GESTRA®

Visual Display and Operating Unit

URB 60

EN
English

Original Installation &
Operating Manual

819699-02

Contents

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Content of this Manual

Product:

Visual display and operating unit URB 60

Applicable documents:

Eaton® Installation Manual MM/YY IL048007ZU

Scope of delivery / Product package

- 1 x URB 60 visual display and operating unit
- 6 x retaining clips
- 1 x power supply connector
- 1 x URB 60 data cable with integrated 120 Ω terminating resistor
- 1 x Eaton® Installation Manual MM/YY IL048007ZU
- 1 x Installation & Operating Manual

How to use this Manual

This Installation & Operating Manual describes the correct use of the URB 60 visual display and operating unit. It applies to all persons who integrate this equipment in 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.
- 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

Ⓐ 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 results in death or serious injury.

⚠ 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 results in damage to property or the environment.

URB 60 specialist terms and 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.

NRG .. / URS .. / URB ... / SRL ... / NRS.. / etc.

Equipment and type designations of GESTRA AG.

SELV

Safety Extra Low Voltage

SIL (safety integrity level)

Safety integrity levels SIL 1 to 4 are used to quantify risk reduction. SIL 4 is the highest level of risk reduction. International standard IEC 61508 forms the basis for establishing, testing and operating technical safety systems.

Continuous blowdown

As the boiler water begins to evaporate, the concentration of non-volatile total dissolved solids (TDS) left behind in the boiler increases over time as a function of steam consumption. If the TDS concentration exceeds the limit defined by the boiler manufacturer, foaming and priming occur as the density of the boiler water increases, resulting in the carry-over of solids with vapour into steam and superheater lines.

The consequences are adverse effects on reliability and severe damage to steam generating units and pipes.

To keep the TDS concentration within admissible limits, a certain portion of boiler water must be removed continuously or periodically (by means of a continuous blowdown valve) and fresh feedwater must be added to the boiler feed to compensate for the water lost through blowdown.

Intermittent blowdown

During the evaporation process, fine sludge is deposited on heating surfaces and on the floor of the steam generating unit. The accumulated sludge sediments form a thermally insulating layer and can damage the boiler walls due to excessive heat.

Intermittent blowdown is achieved by the abrupt opening of the intermittent blowdown valve. The resulting suction effect occurs only at the moment the valve is first opened. The opening time should therefore not exceed about 2 seconds. Longer opening times result in a loss of water.

Time-based pulse/interval actuation of the intermittent blowdown valve optimises the removal of sludge from the boiler. The interval between the intermittent blowdown pulses can be set between 1 and 120 hours (intermittent blowdown interval). The duration of intermittent blowdown can be set between 1 and 60 seconds.

For large boilers, repeated intermittent blowdown pulses may be required. Repetition can be set between 1 and 5 (intermittent blowdown pulses) with an interval from 5 to 30 seconds (pulse interval).

URB 60 specialist terms and abbreviations

Damping (filter constant, conductivity and level control)

This parameter is used to settle the oscillations of the input signal.

Standby mode (conductivity control)

To prevent loss of water, continuous blowdown control and automated intermittent blowdown (if enabled) can be disabled in standby mode or when the burner is switched off.

The continuous blowdown valve moves to CLOSED position, triggered by an external control command. In standby mode, the “MIN/MAX” limits and monitoring functions remain active. When the equipment is back in normal mode, the continuous blowdown valve returns to the control position.

In addition, an intermittent blowdown pulse is triggered (if automated intermittent blowdown is enabled and a blowdown interval and blowdown time have been set).

Cell constant (conductivity control)

The cell constant is a geometric variable of the conductivity electrode and is taken into account when calculating the conductivity. However, this constant may change during operation, e.g. due to dirt deposits on the measuring electrode.

If a reference measurement yields a result that differs from the indicated conductivity value, first check the temperature compensation.

Modify the cell constant only if the temperature coefficient setting is no longer adequate for correct compensation. In this case, change the cell constant until the reading and the indicated conductivity match.

Flushing the continuous blowdown valve (conductivity control)

The continuous blowdown valve can be flushed automatically to prevent it from sticking. In this case, the continuous blowdown valve is actuated at the flushing interval and opened for a defined flushing time.

After the flushing time, the valve moves to the position set by the control.

RefReading (reference reading)

The reference reading is the conductivity of the boiler water directly measured by the boiler service technician. Using this parameter, the measured conductivity can be entered and the correction factor automatically calculated (within its limits). This is then copied to the conductivity electrode and stored, so that conductivity is then adjusted to the correct level.

Abbreviations for safety electrodes:

- SLLL = safety low-level limiter
- STL = safety temperature limiter
- SHLL = safety high-level limiter
- SCL = safety conductivity limiter

URB 60 specialist terms and abbreviations

Control direction

The control direction indicates whether control is for supplying (positive) or draining (negative).

Pb (proportional band)

The proportional band enables the controller amplification to be adapted to suit the controlled system.

Ti (reset time)

The integral element ensures that control deviations can be fully corrected, with no remaining deviation.

Neutral zone

If the actual value reaches the (set point +/- of the neutral zone), the manipulated variable does not change in this range.

Forced switchover

This parameter defines the level at which an automatic change of pump must take place. The assumption here is that since the level cannot be maintained, the pump is faulty.

Usage for the intended purpose

The URB 60 visual display and operating unit can be used in conjunction with various GESTRA CAN bus units from the SPECTOR*connect* series.

The URB 60 is designed for installation in a control cabinet door or switch panel. It may only be used when correctly installed.

Please read the supplied Installation Manual.

IT security and rules for the use of Ethernet devices

The plant operator is responsible for the security of his/her IT network and must take appropriate action to protect equipment, systems and components from unauthorised access.

Pay attention to the following instructions when using Ethernet devices in your system:

- Do not connect equipment, systems or components to an open network, such as the internet, without safeguards in place.
- To fully protect a PLC runtime system on a control system that is available on the internet, the use of common security mechanisms (firewall, VPN access) is absolutely essential.
- Make sure access to all components is restricted to authorised persons.
- Change default factory passwords before bringing into service for the first time!
- Deploy defence in depth mechanisms in your system security, to restrict access and control to individual products and networks.

To ensure proper use in all applications, please also read the Installation & Operating Manuals for the system components used.

- You can find the latest Installation & Operating Manuals on our website:
  https://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.

Do not bring any equipment into service that does not have its own specific name plate.

The name plate indicates the technical features of the equipment.

Basic safety information

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 equipment or system.
- Check that the system is not carrying live voltage before commencing work.

Faulty equipment is a risk to system safety.

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 The equipment may only be installed, wired and brought into service by qualified and competent staff.
Operation	Boiler service technician	Staff trained by the plant operator
Maintenance work	Specialist staff	Electrician Maintenance and setup work may only be performed by authorised staff who have undergone specific training.
Setup work	Specialist staff	Plant construction

Fig. 1

Notes on product liability

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

Function

The URB 60 visual display and operating unit collects the data telegrams in the CAN bus from GESTRA sensors and control units using the CANopen protocol.

When the system is started, the connected devices are automatically recognised by the URB 60 and entered in a list of equipment along with all parameters. The groups, their home screens and navigation buttons are displayed dynamically.

Readings, parameters, settings and messages are shown in plain text. When used as the second water level indicator in boiler plants (EN 12952 / 12953), the level is also presented as a bar chart.

You can select various languages for the plain text display.

Entering parameters with multilevel password security

Multilevel password security prevents parameters and settings from being changed by unauthorised persons.

Password level (PWL)

PWL 1 = protected parameter settings

PWL 2 = safety-relevant values can only be set at this level

Operation and configuration

The URB 60 is operated and configured on the unit itself using the colour touchscreen or via Ethernet using remote software.

Limitations

- In the event of signal multiplication, as can occur with a level control system (NRR 2-60 and NRR 2-61), only one level controller can be presented as a bar chart on the home screen.
  This is indicated by different graphics in the chart and controller/limiter icons at the bottom of the screen.
- If the system has more than one STL (safety temperature limiter), the one with the lowest ID is shown on the home screen.
  On the limiter screens, all connected temperature sensors are shown with their actual value and limit value.
- Switchover between µS and ppm must take place both on the URB 60 and the LRG 1x-6x, so that the displays match.

Technical data

Supply voltage

- 24 V DC (⎓) (19.2 V – 30 V)

Power consumption

- Max. 9.5 W

Current input

- Max. 0.4 A (at 24 V)

Required external fuse

- 2A (to UL)

IP rating

- Front: IP 65 (enclosure type 4X);
  retaining clips and threaded pins required for installation = 6
- Back: IP 20

Data transmission interfaces

- 1 x Ethernet 10/100 Mbit (Modbus TCP/IP)
- 1 x USB host (version 2.0), not galvanically isolated
- 1 x interface for CAN bus to ISO 11898, CANopen, not galvanically isolated

Indicators and controls

- Capacitive 5.7” touchscreen with LED backlight
- Resolution: 640 x 480 pixels (WVGA)
- Brightness: 250 Cd/m^2
- Size (field of view): 110 mm x 65 mm

Admissible ambient conditions

- Service temperature: 0 °C – 50 °C
- Storage temperature: - 20 °C – 60 °C
- Transport temperature: - 20 °C – 60 °C
- Air humidity: 10% – 95% relative humidity, non-condensing

Technical data

Terminal box

- Material: PC GF
- Front pane: Glass with polyester film

Dimensions

- Front panel: (W x H) 170 x 130 mm
- Front panel: 5 mm thick
- Mounting depth: 34 mm
- Switch panel cutout: (W x H) 157 mm x 117 mm (± 1 mm)

Weight

- Approx. 0.6 kg

Real-time clock (battery buffered)

- Type: CR 2032 (Li, lithium)
- Buffer time without supply voltage: Typically 10 years
- The battery is permanently installed and cannot be replaced

Factory settings

The URB 60 visual display and operating unit is delivered ex works with the following settings:

- Baud rate: 50 kBit/s (250 kBit/s as an option)
- Node ID: 110
- On system start: Setup Wizard runs
- PWL 1: 111
- PWL 2: 222
- Conductivity in: µS/cm
- Target IP: 192.168.x.x
- Modbus TCP *: Off

