EN

Operation and installation manual

KNX ENO 626 *secure*

(Art. # 5269)

Bidirectional Gateway with 8+8 channels between EnOcean and KNX Bus

KNX ENO 626 *secure*

Application

The KNX ENO 626 is a bidirectional gateway between EnOcean radio devices and the KNX bus. It transfers commands and measured values of EnOcean wireless sensors to the KNX bus, for example, to control KNX actuators. EnOcean wireless actuators can also be controlled via KNX.

The EnOcean communication is based on the EnOcean Equipment Profiles (EEP). This profile is usually specified in the data sheet of the EnOcean device.

For the controlling of EnOcean actuators corresponding EEPs are emulated. This means that the gateway sends radio telegrams like a push button or a window contact.

Encrypted communication on EnOcean is supported, encryption can be enabled for each sensor or actuator channel separately.

Further information to the EnOcean Equipment Profiles can be found on http://www.enocean-alliance.org.

In addition the gateway supports logical and control functions and includes radio-repeater functionality. The KNX ENO 626 is divided in 16 channels: channels 1-8 can be used for gateway functions as well as for control/logic functions, channels 9-16 only have control/logic functionality:

- *Link from EnOcean sensor to KNX (channels 1-8)*
  - *Switch functions*
    - *Switching*
    - *Dimming*
    - *Shutter*
    - *Scene*
    - *Valuator*
  - *Window handles*
  - *Window contacts*
  - *Access card switches*
  - *Press switches*
  - *Temperature sensors*
  - *Humidity sensors*
  - *Light sensors*
  - *Presence sensors*
  - *Gas sensors*
  - *Room control panels*
  - *Automated meter devices*
  - *Environmental sensors*
  - *Digital inputs*
- *Link from KNX to EnOcean actuator (channels 1-8)*
  - *Emulation of EnOcean switch module for*
    - *Switching*
    - *Dimming*
    - *Shutter*
  - *Emulation of EnOcean window contact*
  - *Bidirectional EnOcean switching, dimming and shutter actuator*
  - *Bidirectional EnOcean HVAC drives for valves*
- *Control / logic (channels 1-16)*
  - *Timer*
    - *Switch-on delay*
    - *Switch-off delay*
  - *Control*
    - *2-point regulator (byte and float)*
    - *Continuous regulator (float)*
    - *Heat requisition*
    - *Lighting control*
  - *Logical functions*
    - *Gates (e.g. AND, OR, XOR)*
    - *Inverter*
    - *Flip-flop (Toggle)*
  - *Special*
    - *Valuator*
    - *Trigger*
    - *Watchdog*
    - *Filter*

The configuration of the device and the channels is performed using the ETS software via the KNX Bus. To configure the wireless components the keys and the LEDS in the device are used.

1. Installation and connection

The device can be flush-mounted, the housing has the appropriate housing size for mounting in a 60 mm flush-mounted socket

When choosing the installation location the RF range of EnOcean devices to be associated with the gateway has to be considered. Shielding objects (e.g. metal cabinets) or interfering transmitters (e.g. computers, electronic transformers, ballasts) near the gateway should be avoided.

More information on range planning and RF interference can be found in the data sheets of the devices and on www.enocean.com.

The connection to the KNX bus is made with a bus connector. The correct polarity of the terminal referred to the printing inside the unit has to be considered.

The KNX ENO 626 features the following controls and displays:

1 *Switch P KNX Prog*
2 *LED P KNX Prog*
3 *KNX bus connector*
4 *LED S State*
5 *LEDs Channels 1-8*
6 *Switch A Exit/Del*
7 *Switch B Activ/Add*

This device is powered only by the KNX bus.

The device is not working without KNX bus power.

A. KNX Programming mode

The KNX programming mode is activated/deactivated by pressing the KNX programming button P 1

When the programming mode is active, the programming LED 2 lights red, this LED blinks red, when the application is not running, e.g. after a failed ETS download.

A gateway ex-factory has the default individual address 15.15.255. There are no group addresses and no connections to RF sensors and actuators programmed.

B. Button functions

The configuration during the teach-in process can be done with the buttons A 6 and B 7.

Key press A long (Del.): Delete the stored device from the current channel

Key press A short (Exit): Leave channel/linking mode

Key press B long (Add.): Start linking mode

Key press B short (Active): Activate or change the channels 1-32

Key press P (KNX Prog. Mode): Activate “KNX Prog. mode”

A long key press is detected when a button is pressed for longer than 1 second.

C. LEDs for state and channels 1-8

The LEDs state 4 and channel 1-8 5 are used for commissioning and system diagnostics.

The main menu shows the device name, the operation mode (e.g. “Running”) and the KNX individual address.

D. Defined operation modes

If the flashing programming LED 5 indicates a problem during the last ETS download the ETS application should be reloaded.

The device start is signaled by a short green flashing of all LEDs 4 and 5

In normal operation, the status LED is used as a display for a received EnOcean telegram, for every telegram, this LED lights up briefly white without repeater function, if repeater function is activated, the LED lights up briefly blue.

When learning/deleting Enocean devices, the LED indicates the ETS configuration of the currently selected channel:

LED Status	Meaning
LED lights green	ETS configuration „Link from EnOcean Sensor to KNX“
LED lights red	ETS configuration „Link from KNX to EnOcean actuator“
LED lights blue	ETS configuration „Control/Logic“

During an ETS download, this LED flashes green.

During normal operation, the channel LEDs 1-8 indicate whether a received EnOcean or KNX telegram is linked to one or more gateway channels. If so, the LED of the linked channel will light up briefly green.

E. Linking to EnOcean devices

Before linking to EnOcean devices, the functions have to be programmed for each channel with the ETS. Per channel typically only one EnOcean device can be linked. For switches, window handles and window contacts up to four links per channel are possible.

If the EnOcean device sends encrypted telegrams “Channel encryption” has to be enabled for the selected channel.

For unidirectional actuator channels any number, for bidirectional only one RF actuator can be learnt. Encrypted control of actuator channels is supported and can be enabled by parameter in the selected channel.

Encrypted communication in EnOcean uses one continuous independent counter (Rolling Code, RLC) in the transmitter and receiver, which is synchronized in the teach-in in both devices.

If the meter reading of learned transmitter and receiver has a difference greater than 60 then no tele-grams are accepted by this transmitter. In order to synchronize the RLC again, it is sufficient if the sender sends the gateway a learning telegram and the gateway does not have to be put into the learning mode.

It should be noted that the RLC in the gateway cannot be counted further if its voltage supply is interrupted. If a learned RPS button is pressed more than 30 times in this state, the button and gateway must be synchronized again by sending a learning telegram.

F. Linking mode for RF sensors

The configuration during the teach-in process can be done with the buttons A 6 and B 7.

If the device is in normal mode, the push button B activates the channel mode by short key press and changes to the next channel, the currently active channel is indicated by one of the LEDs 5. If the channel is configured as a sensor channel via the ETS, the status LED also lights up green.

By long key press on button B on the desired channel, the learning mode is activated, and the corresponding channel LED starts to flash green if the channel still has free connections. A RF sensor can now be connected to the channel, for this purpose the sensor type set in the ETS must match the profile of the sensor to be connected. A connection is created by pressing the learn-button of the sensor. Window handles and switches must be operated for teach-in because they do not have a separate learn button.

To avoid that other transmitting devices are stored by accidental activation during the programming phase, devices can be programmed only after 3-times activation. For this purpose in the general parameters ‘Link switches/handles (RPS) after 3 tel.’

must be selected. The sensor has to send three telegrams within 10 seconds to be linked.

The link mode is terminated by a short press of the left key A, as well as automatically after 5 minutes without operation.

Quick guide linking mode for RF-sensors

1. Button B short press to select the desired channel.
2. Button B long press to activate the learning mode ("Wait for ENO ...").
3. Activate the learning mode in the RF-sensor.
4. The sensor is now programmed.

G. Deleting links for RF sensors

Links with RF sensors can be deleted in several ways. With a long press on button A the delete mode is activated for the current channel. The sensor can now be deleted from the visible channel by pressing the learn button on the RF sensor. It is also possible to delete all assignments of the selected channel by pressing B ("All"). It is not required to operate the RF sensors.

Learned sensors can be erased by several ways. A long press on button A activates the delete mode for the current channel, the corresponding channel LED starts flashing green if the channel is linked to RF sensors. The sensor can now be deleted from the visible channel by pressing the learn button on the RF sensor. It is also possible to delete all learned sensors of the selected channel by short press on button B with activated delete mode. For this, the sensors do not have to be actuated. After successful deletion, the channel LED switches back to steady light.

By programming the application program via the ETS all programmed sensors of all channels will be deleted, when the "Delete all links after download" function in the general parameter is enabled.

If the function of a channel has been changed, programming the parameters with the ETS deletes the links of the modified channel.

The link mode is terminated by a short press of the left key A, as well as automatically after 5 minutes without operation.

Quick guide linking mode for RF sensors:

1. Button B short press to select the desired channel.
2. Button A long press to activate the delete mode (Channel LED flashes red).
3. Activate the learning mode at the desired RF sensor to delete.

Alternatively:

Button B long press to delete all taught-in RF sensors from the selected channel.

H. Linking mode for RF actuators

The selection of the channel during the teach-in of actuators is the same as for teach-in of sensors. Here, in addition to the channel LED of the selected channel, the status LED is red if the channel is set to an actuator function. The teach-in is depending on the emulated sensor type selected:

- RPS switch (F6-02-01 / D2-03-00)

The learning mode must first be activated at the actuator. When emulating an RPS switch, the learning mode in the gateway is activated by long press of button B at the desired channel. In the RPS function, the channel LEDs indicate the pressure point of the emulated switch by flashing, 2 LEDs are always combined:

Channel LEDs	Pressure point
1 - 2	Rocker A top
5 - 6	Rocker A bottom
3 - 4	Rocker B top
7 - 8	Rocker B bottom

The desired pressure point can be selected by short press on button B; by long button press, up to 3 EnOcean telegrams are sent to teach the actuator.

- 1BS input contact (D5-00-01)

The learning mode must first be activated at the actuator. When emulating a 1BS contact, the EnOcean telegram for teach-in is sent by long press of button B long at the desired channel. This is indicated by brief flickering of the channel LED.

- VLD actuators (D2-01-XX)
- VLD actuators (D2-05-XX)

The learning mode must first be activated at the actuator. When these bi-directional actuators are integrated, the learning telegram is triggered by long press of button B of the desired channel, and the triggering of the telegram is indicated by a brief flickering of the corresponding channel LED.

Attention: Some actuators on the market trigger learning from their side, this is not supported by the gateway.

- HVAC actuator for valve (A5-20-01)
- HVAC actuator for valve (A5-20-04)

The teach-in of these bi-directional devices is initiated by the actuator, i.e. the teach-in process takes place as in the case of a sensor channel: The channel LED of the selected channel begins to flicker with a long press on button B, then a learning telegram must be triggered at the actuator. If the teach-in was successful, the channel LED switches back to permanent light.

The learning mode is terminated by a short operation of the left button A as well as automatically after 5 minutes without operation.

The activation of the learning mode of the actuator can be found in the data sheet of the respective actuator.

I. Deleting links for RF actuators

The selection of the channel when deleting connections to actuators is the same as for teach-in of sensors. Here, in addition to the channel LED of the selected channel, the status LED is red if the channel is set to an actuator function. The teach-in is depending on the emulated sensor type selected.

- RPS switch (F6-02-01 / D2-03-00)
- 1BS input contact (D5-00-01))

The links of these unidirectional actuator channels are stored in the respective actuators. These can be deleted locally for many types on the device without the gateway. In some actuators it is also possible to delete individual links by learning telegrams. In this case, the deletion of actuators works the same way as the teach-in.

- VLD actuators (D2-01-XX)
- VLD actuators (D2-05-XX)

The learning mode must first be activated at the actuator. When links to these bi-directional actuators are deleted, the learning telegram is triggered by long press of button A of the desired channel, and the triggering of the telegram is indicated by a brief flickering of the corresponding channel.

Attention: Some actuators on the market trigger deleting from their side, this is not supported by the gateway.

