Berker

Application software

Bidirectional-Gateway between EnOcean and KNX-Bus
Electrical / Mechanical characteristics : see product information

Manufacturers
Berker
Communication
Funk

	Product reference	Description	TP-device RF devices
	7563 00 05	**EnOcean KNX Gateway (32-Kanal AP)**	

Summary

1. Application

The 7563 00 05 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. In addition the gateway supports logical and control functions and includes radio-repeater functionality. The 7563 00 05 is divided in 32 channels. Each channel can be assigned to one of the following functions:

- Link from EnOcean sensor to KNX
    - Switch functions
        - Switching
        - Dimming
        - Shutter
        - Scene
    - 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
    - Switch
    - Dimmer
    - Shutter
    - HVAC actuators (valves)
- Control / logic
    - Timer
        - Switch-on delay
        - Switch-off delay
    - Control
        - 2-point regulator
        - Continuous regulator
        - Heat requisition
        - Lighting control
    - Logical functions
        - Gates (e.g. AND, OR, XOR)
        - Flip-flop (Toggle)
    - Special
        - Trigger
        - Valuator
        - Watchdog

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 display in the device are used.

2. Mounting and connection

The mounting can be done on a wall surface (e.g. brick-work or wood). The mounting holes match those of a 55 mm flush-mounted box.

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 device is powered by the bus, and does not require an external or additional power supply

3. Settings before commissioning

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.

4. Button functions

The buttons inside the device are only needed for the commissioning phase and are not accessible when closed.

Key press T1 long (Del.): Delete the stored device from the current channel (Refer to chapter "Deleting links for RF sensors" and "Deleting links for RF actuators")

Key press T1 short (Exit): Leave channel/linking mode

Key press T2 long (Add): Start linking mode (Refer to chapter "Linking mode for sensors" and "Linking mode for actuators")

Key press T2 short (Active): Activate or change the channels 1-32

Key press T3: Activate "**KNX Prog. mode**" – The KNX device can now receive a new individual address. (Refer to Chapter "Programming the physical address")

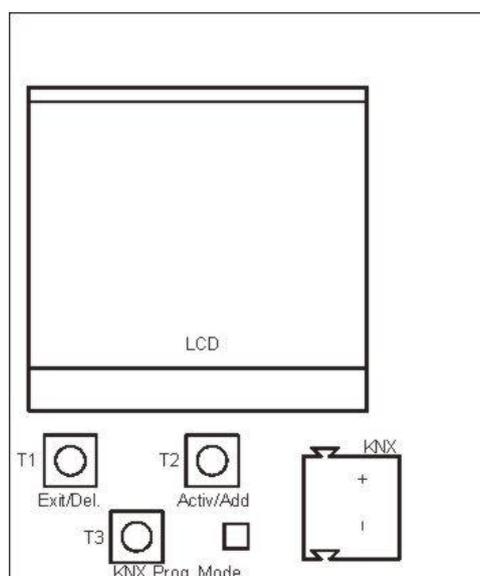A long key press is detected when a button is pressed for longer than 2 seconds.

Fig. 2: View of the open unit

5. LCD Display

The integrated display is used for commissioning and system diagnostics. In normal operation, it is not required and is not visible when the device is closed. The main menu shows the device name, the operation mode (e.g. RUN) and the KNX individual-address (Fig. 3).

Fig. 3: Main menu display

The signal strength of received radio telegrams is visualized as a bar at the bottom of the display. If the received telegram corresponds to one or more channels, it will be shown in a channel matrix on the display.

When a channel is selected the first line of the display shows the channel number and the text configured in the ETS (*"1 Rocker"* in fig. 4). In the second line the channel type (sensor/actuator) and associated EnOcean equipment profiles (EEP) is shown.

In the third line, the number of the allocated and available channel links together with a symbol is displayed. The signal strength bar is displayed in the last line.
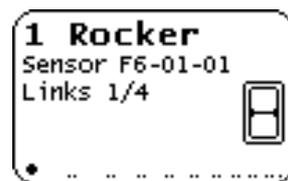

Fig. 4: Channel setting display

6. Programming the individual address

Programming the KNX individual address with ETS requires that the programming button T3 ("KNX Prog. mode") be pressed. If the programming or learning mode is active, the red LED ("KNX Prog. mode LED") will be on. It turns off once the device has successfully received the individual address. Afterwards, Group Addresses and Parameters can be programmed by the ETS.

