

CVM SYSTEM ANALYZERS





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	Measuring in 2 quadrants		Energy saving screen saver		Option for sending alarms by e-mail
	Measuring in 4 quadrants, consumption and generation meters		Harmonics measurements up the 15 th or 50 th		Multi-converter function and analogue inputs
	Measuring in true effective value		Relays with OR option		Functions added via expansion modules
	Measuring of more than 50 electrical parameters		0.5% accuracy in voltage and current		Bill creation and consumption report module
	Storage in the memory of the maximum and minimum values measured		Option for multi-point connection		
	Password protection for setup		Option for access via the Internet		

INTRODUCTION

CVM Series analyzers are highly accurate measuring stations which control and supervise the main electrical parameters in three or four wire, single-phase and/or three-phase systems (in L.V. or M.V.)

Measuring is in true effective value (TRMS), using three voltage inputs and neutral with external current transformer connections having .../5A or .../1A secondaries (current inputs are insulated in ITF types).

In addition to displaying and transmitting all measured or calculated electrical parameters through communications, **CVM** analyzers include a meter function being able to store the system's consumed and generated energy within the CVM's internal memory without the need of an auxiliary power supply.



Panel mounted equipment



DIN rail mounted equipment

CVM system analyzers may include an hourly time slots, according to type, using a preset program. This system obtains a kWh total for each of the preset tariffs. These analyzers, like the single tariff analyzers, record active, inductive reactive, capacitive reactive and apparent power for each of the preset periods.

The whole series has a built in power demand meter in which calculates integrated demand in a preset period. This sliding integration may be carried out for a selected parameter: three-phase current, three-phase active power, three-phase apparent power or current per phase.












The expandable or modular equipment may be supplied with additional functions from a selected expansion card or from the type of **CVM** selected. They have the option for analogue I/O (multi-converter function), digital I/O (central alarm function or impulse generation / kWh) which may be linked to any measured or calculated electrical parameter.

Due to the large volume of information from each of the **CVM** system analyzers, the equipment has communication output. Connection topology and system protocols are varied (RS-232, RS-485, RTB modem, GSM modem, Radio (Modbus RTU, Profibus DP and Metasys N2) and Ethernet (Web or XML)).

PARAMETERS	UNIT	L1	L2	L3	III
Phase-neutral voltage	V	•	•	•	
Phase-phase voltage	V	•	•	•	
Current	A	•	•	•	•
Current	Hz		•		
Active power	kW	•	•	•	•
Inductive reactive power	kvar L	•	•	•	•
Capacitive reactive power	kvar C	•	•	•	•
Apparent power	kV·A	•	•	•	•
Power factor	PF	•	•	•	•
cos φ	cos φ				•
Power demand	Pd			•	
Neutral current	I_N			•	
Harmonic decomposition		•	•	•	
Harmonic Measuring in voltage	% THD - V	•	•	•	
Harmonic measuring in current	% THD - A	•	•	•	
kWh (consumed and generated)	Wh				•
kvarh L (consumed and generated)	varh				•
kvarh C (consumed and generated)	varh				•
kVAh (consumed and generated)	VAh				•

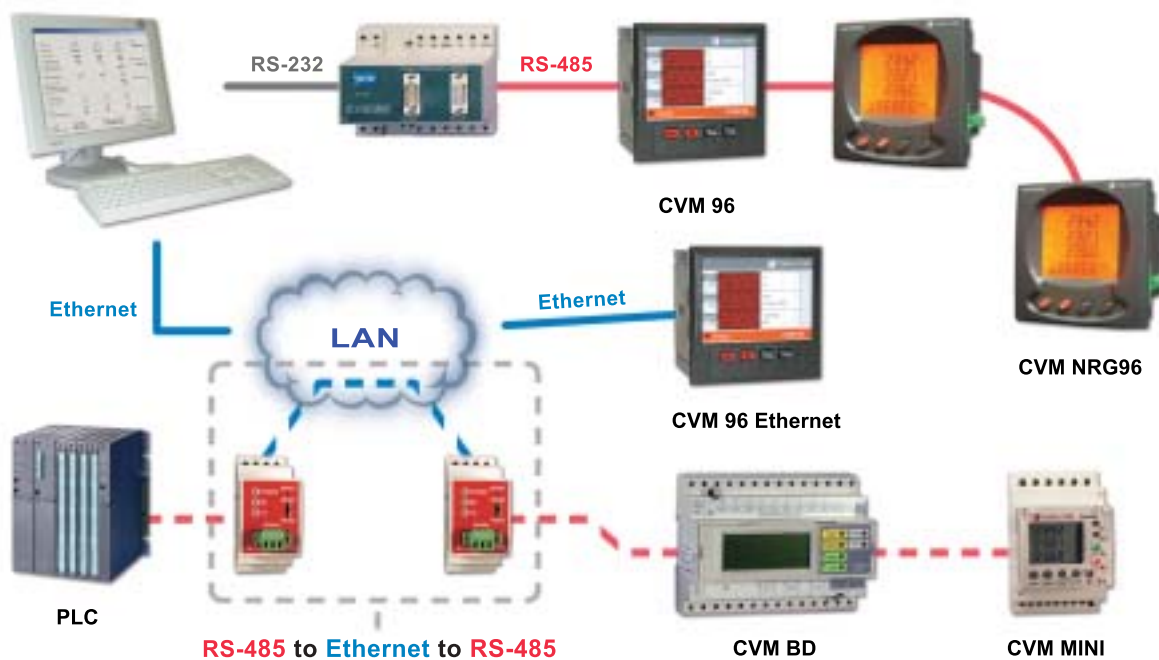
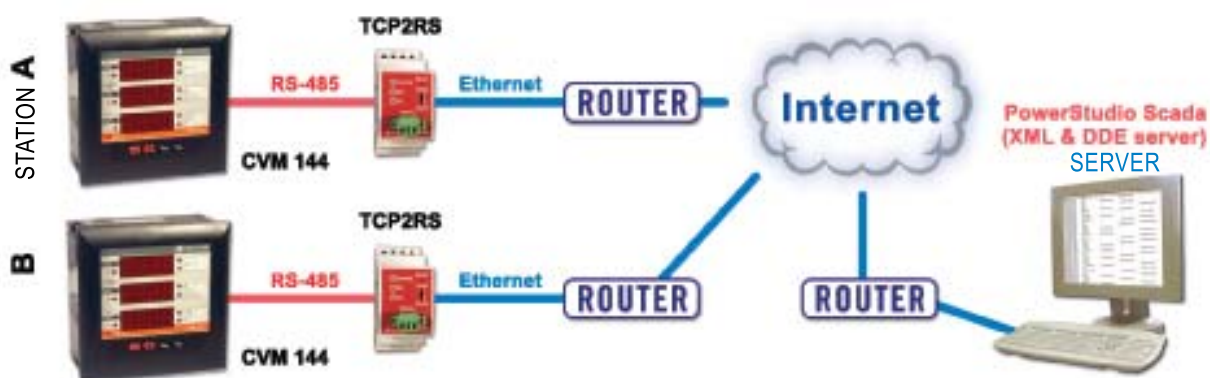
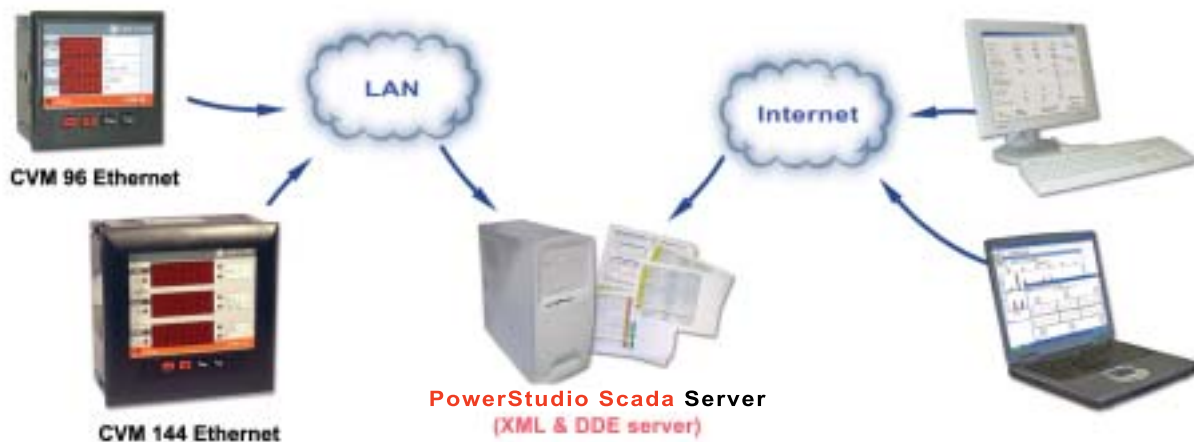


THREE-PHASE SYSTEM ANALYZERS

	PANEL					DIN RAIL			
	96 x 96 mm					3 modules	8 modules		
	CVM-96 SP	CVM-NRG96	CVM-96	CVM-144	CVMk	CVM-MINI	CVM-BC3	CVM-BD	CVM-BDM
									
