



**BROCHURE**

# EMT430 · EMT431 · EMT432

Three-phase power analyzers · 4 DIN modules

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English · Revision 0



# 1 OVERVIEW

EMT430, EMT431 and EMT432 are class 0.2 S three-phase power analyzers in 4 DIN modules, with colour touch display, RS485, Ethernet and Wi-Fi on board. They measure energy and power quality up to the 63rd harmonic, log data to SD or USB and send it to the cloud via MQTT. The three models share measurements and communication and differ in their power supply.



## 1.1 Key features

- **Class 0.2 S:** active energy class 0.2 S (EN 62053-22) and class C (EN 50470-1/3), reactive energy class 0.5 S.
- **Always connected:** RS485 Modbus RTU, Ethernet and Wi-Fi Modbus TCP together, with built-in webserver and MQTT.
- **Power quality:** harmonics and interharmonics up to the 63rd, THD, dips and swells, waveforms (FULL).
- **Logging:** timestamped recording on SD card, USB stick or internal memory.
- **Inputs for every sensor:** 5 A (1 A) CTs or 333 mV CTs and Rogowski coils with built-in integrator.
- **Expandable:** LoRa module or digital inputs up to 3.2 kHz for dry contacts or NPN outputs.

## 1.2 Applications

- Energy efficiency and audits
- Continuous cloud monitoring
- Main plant switchboards
- Sub-metering and cost allocation
- Photovoltaics, storage and energy communities
- Retrofit of existing panels

## 2 MODELS AND VERSIONS

### 2.1 Three power supplies

| Model comparison |                                                      |                                 |                       |
|------------------|------------------------------------------------------|---------------------------------|-----------------------|
| Model            | Power supply                                         | Insulation supply / measurement | Digital inputs (opt.) |
| EMT430           | Self-powered from the voltage inputs, 85–265 Vac L-N | Not insulated                   | 3, up to 3.2 kHz      |
| EMT431           | Auxiliary 85–265 Vac · 90–350 Vdc                    | 1500 V                          | 3, up to 3.2 kHz      |
| EMT432           | SELV 10–36 Vdc · 19–26 Vac                           | 4 kV                            | 1, up to 3.2 kHz      |

| Ideal for |                                                |
|-----------|------------------------------------------------|
| EMT430    | Cloud monitoring with no additional wiring     |
| EMT431    | Main switchboards and lines not always powered |
| EMT432    | Photovoltaics, storage, 24 V panels            |

### 2.2 BASE and FULL versions

| BASE and FULL versions                                                      |      |      |
|-----------------------------------------------------------------------------|------|------|
| Function                                                                    | BASE | FULL |
| Real-time measurements: voltages, currents, powers, $\cos \phi$ , frequency | ●    | ●    |
| Bidirectional active, reactive and apparent energy counters                 | ●    | ●    |
| Average, maximum and minimum values, peaks and max demand                   | ●    | ●    |
| Voltage harmonics and current interharmonics up to the 63rd                 | —    | ●    |
| THD and TDD, distortion power factor, K-factor                              | —    | ●    |
| Quality events: dips, undervoltages, overvoltages                           | —    | ●    |
| Measurement logging, exportable from the webserver                          | —    | ●    |
| Oscilloscope from webserver and RS485                                       | —    | ●    |
| MQTT and connection to the Chronos Cloud                                    | —    | ●    |

### 3 TECHNICAL SPECIFICATIONS

| Measuring inputs             |                                                                                                      |
|------------------------------|------------------------------------------------------------------------------------------------------|
| Rated voltage                | 85–265 Vac L-N · 150–450 Vac L-L                                                                     |
| Operating frequency          | DC / 1–65 Hz                                                                                         |
| Input .I (current-output CT) | In 5 A (or 1 A) · I <sub>max</sub> 6 A · starting 5 mA · < 1 VA per phase · overload 40 A for 500 ms |
| Input .V (333 mV / Rogowski) | V <sub>n</sub> 333 mV · V <sub>max</sub> 500 mV · 220 kΩ · built-in integrator for Rogowski coils    |
| Measurement type             | TRMS · 6400 samples/s at 50 Hz, 7680 at 60 Hz                                                        |

