Cert. No. LRQ 0963008

ISO 9001

**TI-P402-132**
AB Issue 1

# LC1350
# Level Controller

## Description

The Spirax Sarco LC1350 has two alarm channels that can be independently configured high or low to control the water level of a boiler, tank or vessel by operating a pump, valve or solenoid. It has been designed as an on/off level controller for use with the LP10-4 four-tip conductivity probe operating on supply voltages from 99 to 264 Vac.
The controller is suitable for use with virtually all qualities of conductive liquids from salt solutions or boiler water to condensate having an electrical conductivity as low as 1 µS /cm at 25°C.
The LC1350 gives accurate and reliable control under the very different conditions found in vessels, tanks or high output boilers operating up to 32 bar @ 239°C.
The front panel has a 3-digit LCD screen and moving segments that display the liquid level rising or falling along with a five-button keypad.
The unit can be panel, DIN rail or chassis mounted.

**Principal features:**

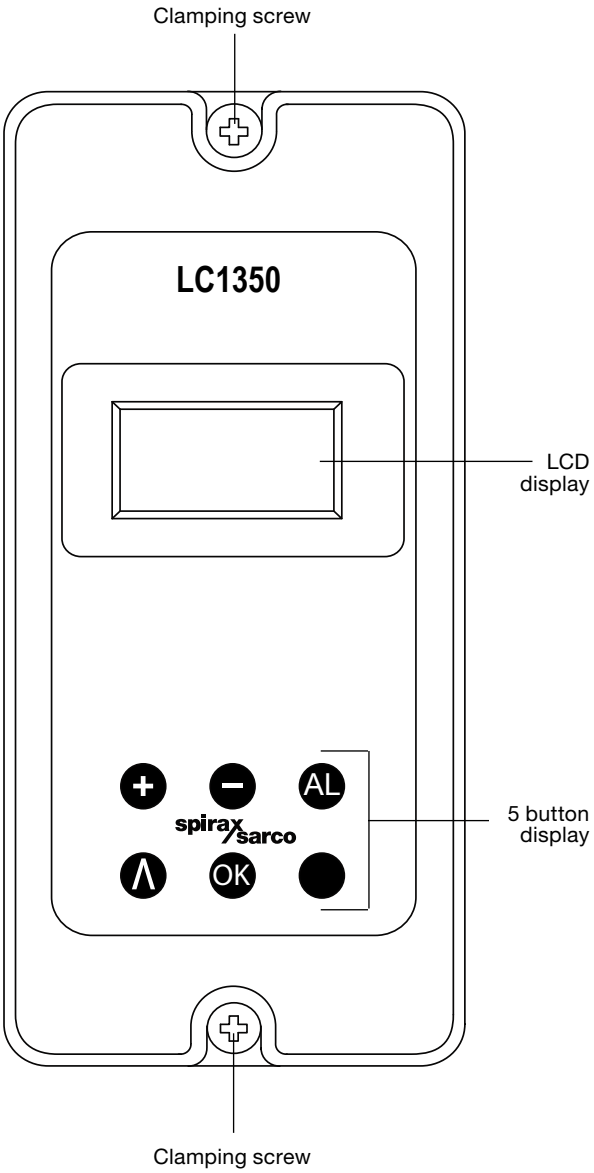
- Level controller with two configurable alarms.
- Universal power supply – 99 Vac to 264 Vac.
- UL and TÜV approved.
- LCD shows level change direction.
- Interactive safety feature.
- Infrared comms.

**Approvals**
This product complies with the Electromagnetic Compatibility Directive 2004 / 108 / EC and all its requirements.
The LC1350 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 LC1350 2008.
The LC1350 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 LC1350 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).




## Application

Typical application example – on/off control of a feedtank:

- Pump on
- Pump off
- High alarm
- Low alarm

**Note:** probes can be mounted in external chambers if boiler mounting is not possible.

## Function

**Inputs**
The LC1350 input options are:

- High alarm or low alarm from a conductivity probe.
- Pump on/off control from two conductivity probes.

**Function / outputs**
The controller reacts to a change in probe conductivity (open/ closed circuit) and energises / de-energises a relay. This action switches a pump or sounds an alarm.

**Other features:**

- Additional filters can be selected to increase the damping effect for turbulent conditions.
- To prevent unwanted or inadvertent changes being made, all commissioning parameters are protected with a fixed pass code.
- The product can communicate via an infrared link between adjacent boiler house controllers. It is designated as a slave unit.
- A panel mounted external test switch may be fitted if required.

