Electrical installation solutions for buildings
Energy efficiency

Index

M4M network analyzers	8/2
DMTME multimeters	8/13
CUS 485 TCP/IP converter	8/15
IP Switches	8/16
Energy meters selection table	8/17
A-series EQ meters	8/22
B-series EQ meters	8/30
C-series EQ meters	8/37
Interfaces for EQ meters	8/41
EQmatic	8/42
System pro M compact® InSite	8/44
CMS – Circuit Monitoring System	8/50
CMS – Control Units	8/56
CMS – Sensors and Accessories	8/58
String monitoring CMS-660	8/63
Analogue and digital instruments selection table	8/66
Modular digital instruments	8/67
Front panel digital instruments	8/69
Analogue instruments selection table	8/70
Modular analogue instruments	8/71
Scales for modular analogue ammeters	8/73
Front-panel analogue instruments	8/74
Scales for front-panel analogue instrument	8/79
Voltmetric and current switches	8/84
E 233 hour counters	8/85
HMT hour counters	8/86
TMD temperature control units	8/87
Current transformers selection table	8/88
CT measurement current transformers with through primary	8/92
CTA measurement current transformers with wound primary	8/97
CTO split core measurement current transformers	8/98
TRF M measurement modular current transformers	8/99
SNT current transformer for d.c. applications	8/100

M4M Network analyzers

Accurate electrical measuring and power monitoring.

Simple in every aspect, M4M enables accurate energy efficiency evaluations and perfectly fits the ABB solution for monitoring, optimization and control of electrical system.

Smart commissioning
Bluetooth module for easy configuration through EPiC Mobile App unique commissioning tool.

Accurate measurement
Class 0,5 measurement according to IEC 61557-12 and advanced power quality functionalities, including historical measurements.

Option for MID Approval
Class C accuracy in accordance with 2014/32/EU for billing applications.

Clear visualization
Color display and App-structured menu for advanced graphic visualization.



Intuitive access
Simplified access to the device via touch screen display or 5 pushbuttons keypad.

Easy to install
Fast one-hand mounting and comfortable installation with clips in only 57 mm depth inside the panel.

Full communication
ABB Ability™ native network analyzers with complete communication protocols and I/O options for integration in any system.



Fast wiring
All-removable terminals and one tool process to speed up the wiring activities.



Intuitive interface
Touchscreen display and easy-to-access App-structured menu make network analyzers' configuration and operation simple and quick. Graphic color display for advanced visualization of the Class 0,5S accurate parameters, interactive pop-ups and complete notifications. Quick navigation is ensured by Homepage and favorite page setting.



Full integration
Natively integrated in sub-distribution management System pro M compact InSite and ABB Ability™ Energy and Asset Manager cloud-solution. To allow monitoring, optimization and control of the complete electrical system.
Wide integration in all main applications through embedded communication protocols (Modbus RTU, Modbus TCP/IP, BACnet/IP, Profibus DP V0).





Smart commissioning
All M4M network analyzers are equipped with Bluetooth BLE module, ensuring smart configuration and quick visualization via unique EPiC commissioning tool, both available as mobile App and desktop software. Availability of remote firmware update regularly at any time guarantees the latest and the most secure version of the device with no impact on operations.



Installation in any panel
Comfortable installation and secure fix on the panel is ensured by the easy-to-use clips, with different thickness setup for compatibility with any panel. One-hand mounting of the device thanks to the hooks on the housing.
The reduced depth of only 57 mm inside the panel makes M4M suitable even in small-size switchboards.



Fast installation and wiring
All terminals on M4M are removable, including the current transformers (CTs) inputs for current measurement, allowing to carry out the wiring directly on the terminals and speeding up the process. Moreover, the vertical disposition of the terminals makes the cabling inside the switchboard more comfortable.



Rogowski coils compatibility
Specific M4M versions compatible with ABB's R4M Rogowski coils allow to retrofit in existing installations, integrating power quality metering with 0 downtime. The pre-wired terminals of R4M coils allow to save up to 70% time for current transformers cabling compared to standard CTs.

Technical features







		M4M 20	M4M 30	M4M 2X
Auxiliary power supply				
Voltage range	[V]		48 - 240 V AC/VDC ±15 %	
Frequency	[Hz]		50 - 60	
Power consumption	[VA]		10 VA max	
Installation category			CAT III 300V class per IEC 61010-1 edition 3	
Protection fuse			T1 A - 277 VAC	
Measurement accuracy				
Measurement type			True RMS up to the 40th harmonic	
			128 samples per cycle, zero blind	
IEC 61557-12			IEC 61557-12 PMD/S/K70/0,5	
Active energy			Class 0,5 acc. to IEC 61557-12 [*]	
			Class 0,5S acc. to IEC 62053-22	
Reactive energy			Class 2 acc. to IEC 61557-12	
			Class 2S acc. to IEC 62053-23	
Active power			Class 0,5 acc. to IEC 61557-12	
Reactive power		Class 2 acc. to IEC 61557-12	Class 1 acc. to IEC 61557-12	Class 1 acc. to IEC 61557-12
Apparent power			Class 0,5 acc. to IEC 61557-12	
Voltage			Class 0,2 acc. to IEC 61557-12	
Current			Class 0,2 acc. to IEC 61557-12	
Neutral current		Calculated	Class 0,2 acc. to IEC 61557-12	Calculated (2X, 2X PQ1, 2X RTS) Class 0,2 acc. to IEC 61557-12 (2X PQ2)
Frequency			Class 0,1 acc. to IEC 61557-12	
Unbalances (Current, Voltage)			Class 0,2 acc. to IEC 61557-12	
Harmonics, THD (Current, voltage)			Class 1 acc. to IEC 61557-12	
Voltage measurement inputs				
Measurement range	[V]		50 - 400 V AC (L-N) 87 - 690 V AC (L-L)	
Measurement category			400V~ (CAT III)	
Rated frequency	[Hz]		50/60 Hz	
Max. VT Primary (indirect connection)	[V]		500 kV AC (L-N)	
Max over voltage	[V]		800 V AC (L-L)	
Protection fuse	[V]		T1 A - 277 V AC	
Insulation characteristics				
Test Voltage impulse @230V to accessible parts			6,4 kV 1,2/50 µS	
Test Voltage impulse @400V to accessible parts			9 kV 1,2/50 µS	
Test Voltage @230V to accessible parts			3 kV 60s @2000m	
Test Voltage @400V to accessible parts			3,6 kV 60s @2000m	
Current measurement inputs				
Number of current inputs		3 (L1, L2, L3)	4 (L1, L2, L3, N)	3 (2X, 2X PQ1, 2X RTS), 4 (2X PQ2)







		M4M 20	M4M 30	M4M 2X
Indirect insertion with CT				
CT rated secondary current			5 A (Class 0,5S)	
			1 A (Class 0,5S)	
Max primary CT			50kA	
Measurement range without accuracy derating			10 mA - 6 A	
Starting current			1 mA	
Burden			0,024 VA at 6 A	
Indirect insertion with Rogowski coils		**M4M 20 Rogowski**	**M4M 30 Rogowski**	**-**
Rated current			10.000 A	-
Measurement range without accuracy derating			100 A - 12 kA	-
Length of coils connections cable to M4M			3m	
Starting current	[A]		10 A	-

I/O

Digital Output				
Voltage (min - max)			5 - 240 V AC/DC	
Current (min - max)			2 - 100 mA	
Max ON state drop voltage			1,5 V	
Max R value at Min voltage conditions (5 V)			1750 Ohm	
Min R value at Max voltage conditions (240 V)			2400 Ohm	
Pulse duration	[ms]		20 ms ON, 20 ms OFF	
Pulse frequency			25 Hz	
Alarm activation delay	[s]		1 - 900 s (programmable)	
Alarm return hysteresis			0 - 40 % (programmable)	
Digital Input				
Maximum voltage			240 V AC/DC	
Max voltage for OFF state on input			20 V AC/DC	
Min voltage for ON state on input			45 V AC/DC	
Analogue Output				
Programmable electrical span			Span [0 - 20 mA or 4 - 20 mA]	-
Load			Typical 250 Ohm, max 500 Ohm	-
Technical data for MID version		**M4M 20-M**	**M4M 30-M**	**-**
MID standards			EN 50470-1, EN 50470-3	
Voltage measurement (type of network and rated voltage)			3Ph/4W - 3Ph/3W - 2Ph/3W - 1Ph/2W, 3 x 230 (400)...3 x 400 (690) V	
Current rating (I min- I ref(Imax))			0,01-1(6) A	
Rated frequencies			50 Hz and 60 Hz	
Tolerance on rated frequencies			+/- 2%	
Active Energy accuracy class			Class C	
Pulse value S0 (pulse constant)			200000 imp/kWh	
Electromagnetic ambient conditions			Class E2	
Mechanical ambient conditions			Class M1	
LED indicator pulse frequency	[s]		200000 imp/kWh	
LED indicator pulse length			1ms	

Energy efficiency

Network analyzers M4M 20, 30 and 2X

Technical features				
Type		**M4M 20 - Class 0,5S**	**M4M 30 - Class 0,5S**	**M4M 2X**
				
Auxiliary power supply				
Voltage range	[V]	48 - 240 VAC/VDC ±15%		
Frequency	[Hz]	50-60		
Power Consumption	[VA]	10 VA max		
Installation category		CAT III 300V class per IEC 61010-1 edition 3		
Protection fuse		T1 A - 277 VAC		

Measurement accuracy*				
Measurement type		True RMS up to the 40th harmonic		
		128 samples per cycle, zero blind		
IEC 61557-12		IEC 61557-12 PMD/S/K70/0,5		
Active energy		Class 0,5 acc. to IEC 61557-12 [*]		
		Class 0,5S acc. to IEC 62053-22		
Reactive energy		Class 2 acc. to IEC 61557-12		
		Class 2S acc. to IEC 62053-23		
Active power		Class 0,5 acc. to IEC 61557-12		
Reactive power		Class 2 acc. to IEC 61557-12	Class 1 acc. to IEC 61557-12	Class 1 acc. to IEC 61557-12
Apparent power		Class 0,5 acc. to IEC 61557-12		
Voltage		Class 0,2 acc. to IEC 61557-12		
Current		Class 0,2 acc. to IEC 61557-12		
Neutral current		Calculated	Class 0,2 acc. to IEC 61557-12	Calculated (2X, 2X PQ1, 2X RTS) Class 0,2 acc. to IEC 61557-12 (2X PQ2)
Frequency		Class 0,1 acc. to IEC 61557-12		
Unbalances (Current, Voltage)		Class 0,2 acc. to IEC 61557-12		
Harmonics, THD (Current, voltage)		Class 1 acc. to IEC 61557-12		

* The total accuracy rate returned in the output is equal to the sum of the Analog Output accuracy rate and the device accuracy rate.

Voltage measurement inputs		
Measurement range	[V]	46-480 (L-N) 80 - 830 VAC (L-L)
Measurement category		400V~ (CAT III)
Rated frequency	[Hz]	50-60 Hz
Max. VT secondary (indirect connection)	[V]	400 VAC (L-N)
Max over voltage	[V]	800 VAC (L-L)
Protection fuse	[V]	T1 A - 277 VAC

* Accuracy referred to insertion with .../5A CT or Rogowski coils, according to product version. Derating for .../1A CT.

Insulation sharacteristics	
Test Voltage Impulse @230V to accessible parts	6,4 kV 1,2/50µS
Test Voltage Impulse @400V to accessible parts	9 kV 1,2/50µS
Test Voltage @230V to accessible parts	3 kV 60s @2000m
Test Voltage @400V to accessible parts	3,6 kV 60s @2000m

Energy efficiency

Network analyzers M4M 20, 30 and 2X

Technical features				
Type		**M4M 20 - Class 0,5S**	**M4M 30 - Class 0,5S**	**M4M 2X**
				
Current measurement inputs				
Number of current inputs		3 (L1, L2, L3)	4 (L1, L2, L3, N)	3 (2X, 2X PQ1, 2X RTS), 4 (2X PQ2)
Indirect insertion with CT				
CT rated secondary current			5 A (Class 0.5S)	
			1 A (Class 0.5S)	
Max primary CT			50 kA	
Measurement range without accuracy derating			50 mA - 6 A	
Starting current			1 mA	
Burden			0.024 VA at 6 A	
Indirect insertion with Rogowski coils		**M4M 20 Rogowski**	**M4M 30 Rogowski**	**-**
Rated current			10,000 A	-
Measurement range without accuracy derating			100 A - 12 kA	-
Length of coils connections cable to M4M		3 m	3 m	
Starting current	[A]		10 A	-
I/O				
Digital Output				
Voltage (min - max)			5 - 240 VAC/DC	
Current (min - max)			2 - 100 mA	
Max ON state drop voltage			1.5 V	
Max R value at Min voltage conditions (5 V)			1750 Ohm	
Min R value at Max voltage conditions (240 V)			2400 Ohm	
Pulse duration	[ms]		20 ms ON, 20 ms OFF	
Pulse frequency			25 Hz	
Alarm activation delay	[s]		1 - 900 s (programmable)	
Alarm return hysteresis			0 - 40% (programmable)	
Digital Input				
Maximum voltage			240 VAC/DC	
Max voltage for OFF state on input			20 VAC/DC	
Min voltage for ON state on input			45 VAC/DC	
Analogue Output				
Programmable electrical span			Span [0 - 20 mA or 4 - 20 mA]	
Load			Typical 250 Ohm, max 500 Ohm	
Technical data for MID version				
MID standards			EN 50470-1 - EN 50470-3 - EN 62052-31	
Voltage measurement (type of network and rated voltage)			3Ph/4W - 3Ph/3W - 2Ph/3W - 1Ph/2W - 3x230/400	
Current rating (I min- I ref(Imax)			0,01-1(6) A	
Rated frequencies			50 Hz and 60 Hz	
Tolerance on rated frequencies			+/- 2%	
Active Energy accuracy class			Class C	
Pulse value S0 (pulse constant)			200000 imp/kWh	
Electromagnetic ambient conditions			Class E2	
Mechanical ambient conditions			Class M1	
Utilization category - IEC 62052-31			2	
LED indicator pulse frequency			200000 imp/kWh	
LED indicator pulse length			1ms	

Energy efficiency

Network analyzers

Technical features				
Type		**M4M 20 - Class 0,5S**	**M4M 30 - Class 0,5S**	**M4M 2X**
				
Mechanical characteristics				
Overall dimensions		96 mm × 96 mm × 78 mm (Depth inside the switchboard: 57 mm)		96 mm x 96 mm x 78 mm (DIN-rail mounting)
IP degree of protection (acc. to IEC 60529)		Front: IP54		-
		Terminals: IP20		
Weight	[g]	400		
Terminal characteristics				
Voltage inputs		Nominal cross section: 2,5 mm² Solid/stranded wire: 0,2 - 2,5 mm2 (AWG 24 - 12) Pitch: 7,62 mm Poles: 4		
Current inputs		Nominal cross section: 2,5 mm² Solid/stranded wire: 0,2 - 2,5 mm² (AWG 24 - 12) Pitch: 5,08 mm Poles: 6 Screw flanges for fixing	Nominal cross section: 2,5 mm² Solid/stranded wire: 0,2 - 2,5 mm2 (AWG 24 - 12) Pitch: 5,08 mm Poles: 8 Screw flanges for fixing	
RS-485 Serial port		Nominal cross section: 2.5 mm² Solid/stranded wire: 0.2 - 2.5 mm² (AWG 24 - 12) Pitch: 5.08 mm Poles: 3		
I/O		Nominal cross section: 2.5 mm² Solid/stranded wire: 0.2 - 2.5 mm² (AWG 24 - 12) Pitch: 5.08 mm Poles: 3 (Programmable I/O, only on M4M 20 I/O) Poles: 3 (Digital outputs) Poles: 3 (Analogue outputs, only on M4M 20 I/O)	Nominal cross section: 2.5 mm² Solid/stranded wire: 0.2 - 2.5 mm² (AWG 24 - 12) Pitch: 5.08 mm Poles: 5 (Programmable I/O) Poles: 3 (Programmable I/O only on M4M 30 I/O) Poles: 3 (Analogue outputs, only on M4M 30 I/O)	Nominal cross section: 2,5 mm² Solid/stranded wire: 0,2 - 2,5 mm2 (AWG 24 - 12) Pitch: 5,08 mm Poles: 5 (Programmable I/O)
Rogowski current probes		Only with ABB Rogowski probes: - R4M-200 2CSG202150R1101 (200 mm diameter) - R4M-80 2CSG202160R1101 (80 mm diameter)		-
Climatic conditions				
Operating temperature		-25 to 70 °C (K70 acc. to IEC 61557-12)		
Storage temperature		-40 to 85 °C (K70 acc. to IEC 61557-12)		
Relative humidity		Max 93% (non-condensing) at 40°C		
Pollution degree		2		
Altitude		< 2,000 m		
User Interface				
Access to device		5 pushbuttons	Touchscreen	-
Display type		Graphic color display		-
Display dimensions		70 × 52 mm (3.5")		-

Energy efficiency
Network analyzers

Technical features			
Type	**M4M 20 - Class 0,5S**	**M4M 30 - Class 0,5S**	**M4M 2X**
			
Communication protocol			
Modbus RTU	**M4M 20 Modbus, M4M 20 I/O, M4M 20 Rogowski**	**M4M 30 Modbus, M4M 30 I/O, M4M 30 Rogowski**	**M4M 2X Modbus**
Communication interface	RS485 with optical isolation		
Baud rate	9.6, 19.2, 38.4, 57.6, 115.2 kbps		
Parity number	Odd, Even, None		
Stop bit	1, 2		
Address	1-247		
Connector	3 pole terminal		
Profibus DP-V0	**M4M 20 Profibus**	**M4M 30 Profibus**	**-**
Protocol	Profibus with slave DP-V0 function in compliance with IEC 61158 regulations		-
Communication interface	RS485 with optical isolation		-
Baud rate	Automatic detection [9.6 kbps - 12 Mbps]		-
Address	0-126		-
Connector	DB 9 female connector (do not use connectors with 90° cable outlet)		-
LED indicators	Green for communication status		-
	Red for communication error		-
Modbus TCP/IP	**M4M 20 Ethernet**	**M4M 30 Ethernet**	**M4M 2X Ethernet**
Protocol	Modbus TCP/IP		
Communication interface	RJ45	RJ45 (2 ports for daisy-chain)*	
BACnet	**M4M 20 Bacnet**	**M4M 30 Bacnet**	
Protocol	BACnet/IP		-
Communication interface	RJ45		-
Bluetooth			
Type	BLE (Bluetooth Low Energy)		
Real-time clock			
Clock drift	-	~ 0.4 seconds per day	
Battery backup time	-	~ 3 days without aux supply	
Standards			
Power metering and monitoring devices (PMD)	IEC 61557-12 (IEC 62053-22, IEC 62053-23)		
Electrical safety	IEC 61010-1		
EMC	IEC 61326-1 (IEC 61000-3-2, IEC 61000-3-3, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11)		

*1x RJ45 port available on M4M 30-M

Energy efficiency

Network analyzers

Technical features			
Type	**M4M 20 - Class 0,5S**	**M4M 30 - Class 0,5S**	**M4M 2X - Class 0,5S**
			
Real-time			
TRMS current	●	●	●
TRMS Voltage	●	●	●
Frequency	●	●	●
Active, Reactive and Apparent Power	●	●	●
Power Factor	●	●	●
Operating timer, countdown timer	●	●	●
Energy			
Active, Reactive and Apparent Energy	●	●	●
4 quadrants Energy (Import/Export)	●	●	●
Tariffs	/	●	/
Power Quality			
THD (I, VLN, VLL)	●	●	●
Individual Harmonics	/	40th	25th
Unbalances (I, VLN, VLL)	/	●	●
Neutral current	Calculated	Measured	Calculated
Phasors (I, VLN)	/	●	
Waveforms (I, VLN, VLL)	/	●	
Data recording and logs			
Single alarms	25	25	25
Warnings, alarms and errors log	●	●	●
Complex alarms with logics	/	4	/
Demand values (average)	Basic	Advanced	Basic
Min/Max Demand values	Basic	Advanced	Basic
Energy Trending logs	/	●	/
RTC	/	●	●
HMI	**Graphic color**	**Graphic color touchscreen**	
Graphs visualization	Basic	Advanced	/
Notifications	●	●	/
Homepage and favourite page	●	●	/
Password protection	●	●	/
Connectivity			
Automatic integration in ABB Ability™ EDCS	●	●	●
Bluetooth Low Energy	●	●	●
Communication Protocols	Modbus RTU, Modbus TCP/IP, Profibus DP-V0, BACnet/IP	Modbus RTU, Modbus TCP/IP, Profibus DP-V0, BACnet/IP	Modbus RTU, Modbus TCP/IP
RJ45 Daisy Chain (Ethernet version)*	/	●	●

*1x RJ45 port available on M4M 30-M

Energy efficiency
Network analyzers



M4M 20

M4M 20 is ABB's network analyzer range that provides complete and accurate electrical parameters monitoring and basic power quality analysis.
Equipped with graphic color display for advanced visualization of the measured parameters and Bluetooth module for smart commissioning.

Communication protocol	I/O	Bbn 8012542 EAN	Order details		Weight 1 piece kg	Pack unit pc.
			Type code	Order code		
BLE	2 Digital out.	511519	M4M 20	2CSG251151R4051	0,400	1
BLE, Modbus RTU	2 Digital out.	511410	M4M 20 Modbus	2CSG251141R4051	0,400	1
BLE, Modbus TCP/IP	2 Digital out.	044710	M4M 20 Ethernet	2CSG204471R4051	0,400	1
BLE, Profibus DP-V0	2 Digital out.	511311	M4M 20 Profibus	2CSG251131R4051	0,400	1
BLE, BACnet/IP	2 Digital out.	368311	M4M 20 Bacnet	2CSG236831R4051	0,400	1
BLE, Modbus RTU	2 Progr. I/O, 2 Digital out., 2 Analogue out.	511618	M4M 20 I/O	2CSG251161R4051	0,400	1
MID BLE, Modbus RTU	2 Digital Out.	390558	M4M 20-M MODBUS	2CSG239055R4051	0,400	1
MID BLE, Modbus TCP/IP	2 Digital Out.	390657	M4M 20-M ETHERNET	2CSG239065R4051	0,400	1



M4M 20 - Rogowski version

M4M 20 is also available as compatible with ABB's R4M Rogowski coils for current measurement, increasing the flexi-bility of network analyzers offer and allowing retrofit in any existing installations.
M4M 20 Rogowski together with R4M Rogowski coils ensures the integration of basic power quality metering in any existing system with 0 downtime.

Communication protocol	I/O	Bbn 8012542 EAN	Order details		Weight 1 piece kg	Pack unit pc.
			Type	Order code		
BLE, Modbus RTU	2 Digital out.	070818	M4M 20 Rogowski	2CSG207081R4051	0.400	1



M4M 30

M4M 30 is ABB's network analyzer range that allows complete power quality analysis and energy efficiency evaluations.
Equipped with touchscreen color display for simplified access to the device and with Bluetooth module for smart commissioning.

