Twido Programmable controller

Catalogue

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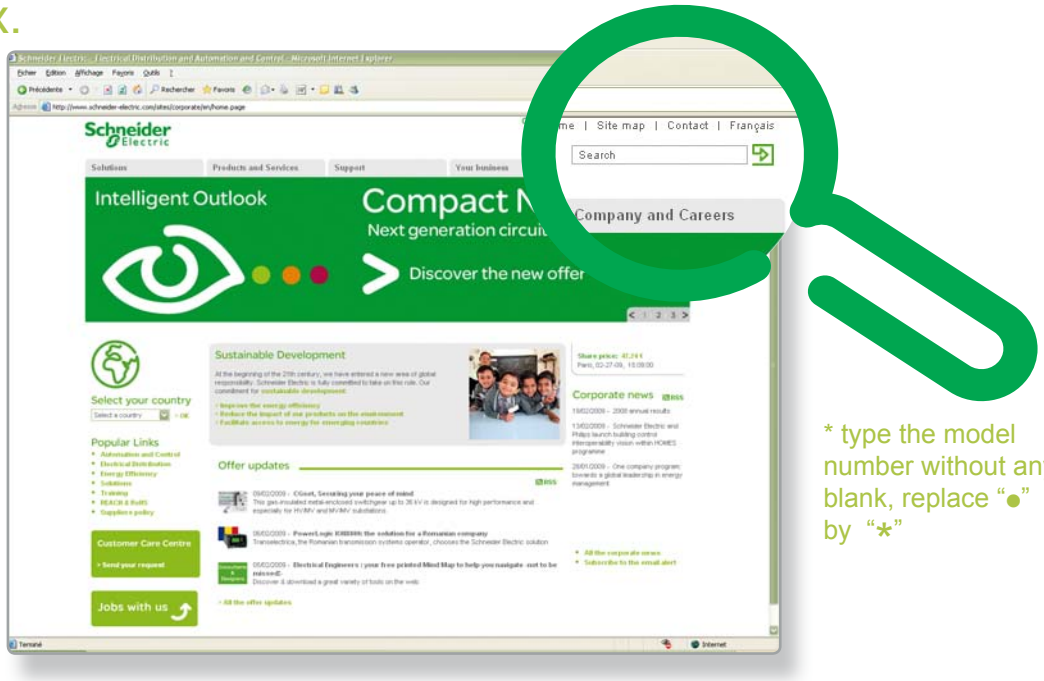
Browse the “product data sheet” to check out :

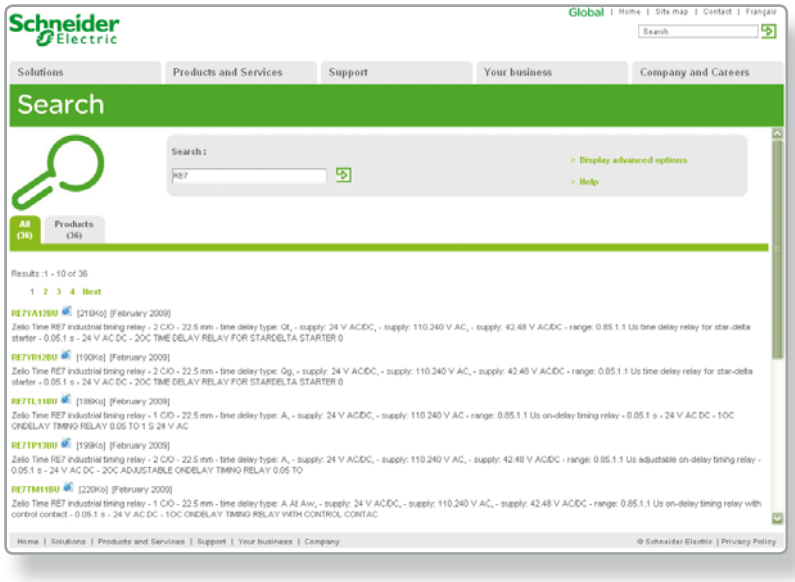
- characteristics,
- dimensions,
- curves, ...
- and also the links to the user guides and the CAD les.

1 From the home page, type the model number* into the “Search” box.



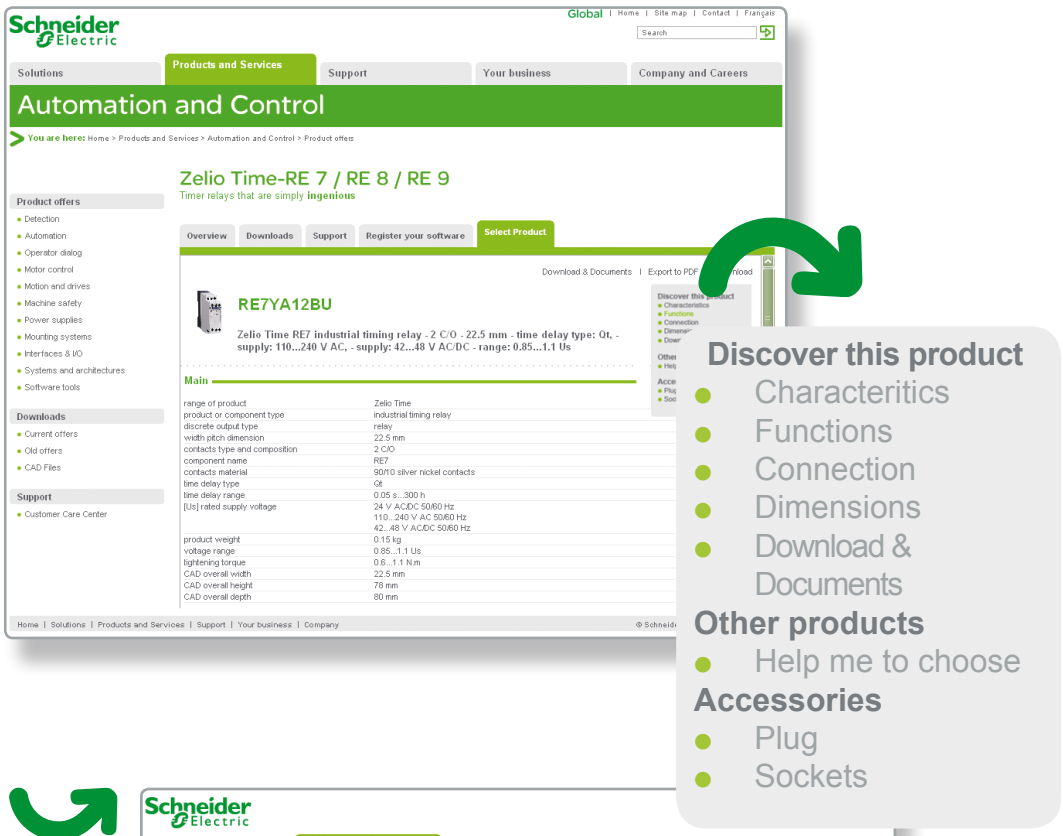
* type the model number without any blank, replace “●” by “*”

2 Under ”All” tab, click the model number that interests you.

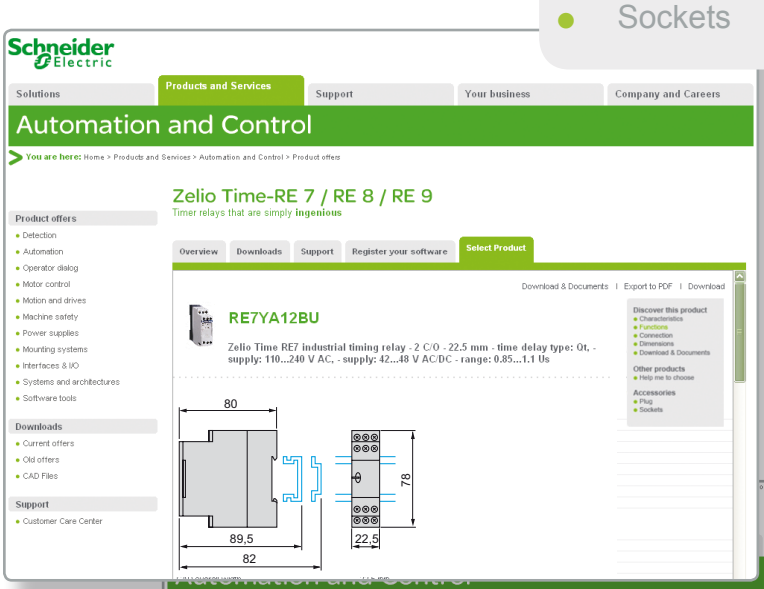


3 The product data sheet displays.

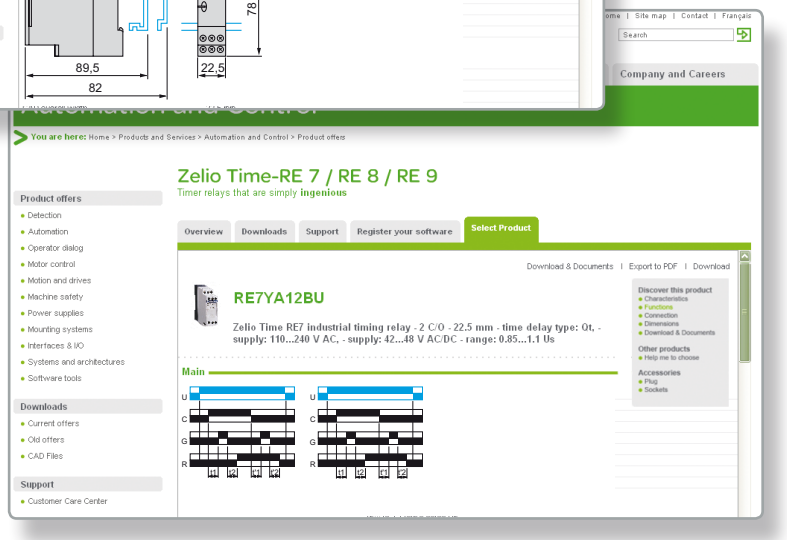
Example : Zelio Time data sheet



Example : Zelio Time data sheet



Example : Zelio Time data sheet



☑ You can get this information in one single pdf file.

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Compact and modular base controllers

ApplicationsP		Compact bases IP 20	
Type of base		Non expandable bases	
			
Discrete I/O	Basic	10	16
	Number of inputs	6 sink/source ⎓ 24 V inputs *(1)*	9 sink/source ⎓ 24 V inputs *(1)*
	Number of outputs	4 relay outputs	7 relay outputs
	Type of connection	No-removable screw terminal block	
Expansion I/O	Number of expansion modules	–	
	Discrete I/O modules	–	
	Analog I/O modules	–	
	Communication	–	
Maximum number of I/O per configuration (base controller with I/O expansion modules)		10	16
Integrated counting and positioning	Counting 5 kHz	3 x 16 bit counting channels *(5)*	
	Counting 20 kHz	1 x 16 bit counting channel (on dedicated discrete inputs)	1 x 32 bit counting channel (on dedicated discrete inputs)
	Positioning 7 kHz	–	
Functions	PID	–	
	Event processing	–	
Communication	Integrated	1 RS 485 serial port	1 RS 485 serial port, 1 optional RS 232C/ RS 485 serial port
	Ethernet TCP/IP	TwidoPort interface module (via RS 485 serial port)	
	Expansion	–	
Supply voltage		∿ 100...240 V for TWD LCA● (⎓ 24 V discrete sensors powered by the base controller), ⎓ 19.2…30 V for TWD LCD●	
Programming	Application memory	700 instructions	2000 instructions
	Internal bits	128 bits	
	Internal words *(5)*	3000	
	Standard function blocks *(5)*	64 timers, 128 counters	
	Double words	No	Yes
	Floating, Trigonometrical	No	No
	Real-time clock	Optional real time clock cartridge, using 16 real-time clock blocks	
Type of base controller	Standard	**TWD LC●A 10DRF** *(6)*	**TWD LC●A 16DRF** *(6)*
	With integrated Ethernet port		
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(1) Sink input: positive logic. Source input: negative logic.
(2) Within the consumption limit controlled by TwidoSuite software.S
(3) With maximum of 42 relay outputs (on base controller and I/O extensions).

Compact bases IP 20		Modular bases IP 20		
Expandable bases		**Expandable bases**		
				
24	40	20		40
14 sink/source ⎓ 24 V inputs *(1)*	24 sink/source ⎓ 24 V inputs *(1)*	12 sink/source ⎓ 24 V inputs *(1)*		24 sink/source ⎓ 24 V inputs *(1)*
10 relay outputs	14 relay outputs 2 source transistor outputs	8 sink or source transistor outputs (depending on model)	6 relay outputs and 2 source transistor outputs	16 sink or source transistor outputs (depending on model)
By removable screw terminal block		By HE 10 connector or Modicon Telefast ABE 7 pre-wired system (with base controller TWD LMDA 20DTK)	By removable screw terminal block	By HE 10 connector or Modicon Telefast ABE 7 pre-wired system (with base controller TWD LMDA 40DTK)
4 modules max. *(2)*	7 modules max. *(2)*	4 modules max. *(2)*	7 modules max. *(2)*	
15 types of module: input, output, mixed 8, 16, 24, 32 channels, connection by screw or spring terminals or by HE 10 connector		15 types of module: input, output, mixed 8, 16, 24, 32 channels, connection by screw or spring terminals or by HE 10 connector		
10 types of module: input, output, mixed 2, 4 or 8 channels, connection by screw terminals		10 types of module: input, output, mixed 2, 4 or 8 channels connection by screw terminals		
CANopen bus master module		CANopen bus master module		
88/120/152 according to whether I/O expansion has: screw terminals*(3)*/spring terminals/HE 10 connector	152/184/248 according to whether I/O expansion has: screw terminals/spring terminals/ HE 10 connector	84/116/148 according to whether I/O expansion has: screw terminals/spring terminals/ HE 10 connector	132/164/228 according to whether I/O expansion has: screw terminals/spring terminals/ HE 10 connector	152/184/248 according to whether I/O expansion has: screw terminals/spring terminals/ HE 10 connector
3 x 16 bit counting channels *(5)*	4 x 16 bit counting channels *(4)*	2 x 16 bit counting channels *(4)*		
1 x 32 bit counting channel (on dedicated discrete inputs)	2 x 32 bit channels (on dedicated discrete inputs)	2 x 32 bit channels (on dedicated discrete inputs)		
–	2 x PWM/PLS function channels	2 x PWM/PLS function channels		
Yes		Yes		
Yes		Yes		
1 RS 485 serial port, 1 optional RS 232C/RS 485 serial port				
	Ethernet port (on TWD LC●E)			
TwidoPort interface module (via RS 485 serial port)				
CANopen				
∿ 100...240 V for TWD LCA● (⎓ 24 V discrete sensors powered by the base controller), ⎓ 19.2…30 V for TWD LCD●		⎓ 19,2 V…30 V		
3000 instructions	3000 instructions, 6000 with memory extension	3000 instructions	3000 instructions, 6000 with memory extension	
256 bits				
3000				
128 timers, 128 counters				
Yes	Yes	Yes	Yes	Yes
No	Yes	No	Yes	Yes
Optional real time clock cartridge, using 16 real-time clock blocks	Integrated	Optional real time clock cartridge, using 16 real-time clock blocks		
TWD LC●A 24DRF *(6)*	**TWD LC●A 40DRF** *(6)* **TWD LC●E 40DRF** *(6)*	**TWD LMDA 20D●K** *(7)*	**TWD LMDA 20DRT**	**TWD LMDA 40D●K** *(7)*
9		13		

(4) Dedicated ⎓ 24 V discrete inputs of the base controller and up/down counting with preset.
(5) The maximum values of the internal words and function blocks cannot be cumulated.
(6) Replace the ● in the reference with **A**: *∿ supply,* **D:** *⎓ supply.*
(7) Replace the ● in the reference with **T**: *source transistor outputs,* **U:** *sink transistor outputs.*

Twido programmable controller
Compact base controllers

TWD LC●A 10DRF

TWD LC●A 16DRF

TWD LC●A 24DRF

TWD LC●A/LC●E 40DRF

Presentation

The Twido range of compact programmable controllers offers an “all-in-one” solution in a compact overall size: 80 to 157 x 90 x 70 mm. Eight compact base controllers (among which 4 expandable base controllers by addition of expansion I/O modules) are available, differing in their processing capacity and in their number of ⎓ 24 V inputs and number of relay and transistor outputs (10, 16, 24 and 40 I/O).

These base controllers use:
- an a.c. supply between ∿ 100 and 240 V (providing the ⎓ 24 V supply to the sensors),
- or a d.c. supply between ⎓ 19.2 and 30 V (an external auxiliary supply must be provided for supply to the sensors).

Those compact base controllers offer the following advantages:
- A significant number of I/O (up to 40 I/O) in a small overall size, so reducing the size of consoles or panels for applications where space is an important factor.

- For expandable compact base (24 and 40 I/O models), a variety of expansion options and product options offer the user a degree of flexibility which is generally only available with larger automation platforms:
  - with 24 I/O compact base controllers **TWD LC●A 24DRF**, up to 4 discrete and/or analogue I/O expansion and/or communication modules.
  - with 40 I/O compact base controllers **TWD LC●● 40DRF**, up to 7 expansion modules (discrete and/or analogue I/O and/or communication).

- An optional modules, such as digital display, memory expansion cartridge, real-time clock cartridge and additional RS 485 or RS 232C communication port.

For further details, see next page

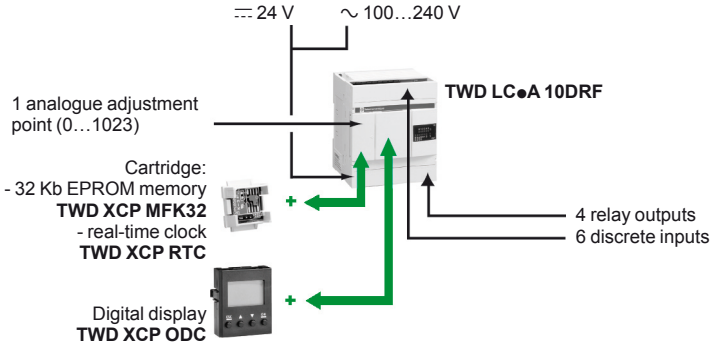
- The compact controller solution also allows great wiring flexibility. For discrete I/O expansion modules (with base controllers **TWD LC●A 24DRF** and **TWD LC●● 40DRF**) several possible types of connection are offered, such as removable screw terminal blocks and spring type connections which allow simple, fast and safe wiring. The Modicon Telefast ABE 7 pre-wired system allows the connection of modules with HE 10 connectors to:
- pre-formed cables with free wires at one end for direct connection to sensors/preactuators,
- the Modicon Telefast ABE 7 pre-wired system for Twido controller (connection cable and ABE 7 sub-base assembly).

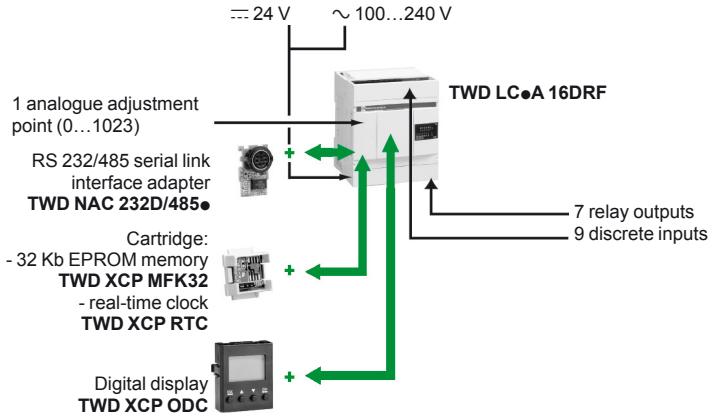
- The display and plug-in memory options allow easy adjustment, transfer and backup of applications:
  - the digital display can be used as a local display and adjustment tool,
  - the EEPROM technology in the memory cartridges allows backup and transfer of programs to any Twido compact or modular controller.

- TwidoSuite software allows easy programming using instruction list language instructions or ladder language graphic objects.

