

• Can be supplemented with option card for modem, EIB, SIOX etc.

EP8101 is a communication PIFA with one serial port.

## **EXO**flex

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 LANs 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

EP8101 can only be mounted in an EXOflex processor house. See "Rules for mounting" on page 2. It 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 the instruction for EH11-S...41-S / EH10-S...40-S / ECX2.

# EP8101

## **Basic Serial PIFA**

Communication PIFA for mounting in an EXOflex house. The PIFA has one serial port selectable between RS232, RS485 (EXOline), and hIEXOline.

- Can also be supplemented with external M-Bus/ SIOX-connection
- Serial port Port 2 or Port 3 for modem support etc.

#### EP8101 handles difficult electrical environments

The communication ports are galvanically insulated from each other and from the internal control logic circuits by a protective barrier, which is bridged by optocouplers. If necessary, the isolation from other circuits can be retained by using a separate power supply. Each process connection has active transient protection, which is led to a special EMI ground (disturbance protection ground) or to protective ground. This provides for optimal handling of difficult electrical environments.



The principles of the isolation barrier

#### Prepared for redundant power supply

The parts of the PIFA closest to the process get their power from an external source, which is normally the same as the source supplying the whole EXOflex-unit with power. To handle power outage situations, it could also be power supplied from an alternative source, e. g. 9035 with external battery. *See the product sheets for EP1011 and* 9035.



## **Communication Ports**

Port 2 and Port 3 are *not* handled by independent PIFA's via EFX, but directly by EXOreal. Port connections cannot be used in expansion houses.

#### RS232

The RS232 interface is selected via the hardware if you connect the signal SEL2 to GND2 or SEL3 to GND3 for the respective port.

Port 2 has the signals RxD, TxD, RTS, CTS.

Port 3 has a complete set of control signals for RS232, i.e. RxD, TxD, RTS, CTS, DTR, DSR, RI and DCD, as well as advanced modem support. Only Port 3 should be used for dial-up modems.

### EXOline/hlEXOline

hlEXOline is obtained by changing a jumper setting on EP8101. EXOline is default.



*The jumper switches for selecting the communication port and EXOline/hlEXOline.* 

#### Rules for mounting

The internal port connections (Port 2, Port 3) in an EXOflex processor house go to different positions (2-8).

Port 3 is available in position 2 in the processor section. Port 2 is available in any position. See below:

P1 1	P2 3	P2 5	P2 7
Processor			<b>_</b>
P2, P3	P2	P2 6	P2
2	4		8
P2, P3	P2	Р2	P2
2	4	6	8

Internal Port 2, 3 connections.

When using more than one serial PIFA in a processor house, Port 2 (from the main processor) will be available in all positions, but not at the same time. One position at a time can be selected in the controller software. A recommended application for this is large meter reading systems.

#### **Options for EP8101**

In addition to the capabilities of EP8101, you can also add an option card for each port and position (2-8). When using an option card, software is used to connect a port to the card. *See the product sheets for modem 9011, the SIOX option 9020F, the EIB option 9017, and the Foxboro option 9015.* 

## Technical data

Power Supply Internal power consumption 5 V ±12 V CE

#### Communication ports 2 and 3

Type Speed Galvanic isolation from the rest of the electronics, common mode voltage

**Communication port 2** Control signals, RS232 Control signals, RS485 Connector EXOline, hIEXOline and RS232

Communication port 3

Control signals, RS232 Control signals, RS485 Connector EXOline, hIEXOline and RS232 Internal

30 mA 20 mA 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.

EXOline (RS485), hlEXOline or RS232, standard EXOline configurable, max 19200 bps, standard 9600 bps

max 250 V

RxD, TxD, RTS and CTS E Terminal block

RxD, TxD, RTS, CTS, DTR, DSR, RI and DCD E Terminal block

#### Option interface on port 3

If no option is specified when ordering EP8101 it will be supplied with connection instructions for modem 9011. When installing another option, the instructions supplied with that option will apply. Stick the new instructions over the old ones.

# Connections

## The RS232 Port

The designations below follow the RS232 standard's DTE terminology.

