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Distributed I/O

Advantys STB

The *open* device integration I/O system

Catalogue
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Advantys STB Distributed I/O Solution

Open and Modular System



Presentation

To meet the needs of machine manufacturers and users, automation architectures have been decentralized while delivering performance comparable to centralized systems. The Advantys STB distributed I/O system, an open, modular input/output system, makes it possible to design islands of automation managed by a master controller via a bus or communication network.

These islands, installed as close to the machine as possible, help reduce the time and cable costs for sensors and actuators, while increasing system availability.

The island components are electronic modules mounted on one or more DIN rails. These clusters of modules, known as segments, carry a bus from beginning to end of each island. The island bus provides power distribution, signal sensing, and power management to all compatible modules, in the form of a wiring management system.
The sensors and actuators on the I/O modules are connected to the I/O modules via removable screw- or spring-type connectors. Built-in mechanisms make it possible to remove and replace (hot swap) Advantys STB modules when the system is powered on.

The Advantys STB distributed I/O system features a protection rating of IP 20. For installations in production workshops, the Advantys STB distributed I/O system must be incorporated in protective housings with at least an IP 54 rating (in compliance with IEC 60950 or NEMA 250 standards). See page 55.

Each Advantys STB module has a default configuration making the island operational as soon as it is powered on. However, in order to benefit from the various module features, use the Advantys configuration software to configure the system to meet user requirements. This software also allows you to define reflex actions in the output modules, thereby avoiding processing by the island master (see pages 42 to 45.

Composition

A typical Advantys STB island is composed in great part of I/O modules of various widths: 13.9, 18.4 and 28.1 mm. The I/O modules, used in conjunction with the DIN rail, network interface modules “NIM” and power distribution modules “PDM”, as well as other accessories, convey a bus which distributes various required power supplies to each module:

An island including 1 to 7 segments comprises:
- 1 STB N●● Network Interface Module “NIM”.

This module manages communications on the island bus. It acts as a gateway for exchanges with the fieldbus or network master. Seven network protocols are offered: Ethernet TCP/IP, CANopen, Modbus Plus, Fipio, INTERBUS, Profibus DP, and DeviceNet.
- 1 or more STB PDT Power Distribution Modules “PDM”. They provide the ⎓ 24 V or ∿ 115/230 V field power required for the sensors and actuators, thereby simplifying connections.
- Digital I/O modules with DC power (STB DD) or AC power (STB DA).
- Analog I/O modules using current or voltage: STB A●●.
- STB EHC counter modules.
- Application-specific modules for controlling TeSys d model motor-starters (mounted with the Tego Power system) and STB EPI TeSys model U starter-controllers.

Additional modules are available for the various architectures proposed below (see page 5):
- 2 STB XBE 1●00 “EOS” and “BOS” extension modules for multisegment structures (up to 6 extension segments).
- STB XCA bus extension cables.
- 1 STB XBE 2100 CANopen extension module for integrating standard CANopen devices.

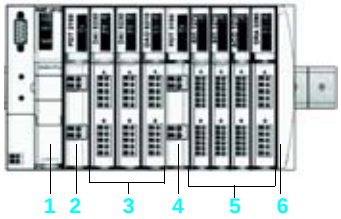
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Advantys STB
Distributed I/O Solution
Open and Modular System

Description

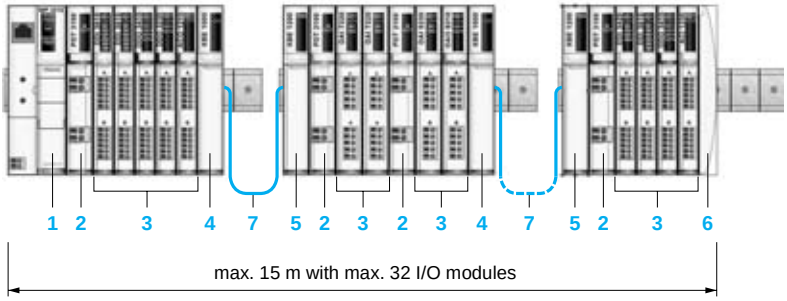
Advantys STB: primary segment



In the example above, the primary segment comprises:

1 STB N●●: Network Interface Module “NIM”. It is placed at the beginning of the primary segment. Each island must have one NIM module only.
2 STB PDT 2100: Power Distribution Module “PDM”. It is installed immediately to the right of the NIM and provides ∿ 115/230 V power to the I/O modules requiring AC power.
3 STB DA● : digital I/O modules with AC power.
4 STB PDT 3100: Power Distribution Module “PDM”. It is installed after all the ∿ 115/230 V I/O modules. It provides ⎓ 24 V to the I/O modules requiring DC power.
5 STB AV● and STB AC●: analog I/O modules requiring DC power. They are installed after the “PDM” module.
6 STB XMP 1100: bus termination.

Advantys STB: primary segment with extension segments



The island bus can support the primary segment with as many as six extension segments.

These segments comprise:

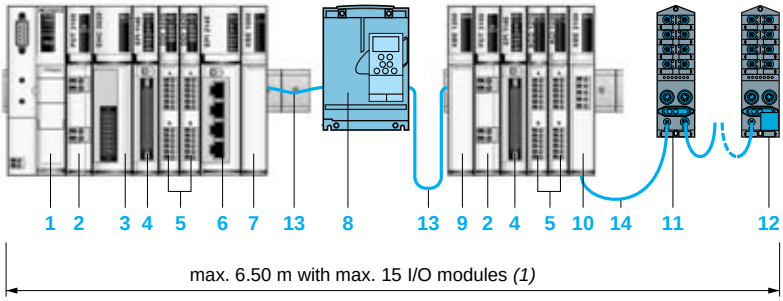
1 STB N●●: Network Interface Module “NIM”. It is placed at the beginning of the primary segment. Each island must have one NIM module only.
2 STB PDT ●100: PDM power distribution module (⎓ 24 V or ∿ 115/230 V). It is installed immediately to the right of the NIM and provides ⎓ 24 V or ∿ 115/230 V power according to the type of I/O modules located on the right.
3 STB AV●, STB AC●, STB DD●, STB DA● and STB DR●: Analog and digital I/O modules, requiring AC or DC power. The I/O groups of various powers are placed to the immediate right of the PDM matching their type.
4 STB XBE 1000: EOS bus extension module: It is always installed in the rightmost position in the primary or extension segment, and is used to extend the island bus to another segment.
5 STB XBE 1200: BOS bus extension module. It is installed at the beginning of each extension segment.
6 STB XMP 1100: island bus termination.
7 STB XCA 100●: island bus extension cables.

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Advantys STB
Distributed I/O Solution
Open and Modular System

Description (continued)

Advantys STB with application-specific modules, preferred module, and standard CANopen devices



The island bus can support:

■ Preferred modules of type ATV 38/58 controller (available later). This type of preferred module is installed between two segments.
■ Standard CANopen devices. They are installed at the end of the island with up to 12 standard CANopen devices. These devices may reduce the maximum island length to 6.5 m (baud rate dependant).

The island bus comprises:

1 STB N●●: Network Interface Module “NIM”.
2 STB PDT 3100: ⎓ 24 V Power Distribution Module “PDM”. It is installed immediately to the right of the “NIM” and provides ⎓ 24 V power to the I/O modules requiring DC power.
3 STB EHC 3020: 1 channel counter module.
4 STB EPI 1145: module for Tego Power motor-starters.
5 STB AV● and STB AC●: analog I/O modules
6 STB EPI 2145: module for TeSys model U starter-controllers.
7 STB XBE 1000: EOS bus extension module: It is always installed in the slot the farthest to the right in the primary or extension segment, and is used to extend the island bus to another segment.
8 ATV 58 controller: preferred module with special option card (available at a later date).
9 STB XBE 1200: EOS bus extension module. It is installed at the beginning of the extension segment.
10 STB XBE 2100: CANopen extension module (max. 12 devices per island).
11 FTB 1CN: Advantys FTB IP 67 monobloc I/O splitter boxes.
12 FTX DPTL12: CANopen bus line terminator (with 120 Ω resistance).
13 STB XCA 100●: island bus extension cables.
14 User supplied cable.

(1) Includes the preferred modules and the standard CANopen devices.

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Advantys STB Distributed I/O Solution
Open and Modular System



STB XBE 1000



STB XBE 1200



STB XBA 2000



STB XBE 2100

References

Description		Reference	Weight kg
Network Interface Modules (Includes the island bus terminator)		See page 10	–
PDM Power Distribution Modules		See page 15	–
Digital I/O modules		See page 22	–
Analog I/O modules		See page 30	–
Parallel interfaces	Tego Power applications	See page 35	–
	TeSys Model U applications	See page 37	–
Counter module		See page 41	–

Description	Use	Reference	Weight kg
EOS bus extension module	Installed at the end of the segment (except for the last segment on the island)	**STB XBE 1000**	–
BOS bus extension module	Installed at the beginning of each extension segment	**STB XBE 1200**	–
CANopen bus extension module	Optionally installed at the end of the last segment to connect standard CANopen devices	**STB XBE 2100**	–

Separate parts

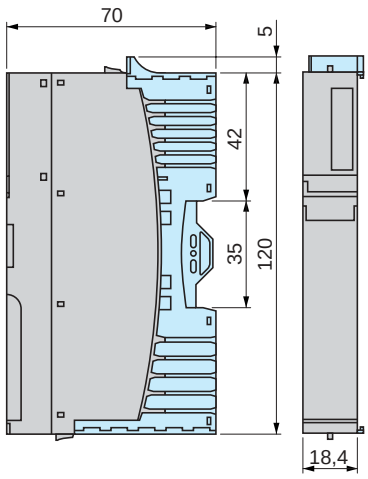
Description	Use for	Reference	Weight kg
I/O base (width 18.4 mm)	STB XBE 1000 extension module	**STB XBA 2400**	0,028
	STB XBE 1200 extension module	**STB XBA 2300**	0,033
	STB XBE 2100 extension module	**STB XBA 2000**	0,028

Description	Use for	Type	Sold in lots of	Reference	Weight kg
2-pin removable connectors for ⎓ 24 V	STB XBE 1200	Screw-type	10	**STB XTS 1120**	0,006
		Spring-type	10	**STB XTS 2120**	0,006
5-pin removable connectors	STB XBE 2100	Screw-type	20	**STB XTS 1110**	0,006
		Spring-type	20	**STB XTS 2110**	0,006
User-customizable labels sheets	Customization of modules and bases		25	**STB XMP 6700**	–

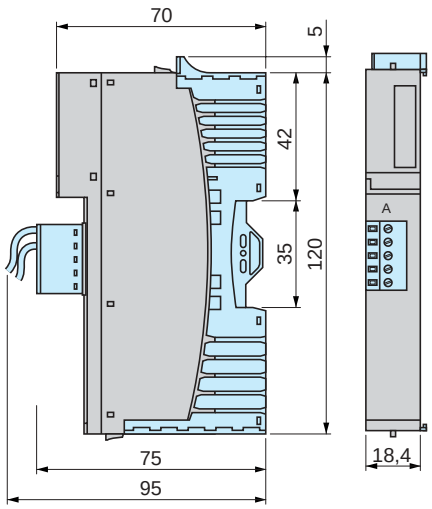
Description	Length	Reference	Weight kg
Island bus extension cables	0.3 m	**STB XCA 1001**	–
	1.0 m	**STB XCA 1002**	–
	4.5 m	**STB XCA 1003**	–
	10.0 m	**STB XCA 1004**	–
	14.0 m	**STB XCA 1006**	–

Dimensions

STB XBE 1000/1200



STB XBE 2100



Presentation: page 2

Description: pages 3 and 4

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Advantys STB
Distributed I/O Solution
Network Interface Modules

Applications		**Data exchange between master PLC and Advantys STB I/O modules**		
Bus or network type		Ethernet TCP/IP network	CANopen Bus	
				
Bus or network nature		Industrial LAN	CAN field bus	
Structure	**Physical interface**	10 BASE-T	ISO 1198	
	Access method	CSMA-CD	CSMA-MA, multimaster	
	Baud rate	10 Mbit/s	10 Kbit/s…1 Mbit/s depending on bus length	10 Kbit/s…800 Mbit/s depending on bus length
Medium		Shielded dual twisted pair via Ethernet ConneXium cabling system	Shielded dual twisted pair	
Configuration	**Number of devices** *(1)*	max. 256 per segment, unlimited with switches	127 slaves	
	Maximum length	500 m according to 802.3 standard 1,000 m with conneXium cabling system	From 30 m (1 Mbit/s) to 5,000 m (10 Kbit/s)	From 50 m (800 Kbit/s) to 5,000 m (10 Kbit/s)
Network interface module features	**Number of I/O modules per Advantys STB island** *(1)*	max. 32 with: - 1 primary segment - max. 6 extension segments		max. 20 per Economy CANopen NIM *(2)*
	Power supply voltage	⎓ 24 V not isolated (19.2…30 V)		
	Logic power supply	Provides ⎓ 5 V logic power to all the I/O modules of an island (1200 mA)		
Services used		- Embedded Web (configuration, diagnostics, and access to variables) - TCP/IP Modbus - SNMP agent	- Process Data Object (PDO) - Service Data Object (SDO) - Special function Object - Network management (NMT)	- PDO mapping
Type of module		**STB NIP 2212**	**STB NCO 2212**	**STB NCO 1113**
Pages		11		

(1) One Advantys STB island corresponds to 1 device on the bus or the network.
(2) Any I/O module inserted after the Economy CANopen NIM is treated as an individual device by the bus master.

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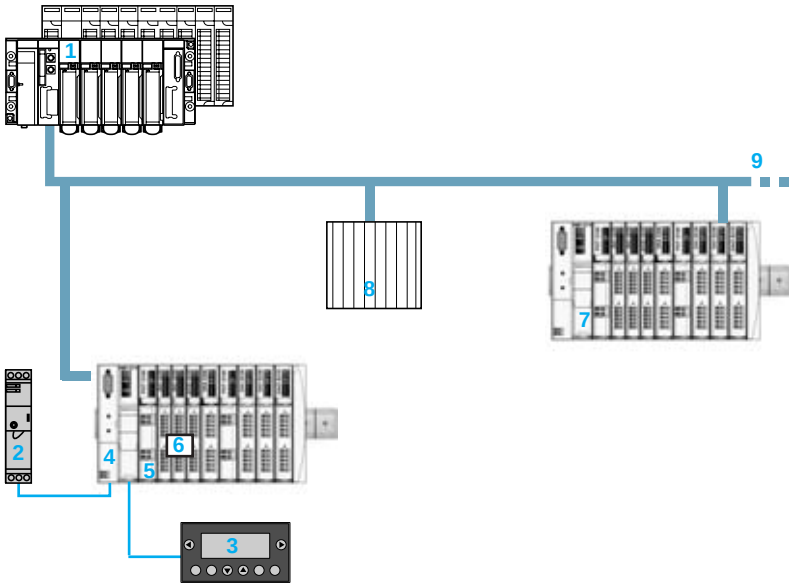
Modbus Plus Network	Fipio Bus	INTERBUS Bus	Profibus DP Bus	DeviceNet Network
				
Industrial LAN compliant with the Modbus Plus standard	Open industrial field bus compliant with the FIP standard	INTERBUS industrial field bus (Generation 4)	Industrial field bus (Profibus DP V.O)	Network compliant with v.2.0 of the Open DeviceNet Vendor Assoc. (ODVA)
Modbus Plus standard	FIP standard	isolated RS 485	RS 485	–
Token passing	Bus managed by bus arbitrator	Master/slave	Master	CSMA-CD
1 Mbit/s	1 Mbit/s	500 Kbit/s	9.6 Kbit/s…12 Mbit/s	125, 250 ou 500 Kbit/s
Twisted pair	Shielded twisted pair	Shielded twisted pair	Shielded twisted pair	Twisted pair
32 per segment 64 for all segments	32 per segment max. 128 for all segments	max. 512 slaves with max. 254 bus terminal blocks	125 slaves	64 slaves
450 m per segment 1800 m with 3 repeaters	1000 m per segment	400 m per bus segment between stations 12.8 km for the bus between stations 50 m for the installation bus	1200 m (9.6 Kbit/s), 4800 m with 3 repeaters, 200 m (12 Mbit/s), 800 m with 3 repeaters	1200 m
max. 32 with: - 1 primary segment - max. 6 extension segments				
- Global data - Peer-to-peer - Peer Cop	- Periodic I/O exchanges - Point-to-Point message - Use of standard profiles FRD/FSD/FED	- Implicit Data process exchange - Logical addressing - Diagnostic	- Slave configuration - Configuration control - Read/write Slave I/O data	- DeviceNet Object (Class ID3) - Connection Object (Class ID5) - Island Bus Object (Class ID101)
STB NMP 2212	**STB NFP 2212**	**STB NIB 2212**	**STB NDP 2212**	**STB NDN 2212**

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Advantys STB
Distributed I/O Solution
Network Interface Modules

Presentation

The STB N●● 2212 network interface modules, located at the beginning of each island, are gateways for exchanging data between the network or bus master PLC and the Advantys STB automation island.
They also enable (except Economy CANopen NIM module) the configuration of parameters and addressing of installation devices. These settings are stored in the module's internal RAM or Flash memory. Optionally, they can be saved to the STB XMP 4440 removable memory card (32 Kb).



1 Fieldbus master
2 External ⎓ 24 V power supply
3 HMI terminal
4 Network Interface Module "NIM"
5 Power Distribution Module "PDM"
6 I/O modules
7 Other network nodes
8 Other slave PLCs
9 Bus terminator

The Advantys STB offer comprises 8 network interface modules, each one dedicated to a specific network or bus:

Network or bus	Network interface module
Ethernet network	STB NIP 2212
CANopen Bus	STB NCO 2212, STB NCO 1113
Modbus Plus Network	STB NMP 2212
Fipio Bus	STB NFP 2212
INTERBUS Bus	STB NIB 2212
Profibus DP Bus	STB NDP 2212
DeviceNet Network	STB NDN 2212

Power Supply for Network Interface Module

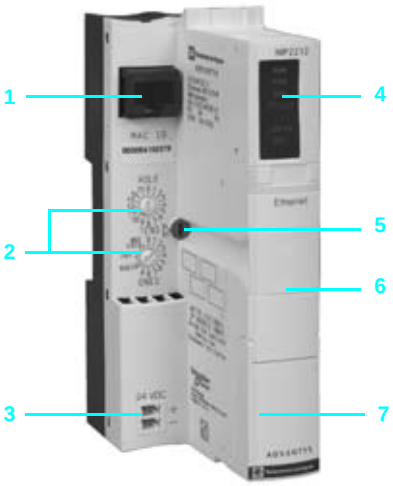
Network interface modules are powered by an external ⎓ 24 V power supply. They convert this power to ⎓ 5 V to provide logic power to the Advantys STB I/O modules. Logic power for the I/O modules in each extension segment is provided by that segment's "BOS" STB XBE 1200 module. See page 5.

