

Safety Control Units

URS 60 URS 61

System description

URS 60 and URS 61 safety control units can be used in combination with various safety sensors as safety level limiters for pressurised steam and hot-water plants.

The equipment can be used as:

- Water level limiters, in combination with level electrode NRG 1x-60 / NRG 26-61.
Water level limiters switch off the heating when the water drops below the set minimum level.
- Safety high level limiters, in combination with level electrode NRG 1x-61 / NRG 26-61.
Safety high level limiters switch off the feedwater supply when the water exceeds the set maximum level.
- Conductivity limiters, in combination with conductivity electrode LRG 1x-6x.
Conductivity limiters switch off the heating when conductivity exceeds the set maximum level.
- Safety temperature monitors/limiters, in combination with temperature transmitter TRV 5-60.
Safety temperature limiters or monitors switch off the heating when the maximum admissible temperature is reached.

The above functions may be combined.

System display and operation may take place using the URB 60 or SPECTORcontrol operating units.

Function

The URS 60 / URS 61 safety control unit cyclically evaluates data telegrams from up to four safety sensors, see "Admissible accessories.." table.

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

The safety functions are monitored by cyclical self-tests. The two integrated relays are switched off in the event of alarms or failures. Function tests and failure diagnosis can be conducted using either the control unit or the operating terminal.

Behaviour in the event of alarms

When level, temperature or conductivity alarms are received, both output contacts are opened after a switch-off delay, and this interrupts the safety circuit (fail-safe position). In this case, the safety control unit does not lock automatically; this function must be implemented in the downstream circuit. The URS 60 or URS 61 can only activate one safety circuit (heating or pump) at any one time.

The safety circuit is interrupted without delay if the following error messages are received:

- Fault in sensors (negative self-test, excessively high temperature in terminal box)
- Fault in control unit (negative self-test)
- Communication failure

Technical data

Supply voltage

- 24V DC +/- 20 %

Power consumption

- max. 7 VA

Current input

- max. 0.3 A

Internal fuse

- T2A

Input/output

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

Safety circuit output

- 2 volt-free relay contacts, connected externally in series. Contact material AgNi
- Maximum switching current at switching voltages of 24 V AC/DC, 115 V AC and 230 V AC: resistive/ inductive 6 A
- Connected contactors must have interference suppression (RC combination) as per the manufacturer's specification

Required external fuse for safety circuit

- T2A or T1A for (TRD604), 72 hrs. of operation

Signal output

- 4 PhotoMOS outputs for external signalling, with or without delay
- 24 DC, max. current load 100 mA, NO characteristic

Test input

- 4 opto-coupler inputs for external test triggering, high active, 24 V DC +/- 20 %

Output relay switch-off delay

- Factory default setting 3 seconds.
- Option of 10 seconds and 15 seconds

Indicators and controls

- 4 x buttons for operation/initiating test function in sensor
- 4 x green LEDs for indicating the active channels
- 4 x red LEDs for indicating a malfunction/alarm
- 3 x yellow LEDs for indicating internal errors and external sensor errors
- 1 x 10-pole code switch for setting the number of limiters, the delay and baud rate

Protection class

- II double insulated

IP rating to EN 60529

- Housing: IP 40
- Terminal strip: IP 20

Admissible ambient conditions

- Service temperature: 0 °C - 55 °C
installed in control cabinet
- Storage temperature: - 40 °C - 80 °C
- Transport temperature: - 40 °C - 80 °C
- Air humidity: 10 % - 95 %
(relative humidity, non-condensing)
- Altitude: up to 2000 m

Housing

- Housing material: Lower section of black polycarbonate (glass-fibre reinforced), front of grey polycarbonate
- 2 x 15-pole terminal strips, removable separately
- Max. cross-section per screw terminal:
 - 1 x 4.0 mm² solid or
 - 1 x 2.5 mm² stranded with sleeve, or
 - 2 x 1.5 mm² stranded with sleeve
- Housing attachment: Mounting clip on support rail TH 35 (to EN 60715)
- Installation in control cabinet (IP54) required

Weight

- Approx. 0.4 kg

Applicable directives:

The URS 60 / URS 61 safety control unit has been tested and approved for use in the scope governed by the following directives and standards:

- Directive 2014/68/EU EU Pressure Equipment Directive
- Directive 2014/35/EU Low Voltage Directive
- Directive 2014/30/EU EMC Directive
- Directive 2011/65/EU RoHS II Directive

Behaviour in the event of error messages

Cyclical self-tests monitor the safety functions of the equipment in the safety control unit and sensors. Error messages are updated with each self-test. If there are no faults, the message is automatically deleted and the output contacts are closed once more. Alarms and error messages are displayed by LEDs or an operating unit.

In addition, you can choose to display alarms on an external signalling device via signalling outputs, either with or without a delay. Faults are always indicated without a delay, however.

Alarm simulation

You can simulate alarms by pressing the button or via external 24 V DC signals.

