



Instructions manual

Series LC

Float level switch



The art of measuring

PREFACE

Thank you for choosing a product from Tecfluid S.A.

This instruction manual allows the installation, configuration, programming and maintenance. It is recommended to read it before using the equipment.

WARNINGS

- This document shall not be copied or disclosed in whole or in any part by any means, without the written permission of Tecfluid S.A.
- Tecfluid S.A. reserve the right to make changes as deemed necessary at any time and without notice, in order to improve the quality and safety, with no obligation to update this manual.
- Make sure this manual goes to the end user.
- Keep this manual in a place where you can find it when you need it.
- In case of loss, ask for a new manual or download it directly from our website www.tecfluid.com Downloads section.
- Any deviation from the procedures described in this instruction manual, may cause user safety risks, damage of the unit or cause errors in the equipment performance.
- Do not modify the equipment without permission. Tecfluid S.A. are not responsible for any problems caused by a change not allowed. If you need to modify the equipment for any reason, please contact us in advance.

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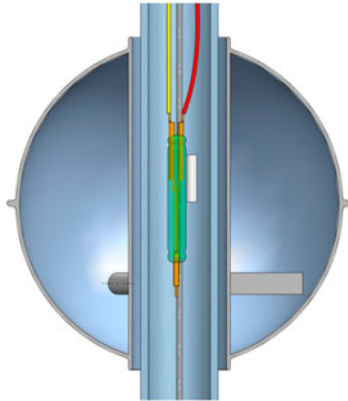
1 INTRODUCTION

The series LC of level detectors allow for detecting one or several level points in tanks. They are robust instruments that have a high chemical resistance.

2 WORKING PRINCIPLE

By means of ring float with magnetic field and reed switches.

One or more reed switches are placed at a specific height inside a guide tube. The changes in liquid level modify the float position in this guide tube, so that when it reaches the switch position, it changes its state, providing an output signal for level detection.



3 RECEPTION

The series LC level switches are supplied conveniently packaged for their protection during transportation and storage, together with their corresponding instruction manual, for installation and operation.

Before installing the level switch, remove all the blocking elements.

Check the following points:

- Moving the float with your hand, it should slide smoothly along the entire length of the guide tube.
- The guide tube has no bumps and is not bent or curved.
- The bottom float stop of the guide tube is correctly mounted.
- Check that the density of the float is equal or lower than the density of the liquid in the installation, and that the upper position (UP) engraved in the float corresponds with its upper part.
- Check, using a multimeter between COM and NO terminals in resistance mode, and manually moving the float, that when going through the point where there is a reed switch, the multimeter shows resistance = 0.

4 INSTALLATION

It can be vertical on the top of the tank, or side mounted.

Mount the seal on the flange or the coupling thread.

Introduce with care the float through the tank nozzle until the flange or coupling thread couples with the tank.

If the float does not pass through the nozzle orifice, it should be installed from inside the tank. To do this, the float must be removed from the guide, removing the security washer DIN6799 or float stop that holds it.

Once the guide is passed through the nozzle, from inside the tank, slide the float back in the guide and fix the washer or screw the float stop in its position.

In case of flange, fix it with the appropriate nuts & bolts.

In case of thread, turn until tight.



The maximum tightening torques for the thread are:

- Metallic thread: 60 Nm.
- Plastic thread: 7 Nm.

5 MODELS

LCM: guide tube length shorter than 2000 mm.

LC: guide tube length longer than 2000 mm or more than 3 RBC reed switches.

LC ... LCM30: flanged connection.

LC ... LCM31: thread connection.

6 OPERATION

Depending on the needs of the application, the reed switches can be of two types:

Bi-stable model RBC

When the float passes the switch position in one direction, it changes its state and keeps it until the float passes again in the opposite direction.

This way the switch state shows directly whether the float is above or below the switching position. One float can activate several switches. Each one will indicate its state independently.

Mono-stable model RSC

The switch changes its state only when the float is at its position, but does not keep it if the float moves away.

To ensure that the float does not pass the switch, the level detector has a float stop above or below it, which prevents the movement of the float beyond the switch, thus keeping its state.

If the level detector is equipped with more than one switch, it will be necessary at least one float less than switches are mounted, and one float stop for each one.