This built-in 5 V power supply provides up to 1.2 A current.

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Advantys STB
Distributed I/O Solution
Network Interface Modules

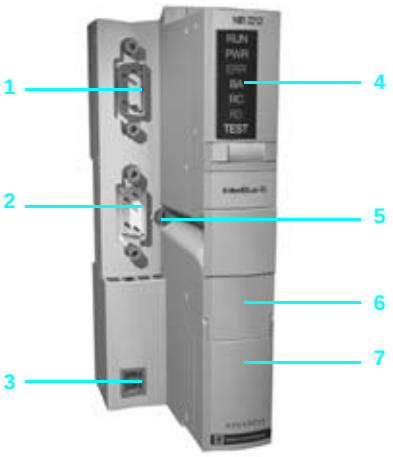


Description

Network interface modules (except for the INTERBUS STB NIB 2212 module)

They feature the following on the front panel:

1 A connector used to connect the island to the fieldbus. See the various connector types on page 9.
2 Two rotary node addressing selectors on the bus or the network.
3 An external ⎓ 24 V power connector for the removable screw-type (STB XTS 1120) or spring-type (STB XTS 2120) connector.
4 A display block with LEDs for the various island states on the bus: power, communication, send/receive data, errors, etc.
5 Locking screw for the STB N●● 2212 module of DIN rails.
6 A drawer *(1)* for an STB XMP 4440 removable memory card.
7 Cover *(1)* accessing the port used to connect an island setup and configuration PC or an HMI screen (read/write data), and the Reset button.



INTERBUS STB NIB 2212 network interface module

It is identical to the network interface modules described above except for the INTERBUS connector.

It features the following on the front panel:

1 A 9-pin SUB-D male connector used to connect the input bus cable.
2 A 9-pin SUB-D female connector used to connect the output bus cable.
3 An external ⎓ 24 V power connector for the removable screw-type (STB XTS 1120) or spring-type (STB XTS 2120) connector.
4 A display block with LEDs for the various island states on the bus: power, communication, send/receive data, errors, etc.
5 Locking screw for the STB N●● 2212 module of DIN rails.
6 A drawer *(1)* for an STB XMP 4440 removable memory card.
7 Cover *(1)* accessing the port used to connect an island setup and configuration PC or an HMI screen (read/write data), and the Reset button.

Network interface modules are provided with the STB XMP 1100 bus terminator and are mounted directly on DIN rails.

(1) Not available with STB NCO 1113 Economy CANopen module.

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Dimensions: page 13

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Advantys STB
Distributed I/O Solution
Network Interface Modules

Characteristics

Type of network interface module		STB	NIP 2212	NCO 2212	NCO 1113	NMP 2212	NFP 2212	NIB 2212	NDP 2212	NDN 2212
Network or bus			Ethernet	CANopen	Economy CANopen	Modbus Plus	Fipio	INTERBUS	Profibus DP	DeviceNet
Compliance with bus or network standards			IEEE 802.3	CIA DS-301		modbus.org	EN 50170, Vol 3, Parts 1-3, 2-3, 3-3, 5-3, 6-3 and 7-3	INTERBUS Club	DIN 19245, Parts 1 and 3	Open DeviceNet Vendors Assoc.
Power supply voltage		**⎓ V**	24 not isolated							
Input current		**mA**	700							
Voltage limits		**⎓ V**	19.2…30							
Output voltage to the island logic bus		**⎓ V**	5.25 ± 0.21							
Output current rating		**A**	1.2 at ⎓ 5 V							
Output impedance		**mΩ**	< 50 to 100 kHz							
Isolation			None *(1)*							
Immunity to electromagnetic disturbance (EMC)			Yes, according to IEC 61131-2							
Connector type	To bus or network		RJ45 female	9-pin SUB-D male		9-pin SUB-D female	9-pin SUB-D male	Input: 9-pin SUB-D male Output: 9-pin SUB-D female	9-pin SUB-D female	5-pin male connector
	RS 232 port (configuration and dialogue)		HE 13, 8-pin female		–	HE 13, 8-pin female				
Max. number of addressable I/O modules	Per island		32	32	20 *(2)*	32	32	32	32	32
Number of segments supported	Primary		1	1	1	1	1	1	1	1
	Extension		max. 6	max. 6	–	max. 6				

(1) Use a ⎓ 24 V SELV external power supply (Safety Extra Low Voltage).
(2) Max. 126 STB modules for all islands with the STB NCO 1113 Economy CANopen module

Special features of the STB NCO 1113 Economy CANopen NIM

The Economy CANopen NIM (STB NCO 1113) allows the bus master to view any I/O module following the STB NCO 1113 as an individual device. Its configuration and setup are performed by exporting the EDS file to the island master configuration software.

The I/O modules that depend on the STB NCO 1113 module are integrated in the PL7/Unity network configuration software and directly exchange data over the fieldbus. As a result, the custom configuration of the I/O modules (using the Advantys configuration software) and the use of reflex functions are not available with the Economy CANopen Interface network module.

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Advantys STB
Distributed I/O Solution
Network Interface Modules



STB NIP 2212



STB NCO 2212/1113



STB NDP 2212



STB NDN 2212

Network Interface Modules

Description	Power supply voltage	Reference	Weight kg
Ethernet network	⎓ 24 V	**STB NIP 2212**	0;130
CANopen Bus	⎓ 24 V	**STB NCO 2212**	0;135
CANopen Bus (Economy NIM)	⎓ 24 V	**STB NCO 1113**	0;130
Modbus Plus network	⎓ 24 V	**STB NMP 2212**	0.145
Fipio Bus	⎓ 24 V	**STB NFP 2212**	0.145
INTERBUS Bus	⎓ 24 V	**STB NIB 2212**	0.155
Profibus DP Bus	⎓ 24 V	**STB NDP 2212**	0.140
DeviceNet Network	⎓ 24 V	**STB NDN 2212**	0.140

Separate parts

Description	Use	Sold in lots of	Reference	Weight kg
32 Kb removable memory card	Application backup memory	1	**STB XMP 4440**	–
External ⎓ 24 V power supply (SELV)	–	–	See page 15	–
2-pin removable connectors for ⎓ 24 V power supply	Screw-type	10	**STB XTS 1120**	0.003
	Spring-type	10	**STB XTS 2120**	0.003
DeviceNet removable connectors (5-pin)	Screw-type	1	**STB XTS 1111**	–
	Spring-type	1	**STB XTS 2111**	–

Replacement parts

Description	Use	Reference	Weight kg
Bus termination	–	**STB XMP 1100**	–
Shielded twisted pair cable, length 2 m (HE13 8 pins/SUB-D 9 pins)	Connects the network interface module (RS 232 port) with the configuration PC or the HMI terminal	**STB XCA 4002**	–

(1) Except with STB NCO 1113 Economy CANopen NIM module.

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Advantys STB
Distributed I/O Solution
Network Interface Modules



490 NTW 000 ●●

Connection accessories

Ethernet Network

Description	Fitted at both ends	Length	Reference	Weight kg
Straight shielded twisted pair cable for connecting hubs and switches	2 RJ45 connectors to connect data terminal equipment (DTE)	2 m	**490 NTW 000 02** *(1)*	–
		5 m	**490 NTW 000 05** *(1)*	–
		12 m	**490 NTW 00012** *(1)*	–
		40 m	**490 NTW 000 40** *(1)*	–
		80 m	**490 NTW 000 80** *(1)*	–

CANopen Bus

Description	Use	Reference	Weight kg
Junction box	For T connection (15-pin SUB-D connector) to 1 or 2 CANopen bus(es) (9-pin SUB-D female connectors)	**TSX CPP ACC 1**	–

Modbus Plus Network

Description	Use	Reference	Weight kg
9 pin SUB-D male connector	Connection of the Modbus Plus connector	**AS MBKT 085**	–
Modbus Plus junction box	IP 20 device for T connections	**990 NAD 230 00**	0.230
	IP 65 unit for T connections, supports 1 RJ45 connector on front panel	**990 NAD 230 10**	0.650
	IP 20 T connector with 2 RJ45 connectors for Modbus Plus cable and one 9 pin SUB-D connector for auxiliary devices	**170 XTS 020 00**	0.260

Description	Use		Length	Reference	Weight kg
	From	To			
Modbus Plus drop cables	IP 20 170 XTS 020 00 T connector	IP 20 170 XTS 020 00 T connector	0.25 m	**170 MCI 020 10**	–
			1 m	**170 MCI 020 36**	–
			3 m	**170 MCI 021 20**	–
			10 m	**170 MCI 020 80**	–
	STB NMP 2212 network interface module	990 NAD 230 00 Junction box	2.4 m	**990 NAD 211 10**	0.530
			6 m	**990 NAD 211 30**	0.530

Fipio Bus

Description	Use	Characteristics	Reference	Weight kg
Female connectors (9 pin SUB-D)	On STB NFP 2212 network interface module	Black polycarbonate IP 20	**TSX FP ACC 12**	0.040
		Zamak	**TSX FP ACC 2**	0.080
Bus connection unit	Junction for main cable	Black polycarbonate IP 20	**TSX FP ACC 14**	0.120
		Zamak IP 65	**TSX FP ACC 4**	0.660
Drop cables	8 mm, 2 shielded twisted pairs 150 Ω For standard environments	100 m	**TSX FP CC 100**	5.680
		200 m	**TSX FP CC 200**	10.920
		500 m	**TSX FP CC 500**	30.000

(1) Cable compliant with EIA/TIA-568 standard and IEC 1180/EN 50 173 in class D. For UL and CSA 22.1 certified cables, add letter **U** *to end of the reference.*



TSX FP ACC 12



TSX FP ACC 14



TSX FP ACC 4

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Connection accessories (continued)

INTERBUS Bus

Description	Use	Length	Reference	Weight kg
Installation bus cables	Prefitted cables to connect 2 network interface modules "NIM"	0.110 m	**170 MCI 007 00**	–
		1 m	**170 MCI 100 00**	–
Junction interface	To connect inter-station bus to installation bus	–	**170 BNO 671 00**	–
Inter-station bus cables	–	100 m	**TSX IBS CA 100**	–
		400 m	**TSX IBS CA 400**	–

Profibus DP Bus

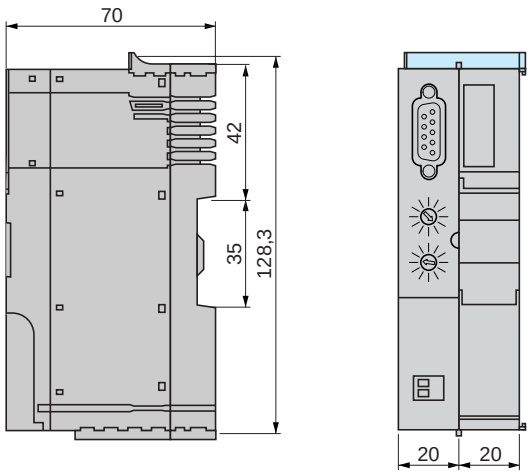
Description	Use	Length	Reference	Weight kg
Connectors for STB NDP 2212 network interface module	Bus terminator	–	**490 NAD 911 03**	–
	Intermediate connection	–	**490 NAD 911 04**	–
	Intermediate connection with terminal port	–	**490 NAD 911 05**	–
Profibus DP connection cables	–	100 m	**TSX PBS CA 100**	–
		400 m	**TSX PBS CA 400**	–

DeviceNet Network

Description	Use	Type	Reference	Weight kg
Female 5-pin connectors	For STB NDN 2212 network interface module	Screw-type	**STB XTS 1111**	–
		Spring-type	**STB XTS 2111**	–

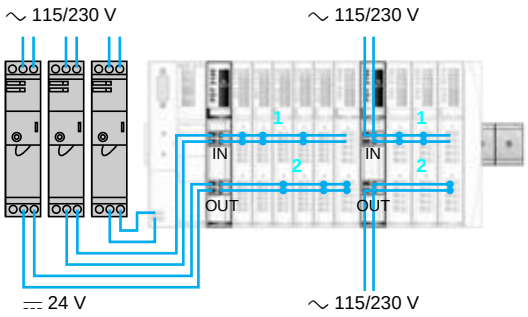
Dimensions

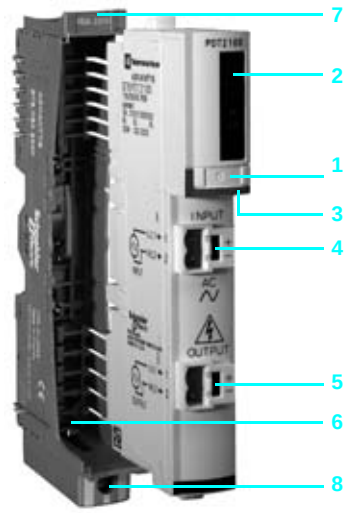
STB N●● 2212/NCO 1113



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Advantys STB Distributed I/O Solution
Power Distribution Modules





Presentation

The STB PDT ●100 Power Distribution Modules “PDM” provide power for the I/O module sensors and actuators via the sensor bus 1 and the actuator bus 2.
Two power distribution modules are available for the Advantys STB distributed I/O:
- The STB PDT 3100 module is dedicated to providing power to the I/O module sensors and actuators requiring a ⎓ 24 V power supply
- The STB PDT 2100 module is dedicated to providing power to the I/O module sensors and actuators requiring a ⎓ 115/230 V power supply.

Choice of Power Distribution Module “PDT” determined by I/O modules

Power distribution module	Voltage (V)	STB I/O modules					
		Digital			Analog		Application-specific
		Inputs	Outputs	Relay Outputs	Inputs	Outputs	
STB PDT 3100	⎓ 24	DDI 3230	DDO 3200	DRC 3210	AVI 1270	AVO 1250	EPI 1145
		DDI 3420	DDO 3230	DRA 3290	ACI 1230	ACO 1210	EPI 2145
		DDI 3610	DDO 3410		ART 0200		EHC 3020
			DDO 3600				
STB PDT 2100	~ 115	DAI 5230	DAO 8210				
	~ 230	DAI 7220	DAO 8210				

Description

The Advantys STB PDT ●100 power distribution modules comprise:
1 A location for a customizable label.
2 A status block with 2 display LEDs:
IN LED on: the sensor bus power supply is present,
OUT LED on: the actuator bus power supply is present.
3 A color-coded module identification stripe (red for ~ 115/230 V, blue for ⎓ 24 V).
4 A connector for removable screw-type connector (STB XTS 1130) or spring-type connector (STB XTS 2130) used to connect the sensor power supply.
5 A connector for removable screw-type connector (STB XTS 1130) or spring-type connector (STB XTS 2130) used to connect the actuator power supply.

To be ordered separately:

6 A STB XBA 2200 mounting base, width 18.4 mm.
This base features:
7 A location for a customizable label.
8 A captive grounding screw.

Characteristics

Module Type			STB PDT 3100	STB PDT 2100
Power supply voltage		**V**	⎓ 24 *(1)*	~ 115/230
Max. current	For inputs	**A**	4 at 30 °C 2.5 at 60 °C	5 at 30 °C 2.5 at 60 °C
	For outputs	**A**	8 at 30 °C 5 at 60 °C	10 at 30 °C 5 at 60 °C
Sensor/actuator bus voltage range		**V**	⎓ 19.2...30 *(2)*	~ 85...265 *(3)*
Plug in/plug out with power on			No	
Nominal consumption		**mA**	0 on ⎓ 5 V logic power supply	
Reverse polarity protection			Yes, on the actuator bus	
Built-in overcurrent protection	For inputs		By 5 A time-delayed fuse	
	For outputs		By 10 A time-delayed fuse	
Max. current on the grounding terminal		**A**	30 for 2 minutes	
Voltage-detect thresholds	IN/OUT LED turns on		≥ ⎓ 15 V ± 1 V	> ~ 70 V ± 5 V
	IN/OUT LED turns off		< ⎓ 15 V ± 1 V	< ~ 50 V ± 5 V
Mounting base			STB XBA 2200 width 18.4 mm	

(1) Use a ⎓ 24 V external power supply with very low safe allowable voltage.
(2) DC power supplies may be shared or separate, or shared with the ⎓ 24 V SELV power supply of the network interface module.
(3) AC power supplies for a given distribution module from a three-phase transformer must be connected at the same phase.

References: page 15
Dimensions: page 15

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Advantys STB Distributed I/O Solution
Power Distribution Modules



STB XBA 2200



STB PDT 3100



STB XTS 1130



STB XTS 2130



STB XMP 7810

References

Power distribution modules

Power Supply Type	Voltage	Reference	Weight kg
⎓	24 V	**STB PDT 3100**	0.130
~	115/230 V	**STB PDT 2100**	0.129

Separate parts

Description	Use for	Sold in lot of	Reference	Weight kg
Mounting base (width 18.4 mm)	Mounting of STB PDT ●100 power supply modules on DIN rails	1	**STB XBA 2200**	0.035
Removable connectors	Screw-type	10	**STB XTS 1130**	0.006
	Spring-type	10	**STB XTS 2130**	0.006
Keying pins	Distribution modules	60	**STB XMP 7700**	–
	Removable connectors	24	**STB XMP 7810**	–
User-customizable labels sheets	Customization of modules and bases	25	**STB XMP 6700**	–

Phaseo regulated, single-phase switching power supplies

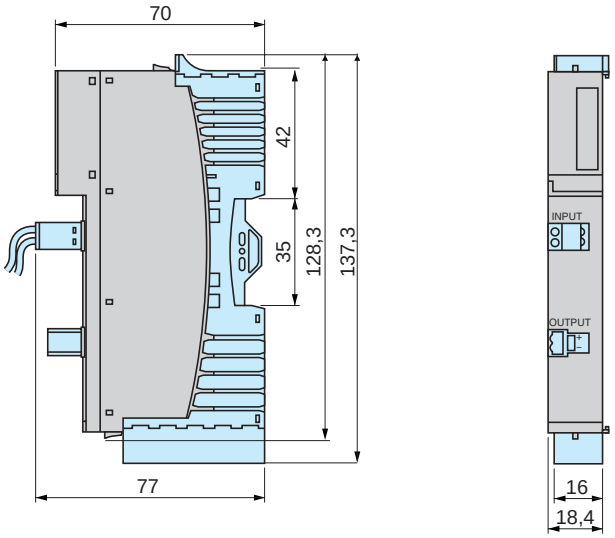
Output voltage	Input voltage mains 47...63 Hz	Nominal power	Nominal current	Reference	Weight kg
⎓ **24 V**	100...240 V	48...240 W	2...10 A	See page 51	0.520

Replacement units

Description	Description	Reference	Weight kg
Fuses	5 A (lot of 5) and 10 A (lot of 5)	**STB XMP 5600**	–

Dimensions

STB PDT 3100/2100



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Advantys STB
Distributed I/O Solution
Digital Input/Output Modules

Configuration		Input modules				
		For direct current			For alternating current	
						
Voltage		24 VDC			115 VAC	230 VAC
Number of channels		2	4	6	2	
Input	Logic	Sink			–	
	Type (IEC/EN 61131-2)	Type 2	Type 1+	Type 1	Type 1	
Load current/channel (outputs)		–				
Response time	Off-to-on	610 µs @ 0.2 ms input filter time	925 µs @ 0.5 ms input filter time	1.21 ms	1.5 line cycles	
	On-to-off	625 µs @ 0.2 ms input filter time	1.35 ms @ 0.5 ms input filter time	1.74 ms	1.5 line cycles	
Filter time constant		0.2...16 ms	0.5...16 ms	1 ms	–	–
Field wiring connectors		Two connectors (6-point): screw-type STB XTS 1100 or spring-type STB XTS 2100			Two connectors (5-point): screw-type STB XTS 1110 or spring-type STB XTS 2110	
Base		STB XBA 1000			STB XBA 2000	
Power Distribution Modules "PDM" *(1)*	Voltage	24 VDC			115 VAC	230 VAC
	Part number	STB PDT 3100			STB PDT 2100	
Isolation	Field-to-bus	1500 VDC for 1 minute			1780 VAC for 1 minute	
	Channel-to-channel	–			–	
Protections against	Reverse polarity	Yes				
	Short circuit and overload	Yes, 5 A time-lag fuse on the Power Distribution Module "PDM"				
	Sensor/actuator power	Electronic short-circuit protection (SCP)				
Model number		**STB DDI 3230**	**STB DDI 3420**	**STB DDI 3610**	**STB DAI 5230**	**STB DAI 7220**
Page		22				

(1) Each voltage groupe requies its own Power Distribution Module "PDM".