* *Also see page 66*

Example name plate/identification

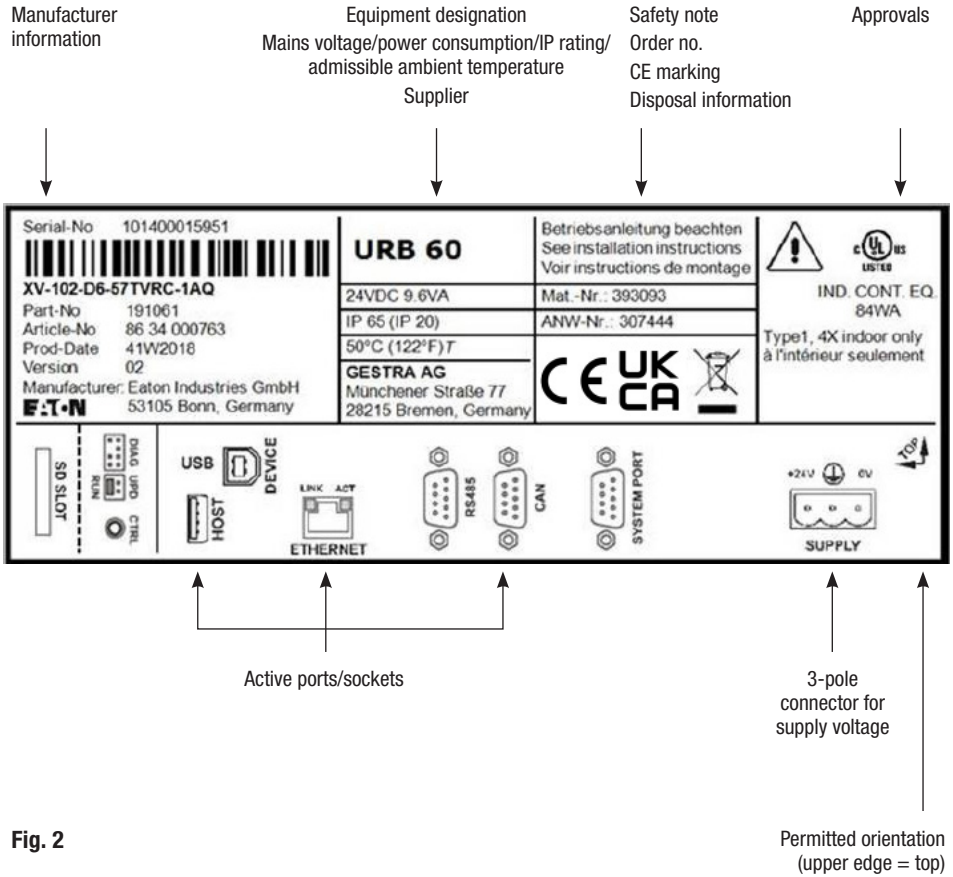


Fig. 2

Dimensions of the URB 60

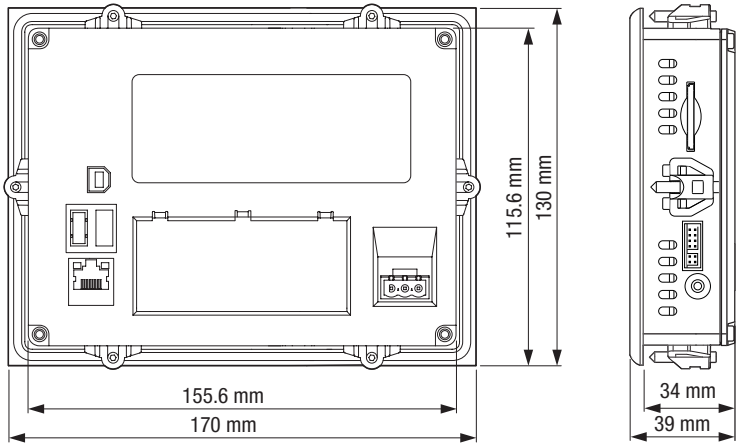


Fig. 3

Installation instructions

The URB 60 visual display and operating unit is designed for installation in control cabinet doors or switch panels.

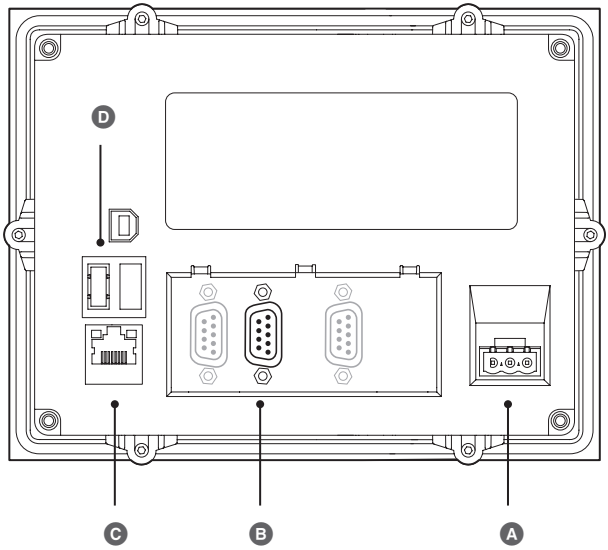
Please read the supplied Installation Manual. There you will find the installation instructions from the manufacturer, plus further diagrams and mounting dimensions.

Criteria for the installation position:

- Do not expose the URB 60 to direct sunlight.
  - Plastic parts of the unit may become brittle under exposure to UV light, shortening its service life.
- Without external ventilation, the maximum inclination of the unit is 45° from the vertical when installed.
- The controls on the service panel of the unit and the ports and cable connections must be freely accessible after installation.
- The panel thickness of the installation aperture must be 2 mm to max. 5 mm.
- Ensure adequate ventilation (cooling).
  - Provide minimum space of 3 cm around the ventilation grilles on the unit.
  - Provide minimum space of 15 cm around components that emit heat (e.g transformers).

Ports and sockets on the URB 60

Ports and sockets are on the back of the unit.



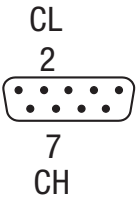
A 1 x 3-pole connector for 24 V DC supply voltage (SELV)

B 1 x CAN bus connector (9-pin, D-Sub, male, UNC)

C 1 x Ethernet ports 10/100 Mbit (Modbus TCP/IP), socket RJ45

D 1 x USB host, supports USB 2.0, maximum cable length 5 m

CAN bus pin assignment



24 V DC supply voltage

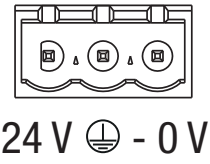
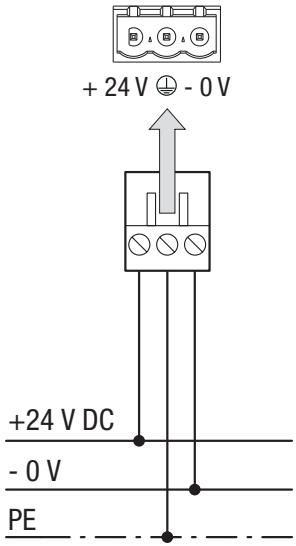


Fig. 4

Connecting the supply voltage

Use a SELV (Safety Extra Low Voltage) power supply unit for connecting the supply voltage. For connection to the supplied 3-pole connector, use a cable with a max. cross-section of 2.5 mm².



24 V DC socket on the unit

3-pole connector, supplied
(Phoenix Contact MSTB 2.5 / 3-ST-5.08)

Cable cross-section (strand or wire):

- min. 0.5 mm²
- max. 2.5 mm²

Fig. 5

Connecting the CAN bus system

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 .. mm² or RE-2YCYV-fl 2 x 2 x .. mm², as the bus line.
- Pre-wired control cables (with connector and coupling) are available as accessories in various lengths.
- The baud rate (transfer rate) is determined by the cable length between the bus terminal devices, and the wire cross-section is determined by the overall power input of the measuring sensors.
- 0.2 A at 24 V is required per sensor. With five sensors, there is therefore a voltage drop of approx. 8 V per 100 m when using cables of 0.5 mm². In this case, the system is operating at its limits.
- With 5 sensors or more and a cable length of ≥ 100 m, the wire cross-section needs to be doubled to 1.0 mm².
- At larger distances of > 100 m, the 24 V DC supply can also be connected on site.

Connecting the CAN bus system

Example

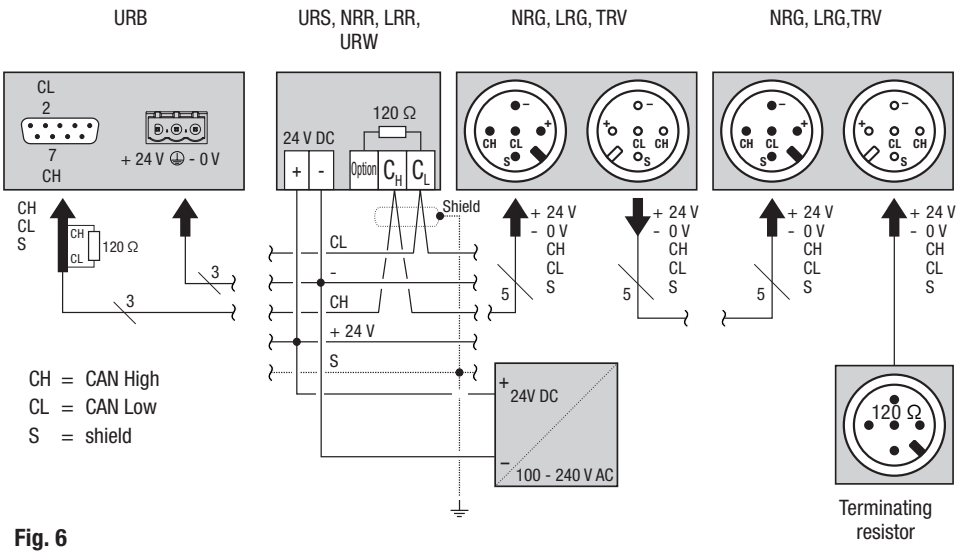


Fig. 6

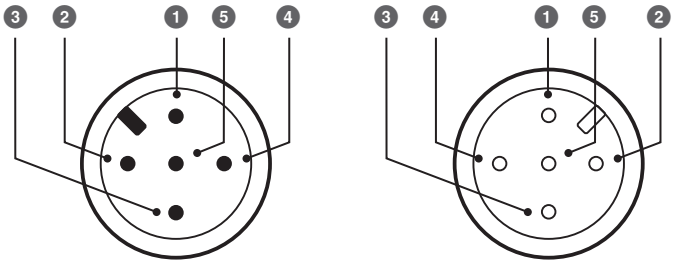
Important notes on connecting the CAN bus system

- A dedicated 24 V DC SELV power supply unit that is isolated from connected loads must be used to supply the SPECTOR*connect* system.
- Make sure wiring is in line, not in a star!
- Use a central earth to prevent differences in potential between plant parts.
  - Connect the bus line shields to one another all the way along, and connect them 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** units between terminals C_L / C_H.
- If you are using the URB 60 as the first or last device, connect the terminating resistor between pins 2 and 7 in the CAN bus connector.
- Connect the supplied data cable to terminals 14 (CHigh) and 15 (CLow) **of the last** safety control unit or controller in the control cabinet. The connector of the data cable leading to the URB 60 contains a 120 Ω terminating resistor, so that the terminating resistor on the safety control unit or controller is no longer required.
- Only **one** URS 60 and **one** URS 61 safety control unit may be used in the CAN bus network.
- The CAN bus network must not be interrupted during operation!
  If it is, an alarm is triggered.

