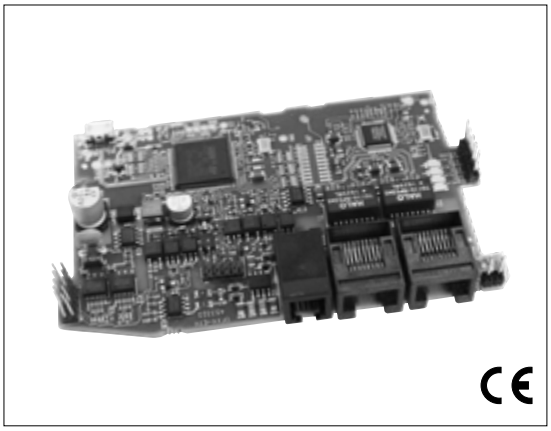
GEFRAN

GFX4-ETH

ETHERNET MODBUS/TCP SLAVE MODULE



Main characteristics

- *Modbus/TCP slave- Modbus RTU Master*
- *Network address from rotary switches*
- *Baud rate 10/100Mbit/s settable via Dip-switch*
- *Internal installation*

Code 80408D_01-2021

PROFILE

The GFX4-ETH module can be installed inside power controller products and expands communication by means of the Modbus/TCP protocol. The module has two communication channels:

- *the first channel is a serial port with Modbus RTU protocol, and connects a maximum of four power controller devices including the product on which the module is installed, for total of 16 controlled zones (4x4);*
- *the second channel is a dual ethernet port with a Modbus/TCP slave protocol permitting connection with a Modbus/TCP master.*

The node address is assigned by means of the two rotary switches (1...99) on the product that houses the module or by means of a software message.

The network Master (typically a PLC) recognizes the slave node by means of this address.

The slave node recognized by the Master consists of the power controller that houses the module plus the power controller products connected to the Modbus serial port.

The expansion can be installed when the above-mentioned products are ordered or at a later date.

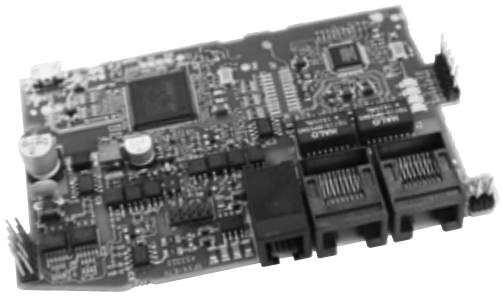
The card has an Ethernet switch with two ports connected to two RJ-45 connectors. The two connectors are interchangeable for connection of the module to the master PLC. The presence of the second connector simplifies wiring of multiple devices, permitting "cascade" connection rather than point to point connection via a single switch.

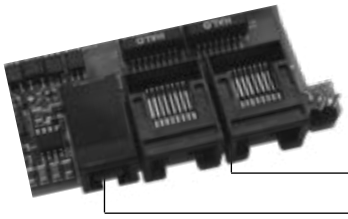
TECHNICAL DATA

Porta ETHERNET	
Protocol	Modbus/TCP (slave)
Function	Connects GFX4/GFXTERMO4 to a Modbus/TCP Master device. Integrated Ethernet switch.
Baud rate	10/100 Mbit/s, Half/Full Duplex Autosensing
Connector	2 x RJ45 CAT5 10/100 BaseT conforming
Address	HW: ID Modbus SW: MAC Address, IP Address
I/O dimensions	16 words in Input and 16 words in Output for zone
Msg. supported	01, 02, 03, 04, 05, 06, 0f, 10
Diagnostics	Error counter to serial link
GREEN led	
ON	Packet activity
YELLOW led	
ON	Link integrity
Modbus port	
Protocol	ModBus RTU (master) RS485 serial
Function	Connects power controller to ModBus RTU network
Baud rate	Autodetected
Connector	RJ10 4-4
General characteristics	
Dimensions	106x56x17mm (H x L x D)
Installation	Inside module
Weight	35g
Power supply	+24V, 3VA max. taken directly from power controller
Working/storage temperature	0...40°C/-20...70°C
Relative humidity	20...85% RH non-condensing
Ambient conditions of use	nternal use, altitude up to 2000m
Installation	Inside module (see "INSTRUCTION AND WARNING" manual)
Approvals and certifications	See power controller modules