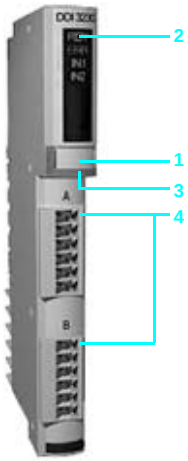
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Output modules							
For direct current (transistor)				**For alternating current (triac)**	**For direct/alternating current (relay)**		
							
24 VDC				115/230 VAC	24 VDC 115/230 VAC		
2		4	6	2	2 form C (N.O/N.C) relay outputs	2 form A/B relay outputs	
Source				–	–		
–				–	–		
0.5 A	2.0 A	0.5 A		2 A @ 30 °C (86°F) 1 A @ 60 °C (140°F)	2 A per contact	7 A per contact	
620 µs @ 0.5 A load	520 µs	560 µs @ 0.5 A load	715 µs @ 0.5 A load	10.0 ms	5.25 ms	10 ms	
575 µs @ 0.5 A load	720 µs	870 µs @ 0.5 A load	955 µs @ 0.5 A load	10.5 ms	6.75 ms	10 ms	
–	–	–	–	–	–	–	
Two connectors (6-point): screw-type STB XTS 1100 or spring-type STB XTS 2100				Two connectors (5-point): screw-type STB XTS 1110 or spring-type STB XTS 2110			
STB XBA 1000				STB XBA 2000		STB XBA 3000	
24 VDC				115/230 VAC	24 VDC (coil)		
STB PDT 3100				STB PDT 2100	STB PDT 3100		
1500 VDC for 1 minute				1780 VAC for 1 minute	1780 VAC for 1 minute		
–	500 VDC for 1 minute	–		–	500 VAC for 1 minute		
Yes							
Yes *(2)*	*(3)*	Yes, 10 A time-lag fuse on the Power Distribution Module “PDM”					
Electronic overcurrent protection (OCP)				–	–		
STB DDO 3200	**STB DDO 3230**	**STB DDO 3410**	**STB DDO 3600**	**STB DAO 8210**	**STB DRC 3210**	**STB DRA 3290**	
22							

(2) Yes, 10 A time-lag fuse on the Power Distribution Module “PDM”.
(3) Recommend user-supplied 2,5 A time-lag fuses on each channel.

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Advantys STB Distributed I/O Solution
Digital Input/Output Modules



Presentation

The STB digital input/output modules consist of input modules, output modules, and relay output modules.

The digital I/O offering is defined as follows:

■ 5 digital input modules:
□ one 2-channel module, one 4-channel module, and one 6-channel module with 24 VDC voltage,
□ one 2-channel module with 115 VAC voltage,
□ one 2-channel module with 230 VAC voltage.

■ 5 digital output modules:
□ two 2-channel modules, one 4-channel module, and one 6-channel module with 24 VDC voltage,
□ one 2-channel module with 115/230 VAC voltage.

■ 2 relay output modules:
□ one 2 form C relay outputs,
□ one 2 form A/B relay outputs.

Description

A typical digital input/output module comprises the following:

1 A location for user-customizable label.

2 A display block showing:
□ the state of the module (RDY, ERR),
□ the state of channel (IN● or OUT●).

3 A color-coded module identification stripe.

4 Two receptacles for field-wiring connectors.

To be ordered separately:

■ I/O bases width 13.9, 18.4 or 28.1 mm, depending on the model of I/O module STB XBA 1000/2000/3000.These bases feature a location for the user-customizable label.

■ Removable screw terminal (5 or 6-channel) STB XTS 1110/1100 or removable spring terminal (5 or 6-channel) STB XTS 2110/2100.

■ Mechanical keying pin to insert between:
□ the I/O module and this I/O base: STB XMP 7700,
□ the field wiring connector and this I/O module: STB XMP 7800,
to ensure that the I/O module, I/O base and field wiring connector are properly matched.

■ User-customizable labels sheets: STB XMP 6700.

Characteristics: : pages 19 to 21
References: page 22
Dimensions: page 23
Wiring: pages 23 to 25

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Advantys STB
Distributed I/O Solution
Digital Input/Output Modules

Characteristics of digital input modules

Type of input module				STB DDI 3230	STB DDI 3420	STB DDI 3610	STB DAI 5230	STB DAI 7220
Number of input channels				2	4	6	2	
Input nominal values	Voltage		**V**	24 DC	24 DC	24 DC	115 AC (50/60 Hz)	230 AC (50/60 Hz)
Input	Logic			Sink	Sink	Sink	–	–
	Type (IEC/EN 61131-2)			Type 2	Type 1+	Type 1	Type 1	Type 1
Input response time	On-to-off		**ms**	0.625 @ 0.2 input filter time	1.35 @ 0.5 input filter time	1.74	1.5 line cycles	
	Off-to-on		**ms**	0.610 @ 0.2 input filter time	0.925 @ 0.5 input filter time	1.21	1.5 line cycles	
Input limit values	Frequency		**Hz**	–	–	–	47…63	
	At state 1	Voltage	**V**	11…30 DC		15…30 DC	74…132 AC	159…256 AC
		Current	**mA**	6 min.	2.5 min.	2 min.	4 min.	
	At state 0	Voltage	**V**	- 3…5 DC			0…20 AC	0…40 AC
		Current	**mA**	2 max.	1.2 max.	0.5 max.	2 max.	
Input voltage values	Permanent voltage		**V**	30 DC			132 AC	265 AC
	Absolute maximum voltage		**V**	56 DC for 1.3 ms, decaying pulse			200 AC for 1 cycle	400 AC for 1 cycle
Hot swapping supported				Yes				
Reverse polarity protection against miswired power				Yes			–	
Isolation voltage	Field-to-bus		**V**	1500 DC for 1 minute			1780 AC for 1 minute	
	Channel-to-channel		**V**	–			–	
Input protection				Resistor-limited				
Current supplied to field device	Electronic short-circuit protection (SCP)		**mA**	100 per channel		–	60 max.	–
Input filtering	Default setting		**ms**	1.0	1.0	1.0 max.	–	–
	User-configurable setting *(1)*		**ms**	0.20 0.50 1.0 2.0 4.0 8.0 16.0	0.50 1.0 2.0 4.0 8.0 16.0	–		
	Tolerance		**ms**	± 0.1	± 0.25	–		
Input polarity	Default setting			Logic normal on both channels				
	User-configurable setting *(1)*			Logic normal or reversed, configurable by channel				
I/O base				STB XBA 1000			STB XBA 2000	
Power Distribution Module "PDM" requirements	Voltage		**V**	24 DC			115/230 AC	
	Model			STB PDT 3100			STB PDT 2100	
	Power protection			5 A time-lag fuse on the "PDM"				
Logic bus current consumption @ 5 VDC			**mA**	50	60	70	50	

(1) Requires the Advantys configuration software.

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Characteristics of digital output modules

Type of output module			STB DDO 3200	STB DDO 3230	STB DDO 3410	STB DDO 3600	STB DAO 8210
Number of output channels			2	2	4	6	2
Output nominal values	Voltage	**V**	24 DC	24 DC	24 DC	24 DC	115/230 AC
	Current/channel	**A**	0.5	2	0.5		2 @ 30° C (86° F) 1 @ 60° C (140° F)
Output logical			Source				–
Output voltage values	Permanent voltage	**V**	19.2…30 DC				20...265 AC
	Absolute maximum voltage	**V**	56 DC for 1.3 ms, decaying voltage pulse				300 AC for 10 s 400 AC for 1 cycle
Response time	Off-to-on		620 µs @ 0.5 A load	520 µs	560 µs @ 0.5 A load	715 µs @ 0.5 A load	10.0 ms
	On-to-off		575 µs @ 0.5 A load	720 µs	870 µs @ 0.5 A load	955 µs @ 0.5 A load	10.5 ms
Hot swapping supported			Yes				
Reverse polarity protection against miswired power			Yes				
Isolation voltage	Field-to-bus	**V**	1500 DC for 1 minute				1780 AC for 1 minute
	Channel-to-channel	**V**	–	500 DC for 1 minute	–		
Output protection (internal)			Electronic overcurrent protection (OCP)				Transient voltage via Varistor and RC
On-state leakage/channel		**mA**	0.4 @ 30 VDC max.	1.0 @ 30 VDC max.	0.4 @ 30 VDC max.		2.5 @ 230 VAC 2.0 @ 115 VAC
Maximum surge current		**A**	5 @ 500 µs (no more than six/minute)	10 @ 500 µs (no more than six/minute)	5 @ 500 µs (no more than six/minute)		30 (1 cycle) 20 (2 cycles)
Maximum load	Capacitance	**µF**	50				–
	Inductance		0.5 H @ 4 Hz switch frequency $L = 0.5/I^2 \times F$ *(1)*				–
Minimum load current		**mA**	0.5	2	0.5		5
Short circuit	Electronic protection		Per group (2 channels per group)				–
	Feedback		Per channel		2 per channel, 4 or 6 per group (2 channels per group)		–
Fault recovery response	Default setting		Channel latched off - requires user reset				No fault detection
	User-configurable setting *(2)*		Auto-recovery or latched off				
Fallback modes	Default		Predefined fallback values on both channels				
	User-configurable setting *(2)*		Hold last value, predefined fallback values on one or more channels				
Fallback states (when predefined is the fallback mode)	Default		Both channels to 0				
	User-configurable setting *(2)*		Each channel configurable to 1 or 0				
Output polarity	Default		Logic normal on both channels				
	User-configurable setting *(2)*		Logic normal or reverse configurable by channel				
I/O base			STB XBA 1000				STB XBA 2000
Power Distribution Module "PDM" requirements	Voltage	**V**	24 DC				Either 115 AC or 230 AC
	Model		STB PDT 3100				STB PDT 2100
	Power protection		10 A time-lag fuse on the "PDM"	*(3)*	10 A time-lag fuse on the "PDM"		
Logic bus current consumption @ 5 VDC		**mA**	60		80	90	70

(1) L = load inductance (H), I = load current (A), F = switching freq. (Hz).
(2) Requires the Advantys configuration software.
(3) Recommended user-supplied 2,5 A time-lag fuses on each channel.

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Characteristics of relay

Type of relay module				STB DRC 3210	STB DRA 3290
Number of relay output channels				2 relay outputs (form C, NO/NC contact pairs)	2 relay outputs (form A/B, NO/NC contact pairs)
Output nominal values	Voltage		**V**	24 DC, 115/230 AC	
	Current per contact	24 VDC	**A**	2	7
		230 VAC	**A**	2	7
Output voltage values	Permanent voltage		**V**	5…30 DC	
			V	20…250 AC	
Response time	Off-to-on		**ms**	5.25	10
	On-to-off		**ms**	6.75	10
Switching capability			**VA**	600 resistive load	2100 resistive load
Relay contact life	Mechanical			10,000,000 operations	
	Electrical			10,000 operations (resistive load @ max. voltage and current)	
Hot swapping supported				Yes	
Isolation voltage	Field-to-bus		**V**	1780 AC for 1 minute	
	Channel-to-channel		**V**	500 AC for 1 minute	
	Bus-to-actuator bus		**V**	1500 DC for 1 minute	
Output surge protection (internal)				None	
Maximum surge current/relay			**A**	20 capacitive load @ t = 10 ms	
Minimum load current			**mA**	50	
Fault recovery response	Default setting			Shorted relay latched off - requires user reset	
	User-configurable setting *(1)*			Auto recovery	
Fallback modes	Default			Predefined	
	User-configurable setting *(1)*			Hold last value	
Fallback states (when predefined is the fallback mode)	Default			2 relays de-energized	
	User-configurable setting *(1)*			Each relay energized or de-energized	
Output polarity	Default			Logic normal on both channels	
	User-configurable setting *(1)*			Logic normal or reverse by channel	
I/O base				STB XBA 2000	STB XBA 3000
Power Distribution Module "PDM" requirements	Coil voltage		**V**	24 DC	
	Model			STB PDT 3100	
	Coil protection		**A**	10 time-lag fuse on the "PDM"	
Logic bus current consumption @ 5 VDC			**mA**	60	

(1) Requires the Advantys configuration software.

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Advantys STB
Distributed I/O Solution
Digital Input/Output Modules



STB XBA 1000



STB DDI 3230



STB XBA 1000



STB DDO 3200



STB XBA 2000



STB DRC 3210

References

Digital input modules

Input voltage	Modularity (No. of channels)	Compliance IEC/EN 61131-2	Reference	Weight kg
24 VDC	2 (sink)	Type 2	**STB DDI 3230**	0.110
	4 (sink)	Type 1+	**STB DDI 342**	0.111
	6 (sink)	Type 1	**STB DDI 3610**	0.112
115 VAC	2	Type 1	**STB DAI 5230**	0.120
230 VAC	2	Type 1	**STB DAI 7220**	0.122

Digital output modules

Output voltage	Output current	Modularity (No. of channels)	Compliance IEC/EN 61131-2	Reference	Weight kg
24 VDC	0.5 A	2 (source)	Yes	**STB DDO 3200**	0.112
	2 A	2 (source)	Yes	**STB DDO 3230**	0.116
	0.5 A	4 (source)	Yes	**STB DDO 3410**	0.110
		6 (source)	Yes	**STB DDO 3600**	0.114
115/230 VAC	2 A	2	Yes	**STB DAO 8210**	0.125

Relay output modules

Output voltage	Output current	Modularity (No. of channels)	Compliance IEC/EN 61131-2	Reference	Weight kg
24 VDC or 115/230 VAC	2 A	2	Yes	**STB DRC 3210**	0.130
	7 A	2	Yes	**STB DRA 3290**	0.130

Separate parts

Description	Base width	For I/O modules	Reference	Weight kg
I/O bases	13.9 mm	STB DDI STB DDO	**STB XBA 1000**	0.024
	18.4 mm	STB DAI STB DAO STB DRC	**STB XBA 2000**	0.028
	28.1 mm	STB DRA	**STB XBA 3000**	0.048

Description	No. of channels	Type	For I/O modules	Reference	Weight kg
Field wiring connector (sold in lots of 20)	6	Screw-type	STB DDI STB DDO	**STB XTS 1100**	0.006
		Spring-type	STB DDI STB DDO	**STB XTS 2100**	0.006
	5	Screw-type	STB DAI STB DAO STB DRC STB DRA	**STB XTS 1110**	0.006
		Spring-type	STB DAI STB DAO STB DRC STB DRA	**STB XTS 2110**	0.006

Description	Use for	Sold in lots of	Reference	Weight kg
Keying pins	Modules	60	**STB XMP 7700**	–
	I/O connectors	96	**STB XMP 7800**	–
User-customizable labels sheets	I/O bases and modules	25	**STB XMP 6700**	–

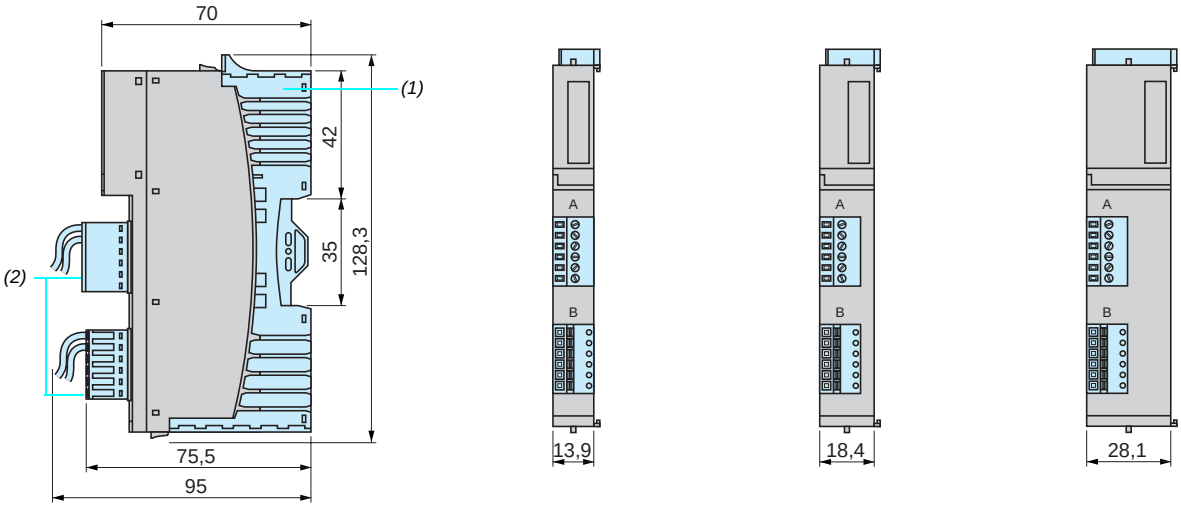
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Advantys STB Distributed I/O Solution
Digital Input/Output Modules

