The essential guide
Interfaces and I/Os

2013

Schneider Electric

From simple connectors to integrated I/O platforms, monobloc products to modular solutions, Modicon I/O presents an extensive range of interfaces and I/O for any application.

Modicon I/O

The compact dimensions and pre-wired system characteristic of the Modicon I/O range allow you to optimise installation time, minimise costs and the risk of error, as well as simplify maintenance.

Contents

Modicon OTB ───── IP 20 Distributed I/O, optimum system
Interface modules

Discrete Type of bus		CANopen Machine bus	Ethernet TCP/IP network (2)	Modbus Series network
Number of I/Os		20 I/O		
Number of inputs		12 inputs 24 VDC IEC type 1		
Number of outputs		6 relay outputs and 2 solid state 24 VDC outputs		
Connection method		Removable terminal block		
Number of I/O expansion modules (1)		7 discrete or analogue input/output modules, or connection accessories		
Maximum I/O configuration		With interface module base: 132 with screw terminal I/O expansion; 244 with HE10 connector I/O expansion; up to 48 analogue channels		
Supply voltage		24 VDC		
Counting	**5 kHz**	2 channels, 32 bits (0…4 294 967 295 points) dedicated discrete inputs -up counting/down counting with preset		
	20 kHz	2 channels, 32 bits (0…4 294 967 295 points) up/down counting, up counting, down counting, frequency meter		
Pulse generator, 7 kHz		2 PWM function channels (output with pulse width modulation) or PLS function (pulse generator output)		
Dimensions W x D x H (mm)		55 x 70 x 90		
References		**OTB1C0DM9LP**	**OTB1E0DM9LP**	**OTB1S0DM9LP**

(1) For the references of discrete I/O and analogue expansion modules, please see www.schneider-electric.com

(2) Transparent Ready : Class A10

Accessories

Type of accessory	Commoning modules	Documentation
Usage	For grouping input or output commons, max 8 A	User guides for Modicon hardware and software, and Modicon Configuration Software for Modicon OTB/FTB/FTM. Provided on CD.
Positioning	Inter-module	–
Référence	**OTB9ZZ61JP**	**FTXES01**

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CANopen electronic interface module

| Type of module	Bus base	CANopen electronic interface module	Power distribution electronic module	Terminal block
Max. number of addressable I/O modules	40 with 240 Digital Input, 240 Digital Output, 20 Input Analog & 20 Output Analog (1)			
Baud rate	10 K…1 Mbps			
Power supply	24 VDC			
Module color	White	White	Grey	Grey
Description	For TM5NCO1 and TM5SPS3 electronic modules	CANopen bus communication with CANopen protocol	For the CANopen bus interface and slice I/O expansion modules	12 spring terminals
References	TM5ACBN1	TM5NCO1	TM5SPS3	TM5ACTB12PS

(1) Only 3 configurations maximum on CANopen fieldbus

Digital and analogue I/O expansion blocks (2)

Type of module	Input			Output		
	Digital	Analog		Digital		Analog
Number of inputs	12 sink	–	–	–	–	–
Number of outputs	–	–	–	12 source	4 relay	–
Number of inputs	–	4	4	–	–	–
Number of outputs	–	–	–	–	–	4
Nominal input current	24 VDC	–	–	–	–	–
Nominal output current	–	–	–	24 VDC	30 VDC/ 230 VAC	–
Type	–	Thermal probe	Voltage / Current	–	–	Voltage / Current
Associated bus sub-bases (3)	TM5ACBM11	TM5ACBM11	TM5ACBM11	TM5ACBM11	TM5ACBM12	TM5ACBM11
Associated terminal block (3)	TM5ACTB12	TM5ACTB12	TM5ACTB12	TM5ACTB12	TM5ACTB32	TM5ACTB12
References	TM5SDI12D	TM5SAI4PH	TM5SAI4L	TM5SDO12T	TM5SDO4R	TM5SAO4L

(2) Wide range of I/O expansion modules (digital I/O, analog, expert, non-functioning dummy, remote I/O modules…), please consult our catalogue pages on www.schneider-electric.com.
(3) To be ordered separately

Modicon TM5

IP 20 Distributed I/O, modular system
Compact I/O
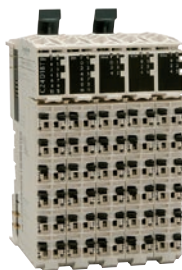
Type of module	20 I/O Digital Compact block	36 I/O Digital Compact block	42 I/O Digital Compact block	24 I/O Digital/Analog Compact block
Digital input number	12	24	24	12
Digital input type	Sink	Sink	Sink	Sink
Analog input number	–	–	–	4
Analog input type	–	–	–	- 10…+ 10 VDC, 0…20 mA, 4…20 mA
Digital output number	8	12	18	6
Digital output type	Transitor	Relay with NO contact	Transitor	Transitor
Analog output number	–	–	–	2
Analog output type	–	–	–	- 10…+ 10 VDC, 0…20 mA
References	TM5C12D8T	TM5C24D12R	TM5C24D18T	TM5C12D6T6L

Type of module	16 I/O Analog Compact block	16 I/O Analog Compact block	16 I/O Analog Compact block
Analog input number	8	8	8
Analog input type	- 10…+ 10 VDC	0…20 mA, 4…20 mA	4 inputs : - 10…+ 10 VDC, 4 inputs : 0…20 mA, 4…20 mA
Analog output number	8	8	8
Analog output type	- 10…+ 10 VDC	0…20 mA, 4…20 mA	4 inputs : - 10…+ 10 VDC, 4 inputs : 0…20 mA, 4…20 mA
Referencecs	TM5CAI8O8VL	TM5CAI8O8CL	TM5CAI8O8CVL

IP 20 Distributed I/O, modular system
PCI modules

Type of module	PCI Serial link communication modules	Serial link communication modules	Profibus DP communication module
Physical layer	RS232	RS485	RS485
Protocol	Modbus / ASCII	Modbus / ASCII	Profibus DP Slave
Baud Rate	115,2 kbit/s max.	115,2 kbit/s max.	12 Mbit/s max.
Connector	D-Sub 9, male	D-Sub 9, male	SUB-D connector (male 9-way)
References	TM5PCRS2	TM5PCRS4	TM5PCDPS

