CVM-B100
CVM-B150

Power analyzers for panel

Description

The **CVM-B100** and **CVM-B150** units are panel mounted three-phase power analyzers (dimensions: 96x96 and 144x144 mm, respectively). Both offer 4-quadrant measurement (consumption and generation). Suitable for Medium or Low voltage installations, in both 3 or 4-wire three-phase circuits, two-phase circuits with or without neutral, single-phase circuits or ARON connections.

The **CVM-B100** and **CVM-B150** high-performance units feature a measurement engine that allows the user to analyse many different electrical parameters, in addition to offering a large variety of optional expansion modules for the same unit.

Features:

— Format: 96x96 (**CVM B100**) and 144x144 (**CVM B150**)
— High-resolution VGA colour screen
— IP 65* front panel protection
— 5 voltage inputs (3 phases + neutral + earth) 1000 V_{f-f}
— 4 Current inputs, ITF
— Class 0.2 voltage and current accuracy
— Class 0.5S energy accuracy
— Expandable unit, up to 4 modules, combining digital and analogue outputs, Modbus/TCP, MBus, LonWorks, Profibus, XML/Web
— Modular (optional addition of expansion modules)
— Touch-sensitive movement buttons
— Universal power supply source
— RS485 communications port (Modbus/RTU and BACnet protocols)
— Customisation of parameters to be displayed
— Operating hour indicator for preventive maintenance.

Other features:

— Innovative SCV interface (Slide, Choose & View) for versatile data display, enabling the customisation of the parameters displayed on the screen
— Electrical parameters: instantaneous, maximum, minimum (with date and time) and demand
— Incremental electrical parameters (energy), times, costs, emissions
— 3 Tariffs (can be selected via the digital input or RS485 communications)
— Capable of showing costs and $kgCO_2$ emission sources on the screen, depending on the energy consumed or generated
— 2 Relay outputs for alarms with delay, times, ON and OFF, etc.
— 2 transistor outputs for alarms or impulse generation, with all the possible configuration parameters
— 2 digital inputs, with control over the selection of the unit's tariffs or configurable for monitoring purposes, with RS-485 Modbus communications, monitoring of logical states of other electromechanical units. (RCCBs, thermal-magnetic circuit breakers, etc.)

* with sealing joint.

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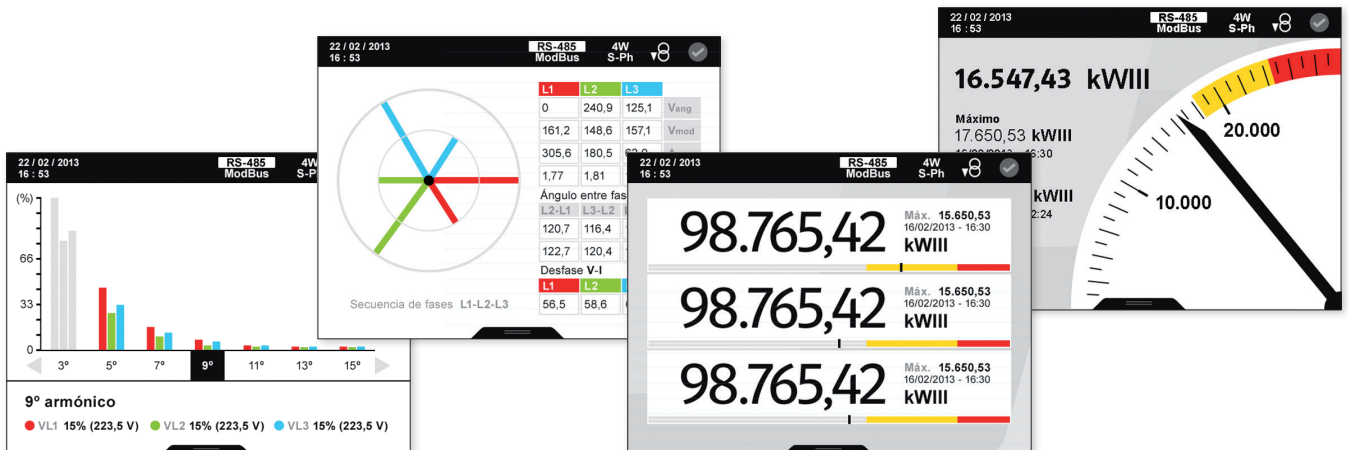
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Applications
— Control and monitoring of all electrical parameters measured in any electric distribution panel and low and high-voltage connection points.
— 4 alarms (2 per transistor and 2 per relay), fully and independently programmable: low or high value, hysteresis, connection/disconnection delays, normally open or closed standby status and interlocking.
— Generation of impulses with transistor outputs, fully and independently configurable over any incremental parameter (energy, costs, $kgCO_2$, total meter or tariff hours)
— Transducer that converts analogue signals to any instantaneous parameter that the unit can measure or calculate, with built-in expansion modules with analogue outputs.
— Display of process signals, with a built-in expansion module with analogue inputs; optional reporting of these signals to SCADA systems through communication systems
— Control of electrical load or alarm signal operations by programming the transistor or relay outputs that are built-in or added through expansion modules.
— Autonomous datalogger with web server, connected to a **M-CVM-AB-Datalogger** module. Enables direct monitoring of the historical data stored in the unit via a conventional web browser.