Dimensions

Side view

STB DDI/DDO 3●●0 | **STB DAI ●●●0/DAO 8210 STB DRC 3210/DRA 3290** | **STB DRA 3290**



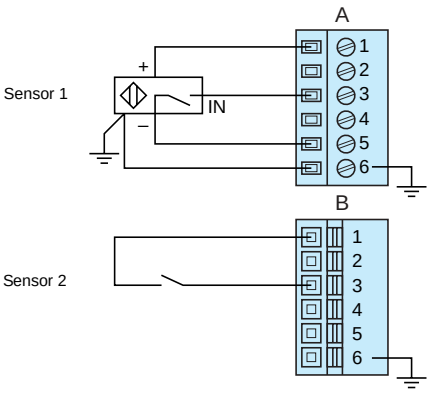
(1) STB XBA 1000/2000/3000 I/O bases

(2) STB XTS 11●0/21●0 connectors

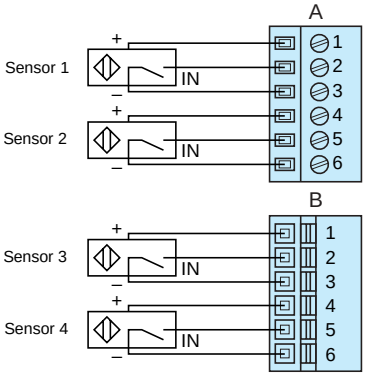
Wiring

Digital input modules

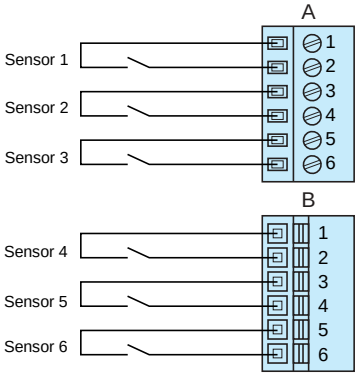
STB DDI 3230



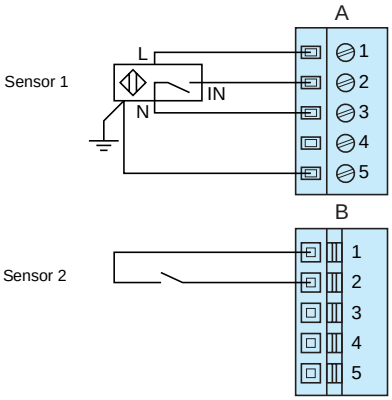
STB DDI 3420



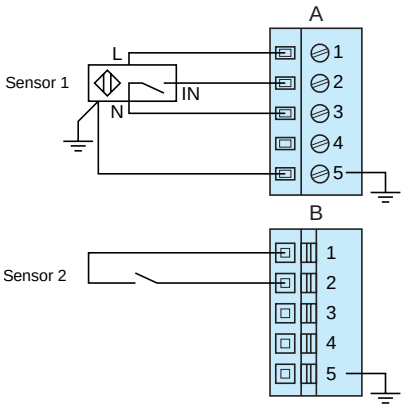
STB DDI 3610



STB DAI 5230



STB DAI 7220

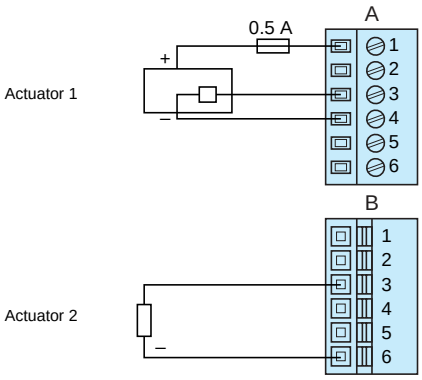


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Wiring (continued)

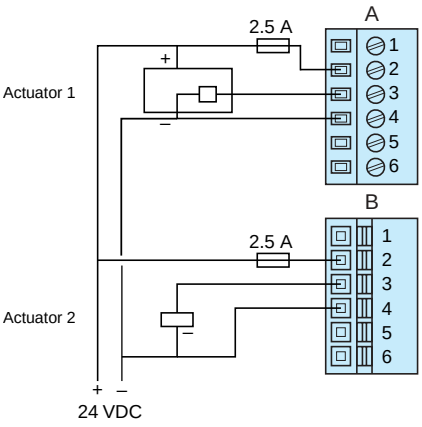
Digital output modules for direct current

STB DDO 3200



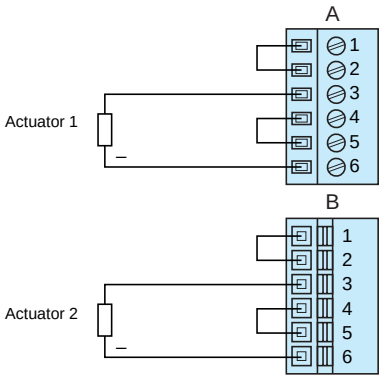
STB DDO 3230

Two field actuators receiving field power from external 24 VDC power supply instead of the PDM

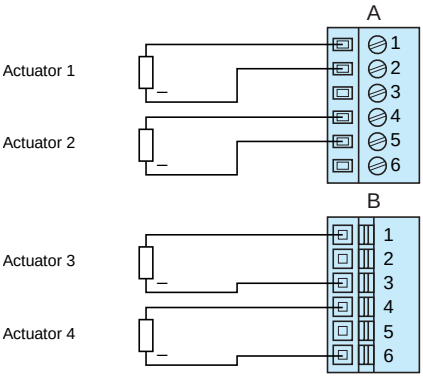


STB DDO 3230

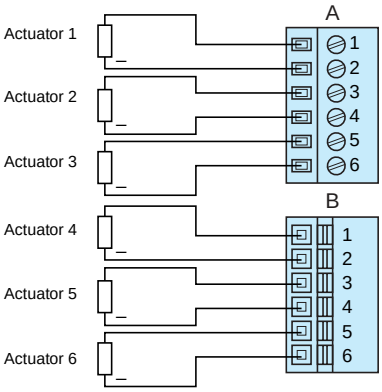
Two two-wire actuators wired to use field power from the actuator bus



STB DDO 3410



STB DDO 3600

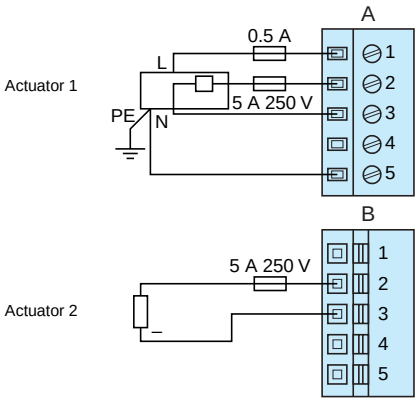


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Wiring (continued)

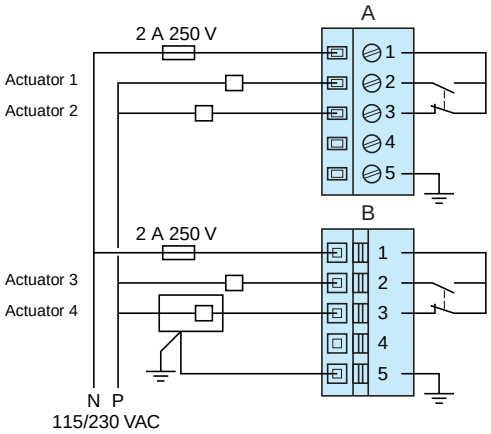
Digital output modules for alternative current

STB DAO 8210

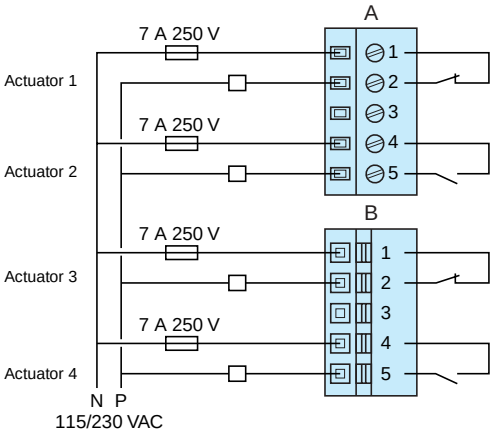


Digital output modules for direct/alternative current (relay)

STB DRC 3210



STB DRA 3290



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Advantys STB Distributed I/O Solution
Analog Input/Output Modules

Configuration		Analog input modules	
		For voltage	For current
			
Number of channels		2 inputs	
Range		- 10…+ 10 V	0…20 mA
Resolution		11 bits + sign	12 bits
Load current/channel (outputs)		–	
Response time		5.0 ms for both channels	
Acquisition period		–	
Update time		10 ms for both channel	
Field wiring connector		Two STB XTS 1100 (6-channel) screw-type connectors or two STB XTS 2100 (6-channel) spring-type	
Base		STB XBA 1000	
Power Distribution Modules “PDM” *(1)*	Voltage	24 VDC	
	Part number	STB PDT 3100	
Isolation	Field-to-bus	1500 VDC for 1 minute	
	Channel-to-channel	30 VDC rms (when sensor bus is not used for field power)	
Fallback states		–	
Protection against	Reverse polarity	Yes	
	Short circuit and overload	Yes, 5 A time-lag fuse on the Power Distribution Module “PDM”	
	Sensor power	Electronic short-circuit protection (SCP)	
Model number		STB AVI 1270	STB ACI 1230
Page		31	

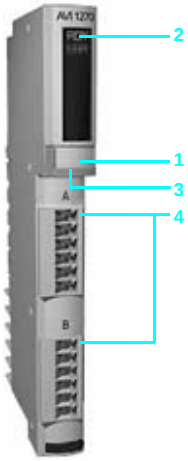
(1) One Power Distribution Module “PDM” is required per voltage group.

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	Analog output modules	
For multirange analog	For voltage	For current
		
	2 outputs	
Thermocouple B, E, J, K, R, S et T “RTD” Pt 100, Pt 1000, Ni 100, Ni 1000, Cu 10 ± 80 mV	Voltage (- 0…+ 10 V, - 10…+ 10 V)	Current (0…20 mA)
15 bits + sign	11 bits + sign or 12 bits	12 bits
	5 mA	20 mA
–	3.0 ms plus settling time 2 channels	
150…360 ms (depending on the range)	–	
	25 ms for 2 channels	
connectors		
1500 VAC for 1 minute	1500 VDC for 1 minute	
–	30 VDC	
	Hold last value Reset to 0 V on 2 channels Go to a predefined value (between 0 V and full scale) on each channel	Hold last value Reset to 0 mA on 2 channels Go to predefined value (between 0 mA and full scale)
Yes, 5 A time-lag fuse on the Power Distribution Module “PDM”	Recommended user-supplied 2,5 A time-lag fuses on each channel	Yes, 10 A time-lag fuse on the Power Distribution Module “PDM”
–		
STB ART 0200	**STB AVO 1250**	**STB ACO 1210**
31		

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Advantys STB Distributed I/O Solution
Analog Input/Output Modules



Presentation

The STB analog inputs allow the acquisition of various analog values encountered in industrial applications.The STB analog outputs are used to control analog field devices such as variable speed drives, proportional control values, etc.

The analog I/O offering is defined as follows:

■ 3 analog input modules:
□ one with 2 ± 10 V, single-ended analog input channels,
□ one with 2 0…20 mA, single-ended analog input channels,
□ one with 2 thermocouple, “RTD” or mV channels.

■ 2 analog output modules:
□ one with 2 single-ended analog output channels configurable for 0…10 V or ± 10 V,
□ one with 2 single-ended analog current output channels at 0…20 mA.

Description

A typical analog input/output module comprises of the following:

1 A location for user-customizable label.

2 A display block showing:
□ the state of the module (RDY, ERR),

3 A color-coded module identification stripe.

4 Two receptacles for field-wiring connectors.

To be ordered separately:

■ I/O bases width 13.9 mm STB XBA 1000. The base features a location for the user-customizable label.

■ Removable screw terminal (6-point) STB XTS 1100 or removable spring terminal (6-point) STB XTS 2100.

■ Mechanical keying pin to insert between:
□ the I/O module and this I/O base: STB XMP 7700,
□ the field wiring connector and this I/O module: STB XMP 7800,
to ensure that the I/O module, I/O base and field wiring connector are properly matched.

■ User-customizable labels sheets: STB XMP 6700.

Characteristics: pages 29 and 30 | References: page 31 | Dimensions: page 31 | Wiring: pages 32 and 33

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Advantys STB
Distributed I/O Solution
Analog Input/Output Modules

Characteristics of analog input modules

Type of input module			STB AVI 1270	STB ACI 1230	STB ART 0200
Number of input channels			2 single-ended analog input channels	2 single-ended analog input channels	2 analog input channel individually configurable for “RTD”, TC or mV operation
Range			± 10 V	0…20 mA	Pt 100, Pt 1000, Ni 100, Ni 1000 and Cu 10 2, 3 or 4-wire “RTD”
					B, E, J, K, R, S, T thermocouples
					± 80 mV
Resolution		**bits**	11 + sign	12	15 + sign
Maximum input (without damage)			50 VDC	25 mA, 50 VDC	± 7.5 VDC
Response time		**ms**	5 both channels		See page 30
Hot swapping supported			Yes		
Return data format			IEC		
Update time		**ms**	10 for 2 channels		See page 30
Input filter			Single low-pass filter at a nominal 25 Hz		
Integral linearity			± 0.2% of full scale, typical	± 0.1% of full scale	See page 30
Differential linearity			Monotonic		–
Input impedance		Ω	400 K	⩽ 300	–
Current supplied to field device			100 mA per channel (electronic short-circuit protection SCP)		
Source impedance		**kΩ**	1 max.	–	–
Absolute accuracy			± 0.5% of full scale @ 25° C		See page 30
Temperature drift			± 0.01% of full scale/ °C		See page 30
Isolation	Field-to-bus	**V**	1500 DC for 1 minute		1500 AC for 1 minute
	Channel-to-channel	**V**	30 DC (when sensor bus is not used for field power)		–
Addressing requirement			4 words (2/channel)		5 words (2/channel + cold-junction compensation)
I/O base			STB XBA 1000		
PDM requirement	Voltage	**VDC**	24		
	Model		STB PDT 3100		
Logic bus current consumption @ 5 VDC		**mA**	60		100

Characteristics of analog output modules

Type of input module			STB AVO 1250		STB ACO 1210
Number of output channels			2 single-ended analog output channels		2 single-ended current analog output channels
Range			0…10 V	± 10 V	0…20 mA
Resolution		**bits**	12	11 + sign	12
Maximum output current/channel		**mA**	5		–
Response time		**ms**	3 plus settling time both channels		
External loop supply		**V**	–		19.2…30 DC (from the 24 DC PDM)
Return data format			IEC		
Update time		**ms**	25 for 2 channels		
Short circuit protection on the outputs			Yes		
Settling		**µs**	–		900 to ± 0.1% of final value
Integral linearity			± 0.1% of full scale typical		
Differential linearity			Monotonic		
Absolute accuracy			± 0.5% of full scale @ 25° C		
Temperature drift			± 0.01% of full scale/ ° C		
Isolation	Field-to-bus	**VDC**	1500 for 1 minute		
	Channel-to-channel	**VDC**	30 (when sensor bus is not used for field power)		
Fallback states	Default setting	**V**	0 V on 2 channels		Drop to minimum output (0 mA)
	User-configurable setting *(1)*		Hold last value; force to a user-specifed state		
			- 32 000…+ 32 000 (with ± 10 V range)		0…32 000
Fallback mode	Default		User configurable		
	User-configurable setting *(1)*		Hold last value		
Addressing requirement			2 words for output data and 2 noncontiguous bytes of configurable data (for voltage range and fallback state)		2 words for output data plus 1 for the power-down state configurable parameter
I/O base			STB XBA 1000		
PDM requirement	Voltage	**VDC**	24		
	Model		STB PDT 3100		
Logic bus current consumption @ 5 VDC		**mA**	80		

(1) Requires the Advantys configuration software.

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Characteristics of STB ART 0200 analog input module

Thermocouple range			**B**	**E**	**J**	**K**	**R**	**S**	**T**
Temperature unit			° C or ° F (° C by default)						
Nominal values		**° C**	130…1820	- 270… + 1000	- 200… + 760	- 270… + 1370	- 50… + 1665	- 50… + 1665	- 270… + 400
		° F	266…3200	- 328… + 1832	- 328… + 1400	- 454… + 2498	- 58… + 3029	- 58… + 3029	- 328… + 752
Data resolution			Increments of 0.1 ° C or ° F						
Broken wire detection			Monitored independently on each channel						
Typical conversion times	With internal cold-junction compensation	**ms**	230 @ 50 Hz 210 @ 60 Hz						
	With external cold-junction compensation	**ms**	400 @ 50 Hz 360 @ 60 Hz						
Accuracy (thermocouple errors not included)		**° C**	± 10.5	± 7			± 10.5		± 7
		° C	± 7 @ 25 ° C	± 5 @ 25 ° C			± 7 @ 25 ° C		± 5 @ 25 ° C
		° F	± 51	± 44.6			± 51		± 44.6
		° F	± 44.6 @ 77 ° F	± 41 @ 77 ° F			± 44.6 @ 77 ° F		± 41 @ 77 ° F
Temperature probe range			**Pt 100**		**Pt 1000**		**Ni 100**	**Ni 1000**	**Cu 10**
Type			2, 3 or 4-wire (3-wire by default)						
Temperature unit			° C or ° F (° C by default)						
Nominal values	IEC	**° C**	- 200…+ 850 (by default)				- 60…+ 180		- 100…+ 260
		° F	- 328…+ 1562 (by default)				- 76…+ 356		- 148…+ 500
	US/JIS	**° C**	- 100…+ 450				N/A		
		° F	- 148…+ 842				N/A		
Data resolution			Increments of 0.1 ° C or ° F						
Broken wire detection			Monitored independently on each channel						
Max. wiring resistance	4-wire	Ω	50 (IEC/US/JIS)		500 (IEC/US/JIS)		50	500	50
	2 or 3-wire	Ω	20 (IEC/US/JIS)		200 (IEC/US/JIS)		20	200	20
Typical conversion times	3-wire	**ms**	340 @ 50 Hz 300 @ 60 Hz						
	2 or 4-wire	**ms**	200 @ 50 Hz 180 @ 60 Hz						
Accuracy (“RTD” errors not included)	@ 25 ° C	**° C**	± 1				± 1		± 4
	@ 60 ° C	**° C**	± 2				± 1		± 4
	@ 77 ° F	**° F**	± 1.6				± 1.6		± 6
	@ 140 ° F	**° F**	± 3.6				± 1,6		± 6
mV range									
Range of the scale		**mV**	± 80 (- 81.92…+ 81.92)						
Data resolution			Increments of 0.01 mV						
Typical conversion times		**ms**	170 @ 50 Hz 150 @ 60 Hz						
Input impedance		**MΩ**	10 typical						
Accuracy	@ 25 ° C/77 ° F		± 0.1 % of full scale @ ambient temperature						
	@ 60 ° C/140 ° F		± 0.15 % of full scale @ ambient temperature						

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Advantys STB Distributed I/O Solution
Analog Input/Output Modules



STB AVI 1270



STB XBA 1000



STB AVO 1250

References

Analog input modules

Input current	Modularity (No. of channel)	Compliance IEC/EN 61131-2	Reference	Weight kg
± 10 V	2	Yes	**STB AVI 1270**	0.115
0…20 mA	2	Yes	**STB ACI 1230**	0.116
Thermocouple, "RTD", ± 80 mV	2	Yes	**STB ART 0200**	–

Analog output modules

Output current	Modularity (No. of channel)	Compliance IEC/EN-61131-2	Reference	Weight kg
0…10 V or ± 10 V	2	Yes	**STB AVO 1250**	0.116
0…20 mA	2	Yes	**STB ACO 1210**	0.117

Separate parts

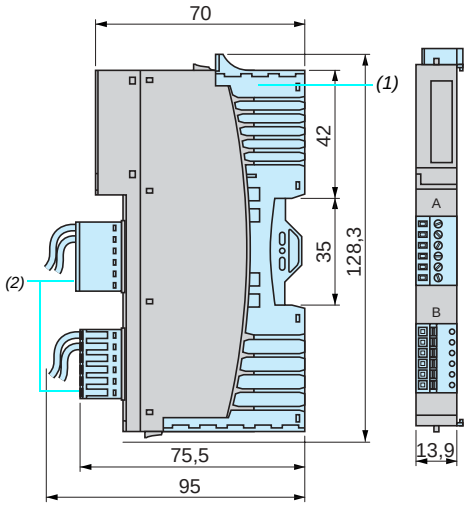
Description	Base width	For I/O modules	Reference	Weight kg
I/O base	13.9 mm	STB AVI 1270 STB ACI 1230 STB ART 0200 STB AVO 1250 STB ACO 1210	**STB XBA 1000**	0.024

Description	Type	For I/O modules	Sold in lots of	Reference	Weight kg
Field wiring connector 6 points	Screw-type	STB AVI 1270 STB ACI 1230 STB ART 0200 STB AVO 1250 STB ACO 1210	20	**STB XTS 1100**	0.006
	Spring-type	STB AVI 1270 STB ACI 1230 STB ART 0200 STB AVO 1250 STB ACO 1210	20	**STB XTS 2100**	0.006

Description	Use for	Sold in lots of	Reference	Weight kg
Grounding kit	Grounding for shielded cables, with 2 parts:1 bar (1 m) and 2 lateral supports	1	**STB XSP 3000**	–
Terminals for grounding kit	Cables (width 1.5...6 mm²)	10	**STB XSP 3010**	–
	Cables (width 5...11 mm²)	10	**STB XSP 3020**	–
Keying pins	Modules	60	**STB XMP 7700**	–
	I/O connectors	96	**STB XMP 7800**	–
User-customizable labels sheets	I/O bases and modules	25	**STB XMP 6700**	–

Dimensions

STB AVI/ACI/ART/AVO/ACO



(1) STB XBA 1000 I/O base.