Functional safety, safety integrity level (SIL)

The URS 60 / URS 61 safety control unit is suitable for safety functions up to SIL 3. It is an element of a safety circuit up to SIL 3 as per EN 61508 in the SPECTOR^{connect} system, and can process alarm information from up to four safety sensors.

Admissible accessories, dependent on the required safety integrity level

In accordance with EU Pressure Equipment Directive 2014/68/EU, standards EN12952, EN12953, EN14597 and EN 61508 and the technical rules of VdTÜV Bulletin W100, WÜ100, the URS 60 / URS 61 safety control unit can be operated with the following accessories, as suitable for the required safety integrity level, see table below.

	Water level limiter	Safety high level limiter	Conductivity limiter	Temperature limiter	Operating unit	Monitoring unit
SIL 3 to EN 61508	NRG 16-60 NRG 17-60 NRG 19-60 NRG 111-60	NRG 16-61 NRG 17-61 NRG 19-61 NRG 111-61	–	TRV 5-60	URB 60 SPECTOR control	SRL 6-60
SIL 2 to EN 61508	NRG 26-61 NRG 16-60 NRG 17-60 NRG 19-60 NRG 111-60	NRG 26-61 NRG 16-61 NRG 17-61 NRG 19-61 NRG 111-61	LRG 16-60 LRG 16-61 LRG 17-60	TRV 5-60	URB 60 SPECTOR control	SRL 6-60

Dimensions

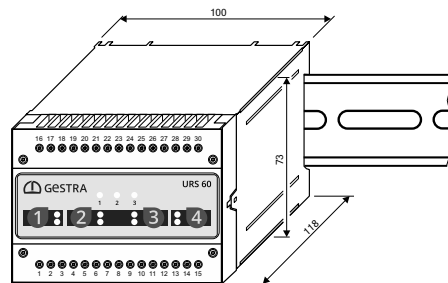


Fig. 1

Wiring diagram (applicable to both units)

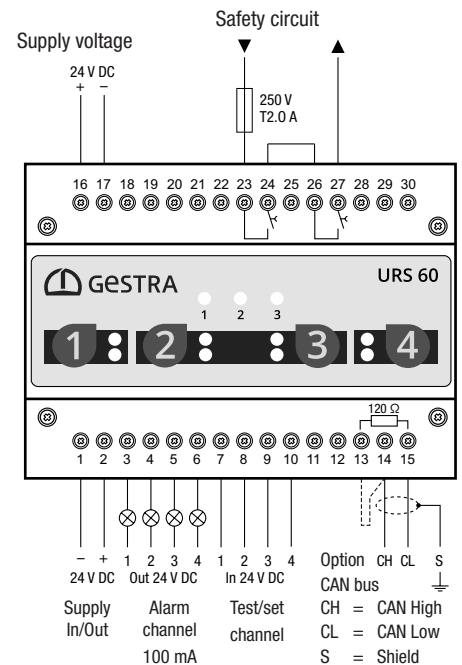


Fig. 2

Safety Control Units

URS 60

URS 61

Notes for planning

A shielded, multi-core, twisted-pair control cable, e.g. UNI-TRONIC® BUS CAN 2 x 2 x .. mm² or RE-2YCYV-fl 2 x 2 x .. mm² must be used as the bus line.

Pre-wired control cables (with plug 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.

A dedicated 24 V DC SELV power supply unit that is isolated from connected loads must be used to supply the SPECTORconnect system.

The I/O interface can be supplied with power either from the supply voltage of the safety control unit or via a separate 24 V DC voltage.

Use a T2A or T1A fuse (TRD 604), 72 hrs. of operation, to protect the switching contacts of the safety circuit.

How to order:

Safety control unit

Type:	Stock code:
■ URS 60	3356041
■ URS 61	3356141

Additional modules:

- Visual display and operating unit URB 60 or SPECTORcontrol
- Monitoring unit SRL 6-60
- Electrodes NRG, LRG or TRV

Wiring diagram of CAN bus system

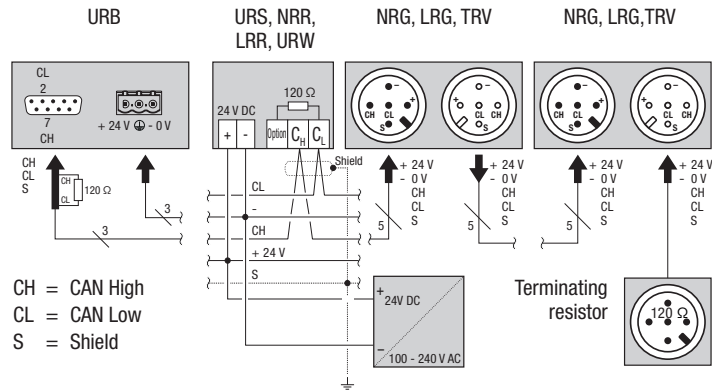


Fig. 3

Please note our terms of sale and delivery.

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