400 Hz Applications
CVM-B150 provides a version adapted to 400 Hz networks specially designed for applications such as:
— Aeronautical
— Astronautics
— Naval
— Military

Technical features

Power circuit	Power supply voltage	85...265 Va.c. / 120...300 Va.c. 20...120 Vd.c. (SDC Model)
	AC Frequency	45...65 Hz
	AC Consumption	**CVM-B100 -** 6...8 VA (max. 24 VA) **CVM-B150 -** 7...12 VA (max. 30 VA)
	DC consumption	**CVM-B100 -** 3...4 W (max. 13 W) **CVM-B150 -** 4...7 W (max. 12 W)
Voltage measurement circuit	Voltage range	500 V_{p-n} - 866 V_{p-p} (functional up to 600 V_{p-n} / 1000 V_{p-p})
	Frequency	40...70 Hz, 400 Hz (only **CVM-B150-ITF-HF-485-ICT2**)
	Measurement margin	7 %...200% of the U_n for U_n=300 Vac (p-n)
	Admissible overvoltage	750 Vac
	Maximum consumption (limited current)	< 0.15 VA
Current measurement circuit	Current measurement	4 (3 phases + 1 neutral)
	Input current	.../5 A or.../1 A or .../250 mA
	Minimum current for class	250 mA
	Start-up current	10 mA
	Measurement margin	0,2...200% I_n (.../5 A) 1...200% I_n (.../1 A) 4...200% I_n (.../250 mA)
	Admissible overload	2 I_n permanent, 100 A t < 1 s
	Consumption	max I_{in} 0.9 VA
Maximum transformation ratios	Primary V : 500,000 Primary A : 999,9 (10 kA) .../5 and .../1A, 63...2000 **MC** type Product of Primary V x Primary A < 900 MW	
Maximum meter value (total)	If (Primary A / Secondary A) < 1,000 (2 GW)	
	If (Primary A / Secondary A) ≥ 1,000 (2 TW)	
Accuracy class	Voltage	Class 0.2 ± 1 digit
	Neutral voltage	Class 0.5 ± 1 digit
	Current	Class 0.2 ± 1 digit
	Neutral current	Class 1 ± 1 digit
	Active power	Class 0.5 ± 1 digit
	Reactive power	Class 1 ± 1 digit
	Active energy	Class 0.5 S (.../5 A) Class 1 (.../1 A and .../250 mA)
	Reactive energy	Class 1 (.../5 A) Class 2 (.../1 A and .../250 mA)
Display of harmonics	Voltage/Current	up to 50