(2) STB XTS 1100/2100 connectors.

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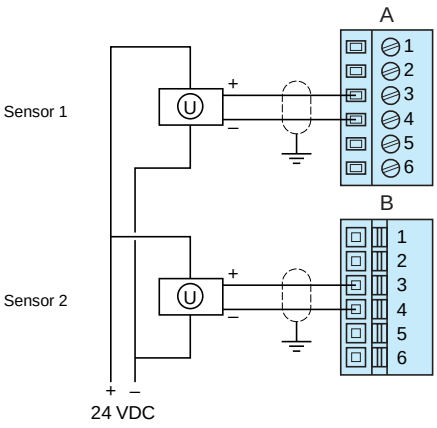
Advantys STB
Distributed I/O Solution
Analog Input/Output Modules

Wiring

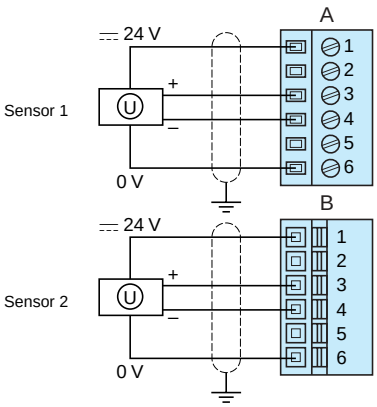
Analog input/output modules

STB AVI 1270

Two isolated analog sensors

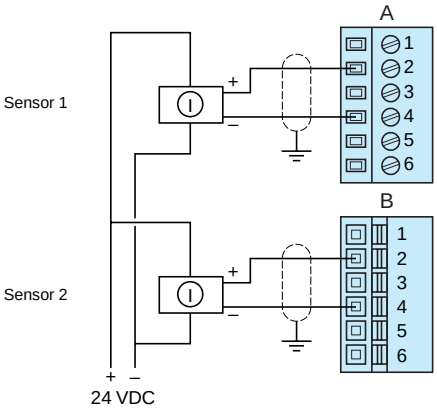


24 VDC from island sensor bus to power analog field devices

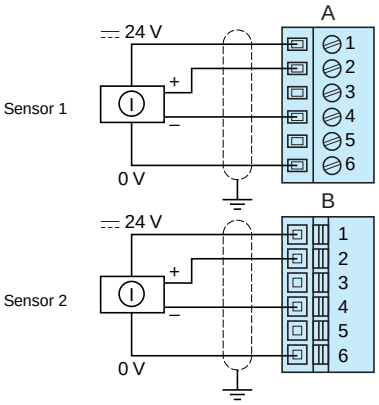


STB ACI 1230

Two isolated analog sensors

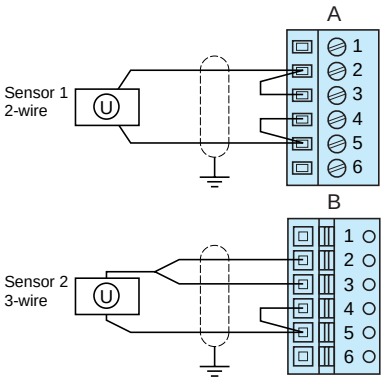


24 VDC from island sensor bus to power analog field devices



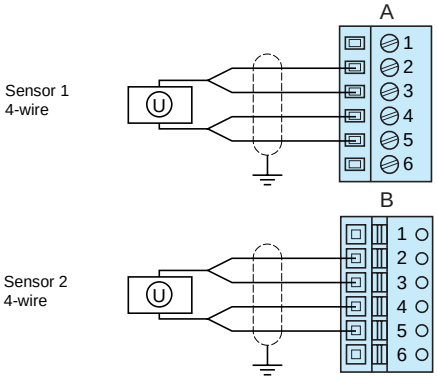
STB ART 0200

Wiring of 2-wire and 3-wire “RTD”

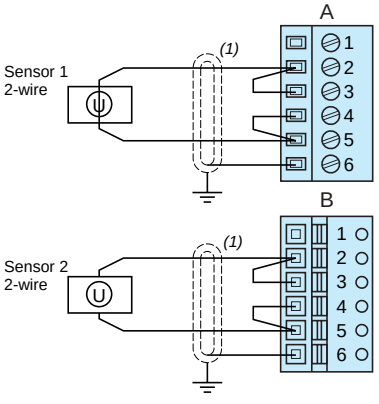


STB ART 0200 (continued)

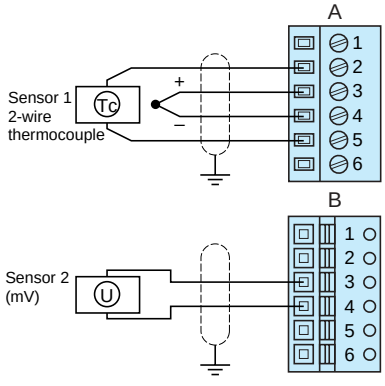
Wiring of 4-wire “RTD”



Wiring of 2-wire “RTD” in the operating high noise environments



Wiring of 2-wire thermocouple and mV sensor



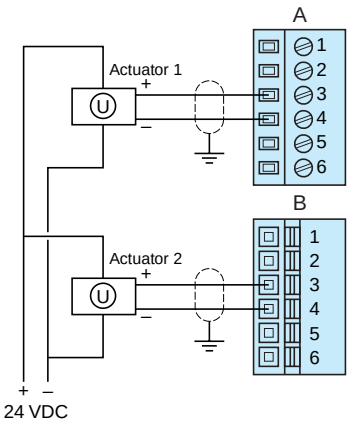
(1) Double-shielded cable

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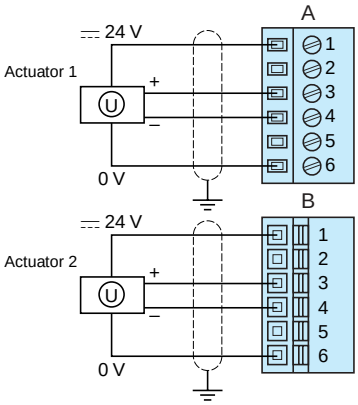
Wiring (continued)

STB AVO 1250

Two isolated analog actuators

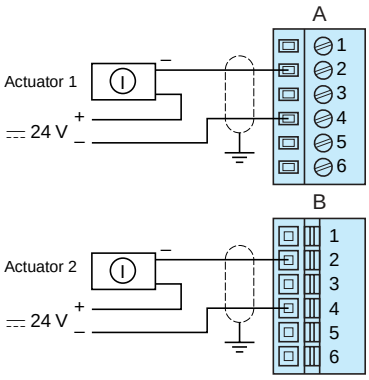


24 VDC from island actuator bus-to-power analog field devices

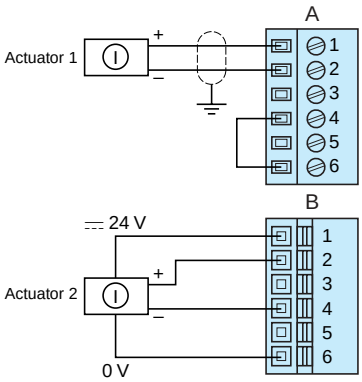


STB ACO 1210

Two isolated analog actuators

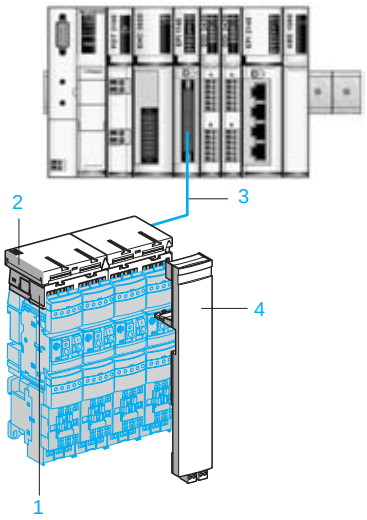


24 VDC from island actuator bus-to-power analog field devices

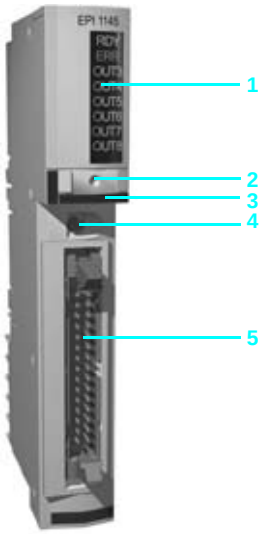


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Advantys STB
Distributed I/O Solution
Parallel Interface for Tego Power Applications



1 63 A power splitter box
2 Control splitter box
3 Connection cable
4 Connection control module



Presentation

The STB EPI 1145 parallel interface is a component of the Advantys STB island designed for the remote connection of 8 motor-starters (or 4 motor-starters in both directions). These TeSys model d motor-starters use the Tego Power installation assistance system.

The Tego Power System

Tego Power is a modular system to help install TeSys model d motor-starters by offering prewired control and power circuits. This Quickfit technology enables cable-free connections to spring-loaded contactor terminals, model d (9 to 32 A) and GV2 M2 motor circuit-breakers.

Tego Power with Quickfit technology enables you to create motor-starter assemblies up to 15 kW/400 V.

Structure of the Tego Power System

The Tego Power system differentiates the power section from the control section:

■ The power kit comprises:
□ a specific plate used to assemble 2 to 8 motor-starters,
□ two connection modules,
□ a power splitter box with a power terminal block,
The contactor for each motor-starter is activated by one of the 8 outputs of the STB EPI 1145 parallel interface.
■ The control kit comprises:
□ a control splitter box for the 2 to 8 motor-starters,
□ a connection module.
The 2 return outputs of each motor-starter (contactor status, circuit-breaker status) are connected to 2 of the 16 inputs to the STB EPI 1145 parallel interface.

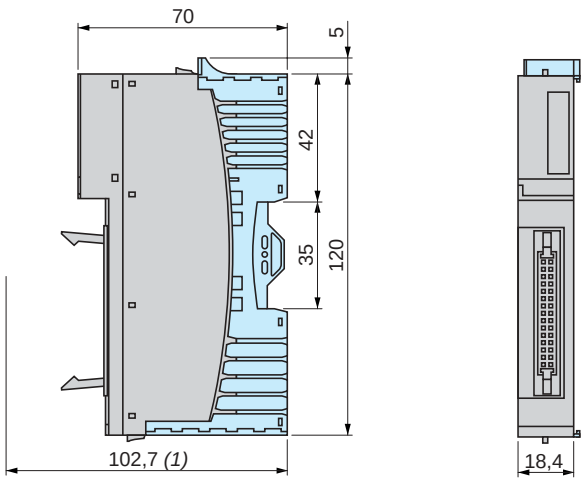
Description

The STB EPI 1145 parallel interface comprises:
1 A display block with 8 LEDs indicating the state of the various motor-starters or output devices.
2 A location for a user-customizable label.
3 A color-coded module identification stripe (black).
4 Selection switch used to view each motor-starter state.
5 An HE 10 connector (30-pin) to connect to a Tego Power system via STB XCA 3002/3003 cables.

To be ordered separately:
An STB XBA 2000 base, width 18.4 mm. The base features a location for the user-customizable label.

Dimensions

STB EPI 1145



(1) With HE 10 connector (30-pin).

Characteristics: page 35
References: page 35

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Advantys STB Distributed I/O Solution

Parallel Interface for Tego Power Applications

Characteristics

Electrical characteristics

Module Type				STB EPI 1145
Plug in/plug out with power on				Yes
Connection				Via 1 HE 10 connector (30 contacts).
P/S				Via STB PDT 3100 ⎓ 24 V power distribution module
Protection				Via STB PDT 3100 power distribution module fuse
Consumption	On ⎓ 5 V logic bus		**mA**	130
	On ⎓ 24 V sensor bus		**mA**	max. 100
	On ⎓ 24 V actuator bus		**mA**	max. 50 (with all 8 outputs at 0 state), max. 1,000 (with all 8 outputs at 1 state)

Characteristics of inputs

Number				16 (8 for the status of each contactor/ 8 for the status of each circuit-breaker)
Nominal values	Voltage		⎓ **V**	24
Type	IEC/EN 61131-2			Type 1
Limit values	At state 1	Voltage	**V**	15...30
		Current	**mA**	min. 2
	At state 0	Voltage	**V**	- 3...+ 5
		Current	**mA**	max. 0.5
Protection				Resistor-limited

Characteristics of outputs

Number			8 (8 to control each contactor)
Nominal values	Voltage	⎓ **V**	24
	Current	**mA**	100 per channel, 850 per module
Limit values	Permanent voltage	**V**	19.2...30
	Absolute voltage	**V**	36
	Peak voltage	**A**	1 for 100 µs per channel
Max. loads	Capacity	µ**F**	50
	Inductance		0.5 Henry at 4 Hz
Short circuit and overload protection			Yes, per channel

References



STB XBA 2000



STB EPI 1145

Parallel interface for TeSys model d motor-starters with Tego Power system

Power Supply type	Voltage	Reference	Weight kg
⎓	24 V	**STB EPI 1145**	0,120

Separate parts

Description	Use	Sold in lots of	Reference	Weight kg
Base 18.4 mm	Application-specific module mounted on DIN rail	1	**STB XBA 2000**	0.024
Keying pin	For application-specific module	60	**STB XMP 7700**	–
User-customizable labels sheets	Customization of modules and bases	25	**STB XMP 6700**	–

Description	Use	Length	Reference	Weight kg
Connection cables (30-pin at each end)	From the power splitter box and APP 2R●E control to the STB EPI 1145 module	1 m	**STB XCA 3002**	–
		2 m	**STB XCA 3003**	–

Tego Power separate elements *(1)*

Description	Use	Reference	Weight kg
Power and control splitter boxes	2 outputs	**APP 2R2E**	–
	4 outputs *(2)*	**APP 2R4E**	–

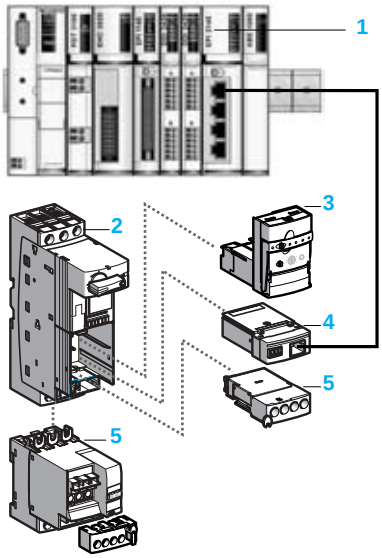
(1) For other Tego Power components, refer to our catalog: "Motor-starter solutions, control and power protection components".
(2) For a set of 8 motor-starters, use 2 APP 2R4E splitter boxes.

Presentation: page 34 Description: page 34 Dimensions: page 34

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Advantys STB Distributed I/O Solution

Parallel Interface for TeSys Model U Applications



Presentation

The STB EPI 2145 1 parallel interface is a component of the Advantys STB distributed I/O system designed for the remote connection of 4 TeSys model U starter-controllers (12 inputs and 8 outputs).

Presentation of model U starter-controllers

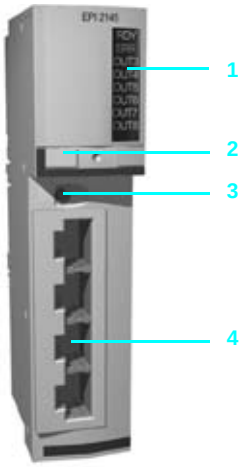
The TeSys model U starter-controllers is a direct motor-starter which performs the following functions:
- ■ Protects and controls single phase or 3-phase motors:
- □ disconnecting power,
- □ short circuit and overcurrent protection,
- □ thermal overload protection,
- □ power switching,
- ■ Application control:
- □ protection alarms, application monitoring (amount of time in use, number of faults, motor current values, etc.).
- □ history.

Components of a model U starter combined with an STB EPI 2145 *(1)* module

The starter-controller functions are performed by a click-lock adjustment that removes the need for cables,
- ■ On a power base 2.
- ■ a ⎓ 24 V 3 control unit (LUC B/D/C/M ●●BL) for 0.09 to 15 kW motors.
- ■ a parallel link communication module (LUF C00) 4.
- ■ options (additional contacts, inverter blocks) 5

Each of the 4 channels of the STB EPI 2145 application-specific module features:
- ■ 2 outputs (starter control and reverse direction control).
- ■ 3 inputs (circuit-breaker status, contactor status, and direction feedback).

