# Energy Management Energy Meter with plug-in Output Modules Type EM3-DIN





- Class 2 (active energy)
- Class 3 (reactive energy)
- Active reactive energy meter
- Direct connection up to 90A
- Electromechanical display 6+1DGT
- LED for the indication of the consumed energy
- Selection of the displayed energy by means of dip-switch
- Optional pulse output (as a module)
- Self power supply or auxiliary power supply 115VAC, 230VAC 50-60Hz
- Full compliance with EN61036 (active energy, class 2)
- Full compliance with EN61268 (reactive energy, class 3)
- Dimensions: 9 DIN-modules
- Sealable housing

Slot A

#### **Product description**

EM3-DIN is a three-phase energy meter for the measure of active or reactive energy; the 208V<sub>L-L</sub>, 220V<sub>L-L</sub> and 400V<sub>L-L</sub> meters are self-supplied, while the 660V<sub>L-L</sub> meters are provided with auxiliary

power supply. EM3-DIN is provided with: 6+1DGT electromechanical indicator for the indication of kWh or kvarh; one green LED for the indication of power ON; one red LED blinking proportionally to the consumed energy.

# Model Range code System Power supply

**Important note:** the AV2 model is suitable only for three-phase unbalanced system without neutral.

O:

# Type selection

# Range code System Auxiliary Power Supply (C or D): 3: Three

**AV3:** 660V<sub>L-L</sub> / 20(90)AAC **Self Power Supply (X): AV2:** 220V<sub>L-L</sub> / 20(90)AAC

**AV8**: 208V<sub>L-L</sub> / 20(90)AAC **AV9**: 400V<sub>L-L</sub> / 20(90)AAC

# 3 : Three-phase, unbalanced load

# C: 115VAC - 15+10% 50-60Hz (only range AV3)

Power supply

**D**: 230VAC -15+10% 50-60Hz (only range AV3)

**X**: Self power-supply

### Slot A (retransmission)

(: None

Module AO2900
Dual open collector
pulse output

R: Module AO2910

One relay output + one open collector output.

# Input specifications

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Accuracy Active energy Reactive energy Start-up current	Class 2, according to EN61036 Class 3, according to EN61268 80mA	Rated input voltage AV2 (AE2004) AV3 (AE2002, AE2003)	Un: 220V <sub>L-L</sub> , -10%≤Un≤+15%, 50-60Hz Un: 660V <sub>L-L</sub> ,
Additional errors Voltage variation Frequency variation Wave form Voltage disymmetry	Acc. to EN61036, EN61268 < 0.5% < 0.5% <1% (3 <sup>rd</sup> harmonic: 10%) < 0.5% (referred to the	AV8 (AE2001) AV9 (AE2000)	$\begin{array}{l} -20\% \leq Un \leq +15\%, \ 50\text{-}60\text{Hz} \\ \text{Un: } 208\text{V}_{\text{L-L}}, \\ -20\% \leq Un \leq +15\%, \ 50\text{-}60\text{Hz} \\ \text{Un: } 400\text{V}_{\text{L-L}} \\ -20\% \leq Un \leq +15\%, \ 50\text{-}60\text{Hz} \end{array}$
External continuous magnetic induction Magnetic induction HF electromagnetic field Accessories influence	rated input voltage)  0 0 (up to 0.5 mT)  < 1% 0	Input impedance AV2 AV3 AV8 AV9	$\begin{array}{l} > 720k\Omega\;(220V_{L\text{-}L}), \leq 4VA \\ > 1.97M\Omega\;(660V_{L\text{-}L}), \leq 4VA \\ > 720K\Omega\;(208V_{L\text{-}L}), \leq 4VA \\ > 720K\Omega\;(400V_{L\text{-}L}), \leq 4VA \end{array}$
Temperature drift	≤ 250 ppm/°C	Frequency	50-60 Hz
Measurements Wave form  Crest factor (I ≤ 20A)	Active or reactive energy sinusoidal and distorted ≤ 6 (127A peak max)	Electrical system	3-phase, unbalanced with or without neutral. Note: in the self-supplied version, the neutral must be connected
Basic current (lb)	20A (according to EN61036 /EN61268)	Display	to the measuring inputs.  Electromechanical type
Maximum current (Imax)  Overload	90A (according to EN61036/ EN61268)	Power supply Energy consumption	6+1 DGT Green LED, ON if supplied Red LED, 640 imp./kWh/
Continuous: current For 10ms: current	4.5 x lb 30 lmax @ 50Hz	Selection of displayed energy Dip-switch 1	kvarh (min. period: 0.5s)  By means of DIP-switch ON: active energy OFF: reactive energy