Connecting the CAN bus system

Pin assignment of the CAN bus connector and coupling for non pre-wired control cables

If non pre-wired control cables are used, you must wire the CAN bus connector and couplings as shown in the wiring **Fig. 7** diagram.



Connector **Coupling**

1	S	Shield
2	+ 24 V	Power supply (red)
3	- 0 V	Power supply (black)
4	CH	CAN High data line (white)
5	CL	CAN Low data line (blue)

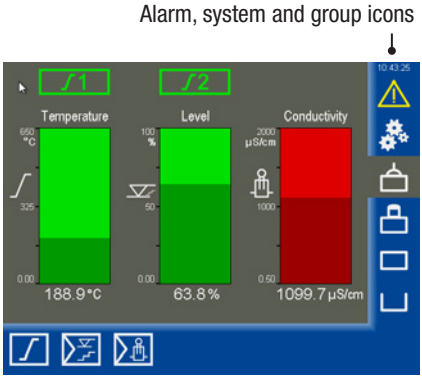
Fig. 7

Operation and navigation

The URB 60 is operated on the unit itself using the colour touchscreen or via Ethernet using remote software.

User interface (example)

The URB 60 visual display and operating unit shows parameters, operating states, etc. on a display. The user interface of the URB is divided into three areas:



- The display window shows operating states and actual values.
- The icons open the associated parameter screens. These icons change dynamically and are either shown or hidden, depending on the current page and configuration.
-  Parameter entries can be disabled by tapping the struck through padlock icon at the bottom right. From PWL 1 onwards, this icon appears after a successful login.

Operation

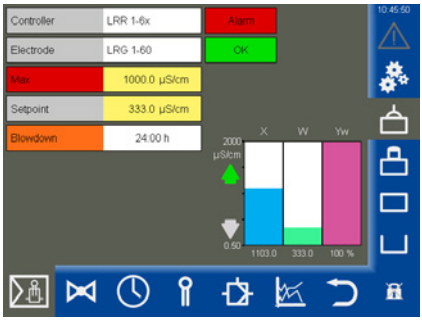
All entries and actions, e.g. opening setup menus and parameter screens, are initiated by tapping the buttons and input fields.

The active screen has a grey background.

Operation and navigation

Colour coding of input and status fields

For example:



Background colour	Description / Function
Grey	Designations
Yellow	Input field / List box / On
Purple	Input field / On / Off
White	Display of readings, measurement signals and dimensions
Green	Status information, status OK
Orange	Status information, Min2/Max2 status
Red	Status information, alarm or error status

Fig. 8

Automatic functions

If you do not input anything on the display for 10 minutes, the brightness is automatically dimmed and you will be logged off.

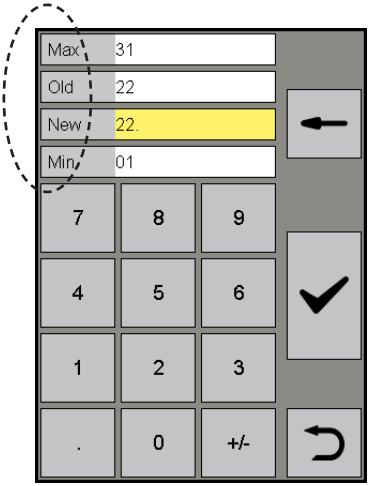
- When the display is dimmed, you can tap the screen once to reactivate it.
- If you do not input anything on the display for one hour, the program automatically returns to the home screen.

Operation and navigation

Entering parameters using the virtual keypad

Tapping an input field opens a numeric virtual keypad.

This keypad shows the old value (Old) and the limits (Min/Max).



Your entries must remain within these limits.

Function keys:

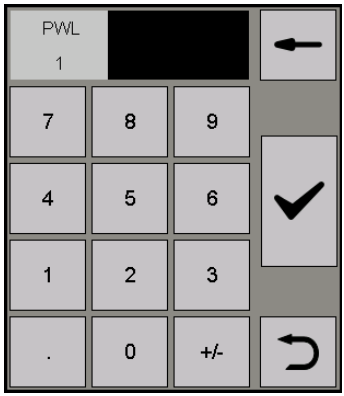
Delete last digit.

Confirm entry.

Discard entries and close the keypad.

Entering parameters with multilevel password security

Multilevel password security prevents parameters and settings from being changed by unauthorised persons. The password prompt appears automatically when you tap an input field.



If you do not input anything for 10 minutes, you will be logged off again.

Factory set password level:

- PWL 1 = 111
- PWL 2 = 222

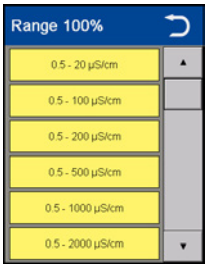
Recommendation for initial setup

Log on using the factory setting, then safeguard your system by setting your own password.

Operation and navigation

Scroll bar for long lists and menus

You can use the scroll bar to navigate up and down long lists and menus to select the desired parameters.



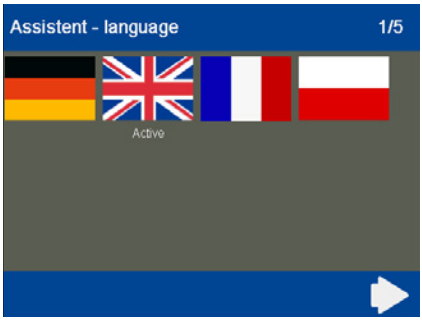
General recurring icons and functions

Symbol	Description		
	Alarm signal	Grey Yellow flashing Yellow	= no alarm = alarm that has not been reset = active alarm that has been reset
	Setup - carry out further system settings		
	Confirm, accept, Yes		
	Cancel, No		
	Back, quit settings		
	Delete signals, lists, configurations		
	Group icons arranged from top to bottom, groups 1 to 4.		

Starting up for the first time

When starting up for the first time, a Setup Wizard opens. This guides you through the setting of the most important parameters.

In addition, the CAN bus searches for devices (nodes) when the unit is switched on.



Navigation with the Setup Wizard

/

Go to previous/next page.

Confirm settings.
On the last page, permanently close the Setup Wizard.

Setup Wizard settings

1. **Language**

   Select the user language you require.

2. **Conductivity**

   The unit can be configured in µS/cm or ppm. This globally affects the display of the URB 60.

3. **Time**

   Set the current time.

4. **User assistance**

   An example is shown to assist you.

5. **Baud rate**

   The SPECTOR*connect* family is factory set to 50 kBit/s.

When the system is started, the connected devices (CAN bus nodes) are automatically detected and entered in a list of equipment along with all parameters. The groups, their home screens and navigation buttons are displayed dynamically.

If a CAN bus node is not on the list, check the node and set the correct parameters. After this, you must import the device list again in the “Device settings” menu.

During initial setup, always check the number of connected devices!

Bringing the boiler, feedwater/condensate tank into service (Groups 1 to 3)

As level and conductivity controllers are factory set on delivery, they all have the same settings and, if they are not assigned to different groups, they will be in conflict. This would lead to malfunctions.

For this reason, please follow the procedure below:

1. Bring Group 1 + Group 2 + Group 3 into service one after another in that order,
   so, first Group 1 only, e.g. with the limiters.
2. Correctly install 120-ohm terminating resistors in the bus at the beginning and end of Group 1.
3. Once Group 1 is functioning, set the units for the feedwater tank as Group 2, then connect the units of the second group to Group 1.

You can set the groups to which the level and conductivity controllers belong in each controller via a 4-pole DIP switch. Set the electrode groups using the rotary knob on the front of each electrode.

4. Perform the same steps for the third group, the condensate tank.

Home screen

The home screen provides an overview of the status of available limiters and controllers. Bar charts display current readings and change colour depending on their status. This enables you to rapidly assess the state of the system.

Limiter icons above the bar charts indicate the status of the connected electrodes.

Opening the parameter screens:

Use the following buttons to open the parameter screens:

Limiter

Level controller

Conductivity controller

Opening alarm and system screens:

Alarms and error messages

System settings

Opening groups:

Up to four groups may be available, depending on the system. You can navigate between the individual groups.

Group 1
e.g. controlling and configuring limiters and controllers in steam boiler plants and hot water installations.

Group 2

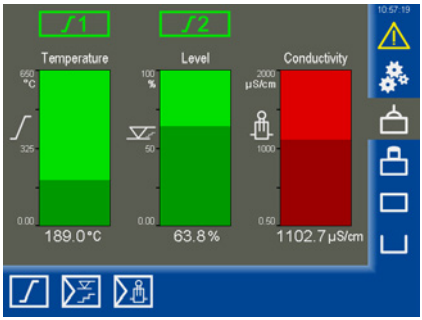
Group 3

Group 4

Groups 2 - 4

Controlling and configuring controllers and plants, e.g. feedwater and condensate plants, etc.

Example



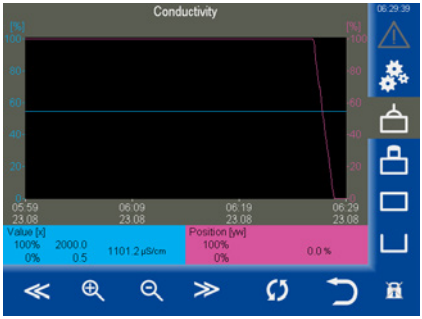
If the level controller is a 3-component (3C) controller, the level shown on the home screen may differ from the level displayed for the electrode, as compensation is taking effect in the controller.

Data log (trend logs)

If you tap a bar chart on the home screen, this opens the associated trend log.

You can also view this via the parameter screens of the connected controllers.

Open the "*Datalog*" on the parameter screens.



Description of display

The data log shows the trend of the actual value and controller setting (Yw) with a resolution of 5 seconds over a 24-hour period.

The current values are shown at the bottom of the screen. Tapping the data log opens a ruler and displays the historic values at that time.

For conductivity and temperature, the data log values are shown normalised to 0-100%.

The non-normalised values are shown below the data log.

