

LC 3000 Level Controller

Self-monitoring controller for low and high level alarm systems

- Self-testing
- International approvals
- High integrity, fail-safe operation
- LEDs status indication

Description

The Spirax Sarco LC 3000 is an advanced level controller with built in cyclic self testing facilities.

It is used with a self-monitoring, high integrity level probe to provide either a high or a low water level alarm in steam and hot water boilers. The LC 3000 has LED indication of the following conditions:-

Green	Normal - level correct
Red	High/Low level or failure alarm

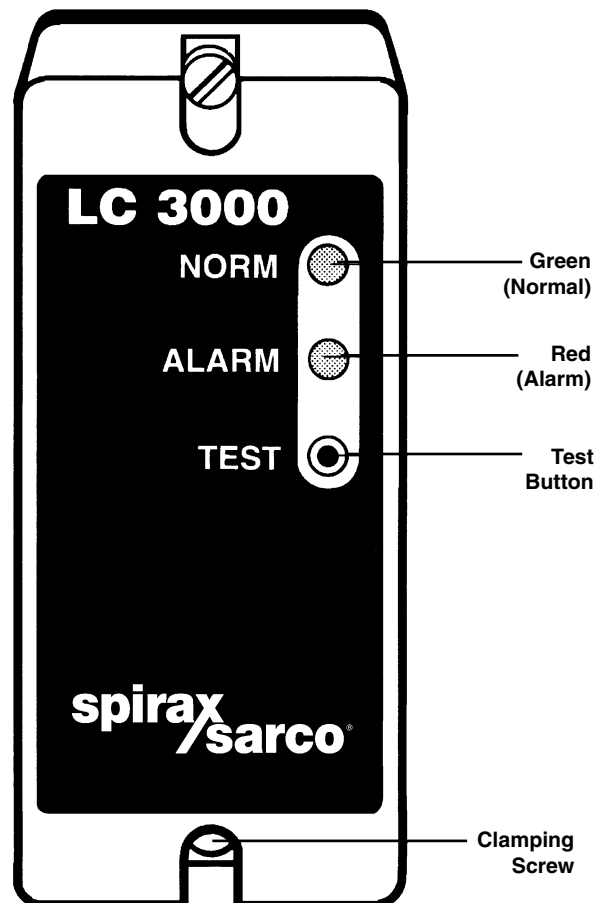
A test button is fitted so that a full test of the controller and probe can be carried out. Provision is made for the wiring of a remote test button if required.

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.

Operation

The LC 3000 detects a change in electrical conductivity between a probe immersed in water, or exposed, in steam or air. In a low level alarm application, the tip is normally immersed, completing a low resistance path to ground. This is detected by the LC 3000 and both relays are kept energised, signalling normal water level. If the water level drops below the probe tip, causing the resistance to rise, both relays are released after about 5-6 seconds. This normally shuts down the burner and sounds the alarm.

For a high level alarm, the normal water level is below probe tip, and the resistance path to earth is high. If the water level rises sufficiently to touch the probe tip, the resistance to ground becomes low, causing relays to release and a high level alarm to sound. The controller may also be wired to cut off the feedwater supply. The LC 3000 also continuously monitors the probe insulation resistance, to compensate for any build-up of conductive scale or dirt on the probe insulators or internal water leakage which could affect its proper working.



Every few seconds during normal operation the LC 3000 simulates a low insulation resistance fault in the probe in order to check the integrity of the probe, probe cable, and controller. Provided the controller internally signals and alarm, the fault is removed before the relays de-energise, and a new cycle starts. If the test fails to give an internal alarm it is an indication that an actual fault exists, so a separate circuit in the LC 3000 de-energises both output relays after a further few seconds. This sounds an alarm and normally shuts down the burner or feedwater supply. A manual test button is fitted in order to carry out full testing of the probe and controller.

Limiting Conditions

Ambient temperature range	32° - 130°F (0-55°C)
Maximum probe cable length	165 ft (50m)
Minimum water conductivity range at operating temperature	30µS/cm minimum.
Protection rating	IP40
Pollution degree	2
Installation category (over voltage category)	II

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Electrical Data

Supply voltage:	
120V Position	99 - 132V
Supply frequency	50 - 60Hz
Power requirements	6VA
Internal fuse	20mm100mA anti-surge (T)
Alarm relay contact rating	120Vac 1A pilot duty
Supply and relays must be protected by an external 3A quick-blow fuse.	

