



LCR2251 Level Controller



Description

The LCR2251 level controller is used in combination with the 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 and MAX water level has been reached, and controls a control valve or pump.

The LCR2251 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 electro-pneumatically actuated control valve as a continuous controller with proportional-plus-integral control (PI controller). In the event of deviations from the setpoint, it outputs a current of 4-20 mA as manipulated variable Y.

Alternatively the controller can be configured to control a pump (on/off control) and transmit a 4 - 20 mA to provide an external level indication (actual value output).

The controller can be configured for fill or discharge control.

If the MIN or MAX water level is reached, after the de-energizing delay the MIN or MAX output contact switches over in the level controller, 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 and MAX alarm is triggered.

If faults occur only in the LCR2251 level controller, the MIN and MAX alarm is triggered and the system is restarted.

Parameters can be changed or the MIN/MAX alarm simulated by operating the push buttons.

Directives and standards

VdTÜV Bulletin "Wasserstand 100" (Water Level 100)

The LCR2251 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.

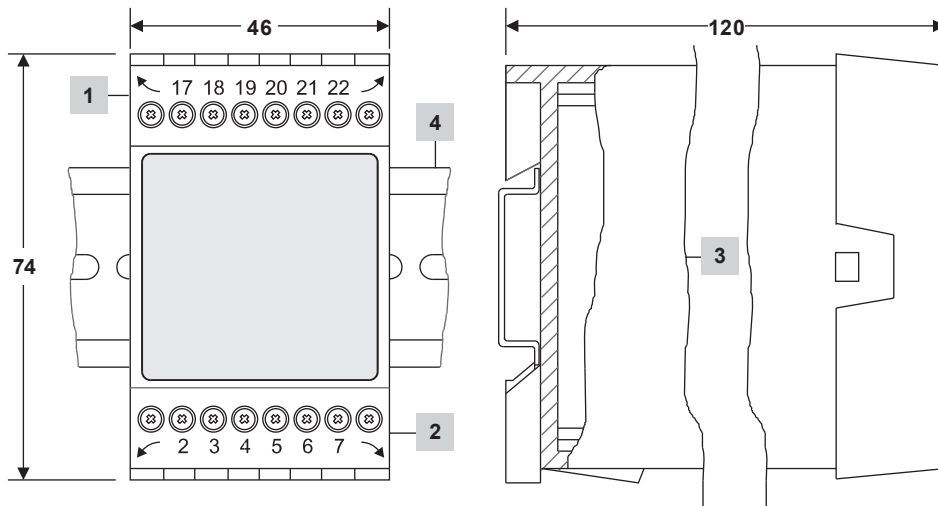
ATEX (Atmosphère Explosible)

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



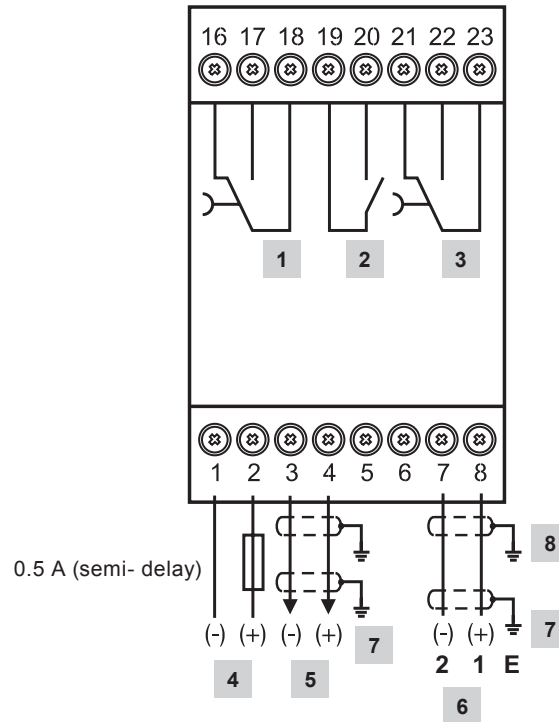
Item

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

Installation in control cabinet

The LCR2251 level controller is clipped onto a type TH 35, EN60715 support rail into a control cabinet, item 4.

Wiring diagram



Item	
1	MIN output contact, de-energizing delay 3 seconds
2	Pump output contact. Not used in continuous controller
3	MAX output contact, de-energizing delay 3 seconds
4	Supply voltage connection 24 Vdc with semi-delay fuse 0.5 A provided on site
5	Output 4-20 mA, manipulated variable Y for continuous controller or actual value output for ON/ OFF controller (pump control)
6	Level transmitter LP20/LP21/PA420, 4-20 mA
7	Earthing point at auxilliary equipment (e.g.PA420/LP20/LP21)
8	Central earthing point (CEP) in control cabinet

Technical data LCR2251

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 $\cos \phi = 1$. De-energizing delay 3 seconds (MIN/MAX alarm) 1 floating open/close contact, 8 A 250 Vac/30 Vdc $\cos \phi = 1$ (pump on/off control) 1 analogue output 4-20 mA, max. load 500 ohms (manipulated variable Y or actual value) Inductive loads must have interference suppression (RC combination) as per the manufacturer's specification
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 1 amber LED for pump active or manipulated variable Y 1 4-pole code switch for configuration
Housing	Housing material, base: black polycarbonate; front: grey polycarbonate Conductor size: 1 x 4.0 mm ² solid, per wire, or 1 x 2.5 mm ² per lead with sleeve to DIN 46228, or 2 x 1.5 mm ² per lead with sleeve to DIN 46228 (min. \varnothing 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 ° ... 55 °C In operation -10 ... 55 °C
Transport temperature	-20 ... +80 °C (<100 hours), only switch on after a defrosting period of 24 hours
Storage temperature	-20 ... +70 °C, only switch on after a defrosting period of 24 hours
Relative humidity	max. 95%, no moisture condensation

How to specify

Continuous PI or ON/OFF level controller with MIN and MAX alarm, 2 volt-free change-over contacts for MIN and MAX alarm, 1 volt-free relay contact for pump / valve control, supply voltage 24V DC 4W.

How to order

Example: 1 off Spirax Sarco LCR2251 level controller.