IP 20 distributed inputs/outputs Modicon STB

Catalogue

May 2013

Unity Pro
Advantys

Schneider Electric

How to find the “Automation and Control” products

Catalogues

Complete product ranges

Essential guides

Selection of the top selling products

General contents

Modicon distributed I/O solutions selection guide . . . . . *page 2*

■ **Open and modular system** ..... *page 4*

■ **Network interface modules**

Selection guide . . . . . *page 16*

□ References ..... *page 22*

■ **Internal bus expansion modules, CANopen expansion module, auxiliary power supply module**

Selection guide . . . . . *page 30*

□ References ..... *page 34*

■ **Power distribution modules**

Selection guide . . . . . *page 36*

□ References ..... *page 42*

■ **Digital I/O modules**

Selection guide . . . . . *page 44*

□ References ..... *page 56*

■ **Analog I/O modules**

Selection guide . . . . . *page 58*

□ References ..... *page 66*

■ **Application-specific modules**

Selection guide . . . . . *page 68*

□ Parallel interface module for TeSys U and TeSys Quickfit applications ..... *page 74*

□ Counter module ..... *page 78*

□ HART multiplexer solution ..... *page 81*

■ **Configuration software**

Selection guide . . . . . *page 82*

□ References ..... *page 90*

■ **Combinations**

□ With Momentum 171CBB97030 processor ..... *page 96*

□ With Magelis operator dialogue terminals ..... *page 100*

□ With STB I/O modules and Telefast ABE7 wiring system ..... *page 102*

■ **Phaseo regulated switch mode power supplies**

□ References ..... *page 107*

■ **Compatibility with sensors**

□ OsiSense XU photo-electric sensors ..... *page 108*

□ OsiSense XS inductive proximity sensors ..... *page 110*

■ **Technical appendices**

□ Certifications for automation products ..... *page 112*

□ Power consumption table ..... *page 114*

■ **A dedicated services offer for your installed base**

□ Operation services ..... *page 116*

□ Modernisation services ..... *page 117*

□ Customization services ..... *page 117*

■ **How to find products ?**

□ Search, visualize and download ..... *page 118*

□ Access product references with adapted tools ..... *page 120*

□ Compare, select and compile ..... *page 122*

□ Check the product status, design your equipment ..... *page 123*

■ **Product reference index** ..... *page 124*

Type of splitter box and module		Monobloc IP 67 I/O splitter boxes
		Modicon ETB

Available buses and networks		Ethernet Modbus TCP/IP EtherNet/IP
Max. number per connection point		
Discrete I/O	Modularity	Splitter box with 16 configurable I/O, 16 I, 12 I + 4 O, or 8 I +8 O
	Input voltage	24 V ⎓
	Output voltage	24 V ⎓
Analog I/O		–
Application-specific I/O		–
		–
I/O connection		M12 connectors
Type of housing		Plastic
Type of module		**ETB1E●●●**
Pages		Please consult the catalogue pages on our website www.schneider-electric.com

Monobloc IP 20 distributed I/O	Optimum IP 20 distributed I/O	Modular IP 20 distributed I/O
Modicon Momentum	**Modicon OTB**	**Modicon STB**
Ethernet Modbus TCP/IP Modbus Plus Fipio InterBus Profibus DP DeviceNet	Ethernet Modbus TCP/IP CANopen Modbus (RS 485)	Ethernet Modbus TCP/IP EtherNet/IP CANopen Modbus Plus Fipio InterBus Profibus DP DeviceNet
1 sub-base with 1 CPU or 1 communication module	1 interface module + 7 Twido expansion modules	1 NIM (Network Interface Module) + 32 I/O modules
Sub-base with 16 I, 32 I, 8 O, 16 O, 32 O, 10 I/8 O, 16 I/8 O, 16 I/12 O and 16 I/16 O	12 I/8 O (interface module) 8 I, 16 I, 32 I, 8 O, 16 O, 32 O, 4 I/4 O and 16 I/8 O (expansion modules)	Module with 2 I, 4 I, 6 I, 16 I, 2 O, 4 O, 6 O or 16 O
24 V ⎓, 120 V ∿ and 230 V ∿	24 V ⎓	24 V ⎓, 115 V ∿ and 230 V ∿
24 V ⎓ V, 120 V ∿ and 230 V ∿ and relay	24 V ⎓ and relay	24 V ⎓, 115/230 V ∿ and relay
8 I, 16 I or 4 O voltage/current sub-bases Sub-base with 4 thermocouple or probe inputs	2 I, 4 I, 8 I, 1 O, 2 O, 2 I/1 O and 4 I/2 O (expansion modules) voltage/current, thermocouple or temperature probe	Modules with 2, 4 or 8 inputs and 1 or 2 outputs (voltage/current) Sub-base with 2 thermocouple or probe inputs
10 kHz/200 kHz 2-channel counter sub-base	Integrated in interface module: - Two 5 kHz/20 kHz channels - 2 PWM function channels	Counter module with one 40 kHz channel
6 I/3 O 120 V ∿ sub-base with 1 Modbus port	–	Parallel interface modules for TeSys Quickfit and TeSys U motor starters, integrated connection for third-party CANopen products
Screw or spring-type removable terminal blocks	Removable screw terminal block (interface module) Removable screw terminal block, non-removable spring-type terminal block and HE 10 connector (expansion modules)	Removable screw or spring-type connectors, Telefast connectors
Plastic		
170AD●	**OTB1●0DM9LP**	**STB●●●**
Please consult the catalogue pages on our website www.schneider-electric.com		

Modicon STB distributed I/O solution

Open and modular system

Modicon STB island example

Colour code	Module type
	NIM network interface EOS/BOS island expansion CANopen expansion
	24 V ⎓ digital inputs
	24 V ⎓ power distribution 24 V ⎓ digital outputs
	115 V ∿ or 230 V ∿ digital current inputs
	115/230 V ∿ power distribution 115/230 V ∿ digital current outputs
	Digital relay outputs TeSys U, TeSys Quickfit interface module and counter module
	Analog inputs
	Analog outputs

Presentation

To meet the needs of machine manufacturers and users, automation architectures have been decentralized while delivering performance close to that of centralized systems.

Architectures based around islands installed as close to the machine as possible reduce the time and cost of wiring for sensors and actuators, while increasing system availability.

The Modicon STB distributed I/O system is an open, modular input/output system and makes it possible to design industrial automation islands managed by a master controller via a bus or communication network.
These islands can be used to connect:
- TeSys U or TeSys T motor starters
- Altivar variable speed drives
- FTB IP 67 distributed I/O
- OsiSense rotary encoders
- Magelis HMI terminals
- Approved third-party products via the CANopen bus: Bosch, Festo, Parker valves, Balluff linear encoders, etc. *(1)*

Advantys software guides users through the design phase, start-up, and even maintenance of the system. This single software package covers the Modicon STB, OTB, FTB, and FTM ranges.

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 Modicon STB I/O family can be divided into 2 groups of modules:
- **Basic modules:** A set of low-cost modules, with simplified operating modes.
- **Standard modules:** An extended offer of I/O modules, with additional functions: configurable parameters, extended operating modes.

The basic range comprises:
- PDM power distribution modules (24 V ⎓ and 115/230 V ∿)
- I/O modules:
  - Digital I/O (24 V ⎓)
  - Analog I/O (10-bit resolution).

The standard range comprises:
- NIM modules: network interfaces
- PDM power distribution modules (24 V ⎓ and 115/230 V ∿)
- I/O modules:
  - Digital I/O (24 V ⎓ and 115/230 V ∿)
  - Analog I/O (10, 12, and 16-bit resolution)
  - Relay outputs (24 V ⎓ coil and 24 V ⎓ or 115/230 V ∿ contact)
- Application-specific module: counter module, HART multiplexer
- Dedicated module: for TeSys U and TeSys Quickfit applications
- EOS end of segment and BOS beginning of segment modules.
- External equipment support module on CANopen expansion

Standard and basic modules can be combined on the same island. Combining them in this way allows a wide range of functions as shown in the table on page 15.

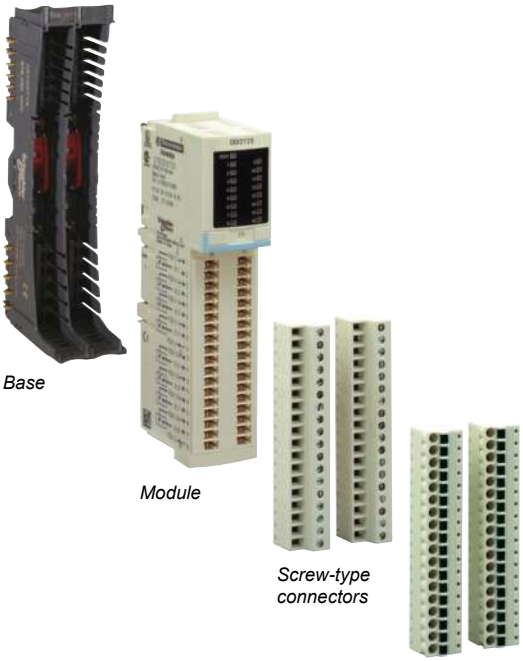
The sensors and actuators are connected to the I/O modules via removable screw-type or spring-type terminals *(2)*.
Standard Modicon STB I/O modules are hot-swappable, provided the network interface modules are also standard type.

Modicon STB distributed I/O islands have a protection rating of IP 20. For installations in production workshops, they must be incorporated in protective casings with at least an IP 54 rating (in compliance with IEC 60950 or NEMA 250).
See page 112.

(1) For more information, please visit our website at www.schneider-electric.com.
(2) For greater ease of wiring and to free up space in the enclosure, it is possible to combine Modicon STB 16-channel digital I/O modules with Modicon Telefast ABE7 prewired or adaptation sub-bases.

Modicon STB distributed I/O solution

Open and modular system



Base

Module

Screw-type connectors

Spring-type connectors

Modicon STB modules

The Modicon STB module references allow you to acquire, under a single reference, the following items:

- A module
- Its base
- The appropriate screw and/or spring-type connectors.

The table below presents the contents of Modicon STB modules and the usual form for their references.
These references are used in the descriptions contained in this catalogue (functions, characteristics, etc).
The module contents, optional parts and replacement parts are detailed on the "References" pages of each module.

Module	Content	Reference
NIM network interface	Module, power supply screw-type connectors and spring-type connectors (base not required), bus termination, mini CD-Rom documentation *(1)(2)*	**STBN●●●●●●**
Power distribution module (PDM)	Base, module, screw-type and spring-type connectors	**STB●●●●●●●K**
Digital I/O (except for 16-channel)		
Analog I/O		
EOS and BOS island bus extension		
CANopen bus extension		
Auxiliary power supply		
TeSys U and TeSys Quickfit interface		
16-channel digital I/O	Base, module, screw-type connectors	**STBDD●37●5KS**
	Base, module, spring-type connectors	**STBDD●37●5KC**
	Module *(3)*	**STBDD●37●5**
	Hart multiplexer	**STBAHI8321KC**
Counter	Base, module, spring-type connectors	**STBEHC3020KC**

(1) NIM DeviceNet network interface module STBNDN●●●●: 5-way screw-type and spring-type removable terminal blocks (fieldbus link) should be ordered separately (see page 22).
(2) An English-language mini-CD-ROM supporting the user documentation, a label template and one exchange file per network type The user documentation is also available on our website, www.schneider-electric.com.
(3) For use with the Modicon Telefast ABE7 prewired or adaptation system:
- STBXBA3000 base to be ordered separately (see page 56)
- Telefast ABE7 base and connection accessories to be ordered separately (see page 103).

Modicon STB distributed I/O solution

Open and modular system

Composition of a Modicon STB island

A Modicon STB island is made up of one or more segments comprising PDM power distribution modules and I/O modules.
An island starts with a NIM network interface module and ends with a bus terminator supplied with the NIM module.
An island can be made up of a single segment or a primary segment and up to 6 expansion segments.
The island segments are chained by EOS (End Of Segment) and BOS (Beginning Of Segment) internal bus expansion modules. See page 9.

On each segment:
■ The PDMs must be placed immediately to the right of the network interface modules or expansion modules.
■ The I/O modules are placed to the right of the PDM module supplying them with power.
■ Each module (with the exception of the NIM network interface module) is held in a fixing base on the DIN rail.
Three module and base widths are possible. On the DIN rail, the overall width needed for a segment is the sum of widths of the network interface module, the bases and any bus termination.

The bases ensure the continuity of the internal bus, the auto-addressing of the modules, and the separated and isolated distribution of the internal power supplies, actuators (outputs) and sensors (inputs).
The advantages of this arrangement are:
■ Unplugging modules:
□ When switched off (cold swap), all modules can be unplugged very quickly.
□ When switched on (hot swap), I/O modules can be unplugged provided the network interface module is the standard type.
■ Output power supply independent of inputs: For example, if an output power supply is cut by a Preventa module, the inputs are still managed.
■ Immunity of inputs: For example, the closing of power contactors (controlled by outputs) does not disturb analog input measurements.

NIM network interface module:
This module manages communications on the island bus. It acts as a gateway for exchanges with the fieldbus or network master.

Different NIM interface modules (standard type only) are available for the following main fieldbuses or local area networks:
■ Ethernet Modbus TCP/IP: single port or double port NIM modules.
■ EtherNet/IP, InterBus, CANopen, Modbus Plus, Fipio, Profibus DP and DeviceNet.

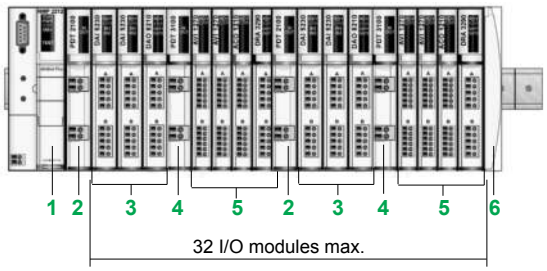
Modicon STB distributed I/O solution

Open and modular system

Standard Modicon STB configurations

Single segment

With a standard NIM network interface module it is possible to create an island with only one segment ("single" segment) comprising up to 32 I/O modules (excluding PDM power distribution modules, NIM network interface module, bus termination and auxiliary power supply).



Single segment standard Modicon STB

In the example above, the single segment comprises:

1. STBN●●2●1●: A standard NIM (Network Interface Module). This is placed at the beginning of the primary segment. Each island must have only one NIM module *(1)*.
2. STBPDT210●K: A basic *(2)* or standard *(3)* PDM (Power Distribution Module). This is installed immediately to the right of the NIM and distributes the 115/230 V ∼ voltage to the I/O modules powered with AC.
3. STBDA●K: Digital (Discrete) I/O modules with AC power.
4. STBPDT310●K: A basic *(2)* or standard *(3)* PDM power distribution module. This is installed after all the ∼ 115/230 I/O modules. It distributes the 24 V ⎓ voltage to the I/O modules powered with DC.
5. STBAV●K, STBAC●K, STBDD●K: Digital or analog I/O modules powered with DC.
6. STBXMP1100: A bus termination plate *(4)*.

(1) The auxiliary power supply module STBCPS2111K (not shown) supplies a 5 V ⎓ 1.2 A logic power supply in addition to that of the NIM module. This module is used when the island segment I/O modules draw a current higher than 1.2 A. It must be combined with a PDM power distribution module.
(2) Basic PDMs isolate the internal 5 V ⎓ logic power supply and the common 24 V ⎓ power supply for the inputs/outputs.
(3) Standard PDMs isolate the internal 5 V ⎓ logic power supply and the separate 24 V ⎓ power supplies for the inputs/outputs.
(4) Supplied with the NIM network interface module.

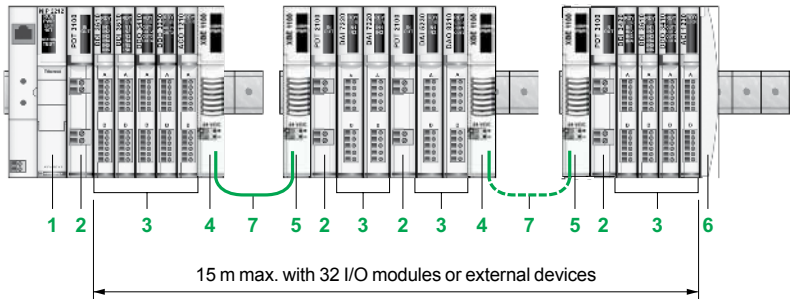
Modicon STB distributed I/O solution

Open and modular system

Standard Modicon STB configurations (continued)

Primary segment with expansion segments

The island bus can support the primary segment with up to 6 expansion segments (7 segments in all).
A standard NIM network interface module supports up to 32 I/O modules (excluding power distribution modules, network interface modules, bus termination, auxiliary power supplies, and EOS/BOS bus expansion modules).



Standard Modicon STB with 3 segments

The segments in the above Modicon STB configuration comprise:

1. STBN●●2●1●: A standard NIM network interface module. This is placed at the beginning of the primary segment. Each island must have only one NIM module.
2. STBPDT●100K: A standard 24 V ⎓ or 115/230 V ∿ PDM power distribution module. This is installed immediately to the right of the NIM and distributes the 24 V ⎓ or 115/230 V ∿, according to the type of I/O modules located on the right.
3. STBAV●, STBAC●, STBAR●, STBDD●, STBDA● and STBDR●: Digital (Discrete) I/O modules with DC or AC power. They are placed immediately to the right of the PDM power distribution module.
4. STBXBE1100K: EOS bus expansion module. This is always installed in the farthest right slot in the primary or expansion segment, and extends the island bus to another segment.
5. STBXBE1300K: BOS bus expansion module. This is installed at the beginning of each expansion segment *(1)*.
6. STBXMP1100: An island bus termination plate *(2)*.
7. STBXCA100●: Island bus extension cables.

(1) The BOS bus expansion module STBXBE1300K provides a 5 V ⎓ 1.2 A logic power supply, from an external 24 V ⎓ power supply. This power supply is distributed to island segment modules located on its right.
(2) Supplied with the NIM network interface module.

Modicon STB distributed I/O solution

Open and modular system

Standard Modicon STB configurations (continued)

CANopen expansion module - Device Integration

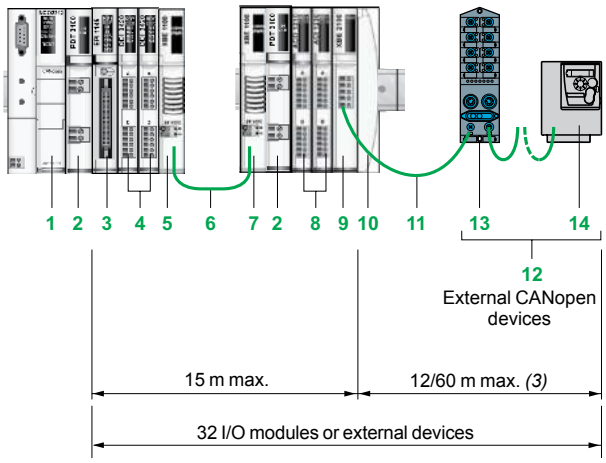
The CANopen expansion module STBXBE2100K can be used to connect, at the end of the segment, external CANopen devices such as:

- Modicon FTB IP67 I/O, in plastic or metal casing
- ATV31C/312/32/61/71 variable speed drives *(1)*
- Festo CPV-CO2 electropneumatic valves
- Parker P2M2HBVC11600 electropneumatic valves
- Balluff Micropulse BTL5 linear encoders
- OsiSense absolute rotary encoders
- TeSys U and TeSys T starter-controllers
- Scaime eNod4-T weighing module, etc. *(2)*.

A standard NIM network interface module supports up to 32 I/O modules and external CANopen devices (excluding power distribution modules, network interface modules, EOS/BOS bus expansion modules and CANopen expansion modules).
The number of external CANopen devices depends on the standard NIM network interface module:

- Standard CANopen and InterBus NIM modules: Up to 7 external CANopen devices.
- Standard Ethernet Modbus TCP/IP single port or double port, EtherNet/IP, Modbus Plus, Fipio and Profibus DP NIM modules: Up to 12 external CANopen devices.

The data rate of the internal bus is set to 500 Kbps with the Advantys STBSPU1●●● configuration software. This speed applies to all Modicon STB modules and external devices.



Daisy chaining of external CANopen devices on an island expansion segment

The island bus in the above example comprises:

1 STBN●●2●1●: A standard NIM network interface module.
2 STBPDT3100K: A standard 24 V ⎓ PDM power distribution module.
3 STBEHC3020KC: 1-channel counter module.
4 STBDDI3420K: Digital input modules.
5 STBXBE1100K: EOS bus expansion module (end of segment).
6 STBXCA100●: Island bus extension cable.
7 STBXBE1300K: BOS bus expansion module (beginning of segment).
8 STBAC●K: Analog I/O modules.
9 STBXBE2100K: CANopen expansion module (max. 12 devices per island).
10 STBXMP1100: Island bus termination plate.
11 TSXCANCA●●●: CANopen cable.
12 Any CANopen external device belonging to the Advantys software library, such as for example:
13 Modicon FTB IP67 I/O.
14 ATV312 variable speed drive.

(1) ATV32 variable speed drives will be integrated to Modicon STB during the 2nd semester 2013.
(2) To obtain the latest list of approved equipment on the CANopen extension, please consult our Customer Care Centre or our website, www.schneider-electric.com.
To validate a new product, please consult our Customer Care Centre.
(3) Total length of CANopen expansion segment: 12 m as standard, 60 m in accordance with the CAN wiring rules described in the CANopen setup document no. 31010857 (in English) available on our website, www.schneider-electric.com.

Modicon STB distributed I/O solution

Open and modular system

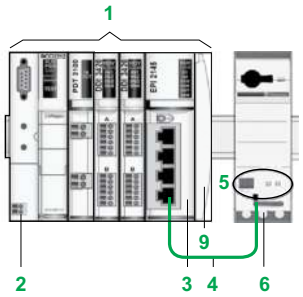
Standard Modicon STB configurations (continued)

Application-specific module for TeSys U and TeSys Quickfit starter-controllers

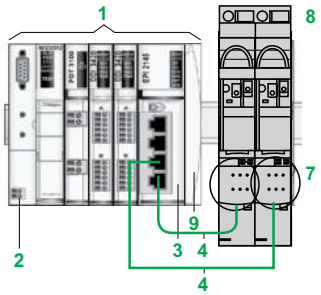
The STBEPI2145K parallel interface module is used to connect TeSys U starter-controllers and TeSys Quickfit motor starters.

The TeSys U starter-controller must be equipped with the LUFC00 parallel communication module.
The characteristics and advantages of this solution are:

- Control of both directions of motor travel
- Simple wiring
- Configuration with Advantys software
- Hot swapping possible (see page 15).



TeSys U connected to a standard Modicon STB



Reversing TeSys Quickfit connected to a standard Modicon STB

The island bus in the above examples comprises:

1 Modicon STB primary island segment.
2 STBN●●2●1●: A standard NIM network interface module.
3 STBEPI2145K: Parallel interface module for TeSys U starter-controllers and TeSys Quickfit motor starters *(1)*.
4 LU9R●●: Cable with one RJ45 connector at each end.
5 STBLUFC00: Modicon parallel communication module.
6 TeSys U starter-controller.
7 LAD9AP3●●: TeSys Quickfit control connection module.
8 TeSys Quickfit reversing motor starter.
9 STBXMP1100: A bus termination plate *(2)*.

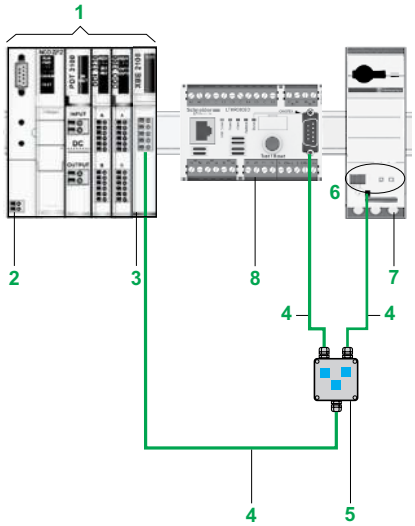
(1) Refer to the "Motor-starter solutions. Control and protection components" catalogue.
(2) Supplied with the NIM network interface module.

Standard Modicon STB configurations (continued)

CANopen expansion module for TeSys U and TeSys T starter-controllers

The CANopen expansion module STBXBE2100K is used to connect TeSys U and TeSys T starter-controllers, via a CANopen tap-off junction.
The TeSys U starter-controller must be equipped with the LULC08 CANopen communication module.

The characteristics and advantages of this solution are:
- Advanced process control, such as reading current data, detailed diagnostics, remote reset, etc.
- Configuration with SoMove software
- Hot swapping possible (see page 15).



CANopen daisy chaining of TeSys T and a TeSys U tap link on a standard Modicon STB

The island bus in the above example comprises:
1 Modicon STB primary island segment.
2 STBN●●2●1●: A standard network interface module.
3 STBXBE2100K: CANopen expansion module (max. 12 devices per island).
4 TSXCANCA●●●: CANopen cable.
5 VW3CANTAP2: CANopen tap-off junction.
6 LULC08 CANopen communication module .
7 TeSys U (LUB●●) starter-controller with an advanced control unit (LUCB/C/D).
8 TeSys T motor management system (LTMR●●C) with CANopen communication port.

Modicon STB distributed I/O solution

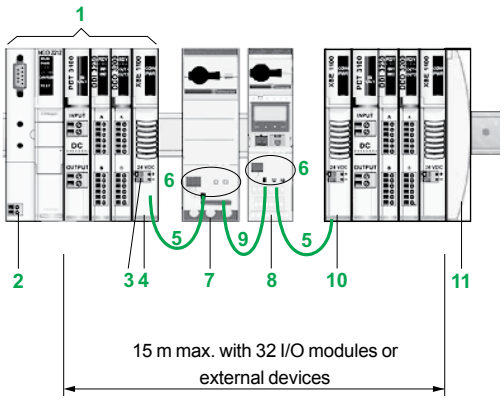
Open and modular system

Standard Modicon STB configurations (continued)

TeSys U starter-controller as preferred module

The island bus can support TeSys U starter-controllers as preferred modules (installation between 2 island segments).
TeSys U starter-controllers must be equipped with a Modicon STB LULC15 serial communication module.

The characteristics and advantages of this solution are:
- Advanced process control (integrated in the Advantys software), such as reading current data, detailed diagnostics, remote reset, etc.
- Configuration with Advantys software
- Hot swapping not possible (see page 15).



TeSys U as preferred module on a standard Modicon STB

The island bus in the above example comprises:
1 Modicon STB primary island segment.
2 STBN●●2●1●: A standard NIM network interface module.
3 Removable screw connector for connection of an external 24 V ⎓ power supply, required for the TeSys U LULC15 communication module.
4 STBXBE1100K: End of segment, used to connect the preferred TeSys U modules.
5 Angled cable with an island bus extension cable connector at each end, providing the bus signals and the internal power supply (LU9RCD●●).
6 Modicon STB LULC15 serial communication modules
7 TeSys U starter-controller (LUB●●) with an advanced control unit (LUCB/C/D).
8 TeSys U starter-controller (LUB●●) with a multifunction control unit (LUCM).
9 Angled cable with an island bus extension cable connector at each end, providing the bus signals and the internal power supply (LU9RDD●●).
10 STBXBE1300K: Beginning of segment.
11 STBXMP1100: A bus termination plate *(1)*.

(1) Supplied with the NIM network interface module.

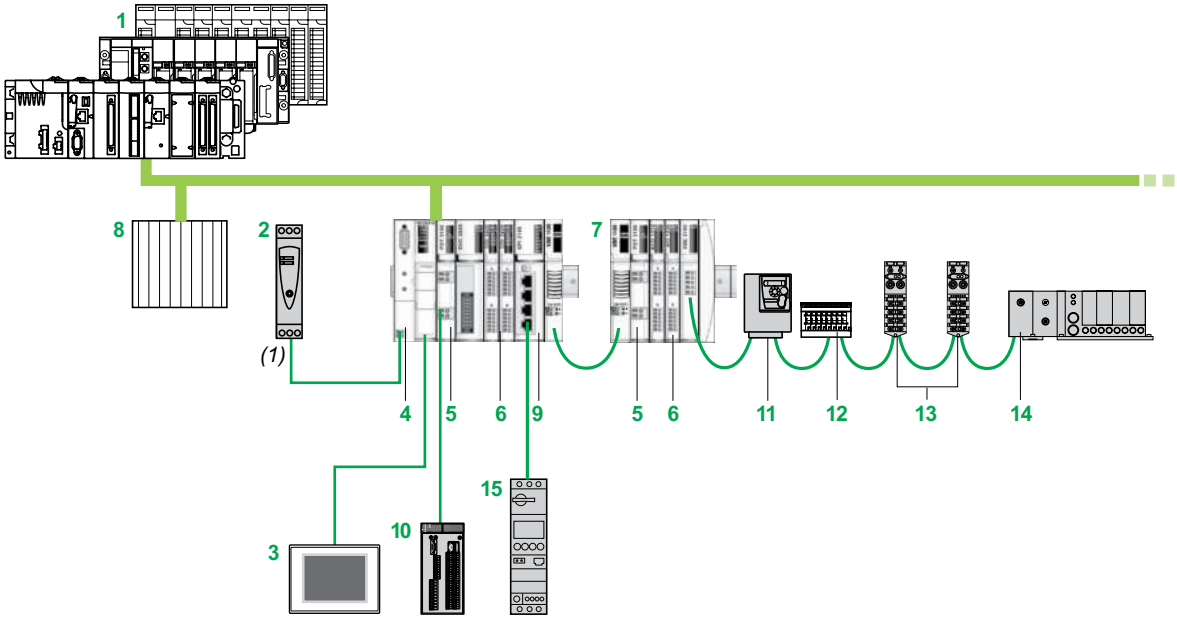
Modicon STB distributed I/O solution

Open and modular system

Example of control system configuration

NIM network interface modules STBN●●2●1●, located at the beginning of each island, are gateways for exchanging data between the network or bus master PLC and the Modicon STB automation island.

Standard NIM STBN●●2●1● modules can be used to configure and address the installation external devices. These settings are stored in the module's internal RAM or Flash memory. Optionally, they can be saved to the 32 Kb removable SIM card STBXMP4440 (except for the address of the network connection point) to duplicate the configuration from one island to another.



The control system configuration in the above example comprises:

1 Modicon M340/Premium/Quantum automation platform.
2 24 V ⎓ external power supply.
3 HMI terminal with Magelis XBT, XBTG, XBTGT type Modbus link (see link cables on page 101).
4 NIM network interface module.
5 PDM power distribution module.
6 I/O modules.
7 Second STB segment.
8 Another control system.
9 Parallel interface module for TeSys U and TeSys Quickfit starter-controllers.
10 Configurable Preventa XPS MC safety controller connected on the power supply to the outputs of the power distribution module STBPDT●100K.
11 ATV 312 variable speed drive.
12 Festo solenoid valves.
13 Modicon FTB IP67 I/O.
14 Parker solenoid valves.
15 TeSys U starter-controller.

(1) In the above example, the 24 V ⎓ power supplies for the PDM power distribution module and the BOS bus expansion module are not shown. See pages 39 and 33 respectively.

Modicon STB distributed I/O solution

Open and modular system

Basic/standard Modicon STB functions

The table below sets out the main functions of the basic and standard Modicon STB ranges:

	I/O modules		Network interface modules (NIM)	Power distribution modules (PDM)		
Modicon STB	**Basic**	**Standard**	**Standard**	**Basic**	**Standard**	**See page**
Max. number of I/O modules			32			6 to 9
Removable terminals	■	■	■	■	■	–
Mechanical keying pin	■	■	■	■	■	53
Cold swapping	■	■	■	■	■	6
Hot swapping	*(1)*	*(1)*	▒	▒	▒	6, 15
Separate power supply to sensors and actuators	*(2)*	*(2)*			■	38
Built-in electronic protection of inputs and outputs	■	■	■	*(3)*	*(4)*	–
Electronic protection of power supply provided by Modicon STB for the sensors	▒	■				–
Protection of power supplies by built-in removable fuse				■	■	–
Status LEDs	■	■	■	▒	■	–
Compatible with all types of network interface module	■	■		■	■	–
CANopen expansion - Device Integration			*(5)*			10
Compatible with local HMI (Magelis)			■			100
Default configuration	■	■	■			84
Assistance with design, start-up, maintenance, power consumption, auto mapping using Advantys software	■	■	*(7)*	■	■	84
Configurable I/O parameters	▒	*(1)*	■			85
Built-in reflex functions	▒	*(1)*	■			89
Removable memory card *(1)(8)*			■			22
Advanced diagnostics	▒	*(1)*	■			86
Internal software (firmware) update			■			21

■ Function available ▒ Function not available □ Not applicable

(1) Requires the use of a standard NIM module.
(2) Requires the use of standard PDM modules.
(3) Basic PDM: One 5 A fuse for the inputs and outputs.
(4) Standard PDM: One 5 A fuse for the inputs and one 10 A fuse for the outputs.
(5) Requires the use of Advantys software, acquired separately or via the Unity Pro software.
(6) In offline mode only.
(7) In offline and online modes.
(8) For assistance with the island internal settings. Simplifies faulty device replacement (FDR) and copying of the island settings.

Hot swapping

When a module on the standard type Modicon STB island is unplugged under power, the behaviour of the other modules depends on the parameter settings of standard type I/O modules :
- Mandatory or optional module
- Configured fallback type per channel.

Swapping a module	Behaviour of the other modules *(1)*
Basic input	The other outputs remain operational
Standard input optional	The other outputs remain operational *(1)*
Standard input mandatory	Fallback of other outputs according to configuration *(1)(2)*
Basic output	The other outputs remain operational
Standard output optional	The other outputs remain operational *(1)*
Standard output mandatory	Fallback of other outputs according to configuration *(1)(2)*
Power distribution module (PDM)	Prohibited
NIM network interface	Prohibited

Operating environment

Modicon STB devices comply with the following certifications *(3)*:
- UL
- CSA
- C-Tick
- GOST
- CE
- FM (class 1, division 2, groups A, B, C, D T4A @ 70°C).
- ATEX 3G (II 3 G Ex nA IIC T4 Ta=0...60 °C) *(4)*.

They benefit from merchant navy certifications issued by shipping classification societies:
- ABS (USA)
- BY (France)
- DNV (Norway)
- GL (Germany)
- LR (Great Britain)
- RINA (Italy)
- RMRS (IEC, pending)

They are designed for use in industrial environments of pollution class 2, in applications of overvoltage category II (as defined in publication IEC 60664-1) and at altitudes of up to 2000 m, without reduction in load.

Protection enhanced with a coating is provided on request, for use in harsh industrial environments (see page 117).

(1) Fallback level set by the Advantys STBSPU1●●● software on standard I/O modules with a standard NIM.
The STBSPU1●●● software cannot be connected on basic NIM modules.
(2) The fallback state is adjustable on standard output modules:
- *Fallback to 0 for digital modules*
- *Fallback to 1 for digital modules*
- *Fallback to any value on analog outputs*
- *Hold last value on digital and analog outputs*

(3) Certifications for all automation products (see page 112).
(4) For ATEX zones not covered by this specification, Schneider Electric offers a solution under the CAPP program (Collaborative Automation Partner Program). Please consult our Customer Care Centre.

***Note**: Limiting supply voltages. The supply voltages for NIM modules, STBXBE1300K, STBXBE1100K, STBCPS2111K, STBPDT3100K, as well as all the external supply voltages, are limited as follows for the ranges of operating temperatures below:*
- *for the range -25...0°C , the supply voltage range is 20.4...30 V ⎓*
- *for the range 0...60°C , the supply voltage range is 19.2...30 V ⎓*
- *for the range 60...70°C , the supply voltage range is 19.2...26.5 V ⎓.*

Modicon STB distributed I/O solution

Network interface modules

Applications		Data exchange between master PLC and Modicon STB island I/O modules	
Bus or network type		Ethernet Modbus TCP/IP, dual port	Ethernet Modbus TCP/IP
Bus or network	Type	Industrial LAN	
	Topology	Standard, daisy chain, daisy-chain loop	Standard
	Compliance with standards	IEEE 802.3	
Structure	Physical interface	10/100 BASE-T, half/full duplex	10 BASE-T
	Data rate	10/100 Mbps	10 Mbps
Medium		Double shielded twisted pair via Ethernet ConneXium cabling system	
Configuration	Number of devices *(1)*	256 max. per segment, unlimited with switches	
	Maximum length	100 m according to 802.3 standard, > 100 m with ConneXium cabling system	
Features of NIM module *(2)*	Number of I/O modules per Modicon STB island *(1)*	Standard NIM: 32 modules max. on 1 primary segment and 6 expansion segments max.	
	Supply voltage	24 V ⎓ not isolated (19.2…30 V) *(3)*	
	Input current	550 mA	430 mA
	Logic power supply *(4)*	Output voltage: 5.25 V ⎓ ± 0.21 % Nominal output current: 1.2 A *(5)*	
	CANopen devices supported *(6)*	12 devices max.	
Interface connectors	Bus or network port	2 x Female RJ45 (embedded switch)	Female RJ45
	RS 232 port (configuration, dialogue with Magelis and firmware update)	HE 13, 8-way female	
Services used		- Embedded Web (configuration, diagnostics and access to variables) - Modbus TCP/IP - SNMP agent - DHCP and BOOTP client services	- Embedded Web (configuration, diagnostics and access to variables) - Modbus TCP/IP - SNMP agent - DHCP and BOOTP client services
Operating temperature, horizontal mounting		Standard NIM: -25…70°C *(7)(8)*	
Type of NIM module	Standard	**STBNIP2311**	**STBNIP2212**
	Basic		
Page		22	

(1) One Modicon STB island corresponds to 1 device on the bus or the network.
(2) See table of functions provided by the basic and standard Modicon STB ranges (page 15).
(3) Use a 24 V ⎓ external SELV (Safety Extra Low Voltage) power supply, rated at minimum 700 mA current output.
(4) Provides logic power to all I/O modules on the primary segment.
(5) 0.575 A for operating temperatures between 60 and 70°C.
(6) Connection via the STBXBE2100K CANopen bus expansion module.

Data exchange between master PLC and Modicon STB island I/O modules	
EtherNet/IP	**CANopen bus**
Industrial LAN	CAN fieldbus
Standard	
IEEE 802.3	CIA DS-301
10/100 BASE-T, half/full duplex	ISO 1198
10/100 Mbps	10 kbps…1 Mbps depending on bus length
Double shielded twisted pair via Ethernet ConneXium cabling system	Double shielded twisted pair
256 max. per segment, unlimited with switches	127 slaves
100 m according to 802.3 standard, > 100 m with ConneXium cabling system	From 30 m (1 Mbps) to 5000 m (10 kbps)
Standard NIM: 32 modules max. on 1 primary segment and 6 expansion segments max.	Standard NIM: 32 modules max. on 1 primary segment and 6 expansion segments max.
24 V ⎓ not isolated (19.2…30 V) *(3)*	
430 mA	
Output voltage: 5.25 V ⎓ ± 0.21 % Nominal output current: 1.2 A *(5)*	
12 devices max.	7 devices max.
Female RJ45	9-way male SUB-D
HE 13, 8-way female	
- Embedded Web (configuration, diagnostics and access to variables) - SNMP agent - DHCP and BOOTP client services	- Process Data Object (PDO) - Service Data Object (SDO) - Network management (NMT)
Standard NIM: -25…70°C *(7)(8)*	
STBNIC2212	**STBNCO2212**

22

(7) Standard NIM modules:
- For -25...0 °C range, the supply voltage range is 20.4...30 V ⎓
- For 0...60 °C range, the supply voltage range is 19.2...30 V ⎓
- For 60...70 °C range, the supply voltage range is 19.2...26.5 V ⎓
(8) When using the segment in extended temperature range (-25...70°C), the power consumption can be only calculated using Advantys or Unity Pro software.

Modicon STB distributed I/O solution

Network interface modules

Applications		Data exchange between master PLC and Modicon STB island I/O modules	
Bus or network type		**Modbus Plus**	**Fipio**
Bus or network	Type	Industrial LAN compliant with the Modbus Plus standard	Open industrial fieldbus compliant with the FIP standard
	Compliance with standards	modbus.org	EN 50170,Vol 3, Parts1-3, 2-3, 3-3, 5-3, 6-3 and 7-3
Structure	Physical interface	Modbus Plus standard	FIP standard
	Data rate	1 Mbps	1 Mbps
Medium		Twisted pair	Shielded twisted pair
Configuration	Number of devices *(1)*	32 per segment 64 for all segments	32 per segment 128 max. for all segments
	Maximum length	450 m per segment 1800 m with 3 repeaters	1000 m per segment
Features of NIM module *(2)*	Number of I/O modules per Modicon STB island *(1)*	Standard NIM: 32 modules max. on 1 primary segment and 6 expansion segments maxi	
	Input current	430 mA	
	Supply voltage	24 V ⎓ not isolated (19.2…30 V) *(3)*	
	Logic power supply *(4)*	Output voltage: 5.25 V ⎓ ± 0.21 % Nominal output current: 1.2 A *(5)*	
	CANopen devices supported *(6)*	12 devices max.	
Connector type	Bus or network port	9-way female SUB-D	9-way male SUB-D
	RS 232 port (configuration, dialogue with Magelis and firrmware update)	HE 13, 8-way female	
Services used		- Global data - Peer-to-peer - Peer Cop	- Periodic I/O exchanges - Point-to-Point message - Use of standard profiles (FRD/FSD/FED)
Operating temperature, horizontal mounting		Standard NIM: -25…70°C *(7)(8)*	
Type of NIM module	Standard	**STBNMP2212**	**STBNFP2212**
	Basic		
Page		22	

(1) One Modicon STB island corresponds to 1 device on the bus or the network.
(2) See table of functions provided by the basic and standard Modicon STB ranges (page 15).
(3) Use a 24 V ⎓ external SELV (Safety Extra Low Voltage) power supply, rated at minimum 700 mA current output.
(4) Provides logic power to all I/O modules on the primary segment.
(5) 0.575 A for operating temperatures between 60 and 70°C.
(6) Connection via the STBXBE2100K CANopen bus expansion module.

