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# Advantys STB distributed I/O solution

## Internal bus extension modules

### Characteristics, auxiliary and bus extension power supplies

Type of module		24 V $\pm$ 5 V $\pm$ auxiliary power supply	EOS internal bus extension	BOS internal bus extension	Bus extension to external CANopen devices
		STB CPS 2111	STB XBE 1100	STB XBE 1300	STB XBE 2100
Power supply	V	24 $\pm$ not isolated	–	24 $\pm$ not isolated	–
Operating temperature, horizontal mounting	°C	-25 to 70 (1)	-25 to 70	-25 to 70 (1)	0 to 60
Current consumption on 5 V $\pm$ logic bus	mA	–	25	–	100
Connectors	Power supply	2 removable pins	–	2 removable pins	–
	Interface	–	Firewire	Firewire	5 removable pins
Input current	mA	400	–	400	–
Voltage range	V	19.2 to 30 $\pm$ (1)	–	19.2 to 30 $\pm$ (1)	–
Output voltage	V	5.25 $\pm$ 0.21%	–	5.25 $\pm$ 0.21%	–
Output current	A	1.2 at 5 V $\pm$ (2)	–	1.2 at 5 V $\pm$ (2)	–
Isolation		No			
Immunity to electromagnetic disturbance (EMC)		Yes according to IEC 61131-2			



STB XBE 1100



STB XBE 1300

The STB CPS 2111 should be associated with an STB PDT ●10● power supply module.

### References

Description	Use with standard STB	Reference	Weight kg
EOS internal bus extension module	Installed at the end of the segment (except for the last segment on the island)	STB XBE 1100 (3)	–
BOS internal bus extension module	Installed at the beginning of each extension segment	STB XBE 1300 (4)	–
Bus extension module to external CANopen devices	Installed at the end of the last segment to connect standard CANopen devices	STB XBE 2100	–

### Auxiliary power supply

Description	Content	Reference	Weight kg
24 V $\pm$ 5 V $\pm$ 1.2 A auxiliary power supply (5)	screw-type and spring-type	STB CPS 2111 K	–
	Module only	STB CPS 2111	–

(1) STB CPS 2111 and STB XBE 1300 modules:

- range -25 to 0° C: the power supply voltage range is  $\pm$  20.4 to 30 V.
- range 0 to 60° C: the power supply voltage range is  $\pm$  19.2 to 30 V.
- range 60 to 70° C: the power supply voltage range is  $\pm$  19.2 to 26.5 V.

(2) 900 mA for operating temperatures in the range 60 to 70°C.

(3) Replaces EOS extension module STB XBE 1000.

(4) Replaces BOS extension module STB XBE 1200.

(5) Power supply for the I/O module logic, in addition to the 5 V  $\pm$  1.2 A power supplies integrated in the NIM network interface module and the BOS bus extension module. Installed in the the primary segment or the extension segments.



STB XBE 2100



STB CPS 2111

# Advantys STB distributed I/O solution

## Internal bus extension modules



STB XBA 2000

Bus extensions: mandatory separate parts			
Description	Used for	Reference	Weight kg
Module bases (width 18.4 mm)	STB XBE 1100	<b>STB XBA 2400</b>	0.028
	STB XBE 1300	<b>STB XBA 2300</b>	0.033
	STB XBE 2100	<b>STB XBA 2000</b>	0.028
	STB CPS 2111	<b>STB XBA 2100</b>	0.033

Description	Used for	Type	Sold in lots of	Reference	Weight kg
2-way removable terminals for 24 V ~ supply (1)	STB XBE 1200	Screw-type	10	<b>STB XTS 1120</b>	–
		Spring-type	10	<b>STB XTS 2120</b>	–
5-way removable terminals (1)	STB XBE 2100	Screw-type	20	<b>STB XTS 1110</b>	0.006
		Spring-type	20	<b>STB XTS 2110</b>	0.006

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

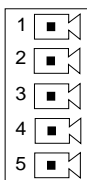
Bus extensions: optional separate parts					
Description	Used for	Type	Reference	Weight kg	
Keying pin	Modules	–	60	<b>STB XMP 7700</b>	–
	Removable terminals	–	96	<b>STB XMP 7800</b>	–
User-customizable labels (2)	I/O modules and bases	–	25 sheets	<b>STB XMP 6700</b>	–
2.5 mm insulated screwdriver	Removable screw terminals	Chrome vanadium steel	–	<b>STB XTT 0220</b>	–

### CANopen extension connection

#### STB XBE 2100: schematic connection diagram (3)

The CANopen interface fieldbus is located on the front of the STB XBE 2100 extension module.

