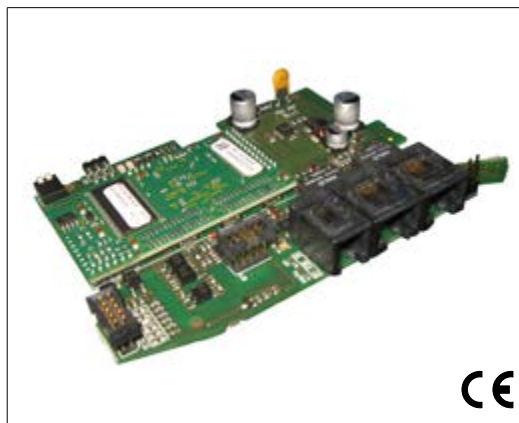# GEFRAN

GFX4-ETH1/ETH5/ETH8
ETHERNET IP SLAVE MODULE

Main characteristics

- *Ethernet-IP slave- Modbus RTU Master*
- *Configurable IP address via DHCPBOOTP or fixed address*
- *Baud rate 10/100Mbit/s with recognition*
- *Auto-Negotiation*
- *Auto-Crossover*
- *2 way Ethernet Switch*
- *Internal installation*

Code 80432C_01-2021

CE

PROFILO

The GFX4-ETH1/ETH5/ETH8 module installs inside GFX4/GFXTERMO4/GFX4-IR/GFW products and expands communication by providing ETH/IP protocol.

The module has two communication channels:

• Ethernet: 2 ports, integrated switch

• Modbus Master: allows communication with a maximum of 16 Slave devices.

Installation of the expansion can be requested when ordering the products or the expansion can be installed later.
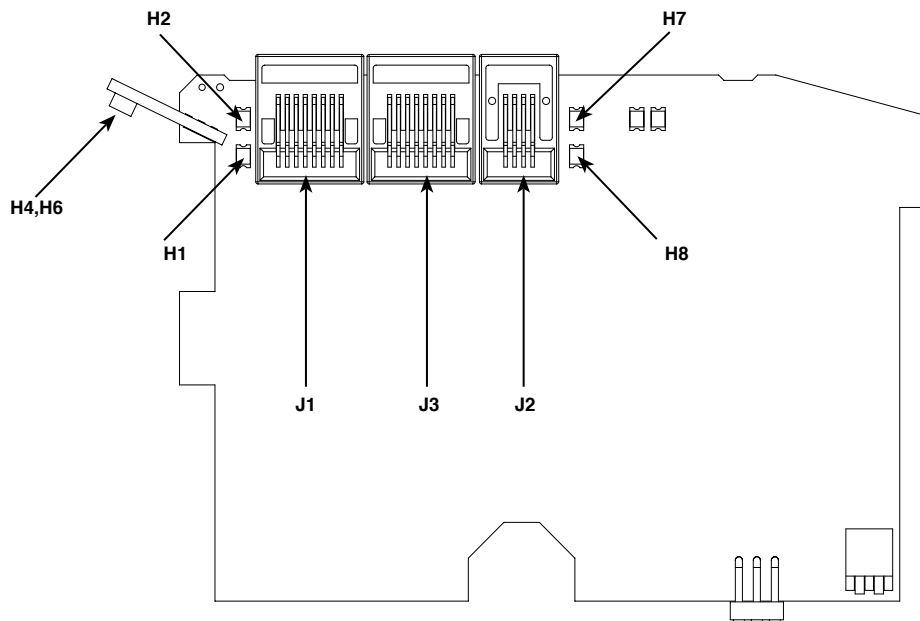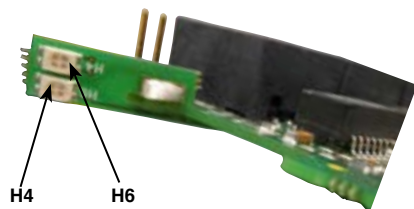
Notes:

- The GFX4-ETH1/ETH5/EHT8 card **CANNOT** be inserted in GFX4 / GFXTERMO4 / GFX4-IR/GFW products equipped with the 4 auxiliary inputs option (mV/TC Aux).
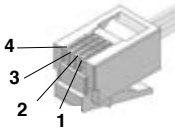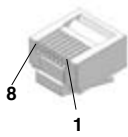
TECHNICAL DATA