6.1 Electrical connection

For the electrical installation it is recommended to use multiple conductor cables instead of single cables, in order to guarantee the cable gland will stay watertight.

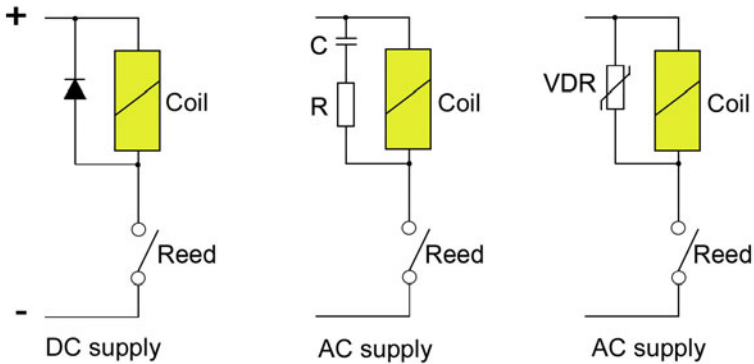
It is recommended to tin the ends of the wires to avoid loose ends.

Make sure that the cable gland closes over the cable and that the connector with the rubber seal is well screwed down to maintain its IP rating.

The electrical installation should provide a fuse or circuit breaker to protect the reed switch from overloads.

Make sure that the contact rating is not exceeded (see section 8 in page 8). If high loads are to be switched, use an auxiliary relay.

When using inductive loads, such as relays or solenoid valves coils, surge arresters should be installed to protect the reed contacts (VDR in case of AC supply and free willing diodes in case of DC supply).

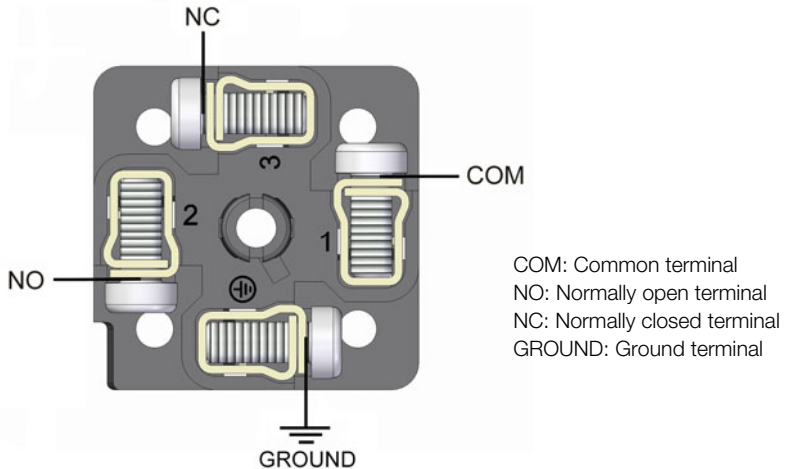


There are three possible connection housings.

6.1.1 DIN 43650 connector

El connector has a PG9 cable gland, for cables with outer diameters between 4.5 mm and 7 mm.

Feed the cables through the cable glands, and connect to the corresponding screw terminals. Make sure that the cable gland closes over the cable and that the connector with the rubber seal is well screwed down to maintain the ingress protection.

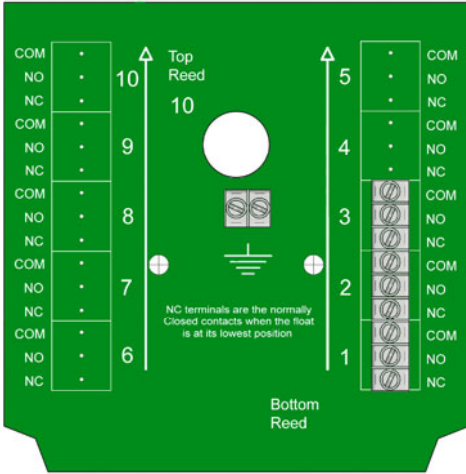


6.1.2 Plastic housing

Connection is made by means of screwed terminal strip. All contacts of the reed switches are identified on the PCB inside.

The housing has three PG11 cable glands, for cables with outer diameters between 6 mm and 10 mm.

