HIRSCHMANN
A BELDEN BRAND

iFLEX TRS 14

Transceiver
for wireless sensors

Contents

User manual

Issue A - 08/2010

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VERSION OVERVIEW

Issue	Date	Description	Editor
A	2010-08-31	First issue, translation of the german original issue A	Konopka

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INTRODUCTION

About this manual

This manual is a component of the equipment or system supplied by Hirschmann Automation and Control GmbH. Keep this manual in a safe place and ensure that it is available to all users.

Liability disclaimer

The contents of this manual are subject to change. Hirschmann Automation and Control GmbH does not provide any guarantee for this material, including the associated guarantee regarding marketability and suitability for certain intended purposes. Hirschmann Automation and Control GmbH accepts no liability for errors in the contents of the manual or for direct or indirect damage in connection with the provision and use of the manual.

Copyright notice

Trademarks

The rendition of common names, trade names, trademarks etc. in this documentation should not be construed to mean that such names, even without special identification, are free in the sense of trademark and trademark protection legislation and hence usable by anyone.

Use for the intended purpose

This device / system is intended exclusively for the tasks described in this manual. Any other use shall be construed as being inappropriate. The manufacturer accepts no liability for damage caused by inappropriate or impermissible use. This device / system may only be used if it is in perfect technical condition.

Qualification of the operating personnel

Only appropriately qualified personnel may work with this device / system, i.e. persons:

- who are familiar with the operation or installation and commissioning
- who know the current regulations for the prevention of accidents

Marking of notices

Dangers and other important notices are marked as follows in this user manual:

WARNING

Warning of direct threat of personal injury and damage to property.

Instructions on precautions to avert the danger.

CAUTION

Warning of dangerous situations. Also warns of damage to property.

Instructions for averting the danger.

IMPORTANT

Warning of possibly damaging situation for the product.

Instructions for avoiding the possibly damaging situation.

NOTE

Usage instructions and information, but no dangerous situation.

HINT

Supplementary comments and recommendations for the user.

1 Safety instructions

In order to avoid possible personal injuries and damage to property when using this device, it is essential to observe the following safety instructions:

CAUTION

Danger of electrical short-circuits.

Switch off all systems before commencing with the installation work!

CAUTION

Danger due to the inadvertent registration of a nearby wireless sensor.

Make sure that the batteries of other wireless sensors are not changed during a registration procedure on an iFLEX TRS 14.

IMPORTANT

Damage to the device if connected to an unsuitable power supply.

The device may only be connected to a DC voltage source of 10 V to 30 V!

IMPORTANT

Damage to the equipment due to non-compliance with the regulations for the handling of equipment containing electrostatically sensitive devices (ESDs):

Pay attention to the following instructions if the device has to be opened during commissioning:

- **Discharge yourself (e.g. by touching an earthed object) before opening the device**
- **Hold the printed circuit board only by the edges**
- **Do not touch components or connector pins or tracks**

IMPORTANT

Impairment of the system function due to the use of an unsuitable antenna radiator.

Always use the antenna radiator included in the scope of supply!

IMPORTANT

Impairment of the system function or breaching of radio transmission regulations by the use of components or extensions not approved by the manufacturer.

Use exclusively components or extensions that are intended and approved by the manufacturer.

IMPORTANT

Possible impairment of the radio link/range in direct proximity to antenna systems with a high HF transmission power.

The device must not be used in the direct proximity of radar systems or transmitters (e.g. radio, TV, mobile telephone etc.) or close to power supply systems.

IMPORTANT

Damage to the device due to the penetration of water and dirt.

Never clean the device with a high pressure cleaner!
Have damage to the decorative foil repaired professionally without delay!

1.1 EU conformity declaration

Hirschmann Automation and Control GmbH
Niederlassung Ettlingen
Hertzstraße 32-34
D-67275 Ettlingen, Germany

erklärt in alleiniger Verantwortung, dass das Produkt
declares in sole responsibility, that the product

iFLEX TRS14 Funkmodul (Empfänger, 2,4 GHZ)

iFLEX TRS14, 608012

(Bezeichnung, Typ oder Modell, Erzeugnisnummer
Type, reference number)

gemäß dem Gesetz über Funkanlagen und Telekommunikations-einrichtungen (FTEG) und der Richtlinie 1999/5/EG (R&TTE)

in accordance with the Radio und Telecommunication Terminal Equipment Act (FTEG) and Directive 1999/5/EG (R&TTE Directive)

Funkanlage / Radio Equipment **Klasse / Class 1**
Geräteklasse / Radio equipment

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the essential requirements of §3 and the other relevant provisions of the FTEG (Article 3 of the R&TTE Directive), when used for its intended purpose.

Gesundheit und Sicherheit gemäß § 3 (1) 1. (Artikel 3 (1) a))
Health and safety requirements pursuant to § 3 (1) 1. (Article 3 (1) a))

Schutzanforderungen in Bezug auf die elektromagn. Verträglichkeit § 3 (1) 2. (Artikel 3 (1) b))
Protection requirements concerning electromagnetic compatibility § 3 (1) 2. (Article 3 (1) b))

Maßnahmen zur effizienten Nutzung des Funkfrequenzspektrums
Measures for the efficient use of the radio frequency spectrum

Luftschnittstelle bei Funkanlagen gemäß § 3 (2) (Artikel 3 (2))
Air interface of the radio systems pursuant to § 3 (2) (Article 3 (2))

Angewendete harmonisierte Normen
Harmonised standards applied

ETSI EN 300 328:2004 V1.6.1

ETSI EN 301 489-1:2008 V1.8.1

ETSI EN 301 489-17:2002 V1.2.1

(Titel und/oder Nummer der Normen oder normativen Dokumente
Title, number of issue of standards)

und gemäß der Richtlinie 2006/95/EG (Niederspannungsrichtlinie)
and in accordance with Directive 2006/95/EC (Low Voltage Directive)

mit den folgenden harmonisierte Normen übereinstimmt
has been designed and manufactured in accordance with the following harmonised standards

EN 60950-1:2006

(Titel und/oder Nummer der Normen oder normativen Dokumente
Title, number of issue of standards)

ppa.

(Wolfgang Schenk
Leiter Business Unit
Electronic Control Systems)

i.V.

