

# 1.1 IF782

## 1.1.1 General Information

The IF782 interface module is an aPCI module and can be installed in all corresponding interface module slots (e. g. in the CP360).

The IF782 is a Powerlink interface module. It can be used as a managing or controlled node. The connection is made via an RJ45 port.

The module is also equipped with an RS485 interface.

## 1.1.2 Order Data


Model Number	Short Description	Image
	<b>Interface Module</b>	
3IF782.9	aPCI interface module, 1 ETHERNET Powerlink interface, managing or controlled node, 1 RS485 interface on terminal block, terminal block 1 x TB704 must be ordered separately.	
	<b>Required Accessory</b>	
0TB704.9	Accessory terminal block, 4-pin, screw clamp, 1.5 mm²	
0TB704.91	Accessory terminal block, 4-pin, cage clamps, 2.5 mm²	

Table 1: IF782 order data

**1.1.3 Technical Data**

<b>Product ID</b>	<b>IF782</b>
<b>Short Description</b>	
Communication Module	1 x RS485, 1 x ETHERNET Powerlink Managing or Controlled Node
<b>interfaces</b>	
Interface IF1 Type Design Maximum Transfer Rate	RS485 4-pin multipoint connector 115.2 kBit/sec
Interface IF2 Fieldbus Type Design Transfer Rate Cable Length	ETHERNET Powerlink 100 Base-T (ANSI/IEEE 802.3) Shielded RJ45 port 100 MBit/s Max. 100 m between two stations (segment length)
<b>General Information</b>	
Status Display	Send/receive data for IF1 Status of the Powerlink station, network activity, link/collision for IF2
Diagnostics Data Transfer (IF1) Station Status (IF2) Bus Function (IF2)	Yes, with status LEDs Yes, with status LED and software status Yes, with status LED and software status
Electrical Isolation PLC - IFx IF1 - IF2	Yes Yes
Power Input 3.3 V 5 V Total	2.5 W 0.3 W 2.8 W
Certification	CE, GOST-R
<b>Mechanical Characteristics</b>	
Slot	Insert e.g. in CP360
Protection	IP20
Operating/Storage Temperature	0 °C to +60 °C / -25 °C to +70 °C
Humidity	5 to 95% (non-condensing)
Note	Order 1 x TB704 terminal block separately

Table 2: IF782 technical data

### 1.1.4 Additional Technical Data

Name	IF782
<b>IF1 interface, RS485</b>	
Controller	UART Type 16C550 compatible
FIFO	16 bytes in send and receive direction
Maximum Distance	1200 m
Network Capable	Yes
Bus Termination Resistor	The bus termination 0AC916.9 is available from B&R. <sup>1)</sup>
<b>IF2 interface, ETHERNET Powerlink</b>	
In/Out Buffer	20 KByte <sup>2)</sup>

Table 3: IF782 additional technical data

1) The active bus termination allows the network to be terminated independent of the supply for the communication modules. The supply voltage for the active bus termination is 120 / 230 VAC.

2) Beginning with firmware version V 50. Before that 11 KByte.

### 1.1.5 Operational and Connection Elements

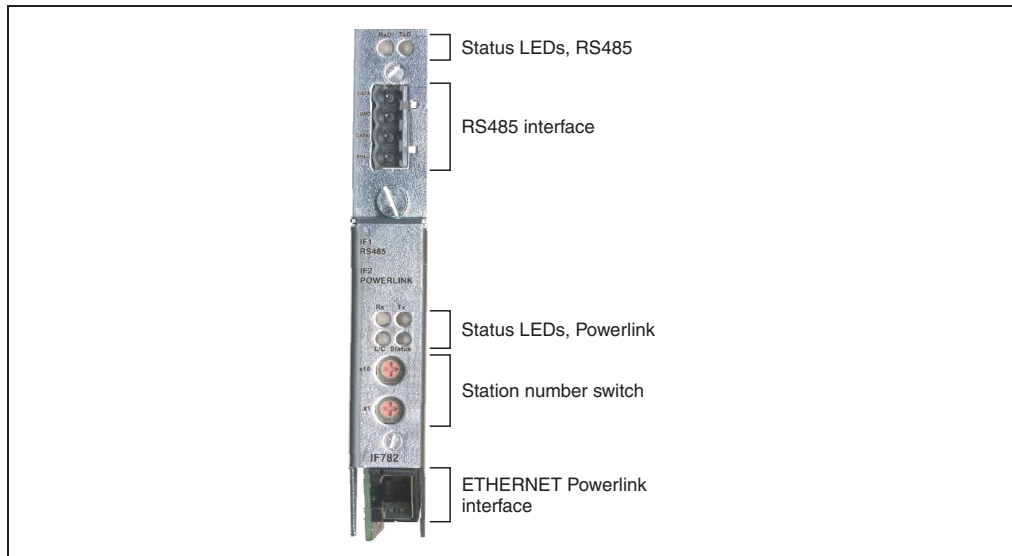


Figure 1: IF782 operational and connection elements

### 1.1.6 Status Display RS485 Interface


Image	LED	Color	Description
	RXD	Orange	The module receives data via the RS485 interface.
	TxD	Orange	The module sends data via the RS485 interface.

