MEASUREMENT AND CONTROL

Fixed power analyzers

Measuring transformers and shunts

Control devices

Management software

Portable power analyzers

Digital instruments

Analogue instruments

Fixed power analyzers

		CVM-A1500 CVM-A1500A	CVM-B150 CVM-B100	CVM-C10	CVM-C4	CVM-E3-MINI	Line-CVM-D32	CVM NET	CVM NET4+	CEM-C6
										
Mounting	Panel (mm)	144x144	144x144 / 96x96	96x96	96x96	OP (72x72)	OP (72x72)	OP (72x72)	–	–
	DIN rail (modules)	–	–	–	–	3	3	3	6	1
AC Measurement	Three-phase 3/4 wires	Config	Config	Config	Config	Config	Config.	•	•	–
	Single-phase	Config	Config	Config	Config	Config	Config.	–	•	•
	Quadrants	4	4	4	4	4	4	4	4	4
	Hamonics	63	50	31	-	31	40	–	15	–
	Phase parameters	•	•	•	•	•	•	•	•	•
	Maximum demand	•	•	•	–	•	•	•	•	–
	Tariffs	3	3	3	2	2	1	1	1	1
	Hours, cost, $kgCO_2$	•	•	•	–	•	•	–	–	–
Voltage input	Direct (V)	600 V_{ph-N}* 1000 V_{ph-ph}	600 V_{ph-N}* 1000 V_{ph-ph}	300 V_{ph-N} 520 V_{ph-ph}	230 V_{ph-N} 400 V_{ph-ph}	300 V_{ph-N} 520 V_{ph-ph}	300 V_{ph-N} 520 V_{ph-ph}	300 V_{ph-N} 520 V_{ph-ph}	300 V_{ph-N} 520 V_{ph-ph}	230 V_{ph-N}
	Indirect (V)	Config.	Config.	Config.	Config.	Config.	Config.	Config.	Config.	-
Current Input	Direct	–	–	–	–	–	–	–	–	100 A
	Indirect (ITF)	●	●	T	●	T	●	T	–	–
	MC System (/250 mA)	●	●	T	–	T	●	T	•	–
	Rogowski sensors	T	–	T	–	T	–	–	–	–
Communications	RS-485	•	•	•	•	T	•	•	•	•
	TCP/IP	•	OP	–	–	T	–	–	–	–
	WIFI	–	–	–	–	T	–	–	–	–
	web server	•	OP	–	–	T	–	–	–	–
	APP	–	–	–	–	–	–	–	–	–
	Bluetooth	–	–	–	–	T	–	–	–	–
Protocols	ModBus/RTU	●	●	●	●	T	●	●	●	●
	ModBus/TCP	OP	OP	–	–	T	–	–	–	–
	XML	•	OP	–	–	–	–	–	–	–
	MBUS	OP	OP	–	–	–	–	–	–	–
	BACnet	•	•	•	–	•	–	–	–	–
	Profibus	OP	OP	–	–	–	–	–	–	–
	LonWorks	OP	OP	–	–	–	–	–	–	–
Otthers	Display	Colour graph	Colour graph	Custom LCD	LED	LCD	TFT RGB	–	–	LCD
	Expandible	•	•	–	–	–	•	–	–	–
Optional	Digital inputs (n.max)	2	2	2	2	1(T)	–	–	–	–
	Digital outputs (n.max)	4	4	4	4	1(T)	2(OP*1)	2	4	–
	Analogue inputs (n.max)	OP	OP	–	–	–	(OP*1)	–	–	–
	Analogue outputs (n.max)	OP	OP	–	–	–	(OP*1)	–	–	–
	Historical data record	•	OP	–	–	–	(OP*1)	–	–	–
Standards	UL certificated	•	•	•	–	–	–	–	–	–
	Measurement in acc. with MID	•	•	•	–	•	•	–	–	T
	Measurement in acc with IEC 61000-4-30	T	–	–	–	–	–	–	–	–
	Calibration certificate in compliance with IEC 61000-4-30	T	–	–	–	–	–	–	–	–
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(T) - depending on the type / (OP) - Optional

Panel mounted power analyzers

CVM-A

Power quality analyzers, colour display, panel mounted

Power supply 100...240 Vac / 120...300 Vdc, 600 V_{Ph-N} / 1000 V_{Ph-Ph} measurement

Type	Code	Energy accuracy	Input current	Tr. output	Relay output	Digital inputs	Commu-nications	Protocol	Harmo-nics	Certifi-cation	Memory
CVM-A1500A-ITF-485-ICT2	[2] M563110000A00	0,2S (.../5A)	.../5 A | .../1 A | 250 mA	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	IEC 61000-4-30 (Class A)	200 MB
CVM-A1500AFLEX-485-ICT2	[2] M563510000A00	1	Rogowski	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	IEC 61000-4-30 (Class A)	200 MB
CVM-A1500A-SDC-ITF-485-ICT2	[2] M5631100F0A00	0,2S (.../5A)	.../5 A | .../1 A | 250 mA	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	IEC 61000-4-30 (Class A)	200 MB
CVM-A1500-ITF-485-ICT2	[*] M56311.	0,2S (.../5A)	.../5 A | .../1 A | 250 mA	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	-	200 MB
CVM-A1500-FLEX-485-ICT2	[*] M56351.	1	Rogowski	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	-	200 MB

Four-quadrant measuring device with PowerStudio embedded. Integrated Datalogger module. Optional Modbus/TCP. 200MB Internal memory
See expansion modules and accessories (sealing gaskets) for CVM-A/CVM-B.
Precision power without connected sensors.

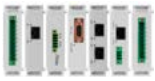
CVM-B

Power analyzer, colour display, panel mounted

Power supply100...240 Vac / 120...300 Vdc, 600 V_{Ph-N} / 1000 V_{Ph-Ph} measurement

Type	Code	Size (mm)	Energy accuracy	Input current	Transistor output	Relay output	Digital inputs	Communi-cations	Protocol
CVM-B150-ITF-485-ICT2	[*] M56111.	144 x 144	0,5 S (.../5A)	.../5 A | .../1 A | .../250 mA	2	2	2	RS-485	Modbus/RTU | BACnet
CVM-B100-ITF-485-ICT2	[*] M56011.	96 x 96	0,5 S (.../5A)	.../5 A | .../1 A | .../250 mA	2	2	2	RS-485	Modbus/RTU | BACnet

4-quadrant measuring unit. See expansion modules and accessories (Sealing gaskets) for CVM-A / CVM-B



M-CVM-AB

Expansion modules for CVM-A and CVM-B

Type	Code	Transistor output	Relay output	Digital inputs	Analogue Input	Analog output	Commu-nications	Protocol	Memory
M-CVM-AB-8I-8OTR	[*] M56E01.	8	-	8	-	-	-	-	-
M-CVM-AB-8I-8OR	[*] M56E02.	-	8	8	-	-	-	-	-
M-CVM-AB-4AI-8AO	[*] M56E03.	-	-	-	4 (0/4 ... 20 mA)	8 (0/4 ... 20 mA)	-	-	-
M-CVM-AB-Modbus-TCP (bridge)	[*] M56E05.	-	-	-	-	-	Ethernet	Modbus/ TCP (gateway to RS485)	-
M-CVM-AB-Modbus-TCP (switch)	[*] M56E0A.	-	-	-	-	-	Ethernet	Modbus/TCP (gateway to TCP)	-
M-CVM-B-DATALOGGER	[*] M56E06.	-	-	-	-	-	Ethernet	Webserver | HTML5 | XML	200 MB
M-CVM-AB-MBUS	[*] M56E07.	-	-	-	-	-	M-BUS	M-BUS	-
M-CVM-AB-LonWorks	[*] M56E08.	-	-	-	-	-	LonWorks	LonTalk (ISO/ IEC 14908, ANSI/ EIA 7091)	-
M-CVM-AB-Profibus	[*] M56E09.	-	-	-	-	-	DB-9	ProfiBus	-

Accessories

Type	Code	Description
IP65-AB-96	[*] M5ZZ5U.	IP 65 airtight seal for CVM-AB (96x96)
IP65-AB-144	[*] M5ZZ5V.	IP 65 airtight seal for CVM-AB (144x144)

CVM-C10

Power analyzer, panel mounted 96 x96

96x96 panel - 85...265 Vac / 95...300 Vdc power supply, 300 V_{Ph-N} / 520 V_{Ph-Ph} measurement

Type	Code	Measuring Channels	Input current	Transistor output	Relay output	Digital inputs	Commu-nications	Protocol	Harmonics
CVM-C10-ITF-485-ICT2	[*] M55911.	3	.../5 A | .../1 A	2	2	2	RS-485	Modbus/RTU | BACnet	31
CVM-C10-MC-485-ICT2	[*] M55921.	3	.../250 mA	2	2	2	RS-485	Modbus/RTU | BACnet	31
CVM-C10-ITF-IN-485-IC2	[*] M55942.	4	.../5 A | .../1 A	-	2	2	RS-485	Modbus/RTU | BACnet	31
CVM-C10-mV-485-ICT2	[*] M559210000V00	3	.../333 mV	2	2	2	RS-485	Modbus/RTU | BACnet	31
CVM-C10-FLEX-IN-485-I2	[*] M55963.	4	Rogowski	-	-	2	RS-485	Modbus/RTU | BACnet	31

FLEX-MAG

Flexible sensors for FLEX devices

Type	Code	Measurement Range (A)	A Max.	Usefull diam.(mm)	Lenght
FLEX-MAG70	[*] M818110041500	1000 A / 100 mV	2000 (*1) 10000 (*2)	70	2 m
FLEX-MAG120	[*] M818120041500	1000 A / 100 mV	2000 (*1) 10000 (*2)	120	2 m
FLEX-MAG70-5M	[*] M818110041900	1000 A / 100 mV	2000 (*1) 10000 (*2)	70	5 m
FLEX-MAG120-5M	[*] M818120041900	1000 A / 100 mV	2000 (*1) 10000 (*2)	120	5 m

(*1) Series CVM-C10 and CVM-E3-MINI

(*2) Serie CVM-A1500/A1500A

Accessories

Type	Code	Description
IP64-C10-96	[*] M5ZZ5T.	IP 64 airtight seal for CVM-C10 (96x96)

CVM–C4

Power analyzer, panel mounted 96x96

96x96 panel - 80...270 Vac / 80...270 Vdc power supply

Type	Code	Measuring Channels	Input current	Transistor output	Relay output	Digital inputs	Communi-cations	Protocol
CVM-C4-ITF-485-ICT2	[C] M52706.	3	.../5 A | .../1 A	2	2	2	RS-485	Modbus/RTU

4-quadrant measuring unit. Can be used to program the voltage transformer ratio

TABLE OF ADDITIONAL FEATURES

CVM-B, CVM-A

M 5 X X X X 0 0 X X X X X				
Code		Internal code		Delivery time
Power supply voltage	Standard (100...270 V_{ac} / 120...300 V_{dc}	0		-
	20...120 V_{dc}	F		1
Others	Metric fork terminals 3 - CAT III 300 V		B T	-

CVM C10

M 5 X X X X 0 0 X			
Internal code			Delivery time
Power supply voltage	Standard (85...265 V_{ac} / 120...300 V_{dc}	0	-
	20...120 V_{dc}	F	1

CVM-C4

M 5 X X X X 0 0 X			
Code		Internal code	Delivery time
Power supply voltage	Estándard (80...270 V_{ac} / $_{dc}$)	0	-
	18 ...36 V_{dc}	3	1

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

DIN rail power analyzers

CVM-E3-MINI

Power analyzer, three-phase DIN rail

Type	Code	Power supply	Input current	Transistor output	Digital inputs	Communications	Protocol	Harmonics
CVM-E3-MINI-ITF-485-IC	[*] M56414.	207...253 Vac	.../5 A | .../1 A	1	1	RS-485	Modbus/RTU | BACnet	31
CVM-E3-MINI-MC-485-IC	[*] M56424.	207...253 Vac	.../250 mA	1	1	RS-485	Modbus/RTU | BACnet	31
CVM-E3-MINI-FLEX-485-IC	[*] M56454.	207...253 Vac	Rogowski	1	1	RS-485	Modbus/RTU | BACnet	31
CVM-E3-MINI-ITF-WiEth	[*] M56470.	90...264 Vac/Vdc	.../5 A | .../1 A	-	-	Ethernet | Wi-Fi | Bluetooth	Modbus/TCP	31
CVM-E3-MINI-MC-WiEth	[*] M56480.	90...264 Vac/Vdc	.../250 mA	-	-	Ethernet | Wi-Fi | Bluetooth	Modbus/TCP	31
CVM-E3-MINI-FLEX-WiEth	[*] M56490.	90...264 Vac/Vdc	Rogowski	-	-	Ethernet | Wi-Fi | Bluetooth	Modbus/TCP	31

Bluetooth is built into every WiEth model, which can be set up using the free MyConfig app. RS-485 models, option to switch power supplies. See table of additional features.

FLEX-MAG

Flexible sensors for FLEX devices

Type	Code	Measurement Range (A)	A Max.	Usefull diam.(mm)	Lenght
FLEX-MAG70	[*] M818110041500	1000 A / 100 mV	2000 (*1) 10000 (*2)	70	2 m
FLEX-MAG120	[*] M818120041500	1000 A / 100 mV	2000 (*1) 10000 (*2)	120	2 m
FLEX-MAG70-5M	[*] M818110041900	1000 A / 100 mV	2000 (*1) 10000 (*2)	70	5 m
FLEX-MAG120-5M	[*] M818120041900	1000 A / 100 mV	2000 (*1) 10000 (*2)	120	5 m

(*1) Series CVM-C10 and CVM-E3-MINI
(*2) Serie CVM-A1500/A1500A

Accessories

Type	Code	Description
ADP. CVM-E3-MINI/ RGU-100B/CBS-400B	[*] M5ZZF100000E3	Panel adapter CVM-E3-MINI, RGU-100B, CBS-400B (72 x 72)

CVM-NET

Power analyer, three-phase DIN rail

Analyzer without display, DIN rail (3 modules) - 230 Vac Power supply

Type	Code	Input current	Transistor output	Communications	Protocol
CVM-NET-ITF-485-C2	[*] M54B21.	.../5 A	2	RS-485	Modbus/RTU
CVM-NET-MC-ITF-485-C2	[*] M54B31.	.../250 mA	2	RS-485	Modbus/RTU
CVM-NET-333-485-C2	[*] M54B310000V00	.../333 mV	2	RS-485	Modbus/RTU

The CVM-NET-MC units require the use of efficient transformers of the MC series, which are not included in the price.

CVM-NET4+

Power analyzer, 4 analyzers in a single unit, DIN rail

Unit without display, DIN rail (6 modules) - 85...265 Vac / 95...300 Vdc Power supply

Type	Code	Input current	Transistor output	Communications	Protocol	Harmonics
CVM-NET4+-ITF-MC-RS485-C4	[*] M55782.	.../250 mA	4	RS-485	Modbus/RTU	15

Requires the installation efficient transformers of the MC series. Not included in the price Configurable, 4 three-phase channels to 12 single-phase channels

TABLE OF ADDITIONAL FEATURES

CVM NET

M	5	X	X	X	X	0	0	X		
Code							Internal code	↑	Delivery time	+ €
Power supply voltage			Standard 230 V_{ac}					0	-	
			(*) 85...265 V_{ac} 95...300 V_{dc}					C	1	

CVM-E3-MINI (With RS-485)

M	5	X	X	X	X	0	0	X		
Code							Internal code	↑	Delivery time	+ €
Power supply voltage			Standard 207...253 Vac					0	-	
			90...264 Vac/Vdc					D	1	

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

Line system

Line-CVM-D

Power analyzer, Line series

Type	Code	Measuring Channels	Input current	Transistor output	Communications	Protocol	Harmonics
Line-CVM-D32	[*] M58100.	3	.../5 A | .../1 A | .../250 mA	2	RS-485 | Bus-Line	Modbus/RTU	40

Bus-Line: RS-485 communications system, with lateral side connector between modules

New

Line-M

Expansion modules, Line system

Type	Code	Transistor output	Relay output	Digital inputs	Analogue Input	Analog output	Communi-cations	Protocol
Line-M-4I0-T	[*] M58E01.	4	-	4	-	-	Bus-Line	Modbus/RTU
Line-M-4I0-R	[*] M58E02.	-	4	4	-	-	Bus-Line	Modbus/RTU
Line-M-8I6O-R	[*] M58E08.	-	6	8	-	-	Bus-Line	Modbus/RTU
Line-M-4I0-A	[*] M58E03.	-	-	-	4 (0/4 ... 20 mA)	4 (0/4 ... 20 mA) |4 (0/2 ... 10 Vdc)	Bus-Line	Modbus/RTU
Line-M-4I0-RV	[*] M58E04.	-	4	4 (230 V)	-	-	Bus-Line	Modbus/RTU
Line-M-20I	[C] M58E06.	-	-	20	-	-	Bus-Line	Modbus/RTU

Transistor I/O expansion modules, Line system

Other expansion modules, Line series

Type	Code	Description
Line-M-EXT-PS	[*] M58E0A.	110-277 V ~ (P-N)/110-480 V ~ (P-P) power supply for maximum of 3 Line devices
Line-M-3G	[*] M58E05.	3G communications modem and Bus-Line to communicate with the Line-EDS devices

3G Modem, expansion modules, Line system

Ethernet

New

Line-TCPRS1	[C] M62411.	RS-485/RS-232 to Ethernet/Wi-Fi converter (ModbusTCP/TCP/UDP) Integrated web server and mobile app (MyConfig) for configuration

Line-TCPRS1: Power supply 100... 264 VAC/100... 300 VDC

Accessories

MC1

Triple scale single-phase efficient transformers

Type	Code	Measurement Range (A)	A Max.	Class 0,5 Power (VA)	System	Usefull diam.(mm)
MC1-15-75	[*] M73112.	75	75	0.25	Single-phase	15
MC1-20-50/100/150 A	[*] M73118.	50/100/150	150	0.25	Single-phase	20
MC1-35-50/100/150 A	[*] M73116.	50/100/150	150	0.25	Single-phase	35
MC1-20-150/200/250 A	[*] M73113.	150/200/250	250	0.25	Single-phase	20
MC1-30-250/400/500 A	[*] M73114.	250/400/500	500	0.25	Single-phase	30
MC1-55-500/1000/1500 A	[*] M73115.	500/1000/1500	1500	0.25	Single-phase	55
MC1-80 1000/1500/2000 A	[*] M73117.	1000/1500/2000	2000	0.25	Single-phase	80

The MC/SC3 transformers with a 250 mA output are only compatible with CVM NET-MC, CVM-A, CVM-B, CVM-E3-MINI and CVM-C units.

MC3

Three-phase current transformers

Type	Code	A Max.	Class 0,5 Power (VA)	System	Usefull diam.(mm)
MC3 - 63 A	[*] M73121.	63	0.1	Three-phase	7,1
MC3 - 125 A	[*] M73122.	125	0.1	Three-phase	14,6
MC3 - 250 A	[*] M73123.	250	0.1	Three-phase	26

The MC/SC3 transformers with a 250 mA output are only compatible with CVM NET-MC, CVM-A, CVM-B, CVM-E3-MINI and CVM-C units.

SC3

Split three-phase current transformers

Type	Code	A Max.	Class 0,5 Power (VA)	System	Usefull diam.(mm)
SC3-125	[*] M73602.	125	0.1	Three-phase	15

The MC/SC3 transformers with a 250 mA output are only compatible with CVM NET-MC, CVM-A, CVM-B, CVM-E3-MINI and CVM-C units.

Energy meters

CEM-C5

Direct Single-phase active energy meter

Type	Code	Quadrants	Measurement Range (V)	Measurement Range (A)	System	Transistor output	Certification	Módules	Display
CEM-C5	[*] Q25112.	2	1 x 230	5 (50) A	Single-phase	1	IEC	1	LCD

Frecuency: 50/60 Hz. Parameters: kWh

CEM-C6

Direct Single-phase energy meter with basic analyser parameters

Type	Code	Quadrants	Measurement Range (V)	Measurement Range (A)	System	Certification	Módules	Communi-cations	Protocol
CEM-C6	[*] Q26112.	4	1 x 230	10 (100) A	Single-phase	IEC	1	RS-485	Modbus/RTU
CEM-C6-MID	[*] Q26115.	2	1 x 230	10 (100) A	Single-phase	MID	1	RS-485	Modbus/RTU

Frecuency: 50/60 Hz. Parameters: V, A, kW, kVA, kWh, cos phi

CEM-C

Energy meter

Power supply 230 Vac, 50 ... 60 Hz

Type	Code	Qua-drants	Measurement Range (V)	Measu-rement Range (A)	I Max. (A)	Tariff	Tr. output	Digital inputs	Certifi-cation	Mó-dules	Commu-nications	Protocol
Direct single-phase												
CEM C10 212	[*] Q21112.	Abs.	1 x 230	5 (65) A	65	1	1	-	IEC	2	-	-
CEM C10 212 MID	[*] Q21114.	Abs.	1 x 230	5 (65) A	65	1	1	-	MID	2	-	-
Direct three-phase												
CEM-C21-T1	[*] Q22411.	Abs.	3 x 127/220...3 x 230/400	5 (65) A	65	1	1	-	IEC	4	-	-
CEM-C21-485-T1	[*] Q22421.	Abs.	3 x 127/220...3 x 230/400	5 (65) A	65	1	1	-	IEC	4	RS-485	Modbus/RTU
CEM-C21-485-DS	[*] Q22431.	Abs.	3 x 127/220...3 x 230/400	5 (65) A	65	2	-	1	IEC	4	RS-485	Modbus/RTU
CEM-C21-T1-MID	[*] Q22412.	Abs.	3 x 127/220...3 x 230/400	5 (65) A	65	1	1	-	MID	4	-	-
CEM-C21-485-T1-MID	[*] Q22422.	Abs.	3 x 127/220...3 x 230/400	5 (65) A	65	1	1	-	MID	4	RS-485	Modbus/RTU
CEM-C21-485-DS-MID	[*] Q22432.	Abs.	3 x 127/220...3 x 230/400	5 (65) A	65	2	-	1	MID	4	RS-485	Modbus/RTU
Indirect three-phase												
CEM-C31-T1	[*] Q23511.	Abs.	3 x 57/100...3 x 230/400	.../ 5 (10) A	10	1	1	-	IEC	4	-	-
CEM-C31-485-T1	[*] Q23521.	Abs.	3 x 57/100...3 x 230/400	.../ 5 (10) A	10	1	1	-	IEC	4	RS-485	Modbus/RTU
CEM-C31-485-DS	[*] Q23531.	Abs.	3 x 57/100...3 x 230/400	.../ 5 (10) A	10	2	-	1	IEC	4	RS-485	Modbus/RTU
CEM-C31-T1-MID	[*] Q23512.	Abs.	3 x 57/100...3 x 230/400	.../ 5 (10) A	10	1	1	-	MID	4	-	-
CEM-C31-485-T1-MID	[*] Q23522.	Abs.	3 x 57/100...3 x 230/400	.../ 5 (10) A	10	1	1	-	MID	4	RS-485	Modbus/RTU
CEM-C31-485-DS-MID	[*] Q23532.	Abs.	3 x 57/100...3 x 230/400	.../ 5 (10) A	10	2	-	1	MID	4	RS-485	Modbus/RTU

CEM-C10 and CEM-C21/C31 without built-in RS-485 communications can optionally communicate with CEM-M-ETH and CEM-M-RS485 modules.
Devices with absolute measurements (ABS). For 2 or 4 quadrants, see the
CEM-XXX-TI encoding table - Devices with pulse output (transistor)
CEM-XXX-DS-Devices with digital input for tariff change and impulse meter

Modules for CEM

Type	Code	Communications	Protocol
CEM-M-RS485	[*] Q23100.	RS-485	Modbus/RTU
CEM-M-ETH	[C] Q23400.	Ethernet	Modbus/TCP

Compatible with CEM-C10 and CEM-C21/C31 meters without built-in RS-485 communications

TABLE OF ADDITIONAL FEATURES

CEM-10 / CEM-C21/ CEM-C31

Q	2	X	X	X	X	0	0	X	X	X	X	X	
Code						Internal code					↑	↑	Delivery time
			Standard (ABS)								0	0	-
		Quadrants	2								0	1	2
			4								0	2	2

ABS = Energy Consumed + Energy Generated

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

Power quality analyzers

		CVM-A1500A	CVM-A1500
		Class A 	Acc. Class A 
Assembly	Panel (mm)	144 x 144	144 x 144
	DIN rail (modules)	–	–
	Wall-mounted	–	–
Connection	Three-phase 3/4-wire	Config.	Config.
	Quadrants	4	4
Power supply		85-265V_{ac} / 120-300V_{dc} 20-120V_{dc} (OP)	85-265V_{ac} / 120-300V_{dc} 20-120V_{dc} (OP)
Parameters	Parameters per phase	●	●
	Power	0,2	0,2
	Active energy	0,2S (.../5A)	0,2S (.../5A)
	Reactive energy	1	1
	Maximum demand	●	●
	Harmonics	63	63
	THD U / THD I	●	●
	Tariffs	3	3
	Hours, cost, kgCO2	●	●
Quality parameter measurements	Events (overvoltages, gaps and interruptions)	●	●
	EN50160 parameters	●	●
	Transients	●	●
Voltage input	Direct	600 V_{ph-N} 1000 V_{ph-ph}	600 V_{ph-N} 1000 V_{ph-ph}
	Indirect	Config	Config.
Input Current	../5 A	●	●
	../1 A	●	●
	../250 mA	●	●
Inputs/outputs	Digital inputs	2	2
	Digital outputs	2	2
	Relay outputs	2	2
Communications	RS-232	–	–
	RS-485	●	●
	TCP/IP	●	●
Interface	Colour screen	●	●
Protocols	ModBus/RTU	●	●
	ModBus/TCP	OP	OP
	XML	●	●
	MBUS	OP	OP
	BACnet	●	●
	Profibus	OP	OP
	LonWorks	OP	OP
	Web server	HTML5	HTML5
	FTP	–	–
Expansion modules	Digital inputs/outputs	OP (8 + 8)	OP (8 + 8)
	Digital inputs / Relay outputs	OP (8 + 8)	OP (8 + 8)
	Analogue inputs/outputs	OP (4 + 8)	OP (4 + 8)
Standards	Measuring in accordance with IEC 61000-4-30	Class A	According Class A
	According to UL	(certificate)	(certificate)
	Measuring in accordance with MID	●	●

T - Depending on type / OP - Optional

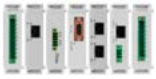
CVM-A

Power quality analyzers, colour display, panel mounted

Power supply 100...240 Vac / 120...300 Vdc, 600 V_{Ph-N} / 1000 V_{Ph-Ph} measurement

Type	Code	Energy accuracy	Input current	Tr. output	Relay output	Digital inputs	Communications	Protocol	Harmonics	Certification	Memory
CVM-A1500A-ITF-485-ICT2	[2] M563110000A00	0,2S (.../5A)	.../5 A | .../1 A | 250 mA	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	IEC 61000-4-30 (Class A)	200 MB
CVM-A1500AFLEX-485-ICT2	[2] M563510000A00	1	Rogowski	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	IEC 61000-4-30 (Class A)	200 MB
CVM-A1500A-SDC-ITF-485-ICT2	[2] M5631100F0A00	0,2S (.../5A)	.../5 A | .../1 A | 250 mA	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	IEC 61000-4-30 (Class A)	200 MB
CVM-A1500-ITF-485-ICT2	[*] M56311.	0,2S (.../5A)	.../5 A | .../1 A | 250 mA	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	-	200 MB
CVM-A1500-FLEX-485-ICT2	[*] M56351.	1	Rogowski	2	2	2	RS-485 | Ethernet	Modbus/RTU | BACnet | webserver (HTTP) | XML | HTML5	63	-	200 MB

Four-quadrant measuring device with PowerStudio embedded. Integrated Datalogger module. Optional Modbus/TCP. 200MB Internal memory
See expansion modules and accessories (sealing gaskets) for CVM-A/CVM-B.
Precision power without connected sensors.