Pass the cables through the cable glands, and connect to the corresponding screw terminals. Last, tighten up the cable glands so that they maintain their ingress protection.

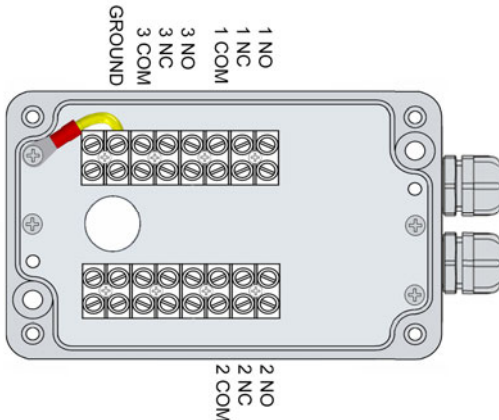


6.1.3 Aluminium housing

Connection is made by means of screwed terminal strip. Along with the level detector, a sheet with all contacts of the reed switches is supplied.

The housing has two M16x1.5 cable glands, for cables with outer diameters between 6 mm and 10 mm.

Pass the cables through the cable glands, and connect to the corresponding screw terminals. Last, tighten up the cable glands so that they maintain their ingress protection.



7 MAINTENANCE

No special maintenance is required.

8 TECHNICAL CHARACTERISTICS

Number of reed switches

Model LCM	Maximum 3 RBC (or 3 RBC + 1 SPST on request)
Model LC	Maximum 5 RBC

Maximum liquid density

Model LCM	0,8 kg/l
Model LC	0,6 kg/l

Maximum liquid viscosity

1500 cSt

Accuracy

±2mm

Hysteresis

±4mm

Measuring range

Model LCM	150 ... 2000m
Model LC EN 1.4404 (AISI 316L)	150 ... 6000 mm
Model LC PVC / PP / PTFE / PVDF	150 ... 2500 mm
Model LC PVC / PP / PTFE / PVDF, with AISI 316L inside	150 ... 6000 mm

Liquid temperature

EN 1.4404 (AISI 316L)	-20°C ... +150°C
PTFE / PVDF	-20°C ... +150°C
PVC	0°C ... +50°C
PP	-10°C ... +90°C

Ambient temperature

EN 1.4404 (AISI 316L)	-20°C ... +60°C
PTFE / PVDF	-20°C ... +60°C
PVC	0°C ... +50°C
PP	-10°C ... +60°C

Working pressure

EN 1.4404 (AISI 316L) y PVC / PP / PTFE with AISI 316L inside	PN16
PVC / PP / PTFE	PN10

Connections

Model LCM	EN 1092-1 DN50 flange G1½ or 1½" NPT thread
Model LC	EN 1092-1 DN100 flange

Ingress protection

Plastic housing	IP67
Aluminium housing and DIN 43650 Connector	IP65

Reed switch	1A 220 V 60 VA
Minimum distance between switches	70 mm

9 SAFETY INSTRUCTIONS

The series LC of level switches are in conformity with all essential requirements of all EC directives applicable to them:

Limit switches:

- | | |
|------------|---|
| 2014/30/EU | Electromagnetic compatibility (EMC directive) |
| 2012/19/EU | Waste electric and electronic equipment (WEEE directive). |
| 2014/35/EU | Low voltage (LV directive) |

Equipment for hazardous areas:

- | | |
|------------|--|
| 2014/34/EU | Equipment and protective systems intended for use in potentially explosive atmospheres (ATEX directive). |
|------------|--|



Declarations of conformity EC can be downloaded from the section "Download" of the Tecfluid S.A. website.

9.1 Certificate of conformity TR CU (EAC marking)

Tecfluid S.A. have subjected the series LC of level switches to a certification procedure according to the technical regulations of the Customs Union of the Eurasian Economic Union (EEU).



This Certificate is an official document confirming the quality of production with the standards on the territory of the Customs Union, particularly regarding safety requirements and electromagnetic compatibility.

10 ADDITIONAL INSTRUCTIONS FOR THE ATEX VERSION

This chapter only applies to equipment intended for use in explosive atmospheres.

