ARTEMES

arte[s] me[nsioni]s - The Art of Measuring
Power & Energy

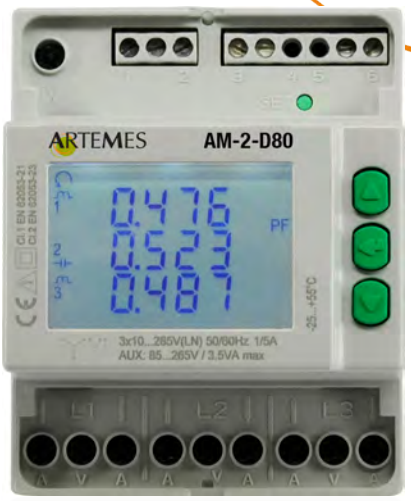

# AM-2

## AM-2-D | AM-2-R | AM-2-S

# AM-2-D

## 4 DIN modules multifunction three-phase meter

- 4 DIN modules compact version
- Fully bi-directional four quadrants measurements for all energies and powers
- Main electrical parameters measured and displayed for a cost-effective consumption analysis
- Version for 1 or 5A CT or for direct connection up to 80A
- Possibility to connect by PT
- 8 MB for data recording
- Possibility to record all energy counters
- Up to 24 parameters selectable among real-time measurements for MIN/AVG/MAX recording
- MODBUS TCP communication by Ethernet port
- Possibility to manage the instrument in remote mode by web interface




## » General Features

AM-2-D is an innovative instrument for measuring and recording electrical parameters. It is particularly suitable for consumption analysis and control, with an excellent quality/price ratio.

AM-2-D is the ideal instrument to establish the measurement points on the plant. The

instrument can communicate through Ethernet port by MODBUS TCP protocol.

Furthermore, the ARTEMES server software is available for the instrument remote management. Web interface is also available in case of using the instrument with Ethernet port: a very useful function that gives the possibility to manage the instrument by any PC connected to the network.

## » Benefits

- AM-2-D provides fully and accurate information on the load in the measurement point and it allows to calculate the costs of the energy consumption.
- Data read by PC allows to generate consumption profiles, recorded values trend, alarms/events report and costs calculation as well as critical values identification.
- Available remote firmware upgrade of the instrument.

## » Applications

- Energy audit.
- Monitoring system and energy control.
- Individual machine load monitoring.
- Power peak control.
- Switchboards, gensets, motor control centers, etc.
- Remote metering and cost allocation.

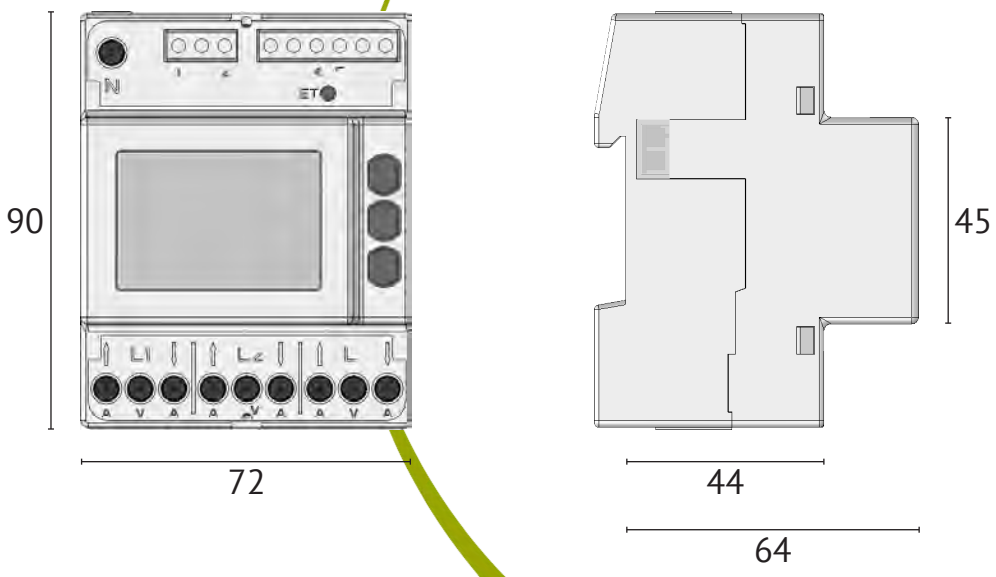
## » Related Products

- ARTEMES server

# » Available Configurations

| | | |
|---|---|---|
| **CURRENT INPUTS (make one choice only)** | For 1/5A CT | ● |
| | Direct connection up to 80A | ● |
| **AUXILIARY POWER SUPPLY** | 85...265 VAC | ● |
| **COMMUNICATION PORT (make one choice only)** | RS485 for MODBUS RTU/ASCII communication | ● |
| | Ethernet for HTTP, MODBUS TCP communication | ● |
| **INSTRUMENT REMOTE MANAGEMENT** | Web server | ● |
| **SIGN REPRESENTATION IN MODBUS PROTOCOL (make one choice only)** | Sign bit | ● |
| | 2's complement | ● |
| **DMD VALUE CALCULATION MODE** | Fixed or sliding window | ● |
| **MEMORY** | 8 MB | ● |
| **RECORDINGS** | Real time params MIN/AVG/MAX values (up to 24 params programmable) | ● |
| | Energy counters | ● |
| **WIRING MODES** | Three phase, 4 wires, 3 currents (3.4.3) | ● |
| | Three phase, 3 wires, 2 currents (3.3.2) | ● |
| | Single phase (1ph) | ● |
| **THD & HARMONICS** | Voltage and current THD values | ● |
| | Voltage and current harmonics up to 15th | ● |
| **APPARENT ENERGY COUNTERS (make one choice only)** | Total counters | ● |
| | Separated Inductive&Capacitive counters | ● |