7. 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.

For actuator channels any number of RF actuators can be learnt.

8. Linking mode for RF sensors

The operation of the gateway during the teach-in of wireless sensors is done using the two buttons below the display.

If the device is in normal mode, the push button T2 activates, by short key presses, the channel mode and changes to the next channel. The display shows the current channel number and the number of connected devices. Also the ETS configured text will be shown for every channel (Fig. 4).

With a long press of T2 on the visible channel, the linking mode is activated. If the device matches the selected function via the parameter configuration, a transmitting device can be connected to the current channel. 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 T1, as well as automatically after 5 minutes without operation.

Quick guide linking mode for RF-sensors

1. T2 short press to select the desired channel.
2. T2 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

9. Deleting links for RF sensors

Links with RF sensors can be deleted in several ways. With a long press on T1 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 T2 ("All"). It is not required to operate the RF sensors.
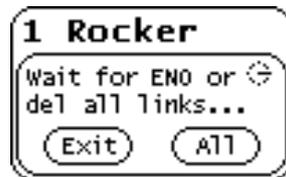
Fig. 5: Deleting links

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 T1, as well as automatically after 5 minutes without operation.

Quick guide linking mode for RF-sensors

1. T2 short press to select the desired channel.
2. T1 long press to activate the delete mode (_"Wait for ENO or del all left ..."_).
3. Activate the learning mode at the desired radio sensor to delete these.

Alternatively:

T2 long press to delete all taught-in wireless sensors from the selected channel.

10. Linking mode for RF-actuators

The operation of the gateway during the linking of actuators is similar to the linking of sensors. First the actuator is placed in linking mode. A long press of T2 at the visible channel activates the linking mode in the gateway. The display shows the *"select key"* selection (Fig. 6). The action point (top or bottom) of the learn telegram can be selected with the T2 button. On some actuators both action points have to be linked separately.

Fig. 6: Selection of learning telegram

Now the button T2 is pressed for sending the learn-telegram to the actuator in the learning mode (The display briefly shows "RF"). If this is done, the learning mode of the actuator can be finished. The actuator should now be programmed.

The link mode is terminated by a short press of the left key T1, as well as automatically after 5 minutes without operation.

The procedure for activating the learn mode of the actuator can be found in the Actuator Datasheet.

Quick guide linking mode for RF-actuators

1. Select the desired channel with T2
2. Activate the learning mode on the RF-actuator.
3. T2 Long press to activate the learning mode in the gateway.
4. T2 short press to select the action point.
5. T2 long press for sending a learn-telegram to the actuator. (Display: *"RF"*).

11. Deleting links for RF actuators

The links to RF-actuators are stored in the respective actuators. This can be deleted for many types locally on the device without operating the gateway. With some actuators it is also possible to delete individual links, using learn-telegrams. In this case, the delete works in the same way as the teach-in of the actuators. The actuator must be set into the erasing mode. Each programmed link must be cleared through the learning mode on the gateway. Details are given in the data sheet of the respective actuator.

12. Normal operation

RF-sensors:

When in normal operation model, each received EnOcean telegram will be compared to see if it has been assigned to a Channel. If so, the channel is shown shortly in a matrix on the LCD display. 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. If an EnOcean telegram is not assigned to any channel, only the signal strength is shown in the display with a bar.

RF actuators:

If the gateway receives a telegram from the KNX bus, which is assigned to an actuator channel, an RF telegram will be sent for this channel.

13. 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. Datapoints 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 telegrams 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.

14. Gateway functions

For each channel, one of the following functions can be chosen. The selection is made in the parameter dialog of the ETS.