M-CVM-AB

Expansion modules for CVM-A and CVM-B

Type	Code	Tr. output	Relay output	Digital inputs	Analogue Input	Analog output	Communications	Protocol
M-CVM-AB-8I-8OTR	[*] M56E01.	8	-	8	-	-	-	-
M-CVM-AB-8I-8OR	[*] M56E02.	-	8	8	-	-	-	-
M-CVM-AB-4AI-8AO	[*] M56E03.	-	-	-	4 (0/4 ... 20 mA)	8 (0/4 ... 20 mA)	-	-
M-CVM-AB-Modbus-TCP (bridge)	[*] M56E05.	-	-	-	-	-	Ethernet	Modbus/TCP (gateway to RS485)
M-CVM-AB-Modbus-TCP (switch)	[*] M56E0A.	-	-	-	-	-	Ethernet	Modbus/TCP (gateway to TCP)
M-CVM-AB-MBUS	[*] M56E07.	-	-	-	-	-	M-BUS	M-BUS
M-CVM-AB-LonWorks	[*] M56E08.	-	-	-	-	-	LonWorks	LonTalk (ISO/IEC 14908, ANSI/EIA 7091)
M-CVM-AB-Profibus	[*] M56E09.	-	-	-	-	-	DB-9	ProfiBus

TABLE OF ADDITIONAL FEATURES

CVM-A

M	5	X	X	X	X	0	0	X	X	X	X	X	
Code						Internal code							Delivery time
Power supply voltage			Standard (100...270Vac / 120...300 Vdc					0					-
			20...120 Vdc					F					1
Others			Metric fork terminals 3 - CAT III 300 V								B	T	-

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

Accessories

Communication converters

Type	Code	Description
RS		
RS2RS	[*] M62141.	RS-232/485 Intelligent converter and amplifier (RTS control) for PC
USB		
USB-RS 485	[*] M54040.	USB to RS-485 Converter
USB-RS 232	[*] M54050.	USB to RS-232 Converter
M-BUS		
CMBUS-8	[*] M540A0.	M-Bus to Modbus Converter, up to 8 Mbus slaves
CMBUS-24	[*] M540B0.	M-Bus to Modbus Converter, up to 24 Mbus slaves
LoRa		
LR1RS+PSAC	[2] M6215A.	LoRa to RS-485 Converter (Modbus/RTU) . AC power supply (110...264 Vac)
LR1RS+PSDC	[2] M6215C.	LoRa to RS-485 Converter (Modbus/RTU) . DC power supply (12 Vdc)
Ethernet		
New Line-TCPRS1	[C] M62411.	RS-485/RS-232 to Ethernet/Wi-Fi converter (ModbusTCP/TCP/UDP) Integrated web server and mobile app (MyConfig) for configuration

Line-TCPRS1: Power supply 100... 264 VAC/100... 300 VDC

Communications accessories

Type	Code	Description
CM-GSM/3G	[*] Q30251.	RS-232/RS-485 GSM/3G Modem
SGE-3G/GPRS	[*] Q30230.	GPRS-3G Modem with Ethernet communications (includes PS + antenna + cable)
ANTENA GSM	[1] Q4994E.	Antenna 9 dB (for GSM modem)

PowerStudio

Energy management software

Type	Code	Description
SCADA software		
PowerStudio	[*] M90211.	Configuration, monitoring in real time, display of graphs and tables
PowerStudio-Scada	[*] M90231.	Software with USB HASP licence. Configuration, monitoring in real time, display of graphs and tables, generation of reports, creation of SCADA screens and alarms
PowerStudio-Deluxe	[C] M90241.	Software with USB HASP licence. Software PowerStudio-Scada with Generic Modbus driver used to connect to other devices available in the market
OPC Server PS/PSS	[1] M91111.	Software with USB HASP licence. **OPC Server** for PowerStudio is an integration platform that can easily integrate the parameters received from PowerStudio (or any of its versions) in any SCADA platform available in the market with a simple approach.
SQL DATA EXPORT	[1] M91301.	Software with USB HASP licence. SQL Data Export is a software tool for the integration of data from PS/PSS/PSSD to a new or existing SQL database.

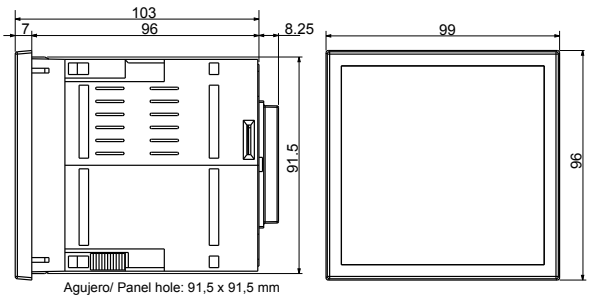
License 4.0 version 4.0

New Change PowerStudioSCADA physical licence to virtual licence

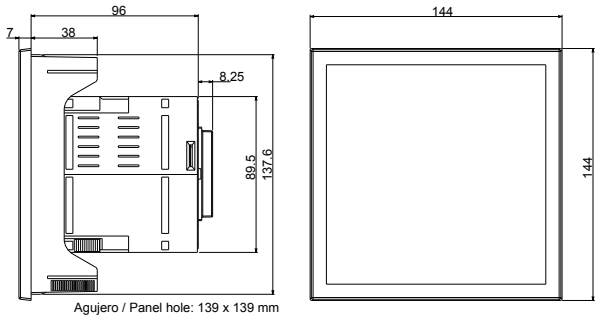
Type	Code	Description
Phi-to-Vir-PSS-Deluxe	[1] M902410055000	Replacement of physical USB licence for PowerStudioSCADA Deluxe with software licence (requires returning physical licence)
Phi-to-Vir-PSS	[1] M902310055000	Replacement of physical USB licence for PowerStudioSCADA with software licence (requires returning physical licence)

Dimensions

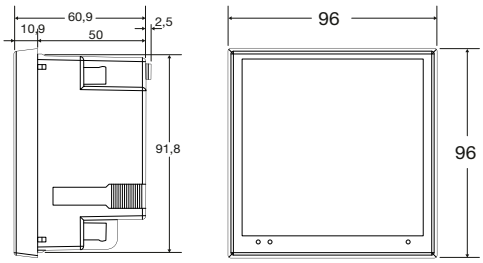
CVM B100



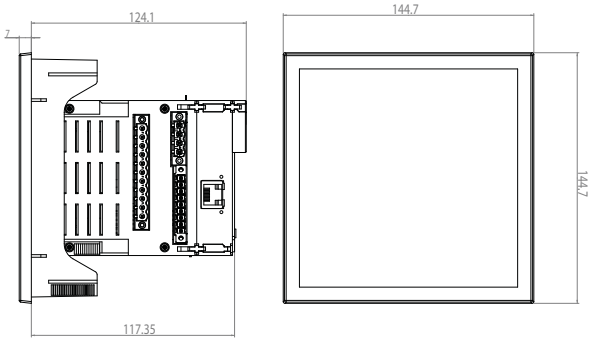
CVM B150



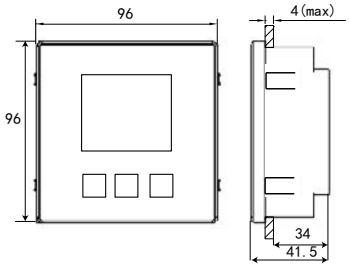
CVM C10



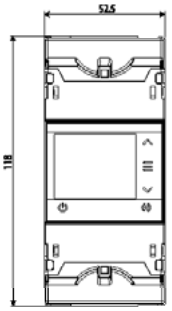
CVM A 1500 / CVM A 1500A

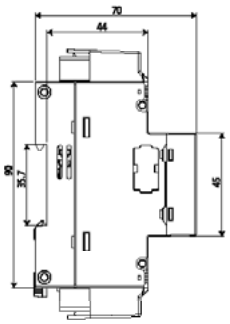


CVM C4

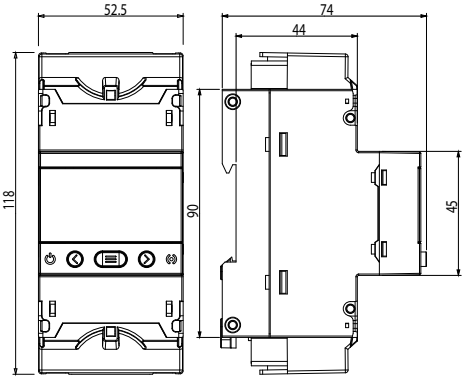


Line-CVM-D32

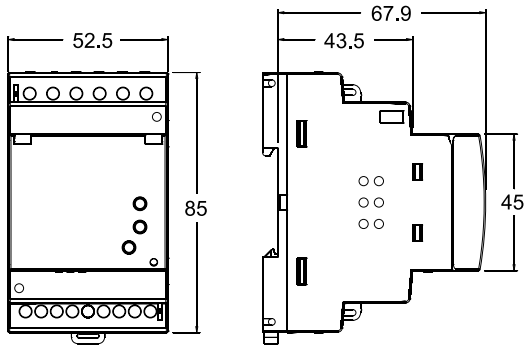




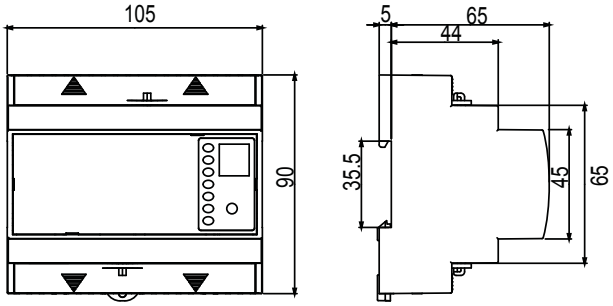
CVM-E3-MINI



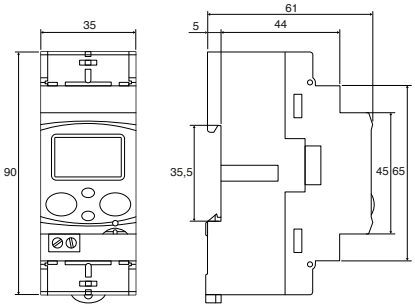
CVM NET



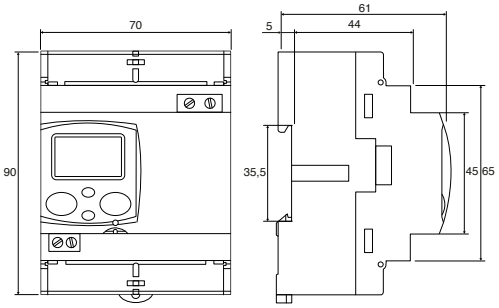
CVM NET4+



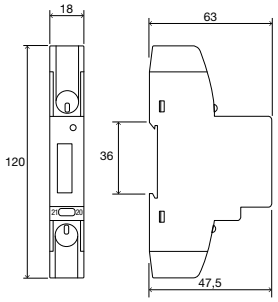
CEM-C10



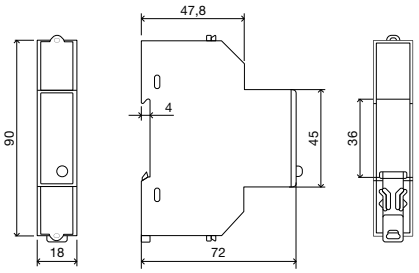
CEM-C21 / CEM-C31



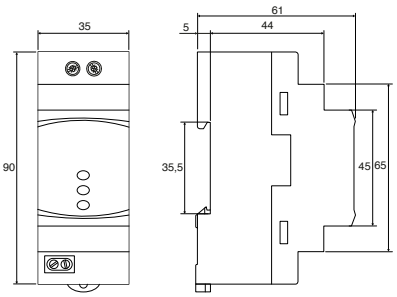
CEM-C5



CEM-C6



CEM-M



Measuring transformers and shunts

Table: Current transformers and shunts selection

		TD	TC	TCH	TA	TQ New	TP	TQR New	STP	MC	TM 45	TRMC	TRM	SH
AC Measurement	For billing meters	–	–	–	–	–	–	–	–	–	–	•	–	–
	For measuring instruments	•	•	•	•	•	•	•	•	•	•	–	•	•
	Wound primary	–	–	–	T	–	–	–	–	–	•	T	–	–
	Passing bar	•	•	•	T	•	•	•	–	•	–	T	•	–
	Split-core	–	–	–	–	•	•	•	•	–	–	–	–	–
	Minimum range (A)	40 A	200 A	50 A	5 A	100 A	250 A	400 A	100 A	50 A	1 A	50 A	75 A	–
	Maximum range (A)	1600 A	4000 A	4000 A	5000 A	1000 A	6000 A	2000 A	300 A	2000 A	50 A	3000 A	5000 A	–
	High accuracy	–	–	•	–	–	–	–	–	–	–	–	–	–
	Three-phase	–	–	–	–	–	–	–	–	T	–	T	–	–
DC measurement	Minimum range (A)	–	–	–	–	–	–	–	–	–	–	–	–	1 A
	Maximum range (A)	–	–	–	–	–	–	–	–	–	–	–	–	20000 A
Other parameters	Secondary output	.../5 A (*2)	.../5 A (*1)	.../5 A (*1)	.../5 A (*1)	.../5 A (*2)	.../5 A (*1)	.../5 A (*2)	../5 A (*2)	250 mA	.../5 A (*1)	.../5 A (*1)	.../5 A (*1)	.../60 mV (*3)
	in resin	OP	OP	OP	–	–	–	–	–	–	–	•	•	–
	Sealable	•	T	T	–	•	•	–	–	–	–	–	–	–
	UL Certificate	–	–	T	T	–	–	–	–	–	–	–	–	–
	Individual certificate	OP	OP	OP	OP	OP	OP	OP	–	–	–	OP	OP	–
	Page	23	24	25	30	26	28	27	28	29	29	31	32	33

T - Depending on the type
OP - Optional
(*1) .../1 On demand
(*2) .../1 A, .../250 mA on request
(*3) Possibility of other outputs (secundary values)

TD

Current transformers narrow section

Type	TD4				TD5				TD5.2			
	  width x height x depth (mm) 50 x 80 x 48				 width x height x depth (mm) 58 x 84 x 53				 width x height x depth (mm) 58 x 84 x 53			
ø (mm)	20								22			
Flat strip(mm)					15 x 15 | 20 x 10 | 25 x 5				25 x 10 | 30 x 10 | 20 x 12			
A/V-A	Class 0.5	1	3	Code	Class 0.5	1	3	Code	Class 0.5	1	3	Code
40/5	-	-	1,25	[*] M75011.								
50/5	-	1	1,5	[*] M75012.	-	0,5	1,5	[*] M75022.				
60/5	-	1,25	2,5	[*] M75013.	-	1	2,5	[*] M75023.				
75/5	-	1,5	3,75	[*] M75014.	-	1,5	3,5	[*] M75024.				
100/5	1,5	2,5	5	[*] M75015.	1,5	2,5	3,75	[*] M75025.	-	-	1	[*] M750A5.
125/5	2,5	3,75	5	[*] M75016.	1,5	2,5	3,75	[*] M75026.	-	1	1,5	[*] M750A6.
150/5	3,75	5	5	[*] M75017.	1,5	2,5	3,75	[*] M75027.	1	1,5	2,5	[*] M750A7.
200/5	5	7,5	7,5	[*] M75018.	2,5	3,75	5	[*] M75028.	1,5	2,5	3,5	[*] M750A8.
250/5					2,5	3,75	5	[*] M75029.	2,5	3,5	5	[*] M750A9.
300/5									2,5	3,5	5	[*] M750AA.
400/5									2,5	3,5	5	[*] M750AB.
500/5									5	7,5	10	[*] M750AC.
600/5									5	7,5	10	[*] M750AD.

Type	TD6.2				TD6				TD8			
	  width x height x depth (mm) 66 x 91 x 53				 width x height x depth (mm) 66 x 91 x 53				 width x height x depth (mm) 85 x 109 x 59			
ø (mm)	25				28				43			
Flat strip(mm)	25 x 12 |30 x 10 |20 x 20				20 x 25 |30 x 15 |40 x 10				50 x 30 | 60 x 12| 13 x 45			
A/V-A	Class 0.5	1	3	Code	Class 0.5	1	3	Code	Class 0.5	1	3	Code
100/5	1	2,5	3,5	[*] M75055.								
125/5	1,5	3,5	5	[*] M75056.								
150/5	2,5	3,5	5	[*] M75057.	1	2,5	3,5	[*] M75047.				
200/5	3,5	5	5	[*] M75058.	1,5	3,5	5	[*] M75048.				
250/5	3,5	5	5	[*] M75059.	2,5	5	5	[*] M75049.				
300/5	5	7,5	7,5	[*] M7505A.	2,5	5	5	[*] M7504A.	2,5	3,5	3,5	[*] M7506A.
400/5	5	7,5	7,5	[*] M7505B.	2,5	5	5	[*] M7504B.	2,5	3,5	5	[*] M7506B.
500/5	5	7,5	10	[*] M7505C.	5	7,5	7,5	[*] M7504C.	2,5	5	5	[*] M7506C.
600/5	5	7,5	10	[*] M7505D.	5	7,5	7,5	[*] M7504D.	2,5	5	5	[*] M7506D.
750/5					5	7,5	10	[*] M7504E.	2,5	5	5	[*] M7506E.
800/5					5	7,5	10	[*] M7504F.	5	7,5	7,5	[*] M7506F.
1000/5									5	7,5	10	[*] M7506G.
1200/5									5	7,5	10	[*] M7506H.
1250/5									7,5	10	10	[*] M7506J.
1500/5									7,5	10	15	[*] M7506K.
1600/5									7,5	10	15	[*] M7506L.

For other configurations see table of additional features

Accessories for TD transformers

Type	Code	Description
DIN-FIX 50x50	[*] M75102.	DIN rail fixing 50 x 50 mm (TD4, TD5, TD5.2, TD6, TD6.2)
DIN-FIX 50x84	[*] M75103.	DIN rail fixing 50 x 84 mm (TD8)
TD4-COVER	[*] M75111.	Terminal cover/label for TD4 + secondary cap
TD5-COVER	[*] M75121.	Terminal cover/label for TD5 / TD5.2 + secondary cap
TD6-COVER	[*] M75141.	Terminal cover/label for TD6 / TD6.2 + secondary cap
TD8-COVER	[*] M75161.	Terminal cover/label for TD8 + secondary cap

TC

Current transformers narrow section

Type	TC10				TC12			
	 width x height x depth (mm) 108 x 137 x 78				 width x height x depth (mm) 129 x 155 x 78			
Flat strip(mm)	50 x 50 |60 x 30 |80 x 30				100 x 50			
A/V-A	Class				Class			
	0.5	1	3	Code	0.5	1	3	Code
200/5	1	2,5	5	[*] M7037F.				
300/5	2,5	5	7,5	[*] M7037D.				
400/5	2,5	5	7,5	[*] M7037G.				
500/5	5	7,5	10	[*] M7037B.				
600/5	7,5	10	15	[*] M7037C.				
750/5	7,5	10	15	[*] M7037H.				
800/5	7,5	10	15	[*] M70372.	10	15	20	[*] M7038B.
1000/5	10	15	20	[*] M70373.	10	15	20	[*] M70381.
1200/5	10	15	20	[*] M70374.	10	15	20	[*] M70382.
1250/5	10	15	20	[*] M7037E.	10	15	20	[*] M7038D.
1500/5	15	20	25	[*] M70375.	15	20	30	[*] M70383.
1600/5	15	20	25	[*] M70376.	15	20	30	[*] M70384.
2000/5	15	20	25	[*] M70377.	15	20	30	[*] M70385.
2500/5	15	20	30	[*] M70378.	20	30	40	[*] M70386.
3000/5	15	20	30	[*] M70379.	30	40	60	[*] M70387.
3200/5					30	40	60	[*] M7038C.
4000/5					35	40	60	[*] M70388.

For other configurations see table of additional features

TABLE OF ADDITIONAL FEATURES

TD / TC									
M	7	X	X	X	X	0	0	X	
Code						Internal code			Delivery time
Secundary			Standard (.../ 5 A)					0	-
			.../ 1 A					1	1
			.../250 mA					A	1

TCH

Current transformers narrow section and high accuracy

Type	TCH6.2				TCH6				TCH8			
												
	width x height x depth (mm) 74 x 87.15 x 71.12				width x height x depth (mm) 64 x 87.5 x 71.2				width x height x depth (mm) 84.1 x 114 x 83			
Flat strip(mm)	20 x 20 |25 x 12 |30 x 10				30 x 15 |20 x 10 |40 x 10				50 x 30 |60 x 12			
A/V-A	Class				Class				Class			
	0.2	0.2S	0.5S	Code	0.2	0.2S	0.5S	Code	0.2	0.2S	0.5S	Code
50/5	0,5	-	-	[*] M7044B.								
60/5	0,5	-	-	[*] M7044C.								
100/5	1,5	1	2,5	[*] M70441.								
125/5	1,5	1	2,5	[*] M70442.								
150/5	3,5	2,5	3,5	[*] M70443.	1,25	1	1,5	[*] M70431.				
200/5	5	3,5	5	[*] M70444.	1,5	1,25	2	[*] M70432.				
250/5	5	5	5	[*] M70445.	1,75	1,5	2,25	[*] M70433.				
300/5	5	5	5	[*] M70446.	2	1,75	2,5	[*] M70434.				
400/5	7,5	7,5	7,5	[*] M70447.	5	1	5	[*] M70435.				
500/5					7,5	5	7,5	[*] M70436.				
600/5					7,5	5	7,5	[*] M70437.	10	5	10	[*] M70463.
750/5					10	7,5	10	[*] M70438.	10	7,5	10	[*] M70464.
800/5					10	7,5	10	[*] M70439.	10	7,5	10	[*] M70465.
1000/5									15	10	15	[*] M70466.
1200/5									15	10	15	[*] M70467.
1250/5									15	10	15	[*] M7046A.
1500/5									15	10	15	[*] M70468.
1600/5									15	10	15	[*] M70469.

For other configurations see table of additional features

Type	TCH10				TCH12			
								
	width x height x depth (mm) 108 x 137 x 78				width x height x depth (mm) 129 x 155 x 78			
Flat strip(mm)	50 x 50 |60 x 30 |80 x 30				100 x 50			
A/V-A	Class				Class			
	0.2	0.2S	0.5S	Code	0.2	0.2S	0.5S	Code
800/5	10	7,5	10	[*] M70472.				
1000/5	10	7,5	10	[*] M70473.				
1200/5	10	10	10	[*] M70474.	15	10	15	[*] M70482.
1250/5	10	10	10	[*] M7047C.	15	10	15	[*] M7048C.
1500/5	10	10	15	[*] M70475.	15	10	15	[*] M70483.
1600/5	10	10	15	[*] M70476.	15	10	15	[*] M70484.
2000/5	10	10	15	[*] M70477.	15	10	15	[*] M70485.
2500/5	10	10	15	[*] M70478.	20	15	20	[*] M70486.
3000/5	10	10	15	[*] M70479.	25	20	25	[*] M70487.
3200/5					25	20	25	[*] M7048B.
4000/5					30	25	30	[*] M70488.

For other configurations see table of additional features

New

TQ

Current transformers split core, button opening

Type	TQ-6				TQ-8			
	  width x height x depth (mm) 80 x 98.5 x 28				 width x height x depth (mm) 120 x 148.5 x 28			
Flat strip(mm)	20 x 30				60 x 80			
A/V-A	Class				Class			
	0.5	1	3	Code	0.5	1	3	Code
100/5	0	0	1	[*] M74023.				
150/5	0	0	1	[*] M74025.				
200/5	0	0	2	[*] M74026.				
250/5	0	1	2	[*] M74027.				
300/5	0,5	1	2	[*] M74028.	0	1	2,5	[*] M74035.
400/5	1	2,5	4	[*] M7402A.	1	1,5	3	[*] M74037.
500/5					2	5	7,5	[*] M74039.
600/5					2	5	8	[*] M7403B.
700/5					2	5	8	[*] M7403D.
750/5					2,5	5	10	[*] M7403E.
800/5					3	6	10	[*] M7403F.
1000/5					5	8	15	[*] M7403I.