(Jochen Dolezal
Leiter Forschung und Entwicklung
Director Research & Development)

Ettlingen, den 27.01.2009

(Ort und Datum
Issue place and date)

2 Product description

2.1 General

The **iFLEX TRS 14** is a transceiver for the wireless coupling of wireless sensors from the Hirschmann **xSENS-xxx-W1** family.

How many sensors can be connected?

Up to 4 wireless sensors can be connected wirelessly to a single **iFLEX TRS 14**. The number of wireless sensors can be extended as required by the employment of several transceivers.

Which wireless sensors can be used?

All sensors from the **xSENS-xxx-W1** family from Hirschmann's extensive range of wireless sensors can be used.
(the article numbers given on the right refer in each case to the sensors including accessories)

Application	***Product designation***	***Article no. (set)***
Load measurement	**fSENS KMD-006-W1** (up to 6 t) Art. no. 605792 alternatively also **fSENS KMD-020-W1** (up to 20 t) Art. no. 606345 	
Angle measurement	**gSENS WGF-W1** (0 to 90°) Art. no. 608016 e.g. for boom angle measurement ***or*** **gSENS WGS-W1** (-15 to +15°) Art. no. 608185 for inclination measurement 	
Wind measurement	**iSENS WSS-W1** 	608179
Hoist limit monitoring (A2B)	**iSENS HES-W1** Art. no. 608015 	608180

Table 1 *Overview of wireless sensors*

2.2 Product features

The **iFLEX TRS 14** is characterised by the following features:

- Wireless coupling of up to four wireless sensors from the **xSENS-xxx-W1** family
- Registration of a wireless sensor to the receiver at the push of a button
- Relay output for hoist limit signal
- Four analog signal outputs (configurable for current/voltage)
- Status LEDs for signalling various operating conditions
- Monitoring of the battery condition of the connected wireless sensors
- Self-diagnostic function
- Sensor calibration by radio command
- Protection class IP65, hence also suitable for outdoor use
- Operating temperature -40 to +85 °C
- Voltage supply 10 to 30 V DC

2.3 Use for the intended purpose

The **iFLEX TRS 14** is a transceiver for the transmission of sensor data collected wirelessly from up to four radio sensors from the **xSENS-xxx-W1** family.

Configurable signal outputs make universal adaptation possible. Because of possible impairment of radio communication/range in direct proximity to antenna systems with a high HF transmission power, the device must not be used in the direct proximity of radar systems or transmitters (e.g. radio, TV, mobile telephone etc.) or close to power supply systems.

2.4 Scope of supply

The scope of supply of the **iFLEX TRS 14** with accessories (art. no. 608177) consists of the following parts:

- **iFLEX TRS 14**
- Magnetic base antenna with 4 m connecting cable
- Antenna radiator
- Connecting cable, 4,7 m, with prefabricated central plug at one end
- User manual on CD

2.5 View of device

Figure 1: *View of the iFLEX TRS 14*

2.6 Dimensions

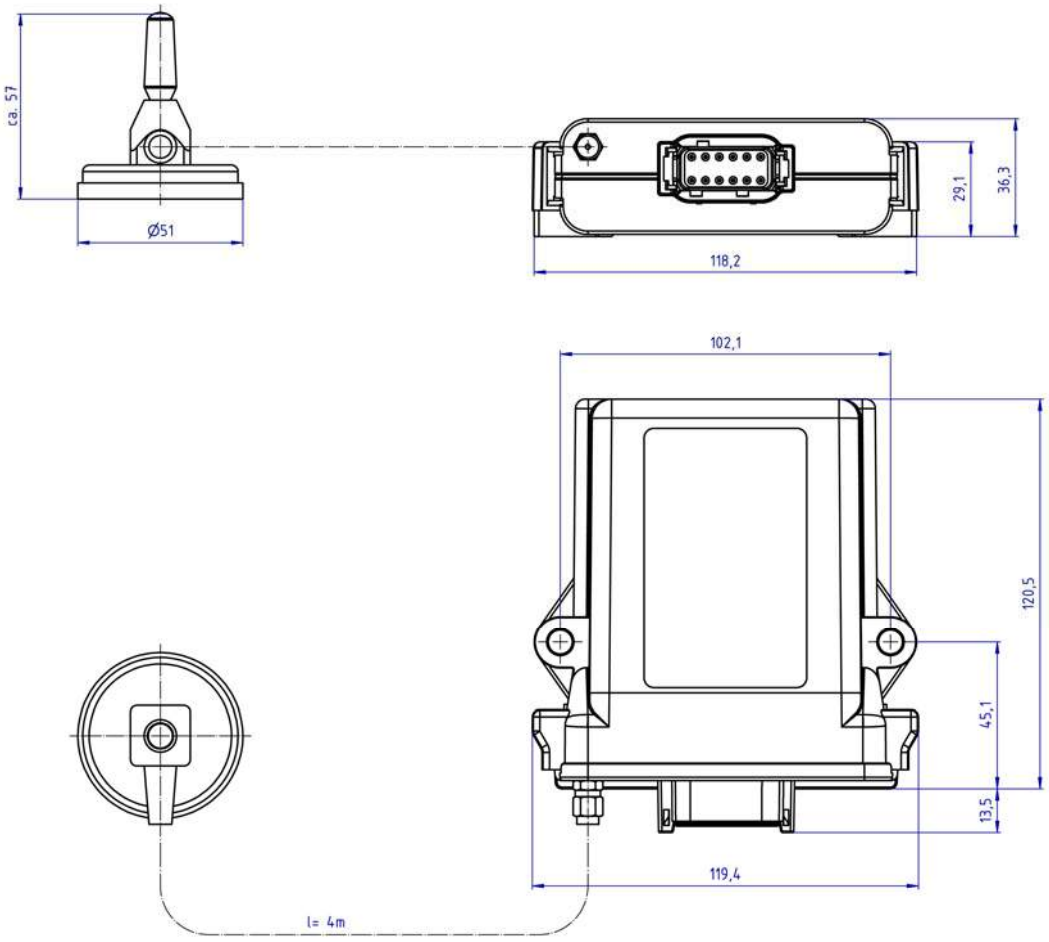


Figure 2: *Dimensions of the iFLEX TRS 14 (with magnetic base antenna)*

3 Installation

3.1 Mounting the components

The **iFLEX TRS 14** is supplied complete with all accessories required for operation. Mounting can therefore be performed simply and quickly. For mounting the wireless sensors, please refer to the instructions provided with the respective sensor.

