spirax sarco

TI-P402-133
AB Issue 2

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 one alarm output that can be configured high or low.

The controller is suitable for use with liquids having an electrical conductivity of 5 µS/cm or 5 ppm.

The LC2250 may be used on boilers, tanks, or vessels operating at up to 32 bar g at 239°C.

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

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

Principal features:

- Level controller for modulating or on/off control of boilers.
- Universal power supply – 99 Vac to 264 Vac.
- 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 61010-1:2001 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 (07.2006).
- UL Listed - open.

Typical applications

On/off control:

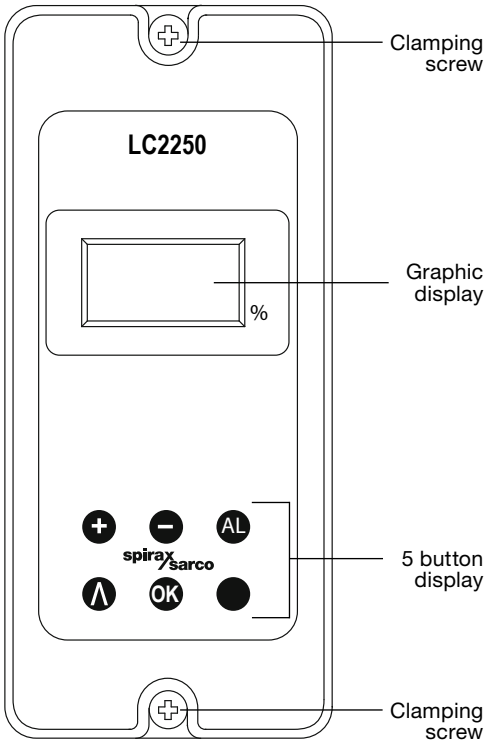
- Pump control.
- One alarm output.
- 4 - 20 mA level output.

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.

- One 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.



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.

Technical data LC2250

Power supply		Mains voltage range	99 Vac to 264 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	
		Maximum relative humidity	80% up to 31°C decreasing linearly to 50% at 40°C	
		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	
			CAN/CSA C22.2 No. 61010-1	
		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 mm² (24 AWG) to 2.5 mm² (12 AWG).	
		Stripping length	5 - 6 mm	
	Level probe cable/wire	Type	High temperature	
		Shield type	Screened	
		Number of cores	3	
		Gauge	1 – 1.5 mm² (18 - 16 AWG)	
		Maximum length	100 m (328 ft)	
	4 - 20 mA output cable / wires	Type	Twisted pair	
		Shield type	Screened	
		Number of pairs	1	
		Gauge	0.23 - 1 mm² (24 - 18 AWG)	
		Maximum length	100 m (328 ft)	
Input technical data	**Level voltage**	Minimum voltage	0 Vdc or 1 V (with OUTRANGE function selected)	
		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)	
		Sample time	260 Hz	
	4 - 20 mA	Minimum current	0 mA	
		Maximum current	22 mA	
		Input impedance	11 KΩ	
		Accuracy	5% FSD over operating range	
		Repeatability	2.5% FSD over operating range	
		Resolution	14 bit (1 µA - approximately)	
		Sample time	260 Hz	

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
		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 minimises 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.

In the UK, your attention is drawn to IEE Regulations (BS 7671). Elsewhere, other regulations will normally apply.

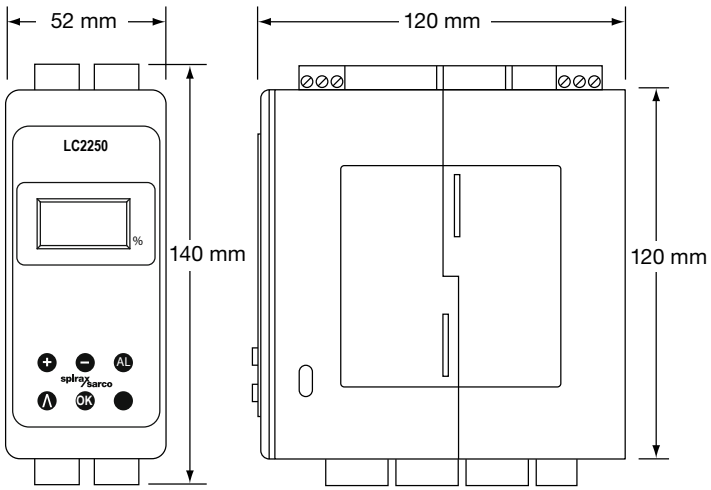
All wiring materials and methods shall comply with relevant EN and IEC standards where applicable.

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. General guidance is given in Health and Safety Executive Guidance Notes BG01 and INDG436.

Dimensions/weight (approximate) in mm and g.

Weight 430 g.



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.