MECO®

SINCE 1962

+60 YEARS

ONE MISSION

Reliable Long-Lasting Affordable

BUREAU VERITAS

Bureau Veritas Certification

MECO INSTRUMENTS PVT. LTD.

MECO®

PLOT NO. EL-1; MIDC ELECTRONIC ZONE, TTC INDL AREA, MAHAPE, NAVI MUMBAI – 400 710, MAHARASHTRA, INDIA.

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the Management System standard detailed below.

Standard

ISO 9001:2015

Scope of certification

MARKETING, DESIGN AND MANUFACTURING OF VARIOUS ELECTRICAL / ELECTRONIC MEASURING INSTRUMENTS, ELECTRICAL TRANSDUCERS AND ACCESSORIES

Original cycle start date: **14 December 2002**
Expiry date of previous cycle: **13 December 2020**
Recertification Audit date: **30 November 2020**
Recertification cycle start date: **13 December 2020**
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **13 December 2023**
Certificate No. **IND.20.9867/QM/U** Version : **1** Revision date: **13 December 2020**

Signed on behalf of BVCH SAS – UK Branch
Jagdheesh N. MANIAN
Head – CERTIFICATION, South Asia
Commodities, Industry & Facilities Division

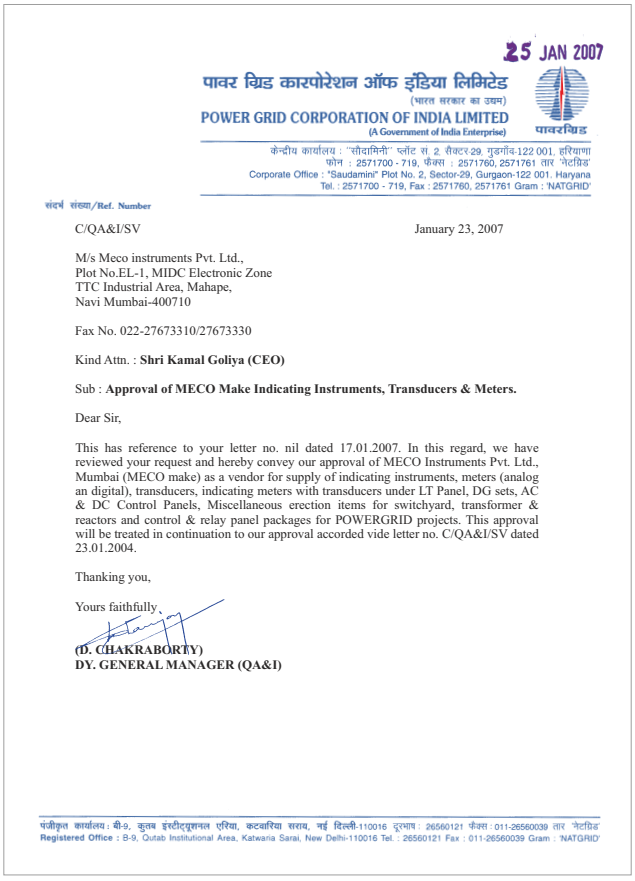
UKAS MANAGEMENT SYSTEMS 0008

Certification body address: 5th Floor, 66 Prescot Street, London, E1 8HG, United Kingdom.

Local office: Bureau Veritas (India) Private Limited (Certification Business) 72 Business Park, Marol Industrial Area, MIDC Cross Road "C", Andheri (East), Mumbai – 400 093, India.

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization. To check this certificate validity please call **+91 22 6274 2000.**

ISO 9001:2015 CERTIFICATE



25 JAN 2007

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

केन्द्रीय कार्यालय : "सौदामिनी" प्लॉट सं. 2, सैक्टर-29, गुडगाँव-122 001, हरियाणा
फोन : 2571700 - 719, फैक्स : 2571760, 2571761 तार 'नेटग्रिड'
Corporate Office : "Saudamini" Plot No. 2, Sector-29, Gurgaon-122 001. Haryana
Tel. : 2571700 - 719, Fax : 2571760, 2571761 Gram : 'NATGRID'

संदर्भ संख्या/Ref. Number

C/QA&I/SV January 23, 2007

M/s Meco instruments Pvt. Ltd.,
Plot No.EL-1, MIDC Electronic Zone
TTC Industrial Area, Mahape,
Navi Mumbai-400710

Fax No. 022-27673310/27673330

Kind Attn. : **Shri Kamal Goliya (CEO)**

Sub : **Approval of MECO Make Indicating Instruments, Transducers & Meters.**

Dear Sir,

This has reference to your letter no. nil dated 17.01.2007. In this regard, we have reviewed your request and hereby convey our approval of MECO Instruments Pvt. Ltd., Mumbai (MECO make) as a vendor for supply of indicating instruments, meters (analog an digital), transducers, indicating meters with transducers under LT Panel, DG sets, AC & DC Control Panels, Miscellaneous erection items for switchyard, transformer & reactors and control & relay panel packages for POWERGRID projects. This approval will be treated in continuation to our approval accorded vide letter no. C/QA&I/SV dated 23.01.2004.

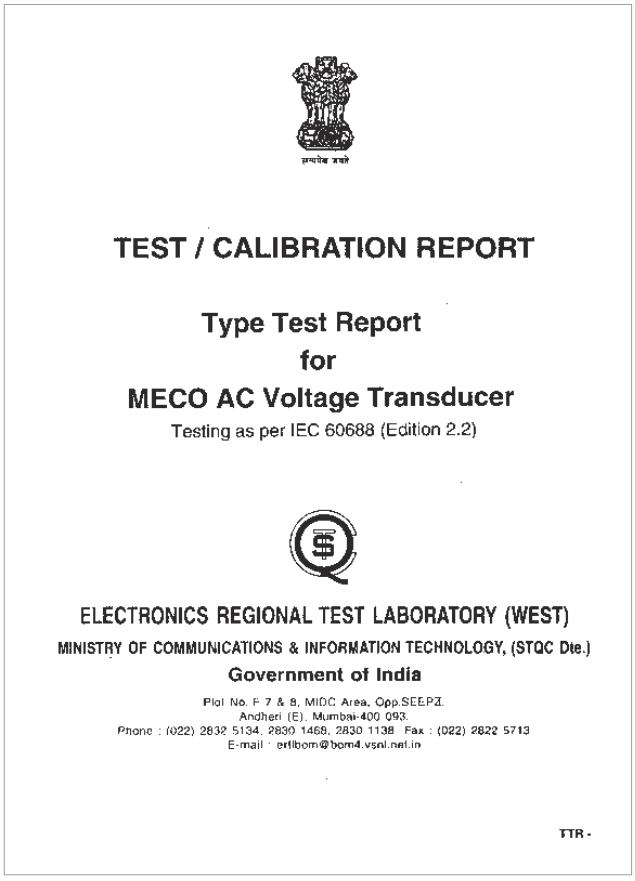
Thanking you,

Yours faithfully,

(D. CHAKRABORTY)
DY. GENERAL MANAGER (QA&I)

पंजीकृत कार्यालय : बी-9, कुतब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली-110016 दूरभाष : 26560121 फैक्स : 011-26560039 तार 'नेटग्रिड'
Registered Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016 Tel. : 26560121 Fax : 011-26560039 Gram : 'NATGRID'

PGCIL APPROVAL



सत्यमेव जयते

TEST / CALIBRATION REPORT

Type Test Report
for
MECO AC Voltage Transducer

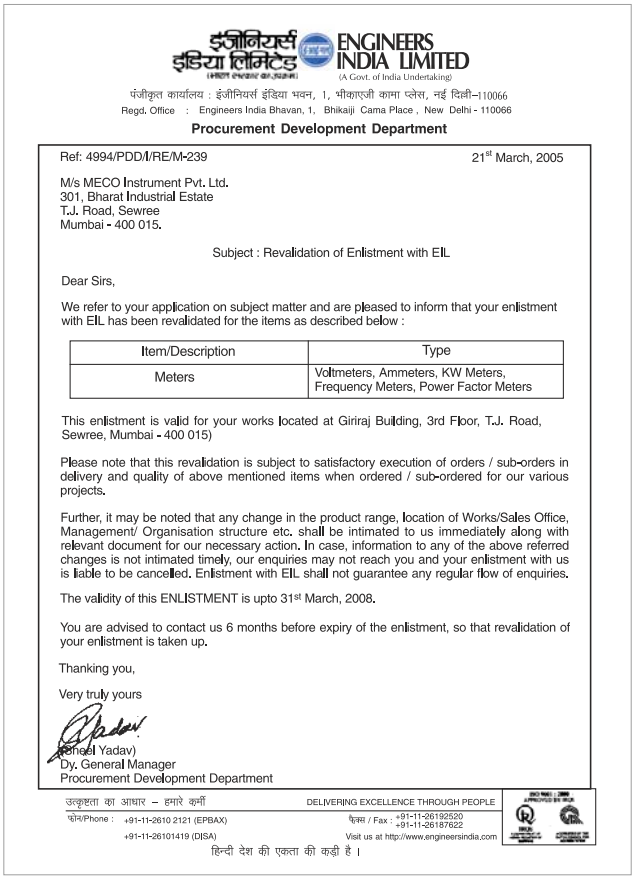
Testing as per IEC 60688 (Edition 2.2)

ELECTRONICS REGIONAL TEST LABORATORY (WEST)
MINISTRY OF COMMUNICATIONS & INFORMATION TECHNOLOGY, (STQC Dte.)
Government of India

Plot No. F 7 & 8, MIDC Area, Opp.SEEPZ.
Andheri (E), Mumbai-400 093.
Phone : (022) 2832 5134, 2830 1468, 2830 1138 Fax : (022) 2822 5713
E-mail : ertlbom@bom4.vsnl.net.in

TTR -

STQC TYPE TEST REPORT



इंजीनियर्स इंडिया लिमिटेड ENGINEERS INDIA LIMITED
(A Govt. of India Undertaking)

पंजीकृत कार्यालय : इंजीनियर्स इंडिया भवन, 1, भीकाएजी कामा प्लेस, नई दिल्ली–110066
Regd. Office : Engineers India Bhavan, 1, Bhikaiji Cama Place, New Delhi - 110066

Procurement Development Department

Ref: 4994/PDD/I/RE/M-239 21st March, 2005

M/s MECO Instrument Pvt. Ltd.
301, Bharat Industrial Estate
T.J. Road, Sewree
Mumbai - 400 015.

Subject : Revalidation of Enlistment with EIL

Dear Sirs,

We refer to your application on subject matter and are pleased to inform that your enlistment with EIL has been revalidated for the items as described below :

Item/Description	Type
Meters	Voltmeters, Ammeters, KW Meters, Frequency Meters, Power Factor Meters

This enlistment is valid for your works located at Giriraj Building, 3rd Floor, T.J. Road, Sewree, Mumbai - 400 015)

Please note that this revalidation is subject to satisfactory execution of orders / sub-orders in delivery and quality of above mentioned items when ordered / sub-ordered for our various projects.

Further, it may be noted that any change in the product range, location of Works/Sales Office, Management/ Organisation structure etc. shall be intimated to us immediately along with relevant document for our necessary action. In case, information to any of the above referred changes is not intimated timely, our enquiries may not reach you and your enlistment with us is liable to be cancelled. Enlistment with EIL shall not guarantee any regular flow of enquiries.

The validity of this ENLISTMENT is upto 31st March, 2008.

You are advised to contact us 6 months before expiry of the enlistment, so that revalidation of your enlistment is taken up.

Thanking you,

Very truly yours

(Bhaei Yadav)
Dy. General Manager
Procurement Development Department

उत्कृष्टता का आधार – हमारे कर्मी DELIVERING EXCELLENCE THROUGH PEOPLE
फोन/Phone : +91-11-2610 2121 (EPBAX) फैक्स / Fax : +91-11-26192520 +91-11-26187622
+91-11-26101419 (DISA) Visit us at http://www.engineersindia.com
हिन्दी देश की एकता की कड़ी है।

EIL APPROVAL

We are an ISO 9001 : 2015 certified company offering reliable, long - lasting and affordable instruments since over six decades. Our team of skilled and trained personnel is equipped with complete in-house facility for design, development and manufacturing world class products with innovative features. Customer focus, product innovation and technological excellence are the prime concern of every member at MECO.

Many of our products have been designed / upgraded by our R & D Department which is recognized by Department of Scientific & Industrial Research, Ministry of Science & Technology, Government of India, New Delhi. We hold over 37 design patents which are registered with The Controller General of Patents, Designs and Trade Marks, Government of India. Our products are certified by some of India's most reputed testing laboratories like ERTL, IDEMI, Karindikar Laboratories & NPL. The high quality of our products experience is always a great value addition for the end user.

To support our manufacturing process we have SMT Pick & Place Machine, Solder Reflow Machine, Robotic Screw Fitting Machine, Dial Printing and Pad Printing Machines. We have one of the latest and largest range of testing equipment and standards which act as a backbone to our QA and Calibration System. Using the state of art electronics, firmware and mechanical infrastructure along with skilled and experienced work force, MECO also acts as an OEM to manufacturers in India, Germany, Italy, UK and USA.

Keeping pace with the requirements of various industry sectors, we have instruments in the following major categories:

- Multifunction Meters
- Power Line Transducers
- Digital Multimeters
- Digital and Analog Insulation Testers
- Testing & Measuring Instruments
- Infrared Body Thermometers
- Solar Analyzers and Solar Power Meter
- Power and Harmonic Analyzers
- Digital Panel Meters and Modules
- Analog Panel and Switchboard Meters
- Digital Clampmeters / Tongtesters
- LCR Meters and Micro / Mili Ohm Meters
- Clamp-On Earth/Ground Resistance & Leakage Current Testers
- Automotive Meters and Battery Testers
- Environment Testing Instruments
- Calibrating Equipment

We have a network of over 75 authorized dealers / distributors and more than 650 resellers who effectively channel the products in the entire Indian subcontinent with good penetration. Our products are exported to almost all the continents of the world through local agents and representatives.

We seek strategic alliances with companies worldwide, who can either efficiently market our products in their local markets or with companies who wish to channel their products in India through our marketing network.

As part of our CSR initiative we arrange eye checkup camps, distribution of baby kits for the newly born, installation of water coolers in government hospitals and many such activities for the welfare of society.

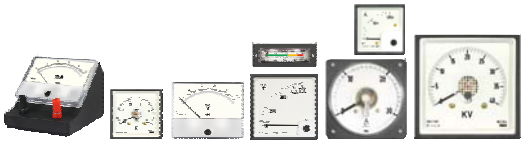
Every member and associate of our organization strongly believes in **"GIVE THE WORLD THE BEST YOU HAVE AND THE BEST IN THE WORLD COMES BACK TO YOU" !!**

Late. Parasmal Goliya
(Founder)

Mr. Premchand Goliya
(Chairman & Mg. Director)

Dr. Kamal P. Goliya
(CEO)

Analog Panel & Switchboard Meters



Digital Multimeters

Digital Clampmeters / Tong Testers

Insulation Testers

Testing & Measuring Instruments

Automotive Meters & Battery Capacity Testers

Solar Analyzers

Environment Testing Instruments

Power & Harmonics Analyzers

Calibrating Equipment / CT's / Decade Resistance Box

Chairman & Managing Director

Mr Premchand Goliya

Associated with Professional Bodies / Associations

- **Former President**
  - ❍ IEEMA (Indian Electrical & Electronics Manufacturers Association), Mumbai
  - ❍ All India Instrument Manufacturers & Dealers Association, Mumbai
  - ❍ AOTS Alumni Association of Western India (AAAWI)
- **Former Chairman**
  CII (Instrumentation Division), N Delhi
- **Member,**
  - ❍ Instrumentation Experts Club, Mumbai
  - ❍ Governing Council, Institute for Design of Electrical Measuring Instruments, Mumbai
  - ❍ Bureau of Indian Standards, Electrical Instruments Sectional Committee, N Delhi
  - ❍ Engineering Export Promotion Council, N Delhi
- **Former Member**
  - ❍ R & D Instrumentation Advisory Council Ministry of Science & Technology, New Delhi
  - ❍ Development Council Instrument Industry Government of India
  - ❍ Technology Information Forecasting & Assessment Council Government of India
- **Honoured with Life Time Achievement Award By**
  - ❍ Instrumentation Experts Club in 2017
  - ❍ Electronic Maker in 2017

Directors

Dr Kamal Goliya (Director & CEO)
Mr Jhanwarlal Sipani (Administration)
Ms Nandita Goliya (Personnel & HR)
Ms Shivani Mehta (Management)
Ms Suvarna Goliya (Management)

Registered Office & Works

EL-1, MIDC Electronic Zone, TTC Industrial Area, Mahape, Navi Mumbai - 400710, Maharashtra (INDIA)
Tel : +91 - 93233 32435 (Sales)
Email : info@mecoinst.com Web : www.mecoinst.com

Authorised Service Centre

Navi Mumbai

Year of Establishment

1962

Banker

Canara Bank, Vashi Branch, Sector 12,
Navi Mumbai - 400703
A/C : 0110261020612, IFSC Code : CNRB0003302

MSME Registration (SMALL Enterprise)

UDYAM - MH-33-0032349
CIN : U33120MH1969PTC014477

Recogonised In - House R&D Unit

Recognized by Department of Scientific & Industrial Research, Ministry of Science & Technology
Government of India, New Delhi
TU/IV-RD/1973/2022 Date 18.05.2022
Renewed till 31.03.2025

Awards and Certifications

Engineering Export Promotion Council
(Government of India)
Awards For Highest Export Of Panel Instruments
1984-85 1994-95 1995-96 1996-97

EFY'S BEST MULTIMETERS AWARD


BEST CALIBRATING EQUIPMENT AWARD


AUTOMATION'S BEST PROCESS INDICATOR MADE IN INDIA AWARD


BEST MULTIMETERS AWARD


EIL APPROVAL

EEPC AWARD

EEPC APPROVAL


BEST INSULATION TESTER AWARD


BEST DIGITAL CLAMP METER AWARD


BEST ELECTRONIC EARTH RESISTANCE TESTER AWARD


BEST DIGITAL PANEL METER AWARD

Government of Maharashtra
Award in Appreciation of Export Achievement
1999-2000

Registrations

ISO 9001 : 2015

- ❍ Certificate No. IND 17.2907U/Q
- ❍ Original Approval Date 14.12.2002 - BVQI

NSIC Registration No.
PMT : NSIC/GP/MUM/2018/63072 Date 16.08.2022

GST
27AAACM2883Q1ZU

Permanent Income Tax No. (PAN)
AAA CM 2883 Q

Company's Act
14477 Date 15.12.1969

Factory Act
Thane -121704520000M-1 Date 01.01.2020 to 31.12.2025

Import Export Code Number
0388036184

Product Profile

- Panel & Switchboard Instruments
- Testing & Measuring Instruments
- Automotive Meters & Battery Testers
- Solar Analyzers
- Environment Testing Instruments
- Power & Harmonic Analyzers
- Calibrating Equipments

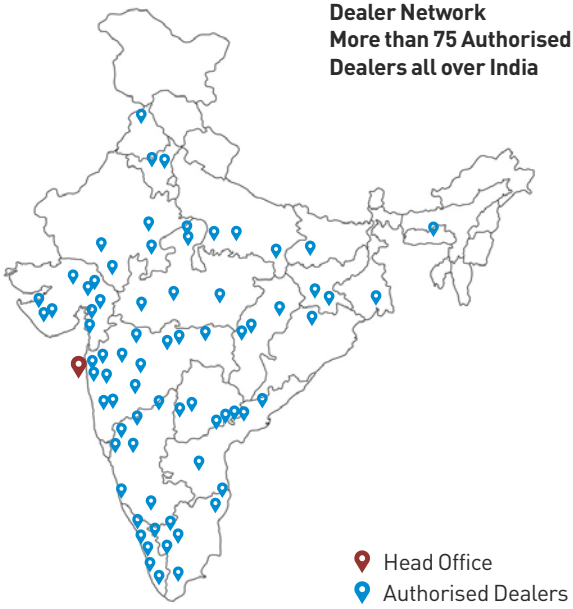
Industry Segments

Automobile	Renewables	R & D Organization
Automation	Food & Fertilizer	Railway
Aviation	Hotel & Tourism	Rubber & Plastic
Cement & Steel	Mining & Metallurgy	SCADA
Chemical	Oil / Gas / Petroleum	Sugar & Distilleries
Defence	Paper	System Integrators
Educational & Labs	Pharmaceutical	Telecommunication
EEE Manufacturer	Power Utilities	Textile Plants/Mills

Exports To Over 30 Countries

Bahrain	Germany	Oman	UAE
Denmark	Indonesia	Philippines	UK
Egypt	Israel	Qatar	USA
Ethiopia	Kenya	Saudi Arabia	Many More...
Finland	Kuwait	Singapore	
France	Malaysia	Thailand	

Dealer Network
More than 75 Authorised Dealers all over India



On Approved List of Major Consultants and Customers

ABB	C & S Group	Honeywell	Maruti	Osaw	Tata Power
Airport Authority [AAI]	DMRC	HPCL	Ministry Of Defence	Panasonic	TELCO
Amara Raja Group	ECIL	ICIC Bank	MPEB	Phillips	TISCO
APGENCO	EIL	IIT's	MRPL	PGCIL	TNEB
Areva T & D India Ltd.	EMERSON	IOCL	MSEDCL	Polycab	TOYOTA
Bajaj Auto Limited	GAIL	Indian Ordance Factory	MSETCL	Popular Switchgear	TUV
BARC	GE	Indian Railways	MTNL	Raychem	TVS
BEST	GERMI	ISRO	NPC	RIL	Venson
Bharti Airtel Ltd.	Godrej	JIO	NALCO	Rockwell	Vikram Sarabhai Space Centre
BHEL	Grasim	JVVNL	NHPC	RRVPNL	WIPRO
Blue Star Limited	GSEB	Jyoti	NIT	SAIL	Yokogawa
BPCL	HARTEK GROUP	L & T	Nitya Electro	Stelmec	Many More....
Chloride	HBL	MGL	NTPC	Siemens	
CREDA	Hindalco	Mahindra	ONGC	SUZLON	

Plant and Machinery

JANOME Robot with Screw Feeder
Automatic Transformer Test System
Magnetizers
ETA Solar Paste Printer
JUKI SMT Placement Machine
ETA REFLOW Machine
Ultrasonic Cleaner
Oil Dispenser
In House CAD Facility
Dial Designer
Belt Conveyor System
Dial Printing Machine
Pad Printing Machine
BFW Miling Machine with 3 axis DRO
Kirloskar Lathe Machine
Batliboi Shaping Machine
Radial Drilling Machine
Tapping Machines 6.5mm
Pantograph
Tanabe (Japan) Coil Winding Machines
Industrial Ovens
DC Regulated Power Supply cum Rectifier Unit
Air Compressors
Box Strapping Machine

Quality Control Facilities

Master Standards
- FLUKE 8588A 8½ Digit Multimeter
- Temperature Calibrator
- DY HTY3 (30°C ~ 45 °C)
- BBTSC 3045 (30°C ~ 45 °C)
- CEM BX 500 (50°C ~ 500°C)
- HP 34401A 6½ Digit Multimeter
- YEW 2885 Watt Convertor
- FLUKE 5500A AC / DC Calibrator
- MECO 90DR HV Resistance Box (0.01MΩ - 5GΩ)
- MECO FS 216 Ammeter
- MECO DIT 918 Digital Insulation Tester
- MECO Current Transformer (1000 / 5A)
- MECO Clampmeter Coil (1000A DC with 100 Turns)
- Shunt (50A / 100mV)
- Quick 191A Thermometer

Mechanical (Dimensional) QC
- World class Measuring Instruments with an In - House Tool Room

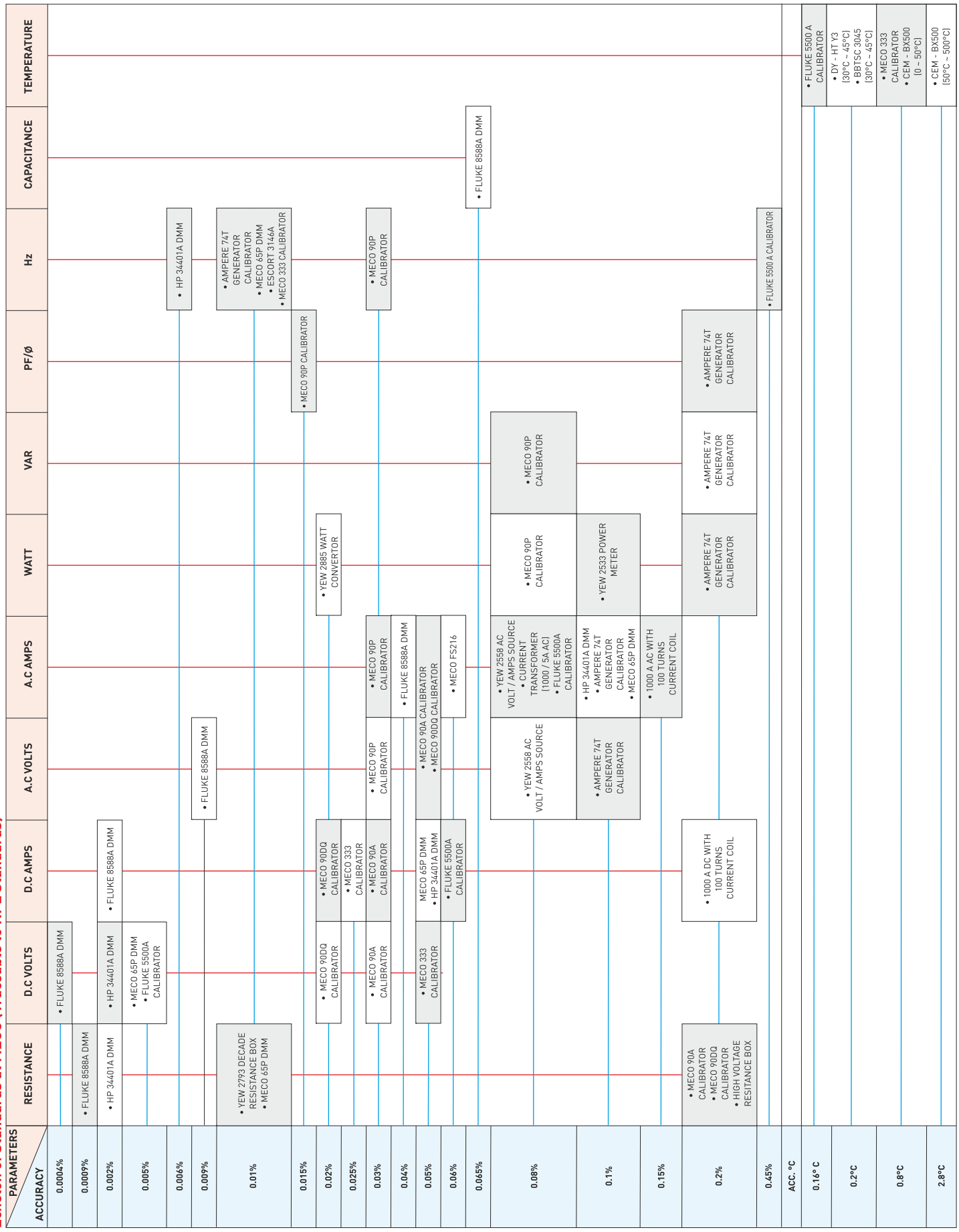
In House Calibrators
- MECO 90DQ Multifunctional Calibrator
- MECO 90A Universal Calibrator
- MECO 90P AC Multifunction Calibrator
- MECO 333 Process Calibrator
- AMPERE 74T 3 Phase V & I Generator
- MECO 90DR45D High Voltage Resistance Box
- YEW Decade Resistance Box
- MECO 65P 6½ Digit Multimeter
- MECO LCR999A LCR Meter
- ESCORT 3146A 6½ Digit Multimeter

Type Tests
- Vibration Table
- Life Tester
- High Voltage Tester
- Oscilloscopes, DMM etc.
- Environmental Chamber
- Insulation Tester
- Stereo Microscopes 40X, e -Microscope
- Bursting Strength Machine

Product Testing / Certification by Accredited Laboratories

Particulars	Certificate No
Analog Instruments	
Type Test Reports	
• Moving Iron AC Panel Meter – SQ72 / SQ96	ERTL (W)/2002 E & S 294 & ERTL (W)/2002 E & S 295
• Moving Coil AC Rectifier Type Meter – MLC96	ERTL (W)/2002 E & S 290
• Moving Coil AC Rectifier Type Meter – C72 / C96	ERTL (W)/2002 E & S 288 & ERTL (W)/2002 E & S 287
• Moving Coil DC Volt Meter – M72 / M96	ERTL (W)/2002 E & S 285 & ERTL (W)/2002 E & S 286
• Moving Coil Panel Meter – ML96	ERTL (W)/2002 E & S 289
• Electronic Analog Type Watt Meter - 96QW33	ERTL (W)/2002 E & S 291
• Electronic Analog Type Frequency Meter - F96	ERTL (W)/2002 E & S 293
• Electronic Analog Type Power Factor Meter - 96QF31	ERTL (W)/2002 E & S 292
• Electronic Analog Insulation Tester - MC904A-2 / MC907A-2	ERTL (W)/2004 E & S 284 & ERTL (W)/2004 E & S 285
EMI and EMC Test Reports	
• Electronic Analog Type Frequency Meter - F72	ERTL (W)/1998 EMI 00088
• Moving Coil AC Rectifier Type Meter - MLC96	ERTL (W)/1998 EMI 00089
• Maximum Demand Ammeter - BM96S	ERTL (W)/1998 EMI 00090
Safety Test Reports	
• Electronic Analog Type Frequency Mete - F72	ERTL (W)/1998 SAF 0046
• Moving Coil AC Rectifier Type Meter - MLC96	ERTL (W)/1998 SAF 0047
• Maximum Demand Ammeter - BM96S	ERTL (W)/1998 SAF 0048
• Moving Coil DC Voltmeter - ML96	TE/ETU022/14-15
Digital Instruments	
Type Test Reports / Calibration Report	
• Digital Multi-Range AC Portable Voltmeter–PM-VAC-5R	CC/ECL/1814/21-22
• Digital Multi-Range AC Portable Ammeter – PM-AAC-5R	CC/ECL/1816/21-22
• Digital Multi-Range DC Portable Voltmeter – PM-VDC-5R	CC/ECL/1815/21-22
• Digital Multi-Range DC Portable Ammeter – PM-ADC-5R	CC/ECL/1817/21-22
• Digital AC & DC Volt Meter - SMP35S	ERTL (W)/2004 E & S 276 & ERTL (W)/2004 E & S 282
• Digital AC Current Meter - SMP35SRS	ERTL (W)/2004 E & S 277
• Digital Frequency Meter (5 Digit) FDM5	ERTL (W)/2004 E & S 278 & ERTL (W)/2004 E & S 289
• Digital Power Factor Meter - DPF 31	ERTL (W)/2004 E & S 281
• Digital Watt Meter - DWM9634	ERTL (W)/2004 E & S 280
• Clamp-On TRMS Power Meter - 3510PHW	ERTL (W)/2008 E & S 357
• AC Digital Tong Tester / Clamp-On TRMS Power Meter - 3510RHW	TR/ETU229/16-17
• Clamp-On Earth / Ground Resistance & Leakage Current Tester - 4680	ERTL (W)/2003 E & S 258 & ERTL (W)/2004 E & S 46
• AC Digital Clampmeter - 3150+	KLPL/BTG/20/10-88
• Digital Insulation Tester - DIT99E	CC/ECU0603/17-18
• Digital Insulation Tester - DIT99C	ERTL (W)/2004 E & S 286
• Digital Insulation Tester - DIT99D	ERTL (W)/2004 E & S 287
• Multifunction Calibrator - 90DQ	CC/ECU1021/08-09
• AC Multifunction Calibrator - 90P	CC/EC U979/09-10
• 4 Digit Frequency Meter	ERTL (W)/2011 E & S 11
EMI and EMC Test Reports	
• Digital Multi meter - 9A02	ERTL (W)/2002 EMI 150
• Power Line Supervisor / Universal Electrical Analyzer - SVPR- 96	ERTL (W)/2002 EMI 147
• Digital Watt Meter - DWM33	ERTL (W)/2002 EMI 148
• Digital AC Current Meter - SMP35SRS	ERTL (W)/2004 EMI 365
• Clamp-On Earth / Ground Resistance & Leakage Current Tester - 4680	ERTL (W)/2004 EMI 234
• Clampmeter Standard Coil with Multifunction Calibrator - Current Coil	CC/ECU01414/17-18
Safety Test Reports	
• Power Line Supervisor / Universal Electrical Analyzer SPVR-96	ERTL (W)2002 SAF 46
Power Line Transducers	
Type Test Reports	
• AC Current Transducer - CMT	ERTL (W)/2003 E & S 117
• AC Voltage Transducer - VMT	ERTL (W)/2003 E & 5 26
• Frequency Transducer - FT	ERTL (W)/2003 E & 5 27
• AC Current Transducer (Self Powered) - CMT	ERTL (W)/2004 E & S 283
EMI and EMC Test Reports	
• Active (Watt) Power Transducer - WT34	ERTL (W)/2002 EMI 149
• AC Voltage Transducer - VMT	ERTL (W)/2003 EMI 262
• Frequency Transducer - FT	ERTL (W)/2003 EMI 263
• Current Transducer with 19V to 90V DC Aux. Supply - CMT	ERTL (W)/2003 EMI 324
• Current Transducer with 85V to 265V AC Aux. Supply - CMT	ERTL (W)/2003 EMI 327
• Voltage Transducer with 19V to 90V DC Aux. Supply - VMT	ERTL (W)/2003 EMI 325
• Voltage Transducer with 85V to 265V AC Aux. Supply - VMT	ERTL (W)/2003 EMI 328
• Watt Transducer with 19V to 90V DC Aux. Supply - WT11	ERTL (W)/2003 EMI 326
• Watt Transducer with 85V to 265V AC Aux. Supply - WT11	ERTL (W)/2003 EMI 329
• Current Transducer with Self Powered Aux. Supply - CMT	ERTL (W)/2004 EMI 366
• Current Transducer - CMT	ERTL (W)/2004 EMI 346
• AC Voltage Transducer - VMT	ERTL (W)/2004 EMI 347
• Frequency Transducer FT	ERTL (W)/2004 EMI 348
• Power Factor Transducer - PFT31	ERTL (W)/2004 EMI 349
• Active Power Transducer - WT33	ERTL (W)/2004 EMI 350
• Reactive Power Transducer - RPT33	ERTL (W)/2004 EMI 351

Echelon of Standards at MECO (Traceable to NPL Standards)



MECO®
SINCE 1962

Multifunction Meters

- ✓ 3 Phase VAF / VIF Meter – TRMS
- ✓ 1 Phase & 3 Phase Multifunction Power & Energy Meter / Transducer
- ✓ 1 Phase Multifunction Meters – TRMS
- ✓ 1 Phase Multifunction Appliance Meter – TRMS With RS-485 Port
- ✓ Power Guard – TRMS

+60 YEARS
ONE MISSION

Reliable Long-Lasting Affordable

FEATURES / PARAMETERS		MFM-96AFN	MFT-96AFN DIN RAIL	MFM-96S	SPVR-96S	MFM Din Rail	MFM-96AF
TRMS Measurement		✓	✓	✓	✓	✓	✓
Display	LED- Super Bright	✓	✓	✓	-	-	✓
	LCD- With Backlight	-	-	-	✓	✓	-
Communication	RS 485 MODBUS, 5KV Isolated Port	✓	✓	✓	✓	✓	✓
System	1 Phase 2 Wire System	✓	✓	-	-	-	-
	3 Phase 3 Wire System	✓	✓	✓	✓	✓	✓
	3 Phase 4 Wire System (Balanced / Unbalanced)	✓	✓	✓	✓	✓	✓
Aux. Supply	85-265V AC / DC (Standard)	✓	✓	✓	✓	-	✓
	19 - 90V AC / DC (Optional)	✓	✓	✓	✓	✓	✓
Current	I1, I2, I3, I Average	✓	✓	✓	✓	✓	✓
	I12 , I31, I Average	✓	✓	✓	✓	✓	✓
	Neutral Current	✓	✓	-	-	-	✓
Voltage	V1N, V2N, V3N, V Average	✓	✓	✓	✓	✓	✓
	V12, V23, V31, V Average	✓	✓	-	✓	✓	✓
	V12, V31, V Average	✓	✓	✓	✓	✓	✓
Frequency	Hz	✓	✓	✓	✓	✓	✓
Active Power	W1, W2, W3, W System	✓	✓	✓	✓	✓	✓
Reactive Power	Var1, Var2, Var3, Var System	✓	✓	✓	✓	✓	✓
Apparent Power	VA1, VA2, VA3, VA System	✓	✓	✓	✓	✓	✓
Power Factor	PF1, PF2, PF3, PF System	✓	✓	✓	✓	✓	✓
Active Energy	KWh1, KWh2, KWh3, KWh Total (Import)	✓	✓	✓	✓	✓	✓
	KWh1, KWh2, KWh3, KWh Total (Export)	✓	✓	✓	✓	✓	✓
Reactive Energy	KVARh1, KVARh2, KVARh3, KVARh Total (Ind.)	✓	✓	✓	✓	✓	✓
	KVARh1, KVARh2, KVARh3, KVARh Total (Cap.)	✓	✓	✓	✓	✓	✓
Apparent Energy	KVAh1, KVAh2, KVAh3, KVAh Total	✓	✓	✓	✓	✓	✓
Previous Energy	Active (Import / Export)	✓	✓	-	-	-	✓
	Reactive (Ind. / Cap.)	✓	✓	-	-	-	✓
	Apparent	✓	✓	-	-	-	✓
Energy Retention & Reset		✓	✓	✓	✓	✓	✓
MAX. Demand	KW System / KVA System	✓	✓	-	-	-	-
THD	V1, V2, V3, I1, I2, I3	✓	✓	-	-	-	-
Scroll - Auto / Manual		✓	✓	✓	✓	✓	✓
Password Protection		✓	✓	✓	✓	✓	✓
CT / PT Primary & Secondary Programmable		✓	✓	-	-	-	-
Baud Rate	2.4 - 19.2 kbps	✓	✓	-	-	-	-
	9.6 kbps	✓	✓	✓	✓	✓	✓
Inbuilt Memory to Programme, Store And Reset For	CTR	-	-	✓	✓	✓	✓
	PTR	-	-	✓	✓	✓	✓
	Instrument Address	✓	✓	✓	✓	✓	✓
	MD Period	✓	✓	-	-	-	✓
	Password	✓	✓	✓	✓	✓	✓
Phase Angle	R, Y, B	✓	✓	-	-	-	✓
Phasor Angle	RY, YB, BR	✓	✓	-	-	-	✓
RUN Hour	Import	✓	✓	-	-	-	✓
	Export	✓	✓	-	-	-	✓
	Total (Import + Export)	✓	✓	-	-	-	✓
ON Hours		✓	✓	-	-	-	✓
Voltage	Min. Value, Max Value	✓	✓	-	-	-	✓
Current	Min. Value, Max Value	✓	✓	-	-	-	✓

VIF96U

Micro Controller Based

Features

- TRMS Measurement
- Measures V, A, Hz, Run Hour, ON Hour & RPM
- RUN Hour / ON Hour (Max. 99999 Hours, 59 Minutes, 59 Second)
- RUN Hour / ON Hour Reset Facility
- Auto Scroll / Manual Scroll Display
- 3 Phase 4 wire
- 3 Rows of 3 Digits Super Bright Red LED Display
- Programmable CTR, PTR, Number of Pole Setting
- Auto Indication for 'KV' & 'KA'
- Auto Selection of Decimal Point

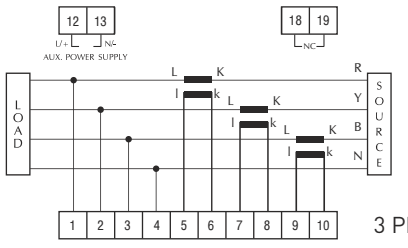
Parameters Measured	Accuracy ±(%FS)	Phase	System
Voltage	± 0.5%	VRN, VYN, VBN, VRY, VYB, VBR	V (System)
Current	± 0.5%	IR, IY, IB	I (Average)
Frequency	± 0.2 Hz	NA	Hz (System)
RPM	± 0.5%	NA	RPM (System)
RUN Hour	NA	NA	RUN Hour (System)
ON Hour	NA	NA	ON Hour (System)

Specifications

Display	3 Rows of 3 Digit RED Seven Segment Display 0.56" / 14.2mm Digit Height		**Voltage Input**	< 0.2 VA / Phase
			Current Input	< 0.2 VA / Phase
Auxiliary Supply	85 - 265 V AC/DC (SMPS)		**System**	3 Phase 3 Element 4Wire
	19 - 90 V AC/DC (SMPS) (Under Development)		**Standard**	
			Installation Category	Cat II (IEC / EN61010 - 1)
Input Voltage	51 - 300 V AC (Max.) (PH - N)	Any one	**Pollution**	Degree 2 (IEC / EN61010 - 1)
	21 - 150 V AC (Max.) (PH - N)		**Environment**	
	88 - 519 V AC (Max.) (PH - PH)	Any one	**Calibration**	27°C ± 5°C
	36 - 258 V AC (Max.) (PH - PH)		**Operating**	0 to 50°C, RH < 70%
Input Current	0.5 A to 6 A (Max.) For 5A Meter	Any one	**Storage**	-10 to 60°C, RH < 70%
	0.1 A to 1.2 A (Max.) For 1A Meter		**Dimensions (mm)**	
Frequency	45 - 55 Hz		**Front**	96 x 96 mm
RPM	As per Number of Pole Setting. Fully Programmable (1 - 255)		**Depth (Behind Bezel)**	43 mm
			Panel Cutout	92 (+0.8, - 0.0) x 92 (+0.8, - 0.0)
VA Burden (Typical)			**Dielectric Strength**	2.5 KV at 50 Hz for 1 min
Auxiliary	< 2.5 VA		**Insulation Resistance**	> 20 MOhms at 500 V DC

Ordering Information : Model, Input Voltage, Input Current, Input Frequency, System 3P3E4W & Auxiliary Supply

Terminal Connection



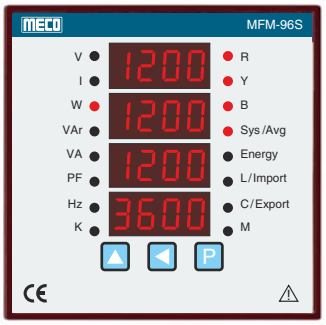
3 Phase 3 Element 4 Wire

SOFTWARE

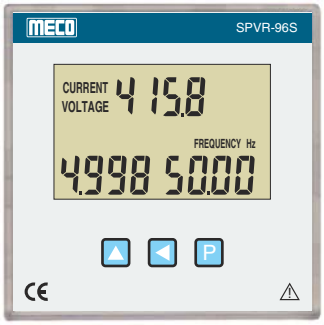
CE

RS 485

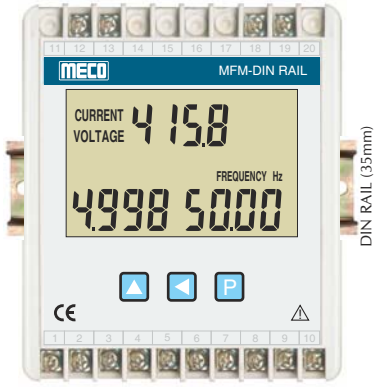
Micro Controller Based



MFM-96S



SPVR-96S



MFM-DIN RAIL

Features

- 10 Parameters, 48 Values on 16 Pages (MFM-96S)
- 10 Parameters, 50 Values on 34 Pages (SPVR-96S & MFM-DIN RAIL)
- TRMS Measurement
- 3 Phase 3 Wire / 3 Phase 4 Wire (User Selectable)
- CTR, PTR, Inst. Address, Password & Energy Reset (Programmble)
- Energy Import - Export (4 Quadrant Operation)
- POWER MASTER Software (Optional)
- RS485 Port, 5KV Isolated with MODBUS RTU Protocol (Optional)
- CE Compliance as per EN61010-1, EN61326-1
- Inbuilt Memory to Store CTR, PTR, Inst. Address & Password
- Auto / Manual Scroll Display (Programmble)
- Energy Retention
- Energy Reset Programmable Parameters (Password Protected)

Parameters Measured	Accuracy ±(%FS)	Phase	System
Voltage	± 0.5%	V1N, V2N, V3N, V12, V23, V31	V (System)
Current	± 0.5%	I1, I2, I3	I (Average)
Active Power	± 1.0%	W1, W2, W3	W (System)
Reactive Power	± 1.0%	Var1, Var2, Var3	Var (System)
Apparent Power	± 1.0%	VA1, VA2, VA3	VA (System)
Frequency	± 0.2 Hz	NA	Hz (System)
Power Factor	± 1° Electrical	PF1, PF2, PF3	PF (System)
Active Energy	Class 1	KWh1, KWh2, KWh3	Kwh Total (Import) & Kwh Total (Export)
Reactive Energy		KVarh1, KVarh2, KVarh3	KVarh Total (IND.) & KVarh Total (CAP.)
Apparent Energy		KVAh1, KVAh2, KVAh3	KVAh Total

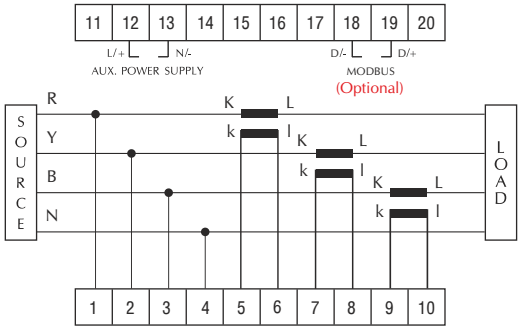
Specifications

Auxiliary Supply	85 - 265VAC / DC (Standard)		Current I/P	< 0.2 VA / Phase
	19 - 90VAC / DC (Optional)		System	3P2E3W / 3P3E4W (User Selectable)
Voltage / Phase	51 - 300VAC (Max.) (PH-N)	Any one	Standard	
	16 - 138VAC (Max.) (PH-N)		Installation Category	CAT II (IEC / EN61010 - 1)
	88 - 519VAC (Max.) (PH-PH)	Any one	Pollution	Degree 2 (IEC / EN61010 - 1)
	28 - 239VAC (Max.) (PH-PH)		Environment	
Current / Phase	0.03A to 1.2A (Max.)	Any one	Calibration	27°C ±5°C
	0.110A to 6A (Max.)		Operating	0 to 50°C , RH < 70%
Frequency	45 - 55Hz		Storage	-10 to 60°C , RH < 70%
Power Factor	0.300 Lag (L) - 1.000 - 0.300 Lead (C)		Terminal Block	Screw Type
VA Burden (Typical)			Dielectric Strength	2.5KV at 50 Hz for 1 min.
Auxiliary	< 3 VA		Insulation Resistance	> 20 MOhms at 500VDC
Voltage I / P	< 0.3 VA / Phase			

* Dimension (mm)

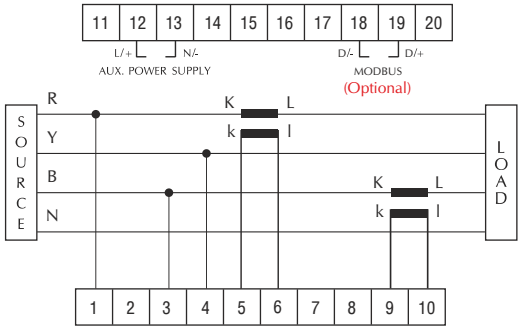
Model	MFM-96S / SPVR-96S	MFM-DIN RAIL
Front	96 x 96	115 (L) x 96(W) x 60(D)
Depth (Behind Bezel panel)	43	
Cut - out	$92^{[+0.8,-0.0]}$ x $92^{[+0.8,-0.0]}$	
Case / Housing Material	DIN Black ABS, Dimension as per DIN 43700	ABS Gray
Mounting	Panel	DIN RAIL (35mm)
Mounting Clamps	Sturdy, Moulded Derlin with Suitable Hardware	
Terminals / Connectors	Terminal Block : Thermo Plastic (UL94V-0) with Tin Plated Brass Terminal	

Terminal Connection

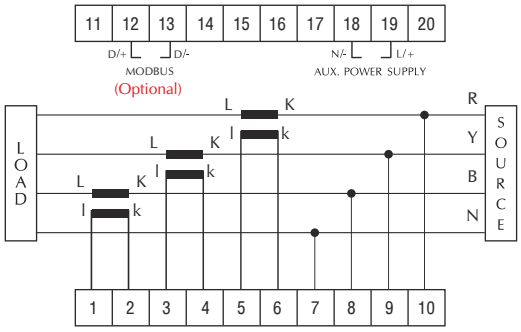


3 Phase 3 Element 4 Wire

SPVR-96S
MFM-96S

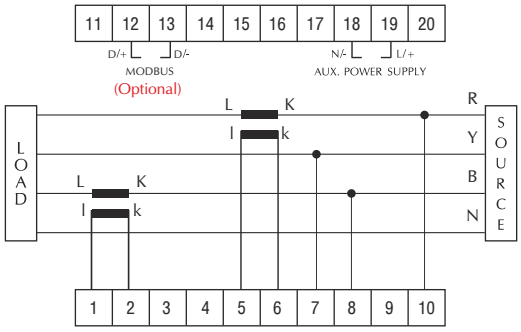


3 Phase 2 Element 3 Wire



3 Phase 3 Element 4 Wire

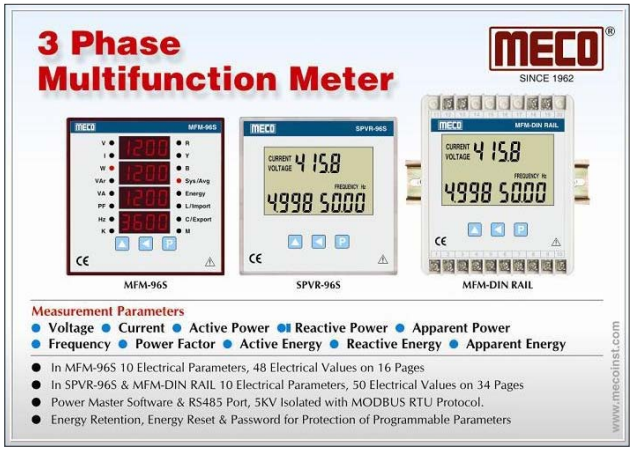
MFM-DIN RAIL



3 Phase 2 Element 3 Wire

Ordering Information: Model, Input Voltage, Input Current, Input Frequency, System 3P3E4W / 3P2E3W, CTR / PTR (if any), Auxiliary Supply & RS485 MODBUS Communication Port (Optional)

POWER MASTER Software



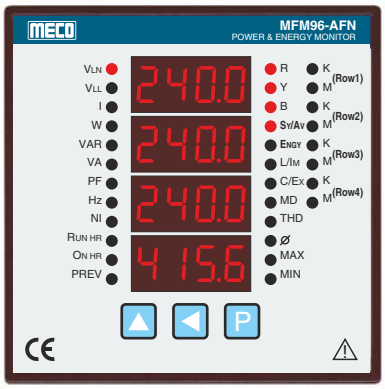
REAL TIME DISPLAY

GRAPH DISPLAY

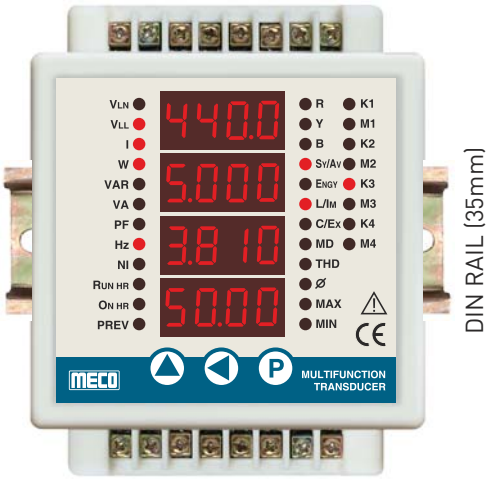
HISTORY TREND

REPORT VIEW DISPLAY

new
Preliminary Data
SOFTWARE
CE
RS 485



MFM-96AFN



DIN RAIL (35mm)

MFT-96AFN DIN RAIL

Micro Controller Based

Features

- TRMS Measurement
- 23 Parameters on 46 Pages
- 4 Rows of 4 Digit Super Bright RED LED Display
- 1 Phase 2 Wire / 3 Phase 3 Wire / 3 Phase 4 Wire System (User Programmable)
- CT/PT Primary & Secondary Programmable
- Programmable CT, PT, Instrument Address, Password & MD Period
- Inbuilt Memory to Store CT, PT, Instrument Address, Password & MD period
- Display Digit Height 0.36" / 9.2mm
- Energy Import-Export (4 Quadrant Operation)
- POWER MASTER Software (Optional)
- RS485 Port, 5KV Isolated with MODBUS RTU Protocol (Optional)
- CE Compliance with EN61010-1, EN61326-1
- Baud Rate (2.4-19.2kbps)
- Auto Scroll (5 sec.) / Manual Scroll Display
- Built in 20 Energy Meters of 8 Digit Resolution
- Energy Retention & Password Protected Energy Reset Facility
- Max. Demand for KW and KVA with user Selectable Demand Interval 5-30 Minutes
- THD for Voltage & Current (1 to 63 Order)
- Password for Protection of Programmable Parameters
- RUN Hours, ON Hours (9999 9999 9999 :59:59)
- Phase Angle & Phasor Angle Measurement
- Display Previous Energies
- Set Date & Time
- Measurement of Min. & Max. Voltage & Current Values
- Sleep Mode for the Display

Specifications

Parameters Measured	**Accuracy** (%)±(FS +5Digit)	**Phase**	**System**
Voltage	0.2	V1N, V2N, V3N, V12, V23, V31	V (System)
Current		I1, I2, I3, NI	I (Average)
Active Power	0.5	W1, W2, W3	W (System)
Reactive Power		Var1, Var2, Var3	Var (System)
Apparent Power		VA1, VA2, VA3	VA (System)
Maximum Demand	0.5	W1, W2, W3, VA1, VA2, VA3	W (System), VA (System)
Harmonic Distortion (1-63) THD (upto 63rd Order)	5	RVH1-63, YVH1-63, BVH1-63 RIH1-63, YIH1-63, BIH1-63	THD - V, THD - I
Frequency	± 0.2 Hz	NA	Hz (System)
Power Factor	± 1^0 Electrical	PF1, PF2, PF3	PF (System)
Active Energy	0.5	KWh1, KWh2, KWh3	KWh Total (Import), KWh Total (Export)
Reactive Energy		KVarh1, KVarh2, KVarh3	KVarh Total (Ind.), KVarh Total (Cap.)
Apparent Energy		KVAh1, KVAh2, KVAh3	KVAh Total
Phase Angle	NA	V1V2, V1V3, V1I1, V2I2, V3I3	NA

Specifications

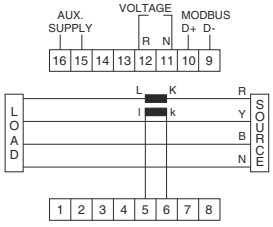
Display	Simultaneous Display of 4 Parameters, 4 Digits Resolution, 0.36" / 9.2mm Digit Height	
Auxiliary Supply	85 - 265V AC / DC (Standard) @ 50/60Hz	
	19 - 90V AC / DC (Optional) @ 50/60Hz	
Input		
Voltage / Phase	26 - 520VAC (Max.) PH-PH	Programmable
	15 - 300VAC (Max.) PH-N	
Current / Phase	0.100A - 1.2A (Max.) for 1A AC	
	0.100A - 6.0A (Max.) for 5A AC	
Frequency	40 - 70 Hz	
Power Factor	0.300 Lag (L) - 1 .000 - 0.300 Lead (C)	
VA Burden (Typical)		
Auxiliary	<2.5VA	
Voltage Input	<1VA / Phase	
Current Input	<1VA / Phase	

System	1P1E2W / 3P2E3W / 3P3E4W	
Standard		
Installation Category	Cat II (IEC / EN61010-1)	
Pollution	Degree 2 (IEC / EN61010-1)	
Environment		
Calibration	27°C ± 5°C	
Operating	0 to 50°C, RH < 70%	
Storage	-10 to 60°C, RH < 70%	
Terminal Block	1) Plug in type for Flush Mounting 2) Screw type for DIN RAIL Mounting	
Dimensions (mm)	**Panel Mount**	**DIN Rail**
Front	96 x 96mm	96 x 120mm
Depth (Behind Bezel)	90mm	93mm
Panel Cut-Out / Mounting	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	35mm DIN Rail
Dielectric Strength	2.5kV at 50Hz for 1min.	
Insulation Resistance	>20MOhms at 500V DC	

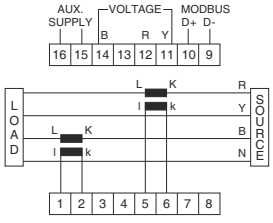
Ordering Information : Model, Input Voltage, Input Current, Input Frequency, Auxiliary Supply and RS485 MODBUS Communication (Optional)

Terminal Connection

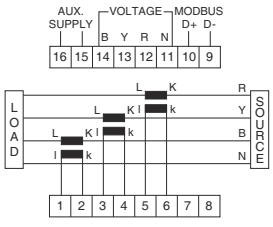
MFT-96AFN DIN RAIL



1 Phase 1 Element 2 Wire

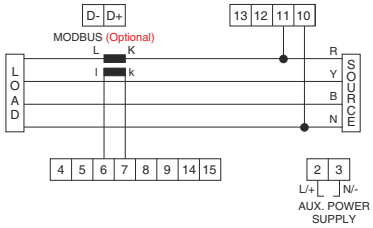


3 Phase 2 Element 3 Wire

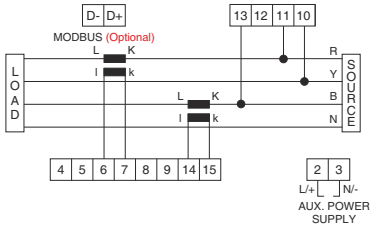


3 Phase 3 Element 4 Wire

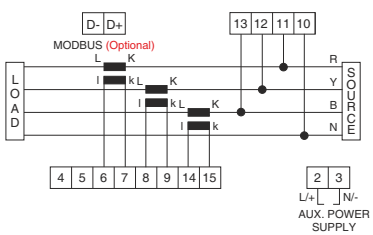
MFM-96AFN



1 Phase 1 Element 2 Wire



3 Phase 2 Element 3 Wire



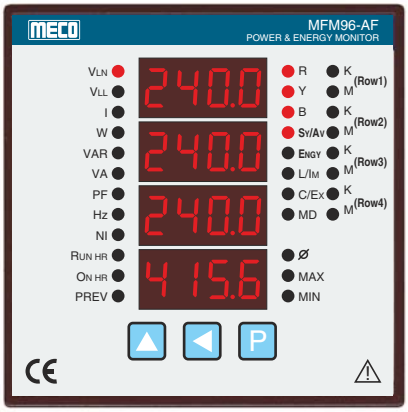
3 Phase 3 Element 4 Wire

new

SOFTWARE

CE

RS 485



MFM-96AF

Micro Controller Based

- Energy Import-Export (4 Quadrant Operation)
- POWER MASTER Software (Optional)
- RS485 Port, 5KV Isolated with MODBUS RTU Protocol (Optional)
- CE Compliance with EN61010-1, EN61326-1
- Inbuilt Memory to Store CTR, PTR, Instrument Address, Password & MD period
- Auto Scroll (5 sec.) / Manual Scroll Display
- Built in 20 Energy Meters of 8 Digit Resolution
- Energy Retention & Password Protected Energy Reset Facility
- Max. Demand for KW or KVA with user Selectable Demand Interval 5-30 Minutes
- Password for Protection of Programmable Parameters
- RUN Hours, ON Hours
- Phase Angle & Phasor Angle Measurement
- Display Previous Energies
- Set Date & Time
- Measurement of Min. & Max. Voltage & Current Values

Features

- TRMS Measurement
- 23 Parameters on 46 Pages
- 4 Rows of 4 Digit Super Bright RED LED Display
- 3 Phase 3 Wire / 3 Phase 4 Wire System (User Selectable)
- Programable CTR, PTR, Instrument Address, Password & MD Period

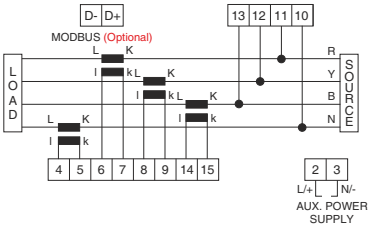
Parameters Measured	Accuracy ±(FS +5Digit)	Phase	System
Voltage	± 0.5%	V1N, V2N, V3N, V12, V23, V31	V (System)
Current		I1, I2, I3, NI	I (Average)
Active Power	± 1%	W1, W2, W3	W (System)
Reactive Power		Var1, Var2, Var3	Var (System)
Apparent Power		VA1, VA2, VA3	VA (System)
Maximum Demand	± 0.5%	W1, W2, W3, VA1, VA2, VA3	W (System), VA (System)
Frequency	± 0.2 Hz	NA	Hz (System)
Power Factor	± 1⁰ Electrical	PF1, PF2, PF3	PF (System)
Active Energy	Class 1	KWh1, KWh2, KWh3	KWh Total (Import), KWh Total (Export)
Reactive Energy		KVarh1, KVarh2, KVarh3	KVarh Total (Ind.), KVarh Total (Cap.)
Apparent Energy		KVAh1, KVAh2, KVAh3	KVAh Total
Phase Angle	NA	V1V2, V1V3, V1I1, V2I2, V3I3	NA

Specifications

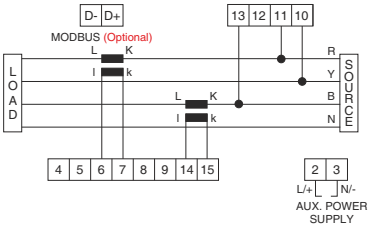
Display	Simultaneous Display of 4 Parameters, 4 Digits Resolution, 0.36" / 9.2mm Digit Height		Current Input	<0.2VA / Phase
Auxiliary Supply	85 - 265V AC / DC, Optional : 19 - 90V AC / DC		**System**	3P2E3W / 3P3E4W
Input			**Standard**	
Voltage/Phase	51 - 300VAC (Max.) PH-N	Any one	Installation Category	Cat II (IEC / EN61010-1)
	17 - 138VAC (Max.) PH-N		Pollution	Degree 2 (IEC / EN61010-1)
	88 - 519VAC (Max.) PH-PH	Any one	**Environment**	
	30 - 239VAC (Max.) PH-PH		Calibration	27°C ± 5°C
Current/Phase	0.050A to 1.2A (Max.)	Any one	Operating	0 to 50°C, RH < 70%
	0.250A to 6A (Max.)		Storage	-10 to 60°C, RH < 70%
Frequency	45 - 65 Hz		**Terminal Block**	Plug in type
Power Factor	0.300 Lag (L) - 1 .000 - 0.300 Lead (C)		**Dimensions (mm)**	
VA Burden (Typical)			Front	96 x 96mm
Auxiliary	<2.5VA		Depth (Behind Bezel)	90mm
Voltage Input	<0.3VA / Phase		Panel Cut-Out	$92^{[+0.8,\ -0.0]}$ x $92^{[+0.8,\ -0.0]}$
			Dielectric Strength	2.5kV at 50Hz for 1 min.
			Insulation Resistance	>20MOhms at 500V DC

Ordering Information : Model, Input Voltage, Input Current, Input Frequency and RS485 MODBUS Communication (Optional)

Terminal Connection



3 Phase 3 Element 4 Wire



3 Phase 2 Element 3 Wire

FEATURES / PARAMETERS		EM-08S (1A/5A AC)	EM-09 (1A/5A/ 20A AC)	EM-08/ EM-08D (1A/5A AC)	PG-09 (1A/5A/ 20A AC)	PG-08T (10A AC)
TRMS MEASUREMENT		✓	✓	✓	✓	✓ (For Sine Wave)
DISPLAY	LCD (With Backlight)	✓	✓	✓	✓	✓
COMMUNICATION	RS 485 MODBUS, 5KV Isolated Port	✓ (Optional)	✓ (Optional)	-	-	-
SYSTEM	1 Phase	✓	✓	✓	✓	✓
AUX. SUPPLY	230V AC	-	-	✓	✓	✓
	SMPS (85-265V AC/DC)	✓	✓	-	-	-
CURRENT	I	✓	✓	✓	✓	✓
VOLTAGE	V (P-N)	✓	✓	✓	✓	✓
FREQUENCY	Hz	✓	✓	✓	✓	✓
ACTIVE POWER	W / KW	✓	✓	✓	✓	✓
REACTIVE POWER	Var / KVar	✓	✓	✓	✓	-
APPARENT POWER	VA / KVA	✓	✓	✓	✓	-
POWER FACTOR	PF	✓	✓	✓	✓	✓
ACTIVE ENERGY	KWh (Import)	✓	✓	✓	✓	✓
REACTIVE ENERGY	KVARh (Ind)	✓	✓	✓	-	-
APPARENT ENERGY	KVAh	✓	✓	✓	-	-
CO_2	KG	-	-	-	✓	✓
TUT	HOUR / MIN	-	-	-	✓	✓
MONEY	CU	-	-	-	-	✓
TARIFF	CU / KWh	-	-	-	-	✓
TIMER & RELAY	-	-	-	-	-	✓
ENERGY RETENTION & RESET		✓	✓	✓	✓	✓
AUTO SCROLLING		✓	✓	✓	-	-
MANUAL SCROLLING		✓	✓	✓	✓	✓
INBUILT MEMORY TO PROGRAM, STORE AND RESET FOR	CTR	✓	-	✓	-	-
	INSTRUMENT ADDRESS	✓	✓	-	-	-

CE

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EM-08(5A)
EM-08(1A)

EM-08D(5A)
EM-08D(1A)

Micro Controller Based

Features

- 10 Parameters on 10 Display Pages
- Measures V, A, PF, Hz, KW, KVA, KVAr, KWh, KVAh & KVArh
- Auto / Manual Scroll Display (User Selectable)
- Reduces Panel Space and Wiring Time
- State of The Art Microcontroller Design
- TRMS Measurement
- Ideal for Testing of Electrical Appliances
- User Programmable CT Ratio (1.00 - 99.99)
- LCD Display with Backlight (20mm Digit Height)

Application

● Appliance Testing ● Energy Audit ● QC ● Studying Energy Efficiency of Electrical Equipment ● Building Management Systems ● Power Management ● Generator / Motor Characteristics ● Plant Maintenance

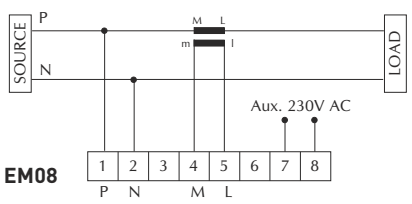
Specification

Functions	EM-08/EM-08D(5A)	EM-08/EM-08D(1A)	Accuracy
RMS Voltage	**50.0 ~ 300 Vrms**		±(0.5% FS +1 dgt.)
RMS Current (any one range only)	(0.25 ~ 6.0 Arms)	(0.05 ~ 1.2 Arms)	±(0.5% FS +1 dgt.)
Active Power	0.012 ~ 1.800 KW	0.002 ~ 0.360 KW	±(0.5% FS +1 dgt.) [Cosφ=0.3 to 1.000]
Apparent Power	0.012 ~ 1.800 KVA	0.002 ~ 0.360 KVA	±(0.5% FS +1 dgt.)
Reactive Power	0.012 ~ 1.800 KVAr	0.002 ~ 0.360 KVAr	±(1.0% FS +1 dgt.) [Sinφ=0.3 to 1.000]
Power Factor	0.3 Lag ~ 1.0 ~ 0.3 Lead		±(0.01 PF +1 dgt.)
Line Frequency	45.00 ~ 65.00 Hz		±0.1 Hz
Active Energy (KWh)	0000 ~ 9999 KWh		Class 1
Apparent Energy (KVAh)	0000 ~ 9999 KVAh		
Reactive Energy (KVArh)	0000 ~ 9999 KVArh		

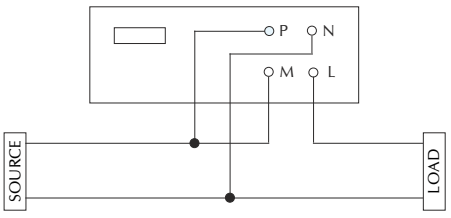
Model		EM08	EM08D
Case / Housing Material		DIN Black ABS, Dimension as per DIN 43700	Portable Type, Desk Top Case with Tilt Stand
Mounting Clamps		Sturdy, Moulded Derlin with suitable Hardware	Desk Top Type
Terminals / Connectors		Terminal Block : Thermoplastic (UL94V-0) with Tin Plated Brass Terminal	For Input connections 10Amps Binding Post Terminals on the Front panel.
Auxiliary Power Supply		230VAC ±20%, 50Hz	230VAC ±20% 50Hz, Switch & Fuse for Aux. Supply at the Back, Supplied with 1-Phase Power Cord
Dimension (mm)	**Front**	96 x 96	160 (W) x 110 (H) x 190 (D)
	Depth (Behind Bezel Panel)	90	
	Cut-Out	92 (+0.8, -0.0) x 92 (+0.8, -0.0)	

Ordering Information: Model, Input Voltage, Input Current (1A or 5A - any one only), CTR & Auxillary Supply

Connection Diagram



EM08



EM08D

SOFTWARE

CE

RS 485

EM-08S (5A)
EM-08S (1A)

Micro Controller Based

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Features

- 10 Parameters on 10 Display Pages
- Measures V, A, PF, Hz, KW, KVA, KVAr, KWh, KVAh & KVArh
- Auto / Manual Scroll Display (User selectable)
- SMPS Power Supply (85 - 265VAC/DC)
- Ideal for Testing of Electrial Appliances
- User Programmable CT Ratio (1.00 - 99.99)
- TRMS Measurement
- 4 Digit LCD Display with Backlight (20mm Digit Height)
- LED Indicator for Parameter Indication
- RS 485 Port (5KV Isolated) (Optional)
- MODBUS RTU Protocol (Optional)
- POWER MASTER Software (Optional)

Application

- Home Appliance Testing
- Energy Audit
- QC
- Studying Energy Efficiency of Electrical Equipement
- Building Management - Systems
- Power Management
- Generator/ Motor Characteristics
- Plant - Maintenance

Specification

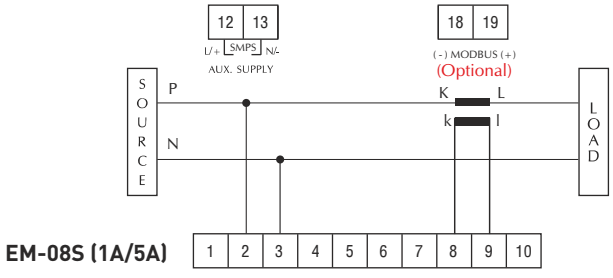
Functions	EM-08S (5A)	EM-08S (1A)	Accuracy
RMS Voltage	50.0 ~ 300Vrms		±(0.5% FS +1 dgt.)
RMS Current (Any One Range Only)	(0.125A ~ 6.0Arms)	(0.025A ~ 1.2Arms)	
Active Power	0.030 ~ 1.800 KW	0.006 ~ 0.360 KW	±(0.5% FS +1 dgt.) [Cosφ=0.3 to 1.000]
Apparent Power	0.030 ~ 1.800 KVA	0.006 ~ 0.360 KVA	±(0.5% FS +1 dgt.)
Reactive Power	0.030 ~ 1.800 KVAr	0.006 ~ 0.360 KVAr	±(1.0% FS +1 dgt.) [Sinφ=0.3 to 1.000]
Power Factor	0.3 Lag ~ 1.0 ~ 0.3 Lead		±(0.01 PF +1 dgt.)
Line Frequency	45.00 ~ 55.00 Hz		±0.1Hz
Active Energy (KWh)	0000 ~ 9999 KWh		Class 1
Apparent Energy (KVAh)	0000 ~ 9999 KVAh		
Reactive Energy (KVArh)	0000 ~ 9999 KVArh		

Note : KW / KVA / KVAr Measurements require Vrms x Irms x Cosφ/Sinφ ≥ 0.006 (for 1A Meter), ≥ 0.030 (for 5A Meter)

Case / Housing Material		DIN Black ABS, Dimension as per DIN 43700
Mounting Clamps		Sturdy, Moulded Derlin with suitable Hardware
Terminals / Connectors		Terminal Block : Thermoplastic (UL94V-0) with Tin Plated Brass Terminal
Auxiliary Power Supply		SMPS (85 - 265 VAC/DC)
Dimension (mm)	Front	96 x 96
	Depth (Behind Bezel Panel)	43 [For EM-08S(1A/5A)]
	Cut-Out	92 (+0.8, -0.0) x 92 (+0.8, -0.0)

Ordering Information: Model, Input Voltage, Input Current (1A or 5A any one only) & RS485 Port (Optional)

Connection Diagram



EM-08S (1A/5A)

SOFTWARE

CE

RS 485

Micro Controller Based

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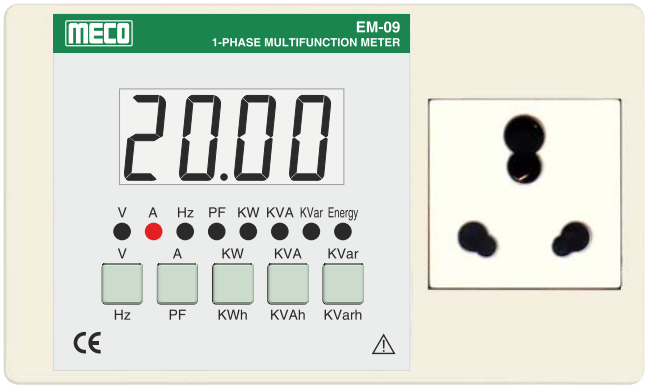


EM-09 (20A)
EM-09 (5A)
EM-09 (1A)

EM09 is a microcontroller based Portable, Continuous Use, Single Phase Electrical Meter indicating TRMS values of various electrical parameters. It measures 10 parameters on 10 display pages on a large LCD display (20mm). It has a smart socket. It is equipped with 5 keys to view all the parameters and for programming of the meter.