For other configurations see table of additional features

Opening easy button

TABLE OF ADDITIONAL FEATURES

TCH										
M	7	X	X	X	X	0	0	X		
Code							Internal code	↑		Delivery time
Secundary			Standard (.../ 5 A)					0		-
			.../ 1 A					1		1
			.../250 mA					A		1

TQ										
M	7	X	X	X	X	0	0	X	X	
Code							Internal code	↑	↑	Delivery time
Secundary			Standard (.../ 5 A)					0		-
			.../ 1 A					1		1
			.../250 mA					A		1
			.../100 mA					7		
Certificate			-						0	-
			Test report (*)						1	

(*) A certificate is attached for every transformer

New

TQR

Current transformers split core

Type	TQR-8				TQR-10			
		 width x height x depth (mm) 216 x 173 x 43.1			 width x height x depth (mm) 240 x 198.71 x 43.41			
ø (mm)	80				105			
Flat strip(mm)								
A/V-A	Class 0.5	1	3	Code	Class 0.5	1	3	Code
400/5	0	1,5	3	[*] M76037.				
500/5	1	1,5	3	[*] M76039.				
600/5	1,5	2	4	[*] M7603B.	1,5	2	4	[C] M7604B.
700/5	2	4	8	[*] M7603D.	2	4	8	[C] M7604D.
750/5	2,5	5	10	[C] M7603E.	2,5	5	10	[C] M7604E.
800/5	3	7	15	[*] M7603F.	3	7	15	[C] M7604F.
1000/5	5	8	16	[*] M7603J.	5	8	16	[C] M7604J.
1250/5	6	10	20	[*] M7603L.	6	10	20	[C] M7604L.
1500/5	6	10	20	[*] M7603M.	6	10	20	[C] M7604M.
2000/5	8	15	25	[*] M7603N.	8	15	25	[C] M7604N.

For other configurations see table of additional features

TABLE OF ADDITIONAL FEATURES

TQR

M	7	X	X	X	X	0	0	X	X	X	
Code							Internal code	↑	↑	↑	Delivery time
Secundary			Standard (.../ 5 A)					0			-
			.../ 1 A					1			1
			.../250 mA					A			1
			.../100 mA					7			Consult
Certificate			-						0		-
			Test report (*)						1		1
IP65 protection (cable meters)										0	
			IP 65 (1 m)							1	
			IP 65 (2 m)							2	
			IP 65 (3 m)							3	
			IP 65 (4 m)							4	
			IP 65 (5 m)							5	
			IP 65 (6 m)							6	
			IP 65 (7m)							7	
			IP 65 (8 m)							8	
			IP 65 (9 m)							9	
			IP 65 (10 m)							A	

(*) A certificate is attached for every transformer

TP

M	7	X	X	X	X	0	0	X	X	
Code						Internal code		↑	↑	Delivery time
Secundary		Standard (.../ 5 A)						0		-
		.../ 1 A						1		1
		.../250 mA						A		1
		.../333 mV						V		1
Certificate		-							0	-
		Test report (*)							1	Consult

(*) A certificate is attached for every transformer

TP

Current transformers, split core

Type	TP-88				TP-812				TP-816			
				 width x height x depth (mm) 145 x 144 x 50				 width x height x depth (mm) 185 x 144 x 50				 width x height x depth (mm) 245 x 184 x 70
Flat strip(mm)	80 x 80				80 x 120				80 x 160			
A/V-A	Class			Code	Class			Code	Class			Code
	0.5	1	3		0.5	1	3		0.5	1	3	
250/5	-	2	4	[*] M70131.								
300/5	1,5	3	6	[*] M70132.								
400/5	1,5	3	10	[*] M70133.								
500/5	2,5	5	15	[*] M70134.	-	4	12	[*] M70141.	3	-	-	[3] M7015F.
600/5	2,5	5	17,5	[*] M70135.	-	5	14	[*] M70142.	3	-	-	[3] M7015H.
750/5	3	6	18	[*] M70136.	2,5	6	17	[*] M70143.	5	-	-	[3] M70158.
800/5	3	7	18	[*] M70137.	3	7	18	[*] M70144.				
1000/5	5	10	20	[*] M70138.	5	9	20	[*] M70145.	10	15	20	[*] M70151.
1200/5					6	11	24	[*] M70146.				
1250/5					7	15	28	[*] M70147.	8	-	-	[3] M7015A.
1500/5					8	17	30	[*] M70148.	15	20	25	[*] M70152.
1600/5					8	17	30	[*] M70149.	8	-	-	[3] M7015B.
2000/5									15	20	25	[*] M70153.
2500/5					10	17	25	[*] M7014A.	15	20	25	[*] M70154.
3000/5									20	25	30	[*] M70155.
3200/5									20	-	-	[3] M7015C.
4000/5									20	25	30	[*] M70156.
5000/5									20	25	30	[*] M70157.
6000/5									20	-	-	[3] M7015E.

For other configurations see table of additional features

TP outdoor protection

Type	Code	Description
TET 114	[*] M79972.	TP-58 outdoor protector
TET 144	[*] M79973.	TP-88/TP-812 outdoor protector

STP

Current transformers, split core

Type	STP-24								
	 Size (mm) width xheight xdepth 55x66x24								
Flat strip(mm)	24 mm								
Secundary	5A			1A			250mA		
A/V-A	Class	VA	Code	Class	VA	Code	Class	VA	Code
100	3	1	[C] M73323.	3	1	[C] M733230010000	3	0,1	[C] M7332300G0000
150	3	1	[C] M73325.	3	1	[C] M733250010000	3	0,1	[C] M7332500G0000
200	3	1	[C] M73326.	3	0,5	[C] M733260010000	3	0,1	[C] M7332600G0000
250	3	1	[C] M73327.	1	1	[C] M733270010000	1	0,1	[C] M7332700G0000
300	3	1	[C] M73328.	1	1	[C] M733280010000	1	0,1	[C] M7332800G0000

SC3

Split three-phase current transformers

Type	Code	A Max.	Class 0,5 Power (VA)	System	Usefull diam.(mm)
SC3-125	[*] M73602.	125	0.1	Three-phase	15

The MC/SC3 transformers with a 250 mA output are only compatible with CVM NET-MC, CVM-A, CVM-B, CVM-E3-MINI and CVM-C units.

MC3

Three-phase current transformers

Type	Code	A Max.	Class 0,5 Power (VA)	System	Usefull diam.(mm)
MC3 - 63 A	[*] M73121.	63	0.1	Three-phase	7,1
MC3 - 125 A	[*] M73122.	125	0.1	Three-phase	14,6
MC3 - 250 A	[*] M73123.	250	0.1	Three-phase	26

The MC/SC3 transformers with a 250 mA output are only compatible with CVM NET-MC, CVM-A, CVM-B, CVM-E3-MINI and CVM-C units.

MC1

Triple scale single-phase efficient transformers

Type	Code	Measurement Range (A)	A Max.	Class 0,5 Power (VA)	System	Usefull diam.(mm)
MC1-15-75	[*] M73112.	75	75	0.25	Single-phase	15
MC1-20-50/100/150 A	[*] M73118.	50/100/150	150	0.25	Single-phase	20
MC1-35-50/100/150 A	[*] M73116.	50/100/150	150	0.25	Single-phase	35
MC1-20-150/200/250 A	[*] M73113.	150/200/250	250	0.25	Single-phase	20
MC1-30-250/400/500 A	[*] M73114.	250/400/500	500	0.25	Single-phase	30
MC1-55-500/1000/1500 A	[*] M73115.	500/1000/1500	1500	0.25	Single-phase	55
MC1-80 1000/1500/2000 A	[*] M73117.	1000/1500/2000	2000	0.25	Single-phase	80

The MC/SC3 transformers with a 250 mA output are only compatible with CVM NET-MC, CVM-A, CVM-B, CVM-E3-MINI and CVM-C units.

TM45

Current transformers, winding primary, DIN rail

Type				
	 width x height x depth (mm) 52.5 x 85 x 70			
ø (mm)	0			
Flat strip(mm)	Winding primary			
A/V-A	Class			Code
	0.5	1	3	
1/5	2,5	5	7	[C] M70609.
5/5	2,5	5	7	[*] M70601.
10/5	2,5	5	7	[*] M70602.
15/5	2,5	5	7	[*] M70603.
20/5	2,5	5	7	[*] M70604.
25/5	2,5	5	7	[*] M70605.
30/5	2,5	5	7	[*] M70606.
40/5	2,5	5	7	[*] M70607.
50/5	2,5	5	7	[*] M70608.

For other configurations see table of additional features

TABLE OF ADDITIONAL FEATURES

TM45

M	7	X	X	X	X	0	0	X	
Code							Internal code	↑	Delivery time
Secundary			Standard (.../ 5 A)					0	-
			.../ 1 A					1	1
			.../250 mA					A	1

TA

M	7	X	X	X	X	0	0	X	
Code							Internal code	↑	Delivery time
Secundary			Standard (.../ 5 A)					0	-
			.../ 1 A					1	1
			.../250 mA					A	1

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

TA210

Current transformers, winding primary

Type				
	width x height x depth (mm) 75 x 104.5 x 134			
Flat strip(mm)	Winding primary			
A/V-A	Class			
	0.5	1	3	Code
5/5	15	20	30	[*] M70541.
10/5	15	20	30	[*] M70542.
15/5	15	20	30	[*] M70543.
20/5	15	20	30	[*] M70544.
25/5	15	20	30	[*] M70545.
30/5	15	20	30	[*] M70546.
40/5	15	20	30	[*] M70547.
50/5	15	20	30	[*] M70548.
60/5	15	20	30	[*] M70549.
75/5	15	20	30	[*] M7054A.
80/5	15	20	30	[1] M7054K.
100/5	15	20	30	[*] M7054B.
125/5	15	20	30	[*] M7054C.
150/5	15	20	30	[*] M7054D.
200/5	15	20	30	[*] M7054E.
250/5	15	20	30	[*] M7054F.
300/5	15	20	30	[*] M7054G.
400/5	15	20	30	[*] M7054H.

Sealable terminal cover and anchoring base included

TA

Current transformers

Type	TA400				TA500				TA600			
	 width x height x depth (mm) 95 x 165 x 59				 width x height x depth (mm) 115 x 185 x 63				 width x height x depth (mm) 124 x 192 x 62			
Flat strip(mm)	100 x 20				100 x 30				125 x 60			
A/V-A	Class				Class				Class			
	0.5	1	3	Code	0.5	1	3	Code	0.5	1	3	Code
300/5	5	10	15	[3] M7059A.								
400/5	5	10	15	[3] M70591.								
500/5	15	20	30	[3] M70592.								
600/5	15	20	30	[3] M70593.								
750/5	15	20	30	[*] M70594.								
800/5	15	20	30	[*] M70595.					15	15	-	[3] M705BB.
1000/5	15	20	30	[*] M70596.	15	20	30	[3] M705A2.	15	20	30	[*] M705B1.
1200/5	15	20	30	[*] M70597.	15	20	30	[3] M705A3.	15	20	30	[3] M705B2.
1500/5	15	30	40	[*] M70598.	15	30	40	[*] M705A4.	15	20	30	[*] M705B3.
2000/5	20	40	50	[*] M70599.	20	40	50	[*] M705A6.	15	20	30	[*] M705B5.
2500/5	20	40	50	[C] M7059B.	20	40	50	[*] M705A7.	20	30	40	[*] M705B6.
3000/5					20	45	60	[*] M705A8.	30	40	60	[*] M705B7.
3200/5									30	40	60	[3] M705BA.
4000/5					35	50	70	[*] M705A9.	35	50	70	[*] M705B8.
5000/5									40	60	80	[*] M705B9.

For other configurations see table of additional features

kit3-TRMC210

Kit of 3 current transformers for energy meters, primary winding

Type	kit3-TRMC210			kit3-TRMC210-05			kit3-TRMC210.2		
	Size (mm) width xheight xdepth 145x110x86								
A/V-A	Class	VA	Code	Class	VA	Code	Class	VA	Code
100/5	0.5S	10	[3] Q309010000001	0.5	10	[3] Q309610000001	0.5S	2,5	[3] Q309810000001
150/5	0.5S	10	[3] Q309020000001	0.5	10	[3] Q309620000001	0.5S	2,5	[3] Q309820000001
200/5	0.5S	10	[3] Q309030000001	0.5	10	[3] Q309630000001	0.5S	2,5	[3] Q309830000001
300/5	0.5S	10	[3] Q309040000001	0.5	10	[3] Q309640000001	0.5S	2,5	[3] Q309840000001
400/5	0.5S	10	[3] Q309050000001	0.5	10	[3] Q309650000001	0.5S	2,5	[3] Q309850000001
500/5	0.5S	10	[3] Q309060000001	0.5	10	[3] Q309660000001	0.5S	2,5	[3] Q309860000001
600/5	0.5S	10	[3] Q309070000001	0.5	10	[3] Q309670000001	0.5S	2,5	[3] Q309870000001

Check availability.../1 A

kit3-TRMC400

Sets of 3 current transformers for energy meters

Type	kit3-TRMC400			kit3-TRMC400-05			kit3-TRMC400.2		
	Size (mm) width xheight xdepth 99x160x68								
Flat strip(mm)	100x20 mm								
A/V-A	Class	VA	Code	Class	VA	Code	Class	VA	Code
750/5	0.5S	10	[3] Q309110000001	0.5	10	[3] Q309710000001	0.5S	2,5	[3] Q309A10000001
1000/5	0.5S	10	[3] Q309120000001	0.5	10	[3] Q309720000001	0.5S	2,5	[3] Q309A20000001
1500/5	0.5S	10	[3] Q309130000001	0.5	10	[3] Q309730000001	0.5S	2,5	[3] Q309A30000001
2000/5	0.5S	10	[3] Q309140000001	0.5	10	[3] Q309740000001	0.5S	2,5	[3] Q309A40000001
3000/5							0.5S	2,5	[3] Q309A60000001

Check availability.../1 A

TRMCx3

Current transformers for energy meters

Type	Code	Measurement Range (A)	Class 0,5S Power (VA)	Usefull diam.(mm)	Cable (m)
Indoor					
TRMC-X3 100/5	[*] Q301T1.	100/5	2.5	38	1.5
TRMC-X3 200/5	[*] Q301T2.	200/5	2.5	38	1.5
TRMC-X3 300/5	[*] Q301T3.	300/5	2.5	38	1.5
TRMC-X3 400/5	[*] Q301T4.	400/5	2.5	38	1.5
Outdoor					
TRMC-X3 100/5 Ext	[C] Q301T1010E000	100/5	2.5	38	7
TRMC-X3 200/5 Ext	[C] Q301T2010E000	200/5	2.5	38	7
TRMC-X3 300/5-ext	[C] Q301T3010E000	400/5	2.5	38	7
TRMC-X3 400/5 Ext	[C] Q301T4010E000	300/5	2.5	38	7

TABLE OF ADDITIONAL FEATURES

TRM									
P	5	X	X	X	X	0	0	X	
Code						Internal code			Delivery time
Secundary		Standard (.../ 5 A)						0	-
		... / 1A						1	3

TRM

Measuring transformers encapsulated in resin

Type	TRM30			TRM40			TRM60		
	Size (mm) width xheight xdepth 50x110x30			Size (mm) width xheight xdepth 38x135x40			Size (mm) width xheight xdepth 36x135x60		
Flat strip(mm)	30 mm			40 mm			60 mm		
A/V-A	Class	VA	Code	Class	VA	Code	Class	VA	Code
75	1	2	[4] P50101.						
100	1	5	[4] P50102.						
150	1	5	[4] P50103.	0.5	5	[4] P50111.			
200	0.5	10	[4] P50104.	0.5	7,5	[4] P50112.			
250	0.5	15	[4] P50105.	0.5	10	[4] P50113.	0.5	5	[4] P50121.
300	0.5	20	[4] P50106.	0.5	15	[4] P50114.	0.5	7,5	[4] P50122.
400	0.5	25	[4] P50107.	0.5	20	[4] P50115.	0.5	10	[4] P50123.
500				0.5	25	[4] P50116.	0.5	15	[4] P50124.
600				0.5	30	[4] P50117.	0.5	20	[4] P50125.
800				0.5	35	[4] P50118.	0.5	25	[4] P50126.
1000							0.5	30	[4] P50127.
1200							0.5	35	[4] P50128.

Type	TRM80			TRM100		
	Size (mm) width xheight xdepth 36x135x80			Size (mm) width xheight xdepth 38x175x100		
Flat strip(mm)	80 mm			100 mm		
A/V-A	Class	VA	Code	Class	VA	Code
500	0.5	5	[4] P50131.			
600	0.5	7,5	[4] P50132.			
750	0.5	10	[4] P50133.	0.5	15	[4] P50141.
1000	0.5	15	[4] P50134.	0.5	20	[4] P50142.
1500	0.5	20	[4] P50135.	0.5	20	[4] P50144.
2000	0.5	25	[4] P50136.	0.5	20	[4] P50145.
2500	0.5	30	[4] P50137.	0.5	20	[4] P50146.
3000				0.5	25	[4] P50147.

Type	TRM140			TRM180		
	Size (mm) width xheight xdepth 40x223x140			Size (mm) width xheight xdepth 40x223x180		
Flat strip(mm)	140 mm			180 mm		
A/V-A	Class	VA	Code	Class	VA	Code
1000	0.5	15	[4] P50151.			
1250	0.5	20	[4] P50152.	0.5	15	[4] P50161.
1500	0.5	25	[4] P50153.	0.5	20	[4] P50162.
2000	0.5	30	[4] P50154.	0.5	20	[4] P50163.
2500	0.5	35	[4] P50155.	0.5	20	[4] P50164.
3000	0.5	35	[4] P50156.	0.5	20	[4] P50165.
4000	0.5	35	[4] P50157.	0.5	20	[4] P50166.
5000				0.5	20	[4] P50167.

SH

Shunts for direct current measurement

Type	SHP		SHB		SH	
						
Accuracy	1		0.5			
Relation	Type	Code	Type	Code	Type	Code
1A/60mV			SHB 1A/60mV	[3] M71221.		
1.5A/60mV			SHB 1.5A/60mV	[3] M71222.		
2.5A/60mV			SHB 2.5A/60mV	[3] M71223.		
4A/60mV			SHB 4A/60mV	[3] M71224.		
5A/60mV			SHB 5A/60mV	[3] M71225.		
6A/60mV			SHB 6A/60mV	[3] M71226.		
10A/60mV			SHB 10A/60mV	[*] M71227.		
15A/60mV			SHB 15A/60mV	[*] M71228.		
25A/60mV			SHB 25A/60mV	[*] M71229.		
30A/60mV	SHP 30A/60mV	[3] M71211.	SHB 30A/60mV	[*] M7122A.	SH 30A/60mV	[*] M71231.
40A/60mV	SHP 40A/60mV	[3] M71212.	SHB 40A/60mV	[*] M7122B.	SH 40A/60mV	[2] M71232.
50A/60mV	SHP 50A/60mV	[3] M71213.	SHB 50A/60mV	[*] M7122C.	SH 50A/60mV	[*] M71233.
60A/60mV	SHP 60A/60mV	[3] M71214.	SHB 60A/60mV	[*] M7122D.	SH 60A/60mV	[*] M71234.
75A/60mV	SHP 75A/60mV	[3] M71215.				
80A/60mV			SHB 80A/60mV	[*] M7122E.	SH 80A/60mV	[*] M71235.
100A/60mV	SHP 100A/60mV	[3] M71216.	SHB 100A/60mV	[*] M7122F.	SH 100A/60mV	[*] M71236.
150A/60mV	SHP 150A/60mV	[3] M71217.			SH 150A/60mV	[*] M71237.
200A/60mV	SHP 200A/60mV	[3] M71218.	SHB 200A/60mV	[2] M7122N.	SH 200A/60mV	[*] M71238.
250A/60mV					SH 250A/60mV	[*] M71239.
300A/60mV					SH 300A/60mV	[*] M7123A.
400A/60mV					SH 400A/60mV	[*] M7123B.
500A/60mV					SH 500A/60mV	[*] M7123C.
600A/60mV					SH 600A/60mV	[*] M7123D.
750A/60mV					SH 750A/60mV	[2] M7123E.
800A/60mV					SH 800A/60mV	[2] M7123F.
1000A/60mV					SH 1000A/60mV	[*] M7123G.
1200A/60mV					SH 1200A/60mV	[3] M7123H.
1500A/60mV					SH 1500A/60mV	[*] M7123J.
2000A/60mV					SH 2000A/60mV	[3] M7123K.
2500A/60mV					SH 2500A/60mV	[3] M7123L.
3000A/60mV					SH 3000A/60mV	[3] M7123M.
4000A/60mV					SH 4000A/60mV	[3] M7123N.
5000A/60mV					SH 5000A/60mV	[3] M7123P.
6000A/60mV					SH 6000A/60mV	[3] M7123Q.
7500A/60mV					SH 7500A/60mV	[3] M7123R.
8000A/60mV					SH 8000A/60mV	[C] M7123S.
10000A/60mV					SH 10000A/60mV	[C] M7123T.
12500A/60mV					SH 12500A/60mV	[C] M7123U.
15000A/60mV					SH 15000A/60mV	[C] M7123V.
18000A/60mV					SH 18000A/60mV	[C] M7123Z.
20000A/60mV					SH 20000A/60mV	[C] M7123O.

Insulating base socket for type SHB (up to 100 A)
All shunts are supplied with 1.5 m long cables with a 1.5 mm² cross-section

SHP / SHB / SH										
M	7	X	X	X	X	0	0	X		
Code						Internal code			Delivery time	
Outputs						Standard .../60 mV		0	-	
						.../50 mV		1	2	
						.../75 mV		7	Consult	
						.../100 mV		2	2	
						.../150 mV		3	2	
						.../200 mV		4	2	
						.../250 mV		8	Consult	
						.../300 mV		5	Consult	
						.../400 mV		9	Consult	
						.../600 mV		6	Consult	

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

VT
Measurement voltage transformers

Type	Code	Class 0,5 Power (VA)	Class 1 Power (VA)	Relation
VT2311 230V/110V	[3] M72311.	10	25	230/110V
VT3823 380V/230V	[3] M72352.	10	25	380/230V
VT4011 400V/110V	[3] M72321.	10	25	400/110V
VT4023 400V/230V	[3] M72322.	10	25	400/230V
VT4411 440V/110V	[3] M72331.	10	25	440/110V
VT4423 440V/230V	[3] M72332.	10	25	440/230V
VT4811 480V/110V	[3] M72341.	10	25	480/110V
VT4823 480V/230V	[3] M72342.	10	25	480/230V
VT7011 700V/110V	[3] M72381.	10	25	700/110V
VT7023 700V/230V	[3] M72382.	10	25	700/230V

For other voltage ratios, please ask

TSR
Current adding transformer

Type	Code	Input current	Class 0,5 Power (VA)	Class 1 Power (VA)	Measuring Channels
TSR-2	[*] M70701.	5 A	15	30	2
TSR-3	[*] M70702.	5 A	15	30	3
TSR-4	[*] M70703.	5 A	15	30	4
TSR-5	[*] M70704.	5 A	15	30	5

Current adding transformers must have the same primary ratio For other ratios, please ask

TE
Impedance elevator transformer

Type	Code	Class 1 Power (VA)	Relation
TE-5/0.1	[*] M70911.	15	5 /0,1 A

For Protection current transformers SEE SECTION Protection and Control/Protection current transformers

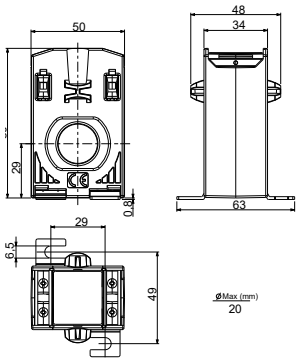
TABLE OF ADDITIONAL FEATURES

TSR

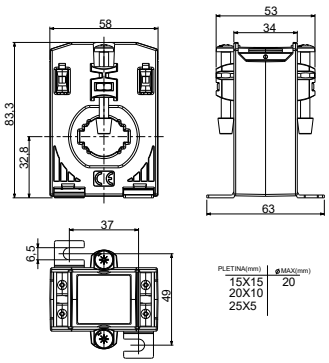
M	7	X	X	X	X	0	0	X	
Code						Internal code			Delivery time
Secundary			Standard (.../ 5 A)					0	-
			.../ 1 A					1	1
			.../250 mA					A	1

