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Fieldbus modules

FD67 Series

Input, output and analog modules with IP67 ingress protection

Reduced cabling and installation costs
256 I/O per node
Single channel diagnostics
IP67 Ingress protection
Fully configurable I/O points
Compact, robust construction

Technical data

Fieldbus nodes, input and output modules

Operating temperature
32°F to 122°F (+0°C to +50°C)

Storage temperature
-4°F to 167°F (-20°C to +75°C)
Consult our Technical Service for use below 35° (+2°C).

Electromagnetic compatibility
EN 50081, EN 50082

Voltage tolerance
IEC 60664-1

Isolation resistance
IEC 60512-2

Conductivity
5 m

Vibration protection
EN60068-2-6 0.5 oz (15g)

Shock protection
EN60068-2-27 1.76 oz/11ms (50g/11ms)

Degree of protection
IP 67 to EN 60629

Materials

Housing: PBT 30% Glass fiber (UL94, V0)
M12 Contact carrier: SPS (UL94 V0)
7/8" Contact carrier - TPE PA 6.6 (UL94 V2)
Contact: CuZn, nickel undercoated and gold plated
M12 O-ring: Viton
7/8" O-ring: NBR
Light comb and light ring: PC (UL94 V0)

DeviceNet™

Options selector

FD67★★★/★★★/★★/★★

Function	Substitute
Profibus node	NDP
Devicenet node	NDN
Input module	DI
Output module	DO
Output / input module	DIO
Analog input current	AIC
Analog input voltage	AIV
Analog output current	AOC
Analog output voltage	AOV
Power distribution	PD

Connection	Substitute
M12	M12
M8	M08
D-sub connector	DSC

Channel	Substitute
4	04
8	08
16	16

Power connection	Substitute
No external power	00
7/8"	78
M12	12

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Fieldbus modules

FD67 Series

Input, output and analog modules
with IP67 ingress protection

	Description	Model
	**Fieldbus nodes**	
	Profibus-DP	FD67NDPM127804
	Devicenet	FD67NDNM127804
	**Input modules**	
	16 Inputs (8 x M12)	FD67DIM120016
	8 Inputs (4 x M12)	FD67DIM120008
	8 Inputs (8 x M8)	FD67DIM080008
	**Output / input modules**	
	16 Outputs / inputs (8 x M12)	FD67DIOM120016
	8 Outputs / inputs (4 x M12)	FD67DIOM120008
	8 Outputs / inputs (8 x M8)	FD67DIOM080008
	16 Outputs / inputs (8 x M12) with external power connection	FD67DIOM121216
	**External power supply module**	FD67PDM127804
	**Analog input modules**	
	Analog input – current (4 x M12)	FD67AICM120004
	Analog input – voltage (4 x M12)	FD67AIVM120004
	**Analog output modules**	
	Analog output – current (4 x M12)	FD67AOCM120004
	Analog output – current (4 x M12)	FD67AOVM120004
	**Output module**	
	Multipole driver (16 outputs)	FD67DODSC0016

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Fieldbus node

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
Profibus-DP	FD67NDPM127804
Devicenet	FD67NDNM127804

Profibus		
Supported Baud rates	9.6 / 19.2 / 45.45 / 93.75 / 187.5 / 500 / 1500 / 3000 / 6000 / 12000 kBaud	
Protocol	Profibus DP according to IEC 61158	
Operating modes	Poll / change of state / cycle	
Vendor I.D	064D hex	
Profibus address	0 to 99 via BCD-Rotary switches	
DeviceNet		
Supported Baud rates	125 / 250 / 500 kBit/sec	
Protocol	DeviceNet in accordance with ODVA Specification	
Operating modes	Poll / Change of State / Cycle	
Vendor-ID	640Dez	
DeviceNet address	0 to 63 via BCD Rotary switches	
Max. number output bytes	70	
Max. number input bytes	210 (including diagnostics)	
Max. explicit message size	210	
Technical data		
Operating voltage	11.0 V to 30.2 V DC	
Power input	~ 70 mA	
Sensor supply		
Max. current	4 A per slot	
Over voltage protection	Yes – Suppression diode	
Overload / short circuit protection	Electronic short circuit detection. Tripping time <10 ms	
Polarity protection		
Module electronics	Yes	
Sensors	Yes	
Actuators	Yes	
Actuator supply		
Current rating	4 A per line	
Max. total current	9 A	
Over voltage protection	Suppression diode	
Overload / short circuit protection	Electronic short circuit detection. Tripping time <10 ms	
Connections		
Power	7/8"-5pin	
DeviceNet	M12- (A-coded) 5 pin	
Profibus	M12- (B-coded) 5 pin	
System connection	M12- (A-coded) 6 pin	
Design information		
Weight	15.8 oz (450 g)	
Torques	M12 Connector	4.4 in lbs (0.5 Nm)
	M4 Fixing screw	17.7 in lbs (2 Nm)
	M3 Fixing screw	10.6 in lbs (1.2 Nm)

