



**Technische Alternative RT GmbH**

A-3872 Amaliendorf, Langestr. 124  
Tel +43 (0)2862 53635 mail@ta.co.at



**GBS-F  
+ RCV-DL  
Vers. 2.0 EN**  
Manual version 3

# Wireless radiation sensor and receiver



**RAS-F** = Wireless radiation  
sensor



**RCV-DL** = Radio receiver

**Wireless radiation sensors GBS-F  
starting with serial number 1188 can be used only  
with radio receivers RCV-DL  
starting with serial number 1867.**



# Table of Contents

Function description.....	4
Power supply .....	4
Commissioning of the GBS-F radiation sensor .....	5
Coupling the receiver to the wireless sensor .....	5
Coupling instructions .....	6
Deleting an allocation in the receiver .....	6
Index specification .....	7
Technical data .....	8
Installation.....	9
Electrical connections RCV-DL.....	9

## Function description

The wireless system comprises a receiver and up to 8 transmitters. A PT1000 temperature sensor can be connected to the radiation sensor (collector sensor). The GBS-F automatically sends the measurement values to the receiver at intervals. The length of the intervals depends on the radiation intensity and internal power supply. These intervals therefore become longer and longer at night. As soon as the internal energy memory, which is charged by the integral solar panel, supplies too low a voltage, the sensor switches to standby mode. In this case, the receiver transmits the **last** value received from the sensor to the controller.

The receiver forwards the signals from the transmitters via the data link (DL bus) to the controller. With X2 controllers, they are applied as DL inputs; for the UVR1611 controller as network input variables (source: DL) and for the ESR31, UVR61-3, UVR63 and UVR63H controllers as external sensors.

With X2 controllers, there is a timeout if no value is transmitted after three queries by the controller. For controller UVR1611, time-out times can be defined for the DL network inputs (length: at least 10 minutes). If no information is received from the DL bus, the network error (X2 controllers) or network status (UVR1611) changes in the event of a time-out and the programming of the controller allows it to react to this interruption.

The receiver RCV-DL can be used with the following controllers:

- ◆ All controllers with X2 technology
- ◆ UVR1611 from version A3.00 **and** serial number 13286
- ◆ UVR63H from version 7.2
- ◆ UVR63 from version 1.0
- ◆ UVR61-3 from version 5.0
- ◆ ESR31 from version 1.0

## Power supply

The wireless radiation sensor is supplied by an integral solar panel.  
The receiver is supplied directly from the DL-bus.

**Important instruction for UVR1611:** If several CAN bus members are simultaneously fed from the controller, a 12V power pack (CAN-NT) must be used to support the power supply to these devices.

# Commissioning of the GBS-F radiation sensor

## Coupling the receiver to the wireless sensor

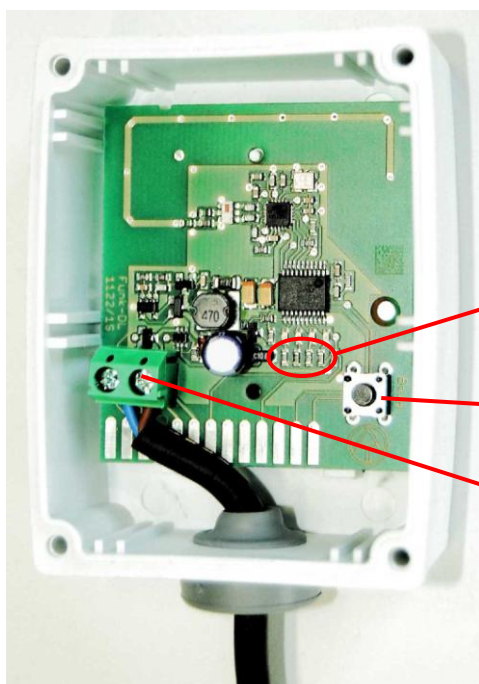
Push-buttons and 4 LEDs are used to couple the receiver to the particular wireless sensor. The 4 LEDs display a binary system, therefore:

- ◆ the first LED has the value **8**,
- ◆ the second LED has the value **4**,
- ◆ the third LED has the value **2** and
- ◆ the fourth LED the value **1**.