Dimensions

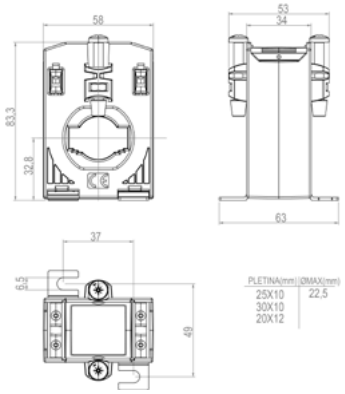
TD 4



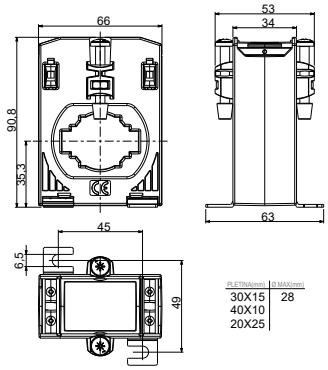
TD 5



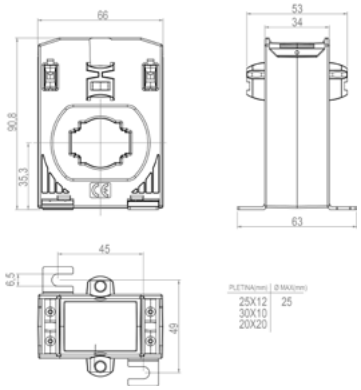
TD 5.2



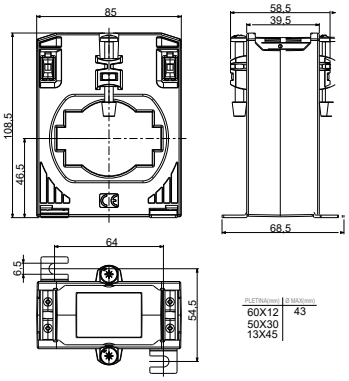
TD 6



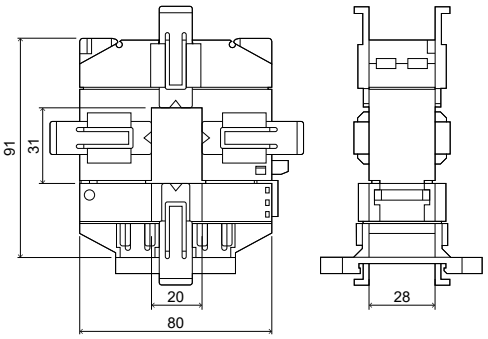
TD 6.2



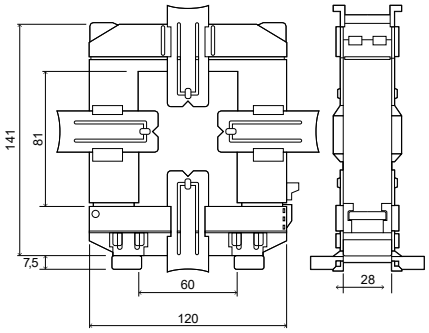
TD 8



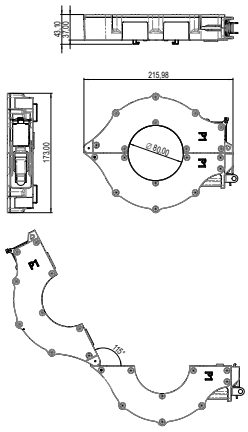
TQ6



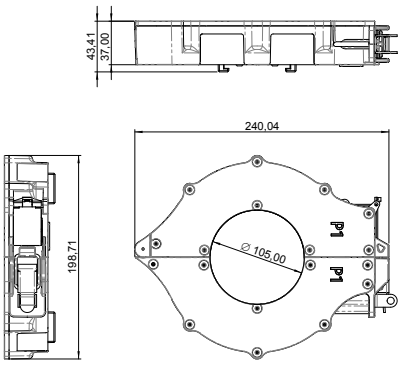
TQ8



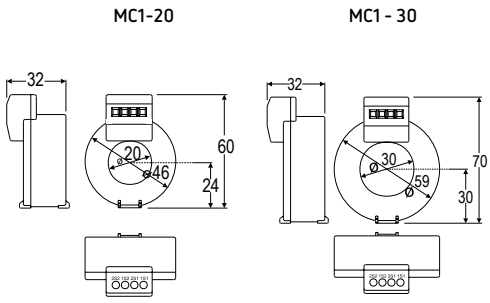
TQR-8



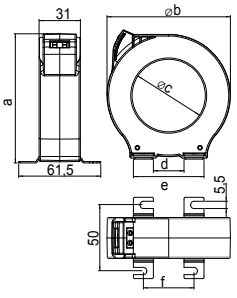
TQR-10



MC1

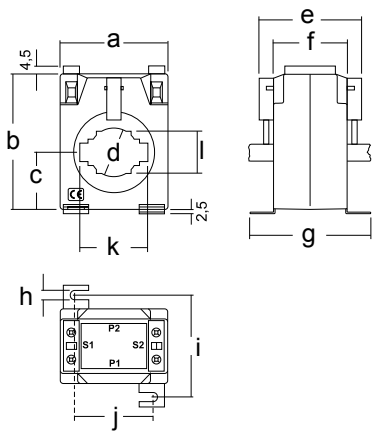


MC1 - 35 / MC1 - 55 / MC1-80



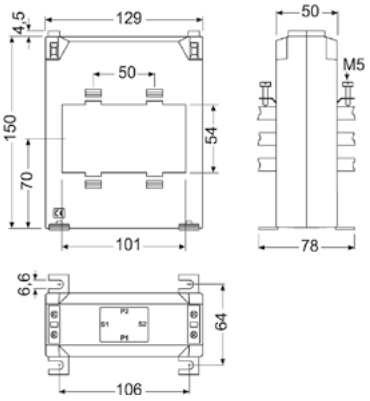
mm	MC1 -35	MC1 -55	MC1 -80
a	75,5	98	130
b	70,5	92	124,5
c	35	55	80
d		23	45
e		53	75
f		38	60

TC / TCH

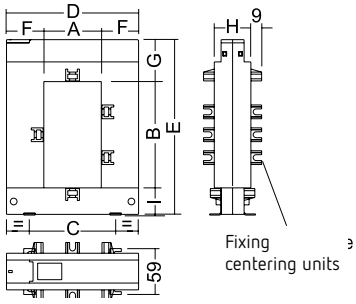


Dimensions (mm)	TC 5 TCH 5	TC 5.2 TCH 5.2	TC 6.2 TCH6.2	TC 6 TCH 6	TC 8 TCH 8	TC 10 TCH 10
a	58	58	64	64	84,5	108
b	70	70	80,5	80,5	102	130
c	29	29	34	34	46	61
d	20,3	22	26	28,5	44	63
e	45	45	60,5	66,5	69	---
f	32	32	44	44	50	50
g	59	59	71	71,2	78	78
h	5,6	5,6	5,6	5,6	6,6	6,6
i	48	48	60	60	64	64
j	39	39	46	46	62	86
k	25,6	30,6	30,6	40,6	60,6	80,6
l	15,6	15,6	20,6	25,2	30,6	50,8

TC 12 / TCH 12



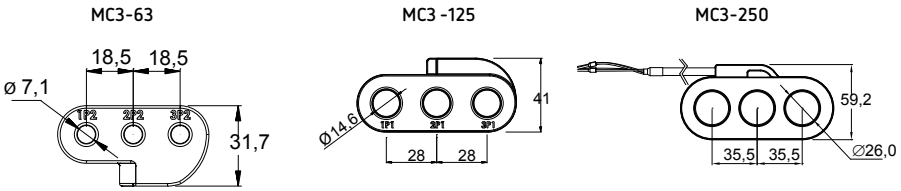
TP



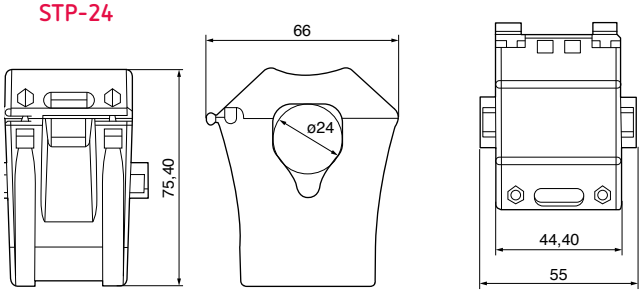
mm	TP-23	TP-58	TP-88	TP-812	TP-816
a	20	50	80	80	80
b	30	80	80	120	160
c	51	78	108	108	120
d	89	114	144	144	184
e	110	145	145	185	245
f	34	32	32	32	52
g	47	32	32	32	47
h	40	32	32	32	52
i	32	32	32	32	38

Note: All types have fixing centering units, except TP-23

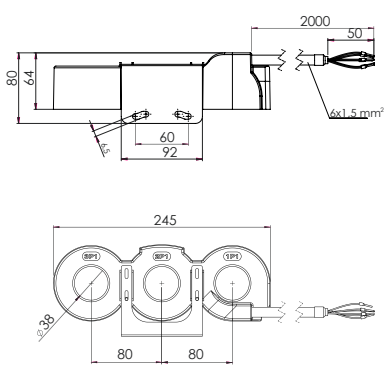
MC3



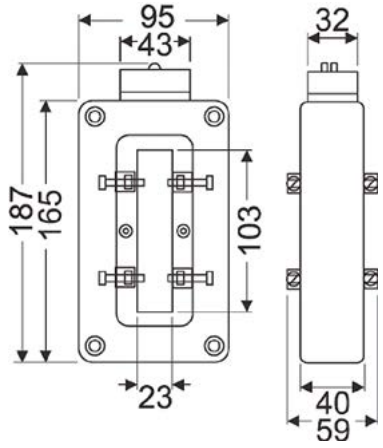
STP-24



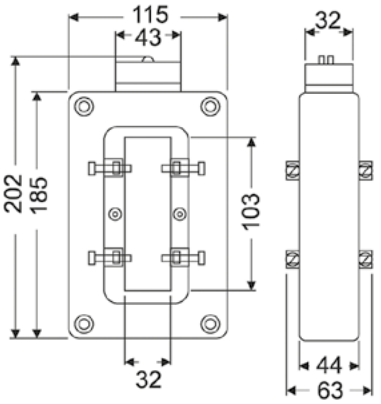
TRMCx3



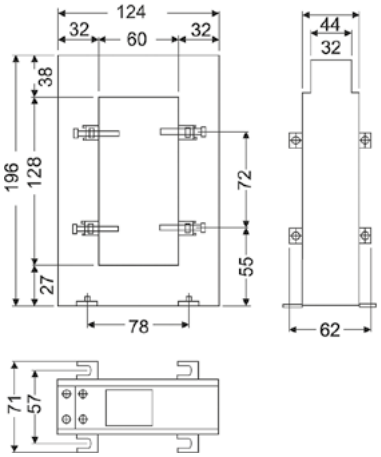
TA 400



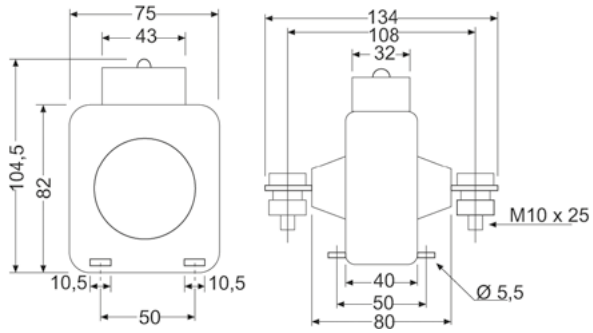
TA 500



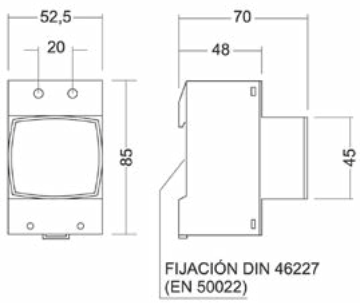
TA 600



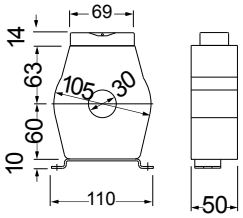
TA 210



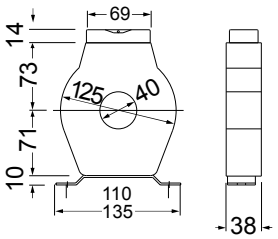
TM 45



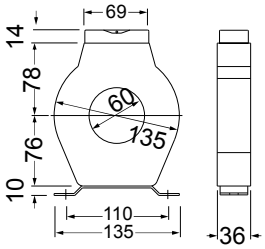
TRM30



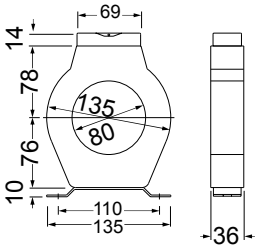
TRM40



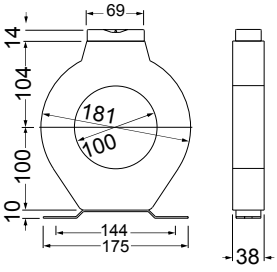
TRM60



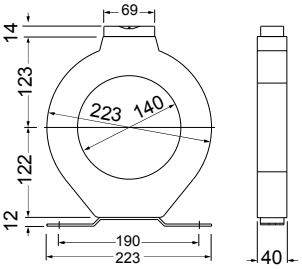
TRM80



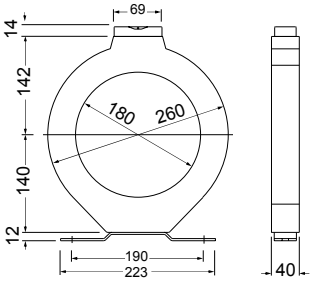
TRM100



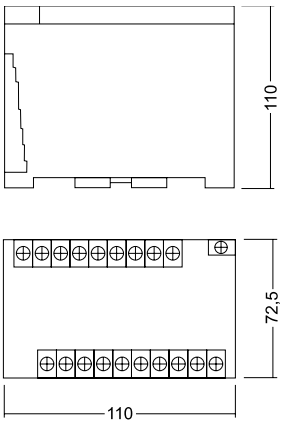
TRM140



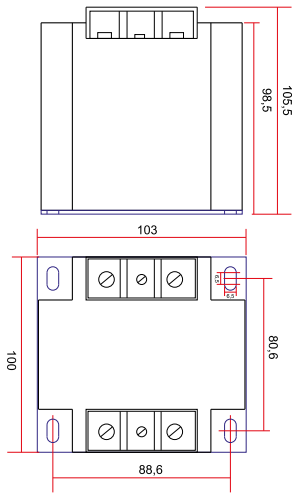
TRM180



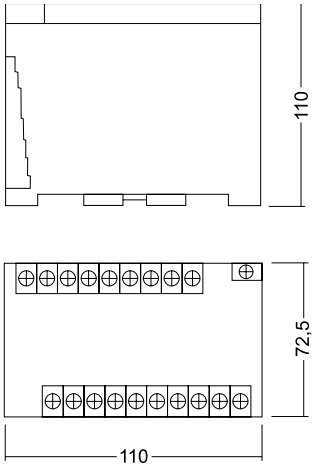
TSR



VT

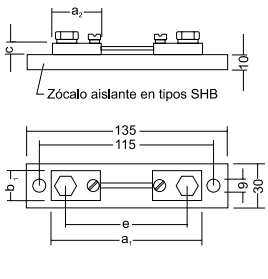


TSR

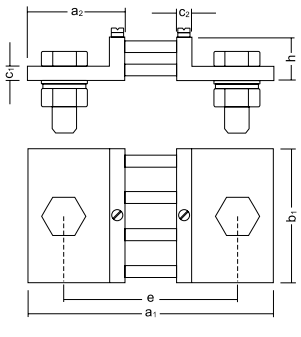


Shunts

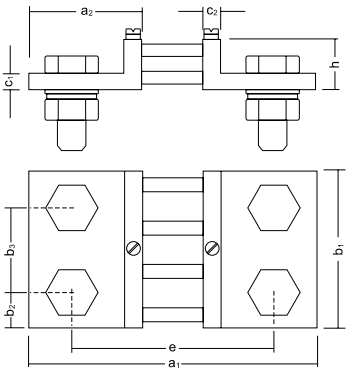
Voltage drop mV (1)	Range A (1)	Fig.	a1	a2	b1	b2	b3	c1	c2	e	h	N° Current connections	Current connections: Hexagonal screws DIN 933	Current connections: Washer DIN 125	Current connections: DIN 934 nut	Voltage connections
60	1-1 , 5-2, 5-4-6-10-15-25	1	90	28	20	-	-	8	-	78	-	2 x 1	M5 x 12	5,3	-	2 Screws M5 x 8 DIN 84 & 2 Washer 5,3 DIN 433
	30-40-60-100-150		100	33	20	-	-	8	-	80	-	2 x 1	M8 x 16	8,4	-	
	250	2	145	55	30	15	-	10	10	105	30	2 x 1	M12 x 40	13	M12	
	400-600				40	20						2 x 1	M16 x 45	17	M16	
	800		165	65	60	30	-	10	10	115	30	2 x 1	M20 x 50	21	M20	
	1500				90	21	48					2 x 2	M16 x 45	17	M16	
	2500				120	30	60	10	10	115	30	2 x 2	M20 x 50	21	M20	
150	1-1 , 5-2 , 5-4-6-10-15-25	1	90	25	20	-	-	8	-	78	-	2 x 1	M5 x 12	5,3	-	
	40-60-100-150		225	33	25	-	-	8	-	205	-	2 x 1	M8 x 16	8,4	-	
	250	2	270	55	30	15	-	10	10	230	50	2 x 1	M12 x 40	13	M12	
	400-600				40	20						2 x 1	M16 x 45	17	M16	
	800		290	65	70	35	-	10	10	240	60	2 x 1	M20 x 50	21	M20	



SHUNT 1-150



SHUNT 200-1000



SHUNT 1500-2500

Control devices

Sistema Line

New

Line-EDS

Energy manager (Efficiency Data Server)

Type	Code	Integrated Software	Transistor output	Generic Modbus	Communications	Protocol
Line-EDS-cloud	[*] M61055.	API's de: AZURE AWS GOOGLE DEXCELL MyCIRCUTOR	2	●	Ethernet | Wi-Fi | RS-485 | Bus-Line	Modbus | API's | web
Line-EDS-PS	[*] M61095.	PowerStudio	2	●	Ethernet | Wi-Fi | RS-485 | Bus-Line	Modbus (Circutor + generic) | XML
Line-EDS-PSS	[*] M61085.	PowerStudio Scada	2	●	Ethernet | Wi-Fi | RS-485 | Bus-Line	Modbus (Circutor + generic) | XML
Line-EDS-PSS PRO	[*] M61065.	PowerStudio Scada PRO	2	●	Ethernet | Wi-Fi | RS-485 | Bus-Line	Modbus (Circutor + generic) | XML

Bus-Line: RS-485 communications system, with lateral side connector between modules

	line-EDS-PS	Line-EDS-PSS	Line-EDS-PSS-Pro
SCADA screen customization	-	2	5
Report customization (Bill simulation)	-	2	5
Programming of events	10	20	40
Programming of calculated variables	10	20	40
Modbus RTU and TCP slave equipment CIRCUTOR or generic	5	10	20

Line-M

Expansion modules, Line system

Type	Code	Transistor output	Relay output	Digital inputs	Analogue Input	Analog output	Communi-cations	Protocol
Line-M-4I0-T	[*] M58E01.	4	-	4	-	-	Bus-Line	Modbus/RTU
Line-M-4I0-R	[*] M58E02.	-	4	4	-	-	Bus-Line	Modbus/RTU
Line-M-8I6O-R	[*] M58E08.	-	6	8	-	-	Bus-Line	Modbus/RTU
Line-M-4I0-A	[*] M58E03.	-	-	-	4 (0/4 ... 20 mA)	4 (0/4 ... 20 mA) |4 (0/2 ... 10 Vdc)	Bus-Line	Modbus/RTU
Line-M-4I0-RV	[*] M58E04.	-	4	4 (230 V)	-	-	Bus-Line	Modbus/RTU
Line-M-20I	[C] M58E06.	-	-	20	-	-	Bus-Line	Modbus/RTU

New

Transistor I/O expansion modules, Line system

Line-CVM-D

Power analyzer, Line series

Type	Code	Measuring Channels	Input current	Transistor output	Communications	Protocol	Harmonics
Line-CVM-D32	[*] M58100.	3	.../5 A | .../1 A | .../250 mA	2	RS-485 | Bus-Line	Modbus/RTU	40

Bus-Line: RS-485 communications system, with lateral side connector between modules

Expansion modules, Line series

Type	Code	Description
Line-M-EXT-PS	[*] M58E0A.	110-277 V ~ (P-N)/110-480 V ~ (P-P) power supply for maximum of 3 Line devices
Line-M-3G	[*] M58E05.	3G communications modem and Bus-Line to communicate with the Line-EDS devices

3G Modem, expansion modules, Line system

Ethernet

New

Line-TCPRS1	[C] M62411.	RS-485/RS-232 to Ethernet/Wi-Fi converter (ModbusTCP/TCP/UDP) Integrated web server and mobile app (MyConfig) for configuration

Line-TCPRS1: Power supply 100... 264 VAC/100... 300 VDC

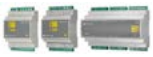
Delivery time: [*] Immediate, [x] working weeks, [c] Consult

New

Line-LM

Impulse and contact centralisers

Type	Code	Modules	Digital inputs	Communications	Protocol
line-LM20I-TCP Kit	[C] M62510.	6	20	Ethernet | WiFi	Modbus/TCP | TCP | UDP
line-LM40I-TCP Kit	[C] M62520.	9	40	Ethernet | WiFi	Modbus/TCP | TCP | UDP



LM

Impulse and contact centralisers

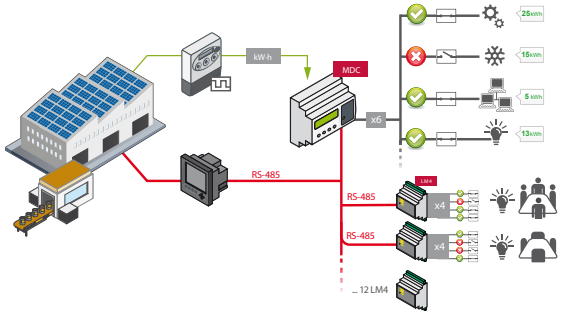
Type	Code	Modules	Relay output	Digital inputs	Analogue Inputs	Communications	Protocol
LM4I-40-M	[*] M31563.	4	4	4	-	RS-485	Modbus/RTU
LM4A-2I0-M	[*] M31565.	4	2	2	4 (0...20mA)	RS-485	Modbus/RTU

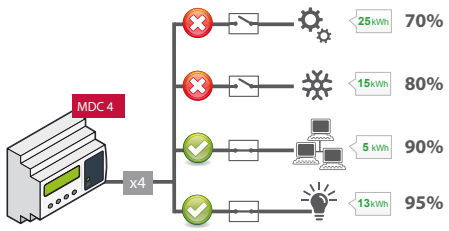
(*) Digital inputs (logic 0 / 1) or energy impulses

MDC

Maximum demand control devices

Type	Code	Description
MDC-20, 6 local Loads, expandable, predictive control		
MDC-20	[*] M61410.	8 digital inputs for logical states or counting impulse signals (electric energy meters, water meters, gas meters, etc.). Load status feedback (inputs/outputs). Expandable via auxiliary LM range units. Historical records of over one year with a log of up to 4500 electrical variables, averaged every 15 minutes, maximum and minimum values over the period (Period can be modified. Ring buffer). RS-485 BUS for connecting up to 12 LM4 i/o
MDC4, 4 loads, level control		
MDC-4	[*] M61430.	Maximum demand control unit, by level. Includes a built-in three-phase power analyzer and 4 relay outputs of up to 6 A for controlling non-priority loads





TH-DG

Temperature probe

Type	Code	Description
TH-DG-RS485	[*] M61310.	Temperature and humidity probe with RS-485 communications (ModBus/RTU).. Needs a 9...24 V ac/cc power supply. PowerStudio supported

ReadWatt

Impulse collection with communication

Type	Code	Description
PS 100..240Vcc	[*] M62331.	ReadWatt power supply
ReadWatt	[*] M62311.	Impulse collector with RS232/RS485 Modbus communications. Built in transistor output. PowerStudio supported

Accessories

Communication converters

Type	Code	Description
RS		
RS2RS	[*] M62141.	RS-232/485 Intelligent converter and amplifier (RTS control) for PC
USB		
USB-RS 485	[*] M54040.	USB to RS-485 Converter
USB-RS 232	[*] M54050.	USB to RS-232 Converter
M-BUS		
CMBUS-8	[*] M540A0.	M-Bus to Modbus Converter, up to 8 Mbus slaves
CMBUS-24	[*] M540B0.	M-Bus to Modbus Converter, up to 24 Mbus slaves
LoRa		
LR1RS+PSAC	[2] M6215A.	LoRa to RS-485 Converter (Modbus/RTU) . AC power supply (110...264 Vac)
LR1RS+PSDC	[2] M6215C.	LoRa to RS-485 Converter (Modbus/RTU) . DC power supply (12 Vdc)
Ethernet		
New Line-TCPRS1	[C] M62411.	RS-485/RS-232 to Ethernet/Wi-Fi converter (ModbusTCP/TCP/UDP) Integrated web server and mobile app (MyConfig) for configuration

Line-TCPRS1: Power supply 100... 264 VAC/100... 300 VDC

Communications accessories

Type	Code	Description
CM-GSM/3G	[*] Q30251.	RS-232/RS-485 GSM/3G Modem
SGE-3G/GPRS	[*] Q30230.	GPRS-3G Modem with Ethernet communications (includes PS + antenna + cable)
ANTENA GSM	[1] Q4994E.	Antenna 9 dB (for GSM modem)

PowerStudio

Energy management software

Type	Code	Description
SCADA software		
PowerStudio	[*] M90211.	Configuration, monitoring in real time, display of graphs and tables
PowerStudio-Scada	[*] M90231.	Software with USB HASP licence. Configuration, monitoring in real time, display of graphs and tables, generation of reports, creation of SCADA screens and alarms
PowerStudio-Deluxe	[C] M90241.	Software with USB HASP licence. Software PowerStudio-Scada with Generic Modbus driver used to connect to other devices available in the market
OPC Server PS/PSS	[1] M91111.	Software with USB HASP licence. **OPC Server** for PowerStudio is an integration platform that can easily integrate the parameters received from PowerStudio (or any of its versions) in any SCADA platform available in the market with a simple approach.
SQL DATA EXPORT	[1] M91301.	Software with USB HASP licence. SQL Data Export is a software tool for the integration of data from PS/PSS/PSSD to a new or existing SQL database.

