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Contents

5 - IP 67 splitter boxes

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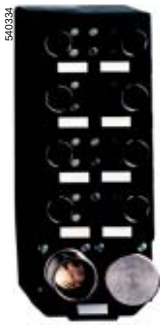
IP 67 I/O splitter boxes and modules

Splitter box and module type	Passive splitter boxes	Monobloc I/O splitter boxes and modules
	Telefast, ABE9 splitter boxes	Advantys, FTB splitter boxes
		
Fieldbus type	–	CANopen DeviceNet Profibus-DP INTERBUS
Number of inputs/outputs	8 I/O, 16 I/O	16 I, 8 I + 8 O, 12 I + 4 O, 16 I/O, 8 I + 8 I/O
Type of signal	Digital	
Functions	Connection of 1 to 16 sensors/actuators	
Type of input/output connectors	M12	
Housing type	Plastic	Plastic and metal
Module type	ABE 9	FTB 1
Pages	5/7	5/26

	Modules TSX E●F	Modules on AS-Interface cabling system			Modular I/O splitter boxes Advantys, FTM splitter boxes
					
	Fipio	AS-Interface			CANopen DeviceNet Profibus-DP
	8 I, 16 I, 8 I/O and 8 O	4 I or 2 I 4 O or 2 O	4 I	4 I or 2 I 4 O or 2 O	8 I, 16 I, 8 I/O and 16 I/O, digital 4 I or 4 O, analogue
					Digital and analogue
		Connection of 1 to 8 sensors/actuators			Connection of 1 to 256 sensors/actuators per bus module
		M8	M12	M8	M8 and M12
	Plastic				
	TSX E●F	**ASI ME● + ASI B●**	**ASI MMO●**	**XZ S●A**	**FTM 1▲**
	Please refer to our “Premium automation platform” catalogue	Please refer to our “AS-Interface cabling system” catalogue			5/46 ▲ Available 1st half 2004

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IP 67 passive splitter boxes
Telefast®, ABE9 splitter boxes

Presentation

ABE9 passive splitter boxes for M12 connectors make it possible to eliminate long and difficult cabling operations. Due their modularity and their dimensions, they are the ideal solution for a wide variety of customer applications.
Connection to the processing unit can either be made by connector or by multicore cable of different lengths.
IP 67 protection allows these products to be used within processes or machines in harsh environments (splashing water, oil, dust, etc.).
The splitter boxes, available in 4 or 8 channel versions, allow connection of up to 16 signals maximum, depending on the version (2 per channel).

The characteristics of splitter boxes ABE 9C12 are as follows:
- Connection of sensors and actuators using M12, 5-pin connectors.
- Modularity: 4 or 8 channels.
- Fixing system and connection to the processing unit conforming to CNOMO specifications:
  - fixing centres,
  - M23, 19-pin connector, enabling the use of pre-formed cables in order to reduce installation time and the risk of error,
  - multicore cable, 5 or 10 metres long. The splitter box comprises a connection cover fitted with plug-in terminals, which provides considerable flexibility for:
    - the replacement of damaged parts,
    - modification of cable length.

It is also possible to differentiate the commons by having separate sensor and actuator power supplies, which enables the Emergency stop function to be managed by switching off only the actuators.

The use of a Y-connector allows 2 signals to be connected to the same M12 channel on the splitter box.
Example: splitter box ABE 9C1281 (8 channels) enables the connection of 16 signals to the processing unit.

The Y-connector is available in 2 versions:
- M12-M12 for connection of two M12 connectors to a single M12 channel on the splitter box,
- M8-M12 for connection of two M8 connectors to a single M12 channel on the splitter box.

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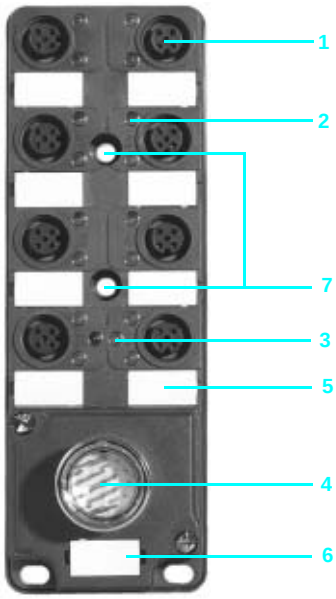
IP 67 passive splitter boxes
Telefast®, ABE9 splitter boxes



Description

Passive splitter boxes ABE 9C12●●C23 have the following on the front face:

1 Four or eight M12 female connectors (depending on model) for connection of sensors and actuators (2 channels per connector).

2 Eight or sixteen channel status indicator lights (depending on model).

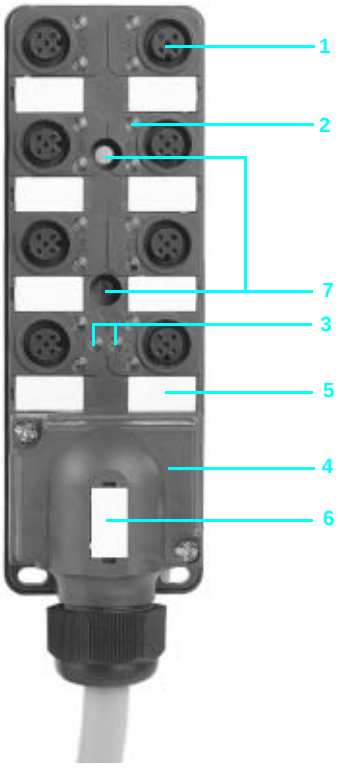
3 One "Power on" indicator light on the splitter box (depending on model).

4 One M23, 19-pin male connector.

5 Four or eight channel marker labels.

6 One splitter box marker label.

7 Splitter box fixing holes.



Passive splitter boxes ABE 9C12●●L●● have the following on the front face:

1 Four or eight M12 female connectors (depending on model) for connection of sensors and actuators (2 channels per connector).

2 Eight or sixteen channel status indicator lights (depending on model).

3 Two "Power on" indicator lights on the splitter box (depending on model).

4 One connection cover fitted with plug-in terminals.

5 Four or eight channel marker labels.

6 One splitter box marker label.

7 Splitter box fixing holes.

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IP 67 passive splitter boxes
Telefast®, ABE9 splitter boxes

Splitter box type			ABE 9C12●0C23	ABE 9C12●1C23	ABE 9C12●0L●●	ABE 9C12●1L●●
Environmental characteristics						
Product certifications			cULus			
Temperature	Operation	°C	- 20…+ 80			
	Storage	°C	- 40…+ 85			
Degree of protection	Conforming to IEC 529		IP 67			
Vibration resistance	Conforming to IEC 68-2-6, test Fc	Hz	10 ≤ f ≤ 57 (constant amplitude = 1.5 mm) 57 ≤ f ≤ 150 (constant acceleration = 0.20 gn)			
Shock resistance	Conforming to IEC/EN 68-2-2		30 gn, for 11 ms			
Insulation group	VDE 0110		Category 3			
Mounting			All positions			
Mechanical fixing			M4 screw fixing			
Channel characteristics						
Number of channels			4 (**ABE 9C1240C23**) 8 (**ABE 9C1280C23**)	4 (**ABE 9C1241C23**) 8 (**ABE 9C1281C23**)	4 (**ABE 9C1240L●●**) 8 (**ABE 9C1280L●●**)	4 (**ABE 9C1241L●●**) 8 (**ABE 9C1281L●●**)
Type of connection per channel			M12, 5-pin female connectors			
Nominal voltage		⎓ V	24			
Current per channel		A	4 maximum			
Contact resistance		mΩ	5			
Power supply status indication			–	Green LED	–	Green LED
Channel status indication			–	Yellow LED	–	Yellow LED
Connection characteristics						
Type of connection			M23, 19-pin male connector		Multicore cable	
Total current in commons	1 mm² supply wire	A	16			
	0.75 mm² supply wire	A	12			
Separation of commons			With or without (by removing links BR1 and BR2, see connections page 5/9		With or without	

Substitution table

Previous range	New range
Splitter boxes with connection by M23 connector	
XZ LC1241C3	**ABE 9C1241C23**
XZ LC1240C3	**ABE 9C1240C23**
XZ LC1281C3	**ABE 9C1281C23**
XZ LC1280C3	**ABE 9C1280C23**
Splitter boxes with connection by cable	
XZ LC1241L5	**ABE 9C1241L05**
XZ LC1240L5	**ABE 9C1240L05**
XZ LC1241L10	**ABE 9C1241L10**
XZ LC1240L10	**ABE 9C1240L10**
XZ LC1281L5	**ABE 9C1281L05**
XZ LC1280L5	**ABE 9C1280L05**
XZ LC1281L10	**ABE 9C1281L10**
XZ LC1280L10	**ABE 9C1280L10**
Accessories	
XZ LG102	**FTX CM12B**
XZ LC1220C1	**FTX CY1212**

IP 67 passive splitter boxes
Telefast®, ABE9 splitter boxes

562511

ABE 9C124●C23

562421

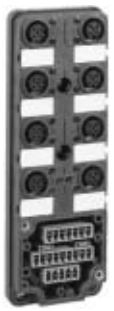
ABE 9C128●C23

562512

ABE 9C124●L●●

562422

ABE 9C128●L●●

108886

ABE 9C128●M

108887

ABE 9XCA1●●●

108768

FTX CY1208

References

Splitter boxes with connection by M23 connector

Number of channels	Connection by	LED indicator	Reference	Weight kg
4	4 x M12 female connectors	With	**ABE 9C1241C23**	0.080
		Without	**ABE 9C1240C23**	0.080
8	8 x M12 female connectors	With	**ABE 9C1281C23**	0.140
		Without	**ABE 9C1280C23**	0.140

Splitter boxes with connection by cable

Number of channels	Connection by	Length m	LED indicator	Reference	Weight kg
4	4 x M12 female connectors	5	With	**ABE 9C1241L05**	0.680
			Without	**ABE 9C1240L05**	0.680
		10	With	**ABE 9C1241L10**	1.700
			Without	**ABE 9C1240L10**	1.700
8	8 x M12 female connectors	5	With	**ABE 9C1281L05**	1.610
			Without	**ABE 9C1280L05**	1.610
		10	With	**ABE 9C1281L10**	3.060
			Without	**ABE 9C1280L10**	3.060

M12 type splitter boxes

Number of channels	For use with connector terminal	with cable	LED indicator	Reference	Weight kg
4	ABE 9CM12C	ABE 9XCA14●●	With	**ABE 9C1241M**	0.060
			Without	**ABE 9C1240M**	0.060
8	ABE 9CM12C	ABE 9XCA18●●	With	**ABE 9C1281M**	0.100
			Without	**ABE 9C1280M**	0.100

Accessories

Type	No. of chan-nels	For use with splitter box	Length m	Reference	Weight kg
Terminal block connector	–	ABE 9C124●M ABE 9C128●M	–	**ABE 9CM12C**	0.040
Connectors with cable	4	ABE 9C124●M	5	**ABE 9XCA1405**	1.060
			10	**ABE 9XCA1410**	2.080
	8	ABE 9C128●M	5	**ABE 9XCA1805**	1.510
			10	**ABE 9XCA1810**	2.240

Description	Composition	Reference	Weight kg
Sealing plugs	For M8 connector (lot of 10)	**FTX CM08B**	0.100
	For M12 connector (lot of 10)	**FTX CM12B**	0.100
Y-connectors	Connection of 2 x M8 connectors to M12 connector on splitter box	**FTX CY1208**	0.020
	Connection of 2 x M12 connectors to M12 connector on splitter box	**FTX CY1212**	0.030
Marker labels	Lot of 12	**ABE 9XLA10**	–

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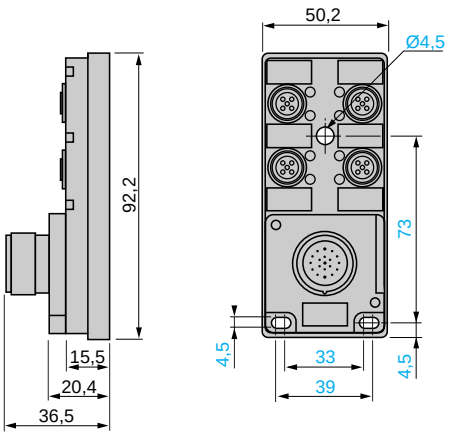
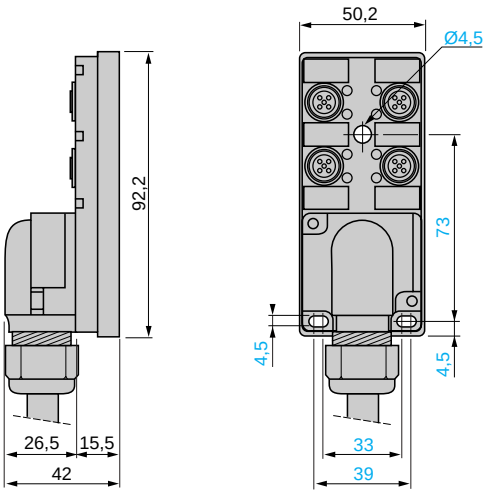
IP 67 passive splitter boxes
Telefast®, ABE9 splitter boxes

Dimensions

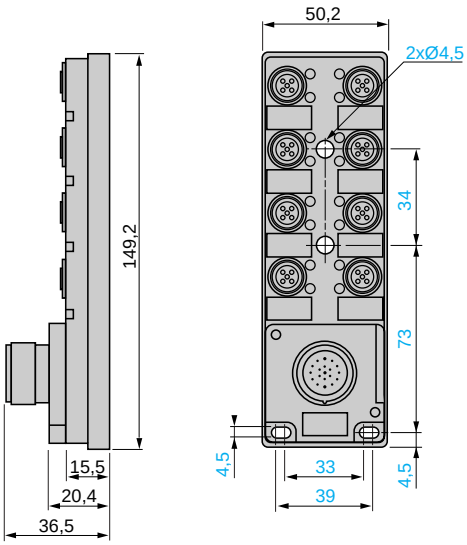
ABE 9C124●C23



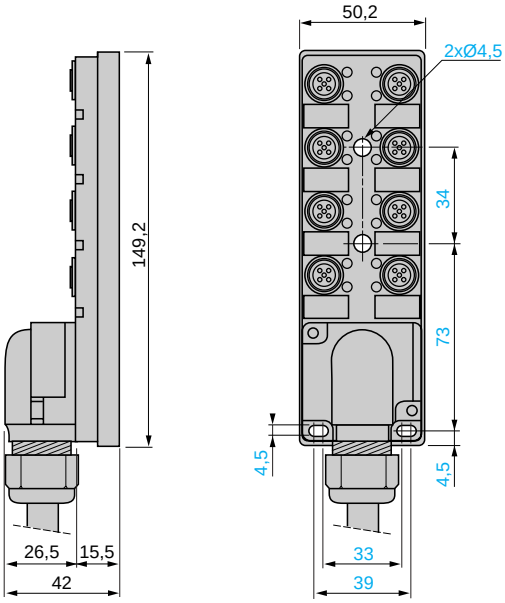
ABE 9C124●L●●



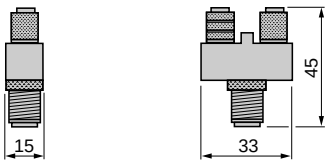
ABE 9C128●C23



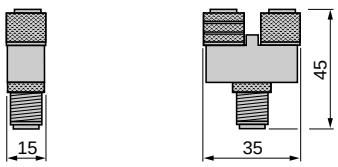
ABE 9C128●L●●



FTX CY1208

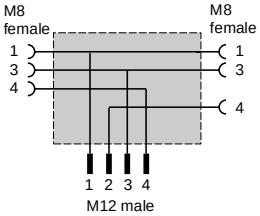


FTX CY1212

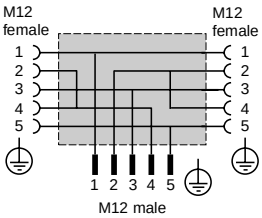


Y-connector connection

FTX CY1208



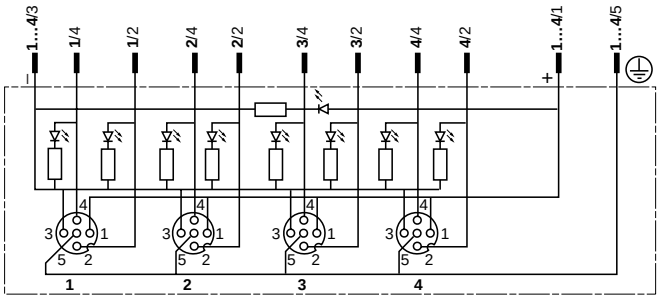
FTX CY1212



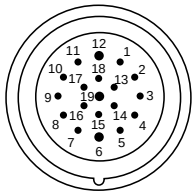
Presentation: page 5/4
Description: page 5/5
Characteristics: page 5/6
References: page 5/7
Connections: page 5/9

