



Universal Converter

# URW 60

EN  
English

Installation & Operating Manual  
**819696-01**

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## Content of this Manual

### **Product:**

Universal Converter URW 60

### **First edition:**

BAN 819696-00/08-2019cm

### **Applicable documents:**

Installation & Operating Manual BAN 819696-01 for URB 60 Visual Display and Operating Unit

You can find the latest Installation & Operating Manuals on our website:

<http://www.gestra.com>

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## Scope of delivery/Product package

- 1 x Universal Converter URW 60
- 1 x Installation & Operating Manual

## How to use this Manual

This Installation & Operating Manual describes the correct use of the URW 60 universal converter. It applies to all persons who integrate this equipment into control systems, install, bring into service, operate, maintain and dispose of this equipment. Anyone carrying out the above-mentioned activities must have read this Installation & Operating Manual and understood its contents.

- Read this Manual in full and follow all instructions given.
- Please also read the instructions for use of any accessories.
- The Installation & Operating Manual is part of the product package. Keep it in an easily accessible location.

### Availability of this Installation & Operating Manual

- Make sure this Installation & Operating Manual is always available to the operator.
- If you pass on or sell the equipment to a third party, please also hand over the Installation & Operating Manual.

## Illustrations and symbols used

1. Action to be taken
- 2.

- Lists
  - ◆ Bullet points in lists

### A Keys to illustrations



Additional information



Read the relevant Installation & Operating Manual

## Hazard symbols in this Manual



Danger zone/Dangerous situation



Danger of death from electric shock

## Types of warning

### **DANGER**

Warning of a dangerous situation that will result in death or serious injury.

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### **WARNING**

Warning of a dangerous situation that may possibly result in death or serious injury.

---

### **CAUTION**

Warning of a situation that may result in minor or moderate injury.

---

### **ATTENTION**

Warning of a situation that will result in damage to property or the environment.

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## Specialist terms/Abbreviations

Here, we explain some abbreviations, specialist terms, etc., which are used in this Manual.

### **CAN (Controller Area Network) bus**

Data transmission standard and interface for connecting electronic equipment, sensors and control systems. Data can be sent and received.

### **TRV .. / NRG .. / LRG .. / SRL ..**

GESTRA equipment and type designations, see page 8.

### **PhotoMOS output**

PhotoMOS are a special kind of semiconductor relay, which use a light-emitting diode on the input side that is optically coupled to an output transistor. This type of electrically non-conductive connection makes sure the input and output circuits are electrically isolated from each other.

### **PI controller**

Controller with proportional (P) and integral (I) control

### **SELV**

Safety Extra Low Voltage

## Usage for the intended purpose

The URW 60 universal converter can be used in combination with a level electrode (with 4-20 mA current output) in steam boilers and hot water installations, and in condensate and feedwater tanks.

### Combinations

The combination of the URB 60 visual display and operating unit, NRR 2-6x level controller, URW 60 and level electrode (4-20 mA) creates a functional unit that can be used as a water level controller and limit switch in steam boilers and hot water installations, and in condensate and feedwater tanks.

### Possible equipment combinations

Level controller	Level electrode	Universal converter (analogue to CAN bus)	Visual display and operating unit
NRR 2-60 NRR 2-61	Ext. 4-20 mA	URW 60	URB 60

**Fig. 1**

#### Key to Fig. 1:

NRR = level controller

URW = universal converter

URB = visual display and operating unit



To ensure the proper use of equipment during all types of use, please also read the Installation & Operating Manuals for the system components used.

- You will find the latest Installation & Operating Manuals for the system components named in **Fig. 1** on our website: <http://www.gestra.com>

## Improper use



**There is a danger of death due to explosion if the equipment is used in potentially explosive atmospheres.**

Do not use the equipment in potentially explosive atmospheres.

## Basic safety notes



### There is a risk of electric shock during work on electrical systems.

- Always switch off the voltage to the equipment before performing work on the terminal strips.
- Check that the plant is not carrying live voltage before commencing work.



