



technical datasheet

FCS-MBx-SG Megablock series*

passive hubs for general purpose, Zone 2 & Division 2 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 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, ten and twelve drop versions. Multiple Megablocks are easily wired to one another to allow larger segments to be constructed.

Megablocks are available with an integral terminator making them ideal for a star or "chickenfoot" topology, where several devices are connected at a single field junction box. Separate Megablock Terminators are also available, which may be wired easily to any Megablock. Megablocks having a built-in terminator are clearly marked ('T') for easy identification by field personnel.

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 connected and disconnected easily during commissioning. After commissioning, retaining screws are tightened to secure each connector to the Megablock.

Trunk connections for the fieldbus home-run/trunk cable are easily identified by their black connectors. Separate numbered connections are provided for each spur drop.

SpurGuard™ is a device-port, short circuit protection technique that minimizes susceptibility to single points of failure. Megablocks are available with built-in SpurGuard™ protectors that prevent a short circuit in any of the individual transmitters or spur cable runs, from bringing down the entire fieldbus segment. A red LED near each spur connection indicates when a spur is shorted and hence in "over-current" mode.

FCS-MBx-SG Megablock hazardous area approvals permit installation in a variety of configurations in Zone 2 and Division 2 hazardous areas. The FCS-MBx and FCS-MBx-SG hubs may be installed as part of non-sparking (non-arcing) or energy-limited (non-incendive) circuits. Additionally, FCS-MBx-SG SpurGuard™ versions have energy-limited spur connections, even if the trunk is classified as 'non-sparking', when fed for example from an F8xx or FPS-I fieldbus power supply.

See the F2xx Megablock datasheet for Zone 1 and Division 1 hazardous areas applications. Additionally, for applications without SpurGuard short circuit protection, the FCS-MBx is certified for installation in intrinsically safe, fieldbus circuits in Zone 1 hazardous areas.

To select the Megablock for your application see the Ordering Information section of this document.

* including models without Spurguard™

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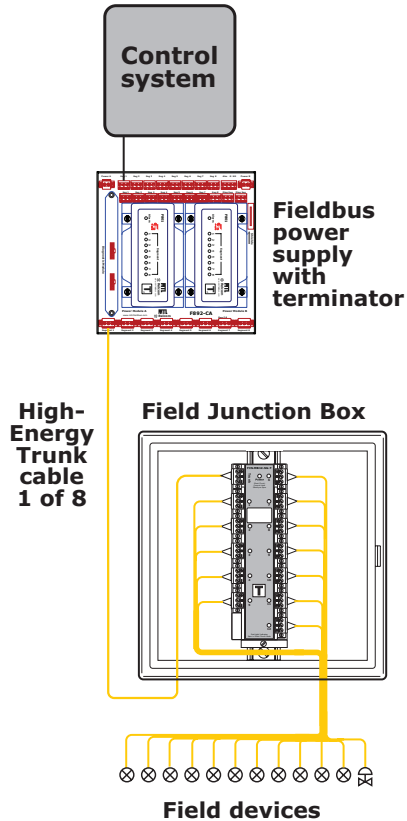


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INSTALLATION

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.

MTL have a wide range of standard junction box designs for use with Megablocks. See the data sheet for the range of Process JB's.



Shown above is an example of a common Fieldbus segment topology. Twelve field devices are connected to a twelve-drop Megablock, which is mounted in a field junction box. The trunk connector on the Megablock is wired to the segment trunk cable that leads to the control room or marshalling panel where the power supply and second terminator are located.

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. Patents 6,366,437, 6,369,997 and 6,519,125.

SPECIFICATIONS

Mounting requirements

35mm DIN rail

Wire capacity

0.14 to 2.5mm²

Case material

Lexan polycarbonate

Temperature range

Operating -45° to +70°C

Storage -50° to +85°C

Voltage required to activate power LED

9.2V dc minimum

Minimum input voltage

10.5V (See Note 1 below)

