

CVMk2

Three-phase power analyzer(balanced and unbalanced) for panel or DIN rail mounting

Description

Three-phase power analyzer (balanced and unbalanced) for its assembly on panel or DIN rail mounting with a graphical display. measuring in 4 quadrants.

Other features include:

- Class 0.2 or 0.5 power and energy
- Measuring of Class B supply quality events (guaranteeing the power supply of the unit with an UPS, battery, etc.)
- Current measuring .../5 or .../1 A
- Measure of neutral current with transformer
- Optional energy consumption and generation billing (up to 9 rates)
- RS-485 Modbus/RTU Communications
- Expansion possibilities (up to 3 modules)
- Backlit graphical display
- Instantaneous display of maximum and minimum electrical parameters with date and hour
- Measure of energy consumed and generated, up to 100 GW·h
- Universal series power supply
- With ITF technology: galvanic insulation protection inputs

Application

- Applied to the control of general switchboards and low, medium and high voltage connection points
- Alarm station with voltage-free digital inputs
- Submetering station: impulse meter with other types of consumption, such as gas, water, steam, etc. with their digital inputs
- Measuring converter: optional association of an instantaneous parameter to one of the analogue outputs available (0...20 mA / 4...20 mA)
- Instantaneous, maximum and minimum parameter recording unit, with date and hour and an expandable memory card
- Power quality analyzer: harmonic decomposition up to order 50°, asymmetries, flicker, unbalances, overvoltages, gaps, interruptions, etc.



Features

| | |
|--|--|
| Power supply circuit | |
| Power supply circuit | 85...265 V ac / 90...300 V dc |
| ac Power supply frequency | 50..0.60 Hz |
| ac Power supply consumption | 30 V·A |
| dc Power supply consumption | < 25 W |
| Metering circuit | |
| Nominal voltage | 300/500 V ph-n / V ph-ph or 500/866 V ph-n / V ph-ph |
| Frequency | 45..0.65 Hz |
| Metering margin | 5...120 % of the U_n for $U_n = 300$ V ac (ph-n) 5...120 % of the U_n for $U_n = 500$ V ac (ph-n) |
| Maximum metering voltage | 360 V ac |
| Admissible overvoltage | 750 V ac |
| Maximum consumption (limited current) | < 0.6 V·A |
| Current measuring circuit | |
| Nominal current | .../5 A or .../1 A |
| Metering margin | 1..0.120 % of I_n for $I_n = 5$ A |
| Primary current metered | Programmable <30,000 A |
| Admissible overload | 6 A permanent, 100 A $t < 1$ s |
| Consumption | < 0.45 V·A |
| Maximum meter value | 100 GW·h |
| Class/Accuracy | 0.2 or 0.5 power and energy |
| Ambient conditions | |
| Operating temperature | -10 ... +50 °C |
| Relative humidity | 5 ... 95% |
| Altitud | 2000 m |
| Build features | |
| Metering module | Assembly on DIN Rail 46277 (EN 50022) |
| Screen or screen + metering module | Assembly on panel (96 x 96 mm, 144 x 144 mm) or opening with a 103 mm diameter |
| External dimensions | 144 x 144 x 116 mm |
| Safety | |
| Designed for CAT III 300/520 Vac installations, in accordance with EN 61010 Double-insulated electric shock protection, class II | |
| Standards | |
| IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-11, IEC 61000-4-4, IEC 61000-4-5 | |

CVMk2

Three-phase power analyzer(balanced and unbalanced) for panel or DIN rail mounting



References

Compact units (metering + display module)