3.1.1 iFLEX TRS 14

The **iFLEX TRS 14** must be mounted in a suitable place on a sufficiently firm surface with the connections at the bottom. The device may be used both indoors and outdoors and is to be mounted such that the LEDs are visible.

The distance between the holes in the housing is 102 mm.

3.1.2 Magnetic base antenna

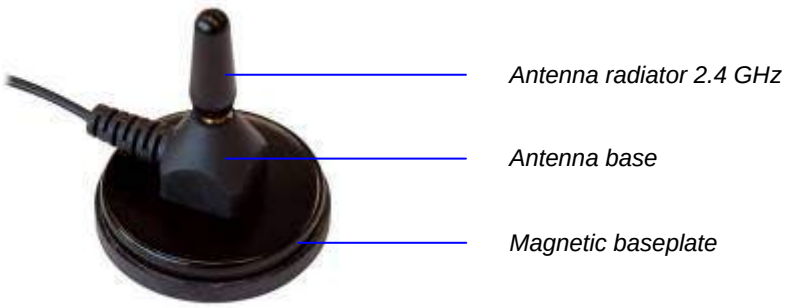


Figure 3: *Magnetic base antenna (art. no. 536023) with mounted radiator*

Preparation of the antenna

First of all, screw the antenna radiator hand tight onto the thread on the top side of the antenna base until you feel a stop. (Remove the protective cap from the thread if necessary).

How do I mount the antenna?

The antenna has a magnetic baseplate and adheres securely to all ferromagnetic surfaces thanks to its strong magnet.

NOTE

Optimal ranges are achieved if the antenna is aligned in accordance with the alignment of the wireless sensor antennas and can radiate as freely as possible.

Niches or recesses are therefore less suitable as mounting locations!

How should the cable be laid?

Please follow the instructions below for laying the antenna cable:

IMPORTANT

The antenna cable can be damaged if it is squeezed or kinked.

Therefore, lay the antenna cable in such a way that it is neither squeezed nor laid around sharp edges!

IMPORTANT

The function of the antenna and hence the whole system can be impaired if a mismatching antenna radiator is used.

Always use the antenna radiator contained in the scope of supply!

Where is the antenna connected?

After laying the cable, connect the coaxial connector of the antenna to the antenna socket on the underside of the **iFLEX TRS 14**. Screw the connector on hand tight.

3.2 Electrical connection

Connection of the device is simple thanks to the connecting cable (4,7 m), which is prefabricated at one end and included in the scope of supply. The open cable end is to be connected properly using wire end ferrules. Please refer to the following illustrations for the wiring of the connecting cable and the pin configuration of the central plug.

CAUTION

Danger of electrical short-circuits.

Switch off all systems before commencing with the installation work!

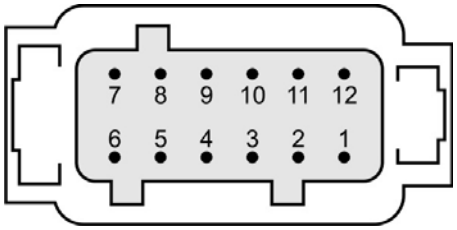
IMPORTANT

Damage to the device if connected to an unsuitable power supply.

The device may only be connected to a DC voltage source of 10 V to 30 V!

3.2.1 Wiring of the central connector

Please refer to the following illustration for the pin configuration of the connector on the underside of the **iFLEX TRS 14** (top view):



Pin 1 +VDC (10 to 30 V)
Pin 2 GND
Pin 3 Ground
Pin 4 Signal output, Sensor 1
Pin 5 Ground
Pin 6 Signal output, Sensor 2
Pin 7 Ground
Pin 8 Signal output, Sensor 3
Pin 9 *not connected*
Pin 10 Signal output, Sensor 4
Pin 11 Relay output, hoist limit switch:
open in hoist limit condition
+U_B if no hoist limit condition or if no hoist limit switch exists
Pin 12 *not connected*

Figure 4: *Pin configuration of the central connector*

3.2.2 Wiring of the connecting cable

The cable contained in the scope of supply is prefabricated at one end with the central plug. The open cable end must be wired according to the following illustration. The external screen should be connected if possible:

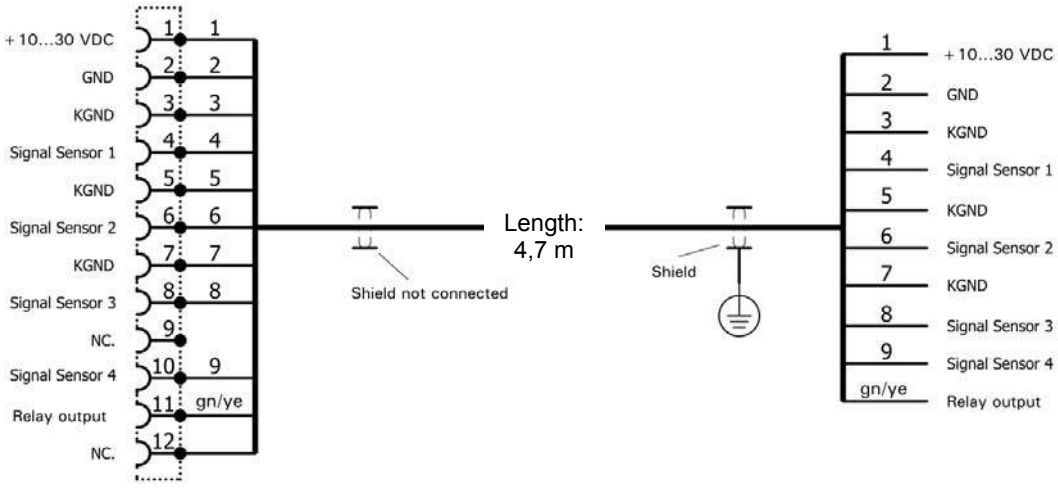


Figure 5: *Wiring of the connecting cable*

4 Commissioning

At least one functional wireless sensor must be available in order to commission and operate the system.

