

Description

Single- or triple phase with integrated M-bus where the consumption is presented in the LCD display for active energy measurement and cost allocation. Mounted on DIN-rail and fits a standard NORM-center. Direct Connection up to 45A (1-phase) and 65A (3-phase)

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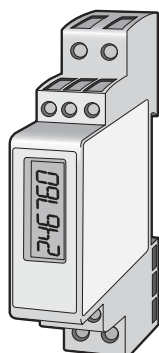
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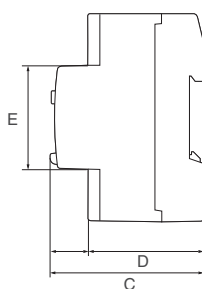
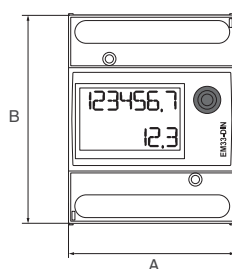
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| Art. No. | RSK | Product category | Material | Dimensions (mm) | Flow (l/min) | Pressure (bar) | Temperature (°C) | Connection type | Connection dimension | Output signal | Communication | Energy supply | Accuracy | Energy supply | Extras | Fits with article | Keywords | Workshop order |
| 7580-EM | | Electricity meter 3-phase with electric grade | | | | | | | | | | | | | | | | |



AT 7580-EM10



Single- or triple-phase electric meter with an integrated M-bus, where the consumption is presented in the LCD display for active energy measurement and cost allocation in applications up to 65A for 3-phase meters (AT7580-EM24M) and up to 45A for 1-phase meters (AT7580-EM111M). Mounted on DIN-rail and fits a standard NORM-center. 1-phase electric meter builds on 1 DIN-module and the 3-phase meter builds on 4 DIN-modules.

Quality assurance

Certificated acc. to the MID-directive, Annex "B" + Annex "D" + Annex "F" for legal metrology relevant to active electrical energy meters (see Annex MI-003), see option "PF" down below.

Effect of radio frequency acc. to CISPR 22.

Fulfils standards: safety IEC60664, IEC61010-1 EN60664, EN61010-1 EN62052-11.

Measuring principle: EN62053-21, EN62053-23. MID "annex MI-003".

MEASUREMENT PRINCIPLE IN ACCORDANCE WITH MEASUREMENT DIRECTIVE (MID ANNEX MI-003)

Accuracy: $0.9 U_n^2 U^2 1.1 U_n$; $0.98 f_n^2 f^2 1,02 f_n$; f_n : 50 or 60Hz; $\cos\phi$: from 0.5 inductive to 0.8 capacitively.

Class B: I st: 0.04A; I min: 0.5A; I tr: 1A; I max: 65A. Operating temperature: from -25°C to +55°C (from 13°F to 131°F) (relative humidity from 0 to 90% non condensing at 40°C) EMC superseding: E2. Mechanical conformity: M2.

Dimensions and weight

| | AT 7580-EM111M | AT 7580-EM24M |
|--------|----------------|---------------|
| A | 18 | 72 |
| B | 90 | 90 |
| C | 68 | 66 |
| D | 44 | 44 (+16) |
| E | 45 | 45 |
| Weight | 40 g | 400 g |

Function and design

AT 7580-EM111M and -EM24M are compact electric meters that are easy to install. AT7580-EM... fits in every application, whether it is for industry or an apartment, where measurement of electricity consumption should be made. AT7580EM has accuracy +/- 0,5% RDG (current/voltage).

In the front there is a digital display that shows kWh and kW and a LED. The LED blinks with a frequency of 1000 impulses/kWh (least period of 90ms and maximum frequency 11 Hz). kWh consumption is measured acc. to EN6253-21 (class 2).

The joystick (not EM10) in the front also shows you actual current per phase (A) and direction as well as reactive consumption (kvarh) and effect (kvar). The meter indicates the wrong phase sequence by lighting a symbol on the display. The installation is simple since the current direction does not matter and that neither external power supply nor any external power transformation is required.