### Faulty equipment jeopardises plant safety.

- If the URW 60 universal converter does not behave as described on page 21, it may be faulty.
- Perform failure analysis.
- Only replace faulty equipment with identical equipment from GESTRA AG.

## Required personnel qualifications

Activity	Personnel	
Integration in control system	Specialist staff	Plant designer
Installation/electrical connection/ bringing into service	Specialist staff	Electrician/installer
Operation	Boiler service technician	Staff trained by the plant operator
Maintenance work	Specialist staff	Electrician
Refits	Specialist staff	Plant construction

Fig. 2

## Notes on product liability

We the manufacturer cannot accept any liability for damages resulting from improper use of the equipment.

## Function

The URW 60 universal converter converts the analogue 4-20 mA signals from a connected level electrode into CAN bus telegrams.

The data are transferred to an ISO 11898 CAN bus via the CANopen protocol.

Function tests and failure diagnosis are performed using the URB 60 visual display and operating unit.

### The data telegrams contain the following information:

- Level values from electrodes
- Fault indications on the occurrence of faults in electronic or mechanical parts

### Possible combinations of functions and equipment

Combining the URW 60 universal converter with an NRR 2-6x level controller, a level electrode with a current output of 4-20 mA and the URB 60 visual display and operating unit gives you the following common functions:

Universal converter	URW 60
<b>Function</b>	
Converts the 4-20 mA current signal from the connected level electrode into CAN bus telegrams.	●
Transmits the signals via CAN bus data telegrams to an NRR 2-6x level controller and the URB 60 visual display and operating unit.	●

**Fig. 3**

## Technical data

### Supply voltage

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- 24 V DC +/-20%

### Power consumption

---

- Max. 4 W

### Current input

---

- Max. 0.2 A

### Required external fuse

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- M0.5A

### Input/output

---

- Interface for CAN bus to ISO 11898, CANopen, insulated

### Input

---

- 1 x analogue input IN / (4-20 mA)

### Indicators and controls

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- 1 x multicolour LED (orange, green)
  - ◆ orange = power up, malfunctions
  - ◆ green = running
- 1 x 4-pole code switch for setting the controller group and baud rate

### Protection class

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- III Safety Extra Low Voltage

### IP rating to EN 60529

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- Terminal box: IP 40
- Terminal strips: IP 20

### Admissible ambient conditions

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- Service temperature 0 °C – 55 °C (0 °C – 55 °C at power-on)
- Storage temperature - 20 °C – 70 °C \*
- Transport temperature - 20 °C – 80 °C (< 100 hours) \*
- Air humidity max. 95%, non-condensing  
*\* Only switch on after a 24-hour defrosting period*

## Technical data

### Terminal box

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- Terminal box material: Lower section of black polycarbonate (glass-fibre reinforced), front of grey polycarbonate
- 2 x 8-pole terminal strips, removable separately
- Max. cross-section per screw terminal:
  - ◆ 1 x 4.0 mm<sup>2</sup> solid, or
  - ◆ 1 x 2.5 mm<sup>2</sup> stranded with sleeve, or
  - ◆ 2 x 1.5 mm<sup>2</sup> stranded with sleeve
- Terminal box attachment: Mounting clip on support rail TH 35 (to EN 60715)

