

Modbus / MQTT Gateway

DAT3680IOT

FEATURES

- Interface Ethernet 10/100 Base-T MQTT, Modbus TCP
- RJ45 Connector and Serial interface RS485
- Configuration via integrated web server
- Industry 4.0 Applications
- Modbus RTU/TCP Master
- 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 DAT3680IOT gateway has a serial interface RS485 for Modbus RTU master and an ethernet interface for Modbus TCP master and MQTT with SSL/TLS. The DAT3680IOT is ideal for Industry 4.0 and IoT applications. It is characterized by a compact size that makes it suitable for mounting on DIN rail inside small electrical cabinets. All connections are made by removable terminals. The electrical isolation between lines provides effective protection against noise in industrial environments. A dedicated Watch-Dog hardware circuit manages the automatic reset of the device. The signaling LEDs allow an immediate diagnosis of the functions. The power supply of the device requires a voltage between 10Vdc and 30Vdc. The device is protected against power polarity reversal.

USER INSTRUCTIONS

DAT3680IOT gateway is an industrial device specifically designed to implement data collection systems which operate according to the Internet of Things (IoT) paradigms; it allows bidirectional communication between field equipment and the Cloud software platform. It provides a Modbus RTU master interface on RS485 or Modbus TCP over Ethernet through which it sends queries to the devices distributed in the field. The variables read by Modbus slave devices are sent to the Cloud via MQTT protocol with SSL / TLS client certificate authentication on variation or fixed time. Through web pages it is possible to define the variables to be sampled of any Modbus device, or to recall the devices present in the library (devices of DAT3000, DAT8000, DAT10000 series). It is also possible to add generic slave devices with Modbus RTU or Modbus TCP protocol.

It is possible to configure the MQTT message structure in order to better adapt to the different MQTT Brokers available (Amazon AWS, IBM Watson IoT, Mosquitto etc.). The configuration of the device is carried out via Web pages and it is possible to remotely update the firmware.

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		Power Supply	10 ÷ 30 Vdc
Typology	Client/Server	Typology	Master	Current Consumption	300 mA max
Ethernet interface	Ethernet 10/100Base-T	Baud Rate	up to 115.2 Kbps	Reverse polarity protection	40 Vdc.
Protocol	Modbus TCP, MQTT	Parity	Even / Odd / None	ISOLATION	
		Stop Bit	1 or 2	Ethernet / RS485	1500 Vac, 50 Hz, 1 min
		Number of modules in multipoint	32 max.	Ethernet / Power Supply	1000 Vac, 50 Hz, 1 min.
		Switching time TX/RX (RS485)	150 us	Power supply / RS485	1500 Vac, 50 Hz, 1 min
		Max. recommended Distance / Baud Rate Ratio(1)		ENVIRONMENTAL CONDITIONS	
		1.2 Km @ 38400 bps		Operative Temperature	-20°C ÷ 60°C
		2 Km @ 19200 bps		Storage Temperature	-40°C ÷ 85°C
		3 Km @ 9600 bps		Humidity (not condensed)	0 .. 90 %
		4 Km @ 4800 bps		Maximum Altitude	2000 m
		5 Km @ 2400 bps		Installation	Indoor
		7 Km @ 1200 bps		Category of installation	II
				Pollution Degree	2
				MECHANICAL SPECIFICATIONS	
				Material	Self-extinguish plastic
				IP Code	IP20
				Wiring	
				Ethernet	RJ-45
				Wiring	wires with diameter 0.8÷2.1 mm ²
					AWG 14-18
				Tightening Torque	0.5 N m
				Mounting	in compliance with DIN rail standard EN-50022
				Weight	about 200 g
				CERTIFICATIONS	
				EMC (for the Industrial Environments)	
				Immunity	EN 61000-6-2
				Emission	EN 61000-6-4
				UKCA (ref S.I. 2016 N°1091)	
				Immunity	BS EN 61000-6-2
				Emission	BS EN 61000-6-4

(1) – The maximum distance depends of: number of devices connected, type of cabling, noises, etc...

INSTALLATION INSTRUCTIONS

The DAT3680IOT 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.