A guide to commissioning and configuring the signal outputs of the **iFLEX TRS 14** and connecting the wireless sensors is provided below.

NOTE

During the initial commissioning and the necessary registration of the wireless sensors, it is useful if these are not yet mounted, but are available close to the iFLEX TRS14.

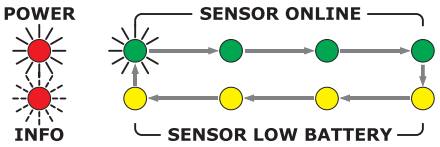
4.1 Switching the device on

How is the device switched on?

After wiring the **iFLEX TRS 14**, the device switches itself on as soon as the supply voltage is present. The red 'Power' LED lights up. After switching on, the system begins with a self-diagnostic routine.

How long does the self-diagnosis take?

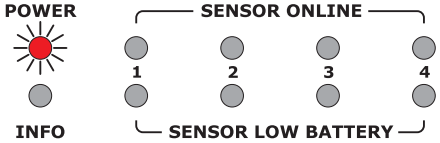
The self-diagnosis takes approx. 3 seconds. During these tests the 'Info' LED additionally flashes and the remaining LEDs light up in succession with a **test pattern**:



LED key: off: lights: flashes slowly: flashes rapidly:

How can I tell whether the device is working correctly?

If no wireless sensors have been registered yet, only the **'Power'** LED should be lit after completion of the self-diagnosis:



If wireless sensors have already been registered, the **'Online'** LED of the respective channel additionally lights up, indicating that the radio link has been established.

Which does it mean when the 'Low Batt' LED lights up?

If a '**Low Battery**' LED lights up, this means that the battery set in the respective wireless sensor is exhausted (remaining capacity < 6,5 %) and must be replaced as soon as possible.

What does it mean when the 'Info' LED lights up?

If the **'INFO'** LED lights up, this means that one of the connected wireless hoist limit switches has reported 'hoist limit'. At the same time, the relay contact opens and there is no voltage at the signal output. The LED may also light up briefly after the iFLEX TRS 14 is switched on, until the radio link to the registered hoist limit switches has been established. If the LED remains lit, this means that the radio link to a registered wireless hoist limit switch is interrupted. In this case the 'Online' LED assigned to the respective channel also flashes.

What does it mean when an 'Online' LED flashes?

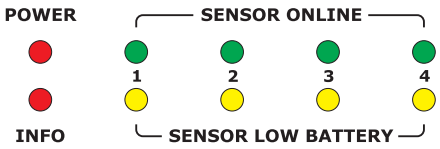
The flashing of an **'ONLINE'** LED after conclusion of the self-diagnosis means that either the radio link with the registered wireless sensor on the indicated channel is interrupted, or, in conjunction with the lighting up of the 'INFO' LED, that a wireless hoist limit switch on the indicated channel is in 'sleep' mode. This mode is activated automatically if the hoist limit switch remains in the hoist limit condition for a lengthy period of time. This function serves to reduce the power requirement of the hoist limit switch. The function is reset automatically upon the next switching of the hoist limit switch.

NOTE

If the link to a wireless sensor is interrupted, rectify the fault first before putting the system into operation.

4.2 Status LEDs

There are 10 LEDs on the front panel of the device, which indicate the status of various operating conditions.



The meaning of the signals can be taken from the table below. The signals apply only to normal operation; deviating signals apply to programming mode:

	off:	lights:	flashes:
POWER	No supply voltage present	Supply voltage is present	
INFO		Hoist limit switch has triggered *or* radio link to a wireless hoist limit switch interrupted	During the system diagnosis
SENSOR ONLINE 1 2 3 4	No sensor registered to this channel	Sensor registered to this channel and ready for operation	During the registration of new wireless sensors *or* hoist limit switch on the indicated channel is in 'sleep' mode *or* link with the sensor on the indicated channel is interrupted
1 2 3 4 SENSOR LOW BATTERY		Batteries of the wireless sensor on this channel are almost exhausted! (capacity < 6.5 %) **Replace the batteries soon!**	

***Table 2** Overview of status LED*

4.3 Opening/closing the housing

It is necessary to open the housing of the iFLEX TRS 14 in order to configure the output signals and the radio link by means of the programming button and jumpers as described below.

- First of all, disconnect the device from the power supply by pulling out the central plug.

IMPORTANT

Damage to the equipment due to non-compliance with the regulations for the handling of equipment containing electrostatically sensitive devices (ESDs):

Pay attention to the following instructions if the device has to be opened during commissioning:

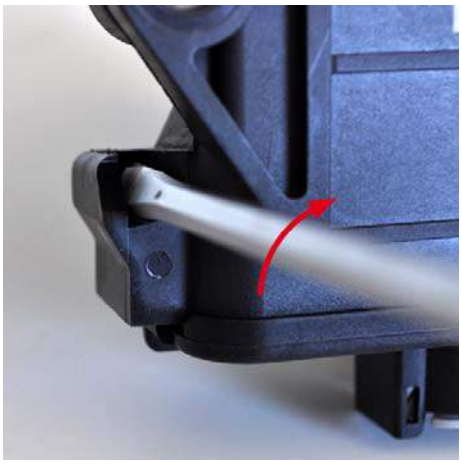
- **Discharge yourself (e.g. by touching an earthed object) before opening the device**
- **Hold the printed circuit board only by the edges**
- **Do not touch components or connector pins or tracks**

Open the housing

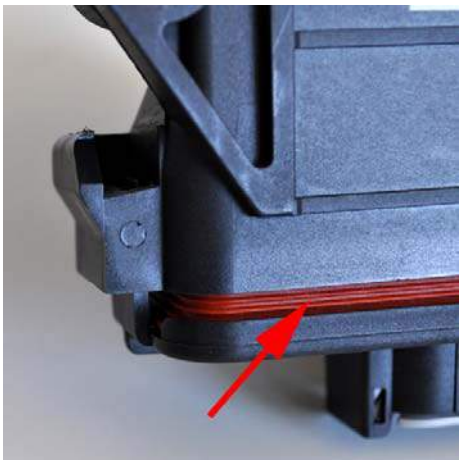
- Follow the procedure described below to **open** the housing:

HINT

A flat-blade screwdriver with a blade width of 4.5 - 5.5 mm is best suited for opening the housing.