### Weight

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- Approx. 0.2 kg

## Example name plate/Identification URW 60

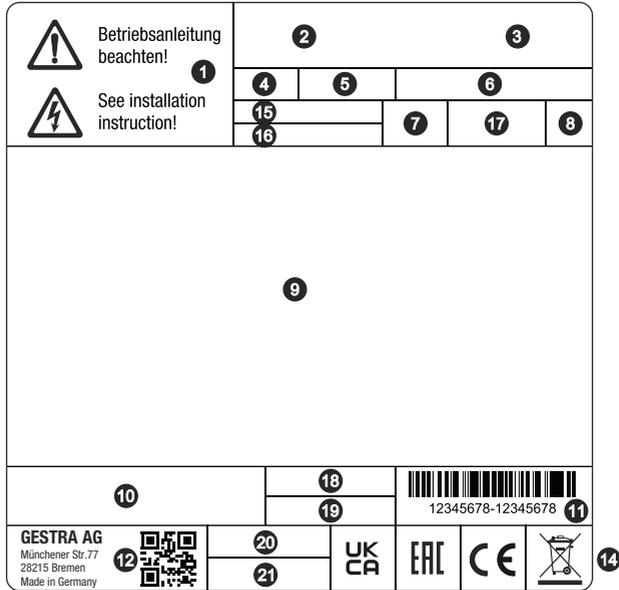


Fig. 4

- |   |                                 |   |
|---|---------------------------------|---|
| ① Safety note                                     | ⑦ Power supply                  | ⑬ Information on functional safety                |
| ② Equipment function                              | ⑧ Protection class              | <b>Optional information</b>                       |
| ③ Equipment designation                           | ⑨ Wiring diagram                | ⑮ Measuring range in $\mu\text{S}/\text{cm}$      |
| ④ Power consumption                               | ⑩ Component type approval       | ⑯ Measuring range in ppm                          |
| ⑤ IP rating                                       | ⑪ Material number-serial number | ⑰ Cutout relay                                    |
| ⑥ Operating data<br>(maximum ambient temperature) | ⑫ Manufacturer                  | ⑱ Marking for limiters (STL) or monitors (STM)    |
|   | ⑬ Component type approval       | ⑳ Field for set limit value                       |
|   | ⑭ Disposal information          | ㉑ Mode of operation in accordance with EN 60730-1 |

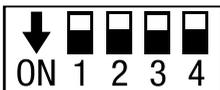


The date of production is printed on the side of the equipment.

## Factory settings

The URW 60 universal converter is delivered ex-works with the following settings:

- Baud rate: 50 kbit/s (max. cable length 1000 m)
- Controller group: 1
- Code switch setting: Sliding switch, white (1 to 4 = OFF)



Configuring the controller group and baud rate, see page 20, Fig. 9.