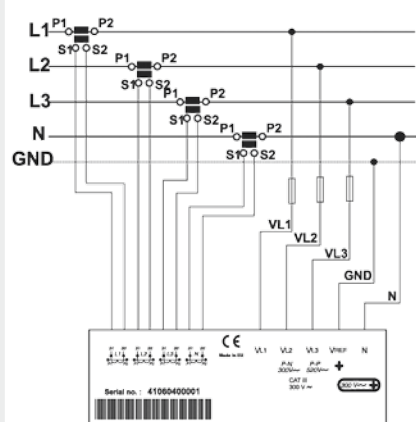
| Quadrants | Class | Communications MODBUS / RTUProtocol | Neutral current | Universal power supply | Type | Code |
|-----------|-------|-------------------------------------|-----------------|------------------------|---------------|--------|
| 4 | 0,5 | RS-485 | Yes | Yes | CVMk2-ITF-405 | M54400 |
| 4 | 0,2 | RS-485 | Yes | Yes | CVMk2-ITF-402 | M54402 |

Measuring units (measuring module)

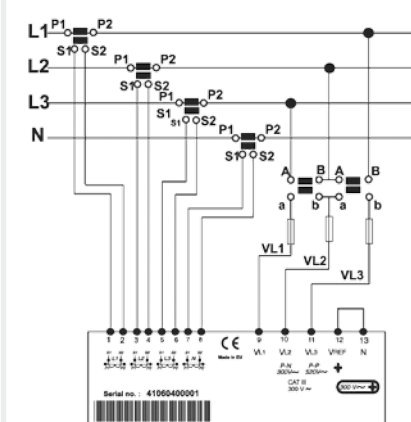
| Quadrants | Class | Communications MODBUS / RTUProtocol | Neutral current | Universal power supply | Type | Code |
|-----------|-------|-------------------------------------|-----------------|------------------------|-----------------|--------|
| 4 | 0,5 | RS-485 | Yes | Yes | M-CVMk2-ITF-405 | M54410 |
| 4 | 0,2 | RS-485 | Yes | Yes | M-CVMk2-ITF-402 | M54412 |

Connections

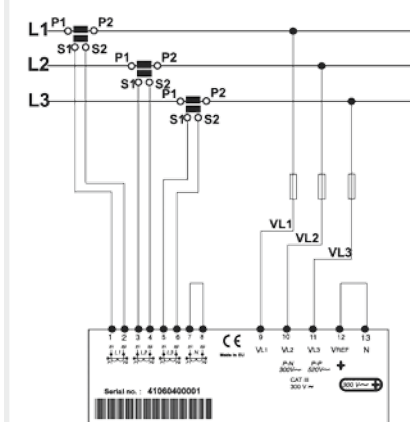
Connection of 4 Current transformers (5 wires)



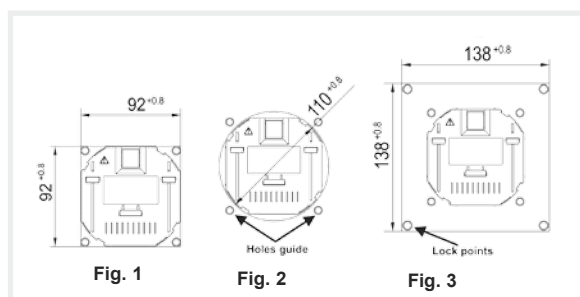
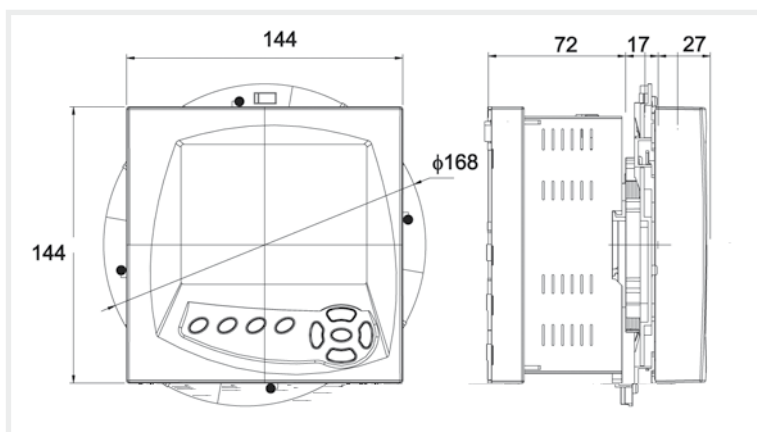
Connection of 4 Current transformers and 2 voltage transformers