Communication protocol	I/O	Bbn 8012542 EAN	Order details		Weight 1 piece kg	Pack unit pc.
			Type code	Order code		
BLE, Modbus RTU	4 Progr. I/O	747611	M4M 30 Modbus	2CSG274761R4051	0,400	1
BLE, Modbus TCP/IP	4 Progr. I/O	746812	M4M 30 Ethernet	2CSG274681R4051	0,400	1
BLE, Profibus DP-V0	4 Progr. I/O	367918	M4M 30 Profibus	2CSG236791R4051	0,400	1
BLE, BACnet/IP	4 Progr. I/O	024514	M4M 30 Bacnet	2CSG202451R4051	0,400	1
BLE, Modbus RTU	6 Progr. I/O, 2 Analogue out.	024712	M4M 30 I/O	2CSG202471R4051	0,400	1
MID BLE, Modbus RTU	4 Progr. I/O	390350	M4M 30-M MODBUS	2CSG239035R4051	0,400	1
MID BLE, Modbus TCP/IP	4 Progr. I/O	390459	M4M 30-M ETHERNET	2CSG239045R4051	0,400	1

Energy efficiency
Network analyzers



M4M 30 - Rogowski version

M4M 30 is also available as compatible with ABB's R4M Rogowski coils for current measurement, increasing the flexi-bility of network analyzers and allowing retrofit in any existing installations. M4M 30 Rogowski together with R4M coils ensure integration of complete PQ analysis in any existing system with 0 downtime.

Communication protocol	I/O	Bbn 8012542	Order details		Weight 1 piece	Pack unit
		EAN	Type	Order code	kg	pc.
BLE, Modbus RTU	4 Progr. I/O	024613	M4M 30 Rogowski	2CSG202461R4051	0.400	1



R4M ROGOWSKI COILS

R4M Rogowski coils are flexible current transformer based on Rogowski technology, ideal to retrofit existing installa-tions up to 12kA. Available in two different sizes (80mm or 200mm diameters), R4M coils are directly equipped with pre-wired removable terminals that perfectly fit M4M 20 Rogowski (3 Rogowski coil inputs) and M4M 30 Rogowski (4 Rogowski coil inputs), with no need for external integrators.

Diameter (mm)	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type	Order code	kg	pc.
80	021605	R4M-80	2CSG202160R1101	0.150	1
200	021506	R4M-200	2CSG202150R1101	0.250	1



M4M 2X

M4M 2X is ABB's network analyzer range that ensuring higher flexibility to project specifications compared to standard network analyzers. M4M 2X is available without display, only communicating via protocols and Bluetooth module for smart remote commissioning.

Communication protocol	I/O	Func-tionality package	Bbn 8012542 EAN	Order details		Weight 1 piece kg	Pack unit pc.
				Type code	Order code		
BLE, Modbus RTU	2 Digital out.	2X	601111	M4M 2X Modbus	2CSG260111R4051		
BLE, Modbus TCP/IP	2 Digital out.	2X	600619	M4M 2X Ethernet	2CSG260061R4051		
BLE, Modbus RTU	2 Digital out.	2X+PQ1	390756	M4M 2X Modbus PQ1	2CSG239075R4051		
BLE, Modbus TCP/IP	2 Digital out.	2X+PQ1	391258	M4M 2X Ethernet PQ1	2CSG239125R4051		
BLE, Modbus RTU	2 Digital out.	2X+PQ2	390855	M4M 2X Modbus PQ2	2CSG239085R4051		
BLE, Modbus TCP/IP	2 Digital out.	2X+PQ2	391357	M4M 2X Ethernet PQ2	2CSG239135R4051		
BLE, Modbus RTU	4 Progr. I/O	2X+RTS	390954	M4M 2X Modbus RTS	2CSG239095R4051		
BLE, Modbus TCP/IP	4 Progr. I/O	2X+RTS	391456	M4M 2X Ethernet RTS	2CSG239145R4051		
BLE, Modbus RTU	4 Progr. I/O	2X+PQ1 +RTS	391050	M4M 2X Modbus PQ1+RTS	2CSG239105R4051		
BLE, Modbus TCP/IP	4 Progr. I/O	2X+PQ1 +RTS	391555	M4M 2X Ethernet PQ1+RTS	2CSG239155R4051		
BLE, Modbus RTU	4 Progr. I/O	2X+PQ2 +RTS	391159	M4M 2X Modbus PQ2+RTS	2CSG239115R4051		
BLE, Modbus TCP/IP	4 Progr. I/O	2X+PQ2 +RTS	391654	M4M 2X Ethernet PQ2+RTS	2CSG239165R4051		

Energy efficiency
DMTME multimeters



DMTME

1.3 mm			
Auxiliary supply	[V rms]	230 +15% - 10% DMTME, DMTME-72 and DMTME-96	
[V rms]		400 +15% - 10% DMTME-72	
[V rms]		115 +15% - 10% DMTME , DMTME-96	
Frequency	[Hz]	45…65	
Power consumption	[VA]	<6	
Fuse protection		T0.1A	
Voltage measuring inputs			
Range	[V rms]	From 10 to 500 V AC phase to neutral; From 17 to 865 V AC phase to phase.	
Max. non destructive	[V rms]	550	
Impedance (L-N)	[MΩ]	>8	
Current measuring inputs (only external CTs .../5 A)			
Range	[A rms]	0.05…5	
Overload		1.1 permanent	
Measurement accuracy			
Voltage		±0.5% F.S. ±1 digit in range	
Current		±0.5% F.S. ±1 digit in range	
Active power		±1% ±0.1% F.S. from cosφ = 0.3 to cosφ = -0.3	
Frequency		±0.2% ±0.1Hz from 40.0 to 99.9 Hz	
		±0.2% ±1Hz from 100 to 500 Hz	
Energy metering			
Maximum metered value for single phase		4,294.9 MWh (MVarh) with KA = KV = 1	
Maximum metered value for three phase		4,294.9 MWh (MVarh) with KA = KV = 1	
Accuracy		Class 1	
Max. power consumption	[VA]	1.4 for each input (with Imax = 5A rms)	
Digital outputs			
Pulse duration		50 ms OFF (min)/ 50 ms ON	
Vmax on contact		48 V (d.c. or a.c. peak)	
Wmax dissipation		450 mW	
Max frequency		10 pulses/sec	
Imax contact		100 mA (d.c. or a.c. peak value)	
Insulation		750 Vmax	
Programmable parameters			
kVT transformer ratio Vprim/Vsec		1…500	
kCT transformer ratio Iprim/Isec		1…1,250	
Free hour counter	[h]	0…10,000,000, resettable	
Countdown	[h]	1…32,000	
Operating temperature	[°C]	0…+50	
Storage temperature	[°C]	-10…+60	
Relative humidity		90% max. (non condensing) at 40°C	
Overall dimensions	[mm]	105x90x58	DMTME
	[mm]	96x96x103	DMTME-96
	[mm]	72x72x90	DMTME-72

Energy efficiency
DMTME multimeters



DMTME



DMTME-96



DMTME-72

DMTME multimeters

The instruments DMTME are digital multimeters that allow the measurement, in TRMS mode, of the principal electrical parameters in three-phase and single-phase 110/230/400 Vac networks, including the max/min/average detection of the main electrical parameters and the active and reactive energy count. The multiple measured variables are displayed locally on four red 7-segment LED displays providing easy readability and simultaneous display of the measures of the electrical parameters of the phases individually and of the whole network.

The instruments DMTME combine, in a single instrument, the functions of multiple devices: voltmeter, ammeter, power factor meter, wattmeter, varmeter, frequency meter, active and reactive energy meters; it allows remarkable financial savings thanks to the reduction of space taken up in the panel and also of time required for cabling, along with the advantage of providing clear readings on a single device.

The DMTME-I-485, DMTME-I-485-96 and DMTME-I-485-72 models are additionally equipped with two digital outputs, fully programmable as either pulse outputs for remote metering of energy consumption, or as alarm outputs. The output relay can be set as NO or NC. Communication over Modbus RTU protocol is possible through the RS485 serial port. All versions come complete with Mini CD containing the instruction manual, technical documentation, Modbus communication protocol and the DMTME-SW tool, intended to be a first-hand PC-based application for the remote visualization of the measures.

DMTME modular multimeters

Auxiliary supply 230 V a.c. and 110 V a.c.

RS485 serial port	Program. digital output	Bbn 8012542	Order details		Weight 1 piece	Pack unit
		EAN	Type code	Order code	kg	pc.
-	-	975700	DMTME	2CSM170040R1021	0.450	1
■	2	975809	DMTME-I-485	2CSM180050R1021	0.450	1

DMTME-96 panel multimeters

Auxiliary supply 230 V a.c. and 110 V a.c. Dimensions 96x96 mm

RS485 serial port	Program. digital output	Bbn 8012542	Order details		Weight 1 piece	Pack unit
		EAN	Type code	Order code	kg	pc.
-	-	046752	DMTME-96	2CSG133030R4022	0.450	1
■	2	046851	DMTME-I-485-96	2CSG163030R4022	0.450	1

DMTME-72 panel multimeters

Auxiliary supply 230 V a.c. and 400 V a.c. Dimensions 72x72 mm

RS485 serial port	Program. digital output	Bbn 8012542	Order details		Weight 1 piece	Pack unit
		EAN	Type code	Order code	kg	pc.
-	-	046554	DMTME-72	2CSG132030R4022	0.450	1
■	2	046653	DMTME-I-485-72	2CSG162030R4022	0.450	1

Energy efficiency
IP Switches



IS/S 8.1.1

IP Switch, 8 Ports, Fast Ethernet, MDRC **NEW**

The IP Switch is an industrial-grade, 8 Ports, Fast Ethernet (100 Mbit/s), unmanaged switch with plug-and-play capabilities, designed for installation in electrical distribution boards and small housings for rapid mounting on 35mm DIN rails (to EN 60715).

Description	Mod. width	Order details		Weight 1 piece	Pack unit
		Type code	Order code	kg	pc.
	8	IS/S 8.1.1	2CDG120082R0011	0.25	1



ISP/S 8.1.1.1

IP Switch PoE, 8 Ports, Fast Ethernet, 55W, MDRC **NEW**

The IP Switch PoE is an industrial-grade, 8 Ports, Fast Ethernet (100 Mbit/s), PoE (55 W), unmanaged switch with plug-and-play capabilities, designed for installation in electrical distribution boards and small housings for rapid mounting on 35mm DIN rails (to EN 60715).

Description	Mod. width	Order details		Weight 1 piece	Pack unit
		Type code	Order code	kg	pc.
	12	ISP/S 8.1.1.1	2CDG120083R0011	0.41	1

Energy meters

ABB EQ Meters. The details make the difference



Energy efficiency

ABB EQ meters. The details make the difference.

A series

Key applications

- Facility management installations
- Critical power
- Production lines
- System solutions
- Power quality
- Etc.

Key performance

Single phase or three phase
Direct connected up to 80 A or transformer current- and/or voltage transformers (CTVT)
Active energy measurement
- Class B (Cl. 1) or
- Class C (Cl. 0,5 S) on CTVT connected meters

Wide voltage range
- 100 - 690 V phase to phase
- 57,7 - 400 V phase to neutral

Alarm functions
MID (Module B and D)
Reactive energy measurement
Import/export measurement of energy
Optional communication
- via M-Bus or
- RS-485 (For Modbus RTU or EQ bus)

4 tariffs controlled by inputs,
- communication or
- built-in clock

Previous values by
- day or
- week or
- month

Demand measurement (per period)
- 3 maximum
- 1 minimum

Load profiles
- 8 channels independently configurable
- 40 000 values total

Harmonics measurement up to 16th harmonic
- Current
- Voltage
- and evaluation of THD

Pulse outputs (S0 compatible)

Instrumentation

The A series meters support reading of instrument values. A large number of electrical properties can be read. Depending on version of the meter the following data is available:
- Active power
- Apparent power
- Reactive power
- Current
- Voltage
- Frequency
- Power factor
- Harmonics (Current and Voltage)
- Total harmonic distortion

B series

Key applications

- Cost transfer/billing
- Solar power
- EV chargers
- Elevators/escalators
- Lighting
- Installation beside machines
- Etc.

Key performance

Single phase or three phase
Direct connected up to 65 A or CT connected (three phase types)
Active energy measurement
- Class B (Cl. 1) or
- Class C (Cl. 0,5 S) on CT connected meters

Alarm functions
MID (Module B and D)
Reactive energy measurement
Import/export measurement of energy
- Optional communication via via M-Bus or
- RS-485 (For Modbus RTU or EQ bus)

4 tariffs controlled by
- input or
- communication

Pulse outputs (S0 compatible)

Instrumentation

The B series meters support reading of instrument values.
A large number of electrical properties can be read. Depending on version of the meter the following data is available:
- Active power
- Apparent power
- Reactive power
- Current
- Voltage
- Frequency
- Power factor

C series

Key applications

- HVAC applications
- Stand-alone applications
- Domestic applications
- Camping and Marinas
- Etc.

Key performance

Single phase or three phase
Very compact
- 1 & 3 modules.

Direct connected up to 40 A
Active energy measurement
Accuracy class 1
Alarm functions
MID (Module B and F) as option
Pulse output (S0 compatible)

Instrumentation

The C series meters support reading of instrument values. A number of electrical properties can be read:
- Power factor
- Active power
- Current
- Voltage

Energy efficiency

ABB EQ meters selection guide

How do I select the best meter for my application?

There are many versions of ABB EQ Meters in order to meet your requests. The EQ program comprises meters with different functionalities such as tariffs, communication interfaces or advanced clock functions. Spend a little time to evaluate the functions and imagine how they could add extra value to your metering. For example, the input counter (from Silver level) on an EQ meter can be used to count products produced by a machine and be read out together with the energy consumption of the same machine. In one easy go you can allocate energy to any produced product from one source. Another useful function is previous values (from Gold level). If you charge users in intervals the meter can secure the data even in the event of a broken communication link. You can collect the correct interval data later and also make it visible for your counterpart immediately on the meters display in case of any discussions.

STEEL	BRONZE	SILVER	GOLD	PLATINUM
	STEEL +	BRONZE +	SILVER +	GOLD +
• Active energy • Class 1 • Pulse Output • Alarm	• Reactive energy • Apparent energy • Import/Export energy • Alarm	• Class 0.5 or 1 • Resettable energy register • Tariffs • Fixed I/O	• Clock Functions - Tariff Control - Previous Value - Max/min demand - Event log	• Harmonics • Configurable I/O • Advanced clock funcitons (load profiles)

Function	Single phase				Three phase				
	C11	B21	A41	A42	C13	B23	B24	A43	A44
Direct connected	1	1 3	1 3 4		1	1 2 3		1 2 3 5	
Transformer connected				1 3 5			1 2 3		1 2 3 4 5
2 element metering						1 2 3	1 2 3	1 2 3 5	1 2 3 4 5
3 element metering					1	1 2 3	1 2 3	1 2 3 5	1 2 3 4 5
Accuracy 1 %, Class 1, Class B	1	1 3	1 3 4	1 3	1	1 2 3	1 2	1 2 3 5	1 2 3
Accuracy 0.5 %, Class 0,5 S, Class C					5		3		3 4 5
Active energy	1	1 3	1 3 4	1 3 5	1	1 2 3	1 2 3	1 2 3 5	1 2 3 4 5
Reactive energy		3	3 4	3 5		2 3	2 3	2 3 5	2 3 4 5
Apparent energy		3	3 4	3 5		2 3	2 3	2 3 5	2 3 4 5
Import/Export energy		3	3 4	3 5		2 3	2 3	2 3 5	2 3 4 5
Tariff registers, 1-4		3	3 4	3 5		3	3	3 5	3 4 5
Instrument values	1	1 3	1 3 4	1 3 5	1	1 2 3	1 2 3	1 2 3 5	1 2 3 4 5
Alarm function	1	1 3	1 3 4	1 3 5	1	1 2 3	1 2 3	1 2 3 5	1 2 3 4 5
Harmonics, 2th-16th and THD					5			5	5
Previous values - day, week, month			4		5			5	4 5
Max and min demand			4		5			5	4 5
Load profiles - 8 channels					5			5	5
Pulse output	1	1	1	1	1	1 2	1 2	1 2	1 2
I/O board - 2 in, 2 out		3	3 4	3		3	3	3	3 4
Configurable I/O - 4 I/O channels					5			5	5
Tariffs controlled by input		3	3 4	3 5		3	3	3 5	3 4 5
Tariffs controlled by communication		3	3 4	3 5		3	3	3 5	3 4 5
Tariffs controlled by clock			4	5				5	4 5
MID approved, verified	optional	1 3	1 3 4	1 3 5	optional	1 2 3	1 2 3	1 2 3 5	1 2 3 4 5
IEC approved	1	1 3	1 3 4	1 3 5	1	1 2 3	1 2 3	1 2 3 5	1 2 3 4 5
Communication - Infrared (M-Bus)		1 3	1 3 4	1 3 5		1 2 3	1 2 3	1 2 3 5	1 2 3 4 5
Communication - M-Bus		optional	optional	optional		optional	optional	optional	optional
Communication - RS-485 Modbus		optional	optional	optional		optional	optional	optional	optional
Communication - RS-485 EQ bus		optional	optional	optional		optional	optional	optional	optional

1 = Steel
2 = Bronze
3 = Silver
4 = Gold
5 = Platinum
□ = Not available

Optional = Available on some order codes

Notes

Energy efficiency

ABB EQ meters selection table







	C11	C13	B21	B23	B24
Mechanical properties					
DIN modules	1	3	2	4	4
Overall Dimensions	17,5 x 111 x 65 mm	54 x 122 x 65 mm	35 x 97 x 65 mm	70 x 97 x 65 mm	70 x 97 x 65 mm
Display	LCD	LCD	Backlit LCD	Backlit LCD	Backlit LCD
Voltage/current inputs					
Operating voltage	230 V AC	3x220–240 VAC	220-240 VAC	3x220-240 V AC	3x220-240 V AC
Maximum current	40 A	40 A	65 A	65 A	6 A
Rated frequency	50 Hz or 60 Hz	50 Hz or 60 Hz	50 Hz or 60 Hz	50 Hz or 60 Hz	50 Hz or 60 Hz
Connection type	Single-phase	Three-phase	Single-phase	Three-phase	Three-phase
Direct connection	■	■	■	■	-
Indirect connection via CT	-	-	-	-	■
Indirect connection via VT	-	-	-	-	-
Measurements					
Active energy	■	■	■	■	■
Reactive energy	-	-	□	□	□
Apparent energy	-	-	□	□	□
Import/export	-	-	□	□	□
Voltage	■	■	■	■	■
Current	■	■	■	■	■
Frequency	■	■	■	■	■
Active power	■	■	■	■	■
Power Factor	■	■	■	■	■
Harmonics analysis	-	-	-	-	-
Accuracy					
Active energy class	Cl. 1	Cl. 1	Cl. 1	Cl. 1	Cl. 1 or Cl. 0,5 S
Functions					
Tariffs registers, 1-4	-	-	□	□	□
Alarms	■	■	■	■	■
Max/Min demand	-	-	-	-	-
Load profiles	-	-	-	-	-
Event logs					
Communication					
Pulse Output (1 PO)	■	■	■	■	■
Digital I/O (2 DI / 2 DO)	-	-	□	□	□
Progr. I/O (4 I/O channels)	-	-	-	-	-
Infrared M-Bus	-	-	■	■	■
M-Bus	-	-	□	□	□
RS-485 Modbus	-	-	□	□	□
RS-485 EQ bus	-	-	□	□	□

■ Standard feature
□ Optional feature according to order codes or meter function level (see table at p. 18)






A41	A42	A43	A44
4	4	7	7
70 x 97 x 65 mm	70 x 97 x 65 mm	123 x 97 x 65 mm	123 x 97 x 65 mm
Backlit Pixel LCD	Backlit Pixel LCD	Backlit Pixel LCD	Backlit Pixel LCD
57.7 - 288 V AC	57.7 - 288 V AC	3x57.7-288/100-500 V AC	3x57.7-288/100-500 V AC (3x57.7-400/100-690 V AC on A44 xxx-x1x)
80 A	6 A	80 A	6 A
50 Hz or 60 Hz	50 Hz or 60 Hz	50 Hz or 60 Hz	50 Hz or 60 Hz
Single-phase	Single-phase	Three-phase	Three-phase
■	-	■	-
-	■	-	■
-	■	-	■
■	■	■	■
□	□	□	□
□	□	□	□
□	□	□	□
■	■	■	■
■	■	■	■
■	■	■	■
■	■	■	■
■	■	■	■
□	□	□	□
Cl. 1	Cl. 1 or Cl. 0,5 S	Cl. 1	Cl. 1 or Cl. 0,5 S
□	□	□	□
■	■	■	■
□	□	□	□
□	□	□	□
■	■	■	■
□	□	□	□
-	□	□	□
■	■	■	■
□	□	□	□
□	□	□	□
□	□	□	□

*) The pulse output can be assigned as an output if it is not used for pulses . You can only have one set of Digital I/O features per EQ meter.

Energy efficiency

ABB EQ meters A series





	A41	A42
Voltage/current inputs		
Nominal voltage	230 V AC	230 V AC
Voltage range	57.7 - 288 V AC (-20% - +15%)	57.7 - 288 or 100 ... 288 V AC (-20% - +15%)
Power dissipation voltage circuits	1.5 VA (0.6 W) total at 230 V AC	1.5 VA (0.6 W) total at 230 V AC
Power dissipation current circuits	0.006 VA (0.006 W) at I_{ref} and I_b	0.001 VA (0.001 W) at I_{ref} and I_n
Base current I_b	5 A	-
Rated current I_n	-	1 A
Reference current I_{ref}	5 A	1 A
Transitional current I_{tr}	0.5 A	0.05 A
Maximum current I_{max}	80 A	6 A
Minimum current I_{min}	0.25 A	0.02 A
Starting current I_{st}	< 20 mA	< 1 mA
Terminal wire area	1 - 25 mm^2	0.5 - 10 mm^2
Recommended tightening torque	2 Nm	1.2 Nm
Communication		
Terminal wire area	0.5 - 1 mm^2	-
Recommended tightening torque	0.25 Nm	-
Transformer ratios		
Configurable current ratio (CT)	-	1/9 - 9999/1
Configurable voltage ratio (VT)	-	1/999 - 999999/1
Pulse indicator (LED)		
Pulse frequency	1000 imp/kWh	5000 imp/kWh
Pulse length	40 ms	40 ms
Frequency	50 or 60 Hz ± 5%	50 or 60 Hz ± 5 % (or 16.7 Hz optional)
Accuracy Class	B (Cl.1) and Reactive Cl. 2	B (Cl.1), C (Cl. 0,5 S) and Reactive Cl. 2
Active energy	1%	0.5%, 1%
Display of energy	Pixel oriented display (LCD)	Same for all the meters in the table
Environmental		
Operating temperature	-40°C - +70°C	-40°C - +70°C
Storage temperature	-40°C - +85°C	-40°C - +85°C
Humidity	75% yearly average, 95% on 30 days/year	75% yearly average, 95% on 30 days/year
Resistance to fire and heat	Terminal 960°C, cover 650°C (IEC 60695-2-1)	Terminal 960°C, cover 650°C (IEC 60695-2-1)
Resistance to water and dust	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.
Mechanical environment	Class M2 in accordance with the Measuring Instrument Directive (MID). (2014/32/EU).	Class M2 in accordance with the Measuring Instrument Directive (MID). (2014/32/EU).
Electromagnetic environment	Class E2 in accordance with the Measuring Instrument Directive (MID), (2014/32/EU).	Class E2 in accordance with the Measuring Instrument Directive (MID), (2014/32/EU).

