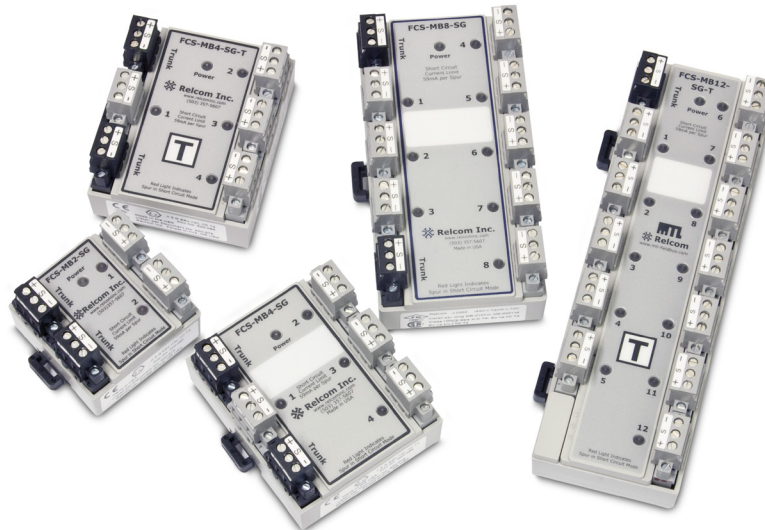




technical datasheet

## 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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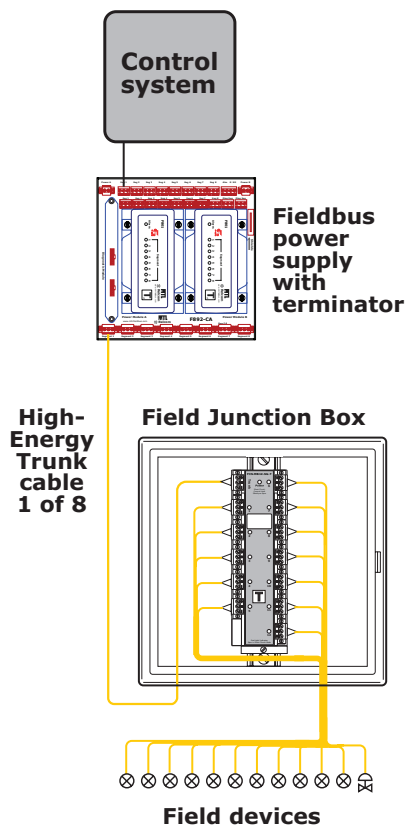
**COOPER** Crouse-Hinds

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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 2.5mm<sup>2</sup>

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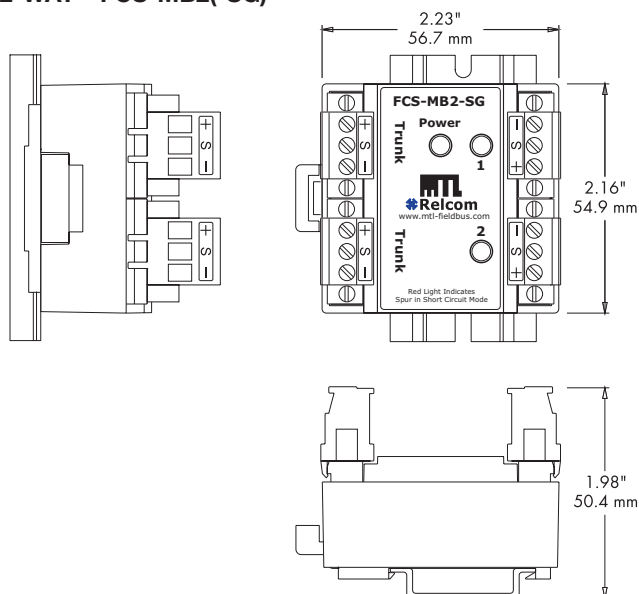
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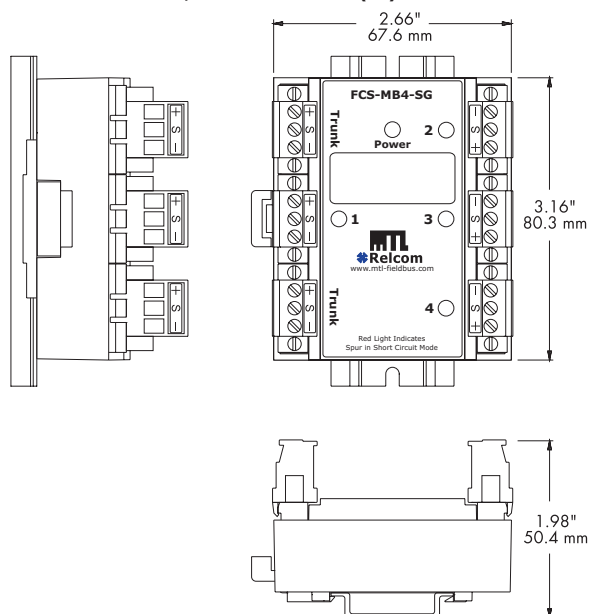
The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.

## CASE DIMENSIONS

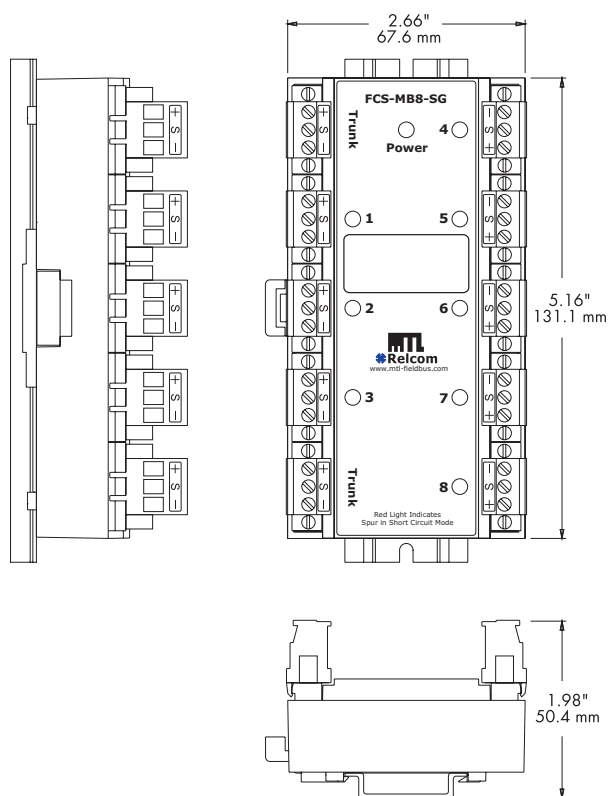
### 2-WAY - FCS-MB2(-SG)



