

# Meco Instruments: In Multimeter Mode

The digital multimeter is a small and versatile device used on a daily basis for detecting faults in countless test, measurement and other related precision equipment. Mumbai-based Meco Instruments has been in the business of manufacturing multimeters for almost forty years, and continues to innovate in this field.

**M**eco Instruments (Pvt) Ltd has over the past forty years created a niche segment for itself in the electronic measuring instruments industry by manufacturing a wide range of products catering to the needs of almost all the market segments. Besides electrical and electronic equipment manufacturers, its products are well recognised by various industries and educational institutions.

With several products in the making, Meco Instruments is best known for its reliable range of multimeters. And as technology has evolved, the multimeter also has moved from a simple analogue device to the current digital form. Let's see how the company has lived up to its expectations. Premchand Goliya, CMD of Meco Instruments, says, "The multimeter is one of many components we have pioneered over the years. Throughout the 1980s, we developed a range of hardware and software applications for the industry."

Recently, Meco Instruments received the ISO 9001:2000 certification from BVQI, London. This particular ISO certification includes marketing, design and manufacturing of various electrical and electronics measuring instruments, as well as electrical transducers and accessories.



Premchand Goliya, MD, Meco Instruments Pvt Ltd

Anyone operating in the multimeter business can tell you the difference between an analogue device and the digital multimeter in popular use today. An analogue meter moves a needle along a scale and is comparatively less expensive, but is also difficult for beginners to read accurately, especially on resistance scales as the meter movement is delicate and dropping the meter is likely to damage it! Digital meters, on the other hand, give an output in numbers, usually on a liquid crystal display and the readings are far more accurate. Most modern multimeters

are digital, and traditional analogue types are destined to become obsolete.

"Your decision on selecting a multimeter should primarily depend on the nature of the job or the work profile," says Mr Goliya. He advises that a person intending to buy a multimeter must first carry out a market survey in terms of product specifications, price comparisons and determining where to buy a DMM (digital multimeter). It is also very important to check the after sales service or guarantee of the particular product or brand. "Determine early in the process what you want to do. And then, frame your

search along the lines of your specific needs—go for the utility aspect rather than the packaged fancy stuff.”

Typically, a multimeter should have these requirements:

- Readability (that is, 2000 Count, 4000 Count, 20,000 Count, 60,000 Count and 80,000 Count with bar graphs)
- Accuracy ( $\pm 0.5\% \text{rdg} + 4 \text{ dgt}$ )
- Multifunctional (Voltage (V), Current (A), Resistance, Capacitance, Frequency, Temperature, Diode Continuity and so on)
- Reliability and safety—tested thoroughly by an external agency, that is, the certification process

Mr Goliya says, “Handheld meters are now designed to read around 100,000-120,000 counts and can carry out several sophisticated functions that otherwise required very expensive instruments in the past.”

He adds, “Digital multimeters are evolving from conventional ADC-based instruments to microprocessor-based intelligent instruments.” An example is the DMM 81K model from MECO.

## Market trends

Technology is constantly changing, and these days everything seems to be controlled by electronics. And with the

## MECO'S DMM 81K

MECO has introduced the DMM 81K, which measures AC voltage up to 20 kHz and is a combination of a 5-digit multimeter, 10-digit counter and a function generator. So it is a microprocessor-based all-in-one handheld measuring instrument.

This 5-digit, 80,000 counts multimeter comes with an accuracy of 0.05 per cent and a backlit multi-display. Its features include an auto data hold/peak hold, auto/manual range setting, 23-segment bar graph updated 40 times per second, 36 hours dynamic recording (Max/Min/Avg), timer for measurement and auto power off. Besides the measurements listed below, diode continuity tests are also possible with the 81K. The device has the optional RS-232 port for communication and recording capabilities.

The 81K comes with wide measuring options:

- DC Voltage: 80 mV to 1000V DC
- AC Voltage (TRMS): 80 mV to 750V AC
- AC Voltage (Avg): 80 mV to 750V AC
- DC Current: 80 mA to 10A DC
- AC Current (TRMS): 80 mA to 10A AC
- AC Current (Avg): 80 mA to 10A AC
- Resistance: 800 Ohms to 80 MOhms
- Frequency: 999.99 Hz to 1000.0 MHz
- Capacitance: 1 nF to 100  $\mu\text{F}$
- Decibel: -80.00 dBm to +80.0 dBm
- Temperature: -50°C to 1372°C

The 10-digit counter generator can be set-up for time measurement from 1 second to 10 hours. Another important feature is the ‘in-built function generator’, which generates square waves of selectable frequencies and duty cycles to assist users in circuit simulation.



advent of Chinese goods in the market, the competition is heating up. When asked about the entry of China into the Indian market, Mr Goliya says, “The multimeters made in China are normally used by technicians for maintenance appliances, where accuracy and reliability is not important. Things are a little tough at

the moment because of the cascading effects of taxes, and it is a little difficult to compete with the goods from China, which are low on quality and produced in bulk.”

So, does it mean that the Indian manufacturers are in danger of closing down? He quickly adds, “India is a very price sensitive market, so initially people might make a beeline for inexpensive products, but when it comes to reliability and accuracy they will always prefer a brand. So from my viewpoint, nothing is lost. Also, the Indian industry has the potential to produce medium and high-end multimeters, because of the availability of good technical skills in India. So we can always deliver better and more innovative products.”

“A person who intends to buy a multimeter must check whether it is made to comply with international standards, such as IEC 1010, for safety. In short, it must conform to CE norms,” he adds. “MECO multimeters have been designed according to these norms and tested at ERTL, Mumbai.”

## MECO'S DMM909

According to Meco Instruments, the MECO DMM909 is the world's first dual channel handheld storage digital multimeter, with patents from Taiwan, China and the US. Its features include:

- 60,000 counts and dual input channels
- 0.02 per cent DC basic accuracy and 0.1 per cent AC basic accuracy
- Bandwidth of 200 kHz (max.), and true RMS
- Fast ACV, ACA response
- Better AC accuracy than that of a bench-top DMM
- More functions than those of a bench-top DMM
- Much lower cost than that of a bench-top DMM
- Study the relationship of two voltages similar to a dual-channel DSO
- Study of relationship of voltage and current with one DMM
- Dual display of frequency and duty cycle
- Record data of both channels using a PC through the RS-232C interface



## Things to look out for while selecting a multimeter

- First and foremost, select the proper function and range for your measurement.
- Be aware of high current and high voltage situations and use the appropriate equipment.
- Always use a meter that meets accepted safety standards.
- Be certain the meter is in good operating condition.
- Follow all equipment safety procedures.
- Check out for battery leaks, electrical/magnetic disturbances to avoid false readings, which could lead to possible electric shock or personal injury.

## IEC51 requirements

According to IEC51 requirements, all measuring instruments and their accessories must bear the following:

- Manufacturer's name or trademark
- Symbol of the measured parameter
- 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

When asked about MECO's performance this year, he says, "We have sold more than 20,000 digital multimeters in this year and the sales have grown by 15-20 per cent. Besides, we are happy to service major clients such as ABB Limited, BARC, Birla Group of Companies, BSES, IIT, Reliance Infocom, and Tata Group of Companies, to name a few."

"Modernisation of electronics is clearly needed... all equipment/tools need to keep pace with modern trends and we at MECO are always innovating. For this, we have won several awards and huge export orders, but the single most factor, which has done us really proud, is that today most of the engineering students from the electrical, electronics and instrumentation fields have at one time or the other used MECO instruments."



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