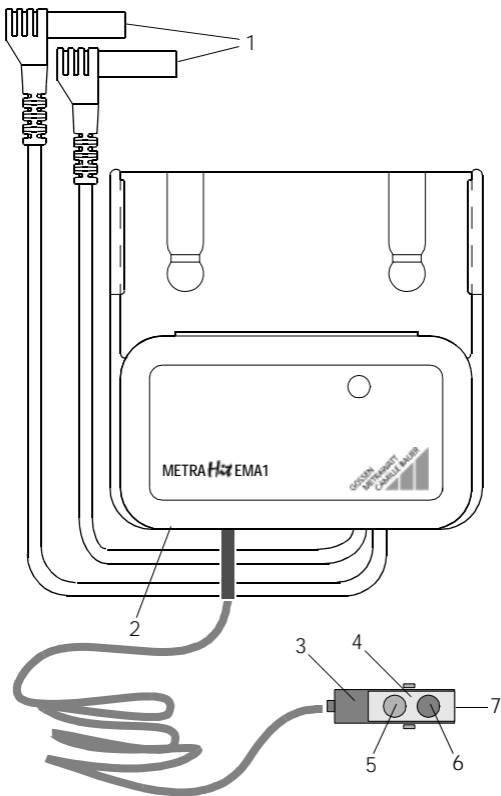


METRAHit[®] EMA1

Energy Measuring Adapter
for Ferraris Meters

3-348-993-02
1/6.99





Controls and Sensor

- 1 Contact protected connector plug for METRAHit[®] 29S multimeter
 – black for GND input socket
 – red for VOLT input socket
- 2 Socket for included power pack
- 3 Sensor
- 4 Scanning window with lenses –
 for attachment to the Ferraris meter
- 5 Transmitter diode
- 6 Receiver diode
- 7 Adjusting screw for setting sensor sensitivity
 with the help of the included triangular aluminum bracket.

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1 Safety Features and Precautions

You have selected a device which provides the user with a high level of functional safety.

The energy measuring adapter has been manufactured and tested in accordance with safety regulations IEC 61010-1 / EN 61010-1 / VDE 0411-1. If used for its intended purpose, functional safety of the device is assured. However, this cannot be guaranteed if the device is operated improperly or handled carelessly.

In order to maintain flawless functioning of the device, it is essential that you read the operating instructions for the energy measuring adapter, as well as those for the multimeter, completely and carefully before placing the device into service, and that all included instructions are adhered to.

Observe the following safety precautions:

The device may only be operated by personnel who are capable of recognizing contact hazards, and of implementing appropriate safety precautions. Contact hazards are present anywhere, where voltages of greater than 30 V may occur (RMS value).

Make sure that the measurement cables are in flawless condition, e.g. no damage to insulation, no interruptions in conductors or plugs etc.

Meanings of Symbols on the Device



Warning concerning a point of danger
(attention: observe documentation)



Indicates EU conformity

Repair, Parts Replacement and Balancing

When the device is opened, voltage conducting parts may be exposed. The device must be disconnected from the multimeter for repair, replacement of parts or balancing. If repair or balancing of a live, open device is required, this may only be carried out by trained personnel who are familiar with the dangers involved.

Defects and Extraordinary Strains

If it may be assumed that the device can no longer be operated safely, it must be removed from service and secured against unintentional use.

Safe operation can no longer be relied upon:

- if the device demonstrates visible damage,
- if the device no longer functions,
- after a long period of storage under unfavorable conditions.

Safety Precautions Concerning Use of the Sensor

- Use the sensor in enclosed rooms only.
- Protect the sensor from moisture.
- Do not expose the sensor or its cable to mechanical stresses.
- Do not turn the adjusting screw for sensor sensitivity beyond its perceptible, physical stop.
- Avoid scratching the surface of the scanning window.
- Do not lay the sensor cable parallel to any current conducting cables.

2 General Description

The METRAHit[®]EMA1 is used as an adapter for the METRAHit[®]29S digital multimeter and allows for energy measurements at Ferraris meters. It consists of a control unit and a sensor, which is attached to the Ferraris meter. The instrument reads out the pulses from the Ferraris meter and displays them at the multimeter.

3 Initial Start-Up

Mounting the Measuring Adapter to the Multimeter

- ⇒ Push the base of the multimeter onto the energy measuring adapter as far as it will go. The guide for the multimeter's rubber feet secure both devices in the desired position.

Connecting the Measuring Adapter to the Multimeter

- ⇒ Insert the black contact protected plug into the ground socket at the multimeter, and the red plug into the voltage measurement socket.

Connecting the Measuring Adapter Power Pack

- ⇒ Insert the small plug from the included power pack into the appropriate socket (2) at the energy measuring adapter.
The guarantee is null and void if any power pack other than the included power pack is used.