(1) TeSys model U components: consult our catalog "Starters and basic TeSys model U equipment".



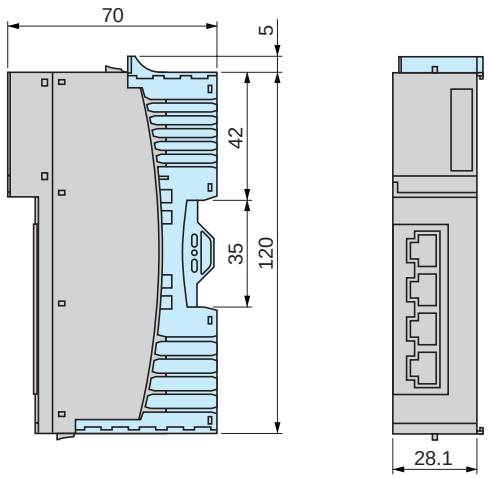
Description

The STB EPI 2145 parallel interface module comprises:
1. A display block with LEDs for the various states of the starter-controllers.
2. A location for a user-customizable label.
3. A color-coded module identification stripe (black).
4. 4 RJ45 connectors for connecting 4 model U starter-controllers.

To be ordered separately:
An STB XBA 3000 base, width 28.1 mm.
The base features a location for the user-customizable label.

Dimensions

STB EPI 2145



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Advantys STB Distributed I/O Solution

Parallel Interface for TeSys Model U Applications

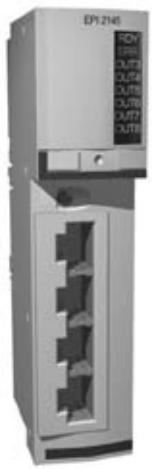
Characteristics

Module Type				STB EPI 2145
Hot swapping				Yes
Connection				Via 4 RJ45 connectors
Power Supply				Via STB PDT 3100 ⎓ 24 V power distribution module
Protection				Via STB PDT 3100 power distribution module fuse
Consumption	On ⎓ 5 V logic bus		**mA**	130
	On ⎓ 24 V sensor bus		**mA**	max. 100
	On ⎓ 24 V actuator bus		**mA**	max. 50 (with all 8 outputs at 0 state), max. 1,000 (with all 8 outputs at 1 state)
Characteristics of Inputs				
Number of inputs				12
Nominal values	Voltage		⎓ **V**	24
Type	Type IEC/EN61131-2			Type 1
Limit values	At state 1	Voltage	**V**	15...30
		Current	**mA**	min. 2
	At state 0	Voltage	**V**	- 3...+ 5
		Current	**mA**	max. 0.5
Protection				Resistor-limited
Characteristics of Outputs				
Number of outputs				8
Nominal values	Voltage		⎓ **V**	24
	Current		**mA**	100 per channel, 850 per module
Limit values	Permanent voltage		**V**	19.2...30
	Absolute voltage		**V**	36
	Peak voltage		**A**	1 for 100 µs per channel
Max. loads	Capacity		µ**F**	50
	Inductance			0.5 Henry at 4 Hz
Short circuit and overload protection				Yes, per channel

References



STB XBA 3000



STB EPI 2145

Parallel Interface for TeSys model U starter-controllers

Type of Power Supply	Voltage	Reference	Weight kg
⎓	24 V	**STB EPI 2145**	0.165

Separate parts

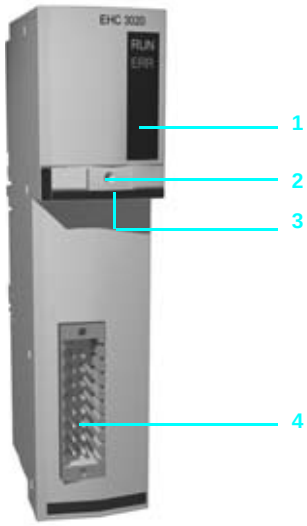
Description	Use	Sold in lot of	Reference	Weight kg
Base 28.1 mm	Application-specific module mounted on DIN rail	1	**STB XBA 3000**	0.048
Keying Pin	For application-specific module	60	**STB XMP 7700**	–
User-customizable labels sheets	Customization of modules and bases	25	**STB XMP 6700**	–

Description	Use	Length	Reference	Weight kg
Connection cables An RJ45 connector at each end	Linking the STB EPI 2145 module to the model U starter-controller	0.3 m	**LU9 R03**	0.045
		1 m	**LU9 R10**	0.065
		2 m	**490 NTW 000 02**	–
		3 m	**LU9 R30**	0.125
		5 m	**490 NTW 000 05**	–
		12 m	**490 NTW 000 12**	–

Presentation: page 36 Description: page 36 Dimensions: page 36

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Advantys STB Distributed I/O Solution
Counter Module



Presentation

Counting parts or events, grouping objects, controlling incoming and outgoing data streams, and measuring lengths or positions all require counting functions.
The STB EHC 3020 counter module performs these functions for an Advantys STB automation island (controlled by a master connected to the island) with a max. counting frequency of 40 kHz.
The STB EHC 3020 module, with 1 counting channel, accepts as input typical ⎓ 24 V sensors: proximity sensors, photo-electric detectors, incremental encoders or mechanical contacts *(1)*.
As output, the module features 2 digital ⎓ 24 V 0.5 A outputs.
The Advantys configuration software is used to select one of the six functions the module can perform.
(1) The counting frequency is limited to 400 Hz with mecanical contacts.

Description

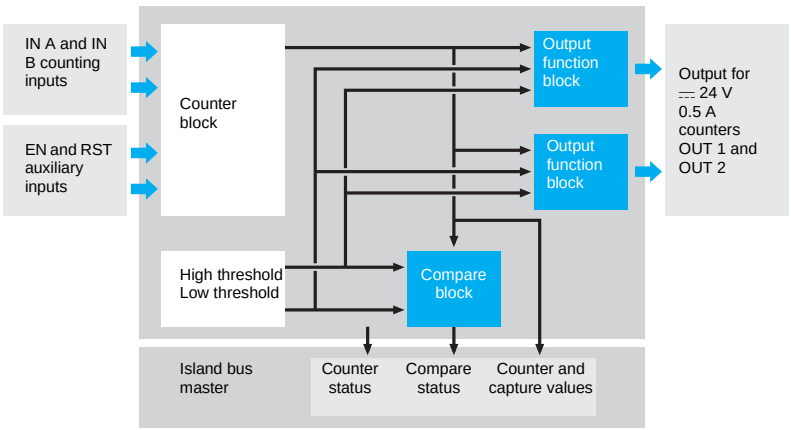
The front panel of the STB EHC 3020 counter module features:
1 A display block with 8 display LEDs:
- RDY LED: module is operational,
- FLT LED: steady: module fault; blinking: ⎓ 24 V power distribution fault or output short circuit (depending on pattern)
- OUT 1 or OUT 2 LEDs: output 1 or 2 active (steady) or short circuit (blinking),
- IN A, IN B, RST and EN LEDs: status of 4 input channels.

2 Location for user-customizable labels.
3 Color-coded module identification stripe (black).
4 A connector for an STB XTS 2150 removable spring-type connector (must be ordered separately).

To be ordered separately:
- STB XBA 3000 base width 28.1 mm. Includes a location for user-customizable labels.
- STB XTS 2150 removable connector with 18-pin.

Operation

Counter channel block diagram



Depending on the counting function used (see operating characteristics page 39), the I/O for the STB EHC 3020 module are allocated to:
- Input IN A, connected to a sensor.
- Inputs IN B, EN and RST, connected to a sensor or activated by the Advantys STB master via the field bus.

The 16-bit counter value is continually compared to the two threshold values (configured with the configuration software) and is used to activate the two OUT 1 and OUT 2 outputs, without requiring processing by the bus master controller. Reports such as the counting value or the two status bits (counter status, compare status) are sent to the master controller of bus.

Characteristics: pages 39 and 40
References: page 41
Dimensions: page 41
Wiring: page 41

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Advantys STB
Distributed I/O Solution
Counter Module

Functional characteristics

Configurable functions	Number	1 of the 6 configurable functions (using the Advantys configuration software)
	Frequency meter	This function measures the frequency received on the IN A input. This frequency is always expressed in Hz (number of pulses per second), with a precision of 1 hertz. Also measures the speed in Units per second. The number of points to be received on the IN A input, corresponding to one unit, must be defined from one up to 255. The maximal frequency on the IN A input is 40 kHz in both cases (without filtering). Response time: < 0,2 s (frequency 2/40 kHz), < 1 s (frequency 0,2 kHz).
	Count events	This function provides the value of the number of pulses received on the IN A input during a selectable time unit. The time unit is configurable : 0.1s, 1s, 10 s or 1 minute. The IN B input can be used to reset the internal time basis which provides the time unit. The maximal number of pulses counted during a time unit is up to 65535. The minimal pulses duration on the IN A input is 10 µs (without filtering). Response time: < 0,5 ms
	Measure time periods	Measures the elapsed time during an event or between two evens (on IN A input) according to the selectable time base of 10 µs, 100 µs or 1 ms. The max. event duration is 0.655, 6.55, or 65.5 seconds, respectively. The max. frequency on the IN A input is 200 Hz. Response time: < 0.5 ms.
	Down counting	The IN B input starts or restarts the counter by resetting the setpoint value defined by the high threshold value. When the counter is running , any pulse received on the IN A input decreases the counter. The counter stops when it reaches 0. The setpoint maximal value is 65535. The maximal frequency on the IN A input is 40 kHz (without filtering). Response time : < 0,5 ms
	Loop (modulo) counting	The IN B input starts or restarts the counter by resetting the setpoint value to 0. The IN B input also triggers the capture of the previous counting value before the counter is reset to 0. When the counter is running , any pulse received on the IN A input increases the counter. The counter turns back to zero automatically when the pulse number received equals the modulo defined by the high threshold value. The modulo maximal value is 65535. The maximal frequency on the IN A input is 40 kHz (without filtering). Response time : < 0,5 ms
	Up/down counting	The RST input starts or restarts the counter by resetting the preset value. When the counter is running, the counting increases or decreseases according to the pulses received on the IN A and IN B inputs (default settings : IN A increases the counter and IN B decreases the counter). By configuration: □ the IN B input can define the counting direction of the pulses received on IN A. □ the IN A and IN B inputs can receivet the signals of an incremental encoder. The counter value is limited to 0 as low limit and to 65535 as high limit. Response time : < 0,5 ms
	OUT 1 and OUT 2 output functions	According to requirements, each of the counting module's two outputs can be configured for one of the following operating modes: □ No direct action: the counter status and status words are processed by the island master □ The output is activated when the counter value is less than the low threshold □ The output is activated when the counter value is between the low threshold and the high threshold □ The output is activated when the counter value is greater than the high threshold □ A pulse is generated on the output when the low threshold is exceeded (when counting down) □ A pulse is generated on the output when the low threshold is exceeded (when counting up) □ A pulse is generated on the output when the high threshold is exceeded (when counting down) □ A pulse is generated on the output when the high threshold is exceeded (when counting up) □ The output is activated as long as the counter is RUN (only available on downcouting function) □ The output is activated when the counter is STOP □ The output is activated when the capture value is less than the low threshold (only available on modulo function) □ The output is activated (according to the modulo) when the counter value is between the low threshold and the high threshold

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Characteristics

Electrical characteristics

Module Type			STB EHC 3020
Frequency on counting inputs		**kHz**	1 channel max. 40
Hot swapping supported			Yes
Mounting base			STB XBA 3000
PDM Power distribution module required	Voltage provided	**V**	24
	Reference		STB PDT 3100
Consumption on the logic bus	⎓ 5 V	**mA**	60 typical, 140 max.
Isolation	Between island bus and I/O	⎓ **V**	500

Characteristics of Inputs

Input type			Counting inputs (IN A and IN B)	Auxiliary inputs (EN and RST)
Nominal values	Voltage	⎓ **V**	24 (limits 19.2…30 V)	
	Current	**mA**	6	
Limit values	At state 1		⎓ 11…30 V, min. 2 mA current (at ⎓ 11 V)	
	At state 0		⎓ - 3…5 V, max. 1.5 mA current	
Logic			Positive	
Filter time	Analog	µs	2.5	25
	Digital	**ms**	None (max. count 40 kHz) 0.40 (max. count 1 kHz) 1.20 (max. count 400 kHz)	–

Characteristics of Outputs

Output type			OUT 1 and OUT 2 outputs
Rated power voltage		⎓ **V**	24 (limits 19.2…30 V)
Nominal current		**A**	0.5 (1 A per module)
Logic			Positive (by default), positive on 1 or 2 channels, negative on 1 or 2 channels (configurable)
Response Time			See functional characteristics, page 39
Leakage current	At state 0	**mA**	max. 0.1
Voltage drop	At state 1	**V**	max. 3
Max. load inductance		**Henry**	0.5 at 4 Hz, or L = 0.5/I^2 x F where L: load inductance, I: load-in current, and F: switching frequency
Short circuit and overload protection	Type per channel		By current limiter (1.1 A typical/1.5 A max.) and electronic tripping (manual or automatic reset)
Default fallback positions	Default		Set to 0 state for both channels
	Configured		Maintain at value, set to state 0 or 1 for each channel

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Advantys STB Distributed I/O Solution
Counter Module



STB XBA 3000



STB EHC 3020

References

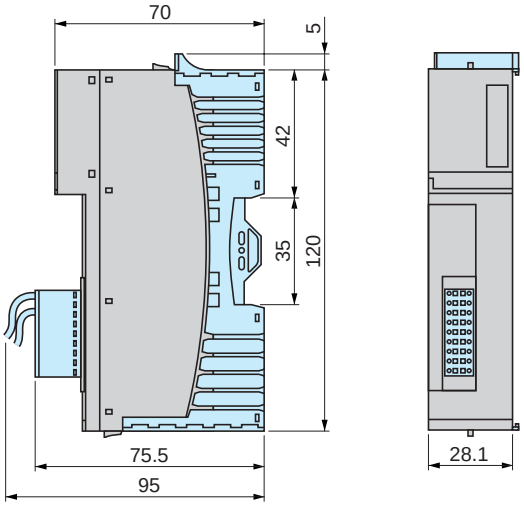
Description	Input type	Reference	Weight kg
Counter module 1 channel 40 kHz	2/3 wire ⎓ 24 V detectors Incremental encoder ⎓ 24 V Mechanical contacts	**STB EHC 3020**	–

Separate Parts

Description	Use for	Sold in lots of	Reference	Weight kg
Base 28.1 mm	Module mounted on DIN rails	1	**STB XBA 3000**	0,048
Removable connector	18-pin sping-type	1	**STB XTS 2150**	0,006
Keying pin	Counter module	60	**STB XMP 7700**	–
	Removable connector	96	**STB XMP 7800**	–
User-customizable labels sheets	Customization of modules and bases	25	**STB XMP 6700**	–

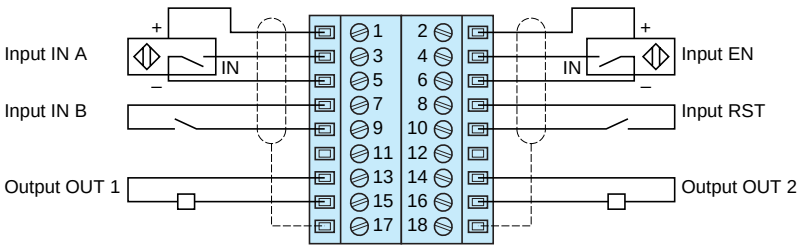
Dimensions

STB EHC 3020



Wiring

Connection to STB XTS 2150 removable terminal block for 18 spring-loaded terminals



The ⎓ 24 V power supplies for the sensors and actuators are provided by the STB PDT 3100 power distribution module via the island's sensor and actuator buses of the Advantys STB island.

Presentation: page 38
Description: page 38

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Advantys STB
Distributed I/O Solution
Configuration Software

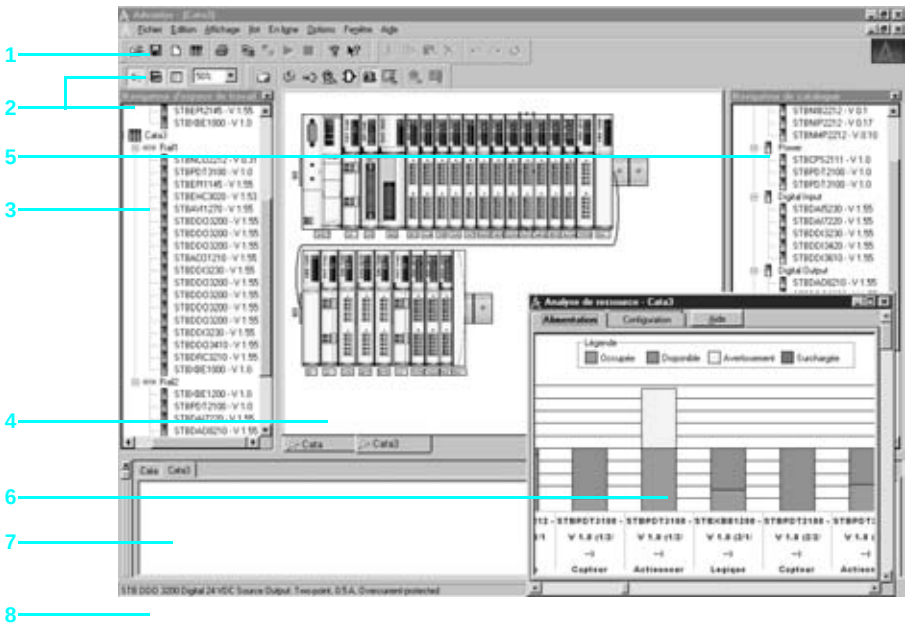
Presentation

The configuration process of the Advantys STB system includes the following steps:
- If necessary, configure all the I/O modules for Advantys STB (digital, analog, and application-specific), and the modules with a default configuration.
- Configure the reflex functions handled at the island level.

These settings are defined using the STB SPU 1000 dedicated Advantys configuration software. This program also allows to:
- Optimize island performance by giving a priority assignment to processing for certain modules.
- Assign mandatory modules (modules whose presence and correct operation are required for the island to operate correctly).
- Declare in the island standard CANopen devices or preferred devices (such as the ATV 38/58 controller available later).
- Check the configuration for compliance and power consumption.
- Modify the module's default features.

User Interface

The main screen of the Advantys STB configuration software gives access to all the available tools in an ergonomic, easy-to-use fashion.



This main screen contains a general view comprising several windows and toolbars that can be moved about the screen.

1 Menu bar, giving access to all functions.

2 Toolbar containing icons used for direct access to editors and the most frequently used functions.

3 Application browser, for browsing the various islands and segments of each island.

4 Main window for viewing islands and segments. By selecting a module, you can access the following editors:
- Module Editor,
- Reflex Action Editor,
- Power supply and memory resource analysis,
- Overview of the I/O image,
- Diagnostics.