Maximum input voltage

see certification ratings

Maximum input current

see certification ratings

Trunk-to-trunk voltage drop

0.1V maximum

FCS-MBx Megablock

Unloaded current consumption

4.0 mA

Spur device current

not limited

Spur short-circuit current

unlimited

Trunk-to-trunk voltage drop

0.1V maximum

Trunk-to-spur voltage drop

0.1V maximum

FCS-MBx-SG, F118 & F215 Megablock with SpurGuard™

Unloaded current consumption

No. of Ports	2	4	8	10	12
mA	4.0	4.1	4.3	4.4	4.5

Spur device current

46mA maximum (recommend one device per spur)

Spur short-circuit current

60mA maximum

Trunk-to-trunk voltage drop

0.1V maximum

Trunk-to-spur voltage drop

1.1V maximum

PHYSICAL NETWORK

IEC 61158-2

Foundation™ fieldbus H1

Profibus PA

Note 1: The minimum input voltage guarantees that the spur output under full load will be at least 9.3V so that the device will see at least 9.0V.



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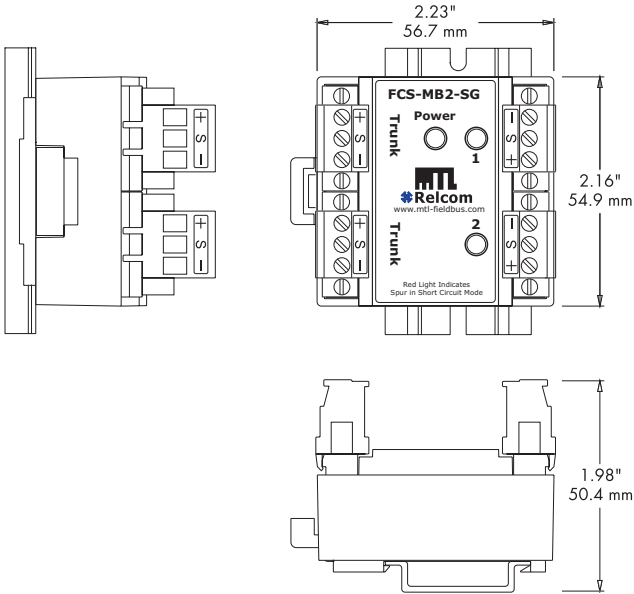
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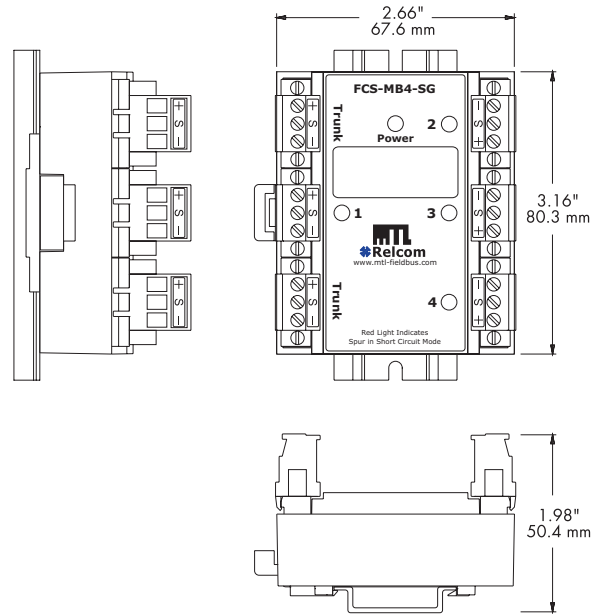
The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.

CASE DIMENSIONS

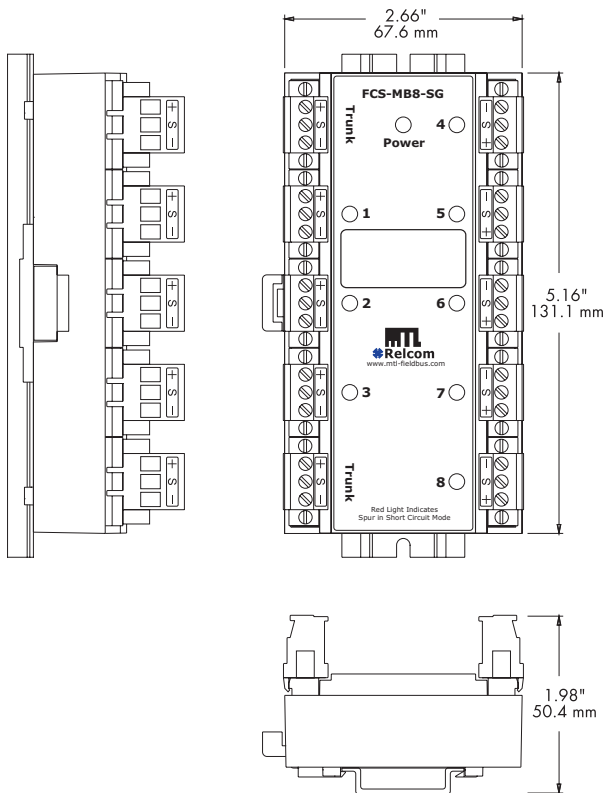
2-WAY - FCS-MB2(-SG)



