

Clamp-On Meters – The New Paradigm

Within the past few years, there has been an ever-growing shift toward to the use of clamp-on meters. This shift can be attributed to convergence.

Convergence is the bringing together from divergent directions, a group or number of factors that generate a new force that in turn creates a significant trend. The advanced technology of the clamp-on meter has provided a solution to many applications that previously required several pieces of equipment (that each in its own right represented a costly expenditure).



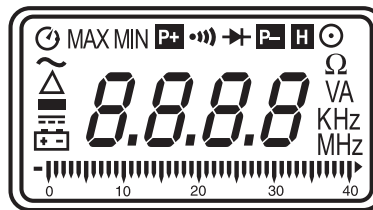
Model 514 measuring primary current on a machine control system.



Clamp-On Multimeter Model 514

From the outset, one of the more obvious observations is the physical makeup. The dominance of the jaws that clamp together with a large digital

display are now the standard of the industry. Prior to this, a discrete current clamp was used to measure current through a conductor which in turn was fed to a Digital Multimeter (DMM) to indicate the value. Voltage indication was also available with this device. Further, there are applications where the monitored parameter fluctuates to the extent that digital readout becomes difficult to read and the incorporation of a fully segmented



analog display is accomplished. Thanks to multi-function LCDs, both forms of indication may be presented simultaneously in a clamp-on meter. Perhaps, Auto Ranging can be listed as one of the greatest functions provided by DMMs and is now found standard in virtually all clamp-on meters. Now, due to powerful, light, compact and accurate circuitry the clamp-on meter can perform these

classic measurements in one single, universal, handheld device.

There is also the need to monitor and indicate parameters that were previously insignificant and/or meaningless to everyday operations. Where Power Quality is involved, there is the need to accurately indicate parameters such as Total Harmonic Distortion, Individual Harmonics, Frequency, Crest Factor, % Distortion Factor, K Factor and more. Variable Frequency Motor Drives have posed some difficulty to even the best of clamp-on meters; however, newer models take this assignment in stride. The more sophisticated a device becomes; there invariably are buttons to activate the associated functions accordingly. At the same time, there is the obvious need to indicate some of the more common parameters such as Current and Voltage as well as Ohms and Continuity. There can be the need to capture instantaneous Peak, which is not to be confused with a RMS value for Max and/or Min. With more and more digital circuitry, we are seeing a much greater need to measure DC. Measuring both AC and DC in the same piece of equipment presents a whole new set of



Harmonic Power Meter
Model 725

requirements. Thanks to Hall Effect semiconductor sensing devices, this is no longer such a daunting task. Non-Sinusoidal Current and Voltage waveforms have spawned the requirement for "True RMS" indication. These models incorporate a high speed sampling technique that can respond to sub-cycle perturbations and in turn provide an overall indication of value whereas, for day to day applications, average sensing may be sufficient. Certain models are considered "Smart" with capabilities to indicate deviations from a previously indicated value. In general, the key difference now is that today's sensitive electronics require greater accuracies.

From a user perspective, we see an ever-changing landscape. Much of the above test equipment was for use in a

Laboratory environment. With the explosive growth of electronics in every facet of Residential, Commercial and Industrial hardware, we see the accompanying need for tools for associated personnel to carry out the proper Installation, Maintaining and Servicing of this equipment.

This new wave of powerful, flexible, convenient and cost effective hand-held units is perhaps one of the biggest boon to those who are challenged with the design, manufacture, installation and service of today's ever increasingly complex, electrical/electronic equipment.

Contact Us

United States & Canada:

Chauvin Arnoux®, Inc.
d.b.a. AEMC® Instruments
200 Foxborough Blvd.
Foxborough, MA 02035 USA
(508) 698-2115 • Fax (508) 698-2118
www.aemc.com

Customer Support – for placing an order, obtaining price & delivery:
customerservice@aemc.com

Sales Department – for general sales information:
sales@aemc.com

Repair and Calibration Service – for information on repair & calibration, obtaining a user manual:
repair@aemc.com

Technical and Product Application Support – for technical and application support:
techinfo@aemc.com

Webmaster – for information regarding www.aemc.com:
webmaster@aemc.com

South America, Australia & New Zealand:

Chauvin Arnoux®, Inc.
d.b.a. AEMC® Instruments
15 Faraday Drive
Dover, NH 03820 USA
(978) 526-7667 • Fax (978) 526-7605
export@aemc.com

All other countries:

Chauvin Arnoux
190, rue Championnet
75876 Paris Cedex 18, France
33 1 44 85 45 28 • Fax 33 1 46 27 73 89
info@chauvin-arnoux.com