# » Technical Drawing



# » Measurements & Recordings

| | | |
|---|---|---|
| **INSTANTANEOUS VALUES** | | |
| VOLTAGE | $V_{L1-N}$ - $V_{L2-N}$ - $V_{L3-N}$ - $V_{L1-L2}$ - $V_{L2-L3}$ - $V_{L3-L1}$ - $V_{\Sigma}$ [V] | ● **MAM** |
| CURRENT (+/-) | $I_{L1}$ - $I_{L2}$ - $I_{L3}$ - $I_{N}$ - $I_{\Sigma}$ [A] | ● **MAM** |
| ACTIVE POWER (+/-) | $P_{L1}$ - $P_{L2}$ - $P_{L3}$ - $P_{\Sigma}$ [W] | ● **MAM** |
| REACTIVE POWER (+/-) | $Q_{L1}$ - $Q_{L2}$ - $Q_{L3}$ - $Q_{\Sigma}$ [var] | ● **MAM** |
| APPARENT POWER (+/-) | $S_{L1}$ - $S_{L2}$ - $S_{L3}$ - $S_{\Sigma}$ [VA] | ● **MAM** |
| POWER FACTOR (ind&cap) | $PF_{L1}$ - $PF_{L2}$ - $PF_{L3}$ - $PF_{\Sigma}$ | ● **MAM** |
| DPF (+/-) | $DPF_{L1}$ - $DPF_{L2}$ - $DPF_{L3}$ | ● **MAM** |
| TANGENT Ø (+/-) | $TANØ_{L1}$ - $TANØ_{L2}$ - $TANØ_{L3}$ - $TANØ_{\Sigma}$ | ● **MAM** |
| VOLTAGE THD | $THDV_{L1}$ - $THDV_{L2}$ - $THDV_{L3}$ - $THDV_{L1-L2}$ - $THDV_{L2-L3}$ - $THDV_{L3-L1}$ [V] | ● **MAM** |
| CURRENT THD | $THDA_{L1}$ - $THDA_{L2}$ - $THDA_{L3}$ - $THDA_{N}$ [A] | ● **MAM** |
| FREQUENCY | f [Hz] | ● **MAM** |
| PHASE ORDER | Ph | ● |
| **DEMAND VALUES (DMD)** | | |
| DMD CURRENT (abs) | $I_{L1DMD}$ - $I_{L2DMD}$ - $I_{L3DMD}$ - $I_{NDMD}$ - $I_{\Sigma DMD}$ [A] | ● |
| DMD ACTIVE POWER (imp&exp) | $P_{L1DMD}$ - $P_{L2DMD}$ - $P_{L3DMD}$ - $P_{\Sigma DMD}$ [W] | ● |
| BALANCE OF DMD SYSTEM ACTIVE POWER (+/-) | $P_{\Sigma DMDBAL}$ [W] | ● |
| DMD REACTIVE POWER (imp&exp) | $Q_{L1DMD}$ - $Q_{L2DMD}$ - $Q_{L3DMD}$ - $Q_{\Sigma DMD}$ [var] | ● |
| BALANCE OF DMD SYSTEM REACTIVE POWER (+/-) | $Q_{\Sigma DMDBAL}$ [var] | ● |
| DMD APPARENT POWER (imp&exp) | $S_{L1DMD}$ - $S_{L2DMD}$ - $S_{L3DMD}$ - $S_{\Sigma DMD}$ [VA] | ● |
| BALANCE OF DMD SYSTEM APPARENT POWER (+/-) | $S_{\Sigma DMDBAL}$ [VA] | ● |
| DMD POWER FACTOR (imp&exp) | $PF_{L1DMD}$ - $PF_{L2DMD}$ - $PF_{L3DMD}$ - $PF_{\Sigma DMD}$ | ● |
| **MAX VALUES** | | |
| MAX VOLTAGE | $V_{L1-NMAX}$ - $V_{L2-NMAX}$ - $V_{L3-NMAX}$ - $V_{L1-L2MAX}$ - $V_{L2-L3MAX}$ - $V_{L3-L1MAX}$ - $V_{\Sigma MAX}$ [V] | ● |
| MAX CURRENT (abs) | $I_{L1MAX}$ - $I_{L2MAX}$ - $I_{L3MAX}$ - $I_{NMAX}$ - $I_{\Sigma MAX}$ [A] | ● |
| MAX ACTIVE POWER (imp&exp) | $P_{L1MAX}$ - $P_{L2MAX}$ - $P_{L3MAX}$ - $P_{\Sigma MAX}$ [W] | ● |
| MAX REACTIVE POWER (imp&exp) | $Q_{L1MAX}$ - $Q_{L2MAX}$ - $Q_{L3MAX}$ - $Q_{\Sigma MAX}$ [var] | ● |
| MAX APPARENT POWER (imp&exp) | $S_{L1MAX}$ - $S_{L2MAX}$ - $S_{L3MAX}$ - $S_{\Sigma MAX}$ [VA] | ● |
| MAX POWER FACTOR (imp&exp) | $PF_{L1MAX}$ - $PF_{L2MAX}$ - $PF_{L3MAX}$ - $PF_{\Sigma MAX}$ | ● |
| MAX TANGENT Ø (imp&exp) | $TANØ_{L1MAX}$ - $TANØ_{L2MAX}$ - $TANØ_{L3MAX}$ - $TANØ_{\Sigma MAX}$ | ● |
| MAX VOLTAGE THD | $THDV_{L1MAX}$ - $THDV_{L2MAX}$ - $THDV_{L3MAX}$ - $THDV_{L1-L2MAX}$ - $THDV_{L2-L3MAX}$ - $THDV_{L3-L1MAX}$ [V] | ● |
| MAX CURRENT THD | $THDA_{L1MAX}$ - $THDA_{L2MAX}$ - $THDA_{L3MAX}$ - $THDA_{NMAX}$ [A] | ● |
| MAX DMD CURRENT | $I_{L1MAXDMD}$ - $I_{L2MAXDMD}$ - $I_{L3MAXDMD}$ - $I_{\Sigma MAXDMD}$ [A] | ● |
| MAX DMD ACTIVE POWER (imp&exp) | $P_{L1MAXDMD}$ - $P_{L2MAXDMD}$ - $P_{L3MAXDMD}$ - $P_{\Sigma MAXDMD}$ [W] | ● |
| MAX DMD REACTIVE POWER (imp&exp) | $Q_{L1MAXDMD}$ - $Q_{L2MAXDMD}$ - $Q_{L3MAXDMD}$ - $Q_{\Sigma MAXDMD}$ [var] | ● |
| MAX DMD APPARENT POWER (imp&exp) | $S_{L1MAXDMD}$ - $S_{L2MAXDMD}$ - $S_{L3MAXDMD}$ - $S_{\Sigma MAXDMD}$ [VA] | ● |
| **MIN VALUES** | | |
| MIN SYSTEM ACTIVE POWER | $P_{\Sigma MIN}$ [W] | ● |
| MIN SYSTEM REACTIVE POWER | $Q_{\Sigma MIN}$ [var] | ● |
| MIN SYSTEM APPARENT POWER | $S_{\Sigma MIN}$ [VA] | ● |
| **COUNTERS** | | |
| ACTIVE ENERGY (imp&exp) | $kWh_{L1}$ - $kWh_{L2}$ - $kWh_{L3}$ - $kWh_{\Sigma}$ [Wh] | ● **EC** |
| BALANCE OF SYSTEM ACTIVE ENERGY | $kWh_{\Sigma BAL}$ [Wh] | ● **EC** |
| REACTIVE ENERGY (imp&exp) (ind&cap) | $kvarh_{L1}$ - $kvarh_{L2}$ - $kvarh_{L3}$ - $kvarh_{\Sigma}$ [varh] | ● **EC** |
| BALANCE OF SYSTEM REACTIVE ENERGY (ind&cap) | $kvarh_{\Sigma BAL}$ [varh] | ● **EC** |
| APPARENT ENERGY (imp&exp) *(ind&cap on request)* | $kVAh_{L1}$ - $kVAh_{L2}$ - $kVAh_{L3}$ - $kVAh_{\Sigma}$ [VAh] | ● **EC** |
| BALANCE OF SYSTEM APPARENT ENERGY *(ind&cap on request)* | $kVAh_{\Sigma BAL}$ [VAh] | ● **EC** |
| INSTALLATION HOUR COUNTER | HRCNTi [h] | ● |
| MEASUREMENT HOUR COUNTER | HRCNTm [h] | ● |
| **HARMONIC ANALYSIS UP TO 15th** | | |
| VOLTAGE HARMONICS | $V_{L1-N}$ - $V_{L2-N}$ - $V_{L3-N}$ - $V_{L1-L2}$ - $V_{L2-L3}$ - $V_{L3-L1}$ [V] | ● **MAM** |
| CURRENT HARMONICS | $I_{L1}$ - $I_{L2}$ - $I_{L3}$ - $I_{N}$ [A] | ● **MAM** |

