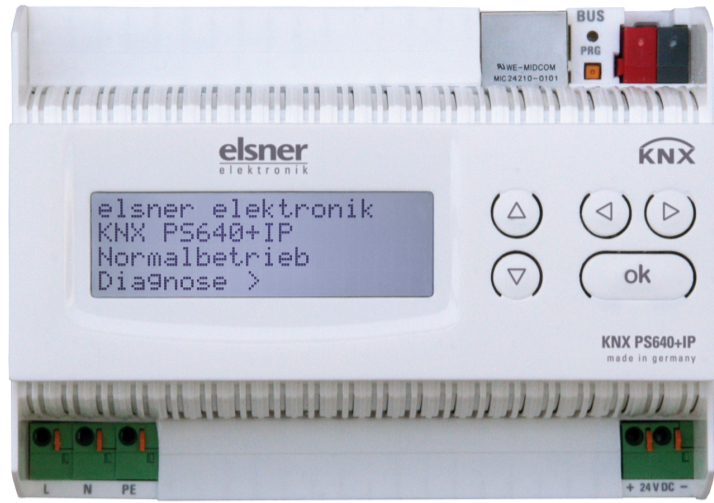# KNX PS640+IP
Power Supply System

Technical specifications and installation instructions
Item number 70145

1. Description

The **Power Supply System KNX PS640+IP** combines the central functions of a KNX bus line:
- Power supply with throttle and bus communication
- IP router and IP interface

The device has got two KNX interfaces, one for the „PLUS" functions of the power supply unit and one for the IP router. The functions are registered at the bus separately and parametrised in different product files (ETS).

The **power supply unit** of the **KNX PS640+IP** delivers a 29 V bus voltage for the KNX system and 24 V DC supply voltage for 24 V devices. Special operating conditions such as short circuit, electrical surge, overcharge or excess temperature are recorded and may be read off on the display. The present power discharge is displayed as well. It is possible to reset the connected bus devices directly by means of the key pad.
In addition all functions can be realised via the bus, too, e. g. the transfer of malfunction messages and operating data and a time/period reset. Malfunction messages are stored by the **KNX PS640+IP**.

The IP router of the **KNX PS640+IP** allows for forwarding of telegrams between different lines via a rapid LAN (IP) backbone. The **KNX PS640+IP** therefore also takes on the function of a line coupler.
In parallel, the **KNX PS640+IP** can be used as **interface for accessing the bus** via IP. Like this, the KNX system can be configured and supervised from any PC in the LAN (Tunnelling). Access via smartphone (KNX app) is also possible.
This device works according to the KNXnet/IP specification using the core, the device management, the tunnelling and the routing part. The router of **KNX PS640+IP** has a filter table and is able to buffer up to 150 telegrams.

Functions:
- Delivers a **29 V KNX bus voltage** (reduced), output current max. 640 mA, short-circuit proof
- Delivers **24 V DC** (not reduced), output current max. 150 mA
- **Reset** of a line directly on the device
- Record of operating hours, overload, external overvoltage, internal overvoltage, short circuit and excess temperature
- Display of operating data bus voltage, bus current and temperature of the device
- The display may be shown in German, English, French, Italian, Spanish or Dutch
- **Bus connection** for data transfer (e. g. malfunction messages, operating data)
- Possibility for reset and diagnostic via the bus
- **Routing:** Transfer of KNX data via LAN (rapid backbone)
- **Line coupler function** via LAN
- **Tunnelling:** Configuration and supervising of the KNX system from any PC in the LAN, access via smartphone (KNX app)

Configuration is made using the KNX software ETS. The **product file** can be downloaded from the Elsner Elektronik website on **www.elsner-elektronik.de** in the "Service" menu.

1.1. Deliverables

- Power Supply System

1.2. Technical data

Housing	Plastic material
Colour	White
Installation	Snap-on fitting on mounting rails
Degree of protection	IP 20
Dimensions	approx. 123 x 89 x 61 (W x H x D, mm), 7 width units
Weight	approx. 370 g
Ambient temperature	Operating 0…+45°C, Storage -25…+70°C
Ambient air humidity	5…95% rH, avoid condensation
Operating voltage	230 V AC, 50 Hz
Power consumption	Full load: approx. 28 W / Standby: approx. 2.7 W
Outputs	• KNX bus voltage 29 V (reduced), Output current max. 640 mA, short-circuit proof • 24 V DC (not reduced), Output current max. 150 mA • KNX data • LAN connector RJ45; 10BaseT (10Mbit/s), Supported internet protocols: ARP, ICMP, IGMP, UDP/IP and DHCP
Data output	KNX +/- bus terminal plug
Group addresses	max. 200
Allocations	max. 200
Communication objects	Power supply unit: 27

The product conforms with the provisions of EU directives.

