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Power supplies 160 mA, 320 mA, 640 mA, 1280 mA with integrated choke

Order No. 2120 00, 2122 00, 2130 00, 2138 00



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1 Product definition

1.1 Product catalogue

Product name: Power supply 160 mA with integrated choke / Power supply 320 mA with integrated choke / Power supply 640 mA with integrated choke / Power supply 1280 mA with integrated choke

Use: System device

Design: RMD (rail-mounted device)

Order No. 2120 00 / 2122 00 / 2130 00 / 2138 00

1.2 Function

KNX power supply units generate and monitor the KNX system voltage (SELV). They guarantee the supply of the KNX subscribers with electrical energy and the data communication via the bus line. One bus line can be connected to the KNX power supply units at the "Bus" connection. A regulator is integrated in each power supply unit, so that there is no need for the use of external KNX regulators at the bus connection.

In addition, the KNX power supply units possess an unregulated direct current output "30 V DC" (SELV). This connection is used, for example, to allow the supply of a further line (e.g. main line) via a KNX regulator to be installed separately. Alternatively, the direct current output can be used to supply further function devices (e.g. auxiliary voltage for binary inputs).

The electrical load can be divided up to the outputs "BUS" and "DC 30 V" as required. However, the total rated current dependent on the device variant (160 mA, 320 mA, 640 mA, 1,280 mA) may not be exceeded. The outputs possess shared overload and short-circuit protection and are also protected against running to empty. The connection of the bus line and the additional consumers takes place using KNX device connection terminals (no data rail required).

The KNX power supply units possess a potential-free relay output as a signalling contact for operating or diagnostic messages. This contact is closed in normal operation and opened when device operation is faulty (overload, overvoltage, KNX voltage failure).

Every power supply unit possesses a reset push-button, which, when actuated, shorts the bus line for a defined time or permanently and thus performs a reset of the connected bus subscribers. In addition, it is possible to acknowledge a fault message using the reset push-button.

An LED display on the front of the device can be used to read off the operating state of the power supply units.

The KNX power supply units are suitable for operation in systems with emergency power supply. With the 160 mA, 320 mA and 640 mA variants, a maximum of two identical power supply units (of the same manufacturer and device type) can be switched in parallel in a bus line to increase the rated current. Here, it is not necessary to switch a 200 m bus line between the power supply units.

The 1,280 mA device variant may not be switched in parallel with further KNX power supply units.

The device is designed for mounting on DIN rails according to DIN EN 60715 in closed compact boxes or in distributors in fixed installations.

2 Mounting, electrical connection and operation

2.1 Safety instructions



Electrical devices may only be mounted and connected by electrically skilled persons.

Danger of electric shock. During installation and cable routing, comply with the regulations and standards which apply for SELV circuits.

Serious injuries, fire or property damage possible. Please read and follow manual fully. Do not open device or operate it beyond the technical specification.

