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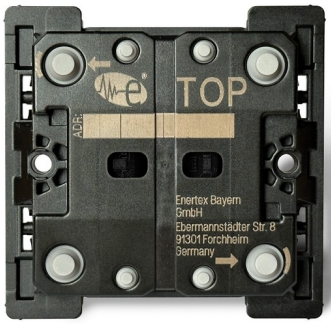
Manual and configuration

# Enertex® ViTa KNX Presence detector


## for variants Enertex AluRa, JUNG Series A 55 and JUNG LS Design

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### Note



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# Notes

- Electrical devices may only be installed and assembled by qualified electricians.
- When connecting KNX interfaces, specialist knowledge from KNX training courses is required.
- Failure to follow the instructions may result in damage to the appliance, fire or other hazards.
- These instructions are part of the product and must remain with the end user.
- The manufacturer is not liable for any costs or damages incurred by the user or third parties through the use of this device, misuse or malfunctions of the connection, malfunctions of the device or the subscriber devices.
- Opening the housing, other unauthorized changes or modifications to the device will invalidate the warranty!
- The manufacturer is not liable for improper use.

## Parameter description in the ETS

The documentation of the application parameters is largely integrated directly in the ETS. To display explanations and help texts, select the ViTa application in the ETS and activate the Context help button in the context menu bar.

# Connection instructions

## Assembly

Installation shall be carried out as follows:

- Wall mounting with rocker operation: installation height between 1.1 m and 1.4 m.
- Wall mounting for motion and presence detection only: installation height between 0.6 m and 1.8 m.
- Ceiling mounting: generally possible.

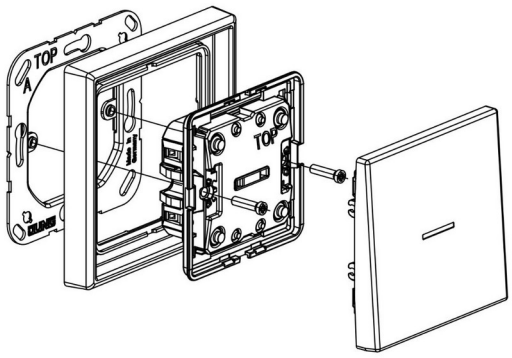


*Figure 1: Assembly*

- Install the mounting ring.
- Connect the bus terminal (black/red) to the bus line.
- Optional: Connect external contacts for the binary input or a remote temperature sensor to the terminals (yellow/white).
- Fit the device, including frame and terminals, onto the mounting ring. Observe the markings “TOP” = up and “A” = front.
- Optional: Fasten the device to the mounting ring using screws. Tighten the plastic screws only lightly (see accessories).
- Snap the rocker covers into place. The rocker covers suitable for the device must be ordered separately (see accessories).

## Accessories

The devices can be installed with one or two rockers (push-button version) (not included in delivery). These rockers can be purchased from JUNG for the A or LS series.

The viewing window is referred to as “Lens” by JUNG.

For additional screw fastening of the device to the mounting ring, plastic screws (JUNG part no. S-NFB TSM ZN) can be used.

## Programming mode and factory reset

### Programming Mode

Programming mode is activated by simultaneously pressing the upper left and lower right buttons. In this state, the status LED remains continuously lit, independent of the loaded application.

The button combination is only valid if no additional buttons are pressed at the same time.

1. Short button press:
   If the button combination is released before 2.1 s have elapsed, programming mode is toggled upon release.

2. Long button press:
   After 2.1 s, programming mode is toggled automatically, even if the buttons remain pressed.
3. Lock period after automatic toggle:
   After the automatic toggle at 2.1 s, the function remains locked until both buttons are fully released. This prevents a second toggle caused by the release edge.

Programming mode can be activated by pressing the two buttons at the top left and bottom right simultaneously. In this case, the status LED lights up continuously, regardless of the application loaded.

If the two buttons are held down for longer than 10 seconds, the factory reset is performed.

### Factory Reset

The factory reset is initiated using the same button combination (upper left + lower right).

If the combination is held for longer than 3.1 s, the factory reset window is activated. From that moment, the buttons must be held for an additional 10 s. The factory reset is executed by the stack upon release.

The practical minimum duration from the initial press is therefore approximately 13.1 s. Once this minimum time has been reached, the red status LED starts flashing.

### Robustness / Protection Against Misoperation

If any additional button is pressed while the combination is active, the programming sequence is immediately aborted. Detection remains locked until both programming buttons have been fully released.

This prevents unintended activation of programming mode or factory reset, for example when a rocker is fully pressed unintentionally.

# Mode of operation

## Overview

### Description

The Enertex® ViTa KNX Presence Detector is a radar-based presence and motion detector with three zones, each with a maximum range of 10 m. Each of these zones can be approximately assigned to a radial distance of the detected object.

In each zone, the detector distinguishes between (fast) detection of distinct movements such as walking, and (slower) detection of significantly smaller movement patterns such as breathing. Fast movements can be classified as approaching the detector, moving away from it, or any type of motion.

The name ViTa stands for vital motion detection and indicates that the device has been optimized to detect presence within the range of micro-vital human movements such as breathing and pulse. This capability allows it to function reliably as a presence detector even when people are sitting very still or at rest. The RF detector operates in the 60 GHz frequency band in order to make this functionality possible.

Unlike conventional presence detectors, the ViTa KNX exhibits high sensitivity not only horizontally but also vertically—upwards and downwards relative to the installation position. This makes it particularly suitable for stairwells and multi-level areas, as people are reliably detected as soon as they enter the stairwell. As a pure motion detector, it impresses with an exceptionally wide detection angle of nearly 180° (horizontal and vertical). This makes the ViTa KNX ideal for use in door areas: the detector responds immediately when the door is opened and reliably switches on the light.

Motion is detected up to 10 m in the frontal direction; laterally as well as upwards and downwards, the effective detection distance is up to 4 m. The presence of a standing person is reliably detected up to approx. 6 m, and a person at rest up to 3 m.