2. Application examples

2.1. IP Interface

2.1.1. Coupler function (KNXnet/IP Routing)

The **Power Supply System KNX PS640+IP** can operate as a line and/or backbone coupler. In both cases, the LAN (IP) acts as a backbone.
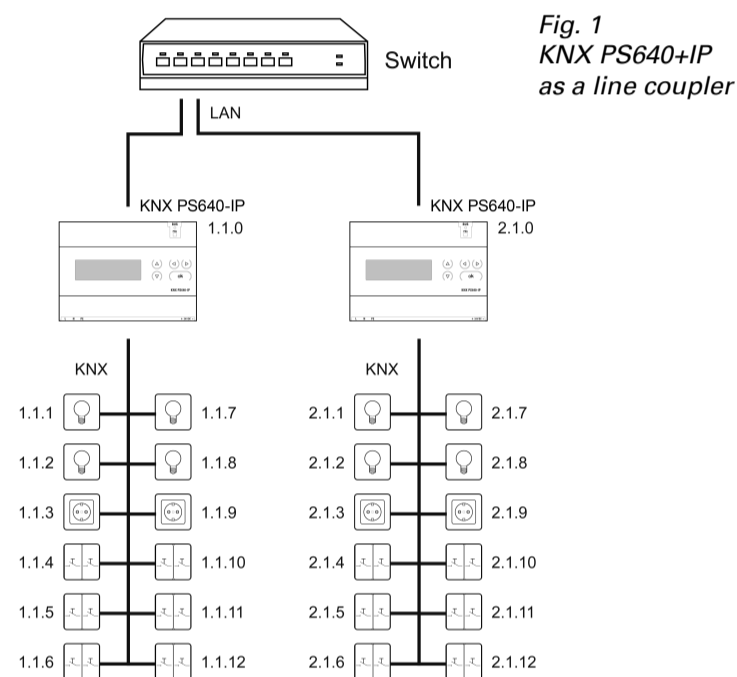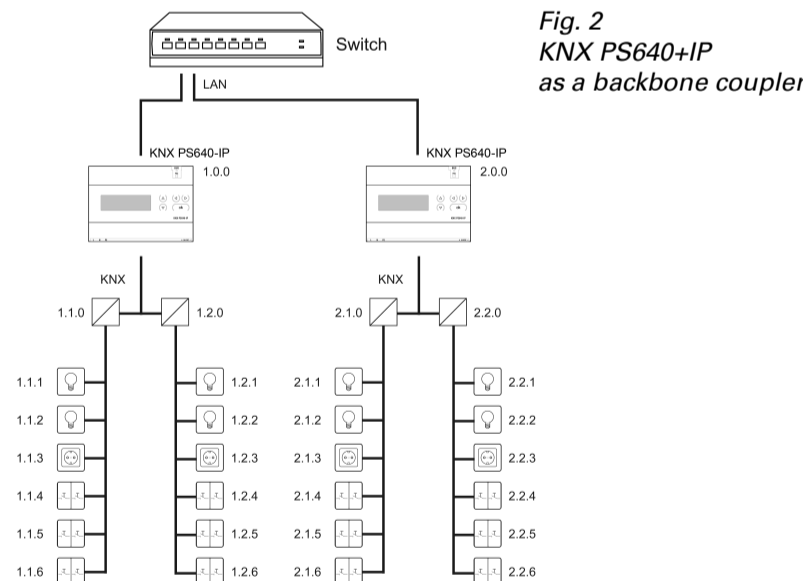
Fig. 1
KNX PS640+IP as a line coupler

