

Transparent Ready

Web gateway - FactoryCast Gateway

TSX ETG 1000 Modbus gateway



Presentation

FactoryCast Gateway TSX ETG 1000 is a new offer of "all in one" intelligent Web gateways integrating, in a standalone compact unit:

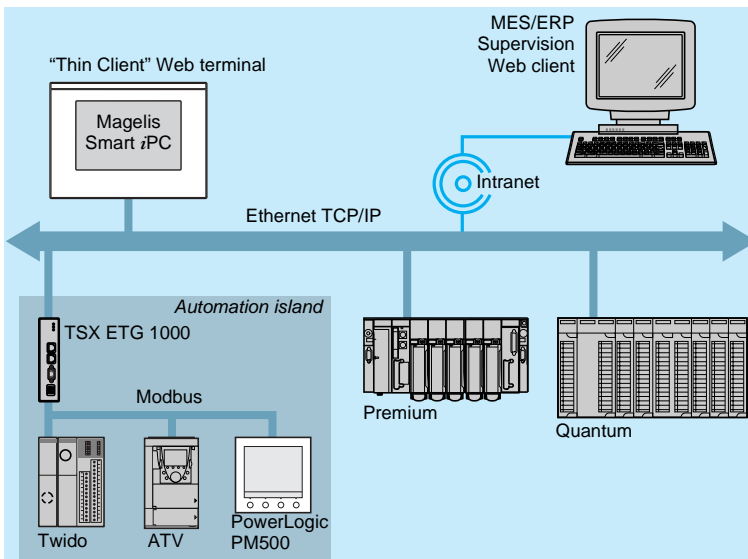
- All the TCP/IP and Modbus RTU network communication interfaces
- A RAS/Router function
- A customizable Web server.

The TSX ETG 1000 gateway is a cost effective response to the needs to integrate Modbus serial installations in an existing Ethernet TCP/IP infrastructure as well as requirements for remote access services including remote diagnostics and maintenance, remote monitoring and control.

It can also be used to remotely configure, program and supervise Modbus devices.

Application examples

Integration of Modbus RTU devices in an Ethernet TCP/IP network infrastructure

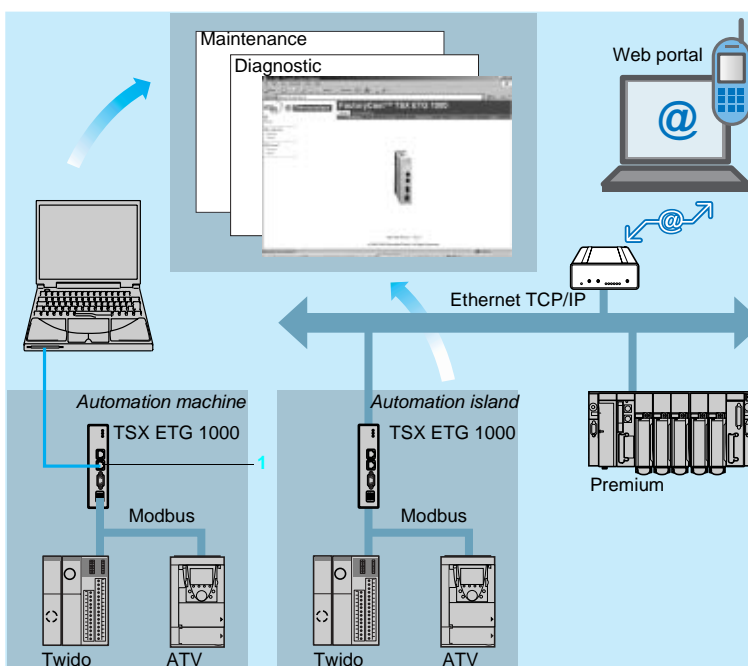


The TSX ETG 1000 gateway enables simple and low-cost integration of any Modbus RTU device or existing Modbus serial installation in an Ethernet TCP/IP network infrastructure. The gateway therefore makes the Modbus devices directly accessible to computer management (MES, ERP) or supervision applications in real time.