Table 4: IF782 status display RS485 interface

### 1.1.7 Status Display ETHERNET Powerlink Interface


Image	LED	Color	Description
	Status	Red/Green	See section "Status LED", on Page 6.
	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 5: IF782 status display ETHERNET Powerlink interface

## Status LED

### Boot Phase

The red LED is lit during booting. After the initialization routines are executed without errors, the status LED changes from red to green.

### Operation

During operation, the status LEDs indicate the following states:

Status LED		Status of 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 logbook. 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		The Powerlink managing node failed. This error code can only occur in controlled node operation. i.e. the set station number lies within the range \$01 - \$FD.
Off	Blinking	System failure. The red blinking LED signals an error code (see Section "System halt error codes", on Page 7).

Table 6: IF782 status LED

## System halt 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 after 2 seconds has passed.

Legend:

- ... 150 ms
- ... 600 ms
- Pause ... 2 s delay

Error Description	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 7: IF782 system failure error codes

## 1.1.8 ETHERNET Powerlink Station Number

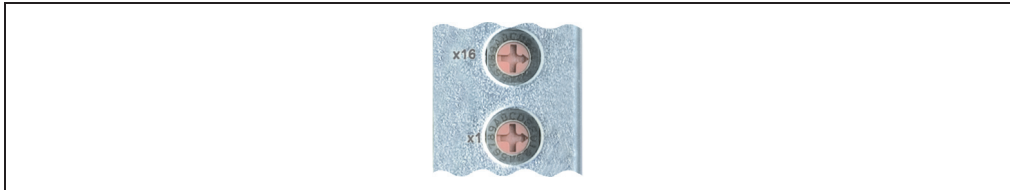


Figure 2: IF782 station number switch

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	Operation as managing node.
\$01 - \$FD	Station number for Powerlink station. Operation as controlled node.
\$FE	Reserved, switch position is not permitted.
\$FF	Reserved, switch position is not permitted.

Table 8: IF782 station number

### 1.1.9 ETHERNET Powerlink Interface (IF2)

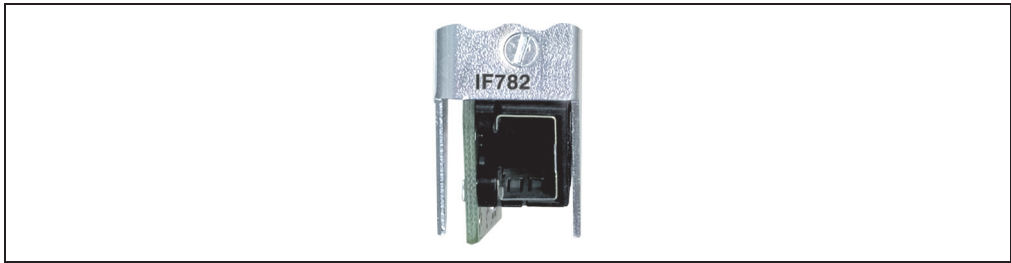


Figure 3: IF782 ETHERNET Powerlink interface (IF2)

Pin	Assignment	
1	RxD	Receive Data
2	RxD\	Receive Data\
3	TxD	Transmit Data
4	Termination	
5	Termination	
6	TxD\	Transmit Data\
7	Termination	
8	Termination	

Table 9: IF782 pin assignment for ETHERNET Powerlink interface (IF2)

### 1.1.10 RS485 Interface (IF1)

Interface	Description	Pin Assignments		
<p>Application Interface RS485</p> <p>4-pin multipoint connector</p>	<p>The RS485 interface is electrically isolated.</p> <p>LEDs show on the interface whether data is being received (RxD) or sent (TxD).</p> <p>Maximum Transfer Rate: 115.2 kBit/s Max. cable length: 1200 m</p>	<b>Terminal</b>	<b>RS485</b>	
		1	DATA	Data
		2	GND	Ground
		3	DATA\	Data\
		4	SHLD	Shield

Table 10: IF782 RS485 interface (IF1)

### 1.1.11 Firmware

#### SG3

The IF782 module is not supported. The IF686 module can be used for these targets.

#### SG4

The firmware is a component of the PLC operating system of B&R Automation Runtime™. It is loaded to the IF782 module during every restart.