With appropriate installation, approximately 30–50 cm away from a passageway, the motion detector can recognize when someone enters or leaves the detection area. It provides corresponding communication objects (KOs) for use as a passage counter.

The radar sensor can be completely deactivated.

The device includes an integrated temperature and humidity sensor as well as a light sensor.

It is equipped with two inputs, which can be configured either as binary inputs (e.g. for a window contact or push button) or as inputs for external temperature probes.

The device is available for both the Enertex AluRa frame system and the JUNG Series A 55 and LS. With up to two rocker switches, it can also be operated as a 4-gang KNX manual switch.

To ensure optimal sensitivity even under challenging environmental conditions, the ViTa can perform a calibration procedure. This calibration can be triggered either directly via the ETS by pressing a button or through a corresponding communication object (CO).

| Order number | Description | Jung series |
|---|---|---|
| 1181-02-AR | Enertex® ViTa KNX Präsenzmelder A | Series A |
| 1181-02-LS | Enertex® ViTa KNX Präsenzmelder LS | Series LS |

*Table 1: Device variants*

**Note:**
Push-button covers with metal surfaces must not be used if they are made of solid metal.

### Function overview

The following functions are available:

- Push-button sensor with up to two mechanical rockers
- Built-in temperature and humidity sensor

- Integrated light sensor
- Motion and presence detection via radar-based detector with up to 10 m range in 3 zones
- Support for up to eight logic functions
- Two external binary inputs, optionally usable as input for a remote temperature sensor (e.g., Albrecht Jung part no. FF NTC)
- Integrated bus coupler for power supply via the KNX bus (no additional power supply required).
- Compatible with standard flush-mounted boxes.

## Motion and Presence Detector

### Motion and Presence

Motion detection operates with a response time of approximately 100 ms, enabling very fast detection of movements within the monitored area. In addition, the system can distinguish between movement towards and movement away from the detector. For reliable direction discrimination, the adaptive motion tracking requires an observation time of approximately 330 ms.

In contrast, the detection of micro-vital movements requires approximately 20-30 s to generate a reliable presence signal. After a restart, the detection algorithms require a settling time of approximately 1.5 minutes. If calibration is triggered before this time has elapsed, it will be aborted with an error. Any previously valid calibration remains unaffected.

To ensure both fast response and stable detection, motion and presence detection are internally combined. If a fallback time of > 30 s is configured, presence detection is activated. The algorithms used for presence detection have processing time of up to 3 minutes. Maximum sensitivity is therefore achieved only after this time constant has elapsed:

- Upon entering the detection area, motion is detected immediately (either for any movement direction or only for movement towards or away from the sensor).
- If a fallback time of > 30 s is configured and a person remains within the detection area, the vital movement detection ensures reliable and continuous presence reporting, even with minimal movement.
- With a fallback time of 3 minutes, maximum presence detection sensitivity is achieved.

This operating principle enables continuous functionality even in scenarios where conventional presence detectors would fail to trigger or would trigger unreliably.

### Zones and Areas

The integrated motion detector operates with three radial detection zones:

| Detection Area | Motion<br>$X_{Max}$ ; $Y_{max}$ | Presence<br>$X_{Max}$ ; $Y_{ma}$ |
|---|---|---|
| Near | 1m; 0,5m | 1m ; 0,5m |
| Medium | 5m; 1,8m | 1,5 m ; 1,3m |
| Far | 10m; 6m | 3 m ; 2,5 m |

*Table 2: Maximum Detection Range (Approximate) for Motion and Presence Detection*

The zones are arranged as lobes in the shape shown in Figure 2 around the installation location of the device. Sensitivity in the Z direction is approximately the same as in the Y direction. Unlike PIR sensors, the ViTa also detects movement in the Z direction (i.e., above and below the sensor). Therefore, the mounting height can be selected relatively freely.

The detection area around the sensor covers almost 180°, so when installed as a passageway

motion detector, movement in the medium zone up to approx. 5 m and in the far zone up to approx. 10 m can be detected. The range in the Z direction is approximately the same as in the Y direction ($Y_{MAX}$=$Z_{MAX}$). Overall, the stated detection ranges are only approximate. Reflections from walls, large objects, and similar factors can affect the detection range.

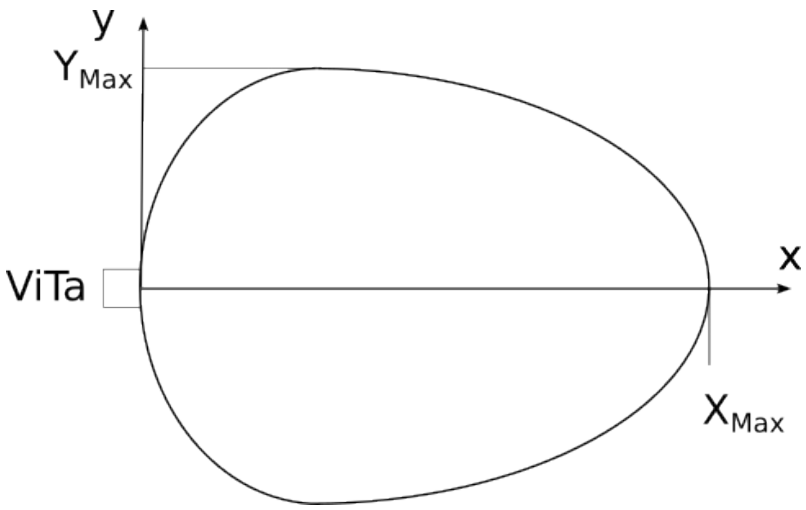


*Figure 2: Detection lobe of the ViTa radar (top view)*

Table 2 provides an overview of the detection ranges.

The respective zone becomes active from the distance specified in Table 2.