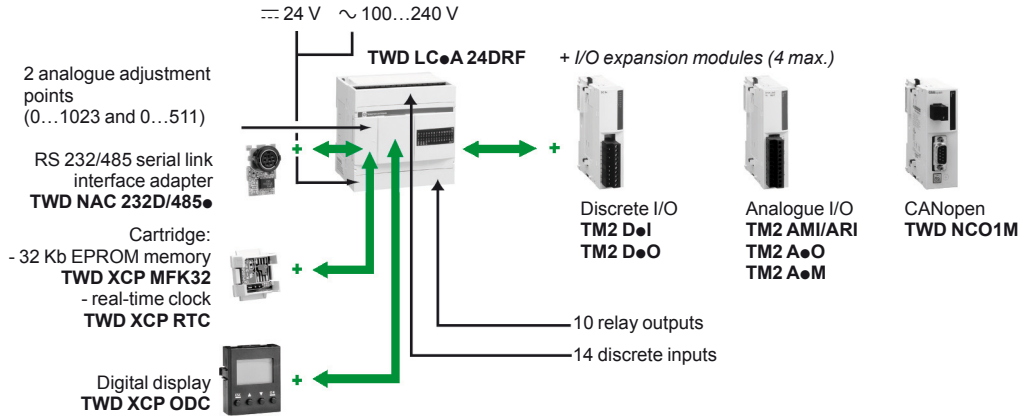
Configuration of compact base controllers

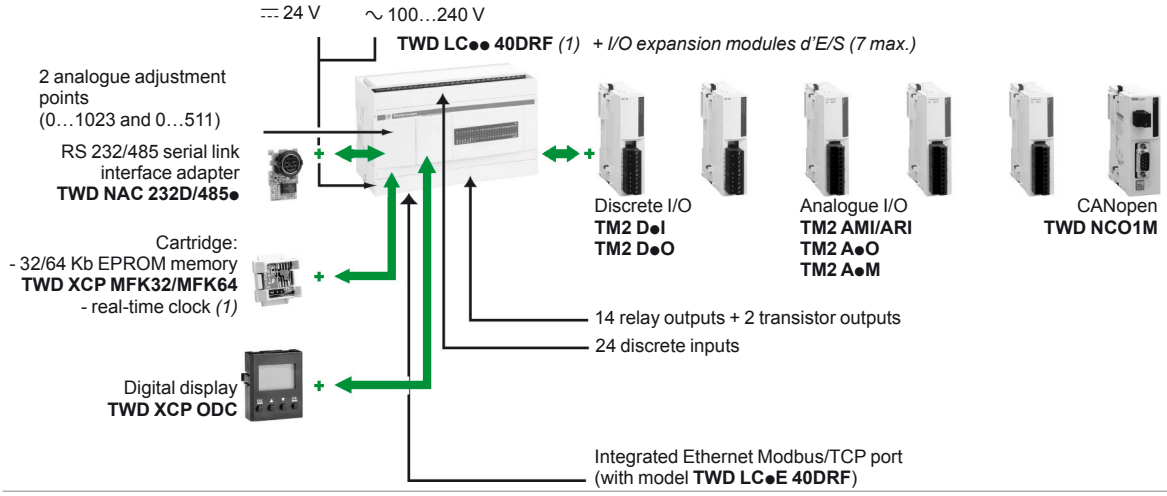
Non expandable compact base controllers





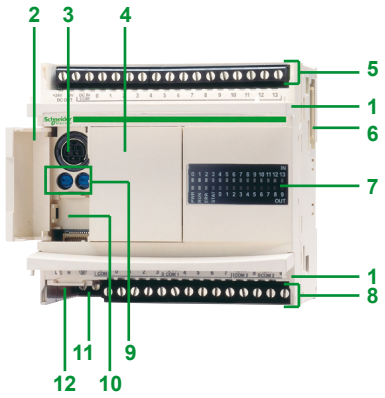
Expandable compact base controllers





(1) Real-time clock function integrated base controllers **TWD LC•• 40DRF**.

Twido programmable controller
Compact base controllers



Description

Compact base controllers TWD LC●A ●●DRF (without integrated Ethernet port)

Twido **TWD LC●A ●●DRF** compact programmable base controllers comprise :

1 Two hinged connection terminal block covers f or access to the terminals.

2 A hinged access door.

3 A mini-DIN type RS 485 serial port connector (allowing connection of the programming terminal).

4 A slot (protected by a removable cover) for digital diagnostic/maintenance display module **TWD XCP ODC**.

5 A screw terminal block for ⎓ 24 V supply to the sensors *(1)* and for connection of the input sensors.

6 A connector for I/O expansion modules **TM2 D●●**, **TM2 A●●** and communication module **TWD NCO1M** (maximum of 4 modules on 24 I/O base controllers and 7 modules on 40 I/O base controllers).

7 A display block showing:
- the status of the base controller by means of 3 pilot lights (PWR, RUN, ERR),
- the status of the inputs and outputs (IN● and OUT●),
- a user pilot light (STAT), to be controlled by the application programme according to user requirements.

8 A screw terminal block for connection of the output preactuators.

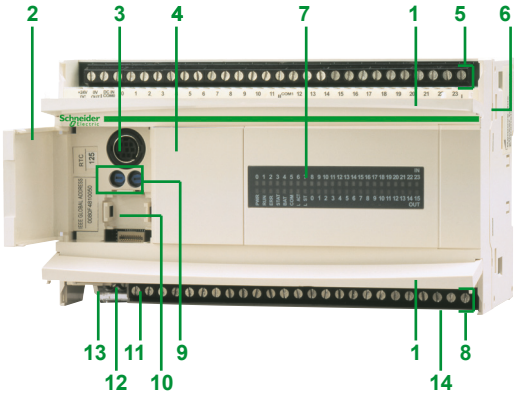
9 Two analogue adjustment points (one point for 10 and 16 I/O models).

10 An expansion connector for the addition of a 2nd RS 232C/RS 485 serial port using adapter **TWD NAC ●●●** (for 16, 24 and 40 I/O models).

11 A screw terminal block for connection of the ∿ 100...240 V mains or ⎓ 19.2...30 V power supply.

With access through the bottom of the controller:

12 A connector for:
- 32 Kb memory cartridge **TWD XCP MFK32** or real-time clock cartridge **TWD XCP RTC** for base controllers **TWD LC●A** 10/16/24DRF,
- 64 Kb memory cartridge **TWD XCP MFK64** for base controllers **TWD LC●A 40DRF**.



Compact base controllers TWD LCAE / LCDE 40 DRF (with integrated Ethernet port)

Twido **TWD LCAE 40DRF** and **TWD LCDE 40DRF** compact programmable base controllers with integrated Ethernet Modbus/TCP port comprise:

1 Two hinged connection terminal block covers for access to the terminals **5**.

2 A hinged access door.

3 A mini-DIN type RS 485 serial port connector (allowing connection of the programming terminal).

4 A slot (protected by a removable cover) for digital diagnostic/maintenance display module **TWD XCP ODC**.

5 A screw terminal block for ⎓ 24 V (1) supply to the sensors and for connection of the input sensors.

6 A connector for I/O expansion module **TM2 D●●**, **TM2 A●●** and communication module **TWD NCO1M** (maximum 7 modules).

7 A display block showing:
- the status of the base controller by means of 7 pilot lights (PWR, RUN, ERR, BAT, COM, LACT and L ST),
- the status of the inputs and outputs (IN● and OUT●),
- a user pilot light (STAT), to be controlled by the application programme according to user requirements.

8 A screw terminal block for connection of the output preactuators.

9 Two analogue adjustment points.

10 An expansion connector for the addition of a 2nd RS 232C/RS 485 serial port using adapter **TWD NAC ●●●**.

11 A screw terminal block for connection of the ∿ 100...240 V mains or ⎓ 19.2...30 V supply.

With access through the bottom of the controller:

12 A connector for 32/64 Kb memory card **TWD XCP MFK32/MFK64**.

13 An RJ45 connector (accessed through the bottom of the controller) for connection to the Ethernet Modbus/TCP network.

14 A slot to take the optional backup battery for the base controller's internal RAM.

***Nota**: Compact base controllers can be mounted as standard on a symmetrical ⊔ rail, mounting plate or panel (2 x 4.3 Ø holes).*
(1) ⎓ 24 V sensor supply only with base controller **TWD LCAA ●●DRF** *(∿ 100…240 V mains supply)*
(2) ⎓ 24 V sensor supply only with base controller TWD LCAE 40DRF (model with ∿ 100…240 V mains supply)

Twido programmable controller
Compact base controllers

TWD LC●A 10DRF

TWD LC●A 16DRF

TWD LC●A 24DRF

TWD LC●A/LC●E 40DRF

TWD XCP MFK32
TWD XCP MFK64

TWD XCP RTC

TWD NAC ●●●●

TWD XCP ODC

References

Number of I/O	Inputs sink/source	Outputs	No. of I/O expansion modules	No. of program memory instructions	Integrated Ethernet port	Reference	Weight kg
~ supply							
■ **Non expandable compact base controllers**							
10 I/O	6 ⎓ 24 V inputs	4 relay outputs	–	700	–	**TWD LCAA 10DRF**	0.230
16 I/O	9 ⎓ 24 V inputs	7 relay outputs	–	2000	–	**TWD LCAA 16DRF**	0.250
■ **Expandable compact base controllers**							
24 I/O	14 ⎓ 24 V inputs	10 relay outputs	4	3000	–	**TWD LCAA 24DRF**	0.305
40 I/O	24 ⎓ 24 V inputs	14 relay outputs and 2 transistor outputs	7	3000 *(1)*	–	**TWD LCAA 40DRF**	0.525
					Yes	**TWD LCAE 40DRF**	0.525
⎓ supply							
■ **Non expandable compact base controllers**							
10 I/O	6 ⎓ 24 V inputs	4 relay outputs	–	700	–	**TWD LCDA 10DRF**	0.230
16 I/O	9 ⎓ 24 V inputs	7 relay outputs	–	2000	–	**TWD LCDA 16DRF**	0.250
■ **Expandable compact base controllers**							
24 I/O	14 ⎓ 24 V inputs	10 relay outputs	4	3000	–	**TWD LCDA 24DRF**	0.305
40 I/O	24 ⎓ 24 V inputs	14 relay outputs and 2 transistor outputs	7	3000 *(1)*	–	**TWD LCDA 40DRF**	0.525
					Yes	**TWD LCDE 40DRF**	0.525

Separate components

Description		Application	Type	Reference	Weight kg
Cartridges	32 Kb memory	For all compact base controllers: - Application backup - Program transfer	EEPROM	**TWD XCP MFK32**	0.005
	64 Kb memory	For compact base controllers TWD LC●● 40DRF: - Memory expansion - Application backup - Program transfer	EEPROM	**TWD XCP MFK64**	0.005
	Real-time clock	For base controllers TWD LC●A 10/16/24DRF Date-stamping RTC based programming	–	**TWD XCP RTC**	0.005
Serial interface adapters		Mini-DIN connector	RS 232C	**TWD NAC 232D**	0.010
			RS 485	**TWD NAC 485D**	0.010
		Screw terminals	RS 485	**TWD NAC 485T**	0.010
Digital display		Data display and modification	–	**TWD XCP ODC**	0.020
Input simulators		6 inputs	–	**TWD XSM 6**	–
		9 inputs	–	**TWD XSM 9**	–
		14 inputs	–	**TWD XSM 14**	–
Optional backup batteries		For compact base controllers TWD LC●● 40DRF	Sold individually	**TSX PLP 01**	–
			Sold in lots of 10	**TSX PLP 101**	–

(1) 6000 instructions with memory expansion cartridge **TWD XCP MFK64**.

Twido programmable controller
Modular base controllers

TWD LMDA 20DTK/20DUK

TWD LMDA 20DRT

TWD LMDA 40DTK/40DUK

Presentation

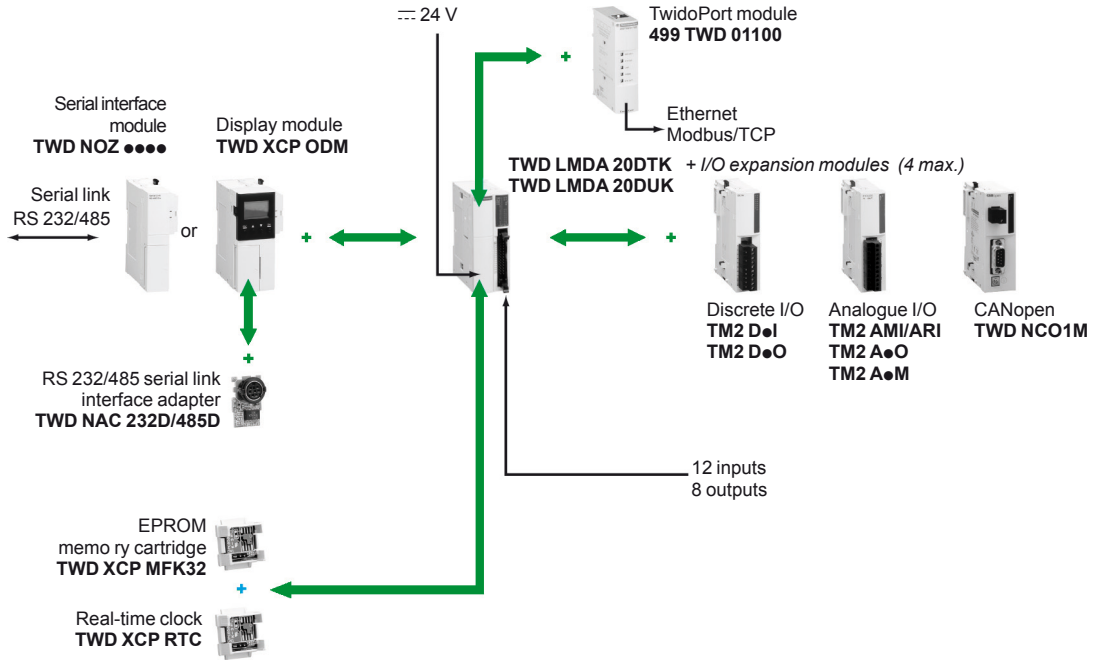
The modular programmable controller range includes five base controllers, which differ in their processing capacity and their number and type of I/O (20 or 40 I/O with connection by screw terminal block or HE 10 connector, with relay or sink/source transistor outputs). They can be fitted with any of the I/O expansion modules in the range (27 discrete and analogue modules). All these modular base controllers use a ⎓ 24 V power supply.

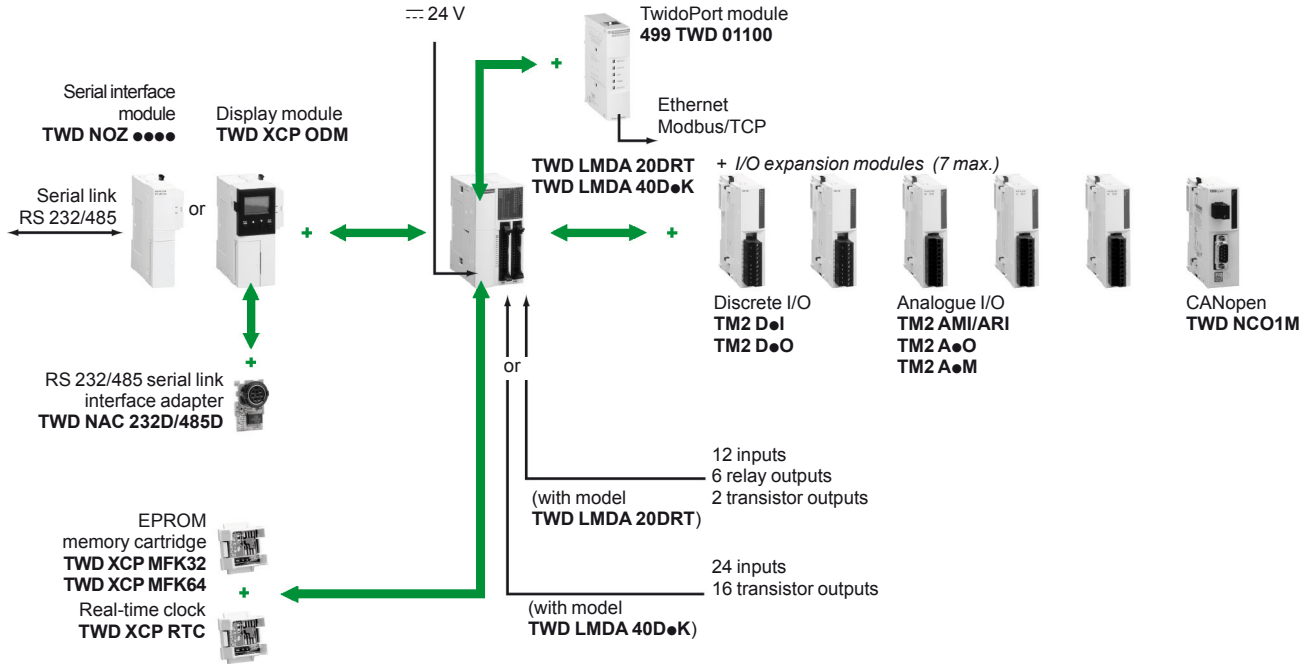
Those modular base controllers are expandable by addition of I/O expansion modules.
They offer:
■ A modular design to adapt to the needs of the application by using a base controller which can be fitted with up to 4 or 7 discrete or analogue I/O expansion modules (depending on the model).
■ A variety of options which offer the user a degree of flexibility which is generally only available with larger automation platforms. **TWD LMDA** modular base controllers can be fitted simultaneously with an optional memory cartridge module, a real-time clock cartridge module and a digital display module or serial interface module; both of the latter two modules allow the addition of a second RS 485 or RS 232C communication port.
■ The modular controller solution also allows great wiring flexibility. Several types of connection are offered, such as removable screw terminal blocks, spring type connections or HE 10 connectors which allow simple, fast and safe wiring. The Modicon Telefast ABE 7 system provides a pre-wired cabling solution, allowing connection of modules with HE 10 connectors to:
□ pre-formed cables with free wires at one end for direct connection to sensors/preactuators,

TwidoSuite software allows easy programming using instruction list language instructions or ladder language graphic objects.

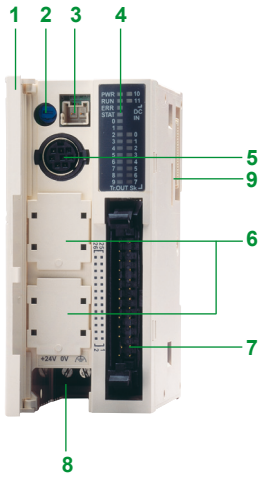
Configuration

Configuration of expandable modular base controllers





Twido programmable controller
Modular base controllers



Description

Twido **TWD LMDA ●0 D●●** modular programmable base controllers comprise:

On the front panel:
1 A hinged access door.
2 An analogue adjustment point.
3 A connector for connection of the integrated analogue input.
4 A display block showing:
- the status of the base controller by means of 7 pilot lights (PWR, RUN, STP, NCF, HLT and NEX)
- the status of the inputs and outputs (IN● and OUT●).

5 A mini-DIN type RS 485 serial port connector (allowing connection of the programming terminal).
6 Two slots (protected by a removable cover) for memory cartridge **TWD XCP MFK32/MFK64** and real-time clock cartridge **TWD XCP RTC**.
7 One (or more) HE 10 connector(s) (26-way) or screw terminal block (with module **TWD LMDA 20DRT**) for connection of the input sensors/output preactuators.
8 Screw terminals for connection of the ⎓ 24 V mains power supply.

On the right-hand side panel:
9 A connector for I/O expansion modules **TM2 D●●**, **TM2 A●●** and communication module **TWD NCO1M** (4 or 7 depending on the model).

On the left-hand side panel:
A connector (not visible) for display module **TWD XCP ODM** or serial interface module **TWD NOZ ●●●●**.

Modular base controllers are mounted on a symmetrical ⊔ rail.
Fixing kit **TWD XMT5** (sold in lots of 5) allows plate or panel mounting.

Twido programmable controller
Modular base controllers


TWD LMDA 20DTK/20DUK


TWD LMDA 40DTK/40DUK


TWD LMDA 20DRT


TWD XCP MFK32
TWD XCP MFK64


TWD XCP RTC


TWD XCP ODM


TWD NAC 232D/485D


TWD NAC 485T


TWD NOZ ●●●

References

Sink/source inputs	Outputs	No. of I/O expansion modules	No. of program memory instructions	Reference	Weight kg
⎓ 24 V supply					
■ Expandable modular bases					
12 ⎓ 24 V inputs	8 source transistor outputs	4	3000	**TWD LMDA 20DTK** *(2)*	0.140
	8 sink transistor outputs	4	3000	**TWD LMDA 20DUK** *(2)*	0.140
	6 relay outputs 2 source transistor outputs	7	3000 *(1)*	**TWD LMDA 20DRT**	0.185
24 ⎓ 24 V inputs	16 source transistor outputs	7	3000 *(1)*	**TWD LMDA 40DTK** *(2)*	0.180
	16 sink transistor outputs	7	3000 *(1)*	**TWD LMDA 40DUK** *(2)*	0.180

Separate components

Description		Applications		Type	Reference	Weight kg
Cartridges	32 Kb memory	For modular base controllers TWD LMDA 20/40D●●: - Application backup - Program transfer		EEPROM	**TWD XCP MFK32**	0.005
	64 Kb memory	For modular base controllers TWD LMDA 20DRT/40D●K: - Memory expansion - Application backup - Program transfer		EEPROM	**TWD XCP MFK64**	0.005
	Real-time clock	For modular base controllers TWD LMDA 20/40D●●: Date-stamping RTC based programming		–	**TWD XCP RTC**	0.005
Integrated display module		For modular base controllers TWD LMDA 20/40D●● Mounted on left-hand side of base controller. Enables adjustment and diagnostics of the controller. Can take a serial adapter TWD NAC ●●●●		–	**TWD XCP ODM**	0.105
Fixing kit Sold in lots of 5		For plate or panel mounting of modular base controllers or expansions		–	**TWD XMT5**	–
Serial interface adapters		Integrated display module TWD XCP ODM	Mini-DIN type connector	RS 232C	**TWD NAC 232D**	0.010
				RS 485	**TWD NAC 485D**	0.010
			Screw terminals	RS 485	**TWD NAC 485T**	0.010
Modules with integrated serial link adapter		Modular base controllers TWD LMDA 20/40D●●	Mini-DIN type connector	RS 232C	**TWD NOZ 232D**	0.085
				RS 485	**TWD NOZ 485D**	0.085
			Screw terminals	RS 485	**TWD NOZ 485T**	0.085

Spare parts

Screw terminal blocks Sold in lots of 2	Base controller TWD LMDA 20DRT, 13 contacts	–	**TWD FTB 2T13**	–
	Base controller TWD LMDA 20DRT, 16 contacts	–	**TWD FTB 2T16**	–
Analogue input cable	For integrated analogue input. Length 1 m	–	**TWD XCA 2A10M**	–
Pre-formed cables	Base controller TWD LMDA ●0DTK Base controller TWD LMDA ●0DUK	–	See page 56	–

(1) 6000 instructions with memory expansion cartridge **TWD XCP MFK64**.
(2) Connection by HE10 connector, allowing use of the Modicon Telefast ABE 7 pre-wired system (see page 56).

