15.12 IF686

15.12.1 General Information

The module IF686 is a Powerlink interface module. It can be used as a manager or bus controller module. The connection is made via an RJ45 port.

15.12.2 Order Data

Model Number	Short Description	Figure
3IF686.9	2005 interface module, 1 ETHERNET Powerlink interface, manager or controller function, electrically isolated	

Table 353: IF686 order data

15.12.3 Technical Data

Product ID	IF686
General Information	
C-UL-US Listed	In preparation
Slot	Insert e.g. in CP260, IF260, IF060
Interface	1 x ETHERNET Powerlink

Power Consumption
  5 V
  24 V
  Total
	Max. 1.76 W
	--- 	
	Max. 1.76 W

Table 354: IF686 technical data

Product ID	IF686
ETHERNET Powerlink Interface	
Standard (Compliance)	ANSI/IEEE 802.3
In/Out Buffer	11 KB
Data Rate	100 Mbps
Signal	100 Base-T
Port Design	Shielded RJ45 port
Line Length Between Two Stations (Segment Length)	Max. 100 m

Table 354: IF686 technical data (cont.)

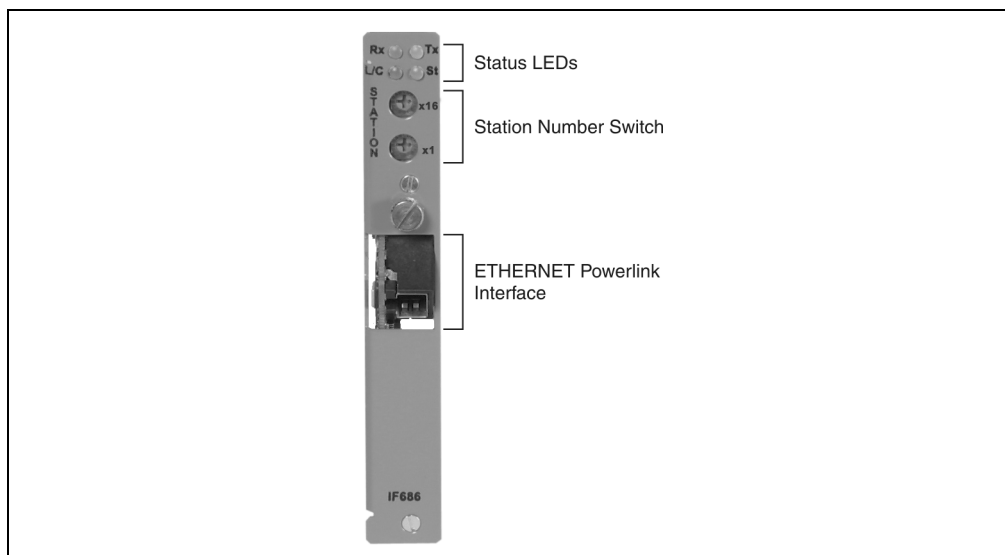### 15.12.4 Operational and Connection Elements

Figure 191: IF686 operational and connection elements

15.12.5 Status Display

Figure	LED	Color	Description
	St	Red/Green	See "Status LED", on page 534.
	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 355: IF686 status display

Status LED

Boot Phase

The red LED is lit during booting. After selecting the boot block, the LED indicates which block is being booted from:

Status LED Red Blinking	Boot Block
Blinking slowly twice	A
Blinking Slowly Three Times	B

Table 356: IF686 boot block indicator

After the initialization routines are executed without errors, the status LED changes from red to green.

Operation

During operation, the status LED 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 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 blinking LED signals an error code (see Section "System Failure Error Codes", on page 535).

Table 357: IF686 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 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 358: IF686 system failure error codes
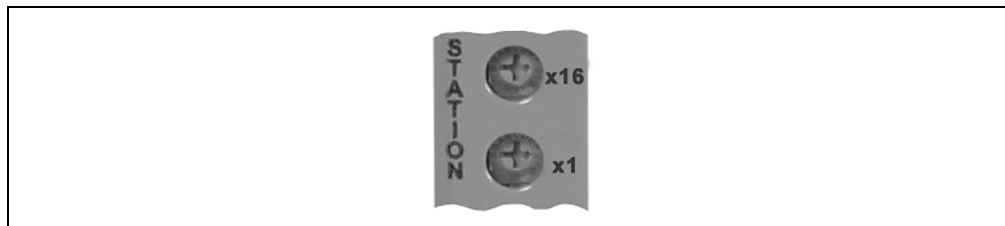
15.12.6 ETHERNET Powerlink Station Number

Figure 192: IF686 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 359: IF686 station number

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B&R 2005 Modules

15.12.7 ETHERNET Powerlink interface
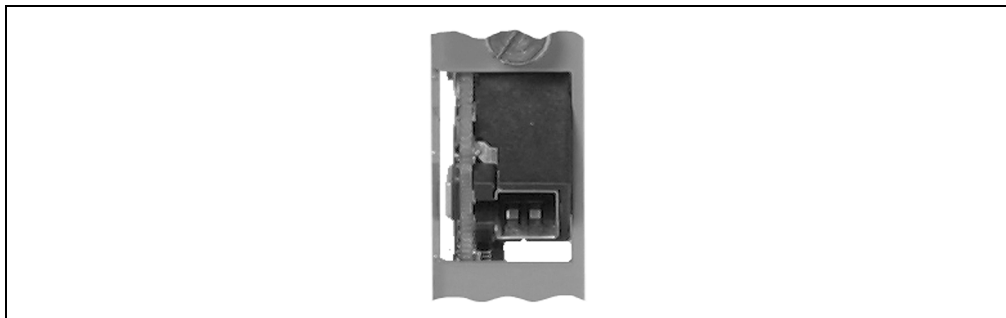
Figure 193: IF686 ETHERNET Powerlink interface

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

Table 360: IF686 pin assignment for ETHERNET Powerlink interface

RXD ... Receive Data   TXD ... Transmit Data

15.12.8 Firmware Update

The firmware update takes place automatically via the CPU (see online help in B&R Automation Studio™: Powerlink - Firmware Update). If an IF686 is operated in controller mode, then it can only be updated locally and not via the Powerlink network.

SG3

The firmware update takes place automatically if the Powerlink library and the data object plfif686.br are present in the PLC.

SG4

No firmware update for the IF686 module is supported at the moment.