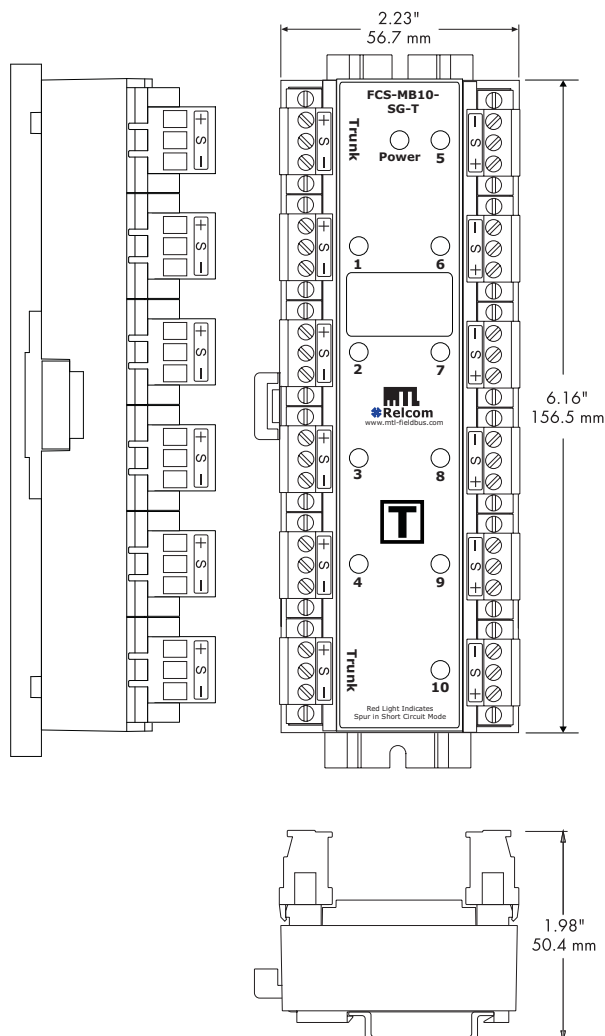
### 4-WAY - FCS-MB4, FCS-MB4-SG(-T)



### 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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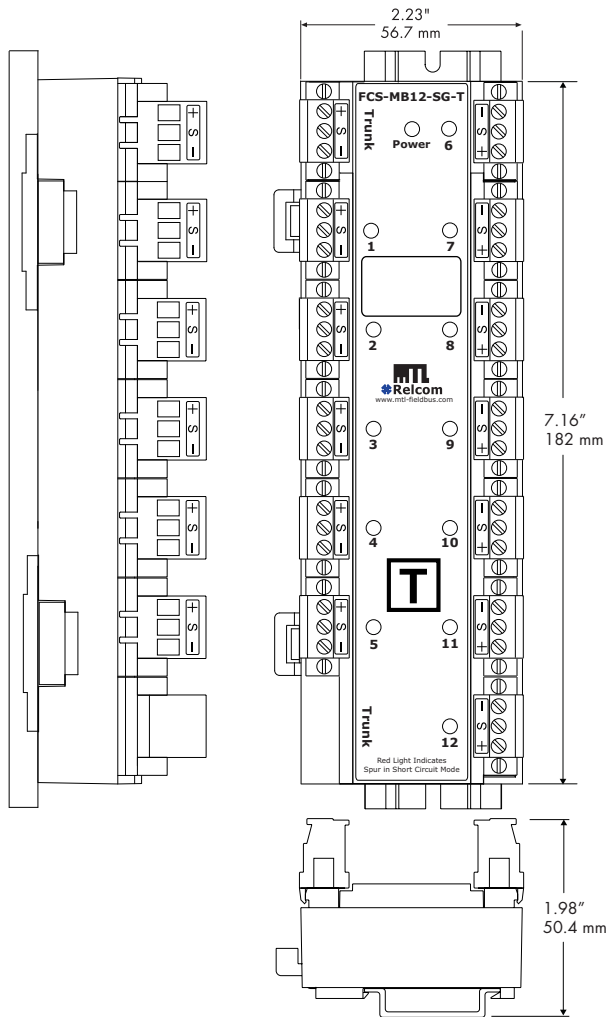
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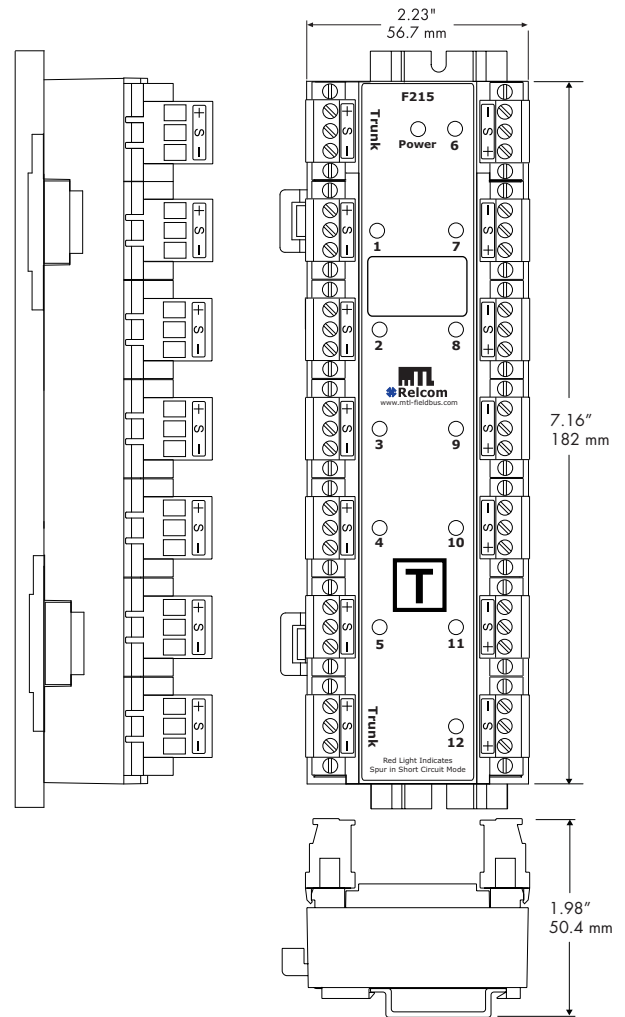
## CASE DIMENSIONS (cont)