Fig. 2
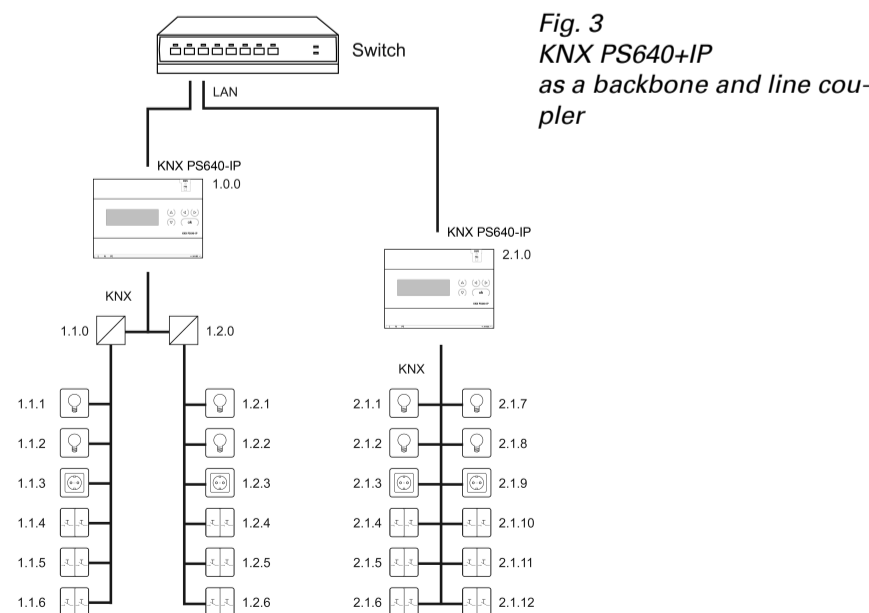*KNX PS640+IP as a backbone coupler*

Fig. 3
KNX PS640+IP as a backbone and line coupler

The physical address assigned to the **KNX PS640+IP** determines whether the device operates as a line or backbone coupler. If the physical address is in the form of x.y.0 (x, y: 1..15), the router operates as a line coupler. If it is in the form of x.0.0 (x: 1..15), the router acts as a backbone coupler.

Attention: If the **KNX PS640+IP** is used as a backbone coupler (x.0.0), there must be no KNX IP Router in the topology beneath it. For example, if a **KNX PS640+IP** has the physical address of 1.0.0, there must be no KNX IP Router with the address 1.1.0.

If the **KNX PS640+IP** is used as a line coupler (x.y.0), there must be no KNX IP Router in the topology above it. For example, if a **KNX PS640+IP** has the physical address of 1.1.0, there must be no KNX IP Router with the address 1.0.0.

The **KNX PS640+IP** has a filter table and thus contributes to reducing bus load. The filter table is automatically generated by the ETS.

Because of the speed difference between the Ethernet (10 Mbit/s) and KNX (9.6 kbit/s), a far greater number of telegrams can be transmitted on IP. If several consecutive telegrams are transmitted on the same line, they must be buffered in the router to avoid telegram loss. The **KNX PS640+IP** has a memory for 150 telegrams (from IP to KNX/EIB).

2.1.2. Bus access (KNXnet/IP Tunnelling)

The **Power Supply System KNX PS640+IP** can be used as an interface to KNX. KNX can be accessed from any point in the LAN. For this purpose, a second physical address must be assigned in the ETS. Please refer to chapter „ETS Connection Manager".

2.2. Power Supply

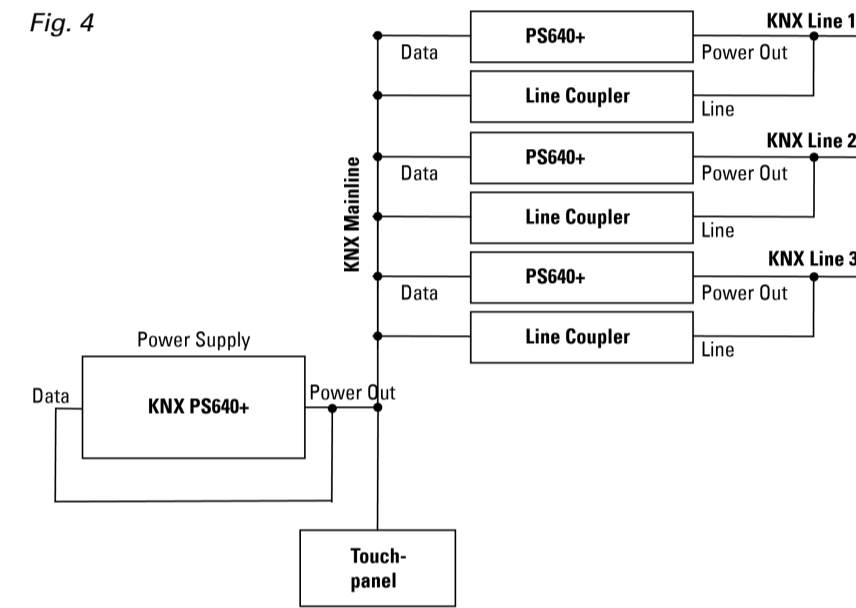#### 2.2.1. Housing example with central operating unit