For each detection zone, an individual fallback time constant (delay until reset after inactivity) can be configured separately for the corresponding reporting communication object. In addition, a dead time after the fallback can be set, during which no new motion detection is performed. For each zone, up to four communication objects can transmit different values upon activation and deactivation of detection (e.g. ON/OFF, 20%/85%, etc.).

An additional communication object for presence detection operates independently of the lock functions and ambient light conditions and can be used for simplified commissioning.

### Behavior with dimmer channels and brightness threshold

If the ViTa controls a dimming channel, the light may fade out slowly after the fallback time has expired. During this transition phase, the luminaire is still technically on, even though the fallback time has already elapsed.

If a maximum brightness (upper brightness threshold) is configured, this may prevent the detector from triggering again during this dimming phase. The remaining light level may still be above the defined threshold, thereby suppressing a new switch-on command despite renewed movement.

For this application, the communication object “*Disable brightness threshold channel* xx” is available. This object can be linked to the 1-bit status object of the dimmer.

The dimmer must be parameterized so that it sends an OFF telegram (0) only when the dimming value has actually reached 0%.

As a result:

- During the dimming phase (between fallback time expiration and complete switch-off), the brightness threshold is disabled.
- If movement is detected during this period, the detector triggers immediately, regardless of the remaining brightness.
- Once the dimmer has fully switched off (0%), the normal brightness threshold logic becomes active again.

This configuration ensures reliable switch-on even when luminaires are switched off with a slow

fade-out.

## Use of Multiple Channels

The communication object *Disable brightness threshold channel xx* (e.g., KO27) is also useful when multiple channels are used.

**Example installation scenario:**
A ViTa device is installed below a mirror in a bathroom.

- Channel 1 is parameterized for the far detection range without directional restriction and controls the ceiling light.
- Channel 2 is parameterized for the near detection range, limited to approach detection only, and controls the mirror light. When the user approaches the mirror, the mirror lighting is switched on.

Under normal conditions, light activation depends on the measured ambient brightness. For example, if the room is initially dark and unoccupied, the ceiling light will switch on when someone enters. Depending on the parameter settings, the increased brightness caused by the ceiling light may prevent the mirror light from switching on due to the active brightness threshold.

In this case, the communication object **"***Disable brightness threshold channel* xx**"** is used for the mirror channel. It is linked to the switching command of the ceiling light. As soon as the ceiling light is switched on, the brightness threshold for the mirror channel is deactivated. This allows the mirror light to switch on despite the increased ambient brightness.

In this way, individual brightness thresholds can be defined for different channels while still allowing additional channels to be activated without being unintentionally suppressed by already active lighting channels.

## Calibration

The presence detector can be calibrated to optimize detection performance. Calibration is initiated in the ETS within the parameter overview of the presence detector by pressing the corresponding button. As a prerequisite, the physical address of the device must have been programmed at least once.

Alternatively, calibration can be started via a trigger communication object (CO 50 "Start calibration") from the bus. A separate status communication object (CO 51 "Calibration status") sends the value 1 when calibration has been successfully completed.

If CO 50 "Start calibration" is written with the value 0, only a measurement is performed; the output is provided as ASCII Text via CO 52 and 53. When the measurements starts, CO 52 outputs "Start Meas."; when calibration is started (trigger=1), "Start cal." is sent on the bus. These communication object outputs are service and diagnostic functions only and usually do not need to be considered.

Calibration adapts the sensor to the specific installation environment. This optimizes detection reliability and sensitivity. The calibration data is retained after a restart as well as after downloading the application. A reset is performed exclusively by a factory reset or specifically via the corresponding function in the ETS application.

### Calibration process and conditions (ETS)

A calibration cycle lasts 80 seconds. The first 20 seconds are used solely for stabilization and are not evaluated. Calibration can only be started after the device has been in operation for at least 90 seconds. During calibration, calculations run automatically in the background. After successful completion, the new threshold values are internally applied and become effective immediately. The calibration status can be checked at any time via the ETS. Evaluation of communication objects is not required for this purpose.

### Error conditions

Calibration will not start or will be aborted immediately if:

- the minimum operating time of 90 seconds has not yet been reached, or
- a permissible spectral limit is exceeded during calibration. The spectral limit is output in

CO 52 as the value following "S". It should typically be in the range of 90 to 200. If it exceeds 280, calibration is aborted, as an object was likely present in the detection area.

If calibration repeatedly aborts due to the installation situation (e.g., an unstable environment), the far zone should be disabled and the medium zone should be used instead.

In the event of an error, calibration is terminated and no new threshold values are adopted.

**Requirements for valid calibration**

New threshold values are only applied if:

- the minimum operating time is fulfilled,
- stable environmental conditions prevail during the 80-second measurement phase (no movements exceeding the permissible calibration range),
- no limit violations occur.

The cyclic outputs via communication objects are intended solely for service and diagnostic purposes and do not need to be considered during normal operation.

## Entry/Exit Counter

The application allows the activation of three objects for counting movements towards the sensor and away from the sensor. For this purpose, the sensor must be installed at a maximum distance of 0.4 m, as indicated in Figure 3. The Enertex® ViTa KNX Presence Detector always monitors only the front-facing area. By detecting the direction of movement, a counter for entry, exit, and net passage is triggered in the near range of the sensor.

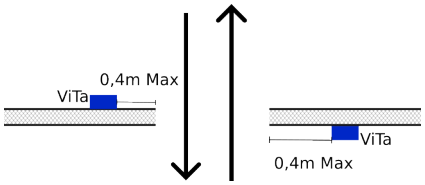


*Figure 3: Counting of entries and exits in the ViTa radar passage area*

The accuracy of this counting function is approximately 80%.

## Mounting

The installation of the Enertex® ViTa KNX Presence Detector can be carried out according to individual requirements. In particular, the mounting height for presence detection is flexible. An optimal range is between 0.8 m and 1.6 m. However, with regard to temperature measurement, it may be necessary to apply a calibration offset compared to the standard mounting height.