## Functional elements and dimensions

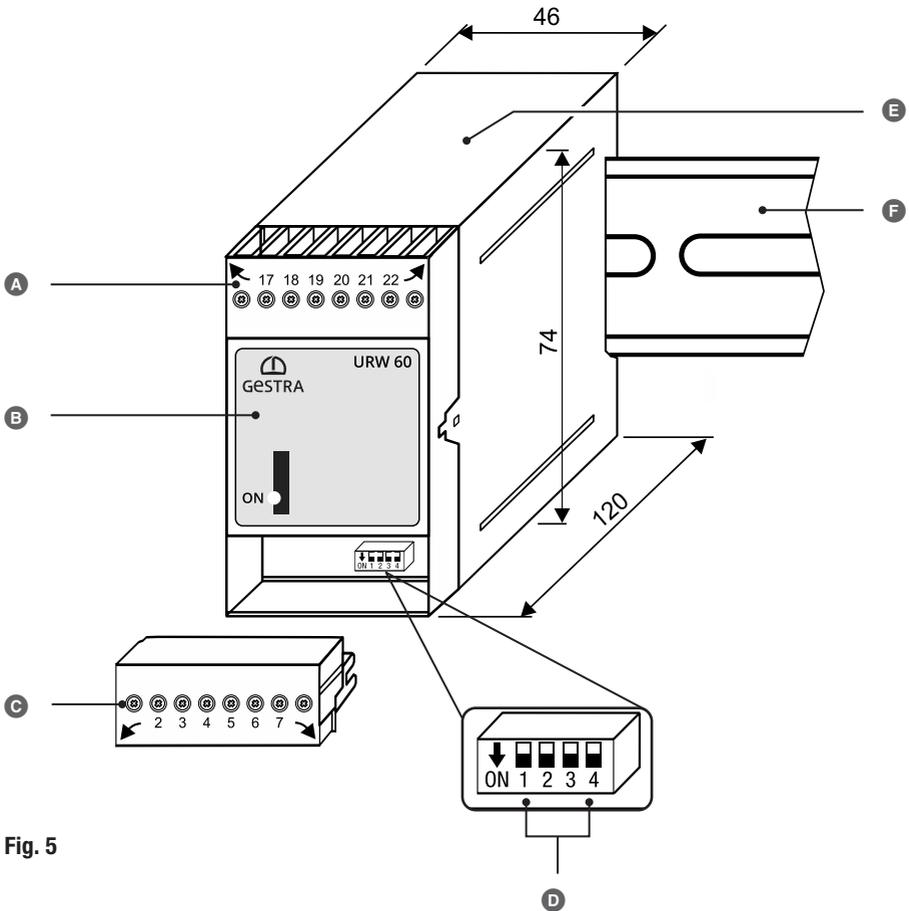


Fig. 5

- Ⓐ Upper terminal strip
- Ⓑ Front membrane with LED, see page 21
- Ⓒ Lower terminal strip
- Ⓓ 4-pole code switch, for setting the controller group and baud rate
- Ⓔ Terminal box
- Ⓕ Support rail TH 35



The code switch can be accessed by disconnecting and removing the lower terminal strip.

Equipment settings, see page 20.

## Installing the URW 60 universal converter

The URW 60 universal converter snaps onto a TH 35 support rail in a control cabinet.

### DANGER



**There is a risk of electric shock during work on electrical systems.**

- Switch off the voltage to the plant before you install the equipment.
- Check that the plant is not carrying live voltage before commencing work.

1. Before you install the equipment, switch off the voltage to the plant or secure the surrounding equipment in the control cabinet, if live, so it cannot be touched.
2. Carefully press the unit onto the support rail until the holder clips into place.

## Electrical connection safety notes

### DANGER



**Incorrectly connecting the universal converter or any associated components is a danger to plant safety.**

- Connect the universal converter and all associated components as shown in the wiring diagram **Fig. 6** in this Manual.
- Do not use unused terminals as jumpers or support terminals.