Twido programmable controller
Discrete I/O expansion modules

Applications	Type of expansion modules	**Discrete inputs with removable screw terminal block**		
	Compatibility	- Twido expandable compact and modular controllers - Modicon OTB I/O distributed Interfaces		
				
Number and type		8 ⎓ 24 V inputs	8 ∿ 120 V inputs	16 ⎓ 24 V inputs
Connection		By removable screw terminal block		
Inputs	Voltage range	⎓ 20.4...28.8 V	∿ 85...132 V	⎓ 20.4...28.8 V
	Input current	7 mA per channel	7.5 mA per channel	7 mA per channel
	Input logic	Sink/source *(1)*	–	Sink/source *(1)*
	Commons	1 x 8 channels	1 x 8 channels	1 x 16 channels
	Response time □ Off-on	4 ms	25 ms	4 ms
	□ On-off	4 ms	30 ms	4 ms
Outputs	Output types			
	Voltage range			
	Commons			
	Output current □ Per output			
	□ Per group of channels			
Isolation	Between channels	None		
	Between channels and internal logic	500 V rms ∿ for 1 min	1500 V rms ∿ for 1 min	500 V rms ∿ for 1 min
I/O module type		**TM2 DDI 8DT**	**TM2 DAI 8DT**	**TM2 DDI 16DT**
Pages		20		

(1) Sink input: positive logic, source input: negative logic.

Discrete inputs with HE10 connector		Discrete I/O with removable screw terminal block	Discrete I/O with non-removable spring terminal block
- Twido expandable compact and modular controllers - Modicon OTB I/O distributed Interfaces			
			
16 ⎓ 24 V inputs	32 ⎓ 24 V inputs	4 ⎓ 24 V inputs/4 relay outputs	16 ⎓ 24 V inputs/8 relay outputs
By HE10 connector Allows use of the Modicon Telefast ABE 7 pre-wired system		By removable screw terminal block	By non-removable spring terminal block
⎓ 20.4...28.8 V		⎓ 20.4...28.8 V	
5 mA per channel		7 mA per channel	
Sink/source *(1)*		Sink/source *(1)*	
1 x 16 channels	2 x 16 channels	1 x 4 channels	1 x 16 channels
4 ms		4 ms	
4 ms		4 ms	
		1 N/O contact	
		∿ 240 V, ⎓ 30V	
		1 x 4 channels	2 x 4 channels
		2 A (Ith)	
		7 A (Ith)	
None		None between input channels, none between output channels	
		Between input group and output groups: 1500 V rms ∿ for 1 min	
		Between output groups: 1500 V rms ∿ for 1 min	
500 V rms ∿ for 1 min		Between input channels and internal logic: 500 V rms ∿ for 1 min	
		Between output channels and internal logic: 2300 V rms ∿ for 1 min	
TM2 DDI 16DK	**TM2 DDI 32DK**	**TM2 DMM 8DRT**	**TM2 DMM 24DRF**
20			

Twido programmable controller
Discrete I/O expansion modules

Applications	Type of expansion modules	**8/16 outputs with removable screw terminal block**			
	Compatibility	- Twido expandable compact and modular controllers - Modicon OTB I/O distributed Interfaces			
					
Type		8 ⎓ 24 V transistor outputs		8 relay outputs	16 relay outputs
Connection		By removable screw terminal block			
Outputs	Output types	Transistor		Relay with 1 N/O contact	
	Voltage range	⎓ 20.4..28.8 V		∿ 240 V, ⎓ 30 V	
	Logic *(1)*	Sink	Source	–	
	Commons	1 x 8 channels		2 x 4 channels	2 x 8 channels
	Output current □ Per output	0.3 A max.	0.5 A max.	2 A max.	
	□ Per group of channels	3 A at 28.8 V	4 A at 28.8 V	7 A max.	8 A max.
	Protection against overload and short-circuit	–	Yes, with automatic reactivation on elimination of the fault	–	
Isolation	Between channels	None		None	
	Between group of channels	–		1500 V rms for 1 min	
	Between channels and internal logic	500 V rms ∿ for 1 min		2300 V rms ∿ for 1 min	
Output module type		**TM2 DDO 8UT**	**TM2 DDO 8TT**	**TM2 DRA 8RT**	**TM2 DRA 16RT**
Pages		20			

(1) Source output: positive logic, sink output: negative logic.

16/32 outputs with HE 10 connectors

- Twido expandable compact and modular controllers
- Modicon OTB I/O distributed Interfaces

16 ⎓ 24 V transistor outputs	16 ⎓ 24 V transistor outputs	32 ⎓ 24 V transistor outputs	32 ⎓ 24 V transistor outputs
By HE10 connector	By HE10 connector Allows use of the Modicon Telefast ABE 7 pre-wired system	By HE10 connector	By HE10 connector Allows use of the Modicon Telefast ABE 7 pre-wired system
Transistors			
⎓ 20.4...28.8 V			
Sink	Source	Sink	Source
1 x 16 channels		2 x 16 channels	
0.1 A max.	0.4 A max.	0.1 A max.	0.4 A max.
1 A at 28.8 V	2 A at 28.8 V	1 A at 28.8 V	2 A at 28.8 V
–	Yes, with automatic reactivation on elimination of the fault	–	Yes, with automatic reactivation on elimination of the fault
None			
–			
500 V rms ∿ for 1 min			
TM2 DDO 16UK	**TM2 DDO 16TK**	**TM2 DDO 32UK**	**TM2 DDO 32TK**
20			

Twido programmable controller
Discrete I/O expansion modules

Presentation

The offer discrete I/O expansion modules includes input modules, output modules and mixed input/output modules. With the 15 I/O modules offered, in addition to the I/O integrated in 24 I/O compact or modular extensible base controllers, configurations can be adapted to best suit application requirements, so optimising costs.

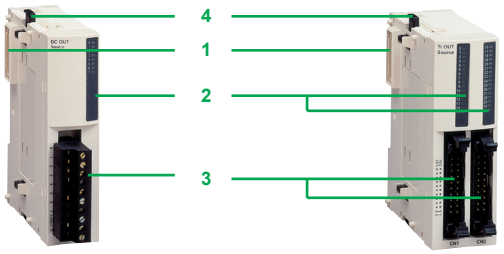
The following discrete I/O modules are available:
- Four ⎓ 24 V discrete input modules comprising an 8, 16 and a 32-channel module, equipped with either removable screw terminal blocks or HE 10 connector, depending on the model. These modules can be either “sink or source” .
- One ∿ 120 V discrete input module, 8 channels, equipped with a removable screw terminal block.
- Eight discrete output modules comprising two output modules with 8 and 16 relay outputs, output modules with 8, 16 or 32-channel “sink” or “source” transistor outputs, equipped with either removable screw terminal blocks or HE 10 connector, depending on the model.
- Two mixed discrete input and output modules, comprising one 4-channel input/4-channel relay output module with removable screw terminal block and one 16-channel input/8-channel relay output module with non-removable spring terminal block.

The narrow width of these I/O modules (17.5 mm, 23.5 mm, 29.7 mm or 39.1 mm) makes it possible to build Twido or Modicon OTB configurations of up to 248 I/O with a minimal overall size of L 364.9 mm x H 90 mm x D 81.3 mm.

Discrete I/O expansion modules and the analogue I/O modules are connected to the different base controller according to the following rules:
- Twido 24 E/S compact base controllers, **TWD LC●A 24DRF**: 4 modules max.
- Twido 40 E/S compact base controllers, **TWD LC●● 40DRF**: 7 modules max.
- Twido 20 E/S modular base controllers, **TWD LMDA 20D●K**: 4 modules max.
- Twido 20 E/S and 40 E/S modular base controllers, **TWD LMDA 20DRT/40D●K**: 7 modules max.
- Modicon OTB Interface 20 E/S, **OTB 1●0 DM9LP**: 7 modules max.

All the discrete I/O modules are electrically isolated with the use of a photocoupler between the internal electronic circuit and the input/output channels.

Twido programmable controller
Discrete I/O expansion modules



Module with removable screw terminal block

Module with HE 10 connector

Description

Discrete I/O expansion modules comprise:

1 An expansion connector for electrical connection to the previous module *(1)*.

2 One or two blocks for displaying the channels and module diagnostics.

3 One or two connection components of varying type, depending on the model:

- removable screw terminal block (1 or 2) for modules whose reference ends in **T**,
- HE 10 connector (1 or 2) for modules whose reference ends in **K**,
- non-removable spring terminal block for module **TM2 DMM 24DRF**.

4 Latching mechanism for attachment to the previous module.

These modules are mounted on a symmetrical ⊔ rail. Fixing kit **TWD XMT 5** (supplied in lots of 5) allows plate or panel mounting. For modules with removable screw terminal block, the terminal blocks are supplied with the module.

The **OTB 9ZZ 61JP** supply common distribution module (2 isolated groups of 10 terminals) simplifies the wiring of supply commons of sensors or actuators via 2 removable screw terminal blocks

(1) A connector on the right-hand side ensures continuity of the electrical link with the next I/O module.

Twido programmable controller
Discrete I/O expansion modules


TM2 DDI 8DT


TM2 DDI 32DK


TM2 DDO 8●T/DRA 8RT


TM2 DDO 16●K


TM2 DDO 32●K


TM2 DRA 16RT


TM2 DMM 8DRT


TM2 DMM 24DRF

References

These discrete I/O modules are mounted as standard on symmetrical ⊔ rails to the right of the Twido base controller. The maximum number of discrete and/or analogue I/O modules which may be mounted depends on the type of base controller:

Base controller type	Twido expandable compact TWD				Twido expandable modular TWD			Modicon OTB Interface
	LC●A 10DRF	LC●A 16DRF	LC●A 24DRF	LC●● 40DRF	LMDA 20D●K	LMDA 20DRT	LMDA 40D●K	OTB 1●0 DM9LP
Number of modules	0	0	4	7	4	7	7	7

Discrete input modules

Input voltage	Nb of channels	Nb of common points	Connection	Reference	Weight kg
⎓ 24 V sink/source	8	1	Removable screw terminal block (supplied)	**TM2 DDI 8DT**	0.085
	16	1	Removable screw terminal block (supplied)	**TM2 DDI 16DT**	0.100
			HE 10 connector	**TM2 DDI 16DK** *(1)*	0.065
	32	2	HE 10 connector	**TM2 DDI 32DK** *(1)*	0.100
∼ 120 V	8	1	Removable screw terminal block (supplied)	**TM2 DAI 8DT**	0.081

Discrete output modules

Output type	Nb of channels	Nb of common points	Connection	Reference	Weight kg
Transistors ⎓ 24 V	8, sink 0.3 A	1	Removable screw terminal block (supplied)	**TM2 DDO 8UT**	0.085
	8, source 0.5 A	1	Removable screw terminal block (supplied)	**TM2 DDO 8TT**	0.085
Transistors ⎓ 24 V	16, sink 0.1 A	1	HE 10 connector	**TM2 DDO 16UK**	0.070
	16, source 0.4 A	1	HE 10 connector	**TM2 DDO 16TK** *(1)*	0.070
	32, sink 0.1 A	2	HE 10 connector	**TM2 DDO 32UK**	0.105
	32, source 0.4 A	2	HE 10 connector	**TM2 DDO 32TK** *(1)*	0.105
Relay 2 A (Ith) **∼ 230 V/⎓ 30 V**	8 (N/O contact)	2	Removable screw terminal block (supplied)	**TM2 DRA 8RT**	0.110
	16 (N/O contact)	2	Removable screw terminal block (supplied)	**TM2 DRA 16RT**	0.145

Discrete mixed input/output modules

Nb of I/O	Nb, type of input	Nb, type of output	Nb of common points	Connection	Reference	Weight kg
8	4 I, ⎓ 24 V sink/source	4 O, relay (N/O contact) 2 A (Ith)	Inputs: 1 common Outputs: 1 common	Removable screw terminal block (supplied)	**TM2 DMM 8DRT**	0.095
24	16 I, ⎓ 24 V sink/source	8 O, relay (N/O contact) 2 A (Ith)	Inputs: 1 common Outputs: 2 commons	Non-removable spring terminal block	**TM2 DMM 24DRF**	0.140

(1) Module that allows use of the Modicon Telefast ABE 7 pre-wired system.

OTB 9ZZ 61JP

References

Separate components

Description	Application	Unit reference	Weight kg
Fixing kit Sold in lots of 5	For plate or panel mounting of the discrete modules.	**TWD XMT 5**	0.065
Commun distribution module	For distribution of supply commons. 8 A max. Connection on 2 removable screw terminal blocks	**OTB 9ZZ 61JP**	0.100
Modicon Telefast ABE 7 pre-wired system	Connection sub-bases I/O connection sub-bases Pre-wired solutions Cables and accessories	See page 57	–

Description	Number of ways	Unit reference	Weight kg
HE 10 female connectors Sold in lots of 5	20	**TWD FCN 2K20**	–
	26	**TWD FCN 2K26**	–

Pre-formed cables for discrete I/O modules with HE 10 connectors

Description	For use with Twido	Gauge C.s.a.	Cable length	Reference	Weight kg
Pre-formed cables 1 pre-formed cable: one end fitted with HE 10 connector, one end with free wires	I/O expansions TM2 DDI 16DK/32DK TM2 DDO 16●K/32●K	AWG 22 0.035 mm²	3 m	**TWD FCW 30K**	0.405
		AWG 22 0.035 mm²	5 m	**TWD FCW 50K**	0.670

Pre-formed connecting cables *(1)*

Description	Association	Jauge Section	Longueur cordon	Reference	Weight kg
Discrete input pre-formed cables, 1 pre-formed cable: one end with 20-way HE 10 connector on TM2 side, one end with 20-way HE 10 connector on sensor side	Inputs TM2 DDI 16DK/32DK	AWG 28 0.080 mm²	1 m	**ABF TE20EP100**	0,080
		AWG 28 0.080 mm²	2 m	**ABF TE20EP200**	0.140
		AWG 28 0.080 mm²	3 m	**ABF TE20EP300**	0.210
Discrete output pre-formed cables 1 pre-formed cable: one end with 20-way HE 10 connector on TM2 side, one end with 20-way HE 10 connector on preactuator side	Outputs TM2 DDO 16TK/32TK	AWG 28 0.080 mm²	1 m	**ABF TE20SP100**	0,080
		AWG 28 0.080 mm²	2 m	**ABF TE20SP200**	0.140
		AWG 28 0.080 mm²	3 m	**ABF TE20SP300**	0.210

(1) Cables strictly for applications other than use of Modicon Telefast ABE 7 sub-bases with Twido controllers. For use of Modicon Telefast ABE 7 sub-bases with Twido controllers, see pages 52 to 57.

Twido programmable controller
Analogue I/O expansion modules

Applications	**Type of expansion modules**	**Analogue inputs**			
	Compatibility	- Twido expandable compact and modular controllers - Modicon OTB I/O distributed Interfaces			
					
Type		2 inputs		4 inputs	8 inputs
Nature		Voltage/current	Thermocouple inputs	Voltage/current Temperature probe	Voltage/current
Connection		Removable screw terminal block			
Inputs	Range	0...10 V 4...20 mA (non differential)	Thermocouple type J, K and T (differential)	0...10 V ● 0...20 mA ● Temperature probe 2, 3 or 4-wire Pt100/1000 ■ : - 200…600 °C Ni 100/1000 ■ : - 50…150 °C (non differential)	0...10 V 0...20 mA (non differential)
	Resolution	12 bits (4096 points)	12 bits (4096 points)	12 bits (4096 points)	10 bits (1024 points)
	Acquisition period	10 ms per channel + 1 controller cycle time	200 ms per channel + 1 controller cycle time	160 ms per channel ● 320 ms per channel ■ + 1 controller cycle time	160 ms per channel + 1 controller cycle time
Outputs	Range				
	Resolution				
	Transfer time				
External suplly	Nominal voltage	⎓ 24 V			
	Limit values	⎓ 20.4…28.8 V			
Isolation	Between channels	Non isolated			
	Between channels and sensor supply	∿ 500 V rms		Non isolated	
	Between channels and internal logic	∿ 500 V rms	∿ 2500 V rms	∿ 2500 V rms	
Analogue I/O module type		**TM2 AMI 2HT**	**TM2 AMI 2LT**	**TM2 AMI 4LT**	**TM2 AMI 8HT**
Pages		24			

Analogue inputs (continued)			**Analogue outputs**		**Analogue I/O**		
- Twido expandable compact and modular controllers - Modicon OTB I/O distributed Interfaces							
		 *(2)*					
8 inputs			1 output	2 outputs	2 inputs/1 output		4 inputs/2 outputs
Temperature probe inputs			Voltage/current	Voltage	Voltage/current	Thermocouple/ temperature probe inputs Voltage/current output	Voltage/current
Removable screw terminal block		Removable screw terminal block and RJ11 connectors	Removable screw terminal block				
NTC probe (non diffe- rential)	PTC probe ⚠ Threshold detection (high and low) (non dif.)	Temperature probe 2 or 3-wire Pt100: - 200…600 °C Pt1000 :- 50…200 °C) (non differential)			0...10 V 4...20 mA (non differential)	Thermocouple type J, K and T Temperature probe 2 or 3-wire Pt100: - 100…500 °C (non differential)	0...10 V 4...20 mA (non differential)
10 bits (1024 pts)	**1** < range **2** = range **4** > range	12 bits (4096 points)			12 bits or 11 bits + sign (4096 points)		12 bits (4096 points)
160 ms per channel + 1 controller cycle time		320 ms per channel (1280 ms maxi.) + 1 controller cycle time			10 ms per channel + 1 controller cycle time	50 ms per channel + 1 controller cycle time	Configurable by software : 16 ms (fast) / 64 ms (normal) per channel + 1 controller cycle time
			0...10 V 4...20 mA	± 10 V	0...10 V 4...20 mA		
			12 bits (4096 points)	11 bits (2048 points) + sign	12 bits (4096 points)		
			10 ms + 1 controller cycle time	2 ms + 1 controller cycle time	20 ms + 1 controller cycle time		
⎓ 24 V			⎓ 24 V				
⎓ 20.4…28.8 V		⎓ 19.2…30 V	⎓ 19.2…30 V				
Non isolated							
Non isolated		∿ 500 V rms	∿ 500 V rms	Non isolated	∿ 500 V rms		∿ 800 V rms
∿ 2500 V rms			∿ 500 V rms	∿ 2500 V rms	∿ 500 V rms		∿ 1500 V rms
TM2 ARI 8HT	**TM2 ARI 8LT** *(1)* **TM2 ARI 8LRJ** *(2)*		**TM2 AMO 1HT**	**TM2 AVO 2HT**	**TM2 AMM 3HT**	**TM2 ALM 3LT**	**TM2 AMM 6HT**
25							

(1) Connection by a removable screw terminal block.
(2) Connection by a RJ11 connector.

Twido programmable controller
Analog I/O expansion modules

Presentation

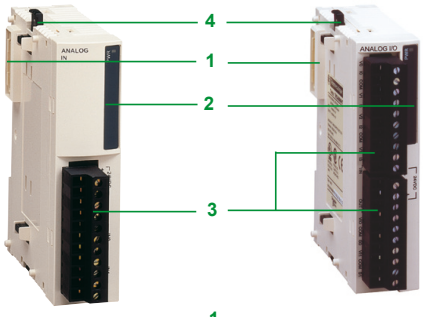
Analog I/O expansion modules enable the acquisition of various analog values encountered in industrial applications.
Analog output modules are used to control the preactuators in devices such as variable speed drives, valves and applications that require process control. The output current or voltage is proportional to the numerical value defined by the user program. When the controller stops, the outputs can be configured with fallback (reset to the lowest scale value or hold the last value received). This function, when set to 'hold', is useful when debugging the application or when a fault occurs, to ensure that the process being controlled is not disturbed.

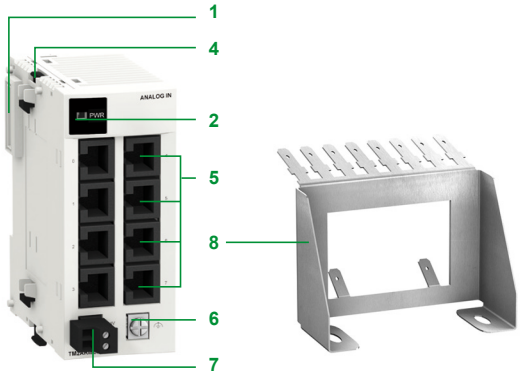
The following 10 analog I/O modules are available:
- One module with 2 inputs: 0…10 V, 4…20 mA
- One module with 2 inputs for type J, K and T thermocouples
- One module with 4 inputs: 0…10 V, 0…20 mA, Pt 100/1000 range - 200…600°C, Ni100/1000 range - 50...150°C
- Two modules with 8 temperature probe inputs: Pt100 range - 200…600°C and Pt1000 range - 50…200°C (with RJ11 connectors or removable screw terminal block)
- One module with 8 inputs: 0…10 V, 0…20 mA
- One module with 8 inputs: PTC/NTC *(1)*
- One module with 1 output: 0…10 V, 4…20 mA
- One module with 2 outputs: ± 10 V
- One mixed module with 2 inputs (0…10 V, 4…20 mA) and 1 output (0…10 V, 4…20 mA)
- One mixed module with 2 thermocouple (type J, K and T) or temperature probe inputs and 1 output 0…10 V, 4…20 mA
- One mixed module with 4 inputs (0…10 V, 4…20 mA) and 2 outputs (0…10 V, 4…20 mA)

Analog expansion modules offer a resolution of 10 bits, 11 bits + sign and 12 bits, with connection by removable screw terminal block. An external 24 V ⎓ power supply is required for each analog module.