Flush mounting (no push-button function and no sensors available) reduces the range by approx. 30 %; detection of vital movements may be further limited. Calibration is recommended in this case. In any event, testing is required to ensure proper operation (no guarantee).

Ensure that the sensor is always firmly screwed in place to avoid malfunctions.

## Switching Off the Transmitter

The radar can be completely deactivated via a communication object (CO) if required.

## Ambient brightness

The motion detection can optionally be combined with the measured ambient brightness. This makes it possible to configure the brightness range in which a motion detection triggers a signal individually. Different parameter values can be defined for day and night operation.

For parameterization, both a lower and an upper threshold for the ambient brightness are available. Only if the calculated brightness value (including any correction via the application parameters) lies within the configured range will the telegrams defined in the application be sent when motion is detected. Offset and scaling of the measured ambient light are always performed in advance. The threshold therefore acts on the calibrated (adjusted) value.

If the configured brightness range is exceeded or undershot, no telegrams are transmitted. This also applies to events that would normally signal leaving the monitored area. As a result, telegrams are sent exclusively when the brightness is within the defined limits.

### Lock

The same behavior applies analogously to the lock communication object (lock CO). This means that both entering and leaving the monitored area are only reported when the lock CO is not set.
If the lock CO is activated, no telegrams for motion or presence detection are output—regardless of whether the brightness conditions are met or not. Only when the lock CO is reset will the parameterized telegrams be output according to the configured brightness and motion parameters.

### Day-Night switching

If switching between day and night operation is activated via a communication object (CO), the telegram output depends on the current state of the day/night CO. When presence is detected in the detection area, telegrams are sent according to the parameters stored for day or night operation.
Important: The switching only affects telegram output when presence is actually detected in the monitored area. No telegrams are output outside of detected presence, even if the day/night CO is sent.

### Interference with Other Sensors

Mutual interference between multiple radar-based motion detectors operating within the same detection area must be prevented. If, for example, an Enertex MeTa² KNX and an Enertex ViTa KNX are installed in the same room, they must be configured to operate in different detection zones. This is achieved by setting the radar frequency to one of five available frequency bands. The sensor detection range remains unaffected.

## Alarm Channel

The alarm channel of the Enertex® ViTa KNX presence detector enables the detection of movements that exceed a parameterizable number within a configurable time window. With this channel logic, a movement is only reported as relevant if the detected number of movements within the defined period is reached.

This function increases the robustness of motion detection against random or short-term disturbances, such as a bird briefly flying past a window or other non-security-relevant events. As a result, false alarms are significantly reduced and the reliability of monitoring is considerably improved.

## Rocker and buttons

### Rocker covers

The devices can be fitted with one or two rockers (push-button version) (not included in the scope of delivery). These rockers are available from JUNG for the A or LS Series.

| Enertex Order Number | 1181-02-AR | | 1181-02-LS | |
|---|---|---|---|---|
| Jung Series | Series A | | Series LS | |
| | With lens | Without lens | With lens | Without lens |
| Single Rocker | A 101 KO5 *xy* | A 101 *xy* | LS 101 KO5 *xy* | LS 101 *xy* |
| Dual Rocker | A 102 KO5 *xy* | A 102 *xy* | LS 102 KO5 *xy* | LS 102 *xy* |

*Table 3: Compatible rockers*

It is important to distinguish here whether the rocker switches are designed with a small central viewing window. If so, the light measurement will output a significantly stronger signal.

## Frame

In addition to the device, a suitable frame is required (not included in the scope of delivery). For Series A, the device is compatible with Enertex® AluRa or frames from JUNG Series A. For Series LS, a corresponding frame from JUNG Series LS must be used.

| Enertex Order Number | | 1181-02-AR | 1181-02-LS |
|---|---|---|---|
| Jung Series | | Series A | Series LS |
| | Enertex® AluRa<br>*1178-0x-xy* | Jung Series A<br>*AC 581 xy*<br>*AV 581 xy*<br>AS 581 xy<br>A 5581 xy | Jung Series LS<br>*LS 981 xy*<br>*LSD 981 xy*<br>*LSP 981 xy*<br>*LS 581 xy* |

*Table 4: Compatible frames*

### Operation

Manual operation on the device can be configured for either rocker actuation or push-button actuation.

If push-button mode is selected, you can choose between single-surface operation and two-surface operation. In single-surface operation, the upper and lower button actuation behave identically. In two-surface operation, the two buttons operate completely independently. This allows you to parameterize up to four different button functions.

### Status LED

The status LED can be used flexibly: it functions both as an independent LED indicator and as an operation indicator for rocker actuation.

Operation Indication

- **Duration:**
  The operation indication lasts exactly one second.
- **Trigger:**
  The operation indication is triggered by every rising edge of a button press, regardless of whether the upper or lower button is pressed.
- **Special Case: Status LED ON:**
  If the status LED is set to "ON" via communication object (CO), it will briefly switch off for 100 ms in the event of an operation. This signals the user that an action has taken place. After the 100 ms, the LED returns to the "ON" state.

Behavior in Programming Mode

- **LED control:**
  When the buttons for programming mode are pressed, the LED is always switched on or reset to the value specified by the CO.

This behavior ensures that both the status indication and the feedback for user interactions are clear and unambiguous.

## Inputs

The device is equipped with two inputs on the rear side. They can be used either as binary inputs (e.g., for evaluating a window contact) or for evaluating button operation via a conventional push button. Alternatively, each input can also be used as an input for an external temperature sensor.

In the application, edge evaluation for the inputs can be configured. Any potential-free installation switch can be used as the external switching contact for the binary input. The switching voltage is provided by the device.

## Temperature Measurement

The device features an internal temperature sensor to measure the current room temperature. After commissioning or a reboot following an extended power interruption, the sensor requires a warm-up period of approximately 30 minutes before it delivers a stable and reliable temperature reading. During this time, deviations may occur between the displayed and the actual room temperature.

