

# Multi Measuring Interfaces

Stand-alone device as trigger • Accessory for PF controller BR-series



## General

The MMI6000, MMI7000 and MMI8003, universal measuring devices, display and record a large number of key grid parameters. Harmful conditions in the grid

(e.g. a high harmonic content) with a negative impact on the system are thus revealed immediately.



MMI6000



MMI7000



MMI8003

## MMI6000

Measuring device for single-phase measuring. It is an external meter combining many devices in one. Combined with a PF controller with interface the MMI6000 monitors the input lead of the PFC system.

Versions:

- MMI6000-R with relay output
  - MMI6000-T with transistor output
- All versions are with an interface RS485.

## Applications

Coupling MMI6000 – BR7000 via RS485 interface

- Genuine monitoring of the particular capacitor currents offers additional protection for the whole PFC system.

## MMI6000 / Modbus RTU

- Usage as separate measuring device allows display of all network parameters and delivery via Modbus RTU protocol.

## MMI6000 / ASCII OUT

- Measured values are provided in ASCII code via interface; usage also as a trigger relay.

## MMI6000-T Dyna-I-trigger

- Triggering of TSM thyristor switches in real time, providing the switching within 1 ms.

## MMI7000 (V4)

Supported by the BR7000-SOFT (Windows-based software) if connected to a RS485 bus, the measured values from all connected devices can be displayed via a PC.

## Features

- Power supply 110 to 440 V AC
- SD card for recording all grid parameters
- 2 independent interfaces RS485
- 4 relay outputs freely programmable

## Applications

Three-phase measuring device in panels

- Grid measurements
- Power measurements
- Measurement of harmonics
- Energy counter (sub-counter)
- Display device in incoming supply or all outgoing lines
- Triggering of messages or switching operations
- Four relay outputs
- Storage of all grid parameters – long-term monitoring via SD card
- Transmitter for external systems
- Coupling with PF controllers with interface for 3-phase external monitoring of the capacitor currents – additional protection for the whole PFC system

## MMI8003

Genuine measuring device for three-phase measuring. Supported by the BR7000-SOFT (windows-based software) it has to connect to a RS485 bus, the measured values from all connected devices can be displayed and processed via a PC or an external control system.

- without display
- for using inside a cabinet
- interface 1x RS485 (Modbus RTU)
- mounting on hut rail

## Applications

Three-phase measuring device in panels

- Grid measurements
- Power measurements
- Measurement of harmonics
- Energy counter (sub-counter)
- Display device in incoming supply or all outgoing lines

All values can be read out via Modbus in real time.

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Technical data			
	MMI6000	MMI7000	MMI8003
<b>Weight</b>	0,5 kg	1.0 kg	0.5 kg
<b>Dimensions (h x w x d)</b>	panel mounting instrument 100 x 100 x 45 mm	panel mounting instrument 144 x 144 x 60 mm	plastic casing for hut rail mounting, 92 x 90 x 38 mm
<b>Interface</b>	1× RS485 (4-pole terminal); Modbus RTU	2× RS485; Modbus RTU	1× RS485; Modbus RTU
<b>Windows-software BR7000-soft</b>	–	included in the delivery	included in the delivery, additional PC-software for parametrization
<b>Output capacity</b>	MMI6000-R: 250 V AC, 1000 W MMI6000-T: 60 V DC, 150 mA	MMI7000: 250 V AC, 1000 W	n/a
<b>Display</b>	graphical, 2 x 16 characters, illuminated	graphical, 128 x 64 dots, illuminated	n/a
<b>Menu languages</b>	English/German	English/German/Russian/ Spanish/Turkish	n/a
<b>Measuring and display</b>	single-phase V, I, F, Q, P, S, cos-φ, W, temperature	three-phase V, I, F, Q, P, S, cos-φ, THD-V, THD-I, W, harmonic of voltage up to 51 <sup>st</sup> , harmonic of current up to 51 <sup>st</sup> , temperature	three-phase V, I, Q, P, S, F, THD-V, THD-I, W, cos-φ, single harmonics of voltage and current. All values can be read out via Modbus in real time
<b>Operating voltage</b>	230 V AC	110 ... 440 V AC ±15 %	24 V DC (via external terminal)
<b>Measuring voltage</b>	230 V AC	three-phase 3 · 30 ... 440 V AC (L-N) 3 · 50 ... 760 V AC (L-L)	three-phase 3 · 30 ... 440 V~ (L-N) 3 · 50 ... 690 V~ (L-L)
<b>Frequency</b>	50/60 Hz	50/60 Hz	10 ... 80 Hz
<b>Power consumption</b>	< 4 VA	< 5 VA	< 1 VA
<b>Measurement current</b>	X:5A and X:1A	3 × X:5A / X:1A	3 × X:5A / X:1A selectable
<b>Measuring temperature range</b>	0 ... +100 °C	–20 ... +100°C	n/a
<b>Ambient temperature range</b>	–10 ... +55 °C	–10 ... +50 °C	–10 ... +55 °C
<b>Storage temperature range</b>	–20 ... +75 °C	–20 ... +60 °C	–20 ... +75 °C
<b>Overvoltage class</b>	II	II	II
<b>Pollution degree</b>	2	2	2
<b>Humidity class</b>	15 ... 95% without dew	15 ... 95% without dew	15 ... 95% without dew
<b>Mounting position</b>	any	any	any
<b>Protection class to IEC 60529</b>	front IP54, rear IP20	front IP54, rear IP20	IP20
<b>Safety guidelines</b>	IEC 61010-1:2001, EN 61010-1:2001	IEC 61010-1:2001, EN 61010-1:2001	IEC 61010-1:2001, EN 61010-1:2001
<b>Sensitivity to interferences (industrial areas)</b>	IEC 61000-4-2:8 kV, IEC 61000-4-4:4 kV	IEC 61000-4-2:8 kV, IEC 61000-4-4:4 kV	IEC 61000-4-2:8 kV, IEC 61000-4-4:4 kV
<b>Ordering code</b>	MMI6000-R: B44066M6000E230 MMI6000-T: B44066M6100E230	B44066M7500E230	B44066M8003E024