EP1011

Main Power PIFA

Main Power PIFA with 4 DI and 4 DO. The PIFA supplies all the PIFAs in an EXOflex house with power.

- **Supply voltage 24 V DC**
- **4 DI, 4 DO**
- **Connectors for connection to external display and EFX-channel**
- **Battery backup for the housing's EXOflex processors**

- **Indications for battery, power supply and communication**
- **Communication port switchable between RS232, RS485 (EXOline) and hlEXOline**
- **Option 9035 for intelligent UPS handling**

EP1011 is a Main Power PIFA with 4 DI, 4 DO and a communication port (Port1) which is switchable between RS232, RS485 (EXOline) and hlEXOline.

The power-PIFA powers the internal logic circuits, option cards included, and the internal parts of the PIFA-units in an EXOflex house. It has a connector for EFX-channel and battery backup for the housing's EXOflex processors.

EXOflex

EXOflex is a general system for control, regulation, supervision and communication in general automation installations. The system offers great possibilities when constructing many different types of control and regulation systems: outstations in distributed systems, controllers in building automation systems, service gateways in LAN's and on the Internet, etc.

The system is of a modular design and provides unique opportunities for adapting the number and type of inputs and outputs required, as well as the type of communication needed.

EXOflex consists of a housing and a selection of PIFA units. One power-PIFA must always be present in each house.

Installation

EP1011 must always be mounted in position 1 in an EXOflex house, i. e. the position at the uppermost left.

EP1011 is of a standard design and size and can quickly and simply be slotted into place. All electrical connections to external equipment are easily attainable on plug-in screw connectors.

For more information on how to install PIFA:s, see instruction EH11-S...41-S / EH10-S...40-S / ECX2.

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Status Indication

Status indication is shown by LEDs on the PIFA.

Designation	Description	Color
B	Battery error	Red
Err		Red
WD		Red
P	Power supply	Green
C1	Communication on Port 1	Green
EFX	Communication, EFX-channel	Green

Connections

The Main Power PIFA has a few simple digital inputs and outputs. It is not an EFX-PIFA, which means that the inputs and outputs do not work in the same way as in other PIFA-units. Instead these are handled directly by EXOreal, as in other, non-EXOflex-modules, i.e. with the system variables **DI*n*** and **DQ*n***.

- *Power supply*
  The EMI earth must be connected to the earth rail or equivalent, to prevent disturbances.

  The 0 V connection must also be grounded. This is normally done at the power unit's negative pole.

- *Standard 24 V DC DI*
  This type of input is used for reading of floating (potential free) contacts and is active high.

  A yellow LED for each input shows its current status.

  ### Process Connections
  The external contact's one end is connected to the input and the other to +C. The +C output is current limited and short circuit proof.

- *Standard 24 V DC DO*
  This type of current source output is mainly constructed for use with DC-relays, lamps and similar.

  The outputs' driving stage is powered from the external supply.

  Each output is current limited, short circuit protected and has overheat protection. Apart from the current limiting for each individual output, there is also total limiting for all of the outputs together.

  A yellow LED for each output shows its status.

  ### Process Connections
  An external load is connected between the output and -C.

Communication Ports

EP1011 has a standard port 1. The port has selectable physical interfaces in the form of RS232, RS485 (EXOline) and hlEXOline. EXOline or hlEXOline is selected with the jumper switch, shown in the picture below. EXOline and hlEXOline must not be mixed on the same communication loop.

The RS232 interface is selected via the hardware if you connect the signal SEL1, 2, 3 to GND1, GND2, GND3 for the respective port.

The jumper for selecting EXOline/hlEXOline.

Built-in Battery

The power-PIFA contains a battery that preserves the contents of the processors' memory and keeps the hardware clock running when the house has no power.

The battery is easily replaced by pulling out the power-PIFA. Each processor has a small current reserve that can keep the memory and hardware clock running for approximately 30 minutes without the power-PIFA.

