



## LCR2250 Level Controller

### Description

The LCR2250 level controller is used in combination with a LP20/LP21/PA420 level transmitter as a limit switch and water level controller, e.g. in steam and water boiler systems, or in condensate and feedwater tanks. The level controller indicates when a MIN or MAX water level has been reached, and opens or closes a control valve.

The LCR2250 level controller processes the level-dependent current signal from the LP20/LP21/PA420 level transmitter. This input signal is recognised by the controller as 0 and 100 % of the boiler measuring range, and shown as an actual value on the 7-segment LED display. The controller is suitable for use with liquids having an electrical conductivity of 5  $\mu\text{S} / \text{cm}$  or 5 ppm, when used with LP20/LP21 capacitance probe and PA420 level transmitter.

The level controller works with an electrically actuated control valve (VMD - Valve Motor Drive) as a 3-position stepping controller with proportional-plus-integral control action (PI controller). If the actual value deviates from the setpoint, the electric actuator is triggered by two output contacts and two flashing LEDs indicate whether the control valve is opening or closing.

The controller can be configured for fill or discharge control.

A further output contact indicates when a MIN or MAX water level is reached (the desired function can be selected by a switch). After the de-energizing time has elapsed, the output contact switches over and the MIN or MAX LED lights up.

Faults in the level transmitter, the electrical connection or the settings are indicated as error codes on the 7-segment LED display. In the event of a malfunction, the MIN/MAX alarm is triggered. If faults occur only in the LCR2250 level controller, the MIN/MAX alarm is triggered and the system is restarted.

Parameters can be changed or the MIN/MAX alarm simulated by operating the push buttons. For external level indication, the LCR2250 level controller has a 4 - 20 mA actual value output.

### Directives and standards

#### VdTÜV Bulletin "Wasserstand 100" (Water Level 100)

The LCR2250 level controller, in combination with the LP20/LP21/PA420 level transmitter, is type approved to the VdTÜV Bulletin "Water Level 100".

The VdTÜV "Wasserstand (=Water Level) 100" describes the requirements for water level control and limiting equipment for boilers.

#### LV (Low Voltage Directive) and EMC (Electromagnetic Compatibility)

The equipment conforms to the requirements of the Low Voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU.

#### ATEX (Atmosphère Explosible)

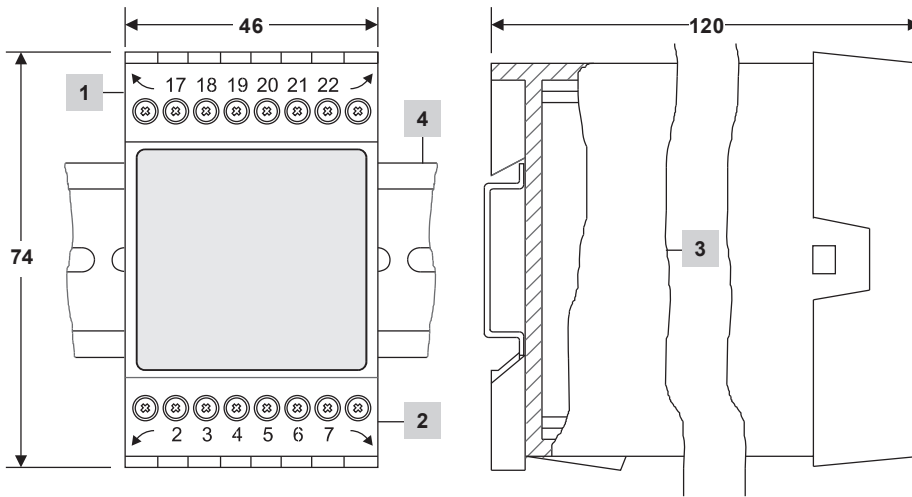
The equipment must not be used in potentially explosive atmospheres, in accordance with European Directive 2014/34/EU.



