



DATA SHEET

MIB 8000 Multi-instrument



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1. About the MIB

1.1 Application

The MIB multi-instrument is a microprocessor-based measuring unit providing measurement of most electrical quantities on a 3-phase electric energy distribution network. The measurements are shown on the built-in display.

The MIB is available in two versions:

- MIB 8000 (basic)
- MIB 8000C (with communication + optional I/O extension module)

True RMS values on all 3-phase network topologies are measured with/without neutral and with both balanced and unbalanced load. A large number of standard analogue instruments can be replaced by the MIB in all electrical measuring applications. The MIB contains all necessary measuring circuits and presents all values on a display with white backlight. The display has 4 digits resolution for all measurements. The backlight on-time is selectable. Operating the MIB is very easy. It is a flexible and logical measuring unit that enables the user to easily adapt the instrument to the individual application. Counter reset and change of settings can be password protected.

The optional I/O extension module (only for the MIB 8000C) extends the number of I/O possibilities. Digital input, pulse counter, pulse output, and SOE can be provided by the extension module.

1.2 Features

Measured and calculated values	
Voltage	True RMS – each phase and line-to-line voltage.
Current	Each phase, average and neutral.
Active power (P)	Active, total and demand – power.
Reactive power (Q)	Reactive, total and demand reactive – power.
Apparent power (S)	Apparent and total apparent power.
Power factor	Power factor and total power factor.
Frequency	Actual frequency of L1.
Load nature	L/C/R.
Digital output (DO)	For alarm output or energy pulse output.
Min./max.	Min./max. of voltage – max. of current and demand.
Energy pulse output	Two ports of pulse output (assign to any energy and reactive energy).
THD (up to 31st harmonics)	Voltage THD of each phase and total, current THD of each phase and total.
Demand	Demand of each phase current, power and reactive power.
Energy	Import and export of energy, inductive and capacitive of reactive energy.
Alarm	Alarm can be related to any metering parameters.
Running hour	Meters the duration of the operation.
Unbalance factor	Voltage and current.

1.3 Connection

The MIB can be used in almost all 3-phase network topologies with/without neutral and with both balanced and unbalanced load. The voltage and current input wiring modes are set separately in the parameter setting process.

The voltage wiring mode can be:

- 3LN 3-phase 4-line Y
- 2LN 3-phase 4-line Y with 2 VT
- 1LN 1-phase 2-line
- 2LL 3-phase 3-line open delta
- 3LL 3-phase 3-line direct connection

The current input wiring mode can be:

- 3CT Unbalance system
- 2CT Unbalance system without N
- 1CT Balance system

Any voltage mode can be grouped with any of the current modes. The MIB is supplied configured in 3-phase 4-wire unbalanced mode, that is to say, voltage wiring mode 3LN and current input mode 3CT (3W4).

1.4 Communication (only MIB 8000C)

Suitable for SCADA systems, RS-485 serial output, and Modbus RTU protocol.

2. Technical specifications

2.1 Electrical specifications

Auxiliary power supply

Supply voltage AC	100 to 415 V AC +/-10% 50/60Hz / 100 to 300 V DC
Consumption	≤ 2 VA
Fuse	1A/250 V AC
Power consumption	3 VA @230 V AC
RTC clock	Time and date backup

Voltage measurement

Nominal voltage U^N	L-N 400 V AC L-L 690 V AC
Measuring range	0 to 1.2 x U^N
Overload capacity	2 x U^N continuously 2500 V for 60 s
VT primary	50 V...1000 kV
VT secondary	50 V...400 V
Fuse	1A/230 V

Current measurement

Nominal current I^N	1 or 5A AC
Measuring range	0 to 1.2 x I^N
Overload capacity	20A continuously 100A for 1s

Frequency measurement

Nominal frequency f_N	50 Hz to 60 Hz
Measuring range	45 Hz to 65 Hz
Measuring point	V1 phase voltage

