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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 type		Industrial LAN	CAN fieldbus
Structure	**Physical interface**	10 BASE-T	ISO 1198
	Data rate	10 Mbps	10 Kbps…1 Mbps depending on bus length
Medium		Double shielded twisted pair via Ethernet ConneXium cabling system	Double shielded twisted pair
Configuration	**Number of devices** *(1)*	256 max. per segment, unlimited with switches	127 slaves
	Maximum length	100 m according to 802.3 standard 1000 m with ConneXium cabling system > 3000 m with fibre optic connection	From 30 m (1 Mbps) to 5000 m (10 Kbps)
Features of NIM modules ***(Network Interface Modules)***	**Number of I/O modules per Advantys STB island** *(1)*	Standard NIM: 32 modules max. on 1 primary segment and 6 extension segments max.	Standard NIM: 32 modules max. on 1 primary segment and 6 extension segments max. Basic NIM: 12 modules max. on 1 primary segment
	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)	
	CANopen devices supported	12 devices max. *(2)*	
Services used		- Embedded Web (configuration, diagnostics and access to variables) - Modbus TCP/IP - SNMP agent - DHCP client service	- Process Data Object (PDO) - Service Data Object (SDO) - Network management (NMT)
Operating temperature *(3)*		0…60°C *(4)*	
Type of NIM module	**Standard**	**STB NIP 2212**	**STB NCO 2212**
	Basic *(5)*		**STB NCO 1010**
Pages		23	

(1) One Advantys STB island corresponds to 1 device on the bus or the network.
(2) Depending on the nature of the CANopen devices, this maximum number may be limited to 7.
(3) Horizontal mounting.
(4) STB N●● 2212 standard modules: -25 to 70°C, see characteristics page 22.
(5) Does not support the CANopen bus extension module, hot swapping, or Advantys software.

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Data exchange between master PLC and Advantys STB I/O modules				
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.0)	Network compliant with v.2.0 of the Open DeviceNet Vendor Assoc. (ODVA)
Modbus Plus standard	FIP standard	Isolated RS 485	RS 485	–
1 Mbps	1 Mbps	500 Kbps	9.6 Kbps…12 Mbps	125, 250 or 500 Kbps
Twisted pair	Shielded twisted pair	Shielded twisted pair	Shielded twisted pair	Twisted pair
32 per segment 64 for all segments	32 per segment 128 max. for all segments	512 slaves max. with 254 bus terminal blocks max.	125 slaves	64 slaves
450 m per segment 1800 m with 3 repeaters	1000 m per segment	400 m per segment of the remote bus 12.8 km for the remote bus 50 m for the installation remote bus	1200 m (9.6 Kbps) 4800 m with 3 repeaters 200 m (12 Mbps) 800 m with 3 repeaters	1200 m
Standard NIM: 32 modules max. on 1 primary segment and 6 extension segments max.		Standard NIM: 32 modules max. on 1 primary segment and 6 extension segments max. Basic NIM: 12 modules max. on 1 primary segment		
24 V ⎓ not isolated (19.2…30 V)				
Provides 5 V ⎓ logic power to all the I/O modules of an island (1200 mA)				
12 devices max. *(2)*				
- Global data - Peer-to-peer - Peer Cop	- Periodic I/O exchanges - Point-to-Point message - Use of standard profiles (FRD/FSD/FED)	- Implicit exchange of process data - Logical addressing - Diagnostics	- Slave configuration - Configuration control - Read/write slave I/O data - Diagnostics on Profibus frames	- DeviceNet Object (Class ID3) - Connection Object (Class ID5) - Island Bus Object (Class ID101)
0…60°C *(4)*				
STB NMP 2212	**STB NFP 2212**	**STB NIB 2212**	**STB NDP 2212**	**STB NDN 2212**
		STB NIB 1010	**STB NDP 1010**	**STB NDN 1010**

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Advantys STB distributed I/O solution
Network interface modules

The range of NIM network interface modules comprises 4 basic NIM modules and 7 standard NIM modules.
Each module is dedicated to a specific network or bus:

Network or bus	Basic network interface module	Standard network interface module
Ethernet network	–	STB NIP 2212
CANopen bus	STB NCO 1010	STB NCO 2212
Modbus Plus network	–	STB NMP 2212
Fipio bus	–	STB NFP 2212
InterBus bus	STB NIB 1010	STB NIB 2212
Profibus DP bus	STB NDP 1010	STB NDP 2212
DeviceNet network	STB NDN 1010	STB NDN 2212

All STB N●● ●●●● references include a power supply connector of each type: one screw-type connector and one spring-type connector.