ELECTRICAL CONNECTIONS

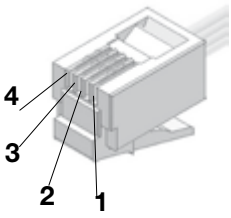
Connectors / LEDs

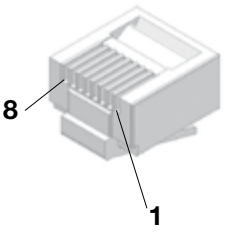




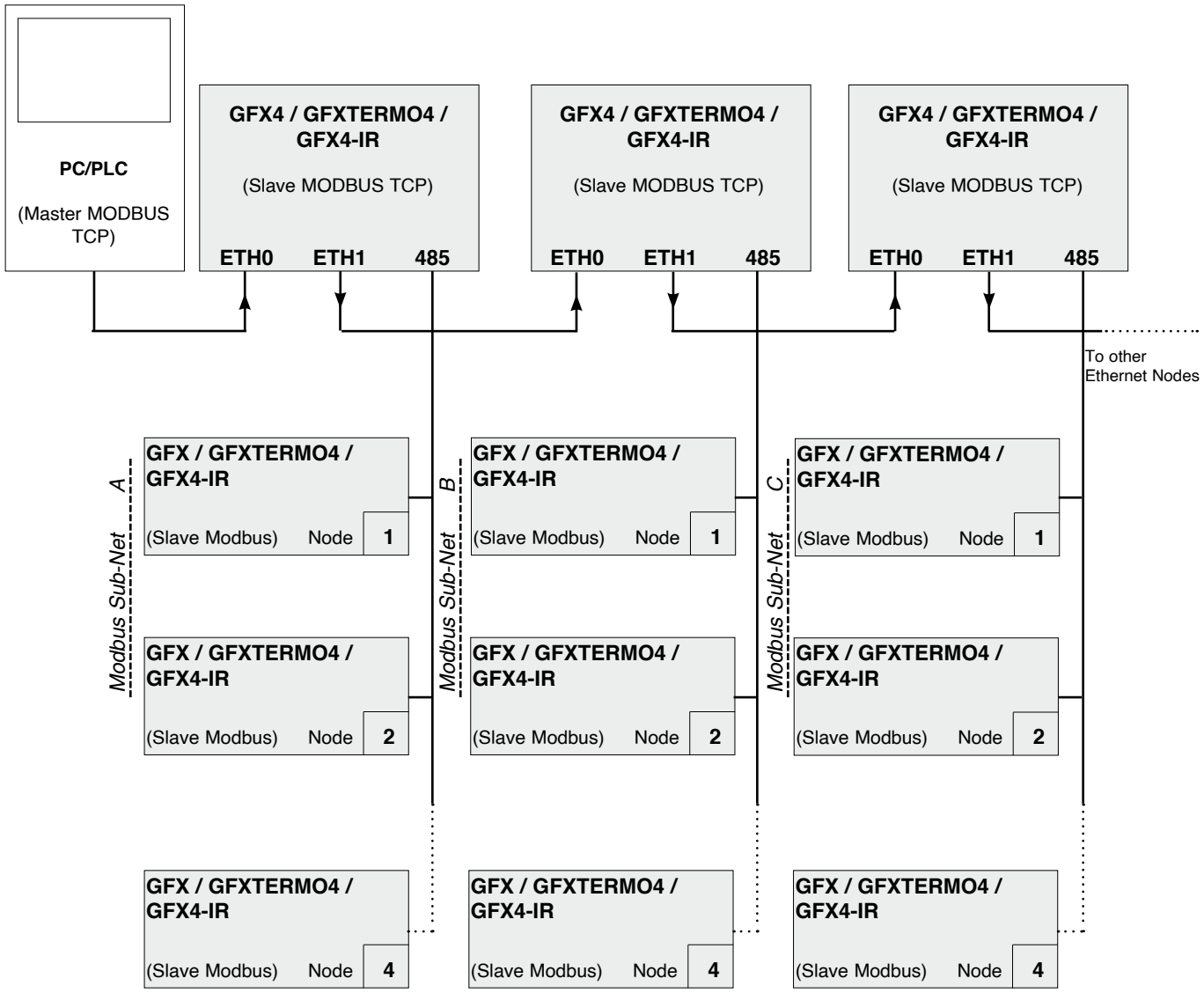
S5 female connector

S4 female connector

Connector J2 RJ10 4-4 pin	Nr. Pin	Name	Decription	Note
	1	GND1 (**)	-	**(**)** Connect the GND signal between Modbus devices with a line distance > 100 m.
	2	Tx/Rx+	Data reception/transmission (A+)	
	3	Tx/Rx-	Data reception/transmission (B-)	
	4	+V (reserved)	-	
Cable type: Flat telephone cable for pin 4-4 conductor 28AWG				

Connector RJ45	Nr. Pin	Name	Decription	Note
	1	TX+	Data + transmission	
	2	TX-	Data - transmission	
	3	RX+	Data + reception	
	4	n.c.		
	5	n.c.		
	6	RX-	Data - reception	
	7	n.c.		
	8	n.c.		
Cable type: Use standard category 6 cable according to TIA/EIA-568A				

CONNECTION EXAMPLE



INSTALLATION NOTE:
To apply to each Ethernet cable a ferrite (cod. 42509, supplied with the board) close to the ETH0 and ETH1 connectors.

SETTINGS REQUIRED TO RESET THE CARD'S DEFAULT VALUES

1. *Turn on the instrument*
2. *Position rotary X10 = C and rotary X1 = 0*
3. *Wait at least 10 seconds*
4. *Turn off the instrument*
5. *Reposition the rotaries at the desired working value, between 1 and 99*
6. *Turn on the instrument again*

CARD CONFIGURATION

The GFX4-ETH card can also be configured using the "Modbus_TCP_card_configurator.exe" software application, available for download on the Gefran web site in the area dedicated to the card.

Serial communication time constraints in Modbus RTU

The following time constraints must be complied with in order to allow correct serial data exchange with the device:

Reading Word/Register parameters: Reading N consecutive parameters, with N from 1 to 16, requires a time of almost 50 ms. In this case the following read and write Modbus command, to the same node, must be sent after this interval time.

Writing Word/Register parameters: Writing N consecutive parameters, with N ranging from 1 to 16, if all values (maximum 16) on the device are updated, will take a time of:50ms + N x 80ms(*) with N from 1 to 16.

The times reported refer to the case in which the Baudrate of the serial line (parameter bAu Modbus address 45) is 19200.

(*) If STATUS_W parameters (Modbus address 305) are included in the write request and their value is different from the one currently present in the slave, the time required to write each one will be 240ms (instead of 80ms).

ORDER CODE

GFX4	ETH

GEFRAN spa reserves the right to make aesthetic or functional changes at any time and without notice.

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