

# Energy Management Energy Meter Type EM1-DIN

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- 5+1 dgt  $\mu$ P-based indicator
- kWh measurement
- TRMS measurement of distorted waves (voltage/current)
- Up to 22.5A direct connection
- Optional pulse output
- Degree of protection (front): IP 40
- Compact housing: 58.5 x 89 x 35 mm
- According to EN61036/IEC1036

## Product Description

$\mu$ P-based energy meter for active energy measurement. The housing is easy to mount on DIN-rail and ensures a degree of protection (front) of IP 40.

## Ordering Key

**EM1-DIN AV81DXX**

Model \_\_\_\_\_  
 Range code \_\_\_\_\_  
 System \_\_\_\_\_  
 Power supply \_\_\_\_\_  
 Output \_\_\_\_\_

## Type Selection

Range code	System	Power supply	Output
<b>AV8:</b> 230VAC - 22.5A	<b>1:</b> One phase system	<b>D:</b> 230 VAC, -15% +10%, 50/60 Hz (standard) Self power supply from the measuring voltage input	<b>XX:</b> No output <b>PX:</b> pulse, open collector, DC type

## Input Specifications

<b>Accuracy (48 to 62 Hz)</b> (@ 25°C $\pm$ 5°C, R.H. $\leq$ 60%)	$\pm$ 2% rdg according to EN 61036 / IEC 61036; see accuracy graph on next page	<b>Max. and min. indication</b> Active energy	Max. 99999.9 min. 00000.0
<b>Additional errors</b> Humidity Power supply Magnetic field	<0.3% f.s., 60% to 90% R.H. $\pm$ 0.5% rdg, -15 +10% p.s. < 0.1% f.s. @ 400 A/m	<b>Measurement</b> Total energy Measurement method	kWh TRMS measurement of a distorted voltage/current wave Coupling type: Direct Crest factor: $\leq$ 2
<b>Rated input</b> Current Voltage	1 input (single phase) 1 input (single phase)	<b>Ranges (impedances)</b> Current	Ib:15AAC, Imax:22.5AAC ( $\leq$ 0.3VA/ $\leq$ 0.1 $\Omega$ ) 0,1Ib: 1,5AAC
<b>Temperature drift</b>	< 300 ppm/°C (0.03%/K)	Start-up current Voltage	50mAAC 230V +10% -15% ( $\geq$ 10k $\Omega$ )
<b>Display</b>	Electromechanical type 5+1 digits, h 4 mm	<b>Frequency range</b>	48 to 62 Hz
<b>Decimal point position</b>	Fixed 0.1 kWh resolution	<b>Over-load protection</b> Continuous: current For 1 s Voltage: Current:	1.5 x Ib 275V 20 x Ib (600A/10ms)
<b>LED's</b> Green Red	Power-on blinking when counting energy, 640 pulses/kWh		

## Output Specifications

<b>Pulse output</b> (on request) Number of outputs Static type	1, independent 10 pulses/kWh, open collector (NPN transistor) $V_{ON}$ 1.2 VDC/ max. 40 mA $V_{OFF}$ 30 VDC max.	Pulse duration	200 ms $\pm$ 5 ms (ON), $\geq$ 600ms (OFF)
		Insulation	By means of optocouplers, 2000 $V_{rms}$ output to measuring input, 2000 $V_{rms}$ output to supply input.

## Supply Specifications

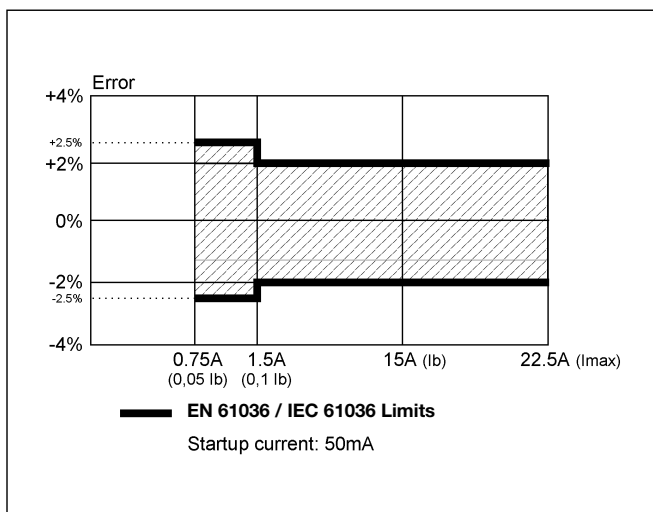
<b>AC voltage</b>	230 VAC (standard), -15%+10% 50/60 Hz Self power supply from the voltage measurement input	<b>Power consumption</b>	$\leq$ 9 VA (capacitive); 1.5W
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## General Specifications