Accuracy

Voltage	0.5 % of range
Current	0.5 % of range
Power	0.5 % of reading
Power factor	0.5 % of range
Frequency	0.2 % of range
Energy	0.5 % of range
Harmonic	1.0 % of range

Digital output (optional)

Output form	Digital output NE (normally energised) NC (normally closed) circuit form is Photo-MOS
Optical isolation	4 kV AC rms
Maximum voltage	250 V AC / 300 V DC
Maximum current	100 mA
Pulse rate	0.1 to 600 kWh/pulse 0.1 to 600 kVArh/pulse
Pulse duration	20 ms to 1 s

2.2 Communication (only MIB 8000C)

Communication

Signal levels	RS485
Connection type	Multi-drop
Devices per link	Maximum 32 units
Cable type	Belden 3105A or equivalent (twisted pair)
Maximum cable length	Up to 1000 m
Transmission mode	Asynchronous
Message format	Modbus RTU
Data rate	1200 to 38400 bits/s

2.3 Environmental specifications

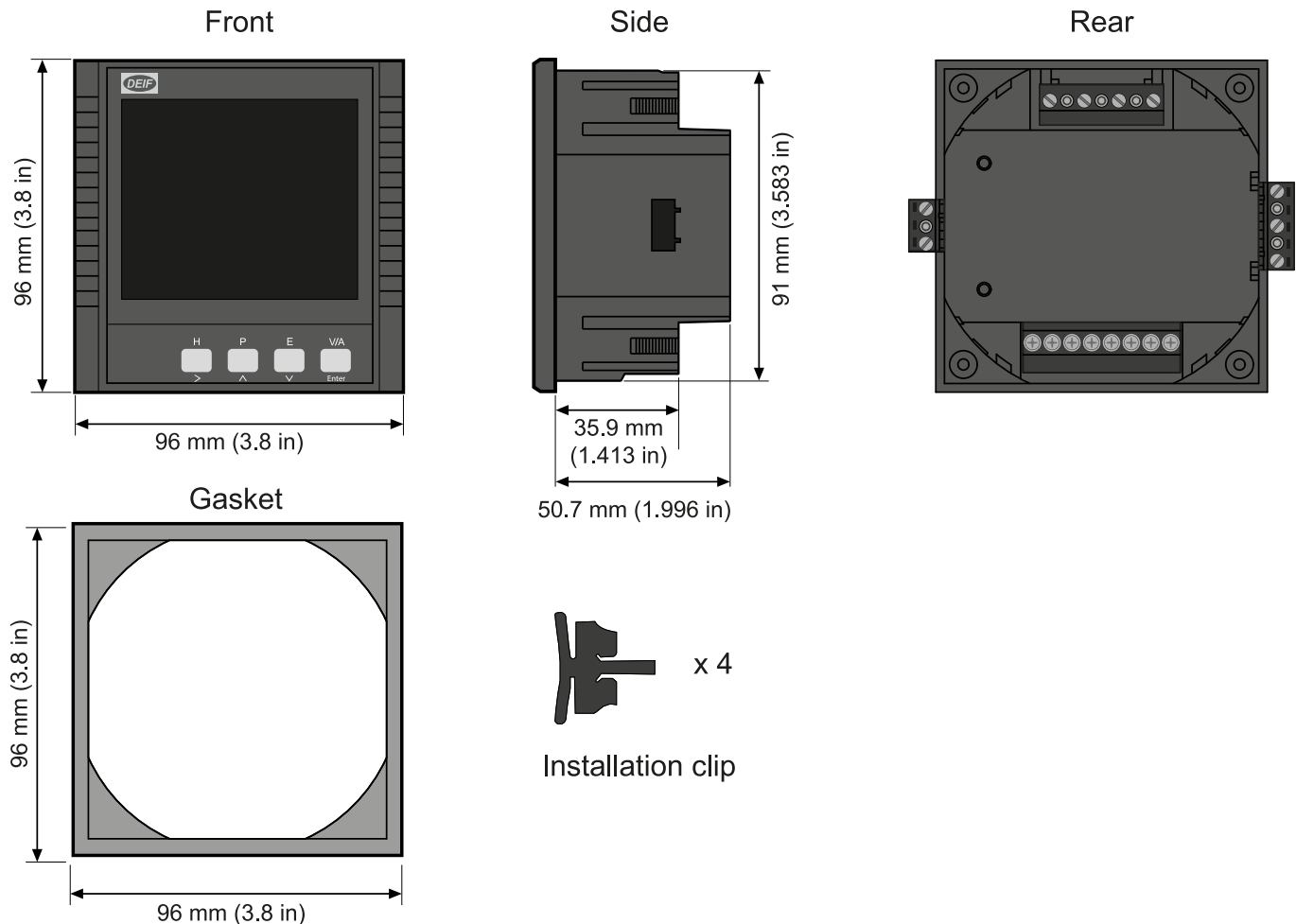
Operation conditions

Working temperature, display	-25 to +70 °C (-13 to +158 °F)
Storage temperature	-40 to +85 °C (-40 to +185 °F)
Relative humidity	5 to 95 % non-condensing
Temperature drifts	< 100 ppm/°C
Measurement Standard	IEC 62053-22 Class 0.5S, 62053-23 Class 2
Material	IEC 60068-2
EMC	IIEC61000-4-2/3/4/5/6/8/11 CISPR-22 IEC 61000-3-2 IEC 61000-6-2/4
Safety	EN 61010-1 UL 61010-1 IEC 61557-12 Cat. III, pollution degree 2
Test voltage	2.2kV according to EN 61010-1
Protection- Front	IP52 (EN 60529)
Protection- Rear	IP30 (EN 60529)

2.4 Connections

Connections	
Measuring inputs	Firm terminal block
Maximum wire	5 mm ² /AWG10
Screw torque	0.5 Nm / 5.5 lb-inch

2.5 Dimensions and weight



Dimensions and weight	
Dimensions	Length: 96 mm (3.8 in) Height: 96 mm (3.8 in) Depth: 50.7 mm (1.996 in)
Panel cutout	Square (IEC 92 DIN) Length: 92 mm + 0.5 (3.62 in) Height: 92 mm + 0.5 (3.62 in) Round (ANSI C39.1) Diameter: 101.6 mm + 0.5 (4 in)
Maximum panel thickness	6 mm (0.24 in)