In addition, its embedded Web server offers the following additional services:

- Diagnostics of Modbus devices
- Reading/writing of Modbus registers
- Alarm notification by E-mail
- Hosting of user-defined Web pages.

Remote diagnostics and remote maintenance Web portal



The addition of the TSX ETG 1000 gateway to any standalone machine or to any automation island (Modbus serial or Modbus TCP/IP) creates a truly sophisticated maintenance portal, without any modification of devices. This Web portal offers the following intelligent functions:

- Customizable Web server
- Alarm notification by E-mail
- Remote diagnostics and remote maintenance
- Remote monitoring and control of Modbus variables by predefined Web pages.

Any "Thin Client" terminal (for instance Magelis Smart iPC) or PC simply equipped with an Internet browser can be used to access these services:

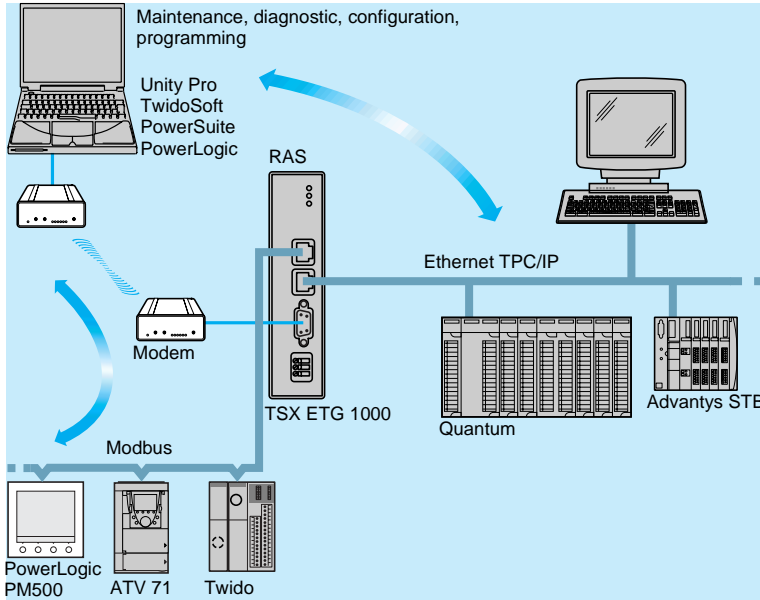
- Directly to the gateway on the TCP/IP port 1
- Remotely via the local network, Intranet, Internet, or via a modem connection.

The Web server is fully customizable so that it can be adapted to the user's requirements. Both the hosting of Web pages or any other documents created by the user, and also alarm notification by E-mail mean that the user can access the essential parameters in a preventive manner.

From now on, each machine integrates its own built-in maintenance.

Application examples (continued)

Remote access to Modbus devices via modem



The TSX ETG 1000 gateway integrates an RAS function (*Remote Access Server*), compatible with all types of modem (STN, GSM, radio modem etc), Intranet/VPN (*Virtual Private Network*) Internet.

It supports:

- PPP (*Point to Point Protocol*), managing incoming and outgoing calls
- A routing function (IP router) providing transparent access to any device present on the Ethernet TCP/IP infrastructure
- Secure access integrating an embedded firewall function for access control (filtering client IP addresses) with password protection.

This type of connection is suitable for remote maintenance and remote diagnostics when there are a large number of sites to be monitored, spread over a wide geographical area. In addition, it can be used to configure and programming remote Modbus devices using software of Telemecanique brand (Unity, Concept, TwidoSoft, PowerSuite, etc).

Functions



Presentation of functions

The TSX ETG 1000 gateway offers the following Transparent Ready services:

- Predefined (or basic) Web services: configuration, diagnostics, remote monitoring and remote control
- Configurable Web services: Web server that can be customized by the user (hosting of Web pages) and alarm notification by E-mail
- Communication functions enabling configuration, programming and remote supervision (via the Modbus serial RTU, Modbus TCP and RAS remote access protocols).