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Technical features

Connections		
Digital inputs	Selection of tariffs, states or external alarms	
	Type	Optoisolated potential-free contact
	Quantity	2
	Activation current	5 mA (15 V maximum voltage of open contact)
	Insulation	4 kV
Digital outputs	Generation of impulses or alarms	
	Type	NPN transistor
	Quantity	2
	Maximum operating voltage	48 Vdc
	Maximum operation current	130 mA
	Maximum frequency	1 kHz
	Pulse duration (T on / T off)	0.3 / 0.7 ms (1 ms of a complete impulse)
	Alarms	
	Type	Relay
	Quantity	2
	Maximum operating power	1500 W
	Maximum voltage open contacts	250 Vac
	Maximum switching current	3 A
	Electrical working life (400 V / 6 A)	3×10^4 cycles
	Mechanical working life	1×10^7 cycles
Built-in communications	Protocols	Modbus RTU / BACnet
	Speed	9600...115200
	bits, parity, stop	8, n, 1 (configurable)
Environmental conditions	Working temperature	-10...+50 ºC
	Relative humidity	5...95%
	Altitude	2000 m
Build features	Format	Assembly on 96x96mm or 144x144 panel
	Depth	110 mm w/o expansion modules (both models)
	Front panel IP Protection	IP 40 (IP 65 with accessory)
	Rear panel IP protection	IP 30
Safety	Designed for CAT III 300/520 Vac installations, in accordance with EN 61010 Double-insulated electric shock protection, class II	
Standards	**IEC 62053-22**, **ANSI** (Class 0.5S), **IEC 62053-24** (Class 1) / **ANSI C12.1** (Class 2), **IEC 61010**, **IEC 61000**, **UNE-EN 55022**, Measurement in accordance with MID, **UL** certification, **IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-11, IEC 61000-4-4, IEC 61000-4-5**	

References
96 x 96

Current measuring secondaries	Type	Code
.../5 or .../1 A or ...250 mA	**CVM-B100-ITF-RS485-ICT2**	**M56011**
.../5 or .../1 A or ...250 mA	**CVM-B100-SDC-ITF-485-ICT2***	**M5601100F0000**

* Power Supply 20...120 Vdc

144 x 144

Current measuring secondaries	Type	Code
.../5 or .../1 A or ...250 mA	**CVM-B150-ITF-RS485-ICT2**	**M56111**
.../5 or .../1 A or ...250 mA	**CVM-B150-SDC-ITF-485-ICT2***	**M5651100F0000**
.../5 or .../1 A or ...250 mA	**CVM-B150-ITF-HF-485-ICT2****	**M561H1**

* Power Supply 20...120 Vdc
** 400 Hz version, check the available variable on the product manual **M210B01**

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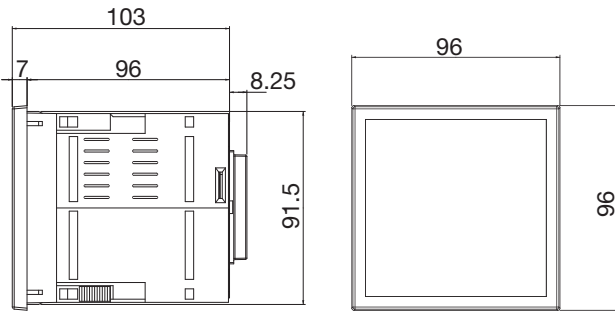
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Expansion modules for CVM B150 and CVM B100