MEASURING FEATURES	-  +					-  +			
Single-phase	•								
Phase-phase voltage		•	•	•	•	•	•	•	•
True effective value (TRMS)	•	•	•	•	•	•	•	•	•
Quadrants	2	4	2	2	4	4	2	4	4
Power demand (Pd)		•	•	•	•	•	•	•	•
Neutral current (*)		•	•	•		•	•		•
Leakage current				•					
THD Measuring (V, A)	•	•	•	•	•	•	•	•	•
Harmonic decomposition		•	•	•	•	•	•		•
Energy meter (kWh, kvarh C, kvarh L)	•	•	•	•	•	•	•	•	•
Multi-tariff					•			•	
Analogue inputs (0/4...20 mA)				•					
Analogue outputs (0/4...20 mA)				•	•			•	•
Digital inputs				•					
Digital outputs	•	•	•	•	•	•	•	•	•
ASSEMBLY FEATURES									
Display	LCD	LCD	LED	LED	LED/LCD	LCD	LCD	LCD	LCD
Screen saver		•	•	•		•	•		•
Password protection		•	•	•		•	•		•
COMMUNICATIONS FEATURES									
RS-232			•	•	•			•	•
RS-485	•	•	•	•	•	•	•	•	•
Ethernet			•	•					
Communications protocol									
Modbus RTU	•	•	•	•	•	•	•	•	•
Profibus DP				•					
Johnson Controls			•	•	•			•	
XML (Ethernet types only)				•					

(*) Measured or calculated, according to type

APPLICATIONS





CVM-NRG 96 COMPACT EQUIPMENT



- Panel mounted electrical system analyzer (96 x 96 mm) which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- Slim line analyzer (only 50 mm deep)
- Power demand meter function (A / A III / kW III / kV·A III)
- Current reading using external transformers .../5A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- RS-485 communication (MODBUS RTU)
- Compatible with the **Power Studio / Scada** system
- 4 line backlit LED display
- Allows selection of default page
- Universal power supply available in "Plus" type



Three-phase 45...65 Hz	Insulated inputs (ITF)	Energy	THD Measuring (V, A)	True effective value	LCD Display	Digital output	Neutral current	Communications	MODBUS Protocol (RTU)	Universal power supply	Harmonics measurer (HAR) HAR decomposition V and A 15°	Type	Cod
•	•	•	•	•	•	•	•	•	•	•	•	CVM-NRG96	M51800
•	•	•	•	•	•	•	•	•	•	•	•	CVM-NRG96-ITF	M51900
•	•	•	•	•	•	1	•	RS-485	•	•	•	CVM-NRG96-ITF, RS485 C	M51911
•	•	•	•	•	•	1	•	RS-485	•	•	•	CVM-NRG96-P-ITF, RS485 C	M51A11
•	•	•	•	•	•	1	•	RS-485	•	•	•	CVM-NRG96-ITF-HAR, RS485 C	M51B11

FEATURES

Power supply circuit	230 V a.c. (+10% / -15%) Plus 85...265 V a.c. 95...300 V d.c.	Output transistor	Opto-insulated (open collector) NPN
Consumption	5 V-A	Maximum operating voltage	24 V d.c.
Frequency	45...65 Hz	Maximum operating current	50 mA
Measuring circuit		Maximum impulse frequency	5 impulses / second
Rated voltage	300 V a.c. phase-neutral 520 V a.c. phase-phase	Length of impulse	100 ms
Frequency	45...65 Hz	Environmental conditions	
Voltage circuit consumption	0,7 V-A	Operating temperature	-10 °C / +50 °C
Current circuit consumption	ITF 0,5 / Shunt 0,75 V-A	Assembly features	
Rated current	I_n .../5 A (insulated input on ITF)	Type of casing	Self extinguishing V0 plastic
Permanent overload	1,1 I_n	Protection: assembled equipment (front) unassembled equipment (side)	IP 51 IP 31
Class		Dimensions	96 x 96 x 63 mm
Voltage	0,5 % ± 2 digits	Weight	0,4 kg
Current	0,5 % ± 2 digits	Safety	Category III-300 V AC. 520 V AC. EN 61010. Electrical shock protection by double insulation class II
Power	1 % ± 2 digits	Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 61000-6-3, 61000-6-1, 61010-1

ACCESSORIES



Converters
(see page M5-23)



Power Studio Scada software
(see M.9)



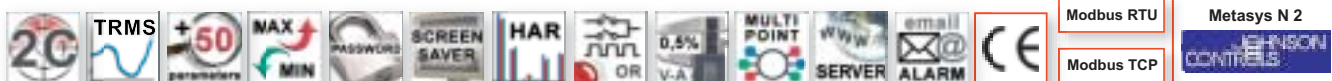
Measuring transformer
(see M.7)

CVM-96 COMPACT EQUIPMENT



- Panel mounted electrical system analyzer (96 x 96 mm) which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- Power demand meter function (A / A III / kW III / kV•A III)
- Current reading using external transformers .../5A or .../1A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- Different protocols (Modbus RTU, Modbus TCP, Metasys N2)
- Allows different connections (RS-232, RS-485, Ethernet)
- Compatible with the **Power Studio / Scada** system
- 3 x 4 digit LED display
- Allows selection of default page
- Varied Measuring range permitted (110, 520 866 V_{f-f})
- Incorrect connection detection (flashing LED)

Ethernet system protocol
RS-485 or RS-232 system protocol



Three-phase 45...65 Hz	Insulated inputs (ITF)	Energy	THD Measuring (V, A)	Harmonics measurer up to 31st (A)	True effective value	LED Display	Relay output	Neutral current	Communications	MODBUS Protocol (RTU)	Type	Code
•	•	•	•	•	•	•	•	•	•	•	CVM 96	M51100
•	•	•	•	•	•	•	•	•	•	•	CVM 96-ITF	M51200
•	•	•	•	•	•	•	2	•	RS-485	•	CVM 96-ITF-RS485-C2	M51211
•	•	•	•	•	•	•	2	•	TCP-IP	•	CVM 96-ITF-Ethernet-C2	M51231
•	•	•	•	•	•	•	2	•	RS-485	•	CVM 96-ITF-Jonhson-C2	M51711
•	•	•	•	•	•	•	2	•	RS-485	•	CVM 96-F-ITF-RS485-C2-HAR-IN	M51513

FEATURES

Power supply circuit (*)	230 V a.c. (+10% / -15%)	Mechanical life	3 x 10 ⁷ operations
Consumption	5 V·A	Energy / alarm impulses	1 impulse/second maximum
Frequency	45 / 65 Hz	At full loading: - electrical life (250 V a.c./3A) - operating frequency	1 x 10 ⁵ operations 450 operations / hour
Measuring circuit		Assembly features	
Rated voltage	300 V a.c. phase-neutral / 520 V a.c. phase-phase	Connection	Pluggable board
Frequency	45...65 Hz	Type of casing	Self extinguishing V0 plastic
Current circuit consumption	0,75 V·A	Protection	assembled equipment (front): IP 54 Unassembled equipment (side): IP 31
Rated current	I _n .../5 A (insulated input on ITF) (option: .../1A)	Dimensions	96 x 96 x 78 mm
Permanent overload	1,2 I _n	Weight	0,52 kg
Class		Environmental conditions	
Voltage	0,5 % ± 2 digits	Operating temperature	-10 °C / +50 °C
Current	0,5 % ± 2 digits	Humidity	5 % ... 95 % (without condensation)
Power	1 % ± 2 digits	Safety	Category III-300 V AC. 520 V AC. EN 61010. Electrical shock protection by double insulation class II
Output transistor		Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348 IEC 571-1, EN 61010-1, EN 50081-1, EN 50082-1
Maximum operating power	750 V·A		
Maximum operating voltage	250 V a.c.		
Maximum operating current	3 A		

(*) Other power supplies and Measurements on request (please see price list)

ACCESSORIES



Converters
(see page M5-23)



Power Studio Scada software
(see M.9)



Measuring transformer
(see M.7)



CVM – 144 MODULAR ANALYZER

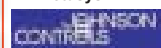
- Panel mounted electrical system analyzer (144 x 144 mm) which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- Harmonics measuring up to the 15th in current (up to 32nd with HAR)
- Power demand meter function (A / A III / kW III / kV·A III)
- Current reading using external transformers .../5A or .../1A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- Different protocols (Modbus RTU, Modbus TCP, Metasys N2)
- Allows different connections (RS-232, RS-485, Ethernet)
- Compatible with the **Power Studio / Scada** system
- 3 x 4 digit LED display
- Varied selection of default page
- Varied Measuring range permitted (110, 520 866 V_{f-f})
- Input/Output module option
- Incorrect connection detection (flashing LED)

Ethernet system protocol

Modbus RTU

Metasys N 2

Modbus TCP



RS-485 or RS-232 system protocol

Modbus RTU

Metasys N 2



EXPANSION MODULE FUNCTIONS



- Alarm station function: digital inputs
- Alarm emitter function: digital output
- Multi-converter function: analogue outputs 0 / 4 ... 20 mA
- Industrial process measurer function: analogue inputs 0 / 4 ... 20 mA
- Leakage and neutral current measurement function

* Many of these options may be combined on one single card: consult factory

FEATURES

Power supply circuit (*)	230 V a.c. (+10% / -15%)
Consumption	5 V·A
Frequency	45...65 Hz
Measuring circuit	
Rated voltage	300 V a.c. phase-neutral/ 520 V a.c. phase-phase
Frequency	45...65 Hz
Voltage circuit consumption	0,75 V·A
Rated current	I_n .../5 A (option: .../1 A)
Permanent overload	1,2 I_n
Class	
Voltage	0,5 % ± 2 digits
Current	0,5 % ± 2 digits
Power	1 % ± 2 digits

(*) Other power supplies and Measurements on request (please see price list).