**LEGEND**

● = standard

**+/-** = signed value
**imp&exp** = values splitted in imported and exported
**abs** = absolute value
**ind&cap** = values splitted in inductive and capacitive
**AVG** = parameters for AVG recording (fixed)

**MAM** = parameters for MIN/AVG/MAX recording (up to 24 params programmable)
**EC** = parameters for Energy counter recording (fixed)
**DMDBAL** = difference between the positive and negative demand value: [DMD+] - [DMD-]
**AL** = difference between the imported and exported value: [imp] - [exp]

# » Specifications

| | |
|---|---|
| **POWER SUPPLY** | |
| Voltage range: | 85 ... 265 VAC |
| Safety: | 300 V CAT III |
| Maximum consumption: | 4.5 VA - 1.6 W |
| Frequency: | 50/60 Hz |
| **VOLTAGE INPUTS** | |
| Voltage range: | 3x10/17 ... 3x285/495 VAC |
| Safety: | 300 V CAT III |
| Minimum voltage for FFT calculation: | 20/35 VAC (multiplied by PT ratio in case of PT use) with direct connection |
| **CURRENT INPUTS** | |
| Maximum value: | 1/5A CT model: 6A |
| | 80A model: 80A |
| Starting current ($I_{st}$): | 1/5A CT model: 2 mA |
| | 80A model: 20 mA |
| CT burden: | 1/5A CT model: 0.04 VA |
| Minimum current for FFT calculation: | 1/5A CT model: 100 mA * CT ratio |
| | 80A model: 200 mA |
| **TYPICAL ACCURACY** | |
| Voltage: | ±0.2% reading in 10% FS...FS range (FS=Full Scale value) |
| Current: | ±0.4% reading in 5% FS...FS range |
| Power: | ±0.5% reading ±0.1% FS (PF=1) |
| Frequency: | ±0.1% reading ±1 digit in 45...65 Hz range |
| Active energy: | Class 1 according to IEC/EN 62053-21 |
| Reactive energy: | Class 2 according to IEC/EN 62053-23 |
| **DISPLAY & KEYBOARD** | |
| Display: | Backlighted LCD, 43x29 mm |
| | 3 rows, 4 digits + symbols |
| Keyboard: | 3 front buttons + 1 protected button |
| **COMMUNICATION PORT** | |
| Type: | Ethernet (RJ45) |
| Protocols: | HTTP, NTP, DHCP, MODBUS TCP |
| Baud rate: | 10/100 Mbps |
| **DIGITAL OUTPUT (DO)** | |
| Type: | Passive optoisolated |
| Maximum values (according to IEC/EN 62053-31): | 27 VDC - 27 mA |
| Energy pulse length (only for DO in pulse mode): | 50 ±2ms ON time |
| Maximum output reaction time (only for DO in alarm mode): | 1 s |
| **WIRE DIAMETER FOR TERMINALS** | |
| Measuring terminals (A & V): | 1/5A CT model: 1.5 ... 6 $mm^2$ |
| | 80A model: 1.5 ... 35 $mm^2$ |
| Terminals for digital output, AUX input, RS485 port: | 0.14 ... 2.5 $mm^2$ |
| **SIZE & WEIGHT** | |
| LxHxP, W: | 72x90x65 mm, max 436 g |
| **ENVIRONMENTAL CONDITIONS** | |
| Operating temperature: | -25°C ... +55°C (3K6) |
| Storage temperature: | -25°C ... +75°C (2K3) |
| Max humidity (without condensation): | 80% |
| Sinusoidal vibration amplitude: | 50 Hz ±0.075 mm |
| Protection degree - frontal part: | IP51 (granted only in case of installation in a cabinet with at least IP51 protection degree) |
| Protection degree - terminals: | IP20 |
| Pollution degree: | 2 |
| Installation and use: | Internal |
| **STANDARD COMPLIANCE** (for the parts applicable for the instrument) | |
| Directives: | 2006/95/EC, 2004/108/EC |
| Safety: | EN 61010-1, EN 61010-2-030, EN 61010-2-032 |
| EMC: | EN 61326-1, EN 55011, EN 61000-4-2, EN61000-4-3, EN61000-4-4, |
| | EN61000-4-5, EN61000-4-6, EN61000-4-11, EN61000-6-2 |

| ORDER CODE | POWER SUPPLY | COMMUNICATION PORT with SIGN BIT in Modbus | APPARENT EN. COUNTER (VAh) | REMOTE MANAGEMENT | |
|---|---|---|---|---|---|
| | Auxiliary | ETHERNET | SEPARATED Ind&Cap | ARTEMES server | Web Server |
| **FOR 1/5A CTs (not included)** | | | | | |
| AM-2-D5 | 85 .... 265VAC | ● | ● | ● | ● |
| **80A DIRECT CONNECTION** | | | | | |
| AM-2-D80 | 85 .... 265VAC | ● | ● | ● | ● |

**OPTIONS available only on request (MOQ 30 pcs), to be indicated together with the selected order code from the list above:**

- 2'S COMPLEMENT for sign representation in Modbus protocol
- TOTAL apparent energy counters (Ind+Cap)

# AM-2-R

## 4 DIN modules multifunction three-phase meter with Rogowski-coils

- 4 DIN modules compact version
- Fully bi-directional four quadrants measurements for all energies and powers
- Main electrical parameters measured and displayed for a cost-effective consumption analysis
- 4 available KITs: 30, 45, 70, 90 cm coil length
- 3 selectable current scales
- Possibility to connect by PT
- Up to 8 MB for data recording
- Possibility to record all energy counters
- Up to 24 parameters selectable among real-time measurements for MIN/AVG/MAX recording
- MODBUS TCP communication by Ethernet port
- Possibility to manage the instrument in remote mode by web interface


## » General features

AM-2-R is an innovative instrument for measuring and recording electrical parameters. It is particularly suitable for consumption analysis and control, with an excellent quality/price ratio.

The connections are very quick and easy, very useful for retrofitting applications on existing switchboards or for energy audit.

AM-2-R is the ideal instrument to establish the measurement points on the plant.

The instrument can communicate through Ethernet port by MODBUS TCP protocol.

Furthermore, the ARTEMES server software for the instrument remote management is available as well. Web interface is also available in case of using the instrument with Ethernet port: a very useful function that gives the possibility to manage the instrument by any PC connected on the network.

## » Benefits

- AM-2-R provides fully and accurate information on the load in the measurement point and it allows to calculate the costs of the energy consumption.
- Data read by PC allows to generate consumption profiles, recorded values trend, alarms/events report and costs calculation as well as critical values identification.
- The use of Rogowski coils for current measurement grants a quick installation, particularly on existing plants. In case of changes on the plant, the instrument can be fit for the current consumption without replacing the transducer.
- Available remote firmware upgrade of the instrument.