These functions are described in detail below.

Gateway configuration

All the functions of the TSX ETG 1000 gateway are configured using predefined Web pages so that there is no need of any external software.

These Web pages can be used to define the following parameters:

- Ethernet TCP/IP connections and access security, with IP address filtering and passwords
- Automatic assignment of IP, BootP/DHCP addresses (FDR client)
- Modbus serial link
- Modem link
- Network management, SNMP agent
- SMTP server for alarm notification by E-mail.

This configuration can be performed remotely.



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TSX ETG 1000 Modbus gateway



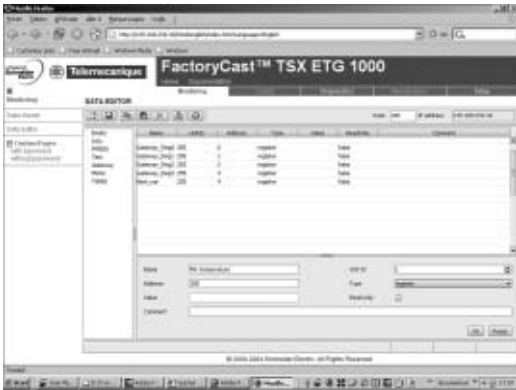
Functions (continued)

Diagnostic

The predefined Web pages integrate the following system diagnostics:

- Statistics on the Ethernet link and the Modbus serial RTU link
- Statistics on the SMTP service for E-mail notification
- Statistics on the RS 232C modem link and PPP protocol
- Statistics on the DHCP service that supplies IP parameters automatically (FDR client, Faulty Device Replacement).

These diagnostics are mainly performed by local or remote reading of status and counters, with reset option.



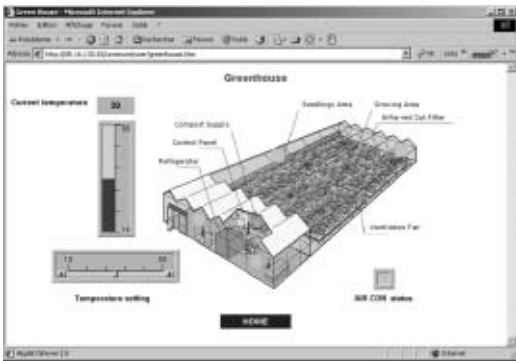
Remote monitoring and remote control

The predefined Web pages provide access to the registers of connected Modbus devices:

■ **In read/write mode** via a built-in data editor, used to fill in the animated variables tables in order to access Modbus registers in real time that are the image of the processes. Write access is protected by a password. Several variables tables can be created by the user and saved locally in the gateway.

■ **In read-only mode.** This function is a simplification of the previous read/write function in that it restricts access to the Modbus variables tables to read-only mode.

The variables are entered by their Modbus register address to which a symbol name can be associated (for example, motor_1, etc).



Hosting of user-defined Web pages function

The TSX ETG 1000 gateway has of 8 Mb memory, which the user can access via FTP (*File Transfer Service*), enabling hosting of Web pages and any Word or Acrobat Reader documents defined by the user (for example, maintenance manuals, diagrams, etc).

These Web pages are created using any standard HTML editor tool (1). These pages can be enhanced by inserting animated graphic objects in real time (Java applet) linked to the Modbus registers. The gateway is supplied with a library of graphic objects (2) and with a macro extension for FrontPage, simplifying insertion of graphic objects with the aid of a parameter-setting utility (Wizard).