Output transistor	
Maximum operating power	750 V·A
Maximum operating voltage	250 V a.c.
Maximum operating current	3 A
Mechanical life	3 x 10 ⁷ operations
Energy / alarm impulses	1 impulse/second maximum
At full loading: - electrical life (250 V AC./3A) - operating frequency	1 x 10 ⁵ operations 450 operations / hour
Analogue outputs	
Output type	0 / 4 ... 20 mA
Resolution	4 000 dots (12 bits)
Maximum impedance	500 Ω
Analogue inputs	
Input type	0 ... 20 mA
Resolution	4 000 dots (12 bits)
Input impedance	200 Ω

FEATURES

Assembly features		Environmental conditions	
Connection	Pluggable board	Operating temperature	-10 °C / +50 °C
Type of casing	Self extinguishing V0 plastic	Humidity	5 % ... 95 % (without condensation)
Protection: assembled equipment (front) unassembled equipment (side)	IP 54 IP 31	Safety	Category III-300 V AC. 520 V AC. EN 61010. Electrical shock protection by double insulation class II
Dimensions	144 x 144 x 76 mm	Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1
Weight	0,4 kg		

Harmonic decomposition up to the 31 st on the display (A)	Three-phase 50...60 Hz	Insulated inputs (ITF)	Energy	THD Measuring (V, A)	True effective value	LED Display	Digital inputs	Relay output	Leakage / Neutral current	Analogue inputs	Analogue outputs	Communications	MODBUS Protocol (RTU)	PROFIBUS Protocol	Johnson Controls Protocol	Type	Code
EXPANDIBLE EQUIPMENT																	
	•		•	•	•	•										CVM 144	M50600
	•	•	•	•	•	•										CVM 144-ITF	M50700
•	•	•	•	•	•	•										CVM 144-ITF-HAR	M50760
	•	•	•	•	•	•						TCP-IP	•			CVM 144-ITF-ETHERNET	M50750
	•	•	•	•	•	•						RS485		•		CVM 144-ITF Profibus	M50730
	•	•	•	•	•	•						RS485			•	CVM 144-ITF Johnson Controls	M50C10
COMPLETE EQUIPMENT																	
	•	•	•	•	•	•		2				RS485	•			CVM 144-ITF RS485-C2	M50710
	•	•	•	•	•	•		2			4	RS485	•			CVM 144-ITF RS485-C2-A4O	M50614
	•	•	•	•	•	•		2		2	2	RS485	•			CVM 144-ITF RS485-C2-A2I/2O	M50618
	•	•	•	•	•	•		2		2	2	TCP-IP	•			CVM 144-ITF-ETHERNET-C2-A2I/2O	M50A58
	•	•	•	•	•	•		2	•			TCP-IP	•			CVM 144-ITF-ETHERNET-C2-currents	M50751
	•	•	•	•	•	•		2		2	2	RS485		•		CVM 144-ITF Profibus-C2-A2I/2O	M50A38
	•	•	•	•	•	•		2	•			RS485		•		CVM 144-ITF Profibus-C2-Currents	M50741
	•	•	•	•	•	•		2		2	2	RS485			•	CVM 144-ITF Johnson Controls-C2-A2I/2O	M50741
	•	•	•	•	•	•		2	•			RS485			•	CVM 144-ITF Johnson Controls-C2-Currents	M50C11
INTERCHANGEABLE EQUIPMENT (for expandable equipment)																	
								2	•							Mod CVM 144 C2-Currents	M51001
								2				RS485	•			Mod CVM 144 RS485-C2	M51010
								2	•			RS485	•			Mod CVM 144 RS485-C2-Currents	M51011
							4	2				RS485	•			Mod CVM 144 RS485-C2-Digital	M51016
								2				RS232	•			Mod CVM 144 RS232-C2	M51020
								2	•			RS232	•			Mod CVM 144 RS232-C2-Currents	M51010
							4	2				RS232	•			Mod CVM 144 RS232-C2-Digital	M51010

ACCESSORIES

Management software
(see M.9)Management software
(see M.9)Measuring transformer
(see M.7)



CVMK MODULAR ANALYZER



- Panel mounted electrical system analyzer (144 x 144 mm) which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- Harmonics Measuring up to the 50th (with HAR)
- Double scale kW / MW
- Current reading using external transformers .../5A or .../1A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- Different protocols (Modbus RTU, Metasys N2, ASCII)
- Second RS-485 port option to connect I/O peripherals
- 3 x 4 digit LED / LCD displays
- Parameter display selection
- Allows selection of default page
- Multiple power supplies, Measuring ranges and current inputs
- Internal clock for setting and for three hourly tariffs (TOU)
- Option for tariffs with RED or RED-MAX modules
- Input/Output module option



*1 According to type

EXPANSION MODULE FUNCTIONS

Expansion options:



- Alarm emitter function: digital output
- Multi-converter function: analogue outputs 0 / 4 ... 20 mA

* Many of these options may be combined on one single card: consult factory

FEATURES

Power supply circuit (*)	230 / 400 V a.c. (+10% / -15%)
Consumption	3 V·A
Frequency	45 ... 65 Hz
Measuring circuit	
Rated voltage	500 V a.c. phase-neutral 865 V a.c. phase-phase
Frequency	45...65 Hz
Current circuit consumption	0,6 V·A
Rated current	I_n .../5 A (insulated input on ITF)
Permanent overload	1,2 I_n
Class	
Voltage	0,5 % ± 2 digits
Current	0,5 % ± 2 digits
Power	1 % ± 2 digits

Assembly features	
Connection	Pluggable board
Type of casing	Self extinguishing V0 plastic
Protection: assembled equipment (front) unassembled equipment (side)	IP 41 IP 31
Dimensions (mm)	144 x 144 x 66 mm
Weight	0,750 kg
Environmental conditions	
Operating temperature	-10 °C / +50 °C
Humidity	5 % ... 95 % (without condensation)
Safety	Category III-300 V AC. 520 V AC. EN 61010. Electrical shock protection by double insulation class II
Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 50081-1, EN 50082-1, EN 61010-1

Three-phase 45...65 Hz	Insulated inputs (ITF)	Voltage Measuring 500 V a.c.	THD Measuring (V, A)	True effective value	Display	Quadrants	Power supply 230/400 V a.c.	Harmonics Measuring up to 50 th (V and A)	Energy + clock	Synchronisation input / tariff change	Triple tariff	Communications	Outputs 4...20 mA	Relay outputs	Type	Code
EXPANDIBLE EQUIPMENT																
•		•		•	LCD	2	•								CVMk	M50120
•	•	•		•	LCD	2	•								CVMk-ITF	M50220
•	•	•		•	LED	2	•								CVMk-L	M50110
•	•	•		•	LED	2	•								CVM-L-ITF	M50210
				•	LCD	4	•								CVMk-4C-ITF	M50230
•	•	•	•	•	LCD	4	•								CVMk-H-ITF	M50321
•	•	•	•	•	LED	4	•								CVM-L-H-ITF	M50311
•	•	•	•	•	LCD	4	•	•							CVMk-HAR-ITF	M53310
•	•	•	•	•	LED	4	•	•							CVMk-HAR-L-ITF	M53300
INTERCHANGEABLE EQUIPMENT																
									•			RS-485			Mod CVM /ER	M50410
												RS-232			Mod CVM / 485	M50401
															Mod CVM / 232	M50402
									•			RS-485			Mod CVM / ER-485	M50411
									•			RS-232			Mod CVM / ER-232	M50412
									•			RS-485			Mod CVM / RED	M50420
									•				1		Mod CVM / ER 420-1	M50413
									•				2		Mod CVM / ER 420-2	M50414
									•				1		Mod CVM / ER C-1	M50416
									•				1	1	Mod CVM / ER C 420-1	M50415
									•	•	•	RS-485			Mod CVM / RED-MAX	M50427
									•			RS-485	1		Mod CVM / RED 420-1	M50423
									•			RS-485		2	Mod CVM / RED C-2	M50426

ACCESSORIES



Converters
(see page M5-23)



Power Studio Scada software
(see M.9)



Measuring transformer
(see M.7)



ANALOGUE I/O EQUIPMENT; DIGITAL I/O EQUIPMENT

CVM-R8C / CVM-R8D



The **CVM-R8C / CVM-R8D** are control peripherals which interact with CIRCUTOR's devices or loggers, located in the field, using their digital inputs and outputs. Their 6 potential free digital inputs offer the option to supervise the status of six dry contacts and display their statuses on management software. It also has 2 analogue inputs and 8 relay outputs which can start or stop a piece of equipment in the installation.