### 12-WAY MEGABLOCKS

#### FCS-MB12-SG(-T)



#### F215



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**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	Ex 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	Ex II 1G Ex ia IIC T4
Certificate no.	RELCO7ATEX1004X	3013269	3039410C	LCIE02ATEX6212X
Apparatus parameters (Trunk)	Energy limited U <sub>i</sub> = 32V I <sub>i</sub> = 1.5A C <sub>i</sub> = 0 L <sub>i</sub> = 0	Non-arcing V <sub>max</sub> = 32V I <sub>max</sub> = 1.5A	Non-arcing V <sub>max</sub> = 32V I <sub>max</sub> = 1.5A	<b>ENTITY</b> Intrinsically safe V <sub>max</sub> , U <sub>i</sub> = 24V I <sub>max</sub> , I <sub>i</sub> = 250mA C <sub>i</sub> = 0 L <sub>i</sub> = 0 P <sub>i</sub> = 1.2W <b>FISCO</b> Intrinsically safe V <sub>max</sub> , U <sub>i</sub> = 17.5V I <sub>max</sub> , I <sub>i</sub> = 380mA C <sub>i</sub> = 0 L <sub>i</sub> = 0 P <sub>i</sub> = 5.32W
Cable parameters (Spur)	Note 1	Non-arcing	Non-arcing	U <sub>o</sub> = 24V I <sub>o</sub> = 250mA C <sub>o</sub> = 62nF L <sub>o</sub> = 568µH P <sub>o</sub> = 1.2W Note 2 U <sub>o</sub> = 17.5V I <sub>o</sub> = 380mA C <sub>o</sub> = 116nF L <sub>o</sub> = 246µH P <sub>o</sub> = 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	FM	FMc	FMc
Standard	EN 60079-0 : 2006 EN 60079-15 : 2005	3600 1998 3611 1999 3810 1989	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	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	Ex 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	NI-ANI/II/2/ABCD/T4 Ta=70°C Ex nA [nL] IIC T4 Ta=70°C	NI/II/2/ABCD/T4 Ta=70°C Ex nA IIC T4 Ta=70°C
Certificate no.	RELCO7ATEX1001X	3013269	3013852	3039092C	3039410C
Apparatus parameters (Trunk)	Energy limited U <sub>i</sub> = 32V I <sub>i</sub> = 1.5A C <sub>i</sub> = 0 L <sub>i</sub> = 0	Non-arcing	Non-arcing	Non-arcing	Non-arcing
Cable parameters (Spur)	Energy limited U <sub>o</sub> = 32V I <sub>o</sub> = 60mA C <sub>o</sub> = 85nF L <sub>o</sub> = 0.26mH Note 3	Non-arcing	Non-incendive V <sub>oc</sub> = 32V I <sub>sc</sub> = 60mA C <sub>a</sub> = 85nF L <sub>a</sub> = 0.26mH	Non-incendive V <sub>oc</sub> = 32V I <sub>sc</sub> = 60mA C <sub>a</sub> = 85nF L <sub>a</sub> = 0.26mH	Non-arcing

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
<b>Megablocks</b>		
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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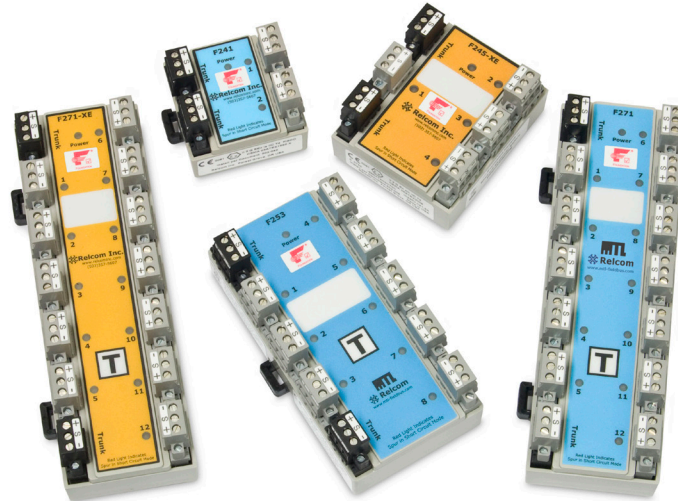
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technical datasheet

## F2xx & F2xx-XE Megablock Series

passive hubs for Zone 1 & Division 1 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. The 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 the entire fieldbus segment down. A red LED near each spur connection indicates that a spur is shorted and is in "over-current" mode.

**Megablock hazardous area approvals** permit installation in a variety of configurations in Zone 1 or 2 and Division 1 or 2. 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.

**For applications using flameproof certified devices**, the Megablocks are designed to meet the requirements for increased safety for installation in an Ex e junction box in Zone 1. See FCS-MBx-SG Megablock datasheet for applications in safe areas, Zone 2 and Division 2 hazardous areas.

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

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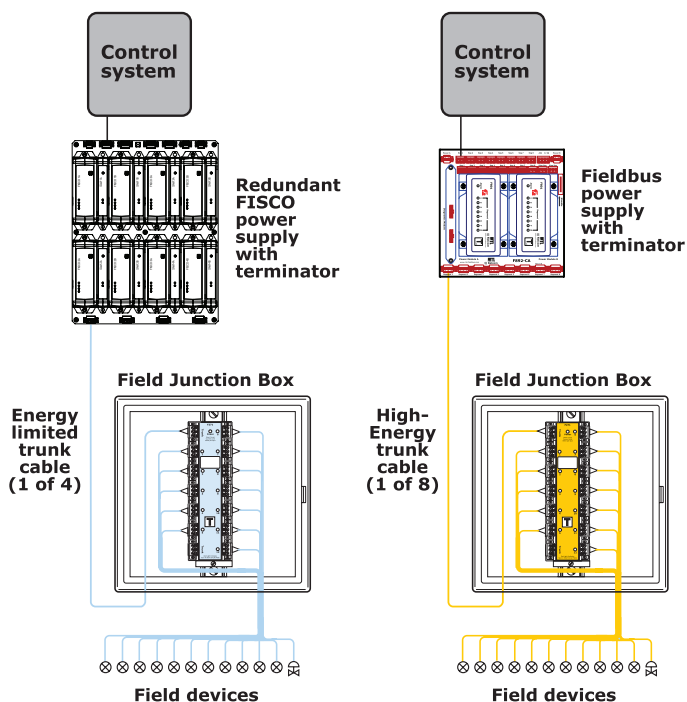
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## INSTALLATION

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. The four, eight, ten and twelve 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 are examples of common Fieldbus segment topologies. 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. On the left is an intrinsically safe Megablock connected to an intrinsically safe FISCO power supply and on the right is an increased safety (Ex em) version connected to a general purpose fieldbus power supply.

