



Vemer S.p.A.

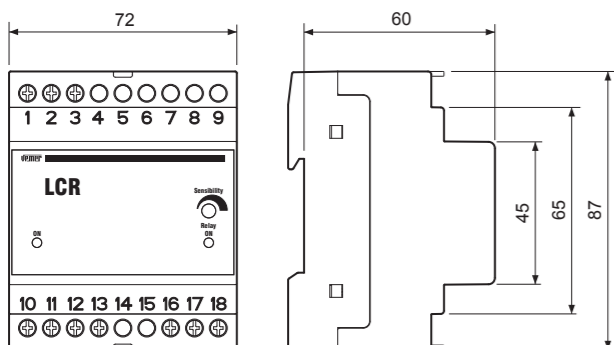
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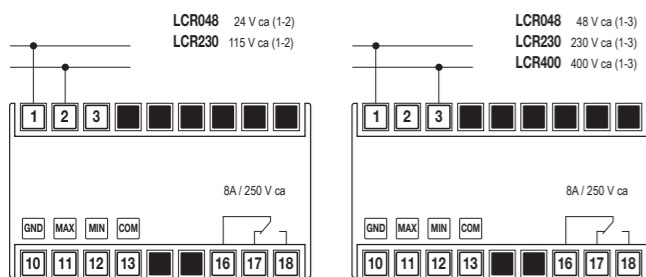
Mod. LCR



Dimensions

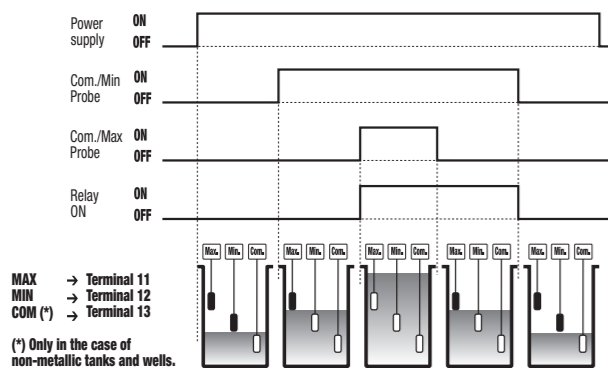


Connection diagram



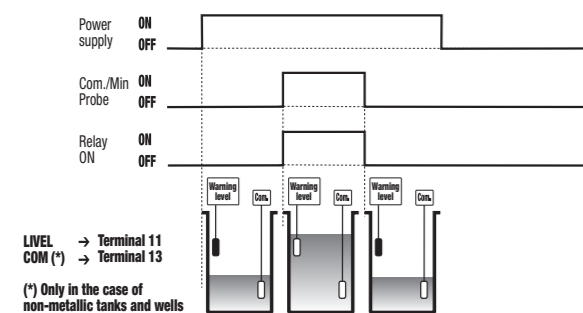
Operating diagram 1

Minimum (with protection against dry running) and maximum level controls



Operating diagram 2

Control of a single liquid level (warning level)



User Manual
CONTROL RELAY FOR ELECTRICALLY CONDUCTED LIQUID LEVELS
Read all the instructions carefully

The level control relay **LCR** is an electronic command device in a standardised **4-module DIN** container, to control the level of electrically conductive liquids.

SAFETY WARNINGS

During the installation and operation of the instrument, proceed in accordance with the instructions below:

- 1) The instrument should be installed by a competent operator following the installation diagrams carefully
- 2) The instrument should be installed in a panel from which no access can be gained to the terminals after installation
- 3) Do not power or connect the instrument if any part of it is damaged
- 4) The electrical system of the building in which the instrument is to be installed should have a switch and a protective device against over-currents
- 5) The instrument is designed for installations with over-voltage category III and pollution level 2, in accordance with the EN 61010-1 standard.

Code	Model	Description
VP810600	LCR048	Liquid-level control relay 24/48 V
VP809800	LCR230	Liquid-level control relay 115/230 V
VP808000	LCR400	Liquid-level control relay 400 V

TECHNICAL SPECIFICATIONS

- Power supply: 24/48/115/230/400 V~ (-15% ÷ +10%), 50/60 Hz
- Absorption: 3,5 VA (2,5 W)
- Termination: 6 mm² block
- Output: relay with exchange contact 8 A / 250 V ~ maximum switchable power 2000 VA cos φ = 1
- Number of probes applicable: 3
- Probe output voltage: 8 V ~ (between the electrodes)
- Probe sensitivity: 4÷30 kΩ adjustable
- Signaling:
 - Green LED: power on
 - Red LED: relay intervention
- Operating temperature: -5°C ÷ + 50°C
- Storage temperature: -10°C ÷ + 70°C
- Humidity: 20% ÷ 90% non-condensing
- Insulation: power supply, load and probe circuits insulated galvanically at reinforced insulation in accordance with the EN 61010-1 standard
- Container: 4-module DIN, colour RAL-7035 grey
- Casing material: self-extinguishing in class V0, in accordance with the UL-94 standard
- Degree of protection: IP20/IP40 when correctly installed in an electrical panel

OPERATION

- The sensitivity of the relay can be adjusted between 4 and 30 kΩ using the "sensitivity" trimmer, in order to adapt it to the conduction value of the liquid to be controlled during the installation stage.
- For the correct operation of the relay, terminal 10, with its own electrode if necessary, should be connected to earth.
- The conductors that connect the relay to the electrodes should if possible be kept separate from the power cables, especially where long distances are involved. If this is not possible, we recommend using screened cables.