*) For 690 V AC meters:
Power dissipation voltage circuits 2.2 VA (1.0 W) total at 230 V AC
Power dissipation current circuits 0.001 VA 0.001 W) per phase at Iref and In





A43	A44
3x230/400 V AC	3x230/400 V AC
3x57.7/100 ... 288/500 V AC (-20% - +15%)	3x57.7/100 ... 288/500 (-20% - +15%)
1.8 VA (0.8 W) total at 230 V AC	1.8 VA (0.8 W) total at 230 V AC
0.006 VA (0.006 W) per phase at I_{ref}	0.001 VA (0.001 W) at I_{ref} and I_n*
5 A	-
-	1 A
5 A	1 A
0.5 A	0.05 A
80 A	6 A
0.25 A	0.01 A
< 20 mA	< 1 mA
1 - 25 mm^2	0.5 - 10 mm^2
2 Nm	1.2 Nm
0.5 - 1 mm^2	0.5 - 1 mm^2
0.25 Nm	0.25 Nm
-	1/9 - 9999/1
-	1/999 - 999999/1
1000 imp/kWh	5000 imp/kWh
50 or 60 Hz ± 5 %	50 or 60 Hz ± 5 %
-	-
A (Cl.2), B (Cl.1) and Reactive Cl. 2	B (Cl.1), C (Cl. 0,5 S) and Reactive Cl. 2
1%	0.5%, 1%
Same for all the meters in the table	Same for all the meters in the table
-40°C - +70°C	-40°C - +70°C
-40°C - +85°C	-40°C - +85°C
75% yearly average, 95% on 30 days/year	75% yearly average, 95% on 30 days/year
Terminal 960°C, cover 650°C (IEC 60695-2-1)	Terminal 960°C, cover 650°C (IEC 60695-2-1)
IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.
Class M2 in accordance with the Measuring Instrument Directive (MID). (2014/32/EU).	Class M2 in accordance with the Measuring Instrument Directive (MID). (2014/32/EU).
Class E2 in accordance with the Measuring Instrument Directive (MID), (2014/32/EU).	Class E2 in accordance with the Measuring Instrument Directive (MID), (2014/32/EU).

Energy efficiency
EQ meters A series

The A series meters ranges from single phase to three phase meters and from basic up to advanced functionality without any comparison. The A series meters are mounted on a DIN rail and are suitable for installation in distribution boards and small enclosures such as consumer units. With the main terminals in accordance with DIN 43857 and accessible from the below the meters, the A series is suitable for many applications.

The low rated or base currents of these products ensures high dynamic performance with superior accuracy even at low currents. The meters support a wide voltage range as well as a wide temperature range. The display is pixel-oriented and can display up to four quantities at the same time. Navigating the meter is easily done via the push-buttons below the display. To configure the meter settings, the set button must be accessed and this
button is protected against unauthorized use when the “glass lid” on the front of the meter is closed and sealed. The exceptional low power consumption of the meters makes them economical in the long run - an important feature specially for large meter populations.

Data from the A series meters can be collected via pulse output or serial communication. The pulse output is a solid state relay that generates pulses proportionally to the measured energy. The meters can also be equipped with built-in serial communication interfaces for M-Bus or Modbus RTU (RS-485). Meters with RS-485 interface can also be set to communicate over the new EQ bus with the gateway G13. All meters in the A series come with an infrared port for communication with an external Serial Communication Adapter (SCA) such as the KNX adapter.

A series supports following instrumentation values dependent on version of meter:
- Active energy
- Current
- Voltage
- Power factor
- Reactive power
- Total harmonic distortion
- Apparent power
- Frequency
- Harmonics

A series meters with a functionality level of Gold or Platinum have an internal clock for advanced functionality:
- Event log
- Previous values
- Load profile
- Maximum and minimum demand

The tariffs are controlled via inputs, via communication or via an internal clock in Gold and Platinum versions.

The A series support up to four I/O’s. It can be two inputs and two outputs in a fixed configuration or four I/O points that are freely configured to input or output. Inputs can be used for counting pulses from e.g. a water meter, or reading status from external devices. Outputs can be used as pulse outputs or controlling external apparatus like
a contactor or an alarm (connected via an external relay). The I/O’s need an external voltage supply. The A series meters are type approved according to IEC and they are both type approved and verified according to MID. MID is the Measuring Instruments Directive 2014/32/EU from the European Commission. MID type approval and verification is mandatory for meters in billing applications within EU and EEA. The type approval is according to standards that covers all relevant technical aspects of the meter. These include climate conditions, electromagnetic compatibility (EMC), electrical requirements, mechanical requirements and accuracy.

Energy efficiency

ABB EQ meters A series



A series

Technical features		
Outputs		
Type	Transistor or MOSFET	
Current	2 - 100 mA	
Voltage	5 - 240 V AC/DC. For meters with only 1 output, 5 - 40 V DC.	
Pulse output frequency	Programmable: 1 - 999999 imp/kWh	
Pulse length	Programmable: 10 - 990 ms	
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
Inputs		
Voltage	0 - 240 V AC/DC	
OFF	0 - 5 V AC/DC	
ON	57 - 240 V AC/24 - 240 V DC	
Min. pulse lenght	30 ms	
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
EMC compatibility		
Impulse voltage test	6 kV 1.2/50 µs (IEC 60060-1)	
Surge voltage test	4 kV 1.2/50 µs (IEC 61000-4-5)	
Fast transient burn test	4 kV (IEC 61000-4-4)	
Immunity to electromagnetic HF-fields	80 MHz - 2 GHz at 10 V/m (IEC 61000-4-3)	
Immunity to conducted disturbance	150 kHz - 80 MHz, (IEC 61000-4-6)	
Immunity to disturbance with harmonics	2kHz - 150kHz	
Radio frequency emission	EN 55022, class B (CISPR22)	
Electrostatic discharge	15 kV (IEC 61000-4-2)	
Standards	EC 62052-11, IEC 62053-21 class 1 & 2, IEC 62053-22 class 0,5 S, IEC 62053-23 class 2, IEC 62054-21, GB/T 17215.211-2006, GBT 17215.321-2008 class 1 & 2, GB/T 17215.322-2008 class 0,5 S, GB 4208-2008, EN 50470-1, EN 50470-3 category A, B & C EQ meters.	
Mechanical		
Material	Polycarbonate in transparent front glass, bottom case, upper case and terminal cover, Glass reinforced polycarbonate in terminal block.	
Dimensions	**A41 / A42**	**A43 / A44**
Width	70 mm	123 mm
Height	97 mm	97 mm
Depth	65 mm	65 mm
DIN modules	4	7

Energy efficiency

EQ meters A series



A41

Direct connected electricity meter up to 80 A. Verified and approved according to MID. IEC approval.Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

EQ meters single phase electricity meter, 4 DIN with IR port, 80 A

Class B (Cl. 1) with functionality level Steel. Active energy

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
57.7...288 V AC, Pulse output	705547	A41 111 - 100	2CMA170554R1000	0.230	1
57.7...288 V AC, Pulse output, RS-485	705004	A41 112 - 100	2CMA170500R1000	0.230	1
57.7...288 V AC, Pulse output, M-Bus	002400	A41 113 - 100	2CMA100240R1000	0.230	1

Class 1 (Reactive Class 2) with functionality level Silver. Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
57.7...288 V AC, 2 output, 2 input, RS-485	705035	A41 312 - 100	2CMA170503R1000	0.230	1
57.7...288 V AC, 2 output, 2 input. M-Bus	705042	A41 313 - 100	2CMA170504R1000	0.230	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Gold. Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
57.7...288 V AC, 2 output, 2 input, RS-485	705059	A41 412 - 100	2CMA170505R1000	0.230	1

Energy efficiency
EQ meters A series



A42

Transformer CTVT connected electricity meter up to 6 A. Verified and approved according to MID. IEC approval. Voltage V - 57...288 V AC. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

EQ meters single phase electricity meter, 4 DIN with IR port, 6 A

Class B (Cl. 1) with functionality level Steel. Active energy

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
57.7...288 V AC, Pulse output	705554	A42 111 - 100	2CMA170555R1000	0.200	1
57.7...288 V AC, Pulse output, RS-485	705103	A42 112 - 100	2CMA170510R1000	0.200	1
57.7...288 V AC, Pulse output, M-Bus	002424	A42 113 - 100	2CMA100242R1000	0.200	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Silver. Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
57.7...288 V AC, 2 output, 2 input, RS-485	705127	A42 312 - 100	2CMA170512R1000	0.200	1

Class C (Cl. 0.5 S) (Reactive Cl. 2) with functionality level Platinum. Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand, advanced load profiles, harmonics and THD. Versions for 16.7, 50 or 60 Hz.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
57.7...288 V AC, Configurable 4 I/O channels, RS-485	002387	A42 552 - 100	2CMA100238R1000	0.200	1
100...288 V AC, Configurable 4 I/O channels, RS-485 16.7*, 50 or 60 Hz	705189	A42 552 - 120	2CMA100518R1000	0.200	1
100...288 V AC, Configurable 4 I/O channels, M-Bus 16.7*, 50 or 60 Hz	705196	A42 553 - 120	2CMA100519R1000	0.200	1

*) The meters are not tested and approved for placement on rolling stock.

Energy efficiency

EQ meters A series



A43

Direct connected electricity meter up to 80 A. Verified and approved according to MID. IEC approval. 2- and 3-element metering. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

EQ meters three phase electricity meter, 7 DIN with IR port, 80 A

Class B (Cl. 1) with functionality level Steel. Active energy

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, Pulse output	705202	A43 111 - 100	2CMA170520R1000	0.440	1
3 x 57.7/100...288/500 V AC, Pulse output, RS-485	002448	A43 112 - 100	2CMA100244R1000	0.440	1
3 x 57.7/100...288/500 V AC, Pulse output, M-Bus	002455	A43 113 - 100	2CMA100245R1000	0.440	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Bronze. Active and reactive energy, import/export.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, Pulse output, RS-485	705226	A43 212 - 100	2CMA170522R1000	0.440	1
3 x 57.7/100...288/500 V AC, Pulse output, M-Bus	705233	A43 213 - 100	2CMA170523R1000	0.440	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Silver. Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, 2 output, 2 input, RS-485	705257	A43 312 - 100	2CMA170525R1000	0.440	1
3 x 57.7/100...288/500 V AC, 2 output, 2 input, M-Bus	705264	A43 313 - 100	2CMA170526R1000	0.440	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Platinum. Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand, advanced load profiles, harmonics and THD.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, Configurable 4 I/O channels, RS-485	705318	A43 512 - 100	2CMA170531R1000	0.440	1
3 x 57.7/100...288/500 V AC, Configurable 4 I/O channels, M-Bus	705325	A43 513 - 100	2CMA170532R1000	0.440	1

Energy efficiency
EQ meters A series



A44

Transformer CTVT connected electricity meter up to 6 A. Verified and approved according to MID. IEC approval. 2- and 3-element metering. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

EQ meters three phase electricity meter, 7 DIN with IR port, 6 A

Class B (Cl. 1) with functionality level Steel. Active energy

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, Pulse output	705332	A44 111 - 100	2CMA170533R1000	0.350	1
3 x 57.7/100...288/500 V AC, Pulse output, RS-485	002486	A44 112 - 100	2CMA100248R1000	0.350	1
3 x 57.7/100...288/500 V AC, Pulse output, M-Bus	002493	A44 113 - 100	2CMA100249R1000	0.350	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Bronze. Active and reactive energy, import/export.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, Pulse output	000130	A44 211 - 100	2CMA100013R1000	0.350	1
3 x 57.7/100...288/500 V AC, Pulse output, RS-485	705349	A44 212 - 100	2CMA170534R1000	0.350	1
3 x 57.7/100...288/500 V AC, Pulse output, M-Bus	705356	A44 213 - 100	2CMA170535R1000	0.350	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Silver. Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, 2 output, 2 input	705363	A44 311 - 100	2CMA170536R1000	0.350	1

Class C (Cl. 0.5 S) (Reactive Cl. 2) with functionality level Silver. Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, 2 output, 2 input, RS-485	705370	A44 352 - 100	2CMA170537R1000	0.350	1
3 x 57.7/100...288/500 V AC, 2 output, 2 input, M-Bus	705387	A44 353 - 100	2CMA170538R1000	0.350	1

Class C (Cl. 0.5 S) (Reactive Cl. 2) with functionality level Gold. Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock,previous values, max and min demand.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, 2 output, 2 input, RS-485	705400	A44 452 - 100	2CMA170540R1000	0.350	1

Class C (Cl. 0.5 S) (Reactive Cl. 2) with functionality level Platinum. Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand, advanced load profiles, harmonics and THD.

Description	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
3 x 57.7/100...288/500 V AC, Configurable 4 I/O channels, RS-485	705455	A44 552 - 100	2CMA170545R1000	0.350	1
3 x 57.7/100...288/500 V AC, Configurable 4 I/O channels, M-Bus	705462	A44 553 - 100	2CMA170546R1000	0.350	1
3 x 57.7/100...400/690 V AC, 1 input + 1 output, RS-485	705493	A44 552 - 110	2CMA170549R1000	0.350	1
3 x 57.7/100...400/690 V AC, 1 input + 1 output, M-Bus	705486	A44 553 - 110	2CMA170548R1000	0.350	1

Energy efficiency

EQ meters B series



	B21
Voltage/current inputs	
Nominal voltage	230 V AC
Voltage range	220...240 VAC (-20% - +15%)
Power dissipation voltage circuits	1.1 VA (0.5 W) total at 230 V AC
Power dissipation current circuits	0.012 VA (0.012 W) at I_{ref} and I_b
Base current I_b	5 A
Rated current I_n	-
Reference current I_{ref}	5 A
Transitional current I_{tr}	0.5 A
Maximum current I_{max}	65 A
Minimum current I_{min}	0.25 A
Starting current I_{st}	< 20 mA
Terminal wire area	1 - 25 mm^2
Recommended tightening torque	2 Nm
Communication	
Terminal wire area	0.5 - 1 mm^2
Recommended tightening torque	0.25 Nm
Transformer ratios	
Configurable current ratio (CT)	-
Pulse indicator (LED)	
Pulse frequency	1000 imp/kWh
Pulse length	40 ms
General data	
Frequency	50 or 60 Hz ± 5%
Accuracy Class	B (Cl. 1) and Reactive Cl. 2
Active energy	1%
Display of energy	6 digit LCD
Environmental	
Operating temperature	-40°C - +70°C
Storage temperature	-40°C - +85°C
Humidity	75% yearly average, 95% on 30 days/year
Resistance to fire and heat	Terminal 960 °C, cover 650°C (IEC 60695-2-1)
Resistance to water and dust	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.
Mechanical environment	Class M2 in accordance with the Measuring Instrument Directive (MID). (2014/32/EU).
Electromagnetic environment	Class E2 in accordance with the Measuring Instrument Directive (MID), (2014/32/EU).





B23	**B24**
3x230/400 V AC	3x230/400 V AC
3x220/380...240/415 VAC (-20% - +15%)	3x220/380...240/415 VAC (-20% - +15%)
1.7 VA (0.8 W) total at 230 V AC	1.7 VA (0.8 W) total at 230 V AC
0.007 VA (0.007 W) per phase at I_{ref} and I_b	0.0007 VA (0.0005 W) per phase at I_{ref} and I_n
5 A	-
-	1 A
5 A	-
0.5 A	0.05 A
65 A	6 A
0.25 A	0.02 A
< 20 mA	< 1 mA
1 - 25 mm²	0.5 - 10 mm²
2 Nm	1.2 Nm
0.5 - 1 mm²	0.5 - 1 mm²
0.25 Nm	0.25 Nm
-	1/9 - 9999/1
1000 imp/kWh	5000 imp/kWh
40 ms	40 ms
50 or 60 Hz ± 5%	50 or 60 Hz ± 5%
B (Cl. 1) or C (Cl. 0.5 S) and Reactive Cl. 2	
1%	0.5%, 1%
7 digit LCD	7 digit LCD
-40°C - +70°C	-40°C - +70°C
-40°C - +85°C	-40°C - +85°C
75% yearly average, 95% on 30 days/year	75% yearly average, 95% on 30 days/year
Terminal 960 °C, cover 650°C (IEC 60695-2-1)	Terminal 960 °C, cover 650°C (IEC 60695-2-1)
IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.
Class M2 in accordance with the Measuring Instrument Directive (MID). (2014/32/EU).	Class M2 in accordance with the Measuring Instrument Directive (MID). (2014/32/EU).
Class E2 in accordance with the Measuring Instrument Directive (MID), (2014/32/EU).	Class E2 in accordance with the Measuring Instrument Directive (MID), (2014/32/EU).

Energy efficiency
EQ meters B series

The EQ meters, B series is a range of meters for single phase and three phase metering. The B series meters are mounted on a DIN rail and are suitable for installation in distribution boards and small enclosures such as consumer units. The B series are suitable in applications where there is a need for reliable energy measurements and where space is limited.

The low rated or base currents of these products ensures high dynamic performance with superior accuracy even at low currents. The B series meters are meters for many applications and installations. Navigating the meter is easily done via the push-buttons below the display. To configure the meter settings, the set button must be accessed and this button is protected against unauthorized use when the “glass lid” on the front of the meter is closed and sealed. The exceptional low power consumption of the meters, less than 0.9 VA and 1.6 VA, makes them economical in the long run - an important feature specially for large meter populations.

Data from the B series meters can be collected via pulse output or serial communication. The pulse output is a solid state relay that generates pulses proportionally to the measured energy. The meters can also be equipped with built-in serial communication interfaces for M-Bus or Modbus RTU (RS-485). Meters with RS-485 interface can also be set to communicate over the new EQ bus with the new gateway G13. All meters in the B series come with an infrared port for communication with an external Serial Communication Adapter (SCA) such as the KNX adapter.

The B series meters support reading of instrument values. A large number of electrical properties can be read. Depending on version of the meter the following data is available:
- Active power
- Apparent power
- Reactive power
- Current
- Voltage
- Frequency
- Power factor

Up to 4 tariffs are controlled via inputs or communication.

The B series support two inputs and two outputs in a fixed configuration. Inputs can be used for counting pulses from e.g. a water meter, or reading status from external devices. Outputs can be used as pulse outputs or controlling external apparatus like a contactor or an alarm (connected via an external relay).

The B series meters are type approved according to IEC and they are both type approved and verified according to MID. MID is the Measuring Instruments Directive 2014/32/EU from the European Commission. MID type approval and verification is mandatory for meters in billing applications within EU and EEA. The type approval is according to standards that covers all relevant technical aspects of the meter. These include climate conditions, electromagnetic compatibility (EMC), electrical requirements, mechanical requirements and accuracy.

Energy efficiency

ABB EQ meters B series



B series

Technical features		
	B series	
Outputs		
Type	Transistor or MOSFET	
Current	2 - 100 mA	
Voltage	5 - 240 V AC/DC. For meters with only 1 output 5 - 40 VDC.	
Pulse output frequency	Programmable 1 - 999999 imp/kWh	
Pulse length	Programmable 10 - 990 ms	
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
Inputs		
Voltage	0 - 240 V AC/DC	
OFF	0 - 5 V AC/DC	
ON	57 - 240 V AC/24 - 240 V DC	
Min. pulse length	30 ms	
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
EMC compatibility		
Impulse voltage test	6 kV 1.2/50µs (IEC 60060-1)	
Surge voltage test	4 kV 1.2/50µs (IEC 61000-4-5)	
Fast transient burn test	4kV (IEC 61000-4-4)	
Immunity to electromagnetic HF-fields	80 MHz - 2 GHz (IEC 61000-4-6)	
Immunity to conducted disturbance	150kHz - 80MHz (IEC 61000-4-6)	
Immunity to disturbance with harmonics	2kHz - 150kHz	
Radio frequency emission	EN 55022, class B (CISPR22)	
Electrostatic discharge	15 kV (IEC 61000-4-2)	
Standards	IEC 62052-11, IEC 62053-21 class 1 & 2, IEC 62053-22 class 0,5 S, IEC 62053-23 class 2, IEC 62054-21, GB/T 17215.211-2006, GB/T 17215.312-2008 class 1 & 2, GB/T 17215.322-2008 class 0,5 S, GB 4208-2008, EN 50470-1, EN 50470-3 category A, B & C	
Mechanical		
Material	Polycarbonate in transparent front glass. Glass reinforced polycarbonate in bottom case and upper case. Polycarbonate in terminal cover.	
Dimensions	**B21**	**B23/B24**
Width	35 mm	70 mm
Height	97 mm	97 mm
Depth	65 mm	65 mm
DIN modules	2	4

Energy efficiency

EQ meters B series



B21

Direct connected electricity meter up to 65 A. Verified and approved according to MID. IEC approval. Instrument values. Alarm function. - Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

EQ meters single phase electricity meter, 2 DIN with IR port, 65 A

For direct connection up to 65 A. Class B (Cl. 1) with functionality level Steel.
Active energy

Description	Bbn	Order details		Weight	Pack
	7392696			1 piece	unit
	EAN	Type code	Order code	kg	pc.
1 x 230 V AC, Pulse output	001496	B21 111 - 100	2CMA100149R1000	0.140	1
1 x 230 V AC, Pulse output, RS-485	001502	B21 112 - 100	2CMA100150R1000	0.150	1
1 x 230 V AC, Pulse output, M-Bus	001519	B21 113 - 100	2CMA100151R1000	0.150	1

For direct connection up to 65 A. Class B (Cl. 1) (Reactive Cl. 2) with functionality level Silver.
Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.

Description	Bbn	Order details		Weight	Pack
	7392696			1 piece	unit
	EAN	Type code	Order code	kg	pc.
1 x 230 V AC, 2 output, 2 input	001540	B21 311 - 100	2CMA100154R1000	0.140	1
1 x 230 V AC, 2 output, 2 input, RS-485	001557	B21 312 - 100	2CMA100155R1000	0.150	1
1 x 230 V AC, 2 output, 2 input, M-Bus	001564	B21 313 - 100	2CMA100156R1000	0.150	1

Energy efficiency
EQ meters B series



B23

Direct connected electricity meter up to 65 A. Verified and approved according to MID. IEC approval. 2- and 3-element metering. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

EQ meters three phase electricity meter, 4 DIN with IR port, 65 A

Class B (Cl. 1) with functionality level Steel.
Active energy

Description	Bbn 7392696 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
3 x 230/400 V AC, Pulse output	001632	B23 111 - 100	2CMA100163R1000	0.310	1
3 x 230/400 V AC, Pulse output, RS-485	001649	B23 112 - 100	2CMA100164R1000	0.320	1
3 x 230/400 V AC, Pulse output, M-Bus	001656	B23 113 - 100	2CMA100165R1000	0.330	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Bronze.
Active and reactive energy, import/export.

Description	Bbn 7392696 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
3 x 230/400 V AC, Pulse output, RS-485	001663	B23 212 - 100	2CMA100166R1000	0.320	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Silver.
Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.