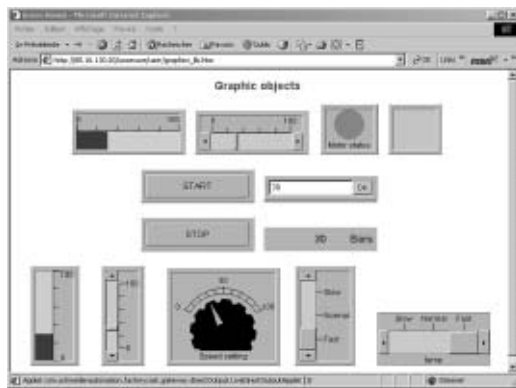
The Web pages can be used, for example, to:

- Provide a graphical interface to visualize and control Modbus registers
- Provide hyperlinks to other Web pages or external Web servers (supplier documentation, etc.)

Any FTP utility (*File Transfer Service*), native in Windows XP or in FrontPage, can be used to upload and download Web pages to the gateway.

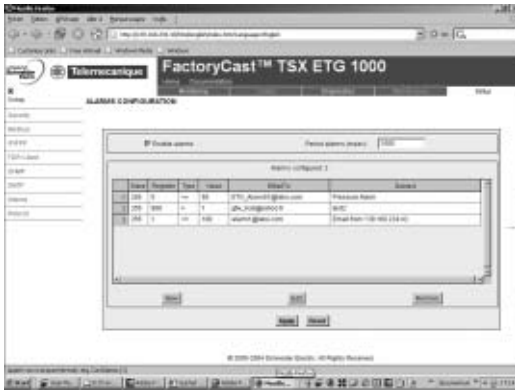
This Web function portal is particularly suitable for:

- Customized remote diagnostics and remote maintenance
- Realtime monitoring of production and process.



(1) For example, Microsoft FrontPage.

(2) Graphic object libraries: Analog and digital indicators, horizontal and vertical bargraphs, boxes for displaying messages and entering values, push-button stations, functions for recording trends, etc.



Functions (continued)

Alarm notification by E-mail

The TSX ETG 1000 gateway can completely autonomously, on a specific event, send E-mails to a list of E-mail addresses.

The event that triggers the E-mail may be associated with the following:

- A Modbus register variable (image of I/O or internal variable)
- An alarm, a threshold overshoot
- A machine or process status
- An operator action, etc.

The send condition is configured by simply setting the parameters of a "ready to use" Web page.

When an E-mail is sent to a destination address, the address of a remote SMTP (*Simple Mail Transfer Protocol*) server must be configured via a predefined Web page. The E-mail service is compatible with all types of SMTP servers. A return address can be defined should delivery to the destination address fail.



Characteristics:

- Maximum number of E-mails: 8
- Contents of E-mail messages: free text with insertion of hyperlinks

Configuration, programming and remote supervision

The gateway allows the user to configure, modify and maintain remotely applications using Telemecanique brand or third-party Modbus products, via their programming or setup software. These software programs are for example:

- TwidoSoft for Twido programmable controllers
- PowerSuite for variable speed drives for Altivar asynchronous motors
- Concept for Momentum and Quantum automation platforms
- Unity Pro for the Quantum automation platform, etc

Similarly, the gateway authorizes to remotely monitor and control devices using the Modbus serial or Modbus TCP protocol. The supervision tool used can be Vijeo Look or Monitor Pro or third party software.