IP 67 passive splitter boxes
Telefast®, ABE9 splitter boxes

ABE 9C124●C23

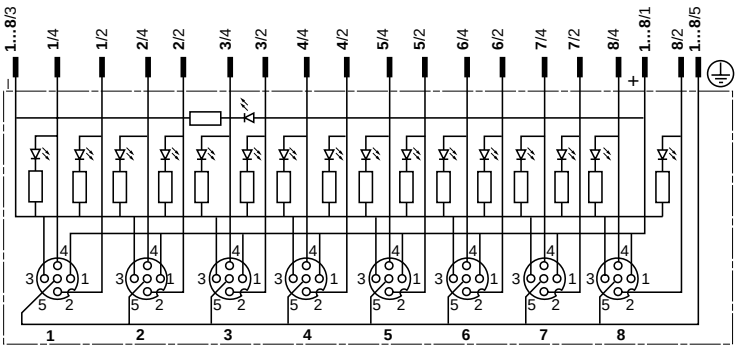


Item	Contact
1/4	15
1/2	7
2/4	5
2/2	4
3/4	16
3/2	8
4/4	3
4/2	14
1 and **3**/1	19
2 and **4**/1	19
1 and **3**/3	6
2 and **4**/3	6
1...**4**/5	12

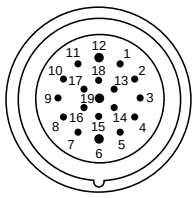


M23 connector

ABE 9C128●C23

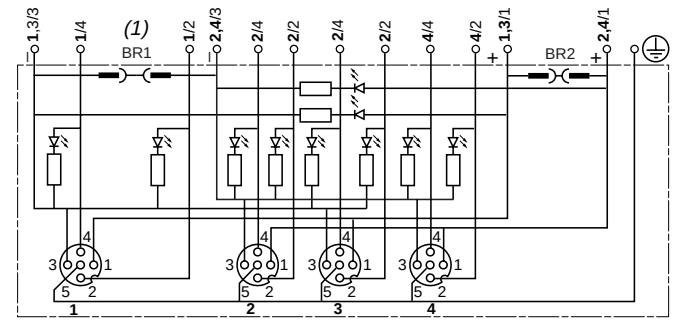


Item	Contact
1/4	15
1/2	7
2/4	5
2/2	4
3/4	16
3/2	8
4/4	3
4/2	14
5/4	17
5/2	9
6/4	2
6/2	13
7/4	11
7/2	10
8/4	1
8/2	18
1, **3**, **5** & **7**/1	19
2, **4**, **6** & **8**/1	19
1, **3**, **5** & **7**/3	6
2, **4**, **6** & **8**/3	6
1...**8**/5	12

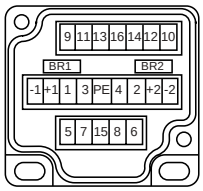


M23 connector

ABE 9C124●L●●

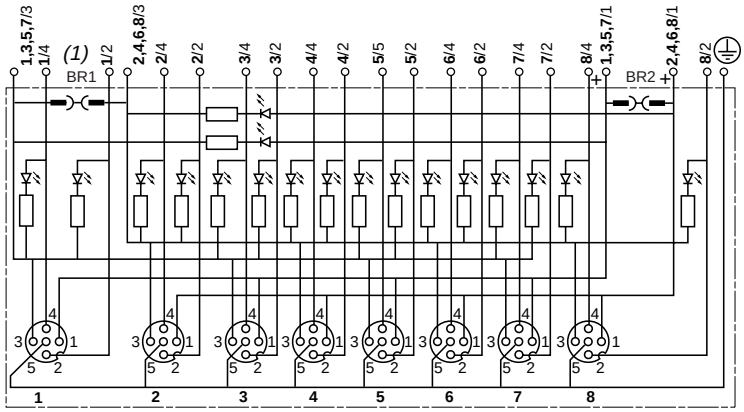


Item	Terminal	Wire
1/4	1	White
1/2	9	Grey/pink
2/4	2	Green
2/2	10	Red/blue
3/4	3	Yellow
3/2	11	White/green
4/4	4	Grey
4/2	12	Brown/green
1 and **3**/1	+ 1	Brown 1
2 and **4**/1	+ 2	Brown 2
1 and **3**/3	– 1	Blue 1
2 and **4**/3	– 2	Blue 2
1...**4**/5	PE	Green/yellow

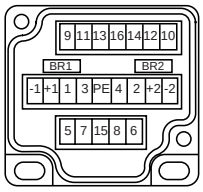


(1) Removable link.

ABE 9C128●L●●



Item	Terminal	Wire
1/4	1	White
1/2	9	Grey/pink
2/4	2	Green
2/2	10	Red/blue
3/4	3	Yellow
3/2	11	White/green
4/4	4	Grey
4/2	12	Brown/green
5/4	5	Pink
5/2	13	White/yellow
6/4	6	Red
6/2	14	Yellow/brown
7/4	7	Black
7/2	15	White/grey
8/4	8	Violet
8/2	16	Grey/brown
1, **3**, **5** & **7**/1	+ 1	Brown 1
2, **4**, **6** & **8**/1	+ 2	Brown 2
1, **3**, **5** & **7**/3	– 1	Blue 1
2, **4**, **6** & **8**/3	– 2	Blue 2
1...**8**/5	PE	Green/yellow



(1) Removable link.

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IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

Applications Industrial fieldbus type		CANopen	DeviceNet	
				
Degree of protection		IP 67	IP 67	
Modularity (number of channels)	8 I + 8 O (8 O + 8 diagnostic inputs)	●	●	–
	12 I + 4 O (4 I + 4 O + 8 diagnostic inputs)	●	●	–
	16 I (8 I + 8 diagnostic inputs)	●	●	●
	16 I/O (8 I/O + 8 diagnostic I/O)	●	●	●
	8 I + 8 I/O (8 I + 8 diagnostic I/O)	–	–	●
Inputs	**Voltage**	⎓ 24 V	⎓ 24 V	
	Conformity to IEC 1131-2	Type 2	Type 2	
Outputs	**Voltage**	⎓ 24 V	⎓ 24 V	
	Type	Transistor	Transistor	
	Current/output	1.6 A	1.6 A	
	Current/splitter box	8 A	8 A	
Connection		M12 connectors (5-pin)	M12 connectors (5-pin)	
Housing type		Plastic	Plastic	Metal
Diagnostics	**Per splitter box**	Bus and I/O undervoltage I/O short-circuit I/O supply	Bus and I/O undervoltage I/O short-circuit I/O supply	
	Per channel	I/O short-circuit Wire breakage fault Faulty sensors/actuators	I/O short-circuit Wire breakage fault Faulty sensors/actuators	
Module type		**FTB 1CN**	**FTB 1DN●●●P0**	**FTB 1DN●●●M0**
Pages		5/26	5/26	

PROFIBUS		INTERBUS
		
IP 67		IP 67
●	–	●
●	–	●
●	●	●
●	●	●
–	●	–
⎓ 24 V		⎓ 24 V
Type 2		Type 2
⎓ 24 V		⎓ 24 V
Transistor		Transistor
1.6 A		1.6 A
8 A		10 A
M12 connectors (5-pin)		M12 connectors (5-pin)
Plastic	Metal	Plastic
Bus and I/O undervoltage I/O short-circuit I/O supply		Bus and I/O undervoltage I/O short-circuit I/O supply
I/O short-circuit Wire breakage fault Faulty sensors/actuators		I/O short-circuit Wire breakage fault Faulty sensors/actuators
FTB 1DP●●●P0	**FTB 1DP●●●M0**	**FTB 1IB**
5/26		5/26

IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

Presentation

To meet the needs of machine manufacturers and users, automation system architectures are becoming decentralised, while offering performances comparable to those obtained with a centralised structure.
Advantys FTB IP 67 monobloc I/O splitter boxes enable sensors and actuators to be connected in distributed automation systems using pre-assembled cables, thus reducing wiring time and costs, whilst at the same time increasing the operational availability of the installation.

These IP 67 protected splitter boxes can also be used within processes or machines in harsh environments (splashing water, oil, dust, etc.). For difficult environments (welding shops etc.), a range of Advantys FTB splitter boxes with a metal housing is available.

Advantys FTB splitter boxes allow distributed connection of sensors and actuators on machines via a fieldbus. They communicate on different buses such as: CANopen, DeviceNet, Profibus-DP and INTERBUS.
Sensors and actuators are connected by means of standard M12 connectors.

Configuration and parametering of the Advantys FTB splitter boxes is carried out using configuration files (e.g.: .eds files for CANopen):
- either directly within the software workshop of the PLC used,
- or by using a SyCon type configurator.

Advantys FTB splitter boxes are available with different input (⎓ 24 V IEC type 2) and output (transistor ⎓ 24 V/1.6 A) configurations:
- Mixed 8 input and 8 output splitter boxes, allowing connection of either 8 sensors and 8 actuators or 8 actuators with integrated diagnostics function.
- Mixed 12 input and 4 output splitter boxes, allowing connection of either 12 sensors and 4 actuators or 4 sensors and 4 actuators with integrated diagnostics function.
- 16 input splitter boxes allowing connection of either 16 sensors or 8 sensors with integrated diagnostics function.
- Mixed 16 input or output splitter boxes, configurable per channel, allowing all possible combinations: 16 inputs, 15 inputs/1 output, 14 inputs/2 outputs, ..., 16 outputs.

Functions

Selection of signal type per channel

- Each M12, 5-pin connector on Advantys FTB splitter boxes allows the connection of 2 signals. Depending on the type of splitter box, these can be:
  - 1 sensor input signal,
  - 1 diagnostic input signal,
  - 1 actuator output signal.

Signal type, depending on splitter box selected:

	FTB	1●●16E	1●●08E08S	1●●12E04S	1●●16C	1D●08E08C
M12	Contact 4	Input	Output	0…3: Input 4…7: Output	Input Output	Input Output
	Contact 2	Input Diagnostic	Input Diagnostic	Input Diagnostic	Input Output Diagnostic	Input Diagnostic

Note: *either a normally open (N/O) or a normally closed (N/C) contact can be chosen for each input signal.*

IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

Diagnostics

Each Advantys FTB splitter box has one LED per channel to indicate the status of the channel and to enable fast and precise location of a fault. Fault monitoring diagnostics are indicated on the splitter box by LEDs and are fed back to the control system (PLC) via the bus.
There are 2 levels of diagnostics:
- diagnostics per channel,
- diagnostics per splitter box.

Diagnostics per channel

- **Sensor short-circuit**

A short-circuit or overload on contact 1 of the M12 female connector blows the self-resetting fuse. Each M12 connector is individually protected. A red LED indicates the fault on the corresponding M12 connector. This fault is signalled to the Master. Supply to the sensors is automatically restored after elimination of the fault.

- **Actuator short-circuit**

A short-circuit or overload of an output causes disconnection of this output. The fault is signalled to the Master. A red LED indicates the fault on the corresponding M12 connector. The output does not restart automatically. After having eliminated the cause of the fault, the channel must be reset by the PLC. This operation erases the short-circuit memory.

- **Actuator warning**

When the output is at state 0, the contact corresponding to the M12 female connector is checked for presence of 24 V voltage. If + 24 V is present, it means there is a “short-circuit”. A red LED indicates the fault on the corresponding M12 connector. The fault is signalled to the Master.

Diagnostics per splitter box

- **Sensor/actuator supply status.**
- **“Undervoltage” fault on the I/O supply.**
- **Sensor short-circuit.**
- **Actuator short-circuit.**

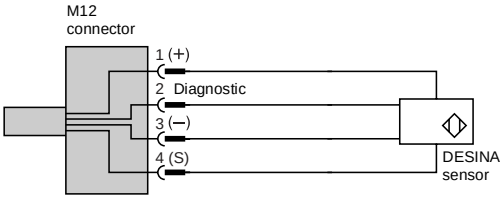
Use of the sensor/actuator diagnostics function

Advantys FTB splitter boxes allow the use of sensors and actuators incorporating an integrated diagnostics function (DESINA type). Configuring contact 2 of each M12 connector as a diagnostic input enables detection of external faults associated with the sensors or actuators.
This information enables the following faults to be detected:
- damage to the detection surface,
- faulty electronics,
- no load.

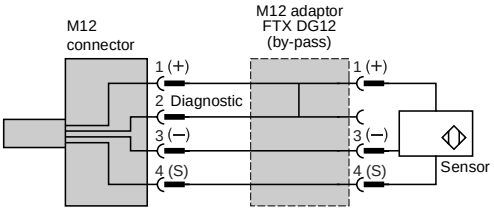
Selection of either the sensor input or diagnostic input function on contact 2 is made channel by channel, by entering parameters, when configuring the splitter box.
Fault indication by a red LED is possible for each channel configured as a diagnostic input (LEDs 10 to 17).

Example of connection of a sensor with integrated diagnostics function:
Using the M12 diagnostics adaptor accessory **FTX DG12**, it is possible to monitor breaks in wiring to sensors or actuators which do not have an integrated diagnostics function.

Example of connection of a sensor with integrated diagnostics function



Example of connection of a standard sensor with the diagnostics adaptor



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Characteristics: pages 5/24 and 5/25
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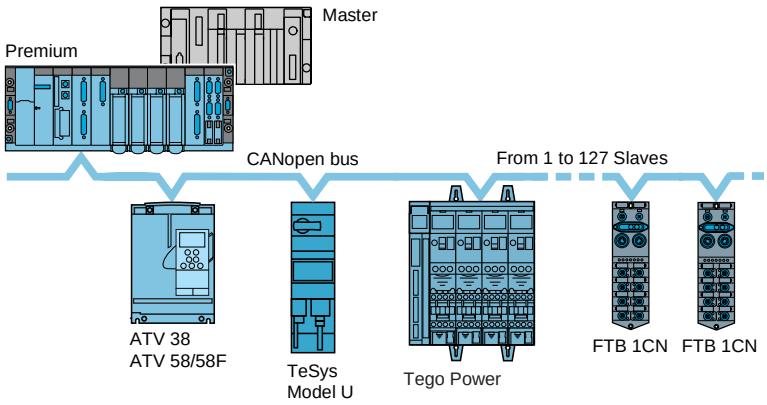
IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

CANopen and DeviceNet buses

Advantys FTB splitter boxes are of the monobloc type.
Each splitter box comprises one part for connection of sensors and actuators by means of M12 connectors, and one part for connection of splitter boxes on CANopen and DeviceNet fieldbuses.
These splitter boxes enable inputs/outputs to be located remotely, as close as possible to the equipment being controlled.

CANopen bus presentation



The CAN system, initially developed for real-time exchange of information in the automobile industry, is now being used more and more throughout industry. There are several fieldbuses based on CAN base layers and components.
The CANopen bus conforms to international standard ISO 11898, promoted by the “CAN in Automation” association (a grouping of manufacturers and users), and guarantees a high degree of openness and inter-operability due to its communication profiles and its standardised equipment.
The CANopen bus is now recognised, in Europe, as the reference standard for building industrial systems based on the CAN concept.
The CANopen bus is a Multimaster bus, based on the Master/Slave principle.
The physical link consists of a shielded twisted pair, to which up to a maximum of 127 Slaves can be connected by simple tap-off. The binary rate varies, depending on the length of the bus, from 1 M bits/s for 40 m to 50 K bits/s for 1000 m.
Each end of the bus must be fitted with a line terminator.

The CANopen bus is a set of profiles on CAN systems, possessing the following characteristics:
- Open bus system.
- Data exchanges in real-time without overloading the protocol.
- Modular design allowing modification of size.
- Interconnection and interchangeability of devices.
- Standardised configuration of networks.
- Access to all device parameters.
- Synchronisation and circulation of data from cyclic and/or event-controlled processes (short system response time).
- Exchanges possible with numerous international manufacturers.

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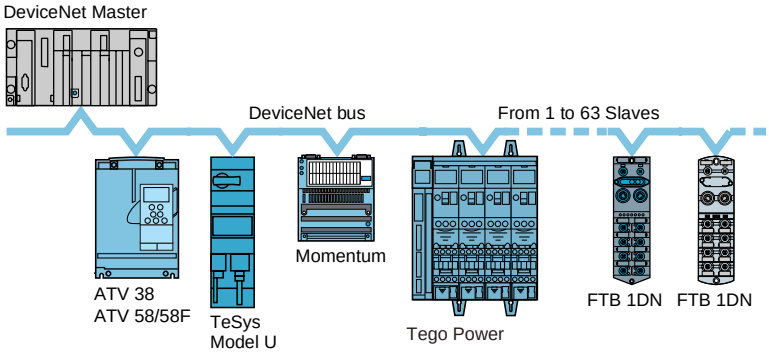
IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

CANopen and DeviceNet buses

DeviceNet bus presentation



The DeviceNet system is a sensor/actuator bus system of the open Low-End type, used in various industrial applications and, in particular, the automobile industry. It is based on CAN technology (OSI layers 1 and 2).
The DeviceNet bus is based on the Master/Slave principle.
The physical link consists of 2 shielded twisted pairs (2 wires for data, 2 wires for auxiliary supply to sensors), to which up to a maximum of 63 slaves can be connected. The binary rate varies, depending on the length of the bus, from 500 K bits/s for 100 m to 125 K bits/s for 500 m.
Each end of the bus must be fitted with a line terminator.