15. Link from EnOcean sensor to KNX bus

The following functions are available in the sensor parameters:

15.1 RPS switch

Fig. 7: RPS switch (sensor)

There are types of switches from one, two and four rockers. To the Rocker (A…D), the following modes of operation can be assigned:

Switch – On/Off
On/Off (rocker up/down)
A short or long key press on the upper switch will send an off-telegram. A short or long key press on the lower switch will send an on-telegram.
On/Off (rocker up/down)
Function as before, but rocker swapped top and bottom.

Comm.-Object	Type KNX	size
Channel…: switch	1.001	1 Bit

Dimming

On/Off – brighter/darker (rocker up/down)

Short pressing on the top button switches the dimmer on and short pressing on the bottom switches it off. A long press on the top button dims the light brighter and a long press on the bottom button dims darker. Dimming stops by releasing the button.

Off/On – darker/brighter (rocker up/down)

Function as before, but rocker swapped top and bottom.

Comm.-Object	Type KNX	Size
Channel…: switch	1.001	1 Bit
Channel…: dimming	3.007	4 Bit

Shutter – Up/Down

Slats – shutter up/down (Rocker up/down)

After a long press on, the run command is sent for the shutter. With a short press the shutter trip stops. When the shutter is not moving, the slats are rotated by a short press on the switch. The direction of the command is up by pressing the top button. By pressing the lower key the run command is "down".

Slats – shutter down/up (Rocker up/down)

Function as before, but rocker swapped top and bottom.

Comm.-Object	Type KNX	Size
Channel…: Slats	1.009	1 Bit
Channel…: Shutter	1.008	1 Bit

Scene – a/b

Two scenes can be switched. Depending on the setting, a scene can be saved for a long push if the actuator supports this.

Attention: A long key press is detected when a button is pressed longer than one second.

Comm.-Object	Type KNX	Size
Channel…: Scene	18.001	1 Biyte

15.2 Other switches and contacts

Fig.8: Other switches and contacts

In the submenu "Other switches and contacts" window contacts, window handles, key card switches and pressure switches can be integrated.

For window handle sensors, three states can be detected. (Window is 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 status of all handles assigned to the channels. Following some examples from the state table:

Window 1	Window 2	Window 3	Window 4	Common status
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 are available the following communication objects:

Comm.-Object	Type KNX	Size
Channel…: Status 1	1.001	1 Bit
Channel…: Status 2	1.001	1 Bit

Handle	Closed	Tilted	Open
Status 1	Off	On	On
status 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 datapoints are sent when the window is closed.

Up to four window contacts can be linked with one channel. The gateway calculates a common status of all contacts assigned to the channel and sends the value "closed only, if all contacts are closed.

For window contacts the following datapoint is available:

Comm.-Object	Type KNX	Size
Channel…:Window group open	1.019	1 Bit

For pressure switches the following datapoint is available:

Comm.-Object	Type KNX	Size
Channel…:Pressed	1.002	1 Bit

For key card switches the following datapoint is available:

Comm.-Object	Type KNX	Size
Channel…:Key card inserted	1.002	1 Bit

15.3 Temperature sensors

Fig. 9: Temperature sensors

Temperature sensors with various value ranges are supported. The temperature value is mapped to a 2-byte floating-point value.
For all temperature sensors the following communication object is available:

Comm.-Object	Type KNX	Size
Channel…: Temperature	9.001	2 Byte

15.4 Temperature and humidity sensors

Fig. 10: Temperature and humidity sensors

Two different combined sensors can be selected. The measured values are stored in two different communication objects.

Comm.-Object	Type KNX	Size
Channel…: rel. humidity	9.007	2 Byte
Channel…: Temperature	9.001	2 Byte

15.5 light sensors

Fig. 11: light sensors

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

Comm.-Object	Type KNX	Size
Channel…: Lux	9.004	2 Byte

15.6 Presence sensors

Fig. 12: Occupancy sensors

In this section presence sensors and motion detectors can be integrated.