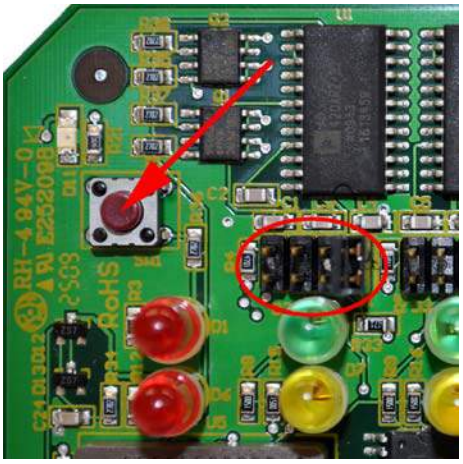


▲ **1.** By means of a slight twisting movement of the screwdriver, press the latches (on both sides of the housing at the rear) carefully towards the housing and in this way unlock the circuit board



▲ **2.** The housing seal will be visible if the circuit board has been unlocked correctly

▲ **3.** Carefully pull the circuit board out of the housing



▲ **4.** View of the **programming button** and the **jumpers** (in this case for channel 1) on the circuit board

Close the housing

- Follow the procedure described below to **close** the housing:

▲ **1.** Carefully slide the circuit board into the guide rails in the housing.
Make sure that the foam strip is positioned as shown.

▲ **2.** Lock the circuit board by applying strong pressure to the underside of the housing (clearly audible click at **both** sides).

4.4 Preconfiguration of the output signals (current/voltage)

The analog signal outputs (channels 1 to 4) are commonly preconfigured in the factory as 4-20 mA current outputs. If necessary the signal outputs can also be commonly configured as voltage outputs.

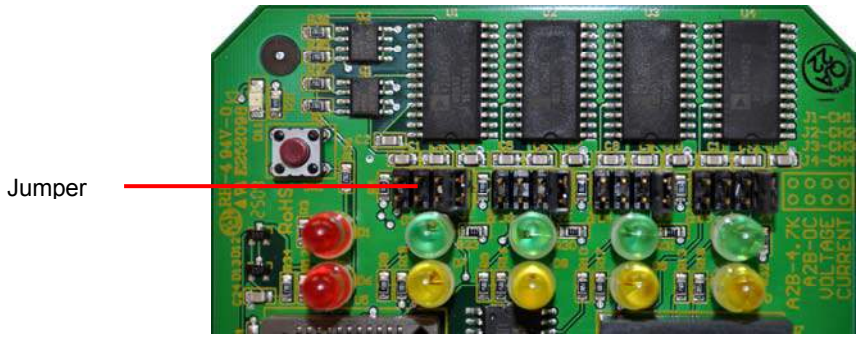
NOTE

The signal outputs (channels 1 to 4) can be commonly configured either as current outputs or as voltage outputs. A mixed configuration is not possible!

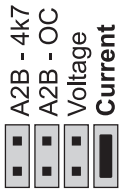
How can the outputs be configured as voltage outputs?

The conversion is made by changing the **jumpers** on the circuit board and subsequently selecting the signal range via the **programming button**. These elements are only accessible after opening the device. (See chapter 4.3)

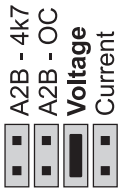
The jumpers for configuring the output signals are located above the LEDs for the corresponding channels 1 - 4:



Now set the jumpers **identically for each channel** according to the sketch below:



▲ Jumper setting for **current** outputs (standard)



▲ Jumper setting for **voltage** outputs

NOTE

If you have configured the signal outputs as voltage outputs, it is also necessary to select the signal range. (See chapter 5.4)

5 Configuration

Wireless sensors are registered or deleted and further device configuration functions are performed by pressing the programming button for a certain length of time whilst observing the visual confirmation via the LEDs.

The programming button is located inside the housing of the device and is only accessible after opening the housing. (To open the housing, see chapter 4.3)

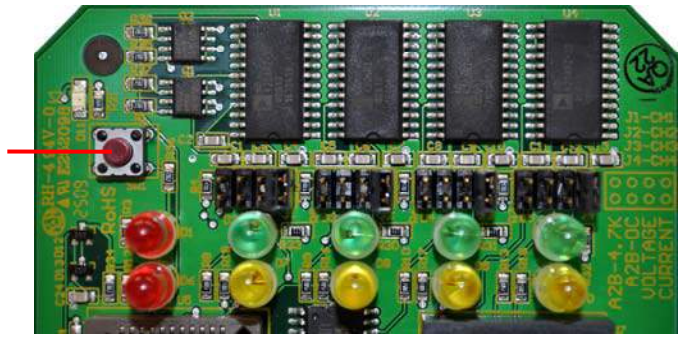


Figure 6: *View of the programming button*

When doing this, pay attention to the safety instructions for the handling of subassemblies containing electrostatically sensitive devices (ESDs). (See safety instructions in Chapter 1)

How are the functions selected?

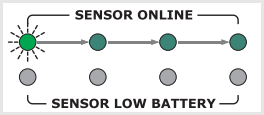
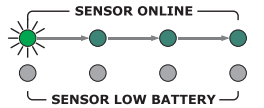
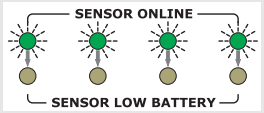
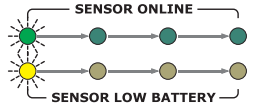
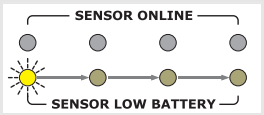
In order to select a certain function, press and **hold** the programming button **until** the desired function is signalled by the LEDs. Then release the programming button. Distinction must thereby be made between flashing and steadily lit LEDs.
The programming cycle is circular and requires approx. 71 seconds for a complete circuit.

How can I exit from the programming mode?

In order to exit from the programming cycle, you can either go through the cycle until the end or briefly remove the central plug. Settings that have already been made will be retained.