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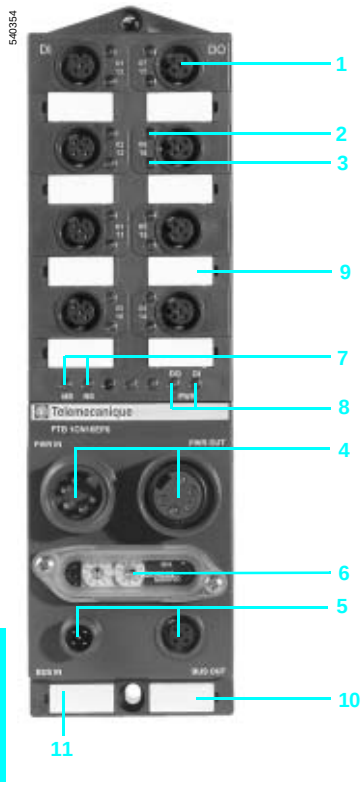
IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

CANopen and DeviceNet buses



Description

CANopen and DeviceNet monobloc I/O splitter boxes FTB 1CN and FTB 1DN have the following on the front face:

1 Eight M12 female connectors for connection of sensors and actuators (2 channels per connector).

2 Eight channel status indicator lights (00 to 07).

3 Eight channel status indicator lights (10 to 17) or channel diagnostic indicator lights (00 to 07) depending on the splitter box configuration.

4 Two 7/8 connectors for connecting the ⎓ 24 V sensor and actuator power supplies: male for PWR IN, female for PWR OUT.

5 One M12 male connector (bus IN) and one M12 female connector (bus OUT) for connection of the CANopen and DeviceNet buses.

6 Access to the address coding and speed selection wheels.

7 Two bus diagnostic LEDs.

8 Two ⎓ 24 V sensor and actuator supply status LEDs.

9 Eight channel marker labels.

10 Two splitter box marker labels.

11 Splitter box functional earth connection (beneath the label).

Configuration

CANopen bus configuration

A .eds file is assigned to each product, which contains all the important information relating to the product. An icon (.dib) is also available for installation in the system configurator.
Please refer to the configuration software documentation for the import of .eds files.
Following the CANopen system initialisation phase, all the Slaves signal their presence on the bus by means of a “Boot-Up” message. A setting-up configurator (e.g.: SyCon) can then start to read and register the CANopen bus and, on the basis of the data obtained, assign a corresponding .eds file to each Slave. Based on the .eds file data, the Master creates a peripheral image of all the Slaves detected by the PLC. The user can assign I/O bytes to logic addresses within the PLC.

■ Addressing

The addresses are configurable from 1 to 99 by means of 2 coding wheels (x 10 and x 1). A 3rd coding wheel enables the data transmission speed to be selected (position 0 = automatic speed recognition from 125 K bits/s to 1 M bits/s).

DeviceNet bus configuration

A .eds file is assigned to each product, which contains all the important information relating to the product. An icon (.dib for CANopen, .ico for DeviceNet) is also available for installation in the system configurator.
When the network is scanned, the identification data is compared with that of the Slaves present on the network and assigned accordingly. After the scanning phase, the scanner will have identified all the Slaves and saved information relating to data length and operating mode.
The DeviceNet bus Master establishes a peripheral image of all the devices detected on the DeviceNet bus and incorporates them according to their physical location in a Scan list. The user can then assign the Scan list, according to the peripheral image of the bus devices, to logic addresses in the PLC.

■ Addressing

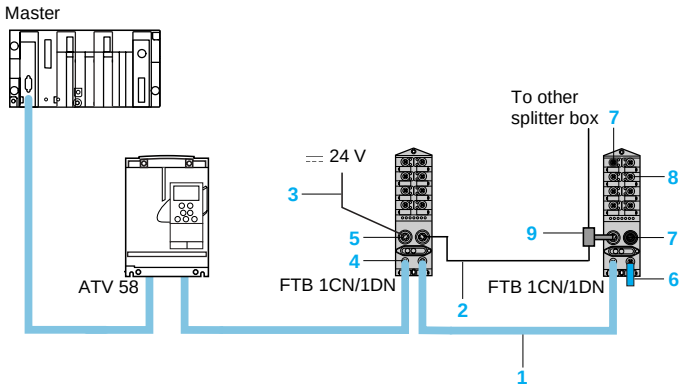
The addresses are configurable from 1 to 63 by means of 2 coding wheels (x 10 and x 1). A 3rd coding wheel enables the data transmission speed to be selected (3 speeds can be selected: 125, 250 and 500 K bits/s).

IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

CANopen and DeviceNet buses

Cabling system



Cabling accessories

CANopen and DeviceNet bus connection cables

Cables FTX CN32●● enable connection of splitter boxes FTB 1CN and FTB 1DN to CANopen and DeviceNet fieldbuses.

1 **FTX CN32●●**: cables fitted with 2 elbowed M12, 5-pin connectors, one at each end, for chaining the bus between two splitter boxes.

Sensor and actuator ⎓ 24 V power supply connection cables

Cables FTX DP2●●● enable connection of ⎓ 24 V power supplies to splitter boxes FTB 1CN and FTB 1DN. Two types of cable are available, in various lengths:

2 **FTX DP22●●**: cables fitted with two 7/8, 5-pin connectors, one at each end, for chaining ⎓ 24 V power supplies between two splitter boxes.

3 **FTX DP21●●**: cables fitted with a 7/8, 5-pin connector at one end, with the other end free for connection of ⎓ 24 V power supplies.

Connectors

4 **FTX CN12●5**: M12, 5-pin, male and female connectors for bus cables.

5 **FTX C78●●**: 7/8, 5-pin, male and female connectors for ⎓ 24 V power supply cables.

Other components

6 **FTX CNTL12**: bus line terminator fitted with an M12 connector.

7 **FTX C●●●B**: sealing plugs for 7/8, M12 and M8 connectors.

8 **FTX CY12●●**: Y-connector for M12 and M8 connectors.

9 **FTX CNCT1**: T-connector fitted with two 7/8, 5-pin connectors for power supply cable.

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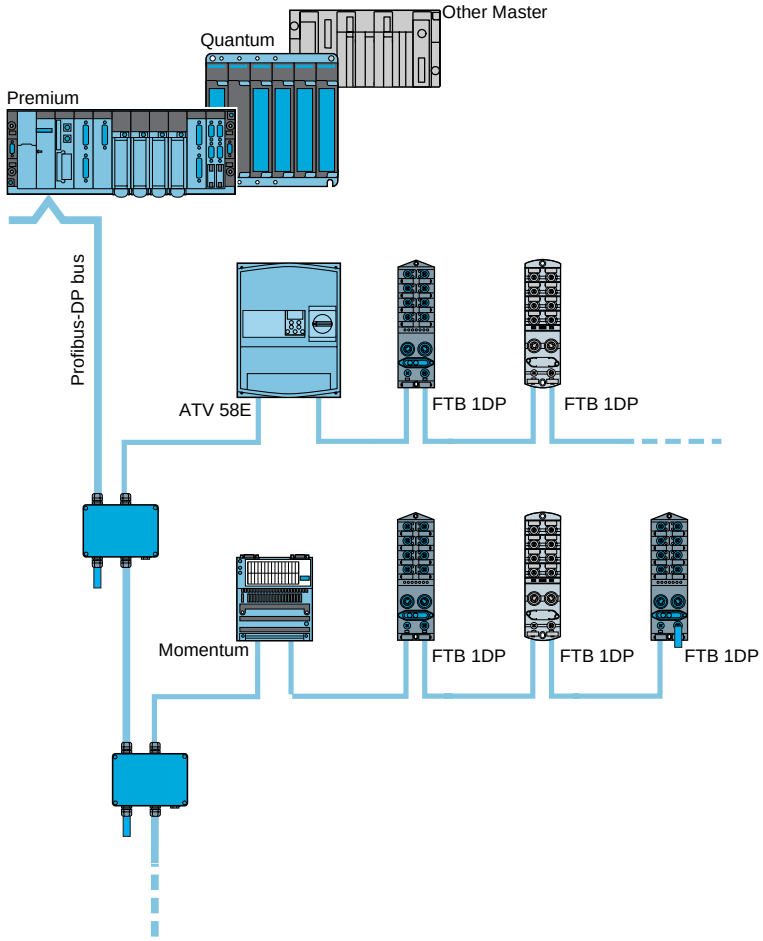
IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

Profibus-DP bus

Advantys FTB splitter boxes are of the monobloc type.
Each splitter box comprises one part for connection of sensors and actuators by means of M12 connectors, and one part for connection of splitter boxes on Profibus-DP fieldbus.
This splitter box enables inputs/outputs to be located remotely, as close as possible to the equipment being controlled.

Profibus-DP presentation



The Profibus-DP (Process Fieldbus Decentralized Peripheral) is an open type fieldbus system for industrial applications. The Profibus standard is described in standard EN 50170.
The physical link is a simple, type A, shielded twisted pair.
Data exchange between the Master (processing unit) and the Slaves (decentralised devices) is performed in a cyclic manner.
A maximum of 32 Slaves can be connected to a bus segment. To increase the number of Slaves, repeaters must be installed in order to create new bus segments. The repeaters also provide galvanic isolation of the bus segments.
The total number of slaves must not exceed 126.
The bus must be fitted with a line terminator at each end of each segment created.

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IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

Profibus-DP bus

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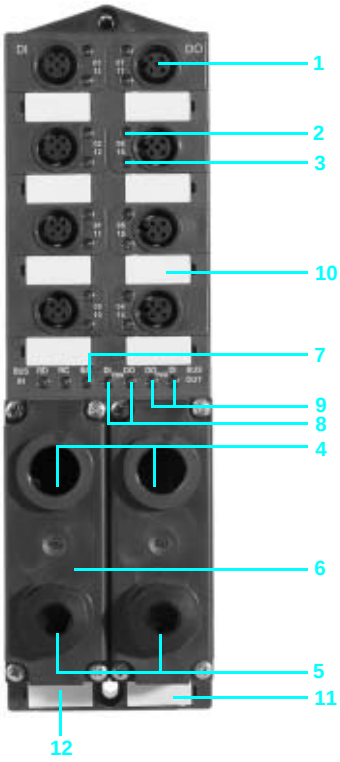

Description

Profibus-DP monobloc I/O splitter boxes FTB 1DP have the following on the front face:

1 Eight M12 female connectors for connection of sensors and actuators (2 channels per connector).

2 Eight channel status indicator lights (00 to 07).

3 Eight channel status indicator lights (10 to 17) or channel diagnostic indicator lights (00 to 07) depending on the splitter box configuration.

4 Two 7/8 connectors for connecting the ⎓ 24 V sensor and actuator power supplies: male for PWR IN, female for PWR OUT.

5 One M12 male connector (bus IN) and one M12 female connector (bus OUT) for connection of the Profibus-DP bus.

6 Access to the address coding wheels.

7 One bus diagnostics LED.

8 Two sensor/actuator diagnostic LEDs.

9 Two ⎓ 24 V sensor and actuator supply status LEDs.

10 Eight channel marker labels.

11 Two splitter box marker labels.

12 Splitter box functional earth connection (beneath the label).

562014

Step 1: Product selection

562015

Step 2: Access to the configuration menu

562016

Step 3: Configuration

Configuration

The Profibus-DP identification number is a preset, non-modifiable element exclusive to each Slave.
A .gsd file is assigned to each product, which contains all the important information relating to the product. An icon (.dib) is also available for installation in the system configurator (please refer to the configuration software documentation for the import of .gsd files).
During configuration of the equipment, the Master receives precise criteria relating to the overall structure of the fieldbus via the system configurator. All necessary information relating to the type and operational behaviour of the various Slaves, as well as data concerning the identification number, are included in the .gsd file.

Example with SyCon configurator:
■ Select the products for the application from the product catalogue library in the SyCon software (step 1),

■ Product configuration (step 2):
□ double-click on the product icon to access the product configuration menu
□ select the required product reference from the suggested list,
□ select the associated functions that you wish to use with the product.

■ Channel by channel, configure the type of signal that will be connected to it (step 3):
□ input (N/O or N/C contact),
□ diagnostic input (only applicable to channels 10 to 17),
□ output.

Addressing

For the Slaves, the assignment of addresses generally starts at address 3 (0-2 reserved for the Master). The addresses are configurable from 1 to 99 by means of 2 coding wheels (x 10 and x 1).

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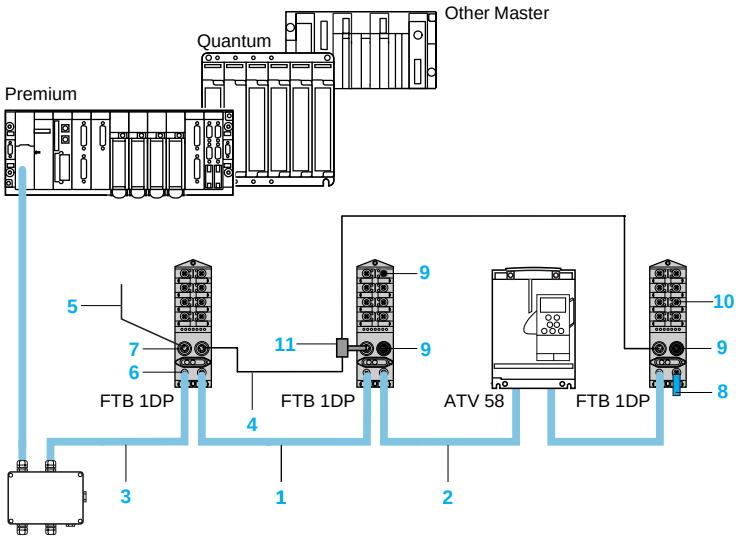
IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

Profibus-DP bus

Cabling system



Cabling accessories

Profibus-DP bus connection cables

Cables FTX DP●2●● enable connection of splitter boxes FTB 1DP to Profibus-DP fieldbus.

1 **FTX DP12●●**: cables fitted with 2 straight M12, 5-pin connectors, one at each end, for chaining the bus between two splitter boxes.

2 **FTX DP32●●**: cables fitted with 2 elbowed M12, 5-pin connectors, one at each end, for chaining the bus between two splitter boxes.

3 **TSX PBSCA●00**: cables free at both ends.

Sensor and actuator ⎓ 24 V power supply connection cables

Cables FTX DP2●●● enable connection of ⎓ 24 V power supplies to splitter boxes FTB 1DP. Two types of cable are available, in various lengths:

4 **FTX DP22●●**: cables fitted with two 7/8, 5-pin connectors, one at each end, for chaining ⎓ 24 V power supplies between two splitter boxes.

5 **FTX DP21●●**: cables fitted with a 7/8, 5-pin connector at one end, with the other end free for connection of ⎓ 24 V power supplies.

Connectors

6 **FTX DP12●5**: M12, 5-pin, male and female connectors for bus cables.

7 **FTX C78●●**: 7/8, 5-pin, male and female connectors for ⎓ 24 V power supply cables.

Other components

8 **FTX DPTL12:** bus line terminator fitted with an M12 connector.

9 **FTX C●●●B:** sealing plugs for 7/8, M12 and M8 connectors.

10 **FTX CY12●●:** Y-connector for M12 and M8 connectors.

11 **FTX CNCT1:** T-connector fitted with two 7/8, 5-pin connectors for power supply cable.

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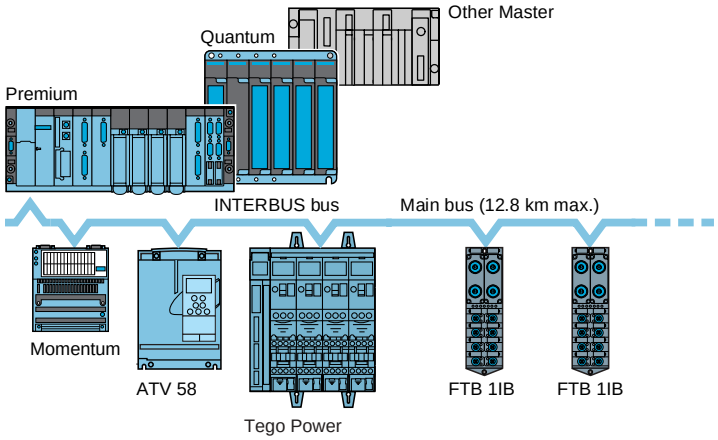
IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

INTERBUS bus

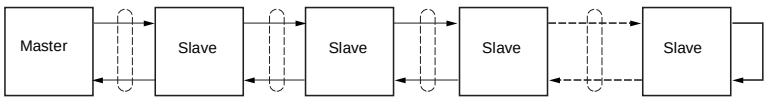
Advantys FTB splitter boxes are of the monobloc type.
Each splitter box comprises one part for connection of sensors and actuators by means of M12 connectors, and one part for connection of splitter boxes on INTERBUS fieldbus.
These splitter boxes enable inputs/outputs to be located remotely, as close as possible to the equipment being controlled.