Data exchange between master PLC and Modicon STB island I/O modules		
INTERBUS	**Profibus DP**	**DeviceNet**
INTERBUS industrial field bus (generation 4)	Profibus DP V.0 industrial field bus	Network compliant with v.2.0 of the Open DeviceNet Vendor Assoc. (ODVA)
INTERBus Club	DIN 19245, Parts 1 and 3	Open DeviceNet Vendors Association
Isolated RS 485	RS 485	–
500 kbps	9.6 kbps…12 Mbps	125, 250 or 500 kbps
Shielded twisted pair		Twisted pair
512 slaves max. with 254 bus terminal modules max	125 slaves	64 slaves
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 expansion segments max.		
430 mA		
24 V ⎓ not isolated (19.2…30 V) *(3)*		
Output voltage: 5.25 V ⎓ ± 0.21 % Nominal output current: 1.2 A *(5)*		
7 devices max	12 devices max.	
Input: 9-way male SUB-D Output: 9-way female SUB-D	9-way female SUB-D	5-way male connector
HE 13, 8-way female		
- 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)
Standard NIM: -25…70°C *(7) (8)*		
STBNIB2212	**STBNDP2212**	**STBNDN2212**
	22	

(7) Standard NIM modules:
- For -25...0 °C range, the supply voltage range is 20.4...30 V ⎓
- For 0...60 °C range, the supply voltage range is 19.2...30 V ⎓
- For 60...70 °C range, the supply voltage range is 19.2...26.5 V ⎓
(8) When using the segment in extended temperature range (-25...70°C), the power consumption can be only calculated using Advantys or Unity Pro software.

Modicon STB distributed I/O solution

Network interface modules

Presentation

The range of NIM network interface modules comprises 9 standard NIM modules. Each module is dedicated to a specific network or bus:

Network or bus	Standard network interface module
Ethernet Modbus TCP/IP, dual port	STBNIP2311
Ethernet Modbus TCP/IP	STBNIP2212
EtherNet/IP	STBNIC2212
CANopen	STBNCO2212
Modbus Plus	STBNMP2212
Fipio	STBNFP2212
InterBus	STBNIB2212
Profibus DP	STBNDP2212
DeviceNet	STBNDN2212

All NIM network interface modules are supplied with two removable terminal power supply connectors: one screw-type and one spring-type.

Power supply for network interface modules

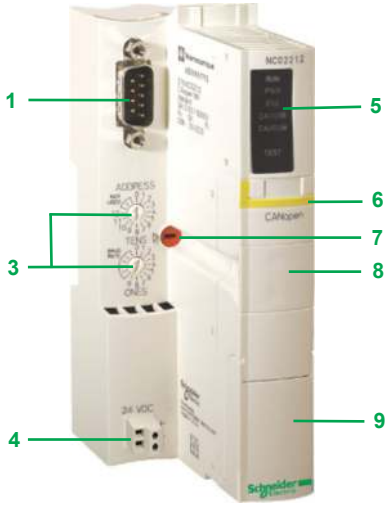
The NIM network interface module is supplied by an external 24 V ⎓ power supply. It converts this voltage to 5 V ⎓ to provide the 5 V ⎓ logic power to the I/O modules of the island's primary segment.

The 5 V ⎓ logic power supply integrated in the NIM module provides a maximum current of 1.2 A (operation in extended temperature ranges, see page 22).
This current can be increased by adding an STBCPS2111K auxiliary power supply that also provides a maximum current of 1.2 A (operation in extended temperature ranges, see page 34).
The STBCPS2111K auxiliary power supply module must be used with an STBPDT●10●K power distribution module placed after it.

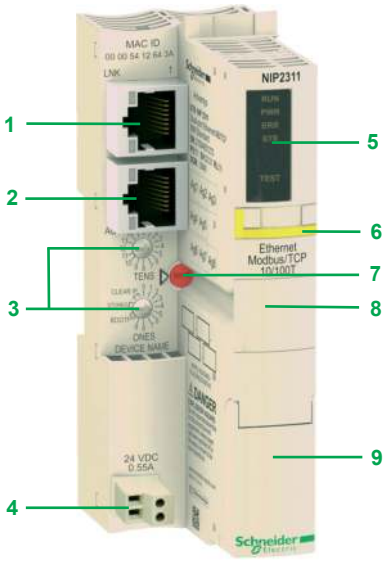
The 5 V ⎓ logic power for the I/O modules in the expansion segments is provided by the STBXBE1300K BOS bus expansion module placed at the beginning of these segments. In the same way that an STBCPS2111K auxiliary power supply module can be added for the primary segment, if the required current exceeds 1.2 A (see page 34).

Modicon STB distributed I/O solution

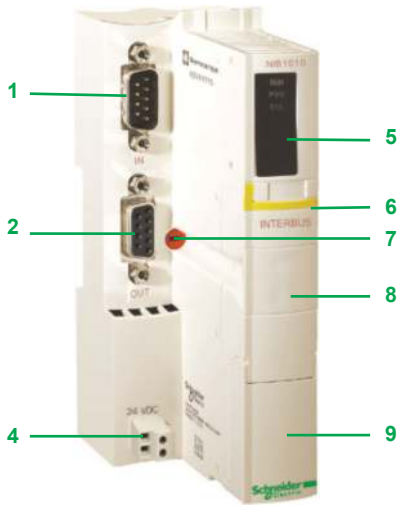
Network interface modules



STBNCO2212 CANopen bus interface module



STBNIP2311 Ethernet Modbus TCP/IP dual port network interface module



STBNIB2212 InterBus network interface module

Description

STBN••2•1• network interface modules

The front panel of STBN••2•1• network interface modules comprises:

1 A connector for connecting the island to the bus or fieldbus. See the various types of connector on the photos on pages 16 to 19.

2 STBNIP2311 Ethernet Modbus TCP/IP dual port NIM module:
□ A second Ethernet network connector which allows daisy-chain or daisy-chain loop topologies.
STBNIB2212 InterBus NIM module:
□ A fieldbus output connector.

3 All NIM modules except InterBus NIM:
□ Two rotary selector switches for addressing the nodes on the bus or the network

4 A 24 V ⎓ external power supply connector with removable screw-type terminals (STBXTS1120) or spring-type terminals (STBXTS2120). External Phaseo power supplies (see page 104)

5 An LED display block indicating the different states of the island's bus: power supply, communication, sending/receiving data, errors, etc.

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

6 A colour-coded module identification stripe: yellow

7 A screw for unlocking the module from the DIN rail
The NIM module can be removed from the island even if the product is assembled. Simply remove the PDM (power distribution module) and then turn this screw a quarter turn.

8 A slot for inserting an STBXMP4440 removable SIM format memory card (only on STBN••2•1• standard NIM modules).

9 A flap for accessing the Reset button *(4)* and the port for connecting a PC or an HMI terminal (to read/write data). The PC connection is used for configuring and setting the parameters of the island. It can also be used to update the firmware of the network interface module *(5)*.

The network interface modules are supplied with:
- A power supply connector of each type: screw-type or spring-type terminals
- STBXMP1100 bus terminator
- An English-language mini-CD-ROM supporting the documentation, a label sheet template and one exchange file per network type

The network interface modules are mounted directly on the DIN rail.

The STBSUS8800 user documentation CD-ROM (to be ordered separately, see page 22) contains specific documentation for each of the 13 NIM network interface modules in 5 languages. These documents can also be downloaded from www.schneider-electric.com.

(1) RUN is permanently on if the module is operational and flashes in various ways in the other states:
- If RUN flashes on startup, the NIM module is in auto-configuration phase.
- If RUN flashes for a long time, there is a fault on the island.
For information about status indication on the NIM module and the island, refer to the "Network interface module applications guide" for the specific network, included on the STBSUS8800 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 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 for NIM modules available on our website www.schneider-electric.com.

Modicon STB distributed I/O solution

Network interface modules

STBNIP2212

STBNCO2212

STBNMP2212

STBNFP2212

STBNIB2212

STBNDN2212

Network interface modules *(1)*

Network or bus	Range	Supply voltage	Reference	Weight kg
Ethernet Modbus TCP/IP, dual port	Standard	24 V ⎓	**STBNIP2311**	0.140
Ethernet Modbus TCP/IP	Standard	24 V ⎓	**STBNIP2212**	0.130
EtherNet/IP	Standard	24 V ⎓	**STBNIC2212**	0.135
CANopen	Standard	24 V ⎓	**STBNCO2212**	0.135
Modbus Plus	Standard	24 V ⎓	**STBNMP2212**	0.145
Fipio	Standard	24 V ⎓	**STBNFP2212**	0.145
InterBus	Standard	24 V ⎓	**STBNIB2212**	0.155
Profibus DP	Standard	24 V ⎓	**STBNDP2212**	0.140
DeviceNet	Standard	24 V ⎓	**STBNDN2212** *(2)*	0.140

Mandatory separate parts

Description	Type	Reference	Weight kg
DeviceNet removable terminals 5-way *(2)*	Screw-type	**STBXTS1111**	–
	Spring-type	**STBXTS2111**	–

Optional parts

Description	Use	Reference	Weight kg
Removable memory card 32 KB SIM *(3)*	Island configuration backup	**STBXMP4440**	–
User documentation	Multilingual on CD-ROM (English, French, German, Spanish and Italian)	**STBSUS8800**	–
External power supply 24 V ⎓ SELV	–	See page 107	–
Configuration software *(3)*	–	See pages 90 to 95	–
Magelis terminal connection cable *(3)*	–	See page 101	–
RS 232C shielded twisted pair cable 8-way HE 13 / 9-way SUB-D (length 2 m) *(3)(4)*	Configuration PC	**STBXCA4002**	0.210
USB SUB-D cable	Configuration PC with USB port Requires STBXCA4002 *(4)*	**SR2CBL06**	0.185

Description	For use with	Sold in lots of	Reference	Weight kg
Keying pin	Removable terminals	96	**STBXMP7800**	–
Sheets of labels for customization *(5)*	Bases and modules	25	**STBXMP6700**	–
Insulated screwdriver 2.5 mm	Removable screw-type terminals	–	**STBXTT0220**	–

(1) All network interface modules are supplied with:
- A power supply connector of each type: screw-type or spring-type terminals
- An STBXMP1100 bus terminator
- Documentation in English on mini-CD-ROM
(2) STBXTS●111 DeviceNet 5-way removable terminals, to be ordered separately.
(3) Standard modules only.
(4) Supplied with STBSPU1●●● Advantys configuration software (see page 94).
(5) Sheets of 144 labels. A template sheet for the customization labels is supplied with the documentation mini-CD-ROM.

Modicon STB distributed I/O solution

Bus and network connection accessories

Spare parts

Description	Type	Sold in lots of	Reference	Weight kg
Removable terminals for 24 V ⎓ power supply 2-way	Screw-type	10	**STBXTS1120**	0.003
	Spring-type	10	**STBXTS2120**	0.003

Description	Use	Reference	Weight kg
Bus terminator	Also supplied with the NIM network interface module	**STBXMP1100**	–

Bus and network connection accessories

CANopen bus *(1)*

Description	Preassembled/Use	Length	Reference	Weight kg
CANopen cables	Standard cables, CE marking Low smoke, zero halogen Flame-retardant (IEC 60332-1)	50 m	**TSXCANCA50**	4.930
		100 m	**TSXCANCA100**	8.800
		300 m	**TSXCANCA300**	24.560
	Standard cables, UL certification, CE marking Flame-retardant (IEC 60332-1)	50 m	**TSXCANCB50**	3.580
		100 m	**TSXCANCB100**	7.840
		300 m	**TSXCANCB300**	21.870
	Cables for harsh environments *(2)* or mobile installation, CE marking. Low smoke, zero halogen. Flame-retardant (IEC 60332-1)	50 m	**TSXCANCD50**	3.510
		100 m	**TSXCANCD100**	7.770
		300 m	**TSXCANCD300**	21.700

VW3CANA71

VW3CANKCDF180T

TSXCANTDM4

TCSCAR013M120

Description	Preassembled/Use	Length	Reference	Weight kg
CANopen adaptor for Altivar 61/71 drive	For mounting on the RJ45 connector of the drive's control terminals. The adaptor provides a 9-way SUB-D connector conforming to the CIA DRP 303-1 CANopen standard	–	**VW3CANA71**	–
CANopen connector 9-way female SUB-D connector with line terminator that can be deactivated. 180° output for 2 CANopen cables	–	–	**VW3CANKCDF180T**	–
IP 20 CANopen tap junction	■ 4 SUB-D ports ■ Screw-type terminals for connecting the trunk cables ■ Line termination		**TSXCANTDM4**	0.196
CANopen preformed cordsets One 9-way female SUB-D connector at each end	Standard, CE marking: Low smoke. Zero halogen. Flame-retardant (IEC 60332-1)	0.3 m	**TSXCANCADD03**	0.091
		1 m	**TSXCANCADD1**	0.143
		3 m	**TSXCANCADD3**	0.295
		5 m	**TSXCANCADD5**	0.440
	Standard, UL certification, CE marking: Flame-retardant (IEC 60332-2)	0.3 m	**TSXCANCBDD03**	0.086
		1 m	**TSXCANCBDD1**	0.131
		3 m	**TSXCANCBDD3**	0.268
		5 m	**TSXCANCBDD5**	0.400
IP 20 CANopen tap junction	■ 3 screw-type terminals ■ 3 RJ45 connectors	–	**VW3CANTAP2**	0.250
CANopen daisy chain tap	■ 1 cable equipped with an RJ45 connector ■ 2 spring-type terminals	0.6 m	**TCSCTN026M16M**	–
	■ 1 cable equipped with an RJ45 connector ■ 2 RJ45 connectors	0.3 m	**TCSCTN023F13M03**	–
CANopen cables	2 RJ45 connectors	0.3 m	**VW3CANCARR03**	0.050
		1 m	**VW3CANCARR1**	0.500
CANopen line terminations	For RJ45 connector	–	**TCSCAR013M120**	–
	For screw-type terminal connector *(3)*	–	**TCSCAR01NM120**	–

(1) For others CANopen bus cables and connection accessories: please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com.
(2) Standard environment: No particular environmental constraints, Operating temperature between + 5°C and + 60°C, Fixed installations.
Harsh environment: Resistance to hydrocarbons/industrial oils/detergents/solder chips, Relative humidity up to 100%, Saline atmosphere, Operating temperature between - 10°C and + 70°C, Extreme temperature variations.
(3) Order in multiples of 2.

Modicon STB distributed I/O solution

Bus and network connection accessories

TCSEC●3M3M●●S4

Bus and network connection accessories (continued)

Ethernet network *(1)*

Description	Preassembled at both ends	Type	Length	Reference	Weight kg
Straight-through shielded twisted pair cables CE compatible	2 x RJ45 connectors For connection to terminal equipment (DTE)	Standard	2 m	**490NTW00002**	–
			5 m	**490NTW00005**	–
			12 m	**490NTW00012**	–
			40 m	**490NTW00040**	–
			80 m	**490NTW00080**	–
		Ruggedized *(2)*	1 m	**TCSECE3M3M1S4**	–
			2 m	**TCSECE3M3M2S4**	–
			3 m	**TCSECE3M3M3S4**	–
			5 m	**TCSECE3M3M5S4**	–
			10 m	**TCSECE3M3M10S4**	–
Crossover shielded twisted pair cables CE compatible	2 x RJ45 connectors For connection between hubs, switches and transceivers	Standard	5 m	**490NTC00005**	–
			15 m	**490NTC00015**	–
			40 m	**490NTC00040**	–
			80 m	**490NTC00080**	–
Straight-through shielded twisted pair cables UL compatible	2 x RJ45 connectors For connection to terminal equipment (DTE)	Standard	2 m	**490NTW00002U**	–
			5 m	**490NTW00005U**	–
			12 m	**490NTW00012U**	–
			40 m	**490NTW00040U**	–
			80 m	**490NTW00080U**	–
		Ruggedized *(2)*	1 m	**TCSECU3M3M1S4**	–
			2 m	**TCSECU3M3M2S4**	–
			3 m	**TCSECU3M3M3S4**	–
			5 m	**TCSECU3M3M5S4**	–
			10 m	**TCSECU3M3M10S4**	–
Crossover shielded twisted pair cables UL compatible	2 x RJ45 connectors For connection between hubs, switches and transceivers	Standard	5 m	**490NTC00005U**	–
			40 m	**490NTC00040U**	–
			80 m	**490NTC00080U**	–

TCSESU051F0

499NMS25101

Description	Port type and number	Reference	Weight kg
ConneXium hub	4 x 10BASE-T ports (copper cable), RJ45 shielded connectors	**499NEH10410**	0.530
ConneXium transceiver	■ 1 x 10BASE-T port (copper cable), RJ45 shielded connector ■ 1 x 100BASE-FX port (multimode optical fibre), SC connector	**499NTR10100**	0.230
Connexium unmanaged switches	5 x IP67 10BASE-T/100BASE-TX ports (copper cable), shielded M12 type D connectors *(3)*	**TCSESU051F0**	0.210
	8 x IP20 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors	**499NES18100**	0.230
	8 x IP30 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESU083FN0**	0.246
	3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESU033FN0**	0.113
	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fibre), duplex SC connector	**TCSESU043F1N0**	0.120
	5 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESU053FN0**	0.113
	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fibre), duplex SC connector	**499NMS25101**	0.330
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connectors	**499NMS25102**	0.335

(1) For others Ethernet network cables and connection accessories: please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com.
(2) Ethernet cables specifically designed for use in harsh industrial environnements. Combining Cat 5E Ethernet cable with rugged RJ45 connectors. Fully shielded for reliable communications in noise environments. Operating temperature range -20 to +70°C.
(3) With IP67 power suppy cables XZCP11/P12 and connectors XZCC12, please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com.

Modicon STB distributed I/O solution

Bus and network connection accessories

Bus and network connection accessories (continued)

Ethernet bus *(1)*

Description	Port type and number	Reference	Weight kg
Connexium unmanaged switches *(continued)*	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single-mode optical fibre), duplex SC connector	**499NSS25101**	0.330
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single-mode optical fibre), duplex SC connectors	**499NSS25102**	0.335
Connexium managed switches	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fibre), duplex SC connector	**TCSESM043F1CU0**	0.400
	■ 2 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCSESM043F2CU0**	0.400
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single mode optical fibre), duplex SC connector	**TCSESU043F1CS0**	0.400
	■ 2 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fibre), duplex SC connector	**TCSESU043F2CS0**	0.400
	4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESM043F23F0**	0.400
	8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESM083F23F0**	0.410
	■ 7 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fibre), duplex SC connector	**TCSESM083F1CU0**	0.410
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCSESM083F2CU0**	0.410
	■ 7 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single mode optical fibre), duplex SC connector	**TCSESM083F1CS0**	0.410
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fibre), duplex SC connector	**TCSESM083F2CS0**	0.410
	8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESB083F23F0**	0.400
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCSESB083F2CU0**	0.400
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 3 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCSESB093F2CU0**	0.400
	8 x IP30 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESM083F23F1** *(2)*	1.000
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors, ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCSESM063F2CU1** *(2)*	1.000
	■ 6 x IP30 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fibre), duplex SC connector	**TCSESM063F2CS1** *(2)*	1.000

TCSESM043F2CSO

TCSESM083F23FO

TCSESM083F2CSO

(1) For others Ethernet network cables and connection accessories: please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com.
(2) Available in Conformal Coating version. For this version, add the letter C at the end of the reference. For example, the TCSESM083F23F1 switch becomes TCSESM083F23F1C in the Conformal Coating version. For further information on treatments for harsh environments, see our website www.schneider-electric.com.

Modicon STB distributed I/O solution

Bus and network connection accessories

Bus and network connection accessories (continued)

Ethernet network *(1)*

Description	Port type and number	Reference	Weight kg
Connexium managed switches *(continued)*	16 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESM163F23F0**	0.600
	■ 14 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCSESM163F2CU0**	0.600
	■ 14 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fibre), duplex SC connector	**TCSESM163F2CS0**	0.600
	■ 22 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCSESM243F2CU0**	0.650
	■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 1000BASE-SX ports (multimode optical fibre) *(2)* ■ or 2 x 1000BASE-LH ports (single mode optical fibre) *(3)* ■ or 2 x 1000BASE-LX ports (single mode and multimode optical fibre) *(4)*	**TCSESM103F2LG0**	0.410
	■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 10/100/1000BASE-TX (Gigabit) ports (copper cable), RJ45 shielded connectors	**TCSESM103F23G0**	0.410

TCSESM243F2CUO

TCSGWA242

TCSNWA271

Description	Type	Number of radios	Data rate	Degree of protection	Reference	Weight
			Mbps			kg
ConneXium Wi-Fi Access Points and Clients	Wi-Fi 802.11g Access Point	2	up to 54	IP 40	**TCSGWA242**	–
	Wi-Fi 802.11g Access Point FCC	2	up to 54	IP 40	**TCSGWA242F** *(5)*	–
	Wi-Fi 802.11g Access Point IP 67	2	up to 54	IP 67	**TCSGWA272**	–
	Wi-Fi 802.11n Access Point	1	up to 300	IP 40	**TCSNWA241**	–
	Wi-Fi 802.11n Access Point FCC	1	up to 300	IP 40	**TCSNWA241F** *(5)*	–
	Wi-Fi 802.11n Access Point IP 67	1	up to 300	IP 67	**TCSNWA271**	–
	Wi-Fi 802.11n Access Point IP 67 FCC	1	up to 300	IP 67	**TCSNWA271F** *(5)*	–
	Wi-Fi 802.11n Access Point IP 67 ATEX	1	up to 300	IP 67 ATEX	**TCSNWA2A1**	–
ConneXium Wi-Fi Client only	Wi-Fi 802.11g Client	1	up to 54	IP 40	**TCSGWC241**	–

(1) For others Ethernet network cables and connection accessories: please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com.
(2) With TCSEAAF1LFU000 fibre optic module, to be ordered separately. Please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com.
(3) With TCSEAAF1LFH000 fibre optic module, to be ordered separately. Please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com
(4) With TCSEAAF1LFS000 fibre optic module, to be ordered separately. Please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com.
(5) With FCC approval, for USA and Canada.

Modicon STB distributed I/O solution

Bus and network connection accessories

TCSWABDH

TCSWAB5DN

TCSWAB5D

TCSWAB2O

TCSWAB2D

TCSWABC5

Bus and network connection accessories (continued)

Ethernet network (continued) *(1)*

Description	Type	Frequency range	Gain	Degree of protection	Reference	Weight
		MHz	dBi			kg
ConneXium Wi-Fi antennas	Dual band hemispherical antenna	2300 - 2500	6	IP 65	**TCSGWABDH**	0.300
		4900 - 5935	8			
	5 GHz Very directional antenna	5150 - 5350	23	IP 65/IP 67	**TCSWAB5V**	0.107
		5470 - 5875				
	Dual band omnidirectional 11n antenna	2400 - 2500	3.5	IP 65	**TCSWABDON**	0.300
		5150 - 5875	5.5			
	5 GHz omnidirectional antenna	5150 - 5875	5	IP 65	**TCSWAB5O**	0.300
	5 GHz dual slant antenna	5150 - 5925	9	IP 65	**TCSWAB5S**	0.110
	5 GHz directional MiMo 11n antenna	5150 - 5875	9	IP 65	**TCSWAB5DN**	0.110
	5 GHz Medium directional antenna	5150 - 5250	18	IP 65/IP 67	**TCSWAB5D**	0.107
		5250 - 5350	19			
		5350 - 5725	18.5			
		5725 - 5875	18			
	5 GHz Very directional 11n antenna	5150 - 5875	23	IP 65/IP 67	**TCSWAB5VN**	2.500
	2.4 GHz omnidirectional antenna	2400 - 2500	6	IP 65	**TCSWAB2O**	0.340
	2.4 GHz directional antenna	2300 - 2500	14	IP 23	**TCSWAB2D**	0.110
	2.4 GHz dual slant antenna	2400 - 2485	8	IP 65	**TCSWAB2S**	0.110
	2.4 GHz Leaky cable, 50 m	2000 - 2900	0.15 at 2.4 GHz	IP 65	**TCSWABC5**	12.000
	2.4 GHz Leaky cable, 100 m				**TCSWABC10**	24.000

TCSWAAC

TCSWABAC2

TCSWABP

TCSWAMCD

Description	Type	With connectors at both ends	Length	Reference	Weight
			m		kg
ConneXium Wi-Fi adaptor cables	Adaptor cable RP-SMA to N-jack	1 x RP-SMA male 1 x N female	0.520	**TCSWAAC**	0.340
	Adaptator cable N-plug to N-jack, 2 m	1 x N male 1 x N female	2.000	**TCSWABAC2**	0.340
	Adaptator cable N-plug to N-jack, 15 m		15.000	**TCSWABAC15**	0.340

Description	Type	Degree of protection	Length	Reference	Weight
			m		kg
ConneXium Wi-Fi accessories	Overvoltage protector for antennas: N-plug to N-jack	IP 65	–	**TCSWABP**	0.080
	Overvoltage protector for LAN/PoE: N-plug to N-jack	IP 68	–	**TCSWABP68**	0.080
	Memory card for IP 40 modules: Mini-DIN connector *(2)*	IP 40	0.315	**TCSWAMCD**	0.035
	Memory card for IP67 and ATEX modules: M12 connector *(2)*	IP 67 ATEX	0.500	**TCSWAMC67**	0.025
	Adaptor kit for pole mounting	–	–	**TCSWABMK**	–

(1) For others Ethernet network cables and connection accessories: please consult the Modicon automation platforms catalogues, available on the website www.schneider-electric.com.
(2) Auto-configuration adaptors which are used to save 2 different versions of the configuration and operating program data for the Wi-Fi access point to which it is connected. They enable managed Wi-Fi access points to be easily commissioned and quickly replaced.

Modicon STB distributed I/O solution

Bus and network connection accessories

ASMBKT085

Bus and network connection accessories (continued)

Modbus Plus network

Description	Use	Reference	Weight kg
9-way male SUB-D connector	Connection of the Modbus Plus connector	**ASMBKT085**	–
Modbus Plus tap	IP 20 junction box for T-connections	**990NAD23000**	0.230
	IP 65 junction box for T-connections, supports one RJ45 connector on front panel	**990NAD23010**	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	**170XTS02000**	0.260

Description	Use		Length	Reference	Weight kg
	From	To			
Modbus Plus drop cables	170XTS02000 IP20 T-connector	170XTS02000 IP20 T-connector	0.25 m	**170MCI02010**	–
			1 m	**170MCI02036**	–
			3 m	**170MCI02120**	–
			10 m	**170MCI02080**	–
	STBNMP2212 network interface module	990NAD23000 tap	2.4 m	**990NAD21110**	0.530
			6 m	**990NAD21130**	0.530

Description	Port type and number	Reference	Weight kg
Modbus Plus/Ethernet 10/100BASE-T gateway	■ 1 x 10/100BASE-TX port (copper cable), RJ45 shielded connector ■ 2 x Modbus Plus ports, DB-9 connectors	**174CEV20040**	–

TSXFPACC12

TSXFPACC14

TSXFPACC4

Fipio bus

Description	Use	Characteristics	Reference	Weight kg
Female connectors (9-way SUB-D)	On STBNFP2212 network interface module	Black polycarbonate IP 20	**TSXFPACC12**	0.040
		Zamak *(1)*	**TSXFPACC2**	0.080
Bus connection unit	Trunk cable tap link	Black polycarbonate IP 20	**TSXFPACC14**	0.120
		Zamak IP 65 *(1)*	**TSXFPACC4**	0.660

Description	Use	Length	Reference	Weight kg
Drop cables	8 mm, 2 shielded twisted pairs 150 Ω For standard environments	100 m	**TSXFPCC100**	5.680
		200 m	**TSXFPCC200**	10.920
		500 m	**TSXFPCC500**	30.000
Daisy chain cables	8 mm, 2 shielded twisted pairs 150 Ω For standard environments	100 m	**TSXFPCA100**	5.680
		200 m	**TSXFPCA200**	10.920
		500 m	**TSXFPCA500**	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	**170MCI00700**	–
		1 m	**170MCI10000**	–
Branch interface	Remote bus to installation remote bus branch connection	–	**170BNO67100**	–
Remote bus cables	–	100 m	**TSXIBSCA100**	–
		400 m	**TSXIBSCA400**	–

(1) For the complete range of Ethernet cables and connection accessories: please consult our website www.schneider-electric.com.

Modicon STB distributed I/O solution

Bus and network connection accessories

Bus and network connection accessories (continued)

Profibus DP bus

Description	Use	Length	Reference	Weight kg
Connectors for STBNDP2212 network interface module	Line terminator	–	**490NAD91103**	–
	Intermediate connection	–	**490NAD91104**	–
	Intermediate connection with terminal port	–	**490NAD91105**	–
Profibus DP connection cables	–	100 m	**TSXPBSCA100**	–
		400 m	**TSXPBSCA400**	–

DeviceNet network

Description	Use	Type	Reference	Weight kg
Female connectors (5-way)	For STBNDN2212 network interface module	Screw-type	**STBXTS1111**	–
		Spring-type	**STBXTS2111**	–

Modicon STB distributed I/O solution

Internal bus expansion,CANopen expansion, auxiliary power supply module

Applications		Modicon STB island bus expansion	
		EOS end of segment	BOS beginning of segment
Interface connectors	Island bus	Firewire connector *(1)*	Firewire connector
	24 V ⎓ external power supply	Screw or spring-type 2-way removable connector	
Base		STBXBA2400, size 2 (18.4 mm)	STBXBA2300, size 2 (18.4 mm)
24 V ⎓ external power supply	Type	24 V ⎓ non-isolated (19.2…30 V) *(2)*	
	Function	TeSys U power supply connected as preferred module	Built-in 5 V ⎓ logic power supply
Protection on 24 V ⎓ power supply	Voltage surge	Yes	Yes
	Reverse polarity	Yes	Yes
	Short-circuit, overload	Yes, resettable internal fuse	Yes
5 V ⎓ logic power supply	Voltage	–	5.25 V ⎓ ± 0.21%
	Max. current		1.2 A *(3)*
	Consumption on the logic bus	–	25 mA
Hot swapping		No	
Operating temperature, horizontal mounting		-25…70°C *(6)*	-25…70°C *(4)*
Module type	Standard	**STBXBE1100K** *(5)*	**STBXBE1300K** *(5)*
	Basic		
Page		34	

(1) Also used to carry the 24 V ⎓ power supply for a TeSys U starter-controller connected as preferred module.
(2) Use a 24 V ⎓ external SELV (Safety Extra Low Voltage) power supply.
(3) 900 mA for operating temperatures between 60 and 70°C.
(4) BOS expansion module STBXBE1300K and auxiliary power supply module STBCPS2111K:
- For -25...0°C range, the supply voltage range is 20.4...30 V ⎓
- For 0...60°C range, the supply voltage range is 19.2...30 V ⎓
- For 60...70°C range, the supply voltage range is 19.2...26.5 V ⎓.
(5) Replace the old EOS-BOS module pairing STBXBE1000K - STBXBE1200K with the EOS-BOS module pairing STBXBE1100K - STBXBE1300K.
(6) When using the segment in extended temperature range (-25...70°C), the power consumption can be only calculated using Advantys or Unity Pro software.

Modicon STB island bus expansion	
Island bus expansion for standard CANopen devices	**Auxiliary power supply**
Screw or spring-type 5-way removable connector	–
–	Screw or spring-type 2-way removable connector
STBXBA2000, size 2 (18.4 mm)	STBXBA2100, size 2 (18.4 mm)
–	24 V ⎓ non-isolated (19.2…30 V) *(2)*
–	Additional 5 V ⎓ logic power supply *(7)*
–	Yes
–	Yes
–	Yes, automatically resettable internal fuse
–	5.25 V ⎓ ± 0.21%
–	1.2 A *(3)*
100 mA	–
No	
-25…70°C *(6)(8)*	-25…70°C *(4)*
STBXBE2100K	**STBCPS2111K**

34

(7) Used when the I/O module current consumption in one segment exceeds 1.2 A. Installed in the the primary segment or the expansion segments in front of a PDM module.
(8) Conforming to the range of operating temperatures for connected CANopen devices.

Modicon STB distributed I/O solution

Internal bus expansion, CANopen expansion, auxiliary power supply modules

Presentation

EOS and BOS internal bus expansion modules STBXBE1●00K

EOS and BOS internal bus expansion modules can be used to extend the island bus beyond the primary segment: there can be up to 6 expansion segments.
The EOS end of segment module must be installed in the last position of the island segment to be extended and the BOS beginning of segment module in the first position of the next expansion segment.
The EOS and BOS modules must be paired so they can collaborate with one another: EOS module STBXBE1100K only works with BOS module STBXBE1300K.
The old EOS-BOS module pairing STBXBE1000K and STBXBE1200K must be replaced with the EOS-BOS module pairing STBXBE1100K and STBXBE1300K.
Only the EOS and BOS modules STBXBE1100K and STBXBE1300K can be used with preferred modules.

The EOS end of segment module STBXBE1100K has a 24 V ⎓ external power supply input. This power supply is distributed to the preferred modules which need it via the internal bus output connector.
The BOS beginning of segment module STBXBE1300K incorporates a 5 V ⎓ logic power supply, generated from a 24 V ⎓ external power supply. This power supply is distributed to the I/O modules in the expansion segment by means of the island power supply bus, via the module bases.
The EOS and BOS modules are connected with a special Modicon STB cable equipped with IEE 1394 connectors (Firewire) and available in 5 different lengths (between 0.3 m and 14 m).

CANopen expansion module STBXBE2100K

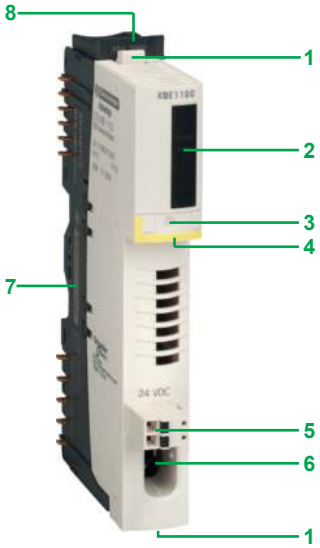
The CANopen expansion module STBXBE2100K is used to add standard CANopen V4.0 devices to the island configuration. An island can include up to 12 standard CANopen devices in a daisy chain, which do not exceed the system limit of 32 I/O modules.
The CANopen expansion module must be added in the last segment, at the end of the island bus. The last segment must be terminated with an STBXMP1100 termination plate.
The CANopen extension is treated as a subnet of the island bus. It must be terminated at both ends. The CANopen expansion module incorporates a CANopen bus termination. A 120 Ω termination must be added on the last CANopen device of the extension.
Standard CANopen devices must feature in the Advantys configuration software catalogue to be recognized as valid island modules.
If the profile for a standard CANopen device does not appear in the catalogue, please consult our Customer Care Centre.
The connection cables between the CANopen expansion module and a CANopen device or between 2 CANopen devices must comply with standard CiA-DR303-1, with resistance of 70 mΩ/m, and a cross-section of 0.25 to 0.35 mm^2 is recommended.

24 V ⎓/ 5 V ⎓ auxiliary power supply module STBCPS2111K

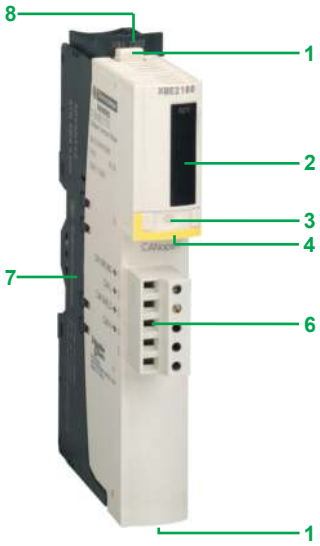
The auxiliary power supply module STBCPS2111K provides an additional 5 V ⎓ logic power supply to the modules installed on its right in an island segment.
The auxiliary power supply module works with the NIM module (in the primary segment) or with the BOS module (in an expansion segment) to provide an additional 5 V ⎓ logic power supply, when the I/O module current consumption in one segment exceeds 1.2 A.
The module converts the 24 V ⎓ voltage from an external power supply source to a 5 V ⎓ isolated logic power supply, supplying up to 1.2 A of current to the modules located on its right.
A power distribution module STBPDT●10●K is required after the auxiliary power supply module, to distribute the 5 V ⎓ logic power supply.

Modicon STB distributed I/O solution

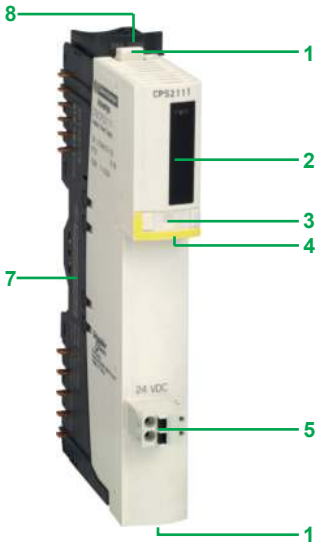
Internal bus expansion, CANopen expansion, auxiliary power supply modules



EOS/BOS internal bus expansion modules STBXBE1●00K



CANopen expansion module STBXBE2100K



Auxiliary power supply module STBCPS2111K

Description

The internal bus expansion modules, CANopen expansion module and auxiliary power supply module comprise:

1 Two catches for locking the module onto the base.

2 An LED display block indicates the various states of the module:

□ EOS module STBXBE1100K:

LED	Status	Indication
Green **CONN** LED	On	Correct connection between the EOS module and a BOS module or a preferred module
	Off	Incorrect connection between the EOS module and a BOS module or a preferred module, or the island power supply in the segment is disabled
Green **PWR** LED	On	A 24 V ⎓ power supply is applied and is more than 18 volts
	Off	A 24 V ⎓ power supply is not applied or is less than 18 volts

□ BOS module STBXBE1300K:

LED	Status	Indication
Green **RDY** LED	On	Logic power correct
	Off	Logic power incorrect
Green **CONN** LED	On	Correct connection between the BOS module and an EOS module or a preferred module, and a 24 V ⎓ power supply is present on the EOS module
	Off	Incorrect connection between the BOS module and an EOS module or a preferred module, or a 24 V ⎓ power supply is missing from the EOS module

□ CANopen expansion module STBXBE2100K:

LED	Status	Indication
Green **RDY** LED	On	Module powered up and operational
	Off	The module is not receiving a logic power supply from the NIM or BOS module, or is malfunctioning

□ Auxiliary power supply module STBCPS2111K:

LED	Status	Indication
Green **PWR** LED	On	Logic power correct
	Off	Logic power incorrect

3 A location for a user-customizable label (on module).

4 A color-coded stripe identifying the module type: yellow.

5 EOS and BOS modules STBXBE1●00K and auxiliary power supply module STBCPS2111K:
□ A 24 V ⎓ external power supply connector, either a screw-type (STBXTS1120) or spring-type (STBXTS2120) removable terminal block. External Phaseo power supplies (see page 104).

6 EOS module STBXBE1100K:
□ A Firewire internal bus output connector.
BOS module STBXBE1300K:
□ A Firewire internal bus input connector.
CANopen expansion module STBXBE2100K:
□ An internal bus output connector, either a screw or spring-type 5-way removable terminal block.

7 A module-specific mounting base, size 2 (width 18.4 mm).

8 A location for a user-customizable label (on mounting base).

Modicon STB distributed I/O solution

Internal bus expansion, CANopen expansion, auxiliary power supply modules

STBXBE1100K

STBXBE1300K

STBXBE2100K

STBCPS2111K

References

The STBXBE●●00K modules are supplied with all related parts: mounting base, screw-type connector, spring-type connector.

To set up these modules, the Advantys STBSPU1●●● configuration and setup software is required. This can be obtained separately (see page 94) or via the Unity Pro software suite (see page 90).

Description	Use with standard STB	Reference	Weight kg
EOS internal bus expansion module	Installed at the end of the segment (except for the last segment on the island)	**STBXBE1100K** *(1)*	–
BOS internal bus expansion module	Installed at the beginning of each expansion segment	**STBXBE1300K** *(2)*	–
Bus expansion module to external CANopen devices	To be installed at the end of the last segment to connect standard CANopen devices	**STBXBE2100K**	–
Auxiliary power supply 24 V ⎓/5 V ⎓ 1.2 A	To be installed in the primary segment or in an expansion segment (if necessary). Must be combined with a power distribution module installed after it.	**STBCPS2111K**	–

(1) Replaces EOS expansion module STBXBE1000K.
(2) Replaces BOS expansion module STBXBE1200K.

Modicon STB distributed I/O solution

Internal bus expansion, CANopen expansion, auxiliary power supply modules

References (continued)

Mandatory separate parts

Description	For use with	Length	Reference	Weight kg
Island bus expansion cables	STBXBE 1●00	0.3 m	**STBXCA1001**	–
		1 m	**STBXCA1002**	–
		4.5 m	**STBXCA1003**	–
		10 m	**STBXCA1004**	–
		14 m	**STBXCA1006**	–

Optional parts

Description	For use with	Sold in lots of	Reference	Weight kg
Keying pins	Bases and modules	60	**STBXMP7700**	–
	Removable terminal blocks	96	**STBXMP7800**	–
Sheets of user-customizable labels *(1)*	Bases and modules	25	**STBXMP6700**	–

Description	For use with	Type		Reference	Weight kg
Insulated screwdriver, 2.5 mm	Screw-type removable terminal blocks	Chrome vanadium steel	–	**STBXTT0220**	–

Spare parts

Description	For use with	Reference	Weight kg
Module bases size 2 (width 18.4 mm)	STBXBE1100	**STBXBA2400**	0.028
	STBXBE1300	**STBXBA2300**	0.033
	STBXBE2100	**STBXBA2000**	0.028
	STBCPS2111	**STBXBA2100**	0.033

Description	For use with	Type	Sold in lots of	Reference	Weight kg
2-way removable terminal blocks *(2)*	STBXBE1●00K and STBCPS2111K	Screw-type	10	**STBXTS1120**	–
		Spring-type	10	**STBXTS2120**	–
5-way removable terminal blocks *(2)*	STBXBE2100K	Screw-type	20	**STBXTS1110**	0.006
		Spring-type	20	**STBXTS2110**	0.006

(1) Template for user-customizable labels:
- Supplied with the documentation mini-CD-ROM provided with the NIM network interface modules
- Available on our website www.schneider-electric.com.
(2) All the STBXTS●●●● connectors can accommodate a flexible wire with a maximum cross-section of 1.5 mm², including the cable end. Max. tightening torque = 0.25 Nm for screw-type connectors.