- HVAC actuator for valve (A5-20-01)
- HVAC actuator for valve (A5-20-04)

Here also for these bi-directional devices, the teach-in procedure is initiated by the actuator: The channel LED of the selected channel begins to flicker with a long press on button A, after that a learning telegram can be triggered at the actuator or the channel can be erased without a learning telegram from the actuator by short press on button B. If the deletion was successful, the channel LED changes to continuous light.

2. Normal operation

J. RF sensors

When in normal operation mode, each received EnOcean telegram will be compared to see if it has been assigned to a channel. If so, the corresponding channel LED flashes. Depending on the configured function there will be one or more telegrams sent on the bus. The gateway only sends telegrams to the KNX bus when a corresponding EnOcean telegram has been received. The transmission frequency on the bus is determined by the EnOcean sensor.

If a received EnOcean telegram is not assigned to a channel, only the status LED flashes white briefly.

K. RF actuators

If a channel is set to switch or input contact and the gateway receives a telegram from the KNX bus, which is assigned to this actuator channel, a RF telegram will be sent for this channel. If a channel is set to HVAC actuator, the channel waits for a request of the actuator, then he sends the actual values to KNX and EnOcean.

For the other actuator channels, the communication is bidirectional: Each telegram from KNX or EnOcean triggers a telegram on the other medium. Each time a KNX telegram is received on an object of a gateway channel, the appropriate channel LED lights up briefly.

L. Internal links

For some use cases it is necessary to link KNX data points (communication objects) of different channels. Thus, values of sensor channels can be connected with inputs from control channels. But also wireless sensors can be connected with RF actuators.

Data points can be linked in the ETS by assigning the same group address to an output and an input object. In this case the values will also be sent to the bus.

In contrast, the internal links are foreseen to link communication objects directly without sending tele-grams via the KNX bus. For this purpose no group addresses have to be assigned in the ETS. Internal links can be created in the parameter dialog of the ETS. In the receiving channel, the communication object number of the output channel can be selected. The value of the selected object is copied internally into the receiving object and implements the associated function.

M. Repeater function

The repeater function is used for extend distances between sensors and actuators. The KNX ENO 626 is a level-1 radio repeater. This means, that only telegrams that come directly from a transmitter will be repeated. Telegrams sent by other repeaters are not repeated again.

3. Reset to factory device settings

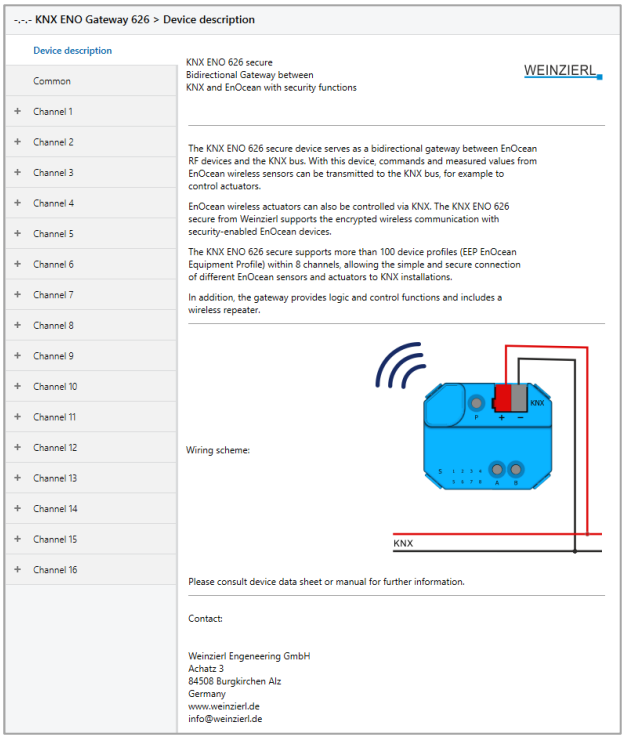
It is possible to reset the device to its factory settings:

- Disconnect the KNX Bus connector 3 from device
- Press button A 6 and keep it pressed down
- Reconnect the KNX Bus connector 3 of device
- Keep button A 6 pressed until state LED 4 lights red

If button A is released, a short flashing of all LEDs 2, 4 and 5 visualizes the successful reset of the device to factory default settings.

4. ETS database

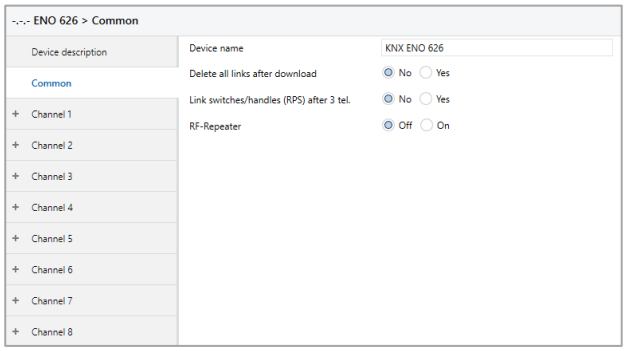
The ETS database (for ETS 4.2 and 5) can be downloaded from the product website of the KNX ENO 626 (www.weinzierl.de) or from the ETS online catalogue.



The following pages and parameters are visible in the ETS.

N. Device description

The first page shows general information about the device.



Common

- Device name (30 Characters)

  An arbitrary name can be assigned for the KNX ENO 626. The device name should be meaningful, e.g. „Living Room.

- Delete all links after download

  If this parameter is active, all linked EnOcean devices in all sensor channels are erased after ETS download.

- Link switches/handles (RPS) after 3 tel.

  This parameter selects whether an EnOcean switch or handle has to be operated 1x or 3x times for teach-in.

- RF-Repeater

  With this parameter the repeater function is switched on or off.

O. Gateway functions

For each of the first 8 channels one of the following function can be selected

- Inactive
- Link from EnOcean sensor to KNX
- Link from KNX to EnOcean actuator
- Control/Logic

Channels 9-16 support only Control/Logic functionality.

If a channel function is enabled, a name of up to 15 characters can be assigned to the channel by parameter „Displayed text“. This name should be clear and meaningful; it is shown in the ETS in the object names of the channel.

The 1st channel will be described below, the functioning of the other 15 channels is according to the 1st.

Gateway functions on channel type “Link from EnOcean sensor to KNX”

In this operating mode EnOcean sensors can be integrated into a KNX system.

When pressing the learn button most EnOcean sensors send their EEP to prevent linking of the sensor to an incompatible gateway channel. The compatible profile is written in the parameter sensor type in the ETS database. If an attempt is made to teach a sensor with an EEP that does not match the channel, the gateway does not establish the connection. If during the ETS configuration, the EEP of a channel is changed, the next download will delete learned sensors on the channel.

During operation, the gateway forwards the data sent on EnOcean of a linked sensor via one or more objects on KNX.

If the EnOcean sensor transmits encrypted telegrams, this must be activated by the parameter "Channel encryption".

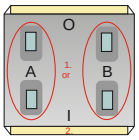
Sensor type “RPS Switch”

The type of device to be used can be selected via the parameter switch type. It is possible to learn devices with a single switch, two or four rockers.

The channel encryption can also be activated in the parameter, it should be noted that at the moment only the PTM 215 of the switch modules of EnOcean is able to communicate encrypted.

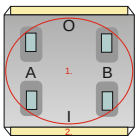
Switching the PTM 215 to encrypted communication:

1. Simultaneously press both contact tabs from either channel A or B
2. By activating the energy bow, trigger the learning telegram and activate the encryption

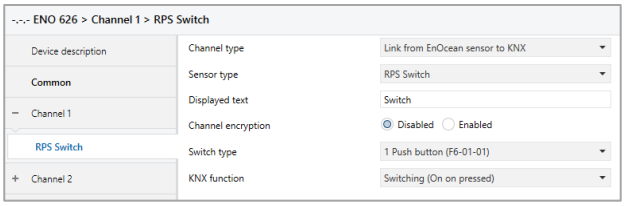


Switching the PTM 215 to unencrypted communication:

1. Simultaneously press all contact tabs from channel A and B
2. By activating the energy bow, trigger the learning telegram and deactivate the encryption



Switch type “1 Push button (F6-01-01)”



The parameters "KNX function" define which KNX telegrams are triggered when the push button is pressed and released:

Switching (On on pressed)

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching on	1.001	1 Bit	To KNX

Switching (Off on pressed)

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching off	1.001	1 Bit	To KNX

Switching Toggle

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching toggle	1.001	1 Bit	To KNX

Dimming

On short button press, a switching telegram is sent via object switching. On long button press, a relative dimming is sent over the entire dimming range to object dimming. When releasing after long button press, a dimming stop telegram is sent via object dimming. Both objects are linked, each switching on or increase of brightness is followed by a switching off or decreasing of brightness on next button press.

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching on/off	1.001	1 Bit	To KNX
Switch Sensor channel - Dimming brighter/darker	3.007	4 Bit	To KNX

Shutter

On each long button press the shutter moves up or down alternatively. If the shutter is moving, it is stopped on short button press, if the shutter is stopped, every short button press sends a step command in up direction.

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Shutter up/down	1.008	1 Bit	To KNX
Switch Sensor channel - Shutter step/stop	1.007	1 Bit	To KNX

Scene

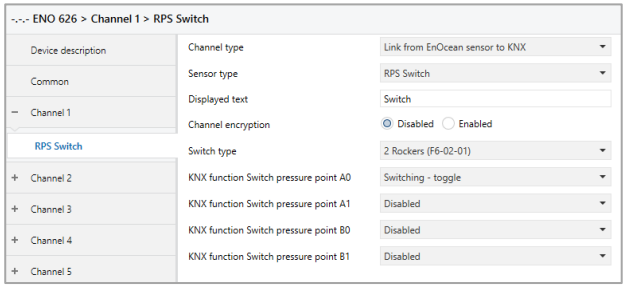
Short button press triggers a scene command. Furthermore, it is selected by parameter whether a command to learn a scene is sent on long button press.

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Scene	18.001	1 Byte	To KNX

Byte value

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Byte value	5.xxx	1 Byte	To KNX

Switch type "2 Rockers (F6-02-01)"



Each pressure point of the 2 rockers can be individually assigned to KNX functions by the parameters "KNX function Switch pressure point":

Disabled

Switching - on

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching on	1.001	1 Bit	To KNX

Switching - off

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching off	1.001	1 Bit	To KNX

Switching - toggle

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching on/off	1.001	1 Bit	To KNX

Dimming - brighter

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching on	1.001	1 Bit	To KNX
Switch Sensor channel - Dimming brighter	3.007	4 Bit	To KNX

Dimming - darker

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching off	1.001	1 Bit	To KNX
Switch Sensor channel - Dimming darker	3.007	4 Bit	To KNX

Dimming - (one-key control)

On short button press, a switching telegram is sent via object switching. On long button press, a relative dimming is sent over the entire dimming range to object dimming. When releasing after long button press, a dimming stop telegram is sent via object dimming. Both objects are linked, each switching on or increase of brightness is followed by a switching off or decreasing of brightness on next button press.

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Switching on/off	1.001	1 Bit	To KNX
Switch Sensor channel - Dimming brighter/darker	3.007	4 Bit	To KNX

Shutter - up

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Shutter up	1.008	1 Bit	To KNX
Switch Sensor channel - Shutter step/stop	1.007	1 Bit	To KNX

Shutter - down

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Shutter down	1.008	1 Bit	To KNX
Switch Sensor channel - Shutter step/stop	1.007	1 Bit	To KNX

Shutter - (one-key control)

On each long button press the shutter moves up or down alternatively. If the shutter is moving, it is stopped on short button press, if the shutter is stopped, every short button press sends a step command in up direction.