The last two items are available only if the island is online.

5 Catalog browser for all the Advantys STB components, sorted by category (networks, power supply, digital I/O, etc.).

6 Power supply and memory resource analysis window.

7 Log window displaying the results of operations performed by the configuration software during a work session on an island.

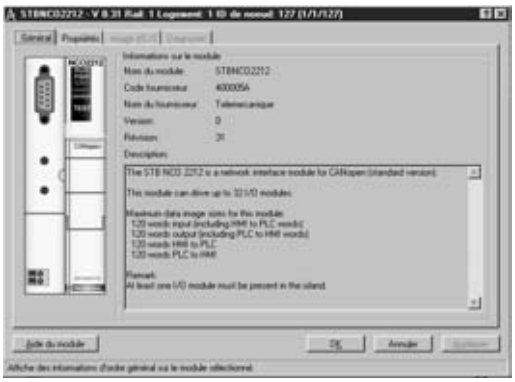
8 Status bar.

Functions:
pages 43 to 45

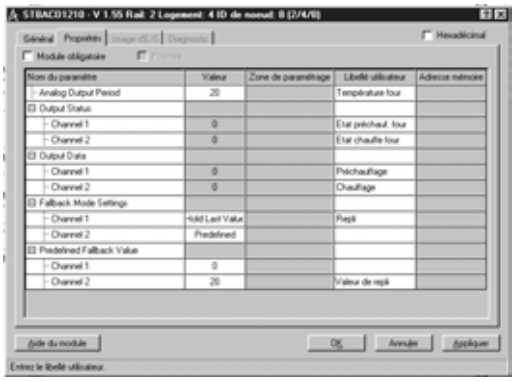
References:
page 45

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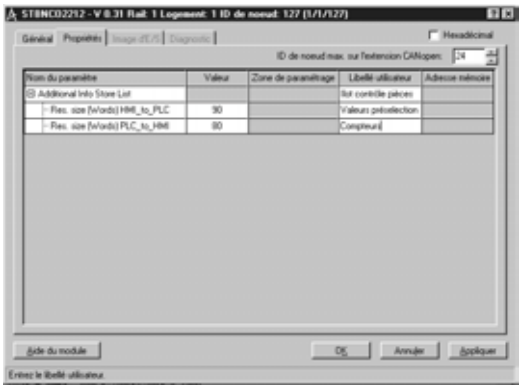
Advantys STB
Distributed I/O Solution
Configuration Software



CANopen bus interface NIM module.



STB ACO1210 module with 2 analog output channels



STB NCO 2212 CANopen bus interface module

Functions

Module Editor

The number of tabs provided by the editor is determined by the mode in which you execute the Advantys Configuration Software (Local or Online). The editor displays some or all of the following tabs: General, etc.

“General”Tab

This read-only tab (island online or offline), provides general information and displays the key technical characteristics of the selected module.

“Properties” Tab

This tab, accessible when the island is offline, contains the operating settings for the selected module, some of which can be changed by the user. Among other things, you can:

■ Select the display format for parameters: decimal or hexadecimal.

■ Identify a module as “mandatory”. That module is then designated as critical for island operations. If the module fails or is not present, the island will no longer be operational (it will stop).

■ Declare the scanning priority for the digital input modules. This allows you to assign more frequent scanning to up to 10 modules per island, so that they will be considered as “fast” modules.

■ Configure the module. The configurable items (cells with white backgrounds) depend on the type of I/O module. Depending on the type of module, the main parameters are:
□ user label assignment: free text field, max. 50 characters,
□ digital input modules: filter time and choice of positive or negative logic for each channel,
□ digital output modules, the behavior upon short circuit or overload (manual or automatic reset), the choice of positive or negative logic for each channel, the default fallback position for each channel (0 or 1 state).
□ analog input modules, with the offset and scaling for each channel,
□ the analog output modules, with for each channel, the refresh rate and the default fallback position (maintain the value or assume a predefined value),
□ parallel interfaces for Tego Power and TeSys Model U applications, the choice of positive or negative logic for each channel, the behavior upon short circuit or overload (manual or automatic reset), and the default fallback position for each channel (0 or 1 state).
□ counter module, the definition of the counting function and its operation, see page 38,
□ network interface modules, the amount of memory reserved for data exchanges with the Operator Terminal (directly connected to the network interface module).This data is also accessible by the island’s master device. If an Advantys STB island has a CANopen extension, a parameter allows you to define the address of the last standard CANopen device connected to the island.

Online help for the selected module can be displayed to show the limits and operating values of these parameters.

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Advantys STB
Distributed I/O Solution
Configuration Software



Functions (continued)

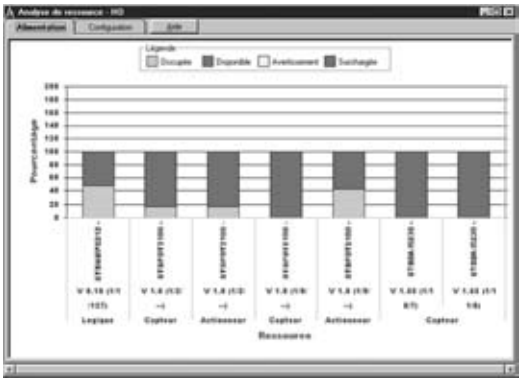
"I/O Image" Tab

This tab, accessible when the island is online, provides a table with data concerning the:
- Input/Output modules comprising the Advantys STB island (values and state of each module).
- Operator Terminal connected to the network interface module. The length of this field (defined in the "Properties" tab of the network interface module) equals the maximum total size of the image table, less the words occupied by the image of the I/O modules.

The total size of the I/O image table depends on the type of the network interface module. These I/O images can be displayed in two views:
- Field bus or network view: each protocol transfers its data in a specific format.
- Internal island bus view: the Modbus protocol is used.

"Diagnostics" Tab

This tab allows the user to perform diagnostics for the island connected to the PC terminal where the Advantys Configuration Software resides.



Analysis of the island's memory and power resources

At any time during the configuration process, you can consult the following information as a percentage:

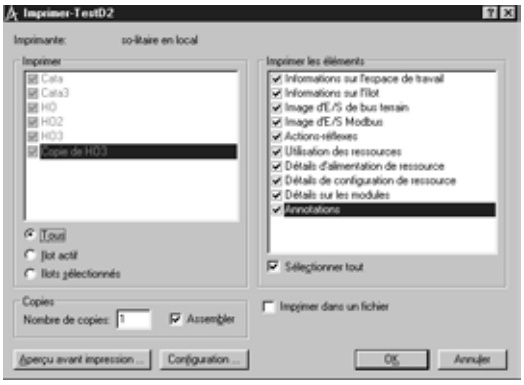
- The power consumption at various voltages:
  - ⎓ 5 V logic provided by the STB N● network interface module,
  - ⎓ 24 V provided by the STB PDT 3100 power distribution module(s),
  - ⎓ 115/230 V provided by the STB PDT 2100 power distribution module(s),

- The usage of the memory integrated in the network interface module:
  - image field for inputs and outputs,
  - settings field for the island configuration data and reflex functions,
  - field dedicated to operator dialog.

Downloading Configuration Data

The software enables bi-directional transfer of configuration data:

- From the PC to the RAM and Flash memory of the island interface module in order to make the island operational. If the network interface module includes the STB XMP 4440 32 KB removable memory card, data is written to the card, providing a backup.
- From the NIM interface module to the PC.



Importing/Exporting EDS files

When the island includes standard CANopen devices, you must use the software to import the description of those devices contained in the EDS files into the catalog database.
Inversely, those descriptions may be exported to the master in case of a CANopen, INTERBUS or DeviceNet bus.

Printing

The Printing mode allows you to select the islands and topics to be printed. You can also print to a file in PDF or RTF format.

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Functions (continued)

Reflex Editor

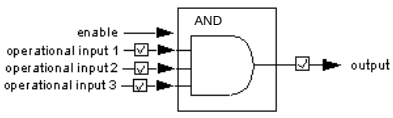
For applications requiring short response times (< 3 ms), the Advantys Configuration Software allows you to create reflex functions that work directly on the island output modules, thereby freeing the bus master from parsing and process them. These reflex functions can be associated with “priority” I/O modules to ensure the reliability of the response time.

An Advantys STB island can call up to 10 reflex functions. These functions are created from blocks whose inputs are activated by the digital or analog input channels and whose results activate an analog or digital output channel. You can nest two reflex functions.

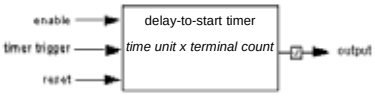
Reflex types and function blocks

Various types of function blocks are available:

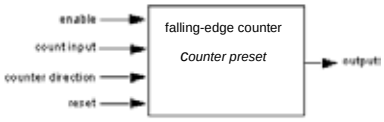
Boolean logic function blocks:
XOR block, AND block with 2 inputs and 3 outputs



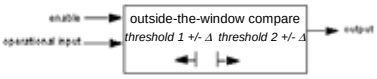
Timer/monostable blocks: when working, when idle, upon activation, and upon deactivation



Rising/Falling Edge counting function blocks:
on rising or falling edge, from 0 to 65,535



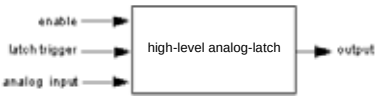
Compare function blocks on signed integers
(- 32,768 to 32,767): i <, i >, < i >, i < and i >



Digital Latch function blocks: on state 0 or 1 or on rising or falling edge, memorize state 0 or 1



Analog Latch function blocks: on state 0 or 1 or on rising or falling edge, memorize the signed integer (0 to 65,535) or unsigned integer (-32,768 to 32,767)





STB SPU 1000

References

The multilingual Advantys Configuration Software is compatible with the following operating systems: Windows 98 (second edition SE), Windows NT 4.0 (service pack ≥ 6), Windows 2000 (service pack ≥ 1) and Windows XP.
It includes online help and is provided with a STB XCA 4002 cable to connect the NIM to the PC (length: 2 m).

Description	Use	Reference	Weight kg
Advantys Configuration Software	Single workstation	**STB SPU 1000**	–
User Documentation	Multilingual on CD-ROM	**STB SUS 8800**	–

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Advantys STB
Distributed I/O Solution
Phaseo Regulated Power Supplies



ABL 7RE240●
ABL 7RP240●



ABL 7RE2405
ABL 7RP2405



ABL 7RE2410
ABL 7RP2410

ABL 7 power supplies

The ABL-7 range of power supplies is designed to provide the d.c. voltage necessary for the control circuits of automation system equipment. Split into three families, this range meets all the needs encountered in industrial, commercial and residential applications. Single-phase or 3-phase *(1)*, of the electronic switch mode type, they provide a quality of output which is suitable for the loads supplied and compatible with the mains supply available in the equipment. Clear guidelines are given on selecting protection devices which are often used with them, and thus a comprehensive solution is provided which can be used in total safety.

Phaseo switch mode power supplies

These switch mode power supplies are totally electronic and regulated. The use of electronics makes it possible to significantly improve the performance of these power supplies which offer:
- compact size,
- integrated overload, short-circuit, overvoltage and undervoltage protection,
- a very wide range of permissible input voltages, without any adjustment,
- a high degree of output voltage stability,
- good performance,
- LED indicators on the front panel.

Phaseo power supplies are available in single-phase and 3-phase versions *(1)*. They deliver a voltage which is precise to 3%, whatever the load and whatever the type of mains supply, within a range of 85 to 264 V for single-phase, or 360 to 550 V for 3-phase. Conforming to IEC standards, UL and CSA certified, they are suitable for universal use. The inclusion of overload and short-circuit protection makes downstream protection unnecessary if discrimination is not required.
ABL-7 RE and ABL-7 RP supplies are also equipped with an output undervoltage control which causes the product to trip if the output voltage drops below 19 V, in order to ensure that the voltage delivered is always usable by the actuators being supplied. All the products are fitted with an output voltage adjustment potentiometer in order to be able to compensate for any line voltage drops in installations with long cable runs. Most of our power supplies are designed for direct mounting on 35 and 75 mm ⎓ rails.

The 24 AC single-phase power supplies referenced in this ctalogue are quite adapted to tie-up with the Advantys STB modules (Network Interfaces Modules “NIM”, Power Distribution Module “PDT” and inputs/outputs modules).

- Universal single-phase supplies **ABL 7RE**:
  - power between 48 W (2 A) and 240 W (10 A),
  - compact size,
  - for all machine equipment,
  - suitable for use in automation system environments based on the Micro and Premium platforms or in any automation system configuration requiring a ⎓ 24 V supply.

- Universal single-phase supplies **ABL 7RP**:
  - power between 60 W (2.5 A) and 240 W (10 A),
  - output voltage available : ⎓12, 24 and 48 V,
  - input filter (PFC) for commercial and residential environments (conforming to standard EN 61000-3-2),
  - two operating modes possible for handling of overload and short-circuit faults :
    - "AUTO" mode which provides automatic restarting of the power supply on elimination of the fault,
    - "MANU" mode which requires manual resetting of the power supply to restart. Resetting is achieved by switching off the mains power.

(1) 3-phase power supplies, consult our catalogue “Phaseo Power Supplies and Transformers”

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Using ⎓ 24 V

■ Using ⎓ 24 V enables so-called protection installations (PELV) to be built. Using PELV is a measure designed to protect people from direct and indirect contact. Measures relating to these installations are defined in publication NF C 12-201 and in standard IEC 364-4-41.

■ The application of these measures to the electrical equipment in machines is defined in standard NF EN 60204-1 and requires:
□ that the voltage used is below 60 V d.c. in dry environments and below 30 V in damp environments,
□ the connection of one side of the PELV circuit, or one point of the source, to the equipotential protection circuit associated with higher voltages.
□ the use of switchgear and control gear on which measures have been taken to ensure "safety separation" between power circuits and control circuits.

■ A safety separation is necessary between power circuits and control circuits in PELV circuits. Its aim is to warn of the appearance of dangerous voltages in ⎓ 24 V safety circuits.

■ The reference standards involved are:
□ IEC 61558-2-6 and EN 61558-2-6 (safety transformers),
□ IEC 664 (coordination of isolation).
Telemecanique power supplies meet these requirements.

■ Moreover, to ensure that these products will operate correctly in relation to the demands of their reinforced isolation, it is recommended that they be mounted and wired as indicated below:
□ they should be placed on an earthed mounting plate or rail,
□ they should be connected using flexible cables, with a maximum of two wires per connection, and tightened to the nominal torque,
□ conductors of the correct insulation class must be used.

■ If the d.c. circuit is not connected to an equipotential protection conductor, an earth leakage detector will indicate any accidental insulation faults (please consult your Regional Sales Office).

Operating voltage

■ The permissible tolerances for the operating voltage are listed in publications IEC 1131-2 and DIN 19240.

■ For nominal voltage Un = ⎓ 24 V, the extreme operating values are from - 15 % to + 20 % of Un, whatever the supply fluctuations in the range - 10 % to + 6 % (defined by standard IEC 38) and load variations in the range 0-100 % of In.

All Telemecanique ⎓ 24 V power supplies are designed to provide a voltage within this range.

■ It may be necessary to use a voltage measurement relay to detect when the normal voltage limits are being surpassed and to deal with the consequences of this (please consult your Regional Sales Office).

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Distributed I/O Solution
Phaseo Regulated Power Supplies

Selection of power supplies

The characteristics to be taken into account when selecting a power supply are:
- the required output voltage and current,
- the mains voltage available in the installation.

This may however result in several products being selected as suitable.
Other selection criteria must therefore be taken into account.

The quality of the mains power supply

The Phaseo range is the solution because it guarantees precision to 3% of the output voltage, whatever the load current and the input voltage. In addition, the wide input voltage range of Phaseo power supplies allows them to be connected to all mains supplies within the nominal range, without any adjustment.
The Phaseo RP family can also be connected to ⎓ 110 and 220 V emergency supplies.

Harmonic pollution (power factor)

The current drawn by a power supply is not sinusoidal. This leads to the existence of harmonic currents which pollute the mains supply. European standard EN 61000-3-2 limits the harmonic currents produced by power supplies. This standard covers all devices between 75 W and 1000 W, drawing up to 16 A per phase, and connected directly to the public mains power supply. Devices connected downstream of a private, low voltage, general transformer are therefore excluded.

Regulated switch mode supplies always produce harmonic currents; a filter circuit (Power Factor Correction or PFC) must therefore be added to comply with standard EN 61000-3-2.
Phaseo ABL-7RP power supplies conform to standard EN 61000-3-2 and can therefore be connected directly to public mains power supplies.

Electromagnetic compatibility

Levels of conducted and radiated emissions are defined in standards EN 55011 and EN 55022.
All products in the Phaseo range have class B certification and can be used without any restrictions due to their low emissions.

Behaviour in the event of short-circuits

Phaseo power supplies are equipped with an electronic protection device. This protection device resets itself automatically on elimination of the fault (around 1 second for ABL-7RE/RP), which avoids having to take any action or change a fuse.
In addition, the Phaseo ABL-7RP ranges allow the user to select the reset mode in the event of a fault:
- in the "AUTO" position, resetting is automatic,
- in the "MANU" position, resetting occurs after elimination of the fault and after switching the mains power off and back on.

This feature allows Phaseo ABL-7RP/U/REQ power supplies to be used in installations where the risks associated with untimely restarting are significant.

Selection of reset mode

It mades by microswitch on the front panel of the product.