Modicon STB distributed I/O solution

Power distribution modules

Applications		Distribution of the sensor and actuator power supplies to the Modicon STB I/O modules	
Power supply		24 V ⎓ *(1)*	

Interface connectors	Shared sensor and actuator power supply (inputs and outputs)	1 screw or spring-type 2-way removable connector	–
	Sensor power supply (inputs)	–	1 screw or spring-type 2-way removable connector
	Actuator power supply (outputs)	–	1 screw or spring-type 2-way removable connector
	Protective earth ground (PE)	Captive screw on mounting base, identified by its yellow/green colour	
Mounting base		STBXBA2200, size 2 (18.4 mm)	
Sensor/actuator power supply	Voltage range	19.2…30 V ⎓ (≥ 21 V ⎓ if a TeSys U is connected)	19.2…30 V ⎓ *(3)* (≥ 21 V ⎓ if a TeSys U is connected)
Voltage-detection thresholds	IN/OUT LED on	–	≥ 15 V ± 1 V ⎓
	IN/OUT LED off	–	< 15 V ± 1 V ⎓
Max. current	Shared sensor and actuator power supply (inputs and outputs)	4 A	6…12 A, depending on derating *(4)*
	Sensor power supply (inputs)	–	4 A *(4)*
	Actuator power supply (outputs)	–	8 A *(4)*
Protection against reverse polarity		–	Yes, on the actuator power supply
Overcurrent protection	Shared sensor and actuator power supply (inputs and outputs)	By 5 A time-lag fuse *(5)*	–
	Sensor power supply (inputs)	–	By 5 A time-lag fuse *(5)*
	Actuator power supply (outputs)	–	By 10 A time-lag fuse*(5)*
Maximum current on the earthing terminal		30 A (for 2 minutes)	
Hot swapping		No	
Operating temperature, horizontal mounting		0…60°C	-25…70°C *(6)*
Module type	Standard		**STBPDT3100K**
	Basic	**STBPDT3105K**	
Page		42 and 43	

(1) DC power supplies may be shared or separate, or shared with the 24 V ⎓ power supply of the network interface module.
(2) AC power supplies for a PDM module from a 3-phase transformer must be connected to the same phase.
(3) Use 24 V ⎓ safety extra low voltage (SELV) external power supplies.
(4) Module STBPDT3100K only. Take into account the combined current derating (total input and output currents):
- For -25...30°C range, the max. combined current is 12 A
- For 45°C, the max. combined current is 10 A
- For 60°C, the max. combined current is 8 A
- For 70°C, the max. combined current is 6 A

Distribution of the sensor and actuator power supplies to the Modicon STB I/O modules	
115/230 V ∿ *(2)*	**115/230 V ∿** *(2)*
1 screw or spring-type 2-way removable connector	–
–	1 screw or spring-type 2-way removable connector
–	1 screw or spring-type 2-way removable connector
Captive screw on mounting base, identified by its yellow/green colour	
STBXBA2200, size 2 (18.4 mm)	
85…265 V ∿	85…265 V ∿
–	> 70 V ± 5 V ∿
–	< 50 V ± 5 V ∿
4 A	–
–	5 A
–	10 A
–	Yes, on the actuator power supply
By 5 A time-lag fuse *(5)*	–
–	By 5 A time-lag fuse *(5)*
–	By 10 A time-lag fuse *(5)*
30 A (for 2 minuites)	
No	
0…60°C	
	STBPDT2100K
STBPDT2105K	
42 and 43	

(5) Built-in fuse on the PDM module. Can be replaced with the STBXMP5600 kit. Possibility of placing 2 spare fuses on the bus termination STBXMP1100.
(6) Module STBPDT3100K:
- For -25...0°C range, the supply voltage range is 20.4...30 V ⎓
- For 0...60°C range, the supply voltage range is 19.2...30 V ⎓
- For 60...70°C range, the supply voltage range is 19.2...26.5 V ⎓

Modicon STB distributed I/O solution

Power distribution modules

Presentation

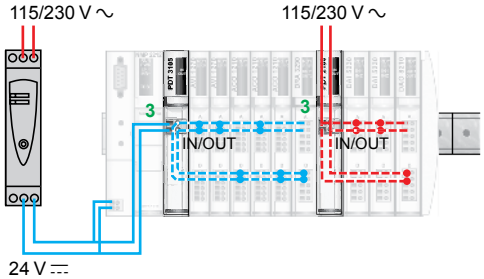
Power distribution modules (PDM) distribute the sensor and actuator field power supplies to the I/O modules of the island segments which require them.
These power supplies are distributed via the bases of the modules that are mechanically and electrically interconnected.

There are four PDM modules, according to the range and type of power supply distributed:
■ Two basic PDM modules:
□ STBPDT3105K: PDM module dedicated to distributing a single 24 V ⎓ field power supply.
□ STBPDT2105K: PDM module dedicated to distributing a single 115/230 V ∿ field power supply.
■ Two standard PDM modules:
□ STBPDT3100K: PDM module dedicated to the separate distribution of two 24 V ⎓ field power supplies.
□ STBPDT2100K: PDM module dedicated to the separate distribution of two 115/230 V ∿ field power supplies.

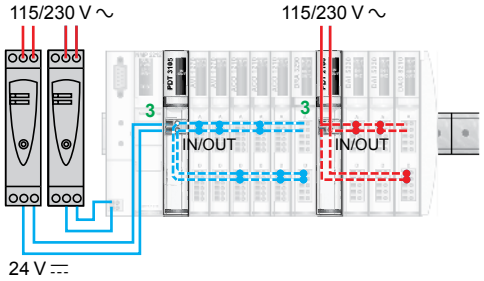
When an island segment is created, the 24 V ⎓, 115 V ∿ and 230 V ∿ I/O modules must be grouped together and managed by separate PDM modules.

The first PDM module in an island segment must be placed in the second position on the segment, after the NIM module in the primary segment or after the BOS expansion module in an expansion segment. The PDM modules that follow must be placed in the first position in the group of I/O modules they supply.

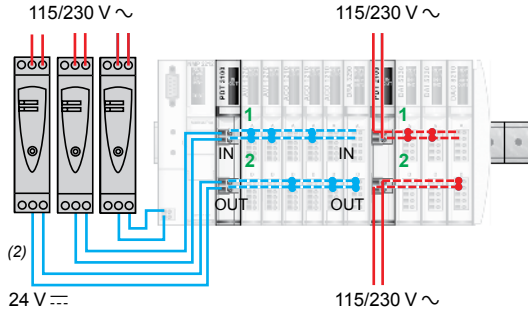
All PDM modules incorporate a protective earth (PE) connection via a captive screw, located at the base of the module. The protective earth (PE) is distributed to the I/O modules in the same way as the field power supplies, via the bases of the modules that are mechanically and electrically interconnected.



Configuration with basic PDM and one 24 V ⎓ power supply



Configuration with basic PDM and two separate 24 V ⎓ power supplies



Configuration with standard PDM and three separate 24 V ⎓ power supplies

Presentation (continued)

Basic PDM modules

STBPDT●105K basic PDM modules distribute the sensor and actuator field power supplies to the I/O modules *(1)* via a single supply bus **3**.
Basic PDM modules have 1 removable fuse, to protect the I/O modules they supply.

There are two possible configurations for the 24 V ⎓ supply for an island primary segment:

- A single 24 V ⎓ supply, for the NIM network interface module and the 24 V ⎓ I/O modules. Low-cost configuration.
- Two separate 24 V ⎓ supplies, for the NIM network interface module and the 24 V ⎓ I/O modules. This configuration allows disconnection of the 24 V ⎓ I/O power supply while maintaining that of the NIM module, and thus of the machine bus. This layout is used for example in a configuration with InterBus NIM module.

Standard PDM modules

STBPDT●100K standard PDM modules distribute the sensor and actuator field power supplies to the I/O modules *(1)* separately, via a sensor bus **1** and an actuator bus **2**.
Standard PDM modules have 2 removable fuses, to protect the I/O modules they supply.

There are three possible configurations for the 24 V ⎓ supply for an island primary segment:

- A single 24 V ⎓ supply, for the NIM network interface module and the 24 V ⎓ I/O modules.
- Two separate 24 V ⎓ supplies, for the NIM network interface module and the 24 V ⎓ I/O modules.
- Three separate 24 V ⎓ supplies, for the NIM network interface module, the 24 V ⎓ input modules and the 24 V ⎓ output modules.

The third configuration allows:

- Disconnection of the I/O power supply while maintaining the power supply to the NIM network interface module and thus to the machine bus. For example, in an InterBus NIM configuration.
- Isolation of the power supply to the outputs from that of the inputs to increase electromagnetic immunity.
- Independent power supply of the outputs, enabling connection of a Preventa module. If these outputs are disconnected, the inputs continue to be managed.

(1) One PDM power distribution module can supply power to both digital and analog I/O modules simultaneously.
(2) It is possible to insert a Preventa safety module between the 24 V ⎓ power supply and the actuator supply input on the PDM module. This layout makes it possible to disconnect the power supply of the outputs (actuators) while keeping the inputs (sensors) powered.
In addition, connecting the outputs of the Preventa module to a digital I/O module enables the status of an emergency stop mushroom head pushbutton to be determined. Consult the "Preventa safety functions and solutions" catalogue.

Modicon STB distributed I/O solution

Power distribution modules

Combinations of power distribution modules and STB I/O modules

STB power distribution module	Voltage	STB I/O modules						STB bus expansion modules *(1)*
		Digital (*discrete*)			Analog		Application-specific	
		Inputs	Outputs		Inputs	Outputs		
			Solid state	Relay				
STBPDT3100K (standard PDM module)	24 V ⎓	DDI3230K DDI3420K DDI3610K DDI3425K DDI3615K DDI3725●●	DDO3200K DDO3230K DDO3410K DDO3600K DDO3415K DDO3605K DDO3705●●	DRC3210K DRA3290K	AVI1255K AVI1275K AVI1270K AVI0300K AVI1400K ACI1225K ACI1230K ACI0320K ACI8320K ACI1400K ART0200K	AVO1255K AVO1265K AVO1250K AVO0200K ACO0120K ACO1225K ACO1210K ACO0220K ACO8220K	EPI2145K EHC3020KC	XBE1100K XBE1300K XBE2100K
STBPDT2100K (standard PDM module)	115 V ∿	DAI5230K DAI5260K	DAO8210K DAO5260K	–	–	–	–	
	230 V ∿	DAI7220K	DAO8210K	–	–	–	–	
STBPDT3105K (basic PDM module)	24 V ⎓	DDI3230K DDI3420K DDI3610K DDI3425K DDI3615K DDI3725●●	DDO3200K DDO3230K DDO3410K DDO3600K DDO3415K DDO3605K DDO3705●●	DRC3210K DRA3290K	AVI1255K AVI1275K AVI1270K AVI0300K AVI1400K ACI1225K ACI1230K ACI0320K ACI8320K ACI1400K ART0200K	AVO1255K AVO1265K AVO1250K AVO0200K ACO0120K ACO1225K ACO1210K ACO0220K ACO8220K	EPI2145K EHC3020KC	
STBPDT2105K (basic PDM module)	115 V ∿	DAI5230K DAI5260K	DAO8210K DAO5260K	–	–	–	–	
	230 V ∿	DAI7220K	DAO8210K	–	–	–	–	

(1) STB bus expansion modules can be connected following any PDM power distribution module.

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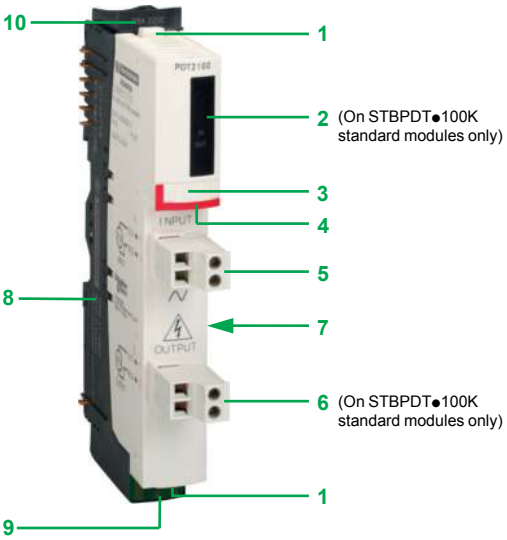
Modicon STB distributed I/O solution

Power distribution modules



STB power distribution modules

Description

STB power distribution modules comprise:
1 Two latches for locking the module on the base
2 An LED display block indicating the various states of the module (only on STBPDT●100K standard modules)

LED	State	Indication
Green **IN** LED	On	The sensor (input) field power supply is present.
	Off	The module is not receiving any external power supply or the fuse is blown or the module is faulty.
Green **OUT** LED	On	The actuator (output) field power supply is present.
	Off	The module is not receiving any external power supply or the fuse is blown or the module is faulty.

3 A slot for a customizable label (on the module)
4 A colour-coded module identification stripe:
□ Blue for 24 V ⎓ PDM modules
□ Red for 115/230 V ∼ PDM modules
5 A removable connector with screw-type (STBXTS1120) or spring-type (STBXTS2120) terminals, used to connect:
□ The sensor field power supply: standard PDM modules STBPDT2100K/3100K
□ The sensor and actuator field power supply: basic PDM modules STBPDT2105K/3105K
6 A removable connector with screw-type (STBXTS1120) or spring-type (STBXTS2120) terminals, used to connect: STBPDT2100K/3100K standard PDM modules only
7 On the right side of the module, one or two fuses that can be replaced by the user:
□ Two 5 A and 10 A time-lag fuses to protect the sensor and actuator buses respectively: standard PDM modules STBPDT2100K/3100K
□ One 5 A time-lag fuse to protect the sensor and actuator supply bus: basic PDM modules STBPDT2105K/3105K
8 A mounting base suitable for all PDM modules, size 2 (width: 18.4 mm)
9 A captive earthing screw (PE) (on the base)
10 A slot for a customizable label (on the base)

Modicon STB distributed I/O solution

Power distribution modules

STBPDT3100K

STBPDT2100K

References

The **STBPDT●10●K** power distribution modules are supplied with all the required parts: screw-type connectors, spring-type connectors and mounting base.

Power distribution modules

Type of power supply	Voltage	Type	Reference	Weight kg
⎓	24 V	Standard	**STBPDT3100K**	0.130
		Basic	**STBPDT3105K**	0.130
∼	115/230 V	Standard	**STBPDT2100K**	0.129
		Basic	**STBPDT2105K**	0.129

Optional parts

Description	For use with	Sold in lots of	Reference	Weight kg
Keying pins	Keying between the power distribution module and its base	60	**STBXMP7700**	–
	Keying between the power distribution module and removable terminals *(1)*	24	**STBXMP7810**	–
Sheets of labels for customization *(2)*	Bases and modules	25	**STBXMP6700**	–
Earthing kit	Earthing the cable shielding. Comprises 1 bar (length 1 m), 2 lateral supports, and an earthing terminal	–	**STBXSP3000**	–
Terminals for earthing kit	Cables, cross-section 1.5...6 mm²	10	**STBXSP3010**	–
	Cables, cross-section 5...11 mm²	10	**STBXSP3020**	–
Insulated screwdriver 2.5 mm	Screw-type removable terminals	–	**STBXTT0220**	–

(1) Supplied with STBXTS1130/2130 removable terminals.
(2) Sheet of 144 labels. A template sheet for the customizable labels is supplied with the documentation mini-CD-ROM.

Modicon STB distributed I/O solution

Power distribution modules

STBXSP3000 + STBXSP3010/3020

References (continued)

Spare parts

Description	Use for	Reference	Weight kg
Mounting base (width 18.4 mm)	Mounting STBPDT●10●K power distribution modules	**STBXBA2200**	0.035

Description	For use with	Sold in lots of	Reference	Weight kg
Removable terminals (2-way) *(1)*	Screw-type	10	**STBXTS1130**	0.006
	Spring-type	10	**STBXTS2130**	0.006

Designation	Description	Reference	Weight kg
Fuses *(2)*	5 A (lot of 5) and 10 A (lot of 5)	**STBXMP5600**	–

Phaseo regulated switch mode power supplies

Output voltage	Line input voltage 47...63 Hz	Nominal power	Nominal current	Reference	Weight kg
24 V ⎓	100...500 V single-phase or three-phase	72...960 W	3...40 A	See page 107	–

(1) All STBXTS●●●● connectors can accommodate a flexible wire with a maximum cross-section of 1.5 mm², including cable end. For screw-type connectors, the maximum tightening torque is 0.25 Nm.
(2) It is possible to place 2 spare fuses on the XMP1100 bus terminator.

Modicon STB distributed I/O solution

Digital I/O modules

DC inputs

Applications			Digital (discrete) input modules DC		
Nominal input voltage			24 V ⎓		
Number of channels			2	4	
Sensor type			2 or 3-wire + earth	2 or 3-wire	
Inputs	Logic	Default	Positive on each channel		
		User-configurable *(1)*	Positive or negative, selection by channel	–	Positive or negative, selection by channel
	Type (IEC/EN 61131-2)		Type 2	Type 1+	
	Internal power supply for 3-wire sensors		Yes (2 outputs)	Yes (4 outputs)	
Response time	Off-to-on		610 µs with 0.2 ms input filter time	3.5 ms	925 µs with 0.5 ms input filter time
	On-to-off		625 µs with 0.2 ms input filter time	3.8 ms	1.35 µs with 0.5 ms input filter time
Input filter time	Default		1 ms	3 ms	1 ms
	User-configurable *(1)*		0.2...16 ms	–	0.5...16 ms
Connection			Two STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors		
Base			STBXBA1000, size 1 (13.9 mm)		
Power distribution modules (PDM) *(2)*	Voltage		24 V ⎓		
	Reference		STBPDT3100/3105K		
Isolation	Channel-to-bus		1500 V ⎓ for 1 minute		
	Channel-to-channel		–		
Protection against	Reverse polarity		Yes		
	Short circuit and overload		Yes, time-lag fuse on the power distribution module (PDM)		
	Electronic protection of sensor power supply		Yes	No	Yes
Hot swapping supported			Yes, with standard NIM only		
Reflex actions supported *(1)*			Yes, as inputs only	No	Yes, as inputs only
Operating temperature, horizontal mounting *(3)*			-25…70°C *(4)*	0…60°C *(5)*	-25…70°C *(4)*
Current consumption on 5 V ⎓ logic bus			55 mA	45 mA	
Module type	Standard		**STBDDI3230K**		**STBDDI3420K**
	Basic			**STBDDI3425K**	
Page			56		

(1) Can be adjusted with STBSPU1●●● configuration software.
(2) One PDM Power Distribution Module is required per voltage type.
(3) Vertical mounting: apply derating of 8°C to the operating temperatures for horizontal mounting.
(4) For extended operating temperatures range, the power consumption can be only calculated using Advantys or Unity Pro software.
(5) For standard operating temperatures range, the power consumption can be calculated using Advantys or Unity Pro software, or a handwritten sheet available at the end of this catalog (see page 114) or an Excel worksheet available on our website, www.schneider-electric.com.

Digital (discrete) input modules			
DC			
24 V ⎓			
6		16	
2-wire		2 or 3-wire	
Positive on each channel			
–	Positive or negative, selection by channel	–	
Type 1		Type 3	
No		Yes (4 outputs)	
5.25 ms	1.21 ms	2 ms	
5.75 ms	1.74 ms	2 ms	
5 ms	1 ms		
–	–		
Two connectors (6-way): STBXTS1100 (screw-type) or STBXTS2100 (spring-type)		Two connectors (18-way): STBXTS1180 (screw-type) or STBXTS2180 (spring-type)	Modicon Telefast ABE 7 connector and cable *(6)*
STBXBA1000, size 1 (13.9 mm)		STBXBA3000, size 3 (28.1 mm)	STBXBA3000, size 3 (28.1 mm) *(7)*
24 V ⎓			
STBPDT3100/3105K			
1500 V ⎓ for 1 minute			
–			
Yes			
Yes, time-lag fuse on the power distribution module (PDM)			
No			
Yes			
No	Yes, as inputs only	No	
0…60°C *(5)*	-25…70°C *(4)*		
45 mA	55 mA	100 mA	
	STBDDI3610K		
STBDDI3615K		**STBDDI3725KS/KC**	**STBDDI3725** *(8)*
56			

(6) Modicon Telefast ABE7 connector and cable to be ordered separately (see page 102).
(7) Base to be ordered separately.
(8) For use with the Modicon Telefast ABE7 pre-wired system (see page 102).

Modicon STB distributed I/O solution

Digital I/O modules

DC (transistor) outputs

Applications			Digital (discrete) output modules DC (transistor)			
Nominal output voltage			24 V ⎓			
Number of channels			2		4	
Outputs	Logic	Default	Positive on each channel			
		User-configurable *(1)*	Positive or negative, selection by channel		–	Positive or negative, selection by channel
	Internal power supply for 3-wire actuators		Yes		No	
Load current			0.5 A	2 A	0.25 A	0.5 A
Response time	Off-to-on		620 µs for a 0.5 A load	520 µs	560 µs for a 0.25 A load	560 µs for a 0.5 A load
	On-to-off		575 µs for a 0.5 A load	720 µs	870 µs for a 0.25 A load	870 µs for a 0.5 A load
Fallback modes	Default		All channels to 0			
	User-configurable *(1)*		Yes *(2)*		–	Yes *(2)*
Fault recovery response	Default		Manual reset			
	User-configurable *(1)*		Yes *(3)*		–	Yes *(3)*
Connection			Two STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors			
Base			STBXBA1000, size 1 (13.9 mm)			
Power distribution modules (PDM) *(4)*	Voltage		24 V ⎓			
	Reference		STBPDT3100/3105K			
Isolation	Channel-to-bus		1500 V ⎓ for 1 minute			
	Channel-to-channel		–	500 V ⎓ for 1 minute	–	
Protection	Reverse polarity		Yes			
	Short circuit and overload		Yes *(5)*	*(6)*	Yes *(5)*	
	Electronic protection of actuator power supply		Yes	Yes, with internal power supply	No	No
Hot swapping supported			Yes, with standard NIM and depending whether the module is mandatory. See page 55			
Reflex actions supported *(1)*			Yes, 2 max.		No	Yes, 2 max.
Operating temperature, horizontal mounting *(7)*			-25…70°C *(8)*	-25…70°C *(8)*	0…60°C *(9)*	-25…70°C *(8)*
Current consumption on 5 V ⎓ logic bus			50 mA	45 mA	70 mA	
Module type	Standard		**STBDDO3200K**	**STBDDO3230K**		**STBDDO3410K**
	Basic				**STBDDO3415K**	
Page			56			

(1) Requires the STBSPU1●●● configuration software.
(2) Fallback states: hold last value, set to predefined value (0 or 1) on each channel individually.
(3) Manual or automatic reset, configurable for standard output modules on an island equipped with a standard NIM module.
(4) One power distribution module (PDM) is required per voltage type.
(5) Built-in time-lag fuses on the power distribution module (PDM).
(6) If an external power supply is used: 2.5 A time-lag fuses recommended on each channel (not supplied).
(7) Vertical mounting: apply derating of 8°C to the operating temperatures for horizontal mounting.

Digital (discrete) output modules			
DC (transistor)			
24 V ⎓			
6		16	
Positive			
–	Positive or negative, selection by channel	–	
No			
0.25 A	0.5 A	0.5 max. per channel	
550 µs at a resistive load of 250 mA	715 µs for a 0.5 A load	2 ms at 0.5 A load	
900 µs at a resistive load of 250 mA	955 µs for a 0.5 A load	2 ms at 0.5 A load	
All channels to 0			
–	Yes *(2)*	–	
Manual reset			
–	Yes *(3)*	–	
Two STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors		Two STBXTS1180 screw-type or STBXTS2180 spring-type 18-way connectors	Modicon Telefast ABE7 connector and cable *(10)*
STBXBA1000, size 1 (13.9 mm)		STBXBA3000, size 3 (28.1 mm)	STBXBA3000, size 3 (28.1 mm) *(11)*
24 V ⎓			
STBPDT3100/3105K			
1500 V ⎓ for 1 minute			
–			
Yes			
Yes *(5)*			
No			
Yes, with standard NIM and depending whether the module is mandatory. See page 55			
No	Yes, 2 max.	No	
0…60°C *(9)*	-25…70°C *(8)*	-25…70°C *(8)*	
90 mA		135 mA	
	STBDDO3600K		
STBDDO3605K		**STBDDO3705KS/KC**	**STBDDO3705** *(12)*
56			

(8) For extended operating temperatures range, the power consumption can be only calculated using Advantys or Unity Pro software.
(9) For standard operating temperatures range, the power consumption can be calculated using Advantys or Unity Pro software, or a handwritten sheet available at the end of this catalog (see page 114) or an Excel worksheet available on our website, www.schneider-electric.com.
(10) Modicon Telefast ABE7 connector and cable to be ordered separately (see page 102).
(11) Base to be ordered separately.
(12) For use with the Modicon Telefast ABE7 pre-wired system (see page 102).

Modicon STB distributed I/O solution

Digital I/O modules

AC inputs

Applications			Digital (discrete) input modules	
			AC	
Nominal input values	Voltage		115 V ∿	
	Frequence		50/60 Hz	
Number of channels			2	
Sensor type			2 or 3-wire + earth	2-wire
Inputs	Logic	Default	Positive	
		User-configurable *(1)*	Positive or negative, selection by channel	
	Type (IEC/EN 61131-2)		Type 1	
	Internal power supply for 3-wire sensors		Yes	No
Connection			Two STBXTS1110 screw-type or STBXTS2110 spring-type 5-way connectors	
Base			STBXBA2000, size 2 (18.4 mm)	
Power distribution modules (PDM) *(2)*	Voltage		115 V ∿	
	Reference		STBPDT2100/2105K	
Isolation	Channel-to-bus		∿ 1780 V for 1 minute	
	Channel-to-channel		–	1780 V ∿, 1 minute
Protection	Reverse polarity		Yes	
	Short circuit and overload		Yes, 5 A time-lag fuse on the power distribution module (PDM)	
	Electronic protection of sensor power supply		Yes	No
Hot swapping supported			Yes, with standard NIM only	
Reflex actions supported *(1)*			Yes, 2 max.	
Operating temperature, horizontal mounting *(3)*			0…60°C *(4)*	
Current consumption on 5 V ⎓ logic bus			40 mA	45 mA
Module type	Standard		**STBDAI5230K**	**STBDAI5260K**
	Basic			
Page			56	

(1) Requires the STBSPU1●●● configuration software.
(2) One PDM power distribution module is required per voltage type.
(3) Vertical mounting: apply derating of 8°C to the operating temperatures for horizontal mounting.
(4) For standard operating temperatures range, the power consumption can be calculated using Advantys or Unity Pro software, or a handwritten sheet available at the end of this catalog (see page 114) or an Excel worksheet available on our website, www.schneider-electric.com.

Digital (discrete) input modules
AC

230 V ∼	
50/60 Hz	
2	
2 or 3-wire + earth	
Positive	
Positive or negative, selection by channel	
Type 1	
Yes	
Two STBXTS1110 screw-type or STBXTS2110 spring-type 5-way connectors	
STBXBA2000, size 2 (18.4 mm)	
230 V ∼	
STBPDT2100/2105K	
∼ 1780 V for 1 minute	
–	
Yes	
Yes, 5 A time-lag fuse on the power distribution module (PDM)	
Yes	
Yes, with standard NIM only	
Yes, 2 max.	
0…60°C *(4)*	
40 mA	

STBDAI7220K
56

Modicon STB distributed I/O solution

Digital I/O modules

DC/AC (relay) and AC (triac) outputs

Applications			Digital (discrete) output modules	
			DC/AC (relay)	
Nominal output voltage			24 V ⎓ (relay contact) 115/230 V ∿ (relay contact)	
Number of channels			2 NO/NC contact relays and common	2 contact relays NO + NC
Outputs	Logic	Default	Positive	
		User-configurable *(1)*	Positive or negative, selection by channel	
	Internal power supply for 3-wire actuators		No	
Load current			2 A per contact	7 A per contact
Response time	Off-to-on		5.25 ms	10 ms
	On-to-off		6.75 ms	10 ms
Fallback modes	Default		Both channels de-energized	
	User-configurable *(1)*		Hold last value or each channel energized or de-energized	
Connection			Two STBXTS1100 screw-type or STBXTS2110 spring-type 5-way connectors	
Base			STBXBA2000	STBXBA3000
Power distribution modules (PDM) *(2)*	Voltage		24 V ⎓ (relay coil)	
	Reference		STBPDT3100/3105K	
Isolation	Channel-to-bus		1780 V ∿ for 1 minute	
	Channel-to-channel		500 V ∿ for 1 minute	
Protection	Reverse polarity		–	
	Short circuit and overload		Yes *(3)*	
	Electronic protection of actuator power supply		No	
Hot swapping supported			Yes, with standard NIM and depending whether the module is mandatory. See page 55	
Reflex actions supported *(1)*			Yes, 2 max.	
Operating temperature, horizontal mounting *(5)*			-25…70°C *(6)(7)*	
Current consumption on 5 V ⎓ logic bus			55 mA	
Module type	Standard		**STBDRC3210K**	**STBDRA3290K**
	Basic			
Page			57	

(1) Requires the STBSPU1●●● configuration software.
(2) One power distribution module (PDM) is required per voltage type.
(3) Built-in time-lag fuses on the power distribution module (PDM).
(4) 2.5 A time-lag fuses recommended on each channel (not supplied).
(5) Vertical mounting: apply derating of 8°C to the operating temperatures for horizontal mounting.

Digital (discrete) output modules	
AC (triac)	
115 V ∼	115/230 V ∼
2	
Positive	
Positive or negative, selection by channel	
Yes	
2 A at 30°C 1 A at 60°C	
0.5 cycles	10 ms
0.5 cycles	10.5 ms
Both channels to 0	
Hold last value or each channel set to 0 or 1	
Two STBXTS1100 screw-type or STBXTS2110 spring-type 5-way connectors	
STBXBA2000, size 2 (18.4 mm)	
–	115/230 V ∼
–	STBPDT2100/2105K
1780 V ∼ for 1 minute	
1780 V ∼ for 1 minute	–
Yes	
(4)	Yes *(3)*
No	
Yes, with standard NIM and depending whether the module is mandatory. See page 55	
Yes, 2 max.	
0…60°C *(8)*	
70 mA	45 mA

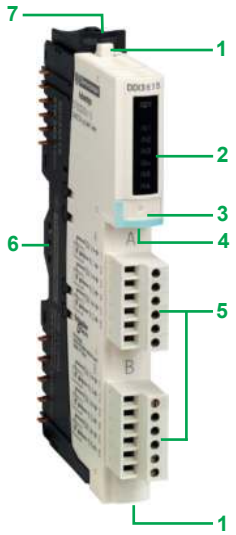
STBDAO5260K	STBDAO8210K

57

(6) With limiting between 60°C and 70°C:
- Only one channel active at any time, to be ensured by the application. Example: control of both directions of operation of a motor
- Maximum load: 2 A for STBDRC3210K, 4 A for STBDRA3290K
- Maximum supply voltage: 24.5 V ⎓
(7) For extended operating temperatures range, the power consumption can be only calculated using Advantys or Unity Pro software.
(8) For standard operating temperatures range, the power consumption can be calculated using Advantys or Unity Pro software, or a handwritten sheet available at the end of this catalog (see page 114) or an Excel worksheet available on our website, www.schneider-electric.com.

Modicon STB distributed I/O solution

Digital I/O modules



Presentation

The digital (discrete) I/O modules offer in the Modicon STB range comprises standard and basic modules of the following types:
- Digital input modules
- Solid state digital output modules
- Digital relay output modules

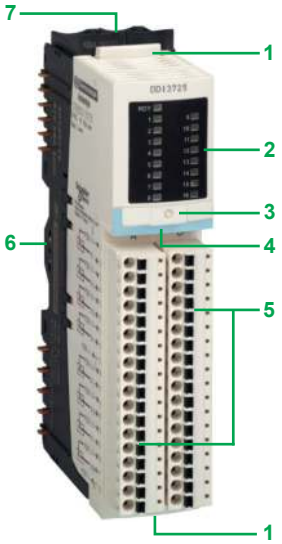
Standard digital I/O modules can be configured by the user, via the STBSPU1●●● Advantys STB configuration software, connected to the island's standard NIM network interface module. Basic digital I/O modules have default factory-set configurations and cannot be configured (see characteristics on page 56).

The basic digital I/O module offer comprises:
- Three 24 V ⎓ digital input modules, with 4, 6 and 16 channels
- Three 24 V ⎓ digital output modules, with 4, 6 and 16 channels

The standard digital I/O module offer comprises:
- Six digital input modules:
  - Three 24 V ⎓ digital input modules, with 2, 4 and 6 channels
  - Two 115 V ∿ digital input modules, with 2 channels
  - One 230 V ∿ digital input module, with 2 channels
- Six solid state digital output modules:
  - Two 24 V ⎓ digital output modules, with 2 channels
  - Two 24 V ⎓ digital output modules, with 4 and 6 channels
  - One 115 V ∿ digital output module, with 2 channels
  - One 230 V ∿ digital output module, with 2 channels
- Two digital relay output modules:
  - One relay output module, with 2 NO and NC contacts and common, with 2 channels
  - One relay output module, with 2 NO and NC contacts, with 2 channels

The references of the digital I/O modules provide all the parts required for their installation:
- Suitable base for the module
- Reference K: screw-type and spring-type connectors (except 16-channel digital I/O modules)
- Reference KS: screw-type connectors (16-channel digital I/O modules)
- KC references: spring-type connectors (16-channel digital I/O modules)

16-channel digital I/O modules can be used with the Modicon Telefast ABE 7 prewired or adaptor system, for easier wiring and to free up space in the electrical cabinet (see page 102). In this case, 16-channel modules must be ordered using references without the letter K (modules only). The Telefast system sub-bases and connectors must be ordered separately.



Description

Digital I/O modules comprise:
1 Two latches for locking the module on the base
2 An LED display block indicating the various states of the module:

Basic I/O modules	Standard I/O modules	Indication
Green **RDY** LED	Green **RDY** LED	Module status: ready, pre-operational, operational, etc.*(1)*
- *(3)*	Red **ERR** LED	Module error *(2)*
Green LEDs **IN1** to **IN6**, or **OUT1** to **OUT6**, or 1 to 16 dep. on modules	Green LEDs **IN1** to **IN6**, or **OUT1** to **OUT6** dep. on modules	State of each channel

3 A slot for a customizable label
4 A colour-coded module identification stripe (see colour codes on page 4)
5 Two connectors for removable screw or spring-type terminals
6 A mounting base specific to the module, size 2, 3 or 4 This base comprises:
7 A slot for a customizable label

(1) RDY is permanently on if the module is operational and flashes in various ways in the other states.
(2) If ERR is on or flashing, there is a fault on this module.
(3) Basic I/O modules: A module error is indicated by the ERR LED on the island's NIM network interface module. For information about module and channel status indication, refer to the "System Hardware Components Reference Guide" included on the STBSUS8800 CD-ROM or available on our website www.schneider-electric.com.

STBXBA3000
size 3 base

STBXSP3000 + STBXSP3010

Description (continued)

Mandatory separate parts

16-channel digital I/O module base:

Module size	Width	Base reference
3	28.1 mm	**STBXBA3000**

This base has to be ordered separately when using 16-channel modules with the Modicon Telefast ABE 7 pre-wired system.

Optional parts

Mechanical keying pins and identifiers
These devices ensure that each I/O module, with its base and wiring connectors are properly matched after dismantling or replacement.

Keying between module and base *(1)*	Keying between module and connectors *(1)*	Module identification *(2)*	Base identification *(2)*
STBXMP7700	STBXMP7800	STBXMP6700	**STBXMP6700**

The STBXMP6700 customizable labels make it much easier to recognize I/O modules and their bases.

External cable shielding connector
This optional device enables quick and easy connection of the external cable shielding *(1)*.

Connection and shielding kit comprising 2 lateral supports, 1 metal bar (length: 1 m) and one earthing terminal	STBXSP3000
Cable clamp size 1 (pack of 10) for shielded cable with external diameter 1.5 to 6 mm²	STBXSP3010
Cable clamp size 2 (pack of 10) for shielded cable with external diameter 5 to 11 mm²	STBXSP3020

Digital input modules and digital output modules
(24 V ⎓, 115/230 V ∿ and 2 A relay) include an earth connection, in which case this accessory is optional.
For analog modules, it is advisable to use this device as it enables quick and easy connection of the external cable shielding *(1)*.

Spare parts

Digital I/O module bases in 3 widths depending on the module:

Module size	Width	Base reference
1	13.9 mm	**STBXBA1000**
2	18.4 mm	**STBXBA2000**
3	28.1 mm	**STBXBA3000**

Removable terminals:

Connector type (2 connectors per module)	**5-way**	**6-way**	**18-way**
Screw-type terminals	STBXTS1110 (pack of 20)	STBXTS1100 (pack of 20)	STBXTS1180 (pack of 2)
Spring-type terminals	STBXTS2110 (pack of 20)	STBXTS2100 (pack of 20)	STBXTS2180 (pack of 2)

These removable terminals have between 5 and 18 different ways of coding the module/connector keying pins *(1)*.

(1) To find out
- How to code the keying pins
- How to use the connection and shielding kit
consult the System Planning and Installation Guide included on the STBSUS8800 CD-ROM or available on our website www.schneider-electric.com.
(2) Template file for printing labels on a laser printer (colour or black and white) or manual marking with indelible felt pen: included on the mini CD-ROM supplied with each NIM network interface module or available on our website www.schneider-electric.com.

STB digital output module operating modes

Output protection and reset following overload or short-circuit

Modicon STB digital output module	Short-circuit and thermal overload protection	Actuator power supply protection	Reset	Diagnostics
Basic modules, STBDDO3415K, 3605K, 3705●●	Internal electronic	Via PDM fuse	On elimination of the fault	Per group of 2 channels
Standard modules, STBDDO3200K, 3230K Actuator powered by the module	Internal electronic	Internal electronic	Configurable *(1)*	Per channel
Standard modules, STBDDO3200K, 3230K Actuator powered externally	Internal electronic	Via external fuse	Configurable *(1)*	Per channel
Standard modules, STBDDO3410K, 3600K	Internal electronic	–	–	Per group of 2 channels
Standard modules, STBDRC3210K, STBDRA3290K	External fuse	–	Configurable *(1)*	–
Standard modules, STBDAO8210K	External fuse	Via external fuse	Configurable *(1)*	–
Standard modules, STBDAO5260K	External fuse	–	Configurable *(1)*	–

Behaviour of digital output modules upon internal communication fault on the island or between PLC and NIM

Modicon STB digital output module	Output fallback
Basic modules, STBDDO3415K, 3605K, 3705●●	0 (open output)
Standard modules, STBDDO3200K, 3230K, 3410K, 3600K STBDRC3210K, STBDRA3290K STBDAO8210K, STBDAO5260K	Configurable *(2)*

Hot swapping and cold swapping of output modules

Swapping a module	While energized: *Hot swap*	Cold swap
	Standard NIM	**Any type of NIM**
Basic digital output module	The other I/O modules remain operational *(3)*	All I/O modules and power distribution modules (PDM) can be removed from the island. The removable connectors make it easier to do this.
Standard digital output module not configured "mandatory"	The other I/O modules remain operational *(3)*	
Standard digital output module configured "mandatory"	Output fallback according to configuration *(3)(4)* The island switches to pre-operational mode. The inputs are no longer updated on the network/fieldbus.	
Power distribution module (PDM)	Not permitted	

(1) The reset is user-configurable: automatic on elimination of the fault (default factory configuration) or intentional by the PLC.
Each module can be configured independently. This operation requires the Advantys STBSPU1●●● configuration software.
The tripping data is transmitted to the PLC via the NIM network interface module.
(2) The fallback is user-configurable: to 0 (default factory configuration), to 1, or to "hold last value" for warm standby and hot standby applications.
Each output channel on each module can be configured separately.
This operation requires the Advantys STBSPU1●●● configuration software.
(3) The STBSPU1●●● configuration software can be connected via a standard NIM. All standard I/O modules can be configured. Basic modules are not configurable (default factory settings only).
(4) For standard digital output modules, the fallback state is configurable:
- Fallback to level 0
- Fallback to level 1
- Fallback to a predefined level of the output range for analog modules
- Hold last value

Compatibility of STB digital input modules with inductive proximity sensors and photo-electric sensors

Details of the compatibility of Modicon STB digital input modules with OsiSense XS inductive proximity sensors and OsiSense XU photo-electric sensors are given on page 108.