Fig. 4

3. Installation and Commissioning

3.1. Installation notes

Installation, testing, operational start-up and troubleshooting should only be performed by an electrician.

CAUTION!
Live voltage!
There are unprotected live components inside the device.
- National legal regulations are to be followed.
- Ensure that all lines to be assembled are free of voltage and take precautions against accidental switching on.
- Do not use the device if it is damaged.
- Take the device or system out of service and secure it against unintentional use, if it can be assumed, that risk-free operation is no longer guaranteed.

The device is only to be used for the intended purpose described in this manual. Any improper modification or failure to follow the operating instructions voids any and all warranty and guarantee claims.

After unpacking the device, check it immediately for possible mechanical damage. If it has been damaged in transport, inform the supplier immediately.

The device may only be used as a fixed-site installation; that means only when assembled and after conclusion of all installation and operational start-up tasks and only in the surroundings designated for it.

Elsner Elektronik is not liable for any changes in norms and standards which may occur after publication of these operating instructions.

3.2. Connection

Observe the correct installation. Incorrect installation may destroy the power supply system or connected electronic devices.

After the auxiliary voltage is applied the device will enter an initialization phase lasting about 5 seconds. During this phase no information can be received via the bus.
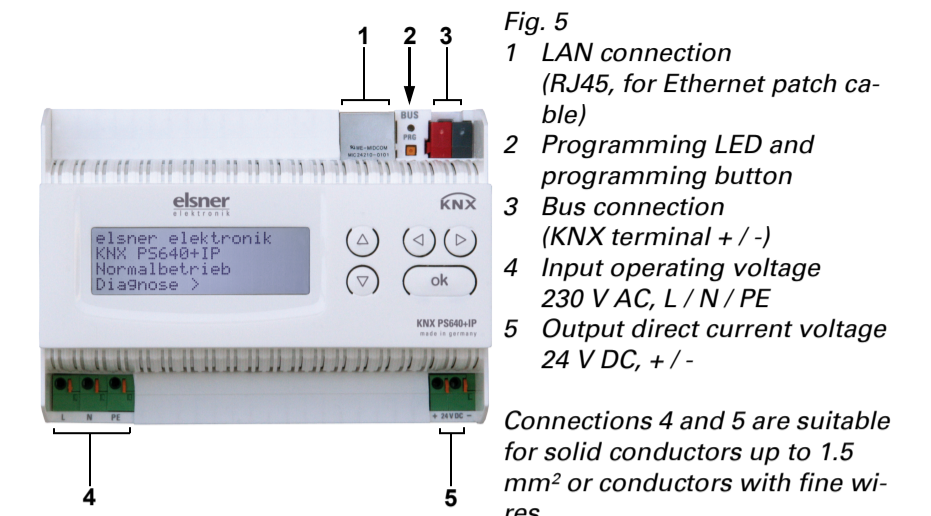
3.2.1. Housing

Fig. 5
1. LAN connection (RJ45, for Ethernet patch cable)
2. Programming LED and programming button
3. Bus connection (KNX terminal + / -)
4. Input operating voltage 230 V AC, L / N / PE
5. Output direct current voltage 24 V DC, + / -

Connections 4 and 5 are suitable for solid conductors up to 1.5 mm² or conductors with fine wires.