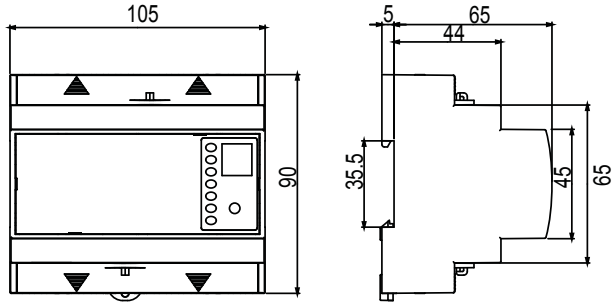
License 4.0 version 4.0

New Change PowerStudioSCADA physical licence to virtual licence

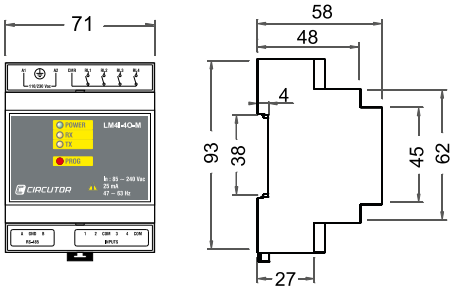
Type	Code	Description
Phi-to-Vir-PSS-Deluxe	[1] M902410055000	Replacement of physical USB licence for PowerStudioSCADA Deluxe with software licence (requires returning physical licence)
Phi-to-Vir-PSS	[1] M902310055000	Replacement of physical USB licence for PowerStudioSCADA with software licence (requires returning physical licence)

Dimensions

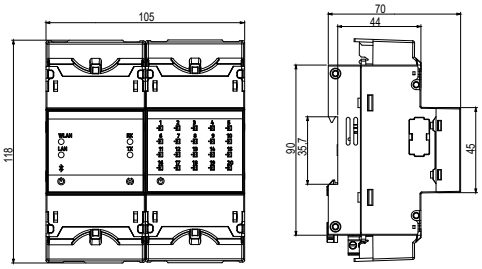
MDC-4 / MDC-20



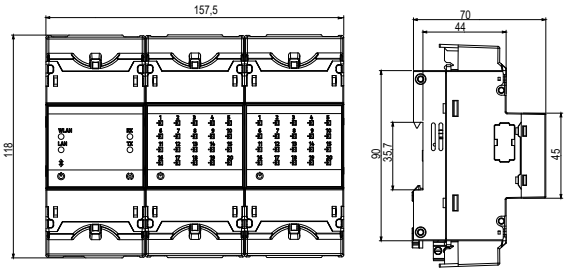
LM4I/4O-M / LM4A-2IO



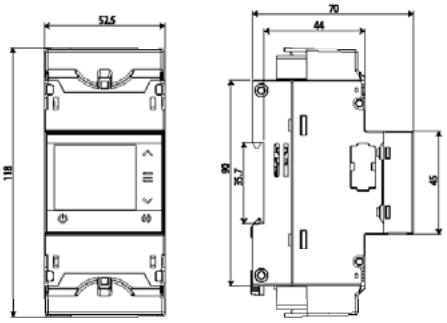
Line-LM20i-TCP

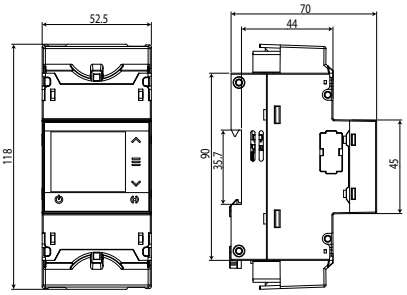


Line-LM40i-TCP

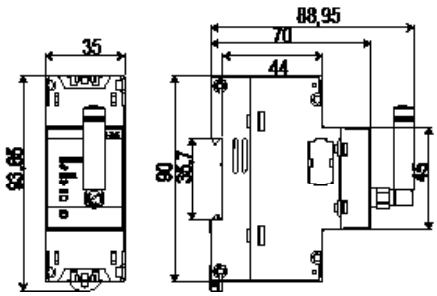


Line-EDS, line-CVM-D32, line-M





line-M-3G



Management software

PowerVision

Data management sofware for devices with memory

Type	Code	Description
Data management software		
PowerVisionPlus	[*] M90413.	Software for reading, downloading and processing files for devices equipped with memories (depending on type). Elaboration of graphs and tables from information. Automatic downloading for QNA Power Quality Analyzers. Other related units: AR5, AR5-L, QNA, CLP, CVM-BD M, CIR-E3 and AR6 series

PowerStudio

Energy management software

Type	Code	Description
Software SCADA		
PowerStudio	[*] M90211.	Energy supervision software for buildings and industrial installations, with the possibility of viewing reports, layouts and single-line diagrams. Other functions include: • Remote parameterisation of the units • Real-time display of parameters • Recording and printout of logs in table or graphic format • Multi-station Web Server and integrated XML Server • Creation of access users and profiles for the application with user name and password • Great versatility and very simple use • Compatible with OPC software for PS/PSS • Custom event configuration (Alarms, Calculations, Sending Emails) • Construction of customised screens • Possibility of performing control actions on the units • Report generator and energy bill simulator module, Possibility to emulate tariffs or time periods • Parameterisation of custom calculations to obtain EnPIs • Comparison of historical data stored in the system • Management of multi-point remote systems in combination with EDS and EDS-3G data servers • Compatible with the 32 and 64-bit Windows 7 and 8 platforms
PowerStudio-Scada	[*] M90231.	Energy monitoring software for industrial buildings and installations. It allows each installation to be controlled, providing the power line status in real time and first-hand, as well as the general consumption of the installation both at low and medium voltage. Its main features are: • Configuring CIRCUTOR units connected to the communications network • Displaying the parameters from the measuring units installed on site in real time • Creating databases • Recording and searching the historical data stored on a computer in graphical or table format • Built-in XML server • Exporting to text files and spreadsheets • Access to information through a conventional Internet browser
PowerStudio-Deluxe	[C] M90241.	In addition to the performance features offered by the standard module, Power Studio Scada, Deluxe can: • Generic Modbus driver used to connect to other devices available in the market • RS485 with Modbus/RTU protocol (driver composition). • Transparent Ethernet connections with the UDP, TCP and Modbus/TCP protocols • Variables to be integrated must have a hexadecimal format. • Acquisition of data with the OPC/DA protocol (real-time data). • Connection and display of video surveillance cameras with an IP connection (no recording functions). • Connection of PSSDs in cascade. • Generic driver used to download meters with the IEC 870 protocol (standard ASDUS) • Global integration of remote PowerStudio applications in a single server • Compatible with 64-bit Windows platforms • Compatible with OPC software for PS/PSS
OPC Server	[1] M91111.	OPC Sever for PowerStudio is an integration platform that can easily integrate the parameters received from PowerStudio (or any of its versions) in any SCADA platform available in the market with a simple approach. The format of requests that can be integrated will be DA real time data. It includes the Tunnelling function, establishing OPC connections over IP through a corporate network. In addition, it can establish decentralised or remote connections (routing). Therefore, any SCADA platform available in the market with an OPC/DA client function can immediately integrate all parameters received from the CIRCUTOR platform
SQL DATA EXPORT	[1] M91301.	SQL Data Export is a software tool for the integration of data from PS/PSS/PSSD to a new or existing SQL database. Main advantages of SQL Data Export: • Exporting historic data stored in SQL databases • Optional selection of devices or databases to be exported • Programming the download frequency • Multiple architectures

License 4.0 version 4.0

New

Change PowerStudioSCADA physical licence to virtual licence

Type	Code	Description
Phi-to-Vir-PSS	[1] M902310055000	Replacement of physical USB licence for PowerStudioSCADA with software licence (requires returning physical licence)
Phi-to-Vir-PSS-Deluxe	[1] M902410055000	Replacement of physical USB licence for PowerStudioSCADA Deluxe with software licence (requires returning physical licence)

Databox

Cloud platform

Type	Code	Description
DataBox	[C] DataBox	Software with licence in the cloud (Databox cloud platform) for complete management of all parameters required for the optimum performance of Energy Audits. The Databox system combines data recording, display and operation from any location using any PC, smartphone or tablet.

SBOX

Gateway for DataBox platform

Type	Code	Description
SBOX 3G VPN	[*] M61920.	Gateway with 3G communications via VPN network (1) and SIM card fully configured to send data from the units connected to the RS-485 port or Ethernet to the Databox cloud platform in order to carry out energy audits and improvements related to electrical energy efficiency
SBOX 3G NET	[*] M61930.	Gateway with 3G communications (SIM card must be provided by the user) to send data from the units connected to the RS-485 port or Ethernet to the Databox cloud platform in order to carry out energy audits and improvements related to Electrical Energy Efficiency

Portable power analyzers

Table: Portable power analyzers

		MYeBOX-A	MYeBOX 1500	MYeBOX 150	VLOG-10
					
Connection	Single-phase	•	•	•	•
	Three-phase	•	•	•	–
Parameters	Voltage	•	•	•	•
	Current	•	•	•	–
	Neutral current	•	•	•	–
	Leakage current	•	•	–	–
	Neutral-earth voltage	•	•	–	–
	Power	•	•	•	–
	Energy (active and reactive)	•	•	•	–
	Harmonics	•	•	•	–
	Flicker	•	•	•	–
Quality parameter measurements	Events (overvoltages, gaps and interruptions)	•	•	•	•
	EN50160 parameters	•	•	•	–
	Transients	•	•	•	–
Inputs/outputs	Digital inputs	2	2	–	–
	Digital outputs	2	2	–	–
Other features	Memory	•	•	•	•
	Communications	WiFi 3G µUSB	WiFi 3G µUSB	WiFi µUSB	USB
	Display	LCD	LCD	LCD	–
	Display of parameters	Display Smartphone & tablet (APP) Software + cloud	Display Smartphone & tablet (APP) Software + cloud	Display Smartphone & tablet (APP) Software + cloud	Software
	Display of files	Smartphone & tablet (APP) Software + cloud	Smartphone & tablet (APP) Software + cloud	Smartphone & tablet (APP) Software + cloud	Software
Standards	Measuring in accordance with IEC 61000-4-30	Class A certified	According Class A	According Class A	Class B
	Measuring in accordance with UL	• (certified)	• (certified)	• (certified)	–
	Page	47	47	47	48

T - Depending on Type

MYeBOX-A

Portable power analyzer with recording of quality events and transients Calibration Certificate (IEC 61000-4-30 Ed.2) Class A

Type	Code	Clamp	Measuring Channels	Transistor output	Digital inputs	Communications
MYeBOX-1500	[2] M840330000A00	-	5	2	2	Wi-Fi | 3G
Portable analyzer kits with current sensors						
MYeBOX-1500-3 FLEX-R45	[2] M8405B0000A00	3 FLEX-R45	5	2	2	Wi-Fi | 3G
MYeBOX-1500- 4 FLEX-R45	[2] M8405C0000A00	4 FLEX-R45	5	2	2	Wi-Fi | 3G
MYeBOX-1500-3 FLEX-R80	[2] M8405D0000A00	3 FLEX-R80	5	2	2	Wi-Fi | 3G
MYeBOX-1500-4 FLEX-R80	[2] M8405E0000A00	4 FLEX-R80	5	2	2	Wi-Fi | 3G
MYeBOX-1500- 3 CPG-100	[2] M840530000A00	3 CPG-100	5	2	2	Wi-Fi | 3G
MYeBOX-1500- 3 CPRG-500	[2] M840550000A00	3 CPRG-500	5	2	2	Wi-Fi | 3G

Analyser with built-in SD memory and Cloud Includes voltage cables, alligator clips, USB cable, fastening strap, magnetic support, battery, power supply and carrying bag. Please contact us for other clamp or clamp length combinations

MYeBOX

Portable power analyzer with recording of quality events and transients in accordance with (IEC 61000-4-30 Ed.2) Class A

Type	Code	Clamp	Measuring Channels	Transistor output	Digital inputs	Communications
MYeBOX-150	[*] M84023.	-	4	-	-	Wi-Fi
MYeBOX-1500	[*] M84033.	-	5	2	2	Wi-Fi | 3G
Portable analyzer kits with current sensors						
MYeBOX-150+3 FLEX-R45	[*] M8404B.	3 FLEX-R45	4	-	-	Wi-Fi
MYeBOX-1500+3 FLEX-R45	[*] M8405B.	3 FLEX-R45	5	2	2	Wi-Fi | 3G
MYeBOX-150-4 FLEX-R45	[*] M8404C.	4 FLEX-R45	4	-	-	Wi-Fi
MYeBOX-1500-4 FLEX-R45	[*] M8405C.	4 FLEX-R45	5	2	2	Wi-Fi | 3G
MYeBOX-150-3 FLEX-R80	[*] M8404D.	3 FLEX-R80	4	-	-	Wi-Fi
MYeBOX 1500+3 FLEX-R80	[*] M8405D.	3 FLEX-R80	5	2	2	Wi-Fi | 3G
MYeBOX-150-4 FLEX-R80	[*] M8404E.	4 FLEX-R80	4	-	-	Wi-Fi
MYeBOX-1500-4 FLEX-R80	[*] M8405E.	4 FLEX-R80	5	2	2	Wi-Fi | 3G
MYeBOX-150 + 3 CPG-100	[*] M84043.	3 CPG-100	4	-	-	Wi-Fi
MYeBOX-1500 + 3 CPG-100	[*] M84053.	3 CPG-100	5	2	2	Wi-Fi | 3G
MYeBOX-150 + 3 CPRG-500	[*] M84045.	3 CPRG-500	4	-	-	Wi-Fi
MYeBOX-1500 + 3 CPRG-500	[*] M84055.	3 CPRG-500	5	2	2	Wi-Fi | 3G

Analyser with built-in SD memory and Cloud Includes voltage cables, alligator clips, USB cable, fastening strap, magnetic support, battery, power supply and carrying bag. Please contact us for other clamp or clamp length combinations

MYeBOX accessories

Type	Code	Description
V-Wire x3	[*] M8401B.	set of 3 600 V CAT III cables
V-Wire x4	[*] M8401C.	set of 4 600 V CAT III cables
V-Wire x5	[*] M8401D.	set of 5 600 V CAT III cables
MYeBOX-BAT	[*] M84011.	MyEBOX battery
MYeBOX-PS	[*] M84012.	MYEBOX power cable
MYeBOX-PS480	[*] M8401A.	MYEBOX power supply (480 V)
MYeBOX-MARKER	[*] M84014.	Markers
MYeBOX-CARRYING BAG	[*] M84015.	Carrying bag
MYeBOX-BELT	[*] M84016.	MyEBOX strap
MYeBOX-MAG SUPPORT	[*] M84017.	MyEBOX magnetic base

Accessories

Type	Code	Description
Brida-AM54-FLEX	[*] M82502.	AM54-flex clamps, 5 colours tie bars
VCC-1	[*] M89909.	Crocodile clamp (1 unit)
MAG-ADAP	[*] M8990H.	Voltage adapter, magnetic tip Ø 6.6 mm
MAG-ADAPx3	[*] M8990J.	Kit 3 voltage adapters, magnetic tip Ø 6.6 mm
MAG-ADAPx4	[*] M8990K.	Kit 4 voltage adapters, magnetic tip Ø 6.6 mm
MAG-ADAPx5	[*] M8990L.	Kit 5 voltage adapters, magnetic tip Ø 6.6 mm

TABLE OF ADDITIONAL FEATURES

MYeBOX

M	8	4	0	X	X	0	0	0	0	X	X	X	
Code						Internal code							Delivery time
class A calibration certificate										A			2
MYeBOX kit with rugged IP clamps for outdoor use											0	2	4

FLEX-R

M	8	1	6	X	X	0	0	0	X	0	X	X	
Code						internal code							Delivery time
REDEL connector (PFG.M0.4GL. AC52GZ+protection (GMA.1B.054.DG)									2				1
Rugged IP for outdoor use											0	1	4

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

FLEX-R

Flexible sensors for MYeBOX analysers

Type	I min (A)	Measurement Range (A)	ø (mm)	Sensor lenght	Nr Sensors	Code	Nr Sensors	Code	Nr Sensors	Code
FLEX-R45	1 | 10 | 500	10 ... 100 A / 100 ... 1000 A / 1000 ... 10000 A	140	45 cm	1	[*] M81611.	3	[*] M81631.	4	[*] M81641.
FLEX-R80			250	80 cm	1	[*] M81612.	3	[*] M81632.	4	[*] M81642.
FLEX-R120			380	120 cm	1	[*] M81613.	3	[*] M81633.	4	[*] M81643.

FLEX-RMG

Flexible sensors for MYeBOX analysers

Type	I min (A)	Measurement Range (A)	ø (mm)	Sensor lenght	Nr Sensors	Code	Nr Sensors	Code	Nr Sensors	Code
FLEX-RMG70	1 | 10 | 500	10 ... 100 A / 100 ... 1000 A / 1000 ... 10000 A	70	22 cm	1	[*] M81911.	3	[*] M81931.	4	[*] M81941.
FLEX-RMG120			120	38 cm	1	[*] M81912.	3	[*] M81932.	4	[*] M81942.

CPG

Clamps

Type	I min (A)	Measurement Range (A)	ø (mm)	Nr Sensors	Code	Nr Sensors	Code	Nr Sensors	Code
CPG-5	0.05	0,5 ... 5 A	20	1	[*] M810B1.	3	[*] M810C1.	4	[*] M810D1.
CPG-100	1	10 ... 100 A		1	[*] M810B2.	3	[*] M810C2.	4	[*] M810D2.
CPRG-500		50 ... 500 A	52	1	[*] M810B3.	3	[*] M810C3.	4	[*] M810D3.
CPRG-1000		20 ... 1000 A		1	[*] M810B4.	3	[*] M810C4.	4	[*] M810D4.
CPRG-200/2000	1 | 10	10 ... 200 A / 150 ... 2000 A	64	1	[*] M810B5.	3	[*] M810C5.	4	[*] M810D5.

CFG

Residual current sensors (leaks)

Type	Code	Measurement Range (A)	I min	Usefull diam.(mm)
CFG-5	[3] M810BD.	0,1 ... 5 A	0.01	20
CFG-10	[*] M810BE.	0,1 ... 10 A	0.05	100

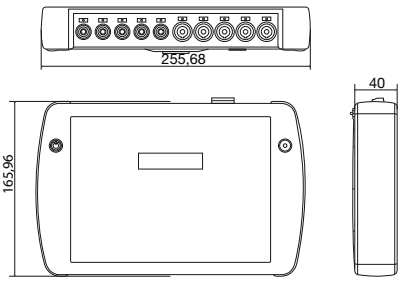
VLOG

Single-phase Power quality analyzer

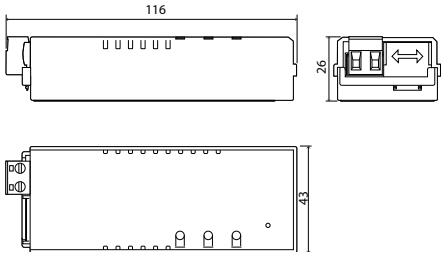
Type	Code	Description
VLOG-10	[C] M84101.	Single-phase analyzer to collect and record outages, gaps, overvoltages and voltage load profile

Dimensions

MYeBOX



VLOG



Digital instruments

Table: Digital intruments selection

		DCB	DHB	DHC-96	DCP-96
				 New	
Mounting	Pannel	48 x 48 72 x 72	96 x 48	96 x 48	96 x 96
	DIN rail	–	–	–	–
AC measurement	Single-phase	●	●	●	●
	Three-phase	–	–	–	●
AC measurement Parameters	Voltage	DCB-xx-Vac	DHB-324	DHC-96 Vac	DCP-96 Vac
	Current	DCB-xx-Aac	DHB-324	DHC-96 Aac	DCP-96 Aac
	Active power (W)	–	DHB-324	-	-
	Frequency (Hz)	DCB-xx-Vac / DCB-xx-Aac	DHB-324	DHC-96 Vac DHC-96 Aac	●
	Maximum demand (A)	–	DHB-324	–	–
DC measurement Parameters	Voltage	DCB-xx-HVdc	-	DHC-96 Vdc DHC-96 CPM DHC-96 CPM HS DHC-96 HVdc DHC-96 CPM 1500	
	Voltage (mV) - Indirect current mV Shunt	DCB-xx-mVdc	DHB-424	DHC-96 mVdc DHC-96 CPM DHC-96 CPM 1500	–
	Current	DCB-xx-Adc	–	DHC-96 Adc	–
	Process signal (±10 V)	DCB-xx-LVdc	DHB-424	DHC-96 LVdc DHC-96 Vdc	–
	Process signal (mA)	DCB-xx-mAdc	-	DHC-96 mAdc	
Accuracy	0,5%	●	●	●	●
No electric parameters	Hour run meter	–	DHB-124	–	–
	Temperature	–	DHB-424	–	–
	Chronometer, impulse meter	–	DHB-124	–	–
	Tachometer (r/min)	–	DHB-124	–	–
Other options	Auxiliar output relay	DCB-72xx-2OR	DHB-124 (3) DHB-424 (4) DHB-324 (4)	2	–
	Analog output	–	1	1	–
	Transistor input	–	–	2	–
	Communications port	–	RS-485 (Modbus RTU)	RS-485 (Modbus RTU)	–
	Auxliar power supply	80...270 Vca/Vcc 18...36 Vcc	85...235 Vca/Vcc	80...270 Vca/Vcc 18...36 Vcc (OP) 20... 60 Vdc (OP)	80...270 Vca 18...36 Vcc (OP)
	Frontal adapter	●	●	●	–
	Page	49	49	50	49

OP - Opcional / T - Depending on the type

DCB

Digital instruments

80 ... 270 Vac /Vdc power supply voltage

Type	Code	System	Output relay	Scale	Size(mm)
Voltmeters					
DCB-48 Vac	[*] M22110.	AC	-	63,5 V / 100 V / 110 V /230 V /380 V /480 V	48 x 48
DCB-72 Vac	[*] M22210.	AC	-	63,5 V / 100 V / 110 V /230 V /380 V /480 V	72 x 72
DCB-72 Vac-2OR	[*] M22212.	AC	2	63,5 V / 100 V / 110 V /230 V /380 V /480 V	72 x 72
DCB-48 LVdc	[*] M22120.	DC	-	± 10 V	48 x 48
DCB-72 LVdc	[*] M22220.	DC	-	± 10 V	72 x 72
DCB-72 LVdc-2OR	[*] M22222.	DC	2	± 10 V	72 x 72
DCB-48 HVdc	[*] M22130.	DC	-	± 500 V	48 x 48
DCB-72 HVdc	[*] M22230.	DC	-	± 1500 V	72 x 72
DCB-72 HVdc-2OR	[*] M22232.	DC	2	± 1500 V	72 x 72
Ammeters					
DCB-48 Aac	[*] M22150.	AC	-	1 A / 5 A	48 x 48
DCB-72 Aac	[*] M22250.	AC	-	1 A / 5 A	72 x 72
DCB-72 Aac-2OR	[*] M22252.	AC	2	1 A / 5 A	72 x 72
DCB-48 Adc	[*] M22170.	DC	-	1 A / 5 A	48 x 48
DCB-72 Adc	[*] M22270.	DC	-	1 A / 5 A	72 x 72
DCB-72 Adc-2OR	[*] M22272.	DC	2	1 A / 5 A	72 x 72
Process indicators					
DCB-48 mVdc	[*] M22140.	DC	-	60 mV / 75 mV / 100 mV / 150 mV / 200 mV	48 x 48
DCB-72 mVdc	[*] M22240.	DC	-	60 mV / 75 mV / 100 mV / 150 mV / 200 mV	72 x 72
DCB-72 mVdc-2OR	[*] M22242.	DC	2	60 mV / 75 mV / 100 mV / 150 mV / 200 mV	72 x 72
DCB-48 mAdc	[*] M22160.	DC	-	-20 ... +20 mA / 0...20 mA / 4...20 mA	48 x 48
DCB-72 mAdc	[*] M22260.	DC	-	-20 ... +20 mA / 0...20 mA / 4...20 mA	72 x 72
DCB-72 mAdc-2OR	[*] M22262.	DC	2	-20 ... +20 mA / 0...20 mA / 4...20 mA	72 x 72

DHB

Digital instruments

85 ... 253 Vac /Vdc power supply voltage

Type	Code	Parameters	Measure	Output relay	Analog output	Communications
DHB-124	[1] M22022.	Impulses, frequency, circular speed, periods, worktime, encoder position	imp., Hz.	3	1 (0/4...20 mA) |1(0...10V)	RS-485
DHB-324	[1] M22026.	Single-phase analyzer	± 100/400 Vac ± 1/5 Aac	4	1 (0/4...20 mA) |1(0...10V)	RS-485
DHB-424	[1] M22028.	Process / Resistance/ Temperature	Pt100/500/1000 Thermocouple J,K,N,E,R,S, ±20 mA, ±10 V, 60 mV	4	1 (0/4...20 mA) |1(0...10V)	RS-485

DCP-96

Digital instruments 96 x 96

80...270 Vac / Vdc power supply voltage.