Modicon STB distributed I/O solution

Digital I/O modules

STBDDI3425K

STBDDI3725KC

STBDDO3415K

STBDDO3705KC

STBDDI3725

STBXBA3000

References

Basic digital input modules

Input voltage	Connectors	Number of channels	Compliance with standard IEC/EN 61131-2	Reference	Weight kg
24 V ⎓	screw-type and spring-type	4	Type 1+	**STBDDI3425K**	0.111
		6	Type 1	**STBDDI3615K**	0.112
	screw-type	16	Type 3	**STBDDI3725KS**	0.086
	spring-type			**STBDDI3725KC**	
	–			**STBDDI3725** *(1)*	

Standard digital input modules

Input voltage	Connectors	Number of channels	Compliance with standard IEC/EN 61131-2	Reference	Weight kg
24 V ⎓	screw-type and spring-type	2	Type 2	**STBDDI3230K**	0.110
		4	Type 1+	**STBDDI3420K**	0.111
		6	Type 1	**STBDDI3610K**	0.112
115 V ∿		2	Type 1	**STBDAI5230K**	0.120
115 V ∿ (external supply)		2 (isolated)	Type 1	**STBDAI5260K**	0.065
230 V ∿		2	Type 1	**STBDAI7220K**	0.122

Basic digital output modules

Input voltage	Connections	Output current	Number of channels	Compliance with standard IEC/EN 61131-2	Reference	Weight kg
24 V ⎓	screw-type and spring-type	0.25 A	4	Yes	**STBDDO3415K**	0.111
			6	Yes	**STBDDO3605K**	0.112
	screw-type	0.5 A	16	Yes	**STBDDO3705KS**	0.086
	spring-type				**STBDDO3705KC**	
					STBDDO3705 *(1)*	

Standard digital output modules

Output voltage	Connectors	Output current	Number of channels	Compliance with standard IEC/EN 61131-2	Reference	Weight kg
24 V ⎓	screw-type and spring-type	0.5 A	2	Yes	**STBDDO3200K**	0.112
		2 A	2	Yes	**STBDDO3230K**	0.116
		0.5 A	4	Yes	**STBDDO3410K**	0.110
			6	Yes	**STBDDO3600K**	0.114

Mandatory separate parts *(1)*

Description	Base width	For I/O modules	Reference	Weight kg
I/O base	28.1 mm	STBDDI3725 STBDDO3705	**STBXBA3000**	0.048

(1) When using 16-channel digital I/O modules with the Telefast ABE7 prewired or adaptor system, order the module on its own and the base separately.

Modicon STB distributed I/O solution

Digital I/O modules

STBDRC3210K

STBDRA3290K

STBDAO5260K

STBDAO8210K

References (continued)

Standard relay output modules

Output voltage	Connectors	Output current	Number of channels	Compliance with standard IEC/EN 61131-2	Reference	Weight kg
24 V ⎓ or 115/230 V ∿ (relay)	screw-type and spring-type	2 A	2	Yes	**STBDRC3210K**	0.130
		7 A	2	Yes	**STBDRA3290K**	0.130

Standard triac output modules

Output voltage	Connectors	Output current	Number of channels	Compliance with standard IEC/EN 61131-2	Reference	Weight kg
115 V ∿	screw-type and spring-type	2 A	2 (isolated)	Yes	**STBDAO5260K**	0.067
115/230 V ∿			2	Yes	**STBDAO8210K**	0.125

Optional parts

Details	Use for	Sold in lots of	Reference	Weight kg
Keying pins	Modules	60	**STBXMP7700**	–
	Removable terminals	96	**STBXMP7800**	–
Sheets of labels for customization *(1)*	Bases and I/O modules	25	**STBXMP6700**	–
Insulated screwdriver 2.5 mm	Removable terminals	–	**STBXTT0220**	–

Spare parts

Description	Base width	For I/O modules	Reference	Weight kg
I/O base	13.9 mm	STBDDI STBDDO	**STBXBA1000**	0.024
	18.4 mm	STBDAI STBDAO STBDRC	**STBXBA2000**	0.028
	28.1 mm	STBDRA	**STBXBA3000**	0.048

Description	Type of connection		For I/O modules	Reference	Weight kg
Removable terminals Sold in lots of 20 *(2)*	6-way	Screw-type	STBDDI STBDDO	**STBXTS1100**	0.006
		Spring-type	STBDDI STBDDO	**STBXTS2100**	0.006
	5-way	Screw-type	STBDAI STBDAO STBDRC STBDRA	**STBXTS1110**	0.006
		Spring-type	STBDAI STBDAO STBDRC STBDRA	**STBXTS2110**	0.006
Removable terminals Sold in lots of 2 *(2)*	18-way	Screw-type	STBDDI3725●● STBDDO3705●●	**STBXTS1180**	0.047
		Spring-type	STBDDI3725●● STBDDO3705●●	**STBXTS2180**	0.034

(1) Sheets of 144 labels. The template sheet for the customization labels is supplied with the documentation mini-CD-ROM.
(2) All connectors can accommodate a flexible wire with a maximum cross-section of 1.5 mm², including the cable end. For screw-type connectors, the maximum tightening torque is 0.25 Nm.

Modicon STB distributed I/O solution

Analog I/O modules

Voltage inputs

Applications		Analog input modules Voltage		
Number of channels		2		
Range		0…10 V	- 10...+ 10 V	
Resolution		10 bits	9 bits + sign	11 bits + sign
Isolation	Channel-to-channel	30 V ⎓ (when sensor voltage is separate from logic bus voltage)		
Response time		5 ms for both channels		
Acquisition or update time		10 ms for both channels		
Input low-pass filter	Cut-off frequency	25 Hz		
Internal power supply for 3-wire inputs		Yes		
Connection (connectors supplied with modules)		2 x STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors		
Base (supplied with modules)		STBXBA1000, size 1 (13.9 mm)		
Power distribution modules (PDM) *(1)*	Voltage	24 V ⎓		
	Reference	STBPDT3100K/3105K		
Protection	Reverse polarity	Yes		
	Short-circuit and overload	Yes, by time-lag fuse on the Power Distribution Module (PDM)		
	Electronic protection of sensor power supply	No		Yes
	Cut sensor wire detection	No		Yes *(2)*
Absolute accuracy at 25°C		+/-0,75% of full scale	+/-0,5% of full scale	+/-0,75% of full scale
Offset calibration constant *(2)*		–		-8191 ... +8191 (representing -2.56 ... +2.56 V)
Maximum count *(2)*		–		23 800 ... 32 760 (representing 7.44 ... 10.24 V)
Hot swapping supported		Yes, with standard NIM only		
Reflex actions supported *(2)*		No		Yes, as inputs only
Operating temperature, horizontal mounting *(3)*		0…60°C *(4)*		
Current consumption on 5 V ⎓ logic bus		30 mA		
Module type	Standard			**STBAVI1270K**
	Basic	**STBAVI1255K**	**STBAVI1275K**	
Page		66		

(1) One Power Distribution Module (PDM) is required per voltage group.
(2) Requires Advantys STBSPU1●●● software.
(3) Vertical mounting: apply derating of 8°C to the operating temperatures for horizontal mounting.

Analog input modules	
Voltage	
4	8
1…5 V, 0…5 V, 0…10 V, -5 V…+5 V, -10 V…+10 V (default)	
15 bits + sign	
30 V ⎓ (when sensor voltage is separate from logic bus voltage)	
–	
13 ms	22 ms for all 8 channels
25 Hz	
–	
2 x STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors	
STBXBA2000, size 2 (18.4 mm)	
24 V ⎓	
STBPDT3100K/3105K	
Yes	
No	
Yes	
Yes *(2)*	
Typically +/-0,4% of full scale at 25°C and +/-0,45% max of full scale	
–	
–	
Yes, with standard NIM only	
Yes, for 2 inputs only (channels 1 and 2)	No
-25…70°C *(5)*	
90 mA	

STBAVI0300K	STBAVI1400K

66

(4) For standard operating temperatures range, the power consumption can be calculated using Advantys or Unity Pro software, or a handwritten sheet available at the end of this catalog (see page 114) or an Excel worksheet available on our website, www.schneider-electric.com.
(5) For extended operating temperatures range, the power consumption can be only calculated using Advantys or Unity Pro software.

Modicon STB distributed I/O solution

Analog I/O modules

Current and multirange inputs

Applications		Analog input modules	
		Current	
Number of channels		2	
Range		4…20 mA	0...20 mA
Resolution		10 bits	12 bits
Isolation	Channel-to-channel	30 V ⎓ (when sensor voltage is separate from logic bus voltage)	
Response time		5 ms for both channels	
Acquisition period		–	
Acquisition or update time		10 ms for both channels	
Input low-pass filter	Cut-off frequency	25 Hz	
Internal power supply for 3-wire inputs		Yes	
Connection (connectors supplied with modules)		2 x STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors	
Base (supplied with modules)		STBXBA1000, size 1 (13.9 mm)	
Power distribution modules (PDM) *(1)*	Voltage	24 V ⎓	
	Reference	STBPDT3100K/3105K	
Protection	Reverse polarity	Yes, by time-lag fuse on the Power Distribution Module (PDM)	
	Short-circuit and overload	–	
	Electronic protection of sensor power supply	No	Yes
	Cut sensor wire detection	No	Yes *(2)*
Absolute accuracy at 25°C		+/-0,75% of full scale	+/-0,5% of full scale
Offset calibration constant *(2)*		–	0 ... +8191 (representing 0 ... +5.12 mA)
Maximum count *(2)*		–	23 800 ... 32 760 (representing 14.88 ... 20.48 mA)
Hot swapping supported		Yes, with standard NIM only	
Reflex actions supported *(2)*		No	Yes, as inputs only
Operating temperature, horizontal mounting *(3)*		0…60°C *(4)*	-25…70°C *(5)*
Current consumption on 5 V ⎓ logic bus		30 mA	
Module type	Standard		**STBACI1230K**
	Basic	**STBACI1225K**	
Page		66	

(1) One Power Distribution Module (PDM) is required per voltage group.
(2) Requires Advantys STBSPU1●●● software.
(3) Vertical mounting: apply derating of 8°C to the operating temperatures for horizontal mounting.

Analog input modules			
Current			Multirange
4		8	2
4…20 mA (default) 0...20 mA	4…20 mA (default) 0...20 mA HART protocol tolerant	4…20 mA (default) 0...20 mA	Thermocouples B, E, J, K, R, S and T Temperature probe Pt 100, Pt 1000, Ni 100, Ni 1000, Cu 10 ± 80 mV
15 bits + sign			
200 V ⎓		30 V ⎓ (when sensor voltage is separate from logic bus voltage)	–
8 ms for all 4 channels	80 ms for all 4 channels	–	–
–			150... 360 ms (depending on range)
10 ms for all 4 channels	85 ms for all 4 channels	22 ms for all 8 channels	10 ms for both channels
985 Hz			25 Hz
No		Yes	–
2 x STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors			
STBXBA2000, size 2 (18.4 mm)			STBXBA1000, size 1 (13.9 mm)
24 V ⎓			
STBPDT3100K/3105K			
Yes, by time-lag fuse on the Power Distribution Module (PDM)			
–			Yes, by time-lag fuse on the PDM
No			
Yes *(2)*		Yes (4…20 mA only)	Yes *(2)*
+/-0,4% of full scale			*(6)*
–			–
–			–
Yes, with standard NIM only			Yes, with standard NIM only
	Yes, for 2 inputs only (1 and 2)	No	Yes, as inputs only
-25…70°C *(5)*			0…70°C *(4)*
95 mA		90 mA	30 mA
STBACI0320K	**STBACI8320K**	**STBACI1400K**	**STBART0200K**
66			66

(4) For standard operating temperatures range, the power consumption can be calculated using Advantys or Unity Pro software, or a handwritten sheet available at the end of this catalog (see page 114) or an Excel worksheet available on our website, www.schneider-electric.com.
(5) For extended operating temperatures range, the power consumption can be only calculated using Advantys or Unity Pro software.
(6) Please refer to our web site www.schneider-electric.com.

Modicon STB distributed I/O solution

Analog I/O modules

Voltage and current outputs

Applications		Analog output modules			
		Voltage			
Number of channels		2			
Range		0...10 V	- 10…+ 10 V	0...+ 10 V (default) - 10...+ 10 V	1...5 V 0...5 V 0...10 V -5...+5 V -10...+10 V (default)
Resolution		10 bits	9 bits + sign	11 bits + sign or 12 bits	15 bits + sign
Isolation	Channel-to-channel	30 V ⎓ (when actuator voltage is separate from logic bus voltage)			200 V ⎓
Output current per channel		5 mA			150 mA
Response time		3 ms for both channels			4 ms
Acquisition period		–			Adjustable up to 255 ms
Acquisition or update time		25 ms for both channels			8 ms
Internal power supply for 3-wire actuators		Yes			–
Connection (connectors supplied with modules)		2 x STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors			
Base (supplied with modules)		STBXBA1000, size 1 (13.9 mm)			STBXBA2000, size 2 (18.4 mm)
Power distribution modules (PDM) *(1)*	Voltage	24 V ⎓			
	Reference	STBPDT3100 K/3105 K			
Fallback states	Default	0 V on both channels			
	User-configurable *(1)*	–		Yes *(2)*	
Protection	Reverse polarity	Yes			
	Short-circuit and overload	2.5 A time-lag fuses recommended on each channel. To be supplied by the user			
	Electronic protection of sensor power supply	No		Yes	
Absolute accuracy at 25°C		+/-0,5% of full scale			+/-0,3% of full scale
Hot swapping supported		Yes, with standard NIM only			
Reflex actions supported *(1)*		No		Yes, 2 max.	Yes
Operating temperature, horizontal mounting *(4)*		0…60°C *(5)*			-25…70°C *(6)*
Current consumption on 5 V ⎓ logic bus		45 mA			265 mA
Module type	Standard			STBAVO1250K	STBAVO0200K
	Basic	STBAVO1255K	STBAVO1265K		
Page		66			

(1) One Power Distribution Module (PDM) is required per voltage group.
(2) Hold last value: reset to zero on both channels; go to a predefined value (between 0 V andfull scale) on each channel.
(3) Each channel individually adjustable: hold last value, go to a predefined value between 0 and 100% of the output range.
(4) Vertical mounting: apply derating of 8°C to the operating temperatures for horizontal mounting.

Analog output modules				
Current				
1	2			
4...20 mA		0...20 mA	4...20 mA	
15 bits + sign	10 bits	12 bits	15 bits + sign	
–	30 V ⎓ (when actuator voltage is separate from logic bus voltage)		200 V ⎓	
4...20 mA				
12 ms	3 ms for both channels		4 ms for both channels	0.4 mA/ms plus acquisition time per channel
–	–			
8 ms	25 ms for both channels		8 ms	
Yes	No			
1 x STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connector	2 x STBXTS1100 screw-type or STBXTS2100 spring-type 6-way connectors			
STBXBA2000, size 2 (18.4 mm)	STBXBA1000, size 1 (13.9 mm)		STBXBA2000, size 2 (18.4 mm)	
24 V ⎓				
STBPDT3100K/3105K				
4 mA	4 mA on both channels	0 mA on both channels		
Yes *(2)*	–	Yes *(2)*	Yes *(3)*	
–	Yes			
Yes, by time-lag fuse on the Power Distribution Module (PDM)				
–	No			
+/-0,3% of full scale	+/-0,5% of full scale		+/-0,3% of full scale	
Yes, with standard NIM only				
Yes	No	Yes, 2 max.	Yes	
-25…70°C *(6)*	0…60°C *(5)*		-25…70°C	
155 mA	40 mA		210 mA	
STBACO0120K		**STBACO1210K**	**STBACO0220K**	**STBACO8220K**
	STBACO1225K			

(5) For standard operating temperatures range, the power consumption can be calculated using Advantys or Unity Pro software, or a handwritten sheet available at the end of this catalog (see page 114) or an Excel worksheet available on our website, www.schneider-electric.com.
(6) For extended operating temperatures range, the power consumption can be only calculated using Advantys or Unity Pro software.

Modicon STB distributed I/O solution

Analog I/O modules

Presentation

The STB Modicon range of analog input modules is used for the acquisition of various analog values encountered in industrial applications.
STB analog output modules are used to control analog-controlled actuators such as variable speed drives, proportional control valves, etc.

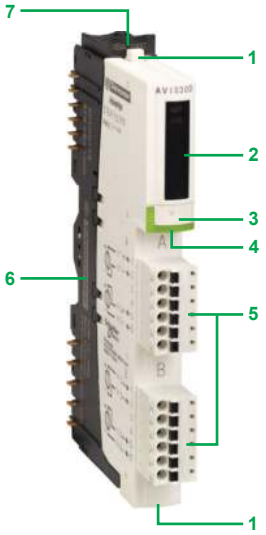
The STB analog I/O module offer comprises 6 basic modules and 13 standard modules. Only the standard modules can be configured by the user, via the STBSPU1●●● Advantys STB configuration software, connected to the island's standard NIM network interface module. The basic modules have default factory-set configurations and cannot be configured.

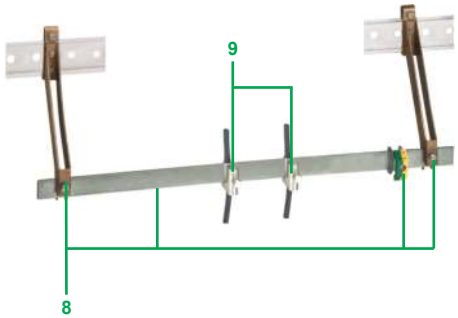
The basic analog I/O module offer comprises:
- ■ 3 analog input modules:
- □ STBAVI1255K: 0…10 V voltage input module, 2 channels
- □ STBAVI1275K: -10…+10 V voltage input module, 2 channels
- □ STBACI1225K: 4… 20 mA current input module, 2 channels
- ■ 3 analog output modules:
- □ STBAVO1255K: 0…10 V voltage output module, 2 channels
- □ STBAVO1265K: -10…+10 V voltage output module, 2 channels
- □ STBACO1225K: 4…20 mA current output module, 2 channels

The standard analog I/O module offer comprises:
- ■ 8 analog input modules:
- □ STBAVI1270K: -10…+10 V voltage input module, 2 channels
- □ STBAVI0300K: 1…5 V, 0…5 V, 0…10 V, - 5…+5 V and -10…+10 V voltage input module, 4 channels
- □ STBAVI1400K: 1…5 V, 0…5 V, 0…10 V, - 5…+5 V and -10…+10 V voltage input module, 8 channels
- □ STBACI1230K: 0…20 mA current input module, 2 channels
- □ STBACI0320K: 4…20 mA and 0…20 mA current input module, 4 channels
- □ STBACI8320K: 4…20 mA and 0…20 mA current input module, HART protocol tolerant, 4 channels
- □ STBACI1400K: 4…20 mA and 0…20 mA current input module, 8 channels
- □ STBART0200K: temperature probe (RTD)/thermocouple (TC)/voltage (mV) multirange input module, 2 channels
- ■ 5 analog output modules:
- □ STBAVO1250K: 0…10 V and -10…+10 V voltage output module, 2 channels
- □ STBAVO0200K: 1…5 V, 0…5 V, 0…10 V, - 5…+5 V, -10…+10 V voltage output module, 2 channels
- □ STBACO0120K: 4…20 mA current output module, 1 channel
- □ STBACO1210K: 0…20 mA current output module, 2 channels
- □ STBACO0220K: 4…20 mA current output module, 2 channels
- □ STBACO8220K: 4...20 mA current output module, HART protocol compliant, 2 channels

Modicon STB distributed I/O solution

Analog I/O modules





Description

Analog I/O modules comprise:

1 Two latches for locking the module on the base.
2 An LED display block indicating the various states of the module:

Basic I/O modules	Standard I/O modules	Indication
Green **RDY** LED	Green **RDY** LED	Module status *(1)*
–	Red **ERR** LED	Module error *(2)*

3 A slot for a customizable label (on the module).
4 A colour-coded module identification stripe (see colour codes on page 4).
5 Two connectors for removable screw or spring-type terminals.
6 A mounting base specific to the module.
7 A slot for a customizable label (on the base).

The references of the analog I/O modules provide all the parts required for their installation:

■ Appropriate mounting base for the module: STBXBA1000 (size 1, width 13.9 mm) or STBXBA2000 (size 2, width 18.4 mm).
■ STBXTS1100 screw-type or STBXTS2100 spring-type 6-way removable terminals.

To be ordered separately:

■ Earthing of the cable shielding is mandatory. The STBXSP3000 optional earthing kit can also be used to secure cables in installations subject to severe vibration.

8 STBXSP3000 optional earthing kit, comprising 2 lateral supports, 1 metal bar (length 1 m) and 1 earthing terminal.
9 STBXSP3010 terminals for 1.5…6 mm^2 cross-section cables or STBXSP3020 terminals for 5…11 mm^2 cross-section cables.

■ Optional mechanical keying pins:
□ Between I/O module and I/O base: STBXMP7700
□ Between wiring connectors and I/O module: STBXMP7800
These devices ensure that the I/O modules, bases and wiring connectors are properly matched after dismantling or replacement.

■ Sheets of customization labels: STBXMP6700.

(1) RDY LED on: module OK. RDY LED off: no power from PDM. RDY LED flashing: fault present.
(2) ERR LED on: internal error. ERR LED off: module OK. ERR LED flashing: module error. Please consult the "System Hardware Components Reference Guide" included on the STBSUS8800 CD-ROM or available on our website www.schneider-electric.com.

Modicon STB distributed I/O solution

Analog I/O modules

STBAVI1270K

STBAVI1400K

STBACI8320K

STBAVO1250K

STBAVO0200K

STBACO0220K

References

Modicon STB analog I/O modules are supplied with the appropriate base for the module, two screw-type connectors and two spring-type connectors (except for the STBACO0120K 1-channel analog output module, which is supplied with the base, one screw-type connector and one spring-type connector).

Standard analog input modules

Input signal	Connectors	Number of channels	Isolation between channels	Resolution (bits)	Reference	Weight kg
- 10…+ 10 V	Screw-type and spring-type	2	No	11 + sign	**STBAVI1270K**	0.115
1…5 V **0…5 V** **0…10 V** **-5 V…+5 V** **-10 V…+10 V**		4	Yes	15 + sign	**STBAVI0300K**	–
		8	No	15 + sign	**STBAVI1400K**	–
0...20 mA		2	No	12	**STBACI1230K**	0.116
4...20 mA and 0...20 mA		4	Yes	15 + sign	**STBACI0320K**	–
4...20 mA and 0...20 mA, HART tolerant		4	Yes	15 + sign	**STBACI8320K**	–
Thermo-couples -80…+80 mV		2	No	15 + sign	**STBART0200K**	–
4…20 mA		8	No	15 + sign	**STBACI1400K**	–

Basic analog input modules

Input signal	Connectors	Number of channels	Isolation between channels	Resolution (bits)	Reference	Weight kg
- 10…+ 10 V	Screw-type and spring-type	2	No	9 + sign	**STBAVI1275K**	0.115
0...10 V		2	No	10	**STBAVI1255K**	0.116
4…20 mA		2		10	**STBACI1225K**	–

Standard analog output modules

Output signal	Connectors	Number of channels	Isolation between channels	Resolution (bits)	Reference	Weight kg
0... 10 V and ± 10 V	Screw-type and spring-type	2	No	12	**STBAVO1250K**	0.116
1…5 V **0…5 V** **0…10 V** **-5 V…+5 V** **-10 V…+10 V**		2	Yes	15 + sign	**STBAVO0200K**	–
4… 20 mA		1	–	15 + sign	**STBACO0120K**	–
0... 20 mA		2	Yes	12	**STBACO1210K**	0.117
4...20 mA		2	Yes	15 + sign	**STBACO0220K**	–
		2	Yes	15 + sign	**STBACO8220K**	–

Basic analog output modules

Output signal	Connectors	Number of channels	Isolation between channels	Resolution (bits)	Reference	Weight kg
- 10…+ 10 V	Screw-type and spring-type	2	No	9 + sign	**STBAVO1265K**	0.115
0...10 V		2	No	10	**STBAVO1255K**	0.116
4… 20 mA		2	No	10	**STBACO1225K**	–

Modicon STB distributed I/O solution

Analog I/O modules

Separate parts

STBXSP3000 + STBXSP3010/3020

References (continued)

Optional parts

Details	Use for	Sold in lots of	Reference	Weight kg
Earthing kit	Earthing shielded cables Comprises 1 bar (1 m long) and 2 lateral supports	–	**STBXSP3000**	–
Terminals for earthing kit	Cables, cross-section 1.5...6 mm²	10	**STBXSP3010**	–
	Cables, cross-section 5...11 mm²	10	**STBXSP3020**	–
Keying pins	Modules	60	**STBXMP7700**	–
	Removable terminals	96	**STBXMP7800**	–
Customization labels *(1)*	Bases and I/O modules	25 sheets	**STBXMP6700**	–
Insulated screwdriver, 2.5 mm	Screw-type removable terminals	–	**STBXTT0220**	–

Spare parts

Description	Width of base	For I/O modules	Reference	Weight kg
I/O base	13.9 mm	STBAVI STBACI1230K/1225K STBART STBAVO1255K/1265K/1250K STBACO1225K/1210K	**STBXBA1000**	0.024
	18.4 mm	STBACI0320K/8320K	**STBXBA2000**	0.028

Description	Connection type	For I/O modules	Sold in lots of	Reference	Weight kg
Removable terminals (6-way) *(2)*	Screw-type	STBAVI STBACI1400K STBART STBAVO0200K STBACO0120K/0220K/8220K	20	**STBXTS1100**	0.006
	Spring-type	STBAVI STBACI STBART STBAVO STBACO	20	**STBXTS2100**	0.006

(1) Sheets of 144 labels. A template sheet for the customization labels is supplied with the documentation mini-CD-ROM.
(2) All connectors can accommodate a flexible wire with a maximum cross-section of 1.5 mm², including the cable end. For screw-type connectors, max. tightening torque: 0.25 Nm.

Modicon STB distributed I/O solution

Application-specific modules

Applications		Parallel interface for TeSys U and TeSys Quickfit starter-controllers	Counting
Interface connections		4 RJ45 connectors (cables to be ordered separately)	18-way spring-type removable connector (supplied with the module)
Mounting base (supplied with the module)		STBXBA3000, size 3 (28.1 mm)	
Swapping	Cold swap	Yes	
	Hot swap	Yes, depending on NIM and configuration with Advantys STB configuration software	
Power supply		24 V ⎓ via STBPDT3100K/3105K module (requires 21 V ⎓ min.)	24 V ⎓ via STBPDT3100K/3105K module
Consumption	On 5 V ⎓ logic bus	110 mA	100 mA
	On 24 V ⎓ sensor bus	100 mA max.	–
	On 24 V ⎓ actuator bus	50 mA min. (with all 8 outputs at state 0) 80 mA by outputs at state 1 (220 mA max. for 150 ms)	–
Inputs	Number	12, 3 per RJ45 port (states of the TeSys U/ TeSys Quickfit)	2 counter inputs (INA and INB) and 2 auxiliary inputs (RST and EN)
	Voltage	24 V ⎓ nominal 15…30 V at state 1 -3…+5 V at state 0	24 V ⎓ nominal 15…30 V at state 1, -3…+5 V at state 0 40 kHz max.
Input logic *(1)*	Default	Positive	Positive for all channels
	Configurable	–	Positive or negative for each channel
Outputs	Number	8 (2 per RJ45 port) (forward and reverse commands)	2 (OUT1 and OUT2)
	Nominal voltage	24 V ⎓ (limits 21…30 V)	24 V ⎓ (limits 19.2…30 V)
Output fallback states *(1)*	Default	All channels to 0	Set to state 0 for both output channels
	Configurable	Hold last value, set to state 0 or 1 for each channel	
Output logic *(1)*	Default	Positive for all channels	
	Configurable	Positive or negative for each channel	
Operating modes		Possible to connect: - 4 TeSys U starter-controllers - 4 TeSys Quickfit direct motor starters - 2 TeSys Quickfit reversing motor starters	Frequency counting, event counting, period measurement, one-off counting, modulo (loop) counting, up/downcounting *(1)*
Protection against short-circuits and overloads	On sensor bus	1 A fuse integrated in the module *(2)* and 5 A fuse in the PDM module *(3)*	–
	On actuator bus	5 A fuse integrated in the module *(2)* and 5/10 A fuse in the PDM module *(3)*	–
	On outputs	Yes, per channel (internal electronic)	
Operating temperature, horizontal mounting *(4)*		-25...70°C *(5)*	
Module type	Standard	**STBEPI2145K**	**STBEHC3020KC**
	Basic		
Page		74	79

(1) Configuration with Advantys STBSPU1●●●● software connected on a standard NIM module.
(2) Fuse cannot be replaced on-site.
(3) Fuse can be replaced by the user.
(4) Vertical mounting: apply derating of 8°C to the operating temperatures for horizontal mounting.
(5) For extended operating temperatures range, the power consumption can be only calculated using Advantys or Unity Pro software.

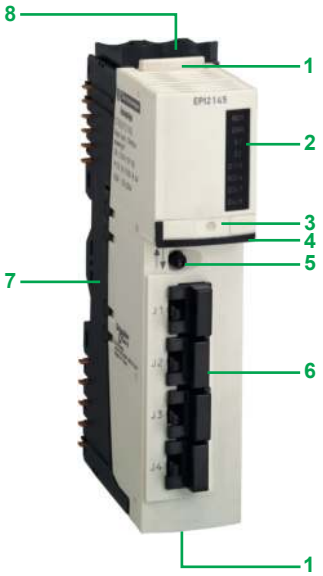
Applications	HART multiplexer

Interface connections		STBXTS2150, 18-way spring-type removable connector (supplied with the module)
Mounting base (supplied with the module)		STBXBA3000, size 3 (28.1 mm)
Swapping	Cold swap	–
	Hot swap	Yes
Power supply		⎓ 24 V
Operating voltage range		⎓ 19.2…30 V
Consumption	On logic bus	400 mA
Reverse polarity detection		Yes
Sensor power provided		No
Number of channels		4 HART channels
Signal filtering for analog pass-through		1 passive filter of 25 Hz with a 3 dB attenuation point
Channel to channel isolation		⎓ 30 V minimum
Data format		Floating point
Operating temperature, horizontal mounting *(4)*		0…60°C
Storage temperature		-40…85°C
Module type	Standard	**STBAHI8321KC**
	Basic	
Page		80

Modicon STB distributed I/O solution

Parallel interface module STBEPI2145K

TeSys U and TeSys Quickfit applications



Description

The STBEPI2145K application-specific parallel interface module is a component of the Modicon STB island designed for the remote connection of TeSys U starter-controllers and TeSys Quickfit prewired motor starters.

The STBEPI2145K application-specific parallel interface module comprises:

1 Two latches for locking the module on the base.
2 An LED display block indicating the various states of the module:

STBEPI2145K module	Indication
Green **RDY** LED	Module status *(1)*
Red **ERR** LED	Module error *(2)*
Green **S1** and **S2** LEDs	Position of selector switch **5** *(3)*
Green **O1/5**, **O2/6**, **O3/7** and **O4/8** LEDs	State of outputs

3 A slot for a customizable label (on the module).
4 A colour-coded module identification stripe: black.
5 A selector switch for selecting the outputs displayed on the display block: outputs 1 to 4 or outputs 5 to 8.
6 Four RJ45 ports, for connecting:
- 4 TeSys model U starter-controllers
- 4 direct motor starters with TeSys Quickfit components
- 2 reversing motor starters with TeSys Quickfit components
- *(4)*

7 A mounting base, size 3 (28.1 mm).
8 A slot for a customizable label (on the base).

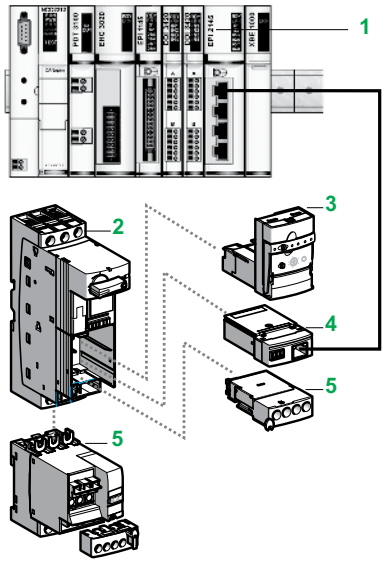
Each RJ45 port has 2 outputs (forward and reverse commands) and 3 inputs (starter-controller states). That is, a total of 8 outputs and 12 inputs for the STBEPI2145K module.

(1) RDY is permanently on if the module is operational. If RDY is off, the PDM is not supplying power. If RDY is flashing, the module is in an error state.
(2) If ERR is on or flashing, the module has an internal error.
For information about module and channel status indication, refer to the "System Hardware Components Reference Guide" included on the STBSUS8800 CD-ROM or available on our website www.schneider-electric.com.
(3) S1: Output bank 1 (outputs 1 to 4)
S2: Output bank 2 (outputs 5 to 8).
(4) The STBEPI2145K module also allows "mixed" TeSys U and TeSys Quickfit connections, within the limits of the available RJ45 ports.

Modicon STB distributed I/O solution

Parallel interface module STBEPI2145K

TeSys U and TeSys Quickfit applications



TeSys U starter control application

Presentation of the TeSys U starter-controller *(1)*

The TeSys U starter-controller is a direct motor starter that performs the following functions:

- ■ Protection and control of single-phase or three-phase motors:
  - □ Disconnects power
  - □ Protects against overcurrent and short circuits
  - □ Protects against thermal overload
  - □ Performs power switching
- ■ Application control:
  - □ Provides protection alarms and application monitoring: duration of use, number of faults, motor current values, etc.
  - □ Provides a logging function

Structure of a TeSys U starter with an STBEPI2145K module *(1)*

The starter-controller functions are implemented with a click-lock adjustment, thus eliminating wiring:

- ■ On a power base **2** (LU2B + LU9BN11)
- ■ Of a 24 V ⎓ control unit **3** (LUCB/D/C/M ●●BL) for 0.09 to 15 kW motors
- ■ Of a parallel communication module (LUFC00) **4**
- ■ Of options (additional contacts, reverser blocks) **5**, including LU9M1●

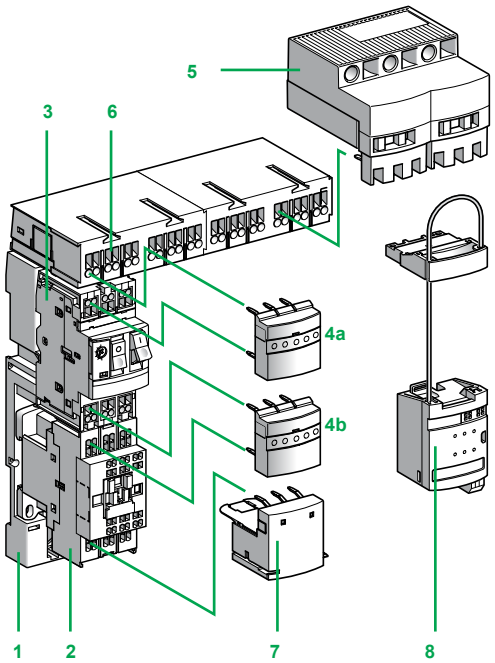
Combined with a TeSys U starter, each of the 4 channels of the STBEPI2145K application-specific module features:

- ■ 2 outputs:
  - □ Starter control
  - □ Reversal control
- ■ 3 inputs:
  - □ State of circuit breaker (position of lever)
  - □ Presence of fault (short circuit, thermal)
  - □ State of main contactor (closed/open)

(1) TeSys U components: please consult the "TeSys U starter-controllers*" catalogue.*

Modicon STB distributed I/O solution

TeSys Quickfit for motor starter components



TeSys Quickfit components for motor starters

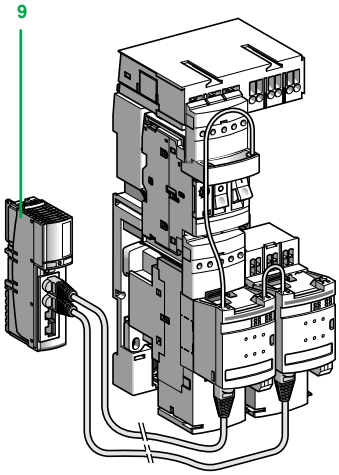
TeSys Quickfit is a modular system that standardizes and simplifies the installation of motor starters.
Combined with GV2 ME circuit breakers and model d (LC1) contactors from 9 to 25 A, TeSys Quickfit simplifies the installation of motor starters with spring-type terminals up to 11 kW/400V.

TeSys Quickfit provides elements for prewiring the:
- Power circuits
- Control circuits

The installation of a motor starter is therefore a quick, easy, reliable and open-ended process.
TeSys Quickfit also:
- Allows for customization of the motor starter at a later date
- Reduces maintenance time
- Saves space inside the equipment by reducing the number of terminals, cable ducts and intermediate interfaces

Elements for prewiring the power section

The TeSys Quickfit system provides the following components for prewiring the power section:
- A power kit comprising, for each output, a mounting plate **1** for the contactor **2** and the circuit breaker **3**, as well as two power connection modules **4a** and **4b**
- A power splitter box **5** for 2 or 4 starters
- Fixed terminals **6** for connecting a power supply up to 60 A (16 mm^2)
- Removable terminals **7** for connecting the motor power supply cables and the earth cables (6 mm^2)



TeSys Quickfit components for motor starters (continued)

Elements for prewiring the control section

For prewiring the control section, the TeSys Quickfit system provides the control connection module **8** **LAD9AP3●●** for connecting motor starters to the processing unit (PLC) via the Modicon parallel interface module **9** **STBEPI2145K** without the use of tools.

The **LAD9AP3●●** control connection module is mounted directly on the contactor and the circuit breaker of each motor starter. It integrates the status and control information of this motor starter.
A mechanical locking device 2 for the system on the head of the contactor ensures faultless connection regardless of the conditions of use (vibration, shock, etc.). Four versions are available: for direct or reversing start, with or without contactor coil interface relay.

The lower part of the **LAD9AP3●●** module has several external connectors, including an RJ45 socket, for connection to the **STBEPI2145K** parallel interface module via RJ45 cables **10** **LU9R●●** , which are available in different lengths.

The following information is available for each motor starter:
- 2 inputs: status of circuit breaker and status of contactor
- 1 output: contactor coil control

Connection to the STBEPI2145K parallel interface module:
- A direct motor starter uses 1 RJ45 channel
- A reversing motor starter uses 2 RJ45 channels

(1) Please consult the "Motor starter solutions. Motor control and protection components" catalogue.

Modicon STB distributed I/O solution

Parallel interface module STBEPI2145K

TeSys U and TeSys Quickfit applications

STBEPI2145K

References

The STBEPI2145K parallel interface module is supplied with the appropriate mounting base for the module.

Module for TeSys U and TeSys Quickfit starter-controllers

Power supply type	Voltage	Reference	Weight kg
⎓	24 V	**STBEPI2145K**	0.165

Mandatory separate parts

Description	Use	No. (1)	Length	Reference	Weight kg
Connecting cables An RJ45 connector at each end	For connecting the STBEPI2145K module to the TeSys U *(2)* and TeSys Quickfit *(3)* starter-controller	1	0.3 m	**LU9R03**	0.0450
			1 m	**LU9R10**	0.065
			2 m	**490NTW00002**	–
			3 m	**LU9R30**	0.125
			5 m	**490NTW00005**	–
			12 m	**490NTW00012**	–

Optional parts

Description	Use	Sold in lots of	Reference	Weight kg
Keying pin	For application-specific module	60	**STBXMP7700**	–
Sheets of labels for customization *(4)*	Bases and I/O modules	25	**STBXMP6700**	–

Spare parts

Description	Use	Reference	Weight kg
Base size 3, 28.1 mm	Mounting application-specific module on DIN rail	**STBXBA3000**	0.048

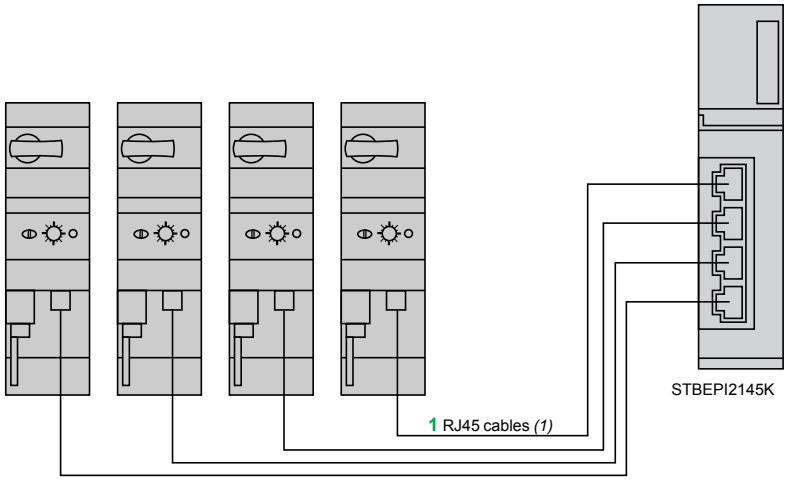
(1) For key to numbers, see page 75.
(2) TeSys U forward only and forward/reverse require only 1 cable.
(3) TeSys Quickfit forward only requires 1 cable, TeSys Quickfit forward/reverse requires 2 cables.
(4) Sheets of 144 labels. The template sheet for the customization labels is supplied with the documentation mini-CD-ROM.

