

Panel Meters and Controllers Power Analyzers and Energy Meters Type WM1-DIN, Energy Meter for DIN-rail Mounting

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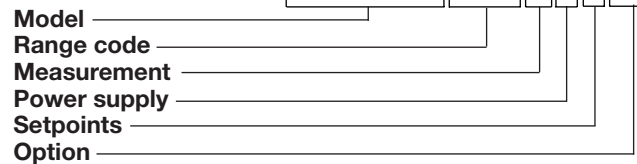
- 3-dgt multi-range μ P-based meter
- Scrolling of power, energy, power factor ($\cos \phi$), current and voltage
- Automatic selection of k (kilo) or M (mega) scale
- Automatic measurement of peak value
- Double measuring input: Up to 5 A or up to 27 A
- Degree of protection (front): IP 40
- Options:
 - Programmable alarm setpoint output
 - Pulse output for connection to remote display or PLC
 - Serial RS 485 output for connection to a personal computer
 - WATTSOFT1 energy management software for WM1-DIN network

Product Description

3-dgt μ P-based meter for measuring power, energy, power factor ($\cos \phi$), current and voltage with automatic selection of scale. A programmable alarm setpoint output

is available on request. The housing is easy to mount on DIN-rail and offers a degree of protection (front) of IP 40.

Ordering Key **WM1-DIN27AAD0XX**



Type Selection

Range code	Power Supply	Options
27A: 5 AAC or 27 AAC selectable	C: 115 VAC, -15% +10%, 50/60 Hz ¹⁾ D: 230 VAC, -15% +10%, 50/60 Hz (standard)	XX: None (1-phase/3-phase system with neutral balanced load) TX: Measurement on 3-phase system without neutral (balanced load) PX: Pulse output (available only without alarm)
		RX: RS 485 serial interface (1-phase/3-phase system, with neutral and balanced load) SX: RS 485 serial interface (3-phase system, without neutral and with balanced load)

¹⁾ on request

Input Specifications

Accuracy (@ 25°C \pm 5°C, R.H. \leq 60%)	± 2 % f.s., ± 2 dgt	Input (cont.) Type	1-phase/3-phase with neutral, balanced load (standard) 3-phase without neutral, balanced load (on request) Undistorted sine wave (form factor 1.11)
Temperature drift	± 250 ppm/°C,		
Display	7-segment LED, h 14.2 mm, 3 digits	Wave form	
Decimal point position	Automatic selection and indication of "k" or "M" range.	Impedance	
Max. and min. indication	Max.: 999, Min.: 0	Voltmeter input:	≥ 1 M Ω
Overflow indication	"oF"	Ammeter input:	1 m Ω (27 A) 6 m Ω (5 A)
Input Current	27 AAC permanent, direct conn. max. 32 AAC for 2 minutes. 5 AAC permanent, CT conn. max. 6 AAC for 2 minutes	Key-pad enable input	By means of external, voltage free NC contact. The input is not insulated from the measuring inputs. Can be used to avoid unwanted programming modifications, resets and totalized energy.
Voltage (48 to 62 Hz)	400 VAC (1-phase conn.) 500 VAC (3-phase conn.)		



Input Specifications (cont.)

Measurements	V_{L-N} , or V_{L-L} , I, W, VA, VAR (max. display: 999M-) Accessible by means of the key-pad in run mode. Wh, VAh VARh (max. display: 999 M-) Accuracy: ± 4 dgt @ 25°C, voltage $\geq 3\%$ f.s. current $\geq 10\%$ f.s. Display: L.10/1.00/C.10; In case of voltage and/or current lower than 3% f.s., the display flashes "1.00"
Voltage, current, instantaneous power	
Peak value	
Energy	
Power factor - $\cos \phi$	Accuracy: ± 4 dgt @ 25°C, voltage $\geq 3\%$ f.s. current $\geq 10\%$ f.s. Display: L.10/1.00/C.10; In case of voltage and/or current lower than 3% f.s., the display flashes "1.00"
Reset date updating	Month and day of the last reset manually programmed by key-pad
Primary range	Transformer ratio programmable from 1 to 999 (max. 5000/5A).