Type	Code	System	Parameters	Scale
DCP-96 VAC	[2] M22410.	AC	V, Hz	3 x 230 / 400V
DCP-96 AAC	[2] M22450.	AC	A,Hz	.../5A, .../1A

TABLE OF ADDITIONAL FEATURES

DCB

Code						Internal Code			
M	2	X	X	X	X	0	0	X	
								↑	Delivery time
Auxiliary supply			Standard (80... 270 V_{ac})					0	
			18 ... 36 V_{dc}					3	-

DHC-96

Digital instruments 96 x 48

80 ... 270 Vac /Vdc power supply voltage

Type	Code	System	Parameters	Output relay	Digital inputs	Analog output	Scale	Commu-nications	Protocol
Voltmeters									
DHC-96 Vac	[*] M22318.	AC	V ~	2	2	1 (20 mA)	63,5 V / 100 V / 110 V /230 V /380 V /480 V	RS-485	Modbus/RTU
DHC-96 Vdc	[*] M22388.	DC	Vdc	2	2	1 (20 mA)	0...20 mA / 4...20 mA / 4...12...20 mA	RS-485	Modbus/RTU
DHC-96 HVdc	[*] M22338.	DC	Vdc	2	2	1 (20 mA)	± 1500 V	RS-485	Modbus/RTU
Ammeters									
DHC-96 Aac	[*] M22358.	AC	A ~	2	2	1 (20 mA)	1 A~ / 5 A~	RS-485	Modbus/RTU
DHC-96 Adc	[*] M22378.	DC	A dc	2	2	1 (20 mA)	1 Adc / 5 Adc	RS-485	Modbus/RTU
DHC-96 mVdc	[*] M22348.	DC	V dc	2	2	1 (20 mA)	60 mV / 75 mV / 100 mV / 150 mV / 200 mV	RS-485	Modbus/RTU
Process indicators									
DHC-96 LVdc	[*] M22328.	DC	Vdc	2	2	1 (20 mA)	± 10 V	RS-485	Modbus/RTU
DHC-96 mAdc	[*] M22368.	DC	mAdc	2	2	1 (20 mA)	-20 ... +20 mA / 0...20 mA / 4...20 mA	RS-485	Modbus/RTU

Option of 0/2... 10 VDC outputs on demand

New

DHC-96 CPM

Digital instruments: Programmabled DC measurement Central

100... 270 Vac /Vdc power supply voltage

Type	Code	System	Parameters	Measu-rement Range U	Measurement Range I	Output relay	Digital inputs	Analog output	Commu-nications	Protocol
Multimeter										
DHC-96 CPM	[*] M223A8.	DC (Shunt)	V/A/kW/ kWh dc	± 150 / 300 /600 Vdc	50 / 60 / 75 / 100 / 150 / 200 / 250 / 300 / 400 / 600 mV	2	2	1 (20 mA)	RS-485	Modbus/RTU
DHC-96 CPM-HS	[C] M223B8.	DC (Hall)	V/A/kW/ kWh dc	± 150 / 300 /600 Vdc	4 Vdc	2	2	1 (20 mA)	RS-485	Modbus/RTU
DHC-96 CPM 1500	[*] M223C8.	DC (Shunt)	V/A/kW/ kWh dc	± 150 / 300 /600 / 1000 / 1500 Vdc	50 / 60 / 75 / 100 / 150 / 200 / 250 / 300 / 400 / 600 mV	2	2	1 (20 mA)	RS-485	Modbus/RTU

Option of 0/2... 10 VDC outputs on demand

Adaptador frontal

Type	Code	Description
Adap.Frontal 72x72 -> 96x96	[*] M29914.	Frontal adapter 72x72 > 96x96
Adap.Frontal 48x48 -> 72x72	[4] M29911.	Frontal adapter 48x48 > 72x72
Adap.Frontal 48x48 -> 96x96	[4] M29912.	Frontal adapter 48x48 > 96x96
Adap.Frontal 48x96 -> 96x96	[*] M29913.	Frontal adapter 48x48 > 96x96

TABLE OF ADDITIONAL FEATURES

DHC, DCP

M	2	X	X	X	X	0	0	X	
Code						Internal Code	↑	Delivery time	
Auxiliary supply	Standard (85... 270 V_{ac}/V_{dc})						0		
	18 ... 36 V_{dc}						3	-	

DHC-96-CPM, DHC-96 Vdc

M	2	2	X	X	X	0	0	X	
Code						Internal Code	↑	Delivery time	
Auxiliary supply	Standard (100... 270 V_{ac}/V_{dc})						0	-	
	20 ... 60 V_{dc}						4	1	

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

Table: Measurement transducer selection

Voltage (V ac)	**CVE / CV-A**	Active power (kW)	**CW**
Voltage (V ac)	**CV-D**	Reactive power (kvar)	**CY**
Current (A ac)	**CCE / CC-A / TP-420 / TC-020 / TCB / TCM**	Frequency (Hz)	**CFE / CF**
Current (A dc)	**CC-D**	Temperature	**CT-PT100**

CVE/CCE/CFE

Narrow section transducers

Narrow-profile transducers, 230 Vac, 45 ... 65Hz.

Type	Code	System	Parameters	Measure	Output type	Analog output
AC Voltage transducer						
CVE-A	[*] M25011.	-	V ~	300 Vac	2	4...20mA
CVE-A-AP	[3] M25021.	-	V ~	230 Vac	1	0...20mA
AC Current transducer						
CCE-A	[*] M25111.	-	A ~	5 A	2	4...20mA
CCE-A-AP	[*] M25121.	-	A ~	5 A	1, 3	0...20mA
Frequency transducers						
CFE	[3] M25511.	Network voltage: 50 ... 600 Vac	-	45 ..... 55 Hz	2	4...20mA
CFE-AP	[3] M25521.	Selecting Network voltage: 115 / 240 / 400 Vac	-	45 ..... 55 Hz	1	0...20mA

Specify ACCORDING TO THE CODE TABLE: 1. Code/ 2. Input range / 3. Output range / 4. Auxiliary power supply / 5. Specify the network voltage for CFE-AP. xxx-AP types external auxiliary supply not required. 4...20 mA output not possible.

For other values, see coding table on following pages

Converters

CV

Voltage transducer

Type	Code	Parameters	Measure	Output type	Analog output
AC Voltage. Accuracy: ± 0,2 % reading, 40...90 Hz					
CV-A-AP Out1	[1] M25041.	V ~	300 Vac	1	0...20mA
CV-A Out1	[1] M25031.	V ~	300 Vac	1	0...20mA
CV-A Out2	[1] M25032.	V ~	300 Vac	2	4...20mA
CV-A-RMS Out1	[1] M25051.	V ~	300 Vac	1	0...20mA
CV-A-RMS Out2	[1] M25052.	V ~	300 Vac	2	4...20mA
DC Voltage. Auxiliary supply 230 V, 40...90 Hz, Accuracy: ± 0,5 % reading					
CV-D Out1,3	[1] M25061.	Vdc	10 Vdc	1, 3	0...20mA
CV-D Out2	[1] M25062.	Vdc	10 Vdc	2	4...20mA

-AP type: Accuracy: ± 0,5 % reading, 40...90 Hz. External auxiliary supply not required. Specify: Zero value, full scale and output type.

For other values, see coding table on following pages

CC

Current transducer

Type	Code	Parameters	Measure	Output type	Analog output
AC Current. Accuracy: ± 0,2 % reading, 40...90 Hz					
CC-A Out1	[1] M25131.	A ~	5 Aac	1	0...20mA
CC-A Out2	[*] M25132.	A ~	5 Aac	2	4...20mA
CC-A-AP	[*] M25141.	A ~	5 Aac	1	0...20mA
CC-A-RMS Out1	[1] M25151.	A ~	5 Aac	1	0...20mA
CC-A-RMS Out2	[*] M25152.	A ~	5 Aac	2	4...20mA
C.C.Current. Auxiliary supply 230 V, 40...90 Hz, Accuracy: ± 0,5 % reading.					
CC-D Out1	[1] M25161.	A dc	20 mA	1, 3	0...20mA
CC-D Out2	[1] M25162.	A dc	20 mA	2	4...20mA

-AP type: Accuracy: ± 0,5 % reading, 40...90 Hz. External auxiliary supply not required. Specify: Zero value, full scale and output type.

For other values, see coding table on following pages

CW
Active power transducer

Type	Code	System	Parameters	Output type	Analog output
Active power. Auxiliary supply 230 V, 40...90 Hz, Accuracy: ± 0,5 % reading					
CW-M Out1,3	[1] M25211.	Single-phase	kW	1, 3	0...20mA
CW-M Out2	[1] M25212.	Single-phase	kW	2	4...20mA
CW-TE Out1,3	[1] M25221.	Balanced three-phase	kW	1, 3	0...20mA
CW-TE Out2	[1] M25222.	Balanced three-phase	kW	2	4...20mA
CW-TA Out1,3	[1] M25231.	Unbalanaced three-phase ARON (3 wires)	kW	1, 3	0...20mA
CW-TA Out2	[1] M25232.	Unbalanaced three-phase ARON (3 wires)	kW	2	4...20mA
CW-TAN Out1,3	[1] M25241.	Unbalanaced three-phase (4 wires)	kW	1, 3	0...20mA
CW-TAN Out2	[1] M25242.	Unbalanaced three-phase (4 wires)	kW	2	4...20mA

Indicate: Zero value, fullscale, type of output, Un (between phases), In and fn.
For other values, see coding table on following pages

CY
Reactive power transducer

Type	Code	System	Parameters	Output type	Analog output
Reactive power. Auxiliary supply 230 V, 40...90 Hz, Accuracy: ± 0,5 % reading					
CY-M Out1,3	[1] M25251.	Single-phase	kvar	1, 3	0...20mA
CY-M Out2	[1] M25252.	Single-phase	kvar	2	4...20mA
CY-TE Sal.1,3	[1] M25261.	Balanced three-phase	kvar	1, 3	0...20mA
CY-TE Sal.2	[1] M25262.	Balanced three-phase	kvar	2	4...20mA
CY-TA Out1,3	[1] M25271.	Unbalanaced three-phase ARON (3 wires)	kvar	1, 3	0...20mA
CY-TA Out2	[1] M25272.	Unbalanaced three-phase ARON (3 wires)	kvar	2	4...20mA
CY-TAN Sal1,3	[1] M25281.	Unbalanaced three-phase (4 wires)	kvar	1, 3	0...20mA
CY-TAN Out2	[1] M25282.	Unbalanaced three-phase (4 wires)	kvar	2	4...20mA

Indicate: Zero value, fullscale, type of output, Un (between phases), In and fn.
For other values, see coding table on following pages

CF
Frequency transducers

Type	Code	Measure	Output type	Analog output
Auxiliary supply 230 V, 40...90 Hz, Accuracy: ± 0,2 % reading				
CF Out1	[3] M25531.	45 ... 55 Hz (10 ... 660 Vac)	1	0...20mA
CF Out2	[1] M25532.	45 ... 55 Hz (10 ... 660 Vac)	2	4...20mA

Indicate: Zero value, fullscale and type of output.
For other values, see coding table on following pages

CT-PT
Temperature transducer

Type	Code	Measure	Output type	Analog output
Temperature				
CT-PT100 Out1,3	[1] M25651.	According probe PT-100	1, 3	0...20mA
CT-PT100 Out2	[*] M25652.	According probe PT-100	2	4...20mA

Indicate: Zero value, fullscale and type of output.
For other values, see coding table on following pages

TABLE OF ADDITIONAL FEATURES

Narrow section transducers

M 2 X X X X 0 0 X X X X X

Code		Internal code					Delivery time
Voltage CVE-A	Standard (300 V)	0					-
	110 V	1					2
	400 V	2					2
	500 V	3					2
	690 V	4					2
Voltage CVE-A-AP	Standard (230 V)	0					-
	110 V	1					2
	400 V	2					2
Current CCE	Standard (5 A)	0					-
	1 A	1					2
	10 A	4					2
Frequency CFE	Standard (45...55 Hz)	0					-
	55...65 Hz	1					2
	47...53 Hz	2					2
	45...65 Hz	3					2
	0...100 Hz	4					2
	380...420 Hz	5					2
	360...440 Hz	6					2
	340...460 Hz	7					2
Output 2 CVE-A, CCE-A, CFE	Standard (4...20 mA)		0				-
	0...20 mA		1				2
	0...10 V		2				2
	2...10 V		3				2
Output 1,3 CVE-A-AP, CCE-A-AP, CFE-AP	Standard (0...20 mA)		0				-
	0...10 V		1				2
Auxiliary supply	Standard (220...240 V)			0			-
	380...400 Vca 40/60 Hz			3			2
	18...36 Vdc			7			2
Network voltage CFE-AP	Standard (230 V)				0	0	2
	110 V				0	1	2
	400 V				0	2	2

For other values consult

Transducers

M 2 X X X X 0 0 X X X

Code		Internal code				Delivery time
AC Voltage CV-A	Standard (300 V)	0				-
	110 V	1				1
	400 V	2				1
	500 V	3				1
	690 V	4				1
AC Current CC-A	Standard (5 A)	0				
	1 A	1				1
	10 A	4				1
DC Voltage CV-D	Standard (10 V)	0				
	60 mV	1				1
	1 V	2				1
	100 V	3				1
	500 V	4				1
DC Current CC-D	Standard (20 mA)	0				
	200 mA	1				1
	1 A	2				1
	10 A	3				1
Power CW, CY	300 V, .../5 A	N				1
	110 V, .../5 A	1				1
	400 V, .../5 A	2				1
	500 V, .../5 A	3				1
	600 V, .../5 A	4				1
	300 V, .../1 A	5				1
	110 V, .../1 A	6				1
	400 V, .../1 A	7				1
	500 V, .../1 A	8				1
	600 V, .../1 A	9				1
Temperature CT-PT	Standard (-200...+200 °C)	0				
	-200...+800 °C	1				1
Frequency CF	Standard (45...55 Hz)	0				
	55...65 Hz	1				1
	47...53 Hz	2				1
	57...63 Hz	3				1
	0...100 Hz	4				1
Outputs 1, 3	Standard (20 mA)		0			-
	0...1 mA		1			1
	0...10 mA		2			1
	2 V		3			1
	5 V		4			1
	0...10 V		5			1
	-20...0...20 mA		6			1
	-10...0...10 V		7			1
	-5...0...5 V		8			1
Outputs 2	Standard (4...20 mA)		0			
	2...10 V		2			1
Auxiliary supply	Standard (220...240 V)			0		-
	100...120 Vac			1		2
	380...400 Vca 40/60 Hz			3		2
	18...36 Vdc			7		2
	40...170 Vdc			9		2

For others values, consult

TI

Current transformer with converter 4 ... 20 mA

Type	TI-420			TP-420		TCM-420	TCB-420	
	TI-420-35	TI-420-70	TI-420-105	TP-420-23	TP-420-58	TCM-420-25	TCB-420-35	TCB-420-70
								
ø (mm)	35	70	105	-	-	25	35	70
Flat strip(mm)	-	-	-	20 x 30	50 x 80	-	-	-
Size (mm) width xheight xdepth	100x79x33	130x110x33	170x146x33	110x89x58	145x114x50	70x87x70	166x79x33	196x110x33
	10...28 Vdc supply, Output 4...20 mA					Output internal supply 4...20 mA (230 Vac Auxiliary supply)		
A	**Code**	**Code**	**Code**	**Code**	**Code**	**Code**	**Code**	**Code**
2.5	[1] M70811.					[2] M71041.	[3] M71011.	
5	[*] M70812.			[*] M70211.		[*] M71042.	[*] M71012.	
10	[*] M70813.			[*] M70212.		[*] M71043.	[*] M71013.	
20	[*] M70814.			[*] M70213.		[*] M71044.	[*] M71014.	
50	[*] M70815.			[*] M70214.		[*] M71045.	[*] M71015.	
100	[*] M70816.	[*] M70821.		[*] M70215.	[*] M70221.	[*] M71046.	[*] M71016.	[1] M71021.
200				[*] M70216.		[*] M71047.		
250	[*] M70817.	[*] M70822.	[1] M70831.	[*] M70217.	[*] M70222.		[*] M71017.	[*] M71022.
500		[*] M70823.	[1] M70832.	[*] M70218.	[*] M70223.			[*] M71023.
750		[*] M70824.	[1] M70833.		[*] M70224.			[*] M71024.
1000			[1] M70834.					
For greater currents, use: transformer + transducer								
EUR								

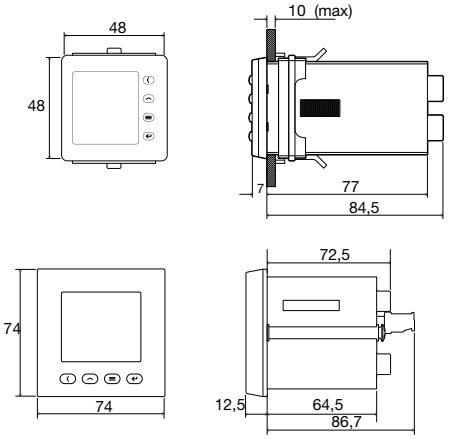
TC-420

Current transformers with converter 4 ... 20 mA or 0 ... 20 mA

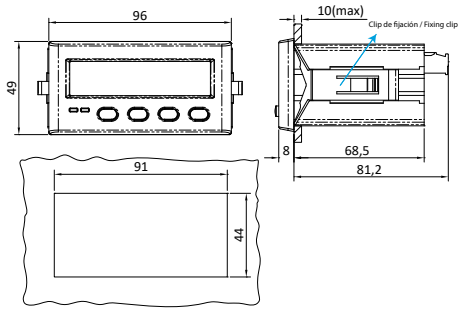
Type	TC5-420	TC6-420	TC8-420	TC6-020	TC8-020
					
ø (mm)	20	28	44	28	44
Flat strip(mm)	**25 x 5**	**40 x 10**	**60 x 12**	**40 x 10**	**60 x 12**
Size (mm) width xheight xdepth	58x70x32	64x80.5x44	84.5x102x50	64x80.5x44	84.5x102x50
	Output 4...20 mA, ext. supply 7,5...36 Vdc			Output 0...20 mA	
A	Code	Code	Code	Code	Code
5	[*] M72112.				
10	[*] M72113.				
20	[*] M72114.				
50		[*] M72131.		[*] M72031.	
100		[*] M72132.		[*] M72032.	
200		[*] M72134.		[*] M72034.	
		[*] M72136.		[*] M72036.	
500			[*] M72151.		[3] M72051.
1000			[*] M72152.		[1] M72052.
For greater currents, use: transformer + transducer					
EUR					

Dimensions

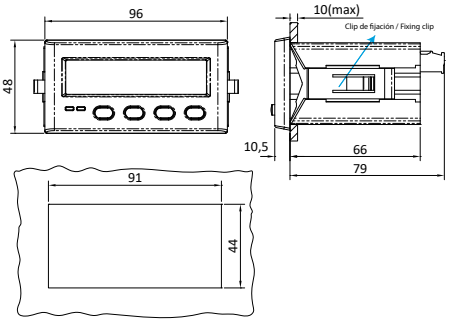
DCB



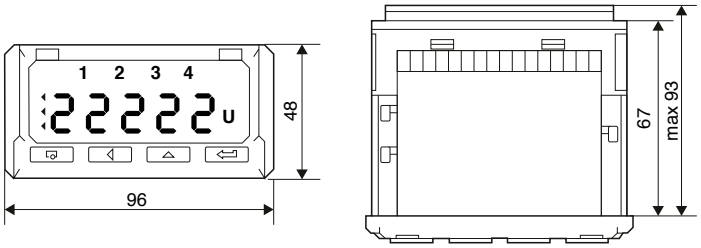
DHC-96



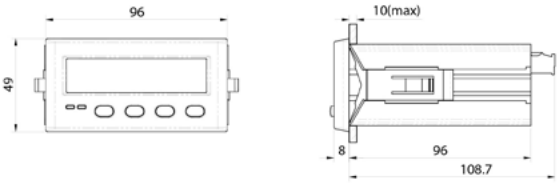
DHC-96 CPM



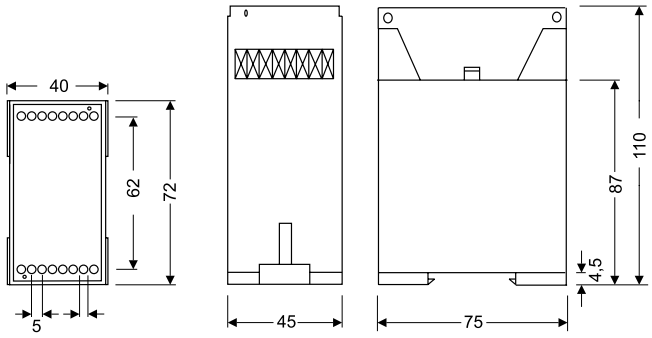
DHB



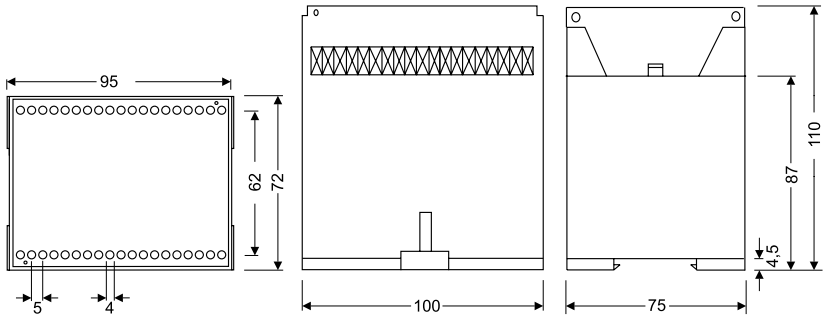
DHC-96 CPM-1500



CV-A / CV-D / CC-A / CC-D / CR2 / CT-PT100 / CUP / CF



CW / CY / CPF / CCOS / CFD



Analogue instruments

Analogue instrument selection table

	Measurement system	Assembly	Specifications	Range	Size mm	Accuracy class	Scale angle	Scale extension	Type
Ammeters	AC ~	Panel	Miliammeter	100...600 mA	48 x 48, 72 x 72, 96 x 96, 144 x 144	1,5	90°	P2	EC
			-	5...100 A ,.../5A					EC
				.../5A	72 x 72, 96 x 96		240°		EZC
			With switch	.../5A			90°	P1	EC FA
			With relays	.../5A	96 x 96				CEC
		DIN rail	-	5...60 A, .../5A	85 x 52			P2	EMSC 45
	CC ⎓	Panel	-	5...60 A, .../60 mV	48 x 48, 72 x 72, 96 x 96, 144 x 144			P1	BC
			With relays	.../60 mV	96 x 96				CBC
		DIN rail	-	5...60 A, .../60 mV	85 x 52				BMSC 45
Voltmeters	AC ~	Panel	-	150 ... 600 V, .../110 V	48 x 48, 72 x 72, 96 x 96, 144 x 144	1,5	90°	P1	EC
				250 V, 500 V	72 x 72, 96 x 96		240°		EZC
				150 ... 600 V					EC F
			With relays	150 ... 600 V, .../110 V	96 x 96		90°		CEC
		DIN rail	-	300 V, 500 V, .../110 V	85 x 52				EMSC 45
	CC ⎓	Panel	-	0...600 V	48 x 48, 72 x 72, 96 x 96, 144 x 144			P1	BC
			With relays	.../60 mV	96 x 96			P1	CBC
		DIN rail	-	15...150 V	85 x 52				BMSC 45
Process indicators	CC ⎓	Panel	-	0...10 V, 0/4... 20 mA	48 x 48, 72 x 72, 96 x 96, 144 x 144	1,5	90°	P1	BC
				0...10 V, 4... 20 mA, .../60 mV			240°	P1	ZC
		DIN rail		0...10 V, 0/4... 20 mA	85 x 52		90°		BMSC 45
Maximeters	-	Panel	Bimetallic	.../5 A				P1,2	MC
			Bimetallic + HM					P2	EMC
Sheet	Needle	Panel	-	45...65 Hz depending type	48 x 48, 72 x 72, 96 x 96, 144 x 144	0,5	90°	-	HC
		DIN rail	-		85 x 52		90°		HMSC
	Sheets	Panel	-		72 x 72, 96 x 96, 144 x 144		-		HLC
Wattmeter		Panel	Single-phase	400 V, .../5 A	96 x 96, 144 x 144	1,5	90°	P1	WMC
			Three-phase						WTC
Phase-meters Electronic		Panel	Single-phase	cos φ 0,5 - 1 - 0,5	96 x 96, 144 x 144	1,5	90°	P1	FEMC
			Three-phase						FETC

EC / EM / EZC / CEC

Moving Iron Miliammeters and Ammeter

Miliammeters and Ammeters, 90º - P2 - Class 1,5

Type					 New
	EC 48	EC 72	EC 96	EC 144	EMSC 45
a 	48	72	96	144	85
b	48	72	96	144	52
c	86,2	69,2	69,2	91,8	65
mA					
100	[1] M10111.	[*] M10121.	[1] M10131.	[1] M10141.	[1] M10161.
150	[1] M10112.	[1] M10122.	[1] M10132.	[1] M10142.	[1] M10162.
250	[1] M10114.	[1] M10124.	[1] M10134.	[1] M10144.	[1] M10164.
300	[1] M10115.	[1] M10125.	[1] M10135.	[1] M10145.	[1] M10165.
400	[1] M10116.	[1] M10126.	[1] M10136.	[1] M10146.	[1] M10166.
500	[1] M10117.	[1] M10127.	[1] M10137.	[1] M10147.	[1] M10167.
600	[1] M10118.	[1] M10128.	[1] M10138.	[1] M10148.	[1] M10168.
A					
5	[*] M10212.	[*] M10222.	[*] M10232.	[3] M10242.	[1] M10262.
10	[*] M10213.	[*] M10223.	[*] M10233.	[3] M10243.	[*] M10263.
15	[*] M10214.	[*] M10224.	[*] M10234.	[3] M10244.	[*] M10264.
20	[*] M10215.	[*] M10225.	[*] M10235.	[3] M10245.	[1] M10265.
25	[*] M10216.	[*] M10226.	[*] M10236.	[3] M10246.	[*] M10266.
30	[*] M10217.	[*] M10227.	[1] M10237.	[3] M10247.	[*] M10267.
40	[*] M10218.	[*] M10228.	[*] M10238.	[3] M10248.	[*] M10268.
50	[*] M10219.	[*] M10229.	[*] M10239.	[3] M10249.	[3] M10269.
60	[*] M1021A.	[*] M1022A.	[*] M1023A.	[3] M1024A.	[3] M1026A.
75	-	[*] M1022B.	[1] M1023B.	[3] M1024B.	-
100	-	[*] M1022C.	[*] M1023C.	[3] M1024C.	-
.../5 A (*1)	[*] M10210.	[*] M10220.	[*] M10230.	[3] M10240.	[*] M10260.

(*1) Exchangeable scales. See next page.

	Ammeters, 240°		Ammeters with phase switch		Ammeters with 2 relays
					
Type	**EZC 72**	**EZC 96**	**EC 72 FA**	**EC 96 FA**	**CEC 96**
Class	5		1,5		1,5
Scale	240º, P2		90º, P1		90º, P2
a 	72	96	72	96	96
b	72	96	72	96	96
c	69,2	69,2	69,2	69,2	110
A	(*2) .../5 A	(*2) .../5 A	(*2) .../5 A(*1)	(*2) .../5 A(*1)	(*2) .../5 A
(*2) .../5 A(*1)	[3] M10920.	[3] M10930.	[*] M10521.	[*] M10531.	[*] M14810.