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Shutter up/down	1.008	1 Bit	To KNX
Switch Sensor channel - Shutter step/stop	1.007	1 Bit	To KNX

Scene

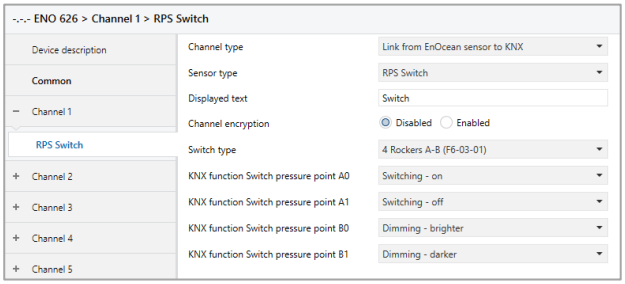
Short button press triggers a scene command. Furthermore, it is selected by parameter whether a command to learn a scene is sent on long button press.

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Scene	18.001	1 Byte	To KNX

Byte value

Group Object	Type KNX	Size	Direction
Switch Sensor channel - Byte value	5.xxx	1 Byte	To KNX

Switch type "4 Rockers (F6-03-01)"



The configuration of a 4-fold rocker is analogous to the 2-fold rocker (F6-02-01), however, it must be noted that for the complete integration, 2 channels must be used in the gateway, one channel for rockers A-B, another channel for rockers C-D. When using a 4-fold rocker, channel encryption is not supported.

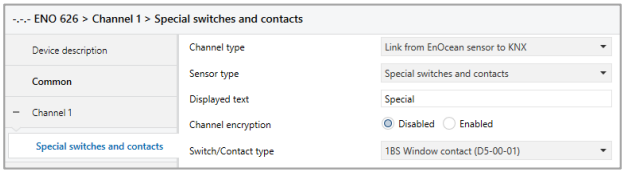
Sensor type "Special switches and contacts"

The parameter switch/contact type can be used to select which type of device is to be used, the following profiles are available:

- 1BS Window contact (D5-00-01)
- 4BS Window and door contact (A5-14-xx)
- RPS Window handle (F6-10-00)
- VLD multi sensor window handle (D2-06-01)
- RPS Key card switch (F6-04-01)
- RPS Pressure switch (F6-04-01)
- RPS Pressure switch group (F6-04-01)
- RPS Liquid leakage sensor (F6-05-01)

- VLD Push Button (D2-03-0A, **as of ETS database V1.1)**
- Generic (RORG-FUNC-TYPE, **as of ETS database V1.1**)

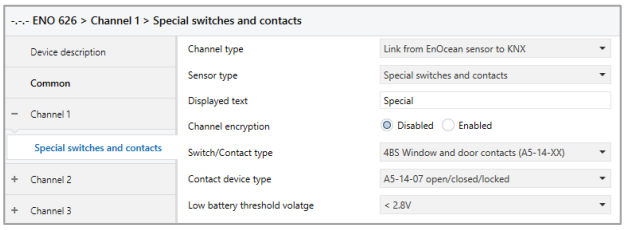
Switch/contact type "1BS Window contact (D5-00-01)"



For window contacts, up to 4 contacts can be taught into one channel. The gateway detects a common state of all contacts learned in the channel and sends the value "closed" only when all windows are closed.

Group Object	Type KNX	Size	Direction
Special Sensor channel - Window group open	1.0019	1 Bit	To KNX

Switch/contact type "4BS Window and door contact (A5-14-xx)"



For this device type, up to 4 contacts can be taught into one channel. The gateway detects a common state of all contacts learned in the channel and sends the value "closed" only when all windows are closed.

The following devices of this profile family are supported:

A5-14-01 open/closed

Group Object	Type KNX	Size	Direction
Special Sensor channel - Window group open	1.0019	1 Bit	To KNX
Special Sensor channel - Battery low	1.002	1 Bit	To KNX

A5-14-03 open/closed/alarm

Group Object	Type KNX	Size	Direction
Special Sensor channel - Window group open	1.0019	1 Bit	To KNX
Special Sensor channel - Alarm	1.005	1 Bit	To KNX
Special Sensor channel - Battery low	1.002	1 Bit	To KNX

A5-14-07 open/closed/locked

Group Object	Type KNX	Size	Direction
Special Sensor channel - Door group open	1.002	1 Bit	To KNX
Special Sensor channel - Door group locked	1.002	1 Bit	To KNX
Special Sensor channel - Battery low	1.002	1 Bit	To KNX

A5-14-08 open/closed/locked/alarm

Group Object	Type KNX	Size	Direction
Special Sensor channel - Door group open	1.002	1 Bit	To KNX
Special Sensor channel - Door group locked	1.002	1 Bit	To KNX
Special Sensor channel - Alarm	1.005	1 Bit	To KNX
Special Sensor channel - Battery low	1.002	1 Bit	To KNX

A5-14-09 open/closed/tilt

Group Object	Type KNX	Size	Direction
Special Sensor channel - Window group open state 1	1.002	1 Bit	To KNX
Special Sensor channel - Window group open state 2	1.002	1 Bit	To KNX
Special Sensor channel - Battery low	1.002	1 Bit	To KNX

A5-14-0A open/closed/tilt/alarm

Group Object	Type KNX	Size	Direction
Special Sensor channel - Window group open state 1	1.002	1 Bit	To KNX
Special Sensor channel - Window group open state 2	1.002	1 Bit	To KNX
Special Sensor channel - Alarm	1.005	1 Bit	To KNX
Special Sensor channel - Battery low	1.002	1 Bit	To KNX

Switch/contact type "RPS Window handle (F6-10-00)"

For window handle sensors, three states can be detected: window open, tilted or closed. When turning the handle in a position the corresponding state will be mapped to two communication objects and transmitted. Up to four handles can be taught to a channel.

The gateway calculates a common state of all handles assigned to the channels. Following some examples from the state table:

Window 1	Window 2	Window 3	Window 4	Common state
Open	Open	Open	Open	Open
Open	Tilted	Open	Open	Open
Open	Closed	Tilted	Closed	Open
Closed	Closed	Closed	Tilted	Tilted
Closed	Closed	Closed	Closed	Closed

For window handles the following communication objects are available:

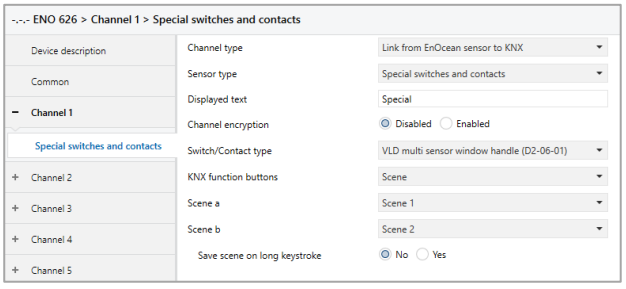
Group Object	Type KNX	Size	Direction
Special Sensor channel - Window group open state 1	1.002	1 Bit	To KNX
Special Sensor channel - Window group open state 2	1.002	1 Bit	To KNX

The following telegrams are sent via these objects in the various states of the window group:

	Window closed	Window tilted	Window open
Window group open state 1	Off	On	On
Window group open state 2	Off	Off	On

The position of the handle is dependent on the installation condition. This is described in the datasheet of the window handle. The handle is mounted correctly if two Off-telegrams via both data points are sent when the window is closed.

Switch/contact type "VLD multi sensor window handle (D2-06-01)"



On selecting this devices type following objects are available:

Group Object	Type KNX	Size	Direction
Special Sensor channel - Window open state 1	1.002	1 Bit	To KNX
Special Sensor channel - Window open state 2	1.002	1 Bit	To KNX
Special Sensor channel - Temperature	9.001	2 Byte	To KNX
Special Sensor channel - Humidity	9.007	2 Byte	To KNX
Special Sensor channel - Alarm	1.005	1 Bit	To KNX
Special Sensor channel - Battery low	1.002	1 Bit	To KNX

Depending on parameter "KNX function buttons" the 2 buttons on the device can execute the following functions:

Switching

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching on/off	1.001	1 Bit	To KNX

Dimming

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching on/off	1.001	1 Bit	To KNX
Special Sensor channel - Dimming brighter/darker	3.007	4 Bit	To KNX

Shutter

Group Object	Type KNX	Size	Direction
Special Sensor channel - Shutter up/down	1.008	1 Bit	To KNX
Special Sensor channel - Shutter step/stop	1.007	1 Bit	To KNX

Scene

Group Object	Type KNX	Size	Direction
Special Sensor channel - Scene	18.001	1 Byte	To KNX

Switch/contact type "RPS Key card switch (F6-04-01)"

On selecting this devices type following object is available

Group Object	Type KNX	Size	Direction
Special Sensor channel - Key card inserted	1.002	1 Bit	To KNX

Switch/contact type "RPS Pressure switch (F6-04-01)"

On selecting this devices type following object is available

Group Object	Type KNX	Size	Direction
Special Sensor channel - Pressed	1.002	1 Bit	To KNX

Switch/contact type "RPS Pressure switch group (F6-04-01)"

On selecting this devices type following object is available

Group Object	Type KNX	Size	Direction
Special Sensor channel - Pressed	1.002	1 Bit	To KNX

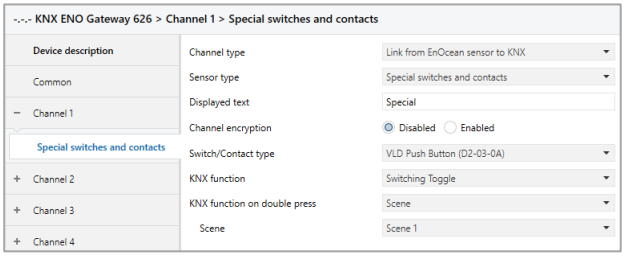
In this operating mode of the pressure switch it is possible to determine via parameter which number of switches must be activated in order to send an ON telegram

Switch/contact type "RPS Liquid leakage sensor (F6-05-01)"

The following object is available with this device type:

Group Object	Type KNX	Size	Direction
Special Sensor channel - Alarm	1.005	1 Bit	To KNX

***Switch/contact type* „VLD Push Button (D2-03-0A)"**
As of database V1.1



This profile supports push buttons with short/long and double key press. The following object is available for monitoring the battery status:

Group Object	Type KNX	Size	Direction
Special Sensor channel - Battery low	1.002	1 Bit	To KNX

The battery status is transmitted each time the button is pressed.

The following KNX functions can be selected for short/long key presses:

- Switching On

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching on	1.001	1 Bit	To KNX

- Switching Off

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching off	1.001	1 Bit	To KNX

- Switching Toggle

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching toggle	1.001	1 Bit	To KNX

Each time the key is pressed, the last value sent is inverted and sent (toggle function).

- Dimming

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching on/off	1.001	1 Bit	To KNX
Special Sensor channel - Dimming brighter/darker	3.007	4 Bit	To KNX

Each time the button is pressed, the last dimming direction sent by both objects is evaluated: If the last value sent was a switch on or an increase in brightness, the next value to be sent is a switch off or a decrease in brightness. A short keystroke sends telegrams for switching on/off, a long keystroke sends telegrams for dimming brighter/darker.

- Shutter

Group Object	Type KNX	Size	Direction
Special Sensor channel - Shutter up/down	1.008	1 Bit	To KNX
Special Sensor channel - Shutter step/stop	1.007	1 Bit	To KNX

If the button is pressed long, the last value sent is inverted and sent via the "Shutter up/down" object. If the button is pressed short, either a current move command is interrupted via the "Shutter step/stop" object or the blind moves one step in the opposite direction to the last move command via the "Shutter up/down" object.

- Szene

Group Object	Type KNX	Size	Direction
Special Sensor channel - Scene	18.001	1 Byte	To KNX

When this function is selected, a parameter for selecting the sent scene appears. In addition, it can be set via parameters whether a command for saving the set scene is to be sent via a long keystroke.

- Byte value

Group Object	Type KNX	Size	Direction
Special Sensor channel - Byte value	5.*	1 Byte	To KNX

When selecting this function, a parameter for setting the value to send appears.

The following KNX functions can be selected for double button presses:

- Switching On

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching on (double press)	1.001	1 Bit	To KNX

- Switching Off

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching off (double press)	1.001	1 Bit	To KNX

- Switching Toggle

Group Object	Type KNX	Size	Direction
Special Sensor channel - Switching toggle (double press)	1.001	1 Bit	To KNX

Each time the key is pressed double, the last value sent is inverted and sent (toggle function).