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8 x M12 modules

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
16 Inputs (8 x M12)	FD67DIM120016
16 Outputs / inputs (8 x M12)	FD67DIOM120016

Technical data			
Max. number of inputs	16		
Max. number of outputs	16		
Operating voltage	24V DC ± 25%		
Power input	~ 50 mA		
Sensor supply			
Max. current	Max. 200 mA per M12 connection		
Overload / short circuit protection	Multifuse (For all M12 connections)	<= 100 mA	Automatic restart
		> 100 mA	Reset necessary
	Time lag 1 s at 1k >= 1 A and 23°C ambient temperature		
Reverse polarity protection			
Module electronics	Yes		
Sensors	Yes		
Actuators	Yes		
Outputs			
Max. current	0.5 A per channel		
Max. total current	4 A		
Over voltage protection	Yes (Varistor)		
Line length	0.75 mm²	Max. 33 ft (10 m)	
	0.34 mm²	Max. 16 ft (5 m)	
Cross section	Max. 1.5 mm²		
Signal delay	10 ms		
Max. switching frequency with resistive load	50 Hz		
Max. switching frequency with inductive load	5 Hz		
Max. lamp load	10 W		
Overload / short circuit protection	Short circuit detection tripping time <10 ms		
Inputs			
Input characteristic	IEC 1131-2. Typ 2		
Input filter	~ 1 ms		
Signal delay	10 ms		
Over voltage protection	Yes (Varistor)		
Connections			
System connection	M12 (A-coded) 6 pin		
Input / output connections	8 x M12 (A-coded) 5 pin		
Design information			
Weight	7.4 oz (210 g)		
Torques	M12 Connector	4.4 in lbs (0.5 Nm)	
	M4 Fixing screw	17.7 in lbs (2 Nm)	

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8 x M12 with external power connection

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
16 Outputs / inputs (8 x M12) with external power connection	FD67DIOM121216

Technical data			
Max. number of inputs	16		
Max. number of outputs	16		
Operating voltage	24V DC ± 25%		
Current consumption	~ 50 mA		
Sensor supply			
Max. current	Max. 200 mA per M12 socket		
Overload / short-circuit fuse	Multifuse (for each M12 socket)	<= 100 mA	Automatic restart
		> 100 mA	Reset required
	Tripping time 1 s at 1k >= 1 A and 23°C ambient temperature		
Reverse polarity protection			
Module electronics	Yes		
Sensors	Yes		
Actuators	Yes		
Outputs			
Rated current	1.6 A per channel		
Max. sum current	4 A		
Overvoltage protection	Yes (Varistor)		
Cable length	0.75 mm2	Max. 33 ft (10 m)	
	0.34 mm2	Max. 16 ft (5 m)	
Cable cross-section	Max. 1.5 mm2		
Signal delay	10 ms		
Max. switching frequency with resistive load	50 Hz		
Max. switching frequency with inductive load	5 Hz		
Max. lamp load	10 W		
Overload / short-circuit fuse	Electronic short-circuit detection, tripping time <10 ms		
Inputs			
Input characteristic	IEC 1131-2, type 2		
Input filter	~ 1 ms		
Signal delay	10 ms		
Overvoltage protection	Yes (Varistor)		
Connections			
System line	M12 connector (A-coded) 6-pole		
I/O lines	8 x M12 round plug connector (A-coded) 5-pole		
Design information			
Weight	7.4 oz (210 g)		
Torques	M12 round plug connector	4.4 in lbs (0.5 Nm)	
	M4 fastening screw	17.7 in lbs (2 Nm)	

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4 x M12 Power distribution module

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
External power supply module	FD67PDM127804