MINIMUM (WITH PROTECTION AGAINST DRY RUNNING) AND MAXIMUM LEVEL CONTROLS

- Filling a tank using contact 16-17 (NC at rest) of the relay**
- In the conditions with the tank empty, the electrodes are not submerged and the output relay is de-energised.
 - The pump will come into action as soon as it has been started up by its commands, and will continue the filling operation until the liquid reaches the maximum level, as controlled by the **MAX** electrode.
 - At this point, the output relay will be excited and contact 16-17 will switch (see the "Operating diagram 1").

- Emptying a tank using contact 16-18 (NC at rest) of the relay**
- In the conditions with the tank full, the electrodes are submerged and the output relay is excited.
 - The pump will come into action as soon as it has been started up by its commands, and will continue the emptying operation until the liquid reaches the minimum level, as controlled by the **MIN** electrode.
 - At this point, the output relay will be de-energised and contact 16-17 will switch (see the "Operating diagram 1").

CONTROLLING A SINGLE LIQUID LEVEL (WARNING THRESHOLD)

- The output relay will excite each time the liquid reaches the level controlled by the **LEVEL** electrode.
- The operation will take place in reverse as soon as the electrode is no longer submerged in the liquid, as there is no self-powering of the relay with this type of control (see the "Operating diagram 2").

REFERENCE STANDARDS

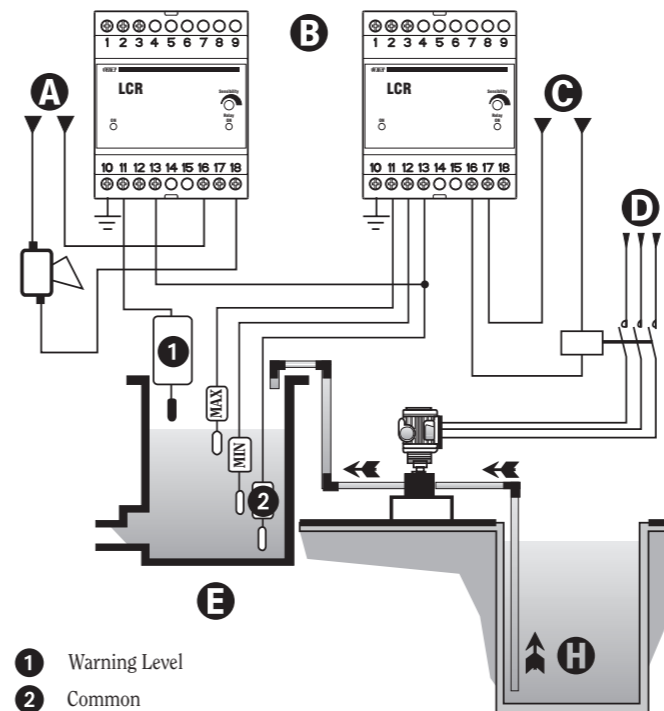
Conformity to the EU directives:
2006/95/EC (Low Voltage)
89/336/EEC modified by 92/31/EEC and 93/68/EEC (EMC)
is declared with reference to the following harmonised standards:
Safety: EN 61010-1
Electromagnetic compatibility: EN 61000-6-2, EN 61000-6-4

USE

The operating principle is based on the variation in the resistance value of the liquid, detected by means of 2 or 3 electrodes, depending on whether the construction materials of the wells and tanks is metallic or not. This device, coupled to suitable electrodes and inserted in the command circuit of pumping systems to keep the level in the wells and accumulator tanks at the levels set, at the same time guaranteeing the protection of the submerged pumps against dry running. The relay can also be used as an alarm device for the detection of the minimum and maximum levels of the liquids to be controlled, or as a protection device for the detection of the presence or absence of the liquid.

Applications (A)

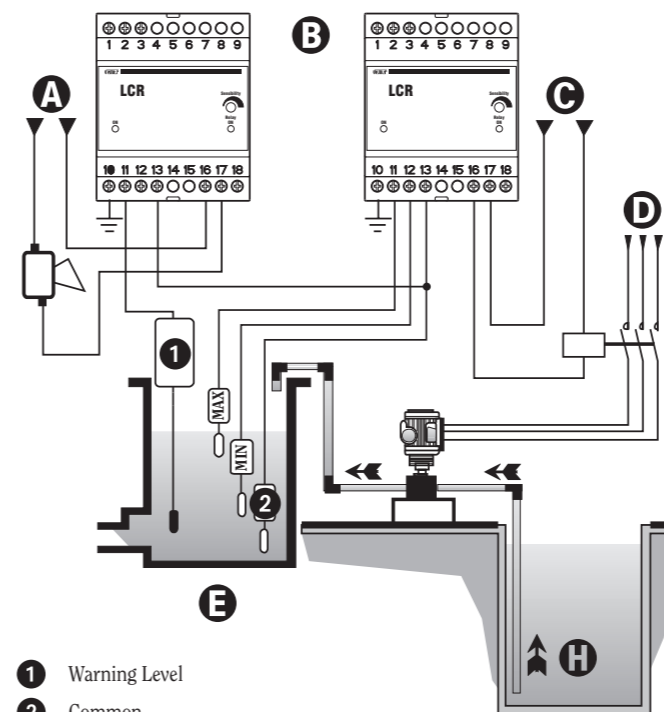
Keeps the liquid level in the tank supplied between the two fixed points (Max/Min), with alarm for excess level.