Discrete I/O expansion modules and analog I/O modules are connected to the different expandable base controllers according to the following rules:
- Twido 24 I/O compact base controllers, **TWD LC●A 24DRF**: 4 modules max.
- Twido 40 I/O compact base controllers, **TWD LC●● 40DRF**: 7 modules max.
- Twido 20 I/O modular base controllers, **TWD LMDA 20D●K**: 4 modules max.
- Twido 20 I/O and 40 I/O modular base controllers, **TWD LMDA 20DRT/40D●K**: 7 modules max.
- Modicon OTB Interface 20 I/O, **OTB 1●0 DM9LP**: 7 modules max.

All analog I/O modules are electrically isolated with the use of a photocoupler between the internal electronic circuit and the input/output channels.





Description

Analog I/O modules comprise:
1 An expansion connector for electrical connection to the adjacent module *(2)*
2 A PWR display block
3 One (or two, depending on model) removable screw terminal block(s) for connecting the 24 V ⎓ external power supply, the sensors and the preactuators
4 A latching mechanism for attachment to the adjacent module

For modules with 8 temperature probe inputs:
5 8 RJ11 connectors. A version of this module is available with 2 removable screw terminal blocks (2 x 13 terminals)
6 A screw terminal for connecting the functional ground (FG)
7 A removable screw terminal block for connecting the 24 V ⎓ power supply

The **TM2 XMTGB** ground connection plate **8** simplifies connection of the analog sensor and actuator cable shielding. This shielding must be connected to the device's functional ground (FG).
These modules are mounted on a symmetrical ⊔ rail. Mounting kit **TWD XMT 5** (supplied in lots of 5) can be used for plate or panel mounting.

(1) With PTC probe, threshold detection inputs (high and low).
(2) A connector on the right-hand side panel ensures continuity of the electrical link with the adjacent I/O module.

Twido programmable controller
Analog I/O expansion modules

References

These analog I/O expansion modules are mounted on symmetrical ⊐ rails to the right of base controller below. The maximum number of I/O and/or analog modules which may be mounted depends on the type of base controller:

Base controller type	Twido compact TWD				Twido modular TWD			Modicon OTB Interface
	LC●A 10DRF	LC●A 16DRF	LC●A 24DRF	LC●● 40DRF	LMDA 20D●K	LMDA 20DRT	LMDA 40D●K	OTB 1●0 DM9LP
Number of modules	0	0	4	7	4	7	7	7

TM2 AMI 2HT

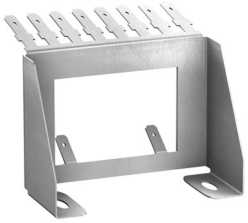
TM2 AMI 2LT

TM2 ARI 8LRJ

TM2 ARI 8LT

TM2 ALM LT

TM2 AMM 6HT



TM2 XMTGB

TM200 RSRCEMC

Channel type	Input range	Output range	Resolution	Connection by	Reference	Weight kg
Analog input modules						
2 inputs	0…10 V 4…20 mA	–	12 bits	Removable screw terminal block (supplied)	**TM2 AMI 2HT**	0.085
	Thermocouple K, J, T	–	12 bits	Removable screw terminal block (supplied)	**TM2 AMI 2LT**	0.085
4 inputs	0…10 V 0…20 mA Temperature	–	12 bits	Removable screw terminal block (supplied)	**TM2 AMI 4LT**	0.085
8 inputs	0…10 V 0…20 mA	–	10 bits	Removable screw terminal block (supplied)	**TM2 AMI 8HT**	0.085
	Pt 100 Pt 1000	–	12 bits	RJ11 connector	**TM2 ARI 8LRJ**	0.190
				Removable screw terminal block (supplied)	**TM2 ARI 8LT**	0.190
	PTC/NTC	–	10 bits for NTC 2-threshold detection with PTC	Removable screw terminal block (supplied)	**TM2 ARI 8HT**	0.085
Analog output modules						
1 output	–	0…10 V 4…20 mA	12 bits	Removable screw terminal block (supplied)	**TM2 AMO 1HT**	0.085
2 outputs	–	± 10 V	11 bits + sign	Removable screw terminal block (supplied)	**TM2 AVO 2HT**	0.085
Analog I/O modules						
2 inputs and 1 output	0…10 V 4…20 mA	0…10 V 4…20 mA	12 bits	Removable screw terminal block (supplied)	**TM2 AMM 3HT**	0.085
	J, K, T thermocouple 3-wire Pt 100 temperature probe	0…10 V 4…20 mA	12 bits	Removable screw terminal block (supplied)	**TM2 ALM 3LT**	0.085
4 inputs and 2 outputs	0…10 V 4…20 mA	0…10 V 4…20 mA	12 bits	Removable screw terminal block (supplied)	**TM2 AMM 6HT**	0.085

Description	Description	Reference	Weight kg
Separate components			
Ground connection plate	Plate equipped with male Faston connector for connecting cable shielding (via Faston clamp 6.35 mm, not supplied) and functional grounds (FG)	**TM2 XMTGB**	0.045
Shielding connection clamps	Attach and ground the shielding of the cables Sold in lots of 25 (20 for cable Ø 4.8 mm and 5 for cable Ø 7.9 mm)	**TM200 RSRCEMC**	–
Mounting kit	For plate or panel mounting of the analog modules. Sold in lots of 5	**TWD XMT 5**	0.065

Twido programmable controller
Communication, integrated ports and modules

Applications			**40 I/O compact base controllers with integrated Ethernet TCP/IP port**
			
Type			**Ethernet TCP/IP**
Structure	Physical interface		10BASE-T/100BASE-TX
	Type of connector		RJ45
	Access method		CSMA-CD
	Binary rate		10/100 Mbit/s
Medium			Double twisted pair copper cable, category CAT 5E Fibre optic via ConneXium cabling system
Configuration	Maximum number of devices		–
	Maximum length		100 m (copper cable), 4000 m (multimode fibre optic), 32 500 m (single-mode fibre optic)
	Number of same type links per station		1 (integrated port)
	Other integrated port		Serial link
Basic services			Modbus TCP/IP messaging (read/write of data words)
Conformity class			Transparent Ready class A10
Transparent Ready communication services	FDR service		IP address assigned by FDR server
Compatibility with Twido base controllers			–
Base controller or module type			**TWD LCDE 40DRF** supply ⎓ 24 V
			TWD LCAE 40DRF supply ∿ 100…240 V
Page			28

TwidoPort Ethernet TCP/IP module	CANopen bus master module for machines and installations	Integrated and optional asynchronous serial link	
			
Ethernet TCP/IP	**CANopen**	**Modbus and Character Mode**	
10BASE-T/100BASE-TX	ISO 11898 (9-way SUB-D connector)	RS 485 not isolated	R 232/485 not isolated
RJ45	9-way SUB-D	8-way Mini-DIN	8-way Mini-DIN or screw terminal block (RS 485)
CSMA-CD	Master CSMA/CA (multiple access)	Master/Slave for Modbus link, Half duplex (RS 485) / Full duplex (RS 232) in character mode	
10/100 Mbit/s	125, 250 or 500 Kbit/s	1.2...38.4 Kbit/s	
Double twisted pair copper cable, category CAT 5E Fibre optic via ConneXium cabling system	Shielded double twisted pair copper cable	Shielded double twisted pair copper cable	
–	16	32 per segment	
100 m (copper cable), 4000 m (multimode fibre optic), 32 500 m (single-mode fibre optic)	30 m…120 m depending on binary rate	10 m (not isolated), 1000 m with insulation box	
1 TwidoPort interface module	1	1	1 optional
–	–	–	
Modubus TCP/IP messaging (read/write of data words)	- 16 input process data objects (receive PDO) - 16 output process data objects (transmit PDO)	Read/write bits and words, diagnostics for Modbus link Transmit and receive character strings in character mode	
Transparent Ready class A10	Class M10	–	
IP address assigned by FDR server	–	–	
10/16/24/40 I/O compact base controllers 20/40 I/O modular base controllers	24/40 I/O compact base controller 20/40 I/O modular base controller	10/16/24/40 I/O compact base controllers 20/40 I/O modular base controllers	16/24/40 I/O compact base controllers 20/40 I/O modular base controllers
499 TWD 01100	**TWD NCO1M**	**Terminal port** integrated in the base controllers	**TWD NAC ●●●D/T** **TWD NOZ ●●●D/T** *(1)*
29	33	36	

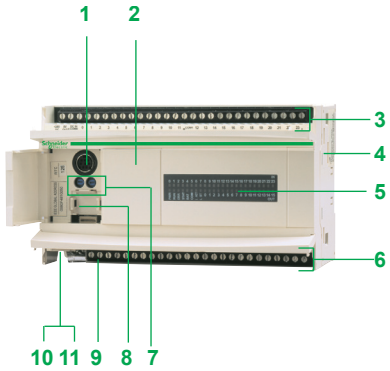
(1) With Twido modular base controller: use a serial interface module **TWD NOZ ●●●D/T** *or a digital display module* **TWD XCP ODM** *fitted with a serial interface adapter* **TWD NAC ●●●D/T**.

Twido programmable controller
Ethernet TCP/IP network
Twido compact base controllers with integrated Ethernet port

Twido compact base controller with display

The Twido programmable controller range offers 2 compact base controllers with integrated Ethernet port. Within a compact overall size of 157 x 90 x 70 mm, base controllers **TWD LCAE 40DRF** (∿ 100…240 V supply) and **TWD LCDE 40DRF** (⎓ 24 V supply) comprise the following discrete I/O:
- 24 ⎓ 24 V inputs.
- 14 relay outputs.
- 2 ⎓ 24 V transistor outputs.

These base controllers with real-time clock function can be fitted with:
- Up to 7 I/O expansion modules, so increasing the I/O capacity to 152 (screw terminal version) or 264 (HE 10 connector version).
- Any of the separate components in the Twido range (memory cartridge, serial link adapters, digital display).



Description

Twido compact base controllers with integrated Ethernet port
TWD LCAE/LCDE 40DRF comprise:
1 A mini-DIN type RS 485 serial port connector (allowing connection of the programming terminal).
2 A slot for digital diagnostic/maintenance display module.
3 A screw terminal block for supply to the ⎓ 24 V sensors (only on base controller TWD LCAE 40DRF) and for connection of the input sensors (protected by hinged terminal block cover).
4 A connector for expansion modules (7 modules max.: discrete I/O, analogue I/O, CANopen bus, AS-Interface).
5 A display block.
6 A screw terminal block for connection of the output preactuators (protected by a hinged terminal block cover).
7 Two analogue adjustment points.
8 A connector for extension of the 2nd RS 232C/RS 485 serial port.
9 A screw terminal block for connection of the mains power supply (∿ or ⎓).
With access through the bottom of the controller:
10 A memory cartridge connector.
11 A standard connector for 10BASE-T/100BASE-TX (RJ45) interface module.

TWD LC●E 40DRF

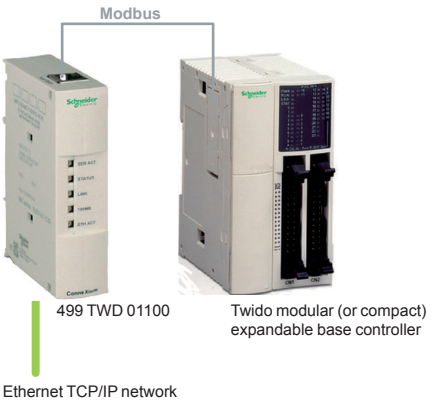
References

Description	No. of discrete I/O	Supply voltage	Reference	Weight kg
Compact base controllers with integrated Ethernet port Transparent Ready Class A10	24 ∿ 24 V inputs 14 relay outputs 2 solid state outputs ⎓ 24 V	∿ 100…240 V	**TWD LCAE 40DRF**	0.525
		⎓ 24 V	**TWD LCDE 40DRF**	0.525

Separate components: serial interface adapter, memory cartridge, digital display, see page 9.

(1) Auto MDI/MDX function not supported.

Twido programmable controller
Ethernet TCP/IP network
TwidoPort interface module



TwidoPort module **499 TWD 01100** is an Ethernet interface that is easy to use and dedicated to Twido compact or modular expandable programmable controllers, version 3.0. It allows incorporation of the Twido controller into an Ethernet network as a passive device (slave). The TwidoPort module is ready for use.
When connected to the integrated RS 485 serial port of any compact or modular base controller, the TwidoPort module acts as a gateway between the Ethernet TCP/IP network and the Twido controller's Modbus serial link.
The connection cable between the base controller and the TwidoPort module is supplied with the module.

The main characteristics of the TwidoPort module are as follows:
■ Connects to the RS 485 port of the Twido controller; no external auxiliary supply is necessary.
■ Ethernet configuration:
□ takes the Ethernet configuration from the Twido application configuration (normal mode),
□ supports manual configuration using Telnet.
■ Provides Ethernet statistics via a Telnet session.

An optional RS 485 type link provides a second Modbus serial link in order to connect, for example, a Magelis XBT operator terminal. **TWD NAC 485D/485T** serial interface adapter or serial interface module **TWD NOZ 485D/485T** is required.

Description

The TwidoPort **499 TWD 01100** interface module comprises:
1 Five pilot lights indicating the status of the interface and of the TwidoPort module links.
2 An RJ45 type connector for connection of the power supply and of the link to the Twido controller's integrated RS 485 port. This connection is made using connection cable **TWD XCA RJP03P** supplied with the TwidoPort interface module.
3 An RJ45 connector (accessed through the bottom of the module) for connection to the Ethernet TCP/IP network.
4 An earthing screw (accessed through the bottom of the module).
The TwidoPort interface module can be mounted as standard on a symmetrical ⊐ rail. Fixing kit **TWD XMT5** (sold in lots of 5) allows plate or panel mounting (2 x Ø 4.3 holes).

499 TWD 01100

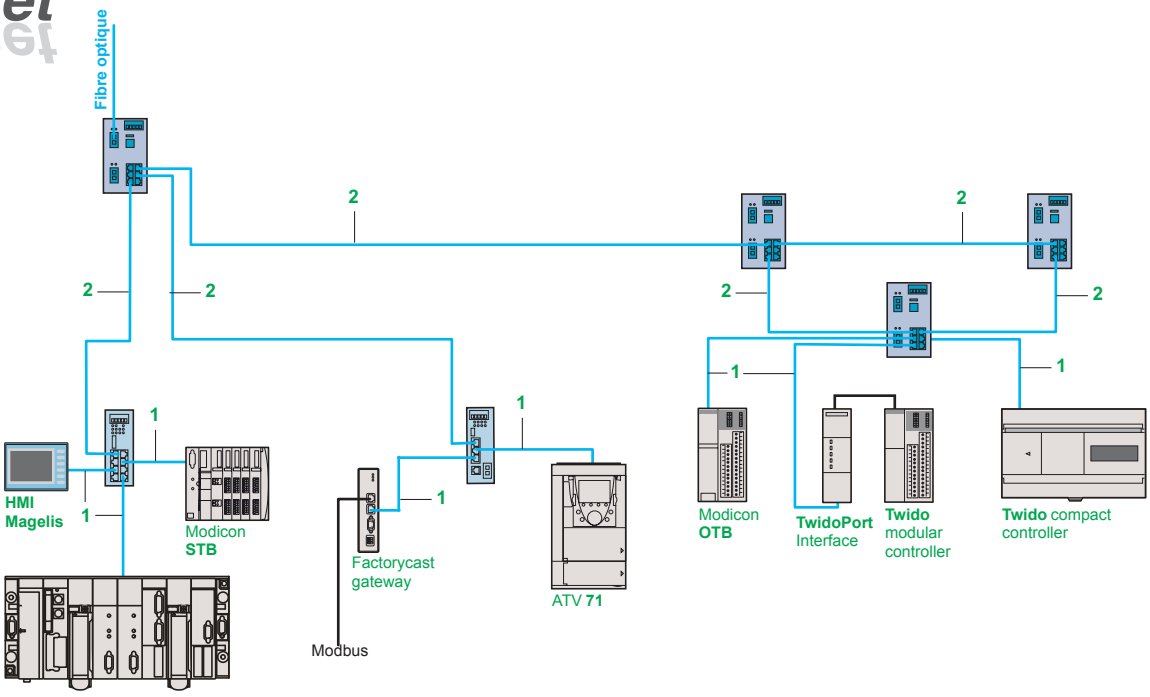
Reference

Description	Twido base controller version ≥ 3.0	Description	Reference	Weight kg
TwidoPort interface module	Compact base controller 10/16/24/40 I/O Modular base controller 20/40 I/O	10/100 Mbit/s. Auto MDIX function. RJ45 connector. Connection cable to base controller, length 0.3 m TWD XCA RJP03P included.	**499 TWD 01100**	0.200
Class A10 Transparent Ready				

Twido programmable controller
Ethernet Modbus/TCP network

Ethernet

Ethernet Modbus/TCP or Ethernet IP network architecture



3 Manageable switch

4 Hub or no manageable switch

References *(1)*

Shielded copper connection cables

ConneXium shielded copper connection cables are available in two versions to comply with the different standards and approvals in force:

■ **Shielded twisted pair copper cables to standard EIA/TIA 568**

These cables conform to:

□ standard EIA/TIA 568, category CAT 5E,

□ standard IEC 11801/EN 50173, class D.

Their flame resistance conforms to:

□ NFC 32070# classification C2

□ standards IEC 322/1,

□ Low Smoke Zero Halogen (LSZH).

■ **Shielded twisted pair copper cables, UL and CSA 22.1 approved**

These cables conform to:

□ standards UL and CSA 22.1.

Their flame resistance conforms to NFPA 70.

"Do It Yourself" cable and connectors

The ConneXium "Do It Yourself" range allows the user to make up Ethernet copper cables on site and to the required length. They are designed for cabling Ethernet 10/100 Mbit/s networks. The maximum length of cables made up in this way is 80 m. They can be assembled quickly using a knife and cutting pliers (no special tools are required).

Description	Characteristics	Length	Reference	Weight kg
Ethernet copper cable 2 shielded twisted pairs 24 AWG	Conforming to the above-mentioned standards and approvals	300 m	**TCS ECN 300R2**	–
RJ 45 connector	Conforming to EIA/TIA-568-D	–	**TCS EK3 MDS**	–
M12 connector	Conforming to IEC 60176-2-101	–	**TCS EK1 MDRS**	–

(1) For other versions (fibre optic, switches, …): please consult our "Machines and Installations with Industrial Communications" catalogue.