INTERBUS bus presentation



INTERBUS is a serial link type fieldbus for sensors and actuators which satisfies the requirements of industrial environments.
Conforming to the standard specification, an INTERBUS can operate with up to 256 Slaves:
- 12.8 km max. with copper conductors,
- beyond 80 km using fibre optic cables.

The distance between 2 different components of the bus must not exceed 400 m (for copper conductors).
The INTERBUS system is designed in the form of a loop and has the structure of a shift register distributed on the bus. Each Slave, with its registers, constitutes a component in this shift register loop.



The cyclic exchange of information between the Master and the Slaves is carried out independently by the Master.
The physical link consists of 3 pairs of twisted wires with common shielding.
In addition to the main bus (long distance bus), a local bus can be set up.
- Characteristics of INTERBUS local bus,
- the ⎓ 24 V power supply also passes along the system cable (3 additional wires, 0.75 mm^2 c.s.a.) to supply the electronics and the Slave peripherals,
- the maximum current is limited to 4.5 A, in accordance with the specification,
- the maximum distance is 50 metres.

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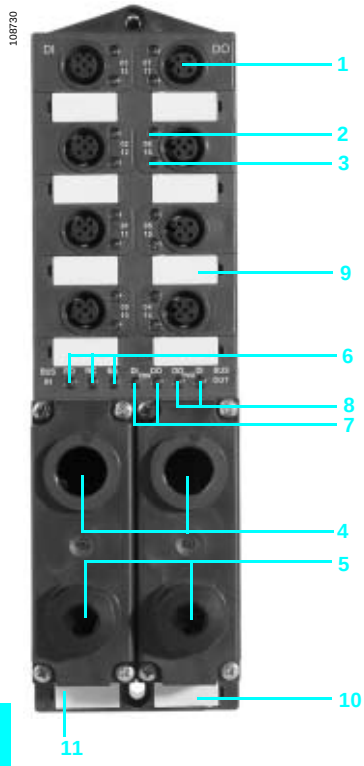
IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

INTERBUS bus



Description

INTERBUS monobloc I/O splitter boxes FTB 1IB have the following on the front face:

1 Eight M12 female connectors for connection of sensors and actuators (2 channels per connector).

2 Eight channel status indicator lights (00 to 07).

3 Eight channel status indicator lights (10 to 17) or channel diagnostic indicator lights (00 to 07) depending on the splitter box configuration.

4 Two terminal blocks for connection of ⎓ 24 V sensor and actuator power supplies (IN and OUT) (connectors included with product).

5 Four terminal blocks for connection of the INTERBUS bus (connectors included with product).

6 Three bus diagnostic LEDs.

7 Two sensor/actuator diagnostic LEDs.

8 Two ⎓ 24 V sensor and actuator supply status LEDs.

9 Eight channel marker labels.

10 Two splitter box marker labels.

11 Splitter box functional earth connection (beneath the label).

Configuration

Each Slave has its own identification code, so that it can be clearly identified by the INTERBUS Master. This code is configured by the manufacturer and cannot be subsequently modified. The characteristics of this code are defined in the INTERBUS specification.
Start-up of the system is immediately followed by an identification cycle. During this system initialisation phase, the identification data of all the Slaves is read by the Master according to their position in the bus. This data will, in particular, be used to prepare the peripheral image at the Master.
The following cycles are simple data cycles, whose only purpose is the exchange of process data between the Master and the Slaves.

Addressing

The INTERBUS system allows either physical addressing or logic addressing.

■ Physical addressing
The assignment of the Master's peripheral image to the process image within the PLC corresponds to the layout of the splitter boxes in the fieldbus.

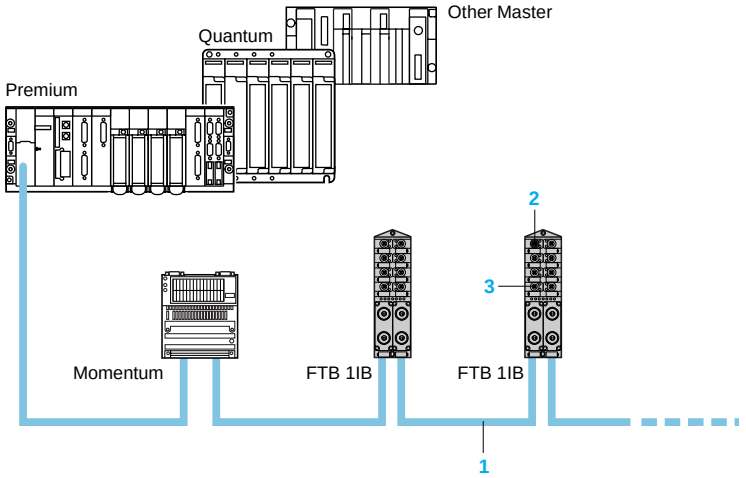
■ Logic addressing
During configuration, it is possible to carry out manual logic addressing using configuration software (for example: CMDtools), independently of the Master used. During this operation, logic addressing of the peripheral image or of parts of this image is carried out to the process image within the PLC.

IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

INTERBUS bus

Cabling system



Cabling accessories

Connection cables for the bus and for sensor and actuator ⎓ 24 V power supplies

Cables FTX IB12●● enable connection of splitter boxes FTB 1IB to INTERBUS fieldbus.

1 **FTX IB12●●**: cables fitted with 2 sets of connectors at each end for chaining the bus and power supplies between two splitter boxes.

Other components

2 **FTX CM●●B**: sealing plugs for M12 and M8 connectors.

3 **FTX CY12●●**: Y-connector for M12 and M8 connectors.

FTX CPE10: cable gland.

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IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

Environmental characteristics

Product certifications			cULus	
Temperature	Operation	**°C**	0…+ 55	
	Storage	**°C**	- 25…+ 70	
Degree of protection	Conforming to IEC 529		IP 67	
Altitude		**m**	0…2000	
Vibration resistance	Conforming to IEC 68-2-6, test Fc	**Hz**	For plastic housing	10 ≤ f ≤ 57 (constant amplitude = 0.35 mm) 57 ≤ f ≤ 150 (constant acceleration = 0.35 gn)
			For metal housing	5 ≤ f ≤ 70 (constant amplitude = 1.5 mm) 70 ≤ f ≤ 500 (constant acceleration = 15 gn)
Shock resistance	Conforming to IEC 68-2-27, test Ea		For plastic housing	30 gn, for 11 ms
			For metal housing	50 gn, for 11 ms
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	**kV**	Contact: ± 4 Air: ± 8	
Resistance to radiated fields	Conforming to IEC 61000-4-3	**V/m**	10	
Immunity to fast transient currents	Conforming to IEC 61000-4-4	**kV**	Power supply: ± 2 Signal: ± 2	
Surge withstand	Conforming to IEC 61000-4-5	**V**	Power supply: (symmetrical) ± 500, (asymmetrical) ± 1000 Signals: (symmetrical) ± 500, (asymmetrical) ± 1000 Earth/PE: ± 500	
Immunity to conducted disturbance	Conforming to IEC 61000-4-6	**Vrms**	10	
Resistance to magnetic fields, 50 Hz	Conforming to IEC 61000-4-8	**A/m**	30	
Mounting			All positions	
Mechanical fixing			Fixing by two M4 screws for plastic housing (tightening torque 1.5 Nm) Fixing by two M6 screws for metal housing (tightening torque 9 Nm)	

Fieldbus characteristics

Bus type		**CANopen**	**DeviceNet**	**Profibus-DP**	**INTERBUS**
Structure	Type	EN 50325 ISO 11898	EN 50325 ISO 11898 CAN, layer 7 DeviceNet	DIN 19245 EN 50170	DIN 19258 EN 50254
	Access method	Multimaster, priority information	Master-Slave	Master-Slave, Multi-Master	Master-Slave
Transmission	Binary rate	1 M bits/s	500 K bits/s	12 M bits/s	500 K bits/s
	Medium	2 twisted, shielded wires	4 twisted, shielded wires	2 twisted, type A, shielded wires (RS 485)	3 twisted pairs with common shielding Fibre optic
Configuration	Maximum number of devices	127	63	32 without repeater 126 with repeaters	256
	Maximum length of bus	**At 1 M bits/s**: - Max. tap-off length: 0.3 m - Max. cumulative tap-off length: 1.5 m **At 500 K bits/s**: - Max. tap-off length: 6 m - Max. cumulative tap-off length: 30 m	**Main line**: - 500 m without repeater, - 3 km with repeater **Tap-off**: 6 m max.	Without repeater: **At 12 M bits/s**: - 100 m max. **At 1.5 M bits/s**: - 200 m max. **At 500 K bits/s**: - 400 m max. **At < 93.75 K bits/s**: - 1.2 km max.	**Main bus link** (long distance bus): 12.8 km **Local bus link**: 50 m

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IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

Input/output characteristics

Splitter box type FTB			1●●16E●●	1●●08E08SP●	1●●12E04SP●	1●●16C●●	1●●08E08CM0
Bus type			All types of bus				DeviceNet bus and Profibus-DP bus
Number of inputs/outputs			**16 I** (8 I + 8 diagnostic inputs)	**16 I/O** (8 O + 8 diagnostic inputs)	**16 I/O** (4 I + 4 O + 8 diagnostic inputs)	**16 I/O** (8 I/O + 8 diagnostic I/O)	**8 I + 8 I/O** (8 I + 8 diagnostic I/O)
Internal consumption of splitter box		**mA**	120				
Operating voltage		⎓ **V**	24				
Splitter box max. supply current		**A**	8 (10 for INTERBUS)				
Bus and I/O undervoltage detection		**V**	< 18				
Built-in short-circuit protection		**mA**	< 100, automatic tripping				
		mA	> 100, reset				

Input characteristics

Number of inputs			**16 I**	**8 I**	**12 I**	**0...16 I**	**8 I + 0...8 I**
Conformity to IEC 1131-2			Type 2				
Compatibility with 2-wire/ 3-wire proximity sensors			Yes				
Input values	Nominal voltage	⎓ **V**	24				
	Maximum current	**mA**	200				
	Sensor power supply	**V**	18…30				
Logic			Positive				
Input filtering		**ms**	1				
Protection against reversed polarity			Yes				

Output characteristics

Number of outputs			–	**8 O**	**4 O**	**0...16 O**	**0...8 O**
Output type			–	Transistor			
Nominal output values	Voltage	⎓ **V**	–	24			
	Current	**A**	–	1.6			
Overvoltage protection			–	Yes (suppressor diode)			
Maximum switching cycles		**Hz**	–	20			
Maximum lamp load		**W**	–	10			
Output connection/cable lengths		**mm²**	–	0.75/10 m maximum 0.34/5 m maximum			

5

IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

FTB 1CN

FTB 1DN●●●P0

FTB 1DN●●●M0

FTB 1DP●●●P0

FTB 1DP●●●M0

FTB 1IB

Number of I/O	Number, type of inputs	Number, type of outputs	Connection by	Housing type	Reference	Weight kg
Monobloc splitter boxes for CANopen bus						
16	8, ⎓ 24 V IEC type 2	8, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1CN08E08SP0**	0.430
	12, ⎓ 24 V IEC type 2	4, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1CN12E04SP0**	0.450
	16, ⎓ 24 V IEC type 2	–	8 x M12 female connectors	Plastic	**FTB 1CN16EP0**	0.440
16 configur-able	0...16, ⎓ 24 V IEC type 2	0...16, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1CN16CP0**	0.450
Monobloc splitter boxes for DeviceNet bus						
16	8, ⎓ 24 V IEC type 2	8, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1DN08E08SP0**	0.450
	12, ⎓ 24 V IEC type 2	4, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1DN12E04SP0**	0.450
	16, ⎓ 24 V IEC type 2	–	8 x M12 female connectors	Plastic	**FTB 1DN16EP0**	0.430
				Metal	**FTB 1DN16EM0**	0.820
16 configur-able	0...16, ⎓ 24 V IEC type 2	0...16, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1DN16CP0**	0.450
				Metal	**FTB 1DN16CM0**	0.820
16 of which 8 configur-able	8 + 0...8, ⎓ 24 V IEC type 2	0...8, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Metal	**FTB 1DN08E08CM0**	0.820
Monobloc splitter boxes for Profibus-DP bus						
16	8, ⎓ 24 V IEC type 2	8, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1DP08E08SP0**	0.430
	12, ⎓ 24 V IEC type 2	4, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1DP12E04SP0**	0.430
	16, ⎓ 24 V IEC type 2	–	8 x M12 female connectors	Plastic	**FTB 1DP16EP0**	0.430
				Metal	**FTB 1DP16EM0**	0.820
16 configur-able	0...16, ⎓ 24 V IEC type 2	0...16, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1DP16CP0**	0.430
				Metal	**FTB 1DP16CM0**	0.820
16 of which 8 configur-able	8 + 0...8, ⎓ 24 V IEC type 2	0...8, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Metal	**FTB 1DP08E08CM0**	0.820
Monobloc splitter boxes for INTERBUS bus						
16	8, ⎓ 24 V IEC type 2	8, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1IB08E08SP1**	0.430
	12, ⎓ 24 V IEC type 2	4, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1IB12E04SP1**	0.440
	16, ⎓ 24 V IEC type 2	–	8 x M12 female connectors	Plastic	**FTB 1IB16EP1**	0.430
16 configur-able	0...16, ⎓ 24 V IEC type 2	0...16, transistor ⎓ 24 V/ 1.6 A	8 x M12 female connectors	Plastic	**FTB 1IB16CP1**	0.430

Presentation, functions: pages 5/12 and 5/13
Description, configuration: pages 5/16 to 5/22
Characteristics: pages 5/24 and 5/25
Dimensions: pages 5/29 to 5/31

IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

108767

FTX DP2115

Connection accessories

Description	Composition	Length m	Reference	Weight kg
For CANopen/DeviceNet buses				
Bus connection cables	Fitted with 2 elbowed M12, 5-pin connectors, A encoded, one at each end	0.3	**FTX CN3203**	0.040
		0.6	**FTX CN3206**	0.070
		1	**FTX CN3210**	0.100
		2	**FTX CN3220**	0.160
		3	**FTX CN3230**	0.220
		5	**FTX CN3250**	0.430
⎓ **24 V power supply connection cables**	Fitted with two 7/8, 5-pin connectors, one at each end	0.6	**FTX DP2206**	0.150
		1	**FTX DP2210**	0.190
		2	**FTX DP2220**	0.310
		5	**FTX DP2250**	0.750
	Fitted with one 7/8, 5-pin connector, other end free	1.5	**FTX DP2115**	0.240
		3	**FTX DP2130**	0.430
		5	**FTX DP2150**	0.700
Connectors	M12 male, 5-pin, A encoded	–	**FTX CN12M5**	0.050
	M12 female, 5-pin, A encoded	–	**FTX CN12F5**	0.050
Line terminator (for end of bus)	Fitted with one M12 connector	–	**FTX CNTL12**	0.010
T-connector for power supply	Fitted with two 7/8, 5-pin connectors	–	**FTX CNCT1**	0.100
For Profibus-DP bus				
Bus connection cables	Fitted with 2 straight M12, 5-pin connectors, one at each end	0.3	**FTX DP1203**	0.040
		0.6	**FTX DP1206**	0.070
		1	**FTX DP1210**	0.100
		2	**FTX DP1220**	0.160
		3	**FTX DP1230**	0.220
		5	**FTX DP1250**	0.430
	Fitted with 2 elbowed M12, 5-pin connectors, one at each end	0.3	**FTX DP3203**	0.040
		0.6	**FTX DP3206**	0.070
		1	**FTX DP3210**	0.100
		2	**FTX DP3220**	0.160
		3	**FTX DP3230**	0.220
		5	**FTX DP3250**	0.430
⎓ **24 V power supply connection cables**	Fitted with two 7/8, 5-pin connectors, one at each end	0.6	**FTX DP2206**	0.150
		1	**FTX DP2210**	0.190
		2	**FTX DP2220**	0.310
		5	**FTX DP2250**	0.750
	Fitted with one 7/8, 5-pin connector, other end free	1.5	**FTX DP2115**	0.240
		3	**FTX DP2130**	0.430
		5	**FTX DP2150**	0.700
Connectors	M12 male, 5-pin, B encoded	–	**FTX DP12M5**	0.050
	M12 female, 5-pin, B encoded	–	**FTX DP12F5**	0.050
Line terminator (for end of bus)	Fitted with one M12 connector	–	**FTX DPTL12**	0.010
T-connector for power supply	Fitted with two 7/8, 5-pin connectors	–	**FTX CNCT1**	0.100
Cables	Free at both ends	100	**TSX PBSCA100**	–
		400	**TSX PBSCA400**	–
For INTERBUS bus				
Cables with connectors for bus and power supply	Fitted with 2 sets of connectors	0.6	**FTX IB1206**	0.250
		1	**FTX IB1210**	0.400
		2	**FTX IB1220**	0.650
		5	**FTX IB1250**	–
Cable gland	M16 x 1.5 (set of 2)	–	**FTX CPE10**	0.020