# Wiring diagram for the URW 60 universal converter

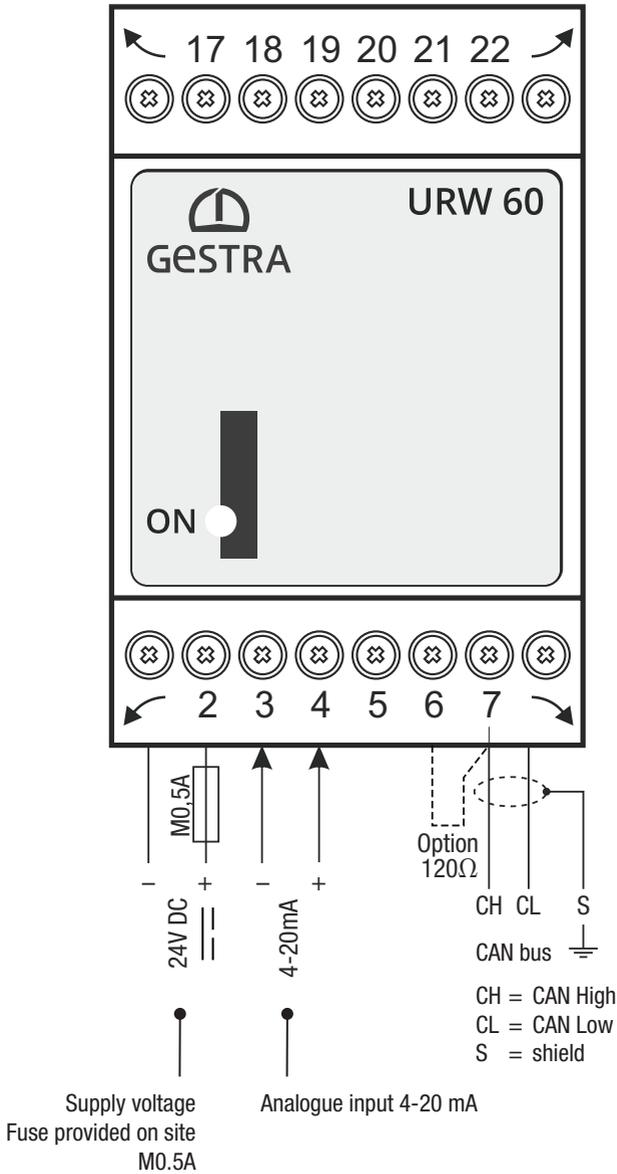


Fig. 6

## Electrical connection

### Bus line, cable length and cross-section

- Use a shielded, multi-core, twisted-pair control cable, e.g. UNITRONIC® BUS CAN 2 x 2 x .. mm<sup>2</sup> or RE-2YCYV-fl 2 x 2 x .. mm<sup>2</sup>, as the bus line.
- Pre-wired control cables (with connector and coupling) are available as accessories in various lengths.
- The baud rate is determined by the line length (transfer rate) between the bus terminal devices, and the conductor size is determined by the overall current input of the measuring sensors.
- As far as possible, route the bus line separately from power lines and protected from environmental influences.

### Connecting the 24 V DC power supply

- The URW 60 universal converter is supplied with 24 V DC.
- A safety power supply unit that delivers a Safety Extra Low Voltage (SELV) must be used to supply the equipment with 24 V DC.
- Use an M0.5A fuse as an external fuse.

### Connecting the 4-20 mA analogue input

- Use a shielded, multi-core control cable with a minimum conductor size of 0.5 mm<sup>2</sup>, e.g. LIYCY 2 x 0.5 mm<sup>2</sup>.
- Maximum cable length = 100 m.
- Route connecting cables separately from power lines.

# Wiring diagram of CAN bus system

## Example

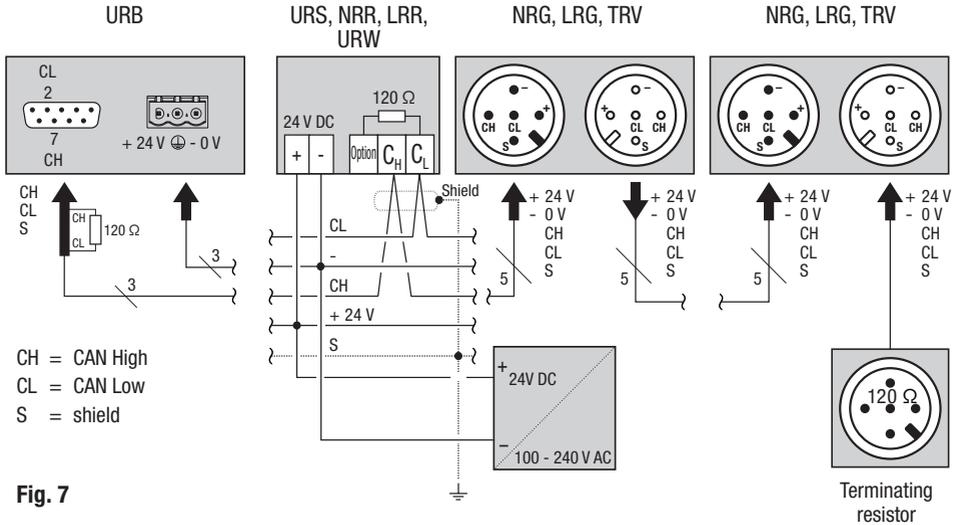


Fig. 7

## Important notes on connecting the CAN bus system

- A dedicated 24 V DC SELV power supply unit that is isolated from connected loads must be used to supply the SPECTORconnect system.
- Make sure wiring is in line, not in a star!
- Use a central earth to prevent differences in potential in plant parts.
  - ◆ Connect the bus line shields to one another all the way along, and connect to the central earthing point (CEP).
- If two or more system components are connected in a CAN bus network, a 120 Ω terminating resistor must be connected to the **first** and **last** devices between terminals C<sub>L</sub>/C<sub>H</sub>.
- The URW 60 universal converter is equipped with an internal terminating resistor. To activate the internal terminating resistor in the URW 60 universal converter, insert a jumper between the terminals (“Option 120Ω” and “CH”).
- The CAN bus network must not be interrupted during operation!  
**If it is, an alarm is triggered.**