Comm.-Object	Type KNX	Size
Channel…: presence	1.018	1 Bit

15.7 Light-/Temperature- und occupancy sensors

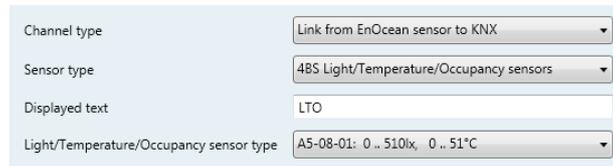| Channel type | Link from EnOcean sensor to KNX |
Sensor type	4BS Light/Temperature/Occupancy sensors
Displayed text	LTO
Light/Temperature/Occupancy sensor type	A5-08-01: 0 .. 510lx, 0 .. 51°C

Fig. 13: Light-/Temperature- und occupancy sensors

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.

Comm.-Object	Type KNX	Size
Channel…: Lux	9.004	2 Byte
Channel…: Temperature	9.001	2 Byte
Channel…: Presence	1.018	1 Bit
Channel…: Occupancy	1.001	1 Bit

15.8 Gas sensors

Kanaltyp	Link zu Sensor
Sensortyp	4BS Gassensoren
Angezeigter Text	Gas
Gassensortyp	A5-09-01: CO-Sensor

Fig. 14: Gas sensors

Sensors for CO and CO2 can be connected. The CO sensor can measure the gas concentration and the temperature (2 bytes each values).
The CO2 sensor can measure gas concentration, temperature and relative humidity (each 2 byte values).

Comm.-Object	Type KNX	Size
Channel…: Gas	9.008	2 Byte
Channel…: Temperature	9.001	2 Byte
Channel…: Humidity	9.007	2 Byte

15.9 Room operation panel

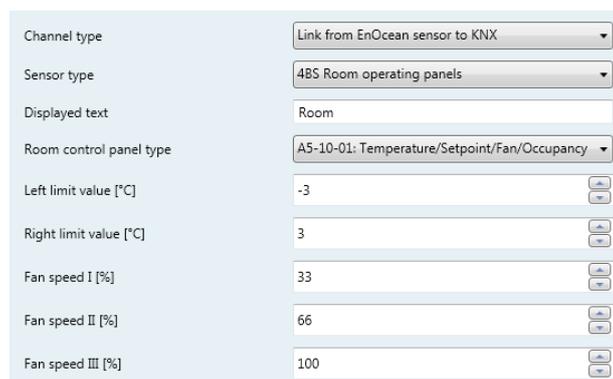| Channel type | Link from EnOcean sensor to KNX |
Sensor type	4BS Room operating panels
Displayed text	Room
Room control panel type	A5-10-01: Temperature/Setpoint/Fan/Occupancy
Left limit value [°C]	-3
Right limit value [°C]	3
Fan speed I [%]	33
Fan speed II [%]	66
Fan speed III [%]	100

Fig. 15: Room operation panel

Various room controls with temperature, presence, and day / night switches can be a linked. Depending on the type, setpoint values, temperature limits and multiple fan speeds can be set.

Comm.-Object	Type KNX	Size
Channel…: Fan speed	5.001	1 Byte
Channel…: Temp. setpoint	9.001	2 Byte
Channel…: Humidity	9.007	2 Byte
Channel…: Temperature	9.001	2 Byte
Channel…: Occupancy	1.018	1 Bit
Channel…: Night	1.001	1 Bit
Channel…: Automatic Fan	1.001	1 Bit

15.10 Automated meter reading

Abb. 16: Automated meter reading

Each channel can read up to three meters. For each counter, there are two communication objects of 4 bytes available: One value for the current consumption and one value for the total consumption.

Comm.-Object	Type KNX	Size
Channel…: Count	12.001	4 Byte
Channel…: Count rate [1/s]	12.001	4 Byte
Channel…: Total energy [kWh]	13.013	4 Byte
Channel…: Current Energy [W]	9.024	2 Byte
Channel…: Total gas [m³]	14.076	4 Byte
Channel…: Current Gas [l/h]	9.025	2 Byte
Channel…: Total water [m³]	14.076	4 Byte
Channel…: Current water [l/h]	9.025	2 Byte

15.11 Environmental and weather sensors

Fig.17: Environmental sensors

The following environmental sensor types can be programmed: Weather station, sunlight (northern hemisphere), date, time and day, direction and geographic position. Depending on the setting, there are different communication objects

for each sensor type.