- Scene

Group Object	Type KNX	Size	Direction
Special Sensor channel - Scene (double press)	18.001	1 Byte	To KNX

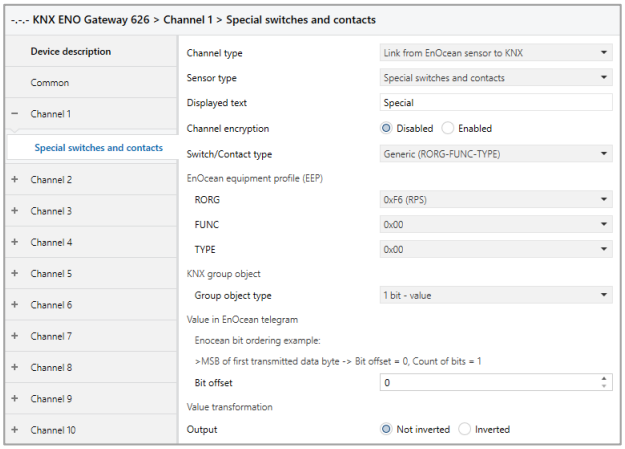
When this function is selected, a parameter for selecting the sent scene appears.

- Byte value

Group Object	Type KNX	Size	Direction
Special Sensor channel - Byte value (double press)	5.*	1 Byte	To KNX

When selecting this function, a parameter for setting the value to send appears.

***Switch/contact type* „Generic (RORG-FUNC-TYPE)“**
As of ETS database V1.1



This function can be used to integrate data from EnOcean sensors with EEPs not supported by the gateway, or to evaluate data from sensors with supported EEPs that deviate from the specification.
The EEP of the device to be evaluated must be known and sent by the EnOcean device during the teach-in process. For setting the EPP the parameters RORG, FUNC and TYPE are available, e.g. if the device sends the EEP A5-08-01 during teach-in, the following must be set:

- RORG: A5
- FUNC: 08
- TYPE: 01

From the received EnOcean telegram, either individual bits can be evaluated or contiguous bits can be combined as bit fields up to a length of 1 byte and interpreted as a value.
The following object types are available for sending on KNX:

- 1 bit - value

Group Object	Type KNX	Size	Direction
Special Sensor channel - Generic 1 bit - value	1.*	1 Bit	To KNX

If 1 bit - value is selected, a parameter also appears for setting whether the bit from the EnOcean telegram is to be sent inverted or not inverted to KNX.

- 1 byte - Integer value / Percent

Group Object	Type KNX	Size	Direction
Special Sensor channel - Generic 1 Byte - Integer value / Percent	5.*	1 Byte	To KNX

- 2 byte - Integer value

Group Object	Type KNX	Size	Direction
Special Sensor channel - Generic 2 Byte - Integer value	7.*	2 Byte	To KNX

- 2 byte - Float value

Group Object	Type KNX	Size	Direction
Special Sensor channel - Generic 2 Byte - Float value	9.*	2 Byte	To KNX

- Raw - Integer value

Group Object	Type KNX	Size	Direction
Special Sensor channel - Generic 1 Byte - Integer value (raw)	5.*	1 Byte	To KNX

To select one or more bits to be evaluated, there are the following 2 parameters:

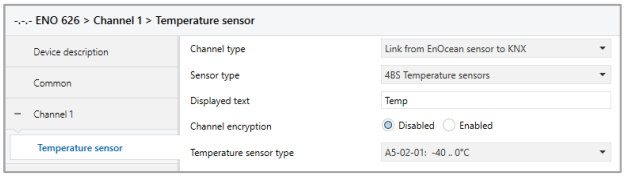
- Bit offset
  Specifies the offset from the MSB of the first received data byte at which the evaluation is to start.
- Count of bits (only for group object type 1 byte or 2 bytes)
  Specifies the number of bits that are to be combined from the set offset and interpreted as a value.

To convert the value from EnOcean telegram to a value in a KNX group telegram, the following parameters are available:

- Scale from EnOcean min
- Scale from EnOcean max

  These two parameters are used to set the range of the value in the EnOcean telegram. This range must be taken from the technical description of the EnOcean device.
- Scale to KNX min
- Scale to KNX max
  These two parameters are used to set the scaling of the value from the EnOcean telegram to the value in the KNX telegram.

Sensor type “4BS Temperature sensors”



Various temperature ranges are supported for the temperature sensors. The temperature value is mapped to a 2 byte floating-point value.

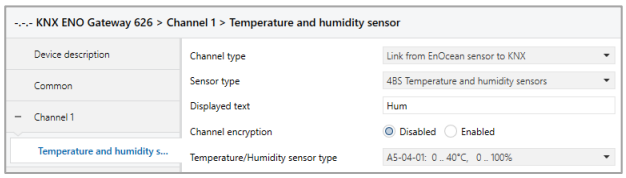
The following profiles are supported:

- A5-02-01: -40 .. 0°C
- A5-02-02: -30 .. +10°C
- A5-02-03: -20 .. +20°C
- A5-02-04: -10 .. +30°C
- A5-02-05: 0 .. +40°C
- A5-02-06: +10 .. +50°C
- A5-02-07: +20 .. +60°C
- A5-02-08: +30 .. +70°C
- A5-02-09: +40 .. +80°C
- A5-02-0A: +50 .. +90°C
- A5-02-0B: +60 .. +100°C
- A5-02-10: -60 .. +20°C
- A5-02-11: -50 .. +30°C
- A5-02-12: -40 .. +40°C
- A5-02-13: -30 .. +50°C
- A5-02-14: -20 .. +60°C
- A5-02-15: -10 .. +70°C
- A5-02-16: 0 .. +80°C
- A5-02-17: +10 .. +90°C
- A5-02-18: +20 .. +100°C
- A5-02-19: +30 .. +110°C
- A5-02-1A: +40 .. +120°C
- A5-02-1B: +50 .. +130°C
- A5-02-20: -10 .. 41,2°C
- A5-02-30: -40 .. 62,3°C

For all temperature sensors the following communication object is available:

Group Object	Type KNX	Size	Direction
Temp Sensor channel - Temperature	9.001	2 Byte	To KNX

Sensor type "4BS Temperature and humidity sensors"



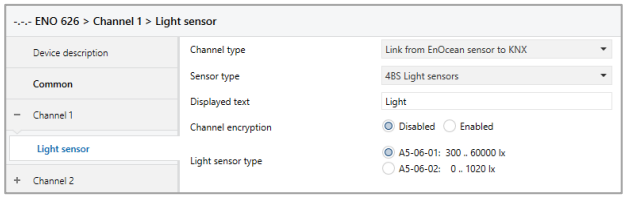
The following profiles can be selected:

- A5-04-01: 0 .. 40°C, 0 .. 100%
- A5-04-02:-20 .. 60°C, 0 .. 100%
- A5-04-03:-20 .. 60°C, 0 .. 100%
  (**As of ETS database V1.1**)

The measured values are sent via two different communication objects:

Group Object	Type KNX	Size	Direction
Hum Sensor channel - Humidity	9.007	2 Byte	To KNX
Hum Sensor channel - Temperature	9.001	2 Byte	To KNX

Sensor type "4BS Light sensors"



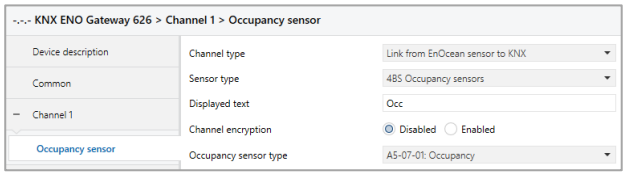
The following profiles can be selected:

- A5-06-01: 300 .. 60000 lx
- A5-06-02: 0 .. 1020 lx

The measuring of light intensity is done in lux (lx). The measured value is available as a 2-byte float value:

Group Object	Type KNX	Size	Direction
Light Sensor channel - Illuminance	9.004	2 Byte	To KNX

Sensor type "4BS Occupancy sensor"



The following profiles are supported here:

- A5-07-01: Occupancy

Occupancy is transmitted via following object:

Group Object	Type KNX	Size	Direction
Occ Sensor channel - Occupancy	1.018	1 Bit	To KNX

- A5-07-02: Occupancy (As of ETS database V1.1)

Occupancy is transmitted via following object:

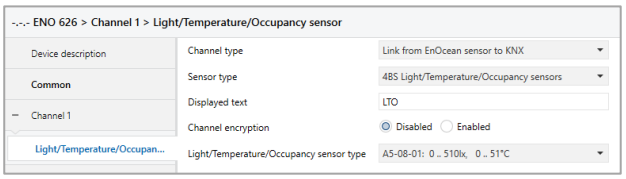
Group Object	Type KNX	Size	Direction
Occ Sensor channel - Occupancy	1.018	1 Bit	To KNX

- A5-07-03: Occupancy + Light (As of ETS database V1.1)

The occupancy and light intensity are sent via the following objects:

Group Object	Type KNX	Size	Direction
Occ Sensor channel - Occupancy	1.018	1 Bit	To KNX
Occ Sensor channel - Illuminance	9.004	2 Byte	To KNX

Sensor type "4BS Light/Temperature/ Occupancy sensor"



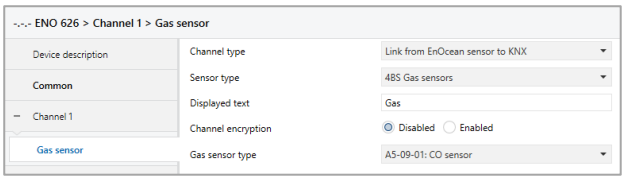
Following profiles are supported here:

- A5-08-01: 0 .. 510lx, 0 .. 51°C
- A5-08-02: 0 .. 1020lx, 0 .. 51°C
- A5-08-03: 0 .. 1530lx, -30 .. 50°C

Light intensity and temperature are each mapped to a communication object with a 2 bytes float value. Presence and motion detectors send 1-bit values:

Group Object	Type KNX	Size	Direction
LTO Sensor channel - Illuminance	9.004	2 Byte	To KNX
LTO Sensor channel - Temperature	9.001	2 Byte	To KNX
LTO Sensor channel - Occupancy	1.018	1 Bit	To KNX
LTO Sensor channel - Motion detector	1.001	1 Bit	To KNX

Sensor type "4BS Gas sensors"



For all sensors, the gas concentration is available via object. Depending on the EPP of the sensor, further measured values can be sent to KNX:

A5-09-01: CO sensor

Group Object	Type KNX	Size	Direction
Gas Sensor channel - Gas concentration	9.008	2 Byte	To KNX
Gas Sensor channel - Temperature	9.001	2 Byte	To KNX

A5-09-04: CO2 sensor

Group Object	Type KNX	Size	Direction
Gas Sensor channel - Gas concentration	9.008	2 Byte	To KNX
Gas Sensor channel - Temperature	9.001	2 Byte	To KNX
Gas Sensor channel - Humidity	9.007	2 Byte	To KNX

A5-09-05: VOC sensor

Group Object	Type KNX	Size	Direction
Gas Sensor channel - Gas concentration	9.008	2 Byte	To KNX

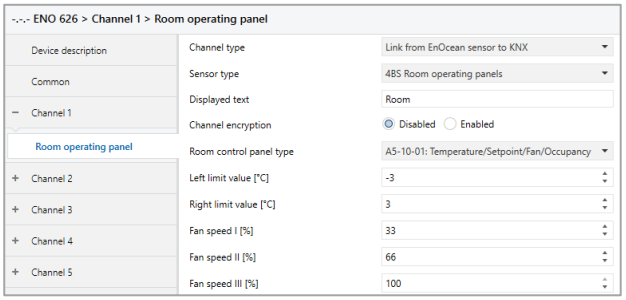
A5-09-08: CO2 sensor

Group Object	Type KNX	Size	Direction
Gas Sensor channel - Gas concentration	9.008	2 Byte	To KNX

A5-09-09: CO2 sensor

Group Object	Type KNX	Size	Direction
Gas Sensor channel - Gas concentration	9.008	2 Byte	To KNX
Gas Sensor channel - Battery low	1.002	1 Bit	To KNX

Sensor type "4BS Room operating panels"



A variety of room control panels can be used with the gateway, depending on the configuration level and EPP of the device, various objects are displayed.

