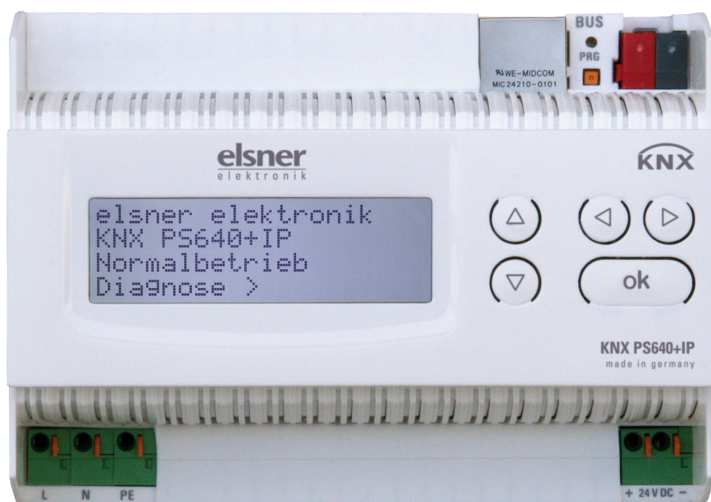




KNX PS640+IP

Power Supply System

Item number 70145



1. Description	5
1.1. Deliverables	6
1.2. Technical data	6
2. Application examples	6
2.1. IP Interface	6
2.1.1. Coupler function (KNXnet/IP Routing)	6
2.1.2. Bus access (KNXnet/IP Tunnelling)	8
2.2. Power Supply	9
2.2.1. Housing example with central operating unit	9
3. Installation and Commissioning	9
3.1. Installation notes	9
3.2. Connection	10
3.2.1. Housing	10
3.2.2. Scheme	11
3.3. Addressing	12
3.3.1. Addressing the IP interface	12
3.3.2. Addressing the KNX power supply unit	12
3.4. Settings in der ETS	12
3.4.1. Parametrise the IP interface	12
3.4.2. Parametrise the KNX power supply unit	12
3.5. Starting Position	13
3.6. Key functions in display menu	13
3.7. Line reset	13
3.8. Data memory	14
3.8.1. Operating hours	14
3.8.2. Overload	15
3.8.3. External overvoltage	15
3.8.4. Internal overvoltage	15
3.8.5. Short circuit	15
3.8.6. Excess temperature	15
3.9. Operating data	16
3.10. Language	16
3.11. Addressing the power supply unit (programming mode)	17
4. Disposal	17
5. Setting of parameters in the ETS	18
5.1. Parameters of the IP interface	18
5.1.1. General	18
5.2. IP configuration	18
5.2.1. Example of assigning IP addresses	19
5.3. Routing (KNX -> IP)	19
5.4. Routing (IP -> KNX)	20
6. Communication settings in the ETS	21

7. Setting the bus functions of the power supply unit in the ETS	21
7.1. Transmission protocol	21
7.1.1. Abbreviations	21
7.1.2. Listing of all communication objects	22
7.2. Parameters of the power supply unit	23
7.2.1. General settings	23
7.2.2. Messages	24
7.2.3. Current threshold value	25



Installation, inspection, commissioning and troubleshooting of the device must only be carried out by a competent electrician.

This manual is amended periodically and will be brought into line with new software releases. The change status (software version and date) can be found in the contents footer. If you have a device with a later software version, please check **www.elsner-elektronik.de** in the menu area "Service" to find out whether a more up-to-date version of the manual is available.

Clarification of signs used in this manual



Safety advice.



Safety advice for working on electrical connections, components, etc.

DANGER!

... indicates an immediately hazardous situation which will lead to death or severe injuries if it is not avoided.

WARNING!

... indicates a potentially hazardous situation which may lead to death or severe injuries if it is not avoided.

CAUTION!

... indicates a potentially hazardous situation which may lead to trivial or minor injuries if it is not avoided.



ATTENTION! ... indicates a situation which may lead to damage to property if it is not avoided.

ETS

In the ETS tables, the parameter default settings are marked by underlining.