## 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 2.5mm<sup>2</sup>

### 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

10.0V (See Note 1 below)

### Maximum input voltage

see certification ratings

### Maximum input current

see certification ratings

### Trunk-to-trunk voltage drop

0.1V maximum

### F245 - F271 Intrinsically Safe Megablock with SpurGuard™

#### Unloaded current consumption

No. of Ports	2	4	8	10	12
mA	1.4	1.7	2.5	2.9	3.2

#### Spur device current

29mA maximum (recommend one device per spur)

#### Spur short-circuit current

40mA maximum

#### Trunk-to-trunk voltage drop

0.1V maximum

#### Trunk-to-spur voltage drop

0.3V maximum

### F245-XE - F271-XE Intrinsically Safe (Ex em) Megablock with SpurGuard™

#### Unloaded current consumption

No. of Ports	4	8	10	12
mA	1.7	2.5	2.9	3.2

#### Spur device current

29mA maximum (recommend one device per spur)

#### Spur short-circuit current

40mA maximum

#### Trunk-to-trunk voltage drop

0.1V maximum

#### Trunk-to-spur voltage drop

0.3V 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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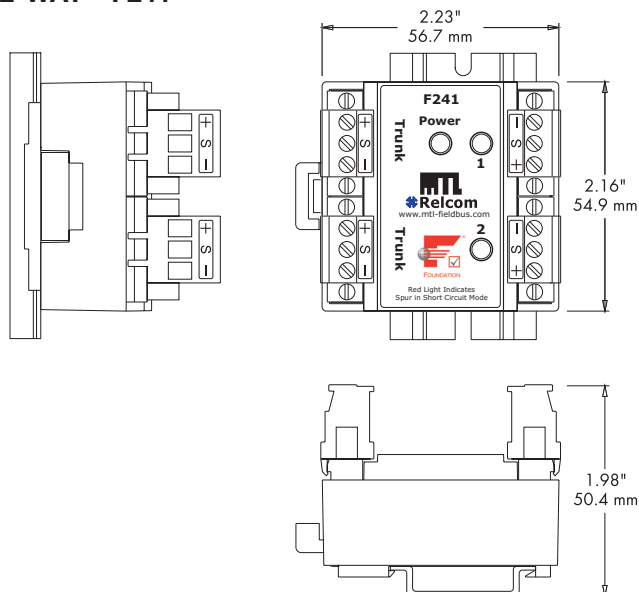
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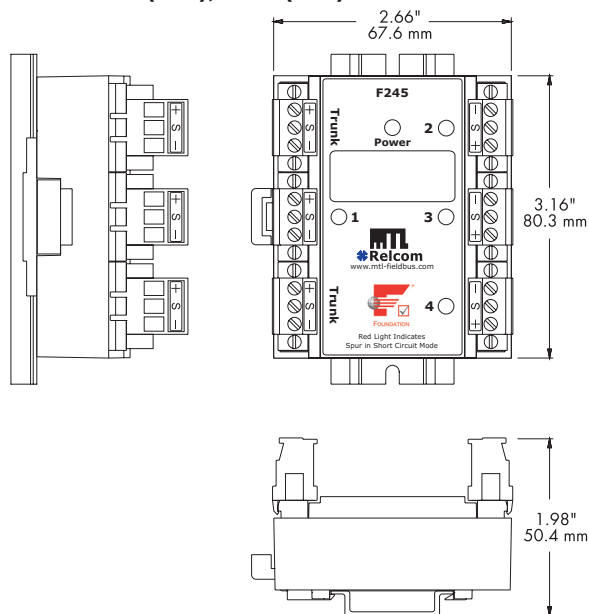


## CASE DIMENSIONS

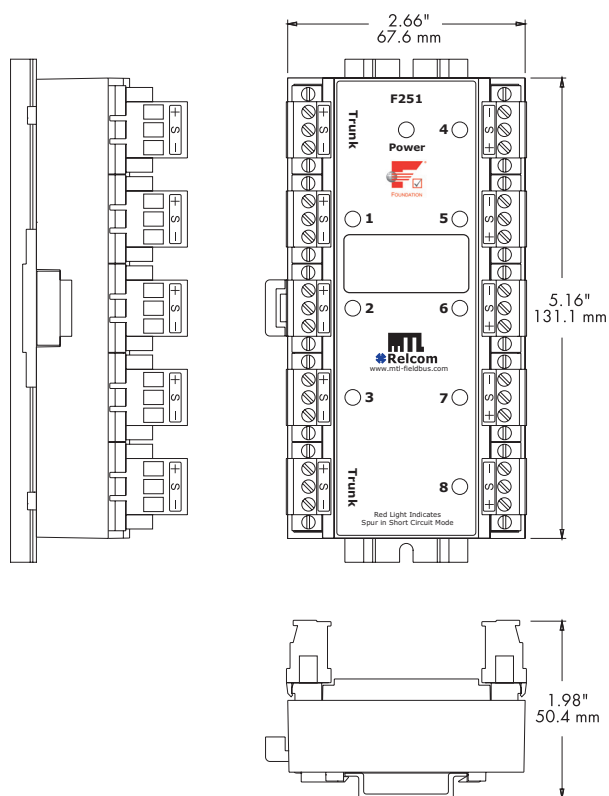
### 2-WAY - F241



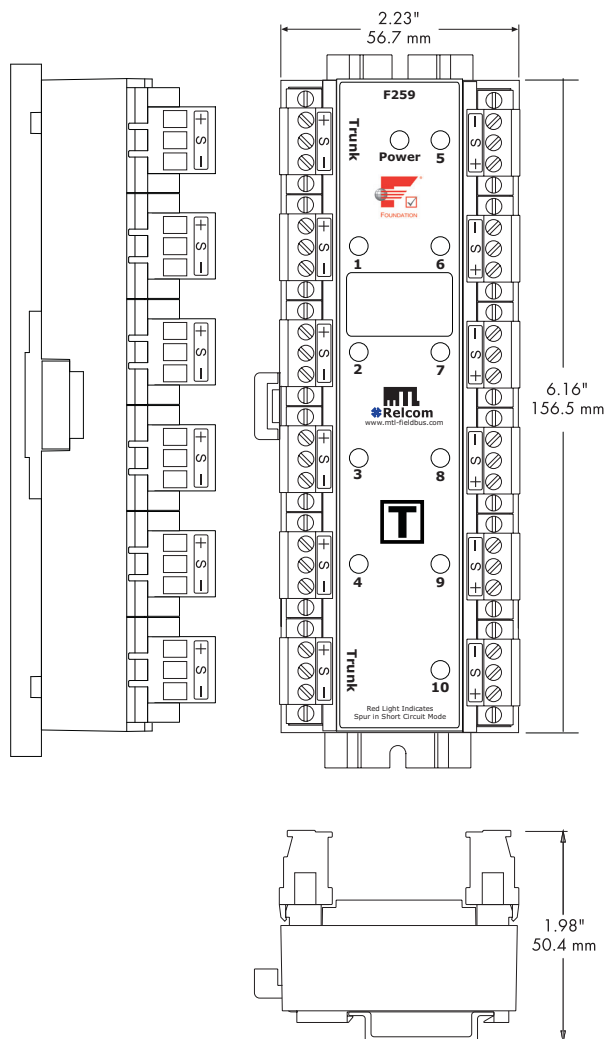
### 4-WAY - F245(-XE), F247(-XE)