## » Applications

- Energy audit.
- Monitoring system and energy control.
- Individual machine load monitoring.
- Power peak control.
- Switchboards, gensets, motor control centers, etc.
- Remote metering and cost allocation.

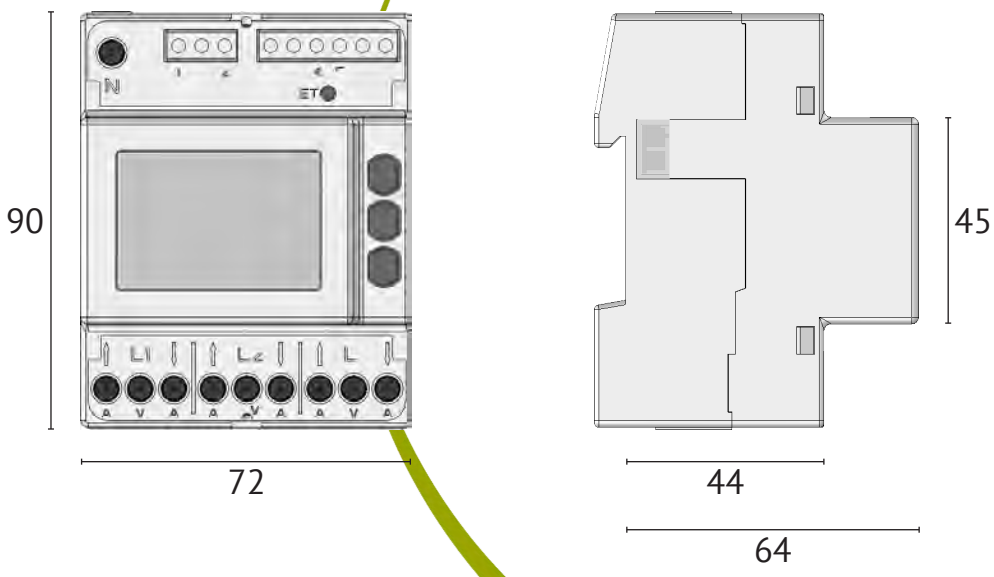
## » Related Products

- ARTEMES server
- ARTEMES topo

# » Available Configurations

| | | |
|---|---|---|
| **CURRENT INPUTS** | Rogowski inputs (3 coils included) | ● |
| **AUXILIARY POWER SUPPLY** | 85...265 VAC | ● |
| **COMMUNICATION PORT (make one choice only)** | Ethernet for HTTP, MODBUS TCP communication | ● |
| **INSTRUMENT REMOTE MANAGEMENT** | Web server | ● |
| **SIGN REPRESENTATION IN MODBUS PROTOCOL (make one choice only)** | Sign bit | ● |
| | 2's complement | ● |
| **DMD VALUE CALCULATION MODE** | Fixed or Sliding window | ● |
| **MEMORY** | 8 MB | ● |
| **RECORDINGS** | Real time params MIN/AVG/MAX values (up to 24 params programmable) | ● |
| | Energy counters | ● |
| **WIRING MODES** | Three phase, 4 wires, 3 currents (3.4.3) | ● |
| | Three phase, 3 wires, 2 currents (3.3.2) | ● |
| | Single phase (1ph) | ● |
| **THD & HARMONICS** | Voltage and current THD values | ● |
| | Voltage and current harmonics up to 15$^{th}$ | ● |
| **APPARENT ENERGY COUNTERS (make one choice only)** | Total counters | ● |
| | Separated Inductive&Capacitive counters | ● |