- **Note 1:** Only after the warm-up period should the temperature-sensor readings be used for control or display purposes. Please take this into account, especially during commis-

sioning or maintenance.

- **Note 2:** If the device is merely restarted and the power was not—or only very briefly—interrupted, no warm-up period is required.

## Humidity Measurement

The ViTa includes an integrated humidity sensor. Air is a mixture of gases, including water vapor, and the amount of water vapor it can hold is limited. In general, the warmer the air, the more water vapor it can contain.

The sensor measures **relative humidity**, which indicates what percentage of the maximum possible water-vapor content the air currently holds. Since the maximum vapor content rises with increasing temperature, relative humidity falls as temperature rises (and vice versa). Accordingly, humidity measurement requires the same warm-up period of about 30 minutes as the temperature measurement—so that the sensor can compensate for its own self-heating after a cold start.

The measured values can be output to the bus via dedicated communication objects (COs). Parameters allow you to choose whether these values are sent cyclically and/or on change. A threshold alarm with hysteresis can also be configured for monitoring.

## Dew point

The device can calculate the dew point approximately. The dew point is defined as the temperature at which the current water vapor content in the air reaches saturation (100% relative humidity). In other words, the dew point (dew-point temperature) is the temperature at which the moisture contained in a given volume of air begins to condense and forms a film of water (dew) on solid surfaces when the air cools at constant pressure.

## Light Sensor

ViTa devices are equipped with a light sensor located on the top surface at the center of the unit. The measurement is uncalibrated and qualitative only. In practice, there is no single “correct” brightness value for a room, as it depends on factors such as fixture placement, furnishings, and the presence of daylight. The sensor reports in lux: 1 lux corresponds to a luminous flux of 1 lumen uniformly distributed over an area of 1 m². (By way of example, a candle emits about 12 lumens; at a distance of 1 m, this corresponds roughly to 1 lux.)

The sensor can measure up to and beyond 30,000 lux only under direct sunlight **and** when rocker-switch tops with small transparent viewing windows are installed. For the rocker switches, versions with *lens* (Figure 4) are available, which enable light measurement with the highest precision and also ensure that the LED status indication is clearly visible.

*Figure 4: Rocker switch with lens*

If a cover without *lens* is selected, the sensor still registers a residual amount of light. In this case, the scaling function in the application can be used to calibrate the sensor accordingly.

The intensity of the measured residual light strongly depends on the color of the frame used: the darker the frame color, the less incident light is detected. However, this may still lead to larger measurement inaccuracies despite scaling.

It should also be noted that the LED status indicator may distort the light measurement if its function is activated.

**Note:**
When a scaling factor greater than 20 is set, a hardware-based switching mechanism in the

sensor is activated. This ensures that the highest possible sensitivity of the measurement is used. This setting is particularly recommended when rocker switches with dark coloration are used or when no lens (no viewing window in the push button) is present. In these cases, the amount of incident light is significantly reduced, so that the higher sensitivity is necessary to obtain reliable measurement values.

**Example:** With a scaling factor of 20 and good light incidence, the same values are usually measured as with a factor of below 20. However, in the case of weak light incidence, a difference becomes apparent: with a factor below 20, the measured value may already be zero. With factor 20, the switching mechanism ensures that a value greater than zero is still output, so that even small light influences are detected.

## Rockers and button functions

### Switching

No dedicated feedback communication object (CO) is provided for the button functions. If a toggle function is to be implemented, the *listening group address* principle from the KNX fundamentals must be used (i.e., linking the status CO with the button output). In this way, the button can indirectly monitor its own switching state and thus provide a toggle function.

In addition, the button can be parameterized so that—depending on the number of short consecutive actuations—it triggers up to four different communication objects (KOs). The maximum permissible time span between two actuations can be parameterized in the application. In the case of multiple actuations, the action is always triggered on the falling edge, i.e., when the button is released.

Furthermore, the application supports the use of a long button press, which can trigger another separate KO.

### Dimming

Both short and long button presses are supported. A short press issues only the switch telegram; a long press issues only the relative-dimming telegram. The “time between switching and dimming” parameter defines the threshold: presses shorter than this value always trigger the switch command; presses equal to or longer than this value trigger the dimming command.

### Shutter

For shutter control, there are two modes:

- Short-term operation can be parameterized on a short button press and long-term operation on a long button press.
- Short-term operation can be parameterized on a long button press and long-term operation on a short button press.

### Value setter (1 and 2 byte)

With the 1- and 2-byte value setter, a fixed value can be output, and optionally, adjustment via long button press is possible. For adjustment via long button press, the following options can be configured:

- **As parameterized value:** The starting value for each adjustment always begins at the value set for a short button press.
- **As value after last adjustment:** The value from the last adjustment is stored in the device (shared for upper and lower button presses on one rocker) and is continuously increased.
- **As value from communication object:** The starting value for each adjustment is always the value from the last transmission to the communication object for adjustment.

### Controller Operating Mode

These parameters can be used to implement controller mode switching.

### Scenes

Scene control can be used to store a scene via long button press. The time for a long button

press is fixed at 3 seconds.

### Color Control

RGB or HSV telegrams can be sent when operated.

## Logic Functions

The device includes up to 8 logic functions. These functions enable simple logical operations within a KNX installation. By linking input and output objects, logic functions can be interconnected.

For each logic output, up to two time functions can be set independently. The time functions only affect the “switching” communication objects and delay the received object value depending on the telegram polarity.

In addition to pure logic, this allows time sequences to be controlled with the logic module.

# ETS application

## Specification

ETS: from version 5.7.4

## Database file

At https://www.enertex.de/e-downloads.html you will find the current ETS database file and the current product description.

## Parameters

The parameter description is integrated into the context help of the ETS if it is not self-explanatory.