Features

- Measures V, A, PF, Hz, KW, KVA, KVAr, KWh, KVAh & KVArh
- TRMS Measurement
- Can be used for Continuous Monitoring
- Auto / Manual Scroll Display (User Selectable)
- State of Art Microcontroller Design
- Portable, Easy to Carry and Simple to Use
- LCD Display with Backlight (Green & White)
- RS 485 Port (5kV Isolated) with MODBUS RTU Protocol (Optional)
- POWER MASTER Software for MIS Reports (Optional)

Application

- Appliances Testing (AC, Refrigerator, Washing Machine etc.)
- LED Lights Testing
- Can be given to Field Technicians in their Tool Kit
- Can be used by R&D Dept. in Designing Energy Efficient Products
- Energy Audit and Plant Maintenance
- Studying Energy Efficiency of Electrical Equipment
- Building Management Systems
- Power Management
- Product Quality Testing

Specification

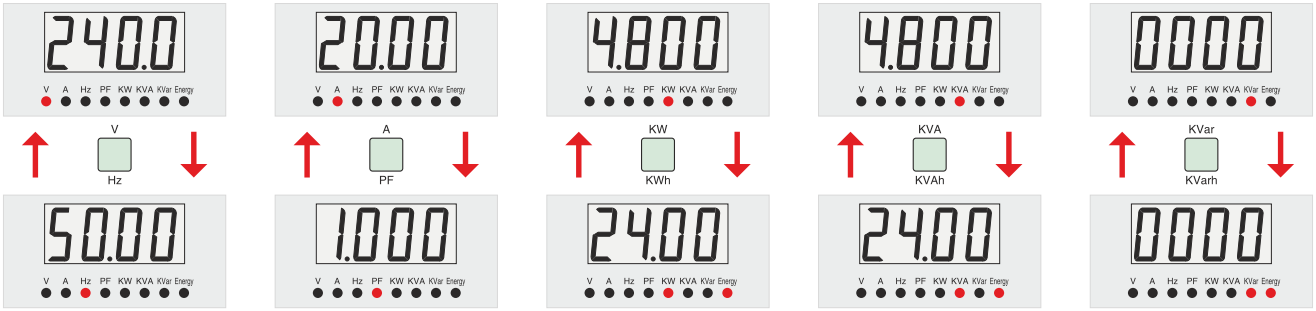
Functions	EM-09 (20A)	EM-09 (5A)	EM-09 (1A)	Accuracy
RMS Voltage	85~265Vrms			±(0.5% FS +1 dgt.)
RMS Current	(0.900A ~ 24Arms)	(0.125A ~ 6.0Arms)	(0.025A ~ 1.2Arms)	
Active Power	0.216 ~ 5.300 KW	0.030 ~ 1.590 KW	0.006 ~ 0.318 KW	±(0.5% FS +1 dgt.) [Cosφ=0.3 to 1.000]
Apparent Power	0.216 ~ 5.300 KVA	0.030 ~ 1.590 KVA	0.006 ~ 0.318 KVA	±(0.5% FS +1 dgt.)
Reactive Power	0.216 ~ 5.300 KVAr	0.030 ~ 1.590 KVAr	0.006 ~ 0.318 KVAr	±(1.0% FS +1 dgt.) [Sinφ=0.3 to 1.000]
Power Factor	0.3 Lag ~ 1.0 ~ 0.3 Lead			±(0.01 PF +1 dgt.)
Line Frequency	45.00 ~ 55.00 Hz			±0.1 Hz
Active Energy (KWh)	0000 ~ 9999 KWh			Class 1
Apparent Energy (KVAh)	0000 ~ 9999 KVAh			
Reactive Energy (KVArh)	0000 ~ 9999 KVArh			

Note : KW / KVA / KVAr Measurements require Vrms x Irms x Cosφ/Sinφ ≥ 0.006 (for 1A Meter), ≥ 0.030 (for 5A Meter) and ≥ 0.216 (for 20A Meter)

Model	EM-09 (20A)	EM-09 (1A/5A)
Case / Housing	ABS Case Suitable for Desktop Mounting / Portable / Wall Mounting Application	
Socket / Plug	6A - 20A Multi Socket & 20A Plug	6A
Auxiliary Power Supply	85-265V AC Supplied with 1 Phase Power Cord	
Dimensions (mm)	164 x 100 x 65mm (approx.)	

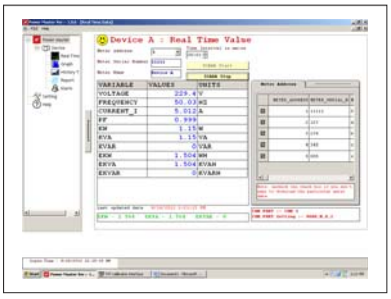
Ordering Information : Model, Input Current (20A or 5A or 1A any one only) & RS485 Port (Optional)

Display Pages

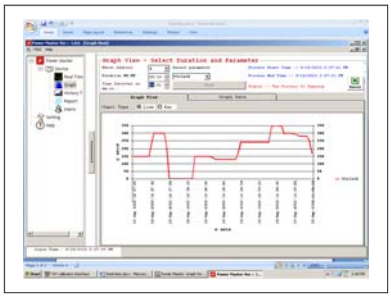


Applications

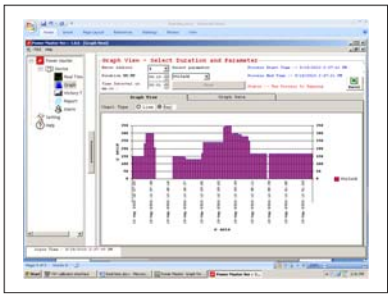
POWER MASTER Software



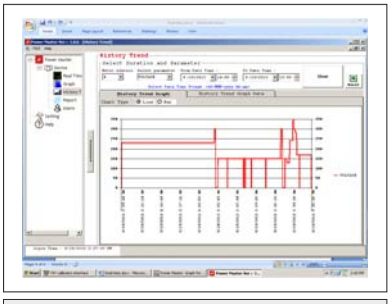
REAL TIME DISPLAY



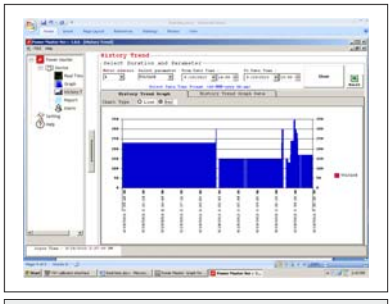
LINE GRAPH DISPLAY



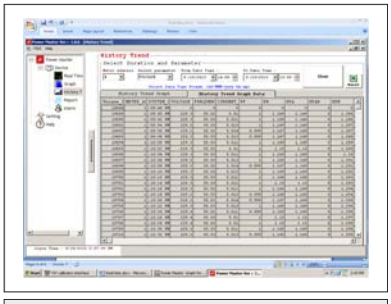
BAR GRAPH DISPLAY



HISTORY TREND - LINE GRAPH DISPLAY



HISTORY TREND - BAR GRAPH DISPLAY



REPORT VIEW DISPLAY

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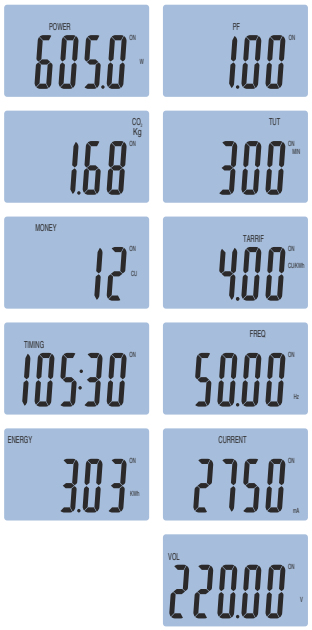
PG08T



many more...

POWERGUARD is a simple to use and easy to handle product which has many applications because of its portability and light weight.

Measures

- Power (W) ● Power Factor (PF)
- Carbon Emission (CO_2 in kg)
- Total Usage Time (MIN) ● Money (CU)
- Tariff (CU/KWh) ● Timer (DHH:MM)
- Frequency (Hz) ● Energy (KWh)
- TRMS V & mA for Sine Wave

Features

- Three Pin Socket & Plug Suitable for Indian Socket
- Large LCD Display with Backlight
- Memory Retention (KWh, MIN, CU, CU/KWh, CO_2)
- Counts CO_2 generated by Electrical Equipment (0.555kg CO_2 is generated by using 1 KWh Energy)
- Timer & Relay Function for ON / OFF the Load

General Specifications

- Accuracy : Class 1.0
- Power Consumption : Less than 1W
- Input : 220V, 50Hz, 10A (Max.)
- Working Temperature : -25°C to +55°C
- Dimensions : 128 x 67 x 57mm (approx.)
- Weight : 150gms (approx.)

Specifications

Functions (Annunciator)	Input Range	Display Format	Accuracy (% of FS) (FS = 2200W)
Power (W)	0.2 ~ 1W	XXXX.X	< 10
	1 ~ 10W		5
	10 ~ 2200W		1
Power Factor (PF)	For 0.2 ~ 5W	X.XX	NA
	For 5 ~ 10W		NA
	For 10 ~ 2000W		< 0.05 PF
CO_2 (Kg)	CO_2 (Kg)	XXX.XX	NA
Total Usage Time (MIN)	Minutes	XXXXX	
Money (CU)	CU	XXXXX	
Tariff (CU/KWh)	CU/KWh	XX.XX	
Timer	000:01 ~ 923:59 (DHH:MM)	XXX:XX	
Frequency (Hz)	45 - 55Hz	XX.XX	±0.05Hz
Energy (KWh)	For 5 ~ 2200W	XXX.XX	1
TRMS Current (mA)	0.02 ~ 100mA	XXXXX	NA
	100mA ~ 10A		3
TRMS Voltage (V)	195 ~ 265V	XXX.XX	0.5
Applications	Teaching, Demonstration & Testing of Electrical Energy Consumption of Household / Office Appliances. It can be used in Houses, Offices, Shops, Schools, Laboratories etc.		

Ordering Information : Model

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Micro Controller Based

PG09 - 20A
PG09 - 5A
PG09 - 1A

Display Pages

POWERGUARD is a simple to use and easy to handle product which can be widely used because of its portability and light weight

Measures

- TRMS Voltage (V)
- Frequency (Hz)
- TRMS Current (A)
- Power Factor (PF)
- Apparent Power (KVA)
- Reactive Power (KVAr)
- Active Power (KW)
- Energy Consumption (KWh)
- Energy Usage Time (EUT)
- Carbon Emission (CO_2 in kg)

Features

- Three Pin Socket & Plug Suitable for Indian Socket
- Large Dual Row LCD Display with Backlight & Annunciator
- Memory Retention (KWh, EUT)
- Simple, Easy & Accurate
- Continuous Measurement
- Counts CO_2 generated by Electrical Equipment (0.555kg CO_2 is generated by using 1KWh Energy)

General Specifications

- Accuracy : Class 1.0
- Power Consumption : Less than 2W (with backlight)
- Working Temperature : -10°C to +55°C, <70% RH
- Dimensions : 156 x 78 x 48mm (approx.)
- Weight : 300gms (approx.)

Specifications

Function	PG09 - 20A	PG09 - 5A	PG09 - 1A	Accuracy
RMS Voltage (V)	240V AC (Nominal) (195V ~ 265Vrms)			± 0.5% of FS
RMS Current (A)	(0.110 ~ 20.00) Arms	(0.100 ~ 6.000) Arms	(0.010 ~ 1.200) Arms	± 0.5% of FS
Active Power @240VAC (KW)	(0.026 ~ 4.800) KW	(0.024 ~ 1.440) KW	(2.400 ~ 288.0) W	±1.0% of FS
Apparent Power @240VAC (KVA)	(0.026 ~ 4.800) KVA	(0.024 ~ 1.440) KVA	(2.400 ~ 288.0) VA	±1.0% of FS
Reactive Power @240VAC (KVAr)	(0.026 ~ 4.800) KVAr	(0.024 ~ 1.440) KVAr	(2.400 ~ 288.0) VAr	±1.0% of FS
Power Factor (PF)	(0.026 ~ 0.120) KW	(0.024 ~ 0.096) KW	(021.6 ~ 048.0) W	> 0.03 PF
	(0.120 ~ 4.800) KW	(0.096 ~ 1.440) KW	(048.0 ~ 288.0) W	< 0.03 PF
Line Frequency (Hz)	45.00 ~ 55.00 Hz			± 0.2 Hz
Active Energy (KWh)	000000 ~ 999999 KWh			Class 1
Energy Usage Time (EUT)	Hours / Minutes			NA
Carbon Emission (CO_2 in kg)	CO_2 (Kg)			NA
Applications :	Teaching, Demonstration & Testing of Electrical Energy Consumption of Household & Office Appliances. It can be used in Houses, Offices, Shops, Schools, Laboratories etc.			

Ordering Information : Model & Range

CHLORIDE

Date: 11.01.2023

To,
M/s. Meco Instruments Pvt. Ltd.
Plot No. 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape, Navi Mumbai – 400 710
Tel. No. 022 – 27673300

Dear Sir/Madam

Kind Attn : Dr. Kamal Goliya - CEO

Sub Products Appreciation letter for Digital Panel Meters and Analog Panel Meters.

We thank you for your support extended to us for supply of MECO Digital Panel Meters and Analog Panel Meters regularly for our various projects in India and for many export projects.

We are very much satisfied with the performance of these meters.

The presales and post-sales service and support offered are prompt and timely.

We hope to have good and strong business relationship with you in future as well.

Thanking You,

Your Faithfully,

M/s. Chloride Power Systems & Solutions Ltd.

Surajit Maryan
Head Purchase
Phone: 9591070389

Chloride Power Systems & Solutions Limited (A wholly owned subsidiary of Exide Industries Ltd.)
Works & Address of Communication : Plot No. Y-21, Block EP, Sector - V, Salt Lake Electronics Complex, Kolkata - 700 091. W.B., India
Phone : +91 33 2357-5851/52/53/54, Fax : +91 33 2357-7082, CIN : U31100WB1980PLC032796
E-MAIL : info@chloridepower.co.in, Web . www.chloridepowersystems.com
Regd. Office : "Exide House", 59E, Chowringhee Road, Kolkata - 700 020

Survey No. 351, Thumkunta (Vill.)
Sheerpet (Md.), R.R. Dist.
Hyderabad - 500 078. India.
Phone : +91-8418-325556/247680/1/2
Fax : +91-8418-247683

HBL®
HBL Power Systems Ltd.

Date : 06.06.2022

To,
M/s. Meco Instruments Pvt. Ltd.
EL-1, MIDC Electronic Zone, TTC Industrial Area,
Mahape, Navi Mumbai - 400710

Kind Attn : Mr. Kishorkumar Thakare (Marketing Manager - South India)

Subject : Appreciation Letter

Dear Sir

We thank you for your excellent support extended to us for supply of MECO Digital Panel Meters regularly for our various projects in India and for many export projects.

We are very much satisfied with the performance of these meters.

The presales and post sales service and support offered are prompt and timely.

We hope to have good strong business relationships with you in future as well.

With Best Regards

P.N.V. Lakshmana Rao
Sr. Manager

Regd. Office :
HBL Power Systems Limited
Road No.10, Banjara Hills, Hyderabad - 500 034.
Website : www.hbl.in
CIN : L40109TG1986PLC006745

Functional Safety Management
(TÜV Rheinland)
IEC 61511:2016
SIS Integration (Phase 4)
FSM 115

CERTIFIED ISO 9001 2015 — UKAS MANAGEMENT SYSTEMS 001

Yokogawa India Limited
Regd. Office:
Plot No. 96, Electronics City Complex,
Hosur Road,
Bangalore - 560100. India
Tel : +91-(0)80-41586000
Fax : +91-(0)80-28521442

YOKOGAWA

YIL/APP/20923/2022
10th May, 2022

M/s. Meco Instruments Pvt. Ltd.
EL-1, MIDC Electronic Zone, TTC Industrial Area,
Mahape,
Navi Mumbai – 400710

Subject: Certificate of Appreciation

Dear Mr. Kishorkumar Thakare,

We are glad to inform you that we are very much satisfied with the performance of your Multifunction Meters, Transducers and Panel Meters.

We thank you for your exceptional sales and service support and attending our queries / requests in a professional and timely manner.

We hope that the same support will be extended to us in future also and will strengthen our business relations.

Thanking you, we remain

Very truly yours,
For YOKOGAWA INDIA LIMITED,

Chandrashekar Hegde,
Manager – Procurement
Centralized Materials Management

For Internal Use Only

CIN No.: U74210KA1987FLC008304 Email ID: YIL-contactus@yokogawa.com Website: http://www.yokogawa.com/in

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भारत हेवी एलेक्ट्रिकल्स लिमिटेड
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd
(A Government of India Undertaking)
ELECTRONICS DIVISION
P.B. No 2606, MYSORE ROAD, BANGALORE - 560 026. INDIA
An ISO 9001, ISO 14001 & OHSAS 18001 COMPANY

PHONE : +918026998443
dharmaraju@bheledn.co.in

Date : 12th Dec 2012

To Whomsoever It May Concern

This is to certify that M/s Meco Instruments Pvt Ltd., TTC Industrial Area, Mahape, Navi Mumbai– 400710 is registered with our unit of BHEL vide vendor code: M402467.

The supplier is registered for the supply of following material categories:

- *Measuring Instruments such as Voltmeters, Ammeters, Wattmeters, Frequency Meters, PF Meters (Both Analog & Digital), and*
- *Indicators*

Type of Registration: Permanent.

12/12/2013
(BK Dharmaraju)
Dy General Manager (Supplier Devpt Cell)

ಧರ್ಮರಾಜು ಬಿ.ಕೆ., ಉಪ ಪ್ರಧಾನ ವ್ಯವಸ್ಥಾಪಕರು/ಪೂರೈಕೆದಾರ ಕೋಶ-ಸಿ.ಇ.
धर्मराजु बी.के., उप महा प्रबंधक/इंजीनियरिंग सेवाएं-सी.ई.
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CE

SMP35S

SMP9635S

Specifications

- **Measuring Method** Dual Slope A/D Conversion
- **Sampling Rate** 2.5 Samples per Second
- **Display Type** 0.56" / 14.2mm Red LED Super Bright Display
- **Maximum Display** 3½ Digit / 1999 Counts (Max)
- **Display Stability** Within ± 2 Digits
- **Resolution** 0.001 to 1 Count depending on range
- **Polarity Indication** " - " is indicated for Negative Input
- **Decimal Selection** Field Selectable
- **Over Range Indication** " 1 " or " -1 "
- **Maximum Overload** Voltage : 1.2 times continuous
Current : 2 times continuous
- **Faceplate / Lens** Red Antiglare Faceplate with Annunciators
- **Crest Factor** 4 (max.) TRMS accuracy specified for sine wave input
- **Frequency Response** 40 - 400Hz
- **VA Burden (Typical)** Auxiliary (110 / 230V AC) : < 5VA
Auxiliary : < 2.5VA
Voltage : < 1.0VA
Current : < 1.0VA
- **Dielectric Strength** 2.5 kV at 50Hz for 1 min. between Input - Auxiliary - Case - Terminals
- **Case / Housing Material** DIN Black ABS, Dimension as per DIN 43700
- **Mounting Clamps** Sturdy, Moulded ABS with suitable Hardware
- **Connectors** Terminal Block : Thermoplastic (UL 94V-0) with Tin Plated Brass Terminals
- **Environment** Calibration : 27°C ± 5°C,
Operating : 0 to 50°C, RH < 70%
Storage : -10 to 60°C, RH < 70%

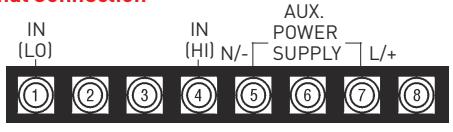
Model	Input		Range	Auxiliary Power Supply (Any One Only)			Accuracy Class
				110V AC	19-90V AC/DC	85-265V AC/DC	0.5
SMP35S / SMP9635S	DC	mV	0 - 200	✓	✓	✓	✓
		V	0 - 2, 20, 200, 1000	✓	✓	✓	✓
		mA	0 - 2, 20, 200	✓	✓	✓	✓
		A	0 - 1, 2, 5, 20	✓	✓	✓	✓
		Zero Supp.	4-20mA or 1 - 5V	✓	✓	✓	✓
		Re-Scaleable	0 - 5V / 10V DC, 1 - 5V DC, 0 - 20mA DC, 0 - 50 / 60 / 75mV, 4 - 20mA (any one) to display 0.100 to1600 in 64 steps. Please suffix these models with RS as SMP35SRS or SMP9635SRS	✓	✓	✓	✓
	AC	V	0 - 2, 20, 200, 750	✓	✓	✓	✓
		A	0 - 1, 2, 5, 20	✓	✓	✓	✓
		Re-Scaleable	0 - 1A or 0 -5A (any one) to display 0.100 to 1600 in 64 steps. Please suffix models with RS as SMP35SRS or SMP9635SRS	✓	✓	✓	✓

Ordering Information : Model, Input Range, Auxiliary Supply & Scale Display

Note : Tap Change Meter On Request

Standard : As per IS 13875

Terminal Connection



SMP35S / SMP9635S

Dimensions (mm)

Model	SMP35S	SMP9635S
Front	48 x 96	96 x 96
Depth (Behind Bezel)	88	90
Panel Cut-Out	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$

new

CE

Micro Controller Based

TRPI-48
4-20mA / 0-20mA / 0-10V

General Description

MECO TRPI-48 is a 4 Digit Triple Range Programmable Process Indicator having three input ranges in the same meter. These input ranges are programmable by the user. The display from -1999 to 9999 is also User Programmable. Thus the user has a wide choice of inputs and displays which makes this meter truly flexible and versatile for applications in Process Industry, Automation, Refinery Plants, Variable Drives, Process Equipment etc.

Features

- 3 Input Ranges in One Meter (User Programmable)
- Decimal Point : Selectable
- 9999 Count (Max.) High Resolution Display
- User Programmable Display -1999 to 9999
- Zero & Span Adjustment through Software
- High Accuracy Across the Entire Range

Specifications

- **Maximum Display** 0.56" / 14.2mm 4 Digit, 9999 (Max), 7 Segment 0.56" LED Display
- **Input Signal** 4 - 20mA DC, 0 - 20mA DC & 0 - 10V DC (User Programmable)
- **Display Range** -1999 To 9999 (Scale Display can be set from -1999 to 9999)
- **Display Stability** Within ± 2 Digits
- **Accuracy** ±0.5% of FSD
- **Aux. Supply** 85 - 265V AC/DC (Standard) 19 - 90V AC/DC (Optional) @ 50/60 Hz
- **Resolution** 0.001 - 1 Count depending on Range / Scale Display
- **Overload Indication** -OL-
- **Underload Indication** -UL- (for 4-20mA DC only)
- **Sampling Rate** 3 Samples / Second
- **Maximum Overload** Voltage : 1.2 Times Continuous Current : 1.2 Times Continuous
- **Mounting Clamps** Sturdy, Moulded Derlin with Suitable Hardware
- **VA Burden** Auxillary : ⩽ 1.5VA Voltage Input : ⩽ 0.5VA Current Input : ⩽ 0.5VA
- **Environmental Conditions** 0 to 55°C, <70% RH (Operation) -10 to 70°C, <70% RH (Storage) 27°C ± 5°C (Calibration)
- **Dielectric Strength** 2.5KV @ 50Hz for 1 minute between Input-Auxiliary & Case-Terminals
- **Impulse Withstand** 3.5kV, 1.2 / 50µ seconds
- **Case / Housing Material** Black ABS, Dimension as per DIN 43700
- **Connectors** Terminal Block : Thermoplastic (UL 94V - 0) with Tin plated Brass Terminals
- **Faceplate / Lens** Red Antiglare Faceplate with Annunciators

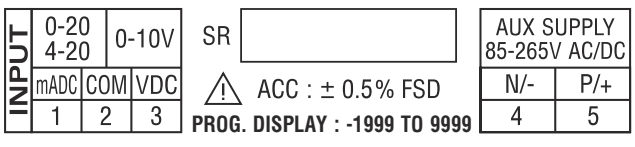
Model	Input	Triple Range (User Programmable)	Programmable Display Key	Aux Supply (Any One Only)	Accuracy
TRPI-48	DC	4 - 20mA, 0 - 20mA & 0 - 10V	✓	85-265V AC / DC (Standard) OR 19-90V AC / DC @50/60Hz (Optional)	± 0.5% of FSD

Ordering Information : Model, Input Range, Auxiliary Supply & Scale Display

NOTE : IP54 Protection (optional) available on request. Default Input Range and Default Scale Display is 4 – 20mA DC.

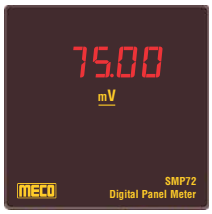
Standard : As per IS 13875

Terminal Connection

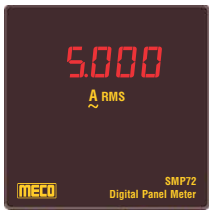


CE

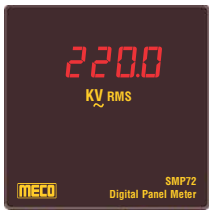
Micro Controller Based



SMP72 - DC



SMP72 - AC



SMP72 - AC

SMP48 - DC

SMP48 - AC

Features

- High Accuracy Across the Entire Range
- User Programmable Display (CT Primary / PTR / Shunt Value)
- 9999 Count (Max) High Resolution Display
- Auto Selection of Decimal Point

Specifications

- **Measuring Method** — TRMS Using Microcontroller
- **Display Type** — 0.56" / 14.2mm Red LED Super Bright Display
- **Maximum Display** — 4 Digit / 9999 (Max.) Counts
- **Display Stability** — Within ±1 Digit
- **Resolution** — 0.001 to 1 Count Depending on Range / Scale Display
- **Over Range Indication** — " Or "
- **Under Range Indication** — NA
- **Sampling Rate** — 3 Samples / Second
- **Maximum Overload** — Voltage : 1.2 Times Continuous
Current : 1.5 Times Continuous
- **Frequency Response** — 40 - 400Hz
- **VA Burden (Typical)** — Auxiliary : ⩽ 1.5VA
Voltage Input : ⩽ 1.0VA
Current Input : ⩽ 1.0VA
- **Environmental Conditions** — 0°C to + 55°C, < 70% RH (Operation)
-10°C to + 70°C, < 70% RH (Storage)
27°C ±5°C (Calibration)
- **Dielectric Strength** — 2.5KV @ 50Hz for 1 minute between Input - Auxiliary & Case -Terminals
- **Impulse Withstand** — 3.5KV, 1.2 / 50 micro second
- **Case / Housing Material** — Polycarbonate, Black
- **Faceplate / Lens** — Polycarbonate Transparent Red
- **Connectors / Terminal** — Nylon 66, 33% GF, Black / Brass
- **Mounting Clamps** — Sturdy, Moulded Derlin with Suitable Hardware

Model	Input		Range (Any One Only)	Programmable Display Key	Aux Supply (Any One Only)	Accuracy
SMP72 / SMP48 / SMP96	DC	mV	0 - 75 (Shunt Operated)	✓(*)	85 - 265V AC / DC @ 50 / 60Hz OR 48V DC	± 0.5% of FSD
			0 - 200	-		
		V	0 - 20, 200, 1000	-		
		mA	0 - 2, 20, 200	-		
		A	0 - 2, 5A	-		
			0 - 20 (Direct)	-		
	AC	V	0 - 110 (PT Operated)	✓(#)		
			0 - 20, 200, 750	-		
		A	0 - 1 (CT Operated)	✓(*)		
			0 - 5 (CT Operated)	✓(*)		
			0 - 20 (Direct)	-		

Standard : As per IS 13875

Terminal Connection

AUX 85-265V AC/DC			INPUT	
P	N		LO	HI
1	2		3	4

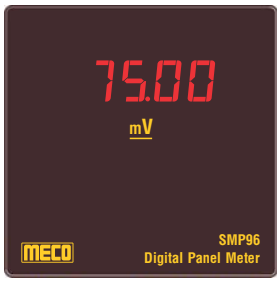
SMP72

INPUT			AUX 85-265V AC/DC	
HI	LO		N	P
1	2		3	4

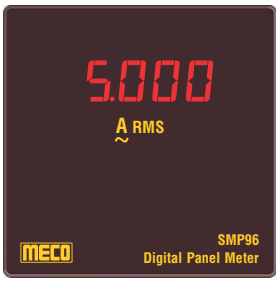
SMP48 / SMP96

CE

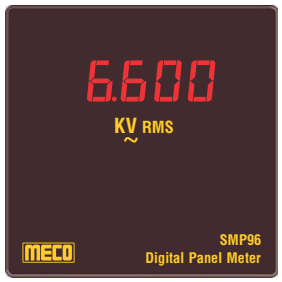
SMP48 - AC



SMP96 - DC



SMP96 - AC



SMP96 - AC

Micro Controller Based

User Programmable PTR Display Value (Using Key)

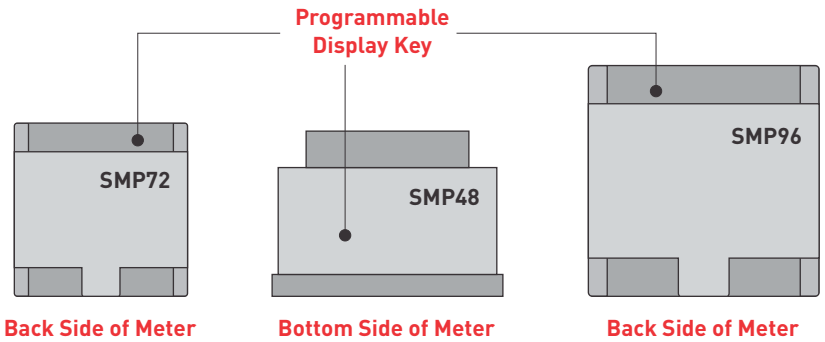
Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)
1	1	0.110	5	30	3.300	9	300	33.00	13	2000	220.0
2	3.77	0.415	6	60	6.600	10	600	66.00	14	4000	440.0
3	4	0.440	7	100	11.00	11	1000	110.0	-	-	-
4	20	2.200	8	200	22.00	12	1200	132.0	-	-	-

* User Programmable CT Primary / Shunt Display Value (Using Key)

CT Primary / Shunt Display Value								
1	25	70	150	350	700	1500	4000	8000
5	30	75	175	400	750	1600	5000	9000
10	40	80	200	450	800	2000	6000	-
15	50	100	250	500	1000	2500	7000	-
20	60	125	300	600	1200	3000	7500	-

Dimensions (mm)			
Model	**SMP72**	**SMP48**	**SMP96**
Front	72 x 72	48 x 96	96 x 96
Depth (Behind Bezel)	43	58	39.5
Panel Cut-Out	68 x 68	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$

Ordering Information : Model, Input Range, Aux. Supply & Scale Display (CTR / PTR / Shunt Value)



For Setting CTP / Shunt / PTR

- Power on DPM
- Press Key On Back Side of Meter
- Meter will Show Present Set Display Value
- Press-Release until the Desired Value is Displayed

new

CE

SMP35SW

SMP9635SW

Micro Controller Based

Features

- High Accuracy Across the Entire Range
- User Programmable Display (CT Primary / PTR / Shunt Value)
- 9999 Count (Max) High Resolution Display
- Auto Selection of Decimal Point

Specifications

- **Measuring Method** — TRMS Using Microcontroller
- **Display Type** — 0.56" / 14.2 mm Red LED Super Bright Display
- **Maximum Display** — 4 Digit / 9999 (Max.) Counts
- **Display Stability** — Within ±2 Digit
- **Resolution** — 0.001 to 1 Count Depending on Range / Scale Display
- **Decimal Point** — Auto Selection
- **Over Range Indication** — " Or "
- **Under Range Indication** — NA
- **Maximum Overload** — Voltage : 1.2 Times Continuous
Current : 1.5 Times Continuous
- **VA Burden (Typical)** — Auxiliary : ⩽ 1.5VA
Voltage Input : ⩽ 1.0VA
Current Input : ⩽ 1.0VA
- **Frequency Response** — 40 - 400Hz
- **Sampling Rate** — 3 Samples / Second
- **Environmental Conditions** — 0°C to + 55°C, < 70% RH (Operation)
-10°C to + 70°C, < 70% RH (Storage)
27°C ±5°C (Calibration)
- **Dielectric Strength** — 2.5KV @ 50Hz for 1 minute between Input - Auxiliary & Case -Terminals
- **Impulse Withstand** — 3.5KV, 1.2 / 50 micro second
- **Case / Housing Material** — DIN Black ABS, Dimension as per DIN 43700
- **Faceplate / Lens** — Red Antiglare Face Plate with Annunciators
- **Mounting Clamps** — Sturdy, Moulded ABS with Suitable Hardware
- **Connectors / Terminal** — Terminal Block : Thermoplastic (UL94V-0) with Tin Plated Brass Terminal

Model	Input		Range (Any One Only)	Programmable Display Key Inside Facia	Aux Supply (Any One Only)	Accuracy
SMP35SW / SMP9635SW	DC	mV	0 - 75 (Shunt Operated)	✓(*)	85 -265V AC/DC @50/60Hz OR 19-90V AC/DC @50/60Hz (Optional)	±0.5% of FSD
			0 - 200	-		
		V	0 - 2, 20, 200	-		
			0 - 1000	-		
		mA	0 - 2, 20 , 200	-		
		A	0 - 2, 5, 20	-		
		Re-Scaleable	4 - 20mA, 0 - 20mA, 0 - 10V	✓		
	AC	V	0 - 110 (PTR Operated)	✓(#)		
			0 - 2, 20, 200, 750	-		
		A	0 - 1 (CT Operated)	✓(*)		
			0 - 5 (CT Operated)	✓(*)		
			0 - 20 (Direct)	-		

Standard : As per IS 13875

Terminal Connection

SMP35SW / SMP9635SW

new

CE

Micro Controller Based

SMP35SW

SMP9635SW

 # User Programmable PTR Display Value (Using Internal Key Inside Facia)

Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)
1	1	0.110	5	30	3.300	9	300	33.00	13	2000	220.0
2	3.77	0.415	6	60	6.600	10	600	66.00	14	4000	440.0
3	4	0.440	7	100	11.00	11	1000	110.0	-	-	-
4	20	2.200	8	200	22.00	12	1200	132.0	-	-	-

*** User Programmable CT Primary / Shunt Display Value (Using Internal Key Inside Facia)**

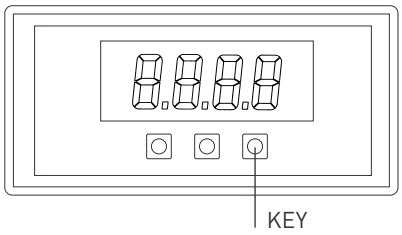
CT Primary / Shunt Display Value								
1	25	70	150	350	700	1500	4000	8000
5	30	75	175	400	750	1600	5000	9000
10	40	80	200	450	800	2000	6000	-
15	50	100	250	500	1000	2500	7000	-
20	60	125	300	600	1200	3000	7500	-

Dimensions (mm)

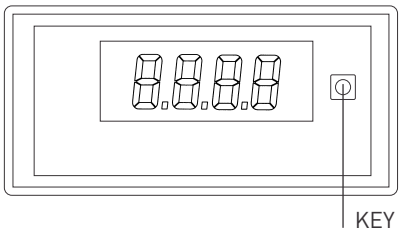
Model	SMP35SW	SMP9635SW
Front	48 x 96	96 x 96
Depth (Behind Bezel)	88	90
Panel Cut-Out	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$

Ordering Information : Model, Input, Range, CTR / PTR (if any), Scale Display & Aux. Supply.

NOTE : This is an Upgraded Version of SMP35S



For Setting Please Refer Instruction Manual
For Range Input 4-20mA DC / 0-20mA DC / 0-10V DC



For Setting CTP / Shunt / PTR

- Power on DPM
- Remove Front Facia
- Press Key on Display Card once
- Meter will Show Present Set Display Value
- Press-Release until the Desired Value is Displayed

4½ Digit Programmable Ammeter / Voltmeter - TRMS (Professional Series)

new

CE

Micro Controller Based

SMP45SW

SMP9645SW

Features

- High Accuracy Across the Entire Range
- User Programmable Display (CT Primary / PTR / Shunt Value)
- 19999 Count (Max) High Resolution Display
- Auto Selection of Decimal Point

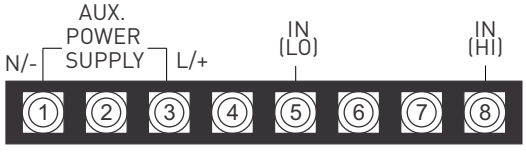
Specifications

- **Measuring Method** — TRMS Using Microcontroller
- **Display Type** — 0.56"/ 14.2mm Red LED Super Bright Display
- **Maximum Display** — 4½ Digit / 19999 (Max.) Counts
- **Display Stability** — Within ±2 Digit
- **Resolution** — 0.0001 to 1 Count Depending on Range / Scale Display
- **Decimal Point** — Auto Selection
- **Over Load Indication** — "-OL-"
- **Under Load Indication** — NA
- **Sampling Rate** — 3 Samples / Second
- **Maximum Overload** — Voltage : 1.2 Times Continuous
Current : 1.2 Times Continuous
- **Frequency Response** — 40 - 400Hz
- **Auxiliary Supply** — 85 - 265V AC / DC (Standard)
19 - 90V AC / DC (Optional)
- **Polarity Indication** — "-" is Indicated for Negative Input
- **VA Burden (Typical)** — Auxiliary : ⩽ 1.5VA
Voltage Input : ⩽ 1VA
Current Input : ⩽ 0.5VA
- **Environmental Conditions** — 0°C to + 55°C, < 70% RH (Operation)
-10°C to + 70°C, < 70% RH (Storage)
27°C ±5°C (Calibration)
- **Dielectric Strength** — 2.5KV @ 50Hz for 1 Minute between Input - Auxiliary & Case -Terminals
- **Impulse Withstand** — 3.5KV, 1.2 / 50 Micro Second
- **Case / Housing Material** — DIN Black ABS, Dimension as per DIN 43700
- **Faceplate / Lens** — Red Antiglare Face plate with Annuciators
- **Connectors / Terminal** — Terminal Block : Thermoplastic (UL94V-0) with Tin Plated Brass Terminal
- **Mounting Clamps** — Sturdy, Moulded ABS with Suitable Hardware

Model	Input		Range	Programmable Display Key (inside facia)	Aux. Supply (Any One Only)	Accuracy
SMP45SW / SMP9645SW	DC	mV	0 - 75 (Shunt Operated)	✓(*)	85-265V AC / DC @ 50 / 60Hz OR 19-90V AC/DC @ 50 / 60Hz (Optional)	± 0.5% of FSD
			0 - 200	-		
		V	0 - 2, 20, 200	-		
			0 - 1000	-		
		mA	0 - 2, 20, 200	-		
		A	0 - 2, 5	-		
	AC	V	0 - 110 (PT Operated)	✓(#)		
			0 - 2, 20, 200, 750	-		
		I	0 - 1 (CT Operated)	✓(*)		
			0 - 5 (CT Operated)	✓(*)		

Standard : As per IS 13875

Terminal Connection



SMP45SW / SMP9645SW

new

CE

SMP45SW

SMP9645SW

Micro Controller Based

 # User Programmable PTR Display Value (Using Internal Key Inside Facia)

Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)
1	1	0.110	5	30	3.300	9	300	33.00	13	2000	220.0
2	3.77	0.415	6	60	6.600	10	600	66.00	14	4000	440.0
3	4	0.440	7	100	11.00	11	1000	110.0	-	-	-
4	20	2.200	8	200	22.00	12	1200	132.0	-	-	-

*** User Programmable CT Primary / Shunt Display Value (Using Internal Key Inside Facia)**

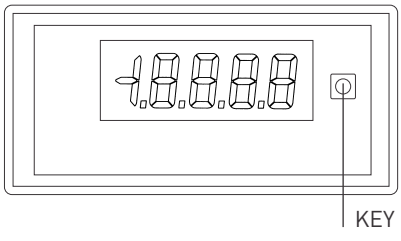
CT Primary / Shunt Display Value							
1	30	80	250	600	1500	5000	10000
5	40	100	300	700	1600	6000	12000
10	50	125	350	750	2000	7000	15000
15	60	150	400	800	2500	7500	20000
20	70	175	450	1000	3000	8000	-
25	75	200	500	1200	4000	9000	-

Dimensions (mm)

Model	SMP45SW	SMP9645SW
Front	48 x 96	96 x 96
Depth (Behind Bezel)	88	90
Panel Cut-Out	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$

Ordering Information : Model, Input Range, CTR / PTR / SHUNT (if any), Scale Display & Auxiliary Supply

NOTE : This is an Upgraded Version of SMP45S



For Setting CTP / Shunt / PTR

- Power on DPM
- Remove Front Facia
- Press Key on Display Card once
- Meter will Show Present Set Display Value
- Press-Release until the Desired Value is Displayed

4½ Digit Programmable Process Indicator

new
Preliminary Data
CE

Micro Controller Based

SMP45SW

SMP9645SW

Features

- High Accuracy Across the Entire Range
- User Programmable Display -19999 to 19999
- ZERO and SPAN Adjustment through Software
- 19999 Count (Max) High Resolution Display
- Decimal Point : Selectable

Specifications

- **Display Type** 0.56"/ 14.2mm Red LED Super Bright Display
- **Maximum Display** 4½ Digit / 19999 (Max.) Counts
- **Display Stability** Within ±2 Digit
- **Resolution** 0.0001 to 1 Count Depending on Range / Scale Display
- **Over Load Indication** "-OL-"
- **Under Load Indication** "-UL-"
- **Sampling Rate** 3 Samples / Second
- **Maximum Overload** Voltage : 1.2 Times Continuous
Current : 1.2 Times Continuous
- **Auxiliary Supply** 85 - 265V AC / DC (Standard)
19 - 90V AC / DC (Optional)
- **VA Burden (Typical)** Auxiliary : ≤ 1.5VA
Voltage Input : ≤ 1.0VA
Current Input : ≤ 1.0VA
- **Polarity Indication** Yes
- **Environmental Conditions** 0°C to + 55°C, < 70% RH (Operation)
-10°C to + 70°C, < 70% RH (Storage)
27°C ±5°C (Calibration)
- **Dielectric Strength** 2.5KV @ 50Hz for 1 Minute between Input - Auxiliary & Case -Terminals
- **Impulse Withstand** 3.5KV, 1.2 / 50 Micro Second
- **Case / Housing Material** DIN Black ABS, Dimension as per DIN 43700
- **Faceplate / Lens** Red Antiglare Face plate with Annuciators
- **Connectors / Terminal** Terminal Block : Thermoplastic (UL94V-0) with Tin Plated Brass Terminal
- **Mounting Clamps** Sturdy, Moulded ABS with Suitable Hardware

Model	Input		Range	Programmable Display Key (inside facia)	Aux Supply (Any One Only)	Accuracy
SMP45SW / SMP9645SW	DC	mA	4 - 20	✓	85-265V AC/DC @ 50/60Hz OR 19-90V AC/DC @ 50/60Hz	±0.5% of FSD
			-20 / 0 / 20	✓		
			0 - 20	✓		
		V	-10 / 0 / 10	✓		
			0 - 10	✓		

Ordering Information : Model, Input Range, Scale Display, Annunciator & Auxiliary Supply.

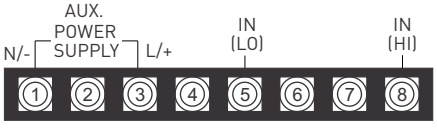
Standard : As per IS 13875

Annunciators

°C | rpm | Hz | pH | kmph | db | mmhg | N/m² | MPM | sph | x100 | Ft/s | °F | rad

% | mm | kg | MW | kvar | cosφ | psi | bar | CPS | Rev/s | m³/min | Ltr/hr | TON | Lux

Terminal Connection



SMP45SW / SMP9645SW

Dimensions (mm)

Model	SMP45SW	SMP9645SW
Front	48 x 96	96 x 96
Depth (Behind Bezel)	88	90
Panel Cut-Out	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$

4½ Digit Programmable Process Indicator with RS-485 Communication

new

Preliminary Data

CE

RS 485

DPI-72x14445SN

DPI-72x14445SN

DPI-14445SN

Micro Controller Based

Features

- High Accuracy Across the Entire Range
- User Programmable Display -19999 to 19999 (adjustable)
- ZERO and SPAN Adjustment through Software
- 19999 Count (Max) High Resolution Display
- Decimal Point : Selectable
- RS485 Port, 5KV Isolated with Modbus RTU Protocol (Optional)

Specifications

- **Display Type** — 1"/ 25.4mm Red LED Super Bright Display
- **Maximum Display** — 4½ Digit / 19999 (Max.) Counts
- **Display Stability** — Within ±2 Digit
- **Resolution** — 0.0001 to 1 Count Depending on Range / Scale Display
- **Over Load Indication** — "-OL-"
- **Under Load Indication** — "-UL-"
- **Sampling Rate** — 3 Samples / Second
- **Maximum Overload** — Voltage : 1.2 Times Continuous
Current : 1.2 Times Continuous
- **Auxiliary Supply** — 85 - 265V AC / DC (Standard)
19 - 90V AC / DC (Optional)
- **Polarity Indication** — Yes
- **VA Burden (Typical)** — Auxiliary : ≤ 1.5VA
Voltage Input : ≤ 1.0VA
Current Input : ≤ 1.0VA
- **Environmental Conditions** — 0°C to + 55°C, < 70% RH (Operation)
-10°C to + 70°C, < 70% RH (Storage)
27°C ±5°C (Calibration)
- **Dielectric Strength** — 2.5KV @ 50Hz for 1 Minute between Input - Auxiliary & Case -Terminals
- **Impulse Withstand** — 3.5KV, 1.2 / 50 Micro Second
- **Case / Housing Material** — Polycarbonate, Black
- **Faceplate / Lens** — Polycarbonate Transparent Red
- **Mounting Clamps** — Sturdy, Moulded Derlin with Suitable Hardware
- **Connectors / Terminal** — Nylon 66, 33% GF, Black / Brass

Model	Input		Range (Any One Only)	Programmable Display Key (inside facia)	Aux Supply (Any One Only)	Accuracy
DPI-72x14445SN / DPI-14445SN	DC	mA	4 - 20	✓	85-265V AC/DC @ 50/60Hz OR 19-90V AC/DC @ 50/60Hz	±0.5% of FSD
			-20 / 0 / 20	✓		
			0 - 20	✓		
		V	-10 / 0 / 10	✓		
			0 - 10	✓		

Ordering Information : Model, Input Range, Scale Display, Annunciator, Auxiliary Supply & RS 485 Modbus Communication (Optional).

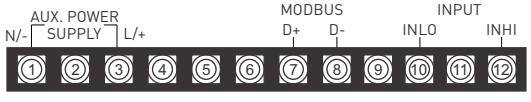
Annunciators

Standard : As per IS 13875

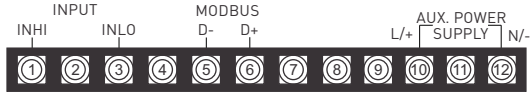
°C | rpm | Hz | pH | kmph | db | mmhg | N/m² | MPM | sph | x100 | Ft/s | °F | rad

% | mm | kg | MW | kvar | cosφ | psi | bar | CPS | Rev/s | m³/min | Ltr/hr | TON | Lux

Terminal Connection



DPI-72x14445SN



DPI-14445SN

Dimensions (mm)

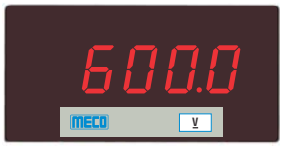
Model	DPI-72x14445SN	DPI-14445SN
Front	72 x 144	144 x 144
Depth (Behind Bezel)	93	72
Panel Cut-Out	$68^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$	$138^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$

CE

RS 485

Micro Controller Based

SMP72x14445SN
Voltmeter - TRMS



SMP72x14445SN
Voltmeter - DC

SMP14445SN
Voltmeter - DC

Features

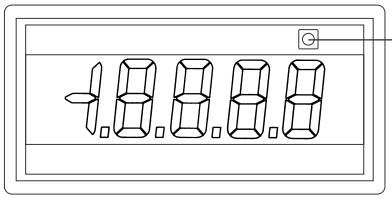
- High Accuracy Across the Entire Range
- User Programmable Display (CT Primary / PTR / Shunt Value)
- 19999 Count (Max) High Resolution Display
- Auto Selection of Decimal Point
- RS485 Port, 5KV Isolated with Modbus RTU Protocol (Optional)

Specifications

- **Measuring Method** — TRMS Using Microcontroller
- **Display Type** — 1"/ 25.4mm Red LED Super Bright Display
- **Maximum Display** — 4½ Digit / 19999 (Max.) Counts
- **Display Stability** — Within ±2 Digit
- **Resolution** — 0.0001 to 1 Count Depending on Range / Scale Display
- **Over Load Indication** — "-OL-"
- **Under Load Indication** — NA
- **Sampling Rate** — 3 Samples / Second
- **Maximum Overload** — Voltage : 1.2 Times Continuous
Current : 1.2 Times Continuous
- **Frequency Response** — 40 - 400Hz
- **Polarity Indication** — "-" is Indicated for Negative Input
- **VA Burden (Typical)** — Auxiliary : ⩽ 1.5VA
Voltage Input : ⩽ 1VA
Current Input : ⩽ 0.5VA
- **Environmental Conditions** — 0°C to + 55°C, < 70% RH (Operation)
-10°C to + 70°C, < 70% RH (Storage)
27°C ±5°C (Calibration)
- **Dielectric Strength** — 2.5KV @ 50Hz for 1 Minute between Input - Auxiliary & Case -Terminals
- **Impulse Withstand** — 3.5KV, 1.2 / 50 Micro Second
- **Case / Housing Material** — Polycarbonate, Black
- **Faceplate / Lens** — Polycarbonate Transparent Red
- **Connectors / Terminal** — Nylon 66, 33% GF, Black / Brass
- **Mounting Clamps** — Sturdy, Moulded Derlin with Suitable Hardware

Model	Input		Range (Any One Only)	Programmable Display Key	Aux Supply (Any One Only)	Accuracy
SMP72x14445SN / SMP14445SN	DC	mV	0 - 75 (Shunt Operated)	✓(*)	85-265V AC / DC @ 50 / 60Hz OR 19-90V AC/DC @ 50 / 60Hz (Optional)	± 0.5% of FSD
			0 - 200	-		
		V	0 - 2, 20, 200	-		
			0 - 1000	-		
		mA	0 - 2, 20, 200	-		
		A	0 - 2, 5	-		
	AC	V	0 - 110 (PT Operated)	✓(#)		
			0 - 2, 20, 200, 750	-		
		I	0 - 1 (CT Operated)	✓(*)		
			0 - 5 (CT Operated)	✓(*)		

Standard : As per IS 13875



For Setting CTP / Shunt / PTR

- Power on DPM
- Remove Front Facia
- Press Key on Display Card once
- Meter will Show Present Set Display Value
- Press-Release until the Desired Value is Displayed

RS 485

Micro Controller Based

SMP72x14445SN
Voltmeter - TRMS

SMP72x14445SN
Ammeter - TRMS

SMP14445SN
Ammeter - DC

User Programmable PTR Display Value (Using Key)

Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)	Sr.	Ratio	PTR (KV AC)
1	1	0.110	5	30	3.300	9	300	33.00	13	2000	220.0
2	3.77	0.415	6	60	6.600	10	600	66.00	14	4000	440.0
3	4	0.440	7	100	11.00	11	1000	110.0	-	-	-
4	20	2.200	8	200	22.00	12	1200	132.0	-	-	-

* User Programmable CT Primary / Shunt Display Value (Using Key)

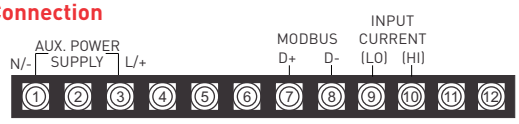
CT Primary / Shunt Display Value							
1	30	80	250	600	1500	5000	10000
5	40	100	300	700	1600	6000	12000
10	50	125	350	750	2000	7000	15000
15	60	150	400	800	2500	7500	20000
20	70	175	450	1000	3000	8000	-
25	75	200	500	1200	4000	9000	-

Dimensions (mm)

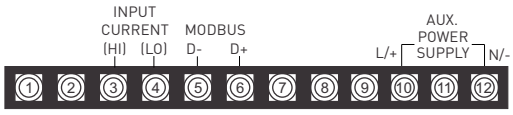
Model	SMP72x14445SN	SMP14445SN
Front	72 x 144	144 x 144
Depth (Behind Bezel)	93	72
Panel Cut-Out	$68^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$	$138^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$

Ordering Information : Model, Input Range, CTR / PTR / SHUNT (if any), Scale Display, Auxiliary Supply & RS 485 Modbus Communication (Optional).

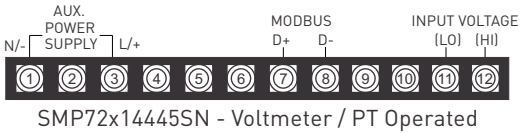
Terminal Connection



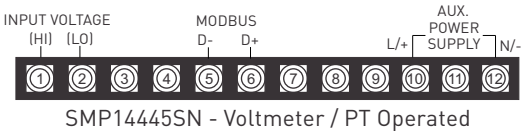
SMP72x14445SN - Ammeter (CT Operated)



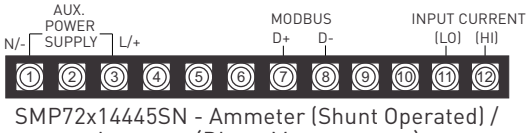
SMP14445SN - Ammeter (CT Operated)



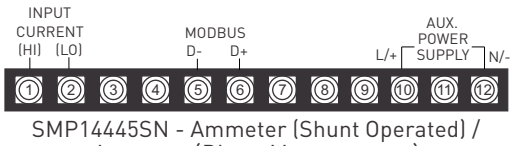
SMP72x14445SN - Voltmeter / PT Operated



SMP14445SN - Voltmeter / PT Operated



SMP72x14445SN - Ammeter (Shunt Operated) / Ammeter (Direct Measurement)



SMP14445SN - Ammeter (Shunt Operated) / Ammeter (Direct Measurement)

CE

SMP72x14445S, SMP72x14445ST

SMP96x28845

Specifications

- **Measuring Method** Dual Slope A/D Conversion
- **Sampling Rate** 2.5 Samples per Second
- **Display Type** Red LED Super Bright Display
- **Maximum Display** 4½ Digit / 19999 Counts (Max.)
- **Resolution** 0.0001 to 1 Count depending on the range
- **Polarity Indication** " - " is indicated for negative input
- **Decimal Selection** Field Selectable
- **Over Range Indication** "0000" blinking
- **Maximum Overload** Voltage : 1.2 times continuous
Current : 2 times continuous
- **VA Burden (Typical)** Auxiliary : < 2.5VA
Voltage Input : < 1.0VA
Current Input : < 1.0VA
- **Frequency Response** 40 - 400Hz
- **Crest Factor** 4 (max.) TRMS accuracy specified for sine wave input
- **Faceplate / Lens** Red Antiglare Faceplate with Annunciators
- **Environment** Calibration : 27°C ± 5°C,
Operating : 0 to 50°C, RH < 70%
Storage : -10 to 60°C, RH < 70%
- **Dielectric Strength** 2.5 kV at 50Hz for 1 min. between Input - Auxiliary - Case - Terminals
- **Case / Housing Material** DIN Black ABS, Dimension as per DIN 43700
- **Mounting Clamps** Sturdy, Moulded ABS with suitable Hardware
- **Connectors** Terminal Block : Thermoplastic (UL 94V-0) with Tin Plated Brass Terminals
- **Display Stability** Within ± 2 Digits

Model	Input		Range	Auxiliary Power Supply (Any One Only)	Accuracy Class		Display Digit Height	
					0.5	1	1.0"/ 25.4mm	2.3"/ 58mm
SMP72x14445S / SMP96x28845S	DC	mV	0 - 200	85-265V AC/DC @ 50/60Hz OR 19-90V AC/DC @ 50/60Hz (Optional)	✓	✓	✓	-
		V	0 - 2, 20, 200		✓	✓	✓	-
		V	0 - 1000		✓	✓	✓	-
		mA	0 - 2, 20, 200		✓	✓	✓	-
		A	0 - 1, 2, 5		✓	✓	✓	-
		Zero Supp.	4-20mA or 1 - 5V		✓	✓	✓	-
	AC	V	0 - 2, 20, 200, 750		✓	✓	✓	-
		A	0 - 1, 2, 5		✓	✓	✓	-
SMP72x14445ST	AC TRMS	V	0 - 2, 20, 200, 750		-	✓	✓	-
		A	0 - 1, 2, 5		-	✓	✓	-

Ordering Information: Model, Input Range, CTR / PTR (if any), Scale Display, Data Hold (Optional), Auxillary Supply & Accuracy Class

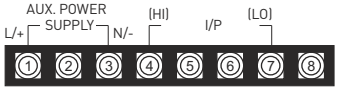
Standard : As per IS 13875

Dimensions (mm)

Model	SMP72x14445S / SMP72x14445ST	SMP96x28845
Front	72 x 144	96 x 288
Depth (Behind Bezel)	93	77
Panel Cut-Out	$68^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $282^{(+0.8,\ -0.0)}$

Terminal Connection

SMP72x14445S / SMP72x14445ST



SMP96x28845

CE

Micro Controller Based

SMP35ASN - Ammeter

SMP35VSN - Voltmeter

SMP9635ASN - Ammeter

SMP9635VSN - Voltmeter

Features

- 1A / 5A Input in same Meter (User Selectable)
- High Accuracy Across the Entire Range
- 9999 Count High Resolution Display
- Aux. Power Supply : 85 - 265V AC / DC
- Aux. Power Supply : 19 - 90V AC / DC (Optional)
- Auto / Manual Scroll Display (User Selectable)
- 3P3W / 3P4W (User Selectable)
- LED Indication for R, Y, B, RY, YB, BR
- User Programmable Display / CTP / PTR
- Auto Selection of Decimal Point
- Auto Indication of KV & KA
- Setup / Programming Protected by Password

Specifications

- **Measuring Method** — TRMS using Microcontroller
- **Display Type** — 0.56" / 14.2mm Red LED Super Bright Display
- **Maximum Display** — 4 Digit / 9999 Counts
- **Display Stability** — Within ± 2 Digits
- **Overload / Underload** — - OL - / - UL - Indication
- **Resolution** — 0.001 to 1 Count Depending on Range
- **Sampling Rate** — 3 Samples / Second
- **Maximum Overload** — Voltage : 1.2 times continuous; Current : 2 times continuous
- **VA Burden (Typical)** — Auxiliary : ⩽ 2VA / Phase; Voltage Input : ⩽1.0VA / Phase; Current Input : ⩽ 1.0VA / Phase
- **Frequency Response** — 45 - 65Hz
- **Environmental Conditions** — 0 to 55°C, < 70% RH (Operation); -10 to 70°C, < 70% RH (Storage); 27°C ± 5 °C (Calibration)
- **Dielectric Strength** — 2.5 kV at 50Hz for 1 min. between Input - Auxiliary & Case - Terminals
- **Impulse Withstand** — 3.5kV, 1.2 / 50µs
- **Case / Housing Material** — Black ABS, Dimension as per DIN 43700
- **Connectors** — Terminal Block : Thermoplastic (UL 94V-0) with Tin Plated Brass Terminals
- **Faceplate / Lens** — Red Antiglare Faceplate with Annunciators
- **Mounting Clamps** — Sturdy, Derline (Engineering plastic)

Model	Input AC	Range (Any One Only)	Programmable Display / CTP / PTR	Aux. Power Supply (Any One Only)	Accuracy
SMP35VSN SMP9635VSN	V	51 - 300V AC (PH-N)	1 - 9999	85-265V AC/DC OR 19-90V AC/DC (Optional)	± (0.5% FSD + 2 Digits)
SMP35ASN SMP9635ASN	A	For 1A Range : 0.080 - 1.200A AC	1 - 9999		
		For 5A Range : 0.200 - 6.000A AC	5 - 9999		

Dimensions (mm)

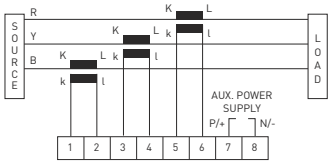
Model	SMP35VSN / SMP35ASN	SMP9635VSN / SMP9635ASN
Front	48 x 96	96 x 96
Depth (Behind Bezel)	88	90
Panel Cut-Out	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$

Ordering Information : Model and Aux. Supply.

Standard : As per IS 13875

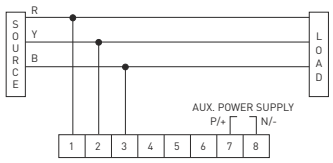
Terminal Connection

3Phase System

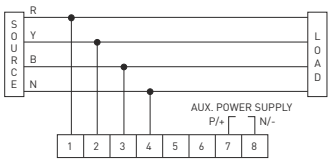


SMP35ASN / SMP9635ASN

3Phase 3Wire System



3Phase 4Wire System

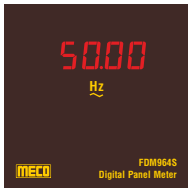


SMP35VSN / SMP9635VSN

CE

FDM4S

RPM4AS (48x96)
RPM964AS (96x96)



FDM964S

FDM72x1444SA
FDM72x1444SB

FDM1444SA
FDM1444SB

Specifications

- **Measuring Method** — Interval Measurement Method using Microcontroller
- **Display Type** — Red LED (Standard)
- **Maximum Display** — 9999 Counts for 4 Digit Meters
- **Display Stability** — Within ± 2 Digits
- **Resolution** — 0.01 to 1 for 4 Digit depending on range
  1 RPM for RPM Meter
- **Decimal Selection** — Auto (FDM4S & FDM964S) / Factory Set (For Others)
- **Maximum Overload** — Voltage : 1.2 times continuous
- **VA Burden (Typical)** — Auxiliary : < 4.5 VA
  Voltage Input : < 0.5VA
- **Environment** — Calibration : 27°C ± 5°C,
  Operating : 0 to 50°C, RH < 70%
  Storage : -10 to 60°C, RH < 70%
- **Dielectric Strength** — 2.5 kV at 50 Hz for 1 min. between Input - Auxiliary - Case - Terminals
- **Case / Housing Material** — DIN Black ABS, Dimension as per DIN 43700
- **Mounting Clamps** — Sturdy, Moulded ABS with suitable Hardware
- **Connectors** — Terminal Block : Thermoplastic (UL 94V-0) with Tin Plated Brass Terminals
- **Faceplate / Lens** — Red Antiglare Faceplate with Annunciators

Model	Input		Auxiliary Power Supply (Any One Only)			Accuracy Class			Display Digit Height	
			110 / 230V AC	24 / 48 / 110 / 220V DC	Self (#) Powered	± 0.1 Hz	± 0.5 Hz	± 2.0 Hz	0.56" / 14.20mm	1.0" / 25.4mm
FDM4S / FDM964S	40 - 99.99Hz	20 - 500V AC For 110V AC or 230V AC Aux. Meters For (#) Self Powered Meters Input Variation is ±20% of Aux.	✓	-	✓	✓	✓	-	✓	-
	40 - 5000Hz **(Auto Ranging)**		✓	-	✓	-	-	✓	✓	-
FDM1444SA	40 - 99.99Hz		✓	-	✓	✓	✓	-	-	✓
FDM1444SB			-	✓	-	✓	✓	-	-	✓
FDM72x1444SA			✓	-	✓	✓	✓	-	-	✓
FDM72x1444SB			-	✓	-	✓	✓	-	-	✓
RPM4AS/ RPM964AS	300 -1500RPM for 10 - 50Hz		✓	-	✓	-	✓	-	✓	-

Dimensions (mm)

Model	FDM4S RPM4AS	FDM964S RPM964AS	FDM72X1444SA FDM72X1444SB	FDM1444SA FDM1444SB
Front	48 x 96	96 x 96	72 x 144	144 x 144
Depth (Behind Bezel)	88	90	93	72
Panel Cut-Out	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$68^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$	$138^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$

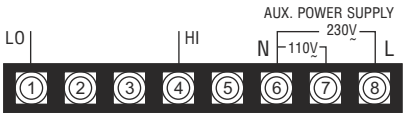
Ordering Information: Model, Input Frequency Range / RPM Range (for RPM Meter), Input Voltage, Auxillary Supply & Accuracy Class

Standard : As per IS 13875

Terminal Connection

FDM72x1444SA (AC Aux.) / FDM72x1444SB (DC Aux.)

FDM1444SB (DC Aux.) / FDM1444SA (AC Aux.)