# » Technical Drawing



# » Measurements & Recordings

| | | |
|---|---|---|
| **INSTANTANEOUS VALUES** | | |
| VOLTAGE | $V_{L1-N}$ - $V_{L2-N}$ - $V_{L3-N}$ - $V_{L1-L2}$ - $V_{L2-L3}$ - $V_{L3-L1}$ - $V_{\Sigma}$ [V] | ● MAM |
| CURRENT (+/-) | $I_{L1}$ - $I_{L2}$ - $I_{L3}$ - $I_{N}$ - $I_{\Sigma}$ [A] | ● MAM |
| ACTIVE POWER (+/-) | $P_{L1}$ - $P_{L2}$ - $P_{L3}$ - $P_{\Sigma}$ [W] | ● MAM |
| REACTIVE POWER (+/-) | $Q_{L1}$ - $Q_{L2}$ - $Q_{L3}$ - $Q_{\Sigma}$ [var] | ● MAM |
| APPARENT POWER (+/-) | $S_{L1}$ - $S_{L2}$ - $S_{L3}$ - $S_{\Sigma}$ [VA] | ● MAM |
| POWER FACTOR (ind&cap) | $PF_{L1}$ - $PF_{L2}$ - $PF_{L3}$ - $PF_{\Sigma}$ | ● MAM |
| DPF (+/-) | $DPF_{L1}$ - $DPF_{L2}$ - $DPF_{L3}$ | ● MAM |
| TANGENT Ø (+/-) | $TAN\Ø_{L1}$ - $TAN\Ø_{L2}$ - $TAN\Ø_{L3}$ - $TAN\Ø_{\Sigma}$ | ● MAM |
| VOLTAGE THD | $THDV_{L1}$ -$THDV_{L2}$ -$THDV_{L3}$ -$THDV_{L1-L2}$ -$THDV_{L2-L3}$ -$THDV_{L3-L1}$ [V] | ● MAM |
| CURRENT THD | $THDA_{L1}$ - $THDA_{L2}$ - $THDA_{L3}$ - $THDA_{N}$ [A] | ● MAM |
| FREQUENCY | f [Hz] | ● MAM |
| PHASE ORDER | Ph | ● |
| **DEMAND VALUES (DMD)** | | |
| DMD CURRENT (abs) | $I_{L1DMD}$ - $I_{L2DMD}$ - $I_{L3DMD}$ - $I_{NDMD}$ - $I_{\Sigma DMD}$ [A] | ● |
| DMD ACTIVE POWER (imp&exp) | $P_{L1DMD}$ - $P_{L2DMD}$ - $P_{L3DMD}$ - $P_{\Sigma DMD}$ [W] | ● |
| BALANCE OF DMD SYSTEM ACTIVE POWER (+/-) | $P_{\Sigma DMDBAL}$ [W] | ● |
| DMD REACTIVE POWER (imp&exp) | $Q_{L1DMD}$ - $Q_{L2DMD}$ - $Q_{L3DMD}$ - $Q_{\Sigma DMD}$ [var] | ● |
| BALANCE OF DMD SYSTEM REACTIVE POWER (+/-) | $Q_{\Sigma DMDBAL}$ [var] | ● |
| DMD APPARENT POWER (imp&exp) | $S_{L1DMD}$ - $S_{L2DMD}$ - $S_{L3DMD}$ - $S_{\Sigma DMD}$ [VA] | ● |
| BALANCE OF DMD SYSTEM APPARENT POWER (+/-) | $S_{\Sigma DMDBAL}$ [VA] | ● |
| DMD POWER FACTOR (imp&exp) | $PF_{L1DMD}$ - $PF_{L2DMD}$ - $PF_{L3DMD}$ - $PF_{\Sigma DMD}$ | ● |
| **MAX VALUES** | | |
| MAX VOLTAGE | $V_{L1-NMAX}$ -$V_{L2-NMAX}$ -$V_{L3-NMAX}$ -$V_{L1-L2MAX}$ -$V_{L2-L3MAX}$ -$V_{L3-L1MAX}$ -$V_{\Sigma MAX}$ [V] | ● |
| MAX CURRENT (abs) | $I_{L1MAX}$ - $I_{L2MAX}$ - $I_{L3MAX}$ - $I_{NMAX}$ - $I_{\Sigma MAX}$ [A] | ● |
| MAX ACTIVE POWER (imp&exp) | $P_{L1MAX}$ - $P_{L2MAX}$ - $P_{L3MAX}$ - $P_{\Sigma MAX}$ [W] | ● |
| MAX REACTIVE POWER (imp&exp) | $Q_{L1MAX}$ - $Q_{L2MAX}$ - $Q_{L3MAX}$ - $Q_{\Sigma MAX}$ [var] | ● |
| MAX APPARENT POWER (imp&exp) | $S_{L1MAX}$ - $S_{L2MAX}$ - $S_{L3MAX}$ - $S_{\Sigma MAX}$ [VA] | ● |
| MAX POWER FACTOR (imp&exp) | $PF_{L1MAX}$ - $PF_{L2MAX}$ - $PF_{L3MAX}$ - $PF_{\Sigma MAX}$ | ● |
| MAX TANGENT Ø (imp&exp) | $TAN\Ø_{L1MAX}$ - $TAN\Ø_{L2MAX}$ - $TAN\Ø_{L3MAX}$ - $TAN\Ø_{\Sigma MAX}$ | ● |
| MAX VOLTAGE THD | $THDV_{L1MAX}$ -$THDV_{L2MAX}$ -$THDV_{L3MAX}$ -$THDV_{L1-L2MAX}$ -$THDV_{L2-L3MAX}$ -$THDV_{L3-L1MAX}$ [V] | ● |
| MAX CURRENT THD | $THDA_{L1MAX}$ - $THDA_{L2MAX}$ - $THDA_{L3MAX}$ - $THDA_{NMAX}$ [A] | ● |
| MAX DMD CURRENT | $I_{L1MAXDMD}$ - $I_{L2MAXDMD}$ - $I_{L3MAXDMD}$ - $I_{\Sigma MAXDMD}$ [A] | ● |
| MAX DMD ACTIVE POWER (imp&exp) | $P_{L1MAXDMD}$ - $P_{L2MAXDMD}$ - $P_{L3MAXDMD}$ - $P_{\Sigma MAXDMD}$ [W] | ● |
| MAX DMD REACTIVE POWER (imp&exp) | $Q_{L1MAXDMD}$ - $Q_{L2MAXDMD}$ - $Q_{L3MAXDMD}$ - $Q_{\Sigma MAXDMD}$ [var] | ● |
| MAX DMD APPARENT POWER (imp&exp) | $S_{L1MAXDMD}$ - $S_{L2MAXDMD}$ - $S_{L3MAXDMD}$ - $S_{\Sigma MAXDMD}$ [VA] | ● |
| **MIN VALUES** | | |
| MIN SYSTEM ACTIVE POWER | $P_{\Sigma MIN}$ [W] | ● |
| MIN SYSTEM REACTIVE POWER | $Q_{\Sigma MIN}$ [var] | ● |
| MIN SYSTEM APPARENT POWER | $S_{\Sigma MIN}$ [VA] | ● |
| **COUNTERS** | | |
| ACTIVE ENERGY (imp&exp) | $kWh_{L1}$ - $kWh_{L2}$ - $kWh_{L3}$ - $kWh_{\Sigma}$ [Wh] | ● EC |
| BALANCE OF SYSTEM ACTIVE ENERGY | $kWh_{\Sigma BAL}$ [Wh] | ● EC |
| REACTIVE ENERGY (imp&exp) (ind&cap) | $kvarh_{L1}$ - $kvarh_{L2}$ - $kvarh_{L3}$ - $kvarh_{\Sigma}$ [varh] | ● EC |
| BALANCE OF SYSTEM REACTIVE ENERGY (ind&cap) | $kvarh_{\Sigma BAL}$ [varh] | ● EC |
| APPARENT ENERGY (imp&exp) *(ind&cap on request)* | $kVAh_{L1}$ - $kVAh_{L2}$ - $kVAh_{L3}$ - $kVAh_{\Sigma}$ [VAh] | ● EC |
| BALANCE OF SYSTEM APPARENT ENERGY *(ind&cap on request)* | $kVAh_{\Sigma BAL}$ [VAh] | ● EC |
| INSTALLATION HOUR COUNTER | HRCNTi [h] | ● |
| MEASUREMENT HOUR COUNTER | HRCNTm [h] | ● |
| **HARMONIC ANALYSIS UP TO 15th** | | |
| VOLTAGE HARMONICS | $V_{L1-N}$ - $V_{L2-N}$ - $V_{L3-N}$ - $V_{L1-L2}$ - $V_{L2-L3}$ - $V_{L3-L1}$ [V] | ● MAM |
| CURRENT HARMONICS | $I_{L1}$ - $I_{L2}$ - $I_{L3}$ - $I_{N}$ [A] | ● MAM |

**LEGEND**

● = standard

**MAM** = parameters for MIN/AVG/MAX recording (up to 24 params programmable)

**EC** = parameters for Energy counter recording (fixed)

+/- = signed value

imp&exp = values splitted in imported and exported

abs = absolute value

ind&cap = values splitted in inductive and capacitive

DMDBAL = difference between the positive and negative demand value: [DMD+] - [DMD-]

BAL = difference between the imported and exported value: [imp] - [exp]