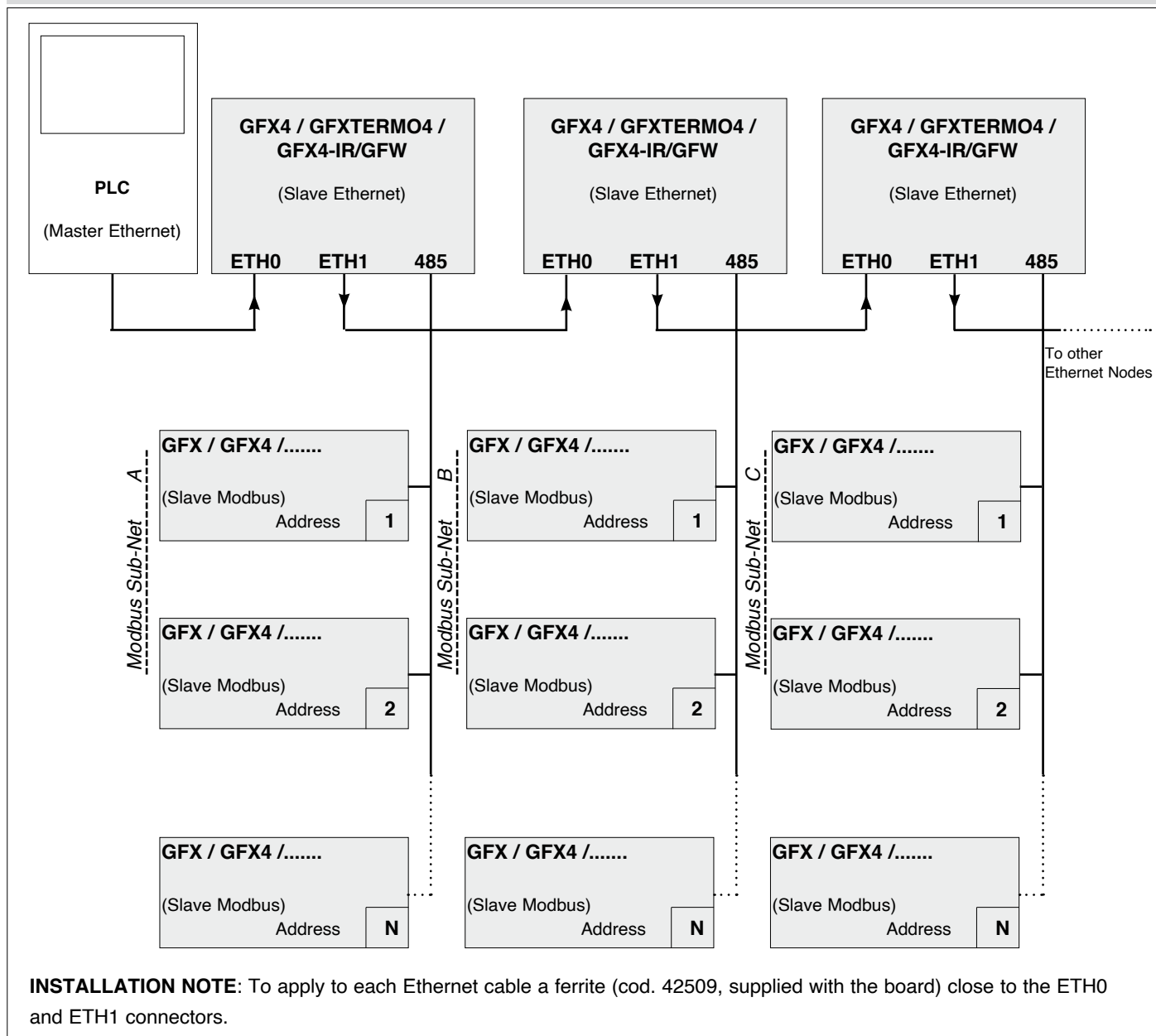| ETHERNET port	
Protocol	Ethernet-IP slave
Function	Connects GFX4 / GFXTERMO4/GFX4-IR/GFW to a Ethernet-IP master
Baud rate	10/100 Mbit/s automatic
Connector	RJ45 conforms CAT5 100 BaseT
Address	SW: MAC Address, IP Address, ID Modbus
Msg. supported	CIP Object 0x44 CIP Service 0x4B,4C,4D,4E,40,50
Diagnostics ETH0-Led Green (H1) ETH0-Led Red (H2) ETH1-Led Green (H8) ETH1-Led Red (H7)	for each ETHn port Module state Module state Network state Network state
Modbus port	
Protocol	ModBus RTU (master) RS485 serial
Function	Connects GFX4 / GFXTERMO4/GFX4-IR/GFW to ModBus RTU network
Baud rate	19200
Connector	RJ10 4-4 (max 32 nodes without repeater)
General characteristics	
Dimensions	106x76x17mm (H x W x D)
Installation	Inside module
Weight	35g
Power supply	+24Vdc, 3VA max. powered directly by GFX4 / GFXTERMO4 / GFX4-IR / GFW
Work/storage temperature	0...40°C/-20...70°C
Relative humidity	20...85% UR non-condensing
Ambient conditions for use	Internal use, altitude up to 2000m
Installation	Inside module (see manual "INSTRUCTIONS FOR USE AND WARNINGS")
Certifications	See GFX4/GFXTERMO4/GFX4-IR/GFW module