(*1) Exchangeable scales. See next page.
(*2) Specify primary current of the measuring transformer

Exchangeable scales, moving iron ammeters

Type	SEC 48	SEC 72	SEC 96	SEMSC 45	SEC 72 FA	SEC 96 FA
Equipment	EC 48	EC 72	EC 96	EMSC 45	EC 72 FA	EC 96 FA
A						
5/5	[*] M102Z2.	[*] M102Y2.	[*] M102X2.	-	-	-
10/5	[*] M102Z3.	[*] M102Y3.	[*] M102X3.	-	-	-
15/5	[*] M102Z4.	[*] M102Y4.	[*] M102X4.	-	-	-
20/5	[*] M102Z5.	[*] M102Y5.	[*] M102X5.	-	-	-
25/5	[*] M102Z6.	[*] M102Y6.	[*] M102X6.	-	-	-
30/5	[*] M102Z7.	[*] M102Y7.	[*] M102X7.	-	-	-
40/5	[*] M102Z8.	[*] M102Y8.	[*] M102X8.	-	-	-
50/5	[*] M102Z9.	[*] M102Y9.	[*] M102X9.	[*] M102U9.	[*] M105Y9.	[*] M105X9.
60/5	[*] M102ZA.	[*] M102YA.	[*] M102XA.	[*] M102UA.	[2] M105YA.	[*] M105XA.
75/5	[*] M102ZB.	[*] M102YB.	[*] M102XB.	[*] M102UB.	[*] M105YB.	[*] M105XB.
100/5	[*] M102ZC.	[*] M102YC.	[*] M102XC.	[*] M102UC.	[*] M105YC.	[*] M105XC.
125/5	[*] M102ZD.	[*] M102YD.	[*] M102XD.	[*] M102UD.	[2] M105YD.	[*] M105XD.
150/5	[*] M102ZE.	[*] M102YE.	[*] M102XE.	[*] M102UE.	[*] M105YE.	[2] M105XE.
200/5	[*] M102ZF.	[*] M102YF.	[*] M102XF.	[*] M102UF.	[*] M105YF.	[*] M105XF.
250/5	[*] M102ZG.	[*] M102YG.	[*] M102XG.	[1] M102UG.	[*] M105YG.	[*] M105XG.
300/5	[*] M102ZH.	[*] M102YH.	[*] M102XH.	[*] M102UH.	[*] M105YH.	[*] M105XH.
400/5	[*] M102ZJ.	[*] M102YJ.	[*] M102XJ.	[*] M102UJ.	[*] M105YJ.	[*] M105XJ.
500/5	[2] M102ZK.	[*] M102YK.	[*] M102XK.	[*] M102UK.	[*] M105YK.	[*] M105XK.
600/5	[*] M102ZL.	[*] M102YL.	[*] M102XL.	[*] M102UL.	[*] M105YL.	[*] M105XL.
750/5	[*] M102ZM.	[*] M102YM.	[*] M102XM.	[*] M102UM.	[*] M105YM.	[*] M105XM.
800/5	[*] M102ZN.	[*] M102YN.	[*] M102XN.	[*] M102UN.	[*] M105YN.	[*] M105XN.
1 000/5	[*] M102ZP.	[*] M102YP.	[*] M102XP.	[1] M102UP.	[*] M105YP.	[*] M105XP.
1 200/5	[*] M102ZQ.	[*] M102YQ.	[*] M102XQ.	[1] M102UQ.	[*] M105YQ.	[*] M105XQ.
1 500/5	[*] M102ZR.	[*] M102YR.	[*] M102XR.	[1] M102UR.	[*] M105YR.	[*] M105XR.
2 000/5	[*] M102ZS.	[*] M102YS.	[*] M102XS.	[1] M102US.	[*] M105YS.	[*] M105XS.
2 500/5	[*] M102ZT.	[*] M102YT.	[*] M102XT.	[1] M102UT.	[*] M105YT.	[*] M105XT.
3 000/5	[*] M102ZU.	[*] M102YU.	[*] M102XU.	[1] M102UU.	[*] M105YU.	[*] M105XU.
4 000/5	[*] M102ZV.	[*] M102YV.	[*] M102XV.	[1] M102UV.	[*] M105YV.	[*] M105XV.
5 000/5	[*] M102ZW.	[2] M102YW.	[*] M102XW.	[1] M102UW.	[*] M105YW.	[*] M105XW.

TABLE OF ADDITIONAL FEATURES

EC, EMSC and EZC

Code		Internal code			Delivery time	+ €
M 1 X X X X 0 0		X	X	X		
Adjustment	Standard 2P	0			-	-
	1P	1			2	
	5P	6			2	
Current input	Standard (.../5 A)		0		-	
	.../1 A		1		1	
Scales(*)	1			1	2	
	5			2	2	
	10			3	2	
	15			4	2	
	20			5	2	
	25			6	2	
	30			7	2	
	40			8	2	
	50			9	2	
	60			A	2	
	75			B	2	
	100			C	2	
	125			D	2	
	150			E	2	
	200			F	2	
	250			G	2	
	300			H	2	
	400			J	2	
	500			K	2	
	600			L	2	
	750			M	2	
	800			N	2	
	1000			P	2	
	1200			Q	2	
	1500			R	2	
	2000			S	2	
	2500			T	2	
	3000			U	2	
	4000			V	2	
	5000			W	2	

SEC, SEM, EM

Code		Internal code		Delivery time	+ €
M 1 X X X X 0 0		X	X		
Adjustment	Standard 2P	0		-	
	1P	1		2	
	5P	6		2	
Current input	Standard (.../5 A)		0	-	
	.../1 A		1	1	

CEC (A)

Code		Internal code		Delivery time
M 1 X X X X 0 0		X	X	
Scales	60	A		-
	75	B		-
	100	C		-
	125	D		-
	150	E		-
	200	F		-
	250	G		-
	300	H		-
	400	J		-
	500	K		-
	600	L		-
	750	M		-
	800	N		-
	1000	P		-
	1200	Q		-
	1500	R		-
	2000	S		-
	2500	T		-
	3000	U		-
Current input	Standard (.../5 A)		0	-
	.../1 A		1	1
	/10 A		4	1

EC (mA), EMSC (mA)

Code		Internal code	Delivery time
M 1 X X X X 0 0		X	
Adjustment	Standard 2P	0	-
	1P	1	2
	5P	6	2

EC / EMSC / EZC / CEC

Moving Iron Voltmeters

	Voltmeters, 90°				Voltmeters, 90°	Voltmeters, 240°	
					 New		
Type	**EC 48**	**EC 72**	**EC 96**	**EC 144**	**EMSC 45**	**EZC 72**	**EZC 96**
Class	1,5				1,5	5	
Scale	90° , P1				90° , P1	240°, P1	
a b c 	48 48 86,2	72 72 69,2	96 96 69,2	144 144 91,8	85 52 65	72 72 69,2	96 96 69,2
V							
250	[*] M10415.	[*] M10425.	[*] M10435.	[3] M10445.	-	[*] M11125.	[*] M11135.
300	[*] M10416.	[*] M10426.	[*] M10436.	[3] M10446.	[*] M10476.		
400	[*] M10417.	[*] M10427.	[*] M10437.	[3] M10447.	-	-	-.
500	[*] M10418.	[*] M10428.	[*] M10438.	[3] M10448.	[*] M10478.	[*] M11128.	[*] M11138.
600	[1] M10419.	[*] M10429.	[*] M10439.	[3] M10449.	-	-	-.
.../110 V(*1)	[1] M10410.	[*] M10420.	[*] M10430.	[3] M10440.	[1] M10470.	-	-

(*1) Exchangeable scales, Voltmeters 90°

	Voltmeters with phases switch					Voltmeters with 2 relays
						
	Three-phase 3 wire		Three-phase 4 wire		with sequence meter	
Type	**EC 72 F III**	**EC 96 F III**	**EC 72 F III +N**	**EC 96 F III +N**	**EC 96 FN-S**	**CEC 96**
Class	1,5					1,5
Scale	90° , P1					90°, P1
a b c 	72 72 69,2	96 96 69,2	72 72 69,2	96 96 69,2	96 96 69,2	96 96 110
V						
150	-	-	-	-	-	[3] M14821.
250	[*] M10625.	[3] M10635.	[*] M10725.	[3] M10735.	-	[3] M14822.
300	[*] M10626.	[*] M10636.	[*] M10726.	[*] M10736.	-	[3] M14823.
400	[*] M10627.	[3] M10637.	[*] M10727.	[3] M10737.	-	[3] M14824.
500	[*] M10628.	[*] M10638.	[*] M10728.	[*] M10738.	[2] M11038.	[3] M14825.
600	[*] M10629.	[3] M10639.	[*] M10729.	[3] M10739.	-	[3] M14826.
(1).../110 V	-	[2] M10632.	-	-	-	[3] M14820.

(1) Specify primary voltage of the measuring transformers

Exchangeable scales, moving iron voltmeters, 1,2P

Type	SEC 48	SEC 72	SEC 96	SEMSC 45
Equipment	EC 48	EC 72	EC 96	EMSC 45
V				
1 000/110	[1] M104Z1.	[1] M104Y1.	[1] M104X1.	[1] M104U1.
3 300/110	[1] M104Z2.	[1] M104Y2.	[1] M104X2.	[1] M104U2.
6 600/110	[1] M104Z3.	[1] M104Y3.	[1] M104X3.	[1] M104U3.
13 200/110	[1] M104Z4.	[1] M104Y4.	[1] M104X4.	[1] M104U4.
15 000/110	[1] M104Z5.	[1] M104Y5.	[1] M104X5.	[1] M104U5.
20 000/110	[1] M104Z6.	[1] M104Y6.	[1] M104X6.	[1] M104U6.
22 000/110	[1] M104Z7.	[1] M104Y7.	[1] M104X7.	[1] M104U7.
25 000/110	[1] M104Z8.	[1] M104Y8.	[1] M104X8.	[1] M104U8.

TABLE OF ADDITIONAL FEATURES

EC Voltmeters with external transformer and EMSC, EZC

Code		Internal code			Delivery time	
M 1	X X X X 0 0	X	X	X		
Adjustment	Standard 1,2P	0			-	
	1P	1			2	
Voltage input	Standard (... / 110 V)		0		=	-
	... / 100 V		1		1	-
	... / 63,5 V		2		1	-
	... / 57,8 V		3		1	-
Scales (For equipments with external transformer and all EC)	1000			1	2	
	3300			2	2	
	6600			3	2	
	13200			4	2	
	15000			5	2	
	20000			6	2	
	22000			7	2	
	25000			8	2	

EC and EC-F direct Voltmeters

Code		Internal code		Delivery time
M 1	X X X X 0 0	X		
Adjustment	Standard 1P	0		-
	1,2P	2		2

EC scales and EMSC Voltmeters and scales

Code		Internal code		Delivery time
M 1	X X X X 0 0	X	X	
Adjustment	Standard 1,2P	0		-
	1P	1		2
Voltage inputs	Standard (... / 110 V)		0	-
	... / 100 V		1	1
	... / 63,5 V		2	1
	... / 57,8 V		3	1

BC / BMSC / CBC

Moving coil ammeters

	Ammeters, 90°				Ammeters, 90°	ammeters with 2 relays
					 New	
Type	BC 48	BC 72	BC 96	BC 144	BMSC 45	CBC 96
Class	1,5				1,5	1,5
Scale	90° , P1				90° , P1	90°, P1
a 	48	72	96	144	85	96
b	48	72	96	144	52	96
c	86,2	69,2	69,2	91,8	65	110
A						
5	[3] M11412.	[*] M11422.	[3] M11432.	[3] M11442.	[3] M11462.	-
10	[3] M11413.	[*] M11423.	[3] M11433.	[3] M11443.	[*] M11463.	-
25	[*] M11416.	[*] M11426.	[*] M11436.	[3] M11446.	[3] M11466.	-
50	[3] M11419.	[*] M11429.	[3] M11439.	[3] M11449.	[*] M11469.	-
60	-	[3] M1142A.	[3] M1143A.	[3] M1144A.	-	-
../60 mV(*1)	[*] M11410.	[*] M11420.	[*] M11430.	[3] M11440.	[3] M11460.	[3] M14830.

(*1) Exchangeable scales. See M.7 for external shunts

Exchangeable Scales

Type	**SBC 48**	**SBC 72**	**SBC 96**	**SBMSC 45**	**Type**	**SBC 48**	**SBC 72**	**SBC 96**	**SBMSC 45**
Device	**BC 48**	**BC 72**	**BC 96**	**BMSC 45**	**Device**	**BC 48**	**BC 72**	**BC 96**	**BMSC 45**
A / mV					**A / mV**				
50/60	[1] M114Z9.	[1] M114Y9.	[*] M114X9.	[1] M114U9.	300/60	[1] M114ZH.	[1] M114YH.	[1] M114XH.	[1] M114UH.
60/60	[1] M114ZA.	[1] M114YA.	[1] M114XA.	[1] M114UA.	400/60	[1] M114ZJ.	[1] M114YJ.	[*] M114XJ.	[1] M114UJ.
75/60	[1] M114ZB.	[1] M114YB.	[1] M114XB.	[1] M114UB.	600/60	[1] M114ZL.	[*] M114YL.	[*] M114XL.	[1] M114UL.
100/60	[1] M114ZC.	[*] M114YC.	[*] M114XC.	[1] M114UC.	1 000/60	[1] M114ZP.	[1] M114YP.	[*] M114XP.	[1] M114UP.
150/60	[1] M114ZE.	[1] M114YE.	[1] M114XE.	[1] M114UE.	1 500/60	[1] M114ZR.	[1] M114YR.	[1] M114XR.	[1] M114UR.
200/60	[1] M114ZF.	[*] M114YF.	[*] M114XF.	[1] M114UF.	2 500/60	[1] M114ZT.	[1] M114YT.	[1] M114XT.	[1] M114UT.
250/60	[1] M114ZG.	[1] M114YG.	[1] M114XG.	[1] M114UG.					

TABLE OF ADDITIONAL FEATURES

BC and BMSC 45 ammeter

Code		Internal code		Delivery time
M 1 X X X X 0 0		X	X X	
Adjustment	Standard	0		-
	central zero	1		2
Shunt input range	Standard (.../60 mV)		0	-
	.../50 mV		1	2
	.../150 mV		3	2
	.../300 mV		5	2
Scale	50		9	2
	60		A	2
	75		B	2
	100		C	2
	150		E	2
	200		F	2
	250		G	2
	300		H	2
	400		J	2
	500		K	2
	600		L	2
	1000		P	2
	1500		R	2
	2500		T	2

SBC, SBMSC 45 scales

Code		Internal code		Delivery time
M 1 X X X X 0 0		X	X	
Adjustment	Standard	0		-
	central zero	1		2
Shunt input range	Standard (.../60 mV)		0	-
	.../50 mV		1	2
	.../150 mV		3	2
	.../300 mV		5	2

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

BC / BM / CBC

Moving coil voltmeters

	Voltmeters, 90º				Voltmeters, 90º	Voltmeters with relay
					 New	
Type	BC 48	BC 72	BC 96	BC 144	BMSC 45	CBC 96
Class	1,5				1,5	1,5
Scale	90° , P1				90° , P1	90°, P1
a b c 	48 48 86,2	72 72 69,2	96 96 69,2	144 144 91,8	85 52 65	96 96 110
V						
0...10 V (*1)	[*] M11813.	[*] M11823.	[*] M11833.	[3] M11843.	-	-
1	[2] M11711.	[1] M11721.	[1] M11731.	[3] M11741.	-	-
15	[*] M11714.	[*] M11724.	[*] M11734.	[3] M11744.	[3] M11764.	-
30	[*] M11716.	[*] M11726.	[*] M11736.	[3] M11746.	[3] M11765.	-
60	[*] M11718.	[*] M11728.	[*] M11738.	[3] M11748.	[3] M11766.	-
100	[3] M11719.	[*] M11729.	[*] M11739.	[3] M11749.	[3] M11767.	
150	[3] M1171A.	[*] M1172A.	[*] M1173A.	[3] M1174A.	[*] M11768.	[3] M14841.
250	[3] M1171B.	[*] M1172B.	[*] M1173B.	[3] M1174B.	-	[3] M14842.
300	-	-	-	-	-	[3] M14843.
400	[3] M1171D.	[*] M1172D.	[*] M1173D.	[3] M1174D.	-	[3] M14844.
500	[3] M1171E.	[*] M1172E.	[1] M1173E.	[3] M1174E.	-	[3] M14845.
600	[3] M1171F.	[1] M1172F.	[1] M1173F.	[3] M1174F.	[3] M1176F.	[3] M14846.

(*1) Scale NOT included

TABLE OF ADDITIONAL FEATURES

BC and BMSC equipment

Code								Internal code
M	1	X	X	X	X	0	0	X

			Delivery time
Adjustment	Standard	0	-
	Central zero	1	2

BC / BMSC / ZC

Process indicators

Process indicators, 90°

					 New
Type	**BC 48**	**BC 72**	**BC 96**	**BC 144**	**BMSC 45**
Class	1,5				1,5
Scale	90° , P1				90° , P1
a 	48	72	96	144	85
b	48	72	96	144	52
c	86,2	69,2	69,2	91,8	65
Scope					
0...10 V	[*] M11813.	[*] M11823.	[*] M11833.	[3] M11843.	[3] M11863.
0...20 mA	[1] M11812.	[1] M11822.	[1] M11832.	[3] M11842.	[3] M11862.
4...20 mA	[*] M11811.	[*] M11821.	[*] M11831.	[3] M11841.	[3] M11861.

Scales NOT included

Exchangeable scales

Type	SIP 48	SIP 72	SIP 96	SIPMSC 45
Equipment	BC 48	BC 72	BC 96	BMSC 45
Scope				
0...10 V	[3] M118Z3.	[3] M118Y3.	[3] M118X3.	[1] M118U3.
0...20 mA	[3] M118Z2.	[3] M118Y2.	[3] M118X2.	[1] M118U2.
4...20 mA	[3] M118Z1.	[3] M118Y1.	[3] M118X1.	[1] M118U1.

Process indicators, 240°

Type			
	ZC 72	**ZC 96**	**ZC 144**
Class	1,5		
Scale	240°, P1		
a 	72	96	144
b	72	96	144
c	69,2	69,2	91,8
Scope			
0...10 V	[1] M12523.	[1] M12533.	[1] M12543.
4...20 mA(*)	[1] M12521.	[1] M12531.	[1] M12541.
.../60 mV	[1] M12520.	[1] M12530.	[1] M12540.

(*) Scale included in the price
The 6-digit code already includes the 4...20 mA scale

TABLE OF ADDITIONAL FEATURES

BC BMSC and ZC process indicators

Code		Internal code			Delivery time
M 1 X X X X 0 0		X	X	X	
Adjustment	Standard	0			-
	Central zero	1			2
Scale	1		1		2
	5		2		2
	10		3		2
	15		4		2
	20		5		2
	25		6		2
	30		7		2
	40		8		2
	50		9		2
	60		A		2
	75		B		2
	100		C		2
	125		D		2
	150		E		2
	200		F		2
	250		G		2
	300		H		2
	400		J		2
	500		K		2
	600		L		2
	750		M		2
	800		N		2
	1000		P		2
	1200		Q		2
	1500		R		2
	2000		S		2
	2500		T		2
	3000		U		2
	4000		V		2
	5000		W		2
Unit	-			0	2
	mA			1	2
	A			2	2
	kA			3	2
	mV			4	2
	V			8	2
	kV			9	2
	rpm			A	2
	rpm x 1000			B	2
	l (litros)			C	2
	m			G	2
	m^2			H	2
	m^3			J	2
	%			K	2

MC /EMC

Maximeter ammeters

	Bimetallic maximeter ammeter				Bimetallic maximeter ammeters + moving iron ammeters		
							
Type	MC 48	MC 72	MC 96	MC 144	EMC 72	EMC 96	EMC 144
Class	3				Bimetallic: 3 Moving iron:1,5		
Scale	90° , P1,2				Double Scale 90º, P1,2, moving iron P2		
a b c 	48 48 86,2	72 72 69,2	96 96 69,2	144 144 91,8	72 72 69,2	96 96 69,2	144 144 91,8
A							
.../ 5 A	[1] M12211.	[*] M12221.	[*] M12231.	[3] M12241.	[*] M12622.	[*] M12632.	[3] M12642.
	Scales NOT included						
Scale	120% 90° , P1,2						
.../ 5 A		[3] M15521.	[3] M15531.				
	Scale included						

Exchangeable scales

Type	SMC 48	SMC 72	SMC 96	SEMC 72	SEMC 96
Equipment	MC 48	MC 72	MC 96	EMC 72	EMC 96
A					
100/5	[1] M122ZC.	[*] M122YC.	[*] M122XC.	[*] M126YC.	[*] M126XC.
200/5	[*] M122ZF.	[*] M122YF.	[*] M122XF.	[*] M126YF.	[*] M126XF.
300/5	[*] M122ZH.	[*] M122YH.	[*] M122XH.	[*] M126YH.	[*] M126XH.
400/5	[*] M122ZJ.	[*] M122YJ.	[*] M122XJ.	[*] M126YJ.	[*] M126XJ.
500/5	[*] M122ZK.	[*] M122YK.	[*] M122XK.	[*] M126YK.	[*] M126XK.
600/5	[1] M122ZL.	[3] M122YL.	[*] M122XL.	[3] M126YL.	[*] M126XL.
750/5	[1] M122ZM.	[3] M122YM.	[*] M122XM.	[*] M126YM.	[*] M126XM.
800/5	[1] M122ZN.	[*] M122YN.	[*] M122XN.	[*] M126YN.	[*] M126XN.
1 000/5	[1] M122ZP.	[*] M122YP.	[*] M122XP.	[*] M126YP.	[*] M126XP.
1 500/5	[1] M122ZR.	[*] M122YR.	[*] M122XR.	[*] M126YR.	[*] M126XR.
2 000/5	[1] M122ZS.	[*] M122YS.	[*] M122XS.	[*] M126YS.	[*] M126XS.

TABLE OF ADDITIONAL FEATURES

MC and EMC maximeters and SMC and SEMC scales

M 1 X X X X 0 0 X X X

Code		Internal code	Delivery time
Adjustment	Standard (15 min.)	0	-
	8 minutes	1	1
	30 minutes	2	2
Current input	Standard (.../5 A)	0	-
	.../1 A	1	1
Scale	100	C	2
	125	D	2
	150	E	2
	200	F	2
	250	G	2
	300	H	2
	400	J	2
	500	K	2
	600	L	2
	750	M	2
	800	N	2
	1000	P	2
	1200	Q	2
	1500	R	2
	2000	S	2
	2500	T	2
	3000	U	2
	4000	V	2
	5000	W	2

HC / HMSC

Pointer type frequencymeters

	90° , 230 V			90 ª , 230 V
	 			 New
Type	HC 72	HC 96	HC 144	HMSC 45
Class	0,5			0,5
Scale	90°			90°
a b c 	72 72 69,2	96 96 69,2	144 144 91,8	85 52 65
45...55 Hz	[*] M12721.	[*] M12731.	[3] M12741.	[2] M12761.

HLC

Reed type frequencymeters

	 			
Tipo	**HLC 48**	**HLC 72**	**HLC 96**	**HLC 144**
Class		0,5		
a b c 		72 72 69,2	96 96 69,2	144 144 91,8
Hz				
48,5...51,5 Hz / 7 reeds	[c] M1291100A0000			
58,5...61,5 Hz / 7 reeds.	[c] M1291100B0000			
47...53 Hz / 13 reeds.		[c] M1292100C0000	[c] M1293100C0000	
57...63 Hz / 13 reeds.		[c] M129210010000	[c] M129310010000	
46...54 Hz / 17 reeds. (*)			[c] M129310080000	
56...64 Hz / 17 reeds. (*)			[c] M129310090000	
45...55 Hz / 21 reeds.(*)				[c] M129410060000
55...65 Hz / 21 reeds .(*)				[c] M129410070000

(*1) Metal enclosure

TABLE OF ADDITIONAL FEATURES

HC and HMSC frequencymeters

Code		Internal code		
M 1 X X X X 0 0 X X				
				Delivery time
Frequency	Standard (45...55 Hz)	0		-
	57...63 Hz	1		2
	55...65 Hz	3		2
	45...65 Hz	4		2
	47...53 Hz	5		2
Voltage	Standard (230 V)		0	-
	100 ... 120 V		1	2
	380 ... 400 V		3	2
	440 V		4	2
	(*) 380 ... 440 V		6	

(*) Only HC

HLC frequencymeters

Code		Internal code		
M 1 X X X X 0 0 X X				
				Delivery time
Voltage	Standard (230 V)		0	-
	100 V		7	3
	110 V		8	3
	400 V		9	3
	440 V		4	3

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

WMC / WTC
Wattmeters

WATTMETERS, 45 ... 65 Hz

Type								
	Single-phase		**Balanced three-phase**		**Three-phase 3 wire (ARON)**		**Three-phase 4 wire**	
	WMC 96	**WMC 144**	**WTC 96E**	**WTC 144E**	**WTC 96A**	**WTC 144A**	**WTC 96AN**	**WTC 144AN**
Class	1,5							
Scale	90° P1							
aa 	96	144	96	144	96	144	96	144
bb	96	144	96	144	96	144	96	144
cc	69,2	91,8	69,2	91,8	82,9	91,8	82,9	91,8
$U_{phase-phase}$	400 V		400 V		110 V (*1)		400 V	
	[*] M13031.	[4] M13041.	[*] M13032.	[4] M13042.	[3] M13034.	[4] M13044.	[*] M13033.	[4] M13043.

Exchangeable scales for the WMC 96, WTC 96E and WTC 96AN equipment. Scales NOT included
(*1) Specify primary voltage and current of the measuring transformers, and power at full scale

Wattmeters Exchangeable scales

	Single-phase		**Three-phase**		
Type		**SWM 96**		**SWT 96E (*1)**	**SWT 96AN (*2)**
Equipment		**WMC 96**		**WTC 96E**	**WTC 96AN**
A	**Full scale**	Code	**Full scale**	Code	Code
50/5	20 kW	[1] M130J9.	30 kW	[1] M130K9.	[1] M130L9.
75/5	-	-	50 kW	[1] M130KB.	[1] M130LB.
100/5	40 kW	[1] M130JC.	60 kW	[1] M130KC.	[1] M130LC.
150/5	60 kW	[1] M130JE.	90 kW	[1] M130KE.	[1] M130LE.
200/5	80 kW	[1] M130JF.	120 kW	[1] M130KF.	[1] M130LF.
300/5	120 kW	[1] M130JH.	180 kW	[1] M130KH.	[1] M130LH.
400/5	160 kW	[1] M130JJ.	240 kW	[1] M130KJ.	[1] M130LJ.
500/5	200 kW	[1] M130JK.	300 kW	[1] M130KK.	[1] M130LK.
600/5	240 kW	[1] M130JL.	360 kW	[1] M130KL.	[1] M130LL.
1 000/5	400 kW	[1] M130JP.	600 kW	[1] M130KP.	[1] M130LP.
1 500/5	600 kW	[1] M130JR.	900 kW	[1] M130KR.	[1] M130LR.
2 000/5	800 kW	[1] M130JS.	1,2 MW	[1] M130KS.	[1] M130LS.
3 000/5	1,2 MW	[1] M130JU.	1,8 MW	[1] M130KU.	[1] M130LU.
4 000/5	1,6 MW	[1] M130JV.	2,4 MW	[1] M130KV.	[1] M130LV.
5 000/5	2,0 MW	[1] M130JW.	3 MW	[1] M130KW.	[1] M130LW.

