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 50º, asymmetries, flicker, unbalances, overvoltages, gaps, interruptions, etc.

Features

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 ºC
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)

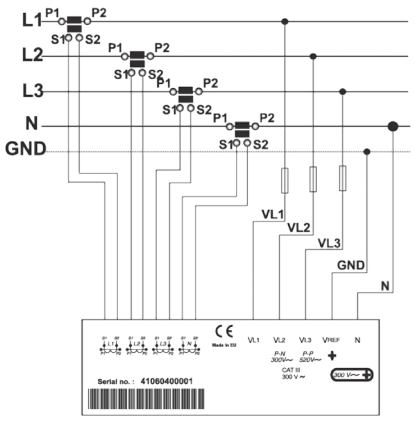
Quadrants	Class	Communications MODBUS / RTUProtocol	Neutral current	Universal power supply	Type	Code
4	0,5	RS-485	Yes	Yes	**CVMk2-ITF-405**	**M54400**
4	0,5	RS-485	Yes	Yes	**CVMk2-ITF-402**	**M54402**

Measuring units (measuring module)

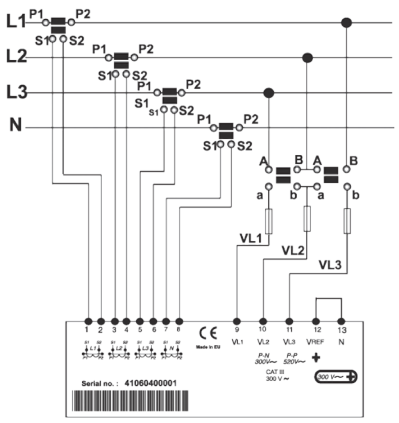
Quadrants	Class	Communications MODBUS / RTUProtocol	Neutral current	Universal power supply	Type	Code
4	0,5	RS-485	Yes	Yes	**M-CVMk2-ITF-405**	**M54410**
4	0,5	RS-485	Yes	Yes	**M-CVMk2-ITF-402**	**M54412**

Connections

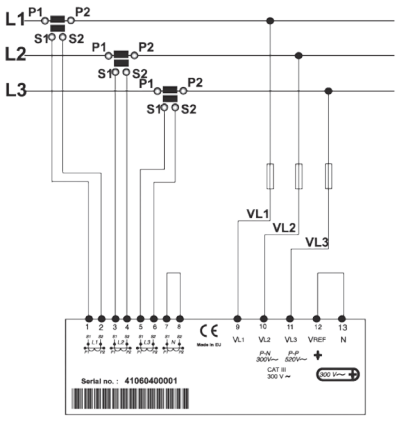
Connection of 4 Current transformers (5 wires)



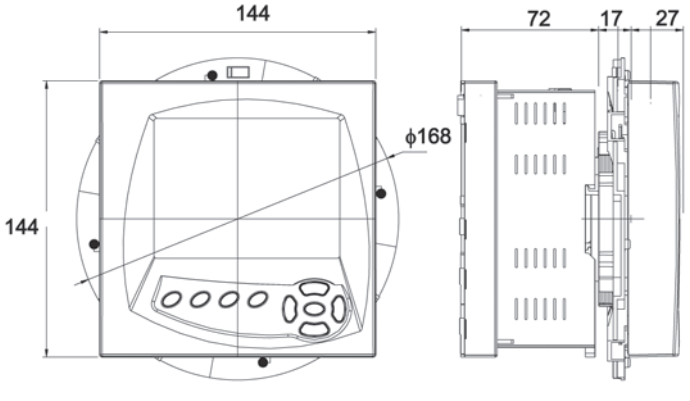
Connection of 4 Current transformers and 2 voltage transformers



Connection of 3 Current transformers (3 wires)



Dimensions



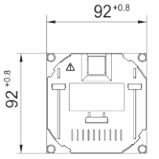


Fig. 1

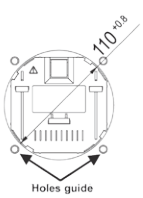


Fig. 2

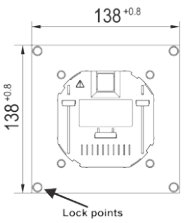


Fig. 3

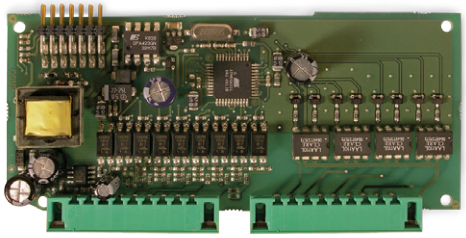
Figures 1, 2 and 3: Display of the frontal panel part embedding (display) in a 92 x 92 mm opening, with a diameter of 110 mm and 138 x 138 mm, respectively

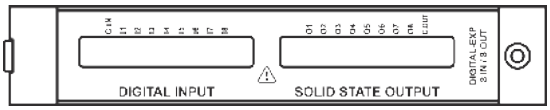
Exchangeable modules

CVM k2

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

Card with 8 digital inputs and 8 digital outputs of transistor





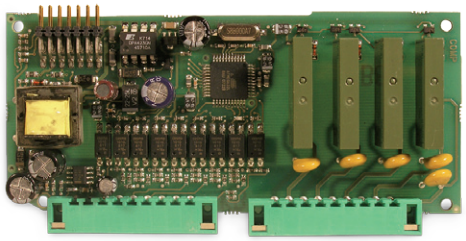
Features

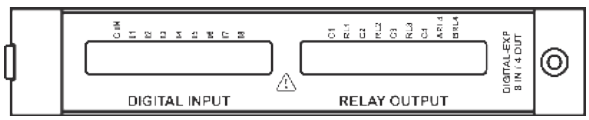
Features	
Logical inputs	
Type of input	Voltage-free
Type of coupling	Optoinsulated
V max	24 Vdc
minimum t ON / t OFF	t ON 40 ms
	t OFF 40 ms
Static outputs	
AC Voltage	<100 Vac
Non-repetitive Peak voltage	350 V pk.
Nominal current	100 mA
Repetitive current during t=1s	120 mA
Maximum current t=10 ms	350 mA
Connection	
Rigid conductor section	0.05...1 mm²
Code	**M54501**

