

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.

Accurate measurement
Class 0.5 measurement according to IEC 61557-12 and advanced power quality functionalities, including historical measurements.

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

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

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.

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

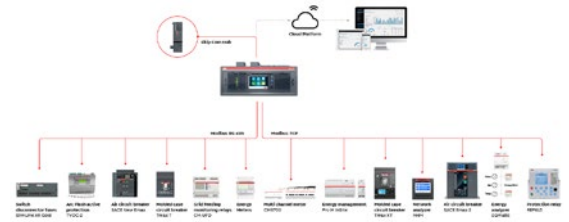
Full communication
ABB Ability™ native network analyzers with complete communication protocols and I/O options for integration in any system.

ABB M4M 30 Specifications:
 S/N: N223AB0127
 2CSG260111R4051
 M4M 2X MODBUS
 Aux: 48-240V_{ac} AC-DC 50-60Hz 10VA
 CAT III
 ABB S.p.A., V.le dell'Industria 18, 20009 Vittuone (MI) Italy
 Made in Italy
 Voltage inputs: Max 400V_{ac} ~ L-N (690V_{ac} ~ L-L)
 L1, L2, L3, N
 Current Inputs (0-6A): I1, I2, I3, IN
 Aux. Supply: 48-240V_{ac} AC-DC
 Dimensions: 7 mm depth, 7 mm terminal spacing



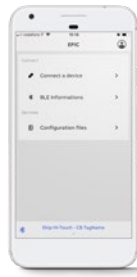
Intuitive interface

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

ABB Ability™-native network analyzers, automatically integrated in ABB Ability™ Energy Manager cloud solution, allowing to monitor, optimize and control 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 $\pm 15\%$	
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 40 th 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]	400 V AC (L-N)	
Max over voltage	[V]	800 V AC (L-L)	
Protection fuse	[V]	T1 A - 277 V AC	

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



M4M 20



M4M 30



M4M 2X

	M4M 20	M4M 30	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 1)	
Measurement range without accuracy derating		50 mA - 6 A	
Starting current		5 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	-
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 features



M4M 20



M4M 30



M4M 2X

Mechanical characteristics

Overall dimensions	96 mm x 96 mm x 77 mm (Depth inside the switchboard: 57 mm)	96 mm x 96 mm x 77 mm (DIN-rail mounting)
IP degree of protection (acc. to IEC 60529)	Front: IP54	-
Weight [g]	400	Terminals: IP20

Terminal characteristics

Voltage inputs	Nominal cross section: 2,5 mm ² Solid/stranded wire: 0,2 - 2,5 mm ² (AWG 24 - 12) Pitch: 7,62 mm Poles: 4		
Current inputs	Nominal cross section: 2,5 mm ² Solid/stranded wire: 0,2 - 2,5 mm ² (AWG 24 - 12) Pitch: 5,08 mm Poles: 6 Screw flanges for fixing	Nominal cross section: 2,5 mm ² Solid/stranded wire: 0,2 - 2,5 mm ² (AWG 24 - 12) Pitch: 5,08 mm Poles: 8 Screw flanges for fixing	
RS-485 Serial port	Nominal cross section: 2,5 mm ² Solid/stranded wire: 0,2 - 2,5 mm ² (AWG 24 - 12) Pitch: 5,08 mm Poles: 3		
I/O	Nominal cross section: 2,5 mm ² Solid/stranded wire: 0,2 - 2,5 mm ² (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 mm ² Solid/stranded wire: 0,2 - 2,5 mm ² (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 mm ² Solid/stranded wire: 0,2 - 2,5 mm ² (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 x 52 mm (3.5")		-



M4M 20



M4M 30



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	4.8, 9.6, 19.2, 38.4 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	Available on 2X PQ1, 2X PQ2, 2X RTS		
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)		

M4M 20 and M4M 30

Comparing the two versions



M4M 20 - Class 0,5S

M4M 30 - Class 0,5S

Accuracy

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	/	40 th
Unbalances (I, VLN, VLL)	/	•
Neutral current	Calculated	Measured
Phasors (I, VLN)	/	•
Waveforms (I, VLN, VLL)	/	•

Data recording and logs

Single alarms	25	25
Warnings, alarms and errors logs	•	•
Complex alarms with logics	/	4
Demand values (average)	Basic	Advanced
Min/Max Demand values	Basic	Advanced
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
RJ45 Daisy Chain (Ethernet version)	/	•

M4M 2X

Functionality packages



Accuracy

M4M 2X - Class 0,5S

TRMS current	●
TRMS voltage	●
Frequency	●
Active, Reactive and Apparent power	●
Power factor	●
Operating timer, countdown timer	●
Active, Reactive and Apparent energy	●
4 quadrants Energy (Import/Export)	●
THD (I, VLN, VLL)	●
Neutral current	Calculated
Single alarms	25
Demand values (average)	Basic
Max/min values	Basic
Warnings, alarms and errors logs	●
Digital Outputs	2
+PQ1	
Individual Harmonics	25 th
Unbalances	●
Historicals logs	Intermediate
RTC	●
+PQ2	
Individual Harmonics	40 th
Unbalances	●
Historicals logs	Advanced
RTC	●
Neutral current	Measured
+RTS	
Tariffs	6
Complex alarms with logics	4
RTC	●
Programmable I/O ¹	4
Connectivity	
Automatic integration in ABB Ability™ EDCS	●
Bluetooth Low Energy	●
Communication Protocols	Modbus RTU, Modbus TCP/IP
RJ45 Daisy Chain (Ethernet version)	●