Modicon STB distributed I/O solution

Parallel interface module STBEPI2145K

TeSys U applications

TeSys U starter-controllers: Remote control

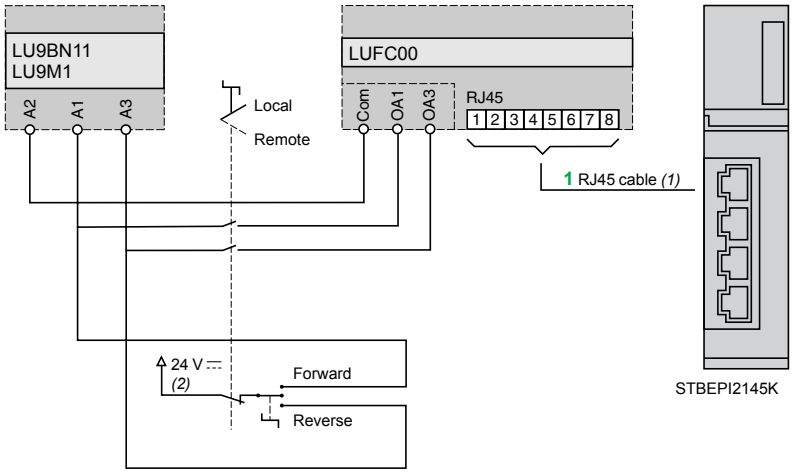


Simple connection of an STBEPI2145K parallel interface module to 4 TeSys U starter-controllers for remote control via PLC.

For each TeSys U starter-controller:
- LU9BN11 or LU9BM1: Prewired coil, supplied with the TeSys U power base.
- LUFC00, parallel communication module: to be ordered separately.
- 1 RJ45 cable *(1)*.

(1) Cables: for key and references, see page 74.

TeSys U local and remote control

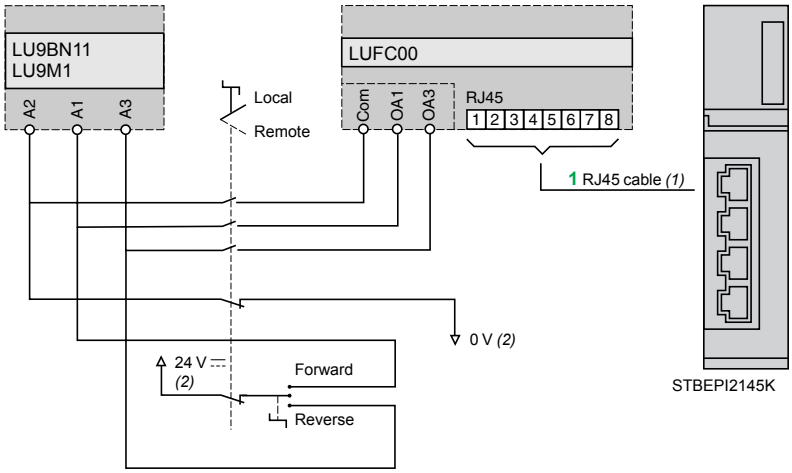


Schematic diagram of simple switching between remote control via Modicon STBEPI2145K and local control by operator: scheme for one TeSys U starter-controller.

The 0 V reference is supplied by the STBEPI2145K parallel interface module via the cable to LUFC00 *(1)*.

(1) Cables: for key and references, see page 74.
(2) 24 V ⎓ power supply of the Modicon STB automation island common to the STBPDT310●K power distribution module.

TeSys U local control, remote control and maintenance



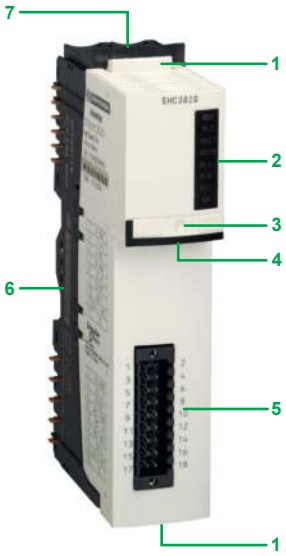
Schematic diagram of switching between remote control via Modicon STBEPI2145K and local control by operator: scheme for one TeSys U starter-controller.

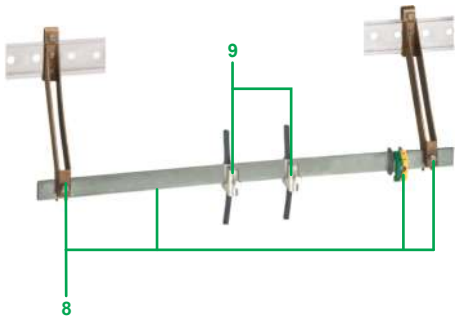
The 24 V ⎓ power supply is local to the TeSys U starter-controller *(1)*.
In the absence of remote control, if the Modicon STB automation island is switched off or disconnected, the operator can control the running of the motor.

(1) Cables: for key and references, see page 74.
(2) 24 V ⎓ power supply local to the TeSys U starter-controller *and common to the STBPDT310●K power distribution module.*

Modicon STB distributed I/O solution

STBEHC3020KC 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 STBEHC3020KC counter module performs these functions for a Modicon STB automation island (controlled by a master connected to the island) with a maximum counting frequency of 40 kHz.

The STBEHC3020KC module, with 1 counter channel, accepts typical 24 V ⎓ sensors (proximity sensors, photoelectric sensors, incremental encoders or mechanical contacts) as inputs *(1)*. The module has two 24 V ⎓ 0.5 A solid state outputs.

The Advantys configuration software is used to select and configure one of the six functions the module can perform.

Description

The STBEHC3020KC counter module comprises:
1 Two latches for locking the module on the base.
2 An LED display block indicating the various states of the module:

Standard STBEHC3020KC module	Indication
Green **RDY** LED	Module status *(2)*
Red **FLT** LED	Module error *(3)*
Green **OUT1** and **OUT2** LEDs	State of the 2 outputs
Green **INA** and **INB** LEDs	State of the 2 counter inputs
Green **RST** LED	State of the Reset input
Green **EN** LED	State of the EN enable input

3 A slot for a customizable label (on the module).
4 A colour-coded module identification stripe: black.
5 A connector for STBXTS2150 18-way removable spring-type terminals (supplied with the module).
6 A mounting base, size 3 (28.1 mm).
7 A slot for a customizable label (on the base).

To be ordered separately:
- An earthing kit, recommended for connecting the cable shielding:
8 STBXSP3000 earthing kit, comprising 2 lateral supports, 1 metal bar (length 1 m) and 1 earthing terminal.
9 STBXSP3010 terminals for 1.5…6 mm² cross-section cables or STBXSP3020 terminals for 5…11 mm² cross-section cables.
- STBXMP7700 optional mechanical keying pin between the module and the base.

This device ensures that the module and its base are properly matched if dismantled or replaced.
- Sheets of labels for customization: STBXMP6700.

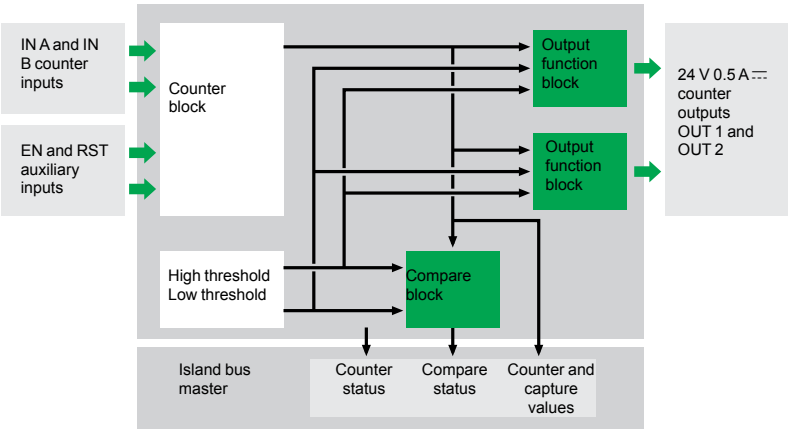
(1) The counting frequency is limited to 400 Hz with mechanical contacts.
(2) RDY is permanently on if the module is operational. If RDY is off, the PDM is not supplying power. If RDY is flashing, the module is in an error state.
(3) If FLT is on or flashing, the module has an internal error.
For information about module and channel status indication, refer to the "System Hardware Components Reference Guide" included on the STBSUS8800 CD-ROM or available on our website www.schneider-electric.com.

Modicon STB distributed I/O solution

STBEHC3020KC counter module

Operation

Counter channel block diagram



Depending on the counting function used (see functional characteristics page 78), the I/O of the STBEHC3020KC module are assigned to:

- Input IN A, connected to a sensor.
- Inputs IN B, EN and RST, connected to a sensor or activated by the automation island master controller via the fieldbus.

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

Functional characteristics

Configurable functions	Number	1 of the 6 configurable functions (using the Advantys configuration software)
	Frequency meter	This basic function measures the frequency received on the IN A input. This frequency is always expressed in hertz (number of pulses per second), with a precision of 1 Hz. 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 1 to 255. The maximum 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)
	Event counting	This function provides the value of the number of pulses received on the IN A input during a unit of time. The unit of time is configurable: 0.1s, 1s, 10 s or 1 minute. The IN B input can be used to reset the internal time base which provides the time unit. The maximum number of pulses counted during a unit of time is 65,535. The minimum pulse duration on the IN A input is 10 µs (without filtering). Response time: < 0.5 ms
	Period measurement	Measures the elapsed time during an event or between two events (on IN A input) according to the selectable time base of 10 µs, 100 µs or 1 ms. The maximum event duration is 0.655 s, 6.55 s, or 65.5 s, respectively. The maximum frequency on the IN A input is 200 Hz. Response time: < 0.5 ms
	Downcounting	The IN B input starts or restarts the counter by resetting it to 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 maximum setpoint value is 65,535. The maximum 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 it to 0. The IN B input also captures the previous counting value before the reset to 0. When the counter is running, any pulse received on the IN A input increases the counter. The counter automatically returns to zero when the number of pulses received equals the modulo defined by the high threshold value. The maximum modulo value is 65,535. The maximum 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 it to the preset value. When the counter is running, counting increases or decreases according to the pulses received on the IN A and IN B inputs (by default, IN A increases the counter and IN B decreases the counter). By configuration: □ Input IN B can define the counting direction of the pulses received on IN A. □ Inputs IN A and IN B can receive signals from an incremental encoder. The counter value is limited to a low limit of 0 and a high limit of 65,535. Response time: < 5 ms
	OUT1 and OUT2 output functions	Depending on requirements, each of the counter module's two outputs can be configured for one of the following operating modes: □ No direct action. □ 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 counter passes the low threshold (downcounting). □ A pulse is generated on the output when the counter passes the low threshold (upcounting). □ A pulse is generated on the output when the counter passes the high threshold (downcounting). □ A pulse is generated on the output when the counter passes the high threshold (upcounting). □ The output is activated when the counter is started (RUN). This option is only available for the downcounter function. □ The output is activated when the counter is stopped (STOP). □ The output is activated when the captured value is less than the low threshold. This option is only available for the modulo function. □ The output is activated when the captured value is between the low threshold and the high threshold. This option is only available for the modulo function.

Modicon STB distributed I/O solution

STBEHC3020KC counter module

PF516001

STBEHC3020KC

References

The STBEHC3020KC counter module is supplied with the appropriate base for the module and the 18-way spring-type removable connector.

Description	Input type	Reference	Weight kg
Counter module with 1 x 40 kHz channel	2/3-wire detector, 24 V ⎓ Incremental encoder, 24 V ⎓ Mechanical contacts	**STBEHC3020KC**	–

Optional parts

Description	Use	Sold in lots of	Reference	Weight kg
Earthing kit *(1)*	Earthing the cable shielding. Comprises 1 bar (length 1 m), 2 lateral supports and 1 earthing terminal	**–**	**STBXSP3000**	–
Terminals for earthing kit	Cables cross-sections 1.5…6 mm²	**10**	**STBXSP3010**	–
	Cables cross-sections 5…11 mm²	**10**	**STBXSP3020**	–
Keying pin	Counter module	**60**	**STBXMP7700**	–
Sheets of labels for customization *(2)*	Bases and I/O modules	**25**	**STBXMP6700**	–
Insulated screwdriver 2.5 mm	Removable screw-type terminals	–	**STBXTT0220**	–

PF516000

STBXSP3000 + STBXSP3010

Spare parts *(3)*

Description	Use	Reference	Weight kg
Mounting base size 3 (28.1 mm)	Mounting module on DIN rail	**STBXBA3000**	0.048
Removable terminals *(3)*	18 spring-type terminals	**STBXTS2150**	–

(1) Earthing kit recommended (mandatory for high-frequency counting).
(2) Sheets of 144 labels. The template sheet for the customization labels is supplied with the documentation mini-CD-ROM.
(3) All connectors can accommodate a flexible wire with a maximum cross-section of 1.5 mm², including the cable end.

Modicon STB distributed I/O solution

STBAHI8321KC HART Multiplexer

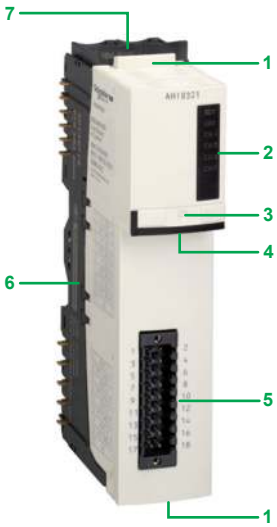
Presentation

Highway Addressable Remote Transducer Protocol (HART) is the global standard for sending and receiving digital information across analog wires between smart devices and a control or monitoring system. The standard is controlled by the HART Communications Foundation.

■ Most control systems can only monitor or control a single field instrument's variable via the analog signal. This solution allows access via Ethernet to the many additional variables and parameters of HART smart instruments.
■ The HART multiplexer can assist in the Configuration, Maintenance and Diagnosis of remote HART field instruments.
■ This solution allows users to benefit from preventative maintenance information provided by HART smart instruments. This can help the move to cost saving Predictive Maintenance.

The STBAHI8321, when used with a HART enabled NIM (STBNIP2311 version 4.01 and above), creates a HART multiplexer solution allowing remote systems to obtain digital data over Ethernet from HART instruments (sensor or actuator devices) on 4-20mA current loops. HART data such as Process Values and diagnostic information can be read by PCs, HMIs.

■ Provides access to HART-enabled intelligent field instruments.
■ This modular solution is very expandable. A HART multiplexer island consists of 1..8 HART modules. This gives 4 to 32 HART devices. (1 HART module = 4 channels = 4 HART devices)
■ Allows PLCs and SCADA to access data from HART instruments using MODBUS commands over Ethernet.
■ HART data can also be monitored on the multiplexer's web pages.
■ Transparently attaches to the 4-20mA current loop between controller and HART device.
■ Reading or writing the instrument's analog signal is possible via optional STB IO modules on the STB island or via a controller's analog module.
■ Supports HART Protocol versions v5,v6 and v7
■ Can be configured by Advantys Configuration Software.
■ DTM support allows configuration and use with FDT based host applications, such as Endress+Hauser FieldCare, PACTware and Unity Pro. *(1)*



STBAHI8321KC

Description

The STBAHI8321KC multiplexer comprises:
1 Two latches for locking the module on the base.
2 An LED display block indicating the various states of the module:

STBAHI8321 interface module	Indication
Green **RDY** LED	Module status *(2)*
Red **ERR** LED	Module error *(3)*
Green **CH1** LED	Channel 1 communication status
Green **CH2** LED	Channel 2 communication status
Green **CH3** LED	Channel 3 communication status
Green **CH4** LED	Channel 4 communication status

3 A slot for a customizable label (on the module).
4 A colour-coded module identification stripe: black.
5 A connector for STBXTS2150 18-way removable spring-type terminals (supplied with the module).
6 A mounting base, size 3 (28.1 mm).
7 A slot for a customizable label (on the base).

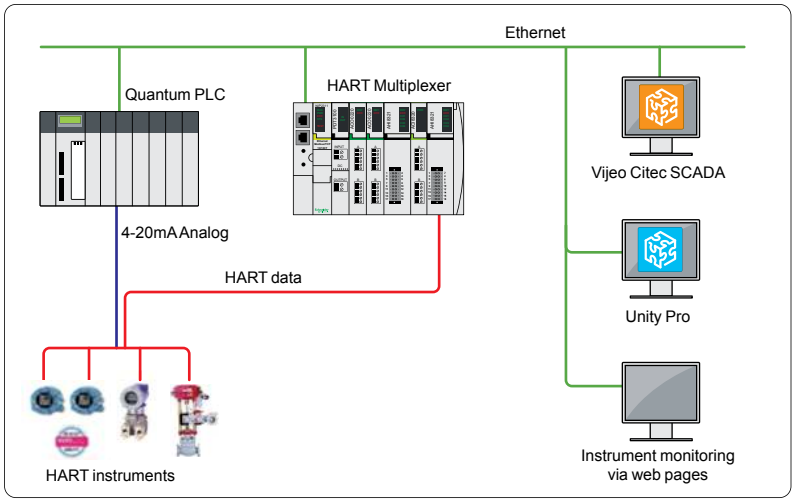
(1) The HART multiplexer DTMs are available on our website www.schneider-electric.com.
(2) RDY is permanently on if the module is operational. If RDY is off, the PDM is not supplying power. If RDY is flashing, the module is in an error state.
(3) If ERR is on or flashing, the module has an internal error.
For information about module and channel status indication, refer to the "System Hardware Components Reference Guide" included on the STBSUS8800 CD-ROM or available on our website www.schneider-electric.com.

Modicon STB distributed I/O solution

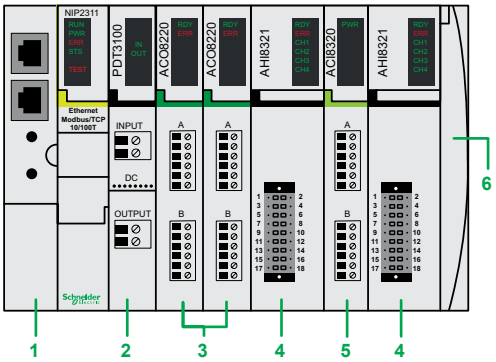
STBAHI8321KC HART Multiplexer

Application examples

HART multiplexer in a global automation architecture



HART multiplexer and devices in a global automation architecture



Example of an 8 HART channels solution

8 HART channels multiplexer island example

The STB HART multiplexer island example below contains 8 HART channels in 2 STBAHI8321 modules. Therefore this island supports up to 8 HART instruments. This example also contains 3 optional STB analog IO modules.

1. STBNIP2311 Ethernet network interface module, version 4.0 or higher
2. STBPDT3100 power distribution module
3. 2 STBACO8220K analog output module (optional)
4. STBAHI8321 HART interface module
5. STBACI8320 analog input module (optional)
6. STBXMP1100 terminator plate

References

Description	Reference	Weight kg
HART multiplexer solution Includes one HART interface module and its mounting base and removable terminals	**STBAHI8321KC**	–
HART multiplexer DTM	**STBSWA3000** *(1)*	–

Spare parts *(2)*

Description	Use	Reference	Weight kg
Mounting base size 3 (28.1 mm)	Mounting module on DIN rail	**STBXBA3000**	0.048
Removable terminals *(2)*	18 spring-type terminals	**STBXTS2150**	–

Accessories

Description	Use	Reference	Weight kg
Customizable label kit	Labelling the HART interface module and mounting base	**STBXMP6700**	–
Keying pin	Helps inserting the HART interface module into the mounting base	**STBXMP7700**	–

(1) Available to download at our website www.schneider-electric.com.
(2) All connectors can accommodate a flexible wire with a maximum cross-section of 1.5 mm², including the cable end.

Unity Pro programming software for Modicon M340 M, Premium P, Quantum Q, Safety S and Modicon distributed I/O D platforms			
IEC 61131-3 languages	Instruction List (IL)	M - D	M - P - D
	Ladder (LD)	M - D	M - P - D
	Structured Text (ST)	M - D	M - P - D
	Function Block Diagram (FBD)	M - D	M - P - D
	Sequential Function Chart (SFC)/Grafcet	M - D	M - P - D
Ladder Logic Language LL984		M	M
Programming services	Multitask programming (Master, fast and event-triggered)	M - D	M - P - D
	Multitask programming (Master, fast, auxiliary and event-triggered)		
	Functional view and function modules	M - D	M - P - D
	DFB editor and instances	M - D	M - P - D
	DDT compound data editors	M - D	M - P - D
	Data structure instances and tables	M - D	M - P - D
	EF and EFB libraries	M - D	M - P - D
	User-definable control loops		P (TSXP572●) - D
	Programmable control loops (with process control FB library)	M - D	M - P - D
	Safety function block libraries		
	Motion function block (MFB) libraries	M - D	M - P - D
	Hot Standby PLC redundancy system		P (TSXP5724M) - D
	System diagnostics	M - D	M - P - D
	Application diagnostics	M - D	M - P - D
	Diagnostics with location of error source	M - D	M - P - D
	Bus and network configuration to slave devices (Modicon distributed I/O, etc.)	M - D	M - P - D
Debugging and display services	PLC simulator	M - D	M - P - D
	Hypertext link animations in graphic languages	M - D	M - P - D
	Step by step execution, breakpoint	M - D	M - P - D
	Watchpoint	M - D	M - P - D
	Runtime screens	M - D	M - P - D
	Diagnostics viewer	M - D	M - P - D
Other services	Creation of hyperlinks	M - D	M - P - D
	XML import/export	M - D	M - P - D
	Application converters (Concept, PL7)		M - P - D
	Utilities for updating PLCs and Advantys operating system	M - D	M - P - D
	Communication drivers for Modicon platforms	M - D	M - P - D
	Unity Pro servers - Openness		
	Online modification of the configuration		
	Importing of applications (Modsoft, Concept, ProWORX) written in LL984 language		
UDE support OFS exchanges	Dynamic exchange with 3rd party tools, OFS		
	Static exchange via XML/XVM export files	M - D	M - P - D
Compatible Modicon platforms	Modicon M340 CPUs M	All models	All models
	Premium CPUs P	–	TSXP57104M/1634M/154M TSXP57204M/2634M/254M TSXH5724M
	Quantum CPUs Q	–	–
	Safety CPUs S	–	–
Compatible Modicon distributed I/O D		STB, OTB, TM7, ETB, Momentum	STB, OTB, TM7, ETB, Momentum
Software name		**Unity Pro Small**	**Unity Pro Medium**
Unity Pro software type		**UNYSPUSF●CD70**	**UNYSPUMF●CD70**
Page/website		90	91

Unity Pro programming software for Modicon M340 M, Premium P, Quantum Q, Safety S and Modicon distributed I/O D platforms

M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - Q	M - Q	M - Q
M - P - Q - D	M - P - Q - D	M - P - Q - D
	P (TSXP575●) - Q (140CPU651/671) - D	P (TSXP575●) - Q (140CPU651/671)- D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
P (TSXP572●/3●/4●) - D	P (TSXP572●/3●/4●/5●) - D	P (TSXP572●/3●/4●/5●)- D
M - P - Q - D	M - P - Q - D	M - P - Q - D
		S - D
M - P - Q - D	M - P - D	M - P - D
P (TSXH5724M/44M) - D	P (TSXH5724M/44M) - Q (140CPU67160) - D	P (TSXH5724M/44M) - Q (140CPU67160) - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
	M - P - Q - D	M - P - Q - S - D
Q	Q	
Q	Q	
	M - P - Q - D	M - P - Q - S - D
M - P - Q - D	M - P - Q - D	M - P - Q - S - D
All models	All models	All models
TSXP57104M/1634M/154M TSXP57204M/2634M/254M TSXP57304M/3634M/354M TSXP574634M/454M TSXH5724M/44M	TSXP57104M/1634M/154M TSXP57204M/2634M/254M TSXP57304M/3634M/354M TSXP574634M/454M TSXP575634M/554M TSXP576634M TSXH5724M/44M	TSXP57104M/1634M/154M TSXP57204M/2634M/254M TSXP57304M/3634M/354M TSXP574634M/454M TSXP575634M/554M TSXP576634M TSXH5724M/44M
140CPU31110 140CPU43412U 140CPU53414U	140CPU31110 140CPU43412U 140CPU53414U 140CPU65150/60 140CPU65260 140CPU67160 140CPU67260/61	140CPU31110 140CPU43412U 140CPU53414U 140CPU65150/60 140CPU65260 140CPU67160 140CPU67260/61
–	–	140CPU65160S 140CPU67160S
STB, OTB, TM7, ETB, Momentum	STB, OTB, TM7, ETB, Momentum	STB, OTB, TM7, ETB, Momentum
Unity Pro Large	**Unity Pro Extra Large**	**Unity Pro XL Safety**
UNYSPULF●CD70	**UNYSPUEF●CD70**	**UNYSPUXF●CD70**
91	92	www.schneider-electric.com

Modicon STB distributed I/O solution

Advantys Configuration and debugging software

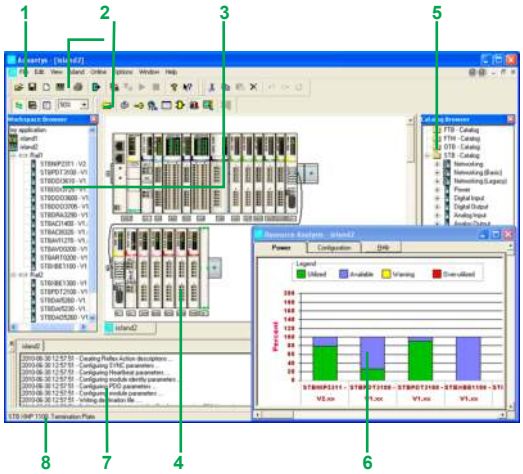
Presentation

Advantys STBSPU1●●● software is the configuration and debugging tool for the Modicon STB, OTB (IP20 protection) and FTB/FTM (IP67 protection) range of distributed I/O solutions. It also enables debugging and diagnostics of distributed I/O islands during operation.

Advantys STBSPU1●●● software can be obtained separately or via the Unity Pro software suite (programming software for Modicon M340/Premium/Quantum PLCs). Advantys and Unity Pro are part of the SoCollaborative Engineering software suite.

As concerns the range of Modicon STB I/O, Advantys STBSPU1●●● software is used to:

- Define all I/O modules making up a Modicon STB automation island.
- Configure standard modules Basic modules have a permanent default configuration.
- Configure the reflex functions handled at island level.
- Optimize island performance by assigning priorities for the processing of certain modules.
- Designate mandatory modules, i.e. modules that must be present and functioning correctly for the island to operate correctly.
- Declare external CANopen devices in the island (these include Modicon FTB IP67 monobloc I/O splitter boxes; electropneumatic valves by Festo, Parker, and Bosch; ATV31C/312/32/61/71 variable speed drives; Balluff linear encoders; OsiSense absolute rotary encoders; other CANopen V4.0 devices, etc.).
- Check the configuration for compliance and power consumption (also available for basic NIMs).



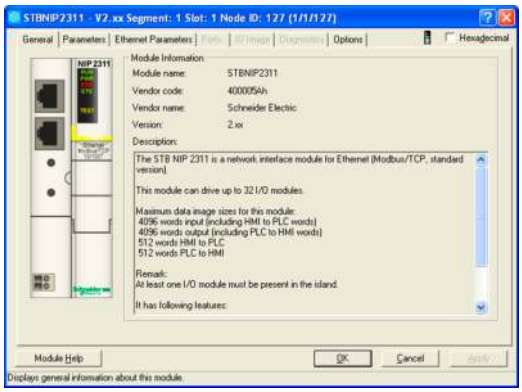
User interface

The welcome screen of the Advantys configuration and debugging software provides easy, intuitive access to all available tools.

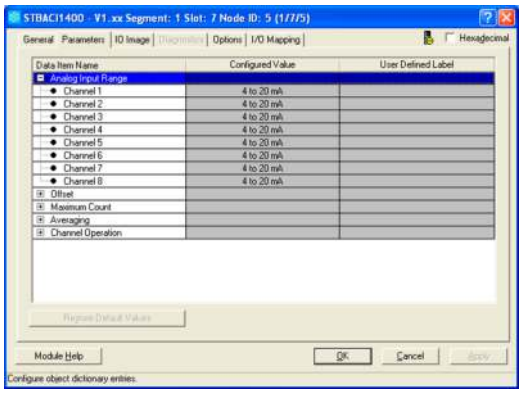
The welcome screen consists of a general view made up of a number of windows and toolbars, which can be arranged as required on the screen:

1 Menu bar: providing access to all functions.
2 Toolbar containing icons which give direct access to editors and the most frequently used functions.
3 Application browser: for navigating to the various islands and segments of each island.
4 Main window, for viewing islands and segments. By selecting a module, you can access the appropriate editors:
- Module editor
- User defined label editor
- Reflex action editor
- Power supply and memory resource analysis
- Overview of the I/O image
- Animation of the I/O image
- Diagnostics
- The last two items are only available if the island is online

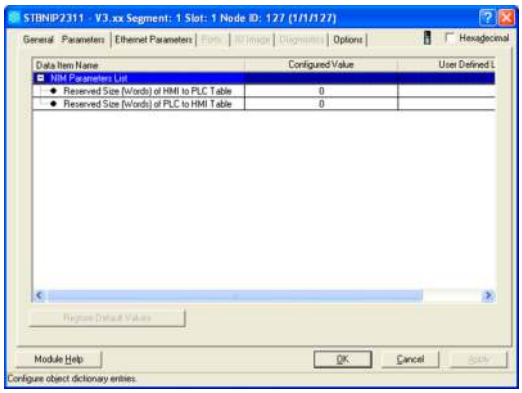
5 Catalogue browser for all the Modicon STB components, sorted by category (networks, power supply, digital I/O, etc.).
6 Window for analyzing the fieldbus power supply and logic power supply resources and memory capacities of the I/O image and the exchange area for HMI terminals.
7 Log window displaying the results of operations performed by the configuration and debugging software during a work session on an island.
8 Status bar.



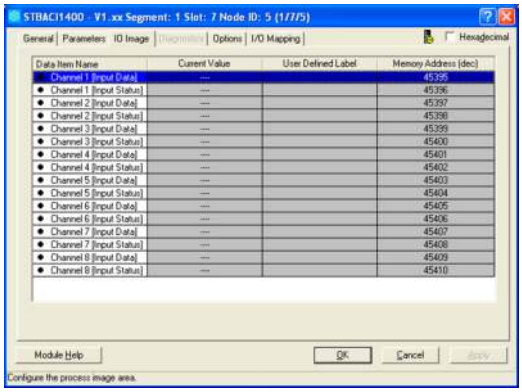
Ethernet Modbus TCP/IP network interface module, double port STBNIP2311 - "General" tab



Module with 8 analog input channels STBACI1400K - "Parameters" tab



Ethernet Modbus TCP/IP network interface module, double port STBNIP2311 - "Parameters" tab



Module with 8 analog input channels STBACI1400K - "I/O Image" tab

Functions

Module editor

The module editor includes between 4 and 7 tabs, depending on the module type: General, Parameters, Ethernet Parameters, I/O Image, Diagnostics, Options and I/O Mapping. Access to these tabs depends on whether or not the island is connected to the network or fieldbus.

"General" tab

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

"Settings" tab

This tab, accessible when the island is offline, contains the operating parameters of the selected module. It can be used, for example, to:

- Select the display format for parameters: decimal or hexadecimal.
- Configure the module. The configurable items (cells with white backgrounds) depend on the module type. Depending on the type of module, the main parameters are:
  - All modules: user label assignment: free text field for up to 50 characters *(1)*
  - Digital input modules: filter time and choice of positive or negative logic for each channel
  - Digital output modules: the behaviour upon short circuit or overload (manual or automatic reset), choice of positive or negative logic for each channel, default fallback position for each channel (state 0 or 1)
  - Analog input modules: the operating range, offset value, maximum counter value, filtering medium, individual channel operation (active/inactive) for each channel
  - Analog output modules: the data format, output range, individual channel operation (active/inactive) and default fallback position (hold last value or set to predefined value) for each channel
  - Application-specific module for TeSys Quickfit or TeSys model U motor starters: the choice of positive or negative logic for each channel, behaviour upon short circuit or overload (manual or automatic reset), and default fallback position for each channel (state 0 or 1)
  - Counter module: definition of the counter function and how it works (see page 78)
  - Network interface modules: the amount of memory reserved for data exchanges with the HMI terminal (directly connected to the network interface module). This data can also be accessed by the island master. If a Modicon STB island has a CANopen extension, a parameter allows you to define the address of the last standard CANopen device connected to the island.

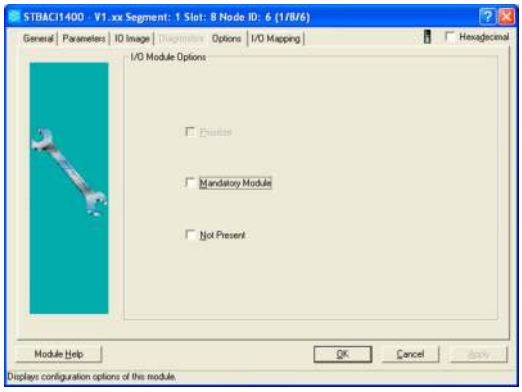
Online help for the selected module can be displayed to show the limits and operating values of these parameters.

"I/O Image" tab

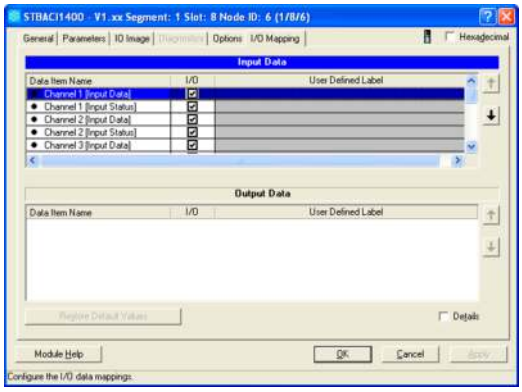
This tab can be used to:

- Read and modify the module I/O data, when the island is online.
- Write a user defined label for any image I/O data. This function is used to identify the important island memory slots, before writing the application.

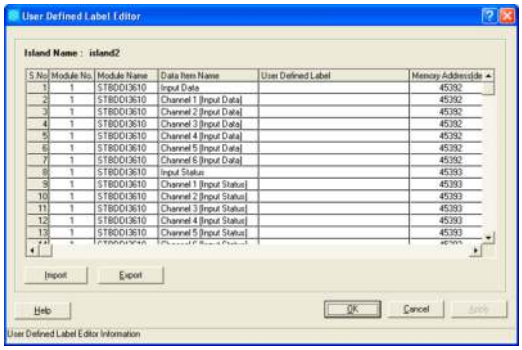
(1) A utility for exporting user defined labels (in CANopen) to the memory of Premium PLCs (in Unity Pro or PL7). Please consult our Customer Care Centre.



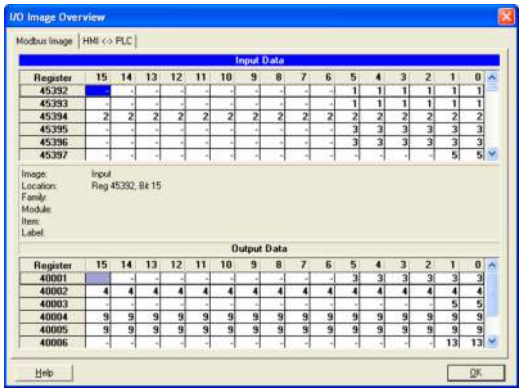
Module with 8 analog input channels STBACI1400K - "Options" tab



Module with 8 analog input channels STBACI1400K - "I/O Mapping" tab



User defined label editor



I/O image overview

Functions (continued)

Module editor (continued)

"Diagnostics" tab

This tab allows the user to perform diagnostics for the island connected to the PC terminal where the Advantys configuration and debugging software resides.

"Options" tab

This tab is used to access the I/O module configuration options or network interface options when offline:

- Declaring scanning of a digital I/O module as "priority". By default the software declares the first 10 island modules considered to be "fast" modules to have priority. If the island includes more than 10 "fast" modules, the module priority must be declared manually.
- Declaring a module as "mandatory". The module is then designated as critical for correct island operation. If the module fails or is not present, the island will no longer be operational and will stop. It becomes operational again if an identical operational module or same type of module is installed in the same position.
- Declaring a module as "not present". This option makes it possible to physically remove a module from the island while retaining the same process image. You can thus define an island with several "not present" modules without changing the PLC program managing the island.
- Configuring the run-time-parameters (RTP) on the network interface module. This option allows memory slots to be reserved on the I/O image (marked RTP) so that the parameters can be transferred to the application program.
- Defining the maximum number of CANopen extension nodes on the network interface module.

"I/O Mapping" tab

This tab is used to edit the I/O mapping for the selected standard module which appears in the I/O image overview.
This function is used to optimize mapping of the I/O image overview dynamically, one module at a time.

Others

Advantys software V5.5 and above includes new dual-port Ethernet Modbus TCP NIM STBNIP2311 version 4.xx that supports RSTP for media redundancy for I/O architectures and broadcast storm prevention.
The module editor provides:

- A "Redundancy" sub tab on STBNIP2311 module.
- A "Ports" tab on CANOpen NIM STBNCO2212 module. This tab displays in online mode, the current values of two parameters: Node ID and Baud rate.

User defined label editor

This editor allows to create user defined labels (symbol names) for all I/O data in the Modicon STB configuration, including external devices connected to the CANopen bus.
User is able to do copy, cut and paste actions in the User defined label editor as well as to import/export user defined labels in CVS format.

I/O image overview

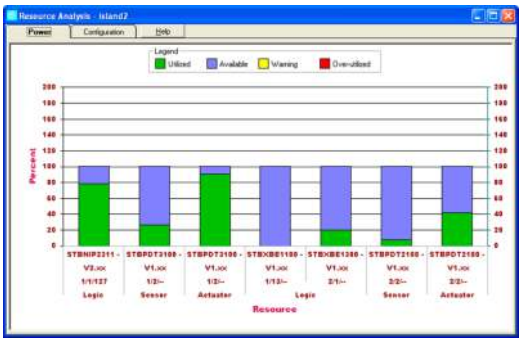
This screen, accessible when the island is online, provides a table with data concerning the:

- I/O modules making up the island: value, status, memory slot, etc.
- HMI terminal connected to the network interface module. The size of this area is defined in the "Parameters" tab of the network interface module.

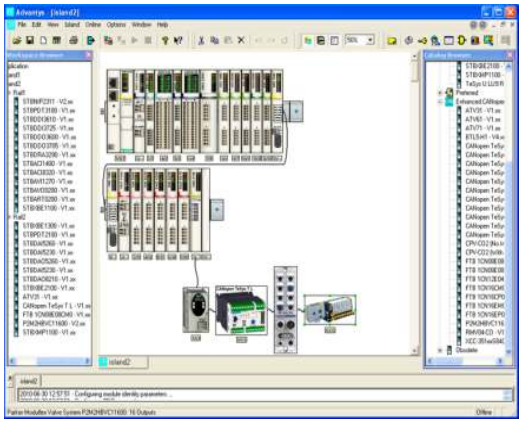
The I/O image can be displayed in two views:

- Fieldbus or network view: each protocol transfers its data in a specific format.
- Internal island bus view: the Modbus protocol is used here.

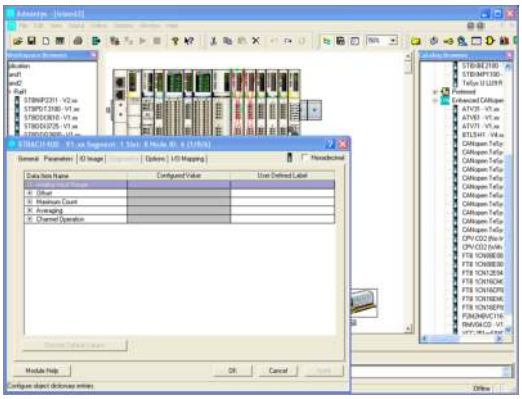
Each view has a table of inputs and a table of outputs.



Power supply and memory resource analysis



Access via RTP to external components such as ATV variable speed drives, etc.



Modules that are "not present" will actually be installed as needed.

Functions (continued)

Analysis of the island memory and power supply resources

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

- ■ The power consumption table for the various voltages:
  - □ The 5 V ⎓ logic voltage provided by the network interface module STBN●●
  - □ The 5 V ⎓ logic voltage supplied by the BOS bus expansion module STBXBE1300K
  - □ The 5 V ⎓ logic voltage supplied by the auxiliary power supply module STBCPS2111K, this module must be combined with a power supply module STBPDT●10●K
  - □ The 24 V ⎓ voltages provided by the power distribution module(s) STBPDT3100/3105K
  - □ The 115/230 V ∿ voltages provided by the power distribution module(s) STBPDT2100/2105K
- ■ The usage of the memory integrated in the network interface module:
  - □ Image field for inputs and outputs
  - □ Field dedicated to the human machine interface

Downloading configuration data

The software enables bi-directional transfer of configuration data:

- ■ From the PC to the RAM and Flash memory of the island network interface module in order to make the island operational. If the network interface module includes the STBXMP4440 32 KB removable memory card, data will be written to the card, providing a backup.
- ■ From the island network interface module to the PC.

RTP run-time parameters

The RTP (Run-Time parameters) function enables access from the PLC to all data *(1)* of the external CANopen components connected to an STB island.
The main uses are:

- ■ Writing the parameters of a component: FDR (Faulty Device Replacement) operation.
- ■ Reading all the variables for the monitoring and diagnostics of any object connected to the island.

Modules that are "not present"

This function allows you to declare "virtual" I/O modules that will not actually be included in the island at the outset.
This means that:

- ■ "Virtual" module slots are reserved in the island configuration.
- ■ The exchange data of the "virtual" modules are included in tables of exchanges with the PLC.

The physical modules can be integrated into the automation island as actual requirements increase.

(1) Data: configuration and adjustment parameters and variables

Functions (continued)

Export user defined labels (“tags”)

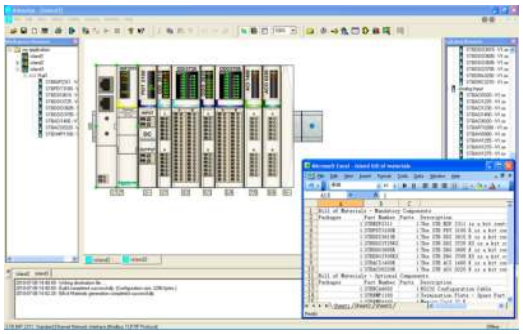
The Advantys software allows you to create tags (symbol names) for all objects and I/O parameters of the Modicon STB configuration, including external devices connected to the CANopen bus.
The “File/export” function exports these names at the same time as the mapping, regardless of the fieldbus or network used. This information can be used directly on all controllers. This eliminates the need to declare I/O objects again and promotes consistency in the naming of machinery or equipment. User defined labels can be exported in CSV format.

