

4. IF787

4.1 General Information

The interface module IF787 is an aPCI module and can be installed in every corresponding interface module slot e. g. in the CP360.

The IF787 is a Powerlink interface module. It can be used as a manager or bus controller module. The connection is made via an RJ45 port.

The module is also equipped with a CAN interface, with its own object buffers in send and receive direction.

4.2 Order Data

Model No.	Short Description	Image
3IF787.9	aPCI interface module 1 ETHERNET Powerlink interface, manager or controller function, 1 CAN interface, max. 500 kbps, object buffer in send and receive direction, network capable, electrically isolated. Order TB704 terminal blocks separately.	
0TB704.9	Accessory, terminal block, 4pin, screw clamps, 1.5 mm ²	
0TB704.91	Accessory, terminal block, 4pin, cage clamps, 2.5 mm ²	
Note: The 4 pin terminal block TB704 is not contained in the delivery!		

Table 40: IF787 order data

4.3 Technical Data

Product ID	IF787
General Information	
C-UL-US Listed	In preparation
Slot	aPCI insert
Interfaces	1 x CAN 1 x ETHERNET Powerlink
Power Consumption	
5 V	Max. 3 W
24 V	---
Total	Max. 3 W
Application Interface IF1	
Type	CAN
Controllers	Controller SJA 1000
Design	4 Pin Multipoint Connector
Electrical Isolation	Yes
Maximum Distance	1,000 m
Maximum Baud Rate	
Bus Length ≤60 m	500 kBit/s
Bus Length ≤200 m	250 kBit/s
Bus Length ≤1,000 m	50 kBit/s
Network Capable	Yes
Bus Termination Resistor	Optional (externally wired)
Application Interface IF2	
Type	ETHERNET Powerlink Interface
Standard (Compliance)	ANSI/IEEE 802.3
Data Rate	100 Mbps
Signal	100 Base-T
Port Design	Shielded RJ45 port
Line Length Between Two Stations (Segment Length)	Max. 100 m

Table 41: IF787 technical data

4.4 Operational and Connection Elements

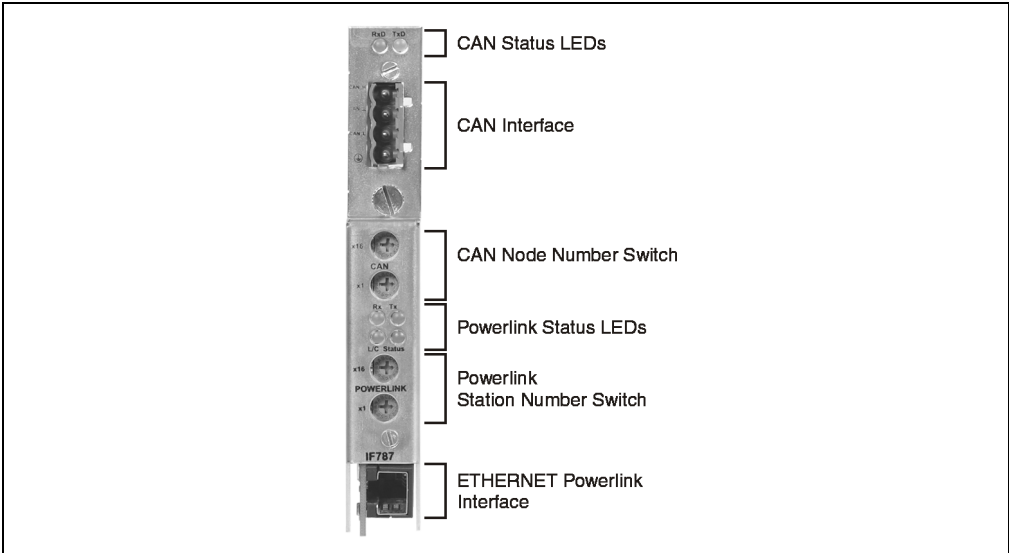


Figure 13: IF787 operational and connection elements

4.5 Status Display

4.5.1 CAN Interface

Image	LED	Color	Description
	RxD	Orange	The module receives data via the CAN interface.
	TxD	Orange	The module sends data via the CAN interface.