Technical data		
Number of outputs	4 – not switcheable (external actuator supply output)	
Operating voltage	24V DC ± 25%	
Current consumption	~ 30 mA	
Reverse polarity protection		
Module electronics	Yes	
Outputs	Yes	
Outputs		
Rated current	4 A per system line connection	
Max. sum current	9 A	
Overvoltage protection	Yes (suppressor diode)	
Cable length	0.5 mm2	Max. 16 ft (5 m)
Overload / short-circuit fuse	electronic short-circuit detection, tripping time <10 ms	
Connections		
Power supply line	7/8" connector 5-pole	
External actuator supply (output)	M12 connector (A-coded) 6-pole	
Design information		
Weight	5.1 oz (145 g)	
Torques	M12 round plug connector	4.4 in lbs (0.5 Nm)
	M4 fastening screw	17.7 in lbs (2 Nm)

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4 x M12 Modules

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
8 Inputs (4 x M12)	FD67DIM120008
8 Outputs / inputs (4 x M12)	FD67DIOM120008

Technical data		
Max. number of inputs	8	
Max. number of outputs	8	
Operating voltage	24V DC ± 25%	
Power input	~ 50 mA	
Sensor supply		
Max. current	Max. 200 mA per M12 connection	
Overload / short circuit protection	Multifuse (For all M12 connections)	<= 100 mA Automatic restart
		> 100 mA Reset necessary
	Time lag 1 s at 1k >= 1 A and 23°C ambient temperature	
Polarity protection		
Module electronics	Yes	
Sensors	Yes	
Actuators	Yes	
Outputs		
Max. current	0.5 A per channel	
Max. total current	4 A	
Under voltage protection	Yes (Varistor)	
Line length	0.75 mm2	Max. 33 ft (10 m)
	0.34 mm2	Max. 16 ft (5 m)
Cross section	Max. 1.5 mm2	
Signal delay	10 ms	
Max. switching frequency with resistive load	50 Hz	
Max. switching frequency with inductive load	5 Hz	
Max. lamp load	10 W	
Overload / short circuit protection	Short circuit detection time lag <10 ms	
Inputs		
Input characteristic	IEC 1131-2, Typ 2	
Input filter	~ 1 ms	
Signal delay	7 ms	
Under voltage protection	Yes (Varistor)	
Connections		
System connection	M12- (A-coded) 6 pin	
Input / output connections	4 x M12- (A- coded) 5 pin	
Design information		
Weight	5.1 oz (145 g)	
Torques	M12 Connector	4.4 in lbs (0.5 Nm)
	M4 Fixing screw	17.7 in lbs (2 Nm)

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8 x M8 Modules

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
8 Inputs (8 x M8)	FD67DIM080008
8 Outputs / inputs (8 x M8)	FD67DIOM080008

Technical data		
Max. number of inputs	8	
Max. number of outputs	8	
Operating voltage	24V DC ± 25%	
Power input	~ 30 mA	
Sensor supply		
Max. current	Max. 200 mA per M12 connection	
Overload / short circuit protection	Multifuse (For all M8 connections)	
	Time lag 1 s at 1k >= 1 A and 23°C ambient temperature	
Polarity protection		
Module electronics	Yes	
Sensors	Yes	
Actuators	Yes	
Outputs		
Current	0.5 A per channel	
Max. current total	4 A	
Over voltage protection	Yes (Varistor)	
Line length	0.75 mm2	Max. 33 ft (10 m)
	0.34 mm2	Max. 16 ft (5 m)
Cross section	Max. 1.5 mm2	
Signal delay	10 ms	
Max. switching frequency with resistive load	50 Hz	
Max. switching frequency with inductive load	5 Hz	
Max. lamp load	10 W	
Overload / short circuit protection	Short circuit protection tripping time <10 ms	
Inputs		
Input characteristic	IEC 1131-2, Typ 2	
Input filter	~ 1 ms	
Signal delay	7 ms	
Over voltage protection	Yes (Varistor)	
Connections		
System connection	M12- (A-coded) 6 pin	
Input / output connections	8 x M8- 3 pin	
Design information		
Weight	5.8 oz (165 g)	
Torques	M8 Connector	4.4 in lbs (0.5 Nm)
	M4 Fixing screws	17.7 in lbs (2 Nm)

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4 x M12 Analog input modules

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
Analog input voltage (4 x M12)	FD67AIVM120004
Analog input current (4 x M12)	FD67AICM120004