The power-PIFA also monitors the battery voltage. When the voltage drops too low, an LED in the front panel is lit and the system variable **BattFail** is set in the house's main processor.

For more information on how to change the battery, see instruction EH11-S...41-S / EH10-S...40-S / ECX2.

External Battery (Option 9035)

EP1011 can be fitted with option 9035, which makes it possible to connect an external battery as an alternative power source for the controller. This battery is intended to complement the normal power supply to the controller, so that the controller can continue working as normal during a power failure.

The Main Power PIFA has certain indicators regarding the external battery and the power supply. These are found in the systems variable **ExtBattery** and is shown with LEDs on the front panel of the PIFA.

- *Line Failure (LF), bit #0* indicates that the normal external power supply is not working, i.e. the controller is being powered by the external battery. When the bit is set to zero, the controller is powered as normal.
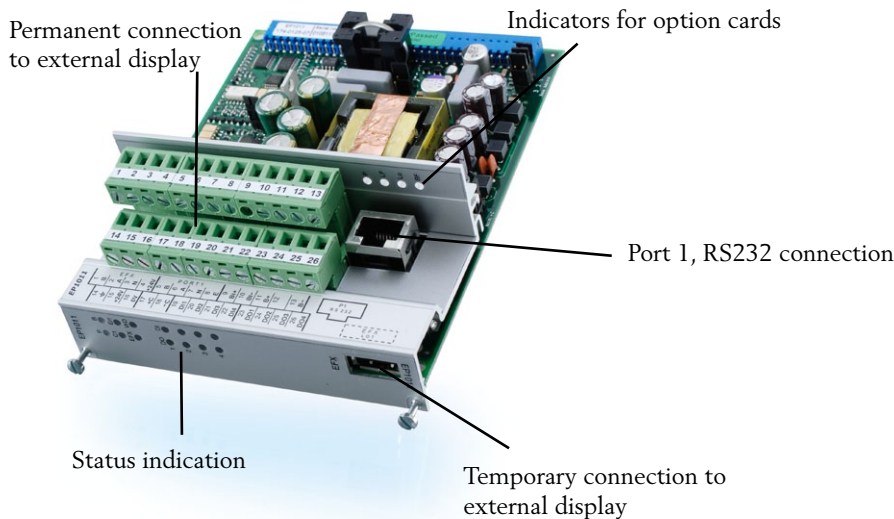
- *Battery Low (Lo), bit #1* indicates that the voltage from the external battery is running low. If this bit is set when the external battery is powering the controller, the battery can only continue to power the controller for a short while. You may however assume that the time is long enough for sending an alarm.

- *Battery Failure (BF), bit #2* indicates that the external battery is out of function, e.g. completely drained or erroneously connected. This can of course only be indicated while the normal power supply is working.

Connection to External Display

An external display can be connected the power-PIFA via permanent screw connectors or a fast connector. Only one display can be connected at a time, and it always has the PIFA-address 0.

Permanent connection			Fast connection on front			
ED	Function	Terminal EP1011	ED	Function	Cable color	USB EP1011
1	+24 V	4	1	+24 V	Red	1
2	0 V	3	2	0 V	Black	4
3	A	2	3	A	Green	3
4	B	1	4	B	White	2

N.B. Green and white are reversed in older version of EK10 and possibly in some other cable brands

Permanent connection to external display

Indicators for option cards

Port 1, RS232 connection

Status indication

Temporary connection to external display

Technical data

Supply voltage	24 V DC
Tolerance	18...30 V DC
Power consumption	
maximum load	1.5 A
no load	70 mA
Battery backup of CPU-memory and RTC	Lithium button cell type CR2032 (min. 5 years for one CPU)
+C output for DI	Fused with electronic fuse, max. 250 mA
Option 9035	Battery Charger/UPS

This product conforms with the requirements of European EMC standards CENELEC EN 61000-6-1 and EN 61000-6-3 and carries the CE-mark.