Weather station:

Comm.-Object	Type KNX	Size
Channel…: Dawn	9.004	2 Byte
Channel…: Temperature	9.001	2 Byte
Channel…: Wind speed	9.005	2 Byte
Channel…: Night	1.001	1 Bit
Channel…: Rain	1.001	1 Bit

Sun intensity, northern hemisphere:

Comm.-Object	Type KNX	Size
Channel…: Sun west	9.004	2 Byte
Channel…: Sun south	9.004	2 Byte
Channel…: Sun east	9.004	2 Byte

Date:

Comm.-Object	Type KNX	Size
Channel…: Date	11.001	3 Byte

Time and Day:

Comm.-Object	Type KNX	Size
Channel…: Time	10.001	3 Byte

Direction:

Comm.-Object	Type KNX	Size
Channel…: Elevation	8.011	2 Byte
Channel…: Azimuth	8.011	2 Byte

Geographic position:

Comm.-Object	Type KNX	Size
Channel…: degree of longitude	14.007	4 Byte
Channel…: degree of latitude	14.007	4 Byte

15.12 Digital input

Channel type	Link from EnOcean sensor to KNX
Sensor type	4BS Digital input
Displayed text	Dig. inp
Digital input type	A5-30-01: Single input contact, Battery monitor

Fig. 18: Digital input

It supports digital inputs with and without battery monitor. The digital inputs with battery monitor send an additional telegram when the battery is weak.

Comm.-Object	Type KNX	Size
Channel…: Contact	1.019	1 Bit
Channel…: Low battery	1.020	1 Bit

16.   Link to actuators

To control EnOcean actuators the gateway emulates 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.
The following functions are available in the actuator parameters:
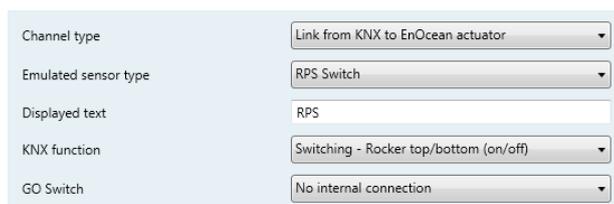
16.1 RPS switch

Fig. 19: RPS switch (actuator)

Various KNX functions are selected, similar to the sensors (Dimming, blinds, scene und switching). Depending on the type of actuator, the correct KNX function has to be chosen.

Comm.-Object	Type KNX	Size
Channel…: Switching	1.001	1 Bit
Channel…: Dimming	3.007	4 Bit
Channel…: Blinds	1.008	1 Bit
Channel…: Slats	1.009	1 Bit
Channel…: Scene	18.001	1 Byte

Absolute dimming is not available because it is not provided in the EEPs.

16.2 1BS Contact input

Fig. 20: 1BS Contact input

It can simulate a simple contact input. On or off will be sent.

Comm.-Object	Type KNX	Size
Channel…: Window open	1.019	1 Byte

16.3 HVAC Actuator for valve drive

Channel type	Link from KNX to EnOcean actuator
Emulated sensor type	HVAC actuator for valve (A5-20-01)
Displayed text	HVAC
GO Valve	No internal connection

Fig. 21: HVAC actuator

In this configuration, battery-operated heating and air actuators can be controlled. The temperature values sent by the actuator will be sent to the bus. A telegram is sent when the EnOcean device signals a low battery.

Battery-operated heating and ventilating actuators can be controlled. The included temperature readings are transmitted to the bus. The device sends a value when a "low battery" signal by the EnOcean-unit is received.

Comm.-Object	Type KNX	Size
Channel…: Valve	5.001	1 Byte
Channel…: Temperature	9.001	2 Byte
Channel…: Low battery	1.020	1 Bit

17. Control/Logic

Control / logic functions can be selected. They include time, control, logic, encoder, trigger and watchdog functions.

17.1 Timer

Channel type	Control/Logic
Control/Logic type	Timer
Displayed text	Timer
Timer type	Switch-on delay
Delay time [s]	60
Output	Not inverted
GO Switch-on delayed input	No internal connection

Fig. 22: Timer

It is possible to realize a switch-on and switch-off delays. The time is set in seconds.