FDM4S / FDM964S / RPM4AS / RPM964AS

CE

FDM964SD

SMP9635SD

SMP14445D, SMP14445SD

FDM1444SAD, FDM1444SBD

Specifications

- **Measuring Method** — Dual Slope A/D Conversion (Voltmeter) Interval Measurement Method using Microcontroller (Frequency Meter)
- **Display Type** — Red LED Super Bright Display
- **Maximum Display** — 19999 Counts (Voltmeter) 9999 Counts (Frequency Meter)
- **Display Stability** — Within ± 2 Digits
- **Maximum Overload** — Voltage : 1.2 times continuous Current : 2 times continuous
- **Dielectric Strength** — 2.5 kV at 50Hz for 1 min. between Input - Auxiliary Case - Terminals
- **Frequency Response** — 40 - 400Hz (Voltmeter)
- **Case / Housing Material** — DIN Black ABS, Dimension as per DIN 43700
- **VA Burden (Typical) Per Display** — Auxiliary : < 5VA; Voltage Input : < 0.1VA; Current Input : < 0.5VA
- **Environment** — Calibration : 27°C ± 5°C, Operating : 0 to 50°C, RH < 70%; Storage : -10 to 60°C, RH < 70%
- **Mounting Clamps** — Sturdy, Moulded ABS with Hardware
- **Connectors** — Terminal Block : Thermoplastic (UL 94V-0) with Tin Plated Brass Terminals
- **Faceplate / Lens** — Red Antiglare Faceplate with Annunciators

Model	Input 1 / Input 2		Range	Auxiliary Power Supply (Any One Only)	Accuracy Class	Digits (max.)		Display Digit Height	
						3½	4½	0.56"/14.2mm	1.0"/25.4mm
SMP14445D SMP14445SD	DC	Zero Supp.	4 - 20mA or 1 - 5V	85-265V AC/DC OR 19-90V AC/DC (Optional)	0.5	-	✓	-	✓
	AC	V	0 - 20, 200, 750V			-	✓	-	✓
		I	0 - 1, 2, 5A			-	✓	-	✓
SMP9635SD	AC	V	0 - 2, 20, 200, 750V			✓	-	✓	-
		I	0 - 1, 2, 5, 20A			✓	-	✓	-
	DC	Zero Supp.	4 - 20mA or 1 - 5V			✓	-	✓	-
		I	0 - 1, 2, 5, 20A			✓	-	✓	-

Model	Input 1 / Input 2		Auxiliary Power Supply (Any One Only)			Accuracy Class			Display Digit Height	
			110 / 230V AC	24 / 48 / 110 / 220V DC	Self Powered	±0.1 Hz	±0.5 Hz	±2.0 Hz	0.56" / 14.20mm	1.0" / 25.4mm
FDM1444AD	40 - 99.99Hz	Please Refer Note	✓	-	✓	✓	-	-	-	✓
FDM1444BD			-	✓	-	✓	-	-	-	✓
FDM964SD	40 - 99.99Hz		✓	-	✓	✓	✓	-	✓	-
	40 - 5000Hz		✓	-	✓	-	-	✓	✓	-

Note : Input 20 - 500V AC For 110V AC or 230V AC or DC Aux. and For Self Powered Input variation is ± 20% of Aux.

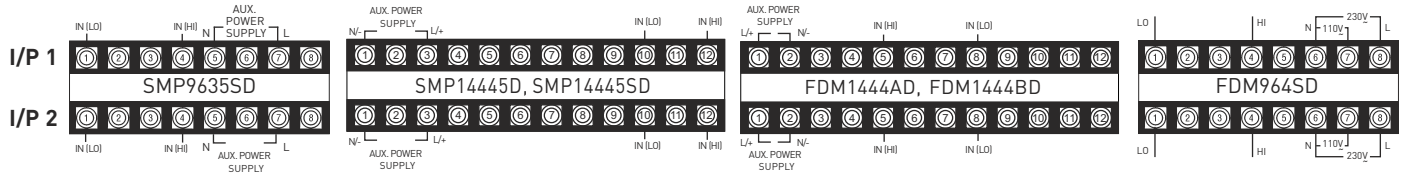
Dimensions (mm)

Model	SMP9635SD	FDM964SD	SMP14445D SMP14445SD	FDM1444AD / FDM1444SAD FDM1444BD / FDM1444SBD
Front	96 x 96	96 x 96	144 x 144	144 x 144
Depth (Behind Bezel)	90	90	130 / 93	130 / 93
Panel Cut-Out	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$138^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$	$138^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$

Ordering Information : Model, (Voltmeter/Ammeter) : Input Range, PTR/CTR (if any), Scale Display, Auxillary Supply & Accuracy Class
(Frequency Meter) : Input Frequency Range, Input Voltage, PTR (if any), Auxillary Supply & Accuracy Class

Standard : As per IS 13875

Terminal Connection



CE

DPF9611S, DPF9631S

DPF72x14411, DPF72x14431

DPF14411, DPF14431

Specifications

- **Measuring Method** — Cosine of Phase Shift between Voltage and Current
- **Sampling Rate** — 2.5 Samples per Second
- **Display Type** — Red LED (Standard)
- **Maximum Display** — 4 Digits to indicate PF
- **Resolution** — 0.001 PF
- **Under Current Indication** — Error Code".01 " Blinking when current < 20% of Nominal is detected
- **Polarity Indication** — L (Lagging/Inductive) or C (Leading/Capacitive)
- **Case / Housing Material** — DIN Black ABS, Dimension as per DIN 43700
- **VA Burden (Typical)** — Auxiliary : < 5 VA
Voltage Input : < 1.0VA / Phase
Current Input : < 1.0VA / Phase
- **Maximum Overload** — Voltage : 1.2 times continuous
Current : 2 times continuous
- **Environment** — Calibration : 27°C ± 5°C,
Operating : 0 to 50°C, RH < 70%
Storage : -10 to 60°C, RH < 70%
- **Dielectric Strength** — 2.5 kV at 50Hz for 1 min. between Case - Terminals
- **Mounting Clamps** — Sturdy, Moulded ABS with Hardware
- **Connectors** — Terminal Block : Thermoplastic (UL 94V-0) with Tin Plated Brass Terminals
- **Faceplate / Lens** — Red Antiglare Faceplate with Annunciators
- **Display Stability** — Within ± 2 Digits

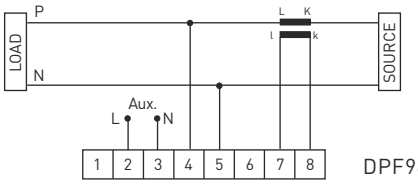
Model	System (Phase, Element, Wire)	Input (Nominal)	Auxiliary Power Supply (Any One Only)		Accuracy Class		Display Digit Height	
			110 / 230V AC	24 / 48 / 110 / 220V DC	Self Powered	± 1 Degree	0.56" / 14.20mm	1.0" / 25.4mm
DPF9611S	1P 1E 2W	V for 1P1E2W = 110 / 230 V (P-N); V for 3P1E2W = 110 / 440 V (P-P); A = 1, 2 or 5A AC; Hz = 50Hz (V Range = ± 20% of Nominal A Range = 20 - 120% of Nominal) PF Range = 0.500 Lag (L) - 1 - 0.500 Lead (C)	✓	✓	✓	✓	✓	-
DPF9631S	3P 1E 2W (Balanced Load)		✓	✓	✓	✓	✓	-
***DPF72x14411** ***DPF14411**	1P 1E 2W		✓	✓	✓	✓	-	✓
***DPF72x14431** ***DPF14431**	3P 1E 2W (Balanced Load)		✓	✓	✓	✓	-	✓

Dimensions (mm)

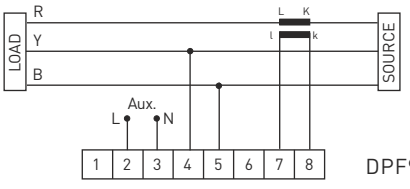
Model	DPF9611S / DPF9631S	DPF72x14411 / DPF72x14431	DPF14411 / DPF14431
Front	96 x 96	72 x 144	144 x 144
Depth (Behind Bezel)	90	130	59
Panel Cut-Out	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$68^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$	$138^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$

Ordering Information: Model, Input Voltage, Input Current, Input Frequency, CTR / PTR (if any), Auxillary Supply & Display Digit Height
Standard : As per IS 13875

Terminal Connection



DPF9611S



DPF9631S

***Note :**
For Terminal Connection of DPF72x14411, DPF14411, DPF72x14431, DPF14431 Please Refer Page of Digital Wattmeter / Varmeter (with Built-In Transducer) - Connection Diagram

CE

SMPW35SW, SMPV35SW

SMPW9635SW, SMPV9635SW

SMPW72x14445SN, SMPV72x14445SN

SMPW14445SN, SMPV14445SN

Specifications

MECO 1-Phase & 3-Phase Digital Watt / Var Meters (with External Transducer) are available in Sizes 48 x 96 / 96 x 96 / 72 x 144 / 144 x 144mm etc. with choice of AC / DC Aux. Supply and Display of Digit Height 0.56 / 1 / 2.3 inches. For detailed specifications, please refer catalog of Digital Panel Meters and respective pages of DIN Transducers. Below are listed some of the more popular Models. However several other types of V, A, W, Var, PF, Hz etc. meters with External Transducers are also available. For more details please refer to our sales@mecoinst.com

Display / Digits (max.)		3½ Digits, 1999 Counts		4½ Digits, 19999 Counts	
Display Height		14.2mm / 0.56"		25.4mm / 1"	
Type	**System**	48 x 96mm	96 x 96mm	72 x 144mm	144 x 144mm
Watt Meter	1P1E2W	**SMPW3511SW**	**SMPW963511SW**	**SMPW72x1444511SN**	**SMPW1444511SN**
	3P1E2W	**SMPW3531SW**	**SMPW963531SW**	**SMPW72x1444531SN**	**SMPW1444531SN**
	3P2E3W	**SMPW3533SW**	**SMPW963533SW**	**SMPW72x1444533SN**	**SMPW1444533SN**
	3P3E4W	**SMPW3534SW**	**SMPW963534SW**	**SMPW72x1444534SN**	**SMPW1444534SN**
Var Meter	1P1E2W	**SMPV3511SW**	**SMPV963511SW**	**SMPV72x1444511SN**	**SMPV1444511SN**
	3P1E2W	**SMPV3531SW**	**SMPV963531SW**	**SMPV72x1444531SN**	**SMPV1444531SN**
	3P2E3W	**SMPV3533SW**	**SMPV963533SW**	**SMPV72x1444533SN**	**SMPV1444533SN**
	3P3E4W	**SMPV3534SW**	**SMPV963534SW**	**SMPV72x1444534SN**	**SMPV1444534SN**
V (Any One)	Nominal Input	**For 1P1E2W : 63.5 / 230 V (P-N); For 3P1E2W : 110 / 440 V (P-P); For 3P2E3W / 3P3E4W : 110 / 440 V (P-P)**			
	Range	0 - 120% of Nominal			
A (Any One)	Nominal Input	1, 2, or 5A AC (also 10A AC for 1 Phase)			
	Range	0 - 120% of Nominal			
Hz		**Standard** : 50Hz, **Optional** : 60Hz			
PF		**Standard Range** : 0.3 Lag - 1 - 0.3 Lead			
Auxiliary Power Supply		**48 x 96mm, 96 x 96mm,** 85-265V AC/DC (Standard) OR 19-90V AC/DC (Optional)		**72x14445SN / 144x144SN** 85-265V AC/DC (Standard) OR 19-90V AC/DC (Optional)	
Accuracy (Calibrated at 27°C ±5°C)		±(0.5% of Full Scale + 2 Digits)			

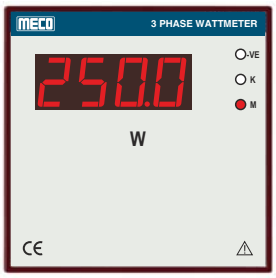
Ordering Information: Model, Input Voltage, Input Current, Input Frequency, CTR / PTR (if any), Scale Display, Auxillary Supply, Accuracy Class, Digits, Uni or Bi Directional & Display Digit Height.

Dimensions (mm)

Model	**SMPW14445SW**	**SMPW9635SW**	**SMPW35SW**	**SMPW72x14445SN**
Front	144 x 144	96 x 96	48 x 96	72 x 144
Depth (Behind Bezel)	72	90	88	93
Panel Cut-Out	$138^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$44^{(+0.5,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$68^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$
External Transducer (approx.)	As per DIN Series Transducers			

DWM96 / DWM144

DVM96 / DVM144



DWM963534S

Specifications

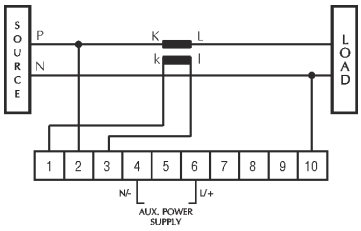
- Measuring Method: Multiplication of Pulse Width and Pulse Height
- Sampling Rate: 2.5 Samples per Second
- Display Type: Red LED (Standard)
- Resolution: 0.001 to 1 depending on range for 3½ digit
  0.0001 to 1 depending on range for 4½ digit
- Maximum Overload: Voltage : 1.2 times continuous
  Current : 2 times continuous
- VA Burden (Typical): Auxiliary : < 5VA
  Voltage Input : < 0.5VA, < 5VA for R Phase in Self Powered
  Current Input : < 0.5 VA / Phase
- Environment: Calibration : 27°C ± 5°C,
  Operating : 0 to 50°C, RH < 70%
  Storage : -10 to 60°C, RH < 70%
- Over Range: " 1 " or " -1 "
- Dielectric Strength: 2.5 kV at 50Hz for 1 min. between Case - Terminals
- Polarity Indication: " - " is Displayed to indicate Export of Power
- Case/Housing Material: DIN Black ABS, Dimension as per DIN 43700
- Mounting Clamps: Sturdy, Moulded ABS with Hardware
- Connectors: For 96x96mm (Detachable Connectors)
  For 144x144mm (Terminal Block) of Thermoplastic (UL 94V-0) with Tin Plated Brass Terminals
- Faceplate / Lens: Red Antiglare Faceplate with Annunciators
- Note: Digital Watt /Var Meters with External Transducer Against Inquiry
- Display Stability: Within ± 2 Digits

Model	Input (Nominal) A = 1, 2 or 5A AC PF 0.3 Lag - 1 - 0.3 Lead Hz = 50Hz			Auxiliary Power Supply (Any One Only)				Accuracy Class		Digits (max.)		Bi Directional		Display Digit Height	
				110 / 230V AC	85-265 VAC/DC	48 / 110 / 220V DC	Self Powered	0.5	1.0	3½	4½	Input	Display	0.56" / 14.2mm	1.0" / 25.4mm
DWM963511 DVM963511	1P 1E 2W	V Range = ± 20% of Nominal; A Range = 20 - 120% of Nominal	For 1P1E2W : 63.5 / 110 / 230 V (P-N); For 3P1E2W : 110 / 440 V (P-P); For 3P2E3W / 3P3E4W : 110 / 440 V (P-P)	✓	-	-	✓	✓	✓	✓	-	✓	✓	✓	-
DWM963531 DVM963531	3P 1E 2W (Balanced Load)			✓	-	-	✓	✓	✓	✓	-	✓	✓	✓	-
DWM963533 DVM963533	3P 2E 3W (Balanced & Unbalanced Load)			✓	-	-	✓	✓	✓	✓	-	✓	✓	✓	-
DWM963534S DVM963534S	3P 3E 4W (Balanced & Unbalanced Load)			✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	-
DWM1444511 DVM1444511	1P 1E 2W			✓	-	✓	✓	-	✓	-	✓	✓	✓	-	✓
DWM1444531 DVM1444531	3P 1E 2W (Balanced Load)			✓	-	✓	✓	-	✓	-	✓	✓	✓	-	✓
DWM1444533 DVM1444533	3P 2E 3W (Bal. & Unbal. Load)			✓	-	✓	✓	-	✓	-	✓	✓	✓	-	✓
DWM1444534 DVM1444534	3P 3E 4W (Bal. & Unbal. Load)			✓	-	✓	✓	-	✓	-	✓	✓	✓	-	✓

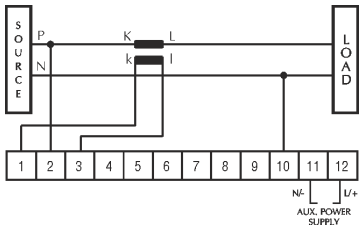
Standard : As per IS 13875

Dimensions (mm)			
Model	**DWM9635 DVM9635**	**DWM963534S DVM963534S**	**DWM14445 DVM14445**
Front	96 x 96	96 x 96	144 x 144
Depth (Behind Bezel)	135	43	59
Panel Cut-Out	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$92^{(+0.8,\ -0.0)}$ x $92^{(+0.8,\ -0.0)}$	$138^{(+0.8,\ -0.0)}$ x $138^{(+0.8,\ -0.0)}$

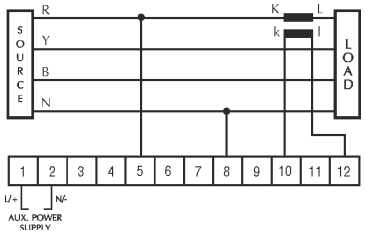
Ordering Information: Model, Input Voltage, Input Current, Input Frequency, CTR / PTR (if any), Scale Display, Auxillary Supply, Accuracy Class, Digits, Uni or Bi-Directional Input & Display Digit Height



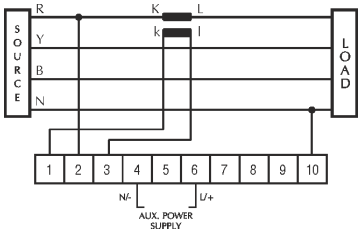
DWM9611, DVM9611



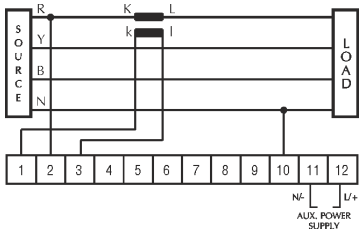
DWM14411, DVM14411



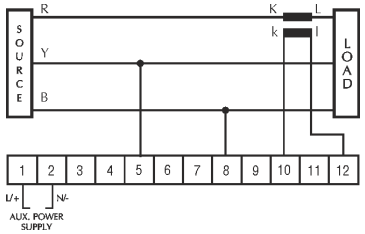
* DPF72x14411



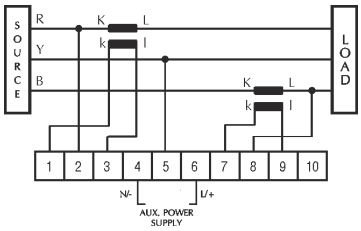
DWM9631, DVM9631



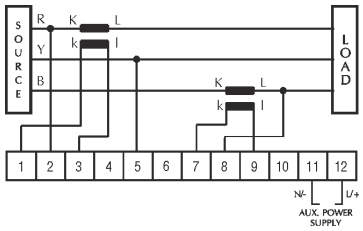
DWM14431, DVM14431



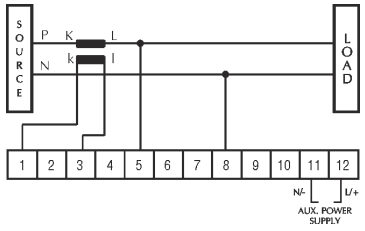
* DPF72x14431



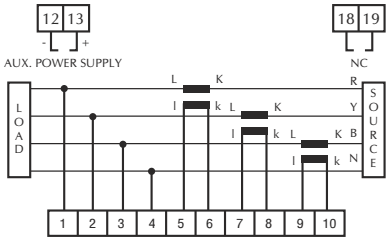
DWM9633, DVM9633



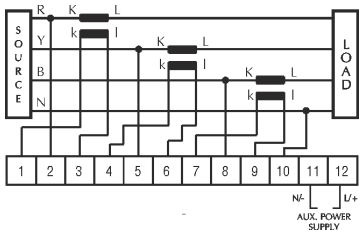
DWM14433, DVM14433



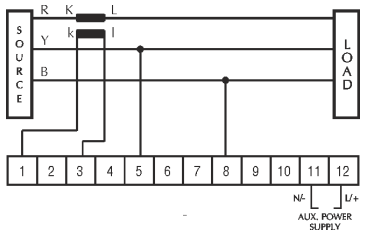
* DPF14411



DWM9634S, DVM9634S



DWM14434, DVM14434



* DPF14431

***Note :**
For Terminal Connection of DPF72x14411, DPF14411, DPF72x14431, DPF14431 Please Refer Page of 4 Digit Digital Power Factor Meter (with Built-in Transducer)

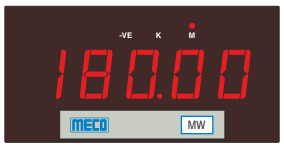
5 Digit 3P Watt / VAR / VA Meter (with Built-In Transducer) - TRMS with RS-485 Comm.
4 Digit 3P PF Meter (with Built-In Transducer) - TRMS with RS-485 Comm.

new

Preliminary Data

CE

RS 485



DWM72x144533 - TRMS
DWM72x144534 - TRMS

DVM72x144533 - TRMS
DVM72x144534 - TRMS

DVAM72x144533 - TRMS
DVAM72x144534 - TRMS

DPF72x144433 - TRMS
DPF72x144434 - TRMS

Micro Controller Based

Features :

- TRMS Measurement
- 1"/25.4mm Digit Height Display
- 5 Digits 99999 Counts (Max.), Super Bright Display
- 3 Phase 3 Wire / 3 Phase 4 Wire System
- CE Compliance with EN61010-1, EN61326-1
- Stable & Accurate
- " -VE " is Displayed to Indicate Export of Power
- Auto Indication of K & M for Kilo & Mega Respectively
- Auto Selection of Decimal Point
- RS485 Port, 5KV Isolated with Modbus RTU Protocol (Optional)

Model	Parameter Measured (System)	Accuracy ±(%FS)
DWM72x144533 - TRMS / DWM72x144534 - TRMS	3 Phase Active Power	±0.5%
DVM72x144533 - TRMS / DVM72x144534 - TRMS	3 Phase Reactive Power	±1.0%
DVAM72x144533 - TRMS / DVAM72x144534 - TRMS	3 Phase Apparent Power	±0.5%
DPF72x144433 - TRMS / DPF72x144434 - TRMS	3 Phase Power Factor	±1° Electrical

Specifications

Auxillary Supply	85 - 265VAC / DC (Standard)		**Current I/P**	<0.2VA / Phase
	19V - 90VAC / DC (Optional)		**System**	3P2E3W / 3P3E4W
Voltage / Phase PT Ratio : 1-2500 (Max.)	190V - 290VAC (Max.) (PH-N)	Any One Only	**Standard**	
	50.8V - 96.2VAC (Max.) (PH-N)		**Installation Category**	CAT II (IEC / EN61010-1)
	330V - 500VAC (Max.) (PH-PH)	Any One Only	**Pollution**	Degree 2 (IEC / EN61010-1)
	88V - 132VAC (Max.) (PH-PH)		**Environment**	
Current / Phase CT Ratio : 1-9000 (Max.)	0.1A to 1.2A (Max.)	Any One Only	**Calibration**	27°C ± 5°C
	0.5A to 6A (Max.)		**Operating**	0 to 50°C, RH <70%
Frequency	45 - 55Hz		**Storage**	-10 to 60°C, RH <70%
Power Factor	0.300 Lag(L) - 1.000 - 0.300 Lead(C)		**Terminal Block**	Screw Type
VA Burden (Typical)			**Dielectric Strength**	2.5KV @ 50Hz for 1min.
Auxiliary	<2.5VA		**Insulation Resistance**	>20MOhms at 500VDC
Voltage I/P	<0.5VA / Phase			

Dimensions (mm)

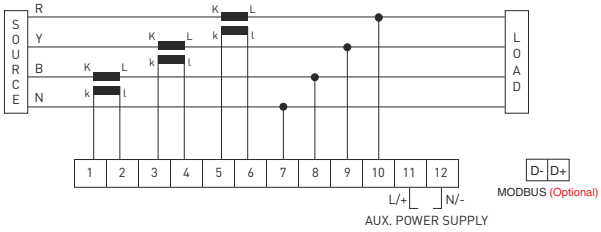
Front	72 x 144 mm
Depth	130 mm
Panel Cut-Out	$68^{[+0.8,\ -0.0]}$ x $138^{[+0.8,\ -0.0]}$
Case / Housing Material	Black ABS, Dimension as per DIN 43700
Mounting	Panel
Mounting Clamps	Sturdy, Moulded Derlin with Suitable Hardware
Terminals / Connectors	Terminal Block Thermo Plastic (UL94V-0) with Tin Plated Brass Terminals

Ordering Information: Model, Input Voltage, Input Current, Input Frequency, System 3P3E4W / 3P2E3W, CTR / PTR (if any), Auxiliary Supply & RS485 MODBUS Communication Port (Optional)

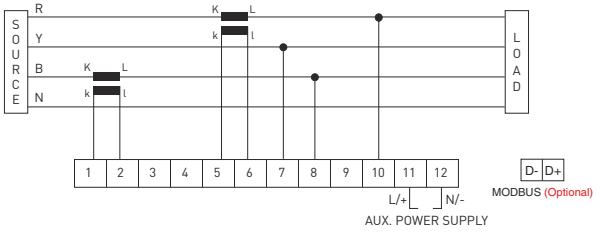
Standard : As per IS 13875

Terminal Connection

3 Phase 3 Element 4 Wire



3 Phase 2 Element 3 Wire



3½ Digit Ammeter / Voltmeter (5V DC Aux. Supply)

CE

SM9635SD

SM35SD

Specifications

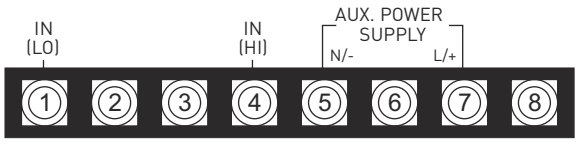
- **Measuring Method** — Dual Slope A/D Conversion
- **Sampling Rate** — 2.5 Samples per Second
- **Display Type** — 14.2mm / 0.56" Digit Height, Red LED (Standard)
- **Maximum Display** — 1999 Counts for 3½ Digit Meters
- **Resolution** — 0.001 to 1 Count for 3½ depending on the Range
- **Polarity Indication** — " - " is indicated for Negative Input
- **Decimal Selection** — Field Selectable
- **Over Range Indication** — " 1 " or " -1 " for 3½ Digit Meters
- **Maximum Overload** — Voltage : 1.2 times continuous
Current : 2 times continuous
- **Environment** — Calibration : 27°C ± 5°C,
Operating : 0 to 50°C, RH < 70%
Storage : -10 to 60°C, RH < 70%
- **VA Burden (Typical)** — Auxiliary : < 1.0VA
Voltage Input : < 1.0VA,
Current Input : < 1.0VA
- **Faceplate / Lens** — Red Antiglare Faceplate with Annunciators
- **Dielectric Strength** — 2.5 kV at 50Hz for 1 min. between Case - Terminals
- **Case / Housing Material** — DIN Black ABS, Dimension as per DIN 43700
- **Mounting Clamps** — Sturdy, Moulded ABS with suitable Hardware
- **Connectors** — Terminal Block : Thermoplastic (UL 94V-0) with Tin Plated Brass Terminals
- **Display Stability** — Within ± 2 Digits

Display / Digits (max.)		3½ Digits, 1999 Counts	
Digit Height		14.2mm / 0.56"	
Ranges	**Input**	**SM9635SD**	**SM35SD**
DC	mV	0 - 200 mV	
	V	0 - 2, 20, 200, 1000 V	
	µA	0 - 200 µA	
	mA	0 - 2, 20, 200 mA	
	A	0 - 2, 5, 20 A	
	Zero Suppressed	4 - 20 mA or 1 - 5 V	
Auxiliary Power Supply		**Standard**: 5VDC ± 10%	
Accuracy (Specified at 27 ± 5°C) ± (%FSD + dgt)	V DC	(0.1 + 2)	
	A DC	(0.2 + 2) in all ranges except (0.3 + 2) in 2 A & 5 A (0.5 + 2) in 20 A	
Dimensions (mm)	Front	96 x 96	48 x 96
	Depth (Behind Bezel)	90	88
	Panel Cut-Out	92 (+0.8, -0.0) x 92 (+0.8, -0.0)	44 (+0.5, -0.0) x 92 (+0.8, -0.0)

Ordering Information: Model, Input Range & Scale Display

Standard : As per IS 13875

Terminal Connection



SM9635SD / SM35SD

GM035-BL

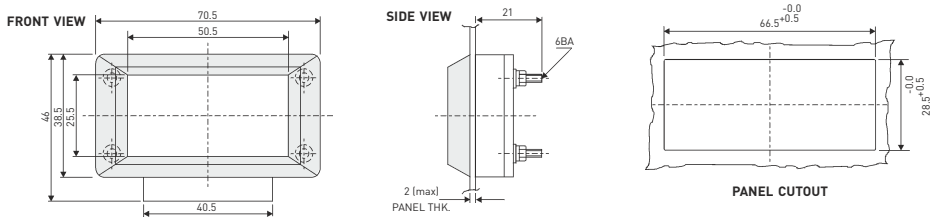
GM035, DH035

GM135

GM045

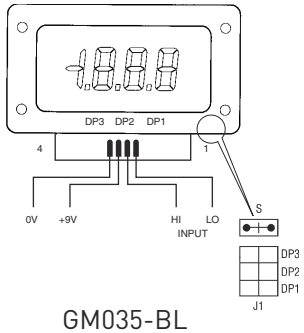
Specifications

- **Measuring Method** 3½ Digit-Dual Slope A/D Conversion
  4½ Digit-Successive Integration A/D Conversion
- **Sampling Rate** 2.5 Samples per Second
- **Display Type** 12.4 mm/0.48" Digit Height LCD for GM035, DH035, GM035-BL (with Backlight)
  11.0 mm/0.43" Digit Height LCD for GM045
  14.2 mm/0.56" Digit Height Red LED for GM135
- **Maximum Display** 1999 counts for 3½ Digit Meters
  19999 counts for 4½ Digit Meters
- **Resolution** 0.001 to 1 count for 3½ depending on the range
  0.0001 to 1 count for 4½ depending on the range
- **Polarity Indication** " - " is indicated for negative input
- **Decimal Selection** Field Selectable
- **Over Range Ind.** " 1 " or " -1 "
- **Display Stability** Within ± 2 Digits
- **Maximum Overload** Voltage : 1.2 times continuous
  Current : 2 times continuous
- **Low Batt. Indication** "LO BAT" in LCD Modules
- **External Start Hold** Provided in Models DH035 and GM045
- **VA Burden (Typical)** Auxiliary : < 20mVA (LCD) & <1VA (LED)
  Voltage : < 0.1VA, Current : < 0.25VA
- **Environment** Calibration : 27°C ± 5°C,
  Operating : 0 to 50°C, RH < 70%
  Storage : -10 to 60°C, RH < 70%
- **Mounting Bezel** Elegant Black ABS Bezel with 4 fixing screws and necessary hardware
- **Connectors** PCB Edge Connector (Optional)
- **Faceplate** Red Antiglare Lens - LED
  LCD Glass - LCD

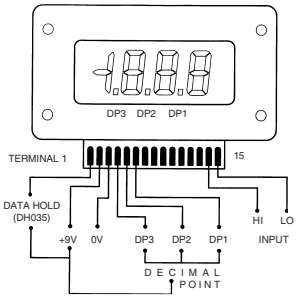
Display / Digits (max.)		3½ Digits, 1999 Counts			4½ Digits, 19999 Counts
Ranges	**Input**	**GM035-BL**	**GM035/DH035**	**GM135**	**GM045**
DC	mV V µA mA	0 - 200 mV 0 - 2, 20, 200 V 0 - 200 µA 0 - 2, 20, 200 mA			
Auxiliary Power Supply		**Standard :** 9VDC ± 10% for GM035, GM035-BL, DH035 and GM045, 5VDC ± 10% for GM135 Note : Power Supply must be Isolated. Supply Ground must not be connected to IN-LO Signal. Please ensure when a shunt is used, it must be connected on Ground / Common side of the load and not on the Supply side.			
Accuracy (Specified at 27 ± 5°C) ± (% FSD + DGT)	V DC	(0.1 + 2)			(0.05 + 2)
	A DC	(0.2 + 2)			
Dimensions (mm)	Front	70.5 x 46			
	Depth (Behind Panel)	21			
	Panel Cut-Out	66.5 (+0.5, -0.0) x 28.5 (+0.5, -0.0)			
	Drawing				

Ordering Information : Model, Input Range & Scale Display

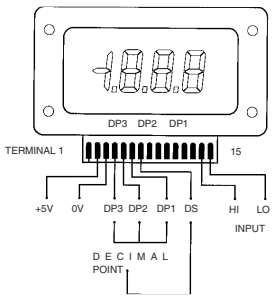
Terminal Connection



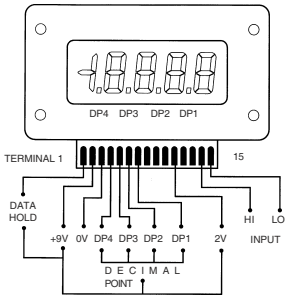
GM035-BL



DH035 / GM035



GM135



GM045

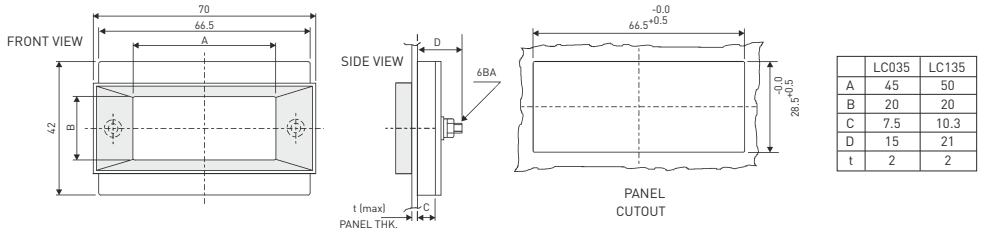
Note : External Start Hold - Provided for GM045 and DH035

LC035

LC135

Specifications

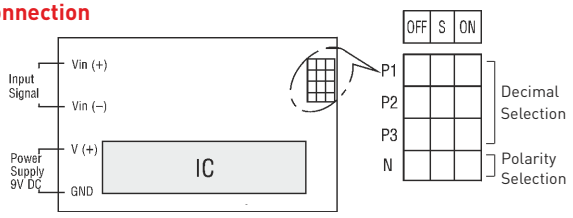
- **Measuring Method** — 3 ½ Digit - Dual Slope A/D Conversion
- **Sampling Rate** — 2.5 Samples per Second
- **Display Type** — 12.4 mm/0.48" Digit Height LCD for LC035
14.2 mm/0.56" Digit Height Red LED for LC135
- **Maximum Display** — 1999 Counts
- **Resolution** — 0.001 to 1 Counts depending on the Range
- **Polarity Indication** — " - " is Indicated for Negative Input
- **Decimal Selection** — Field Selectable
- **Over Range Indication** — " 1 " or " -1 "
- **Maximum Overload** — Voltage : 1.2 times continuous
Current : 2 times continuous
- **VA Burden (Typical)** — Auxiliary : < 20mVA (LCD) & <1VA (LED)
Voltage : < 0.1VA, Current : < 0.25VA
- **Environment** — Calibration : 27°C ± 5°C,
Operating : 0 to 50°C, RH < 70%
Storage : -10 to 60°C, RH < 70%
- **Mounting Bezel** — Elegant ABS Bezel with 2 fixing screws and necessary hardware
- **Connectors** — Header Pins on the PCB
- **Faceplate** — Red Antiglare Lens - LED
LCD Glass - LCD
- **Display Stability** — Within ± 2 Digits

Display / Digits (max.)		3½ Digits, 1999 Counts LCD	3½ Digits, 1999 Counts LED
Ranges	**Input**	**LC035**	**LC135**
DC	mV V µA mA	0 - 200 mV 0 - 2, 20, 200 V 0 - 200 µA 0 - 2, 20, 200 mA	
Auxiliary Power Supply		**Standard**: 9VDC ± 10%	**Standard**: 5VDC ± 10%
		Note : Power Supply must be Isolated. Supply Ground must not be connected to IN-LO Signal. Please ensure when a shunt is used, it must be connected on Ground / Common side of the load and not on the Supply side.	
Accuracy (Specified at 27 ± 5°C)	V DC A DC	± 0.5% of Full Scale	
Dimensions (mm)	Front	70 x 42	
	Depth (Behind Panel)	15	21
	Panel Cut-Out	66.5 (+0.5, -0.0) x 28.5 (+0.5, -0.0)	
	Drawing		

	LC035	LC135
A	45	50
B	20	20
C	7.5	10.3
D	15	21
t	2	2

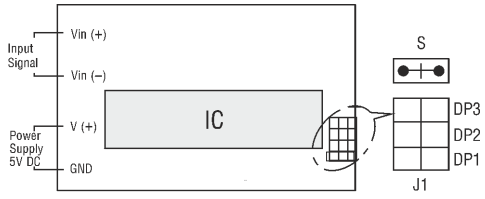
Ordering Information : Model, Input Range & Scale Display

Terminal Connection



- Short S and ON to display Decimal Point, Polarity Indiactor.
- Short S and OFF to prevent display of Decimal Point, Polarity Indicator.

LC035



Short S to display corresponding Decimal Point.

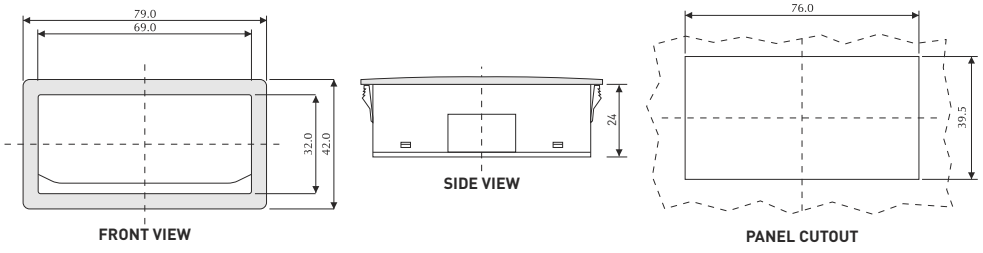
LC135

CE

SM35MS

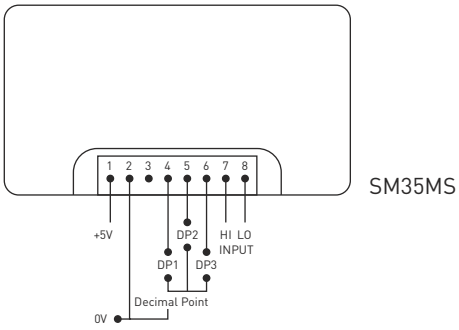
Specifications

- **Measuring Method** — 3½ Digit - Dual Slope A/D Conversion
- **Sampling Rate** — 2.5 Samples per Second
- **Display Type** — 14.2 mm / 0.56" Digit Height Red LED
- **Maximum Display** — 1999 Counts
- **Resolution** — 0.001 to 1 Counts depending on the Range
- **Polarity Indication** — " - " is Indicated for Negative Input
- **Decimal Selection** — Field Selectable
- **Over Range Indication** — " 1 " or " -1 "
- **Maximum Overload** — Voltage : 1.2 times continuous
Current : 2 times continuous
- **VA Burden (Typical)** — Auxiliary : <1VA
Voltage : < 0.1VA, Current : < 0.25VA
- **Environment** — Calibration : 27°C ± 5°C,
Operating : 0 to 50°C, RH < 70°/0
Storage : -10 to 60°C, RH < 70%
- **Mounting** — Flush Mounting
- **Connectors** — Header Pins on the PCB
- **Faceplate** — Red Antiglare Lens - LED
- **Display Stability** — Within ± 2 Digits

Display / Digits (max.)		3½ Digits, 1999 Counts LED
Ranges	**Input**	**SM35MS**
DC	V	0 - 2, 20, 200 V
Auxiliary Power Supply		**Standard :** 5V DC + 10% **Note :** IN-LO Signal & Supply Ground may be Connected Commonly
Accuracy (Specified at 27 ± 5°C)	V DC	+ 0.5% of Full Scale
	A DC	
Dimensions (mm)	Front	79 x 42
	Depth (Behind Bezel)	24
	Panel Cut-Out	$76.5^{(+0.5,\ -0.0)}$ x $39.5^{(+0.5,\ -0.0)}$
	Drawing	

Ordering Information : Model, Input Range & Scale Display

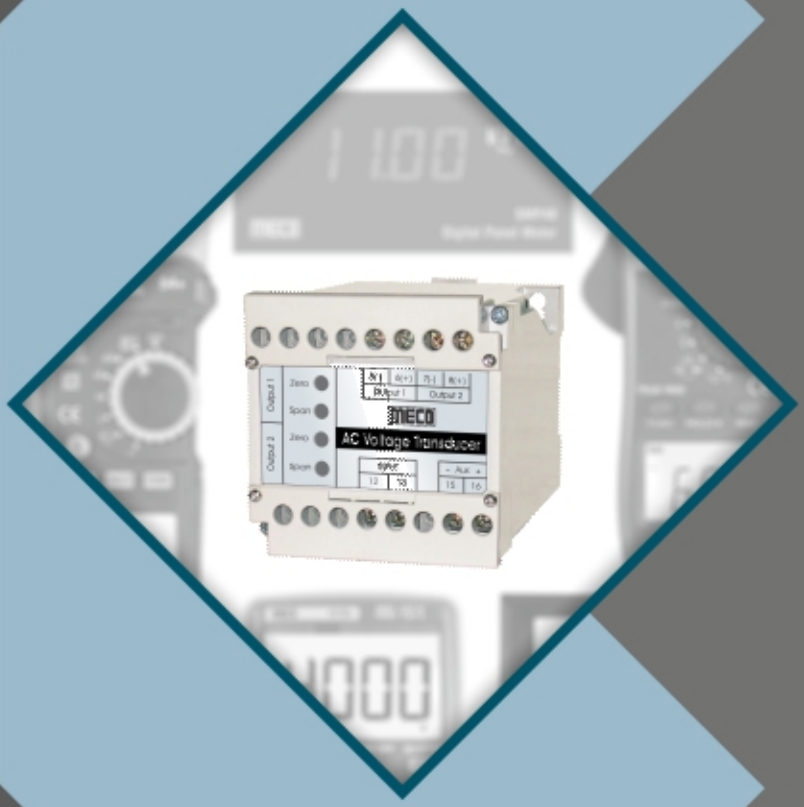
Terminal Connection



SM35MS

• Short Pin No.2 to Display Corresponding Decimal Point

MECO®
SINCE 1962



Power Line Transducers

- ✓ AC Current Transducer
- ✓ AC Voltage Transducer
- ✓ Frequency Transducer
- ✓ DC Isolation Transducer / DC – DC Converter
- ✓ Active Power (Watt) / Reactive Power (Var) Transducer
- ✓ Power Factor Transducer
- ✓ Tap Position Transducer

+60 YEARS
ONE MISSION

Reliable Long-Lasting Affordable

Introduction

MECO Power Line Transducers were designed by MICRO DENSHI CORPORATION of Japan for AC Power Line parameters like Voltage, Current, Wattage, Var, Power Factor, Frequency, DC Isolation, and TAP Position.

These reliable and accurate Transducers are in applications in all sectors of the power and process industry since over 15 years.

These Transducers give a load independent and isolated DC output directly proportional to the input parameters.

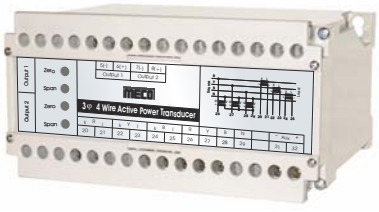
MECO Transducers are widely used for automation and control of the power and process systems as well as for local and remote monitoring of the electrical parameters at every stage of electricity generation, transmission & distribution. They are ideal for SCADA, energy management, telemetering, data-logging as well as central monitoring systems.

MECO Transducers are generally designed to comply to the requirements of IEC 688 / EN 60688, EN 61010-1, EN 61326-1 and I.S. 12784 (Part 1). All MECO Transducers pass through a stringent manufacturing and in-house quality control process consisting of vibration, burn-in and calibration tests to ensure complete reliability and accuracy during the continuous operation.

MECO Transducers can also be supplied mounted in Panel with complete wiring and accessories upto termination point for applications in various industries like Power Utilities, SEB's, Cement, Steel, Aluminum, Chemicals, Fertilizers, Sugar, Petrochemicals etc.

Features

- Terminal Protection Cover
- Reliable & Rugged Static Circuits
- Low Ripple in Output Signal
- Flame Retardant Polycarbonate Case
- Choice of Multiple Asymmetrical Outputs
- Wide Choice of Suppressed Ranges
- Open and Short Circuit Protection for Outputs
- Dual Output (Non Isolated)
- Self-Powered, AC, DC, SMPS Auxillary Supply
- Din Rail Mounting
- Bi-Directional Outputs
- Fast Response Time
- Bi-Directional Inputs for Import / Export



DIN Rail cum Back Panel Mounting

Terminal Protection Strip

Flame Retardant Polycarbonate (UL94V-0) Self Extinguishing, Non Drip Casing

Reliable, Rugged & Static Electronic Circuit using High Stability Components

Types

- AC Current (Average / TRMS)
- AC Voltage (Average / TRMS)
- Frequency
- Active Power (TRMS) (1P & 3P - Balanced or Unbalanced System)
- Reactive Power (TRMS) (1P & 3P - Balanced or Unbalanced System)
- Power Factor (Zero Crossing / TRMS) (1P & 3P - Balanced or Unbalanced System)
- DC Isolation for Voltage & Current
- Tap Position / OLTC

Sr.	 DIN Series	Auxilliary Power Supply			Type of Input		Type of Output				Isolation	Other		
		230V AC	SMPS - LV (19-90V AC / DC) SMPS - HV (85-265V AC / DC)	Self Powered	Bi Directional	Expanded / Suppressed	Single / Dual (Symmetrical / Asymmetrical)	Dual (Non-Isolated)	Bi-Directional	Expanded / Suppressed	2.5KV Between Input / Output / Aux. / Case	Average	TRMS	External Zero & Span Adjustment
1	**AC Current**	✓	✓	✓	NA	✓	✓	✓	NA	✓	✓	✓	✓	✓
2	**AC Voltage**	✓	✓	✓	NA	✓	✓	✓	NA	✓	✓	✓	✓	✓
3	**W / KW / MW (1P 1E 2W) - TRMS**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓
4	**W / KW / MW (3P 1E – Balanced Load)- TRMS**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓
5	**W / KW / MW (3P 2E 3W – Balanced & Unbalanced Load)- TRMS**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓
6	**W / KW / MW (3P 3E 4W – Balanced & Unbalanced Load)- TRMS**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓
7	**Var / KVar / MVar (1P 1E 2W)- TRMS**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓
8	**Var / KVar / MVar (3P 1E – Balanced Load)- TRMS**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓
9	**Var / KVar / MVar (3P 2E 3W – Bal. & Unbal. Load)- TRMS**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓
10	**Var / KVar / MVar (3P 3E 4W – Bal. & Unbal. Load)- TRMS**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓
11	**Frequency Transducer**	✓	Under development, Please inquire with sales@mecoinst.com	✓	NA	NA	✓	✓	NA	✓	✓	✓	NA	✓
12	**PF (1P 1E 2W) - Zero Crossing**	✓		✓	✓	NA	✓	✓	✓	✓	✓	✓	NA	✓
13	**PF (3P 1E 2W – Balanced Load) - Zero Crossing**	✓		✓	✓	NA	✓	✓	✓	✓	✓	✓	NA	✓
14	**PF (3P 2E 3W – Balanced & Unbalanced Load)- TRMS**	✓		✓	✓	NA	✓	✓	✓	✓	✓	NA	✓	✓
15	**PF (3P 3E 4W – Balanced & Unbalanced Load)- TRMS**	✓		✓	✓	NA	✓	✓	✓	✓	✓	NA	✓	✓
16	**DC Isolation / DC-DC Coverter for Current and Voltage**	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓
17	**TAP Position Transducer**	✓	✓	NA	NA	✓	✓	✓	NA	✓	✓	✓	NA	✓

Note : ✓ Indicates choice of Standard / Optional features possible for DIN Series. Please specify your requirement of all Standard / Optional specifications clearly at the time of ordering. NA denotes not applicable.

Specifications

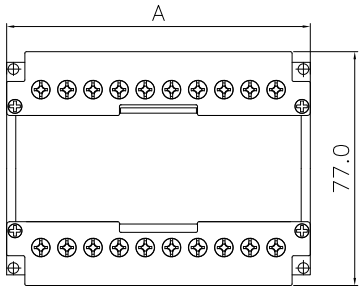
Accuracy	± 0.5% of Span (standard) Others on request (optional)
Accuracy Range	0 to 120%
Zero Adjustment	± 2% of Span (min.)
Span Adjustment	± 10% of Span (min.)
Response Time	< 250 ms for 0 to 90% of Output < 1 s for 0 to 90% of Output for PF
Output Ripple	< 0.5% of Full Scale
Compliance Voltage	12VDC (max.)
Overload - Continuous **Overload -** Short Duration (1 sec.)	Voltage : 1.2 x Un Current : 2 x In Voltage : 2 x Un Current : 20 x In
Max. Open Circuit Voltage	< 30VDC
Stability	± 0.25% Per Annum, Non Cumulative
Environmental Conditions Operating Temperature Storage Temperature Calibrated At	As per IEC 688 User Group II 0 to 55^{0}C, RH < 95% (non condensing) -20 to 70^{0}C, RH < 95% (non condensing) 27^{0}C ± 5^{0}C
Temperature Coefficient	0.02% / ^{0}C
Isolation	Complete (Input/Output/Auxiliary/Case)
Insulation Resistance	>100MΩ at 500VDC
Self Powered (optional)	Max.Variation of ± 20% in input voltage

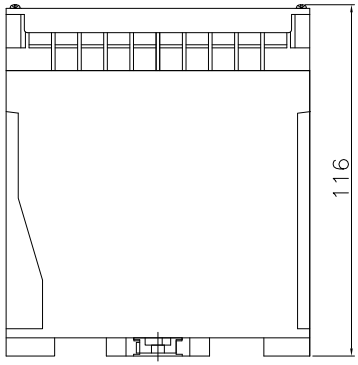
Warm Up Time	20 min. (approx.)
Dielectric Strength	2.5kV at 50 Hz for 1 min.(Standard) 4kV (Optional), across Casing - Input/Output/Auxiliary Input - Output Input - Auxiliary Output - Auxiliary
Impulse Test	5kV, 1.2 / 50 µS
Casing DIN Series	 Flame Retardant, Polycarbonate (UL 94V-0) Self Extinguishing, Non Drip, DIN Rail cum Wall Mounting Casing
Applicable Standards IEC 688 / EN 60688 EN 61010-1 EN 61326-1 IS12784 (Part-1)1989	 Electrical Measuring Tranducers for converting AC Electrical Quantities to Analog or Digital Signals Safety requirments for Electrical Equipment for Measurement Control & Laboratory use Electrical Equipment for Measurement Control & Laboratory use - EMC requirements Electrical Measuring Transducers for converting AC Electrical Quantities into DC Electrical Quantities : General Purpose Transducer

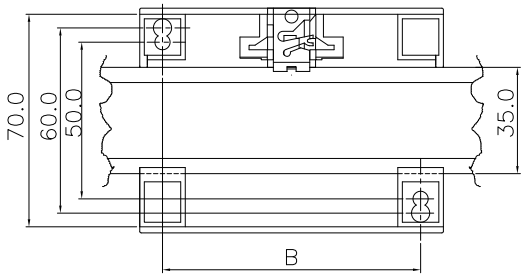
Ordering Information

Model, Input Range, Input Voltage, Input Current, PTR, CTR, Frequency, Auxiliary Supply, Output 1, Output 2 & Optionals

Dimensions (in mm)





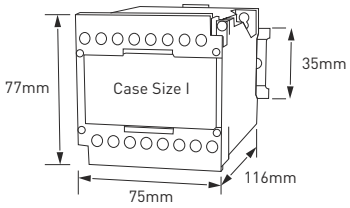


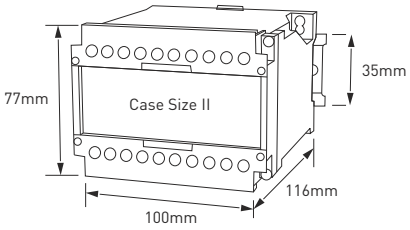
DIN Series

Case Size	A	B
I	75	60
II	100	85
III	150	135

CE

CMT, CMT - TRMS





MECO AC Current Transducers measure AC Current and converts it to an industry standard output signal which is directly proportional to the measured input. These Transducers provide an output which is load independent and isolated from the input. The output can be connected to Controllers, Data-Loggers, PLC's, Analog / Digital Indicators, Recorders for display, analysis or control. They are ideal for SCADA, Energy Management, Telemetering for Remote, Local as well as Central Monitoring Systems.

Type	DIN Series	Accuracy
Current - Average	CMT	±0.5% of Span
Current - TRMS	CMT - TRMS	

AC Input	
Input Ranges	0 - 5A (Direct) 0 - 1A (Direct) CTR / 5A CTR / 1A
Measuring Range	0 - 1.2 In
Overload (continuous)	2 x In
Burden	<0.5 VA *2<6 VA for Self Powered

Optional

- Expanded or Suppressed Input Ranges
  Example : 0 - 0.8 - 1.2 In
- Other input ranges available subject to technical feasibility

DC Output *1,*2			
Current		Voltage	
Output	Load	Output	Load
0-1 mA	0-10 KΩ	0-1 V	> 1 kΩ
0-5 mA	0-2 KΩ	0-5 V	> 5 kΩ
0-10 mA	0-1 KΩ	1-5 V	
2-10 mA		0-10 V	>10 kΩ
0-20 mA	*0-500Ω	2-10 V	
4-20 mA			

Optional

- Dual Non-Isolated Outputs
- Expanded / Suppressed Output
  Example : 4 - 6 - 20 mA for 0 - 0.8 - 1.2 In
- Dual Symmetrical / Asymmetrical Outputs
- Other output ranges available subject to technical feasibility
- *0-600 Ω / 0-750 Ω on Request

Auxiliary Power Supply		
Tolerance		Burden
SMPS - HV	85 - 265V AC / DC	< 2 VA
SMPS - LV	19 - 90V AC / DC	
Self *1 Powered	*1 For Input 1A & 5A AC, Output 0-10 or 0-20mA DC Available Only	Refer Input Burden
AC Linear Power Supply	230V AC ± 20 %	< 4 VA

Optional

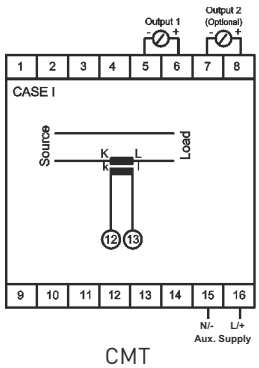
- Other Auxiliary Power Supplies available subject to technical feasibility

Dimension

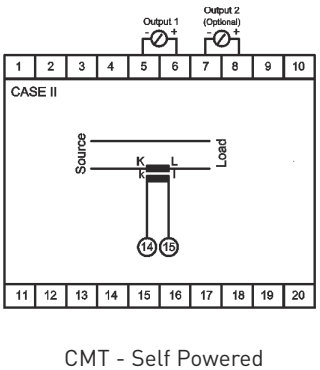
DIN Series : ● Case Size II for Self Powered ● Case Size I for others

Note : ● For Details refer General & Technical Specifications Page

Connection Diagram

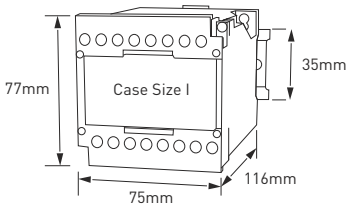


CMT



CMT - Self Powered

CE



VMT, VMT - TRMS

MECO AC Voltage Transducer measures AC Voltage and converts it to an industry standard output signal which is directly proportional to the measured input. These Transducers provide an output which is load independent and isolated from the input. The output can be connected to Controllers, Data-Loggers, PLC's, Analog / Digital Indicators, Recorders for display, analysis or control. They are ideal for SCADA, Energy Management, Telemetering for Remote, Local as well as Central Monitoring Systems.

Type	DIN Series	Accuracy
Current - Average	VMT	±0.5% of Span
Current - TRMS	VMT - TRMS	

AC Input	
Input Ranges	0 - 63.5 V 0 - 110 V 0 - 230 V 0 - 300 V 0 - 440 V 0 - 500 V
Measuring Range	0 - 1.2Un
Overload (continuous)	1.2 x Un
Burden	< Un x 6mA
	< 6 VA for Self Powered

DC Output			
Current		Voltage	
Output	Load	Output	Load
0-1 mA	0-10 KΩ	0-1 V	> 1 kΩ
0-5 mA	0-2 KΩ	0-5 V	> 5 kΩ
0-10 mA	0-1 KΩ	1-5 V	
2-10 mA		0-10 V	>10 kΩ
0-20 mA	*0-500 Ω	2-10 V	
4-20 mA			

Auxiliary Power Supply		
Tolerance		Burden
SMPS - HV	85 - 265V AC / DC	< 2 VA
SMPS - LV	19 - 90V AC / DC	
Self Powered	Max. Variation of ± 20% allowed in Input Voltage	Refer Input Burden
AC Linear Power Supply	230V AC ± 20 %	< 4 VA

Optional
- Expanded or Suppressed Input Ranges also available. Example : 0 - 0.8 - 1.2 Un
- Above Input Ranges with suitable PTR also available·
- Other input ranges available subject to technical feasibility

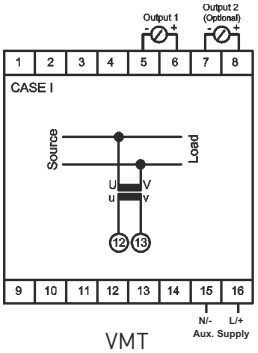
Optional
- Dual Non-Isolated Outputs
- Expanded or Suppressed Output Example : 4 - 6 - 20 mA for 0 - 0.8 - 1.2 Un
- Dual Symmetrical & Asymmetrical Outputs
- Other output ranges available subject to technical feasibility
- *0-600 Ω / 0-750 Ω on Request

Optional
- Other Auxiliary Power Supplies available subject to technical feasibility

Dimension

DIN Series : ● Case Size I
Note : ● For Details refer General & Technical Specifications Page

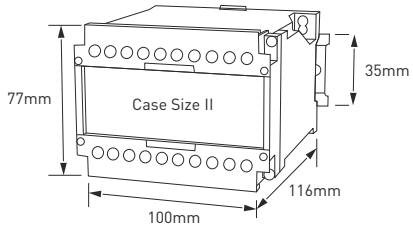
Connection Diagram



VMT

CE

FT



MECO Frequency Transducer measures Power Frequency over a specified Frequency Range and converts it to an industry standard output signal which is directly proportional to the measured input. These Transducers provide an output which is load independent and isolated from the input. The output can be connected to Controllers, Data-Loggers, PLC's, Analog / Digital Indicators, Recorders for display, analysis or control. They are ideal for SCADA, Energy Management, Telemetering for Remote, Local as well as Central Monitoring Systems.

Model : FT (DIN Series)	**Accuracy :** ±0.5% of Span

AC Input	
Input Ranges	45 - 55 Hz 45 - 65 Hz 55 - 65 Hz
Input Voltage	63.5/110/230/440 V (any one only)
Measuring Range	0.8 - 1.2 Un
Overload (continuous)	1.2 x Un
Burden	< Un x 5.5mA
	< 6 VA for Self Powered

DC Output			
Current		Voltage	
Output	Load	Output	Load
0-1 mA	0-10 KΩ	0-1 V	> 1 kΩ
0-5 mA	0-2 KΩ	0-5 V	> 5 kΩ
0-10 mA	0-1 KΩ	1-5 V	
2-10 mA		0-10 V	>10 kΩ
0-20 mA	0-500 Ω	2-10 V	
4-20 mA			

Auxiliary Power Supply		
Tolerance (± 20 %)		Burden
AC Linear Power Supply	110 V	< 4 VA
	230 V	
DC	24 V	
	48 V	
	110 V	
	220 V	
Self Powered	Max. Variation of ± 20% allowed in Input Voltage	Refer Input Burden

Optional
- Above Input Ranges with suitable PTR also available
- Other input ranges available subject to technical feasibility

Optional
- Dual Non-Isolated Outputs
- Dual Symmetrical & Asymmetrical Outputs
- Other output ranges available subject to technical feasibility

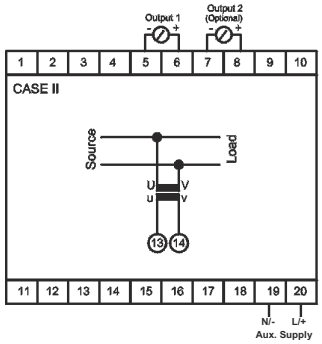
Optional
- Other Auxiliary Power Supplies available subject to technical feasibility

Dimension

DIN Series : ● Case Size II

Note : ● For Details refer General & Technical Specifications Page

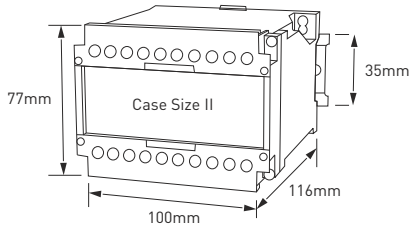
Connection Diagram



FT

CE

DTI



MECO DC Isolation Transducer takes various DC Voltage or DC Current signal inputs and provides a Stable, Ripple-Free and Optically Isolated DC load independent output in the form of current or voltage. The output can be connected to Controllers, Data-Loggers, PLC's, Analog / Digital Indicators, Recorders for display, analysis or control. They are ideal for SCADA, Energy Management, Telemetering for Remote, Local as well as Central Monitoring Systems. Model DTI - RRL has LED indication at Power ON condition.

Model : DTI (DIN Series)	**Accuracy :** ±0.5% of Span

DC Input		
Input Ranges	0-100 mV 0-1 V 0-5 V 1-5 V 0-10 V 2-10 V 0-1000 V	4-20 mA 2-10 mA 1-5 mA 0-1 mA 0-10 mA 0-16 mA 0-20 mA
Measuring Range	0-1.2 In, 0-1.2 Un	
Overload (continuous)	1.2 x Un, 2 x In	
Burden	10 kOhm/V for Voltage 100 mV for Current	
Bi-directional Inputs	-50/0/50 mV DC to -300/0/300 V DC	

DC Output			
Current		Voltage	
Output	Load	Output	Load
0-1 mA	0-10 KΩ	0-1 V	> 1 kΩ
0-5 mA	0-2 KΩ	0-5 V	> 5 kΩ
0-10 mA	0-1 KΩ	1-5 V	
2-10 mA		0-10 V	>10 kΩ
0-20 mA	*0-500 Ω	2-10 V	
4-20 mA			
4-12-20 mA	*0-500 Ω	0-5-10 V	>10 kΩ

Auxiliary Power Supply		
Tolerance		Burden
SMPS - HV	85 - 265V AC / DC	< 2.5 VA
SMPS - LV	19 - 90V AC / DC	
AC Linear Power Supply	110 V ± 20 %	< 4 VA
	230 V ± 20 %	

Optional
- Bi-directional Inputs available
- Other input ranges available subject to technical feasibility

Optional
- Dual Non-Isolated Outputs
- Dual Symmetrical & Asymmetrical Outputs
- Bi-directional Outputs
- Other output ranges available subject to technical feasibility
- *0-600 Ω / 0-750 Ω on Request

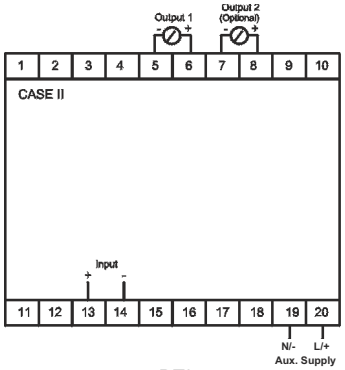
Optional
- Other Auxiliary Power Supplies available subject to technical feasibility

Dimension

DIN Series : ● Case Size II

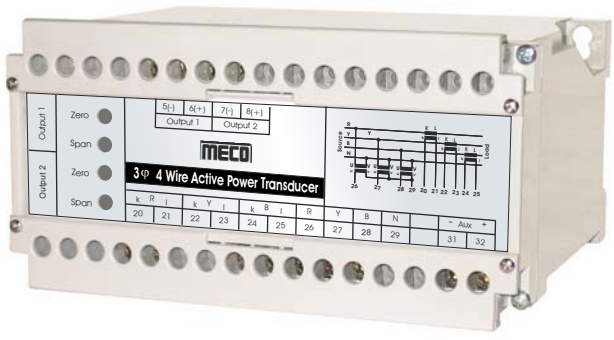
Note : ● For Details refer General & Technical Specifications Page

Connection Diagram

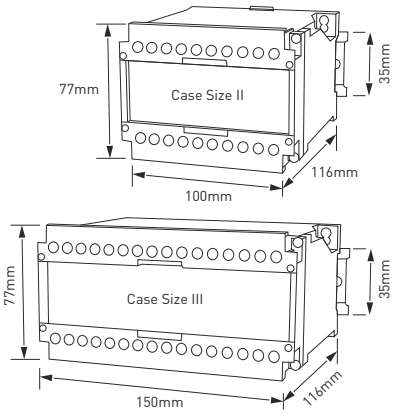


DTI

CE



WT, RPT



MECO AC Active Power (Watt) & Reactive Power (Var) Transducers measure Power in 1 Phase, 3 Phase 3 Wire and 3 Phase 4 Wire in balanced or unbalanced electrical systems and converts it to an industry standard output signal which is directly proportional to the measured input. These Transducers provide an output which is load independent and isolated from the input. These Transducers can measure both Import and Export of Power. The output can be connected to Controllers, Data-Loggers, PLC's, Analog / Digital Indicators, Recorders for display, analysis or control. They are ideal for SCADA, Energy Management, Telemetering for Remote, Local as well as Central Monitoring Systems.

Type	Watt	Var	Accuracy
1Phase 1Element 2Wire - TRMS	WT11	RPT11	±0.5% of Span
3Phase 1Element 2Wire (Balanced) - TRMS	WT31	RPT31	
3Phase 2Element 3Wire (Balanced & Unbalanced) - TRMS	WT33	RPT33	
3Phase 3Element 4Wire (Balanced & Unbalanced) - TRMS	WT34	RPT34	

AC Input	
Input Voltage	0-63.5/110/230/440 V (any one only)
Input Current	0-1/5 A (any one only)
Input Frequency	50/60/400 Hz (any one)
Input PF Range	0 (Lag) - 1 - 0 (Lead)
Measuring Range	0-1.2 x Un x In
Overload (continuous)	2 x In and 1.2 x Un
Burden (Voltage)	< Un x 6mA/Phase < 6 VA for Self Powered
Burden (Current)	< 0.5VA / Phase

DC Output			
Current		Voltage	
Output	Load	Output	Load
0-1 mA	0-10 KΩ	0-1 V	> 1 kΩ
0-5 mA	0-2 KΩ	0-5 V	> 5 kΩ
0-10 mA	0-1 KΩ	1-5 V	
2-10 mA		0-10 V	>10 kΩ
0-20 mA	*0-500Ω	2-10 V	
4-20 mA			

Auxiliary Power Supply		
Tolerance		Burden
AC Linear Power Supply	230 V ± 20%	< 4 VA
SMPS-HV	85-265 V AC/DC	< 2 VA
SMPS-LV	19-90 V AC/DC	
Self Powered	Max. Variation of ± 20% allowed in Input Voltage	Refer Input Burden

Optional
- Above Input Ranges with suitable CTR/PTR also available
- Bi-directional inputs for Import / Export of Power

Optional
- Dual Non-Isolated Outputs
- Dual Symmetrical & Asymmetrical Outputs
- Bi-directional Outputs
- *0-600 Ω / 0-750 Ω on Request

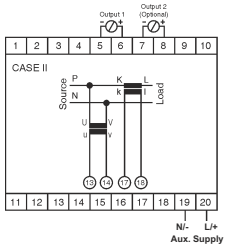
Optional
- Other Auxiliary Power Supplies available subject to technical feasibility

Dimension

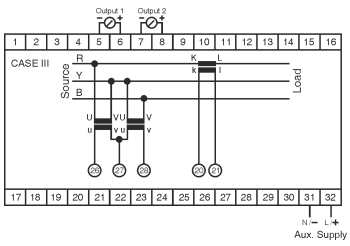
DIN Series :
- Case Size II for 1 Phase
- Case Size III for 3 Phase

Note :
- For Details refer General & Technical Specifications Page

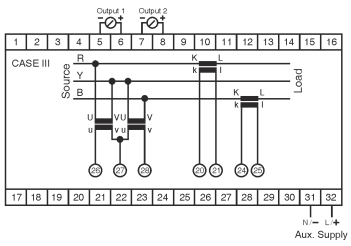
Connection Diagram



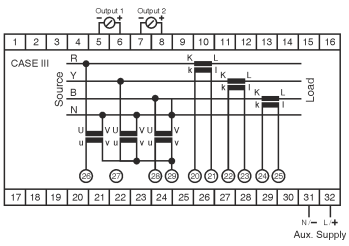
WT11
Case Size II



WT31
Case Size III

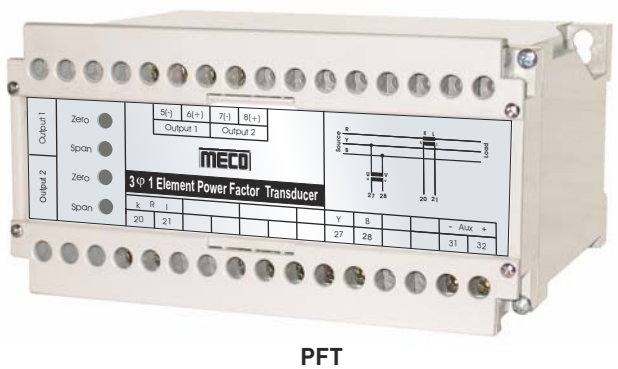


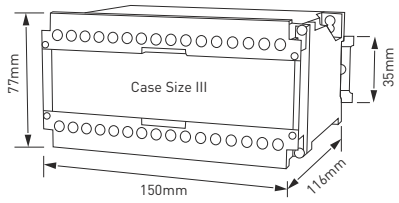
WT33/RPT33
Case Size III



WT34/RPT34
Case Size III

CE





PFT

MECO AC Power Factor Transducers measure the Power Factor in 1 Phase and 3 Phase electrical systems. The resulting output signal is directly proportional to the system power factor. These Transducers provide an output which is load independent and isolated from the input. The output can be connected to Controllers, Data-Loggers, PLC's, Analog / Digital Indicators, Recorders for display, analysis or control. They are ideal for SCADA, Energy Management, Telemetering for Remote, Local as well as Central Monitoring Systems.