Type of module		Analog Input	Analog Input	Analog Input
Type		Voltage / Current	Voltage / Current	Pt100 / Pt1000 temperature probe
Range		- 10…+ 10 VDC 0…20 mA 4…20 mA	- 10…+ 10 VDC 0…20 mA 4…20 mA	- 200…+ 850°C
Resolution		12 bits + sign	15 bits + sign	16 bits
Associated bus sub-bases (3)		TM5ACBM11	TM5ACBM11	TM5ACBM11
Associated terminal block (3)		TM5ACTB12	TM5ACTB12	TM5ACTB12
References	2 channels	**TM5SAI2L**	**TM5SAI2H**	**TM5SAI2PH**
	4 channels	**TM5SAI4L**	**TM5SAI4H**	**TM5SAI4PH**
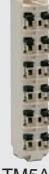
Type of module		Analog Output	Analog Output	Analog Input
Type		Voltage / Current	Voltage / Current	J, K, S, N thermocouple
Range		- 10…+ 10 VDC 0…20 mA	- 10…+ 10 VDC 0…20 mA	Type J : - 210…+ 1200°C Type K : - 270…+ 1372°C Type S : - 50…+ 1768°C Type N : - 270…+ 1300°C
Resolution		12 bits + sign	15 bits + sign	16 bits
Associated bus sub-bases (3)		TM5ACBM11	TM5ACBM11	TM5ACBM11
Associated terminal block (3)		TM5ACTB12	TM5ACTB12	TM5ACTB12
References	2 channels	**TM5SAO2L**	**TM5SAO2H**	**TM5SAI2TH**
	4 channels	**TM5SAO4L**	**TM5SAO4H**	**TM5SAI6TH (6 channels)**

Type of module		Digital Inputs	Digital Inputs	Digital Inputs/Outputs
Supply voltage		24 VDC	100/240 VAC	24 VDC
Type of signal (1)		Sink	–	Sink / Source
Associated bus sub-bases (3)		TM5ACBM11	TM5ACBM12	TM5ACBM11
Associated terminal block (3)		TM5ACTB12	TM5ACTB32	TM5ACTB12
References	2 channels	**TM5SDI2D**	**TM5SDI2A**	–
	4 channels	**TM5SDI4D**	**TM5SDI4A**	–
	6 channels	**TM5SDI6D**	**TM5SDI6U**	–
	12 channels	**TM5SDI12D**	–	**TM5SDM12DT**

Type of module		Digital Outputs	Digital Outputs	Output analog
Supply voltage		24 VDC	24 VDC	30 VDC / 230 VAC
Type of signal (1)		Source	Source	Relay
Associated bus sub-bases (3)		TM5ACBM11	TM5ACBM11	TM5ACBM12
Associated terminal block (3)		TM5ACTB12	TM5ACTB12	TM5ACTB32
References	2 channels	**TM5SDO2T**	–	**TM5SDO2R**
	4 channels	**TM5SDO4T**	**TM5SDO4TA**	**TM5SDO4R**
	6 channels	**TM5SDO6T**	**TM5SDO8TA (8 channels)**	–
	12 channels	**TM5SDO12T**	–	–

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Type of module	Expert module	Expert module	Expert module	Expert module
Number of channels	2	1 or 2	1	1
Max. frequency	50 kHz	100 kHz	250 kHz	1 MHz
Signal	Sink	Sink	Sink	Sink
Integrated functions	Event counting Interval measurement	2 x 24 VDC auxiliary inputs 24 VDC encoder power supply	2 x 24 VDC auxiliary inputs 5 VDC encoder power supply	2 x 24 VDC auxiliary inputs 5 VDC SSI encoder power supply
Associated bus sub-bases (3)	TM5ACBM11	TM5ACBM11	TM5ACBM11	TM5ACBM11
Associated terminal block (3)	TM5ACTB12	TM5ACTB12	TM5ACTB12	TM5ACTB12
References	**TM5SDI12DF**	**TM5SE1IC1024** **TM5SE2IC1024**	**TM5SE1IC02505**	**TM5SE1SC1005**

Type of module	Expert module
Number of channels	1
Sensor range	85...5000 Ω
Resolution	24 bits
Measurement type	Full-bridge strain gauge
Associated bus sub-bases (3)	TM5ACBM11
Associated terminal block (3)	TM5ACTB12
References	**TM5SEAISG**
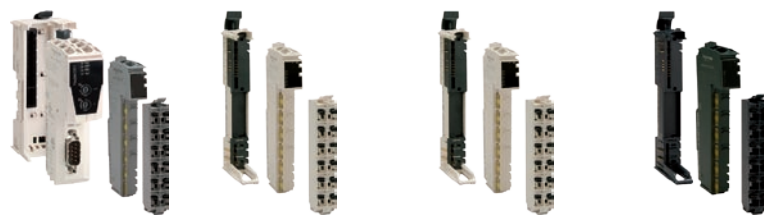
Type of module	CANopen Fieldbus Interface module	Digital Inputs	Digital Outputs	Digital Outputs
Number of channels	–	12	12	4
Power Supply	–	24 VDC	24 VDC	30 VDC / 230 VAC
Type of signal	–	Sink	Source	Relay
Type of wiring	–	1-wire	1-wire	NO/NC contact
Composition of the kit	TM5ACBN1 + TM5ACTB12PS + TM5NCO1 + TM5SPS3	TM5ACBM11 + TM5ACTB12 + TM5SDI12D	TM5ACBM11 + TM5ACTB12 + TM5SDO12T	TM5ACBM12 + TM5ACTB32 + TM5SDO4R
References	**TM5NCO1K**	**TM5SDI12DK**	**TM5SDO12TK**	**TM5SDO4RK**

Type of module	Analog Input	Analog Output	Analog Input
Number of channels	4	4	4
Type	Voltage / Current	Voltage / Current	Pt100 / Pt1000 temperature probe
Range	- 10…+ 10 VDC 0…20 mA 4…20 mA	- 10…+ 10 VDC 0…20 mA	- 200…+ 850°C
Resolution	12 bits + sign	12 bits + sign	16 bits
Composition of the kit	TM5ACBM11 + TM5ACTB12 + TM5SAI4L	TM5ACBM11 + TM5ACTB12 + TM5SAO4L	TM5ACBM11 + TM5ACTB12 + TM5SAI4PH
References	**TM5SAI4LK**	**TM5SAO4LK**	**TM5SAI4PHK**

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Modicon STB ———— IP 20 Distributed I/O, modular system
Communication modules

Type of module NIM		EtherNet		
		Modbus TCP	Modbus TCP, dual port	EtherNet/IP
Baud rate		10 Mbps	10/100 Mbps	10/100 Mbps
Transparent Ready	Class	B20	B15	N/A
	Embedded Web server	Standard services	Standard services	Standard services
	Ethernet services	SNMP agent, FDR, BootP & DHCP client	SNMP agent, RSTP, BootP & DHCP client	SNMP agent, BootP & DHCP client
Max. number of addressable I/O modules		32 per island	32 per island	32 per island
Dimensions W x D x H (mm)		40 x 70 x 128.3	40 x 70 x 128.3	40 x 70 x 128.3
Reference	Standard	**STBNIP2212**	**STBNIP2311**	**STBNIC2212**

Type of module NIM		Machine bus	Fieldbus		
		CANopen	Fipio	INTERBUS	Profibus DP
Max. number of addressable I/O modules		32 per island (1) (2)	32 per island (1)	32 per island (1) (2)	32 per island (1) (2)
Baud rate		10 K…1 Mbps	1 Mbps	0.5 Mbps	9.6 K…12 Mbps
Dimensions W x D x H (mm)		40 x 70 x 128.3			
Reference	Standard	**STBNCO2212**	**STBNFP2212**	**STBNIB2212**	**STBNDP2212**

(1) On 1 primary segment and 6 expansion segments max.