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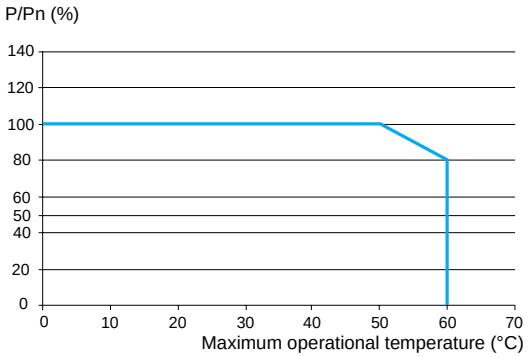
Advantys STB
Distributed I/O Solution
Phaseo Regulated Power Supplies

Technical characteristics

Type of power supply			ABL 7RE	ABL 7RP
Approvals			UL, CSA, TÜV, CTick	
Conforming to standards	Safty		UL 508, CSA 22.2 n° 950	
	EMC		EN 50081-1, IEC 61000-6-2 (EN 50082-2)	
	Low frequency harmonic currents		–	EN 61000-3-2
Input circuit				
LED indication			Orange LED	Orange LED
Input voltages	Rated values	**V**	∿ 100…240	∿ 100…240, ⎓ 110…220 compatible *(1)*
	Permissible values	**V**	∿ 85…264 single-phase	∿ 85…264, ⎓ 100…250 compatible *(1)*
	Permissible frequencies	**Hz**	47…63	
	Efficiency at nominal load		> 85 %	
	Current consumption Ue = 240 V	**A**	0.6 (48 W)/0.83 (72 W) 1.2 (120 W)/2.5 (240 W)	0.4 (72 W)/0.6 (120 W) 1.3 (240W)
	Ue = 100 V	**A**	1.2 (48 W)/1.46 (72 W) 1.9 (120 W)/3.6 (240 W)	0.8 (72 W)/1 (120 W)/2.8 (240 W)
	Current at switch-on	**A**	< 30	
	Power factory		0.65 approx.	0.98 approx.
Output circuit				
LED indication			Green LED	Green LED
Nominal output voltage (U out)		**V**	⎓ 24	12, 24 and 48
Nominal output current		**A**	2/3/5/10	2.5/5/10
Precision	Output voltage		Ajustable from 100 to 120 %	
	Line and load regulation		± 3 %	
	Residual ripple - interference	**mV**	< 200 (peak-peak)	
Micro-breaks	Holding time at I max. and Ve min.	**ms**	> 10	> 20
Temporary overloads	Permissible inrush current (U out >19V)		See page 51	
Protections	Short-circuits		Permanent/automatic restart	Permanent/automatic restart or restart after switching off mains power
	Overload		1.1 In	
	Overvoltage		Tripping if U > 1.5 Un	
	Undervoltage		Tripping if U < 0.8 Un	
Operational and environmental characteristics				
Connections	Input	**mm²**	2 x 2.5 + earth	
	Output	**mm²**	2 x 2.5 + earth, multiple output, depending on model	
Ambient conditions	Storage temperature	**°C**	- 25… + 70	
	Operating temperature	**°C**	0… + 60 (derating as from 50° C, mounted vertically)	
	Max. relative humidity		95 % without condensation	
	Degree of protection		IP 20 conforming IEC 529	
	Vibrations		Conforming EN 61131-2	
Operating position			Vertical	
MTBF at 40 °C			> 100 000 h	
Connections	Series		Possible	
	Parallel		Possible (max. temperature 50 °C)	
Dielectric strength	Input/output		3000 V/50 and 60 Hz 1 minute	
	Input/earth		3000 V/50 and 60 Hz 1 minute	
	Ouput/earth (and output/output)		500 V/50 and 60 Hz 1 minute	
Input fuse incoporated			Yes, not interchangeable	
Disturbance			EN 50081-1	
	Conducted		EN 55011/EN 55022 cl.B	
	Radiated		EN 55011/EN 55022 cl.B	
Immunity			IEC 61000-6-2 (generic)	
	Electrostatic discharge		EN 61000-4-2 (4 kV contact/8 kV air)	
	Electromagnetic		EN 61000-4-3 niv.3 (10 V/m)	
	Conduced interference		EN 61000-4-4 niv.3 (2 kV) , EN 61000-4-5, EN 61000-4-6 niv.3, EN 61000-4-8 niv. 4.	
	Mains interference		EN 1000-4-11 (voltage drops and cuts)	

(1) Compatible input voltage, not indicated on the product.

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Derating

The ambient temperature is a determining factor which limits the power that an electronic power supply can deliver continuously. If the temperature around the electronic components is too high, their life will be significantly reduced. Conversely, a power supply can deliver more than its nominal power if the ambient temperature remains largely below the rated operating temperature.
The rated ambient temperature for Phaseo power supplies is 50 °C. Above this, derating is necessary up to a maximum temperature of 60 °C.
The graph below shows the power P (in relation to the nominal power Pn) which the power supply can deliver continuously, according to the ambient temperature.
Derating should be considered in extreme operating conditions:

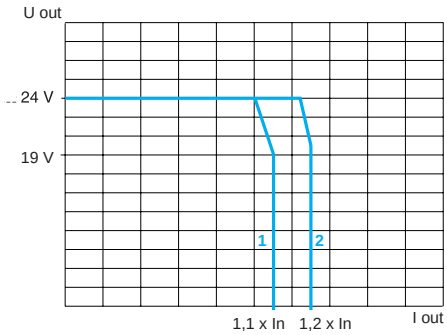
- Intensive operation (output current permanently close to the nominal current, combined with a high ambient temperature).
- Output voltage set above 24V (to compensate for line voltage drops, for example).
- Parallel connection to increase the total power.

General rules to be complied with

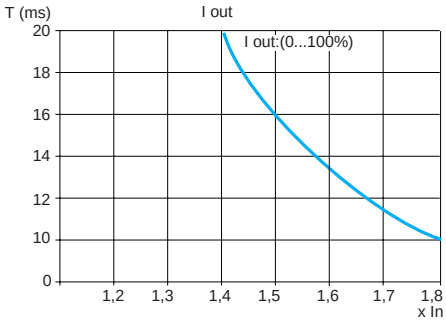
Intensive operation	See derating on above graph. Example for ABL-7RE: □ without derating, from 0 °C to 50 °C, □ derating of nominal current by 2%, per additional °C, up to 60 °C.
Rise in output	The nominal power is fixed. Increasing the output voltage means that the current delivered must be reduced.
Parallel connection to increase the power	The total power is equal to the sum of the power of the power supplies used, but the maximum ambient temperature for operation is 50 °C. To improve heat dissipation, the power supplies must not be in contact with each other.

In all cases, there must be adequate convection round the products to ensure easier cooling. There must be a clear space of 50 mm above and below Phaseo power supplies and of 15 mm at the sides.

Load limit



Temporary overloads



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Advantys STB Distributed I/O Solution
Phaseo Regulated Power Supplies

ABL 7RE and ABL 7RP power supply: protection of the power supply line

Type of mains supply	∿ 115 V single-phase			∿ 230 V single-phase		
Type of protection	Thermal-magnetic circuit-breaker		gG fuse	Thermal-magnetic circuit-breaker		gG fuse
	GB2	C60N		GB2	C60N	
ABL 7RE2402	GB2 ●B07	MG24517 *(1)*	2 A	GB2-DB06	MG24517 *(1)*	2 A
ABL 7RE2403	GB2 ●B07	MG24517 *(1)*	2 A	GB2-DB06	MG24518 *(1)*	2 A
ABL 7RE2405	GB2 ●B08	MG24518 *(1)*	4 A	GB2-DB07	MG24518 *(1)*	2 A
ABL 7RE2410	GB2 ●B12	MG17454 *(1)*	6 A	GB2-DB08	MG24516 *(1)*	4 A
ABL 7RP2403	GB2 ●B07	MG24517 *(1)*	2 A	GB2-DB07	MG17453 *(1)*	2 A
ABL 7RP2405	GB2 ●B07	MG24517 *(1)*	2 A	GB2-DB07	MG24516 *(1)*	2 A
ABL 7RP2410	GB2 ●B09	MG24519 *(1)*	4 A	GB2-DB07	MG24516 *(1)*	2 A

(1) Disjoncteur certifié UL.

Association Phaseo Power supplies with STB modules

		Network interface module "NIM" STB N●●	Power distribution module "PDM" STB PDT 3100	
			Sensors	Actuators
Installation for Advantys STB with	**1 power supply**	**ABL 7RE2410/ABL 7RP2410** (10 A)		
	2 power supplies	**ABL 7RE2402** (2 A)	**ABL 7RE2410/ABL 7RP2410** (10 A)	
	3 power supplies	**ABL 7RE2402** (2 A)	**ABL 7RP2405/ABL 7RE 2405** (5 A)	**ABL 7RP2410/ABL 7R 2410** (10 A)

Note:
- Network Interface module "NIM" STB N●●: ⎓ 24 V power supply, the input current is 0.4 A.
- Power distribution module "PDM" STB PDT 3100: the max. current is:
  - for sensors: 4 A @ 30°C, 2.5 A @ 60°C,
  - for actuators: 8 A @ 30°C, 5A @ 60°C.
- ABL 7RE power supply: built-in auto-protect with auto-reset
- ABL 7RP power supply: built-in auto-protect with auto-reset or manu-reset. EN 61000-3-2 conforming.

References *(1)*



ABL 7RE2405
ABL 7RP2405

ABL 7RE single-phase regulated switch mode power supplies

Mains input voltage 47...63 Hz	Output voltage	Nominal power	Nominal current	Auto-protect reset	Conforming to standard EN 61000-3-2	Reference	Weight
V	⎓ V	W	A				kg
∿ **100…240 single-phase wide range**	24	48	2	auto	no	**ABL 7RE2402**	0.520
		72	3	auto	no	**ABL 7RE2403**	0.520
		120	5	auto	no	**ABL 7RE2405**	1.000
		240	10	auto	no	**ABL 7RE2410**	2.200

ABL 7RP single-phase regulated switch mode power supplies

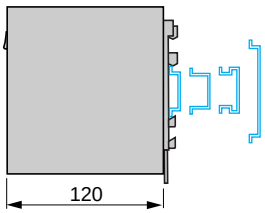
Mains input voltage 47...63 Hz	Output voltage	Nominal power	Nominal current	Auto-protect reset	Conforming to standard EN 61000-3-2	Reference	Weight
V	⎓ V	W	A				kg
∿ **100...240 single-phase wide range** ⎓ **110...220** *(2)*	24	72	3	auto/man	yes	**ABL 7RP2403**	0.520
		120	5	auto/man	yes	**ABL 7RP2405**	1.000
		240	10	auto/man	yes	**ABL 7RP2410**	2.200

(1) Compatible input voltage, not indicated on the product.
(2) Other Phaseo power supplies, consult our catalogue " Phaseo Power supply and Transformer".

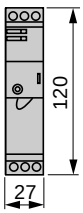
Dimensions

ABL 7RE24●●/ABL 7RP24●●

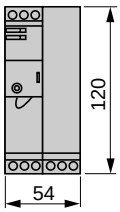
Common side view
Mounting on 35 and 75 mm rails



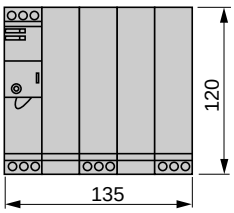
ABL 7RE2402/2403
ABL 7RP2403



ABL 7RE2405



ABL 7RE2410
ABL 7RP2410



Product certifications and marine classification authorities

In some countries, certification of certain electrical components is enforced by law. A standard conformity certificate is then issued by the official organization. Each certified product must carry approval symbols when enforced.
Use on board merchant navy vessels generally requires prior approval (= certification) of an electrical device by certain marine classification authorities.

Key	Certification body	Country
CSA	Canadian Standards Association	Canada
C-Tick	Australian Communication Authority	Australia
UL	Underwriters Laboratories	USA
Key	**Classification authority**	**Country**
ABS	American Bureau of Shipping	USA
BV	Bureau Veritas	France
DNV	Det Norske Veritas	Norway
GL	Germanischer Lloyd	Germany
GOST	Institut de recherche Scientifique Gost Standardt	C.I.S.
LR	Lloyd's Register	United-Kingdom
RINA	Registro Italiano Navale	Italy
RRS	Register of Shipping	C.I.S.

The table below shows the situation as of the 01.09.2003 for certifications obtained or pending from organizations for base PLCs. Further information regarding certified modules can be obtained from your Regional Sales Office.

Normal execution	Certifications				Others		
Certified	CSA Class 1 Div 2	C-Tick ACA	SIMTARS	UL	Class1 Div 2 Hazardous locations	BG	AS-i
Pending certification	Canada	Australia	Australia	USA	Etats-Unis	Germany	Europe
ABE-7				E164866			
Advantys STB	LR 32678			E54088	FM3017828		
Lexium MHD/BPH							
Magelis IPC				E95257			
Magelis TXBT-F	LR 44087-77	N998					
Magelis XBT-F/FC	LR 44087-77	N998					
Magelis XBT-H/P/E/HM/PM	LR 44087-77			E95257			
Micro	LR 58905-30	N998	NI97/0039 Ex2314X	E95257	LR 58905-30	*(1)*	*(2)*
Momentum		N998					
Premium	LR 58905-32S	N998	NI97/0039 Ex2314X	E95257	LR 58905-32S	*(3)*	*(4)*
Quantum							*(5)*
TBX	LR 58905-21 LR 58905-21 (S)	N998		E95257			

(1) TSX DPZ 10D2A safety module.
(2) TSX SAZ 10 AS-i bus master module and TSX SUP A02/A05 AS-i bus power supplies.
(3) TSX PAY 262/282 safety modules.
(4) TSX SAY 100 AS-i bus master modules.
(5) 140 EIA 921 00 AS-i bus master module.

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Product certifications and marine classification authorities (continued)

Normal execution Certified Pending certification	Sociétés de classification des navires							
	ABS USA	BV France	DNV Norway	GL Germany	GOST CEI	LR United-Kingdom	RINA Italy	RRS CIS
ABE-7				99155-96HH				
Advantys STB								
Lexium MHD/BPH								
Magelis IPC								
Magelis TXBT-F								
Magelis XBT-F/FC								
Magelis XBT-H/P/E/HM/PM								
Micro		45016846A001	A7961	99086-96HH		97/00114	ELE/48896/1	
Momentum								
Premium	00MS14569-X00-LD186857-PDA	4501H07135/B0	A7957	99405-97HH		98/00088	ELE/35897/1	
Quantum								
TBX		45037058A001	A7952	99405-97HH			ELE/43795/2	

Conformity to European Directives: CE marquing

All products are conformed to CE marquing.
See Community regulations page 55.

Advantys STB Distributed I/O Solution
Power Requirements

The ⎓ 5 V required for the logic power supply of the I/O modules is provided by the modules:
- Network Interface NIM positionned at the beginning of the primary segment.
- BOS bus extension module positionned at the beginning of the extension segment.

This built-in 5 V power supply provides up to 1200 mA current.
Depending on the total number of modules (on the primary segment and the extension segments), the island installer ought to calculate the island's total power requirements to assure that the currrent required by the I/O modules is not greater than the current provided by the network interface module.

Using the worksheet
For each segment:
- In the "Number" column, indicate the desired quantity for each of the I/O modules used.
- In the "Total" column, calculate the total current based on that quantity.
- In cell 1, add up all these values (mA).
- The total in cell 1 must be lesser than or equal to 1,200 mA, cell 2.

Segment	I/O module reference	Appropriate Module Base	Removable connectors *(1)*	Power Distribution Modules	Number per segment	Power consumption in mA at ⎓ 5 V By module	Total
Digital Inputs	**STB DDI 3230**	XBA 1000	XTS ●100	PDT 3100		50	
	STB DDI 3420	XBA 1000	XTS ●100	PDT 3100		60	
	STB DDI 3610	XBA 1000	XTS ●100	PDT 3100		70	
	STB DAI 5230	XBA 2000	XTS ●100	PDT 2100		50	
	STB DAI 7220	XBA 2000	XTS ●100	PDT 2100		50	
Digital Outputs	**STB DDO 3200**	XBA 1000	XTS ●100	PDT 3100		60	
	STB DDO 3230	XBA 1000	XTS ●100	PDT 3100		60	
	STB DDO 3410	XBA 1000	XTS ●100	PDT 3100		80	
	STB DDO 3600	XBA 1000	XTS ●100	PDT 3100		90	
	STB DAO 8210	XBA 2000	XTS ●110	PDT 2100		70	
	STB DRC 3210	XBA 2000	XTS ●110	PDT 3100		50	
	STB DRA 3290	XBA 2000	XTS ●110	PDT 3100		60	
Analog Inputs	**STB AVI 1270**	XBA 1000	XTS ●100	PDT 3100		60	
	STB ACI 1230	XBA 1000	XTS ●100	PDT 3100		60	
	STB ART 0200	XBA 1000	XTS ●100	PDT 3100		100	
Analog Outputs	**STB AVO 1250**	XBA 1000	XTS ●100	PDT 3100		80	
	STB ACO 1210	XBA 1000	XTS ●100	PDT 3100		80	
Application-specific modules	**STB EPI 1145**	XBA 2000	–	PDT 3100		130	
	STB EPI 2145	XBA 3000	–	PDT 3100		130	
	STB EHC 3020	XBA 3000	XTS 2150	PDT 3100		140	
Consumption per segment				Total current consumed by the network interface module			1
							≤
Network Interface Modules "NIM"	**STB NIP 2212**	Ethernet TCP/IP		Current available on ⎓ 5 V logic			1200 mA 2
	STB NCO 2212	CANopen					
	STB NCO 1113	Economy CANopen					
	STB NMP 2212	Modbus Plus					
	STB NFP 2212	Fipio					
	STB NIP 2212	INTERBUS					
	STB NDP 2212	Profibus DP					
	STB NIN 2212	DeviceNet					
Extension bus module "BOS"	**STB XBE 1200**	–					

(1) For screw-type connector: replace ● by 1, for spring-type connector: by 2

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Advantys STB
Distributed I/O Solution
Community Regulations and Protective Treatment

Community regulations

European Directives

The opening of European markets implies a harmonization of regulations in the various European Union member states.
European Directives are documents used to remove obstacles to the free movement of goods and their application is compulsory in all states of the European Union.
Member states are obliged to transcribe each Directive into their national legislation and, at the same time, to withdraw any conflicting regulations.
The Directives, particularly those of a technical nature with which we are concerned, only set objectives, called “general requirements”.
The manufacturer must take all necessary measures to ensure that his products conform to the requirements of each Directive relating to his equipment.
As a general rule, the manufacturer affirms that his product conforms to the necessary requirements of the Directive(s) by applying the CE label to his product.
CE marking is applied to Telemecanique products where relevant.

The significance of CE marking

- CE marking on a product means that the manufacturer certifies that his product conforms to the relevant European Directives ; it is necessary in order that a product which is subject to a Directive(s) can be marketed and freely moved within the European Union.
- CE marking is intended solely for the national authorities responsible for market regulation.

For electrical equipment, only conformity of the product to standards indicates that it is suitable for use, and only a guarantee by a recognised manufacturer can ensure a high level of quality.
One or more Directives, as appropriate, may apply to our products, in particular :
- The Low Voltage Directive 72/23/EEC amended by Directive 93/68/EEC : CE marking under the terms of this Directive could not be applied before 1 January 1995 and is compulsory as of 1 January 1997.
- The Electromagnetic Compatibility Directive 89/336/EEC, amended by Directives 92/31/EEC and 93/68/EEC : CE marking on the products covered by this Directive has been compulsory since 1 January 1996.

Protective treatment of equipment

Advantys, STB distributed I/O meet the requirements of “TC” treatment *(1)*.
For installations in industrial production workshops or in an environment which corresponds to “TH” treatment *(2)*, STB distributed I/O should be enclosed in casings with a minimum of IP 54 protection as prescribed by standards IEC.
Advantys, STB distributed I/O are supplied with an IP 20 protection index. They can therefore be installed without enclosure in locations with restricted access which do not exceed pollution degree 2 (control room which does not contain a machine or dust-producing activity).

(1) “TC” treatment : all climate treatment.
(2) “TH” treatment : treatment for hot and humid environments.

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Distributed I/O

Advantys STB

The *open* device integration I/O system

Catalogue
September

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