# 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.

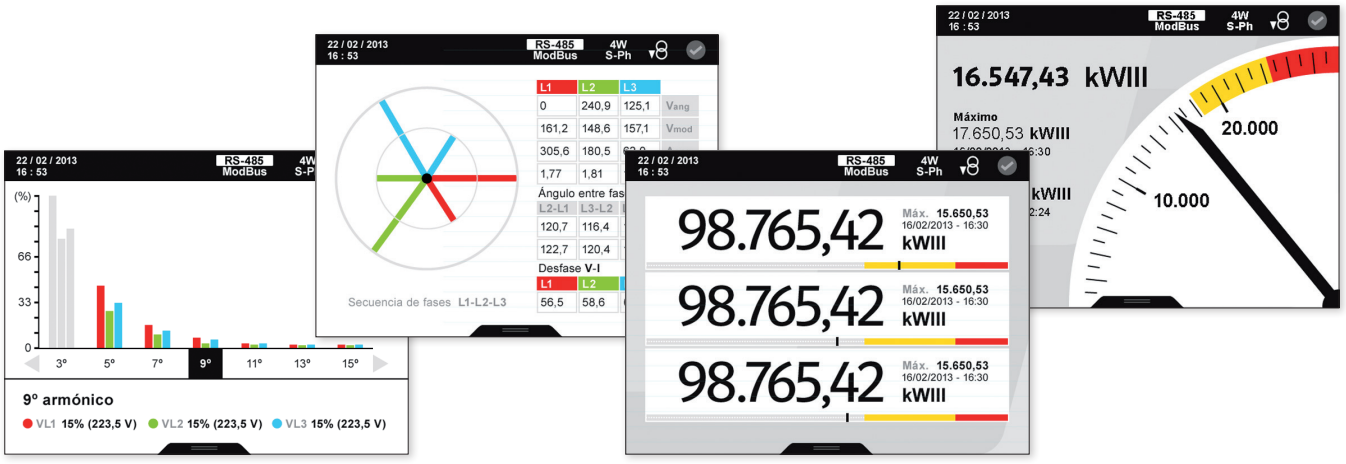
### Features:

- 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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## Power analyzers for panel

### 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.

### Technical features

| | | |
|---|---|---|
| **Power circuit** | Power supply voltage | 85...265 Va.c. / 120...300 Va.c.<br>20...120 Vd.c. (SDC Model) |
| | AC Frequency | 50...60 Hz |
| | AC Consumption | **CVM-B100 -** 6...8 VA (max. 24 VA)<br>**CVM-B150 -** 7...12 VA (max. 30 VA) |
| | DC consumption | **CVM-B100 -** 3...4 W (max. 13 W)<br>**CVM-B150 -** 4...7 W (max. 12 W) |
| **Voltage measurement circuit** | Voltage range | 500 $V_{p-n}$ - 866 $V_{p-p}$<br>(functional up to 600 $V_{p-n}$ / 1000 $V_{p-p}$) |
| | Frequency | 40...70 Hz |
| | 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)<br>1...200% $I_n$ (.../1 A)<br>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<br>Primary A : 999,9 (10 kA) .../5 and .../1A, 63...2000 **MC** type<br>Product of Primary V x Primary A <60 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)<br>Class 1 (.../1 A and .../250 mA) |
| | Reactive energy | Class 1 (.../5 A)<br>Class 2 (.../1 A and .../250 mA) |
| **Display of harmonics** | Voltage/Current | up to 50 |

# CVM-B100
# CVM-B150

## Power analyzers for panel

### Technical features

| | | |
|---|---|---|
| **Connections** | | |
| **Digital inputs** | Selection of tariffs, states or external alarms | |
| | Type | Optoisolated potential-free contact |
| | Quantity | 2 |
| | Activation current | 5 mA<br>(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 x $10^4$ cycles |
| | Mechanical working life | 1 x $10^7$ cycles |
| **Built-in communications** | Protocols | Modbus RTU / BACnet |
| | Speed | 9600...115200 |
| | bits, parity, stop | 8, n, 1 (configurable) |
| **Environmental conditions** | Working temperature | -10...+50 °C |
| | Relative humidity | 5...95% |
| | Altitude | 2000 m |
| **Build features** | Format | Assembly on 96x96mm or 144x144 panel |
| | Depth | 110 mm w/o expansion modules<br>(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<br>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** |

