

Batemika M100 Bridge mA-meter software upgrade

Batemika M100 Bridge mA-meter is a specialized measurement instrument, which is primarily used for accurate and non-intrusive measurement of measurement currents of precision resistance bridges used in primary thermometry. Accurate measurement of the bridge measurement current permits the implementation of more accurate procedure for the self-heating correction, which can in some specific measurements significantly improve the overall measurement uncertainty. As an example, the improved self-heating procedure may be beneficial in direct fixed-point-cell comparison and in the measurement of the vertical temperature profile in the fixed-point cells.

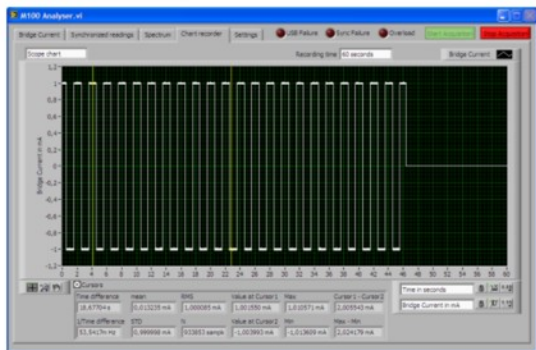


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In February 2015, we have upgraded the Batemika M100 Applications software package

to version 1.2.2. The device has been in production since January 2014, and during the past year, we have obtained some valuable feedback information from our customers. Apart from a few minor glitches and cosmetic improvements, our customers have pointed out that the device could be very useful as a diagnostic tool for servicing resistance bridges. Arguably, if the bridge is malfunctioning, this will likely result in an invalid shape and/or value of the measurement current, especially during the initialization or configuration phase of measurement. A tool for observing the shape of measurement current is therefore required. Use of a classical oscilloscope has limited value, as most oscilloscopes will interfere with the bridge operation, so distorted measurement current can be caused by the connection of the oscilloscope in the measurement system.

M100 is capable of sampling the measurement current with sampling frequency of up to 60 kHz and resolution of 18 bits, and these samples can be continuously accessed via the USB interface. Combined with a software application, this makes a perfect solution for high-resolution observation of measurement current records of up to 300 seconds. Areas of interest can be zoomed-in and investigated. Due to M100 excellent isolation characteristics, there is no influence on bridge operation, which could cause a distortion of the measurement current.



Application for observation of measurement-current shape

The second major upgrade was the improvement of handling of overload conditions. M100 measurement range is specified at 2.9 mA RMS (15 mA RMS for high range), which is applicable to sine wave. This means that the actual acquisition range is ± 4 mA, so DC or square-waveform currents can be accurately measured up to the value of 4 mA. The problem could arise if the measurement current has large spikes, which would temporarily exceed the acquisition range, resulting in truncation at acquisition-range limit. As the RMS value of such current may be well within the stated measurement range, the user could erroneously assume that the measurement is valid. The upgraded firmware of the M100 is capable of detecting an overload condition and will display the OverLoad warning on the M100 display, as well as in the M100 Applications software.



Indication of OverLoad condition

At Batemika, we are dedicated to constant improvement of our products and we are happy to provide solutions to specific problems of our customers. The upgraded software is available in the **Downloads** section of the M100 product page on our website www.batemika.com. The upgrade includes also the Firmware Upgrade utility, which allows the upgrade of existing devices with the improved firmware.