2.2 Device components

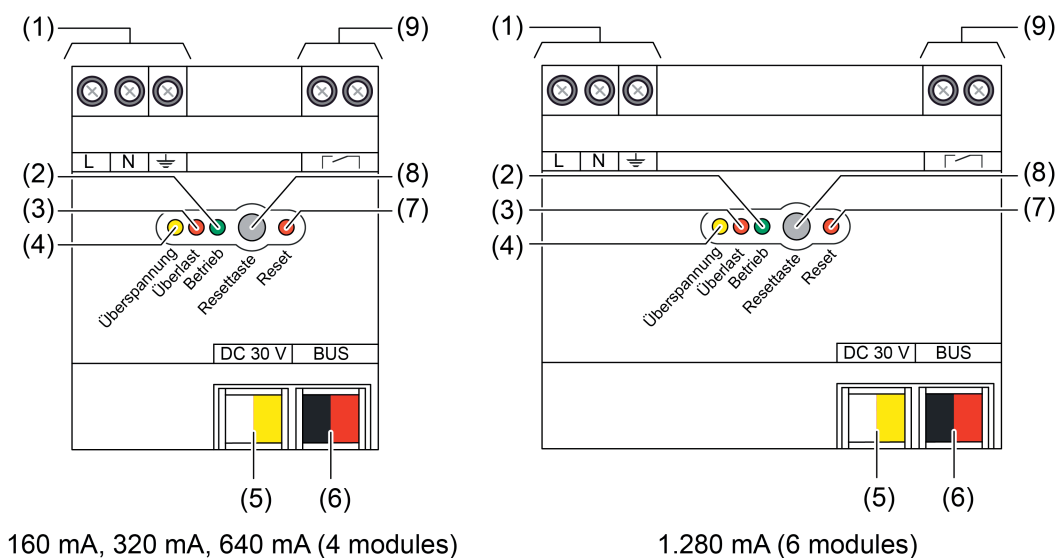


Figure 1: Device components

- (1) Mains connection (L, N, Earth)
- (2) LED **Operation** green
On: Normal operation
Flashes: Overload or overvoltage
Off: No KNX voltage / DC 30 V or internal error
- (3) LED **Overload** red
On: Overload or short-circuit on the KNX bus line or at the output DC 30 V
- (4) LED **Overvoltage** yellow
On: Overvoltage on the KNX bus line or at the output DC 30 V
- (5) Output "DC 30 V"
- (6) Output "Bus" for KNX bus line
- (7) LED **Reset** red
Flashes rapidly (approx. 2.5 Hz): Reset period of 20 seconds
Flashes slowly (approx. 0.25 Hz): Permanent reset

- (8) Button **Reset**
 Acknowledge the diagnostic message: Actuation length <0.5 seconds
 Switch off the KNX bus line for 20 seconds: Actuation 2...4 seconds
 Permanently switch off the KNX bus line: Actuation >4 seconds
 Terminate the permanent reset: Press the button
- (9) Signalling contact for operating or diagnostic messages
 Closed: Normal operation
 Open: After overload, overvoltage or in case of a KNX power failure

2.3 Fitting and electrical connection



DANGER!

Electrical shock when live parts are touched.

Electrical shocks can be fatal.

Before working on the device, disconnect the power supply and cover up live parts in the working environment.

Fitting the device

Observe the temperature range. Ensure sufficient cooling.

- i** The device is designed for mounting on DIN rails according to DIN EN 60715 in closed compact boxes or in distributors in fixed installations.

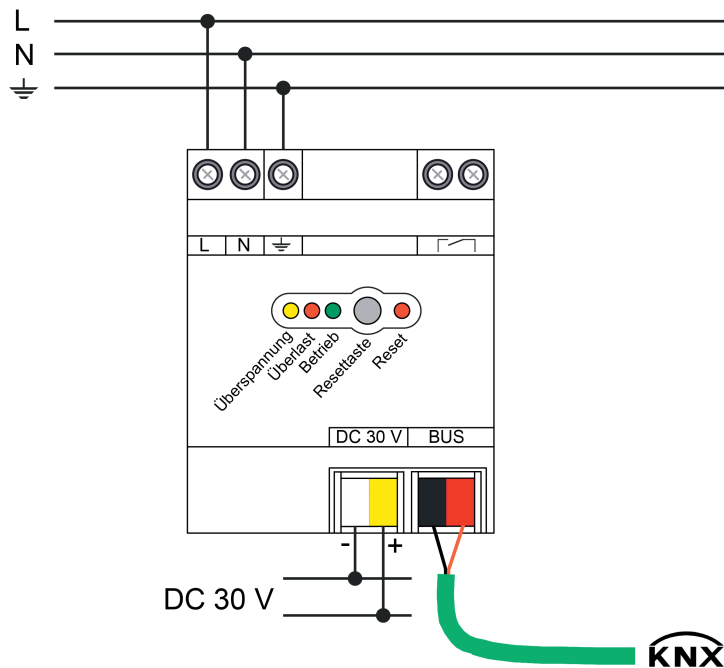


Figure 2: Device connection (connection example):

- Mount the device on DIN rail. The terminals for the mains connection (1) must be at the top.

Connecting the device to mains voltage and bus

The connection of the bus line and the additional consumers takes place using KNX device connection terminals (no data rail required).