Securing the Sensor

- ⇒ First screw the included aluminum bracket to the sensor. Fasten the sensor to the Ferraris meter with the help of this bracket such that the scanning window faces the meter disc. A piece double-sided tape can be used to attach the bracket to the meter housing.
- ⇒ Adjust the sensor sensitivity screw (MIN-MAX) such that the red LED is lit up for the reflective areas of the disc, and that it goes off briefly when the marking (red or black) passes the scanning window. A complete description can be found in chapter 5.

Setting the Operating Parameters at the Multimeter

- ⇒ Turn the multimeter on.
- ⇒ Set the trigger thresholds for events measurement:
SEt ↵ ↓ triG ↵ ↓ EVENTS ↵
H-triG ↵ 100000 ↓↑↵
L-triG 60000 ↓↑↵.
- ⇒ Select power measurement by means of pulse in the EnErGY menu by selecting the following parameters: measuring range: 30 V, pulse to kWh relationship (see serial plate, e.g. 75 revolutions per kWh), unit of measure W for mean value and maximum, as well as the appropriate integral-action time in hours and minutes (hh:mm).
SEt ↵ ↓ EnErGY ↵ ↓ PuLSES ↵ ↓ 30 V ↵
00075 pulses/kWh ↵ W ↵ 00:15 ↵

4 Measurement and Evaluation

- ⇒ Turn the rotary switch to " ➔ " .
- ⇒ Press the FUNC key twice.
This activates the active power measurement.
Wh and PuLSE appear at the display.
- ⇒ Activate the memory mode with the abbreviated key command: Press the FUNC and ON keys simultaneously.
MEM appears at the display.
- ⇒ Make a note of the meter reading.

Downloading Measurement Results with METRAwin[®]10/METRAHit[®] PC-Software

- ⇒ Make the following selections in the "Configuration" menu: Settings/Channels/Channel Display/
YT Recorder: check off Mean and Bar here.
- ⇒ Download the measurement data with the menu File/Read Memory.
- ⇒ Select a suitable display format under Settings/YT Recorder.

5 Aligning and Balancing the Sensor

Reflective Measurement (diffuse scanning, type HPJ-.....)

- ⇒ Mount the sensor with the scanning window facing the meter disc.
- ⇒ Set the red marking on the meter disc to a position at which it cannot be seen.
- ⇒ Slowly turn the sensitivity adjusting screw (7) starting at the MAX position toward the MIN position until the standby lamp goes out. If this lamp remains off, the screw has been set to position A.
- ⇒ Now set the marking on the meter disc so that it appears in the middle.
- ⇒ Slowly turn the sensitivity adjusting screw (7) starting at the MIN position toward the MAX position until the standby lamp lights up. This is position B.
- ⇒ Set the sensitivity adjusting screw to position C, which is halfway between positions A and B.

6 Characteristic Values, Control Unit

Ambient Conditions

Reference Temperature	23° C ±2 K
Storage Temperature	-25° C ... +70° C
Operating Temperature	0° C ... +55° C
Relative Humidity	max. 75%, no condensation allowed
Elevation	to 2000 m
Deployment	indoors

Electromagnetic Compatibility

Interference Emission	EN 50081-1
Interference Immunity	EN 50082-1

Mechanical Design

Protection	IP 40
Dimensions	control unit, WxHxD: 97 mm x 135 mm x 39 mm
Weight	control unit: 110 g

7 Characteristic Values, Sensor

See supplement no. CP-UM-3126E.

8 Maintenance

8.1 Energy Measuring Adapter Housing

No special maintenance is required for the housing. Keep outside surfaces clean. Use a slightly dampened cloth for cleaning. Avoid the use of cleansers, abrasives or solvents.

8.2 Sensor Scanning Window

Use only a soft, dry cloth or compressed air for cleaning.

8.3 Power Pack

No special maintenance is required for the housing. The power pack has been designed for continuous operation and warms up slightly. Make sure that the power pack is not covered to allow for cooling. Protect the power pack from exposure to moisture.

9 Repair and Replacement Parts Service, DKD Calibration Lab and Rental Instrument Service

If required please contact:

GOSSEN-METRAWATT GMBH
Service Center
Thomas-Mann-Str. 20
90471 Nuremberg, Germany
Phone +49 911 86 02 - 410 / 256
Fax +49 911 86 02 - 2 53
e-mail fr1.info@gmc-instruments.com

This address is for Germany only. Abroad,
our representatives or establishments are at your disposal.

10 Product Support

If required please contact:

GOSSEN-METRAWATT GMBH
Product Support Hotline
Phone +49 911 86 02 - 112
Fax +49 911 86 02 - 709

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GOSSEN-METRAWATT GMBH
Thomas-Mann-Str. 16-20
90471 Nuremberg, Germany
Phone +49 911 8602-0
Fax +49 911 8602-669
e-mail: info@gmc-instruments.com
<http://www.gmc-instruments.com>

