15.2 EX282

15.2.1 General Information

The EX282 module is a Powerlink bus controller module. It is equipped with an internal hub with two RJ45 sockets.

The Powerlink bus controller is operated in an expansion slot on power supply module PS465.

The following should be noted:

- Only I/O modules are allowed to be operated
- The digital mixed module DM455 is not supported
- System modules are not supported

15.2.2 Order Data

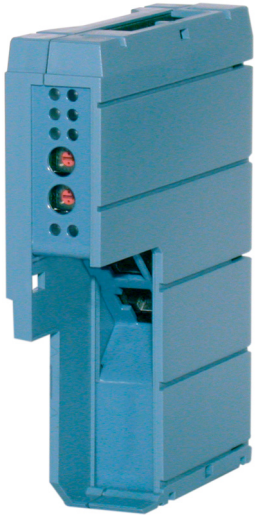
Model Number	Short Description	Figure
3EX282.6	2005 ETHERNET Powerlink bus controller, 2 ETHERNET Powerlink interfaces, electrically isolated, power supply module insert	

Table 307: EX282 order data

15.2.3 Technical Data

Product ID	EX282
General Information	
C-UL-US Listed	Yes
Slot	Insert for power supply PS465
Power Consumption 5 V 24 V Total	 Max. 3.8 W --- Max. 3.8 W
Peripheral	
Diagnosis LEDs	Yes
Station Number Dial	For setting the Powerlink station number
ETHERNET Powerlink Interface	
Standard (Compliance)	ANSI/IEEE 802.3
Data Rate	100 Mbps
Signal	100 Base-T
Port Design	Internal 2x hub 2 x shielded RJ45 port
Line Length Between Two Stations (Segment Length)	Max. 100 m

Table 308: EX282 technical data

15.2.4 Operational and Connection Elements

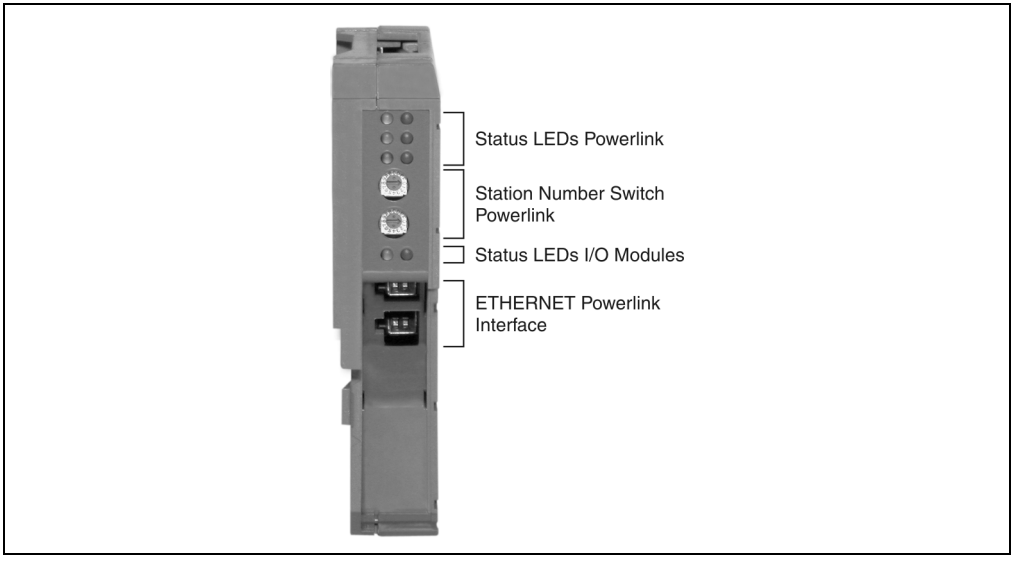


Figure 179: EX282 operational and connection elements

15.2.5 Status Display

Status of I/O Modules

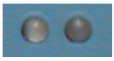
Figure	LED	Color	Description
RUN  I/O	RUN	Green	Blinking ... No I/O-module registered Lit .... At least one I/O-module is registered
	I/O	Red	The LED is lit when a registered I/O-module is faulty or not available.

