

passive hubs for
fieldbus networks

MEGABLOCK SERIES

reliable interconnection for fieldbus networks



Megablocks are DIN rail mounted passive hubs for Foundation Fieldbus networks. They connect several field devices to the network trunk cable and provide short circuit and surge protection to the segment. Megablocks minimize hand wiring and allow individual devices to be added to and removed from the segment without disrupting network communication.

A green power LED on each unit indicates whether at least 9V dc is present. Megablocks are available in two, four, eight and ten drop versions. Multiple Megablocks are easily wired to one another to allow larger segments to be constructed.

The Megablock Terminator is easily wired to any Megablock to prevent signal reflection on the fieldbus segment. The Megablock Terminator is clearly marked for easy identification by field personnel.

The Megablock 10 has an integral terminator making it ideal for a star or chickenfoot topology where several transmitters are connected at a single field junction box.

Occupying approximately the same junction box space as conventional 4-20mA wiring, Megablocks are ideal for both retrofit and greenfield installations.

Each Megablock has two dedicated connections for the fieldbus home run or trunk cable. Trunk connections are easily identified by their black connectors. Separate numbered connections are provided for each spur drop.

Connections to the Megablock are made using pluggable screw terminal type connectors. This allows wire terminations to be made to the individual connectors which are then plugged into the Megablock. Devices can then be easily connected and disconnected during commissioning. After commissioning, retaining screws are tightened to secure each connector to the Megablock.

To minimize susceptibility to single points of failure, Megablocks are available with built-in SpurGuard™ short circuit protectors which prevent a short circuit in any of the individual transmitters or spur cable runs from bringing the entire fieldbus segment down. A red LED near each spur connection indicates that a spur is shorted and is in overcurrent mode.

To protect field transmitters from damage due to induced voltages on the fieldbus cable, each Megablock has built-in over voltage protection that is activated when the potential across the twisted wire pair exceeds 39V dc. The Megablock Terminator has over voltage protection that works by shunting excess current to ground when the shield to ground potential exceeds 75V dc.

Megablock hazardous area approvals permit installation in a variety of configurations in Zone 1 or 2 and Division 1 or 2. Within Zone 2 or Division 2 Megablocks may be installed as part of non-sparking (non-arcing) or energy-limited (non-incendive) circuits. Additionally, SpurGuard™ versions have energy-limited spur connections even if the trunk is classified as 'non-sparking', when fed for example from an MTL5995 or FPS-I fieldbus power supply.

Within Zone 1 and Division 1 Megablocks are designed for installation in intrinsically safe applications, and are compatible with FISCO or Entity-approved field instruments. An energy-limited or intrinsically safe fieldbus allows live connection/disconnection of the fieldbus without the need for a gas clearance certificate, which assists in commissioning, maintenance and system expansions. Alternatively, for applications using flameproof certified devices, the Megablocks are designed to meet the requirements for increased safety for installation in an EEx e junction box in Zone 1.

Refer to the Approvals tables at the end of the Megablocks section for details of current certifications from the different certification authorities. Further approvals are in progress, so consult MTL for up-to-date information.



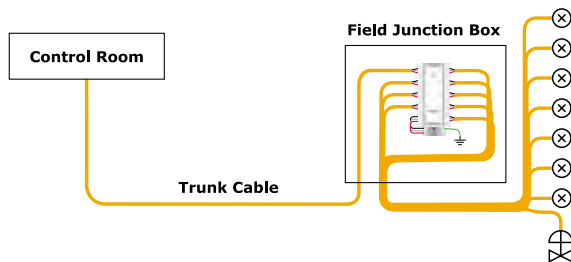
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MTL - RELCOM MEGABLOCKS

INSTALLATION

Megablocks can be mounted vertically or horizontally using 35 mm DIN rail within a suitable enclosure, such as a field junction box. Megablocks are removed from the DIN rail using a flat blade screwdriver to release the mounting platform. Use of DIN rail end stops is recommended to prevent sliding in vertical installations. Four, eight and ten port Megablocks have labeling areas so that segments can be easily identified according to plant standards.



Shown above is an example of a common Fieldbus segment topology. Eight field devices are connected to an eight-drop Megablock, which is mounted in a field junction box. One trunk connector on the Megablock is wired to a Megablock Terminator and the other to the segment trunk cable that leads to the control room or marshalling panel where the power supply and second terminator are located. The Megablock Terminator in the field has a normally open connection to earth ground that closes when surge conditions are detected.