490 NT● 000 ●●

TCS ESU 043F1N0

TCS ESM 043F2C●0

499 NMS/NSS 251 02

TCS ESM 083F2C●0

TCS ESU 051 F0

References (continued)

Shielded twisted pair cables to standard EIA/TIA568

Description	Pre-formed at both ends	Item	Length	Reference	Weight kg
Straight cables	2 x RJ45 connectors For connection to terminal equipment (DTE)	1	2 m	**490 NTW 000 02**	–
			5 m	**490 NTW 000 05**	–
			12 m	**490 NTW 000 12**	–
			40 m	**490 NTW 000 40**	–
			80 m	**490 NTW 000 80**	
Crossover cables	2 x RJ45 connectors For connection between hubs, switches and transceivers	2	5 m	**490 NTC 000 05**	–
			15 m	**490 NTC 000 15**	–
			40 m	**490 NTC 000 40**	–
			80 m	**490 NTC 000 80**	–

Shielded twisted pair cables, UL and CSA 22.1 approved

Description	Pre-formed at both ends	Item	Length	Reference	Weight kg
Straight cables	2 x RJ45 connectors For connection to terminal equipment (DTE)	1	2 m	**490 NTW 000 02U**	–
			5 m	**490 NTW 000 05U**	–
			12 m	**490 NTW 000 12U**	–
			40 m	**490 NTW 000 40U**	–
			80 m	**490 NTW 000 80U**	–
Crossover cables	2 x RJ45 connectors For connection between hubs, switches and transceivers	2	5 m	**490 NTC 000 05U**	–
			40 m	**490 NTC 000 40U**	–
			80 m	**490 NTC 000 80U**	–

Shielded twisted pair cable for IP 67 switch

Description	Pre-formed at both ends	Item	Length	Reference	Weight kg
Straight cables	1 x IP 67 4-way M12 connector and 1 x RJ45 connector	–	1 m	**TCS ECL 1M3M 1S2**	–
			3 m	**TCS ECL 1M3M 3S2**	–
			5 m	**TCS ECL 1M3M 5S2**	–
			10 m	**TCS ECL 1M3M 10S2**	–
			25 m	**TCS ECL 1M3M 25S2**	–
			40 m	**TCS ECL 1M3M 40S2**	–

ConneXium hub

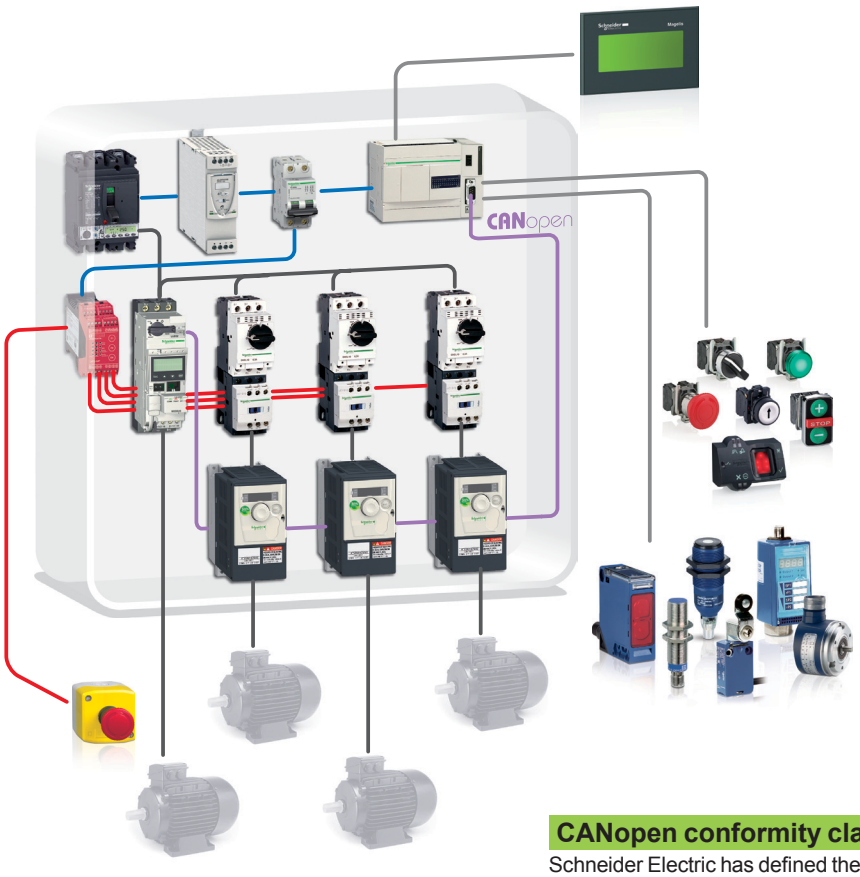
Description	Number of ports		Item	Reference	Weight kg
	Copper cable	Fibre optic			
Twisted pair hub 10BASE-T copper ports, RJ45 shielded connectors	4	–	4	**499 NEH 104 10**	0.530

ConneXium switches

Description	Number of ports		Item	Manag -eable	Reference	Weight kg
	Copper cable	Fibre optic				
Optimized twisted pair switch 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors 100BASE-FX optic port, SC connectors	3	–	4	No	**TCS ESU 033FN0**	0.113
	4	1	4	No	**TCS ESU 043FN0**	0.120
	5	–	4	No	**TCS ESU 053FN0**	0.113
Twisted pair switches 0BASE-T/100BASE-TX copper ports, RJ45 shielded connectors	8	–	4	No	**499 NES 181 00**	0.230
	8	–	3	Yes	**TCS ESM083F23F0**	0.410
Twisted pair and fibre optic switches 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors. 100BASE-FX optic ports, SC connectors	3	1, multimode	3	Yes	**TCS ESM043F1CU0**	0.400
	2	2, multimode	3	Yes	**TCS ESM043F2CU0**	0.400
	3	1, single-mode	3	Yes	**TCS ESM043F1CS0**	0.400
	2	2, single-mode	3	Yes	**TCS ESM043F2CS0**	0.400
	4	1, multimode	4	No	**499 NMS 251 01**	0.330
	3	2, multimode	4	No	**499 NMS 251 02**	0.335
	4	1, single-mode	4	No	**499 NSS 251 01**	0.330
	3	2, single-mode	4	No	**499 NSS 251 02**	0.335
	7	1, multimode	3	Yes	**TCS ESM083F1CU0**	0.410
	6	2, multimode	3	Yes	**TCS ESM083F2CU0**	0.410
	7	1, single-mode	3	Yes	**TCS ESM083F1CS0**	0.410
	6	2, single-mode	3	Yes	**TCS ESM083F2CS0**	0.410
IP 67 twisted pair switch *(1)* 10BASE-T/100BASE-TX copper ports, shielded M12 connectors (type D)	5	–	–	No	**TCS ESU 051 F0**	0.210

(1) Require special cables with M12 connectors for their ⎓ 24 V supply: **XZC P1●64L●.**

Twido programmable controller
CANopen bus
CANopen bus master module



Presentation

Master module **TWD NCO1M** for the CANopen bus allows Twido programmable controllers version ≥ 3.0, compact base controllers **TWD LC●A 24/40DRF** and modular base controllers **TWD LMDA ●0D●●**, to act as CANopen master.
The bus consists of a master station, the Twido controller and slave stations. The master is in charge of configuration, exchanges and diagnostics on the slaves.

The CANopen bus is a communication type bus and allows management of various slaves such as:
- Discrete slaves,
- Analogue slaves,
- Variable speed controllers,
- Motor starters,
- ….

The Twido CANopen master controls up to 16 slaves, each with an input PDO (*Process Data Object*) and an output PDO.
If a slave has more than one PDO, the maximum number of slaves is reduced by an equivalent number.

CANopen conformity class

Schneider Electric has defined the conformity classes for CANopen master and slave devices. Conformity classes are used to identify the services and levels of service supported by each CANopen device or product. These services are described in section 4 of our “Machines & Installations with industrial communications” catalogue.

The table below shows product combination possibilities according to their conformity class.

Conformity class		Slave product		
		S10	S20	S30
Master product	M10			
	M20			
	M30			

Combination possible

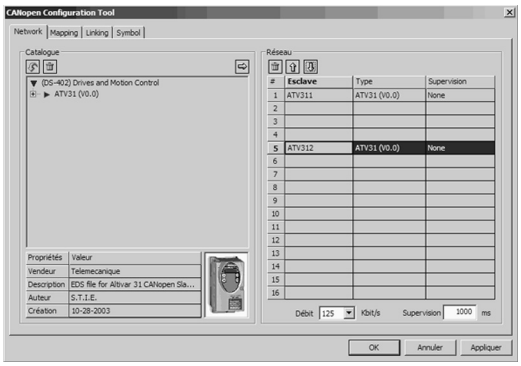
Use restriction: The use of a slave device with a master that has a lower conformity class (e.g. S20 with M10), or of a master device with a slave that has a higher conformity class (e.g. M10 with S20), limits the level of service to that of the lower conformity class.

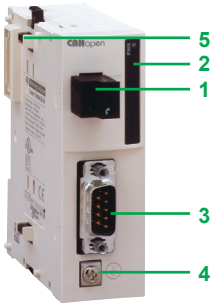
Examples of combinations with the Twido controller

CANopen slave	CANopen master module TWD NCO1M, class M10
Preventa	
Modicon OTB	
Modicon STB	
TeSys T	
TeSys U, Altivar 31, Altivar 61, Altivar 71	
Lexium 05	
Lexium 15, Lexium 17D	
Twin Line	
Osicoder	

Combination possible
Use restriction
Not supported by conformity class M10

Twido programmable controller
CANopen bus
CANopen bus master module





TWD NCO1M

Configuration

The Twido controller's CANopen bus is configured using TwidoSuite software
The various services offered are:
- Selection of the slave type from a list that can be modified by simply importing a description file of the EDS (Electronic Data Sheet) type.
- The position of the slave on the bus: definition of the slave number.
- Selection of variables from the list of variables managed by the slave.
- Linking of variables to the exchange data.
- Symbolization of exchange data.

For certain slaves, such as ATV 31/61/71 variable speed controllers and Lexium 05 servo variable speed controller, one or more profiles are supplied, allowing the slave to be configured according to a mode predefined by Schneider Electric.
The use of profiles provides the user with an operating mode that is described, without having to configure it.

Description

CANopen bus master module **TWD NCO1M** comprises:
1 An earthed, plug-in, 3-way, ⎓ 24 V supply connector.
2 A PWR LED, indicating module power ON or OFF.
3 A 9-way SUB-D connector for connection to the CANopen bus.
4 An earth screw.
5 A connector for connection to the Twido controller or to another I/O expansion module.

Expansion module **TWD NCO1M** can be mounted as standard on symmetrical ⊔ rail. Fixing kit **TWD XMT5** (sold in lots of 5) allows plate or panel mounting.

Reference

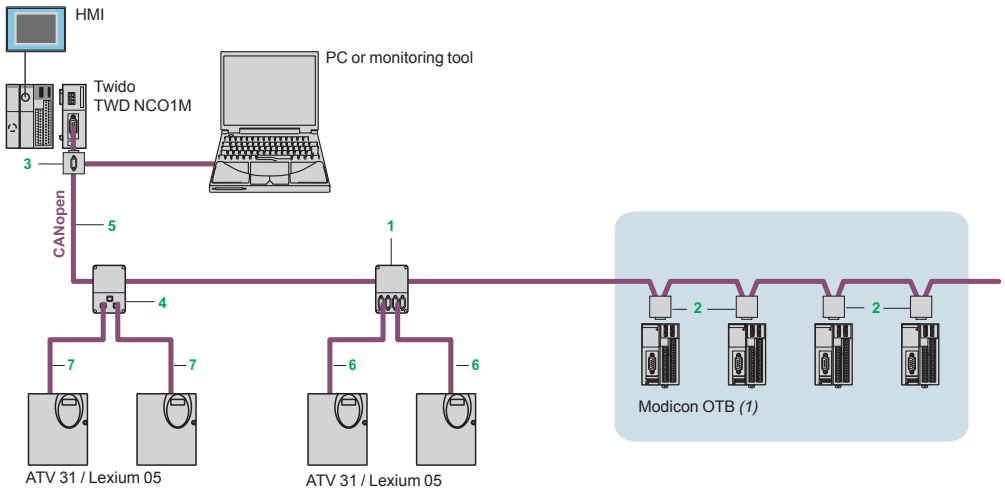
Description	No. of modules per base controller	External supply	Reference	Weight kg
CANopen bus master module for Twido base controller : - Compact TWD LC●● 24/40DRF - Modular TWD LMDA 20/40D●● Conformity class M10	1	⎓ 24 V	**TWD NCO1M**	.

Description	Application	Reference	Weight kg
Fixing kit Sold in lots of 5	For plate or panel mounting of the module.	**TWD XMT5**	–

Twido programmable controller
CANopen bus
Cabling system

CANopen architecture

Connection example of “Distributed CANopen Optimised” architecture dedicated to modular machines and installations.

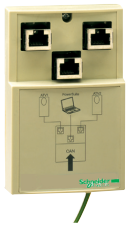


References

Standard junction boxes and connectors

Description	Composition	Item	Length	Reference	Weight kg
CANopen IP 20 tap junction box	4 SUB-D ports. Screw terminal blocks for connection of main cables Line end adapter	1	–	**TSX CAN TDM4**	0.196
IP 20 connectors CANopen 9-way SUB-D female. Line end adapter switch	Elbowed (90°)	2	–	**TSX CAN KCDF 90T**	0.046
	Straight *(2)*	–	–	**TSX CAN KCDF 180T**	0.049
	Elbowed (90°) with 9-way SUB-D connector for connection to PC or diagnostic tool	3	–	**TSX CAN KCDF 90TP**	0.051
M12 connectors IP 67	Male	–	–	**FTX CN 12M5**	0.050
	Female	–	–	**FTX CN 12F5**	0.050
CANopen IP 20 tap junction box for Altivar and Lexium 05	2 x RJ45 ports	4	–	**VW3 CAN TAP2**	–

TSX CAN TDM4



VW3 CAN TAP2

Standard IP 20 pre-formed cables

Description	Application	Item	Length	Unit reference	Weight kg
CANopen cables (2 x AWG 22 2 x AWG 24)	For standard environments *(3)*, CE marking: low fume emission. Halogen-free. Non flame propagating (IEC 60332-1)	5	50 m	**TSX CAN CA50**	4.930
			100 m	**TSX CAN CA100**	8.800
			300 m	**TSX CAN CA300**	24.560
	For standard environments *(3)*, UL certified, CE marking: non flame propagating (IEC 60332-2)	5	50 m	**TSX CAN CB50**	3.580
			100 m	**TSX CAN CB100**	7.840
			300 m	**TSX CAN CB300**	21.870
	For standard environments *(3)* or mobile installation, CE marking: low fume emission. Halogen-free. Non flame propagating (IEC 60332-1). Oil resistant	5	50 m	**TSX CAN CD50**	3.510
			100 m	**TSX CAN CD100**	7.770
			300 m	**TSX CAN CD300**	21.700
CANopen pre-formed cables 1 x 9-way SUB-D female connector at each end.	For standard environments *(3)*, CE marking: low fume emission. Halogen-free. Non flame propagating (IEC 60332-1)	–	0.3 m	**TSX CAN CADD03**	0.091
			1 m	**TSX CAN CADD1**	0.143
			3 m	**TSX CAN CADD3**	0.295
			5 m	**TSX CAN CADD5**	0.440
	For standard environments *(3)*, UL certified, CE marking: non flame propagating (IEC 60332-2)	–	0.3 m	**TSX CAN CBDD03**	0.086
			1 m	**TSX CAN CBDD1**	0.131
			3 m	**TSX CAN CBDD3**	0.268
			5 m	**TSX CAN CBDD5**	0.400

TSX CAN KCD F90T

TSX CAN KCD F180T

TSX CAN KCD F90TP

(1) Modicon OTB product range, see on www.schneider-electric.com
(2) Connector VW3 CAN KCDF 180T may also be used for connection to a Controller Inside programmable card.
(3) Standard environment: without any particular environmental restrictions, operating temperature between + 5 °C and + 60 °C, and for fixed installation. Harsh environments: resistant to hydrocarbons, industrial oils, detergents, solder splashes, hygrometry up to 100%, saline environment, wide temperature variations, operating temperature between - 10 °C and + 70 °C, or mobile installation.

VW3 CAN A71

AM0 2CA 001V000

FTX DP21●●

References (continued)

Standard IP 20 pre-formed cables (continued)

Description	Composition	Item	Length	Unit reference	Weight kg
CANopen pre-formed cables	Pre-formed cables with 1 x 9-way SUB-D female connector and 1 x RJ45 connector	6	0.5 m	**TCS CCN 4F3 M05T**	–
			1 m	**TCS CCN 4F3 M1T**	–
				VW3 M38 05 R010 *(1)*	–
			3 m	**TCS CCN 4F3 M3T**	–
	Pre-formed cables with 2 x 9-way SUB-D connectors, 1 female and 1 male	–	0.5 m	**TLA CD CBA 005**	–
			1.5 m	**TLA CD CBA 015**	–
			3 m	**TLA CD CBA 030**	–
			5 m	**TLA CD CBA 050**	–

IP 20 connection accessories

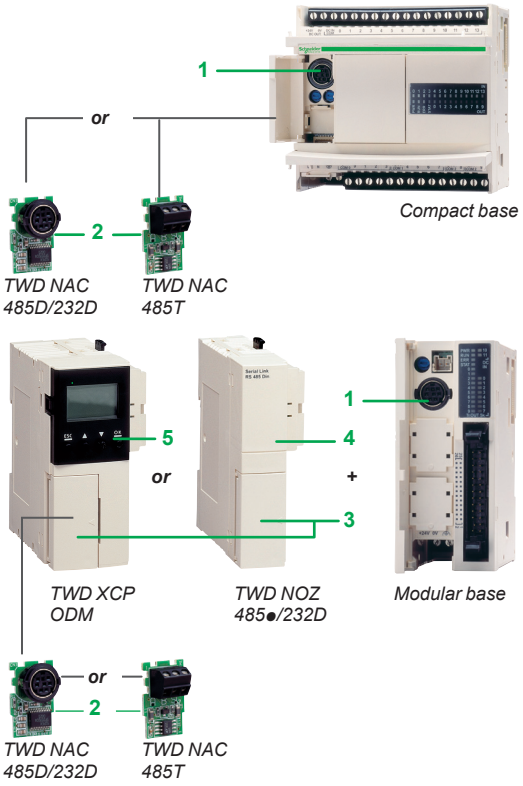
CANopen connector for Altivar 71 *(2)*	9-way SUB-D female. Line end adapter switch. 180° cable entry	–	–	**VW3 CAN KCDF 180T**	–
Adapter for Altivar 71 variable speed controller	CANopen SUB-D to RJ45 adapter	–	–	**VW3 CAN A71**	–
Pre-formed CANopen cables	1 RJ45 connector at each end.	7	0.3 m	**VW3 CAN CARR03**	–
			1 m	**VW3 CAN CARR1**	–
CANopen bus adapter for Lexium 17D	Hardware interface for link conforming to the CANopen standard + 1 connector for connection of PC terminal	–	–	**AM0 2CA 001V000**	0.110
Y connector	CANopen/Modbus	–	–	**TCS CTN011M11F**	–

(1) Cable equipped with line end adapter.
(2) For variable speed controllers **ATV 71H●●●M3**, **ATV 71HD11M3X**, **HD15M3X**, **ATV 71H075N4**... **HD18N4**, *this connector can be replaced by connector* **TSX CAN KCDF 180T**.

Twido programmable controller

Asynchronous serial links

Modbus, character mode, remote link decentralised I/O and programming protocols



Presentation

In order to be able to communicate via serial links, Twido programmable controller modular and compact base (expandable base) controllers include, as standard, an RS 485 serial link principally dedicated as a programming port. These Twido base controllers, except for the 10 I/O compact base (non expandable base) controller, are also available with an optional RS 485 or RS 232 link.

These non isolated serial ports allow Twido compact and modular base controllers to communicate according to 4 protocols:

■ **Programming**, for link with a PC (equipped with TwidoSuite programming software or TwidoAdjust adjustment software) or with a pocket PC. This link may be of the common, modem or wireless type using Bluetooth technology.

■ **Modbus**, in order to meet the needs of master/slave architectures with Schneider Electric or third party devices.

■ **ASCII** in character mode for links with serial devices (printer, modem, …)

■ **"Remote link" decentralised I/O** for Twido base controllers used as I/O expansion or local "reflex" controller.

Description

16/24/40 I/O compact base controllers have the following on the front panel:

1 An RS 485 serial port, with mini-DIN connector, for connection to the programming terminal.

2 A slot for a 2nd serial port link (RS 485/RS 232) by inserting one of the three TWD NAC 485●/232D adapters.

20/40 I/O modular base controllers have the following on the front panel:

1 An RS 485 serial port, with mini-DIN connector, for connection to the programming terminal.

2 A 2nd serial link port (RS 485/RS 232) via adapters TWD NAC 485●/232. Depending on the user's needs, this adapter (accessible via the removable cover **3**) is either:

- **4**, included in the module with interface adapter TWD NOZ 485●/232D
- **5**, to be fitted into digital display module TWD XCP ODM.

The module with interface adapter or the digital display module is mounted on the left-hand side of Twido modular base controllers (only one module can be fitted).

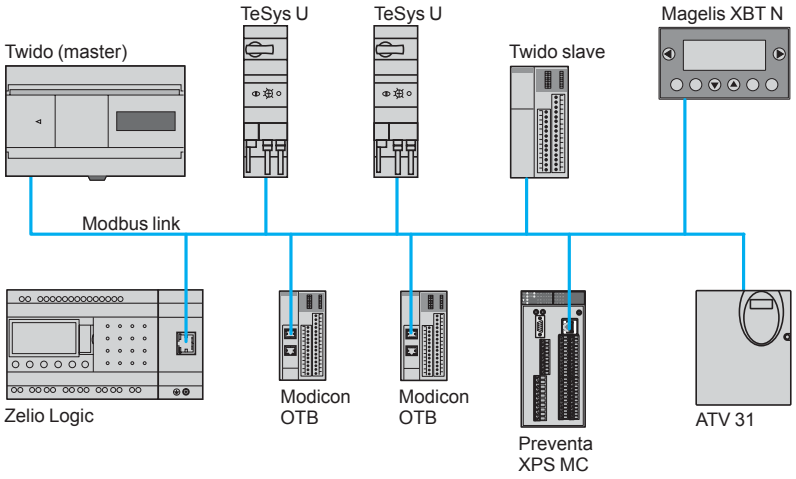
Twido controller serial ports

Integrated port	**Optional port (2nd port)**		
RS 485 Mini-DIN connector	**RS 485** Mini-DIN connector	**RS 232** Mini-DIN connector	**RS 485** Screw terminal block
Compact base controllers TWD LC●A 16/24DRF TWD LC●● 40DRF	TWD NAC 485D	TWD NAC 232D	TWD NAC 485T
All modular base controllers TWD LMDA ●0D●●	TWD NOZ 485D or TWD XCP ODM + TWD NAC 485D	TWD NOZ 232D or TWD XCP ODM + TWD NAC 232D	TWD NOZ 485T or TWD XCP ODM + TWD NAC 485T

Note: if the RS 232 physical layer is used, and for a length > 10 metres, use the RS 485 physical layer and an RS 232C/RS 485 line adapter reference ***XGS Z24****.*

Twido programmable controller
Asynchronous serial links
Modbus and character mode protocols

Modbus serial link



The Modbus serial link meets the needs of master/slave architectures (it is nevertheless necessary to check that the Modbus services required for the application are implemented on the devices concerned).

The bus consists of a master station and slave stations. Only the master station can initiate the exchange (direct communication between slave stations is not possible). Two exchange methods are possible:
- Question/reply, questions from the master are addressed to a specific slave. The master waits for the reply to be returned by the slave polled.
- Distribution, the master distributes a message to all the slave stations on the bus. These stations execute the instruction without sending a reply.