Import/export island mapping files

This function allows you to carry out mapping and export it in the format of any PLC programming software, regardless of the fieldbus or network.

Bill of Materials

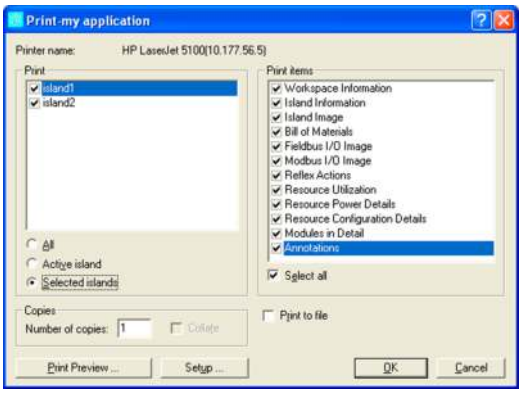
The Bill of Materials *(or* BOM*)* provides the hardware description for the selected island, including the mandatory and optional components.
The BOM can be printed or exported in CVS format.
The BOM can be customized to suit the user's preferences:
- Calculation algorithm based on the kits or individual components.
- Information about the modules.
- Type of connector: screw-type or spring-type. The default value is “screw”.
- Length of the island bus extension cables.



Bill of materials

Print design report

This function allows you to select topics to be sent to a printer or to a PDF or editable RTF file.
The following items can be selected:
- Graphic image of the island (see example above).
- All or part of the island information:
  - List of mandatory components, including accessories, such as bases, connectors, etc.
  - List of optional components, such as labels, keying pins, memory cards, etc.
  - Information about the workspace
  - Information about the island
  - Image of the island
  - List of components
  - Fieldbus I/O image
  - Modbus I/O image
  - Reflex actions
  - Resource usage
  - Resource power supply details
  - Resource configuration details
  - Module details
  - Notes



Printing: selection of islands and elements to be inserted in the design report

Test mode

There are two test modes:
- PLC offline test: Bus or network communication is disconnected.

The outputs can be controlled directly from the Advantys application connected via the Modbus port on the network interface module.
- Online test: Bus or network communication is operational. The outputs can be forced directly from the Advantys application. This mode can be accessed by entering a configurable password.

These test modes allow you to import the island configuration and read the error messages and I/O states.

Update on www.schneider-electric.com

The Advantys STBSPU1●●● configuration and debugging software and the databases in its module catalogue are available on our website www.schneider-electric.com.
Here, you can:
- Download the Advantys STBSPU1000 software application for a free 21-day trial.
- For officially registered software, obtain all function updates and all updates for the catalogue of components that can be connected to Modicon STB automation islands.

Functions (continued)

Reflex functions editor

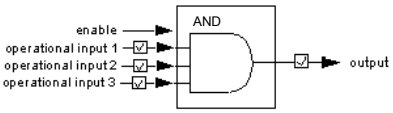
For applications requiring short response times (< 3 ms), the Modicon STB distributed I/O solution allows you to create reflex functions using the configuration and debugging software. These reflex functions act directly at the level of the island output modules and therefore are not taken into account or processed by the island master. These reflex functions can be associated with “priority” I/O modules to ensure the reliability of the response time.

A Modicon STB island can call up to 10 reflex functions.
These functions are created from blocks whose inputs are activated by digital or analog input channels and whose results activate a digital or analog output channel.
It is possible to nest two reflex functions.

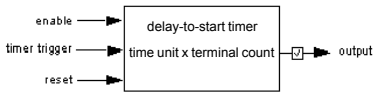
Reflex types and function blocks

Various types of function block are available:

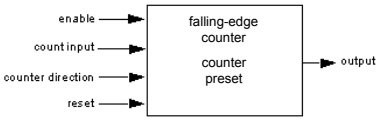
Boolean logic blocks: XOR block, AND blocks with 3 inputs and 1 output



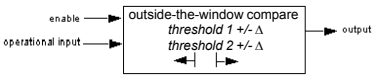
Timer/monostable blocks: when working, when idle, upon activation and upon deactivation



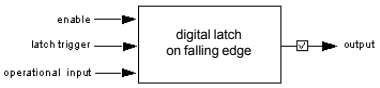
Up/down counter blocks: on a rising or falling edge, from 0 to 65,535



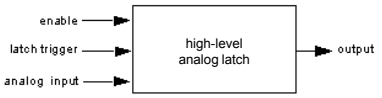
Comparison blocks on signed integers (- 3,768 to 32,767): i <, i >, < i >, i < and i >



Digital latch blocks: on state 0 or 1 or on rising or falling edge, storing of state 0 or 1



Analog latch blocks: on state 0 or 1 or on rising or falling edge, storing of signed integer (0 to 65,535) or unsigned integer (-32,768 to 32,767)



Documentation: A document entitled “Reflex actions” is available on the CD-ROM STBSUS8800 and on our website www.schneider-electric.com.

Advantys STB DTM

Advantys STB DTM software helps to configure STB islands. It is supplied as an installation option with the software on the same CD.*(1)*

It provides DTMs for STB Modbus TCP islands (STBNIP2●1●) and STB Ethernet/IP islands (STBNIC2212).

When used which Unity Pro v7.0, it provides the capabilities of:
- Creating and modifying STB island configuration via a vizualized configuration interface within Unity Pro
- Configuration upload/download
- Monitoring
- Providing process channels for I/O mapping without the need of calculating manually the mapping address and size
- Printing configuration
- Easy labelling without the need to export and import manually the user labels
- Process channels displaying with the representation of I/O data object structure with either byte or bit level.

Advantys STB DTM is also functionnal with the following NOC master DTMs:
- Quantum 140NOC77101, 140NOC78000, 140NOC78100
- Premium ETC101
- M340 BMXNOC0401

(1) It will be installed by default when you choose Typical or Complete installation type. The installation can be cancelled in the Custom installation type.

Software
Unity Pro software
Small/Medium/Large/Extra Large

Unity Pro

References

Unity Pro Small, Medium, Large and Extra Large software packages

These software packages are for programming and setting up Unity automation platforms. The software is available in five versions:
- **Unity Pro Small** (see page 90)
- **Unity Pro Medium** (see page 91)
- **Unity Pro Large** (see page 91)
- **Unity Pro Extra Large** (see page 92)

Upgrade kits for Concept, PL7 Pro and ProWORX software

These upgrade kits allow users who already have these software programs from the installed base and who have a **current subscription** to obtain Unity Pro version V7.0 software at a reduced price. These upgrades are only available for licences of the same type (e.g. from Concept XL group licence to Unity Pro Extra Large group licence). See page 92.

Composition and Windows OS compatibility

Unity Pro multilingual software packages are compatible with Windows XP (32-bit), Windows Vista Business Edition (32-bit) and Windows 7 (32-bit and 64-bit) operating systems.

The packages comprise:
- A Unity Pro V7.0 DVD in six languages (English, French, German, Italian, Spanish and Chinese)
- A Unity Loader V2.3 CD
- An Advantys V7.0 configuration software CD
- A DVD containing the documentation in electronic format in six languages (English, French, German, Italian, Spanish and Chinese)
- A one-year services subscription

Unity Pro Small version 7.0 software

For Modicon M340: All models
For distributed I/O: **Modicon ETB**, **TM7**, **OTB**, **STB**, **Momentum**

Unity Pro Small version 7.0 software packages *(1)*

Description	Licence type	Reference	Weight kg
Unity Pro Small software packages	Single (1 station)	**UNYSPUSFUCD70**	–
	Group (3 stations)	**UNYSPUSFGCD70**	–
	Team (10 stations)	**UNYSPUSFTCD70**	–
Software upgrades from: - Concept S - PL7 Micro - ProWORX NxT/32 Lite	Single (1 station)	**UNYSPUSZUCD70**	–
	Group (3 stations)	**UNYSPUSZGCD70**	–
	Team (10 stations)	**UNYSPUSZTCD70**	–

Licence type extensions for Unity Pro Small version 7.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNYSPUSZUGCD70**	–
Group (3 stations)	Team (10 stations)	**UNYSPUSZGTCD70**	–

(1) For compatibility of Unity software/automation platforms and distributed I/O, refer to the selection guide on page 82.

Selection guide:
page 82

Software

Unity Pro software

Small/Medium/Large/Extra Large

Unity Pro

Unity Pro Medium version 7.0 software

For Modicon M340: All models
For Modicon Premium: **TSX571●...2●**
For distributed I/O: **Modicon ETB**, **TM7**, **OTB**, **STB**, **Momentum**

Unity Pro Medium version 7.0 software packages *(1)*

Description	Licence type	Reference	Weight kg
Unity Pro Medium software packages	Single (1 station)	**UNYSPUMFUCD70**	–
	Group (3 stations)	**UNYSPUMFGCD70**	–
	Team (10 stations)	**UNYSPUMFTCD70**	–
Software upgrades from: - Concept S, M - PL7 Micro, Junior - ProWORX NxT/32 Lite	Single (1 station)	**UNYSPUMZUCD70**	–
	Group (3 stations)	**UNYSPUMZGCD70**	–
	Team (10 stations)	**UNYSPUMZTCD70**	–

Licence type extensions for Unity Pro Medium version 7.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNYSPUMZUGCD70**	–
Group (3 stations)	Team (10 stations)	**UNYSPUMZGTCD70**	–

Upgrade to Unity Pro Medium from Unity Pro Small

Type of upgrade The number of stations is unchanged	Reference	Weight kg
Small to Medium Single (1 station)	**UNYSPUMZSUCD70**	–
Small to Medium Group (3 stations)	**UNYSPUMZSGCD70**	–
Small to Medium Team (10 stations)	**UNYSPUMZSTCD70**	–

Unity Pro Large version 7.0 software

For Modicon M340: All models
For Modicon Premium: **TSX571●…4●**
For Modicon Quantum: **140CPU31110/43412U/53414U**
For distributed I/O: **Modicon ETB**, **TM7**, **OTB**, **STB**, **Momentum**

Unity Pro Large version 7.0 software packages *(1)*

Description	Licence type	Reference	Weight kg
Unity Pro Large software packages	Single (1 station)	**UNYSPULFUCD70**	–
	Group (3 stations)	**UNYSPULFGCD70**	–
	Team (10 stations)	**UNYSPULFTCD70**	–
	Site (≤ 100 users)	**UNYSPULFFCD70**	–
Software upgrades from: - Concept S, M - PL7 Micro, Junior, Pro - ProWORX NxT/32 Lite	Single (1 station)	**UNYSPULZUCD70**	–
	Group (3 stations)	**UNYSPULZGCD70**	–
	Team (10 stations)	**UNYSPULZTCD70**	–
	Site (≤ 100 users)	**UNYSPULZFCD70**	–

Licence type extensions for Unity Pro Large version 7.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNYSPULZUGCD70**	–
Group (3 stations)	Team (10 stations)	**UNYSPULZGTCD70**	–

Upgrade to Unity Pro Large from Unity Pro Medium

Type of upgrade The number of stations is unchanged	Reference	Weight kg
Medium to Large Single (1 station)	**UNYSPULZMUCD70**	–
Medium to Large Group (3 stations)	**UNYSPULZMGCD70**	–
Medium to Large Team (10 stations)	**UNYSPULZMTCD70**	–

(1) For compatibility of Unity software/automation platforms and distributed I/O, refer to the selection guide on page 82.

Selection guide:
page 82

Unity Pro

Unity Pro Extra Large version 7.0 software

For Modicon M340: All models
For Modicon Premium: **TSX571●...6●**
For Modicon Quantum: **140CPU31110/43412U/53414U/65150/65160/65260/67160/67260/67261**
For distributed I/O: **Modicon ETB**, **TM7**, **OTB**, **STB**, **Momentum**

Unity Pro Extra Large version 7.0 software packages *(1)*

Description	Licence type	Reference	Weight kg
Unity Pro Extra Large software packages	Single (1 station)	**UNYSPUEFUCD70**	–
	Group (3 stations)	**UNYSPUEFGCD70**	–
	Team (10 stations)	**UNYSPUEFTCD70**	–
	Site (≤ 100 users)	**UNYSPUEFFCD70**	–
Software upgrades from: - Concept S, M, XL - PL7 Micro, Junior, Pro - ProWORX NxT Lite, Full - ProWORX 32 Lite, Full	Single (1 station)	**UNYSPUEZUCD70**	–
	Group (3 stations)	**UNYSPUEZGCD70**	–
	Team (10 stations)	**UNYSPUEZTCD70**	–
	Site (≤ 100 users)	**UNYSPUEZFCD70**	–

Licence type extensions for Unity Pro Extra Large

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNYSPUEZUGCD70**	–
Group (3 stations)	Team (10 stations)	**UNYSPUEZGTCD70**	–

Upgrade to Unity Pro Extra Large from Unity Pro Large

Type of upgrade The number of stations is unchanged	Reference	Weight kg
Large to Extra Large Single (1 station)	**UNYSPUEZLUCD70**	–
Large to Extra Large Group (3 stations)	**UNYSPUEZLGCD70**	–
Large to Extra Large Team (10 stations)	**UNYSPUEZLTCD70**	–

Documentation for Unity Pro version 7.0

Description	Licence type	Reference	Weight kg
Hardware and software manuals (on DVD) - Platform setup for: Modicon M340, Premium, Quantum, Momentum - Electromagnetic compatibility of networks and fieldbuses - Software setup for: Unity Pro, Function block library	Multilingual: English, French, German, Italian, Spanish, Chinese	**UNYUSE909CDM**	–

(1) For compatibility of Unity software/automation platforms and distributed I/O, refer to the selection guide on page 82.

Selection guide:
page 82

Software

Unity Pro software

Small/Medium/Large/Extra Large

BMXXCAUSBH0●●

TSXPCX1031

TSXCUSB485

Accessories for connecting to the PC programming terminal

Description	Use		Length	Reference	Weight kg
	From processor port	To PC port			
PC terminal connection cables (PC to PLC)	USB mini B port BMXP341000/20●0/20●02	USB port	1.8 m	**BMXXCAUSBH018**	0.065
			4.5 m	**BMXXCAUSBH045**	0.110
	Mini-DIN port Premium TSX571●/2●/3●/4●	RS 232D (9-way SUB-D connector)	2.5 m	**TSXPCX1031**	0.170
		USB port (USB/RS 485 converter)	0.4 m	**TSXCUSB485** *(1)*	0.144
		USB port (mini-DIN/ RJ45 cordset)	2.5 m	**TSXCRJMD25** *(1)*	0.150
	Modbus port 15-way SUB-D Quantum 140CPU31110 140CPU43412A 140CPU53414B	RS 232D (9-way SUB-D connector)	3.7 m	**990NAA26320**	0.300
			15 m	**990NAA26350**	0.180
	USB port Premium TSX575●/6● Quantum 140CPU6●1	USB port	3.3 m	**UNYXCAUSB033**	–
	Modbus port, RJ45 connector Quantum 140CPU6●1	RJ 45 connector	1 m	**110XCA28201**	–
			3 m	**110XCA28202**	–
			6 m	**110XCA28203**	–
PC terminal connection cables (PC SUB-D to Modicon STB I/O)	HE13 connector Modicon STB I/O network interface module (NIM)	RS 232D *(2)* (9-way SUB-D connector)	2 m	**STBXCA4002**	0.210
USB/SUB-D adaptor (PC USB to Modicon STB I/O)	HE13 connector Modicon STB I/O network interface module (NIM) with STBXCA4002 cable *(3)*	USB port *(3)*	–	**SR2CBL06**	0.185

TCSWAAC13FB

Description	Use	Reference	Weight kg
Universal Bluetooth® interface (UBI)	Provides Bluetooth® connectivity for products such as the Modicon M340/Premium platforms and Altivar/Lexium servo drives, via their serial port (RS 485). Used for setting-up and maintenance of products. Designed for permanent installation and can be safely fitted on the inside or outside of electrical enclosures. ■ Protocols supported: Modbus and Uni-Telway ■ Powered via the product's RS 485 serial port ■ Max. range in direct line of sight: 20 m The kit comprises: ■ A Universal Bluetooth® interface (UBI) ■ An RJ45/mini-DIN cable (length 1 m) ■ An RJ45/RJ45 cable (length 1 m) ■ A fixing clamp for installation inside the electrical enclosure ■ A CD with configuration software and user manual	**TCSWAAC13FB**	0.320

(1) The **TSXCUSB485** *converter requires use of the* **TSXCRJMD25** *mini-DIN/RJ45 cordset.*
(2) For connection on a USB port, the **SR2CBL06** *cable must also be used (3).*
(3) Adaptor equipped with a USB connector (PC side) and a 9-way SUB-D connector (STBXCA4002 cable side); requires the **STBXCA4002** *cable (9-way SUB-D/HE 13) for connection to the HE13 connector on the Modicon STB NIM.*

Selection guide:
page 82

Modicon STB distributed I/O solution

Advantys configuration and debugging software

STBSPU1●●●

References

The Advantys configuration and debugging software is multilingual and compatible with the following operating systems:

- Windows XP Professional SP3 32-bit.
- Windows Vista Business SP1 32-bit.
- Windows Vista Ultimate SP1 32-bit.
- Windows 7 Professional 32-bit.
- Windows 7 Ultimate 32-bit.
- Windows 7 Enterprise 32-bit.
- Windows 7 Professional 64-bit.

The Advantys software online help is available in 5 languages: English, French, German, Spanish, and Italian. Internet Explorer (version 4.0 or later) is required to access the online help.

Test period:
During the 21-day test period, all the Advantys functions are available. After this period expires, the online functions are no longer available without registration. All other Advantys functions remain available.

Custom user registration:
Custom user registration can be accessed free-of-charge online or via e-mail, fax, or telephone for all pack types, from the single-station version to the site version. It allows you to receive customized updates within your company.

Advantys configuration and debugging software

Description	Used with	Reference	Weight kg
Advantys configuration and debugging software	Single station - 1 workstation Includes 1 cable and 1 CD-ROM	**STBSPU1000**	–
	3 stations Includes 3 cables and 3 CD-ROMs	**STBSPU1003**	–
	10 stations Includes 10 cables and 10 CD-ROMs	**STBSPU1011**	–
	10 workstations on one site Unlimited registration capacity Includes 10 cables and 10 CD-ROMs	**STBSPU1130** *(1)*	–
Subscription to Advantys configuration and debugging software Duration: 1 year	1 station	**STBBBS1000**	–
	3 stations	**STBBBS1003**	–
	10 stations	**STBBBS1011**	–
	10 workstations on one site Unlimited registration capacity	**STBBBS1130** *(2)*	–

Documentation

User documentation *(3)*	Multilingual on CD-ROM	**STBSUS8800**	–

Optional part

Description	Used with	Reference	Weight kg
USB/SUB-D adaptor	Configuration PC with USB port Requires STBXCA4002 *(4)*	**SR2CBL06**	0.185

Spare part

Description	Used with	Reference	Weight kg
RS 232C shielded twisted pair cable 8-way HE 13/9-way SUB-D (length 2 m) *(4)*	Configuration PC	**STBXCA4002**	0.210

(1) Replaces reference STBSPU1100.
(2) Replaces reference STBBBS1100.
(3) 2 documents are available on the CD-ROM STBSUS8800 and on our website www.schneider-electric.com:
- "Advantys Configuration and Debugging Software. Quick Start Guide"
- "Advantys Configuration and Debugging Software. User Manual".
(4) Supplied with configuration software Advantys STBSPU1●●●.

References (continued)

References, Alliance SI programme

Description	Used with	Reference	Weight kg
Advantys configuration and debugging software	10 workstations on one site for a member of the Alliance SI programme Includes 10 cables and 10 CD-ROMs	**STBSPU1010**	–
Subscription to Advantys configuration and debugging software Duration: 1 year	10 workstations on one site for a member of the Alliance SI programme	**STBBBS1010**	–

Modicon STB distributed I/O solution

Momentum 171CBB97030 processor

Open and modular system

171CBB97030

Presentation

The Momentum 171CBB97030 processor integrates a full programmable controller, an Ethernet switch with 4 x 10/100 Mbps ports, and a Modbus serial communication port. Supporting a wide temperature range from -20 to 70°C, and powered with 24 V ⎓ , it also has a realtime clock and a battery for backing up the memory.

Processor

- ■ 0.25 ms/Kinstructions.
- ■ Concept IEC 61131-1 and ProWorX 32 LL984 program.
- ■ Realtime control using Ethernet:
- □ Distributed I/O connectivity
- □ Peer to peer interprocessor communication
- ■ Realtime clock.
- ■ Battery for backing up data.
- ■ 19.2...42.5 V ⎓ power supply.

Communication

- ■ Integrated Ethernet switch with 4 ports.
- ■ 10/100 Mbps, half/full duplex autonegotiated.
- ■ RS232/RS485 Modbus serial communication port.
- ■ Simple menu-driven configuration.

This integration results in:

- ■ A reduction in the number of components required, simplification of the wiring, lower setup costs.
- ■ Unrivalled flexibility in designing system architectures: the Momentum 171CBB97030 processor's compact dimensions make it ideal for installation where space is limited or in small machines.
- ■ Direct high-performance Ethernet connectivity to the I/O, other control systems and HMI terminals.
- ■ Faster response times on high-traffic networks thanks to its half/full duplex communication with autonegotiation.
- ■ Setup made easy by simple menu-driven configuration.

Applications

Ethernet 10/100 Mbps communication supports the Modbus TCP/IP protocol, offering connectivity to the distributed I/O and host systems, communication with other peer processors, drives, operator and programming terminals, as well as simple browser access to embedded web pages.
The Modbus serial communication port can be used to connect the processor to any RS232 or RS485 device in master or slave mode.
The processor program can be expressed in one of the five IEC 61131-1 languages in the Concept environment or as a ProWorX 32 Ladder 984 logic diagram.

These capacities make it the ideal processor for distributed I/O and device systems on Ethernet, for example: intelligent sub-system connected to a master or supervision processor, multiprocessor distributed processing applications, etc.
The Momentum 171CBB97030 processor is suitable for a wide variety of applications:

- ■ Conveying, handling.
- ■ Packaging.
- ■ Water/waste treatment.
- ■ Infrastructure.
- ■ Pumping, RTU, heating, air conditioning.
- ■ Batch/process control.
- ■ Data acquisition, monitoring.

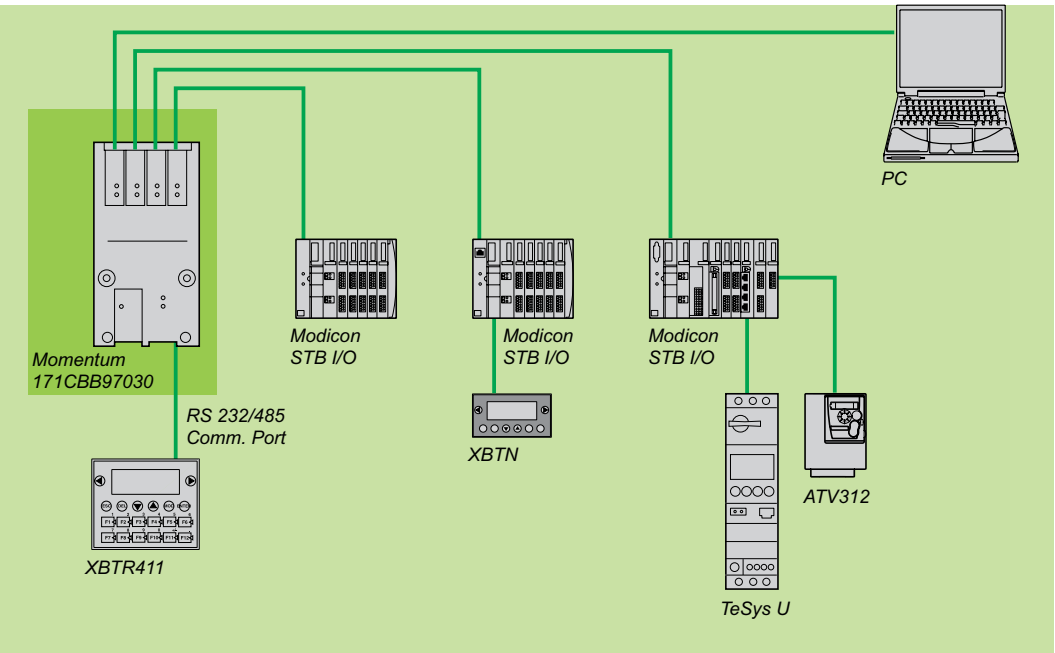
Modicon STB distributed I/O solution

Momentum 171CBB97030 processor

Open and modular system

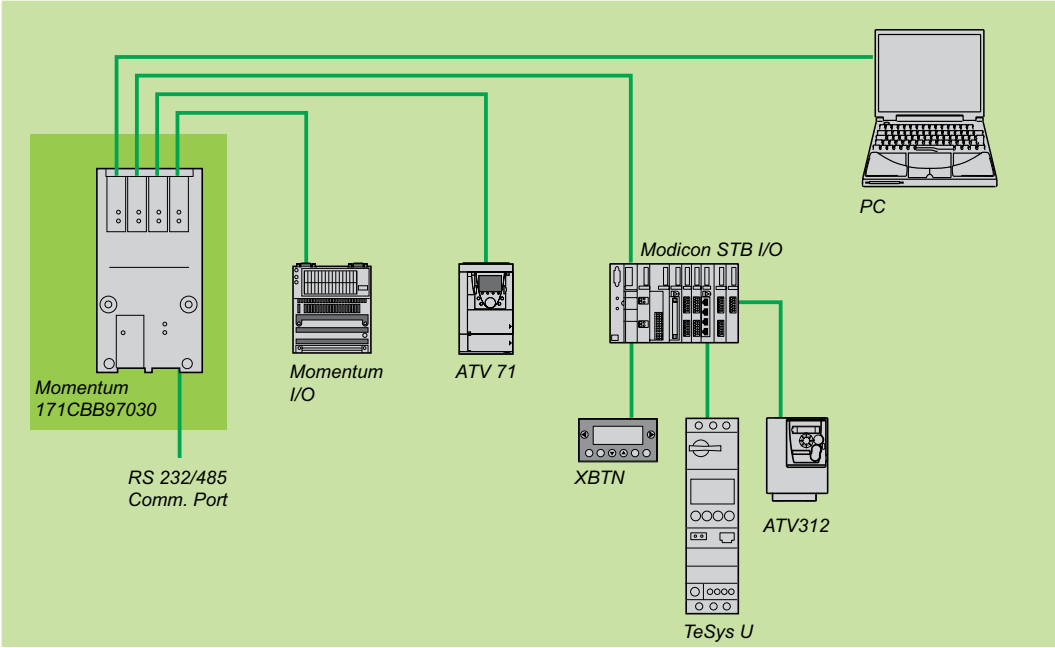
Configuration

Single-processor processing system with 3 I/O lines



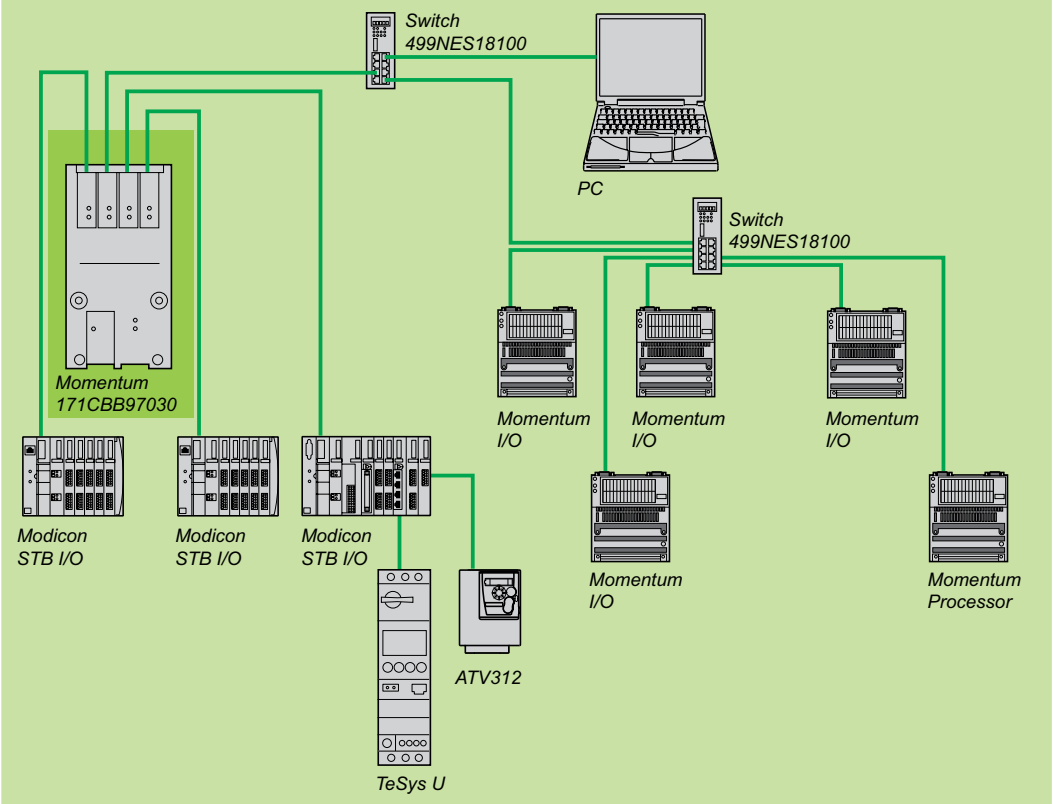
The system can include up to 3 Momentum or Modicon STB I/O islands.

Single-processor processing system with distributed devices



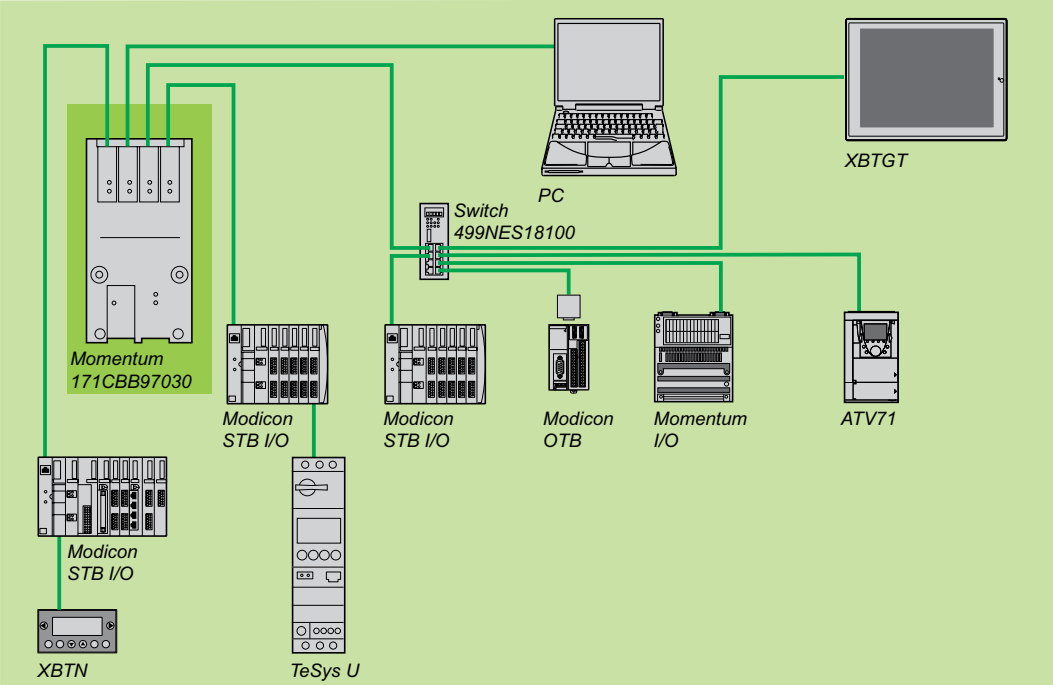
Configuration (continued)

Multiprocessor decentralized processing system



The system can include an existing M1E processor.
Up to 14 processors in peer to peer communication

Processing system extended by a second Ethernet switch

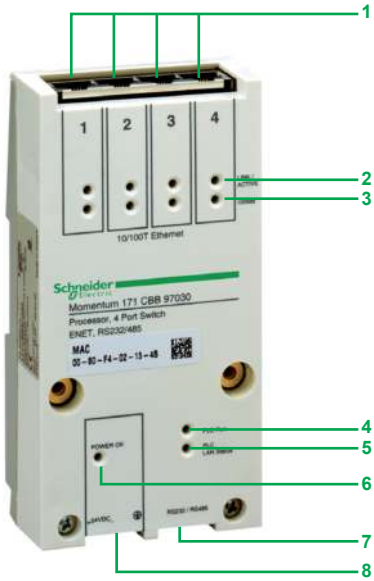


Extending the Ethernet network allows additional devices to be connected.

Modicon STB distributed I/O solution

Momentum 171CBB97030 processor

Open and modular system



Description

1 4 RJ45 10/100 Mbps Ethernet ports.
2 4 Ethernet activity LEDs.
3 4 100 Mbps speed indicator LEDs.
4 1 processor running status LED.
5 1 LAN status LED.
6 1 24 V power supply status LED.
7 RS232/RS485 Modbus serial link port.
8 24 V power supply connector.

Web server

A PC equipped with a browser is all you need to access the Web server hosted by the Momentum 171CBB97030 processor and its 4 pages of information updated in real time:

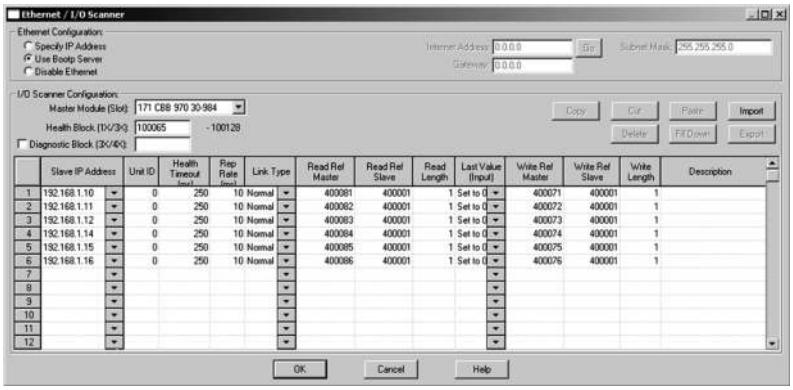
- Processor home page.
- Processor configuration, system status.
- Ethernet transmission/reception statistics.
- Links to Schneider Electric websites.

Device configuration

The *Ethernet I/O scanner* software provides a simple, menu-driven way of configuring Momentum 171CBB97030 processor communication with the I/O devices connected to it:

- IP address.
- Timeout and transaction repetition rate.
- Address of the first processor register where data is to be read/written.
- Length of exchanges in number of words.

Ethernet I/O scanner is included in both Concept and ProWorX software.



Reference

Description	Reference	Weight kg
Momentum processor with integrated 4-port Ethernet switch	**171CBB97030**	0.190

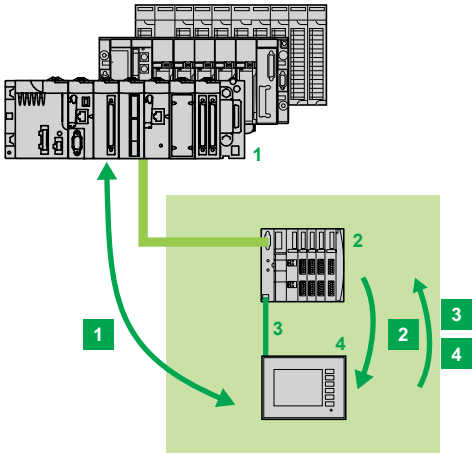
Modicon STB distributed I/O solution

Combination with Magelis operator dialogue terminals

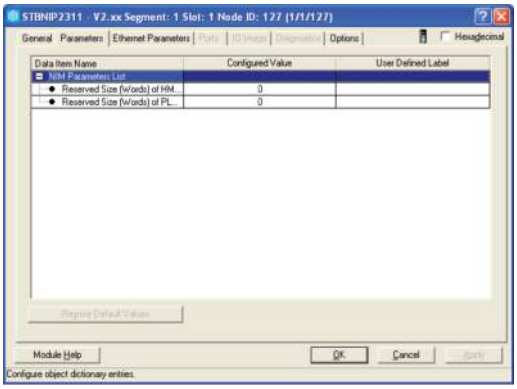
STBNCO2212 (cover open) and STBXCA4002 cable

Application

A Magelis operator dialogue terminal can be connected directly to a Modicon STB island via the Modbus programming port on the island's standard communication module.



1 PLC.
2 Modicon STB distributed I/O island with STBN●●2●1● standard NIM communication module.
3 Modbus serial cable and adaptor if required (see compatibility table on page 101).
4 Magelis operator dialogue terminal.



Configuring the exchange memory size with Advantys STBSPU1●●● software

Functions

In this architecture, the Magelis operator dialogue terminal is the Modbus serial link master and the Modicon STB standard communication module is the slave.

The connection allows:

1 Data exchange between the Magelis terminal and the PLC, via the exchange area defined by the user in the Modicon STB memory.
Two word tables have to be configured (sizes, labels) in the memory of the NIM communication module, using the Modicon STBSPU1●●● configuration software:
- One written by the terminal and read by the PLC (HMI->PLC)
- The other written by the PLC and read by the terminal (PLC->HMI)

The Modicon STB distributed I/O island is used as a neutral gateway between the PLC and the terminal.
The terminal can display information coming from the PLC and, conversely, control automatic functions in the normal way.

2 Display of the following Modicon STB island data on the screen of the Magelis terminal:
- Input and output values
- Internal states

3 When the Modicon STB island is in "Online test" mode (communication with the PLC operational), writing of the island's output values. This mode can be accessed by entering a configurable password.

4 When the Modicon STB island is in "PLC offline test" mode (communication with the PLC stopped), writing of the island's output values. This mode can be protected by a configurable password, if the user requires.

Note:
- Function **2** does not require communication to be established between the PLC and the Modicon STB island
- Functions **2** and **3** or **2** and **4** cannot be performed simultaneously

Modicon STB distributed I/O solution

Combination with Magelis operator dialogue terminals

HMISTU

XBTGT

XBTGH

XBTGK

Magelis operator dialogue terminals *(1)*			
Type of terminal		**Magelis range** *(1)*	**Cable to be used** (terminal/STB island NIM module connection)
Item 4 *(2)*			**Item 3** *(2)*
Small Panels	with 3.4" touch screen	**HMISTO**	**XBTZ9715** (HE13 - RJ45, length 2.5 m)
	with 3.5" touch screen	**HMISTU** *(3)*	
	with keypad, screen: 4.34…17.36 mm	**XBTN**	**XBTZ988** (HE13 - 25-way SUB-D, length 2.5 m)
		XBTR	
	with keypad, screen: 4…16 mm	**XBTRT**	**XBTZ9715** (HE13 - RJ45, length 2.5 m)
Advanced Panels	with 3.8" touch screen	**XBTGT1●**	**XBTZ988** (HE13 - 25-way SUB-D, length 2.5 m) + **XBTZG939 adaptor** (25-way SUB-D/RJ45)
	with touch screen: 5.7", 7.5", 10.4", 12.1", 15"	**XBTGT2/4/5/6/7●**	**STBXCA4002** (HE13 - 9-way SUB-D, length 2 m) or **XBTZ988** (HE13 - 25-way SUB-D, length 2.5 m) + **XBTZG919 adaptor** (25 -way SUB-D / 9-way SUB-D)
	with touch screen: 3.5", 7.0 WVGA (Wide), 5.7", 7.5", 10.4", 12.1"	**HMIGTO**	
	with keypad and screen: 5.7", 10.4"	**XBTGK**	
	portable 5.7"	**XBTGH**	
	with open touch screen: 8.4", 12"	**XBTGTW**	
	with open touch screen: 15"	**HMIGTW**	

(1) For references and full descriptions, please consult the "Human/machine Interfaces" catalogue.
(2) For items 3 and 4, see "Application" on page 100.
(3) Fixed via Ø 22 mm hole. Does not require additional enclosure cut-out.

Modicon STB distributed I/O solution

STB I/O modules and Telefast ABE7 wiring system

Presentation *(1)*

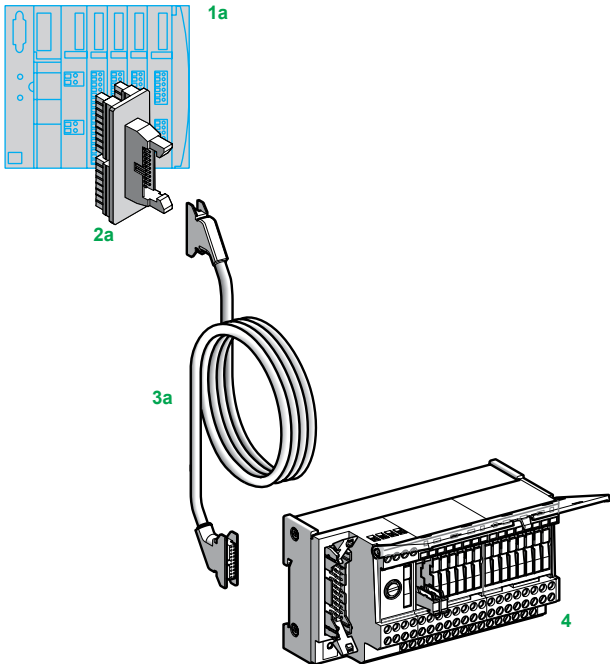
Using the Modicon Telefast ABE7 connector or adapter system rationalizes and simplifies electrical enclosure wiring.
Far less space is required in the enclosure and the Telefast ABE7 base replaces the connection terminals at the bottom of the enclosure.