*Local regulations may restrict the use of this product to below the conditions quoted.*
*In the interests of development and improvement of the product, we reserve the right to change the specification without notice.*

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# Technical data LC1350

| | | | |
|---|---|---|---|
| **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) **-**<br>Minimum of IP54 or UL50 / NEMA Type 3, 3S, 4, 4X, 6, 6P or 13. | |
| | Enclosure rating<br>(front panel only) | NEMA type 4 hose down only (UL approval) and<br>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%) | |
| **Mains and signal connector** | Termination | Rising clamp plug-in terminal blocks with screw connectors.<br>**Caution:** Use only the connectors supplied by Spirax Sarco Ltd.<br>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 | 5 | |
| | Gauge | 1 – 1.5 mm² (18 - 16 AWG) | |
| | Maximum length | 100 m (328 ft) | |
| **Input - Level probe (conductivity)** | Switching conductivity | Minimum conductivity 1 µS/cm @ 25°C (K = 0.22 (220 KΩ) )<br>when used with a Spirax Sarco LP10-4 probe. | |
| | Drive | ac – pulsed | |
| **Output 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 $10^6$ | |
| **Output 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 -<br>does not exceed the accessible emission limits (AEL) of Class 1 | |

## Safety information, installation and maintenance

**Warning: 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.**

In most countries, steam boilers operating with limited supervision require two self-monitoring level probes and controllers to provide two independent low level alarms. A high level alarm is also advised, and is compulsory in some countries. The LC1350 is not self-monitoring.

**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.

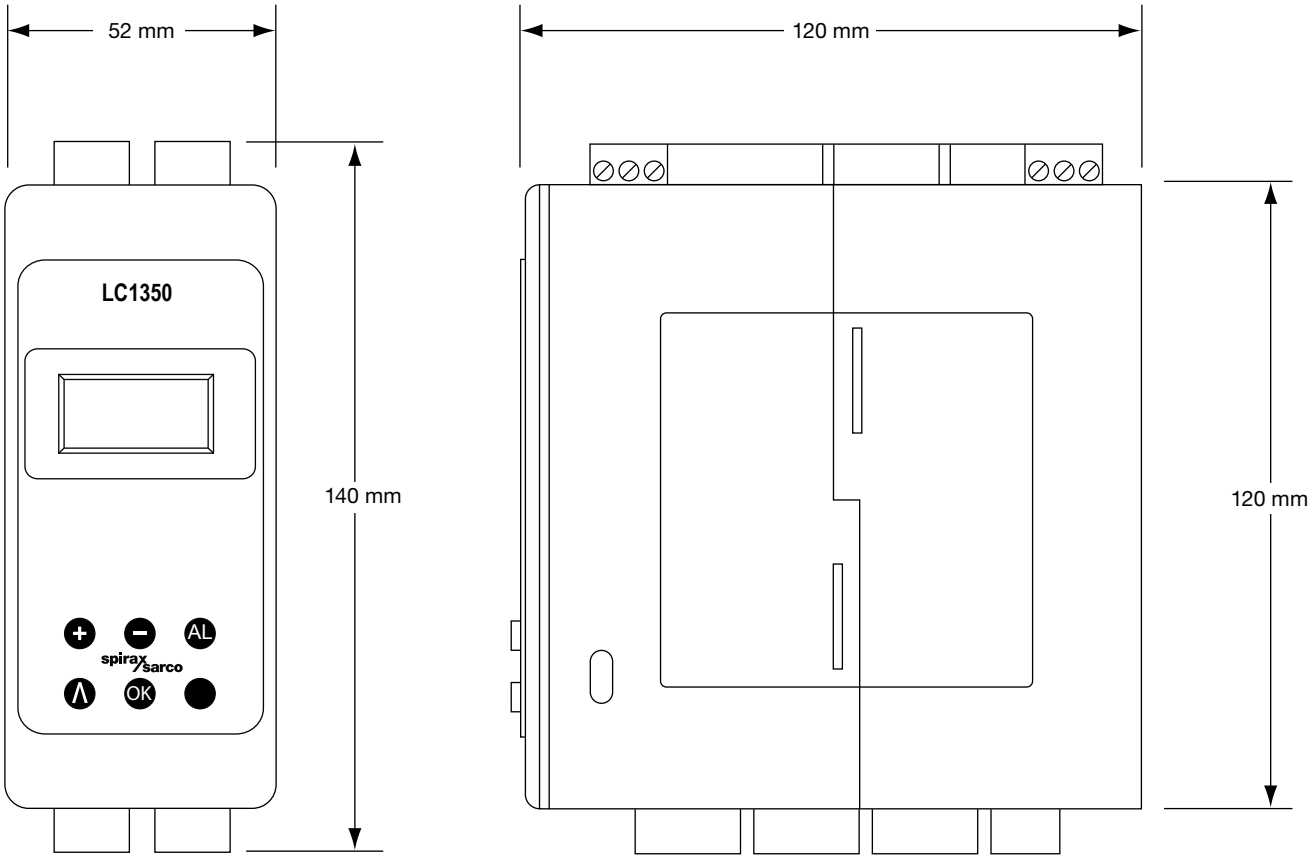
All wiring materials and methods shall comply with relevant EN and IEC standards where applicable.

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 Note PM5.

## Dimensions / weight **(approximate) in mm and g.**

Weight 430 g.




### How to specify

Conductivity level controller to provide on/off control of a pump plus two configurable alarms, and to have infrared communications.

### How to order

**Example:** 1 off Spirax Sarco LC1350 level controller.