Pin no	Signal	Function	Direction
Port 2 alt. Port 3			
27	TxD	Transmit Data	Out
28	RxD	Receive Data	In
29	RTS	Request To Send	Out
30	CTS	Clear To Send	In
31	GND	Signal Ground	
32	SEL	Select RS232 interface. The RS232 interface is selected via the hardware if you connect the signal SEL to GND.	
33	DTR3	Data Terminal Ready (Port 3)	Out
34	DSR3	Data Set Ready (Port 3)	In
35	DCD3	Data Carrier Detect (Port 3)	In
36	RI3	Ring Indication (Port 3)	In

## Standard connection. Connections for EP8101 with the PTT modem 9011 on Port 3

Pin no	Signal	Detailed function	Group function
1	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.	
2	nc		
8	В		EXOline connection, Port 2/3
9	А		Galvanically insulated from all other
10	N	The 0 V reference. This should be connected to the	circuits.
		screen of the communication cable, which in turn	
		should be grounded at one point at least.	
11	Е		
12	nc		Modem 9011
13	nc		
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	R	Ring, connect to analog PSTN	
16	Т	Tip, connect to analog PSTN	]
17	А	Secondary Ring, connect to phone	
18	Al	Secondary Tip, connect to phone	
19	nc		
20	nc		
27	TxD	See "The RS232 Port" on page 4.	RS232 connection, Port 2/3
28	RxD		This connection is galvanically
29	RTS		insulated from the internal circuits.
30	CTS		GND is the signal zero. Use screened
31	GND		cable and earth it at one point.
32	SEL		
33	DTR3		
34	DSR3		
35	DCD3		
36	RI3		

Pin no	Signal	Detailed function	Group function
1	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.	
2	nc		
8	В		EXOline connection, Port 2/3
9	А		Galvanically insulated from all other
10	Ν	The 0 V reference. This should be connected to the	circuits.
		screen of the communication cable, which in turn	
		should be grounded at one point at least.	
11	Е		
12	DTR		Option 9017
13	Gnd	Signal Ground	
14	EMI ground	This terminal is connected internally to the PIFA's	1
		frame and to internal protective circuits. It should be	
		connected to the ground rail with a separate, heavy	
		wire.	
15	TxD	Transmit Data (Out)	
16	RxD	Receive Data (In)	
17	RTS	Request To Send (Out)	
18	CTS	Clear To Send (In)	
19	nc		
20	nc		
27	TxD	See "The RS232 Port" on page 4.	RS232 connection, Port 2/3
28	RxD		This connection is galvanically
29	RTS		insulated from the internal circuits.
30	CTS	1	GND is the signal zero. Use screened
31	GND	1	cable and earth it at one point.
32	SEL	1	cable and carefi it at one point.
33	DTR3	1	
34	DSR3	1	
35	DCD3	1	
36	RI3	1	

# Option EIB. Connections for EP8101 with the EIB option 9017 on Port 3

Pin no	Signal	Detailed function	Group function
1	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.	
2	nc		
8	В		EXOline connection, Port 2/3
9	А		Galvanically insulated from all other
10	N	The 0 V reference. This should be connected to the	circuits.
		screen of the communication cable, which in turn	
		should be grounded at one point at least.	
11	E		
12	nc		Option 9020F
13	nc		
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	nc		
16	S	Meter signal	
17	Ν	Meter signal	
18	+24 V DC		
19	nc		
20	nc		
27	TxD	See "The RS232 Port" on page 4.	RS232 connection, Port 2/3
28	RxD	10	This connection is galvanically
29	RTS		insulated from the internal circuits.
30	CTS		GND is the signal zero. Use screened
31	GND		cable and earth it at one point.
32	SEL		casic and cardinic de one point.
33	DTR3		
34	DSR3		
35	DCD3		
36	RI3		