# » Specifications

| | |
|---|---|
| **POWER SUPPLY** | |
| Voltage range: | 85 ... 265 VAC |
| Safety: | 300 V CAT III |
| Maximum consumption: | 4.5 VA - 1.6 W |
| Frequency: | 50/60 Hz |
| **VOLTAGE INPUTS** | |
| Voltage range: | 3x10/17 ... 3x285/495 VAC, |
| Safety: | 300 V CAT III |
| Minimum voltage for FFT calculation: | 20/35 VAC (multiplied by PT ratio in case of PT use) with direct connection |
| **CURRENT INPUTS** | |
| Maximum value: | 3 selectable scales, 500/4000/20000A |
| Starting current ($I_{st}$): | 0.3 A for FSA 500 A, 1 A for FSA 4000 A, 10 A for FSA 20000 A |
| Minimum current for FFT calculation: | 70 A for FSA 500 A, 400 A for FSA 4000 A, 1500 A for FSA 20000 A |
| **TYPICAL ACCURACY** | |
| Voltage: | ±0.2% reading in 10% FS...FS range (FS=Full Scale value) |
| Current: | ±0.4% reading in 5% FS...FS range |
| | 2% harmonic accuracy ±2 digits |
| Power: | ±0.5% reading ±0.1% FS (PF=1) |
| Frequency: | ±0.1% reading ±1 digit in 45...65 Hz range |
| Active energy: | Class 1 according to IEC/EN 62053-21 |
| Reactive energy: | Class 2 according to IEC/EN 62053-23 |
| **DISPLAY & KEYBOARD** | |
| Display: | Backlighted LCD, 43x29 mm |
| | 3 rows, 4 digits + symbols |
| Keyboard: | 3 front buttons + 1 protected button |
| **COMMUNICATION PORT** | |
| Type: | Ethernet (RJ45) |
| Protocols: | HTTP, NTP, DHCP |
| | MODBUS TCP |
| Baud rate: | 10/100 Mbps |
| **DIGITAL OUTPUT (DO)** | |
| Type: | Passive optoisolated |
| Maximum values (according to IEC/EN 62053-31): | 27 VDC - 27 mA |
| Energy pulse length (only for DO in pulse mode): | 50 ±2ms ON time |
| Maximum output reaction time (only for DO in alarm mode): | 1 s |
| **WIRE DIAMETER FOR TERMINALS** | |
| Measuring terminals (A & V): | 1.5 ... 6 $mm^2$ |
| Terminals for digital output, AUX input, RS485 port: | 0.14 ... 2.5 $mm^2$ |
| **SIZE & WEIGHT** | |
| LxHxP, W: | 72x90x65 mm, max 436 g |
| **ENVIRONMENTAL CONDITIONS** | |
| Operating temperature: | -25°C ... +55°C (3K6) |
| Storage temperature: | -25°C ... +75°C (2K3) |
| Max humidity (without condensation): | 80% |
| Sinusoidal vibration amplitude: | 50 Hz ±0,075 mm |
| Protection degree - frontal part: | IP51 (granted only in case of installation in a cabinet with at least IP51 protection degree) |
| Protection degree - terminals: | IP20 |
| Pollution degree: | 2 |
| Installation and use: | Internal |
| **STANDARD COMPLIANCE** (for the parts applicable for the instrument) | |
| Directives: | 2006/95/EC, 2004/108/EC |
| Safety: | EN 61010-1, EN 61010-2-030, EN 61010-2-032 |
| EMC: | EN 61326-1, EN 55011, EN 61000-4-2, EN61000-4-3, EN61000-4-4, |
| | EN61000-4-5, EN61000-4-6, EN61000-4-11, EN61000-6-2 |

| ORDER CODE | ROGOWSKI KIT DETAIL | | POWER SUPPLY | COMMUNICATION PORT with SIGN BIT in Modbus | APPARENT EN. COUNTER (VAh) | REMOTE MANAGEMENT |
|---|---|---|---|---|---|---|
| | Length [cm] | Ø [cm] | Auxiliary | ETHERNET | SEPARATED Ind&Cap | Web Server |
| **ROGOWSKI COIL KIT: NO. 3 MFC150 INCLUDED** | | | | | | |
| AM-2-R30 | 30 | ~10 | 85...265VAC | ● | ● | ● |
| AM-2-R45 | 45 | ~14 | 85...265VAC | ● | ● | ● |
| AM-2-R70 | 70 | ~22 | 85...265VAC | ● | ● | ● |
| AM-2-R90 | 90 | ~29 | 85...265VAC | ● | ● | ● |

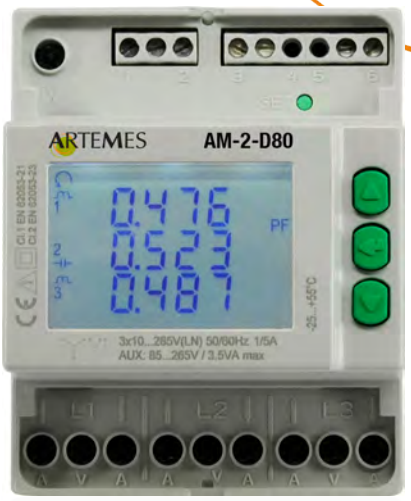
**OPTIONS available only on request (MOQ 30 pcs), to be indicated together with the selected order code from the list above:**

- 2'S COMPLEMENT for sign representation in Modbus protocol
- TOTAL apparent energy counters (Ind+Cap)

# AM-2-S80

## 80A single phase energy meter with built-in communication

- for Ethernet (Modbus TCP) communication
- Direct connection up to 80 A
- Fully bi-directional 4-quadrant measurements for all energies and powers
- Class B according to EN 50470-3 (MID)
- 8 MB for data recording and automatic/manual data transferring
- LCD display with 7 main digits




## » General Features

2 DIN modules energy meter for the energy measurement in industrial and civilian application, with Ethernet Modbus TCP. Available with MID certification suitable for billing.

Besides the energy, the meter can measure the main electrical parameters and makes them available on the built-in port. The LCD display shows the energies and the instantaneous powers. Data is transmitted via Ethernet line. Moreover, a dedicated application/interface for remote management with ARTEMES server is provided:

- *Modbus Master* > software for energy meter management by PC in Ethernet network.

The meter is built according to EN 50470-1 standard. The active energy is compliant to IEC/EN 62053-21 class 1. The accuracy of reactive energy is compliant to IEC/EN 62053-23 class 2.

Wide backlighted LCD display with clear graphic symbols comprehensible at a glance. Metrological LED on front panel and sealable terminal covers. The analysis of the MTBF values, the accurate selection of components and the reduction of the internal working temperatures together with strict production and control standards guarantee a product with an excellent quality and a long lasting reliability.

## » Benefits

- Totalization of the electric energy in the industry for each single line or machine.
- Measurement of energy generated by renewable sources such as solar, eolic, etc.
- Accounting and billing of consumptions in camp sites, malls, residential areas, naval ports, etc.
- Totalization of the electric consumption in hotels, congress centers, exhibition fairs.
- Accounting of the consumptions in buildings with executive office services.
- Internal allocation of the consumptions in timeshare civilian and industrial buildings.
- Realization of energy monitoring systems.
- Remote survey of the consumptions and compute of the costs.

## » Applications

- Remote management through ARTEMES server.
- Up to 7 instantaneous measurements, complete set of energy counters and partial counters. Moreover partial counters can be started, stopped or reset.