* Power Supply 20...120 Vdc

# CVM-B100
# CVM-B150

## Power analyzers for panel

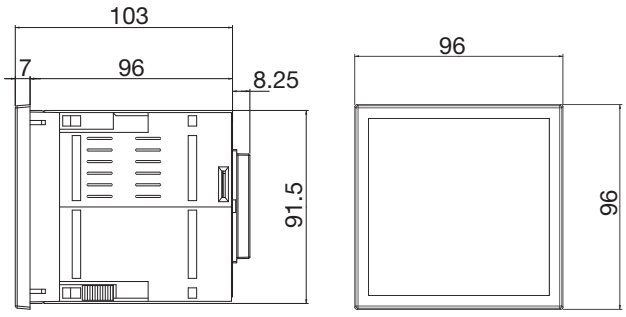
### Expansion modules for CVM B150 and CVM B100

| 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<br>ISO/IEC 14908<br>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** |

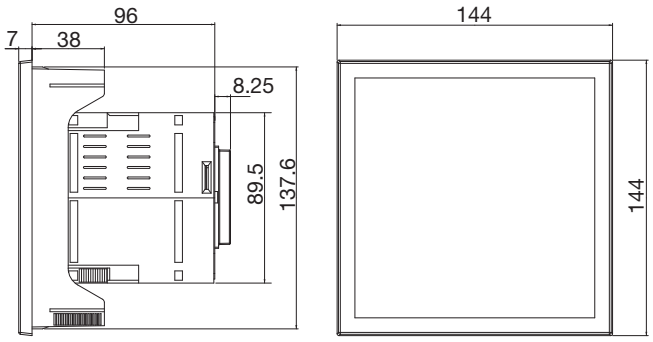
### Dimensions

#### CVM-B100



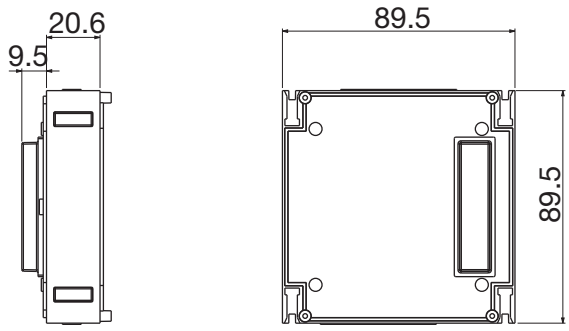

Window level: 92x92 mm

#### CVM-B150




Window level: 138x138 mm

#### CVM-B Module




Note: Refer to the product manual for other options