If a profile supports temperature set point, the limit values that are sent to KNX at the left and right stop of the set point adjuster can be determined via parameters.

If a change of the fan stages is available in the profile, the percentage values can be set with 3 parameters, which are sent when switching to the respective fan stage.

A5-10-01: Temperature/Set point/Fan/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-02: Temperature/Set point/Fan/Day-Night

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Night	1.002	1 Bit	To KNX

A5-10-03: Temperature/Set point

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX

A5-10-04: Temperature/Set point/Fan

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX

A5-10-05: Temperature/Set point/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-06: Temperature/Set point/Day-Night

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Night	1.002	1 Bit	To KNX

A5-10-07: Temperature/Fan

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX

A5-10-08: Temperature/Fan/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-09: Temperature/Fan/Day-Night

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Night	1.002	1 Bit	To KNX

A5-10-0A: Temperature/Set point/Contact

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Contact	1.019	1 Bit	To KNX

A5-10-0B: Temperature/Contact

Group Object	Type KNX	Size	Direction
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Contact	1.019	1 Bit	To KNX

A5-10-0C: Temperature/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-0D: Temperature/Day-Night

Group Object	Type KNX	Size	Direction
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Night	1.002	1 Bit	To KNX

A5-10-10: Temperature/Humidity/Set point/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-11: Temperature/Humidity/Set point/Day-Night

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Night	1.002	1 Bit	To KNX

A5-10-12: Temperature/Humidity/Set point

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX

A5-10-13: Temperature/Humidity/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-14: Temperature/Humidity/Day-Night

Group Object	Type KNX	Size	Direction
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Night	1.002	1 Bit	To KNX

Temperature/Set point

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX

A5-10-16: Temperature/Set point/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-17: Temperature/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-18: Temperature/Set point/Fan/Occupancy/Illuminance

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX
Room Sensor channel - Fan automatic	1.001	1 Bit	To KNX
Room Sensor channel - Illuminance	9.004	2 Byte	To KNX

A5-10-19: Temperature/Fan/Occupancy/Humidity

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-1A: Temperature/Set point/Fan/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-1B: Temperature/Fan/Occupancy/Illuminance

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX
Room Sensor channel - Fan automatic	1.001	1 Bit	To KNX
Room Sensor channel - Illuminance	9.004	2 Byte	To KNX

A5-10-1C: Temperature/Set point Light/Fan/Occupancy/Illuminance

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point light	9.004	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX
Room Sensor channel - Fan automatic	1.001	1 Bit	To KNX
Room Sensor channel - Illuminance	9.004	2 Byte	To KNX

A5-10-1D: Temperature/Set point Humidity/Fan/Occupancy/Humidity

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point humidity	9.007	2 Byte	To KNX
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-1E: Temperature/Fan/Occupancy/Illuminance

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX
Room Sensor channel - Fan automatic	1.001	1 Bit	To KNX
Room Sensor channel - Illuminance	9.004	2 Byte	To KNX

A5-10-1F: Temperature/Set point/Fan/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-20: Temperature/Set point/Occupancy

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

A5-10-21: Temperature/Set point/Fan/Occupancy/Humidity

Group Object	Type KNX	Size	Direction
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

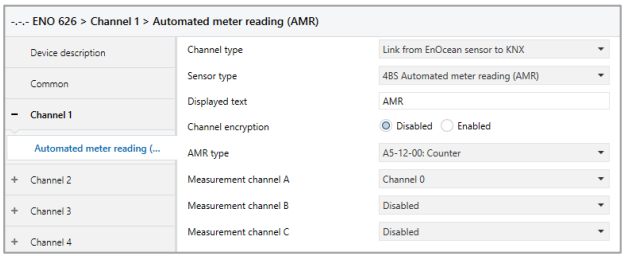
A5-10-22: Temperature/Set point/Fan/Humidity

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX

A5-10-23: Temperature/Set point/Fan/Occupancy/Humidity

Group Object	Type KNX	Size	Direction
Room Sensor channel - Fan speed	5.001	1 Byte	To KNX
Room Sensor channel - Set point temperature	9.001	2 Byte	To KNX
Room Sensor channel - Humidity	9.007	2 Byte	To KNX
Room Sensor channel - Temperature	9.001	2 Byte	To KNX
Room Sensor channel - Occupancy	1.018	1 Bit	To KNX

Sensor type "4BS Automated meter reading (AMR) "



A maximum of three counter channels are supported for each channel. The counter channels that the EnOcean device transmits must be known and set in the parameter. Two communication objects are available for each counter channel, one for the current consumption and for the total consumption.

The profiles have the following objects per channel:

A5-12-00: Counter

Group Object	Type KNX	Size	Direction
AMR Sensor channel - Cumulative counter [1]	12.001	4 Byte	To KNX
AMR Sensor channel - Counter rate [1/s]	12.001	4 Byte	To KNX

A5-12-01: Electricity

Group Object	Type KNX	Size	Direction
AMR Sensor channel - Cumulative energy [kWh]	13.0013	4 Byte	To KNX
AMR Sensor channel - Current energy [kW]	9.024	2 Byte	To KNX

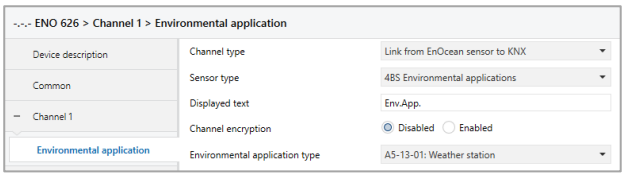
A5-12-02: Gas

Group Object	Type KNX	Size	Direction
AMR Sensor channel - Cumulative gas [m3]	14.0076	4 Byte	To KNX
AMR Sensor channel - Current gas [l/h]	9.025	2 Byte	To KNX

A5-12-03: Water

Group Object	Type KNX	Size	Direction
AMR Sensor channel - Cumulative water [m3]	14.0076	4 Byte	To KNX
AMR Sensor channel - Current water [l/h]	9.025	2 Byte	To KNX

Sensor type "4BS Environmental application "



The following environmental sensors can be used with the gateway:

A5-13-01: Weather station

Group Object	Type KNX	Size	Direction
Env.App. Sensor channel - Dawn	9.004	2 Byte	To KNX
Env.App. Sensor channel - Outdoor temperature	9.001	2 Byte	To KNX
Env.App. Sensor channel - Wind speed	9.005	2 Byte	To KNX
Env.App. Sensor channel - Night	1.002	1 Bit	To KNX
Env.App. Sensor channel - Rain	1.002	1 Bit	To KNX

A5-13-02: Sun intensity, North hemisphere

Group Object	Type KNX	Size	Direction
Env.App. Sensor channel - Sun West	9.004	2 Byte	To KNX
Env.App. Sensor channel - Sun South	9.004	2 Byte	To KNX
Env.App. Sensor channel - Sun East	9.004	2 Byte	To KNX

A5-13-03: Date

Group Object	Type KNX	Size	Direction
Env.App. Sensor channel - Date	11.001	3 Byte	To KNX

A5-13-04: Time and Day

Group Object	Type KNX	Size	Direction
Env.App. Sensor channel - Time	10.001	3 Byte	To KNX

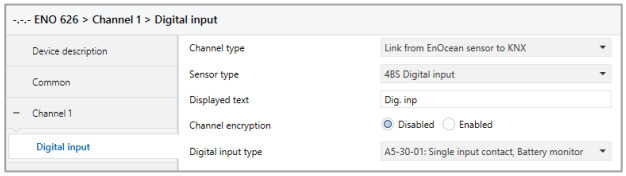
A5-13-05: Direction

Group Object	Type KNX	Size	Direction
Env.App. Sensor channel - Elevation	8.011	2 Byte	To KNX
Env.App. Sensor channel - Azimuth	8.011	2 Byte	To KNX

A5-13-06: Geographic position

Group Object	Type KNX	Size	Direction
Env.App. Sensor channel - Latitude	14.007	4 Byte	To KNX
Env.App. Sensor channel - Longitude	14.007	4 Byte	To KNX

Sensor type "4BS Digital input"



The following profiles can be used in this category:

A5-30-01: Single input contact, Battery monitor

Group Object	Type KNX	Size	Direction
Dig. Inp Sensor channel - Contact	1.009	1 Bit	To KNX
Dig. Inp Sensor channel - Battery low	1.002	1 Bit	To KNX

A5-30-02: Single input contact

Group Object	Type KNX	Size	Direction
Dig. Inp Sensor channel - Contact	1.009	1 Bit	To KNX

A5-30-03: 4 Digital Inputs, Wake and Temperature

Group Object	Type KNX	Size	Direction
Dig. Inp Sensor channel - Switch/Contact 1	1.009	1 Bit	To KNX
Dig. Inp Sensor channel - Switch/Contact 2	1.009	1 Bit	To KNX
Dig. Inp Sensor channel - Switch/Contact 3	1.009	1 Bit	To KNX
Dig. Inp Sensor channel - Switch/Contact 4	1.009	1 Bit	To KNX
Dig. Inp Sensor channel - Switch/Contact Wake	1.002	1 Bit	To KNX
Dig. Inp Sensor channel - Tempera-ture	9.001	2 Byte	To KNX

A5-30-04: 3 Digital Inputs, 1 Byte (As of ETS database V1.1)

Group Object	Type KNX	Size	Direction
Dig. Inp Sensor channel - Switch/Contact 1	1.009	1 Bit	To KNX
Dig. Inp Sensor channel - Switch/Contact 2	1.009	1 Bit	To KNX
Dig. Inp Sensor channel - Switch/Contact 3	1.009	1 Bit	To KNX
Dig. Inp Sensor channel - Byte value	5.*	1 Byte	To KNX

Gateway functions on channel type "Link from KNX to EnOcean actuator"

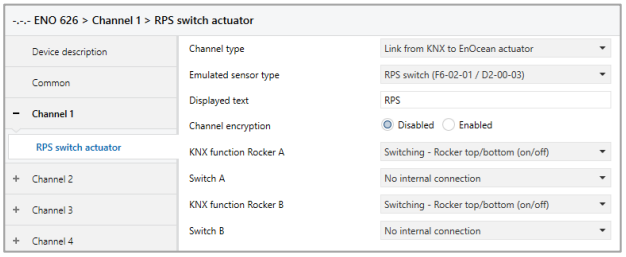
To control EnOcean actuators the gateway can emulate the corresponding sensor profiles. This means the device sends the same radio telegrams as an EnOcean push button for example. Here, each channel uses its own sender ID.

In addition, bidirectional EnOcean actuators with the following EEP families are supported:

- D2-01-XX: Switching/dimming actuators
- D2-05-XX: Shutter actuators
- A5-20-01 and A5-20-04: HVAC actuators for drives

The following actuator functions are available in the parameters:

Emulated sensor type "RPS switch (F6-02-01 / D2-03-00)"



With this profile, a complete RPS switch with 2 rockers can be emulated. Each rocker is separately configurable, the following functions are available:

Switching - Rocker top/bottom (on/off)

In both "Switching" operating modes, an object is available for rocker A and B:

Group Object	Type KNX	Size	Direction
RPS Actuator channel - Switch	1.001	1 Bit	From KNX

In the case of a switching telegram via KNX, the telegram of the EnOcean rocker is sent for "key pressed" and shortly thereafter for "key released":

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Switch on	0x10 -> 0x00
Rocker A Switch off	0x30 -> 0x00
Rocker B Switch on	0x50 -> 0x00
Rocker B Switch off	0x70 -> 0x00

Switching - Rocker top/bottom (off/on)

In the case of a switching telegram via KNX, the telegram of the EnOcean rocker is sent for "key pressed" and shortly thereafter for "key released":

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Switch on	0x30 -> 0x00
Rocker A Switch off	0x10 -> 0x00
Rocker B Switch on	0x70 -> 0x00
Rocker B Switch off	0x50 -> 0x00

Dimming - Rocker top/bottom (brighter/darker)

In both "Dimming" operating modes, two objects are available for each rocker A and B:

Group Object	Type KNX	Size	Direction
RPS Actuator channel - Switch	1.001	1 Bit	From KNX
RPS Actuator channel - Dimming	3.007	4 Bit	From KNX

In the case of a switching telegram via KNX, the telegram of the EnOcean rocker is sent for "key pressed" and shortly thereafter for "key released".