## » Related Products

- ARTEMES server
- ARTEMES topo

# » Technical Features

### Power supply

- power supplied from the voltage circuit
- nominal measurement voltage ±20%
- max consumption: 7.5 VA - 0.5 W
- nominal frequency: 50/60 Hz

### Voltage range & frequency

- 230 ... 240 V  50/60 Hz

### Current

- starting current $I_{st}$: 20 mA
- minimum current $I_{min}$: 250 mA
- transitional current $I_{tr}$: 500 mA
- reference current $I_{ref}$ ($I_b$): 5 A
- maximum current $I_{max}$: 80 A

### Ethernet communication

- port: 10/100 Base T
- protocol: HTTP, NTP, DHCP, Modbus TCP
- communication speed: 10/100 Mbps
- 8 MB for data recording
- web server

### Accuracy

- active energy class 1 according to IEC/EN 62053-21 (NO MID)
- active energy class B according to EN 50470-3 (MID)
- reactive energy class 2 according to IEC/EN 62053-23

### Metrological LED

- meter constant: 1000 imp/kWh
- pulse length: 10 ±2ms

### Environmental conditions

- operating temperature: -25°C ... +55°C
- storage temperature: -25°C ... +75°C
- humidity: 80% max without condensation
- protection degree: IP51 frontal part -IP20 terminals

# » Technical Drawing

# » Measurements & Recordings

| | | |
|---|---|---|
| **INSTANTANEOUS VALUES** | | |
| VOLTAGE | $V_{L1-N}$ - $V_{L2-N}$ - $V_{L3-N}$ - $V_{L1-L2}$ - $V_{L2-L3}$ - $V_{L3-L1}$ - $V_{\Sigma}$ [V] | ● **MAM** |
| CURRENT (+/-) | $I_{L1}$ - $I_{L2}$ - $I_{L3}$ - $I_{N}$ - $I_{\Sigma}$ [A] | ● **MAM** |
| ACTIVE POWER (+/-) | $P_{L1}$ - $P_{L2}$ - $P_{L3}$ - $P_{\Sigma}$ [W] | ● **MAM** |
| REACTIVE POWER (+/-) | $Q_{L1}$ - $Q_{L2}$ - $Q_{L3}$ - $Q_{\Sigma}$ [var] | ● **MAM** |
| APPARENT POWER (+/-) | $S_{L1}$ - $S_{L2}$ - $S_{L3}$ - $S_{\Sigma}$ [VA] | ● **MAM** |
| POWER FACTOR (ind&cap) | $PF_{L1}$ - $PF_{L2}$ - $PF_{L3}$ - $PF_{\Sigma}$ | ● **MAM** |
| DPF (+/-) | $DPF_{L1}$ - $DPF_{L2}$ - $DPF_{L3}$ | ● **MAM** |
| TANGENT Ø (+/-) | $TANØ_{L1}$ - $TANØ_{L2}$ - $TANØ_{L3}$ - $TANØ_{\Sigma}$ | ● **MAM** |
| VOLTAGE THD | $THDV_{L1}$ - $THDV_{L2}$ - $THDV_{L3}$ - $THDV_{L1-L2}$ - $THDV_{L2-L3}$ - $THDV_{L3-L1}$ [V] | ● **MAM** |
| CURRENT THD | $THDA_{L1}$ - $THDA_{L2}$ - $THDA_{L3}$ - $THDA_{N}$ [A] | ● **MAM** |
| FREQUENCY | f [Hz] | ● **MAM** |
| PHASE ORDER | Ph | ● |
| **DEMAND VALUES (DMD)** | | |
| DMD CURRENT (abs) | $I_{L1DMD}$ - $I_{L2DMD}$ - $I_{L3DMD}$ - $I_{NDMD}$ - $I_{\Sigma DMD}$ [A] | ● |
| DMD ACTIVE POWER (imp&exp) | $P_{L1DMD}$ - $P_{L2DMD}$ - $P_{L3DMD}$ - $P_{\Sigma DMD}$ [W] | ● |
| BALANCE OF DMD SYSTEM ACTIVE POWER (+/-) | $P_{\Sigma DMDBAL}$ [W] | ● |
| DMD REACTIVE POWER (imp&exp) | $Q_{L1DMD}$ - $Q_{L2DMD}$ - $Q_{L3DMD}$ - $Q_{\Sigma DMD}$ [var] | ● |
| BALANCE OF DMD SYSTEM REACTIVE POWER (+/-) | $Q_{\Sigma DMDBAL}$ [var] | ● |
| DMD APPARENT POWER (imp&exp) | $S_{L1DMD}$ - $S_{L2DMD}$ - $S_{L3DMD}$ - $S_{\Sigma DMD}$ [VA] | ● |
| BALANCE OF DMD SYSTEM APPARENT POWER (+/-) | $S_{\Sigma DMDBAL}$ [VA] | ● |
| DMD POWER FACTOR (imp&exp) | $PF_{L1DMD}$ - $PF_{L2DMD}$ - $PF_{L3DMD}$ - $PF_{\Sigma DMD}$ | ● |
| **MAX VALUES** | | |
| MAX VOLTAGE | $V_{L1-NMAX}$ - $V_{L2-NMAX}$ - $V_{L3-NMAX}$ - $V_{L1-L2MAX}$ - $V_{L2-L3MAX}$ - $V_{L3-L1MAX}$ - $V_{\Sigma MAX}$ [V] | ● |
| MAX CURRENT (abs) | $I_{L1MAX}$ - $I_{L2MAX}$ - $I_{L3MAX}$ - $I_{NMAX}$ - $I_{\Sigma MAX}$ [A] | ● |
| MAX ACTIVE POWER (imp&exp) | $P_{L1MAX}$ - $P_{L2MAX}$ - $P_{L3MAX}$ - $P_{\Sigma MAX}$ [W] | ● |
| MAX REACTIVE POWER (imp&exp) | $Q_{L1MAX}$ - $Q_{L2MAX}$ - $Q_{L3MAX}$ - $Q_{\Sigma MAX}$ [var] | ● |
| MAX APPARENT POWER (imp&exp) | $S_{L1MAX}$ - $S_{L2MAX}$ - $S_{L3MAX}$ - $S_{\Sigma MAX}$ [VA] | ● |
| MAX POWER FACTOR (imp&exp) | $PF_{L1MAX}$ - $PF_{L2MAX}$ - $PF_{L3MAX}$ - $PF_{\Sigma MAX}$ | ● |
| MAX TANGENT Ø (imp&exp) | $TANØ_{L1MAX}$ - $TANØ_{L2MAX}$ - $TANØ_{L3MAX}$ - $TANØ_{\Sigma MAX}$ | ● |
| MAX VOLTAGE THD | $THDV_{L1MAX}$ - $THDV_{L2MAX}$ - $THDV_{L3MAX}$ - $THDV_{L1-L2MAX}$ - $THDV_{L2-L3MAX}$ - $THDV_{L3-L1MAX}$ [V] | ● |
| MAX CURRENT THD | $THDA_{L1MAX}$ - $THDA_{L2MAX}$ - $THDA_{L3MAX}$ - $THDA_{NMAX}$ [A] | ● |
| MAX DMD CURRENT | $I_{L1MAXDMD}$ - $I_{L2MAXDMD}$ - $I_{L3MAXDMD}$ - $I_{\Sigma MAXDMD}$ [A] | ● |
| MAX DMD ACTIVE POWER (imp&exp) | $P_{L1MAXDMD}$ - $P_{L2MAXDMD}$ - $P_{L3MAXDMD}$ - $P_{\Sigma MAXDMD}$ [W] | ● |
| MAX DMD REACTIVE POWER (imp&exp) | $Q_{L1MAXDMD}$ - $Q_{L2MAXDMD}$ - $Q_{L3MAXDMD}$ - $Q_{\Sigma MAXDMD}$ [var] | ● |
| MAX DMD APPARENT POWER (imp&exp) | $S_{L1MAXDMD}$ - $S_{L2MAXDMD}$ - $S_{L3MAXDMD}$ - $S_{\Sigma MAXDMD}$ [VA] | ● |
| **MIN VALUES** | | |
| MIN SYSTEM ACTIVE POWER | $P_{\Sigma MIN}$ [W] | ● |
| MIN SYSTEM REACTIVE POWER | $Q_{\Sigma MIN}$ [var] | ● |
| MIN SYSTEM APPARENT POWER | $S_{\Sigma MIN}$ [VA] | ● |
| **COUNTERS** | | |
| ACTIVE ENERGY (imp&exp) | $kWh_{L1}$ - $kWh_{L2}$ - $kWh_{L3}$ - $kWh_{\Sigma}$ [Wh] | ● **EC** |
| BALANCE OF SYSTEM ACTIVE ENERGY | $kWh_{\Sigma BAL}$ [Wh] | ● **EC** |
| REACTIVE ENERGY (imp&exp) (ind&cap) | $kvarh_{L1}$ - $kvarh_{L2}$ - $kvarh_{L3}$ - $kvarh_{\Sigma}$ [varh] | ● **EC** |
| BALANCE OF SYSTEM REACTIVE ENERGY (ind&cap) | $kvarh_{\Sigma BAL}$ [varh] | ● **EC** |
| APPARENT ENERGY (imp&exp) *(ind&cap on request)* | $kVAh_{L1}$ - $kVAh_{L2}$ - $kVAh_{L3}$ - $kVAh_{\Sigma}$ [VAh] | ● **EC** |
| BALANCE OF SYSTEM APPARENT ENERGY *(ind&cap on request)* | $kVAh_{\Sigma BAL}$ [VAh] | ● **EC** |
| INSTALLATION HOUR COUNTER | HRCNTi [h] | ● |
| MEASUREMENT HOUR COUNTER | HRCNTm [h] | ● |
| **HARMONIC ANALYSIS UP TO 15th** | | |
| VOLTAGE HARMONICS | $V_{L1-N}$ - $V_{L2-N}$ - $V_{L3-N}$ - $V_{L1-L2}$ - $V_{L2-L3}$ - $V_{L3-L1}$ [V] | ● **MAM** |
| CURRENT HARMONICS | $I_{L1}$ - $I_{L2}$ - $I_{L3}$ - $I_{N}$ [A] | ● **MAM** |