Therefore a maximum of 15 addresses can be specified for wireless sensors.

Address	1st LED Value 8	2nd LED Value 4	3rd LED Value 2	4th LED Value 1
1				☀
2			☀	
3			☀	☀
4		☀		
5		☀		☀
6		☀	☀	
7		☀	☀	☀
8	☀			
9	☀			☀
10	☀		☀	
11	☀		☀	☀
12	☀	☀		
13	☀	☀		☀
14	☀	☀	☀	
15	☀	☀	☀	☀

### Receiver (opened):



4 display LED's  
Sequence from left to right:  
**8 4 2 1**

Coupling button

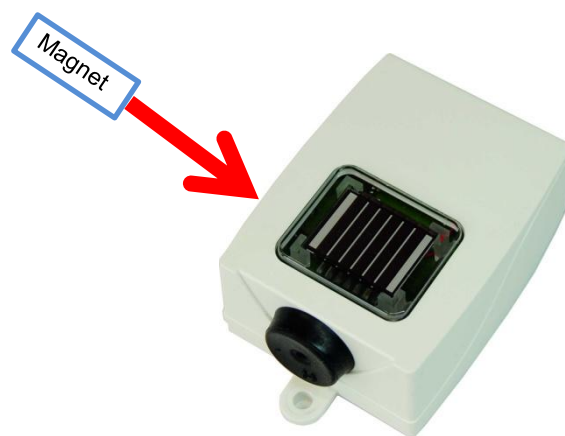
DL bus connection  
(Wires can be connected either way.)  
Wire routing inside in the housing as short as possible!

## Coupling instructions

<b>1</b>	Select a free address in the DL bus net
<b>2</b>	Press the receiver button for at least 2 seconds
<b>3</b>	Hold the magnet on the left side of the GBS-F for at least 2 seconds.

### Supplementary explanations:

- 1.** A **free address** is selected by brief key presses at the receiver. A free **wireless address** can be identified because the relevant LEDs are permanently lit and do not flash. The same address cannot be used twice in the **DL bus network**. Thus for example, if address 1 is already occupied for a FTS4-50DL volume flow encoder, it cannot simultaneously be used for a wireless sensor.
- 2.** After selecting the address, press the button for approximately 2 seconds -> the LEDs start to flash slowly at intervals of a second.
- 3.** The radiation sensor must be placed in the sun for at least 3 minutes or beneath a very bright light source (at least 200W/m<sup>2</sup>), so that the internal energy store is charged.  
A magnet is held on the left side of the radiation sensor for at least 2 seconds and then removed again.



The sensor sends a coupling telegram to the receiver and "registers itself". **After successful registration, the LEDs start to flash more quickly after about 5 seconds.** The sensor must be coupled within a minute of the LEDs starting to flash slowly, otherwise the receiver switches back again (LEDs illuminate continuously).

## Deleting an allocation in the receiver

To delete the allocation of an address to a sensor, the corresponding address must be selected (LEDs flash quickly) and then the button pressed for at least 10 seconds until the LEDs switch over to continuous illumination.

## Index specification

To process sensor values in the controller, specification and selection of the sensor address (1-15) **and** the index (1-5) is necessary.

Indices can be specified for the following values:

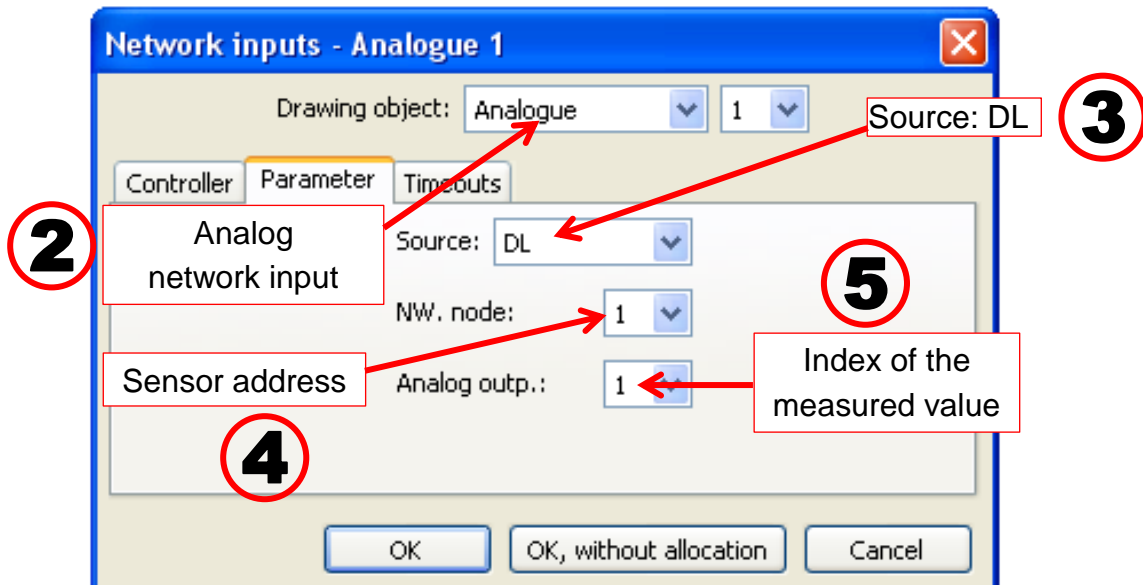
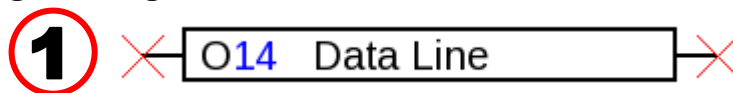
Index	Value
1	Radiation value in W/m <sup>2</sup>
2	Temperature of the connected PT1000 sensor
3	Dimensionless number as measurement for wireless sensor's internal operating voltage: if this value is more than about 550, the sensor does not send any radio signals and is in standby mode.
4	Wireless receiver quality (only displayed with X2 controllers, UVR1611 and UVR63H from version 7.2) Value between 0 and 1000, where 1000 represents the maximum receiving quality (a value less than 300 can cause malfunctions).
5	Time in minutes since the last radio telegram (see instructions re index 5)

**X2 controllers:** The measured values are parameterised in the menu "DL bus".

**UVR1611:** The measurements are parameterised as **analog** network inputs:

NW.Node:                                 Sensor address  
Anal.NW.Outp.:                         Index of the measurement  
Source:                                     DL

TAPPS2 - Programming UVR1611:



A still unused network input variable must be selected for each new value.

## ESR31, UVR61-3, UVR63 and UVR63H :

Adjustment of the measurements takes place in the menu **EXT DL** (external sensors)



**Example:** The external sensor 1 has address 1, the measured temperature of the PT1000 sensor will be imported (index 2). This value can subsequently be allocated to a sensor value (menu ENTER/Men – SENSOR).

### Instruction re index 2:

If no temperature sensor is connected, "999°C" is displayed.

### Instructions re index 5:

If the radiation intensity and sensor operating voltage are sufficient, a radio telegram must be received at least every 8 minutes.

The value is not given as a dimensionless number but rather as a temperature with a comma, e.g. 8 minutes = 0.8°C. The highest counted value is 2500 minutes (= 250.0°C).

With each received radio telegram, this counter is reset to zero.

An error message can therefore be generated in X2 controllers or UVR1611 by means of a comparison function.

However, if a **reset** is performed, the meter is set to 61. If the DL bus is overloaded or the processor malfunctions, an unintentional reset may occur. So that this case can also be detected in X2 controllers or UVR1611, the comparison value must be set to no more than 60 (= 6.0 °C). It must indeed be noted that after commissioning of the receiver up to receipt of the first radio telegram, this index value counts up from 61.