The device has two RS-485 communication ports one of which has MODBUS RTU communication used for communicating with management software. The second port (network port) is for communication with Measuring device (**CVMk** and **CVM BD**) in order to make decisions based on the different electrical measurements calculated by the measuring device..

Alarm program: up to fifty electrical parameter alarm conditions may be programmed using the analyzer as the determining factor. Relays with On / Off delays may even be set.

Control program: it may operate with a slave **MODBUS RTU** remotely managed by management software (**PowerStudio Scada**), or any type of electronic instruction may be internally set using its six inputs and eight outputs turning it into an automatic control device.

Type	Code
CVM-R8C + ALARM Prog.	M53501
CVM-R8C + CONTROL Prog.	M53502
CVM-R8D + CONTROL Prog.	M53512

CVM-R8A-C / CVM-R8A-D



The **CVM-R8A** is a supervision and control peripheral: it has 8 analogue inputs 0...20 mA and 2 analogue outputs 0...20 mA. It has two RS-485 communication ports one of which has MODBUS RTU communication exclusively for communicating with management software. The second port (network port) is for communication with Measuring device (CVMk and CVM BD) in order to make decisions based on the different electrical measurements calculated by the measuring device. This equipment allows analogue signals to be integrated into a SCADA system.

Type	Code
CVM-R8A-C	M53503
CVM-R8A-D	M53513

CVM-R10-C



The **CVM-R10C** is an expansion unit for the **CVM-R8** and **CVM-R8A**. It has 10 output relays, 12 digital inputs (potential free contacts) and a cable connector to connect it to a master peripheral.

Type	Code
CVM-R10-C	M53600

ACCESSORIES



Converters
(see page M5-23)



Power Studio Scada software
(see M.9)



RS-232/485 converter
(see page M5-23)

CVM-96 SP



- Panel mounted electrical system analyzer (96 x 96 mm) which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- Current reading using external transformers .../5A or .../1A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- Compatible with the Power Studio / Scada System
- 3 x 4 digit LED displays
- Allows selection of default page



*1 According to type

Single-phase 45...65 Hz	Insulated inputs (ITF)	Energy	THD Measuring (V, A)	True effective value	LED Display	Relay output	Communications	MODBUS Protocol (RTU)	Type	Code
•	•	•	•	•	•	•	•	•	CVM 96-SP	M51300
•	•	•	•	•	•	2	RS485	•	CVM 96-SP-ITF, RS485 C2	M51411

FEATURES

Power supply circuit (*)	230 V a.c. (+10% / -15%)	Assembly features	
Consumption	5 V·A	Connection	Pluggable board enchufable
Frequency	45 ... 65 Hz	Type of casing	Self extinguishing V0 plastic
Measuring circuit		Protection: assembled equipment (front) unassembled equipment (side)	IP 54 IP 31
Rated voltage	300 V a.c. phase-neutral	Dimensions (mm)	96 x 96 x 100 mm
Frequency	45...65 Hz	Weight	0,52 kg
Current circuit consumption	0,75 V·A	Environmental conditions	
Rated current	I_n .../5 A (insulated input on ITF)	Operating temperature	-10 °C / +50 °C
Permanent overload	1,2 I_n	Humidity	5 % ... 95 % (without condensation)
Class		Safety	Category III-300 V AC./520 V AC. EN 61010. Electrical shock protection by double insulation class II
Voltage	0,5 % ± 1 digits	Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 61000-63, EN 61000-6-1, EN 61010-1
Current	0,5 % ± 1 digits		
Power	1 % ± 1 digits		

ACCESSORIES



Converters
(see page M5-23)



Software PowerStudio
Scada (ver M.9)



Measuring transformer
(see M.7)

CVM-Q



- Panel mounted, class B electrical system analyzer (144 x 144 mm)
- Measuring in True Effective Value in low, medium and high voltage systems (using potential transformers) with the option to program the primary/secondary voltage ratio in the device
- Multi-range voltage Measuring inputs (150/300/500 V a.c. phase-phase) in 3 or 4 wire
- Universal power supply 110 ... 230 V a.c. / 110 ... 230 V d.c.
- Internal non-volatile 1 Mb memory for quality event recording (dips, interruptions and overvoltages)
- Type of event recording, length of event, day and time when it occurred
- Setting thresholds to define supply quality events (% in terms of U_n)
- Displayed information of occurring quality events
- Harmonic distortion rate in voltage measured (THD or D)
- Harmonic decomposition in voltage measured up to 31st
- Two relay outputs (alarm function)

- RS-485 communication (**MODBUS RTU**)
- EasyComm software used in analyzing the quality of the power supply



*1 According to type

Type	Code
CVM-Q RS232-C2-1M	M53220
CVM-Q RS485-C2-1M	M53210

FEATURES

Power supply circuit (*)	110...230 V a.c. / 110...300 V d.c.	Environmental conditions	
Voltage tolerance	+10% / -15%	Operating temperature	-15 °C / +70 °C
Consumption	10 V·A	Humidity	5 % ... 95 % (without condensation)
Frequency	45 ... 65 Hz	Assembly features	
Measuring circuit		Connection	Pluggable board
Rated voltage	150 / 300 / 500 V a.c.	Type of casing	Self extinguishing V0 plastic
Frequency	40...65 Hz	Protection: assembled equipment (front) unassembled equipment (side)	IP 55 IP 31
Measuring circuit consumption	0,25 V·A	Dimensions (mm)	144 x 144 x 76 mm
Class		Weight	0,603 kg
Voltage	0,5 % ± 2 digits	Safety	Category III-300 V AC. EN 61010. Electrical shock protection by double insulation class
Relay outputs		Standards	IEC 664, VDE 0110, UL 94 , EN 61010-1
Maximum power	750 V·A		
Maximum voltage	250 V a.c.		
Maximum current	3 A (resistive)		
Mechanical life	3 x 10 ⁵ operations		

ACCESSORIES



Converters
(see page M5-23)

Software PowerVision
(ver M.9)



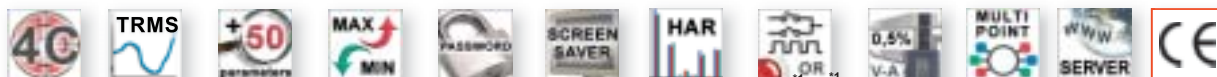
Measuring transformer
(see M.7)



CVM-MINI

- DIN rail mounted (3 modules) electrical system analyzer which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- DIN rail format with only 3 modules
- 72 x 72 mm panel mounted with front adapter
- Current reading using external transformers .../5A or .../1A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- RS-485 communication (MODBUS RTU)
- Compatible with the **Power Studio / Scada** system
- 3 line backlit LED display with magnifying glass
- Parameter display selection
- Allows selection of default page
- Universal power supply available in the "Plus" type
- Lockable

Type	Code
CVM-MINI	M52000
CVM-MINI-ITF	M52010
CVM-MINI-ITF-RS485-C2	M52021
CVM-MINI-ITF-HAR-RS485-C2	M52031



*1 According to type

FEATURES

Power supply circuit	230 V a.c. (+10% / -15%) Plus 85...265 V a.c. 95...300 V d.c.
Consumption	3 V·A
Frequency	45 ... 65 Hz
Measuring circuit	
Rated voltage	300 V a.c. phase-neutral 520 V a.c. phase-phase
Frequency	40...65 Hz
Voltage circuit consumption	0,7 V·A
Current circuit consumption	ITF 0,9 / Shunt 0,75 V·A
Rated current	I_n .../5 A / I_n .../1 A
Permanent overload	1,2 I_n
Class	
Voltage and Current Power	0,5 % ± 1 digits 1 % ± 1 digits
Environmental conditions	
Operating temperature	-10 °C / +50 °C
Humidity	5 % ... 95 % (without condensation)

Assembly features

Connection	Fixed terminals
Type of casing	Self extinguishing V0 plastic
Protection:	Built in equipment: IP 41 / Terminals: IP20
Dimensions	52,5 x 85 x 67,9 mm (3 modules)
Weight	210 g
Output transistor (2)	OOpto-insulated (open collector) NPN
Maximum operating voltage	24 V d.c.
Maximum operating current	50 mA
Maximum impulse frequency	5 impulses / second
Length of impulse	100 ms
Harmonics measurer (HAR)	Descomposition HAR V y A , 1th
Safety	Category III-300 V AC. 520 V AC. EN 61010. Electrical shock protection by double insulation class II
Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1

ACCESSORIES



Measuring transformer
(see M.7)



Software de gestión
(ver M.9)



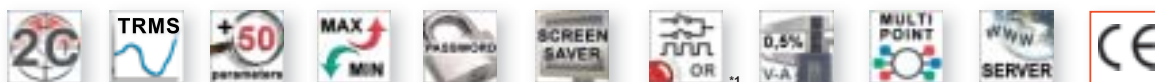
Front adapter
(see page M5-23)



