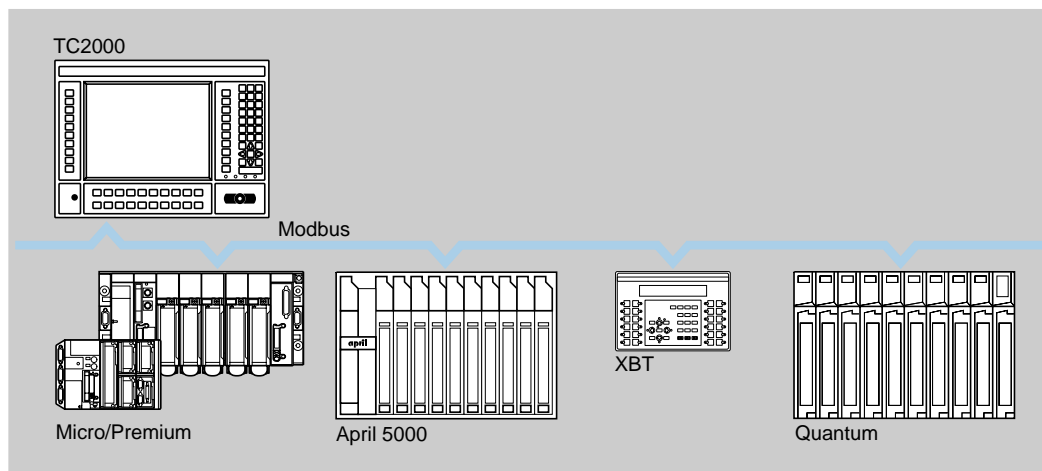


### Presentation

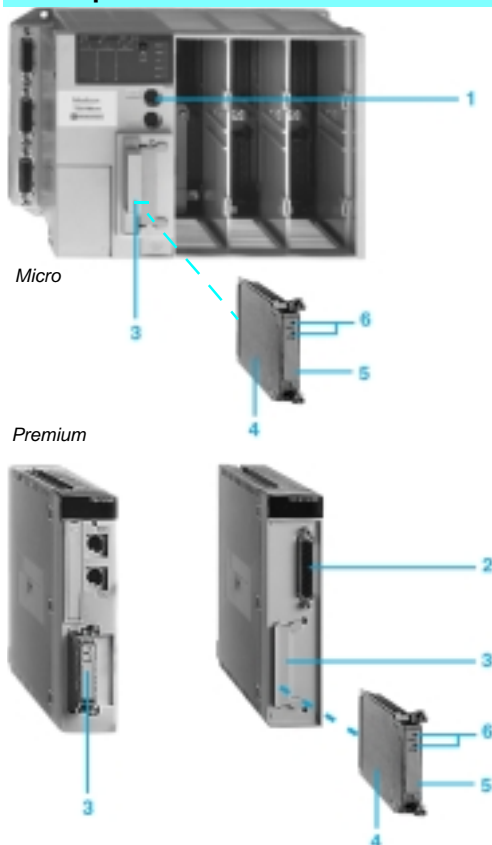


The Modbus bus is used for Master/Slave architectures (it is necessary, however, to check that the Modbus services used by the application are implemented on the devices concerned).

The bus comprises one Master station and several Slave stations. Only the Master station can initiate the exchange (direct communication between Slave stations is not possible). Two exchange mechanisms are possible:

- Question/answer, where the requests from the Master are addressed to a given Slave. The Master then waits for the response from the Slave which has been interrogated.
- Broadcasting, where the Master broadcasts a message to all Slave stations on the bus. These Slave stations execute the command without sending a response.

### Description



#### Integrated link

- 1 Via integrated port on the Micro processor.  
The TER port (8-way mini DIN) also has Modbus RTU Master/Slave (1) protocol.
- 2 Via integrated port on the TSX SCY 21601 module.  
This module has one multiprotocol Half-duplex isolated RS 485 serial link channel (25-way SUB-D connector), with Modbus.

#### TSX SCP 11 multiprotocol PCMCIA cards●

- 3 A slot on the Micro or Premium processor, the Premium coprocessor and on the TSX Premium SCY 21601 module accepts PCMCIA cards, which are comprised of:
- 4 A protective cover.
- 5 A removable cover with fixing screws (to access a 20-way miniature connector).
- 6 Two LEDs:
  - ERR lamp: card or link fault,
  - COM LED: data transmission or reception.

Cable connector to be ordered separately: TSX SCP/SCY cable.

(1) Modbus RTU Slave Protocol with TSX 37-05/08.