General Specifications

Operating temperature	0° to 50°C (32° to 122°F) (R.H. < 90% non-condensing)
Storage temperature	-10° to 60°C (14° to 140°F) (R.H. < 90% non-condensing)
Insulation reference voltage	300 V_{rms} to ground
Dielectric strength	4000 V_{rms} for 1 minute
EMC	IEC 60801-2, IEC 60801-3, IEC 60801-4 (level 2), EN 50 081-1, EN 50 082-1
Safety standards	EN 61010-1, IEC 61010-1, VDE 0411
Connector	Screw-type
Housing	
Dimensions	89 x 71.5 x 58.5 mm (4 DIN-modules)
Material	ABS, self-extinguishing: UL 94 V-0
Degree of protection	IP 40 (front)
Weight	Approx 320 g
Approvals	CSA, CE

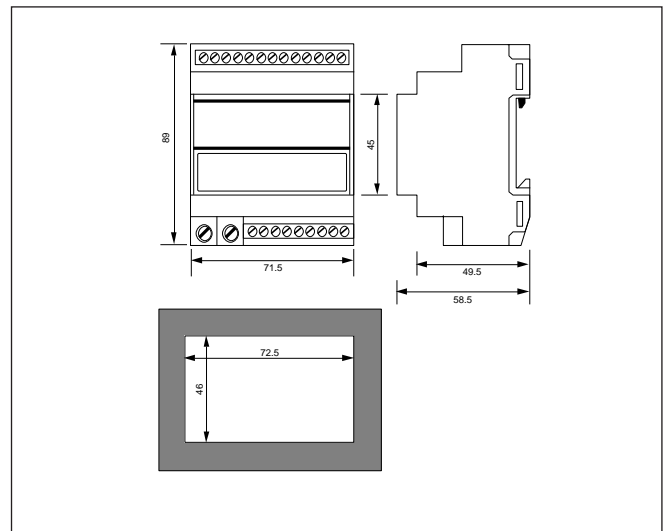
Output Specifications

Alarms (on request)	0 standard (1 on request). From 0 to 999 MW/MVA/ MVAR/instantaneous power, MWh/MVAh/MVARh energy and from L/C. 10 to 1.00 $\cos \phi$ key-pad program- mable $\pm 2\%$ 0 to 100% f.s. key-pad programmable 0 to 255 s key-pad programmable Low or high key-pad programmable Static by TRIAC. (24 VAC to 250 VAC/max. 50 mA). 2 kV between alarm output and all inputs and serial out- put (if available)	Serial output (on request)	One-way multidrop RS 485 (double direction: only for standard static TRIAC output) 256 addresses key-pad selectable. W, VA, VAR, Wh, VAh, VARh, V, I, $\cos \phi$ and setpoint status where present 1 start bit - 7 data bit - even parity - 1 stop bit. 1 start bit - 7 data bit - odd parity - 1 stop bit. 1 start bit - 8 data bit - no parity - 1 stop bit 1200, 2400, 4800 and 9600 bauds, key-pad selectable 2 wires (max. length: 1200 m) + shield. Bias and/or line termination (selectable by DIP-switch). WATTSOFT1: managing soft- ware of the WM1-DIN network (Std: up to 32 instru- ments, from 33 to 256 instruments using the SIU-DIN.8585 modules). Separate 5 VDC, power consumption 70 mA (PSU- DIN module). By means of optocouplers, 2 kV between serial output and measuring inputs. 2 kV between 5 VDC power supply input and measuring inputs.
Number of setpoints		Type	
Setpoint adjustment		Addresses	
Accuracy		Data	
Hysteresis		Data format	
Time delay adjustment		Baud-rate	
Alarm type		Connections	
Output type	Software (on request)		
Insulation	Power supply		
Pulse output (on request)	2 kV between output and all inputs and serial output if available	Insulation	
Type			
Insulated, open collector:		$V_{ON} = 0.6$ VDC/max. 4 mA V_{OFF} max. 20 VDC ON status 200 ms OFF status 800 ms min.- NPN output	
Pulse:			
Pulse number			
Insulation			