Power supply for network interface modules

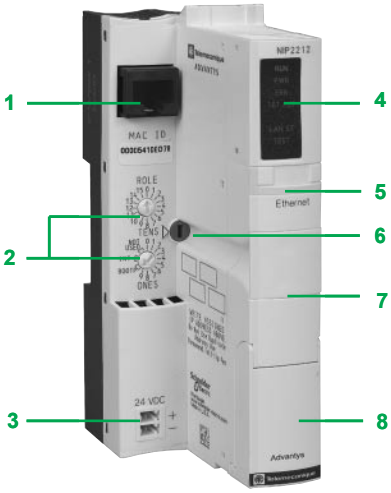
Network interface modules are powered by an external 24 V ⎓ power supply.

They convert this voltage to 5 V ⎓ to provide logic power to the I/O modules of the main Advantys STB segment.
This built-in 5V logic power supply provides a maximum current of 1.2 A.
(operations in extented temperature ranges: see page 22).
This current can be increased through the addition in each segment of an STB CPS 2111 auxiliary power supply that also provides a maximum current of 1.2 A (operations in extented temperature ranges: see page 26).
The STB CPS 2111 should be associated with an STB PDT ●10● power supply module.

Logic power for the I/O modules in each extension segment is provided by the BOS bus extension module STB XBE 1300 placed at the beginning of these segments (see page 26).

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Advantys STB distributed I/O solution
Network interface modules



Interface modules with network/bus address selectors



INTERBUS STB NIB 2212/1010 interface modules

Description

Network interface modules STB N●● 2212/1010

The front panel of the STB N●● 2212/1010 network interface modules has the following features:

1 A connector to connect the island to the fieldbus. See photos of different connector types on pages 18 and 19 and characteristics on page 23.

2 - All NIM modules except INTERBUS network interface modules: Two rotary node addressing selectors on the bus or the network
- INTERBUS STB NIB 2212/1010 network interface modules: One 9-way female SUB-D connector to connect the outgoing bus cable

3 An external 24 V ⎓ power supply connector for the removable screw-type (STB XTS 1120) or spring-type (STB XTS 2120) terminals. External Phaseo power supplies (see page 6)

4 An LED display block indicating the different states of the island on the bus: power, communication, send/receive data, errors, etc.

Indication	Basic NIM modules	Standard NIM modules
Island status: auto-configuration, operational, error, etc. *(1)*	Green RUN LED	Green RUN LED
Power supply: NIM powered up, internal 5 V operational	Green PWR LED	Green PWR LED
Module error *(2)*	Red ERR LED	Red ERR LED
1 to 3 LED status indicators	Depending on bus/ network	Depending on bus/ network
Test mode *(3)*	–	Yellow Test LED

5 A colour-coded identification stripe: yellow

6 A screw for releasing the STB N●● 2212/1010 module from the DIN rail. The NIM module can be removed from the island even if the product is assembled. Simply remove the PDM and then turn this screw a quarter turn.

7 A slot for a removable SIM card STB XMP 4440 (only on STB N●● 2212 standard NIM modules)

8 - Standard NIM module: Access flap for the Reset button *(4)* and the port used to connect an island setup and configuration PC or HMI terminal (read/write data). Can also be used to update the firmware for the network interface module *(5)*.
- Basic NIM module: Access flap for the Reset button *(4)* and the port used to connect a PC used only for updating the firmware of the network interface module.

The network interface modules are supplied with:
■ An English-language mini-CD-ROM supporting the documentation, a label template and one exchange file per network type
■ STB XMP 1100 bus terminator
These are mounted directly on the DIN rail.

The STB SUS 8800 CD-ROM contains specific documentation for each of the 11 network interface modules in 5 languages. These documents can also be downloaded from **www.schneider-electric.com**.

(1) RUN is on permanently if the module is operational and flashes in various ways in the other states.
If RUN flashes on startup, the NIM module is in the auto-configuration phase.
If RUN flashes for a long time, there is a fault on the island. For information about status indications for the NIM module and the island, refer to the "Network interface module applications guide" for the specific network, included on the STB SUS 8800 CD-ROM or available on our website: www.schneider-electric.com.
(2) ERR is off when the island is OK. Otherwise, ERR flashes or is lit.
(3) Test LED off: island OK. Test LED on: backup of parameters to internal memory or SIM card in progress. Test LED flashing: island in Test mode.
(4) Pressing the Reset button for 4 seconds restores the island to the factory settings or the settings contained on the SIM card.
(5) Firmware update of NIM modules available at www.schneider-electric.com.