### Characteristics (1)

Structure					
Type	Heterogeneous industrial bus				
Physical Interface	Non-isolated Micro RS 485 Terminal port		PCMCIA card		
	TSX 37-05/08	TSX 37-10/21/22	RS 485	20 MA CL	Non-isolated RS 232
Method of access	Slave	Master/Slave	Master/Slave Type		
Transmission					
Mode	Asynchronous in baseband				
Frame	RTU		RTU/ASCII		
Data rate	1.2...14.2 Kbps		0.6...19.2 Kbps (for <b>TSX SCP 111</b> ) 1.2...19.2 Kbps (for <b>TSX SCP 112/114</b> ) 1.2...19.2 Kbps (for integrated link to Premium module <b>TSX SCY 21601</b> )		
Medium	Double shielded twisted pair			Double shielded twisted pair, doubled	Quintuple shielded twisted pair
Configuration					
Number of devices	28 devices maximum			16 devices maximum	2 devices (point-to-point)
	98 link addresses maximum	256 link addresses maximum	98 link addresses maximum		
Length of bus	10 m maximum non isolated link 1300 m maximum on isolated link (2)		1300 m excluding tap links	100 to 1000 m according to rate	15 m maximum Tap link
rate	–		15 m maximum Tap link	–	–
Services					
Requests	Bits: 1920 bits per request Words: 120 words per request				
Security	One CRC 16 check parameter on each frame				
Monitoring	No flow control		Diagnostic counters, event counters		
Functions (3) Modbus available on PremiumPLCs.	Code	Modbus Slave		Modbus Master	
	01	Read of n output bits		Read bits	
	02	Read of n input bits		Read of input bits (4)	
	03	Read of n output words		Read words	
	04	Read of n input words		Read of input words (4)	
	05	Write 1 output bit		Write of 1 bit or n bits	
	06	Write 1 output word		Write of 1 word or n words	
	07	Exceptional read status		Exceptional read status	
	08	Diagnostic		Diagnostic	
	0B	Event counter		Event counter	
	0C	Event connection		Event connection	
	0F	Write of n output bits		–	
	10	Write of n output words		–	
	11	Identification		Slave identification	

(1) For characteristics of the TSX SCY 21601 communication module integrated channel, see our Premium catalogue.

(2) For an isolated link, you must use the TSX P ACC 01 terminal port cable connector.

(3) The Master PLC station can send all the Modbus requests (without transmission and reception monitoring).

(4) Requests not available on TSX 37-10/21/22 terminal port.

### Modbus bus connection elements



TSX SCY 21601



TSX SCP 111

Description	Protocol	Physical layer	Reference (1)	Weight kg
<b>Micro PLC integrated link (TER)</b>	Modbus (RTU) Character mode Uni-Telway	Non-isolated RS 485	See page 43050/2	–
<b>Communication module</b>	Modbus Character mode Uni-Telway	- 1 RS 485 isolated integrated channel (channel 0), - 1 PCMCIA type III card slot (channel 1)	<b>TSX SCY 21601</b>	0.360
<b>PCMCIA cards</b> type III for TSX/PCX Premium processor, TSX 37-21/22 PLC or TSX SCY 21601 module	Modbus Character mode Uni-Telway	RS 485 (RS 422 compatible) 1.2...19.2 Kbps	<b>TSX SCP 114</b>	0.105
		RS 232 D (9 signals) 0.6...19.2 Kbps	<b>TSX SCP 111</b>	0.105
		20 mA CL 1.2...19.2 Kbps	<b>TSX SCP 112</b>	0.105

### Modbus connection accessories



TSX SCA 50



TSX SCA 64

Description	Use	Reference	Weight kg
<b>Passive junction box</b>	Bus tap link and extension, line termination adaptation	<b>TSX SCA 50</b>	0.520
<b>2-channel passive subscriber socket (2 or 4-wire) (2)</b>	Tap link of 2 devices with 2 wires Tap link of 1 Master device and/or 1 Slave device with 4 wires Fitted with 2 female 15-pin SUB-D connectors	<b>TSX SCA 64</b>	0.570
<b>Active adaptor RS 232 C/RS 485</b>	Connection of an RS 232 C device as RS 485 Isolation of signals and line termination adaptation	<b>TSX SCA 72</b>	0.520
<b>Micro PLC TER terminal port cable connector</b>	Bus tap link cable (2 or 4-wire) Isolation of Modbus signals Line termination adaptation Supplied with TER port link cable (length 1 m)	<b>TSX P ACC 01</b>	0.690
<b>Line terminators (Set of 2)</b>	Can be connected to the front panel of the TSX SCA 64 subscriber socket	<b>TSX SCA 10</b>	0.030

(1) Product supplied with a bilingual quick reference guide: English and French.

(2) 2 or 4-wire cabling, compatible with the TSX SCA 64 subscriber socket requires a Modbus cable with 10 mm maximum external diameter.

### Modbus connection cables

Description	Use		Length	Reference	Weight kg
	From	To			
<b>Cables for tap link isolated RS 422/485</b>	TSX SCP 114 card	TSX SCA 50 housing 2 wires (1)	3 m	<b>TSX SCP CM 4030</b>	0.160
		Subscriber socket TSX SCA 64, 2/4 wires	3 m	<b>TSX SCP CM 4530</b>	0.180
		Modbus standard device, 4 wires (1) (point-to-point)	3 m	<b>TSX SCP CX 4030</b>	0.160
	Integrated channel (channel 0) Premium module TSX SCY 21601	Housing TSX SCA 50, 2 wires (1)	3 m	<b>TSX SCY CM 6030</b>	0.160
		Subscriber socket TSX SCA 64, 2 wires	3 m	<b>TSX SCY CM 6530</b>	0.160
<b>RS 232 D tap link cables</b>	TSX SCP 111 card	Communication device (Modem, converter, etc) (DCE) (2)	3 m	<b>TSX SCP CC 1030</b>	0.190
		Point-to-point terminal device (DTE) (2)	3 m	<b>TSX SCP CD 1030</b>	0.190
			10 m	<b>TSX SCP CD 1100</b>	0.620
<b>Cable for tap link 20 mA CL</b>	TSX SCP 112 card	Multidrop Modbus (1)	3 m	<b>TSX SCP CX 2030</b>	0.160
<b>Other connecting cables</b>	—	—	—	See page 43606/2	—

(1) End of cable fitted with free wires.

(2) End of cable fitted with a male 25-pin SUB-D connector.