Weight	350 g (0.8 lbs)

3. Ordering

3.1 MIB Multi-instrument

Multi-instrument	Comment	Item no.
MIB 8000	Basic	2961050010.05
MIB 8000C	Includes Communication (Modbus, RS-485)	2961050010.06

Table 3.1 Optional module for MIB 8000C

Module	Comment
Extension I/O module	Extension module for MIB 8000C - request at time of order

Table 3.2 Available accessories

Item	Item no.
Bracket for DIN-rail mounting	2961021911.10

4. Legal information

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The English version of this document always contains the most recent and up-to-date information about the product. DEIF does not take responsibility for the accuracy of translations, and translations might not be updated at the same time as the English document. If there is a discrepancy, the English version prevails.

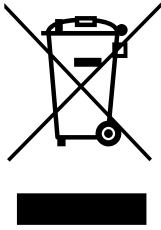
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5. End-of-life

Disposal of waste electrical and electronic equipment

WEEE symbol



All products that are marked with the crossed-out wheeled bin (the WEEE symbol) are electrical and electronic equipment (EEE). EEE contains materials, components and substances that can be dangerous and harmful to people's health and to the environment. Waste electrical and electronic equipment (WEEE) must therefore be disposed of properly. In Europe, the disposal of WEEE is governed by the WEEE directive issued by the European Parliament. DEIF complies with this directive.

You must not dispose of WEEE as unsorted municipal waste. Instead, WEEE must be collected separately, to minimise the load on the environment, and to improve the opportunities to recycle, reuse and/or recover the WEEE. In Europe, local governments are responsible for facilities to receive WEEE. If you need more information on how to dispose of DEIF WEEE, please contact DEIF.