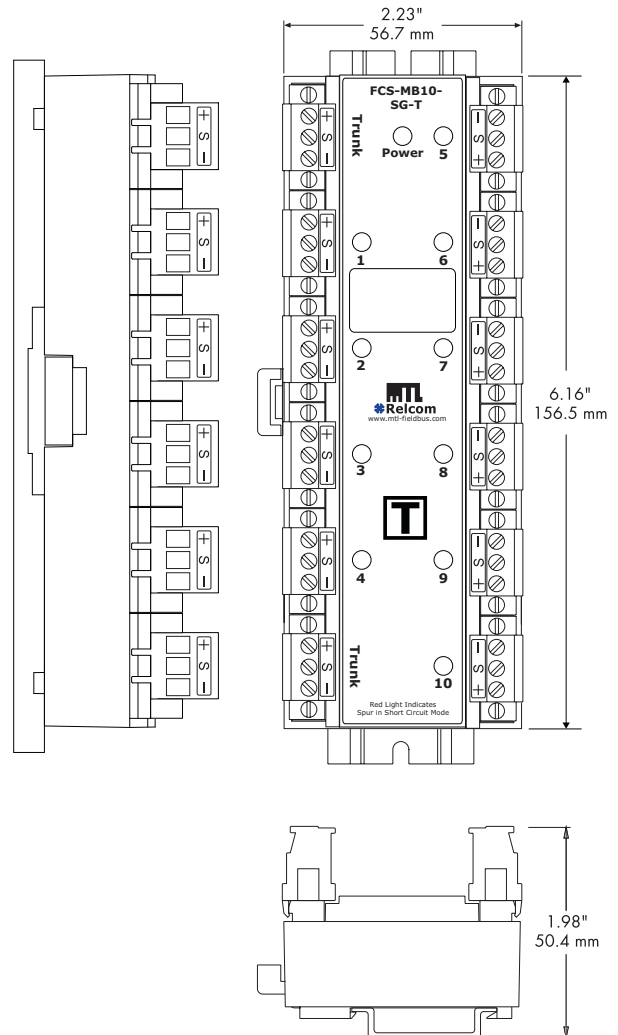
4-WAY - FCS-MB4, FCS-MB4-SG(-T)



8-WAY - FCS-MB8, FCS-MB8-SG(-T)



10-WAY - F118, FCS-MB10-T, FCS-MB10-SG(-T)



Note: Different Megablock versions have minor variations in labelling.