Connection of 3 Current transformers (3 wires)



Dimensions



Figures 1, 2 and 3: Display of the front panel part embedding (display) in a 92 x 92 mm opening, with a diameter of 110 mm and 138 x 138 mm, respectively

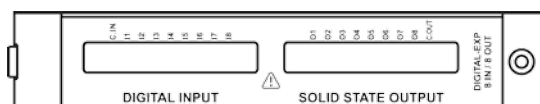
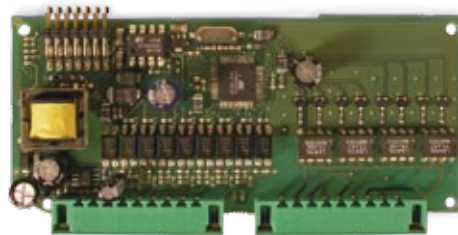
Exchangeable modules
CVM k2

1. k2-EXP-8I / 8O-Digital-TR Card

Card with 8 digital inputs and 8 digital outputs of transistor

Features

| Features | |
|--------------------------------|---------------------------|
| Logical inputs | |
| Type of input | Voltage-free |
| Type of coupling | Optoinsulated |
| V max | 24 Vdc |
| minimum t ON / t OFF | t ON 40 ms t OFF 40 ms |
| Static outputs | |
| AC Voltage | <100 Vac |
| Non-repetitive Peak voltage | 350 V pk. |
| Nominal current | 100 mA |
| Repetitive current during t=1s | 120 mA |
| Maximum current t=10 ms | 350 mA |
| Connection | |
| Rigid conductor section | 0.05...1 mm ² |
| Code | M54501 |

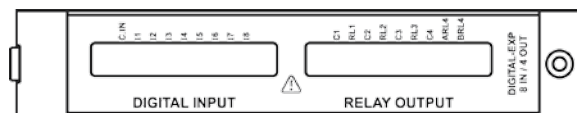
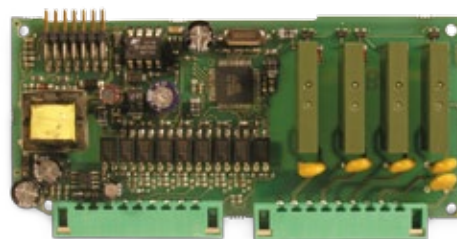
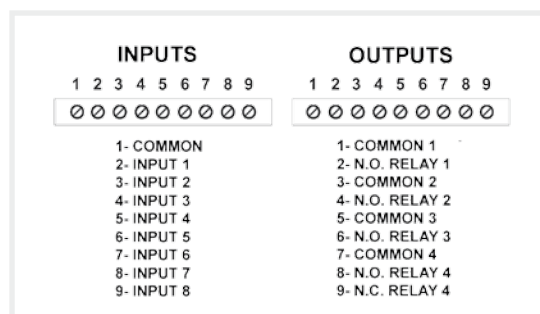

Connection

2. k2-EXP-8I / 4O-Digital-RL Card

Card with 8 digital inputs and 4 digital outputs. Outputs with relay.

Features

| Features | |
|-----------------------------|--|
| Logical inputs | |
| Type of input | Voltage-free |
| Type of coupling | Optoinsulated |
| V max | 24 Vdc |
| minimum t ON / t OFF | t ON 40 ms t OFF 40 ms |
| Relay outputs | |
| AC Voltage | 250 Vac |
| AC Current | 6 Aac |
| Minimum relay load | 1 Vac 0.001 Aac |
| Mechanical working life | 5 x 10 ⁶ operations |
| Electrical working life | NO: 5x10 ⁴ , NC: 3x10 ⁴ cycles |
| Connection | |
| Rigid conductor section | 0.05...1 mm ² |
| Code | M54503 |