**LEGEND**

●= standard

+/- = signed value
imp&exp = values splitted in imported and exported
abs = absolute value
ind&cap = values splitted in inductive and capacitive

**AVG** = parameters for AVG recording (fixed)
**MAM** = parameters for MIN/AVG/MAX recording (up to 24 params programmable)
**EC** = parameters for Energy counter recording (fixed)

DMDBAL = difference between the positive and negative demand value: [DMD+] - [DMD-]
BAL = difference between the imported and exported value: [imp] - [exp]

# » Specifications

| | |
|---|---|
| **POWER SUPPLY** | |
| Voltage range: | 85 ... 265 VAC |
| Safety: | 300 V CAT III |
| Maximum consumption: | 4.5 VA - 1.6 W |
| Frequency: | 50/60 Hz |
| **VOLTAGE INPUTS** | |
| Voltage range: | 3x10/17 ... 3x285/495 VAC |
| Safety: | 300 V CAT III |
| Minimum voltage for FFT calculation: | 20/35 VAC (multiplied by PT ratio in case of PT use) with direct connection |
| **CURRENT INPUTS** | |
| Maximum value: | 1/5A CT model: 6A |
| | 80A model: 80A |
| Starting current ($I_{st}$): | 1/5A CT model: 2 mA |
| | 80A model: 20 mA |
| CT burden: | 1/5A CT model: 0.04 VA |
| Minimum current for FFT calculation: | 1/5A CT model: 100 mA * CT ratio |
| | 80A model: 200 mA |
| **TYPICAL ACCURACY** | |
| Voltage: | ±0.2% reading in 10% FS...FS range (FS=Full Scale value) |
| Current: | ±0.4% reading in 5% FS...FS range |
| Power: | ±0.5% reading ±0.1% FS (PF=1) |
| Frequency: | ±0.1% reading ±1 digit in 45...65 Hz range |
| Active energy: | Class 1 according to IEC/EN 62053-21 |
| Reactive energy: | Class 2 according to IEC/EN 62053-23 |
| **DISPLAY & KEYBOARD** | |
| Display: | Backlighted LCD, 43x29 mm |
| | 3 rows, 4 digits + symbols |
| Keyboard: | 3 front buttons + 1 protected button |
| **COMMUNICATION PORT** | |
| Type: | Ethernet (RJ45) |
| Protocols: | HTTP, NTP, DHCP, MODBUS TCP |
| Baud rate: | 10/100 Mbps |
| **DIGITAL OUTPUT (DO)** | |
| Type: | Passive optoisolated |
| Maximum values (according to IEC/EN 62053-31): | 27 VDC - 27 mA |
| Energy pulse length (only for DO in pulse mode): | 50 ±2ms ON time |
| Maximum output reaction time (only for DO in alarm mode): | 1 s |
| **WIRE DIAMETER FOR TERMINALS** | |
| Measuring terminals (A & V): | 1/5A CT model: 1.5 ... 6 $mm^2$ |
| | 80A model: 1.5 ... 35 $mm^2$ |
| Terminals for digital output, AUX input, RS485 port: | 0.14 ... 2.5 $mm^2$ |
| **SIZE & WEIGHT** | |
| LxHxP, W: | 72x90x65 mm, max 436 g |
| **ENVIRONMENTAL CONDITIONS** | |
| Operating temperature: | -25°C ... +55°C (3K6) |
| Storage temperature: | -25°C ... +75°C (2K3) |
| Max humidity (without condensation): | 80% |
| Sinusoidal vibration amplitude: | 50 Hz ±0.075 mm |
| Protection degree - frontal part: | IP51 (granted only in case of installation in a cabinet with at least IP51 protection degree) |
| Protection degree - terminals: | IP20 |
| Pollution degree: | 2 |
| Installation and use: | Internal |
| **STANDARD COMPLIANCE** (for the parts applicable for the instrument) | |
| Directives: | 2006/95/EC, 2004/108/EC |
| Safety: | EN 61010-1, EN 61010-2-030, EN 61010-2-032 |
| EMC: | EN 61326-1, EN 55011, EN 61000-4-2, EN61000-4-3, EN61000-4-4, |
| | EN61000-4-5, EN61000-4-6, EN61000-4-11, EN61000-6-2 |

| ORDER CODE | POWER SUPPLY | COMMUNICATION PORT with SIGN BIT in Modbus | APPARENT EN. COUNTER (VAh) | REMOTE MANAGEMENT | |
|---|---|---|---|---|---|
| | Auxiliary | ETHERNET | SEPARATED Ind&Cap | ARTEMES server | Web Server |
| **FOR 1/5A CTs (not included)** | | | | | |
| AM-2-D5 | 85 .... 265VAC | ● | ● | ● | ● |
| **80A DIRECT CONNECTION** | | | | | |
| AM-2-D80 | 85 .... 265VAC | ● | ● | ● | ● |

**OPTIONS available only on request (MOQ 30 pcs), to be indicated together with the selected order code from the list above:**

- 2'S COMPLEMENT for sign representation in Modbus protocol
- TOTAL apparent energy counters (Ind+Cap)

NOTE: Subject to change without notice