Isolated Ethernet Gateway Modbus TCP / Modbus RTU — DAT3580 GW

FEATURES
- **Interface Ethernet Server 10/100 Base-T Modbus TCP**
- **RJ45 Connector**
- **Configuration via integrated web server**
- **Serial interface RS-485**
- **Modbus RTU Client**
- **Baud rate up to 115.2 Kbps**
- **Distance up to 1200 m, up to 32 modules connected in multipoint**
- **Connection by removable screw-terminals**
- **LED signalling for Link/Act Ethernet, power supply**
- **Galvanic isolation on all the ways**
- **EMC compliant – CE mark**
- **In compliance to EN-50022 DIN rail mounting**

GENERAL DESCRIPTION
The device DAT3580 GW allows to connect all the devices with Modbus RTU of a RS-485 serial line to the Ethernet with Modbus TCP protocol.
By the integrated web server it is possible to configure the option of Modbus TCP (IP address, subnet mask, etc..) and Modbus RTU (baud rate, etc...)
The device realizes a full electrical isolation between the lines, introducing a valid protection against the effects of all ground loops eventually existing in industrial applications.
The LEDs of signalling of Ethernet and the serial line communication activity and power supply allow a direct monitoring of the system functionality.
The connection is made by removable screw-terminals (inputs and power supply) and RJ45 plug (Ethernet).
The device is housed in a 2 module DIN rough self-extinguishing plastic box for mounting on EN-50022 standard DIN rail.

USER INSTRUCTIONS
The DAT3580 GW can be connected directly to the SCADA, HMI or OPC server on the market that implement the Modbus TCP protocol. It is possible to connect at the same time up to 8 clients; each command sent by a client over the Ethernet with Modbus TCP protocol is processed and re-transmitted over the RS-485 with Modbus RTU protocol to the slave devices connected. As soon as the response from the slave is received, it is processed and re-transmitted to client which sent the query. By the integrated web server it is possible to configure the settings of network and serial line from any remote terminal.

TECHNICAL SPECIFICATIONS (Typical @ 25 °C and in the nominal conditions)

ETHERNET INTERFACE		SERIAL INTERFACE		GENERAL SPECIFICATIONS	
In compliance to Ethernet IEEE 802.3		**In compliance to EIA RS485**		DC Power Supply	18 ÷ 30 Vdc
				AC Power Supply	12 ÷ 30 Vac
Typology	Server	Typology	Client	**Current consumption**	55 mA max.
Ethernet interface	Ethernet 10/100Base-T			**ISOLATION**	
Protocol	Modbus TCP	Baud Rate (configurable)	up to 115.2 Kbps	Ethernet / RS485	1500 Vac, 50 Hz, 1 min.
		Parity (configurable)	Even / Odd / None	Power supply / RS485	1500 Vac, 50 Hz, 1 min.
		Stop Bit (configurable)	1 or 2	**ENVIRONMENTAL CONDITIONS**	
				Operative Temperature	-20°C ÷ 60°C
		Number of modules in multipoint	32 max.	Storage Temperature	-40°C ÷ 85°C
				Humidity (not condensed)	0 .. 90 %
		Switching time TX/RX (RS485)	150 us	Maximum Altitude	2000 m
				Installation	Indoor
		Termination resistance (insertable between terminals D+ and D-)	120 ohm	Category of installation	II
				Pollution Degree	2
		Max. recommended Distance / Baud Rate Ratio(1)	1.2 Km @ 38400 bps	**MECHANICAL SPECIFICATIONS**	
			2 Km @ 19200 bps	Material	Self-extinguish plastic
			3 Km @ 9600 bps	IP Code	IP20
			4 Km @ 4800 bps	Wiring	
			5 Km @ 2400 bps	Ethernet	RJ-45
			7 Km @ 1200 bps	RS-485	removable screw terminals pitch 3.81 mm Diameter 2.5 mm² AWG 14
				Power supply	removable screw terminals pitch 5.08 mm Diameter 0.8÷2.1 mm² AWG 14-18
				Tightening Torque	0.8 N m
				Mounting	in compliance with DIN rail standard EN-50022
				Weight	about 80 g.
				CERTIFICATIONS	
				EMC (for the Industrial Environments)	
				Immunity	EN 61000-6-2
				Emission	EN 61000-6-4
				UKCA (ref S.I. 2016 N°1091)	
		(1) – The maximum distance depends of: number of devices connected, type of cabling, noises, etc...		Immunity	BS EN 61000-6-2
				Emission	BS EN 61000-6-4

INSTALLATION INSTRUCTIONS

The device is suitable for fitting to DIN rails in the vertical position.
For optimum operation and long life follow these instructions:
When the devices are installed side by side it may be necessary to separate them by at least 5 mm. When the devices are installed beside a power supply unit it is necessary to separate them by at least 10 mm.
**To connect the serial line RS485 it is suggested to use the cable Belden type 9842 suitable for RS485.**
Make sure that sufficient air flow is provided for the device avoiding to place raceways or other objects which could obstruct the ventilation slits. Moreover it is suggested to avoid that devices are mounted above appliances generating heat; their ideal place should be in the lower part of the panel.
Install the device in a place without vibrations.
Moreover it is suggested to avoid routing conductors near power signal cables (motors, induction ovens, inverters etc...) and to use shielded cable to connect signals.

