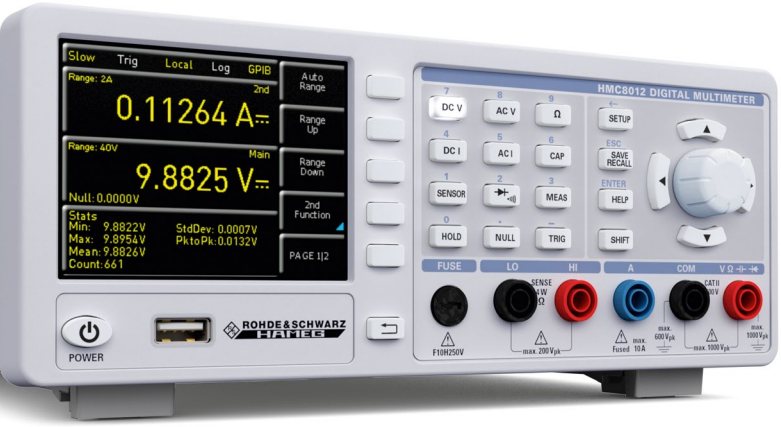
HAMEG Instruments
A Rohde & Schwarz Company

New HMC Compact Instrument Series by HAMEG Instruments



With its new HMC compact series, HAMEG Instruments is introducing an instrument series in a half-19"-format. The first instrument in the HMC series will be the HMC8012, a technically supreme 5-¾ digit digital multimeter. All instruments in the series will be LXI certified and support the USB TMC class to communicate via USB interface as well as via virtual COM port (VCP). Alternative variants with permanently installed GPIB interface are also available.

HAMEG Instruments has come to be known for its oscilloscopes which have always scored high with an attractive price-performance ratio. For many years, HAMEG products have also included power supply units, spectrum analyzers and programmable system instruments such as HF synthesizers, frequency generators or LCR meters. After its recent introduction of the HMO3000 series (mixed-signal oscilloscopes with a bandwidth of up to 500 MHz) the Rohde & Schwarz subsidiary continues to expand other product ranges with its HMC series.

The digital multimeter HMC8012 is starting off the new series. In contrast to the class standard of 5-½ digit displays, the HAMEG instrument offers a 5-¾ digit display (480,000 points) resulting in measurement ranges that are four times higher without any requirement of range switching. It facilitates measurements in the measurement category II with a voltage of up to 600 V, as opposed to the standard of only 300 V in this instrument class. With the HMC8012, current measurements across the entire range can be performed with only one connector. This eliminates any manual switching during range transfers. Additionally, an integrated watt meter enables power measurement in the DC range.

Picture 1: Watt meter in DC range

With a base accuracy of 0.015% in the DC range, the multimeter shows up to 3 measured values on the brilliant TFT color display. The display may include a DC voltage, a AC voltage and related statistics, for instance. Altogether, the multimeter offers 12 different measurement functions: VDC and IDC, True RMS VAC and IAC, frequency, 2- and 4-wire resistance, capacity, continuity, diode, temperature and performance. Extensive mathematics functions such as limit testing, min/max, means, offset, DC performance, dB and dBm are available to support the user during his measurement tasks and round off the multimeter features.

Picture 2: Voltage AC+DC measurement

The performance of a true RMS measurement in the AC+DC range is a very useful option. The option to display three measurement values simultaneously allows users to conveniently measure DC voltages with overlapping AC voltage or direct currents with overlapping alternating currents. This function is useful for the development of LED lighting, for instance, which is typically controlled by means of PWM-regulated signals.

Multimeters with standard monochromatic screens are able to implement limit functions only by means of a signal tone. By contrast, the HMC8012 with its color TFT display also allows a visual implementation of the function. A primary measurement value that is within the defined limit range is shown in green whereas a higher or lower value is displayed in red. The HMC8012 also offers an acoustic option.

The HMC8012 can also solidly hold its ground against competitors in regards to measurement rates: For instance, up to 200 measurements per second are possible (depending on the selected range). The distinguishing feature is the fact that the data logging function allows the user to record these measurements not only on the internal memory which includes 50,000 measurement points. The only record limit for a connected USB stick in FAT or FAT32 format is the capacity of the used storage medium. This makes the HMC8012 the ideal instrument to perform a series of measurements without PC or remote infrastructure that is virtually unlimited in length.

Picture 3: Measurement value within limits

Picture 4: Measurement value outside of limits

With multiple existing interfaces, the new HMC series is naturally suited for the use in automated test environments. All instruments of this series will be LXI certified which is primarily due to the prevalence of the LXI standard. Another aspect is the fact that HAMEG is represented in the LXI consortium by its parent company, Rohde & Schwarz, who is a strategic member. By implementing the LXI core functions, the user gains access to a web server (via LAN interface) for the setup of the measurement instrument. IVI (Interchangeable Virtual Instrument) instrument drivers are another central component for the LXI certification. For the HMC series, HAMEG provides so-called IVI.net drivers which are based on Microsoft .NET-Framework 4. The traditional LabView drivers will also be available for the new series as well as LabWindows/CVI drivers which are based on LabWindows/CVI 2012.

In addition to a LAN interface, all HMC instruments include a USB device port. For this interface, the user can select if the instrument is accessed via virtual COM port (VCP) or via USB TMC class. The traditional version of the VCP allows the user to communicate with the HMC using any terminal program via SCPI commands once the corresponding Windows drivers have been installed. For the multimeter HMC8012, these commands are mostly compatible with the Agilent multimeters 34401A and 34410A. Naturally, the free HAMEG software „HMExplorer" is also available for the HMC series. This Windows application offers HMC instruments a terminal function, the option to create screenshots and to read out the measured data from the HMC memory.

The modern alternative to the virtual COM port is to remote control the HMCs via USB TMC class. TMC stands for „Test & Measurement Class" which indicates that the connected measurement instrument can be recognized without special Windows drivers if VISA drivers are installed and that it can be used directly in corresponding environments. The GPIB interface serves as model to the structure of the TMC design. A major benefit of the USB TMC class is that by sampling specific registers the controlling software can determine if commands have been terminated and if they have been processed correctly. In contrast, the communication via VCP requires analysis and polling mechanisms within the controlling software which may significantly strain the interface of the measurement instruments. The TMC status registers solve this problem with the USB TMC in the same manner as is the case with the GPIB interface for the hardware, namely via corresponding control lines.

In addition to the GPIB functions which are available via USB TMC class, all HMC instruments are optionally available with an integrated GPIB interface. This solution is particularly attractive for customers who already have an existing GPIB environment. With minimum efforts, an old instrument can be replaced by a model of the HMC series. To simplify the exchange of existing instruments, the HMC series was developed in a half-19"-format. With the corresponding frame, this allows the instrument to be fitted into 19" racks which is particularly significant for industrial operational areas. The design also allows the HMCs to be used as a benchtop. As it is characteristic for HAMEG instruments to include the option to stack instruments within a series, it is also planned for the new compact series.

The entire HMC product range is CSA certified and can be ordered with calibration documents from the factory. As is true for all instruments by the measurement instrument expert HAMEG (based in the city of Mainhausen in the German state Hesse), this new series is also being completely developed in Germany and is being produced in the European Union within the company network of its parent company, Rohde & Schwarz. With its attractive price tag the HMC8012 provides customers with a measurement instrument with superior technical features that is unique in this price class.

Kai Scharrmann, June 2013

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