### 8-WAY - F251(-XE), F253(-XE)



### 10-WAY - F259(-XE), F261



**Note: Different Megablock versions have minor variations in labelling.**

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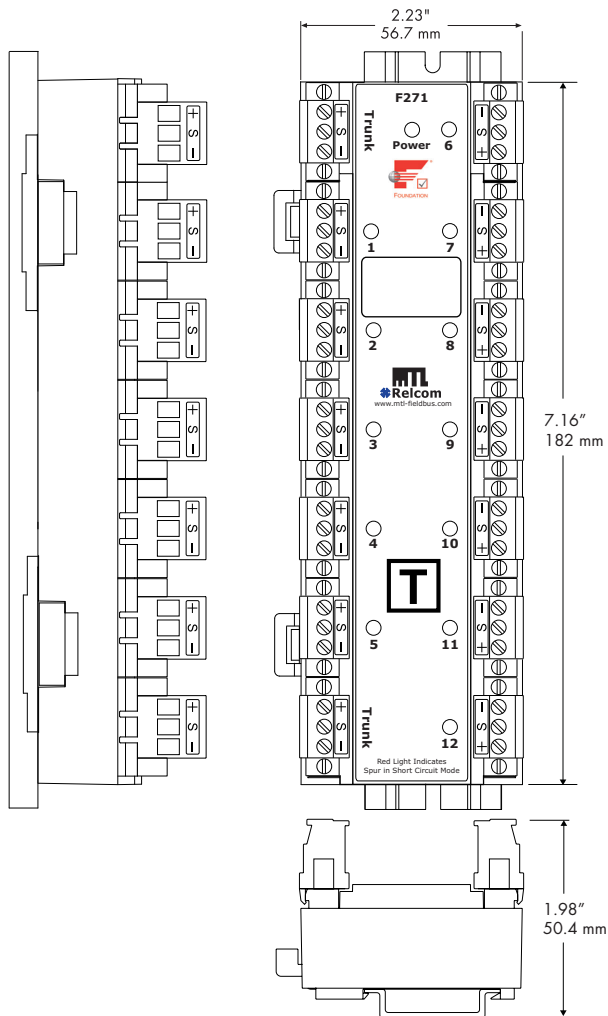
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## CASE DIMENSIONS (cont)

### 12-WAY - F271(-XE)



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**APPROVALS** - for full certification information visit [www.mtl-inst.com/support/certificates/](http://www.mtl-inst.com/support/certificates/)

## MODELS - F241, F245, F247, F251, F253, F259, F261, F271†

Country	Global	Europe	USA	USA & Canada	International
Authority	Fieldbus Foundation™	KEMA (ATEX)	FM	CSA	LCI (IECEx)
Standard	FF-846	EN 60079-0 : 2006* EN 60079-11 : 2007*	3600 1998 3610 2010 3810 1989 inc. Supplement No.1 1995 ANSI/ISA 60079-0 2009 ANSI/ISA 60079-11 2009	C22.2 No. 0 - M1982 CAN/CSA-C22.2 No.1010.1-92 CAN/CSA-C22.2 No.1010.1B-97 T.I.L. No. I-29 C22.2 No. 157-92 CAN/CSA - E79-0-95 CAN/CSA - E79-11-95 FM3600 - November 1998 FM3610 - October 1999	IEC 60079-0 : 2007 IEC 60079-11 : 2006 IEC 60079-27 : 2005
Approved for	See specification	Ex II 2G Ex ia IIC T4	IS/I/1/ABCD/T4 Ta=70°C I/O/AEx ia IIC T4 Ta=70°C	Class I, Division 1 Groups A, B, C and D (Temp Code T4) Ex ia IIC T4	Ex ia IIC T4 Ga
Certificate no.	DC067300	KEMA03ATEX1555X	3020445	1422741	IECEx LCI 11.0068X
Apparatus parameters (Trunk)	See specification	ENTITY Intrinsically safe Ui ≤ 24V Ii ≤ 250mA Ci = 0 Li = 0 Pi ≤ 1.2W	FISCO Intrinsically safe Vmax = 24V Imax = 250mA Ci = 0 Li = 0 Pi = 1.2W	ENTITY Intrinsically safe Vmax, Ui = 24V Imax, Ii = 250mA Ci = 0 Li = 0 Pi = 1.2W	FISCO Intrinsically safe Vmax, Ui = 17.5V Imax, Ii = 380mA Ci = 0 Li = 0 Pi = 5.32W

\* the original KEMA Certificate used EN 50014:1997 and EN 50020:2002. We have determined that there are no technical differences (affecting the products) between these standards and the currently harmonized EN standards listed above.

† Model F271 currently has only Fieldbus Foundation™, ATEX and IECEx approval to the standards indicated.

## MODELS - F245-XE, F247-XE, F251-XE, F253-XE, F259-XE, F271-XE

Country	Global	Europe
Authority	Fieldbus Foundation™	KEMA (ATEX)
Standard	FF-846	EN 60079-0 : 2009 ‡ EN 60079-7 : 2007 ‡ EN 60079-18 : 2009 ‡
Approved for	See specification	Ex II 2 G Ex em IIC T4
Certificate no.	DC067300	KEMA05ATEX2006
Trunk wiring parameters	See specification	Rated voltage 30V DC Rated current 1.5A

‡ The original KEMA Certificate used EN 60079-0:2004, EN60079-7:2001, and EN6007 9-18:2004. We have determined that there are no technological differences (affecting the products) between these standards and the currently harmonized EN standards listed here.