## Changing the equipment settings

### **DANGER**



**Danger of death from electric shock if live connections on terminal strips are touched.**

- Always switch off the voltage to the equipment before performing work on the terminal strips.
- Check that the plant is not carrying live voltage before commencing work.

You can change the baud rate and controller group of the URW 60 universal converter at any time using code switch **D** (see **Fig. 5**).



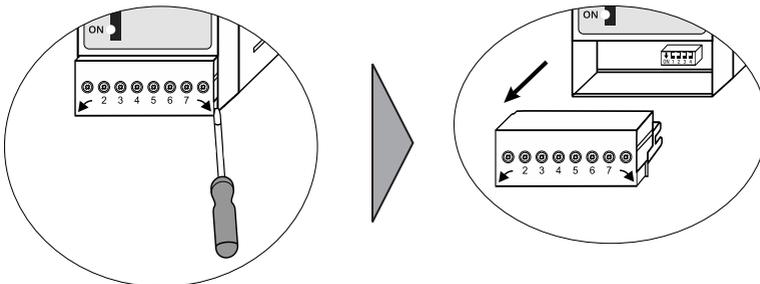
Make changes before installing the universal converter, when access is easier.

#### **You will need the following tools:**

- Slotted screwdriver size 2.5, fully insulated

#### **Proceed as follows:**

1. Switch off the supply voltage to the equipment or plant.
2. Carefully unscrew the lower terminal strip with the screwdriver and pull off, see **Fig. 8**.
3. Set code switch **D** (see **Fig. 5**) as desired, see page 20, **Fig. 9**.
4. When your changes are complete, put the terminal strip back on.



**Fig. 8**

## Changing the equipment settings

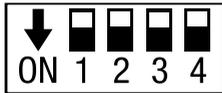
For operation, you must define the controller group and baud rate for the universal converter using code switch  Fig. 5.



Set the same baud rate for all bus nodes.

Code switch  - sliding switch, white

### Configuring the controller group and baud rate



#### URW 60 universal converter

Code switch 				Configuration	ID
S1	S2	S3	S4		
OFF	OFF			<b>Controller group 1 (default)</b>	41
OFF	ON			Controller group 2	46
ON	OFF			Controller group 3	61
ON	ON			Controller group 4	66
		OFF		<b>Baud rate 50 kbit/s (default)</b>	
		ON		Baud rate 250 kbit/s	
			OFF	<b>Reserve (default)</b>	
			ON	Reserve	

Fig. 9



Configure the universal converter as described in the Installation & Operating Manual of the URB 60 visual display and operating unit.

- You will find the latest Installation & Operating Manuals for the system components named in Fig. 1 on our website: <http://www.gestra.com>

## Bringing into service – starting, operation and malfunction

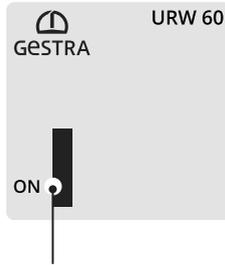


Fig. 10

Multicolour LED (orange/green),  
orange = power up/malfunction, green = running

### Startup

During startup, the LED lights up orange.

### Normal operation

During normal operation, when the supply voltage is on and the correct input signal (4-20 mA) is received, the LED lights up green.

### Behaviour in the event of a malfunction

In the event of a malfunction, the LED lights up orange.



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#### Faulty equipment jeopardises plant safety.