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	<ul style="list-style-type: none"> • 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

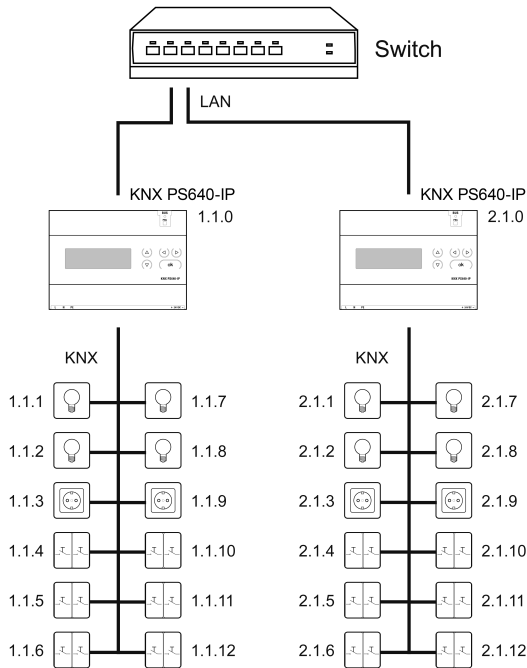
The product conforms with the provisions of EU directives.

2. Application examples

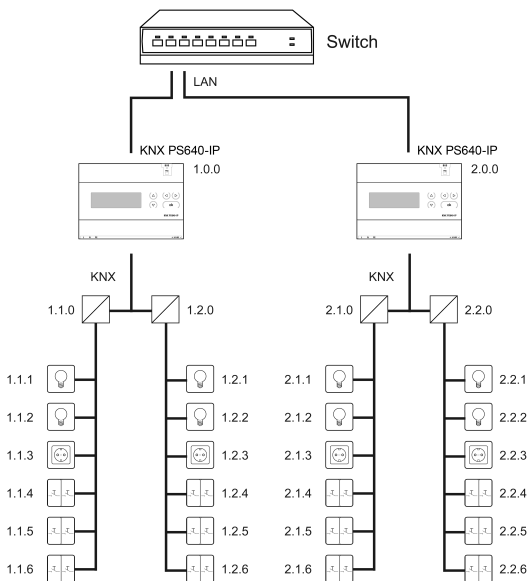
2.1. IP Interface

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*

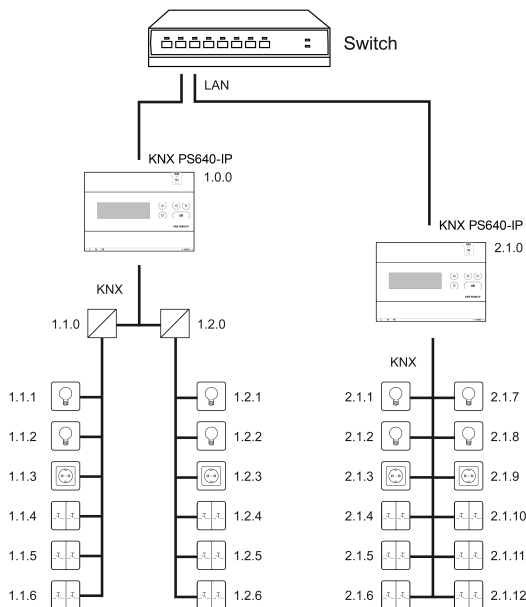


Fig. 3
KNX PS640+IP
 as a backbone and line coupler

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).