Technical data		
Max. number of inputs	4	
Operating voltage	24V DC ± 25%	
Power input	~ 50 mA	
Sensor supply		
Max. current	Max. 200 mA per M12 connection	
Overload / short circuit protection	Multifuse (For all M12 connections)	<= 100 mA Automatic restart
		> 100 mA Reset necessary
	Time lag 1 s at 1k >= 1 A and 23°C ambient temperature	
Polarity protection		
Module electronics	Yes	
Analog inputs	No	
Inputs	**Voltage**	**Current**
Conversion time	~ 2 ms per channel	~ 2 ms per channel
Conversion type	successive approximation	successive approximation
Signal delay	2.5 + conversion time of the number of active channels	2.5 + conversion time of the number of active channels
PIN 2	Positive differential voltage at input	Positive differential current at input
PIN 4	Negative differential voltage at input	Negative differential current at input
Range	-10V to +10V (15 Bit with sign)	0 mA to 20 mA (15 Bit)
	0 to 10 V (15 Bit without sign)	4 mA to 20 mA (15 Bit)
Max. analog input	-12 V or +12 V	22 mA
Input impedance	~ 1 MOhm	~ 300 Ohm
Data format	16 Bit, Motorola or Intel	16 Bit, Motorola or Intel
Relative measuring error	< ± 0.3% from range limit	< ± 0.3% from range limit
Relative measuring error at 55 °C	< ± 0.5% from range limit	< ± 0.5% from range limit
Relative measuring error – EMC conditions	< ± 1% from range limit	< ± 1% from range limit
Calibration	Self-calibration	Self-calibration
Cable length	30 m max.	30 m max.
Connections		
System connection	M12 (A-coded) 6pin	
Input connections	4 x M12 (A-coded) 5pin	
Design information		
Weight	4.9 oz (140 g)	
Torques	M12 Connector	4.4 in lbs (0.5 Nm)
	M4 Fixing screw	17.7 in lbs (2 Nm)

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4 x M12 – Analog output modules

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
Analog output voltage (4 x M12)	FD67AOVM120004
Analog output current (4 x M12)	FD67AOCM120004

Node	Model
Analog output voltage (4 x M12)	FD67AOVM120004
Analog output current (4 x M12)	FD67AOCM120004

Technical data		
Max. number of outputs	4	
Operating voltage	24V DC ± 25%	
Power input	~ 75 mA	
Actuator supply		
Voltage supply on Pin 1	Max. 1.6 A per M12 connection (Total current for entire module max. 4 A)	
Overload / short circuit protection	Yes, with automatic restart after 1 second	
Max. Cable diameter	Max. 1.5 mm2	
Polarity protection		
Module electronics	Yes	
Analog outputs	No	
Outputs	**Voltage**	**Current**
Conversion time	~ 1 ms per channel	~ 1 ms per channel
Signal delay	~ 2 ms + conversion time of active channels	~ 2 ms + conversion time of active channels
PIN 4	Analog voltage output	Analog voltage??? output
PIN 2	Not used	Not used
Measuring range	-10 V to +10 V (11 bits with start bit)	0 to 20 mA (11 bits)
	0 to 10 V (11 bits)	4 to 20 mA (11 bits)
Max. analog output voltage	+10 V or -10V	20 mA
Data format	16 bits, Motorola or Intel	16 bits, Motorola or Intel
Relative error of output value	< ± 0.3% from range limit	< ± 0.3% from range limit
Relative error of output value at 55°C	< ± 0.5% from range limit	< ± 0.5% from range limit
Relative error of output value – EMC conditions	< ± 2% from range limit	< ± 0.5% from range limit
Load resistance	500 Ohm	500 Ohm
Max. capacitive load	1 µF	1 µF
Damping period	Max. resistive load	Max. resistive load
	Max. capacitive load	Max. capacitive load
Nonlinearity	< ± 0.3% from range limit	< ± 0.3% from range limit
Output ripple	< ± 0.3% from range limit	< ± 0.3% from range limit
Cable length	30 m max.	30 m max.
Design information		
Weight	4.9 oz (140 g)	
Torques	M12 Connector 4.4 in lbs (0.5 Nm)	
	M4 Fixing screws 17.7 in lbs (2 Nm)	
Connections		
System connection	M12- (A-coded) 6 pin	
Input / output connections	4 x M12- (A-coded) 5 pin	