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Switch on	0x10 -> 0x00
Rocker A Switch off	0x30 -> 0x00
Rocker B Switch on	0x50 -> 0x00
Rocker B Switch off	0x70 -> 0x00

In the case of a dimming telegram via KNX, the telegram of the EnOcean rocker is sent for "key pressed", "dimming stop" via KNX triggers an EnOcean telegram for "key released".

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Dimming brighter	0x10,

Rocker A Dimming darker	0x30
Rocker A Dimming stop	0x00
Rocker B Dimming brighter	0x50
Rocker B Dimming darker	0x70
Rocker B Dimming stop	0x00

Dimming - Rocker top/bottom (darker/brighter)

In the case of a switching telegram via KNX, the tele-gram of the EnOcean rocker is sent for "key pressed" and shortly thereafter for "key released".

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Switch on	0x10 -> 0x00
Rocker A Switch off	0x30 -> 0x00
Rocker B Switch on	0x50 -> 0x00
Rocker B Switch off	0x70 -> 0x00

In the case of a dimming telegram via KNX, the telegram of the EnOcean rocker is sent for "key pressed", "dimming stop" via KNX triggers an EnOcean telegram for "key released".

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Dimming brighter	0x10,
Rocker A Dimming darker	0x30
Rocker A Dimming stop	0x00
Rocker B Dimming brighter	0x50
Rocker B Dimming darker	0x70
Rocker B Dimming stop	0x00

Shutter - Rocker top/bottom (up/down)

In both "Shutter" operating modes, two objects are available for each rocker A and B:

Group Object	Type KNX	Size	Direction
RPS Actuator channel – Up/Down	1.008	1 Bit	From KNX
RPS Actuator channel – Step/Stop	1.007	1 Bit	From KNX

For a move command via KNX the telegram of the EnOcean rocker is sent for "key released" and shortly thereafter for "key pressed":

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Up	0x00 -> 0x30
Rocker A Down	0x00 -> 0x10
Rocker B Up	0x00 -> 0x70
Rocker B Down	0x00 -> 0x50

A command for the adjustment of the slats via KNX releases 3 telegrams via EnOcean: "Key released," then "key pressed" and then again "key released":

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Decrease	0x00 -> 0x30 -> 0x00
Rocker A Increase	0x00 -> 0x10 -> 0x00
Rocker B Decrease	0x00 -> 0x70 -> 0x00
Rocker B Increase	0x00 -> 0x50 -> 0x00

Shutter - Rocker top/bottom (down/up)

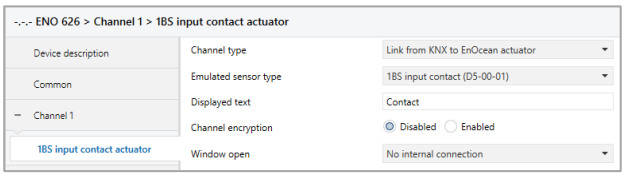
For a move command via KNX the telegram of the EnOcean rocker is sent for "key released" and shortly thereafter for "key pressed":

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Up	0x00 -> 0x10
Rocker A Down	0x00 -> 0x30
Rocker B Up	0x00 -> 0x50
Rocker B Down	0x00 -> 0x70

A command for the adjustment of the slats via KNX releases 3 telegrams via EnOcean: "Key released," then "key pressed" and then again "key released":

KNX telegram	EnOcean telegrams (RPS Data)
Rocker A Decrease	0x00 -> 0x10 -> 0x00
Rocker A Increase	0x00 -> 0x30 -> 0x00
Rocker B Decrease	0x00 -> 0x50 -> 0x00
Rocker B Increase	0x00 -> 0x70 -> 0x00

Emulated sensor type "1BS input contact (D5-00-01)"



With this profile, a 1BS contact input is emulated, this profile is e.g. used by many simple EnOcean window contacts. One object is available:

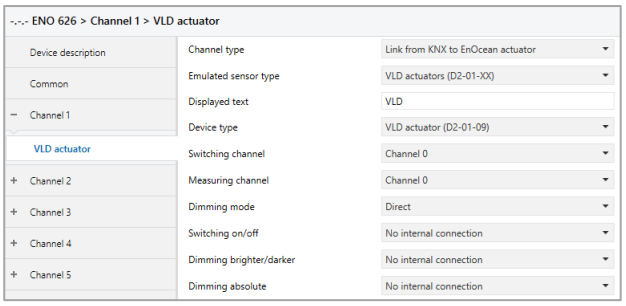
Group Object	Type KNX	Size	Direction
Contact Actuator channel - Window open	1.019	1 Bit	From KNX

KNX telegrams over this object are mapped to EnOcean as follows:

KNX telegram	EnOcean telegrams (1BS Data)
Window open	0x08
Window closed	0x09

Emulated sensor type "VLD actuators (D2-01-XX)"

With this profile, various bidirectional EnOcean switching or dimming actuators of this EEP family can be used.



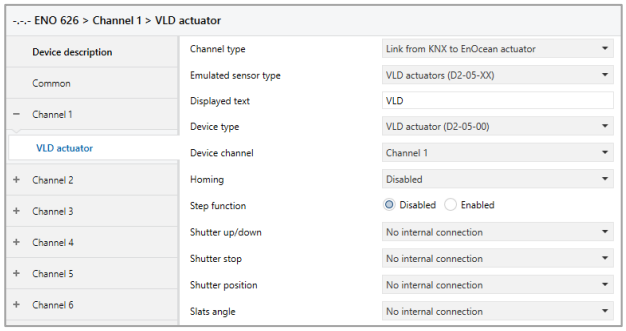
Depending on the device type, the following objects are available for switching or dimming, some profiles also have an energy counter:

Group Object	Type KNX	Size	Direction
VLD Actuator channel - Switching on/off	1.001	1 Bit	From KNX
VLD Actuator channel - Dimming brighter/darker	3.007	4 Bit	From KNX
VLD Actuator channel - Dimming absolute	5.001	1 Byte	From KNX
VLD Actuator channel - Switching status	1.001	1 Bit	To KNX
VLD Actuator channel - Dimming status	5.001	1 Byte	To KNX
VLD Actuator channel - Current energy [kW]	9.024	2 Byte	To KNX
VLD Actuator channel - Cumulative energy [kWh]	13.013	4 Byte	To KNX

The channel used by the EnOcean device must be set in the parameters, alternatively it can be selected that the gateway channel is to control all channels of an EnOcean device. If the EnOcean device has several channels, a separate gateway channel can be used for each.

Emulated sensor type "VLD actuators (D2-05-XX)"

With this profile, bidirectional EnOcean shutter actuators of this EEP family can be used.



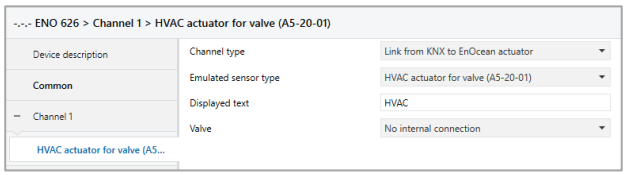
The following objects are available for this device type:

Group Object	Type KNX	Size	Direction
VLD Actuator channel - Shutter up/down	1.008	1 Bit	From KNX
VLD Actuator channel - Shutter step/stop	1.007	1 Bit	From KNX
VLD Actuator channel - Shutter position	5.001	1 Byte	From KNX
VLD Actuator channel - Slats angle	5.001	1 Byte	From KNX
VLD Actuator channel - Shutter position status	5.001	1 Byte	To KNX
VLD Actuator channel - Slats angle status	5.001	1 Byte	To KNX

The channel used by the EnOcean device must be set in the parameters, alternatively it can be selected that the gateway channel is to control all channels of an EnOcean device. If the EnOcean device has several channels, a separate gateway channel can be used for each.

In addition, it can be determined by parameter whether the actuator is to approach positions directly or via a reference run, and the operating time of a step command can also be set.

Emulated sensor type "HVAC actuator for valve (A5-20-01)"



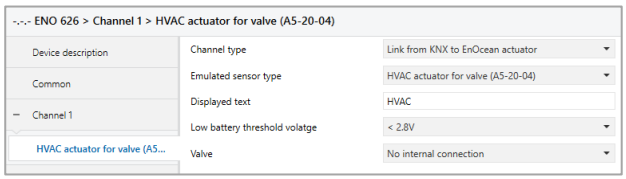
With this profile, various bi-directional EnOcean actuators can be used, the following objects are available:

Group Object	Type KNX	Size	Direction
HVAC Actuator channel - Valve	5.001	1 Byte	From KNX
HVAC Actuator channel - Temperature	9.001	2 Byte	To KNX
HVAC Actuator channel - Battery low	1.002	1 Bit	To KNX
HVAC Actuator channel - Summer	1.001	1 Bit	From KNX

The drive cyclically asks the gateway for new data for set value of the valve and summer mode (in many drives 10 minutes are fixed) and sends its battery status and temperature at the same time, which are immediately forwarded to KNX.

If while the waiting time for the request a new valve position was received by KNX, the valve moves to the last received position after the request.

Emulated sensor type "HVAC actuator for valve (A5-20-04)"



With this profile, various bi-directional EnOcean actuators can be used, the following objects are available:

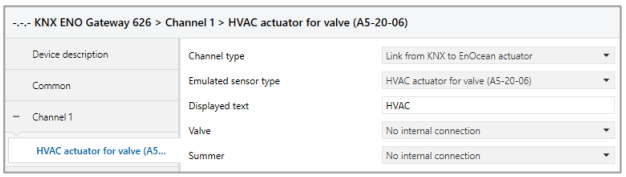
Group Object	Type KNX	Size	Direction
HVAC Actuator channel - Valve	5.001	1 Byte	From KNX
HVAC Actuator channel - Temperature	9.001	2 Byte	To KNX
HVAC Actuator channel - Battery low	1.002	1 Bit	To KNX

The drive cyclically asks the gateway for new data (in many drives 10 minutes are fixed) and sends its battery status and temperature at the same time, which are immediately forwarded to KNX.

If while the waiting time for the request a new valve position was received by KNX, the valve moves to the last received position after the request.

In addition, the threshold for message "battery low" over KNX can be set in the parameters of this profile.

Emulated sensor type "HVAC actuator for valve (A5-20-06)" <u>As of ETS database V1.1</u>



With this profile, various bi-directional EnOcean actuators can be used, the following objects are available:

Group Object	Type KNX	Size	Direction
HVAC Actuator channel - Valve	5.001	1 Byte	From KNX
HVAC Actuator channel - Temperature	9.001	2 Byte	To KNX
HVAC Actuator channel - Battery low	1.002	1 Bit	To KNX
HVAC Actuator channel - Setpoint (relative)	9.002	2 Byte	To KNX
HVAC Actuator channel - Summer	1.001	1 Bit	From KNX

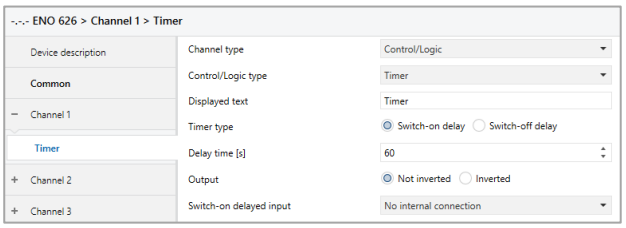
The drive cyclically asks the gateway for new data for set value of the valve and summer mode (in many drives 10 minutes are fixed) and sends its battery status, temperature and rel. setpoint of temperature at the same time, which are immediately forwarded to KNX.

If while the waiting time for the request a new valve position was received by KNX, the valve moves to the last received position after the request.

Gateway functions on channel type "Control/Logic"

Several control / logic functions can be selected here. They include time, control, logic, valuator, trigger and watchdog functions. These functions can be operated with a sensor or actuator channel in the device or externally via KNX telegrams.