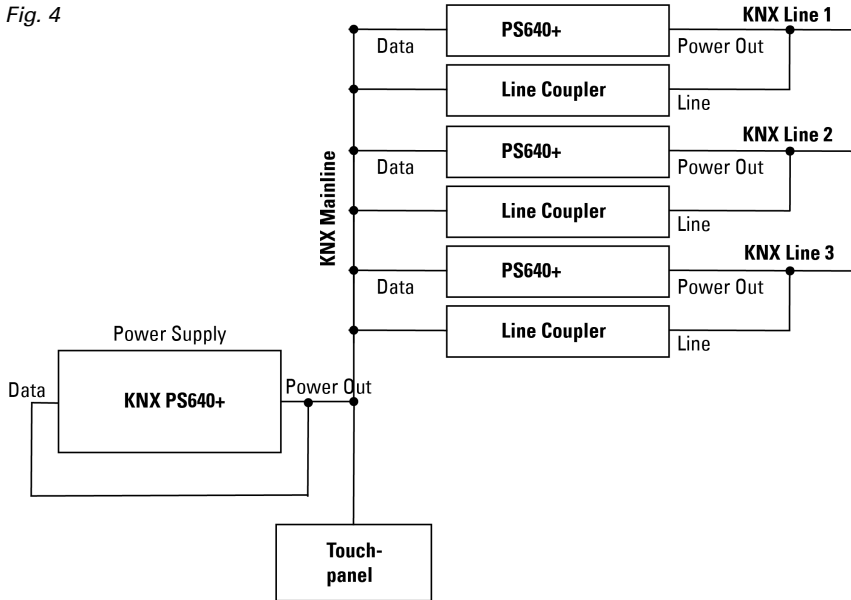
2.1.2. Bus access (KNXnet/IP Tunnelling)

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

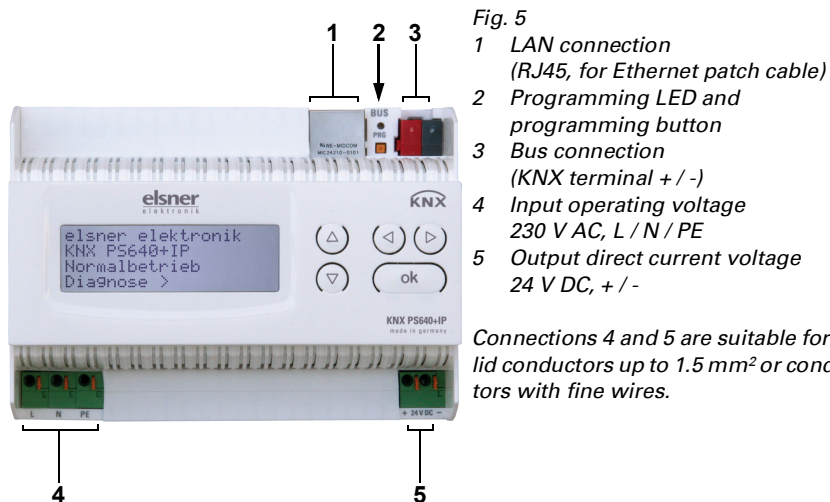


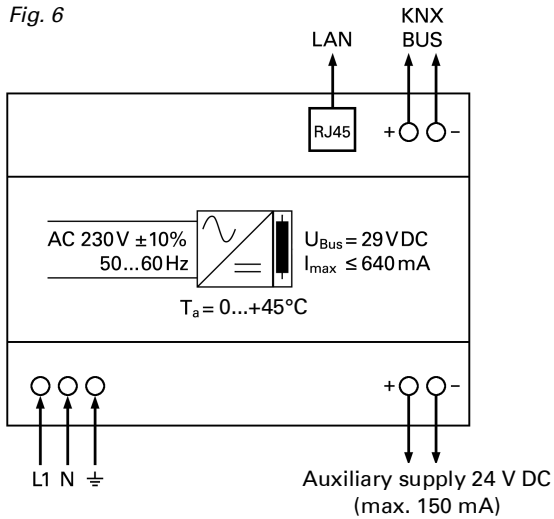
Fig. 5

- 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



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        > v

```

Move the cursor (flashing rectangle at right edge) to the „Data memory“ menu with the keys ▾ and ▴ and confirm with key ▸.