Internal, galvanically separated, generated voltage

Processor, PIFA & options	5V, 1.5 A
PIFA & options	±12 V, 200 + 200 mA
Charging regulator	24 V, 250 mA
External display	24 V, 250 mA, for external display, via the EFX-connection

Digital inputs

Number of inputs	4
Type	Standard 24 V DC DI
Logic 0	0 to 5 V
input current at 0 V	0 mA
input resistance	5,7 kOhm
Logic 1	11 to 30 V
input current at +24 V	4 mA
Update cycle	100 ms (max 5 Hz)

Digital outputs

Number of outputs	4
Type	Standard 24 V DC DO, current source, current is fed from the PIFA-unit's Power supply connection
Output voltage at logical zero	Max 2 V/12 uA
Output current at +24 V (source)	
max continuous load per output	Min 400 mA
max continuous load per output at max. 30°C run temp	Min 500 mA
max transient load (20 ms)	Min 1 A
Update cycle	50 ms

Communication ports

|	
Type	EXOline (RS485), hlEXOline or RS232, standard EXOline
Speed	Configurable, max 19200 bps, standard 9600 bps
Common mode voltage	Max 250 V. Galvanic isolation from the rest of the electronics.

EFX-port

Type	RS485
Communication speed	115200 bps

Port 1

Control signals, RS232	RxD, TxD and RTS
Control signals, RS485	E
Connector EXOline and hlEXOline	Terminal block
Connector RS232	RJ45

Wiring

1	B	EFX
2	A	
3	N	
4	+24 V	
5	B	Port 1: Type RS232 is connected in the RJ45 contact. Type RS485/EXOline is connected in Dinkle connector 5-7 and possibly 8.
6	A	
7	N	
8	E	
9	Bt+	Option
10	Bt-	
11	B+	
12	Wk	
13	B-	
14	EMI ground	This terminal is connected internally to the PIFA's frame and to internal protective circuits. It should be connected to the ground rail with a separate, heavy wire.
15	+24 V	Power supply +24 V DC.
16	0 V	Power supply 0 V. The 0 V-connection is normally grounded at the supply source, so as to define the potential to earth reference and to compensate for disturbances and transients from I/O signals.
17	+C	+24 V DC. Reference for digital inputs DI.
18	-C	0 V. Reference for digital outputs DO.
19	DI1	Digital input 1, type Standard 24 V DC
20	DI2	Digital input 2, type Standard 24 V DC
21	DI3	Digital input 3, type Standard 24 V DC
22	DI4	Digital input 4, type Standard 24 V DC
23	DO1	Digital output 1, type Standard 24 V DC
24	DO2	Digital output 2, type Standard 24 V DC
25	DO3	Digital output 3, type Standard 24 V DC
26	DO4	Digital output 4, type Standard 24 V DC
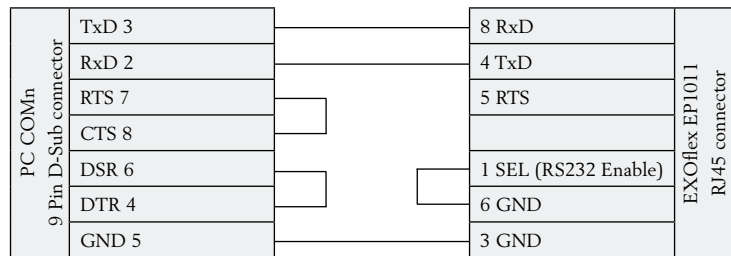
PC to EXOflex EP1011 Port 1, RS232

RS485

1		Port 1, RJ45
2		
3	Gnd	
4	TxD	
5	RTS	
6	Gnd	
7		
8	RxD	

Product documentation

Document	Type
EH11-S...41-S / EH10-S...40-S / ECX2	Instruction for EXOflex houses and the EXOflex processor ECX2
EXO System Manual	Manual covering the EXO System

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