Navigation using the function keys:

-  Move the timeline by 60 minutes
-  Zoom in/zoom out visible timeline
-  Show current recordings
-  Return to home screen

Alarms and error messages

Status and colour of warning triangle:

- **Amber, flashing**
  Active alarms are present that have not been reset.
- **Amber, on continuously**
  Active reset alarms are present.
- **Grey**
  No alarms are active.

Opening the alarm and error list

Opens the list of active alarms.

Description of the alarm and error list

Alarms (Max/Min limit values, limiter triggered) and error messages (offline, hardware errors) are entered in the columns (Pending, Expired) with a time stamp.

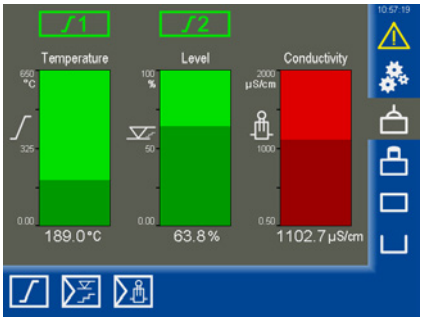
The most recent alarm is always shown at the top of the list. To select an alarm message, select the line in question.

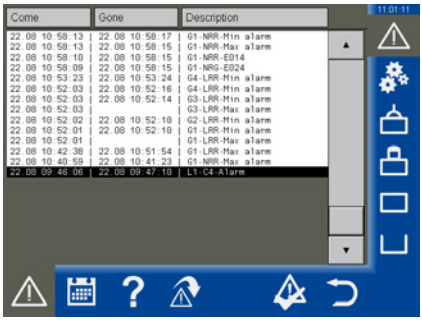
Description of display:

- **Come (= Pending)**
  Time at which the event occurred.
- **Gone (= Expired)**
  Time at which the event expired but was not acknowledged.
- **Description and abbreviations:**

G1...4	Groups 1 to 4
L1..2	Limiter 1 or 2
C1..4	Limiter channel
NRG / LRG / NRR / LRR ...	Type of equipment
NRR 2 =	*Level controller NRR 2-61*
E001...E027	Error codes based on specific device or system *
MAX alarm, offline, etc.	Error / Malfunction / Status
t-Hi / CF.Hi / SG.Lo	Predictive maintenance warnings

Example: G1 – LRR Max Alarm





Options:

Open the Alarm History

Alarm Info, opens a list of the descriptions and abbreviations used:

This button is displayed dynamically if a limiter (L1.. / L2..) alarm message is selected, and pressing the button causes the screen to jump to the limiter page.

Reset alarms. Expired alarms are deleted from the list.

* Description of error codes for controllers and limiters.

For electrodes in the respective Installation & Operating Manual.

Alarms and error messages

Opening the Alarm History, a full list of all alarms

All alarms are stored in an Alarm History. There is memory capacity for 512 alarms.

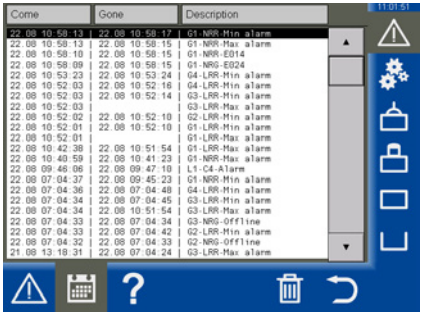
Alarms are stored in cycles and restored after a power failure.

Open the Alarm History.

Description of options:

Delete the entire list.

Close the Alarm History.

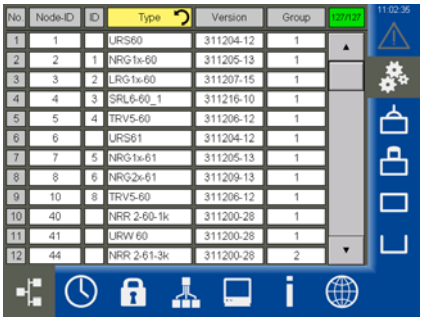


Opening the alarm and error list automatically

In the “System/Device settings” menu, you can determine whether the alarm and error list should open manually or automatically after an error.

System settings

Tapping the icon opens the menu containing the list of all CAN bus nodes.



Opening further menus:

View CAN bus nodes

Set the date/time

Set the date and time and switch between summer and winter time.

Password

Network settings

Device settings

System information

Select language

Viewing CAN bus nodes

View CAN bus nodes.

After the system is started, all CAN bus nodes of the system are entered here. To achieve this, the communication between CAN bus nodes is constantly monitored after the system has been started for the first time.

The CAN bus is re-analysed after a restart. New nodes are found and entered.

The parameters of all CAN bus nodes are only collected and continuously updated following complete analysis. You can see this from the progress number (127/127) at the top right of the display.

Description of the list:

- **No.**
  Consecutive number.
- **Node ID**
  The node ID of the CAN bus node.
- **ID**
  The ID (channel) of the limiter electrode. No other CAN bus nodes have an ID.
- **Type**
  Designation of control unit/electrode (e.g. NRG 1x-60).
- **Version**
  Unit version number.
- **Group**
  The group containing the CAN bus node.

Reimporting the device list

If a CAN bus node is not on the list, check the node.

You can then reimport the device list by tapping the "*Type*" input field or via the "*Device settings*" menu.

This deletes all devices from the list and then lists them afresh.

Set the date/time

Open the "*Date/Time*" menu and make the desired settings.

Description of display/settings:

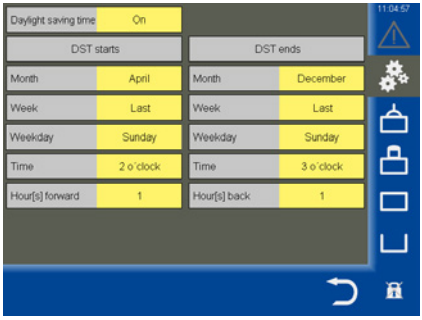
- **Time / Date**

  Tap the appropriate field and set the date and time.

  Confirm these changes to apply them.

- **Summer/winter time**

  Tap the button to open the Settings menu. Then enter the parameters for your time zone.

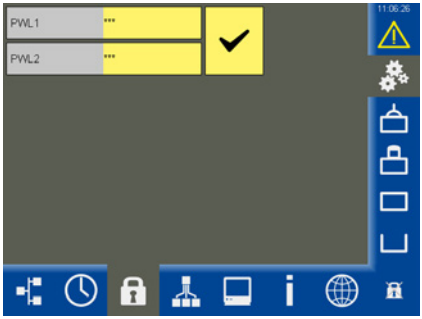


Password

Open the "*Password*" menu.

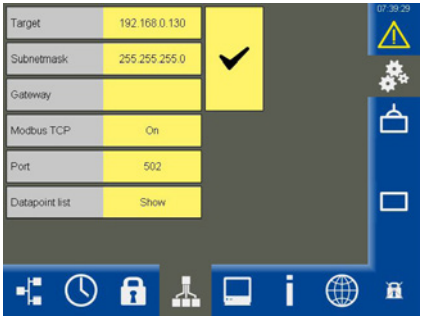
Change your password:

1. PWL1 Tap the input field.
2. First enter your current password, then confirm it.
3. PWL1 Tap the input field again.
4. Next, enter and confirm the new password.



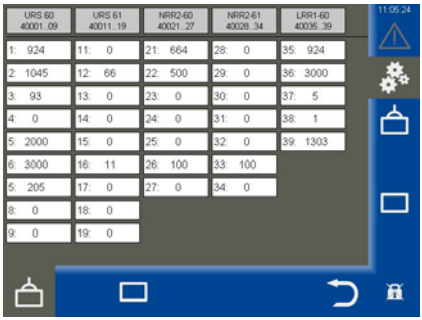
Network settings

Open the "*Network settings*" menu.



Description of display:

- **Target**
  The IP address of the URB 60.
- **Subnet mask**
  The current subnet mask.
- **Gateway**
  The IP address of the gateway.
- **Modbus TCP**
  Enable/disable the protocol.
- **Port**
  Standard = 502
- **Datapoint lists**
  View of active Modbus datapoint list(s) of devices for Groups 1 to 4 (see right). For more detailed information, please download the document "Datapoint List – Supplement to Installation & Operating Manual from our server. (From URB firmware version V1.24)



Remote maintenance/software

The URB 60 can be operated remotely from a PC using VNC remote software, e.g. UltraVNC Viewer. This allows a 1:1 display of the URB 60 on the computer.

To access the URB 60, use the previously set network parameters.

Device settings

Open the "*Device settings*" menu.

Description of display/settings:

- **Conductivity**
  Conductivity can be switched from **µs/cm** to **ppm** globally for all conductivity controllers.
- **Device list – (Reimport)**
  If CAN bus nodes are not detected, you can manually reimport the device list again.

You must also reimport the device list if "Groups or IDs" of controllers or electrodes are changed.

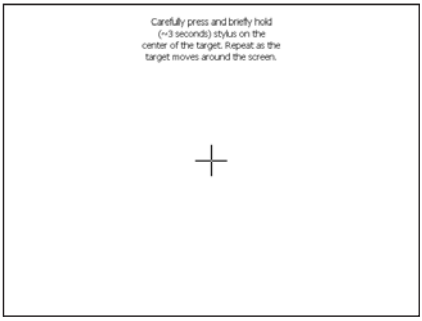
- **Baud rate**
  You can set the baud rate between 50 kBit/s and 250 kBit/s.
  This causes the device to reboot.
- **Alarm list**
  Switch between manual and automatic opening of the alarm list in the event of an alarm or error.
- **Home (screen) Temp 100%**
  The range of the temperature limiter first detected by the URS 60/URS 61 safety control unit is set for display on the home screen.
- **Display (Calibrate)**
  The display can be recalibrated, see the following page. A system program is required for this.

Calibrating the display:

1. Tap "*Calibrate"* next to Display.
2. You will then be prompted to tap the "*Calibration*" button in the "*Touch Properties*" menu (*see "Calibrating the display 1"*).
3. A blank window with a target in the centre then opens (see *"Calibrating the display 2"*).
4. Press the target for approx. 3 seconds using a long, blunt object (stylus).
5. The target then automatically marks the four corner coordinates.
6. To calibrate them, press and hold the target on each corner and hold for approx. 3 seconds.
7. Apply this calibration within 30 seconds by tapping the display.
8. Finally, you will see the message "*Recalibration was successful*".
9. **OK** Tap "OK" to confirm, and then again to quit the "*Touch Properties*" menu.

Calibrating the display 1

Calibrating the display 2



System information

Open the "*System Information*" menu and select the desired action.

Description of display:

- **Startup**

  View a list of the last ten device restarts (e.g. due to power failure), with the date and time.