Characteristics

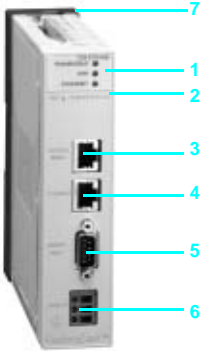
Web gateway module		FactoryCast Gateway TSX ETG 1000		
Transparent Ready services Class C20	Gateway/router		Gateway Ethernet TCP/IP to Modbus, modem to Modbus and modem to Ethernet TCP/IP with IP routing	
	Protocols		I/O Scanning service routing Modbus RTU master and Modbus TCP	
	Predefined Web services	Configuration		"Ready to use" Web pages
		Diagnostic		"Ready to use" Web pages for diagnostics on Ethernet link, Modbus, modem link and diagnostic on E-mail and FDR services
Configurables Web services	Data monitoring		"Ready to use" Web pages: access to Modbus device registers (read/write)	
			HTTP server (8 Mb Flash memory available)	
			Hosting of animated Web pages and any document (.doc, pdf, etc) created by the user Graphic object library (Java applet) with "Wizard" utility for FrontPage File uploading/downloading via FTP protocol	
E-mail service			Alarms notification by E-mail via SMTP server	
	Ethernet TCP/IP advanced communication services	BootP/DHCP protocol		For automatic assignment of the IP address, FDR client for faulty device replacement
		SNMP agent		Device management by an SNMP manager (Network administration)
		Security		Embedded firewall (filtering of IP addresses) and password protection
Connectivity	Ethernet TCP/IP	Physical interface		10BASE-T/100BASE-TX, standard RJ45 connector
		Data rate		10/100 Mbit/s with automatic recognition
		Medium		Twisted pair
	Modem	Physical interface		Half or Full-Duplex RS 232C link, 56 kbit/s, 9-pin SUB-D connector PPP protocol incoming and outgoing calls, PAP authentication protocol
		Services		Remote access via RAS compatible with STN, GSM, radio modem
	Modbus serial	Physical interface		Liaison RS 485, 115 Kbit/s maxi, connecteur normalisé RJ45
Characteristics		No. of devices		32 max. (1)
	Operating temperature			0...+ 60 °C
	Relative humidity			10...95 % non condensing during operation
	Degree of protection			IP 20
	Power supply			--- 24 V (limits --- 19,2...30 V), 100 mA
	Conforming to standards			ISO/IEC 8802-3, ANSI/IEEE Std 802.3, EN 61000-6-4, EN 55011 Class A IEC/EN 61131-2, UL 508, CSA C22.2 no. 142, BV, DNV, GL, LROS, RINA
	LED indicators			Modbus activity (RUN Modbus), Ethernet activity (Ethernet), gateway fault (ERR)
	Dimensions W x H x D			39,83 x 151,5 x 132,7 mm. Mounting on symmetrical DIN rail or plate

(1) Telemecanique brand field products, controllers and PLCs, and any other product conforming to the Modbus standards (consult the site www.modbus-ida.org)

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TSX ETG 1000



LU9 GC3



TSX SCA 64



XGS Z24

Description

The TSX ETG 1000 FactoryCast Gateway is a standalone device with the following elements on the front panel:

- 1 Three LEDs indicating the gateway status (RUN Modbus, ERR, Ethernet)
- 2 The module MAC address (default factory-set address)
- 3 An RJ45 connector for Modbus serial link (marked RS 485)
- 4 A standard RJ45 connector for connection to the Ethernet TCP/IP network (marked Ethernet)
- 5 A 9-pin male SUB-D connector for RS232 serial link (marked Modem RS 232).
- 6 A screw terminal for connecting the 24 V c external power supply
- 7 A support plate for securing the module on a DIN rail or on an AM1-PA pre-slotted plate.

References

Description	Routing	Web server	No.	Reference	Weight kg
FactoryCast Gateway Web gateway Transparent Ready class C20 (1)	- Ethernet TCP/IP to Modbus RTU - Modem to Modbus RTU - Modem to Modbus TCP	8 Mb memory available, configurable and customizable	1	TSX ETG 1000	0,280