The pinout should be as indicated in the table below:



Pin	Signal
1	CAN earth (0 V)
2	CAN low bus signal
3	Optional CAN shielding
4	CAN high bus signal
5	No connection (4)

(1) All the STB XTS ●●●● connectors can accommodate a flexible wire with a maximum cross-section of 1.5 mm<sup>2</sup>, including the cable end. Max. tightening torque = 0.25 Nm for screw-type connectors.

(2) 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](http://www.schneider-electric.com).

(3) Observe all the recommendations in the "Advantys STB System Hardware Components Reference Guide", included on the STB SUS 8800 CD-ROM and available on our website [www.schneider-electric.com](http://www.schneider-electric.com).

(4) This spare pin can be used to distribute the 24 V of external devices.

# Advantys STB distributed I/O solution

## Power distribution modules

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### Presentation

**Basic** power distribution modules (PDM) (STB PDT ●105) provide power for the I/O module sensors and actuators (1) via the same bus **3**.

Two basic PDMs are available:

- The STB PDT 3105 module is dedicated to providing power to the I/O module sensors and actuators requiring a 24 V c power supply.
  - The STB PDT 2105 module is dedicated to providing power to the I/O module sensors and actuators requiring a 115/230 V a power supply.
- Each module has 1 removable fuse.

**Standard** power distribution modules (STB PDT ●100) provide power separately for the I/O module sensors and actuators (1) via the sensor bus **1** and the actuator bus **2**.

Two standard PDMs are available:

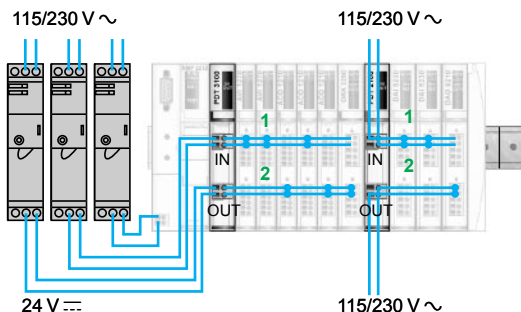
- The STB PDT 3100 module is dedicated to providing power separately to the I/O module sensors and actuators requiring a 24 V c power supply.
  - The STB PDT 2100 module is dedicated to providing power separately to the I/O module sensors and actuators requiring a 115/230 V a power supply.
- Each module has 2 removable fuses.

# Advantys STB distributed I/O solution

## Power distribution modules

### Connecting the power supplies

#### Three separate power supplies

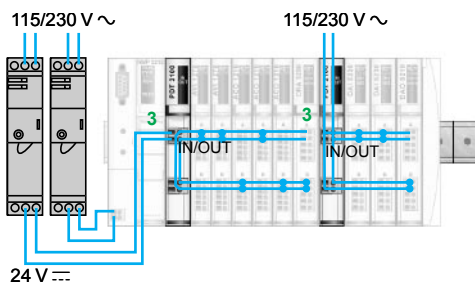


Configuration with standard PDM

This configuration allows:

- Disconnection of the I/O power supply while maintaining the power supply to the network interface module (NIM) and thus to the machine bus (for example, in a NIM INTERBUS configuration).
- Isolation of the output power from the inputs to increase immunity to electromagnetic interference.
- Power supply independent of the outputs, enabling connection of a Preventa module. If these outputs are disconnected, the inputs continue to be managed.

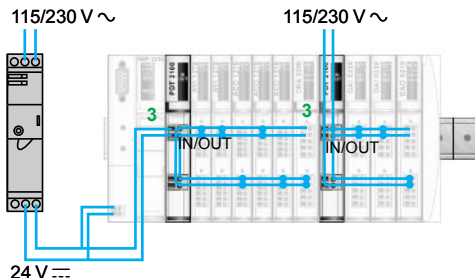
#### Separate NIM module and I/O power supplies



Configuration with basic PDM

This configuration allows disconnection of the I/O power supply while maintaining the power supply to the NIM module and thus to the machinebus (for example, in a NIM INTERBUS configuration).