3.2.2. Scheme

Fig. 6

$U_{Bus} = 29 VDC$
$I_{max} \leq 640 mA$
AC 230V ±10% 50...60 Hz
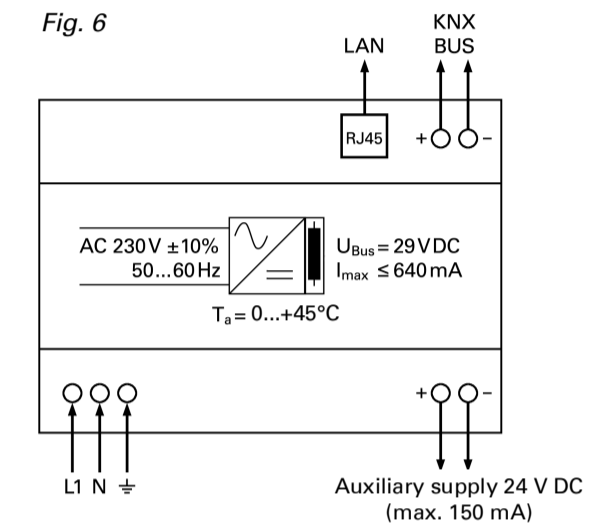$T_a = 0...+45°C$
Auxiliary supply 24 V DC (max. 150 mA)

4. KNX communication of IP interface and power supply unit

The device has got two KNX interfaces, one for the „PLUS" functions of the power supply unit and one for the IP router. The functions are registered at the bus separately and parametrised in different product files (ETS).

4.1. Addressing

IP interface and KNX power supply unit are addressed separately at the bus.

4.1.1. Addressing the IP interface

The IP interface is supplied with the bus address 15.15.0. You can program another address in the ETS (product file of IP interface) by overwriting the 15.15.0 address or by teaching via the programming key at the unit.

4.1.2. Addressing the KNX power supply unit

The power supply unit is supplied with the bus address 15.15.250. You can program another address in the ETS (product file of power supply unit) by overwriting the 15.15.250 address or by using the „Prog Mode" of the unit (see chapter Addressing the power supply unit (programming mode)).

4.2. Settings in der ETS

Different product files are used for setting of the IP interface and the KNX functions of the power supply unit.

4.2.1. Parametrise the IP interface

Use the product file of PS640-IP power supply unit, item number 70142.
For description of parameters please see manual, chapter Setting the IP interface in the ETS.

4.2.2. Parametrise the KNX power supply unit

Use the product file of PS640+(USB) power supply unit, item numbers 70141, 70144.
For description of parameters please see manual, chapter Setting the bus functions of the power supply unit in the ETS.

5. Settings at the Device

5.1. Starting Position

```
elsner elektronik
KNX PS640+IP
Normal Operation
Diagnostics >
```
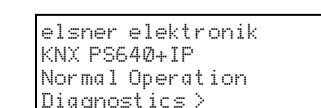
The following may be read off and set on the display of the **Power Supply System KNX PS640+IP**:
- Reset of a line

- Recall of the data memory with operating hours, overcharge, external electrical surge, internal electrical surge, short circuit and excess temperature
- Recall of the operating data bus voltage, bus current and temperature
- Language of display
- Activate the programming mode for addressing of the power supply unit at the KNX bus

The display will be dimmed after 60 seconds if no key has been pressed during this time. In addition, the backlight of the display will be switched off automatically if the temperature inside the housing exceeds 50°C. Thus a high thermal load is avoided.

5.2. Key functions in display menu

▷	Confirms the selection, moves to the next step.
◁	One step back.
▽ △	Changes a setting (selects a setting or changes a value). The cursor (the blinking rectangle) indicates the selected menu item.
ok	Confirms the settings and returns to the device main menu.

5.3. Line reset

```
elsner elektronik
KNX PS640+IP
Normal Operation
Diagnostics >
```
In starting position, press key ▷ once to get into the sector „Diagnostics".

```
Line Reset      > ▮
Data Memory     >
Operating Data  >
Language        >
```
Press key ▷ once more in order to get into the sector „Line reset".

```
Reset: Yes          ▮
       No
       30 seconds
Reset not active!
```
Move the cursor (flashing rectangle at right edge) to the desired setting with the keys ▽ or △ and confirm with key **ok**.

Yes	Reset is activated. The line is switched to neutral and shorted. The basic setting displays: „Reset is active!"
No	Reset not activated. The power supply system works in normal operation.
30 seconds	A reset of 30 seconds is started. Afterwards, the line is supplied with voltage as usual. During the reset state, which lasts 30 seconds, the basic setting displays: „Reset active: XX sec" (countdown).