- 1 Warning Level
- 2 Common
- A Alarm Circuit Power Supply
- B Power Supply 1-2-3
- C Motor Command Circuit
- D Pump Circuit Power Supply
- E Tank Being Filled
- H Well/Tank Emptying

Applications (B)

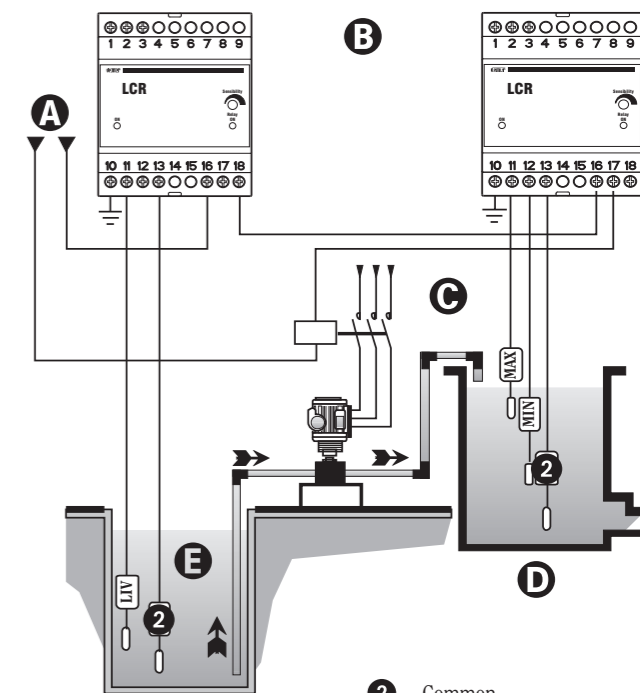
Keeps the level of the liquid in the tank being filled between the two fixed points (Max/Min), with insufficient level alarm.



- 1 Warning Level
- 2 Common
- A Alarm Circuit Power Supply
- B Power Supply 1-2-3
- C Motor Command Circuit
- D Pump Circuit Power Supply
- E Tank Being Filled
- H Well/Tank Emptying/Tank Emptying

Applications (C)

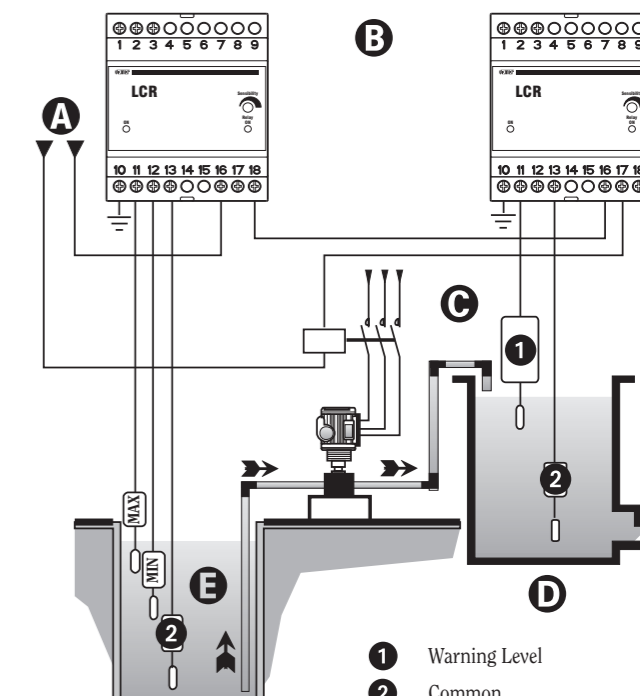
Keeps the level in the tank supplied between the two fixed points (Max and Min level), guaranteeing effective protection against dry running of the pumps, and controlling the level of the liquid in the well or tank being emptied.



- 2 Common
- A Motor Command Circuit
- B Power Supply 1-2-3
- C Pump Circuit Power Supply
- D Tank Being Filled
- E Well/Tank Emptying

Applications (D)

Filling a tank by pumping, with level control in the well or tank being emptied against dry running and control of the warning level in the tank being filled.



- 1 Warning Level
- 2 Common
- A Motor Command Circuit
- B Power Supply 1-2-3
- C Pump Circuit Power Supply
- D Tank Being Filled
- E Well/Tank Emptying