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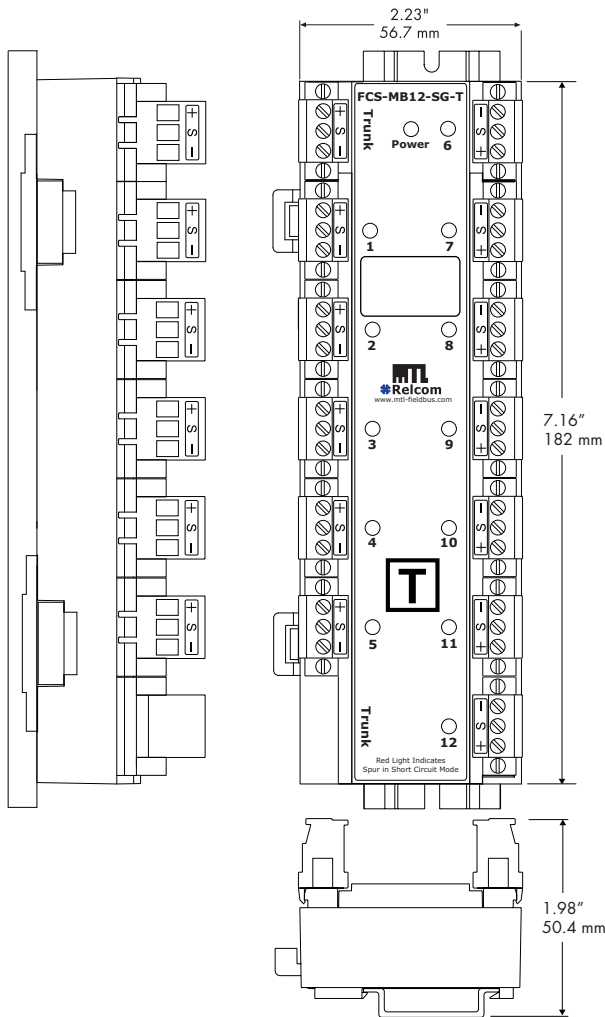
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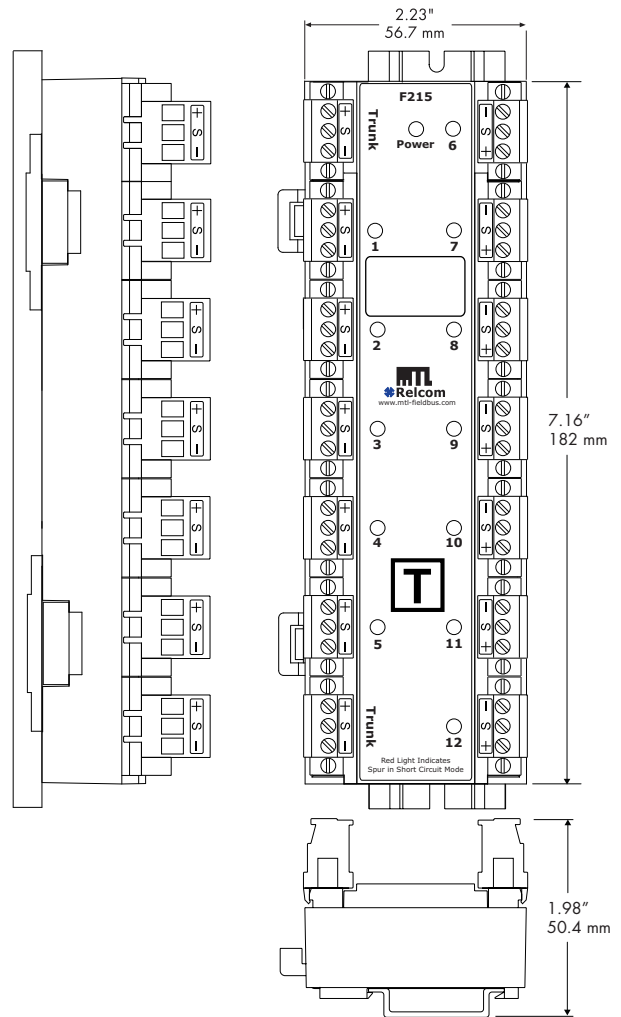
CASE DIMENSIONS (cont)

12-WAY MEGABLOCKS

FCS-MB12-SG(-T)



F215



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APPROVALS - for full certification information visit www.mtl-inst.com/support/certificates/