| Accuracy (25 ± 5 °C, 50 Hz) |                                                                             |
|-----------------------------|-----------------------------------------------------------------------------|
| Active energy               | Class 0.2 S (EN 62053-22) · class C (EN 50470-1/3)                          |
| Energia reattiva            | Class 0.5 S (EN 62053-24)                                                   |
| Voltage · current           | ± 0.1 % rdg                                                                 |
| Powers                      | ± 0.1 % rdg (5–100 % I <sub>n</sub> ) · ± 0.2 % rdg (1–5 % I <sub>n</sub> ) |
| Frequency                   | ± 0.01 Hz (45–65 Hz)                                                        |
| THD · harmonics             | ± 0.3 % · amplitude ± 1 % up to the 16th, ± 2 % up to the 63rd              |

| Communication and outputs |                                                                          |
|---------------------------|--------------------------------------------------------------------------|
| RS485                     | Modbus RTU · 1200–115 200 baud · up to 247 addresses                     |
| Ethernet                  | 10/100 Mbit/s · Modbus TCP, HTTP, MQTT, SNMP · up to 10 clients          |
| Wi-Fi                     | 2.4 GHz 802.11 b/g/n · Modbus TCP, HTTP, MQTT · station and access point |
| NFC · USB · SD            | Configuration, timestamped logging on SD, USB or internal memory         |
| Digital output            | 1 solid-state (opto-MOS) · < 40 V, < 100 mA · alarm or pulses/kWh        |
| Configuration             | Built-in webserver and app · from cloud (FULL)                           |

| General              |                                                                      |
|----------------------|----------------------------------------------------------------------|
| Display              | 2.2" colour 320×240, capacitive touch                                |
| Dimensions           | 90×61×72 mm · 4 DIN modules · grey PBT                               |
| Protection rating    | IP20 · pollution degree 2                                            |
| Temperature          | Operating –25 to +65 °C · storage –40 to +85 °C                      |
| Humidity · altitude  | 10–90 % non-condensing · up to 2000 m                                |
| Measurement category | CAT III 300 V                                                        |
| Standards            | EN 61010-1, EN 61010-2-030 · EN 61000-4-2/3/4/5/6 · EN 55032 class B |

## 4 ORDER CODES

The code is made up of model, input type, version and any expansion: MODEL.INPUT.VERSION[.EXPANSION].

| Code structure |                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Field          | Values                                                                                                                               |
| Model          | EMT430 = self-powered<br>EMT431 = auxiliary power supply 85–265 Vac / 90–350 Vdc<br>EMT432 = SELV power supply 10–36 Vdc / 19–26 Vac |
| Input          | I = 5 A (1 A) CT<br>V = 333 mV CT / Rogowski coils                                                                                   |
| Version        | BASE = measurements, counters and communication<br>FULL = advanced analysis, logging and MQTT                                        |
| Expansion      | no suffix = no expansion<br>LORA = LoRa module<br>DIN = digital inputs (3 on EMT430/EMT431, 1 on EMT432)                             |

| Examples           |                                                        |
|--------------------|--------------------------------------------------------|
| Code               | Description                                            |
| EMT430.I.FULL      | EMT430 with 5 A CT input, FULL version                 |
| EMT431.V.BASE      | EMT431 with 333 mV / Rogowski input, BASE version      |
| EMT432.I.FULL.LORA | EMT432 with 5 A CT input, FULL version, LoRa expansion |

Compatible current sensors: KCT split-core CTs, CP through-hole CTs, HK window CTs (input I), KCT 333 mV CTs and FRC Rogowski coils (input V). See the current sensors datasheet.

### CHRONOS SRL

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| <b>Registered office</b><br>Via Germania 7 - int 6<br>35010 Vigonza (PD)<br>VAT no. / Tax code: 05248100280<br>SDI: M5UXCR1<br>PEC: chronos-pec@pec.it | <b>Operational headquarters</b><br>Via Ceresina 11/E<br>35030 Selvazzano Dentro (PD)<br>Phone: +39 049 2274996<br>Email: info@chronos-tech.it |
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