An overview of the functions that can be called via the programming button can be found below:

5.1 Overview of functions

Function selection	Display		from	to
Register wireless sensor ... to channel 1		LED 1, green, flashes	3	6
... to channel 2		LED 2, green, flashes	6	9
... to channel 3		LED 3, green, flashes	9	12
... to channel 4		LED 4, green, flashes	12	15
Delete wireless sensor ... from channel 1		LED 1, green, lights steadily	16	19
... to channel 2		LED 2, green, lights steadily	19	22
... to channel 3		LED 3, green, lights steadily	22	25
... to channel 4		LED 4, green, lights steadily	25	28
Set signal range A (for all outputs)		All green LEDs flash	29	32
signal range B...		all green LEDs light steadily	33	36
signal range C ...		All yellow LEDs flash	37	40
signal range D ...		all yellow LEDs light steadily	40	43
Sensor calibration (load/angle) ... on channel 1		LED 1, green and yellow, flash	43	46
... to channel 2		LED 2, green and yellow, flash	46	49
... to channel 3		LED 3, green and yellow, flash	50	53
... to channel 4		LED 4, green and yellow, flash	53	56
Erase EEPROM		LED 1, yellow, flashes	56	59
Set angle range of angle sensor ...to -15° to 15°(gSENS WGS)		LED 2, yellow, flashes	59	63
...to 0° to 90°(gSENS WGF)		LED 3, yellow, flashes	63	66
- no function assigned -		LED 4, yellow, flashes	67	70
Menu end		All LEDs off	71	

A detailed description of the functions with which the device can be configured is provided below.

5.2 Registering a wireless sensor

What needs to be observed?

- Every wireless sensor to be used (maximum 4) must be registered once to the **iFLEX TRS 14** for operation.
- The common use of angle sensors gSENS WGF-W1 and gSENS WGF-W1 is not possible.
- The wireless sensor does not need to be registered again following a battery change.
- Re-registration is necessary after exchanging a wireless sensor.
- Wireless sensors that are not to be used any longer must be deleted and deactivated by removing the batteries.

CAUTION

Danger due to the inadvertent registration of a nearby wireless sensor.

Make sure that the batteries of other wireless sensors are not changed during a registration procedure on an iFLEX TRS 14.

Follow the procedure described below to register a wireless sensor.

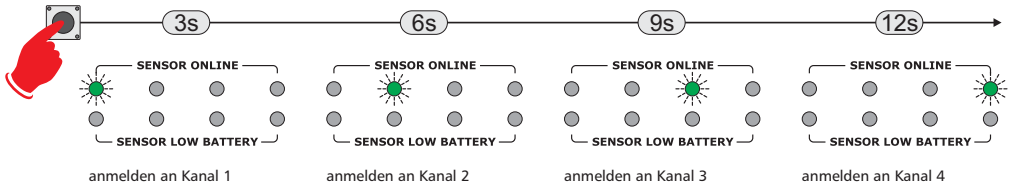
- The wireless sensor should be no more than 1 metre away from the iFLEX TRS 14 during the registration phase.
- Connect the iFLEX TRS 14 to the power supply again. (See also Chapter 4.1)

HINT

Keep a fresh set of batteries at the ready for the registration.

▲ **1.** First of all, open the battery compartment of the **wireless sensor** to be registered by undoing the cover screws and removing the cover of the battery compartment.

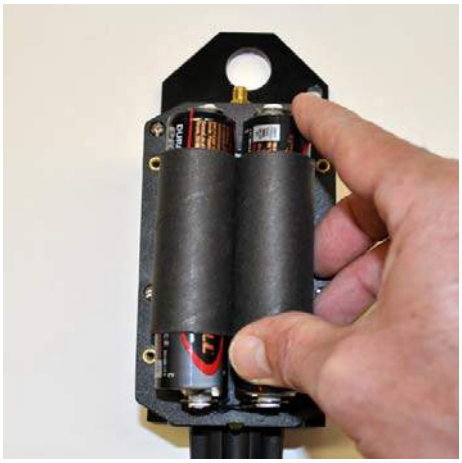
▲ **2.** Remove the batteries



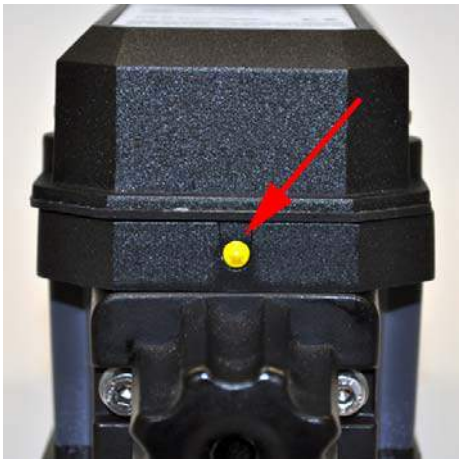
▲ **3.** Press and hold the **programming button** of the iFLEX TRS14 until:

- Online **LED1 flashes** (for the registration of a wireless sensor to **channel 1**)
- Online **LED2 flashes** (for the registration of a wireless sensor to **channel 2**)
- Online **LED3 flashes** (for the registration of a wireless sensor to **channel 3**)
- Online **LED4 flashes** (for the registration of a wireless sensor to **channel 4**)

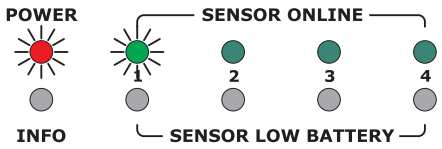
and then release the button.



▲ **4.** Now insert the batteries into the battery compartment of the wireless sensor to be registered, observing the correct polarity.



▲ **5.** Observe the LED on the underside of the housing. This should light up with short pulses. Now fit the cover of the battery compartment.



▲ **6.** The wireless sensor is registered correctly if the respective Online LED lights steadily (in this case e.g. channel 1).