#### One single power supply



Configuration with basic PDM

Low-cost configuration with a single power supply for the NIM module, sensor bus, and actuator bus.

(1) One power distribution module can supply power to both digital and analog I/O modules simultaneously.

# Advantys STB distributed I/O solution

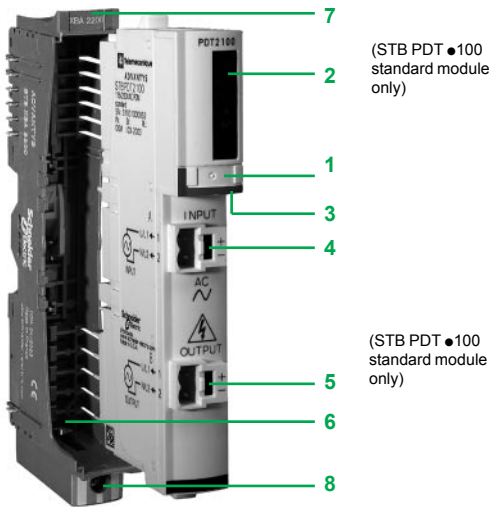
## Power distribution modules

Choice of PDM based on I/O modules								
Power distribution module	Voltage	STB I/O modules					App. specific	STB bus extension modules (1)
		Digital (discrete)			Analog			
		Inputs	Outputs Solid state	Relay	Inputs	Outputs		
STB PDT 3100	24 V $\text{DC}$	DDI 3230	DDO 3200	DRC 3210	AVI 1255	AVO 1255	EPI 1145	XBE 1100
		DDI 3420	DDO 3230	DRA 3290	AVI 1275	AVO 1265	EPI 2145	XBE 1300
		DDI 3610	DDO 3410		AVI 1270	AVO 1250	EHC 3020	XBE 2100
		DDI 3425	DDO 3600		AVI 0300	AVO 0200		XBE 1000
		DDI 3615	DDO 3415		AVI 1400	AVO 0120		XBE 1200
		DDI 3725	DDO 3605		ACI 1225	ACO 1225		
			DDO 3705		ACI 1230	ACO 1210		
					ACI 0320	ACO 0220		
					ACI 8320			
					ACI 1400			
					ART 0200			
		STB PDT 2100	115 V $\sim$	DAI 5230	DAO 8210	–	–	–
DAI 5260	DAO 5260							
230 V $\sim$	DAI 7220		DAO 8210	–	–	–	–	
STB PDT 3105	24 V $\text{DC}$	DDI 3230	DDO 3200	DRC 3210	AVI 1255	AVO 1255	EPI 1145	
		DDI 3420	DDO 3230	DRA 3290	AVI 1275	AVO 1265	EPI 2145	
		DDI 3610	DDO 3410		AVI 1270	AVO 1250	EHC 3020	
		DDI 3425	DDO 3600		AVI 0300	AVO 0200		
		DDI 3615	DDO 3415		AVI 1400	AVO 0120		
			DDO 3605		ACI 1225	ACO 1225		
					ACI 1230	ACO 1210		
					ACI 0320	ACO 0220		
					ACI 8320			
					ACI 1400			
					ART 0200			
STB PDT 2105	115 V $\sim$	DAI 5230	DAO 8210	–	–	–	–	
		DAI 5260	DAO 5260					
	230 V $\sim$	DAI 7220	DAO 8210	–	–	–	–	

(1) STB bus extension modules can be connected to any PDM.