## ORDERING INFORMATION

	Zone/Division 1 Intrinsically Safe	Zone 1 Ex em
Megablocks		
2 way	F241	-
4 way	F245	F245-XE
4 way with internal Terminator	F247	F247-XE
8 way	F251	F251-XE
8 way with internal Terminator	F253	F253-XE
10 way	-	-
10 way with internal Terminator	F259	F259-XE
10 way with switched Terminator	F261	-
12 way	-	-
12 way with internal terminator	F271	F271-XE
12 way with switched Terminator	-	-

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 lengthw	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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EPS F2XX Rev2 050112



## F300 Megablock series

passive hubs for general purpose, Zone 2 & Division 2 fieldbus networks

- Single-piece Trunk In/Trunk Out connector simplifies installation and maintenance
- Pluggable trunk and spur surge protection option
- Choice of rising cage clamp screw or spring clamp terminals
- Locate Megablock in Zone 2 or Division 2
- Connect to Ex nA, Ex ic or non-incendive devices in Zone 2/Division 2
- Connect to Ex d, explosionproof devices in Zone 1/Division 1



**F300 Megablocks** are DIN-rail mounted **passive hubs** for FOUNDATION™ fieldbus H1 and Profibus PA networks for general purpose, Zone 2 and Division 2 applications. They provide a simple means of connecting field devices to the network trunk cable, and protect the segment from spur short circuits. 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 10V dc is present. F300 Megablocks are available in four, eight, and twelve drop versions.

The **black Trunk In/Out pluggable connector** allows replacement of a Megablock without breaking the trunk connection to other devices on the fieldbus segment. The F97 terminator supplied should be mounted in the Trunk-out connection to provide termination when the Megablock is located at the end of the fieldbus segment; alternatively, if the segment is extended, it can be removed to ensure the correct termination is maintained.

**Spur connections to the Megablock** are made using pluggable, grey, screw-terminal or spring clamp terminal connectors. Wire terminations can be made to the individual connectors before plugging them 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. 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. The F300 Megablock has built-in SpurGuard™ protectors that prevent a short circuit in any of the individual field devices 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.

The optional **FS32 modules** can provide **surge protection** for the F300 products on both the trunk and spur terminals. These pluggable modules are simple to fit in a new installation, or as a retrofit option.

A range of **MTL Process Junction Boxes** in stainless steel and carbon loaded, glass-reinforced polyester are available for mounting Megablock wiring components. They offer plenty of space for termination and wiring, making it easy to install and maintain the fieldbus system.

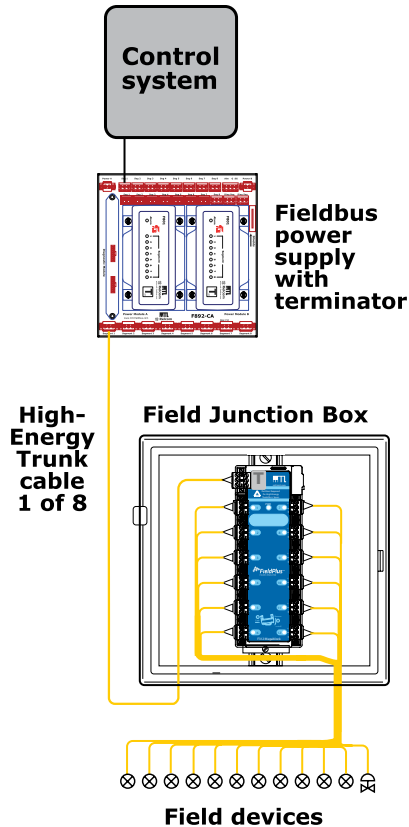
**F300 Megablock hazardous area approvals** permit installation in a variety of configurations in Zone 2 and Division 2 hazardous areas. Typically, F300 Megablocks may be installed with non-sparking (non-arcing) trunk and spur connections. Alternatively, when connected to suitably certified fieldbus power supplies, the trunk may be non-sparking (non-arcing) with non-incendive or intrinsically safe Ex ic spur connections.

**When installed on a non-sparking trunk** with Ex ic spurs, an F300-A01 trunk-spur partition must be installed on the F300 Megablock. The trunk-spur partition is supplied as a pack of 5, as detailed in the Accessories section of this document.

## INSTALLATION

Megablocks can be mounted vertically or horizontally using 35mm DIN rail within a suitable enclosure, such as a field junction box. 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.

F300 Megablocks can be clipped onto or removed from the DIN rail without any tools. Use of DIN rail end stops is recommended to prevent sliding in vertical installations.



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, the fieldbus segment shield should only be grounded at one point. This is usually done by grounding the cable shield at the control room end of the segment.

## SURGE PROTECTION - (see right)

The design of the F300 has made the installation of effective surge protection on trunk and spur cabling a simple matter, through the use of individual FS32 modules. Grounding bars are available, that clip easily onto the Megablocks to provide both mechanical support for the FS32 modules as well as a way of connecting them to a local low-impedance ground point to dissipate any induced surge currents.

See the **ACCESSORIES** section on the rear page to select the appropriate grounding bar(s) for the F300 model used and the necessary FS32 modules. A full technical datasheet for the FS32 is available from the MTL website.

## SPECIFICATIONS

### Mounting requirements

35mm DIN rail

### Wire capacity

0.14 to 2.5mm<sup>2</sup>

### Case material

Polycarbonate

### Temperature range

Operating -45° to +70°C

Storage -50° to +85°C

### Voltage required to activate power LED

10.0V dc minimum

### Minimum input voltage

No. of Ports	4	8	12
V	10.4	10.5	10.6

### Maximum input voltage

see certification ratings

### Minimum spur output voltage

9.35V

### Maximum input current

see certification ratings

### Trunk-to-trunk voltage drop

0.1V maximum

### Unloaded current consumption (maximum)

No. of Ports	4	8	12
mA	3.2	4.8	6.5

### Spur device current

38mA maximum (recommend one device per spur)

### Spur short-circuit current

56mA maximum

### Trunk-to-spur voltage drop

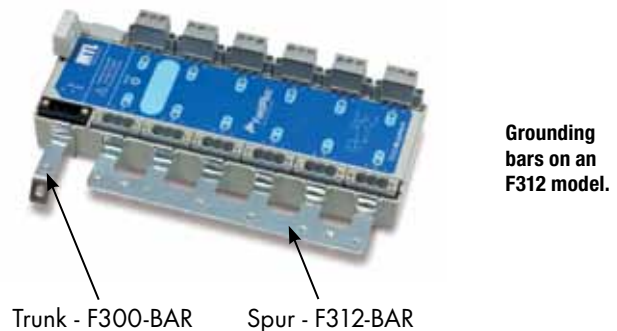
1.25V maximum

## PHYSICAL NETWORK

IEC 61158-2

Foundation™ fieldbus H1

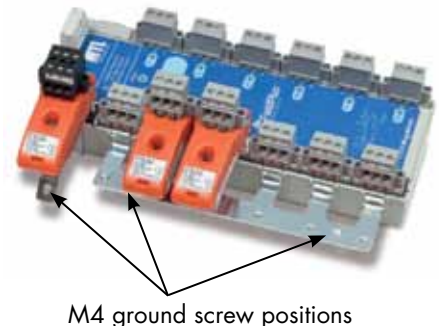
Profibus PA



Trunk - F300-BAR

Spur - F312-BAR

FS32 modules fitted to trunk and two spurs.