## Technical data

<b>Bus load of receiver:</b>	43%
<b>Radio frequency:</b>	868.5 MHz
<b>Range in the open air:</b>	max. 1000m
<b>Range in buildings:</b>	typically 30m, 2 walls or ceilings (dependent on the wall thickness and material)
<b>Protection class:</b>	IP44



## Installation

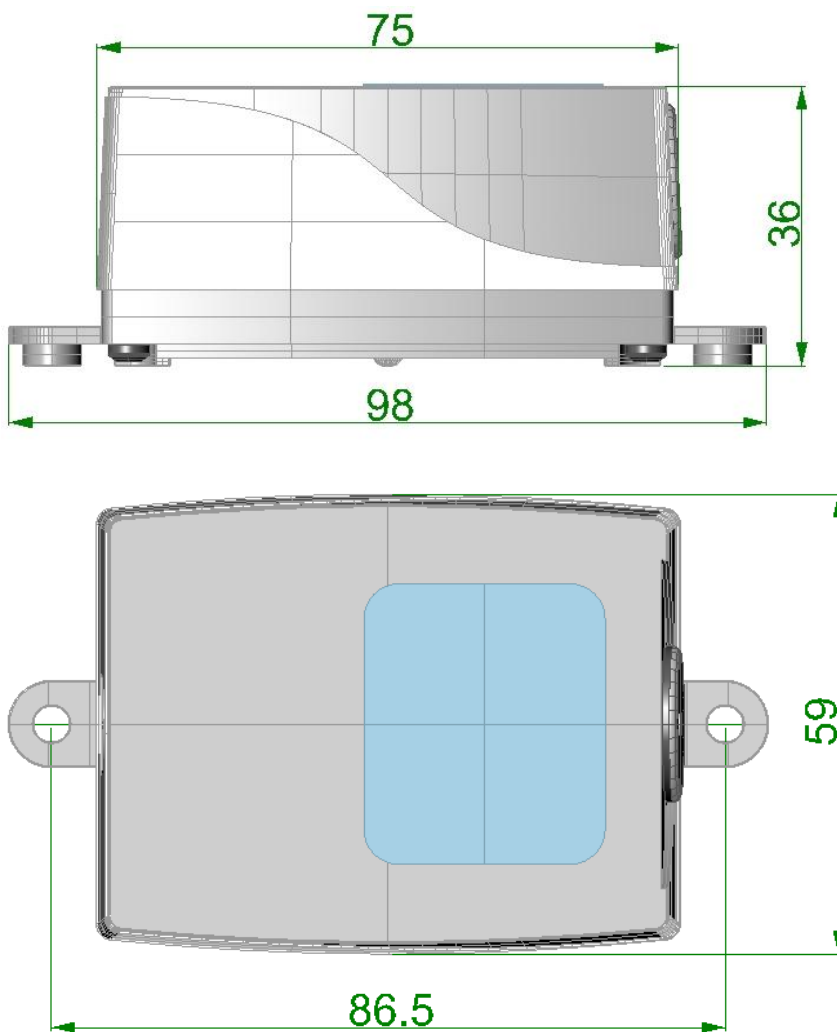
The transmitter and receiver have 2 fastening points for wall mounting.  
When mounting the transmitter, it must be ensured that the cable connection must always be at the bottom.

## Electrical connections RCV-DL

The receiver has to be connected to data link (DL-bus) and sensor mass. The connection polarity is unimportant.

Any cable with a cross section of 0.75 mm<sup>2</sup> can be used for the data link (e.g. twin-strand) having a max. length of 30 m. For longer cables, we recommend the use of shielded cable.

### Dimensions in mm:



We reserve the right to make technical changes.

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# EU Declaration of conformity

Document- Nr. / Date: TA17056 / 02/02/2017  
Company / Manufacturer: Technische Alternative RT GmbH  
Address: A- 3872 Amaliendorf, Langestraße 124

***This declaration of conformity is issued under the sole responsibility of the manufacturer.***

Product name: GBS-F  
Product brand: Technische Alternative RT GmbH  
Product description: Wireless radiation sensor

***The object of the declaration described above is in conformity with Directives:***

2014/53/EU Radio equipment (RED)  
2011/65/EU RoHS Restriction of the use of certain hazardous substances