Type	DIN Series	Accuracy
1Phase 1Element 2Wire - Zero Crossing	PFT11	±0.5% of Span
3Phase 1Element 2Wire (Balanced) - Zero Crossing	PFT31	
3Phase 2Element 3Wire (Balanced & Unbalanced) - TRMS	PFT33-TRMS	
3Phase 3Element 4Wire (Balanced & Unbalanced) - TRMS	PFT34-TRMS	

AC Input	
Input Voltage	63.5/110/230/440 V (any one only)
Input Current	1/5 A (any one only)
Input Frequency	50/60 Hz (any one)
Input PF Range	0.5 (Lag) -1.0 - 0.5 (Lead)
Measuring Range	0.8Un~1.2Un, 0.2In~1.2In
Overload (continuous)	2 x In and 1.2 x Un
Burden (Voltage)	< Un x 6mA/Phase < 6 VA for Self Powered
Burden (Current)	< 0.5VA / Phase

DC Output			
Current		Voltage	
Output	Load	Output	Load
0-1 mA	0-10 KΩ	0-1 V	> 1 kΩ
0-5 mA	0-2 KΩ	0-5 V	> 5 kΩ
0-10 mA	0-1 KΩ	1-5 V	
2-10 mA		0-10 V	>10 kΩ
0-20 mA	0-500 Ω	2-10 V	
4-20 mA			

Auxiliary Power Supply		
Tolerance (± 20 %)		Burden
AC Linear Power Supply	110 V	< 4 VA
	230 V	
DC	24 V	
	48 V	
	110 V	
	220 V	
Self Powered	Max. Variation of ± 20% allowed in Input Voltage	Refer Input Burden

Optional

- Above Input Ranges with suitable CTR/PTR also available
- Bi-directional inputs for Import / Export of Power

Optional

- Dual Non-Isolated Outputs
- Dual Symmetrical & Asymmetrical Outputs
- Bi-directional Outputs

Optional

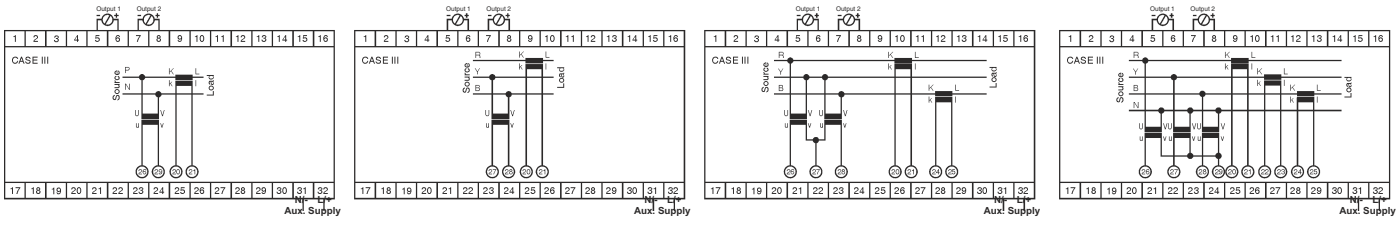
- Other Auxiliary Power Supplies available subject to technical feasibility

Dimension

DIN Series : ● Case Size III

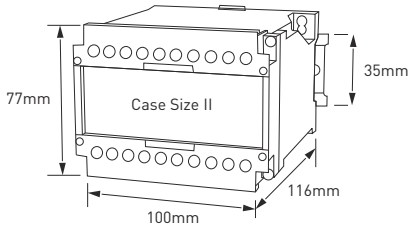
Note : ● For Details refer General & Technical Specifications Page

Connection Diagram



PFT11 PFT31 PFT33 PFT34

CE



TPT

MECO Tap position Transducer takes various Resistance inputs and provides a Stable, Ripple-Free and Optically Isolated DC load independent output in the form of current or voltage. The output can be connected to Controllers, Data-Loggers, PLC's, Analog / Digital Indicators, Recorders for display, analysis or control. They are ideal for SCADA, Energy Management, Telemetering for Remote, Local as well as Central Monitoring Systems.

Model : TPT (DIN Series)	**Accuracy :** ±0.5% of Span

Resistance Input

Resistance input from potentiometric transformer tap positions upto 99 transformer taps. 100 KOhms max.

DC Output

Current		Voltage	
Output	Load	Output	Load
0-1 mA	0-10 KΩ	0-1 V	> 1 kΩ
0-5 mA	0-2 KΩ	0-5 V	> 5 kΩ
0-10 mA	0-1 KΩ	1-5 V	
2-10 mA		0-10 V	>10 kΩ
0-20 mA	*0-500Ω	2-10 V	
4-20 mA			

Auxiliary Power Supply

Tolerance		Burden
SMPS - HV	85 - 265V AC / DC	< 2.5 VA
SMPS - LV	19 - 90V AC / DC	
AC Linear Power Supply	110 V ± 20 %	< 4 VA
	230 V ± 20 %	

Optional

- Other input ranges available subject to technical feasibility

Optional

- Dual Non-Isolated Outputs
- Dual Symmetrical & Asymmetrical Outputs
- Bi-directional Outputs
- Other output ranges available subject to technical feasibility
- *0-600 Ω / 0-750 Ω on Request

Optional

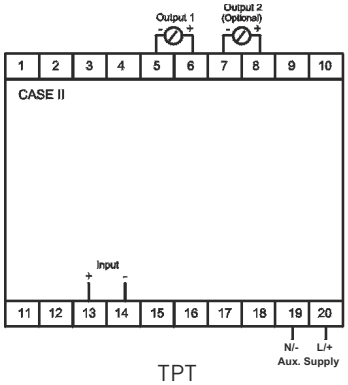
- Other Auxiliary Power Supplies available subject to technical feasibility

Dimension

DIN Series : ● Case Size II

Note : ● For Details refer General & Technical Specifications Page

Connection Diagram



TPT

stelmec®
beyond boundaries

ISO 9001 REGISTERED

Stelmec Limited
(CIN : U31200MH2000PLC124565)
MV SWITCHGEAR DIVISION-II
Survey No. 90 & 92/1,
Virar - Vajreshwari Road, At. Usgaon,
P. O. Bhatane, Tal. Vasai,
Dist. Palghar - 401 303, Maharashtra, India.
Phone : 8291947259, 8291947260
E-mail : sales@stelmec.com
Website : www.stelmec.com

Date: 09.01.2023

To,
M/s. Meco Instruments Pvt. Ltd.
Plot No. 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape, Navi Mumbai – 400 710
Tel. No. 022 – 27673300

Dear Sir,

Kind Attn : Dr. Kamal Goliya - CEO

Sub Satisfactory Executions of Supply of MECO Panel Meters against Purchase order No. STEL/110/GST0500/22-23 Dt. 26.08.2022.

Please refer our above and several Purchase order for Supply of MECO Make Analog Panel Meters.
We are thank full to M/s. MECO Instruments Pvt. Ltd. Navi Mumbai for honouring timely delivery as per given schedule for all items.

We also appreciate Mr. Haren Shah and Mr. Amol Bharnuke for extending their excellent service during completion of order and providing / updating us time to time the proceeding in executing this order.

We look forward to have similar kind of service and support from your organization in our upcoming projects and orders.

Thanking You,
Your Faithfully,
M/s. Stelmec Ltd.

Authorised Signatory

c.c.
Mr. Haren Shah – Senior Marketing Executive
Email : haren.shah@mecoinst.com & harenvshah@yahoo.com Mobile No. : 9820093232
Mr. Amol Bharnuke – Marketing Executive
Email : amol.bharnuke@mecoinst.com Mobile No. : 9987466629

Registered & Corporate Office : 506/507, 55 Corporate Avenue, Saki Vihar Road, Andheri (E), Mumbai - 400 072.
Phone: 022 2803 4500 Email: corporate@stelmec.com Website: www.stelmec.com

GE
Intelligent Platforms

CIN: U72200KA1997PTC022158
Velankani Tech Park, No 43
1st floor, Building 9
Electronics City, Hosur Road
Bangalore 560 100
Website: www.ge.com
T + 91 80 4251 5300-04
F + 91 80 4251 5305-06

Ref: Vendor/Appraisal/15-16

Date : 01/15/2015.

To,
M/S. Meco Instruments Pvt. Ltd.
Plot NO. EL- 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape
Navi Mumbai – 400 710.
Tel No. : 022 27673300
Fax No. : 022 27673330
Email : kamal@mecoinst.com

Kind Attn. : Mr. Kamal Goliya / P. Gawade

Sub: Vendor Appraisal

We thank you for your support extended to us for supply of various Electrical and Electronic Testing and Measuring Instruments and Transducers.

We have been using MECO Multifunction Meters. Digital Panel Meters, Power Line Transducers, Testing and Measuring Instruments. Since more than past 5 years in our DMRC projects to our complete satisfaction.

The presales and post-sales service and support offered are prompt and timely.

We hope to have similar support from your organization for future years too so that we can all mutually achieve higher targets.

We once again thank you for your support extended to fulfill our customer needs.

Yours faithfully,
For GE Intelligent Platforms Pvt Ltd,

Gunashekar KM
Sourcing Leader

Registered Office: GE Intelligent Platforms, CIN: U72200KA1997PTC022158, Velankani Tech Park, 1st Floor, Building 9, #43, Electronics City Hosur Road, Bangalore - 560 100, India,T: + 91 80 42515300-04; F: + 91 80 42515305-06

ABB

Certificate of Appreciation

This is in appreciation towards the contribution of **M/s Meco Instruments Pvt. Ltd.**
to **ABB Ltd., LV- Drives** for adopting good quality systems in meeting ABB business growth during the years 2006 & 2007.

GNV Subba Rao
Business Head
Drives - ABB Ltd.,

BLUE STAR

Blue Star Limited
Block 2-A, DLF Corporate Park,
DLF Qutab Enclave, Phase - III,
Mehrauli-Gurgaon Road,
Gurgaon (Haryana) 122 002, India.
Tel : +91 124 409 4000
Fax : +91 124 409 4004
www.bluestarindia.com

Dt 16.12.2015

M/s. Meco Instruments Pvt. Ltd.
Plot No. 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape, Navi Mumbai – 400 710
Tel. No. 022 – 27673300 Fax No. 022 – 27673310

Kind Attn Mr Haren Shah

Sub Performance of MECO Make Power Line Transducers for Delhi Metro Rail Corporation (DMRC – Delhi)

Please refer our Purchase orders to MECO Instruments Pvt. Ltd. Mahape, Navi Mumbai for Supply of MECO Make Power Line Transducers for Delhi Metro Rail Corporation (DMRC – Delhi) Projects.

Performance of MECO Make Power Line Transducers (Current, Voltage, Power Factor, Active Power, Reactive Power & Frequency Transducers) supplied to us are as per specification and working satisfactory at DMRC Sites.

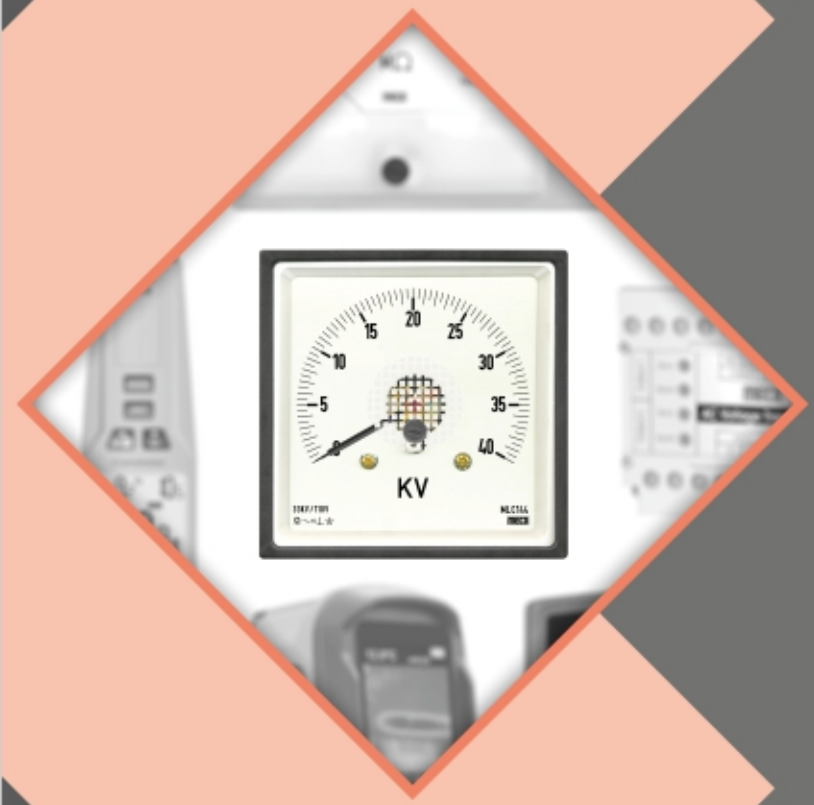
We look forward to have similar kind of service and support in future also.

Thanking You,

Gaurav Khator
Blue Star Ltd, Gurgaon

Registered Office: Kasturi Buildings, Mohan T Advani Chowk, Jamshedji Tata Road, Mumbai 400 020, India. Tel : +91 22 6665 4000 Fax : +91 22 6665 4152
CIN: L 28920MH1949PLC 006870

MECO®
SINCE 1962



Analog Panel and Switchboard Meters

- ✓ AC Moving Iron Meters
- ✓ DC Moving Coil Meters
- ✓ AC Moving Coil Rectifier Type Meters
- ✓ Electronic Type W / VAR / PF / Hz Meters
- ✓ Rectangular AC & DC Meters
- ✓ Educational Desk Stand Meters

+60 YEARS
ONE MISSION

Reliable Long-Lasting Affordable

General Specifications

Standards

All instruments are designed in accordance with the following international and national regulations : IS-1248; IEC-51; IEC-1010; BS89; EN60051 respectively various instruments. The overall dimensions comply with DIN43700 - 43718.

Technical Specifications

Materials

Case : Complies to DIN 43700
Colour : White
Front Frame : Complies with DIN 43718
Colour : Black
Front Glass : Flat glass

Protection

Case : IP52
Terminals : IP00
IP20 (with terminal cover)

Overload Capabilities

Withstand continuous overloads of 1.2 times for Ammeter and Voltmeter the nominal value and short duration overloads of upto 10 times for Ammeter and upto 2 times for Voltmeter the nominal values for 5 seconds.

Climatic Conditions

Reference temperature for these instruments is 27°C ± 2°C. The standard instruments can operate at a maximum relative humidity of 90%.

Operating Temperature

-10°C to + 55°C, RH<90%

Storage Temperature

-20°C to + 70°C, RH<90%

Accuracy Class

All instruments are calibrated according to Accuracy Class specified below as per applicable international standards :

- Moving Iron Meters : 1.5
- Moving Coil Meters : 1.0, 1.5, 2.5
- Electronic Analog Watt / Var Meters : 1.5,1.0
- Power Factor Meters : ±2° Phase Angle
- Frequency Meters : 1.0

Influence of External Magnetic Fields

Moving Iron Meters are provided with an internal shield cup in order to prevent the influence of stray and low intensity magnetic fields.

Moving Coil and all other instruments have a center core self-shielding construction which protects against stray and external low intensity magnetic fields.

Mounting Position

The nominal operating position of the panel meters is vertical. The required mounting position is shown on the scale of the instrument. Instruments with horizontal and angular mounting positions can be supplied on request.

High Voltage Test

All instruments are designed to withstand 2.5kV RMS, 50Hz, for 1min.

Shock and Vibration Resistance

All meter movements are mounted on spring loaded shock absorbing type of jewel bearings which make the instrument capable of offering good resistance to shocks and vibration. This mechanism is much superior to traditional Taut-Band construction which is highly fragile. The Pivot Jewel mechanism is ideal for aviation, traction and marine applications.

Pointer

The pointers are in accordance with DIN 43802.

Zero Adjustment

A screw for zero adjustment is located on the front glass.

Scales

Instrument scales are in accordance with DIN43802 regulations. Special scales are available on request.

Markings and Symbols on Instruments / Meters

According to IEC51 requirements, all measuring instruments and their accessories bear on the dial, or on the external surface of the case, the markings indicating :

- Manufacturers name or trade mark
- Symbol of the measured parameter
- Accuracy / Accuracy Class
- Type of power supply and the number of measuring elements
- Test Voltage
- Operating method of the instrument
- Rated value
- Symbol for mounting position
- Symbol of the accessory or the transformer ratio for which the instrument has been calibrated.

Moving Iron Meters

These instruments consist of a moving piece of ferro magnetic material, which is under influence of a current carrying fixed coil. Considering the above mentioned operating process, these instruments are ideally suited for measuring TRMS current and voltage in alternating current circuits. Accuracy for these meters is applicable only within the nominal working range and not in the overscale range. When using external current transformer, please ensure that the secondary current value of the CT must be the rated current of the Ammeter i.e., In.

Moving Coil Meters

The operation of these instruments depends on the reaction of the current circulating in a moving coil and the field of a fixed permanent magnet. They can be used on alternating current with a suitable rectifier inserted in the circuit.

Moving Coil instruments above 50A, the ammeters are to be used with external Shunts having 60mV or 75mV drop. The Shunts are usually calibrated for a lead resistance of usually less than 0.07 Ohm. When lead resistance is greater than 0.1 Ohm, it is advisable to use shunts of 100, 150 or 300mV drop.

Electronic Analog Watt, Var, PF & Hz Meters

These instruments are available for measuring Active and Reactive Power in single phase and three phase balanced or unbalanced load conditions. In addition to these we manufacture Power Factor Meters for single phase and three phase balanced load systems and line Frequency meters for different voltage ratings and different frequency bands.

Electronic Power meters use multiplier circuits which multiply instantaneous voltage and current.

The average of the product is in the form of analog DC current directly proportional to the AC power. This power is measured with DC moving coil meter. Scale is adjusted to indicate power. Sometimes these meters are used along with CTs and PTs. Bi-directional Watt/Var Meters to indicate export / import can be supplied on request.

In Frequency meter a DC current proportional to the input frequency is obtained by using an electronic circuit. This output is calibrated in terms of frequency.

The circuit for Powerfactor meter gives current output proportional to phase angle. This output is bidirectional to discriminate between leading and lagging Powerfactor. Scale is marked in terms of Cosφ, φ being the phase angle between voltage and current vector.

Since these Watt meters and Var meters are self powered, it is essential that the input voltage is within ±15% of the nominal value. At lower voltage, the instrument will function erratically.

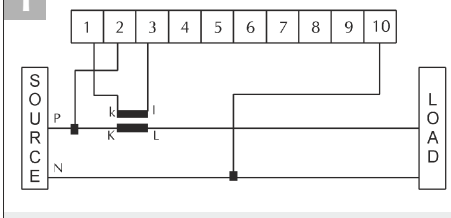
To get proper accuracy from Powerfactor meter, please ensure input voltage is within ±15% of the rated value & current is between 20% to 120% of the rated value.

Note

Power meters and Powerfactor meters are normally supplied for 47 to 53 Hz operation. On request meters to suit 60Hz or 400 Hz can be supplied.

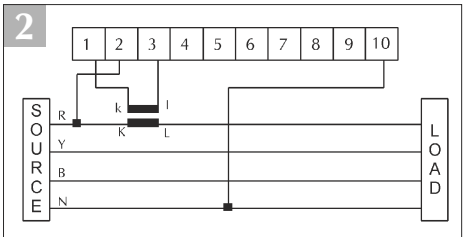
Active power, Reactive power & Low Powerfactor Wattmeter are calibrated at Cosφ = 1, Sinφ = 1 and Cosφ = 0.2 Lag respectively.

1



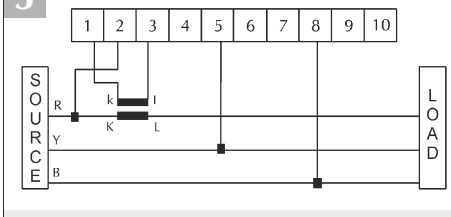
1 φ1 Element Watt Meter and Var Meter

2



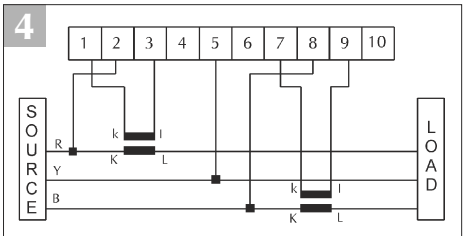
3 φ1 Element Watt Meter and Var Meter
for balanced load only

3



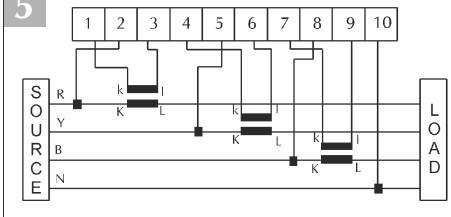
3 φ1 Element - D Type Watt Meter and Var Meter
for balanced load only

4



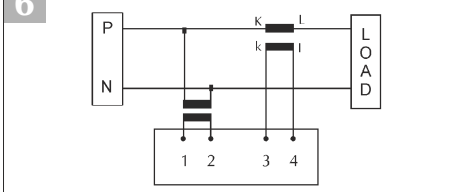
3 φ 2 Element - D Type Watt Meter and Var Meter
for balanced and unbalanced load

5



3 φ 3 Element Watt Meter and Var Meter
for balanced and unbalanced load

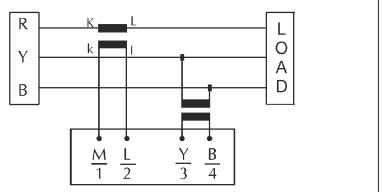
6



Note : P=2, N=4, k=7 & l=9 only for 144LF11

1 φ 1 Element Pf Meter

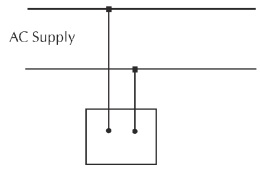
7



Note : M=2, L=4, Y=7 & B=9 only for 144LF31

3 φ 1 Element Pf Meter
for balanced load only

8



Frequency Meter

Burden

Electronic meters impose lower burden on supply than the conventional meters. Typical values are given below.

Watt & Var Meters	
Voltage Rating	Total Burden(VA)
1-Phase, 63.5V	< 0.5
1-Phase, 230/250V	< 2.0
3-Phase, 110V	< 3x0.5
3-Phase, 400/440V	< 3x2.0
Current Rating	Total Burden (VA)
1.0A	< 1VA/Phase
5.0A	< 1VA/Phase

Powerfactor Meters	
Voltage Rating	Total Burden (VA)
1-Phase, 63.5V	< 0.25
1-Phase, 230/250V	< 1.0
3-Phase, 110V	< 0.4
3-Phase, 400/440V	< 1.5
Current Rating	Total Burden (VA)
1.0 A	< 0.5
5.0 A	< 0.5

Frequency Meters	
Voltage Rating	Total Burden (VA)
63.5V	< 0.7
110V	< 1.2
230/250V	< 2.5
400/440V	< 4.5

Scale

Watt & Var Meters

Upper limits of measuring range is one of the decimal or subdecimal values from the following,

1, 1.2, 1.5, 2, 2.5, 3, 4, 5, 6, 7.5 & 8.

In the interest of standardisation it is recommended that the maximum value of the measuring range is chosen accordingly. Following examples will illustrate the method of working out these values.

i) Single Phase

V=250V , I = 5A, Cosφ =1

Power = V.I.Cosφ =250x5x1 = 1250W

Maximum limit in this case should be 1200 or 1500W.

ii) Three Phase

V = 110V, PTR = 33k V/110V

I = 5A, CTR = 500/5A, Cosφ= 1

Power = $\sqrt{3}$.V.I.Cosφ.PTR.CTR

Power = $\sqrt{3}x110x5x1x\frac{33x1000}{110}x\frac{500}{5}$

= 28.578x10 = 28.578MW

Maximum limit in this case should be 25MW or 30MW.

Ordering Information

Please give the following details while ordering :

Model :_____

Full Scale Range :_____

CTR :_____

Voltage (Ph-Ph or Ph-N) :_____

PTR (if any) :_____

Connection diagram number:_____

Example :

Model : 96QW32

Full Scale Range : 0-6 MW

CTR : 600/5A

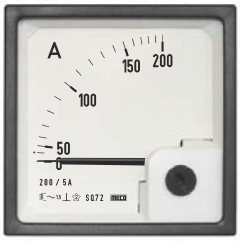
Voltage Ph-Ph : 110V AC

PTR : 6.6KV/110V

Connection diagram number : 4

CE

Interchangeable Scale

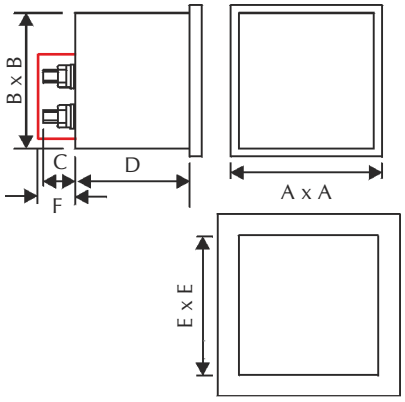


SQ72

SQ96

Model	**SQ72, SQ96**
Description	Moving iron meter of 90° deflection with interchangeable scale facility
Movement Type	Moving iron spring-mounted jewel bearing suspension
Accuracy	±1.5% of full scale as per IS 1248; EN 60051
Self Consumption	Ammeters (upto 5A AC) ≤ 0.6VA; Voltmeters (upto 500V AC) ≤ 5VA
Operating Voltage	600V RMS max.
Test Voltage	2.5KV for 1 minute at 50 Hz
Construction & Design	According to IS 1248; EN 60051
Scale	According to DIN 43802
Case/Housing Material	White ABS, dimensions as per DIN 43700
Bezel	Black ABS, dimensions as per DIN 43718
Glass Faceplate	Flat Glass
Mounting Fasteners/Clamps	Ergonomic easy mountable clamps and nuts for easy installation on Switchboards, Panels, Mosaics etc.
Temperature Conditions	– 10 °C to + 55 °C, RH < 90% (Operating) and – 20 °C to + 70 °C, RH < 90% (Storage) EN60051
Front Protection	IP52 protection as per IS2147
Terminal Protection	Back cover for IP20 terminal protection as per IS2147 (optional)

Dimension and Panel Cutout



— Optional Terminal Protection Cover

Model	**Dimensions (mm)**					
	A	**B**	**C** Max	**D**	**E** $^{+0.8}_{-0.0}$	**F**
SQ72 Voltmeter & Ammeter upto 20A	72	67	17	51.5	68	21
SQ72 Ammeter above 20A	72	67	23	51.5	68	-
SQ96 Voltmeter & Ammeter upto 20A	96	90	17	51.5	92	21
SQ96 Ammeter above 20A	96	90	23	51.5	92	-

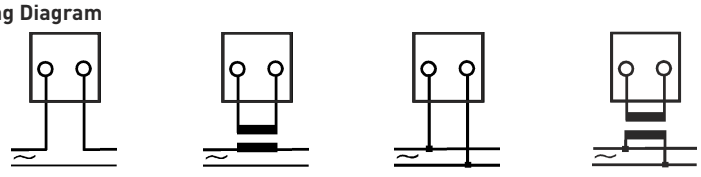
Ammeters						**Voltmeters**		
1 x In (A)		**2 x In (A)**		**6 x In (A)**			**with PT**	
Direct	**with CT**	**Direct**	**with CT**	**Direct**	**with CT**	**Direct**	**Ratio and Scale**	
1A	CTR/5A	1/2A	CTR/5A	1/6A	CTR/5A			
5A	CTR/1A	5/10A	CTR/1A	5/30A	CTR/1A	50V	PTR/63.5V	
10A	10/—	10/20A	10/20/—	10/60A	10/60/—	60V	PTR/110V	10KV/—
15A	15/—	15/30A	15/30/—	15/90A	15/90/—	75V	PTR/230V	15KV/—
20A	20/—	20/40A	20/40/—	20/120A	20/120/—	100V	PTR/250V	20KV/—
25A	25/—	25/50A	25/50/—	25/150A	25/150/—	110V	PTR/400V	25KV/—
30A	30/—	30/60A	30/60/—	30/180A	30/180/—	150V	PTR/440V	30KV/—
40A	40/—	40/80A	40/80/—	40/240A	40/240/—	250V		40KV/—
50A	50/—	50/100A	50/100/—	50/300A	50/300/—	300V	1KV/—	50KV/—
60A	60/—	60/120A	60/120/—	60/360A	60/360/—	500V	1.2KV/—	60KV/—
75A	75/—	75/150A	75/150/—	75/450A	75/450/—	600V	1.5KV/—	75KV/—
80A	100/—	80/160A	100/200/—	80/480A	100/600/—	750V	2KV/—	80KV/—
100A	150/—	100/200A	150/300/—	100/600A	150/900/—		2.5KV/—	100KV/—
	250/—		250/500/—		250/1500/—		3KV/—	and higher
	400/—		400/800/—		400/2400/—		3.5KV/—	
	500/—		500/1000/—		500/3000/—		4KV/—	
	600/—		600/1200/—		600/3600/—		5KV/—	
	1000/—		1000/2000/—		1000/6000/—		6KV/—	
	1500/—		1500/3000/—		1500/9000/—		7.5KV/—	
	and higher		and higher		and higher		8KV/—	

Ordering Information: Model, Input Range, CTR/PTR, Scale

Notes

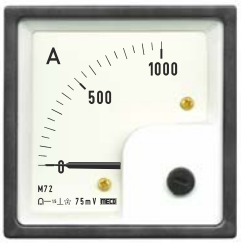
a) Double stamping / non-standard marking available.
b) Gaskets (optional) for vibration proof available.
c) Terminal protection cover (optional) on request for Voltmeter & Ammeter upto 20 A.
d) AC instruments calibrated @ 50Hz. (400Hz on request.)
e) Other ranges subject to technical feasibility.

Wiring Diagram



Ammeter with direct connection | Ammeter with CT | Voltmeter with direct connection | Voltmeter with PT

CE



M72, M96

ML72, ML144

ML96

ML110

Model	M72, M96	ML72, ML96, ML144, ML110
Description	Full Scale deflection 90°	Full Scale deflection 240°
Movement Type	Moving-coil with central magnetic Core; spring-mounted bearing jewel suspension	Moving-coil with central magnetic Core; spring-mounted bearing jewel suspension
Accuracy	± 1.5% of Full Scale	± 1.5% of Full Scale for ML96, ML144, ML110 + 2.5% of Full Scale for ML72
Sensitivity	1000Ω/V (Voltmeter); 200Ω/V (Ammeter)	1000Ω/V (Voltmeter); 200Ω/V (Ammeter)
Operating Voltage	600 V RMS max.	600 V RMS max.
Test Voltage	2.5 KV for 1 minute at 50 Hz	2.5 KV for 1 minute at 50 Hz
Construction & Design	According to IS 1248; EN 60051	According to IS 1248; EN 60051
Scale	According to DIN 43802	Accordingto DIN 43802
Casing	Size 72, 96 ABS Case with Glass Front	Size 72, 96, 144 ABS Case with Glass Front Size 110 ABS Case with Clear Polycarbonate Cover
Dimensions and Panel cutout	Refer Dimensions Page Overleaf	Refer Dimensions Page Overleaf

Ammeters				Voltmeters	
µA	mA	A*	On shunt	mV	V
	1 mA	1 A	—A/60 mV		1 V
	1.5 mA	1.5 A	—A/75 mV		1.5 V
	2 mA	2 A	—A/100 mV		2 V
	2.5 mA	2.5 A			2.5 V
	4 mA	4 A			4 V
	5 mA	5 A	5A/75 mV		5 V
	6 mA	6 A	6A/75 mV		6 V
	10 mA	10 A	10A/75 mV		10 V
	15 mA	15 A	15A/75 mV		15 V
	20 mA	20 A	20A/75 mV		20 V
	25 mA	25 A	25A/75 mV		25 V
	30 mA	30 A	30A/75 mV		30 V
	40 mA	40 A	40A/75 mV		40 V
	50 mA	50 A	50A/75 mV	50 mV	50 V
	60 mA		60A/75 mV	60 mV	60 V
	75 mA		75A/75 mV	75 mV	75 V
100 µA	100 mA		100A/75 mV	100 mV	100 V
150 µA	150 mA		150A/75 mV	150 mV	150 V
250 µA	250 mA		250A/75 mV	250 mV	250 V
400 µA	400 mA		400A/75 mV	400 mV	400 V
500 µA	500 mA		500A/75 mV	500 mV	500 V
600 µA	600 mA		600A/75 mV	600 mV	600 V
800 µA	800 mA		800A/75 mV	800 mV	800 V
			and higher		1000 V

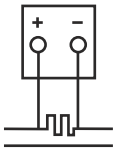
Ordering Information: Model, Input Range, Scale

Notes

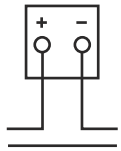
☐ Ranges common to M and ML Series
☐ All other refer to M Series only

* For ML72 DC direct current upto 1A. Above 1A use with external shunt.
a) Double stamping / non-standard / centre zero marking available.
b) Zero supp. DC ammeter for 4-20mA & voltmeter for 1-5V available.
c) Voltmeters with sensitivity 10K Ohms / V available in 90°
d) Rubber gaskets for vibration proof available.
e) Other ranges subject to technical feasibility.
f) Terminal Protection Cover (Optional) on request for all Models except ML144

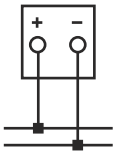
Wiring Diagram



Ammeter on Shunt



Ammeter with direct connection



Voltmeter with direct connection

CE

C72, C96

MLC72, MLC144

MLC96

MLC110

Model	C72, C96	MLC72, MLC96, MLC144, MLC110
Description	Moving Coil measuring instruments with AC rectifier; Full Scale deflection 90°	Moving coil measuring instruments with AC rectifier; Full Scale deflection 240°
Movement Type	Moving-coil with central magnetic Core; spring-mounted bearing jewel suspension	Moving-coil with central magnetic Core; spring-mounted bearing jewel suspension
Accuracy	± 1.5% of Full Scale	± 1.5% of Full Scale for MLC96, MLC144, MLC110 ± 2.5% of Full Scale for MLC72
Operating Voltage	600 V RMS max.	600 V RMS max.
Test Voltage	2.5 KV for 1 minute at 50 Hz	2.5 KV for 1 minute at 50 Hz
Self-Consumption	< 1 VA	< 1 VA
Frequency Range	45 Hz to 1 KHz (Voltmeter & Ammeter) 1 KHz to 10KHz (Voltmeter - Optional)	45 Hz to 1 KHz (Voltmeter & Ammeter) 1 KHz to 10KHz (Voltmeter - Optional)
Construction & Design	According to IS 1248; EN 60051	According to IS 1248; EN 60051
Scale	According to DIN 43802	According to DIN 43802
Casing	Size 72, 96 ABS Case with Glass Front	Size 72, 96, 144 ABS Case with Glass Front Size 110 ABS Case with Clear Polycarbonate Cover
Dimensions and Panel cutout	Refer Dimensions Page Overleaf	Refer Dimensions Page Overleaf

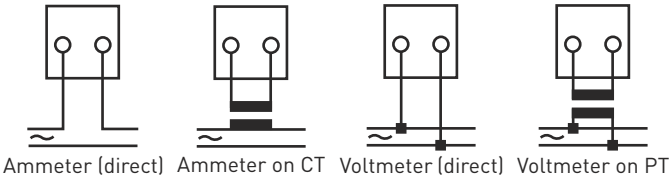
Ammeters @						Voltmeters		
1 x In (A)		2 x In (A)		6 x In (A)			On PT	
Direct	On CT	Direct	On CT	Direct	On CT	Direct	Ratio and Scale	
1A	(/-)	1/2 A	(/-)	1/6 A	(/-)			
5A	(5A or 1A)	5/10A	(5A or 1A)	5/30 A	(5A or 1A)		-V/63.5 V	
	10/-		10/20/-		10/60/-	10 V	-V/110 V	10 KV
	15/-		15/30/-		15/90/-	15 V	-V/230 V	15 KV
	20/-		20/40/-		20/120/-	20 V	-V/250 V	20 KV
	25/-		25/50/-		25/150/-	25 V	-V/400 V	25 KV
	30/-		30/60/-		30/180/-	30 V	-V/440 V	30 KV
	40/-		40/80/-		40/240/-	40 V		40 KV
	50/-		50/100/-		50/300/-	50 V	1 KV	50 KV
	60/-		60/120/-		60/360/-	60 V	1.2 KV	60 KV
	75/-		75/150/-		75/450/-	75 V	1.5 KV	75 KV
	100/-		100/200/-		100/600/-	100 V	2 KV	100 KV
	150/-		150/300/-		150/900/-	150 V	2.5 KV	
	250/-		250/500/-		250/1500/-	250 V	3 KV	
	400/-		400/800/-		400/2400/-	400 V	3.5 KV	
	500/-		500/1000/-		500/3000/-	500 V	4 KV	
	600/-		600/1200/-		600/3600/-	600 V	5 KV	
	1000/-		1000/2000/-		1000/6000/-	750 V	6 KV	
	1500/-		1500/3000/-		1500/9000/-	800 V	7.5 KV	
	and higher		and higher		and higher	1000 V	8 KV	

Ordering Information: Model, Input, CTR/PTR, Scale

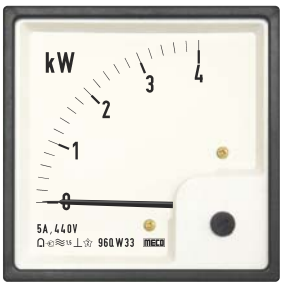
Notes

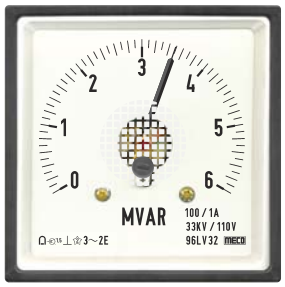
a) Double stamping / non-standard marking available.
b) Rectifier type meters caliberated for AC sine wave.
c) Rubber gaskets for vibration proof available.
d) AC instruments normally caliberated at 50 Hz.
e) Other ranges available subject to technical feasibility.
f) Terminal Protection Cover (Optional) on request for all Models except MLC144
@ From 1mA to 750mA (50Hz) are also available

Wiring Diagram



CE





Rated Accuracy : ± 1.5% of F.S. for Watt & Var Meter (standard)
± 1.0% of F.S. for Watt & Var Meter(optional)
± 2^0 Phase Angle for Powerfactor Meter
± 1% of Full Scale for Frequency Meter

Test Voltage : 2.5KVAC for 1 min. @ 50 Hz, 4KV AC (optional)

Insulation Resistance : Over 20MOhm at 500V DC

Power Supply : Self-Powered

Casing : Size 72, 96, 144 ABS Case with Glass Front
Size 110 ABS Case with Clear Polycarbonate Cover

Continuous Over Load : 1.2 Times Rated Current / Voltage

Deflection			90^0			240^0			
Size in mm			72x72	96x96	144x144	72x72	96x96	110x110	144x144
Scale Length (mm)			60	90	140	110	155	175	230
System	Current Range (Amp)	Voltage Range (Volt)							
Watt Meters & Var Meters			Model Codes						
1 Phase 1 Element	1,5,10	63.5, 230	*72QW11 *72QV11	96QW11 96QV11	144QW11 144QV11	*72LW11 *72LV11	96LW11 96LV11	*110LW11 *110LV11	144LW11 144LV11
3 Phase 1 Element Balanced Load only	1,5,10	110, 440	*72QW31 *72QV31	96QW31 96QV31	144QW31 144QV31	*72LW31 *72LV31	96LW31 96LV31	*110LW31 *110LV31	144LW31 144LV31
3 Phase 2 Element [3 Wire] Balanced or Unbalanced Load	1, 5	110, 440	*72QW32 *72QV32	96QW32 96QV32	144QW32 144QV32	*72LW32 *72LV32	96LW32 96LV32	*110LW32 *110LV32	144LW32 144LV32
3 Phase 3 Element [4 Wire] Balanced or Unbalanced Load	1, 5	$110/\sqrt{3}$ $440/\sqrt{3}$	*72QW33 *72QV33	96QW33 96QV33	144QW33 144QV33	*72LW33 *72LV33	96LW33 96LV33	*110LW33 *110LV33	144LW33 144LV33
Powerfactor & Phase Angle Meter									
Single Phase	1, 5	63.5, 230	#72QF11	96QF11	144QF11	#72LF11	96LF11	110LF11	144LF11
3 Phase Balanced Load	1, 5	110, 440	#72QF31	96QF31	144QF31	#72LF31	96LF31	110LF31	144LF31
Frequency Meter									
40 - 60 Hz, 45 - 55 Hz, 45 - 65 Hz, 55 - 65 Hz, 360 - 440 Hz	NA	63.5, 110, 240, 440	F72	F96	F144	#FL72	FL96	FL110	FL144

Notes

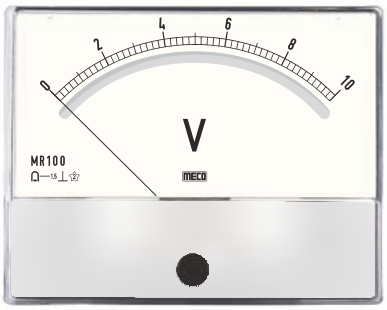
* These Meters supplied with DIN Series Power Line Transducers.
# These Meters Supplied with External Box. (Refer Dimension Page, Drawing 5)
● Meters with Dual scale / Tripple scale stamping can be supplied.
● Rubber Gaskets for vibration protection available on request.
● Meters with centre zero or offset zero scale can be supplied.
● Other Voltage and Current ranges available subject to technical feasibility.

Ordering Information : Model, Input Voltage, Input Current, CTR / PTR, Scale, Accuracy Class

CE

MR60, CR60

MR65, CR65



MR100, CR100

MR120, CR120

Model	**MR60, MR65, MR100, MR120**	**CR60, CR65, CR100, CR120**
Description	DC Ammeters and Voltmeters full scale deflection 90^0	AC Ammeters and Voltmeters full scale deflection 90^0
Movement Type	Moving coil, central magnetic core, spring mounted bearing jewel suspension.	Moving coil, central magnetic core, spring mounted bearing jewel suspension with rectifier circuit.
Accuracy	± 1% of Full Scale for MR120 ± 1.5% of Full Scale for MR100 ± 2.5% of Full Scale for MR60, MR65	± 1.5% of Full Scale for CR100, CR120 ± 2.5% of Full Scale for CR60, CR65
Sensitivity	1000Ω / V (Voltmeter); 200Ω / V (Ammeter)	-
Operating Voltage	600 V RMS max.	600 V RMS max.
Test Voltage	2.5 KV for 1 minute at 50 Hz	2.5 KV for 1 minute at 50 Hz
Frequency	----	45Hz to 1KHz (Volt), 45-100Hz (Amp)
Construction & Design	According to IS 1248; EN 60051	According to IS 1248; EN 60051
Scale	According to DIN 43802	According to DIN 43802
Casing	ABS case with Clear Polycarbonate Cover	ABS case with Clear Polycarbonate Cover
Dimensions and Panel cutout	Refer Dimensions Page Overleaf	Refer Dimensions Page Overleaf

DC Ranges : MR Series

Ammeters*						Voltmeters		
µA	mA		A*	On Shunt		mV	V	
	1 mA	50 mA	1 A	—A/60 mV	50A/75 mV	50 mV	1 V	50 V
	1.5 mA	60 mA	1.5 A	—A/75 mV	60A/75 mV	60 mV	1.5 V	60 V
	2 mA	75 mA	2 A	—A/100 mV	75A/75 mV	75 mV	2 V	75 V
100 µA	2.5 mA	100 mA	2.5 A		100A/75 mV	100 mV	2.5 V	100 V
150 µA	4 mA	150 mA	4 A		150A/75 mV	150 mV	4 V	150 V
250 µA	5 mA	250 mA	5 A	5A/75 mV	250A/75 mV	250 mV	5 V	250 V
400 µA	6 mA	400 mA	6 A	6A/75 mV	400A/75 mV	400 mV	6 V	400 V
500 µA	10 mA	500 mA	10 A *	10A/75 mV	500A/75 mV	500 mV	10 V	500 V
600 µA	15 mA	600 mA	15 A	15A/75 mV	600A/75 mV	600 mV	15 V	600 V
	20 mA		20 A	20A/75 mV	and higher		20 V	
	25 mA		25 A	25A/75 mV			25 V	
	30 mA		30 A	30A/75 mV			30 V	
	40 mA		40 A	40A/75 mV			40 V	
			50 A					

* MR60 direct upto 10A DC only. Above 10A use with external shunt.

AC Ranges : CR Series

Ammeters @									Voltmeters				
1 x In (A)			2 x In (A)			6 x In (A)					On PT		
Direct	On CT		Direct	On CT		Direct	On CT		Direct		Ratio and Scale		
	(/-) (5A or 1A)			(/-) (5A or 1A)			(/-) (5A or 1A)				-V/63.5 V		
1 A	10/-	100/-	1/2 A	10/20/-	100/200/-	1/6 A	10/60/-	100/600/-	10 V	100 V	-V/110 V	2 KV	10 KV
5 A	15/-	150/-	5/10 A	15/30/-	150/300/-	5/30 A	15/90/-	150/900/-	15 V	150 V	-V/230 V	2.5 KV	15 KV
	20/-	250/-		20/40/-	250/500/-		20/120/-	250/1500/-	20 V	250 V	-V/250 V	3 KV	20 KV
	25/-	400/-		25/50/-	400/800/-		25/150/-	400/2400/-	25 V	400 V	-V/400 V	3.5 KV	25 KV
	30/-	500/-		30/60/-	500/1000/-		30/180/-	500/3000/-	30 V	500 V	-V/440 V	4 KV	30 KV
	40/-	600/-		40/80/-	600/1200/-		40/240/-	600/3600/-	40 V	600 V		5 KV	40 KV
	50/-	1000/-		50/100/-	1000/2000/-		50/300/-	1000/6000/-	50 V		1 KV	6 KV	50 KV
	60/-	1500/-		60/120/-	1500/3000/-		60/360/-	1500/9000/-	60 V		1.2 KV	7.5 KV	60 KV
	75/-	and higher		75/150/-	and higher		75/450/-	and higher	75 V		1.5 KV	8 KV	75 KV

@ From 100mA to 5A AC, use with External CT Box, supplied with the instrument.

Ordering Information : Model, Input range, Scale, CTR/PTR

Notes

a) Double stamping /non-standard / centre zero marking available. b) Zero suppressed DC ammeter for 4-20mA and voltmeter for 1-5V available.
c) DC Voltmeters with sensitivity 10 K Ohms / V available. d) Other ranges available subject to technical feasibility.

Moving Coil Educational Desk Stand Meters

MECO Educational Desk Stand Meters are ideal for laboratory use. These meters are made of an unbreakable ABS desk stand with two or three terminals and fitted with MR65, MR100, CR65 or CR100 meters.

MR65EDM

MR100EDM

Model	MR65EDM (DC)	MR100EDM (DC)
Accuracy	±2.5% of Full Scale	±1.5% of Full Scale
Scale Length	68mm	80mm

Ranges	MR65EDM / MR100EDM
Microamps	0-100µA to 0-1000µA
Milliamps	0-1mA to 0-1000mA
Amps	0-1A to 0-30A
Millivolts	0-50mV to 0-1000mV
Volt	0-1V to 0-1000V
Galvanometer	30-0-30 G or 50-0-50 G with 2 µA/Div or 20 µA/Div

Note : Dual ranges available subject to techincal feasibility.

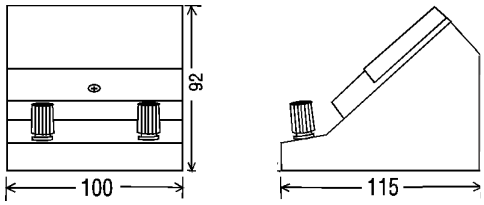
CR65EDM

CR100EDM

Model	CR65EDM (AC)	CR100EDM (AC)
Accuracy	±2.5% of Full Scale	±1.5% of Full Scale
Scale Length	68mm	80mm

Ranges	CR65EDM / CR100EDM
Microamps	----
Milliamps	0-1mA to 0-1000mA
Amps	0-1A to 0-5A
Millivolts	----
Volt	0-10V to 0-1000V
Galvanometer	----

Dimension (mm)



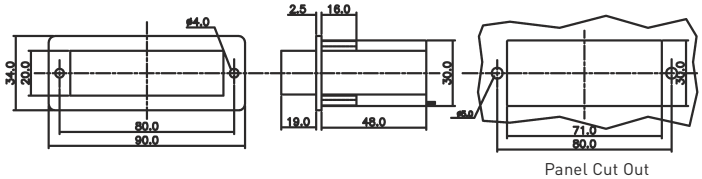
Moving Coil Panel Meters

CE

DC : ME70, AC : CE70

Casing : Clear transparent Polycarbonate Cover
Accuracy : ±2.5% of Full Scale
Ranges & details : Similar to models MR60 and CR60, Current Range max. 1.5 A
Scale Length : 52mm

Dimensions (mm)

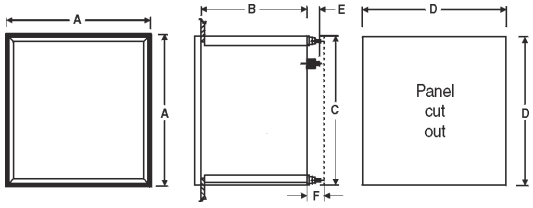


MODELS	SCALE LEHGTH (mm)	REFER DRAWING	A	B	C	D	E	F	EXT. BOX # DRAWING
SQ72 (VOLTMETER & AMMETER UPTO 20A)	64	1	72	51.5	67	68	17	19	-
SQ72 (AMMETER ABOVE 20A)	64	1	72	51.5	67	68	23	19	-
M72,F72,C72, (72QF11,31)	60	1	72	37	66	68	13	19.5	5
72QW11,31,32,33, (72QV11,31,32,33)	60	1	72	37	66	68	13	19.5	4
72LW11,31,32,33, (72LV11,31,32,33)	110	1	72	37	66	68	13	22	4
ML72,MLC72 (Voltmeter),72LF11(#),72LF31(#),FL72(#)	110	1	72	37	66	68	13	22	-
MLC72 (Ammeter)	110	1	72	62	66	68	16	18	-
SQ96 (VOLTMETER & AMMETER UPTO 20A)	97	1	96	51.5	90	92	17	19	-
SQ96 (AMMETER ABOVE 20A)	97	1	96	51.5	90	92	23	19	-
M96 (Above 10A, E=18)	90	1	96	30	90	92	13	19.5	-
96QW11,31,32,33, (96QV11,31,32,33)	90	1	96	102	90	92	16	12	-
96LW11,31,32,33, (96LV11,31,32,33), 96LF11,31,FL96	155								
C96,96QF11,31,F96,M96 (4-20mA DC)	90	1	96	48	90	92	13	19.5	-
ML144,MLC144,144LF11,31,FL144	230	1	144	54	136	138	4	19	-
144QF11,31,F144	140	1	144	66	136	138	16	14	-
144QW11,31,32,33 (144QV11,31,32,33)	140	2	144	116	136	138	-	-	-
144LW11,31,32,33 (144LV11,31,32,33)	230	2	144	103	136	138	-	-	-
ML110,MLC110,110LF11,31,FL110	175	3	----As Per Drawing----						-
110LW,11,31,32,33, (110LV11,31,32,33)	175	3							4
ML96/MLC96 (Above 10A, E=18)	155	1	96	48	90	92	13	22	-

MODELS	SCALE LENGTH (mm)	REFER DRAWING	A	B	C	D	E	F	G	H	I	J	L	O	R	EXT. BOX # DRAWING
MR60,CR60	57	6	60	60	33	24	48	48	51.5	12	-	-	54	4BA	4.5	5 (CR60)
MR65,CR65	68	6	81	81	33	22	64	64	64	12	-	-	67	4BA	4.5	5 (CR65)
MR100,CR100	80	6	100	80	34	21	84	64	63	12	-	7	67	4BA	4.5	5 (CR100)
MR120,CR120	96	6	120	100	38	25	100	80	65	12	-	16	67	4BA	4.5	5 (CR120)

Dimensions (mm)

1



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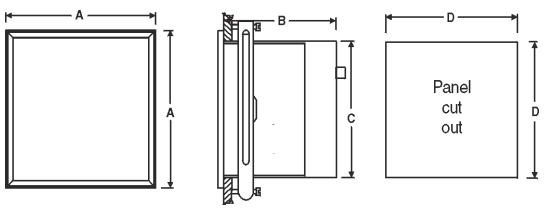

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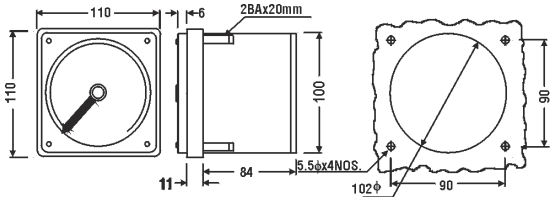
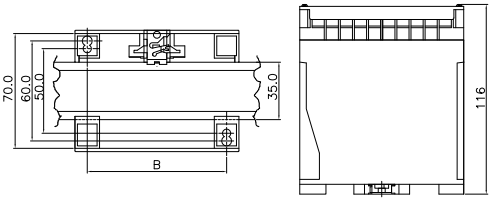
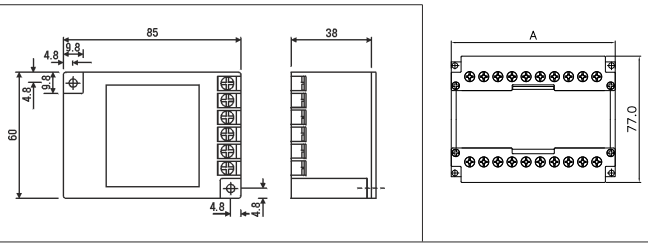


4 Dimension of DIN Series Power Line Transducers

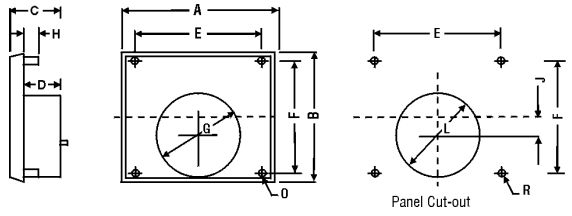
Case Size	A	B
I	75	60
II	100	85
III	150	135



5



6



Note : # For ranges greater than 100 mA & upto 5A AC use Models CR60, CR65, CR100, CR120, 72LF11,72LF31,FL72 & C72 with External CT Box supplied with the instruments (Drawing 5).

MECO®
SINCE 1962

Digital Multimeters

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- ✓ Professional Type

+60 YEARS
ONE MISSION

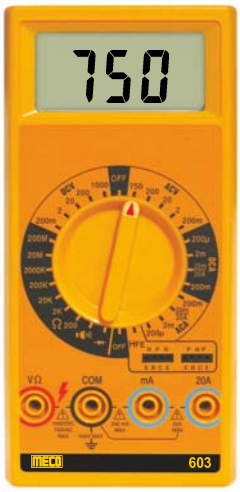
Reliable Long-Lasting Affordable

3½ Digits 2000 Counts Manual Ranging Digital Multimeters
4½ Digits 20000 Counts Manual Ranging Digital Multimeter

new

CE

63+



603

45CF

3½ Digit 2000 Counts, Audiable Continuty, Diode, hFE Test, Backlight, Data Hold & Battery Test	
Ranges	
DC Voltage	200mV/2/20/200/1000V
Accuracy	±(0.5% rdg + 3 dgt) 200mV ±(0.8% rdg + 5 dgt) 2V, 20V, 200V ±(1.0% rdg + 5 dgt) 1000V
AC Voltage	200/750V (45~450Hz)
Accuracy	± (2.0% rdg + 10 dgt)
DC Current	200 µA/2mA/20mA/ 200mA/10A
Accuracy	±(1.8% rdg + 2 dgt) 200µA, 2mA, 20mA ±(2.0% rdg + 2 dgt) 200mA ±(2.0% rdg + 10 dgt) 10A
Battery Test	Ranges : 1.5V, 9V Resolution : 1mV, 10mV Internal Resistance : 10.5Ω ± 1.0Ω, 780Ω ± 200Ω
Resistance	200Ω/2kΩ/20kΩ/200kΩ/ 2MΩ
Accuracy	±(1.0%rdg+4dgt) on all ranges, except ±(1%rdg+10dgt) on 200Ω
Sp. Function	Audible Continuity, Battery Test, Diode Test, hFE Test
Power	Two 1.5V "AAA" Battery
Low Battery	" [-+] " is indicated
Battery Life	200 hours typical
Dimensions	160 x 76 x 32mm (approx.)
Weight	155gms Including Battery (approx)
Accessories	One Pair of Test Leads, Battery (installed), Instruction Manual

3½ Digit 2000 Counts, 17mm Large LCD, Audiable Continuty, Diode & hFE Test	
Ranges	
DC Voltage	200mV/2/20/200/1000V
Accuracy	±(0.5%rdg+1dgt) on all ranges
AC Voltage	200mV/2/20/200/750V (50~500Hz)
Accuracy	±(1%rdg+4dgt) on all ranges except ±(1.5%rdg+4dgt) on 750V
DC Current	200µA/2mA/20mA/ 200mA/20A
Accuracy	±(1%rdg+1dgt) on all ranges except ±(2%rdg+3dgt) on 20A
AC Current	200µA/2mA/20mA/ 200mA/20A (50~500Hz)
Accuracy	±(1.2%rdg+4dgt) on all ranges except ±(2%rdg+4dgt) on20A
Resistance	200Ω/2kΩ/20kΩ/200kΩ/ 2000kΩ/20MΩ/200MΩ
Accuracy	±(0.8%rdg+1dgt) on all ranges, except ±(1%rdg+3dgt) on 200Ω ±(3%rdg+3dgt) on 20MΩ ±(5%rdg+10dgt) on 200MΩ
Sp. Function	Audible Continuity, Diode Test, hFE Test
Power	One 9V battery
Low Battery	" [-+] " is indicated
Battery Life	200 hours typical
Dimensions	170 x 80 x 43mm (approx.)
Weight	240gms Including Battery(approx.)
Accessories	One Pair of Test Leads, Carrying Case, Battery (installed), Instruction Manual and Spare Fuse

4½ Digit 20000 Counts, Large LCD, Capacitance, Frequency, hFE, Infrared Remote Control Check, Live Wire Check, APO	
Ranges	
DC Voltage	200mV/2/20/200/1000V
Accuracy	±(0.05%rdg+5dgt) on all ranges except ±(0.1%rdg+5dgt) on 1000V
AC Voltage	200mV/2/20/200/750V
Accuracy	±(0.8%rdg+10dgt) on all ranges except ±(1.0%rdg +15dgt) on 750V
DC Current	2mA/20/200mA/20A
Accuracy	±(0.5%rdg+5dgt) on 2/20mA ±(0.8%rdg+5dgt) on 200mA ±(2.0%rdg+10dgt) on 20A
AC Current	20/200mA/20A
Accuracy	±(0.8%rdg+10dgt) on 20/200mA ±(3%rdg+10dgt) on 20A
Resistance	200Ω/2/20/200kΩ/2/20MΩ
Accuracy	±(0.4%rdg+5dgt) ±(0.8%rdg+5dgt) on 20MΩ
Capacitance	20/200nF/2/200µF
Accuracy	±(3%rdg+10dgt) ±(5%rdg+10dgt) on 200µF
Frequency	20kHz
Accuracy	±(1.5%rdg+5dgt)
Sp. Function	Diode, Continuity, Data Hold, hFE, Capacitance, Hz, Infrared Remote Control Check, Live Wire Check, APO
Power	One 9V battery
Low Battery	" [-+] " Indicated
Battery Life	150 hours typical
Dimensions	182 x 90 x 60 mm (approx.)
Weight	365gms Including Battery (app.)
Accessories	One Pair of Test Leads, Battery (installed), Inst.Manual & Holster

CE

801 JUNIOR

603 JUNIOR

TORCH LIGHT

HOLSTER WITH MAGNET

TEST LEAD GRIPPER

TRMS, Auto Ranging, 6000 Counts LCD with Backlight, Torchlight, APO, Capacitance, Frequency, Duty Cycle, NCV (LED, Buzzer & EF Strength), Temperature & Holster with Magnet

Ranges	
DC Voltage	60 / 600mV / 6 / 60 / 600 / 1000V
Accuracy	± (0.8% rdg + 5 dgt)
AC Voltage TRMS	60 / 600mV / 6 / 60 / 600 / 750V
Accuracy	± (1.0% rdg + 10 dgt) on 60 / 600mV ± (1.0% rdg + 4 dgt) on all other ranges
AC Response	40Hz ~ 1KHz
DC Current	60 / 600mA / 6 / 10A
Accuracy	± (1.2% rdg + 4 dgt) on 60 / 600mA ± (3.0% rdg+ 2 dgt) on 6A ±(5.0% rdg +10 dgt) on 10A
AC Current TRMS	60 / 600mA / 6 / 10A
Accuracy	± (1.5% rdg + 3 dgt) on 60 / 600mA ± (3.0% rdg + 5 dgt) on 6A ±(5.0% rdg +10 dgt) on 10A
AC Response	40Hz ~ 1KHz
Resistance	600Ω / 6 / 60 / 600KΩ / 6 / 60MΩ
Accuracy	± (0.8% rdg + 5 dgt)
Capacitance	60.00 / 600.0nF / 6.000 / 60.00 / 600.0µF / 6.000 / 60.00 / 100.0mF
Accuracy	± (3.0% rdg + 5 dgt) on all ranges except ± (5.0% rdg + 20 dgt) on 60.00 nF ± (5.0% rdg + 5 dgt) on 60.00 / 100.0 mF
Frequency	60.00 / 600.0Hz / 6.000 / 60.00 / 600.0KHz / 6.000 / 10.00MHz
Sensitivity	200mV to 10V AC
Accuracy	± (1.5% rdg + 5 dgt)
Duty Cycle	1% ~ 99%
Accuracy	± (1.5% rdg + 5 dgt)
Temperature	-20°C ~ 1000°C / -4°F ~ 1832°F
Accuracy	± (1.0% rdg + 3 dgt)
Measuring Category	CAT II 600V
SP Function	Diode Test, Data Hold, Continuity Test / NCV Test (LED, Buzzer & EF Strength),
Power	Three 1.5V 'AAA' Battery
Low Battery	'🔋' is indicated
Battery Life	200 hours typical
Dimensions	147 x 71 x 45mm (approx.)
Weight	230gms Including Battery (approx.)
Accessories	One Pair of Test Leads, Spare Fuse (0.6A/250V) x 2, Holster, Battery (installed), Instruction Manual & K Type Thermocouple (upto 260°C)

Manual Ranging, 2000 Counts LCD with Backlight, Torchlight, APO, NCV (LED, Buzzer & EF Strength), HFE & Holster with Magnet

Ranges	
DC Voltage	200mV / 2 / 20 / 200 / 1000V
Accuracy	± (0.5% rdg + 5 dgt)
AC Voltage	200 / 750V
Accuracy	± (1.2% rdg + 10 dgt)
AC Response	40Hz ~ 400Hz
DC Current	200mA / 10A
Accuracy	± (1.0% rdg + 5 dgt) on 200mA ± (3.0% rdg+ 2 dgt) on 10A
AC Current	200mA / 10A
Accuracy	± (3.0% rdg + 2 dgt)
AC Response	40Hz ~ 400Hz
Resistance	200Ω / 2 / 200KΩ / 2 / 20MΩ
Accuracy	± (1.0% rdg + 3 dgt)
Measuring Category	CAT II 600V
SP Function	Diode Test, Data Hold, Continuity Test / NCV Test (LED, Buzzer & EF Strength)
Power	Three 1.5V 'AAA' Battery
Low Battery	'🔋' is indicated
Battery Life	200 hours typical
Dimensions	147 x 71 x 45mm (approx.)
Weight	230gms Including Battery (approx.)
Accessories	One Pair of Test Leads, Spare Fuse (0.2A/250V) x 2, Holster, Battery (installed) & Instruction Manual

Accessories

K Type Bead Probe (upto 260 °C)
Model : TPK-B

K Type Stick Probe (upto 500°C)
Model : TP-02

Pair of Test Leads suitable for DMM/DTT
Model : TL-DMM/DTT

Pair of Test Leads suitable for Insulation Tester
Model : TL-IT

3¾ Digits 4000 Counts Autoranging Digital Multimeter (Pocket Size)
3⅝ Digits 6000 Counts Autoranging Digital Multimeter - TRMS (Pocket Size)

CE

101B+

108B+TRMS

Pocket Size

Auto Ranging, 3¾ Digits 4000 Counts LCD with Backlight, APO, Capacitance, REL Δ Frequency, Duty Cycle	
Ranges	
DC Voltage	400mV / 4 / 40 / 400 / 1000V
Accuracy	± (0.5% rdg + 4 dgt) on 400mV / 4 / 40 / 400V
	± (0.8% rdg + 4 dgt) on 1000V
AC Voltage	4 / 40 / 400 / 750V
Accuracy	± (1.2% rdg + 4 dgt) on all ranges except
	± (1.5% rdg+4 dgt) on 750V
AC Response	40Hz ~ 400Hz
DC Current	40 / 400mA / 4 / 10A
Accuracy	± (1.0% rdg + 4 dgt) on 40 / 400mA
	± (1.5% rdg + 4 dgt) on 4 / 10A
AC Current	40 / 400mA / 4 / 10A
Accuracy	± (2.0% rdg + 4 dgt)
AC Response	40Hz ~ 200Hz
Resistance	400Ω / 4 / 40 / 400KΩ / 4 / 40MΩ
Accuracy	± (0.8% rdg + 4 dgt) on all ranges except
	± (2.0% rdg + 4 dgt) on 40MΩ
Capacitance	4.000 / 40.00 / 400.0nF / 4.000 / 40.00 / 200.0µF
Accuracy	± (3.5% rdg + 4 dgt) on all ranges except
	± (2.5% rdg + 4 dgt) on 40.00nF
	± (5.0% rdg + 4 dgt) on 4.000nF
Frequency	99.99Hz ~ 10.00MHz
Sensitivity	1V to 36V AC
Accuracy	±(0.08% rdg + 2 dgt)
Duty Cycle	0.1% ~ 99.9%
Sensitivity	1V to 36V AC
Accuracy	± (0.08% rdg + 2 dgt)
Measuring Category	CAT III 600V, CAT II 1000V
SP Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AAA' Battery
Low Battery	'🪫' is indicated
Battery Life	200 hours typical
Dimensions	130 x 65 x 32mm (approx.)
Weight (approx.)	130gms Including Battery
Accessories	One Pair of Test Leads, Battery (installed) & Instruction Manual

TRMS, Auto Ranging, 3⅝ Digits 6000 Counts LCD with Backlight, APO, Capacitance, Frequency, Duty Cycle, Temperature	
Ranges	
DC Voltage	60 / 600mV / 6 / 60 / 600 / 1000V
Accuracy	± (1.0% rdg + 10 dgt) on 60 / 600mV
	± (0.5% rdg + 3 dgt) on 6 / 60 / 600 / 1000V
AC Voltage TRMS	60 / 600mV / 6 / 60 / 600 / 750V
Accuracy	± (1.0% rdg + 3 dgt) on all ranges except
	± (3.0% rdg + 3 dgt) on 60 / 600mV
AC Response	1Hz ~ 1KHz
DC Current	60 / 600mA / 6 / 10A
Accuracy	± (1.5% rdg+3 dgt)
AC Current TRMS	60 / 600mA / 6 / 10A
Accuracy	± (1.5% rdg + 3 dgt)
AC Response	1Hz ~ 1KHz
Resistance	600Ω / 6 / 60 / 600KΩ / 6 / 60MΩ
Accuracy	± (0.5% rdg + 3 dgt) on 600Ω
	± (0.5% rdg + 2 dgt) on 6 / 60 / 600kΩ / 6MΩ
	± (1.5% rdg + 3 dgt) on 60MΩ
Capacitance	9.999 / 99.99 / 999.9nF / 9.999 / 99.99 / 999.9µF / 9.999mF
Accuracy	± (2.0% rdg + 5 dgt) on all ranges except
	± (5.0% rdg + 5 dgt) on 9.999mF
	± (5.0% rdg + 20 dgt) on 9.999nF
Frequency	99.99Hz ~ 10.00MHz
Accuracy	±(0.08% rdg + 2 dgt)
Duty Cycle	0.1% ~ 99.9%
Accuracy	± (0.08% rdg + 2 dgt)
Temperature	-20°C ~ 1000°C / -4°F ~ 1832°F
Accuracy	±(1.0% rdg + 5 dgt) on <400°C / <752°F
	±(1.5% rdg + 15 dgt) on >400°C / >752°F
Measuring Category	CAT III 600V, CAT II 1000V
SP Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AAA' Battery
Low Battery	'🪫' is indicated
Battery Life	200 hours typical
Dimensions	130 x 65 x 32mm (approx.)
Weight (approx.)	130gms Including Battery
Accessories	One Pair of Test Leads, Battery (installed), Instruction Manual & K Type Thermocouple (upto 260°C)