- Connecting the mains voltage to the terminals **L** and **N** (1).
- Connect the **PE** protective conductor or functional earth to the terminal \perp .
- Connect the KNX bus line to output **BUS** (6).
- i** Only one KNX bus line can be connected to the power supply unit.
- Install the cover to protect the bus connection against hazardous voltages in the connection area.
- i** The total load of the outputs can be subdivided as desired. Do not exceed the total rated current.
- i** Do not connect any other products to the bus output which are not intended for connection to a KNX line. This might influence the bus communication.
- i** If a power supply unit goes into overload (exceeding of the rated current due to an excessively high current consumption of the connected bus subscribers) and thus orderly operation of the KNX system is no longer possible, then a second power supply of the same manufacturer and type can be connected in parallel in the same bus line with the 160 mA, 320 mA and 640 device variants. Here, it is not necessary to switch a 200 m bus line between the power supply units.
The short-circuit current of the two power supplies that are switched in parallel may not exceed the maximum bus current of 3 A. This is ensured through the use of identical device types.
The 1,280 mA device variant may not be switched in parallel with further KNX power supply units. The **DC 30 V** outputs may also never be switched in parallel.
- i** The device is suitable for operation in systems with emergency power supply.

Connect the signalling contact for operating or diagnostic messages

The power supply units signal overvoltage, overload, short circuit and KNX voltage failure using a potential-free contact (9). A monitoring device can detect the switching status and forward it for diagnostic purposes. A signal lamp, a signal relay or, for example, a KNX binary input connected to a bus line can be used as monitoring device.

- i** The signal output serves only for signalling purposes (5 mA...2 A) and may not be used to switch a load.
- Connect the signalling device according to the connection example (Figure 3)Connecting .

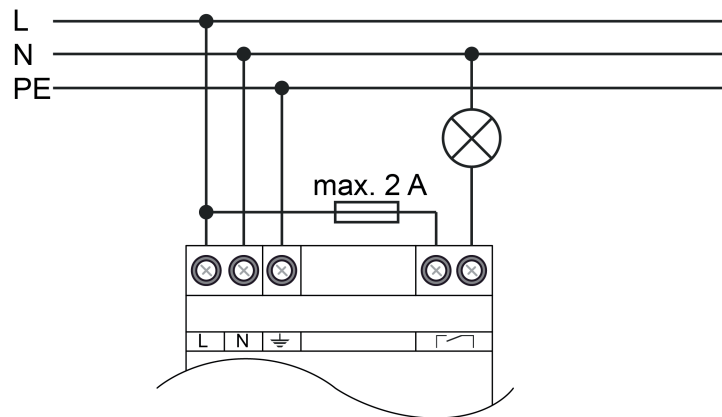


Figure 3: Connection example for optical signalling device

- Connect the KNX binary input according to the connection example (Figure 4)Connecting .