Modbus accessories and cables

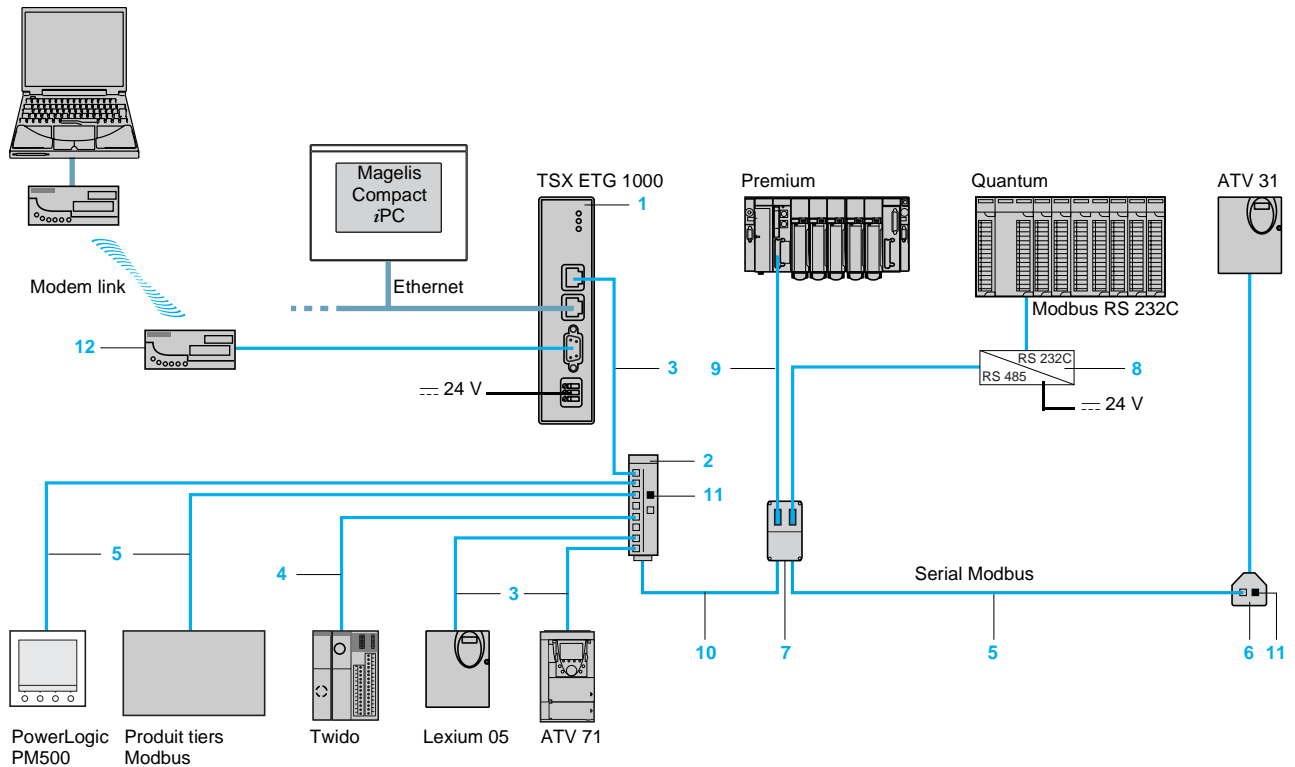
Description	Composition	No.	Length	Unit reference	Weight kg
Modbus splitter block	10 RJ45 connectors and 1 screw terminal	2	–	LU9 GC3	0,500
T-junction boxes	2 RJ45 connectors, an integrated cable with RJ45 connector	6	0,3 m	VW3 A8 306 TF03	–
			1 m	VW3 A8 306 TF10	–
2 channels passive subscriber socket (2 or 4-wire)	Tap link of 2 devices with 2-wires Fitted with 2 female 15-pin SUB-D connectors	7	–	TSX SCA 64	0,570
RS 232C/RS 485 line adaptor without modem signals	Power supply \approx 24 V/20 mA, 19,2 Kbit/s Mounting on 35 mm rail	8	–	XGS Z24	0,100
Cable for RS 485 Modbus serial link	2 RJ45 connectors	3	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 mini-DIN connector for Twido controller (serial adaptor or serial module RS 485) 1 connector RJ45	4	0,3 m	TWD XCA RJ003	0,040
			1 m	TWD XCA RJ010	0,090
			3 m	TWD XCA RJ030	0,160
	1 RJ45 connector and 1 end with free wires	5	3 m	VW3 A8 306 D30	0,150
RS 485 double shielded twisted pair trunk cables (3)	Modbus serial link, livrés sans connecteur	10	100 m	TSX CSA 100	5,680
			200 m	TSX CSA 200	10,920
			500 m	TSX CSA 500	30,000
Line terminator	For RJ45 connector $R = 120 \Omega$, $C = 1 \text{ nf}$	11	<i>Order in multiples of 2</i>	VW3 A8 306 RC	0,200