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IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

108768

FTX CY1208

Separate parts

Description	Composition	Reference	Weight kg
For all bus types			
Connectors	7/8 male, 5-pin	**FTX C78M5**	0.050
	7/8 female, 5-pin	**FTX C78F5**	0.050
Sealing plugs	For M8 connector (lot of 10)	**FTX CM08B**	0.100
	For M12 connector (lot of 10)	**FTX CM12B**	0.100
	For 7/8 connector	**FTX C78B**	0.020
Y-connectors	Connection of two M8 connectors to M12 connector on splitter box	**FTX CY1208**	0.020
	Connection of two M12 connectors to M12 connector on splitter box	**FTX CY1212**	0.030
Diagnostics adaptor	Fitted with two M12 connectors	**FTX DG12**	0.020
Marker labels	For plastic splitter boxes (lot of 10)	**FTX BLA10**	0.010
	For metal splitter boxes (lot of 10)	**FTX MLA10**	0.010
CD-ROM	Configuration files, technical manuals and operating instructions	**FTX ES00**	0.050
Configuration software			
Bus module configuration software for INTERBUS (for Quantum PLC), CANopen and Profibus-DP	Generates an ASCII configuration file for the module, for import into the PLC	**TLX L FBC M**	–

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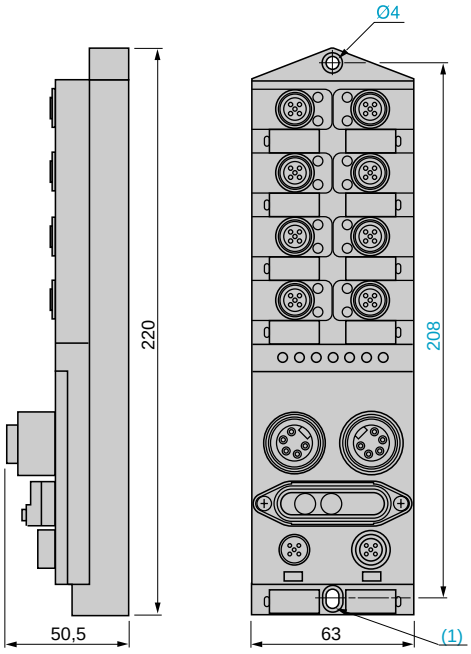
IP 67 monobloc I/O splitter boxes for fieldbuses

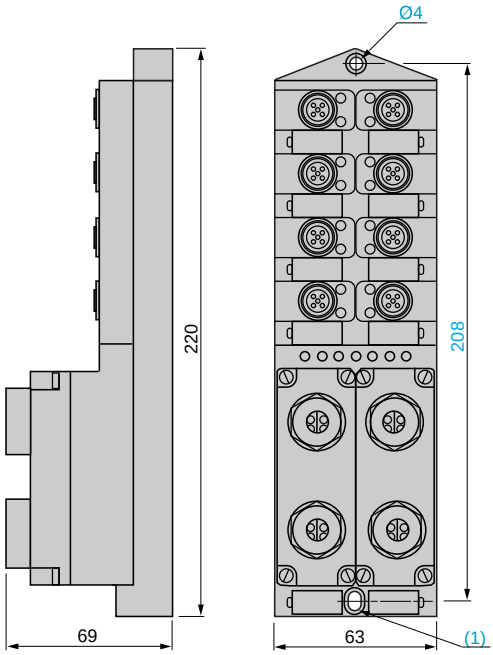
Advantys, FTB splitter boxes

FTB 1CN, FTB 1DN



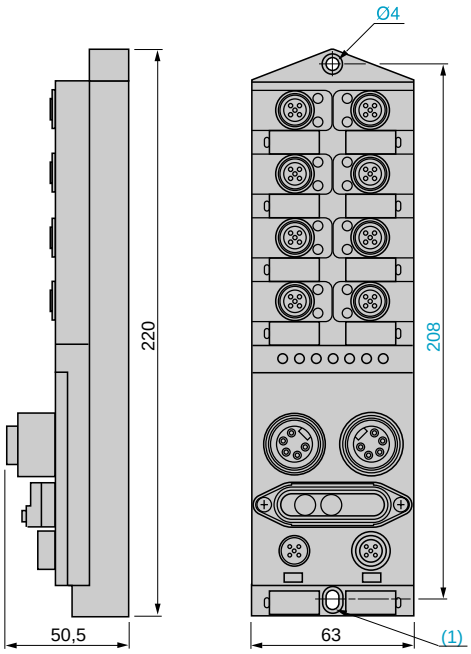
(1) Ø 4 elongated hole

FTB 1IB



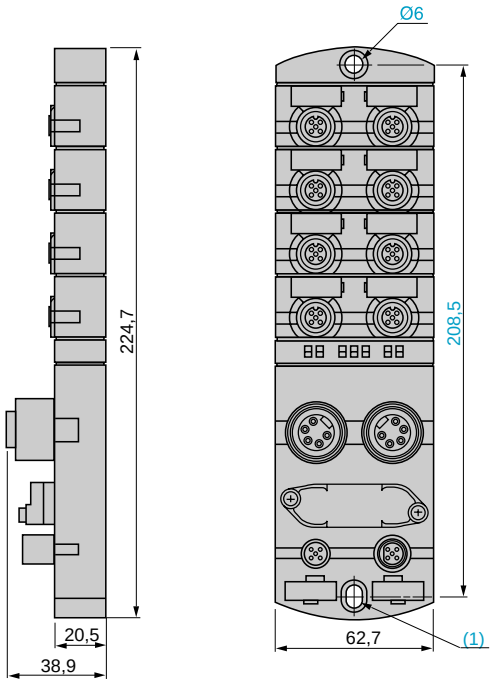
(1) Ø 4 elongated hole

FTB 1DP●●●P0



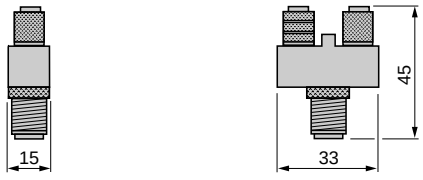
(1) Ø 4 elongated hole

FTB 1DN●●●●●●M0, FTB 1DP●●●●●●M0

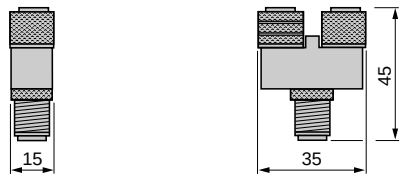


(1) Ø 6 elongated hole

FTX CY1208



FTX CY1212



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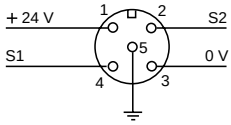
References: pages 5/26 to 5/28

IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

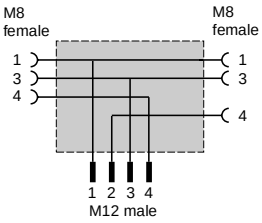
Sensor/actuator connection



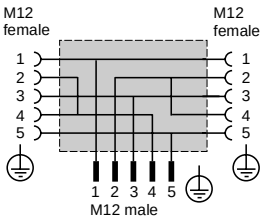
M12 female connector

Y-connector connection

FTX CY1208



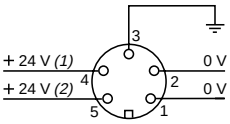
FTX CY1212



CANopen and DeviceNet buses

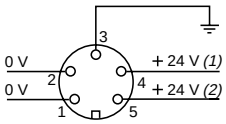
Supply to splitter box

Supply input



7/8 male connector

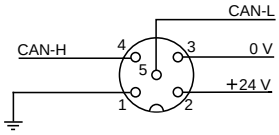
Supply output



7/8 female connector

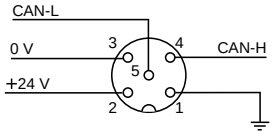
Bus input/Bus output

Bus input



M12 male connector

Bus output



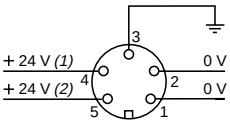
M12 female connector

(1) Supply to splitter box and sensors.
(2) Supply to actuators.

Profibus-DP bus

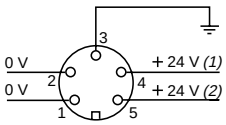
Supply to splitter box

Supply input



7/8 male connector

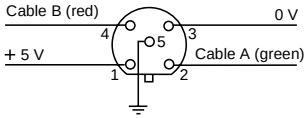
Supply output



7/8 female connector

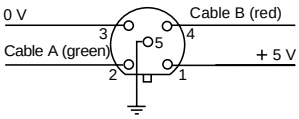
Bus input/Bus output

Bus input



M12 male connector

Bus output



M12 female connector

(1) Supply to splitter box and sensors.
(2) Supply to actuators.

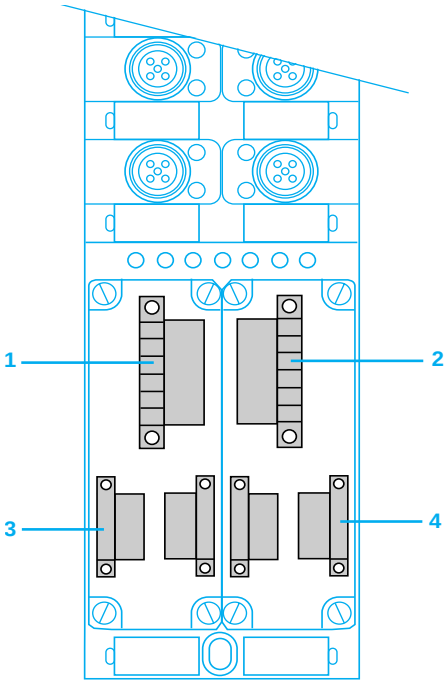
***Note:** connectors linked to shielding.*

IP 67 monobloc I/O splitter boxes for fieldbuses

Advantys, FTB splitter boxes

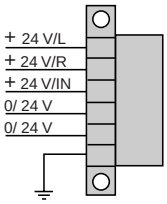
INTERBUS bus

Connections to splitter box

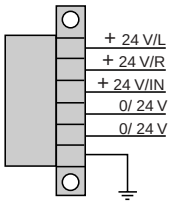


Supply to splitter box

1 Supply input

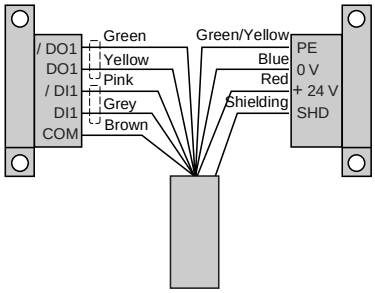


2 Supply output

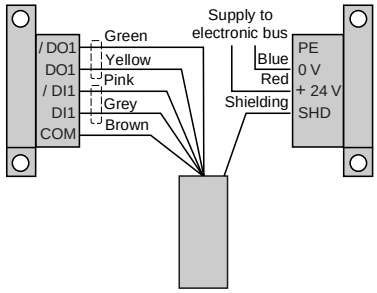


Bus input/Bus output

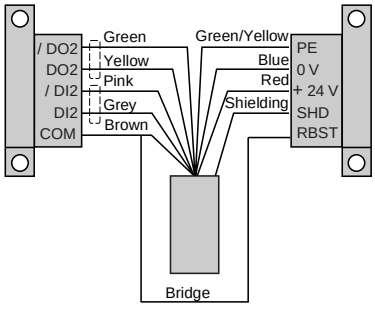
3 Local bus, bus input



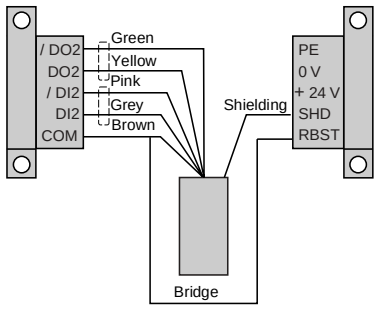
3 Main bus, bus input



4 Local bus, bus output



4 Main bus, bus output



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IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Bus modules FTM Industrial fieldbus type	CANopen	DeviceNet	PROFIBUS
			
Degree of protection	IP 67		
Bus connector type	M12, A encoded	M12, A encoded	M12, B encoded
Maximum number of digital I/O per bus module	256		
Maximum number of splitter boxes per bus module	16		
Maximum number of splitter boxes per segment	4		
Bus module type	FTM 1CN10▲	FTM 1DN10▲	FTM 1DP10▲
Pages	5/46	5/46	5/46

▲ Available 1st half 2004

IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Splitter boxes FTM (not governed by the type of fieldbus)	Digital inputs/outputs	Analogue inputs/outputs

Degree of protection		IP 67							
Bus connection		Internal bus + 24 V power supply by M12, 6-pin connectors							
Splitter box type		Compact		Expandable		Compact			
Connector type		M8	M12	M8	M12	M12			
Modularity **Number of channels**		8 I 8 I/O	8 I 8 I/O 16 I 16 I/O	8 I 8 I/O	8 I 8 I/O 16 I 16 I/O	4 I		4 O	
Digital inputs	**Voltage**	⎓ 24 V				–			
	Conformity to IEC 11331-2	Type 2				–			
Digital outputs	**Voltage**	⎓ 24 V				–			
	Type	Transistor				–			
	Current/output	0.5 A				–			
	Maximum supply by internal bus	4 A				–			
Analogue inputs/outputs	**Nature**	–				Current	Voltage	Current	Voltage
	Measuring range	–				0…20 mA 4…20 mA	⎓ ± 10 V, ⎓ 0… 10 V	0…20 mA 4…20 mA	⎓ ± 10 V, ⎓ 0… 10 V
	Resolution	–				16 bits	15 bits + sign	12 bits	11 bits + sign
	Conversion time	–				≤ 2 ms/channel			
Diagnostics	**Per channel**	I/O short-circuit Wire breakage fault Faulty sensors/actuators				I/O short-circuit Wire breakage fault Faulty sensors/actuators			
Splitter box type		**FTM 1D●08 C08▲**	**FTM 1D●●● C12▲**	**FTM 1D●08 C08E▲**	**FTM 1D●●● C12E▲**	**FTM 1AE04 C12C▲**	**FTM 1AE04 C12T▲**	**FTM 1AS04 C12C▲**	**FTM 1AS04 C12T▲**
Pages		5/46				5/46			

▲ Available 1st half 2004

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IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Presentation

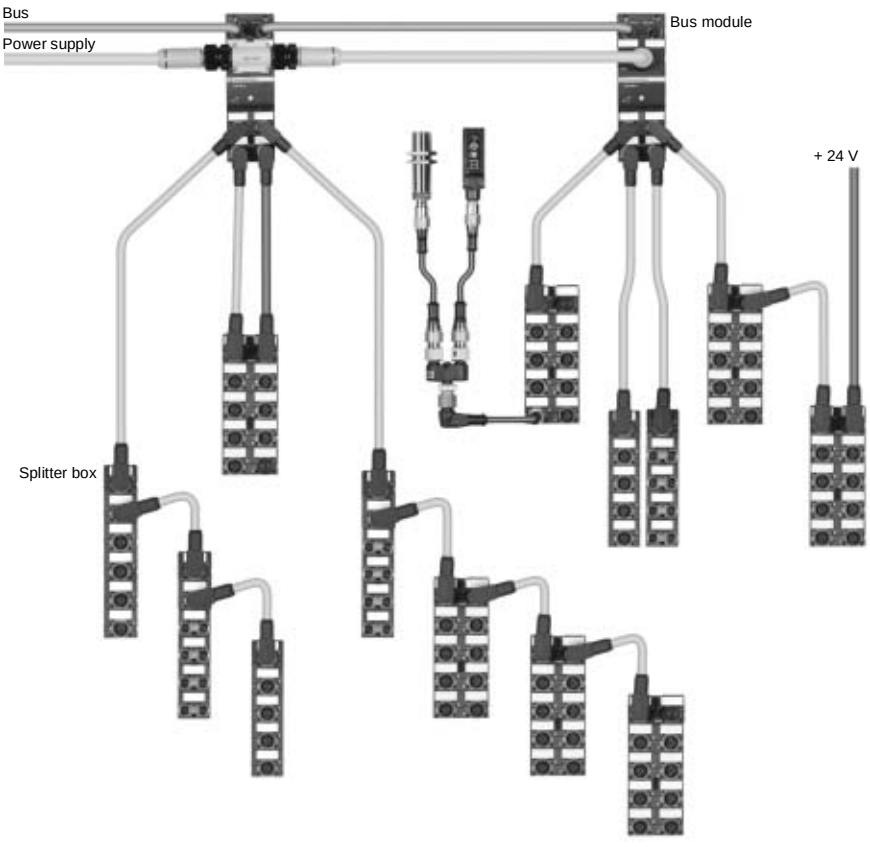
To meet the needs of machine manufacturers and users, automation system architectures are becoming decentralised, while offering performances comparable to those obtained with a centralised structure.
Advantys FTM IP 67 modular I/O splitter boxes enable sensors and actuators to be connected in distributed automation systems using pre-assembled cables, thus reducing wiring time and costs, whilst at the same time increasing the operational availability of the installation.