Description	Bbn 7392696 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
3 x 230/400 V AC, 2 output, 2 input	001687	B23 311 - 100	2CMA100168R1000	0.330	1
3 x 230/400 V AC, 2 output, 2 input, RS-485	001694	B23 312 - 100	2CMA100169R1000	0.340	1
3 x 230/400 V AC, 2 output, 2 input, M-Bus	001700	B23 313 - 100	2CMA100170R1000	0.350	1

Energy efficiency
EQ meters B series



B24

Transformer CT connected electricity meter up to 6 A. Verified and approved according to MID. IEC approval. 2- and 3-element metering. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

EQ meters three phase electricity meter, 4 DIN with IR port, 6 A

Class B (Cl. 1) with functionality level Steel. Active energy

Description	Bbn 7392696 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
3 x 230/400 V AC, Pulse output	001779	B24 111 - 100	2CMA100177R1000	0.250	1
3 x 230/400 V AC, Pulse output, RS-485	001786	B24 112 - 100	2CMA100178R1000	0.250	1
3 x 230/400 V AC, Pulse output, M-Bus	001793	B24 113 - 100	2CMA100179R1000	0.270	1

Class B (Cl. 1) (Reactive Cl. 2) with functionality level Bronze.
Active and reactive energy, import/export.

Description	Bbn 7392696 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
3 x 230/400 V AC, Pulse output, RS-485	001809	B24 212 - 100	2CMA100180R1000	0.250	1

Class C (Cl. 0.5 S) (Reactive Cl. 2) with functionality level Silver.
Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.

Description	Bbn 7392696 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
3 x 230/400 V AC, 2 output, 2 input, RS-485	001830	B24 352 - 100	2CMA100183R1000	0.270	1
3 x 230/400 V AC, 2 output, 2 input, M-Bus	001847	B24 353 - 100	2CMA100184R1000	0.290	1

Energy efficiency
EQ meters C series



C series

The EQ meters, C series are truly compact meters for single phase and three phase metering. The C series is mounted on a DIN rail and is suitable for installation in distribution boards and small consumer units.

Only one or three module wide, the C series is a very compact meter for single phase and three phase applications. The meters have an LCD with large digits showing energy register and instrumentation values. The meters have a wide temperature range which makes it possible to install the meters in many locations. Navigating the meters are easily done via the push-button below the display. The exceptional low power consumption of the meters, less than 0,3 W and 0,6 W at 230 V AC, makes them economical in the long run - an important feature specially for large meter populations.

The C series meters support reading of instrument values. A number of electrical properties can be read:
- Power factor
- Active power
- Current
- Voltage

The C series meters have an output that can be used as pulse output or alarm output. The alarm quantity and levels is easily configured on the meter with the push button. The output can be used for controlling external apparatus like a contactor or an alarm indicator (connected via an external relay).

The C series meters are type approved according to IEC and MID. MID is the Measuring Instruments Directive 2014/32/EU from the European Commission. The type approval is according to standards that covers all relevant technical aspects of the meter. These include climate conditions, electromagnetic compatibility (EMC), electrical requirements, mechanical requirements and accuracy.

MID versions have initial verification according to annex F of the Measuring Instruments Directive.

Energy efficiency

EQ meters C series





	C11	C13
Technical features		
Voltage/current inputs		
Nominal voltage	230 V AC	3x230/400 V AC
Voltage range	230 V AC (-20% - +15%)	3x230/400 V AC (-20% - +15%)
Power dissipation voltage circuits	7.4 VA (0.3 W) at 230 V	1.5 VA (0.6 W) total at 230 V
Power dissipation current circuits	0.04 VA (0.04 W) at I_b and I_{ref}	0.04 VA (0.04 W) per phase at I_b and I_{ref}
Base current I_b	5 A	5 A
Rated current I_n	-	-
Reference current I_{ref}	5 A	5 A
Transitional current I_{tr}	0.5 A	0.5 A
Maximum current I_{max}	40 A	40 A
Minimum current I_{min}	0.25 A	0.25 A
Starting current I_{st}	< 20 mA	< 20 mA
Terminal wire area	0.5 - 10 mm^2	0.5 - 10 mm^2
Recommended tightening torque	0.8 Nm	0.8 Nm
General data		
Frequency	50 or 60 Hz ± 5%	50 or 60 Hz ± 5%
Accuracy Class	B (Cl.1)	B (Cl.1)
Active energy	1%	1%
Display of energy	6 digit LCD	7 digits LCD
Communication		
Terminal wire area	-	-
Recommended tightening torque	-	-
Pulse indicator (LED)		
Pulse frequency	1000 (imp/kWh)	1000 (imp/kWh)
Pulse length	40 ms	40 ms
Environmental		
Operating temperature	- 25°C - +70°C	- 25°C - +70°C
Storage temperature	- 25°C - +85°C	- 25°C - +85°C
Humidity	75% yearly average, 95% on 30 days/year	75% yearly average, 95% on 30 days/year
Resistance to fire and heat	Terminal 960°C, cover 650°C (IEC 60695-2-1)	
Resistance to water and dust	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.	
Mechanical environment	Class M2 in accordance with the Measuring Instrument Directive (MID). (2014/32/EU).	
Electromagnetic environment	Class E2 in accordance with the Measuring Instrument Directive (MID), (2014/32/EU).	

Energy efficiency

EQ meters C series





	C11	C13
Technical features		
Outputs		
Type	Transistor	Transistor
Current	2 - 100 mA	2 - 100 mA
Voltage	5 - 40 V DC	5 - 40 V DC
Pulse output frequency	100 or 1000 (imp/kWh)	100 or 1000 (imp/kWh)
Pulse length	100 ms	100 ms
Terminal wire area	0.5 - 10 mm^2	0.5 - 6 mm^2
Recommended tightening torque	0.8 Nm	0.25 Nm
EMC compatibility		
Impulse voltage test	6 kV 1.2/50 µs (IEC 60060-1)	6 kV 1.2/50 µs (IEC 60060-1)
Surge voltage test	4 kV 1.2/50 µs (IEC 61000-4-5)	4 kV 1.2/50 µs (IEC 61000-4-5)
Fast transient burn test	4 kV (IEC 61000-4-4)	4 kV (IEC 61000-4-4)
Immunity to electromagneti HF-fields	80 MHz - 2 GHz at 10 V/m (IEC 61000-4-3)	80 MHz - 2 GHz at 10 V/m (IEC 61000-4-3)
Immunity to conducted disturbance	150 kHz - 80 MHz, (IEC 61000-4-6)	150 kHz - 80 MHz, (IEC 61000-4-6)
Immunity to disturbance with harmonics	2kHz - 150kHz	2kHz - 150kHz
Radio frequency emission	EN 55022, class B (CISPR22)	EN 55022, class B (CISPR22)
Electrostatic discharge	15 kV (IEC 61000-4-2)	
Standards	IEC 62052-11, IEC 62053-21 class 1, GB/T 17215.211-2006, GBT 17215.321-2008 class 1, GB 4208-2008, EN 50470-1, EN 50470-3 category B	
Mechanical		
Material	Glass reinforced polycarbonate	
Dimensions		
Width	17,5 mm	54 mm
Height	111 mm	122 mm
Depth	65 mm	65 mm
DIN modules	1	3

Energy efficiency

EQ meters C series



C11

Direct connected electricity meter up to 40 A. IEC approval. Instrument values. Alarm function. Optional - Verified and approved according to MID.

EQ meters single phase electricity meter, 1 DIN, 40 A

Class B (Cl.1) with functionality level Steel. Active energy					
Description	**Bbn 7392696**	**Order details**		**Weight 1 piece**	**Pack unit**
	EAN	**Type code**	**Order code**	**kg**	**pc.**
1 x 230 V AC, Pulse output 1000 imp/kWh + MID	035712	C11 110 - 101	2CMA103571R1000	0.070	1
Class 1 with functionality level Steel. Active energy					
1 x 230 V AC, Pulse output 1000 imp/kWh	035729	C11 110 - 301	2CMA103572R1000	0.070	1



C13

Direct connected electricity meter. IEC approval. 3 elementmetering. Instrument values. Alarm function. Optional - Verified and approved according to MID.

EQ meters three phase electricity meter, 3 DIN, 40 A

For direct connection up to 40 A. Class B (Cl.1) with functionality level Steel. Active energy					
Description	**Bbn 7392696**	**Order details**		**Weight 1 piece**	**Pack unit**
	EAN	**Type code**	**Order code**	**kg**	**pc.**
3 x 230/400 V AC, Pulse output 1000 imp/kWh + MID	035743	C13 110 - 101	2CMA103574R1000	0.170	1
For direct connection up to 40 A. Class 1 with functionality level Steel. Active energy					
3 x 230/400 V AC, Pulse output 1000 imp/kWh	035750	C13 110 - 301	2CMA103575R1000	0.170	1

Energy efficiency

Interfaces for EQ meters



ZS/S 1.1

Meter Interface Module, KNX

It records consumption and measured values of the electrical energy consumption meters. Using an infra-red interface, the ABB energy meter types of the A- and B-series are incorporated. The information and data which is read can be used, for example, for cost centre accounting, energy optimisation, monitoring of installations and visualisation.

Description	EAN	Order details		Weight 1 piece	Pack unit
		Type code	Order code	kg	pc.
KNX meter module	4016779662079	ZS/S 1.1	2CDG110083R0011	0.100	1

Energy efficiency
EQmatic



QA/S 3.xx.1

Energy Analyzer, M-Bus, MDRC
Compact and web-based stand-alone devices for energy management applications. For monitoring, logging, displaying and analyzing consumption data of up to 16 or 64 electricity, gas, water or heat meters via M-Bus. Automatic detection for ABB EQ meters (A/B-Series). Access to the device via web browser. The user interface provides graphical analysis functions, e.g. dashboard, historical data, instantaneous values, benchmark functions, cost allocation according to consumer groups and more.

Description	Bbn 4016779	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
16 Devices	997751	QA/S 3.16.1	2CDG110226R0011	0.15	1
64 Devices	997768	QA/S 3.64.1	2CDG110227R0011	0.15	1



QA/S 4.xx.1

Energy Analyzer, Modbus RTU, MDRC
Compact and web-based stand-alone devices for energy management applications. For monitoring, logging, displaying and analyzing consumption data of up to 16 or 64 electricity, gas, water or heat meters via Modbus RTU. Automatic detection for ABB EQ meters (A/B-Series). Access to the device via web browser. The user interface provides graphical analysis functions, e.g. dashboard, historical data, instantaneous values, benchmark functions, cost allocation according to consumer groups and more.

Description	Bbn 4016779	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
16 Devices	997775	QA/S 4.16.1	2CDG110228R0011	0.15	1
64 Devices	997782	QA/S 4.64.1	2CDG110229R0011	0.15	1



QA/S 1.16.1

Energy Analyzer, KNX, MDRC
Compact and web-based stand-alone device for energy management applications.
For monitoring, logging, displaying and analyzing consumption data of up to 16 electricity, gas, water or heat meters via KNX TP. In addition measured values such as temperature, humidity, etc. can be processed and displayed. The alarm function allows early warning via E-mail if any value exceeds defined limits. The user interface provides graphical analysis functions, e.g. dashboard, historical data, instantaneous values, benchmark functions,cost allocation according to consumer groups and more. In order to increase energy efficiency, defined loads can be selectively switched off with the load control function if they exceed a load limit. For further processing data can be exported via E-mail or upload to FTP server. Several data sharing options allow communication with other systems.

Description	Bbn 4016779	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
16 Devices	997713	QA/S 1.16.1	2CDG110224R0011	0.15	1

Notes

System pro M compact® InSite
Connected solution for sub distribution

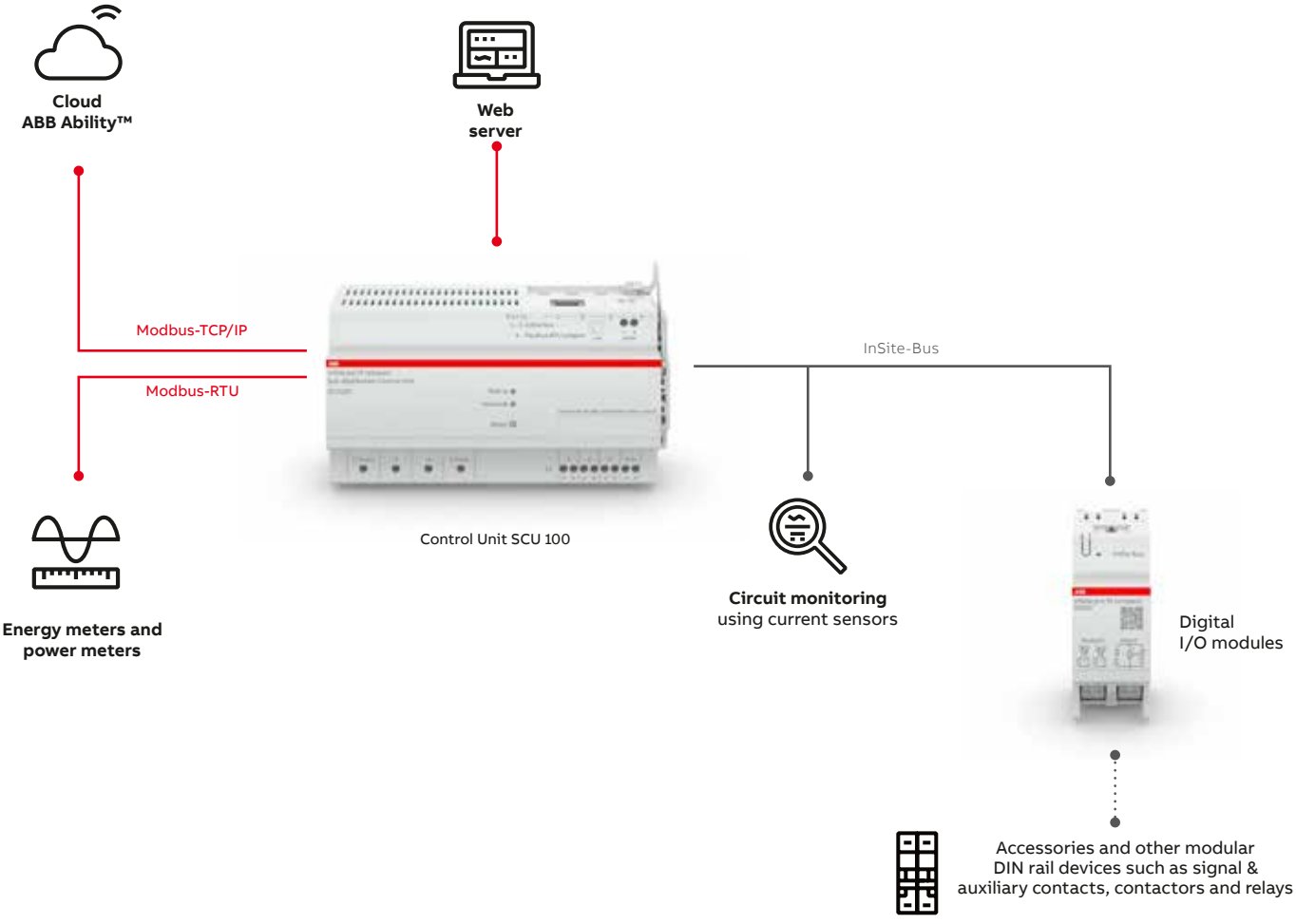
System pro M compact® InSite is a range of connected devices to support energy and asset management in electrical distribution.

The solution delivers highest data security standards (encrypted SNMP V3 and SSL certificate) as well as continuous upgrades thanks to regular firmware updates. Central to the System pro M® InSite range is the SCU100 control unit, that has been specifically developed to allow users to better manage energy and assets in sub distribution boards. It can gather data from up to 16 energy and power meters, as well current sensors for branch measurement.

ABB's ready-made, pre-assembled InSite kit packages are designed to make sub and final electrical distribution smarter with minimal effort. Any size of installation in commercial or industrial application can easily be upgraded, reducing installation and configuration time to nearly zero, and in turn, minimize costly operational downtime.

To enable monitoring and control of the complete energy distribution system, the range is completed with a flexible choice of input and output modules, which can be easily connected to ABB's System pro M compact® accessories of MCBs and RCDs, as well as other DIN-Rail products with digital inputs or outputs. They can also be connected to pulse meters – such as gas or water – to collect utilities consumption.

Based on a wide set of data, available functionalities range from simple monitoring of the installation to analysis of historical data, customized alarms and implementation of automated actions to reduce energy consumption, identify potential risks and ensure operational continuity.

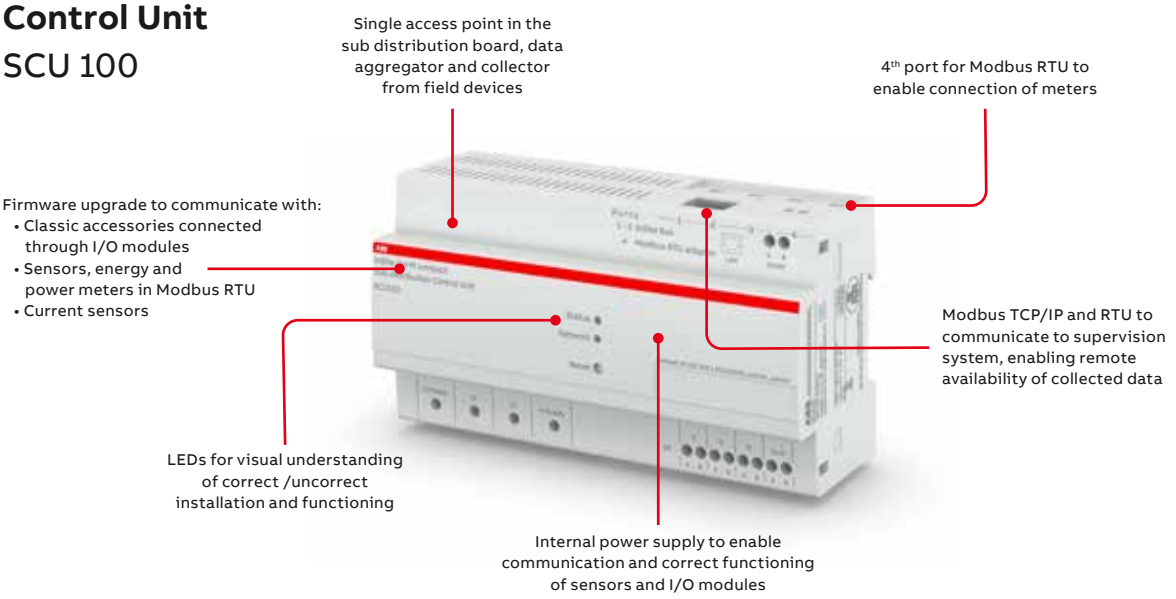




What to include in the panel:

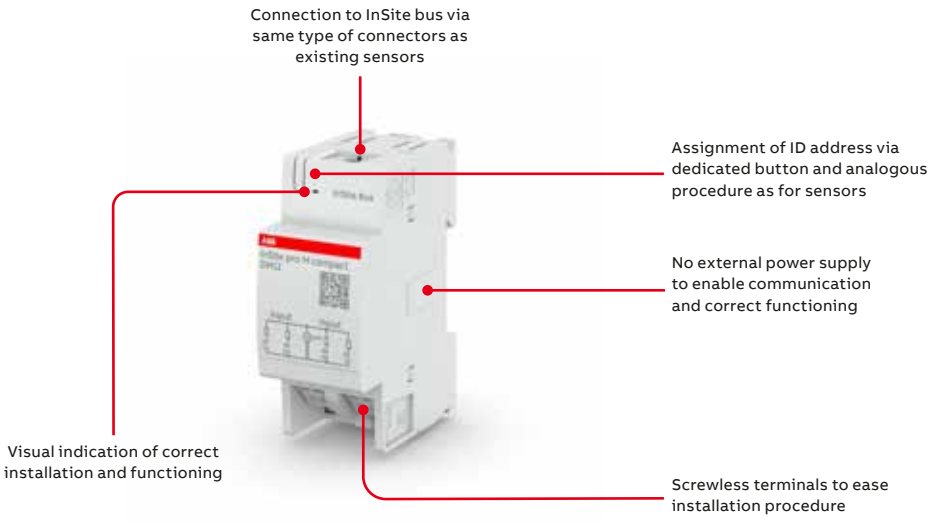
1. **Control Unit**
2. **Digital I/O modules**

1 Control Unit
SCU 100



2 Digital Input/Output modules
DM00, DM10, DM11

- Connect in the connectivity system classic accessories from existing and future ABB ranges and 3rd party ranges.
- Compatibility with water/gas/heat meters with pulse outputs
- Input to receive data from-hard wired connecte devices (accessories, meters)
- Output to act on connected accessories



Technical data

System pro M compact® InSite



Sub distribution control unit	Technical feature	Unit	Description
	Supply voltage	[VAC]	80-277 (L1-N, +5%)
	Frequency	[Hz]	50/60
	Power input (L1-N)	[W]	5...45 depending on number of sensors and I/O modules
	Power input , current trtransformer, secondary side	[VA]	Current circuit <2 (per phase)
	Voltage measurement range	[VAC]	80-277 (L1, L2, L3-N)
	Measurement range, current transformer, secondary side	[A]	nominal: 5 max: 6
	Hramonic component	[Hz]	up to 2000
	Data rate of Modbus RTU	[Baud]	RS485 2- wire, 2400...115200
	Refresh time		1sec / 30 sec (depending on type of data)
	Data storage and export		Integrated 1-year data storage Automatic CSV data export
	Communication		LAN: Modbus TCP/IP, SNMP v1, v2, encrypted v3 RS485: Modbus RTU
	Connected devices		Up to 96 sensors/digital channels Up to 16 meters
	LAN	[Mbit/s]	100
	Conductor cross-section	[mm^2]	0.5...2.5
	Mounting method		35mm DIN rail (DIN 5022)
	Degree of protection		IP20
	Dimensions	[mm]	161.5x87.0x64.9 (9WM)
	Oparting temperature	[°C]	-25... +60
	Stirage temperature	[°C]	-40... +85
	Standards		IEC61010-1

Main circuit accuracy	Description
Voltage	± 1%
Current	± 1%
Harmonic component (up to 2500Hz)	± 1%
Active power	± 2%
Apparent power	± 2%
Reactive power	± 2%
Power factor	± 2%

Input and Output modules	Technical feature	Unit	Input module DM11	Output module DM00	Input and Output module DM10
	Number of digital channels		4 Input	4 Output	2 Input + 2 Output
	Voltage (min - max)*		active input: 22-26 Vdc	relay output: 5Vdc-240Vac	active input: 22-26Vdc relay output: 5Vdc-240Vac
	Current (min - max)*		active input: 4mA	relay output: 5mA-2.5A Max 4,5A (<5sec)	active input: 4mA relay output: mA-2.5A Max 4,5A (<5sec)
	Pulse minimum duration**	[ms]	5	n/a	5
	Pulse frequency**	[Hz]	100	n/a	100
	Terminals cross section	[mm2]	2,5	2,5	2,5
	Mounting method		35 mm DIN rail (DIN 50022) or SMISSLINE TP plug base		
	Degree of protection		IP20	IP20	IP20
	Dimensions	[mm]	36x88x65	36x88x65	36x88x65
	Operating temperature	[°C]	-25...+60	-25...+60	-25...+60
	Storage temperature	[°C]	-40...+85	-40...+85	-40...+85
	Standards		IEC 61010	IEC 61010	IEC 61010

*Relay output values reported are applicable to resistive load
**Applicable only to active inputs

Ordering data

System pro M compact® InSite



SCU100

The SCU100 is capable of collecting measurements and information from up to 16 energy and power meters, in addition to 96 current sensors and digital channels, all simultaneously. It calculates the energy and number of operations at single line level and compares stored values by period or by device.