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Advantys STB distributed I/O solution
Network interface modules

Characteristics

Network interface module type		STB	NIP 2212	NCO 2212	NCO 1010	NMP 2212	NFP 2212
Range			Standard	Standard	Basic	Standard	Standard
Network or bus			Ethernet	CANopen		Modbus Plus	Fipio
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
Supply voltage		V ⎓	24 V non-isolated *(1)*				
Operating temperature, horizontal mounting		°C	-25 to 70 *(2)*		0 to 60	-25 to 70 *(2)*	
Input current		mA	700	700	400	700	
Voltage range		V ⎓	19.2 to 30 *(2)*				
Output voltage to the island logic bus		⎓	5.25 V ± 0.21%				
Nominal output current		A	1.2 (0.575 for STB N●● 2212 standard modules operating in the range 60 to 70°C)				
Isolation			None				
Immunity to electromagnetic interference (EMC)			Yes, according to IEC 61131-2				
Connector type	To bus or network		RJ45 female	9-way male SUB-D		9-way female SUB-D	9-way male SUB-D
	RS 232 port (configuration, dialogue with XBT and firmware update)		HE 13, 8-way female	HE 13, 8-way female	*(3)*	HE 13, 8-way female	
Maximum number of addressable I/O modules	Per island		32	32	12	32	
Number of segments supported	Primary		1				
	Extension		6 max.	6 max.	–	6 max.	

STB network interface module type		STB	NIB 2212	NIB 1010	NDP 2212	NDP 1010	NDN 2212	NDN 1010
Range			Standard	Basic	Standard	Basic	Standard	Basic
Network or bus			INTERBus		Profibus DP		DeviceNet	
Compliance with bus or network standards			INTERBus Club		DIN 19245, Parts 1 and 3		Open DeviceNet Vendors Association	
Supply voltage		V ⎓	24 V non-isolated *(1)*					
Operating temperature, horizontal mounting		°C	-25 to 70 *(2)*	0 to 60	-25 to 70 *(2)*	0 to 60	-25 to 70 *(2)*	0 to 60
Input current		mA	700	400	700	400	700	400
Voltage range		V ⎓	19.2 to 30 *(2)*					
Output voltage to the island logic bus		⎓	5.25 V ± 0.21%					
Nominal output current		A	1.2 (0.575 for STB N●● 2212 standard modules operating in the range 60 to 70°C)					
Output impedance		mΩ	< 50 up to 100 kHz	⩽ 50	< 50 up to 100 kHz	⩽ 50	< 50 up to 100 kHz	⩽ 50
Isolation			None					
Immunity to electromagnetic interference (EMC)			Yes, according to IEC 61131-2					
Connector type	To bus or network		Incoming: 9-way male SUB-D Outgoing: 9-way female SUB-D		9-way female SUB-D		5-way male connector	
	RS 232 port (configuration, dialogue with XBT and firmware update)		HE 13, 8-way female	*(3)*	HE 13, 8-way female	*(3)*	HE 13, 8-way female	*(3)*
Maximum number of addressable I/O modules	Per island		32	12	32	12	32	12
Number of segments supported	Primary		1					
	Extension		6 max.	–	6 max.	–	6 max.	–

(1) Use a 24 V ⎓ SELV (Safety Extra Low Voltage) external power supply.
(2) STB N●● 2212 standard modules:
- range -25 to 0° C: the power supply voltage range is ⎓ 20.4 to 30 V.
- range 0 to 60° C: the power supply voltage range is ⎓ 19.2 to 30 V.
- range 60 to 70° C: the power supply voltage range is ⎓ 19.2 to 26.5 V.
(3) Connection for updating firmware only.

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Advantys STB distributed I/O solution

Network interface modules



STB NIP 2212



STB NCO 2212/1010



STB NMP 2212



STB NFP 2212



STB NIB 2212/1010



STB NDN 2212/1010

Network interface modules *(1)*

Network or bus	Range	Supply voltage	Reference	Weight kg
Ethernet network	**Standard**	24 V ⎓	**STB NIP 2212**	0.130
CANopen bus	**Standard**	24 V ⎓	**STB NCO 2212**	0.135
	Basic	24 V ⎓	**STB NCO 1010**	0.135
Modbus Plus network	**Standard**	24 V ⎓	**STB NMP 2212**	0.145
Fipio bus	**Standard**	24 V ⎓	**STB NFP 2212**	0.145
InterBus bus	**Standard**	24 V ⎓	**STB NIB 2212**	0.155
	Basic	24 V ⎓	**STB NIB 1010**	0.155
Profibus DP bus	**Standard**	24 V ⎓	**STB NDP 2212**	0.140
	Basic	24 V ⎓	**STB NDP 1010**	0.140
DeviceNet network	**Standard**	24 V ⎓	**STB NDN 2212** *(2)*	0.140
	Basic	24 V ⎓	**STB NDN 1010** *(2)*	0.140

Separate parts

Description	Type	Reference	Weight kg
DeviceNet removable terminals 5-way	Screw-type	**STB XTS 1111**	–
	Spring-type	**STB XTS 2111**	–