Connection


Exchangeable modules

CVM K2

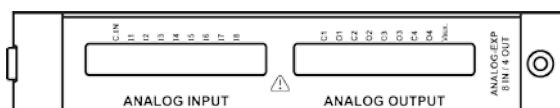
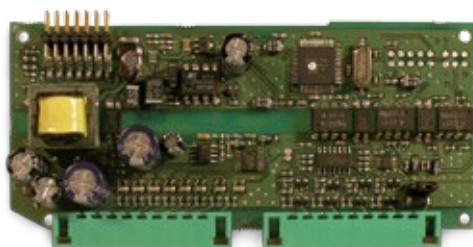


3. k2-EXP-8I / 4O-Analogue Card

Card with 8 analogue inputs and 4 analogue outputs

Features

| Features | |
|--------------------------|--------------------------|
| Analogue outputs | |
| Maximum internal voltage | 20 / 24 Vdc |
| Output range | 0 / 4...20 mA |
| Linearity | 1 % |
| Load resistance | < 500 ohm |
| Output range | 4000 points |
| Analogue inputs | |
| Type of metering | - |
| Input range | 0 / 4...20 mA |
| Metering accuracy | 1 % |
| Input impedance | 200 ohm |
| Connection | |
| Rigid conductor section | 0.05...1 mm ² |
| Code | M54502 |



Connection

| ENTRADAS | | | | | | | | | SALIDAS | | | | | | | | |
|------------------------|---|---|---|---|---|---|---|---|-----------------------|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ |
| 1- COMUN | | | | | | | | | 1- COMUN | | | | | | | | |
| 2- Entrada Analógica 1 | | | | | | | | | 2- Salida Analógica 1 | | | | | | | | |
| 3- Entrada Analógica 2 | | | | | | | | | 3- COMUN | | | | | | | | |
| 4- Entrada Analógica 3 | | | | | | | | | 4- Salida Analógica 2 | | | | | | | | |
| 5- Entrada Analógica 4 | | | | | | | | | 5- COMUN | | | | | | | | |
| 6- Entrada Analógica 5 | | | | | | | | | 6- Salida Analógica 3 | | | | | | | | |
| 7- Entrada Analógica 6 | | | | | | | | | 7- COMUN | | | | | | | | |
| 8- Entrada Analógica 7 | | | | | | | | | 8- Salida Analógica 4 | | | | | | | | |
| 9- Entrada Analógica 8 | | | | | | | | | 9- Vaux. EXTERNA | | | | | | | | |

4. k2-EXP-SD Card

Ethernet communications card and SD memory

Features

| SD Card | |
|------------------|---------------|
| Type of card | SD |
| Maximum capacity | 2 Gb |
| Format | FAT 16 |
| Code | M54506 |



Recommendations

Card used to record up to 400 electrical variables coming from a CVMk2 power quality analyzer. It also includes a log of the quality events: overvoltages, voltage interruptions or gaps.

Icons

- Correct SD memory state
- Incorrect SD memory state
- SD Card removal enabled



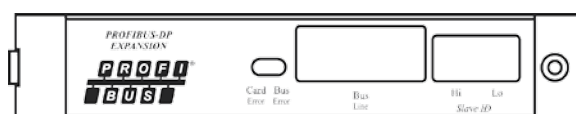
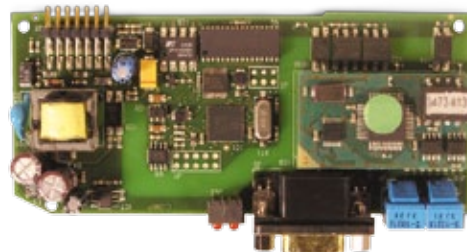
Exchangeable modules CVM k2

5. PROFIBUS Card

GSD Modules

The GSD modules are configured in accordance with the following table. The table shows the module number, content (variables) and the total size of the module.