(*1) Balanced three-phase wattmeters type WTC 96E 230 V, 400 V
(*2) Unbalanced three-phase wattmeters type WTC 96AN 400 V

TABLE OF ADDITIONAL FEATURES

Wattmeters scales

Code								Internal code		
M	1	X	X	X	X	0	0	X	X	
										Delivery time
Current input								Standard .../ 5 A	0	-
								.../ 1 A	1	2
Voltages (V)								Standard (400 V)	0	-
								110 (a)	1	2
								230	2	2
								440	5	2
								460	6	2

(a) In ARON unbalanced three-phase Wattmeters (3 wires), the standard voltage is 110 V

Wattmeters

Code								Internal code		
M	1	X	X	X	X	0	0	X	X	X
Current input								Standard .../ 5 A	0	-
								.../ 1 A	1	2
Voltage								Standard (400 V_{ph-ph})	0	-
								110 V_{ph-ph} (a)	1	2
								230 V_{ph-ph}	2	2
								440 V_{ph-ph}	5	2
								460 V_{ph-ph}	6	2
Scale ranges Primary current transformer								50	9	2
								75	B	2
								100	C	2
								150	E	2
								200	F	2
								300	H	2
								400	J	2
								500	K	2
								600	L	2
								1000	P	2
								1500	R	2
								2000	S	2
								3000	U	2
								4000	V	2
								5000	W	2

(a) In ARON unbalanced three-phase Wattmeters (3 wires), the standard voltage is 110 V

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

FEMC / FETC

Electronic Phasemeters

90 °, 50 Hz

Type	Single-phase		Balanced three-phase	
	FEMC 96	FEMC 144	FETC 96	FETC 144
Class	1,5			
Scale	90° P1			
a b c	96 96 82,9	144 144 91,8	96 96 82,9	144 144 91,8
V **V**	cos *phi* 0,5-1-0,5			
100/√3	[1] M13431.	[3] M13441.	-	-
110/√3	[1] M13432.	[3] M13442.	-	-
100	[1] M13433.	[3] M13443.	[1] M1343C.	[3] M1344C.
110	[1] M13434.	[3] M13444.	[1] M1343D.	[3] M1344D.
230	[1] M13435.	[3] M13445.	[3] M1343E.	[3] M1344E.
400	[1] M13436.	[3] M13446.	[*] M1343F.	[3] M1344F.
440	[1] M13437.	[3] M13447.	[1] M1343G.	[3] M1344G.
500	[1] M13438.	[3] M13448.	[1] M1343H.	[3] M1344H.

Current range: from 0,1 to 1,2 In. To connect to .../ 5 A transformers. Electronic converter included.

PGR

Protection Wattmeters

Protective dual bidirectional wattmeter, 230 V

Type	Single-phase	Balanced three-phase	Three-phase 3 wire (ARON)	Three-phase 4 wire
	PGR 96 M	**PGR 96E**	**PGR 96A**	**PGR 96AN**
Converter	CW-M	CW-TE	CW-TA	CW-TAN
Class	1,5			
Scale	90° , P2			
a b c	96 96 110			
U / I				
100/ √3... 500 V .../ 5 A	[4] M14721.	-	-	-
100...500 V .../5 A	-	[4] M14722.	[4] M14724.	[4] M14723.

MUST SELECT THE REST OF PARAMETERS ON THE ATTACHED TABLE
The instrument includes the analogue converter and indicator.
Specify the primary voltage and current of the current transformers, the full scale power value and main voltage. Included and exchangeable scales. Standarized scales.

TABLE OF ADDITIONAL FEATURES

Electronic phasemeters

Code			Internal code	
M 1 X X X X 0 0			X	Delivery time
Secondary current	Standard .../ 5 A		0	-
	.../ 1 A		1	3

PGR

Code		Internal code			Delivery time
M 1 X X X X 0 0		X	X	X	
Scale	50	9			-
	60	A			3
	75	B			3
	100	C			3
	125	D			3
	150	E			3
	200	F			3
	250	G			3
	300	H			3
	400	J			3
	500	K			3
	600	L			3
	750	M			3
	800	N			3
	1000	P			3
	1200	Q			3
	1500	R			3
	2000	S			3
	2500	T			3
	3000	U			3
	4000	V			3
	5000	W			3
input current	Standard (.../ 5 A)		0		-
	.../ 1 A		1		3
Power Supply	Standard 220...240 V			0	2
	380 ... 400 V 40/60 Hz			3	3

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

2EC / 2HC / 2HLC / SMC / STC / UC / SynchroMAX, Synchronization and marine applications equipment

2EC, Double voltmeters


Type	2 EC 96	2 EC 144
Class	1,5	
Scale	90°	
a b c	96 96 69,2	144 144 91,8
V		
2 x .../100	[3] M13831.	[4] M13841.
2 x .../110	[3] M13832.	[4] M13842.
2 x 220	[3] M13833.	[4] M13843.
2 x 380	[3] M13834.	[*] M13844.
2 x 440	[3] M13835.	[4] M13845.

Specify voltage transformers

SMC / STC, Synchroscopes, 50 Hz


Type	Single-phase		Three-phase	
	SMC 96	SMC 144	STC 96	STC 144
Class	1,5		1,5	
a b c	96 96 121,2	144 144 122	96 96 121,2	144 144 122
V				
110	[3] M14431.	[4] M14441.	[*] M14435.	[4] M14445.
230	[3] M14432.	[4] M14442.	[3] M14436.	[4] M14446.
400	[3] M14433.	[4] M14443.	[*] M14437.	[4] M14447.
500	[3] M14434.	[4] M14444.	[3] M14438.	[4] M14448.

SynchroMAX, Synchronization equipment

Power Supply 400 V

Type	SynchroMAX	SynchroMAX PID
PID Control	No	Yes
a a b b c c	96 96 82,9	
Frequency	30 ... 70 Hz	
$V_{Measurement}$		
30...150	[*] M14624.	[*] M14634.
110...600	[*] M14625.	[4] M14635.

UC / CUC, Phase sequence indicators, 50 Hz



Type	UC 72	UC 96	CUC 96
Control Relay	No		Yes
a b c	72 72 82,9	96 96 82,9	96 96 82,9
V			
100...150	[1] M13726.	[1] M13736.	-
150...500	[1] M13721.	[*] M13731.	-
230	-	-	[3] M13754.
400	-	-	[*] M13755.

2HC, Double frequencymeters

Pointer Type, 230 V


Tipo	2 HC 96	2 HC 144
Class	0,5	
Scale	90°	
a b c	96 96 82,9	144 144 91,8
Hz		
45...55	[3] M12732.	[4] M12742.

2HLC, Double Reed type frequencymeters

Reed, 230 V


Tipo	2 HLC 96	2 HLC 144
Class	0,5	
Scale	-	
a b c	96 96 82,9	144 144 91,8
Hz		
47...53 Hz / 13 reed	[c] M1293200C0000	
57...63 Hz / 13 reed	[c] M129320010000	
46...54 Hz / 17 reed (*1)	[c] M129320080000	
56...64 Hz / 17 reed (*1)	[c] M129320090000	
45...55 Hz / 21 reed (*1)		[c] M129420060000
55...65 Hz / 21 reed (*1)		[c] M129420070000

(*1) Metal enclosure

CH

Hour run meters

Type	CH 48	CH 72	CH 96	CH 45
	5 + 2			
Display a b c	48 48 86,2	72 72 69,2	96 96 69,2	
Code	[*] M14911.	[*] M14921.	[2] M14931.	[4] M14951.

MEG-1000

Insulation resistance meter

230 V (*), 50...60 Hz

Type	MEG-1000
Class	1,5
Scale	90º
Frequency	50...60 Hz
a a b b c c	96 96 132
Ω (double Scales)	0...500 kΩ 0.5...5 MΩ
Code	[*] M15051.

(*) Power Supply 440 Vac +10% €

TABLE OF ADDITIONAL FEATURES

2 EC

Code									
	M	1	X	X	X	X	0	0	X
									Delivery time
Nominal scale value (Full scale)								400 (640)	0	-
								440 (700)	1	3
								660 (1050)	2	3
								1000 (1600)	3	3
								1200 (1920)	4	3
								2500 (4000)	5	3
								3000 (4800)	6	3
								3300 (5280)	7	3
								4000 (6400)	8	3
								5000 (8000)	9	3
								5500 (8800)	A	3
								6600 (10560)	B	3
								7200(11520)	C	3
								9000 (14400)	D	3
								10000 (16000)	E	3
								11000 (17600)	F	3
								12500 (20000)	G	3
								15000 (24000)	H	3
								20000 (32000)	J	3
								22000 (35200)	K	3
								24000 (38400)	L	3
								25000 (40000)	M	3

2HC frequencymeters

Code										
	M	1	X	X	X	X	0	0	X	X
										Delivery time + €
Frequency (Hz)								Standard (45...55 Hz)	0	-
								57...63	1	2
								55...65	3	2
								45...65	4	2
								47...53	5	2
Voltage (V)								Standard (230 V)	0	-
								100 ... 120	1	3
								380 ... 400	3	3
								440	4	3

SMC, STC, UC

Code									
	M	1	X	X	X	X	0	0	X
									Delivery time
Frequency								Standard (50 Hz)	0	-
								60 Hz	1	3

SynchroMAX

Code									
	M	1	X	X	X	X	0	0	X
									Delivery time
Voltage supply								Standard (400 V)	0	-
								110 Vac	1	-
								230 Vac	2	-
								40...170 Vdc	D	2

2HLC frequencymeters

Code										
	M	1	X	X	X	X	0	0	X	X
										Delivery time + €
Voltage								Standard (230 V)	0	-	-
								100 V	7	3	-
								110 V	8	3	-
								400 V	9	3	
								440 V	4	3	-

CH

Code										
	M	1	X	X	X	X	0	0	X	X
										Delivery time
Frequency								Standard 50 Hz	0	-
								60 Hz	1	2
Voltage								Standard (230 V)	0	-
								24 Vc.a.	6	2
								110 Vc.a.	1	2
								10...80 Vc.c.	8	2
								80...200 Vc.c.	A	2

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

Accessories / Options for analogue instruments

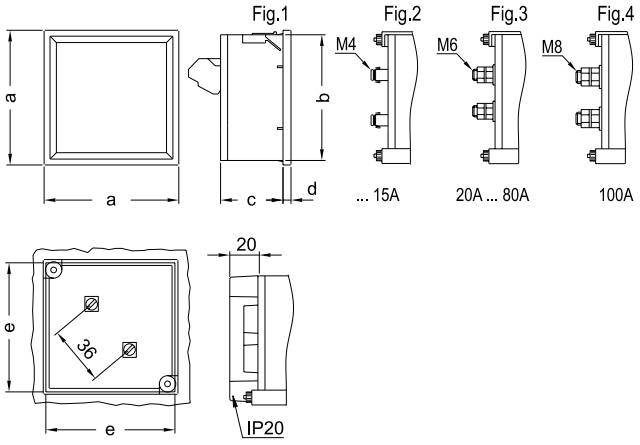
GENERAL options for analogue instruments

Type	Code
IP 54 airtight seal , **48 x 48**	[1] M1ZZ52.
IP 54 airtight seal, **72 x 72**	[1] M1ZZ53.
IP 54 airtight seal, **96 x 96**	[1] M1ZZ54.
IP 54 airtight seal, **144 x 144**	[1] M1ZZ55.
Protection IP 65, 48 x 48	[1] M19941.
Protection IP 65, 72 x 72	[1] M19942.
Protection IP 65, 96 x 96	[1] M19943.
Protection IP 65, 144 x 144	[1] M19944.
Terminal covers (IP 20) 48 x 48	[3] M19921.
Terminal covers (IP 20) 72x 72	[*] M19922.
Terminal covers (IP 20) 96 x 96	[*] M19923.

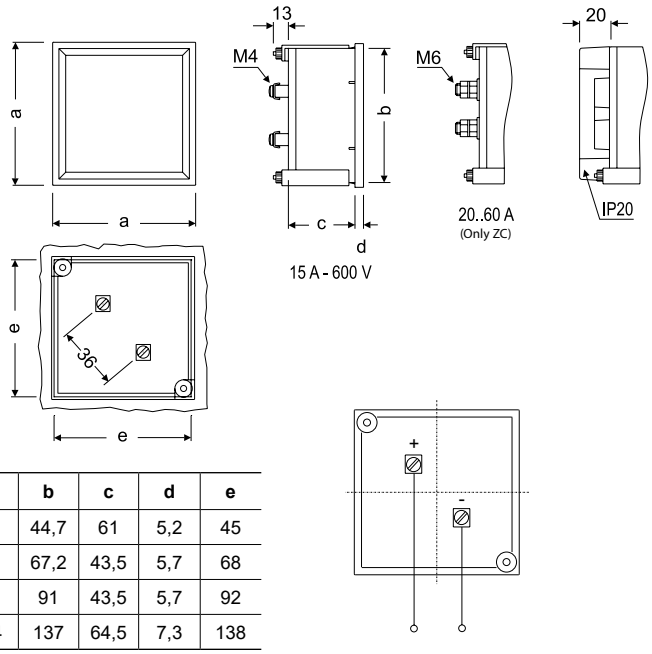
M 1 X X X X 0 0 X X X X X			
			Delivery time
Other options	Tropical proof (assembly panel only)	0 1	2
	Externally regulated pointer	0 2	2
	Anti-reflection glass	0 3	2
	Makrolon glass	0 4	2
	Interior lighting (6-12-48 V dc) panel only	0 5	2
	Tropical proof + Anti-reflection glass	0 6	2
	Tropical proof + Makrolon glass	0 7	2

Dimensions

EC / BC

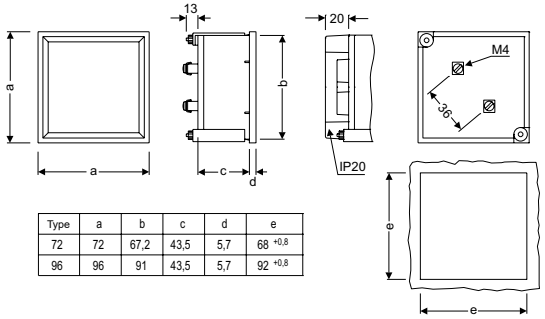


EZC / ZC



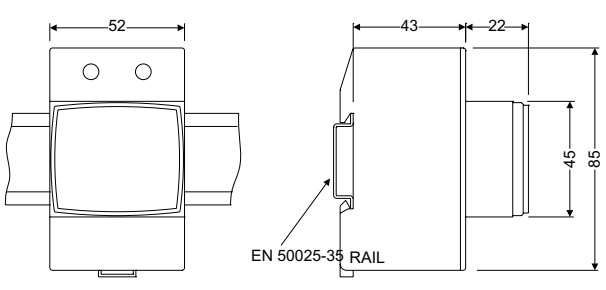
Typ	Fig. EC	Fig. BC	Fig. ZC	Fig. EZC	a	b	c	d	e
48	1-3	1-3	1	-	48	44,7	61	5,2	45
72	1-3-4	2-3-4	1	1	72	67,2	43,5	5,7	68
96	1-3-4	2-3-4	1	1	96	91	43,5	5,7	92
144	2-3-4	2-3-4	1	-	144	137	64,5	7,3	138

EC-FA, EC-F, EC-FN



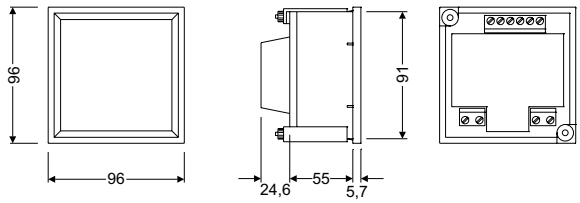
Type	a	b	c	d	e
72	72	67,2	43,5	5,7	68 $^{+0,8}$
96	96	91	43,5	5,7	92 $^{+0,8}$

EMSC 45 / BMSC 45 / HMSC 45

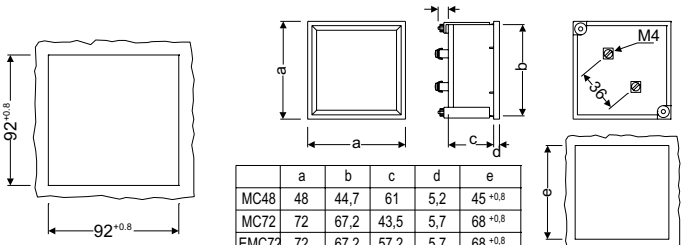


Delivery time: [*] Immediate, [x] working weeks, [c] Consult

CEC/ CBC / PGR

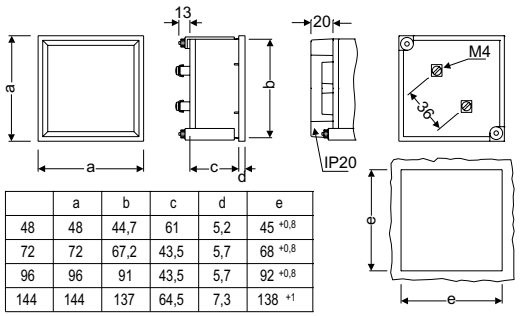


EMC / MC



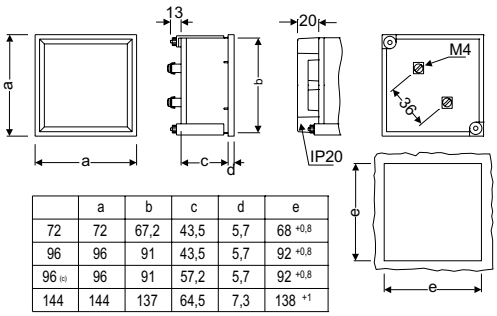
	a	b	c	d	e
MC48	48	44,7	61	5,2	45 +0,8
MC72	72	67,2	43,5	5,7	68 +0,8
EMC72	72	67,2	57,2	5,7	68 +0,8
96	96	91	43,5	5,7	92 +0,8
144	144	137	64,5	7,3	138 +1

HC



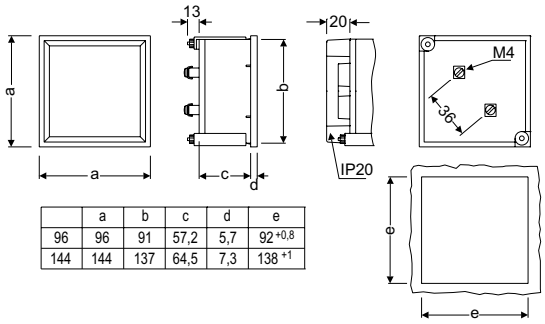
	a	b	c	d	e
48	48	44,7	61	5,2	45 +0,8
72	72	67,2	43,5	5,7	68 +0,8
96	96	91	43,5	5,7	92 +0,8
144	144	137	64,5	7,3	138 +1

HLC



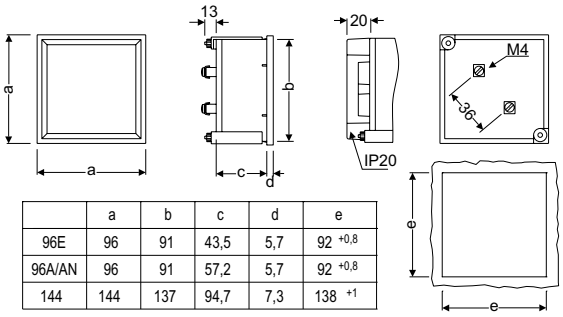
	a	b	c	d	e
72	72	67,2	43,5	5,7	68 +0,8
96	96	91	43,5	5,7	92 +0,8
96 (c)	96	91	57,2	5,7	92 +0,8
144	144	137	64,5	7,3	138 +1

FEMC / FETC



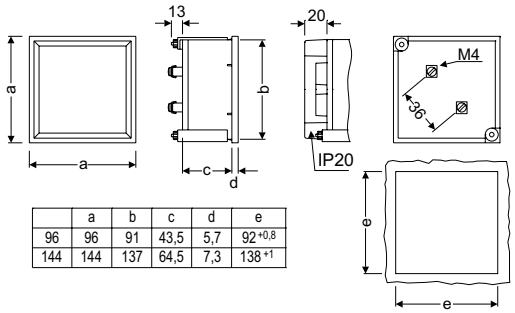
	a	b	c	d	e
96	96	91	57,2	5,7	92 +0,8
144	144	137	64,5	7,3	138 +1

WMC / WTC



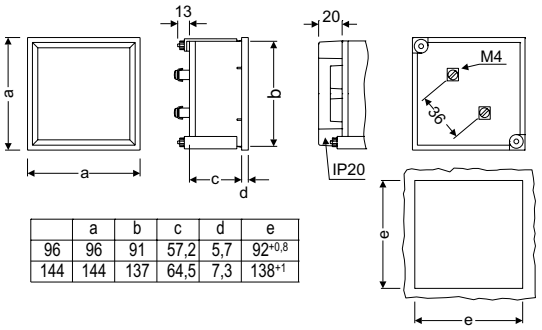
	a	b	c	d	e
96E	96	91	43,5	5,7	92 +0,8
96A/AN	96	91	57,2	5,7	92 +0,8
144	144	137	94,7	7,3	138 +1

2 EC



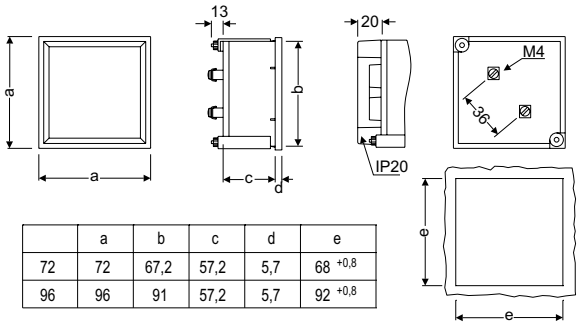
	a	b	c	d	e
96	96	91	43,5	5,7	$92^{+0,8}$
144	144	137	64,5	7,3	138^{+1}

2 HC / 2 HLC



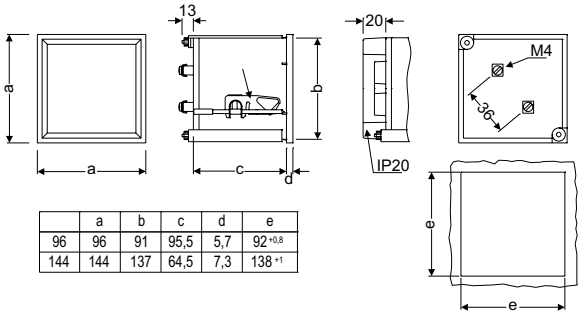
	a	b	c	d	e
96	96	91	57,2	5,7	$92^{+0,8}$
144	144	137	64,5	7,3	138^{+1}

UC / CUC



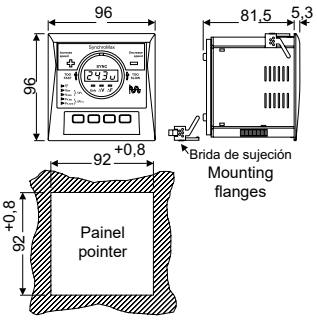
	a	b	c	d	e
72	72	67,2	57,2	5,7	$68^{+0,8}$
96	96	91	57,2	5,7	$92^{+0,8}$

SMC / STC

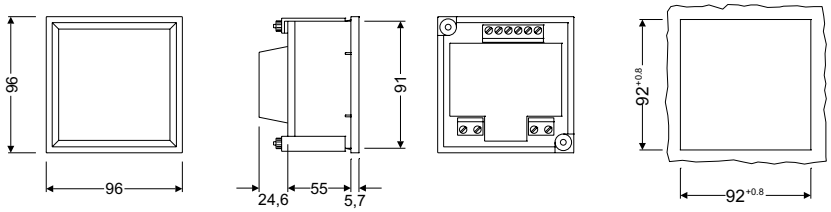


	a	b	c	d	e
96	96	91	95,5	5,7	$92^{+0,8}$
144	144	137	64,5	7,3	138^{+1}

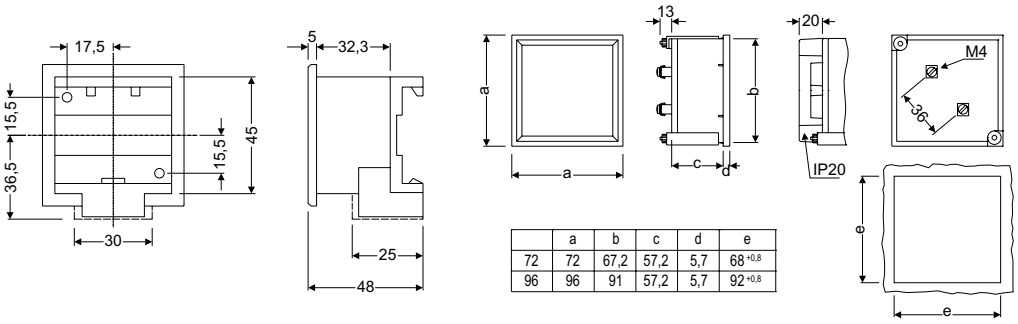
SYNCROMAX



MEG-1000



CH



	a	b	c	d	e
72	72	67,2	57,2	5,7	$68^{+0,8}$
96	96	91	57,2	5,7	$92^{+0,8}$