LC3050
Level Controller

Description
The Spirax Sarco LC3050 is a level limiting alarm for use in conductive liquids as a high or a low alarm, and is defined as a 'special design water level limiter' in the context of EN 12952-11. It is suitable for use with steam or hot water boilers operating up to 32 bar at 239°C (464psig@462°F).

The LC3050 is a dual voltage unit, 230 Vac or 115 Vac for use with Spirax Sarco high or low level, self-monitoring high integrity probes.

The LC3050 has two LED’s, indicating normal and alarm conditions, and a test button (AL). The other buttons on the keypad are non-functional.

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

An automatic cyclic test of the probe, probe cable and controller is carried out every few seconds by internally simulating a fault in the probe.

A test button is fitted so that a full test of the probe, controller, and associated circuits can be carried out. Provision is made for the wiring of a remote test button if required.

WARNING; 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.

Principal features:
- High integrity, self-monitoring low or high level alarm.
- UL and TÜV approved.
- Dual mains supply, 230 / 115 Vac.
- LED indication of status.
- Infrared communications.

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

This product meets all the Requirements of the Directive and is suitable for Class A Environments (eg Industrial). The LC3050 meets the requirements of the Directive by meeting the Controlling standard:
- EN 61326-1: 2006 - Electrical equipment for measurement control and laboratory use - EMC requirements Part 1: General requirements.

In addition the LC3050 meets the EMC requirements of the following standards:

The LC3050 has been type-tested as a Special Design Water Level Limiter by meeting the Standard:
- Vd TÜV requirements for water level control and limiting devices, Water Level 100 (07.2010).
- UL listed (open)

The product complies with Low Voltage Directive (2006 / 95 / EC) by meeting the standards of:
- EN 61010-1:2001 Safety requirements for electrical equipment for measurement, control and laboratory use.

Function / Inputs / Outputs

Function
The LC3050 is normally configured to warn of a change in level outside normal limits for steam or hot water boilers, tanks or vessels, by engaging an alarm relay. Spirax Sarco high-integrity, self-monitoring probes can indicate internal faults or water ingress.

The LC3050 compares the resistance to earth from the probe, through the water, to the boiler or vessel shell. If a change in water level causes this resistance to change beyond a set limit, a timer is engaged which alters the state of internal relays after a pre-set delay. This signal is normally used to trigger an alarm, and cut the supply to the burner.

Input / output
The product accepts inputs from the LP30 low level probe or the LP31 high level probe.

With the water level normal the green LED will be lit, and the boiler panel will indicate a normal water level. The green LED briefly extinguishes every few seconds showing that the automatic cyclic test is being carried out.

A compensation tip on the probe signals an alarm if the probe should become faulty through water ingress or an internal wiring fault.

Outputs can be remotely accessed via the RS485 / MODBUS communications.

Other features
The LC3050 can communicate via an infrared link between adjacent controllers. It enables the alarm status of the LC3050 to be passed to a product fitted with RS485 (user). User products are those fitted with a graphics display. The LC3050 is defined as a slave unit. No set-up or adjustment is needed.

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.
# LC3050
## Level Controller
### Technical data LC3050

| Power supply | **Mains voltage range** | 220/240 Vac setting (198 V to 264 V)  
| | 110/120 Vac setting (99 V to 132 V)  
| | **Frequency** | 50 - 60 Hz  
| | **Power consumption** | 230 V/30 mA or 115 V/60 mA  
| 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) - Minimum of IP54 or UL50 / NEMA Type 3, 3S, 4, 4X, 6, 6P or 13.  
| **Enclosure rating** | NEMA type 4 hose down only (UL approval) and IP65 (verified by TRAC Global)  
| **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 data** | **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 (0.2")  
| | **Type** High temperature  
| | **Shield type** Screened  
| | **Number of cores** 4  
| | **Gauge** 1 – 1.5 mm² (18 - 16 AWG)  
| | **Maximum length** 50 m (164 ft)  
| | **Recommended type** Prysmian (Pirelli) FP200, Delta Crompton Firetuf OHLS  
| **Level probe cable/wire** | **Input technical data** Minimum conductivity 30 µS/cm or 30 ppm at 25°C (77°F)  
| | **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  
| | **1/8 HP (3 amp) @ 120 Vac**  
| | **Pilot duty load** C300 (2.5 amp) - control circuit/coils  
| | **Electrical life (operations)** 3 x 10⁸ or greater depending on load  
| | **Mechanical life (operations)** 30 x 10⁶  
| | **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
## LC3050

### Level Controller

#### 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.

**Caution:** Before installing and connecting the power ensure there is no condensation within the unit. The product may be installed on a DIN rail, on a chassis plate, or in a panel cutout. A bezel is supplied.

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. Spirax Sarco can provide suitable plastic or metal enclosures.

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. (0.95 lb)

---

How to specify

High-integrity self-monitoring level controller with fail-safe operation and self-testing facilities. LED indication of alarm and safe status. Infrared communications facility. A test button facility shall be provided on the front panel.

How to order

Example: 1 off Spirax Sarco LC3050 level high-integrity, self-monitoring level controller.