Connection

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

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

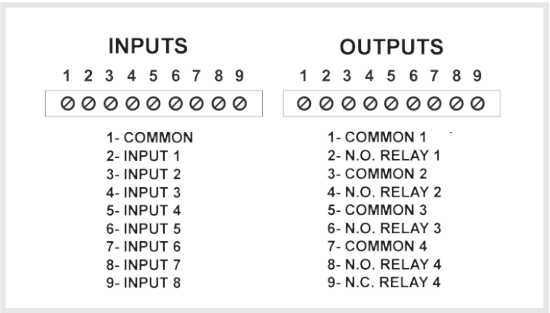




Features

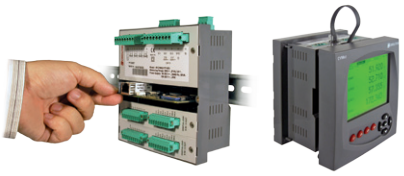
Features	
Logical inputs	
Type of input	Voltage-free
Type of coupling	Optoinsulated
V max	24 Vdc
minimum t ON / t OFF	t ON 40 ms
	t OFF 40 ms
Relay outputs	
AC Voltage	250 Vac
AC Current	6 Aac
Minimum relay load	1 Vac
	0.001 Aac
Mechanical working life	5 x 10^6 operations
Electrical working life	NO: 5x10^4, NC: 3x10^4 cycles
Connection	
Rigid conductor section	0.05...1 mm²
Code	**M54503**

Connection



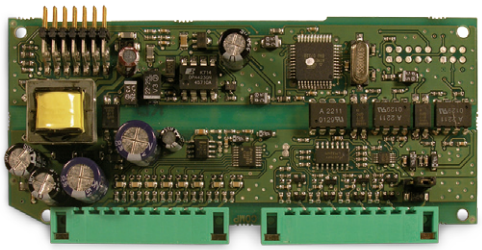
Exchangeable modules

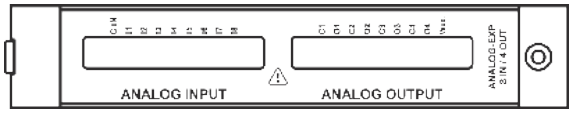
CVM k2



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

Card with 8 digital inputs and 4 digital outputs





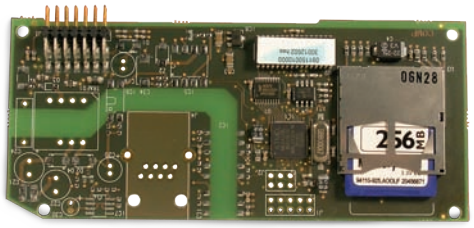
Features

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

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**

Icons

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

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.

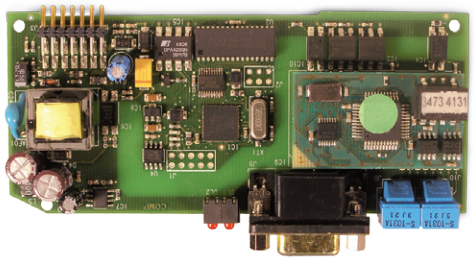
Exchangeable modules
CVM k2

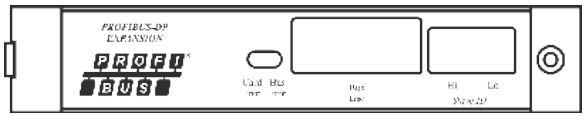
5. PROFIBUS Card

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 (15º)	72	72
9	Even harmonics, Current (15º)	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

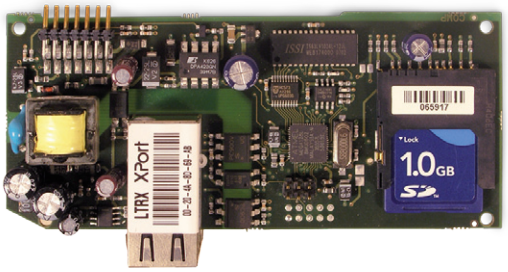




Code	M5450A

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

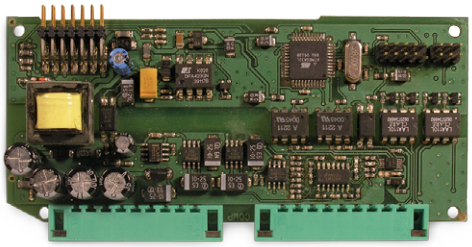
- The unit is formatted automatically when installing an SD card. Do not install cards with contents stored that you wish to keep.
- To remove the SD card safely, interrupt the communications between the unit and the memory. There are two ways to do so; either turning the unit off or accessing the card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

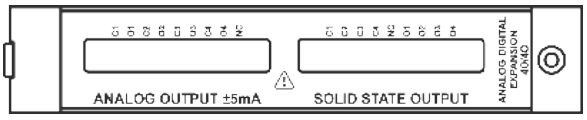
Icons

- 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 mm²
Code	**M54507**

Connection