Remotely monitoring of the system is made possible by a digital communication that supports different protocols: Modbus RTU, TCP or SNMP v1 and v2 and the encrypted v3.

Its built-in web server offers intuitive access to the measured data, the configuration settings and the system parameters, providing one unique interface for both operations and commissioning process. The two interfaces – LAN (TCP/IP or Modbus TCP) and RS485 (Modbus RTU) – guarantee straightforward integration into any IT infrastructure. What's more, the data can be read out by means of an encrypted SNMP protocol.

The Sub-distribution Control Unit SCU100 has been specifically develop to meet requirements of energy and asset monitoring and control in sub-distribution panelboards. In a framework where energy efficiency and operations continuity are becoming crucial, SCU100 offers the possibility to reduce wastes and identify risky situations promptly.



Digital Input and Output modules – DM11, DM00, DM10

The range of digital Input and Output Modules consists of 3 devices to adapt to quantity and type of installed products: Input Module DM11, Output Module DM00 and Input/Output Module DM10.

They can be connected to System pro M compact® accessories of MCBs and RCDs, but also to other DIN-Rail products with a digital input or output and to pulse meters (e.g. water, gas meters). They can read contact status, activate or deactivate lines and collect utilities consumptions.

ABB ranges compatible with I/O Modules are:

Molded Case Circuit Breaker
Tmax XT

Molded Case Circuit Breaker	Residual Current Devices
S 200	RCCBs – F 200
SN 201	RCD-blocks – DDA 200, DDA 800
S200 80-100A	RCBOs – DS 201, DS 202, DS 203, DS 200, DS800
S 750 DR	eRCBOs – DSE, DSN
S 700	
S 800	



Accessories

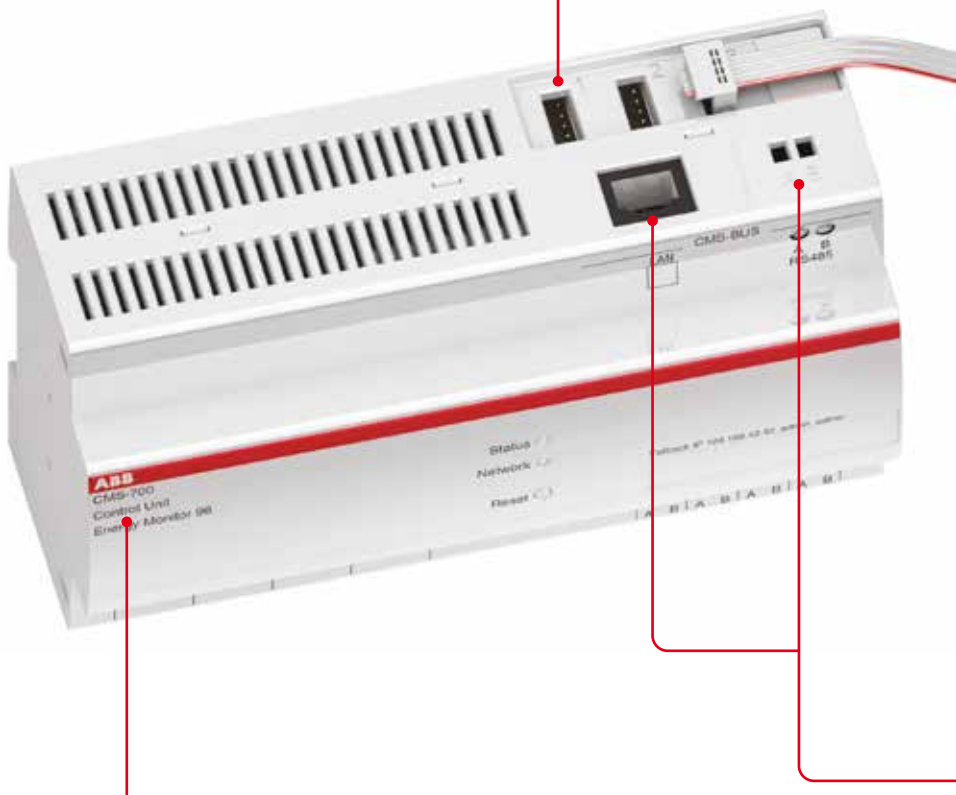
The Sub-distribution Control Unit needs a flat cable to gather information from current sensors and digital I/O modules. The flat cable should be a 4-pin cable, flexible in length. Devices can be placed at customizable distances required by the specific application.

Description	GTIN 7612271 EAN	Ordering details Brief description	 Product no.	Weight of 1 unit (kg)	Packaging unit (pce.)
Sub-distribution Control Unit	508104	SCU100	2CCG000242R0001	0.329	1
Digital Input Module	508135	DM11	2CCG000245R0001	0.075	1
Digital Output Module	508142	DM00	2CCG000246R0001	0.085	1
Digital Input and Output Module	508159	DM10	2CCG000247R0001	0.080	1
Flat cable 5m	508111	INS105	2CCG000243R0001	0.046	1
Connector set (35pcs)	508128	INS135	2CCG000244R0001	0.024	35

Energy efficiency
CMS – Circuit Monitoring System overview

The quality of a Circuit Monitoring System is dependent on the strengths of the individual components and how well they interact. ABB's new CMS sets new and high standards. Compactness, technology, measurement results, user friendliness and flexibility - every component and every feature of the CMS has been fully optimized in terms of practicality and functionality.

CMS bus interface
Each bus interface allows up to 32 sensors connected to the Control Unit:
CMS-700: up to 96 sensors (3×32)
CMS-600: up to 64 sensors (2×32)
CMS-660: up to 32 sensors (1×32)



Example illustration:
Control Unit CMS-700 in combination with CMS open-core sensors



CMS-600



CMS-700



CMS-660

Control Units
The control unit evaluates the measurement data picked up by the sensors, and makes it available via the provided interfaces.

Three different units are available depending on the application: CMS-700, CMS-660 and CMS-600.

Connection technology
Connecting the sensors to the Control Unit is extremely simple and requires no special tools. All sensors are connected to the Control Unit by means of a flexible flat cable and insulation displacement connectors. The positioning of sensors is fully customizable so that they sit exactly where a measurement is required.







Sensors
CMS sensors can be placed anywhere in the system, without any limitation. Easy initializing is guaranteed by the unique ID assigned to each sensors via Control Unit in just a few simple steps.
All measurement functions are available right after commissioning.



Serial interfaces
Depending on the selected control unit, the following communication interfaces are available: RS485 (Modbus RTU), LAN (TCP/IP and Modbus TCP), SNMP v1/v2 and v3 encrypted.

The web server integrated in the CMS-700 makes it possible to display the values via any Internet browser and to automatically export the files (via e-mail or FTP server).

Energy efficiency
Circuit Monitoring System

Integrate however you want thanks to multiple mounting options.
Depending on the application, you can choose between two sets of sensors - one specifically designed for ABB installation devices, the other with an universal design to be installed on cables or DIN-rail.

Sensors for ABB devices







System pro M installation, SMISSLINE
The sensors of the CMS-120LA and CMS-120FH series allow easy retrofit installation on S200 MCBs, SMISSLINE devices and E90 fuseholders (1000VDC).



Installation on S800 installation devices
CMS-100S8 and CMS-200S8 series sensors can be mounted on all S800 high performance circuit breakers with cage terminals.

Universally usable sensor designs







Mounting on a DIN rail
CMS-120DR, CMS-100DR, and CMS-200DR series sensors can be mounted on all DIN rails with the aid of a DIN rail mounting.



Cable tie mounting
If space is at a real premium, CMS-120CA, CMS-100CA, and CMS-200CA series sensors can be secured directly to the cable(s) to be measured by means of cable ties.

Energy efficiency
Circuit Monitoring System

Tangible value added for you
ABB circuit monitoring pays off twofold



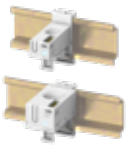
Early warning system (predictive maintenance) for increasing the availability of critical consumers
Continuous monitoring of the current flow at the circuit breaker makes it possible to detect overloaded lines before they lead to a service interruption. Apart from this, monitoring individual circuits indicates whether the loads are in the desired operating mode or not. In this way, system deviations can be ascertained instantaneously. What's more, the CMS can be used to detect unbalanced loads before they result in failure of the neutral conductor and consequently load failure.



Cost analysis to reduce and assign energy costs
The cost of energy will rise continuously. In order to cut costs, you first have to know where they arise. The Control Unit helps illustrate and analyze the instantaneous energy consumption levels. Furthermore, the calculated active energy can be used to roughly allocate the costs at the output level.

Energy efficiency
Circuit Monitoring System

Sensors overview

		System Pro M, SMISSLINE		S800	DIN rail	Cable tie
						
Mounting method	for all MCBs, RCDs, RCBOs with twin terminals	for MCBs (S200, SMISSLINE) and RCBOs (SMISSLINE)	for fuse holders E90	for all S800 devices with cage terminals	universally usable	universally usable
Open-core sensors						
AC accuracy* of ≤ ± 1.0% The laying method influences the accuracy.						
18-mm overall width						
CMS-120xx (80 A)	CMS-120PS	CMS-120LA	-		CMS-120DR	CMS-120CA
CMS-121xx (40 A)	CMS-121PS	CMS-121LA	CMS-121FH		CMS-121DR	CMS-121CA
CMS-122xx (20 A)	CMS-122PS	CMS-122LA	CMS-122FH		CMS-122DR	CMS-122CA
Solid-core sensors						
AC accuracy* of ≤ ± 0.5%						
18-mm overall width						
CMS-100xx (80 A)	CMS-100PS			CMS-100S8	CMS-100DR	CMS-100CA
CMS-101xx (40 A)	CMS-101PS			CMS-101S8	CMS-101DR	CMS-101CA
CMS-102xx (20 A)	CMS-102PS			CMS-102S8	CMS-102DR	CMS-102CA
25-mm overall width						
CMS-200xx (160 A)				CMS-200S8	CMS-200DR	CMS-200CA
CMS-201xx (80 A)				CMS-201S8	CMS-201DR	CMS-201CA
CMS-202xx (40 A)				CMS-202S8	CMS-202DR	CMS-202CA

* All accuracy specifications refer to the relevant full scale value and apply to 25°C

Energy efficiency

Circuit Monitoring System





Control units		
Characteristics	**Control Unit CMS-700**	**Control Unit CMS-600**
CMS Sensors		
Sensors	96 (3x32)	64 (2x32)
Control Unit		
Integrated power supply	•	
Voltage measurement	•	
Current (External CTs are required) measurement	•	
Active, reactive and appearent power (External CTs are required) measurement	•	
Calculated values for the branches		
Energy (Using branch currents, mains voltage and power factor over time)	•	
Power (Using branch currents, mains voltage and power factor)	•	
Interfaces		
RS485	•	•
LAN	•	
Protocols		
Modbus RTU	•	•
Modbus TCP	•	
SNMP (v1, v2 and encrypted v3)	•	
Visualization		
Built-in web server	•	
Touch display		•
CSV data export	•	
Approvals		
IEC 61010-1	•	•
UL 508 / CSA C22.2 No. 14	•	•

Energy efficiency

Control units



CMS-700

CMS-700
User Manual



CMS-600

CMS-600
User Manual

Control Unit CMS-700		
Supply voltage	[VAC]	80 – 277 (L1-N, +5%)
Frequency	[Hz]	50 / 60
Power input (L1-N)	[W]	5 ... 40 (dep. on number of sensors)
Power input, current transformer, secondary side	[VA]	Current circuit <2 (per phase)
Voltage measurement range	[VAC]	80 – 277 (L1, L2, L3-N)
Measurement range, current transformer, secondary side	[A]	nominal: 5 max.: 6
Harmonic component	[Hz]	up to 2000
Data rate of Modbus RTU	[Baud]	RS485 2-wire, 2400 ... 115200
Refresh time		≤1 sec with max. 96 sensors
LAN	[Mbit/s]	100
Conductor cross-section	[mm²]	0.5 ... 2.5
Mounting method		35 mm DIN rail (DIN 50022)
Degree of protection		IP20
Dimensions	[mm]	161.5 x 87.0 x 64.9 (9 WM)
Operating temperature	[°C]	-25 ... +60
Bearing temperature	[°C]	-40 ... +85
Standards		IEC61010-1 UL 508/ CSA C22.2 No. 14
Main circuit accuracy		
Voltage		±1%
Current		±1%
Harmonic component		1%
Active power		±2%
Apparent power		±2%
Reactive power		±2%
Power factor		±0.2%

Control Unit CMS-600 – Modbus RTU		
Supply voltage	[VDC]	24 (±10%)
Power input	[W]	4 – 24 (dep. on number of sensors)
Interface		RS485 2-wire
Protocol		Modbus RTU
Data rate	[Baud]	2400 ... 115200
Refresh time		≤1 sec with max. 64 sensors
Insulation strength	[VAC]	400
Screw-type terminals		0.5 ... 2.5 mm², max. 0.6 Nm
Mounting method		35 mm DIN rail (DIN 50022) or SMISSLINE TP plug base
Dimensions	[mm]	71.8 x 87.0 x 64.9 (4 WM)
Operating temperature	[°C]	-25 ... +70
Bearing temperature	[°C]	-40 ... +85
Standards		IEC 61010-1 UL 508/ CSA C22.2 No. 14

Energy efficiency
Control units

CMS-700



CMS-700
User Manual

CMS-700

The CMS-700 measures the AC and DC currents in the outgoing circuits via up to 3 x 32 sensors and calculates the energy and output data (line-side active and reactive power) of up to 96 sensors simultaneously.

Remotely monitoring of the system is made possible by a digital communication that supports different protocols: Modbus RTU, TCP or SNMP v1 and v2 and the encrypted v3. The Control Unit CMS-700 stands out thanks to its built-in web server that offers easy access not only to the measured data but also to the system parameters. The two interfaces – LAN (TCP/IP or Modbus TCP) and RS485 (Modbus RTU) – guarantee straight¬forward integration into any IT infrastructure. What's more, the data can be read out by means of an encrypted SNMP protocol.

The Control Unit CMS-700 has been developed specifically to meet the requirements of critical power applications, such as tho¬se of computing centers. In addition, however, professional energy monitoring is becoming ever more important when it comes to identifying savings potentials in functional buildings such as office buildings.

CMS-600



CMS-600
User Manual

CMS-600

The CMS-600 system enables you to measure AC and DC currents in up to 64 branches. For simple and fast operation, the Control Unit is equipped with an illuminated touch display that makes not only initialization but also control of the sensors extremely simple.

A 2-wire RS485 Modbus RTU interface enables users to remotely query and process the measurement data. As such, the CMS-600 Control Unit can be very easily integrated into an existing Modbus architecture. As an option, the measured values can also be visualized and processed by me¬ans of a programmable logic control (PLC).

CMS-600 is equipped with an integrated CMS software for which great care has been taken to ensure that the navigation concept is highly intuitive

The Control Unit CMS-600 are put to use in the critical power systems of hospitals and in similar industrial applica¬tions, too. Furthermore, these devices can also be found in functio¬nal buildings such as airports, hotels, office buildings, universities/ colleges and museums or in industrial photovoltaics.

Description	GTIN 7612271	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
Control units					
Control Unit CMS-700	453138	CMS-700	2CCA880700R0001	0.329	1
Control Unit CMS-600	418700	CMS-600	2CCA880000R0001	0.153	1

Energy efficiency

Sensors and Accessories



CMS-120LA



CMS-120FH



CMS-120PS



CMS-120DR



CMS-120CA

Open core sensors 18 mm

Sensor type			CMS-120xx	CMS-121xx	CMS-122xx
Measurement range		[A]	80	40	20
Measurement method			TRMS, AC 50 / 60 Hz, DC		
Peak value of the distorted wave-form			≤ 1.5	≤ 3	≤ 6
AC accuracy (TA = 25 °C)*			≤ ± 1 %		
AC* temperature coefficient			≤ ± 0.04 %		
AC accuracy (TA = 25 °C)*			≤ ± 1.2 %	≤ ± 1.4 %	≤ ± 1.8 %
DC* temperature coefficient			≤ ± 0.14 %	≤ ± 0.24 %	≤ ± 0.44 %
Resolution		[A]	0.01		
Internal sampling rate		[Hz]	5000		
Respond time (±1 %)		[sec]	Type 0.34		
Max. diameter of the cable		[mm]	9.6		
Insulation			690 V AC /1500 V DC		
Operating temperature		[°C]	– 25 ... +70 / – 40 ... +85		
Size	CMS-120PS series	[mm]	17.4 x 41.0 x 26.5		
	CMS-120CA series	[mm]	17.4 x 41.0 x 29.0		
	CMS-120DR series	[mm]	17.4 x 51.5 x 43.2		
	CMS-120LA series	[mm]	17.4 x 41.0 x 38.9		
	CMS-120FH series	[mm]	17.4 x 41.0 x 38.9		
Reference standard			IEC 61010-1 | UL508 / CSA C22.2 No 14		

* All accuracy specifications refer to full scale value and apply at 25° C.
In the case of open-core sensors, the position of the cable affects accuracy.



CMS-120PS



CMS-120PS



CMS-120DR



CMS-120CA

Solid-core sensors 18 mm

Sensor type			CMS-100xx	CMS-101xx	CMS-102xx
Measurement range		[A]	80	40	20
Measurement method			TRMS, AC 50 / 60 Hz, DC		
Peak value of the distorted wave-form			≤ 1.5	≤ 3	≤ 6
AC accuracy (TA = 25 °C)*			≤ ± 0.5 %		
AC* temperature coefficient			≤ ± 0.036 %		
AC accuracy (TA = 25 °C)*			≤ ± 0.7 %	≤ ± 1.0 %	≤ ± 1.7 %
DC* temperature coefficient			≤ ± 0.047 %	≤ ± 0.059 %	≤ ± 0.084 %
Resolution		[A]	0.01		
Internal sampling rate		[Hz]	5000		
Respond time (±1 %)		[sec]	Type 0.25		
Max. diameter of the cable		[mm]	10		
Insulation		[V]	690 V AC /1500 V DC		
Operating temperature		[°C]	– 25 ... +70 / – 40 ... +85		
Size	CMS-100PS series	[mm]	17.4 x 41.0 x 26.5		
	CMS-100S8 series	[mm]	26.5 x 45.5 x 31.8		
	CMS-100DR series	[mm]	17.4 x 51.5 x 43.2		
	CMS-100CA series	[mm]	17.4 x 41.0 x 29.0		
Reference standard			IEC 61010-1 | UL508 / CSA C22.2 No 14		

* All accuracy specifications refer to the relevant full scale value and apply at 25° C.

Energy efficiency
Sensors and Accessories



CMS-120PS



CMS-120DR



CMS-120CA

Solid-core sensors 25 mm

Sensor type			**CMS-200xx**	**CMS-201xx**	**CMS-202xx**
Measurement range		[A]	160	80	40
Measurement method			TRMS, AC 50 / 60 Hz, DC		
Peak value of the distorted wave-form			≤ 1.5	≤ 3	≤ 6
AC accuracy (TA = +25°C)*			≤ ± 0.5 %		
AC* temperature coefficient			≤ ± 0.036 %		
AC accuracy (TA = +25°C)*			≤ ± 0.7 %	≤ ± 1.0 %	≤ ± 1.7 %
DC* temperature coefficient			≤ ± 0.047 %	≤ ± 0.059 %	≤ ± 0.084 %
Resolution		[A]	0.01		
Internal sampling rate		[Hz]	5000		
Respond time (±1 %)		[sec]	Type 0.25		
Max. diameter of the cable		[mm]	15		
Insulation		[V]	690 V AC / 1500 V DC		
Operating temperature		[°C]	– 25 ... +70 / – 40 ... +85		
Size	CMS-200S8 series	[mm]	26.5 x 43.0 x 38.5		
	CMS-200DR series	[mm]	25.4 x 43.0 x 43.2		
	CMS-200CA series	[mm]	25.4 x 43.0 x 35.7		
Reference standard			IEC 61010-1 | UL508 / CSA C22.2 No 14		

* All accuracy specifications refer to the relevant full scale value and apply at 25 °C.

Energy efficiency

Sensors and Accessories



Open-core sensors Installation manual

Open-core sensors

The open-core sensors are able to measure all types of current, whether AC, DC or mixed, up to 80 A in TRMS, enabling exact and effective measurements. As each sensor is equipped with its own microprocessor for processing the signal, the measurement data is transmitted digitally to the Control Unit via bus interface, maximizing data reliability. Disturbances like those experienced with analog data now most definitely belong to the past.

With this solution a faster cabling is guaranteed, since wiring cables are directly inserted in the sensors without the aid of a screwdriver. No special tools are needed for the entire connection process.

With AC accuracy* of ≤ ±1.0 %, they can be used in a multitude of applications without any problem: System pro M, DIN rail and Cable tie.



Solid-core sensors Installation manual

Thanks to their U shape, the open-core sensors can be retrofitted to existing installations, without the need to discon¬nect the cabling or shut down the equipment, being the key for brownfield extension.

Solid-core sensors

Alternating (AC), direct (DC) or mixed (TRMS) currents – the CMS sensors monitor and measure all types of current over a measurement range of up to 160 A (TRMS). They even measure harmonic components in the signal curve. The measurements are digitally transmitted through bus interface, enabling reliability of data and removing disturbance effects.

Maximum secure insertion of wiring cables is guaranteed by this sensors solution.

Everything is built into an 18 or 25 mm wide unit to enable precise and effective measurements. This makes these CMS sensors the most compact and most powerful on the market.

Depending on the application, solid-core sensors are chosen between up to four different mounting options to making this solution as flexible as possible.

The solid-core units feature an enclosed structure and AC measurement accuracy* of ≤ ± 0.5 %, and are therefore suitable for all applications in which maximum-precision measurement is crucial.

* All accuracy specifications refer to the rel-evant full-scale value and apply to 25 °C.

Accessories

The Control Unit of the circuit monitoring system need a flat cable for receive branches measurements from sensors. The flat cable should be a 4-pin cable, flexible in length. Flat cable are available in several lengths in order to cover the most kind of application. Cables with the greater length are designed with the purpose of being adapted, through cutting, to the various lengths required by the applications.