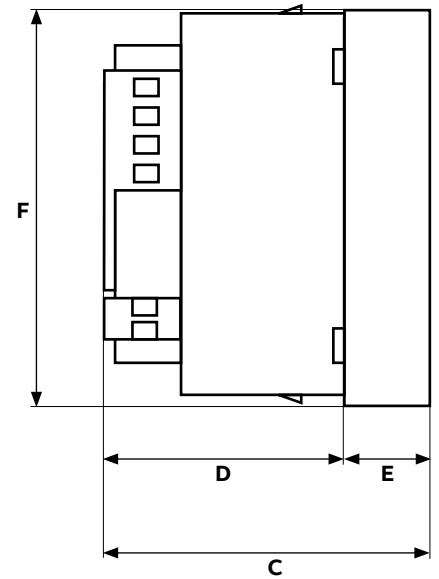
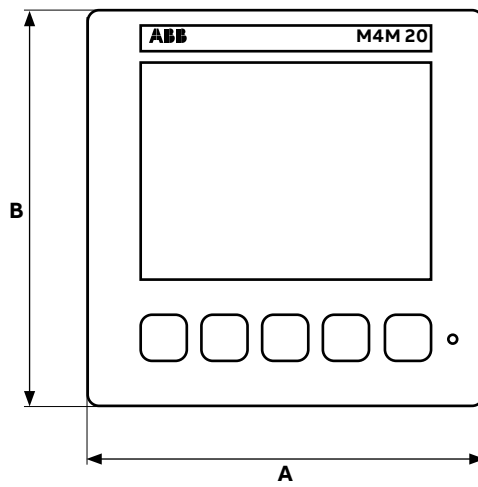
¹ instead of 2 Digital Outputs

Overall dimensions

M4M 20, M4M 30

Dimensions

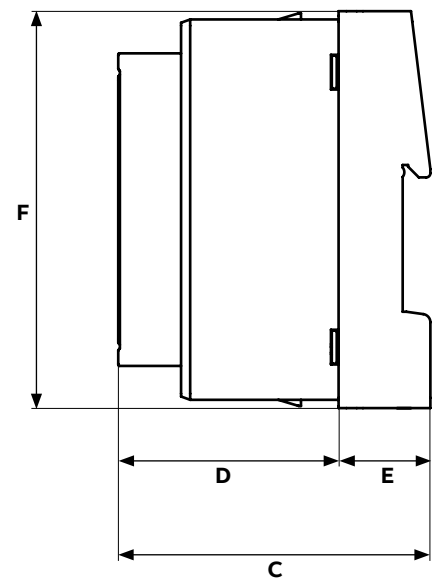
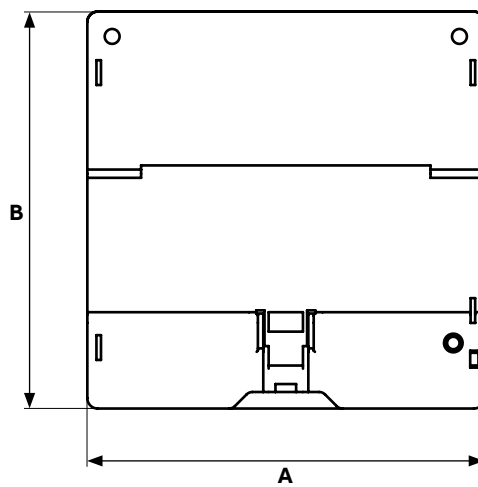
- A: 96 mm
- B: 96 mm
- C: 77,5 mm
- D: 57 mm
- E: 20,5 mm
- F: 92 mm



M4M 2X

Dimensions

- A: 96 mm
- B: 96 mm
- C: 77.5 mm
- D: 53.5 mm
- E: 22 mm
- F: 92 mm



Ordering codes



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



M4M 20 - ROGOWSKI VERSION

M4M 20 is also available as compatible with ABB's R4M Rogowski coils for current measurement, increasing the flexibility 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 code	Order code		
BLE, Modbus RTU	2 Digital Outputs	070818	M4M 20 Rogowski	2CSG207081R4051	0,400	1

Ordering codes



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



M4M 30 - ROGOWSKI VERSION

M4M 30 is also available as compatible with ABB's R4M Rogowski coils for current measurement, increasing the flexibility 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 EAN	Order details		Weight 1 piece kg	Pack unit pc.
			Type code	Order code		
BLE, Modbus RTU	4 Prog. 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 installations 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 EAN	Order details		Weight 1 piece kg	Pack unit pc.
		Type code	Order code		
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	Functionality 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		