Outputs	Digital Inp.	Analogue Inp.	Communications	Protocol	Type	Code
8 Trans.(*)	8	-	-	-	**M-CVM-AB-8I-8OTR**	**M56E01**
8 relay	8	-	-	-	**M-CVM-AB-8I-8OR**	**M56E02**
8 (0/4...20mA)	-	4 (0/4...20mA)	-	-	**M-CVM-AB-4AI-8AO**	**M56E03**
-	-	-	Ethernet (Bridge RS-485)	Modbus/TCP	**M-CVM-AB-Modbus-TCPBridge**	**M56E05**
-	-	-	Ethernet (Bridge Ethernet)	Modbus/TCP	**M-CVM-AB-Modbus-Switch**	**M56E0A**
-	-	-	Ethernet	Web/XML/PowerStudio	**M-CVM-AB-Datalogger**	**M56E06**
-	-	-	MBus	MBus	**M-CVM-AB-MBUS**	**M56E07**
-	-	-	LonWorks	**LonTalk ISO/IEC 14908 ANSI/EIA 7091**	**M-CVM-AB-LonWorks**	**M56E08**
-	-	-	-	Profibus/DP	**M-CVM-AB-Profibus**	**M56E09**

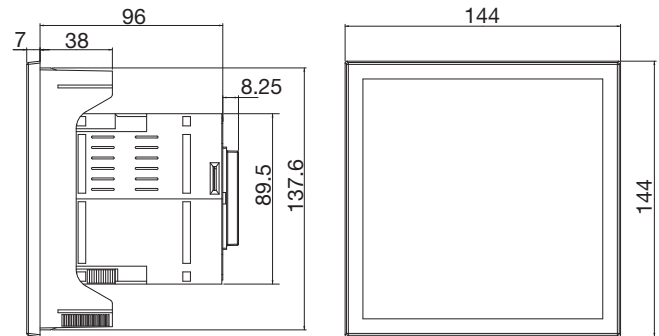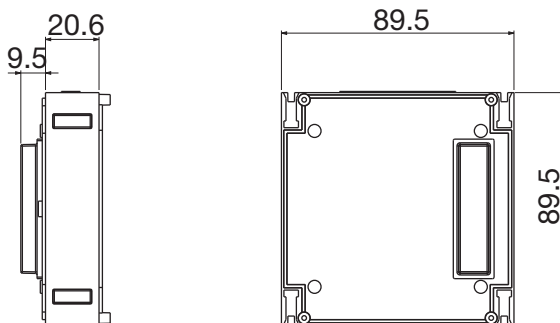| Description	Type	Code
IP 65 sealing joint for CVM-AB (96x96)	**IP65-AB-96**	**M5ZZ5U**
IP 65 sealing joint for CVM-AB (144x144)	**IP65-AB-144**	**M5ZZ5V**