Energy efficiency
Sensors and Accessories

Open-core sensors

	Description Type	ABB code	Weight of 1 unit (kg)	Unit conf. (Pcs)
Open-core sensors 18 mm for retrofit of MCBs (S200, SMISSLINE) and RCBOs (SMISSLINE)				
80 A	CMS-120LA	2CCA880225R0001	0.012	1
40 A	CMS-121LA	2CCA880226R0001	0.012	1
20 A	CMS-122LA	2CCA880227R0001	0.012	1
Open-core sensors 18 mm for retrofit of E90 fuseholders 1000VDC				
40 A	CMS-121FH	2CCA880216R0001	0.012	1
20 A	CMS-122FH	2CCA880217R0001	0.012	1
Open-core sensors 18 mm for pro M and SMISSLINE devices with twin terminals				
80 A	CMS-120PS	2CCA880210R0001	0.012	1
40 A	CMS-121PS	2CCA880211R0001	0.012	1
20 A	CMS-122PS	2CCA880212R0001	0.012	1
Open-core sensors 18 mm for DIN-rail (universal use)				
80 A	CMS-120DR	2CCA880240R0001	0.015	1
40 A	CMS-121DR	2CCA880241R0001	0.015	1
20 A	CMS-122DR	2CCA880242R0001	0.015	1
Open-core sensors 18 mm for cable tie mounting (universal use)				
80 A	CMS-120CA	2CCA880220R0001	0.011	1
40 A	CMS-121CA	2CCA880221R0001	0.011	1
20 A	CMS-122CA	2CCA880222R0001	0.011	1

Solid-core sensors

	Description Type	ABB code	Weight of 1 unit (kg)	Unit conf. (Pcs)
Solid-core sensors 18 mm for S800 devices with cage terminals				
80 A	CMS-100S8	2CCA880124R0001	0.014	1
40 A	CMS-101S8	2CCA880125R0001	0.014	1
20 A	CMS-102S8	2CCA880126R0001	0.014	1
Solid-core sensors 18 mm for pro M & SMISSLINE installation devices with twin terminals				
80 A	CMS-100PS	2CCA880100R0001	0.012	1
40 A	CMS-101PS	2CCA880101R0001	0.012	1
20 A	CMS-102PS	2CCA880102R0001	0.012	1
Solid-core sensors 18 mm for DIN rail mounting (universally usable)				
80 A	CMS-100DR	2CCA880128R0001	0.015	1
40 A	CMS-101DR	2CCA880129R0001	0.015	1
20 A	CMS-102DR	2CCA880130R0001	0.015	1
Solid-core sensors 18 mm for cable tie mounting (universally usable)				
80 A	CMS-100CA	2CCA880107R0001	0.011	1
40 A	CMS-101CA	2CCA880108R0001	0.011	1
20 A	CMS-102CA	2CCA880109R0001	0.011	1
Solid-core sensors 25 mm for S800 devices with cage terminals				
160 A	CMS-200S8	2CCA880136R0001	0.028	1
80 A	CMS-201S8	2CCA880137R0001	0.028	1
40 A	CMS-202S8	2CCA880138R0001	0.028	1

Energy efficiency
Sensors and Accessories

Solid-core sensors

	Description Type	ABB code	Weight of 1 unit (kg)	Unit conf. (Pcs)
Solid-core sensors 25 mm for DIN-rail mounting (universal use)				
160 A	CMS-200DR	2CCA880132R0001	0.030	1
80 A	CMS-201DR	2CCA880133R0001	0.030	1
40 A	CMS-202DR	2CCA880134R0001	0.030	1
Solid-core sensors 25 mm for cable tie mounting (universal use)				
160 A	CMS-200CA	2CCA880117R0001	0.026	1
80 A	CMS-201CA	2CCA880118R0001	0.026	1
40 A	CMS-202CA	2CCA880119R0001	0.026	1

Control Unit

	Description Type	ABB code	Weight of 1 unit (kg)	Unit conf. (Pcs)
CMS-600 Control Unit	CMS-600	2CCA880000R0001	0.153	1
CMS-700 Control Unit	CMS-700	2CCA880700R0001	0.329	1

Accessories

	Description Type	ABB code	Weight of 1 unit (kg)	Unit conf. (Pcs)
2 m flat cable	CMS-800	2CCA880148R0001	0.017	1
5 m flat cable	CMS-802	2CCA880331R0001	0.045	1
10 m Flat cable	CMS-803	2CCA880332R0001	0.090	1
30 m Flat cable	CMS-805	2CCA880333R0001	0.270	1
Connector set (35 pcs)	CMS-820	2CCA880145R0001	0.024	35

String monitoring
CMS-660 circuit monitoring system

Extreme flexibility
The number (up to 32) and positioning of the sensors is fully customizable, ensuring the highest flexibility in integration to different system conditions.

Up-to-date system status
CMS-660 immediately detects unusual system status (e.g. solar shading, over-voltages, breaker trip, high temperature), facilitating maintenance of the system.



User friendliness
Local information, thanks to the LEDs, about network and device status. Reset button to easily set the device.

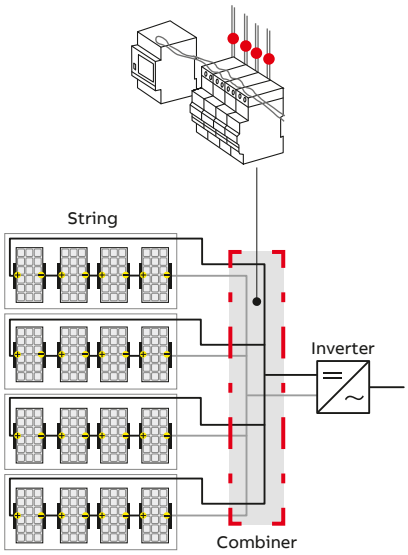
Compatibility
RS485 port to guarantee easy integration with the plant / inverter monitoring systems.

Smart commissioning
Thanks to the intelligent, intuitive configuration, the CMS system can be configured and put into operation in just a few minutes.

One sensor for all currents and strings
Direct, alternating or mixed – in a wide measuring range up to 80A, allowing the combination of two strings into one solid-core sensor.

Energy efficiency

String monitoring CMS-660



Circuit monitoring system for PV applications

The CMS string monitoring increases the efficiency of photovoltaic systems by detecting failures on PV strings. With the easy-to-integrate system you can immediately detect unusual system status, e.g. defective strings, over-voltages, breaker trips or high temperatures, enabling you to quickly implement appropriate countermeasures.

Key features:

- Current and temperature measurement directly from the sensors
- Monitoring of two strings can be combined into one single CMS solid-core sensor
- Integration of SPD and Switch disconnector status via 2 digital inputs
- Up to 32 flexible monitoring points, placed where measurement is required
- LEDs provide local information about network and device status.
- Modbus RTU protocol guarantees easy integration into plant or inverter monitoring systems
- Connection technology is extremely simple and requires no special tools

Control unit – CMS-660

Main technical specification		CMS-660
General data		
Degree of protection		IP20
Operating temperature	[°C]	– 25 .. +70 °C
Storage temperature	[°C]	– 40 .. +85 °C
Dimensions W / H / D	[mm]	71.8 x 87.0 x 64.9 (4 modules)
Screw-type terminals		0.5…2.5 mm², max 0.6 Nm
Altitude	[m]	≤ 2000 m
Insulation strength	[VAC]	400
Installation on DIN-rail		35 mm (DIN EN 50022)
Reference standards		IEC 61010-1 UL | 508/CSA C22.2 No. 14
Supply		
Supply voltage	[VDC]	24 (±10%)
Power Input	[W]	0.5 - 11 (dep. on n. of sensors)
Serial interface (RS-485)		
Serial transmission speed		2.4 … 115. 2 kbps
Cable type		Twisted, shielded
Communication protocol		Modbus RTU
Measuring inputs		
Max. number of sensors		32
Refresh time		≤1 sec with max 32 sensors
Digital inputs		2
Connection method		Push-in spring connection
Cable diameter		max. 0.5mm²
Electrical characteristics		for potential-free contact
Micro USB port		1

Control Unit

	Description Type	ABB code	Weight of 1 unit (kg)	Unit conf. (Pcs)
CMS-660 control unit	CMS-660	2CCA880020R0001	0.153	1

Notes

Energy efficiency

Analogue and digital instruments selection table

Measure	Technology	Mounting	Insertion	Characteristics	Accessories	Type	
Voltage	Analogue	3 modules	Direct	a.c.	MCV voltage switches	VLM page 8/45	
		72x72, 96x96	Direct		MCV voltage switches	VLM-1 page 8/50	
	Digital	3 modules	Direct	a.c. and d.c. Auxiliary supply 230 V a.c.	MCV voltage switches	VLMD page 8/42	
		36x72	Direct		MCV voltage switches	VLMD P page 8/43	
Curent	Analogue	3 modules	Direct	a.c. and d.c.	MCA current switches	AMT page 8/45	
			Indirect		CT a.c. current transformer SNT shunt for d.c. SCL interchangeable scale MCA current switches	AMT1/A AMT2 page 8/46	
		72x72, 96x96	Direct		MCA current switches	AMT1-A1 AMT2-A2 page 8/52	
			Indirect		CT a.c. current transformer SNT shunt for d.c. SCL interchangeable scale MCA current switches	AMT1-A1 AMT1-A5 AMT2-A2 page 8/52	
	Digital	3 modules	Indirect	a.c. and Auxiliary supply 230 V a.c.	CT a.c. current transformer SNT shunt for d.c. MCA current switches	AMTD page 8/42	
		36x72	Indirect		CT a.c. current transformer SNT shunt for d.c. MCA current switches	AMTD P page 8/43	
Frequency	Analogue	72x72, 96x96	Direct	a.c.		FRZ page 8/54	

Energy efficiency

Modular digital instruments



Digital instruments

Technical features		
Power supply	[V]	230 V a.c.
Rated frequency	[Hz]	50÷60
Ammeter full scale value	[A]	5, 20, 25, 40, 60, 100, 150, 200, 250, 400, 600, 999
Voltmeter full scale value	[V]	600
Frequency meter range	[Hz]	35...400
Tripping delay	[s]	1, 5, 10, 20, 30
Hysteresis	[%]	5, 10, 20, 30 set threshold
Output pins		3-4
Output relay		NO
Rated voltage relay	[V]	230 V a.c.
Rated current relay	[A]	AC1 16, AC15 3
Relay configuration		NO relay closes in alarm status
		NC relay opens in alarm status, positive safety
Overload	[In/Vn]	1, 2
Accuracy class	[%]	±0,5 full scale ±1digit at 25 °C
Max. signal input value for ammeters		5 A a.c./60 mV d.c.
Display		3 digit LED display
Operating temperature	[°C]	-10...+55
Storage temperature	[°C]	-40...+70
Protection degree		IP20
Power consumption	[VA]	4
Modules		3
Overall dimensions front panel devices	[mm]	36x72x61.5 (51.5 depth inside the switchboard)
Standard		IEC EN 61010

Energy efficiency

Modular digital instruments



VLMD

Modular digital instruments

The wide range of modular digital instruments starts with single-phase mono-function measurement devices for measuring voltage, current.
The range is composed by a voltmeter for a.c./d.c. voltage monitoring, one ammeter for a.c. current. Ammeters measure in indirect insertion thanks to measuring accessories, like current transformer for a.c. and shunt for d.c.
The full-scale value is programmable by the user, according to the current flow on the primary windings.

Version	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
a.c./d.c. digital voltmeter	620402	VLMD-1-2	2CSM110000R1011	0,300	1
a.c. digital ammeter	620501	AMTD-1	2CSM320000R1011	0,300	1



AMTD

Modular digital instruments with alarm relay

The range is widened by two additional devices with extended features: two ammeters, trip the internal relay to signal an alarm condition if the measured parameter exceeds or falls below a programmable threshold. The measured maximum and minimum peak values are stored in the non-volatile instrument's memory.
The contact type is NO, so that the contact is open when the instrument is powered off, but it is possible to obtain positive safety operation setting, directly on the instrument, the NC relay contact type.
The instrument with relay can be used to signal the exceeding or the fall below a certain threshold, but not for both functions simultaneously.



FRZ

Version	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
a.c. digital ammeter with alarm relay	747734	AMTD-1-R	2CSM274773R1011	0,300	1
d.c. digital ammeter with alarm relay	610731	AMTD-2-R		0,300	1

Energy efficiency

Front panel digital instruments



VLMD P

Front-panel digital instruments

The wide range of front-panel digital instruments starts with single-phase mono-function measurement devices for measuring voltage and current.
The range is composed by a voltmeter for a.c./d.c. voltage monitoring, and one ammeter for a.c. Ammeters measure in indirect insertion thanks to measuring accessories, like current transformer for a.c.
The full-scale value is programmable by the user, according to the current flow on the primary windings.

Version	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
a.c./d.c. digital voltmeter	136057	VLMD P	2CSG213605R4011	0,300	1
a.c. digital ammeter	136156	AMTD-1 P	2CSG213615R4011	0,300	1



AMTD-_ P

Front-panel digital instruments with alarm relay

The range is widened by one additional devices with extended features: one ammeters that trip the internal relay to signal an alarm condition if the measured parameter exceeds or falls below a programmable threshold. The measured maximum and minimum peak values are stored in the non-volatile instrument's memory.
The contact type is NO, so that the contact is open when the instrument is powered off, but it is possible to obtain positive safety operation setting, directly on the instrument, the NC relay contact type.
The instrument with relay can be used to signal the exceeding or the fall below a certain threshold, but not for both functions simultaneously.

Version	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
a.c. digital ammeter with alarm relay	136453	AMTD-1-R P	2CSG213645R4011	0,300	1

Energy efficiency

Analogue instruments selection table

Instrument mounting	a.c / d.c.	Size	Full-scale value Visualization	Instrument type		Scale type	
Modular	a.c.	-	90°	AMT1/A1		SCL 1	
Front-panel	a.c.	72x72 mm	90°	AMT1-A1/72		SCL-A1 ... /72	
			78°	AMT1-A5/72		SCL-A5 ... /72	
	a.c.	96x96 mm	90°	AMT1-A1/96		SCL-A1 ... /96	
			78°	AMT1-A5/96		SCL-A5 ... /96	
	d.c.	96x96 mm	90°	AMT2-A2/96		SCL-A2 ... /96	

Analogue instruments with scales

The range of mono-function analogue instruments, employable in single-phase networks, is composed of measurement devices performing the measure and visualization of one electrical parameter: voltage, current and frequency.
The range of voltmeters, both in modular and front-panel versions, is composed by devices fully equipped with the proper scale, even when the use of a voltage transformer is required. The connection, whether it's direct, allows the immediate visualization of the measures on the display.
The range of ammeters is composed of devices for direct and indirect connection to the network. The devices directly connected to the network are fully equipped with proper scale, while the devices that require a current transformer or a shunt, need to be combined with a separate scale to be mounted on the front of the instrument.
The wide range of scales for ammeters allows the employability of the latter even in application with high nominal current, up to 10000 A a.c.

Energy efficiency

Modular analogue instruments



VLM1



AMT1

Technical features			
Rated voltage Un		[V]	a.c. 300, 500; d.c. 100, 300
Rated currents in a.c.	Direct reading	[A]	full scale values 5...30
	Indirect reading		full scale values 5...2500
Rated currents in d.c.	Direct reading	[A]	full scale values 0.1...30
	Indirect reading		full scale values 5...500
Frequency		[Hz]	50/60
Overload capacity		[%]	20 compared to the voltage or to the rated current
Accuracy class		[%]	1.5 (0.5 for frequency meters)
Ammeters power consumption		[VA]	5 A: 0.3 VA; 10 A: 0.6 VA; 25 A:1 VA; 30 A: 1.2 VA
Voltmeters power consumption		[VA]	300 V: 1.5 VA; 500 V: 4 VA
Frequency meters power consumption		[VA]	<1.5 VA
Modules		[No.]	3
Protection degree			IP20
Standards			EN 60051

The range of modular analogue instruments is composed by mono-function measurement devices employable in single-phase networks. It includes voltmeters, ammeters and frequency meters. In particular, the range of ammeters is composed of devices fully equipped with the appropriate scale in the range between 5 A and 30 A. In case of greater current values, the range features devices to be used together with the proper scale and CT according to the application.

Modular analogue instruments for alternating current

Suitable for direct or indirect measurement through the appropriate accessories.

Voltmeters: direct connection					
Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
300 V	007906	VLM1/300	2CSM110190R1001	0.200	1
500 V	000006	VLM1/500	2CSM110220R1001	0.200	1

Ammeters: direct connection					
Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
5 A	000709	AMT1/5	2CSM310030R1001	0.200	1
10 A	000105	AMT1/10	2CSM310040R1001	0.200	1
15 A	000204	AMT1/15	2CSM310050R1001	0.200	1
20 A	000303	AMT1/20	2CSM310060R1001	0.200	1
25 A	000402	AMT1/25	2CSM310070R1001	0.200	1
30 A	000501	AMT1/30	2CSM310080R1001	0.200	1

Energy efficiency

Modular analogue instruments



VLM2

Ammeters without scale: connection using CT.../5					
Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
A1	000600	AMT1/A1	2CSM320250R1001	0.200	1



AMT2

Ammeters: direct connection					
Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
10 mA	028307	AMT2/0.01	2CSM410330R1001	0.200	1

Energy efficiency

Scales for modular analogue ammeters



SCL

Scales for modular analogue ammeters

Scales SCL 1/A1 for AMT1					
Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
A1-5A	001201	SCL 1/5	2CSM110021R1041	0.010	10
A1-10A	001300	SCL 1/10	2CSM110032R1041	0.010	10
A1-20A	001409	SCL 1/20	2CSM110075R1041	0.010	10
A1-25A	030706	SCL 1/25	2CSM110096R1041	0.010	10
A1-30A	001508	SCL 1/30	2CSM110107R1041	0.010	10
A1-40A	030805	SCL 1/40	2CSM110128R1041	0.010	10
A1-50A	001607	SCL 1/50	2CSM110149R1041	0.010	10
A1-60A	030904	SCL 1/60	2CSM110159R1041	0.010	10
A1-75A	031000	SCL 1/75	2CSM110169R1041	0.010	10
A1-80A	001706	SCL 1/80	2CSM110179R1041	0.010	10
A1-100A	001805	SCL 1/100	2CSM110189R1041	0.010	10
A1-150A	001904	SCL 1/150	2CSM110209R1041	0.010	10
A1-200A	002000	SCL 1/200	2CSM110229R1041	0.010	10
A1-250A	031109	SCL 1/250	2CSM110249R1041	0.010	10
A1-300A	002109	SCL 1/300	2CSM110259R1041	0.010	10
A1-400A	002208	SCL 1/400	2CSM110279R1041	0.010	10
A1-500A	002307	SCL 1/500	2CSM110299R1041	0.010	10
A1-600A	031208	SCL 1/600	2CSM110309R1041	0.010	10
A1-800A	002406	SCL 1/800	2CSM110329R1041	0.010	10
A1-1000A	002505	SCL 1/1000	2CSM110339R1041	0.010	10
A1-1500A	274704	SCL 1/1500	2CSM110359R1041	0.010	10
A1-2000A	274803	SCL 1/2000	2CSM110379R1041	0.010	10
A1-2500A	274902	SCL 1/2500	2CSM110389R1041	0.010	10

Energy efficiency

Front-panel analogue instruments



Front panel analogue instruments

Technical features		
Rated max. reference voltage for insulation	[V]	600 (a.c meters), 300 (d.c. meters)
Test voltage	[V]	2000 eff. (50 Hz/1 min)
Accuracy class		1.5 (0.5 for frequency meters)
Overload capacity ①		
- ammetric windings		up to In x 10/< sec. up to In x 2/permanent
- voltmetric windings		up to Un x 2/< 5 sec. up to Un x 1.2/permanent
Operating temperature	[°C]	-10...+55
Storage temperature	[°C]	-40...+70
Average and max. relative humidity (DIN 40040) ②		65% (yearly average) 85% (+35 °C/60 days a year)
Vibration resistance (IEC 50-1)	[g (9.81 m/s)]	0.08-1.8 (0.35 mm/10-55 Hz; 3 axis/6 h)
Degree of protection		IP52 indoors
		IP00 on the terminals (IEC 144. DIN 40050)
		IP20 with suitable terminal covers
Materials		
- cases and front edge		self-extinguishing thermosetting material in accordance with UL94 V-0, fungus and termite resistant
- pointers (DIN 43802) ③		molded aluminium
- terminals		brass
Assembly		vertical/horizontal with special screw-on brackets ④
Dimensions W x H x D (DIN 43700/43718)	[mm]	48 x 48 X 53 72 x 72 x 53 96 x 96 X 53
Applicable standards		IEC EN 61010-1

① The overload can be greater for instruments enabled by a CT because the transformer generally keeps secondary current peaks to within 10 In.
② Tropicalization enables the instruments to withstand up to 95% max. relative humidity (+35 °C/60 days). In accordance with DIN standard 40040, they must be protected against any penetration of humidity inside the device. Terminals, screws, washers, bolts and magnets are galvanically protected against rust, while the electrical circuits are painted with the special Multicolor PC52 varnish.
③ The pointer damping time is 1 second. The recorded values are cleared by pressing the control provided.
④ With 0.5 mm -19 mm thick panels, the screws must be attached in the fixing position nearest to the front edge of the measuring device, whereas the 20 mm - 39 mm thick panels require the screws to be fixed in the position furthest away from the front edge.

Energy efficiency

Front-panel analogue instruments



VLM

Available in both alternating current and direct current versions, the front-panel mono-function measurement devices come in two standard sizes, 72 mm x 72 mm and 96 mm x 96 mm (special versions available on request), employable in single-phase networks. The range is composed ammeters for a.c. and d.c. applications, and voltmeters and frequency meters for a.c. applications. Ammeters without scale for indirect connection must be completed with the appropriate scale, chosen according to the full-scale value.