# Option SIOX. Connections for EP8101 with the SIOX option 9020F on Port 3

Image in the second of the second of the second of the ground rail with a separate, heavy wire.       EXOline connection, Port 2/3         2       nc       Galvanically insulated from all other secret of the communication cable, which in turn should be grounded at one point at least.       EXOline connection, Port 2/3         10       N       The 0 V reference. This should be connected to the screen of the communication cable, which in turn should be grounded at one point at least.       Galvanically insulated from all other circuits.         11       E       nc       Option 9015         12       nc       Grad       Signal Ground         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.       Option 9015         15       TxD       Transmit Data (Out)       Option 9015         16       RxD       Receive Data (In)       Option 9015         17       RTS       Request To Send (Out)       Presend (In)       Presend (In)         19       nc       Presend (In)       Presend (In)       Presend (In)         19       nc       Presend (In)       Presend (In)       Presend (In)         19       nc       Presend (In)       Presend (In)       Presend (In)       Presend (In)         19       Rc <th>Pin no</th> <th>Signal</th> <th>Detailed function</th> <th>Group function</th>	Pin no	Signal	Detailed function	Group function
Image: set of the ground rail with a separate, heavy wire.connected to the ground rail with a separate, heavy wire.2ncEXOline connection, Port 2/3 Galvanically insulated from all other circuits.3BImage: sector of the communication cable, which in turn should be grounded at one point at least.EXOline connection, Port 2/3 Galvanically insulated from all other circuits.11EImage: sector of the communication cable, which in turn should be grounded at one point at least.Option 901512ncImage: sector of the 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.Option 901515TxDTransmit Data (Out)Image: sector of Sector Option 1000000000000000000000000000000000000	1	EMI ground	This terminal is connected internally to the PIFA's	
Image: set of the			frame and to internal protective circuits. It should be	
2       nc       EXOline connection, Port 2/3         8       B       EXOline connection, Port 2/3         9       A       Galvanically insulated from all other         10       N       The 0 V reference. This should be connected to the screen of the communication cable, which in turn should be grounded at one point at least.       Galvanically insulated from all other         11       E        Content of the communication cable, which in turn should be grounded at one point at least.       Option 9015         12       nc        Content of the communication cable, which in turn should be grounded at one point at least.       Option 9015         13       Gnd       Signal 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       TxD       Transmit Data (Out)       This create To Send (Out)          16       RxD       Receive Data (In)           19       nc            20       nc            21       TxD       See "The RS232 Port" on page 4.        RS232 connection, Port 2/3         22       RTS       GND       Ser The RS232 Port" on page 4.       GND is the signal zer			connected to the ground rail with a separate, heavy	
8       8       8       EXOline connection, Port 2/3         9       A       Galvanically insulated from all other         10       N       The 0 V reference. This should be connected to the screen of the communication cable, which in turn should be grounded at one point at least.       Galvanically insulated from all other         11       E       nc       Galvanically insulated from all other         12       nc       Signal Ground       Option 9015         13       Gnd       Signal 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.       Option 9015         15       TxD       Transmit Data (Out)       Receive Data (In)         16       RxD       Receive Data (In)       Pressond (Out)         18       CTS       Clear To Send (Out)       Pressond (In)         19       nc       Pressond (In)       This connection, Port 2/3         77       TxD       See "The RS232 Port" on page 4.       RS232 connection, Port 2/3         78       RxD       See "The RS232 Port" on page 4.       Galvanically insulated from the internal circuits.         80       CTS       See "The RS232 Port" on page 4.       RS232 connection, Port 2/3         71       RXD       See "The RS232 Por			wire.	
AImage: Constraint of the communication cable, which in turn should be grounded at one point at least.Galvanically insulated from all other circuits.11EEImage: Constraint of the communication cable, which in turn should be grounded at one point at least.Option 901512ncImage: Constraint of the communication cable, which in turn should be grounded at one point at least.Option 901513GndSignal GroundImage: Constraint of the communication cable, which in turn should be grounded at one point at least.Option 901514EMI groundThis 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.Option 901515TxDTransmit Data (Out)Image: Constraint Data (Out)Image: Constraint Data (Out)16RxDReceive Data (In)Image: Constraint Data (Out)Image: Constraint Data (Out)18CTSClear To Send (Out)Image: Constraint Data (Constraint Data (Constrai	2	nc		