References

Serial link modules and adapters

All serial links for Twido controllers, whether integrated or optional, are non isolated.
It is therefore recommended that isolating devices be used for bus lengths > 10 m,

TWD NAC 232D/485D

TWD NAC 485T

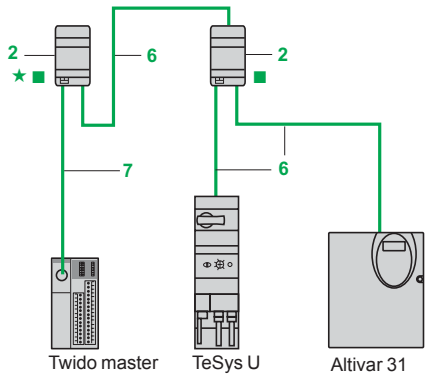
TWD NOZ 485●
TWD NOZ 232D

Description	Compatibility	Connection	Physical layer	Reference	Weight kg
Serial interface adapters	Compact base controllers TWD LC●A 16/24DRF and TWD LC●● 40DRF Integrated display module TWD XCPODM	Mini-DIN connector	RS 232C	**TWD NAC 232D**	0.010
			RS 485	**TWD NAC 485D**	0.010
		Screw terminals	RS 485	**TWD NAC 485T**	0.010
Modules with integrated serial link adapter	Modular base controllers TWD LMDA 20/40D●●	Mini-DIN connector	RS 232C	**TWD NOZ 232D**	0.085
			RS 485	**TWD NOZ 485D**	0.085
		Screw terminals	RS 485	**TWD NOZ 485T**	0.085
Integrated display module	Base controllers TWD LMDA 20/40D●●. Allows a TWD NAC●●●● serial adapter to be fitted		According to TWD NAC	**TWD XCP ODM**	0.105

Twido programmable controller
Modbus and character mode serial link
Cabling system

Modbus cabling system

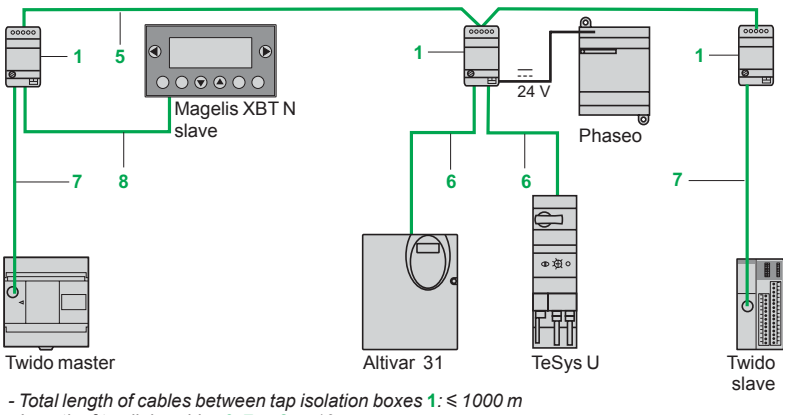
Non isolated link



- Cable length between Twido and Altivar 31: ⩽ 30 m
- Length of cable 6: ⩽ 10 m

★ *Line polarisation active*
■ *Line end adapter*

Isolated link



- Total length of cables between tap isolation boxes 1: ⩽ 1000 m
- Length of tap link cables 6, 7 or 8: ⩽ 10 m

★ *Line polarisation active*
■ *Line end adapter*

References

Tap-off and adapter components for RS 485 serial link

Description	Application	Item	Length	Reference	Weight kg
Tap isolation box Screw terminal block for main cable 2 x RJ45 for tap-off	- RS 485 line isolation *(1)* - Line end adapter (RC 120 Ω, 1nF) - Line pre-polarisation (2 R 620 Ω) ⎓ 24 V supply (screw terminal block) or ⎓ 5 V (via RJ45) Mounting on 35 mm ⊔	1	–	**TWD XCA ISO**	0.100
Tap junction box 1 x RJ45 for main cable 2 x RJ45 for tap-off	- Line end adapter (RC 120 Ω, 1nF) - Line pre-polarisation (2 R 620 Ω) Mounting on 35 mm ⊔	2	–	**TWD XCA T3RJ**	0.080
Modbus hub Screw terminal block for main cable 10 x RJ45 for tap-off	Mounting on 35 mm ⊔, on mounting plate or panel (2 x Ø 4 mm screws)	–	–	**LU9 GC3**	0.500
T-junction boxes 2 x RJ45 for main cable	1 integrated cable with RJ45 connector for Altivar variable speed controller dedicated tap-off	–	0.3 m	**VW3 A8 306 TF03**	–
			1 m	**VW3 A8 306 TF10**	–
Passive tap junction box	- Line extension and single-channel tap-off on screw terminal block - Line end adapter	–	–	**TSX SCA 50**	0.520
RS 232C/RS 485 line converter	- Flow rate 19.2 Kbit/s max. - Without modem signals ⎓ 24 V/20 mA supply, Mounting on 35 mm ⊔	–	–	**XGS Z24**	0.100

(1) Line isolation recommended for distances > 10 m.


TWD XCA ISO


TWD XCA T3RJ


LU9 GC3


TSX SCA 50


XGS Z24

Twido programmable controller
Modbus and character mode serial link
Cabling system

Références (suite)

Connection cables for RS 485 serial link

Description	Application	Item	Length	Unit reference	Weight kg
Main cables double shielded twisted pair RS 485	Modbus serial link, supplied without connector	5	100 m	**TSX CSA 100**	5.680
			200 m	**TSX CSA 200**	10.920
			500 m	**TSX CSA 500**	30.000
Modbus cables RS 485	2 x RJ45 connectors	6	0.3 m	**VW3 A8 306 R03**	0.030
			1 m	**VW3 A8 306 R10**	0.050
			3 m	**VW3 A8 306 R30**	0.150
	1 x RJ45 connector and 1 end with free wires	–	1 m	**TWD XCA FJ010**	0.060
			3 m	**VW3 A8 306 D30**	0.150
	1 mini-DIN connector for Twido controller and 1 RJ45 connector	–	0.3 m	**TWD XCA RJ003**	0.040
			1 m	**TWD XCA RJ010**	0.090
			3 m	**TWD XCA RJ030**	0.160
	1 mini-DIN connector for Twido controller and 1 RJ45 connector *(1) (3)*	7	0.3 m	**TWD XCA RJP03**	0.027
	1 mini-DIN connector for Twido controller and 1 RJ45 connector Dedicated programming protocol *(2) (3)*	–	0.3 m	**TWD XCA RJP03P**	0.027
	1 mini-DIN connector for Twido controller and 1 end with free wires	–	1 m	**TWD XCA FD010**	0.062
			10 m	**TSX CX 100**	0.517
Twido cables to display and Magelis compact terminal XBT N/R	1 mini-DIN connector for Twido controller and 1 RJ 45 connector for XBT N200/N400/R400	–	2.5 m	**XBT Z9780**	0180
	1 mini-DIN connector for Twido controller and 1 x 25-way SUB-D connector for: - XBT N410/N401/NU400 - XBT R410/R411	–	2.5 m	**XBT Z968**	0.210
Cables for display and Magelis compact terminal XBT N/R	2 x RJ45 connectors for XBT N200/N400/R400	8	3 m	**VW3 A8 306 R30**	0.150
	1 x RJ45 connector and 1 x 25-way SUB-D connector for: - XBT N410/N401/NU400 - XBT R410/R411	8	2.5 m	**XBT Z938**	0.210
Line end adapter	For RJ45 connector R = 120 Ω, C = 1 nf	–	Order in multiples of 2	**VW3 A8 306 RC**	0.200

Connection cables for RS 232 serial link

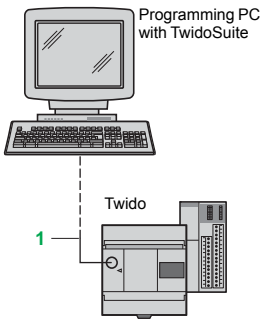
Description	Application	Length	Reference	Weight kg
Cable for DTE terminal (printer) *(4)*	Serial link for terminal device (DTE) 1 x RJ45 connector and 1 x 9-way SUB-D female connector	3 m	**TCS MCN 3M4F3C2**	0.150
Cable for DCE terminal (modem, converter)	Serial link for point to point device (DCE) 1 x RJ45 connector and 1 x 9-way SUB-D male connector	3 m	**TCS MCN 3M4M3S2**	0.150

(1) Forcing the configuration of RS 485 integrated port with programming protocol parameters.
(2) Allows the using of RS 485 integrated port with the parameters defined in configuration.
(3) Carries ⎓ 5 V voltage (supplied by RS 485 integrated port of Twido controller) for **TWD XCA ISO** *tap isolation box (not using the ⎓ 5 V external power supply).*
(4) If the terminal is equipped with a 25-way SUB-D connector, a SUB-D 25-way female/9-way male adapter **TSX CTC 07** *must also be ordered.*

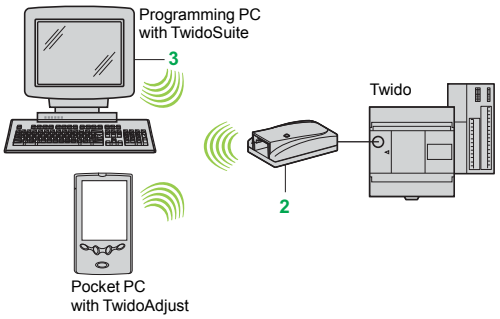
Twido programmable controller
Asynchronous serial links
Programming protocol

Terminal link cabling system (integrated port)

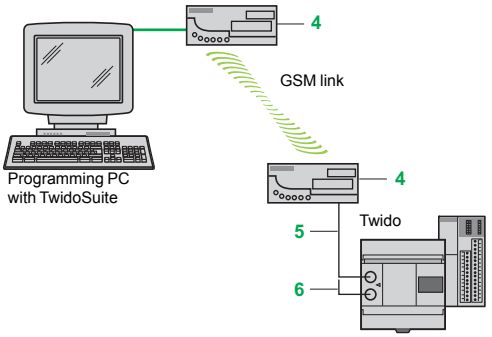
Direct link



Wireless link



Link by modem



References

TSX CUSB 485

TSX PCX 1031

VW3 A8 114

SR2 MOD01

SR2 MOD03

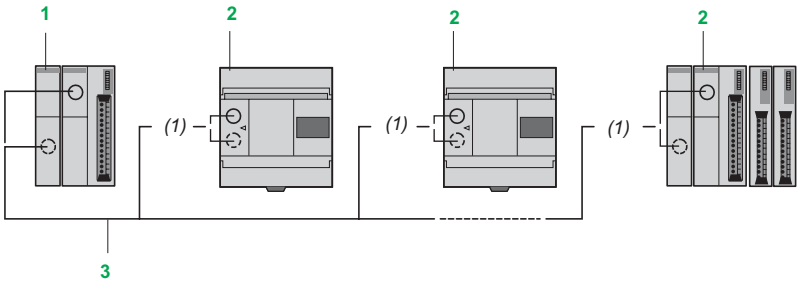
Connection components for terminal link

Description	Application	Item	Cable length	Unit reference	Weight kg
USB/RS485 converter	Allows connection of the Twido controller's integrated port to the USB port on the programming PC. To be used with mini-DIN/RJ45 cable.	1	0.4 m	**TSX CUSB 485**	0.144
RS 485 cable	Fitted with a mini-DIN connector and an RJ45 connector To be used with the USB/RS485 converter	1	2.5 m	**TSX CRJMD 25**	0.150
RS 232 cable for DTE terminal (PC serial port, printer, …)	Fitted with a mini-DIN connector and a 9-way SUB-D female connector	1 *(1)*	2.5 m	**TSX PCX 1031**	0.170
Adapter Modbus/Bluetooth®	- 1 Bluetooth® adapter (range 10 m, class 2) with RJ45 connector - 1 x 0.1 m length cable for TwidoSuite, with 1 RJ45 connector and 1 mini-DIN connector - adapter and cable for Altivar variable speed drives	2	–	**VW3 A8 114**	0.155
USB Bluetooth adapter for PC	Range 10 m For use on the PC serial port if the PC does not have Bluetooth technology	3	–	**VW3 A8115**	0.290
RTC Modem *(2)*	Type SIXNET VT - Modem-5-WW Supplied with telephone cable Supply voltage ⎓ 12…36 V	4	3 m	**SR2 MOD01**	0.231
GSM Modem *(3)*	4-band 900/1800 MHz (Europe) and 900/1900 MHz (US) IP31 box supplied with - power cable (1.5 m) - 4-band GSM antenna with cable (2.5 m) - mounting on panel or on 35 mm ⊔ Supply voltage ⎓ 5,5…24 V	4	1.5 m	**SR2 MOD03**	0.335
RS 485/232 cable for DCE terminal (modem, …)	Connection on Twido RS 485 terminal port Fitted with a mini-DIN connector and a 9-way SUB D male connector. Supplied with a **TSX CTC 09** adapter (9-way SUB-D female/25-way SUB-D male).	5	3 m	**TSX PCX 1130**	0.140
RS 232 cable for DCE terminal (modem, …)	Connection on **TWD NAC 232D** RS 232 serial interface adapter Fitted with a mini-DIN connector and a 9-way SUB D male connector.	6	3 m	**TWD XCA MD030**	0.138

(1) Depending on the type of terminal to be connected, adapter **TSX CTC 10** *(9-way SUB-D male/25-way SUB-D male) must be ordered separately.*
(2) In order to connect the RTC Modem to a Twido controller, cable **TSX PCX 1031** *should be used along with an adapter which crosses pins 2 and 3 on two DB9 male connectors.*
Please note that this adapter is not supplied by Schneider Electric.
(3) **SR2 MOD03** *modem with Twido controller parameters. Compatible with Modicon M340, Modicon Premium and TSX Micro platforms.*

Twido programmable controller
Asynchronous serial links
“Remote link” decentralised I/O protocol

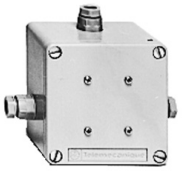
“Remote Link” decentralised I/O



Each compact or modular base controller can be extended by means of any other Twido base controller used either as an I/O extension, or as a local “reflex” controller:
■ When used as an I/O extension, these 10, 16, 20, 24 or 40 discrete I/O base controllers cannot take any expansion modules (discrete I/O, analogue I/O or communication). The “master” base controller acquires the inputs and updates the outputs of the Twido base controllers used as remote I/O extensions
■ When used as a local “reflex” controller, these base controllers each have their own application program. They can take any of the expansion modules (discrete I/O, analogue I/O or communication). Eight internal words (4 input words %INW0.0…%INW0.3 and 4 output words %QNW0.0…%QNW0.3) are reserved in each “reflex” base controller for automatic exchange of information with the “master” controller.

1 Compact or modular base controller acting as “master”.
2 Twido compact or modular base controllers used as I/O extension or as local “reflex” controller.
3 RS 485, 3-wire cable from the integrated serial port or from the 2nd optional serial port.

(1) Connection is made either to the integrated serial port, or to the 2nd optional serial port



TSX SCA 50

References

Tap-off and connection components

Description	Application	Item	Length	Reference	Weight kg
Passive tap **junction box**	- Line extension and single-channel tap-off on screw terminal block - Line end adapter	–	–	**TSX SCA 50**	0.520
Main cables double shielded twisted pair RS 485	Modbus serial link, supplied without connector	5	100 m	**TSX CSA 100**	5.680
			200 m	**TSX CSA 200**	10.920
			500 m	**TSX CSA 500**	30.000
Modbus cables RS 485	1 mini-DIN connector for Twido controller and 1 end with free wires	–	1 m	**TWD XCA FD010**	0.062
			10 m	**TSX CX 100**	0.517

Twido programmable controller
TwidoSuite programming software

Presentation

TwidoSuite programming software is a user-friendly tool designed to help you develop projects created on Twido controllers. It provides seamless continuity for applications created using TwidoSoft.

TwidoSuite is easy-to-use and takes little or no time to learn how to use.
Its primary aim is to reduce project development time significantly by simplifying all necessary interventions.
TwidoSuite is the first software tool:
■ Organized according to the project development cycle. Navigation through the software is so easy that it becomes second nature.
■ Offering an interface that is resolutely modern, pleasant and intuitive, so that getting started is:
□ More user-friendly
□ Faster - the simplified interface helps you find the information you need in a matter of seconds
□ More efficient, thanks to the numerous tools and tips on offer

TwidoSuite software runs with the following minimum configurations:
■ Microsoft Windows® 2000, Microsoft Windows® XP (service Pack 2 recommended)
■ 466 MHz Pentium type processor, hard disk with 100 Mb space available and 128 Mb of RAM
■ Minimum screen resolution of 800 x 600 pixels

Connecting a PC to the controller

There are several ways of connecting a PC to controllers during the programming, debug and maintenance phases.

Link via connection cables

The PC is connected to the Twido bases via:
■ A USB port using the USB/RS 485 converter **TSX CUSB 485** and the 2.5 m Mini-DIN/RJ45 cable **TSX CRJMD25**
■ A RS 232 serial port via the 2.5 m 9-way Mini-DIN/SUB-D multifunction cable **TSX PCX 1031**

Link via modem

Modems are a very practical solution avoiding the need for on-site attendance for certain maintenance operations.
The modem connected to the Twido controller must be declared in the hardware configuration. It will be initialized by the controller automatically (Hayes initialization string).
At the PC end, the TwidoSuite software will associate a special modem connection that will be memorized in the project (including the telephone number to use).

Ethernet network link

Thanks to its embedded Ethernet port, the Twido compact bases controller **TWD LCAE 40DRF** and **TWD LCDE 40DRF** can be connected to a PC using the Ethernet network and the Modbus TCP/IP protocol.
The TwidoPort Plug&Play interface module **499 TWD 01100** is extremely easy to use, and can be used to incorporate all Twido controllers (firmware version ≥ 3.0) into an Ethernet TCP/IP network.

Bluetooth wireless link

The ideal solution during the debug phase, the Bluetooth wireless link provides the convenience of total freedom of movement within a radius of 10 m around the Twido controller.

Being self-powered, the Modbus - Bluetooth adaptor **VW3 A8 114** simply has to be connected to the Twido controller. If the PC does not have Bluetooth technology, the USB - Bluetooth adaptor **VW3 A8 115** should be used.

Twido programmable controller
TwidoSuite programming software
Navigation, management, description

523256

Instinctive, visual navigation

Navigation within TwidoSuite is intuitive and highly visual.

Presentation is optimized in such a way that selecting the development stage of the desired project makes the appropriate tools available.

The environment ensures nothing is overlooked, by suggesting the tasks to be performed throughout the project development cycle.

The workspace has been streamlined so that only that which is necessary and relevant to the current task is featured, without any superfluous information.

An area can be used to activate additional tools in a matter of seconds.

The basic functions are permanently accessible for quick and easy navigation and access to information.

Project management

The “Project management” function is used to:
- Create a new project with the option to enter data by means of a form and attach a photo
- Open a project from the PC (hard disk, CD-Rom, USB key, etc.)
- Review a project from a Twido controller.

There is quick access to the most recently-used projects.

523257

Description of the architecture

This function is used to:
- Define the Twido hardware used in the project (controller, I/O expansion, options, etc.)
- Describe the controller environment, such as, for example:
  - The HMI terminal connected
  - The devices connected to the CANopen network
  - Etc.

This hardware context for the project is essential for explaining as clearly as possible the composition of the control system managed by the Twido controller.

A highly visual “Catalog” can be used to select the appropriate product including:
- The product reference
- The product description
- A photo of the product

A graphic editor can be used to assemble the various elements easily by a simple drag & drop.

The “Parts list” tool lists all the products used and can retrieve this information in Excel format so that an order for equipment can be prepared more quickly, for example.

Twido programmable controller

TwidoSuite programming software

Configuration, programming, debugging

Configuration

The configuration stage is used to define the elements that will be available for programming. There are three types of configuration:

- Hardware configuration, which defines, for example, the type of sensor connected to an analog expansion module input or even the temperature scale to be used (°C or °F)
- Data configuration, which is used to set timer parameters and define the constants and the number of memory words to be used
- Behavior configuration, which specifies the start-up conditions for the application (automatically on controller power-up, or dependent on the state of an input), the scan mode, etc.

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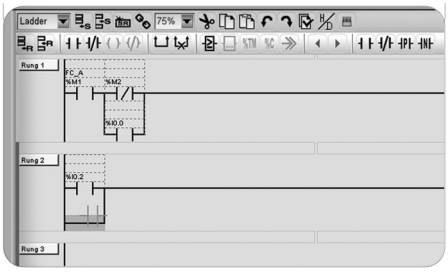

Programming

Programming is an essential step, and one which has been carefully designed to be as efficient as possible. The program can now therefore be organized into “Sections”, which simplify reading and navigating through the program.
These sections can be programmed in LIST or LADDER language.

For enhanced productivity, a new Ladder Editor helps create the program in record time. Use of the “Data Browser” tool replaces the often tedious task of entering a memory address with a simple drag & drop.

Debugging

Often performed in difficult conditions, debugging is now much improved.
The connection task is guided step-by-step, so that all the actions performed by TwidoSuite (choice of connection, test of the connected controller, selection of the transfer performed) can be followed.
The program is then animated, allowing modifications to be made without stopping the controller (RUN).
Animation tables display the memory objects in a user-friendly way.
A mini floating display panel can be used to control actions on the controller.

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Documentation

Because a printed dossier of the created project is still a crucial element, it is possible to configure some project elements for printing, define the page layout to suit the user’s requirements, and then launch printing.
A preview function avoids wasted print jobs.

Generating an HTML folder allows the documentation to be reviewed in Microsoft Word 2000 in order to add to it and create a maintenance manual, for example.