GROUNDING

To prevent ground loops, a fieldbus segment should only be grounded at one point. This is usually done by grounding the cable shield at the control room end of the segment. If a permanent segment ground connection in the field is desired, this can be achieved by wiring the shield terminal on one of the Megablock trunk connectors to a suitable earth ground instead of wiring it to the shield terminal on the Megablock Terminator.

Fieldbus Connection System (FCS) wiring blocks are protected by U.S. Patent 5,775,955

ORDERING INFORMATION

	Megablocks	Megablocks with integrated SpurGuard™ short circuit protection	
	General Purpose Zone/Division 2 and Intrinsically Safe	General Purpose and Zone/Division 2	Zone/Division 1 EEx i and EEx me
2 way	FCS-MB2	FCS-MB2-SG	-
4 way	FCS-MB4	FCS-MB4-SG	F245
8 way	FCS-MB8	FCS-MB8-SG	F251
10 way with Terminator	FCS-MB10-T	FCS-MB10-SG-T	F259

Accessories

Heavy Duty DIN rail end stop
35mm DIN Rail, 1 metre length

Part Number

ETL7000
THR7000

SPECIFICATIONS

Mounting Requirements: 35mm DIN rail
Wire Capacity: 12-24 AWG
Case material: Lexan Polycarbonate
Temperature Range: -45° to +70°C
Voltage Required to activate Power LED: 9.2V dc minimum

FCS-MBx Megablock

Power Consumption: 3.5mA maximum
Maximum Current Delivered to Spur: Not Limited
Trunk to Spur Voltage Drop: 0V

FCS-MBx Megablock with SpurGuard™

Power Consumption:
No SpurGuards™ tripped: 4.5mA
per SpurGuard™ tripped: 60mA
Maximum Current Delivered to Spur: 58.0mA ± 1.0mA
Trunk to Spur Voltage Drop (SpurGuard™ not tripped):
DC Impedance: 21Ω
Typical: 0.4V dc (17mA device current draw)
Trunk to Spur Voltage Drop: 0V

F240 - F259 Megablock with SpurGuard™

Power Consumption:
with no SpurGuards™ tripped: 4.5mA
with SpurGuard™ tripped: 41mA
Maximum Current Delivered to Spur: 40mA ± 1.0mA
Trunk to Spur Voltage Drop (SpurGuard™ not tripped):
Typical: 0.1V dc (17mA device current draw)
DC Impedance: 5Ω

Megablock Terminator

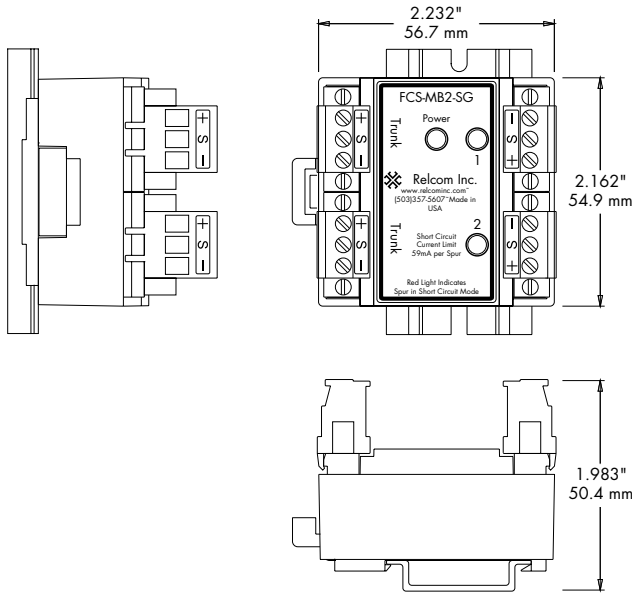
Operating Temperature Range: -45° to +70°C
Common Mode Voltage Limit: 39V
Transient Mode Voltage Limit: 75V

Physical Network

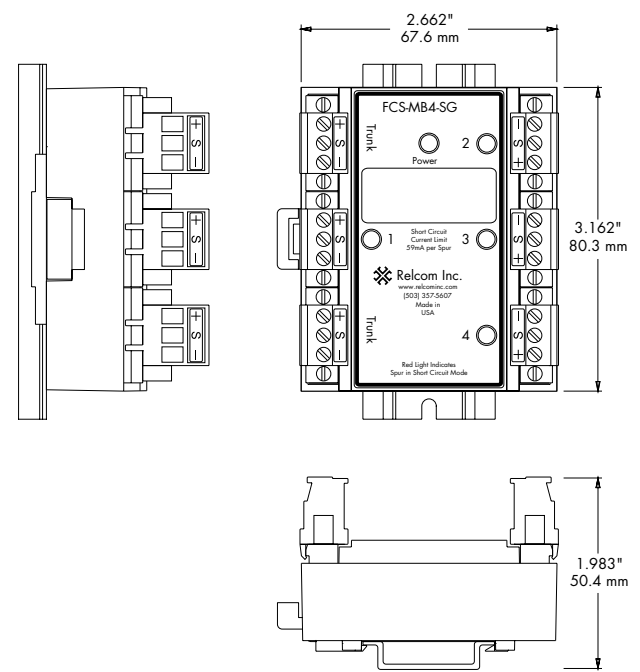
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FOUNDATION™ Fieldbus H1
Profibus PA