AT7580-EM111M and AT7580-EM24M has an integrated M-bus interface acc. to

EN 13757-1. Possible budrates are 300, 2400 and 9600.

Technical information

AT 7580-EM111M, AT 7580-EM24M

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| Measuring inputs: | 1-phase system 3-phase system |
| AT 7580-EM111M | 1-phase system |
| AT 7580-EM24M | 3-phase system |
| Power measurement: | Galvanically insulated, including built-in current transformers, direct measurement current 45 A. direct measurement current 65 A |
| AT 7580-EM111M | direct measurement current 45 A. |
| AT 7580-EM24M | direct measurement current 65 A |
| Voltage: | 230V / 400V AC |
| Accuracy (Display): | |
| AT 7530-EM111M | (@25°C ±5°C, R.H. 260%, 45 to 65Hz). In: 0,25A, Ib: 5A, I _{max} : 45A; Un: 230VLN -30% +20% |
| AT 7530-EM24M | (@25°C ±5°C, R.H. 260%, 45 to 65Hz). Ib: 10A, I _{max} : 65A; Un: 184 to 276VLN (318 to 480VLL). |
| Current: | From 0.004I _b to 0.2I _b : ±(0.5% RDG +3DGT); from 0.2I _b to I _{max} : ±(0.5% RDG +1DGT). Active effect ±(1%RDG +2DGT). Reactive effect ±(2%RDG +2DGT). Energy class 1 acc. to EN62053-21 and MID Annex MI-003 Class B Class 2 acc. to EN62053-23. Ib: 10A |
| 7530-EM111M | I _{max} : 45A, Ib:5A |
| 7530-EM24M | I _{max} : 65A; Ib: 10A Start up current: 20mA (-EM111M) resp. 40 mA (-EM24M). |
| Additional measurement error on energy: | Disturbance enlargement acc to. EN62053-21, EN62053-23 och EN 50470-3 |
| Temperature operation: | ≤200ppm/°C. |
| Sampling frequency: | |
| AT 7580-EM111M | 4096 sampl./s @ 50Hz, 4096 sampl./s @ 60Hz. |
| AT 7580-EM24M | 1600 sampl./s @ 50Hz, 1900 sampl./s @ 60Hz. |
| Display: | |
| AT 7580-EM111M | 1 row, 7 digits. Typ LCD, height 6 mm. |
| AT 7580-EM24M | 3 rows (1 x 8 digits; 2 x 4 digits). Type LCD, height 7 mm. Readout of instantaneous variables 4 digits. Energy consumed: 8 digits. When the set value exceeds the maximum measurement level, it is indicated by "EEEE". Max. Instantaneous variables, energies: 999999.9 Instantaneous variables 0; energies 0.0 |
| LED: | |
| AT 7580-EM111M | Red LED (Power consumption) acc. to EN50470-3, EN62052-11, 1000 imp./kWh,(min.period 90 ms, max frequency 11 Hz). |
| AT 7580-EM24M | Red LED (Power consumption) acc. to EN50470-3, EN62052-11 . 0,001 kWh/kvarh per pulse 16Hz. |
| Measuring method: | TRMS measurements of disturbed sinus waves. |
| Overload current: | Continuous 45A @50Hz, by 10ms 1350A (EM111M) Continuous 65A @ 50Hz, by 10ms 1920A max. (EM24M) |
| Overload voltage: | Continuous 1.2 Un. Under 500ms 2 Un. 230 VL-N 1,2 Mohm (EM111M) 400VL-L see "Power consumption": <4VA (EM24M) |
| Input impedance: | |
| Frequency: | 50 Hz (EM111M), 45 to 65 Hz (EM24M) |