(2) 12 max on 1 primary segment for basic versions.

Type of module		Other networks		
		Modbus Plus	DeviceNet	
Max. number of addressable I/O modules		32 per island	32 per island	12 per island
Baud rate		1 Mbps	125, 250 or 500 Kbps	125, 250 or 500 Kbps
Dimensions W x D x H (mm)		40 x 70 x 128.3		
Reference	Standard	**STBNMP2212**	**STBNDN2212**	–
	Basic	–	–	**STBNDN1010**

Connection accessories

Type of accessory		Removable terminals for	
		24 VDC power supply	DeviceNet
Use		All communication modules	Network link DeviceNet module
Reference	Screw terminals	**STBXTS1120** (1)	**STBXTS1111**
	Spring terminals	**STBXTS2120** (1)	**STBXTS2111**

(1) Provided with the module kit and can be ordered separately as spare parts (sold by lots of 10). STBXTS●120 are delivered systematically with STBN●●●●●●

Marking label sheets	**STBXMP6700**
Screwdriver	**STBXTT0220**

Connection accessories: See www.schneider-electric.com

Modicon STB ——— IP 20 Distributed I/O, modular system
Power distribution modules (1)

Type of module			PDM				Auxiliary Power supply
Connection by removable terminals			Screw STBXTS1130 (2) (3)				Screw STBXTS1120 (2)
			Spring STBXTS2130 (2) (3)				Spring STBXTS2120 (2)
Supply voltage			24 VDC		115…230 VAC		24 VDC
Maximum current	Inputs (4)		4 A at 30°C, 2.5 A at 60°C	–	5 A at 30°C, 2.5 A at 60°C	–	–
	Outputs (4)		8 A at 30°C, 5 A at 60°C	–	10 A at 30°C, 5 A at 60°C	–	–
	Inputs/Outputs (4)		–	4 A at 30°C, 2.5 A at 60°C	–	4 A at 30°C, 2.5 A at 60°C	–
	Logic internal 5 V		–	–	–	–	1.2 A
Sensor/actuator bus voltage range			19.2…30 VDC		85…265 VAC		–
Dimensions W x D x H (mm)			18.4 x 70 x 128.3				
Reference	Module (5)	Standard	**STBPDT3100K**	–	**STBPDT2100K**	–	**STBCPS2111K**
		Basic	**–**	**STBPDT3105K**	**–**	**STBPDT2105K**	
	Base		**STBXBA2200**		**STBXBA2200**		**STBXBA2100**

(1) For power supplies see chapter 5.
(2) To be ordered separately, sold in lots of 10.
(3) PDM connector keying pin kit STBXMP7810.
(4) PDM fuse kit STBXMP5600.
(5) Kit reference including module, base and terminal.
    Base and terminals can be ordered separately as spare parts.

Bus extension modules for standard range

Type of module			"EOS" End of segment	"BOS" Beginning of segment	Extension for CANopen connection devices
Connection by removable terminals			–	Screw STBXTS1120 (1)	Screw STBXTS1110 (2)
			–	Spring STBXTS2120 (1)	Spring STBXTS2110 (2)
Use			For placing at end of segment (except for the last)	For placing at head of each extension segment	For placing at end of last segment
Dimensions W x D x H (mm)			18.4 x 70 x 128.3		
Reference	Module (3)	Standard	**STBXBE1100K**	**STBXBE1300K**	**STBXBE2100K**
	Base		**STBXBA2300K**	**STBXBA2400**	**STBXBA2000**

(1) To be ordered separately, sold in lots of 10.   (2) To be ordered separately, sold in lots of 20.
(3) Kit reference including module, base and terminal. Base and terminals can be ordered separately as spare parts.

Software and memory card

Type		Modicon STB, OTB, FTM, FTB configuration software (PC connection cable supplied)					Removable memory card
Software User Guide		Single station	3 pack	10 pack	Unlimited Site	System Aliance Integrator	–
Memory size		–					32 KB
Reference		**STBSPU1000**	**STBSPU1003**	**STBSPU1011**	**STBSPU1130**	**STBSPU1010**	**STBXMP4440**
	Hardware User Guide	**STBSUS8800**					

Connection accessories

Type of accessory	Island bus expansion cable				
Length	0.3 m	1 m	4.5 m	10 m	14 m
Reference	**STBXCA1001**	**STBXCA1002**	**STBXCA1003**	**STBXCA1004**	**STBXCA1006**
	Bus termination module or plug		**Programmation connection cable L= 2 m**		
Reference	**STBXMP1100**		**STBXCA4002**		

Connection accessories: See www.schneider-electric.com

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Modicon STB — IP 20 Distributed I/O, modular system
Discrete modules

Type of module			Discrete inputs						
Connection by removable terminals (1)	Screw (2)		STBXTS1100			STBXTS1180	STBXTS1110		
	Spring (2)		STBXTS2100			STBXTS2180	STBXTS2110		
Number of channels			2	4	6	16	2	2 (isolated)	2
Input voltage			24 VDC				115 VAC		230 VAC
Dimensions W x D x H (mm)			13.9 x 70 x 128.3				18.4 x 70 x 128.3		
Reference	Module (6)	Standard	STBDDI3230K	STBDDI3420K	STBDDI3610K	–	STBDAI5230K	STBDAI5260K	STBDAI7220K
		Basic	–	STBDDI3425K	STBDDI3615K	STBDDI3725KS/KC* STBDDI3725**	–	–	–
	Base (3)		STBXBA1000			STBXBA3000	STBXBA2000		

* KS with base and screw terminals,
  KC with base and spring terminals.
** Without base and terminals.
  Base and terminals can be ordered separately as spare parts.