CVM-BC3



- DIN rail mounted (8 modules) electrical system analyzer which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- DIN rail format (8 modules)
- Harmonics measurement
- Current reading using external transformers .../5A or .../1A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- RS-485 communications (MODBUS RTU)
- Compatible with the **Power Studio / Scada** system
- 3 line backlit LCD display
- Allows selection of default page



*1 According to type

Three-phase 45...65 Hz	True effective value	Insulated inputs (ITF)	Energy	THD Measuring (V, A)	Maximum demand	LCD Display	Quadrants	Communications RS485	Relay outputs	Type	Code
•	•	•	•	•	•	•	2	•	•	CVM-BC3	M52400
•	•	•	•	•	•	•	2	•	•	CVM-BC3-ITF	M52500
•	•	•	•	•	•	•	2	•	2	CVM-BC3-ITF-RS485-C2	M52511

FEATURES

Power supply circuit (*)	230 V a.c. (+10% / -15%)
Consumption	5 V·A
Frequency	45 ... 65 Hz
Measuring circuit	
Rated voltage	300 V a.c. phase-neutral 520 V a.c. between phases
Frequency	45...65 Hz
Current circuit consumption	0,75 V·A
Rated current	I_n .../5 A (insulated input on ITF) (option: .../1 A)
Permanent overload	1,06 I_n
Class	
Voltage	0,5 % ± 2 digits
Current	0,5 % ± 2 digits
Power	1 % ± 2 digits

Assembly features

Connection	Metal terminals, "Posidriv" screws
Type of casing	Self extinguishing V0 plastic
Protection: built in equipment / terminals	IP 41 IP 20
Dimensions (mm)	140 x 110 x 70 mm (8 modules)
Weight	0,4 kg
Environmental conditions	
Operating temperature	-10 °C / +50 °C
Humidity	5 % ... 95 % (without condensation)
Safety	Category III-300 V AC. 520 V AC. EN 61010. Electrical shock protection by double insulation class II
Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1

ACCESSORIES



Converters
(see page M5-23)



Software PwerStudio Scada
(ver M.9)



Measuring transformer
(see M.7)

CVM-BD



- DIN rail mounted (8 modules) electrical system analyzer which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- DIN rail format (8 modules)
- Harmonics measurement
- Double scale kW / MW
- Current reading using external transformers .../5A or .../1A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- Different protocols (Modbus RTU, Modbus TCP, Metasys N2)
- Second RS-485 port option to connect I/O peripherals
- Compatible with the Power Studio / Scada system
- 3 line backlit LCD display
- Parameter display selection
- Allows selection of default page
- Internal clock for setting and for three hourly tariffs (TOU)
- Option for tariffs with RED or RED-MAX modules



*1 According to type

(Codes and types on page M5-19)

FEATURES

	CVM-BD
Power supply circuit (*)	230 V a.c. (+10% / -15%)
Consumption	6 V-A
Frequency	45 ... 65 Hz
Measuring circuit	
Rated voltage	500 V a.c. phase-neutral 866 V a.c. between phases
Frequency	45...65 Hz
Current circuit consumption	0,6 V-A
Rated current	I_n .../5 A (insulated input on ITF) (option: .../1 A)
Permanent overload	1,2 I_n
Class	
Voltage	0,5 % ± 2 digits
Current	0,5 % ± 2 digits
Power	1 % ± 2 digits

(*) Other power supplies, on request

	CVM-BD
Assembly features	
Connection	Metal terminals, "Posidrive" screws
Type of casing	Self extinguishing V0 plastic
Protection: built in equipment / terminals	IP 41 / IP 20
Dimensions (mm)	140 x 110 x 70 mm (8 modules)
Weight	0,52 kg
Environmental conditions	
Operating temperature	-10 °C / +50 °C
Humidity	5 % ... 95 % (without condensation)
Safety	
	Category III-300 V AC. 520 V AC. EN 61010. Electrical shock protection by double insulation class II
Standards	
	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1

ACCESSORIES



Converters
(see page M5-23)



Power Studio Scada software
(see M.9)



Measuring transformer
(see M.7)



CVM-BDM



- DIN rail mounted (8 modules) electrical system analyzer which measures, calculates and displays the main electrical parameters in balanced and unbalanced three-phase systems
- DIN rail format (8 modules)
- Calculates flicker per phase
- Harmonics Measuring up to the 15th
- Double scale kW/MW
- Current reading using external transformers .../5A or .../1A (insulated inputs, according to type)
- Option for measuring in Low and Medium Voltage systems
- Internal 1 Mb memory
- Records selected variables in each time period
- RS-485 communication with MODBUS RTU protocol (in RS-485) & Zmodem for downloading files
- Second RS-485 port option to connect I/O peripherals
- Compatible with the **Power Vision**
- 3 line backlit LCD display
- Allows selection of default page



*1 According to type

FEATURES

	CVM-BDM
Power supply circuit (*)	230 V a.c. (+10% / -15%)
Consumption	6 V·A
Frequency	45 ... 65 Hz
Measuring circuit	
Rated voltage	500 V a.c. phase-neutral 866 V a.c. between phases
Frequency	45...65 Hz
Current circuit consumption	0,6 V·A
Rated current	I_n .../5 A (insulated input on ITF) (option: .../1 A)
Permanent overload	1,2 I_n
Class	
Voltage	0,5 % ± 2 digits
Current	0,5 % ± 2 digits
Power	1 % ± 2 digits
Internal memory	1 MB

(*) Other power supplies, on request

	CVM-BDM
Assembly features	
Connection	Metal terminals, "posidriv" screws
Type of casing	Self extinguishing V0 plastic
Protection: built in equipment / terminals	IP 41 IP 20
Dimensions (mm)	140 x 110 x 70 mm (8 modules)
Weight	0,52 kg
Environmental conditions	
Operating temperature	-10 °C / +50 °C
Humidity	5 % ... 95 % (without condensation)
Safety	
Category III-300 V AC. 520 V AC. EN 61010. Electrical shock protection by double insulation class II	
Standards	
IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1	

ACCESSORIES



Converters
(see page M5-23)

Software PowerVision
(ver M.9)



Measuring transformer
(see M.7)

CVM - BD CVM-BDM

Three-phase 45...65 Hz	True effective value	Insulated inputs (ITF)	Energy	Clock	THD Measuring / D (V, A)	Maximum demand	Flicker Measuring	Harmonics measurer	LCD Display	Quadrants	Communications RS232	Communications RS485	Communications RS485-RED	Internal memory (MB)	Relay outputs	Outputs 4-20 mA	Type	Code
CVM-BD																		
•	•	•	•	•	•	•			•	4	op	•	•				CVM-BD-RED-H	M52110
•	•	•	•	•	•	•			•	4	op	•	•		2		CVM-BD-RED-C2-H	M52111
•	•	•	•	•	•	•			•	4							CVM-BD-H	M52100
•	•	•	•	•	•	•			•	4						4	CVM-BD-420-4-H	M52104
•	•	•	•	•	•	•			•	4						8	CVM-BD-420-8-H	M52105
•	•	•	•	•	•	•			•	4	op	•	•		1	1	CVM-BD-RED-C420-H	M52122
•	•	•	•	•	•	•			•	4	op	•	•			2	CVM-BD-RED-420-H	M52123
CVM-BDM																		
•	•	•	•	•	•	•	•	•	•	4	op	•		1			CVM-BDM	M52210
•	•	•	•	•	•	•	•	•	•	4	op	•		1	2		CVM-BDM-C2	M52211
•	•	•	•	•	•	•	•	•	•	4	op	•		1	1	1	CVM-BDM-C420	M52212
•	•	•	•	•	•	•	•	•	•	4	op	•		1		2	CVM-BDM-420	M52213



CVM-SP

- DIN rail mounted (4 modules) electrical system analyzer which measures, calculates and displays the main electrical parameters in single-phase systems
- DIN rail format (only 4 modules)
- Direct current Measuring using toroidal current transformers built into the equipment
- RS-485 communication (MODBUS RTU)
- Compatible with the **Power Studio / Scada** System
- 3 x 4 digit LCD displays
- Allows selection of default page



Single-phase 50...60 Hz	Insulated inputs (ITF)	Energy	THD Measuring (V, A)	True effective value	Display LCD	Relay outputs	Communications RS-485	Maximum demand	Type	Code
•	•	•	•	•	•			•	CVM-SP 25A	M53001
•	•	•	•	•	•			•	CVM-SP 100 A	M53004
•	•	•	•	•	•	1	•	•	CVM-SP-RS485 C 25 A	M53011
•	•	•	•	•	•	1	•	•	CVM-SP-RS485 C 100 A	M53014

FEATURES

Power supply circuit (*)	230 V a.c. (+20% / -15%)
Consumption	3 V·A
Frequency	50 ... 60 Hz
Measuring circuit	
Rated voltage	230 V a.c.
Frequency	45...65 Hz
Current circuit consumption	0,75 V·A
Rated current	According to type
Permanent overload	1,2 I _n
Class	
Voltage	0,5 % ± 2 digits
Current	0,5 % ± 2 digits
Power	1 % ± 2 digits