***Employed standards:***

EN 60730-1: 2011 Automatic electrical controls for household and similar use –  
Part 1: General requirements  
EN 61000-6-3: 2007 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards -  
+A1: 2011 Emission standard for residential, commercial and light-industrial  
+ AC2012 environments  
EN 61000-6-2: 2005 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards -  
+ AC2005 Immunity for industrial environments  
EN 50581: 2012 Technical documentation for the assessment of electrical and electronic  
products with respect to the restriction of hazardous substances

***Position of CE - label:*** On packaging, manual and type label



Issuer: Technische Alternative RT GmbH  
A- 3872 Amaliendorf, Langestraße 124

***This declaration is submitted by***

A handwritten signature in black ink, appearing to read 'Schneider Andreas'. The signature is written in a cursive, flowing style.

Dipl.-Ing. Andreas Schneider, General manager,  
02/02/2017

This declaration certifies the agreement with the named standards, contains however no warranty of characteristics.

The security advices of included product documents are to be considered.

# EU Declaration of conformity

Document- Nr. / Date: TA17057 / 02/02/2017  
Company / Manufacturer: Technische Alternative RT GmbH  
Address: A- 3872 Amaliendorf, Langestraße 124

***This declaration of conformity is issued under the sole responsibility of the manufacturer.***

Product name: RCV-DL  
Product brand: Technische Alternative RT GmbH  
Product description: Radio receiver

***The object of the declaration described above is in conformity with Directives:***

2014/53/EU Radio equipment (RED)  
2011/65/EU RoHS Restriction of the use of certain hazardous substances

***Employed standards:***

EN 60730-1: 2011 Automatic electrical controls for household and similar use –  
Part 1: General requirements  
EN 61000-6-3: 2007 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards -  
+ A1: 2011 Emission standard for residential, commercial and light-industrial  
+ AC2012 environments  
EN 61000-6-2: 2005 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards -  
+ AC2005 Immunity for industrial environments  
EN 50581: 2012 Technical documentation for the assessment of electrical and electronic  
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Dipl.-Ing. Andreas Schneider, General manager,  
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## **Guarantee conditions**

**Note:** The following guarantee conditions do not in any way limit the legal right to a guarantee, rather expand your rights as a consumer.

1. The company Technische Alternative RT GmbH provides a two-year guarantee from the date of purchase by the end consumer for all the devices and parts which it sells. Defects must be reported immediately upon detection and within the guarantee period. Technical support knows the correct solution for nearly all problems. In this respect, contacting us immediately will help to avoid unnecessary expense or effort in troubleshooting.
2. The guarantee includes the free of charge repair (but not the cost of on site fault-finding, removal, refitting and shipping) of operational and material defects which impair operation. In the event that a repair is not, for reasons of cost, worthwhile according to the assessment of Technische Alternative, the goods will be replaced.
3. Not included is damage resulting from the effects of overvoltage or abnormal ambient conditions. Likewise, no guarantee liability can be accepted if the device defect is due to: transport damage for which we are not responsible, incorrect installation and assembly, incorrect use, non-observance of operating and installation instructions or incorrect maintenance.
4. The guarantee claim will expire if repairs or actions are carried out by persons who are not authorised to do so or have not been so authorised by us or if our devices are operated with spare, supplementary or accessory parts which are not considered to be original parts.
5. The defective parts must be sent to our factory with an enclosed copy of the proof of purchase and a precise description of the defect. Processing is accelerated if an RMA number is applied for via our home page [www.ta.co.at](http://www.ta.co.at). A prior clarification of the defect with our technical support is necessary.
6. Services provided under guarantee result neither in an extension of the guarantee period nor in a resetting of the guarantee period. The guarantee period for fitted parts ends with the guarantee period of the whole device.
7. Extended or other claims, especially those for compensation for damage other than to the device itself are, insofar as a liability is not legally required, excluded.

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## **Technische Alternative RT GmbH**



A-3872 Amaliendorf Langestraße 124

Tel ++43 (0)2862 53635

Fax ++43 (0)2862 53635 7

E-Mail: [mail@ta.co.at](mailto:mail@ta.co.at)

--- [www.ta.co.at](http://www.ta.co.at) ---

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