CE

153B+TRMS

171B+TRMS

TRMS, Auto Ranging, 3⅝ Digits 6000 Counts LCD with Backlight, APO, Capacitance, Frequency, Duty Cycle & Holster

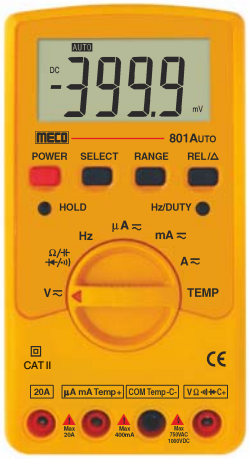
Ranges	
DC Voltage	60 / 600mV / 6 / 60 / 600 / 1000V
Accuracy	± (1.0% rdg + 4 dgt) on 60 / 600mV ± (0.5% rdg + 2 dgt) on 6 / 60 / 600V ± (1.0% rdg + 3 dgt) on 1000V
AC Voltage TRMS	60 / 600mV / 6 / 60 / 600 / 750V
Accuracy	± (1.0% rdg + 5 dgt) on all ranges except ± (1.2% rdg + 5 dgt) on 60 / 600mV ± (1.5% rdg + 5 dgt) on 750V
AC Response	40Hz ~ 1KHz
DC Current	600 / 6000μA / 60 / 600mA / 6 / 20A
Accuracy	± (1.0% rdg + 2 dgt) on 600 / 6000μA ± (1.2% rdg + 3 dgt) on 60 / 600mA ± (1.5% rdg+ 5 dgt) on 6 / 20A
AC Current TRMS	600 / 6000μA / 60 / 600mA / 6 / 20A
Accuracy	± (1.5% rdg + 5 dgt) on 600 / 6000μA ± (2.0% rdg + 5 dgt) on 60 / 600mA ± (2.5% rdg + 5 dgt) on 6/20A
AC Response	40Hz ~ 1KHz
Resistance	600Ω / 6 / 60 / 600KΩ / 6 / 60MΩ
Accuracy	± (1.2% rdg + 2 dgt) on 600Ω & 6MΩ ± (1.0% rdg + 2 dgt) on 6 / 60 / 600kΩ ± (1.5% rdg + 2 dgt) on 60MΩ
Capacitance	9.999 / 99.99 / 999.9nF / 9.999 / 99.99 / 999.9μF / 9.999mF
Accuracy	± (2.0% rdg + 4 dgt) on all ranges except ± (3.0% rdg + 4 dgt) 9.999mF
Frequency	99.99Hz ~ 10.00MHz
Sensitivity	1V ~ 36V AC
Accuracy	±(0.05% rdg + 4 dgt)
Duty Cycle	0.1% ~ 99.9%
Sensitivity	1V ~ 36V AC
Accuracy	± (0.05% rdg + 4 dgt)
Measuring Category	CAT III 1000V, CAT IV 600V
SP Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AA' Battery
Low Battery	'🔋' is indicated
Battery Life	200 hours typical
Dimensions	180 x 90 x 52mm (approx.)
Weight	370gms Including Battery (app.)
Accessories	One Pair of Test Leads, Holster, Battery (installed) & Instruction Manual

TRMS, Auto / Manual, 3⅝ Digits 6000 Counts LCD with Backlight, APO, Capacitance, REL Δ, Max / Min, Frequency, Duty Cycle, Temperature & Holster

Ranges	
DC Voltage	60 / 600mV / 6 / 60 / 600 / 1000V
Accuracy	± (1.0% rdg + 4 dgt) on 60 / 600mV ± (0.5% rdg + 2 dgt) on 6 / 60 / 600V ± (1.0% rdg + 3 dgt) on 1000V
AC Voltage TRMS	60 / 600mV / 6 / 60 / 600 / 750V
Accuracy	± (1.0% rdg + 5 dgt) on all ranges except ± (1.2% rdg + 5 dgt) on 60 / 600mV ± (1.5% rdg + 5 dgt) on 750V
AC Response	40Hz ~ 1KHz
DC Current	600 / 6000μA / 60 / 600mA / 6 / 20A
Accuracy	± (1.0% rdg + 2 dgt) on 600 / 6000μA ± (1.2% rdg + 3 dgt) on 60 / 600mA ± (1.5% rdg+ 5 dgt) on 6 / 20A
AC Current TRMS	600 / 6000μA / 60 / 600mA / 6 / 20A
Accuracy	± (1.5% rdg + 5 dgt) on 600 / 6000μA ± (2.0% rdg + 5 dgt) on 60 / 600mA ± (2.5% rdg + 5 dgt) on 6 / 20A
AC Response	40Hz ~ 1KHz
Resistance	600Ω / 6 / 60 / 600KΩ / 6 / 60MΩ
Accuracy	± (1.2% rdg + 2 dgt) on 600Ω & 6MΩ ± (1.0% rdg + 2 dgt) on 6 / 60 / 600kΩ ± (1.5% rdg + 2 dgt) on 60MΩ
Capacitance	9.999 / 99.99 / 999.9nF / 9.999 / 99.99 / 999.9μF / 9.999mF
Accuracy	± (2.0% rdg + 4 dgt) on all ranges except ± (3.0% rdg + 4 dgt) on 9.999mF
Frequency	99.99Hz ~ 10.00MHz
Accuracy	±(0.05% rdg + 4 dgt)
Duty Cycle	0.1% ~ 99.9%
Accuracy	± (0.05% rdg + 4 dgt)
Temperature	-40°C ~ 1000°C / -40°F ~ 1832°F
Accuracy	± (3.0% rdg + 4 dgt) on -40°C ~ 0°C / -40°F ~32°F ± (1.0% rdg + 3 dgt) on 0°C ~ 400°C / 32°F ~ 750°F ± (2.0% rdg + 5dgt) on 400°C ~ 1000°C / 750°F ~ 1832°F
Measuring Category	CAT III 1000V, CAT IV 600V
SP Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AA' Battery
Low Battery	'🔋' is indicated
Battery Life	200 hours typical
Dimensions	180 x 90 x 52mm (approx.)
Weight	370gms Including Battery (approx.)
Accessories	One Pair of Test Leads, Holster, Battery (installed), Instruction Manual & K Type Thermocouple (upto 260°C)

CE

9A06



801AUTO

Auto / Manual, 3½ Digit, 2000 Counts LCD, APO & Temperature

Ranges	
DC Voltage	200mV/2/20/200/1000V
Accuracy	± (0.5%rdg + 4dgt) on 200mV & 2V, ± (0.7%rdg + 4dgt) on 20V & 200V, ± (1%rdg + 4dgt) on 1000V
AC Voltage	200mV/2/20/200/750V (200mV Manual only)
Accuracy	± (1.0%rdg + 8dgt) on all ranges except ± (1.5%rdg + 8dgt) on 750V
DC Current	200/2000µA/20/200mA/2/10A
Accuracy	± (1.5%rdg + 4dgt)
AC Current	200/2000µA/20/200mA/2/10A
Accuracy	± (2.2%rdg + 4dgt)
Resistance	200Ω/2/20/200kΩ/2/20MΩ
Accuracy	± (0.7%rdg + 4dgt) on all ranges except ± (1.2%rdg + 4dgt) on 2MΩ ± (2.5%rdg + 4dgt) on 20MΩ
Temperature	-20°C~1300°C/-4°F~1999°F
Accuracy	± (2%rdg + 4dgt)
Sp. Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AA' Battery
Low Battery	" ⊟ " Indicated
Battery Life	200 hours typical
Dimensions	161 x 86 x 43 mm (approx.)
Weight	250gms Including Battery (approx.)
Measuring Catagory	CAT II
Accessories	One Pair of Test Leads, Battery (installed), K Type Thermocouple (upto 260°C), Inst. Manual & Carrying Case

Auto / Manual, 3¾ Digit, 4000 Counts LCD, APO, Capacitance, Frequency, Duty Cycle & Temperature

Ranges	
DC Voltage	400mV/4/40/400/1000V
Accuracy	± (0.5% rdg + 4 dgt) on 400mV/4V ± (0.7% rdg + 4 dgt) on 40/400V ± (1.0% rdg + 4 dgt) on 1000V
AC Voltage	4/40/400/750V
Accuracy	± (1.0% rdg + 5 dgt) on all ranges except ± (1.5% rdg + 8 dgt) on 750V
DC Current	400/4000µA/40/400mA/4/20A
Accuracy	± (1.5% rdg + 4 dgt)
AC Current	400/4000µA/40/400mA/4/20A
Accuracy	± (2.2% rdg + 4 dgt)
Resistance	400Ω/4/40/400kΩ/4/40MΩ
Accuracy	± (0.7% rdg + 4 dgt) on all ranges except ± (1.2% rdg + 4 dgt) on 4MΩ ± (2.5% rdg + 4 dgt) on 40MΩ
Capacitance	40/400nF/4/40/100µF
Accuracy	± (5.0% rdg + 10 dgt)
Frequency	9.999Hz ~9.999MHz
Accuracy	± (0.5% rdg + 2 dgt)
Duty Cycle	0.1% ~ 99.9%
Accuracy	± (0.5% rdg + 2 dgt)
Temperature	-20°C~1300°C
Accuracy	± (2% rdg + 4 dgt)
Sp. Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AA' Battery
Low Battery	" ▯ " is indicated
Battery Life	200 hours typical
Dimensions	161 x 86 x 43 mm (approx.)
Weight	250gms Including Battery (approx.)
Measuring Catagory	CAT II
Accessories	One Pair of Test Leads, Battery (installed), K Type Thermocouple (upto 260°C), Inst. Manual & Carrying Case

Accessories

K Type Bead Probe (upto 260°C)
Model : TPK-B

K Type Stick Probe (upto 500°C)
Model : TP-02

Pair of Test Leads suitable for DMM/DTT
Model : TL-DMM/DTT

Pair of Test Leads suitable for Insulation Tester
Model : TL-IT

CE

666TRMS

450B+TRMS

TRMS, Auto / Manual, 3⅝ Digits 6600 Counts, APO, Capacitance, Frequency, Duty Cycle, Temp., Diode, Audible Continuity & Data Hold

Ranges	
DC Voltage	600mV / 6 / 60 / 600 / 1000V
Accuracy	±(1.0%rdg+4dgt) on 600mV ±(0.5%rdg+2dgt) on 6 / 60 / 600V ±(1.0%rdg+3dgt) on 1000V
AC Voltage TRMS	600mV / 6 / 60 / 600 / 750V
Accuracy	±(1.0%rdg+5dgt) on all ranges except ±(1.2%rdg+5dgt) on 600mV ±(1.5%rdg+5dgt) on 750V
AC Response	40Hz~1KHz
DC Current	600 / 6000μA / 60 / 600mA / 6 / 20A
Accuracy	±(1.0%rdg+2dgt) on 600 / 6000μA ±(1.2%rdg+3dgt) on 60 / 600mA ±(1.5%rdg+5dgt) on 6/20A
AC Current TRMS	600 / 6000μA / 60 / 600mA / 6 / 20A
Accuracy	±(1.5%rdg+5dgt) on 600 / 6000μA ±(2.0%rdg+5dgt) on 60 / 600mA ±(2.5%rdg+5dgt) on 6 / 20A
AC Response	40Hz~1KHz
Resistance	600Ω / 6 / 60 / 600kΩ / 6 / 60MΩ
Accuracy	±(1.2%rdg+2dgt) on 600Ω & 6MΩ ±(1.0%rdg+2dgt) on 6 / 60 / 600kΩ ±(1.5%rdg+2dgt) on 60MΩ
Capacitance	9.999 / 99.99 / 999.9nF / 9.999 / 99.99 / 999.9μF / 9.999mF
Accuracy	±(2.0%rdg + 4dgt) on all ranges except ±(3.0%rdg + 4dgt) on 9.999mF
Frequency	99.99Hz ~10.00MHz
Accuracy	±(0.05%rdg + 4dgt)
Duty Cycle	0.1% ~ 99.9%

TRMS, Auto / Manual, 4½ Digit 19999 Count LCD with Backlight, APO, Capacitance, Frequency, Duty Cycle, DATA HOLD, MIN / MAX, Δ ZERO / REL, Diode Test, Audible Continuity & NCV

Ranges	
DC Voltage	19.999 / 199.99mV / 1.9999 / 19.999 / 199.99 / 1000.0V
Accuracy	±(0.5% rdg + 3 dgt)
AC Voltage TRMS	19.999 / 199.99mV / 1.9999 / 19.999 / 199.99 / 750.0V
Accuracy	± (1.0% rdg + 3 dgt)
AC Response	40Hz ~ 1KHz
DC Current	199.99 / 1999.9μA / 19.999 / 199.99mA / 1.9999 / 10.000A
Accuracny	± (0.8% rdg + 3 dgt) on 199.99 / 1999.9μA ± (1.0% rdg + 3 dgt) on all other ranges
AC Current TRMS	199.99 / 1999.9μA / 19.999 / 199.99mA / 1.9999 / 10.000A
Accuracy	± (1.0% rdg + 3 dgt) on 199.99 / 1999.9μA ± (1.2% rdg + 3 dgt) on all other ranges
AC Response	40Hz ~ 1KHz
Resistance	199.99Ω / 1.9999 / 19.999 / 199.99kΩ / 1.9999 / 19.999 / 199.99MΩ
Accuracy	± (1.0% rdg + 3 dgt) on 199.99Ω ± (0.5% rdg + 3 dgt) on 1.9999 / 19.999 / 199.99kΩ ± (1.5% rdg + 3 dgt) on 1.9999 / 19.999MΩ ± (3% rdg + 5 dgt) on 199.99MΩ
Capacitance	9.999 / 99.99 / 999.9nF / 9.999 / 99.99 / 999.9μF/ 9.999mF
Accuracy	± (5.0% rdg + 20 dgt) on 9.999nF ± (2.0% rdg + 5 dgt) on 99.99 / 999.9nF / 9.999 / 99.99 / 999.9μF ± (5.0% rdg + 5 dgt) on 9.999mF
Frequency	99.99 / 999.9Hz / 9.999 / 99.99 / 999.9KHz / 9.999MHz
Accuracy	± (0.1% rdg + 2 dgt)
Duty Cycle	1% ~ 99%
Accuracy	± (0.1% rdg + 2 dgt)
Sp. Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AA' Battery
Low Battery	'[+-]' is indicated
Battery Life	200 hours typical
Dimensions	161 x 81 x 39 mm (approx.)
Weight	230gms Including Battery (approx.)
Accessories	One Pair of Test Leads, Battery (installed), Instruction Manual & Drawstring Pouch

Accuracy	±(0.05%rdg + 4dgt)
Temperature	-40°C~1000°C / -40°F~1832°F
Accuracy	±(3.0%rdg + 4dgt) on - 40°C~0°C / -40°F~32°F ±(1.0%rdg + 3dgt) on 0°C ~400°C / 32°F~750°F ±(2.0%rdg + 5dgt) on 400°C~1000°C / 750°F~1832°F
Sp. Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AA' Battery
Low Battery	'[+-]' indicated
Battery Life	200 hours typical
Dimensions	161 x 86 x 43 mm (approx.)
Weight	250gms Including Battery (approx.)
Measuring Catagory	CAT II
Accessories	One Pair of Test Leads, Battery (installed), K Type Thermocouple (upto 260°C), Instruction Manual & Carrying Case

CE

126B+TRMS

135B+TRMS

Pocket Size

TRMS, Auto / Manual, 4 Digits 9999 Counts LCD with Backlight, APO, Capacitance, Resistance, Frequency, Duty Cycle & Square Wave Output

Ranges	
DC Voltage	9.999 / 99.99 / 999.9mV / 9.999 / 99.99 / 999.9V
Accuracy	± (0.5% rdg + 3 dgt)
AC Voltage TRMS	9.999 / 99.99 / 999.9mV / 9.999 / 99.99 / 750.0V
Accuracy	± (1.0% rdg + 3 dgt)
AC Response	40Hz ~ 1KHz
DC Current	99.99 / 999.9µA 999.9mA / 9.999A
Accuracy	± (0.8% rdg + 3 dgt) on 99.99 / 999.9µA ± (1.0% rdg + 3 dgt) on 999.9mA / 9.999A
AC Current TRMS	99.99 / 999.9µA 999.9mA / 9.999A
Accuracy	± (1.0% rdg + 3 dgt) on 99.99 / 999.9µA ± (1.2% rdg + 3 dgt) on 999.9mA / 9.999A
AC Response	40Hz ~ 1KHz
Resistance	99.99 / 999.9Ω / 9.999 / 99.99 / 999.9KΩ / 9.999MΩ
Accuracy	± (1.0% rdg + 3 dgt) on 99.99Ω ± (0.5% rdg + 3 dgt) on 999.9Ω / 9.999 / 99.99 / 999.9KΩ ± (1.5% rdg + 3 dgt) on 9.999MΩ
Capacitance	9.999 / 99.99 / 999.9nF / 9.999 / 99.99 / 999.9µF / 9.999mF
Accuracy	± (5.0% rdg + 20 dgt) on 9.999nF ± (2.0% rdg + 5 dgt) on 99.99 / 999.9nF / 9.999 / 99.99 / 999.9µF ± (5.0% rdg + 5 dgt) on 9.999mF
Frequency	99.99Hz ~ 9.999MHz
Accuracy	±(0.1% rdg + 2 dgt)
Duty Cycle	1% ~ 99%
Accuracy	± (0.1% rdg + 2 dgt)
Square Wave Output	50Hz / 100Hz / 200Hz / 300Hz / 400Hz / 500Hz / 600Hz / 700Hz / 800Hz / 900Hz / 1000Hz / 2000Hz / 3000Hz / 4000Hz / 5000Hz
Measuring Category	CAT II 1000V, CAT III 600V
SP Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AAA' Battery
Low Battery	'🔋' is indicated
Battery Life	200 hours typical
Dimensions	130 x 65 x 32mm (approx.)
Weight	130gms Including Battery (approx.)
Accessories	One Pair of Test Leads, Drawstring Pouch, Battery (installed), Instruction Manual

TRMS, Auto / Manual, 4 Digits 9999 Counts LCD with Backlight, APO, Capacitance, Resistance, NCV, Frequency, Duty Cycle & Temperature

Ranges	
DC Voltage	9.999 / 99.99 / 999.9mV / 9.999 / 99.99 / 999.9V
Accuracy	± (0.5% rdg + 3 dgt)
AC Voltage TRMS	9.999 / 99.99 / 999.9mV / 9.999 / 99.99 / 750.0V
Accuracy	± (1.0% rdg + 3 dgt)
AC Response	40Hz ~ 1KHz
DC Current	99.99 / 999.9µA 999.9mA / 9.999A
Accuracy	± (0.8% rdg + 3 dgt) on 99.99 / 999.9µA ± (1.0% rdg + 3 dgt) on 999.9mA / 9.999A
AC Current TRMS	99.99 / 999.9µA 999.9mA / 9.999A
Accuracy	± (1.0% rdg + 3 dgt) on 99.99 / 999.9µA
AC Response	± (1.2% rdg + 3 dgt) on 999.9mA / 9.999A 40Hz ~ 1KHz
Resistance	99.99 / 999.9Ω / 9.999 / 99.99 / 999.9KΩ / 9.999 / 99.99MΩ
Accuracy	± (1.0% rdg + 3 dgt) on 99.99Ω ± (0.5% rdg + 3 dgt) on 999.9Ω / 9.999 / 99.99 / 999.9KΩ ± (1.5% rdg + 3 dgt) on 9.999 / 99.99MΩ
Capacitance	9.999 / 99.99 / 999.9nF / 9.999 / 99.99 / 999.9µF / 9.999mF
Accuracy	± (5.0% rdg + 20 dgt) on 9.999nF ± (2.0% rdg + 5 dgt) on 99.99 / 999.9nF / 9.999 / 99.99 / 999.9µF ± (5.0% rdg + 5 dgt) on 9.999mF
Frequency	99.99Hz ~ 9.999MHz
Accuracy	±(0.1% rdg + 2 dgt)
Duty Cycle	1% ~ 99%
Accuracy	± (0.1% rdg + 2 dgt)
Temperature	-20°C ~ 1000°C / -4°F ~ 1832°F
Accuracy	± (2.5% rdg + 5 dgt)
Measuring Category	CAT II 1000V, CAT III 600V
SP Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AAA' Battery
Low Battery	'🔋' is indicated
Battery Life	200 hours typical
Dimensions	130 x 65 x 32mm (approx.)
Weight	130gms Including Battery (approx.)
Accessories	One Pair of Test Leads, Drawstring Pouch, Battery (installed), Instruction Manual & K Type Thermocouple (upto 260°C)

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SINCE 1962

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- ✓ AC / TRMS
- ✓ DC / AC - Small
- ✓ DC / AC / TRMS

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CE

27-AUTO BL

27T-AUTO BL

2502T-AUTO BL

600A AC TRMS
Auto Ranging, 3½ Digit, 2000 Counts, Data Hold, Max, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength), APO

Ranges	
AC Current TRMS	2A, 20A, 200A, 600A (Auto Ranging)
Accuracy	±(3%rdg+5dgt) on 2A ±(2%rdg+3dgt) on 20A ±(2%rdg+5dgt) on 200A & 600A
AC Response	40Hz ~ 1KHz
Overload	600A AC max. for 1 min.
AC Voltage TRMS	2V, 20V, 200V, 600V (Auto Ranging)
Accuracy	±(1.2%rdg+3dgt)
AC Response	40Hz ~ 1KHz
DC Voltage	200mV, 2V, 20V, 200V, 600V (Auto Ranging)
Accuracy	±(0.8%rdg+3dgt)
Resistance	200Ω, 2kΩ, 20KΩ, 200kΩ, 2MΩ, 20MΩ (Auto Ranging)
Accuracy	±(1.2%rdg+3dgt)
Audible Continuity	40Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	" ⊟ " is indicated
Dimension	185 x 65 x 28 mm (approx.)
Weight	170 gms Including Battery (approx.)
Jaw Opening	Cable Dia. 25mm (max.)
Safety Standard	CAT II 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed)

600A AC TRMS
Auto Ranging, 3½ Digit, 2000 Counts, Temperature, Data Hold, Max, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength), APO

Ranges	
AC Current TRMS	2A, 20A, 200A, 600A (Auto Ranging)
Accuracy	±(3%rdg+5dgt) on 2A ±(2%rdg+3dgt) on 20A ±(2%rdg+5dgt) on 200A & 600A
AC Response	40Hz ~ 1KHz
Overload	600A AC max. for 1 min.
AC Voltage TRMS	2V, 20V, 200V, 600V (Auto Ranging)
Accuracy	±(1.2%rdg+3dgt)
AC Response	40Hz ~ 1KHz
DC Voltage	200mV, 2V, 20V, 200V, 600V (Auto Ranging)
Accuracy	±(0.8%rdg+3dgt)
Temperature	-20°C to 750°C / -4°F to 1382°F
Accuracy	±(3%rdg+5dgt)
Resistance	200Ω, 2kΩ, 20KΩ, 200kΩ, 2MΩ, 20MΩ (Auto Ranging)
Accuracy	±(1.2%rdg+3dgt)
Audible Continuity	40Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	" ⊟ " is indicated
Dimension	185 x 65 x 28 mm (approx.)
Weight	170 gms Including Battery (approx.)
Jaw Opening	Cable Dia .25mm (max.)
Safety Standard	CAT II 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed) K Type Thermocouple (upto 260°C)

1000A AC TRMS
Auto / Manual, 3½ Digit, 2000 Counts, APO Temperature, Data Hold, Max, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength)

Ranges	
AC Current TRMS	2A, 20A, 200A, 1000A
Accuracy	±(3%rdg+5dgt) on 2A & 20A ±(2%rdg+5dgt) on 200A & 1000A
AC Response	40Hz ~ 1KHz
Overload	1000A AC max. for 1 min.
AC Voltage TRMS	2V, 20V, 200V, 750V
Accuracy	±(1.2%rdg+3dgt)
AC Response	40Hz ~ 1KHz
DC Voltage	200mV, 2V, 20V, 200V, 1000V
Accuracy	±(0.8%rdg+3dgt)
Temperature	-20°C to 750°C/-4°F to 1382°F
Accuracy	±(3%rdg+5dgt)
Resistance	200Ω, 2kΩ, 20KΩ, 200kΩ, 2MΩ, 20MΩ
Accuracy	±(1.2%rdg+3dgt)
Audible Continuity	30Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AA' Battery
Battery Life	200 Hours Typical
Low Battery	" ⊟ " is indicated
Dimension	245 x 95 x 35 mm (approx.)
Weight	309 gms Including Battery (approx.)
Jaw Opening	Cable Dia. 52mm (max.)
Safety Standard	CAT III 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed) K Type Thermocouple (upto 260°C)

CE

72-AUTO BL

600A AC TRMS Auto Ranging, 3¾ Digit, 4000 Counts, Data Hold, Rel.Test, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength), APO	
Ranges	
AC Current TRMS	40A, 400A, 600A (Auto Ranging)
Accuracy	±(2.5%rdg+5dgt)
AC Response	40Hz ~ 1KHz
Overload	600A AC max. for 1 min.
AC Voltage TRMS	4V, 40V, 400V, 600V (Auto Ranging)
Accuracy	±(1.2%rdg+3dgt)
AC Response	40Hz ~ 1KHz
DC Voltage	400mV, 4V, 40V, 400V, 600V (Auto Ranging)
Accuracy	±(0.8%rdg+3dgt)
Frequency	4Hz ~ 1MHz (Auto Ranging)
Accuracy	±(0.5%rdg+2dgt)
Resistance	400Ω, 4kΩ, 40KΩ, 400kΩ, 4MΩ, 40MΩ (Auto Ranging)
Accuracy	±(1.2%rdg+3dgt)
Audible Continuity	40Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	" " is indicated
Dimension	185 x 65 x 28 mm (approx.)
Weight	170 gms Including Battery (approx.)
Jaw Opening	Cable Dia. 25mm (max.)
Safety Standard	CAT II 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed)

72T-AUTO BL

600A AC TRMS Auto Ranging, 3¾ Digit, 4000 Counts, Temperature, Capcitance, Data Hold, Rel.Test, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength), APO	
Ranges	
AC Current TRMS	40A, 400A, 600A (Auto Ranging)
Accuracy	±(2.5%rdg+5dgt)
AC Response	40Hz ~ 1KHz
Overload	600A AC max. for 1 min.
AC Voltage TRMS	4V, 40V, 400V, 600V (Auto Ranging)
Accuracy	±(1.2%rdg+3dgt)
AC Response	40Hz ~ 1KHz
DC Voltage	400mV, 4V, 40V, 400V, 600V (Auto Ranging)
Accuracy	±(0.8%rdg+3dgt)
Temperature	-20°C to 750°C / -4°F to 1382°F
Accuracy	±(3%rdg+5dgt)
Capacitance	5nF, 50nF, 500nF, 5µF, 50µF, 200µF
Accuracy	±(3%rdg+2dgt)
Frequency	4Hz ~ 1MHz (Auto Ranging)
Accuracy	±(0.5%rdg+2dgt)
Resistance	400Ω, 4kΩ, 40KΩ, 400kΩ, 4MΩ, 40MΩ (Auto Ranging)
Accuracy	±(1.2%rdg+3dgt)
Audible Continuity	40Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	" " is indicated
Dimension	185 x 65 x 28 mm (approx.)
Weight	170 gms Including Battery (approx.)
Jaw Opening	Cable Dia. 25mm (max.)
Safety Standard	CAT II 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed) K Type Thermocouple (upto 260°C)

2520THz-AUTO BL

1000A AC TRMS Auto / Manual, 3⅝ Digit, 6000 Counts, Temperature, Capcitance, Data Hold, Backlight, Hz / Duty, Torchlight, NCV (LED, Buzzer & EF Strength), APO	
Ranges	
AC Current TRMS	60A, 600A, 1000A
Accuracy	±(2.5%rdg+5dgt)
AC Response	40Hz ~ 1KHz
Overload	1000A AC max. for 1 min.
AC Voltage TRMS	6V, 60V, 600V, 750V
Accuracy	±(1.2%rdg+3dgt)
AC Response	40Hz ~ 1KHz
DC Voltage	600mV, 6V, 60V, 600V, 1000V
Accuracy	±(0.8%rdg+3dgt)
Temperature	-20°C to 750°C/-4°F to 1382°F
Accuracy	±(3%rdg+5dgt)
Capacitance	6nF, 60nF, 600nF, 6µF, 60µF, 600µF (Auto Ranging)
Accuracy	±(3%rdg+7dgt) >6µF±(5%rdg+5dgt) >100µF Not Applicable
Frequency	10Hz ~ 10MHz (Auto Ranging)
Accuracy	±(0.5%rdg+2dgt)
Duty Cycle	0.1% ~ 99.9%
Accuracy	±(0.5%rdg+2dgt)
Resistance	600Ω, 6kΩ, 60KΩ, 600kΩ, 6MΩ, 60MΩ
Accuracy	±(1.2%rdg+3dgt)
Audible Continuity	30Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AA' Battery
Battery Life	200 Hours Typical
Low Battery	" " is indicated
Dimension	245 x 95 x 35 mm (approx.)
Weight	309 gms Including Battery (approx.)
Jaw Opening	Cable Dia. 52mm (max.)
Safety Standard	CAT III 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed) K Type Thermocouple (upto 260°C)

new
Preliminary Data
CE

54+

90+

DTT 266

600A AC TRMS
Auto Ranging, 3¾ Digit, 4000 Counts, Capacitance, Data Hold, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength), APO

Ranges	
AC Current TRMS	4A, 40A, 400A, 600A (Auto Ranging)
Accuracy	±(2.0%rdg+5dgt) on all ranges except ±(3.0%rdg+5dgt) on 4A
AC Response	40Hz ~ 2KHz
Overload	600A AC max. for 1 min.
AC Voltage TRMS	4V, 40V, 400V, 600V (Auto Ranging)
Accuracy	±(1.2%rdg+5dgt)
AC Response	40Hz ~ 2KHz
DC Voltage	400mV, 4V, 40V, 400V, 600V (Auto Ranging)
Accuracy	±(0.8%rdg+5dgt)
Capacitance	4nF, 40nF, 400nF, 4µF, 40µF, 400µF, 4mF (Auto)
Accuracy	±(3%rdg+5dgt)
Resistance	400Ω, 4kΩ, 40KΩ, 400kΩ, 4MΩ, 40MΩ (Auto Ranging)
Accuracy	±(1.2%rdg+5dgt)
Audible Continuity	50Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	"⊟+" is indicated
Dimension	190 x 71 x 30 mm (approx.)
Weight	190gms Including Battery (approx.)
Jaw Opening	Cable Dia. 30mm (max.)
Safety Standard	CAT II 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed)

600A AC TRMS
Auto Ranging, 3¾ Digit, 4000 Counts, Temperature, Capcitance, Data Hold, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength), APO

Ranges	
AC Current TRMS	4A, 40A, 400A, 600A (Auto Ranging)
Accuracy	±(2.0%rdg+5dgt) on all ranges except ±(3.0%rdg+5dgt) on 4A
AC Response	40Hz ~ 2KHz
Overload	600A AC max. for 1 min.
AC Voltage TRMS	4V, 40V, 400V, 600V (Auto Ranging)
Accuracy	±(1.2%rdg+5dgt)
AC Response	40Hz ~ 2KHz
DC Voltage	400mV, 4V, 40V, 400V, 600V (Auto Ranging)
Accuracy	±(0.8%rdg+5dgt)
Temperature	-20°C to 1000°C / -4°F to 1832°F
Accuracy	±(3%rdg+5dgt)
Capacitance	4nF, 40nF, 400nF, 4µF, 40µF, 400µF, 4mF
Accuracy	±(3%rdg+5dgt) Note : 4nF for Reference only
Frequency	4Hz ~ 4KHz (Auto Ranging)
Accuracy	±(0.5%rdg+5dgt)
Resistance	400Ω, 4kΩ, 40KΩ, 400kΩ, 4MΩ, 40MΩ (Auto Ranging)
Accuracy	±(1.2%rdg+5dgt)
Audible Cont.	50Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	"⊟+" is indicated
Dimension	190 x 71 x 30 mm (approx.)
Weight	190gms Including Battery (approx.)
Jaw Opening	Cable Dia. 30mm (max.)
Safety Standard	CAT II 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed) K Type Thermocouple (upto 260°C)

1000A AC
Manual Ranging, 3½ Digit, 2000 Counts, Data Hold

Ranges	
AC Current	200A, 1000A (50Hz-60Hz)
Accuracy	±(2.5% + 13dgt) on 200A ±(2.5% + 8dgt) upto 800A Above 800A the reading are only for reference
Overload	1200A AC max. for 1 min.
AC Response	50 ~ 60Hz
AC Voltage	750V (45Hz ~ 450Hz)
Accuracy	±(1.2%rdg+5dgt)
AC Response	45 ~ 450Hz
DC Voltage	1000V
Accuracy	±(1%rdg+5dgt)
Resistance	200Ω, 20KΩ
Accuracy	±(1.0%rdg+10dgt) on 200Ω ±(1.0%rdg+4dgt) on 20KΩ
Over Volt Protection	250V DC / 220V AC RMS
Audible Cont.	30Ω ± 20Ω (approx.)
Over Volt Protection	250V DC / 220V AC RMS
Insulation Test	20MΩ, 2000MΩ (With Optional Unit)
Accuracy	±(2% of rdg + 2 dgt) on 20MΩ ±(4% of rdg + 2 dgt) upto 500MΩ ± (5% of rdg + 2 dgt) above 500MΩ
Power	9V Battery
Battery Life	200 Hours Typical
Low Battery	"⊟+" is indicated
Dimension	230 x 68 x 37mm (approx.)
Weight	240gms Including Battery (approx.)
Jaw Opening	Cable Dia. 53mm (max.)
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, 9V Battery (installed) x 1, 500V Insulation Tester Unit x 1 (optional)

2250-Hz AUTO

1008-TRMS

1000A AC TRMS
Auto Ranging, 3¾ Digit, 4200 Counts, Data Hold, Frequency, Duty Cycle, APO

Ranges	
AC Current TRMS	4A, 40A, 400A, 1000A
Accuracy	±(3%rdg+4dgt) on 40A ±(2%rdg+4dgt) on 400A, 1000A
AC Response	40Hz ~ 1KHz
Overload	1000A AC max. for 1 min.
AC Voltage TRMS	4V, 40V, 400V, 750V (Auto) (40-500Hz)
Accuracy	±(1.0%rdg+8dgt) on all ranges except ±(1.5%rdg+8dgt) on 750V
AC Response	40Hz ~ 1KHz
DC Voltage	4V, 40V, 400V, 1000V (Auto)
Accuracy	±(0.5%rdg+4dgt) on 4V ±(0.7%rdg+4dgt) on 40V & 400V ±(1 %rdg+4dgt) on 1000V
Resistance	400Ω, 4kΩ, 40KΩ 400kΩ, 4MΩ, 40MΩ (Auto)
Accuracy	±(0.7%rdg+4dgt) on all ranges except ±(1.2%rdg+4dgt) on 4MΩ ±(2.5%rdg+4dgt) on 40MΩ
Over Volt Protection	600V DC or AC RMS
Frequency Ranges	9.999Hz, 99.99Hz, 999.9Hz, 9.999KHz, 99.99KHz, 999.9KHz, 9.999MHz (Auto)
Accuracy	±(0.5%rdg+2dgt)
Over Volt Protection Sensitivity	600V DC or AC RMS 3V
% Duty Cycle	1% to 90% (Auto)
Accuracy	±(0.5%rdg+2dgt)
Over Volt Protection	600V DC or AC RMS

1000A AC TRMS
Auto / Manual, 3⅝ Digit, 6000 Counts LCD with Backlight, APO, Capacitance, Frequency, Duty Cycle & Temperature

Ranges	
DC Voltage	600mV/6/60/600/1000V
Accuracy	± (0.5%rdg + 3dgt)
AC Voltage TRMS	600mV/6/60/600/750V
Accuracy	± (1.0% rdg + 5dgt)
AC Response	40Hz ~ 1000Hz
DC Current	600/6000µA
Accuracny	± (0.8% rdg + 10dgt)
AC Current TRMS	600/6000µA / 600 / 1000A
Accuracy	± (2.0% rdg + 30dgt)
AC Response	40 Hz ~ 1000Hz
Overload	1000A AC Max. for 1min. for A
Resistance	600Ω/6/60/600kΩ/6/60MΩ
Accuracy	± (0.8% rdg + 5dgt) on 600Ω ± (0.8% rdg + 3dgt) on 6/60/600kΩ/6MΩ
	± (1.0% rdg + 25dgt) on 60MΩ
Capacitance	9.999/99.99/999.9nF/9.999/99.99/999.9µF/9.999mF
Accuracy	± (3.5% rdg + 60dgt) on all ranges except ± (5.0% rdg + 10dgt) on 999.9µF& 9.999mF
Frequency	99.99Hz ~10.00MHz
Accuracy	± (0.01% rdg + 3dgt)
Duty Cycle	0.1% ~ 99.9%
Accuracy	± (0.01% rdg + 3dgt)
Temperature	-20°C ~ 1000°C / 0°F ~ 1832°F
Accuracy	± (1% rdg + 5dgt) on - 20°C ~ 400°C ± (1.5% rdg + 15dgt) on 400°C ~ 1000°C ± (0.75% rdg + 5 dgt) on 0°F ~ 750°F ± (1.5% rdg + 15 dgt) on 750°F ~ 1832°F
µA Measurement for HVAC Flame Sensors	600.0µA / 6000µA
Accuracy	± (1% rdg + 20 dgt)
Sp. Function	Diode Test, Audible Continuity, Data Hold
Power	Two 1.5V 'AA' Battery
Low Battery	' ' is indicated
Battery Life	200 hours typical
Dimension	238 x 90 x 48mm (approx.)
Weight	351gms Including Battery
Jaw Opening	30mm
Measuring Catagory	CAT IV 600V
Accessories	One Pair of Test Leads, Battery (installed), K Type Thermocouple (upto 260°C), Instruction Manual & Carrying Case

Audible Cont.	40Ω (approx.)
Over Volt Protection	600V DC or AC RMS
Diode Test	1.0 ± 0.6mA (approx.)
Over Volt Protection	600V DC or AC RMS
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	' ' is indicated
Dimension	250 x 98 x 35 mm (approx.)
Weight	375gms Including Battery (approx.)
Jaw Opening	Cable Dia. 55mm (max.)
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed)

new
Preliminary Data
CE

36-AUTO BL

99+

600A DC /AC TRMS
Auto Ranging, 3⅝ Digit, 6000 Counts, Temperature, Capcitance, Data Hold, Back Light, Torch Light, Hz / Duty, NCV (LED, Buzzer & EF Strength), APO

Ranges	
AC Current TRMS	60A / 600A
Accuracy	±(2.5%rdg+8dgt) on 60A ±(2.5%rdg+5dgt) on 600A
AC Response	40Hz ~ 1KHz
Overload	600A AC max. for 1 min.
DC Current	60A/ 600A
Accuracy	±(3%rdg+3dgt)
Overload	600A DC max. for 1 min.
AC Voltage TRMS	6V, 60V, 600V (Auto)
Accuracy	±(1.2%rdg+3dgt)
AC Response	40Hz ~ 1KHz
DC Voltage	600mV, 6V, 60V, 600V (Auto)
Accuracy	±(0.8%rdg+3dgt)
Temperature	-20°C to 750°C / -4°F to1382°F
Accuracy	±(3%rdg+5dgt)
Capacitance	60nF, 600nF, 6µF, 60µF, 600µF, 6mF, 60mF (Auto)
Accuracy	±(4%rdg+3dgt)
Frequency	60Hz, 600Hz, 6KHz, 60KHz, 600KHz, 1MHz (Auto)
Accuracy	±(0.5%rdg+2dgt)
Duty Cycle	0.1% - 99.9%
Accuracy	±(0.5%rdg+2dgt)
Resistance	600Ω, 6kΩ, 60KΩ, 600kΩ, 6MΩ, 60MΩ (Auto)
Accuracy	±(1%rdg+3dgt)
Audible Continuity	30Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	"⊟" is indicated
Dimension	185 x 65 x 28 mm (approx.)
Weight	170gms Including Battery (approx.)
Jaw Opening	Cable Dia. 25mm (max.)
Safety Standard	CAT II 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed) K Type Thermocouple (upto260°C)

600A DC /AC TRMS Auto Ranging, 3⅝ Digit, 6000 Counts, Temperature, Capcitance, Data Hold, Back Light, Torch Light, Hz / Duty, NCV (LED, Buzzer & EF Strength), LoZ (DCV/ACV), VFC, APO

Ranges	
AC Current TRMS	60A / 600A
Accuracy	±(2.5%rdg+3dgt)
AC Response	40Hz ~ 1KHz
Overload	600A AC max. for 1 min.
DC Current	60A/ 600A
Accuracy	±(3%rdg+3dgt)
Overload	600A DC max. for 1 min.
AC Voltage TRMS	6V, 60V, 600V (Auto)
Accuracy	±(1.0%rdg+4dgt) on 6V, 60V ±(1.2%rdg+10dgt) on 600V
AC Response	40Hz ~ 1KHz
DC Voltage	600mV, 6V, 60V, 600V (Auto)
Accuracy	±(0.5%rdg+5dgt) on all ranges except ±(0.8%rdg+5dgt) on 600V
Temperature	-20°C to 1000°C / -4°F to1832°F
Accuracy	±(1.0%rdg+3dgt)
Capacitance	6nF, 60nF, 600nF, 6µF, 60µF, 600µF, 6mF, 60mF, 100mF (Auto)
Accuracy	±(4%rdg+5dgt) on all ranges except ±(5%rdg+5dgt) on 100mF Note : 6nF for Reference only
Frequency	60Hz, 600Hz, 6KHz, 60KHz, 100KHz (Auto)
Accuracy	±(1.5%rdg+5dgt)
Duty Cycle	0.1% - 99.9%
Accuracy	Reference only
Resistance	600Ω, 6kΩ, 60KΩ, 600kΩ, 6MΩ, 60MΩ (Auto)
Accuracy	±(0.8%rdg+5dgt) on all ranges except ±(1.2%rdg+5dgt) on 60MΩ
Audible Continuity	50Ω (approx.)
Diode Test	1.0 ±0.6mA (approx.)
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	"⊟" is indicated

Dimension	190 x 71 x 30 mm (approx.)
Weight	180gms Including Battery (approx.)
Jaw Opening	Cable Dia. 30mm (max.)
Safety Standard	CAT II 600V
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (installed) K Type Thermocouple (upto260°C)

Accessories

K Type Bead Probe (upto 260°C)
Model : TPK-B

K Type Stick Probe (upto 500°C)
Model : TP-02

Pair of Test Leads suitable for DMM/DTT Model :
TL-DMM/DTT

Pair of Test Leads suitable for Insulation Tester
Model : TL-IT

CE

1080-TRMS

3600+

1200A DC/AC TRMS
Auto / Manual, 3⅝ Digit, 6000 Counts LCD with Backlight, APO, Capacitance, Frequency, Duty Cycle & Temperature

Ranges	
DC Voltage	600mV / 6 / 60 / 600 / 1000V
Accuracy	± (0.5%rdg + 3dgt)
AC Voltage TRMS	6 / 60 / 600 / 750V
Accuracy	± (1.0% rdg + 5dgt)
AC Response	40Hz~1000Hz
DC Current	600 / 6000µA / 60 / 600 / 1200A
Accuracy	± (1.2% rdg + 10dgt) on 600 / 6000µA ± (2.0% rdg + 30dgt) on 60 / 600 / 1200A
Overload	1200A DC Max. for 1min. for A
AC Current TRMS	600 / 6000µA / 60 / 600 / 1200A
Accuracy	± (2.0% rdg + 30dgt)
AC Response	40 Hz~1000Hz
Overload	1200A AC Max. for 1min. for A
Resistance	600Ω / 6 / 60 / 600kΩ / 6 / 60MΩ
Accuracy	± (0.8% rdg + 5dgt) on 600Ω ± (0.8% rdg + 3dgt) on 6 / 60 / 600kΩ / 6MΩ ± (1.0% rdg + 25dgt) on 60MΩ
Capacitance	9.999 / 99.99 / 999.9nF / 9.999 / 99.99 / 999.9µF / 9.999mF
Accuracy	± (3.5% rdg + 60dgt) on all ranges except ± (5.0% rdg + 10dgt) on 9.999mF
Frequency	99.99Hz~10.00MHz
Accuracy	± (0.01% rdg + 3dgt)
Duty Cycle	0.1%~99.9%
Accuracy	± (0.01% rdg + 3dgt)
Temperature	-20°C~1000°C / 0°F~1832°F
Accuracy	± (1% rdg + 5dgt) on - 20°C~400°C ± (1.5% rdg + 15dgt) on 400°C~1000°C ± (0.75% rdg + 5 dgt) on 0°F~750°F ± (1.5% rdg + 15 dgt) on 750°F~1832°F
µA Measurement for HVAC Flame Sensors	600.0µA / 6000µA
Accuracy	± (1% rdg + 20 dgt)
Sp. Function	Diode Test, Audible Continuity, Data Hold
Power	One 9V Battery
Low Battery	'⊟' is indicated
Battery Life	200 hours typical
Dimension	238 x 90 x 48mm (approx.)
Weight	320gms Including Battery (approx.)
Jaw Opening	30mm
Measuring Catagory	CAT IV 600V
Accessories	One Pair of Test Leads, Battery (installed), K Type Thermocouple (upto 260°C), Instruction Manual & Carrying Case

1200A DC / 1000A AC TRMS
3¾ Digit, 4200 Counts, Auto Ranging, Frequency, Duty Cycle, MAX / MIN, Δ REL, DATA HOLD, APO

Ranges	
AC Current TRMS	400A, 1000A
Accuracy	±(3.0%rdg + 8dgt) 50~60Hz ±(3.5%rdg + 8dgt) 40Hz~1KHz
Overload	1200A DC/AC RMS max. 1 min.
AC Voltages TRMS	4V, 40V, 400V, 750V (Auto)
Accuracy	±(1.5%rdg + 5dgt) 50~60Hz ±(2.0%rdg + 8dgt) 40Hz~1KHz
DC Current	400A, 1200A
Accuracy	±(3.0%rdg+8dgts)
Overload	1200A DC/AC RMS max. 1 min.
DC Voltage	400mV, 4V, 40V, 400V, 1000V (Auto)
Accuracy	±(0.8%rdg + 5dgts)
Resistance	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ (Auto)
Accuracy	±(1.5%rdg + 5dgt) on 400Ω ±(1.5%rdg + 3dgt) on 4kΩ~400kΩ ±(2.0%rdg + 5dgt) on 4MΩ, 40MΩ
Capacitance	4nF, 40nF, 400nF, 4µF, 40µF (Auto)
Accuracy	±(3%rdg + 10dgt) on all ranges except ±(4%rdg + 40dgt) on 4nF ±(4%rdg + 10dgt) on 40nF Note : on 4nF (Use Δ REL)
Frequency	9.999, 99.99, 999.9Hz, 9.999, 99.99, 999.9KHz, 9.999MHz (Auto)
Accuracy	±(0.5%rdg + 4dgts)
Duty Cycle	10~90%
Accuracy	±(0.5%rdg + 4dgts)
Temperature	-20°C ~ 750°C / -4°F ~ 1400°F
Accuracy	+(1.0%rdg + 5dgts) on -20°C ~ 400°C / -4°F ~ 650°F +(1.5%rdg + 5dgts) on 401°C ~ 750°C / 651°F ~ 1400°F
Sp. Function	Audible Continuity, Diode Test
Power	Two 1.5V "AAA" Battery
Battery Life	150 hours (typical)
Low Battery	'▭' is indicated.
Protection	600VDC or AC RMS overload protection in Capacitance, Diode, Ohms, Hz, Duty Cycle, Continuity, Temperature
Dimensions	250 x 100 x 46 mm (approx.)
Weight	386 gms Including Battery (approx.)
Jaw Opening	Cable Dia 55mm max.
Accessories	One Pair of Test Leads, Carrying Case, Battery (installed), K Type Thermocouple (upto 260°C) & Inst. Manual

18 SMART

3690 AUTO

400A AC
Auto Ranging, 3½ Digit, 2000 Counts, Data Hold for Resistance & Continuity

Ranges	
AC Current	2A, 20A, 200A, 400A (Auto Ranging)
Accuracy	±(2.5%rdg+10dgt) on 2A & 20A ±(2.0%rdg+5dgt) on 200A & 400A (Measures above 700mA AC)
AC Response	40 ~ 200Hz
Overload	400A AC max. for 1 min.
AC Voltage	2V, 20V, 200V, 600V (Auto)
Accuracy	±(1.2%rdg+3dgt) on all ranges except ±(1.2%rdg+8dgt) on 600V (Measures above 1V AC)
AC Response	40 ~ 400Hz
DC Voltage	2V, 20V, 200V, 600V (Auto)
Accuracy	±(0.5%rdg+2dgt) on all ranges except ±(1.0%rdg+5dgt) on 600V (Measures above 1V DC)
Resistance	200Ω, 2kΩ, 20KΩ, 200kΩ, 2MΩ, 20MΩ (Auto)
Accuracy	±(1.5%rdg+3dgt)
Audible Continuity	30Ω Approx
Power	Two 1.5V 'AAA' Battery
Battery Life	200 Hours Typical
Low Battery	" ▭ " is indicated
Dimension	175 x 65 x 28 mm (approx.)
Weight	130 gms Including Battery (approx.)
Accessories	One Pair of Test Leads, Instruction Manual, Carrying Case, Battery (Installed)
Jaw Opening	Cable Dia. 25mm (max.)
Measuring Catagory	CAT III 600V

600A DC / AC
Auto / Manual, 3¾ Digit, 4000 Counts, Frequency, Data Hold, Audible Continuity, Diode Test, Δ Zero Button (for DCA), APO

Ranges	
AC Current	400A, 600A
Accuracy	±(1.75%rdg + 5dgt) (50~60Hz)
Overload	600A AC max. for 1 min.
AC Voltage	4V, 40V, 400V, 600V
Accuracy	±(1.2%rdg + 4dgt) (50~60Hz) ±(4%rdg + 5dgt) for 600V
DC Current	400A, 600A
Accuracy	±(1.5%rdg + 5dgt) for 400A ±(2%rdg + 5dgt) for 600A
Overload	600A DC max. for 1 min.
DC Voltage	400mV, 4V, 40V, 400V, 600V
Accuracy	±(0.5%rdg + 8dgt) (400mV to 400V) ±(0.7%rdg + 2dgt) for 600V
Resistance	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ
Accuracy	±(0.75%rdg + 8dgt) 400Ω to 400kΩ ±(1%rdg + 6dgt) 4MΩ ±(2%rdg + 4dgt) 40MΩ
Overload	600V DC / AC RMS
Frequency	100Hz, 1KHz, 10KHz, 100KHz, 500KHz
Accuracy	±(0.3%rdg + 2dgt)
Duty Cycle	1% to 90 %
Power	Two 1.5V 'AAA' Battery
Battery Life	150 hours (typical)
Low Battery	" ▭ " is Indicated
Over Range	"OL" or "-OL" is indicated
Dimension	220 x 85 x 46 mm (approx.)
Weight	280gms Including Battery (approx.)
Jaw Opening	Cable Dia. 30mm max.
Accessories	One Pair of Test Leads, Battery (installed), Instr. Manual & Carrying Case

Accessories

K Type Bead Probe (upto 260°C)
Model : TPK-B

K Type Stick Probe (upto 500°C)
Model : TP-02

Pair of Test Leads suitable for DMM/DTT
Model : TL-DMM/DTT

Pair of Test Leads suitable for Insulation Tester
Model : TL-IT

2003A+

4455

2000A DC / 2000A AC TRMS
3⅝ Digit, 6000 Counts, 60 Segment Bargraph, Auto / Manual, Δ ZERO, Hz / Duty, RPM, MIN-MAX, Data Hold, Audible Continuity, APO

Ranges	
AC Current TRMS	600A, 2000A
Accuracy	±(3.5%rdg + 5dgt)
Overload	2000A AC max. for 1 min.
AC Voltage TRMS	6V, 60V, 600V (Auto & Manual)
Accuracy	±(1%rdg + 6dgt) (50 ~ 60Hz) ±(2%rdg + 4dgt) (40 ~ 500Hz)
Overload	600V DC / AC RMS
DC Current	600A, 2000A
Accuracy	±(2.5%rdg + 5dgt)
Overload	2000A DC max. for 1 min.
DC Voltage	600mV, 6V, 60V, 600V (Auto & Manual)
Accuracy	±(0.5%rdg + 5dgt)
Overload	600V DC / AC RMS
Resistance	600Ω, 6kΩ, 60kΩ, 600kΩ, 6MΩ, 60MΩ, (Auto & Manual)
Accuracy	±(0.3%rdg + 8dgt) 600Ω ±(0.3%rdg + 5dgt) 6~600kΩ ±(0.5%rdg + 5dgt) 6MΩ ±(2%rdg + 5dgt) 60MΩ
Overload	600V DC/AC RMS
Frequency	9.999Hz ~ 999.9KHz (Auto)
Accuracy	±(0.1 %rdg + 2dgt) (for non distorted waveforms only)
% Duty Cycle	1% to 90%
Accuracy	±(0.5%rdg + 5dgt)
RPM	9.999K RPM, 99.99K RPM (Auto)
Accuracy	±0.5%rdg of fullscale
Capacitance	40nF, 400nF, 4μF, 40μF (Auto)
Accuracy	±(3%rdg + 40dgt) on 40nF (Use Δ ZERO) ±(3%rdg + 10dgt) on 400nF to 4μF ±(6%rdg + 10dgts) on 40μF
Overload	600V DC / AC rms.
Sp. function	Audible Continuity, Diode Test
Power	One 9V Battery
Battery Life	150 hours (typical)
Low Battery	"[+−]" is Indicated
Over Range	"OL" or "-OL" is indicated
Dimensions	250 x 100 x 46 mm (approx.)
Weight	410 gms Including Battery (approx.)
Jaw Opening	Cable Dia 55mm max.
Accessories	One Pair of Test Leads, Battery (installed), Instruction Manual & Carrying Case

2000A DC / 2000A AC (TRMS)
3½ Digit, 1999 Counts, Auto & Manual Ranging, Inrush Current, Backlight, Torch light, DATA HOLD, APO

Ranges	
AC Current TRMS	20A, 200A, 2000A (Auto & Manual Ranging)
Accuracy	±(1.90%rdg + 10dgt)
AC Response	AC Conversion Type : TRUE RMS responding, Calibrated readings consistent with sinusoidal waveform RMS. Frequency Range : 50 ~ 60Hz
Overload	2000A DC/AC RMS max. for 1 min.
AC Voltages TRMS	2V, 20V, 200V, 2000V (Auto & Manual Ranging)
Accuracy	±(0.80% rdg + 10 dgts) 2V ±(0.80% rdg + 5 dgts) 20V, 200V ±(2.0% rdg + 5 dgts) 2000V
AC Response	Frequency : 10Hz ~ 1KHz (200V : 10Hz to 400Hz), Display : TRUE RMS (Sinusoidal waveform RMS Calibration)
DC Current	20A, 200A, 2000A (Auto & Manual Ranging)
Accuracy	±(1.90%rdg+10dgts)
Overload	2000 A DC/AC RMS max. for 1 min.
DC Voltage	2V, 20V, 200V, 2000V (Auto & Manual Ranging)
Accuracy	±(0.50%rdg + 5dgts) on all rages except ±(2.00% rdg + 5dgts) on 2000V
Resistance	200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ (Auto & Manual Ranging)
Accuracy	±(1.00%rdg + 5dgt) on 200Ω ±(0.80%rdg + 5dgt) on 2kΩ~2MΩ ±(1.50%rdg + 5dgt) on 20MΩ
Capacitance	20nF, 200nF, 2μF, 20μF, 200μF, 2000μF (Auto Ranging)
Accuracy	±(3%rdg + 10dgt) on all ranges except ±(5%rdg + 10dgt) on 2000μF
Sp. Function	Audible Continuity, Diode Test function
Power	One 9V Battery
Battery Life	150 hours (typical)
Low Battery	'[+−]' is indicated.
Protection	220VDC or AC RMS overload protection in Capacitance, Diode, Ohms, Continuity
Dimensions	270 x 100 x 46 mm (approx.)
Weight	460gms Including Battery (approx.)
Jaw Opening	Cable Dia 55mm max.
Accessories	One Pair of Test Leads, Carrying Case, Battery (installed) & Inst. Manual

Phillips MACHINE TOOLS

Haas F1 Team

Date: 15.03.2022

To,
Dr. Kamal Goliya - CEO
M/s. Meco Instruments Pvt. Ltd.
Plot No. 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape, Navi Mumbai – 400 710
Tel. No. 022 – 27673300

Dear Sir,

Sub Satisfactory Executions of Supply of MECO Testing Instruments against Purchase order No. PO-21-22-011442, 001443 dt. 07.08.2021 & PO 004512 Dt. 30.10.2021 for Karnataka Govt. ITI Projects with Tata Technologies Ltd.

Please refer our several above Purchase order for Supply of MECO Products against above mentioned projects. We are thank full to M/s. MECO Instruments for honouring timely delivery as per given schedule for all items.

We appreciate Mr. Haren Shah – Senior Marketing Executive for extending his excellent service during completion of order and providing / updating us time to time the proceeding in executing this order.

We look forward to have similar kind of service and support from your organization in our upcoming projects.

Thanking You,
Your Faithfully,
For M/s. Phillips Machine Tools India Private Limited.

Mr. Shrikant Kumkar
Assistant Manager - Sales Support

c.c.
Mr. Haren Shah – Senior Marketing Executive
Email : haren.shah@mecoinst.com & harenvshah@yahoo.com
Mobile No. : 9820093232

PHILLIPS MACHINE TOOLS INDIA PVT. LTD.
W-225, TTC Industrial Area, MIDC Khaime, Koparkhaime, Navi Mumbai - 400705. Maharashtra, India.
+022 6139 2800 | Email: support.india@phillipscorp.com | www.phillipscorp.com
CIN No.: U72200MH2008PTC186975

Panasonic

Panasonic India Pvt. Ltd.
Industrial Plot No. 1,
Village Bid Dadri, Jhajjar
Haryana - 124103, India

24 MAY 2022

20 May 2022

To,
M/s. Meco Instruments Pvt. Ltd.
Plot No. EL – 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape,
Navi Mumbai – 400 710 (INDIA)

Subject : Certificate of Appreciation

Dear Shri Premchand Goliya Ji (C.M.D.),

We are using following components: Digital Panel Meters, Analog Panel Meters manufactured by you in our machines since about 7 years. These components have helped our supply chain in increasing local content in our products thereby creating import substitution.

During the use we have found the performance of these products satisfactory. Also the delivery, sales, technical and service support of your team is up to our expectation.

We thank MECO Team for their professional approach and look forward to stronger cooperation in future too.

Thanking You,
For Panasonic India Pvt. Ltd.,

Prashant Yadav
Head – Procurement

Registered Office : 12th Floor, Ambience Tower, Ambience Island, NH-8, Gurgaon-122002, Haryana.
Website : www.panasonic.in Email : contact.pi@in.panasonic.com CIN No. U51395TN2006PTC060554

Save Power. Save India. Arzoo ENERGY BY KUSHAL GROUP

Date : 17.01.2023

To
Mr. Haren Shah – Senior Marketing Executive
M/s. MECO METERS PVT. LTD.
Mahape, Navi Mumbai.
Maharashtra

Dear Sir,

Hope all Fine at your side.

We are using MECO Power & Harmonics Aanalyzer Model PHA 5850-B since many years. The Analyzer is working to our satisfaction without any issue till date.

We have witness Testing with PHA5850 the monitoring, data logging, downloading data to prepare the reports are seems to be key features of this analyzer. Purpose of procuring this analyzer is served to our satisfaction.

We thanks and appreciate Mr. Haren Shah for extending timely technical support as and when require. Hope the support service will continue from MECO in future also.

Also to be noted that we are able to conduct the Energy Study /Audit with MECO PHA 5850 time to time as it is given with user friendly software.

Thanking you in advance
Yours faithfully

Arzoo Energy .....

c.c. For Information :

Mr. Haren Shah – Senior Ma

Arzoo Energy (I) Pvt. Ltd.
301, 3rd Floor, Parasmani Tower, 95 M.M.G.S. Marg, Near Dadar Station, Dadar (E), Mumbai - 400014
Tel: 022 - 2417 2663 / 9867711509 • Web: www.arzooenergy.in • Email:info@arzooenergy.in

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TATA

28 NOV 2013

TO WHOMSO EVER IT MAY CONCERNED

We have purchased the Power and Harmonic Analyzer model PHA 5850 from Meco Instruments Pvt Ltd, Mumbai and the performance of the instrument during the energy audit was found to be excellent. I also appreciate the excellent service support provided by Mr Haren Shah during the last 2 years in formulating the Energy Audit reports and also software support in case of an emergency at the field.

I find the Analyzer PHA 5850 is a very cost effective and an efficient Electrical tool and is essential for an Energy auditor.

For Tata Global Beverages Ltd

Radhakrishnan Nair R
(Sr Manager- Engineering and Establishments)

Date 22.11.2013

TATA GLOBAL BEVERAGES LIMITED
Kirloskar Business Park Block C 3rd & 4th Floor Hebbal Bengaluru 560 024
Tel 91 80 67171200 Fax 91 80 67171201
Registered Office 1 Bishop Lefroy Road Kolkata 700 020

MECO®
SINCE 1962

Insulation Testers

- ✓ Analog Insulation Testers
- ✓ Digital Insulation Testers

+60 YEARS
ONE MISSION

Reliable Long-Lasting Affordable

CE

TYPE TEST Confirming to BIS 10656-83

Adaptor
(MC-900BA Series)

MC-900 Series/MC-900BA Series

Features

- Single Person Push Button Operation
- High Accuracy ± 5% of Indicated Value in Effective Range
- Scale Length : 80mm (approx.)
- Terminal Voltage : More Than 85% of Rated Voltage for Insulation Resistance
- Measurement from 10% to 100% of the Insulation Resistance Range
- ABS Resin Yellow Case with Polycarbonate Meter Front Cover
- Meets Requirement of IEC 61010, Installation Category II, 1000VPhase Earth
- Designed to Generally Confirm to IS 10656-1983
- 7 Models with various Voltage & MOhm Ranges
- Battery Adaptor (Optional) for MC-900BA Series

Applications

Ideal for Insulation Resistance Measurement of

- Electrical Equipment (Motors, Transformers, Machines, etc.)
- Cables for Communication Networks
- Industrial, Commercial & Residential Installations
- Electrical Cables for Distribution Networks
- House Hold Appliances (Washing Machines, Mixer, Toaster, etc.)

Model	Range	Test Voltage DC
MC-901 / MC-901BA	0 - 20 M Ohms	100 V
MC-903 / MC-903BA	0 - 100 M Ohms	500 V
MC-904 / MC-904BA	0 - 500 M Ohms	500 V
MC-941 / MC-941BA	0 - 1000 M Ohms	500 V
MC-906 / MC-906BA	0 - 200 M Ohms	1000 V
MC-907 / MC-907BA	0 - 500 M Ohms	1000 V
MC-981 / MC-981BA	0 - 2000 M Ohms	1000 V

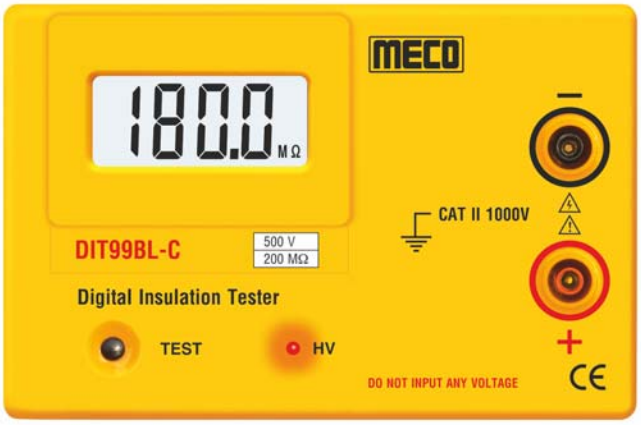
Specifications

Accuracy	± 5% of Indicated Value at 27°C ± 5°C
Operating Temperature	0° to 50°C
Storage Temperature	-10°C to 60°C
Relative Humidity	80% Maximum
Low Battery	When Battery Voltage Drops below Operating Voltage, Pointer cannot reach zero after shorting the Output Terminals.
Dielectric Strength	3.5 KV @ 50Hz for 1 min. between Input Terminals & Case
Insulation Resistance	More than 50M Ohm at 500V between Circuit & Case
Power	9V (6 x 1.5V AA) Battery
Dimensions	144.5 x 95 x 72.5 mm (approx.)
Weight	438.6 gms Including Battery (approx.)
Accessories	Test and Calibration Certificate, Pair of Crocodile / Alligator Test Leads (Red & Black) x 1, Carrying Case x 1, 1.5V AA Batteries x 6 (Fitted - In), Battery Adaptor (Optional) for MC-900BA Series [Adaptor Input : 100 - 240V, 50 / 60Hz, 0.3A, Output : 9V⎓500mA]
Ordering Information	Model, Battery Adaptor (optional)

CE

TYPE TEST Confirming to BIS 10656-83

Adaptor
(DIT99BL-BA Series)



DIT99BL Series / DIT99BL-BA Series

Features

- 3½ Digit 15mm LCD Display with Backlight
- High Voltage LED Indication
- High Accuracy ± (3% rdg + 2 dgt)
- 5 Models with various Voltage & MOhm Ranges
- Single Person Push Button Operation
- Designed to Generally Confirm to IS 10656-1983
- Meets Requirement of IEC 61010, Installation Category II, 1000V Phase - Earth
- Terminal Voltage more than 85% of rated Voltage for Insulation Resistance Measurement from 10% to 100% of the Insulation Resistance Range
- Carrying Case
- Battery Adaptor (Optional) for DIT99BL-BA Series

Applications

Ideal for Insulation Resistance Measurement of

- Electrical Equipment (Motors, Transformers, Machines, etc.)
- Electrical Cables for Distribution Networks
- Cables for Communication Networks
- House Hold Appliances (Washing Machines, Mixer, Toaster, etc.)
- Industrial, Commercial & Residential Installations

Model	Range	Test Voltage DC	Resolution
DIT99BL-A / DIT99BL-A (BA)	0 - 20 M Ohms	100 V	0.01 M Ohms
DIT99BL-B / DIT99BL-B (BA)	0 - 200 M Ohms	250 V	0.1 M Ohms
DIT99BL-C / DIT99BL-C (BA)	0 - 200 M Ohms	500 V	0.1 M Ohms
DIT99BL-D / DIT99BL-D (BA)	0 - 200 M Ohms	1000 V	0.1 M Ohms
DIT99BL-E / DIT99BL-E (BA)	0 - 2000 M Ohms	1000 V	1 M Ohms

Specifications

Display	3½ Digit LCD Display with Backlight, 15mm Digit Height, 1999 Count (Max.)
H.V. Warning	Red LED Indicator for High Voltage Warning
Accuracy	± (3% rdg + 2 dgt) at 27°C ± 5°C
Conversion Rate	2.5 sec
Over-Range Indication	"1" is Displayed
Operating Temperature	0° to 50°C
Storage Temperature	-20°C to 60°C
Relative Humidity	80% Maximum
Low Battery	' ' is Displayed when Battery Voltage drops below Operating Voltage
Dielectric Strength	3.5 KV @ 50Hz for 1 min. between Input Terminals & Case
Insulation Resistance	More than 50MOhm at 500V between Circuit & Case
Power	1.5V 'AA' x 6 Batteries
Dimensions	95 x 145 x 61.5 mm (approx.)
Weight	370gms Including Battery (approx.)
Accessories	Test and Calibration Certificate, Pair of Crocodile / Alligator Test Leads (Red & Black) x 1, Carrying Case x 1, 1.5V AA Batteries (Fitted - In) x 6, Instruction Manual x 1, Battery Adaptor (Optional) for DIT99BL-BA Series [Adaptor Input : 100 - 240V, 50 / 60Hz, 0.3A, Output : 9V⎓500mA]
Ordering Information	Model, Battery Adaptor (optional)

2.5kV - 20GΩ Digital Insulation Tester with AC Voltage Function

CE

Product Kit

Insulation Resistance Measurment Test Leads

DIT918

Batteries

Carrying Bag

Introduction

MECO - DIT 918 is a 2.5KV Digital Insulation Tester with 3½ Digit (1999 Counts) Large Display. It measures Insulation Resistance upto 20GΩ and AC Voltage upto 600VAC. It is ideally suited for testing of Insulation Resistance and Voltage of Transformers, Switches, High Voltage Systems, Cables, Appliances, Motors etc.