ELECTRICAL CONNECTIONS

H1	Led GREEN LINK	Port ETH0
H2	Led RED signal	Port ETH0
H7	Led RED activity	Port ETH1
H8	Led GREEN LINK	Port ETH1
H4	Led bicolor GREEN (H1) RED (H2)	Port ETH
H6	Led bicolor GREEN (H8) RED (H7)	Port ETH
J1	Connector	Port ETH0 (IN)
J3	Connector	Port ETH1 (OUT)
J2	Connector	Serial Modbus

Connector J2 RJ10 4-4 pin

	Pin N°	Name	Description	Notes
	1	GND1 (**)	-	**(**)** It is advisable to also connect the GND signal between Modbus devices with a line distance > 100 m
	2	Rx/Tx+	Data reception/ transmission (A)	
	3	Rx/Tx-	Data reception/ transmission (B)	
	4	+V (reserved)	-	

Cable type: flat telephonic for 4-4 pin 28AWG conductor

Connector J1 and J3 RJ45

	Pin N°	Name	Description	Notes
	1	TX+	-	
	2	TX-	Data transmission +	
	3	RX+	Data transmission -	
	4	n.c.	Data reception +	
	5	n.c.		
	6	RX-		
	7	n.c.	Data reception -	
	8	n.c.		

Cable type: use standard category 5 cable according to TIA/EIA-568B

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

Ethernet IP PROTOCOL

It is possible to order the Ethernet IP communication with the option E5 or with the option E8 (Conformance Test 15 – C.T. 15). In the following table are described the characteristics of the E8 protocol..

E8 ADDED CHARACTERISTICS (CONFORMANCE TEST 15 – C.T. 15)

FUNCTIONALITIES	DESCRIPTION
DLR	It allows to manage ring network configuration (if one slave is broken it is still possible to reach the other nodes present on the network by the alternative path)
Identity Reset	This function is requested to pass the certification test

WARNING: "In case of replacement of products with option E5, with new products with option E8 it is necessary to follow the procedure described in the "USER MANUAL (OPTION "E8") available on the web site www.gefran.com. To avoid any procedure it is still possible to order a product with option E5.

WARNING: " Inside Ethernet IP networks products GFX4/GFXTERMO4 version E5 and version E8 CAN NOT COHESIST"

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

F046330	GFX4	ETH1		For GFX4/GFXTERMO4/GFX4-IR/GFW Products

0	DHCP (*)
1	IP Address (**)

F058235	GFX4-IR	ETH5	For GFX4-IR products
F058234	GFX4	ETH5	For GFX4/GFXTERMO4 products
F076181	GFX4	ETH8	For GFX4-IR/GFX4/GFXTERMO4 products

(**) IP_Address `_ _ _ · _ _ _ · _ _ _ · _ _ _`

Netmask **2 5 5 · 2 5 5 · 2 5 5 · _ 0 _**

Gateway **_ 0 _ · _ 0 _ · _ 0 _ · _ 0 _**

(*) The product will be associated with an Ethernet Address (MAC)

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