- **Login**

  View a list of the last ten device logins with date, time and password status.

  PWL0 = failed login

  PWL1/2 = successful login

- **Datalogs/Alarms**

  Save the data logs and alarm list to a USB stick.

  The file time stamps are in the **Unix time stamp format** and can be counted back using the formulae in Excel:

  =DATE(1970;1;1)+(LINKS([CELL];10)/86400)

  .

- **Predictive maintenance**

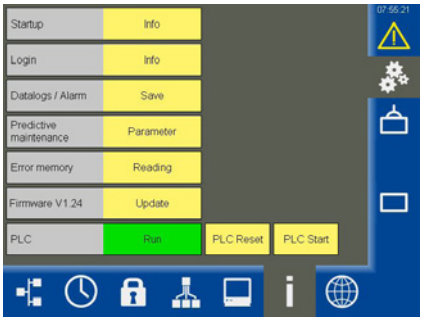
  Controller and electrode-specific maintenance parameters are shown. The operating time (see diagram), electrode tip temperature, switching cycles, internal alarm/error counters and alarm limits are listed in tables. Limits can be defined. If a limit is exceeded, an entry is made in the alarm table. The CAN bus signal quality is also presented in a trend graph.

  See below for further information.

- **Error memory**

  Export the internal error log of selected CAN bus nodes to a USB stick. To do this, you can switch the desired devices in the lists on/off and select them.

The data export („Reading") takes approx. 6 minutes per device.



- **Firmware Vx.x**

  Updates provided by GESTRA can be copied onto the device using a USB stick.

1. To do so, insert the USB stick in the device and reboot the device.

   This makes sure the USB stick is detected.

2. Now perform the update.

- **PLC**

  Status display of the URB software.

  - Run = OK
  - Stop = error

  "PLC Reset" followed by "PLC Start" completely deletes all internal parameters.

In the event of an error, please contact GESTRA Service.

Predictive maintenance

Predictive maintenance learns from available historic maintenance data.

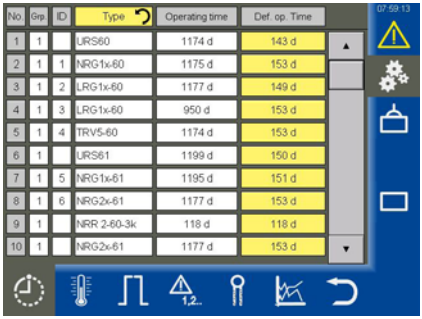
The data below enables predictions to be made that provide an answer to the question “What will happen when?”

The functions presented will be available from URB firmware version V1.24 and later. The following parameters are only available for compatible equipment.

- **Operating time**

  The total operating time of the equipment (since it was first switched on at the plant) is shown.

  Def. operating time: Operating time of the equipment (since it was last reset by the user)



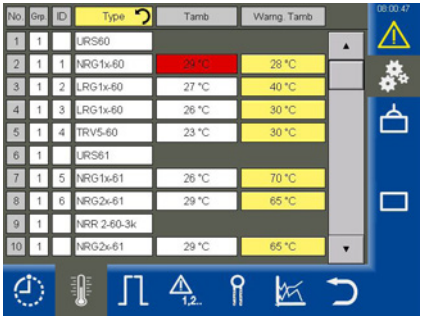
- **Electrode tip temperature**

  The ambient temperature at the electrode tip is shown.

  Attention: The temperature inside the electrode tip can be up to 15°C higher

  Warning. Electrode tip temperature: This is the limit at which a tip temperature warning takes place on the electrode (t-xx) and the URB60.

  Attention: This warning limit does not affect error code E.027, which remains fixed at 75°C

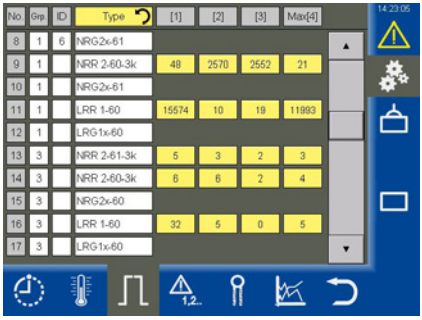


- **Switching cycles**

  Switching cycle counter for relays 1-4 (NRR 2-60, NRR 2-61 and LRR 1-60 only).

  1 for LRR 1-60 “Min” or “Intermittent blowdown”.

  2 , 3 LRR 1-xx valve OPEN/CLOSED or NRR 2-xx pump ON/OFF, depending on the configuration



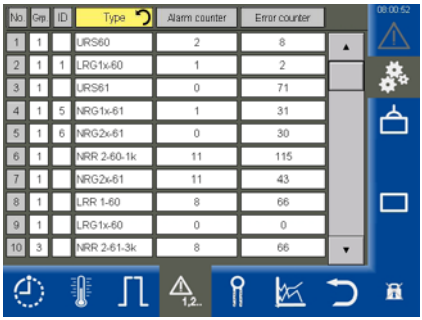
Predictive maintenance

- **Alarm error counter**

  The alarm counter counts alarms that have occurred (+ tests).

  The error counter counts the errors that have occurred.

  Note: This applies to URS 60 and URS 61 limiters and all connected electrodes.



- **Dirt deposits**

  Value:

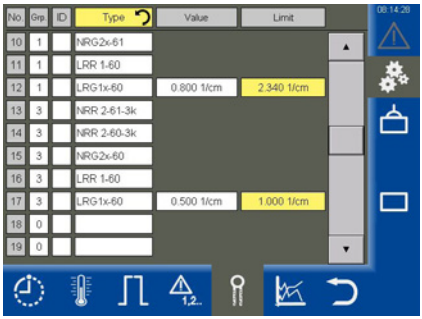
  LRG 1x-60 = cell constant (0.05...5)
  Note: Factory setting 0.21

  LRG 1x-61 = signal reserve (0...100%)
  Note: Ex works 100%

  Limit:

  LRG 1x-60 = limit above which the warning “CF.Hi” is shown on the electrode display or on the URB 60. This draws attention to inadmissibly high soiling of the electrode tip. Remedy: Clean the electrode tip.

  LRG 1x-61 = limit below which the warning “Sg.Lo” is shown on the electrode display or the URB 60. This draws attention to inadmissibly high soiling of the electrode tips. Remedy: Clean the electrode tips.



Predictive maintenance

- **CAN bus quality**

  CAN bus quality trend over the last 9 days.

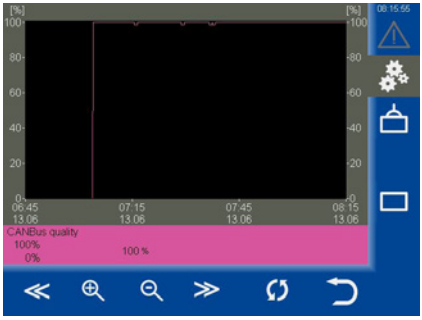
  100%: CAN bus quality excellent.

  95...99%: CAN bus quality good. There may be minor EMI sources nearby.

  50...94%: CAN bus quality OK. There are EMI sources nearby. Improved shielding or suppression of noise sources may be sensible, in order to prevent unwanted safety shutoffs by the URS 6x in future.

  1...49%: CAN bus quality poor. There are major EMI sources nearby. A safety shutoff by the URS 6x in future is possible.

  0%: CAN bus quality very poor. CAN bus communication is not possible. Wiring error, wrong baud rate, incorrect termination.



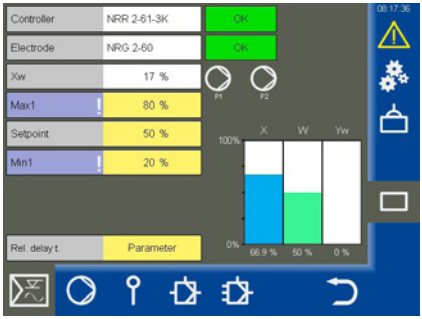
Selecting the language

Open the "*Language*" menu and select the user language you require.

Configuring the level controller

Open the parameter screen.

Example: NRR 2-61 level controller



Description of parameters:

- **Controller**

  Displays the connected level controller and its status:

  - **OK**

    The level controller is functioning without problem.
  - **Offline**

    No communication with the URB 60.
  - **Collective fault**

    A fault has occurred in the level controller.
  - **Alarm**

    Value above or below limit.
- **Electrode**

  Displays the level electrode in question, and its status. For status messages, see controller.
- **Xw = control deviation**

  Control deviation = actual value X - set point W
- **Max1 ***

  Set the Max. limit for the boiler level in percent.
- **Set point**

  Set the desired set point.
- **Min1 ***

  Set the Min. limit for the boiler level in percent.

  If the “Max1/Min1” limits are reached, the parameter row changes colour.

  ** You can test the relays of the connected level controller if necessary, see following page.*
- **Relay delay**

  On and off delays can be set for the Max and Min relays (controller software version 311200 -30 or later).

Description of pump icons (P1/P2)

The pump icons are displayed dynamically based on the set number of pumps (1 or 2).

Green = pump on

White = pump off

Only one pump at a time can be in operation.

Description of bar charts:

X = actual value (compensated)

X1 = actual value (uncompensated), 3C controller (not shown here)

W = set point

Yw = manipulated variable

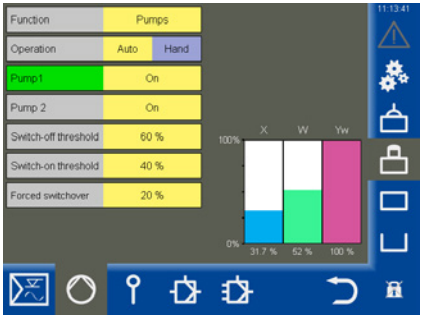
Configuring the level controller

Testing the relays of the connected level controller

1. Tap the “Max1” or “Min1” input field. The required test window now opens.
2. ✔ Initiate the relay test by pressing and holding the button until the controller status and parameter field change colour.
3. The relay in the level controller remains active while you are pressing the button.

Pump control

When you select “Pumps”, the following menu opens.



Description of parameters:

- **Function**
  Switch between pump and valve control.
- **Operation (Auto/Manual)**
  In manual mode, the drive can be operated manually.
- **Pump 1/2 (On/Off)**
  Enable a connected pump so it is ready for operation.
- **ON threshold**
  Set the value at which the pump turns on.
- **OFF threshold**
  Set the value at which the pump turns off.
- **Forced switchover**
  Set the value at which forced switchover of the pump takes place.

Description of bar chart

- The “Yw” bar chart shows the manipulated variable of the controller output (4 – 20 mA) normalised to 100%.