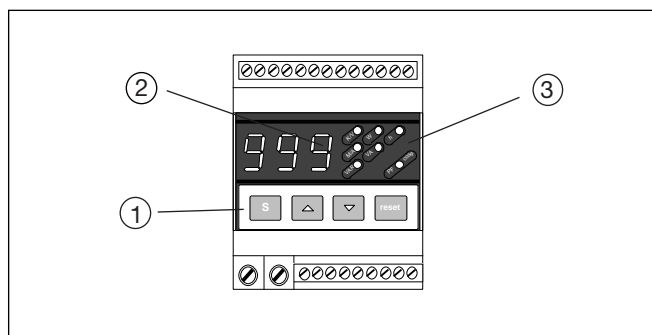
Supply Specifications

AC supply	230 VAC, -15%+10%, 50/60 Hz (standard), 115 VAC, -15%+10%, 50/60 Hz (on request)
Insulation	4 kV between measuring inputs and power supply input 4 kV between enable input and power supply input
Power consumption	2.5 VA

Dimensions



Front Panel Description



1. Key-pad

- « S » Set/enter
- « ▲ » Up
- « ▼ » Down
- « Reset » Special function

Set-up and programming procedures are easily controlled by the 4 pushbuttons.

1. Key-pad (cont.)

“S”

- To enter programming.

“UP/DOWN” (into the programming procedure)

- To select: priority measurement, serial interface parameters or pulse output parameters (on request), maximum power, energy or $\cos \varphi$ (on request).

“UP/DOWN” (during measurement)

- Scrolling all the available measurements

“Reset”

- Reset the displayed value (totalized energy or peak value).

2. Display

3-digit (maximum read-out 999).

Alphanumeric indication by means of 7-segment display for:

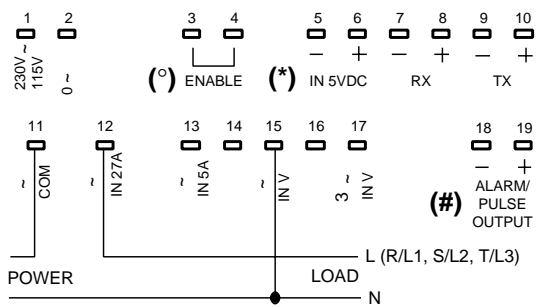
- Displaying of the measured value.
- Indication of programming parameters.

3. LED

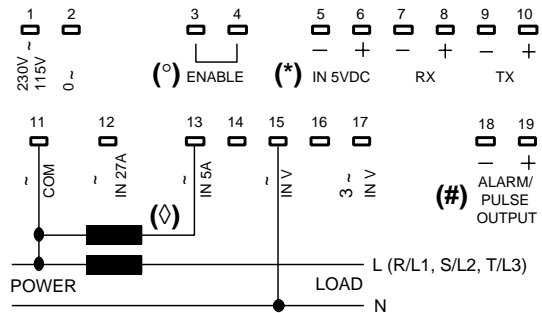
To display the selected engineering unit (flashing LED to notify an alarm activation).

Wiring Diagrams

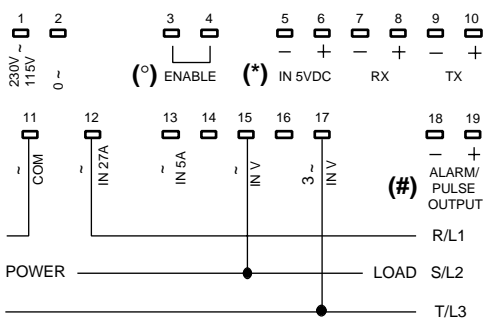
Direct connection on single phase or three-phase system with neutral and balanced load



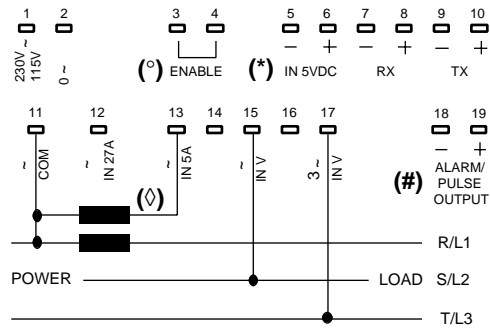
CT connection on single phase or three-phase system with neutral and balanced load



Direct connection on three-phase system without neutral and with balanced load



CT connection on three-phase system without neutral and with balanced load



- (*) An external 5 VDC power supply must be connected to the RS485 serial interface output (see PSU-DIN module)
- (◇) Attention: CT's cannot be earthed
- (°) Attention: The ENABLE input (KEY-PAD enabling) is not insulated from the measuring inputs
- (#) The static ALARM OUTPUT must be connected in series to the load to be controlled, as if it were a simple contact

Network Connection

PC/WM1-DIN network connections (RS485 interface)