Type of module			Discrete solid state outputs						
Connection by removable terminals (1)	Screw (2)		STBXTS1100						STBXTS1180
	Spring (2)		STBXTS2100						STBXTS2100
Number of channels			2		4		6		16
Output voltage			24 VDC		24 VDC		24 VDC		24 VDC
Output current			0.5 A	2 A	0.25 A	0.5 A	0.25 A	0.5 A	0.5 A
Dimensions W x D x H (mm)			13.9 x 70 x 128.3						
Reference	Module (6)	Standard	STBDDO3200K	STBDDO3230K	–	STBDDO3410K	–	STBDDO3600K	–
		Basic	–	–	STBDDO3415K	–	STBDDO3605K	–	STBDDO3705KS/KC* STBDDO3705**
	Base (3)		STBXBA1000						STBXBA3000

* KS with base and screw terminals,
  KC with base and spring terminals.
** Without base and terminal.
  Base and terminals can be ordered separately as spare parts.

Type of module			Discrete outputs			
			Triac		Relay	
Connection by removable terminals (1)	Screw (2)		STBXTS1100			
	Spring (2)		STBXTS2100			
Number of channels			2	2 (isolated)	2 NO/NC and common	2NC+NO
Output voltage			115…230 VAC	115 VAC	24 VDC ou 115…230 VAC	
Output current			2 A à 30°C, 1 A à 60°C		2 A per contact	7 A per contact
Dimensions W x D x H (mm)			18.4 x 70 x 128.3		28.1 x 70 x 128.3	
Reference	Module (6)	Standard	STBDAO8210K	STBDAO5260K	STBDRC3210K	STBDRA3290K
	Base (3)		STBXBA2000		STBXBA3000	

(1) To be ordered separately, sold in lots of 20.
(2) I/O connector keying pin kit STBXMP7800.
(3) Module keying pin kit STBXMP7700.
(4) If connection on Telefast2 order STBXTS6510 or connection on Telefast Twido order STBXTS5510.
(5) If connection on Telefast2 order STBXTS6610 or connection on Telefast Twido order STBXTS5610.
(6) Kit reference including module, base and terminal except for STBDDI3725 and STBDD03705. Base and terminals can be ordered separately as spare parts.

Connection accessories: See www.schneider-electric.com

Modicon STB — IP 20 Distributed I/O, modular system
Analog modules
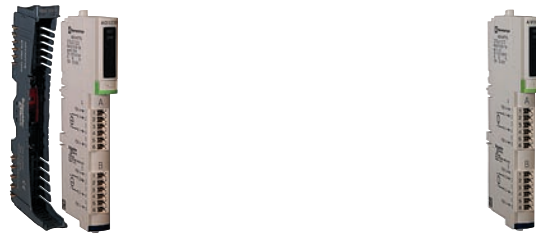
Type of module (1)			Analog inputs (*)							
Connection by removable terminals			Screw STBXTS1100 (2) / Spring STBXTS2100 (2)							
Number of channels			2				4		8	2
Input signal			- 10…+10 V	0…+10 V	0…20 mA	4…20 mA	4…20 / 0…20 mA	Selectable	Selectable	Multirange (3)
Resolution			11 bits + sign	10 bits	12 bits	10 bits	15 bits + sign			
Dimensions W x D x H (mm)			13.9 x 70 x 128.3				18.4 x 70 x 128.3			13.9 x 70 x 128.3
Reference	Module (8)	Standard	–	–	STBACI1230K	–	STBACI0320K	STBAVI0300K	STBACI1400K (5)	STBART0200K
			STBAVI1270K	–	–	–	STBACI8320K (4)	–	STBAVI1400K (6)	–
		Basic	–	STBAVI1255K	–	STBACI1225K	–	–	–	–
	Base		STBXBA1000				STBXBA2000			STBXBA1000

(*) For other references, please see:
www.schneider-electric.com

Type of module (1)			Analog outputs							
Connection by removable terminals			Screw STBXTS1100 (2) / Spring STBXTS2100 (2)							
Number of channels			1	2						
Output signal			4…20 mA	0…+10 , - 10…+10 V	0…+10 V	-10 V…+10 V	0…20 mA	4…20 mA	4…20 mA	Selectable (6)
Resolution			15 bits + sign	11 bits + sign or 12 bits	10 bits	9 bits + sign	12 bits	10 bits	15 bits + sign	
Dimensions W x D x H (mm)			18.4 x 70 x 128.3	13.9 x 70 x 128.3					18.4 x 70 x 128.3	
Reference	Module (8)	Standard	STBACO0120K	STBAVO1250K	–	–	STBACO1210K	–	STBACO0220K	STBAVO0200K
		HART compliant	–	–	–	–	–	–	STBACO8220K (7)	–
		Basic	–	–	STBAVO1255K	STBAVO1265K	–	STBACO1225K	–	–
	Base		STBXBA2000	STBXBA1000					STBXBA2000	

Application-specific modules

Type of module (1)			For motor starters TeSys model U	Counter	HART Interface module
Connection by connector			4 RJ45	Spring STBXTS2150 (2)	Spring STBXTS2150
Number of inputs/outputs			12 I / 8 O	4 I / 2 O	–
Input voltage			24 VDC	24 VDC	–
Output voltage/current			24 VDC/0.1 A per channel	24 VDC/0.5 A	–
Number of channels			4 starters-controllers	1 counter channel 40 kHz	4 channels compatible with 4...20mA HART signals
Dimensions W x D x H (mm)			28.1 x 70 x 128.3		28.1 X 70 X 128.3
Reference	Module (8)	Standard	STBEPI2145K	STBEHC3020K	STBAHI8321KC
	Base		STBXBA3000		STBXBA3000
	Connection cables		(9)	–	–

(1) Grounding kit (recommended for counter > 40 kHz): STBXSP3000 (connecting support) + STBXSP3010 (1.5…6 mm² cables) + STBXSP3020 (5…11 mm² cables)
(2) To be ordered separately, sold in lots of 20. (3) Multirange temperature probe thermocouples B, E, J, K, R, S, T. Thermal probe Pt 100, Pt 1000, Ni 100, Ni 1000, cu 10, ± 80 mV.
(4) 4 HART-tolerant channels (5) Input signal selectable / channel 0…20 mA and 4…20 mA (6) Input signal selectable / channel 1…5 VDC, 0…5 VDC, 0…10 VDC, ± 5 VDC and ± 10 VDC
(7) 2 Hart compliant channels. (8) Kit reference including module, base and terminal
(9) LU9R03 (0,3 m), LU9R10 (1 m), 490NTW00002 (2 m), LU9R30 (3 m), 490NTW00005 (5 m), 490NTW00012 (12 m)

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CANopen interface I/O blocks

Type of module	CANopen interface blocks with digital I/O		
Number of channels	8 I/O	16 I/O	16 I/O
Number, type of inputs	8 sink (1)	16 sink (1)	16 sink (1)
Number, type of outputs	8 transistor / source (2)	16 transistor / source (2)	16 transistor / source (2)
Sensor / actuator connection	8 female M8 connectors	16 female M8 connectors	8 female M12 connectors
Communication bus	CANopen TM7 bus	CANopen TM7 bus	CANopen TM7 bus
References	**TM7NCOM08B**	**TM7NCOM016B**	**TM7NCOM016A**