Configuring the level controller

Setting manual control or the manipulated variable for manual pump operation

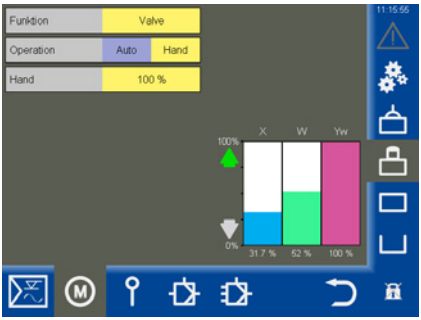
Tap “Manual” to enable manual control.

Then, in the list box, set the manipulated variable for manual operation and switch the pump on or off.

Switching actuator operation between automatic and manual

 Open the menu.

One of the icons is displayed, depending on which function is enabled.



Description of parameters:

- **Operation (Auto/Manual)**
  In manual mode, the actuator can be operated manually.
- **Manual**
  Set the actuator or valve as desired.

The system automatically switches back to automatic mode when you close this window.

Valve calibration in manual mode when a feedback potentiometer is connected to the NRR 2-60

Open the menu.

Description of parameters:

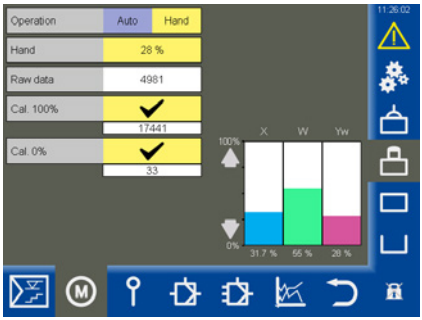
- **Operation (Auto/Manual)**
  In manual mode, you can adjust the continuous blowdown valve using the manual value.

Active parameters when a feedback potentiometer is connected to the NRR 2-60 level controller:

- **Raw data**
  Displays the current digital valve position.
- **Cal. 100% / Cal. 0%**
  Calibrated valve positions.
  The calibrated raw data are shown in the blank windows under Cal. 100% / Cal 0%.

The system automatically switches back to automatic mode when you close this window.

Display in manual mode when a feedback potentiometer is connected to the NRR 2-60 level controller (example).



If no feedback potentiometer is connected to the level controller, the parameters are not displayed.

Description of bar chart:

 = green, the valve opens or closes

X = actual value

W = set point

Yw = manipulated variable in % based on the continuous blowdown valve stroke

Configuring the level controller

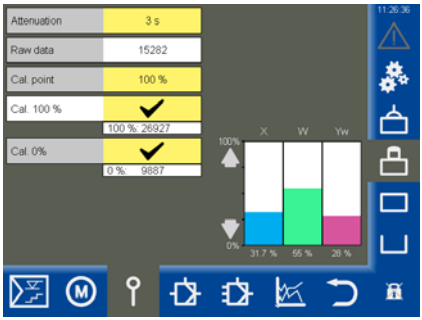
Calibrating the boiler level

If a URW 60 is used for level measurement, calibration is not available.

Open the "*Electrode*" menu.

Description of parameters:

- **Damping**
  This parameter is used to settle the oscillations of the input signal.
- **Raw data**
  Displays the current digital boiler level.
- **Calibration point**
  The desired calibrated level can be set from > 25% to 100%.
- **Cal. 100% (calibration point) / Cal. 0%**
  Calibrated boiler levels.
  The calibrated raw data are shown in the blank windows under Cal. 100% / Cal 0%.



Perform calibration:

The system must go to the 0% range, or this range must be calibrated.

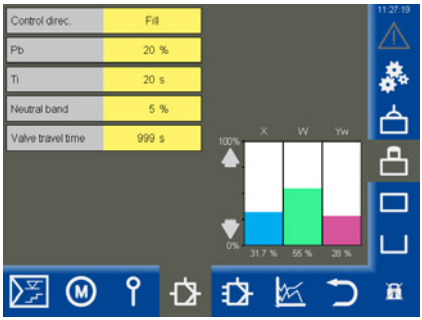
Calibration may be performed in any order.

1. Reduce the boiler level to 0%.
2. ✓ When this level is reached, confirm it.
   The raw data is applied and displayed.
3. Fill the boiler up to the defined calibration point xxx%.
   You can define the calibration point within the limits > 25% to 100% using interpolation.
4. ✓ Confirm the level.

Configuring the level controller

Setting the level controller

Open the control parameter screen.



Description of parameters:

- **Control direction**
  Control is set in either supply or drain.
- **Pb / Ti / Neutral zone / Valve runtime (optional)**
  See table.

Guide to setting control parameters

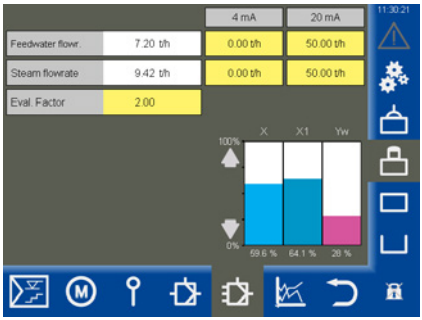
Parameter		Control deviation	Control valve
Proportional band **Pb**	> higher	Large remaining deviation	Responds slowly
	< lower	Small remaining deviation	Responds quickly and may open/close continually
	Example:	Measuring range 100% = 200 mm from sight glass Set point SP = 80% of measuring range = 160 mm Proportional band Pb = +/- 20% of set point = +/- 32 mm With the measuring range and set point mentioned above, the proportional band is then +/- 16% = +/- 32 mm or in the range 128 mm to 192 mm.	
Reset time **Ti**	> higher	Slow correction of deviations	Responds quickly
	< lower	Fast correction of deviations, the control loop may tend to overshoot	Responds slowly
Neutral zone	> higher	Correction of deviations starts with a delay	In this range, the manipulated variable point does not change. Responds only if the control deviation is larger than the neutral zone.
	< lower	Correction of deviations starts rapidly	
Valve runtime	*For NRR 2-60 only*		Establish the real valve runtime, e.g. from Closed to Open (0 – 100%).

Fig. 9

Configuring the level controller

Setting the level controller for 3-component control

The 3C controller icon appears only if a controller of this type is used in the system.



Open the 3C control parameter screen.

Description of parameters:

- **Feedwater flowrate**
- **Steam flowrate**

  For each type of flowrate, enter the measuring range of the connected sensors under the analogue signal inputs (4 mA / 20 mA).
- **Quality factor**

  This factor assesses how much the difference (steam flowrate - feedwater flowrate) influences the measured level.

Description of bar charts:

X = actual value (compensated)

X1 = actual value (uncompensated)

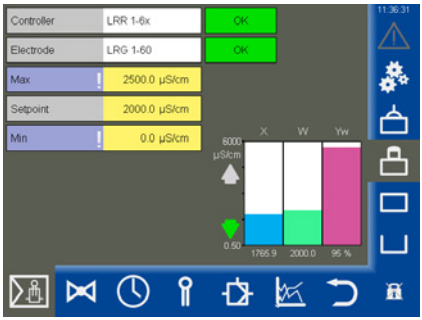
Yw = manipulated variable

Controlled actual value = level - (steam flowrate - feedwater flowrate) x quality factor.
(Only if steam flowrate - feedwater flowrate > 0).

Configuring the conductivity controller

Open the parameter screen.

Example



Description of parameters:

- **Controller**

  Displays the connected conductivity controller and its status:

  - **OK**

    The conductivity controller is functioning without problem.
  - **Offline**

    No communication with the URB 60.
  - **Collective fault**

    A fault has occurred in the conductivity controller.
  - **Alarm**

    Value above or below limit.
- **Electrode**

  Displays the conductivity electrode in question, and its status. For status messages, see controller.
- **Max**

  Set the Max switchpoint.
- **W**

  Set the set point.
- **Min**

  Set the Min switchpoint.

  If the “Max/Min” switchpoints are reached, the parameter row changes colour.

You can change the unit between “µS/cm” and “ppm” if required.

Display for configuring Intermittent blowdown

If the **Min** contact of the LRR 1-60 conductivity controller was configured as “Intermittent blowdown”, the display changes and the time until the next blowdown is shown.

Blowdown	13:27 h

Description of bar charts:

X = actual value

W = set point

Yw = manipulated variable in % based on the continuous blowdown valve stroke

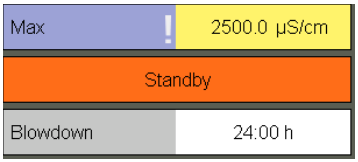
Configuring the conductivity controller

Standby mode

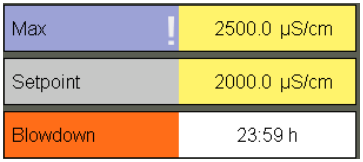
At the standby input of the LRR 1-60 conductivity controller, an external signal (24 V DC) can switch the controller to standby mode. This causes the control to switch off and the valve to close.

The switchpoints (Max/Min) and the monitoring function remain active in standby mode.

Display when the conductivity controller has been switched to standby mode



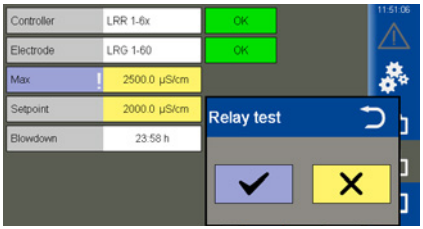
Display and functions after quitting standby mode



If you quit standby mode, the controller returns to control mode and intermittent blowdown is re-enabled once more.

Testing the relays of the connected conductivity controller

1. Tap the “Max1” or “Min1” input field. The required test window now opens.
2. ✔ Initiate the relay test by pressing and holding the button until the controller status and parameter field change colour.
3. The relay in the conductivity controller remains active while you are pressing the button.



Continuous blowdown valve

Open the "*Valve*" menu.

Description of parameters:

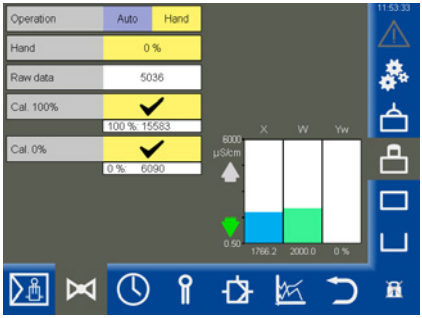
- **Operation (Auto/Manual)**
  In manual mode, you can adjust the continuous blowdown valve using the manual value.

Active parameters when a feedback potentiometer is connected to the LRR 1-60 conductivity controller:

- **Raw data**
  Displays the current digital valve position.
- **Cal. 100% / Cal. 0%**
  Calibrated valve positions.
  The calibrated raw data are shown in the blank windows under Cal. 100% / Cal 0%.