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1 x D-sub connector

FD67 Series

Input, output and analog modules
with IP67 ingress protection

Node	Model
Multipole driver (16 outputs)	FD67D0DSC0016

Technical data	
Number of outputs	16
Operating voltage	24V DC ± 25%
Power input	~ 50 mA
Polarity protection	
Module electronics	Yes
Actuators	Yes
Outputs	
Rated current	60 mA per channel
Overvoltage protection	Yes (Zener diode)
Cable length	Max. 4.4 in lbs (0.5 m) (pre-wired)
Cable cross-section	Max. 0.25 mm2
Signal delay	10 ms
Max. switching frequency at resistive load	50 Hz
Max. switching frequency at inductive load	5 Hz
Overload / short-circuit fuse	Electronic short-circuit detection, tripping time <1 ms
Line break	Detection by "Sens" wire
Design information	
Weight	5.8 oz (165 g)
Torque – M4 fastening screw	17.7 in lbs (2 Nm)
Connections	
System connection	M12- (A-coded) 6 pin
Input / output connections	Customized and pre-wired

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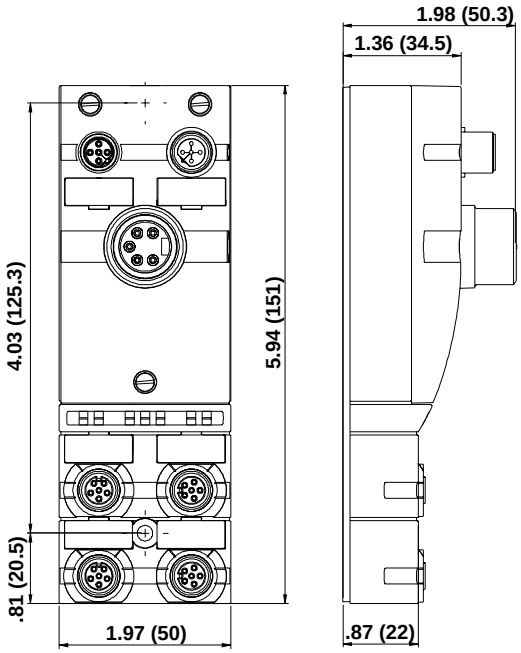
Fieldbus modules dimensions