Features

- 3½ Digit (1999 Counts) Large LCD Display
- High Accuracy for Insulation Measurement and for AC Voltage Measurement
- Range Selection & Single Person Push Button Operation
- Data Holding Function, Function Icons on Display
- Measurement of AC Voltage upto 600VAC
- Auto Range (Insulation Test)
- Red LED Indicator for HV (High Voltage)
- Battery Operated
- As per IS10656-1983
- As per Safety Standard IEC/EN 61010-1 & 61010-31
- Over Voltage CAT III, 600V
- As per EMC Standard IEC 61326 Class B

Electrical Specifications

Accuracy : ±(% reading + digits) at 23°C±5°C; RH≤75%

Specification	Test voltage	Range	Accuracy	Resolution
Insulation Resistance	500V / 1000V / 2500V DC	0.1MΩ to 200MΩ	±(3%rdg+5 dgt.)	0.01MΩ to 0.01GΩ
		200MΩ to 10GΩ	±(5%rdg+5 dgt.)	
		10GΩ to 20GΩ	±(10%rdg+5 dgt.)	
AC Voltage Measurement	0 ~ 600VAC (40 ~ 60Hz)	-	±(2%rdg+5 dgt.)	1V

General Specifications

Display	3½ Digit (1999 Counts) Large LCD Display with 20 mm Digit Height
High Voltage Indication	✓
Data Hold	✓
Low Battery Indication	✓
Low Resistance Warning	✓
Operating Temperature	0°C to 40°C (RH ≤ 80%)
Storage Temperature	- 10°C to 50°C (RH ≤ 85%)
Power	9V (Six 1.5V "AA" Battery)
Dimensions	150 x 100 x 70mm (approx.)
Weight	680 gms including batteries (approx.) for DIT 918 Meter only, Weight of Accessories extra
Standard Accessories	Insulation Resistance Measurement Test Leads x 1 Set 1.5V AA Batteries x 6 pcs Carrying Bag x 1 pc Instruction Manual x 1 pc

5kV - 200GΩ Digital Insulation Tester with AC Voltage, Phase Sequence & Phase Status Indicator

CE

Product Kit

Batteries (DIT 954)

Insulation Resistance Measurement Test Leads

DIT 954 / DIT 954R

Phase Sequence Measurement Wire

Heavy Duty Carrying Bag

Built-In Rechargeable Batteries (DIT 954R)

AC Adaptor

Introduction

MECO - DIT 954 / DIT 954R are 5KV Digital Insulation Testers with 3½ Digit (1999 Counts) Large Display and Backlight. This measures Insulation Resistance upto 200GΩ, AC Voltage upto 600VAC and check Phase Sequence and Phase Status Indication.

Features

- 3½ Digit (1999 Counts) Large LCD Display
- Range Selection & Single Person Push Button Operation
- LCD with Green Backlight
- Data Holding Function
- Display with Annunciators
- Measurement of AC Voltage upto 600VAC
- Measurement of Phase Sequence Between (Phase - Phase Voltage) with LED Indicators & Beep Facility
- Auto Range (Insulation Test)
- Red LED Indicator for HV (High Voltage)
- Inbuilt Protection Circuit to prevent the harm of reverse Voltages.
- Battery Operated with AC Adaptor
- Suitable for Calculating PI & DAR (Manually)
- As per IS10656-1983
- As per EMC Standard IEC 61326-1 Class B
- Over Voltage CAT III, 600V
- As per Safety Standard IEC/EN 61010-1 & 61010-31
- IP 44 Protection

Electrical Specifications

Accuracy : ±(% reading + digits) at 23°C ±5°C; RH≤75%

Specification	Test voltage	Range	Accuracy	Resolution
Insulation Resistance	1000V / 2500V / 5000V DC	0.1MΩ to 200MΩ	±(3%rdg+5 dgt.)	0.01MΩ to 0.1GΩ
		200MΩ to 10GΩ	±(5%rdg+5 dgt.)	
		10GΩ to 200GΩ	±(10%rdg+5 dgt.)	
AC Voltage Measurement	0 ~ 600VAC (40 ~ 60Hz)	-	±(2%rdg+5 dgt.)	1V
Phase Sequence Test	100V ~ 450V (Phase to Phase) 40 ~ 60Hz	-	-	-

General Specifications

Display	3½ Digit (1999 Counts) Large LCD Display with 29mm Digit Height
Over-Range Indication	'1' is displayed
Operating Temperature	0°C to 40°C (RH ≤ 80%)
Storage Temperature	- 10°C to 50°C (RH ≤ 75%)
Power	12V (Eight x 1.5V "AA" Battery) [For DIT 954 and Rechargeable for DIT 954R] with AC Adaptor
Dimensions	190 x 155 x 75mm (approx.)
Weight	900 gms including batteries (approx.)
Standard Accessories	Insulation Resistance Measurement Test Leads for High Voltage x 1 Set, Phase Sequence Measurement Wires x 1 set, AC Adaptor x 1 pc, 1.5V "AA" Batteries x 8 pcs for DIT 954, 1.5V "AA" Rechargeable Batteries x 8 pcs for DIT 954R, Heavy Duty Carry Bag x 1 pc, Instruction Manual x 1 no.

Why Battery Operated Insulation Testers Are Superior Than Hand Cranking Types ?

Advantages of Battery Operated Insulation Tester

1. Single person push button operation.
2. Light weight, compact, safe and handy to use and carry.
3. Can work even in congested areas.
4. Accuracy is high / better.
5. Cost is affordable.
6. Can be used for home as well industrial applications.

Disadvantages of Hand Cranking Insulation Tester

1. At least two persons are required to operate.
2. Heavy, bulky and not easy to use and carry.
3. Require stable surface for placement and operation (normally hard to find at working sites).
4. Accuracy is poor. Also rotation of the cranking mechanism is required at a fixed RPM to make measurements accurately.
5. Cost is very high.
6. Can be used for industrial applications.

Deals in Educational, Industrial & Research Equipments

Associated Scientific Corporation www.ascindore.in

Date: 14.01.2023

To,
M/s. Meco Instruments Pvt. Ltd.
Plot No. 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape, Navi Mumbai – 400 710
Tel. No. 022 – 27673300

Dear Sir,

Kind Attn : Dr. Kamal Goliya - CEO

Sub Satisfactory Executions of Supply of MECO Panel Meters Model SMP48 against Purchase order No. ASC/22-23 Dt. 18.10.2022.

Please refer our above and several Purchase order for Supply of MECO Make Digital Panel Meters.
We are thank full to M/s. MECO Instruments Pvt. Ltd. Navi Mumbai for honouring timely delivery as per given schedule for all items.

We also appreciate Mr. Haren Shah for extending their excellent service during completion of order and providing / updating us time to time the proceeding in executing this order.

We look forward to have similar kind of service and support from your organization in our upcoming projects and orders.

Thanking You,
Your Faithfully,
M/s. Associated Scientific Corporation.

(Mukesh Jain)
c.c.
Mr. Haren Shah – Senior Marketing Executive
Email : haren.shah@mecoinst.com & harenvshah@yahoo.com Mobile No. : 9820093232

3A, Electronic Complex, Pardeshipura,
Indore-452003 (MP) India
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SYSTRONICS®
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☎ : 079 - 2281 3117 / 2755 6077
FAX : 079 - 2755 2902
✉ : admn@systronicsindia.com
Web : www.systronicsindia.com

Date: 21.01.2023

To,
M/s. Meco Instruments Pvt. Ltd.
Plot No. 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape, Navi Mumbai – 400 710
Tel. No. 022 – 27673300

Dear Sir/Madam

Kind Attn : Dr. Kamal Goliya - CEO

Sub Products Appreciation letter for Digital LCD & LED Modules

We thank you for your support extended to us for supply of MECO Digital LCD & LED Modules regularly for our various projects.

We are very much satisfied with the performance of these modules.

The presales and post-sales service and support offered are prompt and timely.

We hope to have good and strong business relationship with you in future as well.

Thanking You,
Your Faithfully,
M/s. Systronics

Authorised Signature

c.c.
Mr. Amol Bharnuke – Marketing Executive
Email : amol.bharnuke@mecoinst.com Mobile No. : 9987466629

Regd. Office / Head Office : B/116 - 129, Supath-II Complex, Near Juna Wadaj Bus Terminus, Ashram Road, Ahmedabad-380 013. India • Phone : 91-79-27556077, 27553589 • E-mail : admn@systronicsindia.com
Website : www.systronicsindia.com • CIN U32201 GJ1973 PLC002437
Manufactures of Electronic Instruments & Scientific Equipments.
Branches : Bengaluru, Bhaubaneshwar, Chennai, Hyderabad, Kolkata, Mumbai, New Delhi, Patna & Thiruvananthapuram.

MECO®
SINCE 1962

Testing & Measuring Instruments

- ✓ Digital Multi-Range Portable Meter
- ✓ Digital Earth Resistance Tester
- ✓ Leakage Current Tester
- ✓ Clamp-On Earth / Ground Resistance & Leakage Current Tester
- ✓ Micro – Ohmmeter / Milli – Ohmmeter
- ✓ Transformer Turns Ratio Meter
- ✓ LCR Meter
- ✓ Phase Sequence Indicator
- ✓ Inverter Analyzer
- ✓ Non-Contact Voltage Detector

+60 YEARS
ONE MISSION

Reliable Long-Lasting Affordable

new

Preliminary Data

SOFTWARE

USB

Micro Controller Based

PM-VAC-5R
PM-VDC-5R
PM-AAC-5R
PM-ADC-5R

Digital Multi-Range Portable Meters are ideal for continuous AC TRMS and DC measurements. These precision meters are of Class 0.5 and have a backlight display with annunciators for ease of reading. The meters can be used in horizontal, vertical or inclined position and there are no parallax errors. These are housed in a strong, compact and rugged casing with a tilt handle for ease of carrying. These are designed using advanced microcontrollers and SMT technology and there are no moving parts which could cause loss of accuracy or errors. There are 4 models, one each for A AC, A DC, V AC and V DC. Each model has 5 ranges thereby eliminating the need for having separate instrument for each range. There is overload indication and overload protection against accidental misuse. USB connectivity and user interface software is provided for ease of data handling and analysis. These Digital Multi-Range Portable Meters are most suitable for use in Laboratories, Engineering Schools/ Colleges Workshops and Field Measurements Applications for continuous use and can serve as a master standard meter for verification or re-calibration of secondary standard meters.

Features

- Precision Class 0.5
- TRMS Measurement
- Microcontroller Design (No Moving Parts)
- Backlight Display with Annunciators (No Parallax Errors)
- USB Port (Standard) with User Interface Software (Optional)
- Data Hold, Auto Power Off and Low Battery Indication
- Overload Indication
- Strong Rugged Casing with Tilt Stand

Specification

- 5 Digits (Except for 750V AC)
- 0.0001 to 1 Count Resolution (Depending on Range)
- 1" / 25.4 mm Digit Display
- Sampling Rate : 3 Samples / Sec
- Accuracy : ± (0.5% rdg + 3 dgt)
- Maximum Overload : 1.2 Times (Continuous)
- Polarity Indication : " – " for Negative Input
- Power : 1.5V 'AA' Battery x 4 pcs
- Power : 6V DC Adaptor (Optional)
- Power Consumption : < 0.2 VA
- Dimension (mm) : 170 x 74 x 240 (approx.)
- Weight (Including Battery) : 850 gms approx. (Ammeter)
  780 gms approx. (Voltmeter)
- Environment : 22 to 32°C, < 70% RH (Calibration)
  0 to +50°C, < 70% RH (Operation)
  -10 to +60°C, < 70% RH (Storage)

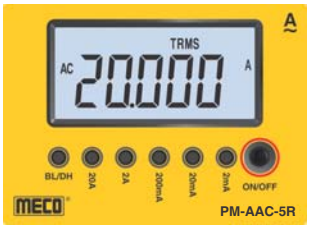
Accuracy : ± (0.5% rdg + 3dgt)

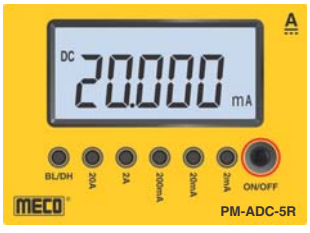
Model	Input	Ranges	Resolution
PM-VAC-5R	AC TRMS	0 – 200mV	0.01
		0 – 2V	0.0001
		0 – 20V	0.001
		0 – 200V	0.01
		0 – 750V	0.1
PM-VDC-5R	DC	0 – 200mV	0.01
		0 – 2V	0.0001
		0 – 20V	0.001
		0 – 200V	0.01
		0 – 1000V	0.1
PM-AAC-5R	AC TRMS	0 – 2mA	0.0001
		0 – 20mA	0.001
		0 – 200mA	0.01
		0 – 2A	0.0001
		0 – 20A	0.001
PM-ADC-5R	DC	0 – 2mA	0.0001
		0 – 20mA	0.001
		0 – 200mA	0.01
		0 – 2A	0.0001
		0 – 20A	0.001

Accessories

Standard : 1.5V 'AA' Battery x 4 pcs (installed), Test Leads (Red & Black for 2A continuous) x 1 pair, Instruction Manual x 1 pc. and Spare Fuse x 2 pcs (for Ammeter Only)

Optional : Test Leads (Red & Black for 20A continuous) x 1 pair, USB Cable x 1 pc, User Interface Software x 1pc



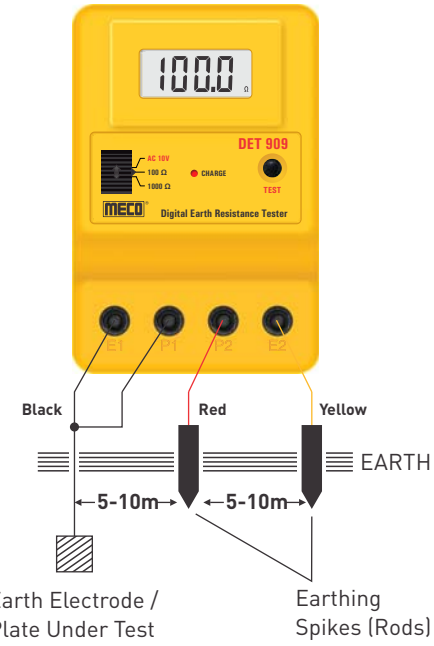


Ordering Information

Model, Test Leads (Red & Black suitable for 20A continuous) x 1 pair (Optional), USB Cable x 1 pc (Optional), User Interface Software x 1pc (Optional).

DET 909

Precision Earth Resistance Measurment



Introduction

MECO DET 909 is designed with technical know how from FUSO Electric Company of Japan. It is useful for measurment of Earth Resistance of Earthing in the Electrical System. This Instrument finds wide applications for testing Earthing of installations in Power Industries, Telecommunication Networks & Electrical Traction Systems etc. It also measures Earth Voltage.

Features

- 3½ Digit (1999 Counts) 14mm LCD Display
- Auto Power Off Function (after 3-5min.)
- Low Battery Indication
- Capable of Measuring Earth Voltage (0 - 10V AC)
- Light Weight & Portable
- Extremely Simple to Operate Connect - Press - Read
- Designed to Reject High Levels of Noise & Interference
- Designed to Generally Confirm to IS10656-1983
- Range Selection & Single Person Push Button Operation Switches
- Two Ranges for Earth Resistance Measurement
- Functions Icons on Display
- Battery Operated
- IEC 1010 CAT III 200V
- Sturdy, Elegant & Compact Body

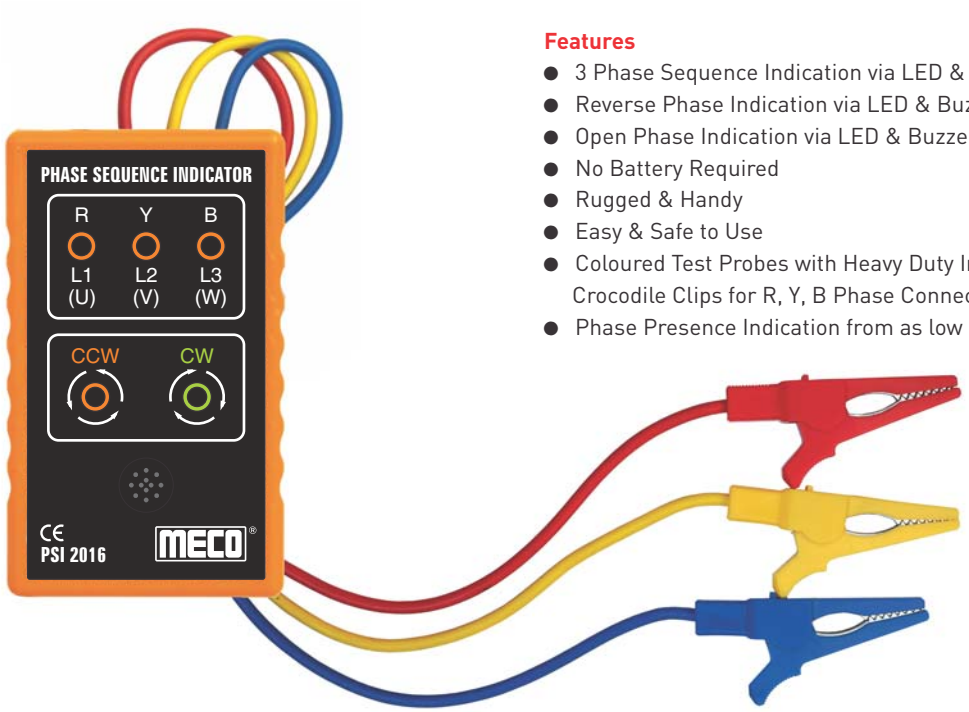
Electrical Specifications

Specification	Range	Resolution
Earth Resistance	0 - 100Ω	0.1Ω
	0 - 1000Ω	1Ω
Earth Voltage	0 - 10V AC	0.01VAC

General Specifications :

Display	3½ dgt. (1999 Counts) LCD Display with 14mm height.	
Accuracy	± (3% rdg. + 5 dgt.) For Earth Resistance	at 23°C ±5°C
	± (1% rdg. + 2 dgt.) For Earth Voltage	
Conversion Rate	2.5 Sec	
Over Range Indication	"1" is displayed	
Operating Temperature	0° to 50°C	
Storage Temperature	-20° to 60°C	
Relative Humidity	80% Maximum	
Low Battery	'⊟' Is Displayed when Battery Voltage drops below Operating Voltage	
Dielectric Strength	2.5KV @ 50Hz for 1min, between Input Terminals & Case	
Insulation Resistance	More than 50MΩ @ 500V between Circuit & Case	
VA-Power	< 3.0VA	
Power	1.2V 'AA' x 8 Rechargeable Batteries	
Dimensions	166 x 111 x 75mm (approx.)	
Weight	525gms. Including Battery (approx.)	
Accessories (Standard)	Carrying Case x 1, 1.2V 'AA' Rechargeable Batteries (fitted in) x 8, Instruction Manual x 1, Carton x 1, 2 Pin Male-Female Wire	
Accessories (Optional)	Test Leads x 1 Set (Red, Yellow, Black), Earthing Spikes (Rods) x 2	

CE



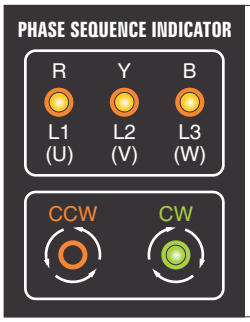
PSI 2016

Features

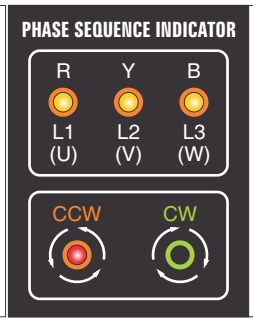
- 3 Phase Sequence Indication via LED & Buzzer
- Reverse Phase Indication via LED & Buzzer
- Open Phase Indication via LED & Buzzer
- No Battery Required
- Rugged & Handy
- Easy & Safe to Use
- Coloured Test Probes with Heavy Duty Insulated Crocodile Clips for R, Y, B Phase Connections
- Phase Presence Indication from as low as 100V AC (PH-PH)

Introduction

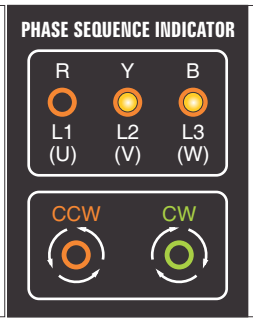
In Electrical Systems, sometimes without identification of Phase Sequence it is impossible to proceed further. The Phase Sequence Indicator is used to determine the Phase Sequence R, Y & B of 3 Phase Voltages. It is important that Phase Sequence is known properly prior to energizing electrical motors and other equipment, as incorrect connection could cause damage to the equipment. The correct operation of measuring instruments like 3 Phase Energy Meter, 3 Phase Power Meter & Automatic Control of devices also depends on the Phase Sequence.



Correct Phase (CW)
- All 3 Yellow LED's ON
- Green LED ON
- Intermittent Beep



Reverse Phase (CCW)
- All 3 Yellow LED's ON
- Red LED ON
- Continuous Beep



Open Phase (One Phase Only)
- Yellow LED for Open Phase is OFF e.g. R Phase LED OFF
- Both Green & Red LED's OFF
- Continuous Beep

Electrical Specifications	
Voltage Range (PH-PH)	100 - 600V AC
Frequency Range	40 - 400Hz
Operating time for continuous Measurement	60 minutes Max. at 200VAC, 4 minutes Max. at 500VAC
Withstand Voltage	4000 V for one minute
Environmental Specifications	
Storage Temperature	- 20°C ~ 60°C
Operating Temperature	- 10°C ~ 40°C
Safety Specifications	
Electrical Safety	EN 61010 - 1
Over Voltage category	CAT III 600 V, CAT IV 300V
Mechanical & General Specifications	
Size	100 x 60 x 24.5mm (approx.)
Weight	185g (approx.)
Case & Housing Material	ABS
Accessories	Test Leads with Insulated Crocodile Clips & Carrying Case.

LCR999A

Features

- Basic measurement accuracy 0.1% & speed upto 10 meas / sec.
- Large LCD display with bright white backlight.
- Ultra low power consumption, battery powered for 24 hours of continuous use.
- Automatic identification function (Ai).
- Percentage display & 4 tolerance comparator : 1%, 5%, 10% & 20%
- 9V battery & External power supply
- Automatic correction function with datahold, max. / min. / average recording.
- Utility function configuration & current setup recovery after power off.
- Standard Mini-USB interface, SCPI compatible
- Auto power Off
- Constant output impedance : 100 ohm

Application

- Field maintenance test & external carrying test.
- Fixation point on production line or mobile checkout.
- Warehouse & real time spot or batch inspection.
- Flow inspect and in field measurements.

Specifications

Function		
Measurement Parameter	Primary Parameters : L / C / R / Z	Secondary Parameter : D / Q / θ / ESR
Equivalent Mode	Series, Parallel	
Auto LCR Function	Manual / Auto	
Ranging Mode	Auto	
Test Terminals	2-Terminal, 4-Terminal, 5-Terminal	
Measurement Speed	10 meas/sec (fast), 5 meas/sec (med), 2 meas/sec (slow)	
Correction	Short , Open	
Tolerance Mode	1%, 5%, 10%, 20%	
Input Protection Fuse	0.1A / 63V	
Interface	Mini-USB (Virtual Serial Port)	
Test Signal		
Signal Frequency	100Hz, 120Hz, 1KHz, 10KHz	
Test Signal Level	0.6 Vrms	
Output Impedance	100Ω	
Basic Accuracy	0.1%	
Measuring Range	L	4μH ~ 1000H Range for Display 0.001μH ~ 1000.0H
	C	4pF ~ 20mF Range for Display 0.001pF ~ 20.000mF
	R / Z	0.4Ω ~ 10MΩ Range for Display 0.0001Ω ~ 10.000MΩ
	ESR	Range for Display 0.0000Ω ~ 999.9Ω, Resolution : 0.0001Ω
	D	Range for Display 0.0000 ~ 9.999, Resolution : 0.0001
	Q	Range for Display 0.0000 ~ 9999, Resolution : 0.0001
	θ	Range for Display - 179.9° ~ 179.9°, Resolution : 0.01°
Environment	0°C~40°C, ≤90% RH	
Power Supply		
Battery Model	7.2V Ni-MH 600mAH Rechargable Battery	
AC Adaptor	Input : 220V (1±10%), 50Hz (1±5%) : Output 12V DC	
Charge Time & Current	Continuous Charge Time : Max. 80min.	Charge Current : Max. 150mA
Battery Capcity Indication	Real Time Disaplay on LCD	
General		
Dimensions	193 x 93 x 48mm	
Weight	395gms (approx.)	
Safety and EMC compliance	IEC 61010-1 : 2001, IEC 61326-2-1 : 2005	
Accessories	Manual, Short Circuit Plate x 1, 7.2V Ni MH Rechargeable Battery (installed) x 1, 12V/300mA AC Adapter x 1, 5 Terminal Kelvin Test Leads x 1 **Optional :** SMD 4 Terminal Kelvin Test Tweezers x 1, Banana Plugs-Crocodile Clip Test Leads x 1, Mini USB Communication Cable & S/W CD	

TTR 8100

Transformer is a very important element in the Electric Power Distribution System. It needs to be maintained from time to time to guarantee smooth power supply at consumer end.

MECO TTR8100 is portable instrument for accurate measurement of 1-Phase & 3-Phase Transformer VT / CT Turns Ratio, Excitation Voltage, Current, Phase Angle and Deviation. TTR8100 ensures the Correct Turn Ratio and Quality of the Transformer.

It checks live Test Points, Short Circuit, Open Circuit and Reverse Polarity before each measurement.

Features

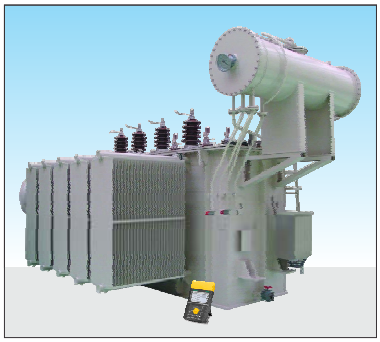
- Measurements of 1Φ and 3Φ Transformer / VT / CT Turns Ratio
- VT/PT Ratio 0.8~10000, CT Ratio 0.8~2000
- Graphical and Literal Illustration of Measurements and connections with Large Back-lighted Dot Matrix 240x128 LCD
- Displays Turns Ratio, Deviation, Secondary Output, Excitation Voltage and Current, Phase Angle and Nameplate Transformer / VT / CT Values in one page for easy quality interpretation.
- Check for Live Test Points, Short Circuit, Open Circuit and Reverse Polarity before each measurement.
- Store 4096 Files of Transformer Nameplate Values (VT / PT / CT, 1Φ / 3Φ, Test Frequency, Primary and Secondary Voltages or Ratio, RCF) and Measuring Data.
- Ten test Frequencies (50~400Hz)
- 9 Types of 3Φ Winding Connections pre-installed.
- Wireless Blue Tooth Communication with PC.
- Select Filter to Remove Field noise (Slow, Normal, Fast)
- Record with Date and Time Stamp
- Powerful lithium Battery (3400mAH) with built-in Charging Circuit
- User Programmable RCF (Reference Correction Factor, 0.99~1.01) to Correct Accuracy within 1% Error
- PC Application Software Included
- Friendly File System for Easy On-site Data Retrieval and Nameplate Values Management

Reference Conditions : 23°C±5°C (30 to 50% RH). Add 25ppm / °C for -0° to 18°C and 28° to 50°C to all Accuracy Specifications. No external electrical or magnetic fields. Output current ⩽ 150mA for VT / PT and ⩽ 50mA for CT. Calibration Cycle is 1 Year.

Electrical

Ratio Range (VT / PT)	**Autoranging : 0.8000 to 10000:1**	
Accuracy (70Hz)	**Ratio Range**	**Accuracy (%of Reading)**
	0.8000 to 999.99	±0.1%
	1000.0 to 4999.9	±0.2%
	5000.0 to 10000	±0.25%
Ratio Range (CT)	**Autoranging : 0.8000 to 2000.0**	
Accuracy (70Hz)	**Ratio Range**	**Accuracy (%of Reading)**
	0.8000 to 2000.0	±0.5%
Excitation Signal	VT / PT Mode : 34Vrms max CT Mode : Auto Level 0 to 1A, 0.1 to 20Vrms	
Excitation Current Display	Range : 0 to 1000mA Accuracy : ±(2% of Reading +2mA)	
Excitation Frequency (Hz)	50, 55, 60, 70, 100, 120, 200, 240, 300, 400	
Display	5" Large Dot Matrix LCD Display (240x128) with Backlight	
Power	Rechargeable Lithium Battery, 3400mAh	
Battery Life	Over 10Hrs of Continuous Operation. Battery life (%) Indication	
Battery Charger	Universal Input (90 to 264Vrms Input)	
Charging Time	<4Hrs	
Data Storage	4096 Files Each (VTM, CTM, VTR, CTR, BMP)	
Date/Time	Battery-Backed, Real-time Calendar Clock	
Measurement Method	ANSI/IEEE C57.12.90 and IEC 600076.1	
Accessory	Test Leads x 1 Pair, Alligator Clips x 4, Rechargeable Lithium Battery x 1, Instruction Manual x 1, AC Adaptor x 1, Power Cord x 1, Software CD and Manual x 1, Carrying Bag x 1	

Application



Accessories

7002, 7272

Features

- Basic Accuracy 0.25%
- Max. Test Current : 10A (60mΩ) for 7272, 5A (120mΩ) for 7002
- Manual or Auto Range
- Four Terminal Kelvin Measurement
- 6 Ranges with 1μΩ Best Resolution
- Measurement of Resistive and Inductive Materials
- Setting for HI, LO & PASS Readings
- Memory of 3000 Measurements Data
- Programmable HI-LO Alarm with memory of 20 Data
- Large LCD with Backlight & HOLD Function
- Low Power Consumption
- Battery Operated (Rechargeable Battery)
- Low Battery indication
- LED indication for Invalid Resistance Measurement
- Cable Length Measurement in feet & meters
- User Interface Software for PC Communication via RS232C (to USB Bridge) Cable
- Built-in Battery Charging Circuit & Calendar Clock

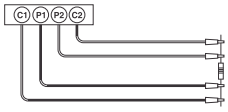
General Specifications

- Battery Charging Time 10Hrs
- AC Adaptor : Input 110V or 220V AC, Output DC 15V/1~3A
- LCD Display 4 5/6 Digit + Backlight
- Dimension : 260 x 158 x 70mm (approx.)
- Weight : 1125gms Including Battery (approx.)
- Environment : $0^0C \sim 50^0C \leq 85\%$ RH (Operation)
  : $-20^0C \sim 60^0C \leq 75\%$ RH (Storage)

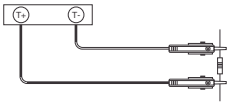
Accessories

- Users Manual x 1 ● Software Manual x 1 ● Software CD x 1
- RS232C (to USB Bridge) Cable x 1 ● AC Adaptor x 1
- 11.1V Rechargeable Lithium Battery (1600mAh) x 1 for 7002
- 11.1V Rechargeable Lithium Battery (3400mAh) x 1 for 7272
- 1 Set of Kelvin Clips ● Carrying Bag x 1
- **Optional :** 4 Wire Test Leads, Double Prods Alligator Clips

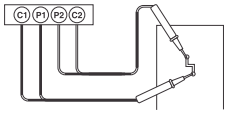
Application



Measurement (with Alligator Clips)



Measurement (with Kelvin Clips)



Measurement (with 4 wire Test Leads)

Electrical Specifications ($23^0C \pm 5^0C$)

Manual Range

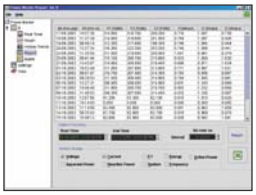
Resistance Range		Resolution	Accuracy
10A (7272)	400μΩ ~ 4000μΩ	1μΩ	±0.25% ±25μΩ
	1.500mΩ ~ 16.000mΩ	1μΩ	±0.25% ±25μΩ
	5.000mΩ ~ 60.000mΩ	1μΩ	±0.25% ±25μΩ
5A (7002)	1.000mΩ ~ 8.000mΩ	1μΩ	±0.25% ±25μΩ
	5.00mΩ ~ 32.00mΩ	10μΩ	±0.25% ±250μΩ
	10.00mΩ ~ 120.00mΩ	10μΩ	±0.25% ±250μΩ
1A	4.00mΩ ~ 40.00mΩ	10μΩ	±0.25% ±250μΩ
	15.00mΩ ~ 160.00mΩ	10μΩ	±0.25% ±250μΩ
	50.00mΩ ~ 600.00mΩ	10μΩ	±0.25% ±250μΩ
100mA	0.0400Ω ~ 0.4000Ω	100μΩ	±0.25% ±2.5mΩ
	0.1500Ω ~ 1.6000Ω	100μΩ	±0.25% ±2.5mΩ
	0.5000Ω ~ 6.0000Ω	100μΩ	±0.25% ±2.5mΩ
10mA	0.400Ω ~ 4.000Ω	1mΩ	±0.25% ±25mΩ
	1.500Ω ~ 16.000Ω	1mΩ	±0.25% ±25mΩ
	5.000Ω ~ 60.000Ω	1mΩ	±0.25% ±25mΩ
1mA	4.00Ω ~ 40.00Ω	10mΩ	±0.25% ±250mΩ
	15.00Ω ~ 160.00 Ω	10mΩ	±0.25% ±250mΩ
	50.00Ω ~ 600.00Ω	10mΩ	±0.25% ±250mΩ
100μA	0.0400kΩ ~ 0.4000kΩ	100mΩ	±0.75% ±3Ω
	0.1500kΩ ~ 1.6000kΩ	100mΩ	±0.75% ±3Ω
	0.5000kΩ ~ 6.0000kΩ	100mΩ	±0.75% ±3Ω

Electrical Specifications ($23^0C \pm 5^0C$)

Auto Range

Resistance Range		Resolution	Accuracy
10A (7272)	400μΩ ~ 60.000mΩ	1μΩ	±0.25%±25μΩ
5A (7002)	1.000mΩ ~ 8.000mΩ	1μΩ	±0.25%±25μΩ
	8.00mΩ ~ 120.00mΩ	10μΩ	±0.25%±250μΩ
1A	4.00mΩ ~ 600.00mΩ	10μΩ	±0.25%±250μΩ
100mA	0.0400Ω ~ 6.0000Ω	100μΩ	±0.25%±2.5mΩ
10mA	0.400Ω ~ 60.000Ω	1mΩ	±0.25%±25mΩ
1mA	4.00Ω ~ 600.00Ω	10mΩ	±0.25%±250mΩ
100μA	0.0400kΩ ~ 6.0000kΩ	100mΩ	±0.75%±3Ω

Software



Application program to represent Real Time Values & Facility to open / save recorded data, plot data, export data, print display screen, parameter setting etc. The screen also displays current time, start time, system mode, sample rate, high limit, low limit, sample count & present sample value. The program also supports plotting of present or recorded data.

CE

Carry Bag

Resistance
Verification Plate

4680BL, 4680BLC

The faults in any Electrical System are unavoidable. Earthing plays an important role in Generation, Transmission & Distribution for safe and proper operation of any Electrical Installation. **MECO 4680BL/4680BLC Clamp-On Earth / Ground Resistance Tester** has long elliptical jaw suitable for flat as well as round earthing strips. It completely eliminates the use of ground and auxiliary rods thus saving lot of time and avoiding shutdown. Calibration check can be verified by using the Resistance Verification Plate provided. This is an extremely handy instrument especially at place where it is next to impossible to measure Earth / Ground Resistance by conventional methods. Substantial time saving and easy operating justify the investment in these instruments.

Features

- Non Contact Ground Resistance Measurement
- No Auxillary Electrodes Needed
- Data Storing Memory
- Data Hold, Noise Signal
- Ground Resistance Measurement 0.01Ω ~1000Ω
- Suitable for Earthing Strip upto 65mm
- Suitable for Round Conductor upto 25mm Φ
- Leakage Current (0.5mA~30.00A) (Model 4680BLC)
- Auto Ranging
- Continuity Loop Test
- Auto Power Off

General Specifications

Jaw	:	65 x 32 mm (approx.)
Conductor Size	:	Upto 65 mm / 25 mm Φ
Power	:	Four 1.5V "AA" Battery
Display	:	4 Digit 9999 counts LCD Back Light Display
Range Selection	:	Auto
Memory	:	99 Sets
Overload Indication	:	OL
Low Battery Indication	:	B
Operating Environment	:	-10°C ~ 55°C
Dimensions	:	293 x 90 x 66 mm
Weight	:	1250 gms Including Battery (approx)
Accessories	:	Resistance Verification Plate x 1, Battery 1.5V (AA) x 4 (Installed), User Manual x 1, Carry Bag x 1
Configurable Alarm	:	Resistance : 1~199Ω Current : 1~499mA

Electrical Specifications (23°C ± 5°C)

Ground Resistance (Auto Range) (4680BL, 4680BLC)		
Range	**Resolution**	**Accuracy of Reading**
0.010 ~ 0.099 Ω	0.001 Ω	± (1%+0.01 Ω)
0.10 ~ 0.99 Ω	0.01 Ω	± (1%+0.01 Ω)
1.0 ~ 49.9 Ω	0.1 Ω	± (1.5%+0.1 Ω)
50.0 ~ 99.5 Ω	0.5 Ω	± (2%+0.5 Ω)
100 ~ 199 Ω	1 Ω	± (3%+1 Ω)
200 ~ 395 Ω	5 Ω	± (6%+5 Ω)
400 ~ 590 Ω	10 Ω	± (10%+10 Ω)
600 ~ 1000 Ω	20 Ω	± (20%+20 Ω)

Ground & Leakage Current : Auto Ranging, 45/65Hz, RMS (4680BLC)		
Range	**Resolution**	**Accuracy of Reading**
0 ~ 80 mA	0.05 mA	± (2.5%+1 mA)
80 mA ~ 650 mA	0.5 mA	± (2.5%+2 mA)
650 mA ~ 4 A	5 mA	± (2.5%+10 mA)
4 A ~ 30 A	10 mA	± (2.5%+20 mA)

Clamp - On Earth / Ground Resistance & Leakage Current Tester (suitable for 23 / 35mm Conductor)

4680, 4680B

Features

- Non Contact Ground Resistance Measurement
- No Auxiliary Electrodes Needed
- Recording / 116 Sets of Memory
- Ground Resistance Measurment 0.025Ω ~ 1500Ω
- Suitable for Ground Wire upto Φ 23mm (Model 4680)
- Suitable for Ground Wire upto Φ 34.5mm (Model 4680B)
- Leakage Current (0.300mA ~ 30.00A) (Model 4680)
- Leakage Current (0.300mA ~ 35.00A) (Model 4680B)
- Programmable High & Low Alarm
- Programmable Data Logging
- Auto Range
- Continuity Loop Test
- Auto Power Off (4~6 mins.)

General Specifications

Jaw Opening : 23 mm approx. (Model 4680)
38 mm approx. (Model 4680B)
Power : 9V Battery
Display : 4 Digit 9999 Counts LCD
Range Selection : Auto
Overload Indication : OL
Power Consumption : 40mA (approx.)
Low Battery Indication : B
Operating Environment : 0^0 ~ 50 ^{0}C, RH < 85%
Storage Environment : -20^0C ~ 60 ^{0}C, RH < 75%
Dimensions : 257 x 100 x 47 mm (Model 4680)
276 x 102 x 51 mm (Model 4680B)
Weight : 670 gms Including Battery (approx.) (4680)/
790 gms Including Battery (approx.) (4680B)
Accessories : Resistance Verification Plate x 1,
Battery (installed) x 1, User Manual x 1,
Carry Box x 1, Cleaning Brush x 1

Electrical Specifications (23^{0}C ± 5^{0}C)

Ground Resistance (Auto Range)		
Range	**Resolution**	**Accruacy of Reading[1,2]**
0.025 ~ 0.250 Ω	0.002 Ω	± 1.5%rdg ± 0.05Ω
0.251 ~ 1.000 Ω	0.02 Ω	± 1.5%rdg ± 0.05Ω
1.001 ~ 10.00 Ω	0.02 Ω	± 1.5%rdg ± 0.1Ω
10.01 ~ 50.00 Ω	0.04 Ω	± 2.0%rdg ± 0.3Ω
50.01 ~ 100.0 Ω	0.04 Ω	± 2.0%rdg ± 0.5Ω
100.1 ~ 200.0 Ω	0.4 Ω	± 3.0%rdg ± 1.0Ω
200.1 ~ 400.0 Ω	2Ω	± 5.0%rdg ± 5Ω
400.1 ~ 600.0 Ω	5Ω	± 10%rdg ± 10Ω
600.1 ~ 1500 Ω	20 Ω	± 20%rdg

1. Loop resistance noninductive, external field <50A/m (4680) or <200A/m (4680B), external electrical field <1V/m, conductor centered.
2. Resistance Measurement Frequency : 3.333KHz

Ground & Leakage Current : Auto Ranging, 50/60Hz, TRMS, Crest Factor <3.0 for (4680) or <3.5 for (4680B)		
Range	**Resolution**	**Accruacy of Reading**
0.300 ~ 1.000 mA	0.001 mA	± 2.0%rdg ± 0.05mA
1.00 ~ 10.00 mA	0.01 mA	± 2.0%rdg ± 0.03mA
10.0 ~ 100.0 mA	0.1 mA	± 2.0%rdg ± 0.3mA
100 ~ 1000 mA	1 mA	± 2.0%rdg ± 3mA
0.200 ~ 4.000A	0.001A	± 2.0%rdg ± 0.03A
4.00 ~ 30.00A (4680)	0.01A	± 3.0%rdg ± 0.03A
4.00 ~ 35.00A (4680B)	0.01A	± 3.0%rdg ± 0.03A

Accuracy of Resistance Calibration Plate : ±1%
Data Logging Capacity : 116 Records
Data Logging Interval : 1 ~ 255 Seconds

4671A

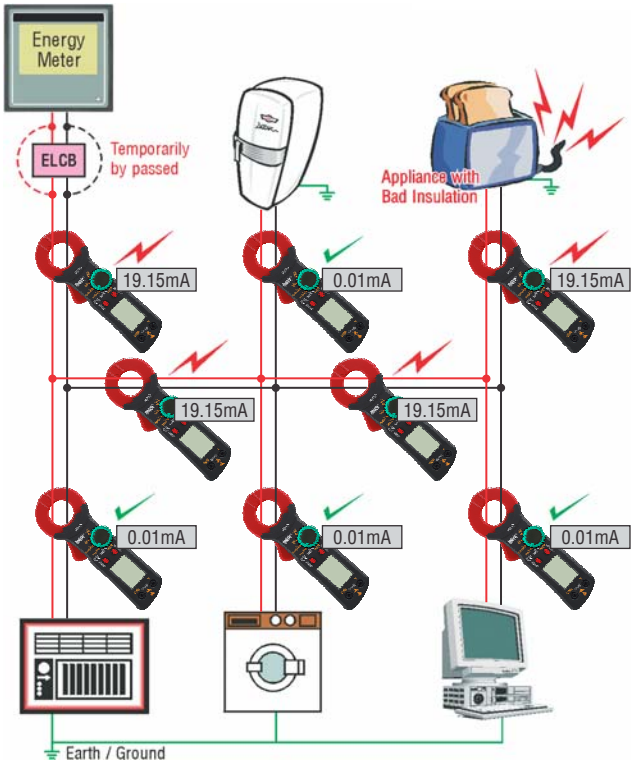
Features

- 10μA Ultra High Resolution
- Large Conductor Diameter (30mm)
- AC Current in 4 Ranges (20mA, 200mA, 2A, 60A)
- Wide Frequency Response (40Hz~400Hz)
- AC A, AC V, DC V
- Large 3½ Digit LCD (1999 Count)
- Data Hold
- Low Battery Indication
- Auto Power Off
- Wristlet

General Specifications

Jaw Opening	Cable Dia 30mm. max. (approx.)
Power	Two 1.5V 'AAA' Battery
Display	3½ Digits 1999 Counts LCD
Range Selection	Manual
Overload Indication	OL
Power Consumption	15mA (approx.)
Low Battery Indication	+ −
Sampling Time	3 time/sec.
Operating Environment	-10° to 50°C, RH < 85%
Storage Environment	-20°C to 60°C, RH < 75%
Altitude	up to 2000M
Dimensions	183 x 63 x 29 mm
Weight	160gms Including Battery (approx.)
Accessories	Battery (installed), Test Leads x 1 pair, Carrying Case x 1, Users Manual x 1

Fault Tracing of Live Installation



Specifications (23°C ±5°C)

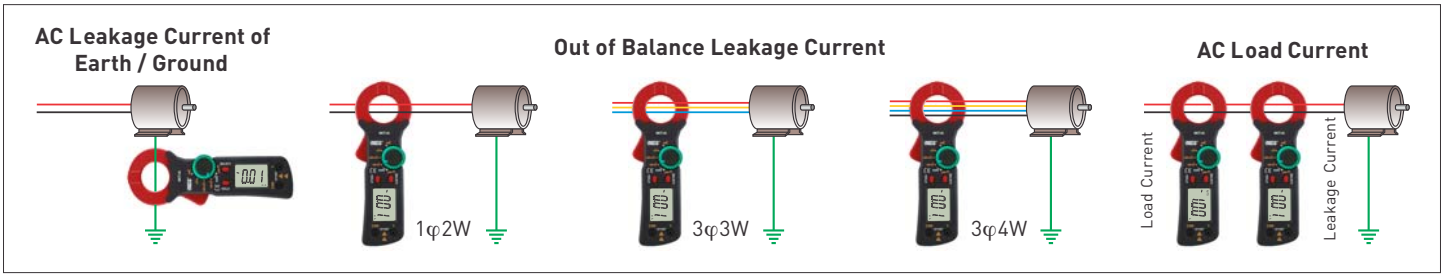
AC Current (40Hz ~ 400Hz)		
Range	**Resolution**	**Accuracy**
20 mA	0.01 mA	±(2.5%rdg ± 5dgts)
200 mA	0.1 mA	
2 A	0.001 A	
60 A	0.1 A	±(3.0%rdg ± 8dgts)

Though the Meter can Display upto 200A, the Calibration is valid upto 60A

AC Voltage (40Hz ~ 400Hz)		
Range	**Resolution**	**Accuracy**
600V	1V	±(2.0%rdg ± 5dgts)

DC Voltage		
Range	**Resolution**	**Accuracy**
600V	1V	±(2.0%rdg ± 5dgts)

Application



4671

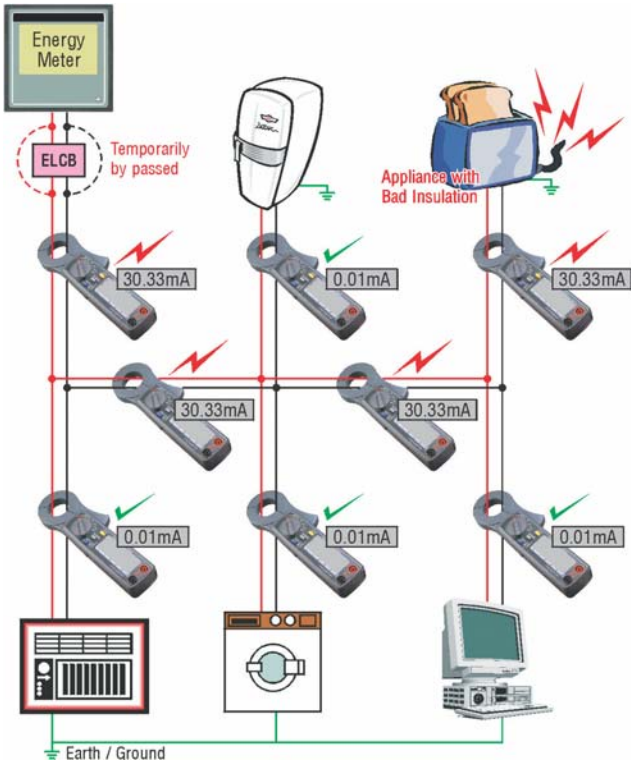
Features

- 10μA Ultra High Resolution
- Large Conductor Diameter (30mm)
- AC Current in 5 Ranges (40mA, 400mA, 4A, 40A, 60A)
- Wide Frequency Response (40Hz~1KHz)
- AC A, AC V, Ω and Continuity
- Large 3¾ Digit LCD (4000 Count)
- 40 Segment Fast Bargraph Display (30 times/sec.)
- Data Hold and Max/Min Hold
- Relative Measurement
- 600 Vrms Overload Protection in Resistance Range
- Auto Power Off

General Specifications

Jaw Opening	Cable Dia 30mm. max. (approx.)
Power	Two 1.5V "AA" Battery
Display	3¾ LCD with 40 Segment Bargraph
Range Selection	Manual
Overload Indication	OL
Power Consumption	15mA (approx.)
Low Battery Indication	B
Sampling Time	3 time/sec. (display) 30 time/sec. (bargraph)
Operating Environment	-10⁰ to 50⁰C, RH < 85%
Storage Environment	-20⁰C to 60⁰C, RH < 75%
Altitude	up to 2000M
Dimensions	210 x 72 x 36 mm
Weight	210gms Including Battery(approx.)
Accessories	Carrying Case x 1, Users Manual x 1, Battery (installed), Test Leads x 1 pair

Fault Tracing of Live Installation



Specifications (23⁰C ±5⁰C)

AC Current			
Range	**Resolution**	**Accuracy**	
		50/60 Hz	**Wide (40Hz~1KHz)**
40 mA	10 μA	±1.0%rdg ± 3dgts	±2.0%rdg ± 5dgts
400 mA	100 μA		
4 A	1 mA		
40 A	10 mA		
60 A (0~50A)	100 mA	±1.5%rdg ± 3dgts	±3.0%rdg ± 5dgts
60 A (50~60A)	100 mA	±3.0%rdg ± 5dgts	±3.5%rdg ± 5dgts

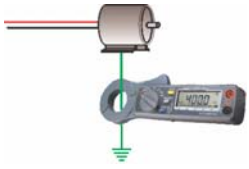
Though the Meter can Display upto 400A, the Calibration is valid upto 60A

Resistance (Ω) and Continuity (Open Voltage 0.4V)				
Range	**Resolution**	**Accuracy**	**Beeping**	**OL Protection**
40~400Ω	0.1Ω	±1.0%rdg ± 2dgts	<38.0Ω	AC 600V

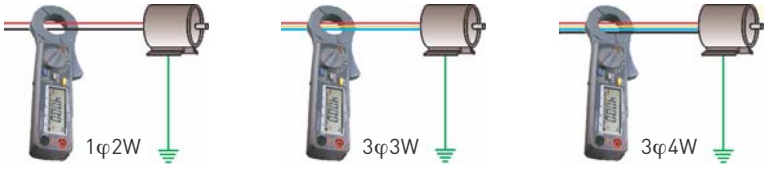
AC Voltage (Input Impedance : 10 MΩ)				
Range	**Resolution**	**Accuracy**		**Overload Protection**
		50/60 Hz	40~1KHz	
400V	0.1V	±1.5%rdg ± 2dgts	±2.0%rdg ± 4dgts	AC 800V

Application

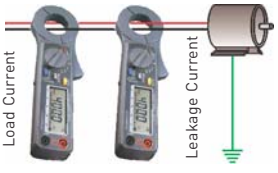
AC Leakage Current of Earth / Ground



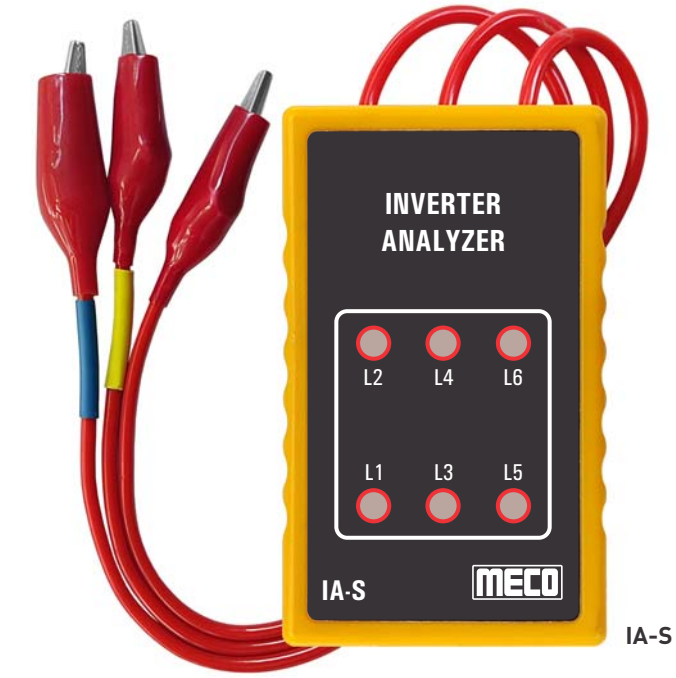
Out of Balance Leakage Current



AC Load Current



Inverter Analyzer
Non-Contact Voltage Detector



IA-S

Features

- Helps to Diagnose Fault in Inverter Based Products
- 60 - 600V AC, 40 - 400Hz (Max. for 5 minutes)
- No Battery Required
- Rugged, Handy, Easy and Safe to Use
- Color Identified Test Probes with Insulated Crocodile Clips for R, Y, B Connections
- LED Based Instant Diagnosis

Introduction

Inverter Analyzer is suitable to check all inverter products. It can be used to analyze the fault in Air Conditioners (AC's), Refrigerators etc. It helps to diagnose whether there is a Compressor failure or a PCB failure.

Working

In case of a breakdown,

Step 1 : Turn the power off.

Step 2 : Remove the connections between the Compressor and PCB.

Step 3 : Check and ensure that the charged voltage of built-in smoothening electrolytic capacitor drops to < 10V DC or below while carrying out any service.

Step 4 : Connect Inverter Analyzer instead of Compressor by connecting the faston terminals of the PCB to the Crocodile Clips of the Inverter Analyzer (R, Y, B respectively). Be careful not to touch the Crocodile Clips (R, Y, B) with each other.

Step 5 : Turn the power on and operate the A.C. or Refrigerator.

Step 6 (Diagnosis) : When all LED's of the Inverter Analyzer are lit uniformly, it means the PCB is proper and Compressor is faulty. When any / all LED's are not uniformly lit, it means there is fault in the PCB.

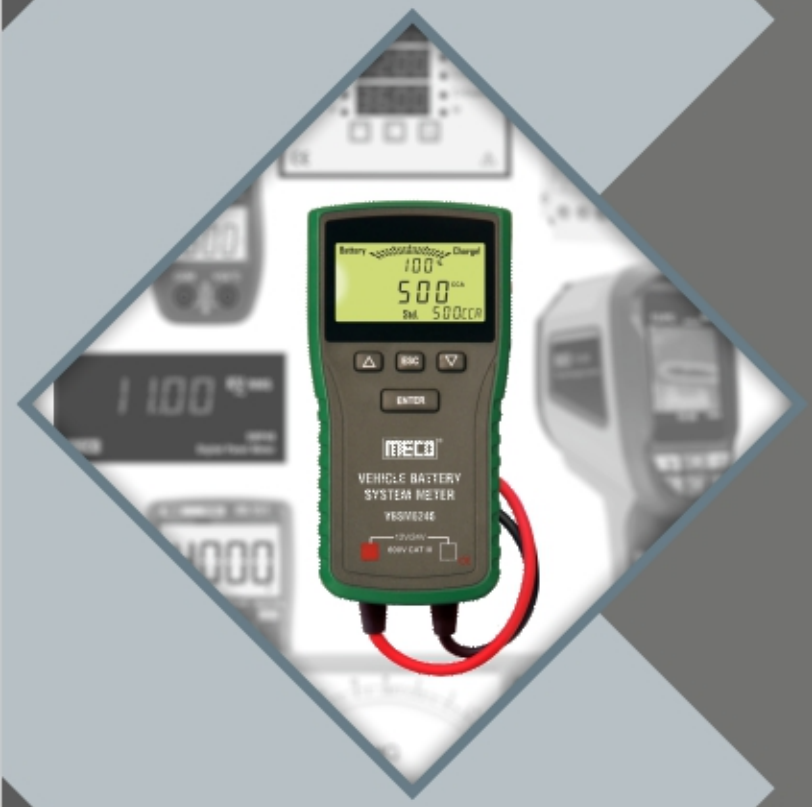
Step 7 : On completion of diagnosis, be sure to switch off the power. Then remove the connections of the Crocodile Clips of the Inverter Analyzer. Re-connect the faston terminals of the PCB to Compressor firmly. Loose connections may lead to burning of the terminals.

NCVD-1000

NCVD-1000S

Functions	Safe Non Contact Voltage Detection, Torch Light	Safe Non Contact Voltage Detection, Torch Light, Auto Power Off
Voltage Range	90 ~ 1000V AC	90 ~ 1000V AC
Frequency Range	50 ~ 60Hz	50 ~ 60Hz
Alarm Mode	Bright RED LED with Audible Sound (Buzzer)	Bright RED LED with Audible Sound (Buzzer)
Torch	White LED Illumination	White LED Illumination
NCV Sensitivity	Fixed	Fixed
Measurement Category	CAT II 1000V AC	CAT III 1000V AC
Power	1.5V AAA x 2 Batteries	1.5V AAA x 2 Batteries
Auto Power Off	-	5 Min. (approx.)
Dimension	153 x 25 x 18mm (approx.)	148 x 26 x 18mm (approx.)
Weight	42gms (approx.) Including Batteries	38gms (approx.) Including Batteries
Accessories	1.5V (AAA) x 2 Batteries, Blister	1.5V (AAA) x 2 Batteries, Blister

MECO®
SINCE 1962



Automotive and Battery Capacity Testers / Meters

- ✓ Battery (Load) Testers (Analog and Digital)
- ✓ Vehicle Battery System Meters
- ✓ Multifunction Automotive Meter
- ✓ Digital Automotive Multimeter
- ✓ Battery Capacity (Impedence) Testers

+60 YEARS
ONE MISSION

Reliable Long-Lasting Affordable

ABM18

BM63

Introduction

A battery is an electrochemical cell that is charged externally to store electrical power. The stored power of the battery is released when it is needed for various applications that could be required for normal day to day working, back-up operations, critical applications or for emergencies. The use of batteries is increasing every day in order to drive / support various applications such as Cars, Motor Cycles, UPS, Generators, Automobiles, Emergency Lights, Solar Power etc.

A battery is expected to always perform flawlessly as per its capacity. However sometimes even new batteries fail and hence periodic testing and maintenance of batteries is required. It is important to also test incoming batteries as a part of the quality control procedure to ensure proper compliance of the supply made by the battery manufacturer. The loss of battery capacity occurs gradually often without the knowledge of the user.

The function of the Battery Meters MECO ABM18 and BM63 is to check the capacity condition of various lead acid storage batteries and to ensure that the supported equipment is adequately backed-up, prevented from unexpected failures and forewarned for any calamity. The battery tester helps to identify the weak batteries so that they can be re-charged or weeded out of the system before they make the complete system unreliable.

ABM18

MECO ABM18 is a portable Automobile Battery (Load) Meter which can check the capacity condition of different types of Motorcycle and Motorcar batteries from 2 to 200Ah.

The product consists of a Load Resistor and Testing Clip. The state of the battery is indicated on the meter dial as 'FULLUP' (White), 'NORMAL' (Green), 'RECHARGE' (Yellow), 'DISCHARGE' (Red) directly.

Technical Specifications

Rated Voltage of Battery to be Tested : 2, 6, 12V DC
Rated Capacity of Battery to be Tested : 2 ~ 200Ah
Dimensions : 225 x 124 x 68mm (approx.)
Weight : 500gms (approx.)

Application

MOTORCYCLE	CAPACITY	VOLTAGE	MOTORCAR	CAPACITY	VOLTAGE
50cc	2Ah	6V or 12V	20 ~ 360cc	20 ~ 24Ah	6V or 12V
51 ~ 125cc	6 ~ 10Ah		500 ~ 2000cc	30 ~ 60Ah	
126 ~ 250cc	9 ~ 15Ah		2000 ~ 5000cc	55 ~ 100Ah	
251 ~ 750cc	10 ~ 18Ah		5000 ~ 8000cc	100 ~ 200Ah	12V or 12V x 2

BM63

MECO BM63 is a portable Battery (Load) Meter which can check the capacity condition of different types of batteries from 4 to 500Ah.

The product consists of a DC Voltmeter, Load Resistor and Testing Clip. The state of the battery is indicated on the meter dial as 'OK' (Green), 'WEAK' (Yellow) and 'BAD' (Red) directly.

Technical Specifications

DC Voltmeter : 0 ~ 15V DC
Rated Voltage of Battery to be Tested : 2, 6, 12V DC
Rated Capacity of Battery to be Tested : 4 ~ 500Ah
Dimensions : 220 x 120 x 70mm (approx.)
Weight : 550gms (approx.)

Digital Battery (Load) Meter
Motorcycle / Two Wheeler Battery Meter

DBM72

Features

- 80A Discharge Current Load Test for 6V / 12V (40Ah ~ 200Ah) Lead Acid and Li-ion Battery
- Built-In 10 Seconds Timer to Auto Cut-off Load After Test
- Temperature Rise is Controlled (for Circuit Protection)
- Two Way Internal Resistance Measurement (Load Test Method & 4-Wires Method)
- Auto Data Hold

Specifications	Range
Battery Type	Lead Acid & Li-ion Battery
Battery Voltage	6V / 12V DC
Battery Capacity	40 Ah ~ 200Ah
Battery Load Test Current	80A
Load Test Time Control Timer	<10 Seconds
Battery Drop Voltage in Load Test	✓
Temperature Control in Load Test	✓
Battery Internal Resistance by Load Test	0 ~ 99mΩ
Battery Internal Resistance by 4 - Wires Test	0 ~ 99mΩ
Battery Conclusion by Load Test or by 4 - Wires Test	GOOD / WEAK / BAD
Reverse Polarity Protection	✓
Detect and Display Bad Cell	✓
Missing Lead Detection	✓
Overload Protection of Input Voltage	✓
Safety Standard	CAT III 600V
Cable Length	300mm (approx.)
Dimension	205 x 115 x 70mm (approx.)
Weight	900g (approx.)

MBM27

Features

- Key Parameters Measured for Diagnosis of Motorcycle / Two Wheeler Vehicle Battery and Electrical System.
- 12V (3 to 20Ah) Lead Acid Wet and Dry Charged Batteries of Motorcycle and Two Wheelers.
- Three Testing References by Battery Type (Wet Charged Battery), CCA Rating (Dry Charged Battery) and Ah Rating (General Purpose Cracking Battery).
- Display of Battery Condition [Good / Caution / Replace].
- Reverse Polarity Protection and Overload Voltage Protection to ensure Operator Safety.

Specifications	Range
Battery Test	✓
Engine Cranking Load Test	✓
Charging System Test	✓
CCA Range	100 ~ 1000
Ah Range	3 ~ 20Ah (not continuous)
State of Charge (SOC)	0 ~ 100%
State of Health (SOH)	0 ~ 100%
Voltage Range	9 ~ 16V ± 3%
Internal Resistance	0 - 99mΩ
Display Battery Internal Resistance	Milli Ohms
Display Battery Voltage	Volts
Display Battery Condition	Good / Caution / Replace
Test 12V Batteries	✓
Battery Recharge Indication	✓
Reverse Polarity Protection	✓
Detect and Display Bad Cell	✓
Loose Lead Detection	✓
Overload Protection of Input Voltage	✓
Cable Length	700mm (approx.)
Dimension	146 x 82 x 25mm (approx.)
Weight	266g (approx.)

CE

VBSM6129B

VBSM6246

VBSM6246P

Features

- Key Parameters Measured for Diagnosis of Vehicle Battery & Electrical System
- Overload Protection to ensure Operator Safety
- Loose Lead Detection
- Reverse Polarity Protection
- Internal Unit Conversion CCA / IEC / EN / DIN
- Battery Recharge Indicator, Detects and Displays Bad Cell and Overload Protection of Input Voltage

Specifications	VBSM6129B	VBSM6246	VBSM6246P
Battery Test	✓	✓	✓
Engine Activation Load Test	✓	✓	✓
Maximum Load Test	-	✓	✓
Charging System Test	✓	✓	✓
CCA Range	100 ~ 1700	100 ~ 1700	100 ~ 1700
IEC Range	100 ~ 1000	100 ~ 1000	100 ~ 1000
EN Range	100 ~ 1700	100 ~ 1700	100 ~ 1700
DIN Range	100 ~ 1000	100 ~ 1000	100 ~ 1000
JIS Range	Refer Table in Instruction Manual	Refer Table in Instruction Manual	Refer Table in Instruction Manual
Display Battery Internal Resistance	Milli Ohms	Milli Ohms	Milli Ohms
Display Battery Voltage	Volts	Volts	Volts
Display Battery Condition	LED Indication GOOD (Green), WEAK (Yellow) & BAD (Red)	Good / OK / Pay Attention / Replace	Good / OK / Pay Attention / Replace
Thermal Printer	-	-	✓
Test Batteries	12V	12V / 24V	12V / 24V
Battery Recharge Indication	✓	✓	✓
Reverse Polarity Protection	✓	✓	✓
Detect and Display Bad Cell	✓	✓	✓
Loose Lead Detection	✓	✓	✓
Internal Unit Conversion EN, IEC, DIN	✓	✓	✓
Overload Protection of Input Voltage	✓	✓	✓
LCD with Backlight	✓	✓	✓
Safety Standard	CAT III 600V	CAT III 600V	CAT III 600V
Cable Length	850mm (approx.)	700mm (approx.)	700mm (approx.)
Dimension	128 x 85 x 35mm (approx.)	180 x 90 x 32mm (approx.)	235 x 90 x 50mm (approx.)
Weight	300g (approx.)	400g (approx.)	450g (approx.)

CE

User Changable Pinpoint or Hook Test Leads

LCD Screen

MAM6138

Terminal Shutter Interlock

When 0hm Measurment Selected

When mA Measurment Selected

When 20A Measurment Selected

6255

Features

- 3 in 1 Automotive Auto Ranging DMM, Power Probe & Logic Probe
- Pen Type Design Perfect for Automotive Diagnosis
- Hands - Free Test Leads for Excellent Convenience
- Flashlight for Operation of Automotive Diagnosis
- Auto Range, Auto Power Off, Low Battery Warning & Data Hold

Specification	Range	Accuracy
VDC	200mV / 2V / 20V / 200V / 600V	± (0.5% + 5)
VAC	2V / 20V / 200V / 600V	± (1.2% + 5)
Resistance	200 / 2000 / 20K / 200K / 2M / 20MΩ	± (0.8% + 5)
Continuity Buzzer & Diode	✓	NA
Logic Test	6V / 12V / 24V	
Test Lighter (Bulb Style Circuit Tester)	**12V / 24V**	
Flash Light, Data Hold, Auto Power Off	✓	
Auto & Manual Range, Low Battery Warning	✓	
Power Source	1.5V AA x 2	
Max. Display	1999	
Dimension	210 x 60 x 32mm (approx.)	
Weight	240g (approx.)	

DMM Mode

Logic Probe Mode

Test Light Mode

Flash Light

Features

- Terminal Shutter Interlock Mechanism Prevents Wrong Opertions
- 11 Functions
- Heavy Duty Rubber Holster
- Data Hold, Auto Power Off
- Measurement of Duty, Ignition Frequency, Ms-Pulse Width, RPM & DWELL

Specifications	Range	Accuracy
Ignition Frequency	0.1Hz ~ 20KHz	± (1.5% + 10)
Pulse Width	0.1 ~ 999.9ms	± (1.5% + 10)
RPM	2STR : 300 ~ 19999 rpm	± (3% + 5)
	4STR : 600 ~ 19999 rpm	
DC V	20V / 200V	± (0.5% + 3)
	1000V	± (0.8% + 3)
AC V	20V / 200V	± (1% + 5)
	700V	± (1.2% + 5)
DC A	20mA / 200mA	± (1.5% + 5)
	20A	± (2% + 10)
AC A	20mA / 200mA	± (2% + 5)
	20A	± (3% + 10)
Resistance	200Ω	± (1% + 5)
	2K / 20K / 200K / 2M	± (1% + 1)
Frequency	2KHz / 20KHz	± (1.5% + 10)
Temperature	-40 ~ 0°C	± (5% + 5)
	0 ~ 400°C	± (1% + 3)
	400 ~1000°C	± (2% + 3)
DUTY	0.1% ~ 99.9%	NA
DWELL	1 / 2 / 3 / 4 / 5 / 6 / 8	± (3% + 5)
Continuity Buzzer	✓	NA
Diode Test	✓	
Transistor Test	✓	
Power Source	9V Battery	
Dimension	200 x 85 x 38 mm (approx.)	
Weight	800g (approx.)	

What is Internal Resistance of Battery?

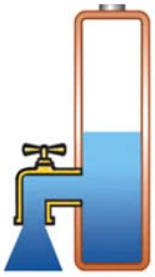
One of the basic requirements of a battery for digital applications is low internal resistance. Measured in milliohms, the internal resistance is the gatekeeper that, to a large extent, determines the runtime. The lower the resistance, the less restriction the battery encounters in delivering the needed power. The internal resistance (IR) of a battery is defined as the opposition to the flow of current within the battery. There are two basic components that impact the internal resistance of a battery; they are electronic resistance and ionic resistance. The electronic resistance plus the ionic resistance will be referred to as the total effective resistance.

How does Internal Resistance affect Performance?