```

Hours of Operation > █
Overload           >
Ext. Overvoltage   >
Int. Overvoltage   > v

```

```

Short circuit      >
Excess Temperat.   >

```

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        > v
```

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        > v
```

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 Functions 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 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!

7. Setting of parameters in the ETS

7.1. Parameters of the IP interface

7.1.1. General

Device name	[free entry]
The KNX PS640+IP can be assigned a name of your choice. The device name should be descriptive (e. g. Line TF). It is used to search for and recognize a device.	
Monitoring bus voltage failure	disable • enable
If a KNX failure is detected, it is reported on the IP. Return of the bus voltage is also reported.	
IP address assignment	automatic (DHCP) • manual
<i>Automatic (DHCP):</i> The IP address is automatically assigned on the DHCP, i.e. additional settings are not required. To be able to use this function, there must be a DHCP server in the LAN (many DSL routers have an integrated DHCP server). <i>Manual:</i> In this case, the IP address, the subnet and the gateway IP address must be entered manually.	

7.2. IP configuration

IP Routing Multicast address	
Byte 1 / 2 / 3 / 4	0 ... 255
This address is used for routing telegrams on IP. The multicast IP address 224.0.23.12 was reserved (KNXnet/IP) at the IANA (Internet Assigned Numbers Authority) for this purpose. If a different multicast IP address is required, it must lie within the range of 239.0.0.0 to 239.255.255.255.	
IP address	
Byte 1 / 2 / 3 / 4	0 ... 255
This is the IP address of the KNX PS640+IP .	

IP subnet	
Byte 1 / 2 / 3 / 4	0 ... 255
Enter the subnet mask here. The device uses the values entered in this mask to determine whether there is a communications partner in the local network. If there is no partner in the local network, the device will not send the telegrams directly to the partner but to the gateway that routes the telegram.	
IP gateway address	
Byte 1 / 2 / 3 / 4	0 ... 255
Enter the IP address of the gateway here. Note: If the KNX PS640+IP will only be used in the local LAN, the entry of 0.0.0.0 can remain unchanged.	

7.2.1. Example of assigning IP addresses

A PC is to be used to access the **KNX PS640+IP**.

IP address of the PC: 192.168.1.30

Subnet of the PC: 255.255.255.0

The **KNX PS640+IP** is located in the same local LAN, i. e. it uses the same subnet. The subnet constrains the IP addresses that can be assigned. In this example, the IP address of the **KNX PS640+IP** must be 192.168.1.xx, where xx can be a number from 1 to 254 (with the exception of 30, which is already in use). It must be ensured that no numbers are assigned twice.

IP address of the **KNX PS640+IP**: 192.168.1.31

Subnet of the **KNX PS640+IP**: 255.255.255.0

7.3. Routing (KNX -> IP)

Group telegrams (main group 0 to 13)	block • route • filter
<i>Block:</i> No group telegrams of this main group are routed to IP. <i>Route:</i> All group telegrams of this main group are routed to IP independent of the filter table. This setting is for testing purposes only. <i>Filter:</i> The filter table is used to check whether or not the received group telegram should be routed to IP.	
Group telegrams (main groups 14 and 15)	block • route
<i>Block:</i> No group telegrams of main groups 14 and 15 are routed to IP. <i>Route:</i> All group telegrams of main groups 14 and 15 are routed to IP.	
Group telegrams (main groups 16 to 31)	block • route
<i>Block:</i> No group telegrams of these main groups are routed to IP. <i>Route:</i> An additional page appears on which the routing of main groups 16 to 31 can be disabled or enabled in pairs. Note: The group addresses of main groups 16 to 31 are reserved addresses that can be used for special applications (e.g. in Easy Mode). These group addresses are not available in the ETS.	
Physically addressed telegrams	block • route • filter
<i>Block:</i> No physically addressed telegrams are routed to IP. <i>Route:</i> All physically addressed telegrams are routed to IP. <i>Filter:</i> The physical address is used to check whether the received physically addressed telegram should be routed to IP.	
Broadcast telegrams	block • route
<i>Block:</i> No received broadcast telegrams are routed to IP. <i>Route:</i> All received broadcast telegrams are routed to IP.	
Acknowledge (ACK) of group telegrams	always • only if routed