M4 ground screw positions

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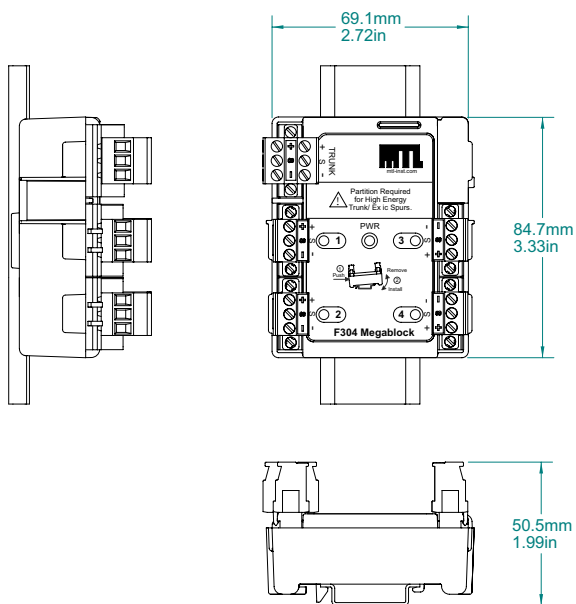
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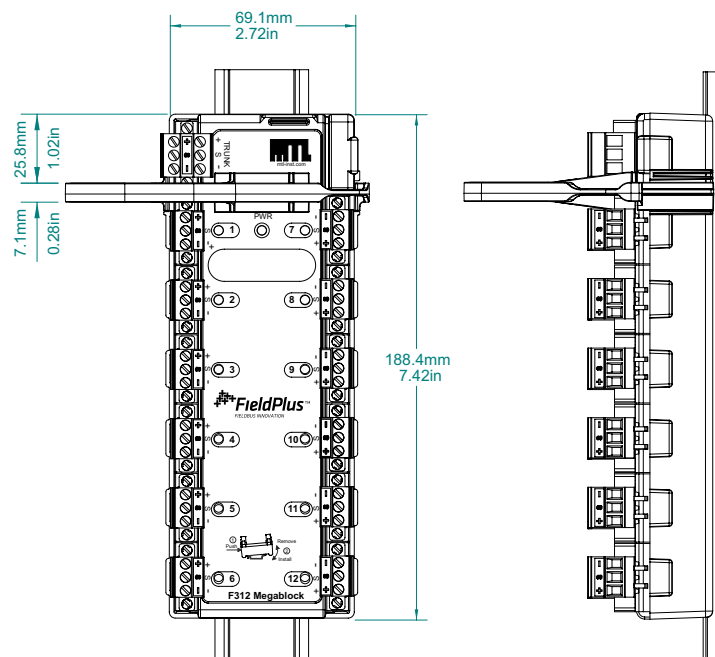
EPS F300 Rev5 260613

## CASE DIMENSIONS

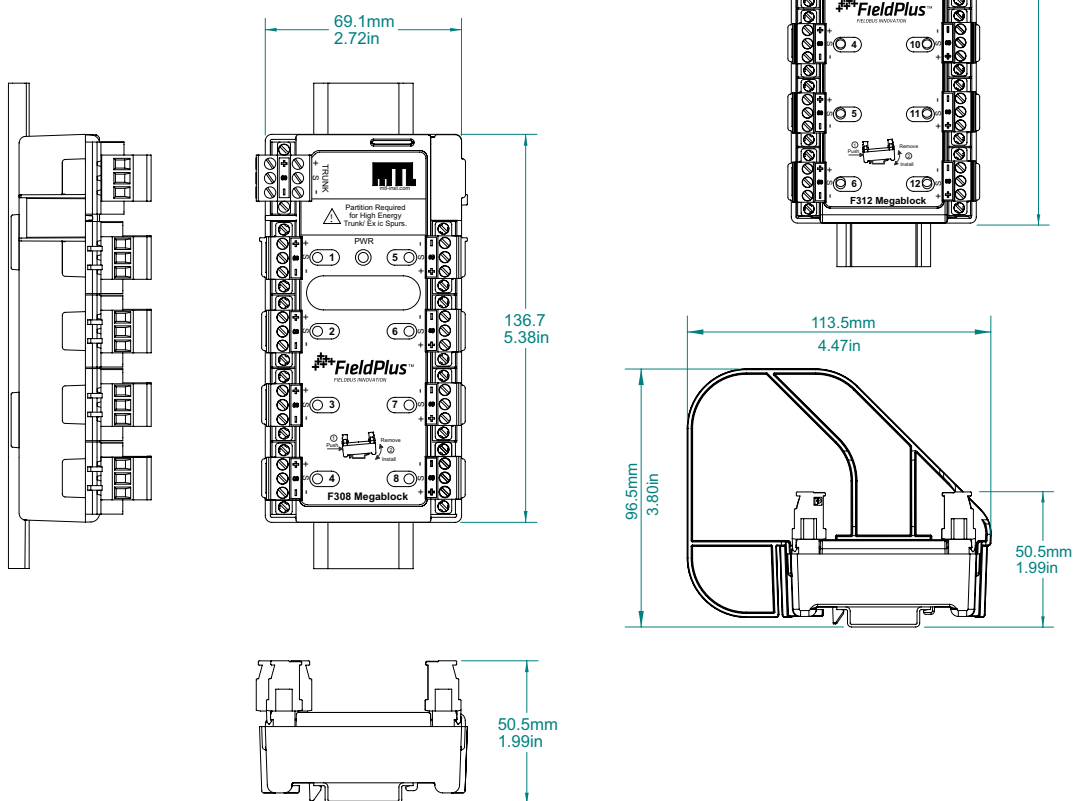
### 4-WAY - F304



### 12-WAY - F312 (showing trunk-spur partition)



### 8-WAY - F308



**Note: Different Megablock versions have minor variations in labelling.**

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**APPROVALS - for full certification information visit [www.mtl-inst.com/support/certificates/](http://www.mtl-inst.com/support/certificates/)**