Table 309: EX282 status display

ETHERNET Powerlink Interface

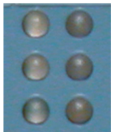
Figure	LED	Color	Description
L/C 1 Rx 1 L/C 2 Rx 2 Tx Status 	Status	Red/Green	See "Status LED", on page 489.
	Tx	Orange	The Powerlink station is sending data.
	Rx 1 + Rx 2	Orange	The RX LED is always lit when Powerlink activity is present on the bus.
	L/C 1 + L/C 2	Red/Green	Green ... Link Red ..... Collision

Table 310: EX282 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 311: EX282 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		
Green	Red	Status of the Powerlink Station
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.
Off	Blinking	System failure. The red blinking LED signals an error code (see Section"System Failure Error Codes", on page 490).

Table 312: EX282 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. $00 for Controller Stations, and $FE, $FF)	•	–	–	–	Pause	•	–	–	–	Pause

Table 313: EX282 system failure error codes

15.2.6 ETHERNET Powerlink Station Number

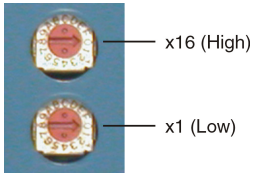


Figure 180: EX282 station number dial

The station number for the Powerlink station is set using both number switches. Station numbers are permitted between $01 and $FD.

Switch Position	Description
$00	Reserved for manager station, switch position is not permitted.
$01 - $FD	Station number for Powerlink station.
$FE	Reserved, switch position is not permitted.
$FF	Reserved, switch position is not permitted.

Table 314: EX282 station number

15.2.7 RJ45 Ports

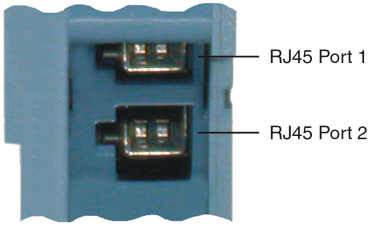


Figure 181: EX282 RJ45 ports

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

Table 315: EX282 pin assignments for RJ45 port

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

15.2.8 SG3

The EX282 module is not supported at the moment on SG3 targets.

15.2.9 SG4

The firmware update takes place automatically. The firmware is a component of the PLC operating system B&R Automation Runtime™.

15.2.10 Module Fastener

The EX282 module is equipped with a module fastener. The module fastener prevents the power supply from falling out of the bus controller during transport.

A screwdriver is required to install the module. The screwdriver should be inserted between the power supply and EX282 at the same height as the sloped marking (see figure). By simultaneously levering the screwdriver in the direction of the power supply and pulling the EX282, the bus controller is taken out from its bracing and can be removed from the power supply.

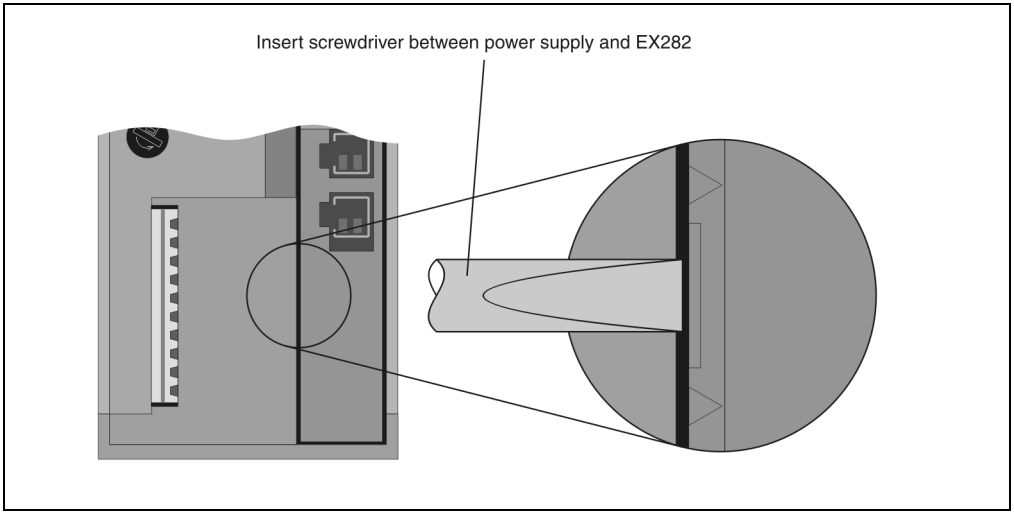


Figure 182: EX282 module fastener