# Advantys STB distributed I/O solution

## Power distribution modules



(STB PDT ●100 standard module only)

(STB PDT ●100 standard module only)

### Description

The front panel of the STB PDT ●10● power distribution modules features:

- 1 A slot for a user-customizable label
- 2 A status block with 2 display LEDs (STB PDT 2100/3100 standard modules only):

Indication	Basic PDM modules	Standard PDM modules
Sensor bus power supply (1)	–	Green IN LED
Actuator bus power supply (1)	–	Green OUT LED

- 3 A colour-coded module identification stripe (red for 115/230 V ~, blue for 24 V ☐)
- 4 A connector for removable screw-type terminals (STB XTS 1130) or spring-type terminals (STB XTS 2130) used to connect:
  - The sensor power supply for STB PDT 2100/3100 standard modules
  - The sensor/actuator power supply for STB PDT 2105/3105 basic modules
- 5 A connector for removable screw-type terminals (STB XTS 1130) or spring-type terminals (STB XTS 2130) used to connect the actuator power supply (STB PDT 2100/3100 standard module only)
- 6 An STB XBA 2200 mounting base, width 18.4 mm. This base features:
- 7 A slot for a user-customizable label
- 8 A captive earthing screw

The STB SUS 8800 CD-ROM contains two documentation sets for the power distribution modules in 5 languages:

- "System Hardware Components Reference Guide"
- "System Planning and Installation Guide"

These documents can also be downloaded from [www.schneider-electric.com](http://www.schneider-electric.com).

(1) IN/OUT LED on: Power supply present on digital I/O modules.

IN/OUT LED off: No external power supply or removable fuse inside the PDM has blown. Refer to the "System Hardware Components Reference Guide" included on the STB SUS 8800 CD-ROM or available from our website: [www.schneider-electric.com](http://www.schneider-electric.com).

# Advantys STB distributed I/O solution

## Power distribution modules

Power distribution modules, characteristics						
Module type		STB PDT 3100	STB PDT 2100	STB PDT 3105	STB PDT 2105	
Range		Standard	Basic			
Supply voltage	V	24 $\ddot{\text{---}}$ (1)	115/230 $\sim$	24 $\ddot{\text{---}}$	115/230 $\sim$	
Operating temperature, horizontal mounting	$^{\circ}\text{C}$	-25 to 70 (1)	-25 to 60			
Maximum current	For inputs	A	4 (3)	5 to 30 $^{\circ}\text{C}$ 2.5 to 60 $^{\circ}\text{C}$	–	–
	For outputs	A	8 (3)	10 to 30 $^{\circ}\text{C}$ 5 to 60 $^{\circ}\text{C}$	–	–
	For inputs/outputs	A	6 to 12 according to derating (3)	–	4 to 30 $^{\circ}\text{C}$ 2.5 to 60 $^{\circ}\text{C}$	4
Sensor/actuator bus voltage range	V	19.2 to 30 $\ddot{\text{---}}$ (2) (3)	85 to 265 $\sim$ (4)	19.2 to 30 $\ddot{\text{---}}$	85 to 265 $\sim$	
Hot swapping		No				
Nominal consumption	mA	0 on 5 V $\ddot{\text{---}}$ logic power supply				
Reverse polarity protection		Yes, on the actuator bus	–	Yes, on the actuator bus	–	
Built-in overcurrent protection	For inputs	By a 5 A time-lag fuse (6)				
	For outputs	By a 10 A time-lag fuse (6)		By a 5 A time-lag fuse (6)		
Maximum current on the earthing terminal	A	30 for 2 minutes				
Voltage-detection thresholds	IN/OUT LED on	$\geq 15\text{ V} \pm 1\text{ V} \ddot{\text{---}}$	$> 70\text{ V} \pm 5\text{ V} \sim$	–		
	IN/OUT LED off	$< 15\text{ V} \pm 1\text{ V} \ddot{\text{---}}$	$< 50\text{ V} \pm 5\text{ V} \sim$	–		
Mounting base (included in kits)		STB XBA 2200 width 18.4 mm				

(1) Use 24 V  $\ddot{\text{---}}$  safety extra low voltage (SELV) external power supplies.

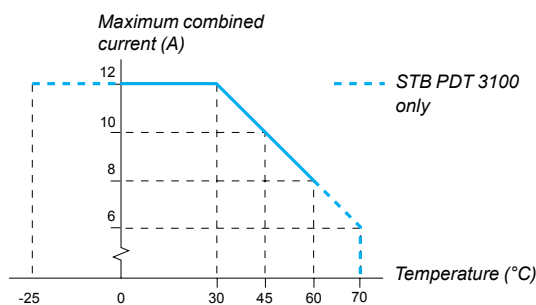
(2) STB PDT 3100 module only:

- range -25 to 0 $^{\circ}\text{C}$ : the power supply voltage range is  $\ddot{\text{---}}$  20.4 to 30 V.