Front-panel analogue voltmeters for alternating current

Size	Inser-tion	Scale	VT type	Bbn 8012542	Order details		Weight 1 piece	Pack unit
mm		V a.c.		EAN	Type code	Order code	kg	pc.
72	D	50		544104	VLM-1-50/72	2CSG112100R4001	0.200	1
72	D	60		544203	VLM-1-60/72	2CSG112110R4001	0.200	1
72	D	80		544302	VLM-1-80/72	2CSG112120R4001	0.200	1
72	D	100		544401	VLM-1-100/72	2CSG112130R4001	0.200	1
72	D	150		544500	VLM-1-150/72	2CSG112150R4001	0.200	1
72	D	200		544609	VLM-1-200/72	2CSG112160R4001	0.200	1
72	D	250		544708	VLM-1-250/72	2CSG112180R4001	0.200	1
72	D	300		544807	VLM-1-300/72	2CSG112190R4001	0.200	1
72	D	400		544906	VLM-1-400/72	2CSG112210R4001	0.200	1
72	D	500		545002	VLM-1-500/72	2CSG112220R4001	0.200	1
72	D	600		545101	VLM-1-600/72	2CSG112230R4001	0.200	1

Energy efficiency

Front-panel analogue instruments



VLM

Size	Inser-tion	Scale	VT type	Bbn 8012542	Order details		Weight 1 piece	Pack unit
mm		V a.c.		EAN	Type code	Order code	kg	pc
96	D	50		546702	VLM-1-50/96	2CSG113100R4001	0.400	1
96	D	60		546801	VLM-1-60/96	2CSG113110R4001	0.400	1
96	D	80		546900	VLM-1-80/96	2CSG113120R4001	0.400	1
96	D	100		547006	VLM-1-100/96	2CSG113130R4001	0.400	1
96	D	150		547105	VLM-1-150/96	2CSG113150R4001	0.400	1
96	D	200		547204	VLM-1-200/96	2CSG113160R4001	0.400	1
96	D	250		547303	VLM-1-250/96	2CSG113180R4001	0.400	1
96	D	300		547402	VLM-1-300/96	2CSG113190R4001	0.400	1
96	D	400		547501	VLM-1-400/96	2CSG113210R4001	0.400	1
96	D	500		547600	VLM-1-500/96	2CSG113220R4001	0.400	1
96	D	600		547709	VLM-1-600/96	2CSG113230R4001	0.400	1

D: direct connection

Energy efficiency

Front-panel analogue ammeters for alternating current



AMT1-A1 72



AMT1-A1 96

Size	Insertion	Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
mm		A a.c.	EAN	Type code	Order code	kg	pc.
72	D	1	545507	AMT1-A1-1/72	2CSG312020R4001	0.200	1
72	D	5	545606	AMT1-A1-5/72	2CSG312030R4001	0.200	1
72	D	10	545705	AMT1-A1-10/72	2CSG312040R4001	0.200	1
72	D	15	545804	AMT1-A1-15/72	2CSG312050R4001	0.200	1
72	D	20	545903	AMT1-A1-20/72	2CSG312060R4001	0.200	1
72	D	25	546009	AMT1-A1-25/72	2CSG312070R4001	0.200	1
72	D	30	546108	AMT1-A1-30/72	2CSG312080R4001	0.200	1
72	D	40	546207	AMT1-A1-40/72	2CSG312090R4001	0.200	1
72	D	50	546306	AMT1-A1-50/72	2CSG312100R4001	0.200	1
72	D	60	546405	AMT1-A1-60/72	2CSG312110R4001	0.200	1
72	I	SCL-A1	546504	AMT1-A1/72	2CSG322250R4001	0.200	1
72	I	SCL-A5	546603	AMT1-A5/72	2CSG322260R4001	0.200	1

Size	Insertion	Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
mm		A a.c.	EAN	Type code	Order code	kg	pc.
96	D	1	548102	AMT1-A1-1/96	2CSG313020R4001	0.400	1
96	D	5	548201	AMT1-A1-5/96	2CSG313030R4001	0.400	1
96	D	10	548300	AMT1-A1-10/96	2CSG313040R4001	0.400	1
96	D	15	548409	AMT1-A1-15/96	2CSG313050R4001	0.400	1
96	D	20	548508	AMT1-A1-20/96	2CSG313060R4001	0.400	1
96	D	25	548607	AMT1-A1-25/96	2CSG313070R4001	0.400	1
96	D	30	548706	AMT1-A1-30/96	2CSG313080R4001	0.400	1
96	D	40	548805	AMT1-A1-40/96	2CSG313090R4001	0.400	1
96	D	50	548904	AMT1-A1-50/96	2CSG313100R4001	0.400	1
96	D	60	549000	AMT1-A1-60/96	2CSG313110R4001	0.400	1
96	I	SCL-A1	549109	AMT1-A1/96	2CSG323250R4001	0.400	1
96	I	SCL-A5	549208	AMT1-A5/96	2CSG323260R4001	0.400	1

D: direct connection
I: indirect connection with VT, CT and shunt, according to the type

Energy efficiency

Front-panel analogue instruments



FRZ 72



FRZ 96

Front-panel analogue frequency meters

Size	Insertion	Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
mm			EAN	Type code	Order code	kg	pc.
72	D	90°	555704	FRZ-90/72	2CSG812310R4001	0.200	1
72	D	240°	555902	FRZ-240/72	2CSG812320R4001	0.200	1

Size	Insertion	Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
mm			EAN	Type code	Order code	kg	pc.
96	D	90°	555803	FRZ-90/96	2CSG813310R4001	0.400	1
96	D	240°	556008	FRZ-240/96	2CSG813320R4001	0.400	1

D: direct connection
I: indirect connection with VT, CT and shunt, according to the type

Energy efficiency

Scales for front-panel analogue instrument



SCL

Scales 72 x 72 mm: SCL-A1 for AMT1-A1/72 a.c. ammeters

Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
A a.c.	EAN	Type code	Order code	kg	pc.
1	771609	SCL-A1-1/72	2CSG112010R5011	0.010	10
5	771708	SCL-A1-5/72	2CSG112021R5011	0.010	10
10	771807	SCL-A1-10/72	2CSG112032R5011	0.010	10
15	771906	SCL-A1-15/72	2CSG112054R5011	0.010	10
20	772002	SCL-A1-20/72	2CSG112075R5011	0.010	10
25	772101	SCL-A1-25/72	2CSG112096R5011	0.010	10
30	772200	SCL-A1-30/72	2CSG112107R5011	0.010	10
40	772309	SCL-A1-40/72	2CSG112128R5011	0.010	10
50	772408	SCL-A1-50/72	2CSG112149R5011	0.010	10
60	772507	SCL-A1-60/72	2CSG112159R5011	0.010	10
80	772606	SCL-A1-80/72	2CSG112179R5011	0.010	10
100	572305	SCL-A1-100/72	2CSG112189R5011	0.010	10
150	572404	SCL-A1-150/72	2CSG112209R5011	0.010	10
200	572503	SCL-A1-200/72	2CSG112229R5011	0.010	10
250	572602	SCL-A1-250/72	2CSG112249R5011	0.010	10
300	572701	SCL-A1-300/72	2CSG112259R5011	0.010	10
400	572800	SCL-A1-400/72	2CSG112279R5011	0.010	10
500	572909	SCL-A1-500/72	2CSG112299R5011	0.010	10
600	573005	SCL-A1-600/72	2CSG112309R5011	0.010	10
800	573104	SCL-A1-800/72	2CSG112329R5011	0.010	10
1000	573203	SCL-A1-1000/72	2CSG112339R5011	0.010	10
1500	573302	SCL-A1-1500/72	2CSG112359R5011	0.010	10
2000	573401	SCL-A1-2000/72	2CSG112379R5011	0.010	10
2500	573500	SCL-A1-2500/72	2CSG112389R5011	0.010	10
3000	573609	SCL-A1-3000/72	2CSG112399R5011	0.010	10
4000	573708	SCL-A1-4000/72	2CSG112409R5011	0.010	10
5000	573807	SCL-A1-5000/72	2CSG112419R5011	0.010	10
6000	573906	SCL-A1-6000/72	2CSG112429R5011	0.010	10
8000	574002	SCL-A1-8000/72	2CSG112439R5011	0.010	10
10000	574101	SCL-A1-10000/72	2CSG112449R5011	0.010	10

Energy efficiency

Scales for front-panel analogue instrument



SCL

Scales 72 x 72 mm: SCL-A5 for AMT1-A5/72 a.c. ammeters					
Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
A a.c.	EAN	Type code	Order code	kg	pc.
1	772705	SCL-A5-1/72	2CSG122010R5011	0.010	10
5	772804	SCL-A5-5/72	2CSG122021R5011	0.010	10
10	772903	SCL-A5-10/72	2CSG122032R5011	0.010	10
15	773009	SCL-A5-15/72	2CSG122054R5011	0.010	10
20	773108	SCL-A5-20/72	2CSG122075R5011	0.010	10
25	773207	SCL-A5-25/72	2CSG122096R5011	0.010	10
30	773306	SCL-A5-30/72	2CSG122107R5011	0.010	10
40	773405	SCL-A5-40/72	2CSG122128R5011	0.010	10
50	773504	SCL-A5-50/72	2CSG122149R5011	0.010	10
60	773603	SCL-A5-60/72	2CSG122159R5011	0.010	10
80	773702	SCL-A5-80/72	2CSG122179R5011	0.010	10
100	574200	SCL-A5-100/72	2CSG122189R5011	0.010	10
150	574309	SCL-A5-150/72	2CSG122209R5011	0.010	10
200	574408	SCL-A5-200/72	2CSG122229R5011	0.010	10
250	574507	SCL-A5-250/72	2CSG122249R5011	0.010	10
300	574606	SCL-A5-300/72	2CSG122259R5011	0.010	10
400	574705	SCL-A5-400/72	2CSG122279R5011	0.010	10
500	574804	SCL-A5-500/72	2CSG122299R5011	0.010	10
600	574903	SCL-A5-600/72	2CSG122309R5011	0.010	10
800	575009	SCL-A5-800/72	2CSG122329R5011	0.010	10
1000	575108	SCL-A5-1000/72	2CSG122339R5011	0.010	10
1500	575207	SCL-A5-1500/72	2CSG122359R5011	0.010	10
2000	575306	SCL-A5-2000/72	2CSG122379R5011	0.010	10
2500	575405	SCL-A5-2500/72	2CSG122389R5011	0.010	10
3000	575504	SCL-A5-3000/72	2CSG122399R5011	0.010	10
4000	575603	SCL-A5-4000/72	2CSG122409R5011	0.010	10
5000	575702	SCL-A5-5000/72	2CSG122419R5011	0.010	10
6000	575801	SCL-A5-6000/72	2CSG122429R5011	0.010	10
8000	575900	SCL-A5-8000/72	2CSG122439R5011	0.010	10
10000	576006	SCL-A5-10000/72	2CSG122449R5011	0.010	10

Energy efficiency

Scales for front-panel analogue instrument



SCL

Scales 96 x 96 mm: SCL-A1 for AMT1-A1/96 a.c. ammeters					
Scale	**Bbn 8012542**	**Order details**		**Weight 1 piece**	**Pack unit**
A a.c.	**EAN**	**Type code**	**Order code**	**kg**	**pc.**
1	773801	SCL-A1-1/96	2CSG113010R5011	0.010	10
5	773900	SCL-A1-5/96	2CSG113021R5011	0.010	10
10	774006	SCL-A1-10/96	2CSG113032R5011	0.010	10
15	774105	SCL-A1-15/96	2CSG113054R5011	0.010	10
20	774204	SCL-A1-20/96	2CSG113075R5011	0.010	10
25	774303	SCL-A1-25/96	2CSG113096R5011	0.010	10
30	774402	SCL-A1-30/96	2CSG113107R5011	0.010	10
40	774501	SCL-A1-40/96	2CSG113128R5011	0.010	10
50	774600	SCL-A1-50/96	2CSG113149R5011	0.010	10
60	774709	SCL-A1-60/96	2CSG113159R5011	0.010	10
80	774808	SCL-A1-80/96	2CSG113179R5011	0.010	10
100	584100	SCL-A1-100/96	2CSG113189R5011	0.010	10
150	584209	SCL-A1-150/96	2CSG113209R5011	0.010	10
200	584308	SCL-A1-200/96	2CSG113229R5011	0.010	10
250	584407	SCL-A1-250/96	2CSG113249R5011	0.010	10
300	584506	SCL-A1-300/96	2CSG113259R5011	0.010	10
400	584605	SCL-A1-400/96	2CSG113279R5011	0.010	10
500	584704	SCL-A1-500/96	2CSG113299R5011	0.010	10
600	584803	SCL-A1-600/96	2CSG113309R5011	0.010	10
800	584902	SCL-A1-800/96	2CSG113329R5011	0.010	10
1000	585008	SCL-A1-1000/96	2CSG113339R5011	0.010	10
1500	585107	SCL-A1-1500/96	2CSG113359R5011	0.010	10
2000	585206	SCL-A1-2000/96	2CSG113379R5011	0.010	10
2500	585305	SCL-A1-2500/96	2CSG113389R5011	0.010	10
3000	585404	SCL-A1-3000/96	2CSG113399R5011	0.010	10
4000	585503	SCL-A1-4000/96	2CSG113409R5011	0.010	10
5000	585602	SCL-A1-5000/96	2CSG113419R5011	0.010	10
6000	585701	SCL-A1-6000/96	2CSG113429R5011	0.010	10
8000	585800	SCL-A1-8000/96	2CSG113439R5011	0.010	10
10000	585909	SCL-A1-10000/96	2CSG113449R5011	0.010	10

Energy efficiency

Scales for front-panel analogue instrument



SCL

Scales 96 x 96 mm: SCL-A5 for AMT1-A5/96 a.c. ammeters					
Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
A a.c.	EAN	Type code	Order code	kg	pc.
1	774907	SCL-A5-1/96	2CSG123010R5011	0.010	10
5	775003	SCL-A5-5/96	2CSG123021R5011	0.010	10
10	775102	SCL-A5-10/96	2CSG123032R5011	0.010	10
15	775201	SCL-A5-15/96	2CSG123054R5011	0.010	10
20	775300	SCL-A5-20/96	2CSG123075R5011	0.010	10
25	775409	SCL-A5-25/96	2CSG123096R5011	0.010	10
30	775508	SCL-A5-30/96	2CSG123107R5011	0.010	10
40	775607	SCL-A5-40/96	2CSG123128R5011	0.010	10
50	775706	SCL-A5-50/96	2CSG123149R5011	0.010	10
60	775805	SCL-A5-60/96	2CSG123159R5011	0.010	10
80	775904	SCL-A5-80/96	2CSG123179R5011	0.010	10
100	586005	SCL-A5-100/96	2CSG123189R5011	0.010	10
150	586104	SCL-A5-150/96	2CSG123209R5011	0.010	10
200	586203	SCL-A5-200/96	2CSG123229R5011	0.010	10
250	586302	SCL-A5-250/96	2CSG123249R5011	0.010	10
300	586401	SCL-A5-300/96	2CSG123259R5011	0.010	10
400	586500	SCL-A5-400/96	2CSG123279R5011	0.010	10
500	586609	SCL-A5-500/96	2CSG123299R5011	0.010	10
600	586708	SCL-A5-600/96	2CSG123309R5011	0.010	10
800	586807	SCL-A5-800/96	2CSG123329R5011	0.010	10
1000	586906	SCL-A5-1000/96	2CSG123339R5011	0.010	10
1500	587002	SCL-A5-1500/96	2CSG123359R5011	0.010	10
2000	587101	SCL-A5-2000/96	2CSG123379R5011	0.010	10
2500	587200	SCL-A5-2500/96	2CSG123389R5011	0.010	10
3000	587309	SCL-A5-3000/96	2CSG123399R5011	0.010	10
4000	587408	SCL-A5-4000/96	2CSG123409R5011	0.010	10
5000	587507	SCL-A5-5000/96	2CSG123419R5011	0.010	10
6000	587606	SCL-A5-6000/96	2CSG123429R5011	0.010	10
8000	587705	SCL-A5-8000/96	2CSG123439R5011	0.010	10
10000	587804	SCL-A5-10000/96	2CSG123449R5011	0.010	10

Energy efficiency

Scales for front-panel analogue instrument



SCL

Scales 96 x 96 mm: SCL-A2 for AMT2-A2/96 d.c. ammeters					
Scale	Bbn 8012542	Order details		Weight 1 piece	Pack unit
A a.c.	EAN	Type code	Order code	kg	pc.
20	598107	SCL-A2-20/96	2CSG233075R5011	0.010	10
100	598206	SCL-A2-100/96	2CSG233189R5011	0.010	10
150	598305	SCL-A2-150/96	2CSG233209R5011	0.010	10
200	598404	SCL-A2-200/96	2CSG233229R5011	0.010	10
250	598503	SCL-A2-250/96	2CSG233249R5011	0.010	10
300	598602	SCL-A2-300/96	2CSG233259R5011	0.010	10
400	598701	SCL-A2-400/96	2CSG233279R5011	0.010	10
500	598800	SCL-A2-500/96	2CSG233299R5011	0.010	10
600	598909	SCL-A2-600/96	2CSG233309R5011	0.010	10
800	599005	SCL-A2-800/96	2CSG233329R5011	0.010	10
1000	599104	SCL-A2-1000/96	2CSG233339R5011	0.010	10

Energy efficiency

Voltmetric and current switches



MCV

Technical features		
Insulation voltage	[V]	600
Rated thermal current	[A]	12
Mechanic operations	[No.]	1000000
Power consumption	[VA]	0.23
Modules	[No.]	3

MCV - MCA voltmetric and current switches

Cam rotary switches are suitable for mounting on EN 50022 rail. In three-phase systems they enable the use of a single measurement instrument (single-phase) for viewing the current or voltage value set through the switch itself.



MCA

Voltmeter switches						
Range	Power loss	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	W	EAN	Type code	Order code	kg	pc.
L1, L2, L3	0.5	522469	MCV 4	1SCA022404R4740	0.095	1
L1, L2, L3, N	0.5	522438	MCV 7	1SCA022647R7840	0.110	1

Current switches						
Range	Power loss	Bbn 7392696	Order details		Weight 1 piece	Pack unit
	W	EAN	Type code	Order code	kg	pc.
0-1-2-3	0.5	522452	MCA 4	1SCA022404R4821	0.110	1



QCA 48

Front panel QCV - QCA voltage and current switches

For use in three-phase systems, to allow a single device to measure the voltage and current settings adjusted by the switches.

Measure	Position	Bbn 7392696	Order details		Weight 1 piece	Pack unit
		EAN	Type code	Order code	kg	pc.
Voltage	4	527990	QCV-4/48	1SCA022780R0770	0.150	1
Current	4	528003	QCA-4/48	1SCA022780R0690	0.150	1
Voltage	7	527983	QCV-7/48	1SCA022780R0850	0.150	1



QCV 48

Energy efficiency
E 233 hour counters



E 233

Technical features		
	AC equipment	DC equipment
Rated voltage	50 Hz: 24 V, 230 V 60 Hz: 24 V, 120 V, 240 V	DC 12 V ... 48 V
Voltage tolerance	±15 %	±10 %
Power consumption	1.5 VA	ca. 20 mW (at 12 V DC)
Ambient temperature	–15 °C/5 °F... +50 °C/122 °F	–10 °C/14 °F ... +50 °C/122 °F
Counting capacity	99.999 h	99.999 h
Reading accuracy	0.01 h	0.1 h
Operation display	fast running	LED blinking
Protection against electric shock	according to DIN VDE 0106 Part 100 (BGV A2)	according to DIN VDE 0106 Part 100 (BGV A2)
Terminal size	up to 10 mm^2	up to 10 mm^2

E 233 electro-mechanical hour counters

Hour counters are used to record operating times as well as to determine idle times and off times of industrial machinery and plant, for commercial purposes or in domestic installations. No reset functionality.

Rated voltage	Bbn 4012233	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
AC 230 V/50 Hz	630004	E 233-230	2CDE100000R1601	0.05	10
AC 24 V/50 Hz	630103	E 233-24	2CDE400000R1601	0.05	10
DC 12 V ... 48 V	630202	E 233-12/48	2CDE300010R1601	0.05	10
AC 240 V/60 Hz	365901 ①	E 233-240/60 Hz	2CDE100021R1601	0.05	10
AC 120 V/60 Hz	366007 ①	E 233-120/60 Hz	2CDE600021R1601	0.05	10
AC 24 V/60 Hz	366106 ①	E 233- 24/60 Hz	2CDE400021R1601	0.05	10

① Bbn No. 4016779

Energy efficiency
HMT hour counters



HMT

Technical features		
Rated voltage Un	[V]	a.c. 24 a.c. 110 a.c. 230
Displayed digits (in hours)	[n°]	99,999.9 (for HMT1 and HMT11)
Accuracy class	[%]	0.5
Frequency	[Hz]	50
Power consumption	[W]	1.1...2.2
Modules	[No.]	2

HMT electro-mechanical hour counters
Equipped with 7-digit indicator (99.999,99) and available in two modules.
They cannot be reset.

Rated voltage	Bbn 8012542	Order details		Weight 1 piece	Pack unit
V AC	EAN	Type code	Order code	kg	pc.
24	030300	HMT 1/24	2CSM111000R1601	0.200	6
110	030409	HMT 1/110	2CSM121000R1601	0.200	6
230	030508	HMT 1/220	2CSM131000R1601	0.200	6
230	030607	HMT 11	2CSM133000R1601	0.200	1

Energy efficiency

TMD temperature control units



TMD

Technical features			
Auxiliary supply	Alternating current	[V]	20÷250 ±15%
	Direct current	[Hz]	115-230-400 50-60
Power consumption		[VA]	4 max
Input	Sensor		PT100 RTD (not included)
	Type		3 wires (2 and 4 wires types are also supported)
	Error		1 degree every 0,39 Ω
	Measure range	[°C]	0...220 ± 2
	Compensation	[Ω]	20 max
	Trip delay/hysteresis	[s/°C]	5/2
Output	Number		4
	Type		NO-CO-NC
	Vmax	[V]	12 d.c.
	Imaxww	[A]	8 (resistive load)
	Functions		Alarm, trip, cooling, auto-test
	Programmable functions		Alarm, tip, hold, fan, temp. max
Display			7 segments LED
Connections	Terminals		removable screw
	Max section	[mm²]	2.5
Insulation voltage		[V]	2500/50 Hz - 1 min
Protection degree	Front		IP52
	Rear		IP20
Operation temperature		[°C]	-10...+55, relative humidity max 90%
Storage temperature		[°C]	-25...+80
Reference			IEC EN 50081-2, IEC EN 50082-2, IEC EN 60255

Temperature control units

TMD are used measure and control the temperature levels and efficiency of electric machines, power transformers, motors, etc.
The temperature is measured by four PT100 type sensors. Each measuring channel has two programmable alarm thresholds which trip two output relays to remotely signal that a critical temperature has been reached.
The measured values and any alarm conditions are shown on the dual 3-digit display on the front of the device, which also has five programming keys for configuring its operation.
The control unit is also able to store in memory maximum values and a log of all trip-events.