The Modicon wiring system, with its Telefast and Telefast for Twido controllers bases, is particularly suitable for applications requiring:
- 48 V ⎓ and 48 V ∿ voltage I/O.
- A large number of 115 V ∿ and 230 V ∿ I/O.
- A large number of relay outputs.

Connection of Modicon STB I/O modules to the Telefast ABE7 system differs according to the type of module:
- 16-channel digital I/O modules STBDDI3725 and STBDDO3705: Connection via Telefast HE 10 connectors and their associated Telefast ribbon cables or cables. These connection components must be ordered separately (see description below and combinations on page 103).
- Other Modicon STB digital and analog I/O modules: Connection via screw or spring-type 5/6-way removable connectors, supplied with the I/O modules and the associated pre-wired cables. The latter must be ordered separately (see below).

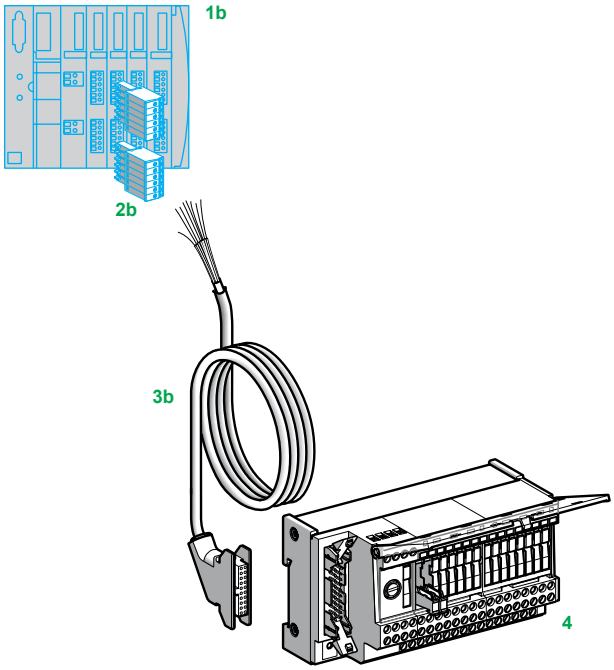
Description *(1)*

16-channel digital I/O modules STBDDI3725 and STBDDO3705



1a Modicon STB I/O island incorporating a module with 16 I/O STBDDI3725 or STBDDO3705.
2a HE10 connector STBXTS5●10 (DDI) or STBXTS6●90 (DDO).
3a Rolled ribbon cable TSXCDP●02 or connection cable TSXCDP●03 equipped with two 20-way HE10 connectors.
4 Modicon Telefast ABE7 connector or adapter base. See combination table on page 103.

Other Modicon STB digital and analog I/O modules



1b Modicon STB I/O island incorporating a digital I/O module STBDDI/DDO●●●●K (except for 16-channel modules) or an analog I/O module STBAVI/ACI/ART/AVO/ACO●●●●K.
2b Screw or spring-type 5/6-way removable connectors, supplied with the STB I/O module.
3b Pre-wired cable TSXCDP301/501/1001 (length 3/5/10 meters) with HE10 connector at one end and flying leads at the other end. Cross-section 0.324 mm^2, AWG24.
4 Modicon Telefast ABE7 connector or adapter base.

Redundancy solution for Modicon STB I/O *(1)*

Two Modicon STB I/O modules of the same type, located in two separate islands, can be connected to a single Telefast ABE7 pre-wired base (redundancy of I/O). This configuration is used, for example, in the context of a Premium Hot Standby architecture, please refer to our “Modicon Premium automation platform” catalogue.
Digital I/O modules are connected via a Telefast redundancy base ABE7ACC11 (inputs) or ABE7ACC10 (outputs) and the same connectors and ribbon cables or cables used for single connections.
STB analog I/O modules are connected via JM Concept analog I/O multiplexers JK3000N2 (inputs) and GK3000D1 (outputs).

(1) If you require any more information on the Telefast wiring system, please consult our Customer Care Centre.

Combinations of STB modules with 16 digital I/O/Telefast ABE7 systems (Telefast and Telefast for Twido controllers)

(1) (2)

Telefast ABE7 bases (item 4)		STBDDI3725 (item 1a)	STBDDO3705 (item 1a)	Ribbon cables (item 3a)	Cables (item 3a)
		Associated STBXTS●●●● connector (item 2a)			
Telefast passive connector bases (16-channel)					
Universal	**ABE7H16R●●**	**STBXTS6510**	**STBXTS6610**	**TSXCDP●02** (100 mA total max.) *(3)* or **ABFH20H●00** (> 500 mA total max.) *(3)*	**TSXCDP●●3** (> 500 mA total max.) *(4)*
	ABE7H16S21				
	ABE7H16S43				
	ABE7H16F43		**STBXTS6610**		
Miniature	**ABE7H16C10**	**STBXTS6510**			
	ABE7H16C11				
	ABE7H16C21				
	ABE7H16C31				
Telefast for Twido controllers passive connector bases (16-channel) *(6)*					
16 passive inputs	**ABE7E16EPN20**	**STBXTS5510**		–	**ABFT20E●●0** (> 500 mA total max.) *(5)*
16 passive outputs	**ABE7E16SPN20**		**STBXTS5610**		
	ABE7E16SPN22				
	ABE7E16SRM20				
Telefast input adapter active bases (16-channel)					
Voltage	**Telefast ABE7 base**				
V					
48 ⎓	**ABE7S16E2E1**	**STBXTS6510**		**TSXCDP●02** (100 mA total max.) *(3)* or **ABFH20H●00** (> 500 mA total max.) *(3)*	**TSXCDP●●3** (> 500 mA total max.) *(4)*
48 ∼	**ABE7S16E2E0**				
115 ∼	**ABE7S16E2F0**				
230…240 ∼	**ABE7S16E2M0**				
	ABE7P16F310				
	ABE7P16F312				

Telefast output adapter active bases (16-channel)

Type	Voltage	Current per channel	Telefast sub-base ABE7	Relay				
	V	**A**						
Relay	24 ⎓	0.5	**ABE7S16S2B0**	–		**STBXTS6610**	**TSXCDP●02** (100 mA total max.) *(3)* or **ABFH20H●00** (> 500 mA total max.) *(3)*	**TSXCDP●●3** (> 500 mA total max.) *(4)*
		0.5	**ABE7S16S1B2**	–				
		⩾ 0.7	**ABE7P16T●●●●** *(7)*	–				
Relay	48 ⎓	0.5	**ABE7P16T2●●●** *(7)*	ABS7C2E				
Relay	48 ∼	0.5	**ABE7P16T2●●●** *(7)*	ABS7SA2M				
Relay	115 ∼	0.5	**ABE7P16T2●●●** *(7)*	ABS7SA2M				
Relay	230...240 ∼	0.5	**ABE7P16T2●●●** *(7)*	ABS7SA2M				
Solid state	24...240 ∼	1.5	**ABE7P16T3●●**	ABS7SA3MA				
Solid state	24...48 ⎓	1.5	**ABE7P16T3●●**	ABS7SC3E				
Solid state	24 ⎓	2	**ABE7P16T3●●**	ABS7SC3BA				
Economy relay	30 ⎓	2	**ABE7R16S●●●**	–				
	30 ⎓	2..5	**ABE7R16S210/212**	–				
Economy relay	230 ∼	2	**ABE7R16S●●●**	–				
	230 ∼	2...5	**ABE7R16S210/212**	–				

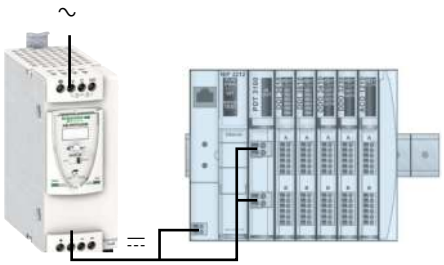
	Compatible
	Not compatible

⚠ The STB module can provide 24 V ⎓ power to the Telefast ABE7 block provided the current does not exceed 50 mA per group of 4 channels. Otherwise an external power supply will be required and only the 0 V reference should be connected between the STB module and the Telefast ABE7 block.

(1) Combinations given for 16-channel Modicon STB digital I/O modules (STBDDI3725/STBDDO3705). For other Modicon STB I/O modules (1b), connectors (2b) are supplied with the modules and the connection is made via pre-wired cable TSXCDP●●●●● (3b). See page 102.
(2) The item numbers indicated in this table correspond to the item numbers mentioned in the description on page 102.
(3) Replace the "●" with "1" for a 1 m length, "2" for 2 m, "3" for 3 m.
(4) Replace the "●●" with "05" for a 0.5 m length, "10" for 1 m, "20" for 2 m, "30" for 3 m, "50" for 5 m.
(5) Replace the "●●" with "05" for a 0.5 m length, "10" for 1 m, "20" for 2 m.
(6) For complete references and descriptions, please consult our specialist catalogue "Twido programmable controller".
(7) Empty bases.

Modicon STB distributed I/O solution

Phaseo regulated switch mode power supplies



ABL8RPS24050 *Modicon STB distributed I/O island*

Presentation

Two power supply offers are available for Modicon STB distributed I/O islands *(1)*:
- Phaseo regulated switch mode power supplies **ABL8RPS/RPM/WPS**
- Phaseo regulated switch mode power supplies **ABL4RSM/WSR**.

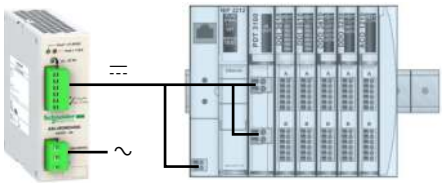
Phaseo regulated switch mode power supplies ABL8RPS/RPM/WPS *(2)*

The ABL8RPS/RPM/WPS power supply offer is designed to provide the DC voltage necessary for the control circuits of automation system equipment.
Comprising 6 products, this range meets requirements encountered in industrial and commercial applications.
These compact electronic switch mode power supplies provide the quality of output current required for the loads supplied and are compatible with the Modicon STB ranges of distributed I/O and the Modicon M340, Premium and Quantum automation platforms.

When used with additional function modules, they ensure continuity of service in the event of power outages or application malfunctions.

Phaseo ABL8RPS/RPM/WPS power supplies must be connected in phase-to-neutral or phase-to-phase for ABL8RPS/RPM and in 3-phase for ABL8WPS.
They deliver a voltage that is precise to within 3%, whatever the load and whatever the type of line supply, within the following ranges:
- 85 to 132 V ∿ and 170 to 550 V ∿ for ABL8RPS
- 85 to 132 V ∿ and 170 to 264 V ∿ for ABL8RPM
- 340 to 550 V ∿ for ABL8WPS

Conforming to IEC standards and UL and CSA certified, they are suitable for universal use.



ABL4RSM24050 *Modicon STB distributed I/O island*

Phaseo regulated switch mode power supplies ABL4RSM/WSR *(2)*

The ABL4RSM/WSR power supply offer is designed to provide the DC voltage necessary for the control circuits of automation system equipment consuming 85 W to 960 W on ⎓ 24 V.
Comprising 7 products, this range of power supplies meets the needs encountered in industrial applications.
Using electronic switch mode technology, these power supplies provide a quality of output current that is suitable for the loads supplied and compatible with the Modicon STB ranges of distributed I/O and the Twido programmable controllers, the Modicon logic controllers M238 and M258, the Modicon motion controllers LMC058, the automation platforms M340, Premium and Quantum.

Due to their high overload withstand, the power supplies ABL4 are the power supply solution for stepper motors, servo motors and integrated drives.
When used with function modules ABL8B/RED/D/P, they ensure continuity of service in the event of power outages or application malfunctions. In addition, the ABL4RSM24200 model can be used in a redundant power supply without an additional redundancy module due to its integrated diode.

Their high effectiveness enables us to offer power supplies that are among the smallest on the market, thus considerably reducing the space required in enclosures.

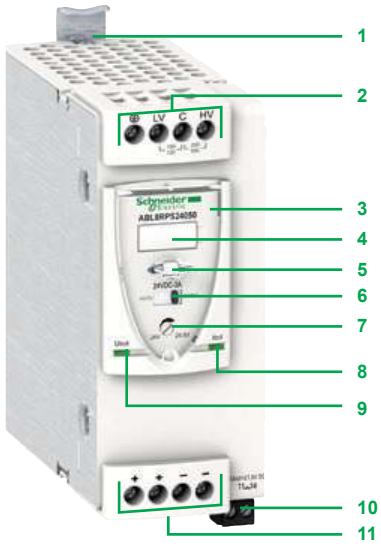
Power supplies ABL4 must be connected in phase-to-neutral, phase-to-phase *(3)* for the ABL4R, and in 3-phase for the ABL4W.
They deliver a voltage that is precise to within ± 1% whatever the load and whatever the type of line supply, within the following ranges:
- ∿ 90…264 V for the ABL4RSM24035 and ABL4RSM24050,
- ∿ 90…132 V and ∿ 185…264 V for the ABL4RSM24100 and ABL4RSM24200,
- ∿ 340…550 V for the ABL4W.

Conforming to IEC standards and UL certified, the power supplies ABL4 are suitable for universal use.

(1) Certain offers can not be marketed in certain countries, please consult our Customer Care Center.
(2) For more information on this offer, please consult our web site www.schneider-electric.com.
(3) Only on certain American lines supply.

Modicon STB distributed I/O solution

Phaseo regulated switch mode power supplies

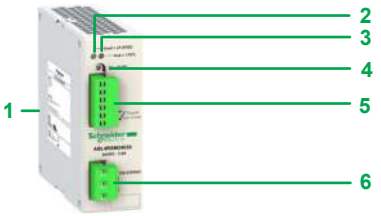


Description

Phaseo regulated switch mode power supplies ABL8RPS/RPM/WPS

The regulated switch mode power supplies Phaseo ABL8RPS/RPM/WPS comprise:

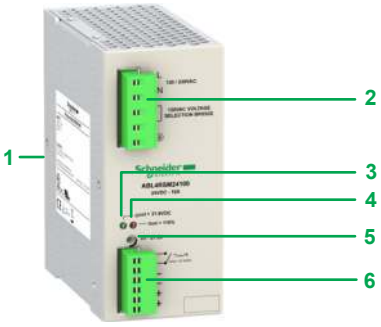
1 Spring clip for 35 mm ⊥ 35 rail
2 4 mm² cage clamp terminals for connecting the AC voltage (single-phase, phase-to-phase or 3-phase connection)
3 Protective glass flap
4 Clip-on marker label
5 Locking catch for the glass flap (sealable)
6 Protection mode selector
7 Output voltage adjustment potentiometer
8 Output voltage status LED (green and red)
9 Output current status LED (green, red, and orange)
10 Screw terminals for connecting the diagnostic relay contact, except ABL8RPS24030
11 4 mm² (10 mm² on ABL8WPS24●00 and ABL8RPM24200) cage clamp terminals for connecting the DC output voltage



Phaseo regulated switch mode power supplies ABL4RSM/WSR

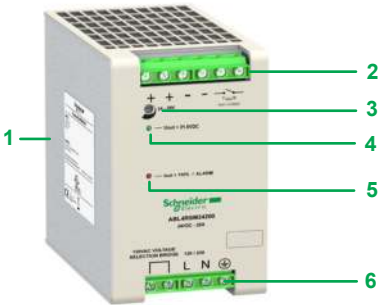
The regulated switch mode power supplies Phaseo ABL4RSM24035 and ABL4RSM24050 comprise:

1 Spring clip for Omega (⊥ 35 mm) rail
2 Output voltage status LED (green)
3 Output circuit overcurrent LED (red)
4 Output voltage adjustment potentiometer
5 Removable screw terminal block for connection of the DC output voltage and diagnostics contact
6 Removable screw terminal block for connection of the AC input voltage on single-phase (1)



The regulated switch mode power supply Phaseo ABL4RSM24100 comprises:

1 Spring clip for Omega (⊥ 35 mm) rail
2 Removable screw terminal block for connection of the AC input voltage (on single-phase) *(1)*) and for connection of 120/230 V selection link
3 Output voltage status LED (green)
4 Output circuit overcurrent LED (red)
5 Output voltage adjustment potentiometer
6 Removable screw terminal block for connection of the DC output voltage and diagnostics contact



The regulated switch mode power supplies Phaseo ABL4RSM24200, ABL4WSR24200, ABL4WSR24300 and ABL4WSR24400 comprise:

1 Spring clip for Omega (⊥ 35 mm) rail
2 Enclosed screw terminals for connection of the DC output voltage and diagnostics contact
3 Output voltage adjustment potentiometer
4 Output voltage status LED (green)
5 Output circuit overcurrent and alarm LED (red)
6 Enclosed screw terminals for connection of the AC input voltage:
- single-phase connection for ABL4RSM24200 *(1)*
- 3-phase connection for ABL4W●●●●

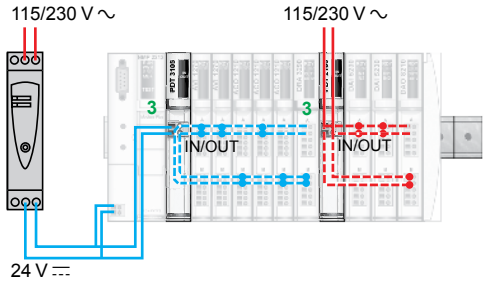
(1) Connection between 2 phases only on certain American line supplies.

Modicon STB distributed I/O solution

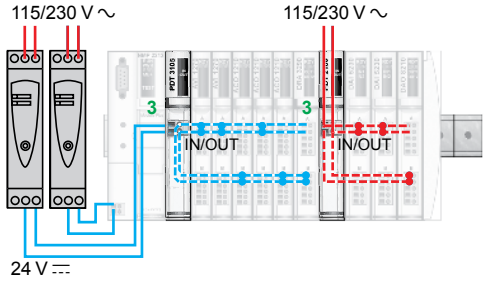
Phaseo regulated switch mode power supplies

Combinations of Phaseo power supplies with Modicon STB modules

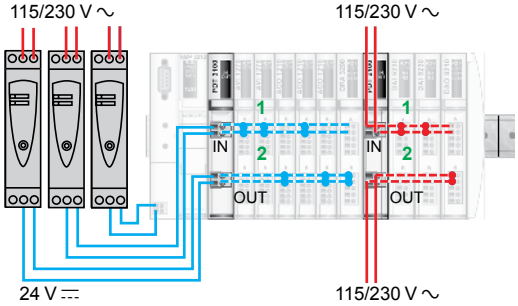
Type of Modicon STB module		NIM network interface module STBN••2•1• BOS bus expansion module STBXBE1300K Auxiliary power supply STBCPS2111K	Power distribution module (PDM) STBPDT3100K/3105K *(2)*	
			Sensors	Actuators
Configuration with *(1)*	**1 power supply**	ABL8RPS/RPM/WPS or ABL4RSM/WSR *(3)* 3 A min. or more, depending on primary connection and consumption of the island *(4)*		
	2 power supplies	ABL8RPS24030 (3 A) or ABL4RSM24035 (3.5 A) *(3)*	ABL8RPS/RPM/WPS or ABL4RSM/WSR *(3)* 3 A min. or more, depending on primary connection and consumption of the island *(4)*	
	3 power supplies	ABL8RPS24030 (3 A) or ABL4RSM24035 (3.5 A) *(3)*	ABL8RPS24030 (3 A); ABL8RPS24050 (5 A) or ABL4RSM24035 (3.5 A); ABL4RSM24050 (5 A) *(3)*	ABL8RPS/RPM/WPS or ABL4RSM/WSR *(3)* 3 A min. or more, depending on primary connection and consumption of the island *(4)*



Configuration with basic PDM and one 24 V ⎓ power supply



Configuration with basic PDM and two separate 24 V ⎓ power supplies



Configuration with standard PDM and three separate 24 V ⎓ power supplies

If the nominal current values for Phaseo power supplies are exceeded, multiple power supplies can be used to power NIM, BOS, CPS and PDM modules in accordance with the rules defined above (1, 2 or 3 power supplies).

Reminder:

■ The STBCPS2111K module must be used with an STBPDT3100K/3105K power distribution module.

■ 24 V ⎓ power supplies. The input currents of these power supplies are as follows:

- □ NIM network interface module STBN••: 0.4 A
- □ BOS bus expansion module STBXBE1300K: 0.3 A
- □ Auxiliary power supply STBCPS2111K: 0.3 A

■ Power distribution modules (PDM): the maximum current is as follows:

- □ STBPDT3100K for sensor power supply: 4 A at 30°C, 2.5 A at 60°C
- □ STBPDT3100K for actuator power supply: 8 A at 30°C, 5 A at 60°C
- □ STBPDT3105K for sensor/actuator power supply: 4 A at 30°C, 2.5 A at 60°C

(1) See diagrams below.
(2) Basic power distribution module STBPDT3105K*: installation with 1 or 2 power supplies only.*
(3) Certain offers can not be marketed in certain countries, please consult our Customer Care Center.
(4) Consumption statistics for the 5 V logic power supply and 24 V sensor and actuator power supplies can be viewed using the Advantys STBSPU1•••• configuration and debugging software. Consumption statistics for the 5 V ⎓ logic power supply can be produced manually using the table on page 114.

Schneider Electric

Modicon STB distributed I/O solution

Phaseo regulated switch mode power supplies

PF106349

ABL8RPS24050

PF513585

ABL8RPM24200

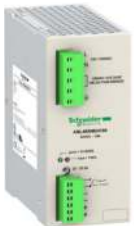
PF513586

ABL8WPS24200

PF100288B

ABL4RSM24050

PF100287B



ABL4RSM24100

PF100851A

ABL4WSR24200

PF513587

ABL8BUF24400

Phaseo regulated switch mode power supplies ABL8RPS/RPM/WPS *(1)*

Input voltage	Secondary: Output voltage	Nominal power	Nominal current	Reset	Conforming to IEC/EN 61000-3-2	Reference	Weight kg
Single-phase (N-L1) **or 2-phase** (L1-L2) **connection**							
100…120 V ∿ - 200...500 V ∿ - 15%,+ 10% 50/60 Hz	24...28.8 V ⎓	72 W	3 A	Auto/man	Yes	**ABL8RPS24030**	0.300
		120 W	5 A	Auto/man	Yes	**ABL8RPS24050**	0.700
		240 W	10 A	Auto/man	Yes	**ABL8RPS24100**	1.000
100…120 V/ - 200...240 V ∿ - 15%,+ 10% 50/60 Hz	24...28.8 V ⎓	480 W	20 A	Auto/man	Yes	**ABL8RPM24200**	1.600
3-phase connection (L1-L2-L3)							
380…500 V ∿ ± 10% 50/60 Hz	24...28.8 V ⎓	480 W	20 A	Auto/man	Yes	**ABL8WPS24200**	1.600
		960 W	40 A	Auto/man	Yes	**ABL8WPS24400**	2.700

Phaseo regulated switch mode power supplies ABL4RSM/WSR *(1)*

Input voltage	Secondary: Output voltage	Nominal power	Nominal current	Reset	Reference	Weight kg
Single-phase (N-L1) **connection** *(2)*						
100…230 V ∿ - 10%, + 15%	23…27.4 V ⎓	85 W	3.5 A	Automatic	**ABL4RSM24035**	0.500
		120 W	5 A	Automatic	**ABL4RSM24050**	0.500
120 V ∿ - 25%, + 10% and **230 V ∿** - 20%, + 15%	23…27.4 V ⎓	240 W	10 A	Automatic	**ABL4RSM24100**	0.800
	24…27.8 V ⎓	480 W	20 A	Automatic	**ABL4RSM24200** *(3)*	1.300
3-phase (L1-L2-L3) **connection**						
400…500 V ∿ - 15%, + 10%	24…27.8 V ⎓	480 W	20 A	Automatic	**ABL4WSR24200**	1.300
		720 W	30 A	Automatic	**ABL4WSR24300**	1.300
		960 W	40 A	Automatic	**ABL4WSR24400**	1.300

Function modules for continuity of service *(4)*

Function	Use	Description	Reference	Weight kg
Continuity after a power outage	Holding time 100 ms at 40 A and 2 s at 1 A	Buffer module	**ABL8BUF24400**	1.200
	Holding time 9 min at 40 A...2 hrs at 1 A (depending on use with a battery check module-battery unit and load) *(5)*	Battery check module, 20 A output current	**ABL8BBU24200**	0.500
		3.2 Ah battery module *(6)*	**ABL8BBU24400**	0.700
		7 Ah battery module *(6)*	**ABL8BPK24A03**	3.500
		7 Ah battery module *(6)*	**ABL8BPK24A07**	6.500
		12 Ah battery module *(6)*	**ABL8BPK24A12**	12.000
Continuity after a failure	Paralleling and redundancy of the power supply to ensure uninterrupted operation of the application excluding supply failures and application overloads	Redundancy module	**ABL8RED24400**	0.700
Discriminating downstream protection	Electronic protection (1...10 A overload or short-circuit) of 4 output terminals from a Phaseo ABL8RPS/RPM/WPS or ABL4RSM/WSR power supply	Protection module with 2-pole breaking *(7)(8)*	**ABL8PRP24100**	0.270

Separate and spare parts

Description	Use	Composition	Unit reference	Weight kg
Fuse assemblies	ABL8PRP24100 discriminating protection module	4 x 5 A, 4 x 7.5 A and 4 x 10 A	**ABL8FUS01**	–
	ABL8BKP24A●● battery	4 x 20 A and 6 x 30 A	**ABL8FUS02**	–
Clip-on marker labels	All products except ABL8PRP24100	Order in multiples of 100	**LAD90**	0.030
	ABL8PRP24100 discriminating protection module	Order in multiples of 22	**ASI20MACC5**	–
DIN rail mounting kit	ABL8BPK24A03 battery module		**ABL1A02**	–
EEPROM memory	Backup and duplication of ABL8BBU24●00 battery check module parameters		**SR2MEM02**	0.010

(1) Certain offers can not be marketed in certain countries, please consult our Customer Care Center.
(2) 2-phase connection possible on certain American line supplies.
(3) Power supply reference ABL4RSM24200 has an integrated redundancy diode.
(4) For use with Phaseo power supplies ABL8RPS/RPM/WPS or ABL4RSM/WSR.
(5) Compatibility table for battery check module-battery unit with holding time depending on the load. More technical information on www.schneider-electric.com.
(6) Supplied with 20 or 30 A fuse depending on the model.
(7) Supplied with four 15 A fuses.
(8) Local reset via pushbutton or automatic reset on elimination of the fault.

Modicon STB distributed I/O solution

Compatibility of I/O with OsiSense XU photo-electric sensors

Photo-electric sensors *(1)*				Digital (discrete) input modules						
				STBDDI				STBDAI		
Type			Reference	3230K	3420K 3425K	3610K 3615K	3725KC 3725KS	5230K	5260K	7220K
General purpose										
Design Ø 18	Metal	3-wire, PNP 24 V	XUB0/1/2/4/5/9B●P●●●	■	■	■	■			
		3-wire, NPN 24 V	XUB0/1/2/4/5/9B●N●●●		■		■			
	Plastic	3-wire, PNP 24 V	XUB0/1/2/4/5/9A●P●●●	■	■	■	■			
		3-wire, NPN 24 V	XUB0/1/2/4/5/9A●N●●●		■		■			
Design	Miniature	3-wire, PNP 24 V	XUM0/2/5/9AP●●●●	■	■	■	■			
		3-wire, NPN 24 V	XUM0/2/5/9AN●●●●		■		■			
	Compact 50 x 50	3-wire, PNP 24 V	XUK1/2/5/8/9AP●●●	■	■	■	■			
		3-wire, NPN 24 V	XUK1/2/5/8/9AN●●●		■		■			
		3-wire, programmable PNP/NPN DC	XUK0AK●●●	■	■	■	■			
		5-wire, programmable AC/DC	XUK0/1/2/5/8/9AR					■	■	■
	Compact 92 x 71	3-wire, programmable PNP/NPN DC	XUX0/1/2/5/8/9AK	■	■	■	■			
		5-wire, programmable AC/DC	XUX0/1/2/5/8/9AR					■	■	■
Application										
Material handling	Optical fork	3-wire, PNP 24 V	XUVR●●●●P●●	■	■	■	■			
		3-wire, NPN 24 V	XUVR●●●●N●●		■		■			
		3-wire, PNP 24 V	XUVA●●●●P●●	■	■	■	■			
		3-wire, NPN 24 V	XUVA●●●●N●●		■		■			
		4-wire, PNP or NPN 24 V	XUYF●●●●●	■	■	■	■			
		4-wire, PNP or NPN 24 V	XUVU06●●●	■	■	■	■			
		4-wire, PNP or NPN 24 V	XUVK●●●	■	■	■	■			
		3-wire, PNP 24 V	XUVH●●●	■	■	■	■			
		3-wire, NPN 24 V	XUVJ●●●		■		■			
		4-wire, PNP or NPN 24 V	XUVF●●●	■	■	■	■			
Packaging	Fibre	4-wire, PNP or NPN 24 V	XUYDCF●●●	■	■	■	■			
	Compact	4-wire, PNP 24 V	XUK●S●●●●	■	■	■	■			
	M18, threaded	3-wire, PNP 24 V	XU5M18U1D	■	■	■	■			
	Fibre	4-wire, PNP or NPN 24 V	XUYAFL●●●	■	■	■	■			
	M18, threaded	3-wire, PNP 24 V	XUBT●P●●●	■	■	■	■			
		3-wire, NPN 24 V	XUBT●N●●●		■		■			
	Compact	4-wire, PNP or NPN 24 V	XUKT●●●	■	■	■	■			
		3-wire, PNP 24 V	XUKC1N●●●	■	■	■	■			
		3-wire, NPN 24 V	XUKC1P●●●		■		■			
		3-wire, PNP 24 V	XURC3P●●●	■	■	■	■			
		3-wire, NPN 24 V	XURC3N●●●		■		■			
		4-wire, PNP or NPN 24 V	XUMW●●●	■	■	■	■			
	M18, threaded	3-wire, PNP 24 V	XUB0SP●●●	■	■	■	■			
		3-wire, NPN 24 V	XUB0SN●●●		■		■			
		3-wire, PNP 24 V	XU●N18P●●●	■	■		■			
		3-wire, NPN 24 V	XU●N18N●●●		■		■			
	M8, threaded	3-wire, PNP 24 V	XUAH●●●	■	■	■	■			
		3-wire, NPN 24 V	XUAJ●●●		■		■			
	Miniature	3-wire, PNP 24 V	XUYP●●●●P●●	■	■	■	■			
		3-wire, NPN 24 V	XUYP●●●●N●●		■		■			
		3-wire, PNP 24 V	XUM2/5/9BP●●●	■	■	■	■			
		3-wire, NPN 24 V	XUM2/5/9BN●●●		■		■			
		3-wire, PNP 24 V	XUY●●●929●●	■	■	■	■			
Hoisting	M18, threaded	3-wire, PNP 24 V	XUBLBP●●●	■	■	■	■			
		3-wire, NPN 24 V	XUBLBN●●●		■		■			
	Compact	2-wire 4…20 mA; 3-wire 0…10 V	XUJK803538							
	M18, threaded	2-wire 4…20 mA	XU5M18AB20D							
		PNP, 2-wire 4…20 mA	XU2M18AB20D	■	■	■	■			
	Compact	PNP, 2-wire 4…20 mA	XUYP●●●925	■	■	■	■			
		4-wire, PNP or NPN 24 V	XUYPS●●●	■	■	■	■			
	Fibre	3-wire, PNP 24 V	XUDA●P●●●	■	■	■	■			
		3-wire, NPN 24 V	XUDA●N●●●		■		■			
		4-wire, PNP or NPN 24 V	XUYAF●●●	■	■	■	■			
	Other formats	3-wire, programmable PNP/NPN DC	XUC2/8/9AK●●●	■	■	■	■			
		5-wire, programmable AC/DC	XUC2/8/9ARC●●●					■	■	■
		3-wire, PNP 24 V	XUE●AA●●●	■	■	■	■			
		2-wire, AC	XULA●●●					■	■	■
		5-wire, programmable AC/DC	XULM●●●					■	■	■
		3-wire, programmable PNP/NPN DC	XUYB●●●S	■	■	■	■			
		5-wire, programmable AC/DC	XUYB●●●R					■	■	■
	M18, threaded	2-wire, AC DC	XU5/8/9M18MA●●●					■	■	■

Compatible
Not compatible

(1) To obtain the complete references, please consult the "Detection for automation solutions" catalog available on the www.tesensors.com website.

	Analog input modules								Counter module
	STBAVI				STBACI			STBART	STBEHC
	1255K	1270K 1275K	0300K	1400K	1225K 1230K	0320K 8320K	1400K	0200K	3020K

Modicon STB distributed I/O solution

Compatibility of I/O with OsiSense XS inductive proximity sensors

Inductive proximity sensors *(1)*				**Digital (discrete) input modules**			
				STBDDI			
Type			**Reference**	**3230K**	**3420K 3425K**	**3610K 3615K**	**3725KC 3725KS**
General purpose							
Cylindrical, flush mountable, standard range, short tube	Ø 6.5 plain M8, M12, M18, M30, threaded	3-wire, PNP 24 V	XS506/08/12/18/30B1P●●●	■	■	■	■
		3-wire, NPN 24 V	XS506/08/12/18/30B1N●●●		■		■
		2-wire, DC 24 V	XS506/08/12/18/30BSD/C●●●	■	■	■	■
Cylindrical, flush mountable, standard range, long tube	M8, M12, M18, M30, threaded	3-wire, PNP 24 V-48 V	XS508/12/18/30BLP●●●	■	■	■	■
		3-wire, NPN 24 V-48 V	XS508/12/18/30BLN●●●		■		■
		2-wire, DC 24 V-48 V	XS508/12/18/30B1D/C●●●	■	■	■	■
	M12, M18, M30, threaded	2-wire, AC DC	XS512/18/30B1M●●●				
Cylindrical, flush mountable, increased range, short tube	Ø 6.5 plain M8, M12, M18, M30, threaded	3-wire, PNP 24 V	XS106/08/12/18/30B3P●●●	■	■	■	■
		3-wire, NPN 24 V	XS106/08/12/18/30B3N●●●		■		■
		2-wire, DC 24 V	XS606/08/12/18/30B3D/C●●●	■	■	■	■
Cylindrical, flush mountable, increased range, long tube	M8, M12, M18, M30, threaded	3-wire, PNP 24 V-48 V	XS608/12/18/30B1P●●●	■	■	■	■
		3-wire, NPN 24 V-48 V	XS608/12/18/30B1N●●●		■		■
		2-wire, DC 24 V-48 V	XS608/12/18/30B1D●●●	■	■	■	■
	M12, M18, M30, threaded	2-wire, AC DC	XS612/18/30B1M●●●				
Cylindrical, non flush mountable, increased range, long tube	M12, M18, M30, threaded	3-wire, PNP 24 V-48 V	XS612/18/30B4P●●●	■	■	■	■
		3-wire, NPN 24 V-48 V	XS612/18/30B4N●●●		■		■
		2-wire, AC DC	XS612/18/30B4M●●●				
Flat format, flush mountable, standard range	Formats: J 8x22x8, F 15x22x8, E 26x26x13, C 40x40x15, D 80x80x26	3-wire, PNP 24 V	XS7J/F/E/C/D1A1P●●●	■	■	■	■
		3-wire, NPN 24 V	XS7J/F/E/C/D1A1N●●●		■		■
		2-wire, DC 24 V	XS7J/F/E/C/D1A1D/C●●●	■	■	■	■
40X40X117 format, plastic, turret head: 5 positions	NO + NC	4-wire, PNP 24 V-48 V	XS7/XS8C2/C4A1/A4P●●●	■	■	■	■
		4-wire, NPN 24 V-48 V	XS7/XS8C2/C4A1/A4N●●●		■		■
	NO/NC programmable	2-wire, DC 24 V-48 V	XS7/XS8C2/C4A1/A4D●●●	■	■	■	■
		2-wire, AC DC	XS7/XS8C2/C4A1/A4M●●●				
Flat format, flush mountable, increased range	Formats: E 26x26x13, C 40x40x15, D 80x80x26	3-wire, PNP 24 V	XS8E/C/D1A1P●●●	■	■	■	■
		3-wire, NPN 24 V	XS8E/C/D1A1N●●●		■		■
		2-wire, AC DC	XS8E/C/D1A1M●●●				
Cylindrical, multivoltage	M12, M18, M30, threaded	2-wire, AC DC	XS1/2M12/18/30M●250				
Cylindrical, metal, 4-wire	Ø 6.5 plain M8, M12, M18, M30, threaded	4-wire, PNP 24 V	XS1L06/M08/N12/18/30PC410	■	■	■	■
		4-wire, NPN 24 V	XS1L06/M08/N12/18/30NC410		■		■
Cylindrical, metal, 4-wire PNP+NPN	M12, M18, M30, threaded	4-wire, PNP+NPN, programmable 24 V	XS1/2/4M12/18/30KP340●	■	■	■	■
Cylindrical, plastic, non flush mountable, standard range	M8, M12, M18, M30, threaded	3-wire, PNP 24 V	XS4P08/12/18/30P●340●	■	■	■	■
		3-wire, PNP 24 V-48 V	XS4P08/12/18/30P●370●	■	■	■	■
		3-wire, NPN 24 V	XS4P08/12/18/30N●340●		■		■
		3-wire, NPN 24 V-48 V	XS4P08/12/18/30N●370●		■		■
		2-wire, AC DC	XS4P08/12/18/30M●230●●●				
Basic, cylindrical, plastic, non flush mountable or metal, flush mountable and non flush mountable, standard range	Ø 6.5 plain	3-wire, PNP 24 V	XS1/206BLP●●●	■	■	■	■
		3-wire, NPN 24 V	XS1/206BLN●●●		■		■
	M8, M12, M18, M30, threaded	3-wire, PNP 24 V	XS1/208/12/18/30A/BLP●●●	■	■	■	■
		3-wire, NPN 24 V	XS1/208/12/18/30A/BLN●●●		■		■
	M8, M12, M18, M30, threaded	3-wire, PNP 24 V	XS1N08/12/18/30P●349●	■	■	■	■
		3-wire, NPN 24 V	XS1N08/12/18/30N●349●		■		■
Cylindrical, miniature	Ø 4 plain	3-wire, PNP 24 V	XS1L04P●31●●	■	■	■	■
		3-wire, NPN 24 V	XS1L04N●31●●		■		■
	M5, threaded	3-wire, PNP 24 V	XS1N05P●31●●	■	■	■	■
		3-wire, NPN 24 V	XS1N05N●31●●		■		■
	Ø 6.5 plain	3-wire, PNP 24 V	XS2L06P●340●	■	■	■	■
		3-wire, NPN 24 V	XS2L06N●340●		■		■
Applications							
Adjustable range	M12, M18, M30, threaded	3-wire, PNP 24 V	XS612/618/630B2P●●●	■	■	■	■
		3-wire, NPN 24 V	XS612/618/630B2N●●●		■		■
Rotation monitoring	M18, threaded	3-wire, PNP 24 V-48 V	XSAV11/2373	■	■	■	■
		2-wire, AC DC	XSAV11/2801				
	E 26x26x13, C 40x40x15 formats	3-wire, PNP 24 V	XS9E/C11RP●●●●	■	■	■	■
		2-wire, AC DC	XS9E/C11RM●●●●				
Analog output	M12, M18, M30, threaded	2-wire 4…20 mA; 3-wire 0…10 V	XS●12/18/30AB●●●●				
	Block format	2-wire 4…20 mA; 3-wire 0…10 V	XS9●111A●●●● XS9C2/C4A2A●●●●				
Food and beverage processing	Cylindrical, threaded, metal	3-wire, PNP 24 V	XS2●●SAP●●● XS908/12/18/30R/S●P●●●	■	■	■	■
		3-wire, NPN 24 V	XS2●●SAN●●●		■		■
		2-wire, AC DC	XS2●●SAMA●●●				
	Cylindrical, threaded, plastic	3-wire, PNP 24 V-48 V	XS2●●AAP●●●	■	■	■	■
		3-wire, NPN 24 V	XS2●●AAN●●●		■		■
		2-wire, AC DC	XS2●●AAMA●●●				
Factor 1	Cylindrical, threaded, metal	4-wire, PNP+NPN 24 V	XS1M●●KPM40	■	■	■	■
	C 40 x 117 x 41 format	4-wire, PNP+NPN 24 V	XS9C2/C4A●●●●	■	■	■	■
	Cylindrical, threaded, metal	3-wire, PNP 24 V	XS1M18PAS●●	■	■	■	■
Assembly	12x26x40 format	3-wire, PNP 24 V	XS7G12P●140	■	■	■	■
		3-wire, NPN 24 V	XS7G12N●140		■		■
		4-wire, PNP 24 V-48 V	XS7G12P●440	■	■	■	■
		4-wire, NPN 24 V-48 V	XS7G12N●440		■		■
		2-wire, AC DC	XS7G12M●230				
Conveying	C 40x40x40 format	2-wire, DC 24 V-48 V	XS7T4DA●●●	■	■	■	■
		4-wire, PNP 24 V-48 V	XS7T4PC●●●	■	■	■	■
		4-wire, NPN 24 V-48 V	XS7T4NC●●●		■		■
	D 80x80x40 format	2-wire, DC 24 V-48 V	XS7D1●●●●	■	■	■	■
Welding	Cylindrical, metal	3-wire, PNP 24 V	XS1M●●PAW●●	■	■	■	■
		2-wire, DC 24 V-48 V	XSLC●●●	■	■	■	■

Compatible
Not compatible

(1) To obtain the complete references, please consult the "Detection for automation solutions" catalog available on the www.tesensors.com website.