<i>Always:</i> An acknowledge is generated for every received group telegram (from KNX). <i>Only if routed:</i> An acknowledge is only generated for received group telegrams (from KNX) if they are routed to IP.	

Acknowledge (ACK) of physically addressed telegrams	always • only if routed • answer with NACK
<p><i>Always:</i> An acknowledge is generated for every received physically addressed telegram (from KNX).</p> <p><i>Only if routed:</i> An acknowledge is only generated for received physically addressed group telegrams (from KNX) if they are routed to IP.</p> <p><i>Answer with</i></p> <p><i>NACK:</i> Every received physically addressed telegram (from KNX) is responded to with NACK (not acknowledge). This means that communication with physically addressed telegrams on the corresponding KNX line is not possible. Group communication (group telegrams) is not affected. This setting can be used to block attempts at manipulation.</p>	

7.4. Routing (IP -> KNX)

Group telegrams (main groups 0 to 13)	block • route • filter
<p><i>Block:</i> No group telegrams of these main groups are routed to KNX.</p> <p><i>Route:</i> All group telegrams of this main group are routed to KNX independent of the filter table. This setting is used for testing purposes only.</p> <p><i>Filter:</i> The filter table is used to check whether the received group telegram should be routed to KNX.</p>	
Group telegrams (main groups 14 and 15)	block • route
<p><i>Block:</i> No group telegrams of main groups 14 and 15 are routed to KNX.</p> <p><i>Route:</i> All group telegrams of the main groups 14 and 15 are routed to KNX.</p>	
Group telegrams (main groups 16 to 31)	block • route
<p><i>Block:</i> No group telegrams of these main groups are routed to KNX.</p> <p><i>Route:</i> An additional page appears on which the routing of main groups 16 to 31 can be disabled or enabled in pairs.</p>	
Physically addressed telegrams	block • route • filter
<p><i>Block:</i> No physically addressed telegrams are routed to KNX.</p> <p><i>Route:</i> All physically addressed telegrams are routed to KNX.</p> <p><i>Filter:</i> The physical address is used to check whether the received physically addressed telegram should be routed to KNX.</p>	
Broadcast telegrams	block • route
<p><i>Block:</i> No received broadcast telegrams are routed to KNX.</p> <p><i>Route:</i> All received broadcast telegrams are routed to KNX.</p>	
Resending of group telegrams	block • route
<p><i>Disable:</i> The received group telegram is not resent to KNX in case of a fault.</p> <p><i>Enable:</i> The received group telegram is resent up to three times in case of a fault.</p>	
Resending of physically addressed telegrams	block • route
<p><i>Disable:</i> The received physically addressed telegram is not resent to KNX in case of a fault.</p> <p><i>Enable:</i> The received physically addressed telegram is resent up to three times in case of a fault.</p>	

Resending of broadcast telegrams

block • route

Disable: The received broadcast telegram is not resent to KNX in case of a fault.*Enable:* The received broadcast telegram is resent up to three times in case of a fault.

8. Communication settings in the ETS

If the IP-configuration of the **KNX PS640+IP** is valid the device can act as an interface to KNX. The following configuration is necessary:

Select the button „Settings“ and the tab „Communication“ in the main window of ETS4. All available connections are listed by „Configured connections“. Select the desired connection.

The button „Local settings“ enables the configuration of the individual address, which is used for bus access.

A dummy device may be created in the ETS-project to reserve this address.

The **KNX PS640+IP** supports up to 5 connections simultaneously. An additional physical address has to be reserved for every connection. The first additional physical address is allocated (as shown above) to the connection in the ETS. The remaining additional addresses can be assigned directly by the device, in which case the learn button should be pressed for at least one second. The automatic address allocation is performed as:

Connection 2 contains the next higher address from Connection 1,

Connection 3 the next higher from Connection 2

etc.

For example:

Connection 1 uses the additional individual address 15.15.250.

Connection 2 is automatically set to 15.15.251, connection 3 is 15.15.252,

connection 4 is 15.15.253 and connection 5 is 15.15.254.

The assignment of the additional individual addresses is shown by a fast blinking learned.

Note: It is necessary to check whether the additional individual addresses are unused before they are assigned.