MODELS - FCS-MB2, FCS-MB4, FCS-MB8, FCS-MB10-T

Country	Europe	USA	Canada	Europe
Authority	ATEX (Category 3)	FM	FMc	LCIE
Standard	EN 60079-0 : 2004 EN 60079-15 : 2005	3600 1998 3611 1999 3810 1989	CSA C22.2 No. 213 1987 CSA E60079-0 2002 CSA E60079-15 2002 CSA C22.2 No.1010.1 1992 inc. Amendment 2 1997	EN60079-0 : 2006* EN60079-11 : 2007*
Approved for	⊕ II 3 GD Ex nA IIC T4	NI/II/2/ABCD/T4 Ta=70°C I / 2 / IIC / T4 Ta=70°C	NI/II/2/ABCD/T4 Ta=70°C Ex nA IIC T4 Ta=70°C	⊕ II 1G Ex ia IIC T4
Certificate no.	RELC07ATEX1004X	3013269	3039410C	LCIE02ATEX6212X
Apparatus parameters (Trunk)	Energy limited U _i = 32V I _i = 1.5A C _i = 0 L _i = 0	Non-arcing V _{max} = 32V I _{max} = 1.5A	Non-arcing V _{max} = 32V I _{max} = 1.5A	ENTITY Intrinsically safe V _{max} , U _i = 24V I _{max} , I _i = 250mA C _i = 0 L _i = 0 P _i = 1.2W FISCO Intrinsically safe V _{max} , U _i = 17.5V I _{max} , I _i = 380mA C _i = 0 L _i = 0 P _i = 5.32W
Cable parameters (Spur)	Note 1	Non-arcing	Non-arcing	U _o = 24V I _o = 250mA C _o = 62nF L _o = 568µH P _o = 1.2W Note 2 U _o = 17.5V I _o = 380mA C _o = 116nF L _o = 246µH P _o = 5.32W Note 2

* the original LCIE Certificate used EN 50014:1997 + Amendments 1 & 2 and EN 50020:1994. We have determined that there are no technical differences (affecting the products) between these standards and the currently harmonized EN standards listed above.

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.

Note 2: The figures quoted apply to IIC gas group. See certificate for parameter relating to groups IIB and IIA

MODELS - F118, F215, FCS-MB2-SG-[T], FCS-MB4-SG-[T], FCS-MB8-SG-[T], FCS-MB10-SG-[T], FCS-MB12-SG-[T]

Country	Europe	USA	Canada
Authority	ATEX (Category 3)	FM	FMc
Standard	EN 60079-0 : 2006 EN 60079-15 : 2005	3600 1998 3611 1999 3810 1989	CSA C22.2 No. 213 :1987 CSA E60079-0: 2002 CSA E60079-15: 2002 CSA C22.2 No.1010.1:1992 + Amendment 2 1997
Approved for	⊕ II 3 GD Ex nA [nL] IIC T4	NI/II/2/ABCD/T4 Ta=70°C I / 2 / IIC / T4 Ta=70°C	NI-ANI/II/2/ABCD/T4 Ta=70°C NI-ANI/II/2/IIC/T4 Ta=70°C
Certificate no.	RELC07ATEX1001X	3013269	3039092C
Apparatus parameters (Trunk)	Energy limited U _i = 32V I _i = 1.5A C _i = 0 L _i = 0	Non-arcing	Non-arcing
Cable parameters (Spur)	Energy limited U _o = 32V I _o = 60mA C _o = 85nF L _o = 0.26mH Note 3	Non-arcing	Non-incendive V _{oc} = 32V I _{sc} = 60mA C _a = 85nF L _a = 0.26mH

Note 3: Trunk may be installed as Energy-limited or Non-sparking circuit; spur is Energy-limited in either case.

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ORDERING INFORMATION

	No SpurGuard™	With SpurGuard™ short-circuit protection
	General Purpose, Zone/Division 2 and Intrinsically Safe	General Purpose and Zone/Division 2
Megablocks		
2 way	FCS-MB2	FCS-MB2-SG
4 way	FCS-MB4	FCS-MB4-SG
4 way with internal Terminator	-	FCS-MB4-SG-T
8 way	FCS-MB8	FCS-MB8-SG
8 way with internal Terminator	-	FCS-MB8-SG-T
10 way	-	FCS-MB10-SG
10 way with internal Terminator	FCS-MB10-T	FCS-MB10-SG-T
10 way with switched Terminator	-	F118
12 way	-	FCS-MB12-SG
12 way with internal terminator	-	FCS-MB12-SG-T
12 way with switched Terminator	-	F215

See Fieldbus Terminators datasheet for details of separate, DIN-rail mounted terminators

ACCESSORIES

Description	Part Number
Heavy Duty DIN rail end stop	ETL7000
35mm DIN Rail, 1 metre length	THR7000
Process JB stainless steel, painted‡	FCS-75XX
Process JB carbon loaded GRP‡	FCS-85XX
Process JB stainless steel‡	FCS-95XX

‡ See Process JB data sheets for further details

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