Temperature measured	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
4	560203	TMD-4/96	2CSG524000R2021	0.8	1

Energy efficiency

Current transformers selection table

Breaker choice							
Modular	S200, S750DR, S800						
Tmax	XT1, XT2, XT3, XT4, T4320					T5	
Emax							

Installation choice							
Fixing system	DIN rail	DIN rail	DIN rail, cable or bus bar		Bus bar	DIN rail, cable or bus bar, base mounted with feet	








Rated current (A)	CTA	TRF M	CT PRO XT		CT30	CT MAX	
			Standard	SELV version		Standard	SELV version
20	2CSG111050R1141 CTA/20						
25	2CSG111060R1141 CTA/25						
40	2CSG111080R1141 CTA/40 (cl. 0.5)	2CSM100050R1111 TRFM/40	2CSG225745R1101 CT PRO XT 40	2CSG225845R1101 CT PRO XT 40 SELV			
50	2CSG111090R1141 CTA/50 (cl. 0.5)		2CSG225755R1101 CT PRO XT 50	2CSG225855R1101 CT PRO XT 50 SELV			
60	2CSG111100R1141 CTA/60 (cl. 0.5)	2CSM100070R1111 TRFM/60 (cl. 1)	2CSG225765R1101 CT PRO XT 60	2CSG225865R1101 CT PRO XT 60 SELV			
80	2CSG111110R1141 CTA/80 (cl. 0.5)		2CSG225775R1101 CT PRO XT 80	2CSG225875R1101 CT PRO XT 80 SELV			
100	2CSG111120R1141 CTA/100 (cl. 0.5)	2CSM100090R1111 TRFM/100	2CSG225785R1101 CT PRO XT 100	2CSG225885R1101 CT PRO XT 100 SELV	2CSG101100R1101 CT30/100 (cl. 3)		
150		2CSM100100R1111 TRFM/150	2CSG225795R1101 CT PRO XT 150	2CSG225895R1101 CT PRO XT 150 SELV	2CSG101110R1101 CT30/150 (cl. 3)		
200			2CSG225805R1101 CT PRO XT 200	2CSG225905R1101 CT PRO XT 200 SELV			
250		2CSM100120R1111 TRFM/250	2CSG225815R1101 CT PRO XT 250	2CSG225915R1101 CT PRO XT 250 SELV	2CSG101130R1101 CT30/250		
300			2CSG225825R1101 CT PRO XT 300	2CSG225925R1101 CT PRO XT 300 SELV		2CSG225945R1101 CT MAX 300	2CSG226005R1101 CT MAX 300 SELV

	T6,T7		T6,T7					
	E1.2, E2.2, E4.2			E2, E3, E4, E6	E2.2, E4.2, E6.2	E2.2, E4.2	E1.2	
		Cable or bus bar, base mounted with feet		Bus bar	Cable or bus bar, base mounted with feet		Bus bar	
								
	CT6	CT8	CT8V	CT80	CT12	CT12V	CT120	Class
								0,5
								0,5
								3
								3
								3
								3
								1
								0,5
								0,5
	2CSG421130R1101 CT6/250			2CSG201130R1101 CT80/250				0,5
	2CSG421140R1101 CT6/300							0,5

Energy efficiency

Current transformers selection table

Breaker choice

Modular	S200, S750DR, S800	
Tmax	XT1, XT2, XT3, XT4, T4320	T5
Emax		

Installation choice

Fixing system	DIN rail	DIN rail	DIN rail, cable or bus bar	Bus bar	DIN rail, cable or bus bar, base mounted with feet








Rated current (A)	CTA	TRF M	CT PRO XT		CT30	CT MAX	
			Standard	SELV version		Standard	SELV version
400		2CSM100140R1111 TRFM/400	2CSG225835R1101 CT PRO XT 400	2CSG225935R1101 CT PRO XT 400 SELV	2CSG101150R1101 CT30/400	2CSG225955R1101 CT MAX 400	2CSG226015R1101 CT MAX 400 SELV
500						2CSG225965R1101 CT MAX 500	2CSG226025R1101 CT MAX 500 SELV
600		2CSM100160R1111 TRFM/600				2CSG225975R1101 CT MAX 600	2CSG226035R1101 CT MAX 600 SELV
800						2CSG225985R1101 CT MAX 800	2CSG226045R1101 CT MAX 800 SELV
1000						2CSG225995R1101 CT MAX 1000	2CSG226055R1101 CT MAX 1000 SELV
1200							
1250							
1500							
2000							
2500							
3000							
4000							
5000							
6000							

Primary choice

	CTA	TRF M	CT PRO XT		CT30	CT MAX	
	Wound primary	Through primary			Split core trough primary	Through primary	
Through	8	29	18	18	–	30	30
primary max	–	–	20x10	20x10	–	30x15; 40x10	30x15; 40x10
section [mm]	–	–	–	–	3x80x10	–	–

T6,T7		T6,T7					
E1.2, E2.2, E4.2			E2, E3, E4, E6	E2.2, E4.2, E6.2	E2.2, E4.2	E1.2	

	Cable or bus bar, base mounted with feet		Bus bar	Cable or bus bar, base mounted with feet		Bus bar	
							
CT6	CT8	CT8V	CT80	CT12	CT12V	CT120	Class
2CSG421150R1101 CT6/400			2CSG201150R1101 CT80/400				0,5
2CSG421160R1101 CT6/500			2CSG201160R1101 CT80/500				0,5
2CSG421170R1101 CT6/600	2CSG521170R1101 CT8/600	2CSG631170R1101 CT8-V/600	2CSG201170R1101 CT80/600	2CSG721170R1101 CT12/600			0,5
2CSG421180R1101 CT6/800	2CSG521180R1101 CT8/800	2CSG631180R1101 CT8-V/800		2CSG721180R1101 CT12/800	2CSG831180R1101 CT12-V/800	2CSG401180R1101 CT120/800	0,5
2CSG421190R1101 CT6/1000	2CSG521190R1101 CT8/1000	2CSG631190R1101 CT8-V/1000	2CSG201190R1101 CT80/1000	2CSG721190R1101 CT12/1000	2CSG831190R1101 CT12-V/1000		0,5
2CSG421200R1101 CT6/1200	2CSG521200R1101 CT8/1200	2CSG631200R1101 CT8-V/1200		2CSG721200R1101 CT12/1200	2CSG831200R1101 CT12-V/1200	2CSG401200R1101 CT120/1200	0,5
					2CSG831210R1101 CT12-V/1250		0,5
2CSG421220R1101 CT6/1500	2CSG521220R1101 CT8/1500	2CSG631220R1101 CT8-V/1500		2CSG721220R1101 CT12/1500	2CSG831220R1101 CT12-V/1500	2CSG401220R1101 CT120/1500	0,5
2CSG421230R1101 CT6/2000	2CSG521230R1101 CT8/2000	2CSG631230R1101 CT8-V/2000		2CSG721230R1101 CT12/2000	2CSG831230R1101 CT12-V/2000		0,5
2CSG421240R1101 CT6/2500	2CSG521240R1101 CT8/2500	2CSG631240R1101 CT8-V/2500		2CSG721240R1101 CT12/2500	2CSG831240R1101 CT12-V/2500		0,5
	2CSG521250R1101 CT8/3000			2CSG721250R1101 CT12/3000	2CSG831250R1101 CT12-V/3000		0,5
				2CSG721260R1101 CT12/4000	2CSG831260R1101 CT12-V/4000		0,5
				2CSG721270R1101 CT12/5000			0,5
				2CSG721280R1101 CT12/6000			0,5

CT6	CT8	CT8V	CT80	CT12	CT12V	CT120
Through primary			Split core trough primary	Through primary		Split core trough primary
50	2x30	2x35	–	2x50	3x35	–
60x20	80x30	–	–	80x50; 100x50; 125x50	–	–
–	–	80x30; 3x80x5	2x30x10	–	125x30, 3x100x10, 4x100x5, 4x125x5	4x120x10

Energy efficiency

CT measurement current transformers with through primary



CT

Technical features				
		CT...	CTO	TRFM
Standard secondary current	[A]	5 A		
Max. voltage for operation	[kV]	1,2		
Test voltage	[kV]	3 a 50 Hz/1min		
Residual current voltage at secundary terminals when security circuit intervenes (only SELV versions)		< 25 V rms		
Short circuit rated thermal current	[IpN]	40 per 1 sec.	60 per 1 sec.	40 per 1 sec.
Short circuit rated dynamic current	[Ith]	2,5 per 1 sec.		
Permanent overload	[IpN]	1,2		
Safety factor	[Fs]	from ≤ 2 to ≤ 10 depending on the type and capacity		
Frequency	[Hz]	50-60		
Air insulation class		Class E	B	E
Terminals		primary P1 - P2 (K - L); secondary s1 - s2 (k - l)		
		P1 (K) primary winding input		
		s1 (k) secondary winding input		
		P2 (L) primary winding output		
		s2 (l) secondary winding output		
Housing		Self-extinguishing thermoplastic resin V0		
Protection degree		IP30	IP20	IP20
Operating temperature	[°C]	-5...+50	-5...+50	-25...+50
Max. temperature on bars	[°C]	70°C		
Storage temperature	[°C]	-20...+80	-20...+80	-40...+80
Relative humidity		80%		
Reference standard		IEC EN 60044-1, IEC EN 61010-1		
Secondary protection circuit reference standards (only SELV versions)		IEC60364; IEC473.1.4; IEC556.3; CEI64-8-4;		
		CEI411.1.4.3; CEI411.5.2; CEI411.2; CEI473.1.4; CEI473.2.3		

CT and CTA current transformers

Used to transform primary currents (max. 6000 A) into .../5 A low secondary currents indirectly supplying power to analogue and digital measurement devices. They are available both with wound and through primary. In the first case they are provided along with the bar or the primary terminal; in the second case they have a hole to insert in the bar or the cable which forms the primary.

The rated current to the secondary windings is 5 A, in line with the offer of measuring devices. CT ../1 are not employable with ABB mono-function and multifunction measuring devices. The use of CT ../1 is needed in case of long wirings from CT secondary windings to the measuring device; nowadays, the wide use of communication protocols doesn't require the instrument to be installed far from the line to measure.

The new SELV versions of the CT PRO XT and CT MAX guarantee maximum safety against overvoltage and switchboard internal overheating thanks to the innovative electronic protection circuit which automatically short-circuit the CT secondary winding in case of accidental disconnection of its secondary terminals.

Energy efficiency

CT measurement current transformers with through primary



CT PRO XT

Standard type current transformers .../5 A with through primary

CT PRO XT .../5 A series, through primary							
Primary rated current Iprim A	Accurancy class	Rated power	Bbn 8012542	Order details		Weight 1 piece	Pack unit
		VA	EAN	Type code	Order code	kg	pc.
40	3	2	257455	CT PRO XT 40	2CSG225745R1101	0.32	1
50	3	2	257554	CT PRO XT 50	2CSG225755R1101	0.32	1
60	3	2	257653	CT PRO XT 60	2CSG225765R1101	0.32	1
80	3	2	257752	CT PRO XT 80	2CSG225775R1101	0.32	1
100	1	3	257851	CT PRO XT 100	2CSG225785R1101	0.32	1
150	1	5	257950	CT PRO XT 150	2CSG225795R1101	0.32	1
200	1	5	258056	CT PRO XT 200	2CSG225805R1101	0.32	1
250	0.5	5	258155	CT PRO XT 250	2CSG225815R1101	0.32	1
300	0.5	5	258155	CT PRO XT 300	2CSG225825R1101	0.32	1
400	0.5	5	258353	CT PRO XT 400	2CSG225835R1101	0.32	1

CT PRO XT SELV .../5 A series, through primary							
Primary rated current Iprim A	Accurancy class	Rated power	Bbn 8012542	Order details		Weight 1 piece	Pack unit
		VA	EAN	Type code	Order code	kg	pc.
40	3	2	258452	CT PRO XT 40 SELV	2CSG225845R1101	0.37	1
50	3	2	258551	CT PRO XT 50 SELV	2CSG225855R1101	0.37	1
60	3	2	258650	CT PRO XT 60 SELV	2CSG225865R1101	0.37	1
80	3	2	258650	CT PRO XT 80 SELV	2CSG225875R1101	0.37	1
100	1	3	258858	CT PRO XT 100 SELV	2CSG225885R1101	0.37	1
150	1	5	258957	CT PRO XT 150 SELV	2CSG225895R1101	0.37	1
200	1	5	259053	CT PRO XT 200 SELV	2CSG225905R1101	0.37	1
250	0.5	5	259152	CT PRO XT 250 SELV	2CSG225915R1101	0.37	1
300	0.5	5	259251	CT PRO XT 300 SELV	2CSG225925R1101	0.37	1
400	0.5	5	259350	CT PRO XT 400 SELV	2CSG225935R1101	0.37	1

CT PRO XT series		
Through primary		max section [mm]
cable	○	18
horizontal bar	▭	20x10
vertical bar	▯	-

Energy efficiency

CT measurement current transformers with through primary



CT MAX

CT MAX .../5 A series, through primary

Primary rated current Iprim A	Accurancy class	Rated power VA	Bbn 8012542 EAN	Order details Type code	Order details Order code	Weight 1 piece kg	Pack unit pc.
300	0,5	4	259459	CT MAX 300	2CSG225945R1101	0,32	1
400	0,5	5	259558	CT MAX 400	2CSG225955R1101	0,32	1
500	0,5	6	259558	CT MAX 500	2CSG225965R1101	0,32	1
600	0,5	10	259657	CT MAX 600	2CSG225975R1101	0,32	1
800	0,5	10	259657	CT MAX 800	2CSG225985R1101	0,32	1
1000	0,5	10	259954	CT MAX 1000	2CSG225995R1101	0,32	1

CT MAX SELV .../5 A series, through primary

Primary rated current Iprim A	Accurancy class	Rated power VA	Bbn 8012542 EAN	Order details Type code	Order details Order code	Weight 1 piece kg	Pack unit pc.
300	0,5	4	260059	CT MAX 300 SELV	2CSG226005R1101	0,37	1
400	0,5	5	260158	CT MAX 400 SELV	2CSG226015R1101	0,37	1
500	0,5	6	260257	CT MAX 500 SELV	2CSG226025R1101	0,37	1
600	0,5	10	260356	CT MAX 600 SELV	2CSG226035R1101	0,37	1
800	0,5	10	260455	CT MAX 800 SELV	2CSG226045R1101	0,37	1
1000	0,5	10	260554	CT MAX 1000 SELV	2CSG226055R1101	0,37	1

CT MAX series

Through primary		max section [mm]
cable	◯	30
horizontal bar	▭	30x15, 40x10
vertical bar	▯	-

Energy efficiency

CT measurement current transformers with through primary



CT6



CT8



CT8/V

CT6 .../5 A series, through primary

Primary rated current Iprim A	Accurancy class	Rated power VA	Bbn 8012542 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
250	0.5	5	605508	CT6/250	2CSG421130R1101	1.000	1
300	0.5	5	605607	CT6/300	2CSG421140R1101	1.000	1
400	0.5	6	605706	CT6/400	2CSG421150R1101	1.000	1
500	0.5	6	605805	CT6/500	2CSG421160R1101	1.000	1
600	0.5	10	605904	CT6/600	2CSG421170R1101	1.000	1
800	0.5	10	606000	CT6/800	2CSG421180R1101	1.000	1
1000	0.5	20	606109	CT6/1000	2CSG421190R1101	1.000	1
1200	0.5	20	606208	CT6/1200	2CSG421200R1101	1.000	1
1500	0.5	30	606307	CT6/1500	2CSG421220R1101	1.000	1
2000	0.5	30	606406	CT6/2000	2CSG421230R1101	1.000	1
2500	0.5	30	606505	CT6/2500	2CSG421240R1101	1.000	1

CT8 .../5 A series, through primary

Primary rated current Iprim A	Accurancy class	Rated power VA	Bbn 8012542 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
600	0.5	10	606901	CT8/600	2CSG521170R1101	1.000	1
800	0.5	10	607007	CT8/800	2CSG521180R1101	1.000	1
1000	0.5	10	607106	CT8/1000	2CSG521190R1101	1.000	1
1200	0.5	15	607205	CT8/1200	2CSG521200R1101	1.000	1
1500	0.5	20	607304	CT8/1500	2CSG521220R1101	1.000	1
2000	0.5	20	607403	CT8/2000	2CSG521230R1101	1.000	1
2500	0.5	20	607502	CT8/2500	2CSG521240R1101	1.000	1
3000	0.5	20	607601	CT8/3000	2CSG521250R1101	1.000	1

CT8-V .../5 A series, through primary

Primary rated current Iprim A	Accurancy class	Rated power VA	Bbn 8012542 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
600	0.5	10	608905	CT8-V/600	2CSG631170R1101	0.800	1
800	0.5	10	609001	CT8-V/800	2CSG631180R1101	0.800	1
1000	0.5	10	609100	CT8-V/1000	2CSG631190R1101	0.800	1
1200	0.5	10	609209	CT8-V/1200	2CSG631200R1101	0.800	1
1500	0.5	10	609308	CT8-V/1500	2CSG631220R1101	0.800	1
2000	0.5	20	609407	CT8-V/2000	2CSG631230R1101	0.800	1
2500	0.5	20	609506	CT8-V/2500	2CSG631240R1101	0.800	1

CT6 series

Through primary		max section [mm]
cable	○	50
horizontal bar	▭	60x20
vertical bar	▯	-

CT8 series

Through primary		max section [mm]
cable	○	2x30
horizontal bar	▭	80x30
vertical bar	▯	-

CT8-V series

Through primary		max section [mm]
cable	○	2x35
horizontal bar	▭	-
vertical bar	▯	80x30 3x80x5

Energy efficiency

CT measurement current transformers with through primary



CT12



CT12/V

CT12 .../5 A series, through primary							
Primary rated current Iprim A	Accurancy class	Rated power	Bbn 8012542	Order details		Weight 1 piece	Pack unit
		VA	EAN	Type code	Order code	kg	pc.
600	0.5	10	607809	CT12/600	2CSG721170R1101	1.600	1
800	0.5	15	607908	CT12/800	2CSG721180R1101	1.600	1
1000	0.5	20	608004	CT12/1000	2CSG721190R1101	1.600	1
1200	0.5	20	608103	CT12/1200	2CSG721200R1101	1.600	1
1500	0.5	20	608202	CT12/1500	2CSG721220R1101	1.600	1
2000	0.5	30	608301	CT12/2000	2CSG721230R1101	1.600	1
2500	0.5	40	608400	CT12/2500	2CSG721240R1101	1.600	1
3000	0.5	40	608509	CT12/3000	2CSG721250R1101	1.600	1
4000	0.5	50	608608	CT12/4000	2CSG721260R1101	2.000	1
5000	0.5	50	745600	CT12/5000	2CSG721270R1101	3.000	1
6000	0.5	50	745709	CT12/6000	2CSG721280R1101	3.000	1

CT12-V .../5 A series, through primary							
Primary rated current Iprim A	Accurancy class	Rated power	Bbn 8012542	Order details		Weight 1 piece	Pack unit
		VA	EAN	Type code	Order code	kg	pc.
800	0.5	10	609605	CT12-V/800	2CSG831180R1101	0.700	1
1000	0.5	10	609704	CT12-V/1000	2CSG831190R1101	0.700	1
1200	0.5	10	609803	CT12-V/1200	2CSG831200R1101	0.700	1
1250	0.5	10	609902	CT12-V/1250	2CSG831210R1101	0.700	1
1500	0.5	12	610007	CT12-V/1500	2CSG831220R1101	0.700	1
2000	0.5	15	610106	CT12-V/2000	2CSG831230R1101	1.000	1
2500	0.5	20	610205	CT12-V/2500	2CSG831240R1101	1.000	1
3000	0.5	20	610304	CT12-V/3000	2CSG831250R1101	1.000	1
4000	0.5	20	745808	CT12-V/4000*	2CSG831260R1101	1.000	1

* Air insulation class: Class B

CT12 series

Through primary		max section [mm] up to 4000A	max section [mm] 5000 and 6000 A
cable	○	2x50	-
horizontal bar	▭	125x50	120x10, 2x120x10, 3x120x10
vertical bar	▯	-	200x10, 2x200x10, 3x200x10

CT12-V series

Through primary		max section [mm]
cable	○	3x35
horizontal bar	▭	-
vertical bar	▯	125x30, 3x100x10, 4x125x5

Energy efficiency

CTA measurement current transformers with wound primary



CTA/25

Standard type current transformers .../5 A with wound primary

CTA .../5 A series, wound primary with insertion on Ø8 MA bolt							
Primary rated current Iprim	Accurancy class	Rated power	Bbn 8012542	Order details		Weight 1 piece	Pack unit
A		VA	EAN	Type code	Order code	kg	pc.
10	0.5	5	661405	CTA/10	2CSG111030R1141	0.290	1
20	0.5	5	661603	CTA/20	2CSG111050R1141	0.290	1
25	0.5	5	661702	CTA/25	2CSG111060R1141	0.290	1
40	0.5	5	661801	CTA/40	2CSG111080R1141	0.290	1
50	0.5	5	661900	CTA/50	2CSG111090R1141	0.290	1
60	0.5	5	662006	CTA/60	2CSG111100R1141	0.290	1
80	0.5	5	662105	CTA/80	2CSG111110R1141	0.290	1
100	0.5	5	662204	CTA/100	2CSG111120R1141	0.290	1

CTA series

Wound primary		max section [mm]
cable	○	8
horizontal bar	▭	-
vertical bar	▯	-

Energy efficiency

CTO split core measurement current transformers



CT30



CT80



CT120

Split core measurement current transformers with through primary

Split core measurement current transformers are used in distribution panels or power c enters for maintenance or system expansion. They can be installed easily and they allows to save a lot of time, avoiding bar disconnection. All transformers are complete with terminal caps and fastening accessories, both on bar and on wall.

CT30/...5 A Split core current transformers

Primary rated current Iprim A	Accurancy class	Rated power VA	Bbn 8012542 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
100	3	1.5	887805	CT30/100	2CSG101100R1101	0.85	1
150	3	2	887904	CT30/150	2CSG101110R1101	0.85	1
250	0.5	1.5	888109	CT30/250	2CSG101130R1101	0.85	1
400	0.5	2.5	888000	CT30/400	2CSG101150R1101	0.85	1

CT80/...5 A Split core current transformers

Primary rated current Iprim A	Accurancy class	Rated power VA	Bbn 8012542 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
250	0.5	1	888208	CT80/250	2CSG201130R1101	1.1	1
400	0.5	1.5	888307	CT80/400	2CSG201150R1101	1.1	1
500	0.5	2.5	888406	CT80/500	2CSG201160R1101	1.1	1
600	0.5	2.5	888505	CT80/600	2CSG201170R1101	1.1	1
1000	0.5	5	888703	CT80/1000	2CSG201190R1101	1.1	1

CT120/...5 A Split core current transformers

Primary rated current Iprim A	Accurancy class	Rated power VA	Bbn 8012542 EAN	Order details Type code	Order code	Weight 1 piece kg	Pack unit pc.
800	0.5	3	889304	CT120/800	2CSG401180R1101	1.3	1
1200	0.5	6	889502	CT120/1200	2CSG401200R1101	1.3	1
1500	0.5	8	889601	CT120/1500	2CSG401220R1101	1.3	1

CT30 series

Through primary	
	○
	▭
	▯

CT80 series

Through primary	
	○
	▭
	▯

CT120 series

Through primary		max section [mm]
cable	○	
horizontal bar	▭	
vertical bar	▯	4x120x10

Energy efficiency

TRF M measurement modular current transformers



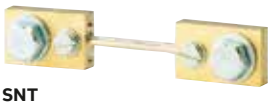
TRF M

Modular current transformers with Ø 29 mm through primary, secondary .../5A
TRF M are modular current transformers with through primary for measuring instruments. Their compact size and quick DIN rail plug allow easy installation along with great measurement precision.

Primary rated current Iprim	Accurancy class	Rated power	Bbn 8012542	Order details		Weight 1 piece	Pack unit
A		VA	EAN	Type code	Order code	kg	pc.
40	3	1	046912	TRFM/40	2CSM100050R1111	0.250	1
60	1	2	047018	TRFM/60	2CSM100070R1111	0.250	1
100	0.5	2	047117	TRFM/100	2CSM100090R1111	0.250	1
150	0.5	3	047216	TRFM/150	2CSM100100R1111	0.250	1
250	0.5	4	047315	TRFM/250	2CSM100120R1111	0.250	1
400	0.5	6	047407	TRFM/400	2CSM100140R1111	0.250	1
600	0.5	8	047506	TRFM/600	2CSM100160R1111	0.250	1

Energy efficiency

SNT current transformer for d.c. applications



SNT

Technical features		
Voltage	[mV]	60
Current rating	[A]	from 5 to 1000
Accuracy class		0.5 (from 10 to 30 °C)
Max. load	[Ω]	0.25
Overload for 5 sec.		from 10 to 500 A : 1xIn
		from 600 to 1000 A: 5xIn

Shunts

Shunts have 60 mV voltage and must be used with a maximum load of 0.25 Ω in combination with measurement instruments in d.c.

For an appropriate operation:

- both horizontal and vertical mounting are possible (the horizontal position enables a greater heat consumption)
- the faying surface must be completely used and clean; cover with specific grease after the connection
- screws and bolts must be perfectly tight
- shunts must be sufficiently ventilated; as they are not insulated, it is a good rule to protect them against accidental contacts.

60 mV shunts					
Rated current	Bbn 8012542	Order details		Weight 1 piece	Pack unit
A	EAN	Type code	Order code	kg	pc.
10	047803	SNT 1/10	2CSM100030R1121	1.800	1
50	048404	SNT 1/50	2CSM100090R1121	2.200	1
100	048701	SNT 1/100	2CSM100120R1121	1.300	1
150	048800	SNT 1/150	2CSM100130R1121	1.300	1
400	049104	SNT 1/400	2CSM100160R1121	1.900	1
800	049401	SNT 1/800	2CSM100190R1121	2.200	1
1000	049500	SNT 1/1000	2CSM100200R1121	2.200	1