The system automatically switches back to automatic mode when you close this window.

Display in manual mode when a feedback potentiometer is connected to the LRR 1-60 conductivity controller (example).



If no feedback potentiometer is connected to the conductivity controller, the parameters are not displayed.

Description of bar chart:

 = green, the valve opens or closes

X = actual value

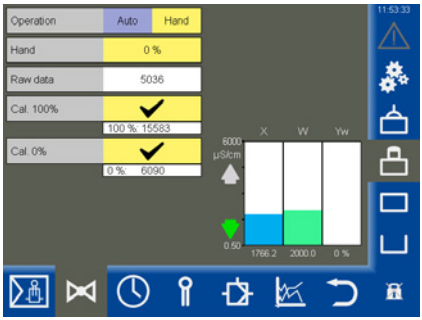
W = set point

Yw = manipulated variable in % based on the continuous blowdown valve stroke

Configuring the conductivity controller

Continuous blowdown valve – Calibrating the feedback potentiometer for the valve position display

If a feedback potentiometer is connected to the LRR 1-60 conductivity controller, it must be calibrated.



Read the instructions for connecting a feedback potentiometer in the Installation & Operating Manual of the LRR 1-60 conductivity controller.

Perform calibration:

Calibration at 0%

1. Tap the “Manual” button.
2. Enter 0% in the “Manual” input field.

   The continuous blowdown valve moves to the set position.
3. ✔ When the valve position is reached, confirm it.

Calibration at 100%

4. Enter 100% in the “Manual” input field.

   The continuous blowdown valve moves to the set position.
5. ✔ When the valve position is reached, confirm it.

Setting the intermittent blowdown and automatic flush function

Open the menu.

Description of parameters:

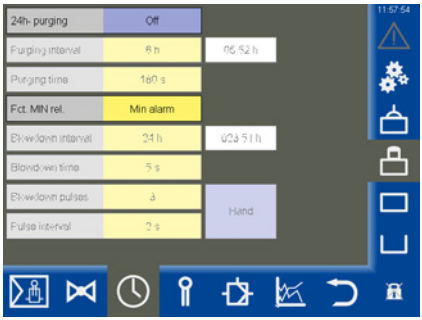
- **24h flushing (On/Off)**
  Switch automatic flushing on/off.
  The continuous blowdown valve can be flushed automatically to prevent it from sticking.
- **MIN Rel. Fct. (MIN relay function)**
  You can set the following functions for the MIN relay of the LRR 1-60 conductivity controller, also see examples on the right:
  - Min alarm
  - Intermittent blowdown

Further parameters after “24h flushing” function has been switched on:

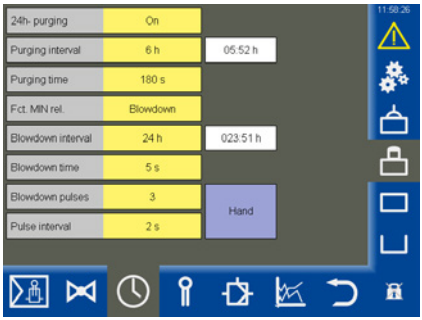
The continuous blowdown valve is switched on regularly at set flushing intervals and opens for the set flushing time.

- **Flushing interval in hours (h)**
  After the flushing interval, the time until the next flush is shown in the blank field.
- **Flushing time (in seconds)**

Example: MIN relay function as “Min alarm”



Example: MIN relay function as “Intermittent blowdown”



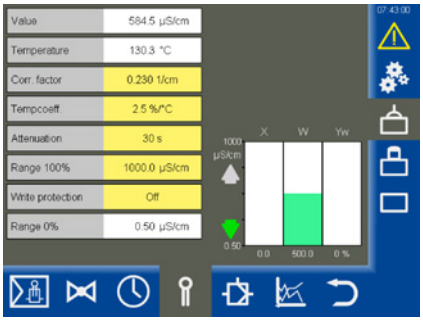
Further parameters after “Intermittent blowdown” function has been switched on:

- **Intermittent blowdown interval (in hours)**
- **Intermittent blowdown time (in seconds)**
  The intermittent blowdown valve is switched on regularly at set intervals and opens for the set intermittent blowdown time.
- **Intermittent blowdown pulses**
  Number of pulses.
- **Pulse interval (in seconds)**
  Set the time between the individual intermittent blowdown pulses.
- **Remaining runtime (in hours)**
  Until the next intermittent blowdown.
- **Manual**
  Initiate intermittent blowdown manually.

Setting a correction factor and temperature compensation for the current conductivity reading

Open the menu.

Example



Description of parameters:

- **Reading**
  The current measured conductivity.
- **Temperature**
  The current temperature at the tip of the electrode.

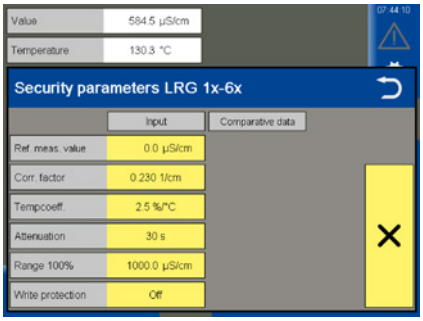
If “Write protection” is activated, the safety parameters are shown in white colour (= inactive).

Safety parameters

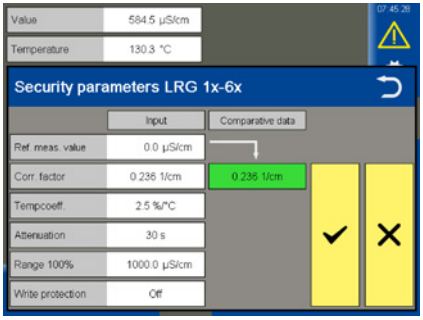
The “Safety parameters” menu appears when you tap the input fields of the parameters below.

Setting and description of safety parameters,

see next page.



View of safety parameters after successful transmission. You can now accept or reject the reference value.



Configuring the conductivity controller

Setting safety parameters

1. Tap one of the following parameters:

   Reference reading, correction factor, temperature coefficient, damping, or 100% range.

2. The “Safety parameters” menu opens.

   The current safety parameter values are displayed.

3. Entry of safety parameters.

   You can change the safety parameters within the admissible limits.

   After entry, the format of the value is converted. It is then sent to the electrode, which sends it back as a “Reference value”.

The “input” fields below are hidden to prevent the wrong one being filled.

4. If the reference value is the same as the input value, it is shown with a green background.

   Input = reference value

   ✔ Confirm the input value.

   If there is a problem with transmission, a red background is shown.

   Input ≠ reference value

   ✘ Reject the entered value and enter a new one.

If you do not enter anything for 20 seconds, the window closes automatically.

Description of safety parameters:

- **ReferenceReading (“Ref.meas.value”)**

  The reference reading is the conductivity of the boiler water directly measured by the boiler service technician.

  Enter the measured reference reading here.

  The correction factor is calculated automatically (within its limits of 0.05 to 5.00 1/cm), transmitted to the electrode and then copied back to the “Reference value” field.

  If the calculated correction factor is outside its limits, the entered value is rejected.

- **Correction factor**

  During operation, the indicated conductivity may differ from the reference reading obtained from a reference measurement, e.g. due to soiling.

  In this case, change the correction factor until the displayed “*Reading*” matches the reference reading from the reference measurement.

- **TemperatureCoeff. (temperature coefficient) when service temperature has been reached.**

  Proceed as described above for the correction factor.

- **Damping**

  These parameters are used to settle the oscillations of the input signal.

- **100% range**

  Enter the maximum expected conductivity.

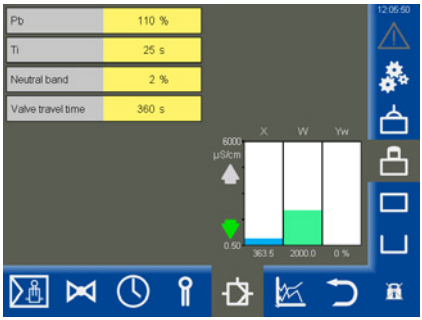
- **Write protection**

  To increase the system security you can lock the parameter settings for the LRG 1x-6x via CAN bus. If write protection is ON, it can only be unlocked at the electrode (Parameter SEcu).

Configuring the conductivity controller

Setting the control parameters

Open the control parameter screen.



Guide to setting control parameters

Parameter		Control deviation	Continuous blowdown valve
Proportional band **Pb**	> higher	Large remaining deviation	Responds slowly
	< lower	Small remaining deviation	Responds quickly and may open/close continually
	Example:	Measuring range 0 - 6000 µS/cm Set point SP = 3000 µS/cm Proportional band Pb = +/- 20% of set point = +/- 600 µS/cm With the measuring range and set point mentioned above, the proportional band is then +/- 600 µS/cm or in the range 2400 µS/cm to 3600 µS/cm.	
Reset time **Ti**	> higher	Slow correction of deviations	Responds quickly
	< lower	Fast correction of deviations, the control loop may tend to overshoot	Responds slowly
Neutral zone	> higher	Correction of deviations starts with a delay	In this range, the manipulated variable point does not change. Responds only if the control deviation is larger than the neutral zone.
	< lower	Correction of deviations starts rapidly	
Valve runtime			Establish the real valve runtime, e.g. from Closed to Open (0 – 100%).

Fig. 10

Opening the limiter overview

Open the limiter overview, see example.

Two limiters are shown as a maximum.

For each limiter, an icon appears at the bottom of the screen:

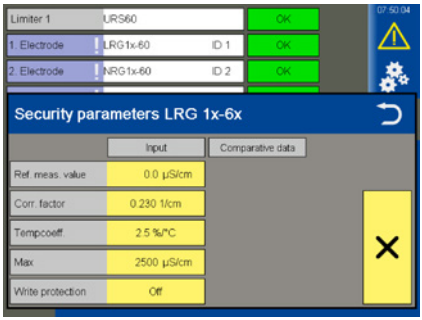
Limiter 1

Limiter 2

Description of display:

- **Limiter 1 or 2**
  Displays the available safety control unit (e.g. URS 60).
- **Electrodes and sensors 1 to 4**
  Displays the available limiter electrodes (e.g. NRG 16-60) and sensors.

If an electrode with an actual value/ limit value that can be displayed is connected, these parameters appear in the lower part of the window.



