

LC2250 Level Controller

Description

The Spirax Sarco LC2250 is a level controller for on/off or modulating control of conductive liquid levels.

The LC2250 has two alarm outputs that can be configured high or low.

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 an LP20, PA20, or PA420 capacitance probe.

The LC2250 may be used on boilers, tanks, or vessels operating at up to 32 bar g at 239°C (464 psig@462°F).

The front panel has a 3 digit LCD display and a five-button keypad.

The unit can be panel, DIN rail, or chassis mounted.

Principal features:

- Level controller for modulating or on/off control of boilers.
- Universal power supply – 110 Vac to 240 Vac @ 50/60 Hz.
- UL and TÜV approvals.
- Alarm – high or low.
- Input filter for turbulent conditions.
- 0/4-20 mA retransmit.
- Infrared communications.

Approvals

This product complies with the Electromagnetic Compatibility Directive 2004 / 108 / EC and all its requirements.

The LC2250 is suitable for Class A Environments (e.g. industrial). A fully detailed EMC assessment has been made and has the reference number UK Supply BH LC2250 2008.

The LC2250 complies with the Low Voltage Directive by meeting the standards of:

- EN 61010-1:2010 safety requirements for electrical equipment for measurement, control, and laboratory use.

The LC2250 has been type-tested as a level control by meeting the standard:

- Vd TÜV requirements for water level control and limiting devices, Water Level 100 (07.2010).
- UL listed (open)

Typical applications

On/off control:

- Pump control.
- Two alarm output.
- 4 - 20 mA level output.

Note: A solenoid valve may be used instead of a pump.

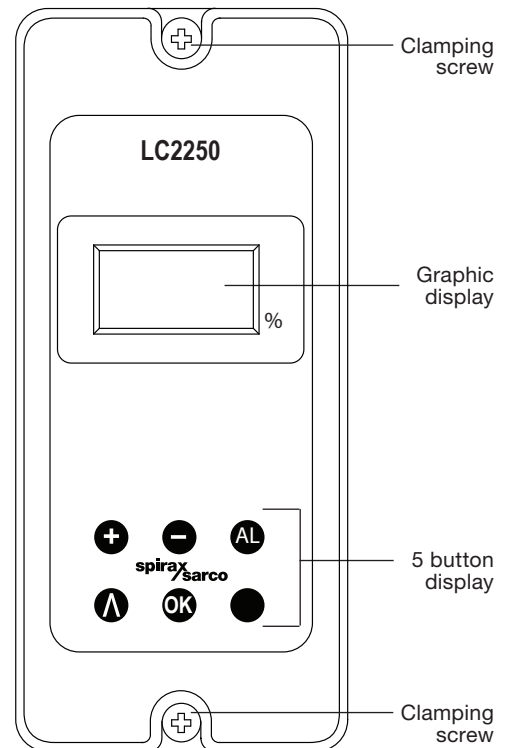
Modulating control:

Modulating valve control using valve motor drive or 4 - 20 mA control signals.

- Two alarm output.
- 4 - 20 mA level output.

Note: The 4 - 20 mA level output is only available when the product is configured for valve motor drive systems.

Local regulation may restrict the use of this product below the conditions quoted. Limiting conditions refer to standard connections only. In the interests of development and improvement of the product, we reserve the right to change the specification.



Function

The product compares the input signals with the Set Point selected by the user. It then changes its output signal to control the water level in the boiler or tank.

Inputs

The product has two inputs to accept the following signals:

- Level probe or transmitter 1 - 6 V or 4 - 20 mA.
- A 1 K potentiometer input ~ for Valve Motor Drive (VMD).

Outputs

The output control signal can be configured / wired to work with a pump or a modulating control valve. It also provides a relay output for high or low level alarms and can provide an isolated 4 - 20 mA retransmission output.

Other features:

- An additional filter can be selected to increase the damping effect for turbulent conditions.
- Commissioning parameters are protected with a pass code.
- The LC2250 can communicate via an infrared link between adjacent controllers. It enables the parameters to be passed to a product fitted with RS485 (User). The LC2250 is designated as a slave unit – no set-up or adjustment is needed. Important: Do not cover or obstruct the infrared beam between products.