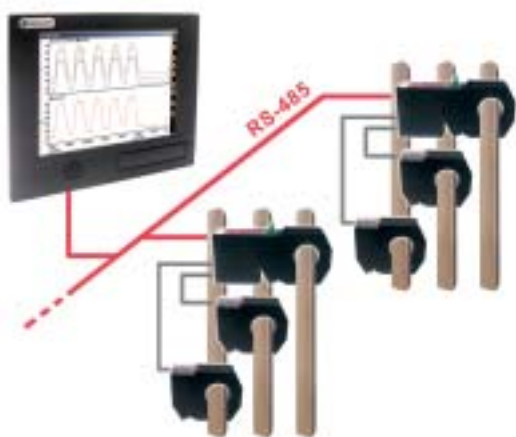
Assembly features

Current cables input	Maximum 11 mm φ
Type of casing	Modular Self extinguishing V0 plastic
Protection: built in equipment / terminals	IP 41 IP 20
Dimensions (mm)	70 x 80 x 75 mm (4 modules)
Weight	0,250 kg
Environmental conditions	
Operating temperature	-10 °C / +50 °C
Humidity	5 % ... 95 % (without condensation)
Safety	Category III-300 V AC. / 520 V AC. EN 61010. Electrical shock protection by double insulation class II
Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 50081-1, EN 50082-1, EN 61010-1

ACCESSORIES

Converters
(see page M5-23)Software PowerStudio Scada
(ver M.9)Measuring transformer
(see M.7)

POWER NET SYSTEM



- POWER NET is a multi-analyzer used on electrical systems
- which can include up to 32 analyzers connected into one single measuring package
- It has a self detecting system for Measuring units (**Power Net-35, Power Net-70, Power Net-90-35, Power Net-90-70**) for easy installation
- It is a user friendly system analyzer which has the user's installation diagram on a touch screen
- It has an internal memory for energy studies
- Direct current Measuring up to 1000 A
- Measuring points are made up of a **Power Net** and 2 **TC-PowerNet**



*1 According to type / *2 Using accessories

TOUCHNET station			M59921
Power Net			
Useful diameter ϕ (mm)	Current (A)	Type	Code
35	50	Power Net-35-50	M52621
35	100	Power Net-35-100	M52622
35	250	Power Net-35-250	M52623
70	500	Power Net-70-500	M52624
70	1000	Power Net-70-1000	M52625

Power Net - 90			
Useful diameter ϕ (mm)	Current (A)	Type	Code
35	50	Power Net-90-35-50	M52611
35	100	Power Net-90-35-100	M52612
35	250	Power Net-90-35-250	M52613
70	500	Power Net-90-70-500	M52614
70	1000	Power Net-90-70-1000	M52615
TC-Power Net			
35	50	TC-Power Net-35-50	M52631
35	100	TC-Power Net-35-100	M52632
35	250	TC-Power Net-35-250	M52633
70	500	TC-Power Net-70-500	M52634
70	1000	TC-Power Net-70-1000	M52635

FEATURES

TOUCHNET	
Power supply source	
Input	90-264 V a.c. , 47-63 Hz
Output	5 V / 4 A, +12 / 2 A
Current	Max. 3.0 a 115 V a.c.
Connectors	
Keypad	PS/2 Keyboard
Mouse	PS/2 Mouse
Series port	RS-232
Series port	RS-232 / 422 / 485 (jumpers)
Parallel port	Conector 25-pin D-Sub
USB	3 puertos USB
LAN adaptor	RJ-45 (10 / 100 Base-T)

ACCESSORIES



Measuring transformer
(see M.7)



ENERGY WEB SERVER



Electrical parameters Web Server.

Using its non volatile, cyclical internal memory (8 or 16 Mb according to type), it records data from up to 32 system analyzers connected to the RS-485 port on the unit.

10baseT Ethernet connection using RJ45 connector.

It has an internal firmware application, written in Java, which allows the user to:

- Display all electrical parameters from the system analyzers in the field, in real time
- Draw graphs and tables for historical data using files saved in the memory
- Connect the Web Server to a local in house system (LAN) or publish this IP making the equipment accessible from any Internet access point

The equipment does not require any external software for the application because the system editor is built into the unit. The equipment may be queried by more than one user at the same time using a conventional Internet browser (multi-user).

The System Analyzers compatible with the **Energy Web Server** system are:

- **CVM 144** – System Analyzer, three-phase (see page M5-8)
- **CVM 96** – System Analyzer, three-phase (see page M5-7)
- **CVM Q** – Class B Electrical Power Supply Quality Analyzer (see page M5-14)



Type	Code
Energy Web Server 8: stores up to 30 days' information with an average of 15 minutes from 16 pieces of equipment	M54200
Energy Web Server 16: stores up to 30 days' information with an average of 15 minutes from 32 pieces of equipment	M54210
PS-EWS: 7.2 V DC 1 A rechargeable battery accessory via the Energy Web Server. Once charged, 60 minutes supply without mains supply. Charge time not less than 36 hours	M59911

FEATURES

Power supply circuit (*)	230 / 400 V a.c. (+10% / -15%)	Environmental conditions	
Consumption	9 V-A	Operating temperature	-10 °C / +50 °C
Frequency	45 ... 65 Hz	Humidity	5 % ... 95 % (without condensation)
Assembly features		Safety	Category III-300 V AC./520 V AC. EN 61010. Electrical shock protection by double insulation class II
Connection	Pluggable board	Standards	IEC 664, VDE 0110, IEC 801, UL 94, IEC 348, IEC 571-1, EN 50081-1, EN 50082-1, EN 61010-1
Type of casing	Self extinguishing V0 plastic		
Protection: assembled equipment (front) unassembled equipment (side)	IP 41 IP 31		
Dimensions (mm)	140 x 123 x 53 mm		
Weight	0,750 kg		

ACCESSORIES



Measuring transformer
(see M.7)

ACCESORIES

RS-232 / 485 Converter



Type	Code
RS-232/485 intelligent converter	M54020
RS-232/485 or 422 converter (RTS signal check)	M54010

- RS-232 to RS-485 system protocol converter
- BUS length of 1200 m permitted with RS-485 protocol
- Power supply 230 V a.c.
- Transmission speed: from 4,800 bps up to 38,400 bps
- RTS signal check (in intelligent model) - Power Studio

USB Converter



USB to RS-232/485 system protocol converter
Power supply via PC's USB port.
Transmission speed: from 4,800 bps up to 128,000 bps

Type	Code
USB-RS-232 converter	M54040
USB-RS-485 converter	M54050

CAR RS-485 Amplifier



- RS-485 signal amplifier
- Power supply: 12 V DC
- Transmission speed: from 4,800 bps up to 38,400 bps

Type	Code
CAR RS-485 Amplifier / repeater	M54060

TCP2RS, RS-232 / 485 – Ethernet converter



RS-232 or RS-485 to Ethernet system protocol converter
Power supply 85...265 V AC / 115...374 V DC
Ethernet speed: 10/100BaseTX
RS Bus transmission speed: from 1,200 bps up to 115,200 bps
Applications:

- RS-232 / 485 to Ethernet
- Ethernet to RS-232 / 485
- RS-232 / 485 to Ethernet to RS-232 / 485

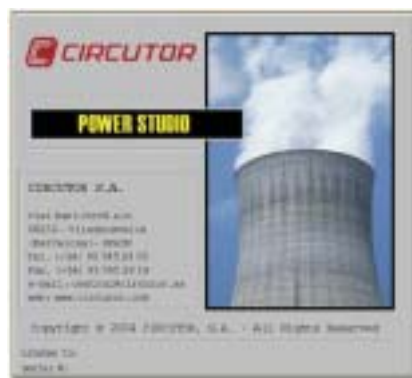
Type	Code
TCP2RS, RS-232 / 485 – ETHERNET TCP/IP converter	M54030

CVM-MINI panel adapter



Front panel adapter (72 x 72 mm) for CVM-MINI

Type	Code
CVM-MINI adapter	M52ZF1



POWERSTUDIO

PowerStudio is an abbreviated version of **PowerStudio Scada**.

Its main function is communication with **CIRCUTOR** equipment and the subsequent writing of tables and graphs of recorded histories.

PowerStudio allows:

- Visualization of power quality parameters
- Preventative maintenance of electrical systems

The main benefits of **PowerStudio** are:

- Remote parameterisation of equipment
- Real time display of measured parameters
- Displaying historical data by graphs or tables
- Printing graphs or tables
- Multi-point software (Web Server) using static screens
- XML server and DDE built in (used for data exchange with other applications on the market)
- Highly versatile and easy to use
- Access via the Internet with password protection with ability to create access profiles

With **PowerStudio**, the user is in complete control of the system, knowing the status of the power lines including the system's overall consumption of Low voltage and Medium voltage loads, in real time.

PowerStudio supplies the user with data that can be used to schedule preventive maintenance of which a number of electrical parameters may be checked (see table on the right).