10       N       The 0 V reference. This should be connected to the screen of the communication cable, which in turn should be grounded at one point at least.       circuits.         11       E          12       nc          13       Gnd       Signal Ground         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.       Option 9015         15       TxD       Transmit Data (Out)          16       RxD       Receive Data (In)          17       RTS       Request To Send (Out)          18       CTS       Clear To Send (In)          19       nc           20       nc           21       TxD       See "The RS232 Port" on page 4.       Rs232 connection, Port 2/3         7       TxD       See "The RS232 Port" on page 4.       GND is the signal zero. Use screened cable and earth it at one point.         21       SEL            33       DTR3            34       DSR3        DCD3	8	В		EXOline connection, Port 2/3
screen of the communication cable, which in turn should be grounded at one point at least.Option 901511E	9	A		Galvanically insulated from all other
Indextshould be grounded at one point at least.I1EI2ncI3GndSignal GroundI4EMI groundThis 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.Option 9015I5TxDTransmit Data (Out)I6RxDReceive Data (In)I7RTSRequest To Send (Out)I8CTSClear To Send (In)19nc	10	N	The 0 V reference. This should be connected to the	circuits.
I1       E       Option 9015         I2       nc       Image: Signal Ground of Signal 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.       Option 9015         I5       TxD       Transmit Data (Out)       Image: Signal Ground Out)       Image: Signal Ground Out)         I6       RxD       Receive Data (In)       Image: Signal Ground Out)       Image: Signal Ground Out)         I8       CTS       Clear To Send (Out)       Image: Signal Ground Out)       Image: Signal Ground Out)         I9       nc       Image: Signal Ground Out)       Image: Signal Ground Out)       Image: Signal Ground Out)         I20       nc       Image: Signal Ground Out)       Image: Signal Ground Out)       Image: Signal Ground Out)       Image: Signal Ground Out)         I20       nc       Image: Signal Ground Out)       Image: Signal Ground Out)       Image: Signal Ground Out)         I20       nc       Image: Signal Ground Out)       Image: Signal Ground Out)       Image: Signal Ground Out)         I21       RxD       See "The RS232 Port" on page 4.       RS232 connection, Port 2/3       This connection is galvanically insulated from the internal circuits.         I31       GND       Image: Signal Ground Out)			screen of the communication cable, which in turn	
Image: constraint of the second state of the secon			should be grounded at one point at least.	
13       Gnd       Signal Ground         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       TxD       Transmit Data (Out)         16       RxD       Receive Data [In)         17       RTS       Request To Send (Out)         18       CTS       Clear To Send (In)         19       nc       20         20       nc       21         21       TxD       See "The RS232 Port" on page 4.         22       RxD       23         23       SEL       33         33       DTR3         34       DSR3         35       DCD3	11	E		
IndextIndextIndext14EMI groundThis 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.15TxDTransmit Data (Out)16RxDReceive Data (In)17RTSRequest To Send (Out)18CTSClear To Send (In)19nc2020nc2022TxD28RxD29RTS30CTS31GND32SEL33DTR334DSR335DCD3	12	nc		Option 9015
InterpretationInternational protective circuits. It should be connected to the ground rail with a separate, heavy wire.15TxDTransmit Data (Out)16RxDReceive Data (In)17RTSRequest To Send (Out)18CTSClear To Send (In)19nc	13	Gnd	Signal Ground	
Interpretationconnected to the ground rail with a separate, heavy wire.15TxDTransmit Data (Out)16RxDReceive Data (In)17RTSRequest To Send (Out)18CTSClear To Send (In)19nc20nc27TxDSee "The RS232 Port" on page 4.28RxD29RTS30CTS31GND32SEL33DTR334DSR335DCD3	14	EMI ground	This terminal is connected internally to the PIFA's	
wire.15TxDTransmit Data (Out)16RxDReceive Data (In)17RTSRequest To Send (Out)18CTSClear To Send (In)19nc20nc27TxDSee "The RS232 Port" on page 4.28RxD29RTS30CTS31GND32SEL33DTR334DSR335DCD3			frame and to internal protective circuits. It should be	
15TxDTransmit Data (Out)16RxDReceive Data (In)17RTSRequest To Send (Out)18CTSClear To Send (In)19nc20nc27TxDSee "The RS232 Port" on page 4.28RxD29RTS30CTS31GND32SEL33DTR334DSR335DCD3			connected to the ground rail with a separate, heavy	
16       RxD       Receive Data (In)         17       RTS       Request To Send (Out)         18       CTS       Clear To Send (In)         19       nc			wire.	
ITRTSRequest To Send (Out)18CTSClear To Send (In)19nc	15	TxD	Transmit Data (Out)	
18       CTS       Clear To Send (In)         19       nc	16	RxD	Receive Data (In)	
19     nc       20     nc       20     nc       27     TxD       28     RxD       29     RTS       30     CTS       31     GND       32     SEL       33     DTR3       34     DSR3       35     DCD3	17	RTS	Request To Send (Out)	
Image: Construction of the second	18	CTS	Clear To Send (In)	
Z7TxDSee "The RS232 Port" on page 4.RS232 connection, Port 2/3Z8RxD29RTS30CTS31GND32SEL33DTR334DSR335DCD3	19	nc		
28RxD29RTS30CTS31GND32SEL33DTR334DSR335DCD3	20	nc		
28RxD29RTS30CTS31GND32SEL33DTR334DSR335DCD3	27	TxD	See "The RS232 Port" on page 4.	RS232 connection, Port 2/3
29RTS30CTS31GND32SEL33DTR334DSR335DCD3	28	RxD		
30CTS31GND32SEL33DTR334DSR335DCD3	29	RTS	1	
31     GND       32     SEL       33     DTR3       34     DSR3       35     DCD3	30	CTS	1	
32         SEL           33         DTR3           34         DSR3           35         DCD3	31	GND	1	e e e e e e e e e e e e e e e e e e e
34         DSR3           35         DCD3	32	SEL	1	case and care in a cone point.
35 DCD3	33	DTR3	1	
	34	DSR3	1	
36 RI3	35	DCD3	1	
	36	RI3	1	

## Option Foxboro. Connections for EP8101 with the Foxboro option 9015 on Port 3.

## Product documentation

Document	Туре
EH11-S41-S / EH10-S40-S / ECX2	Instruction for EXOflex houses and the EXOflex processor ECX2
EXO System Manual	Manual covering the EXO System

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