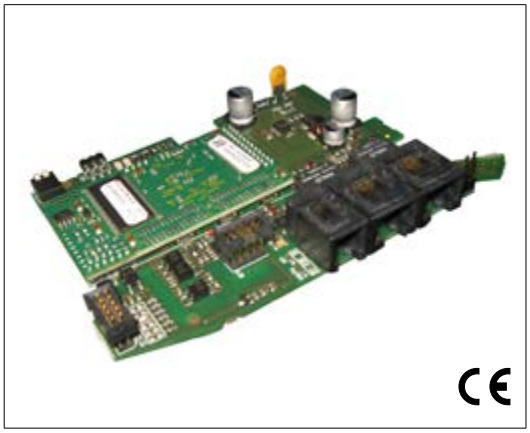
GEFRAN

Card for Ethernet communication with Profinet protocol



Main characteristics

- *PROFINET slave- Modbus RTU Master*
- *Baud rate 10/100 Base-TX*
- *Auto-Crossover*
- *Internal installation*

Code 80431B_01-2021

PROFILE

The Ethernet communication module with Profinet protocol is installed inside the products GFX4/GFXTERMO4/GFX4-IR and series GFW products and expands communication by providing PROFINET protocol. PROFINET IO certification available for GFX4-IR/GFX4/GFXTERMO4.

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.

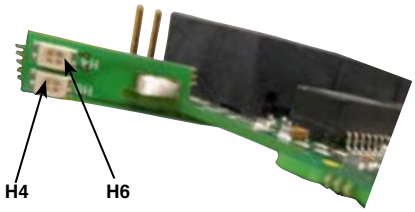
***Notes**:*

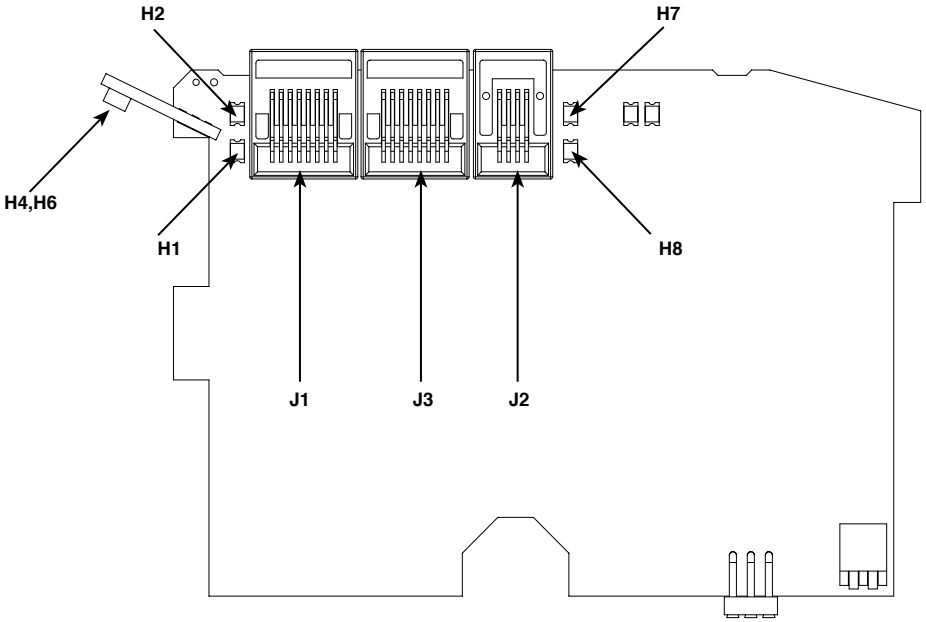
*- The card **CANNOT** be inserted in GFX4 / GFXTERMO4 / GFX4-IR products equipped with the 4 auxiliary inputs option (mV/TC Aux).*

TECHNICAL DATA

ETHERNET port	
Protocol	PROFINET - IO
Function	Connects GFX4 / GFXTERMO4 / GFX4-IR and series GFW to an PROFINET CONTROLLER
Baud rate	10/100 Mbit/s automatic
Connector	RJ45 conforms CAT5 100 BaseT
Address	DCP integrated switch
Msg. supported	Cyclical / Acyclical
Diagnostics ETH0-Led GREEN (H1) ETH0-Led RED (H2) ETH1-Led GREEN (H8) ETH1-Led RED (H7)	for each ETHn port Link Signal Link Activity
Modbus port	
Protocol	ModBus RTU (master) RS485 serial
Function	Connects GFX4 / GFXTERMO4 / GFX4IR / GFW to ModBus RTU network
Baud rate	19200
Connector	RJ10 4-4 (max 16 nodes without repeater)
General characteristics	
Dimensions	106x76x17mm (H x W x D)
Installation	Inside module
Weight	35g
Power supply requirement	+24Vdc, 3W max. directly taken from Power module where it is insert
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 modules

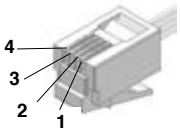
ELECTRICAL CONNECTIONS





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	Modbus serial

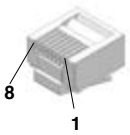
Connector J2 RJ10 4-4 pin



Pin N°	Name	Description	Note
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 (riservato)	-	