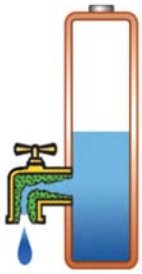
Storage batteries are repeatedly charged and discharged over a long interval. This tends to gradually deteriorate the battery performance and the internal resistance increases until charging is no longer possible. Faults may also be caused by internal short-circuits, reducing the battery voltage, making the battery over-heat or in the case of a short-circuit caused by corrosion, possibly even leading to a fire.

A high mW reading can trigger an early 'low battery' indication on a seemingly good battery because the available energy cannot be delivered in the required demand and remains inside the battery.

The internal resistance of a battery is dependent on the specific battery's size, chemical properties, age, temperature and the discharge current.



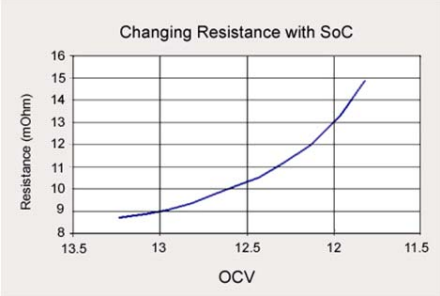
Low Resistance



High Resistance

Effects of internal battery resistance

A battery with low internal resistance delivers current to the equipment (Load) as per requirement. High internal resistance causes battery voltage to drop. Because of drop in voltage, current flowing to the equipment (Load) gets cut-off leaving energy in the battery.



Typical internal resistance readings of a lead acid battery

The readings were taken at open circuit voltage (OCV).

MECO Battery Capacity Tester

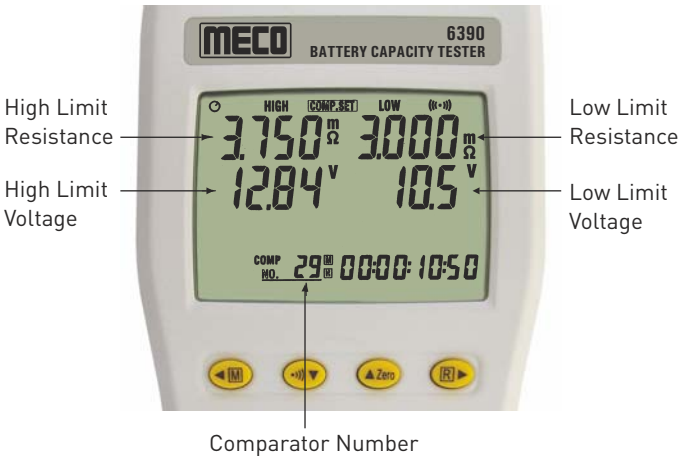
In the modern age with the increase in various portable devices, maintenance of batteries has become crucial as the performance of these devices depend on life of batteries. Because of continues charging and discharging of batteries their performance gradually deteriorates until charging is no longer possible which may result in sudden failure of the system.

MECO Batter Capacity Testers can give quick results on the state of a battery either as PASS, WARNING or FAIL which is based on comparator settings of internal resistance and the voltage for various batteries. MECO Battery Capacity Testers can check all types of batteries including Nickel-Metal Hydride batteries (NiMH), Nickel Cadmium batteries (NiCd), Lithium-Ion batteries (Li-ion), Alkaline batteries and Lead-Acid batteries. Users can choose from 2 models to suit their applications : Battery Capacity Tester Model 6363 for testing batteries upto 40V and 500Ah and Battery Capacity Tester Model 6390 for testing batteries upto 60V and 1200Ah.

The analysis of batteries state is PASS / WARNING / FAIL based on a six-way combination of comparisons against upper and lower limits of Internal Resistance and Voltage threshold. This result is then indicated by LEDs and a Beeper.

Comparator Table

Resistance / Voltage	Low Limit Resistance Lo	↓ Middle	High Limit Resistance ↓ Hi
Voltage ..... Lo	WARNING Beeper	WARNING Beeper	FAIL Beeper
Comparison →			
Value .....Hi	PASS	WARNING Beeper	FAIL Beeper



Applications (For 6363 & 6390)

For Manufacturers, R & D Units, Service Centers, Technicians, Dealers & Service Excutives in following industries

- Battery
- UPS
- Automobile
- Emergency Power Backup
- Solar Energy
- Wind Energy
- Lift
- Crane & forklift
- IT
- Telecom
- Aircraft
- Railways

Battery Capacity (Impedence) Tester for Batteries upto 500Ah

SOFTWARE

CE

USB

Product Kit

6363

Top Connections

Software Window

Features

- Memory & Read Function
- Right Device to know the TRUE-LIFE of Battery Capacity (Resistance / Voltage) Simultaneously Measure
- On-line Testing without shutting down battery
- Built-in Comparator Function
- Rates Conditions as PASS, WARNING or FAIL
- Datalogging Memory Function
- Compact and Lightweight
- USB Interface & Software
- Auto Power Off

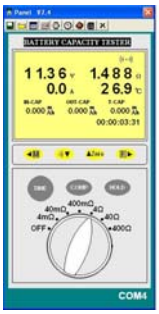
Specifications

Battery Types Tested	**UPS Battery, Motor Cycle** (6V/12V : 2 ~ 20Ah), **Car** (12V : 21 ~ 80Ah), **Truck** (12V : 83 ~ 160Ah) **Household Appliances** [(9V : upto 625mAh), (AA : upto 2850mAh), (AAA : upto 1250mAh), (C : upto 8350mAh), (D : upto 20500mAh)], **Lithium Notebook Battery** [(14.8V : 3600 ~ 4800mAh), (11.1V : 3600 ~ 7200mAh)], **Lithium Digital Camera Battery** (3.7V : 650 ~ 1350mAh), **Lithium Cordless Phone Battery** (3.7V : 800 ~ 1250mAh),
Battery Capacity	0 to 500Ah
Resistance	**Ranges :** 40mΩ, 400mΩ, 4Ω, 40Ω **Resolution :** 10μΩ, 100μΩ, 1mΩ, 10mΩ **Accuracy :** ± (1% rdg + 10 dgt) on all Ranges
Measurement Condition	**Current :** 25mA, 2.5mA, 250μA, 25μA **Frequency :** 1KHz ± 10%
Voltage	**Measurement :** 4V, 40V **Resolution :** 1mV, 10mV **Accuracy :** ± (0.1% rdg + 6 dgt)
Open Circuit Terminal Voltage	≤ $3.5V_{PP}$
Manual Data Logging	500 Sets
Continuous Data Logging	9600 Sets
Comparator Settings	Resistance High and Low Limits and Voltage Throughold Point
Number of Comparator Settings	99 Sets
Operating Environment	0°C to 40°C (32°F to 104°F), 80% RH or Less, Non-Condensing
Maximum Input Voltage	50V DC
Power Supply	Six 1.5V AA Size Batteries
Battery Life	7 Hours
Dimensions / Weight	250 x 100 x 45 mm (approx.) / 490gms Including Batteries (approx.)
Accessories	Instruction Manual x 1, Batteries (installed), Test Probe (Alligator Clips) x 1, USB Cable x 1, Software Disk x 1, Carrying Bag x 1

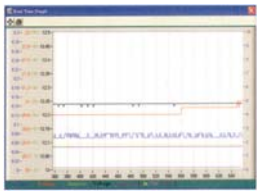
Battery Capacity (Impedence) Tester with DC Current Adaptor for Batteries upto 1200Ah

DC Current Adaptor

6390



Software Window



Features

- Right Device to know the TRUE-LIFE of Battery Capacity (Resistance / Voltage / Current & Temperature) Simultaneously
- Measure battery charge / discharge capacity (Ah)
- Measure battery State of Charge SOC (%)
- On-line Testing without shutting down battery
- Built-in Comparator Function
- Rates Conditions as PASS, WARNING or FAIL
- Auto Datalogging Micro SD Card 4GB upto 99 blocks
- Compact and lightweight
- USB Interface & Software
- Load Test Analysis (Charge / Discharge)
- Auto-Hold & Auto-Data Storage
- Wide Range 0 ~1200 Ah
- Auto Power Off
- Memory & Read Function

Specifications

Battery Types Tested	**UPS Battery, Motor Cycle** (6V/12V : 2 ~ 20Ah), **Car** (12V : 21 ~ 80Ah), **Truck** (12V : 83 ~ 160Ah) **Household Appliances** [(9V : upto 625mAh), (AA : upto 2850mAh), (AAA : upto 1250mAh), (C : upto 8350mAh), (D : upto 20500mAh)], **Lithium Notebook Battery :** [(14.8V : 3600 ~ 4800mAh), (11.1V : 3600 ~ 7200mAh)], **Lithium Digital Camera Battery :** (3.7V : 650 ~ 1350mAh), **Lithium Cordless Phone Battery :** (3.7V : 800 ~ 1250mAh),
Battery Capacity	0 to 1200Ah
Resistance	**Ranges :** 4mΩ, 40mΩ, 400mΩ, 4Ω, 40Ω, 400Ω **Resolution :** 1μΩ, 10μΩ, 100μΩ, 1mΩ, 10mΩ, 100mΩ **Accuracy :** ± (0.8% rdg + 6 dgt) on all ranges. except ± (3% rdg + 20 dgt) on 4mΩ
Measurement Condition	**Current :** Approx. 40mA, 4mA, 400μA, 40μA, 4μA **Frequency :** 1KHz ± 30Hz
DC Voltage	**Range :** 6V, 60V; **Resolution :** 1mV, 10mV; **Accuracy :** ±(0.1% rdg + 6 dgt)
Temperature	**Range :** -20°C to 60°C (-4°F to 140°F); **Resolution :** 0.1°C / 0.1°F; **Accuracy :** ± 1°C / ± 1.8°F
DC Current	**Range :** 600A; **Resolution :** 0.1A; **Accuracy :** ± (2% rdg + 2 dgt)
Open Circuit Voltage	5V max
Datalogging	**Manual Datalogging :** 999 Sets (Can be read by Meter & Download by PC) **Auto Datalogging :** Micro SD card 4GB (Max. 99 Blocks)
Comparator	**Setting :** Resistance Upper and Lower Limits and Voltage (Threshold) Upper and Lower Limit **Memory :** 99 Sets of Values
Operating Environment	0°C to 40°C (32°F to 104°F), 80% RH or less, Non-condensing
Power Supply	Six 1.5V AA size Alkaline Batteries
Battery life	5.5 Hours
Standard	IEC 61010-1, 1000V Insulation CAT III, Pollution Degree 2
Dimensions / Weight	198 x 94 x 49 mm (approx.) / 530 gms Including Battery (approx.)
Accessories	Alligator Clip Type Test Lead with Temperature Sensor x1, Pin Type Test Lead x 1, DC Current Adaptor x 1, Zero Adjustment Board x 1, Instruction Manual x 1, AA 1.5V Batteries x 6, AC Adaptor x 1, 4GB Micro SD Card (installed) x 1, USB Cable x 1, PC Software Disk x 1 & Carring Bag x 1

Battery Capacity (Impedence) Tester with DC Current Adaptor for Batteries upto 1200Ah

Resistance Measurement

Range	Resolution	Measurement Current	Accuracy
4mΩ	1μΩ	40mA approx.	± (3% rdg ± 20 dgt)
40mΩ	10μΩ	40mA approx.	± (0.8% rdg ± 6 dgt)
400mΩ	100μΩ	4mA approx.	
4Ω	1mΩ	400μA approx.	
40Ω	10mΩ	40μA approx.	
400Ω	100mΩ	4μA approx.	

Measuring Current Frequency : 1KHz ± 30Hz

Voltage Measurement

Range	Resolution	Accuracy
6V	1mV	± (0.1% rdg ± 6 dgt)
60V	10mV	

Maximum Input Voltage : 60VDC maximum. No AC Voltage Input.

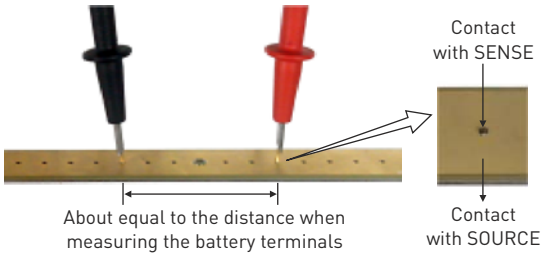
Temperature Measurement

Range	Resolution	Accuracy
-20°C to 60°C	0.1°C	± 1.0°C
-4°F to 140°F	0.1°F	± 1.8°F

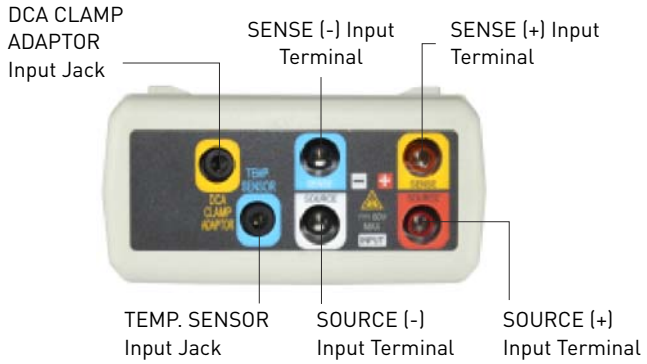
DC Current Measurement

Range	Sensitivity	Resolution	Accuracy
600A	0.6A ~ 600.0A	0.1A	± (2.0% rdg ± 2 dgts)

Zero Adjustment Using Pin Type Test Lead

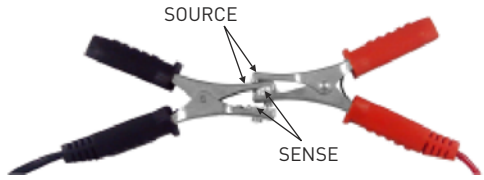


Input Terminals



Usage

Zero Adjustment Using Clip Type Test Lead



Product Kit

भारत सरकार
अन्तरिक्ष विभाग
इसरो उपग्रह केन्द्र
पोस्ट बॉक्स नं. 1795, हवाई पत्तन मार्ग
विमानपुरा डाक घर, बेंगलूरु - 560 017. भारत
दूरभाष :
फेक्स :

सत्यमेव जयते

Government of India
Department of Space
ISRO Satellite Centre
Post Box. No. 1795, Airport Road, Vimanapura Post
Bangalore - 560 017. India
Telephone :
Fax :
25084024
25205283/84

ISCP-2012-0-24809-0101 LO 17/07/2013

WHOM SO EVER IT MAY CONCERN

This is to certify that **"SOLAR MODULE ANALYSER" (SMA) LOW POWER SMA AND HIGH POWER SMA** which is procured vide our Purchase Order No. ISCP-2012-0-24809-0101 LO Dated.17.06.2013 from **M/s. MECO METERS PVT LTD., MAHAPE** for ISRO Satellite Centre, Bangalore, is for our own use. There will not be any commercial transactions involved or re-sale of these items.

These materials are being transported through carriers.

It is requested not to detain enroute, as the item is required very urgently at the destination.

V.SARAVANAN
Purchase & Stores Officer

भारतीय अन्तरिक्ष अनुसंधान संगठन — **Indian Space Research Organisation**

1st Floor Energy Building
Pandit Deendayal Petroleum University Campus
Gandhinagar, Gujarat - 382 007, INDIA
Phone : +91-79-2327 5361
Fax : +91-79-2327 5380
Email : information@germi.org
Website : www.germi.org

GERMI
GUJARAT ENERGY RESEARCH AND MANAGEMENT INSTITUTE

ENERGY EDUCATION
ENERGY RESEARCH & DEVELOPMENT
ENERGY AWARENES & PUBLICATION
ENERGY CONSULTANCY

Dr. Omkar Jani
Principal Research Scientist, Solar Energy Research Wing
GERMI Research, Innovation and Incubation Centre

GERMI/Solar/2016/554
4 January 2016

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **"SOL!R SYSTEM !N!LYZER MODEL: 9018 BT"** , which is procured vide our Purchase Order number GERMI/SRWTRG/2015/021 dated 24.11.2015 from **M/s. Meco Meters Private Limited,** Mahape, Navi Mumbai for Gujarat Energy Research and Management Institute, Gandhinagar, Gujarat, is for our internal use, training and research purpose.

Sincerely yours,

Omkar Jani

CREDA
CHHATTISGARH STATE RENEWABLE ENERGY DEVELOPMENT AGENCY
(Dept. of Energy, Govt. of Chhattisgarh)
2nd Floor, CSERC Building, Shanti Nagar, RAIPUR (C.G.)
Tel.: +91-771-4019230, 4019231, 4019227, 4019228, Fax: 0771-4268386
E-mail: info@creda.in Website: www.creda.in

CREDA/EC/F-80/SJ/14624

Raipur, Date: 30 DEC 2015

TO WHOMESOEVER IT MAY CONCERN

It gives us immense pleasure & satisfaction to put on record our appreciation for M/s. Meco Meters Pvt. Ltd., Navi Mumbai from whom we had purchased "Battery Capacity Tester" model No.-6363.

The performance of the instrument found to be satisfactory & excellent during the field inspection & testing of lead acid battery of the solar photovoltaic plant.

We also express our appreciation to the team of M/s. Meco Meters Pvt. Ltd. for their excellent service support to CREDA.

I find the "Battery Capacity Tester" is very effective as well as essential electrical measuring instrument for testing & inspection of battery in solar photovoltaic plant.

Date: 30.12.2015
Place: Raipur

(Sanjeev Jain)
Chief Engineer, CREDA

CREDA - *Energetic agency with ever lasting energy source*

SOLAR IDEA

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info@solaridea.com
www.solaridea.com

4th January, 2016

To,
M/s. MECO Meters Pvt. Ltd.
Plot No. EL - 60, MIDC., Electronic Zone,
TTC Industrial Area, Mahape,
Navi Mumbai – 400710 (India)
Tel. No. 022 – 27673300
Fax No. 022 – 27673310

Kind Attention: Mr. Kamal Goliya / Mr. Prashant Thakkar

Subject: Performance of MECO Solar System Analyzer - 9018BT

Dear Sir,

We are pleased to inform you that performance of MECO Solar System Analyzer 9018BT supplied to us is working well and is meeting our expectations.

We are using the MECO Solar System Analyzer for analyzing and improving the efficiency of our Solar Inverters, Solar pumps, and other solar systems. We are also able to assess the PV panel performance and furthermore, we are able to adjust the panels spacing and tilt angel to obtain optimum power from the PV panels.

The analyzer is found to be reliable and we have pleasure in recommending the same to others.

We look forward to having similar kind of service and support from you in the future.

With Best Regards
For M/s. Solar Idea Pvt. Ltd.

Managing Director

SOLAR IDEA PRIVATE LIMITED, CIN : U40106TG2014PTC094915
Registered Office : Door No. 8-2-277/A/7, Plot No. 126, Road No. 2, Banjara Hills, Hyderabad -500034, Telangana State, India.

MECO®
SINCE 1962

Solar Analyzers

- ✓ Solar Module Analyzer
- ✓ Solar System Analyzer
- ✓ Solar Power Meter

+60 YEARS
ONE MISSION

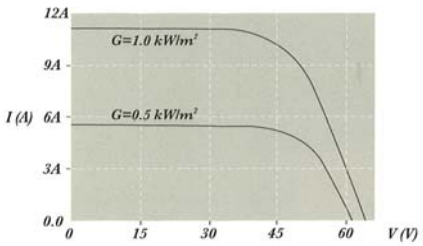
Reliable Long-Lasting Affordable

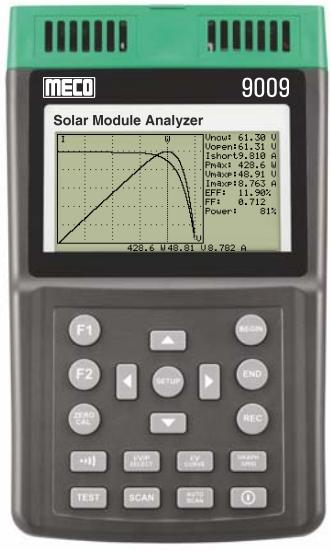
SOFTWARE

CE

USB

IV-Curve





9009

Solar Cell

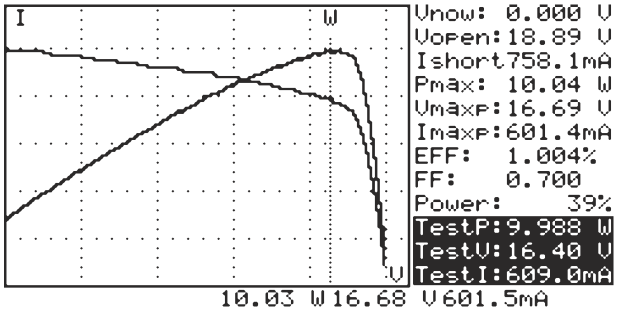
Solar Panels

MECO Solar Module Analyzer Model 9009 is a portable analyzer used for testing, maintenance and finding efficiency of various parameters of solar panels and cells. Analyzer can be used to design Solar System to generate specific power. It can identify Solar Power System requirement, best angle of Solar Panel installation and Broken / Worn-out cells

Features

- I-V Curve Test for Solar Panel / Module / Cell
- Max. Solar Panel / Module / Cell Power (Pmax) search by Auto-Scan : 60V, 12A (500W Capability)
- Best Resolution : 1mV, 1mA
- Manual Single Point I-V Test
- Max. Voltage (Vmaxp) at Pmax
- Max. Current (Imaxp) at Pmax
- Voltage at Open Circuit (Vopen)
- Current at Short Circuit (Ishort)
- I-V Curve with Cursor to Display each Data Point
- Efficiency (%) Calculation of Solar Panel
- Solar Panel Area Setting : 0.001 m^2 ~ 9999 m^2
- Standard Light Source Setting : 10 W/m^2 ~ 1000 W/m^2
- Communicate with PC via USB Cable
- AC Adaptor and Rechargeable Lithium Battery
- Memory Size : 100 Records
- Sampling Time of Data Logging : 0 ~ 99 min.
- Large LCD with Backlight

IV-Curve



General Specifications

Battery Type	Rechargeable Lithium Battery, 3400mAh
Battery Life	400 times of linear scan from 60V to 0V and 0A to 12A.
Data Logging Memory Size	100 records
AC Adaptor	AC 110 ~ 240V Input, DC 15V / 1 ~ 3A Output
Standards	EN 61326 - 1:2006 EN 61010 - 1:2001 CAT I 60V Pollution Degree 2
Operation Environment	5°C ~ 50°C, <85% RH
Temperature Coefficient	0.1% of full scale / °C(<18°C or >28°C)
Storage Environment	-20°C ~ 60°C, <75% RH
Dimension	257 x 155 x 57mm (approx.)
Weight	1160gms Including Battery (approx.)
Accessories	User Manual x 1, AC Adaptor x 1, Optical USB Cable x 1, Rechargeable Lithium Battery (installed) x 1, Software CD x 1, Software Manual x 1, Kelvin Clips (12A max) x 1 Set, 4 Wire to 2 Wire Connector (10A Max and 12A for 1minute) x 1 set, Carrying Bag x 1

Electrical Specifications (23°C ± 5°C, Four-Wire Measurement Maximum Power Limit is 500W)

DC Voltage Measurement

Range	Resolution	Accuracy
0 ~ 10V	0.001V	± 1% ± (1% of Vopen ± 0.1V)
10 ~ 60V	0.01V	± 1% ± (1% of Vopen ± 0.1V)

Vopen : Open Circuit Voltage of Solar Cell or Module

DC Current Measurement

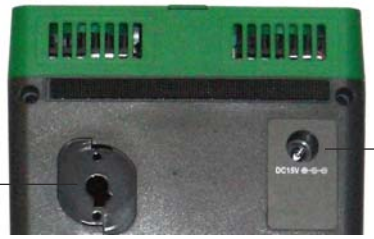
Range	Resolution	Accuracy
0.01 ~ 10A	1mA	± 1% ± (1% of Ishort ± 9mA)
10 ~ 12A	10mA	± 1% ± (1% of Ishort ± 0.09A)

Ishort : Short Circuit Current of Solar Cell or Module

DC Current Simulation

Range	Resolution	Accuracy
0.01 ~ 10A	1mA	± 1% ± 9mA
10 ~ 12A	10mA	± 1% ± 0.09A

Rear Panel Connections



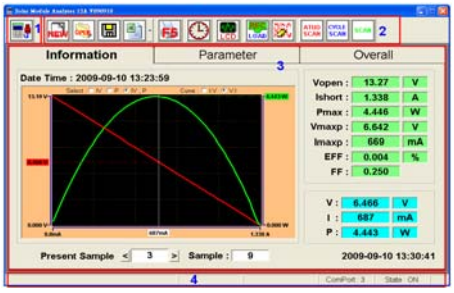
Applications

- Quality Control at Production Line, Warehouse or Site of Installation
- Identify Requirements of Solar Power System
- Maintenance of Solar Panels
- Verify the Best Installation Angles of Solar Panels
- Research and Development

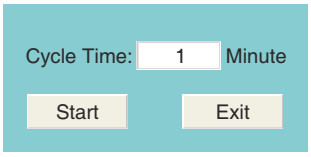
User Interface & Data Acquisition Software

Solar Module Analyzer is supplied with user friendly software for Data Storing and Analysis. Users can store Data (.CSV/.TAB) that can be read in MS EXCEL and Print Waveform / Graph via Printer

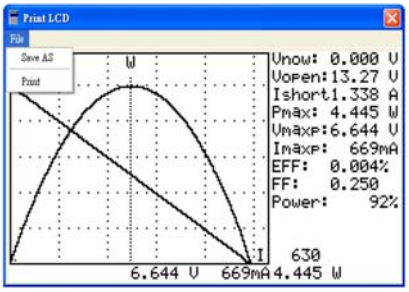
Software Window



Cycle Scan



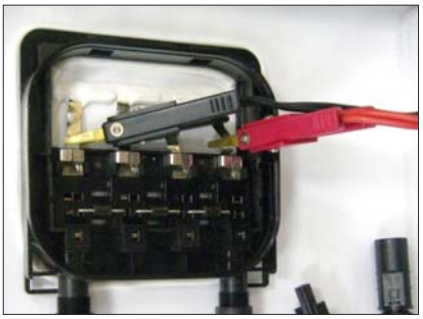
Print LCD



Product Kit

4 Wire Measurement

Solar Panel Connections



Solar System Analyzer (Photovoltaic I-V Curve Tester) with DC Current Clamp, AC Power Clamp, Thermo & Irradiance Meter

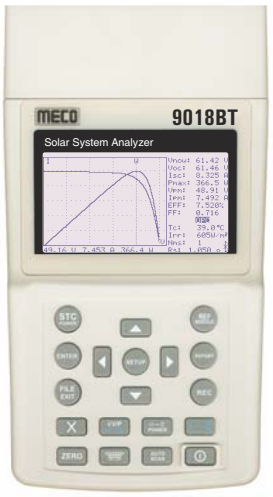
SOFTWARE

CE

USB

BLUETOOTH

Solar 21
(AC Clamp)



9018BT

Solar 15
(DC Clamp)

Irradiance
Meter

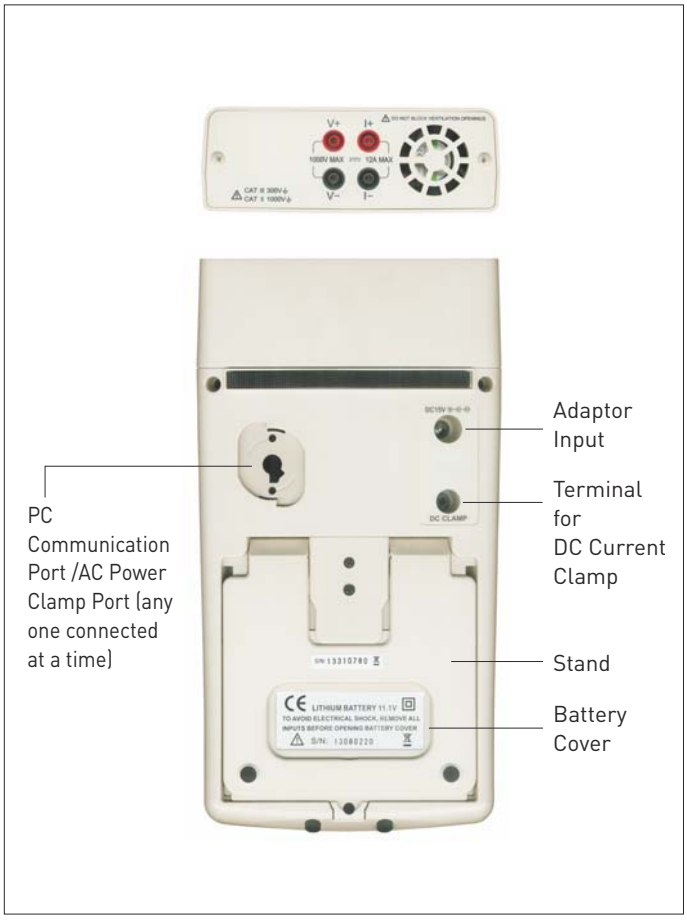
Thermo
Meter

MECO Solar System Analyzer Model 9018BT is Portable Analyzer used for Testing, Monitoring, Measuring, Analyzing and Troubleshooting various parameters of Solar System. This System has Intelligent Test Logic with no personal attendance required. The System continuously monitor DC Output of Solar System and AC Power Output of Inverter, Calculate Efficiency of DC to AC Power Conversion and Maximum Output Power.

Features

- I-V Curve Test for Solar System
- Max. Solar System Power (Pmax) search by Auto-Scan : 1000V, 12A (12000W Capability)
- The Analyzer and the Remote Solar Detector is connected by Bluetooth Wireless Communication (Bluetooth 2.1 + EDR Class 1)
- The Remote Solar Detector is Moisture-Proof.
- Intelligent Test Logic with no personnel attendance required in the field.
- Max. Voltage (Vpm) at Pmax, Max. Current (Ipm) at Pmax
- Voltage at Open Circuit (Voc), Current at Short Circuit (Isc)
- Efficiency (%) Calculation of Solar System
- Temperature Measurement of Solar Panels
- Irradiance Measurement of Sun Light
- Series Resistance (Rs) Calculation of Solar Panels
- I-V Curve with Cursor to Display each Data Point
- With Data Logging / Open Function, the I-V Curves of Solar System can be analysed / recorded for a period of time (e.g. 60 min.)
- Conversion of I-V Curve under OPC to data under Standard Test Condition (STC) based upon IEC Standard
- Built-in Calendar Clock
- Users can set up the Parameters of Solar Panels
- Users can set up the Series number of Solar Panels. Parameters of many Solar Panels can be Measured in One Measurement.
- The Irradiances and Temperatures of Solar Panels can be continuously Measured, Monitored and Recorded.
- Rechargeable Lithium Battery, Low Battery Warning, AC Power Adaptor
- Optical USB Cable for PC Communication
- Solar Connector (optional)

Top & Rear Panel Connections



- Provide Operating Condition (OPC) and Standard Test Condition (STC) test reports for Verification of Solar Panel Performance (OK, or NO OK)
- With Power Clamps (SOLAR 15 DC Current Probe and SOLAR 21 AC Power Clamp), continuously measure / monitor / record the DC Power output of Solar System and the AC Power Output of Inverter (1 phase or balanced 3 phases); calculate the Efficiency of DC to AC Power Conversion and the Efficiency of the max. output power.

General Specifications for Solar System Analyzer

Battery Type	Rechargeable Lithium Battery (3400mAh)
Battery Life	400 times of linear scan (1000V ~ 1V, 0.1A ~ 12A), 8 hours for standby mode.
Memory Size	512K Bytes (3980 Mod files or 320 REC files or 3980 PWR files or 3980 IRR files)
AC Adaptor	AC 100 ~ 240V input, DC 15V / 1 ~ 3A output
Standards	EN 61323-1:2006 Class B, EN 61010-1:2010, IEC 6100-4-2:2008, CAT II 1000V, CAT III 300V & Pollution Degree 2
Operation Environment	5°C ~ 50°C, <85% RH
Temperature Coefficient	0.1% of full scale / °C (<18°C or >28°C)
Storage Environment	-20°C ~ 60°C, <75% RH
Dimension	260 x 158 x 64mm (approx.)
Weight	1580gms Batteries included (approx.)
Accessories	Solar Irradiance Meter (Remote Solar Detector) x 1, Thermometer x 1, USB power cord x 1, User manual x 1, AC adaptor x 1, Optical USB cable x 1, Rechargeable lithium battery (3400mAh) x 1 (installed), Software CD x 1, Software manual x 1, Carrying bag x 1, Thermal conductive gel x 1, Testing clips (1 black & 1 red), 4-wire to 2-wire connecting cable x 1, 4-wire testing (Extension) cable x 1, Solar 15 : DC current probe x 1, Solar 21: AC power clamp x 1, **Optional :** Solar Connector (1 black & 1 red)

Electrical Specifications (23°C ± 5°C, Irradiance ≧ 800W/m², Four-Wire Measurement, Maximum Power Limit is 12000W)

DC Voltage Measurement

Range	Resolution	Accuracy
1 ~ 1000V	0.01 V / 0.1 V / 1 V	± 1% ± (1% of Voc ± 0.1 V)

Voc : open circuit voltage of solar system

DC Current Measurement

Range	Resolution	Accuracy
0.1 ~ 12A	1mA / 10mA	± 1% ± (1% of Isc ± 9mA)

Isc : short circuit current of solar system

DC Current Simulation

Range	Resolution	Accuracy
0.1 ~ 12A	1mA / 10mA	± 1% ± 9mA

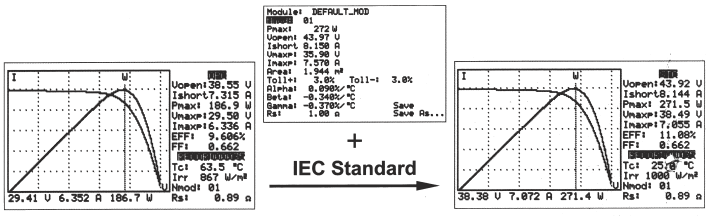
Irradiance Measurement

Range	Resolution	Accuracy
0 ~ 2000W/m²	1W/m²	± 3% ± 20dgts

Temperature Measurement

Range	Resolution	Accuracy
-22 ~ 85°C	0.1°C	± 1% ± 1°C

Conversion of OPC Data into STC Data

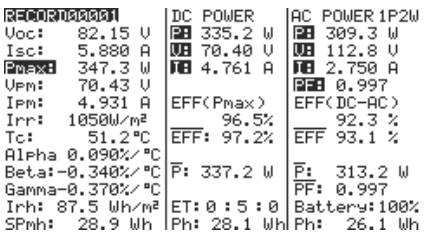


AC Power Clamp (Solar 21)

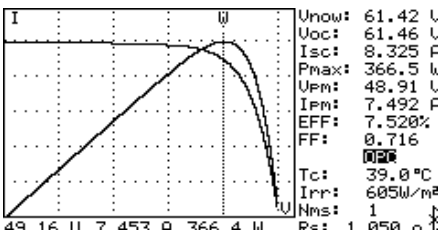
Features

- Active (W, KW, HP), Reactive (VAR, KVAR) & Apparent (VA, KVA) Power
- Power factor (PF), Phase angle (Φ), & Energy (mWH, WH, KWH)
- Measurement of standby power consumption for IT products
- Non-interrupted AC current harmonic analysis
- 1 to 99th order of harmonics at 1.0% basic accuracy
- Total harmonic distortion (%THD-F) & crest factor (CF)
- True RMS measurement of V & A at 0.5% basic accuracy
- Fast peak function (39μs for 50Hz, 33μs for 60Hz)
- Measurement of balanced 3Φ power
- Measurement of balanced 3Φ sequence
- Programmable CT ratio from 1 to 250
- Max, Min & Data hold functions
- Leakage current measurement at 10μA resolution
- Active power in H.P.
- Shielded jaw immune to external interference

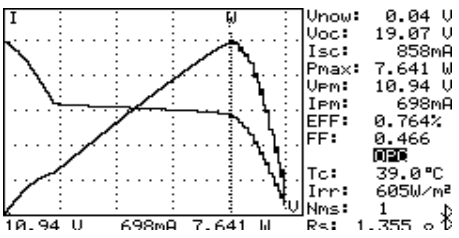
Efficiency of Power Mode



Normal I-V Curve



Abnormal I-V Curve (Cells at the corner of solar panel are defected)



DC Current Probe (Solar 15)

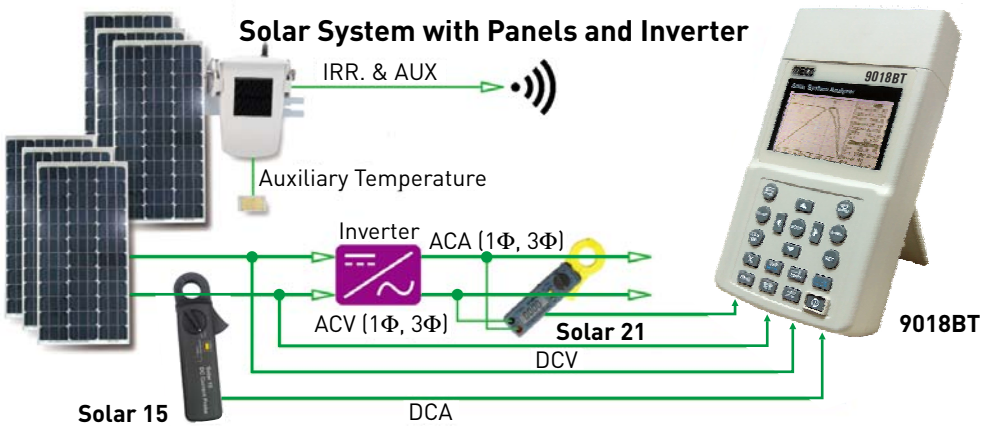
Features

- Accurate DC Current Probe for Current Measurement
- One Touch Zero for DCA adjustment
- 23mm Diameter Jaw

Electrical Specifications for DC Current Probe (Solar 15)

Range	Resolution	Accuracy
DC 12A	1mA / 10mA	± 2.0% ± 30mA

Applications



A. Quality Control at Production Line, Warehouse or Site of Installation

- Manufacturers of solar panels can test the characteristics for quality control purpose at the production line.
- Installation engineers can randomly test samples of solar panels at site to verify the quality of solar panels used at site of installation.

B. Identify Requirements of Solar Power System

- The unit can measure actual max. power (Pmax), voltage (Vpm) and current (Ipm) at max. power.
- Instead of the rated max. power, system designers need to be aware of the actual solar power from solar panels under actual operating conditions.

C. Maintenance of Solar Panels

- Maintenance engineers can store the characteristics data of solar panels in the beginning and compare the characteristics data in weekly, monthly or yearly maintenances.

D. Verify the Best Installation Angles of Solar Panels

- Engineers can collect data of the installation angles at different dates and time by using the unit at site of installation.
- The data can be used as a reference to design the automated angle adjustment system or the data can be used to select an optimal angle for a fixed angle installation.

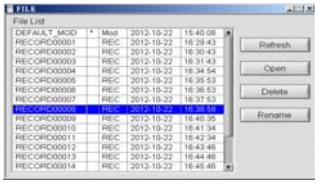
E. Measure / Monitor / Record the DC Power Output & Efficiency

- Continuously Measure / Monitor / Record the DC power output of solar system and the AC power output of inverter (1 phase or balanced 3 phases)
- Calculate the efficiency of DC to AC power conversion and the efficiency of the max. output power

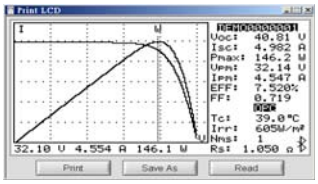
Product Kit

User Interface and Data Acquisition Software

File List

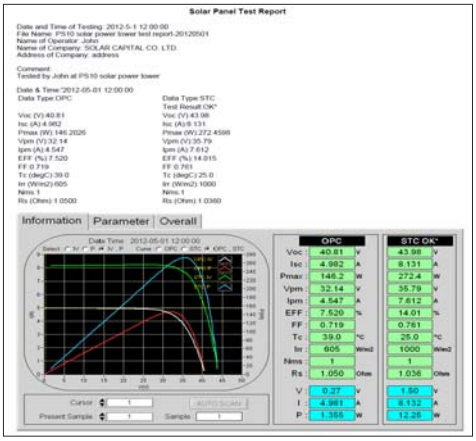


Print LCD

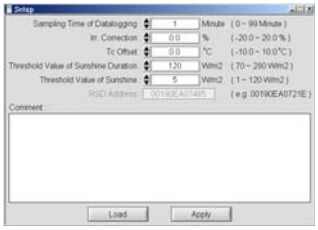


Cycle Scan

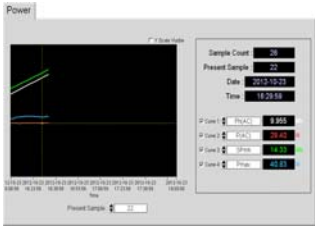
Solar Panel Test Report



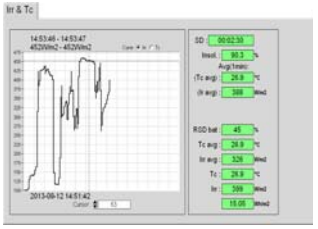
Setup



Power Curves



Irradiance / Temperature Recording



936

Applications

- Solar Power Plant
- Solar Radiation Measurements
- Solar Power Research for Location of the Solar Panels or Solar Water Heaters
- Physics and Optical Laboratories
- Meteorology
- Agriculture
- Windows Performance Calculate the Rate of Daylight Penetration

Features

- Solar Power Measurement with Orientation and Tilt Angle
- Measurement : Solar Power (illuminance), Orientation, Tilt Angle
- Solar Power Measurement Range : 2000 W/m^2 or 634 BTU / (ft^2.h).
- Easy Measurement for Rate of Daylight Penetration
- Auto Change for Measuring Range
- Auto Power off with Disable Function
- Instantaneous, Average, Min/Max Values, Data Hold
- 20 Points Memory, Low Battery Indicator
- Socket for Tripod Mounting
- Operation with 9V Battery
- Magnetic Mount
- Backlight LCD and 4 Digits Triple Display

Specifications

Sensor	High Sensitivity Silicon Photodiode
Spectral Response	400 ~ 1100 nm
Range	0 ~ 2000 W/m^2 (0 ~ 634 BTU / ft^2.h)
Accuracy (at 23°C, 60% RH)	± 10W/m^2 (± 3 BTU / ft^2.h) or ± 5% (whichever is greater)
Resolution	0.00 ~ 99.99 W / m^2 : 0.01 W / m^2,
	100.0 ~ 999.9 W / m^2 : 0.1 W / m^2 ,1000 ~ 2000 W / m^2 : 1 W/m^2
	0.00 ~ 99.99 BTU / ft^2.h : 0.01 BTU / ft^2.h,
	100.0 ~ 634.0 BTU / ft^2.h : 0.1 BTU / ft^2.h
Angular Accuracy	Cosine Corrected < 7% (angle < 60°)
Tilt Angle Range	0 ~ 90°
Tilt Angle Accuracy (at 23°C, 60% RH)	± 1.2°(≤ 60°), Additional Temperature Induced Error ± 0.1° / °C from 23°C
Sample Time	Approx. 0.4 Second
Operation Temp. & Relative Humidity	0°C ~ 50°C (32°F ~ 122°F) Less than 80% RH
Store Temp. & Relative Humidity	-10°C ~ 60°C (14°F ~ 140°F) Less than 85% RH
Auto Power Off	Enable or Disable (Auto Power off after approx. 10 minutes)
Battery Life	Approx. 30 Hours for Continuous Use
Max / Min / Avg	Yes
Data Hold	Yes
Low Battery Indication	Yes
Backlight Function	Yes
Zero Adjustment	Yes
Over Range Indication	Yes ("--HI--")
Memory	Yes (20 Points Memory)
Compass	Yes
Solar Transmission Measurement	Yes
Tripod Socket	Yes
Weight	220gms Including Battery (approx.)
Dimensions	Main Instrument : 140 x 49 x 29 mm (approx.)
	Sensor Probe : 83 x 54 x 26 mm (approx.)
Accessories	9V Battery, Instruction Manual, Carrying Case

RECOMMENDED NOISE LEVELS

Noise Limit for Various Zones

Zone	Day Time (Noise Limit in dBA)	Night Time (Noise Limit in dBA)
Industrial Zone	75	70
Commercial Zone	65	55
Residential Zone	55	45
Silent Zone	50	40

Noise Limit for Vehicles

Category of Vehicle	Noise Limit in dBA
Motorcycle, Scooters and Three Wheelers	80
Passenger Cars	82
Passenger or Commercial Vehicles upto 4 MT	85
Passenger or Commercial Vehicles above 4 MT and upto 12 MT	89
Passenger or Commercial Vehicles Exceeding 12 MT	91

Noise Limit for Domestic Appliances and Construction Equipment

Category of Domestic Appliances/ Construction Equipments	Noise Limit in dBA
Window Air Conditioners of 1 Tonne to 1.5 Tonne	68
Air Coolers	60
Refrigerators	46
Diesel Generator for Domestic Purposes	85 - 90
Compactors (Rollers), Front Loaders, Concrete Mixers, Cranes (Movable), Vibrators and Saws	75

RECOMMENDED LUX LEVELS

Place	Lux Limit
Office Space	
The Conference Room	200~750
Paperwork	700~1500
Typewriting Draft	1000~2000
Factory	
Packaging or the Aisle	150~300
The Production Line of Vision	300~750
Inspection / QA	750~1500
Assembly Work	1500~3000
The Hotel	
Public Places or Bathroom	100~200
Reception Room or Cashier Room	200~1000
Shop	
Indoor Staircase or Corridor	150~200
The Exhibition Window or Packaging Machine	750~1500
The Receptionist or Exhibition Window	1500~3000
Hospital	
Ward or Warehouse	100~200
The Medical Examination Room	300~750
Surgery	
The Emergency Room	750~1500
School	
Hall, Indoor Stadium	100~300
Classroom	200~750
Laboratory, Library, Study Room	500~1500

Source : Web / Internet

MECO®
SINCE 1962

Environment Testing Instruments

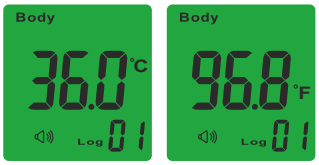
- ✓ Infrared Thermometer (Body & Industrial)
- ✓ Thermal Imaging Camera
- ✓ Humidity & Temperature Meter
- ✓ Air Flow Anemometer
- ✓ Digital Sound Level Meter
- ✓ Digital Lux Meter
- ✓ Laser Distance Meter
- ✓ Combustible Gas Leak Detector
- ✓ Tachometer
- ✓ Coating Thickness Gauge

+60 YEARS
ONE MISSION

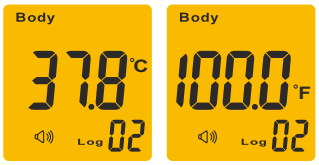
Reliable Long-Lasting Affordable

CE

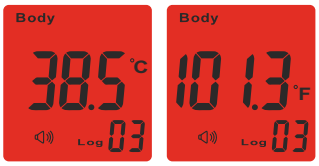
BT-99



Green
Normal Temperature
(Less than 37.5°C / 99.5°F)



Orange
Marginally High Temperature
(Between 37.5°C to 38°C / 99.5°F to 100.4°F)



Red
Very High Temperature
(Above 38°C / 100.4°F)

- Warranty One Year
- Annual Re-calibration service available at extra cost "As per requirements of Legal Metrology Act."

Features :

- Handheld
- Precise non-contact measurements
- Measures temperature from distance
- Reduces risk of virus spread
- Body Temperature Measurements
- Surface Temperature Measurements
- Fast response (0.5 Sec.)
- 34 Measuring Data can be stored
- Alarm for higher or lower body temperature
- LCD display with backlight
- Green, Orange and Red backlights to classify level of temperature
- °C / °F switchable
- Auto power off

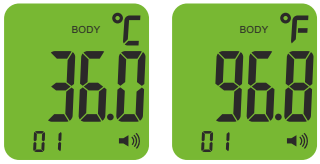
General Specifications

Body Temperature Measuring Range	36°C ~ 42.9°C (97°F ~ 109°F)
Body Temperature Measuring Accuracy	± 0.3°C (± 0.6°F)
Surface Temperature Measuring Range	0 ~ 100°C (32 ~ 212°F)
Surface Temperature Measuring Accuracy	± 1°C (± 1.8°F)
Resolution	0.1°C / 0.1°F
Response Time	0.5 Sec
Measuring Distance	5 ~ 8 cm
Auto Power Off	7 Sec (approx.)
Operating Temperature	10°C ~ 40°C (50°F ~ 104°F)
Storage Temperature	-10°C ~ 60°C (14°F ~ 140°F)
Relative Humidity	10% ~ 90% RH operating, <80% RH storage
Power	1.5V AA Battery x 2 pcs.
Weight	140gms (including battery approx.)
Dimension	145 x 80 x 40mm (approx.)
Accessories	Carrying Pouch, Instruction Manual, 1.5V AA Battery x 2 pcs.

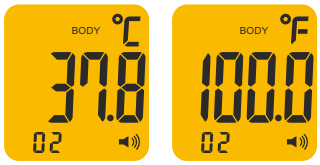
Note : Infrared Thermometer has advantage of measuring temperature from a distance and without contact with the object. Hence the reading may be approximate and used for surveillance / segregation only. For more accurate and confirmatory reading, please use Contact Type Thermometer.

CE

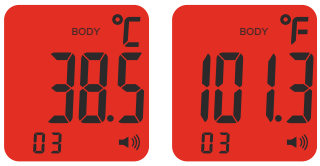
MBT-99



Green
Normal Temperature
(Less than 37.3°C / 99.2°F)



Orange
Marginally High Temperature
(Between 37.4°C to 37.9°C / 99.3°F to 100.3°F)



Red
Very High Temperature
(Above 37.9°C / 100.3°F)

- Warranty One Year
- Annual Re-calibration service available at extra cost "As per requirements of Legal Metrology Act."

Features :

- Handheld
- Precise non-contact measurements
- Measures temperature from distance
- Reduces risk of virus spread
- Body Temperature Measurements
- Surface Temperature Measurements
- Fast response (5 Sec.)
- 32 Measuring Data can be stored
- LCD display with Green, Orange and Red backlights to classify level of temperature (Only for Body Temperature Measurement)
- °C / °F switchable
- Auto power off

General Specifications

Body Temperature Measuring Range	32.0°C ~ 43.0°C (89.6°F ~ 109.4°F)
Body Temperature Measuring Accuracy	± 0.3°C (± 0.6°F)
Surface Temperature Measuring Range	0.0°C ~ 100.0°C (32.0°F ~ 212.0°F)
Surface Temperature Measuring Accuracy	± 1°C (± 1.8°F)
Resolution	0.1°C / 0.1°F
Response Time	5 Sec.
Measuring Distance	5 ~ 8 cm
Auto Power Off	10 Sec (approx.)
Operating Temperature	10°C ~ 40°C (50°F ~ 104°F)
Storage Temperature	-10°C ~ 60°C (14°F ~ 140°F)
Relative Humidity	10% ~ 90% RH operating, <80% RH storage
Power	1.5V AAA Battery x 2 pcs.
Weight	140gms (including battery approx.)
Dimension	165 x 95 x 45mm (approx.)
Accessories	Carrying Pouch, Instruction Manual, 1.5V AAA Battery x 2 pcs.

Note : Infrared Thermometer has advantage of measuring temperature from a distance and without contact with the object. Hence the reading may be approximate and used for surveillance / segregation only. For more accurate and confirmatory reading, please use Contact Type Thermometer.

CE

IRT600T

IRT1050P

Temperature Range	–50°C ~ 600°C	–50°C ~ 1050°C
	–58°F ~ 1112°F	–58°F ~ 1922°F
Accuracy	For <0°C (32°F) : ±3°C (±5.4°F) or ±3% For ⩾0°C (32°F) : ±1.5°C (±2.7°F) or ±1.5%	±1.5°C
Distance Spot Ratio	12 : 1	50 : 1
Emissivity	0.1 ~ 1.0 (Adjustable)	0.10 ~ 1.00 (Adjustable)
Repeatability	±1% or ±1°C / ±1°F	±1% or ±0.5°C
Wavelength	-	630 ~ 670nm
Resolution	0.1°C / 0.1°F	0.1°C / 0.1°F
Spectral Response	8µm ~ 14µm	8µm ~ 14µm
Special Function		
°C / °F Selection	✓	✓
Laser Switch	✓	✓
Auto Power Off	✓	✓
Low Battery Indication	✓	✓
Backlight Display	✓	✓
MAX Function	-	✓
MIN Function	-	✓
DIF Function	-	✓
AVG Function	-	✓
Data Storage	-	✓
High / Low Temperature Alarm Settings Function	-	✓
LCD Size	24 x 26mm	36 x 27mm
Packing Information		
Power	1.5V AAA x 2 Batteries	9V Battery
Product Color	Yellow + Black	Yellow + Black
Dimensions	150 x 94 x 38mm (approx.)	235 x 130 x 54mm (approx.)
Product Net Weight	130gms including battery (approx.)	278gms including battery (approx.)
Accessories	Drawstring Pouch x 1, Instruction Manual x 1, 1.5V AAA Battery (installed) x 2	Heavy Duty Carry Box x 1, Instruction Manual x 1, Tripod Stand x 1, 9V Battery (installed) x 1

CE

TIC 300

TIC300 is a Thermal Imaging Camera which combines the functions of surface temperature measurement and real-time thermal imaging.

Traditional Thermal Imaging Cameras measure each component one by one but TIC300 does it together thus saving customer's time. The potential problem is clearly displayed on the color screen which helps customer to quickly locate the central point and temperature of the problem area.

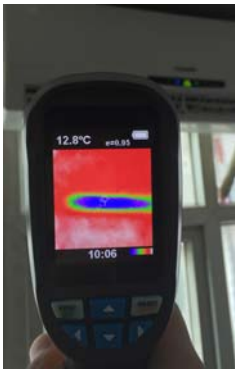
To improve recognition, this product is equipped with a vision camera. Based on practical requirements, it can turn thermal image into visional image. Thermal image and visional image can be stored in the memory card. Adjust the images and store them in PC which are used to generate reports or for printing. After seconds it can be tested. This product is the optimum product for electrician and maintenance personnel. It can quickly find out the problem area.

Specifications

Display	2.4" Color Display
Infrared Image Resolution	60 x 60
Total Pixels	3600
FOV / Shortest Focal Length	20° x 20° / 0.5m
Thermal Sensitivity	0.3°C
Temperature Range	-20°C ~ 300°C (-4°F ~ 572°F)
Measuring Accuracy	±2% Digit / ±2°C
Wavelength Range	8 ~ 14μm
Image Capturing Frequency	6Hz
Emissivity	0.1 ~ 1.0 (Adjustable)
Focus Mode	Fixed
Palette	Iron Color, Rainbow High Contrast, Gray Scale (Black Glow) And White Scale (White Glow)
Image Storage	Micro SD Card (4GB)
File Format	BMP
Set Control	Unit Adjustment / Language / Date Time Format / Automatic Shutdown
Power	Four 1.5V "AA" Battery
Automatic Power-Off Time	12 Minutes
Operating Temperature	-5°C ~ 40°C
Storage Temperature	-20°C ~ 50°C
Relative Humidity	10% RH ~ 80% RH
Dimensions	212 x 95 x 62mm (approx.)
Weight	320gms (approx.)
Waterproof Rating	IP54
Accessories	Carrying Case, Inst. Manual, Micro SD Card (installed), Wristlet, AA x 4 Batteries (installed)

Applications

- Hot Kettle
- Electric Fan
- Air Vent / Window
- Electrical Transformer
- CPU / UPS
- Electrical Panel [Bus - Bar]
- Flame / Lighter
- Soldering Iron
- Smelting Pot
- Washing Machine
- Cooling Towers
- Human Body



CE

Humidity & Temperature Meter 920P

Humidity Measuring	
Functions	°C / °F / RH Selection, MAX / MIN, Auto Power Off
Range	0% ~ 100% RH
Accuracy	± 3%RH (25°C , 20 ~ 80% RH) ± 3.5%RH (At Other Ranges)
Resolution	0.01%RH
Temperature Measuring	
Range	- 20°C ~ 80°C / - 4°F ~ 176°F
Accuracy	±0.5°C / ±0.9°F (25°C) ±0.8°C / ±1.5°F (At Other Ranges)
Resolution	0.01°C / 0.01°F
Power	9V Battery
Dimensions	173 x 56 x 39mm (approx.)
Weight	139gms Including Battery (approx.)
Accessories	Carrying Case, Inst. Manual, 9V Battery (installed)

Air Flow Anemometer 961P

Air Flow Measuring	
Functions	m / Sec, Ft / min, Knots, Km / h, MPH, CFM, MAX / MIN / HOLD, Auto Power Off
Range	1 ~ 25m/s
Accuracy	± (3% rdg ± 0.2m/s)
Resolution	0.01m/s
Temperature Measuring	
Range	0 ~ 50°C, 32 ~ 122°F
Accuracy	± 2°C / ± 4.0°F
Resolution	0.1°C / 0.1°F
Power	9V Battery
Dimensions	202 x 56 x 39mm (approx.)
Weight	155gms Including Battery (approx.)
Accessories	Carrying Case, Inst. Manual, 9V Battery (installed)

Digital Sound Level Meter 970P

Functions	MAX / MIN / HOLD, Auto Power Off
Range	35dB ~ 130dB (31.5Hz ~ 8 Khz)
Accuracy	± 1.5dB (under reference conditions)
Resolution	0.1dB
Selection	-
Power	9V Battery
Dimensions	172 x 56 x 39 mm (approx.)
Weight	144gms Including Battery (approx.)
Accessories	Carrying Case, Inst. Manual, 9V Battery (installed)

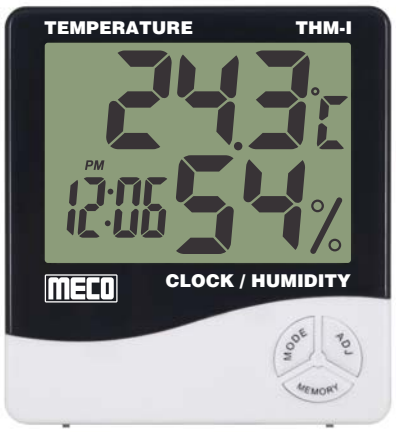
Digital LUX Meter 930P

Functions	MAX / MIN, Backlight, Auto Power Off
Range	0 ~ 200,000 lux 0 ~ 20,000 fc
Accuracy	±5% rdg+10 dgt (<10.000 lux/fc) ±10% rdg+10 dgt (>10.000 lux/fc)
Resolution	0.1lux or 0.1fc
Selection	lux / fc
Power	9V Battery
Dimensions	190 x 56 x 39mm (approx.)
Weight	135gms Including Battery (approx.)
Accessories	Carrying Case, Inst. Manual, 9V Battery (installed)

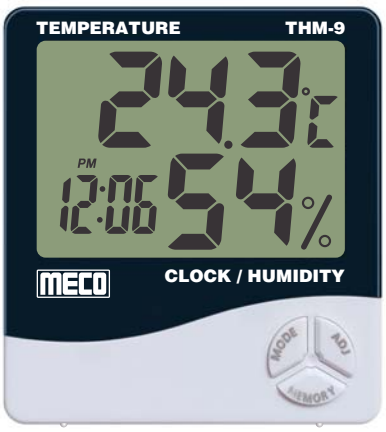
Temperature & Humidity Meter (with Clock & Calendar)
Digital LUX Meter with Flexible Sensor

new

CE



THM-I



THM-9

Applications

- Home, Office
- Laboratory
- Hospital
- Green House
- Hotels and many more....

Specifications

Functions	°C / °F Selection, MAX / MIN, Integral Hour Alarm, Clock & Calendar	°C / °F Selection, MAX / MIN, Integral Hour Alarm, Clock & Calendar
Display	Temperature, Humidity and Time Simultaneously	Temperature, Humidity and Time Simultaneously
Temperature Range	-10°C ~ 50°C / 14°F ~ 122°F	-10°C ~ 50°C / 14°F ~ 122°F
Temperature Accuracy	± 1.0°C / ± 1.8°F	± 2.0°C / ± 3.6°F
Temperature Resolution	0.1°C / 0.1°F	0.1°C / 0.1°F
Humidity Range	10%RH ~ 99%RH	10%RH ~ 99%RH
Humidity Accuracy	± 5% RH	± 10% RH
Humidity Resolution	1%RH	1%RH
Power	One 1.5V "AAA" Battery	One 1.5V "AAA" Battery
Dimensions	103 x 93 x 24mm (approx.)	103 x 93 x 24mm (approx.)
Weight	90gms (approx.) Including Battery	106gms (approx.) Including Battery
Accessories	Battery : 1.5V AAA x 1, Blister & Manual	Battery : 1.5V AAA x 1, Blister & Manual

Digital LUX Meter with Flexible Sensor

Functions	MAX / MIN, Backlight, Auto Power Off with Disable Feature, Data Hold
Range	0.1 ~ 200,000 lux 0.0 ~ 20,000 fc
Accuracy	±3% + 30 dgt
Resolution	0.1 lux or 0.1 fc
Selection	lux / fc
Power	1.5V AAA x 2 Batteries
Dimensions	157 x 54 x 34mm (approx.)
Weight	70gms Including Battery (approx.)
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (installed)

930T

new
Preliminary Data
CE

Humidity & Temperature Meter

920K

Specifications	Range	Resolution	Accuracy
Ambient Temperature / Wet Bulb Temperature / Dew-Point Temperature	-20 ~ 0°C	0.1°C	±1.0°C (0 ~ 45°C)
	0 ~ 60°C	0.01°C	±1.5°C (-20 ~ 0°C, 45 ~ 60°C)
	-4 ~ 0°F	0.1°F	±2.0°F (32 ~ 113°F) ±2.7°F (-4 ~ 32°F, 113 ~ 140°F)
	0 ~ 99.99°F	0.01°F	
	100 ~ 140°F	0.1°F	
Humidity	0 ~ 100% RH	0.1%	±3.0% RH (20 ~ 80%)
			±4.0% RH (0 ~ 20%, 80 ~ 100%)
Auto Ranging	Yes		
Refresh Rate	3 Times / Second		
Unit	°C / °F Selectable		
Comfort Indicator	Yes		
Data Hold	Yes		
Backlight	Yes		
Auto Power Off	Yes		
Low Battery Indicator	Yes		
Power	1.5V AAA x 2 Batteries		
Operating Altitude	< 2000m		
Operating Temperature	-10°C ~ +50°C		
Storage Temperature	-20°C ~ +60°C		
Operating Humidity	< 80% RH		
Weight	90gms Including Battery (approx.)		
Dimension	155 x 40 x 27mm (approx.)		
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (Installed)		

Lux Meter

930K

Specifications	Range	Resolution	Accuracy
Lux / Fc	0 ~ 20.00	0.01	±(3% + 2)
	20.00 ~ 200.0	0.1	
	200.0 ~ 2000	1.0	
	2.000K ~ 20.00K	0.01K	
Lux	20.00K ~ 200.0K	0.1K	
Auto Ranging	Yes		
Spectral Measurement Range	320 ~ 730nm		
Response Time	3 Times / Second		
Min / Max	Yes		
Unit	Lux / Fc		
Data Hold	Yes		
Backlight	Yes		
Auto Power Off	Yes		
Low Battery Indicator	Yes		
Power	1.5V AAA x 2 Batteries		
Operating Altitude	< 2000m		
Operating Temperature	-10°C ~ +50°C		
Storage Temperature	-20°C ~ +60°C		
Operating Humidity	< 80% RH		
Weight	110gms Including Battery (approx.)		
Dimension	155 x 40 x 40mm (approx.)		
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (Installed)		

new
Preliminary Data
CE

961K

Anemometer

Specifications	Range	Resolution	Accuracy
m/s	0.80 ~ 30.00 m/s	0.01 m/s	±(2.0% + 50)
(meter per second)	30.00 ~ 40.00 m/s	0.01 m/s	Reference
Km/h	2.88 ~ 108.0 km/h	0.01 km/h	±(2.0% + 50)
(kilometer per hour)	108.0 ~ 144.0 km/h	0.1 km/h	Reference
ft/s	2.62 ~ 98.50 ft/s	0.01 ft/s	±(2.0% + 50)
(feet per second)	98.50 ~ 131.2 ft/s	0.01 ft/s	Reference
knots	1.6 ~ 58.30 knots	0.01 knots	±(2.0% + 50)
(nautical miles per hour)	58.30 ~ 77.70 knots	0.01 knots	Reference
mile/h	1.80 ~ 67.20 mil/h	0.01 mil/h	±(2.0% + 50)
(mile per hour)	67.20 ~ 90.00 mil/h	0.01 mil/h	Reference
ft/m	157.5 ~ 5900 ft/m	1 ft/m	±(2.0% + 50)
(feet per minute)	5900 ~ 7874 ft/m	1 ft/m	Reference
Auto Ranging	Yes		
Refresh Rate	3 Times / Second		
Min/Max/Avg	Yes		
Wind Scale	Level 0 ~ 12		
Unit	m/s, km/h, ft/s, knots, mile/h, ft/m, CMM, CFM, CMS		
Data Hold	Yes		
Backlight	Yes		
Auto Power Off	Yes		
Low Battery Indicator	Yes		
Power	1.5V AAA x 2 Batteries		
Operating Altitude	< 2000m		
Operating Temperature	-10°C ~ +50°C		
Storage Temperature	-20°C ~ +60°C		
Operating Humidity	< 80% RH		
Weight	100gms Including Battery (approx.)		
Dimension	176 x 40 x 27mm (approx.)		
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (Installed)		

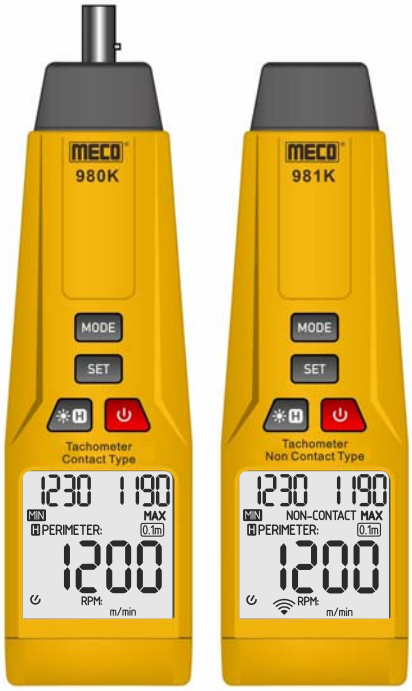
970K

Sound Meter

Specifications	Range	Resolution	Accuracy
dB	30dB ~ 130dB	0.1dB	±1.5dB (In the Reference Sound Pressure Level 94dB 1KHz)
Sampling Rate	Fast : 125ms, Slow : 1000ms		
Frequency Range	31.5Hz ~ 8KHz		
Noise	Aweighting		
Min /Max	Yes		
Unit	dB		
Data Hold	Yes		
Backlight	Yes		
Auto Power Off	Yes		
Low Battery Indicator	Yes		
Power	1.5V AAA x 2 Batteries		
Operating Altitude	< 2000m		
Operating Temperature	-10°C ~ +50°C		
Storage Temperature	-20°C ~ +60°C		
Operating Humidity	< 80% RH		
Weight	120gms Including Battery (approx.)		
Dimension	175 x 40 x 27mm (approx.)		
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (Installed)		

new
Preliminary Data

CE



980K 981K

Tachometer (Contact Type and Non-Contact Type)

Specifications	Range	Resolution	Accuracy
RPM	50.00 ~ 99.99	0.01	±(0.03% + 2)
	100.00 ~ 999.9	0.1	
	10000 ~ 19999	1.0	
Auto Ranging	Yes		
Working Principle	Contact Measurement (980K)		
	Non- Contact Measurement (981K)		
Measuring Distance	50 ~ 250mm (981K)		
Refresh Rate	3 Times / Second		
Min / Max	Yes		
Unit	m/min, m/sec, ft/min, ft/sec, in/min		
Data Hold	Yes		
Backlight	Yes		
Auto Power Off	Yes		
Low Battery Indicator	Yes		
Power	1.5V AAA x 2 Batteries		
Operating Altitude	< 2000m		
Operating Temperature	-10°C ~ +50°C		
Storage Temperature	-20°C ~ +60°C		
Operating Humidity	< 80% RH		
Weight	100gms Including Battery (approx.)		
Dimension	980K : 150 x 40 x 27mm (approx.),		
	981K : 135 x 40 x 27mm (approx.)		
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (Installed)		

990K

Coating Thickness Gauge

Specifications	Range	Resolution	Accuracy
Measuring	0 ~ 99.9 µm	0. 1 µm	± (3%+1) µm
	100 ~ 1250 µm	1.0 µm	± (3%+1) µm
Measuring	0 ~ 4.99 mil	0.01 mil	± (3%+0.04) mil
	5.0 ~ 49.2 mil	1.0 mil	± (3%+0.04) mil
Auto Ranging	Yes		
Display Type	1.44 inches TFT LCD		
Metal Type	Ferrous / Non-Ferrous		
Measurement Method	Single / Continuous		
Min/Max/Avg	Yes		
Unit	µm / mil		
Data Hold	Yes		
Backlight	Yes		
Audio Alarm	Yes		
Data Storage	100 Groups		
Rotatable Screen	Manual Control by setting (0° / 90° / 180° / 270°)		
Auto Power Off	Yes		
Low Battery Indicator	Yes		
Power	1.5V AAA x 2 Batteries		
Operating Altitude	< 2000m		
Operating Temperature	-10°C ~ +50°C		
Storage Temperature	-20°C ~ +60°C		
Operating Humidity	< 80% RH		
Weight	108gms Including Battery (approx.)		
Dimension	140 x 40 x 27mm (approx.)		
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (Installed), Calibration Kit		

940K

Brake Fluid Tester

Specifications	Range	Resolution
Brake Oil Type	DOT3 / DOT4 / DOT5.1	
Brake Oil Status Test	GOOD	Water Content < 1%
	CAUTION	Water Content < 3%
	STOP	Water Content > 3%
Auto Ranging	Yes	
Data Hold	Yes	
Backlight	Yes	
Work light	Yes	
Magnet Function	Yes	
Warning Tone	Yes	
Auto Power Off	Yes	
Low Battery Indicator	Yes	
Power	1.5V AAA x 2 Batteries	
Operating Altitude	< 2000m	
Operating Temperature	-10°C ~ +50°C	
Storage Temperature	-20°C ~ +60°C	
Operating Humidity	< 80% RH	
Weight	250gms Including Battery (approx.)	
Dimension	190 x 40 x 27mm (approx.)	
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (Installed)	

950K

Combustible Gas Leak Detector

Specifications	Range	Resolution	Accuracy
Combustible Gas	0 ~ 999.9 ppm	0.1 ppm	≤10% FS (Methane)
	1000 ~ 9999 ppm	1.0 ppm	
	0 ~ 20.00% LEL	0.01% LEL	
Auto Ranging	Yes		
Sensitivity	≤50 ppm (Methane)		
Response Time	≤2 Seconds		
Warm-up time	30 Sec (approx.)		
Refresh Rate	400 ms		
Flexible Probe	16 inch		
Min / Max / Avg	Yes		
Unit	ppm, %LEL		
Data Hold	Yes		
Backlight	Yes		
Auto Power Off	Yes		
Low Battery Indicator	Yes		
Power	1.5V AAA x 2 Batteries		
Operating Altitude	< 2000m		
Operating Temperature	-10°C ~ +50°C		
Storage Temperature	-20°C ~ +60°C		
Operating Humidity	< 80% RH		
Weight	300gms Including Battery (approx.)		
Dimension	535 (with probe) x 40 x 27mm (approx.)		
Accessories	Carrying Case, Inst. Manual, 1.5V AAA x 2 Batteries (Installed)		

new Preliminary Data

Function

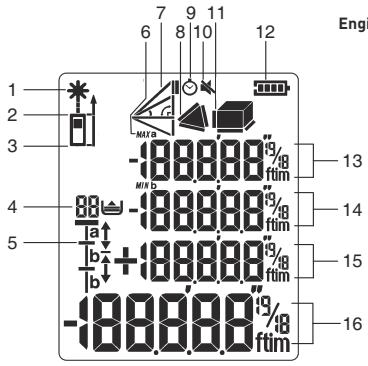
- Display Illumination [Backlight]
- Min / Max, Measurement / Continuous Measurement
- Addition / Subtraction
- Pythagoras Measurement
- Area / Volume Calculation
- Wall Area Measurement
- Triangular Area Measurement
- Stake out Measurement
- Front / Back Benchmark Measuring Datum Selection

LDM60+

LDM100+

Display Screen

1. Laser Emission Indicator
2. Reference Edge [Front]
3. Reference Edge [Behind]
4. Stored Data Indicator
5. Stake out Function
6. MAX / MIN Measurement
7. Indirect measuring / Pythagoras Theorem Measurement
8. Triangular Area
9. Timer
10. Silence
11. Area / Volume Function.
12. Battery Indicator
13. The third Display Line
14. The Second Display Line
15. The First Display Line
16. Main Display Line (Result)



Applications

Specifications

Model	LDM60+	LDM100+
Range	0.05 ~ 60m	0.05 ~ 100m
Measuring Accuracy upto 60 / 100m [in the room]	±1.5mm	±1.5mm
Measurement Time	0.25 ~ 1s	0.25 ~ 1s
Units	m / in / ft / ft'in"	m / in / ft / ft'in"
Smallest Unit Displayed	1mm	1mm
Laser Class	Class II	Class II
Laser Type	630 ~ 670, <1mW	630 ~ 670, <1mW
Auto Laser Switch Off	After 30 second	After 30 second
Automatic Switch Off	After 3 Minutes of Inactivity	After 3 Minutes of Inactivity
Timer (Self-Triggering)	✓	✓
Historical Storage	99	99
Storage Temperature	-20°C ~ 60°C	-20°C ~ 60°C
Operating Temperature	-10°C ~ 50° C	-10°C ~ 50° C
Power	1.5V AAA x 2 Batteries	1.5V AAA x 2 Batteries
Battery Life	Up to 5000 Measurements	Up to 5000 Measurements
Rating [Dust Proof & Splash Proof]	IP40	IP40
Dimensions	110 x 44 x 26mm [approx.]	110 x 44 x 26mm [approx.]
Weight	70gms [Including Batteries] approx.	70gms [Including Batteries] approx.
Accessories	1.5V AAA X 2 Batteries [Installed], Drawstring Pouch, Inst. Manual, Wristlet	1.5V AAA X 2 Batteries [Installed], Drawstring Pouch, Inst. Manual, Wristlet

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Power & Harmonics Analyzer & Clamp-On Power Meter

- ✓ Power & Harmonics Analyzer
- ✓ AC Clamp-On Power & Harmonics Tester
- ✓ Clamp-On TRMS Power Meter
- ✓ 3φ/1φ Clamp-On TRMS Power Meter for AC/DC Power Measurement

+60 YEARS
ONE MISSION

Reliable Long-Lasting Affordable

SOFTWARE

CE

USB

MECO supports Bureau of Energy Efficiency (BEE), Govt. of India's mission to institutionalize certification of Electric / Electronic goods for ECOMARK under Gazette of India

PHA 5850

Under BEE's PAT Scheme (Perform, Achieves & Trade) it is mandated to compulsorily improve their Energy Efficiency by adopting all the available measures including replacement of their old Equipments with New and Energy Efficient Equipments

Versatile Handy instrument using micro controller technology and easy to use software program for recording and downloading.