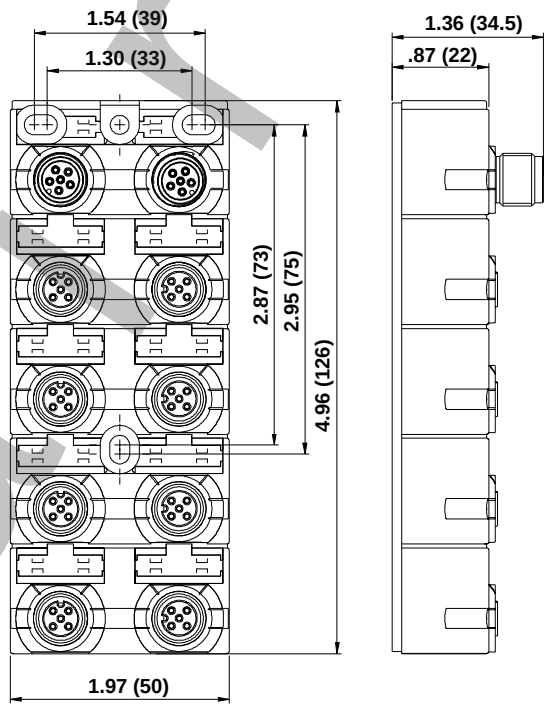
FD67 Series

Input, output and analog modules
with IP67 ingress protection

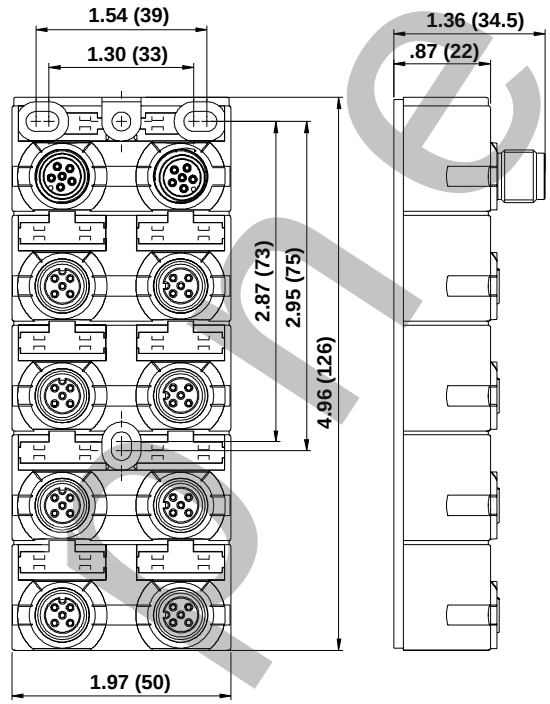
Fieldbus node



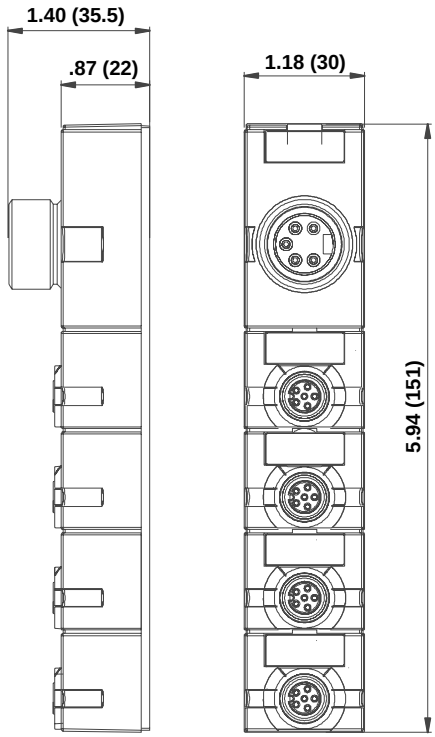
8 x M12 Modules



8 x M12 with external power connection



4 x M12 Power distribution module



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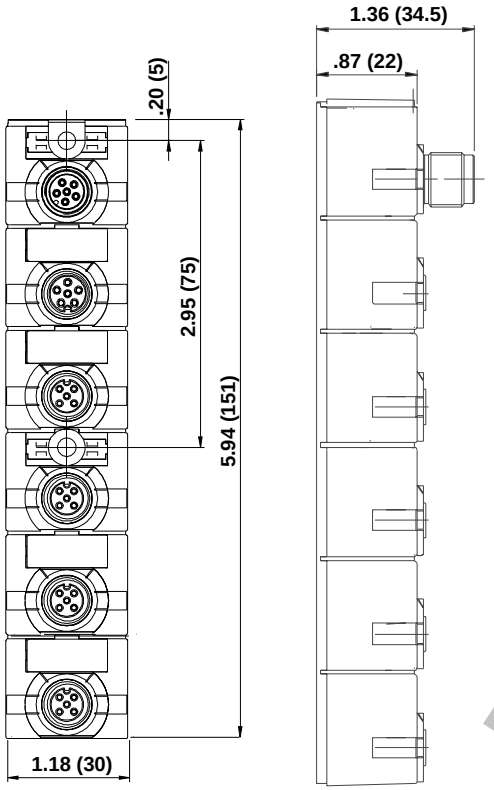
Fieldbus modules dimensions

