

ELECTRICAL SAFETY
POWER QUALITY
ENERGY MANAGEMENT



Graphene Energy Meter – GEM230/GEM630

Single Phase and Three Phase Energy Meter

- Complies with MID EN50470 Class B
- Built-in Modbus RTU
- 2 tariffs energy counter
- Measurement of THD harmonics

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Single Phase and Three Phase Energy Meter



Product Description

GEM230/GEM630 is part of the new smart Graphene-Meter-Series and an advanced digital multi-function power meter, which can be directly connected to up to 100A loads or via a current transformer to any system. The unit measures all-important system values like active energy, reactive energy, current, voltage, power, power factor, frequency, demand, etc.

Bi-directional measurement makes it an ideal choice for Solar PV / generation plant measurement. A remote communication port and a standard interface via Modbus RTU or M-bus EN13757-3 ensure smooth exchange with any other system. To provide the highest security standard, all communication parameters are password protected. The front panel allows the user to check data and set up the meter via easy-to-access buttons.

Device Features

- Accuracy according to MID Class B
- Direct connection up to 100A
- CT operated 1A/5A/333mV
- Measures active energy, reactive energy, current, voltage, power, power factor, frequency, demand, THDV, THDI, etc.
- 64kB data recording for energy, demand, max demand & max record
- Memory ROM 128kB
- Modbus RTU communication
- MID certified
- Multi-tariff
- Optional: LoRaWAN protocol

Typical Applications

- Low voltage distribution networks
- Power station
- Generation plant
- Data Center
- Consumer billing
- Retail shop
- Commercial/residential building
- Oil & Gas Plant
- Offshore and marine

Certifications & Compliances



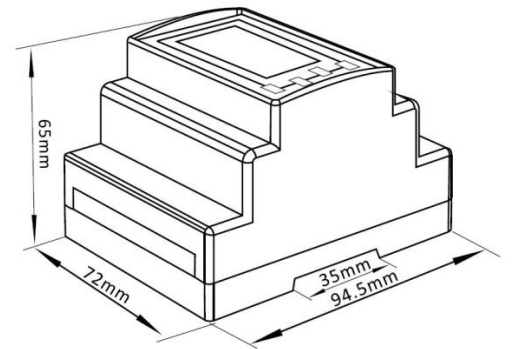
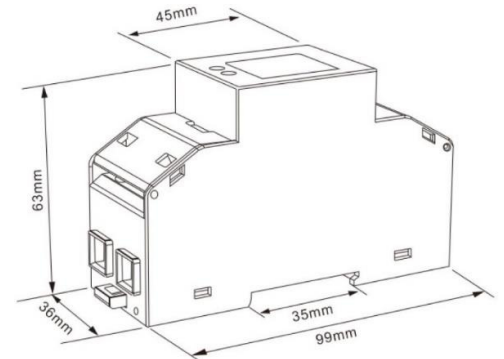
Technical Specification

| | Model | | |
|--------------------------------|--|---------------------|------------------------------|
| | GEM230-D | GEM630-D | GEM630-CT |
| Connection Type | 1 Phase Direct 100A | 3 Phase Direct 100A | 3 Phase CT Operated / 333mV |
| Nominal Voltage (Un) | 120V or 230Vac | 3x230/400Vac | |
| Operational voltage | 80%~120% of Un | | 60%~120% of Un |
| Maximum rated current (Imax) | 100A (0.4% Ib-Imax) | | 333mV / 5A CT (0.4% Ib-Imax) |
| Overload | 30 Imax for 0.01s | | 20 Imax for 0.01s |
| Insulation capabilities | | | |
| AC voltage withstand | 4KV for 1 minute | | |
| Impulse voltage withstand | 6KV-1.2μS | | |
| Operational frequency range | 50 or 60Hz | | |
| Internal power consumption | ≤ 2W/10VA | | |
| Environment Protection | | | |
| Operating humidity | ≤ 90% | | |
| Storage humidity | ≤ 95% | | |
| Operating temperature | -25°C - +55°C | | |
| Storage temperature | -40°C - +70°C | | |
| Working Altitude | ≤2000m | | |
| Reference temperature | 23°C± 2°C | | |
| Installation category | EN61010-1 CAT II | EN61010-1 CAT III | EN61010-1 CAT III |
| Mechanical environment | M1 | | |
| Electromagnetic environment | E2 | | |
| Degree of pollution | 2 | | |
| Protection | IP51(indoor) | | |
| Insulating Class | II | | |
| Electrostatic discharges | 8kV contact / 15kV air gap | | |
| Radiated & emissions | EN 55022 | | |
| Accuracy class | | | |
| Voltage, Current | 0.5% | | |
| Frequency | 0.2% of mid-frequency | | |
| Power factor | 1% of unity (0.01) | | |
| Active Power / Reactive power | ± 0.5% / ±1% of range maximum | | |
| Reactive energy (Varh) | Class 2 | | |
| Active energy (Wh) | Class 0.5 / Class 1 | | |
| International standard | IEC 62053-21 CL0.5/ CL1, EN50470-1/3 MID CL B, IEC 61557-12 CL0.5/ CL1 | | |
| Accuracy class | Class 0.5 / Class C, Class 1 / Class B | | |
| Communication | | | |
| Bus type | RS485 / Wireless | | |
| Protocol | Modbus RTU / Lorawan (Output Power: 13 dBm) | | |
| Pulse output 1 | Configurable | | |
| Pulse output 2 | 1000imp/kWh | 400imp/kWh | 3200 imp/kWh |
| Max reading | 99999.9 kWh | 999999.99 kWh/kVarh | 9999999.9 kWh/kVarh |

Dimensions & Ordering Code

Ordering Code for GEM230 / GEM630

| G | Eetarp Product Fixed Code |
|---|---|
| E | Fixed Code |
| M | Fixed Code |
| X | Reserved |
| M | M = MID Class |
| X | C = MODBUS RTU M = Mbus, L = LoRaWAN |
| X | 5 = RS485 |
| X | 1 = 1 Phase Direct 100A 2 = 3 Phase Direct 100A 3 = 3 Phase CT Operated 1/5A 4 = 3 Phase CT Operated 333mV |
| X | 1 = Basic (imp/Exp kwh) 2 = Multi-function Meter |
| X | X = No Pulse Outputs 2 = 2 Pulse Outputs |
| X | X = No Tariffs 2 = 2 Tariffs 4 = 4 Tariffs |
| X | 1 = 1% 5 = 0.5% |



Common GEM230 / GEM630 Variants

| Order | Type | Features |
|--------------|--------------|--|
| GEMXMC512221 | GEM230-D | 1 Phase Direct Connection 100A, 2 tariffs, CL 1 |
| GEMXMC522221 | GEM630-D | 3 Phase Direct Connection 100A, 2 tariffs, CL 1 |
| GEMXMC532221 | GEM630-CT | 3 Phase CT Operated 1A/5A, 2 tariffs, CL 1 |
| GEMXMC5122X1 | GEM230-D-M | 1 Phase Direct Connection 100A, single tariffs, CL 1 |
| GEMXMC5222X1 | GEM630-D-M | 3 Phase Direct Connection 100A, single tariffs, CL 1 |
| GEMXMC5322X1 | GEM630-CT-M | 3 Phase CT Operated 1A/5A, single tariffs, CL 1 |
| GEMXMC5222X5 | GEM630-D-M-1 | 3 Phase Direct Connection 100A, single tariffs, CL 0.5 |



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