TERMINALS OVERVIEW
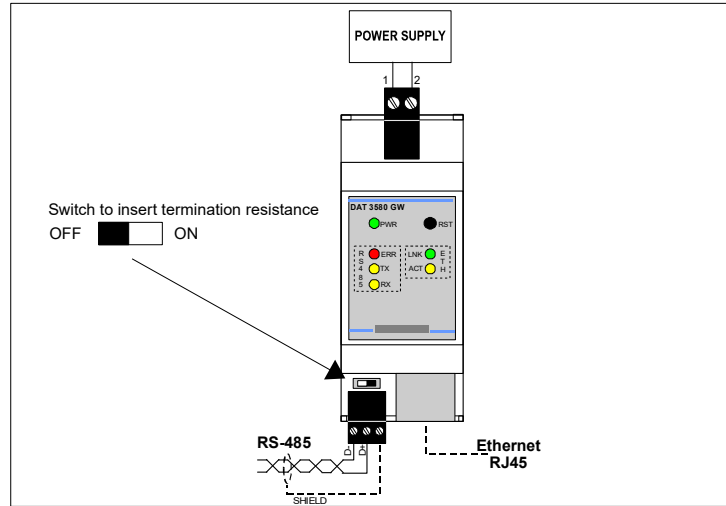
LIGHT SIGNALLING

| LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
ERROR	RED	BLINK	RS485 net error occurred. If button RST pushed – Reset of device occurred
		OFF	No error
TX	YELLOW	BLINK	Stream of data over transmission line of RS-485 (the blinking frequency depends on Baud-rate)
		OFF	No data over transmission line of RS-485
RX	YELLOW	BLINK	Stream of data over receiving line of RS-485 (the blinking frequency depends on Baud-rate)
		OFF	No data over receiving line of RS-485
LNK	GREEN	BLINK	Device connected to the Ethernet
		OFF	No data received from the Ethernet
ACT	YELLOW	BLINK	Stream of data over the Ethernet
		OFF	No data received from the Ethernet

MECHANICAL DIMENSIONS (mm)
VIEW WITH TERMINAL COVER
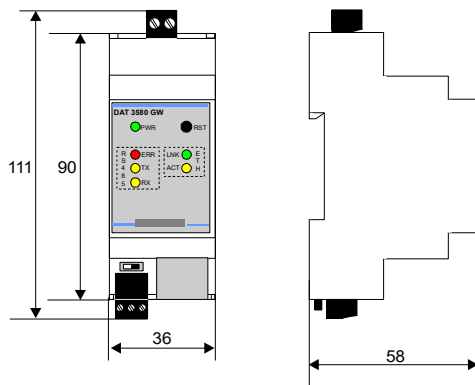
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste.
It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste.
For more information contact the proper office in the user's city , the service for the waste treatment or the supplier from which the product has been purchased.

WIRING
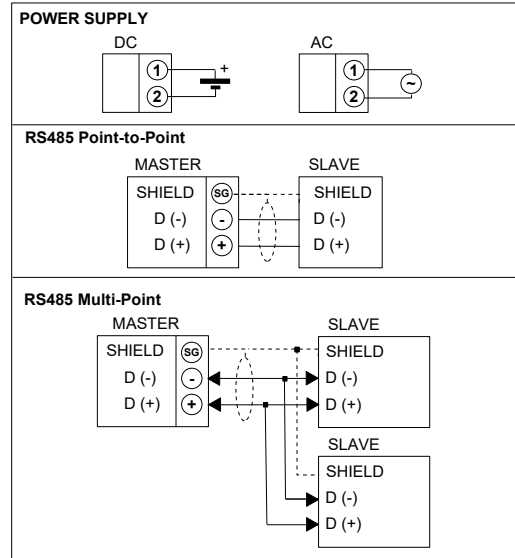
CONFIGURATION BY WEB SERVER

To configure the device by web server:
- Connect to the device via an internet browser
- Select the language
- Click on "Settings"
- Insert User Name (factuser) and Password (factpwd)
- Modify the parameters as desired
- Click on "Save Settings" and wait for that the reset occurs

FUNCTION BUTTON "RST"

To reload the default parameters of the device, keep pushed the button "RST" on the front side of the instrument with device powered for at least 5 seconds.
The led PWR will become red and the reset of the device will occur.
The following parameters will be load:

Ethernet:
- IP Address : 192.168.1.100
- Subnet Mask : 255.255.255.0
- Gateway Mask: 192.168.1.1

RS485:
- Baud rate 38400 bps
- Parity: none
- Stop bit : 1
The modbus address is internally fixed to 255.

TERMINATION RESISTANCE SELECTION FOR RS485

In the low part of the device it is possible to access to the dip-switch of selection of termination resistance.
If the cursor is on OFF position (to left) the termination resistance won't be inserted.
If the cursor is on ON position (to right) the termination resistance of 120 ohm will be inserted across the lines of the RS485.

ISOLATIONS STRUCTURE
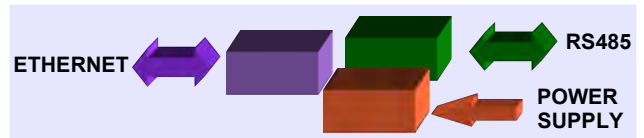
HOW TO ORDER
" DAT 3580 GW "

Configuration:

IP Address: ☐☐☐ . ☐☐☐ . ☐☐☐ . ☐☐☐
SubNet Mask: ☐☐☐ . ☐☐☐ . ☐☐☐ . ☐☐☐
Gateway: ☐☐☐ . ☐☐☐ . ☐☐☐ . ☐☐☐
Setting for RS485: BaudRate,N° of bit, parity, stop bit