- range 0 to 60 $^{\circ}\text{C}$ : the power supply voltage range is  $\ddot{\text{---}}$  19.2 to 30 V.

- range 60 to 70 $^{\circ}\text{C}$ : the power supply voltage range is  $\ddot{\text{---}}$  19.2 to 26.5 V.

(3) Take into account the total input and output currents: combined current.



(4) DC power supplies can be shared or separate, or shared with the 24 V  $\ddot{\text{---}}$  power supply of the network interface module.

(5) AC power supplies for a given distribution module from a 3-phase transformer must be connected at the same phase.

(6) Built-in fuse on the power distribution module. Can be replaced with the STB XMP 5600 fuse kit.



# Advantys STB distributed I/O solution

## Power distribution modules



STB XBA 2200



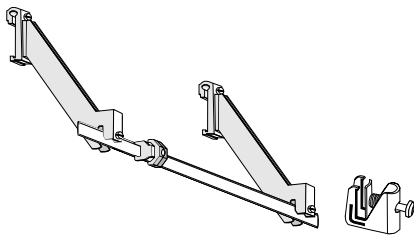
STB PDT 3100



STB XTS 1130



STB XTS 2130



STB XSP 3000

STB XSP 3010/3020

### References

The **STB PDT●10●K** reference kits include all related parts: screw-type connectors, spring-type connectors and mounting base.

#### Power distribution modules: connector kits

Power supply type	Voltage	Type	Reference	Weight kg
☰	24 V	Standard	STB PDT 3100 K	0.130
		Basic	STB PDT 3105 K	0.130
~	115/230 V	Standard	STB PDT 2100 K	0.129
		Basic	STB PDT 2105 K	0.129

#### Power distribution modules: modules only

Power supply type	Voltage	Type	Reference	Weight kg
☰	24 V	Standard	STB PDT 3100	0.130
		Basic	STB PDT 3105	0.130
~	115/230 V	Standard	STB PDT 2100	0.129
		Basic	STB PDT 2105	0.129

#### Replacement and optional parts

Description	Used for	Sold in lots of	Reference	Weight kg
<b>Mounting base</b> (width 18.4 mm)	Mounting of STB PDT ●10● power distribution modules on DIN rails	1	STB XBA 2200	0.035
<b>Removable terminals</b> (2-pin) (1)	Screw-type	10	STB XTS 1130	0.006
	Spring-type	10	STB XTS 2130	0.006
<b>Keying pins</b>	Keying between the power distribution module and its base (sold in lots of 60)	–	STB XMP 7700	–
	Keying between the power distribution module and removable terminals (sold in lots of 24) (2)	–	STB XMP 7810	–
<b>User-customizable label sheets</b> (3)	Bases and modules	25	STB XMP 6700	–
<b>Earthing kit</b>	Earthing for shielded cables. Kit comprises 1 bar (1 m) and 2 lateral supports	1	STB XSP 3000	–
<b>Terminals for earthing kit</b>	Cables with a cross-section of 1.5 to 6 mm <sup>2</sup>	10	STB XSP 3010	–
	Cables with a cross-section of 5 to 11 mm <sup>2</sup>	10	STB XSP 3020	–
<b>Insulated screwdriver, 2.5 mm</b>	Screw-type removable terminals	–	STB XTT 0220	–

#### Phase single-phase switching regulator supplies

Output voltage	Line input voltage 47 to 63 Hz	Nominal power	Nominal current	Reference	Weight kg
24 V ☰	100 to 240 V	48 to 240 W	2 to 10 A	See page 121	–

#### Replacement parts

Designation	Description	Reference	Weight kg
<b>Fuses</b>	5 A (lot of 5) and 10 A (lot of 5)	STB XMP 5600	–

(1) All STB XTS ●●●● connectors can accommodate a flexible wire with a maximum cross-section of 1.5 mm<sup>2</sup>, including the cable end. For screw-type connectors, the maximum tightening torque is 0.25 Nm.

(2) Supplied with STB XTS 1130/2130 removable terminals.

(3) The template for the user-customizable labels is supplied on the documentation mini-CD-ROM.



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