Macros for Modbus serial link and CANopen bus

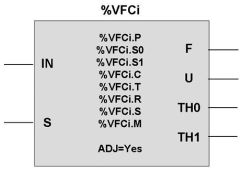
In order to make programming easier, a system of macros simplifies writing of the program and improves understanding of the code. This system is presented according to different families of equipment - generic equipment, variable speed drives (ATV 31, ATV 61, ATV 71 and Lexium 05).
For each family, a list of macros is suggested to facilitate exchanges between the Twido programmable controller and the device connected to the Modbus serial link or the CANopen bus. These macros are in the form of configurable families to describe the network characteristics of the device involved (Modbus network or CANopen bus, slave address, etc.). The instances thus configured can be run within the program.
For each macro, symbols for objects used can be generated automatically in order to provide further assistance in terms of readability of the application. For each macro inserted in the program, TwidoSuite software automatically generates code in Instruction List language, encapsulated in a subroutine. The macro's code call line is compiled by the TwidoSuite software by calling a subroutine.
After calling up a macro, the code generated in Instruction List language can be displayed. No modifications to the content of subroutines generated in this way are allowed.

Counter function

The counter function allows the controller to count a large number of pulses, within one program scan cycle. The fast counters can compare the current counter value with a preset value and trigger an output when the preset value is reached. This type of counter function can be used for counting parts or events, or for measuring length or position.
The number of integrated fast counters depends on the type of base controller:

Base controller type TWD	Compact LC●A 10/16/24 DRF	Compact LCA● 40DRF LCD● 40DRF	Modular LMDA 20D●K/20DRT LMDA 40D●K
VFC counter (20 kHz)	1	2	2
FC counter (5 kHz)	3	4	2

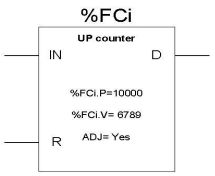
Very fast counter - VFC (20 kHz)

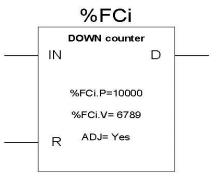


The 32-bit fast counter (VFC) is an up/down counter with the possibility of auxiliary inputs. The counter is accessed by means of the %VFCi function block programmed using TwidoSuite. The %VFCi function block can be used to execute one of the following five functions, all with a maximum frequency of 20 kHz:
- Up/Down counter
- Up/Down counter with detection of running direction
- Single up counter
- Single down counter
- Frequency meter

The pulses to be counted may come from an incremental encoder or from two proximity sensors (up/down counting) connected to inputs I0 and I1 of Twido base controllers.

Fast counter - FC (5 or 10 kHz)

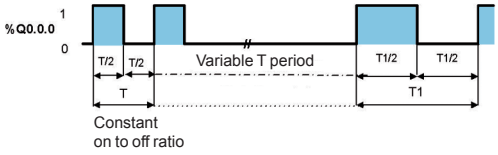


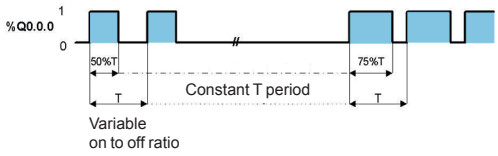


The 16-bit fast counter is available for up or down counting of pulses (rising edges) on the discrete inputs of Twido base controllers at a maximum frequency of 5 kHz. The up and down counters are accessed by means of the %FCi function block programmed using TwidoSuite. Using the configuration editor, the user must select either up or down counting mode for each function block, define the initial value of the preset %FCi.P and select the attribute "adjustable" in order to be able to dynamically change the preset value %FCi.P and the current value %FCi.V.
Within function block %FCi, the current value %FCi.V varies by:
- Incrementing the value 0 to the preset value %FCi.P in up counter mode
- Decrementing the preset value %FCi.P to 0 in down counter mode

(1) Requires TwidoSuite software version ≥ 1.20.

Twido programmable controller
TwidoSuite programming software
Position control, processing, PID





Position control

Twido compact (**TWD LCA● 40DRF**) and modular controllers offer two software positioning functions (frequency 7 kHz) which can be used, for example, for controlling stepper motors:
- PLS (pulse) function - pulse generator output
- PWM function - pulse width modulation output. This function can also be used for applications with light or sound intensity control (dimmer or volume control function).

PLS function (pulse, 7 kHz) *(1)*

The PLS function block generates pulses of fixed ratio. In some cases, the frequency can be fixed and in others it is variable (as in control of slopes when driving a stepper motor). The %PLS function block can be programmed to generate a specific number of pulses.
%PLS function blocks are assigned to outputs %Q0.0.0 or %Q0.0.1 on Twido base controllers.
The pulse generator signal has a variable period, but with a constant duty cycle which establishes an ON to OFF ratio of 50% of the period (see illustration opposite).

PWM function (7 kHz) *(1)*

The PWM function block generates pulses of fixed frequency, with a variable ratio between the high state and low state of the output signal. The ON to OFF duration ratio is a dynamic variable called %PWM.R, with a range from 0% to 100%.
PWM function blocks are assigned to outputs %Q0.0.0 or %Q0.00.1 on a base controller. The PWM function can be used to control analog module outputs.
The user-defined %PWM function block generates a signal on output %Q0.0.0 or %Q0.0.1 of Twido base controllers (see illustration opposite).

Event processing

- Event management by the application.
- 2 priority levels
- 3 types of source:
  - 4 event sources based on the basic inputs
  - 4 event sources based on the very fast threshold counter (VF counter)
  - 1 event source based on the periodic event (Timer)
- Command masked and enabled by the system bits
- Each event executes a single user logic subroutine
- Updating of “reflex” outputs

PID

- 14 PID programming loops
- “Autotuning” algorithm (for software version ⩾ 2.5).
- Analog/PWM output
- Linear conversion of measuring input
- 2 alarm levels (high and low) on the “measurement”
- Command output limits
- Direct and inverse action
- 2 animated modes for PID: configuration mode, debug mode

Online modification

This application can be debugged and adjusted in online mode. With this mode, the application program contained in the PC memory is identical to that in the controller memory. Program modifications can therefore be made directly in the Twido controller.

Twido programmable controller
TwidoSuite programming software

TSX PCX 1031

TSX CUSB 485

VW3 A8 114

VW3 A8 115

499 TWD 01100

References

TwidoSuite bilingual software packages are for use on PCs *(1)* with Windows 2000 or Windows XP operating systems.
The software product comprises:
■ A DVD-ROM including 5 TwidoSuite bilingual software with the hardware and software setup documentation
■ Hard copy of the quick start guide

TwidoSuite software

Description	Programming languages Languages of use	Reference	Weight kg
TwidoSuite version V2.3 Multilingual (1 DVD-ROM)	Ladder and Instruction List English/Chinese, English/French, English/German, English/Spanish and English/Italian	**TWD BTF U10M**	–

Discover TwidoPack

Description	Composition	Reference	Weight kg
TwidoPack Compact	Compact base 10 I/O TWD LCAA 10DRF Real-time clock cartridge TWD XPD RTC Input simulator TWD XSM 6 USB/RS485 converter TSX CUSB 485 with cordset (0.4 m) TSX CRJMD25 TwidoSuite software on DVD-Rom TWD BTF U10M	**TWD XPD PAK6M**	–

Components for connecting a PC to the controller

Description	Use		Length	Reference	Weight kg
	From	To			
Connection cables	Compact and modular Twido controllers (Mini-DIN)	Serial port on PC with TwidoSuite software installed	2.5 m	**TSX PCX 1031**	0.170
		RJ45 on USB/RS 485 converter *(3)*	2.5 m	**TSX CRJMD25**	0.150
USB/RS 485 converter	Cable TSX CRJMD25 (RJ45)	USB port on PC *(2)* with TwidoSuite software installed	0.4 m	**TSX CUSB 485**	0.144

Bluetooth wireless link

Description	Use	Reference	Weight kg
Bluetooth gateway	Range 10 m (class 2). Comprising: - 1 Bluetooth gateway with one RJ45 - 1 cable (length 0.1 m) with two RJ45 - 1 cable (length 0.1 m) with one RJ45 and a mini-DIN for TwidoSuite software - 1 RJ45/9-way SUB-D adaptor	**VW3 A8 114**	0.155
Bluetooth gateway for PC	Range 10 m (class 2) Required for a PC without Bluetooth technology Connection on PC USB port	**VW3 A8 115**	0.010

Ethernet network interface

Description	Characteristics	Reference	Weight kg
TwidoPort interface module for all bases version ≥ 3.0	10/100 Mbps. Auto MDIX function Ethernet network connection on RJ45 connector Supplied with connection cable for Twido base TWD XCA RJP03P	**499 TWD 01100**	0.200

(1) Minimum configurations, see page 42.
(2) To connect the Twido controller to the USB port of a PC, you need to add two other product references: cable **TSX CRJMD25** *and USB/RS 485 converter* **TSX CUSB 485**.

Twido programmable controller
TwidoAdjust software

532634

Example of TwidoAdjust software screen

Presentation

TwidoAdjust is a software tool dedicated to the management and animation of Twido applications, using a Pocket PC.

The Pocket PC with TwidoAdjust software package can be connected to a Twido programmable controller:
- either using **TSX PCX 1031** and **TSX PCX 1130** connection cables (ensuring crossing of the Rx and Tx wires),
- or using Bluetooth wireless technology. For optimum performance, use a Pocket PC with integrated Bluetooth technology.

TwidoAdjust software requires a Pocket PC with Windows Mobile 5.0 *(1)* operating system and must be used with the stylus, since the Pocket PC buttons are not supported by TwidoAdjust software.

TwidoAdjust software is used to manage a project and allows:
- the transfer of applications,
- animation and back-up of object tables,
- back-up of object category values.

From the very first screen, TwidoAdjust software offers the possibility of displaying essential controller data, such as its reference, its status, the name of the application and version of its microprogram.

Functions

The functions offered by TwidoAdjust software are split into three groups: connection, application and system.

Connection

The connection function establishes communication between the TwidoAdjust software and the Twido programmable controller and allows disconnection and access to basic data such as references, controller status and name of the application.

Application

The application function includes the following functions:
- **transfer**, such as transfer of the application, reading of an application, “backup”, “restore”,
- **animation of object tables**, creation, editing, table animation, capture of values,
- **reading the configuration** of the application.

System

The system function makes it possible to display the physical configuration of the controller, set the RTC function clock and update the PLC’s microprogram.

The operation of TwidoAdjust software can also be customised via the “Action” and “Preferences” menus. Other types of customisation are offered, such as adding shortcuts, choice of default communication port, opening of latest project.

(1) TwidoAdjust is also compatible with Pocket PC2003 operating system.

Twido programmable controller
TwidoAdjust software

TSX PCX 1031

VW3 A8 114

References

The multi-language software packages (English, French, German, Italian and Spanish) are for use on Pocket PCs with Windows Mobile 5.0 *(1)* operating system. These software packages include:

- a CD-ROM containing TwidoAdjust multi-language software and multi-language documentation for hardware and software set-up,
- depending on the model, Bluetooth gateway **VW3 A8114**.

TwidoAdjust software

Description	Processor	Language	Composition	Reference	Weight kg
TwidoAdjust software packages	Recommended processor 400 MHz Available RAM 128 or 256 Kb	Multi-language	–	**TWD SMD 1002 V30M**	–
			Supplied with Bluetooth gateway VW3 A8114	**TWD SMD 1004 V30M**	–

Separate components

Description	Composition	Reference	Weight kg
Bluetooth gateway	Range 10 m (class 2). Comprising: - 1 Bluetooth gateway with one RJ45 - 1 cable (length 0.1 m) with two RJ45 - 1 cable (length 0.1 m) with one RJ45 and a mini-DIN for TwidoSuite software - 1 RJ45/9-way SUB-D adaptor	**VW3 A8114**	0.155

Description	Application		Reference	Weight kg
Twido-Pocket PC cordsets *(3)*	With one mini-DIN connector and one female 9-way SUB-D connector	2.5 m	**TSX PCX 1031**	–
	With one mini-DIN connector and one male 9-way SUB-D connector	3 m	**TSX PCX 1130**	–

(1) TwidoAdjust is also compatible with Pocket PC2003 operating system.

(2) Connection schemes, see page 40.

(3) Cordset **TSX PCX 1130** *supplied with 1 SUB-D adapter* **TSX CTC 09** *(9-way female/25-way male).*
Cordset **TSX PCX 1031** *can be use for connection between Twido controler and Pocket PC, after having crossed the Rx and Tx conductors*

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Connection sub-bases for Twido controller

Applications		**Connection sub-bases for discrete inputs and outputs**		
				
Compatibility		Twido modular base controllers equipped with HE 10 connectors Not compatible with interface modules of Modicon OTB distributed I/O		
Relay amplification		–		Electromechanical and solid state, fixed
Control voltage		⎓ 24 V		
Output voltage		⎓ 24 V		⎓ 24 V (solid state) ⎓ 5…30 V, ∿ 250 V (electromechanical)
Current per channel	Input	5…7 mA		5…7 mA
	Output	0.3 A		2 A (solid state) 3 A (electromechanical)
Modularity		20 (12 inputs/8 outputs)		
Type of I/O		- 12 inputs (1 common/12 channels) - 8 outputs (1 common/8 channels)	- 12 inputs (1 common/12 channels) - 8 outputs with fuse protection (1 common/8 channels) LED indication	- 12 inputs (1 common/12 channels) - 2 solid state outputs (1 common/2 channels) - 6 relay outputs (electromechanical) 1 N/O (1 common/6 channels)
Number of terminals per channel		2, 3 (with optional snap-on terminal block)		
Connection to Twido programmable controller		HE 10 connector, 26-way		
Type of terminal		Fixed screw terminal block		
Interface type		**ABE 7B20MPN20**	**ABE 7B20MPN22**	**ABE 7B20MRM20**
Pages		56	56	56

Connection sub-bases for discrete inputs	Connection sub-bases for discrete outputs		
			
Twido I/O modules with HE 10 connectors Not compatible with interface modules of Modicon OTB distributed I/O			
–			Electromechanical, fixed
⎓ 24 V			
⎓ 24 V			⎓ 5…30 V, ∿ 250 V (electromechanical)
5 mA	–		–
–	0.1 A		3 A
16 inputs	16 outputs		
16 inputs (1 common/16 channels)	16 outputs (1 common/16 channels)	16 outputs with fuse protection LED indication	16 relay outputs (electromechanical) 1 N/O (1 common/4 channels)
2, 3 (with optional snap-on terminal block)			
HE 10 connector, 20-way			
Fixed screw terminal block			
ABE 7E16EPN20	**ABE 7E16SPN20**	**ABE 7E16SPN22**	**ABE 7E16SRM20**
56	56	56	56

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Connection sub-bases for Twido controller

Presentation

Relay and connection functions, with or without polarity distribution, significantly reduce wiring time and eliminate the risk of error.
The ModiconTelefast ABE 7 pre-wired system allows fast, reliable and economical remote connection of I/O modules (⎓ 24 V discrete) to operative parts, partly eliminating the single-wire connection and intermediate terminal blocks.
The Telefast ABE 7 system can only be connected to Twido modules equipped with HE 10 type connectors. It consists of connecting cables and interface sub-bases.
The Telefast ABE 7 range is suitable for all types of connection found in control system devices:
- I/O located in the PLC cabinet,
- I/O located directly on the machine or in auxiliary enclosures.

All the I/O connection sub-bases comprise output terminals on 2 rows :
- 1st row: connection of the signal,
- 2nd row: connection of its common
  - ⎓ 24 V for the inputs,
  - 0 V for the outputs.

A 3rd row of optional terminals ABE 7BV●● may be added for connection of another common.

These I/O sub-bases are available in different configurations:

Sub-bases for Twido modular base controllers

- **ABE 7B20MPN20:** sub-base with 12 inputs + 8 passive outputs.

- **ABE 7B20MPN22:** sub-base with 12 inputs + 8 passive outputs.
  - individual fuse protection for each output (0.315 A),
  - LED indication,
  - blade disconnector for the 0 V common.

- **ABE 7B20MRM20:** sub-base with 12 inputs + 8 outputs with soldered relays
  - 2 A solid state relay (1 x 4 A common/2 channels) on 2 outputs,
  - electromechanical relays (1N/O ⎓ 24 V/∿ 250 V, 3 A) on 6 outputs for adaptation of the current or voltage signal (1 x 10 A common/6 channels).

Sub-bases for Twido I/O expansion modules

- **ABE 7E16EPN20:** sub-base with 16 passive inputs.

- **ABE 7E16SPN20:** sub-base with 16 passive outputs.

- **ABE 7E16SPN22:** sub-base with 16 passive outputs.
  - individual fuse protection for each output (0.315 A),
  - LED indication
  - blade disconnector for breaking the 0 V common.

- **ABE 7E16SRM20:** sub-base with 16 soldered relay outputs
  - electromechanical relays (1N/O ⎓ 24 V/∿ 250 V, 3 A) on 16 outputs for adapting the current or voltage signal (1 x 5 A common/4 channels)

Optional terminal blocks

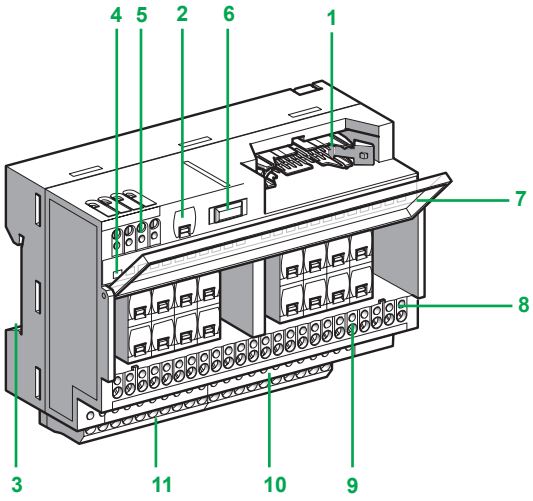
- **ABE 7BV20TB**
  - 12 shunted screw terminals for the input common,
  - 8 shunted screw terminals for the output common.

- **ABE 7BV20**
  - 20 shunted screw terminals for connection of a single common.

Connection interfaces

Modicon Telefast ABE 7 pre-wired system

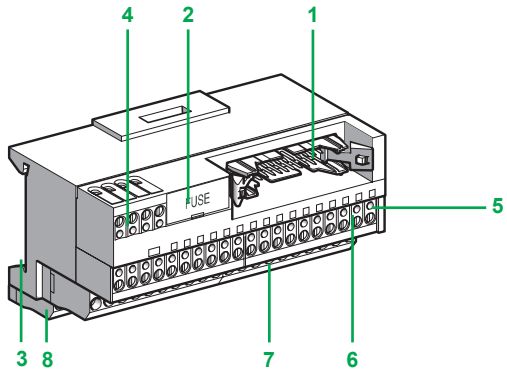
Connection sub-bases for Twido controller



Description

Connection sub-bases ABE 7B20M●●●●, ABE 7E16SRM20 and ABE 7E16SPN22

1 HE 10 connector (20-way for ABE 7E16●●●●●, 26-way for ABE 7B20●●●●●).
2 Fuse for the ⎓ 24 V supply circuit.
3 Rail mounting.
4 LED for channel indication (only on ABE 7B20MPN22 and ABE 7E16SPN22).
5 ⎓ 24 V power supply terminal block.
6 Blade disconnector on ⎓ 0 V (only on ABE 7B20MPN22 and ABE 7E16SPN22).
7 Legend holder cover: customer marking on outside and sub-base wiring scheme on inside, providing access to fuses per channel (only on ABE 7B20MPN22 and ABE 7E16SPN22).
8 Test point for Ø 2.3 mm plug.
9 Upper terminal block for connection of signals.
10 Lower terminal block for connection of commons.
11 Optional snap-on terminal block with 20 screw terminals.