(1) Sink inputs: positive logic   (2) Source outputs: positive logic

Digital I/O expansion blocks
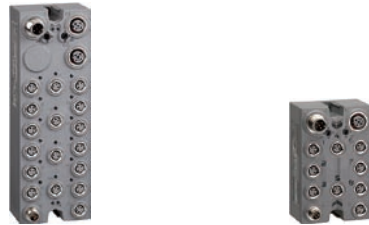
Type of module	Analog I/O expansion blocks		
Input voltage	24 VDC IEC type 1		
Output voltage	24 VDC		
Type of inputs	Sink (positive logic)		
Type of ouputs	Transistor / source (positive logic)		
Diagnostics	By expansion block, channel, communication on TM7 bus		
Communication bus	TM7 bus		
Output current	0.5 A		2A
Sensor / actuator connection	M8 connectors	M12 connectors	M8 connectors
References — 8 inputs	**TM7BDI8B**	–	–
8 configurable I/O	**TM7BDM8B**	–	–
16 inputs	**TM7BDI16B**	**TM7BDI16A**	–
16 configurable I/O	**TM7BDM16B**	**TM7BDM16A**	–
8 outputs	–	–	**TM7BDO8TAB**

Analog I/O expansion blocks

Type of module	Analog I/O expansion blocks			
Input range	Voltage	Current 0…20 mA	Temperature probe Pt100 / Pt1000	J, K, S thermocouple
Output range	Voltage -10… + 10 V DC	Current 0…20 mA	-	-
Type of inputs	Sink (positive logic)			
Type of ouputs	Transistor / source (positive logic)			
Diagnostics	By expansion block, channel, communication on TM7 bus			
Communication bus	TM7 bus			
Sensor / actuator connection	M12 connectors			
Resolution	11 bit + sign	12 bit	16 bit	16 bit
References — 2 inputs/2 outputs	**TM7BAM4VLA**	**TM7BAM4CLA**	–	–
4 inputs	**TM7BAI4VLA**	**TM7BAI4CLA**	**TM7BAI4TLA**	**TM7BAI4PLA**
4 outputs	**TM7BAO4VLA**	**TM7BAO4CLA**	–	–
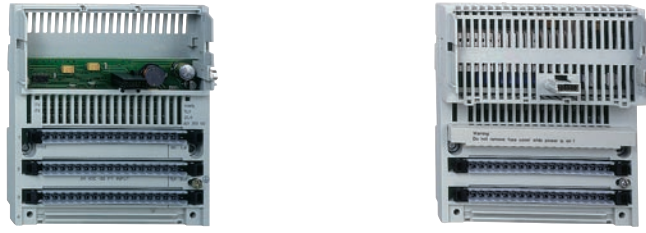
Type of module	Multibus discrete inputs			
Connection	By screw terminals 170XTS00100 or spring terminals 170XTS00200 (to be ordered separately)			
Input voltage	24 VDC		120 VAC	230 VAC
Number of channels	16 (1 common point)	32 (2 common points)	16 (2 common points)	
Dimensions W x D x H (mm)	125 x 47.5 x 141.5 (with communication modules or processors)			
	144 x 70 x 141.5 (with M1/M1E processors and optional modules)			
Reference	**170ADI34000**	**170ADI35000**	**170ADI54050**	**170ADI74050**

Type of module		Multibus discrete outputs					
		Solid state		Triac			
Connection		By screw terminals 170XTS00100 or spring terminals 170XTS00200 (to be ordered separately)					
Output voltage		24 VDC		120 VAC		230 VAC	
Number of protected channels		16	32	8	16	8	16
		(2 common pts)	(2 common pts)	(2 common pts)	(2 common pts)	(2 common pts)	(2 common pts)
Output current	Per channel	0,5 A	0,5 A	2 A	0,5 A	2 A	0,5 A
	Per group of channels	4 A	8 A	4 A	4 A	4 A	4 A
	Per module	8 A	16 A	8 A	8 A	8 A	8 A
Dimensions W x D x H (mm)		125 x 47.5 x 141.5 (with communication modules or processors)					
		144 x 70 x 141.5 (with M1/M1E processors and optional modules)					
Reference		**170ADO34000**	**170ADO35000**	**170ADO53050**	**170ADO54050**	**170ADO73050**	**170ADO74050**

Type of module		Multibus discrete I/O							
		Solid state					Relay		Triac
Connection		By screw terminals 170XTS00100 or spring terminals 170XTS00200 (to be ordered separately)							
Number of channels	Inputs	16 (1 common pt)	16 (4 com. pts)	16 (1 com. pt)	10 (1 common pt)				
	Input logic	Positive	Positive (2)	Negative	Positive			–	
	Outputs	16 (1 common pt)	16 (2 common pts)		8/4 (1 com. pt)	12	8 (2 common pts)		8 (1 com. pt)
Input voltage		12…48 VDC	24 VDC						120 VAC
Output voltage		12…48 VDC	24 VDC				24…230 VAC/20…115 VDC		120 VAC
Output current	Per output	0,5 A	0,5 A		2 A	0,5 A	2 A		0,5 A
	Per group of channels	–	4 A		4 A	4/2 A	8 A		4 A
	Per module	8 A	8 A		8 A	6 A	16 A		4 A
Dimensions W x D x H (mm)		125 x 47.5 x 141.5 (with communication modules or processors)							
		144 x 70 x 141.5 (with M1/M1E processors and optional modules)							
Reference		**170ADM85010**	**170ADM35010**	**170ADM35015**	**170ADM37010**	**170ADM39010**	**170ADM39030**	**170ARM37030**	**170ADM69051**

(2) For a version with high-speed positive logic, replace **0** at the end of the reference with **1**. E.g. **170ADM35010** becomes **170ADM35011**

Connection accessories: See www.schneider-electric.com

Analog I/O modules

Type of module	Multibus analog inputs		
Connection	By screw terminals 170XTS00100 or spring terminals 170XTS00200 (to be ordered separately)		
Number of channels	8 isolated	16 with common point	4 isolated
Input signal	± 5 V, ± 10 V, ± 20 mA, 1…5 V, 4…20 mA	± 5 V, ± 10 V, 4...20 mA	Multi-range ± 25 mV, ± 10 mV (1)
Resolution	14 bits + sign, 15 bits unipolar	12 bits + sign	15 bits + sign
Dimensions W x D x H (mm)	125 x 47.5 x 141.5 (with communication modules or processors) 144 x 70 x 141.5 (with M1/M1E processors and optional modules)		
Reference	170AAI03000	170AAI14000	170AAI52040

(1) Temperature probe: Pt 100, Pt 1000, Ni 100, Ni 1000, Thermocouple: B, E, J, K, N, R, S, T.