## Communication objects

**Note: Depending on the parameterization, some objects may not be available.**

| ID | Name | Object function | Description / enablement | Length | DPT |
|---|---|---|---|---|---|
| 1 | Button 1 / Rocker 1 (…) – Output | Switching | 1-bit object for controlling a switching channel | 1 bit | DPST-1-1 |
| | | Short-term operation | 1-bit object for controlling a shutter/awning actuator for short-term operation | 1 bit | DPST-1-7 |
| | | Value sender | Object adapts to the data type of the parameterization. Output of a value. | 1 byte / 2 bytes | DPST-5-1 / DPST-5-3 / DPST-5-10 / DPST-9-1 |
| | | Scene | 8-bit object for controlling a scene extension unit | 1 byte | DPST-18-1 |
| | | Operating mode | 8-bit object for controlling a controller extension unit | 1 byte | DPST-20-102 |
| | | Color HSV | 3-byte RGB object for controlling an RGB dimmer channel | 3 bytes | DPST-232-600 |
| | | Color RGB | 3-byte RGB object for controlling an RGB dimmer channel | 3 bytes | DPST-232-600 |
| 2 | Button 1 / Rocker 1 (…) – Output | Long-term operation | 1-bit object for controlling a blind actuator for long-term operation | 1 bit | DPST-1-8 |
| | Button 1 / Rocker 1 (…) – Output | Switching (2-fold) | 1-bit object for controlling a switching channel | 1 bit | DPST-1-1 |
| | Button 1 / Rocker 1 (…) – Input | Status ON/OFF | Feedback of the switching status for toggle function | 1 bit | DPST-1-1 |
| 3 | Button 1 (…) / Rocker 1 (…) | Dimming | 4-bit object for controlling a dimming actuator | 4 bit | DPST-3-7 |
| | Button 1 / Rocker 1 (…) – Output | Switching (3-fold) | 1-bit object for controlling a switching channel | 1 bit | DPST-1-1 |
| 4 | Button 1 / Rocker 1 (…) – Output | Switching (4-fold) | 1-bit object for controlling a switching channel | 1 bit | DPST-1-1 |
| 5 | Button 1 / Rocker 1 (…) – Output | Switching (long) | 1-bit object for controlling a switching channel | 1 bit | DPST-1-1 |
| 6–10 | – | – | See KO 6–10: objects for Button 2 | – | – |
| 11 | Status LED – Input | Status LED | 1-bit KO for controlling the status LED | 1 bit | DPST-1-1 |
| 12–21 | – | – | See KO 1–10: objects for Buttons 3+4 / Rocker 2 | – | – |
| 23 | Presence detector – Input | Switch off radar | 1-bit object for disabling the radar | 1 bit | DPST-1-2 |
| 24 | Presence detector – Input | Day (0) / Night (1) | 1-bit object to set the device to day or night mode | 1 bit | DPST-1-24 |

| ID | Name | Object function | Description / enablement | Length | DPT |
|---|---|---|---|---|---|
| 25 | Presence detector – Output | Presence channel 1 | 1-bit object indicating motion or presence detection independently of the lock functions and ambient light conditions for simplified commissioning | 1 bit | DPST-1-2 |
| 26 | Presence detector – Input | Lock object channel 1 | Lock object for channel 1 | 1 bit | DPST-1-1 |
| 27 | Presence detector – Input | Disable brightness threshold channel 1 | 1-bit object for disabling the brightness threshold | 1 bit | DPST-1-1 |
| 28 | Presence detector – Output | Switching channel 1 | 1-bit object for controlling a switching channel | 1 bit | DPST-1-1 |
| | | Dimming channel 1 | 4-bit object for controlling a dimming actuator | 4 bit | DPST-3-7 |
| | | Long-term operation channel 1 | 1-bit object for controlling a blind actuator for long-term operation | 1 bit | DPST-1-8 |
| | | Short-term operation channel 1 | 1-bit object for controlling a shutter/awning actuator for short-term operation | 1 bit | DPST-1-7 |
| | | Value sender channel 1 | Object adapts to the data type of the parameterization. Output of a value. | 1 byte / 2 bytes | DPST-5-1 / DPST-5-3 / DPST-5-10 / DPST-9-1 |
| | | Scene channel 1 | 8-bit object for controlling a scene extension unit | 1 byte | DPST-18-1 |
| | | Operating mode channel 1 | 8-bit object for controlling a controller extension unit | 1 byte | DPST-20-102 |
| | | Color channel 1 | 3-byte RGB object for controlling an RGB dimmer channel | 3 bytes | DPST-232-600 |
| 29–31 | – | – | See KO 27: objects for telegram 2–4 of the channel | – | – |
| 32–45 | – | – | See KO 25–30: objects for channels 2+3 | – | – |
| 50 | Presence detector – Input | Start calibration | Object to start calibration<br>CalibrationStart = 1 (Start calibration)<br>**Start condition:**<br>• Calibration starts only if the device has been operating for more than 90 s.<br>• If < 90 s: abort with error status (LimitError in the application status, KO52 sends "Cal. Error "), no new calibration is performed.<br>**Runtime:**<br>• Total duration: 80 s.<br>• The first 20 s are not used for user calibration values (settling/wait phase).<br><br>**During calibration:**<br>• Cyclic debug output every 10 s (after all measured variables have been available at least once) on KO52 and KO53.<br>• Abort condition during runtime:<br>If excessive signal is detected (e.g. due to sustained movement): KO52 sends "Cal. Error ", LimitError in the Application status. CalibrationStart is actively reset to 0 and transmitted.<br><br>**Upon successful completion:**<br>• The calibration process calculates new calibration values.<br>• Output of the calibration values (... CL) and, after 1 s, the resulting limits (... LI) (each via KO53).<br>• CalibrationStart is reset to 0 and transmitted.<br><br>**CalibrationStart = 0 (Measurement/debug mode, no calibration)**<br>• Cyclic measurement buffers are reset.<br>KO52 = "Start Meas. "<br>• Afterwards:<br>Cyclic debug output is active for 60 s (every 10 s) on KO52 and KO53.<br>• Only measurement/debug values are output, no calibration is performed.<br>• Note<br>This is a diagnostic mode, not a calibration start. | 1 bit | DPST-1-17 |