<b>Operating temperature</b>	-10° to +45°C (14° to +113°F) (R.H. < 90% non-condensing)	<b>Safety standards</b>	IEC 61010-1, EN 61010-1
<b>Storage temperature</b>	-30° to +60°C (-22° to +140°F) (R.H. < 90% non-condensing)	<b>Product Standard</b>	IEC 61036/EN 61036
<b>Insulation reference voltage</b>	300 $V_{rms}$ to ground	<b>Connector</b>	Screw-type, max. 6 mm <sup>2</sup> wires max. 2.5 mm <sup>2</sup> wires
<b>Insulation</b>	4000 $V_{rms}$ between all inputs to ground	<b>Housing</b>	Dimensions 2 DIN modules, 58.5 x 89 x 35 mm Material ABS, self-extinguishing: UL 94 V-0
<b>Dielectric strength</b>	4000 $V_{rms}$ for 1 minute	<b>Degree of protection</b>	Front: IP40
<b>Noise rejection</b> CMRR	100 dB, 48 to 62 Hz	<b>Weight</b>	Approx. 100 g (packing included)
<b>EMC</b>	EN 50081-1, EN 50082-1	<b>Approval</b>	CE

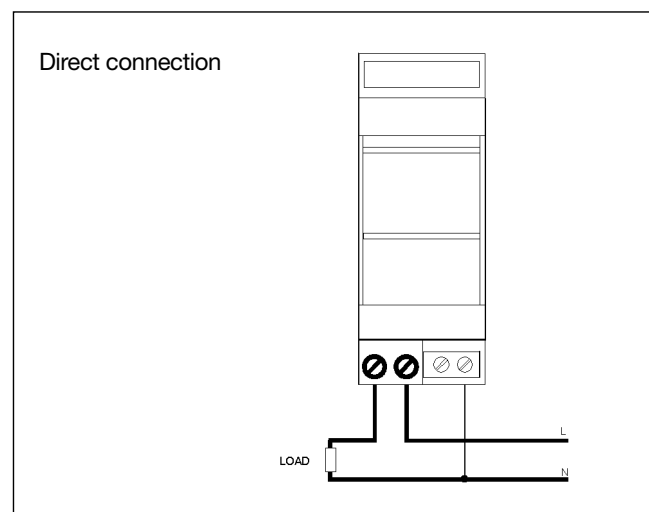
## Accuracy

### Accuracy (rdg) versus input current

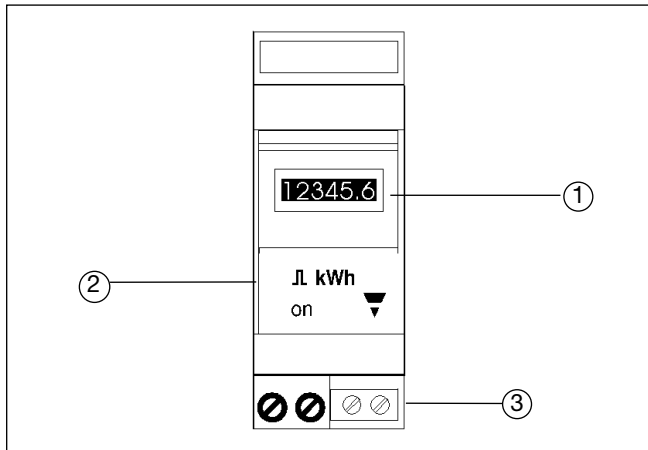


## Wiring Diagrams

### Single phase input connection

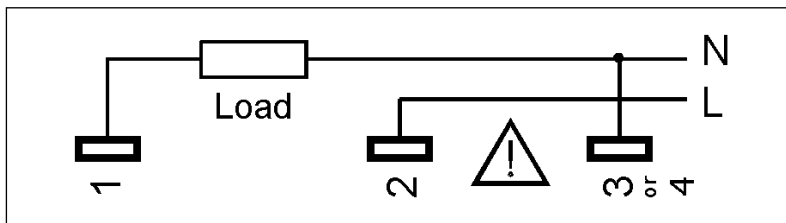


## Front Panel Description



1. **Display**  
5+1 digit (maximum read-out 99999.9).  
Numeric indication by means of an electro-mechanical unit
2. **Green LED:** power-ON  
**Red LED:** counting energy when blinking
3. **Connection terminal blocks**

## Terminal board



## Dimensions (mm)