Table 42: IF787 status display CAN interface

4.5.2 ETHERNET Powerlink Interface

Image	LED	Color	Description
ETHERNET Powerlink 	Status	Red/Green	See Section "Status LED", on page 49.
	Tx	Orange	The Powerlink station is sending data.
	Rx	Orange	The Rx LED is always lit when Powerlink activity is present on the bus.
	L/C	Red/Green	Green: Link Red: Collision

Table 43: IF787 status display ETHERNET Powerlink interface

Status LED

Boot Phase

During booting, the red LED is lit. The red LED goes out and the green LED is switched on after the initialization routines are carried out with no errors.

Operation

During operation, the status LED indicate the following states:

Status LED		Status which is found in the Powerlink station
Green	Red	
On	Off	The Powerlink station is running with no errors.
Off	On	A fatal system error has occurred. The error type can be read using the PLC log book. It concerns an irreparable problem. The system cannot properly carry out its tasks. This status can only be changed by resetting the module.
Blinking Alternately		Powerlink Manager failed This error code can only occur in bus controller operation i.e. the set station number lies within the range \$01 - \$FD.
Off	Blinking	System Failure. The red LED blinks an error code (see Section "System Failure Error Codes", on page 50).

Table 44: IF787 status LED

System Failure Error Codes

The error is displayed via the red status LED using four switch-on phases. The switch-on phases are either 150 ms or 600 ms long. Error code outputs are repeated cyclically every 2 seconds.

Legend: • 150 ms
 – 600 ms
 Pause 2 s delay

Description of Error	Error code displayed by red status LED									
Stack Overflow	•	•	•	•	Pause	•	•	•	•	Pause
RAM Error	•	•	•	—	Pause	•	•	•	—	Pause
Undefined Address: Access to a Non-Existent Address.	•	•	—	•	Pause	•	•	—	•	Pause
Instruction Fetch Memory Abort: Invalid Memory Access During Instruction Fetch (e. g. UINT access of an uneven address).	•	•	—	—	Pause	•	•	—	—	Pause
Data Access Memory Abort: Invalid Memory Access During Data Access (e. g. UINT access of an uneven address).	•	—	•	•	Pause	•	—	•	•	Pause
Error when Programming the FPGA.	•	—	—	•	Pause	•	—	—	•	Pause
Invalid station number (e. g. \$FE or \$FF)	•	—	—	—	Pause	•	—	—	—	Pause

Table 45: IF787 system failure error codes

4.6 ETHERNET Powerlink Station Number



Figure 14: IF787 ETHERNET Powerlink station number switch

The station number for the Powerlink station is set using both number switches. Station numbers are permitted between \$00 and \$FD.

Switch Position	Description
\$00	Operated as manager station.
\$01 - \$FD	Station Number for Powerlink Station. Operated as controller station.
\$FE	Reserved, switch position is not permitted.
\$FF	Reserved, switch position is not permitted.

Table 46: IF787 ETHERNET Powerlink station number

4.7 ETHERNET Powerlink Interface (IF2)



Figure 15: IF787 ETHERNET Powerlink interface (IF2)

Pin	Assignment
1	RXD
2	RXD\
3	TXD
4	Termination
5	Termination
6	TXD\
7	Termination
8	Termination

Table 47: IF787 pin assignment for ETHERNET Powerlink interface (IF2)

RXD ... Receive Data

TXD ... Transmit Data

4.8 CAN node number



Figure 16: IF787 CAN node number switch

The node number for the CAN interface (IF1) is set with the two hex switches.

The CAN node number can also be set by the software (in preparation).

4.9 CAN Interface (IF1)

A 120 Ω bus terminating resistor is included with delivery. The resistor can be inserted between pin 1 and pin 3.

Interface	Description	Pin Assignments	
		Terminal	CAN
Application Interface CAN 	The electrically isolated CAN interface is a 4 pin multipoint connector. LEDs show on the interface whether data is being received (RxD) or sent (TxD). Max. Baud Rate: 500 kBit/s Bus Length: ≤60 m 250 kBit/s Bus Length: ≤200 m 50 kBit/s Bus Length: ≤1,000 m	1	CAN_H
		2	CAN_GND
		3	CAN_L
		4	Shield

Table 48: IF787 CAN interface (IF1)