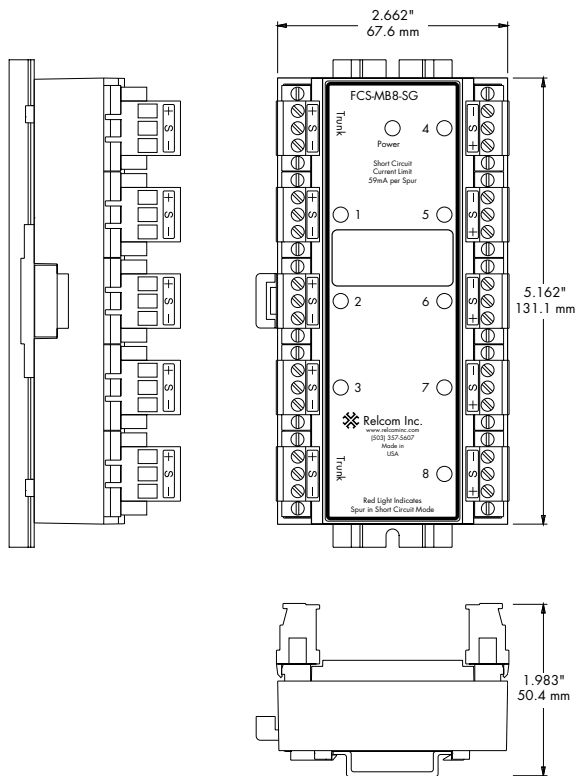
FCS-MB2, FCS-MB2-SG



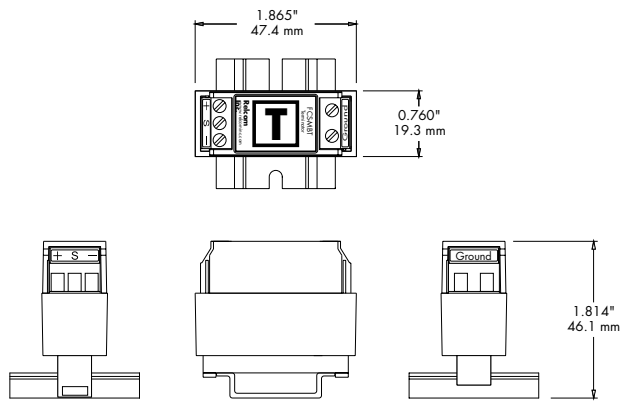
FCS-MB4, FCS-MB4-SG, F245



FCS-MB8, FCS-MB8-SG, F251



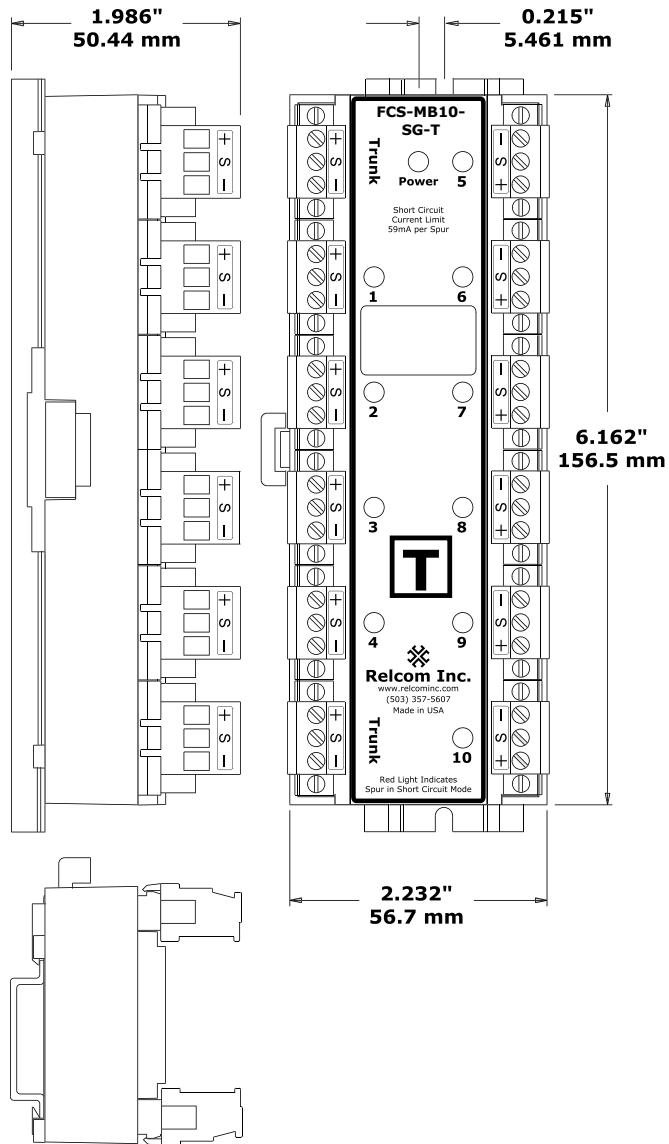
FCS-MBT



Note: Different Megablock versions have minor variations in labelling.



FCS-MB10-T, FCS-MB10-SG-T, F259



Note: Different Megablock versions have minor variations in labelling.

APPROVALS (FCS-MB2, FCS-MB4, FCS-MB8, FCS-MBT)

Country	Europe	USA	Canada	Canada	Europe		
Authority	ATEX (Category 3)	FM	CSA	CSA	LCIE		
Standard	EN50021: 1999	3611	C22.2 No. 213 - M1987 CAN/CSA - E79-15-95	C22.2 No. 157-92 CAN/CSA - E79-11-95	EN50014(1997) + Amendments 1 & 2 EN50020 (1994)		
Approved for	Zone 2 EEx n AL IIC T4	Class I, Division 2 Groups A, B, C, D T4	Class I, Division 2 Groups A, B, C, D Ex nA IIC T4	Class I, Division 1 Groups A, B, C, D T4 Ex ia IIC T4	EEx ia IIC T4		
Certificate no.	500-047	3013269	1198909	1198909	LCIE02 ATEX6212X		
Field wiring parameters				ENTITY FISCO	ENTITY FISCO		
Trunk	Energy limited U _i =32V I _i =1.5A C _i =0 L _i =0	Non-arcing	Non-arcing	Intrinsically safe V _{max} , U _i =24V I _{max} , I _i =250mA C _i =0 L _i =0 P _i =1.2W	Intrinsically safe V _{max} , U _i =17.5V I _{max} , I _i =380mA C _i =0 L _i =0 P _i =5.32W	Intrinsically safe U _i ≤ 24V I _i ≤ 250mA C _i =0 L _i =0 P _i ≤ 1.2W	Intrinsically safe U _i ≤ 17.5V I _i ≤ 380mA C _i =0 L _i =0 P _i ≤ 5.32W