Replacement and optional parts

Description	Type	Sold in lots of	Reference	Weight kg
Removable terminals for 24 V ⎓ 2-way	Screw-type	10	**STB XTS 1120**	0.003
	Spring-type	10	**STB XTS 2120**	0.003

Description	Use	Reference	Weight kg
32 KB removable SIM card *(3)*	Island configuration backup	**STB XMP 4440**	–
External 24 V ⎓ SELV power supply	–	See page 121	–
Configuration software *(3)*	–	See page 101	–
Magelis XBT terminal connection cable *(3)*		See page 109	–
RS 232C shielded twisted pair 8-way HE 13/ 9-way SUB-D (length 2 m) *(3) (4)*	Configuration PC	**STB XCA 4002**	0.210
USB SUB-D cable	Configuration PC with USB portRequires STB XCA 4002 *(4)*	**SR2 CBL 06**	0.185
User documentation	Multilingual on C-ROM (English, French, German, Spanish and Italian)	**STB SUS 8800**	–
Bus terminator	Also supplied with the NIM network interface module	**STB XMP 1100**	–

(1) All network interface modules are supplied with:
- A suitable power supply connector
- Documentation in English on mini-CD-ROM and bus terminator (STB XMP 1100)
(2) DeviceNet 5-way removable terminals STB XTS ●111, to be ordered separately
(3) Standard modules only
(4) Supplied with STB SPU 1●●● configuration software (see page 101)

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Advantys STB distributed I/O solution

Network interface modules



TSX CAN TDM4



490 NTW 000 ●●



AS MBKT 085

Bus and network connection accessories

CANopen bus *(1)*

Description	Fitted at ends	Length	Reference	Weight kg
IP 20 CANopen tap junction	4 SUB-D ports. Screw terminals for connection of trunk cables. Line termination.		**TSX CAN TDM4**	0.196
CANopen preformed cordsets One 9-way female SUB-D connector at each end	Standard, CE marking: low smoke emission. Halogen-free. Flame-retardant (IEC 60332-1)	0.3 m	**TSX CAN CADD03**	0.091
		1 m	**TSX CAN CADD1**	0.143
		3 m	**TSX CAN CADD3**	0.295
		5 m	**TSX CAN CADD5**	0.440
	Standard, UL certification, CE marking: Flame-retardant (IEC 60332-2)	0.3 m	**TSX CAN CBDD03**	0.086
		1 m	**TSX CAN CBDD1**	0.131
		3 m	**TSX CAN CBDD3**	0.268
		5 m	**TSX CAN CBDD5**	0.400

Ethernet network *(1)*

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

Modbus Plus network

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

Description	Use From	Use To	Length	Reference	Weight kg
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 tap	2.4 m	**990 NAD 211 10**	0.530
			6 m	**990 NAD 211 30**	0.530

(1) For the complete range of CANopen and Ethernet cables and connection accessories, please refer to the "Automation & Control. Machines & installations with industrial communications" catalogue.

(2) Cable compliant with EIA/TIA-568 Category 5 and IEC 1180/EN 50 173 Class D. For UL- and CSA 22.1-certified cables, add letter U to end of reference.

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Advantys STB distributed I/O solution

Network interface modules



TSX FP ACC 12



TSX FP ACC 14



TSX FP ACC 4

Bus and network connection accessories (continued)

Fipio bus

Description	Use	Characteristics	Reference	Weight kg
Female connectors (9-way SUB-D)	On STB NFP 2212 network interface module	Black polycarbonate IP 20	**TSX FP ACC 12**	0.040
		Zamak *(1)*	**TSX FP ACC 2**	0.080
Bus connection unit	Trunk cable tap link	Black polycarbonate IP 20	**TSX FP ACC 14**	0.120
		Zamak IP 65 *(1)*	**TSX FP ACC 4**	0.660

Description	Use	Length	Reference	Weight kg
Drop cables	8 mm, 2 shielded twisted pairs 150 W 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
Daisy chain cables	8 mm, 2 shielded twisted pairs 150 W For standard environments	100 m	**TSX FP CA 100**	5.680
		200 m	**TSX FP CA 200**	10.920
		500 m	**TSX FP CA 500**	30.000

INTERBUS bus

Description	Use	Length	Reference	Weight kg
Installation remote bus cables	Preassembled cables to connect 2 network interface modules	0.110 m	**170 MCI 007 00**	–
		1 m	**170 MCI 100 00**	–
Branch interface	Remote bus to installation remote bus branch connection	–	**170 BNO 671 00**	–
Remote 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	Line 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 connectors (5-way)	For STB NDN 2212 network interface module	Screw-type	**STB XTS 1111**	–
		Spring-type	**STB XTS 2111**	–

(1) Do not use for applications involving vibrations ⩾ 1 g or heavy impacts.

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