With key ◁, you return to the previous menu level.

5.4. Data memory

```
elsner elektronik
KNX PS640+IP
Normal Operation
Diagnostics >
```
In starting position, press key ▷ once.

```
Line Reset      >
Data Memory     > ▮
Operating Data  >
Language        > ∨
```
Move the cursor (flashing rectangle at right edge) to the „Data memory" menu with the keys ▽ and △ and confirm with key ▷.

```
Hours of Operation > ▮    Short circuit    >
Overload           >      Excess Temperat. >
Ext. Overvoltage   >
Int. Overvoltage   > ∨
```
Move the cursor to the desired menu with the up and down keys and press key ▷.

5.4.1. Operating hours

```
Run time:  0 years
    0 day 0 hrs.

< = Back
```
The operating hours of the power supply system are displayed in years, days and hours.

With key ◁ you return to the previous menu level.

5.4.2. Overload

```
Overload detected
0 times. Duration:
0 day. 0 hrs. 0 min
< = Back
```
The number of overload incidents and the total time in days, hours and minutes are displayed.

With key ◁ you return to the previous menu level.

5.4.3. External overvoltage

```
External Overvoltage
was detected
0 times.
< = Back
```
The number of external overvoltage incidents is displayed.

With key ◁ you return to the previous menu level.

5.4.4. Internal overvoltage

```
Internal Overvoltage
was detected
0 times.
< = Back
```
The number of internal overvoltage incidents is displayed.

With key ◁ you return to the previous menu level.

5.4.5. Short circuit

```
A short at the bus was
detected
0 times.
< = Back
```
The number of short circuit incidents at the bus is displayed.

With key ◁ you return to the previous menu level.

5.4.6. Excess temperature

```
Excess Temperature on
the board
was detected
0 times!
```
The number of excess temperature incidents on the circuit board of the device is displayed.

With key ◁ you return to the previous menu level.

5.5. Operating data

```
elsner elektronik
KNX PS640+IP
Normal Operation
Diagnostics >
```
In starting position, press key ▷ once.

```
Line Reset      >
Data Memory     >
Operating Data  > ▮
Language        > ∨
```
Move the cursor (flashing rectangle at right edge) to the „Operating Data" menu with the keys ▽ and △ and confirm with key ▷.

```
Bus Voltage   29.4 V
Bus Current   320 mA
Temperature   42.1°C
```
The current values of
- Bus voltage
- Bus current
- Temperature on the circuit board of the device
are displayed.

With key ◁ you return to the previous menu level.

5.6. Language

```
elsner elektronik
KNX PS640+IP
Normal Operation
Diagnostics >
```
In starting position, press key ▷ once.

```
Line Reset      >
Data Memory     >
Operating Data  >
Language        > ▮
```
Move the cursor (flashing rectangle at right edge) to the „Language" menu with the keys ▽ and △ and confirm with the key ▷.

```
Sprache : Deutsch ▮
Language : English
Idioma   : Espanol
Taal     : Hollands
```
Move the cursor to the desired language with the up and down keys and press the key **ok**. The display automatically jumps to the previous menu in the desired language.

With key ◁ you get back by one menu level to the basic setting.

5.7. Addressing the power supply unit (programming mode)

To set the physical address of the power supply unit at the KNX bus, the programming mode is activated here.

```
elsner elektronik
KNX PS640+IP
Normal Operation
Diagnostics >
```
In starting position, press key ▷ once.

```
Line Reset      >
Data Memory     >
Operating Data  >
Language        > ∨
```
Move the cursor (flashing rectangle at right edge) to the „Prog. Mode" menu with the keys ▽ and △ and confirm with the key ▷.

```
Prog. Mode      > ▮
```

```
Prog. Mode:   On ▮
              Off
PLUS Funktions are
active in Prog. Mode
```
Move the cursor with the keys ▽ and △ to „On" and press the key **ok**. The programming mode is active just as long as the text „Prog. Mode active" is shown.

To switch off programming mode, move the cursor with the keys ▽ and △ to „Off" and press the key ▷.

With key ◁ you get back by one menu level to the basic setting.

6. Disposal

After use, the device must be disposed of or recycled in accordance with the legal regulations. Do not dispose of it with the household waste!