An intricate part of this system's supervision includes assessment of the various electrical service parameters achieved by using the correct metering devices.

PARAMETERS	UNIT	L1	L2	L3	III
Phase-neutral voltage	V	•	•	•	
Phase-phase voltage	V	•	•	•	
Current	A	•	•	•	•
Frequency	Hz		•		
Active power	kW	•	•	•	•
Inductive reactive power	kvar L	•	•	•	•
Capacitive reactive power	kvar C	•	•	•	•
Apparent power	kV·A	•	•	•	•
Power factor	PF	•	•	•	•
Power demand	Pd			•	
Neutral current	I_N			•	
Harmonic decomposition		•	•	•	
Voltage THD	% THD - V	•	•	•	
Current THD	% THD - A	•	•	•	
kWh (consumed and generated)	Wh				•
kvarh L (consumed and generated)	varh				•
kvarh C (consumed and generated)	varh				•
kVAh (consumed and generated)	VAh				•

General electrical parameters measured and calculated by the **CVM** series

AVAILABLE DRIVERS		
Equipment	Division	PowerStudio / PowerStudio Scada
CVM-NRG96	Measurement	•
CVM-MINI	Measurement	•
CVM-96 III / Ethernet	Measurement	•
CVM-144 III / Ethernet	Measurement	•
CVM-BC / BC3	Measurement	•
CVM-B / BD	Measurement	•
CVMk / HAR	Measurement	•
CVM-R8 C / A	Measurement	•
DH96	Measurement	•
LM50-TCP	Measurement	•
LM24-M	Measurement	•
MK	Measurement	•
RGU-10	Protection and Control	•
CBS-8	Protection and Control	•
CDR-8	Protection and Control	•
RRM-C	Protection and Control	•
CIRWATT	Quality & Metering	•

PowerStudio Scada Software

The installation of **CIRCUTOR** System Analyzers aims to cover three important requirements:

- Energy supervision in industrial environments
- Preventative maintenance on electrical lines and installations
- Allocating departmental costs or production process costs

In order to attain these objectives and due to the large volume of information which each Measuring station brings, software or a control application will be necessary, using a centralised data collection system, which seeks to process the data and write reports in order to adopt preventative or corrective measures in the installation. For this reason **CIRCUTOR** has developed the Power Studio Scada software for complete energy management.

MAIN FEATURES

• Remote programming of equipment

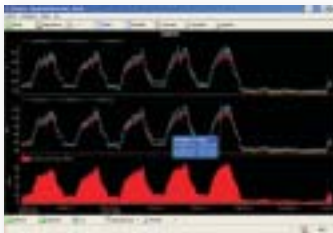
On-line programming of all connected devices, configuring all of the devices from a central control station.

The following may be programmed from **PowerStudio Scada**: voltage and current transformation ratios, digital outputs, analogue inputs/outputs, etc.



• Real time display of parameters

PowerStudio Scada allows the real time display of all equipment showing system parameters and the status of the electrical distribution lines, in real time. This is possible because PowerStudio Scada is constantly communicating with the equipment (polling). The display may be digital (numerical) or analogue (bars) indicating, in colors, equipment which are operating outside their limits (red, orange, green).



• Histories

Automatic recording of histories without the need for programming (from when a piece of equipment is added its parameters are recorded by the software). Creation of tables and/or graphs based on the recorded data (grouped by day, week or month). Using the information represented the development of any electrical parameter or process may be shown over time including displaying the increase in the totalled variable over time (energy). Option for printing any table or graph generated.

• Alarm module

With the alarm module and a preset programming, the user may display, in real time, any incident that may occur in the installation. The alarms may be associated with any integrated parameters in the software.

• Multi-point software (web server)

Internal web server allowing all in-house system users (LAN) to display data offered by Power Studio Scada in real time or to consult recorded histories. Unlimited number of users and the option to create access filter to limit the published information.

• Built in DDE and XML server

For dynamic data exchange to integrate energy supervision into an overall control system.



• Construction of personalized screens

These screens may show anything from single wire diagrams of the installation right up to personalized screens simulating a production process. In this way parameter or status display labels may be attached to indicate the status of a specific point in the installation or line.

Unlimited number of personalized screens. Option for creating synchronized display screens for each point in the installation.

• Remote control functions

By using **CIRCUTOR** equipment there is the option to carry out remote control functions on parts of the installation (forcing them to start or stop).

• Report generator and bill simulator module

Power Studio Scada has the most powerful report generator and bill simulator on the market. Any variable logged and recorded by the software is stated on a summary report where anything from energy consumption, over a predetermined period of time, up to a summary of events or incidents may be included.

Personalised reports for each. Mathematical functions may be applied to the log variables to obtain production ratios or consumption receipts for an issued electrical bill.

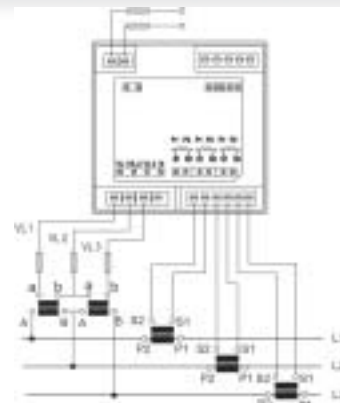
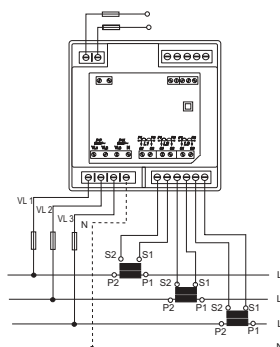
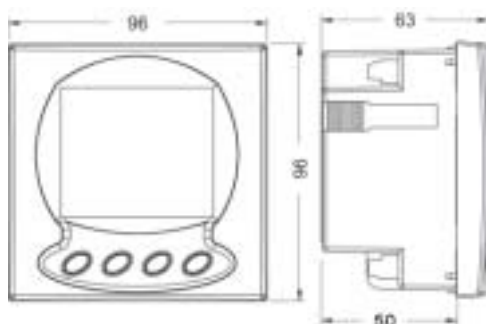
• Highly versatile and very easy to use

PowerStudio Scada is an easy and intuitive tool. Creating a Scada application does not require programming knowledge because the addition of new devices (meters / controllers), making SCADA screens and compiling reports does not require any form of training in data acquisition systems. The user interface is via an intuitive system of vertical menus.

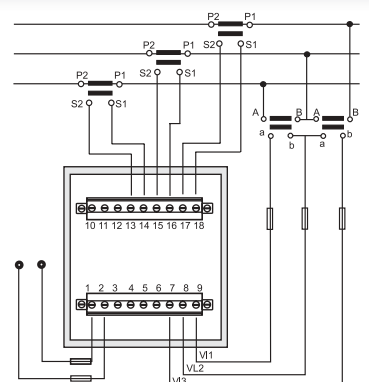
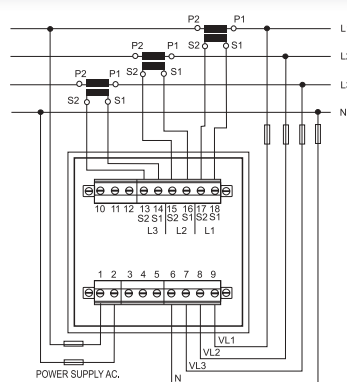
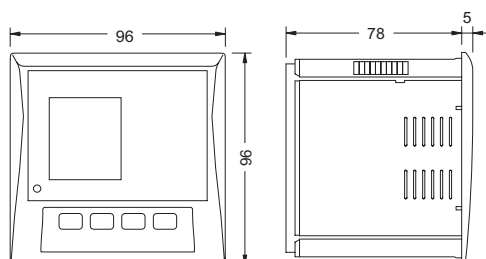


DIMENSIONS / CONNECTIONS

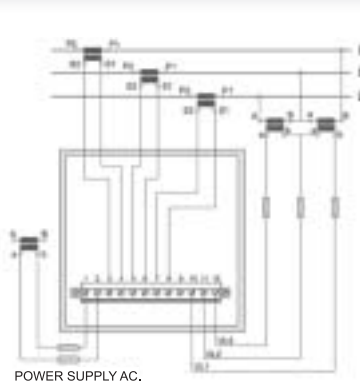
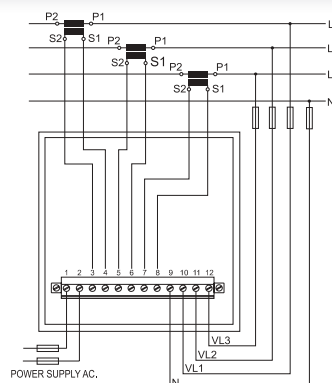
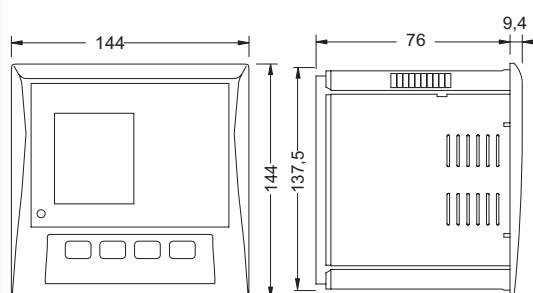
CVM-NRG96