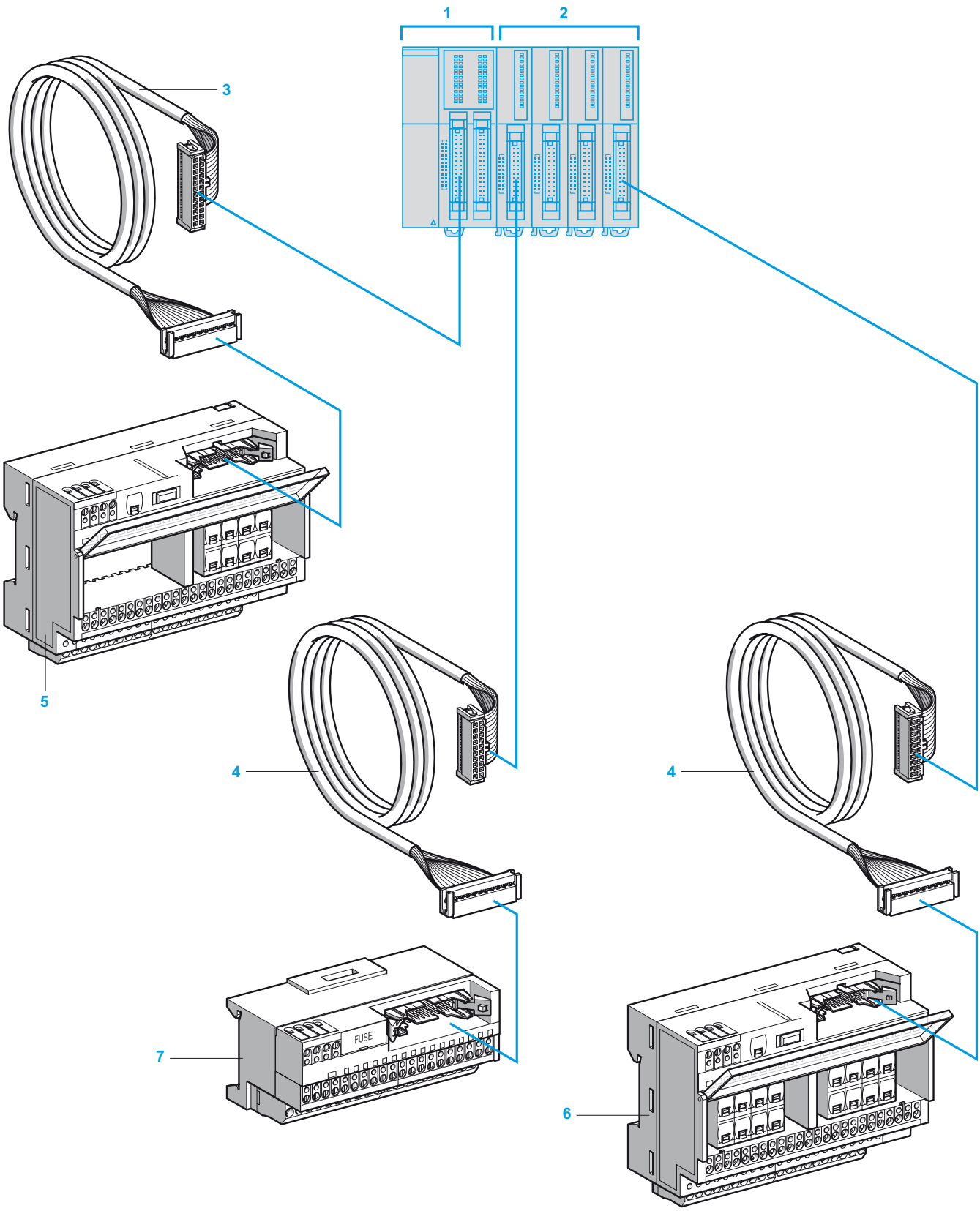
Connection sub-bases ABE 7E16EPN20 and ABE 7E16SPN20

1 HE 10 connector, 20-way,
2 Fuse for the ⎓ 24 V supply circuit.
3 Rail mounting.
4 ⎓ 24 V power supply terminal block.
5 Test point for Ø 2.3 mm plug.
6 Upper terminal block for connection of signals.
7 Lower terminal block for connection of commons.
8 Optional snap-on terminal block with 20 screw terminals.

Connection interfaces

Modicon Telefast ABE 7 pre-wired system

Pre-wired solutions for Twido



Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Pre-wired solutions for Twido

Presentation (continued)

1 Modular base controller with 26-way HE 10 connectors. The modular sizes available are 20 or 40 I/O.
2 Input and output modules with 20-way HE 10 connectors. The modular sizes available are 16 or 32 I/O.
3 Cable (ABF T26B●●0) equipped with a 26-way HE 10 connector at each end. This cable is available in 0.5, 1 and 2 metre lengths (AWG 28/0.08 mm2).
4 Cable (ABF T20E●●0) equipped with a 20-way HE 10 connector at each end. This cable is available in 0.5, 1, 2 and 3 metre lengths (AWG 28/0.08 mm2).
5 20 channel sub-base (ABE 7B20MPN2● or ABE 7B20MR20) for modular base controllers.
6 16 channel sub-base (ABE 7E16SPN22 or ABE 7E16SRM20) for output extension modules.
7 16 channel sub-base (ABE 7E16EPN20 or ABE 7E16SPN20) for input or output extension modules.

Compatibility with modular base controllers and I/O modules

		Modular base controllers	Discrete I/O modules	
		Inputs/outputs	Inputs	Outputs
Incorporated in Twido programmable controllers		**TWD LMDA 20DTK (12 I/8 O)** **TWD LMDA 40DTK (24 I/16 O)**	**TM2 DDI 16DK (16 I)** **TM2 DDI 32DK (32 I)**	**TM2 DDO 16TK (16 O)** **TM2 DDO 32TK (32 O)**
Terminal block types		HE 10 connector, 26-way	HE 10 connector, 20-way	
Connection to Twido programmable controller		**ABF T26B●●0 (HE 10, 26-way)**	**ABF T20E●●0 (HE 10, 20-way)**	
Passive connection sub-bases				
20 channels	**ABE 7B20MPN2●**	■		
16 channels	**ABE 7E16EPN20**		■	
	ABE 7E16SPN2●			■
Output adapter bases				
20 channels	**ABE 7B20MRM20**	■		
16 channels	**ABE 7E16SRM20**			■

■ Compatible

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Connection sub-bases for Twido controller

ABE 7B20MPN20

ABE 7E16EPN20

ABE 7E16SRM20

References

For Twido modular base controllers

Number of I/O	Number, type of input	Number, type of output	Compatibility	LED per channel	Fuse	Reference	Weight kg
20	12, sink ⎓ 24 V	8, source ⎓ 24 V	TWD LMDA20DTK/ LMDA40DTK	No	No	**ABE 7B20MPN20**	0.430
				Yes	Yes	**ABE 7B20MPN22**	0.430
	12, sink ⎓ 24 V	2, source ⎓ 24 V, 2 A and 6, relay ⎓ 24/∿ 250 V, 3 A	TWD LMDA20DTK/ LMDA40DTK	No	No	**ABE 7B20MRM20**	0.430

For Twido extension modules

Number of inputs	Type of input	Compatibility	LED per channel	Fuse	Reference	Weight kg
16	Sink ⎓ 24 V	TM2 DDI16DK/ DDI32DK	No	No	**ABE 7E16EPN20**	0.430

Number of outputs	Type of output	Compatibility	LED per channel	Fuse	Reference	Weight kg
16	Source ⎓ 24 V	TM2 DDO16TK/ DDO32TK	No	No	**ABE 7E16SPN20**	0.450
			Yes	Yes	**ABE 7E16SPN22**	0.450
	Relay ⎓ 24/∿ 250 V, 3 A	TM2 DDO16TK/ DDO32TK	No	No	**ABE 7E16SRM20**	0.430

Connection cables for Twido modular base controllers

Type of signal	Compatibility	Type of connection		Gauge/ C.s.a.	Length *(1)*	Reference	Weight kg
		Twido side	Telefast ABE 7 side				
Discrete inputs/ outputs	TWD LMDA20DTK/ LMDA40DTK	HE 10 26-way	HE 10 26-way	AWG 28 0.08 mm²	0.5 m	**ABF T26B050**	0.080
					1 m	**ABF T26B100**	0.110
					2 m	**ABF T26B200**	0.180
	TM2 DDI16DK/ DDI32DK/ DDO16TK/ DDO32TK	HE 10 20-way	HE 10 20-way	AWG 28 0.08 mm²	0.5 m	**ABF T20E050**	0.060
					1 m	**ABF T20E100**	0.080
					2 m	**ABF T20E200**	0.140

Accessories

Description	Number of shunted terminals	Characteristics	Sold in lots of	Unit reference	Weight kg
Optional snap-on terminal blocks	20	–	5	**ABE 7BV20**	0.060
	12 + 8	–	5	**ABE 7BV20TB**	0.060
Quick-blow fuses 5 x 20, 250 V, UL	–	0.125 A	10	**ABE 7FU012**	0.010
		0.315 A	10	**ABE 7FU030**	0.010
		1 A	10	**ABE 7FU100**	0.010
		2 A	10	**ABE 7FU200**	0.010

(1) For lengths > 2 m, please contact us.

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Cables for connection sub-bases and accessories for Twido controller

References (continued)

Separate components

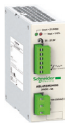
Description	Type	Compatibility	Sold in lots of	Reference	Weight kg
Connectors (sold in lots of 5)	HE 10 female 26-way	TWD LMDA20DTK/40DTK	5	**TWD FCN2K26**	–
	HE 10 female 20-way	TM2 DDI16DK/DDI32DK/ DDO16TK/DDO32TK	5	**TWD FCN2K20**	–
Screw terminal blocks (sold in lots of 2)	10-way	TM2 DDI●DT/DDO8●T/ DRA16RT	2	**TWD FTB 2T10**	–
	11-way	TM2 DMM8DRT/AMI●●T/ ARI8HT/ DAI8DT/DRA8RT	2	**TWD FTB 2T11**	–

Description	Compatibility	Type of connection		Gauge/ C.s.a.	Length	Reference	Weight kg
		Twido side	Other end				
Cables for discrete I/O	TWD LMDA20DTK/ LMDA40DTK	HE 10 26-way	Bare wires	AWG 22 0.035 mm²	3 m	**TWD FCW 30M**	0.405
					5 m	**TWD FCW 50M**	0.670
	TM2 DDI16DK/ DDI32DK/ DDO16TK/ DDO32TK	HE 10 20-way	Bare wires	AWG 22 0.035 mm²	3 m	**TWD FCW 30K**	0.405
					5 m	**TWD FCW 50K**	0.670
Pre-formed cable, rolled	20 conductors	–	–	AWG 28 0.08 mm²	20 m	**ABF C20R200**	1.310

Power supplies and transformers Phaseo

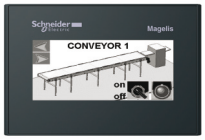
Regulated switch mode power supplies

Power supplies		Regulated switch mode power supplies ABL 8MEM, ABL 7RM: 7 to 60 W - Rail mounting ABL 8REM, ABL 7RP: 60 to 144 W - Rail mounting			
					
Nominal input voltage		∿ 100...240 V ⎓ 120...250 V			
Connection to worldwide line supplies	United States - 120 V (phase-to-neutral) - 240 V (phase-to-phase)	Single-phase (N-L1) connection or 2-phase (L1-L2) connection			
	Europe - 230 V (phase-to-neutral) - 400 V (phase-to-phase)	Single-phase (N-L1) connection			
	United States - 277 V (phase-to-neutral) - 480 V (phase-to-phase)	–			
Undervoltage control		Yes			
Protection against overloads and short-circuits		Yes, voltage detection. Automatic reset on elimination of the fault			
Diagnostics relay		–			
Compatibility with function modules		–			
Power reserve (Boost)		1.25 to 1.4 In for 1 minute, depending on model (for ABL 8MEM)			No
Output voltage		⎓ 5 V	⎓ 12 V	⎓ 24 V	⎓ 48 V
Output current	0.3 A			**ABL 8MEM24003**	
	0.6 A			**ABL 8MEM24006**	
	1.2 A			**ABL 8MEM24012**	
	2 A		**ABL 8MEM12020**		
	2.5 A			**ABL 7RM24025**	**ABL 7RP4803**
	3 A			**ABL 8REM24030**	
	3.5 A				
	4 A	**ABL 8MEM05040**			
	5 A		**ABL 7RP1205**	**ABL 8REM24050**	
	6 A				
	10 A				
	20 A				
	30 A				
	40 A				
Pages		Consult our web site: schneider-electric.com			

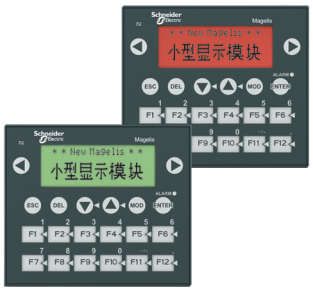
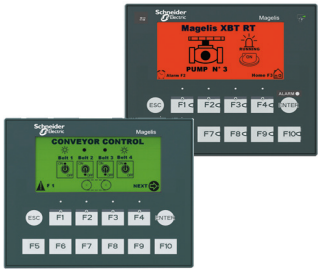
ABL4: 85 to 960 W - Compact - Rail mounting			Function modules ABL 8DCC: converters ⎓/⎓	
				
∼ 100…230 V	∼ 120 V or ∼ 230 V	∼ 400…500 V	⎓ 24 V	
Single-phase (N-L1) connection	Single-phase (N-L1) connection or 2-phase (L1-L2) connection	–	–	
–	Single-phase (N-L1) connection	3-phase (L1-L2-L3) connection	–	
–	–	3-phase (L1-L2-L3) connection	–	
No	No	No	–	
Yes, current limitation Automatic reset on elimination of the fault			Yes, current limitation	
Yes	Yes	Yes	Yes, depending on model	
Yes with buffer module, battery and battery check modules, redundancy module and discriminating downstream protection module				
Depending on model: 1.5 to 1.7 In for 5 to 30 seconds			No	
⎓ 24 V			⎓ 5 V	⎓ 7...12 V
				ABL 8DCC12020 *(1)*
ABL 4RSM24035				
ABL 4RSM24050				
			ABL 8DCC05060 *(1)*	
	ABL 4RSM24100			
	ABL 4RSM24200	**ABL 4WSR24200**		
		ABL 4WSR24300		
		ABL 4WSR24400		
Consult our web site: schneider-electric.com *(2)*				

(1) Converter module ⎓/⎓, must be used with a Phaseo power supply.
(2) Certain offers can not be marketed in certain countries, please consult your "Customer Care Centre".

Operator dialogue terminals
Magelis Small Panels

Applications		**Display of graphic pages**		
Type of terminal		**Small Panels with touch screen**		
				
Display	Type	Monochrome STN LCD (200 x 80 pixels), backlit - Green, orange and red, or - White, pink and red	Colour QVGA TFT LCD (320 x 240 pixels)	
	Capacity	3.4" (monochrome)	3.5" (colour)	5.7" (colour)
Data entry		Via touch screen		
Memory capacity	Application	16 MB Flash		
	Expansion	–		
Functions	Maximum number of pages	Limited by internal FLASH EPROM memory capacity		
	Variables per page	Unlimited		
	Representation of variables	Alphanumeric, bitmap, bargraph, gauge, curves, buttons, LEDs		
	Recipes	32 groups of 64 recipes		
	Curves	Yes, with log		
	Alarm logs	Yes		
	Real-time clock	Access to the PLC real-time clock		
	Alarm relay	–		
	Buzzer	Yes		
Communication	Asynchronous serial link	RS 232C/RS 485 *(1)* RS 232C using Zelio protocol *(2)*	RS 232C/RS 485	
	Downloadable protocols	Uni-TE, Modbus and for PLC brands: Allen-Bradley, Omron, Mitsubishi, Siemens		
	Printer link	USB for serial or parallel printer		
	USB ports	1 host type A and 1 device type mini-B		
	Networks	1 Ethernet TCP/IP port (10BASE-T/100BASE-TX) *(3)*	1 Ethernet TCP/IP port (10BASE-T/100BASE-TX)	
Development software		Vijeo Designer (on Windows XP, Windows Vista and Windows 7)		
Operating system		Magelis		
References		**HMI STO 5●●**	**HMI STU 655**	**HMI STU 855**
Page		Consult our web site: schneider-electric.com		

(1) Only HMI STO 511/512.
(2) Only HMI STO 501.
(3) Only HMI STO 531/532.

Display of text messages and/or semi-graphic pages	Display of text messages and/or semi-graphic pages Control and configuration of data	
Small Panels with keypad	**Small Panels with keypad**	**Small Panels with touch screen and keypad**
		
Green backlit monochrome LCD, height 5.5 mm or Green, orange or red backlit monochrome LCD, height 4.34…17.36 mm	Green, orange or red backlit monochrome LCD, height 4.34…17.36 mm	Green, orange or red backlit monochrome matrix LCD (198 x 80 pixels), height 4…16 mm
2 lines of 20 characters or 1 to 4 lines of 5 to 20 characters (monochrome)	1 to 4 lines of 5 to 20 characters (monochrome)	2 to 10 lines of 5 to 33 characters (monochrome)
Via keypad with 8 keys (4 customizable)	Via keypad with ■ 12 function keys or numeric entry (depending on context) ■ 8 service keys	Via keypad with ■ 4 function keys ■ 8 service keys Via touch screen and keypad with ■ 10 function keys ■ 2 service keys
512 KB Flash		512 KB Flash EPROM
–		
128/200 application pages 256 alarm pages	128/200 application pages 256 alarm pages	200 application pages 256 alarm pages
40…50	40…50, bargraph, buttons, LEDs	50
Alphanumeric		Alphanumeric, bargraph, buttons, LEDs
–		
Yes		
Yes *(5)*	Yes	
Access to the PLC real-time clock	Access to the PLC real-time clock	
–		
–		Yes *(4)*
RS 232C/RS 485		
Uni-TE, Modbus and for PLC brands: Allen-Bradley, Omron, Mitsubishi, Siemens		
RS 232C serial link *(5)*		
–		
–		
Vijeo Designer Lite (on Windows 2000, Windows XP and Windows Vista)		
Magelis		
XBT N ●●●●	**XBT R ●●●**	**XBT RT ●●●**
Consult our web site: schneider-electric.com	Consult our web site: schneider-electric.com	Consult our web site: schneider-electric.com

(4) Only XBT RT511.
(5) Depending on model.

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.

Abbreviated name	Certification body	Country
CSA	Canadian Standards Association	Canada
C-Tick	Australian Communication Authority	Australia, New Zealand
GOST	Scientific research institute for GOST standards	CIS, Russia
UL	Underwriters Laboratories	USA

Abbreviated name	Classification society	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	CIS, Russia
RRR	Russian River Register	

The tables below provide an overview of the situation as at **01/07/2011** 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**	**ACA** (C-Tick)	**GOST**	**Hazardous locations (1) Class I, div 2**	**INERIS**	**TÜV Rheinland**	**BG**	**SIMTARS**	**AS-Interface**
	USA	Canada	Australia	CEI, Russia	USA, Canada	Europe		Germany	Australia	Europe
Modicon OTB										
Modicon STB					FM	Cat. 3 G *(2) (4)*				
Modicon Telefast ABE 7										
ConneXium					*(2)*					
Magelis BOX PC	*(3)*				UL *(3)*	Cat. 3 D *(7)*				
Magelis iPC/GTW	*(3)*	*(2)*		*(2)*	UL	*(2) (4)*				
Magelis XBT GT		*(2)*		*(2)*	CSA/UL *(2)*	Cat. 3 G-D/ 3D *(2) (4)*				
Magelis XBT GK	*(3)*				CSA/UL					
Magelis XBT N/R/RT					CSA/UL	Cat. 3 G-D *(4)*				
Magelis HMI STO/STU	*(2) (3)*			*(2)*	UL *(2) (3)*	*(2)*				
Modicon M340					CSA	IEC Ex ia I *(2) (4)*				*(2)*
Modicon Momentum										
Modicon Premium				*(2)*	CSA			*(2)*	*(2)*	*(2)*
Modicon Quantum				*(2)*	FM *(2)*					
Modicon Quantum Safety				*(2)*	CSA		SIL 2, SIL 3 *(6)*			
Preventa XPSMF							SIL 3 *(6)*			
Modicon TSX Micro								*(2)*		*(2)*
Phaseo	*(3)*									
Twido					UL					*(2)*

(1) ***Hazardous locations****: According to UL 1604, ANSI/ISA 12.12.01, CSA 22.2 N° 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)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.
(5) Certified by Test Safe.
(6) According to IEC 61508. Certified by TÜV Rheinland for integration into a safety function of up to SIL2 level.
(7) Certified by FTZÜ.

Merchant navy certifications

	Shipping classification societies									
Certified / *Certification pending*	ABS	BV	DNV	GL	Korean Register of Shipping	LR	RINA	RMRS	RRR	PRS
	USA	France	Norway	Germany	Korea	UK	Italy	CIS	CIS	Poland
Modicon OTB										
Modicon STB	*(1) (2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*	*(2)*	*(2)*	
Modicon Telefast ABE 7										
ConneXium		*(2)*		*(2)*		*(2)*				
Magelis BOX PC				Bridge *(2)*						
Magelis *i*PC/GTW			*(2)*							
Magelis XBT GT	*(2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*	*(2)*	*(2)*	
Magelis XBT GK										
Magelis XBT N/R										
Magelis XBT RT										
Magelis HMI STO/STU		*(2)*								
Modicon M340	*(2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*	*(2)*	*(2)*	
Modicon Momentum										
Modicon Premium	*(2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*			
Modicon Quantum	*(2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*	*(2)*		
Modicon TSX Micro										
Phaseo										
Twido	*(3)*		*(3)*	*(3)*		*(3)*				

(1) Also covers US Navy requirements **ABS-NRV** part 4.
(2) Depends on product; please visit our website: www.schneider-electric.com.
(3) Except for: Compact bases **TWD LC••40DRF**, *communication modules* **499 TWD 01100**, **TWD NCO1M** *and* **TWD NOI 10M3** *and tap junctions* **TWD XCA ISO/T3RJ**.

CE marking

■ The appearance of a 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 for allowing its free circulation within European Union states.
■ The CE mark is intended for use by those responsible for regulating national markets.
■ Twido controllers are conform to IEC/EN 61131-2-2007.

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)

Protective treatment of Twido controller, compact and modular bases

Twido controller (compact and modular bases) meet the requirements of “TC” treatment (Treatment for all Climates).
For installations in industrial production workshops or environments corresponding to “TH” treatment (treatment for hot and humid environments), Twido controllers must be embedded in envelopes with a minimum IP 54 protection, in compliance with IEC/EN 60664 and NF C20 040.

Twido controller themselves offer **protection to IP 20 level** and **protection against pins** (encloset equipement). They can therefore be installed without an envelope in reserved-access areas which do not exceed **pollution level 2** and **overvoltage category 2** (control room with no dust-producing machine or activity). The pollution level 2 does not take account of more severe environmental conditions: air pollution by dust, smoke, corrosive or radioactive particles, vapours or salts, attack by fungi, insects, ...

Product reference index

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Design: Schneider Electric
Photos: Schneider Electric

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