EP8282

TCP/IP PIFA

Communication PIFA for TCP/IP communication, intended for mounting in an EXOflex house. EP8282 makes it possible to connect EXOflex directly to a computer network.

- **Ethernet 10Base-T/100Base auto-negotiation**
- **TCP/IP communication**

- **10/100 Mbit network**

EP8282 is a TCP/IP PIFA, normally used for carrying EXOline messages in a system with a main computer and controllers. The protocol used for transfer is EXOline-TCP slave.

EP8282 connects internally to Port 3. The connection from EP8282 to the network is via Ethernet 10Base-T/100Base auto-negotiation.

The PIFA supports addressing via DHCP, DNS names and automatic DNS name registration.

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 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

EP8282 must be mounted in position 2 in an EXOflex processor house. 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 via RJ45 and plug-in screw connectors (EMI protection).

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

General

The TCP/IP PIFA unit is a special PIFA intended for connection to Port 3 in a processor house. The connection to the network is via twisted-pair Ethernet.

The transport via TCP/IP is invisible to the controller, as the communication is translated to and from ordinary serial communication for the controller. This means that ordinary computer networks, and even the Internet, can be used for communication between and with controllers.

By using TCP/IP PIFA:s, systems can be spread over greater geographic areas with very simple resources. Exploiting the infrastructures already in use for ordinary computers reduces installation costs.

The PIFA unit can be used with most types of TCP/IP networks, e.g. local area networks, the Internet, etc. It is not however suitable for use in dial-up TCP/IP networks.

The picture below shows an example of a system where the controllers communicate with each other with the help of TCP/IP PIFA units.
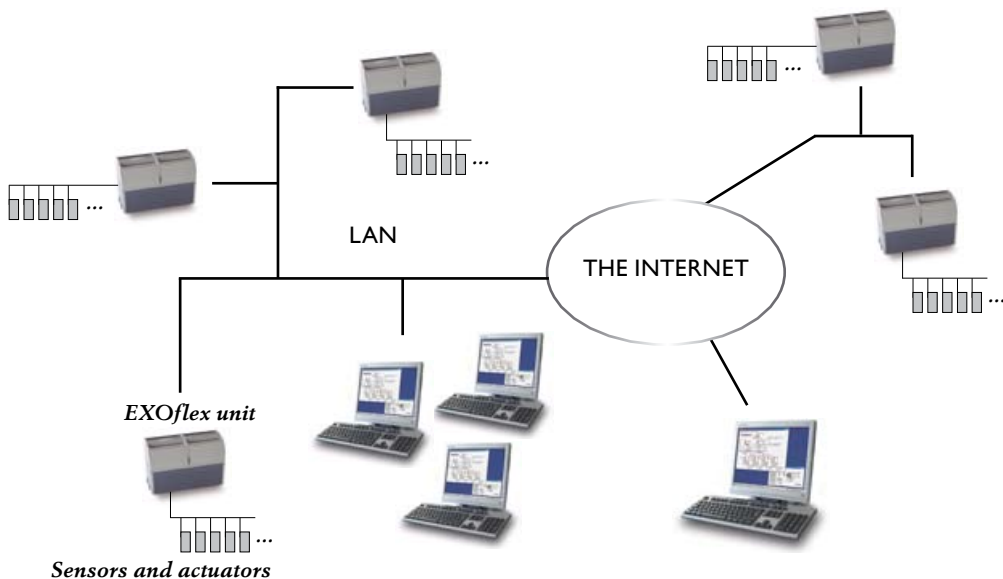

LAN

THE INTERNET

EXOflex unit

Sensors and actuators

Figure 1. System using Ethernet communication.

Network Construction

A controller's serial port is always either a master or a slave, which is configured in EXOreal in the usual way. The TCP/IP-PIFA can only be connected to slave port #3. All communication must go between a master port and a slave port.

Security

Security in this context means how to protect the system against network intruders. There are a few mechanisms in the TCP/IP PIFA unit which together with a firewall provide good security.

See the EXO System Manual for more information how to configure a safe connection between the PIFA and the main computer.

N.B. The TCP/IP-PIFA only has the protocols EXOline-TCP and EXOconfig, *not* telnet or ftp etc.

Performance

The TCP/IP PIFA is a gateway that takes the information from a serial port and transports it over a network using the TCP and IP protocols. So the TCP/IP PIFA is not only a physical converter, but also a protocol converter to a certain extent. This means that even if the transfer speed of the network is 100 Mbit, the transfer of data between the computer and the TCP/IP-PIFA will be significantly lower.