AT 7580-EM111M, AT 7580-EM24M

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| Joystick: | For navigating between measurement pages (only AT 7580-EM24M) |
| M-Bus | Acc. to EN13757-1 |
| Baudrate | 300, 2400 (default) 9600 |
| RS485 serial port | RS485 Protokol MODBUS/ RTU |
| Operating temperature: | |
| EM111-M | -25°C to +65°C (R.H. from 0 to 90% non-condensing @ 40°C) acc. to EN62053-21, EN50470-1 and EN62053-23. |
| EM24M | -25°C to +55°C (R.H. from 0 to 90% non-condensing @ 40°C) acc. to EN62053-21, EN50470-1 and EN62053-23. |
| Storage temperature: | -30°C to +70°C (R.H. < 90% non-condensing @ 40°C) acc. to EN62053-21 och EN62053-23. |
| Installing category : | Cat. III (IEC60664, EN60664). Isolation (during 1 minute) 4000 VRMS between output and measuring inputs, 4000VRMS between outputs and inputs for operating voltage. Dielektrisc strength 4kVAC RMS during 1 minute. Electrostatic discharge acc. to EN62052-11 15kV air discharge; Immunity to irradiated: Power test: 10V/m from 80 to 2000MHz; test without power: 30V/m from 80 to 2000MHz; Blast resistance: Circuit for measuring current and voltage: 4kV. Immunity to conductive disturbance 10V/m from 150KHz to 80MHz. Short-term overload: on Circuits for measuring of current and voltage: 4kV; for "L"-extern operating voltage: 1kV; CMRR 100 dB from 48 to 62 Hz. EMC acc. to EN62052-11. Safety EN62052-11, Metrology EN62053-21, EN50470-3 |
| Noise rejection: | |
| Quality mark | |
| CE connections: | |
| EM111M | Screw terminal. Cable area: max. 6mm ² (inputs), maximum tightening 1,1Nm |
| EM24M | Screw terminal. Cable area: max. 16mm ² (inputs); min. 2.5mm ² (inputs), maximum tightening 1,7Nm/3Nm |
| Material: | |
| EM111M | Noryl, UL 94 V-0 |
| EM24M | Nylon PA66, self- extinguishing: UL 94 V-0. |
| Mounting: | Standard DIN-rail. |
| Protection class: | Front: -EM111M IP51, EM24M: IP50. Connections: IP20. |
| Operating voltage: | Self-managed operation -30% +20% 45-65Hz (EM111M), -15% +10% 48-62Hz (EM24M), |
| Effect consumption: | -EM111M: ≤1,0W ≤8 VA. -EM24M: 20VA/1W. |

Installing

Connect on screw terminals to 230 VAC max 48 A (AT7580-EM111M resp. 65A - EM24M).

The M-bus-connection is polarity-independent.

A standard shielded (4 x 0.8 mm diameter / 0.5 mm² phone type) or standard power cable type (1.5 mm²) can be used.

Every individual M-Bus slave must be assigned an unique primary- or secondary adress depending on the addressing method. Primary adress: 1 to 247, specified in meter "Address". Secondary address: specified by serial number (Sn:) on both label and display.

Measure the voltage across the M-Bus slave connection to confirm M-Bus mas-

ter connection. The voltage should be between 24-48 VDC.

SAFETY

Read through the manual carefully. If the instrument is used in a - by the manufacturer - unspecified way, the safety of the instrument may be reduced.

Maintenance: make sure that all the connections are properly connected to avoid malfunction or damage to the instrument.

To keep the instrument clean, use a slightly damp cloth; do not use any abrasives or solvents. We recommend for the instrument to be disconnected before cleaning.

How to order

Example: AT 7580-EM

| AT 7580 | -EM |
|----------|------------------------------------------------------------|
| Fig. No. | Performance |
| | -EM111M, 1-phase, max 48A, integrated m-bus, 1 module wide |
| | -EM24M: 3-phase, max 65A, integrated m-bus, 4 modules wide |