| ID | Name | Object function | Description / enablement | Length | DPT |
|---|---|---|---|---|---|
| 51 | Presence detector – Output | Calibration status | Status object of the calibration<br>The communication object exclusively indicates whether a valid calibration is present.<br>Value 1 means: a valid calibration is stored/loaded.<br>Value 0 means: no valid calibration is available.<br><br>**Busbehavior**<br>• After restart: the communication object is noct actively sent to the bus<br>• After successful completion of a calibration (after saving): the communication object is set to 1 and transmitted.<br>• After deleting/invalidating the calibration (e.g. via reset path): the communication object is set to 0 and transmitted.<br><br>**Important for diagnostics**<br><br>• Limit errors (e.g. abort due to threshold violation) do not directly change this communication object.<br>• An ongoing calibration process does not change this communication object; only the existence of a persistently stored valid calibration is relevant.<br>• The communication object is transmitted event-based (not cyclically), exactly at the state changes described above. | 1 bit | DPST-1-2 |
| 52 | Presence detector – Output | Calibration debug 1 | Communication object with additional service and diagnostic outputs for calibration<br>**Character format in the telegram**<br>“X%03u A%03u S%03u”<br>(C formatting, exactly 14 characters)<br>• Meaning (Enertex-specific performance indicators):<br>  • X: Micro-movements<br>  • A: Breathing range<br>  • S: Motion<br>• For calibration/limit output, the identifiers are lowercase: x... a... s...<br>• Values are limited to the range 0..999.<br>**Calibration (KO CalibrationStart = 1):**<br>• Sends “Start cal.” once.<br>• During active calibration, cyclic transmission every 10 s.<br>• In case of error during calibration: “Cal. error”.<br>**Measurement mode (KO CalibrationStart = 0):**<br>• Immediately sends “Start Meas.” once on Debug 1.<br>• Then cyclic transmission every 10 s for 60 s.<br>**Read request:**<br>• If a valid calibration exists, immediate output of the calibration block (x... a... s..., together with Debug 2 “CL”).<br>• After 1 s, additional output of the limit block (x... a... s..., together with Debug 2 “LI”). | 14 bytes | DPST-16-0 |

| ID | Name | Object function | Description / enablement | Length | DPT |
|---|---|---|---|---|---|
| 53 | Presence detector – Output | Calibration debug 2 | Object with additional service and diagnostic outputs for calibration<br>***String outputs***<br>Live during active calibration:<br>SSSSS:AAAAA CC<br>CC = countdown in seconds (00..99) until end of calibration<br>**(**Enertex-specific performance indicators):<br><br>**Live without active calibration:**<br>SSSSS:AAAAAESB<br>Flags:<br>- E = Evidence<br>- S = Stable<br>- B = Trigger<br>Enertex-specific adaptive special filter key figures:<br>• SSSSS: Micro-movements<br>• AAAAA: Breathing range<br>**Calibration values (upon read request Debug1):**<br>• SSSSS:AAAAA CL<br>• Limit values (1 s after CL):<br>SSSSS:AAAAA LI<br>• No calibration available (upon read request Debug1):<br>“no Cal.” | 14 bytes | DPST-16-0 |
| 65 | Input 1 (…) – Output | Value | If input 1 on the rear side is parameterized as a button, the KO is 1 bit and indicates the switch state. If the input is used to evaluate the remote sensor, the KO is a 16-bit floating point value representing the currently measured temperature. | 1 bit / 2 bytes | DPST-1-1 / DPST-9-1 |
| 66 | Input 2 (…) – Output | Value | If input 2 on the rear side is parameterized as a button, the KO is 1 bit and indicates the switch state. If the input is used to evaluate the remote sensor, the KO is a 16-bit floating point value representing the currently measured temperature. | 1 bit / 2 bytes | DPST-1-1 / DPST-9-1 |
| 70 | Alarm – Output | Alarm | 1-bit KO is triggered when the number of detected movements exceeds the parameterized time window. | 1 bit | DPST-1-5 |
| 71 | Alarm – Input | Alarm lock object | Lock object for the alarm. | 1 bit | DPST-1-2 |
| 72 | Alarm – Input | Reset | 1-bit KO for resetting the alarm. | 1 bit | DPST-1-17 |
| | | | | | |
| 74 | Brightness – Input | External brightness | 16-bit floating point object representing a illuminance from another KNX measuring point. | 2 bytes | DPST-9-4 |
| 75 | Temperature – Output | Actual temperature | 16-bit floating point object outputting the determined mixed temperature from all temperatures according to the specification on the “Measured values” tab. This temperature is also the temperature used as the controller input variable. | 2 bytes | DPST-9-1 |
| 76 | Temperature – Output | Internal temperature | 16-bit floating point object outputting the currently internally measured temperature. | 2 bytes | DPST-9-1 |
| 77 | Temperature – Input | External temperature | 16-bit floating point object representing a temperature from another KNX measuring point. | 2 bytes | DPST-9-1 |
| 78 | Humidity – Output | Internal humidity | 16-bit floating point object outputting the currently internally measured relative humidity. | 2 bytes | DPST-9-7 |
| 79 | Threshold alarm – Output | Humidity alarm | 1-bit KO is triggered when the parameterized threshold value is exceeded. | 1 bit | DPST-1-5 |
| 80 | Dew point – Output | Dew point | 16-bit floating point object outputting the current dew point. | 2 bytes | DPST-9-1 |
| 81 | Threshold alarm – Output | Dew point alarm | 1-bit KO is triggered when the parameterized threshold value is exceeded. | 1 bit | DPST-1-5 |
| 82 | Brightness – Output | Internal brightness | 16-bit floating point object outputting the currently internally measured illuminance in lux. | 2 bytes | DPST-9-4 |
| 83 | Threshold alarm – Output | Brightness alarm | 1-bit KO is triggered when the parameterized threshold value is exceeded. | 1 bit | DPST-1-5 |
| 84 | Brightness – Output | Actual brightness | 16-bit floating point object outputting the determined mixed illuminance from internal and external values. | 2 bytes | DPST-9-4 |
| 85 | Passage counter – Output | Incoming | 4-byte KO for the counter value of incoming persons | 4 bytes | DPST-13-1 |
| 86 | Passage counter – Output | Outgoing | 4-byte KO for the counter value of outgoing persons | 4 bytes | DPST-13-1 |