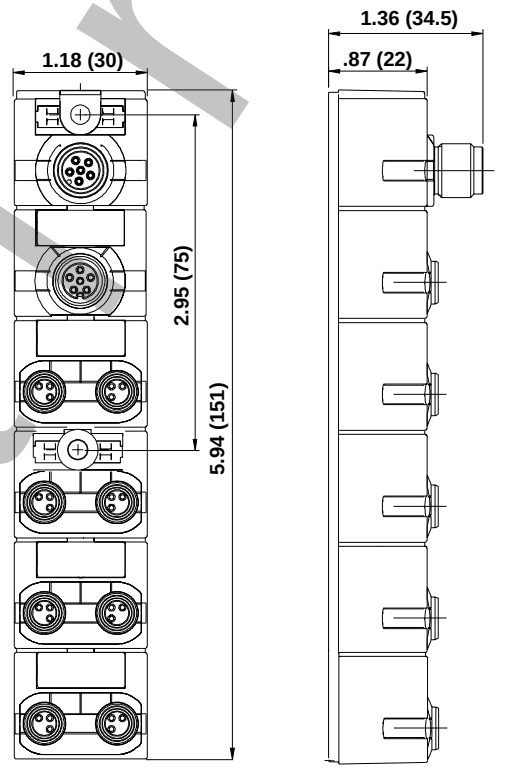
FD67 Series

Input, output and analog modules
with IP67 ingress protection

4 x M12 Modules

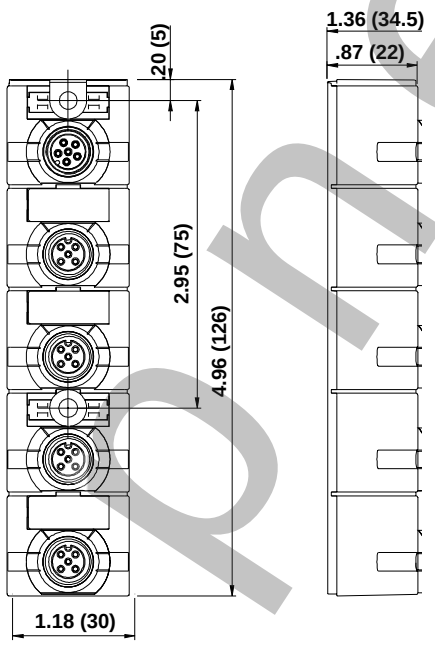


8 x M8 Modules

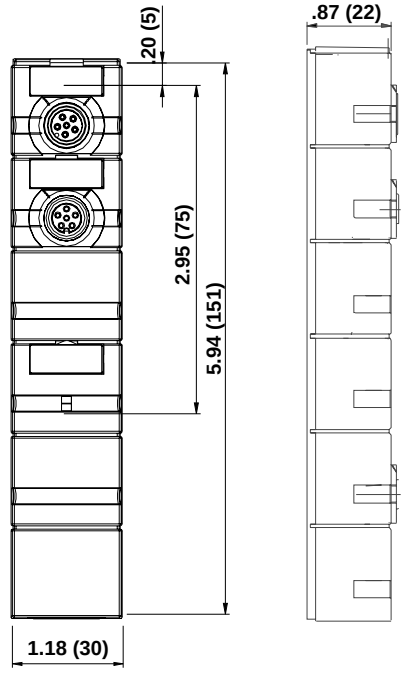


4 x M12 – Analog input modules

4 x M12 – Analog output modules



1 x D-sub connector



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Fieldbus modules

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Input, output and analog modules
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Accessories

Blanking plug		Label kit	
			
		20 x clip labels	FD67-LAB0000000
M12	FD67-BLKM120000		
M8	FD67-BLKM080000		

Options selector – cables and connectors

FD67★★★ ★★★ ★★ ★★

Function	Substitute
Comms	1
Wireable	2
To module	3
To module shielded	4
Sub bus comms.	5
Fieldbus power	6
Profibus	7
DeviceNet	8

Material	Substitute
PUR	U
PVC	V
Solid connection	J
No cable	0

Connector 1	Substitute
M12 Male	1
M8 Male	2
P8 (8mm snap In)	3
DIN A	4
DIN B	5
DIN C	6
Open	7
M12 Female	8
M8 Female	9
7/8" Male	A
M12 Profibus male	P
M12 Devicenet male	D
M12 Profibus female	G
M12 Devicenet female	H
Profibus termination	K
Devicenet termination	L
Sub bus termination	N
7/8" Female	R
Blank end	M

Pins	Substitute
3	3
4	4
5	5
6	6

Cable	Substitute
Straight	S
90°	A
Open end	0

Cable length	Substitute
0	0
1 ft (0.3m)	1
2 ft (0.6m)	2
3 ft (1.0m)	3
5 ft (1.5m)	4
6.5 ft (2.0m)	5
8 ft (2.5m)	6
10 ft (3.0m)	7
11.5 ft (3.5m)	8
13 ft (4.0m)	9
15 ft (4.5m)	A
16 ft (5.0m)	B
33 ft (10m)	F

No. of connections	Substitute
0	0
1	1
2	2

Cable	Substitute
Straight	S
90°	A
Open end	0

Pins	Substitute
3	3
4	4
5	5
6	6

Connector 2	Substitute
M12 Male	1
M8 Male	2
P8 (8mm snap In)	3
DIN A	4
DIN B	5
DIN C	6
Open	7
M12 Female	8
M8 Female	9
7/8" Male	A
M12 Profibus male	P
M12 Devicenet male	D
M12 Profibus female	G
M12 Devicenet female	H
Profibus termination	K
Devicenet termination	L
Sub bus termination	N
7/8" Female	R
Blank end	M

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