Comm.-Object	Type KNX	Size
Channel…: Switch-on delayed input	1.001	1 Bit
Channel…: Switch-on delayed output	1.001	1 Bit

Comm.-Object	Type KNX	Size
Channel…: Switch-off delayed input	1.001	1 Bit
Channel…: Switch-off delayed output	1.001	1 Bit

17.2 Controller

Fig. 23: Controller

<u>Two-point float</u>

Comm.-Object	Type KNX	Size
Channel…: Controller On/Off	1.001	1 Bit
Channel…: Setpoint (absolute)	9.001	2 Byte
Channel…: Setpoint (relative)	9.002	2 Byte
Channel…: Value actual	9.001	2 Byte
Channel…: Switch	1.001	1 Bit

<u>Continuously float</u>

It is a continuous temperature controller with night-, presence and window-/door-function.

Comm.-Object	Type KNX	Size
Channel…: Controller On/Off	1.001	1 Bit
Channel…: Setpoint (absolute)	9.001	2 Byte
Channel…: Setpoint (relative)	9.002	2 Byte
Channel… Temperature actual value	9.001	2 Byte
Channel…: Night	1.001	1 Bit
Channel…: Presence	1.018	1 Bit
Channel…: Window open	1.019	1 Bit
Channel…: Control variable	5.001	1 Byte

<u>Heat demand requirements</u>

The maximum value of the control inputs from1 to 6 is transmitted to the output. Only the highest value is passed. The value of the datapoint "Demand" will be set to "1", when the maximal value is greater than zero.

Comm.-Object	Type KNX	Size
Channel…: Control value 1	5.001	1 Byte
Channel…: Control value 2	5.001	1 Byte
Channel…: Control value 3	5.001	1 Byte
Channel…: Control value 4	5.001	1 Byte
Channel…: Control value 5	5.001	1 Byte
Channel…: Control value 6	5.001	1 Byte
Channel…: Demand	1.001	1 Bit
Channel…: Max value	5.001	1 Byte

Lighting control

Several functions can be realized:

- **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 semi-automatic 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.

Comm.-Object	Type KNX	Size
Channel…: Controller on/off	1.001	1 Bit
Channel…: Light on/off	1.001	1 Bit
Channel…: Presence	1.019	1 Bit
Channel…: Light actual value	9.004	2 Byte
Channel…: Switch	1.001	1 Bit
Channel…: Dimm value	5.001	1 Byte

17.3 Logic element

Fig. 24: Logic element

AND-, OR-, XOR-, NAND-, NOR-, XNOR-Gate

Two different logic functions can be selected independently for Type A or Type B.

Comm.-Object	Type KNX	Size
Channel…: Gate input A1	1.001	1 Bit
Channel…: Gate input A2	1.001	1 Bit
Channel…: Gate output A	1.001	1 Bit
Channel…: Gate input B1	1.001	1 Bit
Channel…: Gate input B2	1.001	1 Bit
Channel…: Gate output B	1.001	1 Bit

Inverter

Four signals can be inverted. (Input and output A-D)

Comm.-Object	Type KNX	Size
Channel…: Inverter input A-D	1.001	1 Bit
Channel…: Inverter output A-D	1.001	1 Bit

Toggle flip-flop

Per channel, up to 4 flip-flops can be used. If the input receives "1", the output changes its value ("0" to "1" or "1" to "0").

Comm.-Object	Type KNX	Size
Channel…: Toggle flip-flop input A-D	1.001	1 Bit
Channel…: Toggle flip-flop output A-D	1.001	1 Bit

17.4 Special

Fig. 25: Special

Valuator (byte)

Up to 4 byte-valuators can be implemented on one channel. If the values "0" or "1" are received on the input datapoint , the configured value will be sent via the output datapoint.

Comm.-Object	Type KNX	Size
Channel…: Valuator binary-in A-D	1.001	1 Bit
Channel…: Valuator value out A-D	5.000	1 Byte

Valuator (float)

Up to 2 float-valuators can be implemented on one channel. If the values "0" or "1" are received on the input datapoint, then the configured value will be sent via the output datapoint.