| ID | Name | Object function | Description / enablement | Length | DPT |
|---|---|---|---|---|---|
| 87 | Passage counter – Output | Difference | 4-byte KO for the difference between incoming and outgoing persons | 4 bytes | DPST-13-1 |
| 88 | Passage counter – Input | Reset | 1-bit trigger for resetting the passage counter | 1 bit | DPST-1-17 |
| 100 | Logic 1 (…) | Logic gate input 1 | 1-bit object as input 1 of a logic gate (1…8). The input state can optionally be inverted. This object is only available if the logic function type is set to “Logic gate” and input 1 is used. | 1 bit | DPST-1-2 |
| | | Converter lock function | 1-bit object as input of a converter. It can be parameterized whether the converter reacts to ON and OFF commands, or alternatively processes only ON or only OFF telegrams. This object is only available if the logic function type is set to “Converter”. | 1 bit | DPST-1-2 |
| | | Lock element lock function | 1-bit object as input of a lock element. This object is only available if the logic function type is set to “Lock element”. | 1 bit | DPST-1-2 |
| | | Comparator input | 4-byte object as input of a comparator. This object is only available if the logic function type is set to “Comparator” and the data format is set to “4 byte value -2147483648…2147483647 (DPT 13.001)”. | 4 bytes | DPST-13-1 |
| | | Threshold switch input | 4-byte object as input of a threshold switch. This object is only available if the logic function type is set to “Threshold switch” and the data format is set to “4 byte value -2147483648…2147483647 (DPT 13.001)”. | 4 bytes | DPST-13-1 |
| 101 | Logic 1 (…) | Logic gate input 2 | 1-bit object as input 2 of a logic gate (1…8). The input state can optionally be inverted. This object is only available if the logic function type is set to “Logic gate” and input 2 is used. | 1 bit | DPST-1-2 |
| | | Converter input | 1-bit object as lock input of a converter. A locked converter no longer processes input states and therefore does not convert any new output values (the last value is retained and may be sent cyclically). Telegram polarity can be parameterized. This object is only available if the logic function type is set to “Converter”. | 1 bit | DPST-1-2 |
| | | Lock element input | 1-bit object as lock input of a lock element. A locked lock element no longer passes input states to the filter and therefore does not convert any new output values (the last value is retained and may be sent cyclically). Telegram polarity can be parameterized. This object is only available if the logic function type is set to “Lock element”. | 1 bit | DPST-1-2 |
| 102 | Logic 1 (…) | Logic gate input 3 | 1-bit object as input 3 of a logic gate (1…8). The input state can optionally be inverted. This object is only available if the logic function type is set to “Logic gate” and input 3 is used. | 1 bit | DPST-1-2 |
| 103 | Logic 1 (…) | Logic gate input 4 | 1-bit object as input 4 of a logic gate (1…8). The input state can optionally be inverted. This object is only available if the logic function type is set to “Logic gate” and input 4 is used. | 1 bit | DPST-1-2 |
| 104 | Logic 1 (…) | Logic gate output | 1-bit object as output of a logic gate (1…8). This object is only available if the logic function type is set to “Logic gate”. | 1 bit | DPST-1-2 |
| | | Converter output | 1-byte object as value output of a converter. This object is only available if the logic function type is set to “Converter”. | 1 byte | DPST-5-1 |
| | | Lock element output | 1-bit object as output of a lock element. This object is only available if the logic function type is set to “Lock element”. | 1 bit | DPST-1-2 |
| | | Comparator output | 1-bit object as output of a comparator. The output object is fixed to 1-bit (DPT 1.002) and outputs the result of the comparison operation (ON = true / OFF = false). This object is only available if the logic function type is set to “Comparator”. | 1 bit | DPST-1-2 |
| | | Threshold switch output | 1-bit object as output of a threshold switch. The output object is fixed to 1-bit (DPT 1.002) and outputs the result of the threshold evaluation (ON = true / OFF = false). This object is only available if the logic function type is set to “Threshold switch”. | 1 bit | DPST-1-2 |
| 105–139 | – | – | See KO 100–104: objects for logic 2–8 | – | – |

*Table 5: Communication objects*

# Technical data

| | |
|---|---|
| Power consumption | typ. 5 mA bei 29 V<br>Anschlussstecker Typ 5.1 |
| Proximity sensor / motion detector | Radar 60 GHz, with 10 modulation frequencies CW, 0 to 100% transmission power adjustable in 8 steps |
| Rockers | 2 x Mechanical Rockers, can be used in single button operation |
| Connections | 2x external temperature/binary inputs. |
| Housing | • Front cover (depending on version):<br>◦ Compatible with AluRa by Enertex<br>◦ Compatible with LS Design by JUNG<br>◦ Compatible with Series A by JUNG<br>• Rear housing: plastic<br>• Suitable for standard flush-mounted wall box<br>• Compatible Frame (depending on version):<br>◦ AluRa by Enertex<br>◦ LS Design by JUNG<br>◦ Series A by JUNG |
| General | For use in dry indoor areas only.<br>Ambient temperature: -5 ... +45° C<br>Protection class IP20<br>Protection class III |
| Sensors | Temperature<br>Humidity<br>Luminous intensity<br>Movement and presence |