Configuration - Run setup on a PIFA

Connect the crossover cable between the laptop PC and the TCP/IP PIFA. When the configuration is complete, the crossover cable is disconnected and the TCP/IP PIFA is connected directly to the network.

Each PIFA unit has a serial number. The serial number is an ordinary figure number. All components manufactured

by Regin receive a unique serial number. The Ethernet-address is a 48-bit address, unique amongst all Ethernet units produced (worldwide).

The PIFA's Ethernet-address is noted on the lower barcode label behind the plate covering the part of the PIFA not used for contacts, see the figure below. When the PIFA is not mounted in a house, the covering plate can be moved to the side to reveal the PIFA's Ethernet-address and serial number.
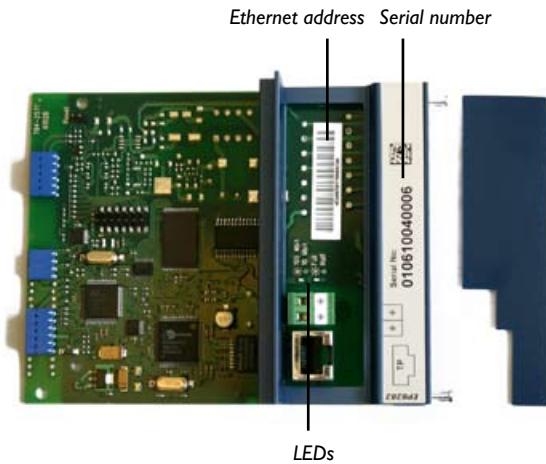
Figure 2. Ethernet address, serial number and LEDs behind plate.

For more information about configuration, see the EXO System Manual.

Avanced applications

Multimaster

TCP/IP PIFA units that are used as slaves can handle the communication with several master units at the same time. If two master units simultaneously each send a question to the station slave, one of the master units' answers will be slightly delayed, while the message from the other station master is being processed. This means that the number of messages per second from one of the masters will be somewhat lower than had it been alone. The total number of messages per second will however increase since the slave receives the next message from the queue as soon as it has processed the previous message.

Firewalls

To communicate via TCP/IP PIFA units through a firewall, it must be configured for that purpose. A firewall is a unit that only allows TCP/IP-communication on certain port numbers and not on others. TCP/IP-ports work as separate communication channels between two nodes. The TCP/IP PIFA units use separate ports for operation and configuration, as described below:

Type of communication	Protocol name	Port number	Protocol
Normal operational traffic	EXOline-TCP	26486	TCP
Configuration, i.e. the commands Setup PIFA, Load Configuration and Load PIFAos.	EXOconfig	26487	TCP, UDP

Indications

There are two LEDs behind the covering plate of the PIFA (see figure 2):

- **Type of communication**
  A yellow LED shows if the communication is half-duplex or full-duplex. If the LED is lit, it indicates full-duplex communication. If it is not lit, the communication is half-duplex.

- **Communication speed**
  A green LED indicates the communication speed. If the LED is lit, the speed is 100 Mbit. If it is not lit, the communication speed is 10 Mbit.

There are two LEDs on the front of the PIFA (see figure 3)

- **LAN**
  If the LED shines with a fixed green light, it indicates Link to Hub/Switch. If the LED flashes green, it indicates communication.

- **ID**
  ID-function. A green LED indicates Link or LAN. If the LED flashes the unit has been selected by a tool, for example Project Builder.
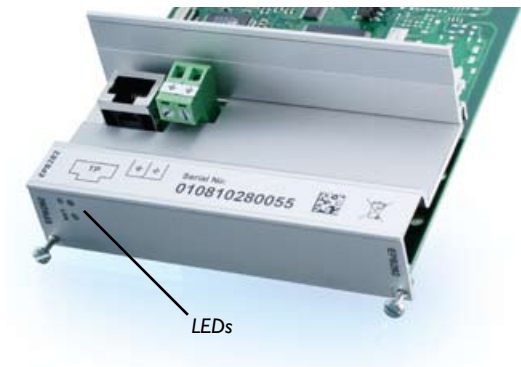
Figure 3. LAN and ID LEDs

Technical data

Power supply	Internal only
Internal Power Consumption	5 V, 0.95 VA (connected to the network)
CE	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.

Communication ports

Internal serial port

Type	RS232 TTL
Built-in protocol	EXOline-TCP Slave

Ethernet port

Type	10Base-T/100Base auto-negotiation
Fast connector	Shielded RJ45
Supported standards	IEEE 802.3u and IEEE 802.3x full-duplex flow control
Built- in protocol	EXOline over TCP/IP Slave
Max cable length	100 m (min CAT 5)

Wiring

EMI-earth must be connected to the ground rail or equivalent, to divert disturbances.

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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