Dimensions

CVM-B100

Window level: 92x92 mm

CVM-B150

Window level: 138x138 mm

CVM-B Module

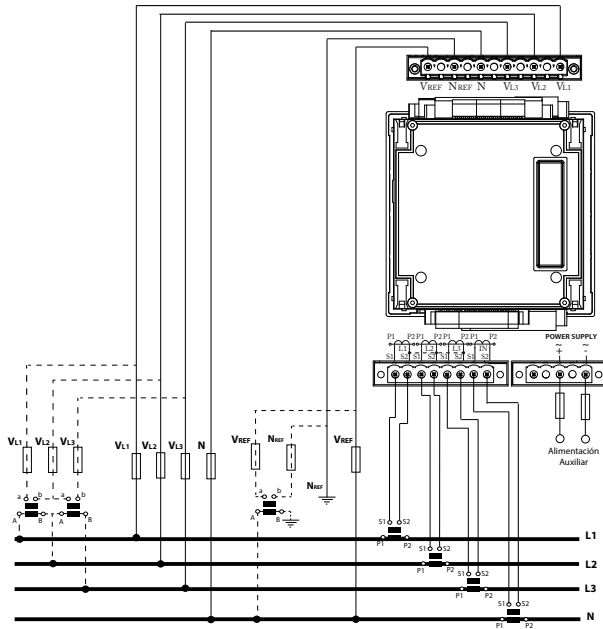Note: Refer to the product manual for other options
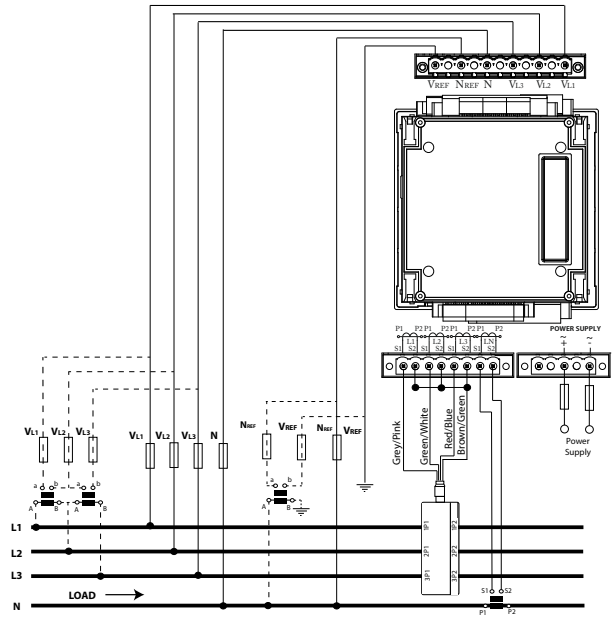
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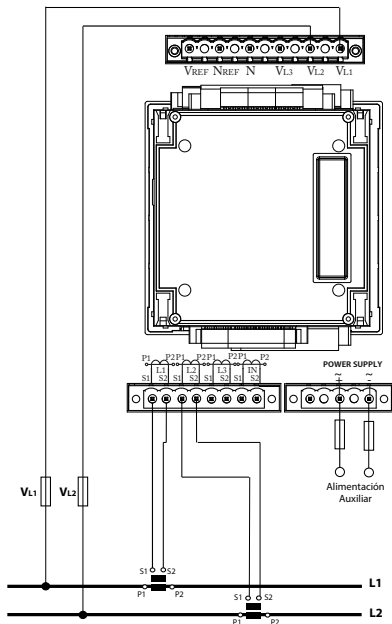## Power analyzers for panel

Connections

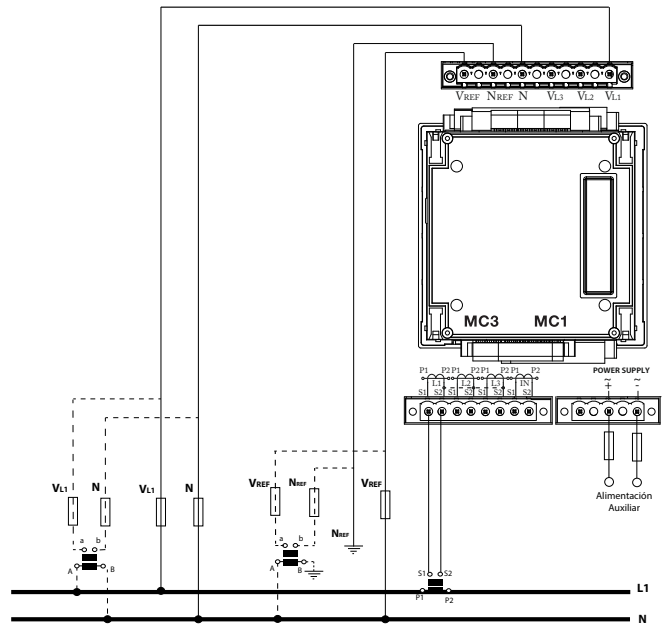Three-phase measurement, with or without voltage transformer and current transformers

Three-phase measurement, with or without voltage transformer and **MC3** type transformers (1250 mA) + .../5 A type transformers for neutral current.

Direct phase-phase measurement with current transformers

Measurement in single-phase system with or without voltage transformer

Note: Refer to the product manual for other options

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