For new devices (i.e. in the factory settings state), only the additional individual address of the first connection is active with the address 15.15.250. To support multiple concurrent connections the additional address assignment is required.

9. Setting the bus functions of the power supply unit in the ETS

9.1. Transmission protocol

9.1.1. Abbreviations

Flags:

C Communication*R* Read*W* Write*T* Transmit*U* Update

9.1.2. Listing of all communication objects

No.	Name	Function	EIS type	Flags
0	Bus voltage [V]	Output	14.030	C R T
1	Bus current [mA]	Output	9.021	C R T
2	Permanent reset (1 = active 0 = inactive)	Input	1.003	C R W
3	Time reset (1 = 30 seconds active 0 = inactive)	Input	1.003	C R W
4	Reset status of the line (1 = active 0 = inactive)	Output	1.002	C R T
5	Overload (0 = normal 1 = overload)	Output	1.002	C R T
6	external overvoltage (0 = normal 1 = overvoltage)	Output	1.002	C R T
7	internal overvoltage (0 = normal 1 = overvoltage)	Output	1.002	C R T
8	Short circuit (0 = normal 1 = short circuit)	Output	1.002	C R T
9	Overtemperature (0 = normal 1 = overtemperature)	Output	1.002	C R T
10	System defect (0 = normal 1 = defect)	Output	1.002	C R T
11	1 bit malfunction collection (operation = 0 fault = 1)	Output	1.002	C R T
12	8 bit status collection	Output	5.010	C R T
13	Date	Input	11.001	C R W
14	Time	Input	10.001	C R W
15	Recall error information (1 = No.+1 0 = No.-1)	Input	1.008	C R W
16	Message part 1	Output	16.000	C R T
17	Message part 2	Output	16.000	C R T
18	Message part 3	Output	16.000	C R T
19	Message part 4	Output	16.000	C R T

No.	Name	Function	EIS type	Flags
20	Threshold value: 16 bit value [mA]	Input / Output	9.021	C R W T U
21	Threshold value: 1 = Increment 0 = Decrement	Input	1.008	C R W
22	Threshold value: Increment	Input	1.017	C R W
23	Threshold value: Decrement	Input	1.017	C R W
24	Threshold value: Switching output	Output	1.002	C R T
25	Threshold value: Switching output block	Input	1.003	C R W
26	Software version	readable	217.001	C R

9.2. Parameters of the power supply unit

9.2.1. General settings

Measured values:

Transmission behaviour object „bus voltage“	<ul style="list-style-type: none"> • do not send • send cyclically • send in case of change • send in case of change and cyclically
Sending cycle (only if sending „cyclically“)	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h
Change in % (only if sending „in case of change“)	1 ... 50

Transmission behaviour object „bus current“	<ul style="list-style-type: none"> • do not send • send cyclically • send in case of change • send in case of change and cyclically
Sending cycle (only if sending „cyclically“)	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h
Change in % (only if sending „in case of change“)	1 ... 100

Reset of the line:

What shall be used for the reset?	
display and keyboard	Yes
object „permanent reset“ 1 = reset 0 = no reset	No • Yes
object „time reset“ 1 = 30 seconds reset 0 = no reset	No • Yes
Use object „reset status of the line“	No • Yes

Other:

Maximum telegram quota	1 • 2 • 3 • 5 • 10 • 20 Telegrams per second
General sending delay after power up and programming	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h

9.2.2. Messages**1 bit malfunction objects:**

Object „overload“	<ul style="list-style-type: none"> • do not send • send in case of change • send in case of change to 1 • send in case of change to 0 • send in case of change and cyclically • send in case of change to 1 and cyclically • send in case of change to 0 and cyclically
Sending cycle (only if sending „cyclically“)	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h
Object „external overvoltage“	[The setting options are similar to object „overload“]
Object „internal overvoltage“	[The setting options are similar to object „overload“]
Object „short circuit“	[The setting options are similar to object „overload“]
Object „overtemperature“	[The setting options are similar to object „overload“]
Object „system defect“	[The setting options are similar to object „overload“]

1 bit malfunction collection:

Object „1 bit malfunction collection“	<ul style="list-style-type: none"> • do not send • send in case of change • send in case of change to 1 • send in case of change to 0 • send in case of change and cyclically • send in case of change to 1 and cyclically • send in case of change to 0 and cyclically
This object results in a disjunction of the 1 bit malfunction objects	
Sending cycle (only if sending „cyclically“)	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h

8 bit status collection:

Object „8 bit status collection“	<ul style="list-style-type: none"> • do not send • send in case of change • send in case of change and cyclically
Sending cycle (only if sending „cyclically“)	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h
Bit 0 = reset status of the line	= value 1
Bit 1 = overload	= value 2
Bit 2 = external overvoltage	= value 4
Bit 3 = internal overvoltage	= value 8
Bit 4 = short circuit	= value 16
Bit 5 = overtemperature	= value 32
Bit 6 = current threshold value exceeded	= value 64
Bit 7 = system defect	= value 128

A combination of error messages is possible. If e.g. value 34 is transferred, then Bit 1 = Overload and Bit 5 = Overtemperature are set.

The value set in the menu „current threshold value“ (see next chapter) is used as current threshold value. The additional settings for hysteresis etc. are not taken into account for the status collection. Bit 6 „current threshold status exceeded“ is set, if the threshold value has been exceeded for 1 minute. The bit is immediately deleted again, if the threshold value is underrun.

Error log:

Use error log	No • Yes
If the error log is used:	
Object „message part 1“ sends signal: Error no. (1 = latest error)	
Object „message part 2“ sends signal: Error type	
Object „message part 3“ sends signal: Date of error start	
Object „message part 4“ sends signal: Time of error start	

9.2.3. Current threshold value

Use threshold value	No • Yes
---------------------	----------

If the threshold value is used:

Threshold value:

If the threshold value is set by parameter:

Threshold value is set by	Parameter
Threshold value in mA	0 ... 640
Hysteresis of the threshold value in %	0 ... 50

If the threshold value is set by communication object:

Threshold value is set by	Communication object
The value communicated last shall be maintained	<ul style="list-style-type: none"> • not • after restoration of voltage • after restoration of voltage and programming (Do not use for first commissioning)
Start threshold value in mA valid until 1. communication <i>(only if the value communicated last is „not“ maintained or „after restoration of voltage“)</i>	0 ... 640
Type of threshold change	<ul style="list-style-type: none"> • Absolute value with a 16 bit com.object • Increment/decrement with one comm. object • Increment/decrement with two comm. objects
Step size in mA <i>(only with „increment/decrement“)</i>	1 • 2 • 5 • 10 • 20 • 50 • 100
Hysteresis of the threshold value in %	0 ... 50

Switching output:

Output is at (TV = Threshold value)	<ul style="list-style-type: none"> • TV above = 1 TV - hyst. below = 0 • TV above = 0 TV - hyst. below = 1 • TV below = 1 TV + hyst. above = 0 • TV below = 0 TV + hyst. above = 1
Switching delay from 0 to 1	none • 1 s • 2 s • 5 s • 10 s • ... • 2 h
Switching delay from 1 to 0	none • 1 s • 2 s • 5 s • 10 s • ... • 2 h

Switching output sends	<ul style="list-style-type: none"> • send in case of change • send in case of change to 1 • send in case of change to 0 • send in case of change and cyclically • send in case of change to 1 and cyclically • send in case of change to 0 and cyclically
Send switching output in a cycle of (only if sending „cyclically“)	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h

Blocking:

Use block of the switching output	No • Yes
-----------------------------------	----------

If the block of the switching output is used:

Use block of the switching output	Yes
Evaluation of the blocking object	<ul style="list-style-type: none"> • if value 1: block if value 0: release • if value 0: block if value 1: release
Value of the blocking object before 1. communication	0 • 1

Behaviour of switching output	
with blocking	<ul style="list-style-type: none"> • do not send telegram • send 0 • send 1

The behaviour with release of the switching output depends on the value of the parameter „Switching output sends ...“ (see „Switching output“)

Value of parameter „Switching output sends“:	Setting options „Behaviour of the switching output with release“:
in case of change	<ul style="list-style-type: none"> • do not send telegram • send status of the switching output
in case of change to 1	<ul style="list-style-type: none"> • do not send telegram • if switching output = 1 → send 1
in case of change to 0	<ul style="list-style-type: none"> • do not send telegram • if switching output = 0 → send 0
in case of change and cyclically	send status of the switching output (no selection)
in case of change to 1 and cyclically	if switching output = 1 → send 1 (no selection)
in case of change to 0 and cyclically	if switching output = 0 → send 0 (no selection)