If a wireless hoist limit switch has been registered:

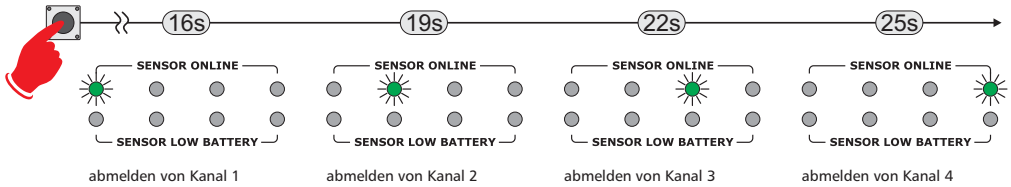
Now pull on the rope of the wireless hoist limit switch for 5 secs. The system is working perfectly if the 'INFO' LED extinguishes within this time. The wireless sensor is now ready to be mounted.

5.3 Deleting wireless sensors

Wireless sensors that are not to be used any longer must be deleted and deactivated by removing the batteries.

Follow the procedure described below to delete a wireless sensor.

1. Open the housing of the iFLEX TRS 14 as described in chapter 4.3.



▲ **2.** Press and hold the **programming button** of the iFLEX TRS14 until:

- Online **LED1 lights steadily** (for the deletion of a wireless sensor from **channel 1**)
- Online **LED2 lights steadily** (for the deletion of a wireless sensor from **channel 2**)
- Online **LED3 lights steadily** (for the deletion of a wireless sensor from **channel 3**)
- Online **LED4 lights steadily** (for the deletion of a wireless sensor from **channel 4**)

and then release the button.

The wireless sensor is deleted as soon as the respective ‘Online’ LED has extinguished.

5.4 Setting the signal range

After preselecting the signal outputs (current/voltage) via the jumpers (see chapter 4.4), it is then also necessary to select the signal range.

An overview of the possible signal outputs for the different types of sensor can be found in the table below. The signal outputs are all preconfigured in the factory to signal range **B** (current 4 to 20mA).

- Select a desired signal range and note the assigned letter A to D

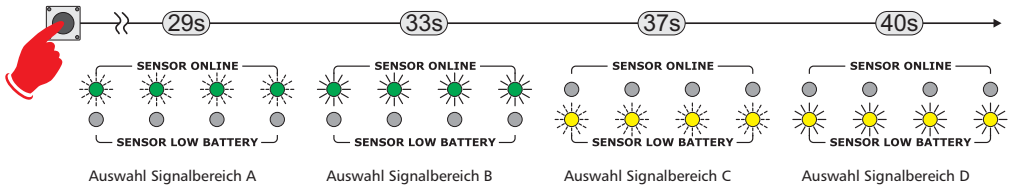
Signal range	Type of sensor	Output signal	Error from
A (voltage)	fSENS KMD-xxx-W1 load cell	0…2,5V [0…45000 lb]	5V
	gSENS WGF-W1 angle sensor	-3,125…-1,875V [0…90°]	-3,14V
	gSENS WGS-W1 inclination sensor	0,5…4,5V [-15…+15°]	5V
	iSENS WSS-W1 anemometer	1,8…9,0V [0…50 mph]	9V
B (current) standard	fSENS KMD-xxx-W1 load cell	4…20mA [0…45000 lb]	24mA
	gSENS WGF-W1 angle sensor	20…4mA [0…90°]	24mA
	gSENS WGS-W1 inclination sensor	4…20mA [-15…+15°]	24mA
	iSENS WSS-W1 anemometer	4…20 mA [0…50 mph]	24mA
C (voltage)	fSENS KMD-xxx-W1 load cell	1,8…9,0V [0…45000 lb]	9V
	gSENS WGF-W1 angle sensor	1,8…9,0V [0…90°]	9V
	gSENS WGS-W1 inclination sensor	*(not defined)*	-
	iSENS WSS-W1 anemometer	1,8…9,0V [0…50 mph]	9V
D (voltage)	fSENS KMD-xxx-W1 load cell	0…2,5V [0…45000 lb]	5V
	gSENS WGF-W1 angle sensor	+3,125…+1,875V [0…90°]	3,14V
	gSENS WGS-W1 inclination sensor	*(not defined)*	-
	iSENS WSS-W1 anemometer	1,8…9,0V [0…50 mph]	9V

***Table 3** Overview of signal ranges*

Conversion: 1 lb(US) = 0,453kg 1 mph = 1,61 km/h

Follow the procedure described below to set the signal range.

1. Open the housing of the iFLEX TRS 14 as described in chapter 4.3.



▲ **2.** Press and hold the **programming button** of the iFLEX TRS14 until:

- all green **LEDs flash** (for signal range **A**)
- all green **LEDs light steadily** (for signal range **B**)
- all yellow **LEDs flash** (for signal range **C**)
- all yellow **LEDs light steadily** (for signal range **D**)

and then release the button.

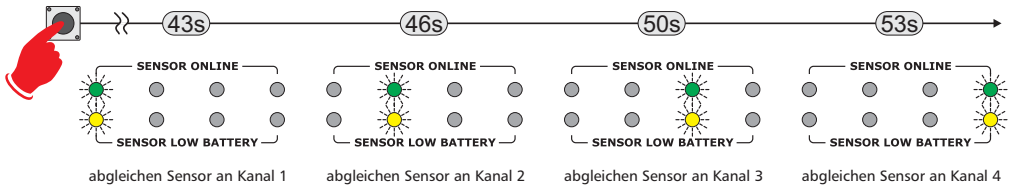
The selected signal range is set as soon as the button is released.

5.5 Adjusting the zero point (load/angle sensor only)

If load and angle sensors are connected, this function can be used to make subsequent small corrections to the zero point.

Follow the procedure described below in order to adjust the zero point.

1. Open the housing of the iFLEX TRS 14 as described in chapter 4.3.



▲ **2.** Press and hold the **programming button** of the iFLEX TRS14 until:

- green and yellow **LED1 flash** (for adjustment of a sensor on **channel 1**)
- green and yellow **LED2 flash** (for adjustment of a sensor on **channel 2**)
- green and yellow **LED3 flash** (for adjustment of a sensor on **channel 3**)
- green and yellow **LED4 flash** (for adjustment of a sensor on **channel** 4)

and then release the button. The previously flashing LEDs are now lit steadily. The device remains in the 'zero point adjustment' mode.

3. Now press the **programming button** of the iFLEX TRS14 again, several times if necessary, until:

- the **INFO** LED **lights up** (for adjustment in the **positive** direction)
- the **INFO** LED **extinguishes** (for adjustment in the **negative** direction)

and keep the button depressed until the desired zero point is reached.