These IP 67 protected splitter boxes can also be used within processes or machines in harsh environments (splashing water, oil, dust, etc.).

Advantys FTM splitter boxes allow distributed connection of sensors and actuators on machines via a fieldbus. They communicate on different buses such as: CANopen, DeviceNet and Profibus-DP.
Sensors and actuators are connected by means of standard M12 and M8 connectors.
This modularity makes installation of the splitter boxes within the machine even easier.
The configurable I/O splitter boxes also enable the mixing of inputs and outputs and, as a result, reduce the number of product variants. This provides savings in space as well as increasing the flexibility of the installation.

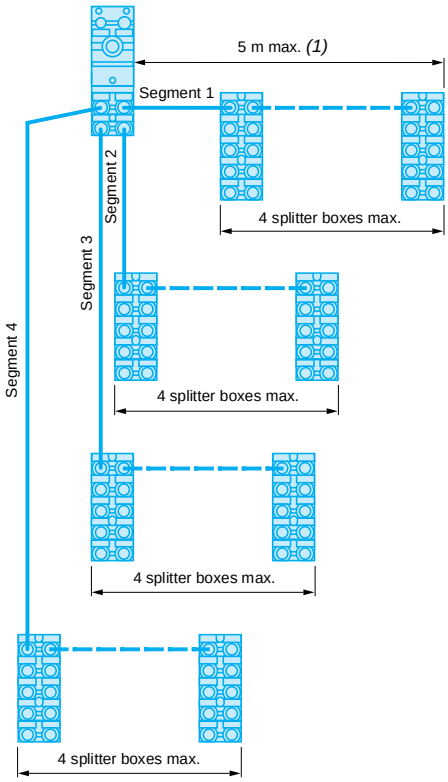
Principle

The Advantys FTM modular offer enables, from a single communication interface (fieldbus module), the connection of a changeable number of I/O splitter boxes. These splitter boxes are connected to the bus module by a hybrid cable comprising both the internal bus and the power supply (internal, sensors and actuators). **The I/O splitter boxes are not governed by the type of fieldbus**, thus reducing the number of splitter box references. Addressing of Advantys FTM splitter boxes is automatic. On completion of mounting, the system is ready to operate.



IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes



(1) Maximum distance of 5 m between the bus module and the last splitter box on the same segment.

Presentation *(continued)*

The topology of the system is a star/line architecture.
Each bus module is fitted with four M12 connectors for the connection of Advantys FTM splitter boxes (star architecture). On each "run", called a segment, it is possible to connect up to 4 splitter boxes on the chaining principle (line architecture). The maximum length of a segment, between the bus module and the last splitter box, must not exceed 5 metres.

For one bus module, the maximum number of splitter boxes is:
- 4 per segment, i.e. 64 I/O.
- 16 for the group of 4 possible segments of the bus module, i.e. 256 digital I/O.

Several Advantys FTM splitter box variants are available:

Compact splitter boxes
These splitter boxes do not allow continuity of the internal bus to other splitter boxes on the same bus module segment. They are used in the following cases:
- a single splitter box on a segment (no chaining),
- the last splitter box on a segment.

Expandable splitter boxes
These splitter boxes allow continuity of the internal bus to other splitter boxes (chaining). If an expandable splitter box is used as the last splitter box of an internal bus segment, it is then necessary to install a line terminator on the output bus connector.

Digital I/O splitter boxes
These splitter boxes are available in compact and expandable versions, only for the connection of sensors (input splitter boxes) or for the connection of sensors and/or actuators (input/output splitter boxes):
- ⎓ 24 V inputs, IEC type 2,
- ⎓ 24 V 0.5 A transistor outputs.

- The different input splitter box variants are as follows:
  - 8 x M8 connectors for connection of up to 8 sensors,
  - 4 x M12 connectors for connection of up to 8 sensors (4 for sensors with integrated DESINA diagnostics function),
  - 8 x M12 connectors for connection of up to 16 sensors (8 for sensors with integrated DESINA diagnostics function).

- The different input/output splitter box variants are as follows:
Each channel can be configured as an input, an output or as a diagnostic input.
  - 8 x M8 connectors for connection of up to 8 sensors or actuators,
  - 4 x M12 connectors for connection of up to 8 sensors or actuators (4 for sensors with integrated DESINA diagnostics function),
  - 8 x M12 connectors for connection of up to 16 sensors or actuators (8 for sensors or actuators with integrated DESINA diagnostics function).

Analogue I/O splitter boxes
These splitter boxes are only available in the compact version for the connection of analogue sensors or actuators using M12 connectors:
- 4 analogue input splitter boxes (voltage or current).
- 4 analogue output splitter boxes (voltage or current).

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IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Functions

Selection of signal type per channel

■ Each M12, 5-pin connector on Advantys FTM splitter boxes allows the connection of 2 signals. Depending on the type of splitter box, these can be:
- □ 1 sensor input signal,
- □ 1 diagnostic input signal,
- □ 1 actuator output signal.

Signal type, depending on digital splitter box selected:

		FTM 1DD	FTM 1DE
M12 and M8	Contact 4	Input Output	Input
M12	Contact 2	Input Output Diagnostic	Input Diagnostic

Note: *either a normally open (N/O) or a normally closed (N/C) contact can be chosen for each input signal.*

Diagnostics

Each Advantys FTM splitter box has one LED per channel to indicate the status of the channel and to enable fast and precise location of a fault. Fault monitoring diagnostics are indicated on the splitter box by LEDs and are fed back to the control system (PLC) via the bus.

There are 2 levels of diagnostics:
- ■ diagnostics per channel,
- ■ diagnostics per splitter box.

Diagnostics per channel

■ **Sensor short-circuit**

A short-circuit or overload on contact 1 of the M12 or M8 female connector blows the self-resetting fuse. Each M12 or M8 connector is individually protected. A red LED indicates the fault on the corresponding M12 or M8 connector. This fault is signalled to the Master. Supply to the sensors is automatically restored after elimination of the fault.

■ **Actuator short-circuit**

A short-circuit or overload of an output causes a reset of this output. The fault is signalled to the Master. A red LED indicates the fault on the corresponding M12 or M8 connector. The output does not restart automatically. After having eliminated the cause of the fault, the channel must be reset by the PLC. This operation erases the short-circuit memory.

■ **Actuator warning**

When the output is at state 0, the contact corresponding to the M12 or M8 female connector is checked for presence of 24 V voltage. If + 24 V is present, it means there is a “short-circuit”. A red LED indicates the fault on the corresponding M12 or M8 connector. The fault is signalled to the Master.

IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Functions *(continued)*

Diagnostics per splitter box

- **Sensor/actuator supply status.**
- **“Undervoltage” fault on the I/O supply.**
- **Sensor short-circuit**.
- **Actuator short-circuit**.

Use of contact 2 diagnostics function (M12 connector)

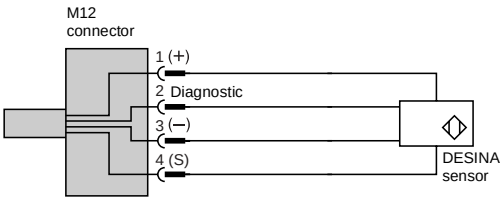
Advantys FTM splitter boxes allow the use of sensors and actuators incorporating an integrated diagnostics function (DESINA type). Configuring contact 2 of each M12 connector as a diagnostic input enables detection of external faults associated with the sensors or actuators.
This information enables the following faults to be detected:

- damage to the detection surface,
- faulty electronics,
- no load.

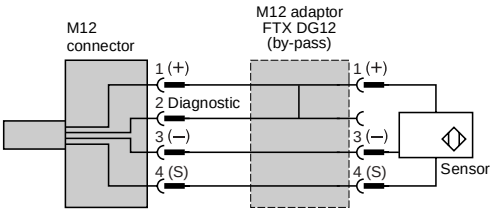
Selection of either the sensor input or diagnostic input function on contact 2 is made channel by channel, by entering parameters, when configuring the splitter box.
Fault indication by a red LED is possible for each channel configured as a diagnostic input.

Example of connection of a sensor with integrated diagnostics function:
Using the M12 diagnostics adaptor accessory **FTX DG12**, it is possible to monitor breaks in wiring to sensors or actuators which do not have an integrated diagnostics function (only applicable to splitter boxes fitted with M12 connectors).

Example of connection of a sensor with integrated diagnostics function



Example of connection of a standard sensor with the diagnostics adaptor



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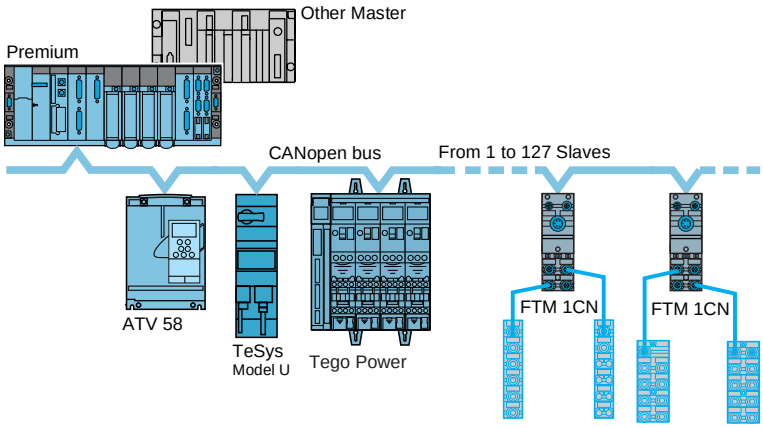
IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

CANopen bus presentation



The CAN system, initially developed for real-time exchange of information in the automobile industry, is now being used more and more throughout industry. There are several fieldbuses based on CAN base layers and components.
The CANopen bus conforms to international standard ISO 11898, promoted by the “CAN in Automation” association (a grouping of manufacturers and users), and guarantees a high degree of openness and inter-operability due to its communication profiles and its standardised equipment.
The CANopen bus is now recognised, in Europe, as the reference standard for building industrial systems based on the CAN concept.
The CANopen bus is a Multimaster bus, based on the Master/Slave principle.
The physical link consists of a shielded twisted pair, to which up to a maximum of 127 Slaves can be connected by simple tap-off. The binary rate varies, depending on the length of the bus, from 1 M bits/s for 40 m to 50 K bits/s for 1000 m.
Each end of the bus must be fitted with a line terminator.

The CANopen bus is a set of profiles on CAN systems, possessing the following characteristics:
- Open bus system.
- Data exchanges in real-time without overloading the protocol.
- Modular design allowing modification of size.
- Interconnection and interchangeability of devices.
- Standardised configuration of networks.
- Access to all device parameters.
- Synchronisation and circulation of data from cyclic and/or event-controlled processes (short system response time).
- Exchanges possible with numerous international manufacturers.

CANopen bus configuration

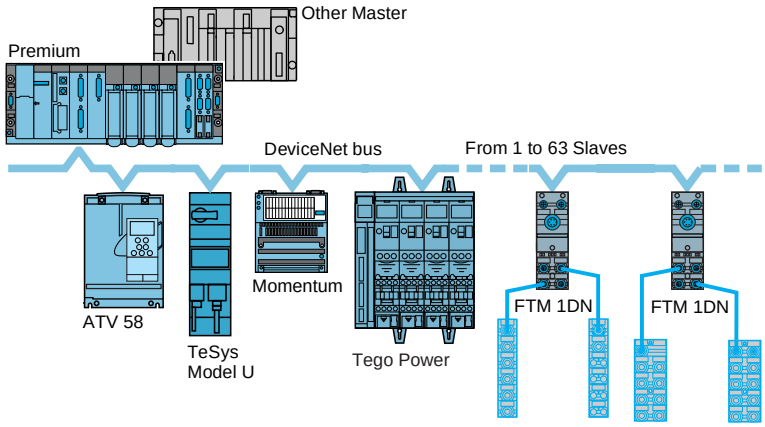
A .eds file is assigned to each product, which contains all the important information relating to the product. An icon (.dib) is also available for installation in the system configurator.
Please refer to the configuration software documentation for the import of .eds files.
Following the CANopen system initialisation phase, all the Slaves signal their presence on the bus by means of a “Boot-Up” message. A setting-up configurator (e.g.: SyCon) can then start to read and register the CANopen bus and, on the basis of the data obtained, assign a corresponding .eds file to each Slave. Based on the .eds file data, the Master creates a peripheral image of all the Slaves detected by the PLC. The user can assign I/O bytes to logic addresses within the PLC.
- Addressing

The addresses are configurable from 1 to 99 by means of 2 coding wheels (x 10 and x 1). A 3rd coding wheel enables the data transmission speed to be selected (position 0 = automatic speed recognition).

IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

DeviceNet bus presentation



The DeviceNet system is a sensor/actuator bus system of the open Low-End type, used in various industrial applications and, in particular, the automobile industry. It is based on CAN technology (OSI layers 1 and 2).
The DeviceNet bus is based on the Master/Slave principle.
The physical link consists of 2 shielded twisted pairs (2 wires for data, 2 wires for auxiliary supply to sensors), to which up to a maximum of 63 slaves can be connected. The binary rate varies, depending on the length of the bus, from 125 K bits/s for 500 m to 500 K bits/s for 100 m.
Each end of the bus must be fitted with a line terminator.

DeviceNet bus configuration

A .eds file is assigned to each product, which contains all the important information relating to the product. An icon (.ico) is also available for installation in the system configurator.
When the network is scanned, the identification data is compared with that of the Slaves present on the network and assigned accordingly. After the scanning phase, the scanner will have identified all the Slaves and saved information relating to data length and operating mode.
The DeviceNet bus Master establishes a peripheral image of all the devices detected on the DeviceNet bus and incorporates them according to their physical location in a Scan list. The user can then assign the Scan list, according to the peripheral image of the bus devices, to logic addresses in the PLC.

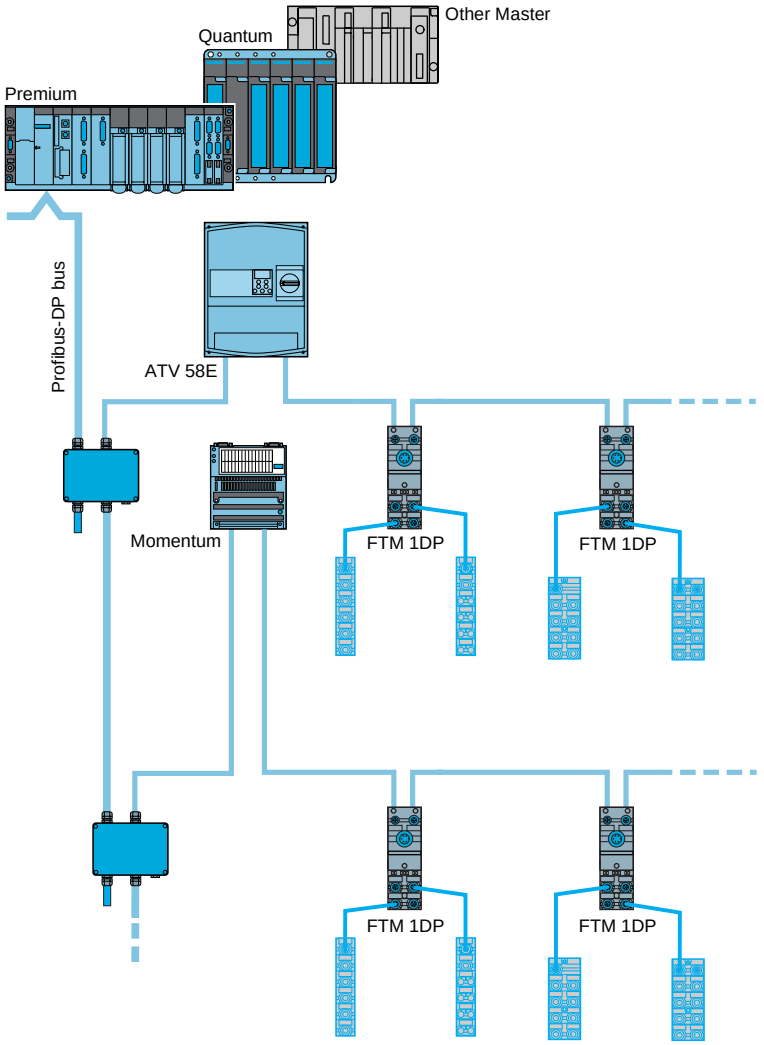
■ Addressing

The addresses are configurable from 1 to 63 by means of 2 coding wheels (x 10 and x 1). A 3rd coding wheel enables the data transmission speed to be selected (3 speeds can be selected: 125, 250 and 500 K bits/s).

IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Profibus-DP presentation



The Profibus-DP (Process Fieldbus Decentralized Peripheral) is an open type fieldbus system for industrial applications. The Profibus standard is described in standard EN 50170.
The physical link is a simple, type A, shielded twisted pair.
Data exchange between the Master (processing unit) and the Slaves (decentralised devices) is performed in a cyclic manner.
A maximum of 32 Slaves can be connected to a bus segment. To increase the maximum number of Slaves possible, repeaters must be installed in order to create new bus segments.
The repeaters also provide galvanic isolation of the bus segments.
The total number of slaves must not exceed 126.
The bus must be fitted with a line terminator at each end of each segment created.

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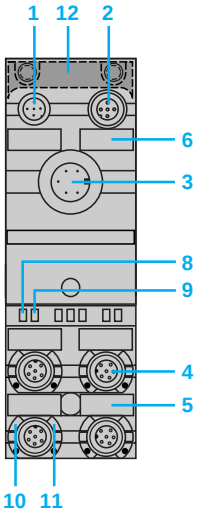
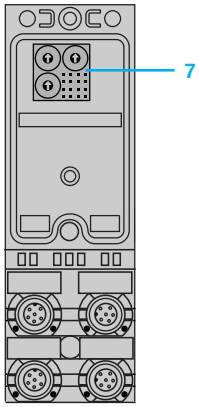
IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes



Bus module FTM with cover

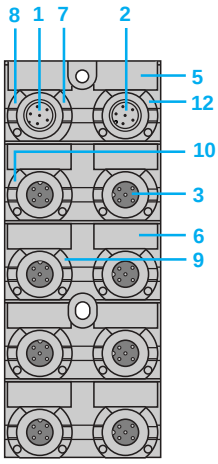


Bus module FTM without cover

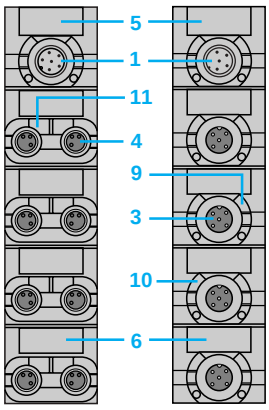
Description

Modular bus modules FTM have the following on the front face:

1 One M12 male connector (bus IN) for connection of the bus.
2 One M12 female connector (bus OUT) for connection of the bus.
3 One 7/8 male connector for connection of the ⎓ 24 V power supplies.
4 Four M12 female connectors for connection of the splitter box inputs/outputs via the internal bus.
5 Four channel marker labels.
6 Two bus module marker labels.
7 Speed selection (CANopen and DeviceNet buses) and bus address switches.
8 One bus power supply status LED.
9 One bus diagnostics LED.
10 One sensor power supply diagnostics LED.
11 One sensor power supply diagnostics and communication status LED.
12 Bus module functional earth connection.



FTM 1D●16C12

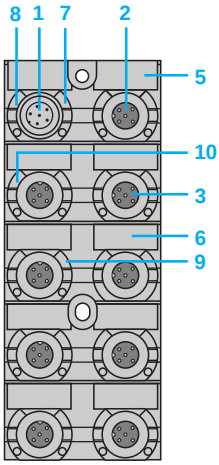


FTM 1D●08C08

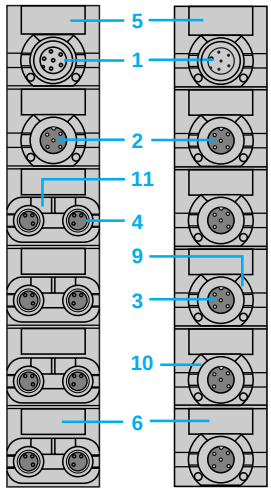
FTM 1D●08C12
FTM 1A●04C12●

Compact splitter boxes FTM 1D●08C●●, FTM 1D●16C12 and FTM 1A●04C12● have the following on the front face:

1 One M12 male connector for connection to the bus module or the previous module.
2 One M12 male connector for connection of an auxiliary ⎓ 24 V actuator power supply (only applicable to FTM 1DD16C12).
3 Four or eight M12 female connectors (depending on model) for connection of sensors and actuators.
4 Eight M8 female connectors for connection of sensors and actuators.
5 One or two splitter box marker labels (depending on model).
6 Four or eight channel marker labels.
7 One actuator power supply diagnostics LED.
8 One sensor power supply diagnostics and communication status LED.
9 Four or eight channel status indicator lights (00 to 07).
10 Four or eight channel status indicator lights (10 to 17) or channel diagnostic indicator lights (00 to 07) depending on the splitter box configuration.
11 Eight channel "power on" indicator lights (00 to 07).
12 One auxiliary supply "power on" indicator light.



FTM 1D●16C12E



FTM 1D●08C08E

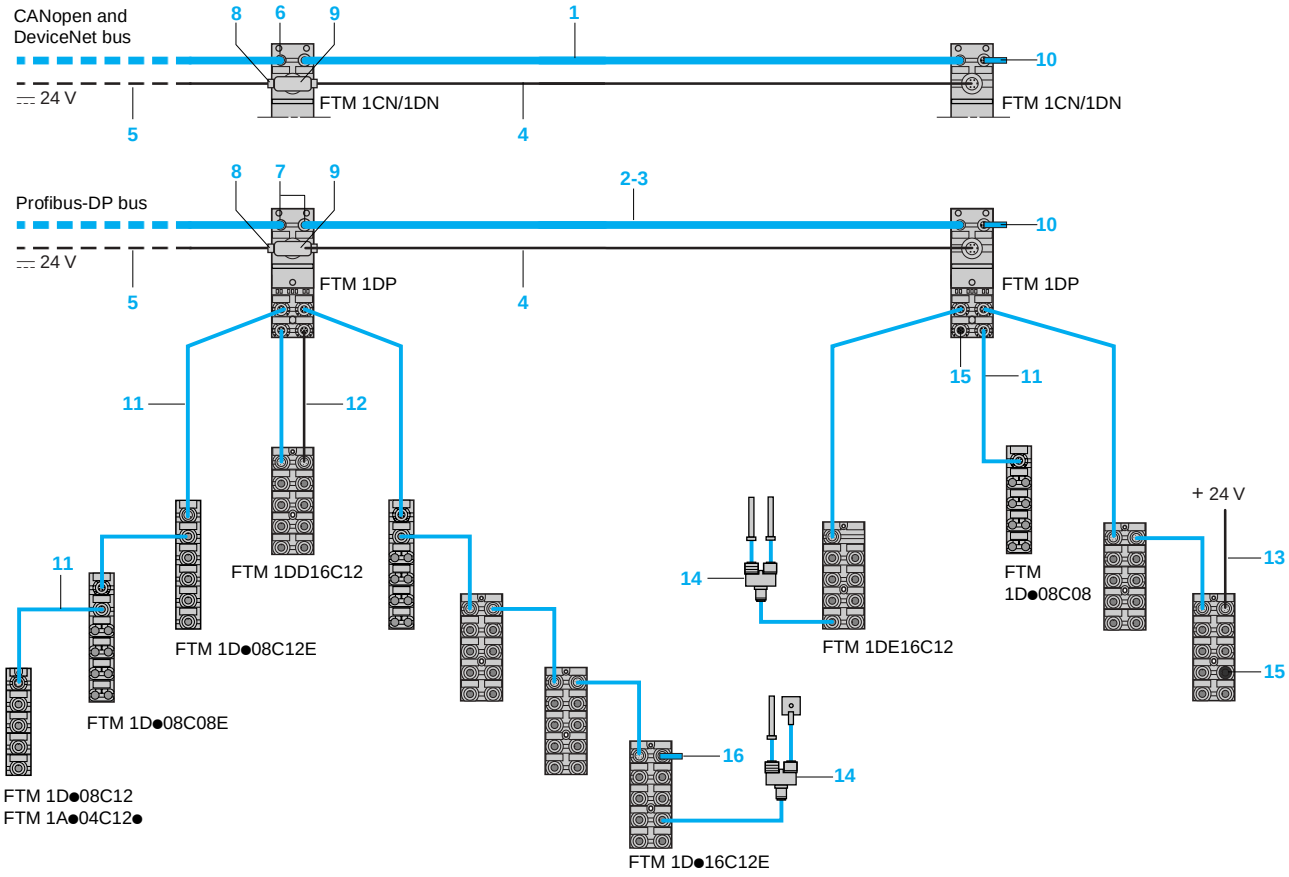
FTM 1D●08C12E

Expandable splitter boxes FTM 1D●08C●●E and FTM 1 D●16C12E have the following on the front face:

1 One M12 male connector for connection to the bus module or the previous module.
2 One M12 female connector for chaining the internal bus to the next module.
3 Four or eight M12 female connectors (depending on model) for connection of sensors and actuators.
4 Eight M8 female connectors for connection of sensors and actuators.
5 One or two splitter box marker labels (depending on model).
6 Four or eight channel marker labels.
7 One actuator power supply diagnostics LED.
8 One sensor power supply diagnostics LED.
9 Four or eight channel status indicator lights (00 to 07).
10 Four or eight channel status indicator lights (10 to 17) or channel diagnostic indicator lights (00 to 07) depending on the splitter box configuration.
11 Eight channel "power on" indicator lights (00 to 07).

IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes



Note: *the I/O splitter boxes are not governed by the type of fieldbus.*

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IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Cabling accessories for bus modules

Bus module to bus connection cables

Various cables enable connection of the bus module to the fieldbus.
They are available in different lengths:

CANopen and DeviceNet buses:

1 **FTX CN32●●**: cables fitted with 2 elbowed M12, 5-pin connectors, one at each end, for connecting the bus between two bus modules.

Bus Profibus-DP:

2 **FTX DP32●●**: cables fitted with 2 elbowed M12, 5-pin connectors, one at each end, for connecting the bus between two bus modules.

3 **FTX DP12●●**: cables fitted with 2 straight M12, 5-pin connectors, one at each end, for connecting the bus between two bus modules.

Bus module ⎓ 24 V power supply connection cables

Cables FTX DP2●●● enable connection of the main ⎓ 24 V power supply to bus modules FTM 1.
Two types of cable are available, in various lengths:

4 **FTX DP22●●**: cables fitted with two 7/8, 5-pin connectors, one at each end, for chaining ⎓ 24 V power supplies between two bus modules.

5 **FTX DP21●●**: cables fitted with a 7/8, 5-pin connector at one end, with the other end free for connection of ⎓ 24 V power supplies.

Connectors

6 **FTX CN12●5**: M12, 5-pin, male and female connectors for CANopen and DeviceNet bus cables (A encoded).

7 **FTX DP12●5**: M12, 5-pin, male and female connectors for Profibus-DP bus cables (B encoded).

8 **FTX C78●5**: 7/8, 5-pin, male and female connectors for ⎓ 24 V power supply cables.

Other components

9 **FTX CNCT1**: T-connector fitted with two 7/8, 5-pin connectors, for power supply cable.

10 **FTX ●●TL12:** CANopen, DeviceNet and Profibus-DP bus line terminators, fitted with an M12 connector.

Internal cabling accessories

Internal bus connection cables

Cables FTX CB32●● enable connection of the internal bus between the bus module and the splitter boxes.
This cable is available in different lengths:

11 **FTX CB32●●**: cables fitted with 2 elbowed M12, 6-pin connectors, one at each end, for connection of internal bus between the bus module and the splitter box or for chaining between two splitter boxes.

Auxiliary ⎓ 24 V power supply connection cables

Cables FTX CA3●●● enable connection of an auxiliary ⎓ 24 V power supply between the bus module and the splitter boxes or directly from a ⎓ 24 V power supply.
Two types of cable are available, in various lengths:

12 **FTX CA32●●**: cables fitted with 2 elbowed M12, 6-pin connectors, one at each end, for connection of ⎓ 24 V power supplies between the bus module and the splitter box.

13 **FTX CA31●●**: cables fitted with 1 elbowed M12, 6-pin connector at one end, with the other end free for connection of ⎓ 24 V power supply.

Other components

14 **FTX CY12●●:** Y-connector for M12 and M8 connectors.

15 **FTX CM●●B:** sealing plugs for M12 and M8 connectors (bus modules and splitter boxes).

16 **FTX CBTL12:** internal bus line terminator fitted with an M12 connector.

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IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Environmental characteristics

Product certifications			cULus
Temperature	Operation	**°C**	0…+ 55
	Storage	**°C**	- 25…+ 70
Degree of protection			IP 67
Altitude		**m**	0…2000
Vibration resistance	Conforming to IEC 68 part 2-6		15 gn
Shock resistance	Conforming to IEC 68-2-27, test Ea		50 gn, for 11 ms
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	**kV**	Contact: ± 4 Air: ± 8
Resistance to radiated fields	Conforming to IEC 61000-4-3	**V/m**	10
Immunity to fast transient currents	Conforming to IEC 61000-4-4	**kV**	Power supply: ± 2 Signal: ± 2
Surge withstand	Conforming to IEC 61000-4-5	**V**	Power supply: (symmetrical and asymmetrical) ± 500 Signals: (symmetrical and asymmetrical) ± 1000 Earth/PE: ± 500
Immunity to conducted disturbance	Conforming to IEC 61000-4-6	**V/m**	10
Resistance to magnetic fields, 50 Hz	Conforming to IEC 61000-4-8	**A/m**	30
Mounting			All positions
Mechanical fixing			Fixing by two M4 screws (tightening torque 1.5 N.m)

Bus module characteristics

Bus module type		**FTM 1CN10**	**FTM 1DN10**	**FTM 1DP10**
Bus type		CANopen	DeviceNet	Profibus-DP
Operating voltage	⎓ **V**	24		
Maximum supply current	**A**	9		
Binary rate		125, 250 and 500 K bits/s		12 M bits/s
Internal consumption of bus module	**mA**	70		80

Fieldbus characteristics

Bus type			**CANopen**	**DeviceNet**	**Profibus-DP**
Structure	Type		EN 50325 ISO 11898	EN 50325 ISO 11898 CAN, layer 7 DeviceNet	DIN 19245 EN 50170
	Access method		Multimaster, priority information	Master-Slave	Master-Slave, Multi-Master
Transmission	Binary rate		1 M bits/s	500 K bits/s	12 M bits/s
	Medium		2 twisted, shielded wires	4 twisted, shielded wires	2 twisted, type A, shielded wires (RS 485)
Configuration	Maximum number of devices		127	63	32 without repeater 126 with repeaters
	Maximum length of bus		**At 1 M bits/s**: - Max. tap-off length: 0.3 m - Max. cumulative tap-off length: 1.5 m **At 500 K bits/s**: - Max. tap-off length: 6 m - Max. cumulative tap-off length: 30 m	**Main line**: - 500 m without repeater, - 3 km with repeater **Tap-off**: 6 m max.	Without repeater: **At 12 M bits/s**: - 100 m max. **At 1.5 M bits/s**: - 200 m max. **At 500 K bits/s**: - 400 m max. **At < 93.75 K bits/s**: - 1.2 km max.

IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Digital input/output splitter box characteristics

Splitter box type			Inputs		Inputs/outputs	
	Compact		FTM 1DE08C●●	FTM 1DE16C12	FTM 1DD08C●●	FTM 1DD16C12
	Expandable		FTM 1DE08C●●E	FTM 1DE16C12E	FTM 1DD08C●●E	FTM 1DD16C12E
Number of inputs/outputs			8 I	16 I	8 I/O	16 I/O
Internal consumption of splitter box		**mA**	30 (M8) 50 (M12)	50	30 (M8) 50 (M12)	50
Operating voltage		**⎓ V**	24			
Splitter box max. supply current		**A**	4			
Auxiliary supply max. current		**A**	–			4 (only **FTM 1DD16C12**)
Bus and I/O undervoltage detection		**V**	< 18			
Input characteristics						
Number of inputs			8 I	16 I	0...8 I	0...16 I
Conformity to IEC 1131-2			Type 2			
Compatibility with 2-wire/3-wire proximity sensors			Yes			
Input values	Nominal voltage	**⎓ V**	24			
	Maximum current	**mA**	200			
	Sensor power supply	**V**	18...30			
Logic			Positive			
Input filtering		**ms**	1			
Channel status indication			By LED (yellow), one LED per input			
Protection against reversed polarity			Yes			
Output characteristics						
Number of outputs			–		0...8 O	0...16 O
Output type			–		Transistor	
Nominal output values	Voltage	**⎓ V**	–		24	
	Current	**A**	–		0.5	
Response time		**ms**	–		< 0.5	
Max. switching cycle		**Hz**	–		Resistive: 50 Inductive: 5	
Max. lamp load		**W**	–		10	
Channel status indication			–		By LED (yellow), one LED per output	
Output connection/cable lengths		**mm²**	–		0.75/10 m maximum 0.34/5 m maximum	

Analogue input/output splitter box characteristics

Splitter box type			Inputs		Outputs	
	Compact		FTM 1AE04C12C	FTM 1AE04C12T	FTM 1AS04C12C	FTM 1AS04C12T
Number of inputs/outputs			4 I	4 I	4 O	4 O
Internal consumption of splitter box		**mA**	50			
Operating voltage		**⎓ V**	24			
Maximum supply current	Splitter box	**A**	4			
	Per channel	**A**	≤ 0.2		≤ 1.6	
Bus and I/O undervoltage detection		**V**	< 18			
Input and output characteristics						
Type			Differential 300 Ω	Differential 1 MΩ	≤ 500 Ω	≥ 500 Ω
Current	Measuring range		0…20 mA, 4…20 mA	⎓ ± 10 V, ⎓ 0…10 V	0…20 mA, 4…20 mA	⎓ ± 10 V, ⎓ 0…10 V
	Resolution	**Bits**	16	15 + Sign	12	11 + Sign
	Conversion time	**ms**	≤ 2/channel		≤ 1/channel	
Input filtering		**ms**	1		–	
Channel status indication			By LED			
Output connection/cable lengths		**m**	30 max.			

Digital and analogue splitter boxes diagnostic characteristics

Internal bus and I/O undervoltage detection	**V**	< 18
Internal bus communication		By LED
Channel and splitter box short-circuit		By LED
Cable breakage		By LED

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IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

FTM 1CN

FTM 1D●08C08

FTM 1D●08C08E

FTM 1D●08C12
FTM 1A●04C12●

FTM 1D●08C12E

FTM 1DD16C12

Bus modules for modular splitter boxes

Bus type	Maximum number of splitter boxes	Connection to bus by	Reference	Weight kg
CANopen	16	M12 connectors	**FTM 1CN10▲**	0.420
DeviceNet	16	M12 connectors	**FTM 1DN10▲**	0.420
Profibus-DP	16	M12 connectors	**FTM 1DP10▲**	0.420

Modular digital I/O splitter boxes for all bus types

Number of I/O	Number, type of inputs	Number, type of outputs	Connection by	Type	Reference	Weight kg
8	8, ⎓ 24 V IEC type 2	–	8 x M8 female connectors	Compact	**FTM 1DE08C08▲**	0.120
				Expandable	**FTM 1DE08C08E▲**	0.120
			4 x M12 female connectors	Compact	**FTM 1DE08C12▲**	0.120
				Expandable	**FTM 1DE08C12E▲**	0.120
	0...8, ⎓ 24 V IEC type 2	0...8, transistor ⎓ 24 V/ 0.5 A	8 x M8 female connectors	Compact	**FTM 1DD08C08▲**	0.120
				Expandable	**FTM 1DD08C08E▲**	0.120
			4 x M12 female connectors	Compact	**FTM 1DD08C12▲**	0.120
				Expandable	**FTM 1DD08C12E▲**	0.120
16	16, ⎓ 24 V IEC type 2	–	8 x M12 female connectors	Compact	**FTM 1DE16C12▲**	0.220
				Expandable	**FTM 1DE16C12E▲**	0.220
	0...16, ⎓ 24 V IEC type 2	0...16, transistor ⎓ 24 V/ 0.5 A	8 x M12 female connectors	Compact	**FTM 1DD16C12▲**	0.220
				Expandable	**FTM 1DD16C12E▲**	0.220

Modular analogue I/O splitter boxes for all bus types

4	4, 0...20 mA 4...20 mA	–	4 x M12 female connectors	Compact	**FTM 1AE04C12C▲**	0.130
	4, ⎓ ± 10 V ⎓ 0...10 V	–	4 x M12 female connectors	Compact	**FTM 1AE04C12T▲**	0.130
	–	4, 0...20 mA 4...20 mA	4 x M12 female connectors	Compact	**FTM 1AS04C12C▲**	0.130
		4, ⎓ ± 10 V ⎓ 0...10 V	4 x M12 female connectors	Compact	**FTM 1AS04C12T▲**	0.130

Connection accessories

Description	Composition	Length m	Reference	Weight kg
For CANopen/DeviceNet buses				
Bus connection cables	Fitted with 2 elbowed M12, 5-pin connectors, A encoded, one at each end	0.3	**FTX CN3203**	0.040
		0.6	**FTX CN3206**	0.070
		1	**FTX CN3210**	0.100
		2	**FTX CN3220**	0.160
		3	**FTX CN3230**	0.220
		5	**FTX CN3250**	0.430
Connectors M12	5-pin, male, A encoded	–	**FTX CN12M5**	0.050
	5-pin, female, A encoded	–	**FTX CN12F5**	0.050
Line terminator (for end of bus)	Fitted with one M12 connector	–	**FTX CNTL12**	0.010
For Profibus-DP bus				
Bus connection cables	Fitted with 2 straight M12, 5-pin connectors, one at each end	0.3	**FTX DP1203**	0.040
		0.6	**FTX DP1206**	0.070
		1	**FTX DP1210**	0.100
		2	**FTX DP1220**	0.160
		3	**FTX DP1230**	0.220
		5	**FTX DP1250**	0.430
	Fitted with 2 elbowed M12, 5-pin connectors, one at each end	0.3	**FTX DP3203**	0.040
		0.6	**FTX DP3206**	0.070
		1	**FTX DP3210**	0.100
		2	**FTX DP3220**	0.160
		3	**FTX DP3230**	0.220
		5	**FTX DP3250**	0.430

▲ Available 1st half 2004

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Dimensions, schemes: pages 5/48 and 5/49

IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

Connection accessories (continued)

Description	Composition	Length m	Reference	Weight kg
For Profibus-DP bus (continued)				
Connectors	M12 male, 5-pin, B encoded	–	**FTX DP12M5**	0.050
	M12 female, 5-pin, B encoded	–	**FTX DP12F5**	0.050
Line terminator (for end of bus)	Fitted with one M12 connector	–	**FTX DPTL12**	0.010
For all bus types				
⎓ 24 V bus module power supply connection cables	Fitted with two 7/8, 5-pin connectors, one at each end	0.6	**FTX DP2206**	0.150
		1	**FTX DP2210**	0.190
		2	**FTX DP2220**	0.310
		5	**FTX DP2250**	0.750
	Fitted with one 7/8, 5-pin connector, other end free	1.5	**FTX DP2115**	0.240
		3	**FTX DP2130**	0.430
		5	**FTX DP2150**	0.700
T-connector for power supply cable	Fitted with two 7/8, 5-pin connectors	–	**FTX CNCT1**	0.100
For internal bus				
Internal bus connection cables for bus module splitter box linking	Fitted with 2 elbowed M12, 6-pin connectors, one at each end	0.3	**FTX CB3203▲**	0.060
		0.6	**FTX CB3206▲**	0.090
		1	**FTX CB3210▲**	0.120
		2	**FTX CB3220▲**	0.215
		3	**FTX CB3230▲**	0.310
		5	**FTX CB3250▲**	0.500
Auxiliary ⎓ 24 V power supply connection cables for bus module splitter box linking	Fitted with 2 elbowed M12, 6-pin connectors, one at each end	0.3	**FTX CA3203▲**	0.035
		0.6	**FTX CA3206▲**	0.045
		1	**FTX CA3210▲**	0.060
		2	**FTX CA3220▲**	0.090
		3	**FTX CA3230▲**	0.120
		5	**FTX CA3250▲**	0.180
Auxiliary ⎓ 24 V power supply connection cables	Fitted with one elbowed M12, 6-pin connector, other end free	0.3	**FTX CA3103▲**	0.030
		0.6	**FTX CA3106▲**	0.035
		1	**FTX CA3110▲**	0.040
		2	**FTX CA3120▲**	0.070
		3	**FTX CA3130▲**	0.100
		5	**FTX CA3150▲**	0.160
Line terminator for end of internal bus	Fitted with one M12 connector	–	**FTX CBTL12▲**	0.030

Separate parts

Description	Composition	Reference	Weight kg
Connectors	7/8 male, 5-pin	**FTX C78M5**	0.050
	7/8 female, 5-pin	**FTX C78F5**	0.050
Sealing plugs	For M8 connector (lot of 10)	**FTX CM08B**	0.100
	For M12 connector (lot of 10)	**FTX CM12B**	0.100
Y-connectors	Connection of 2 x M8 connectors to M12 connector on splitter box	**FTX CY1208**	0.020
	Connection of 2 x M12 connectors to M12 connector on splitter box	**FTX CY1212**	0.030
Diagnostics adaptor	Fitted with two M12 connectors	**FTX DG12**	0.020
Marker labels	Lot of 10	**FTX MLA10**	0.010
CD-ROM	Configuration files, technical manuals and operating instructions	**FTX ES00**	0.050
Configuration software			
Bus module configuration software for CANopen and Profibus-DP	Generates an ASCII configuration file for the bus module, for import into the PLC	**TLX L FBC M**	–

FTX CY1208

▲ Available 1st half 2004

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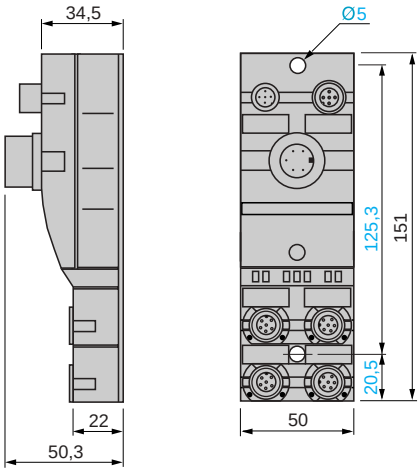
IP 67 modular I/O splitter boxes for fieldbuses

Advantys, FTM splitter boxes

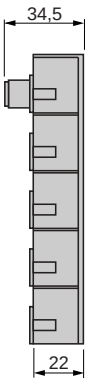
Bus modules

FTM 1●●10

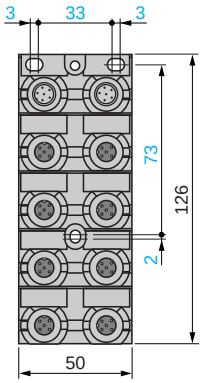


Splitter boxes

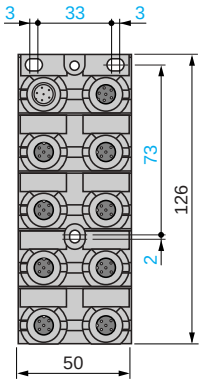
Common side view



FTM 1DD16C12



FTM 1DD16C12E
FTM 1DE16C12E



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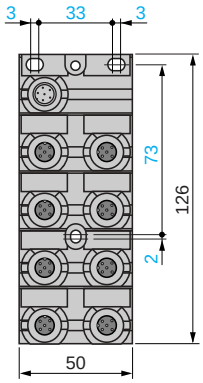
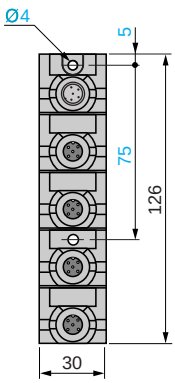
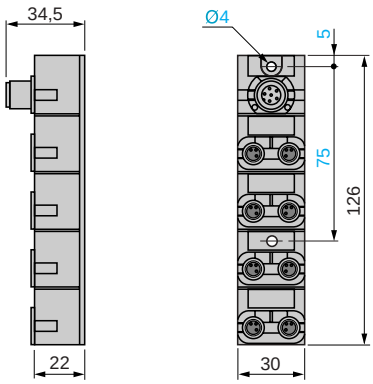


FTM 1D●08C12
FTM 1A●04C12●



FTM 1D●08C08



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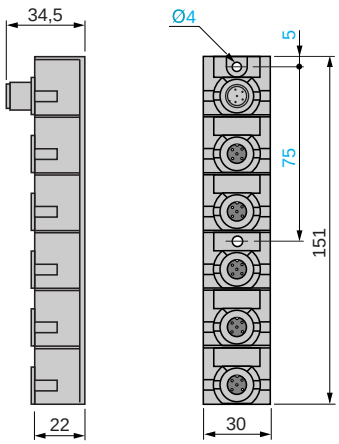

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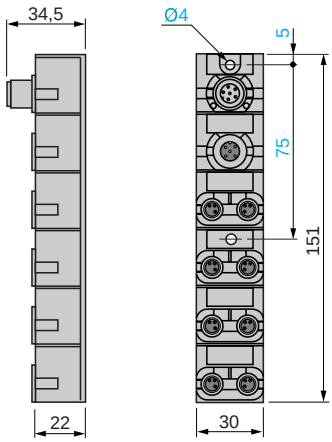
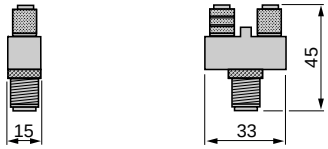
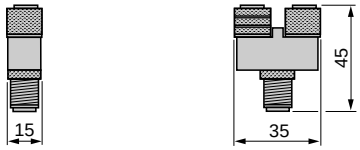


Y-connectors

FTX CY1208



FTX CY1212



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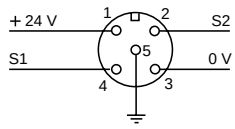
IP 67 modular I/O splitter boxes for fieldbuses

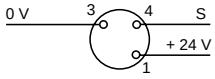
Advantys, FTM splitter boxes

Splitter box connection

Input/output connection for digital splitter boxes



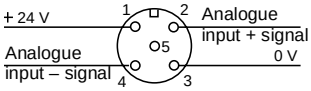
M12 female connector



M8 female connector

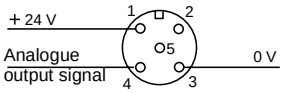
Input/output connection for analogue splitter boxes

Analogue input



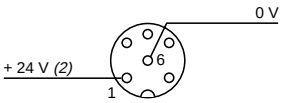
M12 female connector

Analogue output



M12 female connector

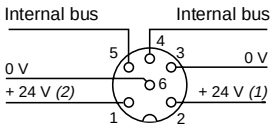
Auxiliary power supply



M12 male connector

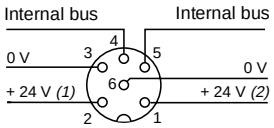
Bus input/Internal bus output of splitter boxes

Internal bus input



M12 male connector

Internal bus output



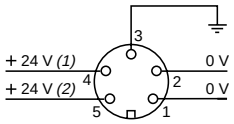
M12 female connector

(1) Supply to splitter box and sensors.
(2) Supply to actuators.

Bus module connection on CANopen and DeviceNet bus

Supply to bus module

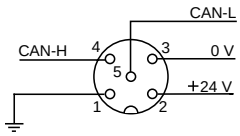
Supply input



7/8 male connector

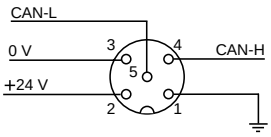
Bus input/Bus outputs of bus module

Bus input



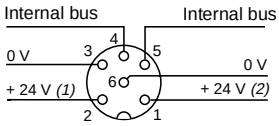
M12 male connector

Bus output



M12 female connector

Internal bus output



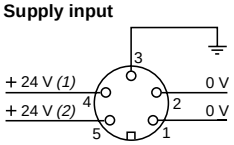
M12 female connector

(1) Supply to splitter box and sensors.
(2) Supply to actuators.

Bus module connection on Profibus-DP bus

Supply to bus module

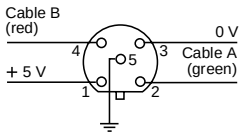
Supply input



7/8 male connector

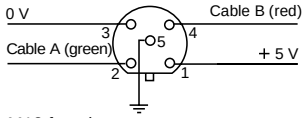
Bus input/Bus outputs of bus module

Bus input



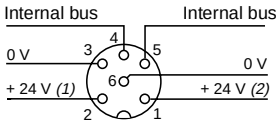
M12 male connector

Bus output



M12 female connector

Internal bus output



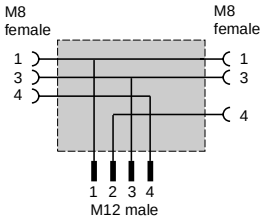
M12 female connector

(1) Supply to splitter box and sensors.
(2) Supply to actuators.

***Note:** connectors linked to shielding.*

Y-connector connection

FTX CY1208



FTX CY1212