# **Output specifications**

Pulse outputs (on request) AO2900, slot A Insulation between the two Number of outputs outputs: functional Pulse outputs to be used as Relay + open collector output. Working mode like AO2910 module retransmission of the energies: AO2900. active energy Channel 1 Pulse output One static output+one relay Channel 2 reactive energy output, other characteristics 10 / kWh, 10 / kvarh Number of pulses like AO2900. Static type like module AO2900; Relay type: SPDT, AC1, AC15: 1AAC @250VAC Open collector (NPN transistor) Von 1.2VDC / max 100mA Type Output type Voff 30VDC max Pulse duration 220ms (ON), ≥200ms (OFF) 2000 V<sub>RMS</sub> outputs to measuring inputs, 2000 V<sub>RMS</sub> output to Insulation according to DIN43864 ≤10µA, @ 30V, 60°C Leakage current Insulation By means of optocouplers, supply input. 2000Vrms for 1 minute Insulation between the two between measuring inputs outputs: 2000 V<sub>RMS</sub> and pulse outputs.

# Power supply specifications

Self power supply	400VAC V <sub>L-L</sub> -20% +15% 50-60Hz 208VAC V <sub>L-L</sub> -20% +15% 50-60Hz 220VAC V <sub>L-L</sub> -10+15%, 50-60Hz	Auxiliary power supply	230VAC -15+10% 50-60Hz 115VAC -15+10% 50-60Hz
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#### General specifications

Operating temperature	-20 to +55°C (14°F to 131°F) (R.H. from 0 to 90% non-condensing @ 40°C) according to EN61036 and EN61268	Standards Metrology Safety Pulse output Connections	EN61036, EN61268 IEC-664 DIN 43864 Screw-type,
Storage temperature	-20 to +70°C (14°F to 140°F)	Cable cross-section area	Max. 35 mm <sup>2</sup> (measuring inputs)
Dielectric strength	4000Vrms for 1 minute		Min. 6 mm <sup>2</sup> (measuring inputs)
Installation category	Cat. III (IEC 664)	Nije /Nava oprovo toktopino torovo	Other inputs: 4 mm <sup>2</sup>
EMC		Min./Max. screws tightening torque	2 Nm / 6 Nm (90A inputs)
Burst	4kV / level 4 (EN61000-4-4)	Housing	
Immunity to irradiated electromagnetic fields	10V/m from 26 to 1000MHz (EN61000-4-3)	Dimensions Material	162.5 x 90 x 63 mm ABS, NORYL, PC self-extinguishing
Electrostatic discharges	15kV (EN61000-4-2)	Mounting	DIN-rail or wall
Radio frequency emissions	according to CISPR 14 and CISPR 22	Degree of protection	Front: IP40 Screw terminals: IP20
Pulse voltage (1.2/50µs)	8kV (EN61000-4-5)	Weight	Approx. 800 g (packing included)