DEFAULT ETHERNET CONFIGURATION

- IP address : 192.168.1.100
- Subnet Mask : 255.255.255.0
- Gateway Mask: 192.168.1.1

CONFIGURATION BY WEB SERVER

To configure the device by web server:

- Connect to the device via an internet browser
- Insert User Name (admin) and Password (password)
- Select the language
- Click on CHANNEL, DEVICES or MQTT
- Modify the parameters as desired
- Click on "Save"

FUNCTION BUTTON "RST" FOR RECOVERY MODE

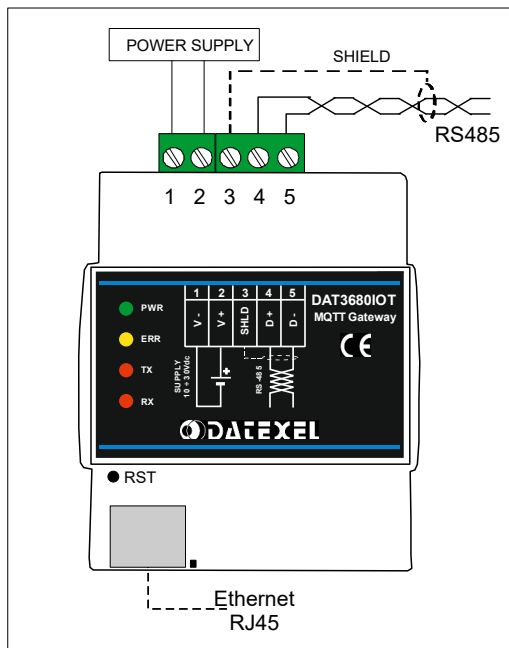
In order to access the Recovery Mode, power on the gateway by keeping the "RST" button on the front of the instrument pressed for at least 5 seconds, the device will then start in Recovery Mode (see User Guide). According to your needs, it will be possible to do:

- Full reset
- Hostname reset
- Network interface reset
- Login credentials reset
- Configuration reset

In Recovery Mode it is also possible to:

- Check and correct file system errors
- Download stored logs
- Clean temporary files, logs, etc.
- Update firmware

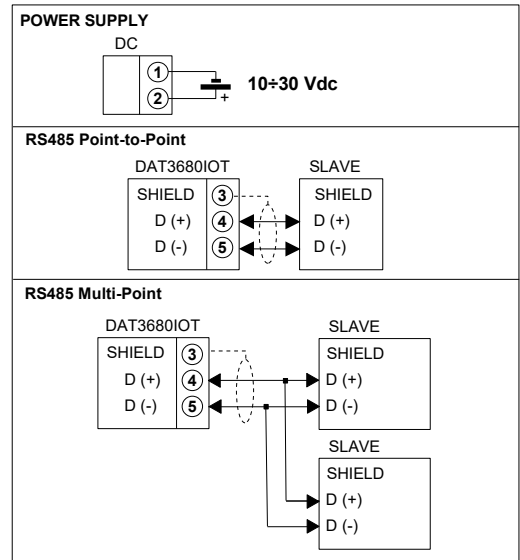
WIRING



ISOLATIONS STRUCTURE



CONNECTIONS

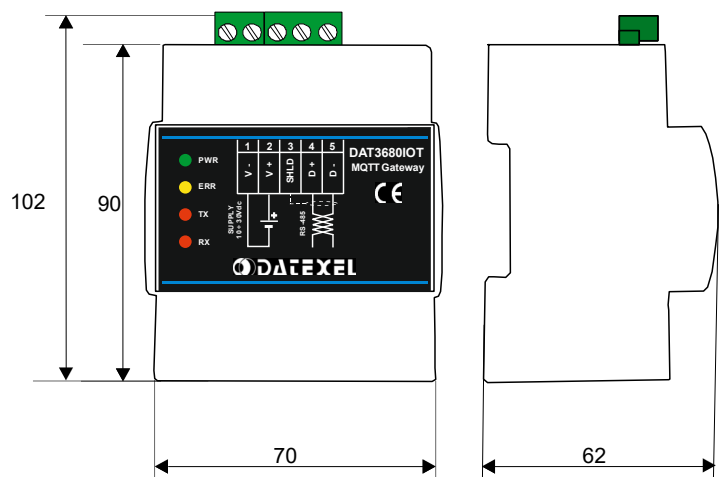


LIGHT SIGNALLING

LED	COLOR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
ERROR	YELLOW	OFF	No error
		BLINK SLOW-FAST-FAST	Boot (about 60 sec, few minutes for the first boot)
		BLINK SLOW	Communication error (Modbus, MQTT etc.)
		BLINK FAST	Watchdog Restart
TX	RED	BLINK	Stream of data over transmission line of RS-485
		OFF	No data over transmission line of RS-485
RX	RED	BLINK	Stream of data over receiving line of RS-485
		OFF	No data over transmission line of RS-485

MECHANICAL DIMENSIONS (mm)

VIEW WITH TERMINAL COVER



HOW TO ORDER

"DAT3680IOT"

Configuration:

IP Address:

SubNet Mask:

Gateway:

RS485 settings: Baud Rate, bit, parity, stop bit

☐ = Requested
☐ = Optional