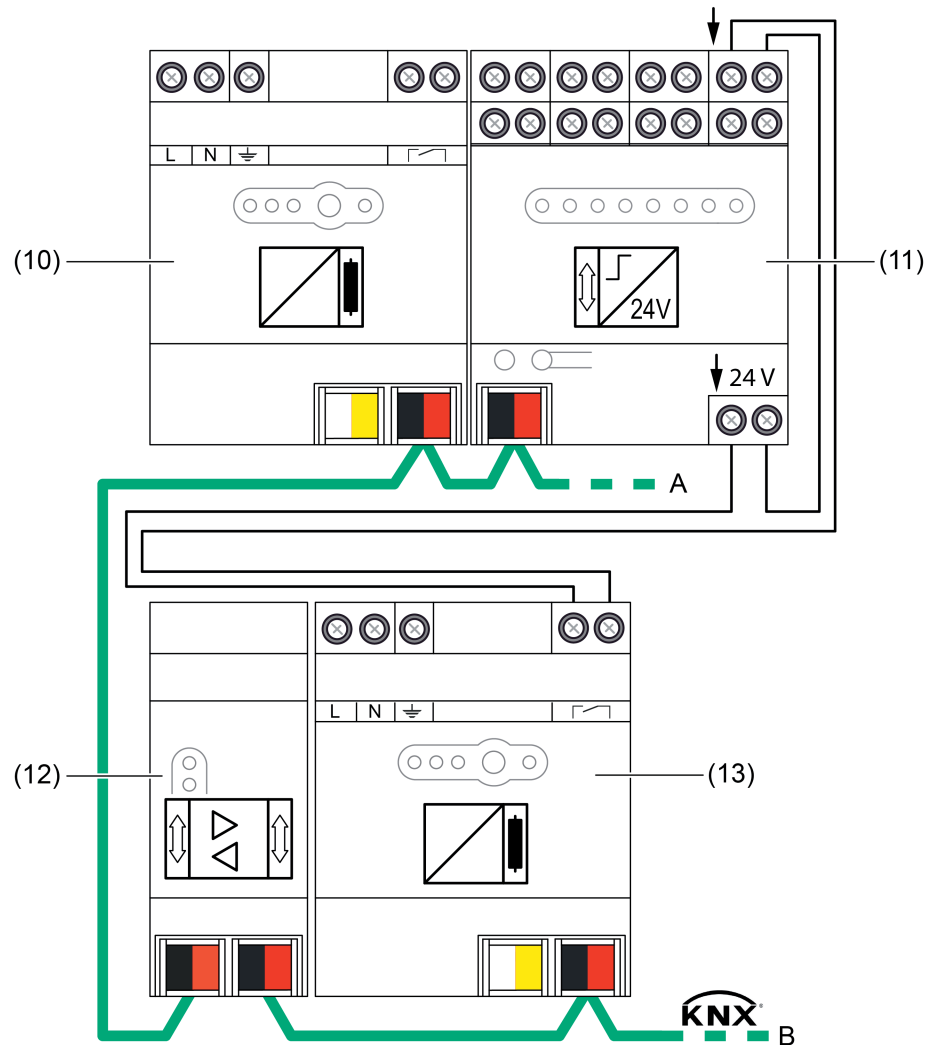


Figure 4: Connection example for KNX binary input

- (10) Power supply main line
- (11) Binary input on the main line
- (12) Line coupler
- (13) Power supply line

i Observe the wiring! Install the cables for the signal contact such that no loops are created. During operation loops can cause interference voltages to be coupled into.

Operation with emergency power systems

The KNX power supply units can be used in combination with centrally supplied emergency power systems. In this way, the function of the KNX system and the control of the most important functions can be ensured in emergency operation.

- i** Statutory and standard specifications for emergency power and emergency lighting systems vary from country to country. In any event, the electrical installation engineer or technical planner must check whether the specific specifications are observed.

Cable lengths

For KNX line segments and power supplies the following rules apply:

- Bus line length per line segment: max. 1,000 m
- Bus line length between power supply and KNX bus subscriber: max. 350 m
- Bus line length between two KNX bus subscribers: max. 700 m

2.4 Commissioning

ETS commissioning

The KNX power supply units do not require an ETS application program. As such, no commissioning with the ETS is necessary. After mounting and electrical connection, the devices are immediately ready for operation.

2.5 Operation

Reset function and Reset button

In normal operation the control of the power supply is not necessary. Operation of the Reset button (8) allows, for example, the execution of a reset of the connected bus line or the acknowledgement of a fault. The button is recessed and thus prevents that it is inadvertently actuated in operation.

When resetting a bus line, the output voltage of the power supply is switched off. At the same time the bus line is short-circuited so that all connected KNX devices are disconnected from the bus voltage.

LED functions and signal contact

An LED display on the front of the device can be used to read off the operating state of the power supply units. In addition, the power supply units possess a potential-free relay output as a signalling contact for operating or diagnostic messages. This contact is closed in normal operation and opened when device operation is faulty (short circuit, overload, overvoltage, KNX voltage failure).

State of operation	LED Operation (green)	LED Overload (red)	LED Overvoltage (yellow)	LED Reset (red)	Signal contact
Normal operation	on	off	off	off	closed
Reset 20 sec	on	off	off	flashes (2.5 Hz)	closed
Reset Permanent	on	off	off	flashes (0.25 Hz)	closed
Overvoltage	flashes (0.5 Hz) *	off	on **	off	opened ***
Overload, short-circuit	flashes (0.5 Hz) *	on **	off	off	opened ***

KNX voltage / DC 30 V failed, internal error.	off	off	off	off	open
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LED functions and signal contact

*: LED flashes for as long as the fault is identified.