- **For example:**
  - **2. SCL (electrode 2) ***
  - **4. STL (sensor 4) ***

  *** Abbreviations for safety electrodes:**

  SLLL = safety low-level limiter
  STL = safety temperature limiter
  SHLL = safety high-level limiter
  SCL = safety conductivity limiter

- **Setup / display (for SIL2 LRG 1x-6x electrodes only) – Setting safety parameters**
  For a conductivity electrode, a setup button is also shown. You can use this to set the safety parameters.
  If write protection is ON (Parameter SEcu), the button changes to “Show”. The safety parameters can then only be viewed.

Opening the limiter overview

Setting safety parameters of the conductivity limiter

1. Perform a reference measurement to determine the current conductivity of the boiler water.
2. **Setup**: Tap the Setup button.
3. The “Safety parameters” menu opens.

   The current safety parameter values are displayed.
4. Entry of safety parameters.

   You can change the safety parameters within the admissible limits.

   After entry, the format of the value is converted. It is then sent to the electrode, which copies it back as a “Reference value”.
5. If the reference value is the same as the input value, it is shown with a green background.

   Input = reference value

   ✔ Confirm the input value.

   If there is a problem with transmission, a red background is shown.

   Input ≠ reference value

   ✘ Reject the entered value and enter a new one.

If you do not enter anything for 20 seconds, the window closes automatically.

Description of safety parameters:

- **ReferenceReading (“Ref.meas.value”)**

  The reference reading is the conductivity of the boiler water directly measured by the boiler service technician.

  Enter the measured reference reading here.

  The correction factor is calculated automatically (within its limits of 0.05 to 5.00 1/cm), transmitted to the electrode and then copied back to the “Reference value” field.

  If the calculated correction factor is outside its limits, the entered value is rejected.
- **Correction factor**

  During operation, the indicated conductivity may differ from the reference reading gained from the reference measurement, e.g. due to soiling.

  In this case, change the correction factor until the displayed “*Reading*” matches the reference reading from the reference measurement.
- **TemperatureCoeff. (temperature coefficient) when service temperature has been reached.**

  Proceed as described above for the correction factor.
- **Max**

  Limit value for maximum admissible conductivity.

You can also set the limit value on the conductivity electrode.

- **Write protection**

  To increase the system security you can lock the parameter settings for the LRG 1x-6x via CAN bus. If write protection is ON, it can only be unlocked at the electrode (Parameter SEcu).

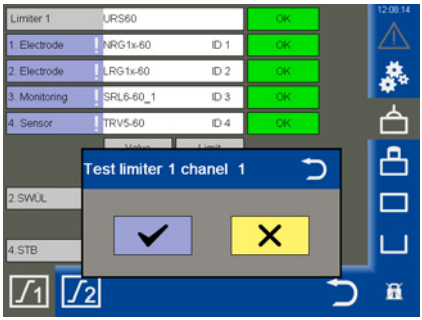
Opening the limiter overview

Testing the limiter

You can test the limiter for the stored limiter electrodes.

1. Tap the input field of the required electrode (the fields contain a "**!**"). The required test window now opens.
2. ✔ Initiate the relay test by pressing and holding the button until the limiter status and electrode status change colour.
3. While you are pressing the button, the safety circuit is interrupted when the delay time elapses.

   The limiter behaves as if there were a genuine alarm.



Read the Manual of the limiter in question.

System malfunctions

Display of system malfunctions in the alarm and error list using error codes

Error codes for the URS 60/URS 61 safety control unit			
Error code	**Internal designation**	**Possible errors**	**Remedy**
E.006	ProbeCntErr	No channel configured	Check code switch
E.007	DipKonfErr	Inconsistent code switch setting	Check code switch
E.008	Ch1Ch2DiffErr	EMC or internal error	Check installation location Replace safety control unit
E.009	Relais1Err	Error in relay 1	Check installation location Replace safety control unit
E.010	Relais2Err	Error in relay 2	Check installation location Replace safety control unit
E.012	DoubleStandByErr	Two electrodes are bridged	Check both monitoring units (SRL 6-60)
E.013	Probe1Err	Collective fault in channel 1	Check channel 1
E.014	Probe2Err	Collective fault in channel 2	Check channel 2
E.015	Probe3Err	Collective fault in channel 3	Check channel 3
E.016	Probe4Err	Collective fault in channel 4	Check channel 4
E.019	V6Err	EMC or voltage error	Check installation location Replace safety control unit
E.020	V5Err	EMC or voltage error	Check installation location Replace safety control unit
E.021	V3Err	EMC or voltage error	Check installation location Replace safety control unit
E.022	V1Err	EMC or voltage error	Check installation location Replace safety control unit
E.023	V12Err	EMC or voltage error	Check installation location Replace safety control unit
E.024	CANErr	Wrong baud rate or wiring error	Check the baud rate, wiring and terminating resistors
E.025	ESMG1 (µC1Err)	EMC error or internal process error	Check installation location Replace safety control unit
E.026	BIST (SelftestErr)	EMC or internal error	Check installation location Replace safety control unit

All error codes from E.001 to E.005 and E.018 not listed here are available as reserves

System malfunctions

Error codes for the NRR 2-60 / NRR 2-61 level controller, LRR 1-60 conductivity controller and URW 60 universal converter			
Error code	**Internal designation**	**Possible errors**	**Remedy**
E.001	-	-	-
E.002	-	-	-
E.003	-	-	-
E.004	PlausSwitchpointErr	MIN switchpoint higher than MAX switchpoint	Reset the switchpoints
E.005	InitTestErr	Internal error	Reboot the unit and replace if necessary
E.006	WalkThroughAppErr	Internal error	Reboot the unit and replace if necessary
E.007	WalkThroughTestErr	Internal error	Reboot the unit and replace if necessary
E.008	PlausSteamErr	Implausible measuring range settings Steam flowrate: Min > Max	Check/reset steam flowrate measuring range
E.009	PlausWaterErr	Implausible measuring range settings Feedwater flowrate: Min > Max	Check/reset feedwater flowrate measuring range
E.010	PlausPotiErr	Calibration points implausible Valve: CLOSED (0%) > OPEN (100%)	Check Valve CLOSED (0%) and Valve OPEN (100%) calibration points
E.011	PlausErr	Implausible measuring range settings Min > Max	Check/reset measuring range
E.012	ProbeCommErr	Breakdown in communication with electrode	Check baud rate, group number, wiring and terminating resistors
E.013	OvertempErr	Ambient temperature of electrode > 75°C	Check electrode installation location Reduce ambient temperature of electrode terminal box

System malfunctions

Error codes for the NRR 2-60 / NRR 2-61 level controller, LRR 1-60 conductivity controller and URW 60 universal converter			
E.014	ProbeStoerungErr	General electrode error	Check electrode
E.015	SteamMinErr	Steam flowrate measuring current < 4 mA	Check steam flowrate current transmitter and replace if necessary Check electrical connection
E.016	SteamMaxErr	Steam flowrate measuring current > 20 mA	Check steam flowrate current transmitter and replace if necessary Check electrical connection
E.017	FeedwaterMinErr	Feedwater flowrate measuring current < 4 mA	Check feedwater flowrate current transmitter and replace if necessary Check electrical connection
E.018	FeedwaterMaxErr	Feedwater flowrate measuring current > 20 mA	Check feedwater flowrate current transmitter and replace if necessary Check electrical connection
E.019	ProbeLFShortOpenErr	Faulty conductivity electrode (sensor break or short circuit)	Check conductivity electrode and replace if necessary Check electrical connection
E.020	ProbePtShortOpenErr	Faulty Pt1000 temperature sensor (sensor break or short circuit)	Check Pt1000 temperature sensor and replace if necessary Check electrical connection
E.021	MinErr	Measuring current < 4 mA	Check current transmitter and replace if necessary Check electrical connection
E.022	MaxErr	Measuring current > 20 mA	Check current transmitter and replace if necessary Check electrical connection
E.023	-	-	-
E.024	CANErr	Wrong baud rate or wiring error	Check baud rate, group number, wiring and terminating resistors
E.025	Pump1Err	Pump 1 output too low or pump faulty	Check controller parameters and switching thresholds of pumps Check pump electrical connection Replace pump if necessary
E.026	Pump2Err	Pump 2 output too low or pump faulty	Check controller parameters and switching thresholds of pumps Check pump electrical connection Replace pump if necessary
E.027	-	-	-

All error codes from E.001 to E.027 not listed here are available as reserves

System malfunctions

Common faults during use

USB stick cannot read/write files
Remedy:
■ Reboot the URB 60 with the USB stick inserted and perform the desired action again. ■ The USB stick must have the file format FAT32. ■ The USB stick may not be suitable for this data transfer.

The home screen remains blank
Remedy:
■ The URB 60 is not correctly connected to the CAN interface. ■ Wrong baud rate, correct the baud rate.

Incorrect parameter display
Remedy:
Reboot the URB 60.

Parameters are difficult to manipulate on the display
Remedy:
Recalibrate the display.

What to do in the event of system malfunctions

Check installation and function

When you have remedied system malfunctions, perform a function test as follows.

- Check installation and function
- Check settings

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

Data exchange via Modbus TCP

The URB 60 visual display and operating unit has a Modbus TCP server. This enables all values to be forwarded to a higher-level control system or control centre.

Parameter:

- Modbus ID: 1
- Port: 502
- Modicon Modbus: based on 1

You can find the latest list of datapoints on our website at:
https://www.gestra.com/search-results?q=urb

Taking out of service

1. Switch off the supply voltage and secure so that it cannot be turned on again.
2. Unplug the mains connector from the unit.
3. Remove all plug and socket connections (e.g. CAN bus line, Ethernet connection, etc.).
4. Unscrew the screws and remove the retaining clips.
5. Carefully push the unit out of the cutout in the door of the control cabinet.

An alarm is triggered when the CAN bus line is interrupted.

Disposal

Dispose of the URB 60 visual display and operating unit 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 outside of the return package, as processing will otherwise be impossible and the products will be returned to the sender at their expense.

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 as well as relevant certificates and approvals.

You can download the latest version of the Declaration of Conformity from www.gestra.com and request relevant certificates and approvals by writing to the following address:

GESTRA AG
Münchener Straße 77
28215 Bremen
Germany
Tel. +49 421 3503-0
Fax +49 421 3503-393
e-mail info@de.gestra.com
Website www.gestra.com

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

For your notes

For your notes

For your notes

For your notes

You can find our authorised agents around the world at: **www.gestra.com**

GESTRA AG

Münchener Straße 77
28215 Bremen
Germany
Tel. +49 421 3503-0
Fax +49 421 3503-393
e-mail info@de.gestra.com
Website www.gestra.com

UK Importer:
GESTRA UK Ltd

Unit 1 Sopwith Park, Royce Close,
West Portway Business Park, Andover,
Hampshire SP10 3TS
United Kingdom

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