| Mod. | Parameters | Byte | Size |
|------|--------------------------------|------|------|
| 1 | Simple voltages | 12 | 52 |
| | Phase currents | 12 | |
| | Compound voltages | 12 | |
| | Power factor | 12 | |
| | Frequency | 4 | |
| 2 | Power ratings | 48 | 48 |
| 3 | Mean values | 12 | 44 |
| | Neutral values | 8 | |
| | Three-phase values | 24 | |
| 4 | Current energy with no billing | 48 | 48 |
| 5 | THD U / I | 32 | 32 |
| 6 | THD odd / even | 64 | 64 |
| 7 | Unbal / Asymmetry / Flicker | 44 | 44 |
| 8 | Odd harmonics, Voltage (15°) | 72 | 72 |
| 9 | Even harmonics, Current (15°) | 72 | 72 |
| 10 | Digital I. 1 / Analogue I. 2 | 64 | 64 |
| 11 | Digital I. 2 / Analogue I. 3 | 64 | 64 |
| 12 | Digital I. 3 / Analogue I. 1 | 64 | 64 |
| 13 | Cos φ | 12 | 12 |



Code **M5450A**

6. k2-EXP-SD-MODBUS/TCP Card

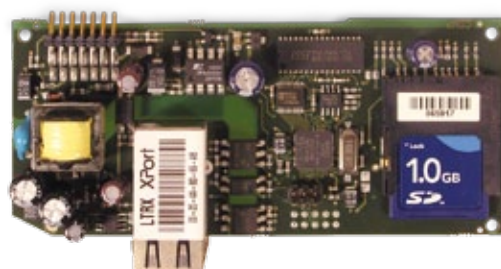
Ethernet communications card and SD memory

Features

| Ethernet output | |
|------------------------|---|
| Network Protocol | Ethernet RJ-45 |
| Communication protocol | Modbus / TCP |
| Speed | compatible with 10 base T / 100 base Tx |
| SD Card | |
| Type of card | SD |
| Maximum capacity | 2 Gb |
| Format | FAT 16 |
| Code | M54504 |

Recommendations

- The unit is formatted automatically when installing an SD card. Do not install cards with contents stored that you wish to keep.
- To remove the SD card safely, interrupt the communications between the unit and the memory. There are two ways to do so; either turning the unit off or accessing the card setup menu.



Icons

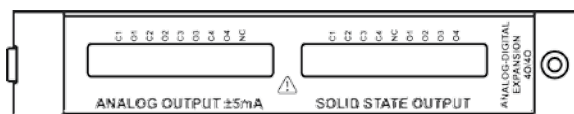
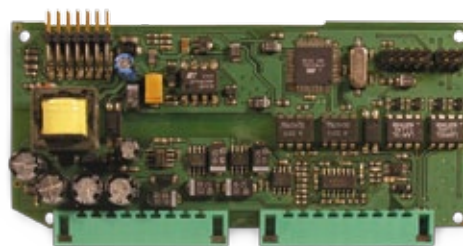
- Correct SD memory state
- Incorrect SD memory state
- SD Card removal enabled

Exchangeable modules CVM k2

7. Exp. Card 4 S analogue + 4 S static. ±5 mA

Features

| | |
|----------------------------------|--------------------------|
| Features | |
| Logical outputs | |
| Output range | ±5 mA |
| Linearity | 1 % |
| Load resistance | < 1000 |
| Output range | 4000 points |
| Static outputs | |
| Voltage | <100 Vac/Vdc |
| Non-repetitive Peak voltage | 350 V pk. |
| Nominal current | 100 mA |
| Repetitive current during $t=1s$ | 120 mA |
| Maximum current $t=10 ms$ | 350 mA |
| Connection | |
| Rigid conductor section | 0.05...1 mm ² |
| Code | M54507 |



Connection

| A.OUTPUTS | | | | | | | | | T.INPUTS | | | | | | | | |
|-----------|----------------------|-----------|----------------------|-----------|----------------------|-----------|----------------------|-------------|-----------|-----------|-----------|-----------|-----------|------------------------|------------------------|------------------------|------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 1- COMMON | 2- Analogic output 1 | 3- COMMON | 4- Analogic output 2 | 5- COMMON | 6- Analogic output 3 | 7- COMMON | 8- Analogic output 4 | 9- Not used | 1- COMMON | 2- COMMON | 3- COMMON | 4- COMMON | 5- COMMON | 6- Transistor output 1 | 7- Transistor output 2 | 8- Transistor output 3 | 9- Transistor output 4 |