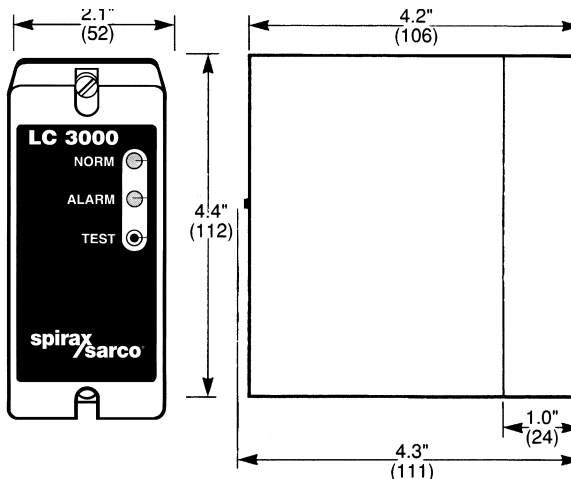
Material

Enclosure base and connector	Noryl SE1 GFN 2
Enclosure cover and intermediate plate	R-ABS 90.00

Installation

The controller must be installed in a metal or plastic enclosure to provide environmental protection. The controller can be mounted on a "top hat" section DIN rail using the mounting clip provided, or the clip may be removed and the controller screwed directly to a chassis plate.

Full installation, wiring, commissioning and fault finding information is supplied with the controller. Spirax Sarco can supply a UL Listed LC3000 in an enclosure, mounted on DIN rail and connected to field wiring terminals with integral fuses.



How To Specify

1 - Spirax Sarco UL LC3000 Level Controller

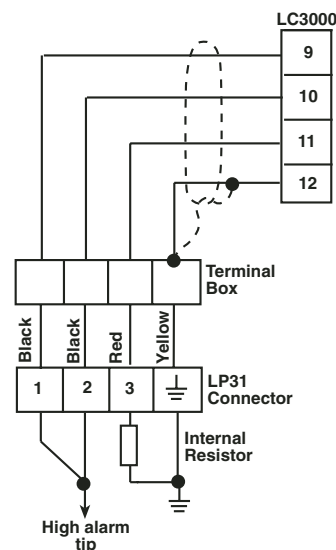
Important Note:

All boiler water level and low water alarm controls require regular testing and inspection. For specific testing instructions for Spirax Sarco systems please see separate literature.

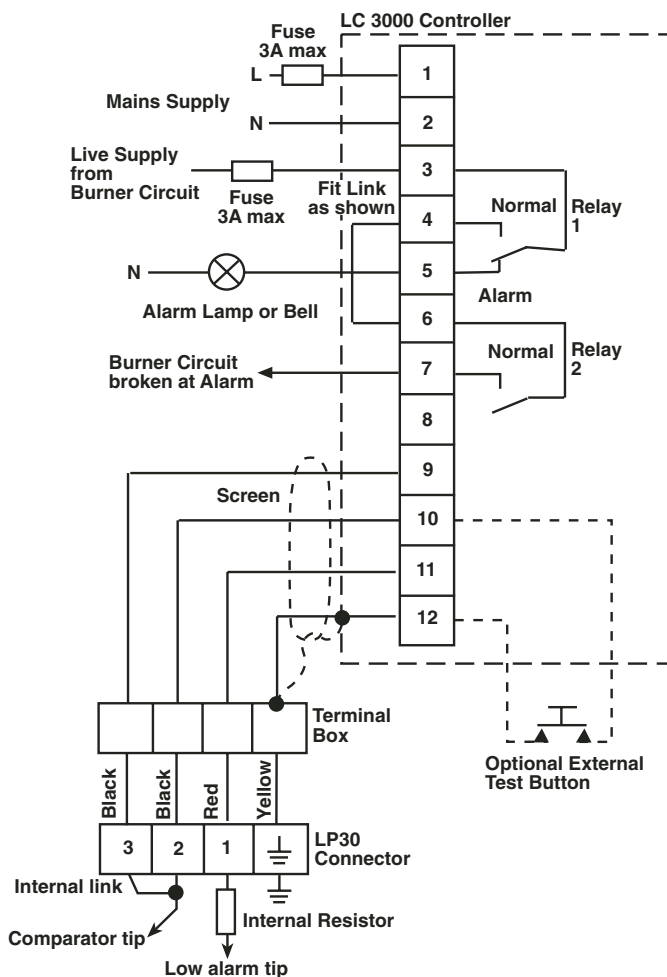
Available Spares

Internal fuse 100mA anti-surge (T) 20mm cartridge fuses (set of 3) — stock number 4033380.

Details showing wiring of the LP31 for High Alarm



WIRING DIAGRAM



Approvals

UL
United States Standard

UL353
Limit Controls
MH25452

ULC
Canadian Standard

C22.2 No. 24-93
MH25452

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