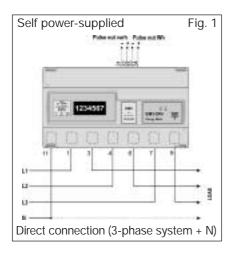
#### Available models and modules

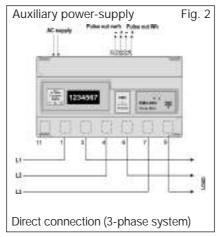
Туре	Inputs	Power	Number of	Ordering
		Supply	channels	code
EM3-DIN AV9.3.X	400V <sub>L-L</sub> / 20(90)AAC	Self power supply		AE2000
EM3-DIN AV8.3.X	208V <sub>L-L</sub> / 20(90)AAC	Self power supply		AE2001
EM3-DIN AV2.3.X	220V <sub>L-L</sub> / 20(90)AAC	Self power supply		AE2004
EM3-DIN AV3.3.C	660V <sub>L-L</sub> / 20(90)AAC	115VAC - 15+10%		AE2002
EM3-DIN AV3.3.D	660V <sub>L-L</sub> / 20(90)AAC	230VAC - 15+10%		AE2003
Open collector output			2	AO2900
Relay + open coll. output			2	AO2910

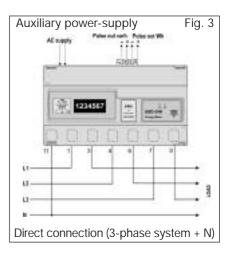


# Wiring diagrams

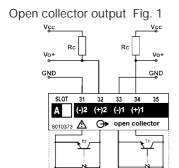
#### EM3-DIN 20(90)A

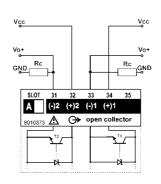


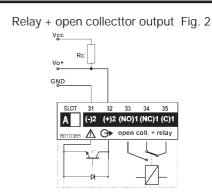




#### Wiring diagrams (optional module)



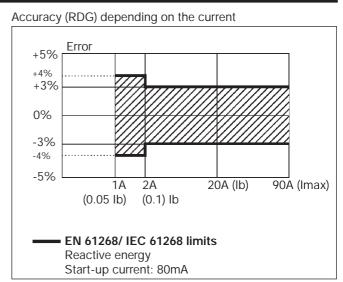




Only open collector outputs: the grounds of the outputs are separated, and therefore it's possible to carry out, for the same module, two different connections. The load resistance (Rc) must be designed so that the closed contact current is lower than 100mA; the VDC voltage must be lower than or equal to 30V.

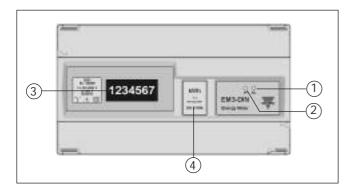
#### **Accuracy**

Accuracy (RDG) depending on the current Error +4% +2.5% +2% 0% -2% -2.5% -4% 20A (lb) 90A (Imax) (0.05 lb)(0.1) lb EN 61036/ IEC 61036 limits Active energy Start-up current: 80mA





#### Front panel description



#### 1. Red LED

Indicates the consumed energy (640 pulses / kWh, minimum period 0.5ms) blinking proportionally.

#### 2. Green LED

Indicates power ON.

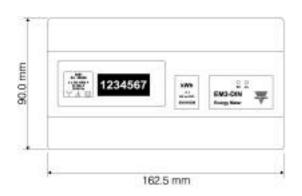
#### 3. Display

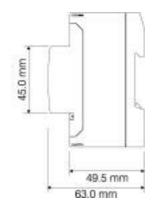
Electromechanical type, 6+1 DGT, displays kWh or kvarh according to the selection made by means of an internal dip-switch.

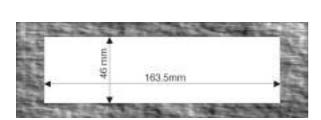
#### 4. Engineering unit

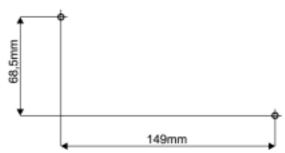
Removable double sided [front (kWh) / back (kvarh)] label

#### **Dimensions**



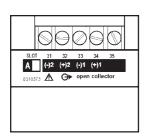




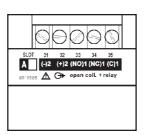


#### **Terminal board**

Dual open collector output module



Realy + open collecttor output



**AO 2900** 

AO 2910