Control/Logic type "Timer"



Here it is possible to realize a switch-on or switch-off delay. The time is set in seconds.

2 objects are available:

Group Object	Type KNX	Size	Direction
Timer Regelung/Logik 1- Verzögerung Eingang	1.001	1 Bit	From KNX
Timer Regelung/Logik 1- Verzögerung Ausgang	1.001	1 Bit	To KNX

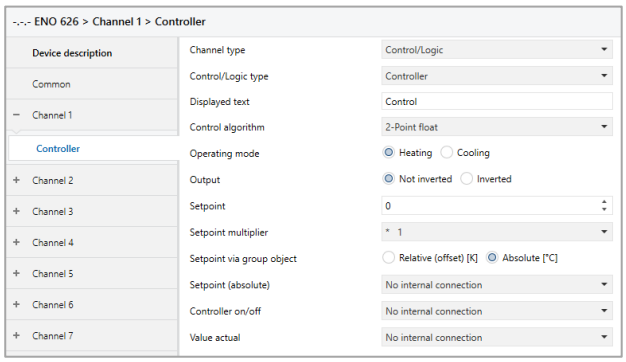
Control/Logic type "Controller"

Various control algorithms are available:

- Two-point float
- Continuous float

- Heat requisition
- Lighting control

Control algorithm "Two-point float"



The controller channel has the following objects:

Group Object	Type KNX	Size	Direction
Control Control/Logic - Controller on/off	1.001	1 Bit	From KNX
Control Control/Logic - Set point	9.001	2 Byte	To KNX
Control Control/Logic - Value actual	9.001	2 Byte	To KNX
Control Control/Logic - Switch	1.001	1 Bit	To KNX

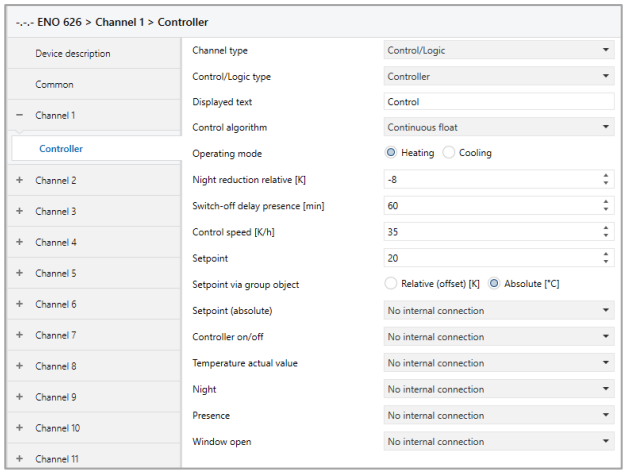
The channel is active on device start, and can be deactivated via object "Controller on/off". When deactivated, the "Switch" object sends an off telegram and the channel reacts to no changes via the "Actual/Set point" objects during deactivation. If the controller has been deactivated, any changes to the input objects are processed on activation, and the output switches according to its configuration.

The parameter "Operating mode" or "Output" can be used to determine whether the output switches off or on when the actual value is over Set point. If the actual value is below Set point with a fixed hysteresis of -1K, the output is switched on or off.

On device start, the Set point from parameters is active, the parameter "Set point via group object" defines how a new Set point via a telegram is treated:

- Relative: Set point from parameter +/- value from telegram
- Absolute: Set point from parameter will be overwritten by value from telegram

Control algorithm "Continuous float"



This controller channel has the following objects:

Group Object	Type KNX	Size	Direction
Control Control/Logic - Controller on/off	1.001	1 Bit	From KNX
Control Control/Logic - Set point	9.001	2 Byte	From KNX
Control Control/Logic - Temperature actual value	9.001	2 Byte	From KNX
Control Control/Logic - Night	1.002	1 Bit	From KNX
Control Control/Logic - Presence	1.018	1 Bit	From KNX
Control Control/Logic - Window open	1.019	1 Bit	From KNX
Control Control/Logic - Control variable	5.001	1 Byte	To KNX

The channel uses a PI controller, which operates with the configuration via parameter "control speed" and a fixed cycle time of 5 minutes.

The controller channel is active on device start, without actual value, the control variable is 50% for heating, 0% for cooling. The controller can be deactivated via object "Controller on/off". On deactivation, the control variable 0% is sent to close the valve, and the channel will not react to any other input objects during deactivation. If the controller has been deactivated, any changes to the input objects are processed on activation, and the output switches according to its configuration.

If the object "Open window" is received via object, the control variable 0% is sent on the next regular transmission, the controller continues to work according to its configuration on "Window closed".

When a 1 is received via the "Night" object, the controller goes into the night lowering / raising, whereby the current Set point value is reduced or increased by the value specified in the parameter.

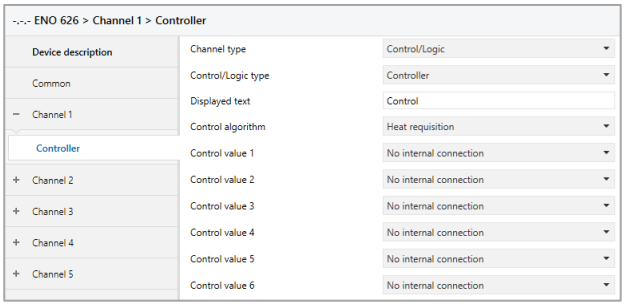
With every received 1 via input "Presence", the delay time starts again, the controller switches to the night lowering / raising at the end of the delay time.

On device start, the Set point from parameters is active, the parameter "Set point via group object" defines how a new Set point via a telegram is treated:

- Relative: Set point from parameter +/- value from telegram
- Absolute: Set point from parameter will be overwritten by value from telegram

In the operating mode "Heating", frost protection is also active: If the actual temperature falls below +5°C, the "Control variable" output sends 50% to protect the heating system, if the actual temperature exceeds +6°C when frost protection is active, the controller returns to normal operation.

Control algorithm "Heat requisition"

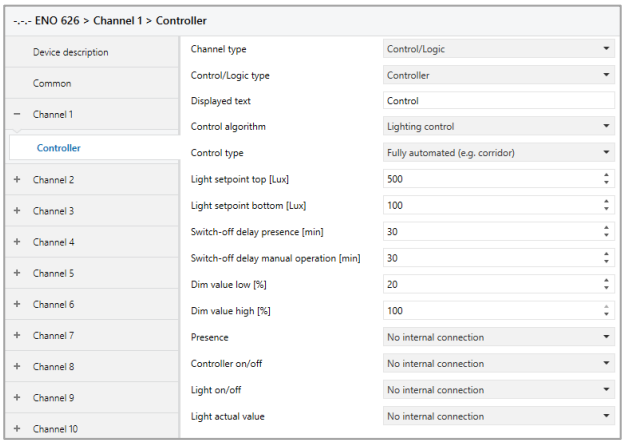


This controller channel has the following objects:

Group Object	Type KNX	Size	Direction
Control Control/Logic - Control value 1	5.001	1 Byte	From KNX
Control Control/Logic - Control value 2	5.001	1 Byte	From KNX
Control Control/Logic - Control value 3	5.001	1 Byte	From KNX
Control Control/Logic - Control value 4	5.001	1 Byte	From KNX
Control Control/Logic - Control value 5	5.001	1 Byte	From KNX
Control Control/Logic - Control value 6	5.001	1 Byte	From KNX
Control Control/Logic - Demand	1.002	1 Bit	From KNX
Control Control/Logic - Max value	5.001	1 Byte	To KNX

The maximum input value from the objects "Control value 1-6" is sent to the "Max value" output, whereby the object "Demand" sends a 1 if the maximum value>0, a 0 if the maximum value is 0.

Control algorithm “Lighting control“



Several functions can be implemented:

- Full-automatic control

  A typical application for the fully automatic control is the lighting of a corridor.

  The light is turned on in presence when the current brightness value is below the threshold. By manual operation, the light can be switched on or off for a specific time.

- Semi-automatic control

  The semiautomatic mode allows the user or residents to turn the lights on and off manually. The semiautomatic only intervenes when the light was ‘forgotten’. A typical application is an office room with several desks.

  The light will not be switched on automatically. The semi-automatic switches the light off when the current brightness value is above the threshold or when for a defined time presence is no longer detected.

- Simple control

  The simple control only evaluates the brightness and can be used, for example, for a store window. The light turns on if it is too dark, and automatically turns off when the brightness limit is reached.

This controller channel has the following objects:

Group Object	Type KNX	Size	Direction
Control Control/Logic - Controller on/off	1.001	1 Bit	From KNX
Control Control/Logic - Light on/off	1.001	1 Bit	From KNX
Control Control/Logic - Presence	1.018	1 Bit	From KNX
Control Control/Logic - Light actual value	9.004	2 Byte	From KNX
Control Control/Logic - Switch	1.001	1 Bit	To KNX
Control Control/Logic - Dimm value	5.001	1 Byte	To KNX

The lighting control has the following states:

- Deactivated:

  The channel can be deactivated via object "Controller On/Off". When deactivated, the object "Switch" sends off telegram and the object "Dimming value" sends the value from the parameter "Dim value low". During deactivation, the channel does not react to changes on the input objects of presence and light value, but can be manually overridden.

- Standby:

  The channel is in standby on startup and awaits presence, the value from parameter "Light Set point top" is active: If the actual value exceeds the light Set point top, an off telegram and the value from parameter "Dim value low" are sent.

- Automatic lighting control:

  This state is activated on receiving presence.

  The monitoring of the upper threshold is always active in this state. Additionally in operating mode full-automatic control, ON telegram and the value from parameter "Dim value high" are sent if the actual value falls below the lower threshold.

  Each time presence is received, the delay time presence is restarted. When this delay time expires, the channel falls back to state standby. At this, an OFF telegram and the value from parameter "Dim value low" are sent.

- Manual override

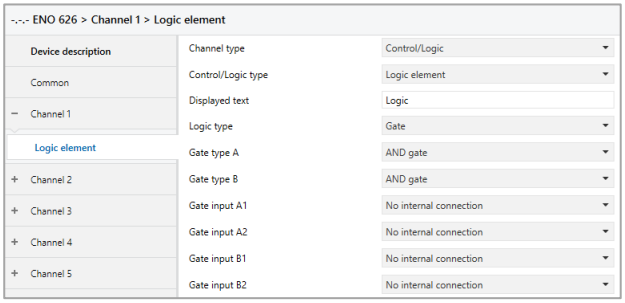
  This state is activated when a telegram is received on object "light on/off", this telegram is forwarded to the switching output, additionally "dim value low/high" is sent. Each time light on/off is received, the delay time of manual operation is restarted. While this delay time is active, the processing of the light value is disabled. When the delay time expires, the channel falls back into standby.

Control/Logic type “Logic element“

Various logic functions can be used here:

- Gate
- Inverter
- Toggle flip-flop

Logic type “Gate“



Each gate channel has 2 gates with individually configurable type:

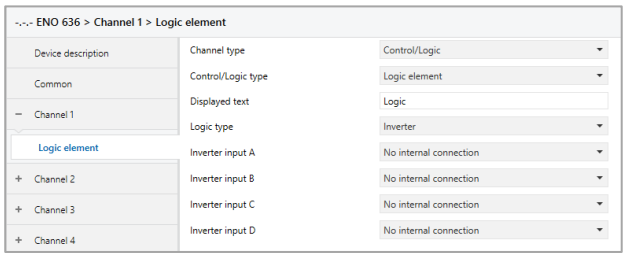
- AND gate
- OR gate
- XOR gate
- NAND gate
- NOR gate
- XNOR gate

Each gate of a channel has 2 input and 1 output object:

Group Object	Type KNX	Size	Direction
Logic Control/Logic - Gate input A1	1.002	1 Bit	From KNX
Logic Control/Logic - Gate input A2	1.002	1 Bit	From KNX
Logic Control/Logic - Gate output A	1.002	1 Bit	To KNX
Logic Control/Logic - Gate input B1	1.002	1 Bit	From KNX
Logic Control/Logic - Gate input B2	1.002	1 Bit	From KNX
Logic Control/Logic - Gate output B	1.002	1 Bit	To KNX

The states at the inputs are linked according to the selected logic function, the result is sent to the output at each input telegram.