Useful for time to time monitoring of Power Parameters, Energy and Presence of Harmonics at several Location / Machines.

Cost Effective & Efficient Tool for Energy Auditor, Maintenance Persons, Service Providers, Site / Plant Engineers.

MECO Power and Harmonics Analyser Model PHA-5850 can Analyze, Measure, Monitor & Data Log values of Power Quality & Consumption (Energy). Capable of analyzing IT standby power consumption to the maximum demand of factory. It comes with a user friendly application software that increases the utility & performance of this instrument. The analyzer is ideal for an any Engineer / Inspector for carrying out Periodic Visits, Maintainance of Plant, Vigilance checks, Surveys and Energy Audits for checking at Industrial and Consumers end.

Features:

- Analysis of 3P4W, 3P3W, 1P2W, 1P3W Systems
- Display of 35 Parameters in one screen (3P4W)
- Programmable CT (1 to 600) and PT (1 to 3000) Ratios
- Graphic Phasor Diagram
- RMS, PEAK Value & Crest Factor
- True RMS value, Active Power, Apparent & Reactive Power (KVA, KVAR)
- Power Factor, Phase Angle (Φ) & Energy (WH, KWH, KVARH, PFH)
- Average / Maximum Demand (KW, MW, KVA, MVA) with Programmable Period
- Display of 50 Harmonics in one Screen with Wave form with Peak value (1024 Sample / Period)
- Analysis of Total Harmonic Distortion **(THD-F)**
- Capture 28 Transient Events with Programmable Threshold (%) (DIP, SWELL & OUTAGE)
- Built in timer & Calendar for Data Logging
- Facility to retrieve Power Data & Harmonics on Meter Screen
- 512K Memory with Programmable Interval (2 to 3000 seconds, 17000 records for 3P4W System)
- Optical Isolated RS-232C~USB Interface
- Software for easy download of Recorded Data & Transient events
- Calculated Unbalanced Current through Neutral line

General Specification : PHA5850

Power	Eight x 1.5V "AA" Batteries
External DC Input	Power supply adapter 12 Volts. DC
Display	Dot Matrix LCD (240x128) with backlight
LCD Update Rate	1 time / second
Power Consumption	140mA (approx.)
No. Of Samples	1024 samples / period
Data Logging Files	85
Max. File Capacity	17474 records (3P4W, 3P3W)
	26210 records (1P3W)
	52420 records (1P2W)
	4096 records (50 Harmonics / record)
Sampling Time	2 to 3000 seconds for data logging
Low battery Indication	B
Overload Indication	OL

Operating Condition	-10°C to 50°C ⩽ 85% RH	
Storage Condition	-20°C to 60°C ⩽ 75% RH	
Dimensions	257 x 155 x 57 mm	
Weight	1160 g (Batteries included)	
Accessories	Voltage Test Leads	x 4 (3 meter long)
	Alligator Clips (Voltage)	x 4 (R.Y.B.N.)
	Carrying Bag	x 1
	Batteries 1.5V	x 8
	External DC Adaptor	x 1
	Software CD	x 1
	Users Manual	x 1
	Software Manual	x 1
	Optical USB Cable	x 1
	Current Clamps	x 3 (Any One CT Set)

Specifications : (23°C ± 5°C)

AC Current
(50Hz or 60Hz, Auto Range, True RMS, Crest Factor <4, CT=1)

Model : PHA-5850A (100A) (Overload Protection AC 200A)

Range	Resolution	Accuracy of Readings
0.04 - 1A	0.1mA / 1mA	± 0.5% ± 0.05A
0.4 - 10A	0.001A / 0.01A	± 0.5% ± 0.05A
4 - 100A	0.01A / 0.1A	± 1.0% ± 0.5A

Model : PHA-5850B (1000A) (Overload Protection AC 2000A)

Range	Resolution	Accuracy of Readings
10.00A	0.001A / 0.01A	-
5A - 100.0A	0.01A / 0.1A	± 0.5% ± 0.5A
50A - 1000.0A	0.1A / 1A	± 0.5% ± 5A

Model : PHA-5850C (3000A) (Overload Protection AC 3000A)

Range	Resolution	Accuracy of Readings
10.0 - 300.0A	0.01A / 0.1A	± 1% of range
300.0 - 3000A	0.1A / 1A	

Model : PHA-5850D (1200A) (Overload Protection AC 1200A)

Range	Resolution	Accuracy of Readings
6.0 - 120.0A	0.01A / 0.1A	± 1% of range
120.0 - 1200A	0.1A / 1A	

Harmonic of AC Voltage in Percentage

Range	Resolution	Accuracy
1 - 20th	0.1%	± 2%
21 - 49th		± 4% of reading ± 2.0%
50 - 99th		± 6% of reading ± 2.0%

Harmonic of AC Current in Percentage
Model : PHA-5850A (100A)

Range	Resolution	Accuracy
1 - 10th	0.1%	± 0.2% of reading ± 1%
11 - 20th		± 2% of reading ± 1%
21 - 50th (A range)		± 5% of reading ± 1%
21 - 50th (mA range)		± 10% of reading ± 1%
51 - 99th		± 35% of reading ± 1%

Model : PHA-5850B (1000A)

Range	Resolution	Accuracy
1 - 20th	0.1%	±2%
21 - 49th		± 4% of reading ± 2.0%
50 - 99th		± 6% of reading ± 2.0%

Model : PHA-5850C (3000A) & PHA-5850D (1200A)

Range	Resolution	Accuracy
1 - 20th	0.1%	±2 %
21 - 50th		± 6%
51 - 99th		± 10%

AC Watt
(50Hz or 60Hz, PF 0.5~1, CT=1, continuous waveform)

Model : PHA-5850A (100A)

Range (0 to 100A)	Resolution	Accuracy of Readings
5.0 - 999.9W	0.1W	± 1% ± 0.8W
1.000 - 9.999KW	0.001KW	± 1% ± 8W
10.00 - 99.99KW	0.01KW	± 1% ± 80W
100.0 - 999.9KW	0.1KW	± 1% ± 0.8KW
1000 - 9999KW	1KW	± 1% ± 8KW

Model : PHA-5850B (1000A)

Range (0 to 1000A)	Resolution	Accuracy of Readings
5.0 - 999.9W	0.1W	± 1% ± 0.8W
1.000 - 9.999KW	0.001KW	± 1% ± 8W
10.00 - 99.99KW	0.01KW	± 1% ±8 0W
100.0 - 999.9KW	0.1KW	± 1% ± 0.8KW
1000 - 9999KW	1KW	± 1% ± 8KW
0.000 - 9.999MW	0.001MW	± 1% ± 80KW

Model : PHA-5850C (3000A)
Model : PHA-5850D (1200A)

Range (0 to 3000A or 0 to 1200A)	Resolution	Accuracy of Readings	
		>20V & >30A	<20V or <30A
10.0 - 999.9W	0.1W	± 1% of range	± 2% of range
1.000 - 9.999KW	0.001KW		
10.00 - 99.99KW	0.01KW		
100.0 - 999.9KW	0.1KW		
1000 - 9999KW	1KW		

AC Voltage
(50Hz or 60Hz, Auto Range, True RMS,Crest Factor<4, Input Impedance 10MV, VT (PT) = 1, Overload Protection AC 800V)

Range	Resolution	Accuracy of Readings
20.0V - 500.0V (Phase to Neutral)	0.1V	± 0.5% ± 5dgts
20.0V - 600.0V (Phase to Phase)		

Power Factor (PF)
Model : PHA-5850A (100A) & PHA-5850B (1000A)

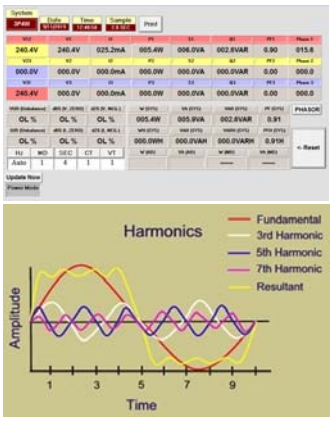
Range	Resolution	Accuracy
0.00 - 1.00	0.01	± 0.04

Model : PHA-5850C (3000A) & PHA-5850D (1200A)

Range	Resolution	Accuracy	
		>20V & >30A	<20V or <30A
0.000 - 1.000	0.001	± 0.04	± 0.1

Testing for Energy Study & Audit

Power & Harmonics



Harmonic Filter Panel

Data Logging

Ordering Information

Model : PHA 5850A = PHA 5850 + CT set A
Model : PHA 5850B = PHA 5850 + CT set B
Model : PHA 5850C = PHA 5850 + CT set C
Model : PHA 5850D = PHA 5850 + CT set D

Model : CT set A
3 pcs (R,Y,B) Clamp - On CTs
Conductor Size : 30mm (approx.)
Range : 1 / 10 / 100A

OR

Model : CT set B
3 pcs (R,Y,B) Clamp - On CTs
Conductor Size : 55mm (approx.) Busbar 64 x 24mm
Range : 10 / 100 / 1000A

OR

Model : CT set C
3 pcs Flexible CTs
Probe Length : 24" / 610mm (approx.)
Minimum bending Diameter : 35mm
Connector Diameter : 23mm
Cable Diameter : 14mm
Cable Length from Probe to Box : 1700mm
Cable Length from Box to Output : 1700mm
Range : 300 / 3000A

OR

Model : CT set D
3 pcs Flexible CTs
Probe Length : 18" / 460mm (approx.)
Minimum bending Diameter : 35mm
Connector Diameter : 23mm
Cable Diameter : 14mm
Cable Length from Probe to Box : 1700mm
Cable Length from Box to Output : 1700mm
Range : 120 / 1200A

CE

PHT 4545

Power Analysis

● W, KW, HP, VA, KVA, VAR, KVAR ● PF, Phase Angle (Φ) ● Energy (WH, KWH)
● Balanced 3Phase Power Quality ● 3Phase Sequence ● Programmable CT Ratio (1 to 250)
● Dual Displays (W + PF, VA + KVAR...) ● Active Power in HP
● Resistance and Continuity with Beeper

Harmonic Analysis

● True RMS value (V and A) at 0.5% basic accuracy ● 1500A AC ● Harmonic Analysis (V and A) to the 99th Order in % and in magnitude ● Better Understanding of High Frequency Harmonic Analysis (up to 5/6 KHz) ● Non-interrupted Harmonic Analysis ● Analysis of Total Harmonic Distortion (%THD-F) ● Analysis of Crest Factor (C.F.) ● Fast Peak Function (33m for 60Hz and 39n for 50Hz) ● Max, Min and Data Hold Function

General Specifications

Jaw Opening	:	Cable Dia 55mm (approx.), 64 x 24mm (Bus Bar)
Power	:	Two 1.5V "AA" Battery
Display	:	4 + 4 Digits LCD
Auto-Power-Off	:	30 minutes
LCD Update Rate	:	2 times / sec.
Operating Temperature	:	-10°C to 50°C
Storage Temperature	:	-20°C to 60°C
Option	:	Alligator Clips
Power Consumption	:	10mA (approx.)
No. of Samples / Period	:	512 (V & A), 256 (W)
Operating Humidity	:	< 85% Relative
Storage Humidity	:	< 75% Relative
Weight	:	650gms Including Battery (approx.)
Dimension	:	271 x 112 x 46mm (approx.)
Accessories	:	Test Leads, Carry Bag, Users Manual, Batteries (Installed)

Specifications (23°C ± 5°C)

Harmonics of AC Current in % & Magnitude (1~99th order)

Range	Resolution in %	Accuracy in %	Resolution in Magnitude	Accuracy in Magnitude
1 ~ 20th	0.1%	±2%	0.1A	± 2% of reading ± 0.4A
21 ~ 49th		4% of reading ± 2.0%		± 4% of reading ± 0.4A
50 ~ 99th		6% of reading ± 2.0%		± 6% of reading ± 0.4A

Harmonics of AC Voltage in % & Magnitude (1~99th order)

Range	Resolution in %	Accuracy in %	Resolution in Magnitude	Accuracy in Magnitude
1 ~ 20th	0.1%	± 2%	0.1V	± 2% of reading ± 0.5V
21 ~ 49th		4% of reading ± 2.0%		± 4% of reading ± 0.5V
50 ~ 99th		6% of reading ± 2.0%		± 6% of reading ± 0.5V

Crest Factor (C.F., Accuracy of Readings)

Range	Resolution	Accuracy
1.00 ~ 99.99	0.01	± 5% ± 30 dgt

AC Watt (50 or 60Hz)

Range	Resolution	Accuracy
10.0 ~ 999.9W	0.1W	± 2% ± 20 dgt (>20V & >20A) ± 2% ± 40 dgt (<20V or <20A)
1.000 ~ 9.999KW	0.001KW	
10.00 ~ 99.99KW	0.01KW	
100.0 ~ 999.9KW	0.1KW	
1000 ~ 9999KW	1KW	

AC Current (50 or 60Hz, True RMS)

Range	Resolution	Accuracy
10.0 ~ 1500.0A	0.1A	± 2% ± 5 dgts

AC Voltage (50 or 60Hz, True RMS)

Range	Resolution	Accuracy
10.0 ~ 600.0V	0.1V	± 0.5% ± 5 dgts

Power Factor & Phase Angle

Range	Resolution	Accuracy
0.000 ~ 1.000	0.001	± 0.04
-180°to180° & 0°to360°	0.1°	± 2°

Total Harmonic Distortion (THD-F, 1 to 50th order)

Range	Resolution	Accuracy
0.0 ~ 20%	0.1%	± 2%
20.1 ~ 100%		± 6% of reading ± 1%
100.1 ~ 999.9%		±10% of reading ± 1%

Resistance(Ω) and Continuity (Beep if less than 50Ω)

Range	Resolution	Accuracy
* 7.0 ~ 999.9Ω	0.1Ω	± 5Ω
1000 ~ 1200Ω	1Ω	

* If reading is less than 7Ω it is displayed as 0Ω

Clamp-On TRMS Power Meter with Automatic Computation of 1φ and 3φ (3φ3W/3φ4W) Parameters

CE

3510PHW-AUTO

Features

- Check 3φ Phase Sequence
- 4 Digit LCD, 9999 Count, Autoranging
- Data Hold, Auto Power Off
- Dual Display KW+HP, KW+PF, KW+KVAR, KVA+φ, V+A, A+Hz, V+Hz
- Cable of Diameter upto 43mm / Busbar upto 65mm x 16mm

Applications

- 1φ & 3φ (3φ3w / 3φ4w) Power Analyzer
- Ideal for Electrical Audit of Heating, Ventilation & Aircon Systems (HVAC)
- Check Current drawn in Motors and Compressors
- Test Run / Start Capacitors
- Check for Energized Circuits & Balance Loads
- Capture Motor In-Rush Current Readings
- Determine Peak Power Demand Periods
- Analyze Temperature Data with the Aid of the Time Stamp
- Resistance upto 100MΩ
- Use MAX / MIN / REC in Temperature Mode to Assess Efficiency
- Evaluate Electrical Contacts
- Verify the Stability of Voltage
- Check Motor Run / Start Capacitor Values
- To Identify Low Voltage Control Signal
- To Identify Power Sources

1φ/3φ TRUE Power (KW) : (PF lag 1.000~0.000~lead 1.000 or 00.00°~360.0°) (1 hp=0.7457KW)

Range	Resolution	Accuracy ±(%rdg+dgts)	Overload Protection
99.99KW	0.01KW	±(5% + 30) (50, 60Hz)	600VAC/ 1000AAC
600.0KW	0.1KW		

1φ/3φ HP (1HP=745.7W) : (PF lag 1.000~0.000~lead 1.000 or 00.00°~360.0°)

Range	Resolution	Accuracy ±(%rdg+dgts)	Overload Protection
99.99HP	0.01 HP	±(5% + 30) (50, 60Hz)	600VAC/ 1000AAC
800.0HP	0.1 HP		

1φ/3φ Apparent Power (KVA)

Range	Resolution	Accuracy ±(%rdg+dgts)	Overload Protection
99.99KVA	0.01 KVA	±(2.5% + 30)	600VAC/ 1000AAC
600.0KVA	0.1 KVA		

1φ/3φ Reactive Power (KVAR) : (PF lag 1.000~0.000~lead 1.000 or 00.00°~360.0°)

Range	Resolution	Accuracy ±(%rdg+dgts)	Overload Protection
99.99KVAR	0.01KVAR	±(5% + 50dgts) (50, 60Hz)	600V AC/1000AAC
600.0KVAR	0.1KVAR		

3φ Phase Sequence Indication

Range	Frequency Response	Overload Protection
80V to 480V	(50Hz / 60Hz)	600V

ACA Inrush Current

Range	Resolution	Sensitivity	Measurement Time	Overload Protection
99.99A	0.01A	>5A	100ms	1000A AC
999.9A	0.1A	>50A		

1φ/3φ PF & Phase Angle (50Hz, 60Hz)

Range	Resolution	Accuracy	Sensitivity
00.00°~99.99°	0.01°	± 6.0°	ACV>100V, ACA>10A
100.0°~360.0°	0.1°		
lag 1.000~0.000~ lead 1.000	0.001		

Frequency

Range	Resolution	Accuracy ±(%rdg+dgts)	Sensitivity
40.00Hz~999.9Hz	0.01Hz/0.1Hz	±(0.5% + 2)	ACV>1.2V, ACA>6A

AC Current (50Hz to 400Hz) : TRMS

Range	Resolution	Accuracy ±(%rdg+dgts)	Sensitivity	Overload Protection
99.99A	0.01A	±(2% + 30) (50,60Hz)	0.10A	1000A
999.9A	0.1A	±(4% + 30) (40-400Hz)	1.0A	

µA : DC + AC TRMS (Burden Voltage : 5mV/µA) (50Hz to 400Hz)

Range	Resolution	Accuracy ±(%rdg+dgts)	Sensitivity	Overload Protection
99.99µA	0.01µA	±(1% + 30)	0.20 µA	500V DC or AC rms for 1 min.
999.9µA	0.1µA		2.0µA	

AC Voltage (50Hz to 400Hz) : TRMS

Range	Resolution	Accuracy ±(%rdg+dgts)	Sensitivity	Overload Protection
999.9mV	0.1mV	±(1% + 30) (50, 60Hz)	2.0mV	600V
9.999V	0.001V		0.020V	
99.99V	0.01V	±(2% + 30) (40-400Hz)	0.20V	
600.0V	0.1V		2V	
Input Impedance : 3MΩ				

Clamp-On TRMS Power Meter with Automatic Computation of 1φ and 3φ (3φ3W/3φ4W) Parameters

DC Voltage				
Range	**Resolution**	**Accuracy ±(%rdg+dgts)**	**Sensitivity**	**Overload Protection**
999.9mV	0.1mV	±(1% + 30)	2.0mV	600V
9.999V	0.001V		0.020V	
99.99V	0.01V		0.20V	
600.0V	0.1V		2V	
Input Impedance : 3MΩ				

Resistance (Continuity < 40Ω on the 999.9Ω range)			
Range	**Resolution**	**Accuracy ±(%rdg+dgts)**	**Overload Protection**
999.9Ω	0.1Ω	±(1% + 10)	500V DC or AC rms for 1 min.
9.999KΩ	0.001KΩ		
99.99KΩ	0.01KΩ		
999.9KΩ	0.1KΩ		

MΩ (Auto Ranging)			
Range	**Resolution**	**Accuracy ±(%rdg+dgts)**	**Overload Protection**
9.999MΩ	0.001MΩ	±(5% + 10)	500V DC or AC rms for 1 min.
99.99MΩ	0.01MΩ		

Capacitance			
Range	**Resolution**	**Accuracy ±(%rdg+dgts)**	**Overload Protection**
10.000µF	0.001µF	±(3.0% + 5)	500V DC or AC rms for 1 min.
100.00µF	0.01µF	±(1.5% + 5)	
1000.0µF	0.1µF		
7000µF	1µF	±(2.5% + 15)	

Diode (Continuity < 40mV)			
Range	**Resolution**	**Accuracy ±(%rdg+dgts)**	**Overload Protection**
2.000V	0.001V	±(2% + 1)	500V DC or AC rms for 1 min.

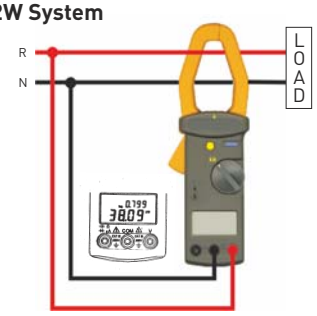
Temperature (K-Type Thermocouple)			
Range	**Resolution**	**Accuracy ±(%rdg+dgts)**	**Overload Protection**
-50°C to 900°C	0.1°C	±(.2% + 4°C)	30VAC or 60VDC
-58°F to 1000°F	0.1°F	±(.2% + 6°F)	

General Specifications

Numerical Dual Display : 4 Digit 9999 Count LCD
Low Battery Indication : is displayed
Power : 9V Battery x 1
Sampling Rate : 2.5 times/sec. (Digital Display)
1 times/6 sec. (on KW, KVA)
Operating Temperature and Humidity : 0°C to 50°C (32°F to 122°F)
RH < 80% non-condensing
Storage Temperature and Humidity : -10°C to 60°C (14°F to 140°F)
RH < 70% non-condensing
Dimensions : 247 x 90 x 40mm
Weight : 425gms Including Battery (approx.)
Jaw Opening : Cable Dia 43mm (max.)
Bus Bar 16mm x 65mm
Accessories : Carrying Case, Battery (installed), Test Leads Pair, K Type Thermocouple (Upto 260°C) (Optional), Instruction Manual
Auto Power off Time : Approx. 30 minutes
Temperature Coefficient : 0.1 x (specified accuracy) / °C (<18 or>28°C, <64 or >82°F)

Usage

1φ 2W System

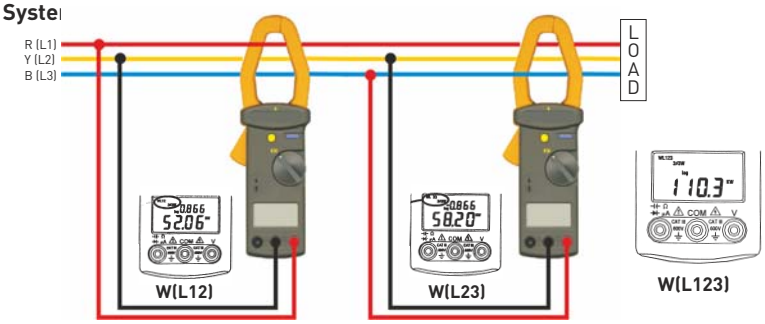


Press "RANGE" Key to Select KW+HP, KW+PF, KW+KVAR, KVA+θ or A+V

$PF = \frac{KW}{KVA} = COS\theta$

HP = 746 watts
KVA = (V x A) / 1000
KVAR = KVA x Sinθ

3φ 3W System

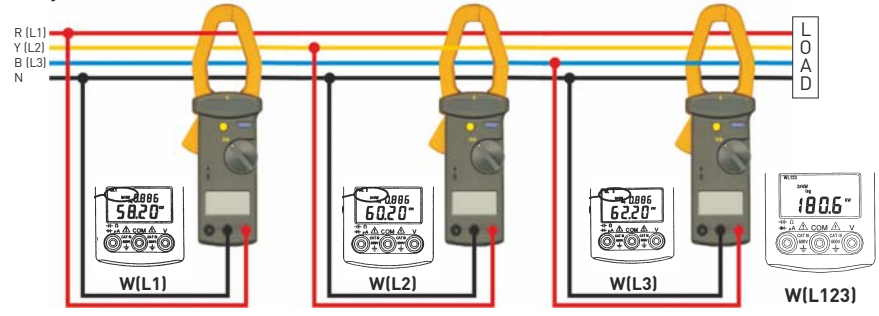


$W_{3\Phi3W} = W_{RY\,(L1L2)} + W_{BY\,(L3L2)}$

$KVA_{3\Phi3W} = \sqrt{KW^2_{3\Phi3W} + KVAR^2_{3\Phi3W}}$

$PF_{3\Phi3W} = \frac{KW_{3\Phi3W}}{KVA_{3\Phi3W}}$

3φ 4W System

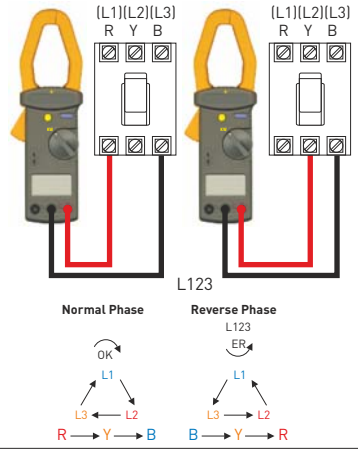


$W_{3\Phi4W} = W_{R\,(L1)} + W_{Y\,(L2)} + W_{B\,(L3)}$

$KVA_{3\Phi4W} = \sqrt{KW^2_{3\Phi4W} + KVAR^2_{3\Phi4W}}$

$PF_{3\Phi4W} = \frac{KW_{3\Phi4W}}{KVA_{3\Phi4W}}$

3Φ Phase Sequence Indication



R:L1, Y:L2, B:L3

CE

4500

How one wished, one could measure 3φ power with a single clamp meter without any manual calculations; well now it is a reality. MECO 4500 Clamp-On Power Meter does this with absolute ease and reliability. Be it 3φ4W, 3φ3W, balanced or unbalanced system. Needless to add, it also works for 1φ2W and 1φ3W systems. Handy and ideal for on-site measurement, energy audit, data recording, Q.C. testing and maintenance of the entire plant.

Features

- 3φ4 W, 3φ3 W, 3φBalanced, 1φ2 W, 1φ3 W
- AC + DC 2000 KW (3φ), 1200 KW (1φ)
- Dual display KW + PF, KVA + KVAR, V + A, V + Hz, A + Hz
- Phase Angle Measurment (±90⁰), Phase Sequence Indication (R,S,T)
- AC 600V, DC 600V, AC + DC 2000A
- Power Factor
- AC/DC Auto Detection
- TRMS Values
- Memory of 4 records
- Auto Range

KVA + KVAR

V + Hz

Power Factor (PF) $PF = \frac{KW}{KVA}$

AC + DC KVA (Apparent Power) $KVA = \frac{V \times A}{1000}$

AC + DC KVAR (Reactive Power) $KVAR = \sqrt{(KVA)^2 - (KW)^2}$

General Specifications

Jaw Opening	Cable Dia. 55mm. (approx.) Bus Bar 65 (D) x 24 (W) mm
Power	9V Battery
Display	2 x 4 Digits Dual Display LCD
Range Selection	Auto
Overload Indication	OL
Power Consumption	25mA (approx.)
Low Battery Indication	B
Sampling Time	0.5 sec. (V and A) 1.6 sec. (W)
Operating Temp.	4⁰ to 50⁰C
Operating Humidity	<85% RH
Storage Temperature	-20⁰C to 60⁰C
Storage Humidity	<75% RH
Dimensions	271 x 112 x 46 mm
Weight	650gms Battery Including (approx.)
Accessories	Carry Bag x 1, Users Manual x 1, Battery (Installed) x 1, Test Lead x 1 Pair

Electrical Specification (23⁰C ± 5⁰C)

AC+DC True Power
(PF 0.2~1.0, 3φ 3W, 3φ4W, 1φ2W, and 1φ3W)

Range	Resolution	Accuracy (of rdg)	Range
0~99.99KW	0.01KW	± 2.0% ± 0.05KW	AC 600V, DC 600V, ACA/DCA 2000A
100~999.9KW	0.1KW	± 2.0% ± 0.5KW	AC 600V, DC 600V, ACA/DCA 2000A
1000~1200KW	1KW	± 2.0% ± 5KW	AC 600V, DC 600V, ACA/DCA 2000A

AC+DC True Power
(Power Factor 0.2~1.0, 3 φ Balanced Power)

Range	Resolution	Accuracy (of rdg)	Range
0~99.99KW	0.01KW	±2.0%±0.5KW	AC 600V, DC 600V, ACA/DCA 2000A
100~999.9KW	0.1KW	±2.0%±0.5KW	AC 600V, DC 600V, ACA/DCA 2000A
1000~2000KW	1KW	±2.0%±5KW	AC 600V, DC 600V, ACA/DCA 2000A

AC+DC Voltage (True RMS, Crest Factor<4, Autorange, Overload Protection 800VAC for all range)

Range	Resolution	Accuracy (of reading)		Input Impedance
		DC, 50/60 Hz	40 - 400 Hz	
0~200V	0.1V	±1.5% ±5 dgt	±2.0% ±5 dgt	10MΩ
200~500V	0.1V	±1.5% ±5 dgt	±2.0% ±5 dgt	
500~600V	1V	±1.5% ±5 dgt	±2.0% ±5 dgt	

AC+DC Current (True RMS, Crest Factor <4)

Range	Resolution	Accuracy (of reading)		Overload Protection
		DC, 50/60 Hz	40-400 Hz	
0~200A	0.1A	± 1.5% ± 5 dgt	± 2.0% ± 5 dgt	AC 3000A
200~500A	0.1A	± 2.0% ± 5 dgt	± 2.5% ± 5 dgt	AC 3000A
500~2000A	1A	± 2.5% ± 5 dgt	± 3.0% ± 5 dgt	AC 3000A

Phase Angle
(Must zero the current reading before measurement)

Range	Accuracy	Sensitivity	Remark
-90⁰ to + 90⁰ (50/60 Hz)	± 2.0⁰	V> 100V, A> 10A	Zero Crossing Detection

* If current signal is not detected, the phase angle will be left blank in LCD.

Frequency (if <10 Hz, Hz = 0)

Range	Accuracy	Sensitivity
50/60 Hz	± 2dgts	V > 1V, A > 5A
10-400 Hz	± 0.5% ± 2dgt	V > 1V, A > 5A

MECO®
SINCE 1962

Calibrating Equipment

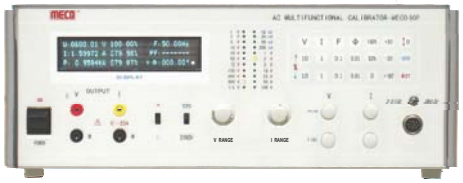
- ✓ Universal Calibrator
- ✓ Multifunctional Calibrator
- ✓ AC Multifunctional Calibrator
- ✓ Multifunction Process Calibrator
- ✓ High Voltage Resistance Box
- ✓ Clamp – On CT'S & Flexible AC Current Probe

+60 YEARS
ONE MISSION

Reliable Long-Lasting Affordable

90A

90DQ



90P

FEATURES / PARAMETERS		90A	90DQ	90P
DISPLAY	5½ Digit Display	✓	✓	✓
SYSTEM (1 PHASE)	DC	✓	✓	-
	AC	✓	✓	✓
VOLTAGE (V)	AC/DC V : (0 - 200mV to 1000V)	✓	-	-
	AC/DC V : (0 - 250mV to 1000V)	-	✓	-
	AC V : (0 - 1V to 1000V)	-	-	✓
CURRENT (A)	AC/DC A : (0 - 100µA to 20A)	✓	-	-
	AC/DC A : (0 - 100µA to 50A)	-	✓	-
	AC A : (0 - 10mA to 100A)	-	-	✓
FREQUENCY (Hz)	SYNCH	-	✓	-
	50 Hz	✓	✓	-
	60 Hz	✓	✓	-
	400 Hz	✓	✓	-
	1 KHz	-	✓	-
	40 Hz to 70 Hz	-	-	✓
RESISTANCE	10Ω to 24k x 1kΩ	✓	✓	-
PHASE ANGLE	0 to 359.99°	-	-	✓
POWER (1 PHASE)	Range : 0 to 100kW	-	-	✓
POWER FACTOR	Range : -1 to +1	-	-	✓
COMMUNICATION PORT	RS232	✓	✓	✓
KEY ADJUSTOR		✓	✓	✓
WORKS CALIBRATION CERTIFICATE TRACEABLE TO NPL		✓	✓	✓
STANDARD CURRENT COIL (OPTIONAL)	Input 5A (Max.), Turn Ratio 100 / 1	-	✓	✓
	Input 10A (Max.), Turn Ratio 100 / 1	-	✓	✓
	Input 20A (Max.), Turn Ratio 50 / 1	✓	-	-

Applications

- R & D Labs
- NABL Labs
- Educational Institutes
- Paper & Pulp Industires
- Automobile Industries
- Textile Industries
- Calibration Labs
- Chemical Process Industries
- Cement Plants
- Instrument Manufacturing Companies
- Medical Industries
- Petrochemical Industries

Voltmeter

Ammeter

Wattmeter Varmeter

PF Meter

Hz Meter

Multifunction Meter

Transducer

Multimeter

Clamp Meter

RS 232

90A

Key Adjuster

MODEL 90A Universal Calibrator gives a standard output for AC Voltage, DC Voltage, AC Current & DC Current. Keys or Knob help to adjust the magnitude of the output signals. Important features include wide range, high accuracy, good stabilization, easy operation and portability. The Calibrator is ideal for testing ammeters and voltmeters upto 0.2 accuracy class.

Applications

- Calibration of AC Volt, Amp, Frequency Meters
- Calibration of DC Volt, Amp Meters
- Calibration of Resistance Meters, Clamp Meters, Multimeters

Standard Accessories

- 1 x Key Adjuster
- 1 x Power Cord
- 1 x Pair of Output Leads
- 2 x Fuse (2A)
- 1 x Data Cable for PC Connectivity
- 1 x Operation Manual

Optional Accessories

- Standard Current Coil

Turns Ratio	50 / 1
Input Max.	20A
Current	1000A
Clamp Jaw	> 28mm
DC Impedance	0.9 Ω
DC Burden	20A / 1.3V
AC Burden	20A / 3V
Frequencies	DC to 60Hz
Accuracy	± 0.3% rdg

Technical Specifications

Voltage Control	Output Voltage Range : Basic Error :	200mV, 1V, 2V, 5V, 10V, 20V, 50V, 100V, 200V, 500V, 1000V DCV : ± (0.03 %RD + 0.02 %FS) ACV : ± (0.05 %RD + 0.03 %FS)
Current Control	Output Current Range : Basic Error :	100µA, 500µA, 2mA, 5mA, 20mA, 50mA, 200mA, 500mA, 2A, 5A, 20A DCI : ± (0.05 %RD + 0.02 %FS) ACI : ± (0.07 %RD + 0.03 %FS)
Frequency Control	Frequency Range : Frequency Error :	50Hz, 60Hz, 400Hz < 1 %
Resistance Control	Resistance Range : Basic Error :	10, 24, 50, 100, 240, 500 (Ω), 1, 2.4, 5, 10, 24 (kΩ), 10x1k, 24x1k, 50x1k, 100x1k, 240x1k, 500x1k, 1kx1k, 2.4kx1k, 5kx1k, 10kx1k, 24kx1k ± 0.2 % +20mΩ

Note - RD : Reading, FS : Full Scale

General Specifications

- Stability DC : < 0.01 %FS / 2 min, AC : < 0.03 %FS / 2 min
- Ripple : < 0.1 %
- Power Supply : 230 VAC, 50 (60) Hz
- Power Consumption : < 180 VA
- Operating Temperature : 5ºC to 35ºC
- Relative Humidity : ⩽ 80 %
- Distortion : < 0.5 %
- Display : 5½ Digit LED Digital Display
- Step adjustment of Output Signal : 10 %FS, 1 %FS, 0.1 %FS, 0.05 %FS
- Dimensions : 147 x 480 x 480mm (approx.)
- Total Weight : 17 kgs (approx.)

RS 232

90DQ

Key Adjustor

MODEL 90DQ Multifunctional Calibrator can output standard AC Voltage, DC Voltage, AC Current & DC Current. Output actual value, percent and FS display at the same time. Calibrator may select FS (full scale) and relevant step in according with scale of UUT (unit under test). Keys or knobs adjust magnitude of the output signals. Wide range, high accuracy, good stabilization, easy operation and portable. The calibrator is ideal to test amperemeter and voltmeter upto 0.2 class.

Applications

- Calibration of AC Volt, Amp, Frequency Meters
- Calibration of DC Volt, Amp Meters
- Calibration of Resistance Meters, Clamp & Multi Meters

Standard Accessories

- 1 x Key Adjuster
- 1 x Power Cord
- 1 x Pair of Output Leads
- 1 x Pair of Output Leads (50A)
- 2 x Fuse (4A)
- 1 x Data Cable for PC Connectivity
- 1 x Operation Manual

Optional Accessories

- Standard Current Coil

Turns Ratio	100 / 1	100 / 1
Input Max.	**5A**	**10A**
Current	**500A**	**1000A**
Clamp Jaw	> 20mm	> 28mm
DC Impedance	0.7Ω	0.9Ω
DC Burden	5A / 3.5V	10A / 2.5V
AC Burden	5A / 6V	10A / 5V
Frequencies	DC to 60Hz	DC to 60Hz
Accuracy	± 0.3% rdg	± 0.3% rdg

Technical Specifications

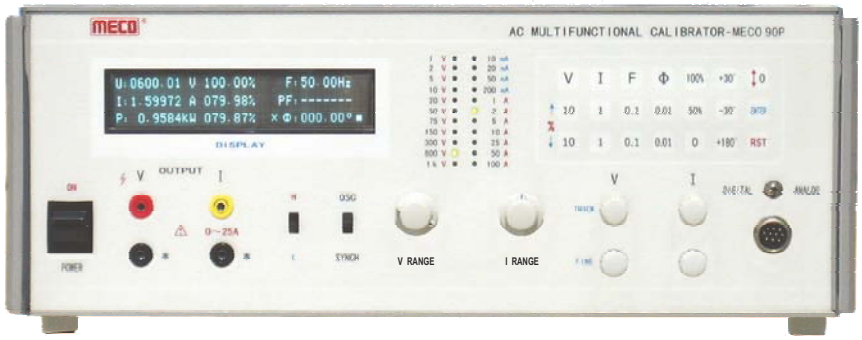
Voltage Control	Output Voltage Range : Basic Error :	250mV, 1V, 2.5V, 5V, 10V, 25V, 50V, 100V, 250V, 500V, 1000V DCV : ± (0.02 %RD + 0.01 %FS) ACV : ± (0.05 %RD + 0.02 %FS)
Current Control	Output Current Range : Basic Error :	100µA, 500µA, 2.5mA, 10mA, 25mA, 100mA, 250mA, 1A, 2.5A, 10A, 50A DCI : ± (0.03 %RD + 0.02 %FS) ACI : ± (0.05 %RD + 0.03 %FS)
Frequency Control	Frequency Range : Frequency Error :	50Hz, 60Hz, 400Hz, 1kHz < 0.1 %
Resistance Control	Resistance Range : Basic Error :	10, 24, 50, 100, 240, 500 (Ω), 1, 2.4, 5, 10, 24 (kΩ), 10x1k, 24x1k, 50x1k, 100x1k, 240x1k, 500x1k, 1kx1k, 2.4kx1k, 5kx1k, 10kx1k, 24kx1k ± 0.2 % +20mΩ

General Specifications

Note - RD : Reading, FS : Full Scale

- Stability DC : < 0.01 %FS / 3 min, AC : < 0.02 %FS / 3 min
- Ripple : < 0.2 %
- Power Supply : 230 VAC, 50 (60) Hz
- Power Consumption : < 250 VA
- Operating Temperature : 5°C to 35°C
- Relative Humidity : ⩽80 %
- Distortion : < 0.5 %
- Display : 5½ Digit LED Digital Display
- Step adjustment of Output Signal : 100 %FS / N, 10 %FS / N, 1 %FS / N, 0.1 %FS / N (N = 4, 5, 6, 10 and 15)
- Dimensions : 190 x 480 x 545mm (approx.)
- Total Weight : 22.5 kgs (approx.)

RS 232



90P

Key Adjustor

MODEL 90P AC Multifunctional Calibrator can output standard AC Voltage and AC Current. It measures AC Voltage, AC Current, Power, Phase Angle, Power Factor and Frequency (40Hz ~ 70Hz). Wide output range of Current and Voltage; High reliability and low wave distortion.

Applications

- Calibration of Power Meters, AC Volt, Amp, Watt, Var, Frequency, Powerfactor, Phase Angle and Energy Meters.
- Calibration of Voltage, Current, Active & Reactive Power, Frequency, Powerfactor, Phase Angle and Energy Transducers.

Standard Accessories

- 1 x Key Adjuster
- 1 x Power Cord
- 1 x Pair of Output Leads
- 1 x Pair of Output Leads (50A / 100A)
- 2 x Fuse (4A)
- 1 x Data Cable for PC Connectivity
- 1 x Operation Manual

Optional Accessories

- Standard Current Coil

Turns Ratio	100 / 1	100 / 1
Input Max.	**5A**	**10A**
Current	**500A**	**1000A**
Clamp Jaw	> 20mm	> 28mm
DC Impedance	0.7Ω	0.9Ω
DC Burden	5A / 3.5V	10A / 2.5V
AC Burden	5A / 6V	10A / 5V
Frequencies	DC to 60Hz	DC to 60Hz
Accuracy	± 0.3% rdg	± 0.3% rdg

Technical Specifications

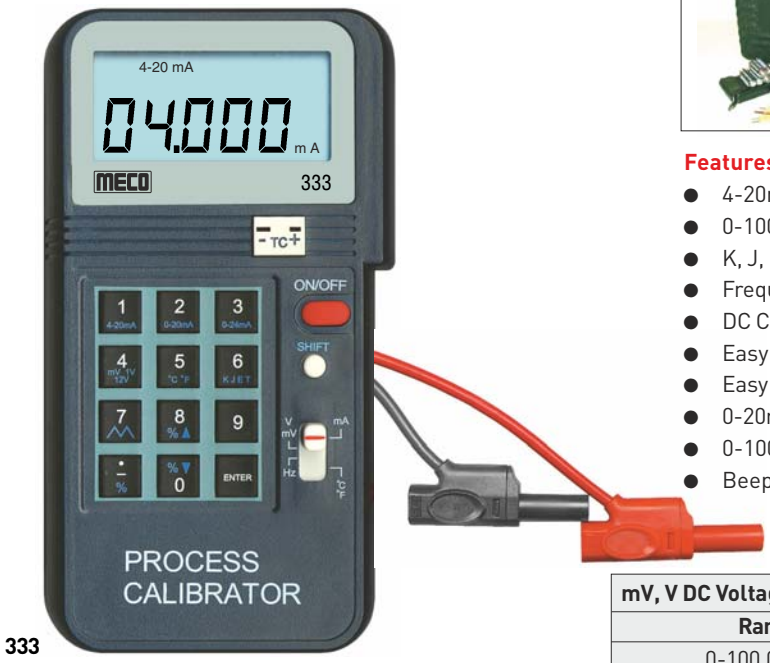
Voltage Control	Output Voltage Range :	1V, 2V, 5V, 10V, 20V, 50V, 75V, 150V, 300V, 600V, 1000V
	Min. Resolution :	0.02mV
	Basic Error :	AC V : ± (0.03 %RD + 0.02 %FS)
Current Control	Output Current Range :	10mA, 20mA, 50mA, 200mA, 1A, 2A, 5A, 10A, 25A, 50A, 100A
	Min. Resolution :	0.2μA
	Basic Error :	AC I : ± (0.03 %RD + 0.02 %FS)
Frequency Control	Frequency Range :	40Hz to 70Hz
	Frequency Error :	± 0.02 Hz
Phase Control	Phase Angle Range :	0 to 359.99°
	Phase Error :	± 0.05°

Note - RD : Reading, FS : Full Scale

General Specifications

- Power Range : 0 to 100kW
- Power Basic Error : ± (0.07 %RD + 0.03 %FS)
- Stability V, I : < 0.01 %FS / 2 min, P : < 0.02 %FS / 2 min
- Distortion : < 0.5 %
- Power Factor Range : -1 to +1
- Power Factor Basic Error : ± 0.001 (PF 0 to ±0.8); ±0.0005 (PF -0.8 to -1, +0.8 to +1)
- Power Supply : 230 VAC, 50 (60) Hz
- Power Consumption : < 300 VA
- Display : 5½ Digit VFD Digital Display
- Operating Temperature : 5°C to 35°C
- Relative Humidity : ⩽80 %
- Dimensions : 192 x 480 x 540mm (approx.)
- Total Weight : 23 kgs (approx.)

CE



333

Features

- 4-20mA (1KΩ Load, 24V Loop Supply)with 1μA Resolution
- 0-100.00mV, 0-1.0000V, 0-12.000V
- K, J, E & T Thermocouples (^{0}C and ^{0}F)
- Frequency : 1-62500 Hz
- DC Current Basic Accuracy : 0.025%
- Easy Key Pad Number Operation
- Easy Step and Auto Ramp Functions
- 0-20mA & 0-24mA Selectable
- 0-100% Output (mA, mV, V)
- Beeper Warning when Output is Open (mA) or Short (mV, V)

Electrical Specifications (23^{0}C ± 5^{0}C, 10 minutes after power is on)

mA DC Current (1KΩ max. Load, 24V Loop Supply)		
Range	**Resolution**	**Accuracy**
4-20 mA, 0-20 mA, 0-24 mA	1 μA	± 0.025%rdg ± 3μA

Beeper Warning when Output is Open and specified Current Output >1mA

mV, V DC Voltage (1mA Supply Current)		
Range	**Resolution**	**Accuracy**
0-100.00 mV	10 μV	± 0.05%rdg ± 30μV
0-1.0000 V	100 μV	± 0.05%rdg ± 300μV
0-12.000 V	1 mV	± 0.05%rdg ± 3mV

Beeper Warning when Output is short and specified Voltage Output >10mV

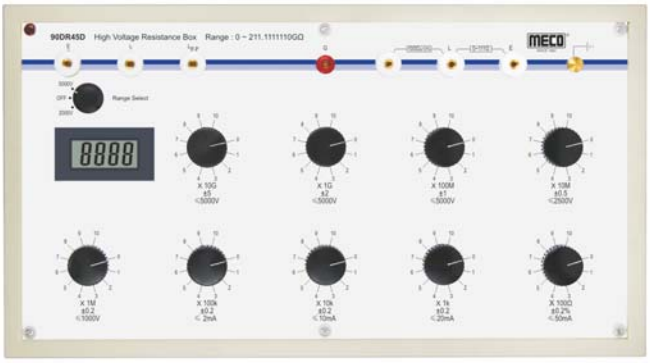
Frequency (1KΩ Load Min.)		
Range	**Resolution**	**Accuracy**
1-125 Hz	1 Hz	± 0.04 Hz
126-62500 Hz	1 Hz	± 0.01% ± 0.04 Hz

K, J, E and T Type Thermocouples (1^{0}C, 1^{0}F Resolution, 1KΩ Load Min.)			
Range	**Accuracy**	**Range**	**Accuracy**
K : -200 to -100^{0}C	± 2.0^{0}C	K : -328 to -148^{0}F	± 3.6^{0}F
K : -100 to 0^{0}C	± 1.1^{0}C	K : -148 to 32^{0}F	± 1.8^{0}F
K : 0 to 1370^{0}C	± 0.8^{0}C	K : 32 to 2400^{0}F	± 1.5^{0}F
J : -100 to 0^{0}C	± 0.9^{0}C	J : -148 to 32^{0}F	± 1.6^{0}F
J : 0 to 760^{0}C	± 0.7^{0}C	J : 32 to 1400^{0}F	± 1.2^{0}F
E : -100 to 0^{0}C	± 0.9^{0}C	E : -148 to 32^{0}F	± 1.6^{0}F
E : 0 to 700^{0}C	± 0.7^{0}C	E : 32 to 1292^{0}F	± 1.2^{0}F
T : -200 to 0^{0}C	± 1.0^{0}C	T : -328 to 32^{0}F	± 1.8^{0}F
T : 0 to 400^{0}C	± 0.8^{0}C	T : 32 to 752^{0}F	± 1.5^{0}F

General Specifications

Power	9V Battery & External Battery Pack (Six x 1.5V "AA" Batteries)
Display	4 and 5 Digits LCD Display with Annunciator
Operating Environment	0^0 to 50^{0}C (32 to 122 ^{0}F), RH <85%
Storage Environment	-20^{0}C to 60^{0}C (-4 to 140^{0}F), RH <85%
Dimensions	88 x 168 x 38 mm (approx.)
Weight	330gms Including Battery (approx.)
Accessories	Carrying Case x 1, Users Manual x 1, K type Thermocouple Connector x 1, External Battery Pack Holder 1.5V AA Batteries x 6, 9V Battery, Pair of Alligator Test Leads x 1

90DR



90DR45D

Parameters	Specifications
Resistance Range	0.01MΩ ~ 5GΩ
17 Selectable Fixed Resistance Values	0.01MΩ, 0.05MΩ, 0.1MΩ, 0.2MΩ, 0.5MΩ, 1MΩ, 2MΩ, 5MΩ, 10MΩ, 20MΩ, 50MΩ, 100MΩ, 200MΩ, 500MΩ, 1kMΩ, 2kMΩ, 5kMΩ
Accuracy	±0.2%, ±0.2%, ±0.2%, ±0.2%, ±0.2%, ±0.2%, ±0.2%, ±0.2%, ±0.5%, ±0.5%, ±0.5%, ±1%, ±1%, ±1%, ±2%, ±2%, ±2% (respectively)
Voltage Range (DC)	100V, 200V, 300V, 400V, 500V, 1kV, 1kV, 1kV, 1kV, 2.5kV, 2.5kV, 2.5kV, 2.5kV, 2.5kV, 2.5kV, 2.5kV, 2.5kV (respectively)
Insulation Resistance between Circuit and Housing	>500GΩ
Maximum With Stand Voltage Between Circuit and Housing	2000V AC For <60 Seconds
Working Temperature	20 ± 5°C (Typical) 20 ± 5°C (Reference)
Storage Temperature	-10 ~ 40°C, ≤ 75% RH
Humidity	25% ~ 75% (Typical) 30% ~ 60% (Reference)
Dimension	310 x 240 x 160mm (approx.)
Weight	3.6Kg (approx.)
Applications	● Checking of HV Insulation Testers ● Research Laboratories ● Factories ● School & Institute ● Accreditation Laboratories ● Certification Agencies

Parameters	Specifications
Display	4½ Digit Display
Resistance Range	0 ~ 211.1111110GΩ
10 Adjustable Potentiometric Resistance	$x10^2$, $x10^3$, $x10^4$, $x10^5$, $x10^6$, $x10^7$ $x10^8$, $x10^9$, $x10^{10}$, $x10^{11}$
Accuracy	±0.2%, ±0.2%, ±0.2%, ±0.2%, ±0.2%, ±0.5%, ±1%, ±2%, ±5%, ±10% (respectively)
Current / Voltage Value of Each Resistance	50mA, 20mA, 10mA, 2mA, 1000V, 2500V, 5000V, 5000V, 5000V (respectively)
Voltage Range	0 ~ 1999.9V ~ 5000V (RMS / V_{PP})
Accuracy	±(1% rdg +2digits)
Input Impedance	10GΩ ± 10%
Insulation Resistance between Circuit and Housing	1TΩ
Maximum With Stand Voltage Between Circuit and Housing	10000V AC(RMS) For <60 Seconds
Working Temperature and Humidity	20 ± 5°C, ≤ 65% RH
Storage Temperature and Humidity	-10 ~ 55°C, ≤ 80% RH
Dimension	520 x 285 x 180 mm (approx.)
Power	9V Battery
Weight	5.3Kg (approx.)
Applications	● Checking of HV Insulation Testers ● Research Laboratories ● Factories ● School & Institute ● Accreditation Laboratories ● Certification Agencies

CE

M1

S

Model M1	
Transformer ratio (Arms)	100 A/1A
Rated burden	1W
Maximum load	2W
Overload (Arms)	120% continuous,150% for 5 min/ h
Weight	100 gm approx.
Colours	Red, Yellow, Blue
Dimensions	97 x 46 x 27 mm.
Jaw opening	Cable Dia 15 mm max.
Accuracies	
for 50 Hz	±2% of rdg. for 5A to 10A ±1% of rdg. for 10A to 150A
for 2000Hz	±1% of rdg. for 100A
for 50A	±2% from 30Hz to 10000Hz
for phase	from 1^0 to 2.5^0
Connections	Safety sockets for banana plugs ø 4mm

Model S	
Transformer ratio (Arms)	200/5A, 500/5A, 1000/5A (Single Range) 100, 500, 1000/5A (Triple Range)
Overload (Arms)	120% continuous, 200% for 5 min/h
Weight	535 gm approx.
Colours	Red, Yellow, Blue
Dimensions	217 x 109 x 40 mm.
Jaw Opening	Cable Dia 53 mm max.
Bus bar	51 x 12mm
Accuracies	
for 30Hz to 5000Hz	Class 2 for Rated Burden 0.8W
for 45Hz to 1000Hz	Class 1 for Rated Burden 0.4W
for 50Hz to 400Hz	Class 0.5 for Rated Burden 0.2W
Connections	Safety Sockets for Banana Plugs ø 4mm

Note : Clamps with specifications other than above available subject to technical specifications.
Caution : The current probe secondary should never be open-circuited. Otherwise, lethal voltages will be developed and the probe will be damaged. Always complete the secondary connection firmly before clipping on the probe to the circuit. For disconnection, reverse the sequence. For power measurements, ensure the correct P1, P2 and S1, S2 polarities as indicated by the arrows on the Probe.

FCT Series

Model FCT Series

MECO FCT is a Flexible Current Transformer based on the Rogowski principle. It is suitable to conveniently measure Single / Three Phase AC and Pulsed DC Currents. After approximate signal conditioning, it can be used with Digital Multimeters, Recorders and other suitable equipment to measure current from very low frequencies up to 1MHz.

The probes comprises of a flexible air-cored sensor which can be opened and installed around a primary conductor without interrupting the circuit. The flexible and lightweight measuring head allows quick and easy installation in hard to reach areas and over large conductors. Inner Diameter / Window Size and leads can be customized.

Specification

Typical Voltage Output VoRMS (Sinusoidal Current)	$(2.183 \times 10^{-6}) \times$ IRMS x Frequency
VoRMS (at 3000ARMS, 50 Hz)	300mV AC
Rated Current (RMS)	3000A
Inner Diameter / Window Size	100mm (5")
Coil Diameter	9 mm
Internal Resistance per Probe	120Ω
Operating Temperature Range	-10°C to + 60°C
Storage Temperature Range	-20°C to + 70°C

Bandwidth	5Hz ~1MHz
Accuracy	± 0.2%(Most accurate position, 25°C)
Phase Shift	90 ± 0.2 degrees
Temperature Sensitivity	0.08% per °C
Position Sensitivity	± 0.5%
Working Voltage	1000V AC RMS

Ordering Information : Model, Rated Input (A AC) & Rated Output

Clamp - On AC Current Transformer

CCT50

CCT602

MECO CCT Series of Clamp-On Current Transformer's are designed for fast and easy installation. Clamp-On Current Transformer uses Permalloy Magnetic Core or Silicon Amorphous Core, with characteristics of small size, high precision, good stability and strong anti-interference ability.These sensor's give a standard AC Current output which is suitable to conveniently measure on Single Phase / Three Phase Circuits with good stability and high anti-interference ability. It is ideal for power and energy measurement with high precision and small phase angle error in applications related to electric power, communication, monitoring and control. It can measure a variety of electric parameters without removing cables.The Standard length of Output Leads is 2 Meter. However Output and Leads Cable can be customized.

Features

- Clamp-On Design, Safe, Easy to Install, Portable.
- Wide Inner Window, Allowing Clamping of Big Cables or Bus-Bars.
- Silicon Steel / Permalloy Core
- Operating Temperature -25°C to 75°C
- Operating Humidity < 85%
- Output Connection UL1015 22AWG Wire (Twisted Wire) 2m

Applications

- Current Measurement, Monitoring and Protection for Electrical Wiring and Equipment.
- Current and Power Measurement for Electric Motors, Lighting, Air Compressor, Heating and Ventilation System, Air-Condition Equipment and Automation-Control System.
- Current, Power and Energy Monitoring Device.

Electrical Specifications

Frequency	50 - 400Hz
Rated Input	As Below
Measuring Range	5% In - 130% In
Rated Output	0 - 5A AC (Standard)
	0 -1A AC or 0-10V AC (Optional)
Ratio	≤ ± 0.1 %
Phase Angle	≤ ± 10min
Dielectric Strength	3.0KV / 1mA / 1min
Insulation Resistance	DC500V / 100MΩ min

Specification

Model	Rated Input (A AC)	Rated Output	Accuracy	Window Size (mm) (ID)
CCT50	0 - 100A	5A AC	2.5% ≤60A, 1.0% >60A	50
	0 - 500A		1.0%	
	0 - 1000A			
CCT602	0 ~ 2000A			60

Ordering Information : Model, Rated Input (A AC) & Rated Output

HI TECH CALIBRATION SERVICES

No. 209, VGP Nagar, Mugappair West, Chennai - 600 037, INDIA.
Phone : 044 - 26 56 78 90 (5 Lines), Mobile : 95970 95960
enquiry@hitechcalibration.com | www.hitechcalibration.com

Ref No. HT/LT/2022-23/008 — 16-Apr-2022

CERTIFICATE OF APPRECIATION

To

Kishor Kumar Thakare (Marketing Manager – South India)
MECO Instruments Private Limited,
Navi Mumbai – 400710.

Dear Sir / Madam,

It is with great pleasure to inform you that your product **(Universal Calibrator MECO 90A)** we have purchased on **March 2022** is working properly and all the values are within the accuracy limit which is mentioned in the product manual. It is very user-friendly product and we are pleasure to recommend this product to other laboratories also.

We hope to have similar support from your organization so that it will strengthen our business relation.

For Hi Tech Calibration Services,

R. Shobana,

Calibration Engineer.

End of Letter

INDOSAW
Committed to Excellence

Date: 24.01.2023

To,
M/s. Meco Instruments Pvt. Ltd.
Plot No. 1, MIDC Electronic Zone,
TTC Industrial Area, Mahape, Navi Mumbai – 400 710.
Tel. No. 022 – 2767 33 00 / 093233 32435

Kind Attn : Dr. Kamal Goliya – CEO / Mr. Prashant Thakkar (Marketing Manager – North India)

Sub : Products Appreciation letter for Digital LED and LCD Modules.

Dear Sir,

We thank you for your support extended to us for supply of MECO Digital LED and LCD Modules regularly for our various projects in India and for many export projects.

We are very much satisfied with the performance of these meters.

The presales and post-sales service and support offered are prompt and timely.

We hope to have good and strong business relationship with you in future as well.

Thanking You,

Your Faithfully,

M/s. Osaw Industrial Products Pvt. Ltd., Ambala
Name : AJAY SAGAR
Designation : MANAGING DIRECTOR

c.c.
Mr. Prashant Thakkar (Marketing Manager – North India)
Email : prashant.thakkar@mecoinst.com Mobile No. : 098672 66639

CIN U29100HR1992PTC031570 OSAW INDUSTRIAL PRODUCTS PVT. LTD.
P.O. BOX NO. 42, OSAW COMPLEX, JAGADHRI ROAD AMBALA CANTT - 133001, HR (INDIA), TEL: +91-171-2699347, 2699267,
E-mail: enquiry@indosaw.com (Foreign), denquiry@indosaw.com (Indian Agri), deducation@indosaw.com (Indian Edu) Website: www.indosaw.com

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Data Connectivity, Interface Solutions
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info@accoladeelectronics.com
www.accoladeelectronics.com

24 DEC 2015
ACCOLADE®
ELECTRONICS PVT. LTD.
An ISO 9001:2008 Company
CIN:U31200PN2003PTC018387

To,

21st December 2015.

MECO METERS PRIVATE LTD.

Plot No. EL-60, MIDC Electronic Zone, TTC Industrial

Area, Mahape, Navi Mumbai 400710. INDIA

Subject: Customer appreciation letter.

Dear Sir,

As one of your customers, we purchased a Universal Calibrator-90P from your company. We wanted to say thank you for the assistance you gave us in purchasing the product and training to our Technical Team. We can say that we are greatly satisfied with the Universal ***Calibrator-90P*** *which we bought from your company.*

Again, we wanted to let you know that we greatly appreciate the effort of your company especially your personal attention & your great customer service.

Thanking you,

Deepak Jagadale

Director

Accolade Electronics Pvt. Ltd.

Pune

Reg. Office : 19-20, Fly View, Near Fly Over, Warje, Pune - 411 058 (India).
Works : Ghare Complex, S. No. 78/1, Dangat Industrial Estate, Shivne, Pune - 411 023.

ACCUTECH
Calibration & Instrument solution

- Calibration of Electro-Technical,Thermal, Mechanical & Flow Instruments / Equipment.
- Industrial Process Control Instruments Manufacture & Repairing.

Shop No. A-31, Sagar Complex, Nashik Phata, Opp. Kasarwadi Rly. Station,Kasarwadi, Pune-411034.
Contact :+91- 9960162504.
E-mail service.acis@gmail.com.

APPRECIATION LETTER

16th-Dec-2015.

To Whomsoever It May Concern

We Have Purchased the Universal Calibrator Model No.90A From **Meco Instruments Pvt. Ltd.** Mahape Navi Mumbai. The performance of the Instrument during calibration from IDEMI Mumbai was found within claimed accuracy from Meco.

The Instrument is user friendly. We are thanking to Meco Instruments to Support us for growing our calibration Laboratories.

We hope to have similar support from your organization in future also. So it will strengthen our business relations.

For :-
Accutech Calibration & Instrument Solution.

CALIBRATION & INSTRUMENT SOLUTION PUNE

Name: Sainath [illegible]
Managing Partner

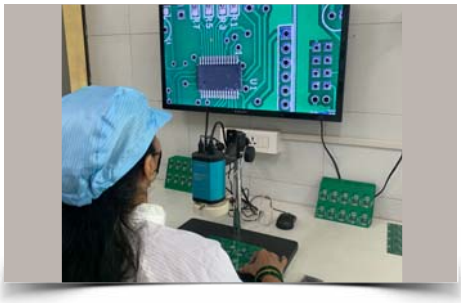
Factory Tour

Welcome to MECO - Mahape

Sales & Marketing Department

Product Display Gallery

Store & Material Handling

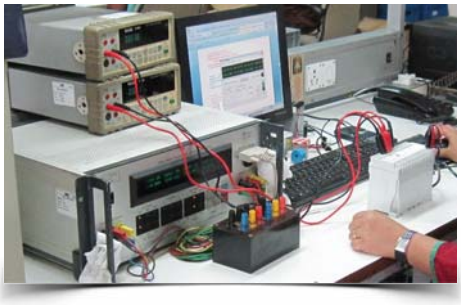


Quality Control

SMT & Reflow Machine

Meter Assembly Line

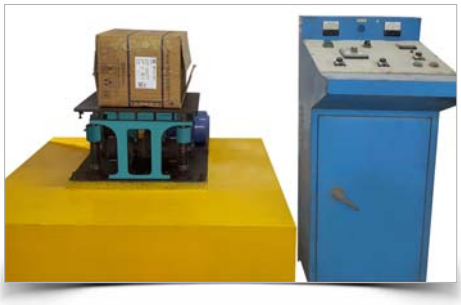
Production Line



World Class Calibrating Equipment

Factory Automation

Enviromental & Burn-In Chambers



Vibration Test

Outgoing QC

Training & Seminars

Awards

ISO 9001-2015 Certified Company

MECO INSTRUMENTS PRIVATE LTD.

EL-1, MIDC Electronic Zone, TTC Industrial Area, Mahape,
Navi Mumbai - 400710, Maharashtra, INDIA

MECO METERS PRIVATE LTD.

EL-60, MIDC Electronic Zone, TTC Industrial Area, Mahape,
Navi Mumbai - 400710, Maharashtra, INDIA

Sales : +91-93233 32435
North & Goa : +91-93244 11558
South : +91-93242 89268
East, M.P. & Gujarat : +91-93244 05281
Maharashtra : +91-93720 11735

Email : sales@mecoinst.com **Web :** www.mecoinst.com **Connect With Us :**