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Technical data LC2250

Power supply	Mains voltage range	110 Vac to 240 Vac at 50/60 Hz			
	Power consumption	7.5 W (maximum)			
Environmental	General	Indoor use only			
	Maximum altitude	2 000 m (6 562 ft) above sea level			
	Ambient temperature limits	0 - 55°C (32-131°F)			
	Maximum relative humidity	80% up to 31°C (88°F) decreasing linearly to 50% at 40°C (104°F)			
	Overvoltage category	III			
	Pollution degree	2 (as supplied)			
		3 (when installed in an enclosure) - Minimum of IP54 or UL50 / NEMA Type 3, 3S, 4, 4X, 6, 6P or 13.			
	Enclosure rating (front panel only)	NEMA type 4 hose down only (UL approval) and IP65 (verified by TRAC Global)			
	LVD (safety)	Electrical safety EN 61010-1 UL61010-1, 3rd Edition, 2012-05 CAN/CSA-C22.2 No. 61010-1, 3rd Edition, 2012-05			
	EMC	Immunity/Emissions	Suitable for heavy industrial locations		
	Enclosure	Material	Polycarbonate		
	Front panel	Material	Silicone rubber, 60 shore.		
	Solder	Tin/lead (60/40%)			
Cable/wire and connector data	Mains and signal connector	Termination	Rising clamp plug-in terminal blocks with screw connectors. Caution: Use only the connectors supplied by Spirax Sarco Ltd. Safety and Approvals may be compromised otherwise.		
		Cable size	0.2 mm ² (24 AWG) to 2.5 mm ² (12 AWG).		
		Stripping length	5 - 6 mm (0.2")		
	Level probe cable/wire	Type	High temperature		
		Shield type	Screened		
		Number of cores	3 LP20/PA20, 2 (LP20/PA420 4-20mA Transducer)		
	4 - 20 mA output cable / wires	Gauge	1 - 1.5 mm ² (18 - 16 AWG)		
		Maximum length	100 m (328 ft)		
		Type	Twisted pair		
	Input technical data	Level voltage	Shield type	Screened	
			Number of pairs	1	
			Gauge	0.23 - 1 mm ² (24 - 18 AWG)	
			Maximum length	100 m (328 ft)	
Minimum voltage			0 Vdc or 1 V (with OUTRANGE function selected)		
4 - 20 mA		Maximum voltage	6 Vdc (absolute maximum = 7 Vdc)		
		Input impedance	28 KΩ		
		Accuracy	5% FSD over operating range		
		Repeatability	2.5% FSD over operating range		
		Resolution	14 bit (0.15 mV approximately)		
4 - 20 mA	Sample time	260 Hz			
	Minimum current	0 mA			
	Maximum current	22 mA			
	Input impedance	11 KΩ			
	Accuracy	5% FSD over operating range			
4 - 20 mA	Repeatability	2.5% FSD over operating range			
	Resolution	14 bit (1 μA - approximately)			
	Sample time	260 Hz			

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Technical data LC2250 (continued)

Output technical data	24 Vdc supply	Maximum voltage	32 Vdc (no load, open circuit)
		Maximum current	25 mA
		Ripple voltage	10 mV @ 264 V, full load
	4 - 20 mA	Minimum current	0 mA
		Maximum current	20 mA
		Open circuit voltage (maximum)	19 Vdc
		Resolution	0.1% FSD
		Maximum output load	500 ohm
		Isolation	100 V
		Output rate	10 / second
Relays	Contacts	2 x single pole changeover relays (SPCO)	
	Voltage ratings (maximum)	250 Vac	
	Resistive load	3 amp @ 250 Vac	
	Inductive load	1 amp @ 250 Vac	
	ac motor load	¼ HP (2.9 amp) @ 250 Vac	
		1/10 HP (3 amp) @ 120 Vac	
	Pilot duty load	C300 (2.5 amp) - control circuit/ coils	
	Electrical life (operations)	3 x 10 ⁵ or greater depending on load	
	Mechanical life (operations)	30 x 10 ⁶	
	Infrared	Physical layer	IrDA
Baud		38 400	
Range		10 cm (4")	
Working angle		15°	
Eye safety information		Exempt from EN 60825-12: 2007 Safety of laser products - does not exceed the accessible emission limits (AEL) of Class 1	

Safety information, installation and maintenance

This document does not contain sufficient information to install the unit safely. The unit operates at a potentially fatal mains voltage. Before attempting to install the unit read the Installation and Maintenance Instructions supplied with it.

The product must be installed in a suitable industrial control panel or fireproof enclosure to provide impact and environmental protection. A minimum of IP54 (EN 60529) or Type 3, 3S, 4, 4X, 6, 6P and 13 (UL50/NEMA 250) is required.

The product may be installed on a DIN rail, a chassis plate, or in a panel cut-out. A bezel is supplied.

Install the product in an environment that minimizes the effects of heat, vibration, shock and electrical interference.

Do not install the product outdoors without additional weather protection.

Do not attempt to open the product - it is sealed and has no replaceable parts or internal switches.

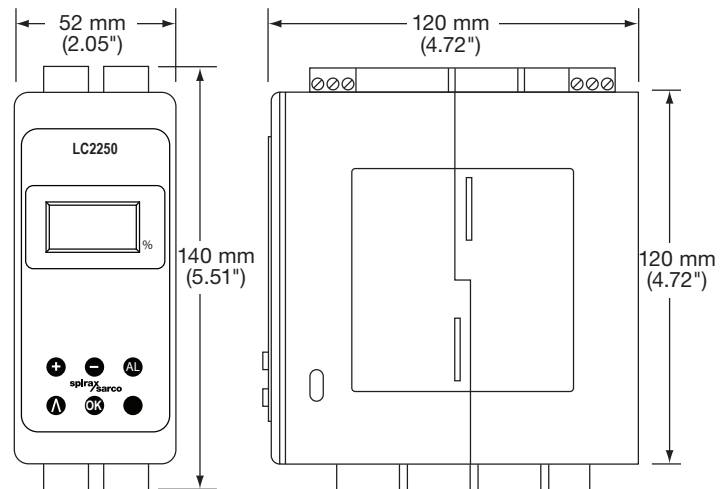
Do not cover or obstruct the infrared beam between products.

No special servicing, preventative maintenance or inspection of the product is required.

Boiler water level controls and level alarms do, however, require testing and inspection.

Dimensions/weight (approximate) in mm and g.

Weight 430 g. (0.95lb)



How to specify

Level controller with auto voltage sensing, alarm that can be configured high or low, and infrared communications.

How to order

Example: 1 off Spirax Sarco LC2250 level controller.