** : LED is lit until the fault is acknowledged via the Reset button.

***: Signal contact is opened until the fault is acknowledged via the Reset button.

- i** The **BUS** and **DC 30 V** outputs possess a shared overload and short-circuit protection and are also protected against running to empty. If there is a fault (short-circuit, overload, surge voltage), then both outputs are always affected and thus are not ready for operation.
- i** The signalling contact indicates a power failure on the KNX line. When power supplies are connected in parallel, the signalling contact opens only if both power supplies are faulty or switched off (eg due to failure of the mains voltage on both devices). In this case too, the green operation LED will not extinguish until both power supplies are switched off.

Switch off the KNX bus line for 20 seconds

The connected KNX bus line can be switched off for a defined period of 20 seconds.

- Press the reset button (8) for a period of 2...4 seconds.
The bus line is short-circuited for a period of 20 seconds.
The **Reset** LED (7) flashes quickly (approx. 2.5 Hz).
After 20 seconds, the bus voltage is switched on again automatically. The **Reset** LED then switches off.
- i** The **DC 30 V** output of the unregulated direct current is not short-circuited on a bus reset.

Permanently switch off the KNX bus line

The connected KNX bus line can be permanently switched off (for installation or maintenance work).

- Press the Reset button (8) for longer than 4 seconds.
The bus line is short-circuited.
The **Reset** LED (7) flashes slowly (approx. 0.25 Hz).
- i** The **DC 30 V** output of the unregulated direct current is not short-circuited on a bus reset.

Terminating the permanent reset

Prerequisite: The KNX bus line is permanently switched off. The **Reset** LED (7) flashes slowly.

- Press the Reset button (8).
The bus voltage is switched on again. The **Reset** LED switches off.
- i** On switching the mains power supply off and on again, a permanent reset is automatically reset.

Acknowledging the diagnostic message

After detecting a overvoltage or a short circuit, the LED (red LED on short-circuit, overload or yellow LED on overvoltage) and the signal contact signal the event until the message is acknowledged.

- Press the reset button (8) for a period of up to 0.5 seconds.
The fault is acknowledged and reset.
- ❗ On switching the mains power supply off and on again, a fault is automatically acknowledged.

3 Technical data

General

Rated voltage AC	AC 230 V ~ (± 10%)
Rated voltage DC	DC 240 ... 250 V
Mains frequency	50 / 60 Hz
Output current	
Order No. 2120 00	160 mA (all outputs)
Order No. 2122 00	320 mA (all outputs)
Order No. 2130 00	640 mA (all outputs)
Order No. 2138 00	1280 mA (all outputs)
Power dissipation (max. load on all outputs)	
Order No. 2120 00	max. 1.5 W
Order No. 2122 00	max. 1.8 W
Order No. 2130 00	max. 2.9 W
Order No. 2138 00	max. 6.4 W
Efficiency	
Order No. 2120 00	approx. 76 %
Order No. 2122 00	approx. 84 %
Order No. 2130 00	approx. 87 %
Order No. 2138 00	approx. 86 %
Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-25 ... +75 °C
Relative humidity	max. 93 % (No moisture condensation)
Fitting width	
Order No. 2120 00	72 mm / 4 modules
Order No. 2122 00	72 mm / 4 modules
Order No. 2130 00	72 mm / 4 modules
Order No. 2138 00	108 mm / 6 modules
Connection mode	Screw terminal
single stranded	0.5 ... 4 mm ²
Finely stranded without conductor sleeve	0.5 ... 4 mm ²
Finely stranded with conductor sleeve	0.5 ... 2.5 mm ²

KNX

KNX medium	TP 256
Bus output voltage	DC 28 ... 31 V SELV
Short-circuit current	
Order No. 2120 00	max. 1 A
Order No. 2122 00	max. 1 A
Order No. 2130 00	max. 1.5 A
Order No. 2138 00	max. 3 A
Parallel operation with identical power supply	
Order No. 2120 00	Yes
Order No. 2122 00	Yes
Order No. 2130 00	Yes
Order No. 2138 00	No
Connection type for bus	Device connection terminal

Output DC 30 V

Output voltage	DC 30 V
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Signal output

Switching voltage AC	AC 12 ... 230 V~
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Switching voltage DC
Switching current
Connection mode

DC 2 ... 30 V
5 mA ... 2 A
device connection terminal

4 Appendix

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