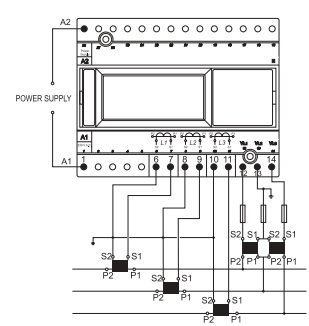
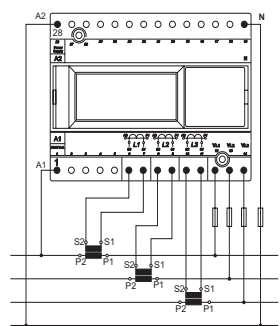
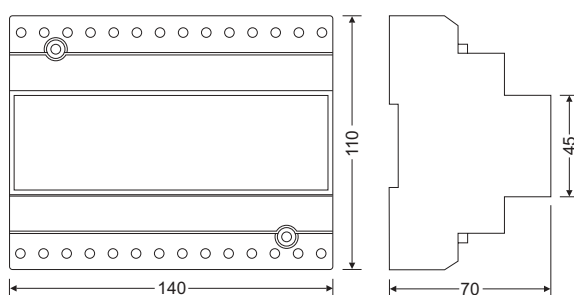
CVM-96



CVM-144

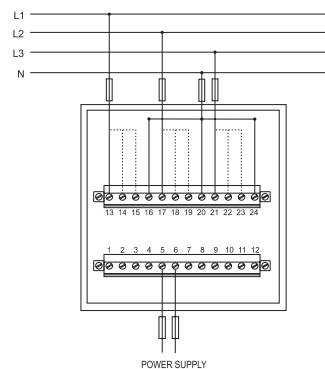
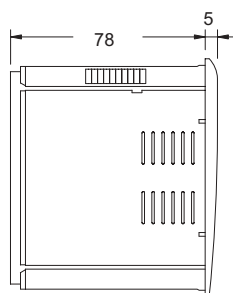
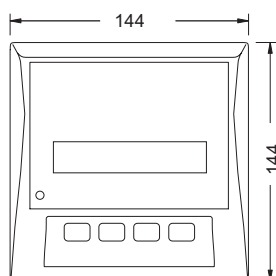


CVM-BC3/BD/BDM

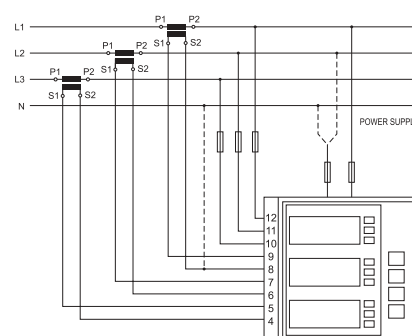
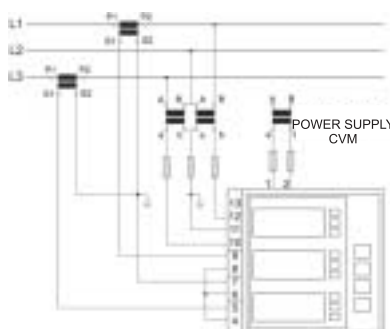
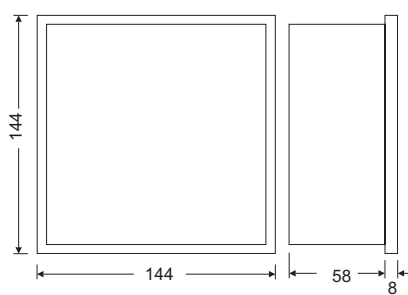


DIMENSIONS / CONNECTIONS

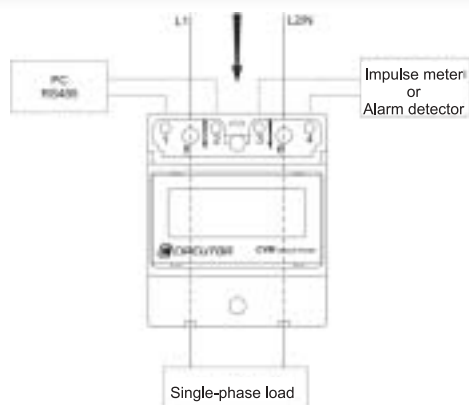
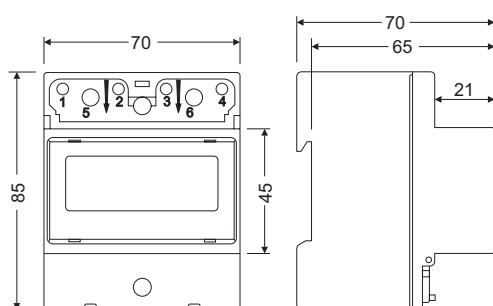
CVM-Q



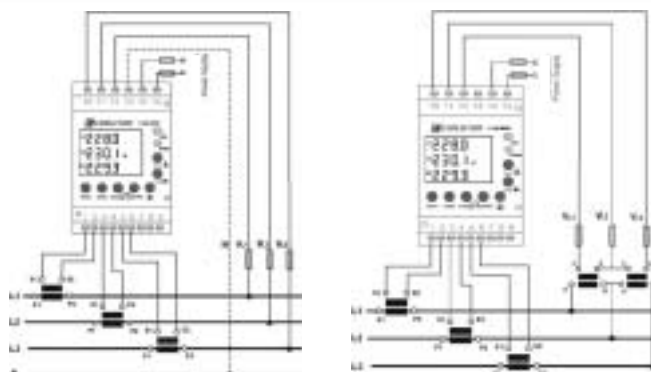
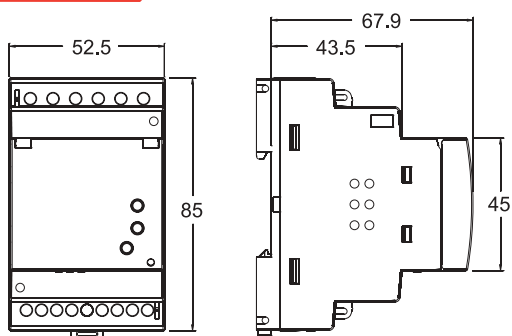
CVMK



CVM-SP



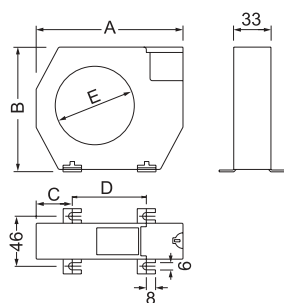
CVM-MINI





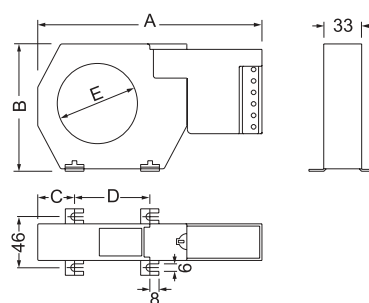
DIMENSIONS / CONNECTIONS

TC-POWER NET



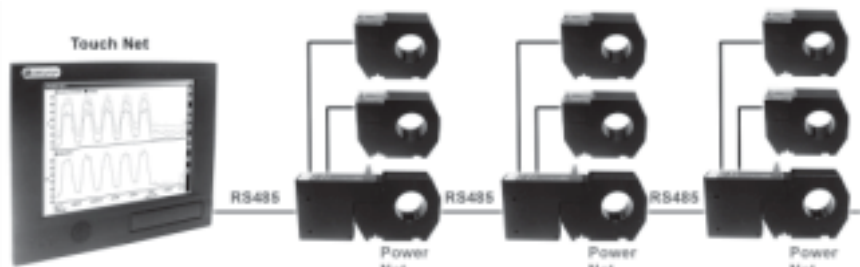
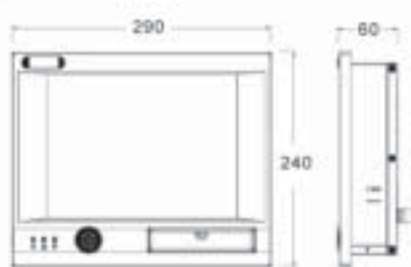
Type	A	B	C	D	E
TC-PowerNet-35	100	79	26	48,5	35
TC-PowerNet-70	130	110	32	66	70

POWER NET

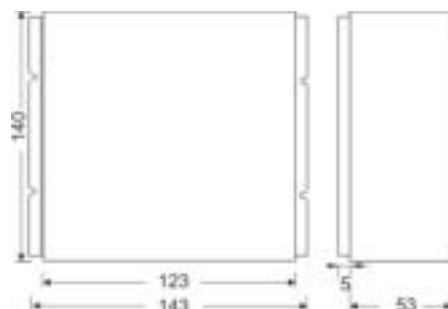


Type	A	B	C	D	E
PowerNet-35	166	79	26	48,5	35
PowerNet-70	196	110	32	66	70

TOUCH NET



ENERGY WEB SERVER



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