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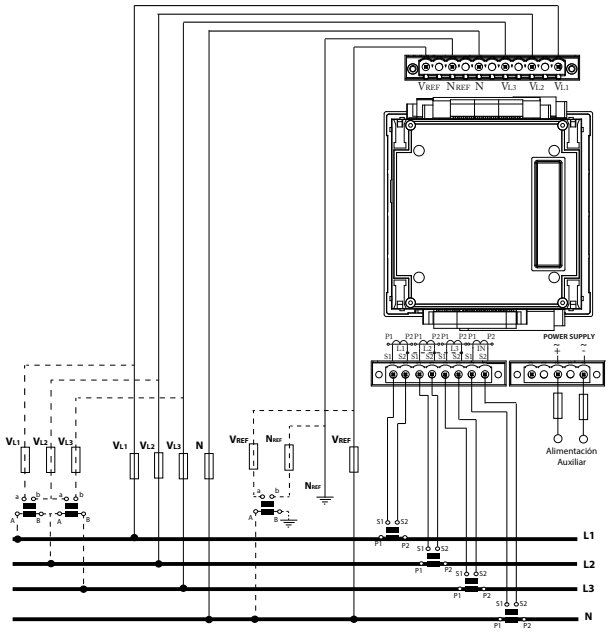
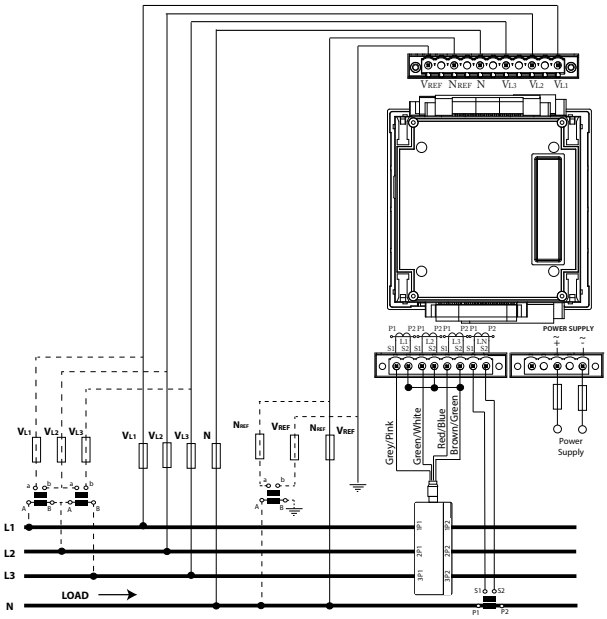
## Power analyzers for panel

### Connections

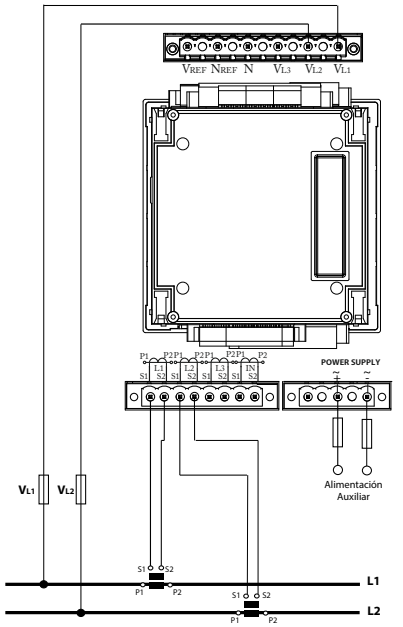
Three-phase measurement, with or without voltage transformer and current transformers



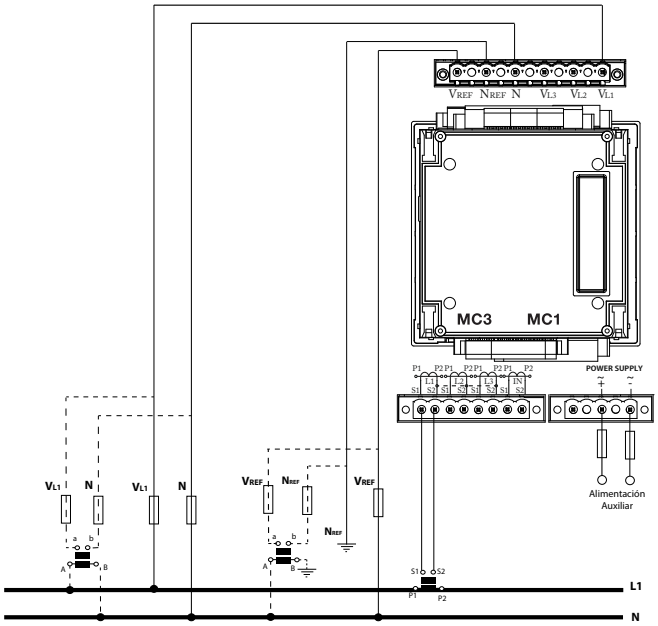

Three-phase measurement, with or without voltage transformer and **MC3** type transformers (1250 mA) + **MC1** for neutral current




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