(1) Supplied with CD-Rom containing the installation manuals (English, French, German, Italian and Spanish), the graphic library and the FrontPage macro utility.

(2) Miniature connector at the end of **TSX SCP 114 Premium PCMCIA** and SUB-D 15-pin connector at the **TSX SCA 64** subscriber socket end.

(3) RS 485 Modbus other cable (RS 485 2-wire + power supply 2-wire), type CCR301, cable on reel (60 m) reference: **50965**, Merlin Gerin brand.

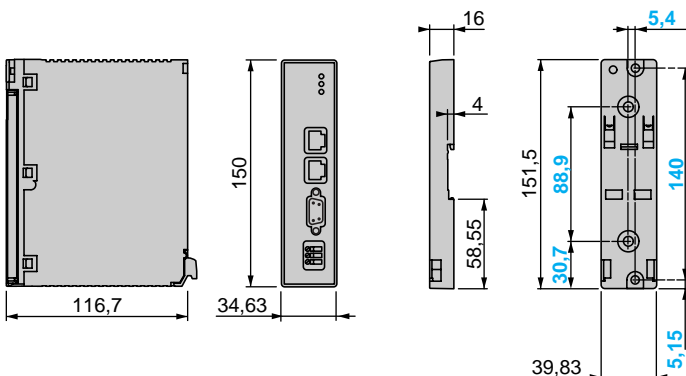
Connections



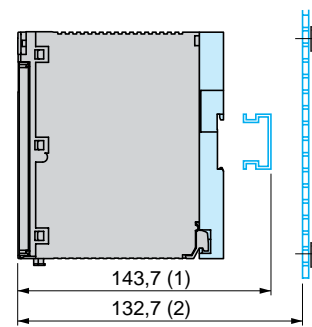
- 1 FactoryCast Gateway Web gateway **TSX ETG 1000**
- 2 Modbus splitter block **LU9 GC3**
- 3 Cable equipped with 2 RJ45 connectors **VW3 A8 306 R●●**
- 4 Cable for RS 485 optional port (with mini-DIN connector) Twido controller **TWD XCA RJ0●●**
- 5 Cable equipped 1 end with RJ45 connector and 1 end with free wires **VW3 A8 306 D30**
- 6 Modbus T-junction with integrated cable (RJ45 connectors) **VW3 A8 306 TF●●**
- 7 2 channels passive subscriber socket **TSX SCA 64**
- 8 RS 232C/RS 485 line adaptor **XGS Z24**
- 9 Cable equipped with 1 miniature connector (PCMCIA side) and 1 15-pin SUB-D connector **TSX SCP CM 4530**
- 10 Trunk cable, without connector, length 100, 200 or 500 m **TSX SCA ●00**
- 11 Line terminator (RJ45) **VW3 A8 306RC**
- 12 Modem STN, GSM or radio, consult the Web site of our partners :
 - Etic : www.etictelecom.com
 - Gener : www.gener.fr
 - Prosoft Technology : www.radiolinx.com
 - Wavecom : www.wavecom.com
 - Westermo : www.westermo.se

Dimensions, mounting

TSX ETG 1000 gateway



Mounting on profiled AM1 DE200/AM1 DP200
or on AM1 PA mounting plate



(1) 136,2 mm with profiled AM1 DP200.
(2) Assembly on AM1 PA mounting plate.