Spur	Note 1	Non-arcing	Non-arcing	As trunk	As trunk	U _o = 24V I _o = 250mA C _o = 62µF L _o = 568µH P _o = 1.2W	U _o = 17.5V I _o = 380mA C _o = 116µF L _o = 246µH P _o = 5.32W

Note 1: Spur is Energy-limited only if trunk is installed as Energy-limited, in which case spur field wiring parameters are as source of supply to trunk, and limited to 32V and 1.5A max.

APPROVALS (FCS-MB2-SG, FCS-MB4-SG, FCS-MB8-SG)

Country	Europe	USA	Canada	Canada
Authority	ATEX (Category 3)	FM	CSA	CSA
Standard	EN50021: 1999	3611	C22.2 No. 213 - M1987 CAN/CSA - E79-15-95 IEC 60079-15	C22.2 No. 213 - M1987 CAN/CSA - E79-15-95
Approved for	Zone 2 EEx n AL IIC T4	Class I, Division 2 Groups A, B, C, D T4	Class I, Division 2 Groups A, B, C, D Ex nA [nL] IIC T4	Class I, Division 2 Groups A, B, C, D Ex nA IIC T4
Certificate No.	500-086	3013269	1280795	1198909
Field wiring parameters				
Trunk	Energy-limited U _i =32V I _i =1.5A C _i =0 L _i =0	Non-arcing	Non-arcing	Non-arcing
Spur	Energy-limited U _o =32V I _o =60mA C _o =170nF L _o =1.26mH Note 2	Non-arcing	Non-incendive V _{oc} =32V I _{sc} =60mA C _a =170nF L _a =1.26mH	Non-arcing

Note 2: Trunk may be installed as Energy-limited or Non-sparking circuit; Spur is Energy-limited in either case.

Note 3: FCS-MB10 certifications are pending.