Country	Europe		International		
Authority	ATEX (Category 3)		IECEX		
Standard	EN 60079-0 : 2009 EN 60079-11 : 2007 EN 60079-15 : 2010	EN 60079-0 : 2009 EN 60079-11 : 2007 EN 60079-27 : 2008	IEC60079-0 : 2004 IEC 60079-15 : 2005-03	IEC60079-0 : 2007-10 IEC 60079-11 : 2006 IEC 60079-15 : 2010	IEC60079-0 : 2007-10 IEC 60079-11 : 2006 IEC 60079-27 : 2008
Approved for	Ex II 3 G Ex nA [ic] IIC T4*	Ex II 3 G Ex ic IIC T4	Ex nA [nL] IIC T4	Ex nA [ic] IIC T4*	Ex ic IIC T4
Certificate no.	REL11ATEX1010X	REL11ATEX1010X	IECEX FMG 11.0017	IECEX FMG 11.0017	IECEX FMG 11.0017
Apparatus parameters (Trunk)	Non-arcing U <sub>i</sub> = 24V (IIC) U <sub>i</sub> = 32V (IIB, IIA) I <sub>t</sub> = 2A C <sub>i</sub> = 0, L <sub>i</sub> = 0	Energy Limited FISCO ic	Non-arcing U <sub>i</sub> = 24V (IIC) U <sub>i</sub> = 32V (IIB, IIA) I <sub>t</sub> = 2A C <sub>i</sub> = 0, L <sub>i</sub> = 0	Non-arcing U <sub>i</sub> = 24V (IIC) U <sub>i</sub> = 32V (IIB, IIA) I <sub>t</sub> = 2A C <sub>i</sub> = 0, L <sub>i</sub> = 0	Energy Limited FISCO ic
Cable parameters (Spur)	Energy limited U <sub>o</sub> = U <sub>o</sub> of power supply with voltage limiting to EN 60079-11 I <sub>o</sub> = 56mA C <sub>o</sub> = 80nF L <sub>o</sub> = 0.15mH (IIC) L <sub>o</sub> = 0.26mH (IIB, IIA)	Energy Limited FISCO ic	Energy limited U <sub>o</sub> = U <sub>o</sub> of power supply I <sub>o</sub> = 56mA C <sub>o</sub> = 80nF L <sub>o</sub> = 0.15mH (IIC) L <sub>o</sub> = 0.26mH (IIB, IIA)	Energy limited U <sub>o</sub> = U <sub>o</sub> of power supply with voltage limiting to IEC 60079-11 I <sub>o</sub> = 56mA C <sub>o</sub> = 80nF L <sub>o</sub> = 0.15mH (IIC) L <sub>o</sub> = 0.26mH (IIB, IIA)	Energy Limited FISCO ic

\* An **F300-A01** trunk spur partition must be installed for Ex nA [ic] applications. See **Accessories** below.

Country	USA		Canada	
Authority	FM	FM	FMc	FMc
Standard	3600 2011 3611 2004 3810 2005 ANSI/ISA 60079-0 2009 ANSI/ISA 60079-15 2009	3600 2011 3611 2004 3810 2005 ANSI/ISA 60079-0 2009 ANSI/ISA 60079-15 2009	CSA C22.2 No. 213-M1987 : 2013 CSA E60079-0: 2002 CSA E60079-15: 2002 CSA C22.2 No. 61010.1: 2004	CSA C22.2 No. 213-M1987 : 2013 CSA E60079-0: 2002 CSA E60079-15: 2002 CSA C22.2 No. 61010.1: 2004
Approved for	NI/2/ABCD/T4 Ta=70°C I/2/IIC/T4 Ta=70°C	NI/2/ABCD/T4 Ta=70°C I/2/IIC/T4 Ta=70°C	NI/2/ABCD/T4 Ta=70°C I/2/Ex nA [nL] IIC T4 Ta=70°C	NI/2/ABCD/T4 Ta=70°C Ex nA IIC T4 Ta=70°C
Certificate no.	3041271	3041271	3041271C	3041271C
Apparatus parameters (Trunk)	Non-arcing	Non-arcing V <sub>max</sub> = 24V Gas Groups A, B (IIC) V <sub>max</sub> = 32V Gas Groups C, D (IIB, IIA) I <sub>max</sub> = 2A V <sub>oc</sub> = V <sub>max</sub> power supply	Non-arcing V <sub>max</sub> = 24V Gas Groups A, B (IIC) V <sub>max</sub> = 32V Gas Groups C, D (IIB, IIA) I <sub>max</sub> = 2A V <sub>oc</sub> = V <sub>max</sub> power supply	Non-arcing
Cable parameters (Spur)	Non-arcing	Non-incendive field wiring I <sub>sc</sub> = 56mA C <sub>a</sub> = 80nF L <sub>a</sub> = 0.15mH Gas Groups A, B (IIC) L <sub>a</sub> = 0.26mH Gas Groups C, D (IIB, IIA)	Energy limited I <sub>sc</sub> = 56mA C <sub>a</sub> = 80nF L <sub>a</sub> = 0.15mH Gas Groups A, B (IIC) L <sub>a</sub> = 0.26mH Gas Groups C, D (IIB, IIA)	Non-arcing

## ORDERING INFORMATION

<b>F304</b>	4 way Megablock – screw terminals - including F97 terminator
<b>F308</b>	8 way Megablock – screw terminals - including F97 terminator
<b>F312</b>	12 way Megablock – screw terminals - including F97 terminator
<b>F304-PC</b>	4 way Megablock – spring-clamp terminals - including F97 terminator
<b>F308-PC</b>	8 way Megablock – spring-clamp terminals - including F97 terminator
<b>F312-PC</b>	12 way Megablock – spring-clamp terminals - including F97 terminator

## ACCESSORIES

<b>F300-A01-5</b>	Trunk-spur partition – pack of 5
<b>FS32*</b>	Fieldbus Surge Protector
<b>F300-BAR-5</b>	Pack of 5 F300 trunk bars
<b>F304-BAR-10</b>	Pack of 10 F304 spur bars (two F304-BARs required for each F304)
<b>F308-BAR-10</b>	Pack of 10 F308 spur bars (two F308-BARs required for each F308)
<b>F312-BAR-10</b>	Pack of 10 F312 spur bars (two F312-BARs required for each F312)

\* See datasheet on MTL web site for full technical specification

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