Type of module		Multibus analog outputs		Analog I/O and multibus discrete I/O			
Connection		By screw terminals 170XTS00100 or spring terminals 170XTS00200 (to be ordered separately)					
Number of channels	Inputs	–		4 differential + 4 discrete		6 with com pt + 8 discrete (24 VDC)	
	Outputs	4		2 + 2 discrete (24VDC)	2 + 2 discrete (12VDC)	4 with com pt + 8 discrete (24 VDC)	
Input signal		± 10 V, 0...20 mA	± 10 V, 4...20 mA	± 5 V, ± 10 V, ± 20 mA, 1…5 V, 4…20 mA		0…10 V	± 10 V
Output signal		–		± 10 V, 4...20 mA		0…10 V	± 10 V
Resolution		12 bits + sign		12...14 bits dep. on signal		14 bits	14 bits
Dimensions W x D x H (mm)		125 x 47.5 x 141.5 (with communication modules or processors) 144 x 70 x 141.5 (with M1/M1E processors and optional modules)					
Reference		170AAO12000	170AAO92100	170AMM09000	170AMM09001	170ANR12090	170ANR12091

Application-specific I/O modules

Type of module	High-speed counter	Discrete I/O with Modbus port
Connection	By screw terminals 170XTS00100 or spring terminals 170XTS00200 (to be ordered separately)	
Type of inputs for	Incremental or absolute encoders	RS 485 Modbus port
Operating voltage	24 VDC	120 VAC
Counting frequency	200 kHz	–
Number of channels	2 independent	–
Number of discrete I/O	2 x 3 inputs/2 x 2 outputs	6 inputs/3 outputs
Dimensions W x D x H (mm)	125 x 47.5 x 141.5 (with communication modules or M1/M1E processors) 144 x 70 x 141.5 (with M1/M1E processors and optional modules)	
Reference	170AEC92000	170ADM54080

Modicon Momentum —— Distributed I/O and processors
Communication modules

Type of module	Ethernet TCP/IP network		Fipio fieldbus	INTERBUS (1) fieldbus	Profibus DP fieldbus
Speed	10 Mbps	10/100 Mbps	1 Mbps	0.5 Mbps	9.6 K…12 Mbps
Manager PLC	–		Premium	-	-
Redundancy	No		No	No	No
Standard services	Modbus TCP/IP		–	–	–
Reference	**170ENT11002**	**170ENT11001**	**170FNT11001**	**170INT11000** (1)	**170DNT11000**

(1) Generation 4, twisted pair medium: **170INT11003,** with optical fiber medium: **170INT12000**

Type of module	Other networks		
	Modbus Plus		DeviceNet
Speed	1 Mbps		0.5 Mbps
Manager PLC	Premium or Quantum	Quantum	–
Redundancy	No	Yes	No
Standard services	–	–	–
Reference	**170PNT11020**	**170PNT16020**	**170LNT71000**

Optional modules for M1/M1E processors

Type of module (2)	Modbus Plus		Asynchronous serial link
Communication ports	1 Modbus Plus	2 redundant Modbus Plus	RJ45
Real-time clock	Integrated, ± 13 sec/day accuracy		
Connection	By 9-way SUB-D connector		
Reference	**172PNN21022**	**172PNN26022**	**172JNN21032**

(2) Include save battery of the M1/M1E processors application and data memories.

Connection accessories

Type	RS 232C communication cable		
Length	1 m	3 m	6 m
Reference	**110XCA28201**	**110XCA28202**	**110XCA28203**

Power supply module (3)

Type of power supply module for	Momentum processors
Input voltage	120 or 230 VAC (selected by jumper)
Output voltage	24 VDC
Output current	0.7 A
Dimensions W x D x H (mm)	73 x 44.5 x 146
Reference	**170CPS11100**

(3) For power supplies, see chapter 5.

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Type of processor		M1			
Number of I/O	Discrete	2048 I/O		2048 I/2048 Q	8192 I/O
	Registers	2048 words		4096 words	26048 words
Integrated communication ports	Modbus	1 RS 232C	1 RS 232C + 1 RS 485	1 RS 232C	1 RS 232C + 1 RS 485
	Ethernet TCP/IP	–		–	–
	I/O bus (1)	–		1 I/O port	–
Transparent Ready	Embedded Web server	–			
Memory capacity	RAM	64 Kb		256 Kb	512 Kb
	Flash	256 Kb		256 Kb	512 Kb
	User, 984 LL language (2)	2.4 K		12 K	18 K
	User, IEC language (3)	–		160 K	240 K
	Data	2 K		4 K	24 K
Cycle time		1 ms/K	1 ms/K	0.63 ms/K	1 ms/K
Reference		**171CCS70000**	**171CCS78000**	**171CCS76000**	**171CCC78010**

(1) I/O bus derived from INTERBUS bus.

(2) ProWORX 32 or Concept programming software.

(3) Concept programming software.

Type of processor		M1	M1E			
Number of I/O	Discrete	8192 I/O				
	Registers	26048 words				
Integrated communication ports	Modbus	1 RS 232C	1 RS 485		–	
	Ethernet TCP/IP	–	1 integrated Ethernet port			
	I/O bus (1)	1 I/O port	–		1 I/O port	
Transparent Ready	Embedded Web server	–	Standard services (class A10)			
Memory capacity	RAM	512 Kb	544 Kb			
	Flash	512 Kb		1 Mb	512 Kb	1 Mb
	User, 984 LL language (2)	18 K				
	User, IEC language (3)	240 K	–	200 K	–	200 K
	Data	24 K				
Cycle time		1 ms/K	0.3 ms/K			
Reference		**171CCC76010**	**171CCC98020**	**171CCC98030**	**171CCC96020**	**171CCC96030**

Type of processor		171 CBB97030
Integrated communication ports	Modbus	1 RS 232/485
	Ethernet TCP/IP	4 integrated Ethernet port
Transparent Ready	Embedded Web server	Standard services (class B)
Memory capacity	RAM	512 Kb
	Flash	1 Mb
	User, 984 LL language (2)	18 K
	User, IEC language (3)	200 K
	Data	24 K
Cycle time		0.25 ms/K
Reference		**171CBB97030**

Connection accessories: See www.schneider-electric.com

Passive I/O sub-bases «Discrete»

Type of connection sub-base	Optimum			
Number of channels	16	16		
Max. current per channel	0.5 A	0.5 A		
Control voltage / output voltage	24 VDC / 24 VDC	24 VDC / 24 VDC		
LED per channel	–	With		
Number of terminals per channel/on row number	1/2	1/1	2/2	3/3
Dimensions W x D x H (mm)	55 x 59 x 67	106 x 60 x 49		
References	–	**ABE7H16C11**	**ABE7H16C21**	**ABE7H16C31**
Cable L = 1 m	**ABE7H20E100** (1)	–	–	–
Cable L = 2 m	**ABE7H20E200** (1)	–	–	–
Cable L = 3 m	**ABE7H20E300** (1)	–	–	–
Connection cable recommended for Modicon, TSX Micro and Premium PLCs, L = 1 m (2)	**ABFH20H100**			

(1) Connection cable supplied for PLCs.