---

- If the URW 60 universal converter does not behave as described on this page, it may be faulty.
  - Perform failure analysis.
  - Only replace faulty equipment with identical equipment from GESTRA AG.
-

# System malfunctions

## Causes

System malfunctions occur if CAN bus components have been incorrectly installed or configured, if the equipment has overheated, if there is interference in the supply network or if electronic components are faulty.

## Check the installation and configuration before systematic troubleshooting

### Installation:

- Check that the installation location complies with the admissible ambient conditions in terms of temperature, vibration, interference sources, etc.

### Wiring:

- Does the wiring conform to the wiring diagrams?
- Is the bus line polarity correct throughout?
- Is a 120  $\Omega$  terminating resistor connected to the terminal devices of the CAN bus line?

### Controller group and baud rate configuration on the level controller:

- Are the controller group and baud rate correctly set on code switch ?

### Configuration of electrodes:

- Are the electrodes correctly set and has the measuring range been calibrated?

### Baud rate:

- Is the cable length correct for the set baud rate?
- Is the baud rate identical for all devices?

## DANGER



### There is a risk of electric shock during work on electrical systems.

- Always switch off the voltage to the equipment before working on the terminal strips (installation, electrical connection, disassembly).
- Disconnect all poles of the supply cable from the mains and secure so they cannot be switched back on.
- Check that the plant is not carrying live voltage before commencing work.
- Interrupting the CAN bus during operation triggers an alarm.

# System malfunctions

## Indication of system malfunctions

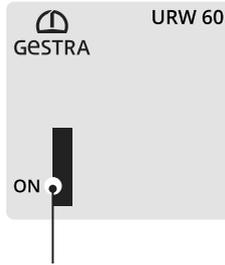


Fig. 11

Multicolour LED (orange/green),  
orange = power up/malfunction, green = running

Indication of malfunctions in the URW 60 universal converter	
Type of fault/malfunction	LED
Breakdown in CAN bus communication	orange
Incorrect input signal (4-20 mA)	orange
Interruption to power supply	off

Fig. 12

## What to do in the event of system malfunctions



In the event of malfunctions or faults that cannot be remedied with the aid of this Installation & Operating Manual, please contact our service centre or authorised agent in your country.

## Taking out of service

1. Switch off the supply voltage and the voltage to the equipment.
2. Check that the equipment is not live.
3. Unscrew and pull off the upper and lower terminal strips, see **Fig. 5 A; B**
4. Release the slider holder on the base of the equipment, and detach the URW 60 universal converter from the support rail.

## Disposal

Dispose of the universal converter in accordance with statutory waste disposal regulations.

## Returning decontaminated equipment

**If products have come into contact with media that are hazardous to health, they must be drained and decontaminated before being returned to GESTRA AG.**

Such media include solid, liquid or gaseous substances, mixtures of these, or radiation.

GESTRA AG can accept returned products only if accompanied by a completed and signed return note and also a completed and signed declaration of decontamination.



The return confirmation and declaration of decontamination must be attached to the returned goods and be accessible from the outside. Otherwise, the goods cannot be dealt with and will be returned, carriage unpaid.

**Please proceed as follows:**

1. Let GESTRA AG know about the return beforehand by e-mail or phone.
2. Wait until you have received the return confirmation from GESTRA.
3. Fill out the return confirmation (and declaration of decontamination) and send it with the products to GESTRA AG.

## **Declaration of Conformity Standards and Directives**

You can find details on the conformity of the equipment and the applicable standards and directives in the Declaration of Conformity and associated certificates.

You can download the Declaration of Conformity from [www.gestra.com](http://www.gestra.com) and request relevant certificates by writing to the following address:

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Fax +49 421 3503 393

e-mail [info@de.gestra.com](mailto:info@de.gestra.com)

Website [www.gestra.com](http://www.gestra.com)

Modifications to the equipment not approved by us will invalidate the Declarations of Conformity and certificates.



## For your notes



You can find our authorised agents around the world at:

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