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

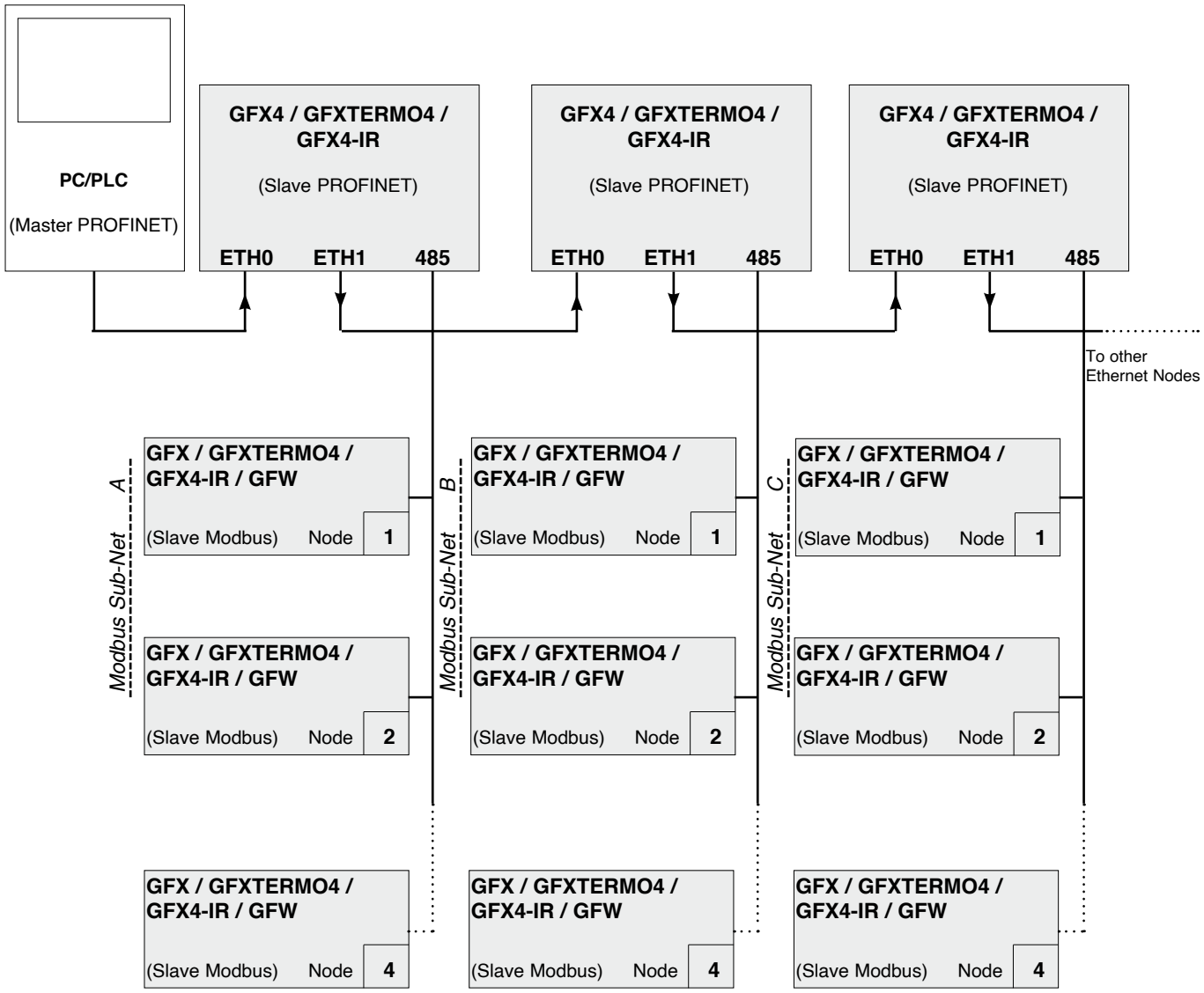
Connector J1 and J3 RJ45



Pin N°	Name	Description	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 5 cable according to TIA/EIA-568B

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.

Profinet PROTOCOLS

t is possible order Profinet boards with protocol version 2.2 (products with E4 option), or with version 2.3 (products with E6 option). In the table are described the features of the new protocol.

Table new features card version E6 (stack PROFINET spec. 2.3) compared to E4 (stack PROFINET spec. 2.2).

FUNCTION	DESCRIPTION
Media Redundancy Protocol client di tipo Bumpless	Lets get: • a time of zero reorganization of the network • no isochronous frames lost In case of interruption of the PROFINET communication loop
Fast Forwarding	It allows a reduction of the transit delay of the PROFINET package through each node of 50%
Dynamic Frame Packaging	It allows to optimize the bandwidth, and to arrive at a theoretical cycle time for IRT traffic equal to 32.5us instead of 1ms

ATTENTION: "In case of replacement and/or insertion of version E6 in network using previous version ["E4"] the PLC application must be recompiled with the respective files GSDML, matched with communication module E6.
If application SW will not be recompiled, the product with option E6 will not be managed. To avoid this procedure, it is possible order an E4 device".

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

F054949	**GFX4**	**ETH4**
F072903	**GFW**	**ETH4**
F074702	**GFW**	**ETH4-600**
F074703	**GFW**	**ETH6**
F074704	**GFW**	**ETH6-600**

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