(2) For a 2 m length cable, replace the number 1 in the reference by 2, and for a 3 m length, by 3. (Example: ABFH20H**1**00 becomes ABFH20H**2**00).

Type of connection sub-base	Universal					
Number of channels	16					
Max. current per channel	0.5 A					
Control voltage / output voltage	24 VDC / 24 VDC					
LED per channel	–	With	–	–	With	With
Number of terminals per channel/on row number	1/1	1/1	1/2	2/2	2/2	3/3
Dimensions W x D x H (mm)	125 x 58 x 70		84 x 58 x 70	125 x 58 x 70		
References	**ABE7H16R10**	**ABE7H16R11**	**ABE7H16R50**	**ABE7H16R20**	**ABE7H16R21**	**ABE7H16R31**
Connection cable recommended for Modicon, TSX Micro and Premium PLCs, L = 1 m: **ABFH20H100** (2)						

(2) For a 2 m length cable, replace the number 1 in the reference by 2, and for a 3 m length, by 3. (Example: ABFH20H**1**00 becomes ABFH20H**2**00).

Type of connection sub-base		For counter and analogue channels	Passive distribution with shielding continuity	Distribution and supply of analogue channels
Number of channels		1 counter channel (3)	8	8
Max. current per channel		25 mA	25 mA	25 mA
Control voltage / output voltage		24 VDC / 24 VDC		
Number of terminals per channel		2	2 or 4	2 or 4
Dimensions W x D x H (mm)		143 x 58 x 70	125 x 58 x 70	125 x 58 x 70
References		**ABE7CPA01**	**ABE7CPA02**	**ABE7CPA03**
Connection cable recommended for Modicon PLCs (4)	TSX Micro L = 2.5 m	**TSXCCPS15**	–	–
	Premium L = 3 m	**TSXCAP030**		

(3) Or 8 inputs + 2 outputs, analogue .

(4) Connection cables available for other PLCs, please see www.schneider-electric.com

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Sockets with plug-in relays and terminals

| Type of connection sub-base	With soldered solid-state relay inputs		With soldered solid-state relay outputs		With soldered electro-mechanical relay outputs	
Number of channels	16		16		16	
Max. current per channel	12 mA		0.5 A		2 A	5 A
Input voltage / output voltage	24 VDC / -	110 VAC / -	- / 24 VDC		- / 5…30 VDC, 250 VAC	
Number of contacts	–		–		1 N/O	
Polarity distribution	–		–		(1)	Volt-free
Number of terminals per channel	2					
Dimensions W x D x H (mm)	206 x 58 x 77					
References	**ABE7S16E2B1**	**ABE7S16E2F0**	**ABE7S16S2B0**(2)	**ABE7S16S1B2**	**ABE7R16S111**	**ABE7R16S210**
Connection cable recommended for Modicon, TSX Micro and Premium PLCs, L = 1 m: **ABFH20H100** (3)						

(1) Contact common per group of 8 channels.

(2) With fault detection signal (can only be used with modules with protected outputs).

(3) For a 2 m length cable, replace the number 1 in the reference by 2, and for a 3 m length, by 3. (Example: ABFH20H**1**00 becomesABFH20H**2**00).

Type of connection sub-base	With plug-in electromechanical relays					
Number of channels	16					
Max. current per channel	5 A	2.5 A			4 A	5 A
Control voltage / output voltage	24 VDC / 5…24 VDC, 230 VAC					
Number of contacts	1 N/O			1 C/O		2 C/O
Polarity distribution	(4)	(5)	Volt-free			
Number of terminals per channel	2	2 or 3			2 to 6	
Dimensions W x D x H (mm)	110 x 54 x 89	211 x 64 x 89			272 x 74 x 89	
References	**ABE7R16T111**	**ABE7R16T212**	**ABE7R16T210**	**ABE7R16T230**	**ABE7R16T330**	**ABE7R16T370**
Connection cable recommended for Modicon, TSX Micro and Premium PLCs, L = 1 m: **ABFH20H100** (6)						

(4) Contact common per group of 4 channels.

(5) Common on both poles.

(6) For a 2 m length cable, replace the number 1 in the reference by 2, and for a 3 m length, by 3. (Example: ABFH20H**1**00 becomes ABFH20H**2**00).

Connection cables for PLCs (7)
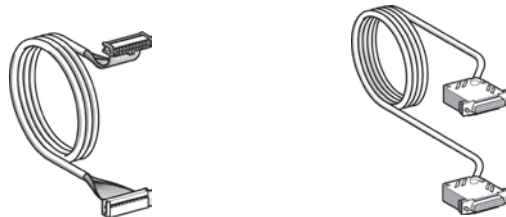
Input/Output functions		Discrete	Analogue	Analogue and counter	Counter	Axis control
References	Cable L = 1 m	**ABFH20H100**	–	–	–	–
	Cable L = 2 m	**ABFH20H200**	**ABFY25S200**	–	–	**TSXCXP213**
	Cable L = 2.5 m	–	–	**TSXCCPS15**	**TSXCCPH15**	–
	Cable L = 3 m	**ABFH20H300**	**TSXCAP030**	–	–	–
	Cable L = 6 m	–	–	–	–	**TSXCXP613**

(7) Modicon, TSX Micro and Premium PLCs.