### Typical applications

- Steam and Water Boilers
- Condensate and feedwater tanks

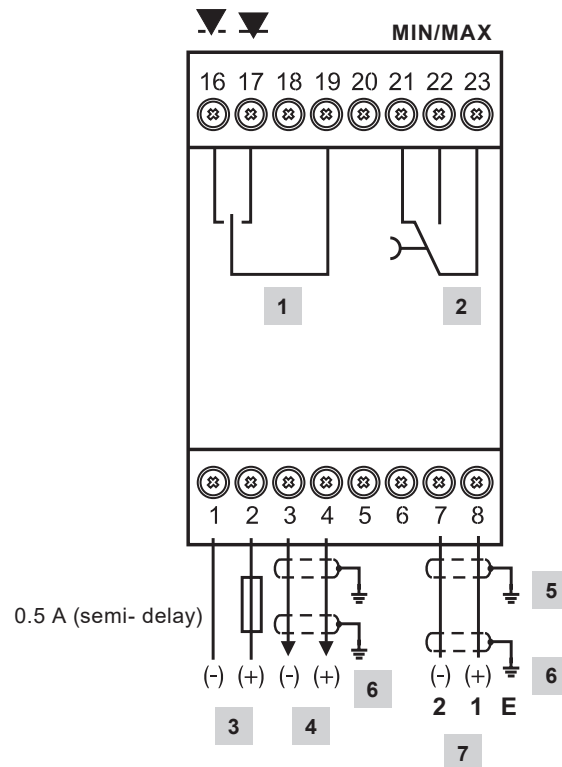
**Dimensions** (approximate) in mm



Item	
1	Upper terminal strip
2	Lower terminal strip
3	Housing
4	Support rail TH 35, EN 60715

**Installation in control cabinet**  
 The LCR2250 level controller is clipped onto a type TH 35, EN 60715 support rail in a control cabinet, see item 4.

**Wiring Diagram**



Item	
1	Output contact for control valve actuation
2	MIN/MAX output contact, de-energizing delay 3 seconds
3	Supply voltage connection 24 Vdc with semi-delay fuse 0.5 A provided on site
4	Actual value output 4-20 mA
5	Central earthing point (CEP) in control cabinet
6	Earthing point at auxiliary equipment (e.g. PA420/LP20/LP21).
7	Level transmitter LP20/LP21/PA420 4-20 mA.

## Technical Data

Supply voltage	24 Vdc +/- 20%
Fuse	External 0.5 A (semi-delay)
Power consumption	4 W
Connection of level transmitter	1 analogue input 4-20 mA, e.g. for LP20/LP21/PA420 level transmitter, 2 poles and screen
Supply voltage to level transmitter	12 Vdc/max. 20 mA
Outputs:	2 floating changeover contacts, 8 A 250 Vac/30 Vdc $\cos \phi = 1$ (control valve open/closed) 1 floating changeover contact, 8 A 250 Vac/30 Vdc $\cos \phi = 1$ De-energizing delay 3 seconds (MIN/MAX alarm, can be switched) Inductive loads must have interference suppression (RC combination) as per the manufacturer's specification 1 analogue output 4-20 mA, max. load 500 ohms, e.g. for an actual value display
Displays and controls	3 push-buttons for MIN/MAX alarm test and parameter setting 1 green 4 digit 7-segment LED display 2 red LEDs for MIN/MAX alarm 2 amber LEDs for control valve opening/closing 1 4-pole code switch for configuration
Housing	Housing material, base: black polycarbonate; front: grey polycarbonate Conductor size: 1 x 4.0 mm <sup>2</sup> solid, per wire, or 1 x 2.5 mm <sup>2</sup> per lead with sleeve to DIN 46228, or 2 x 1.5 mm <sup>2</sup> per lead with sleeve to DIN 46228 (min. $\emptyset$ 0.1 mm) Terminal strips can be removed separately Housing attachment: Mounting clip on support rail TH 35, EN 60715
Electrical safety	Degree of contamination 2 for installation in control cabinet with degree of protection IP 54, fully insulated
Degree of protection	Housing: IP 40 to EN 60529 Terminal strip: IP 20 to EN 60529
Weight	approx. 0.2 kg
Ambient temperature	At moment of switch-on 0 ° to 55 °C In operation -10 to 55 °C
Transport temperature	-20 to +80 °C (<100 hours), only switch on after a defrosting period of 24 hours
Storage temperature	-20 to +70 °C, only switch on after a defrosting period of 24 hours
Relative humidity	max. 95%, no moisture condensation

### How to specify

3-position stepping PI controller with MIN or MAX alarm, 1 volt-free change-over contact for MIN or MAX alarm, 1 volt-free relay contact for valve open/stop/closed, supply voltage 24V DC, 4W.

### How to order

Example: 1 off Spirax Sarco LCR2250 level controller.