	Digital (discrete) input modules			Analog input modules								Counter module
	STBDAI			STBAVI				STBACI			STB ART	STBEHC
	5230K	5260K	7220K	1255K	1270K 1275K	0300K	1400K	1225K 1230K	0320K 8320K	1400K	0200K	3020K

Some countries require certain electrical components to undergo certification by law. This certification takes the form of a certificate of conformity to the relevant standards and is issued by the official body in question. Where applicable, certified devices must be labelled accordingly. Use of electrical equipment on board merchant vessels generally implies that it has gained prior approval (i.e. certification) by certain shipping classification societies.

Abbreviation	Certification body	Country
CSA	Canadian Standards Association	Canada
C-Tick	Australian Communications and Media Authority	Australia, New Zealand
GOST	Scientific research institute for GOST standards	Russia
UL	Underwriters Laboratories	USA

Abbreviation	Classification authority	Country
IACS	International Association of Classification Societies	International
ABS	American Bureau of Shipping	USA
BV	Bureau Veritas	France
DNV	Det Norske Veritas	Norway
GL	Germanischer Lloyd	Germany
LR	Lloyd's Register	UK
RINA	Registro Italiano Navale	Italy
RMRS	Russian Maritime Register of Shipping	Russia
RRR	Russian River Register	Russia
CCS	China Classification Society	China

The tables below provide an overview of the situation as at 1st October 2012 in terms of which certifications (listed next to their respective bodies) have been granted or are pending for our automation products.
Up-to-date information on which certifications have been obtained by products bearing the Schneider Electric brand can be viewed on our website: **www.schneider-electric.com**

Product certifications

Certified
Certification pending

	Certifications						
	UL	**CSA**	**C-Tick ACMA**	**GOST**	**Hazardous locations** *(1)* **Class I, div 2**	IEC IECEx Ex *(6)*	TÜV Rheinland FS
	USA	Canada	Australia	Russia	USA, Canada		
Modicon OTB							
Modicon STB					FM	Zone 2 *(2)(5)*	
Modicon Telefast ABE 7							
ConneXium					*(2)*		
Magelis iPC/GTW		*(3)*		*(2)*	*(3)*	Zone 2/22 *(2)*	
Magelis XBT GT		*(3)*		*(2)*	*(2) (3)*	Zone 2/22 *(2)(5)*	
Magelis XBT GK		*(3)*			*(3)*		
Magelis XBT N/R/RT					CSA	Zone 2/22 *(2)(5)*	
Magelis HMI GTO		*(3)*		*(2)*	*(3)*	*(2)*	
Magelis HMI STO/STU		*(3)*		*(2)*	*(2)(3)*	*(2)*	
Modicon M340					CSA	Zone 2/22 *(2)(8)*	
Modicon Momentum					FM		
Modicon Premium				*(2)*	CSA		
Modicon Quantum				*(2)*	CSA, FM *(2)*	Zone 2/22 *(2)*	
Modicon Quantum Safety				*(2)*	CSA	Zone 2/22 *(2)*	SIL 2, SIL 3 *(7)*
Preventa XPSMF							SIL 3 *(7)*
Modicon TSX Micro					CSA		
Phaseo	*(3)*						
Twido	*(4)*	*(4)*			CSA/UL *(4)*		

(1) Hazardous locations: According to ANSI/ISA 12.12.01, CSA 22.2 No. 213 and FM 3611, certified products are only approved for use in hazardous locations categorized as Class I, division 2, groups A, B, C and D, or in non-classified locations.
(2) Depends on product; please visit our website: www.schneider-electric.com.
(3) North American certification cULus (Canada and USA).
(4) Except for AS-Interface module TWD NOI 10M3, CE only.
(5) For zones not covered by this specification, Schneider Electric offers a solution as part of the CAPP (Collaborative Automation Partner Program). Please consult our Customer Care Centre.
(6) Refer to the instructions supplied with each ATEX and/or IECEx certified product.
(7) According to IEC 61508. Certified by TÜV Rheinland for integration into a safety function of up to SIL 2 or SIL 3.
(8) Can be used in gassy mines under certain conditions.

Merchant navy certifications

Certified
Certification pending

	Shipping classification societies										
	ABS	BV	DNV	GL	KRS	LR	RINA	RMRS	RRR	PRS	CCS
	USA	France	Norway	Germany	Korea	Great Britain	Italy	Russia	Russia	Poland	China
Modicon OTB											
Modicon STB	*(1) (2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*				
Modicon Telefast ABE 7											
ConneXium											
Magelis iPC/GTW				*Bridge (2)*							
Magelis XBT GT	*(2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*	*(2)*	*(2)*		
Magelis XBT GK											
Magelis XBT N/R											
Magelis XBT RT											
Magelis HMI GTO											
Magelis HMI STO/STU		*(2)*	*(2)*								
Modicon M340								*(2)*	*(2)*		
Modicon Momentum											
Modicon Premium											
Modicon Quantum											
Modicon TSX Micro											
Phaseo											
Twido											

(1) Also covers US Navy requirements **ABS-NRV** part 4.
(2) Depends on product; please visit our website: www.schneider-electric.com.

EC regulations

European Directives

The open nature of the European markets assumes harmonization between the regulations set by the member states of the European Union. European Directives are texts whose aim is to remove restrictions on free circulation of goods and which must be applied within all European Union states.
Member states are obligated to incorporate each Directive into their national legislation, and to simultaneously withdraw any regulations that contradict it.
Directives - and particularly those of a technical nature with which we are concerned - merely set out the objectives to be fulfilled (referred to as “essential requirements”). Manufacturers must take all necessary measures to ensure that their products conform to the requirements of each Directive applicable to their equipment.
As a general rule, manufacturers certify compliance with the essential requirements of the Directive(s) that apply to their products by applying a CE mark. The CE mark is affixed to our products where applicable.

Significance of the CE mark

The CE mark on a product indicates the manufacturer's certification that the product conforms to the relevant European Directives; this is a prerequisite for placing a product which is subject to the requirements of one or more Directives on the market and allowing its free circulation within European Union countries. The CE mark is intended for use by those responsible for regulating national markets.
Where electrical equipment is concerned, conformity to standards indicates that the product is fit for use. Only a warranty by a well-known manufacturer can provide assurance of a high level of quality.
As far as our products are concerned, one or more Directives are likely to apply in each case; in particular:

- The Low Voltage Directive (2006/95/EC)
- The Electromagnetic Compatibility Directive (2004/108/EC)
- The ATEX CE Directive (94/9/EC)

Dangerous substances

These products are compatible with:

- The WEEE Directive (2002/96/EC)
- The RoHS Directive (2002/95/EC)
- The China RoHS Directive (Standard SJ/T 11363-2006)
- The REACH regulations Directive (EC 1907/2006)

Note: *Documentation on sustainable development is available on our website www.schneider-electric.com (product environmental profiles and instructions for use, ROHS and REACH directives) .*

End of life (WEEE)

End of life products containing electronic cards must be dealt with by specific treatment processes.
When products containing backup batteries are unusable or at end of life they must be collected and treated separately. Batteries do not contain a percentage by weight of heavy metals above the limit specified by European Directive 2006/66/EC.

Modicon STB distributed I/O solution

Power consumption table

Principle

Principle

The 5 V ⎓ voltage required for the logic power supply to the I/O modules is supplied by the following NIM network interface, BOS bus expansion and auxiliary power supply modules from the 24 V ⎓ power supply.

These modules provide a max. current of 1200 mA at 5 V ⎓ *(1)*:
- **NIM network interface module** placed at the beginning of the primary segment.
- **BOS bus expansion module** placed at the beginning of each expansion segment.
- **CPS auxiliary power supply module** placed within a segment.

The power consumption per segment must be calculated to ensure that the current required by the I/O modules does not exceed the current supplied by the different power supply modules.

If necessary, add an STBCPS2111K auxiliary power supply to the segment (s) where this is the case.
The STBCPS2111K module must be used in conjunction with a power distribution module STBPDT●10●K.

Instructions for using the calculation sheet on the opposite page *(2)*

Note: *The calculation sheet on the opposite page can only be used when the segment is in the standard temperature range (0…+60°C) (1). When using the segment in the extended temperature range (-25…+70°C), Advantys or Unity Pro configuration and debugging software must be used to create the power consumption table.*

Use one calculation page per segment *(1)(2)*.

For each segment:
- In the “Number” column indicate the required number of I/O modules for each reference.
- In the “Total” column calculate the total current based on that number.
- In box **1**, enter the grand total of all these values (mA) *(1)*.
- The total in box **1** must be less than or equal to 1200 mA *(1)*, box **2** or box **4** (if an expansion segment). If it is higher, add an auxiliary power supply, box **3**.

The Advantys or Unity Pro configuration and debugging software creates the power consumption table automatically depending on which temperature range is chosen (standard, extended, etc.).

(1) Current value given for use in standard temperature range (0…+60°C).
For use in extended temperature range (-25…+70°C), use the Advantys or Unity configuration software to create the power consumption table.
(2) Calculation sheet also available as a Excel spreadsheet, available on our website www.schneider-electric.com or from our Customer Care Centre.

Modicon STB distributed I/O solution

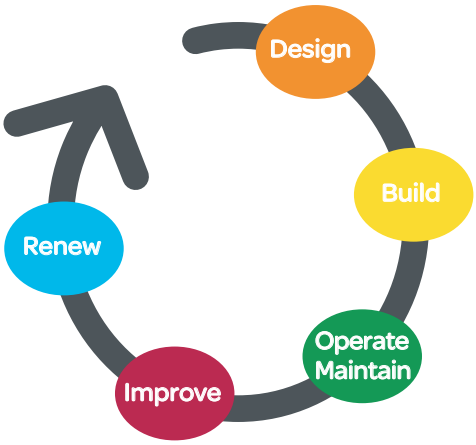
Power consumption table

Calculation sheet per segment

Segment	I/O module reference	Power distribution modules (PDM) (standard/basic)	Number of I/O modules in the segment	Power consumption in mA at 5 V ⎓ voltage	
				Per I/O module *(2)*	Total
Discrete inputs	**STBDDI3230K**	PDT3100K/3105K		55	
	STBDDI3420K	PDT3100K/3105K		45	
	STBDDI3425K	PDT3100K/3105K		45	
	STBDDI3610K	PDT3100K/3105K		55	
	STBDDI3615K	PDT3100K/3105K		45	
	STBDDI3725/KS/KC *(1)*	PDT3100K/3105K		100	
	STBDAI5230K	PDT2100K/2105K		40	
	STBDAI5260K	PDT2100K/2105K		45	
	STBDAI7220K	PDT2100K/2105K		40	
Discrete outputs	**STBDDO3200K**	PDT3100K/3105K		50	
	STBDDO3230K	PDT3100K/3105K		45	
	STBDDO3410K	PDT3100K/3105K		70	
	STBDDO3415K	PDT3100K/3105K		70	
	STBDDO3600K	PDT3100K/3105K		90	
	STBDDO3605K	PDT3100K/3105K		90	
	STBDDO3705/KS/KC *(1)*	PDT3100K/3105K		135	
	STBDAO5260K	PDT2100K/2105K		70	
	STBDAO8210K	PDT2100K/2105K		45	
	STBDRC3210K	PDT3100K/3105K		55	
	STBDRA3290K	PDT3100K/3105K		55	
Analog inputs	**STBAVI0300K**	PDT3100K/3105K		90	
	STBAVI1255K	PDT3100K/3105K		30	
	STBAVI1270K	PDT3100K/3105K		30	
	STBAVI1275K	PDT3100K/3105K		30	
	STBAVI1400K	PDT3100K/3105K		90	
	STBACI0320K	PDT3100K/3105K		95	
	STBACI1225K	PDT3100K/3105K		30	
	STBACI1230K	PDT3100K/3105K		30	
	STBACI1400K	PDT3100K/3105K		90	
	STBACI8320K	PDT3100K/3105K		95	
	STBART0200K	PDT3100K/3105K		30	
Analog outputs	**STBAVO0200K**	PDT3100K/3105K		265	
	STBAVO1250K	PDT3100K/3105K		45	
	STBAVO1255K	PDT3100K/3105K		45	
	STBAVO1265K	PDT3100K/3105K		45	
	STBACO0120K	PDT3100K/3105K		155	
	STBACO0220K	PDT3100K/3105K		210	
	STBACO8220K	PDT3100K/3105K		210	
	STBACO1210K	PDT3100K/3105K		40	
	STBACO1225K	PDT3100K/3105K		40	
Application-specific modules	**STBEPI2145K**	PD3100K/3105K		110	
	STBEHC3020KC	PDT3100K/3105K		100	
	STBAHI8321KC	–		400	
Expansion modules	**STBXBE1100K**	–		25	
	STBXBE2100K	–		100	
Consumption per segment	Total current consumption per segment			**1** *(2)*	
				≤	
Network interface modules (NIM)		Primary segment		**2** *(2)*	**1200 mA**
Ethernet Modbus TCP/IP double port	**STBNIP2311**				supplied by the NIM module
Ethernet Modbus TCP/IP	**STBNIP2212**				
EtherNet/IP	**STBNIC2212**				
CANopen	**STBNCO2212**		**1**		
Modbus Plus	**STBNMP2212**				
Fipio	**STBNFP2212**				
InterBus	**STBNIB2212**				
PROFIBUS DP	**STBNDP2212**				
DeviceNet	**STBNDN2212**				
Auxiliary power supply module	**STBCPS2111K**	Primary or expansion segment	**1**	**4** *(2)*	**1200 mA**
BOS bus expansion module	**STBXBE1300K**	Expansion segment	**1**	**3** *(2)*	**1200 mA**

(1) STBDD●37●5: Supplied without connector for Telefast ABE7 pre-wired system and without sub-base, to be ordered separately (see page 4).
STBDD●37●5KS: Supplied with screw-type connectors/STBDD●37●5KC: supplied with spring-type connectors.
(2) Current value given for use in standard temperature range (0…+60°C); extended temperature range (-25…+70°C) (see page 114).

A dedicated services offer for your installed base



Design - Build - Operate/Maintain - Improve - Renew

Schneider Electric, with its experts, products and dedicated tools, provides services such as system design, consultancy, maintenance contracts, modernisation of facilities or delivering projects.

The Schneider Electric services offer is structured around several key areas:
- Maintenance and support services:
  - A set of services to help maintain reliability and availability of automated control systems. These services may be the subject of a bespoke maintenance contract to meet your requirements more closely.
- Consultancy services:
  - Diagnostics of the installed base
- Modernization solutions:
  - Migration solutions including consultancy, expertise, tools and technical support to help ensure a smooth transition to newer technology while keeping the wiring and the encoding in most cases.

Customization services are also available to accommodate specific requirements. For more information, please consult the specific pages on our website www.schneider-electric.com/automationservices.

Maintenance and support services

Spare parts, exchanges and repairs

Everything you need to get equipment working again as quickly as possible

Solutions to respond very quickly to requests for spare parts, exchanges and repairs to your installed automation equipment (automation platforms, Human Machine Interfaces, drives, distributed I/O):
- Spare parts management:
  - Identification of critical parts
  - Stock of spare parts: a Schneider Electric owned stock of spare parts, on your site or in one of our warehouses, with immediate availability on site or a contractually agreed delivery time if stored off site
  - Testing of spare parts stored on site
  - Automatic stock filling
- Repairs:
  - Broken down products are repaired in a network of worldwide repair centres. For each repaired product, our experts provide a detailed report.
- On-site repair:
  - Our experts' knowledge and expertise
  - Monitoring of specific repair procedures
  - Availability of our teams to respond 24/7
- Exchanges:
  - With standard replacements, receive a new or reconditioned product before the broken down product has even been sent back
  - Fast exchanges offer the option to receive the replacement product within 24 hours (in Europe)

Preventive maintenance

Improving and guaranteeing the long-term reliability and performance of your installations

Schneider Electric's preventive maintenance expert assesses your site, the equipment to be managed and sets up a maintenance program to accommodate specific requirements. A list is provided of the tasks to be performed and their frequency, including site-specific tasks, describing how preventive maintenance is to be managed.

Extended warranty

An additional manufacturer warranty covering replacement or repair of the equipment

The extended warranty offers the option to take out a 3-year warranty. The warranty period can vary according to the geographical area, consult your Customer Care Centre.

Online support

Access to dedicated experts

Priority access to experts who can answer technical questions promptly concerning equipment and software both on sale and no longer commercially available.

Software subscription

Access to software upgrades and new features

By subscribing to software updates, users are able to:
- Purchase licences
- Receive updates, upgrades, software migrations and transitions
- Download software from Schneider Electric's software library

***Note**: To check availability of services required, please contact our Customer Care Centre.*

A dedicated services offer for your installed base

Consultancy services

M2C (Maintenance and Modernization Consultancy)

Professional tools and methods, proven experience of managing obsolescence and updating installed bases, to reduce downtimes and improve performance.

With our maintenance and modernization consultancy offer, Schneider Electric will help you check the state of your installed base by:
- Defining the scope and depth of the analysis in collaboration with you
- Collecting the technical data without shutting down production
- Analyzing and identifying avenues for improvement
- Producing a recommendation plan

Customer benefits:
- Learning about the components that make up the installed base and how up-to-date they are
- Better downtime anticipation
- Expert advice designed to improve performance

Modernization solutions

Migration to PlantStruxure

To find out more about PlantStruxure architectures, please visit our website www.schneider-electric.com/PlantStruxure

Proven expertise, tools and methods to give you a clear vision of the improvement opportunities and guide you toward a successful modernization project

Schneider Electric offers a gradual program of modernization through a series of products, tools and services that allow you to upgrade to newer technology. There are several stages in this gradual modernization program:
- Partial program: replacement of an old component with a new one
- Staggered program: gradual incorporation of new offers in the system
- Total program: total renovation of the system

The table below lists our various migration offers:

Wide range of migration offers

Solution		Change the CPU	Keep the I/O racks & wiring	Change the I/O racks & keep the wiring	Migrate your application	Manage your project	Execute your project
Platform *(1)*	TSX47 to TSX107	◓	◓	◓	◓	◓	◓
	April series 1000			◓	◓	◓	◓
	Modicon ●84, Compact	◓	◓	◓	◓	◓	◓
	April SMC				◓	◓	◓
	Merlin Gerin PB				◓	◓	◓
	AEG	◓	◓	◓	◓	◓	◓
	Symax	◓			◓	◓	◓

◓ Service available

(1) Our migration service offer also includes SCADA, Human Machine Interfaces, drives, communication networks and distributed I/O.

Customization services

Schneider Electric is able to meet your specific requirements and provide you with adapted products:
- Protective coating for Human Machine Interfaces, automation platforms and distributed I/O modules for use in harsh environments
- Customized cable lengths to match your specific needs
- Customized front panels for Human Machine Interfaces

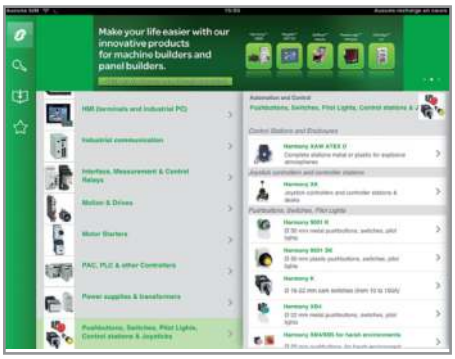
***Note**: To check availability of services required, please contact our Customer Care Centre.*

Search, visualize, and download

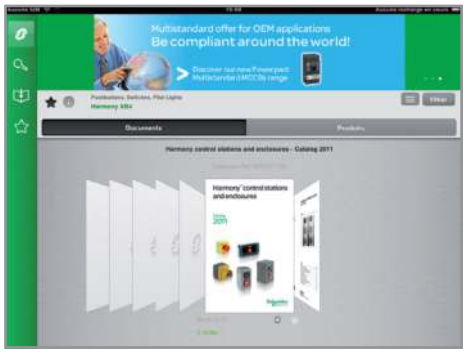
Use your tablet or your PC to quickly access detailed and comprehensive information on all our products

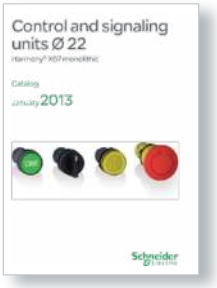
Tablets

Application name: “Automation Library by Schneider Electric”

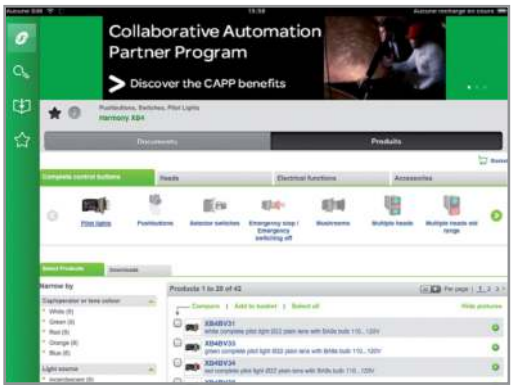


All product ranges
displayed by function





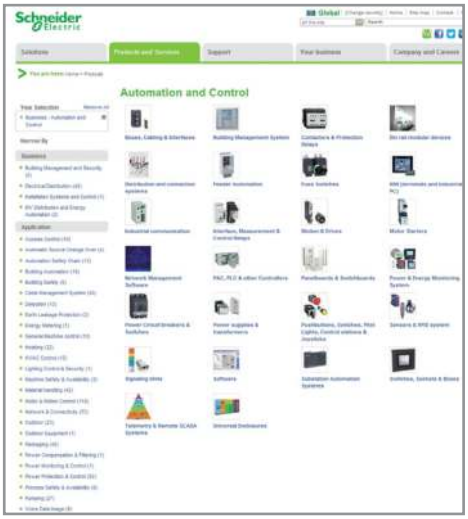
Dynamic catalogues
(hyperlinks, video, ...)



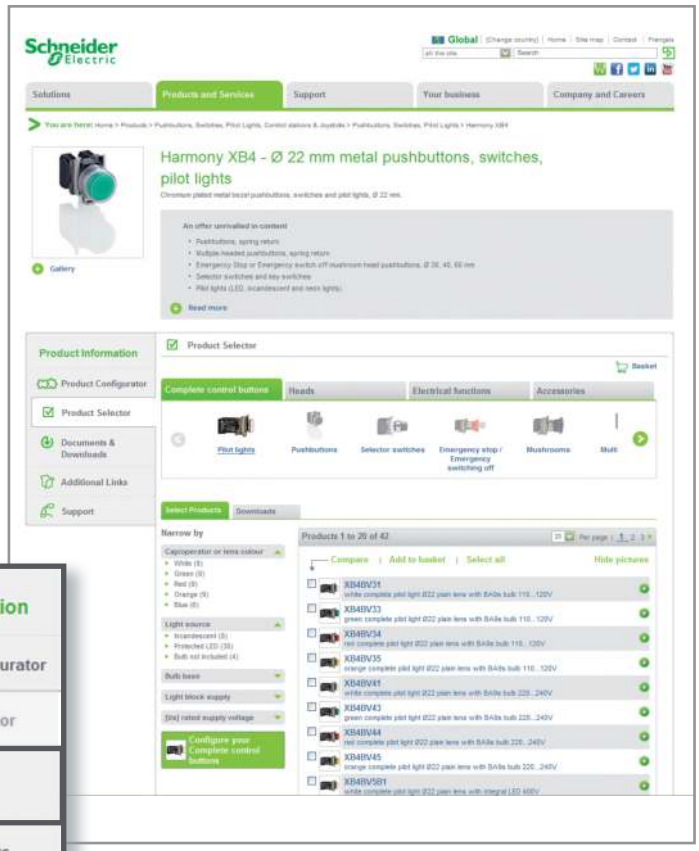
Product selector: dynamic filters to get easily your part number

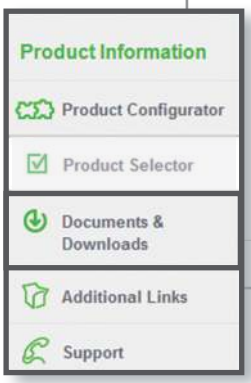
Personal computer

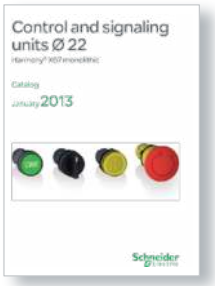
Path: www.schneider-electric.com > **Products and Services** > Automation and control > Product offer



All product ranges
displayed by function





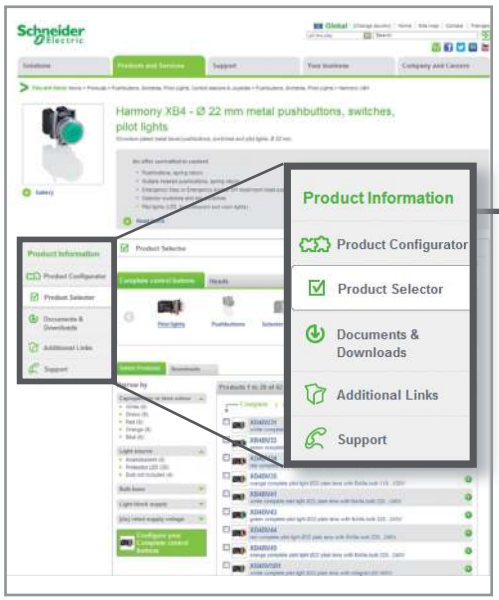


Dynamic catalogues
(hyperlinks, video, ...)

Product selector: dynamic filters to get easily your part number

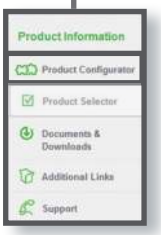
Access product references with adapted tools

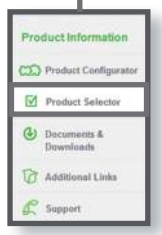
Path: www.schneider-electric.com > **Products and Services** > Automation and control > ... > Product offer



Graphic product configurator
Select the right product with just a few clicks

Dynamic product selector
Visualize product characteristics and dimensions



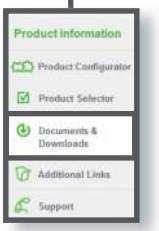


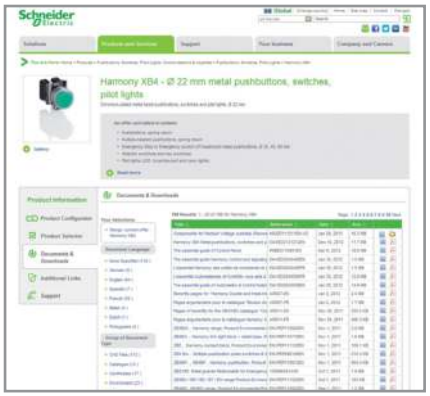
Product data sheet
with technical characteristics and dimensions

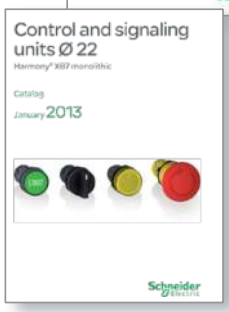
Dimensions

Technical characteristics

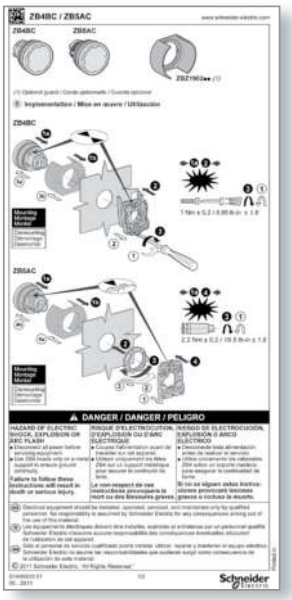
Documents and downloads
Visualize and download catalogues, technical publications, certificates, etc.







Essential guides



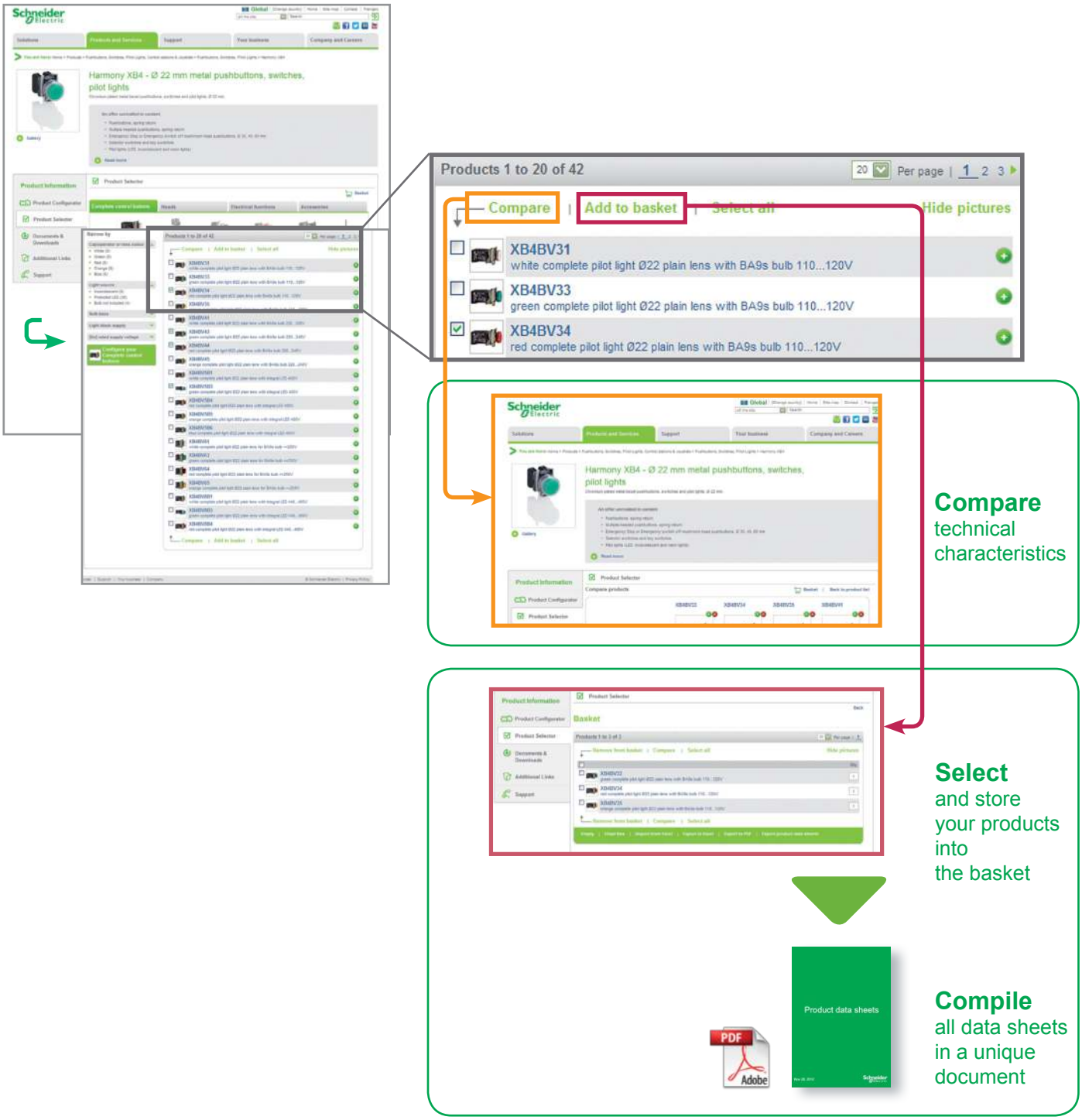
Dynamic catalogues

Certificates

Technical publications

Compare, select, and compile

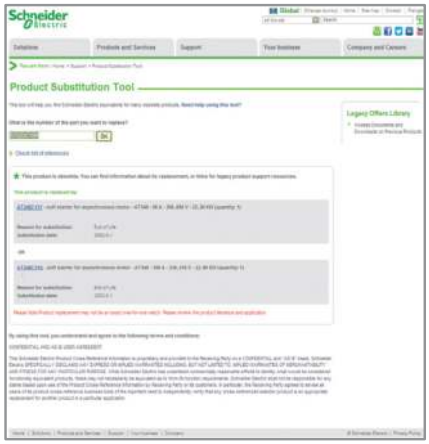
Path: www.schneider-electric.com > **Products and Services** > Automation and control > ... > Harmony XB4*



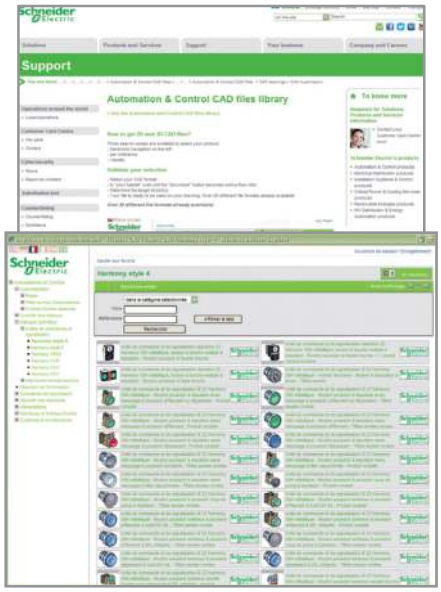
* Example of research on a product

Check the product status, design your equipment

Path: www.schneider-electric.com > **Support** > Product Substitution Tool
Path: www.schneider-electric.com > **Support** > CAD files



Product status:
indicate whether the product is still commercialized. Otherwise, the tool suggests a product substitution.



CAD files:
available in various formats they will be easily integrated into your installation design software.

Please note that all references to products and services are just examples.

Product reference index

1

110XCA2820● 93
170BNO67100 28
170MCI00700 28
170MCI020●● 28
170MCI02120 28
170MCI10000 28
170XTS02000 28
171CBB97030 99
174CEV20040 28

4

490NAD9110● 29
490NTC000●● 24
490NTC000●●U 24
490NTW000●● 24
490NTW000●●U 24
499NEH10410 24
499NES18100 24
499NMS2510● 24
499NSS2510● 25
499NTR10100 24

9

990NAA263●0 93
990NAD211●0 28
990NAD230●0 28

A

ABL1A02 107
ABL4RSM24●●● 107
ABL4WSR24●●● 107
ABL8BBU24●●● 107
ABL8BPK24A●● 107
ABL8BUF24400 107
ABL8FUS0● 107
ABL8PRP24100 107
ABL8RED24400 107
ABL8RPM24200 107
ABL8RPS24●●0 107
ABL8WPS24●00 107
ASI20MACC5 107
ASMBKT085 28

B

BMXXCAUSBH0●● 93

L

LAD90 107
LU9R03 74
LU9R10 74
LU9R30 74

S

SR2CBL06 22, 93, 94
SR2MEM02 107
STBACI0320K 66
STBACI●●●●K 66
STBACO●●●●K 66
STBAHI8321KC 5, 81
STBART0200K 66
STBAVI●●●●K 66
STBAVO●●●●K 66
STBBBS10●● 94, 95
STBBBS1130 94
STBCPS2111K 34
STBDAI5230K 56
STBDAI5260K 56
STBDAI7220K 56
STBDAO5260K 57
STBDAO8210K 57
STBDDI3230K 56
STBDDI3420K 56
STBDDI3425K 56
STBDDI3610K 56
STBDDI3615K 56
STBDDI3725 56
STBDDI3725KC 56
STBDDI3725KS 56
STBDDO3200K 56
STBDDO3230K 56
STBDDO3410K 56
STBDDO3415K 56
STBDDO3600K 56
STBDDO3605K 56
STBDDO3705 56
STBDDO3705KC 56
STBDDO3705KS 56
STBDD●37●5 5
STBDD●37●5KC 5
STBDD●37●5KS 5
STBDRA3290K 57
STBDRC3210K 57
STBEHC3020KC 5, 79
STBEPI2145K 74
STBNCO2212 22
STBNDN2212 22
STBNDP2212 22
STBNFP2212 22
STBNIB2212 22
STBNIC2212 22
STBNIP2212 22
STBNIP2311 22
STBNMP2212 22
STBN●●●●●● 5
STBPDT2100K 42
STBPDT2105K 42
STBPDT3100K 42
STBPDT3105K 42
STB●●●●●●●K 5
STBSPU1000 94
STBSPU1003 94
STBSPU1010 95
STBSPU1011 94
STBSPU1130 94
STBSUS8800 22, 94
STBSWA3000 81
STBXBA1000 57
STBXBA2000 35, 57
STBXBA2100 35
STBXBA2200 43
STBXBA2300 35
STBXBA2400 35
STBXBA3000 56, 57, 74, 79, 81
STBXBE1100K 34
STBXBE1300K 34
STBXBE2100K 34
STBXCA100● 35
STBXCA4002 22, 93, 94, 101
STBXMP1100 23
STBXMP4440 22
STBXMP5600 43
STBXMP6700 22, 35, 42, 57, 67, 74, 79, 81
STBXMP7700 35, 42, 57, 67, 74, 79, 81
STBXMP7800 22, 35, 57, 67
STBXMP7810 42
STBXSP30●0 42, 67, 79
STBXTS1100 57, 67
STBXTS1110 35, 57
STBXTS1111 22, 29
STBXTS1120 23, 35
STBXTS1130 43
STBXTS1180 57
STBXTS2100 57, 67
STBXTS2110 35, 57
STBXTS2111 22, 29
STBXTS2120 23, 35
STBXTS2130 43
STBXTS2150 79, 81
STBXTS2180 57
STBXTT0220 22, 35, 42, 57, 67, 79

T

TCSCAR01NM120 23
TCSCAR013M120 23
TCSCTN023F13M03 23
TCSCTN026M16M 23
TCSECE3M3M1S4 24
TCSECE3M3M2S4 24
TCSECE3M3M3S4 24
TCSECE3M3M5S4 24
TCSECE3M3M10S4 24
TCSECU3M3M1S4 24
TCSECU3M3M2S4 24
TCSECU3M3M3S4 24
TCSECU3M3M5S4 24
TCSECU3M3M10S4 24
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TCSESB093F2CU0 25
TCSESM043F1CU0 25
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TCSESM083F2CS0 25
TCSESM083F2CU0 25
TCSESM083F23F0 25
TCSESM083F23F1 25
TCSESM103F2LG0 26
TCSESM103F23G0 26
TCSESM163F2CS0 26
TCSESM163F2CU0 26
TCSESM163F23F0 26
TCSESM243F2CU0 26
TCSESU033FN0 24
TCSESU043F1CS0 25
TCSESU043F1N0 24
TCSESU043F2CS0 25
TCSESU051F0 24
TCSESU053FN0 24
TCSESU083FN0 24
TCSGWA242 26
TCSGWA242F 26
TCSGWA272 26
TCSGWABDH 27
TCSGWC241 26
TCSNWA2A1 26
TCSNWA241 26
TCSNWA241F 26
TCSNWA271 26
TCSNWA271F 26
TCSWAAC 27
TCSWAAC13FB 93
TCSWAB2D 27
TCSWAB2O 27
TCSWAB2S 27
TCSWAB5D 27
TCSWAB5DN 27
TCSWAB5O 27
TCSWAB5S 27
TCSWAB5V 27
TCSWAB5VN 27
TCSWABAC2 27
TCSWABAC15 27
TCSWABC5 27
TCSWABC10 27
TCSWABDON 27
TCSWABMK 27
TCSWABP 27
TCSWABP68 27
TCSWAMC67 27
TCSWAMCD 27
TSXCANCA50 23
TSXCANCA●00 23
TSXCANCADD1 23
TSXCANCADD03 23
TSXCANCADD● 23
TSXCANCB50 23
TSXCANCB●00 23
TSXCANCBDD1 23
TSXCANCBDD03 23
TSXCANCBDD● 23
TSXCANCD50 23
TSXCANCD●00 23
TSXCANTDM4 23
TSXCRJMD25 93
TSXCUSB485 93
TSXFPACC● 28
TSXFPACC1● 28
TSXFPCA●00 28
TSXFPCC●00 28
TSXIBSCA●00 28
TSXPBSCA●00 29
TSXPCX1031 93

U

UNYSPUEFFCD70 92
UNYSPUEFGCD70 92
UNYSPUEFTCD70 92
UNYSPUEFUCD70 92
UNYSPUEZFCD70 92
UNYSPUEZGCD70 92
UNYSPUEZGTCD70 92
UNYSPUEZLGCD70 92
UNYSPUEZLTCD70 92
UNYSPUEZLUCD70 92
UNYSPUEZTCD70 92
UNYSPUEZUCD70 92
UNYSPUEZUGCD70 92
UNYSPULFFCD70 91
UNYSPULFGCD70 91
UNYSPULFTCD70 91
UNYSPULFUCD70 91
UNYSPULZFCD70 91
UNYSPULZGCD70 91
UNYSPULZGTCD70 91
UNYSPULZMGCD70 91
UNYSPULZMTCD70 91
UNYSPULZMUCD70 91
UNYSPULZTCD70 91
UNYSPULZUCD70 91
UNYSPULZUGCD70 91
UNYSPUMFGCD70 91
UNYSPUMFTCD70 91
UNYSPUMFUCD70 91
UNYSPUMZGCD70 91
UNYSPUMZGTCD70 91
UNYSPUMZSGCD70 91
UNYSPUMZSTCD70 91
UNYSPUMZSUCD70 91
UNYSPUMZTCD70 91
UNYSPUMZUCD70 91
UNYSPUMZUGCD70 91
UNYSPUSFGCD70 90
UNYSPUSFTCD70 90
UNYSPUSFUCD70 90
UNYSPUSZGCD70 90
UNYSPUSZGTCD70 90
UNYSPUSZTCD70 90
UNYSPUSZUCD70 90
UNYSPUSZUGCD70 90
UNYUSE909CDM 92
UNYXCAUSB033 93

V

VW3CANA71 23
VW3CANCARR1 23
VW3CANCARR03 23
VW3CANKCDF180T 23
VW3CANTAP2 23

X

XBTZ988 101
XBTZ9715 101
XBTZG9●● 101

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Design: Schneider Electric
Photos: Schneider Electric
Printed by:

MKTED2130401EN

May 2013