For other connection cables and accessories, please see www.schneider-electric.com

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Type of connection sub-base	Discrete outputs			
				Relay
Number of channels	16	16	16	16
Type of outputs	16 I	16 O	16 O, fuse protected	16 O
	(1 common for 16 channels)	(1 common for 16 channels)	(1 common for 16 channels)	(1 common for 4 channels)
Voltage / current of outputs	24 VDC / 5 mA	24 VDC / 0.1 A		Relay: 5…30 VDC, 250 VAC / 3 A
LED per channel	–		With	–
Number of terminals per channel/row number	2/2			
Dimensions W x D x H (mm)	106 x 60 x 49		130 x 62.5 x 83	
References	**ABE7E16EPN20**	**ABE7E16SPN20**	**ABE7E16SPN22**	**ABE7E16SRM20**

Connection cables for Twido and Modicon M238

Type of cable			For linking Twido base and Modicon Telefast sub-base	For linking discrete I/O expansion modules Twido or Modicon M238 and Modicon Telefast sub-base
For use with			TWDLMDA20DTK/40DTK	TM2DI16DK/32DK/DDO16TK/32TK
Type of connectors			HE10, 26-pin, at either end	HE10, 20-pin, at either end
References	Cable	L = 0.5 m	**ABFT26B050**	**ABFT20E050**
		L = 1 m	**ABFT26B100**	**ABFT20E100**
		L = 2 m	**ABFT26B200**	**ABFT20E200**

Accessories

Type of accessory	Optional clip-in terminals	
Number of linked terminals	20	12 + 8
References	**ABE7BV20**	**ABE7BV20TB**

Type of connection			To PLC using multicore cable	
Number of channels			4	8
Type of female connector			M12, 5-pin	M12, 5-pin
Max. number of signals			8	16
Max. current per channel			4 A	
Max. current per splitter box			16 A (1 mm²)	
Product certification			cULus	
Dimensions W x D x H (mm)			50.2 x 42 x 92.2	50.2 x 42 x 149.2
References	**Without LEDs**	Cable L = 5 m	**ABE9C1240L05**	**ABE9C1280L05**
		Cable L = 10 m	**ABE9C1240L10**	**ABE9C1280L10**
	With LEDs (1)	Cable L = 5 m	**ABE9C1241L05**	**ABE9C1281L05**
		Cable L = 10 m	**ABE9C1241L10**	**ABE9C1281L10**

(1) Green LED: power supply status, yellow LED: channel status.

| Type of connection		To PLC using M23 connector	
Number of channels		4	8
Type of female connector		M12, 5-pin	M12, 5-pin
Max. number of signals		8	16
Max. current per channel		4 A	
Max. current per splitter box		16 A	
Product certification		cULus	
Dimensions, W X D x H		50.2 x 36.5 x 92.2	50.2 x 36.5 x 149.2
References	Without LEDs	**ABE9C1240C23**	**ABE9C1280C23**
	With LEDs (1)	**ABE9C1241C23**	**ABE9C1281C23**

(1) Green LED: power supply status, yellow LED: channel status.

Accessories
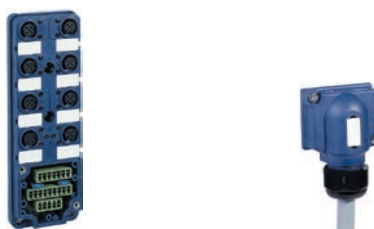
Type of accessory		Splitter boxes w/o cable		Terminal connectors		Sealing plugs
		Without LEDs	With LEDs	Cable L = 5 m	Cable L = 10 m	(sold in lots of 10)
References	4-channel	**ABE9C1240M**	**ABE9C1241M**	**ABE9XCA1405**	**ABE9XCA1410**	–
	8-channel	**ABE9C1280M**	**ABE9C1281M**	**ABE9XCA1805**	**ABE9XCA1810**	–
	for Ø12 connector	–	–	–	–	**FTXCM12B**
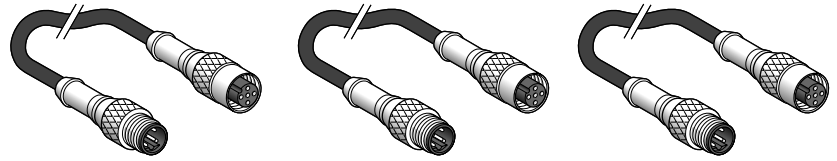
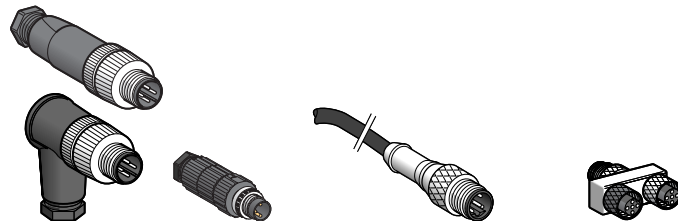| Type	Male / Female jumper cables		
Type of male connector, interface side	M12, 4-pin, straight, screw thread	M12, 4-pin, straight, screw thread	M12, 5-pin, straight, screw thread
Type of female connector, sensor side	M12, 3-pin, straight, screw thread	M12, 4-pin, straight, screw thread	M12, 5-pin, straight, screw thread
Cable	PUR, black	PUR, black	PUR, black
References Cable L = 1 m	XZCR1511040A1	XZCR1511041C1	XZCR1511064D1
L = 2 m	XZCR1511040A2	XZCR1511041C2	XZCR1511064D2

M8/M8, M8/M12 and M12/DIN jumper cables
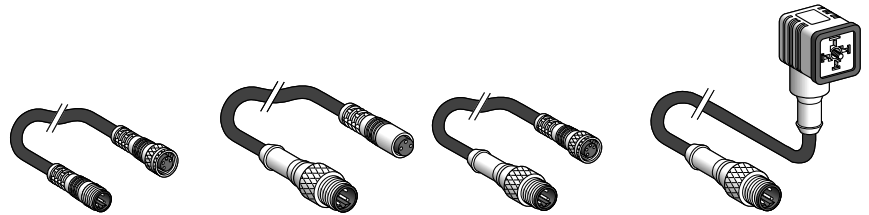
Type	Male / Female jumper cables			
Type of male connector, interface side	M8, 3-pin straight, screw thread	M12, 3-pin straight, screw thread	M12, 3-pin straight, screw thread	M12, 3-pin straight, screw thread
Type of female connector, sensor side	M8, 3-pin straight, screw thread	M8, 3-pin straight, clip together	M8, 3-pin straight, screw thread	DIN 43650A elbowed, screw thread
Cable	PUR, black	PUR, black	PUR, black	PUR, black
References Cable L = 1 m	XZCR2705037R1	XZCR1501040G1	XZCR1509040H1	XZCR1523062K1
L = 2 m	XZCR2705037R2	XZCR1501040G2	XZCR1509040H2	XZCR1523062K2

Pre-wired connectors and splitter box

Type	Connectors		Pre-wired connectors	Splitter box "Y"	
Type of male connector, interface side	M12, 4-pin	M8, 3-pin	M12, 5-pin, straight, screw thread	1 x M12	1 x M12
Type of female connector, sensor side	–	–	–	2 x M12	2 x M8
Cable	–	–	PUR, black	–	
References Straight connector, screw thread	XZCC12MDM40B	XZCC8MDM30V	–	FTXCY1212	FTXCY1208
Elbowed connector, screw thread	XZCC12MCM40B	–	–	–	–
Cable L = 0.5 m	–	–	XZCP1564L05	–	–
L = 2 m	–	–	XZCP1564L2	–	–

Notes