Comm.-Object	Type KNX	Size
Channel…: Valuator binary-in A-B	1.001	1 Bit
Channel…: Valuator value out A-B	9.000	2 Byte

Trigger (byte)

Up to 4 byte-triggers can be implemented on one channel. The trigger compares input value with the configured trigger level corresponding to the configured condition. Is this condition is fulfilled, the value "1" will be sent via the output datapoint.

Comm.-Object	Type KNX	Size
Channel…: Trigger value in A-D	5.000	1 Byte
Channel…: Trigger binary out A-D	1.001	1 Bit

Trigger (float)

Up to 2 float-triggers can be implemented on one channel. The trigger compares the input value with the configured trigger level corresponding to the configured condition. Is this condition is fulfilled, the value "1" will be sent via the output datapoint.

Comm.-Object	Type KNX	Size
Channel…: Trigger value in A-B	9.000	2 Byte
Channel…: Trigger binary out A-B	1.001	1 Bit

Watchdog

Up to 4 group objects can be monitored on one channel. If the associated group object (GO) does not send a value within the configured time, then the value "1" will be sent via the output (alarm) datapoint. For the connecting of the group objects only the internal links can be used.

Comm.-Object	Type KNX	Size
Channel…: Watchdog A-D alarm	1.001	1 Bit

18. Repeater Function

The repeater function is used for extend distances between sensors and actuators. The 7563 00 05 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.

The repeater function of the 7563 00 05 is activated by the general parameters in the ETS. If the function is enabled it will be displayed in the main menu of the display (Fig. 26).

Fig. 26: Active repeater function

19. Bus monitor function

The integrated bus monitor function is used for system diagnostics directly on the device. The device can display both EnOcean and KNX telegrams.

A short press of T1 in menu activates the dual EnOcean and KNX bus monitor ("E+K BUSMON"). The last five incoming and outgoing messages are displayed at the bus monitor. With a long press of T2 can be switched between the EnOcean bus monitor ("ENO BUSMON"), the KNX bus monitor ("KNX BUSMON") and the dual E+K bus monitor.

To return to the main menu of the gateway, the T1 button is used. The bus monitor is automatically closed after 5 minutes of inactivity.

EnOcean bus monitor

If a telegram is received from an EnOcean device, the signal strength (RSSI) value is shown in the first position of the line. The RSSI (Received Signal Strength Indication) is represented by a value between 1 and 4 (1 = min., 4 = best). The first 8 digits of numeric value is the hexadecimal ID of the sending device. The transmitted data is displayed also in hexadecimal coding in the second numeric part.

If a message is sent by the gateway, it is displayed in the first position of the line with an "S". The ID used by the gateway and the transferred data are also shown.
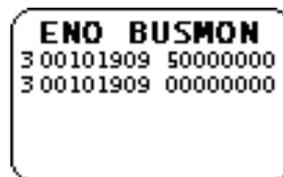


```
ENO BUSMON
3 00101909 50000000
3 00101909 00000000
```

Fig. 27: EnOcean bus monitor

KNX bus monitor

The KNX bus monitor displays the messages at the object level. Therefore, only group telegrams are visible which address the gateway or which are sent by it.

If a telegram is received from KNX bus, it will be shown in the KNX bus monitor with an "I". Behind it the decimal group object number and the data packet will be shown with up to 4 hexadecimal bytes.

If a KNX group address is associated with several group objects in the gateway, then one line will be shown for each link. When sending a message to the KNX bus, an "O" is displayed with the decimal object number and the data packet in hexadecimal coding.
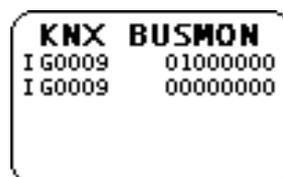


```
KNX BUSMON
I G0009   01000000
I G0009   00000000
```

Fig. 28: KNX bus monitor

Representation of the messages on the display:

Receiving of EnOcean-telegram
```
(1-4)  Device ID    Data packet
```

Sending of EnOcean-telegram
```
S          Device D    Data packet
```

Receiving of KNX-telegram
```
I          GO-No.      Data packet
```

Sending of KNX-telegram
```
O          GO-No.      Data packet
```

KNX® EnOcean