The 'zero point adjustment' mode can only be terminated by disconnecting the central plug. The previously set values thereby remain stored.

5.6 Erasing the EEPROM

Using this function, all stored registration and configuration data can be deleted and the factory settings restored.

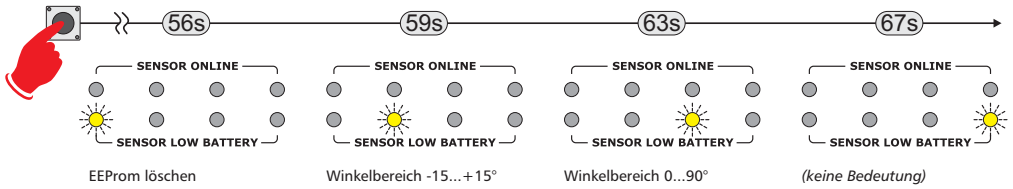
IMPORTANT

Danger due to inadvertent deletion of all registration and configuration data!

Only use this function if you really want to delete all configuration data!

Follow the procedure described below in order to erase the EEPROM:

1. Open the housing of the iFLEX TRS 14 as described in chapter 4.3.



▲ **2.** Press and hold the **programming button** of the iFLEX TRS14 until:

- the yellow **LED 1 flashes**

and then release the button.

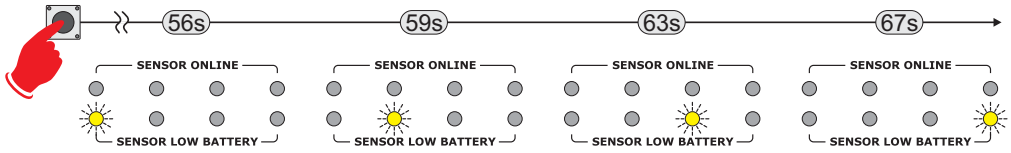
The EEPROM is erased as soon as the button is released.

5.7 Setting the angle range (angle sensor only)

If an angle sensor is connected, this function is used to define the type of sensor being used.

Follow the procedure described below in order to adjust the angle range.

1. Open the housing of the iFLEX TRS 14 as described in chapter 4.3.



EEProm löschen | Winkelbereich -15...+15° | Winkelbereich 0...90° | *(keine Bedeutung)*

▲ **2.** Press and hold the **programming button** of the iFLEX TRS14 until:

- the yellow **LED 2 flashes** (for selection of **angle range -15 to +15°, gSENS WGS-W1**)
- the yellow **LED 3 flashes** (for selection of **angle range 0 to +90°, gSENS WGF-W1**)

and then release the button.

The angle range is set as soon as the button is released.

6 Service and maintenance

The **iFLEX TRS 14** transceiver does not contain any serviceable parts. The micro-fuse inside the device is self-resetting and therefore does not need to be exchanged. If you notice malfunctions, you should switch the device off and have it checked and, if necessary, repaired immediately by an authorised Hirschmann service partner.

Clean the surface of the equipment occasionally with a damp cloth using a mild cleaning agent. However, you should never use abrasive or alcohol-based cleaning agents, as these can damage the housing or the front foil!

IMPORTANT

Damage to the front foil can lead to the penetration of moisture and dirt into the interior of the device.

Never clean the device with a high pressure cleaner! Have damage to the front foil repaired professionally without delay!

Keep the contact area of the device plug and the antenna connector clean and occasionally check that the connections are tight.

Occasionally check the connecting cable and antenna cable as well as the antenna itself. If parts are damaged, these must be repaired properly or replaced immediately.

7 Technical data

Article designation	iFLEX TRS 14
Article number	608177 (complete with accessories, see scope of supply)
Operating voltage	10 - 30 V DC
Fuse	Self-resetting internal fuse, 500 mA
Transmission frequency	2.45 GHz, ISM band, licence-free and exempt from duty IEEE 802.15.4 standard, DSSS /OQPSK modulated Class1 radio system in accordance with FTEG and 1999/5/EC (R&TTE)
Antenna	2.4 GHz, with magnetic base and screwed on antenna radiator, 4m connecting cable, RP-SMA plug
Range	approx. 300 m (depending upon environmental conditions)
CE conformity	ETSI EN 300 328 ETSI EN 301 489-1 ETSI EN 300 489-17 EN 60950-1
FCC conformity	FCC 47 CFR Part 15, Radio Frequency Devices, Subpart B
Control elements	1 programming button (inside the device), jumpers for the configuration of the signal outputs
Displays	10 Status LEDs for signalling various operating conditions
Electrical connection	Central connector (German) 12-pole (on underside of device)
Signal outputs	4 analog outputs, commonly configurable for current/voltage, signal range commonly adjustable 1 relay contact, switches to $+U_b$ when hoist limit is triggered
Antenna connection	RP-SMA, coaxial (on the underside of the device)
Dimensions	H 134 mm x W 118,2 mm x D 36,3 mm
Weight	0,258 kg (device only)
Distance between mounting holes	102,1 mm
Operating temperature range	-40 ºC to +85 ºC
Storage temperature range	-50 ºC to +85 ºC
Protection class	IP 65
Scope of supply	iFLEX TRS 14 with accessories: - Magnetic base antenna with 4 m connecting cable - Antenna radiator 2.4 GHz band - Connecting cable, 4.5 m, partly prefabricated - User manual on CD

Feedback

What is your opinion about this manual? We always try to describe the products fully in our manuals, as well as providing important background knowledge to ensure trouble-free operation.

We take the task of continuous improvement and reduction of errors very seriously. Your comments and suggestions help us to increase the quality and level of information for this document.

Your assessment of this manual:

	excellent	good	satisfactory	so-so	poor
Accuracy	O	O	O	O	O
Readability	O	O	O	O	O
Ccomprehensibility	O	O	O	O	O
Examples	O	O	O	O	O
Structure / Layout	O	O	O	O	O
Completeness	O	O	O	O	O
Illustrations / Images	O	O	O	O	O
Drawings, Diagrams	O	O	O	O	O
Tables	O	O	O	O	O

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Notes