Logic type “Inverter“

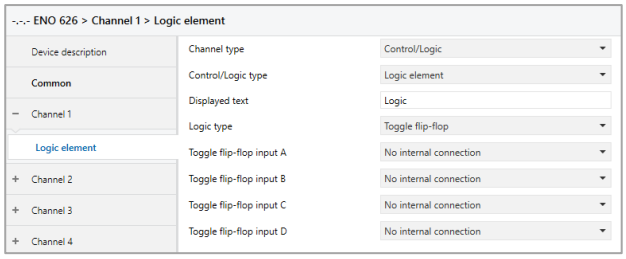


Each gate channel supports up to 4 separate inverters:

Group Object	Type KNX	Size	Direction
Logic Control/Logic - Inverter input A	1.002	1 Bit	From KNX
Logic Control/Logic - Inverter output A	1.002	1 Bit	To KNX
Logic Control/Logic - Inverter input B	1.002	1 Bit	From KNX
Logic Control/Logic - Inverter output B	1.002	1 Bit	To KNX
Logic Control/Logic - Inverter input C	1.002	1 Bit	From KNX
Logic Control/Logic - Inverter output C	1.002	1 Bit	To KNX
Logic Control/Logic - Inverter input D	1.002	1 Bit	From KNX
Logic Control/Logic - Inverter output D	1.002	1 Bit	To KNX

The inverter sends each telegram at the input inverted to the output.

Logic type “Toggle flip-flop“



Each gate channel supports up to 4 separate toggle flip-flops:

Group Object	Type KNX	Size	Direction
Logic Control/Logic - Toggle flip-flop input A	1.002	1 Bit	From KNX
Logic Control/Logic - Toggle flip-flop output A	1.002	1 Bit	To KNX
Logic Control/Logic - Toggle flip-flop input B	1.002	1 Bit	From KNX
Logic Control/Logic - Toggle flip-flop output B	1.002	1 Bit	To KNX
Logic Control/Logic - Toggle flip-flop input C	1.002	1 Bit	From KNX
Logic Control/Logic - Toggle flip-flop output C	1.002	1 Bit	To KNX
Logic Control/Logic - Toggle flip-flop input D	1.002	1 Bit	From KNX
Logic Control/Logic - Toggle flip-flop output D	1.002	1 Bit	To KNX

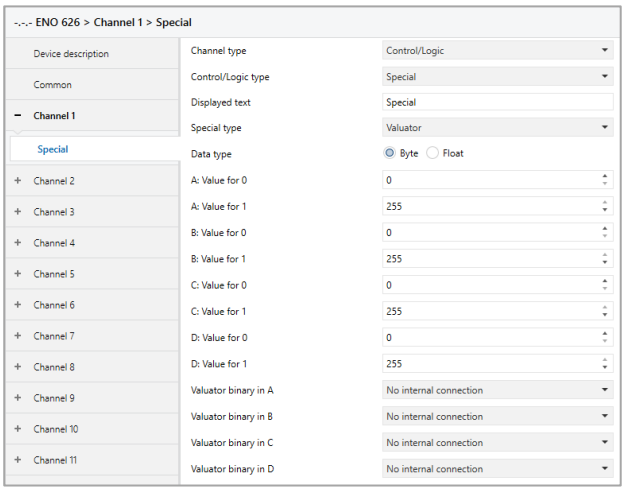
The toggle flip-flop changes between on/off telegram at the output at every on telegram at the input. An off telegram at the input is ignored.

Control/Logic type “Special“

Various functions can be configured here:

- Valuator
- Trigger
- Watchdog
- Filter

Special type “Valuator“



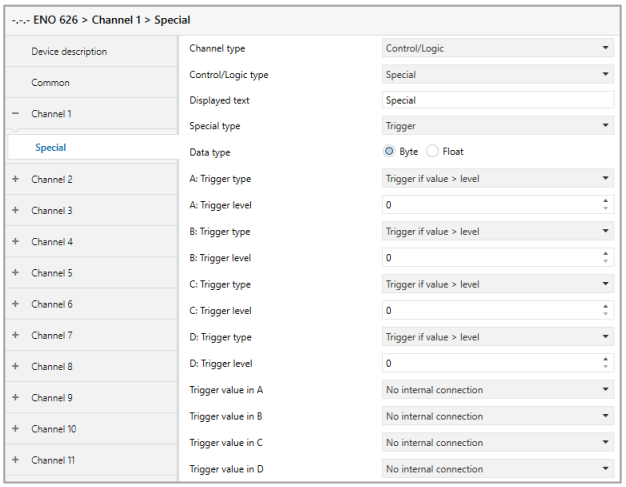
Each channel supports up to 4 valuators to output byte values, or up to 2 valuators to output 2-byte float values:

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Valuator binary in A	1.002	1 Bit	From KNX
Special Control/Logic channel - Valuator value out A	5.*	1 Byte	To KNX
Special Control/Logic channel - Valuator binary in B	1.002	1 Bit	From KNX
Special Control/Logic channel - Valuator value out B	5.*	1 Byte	To KNX
Special Control/Logic channel - Valuator binary in C	1.002	1 Bit	From KNX
Special Control/Logic channel - Valuator value out C	5.*	1 Byte	To KNX
Special Control/Logic channel - Valuator binary in D	1.002	1 Bit	From KNX
Special Control/Logic channel - Valuator value out D	5.*	1 Byte	To KNX

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Valuator binary in A	1.002	1 Bit	From KNX
Special Control/Logic channel - Valuator value out A	9.*	2 Byte	To KNX
Special Control/Logic channel - Valuator binary in B	1.002	1 Bit	From KNX
Special Control/Logic channel - Valuator value out B	9.*	2 Byte	To KNX

The value sent by the output object can be individually configured for each valuator on 0 and 1 telegram at the input.

Special type “Trigger“



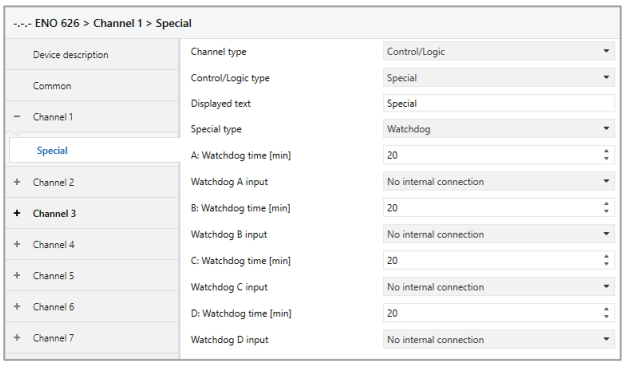
Each channel supports up to 4 triggers for evaluation of byte values, or up to 2 triggers for evaluation of 2-byte float values:

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Trigger value in A	5.*	1 Byte	From KNX
Special Control/Logic channel - Trigger binary out A	1.001	1 Bit	To KNX
Special Control/Logic channel - Trigger value in B	5.*	1 Byte	From KNX
Special Control/Logic channel - Trigger binary out B	1.001	1 Bit	To KNX
Special Control/Logic channel - Trigger value in C	5.*	1 Byte	From KNX
Special Control/Logic channel - Trigger binary out C	1.001	1 Bit	To KNX
Special Control/Logic channel - Trigger value in D	5.*	1 Byte	From KNX
Special Control/Logic channel - Trigger binary out D	1.001	1 Bit	To KNX

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Trigger value in A	9.*	1 Bit	From KNX
Special Control/Logic channel - Trigger binary out A	1.001	2 Byte	To KNX
Special Control/Logic channel - Trigger value in B	9.*	1 Bit	From KNX
Special Control/Logic channel - Trigger binary out B	1.001	2 Byte	To KNX

It is individually configurable for each trigger, at which threshold value on the input object a 0 or 1 telegram is sent by the output object.

Special type "Watchdog"

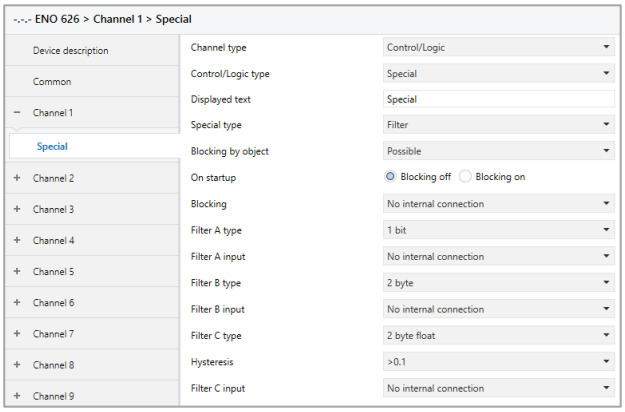


Each channel supports up to 4 functions to monitor the transmission frequency of EnOcean devices:

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Watchdog A alarm	1.002	1 Bit	To KNX
Special Control/Logic channel - Watchdog B alarm	1.002	1 Bit	To KNX
Special Control/Logic channel - Watchdog C alarm	1.002	1 Bit	To KNX
Special Control/Logic channel - Watchdog D alarm	1.002	1 Bit	To KNX

The inputs must be internally linked to output objects of EnOcean devices. Each reception of an EnOcean telegram restarts the monitoring time. The alarm on KNX is triggered if no EnOcean telegram was received within the monitoring time.

Special type "Filter"



Each channel supports up to 3 filter functions. These functions are primarily intended for internal links to prevent frequent transmission to the KNX bus. The following input types can be selected:

Filter type 1 Bit

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Filter A input	1.001	1 Bit	From KNX
Special Control/Logic channel - Filter B input	1.001	1 Bit	From KNX
Special Control/Logic channel - Filter C input	1.001	1 Bit	From KNX
Special Control/Logic channel - Filter A output	1.001	1 Bit	To KNX
Special Control/Logic channel - Filter B output	1.001	1 Bit	To KNX
Special Control/Logic channel - Filter C output	1.001	1 Bit	To KNX

Filter type 1 Byte

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Filter A input	5.*	1 Byte	From KNX
Special Control/Logic channel - Filter B input	5.*	1 Byte	From KNX
Special Control/Logic channel - Filter C input	5.*	1 Byte	From KNX
Special Control/Logic channel - Filter A output	5.*	1 Byte	To KNX
Special Control/Logic channel - Filter B output	5.*	1 Byte	To KNX
Special Control/Logic channel - Filter C output	5.*	1 Byte	To KNX

Filter type 2 Byte

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Filter A input	7.*	2 Byte	From KNX
Special Control/Logic channel - Filter B input	7.*	2 Byte	From KNX
Special Control/Logic channel - Filter C input	7.*	2 Byte	From KNX
Special Control/Logic channel - Filter A output	7.*	2 Byte	To KNX
Special Control/Logic channel - Filter B output	7.*	2 Byte	To KNX
Special Control/Logic channel - Filter C output	7.*	2 Byte	To KNX

Filter type 2 Byte Float

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Filter A input	9.*	2 Byte	From KNX
Special Control/Logic channel - Filter B input	9.*	2 Byte	From KNX
Special Control/Logic channel - Filter C input	9.*	2 Byte	From KNX
Special Control/Logic channel - Filter A output	9.*	2 Byte	To KNX
Special Control/Logic channel - Filter B output	9.*	2 Byte	To KNX
Special Control/Logic channel - Filter C output	9.*	2 Byte	To KNX

For input type 1 bit, 1 and 2 bytes, an output telegram is sent only if the input value has changed. For input type 2 byte float, it is also possible to set the minimum change of the input value for an output telegram.

In addition, the sending of an output telegram can be completely blocked via the object "blocking".

Group Object	Type KNX	Size	Direction
Special Control/Logic channel - Blocking	1.001	1 Bit	From KNX

WARNING

- The device must be mounted and commissioned by an authorized electrician.
- The prevailing safety rules must be heeded.
- The device must not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.

ETS4/5 Database
www.weinzierl.de/en/products/636/ets4

Datasheet
www.weinzierl.de/en/products/636/datasheet

CE Declaration
www.weinzierl.de/en/products/636/ce-declaration

Configuration Tool
www.weinzierl.de/en/products/636/software

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