The LC series of level switches is considered Simple apparatus according to EN 60079-11:2013 standard, clause 5.7, since it does not have its own source of ignition, therefore it does not require certification by a notified body and it needs not be marked in conformity with the ATEX directive.

10.1 Non metallic parts



WARNING: POTENTIAL RISK OF ELECTROSTATIC CHARGE

It affects instruments with plastic components.

Since the danger of ignition by electrostatic discharge when rubbing plastic parts of the level detector can not be avoided, **the equipment should always be cleaned with a damp cloth.**



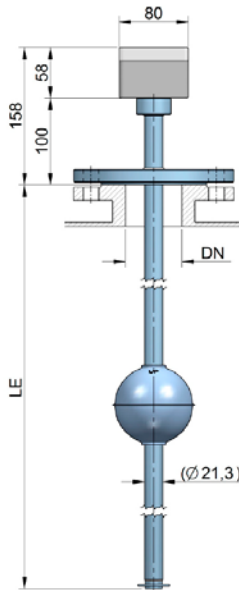
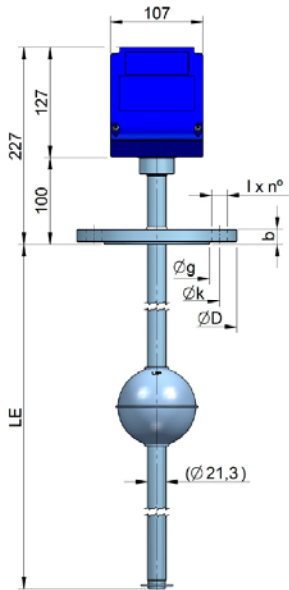
WARNING: RISK OF IMPACT

It affects the devices with aluminium box.

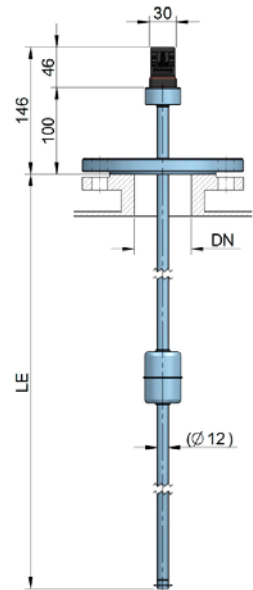
When the connection housing is made of aluminium, **the equipment must be installed and operated always in locations with a low risk of impact.**

11 DIMENSIONS

Models LC



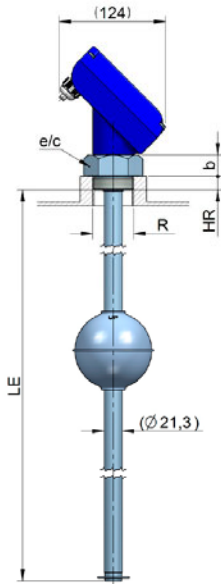
Models LCM



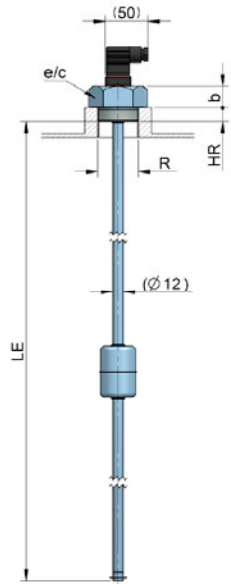
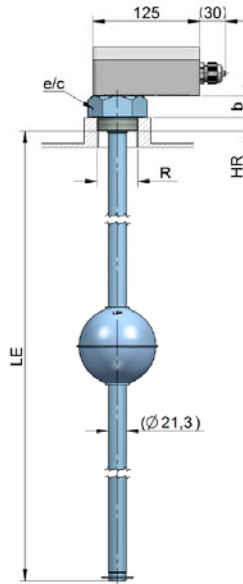
Models	DN	PN	D	g	k	l x n°	b	LE
LCM	50	40	165	102	125	18 x 4	20	According to order
LC	100	16	220	158	180	18 x 8	20	

(dimensions in mm)

Models LC



Models LCM



Models	R	e/c	b	HR	LE
LC / LCM	G1½	60	25	16	According to order

(dimensions in mm)

WARRANTY

Tecfluid S.A. guarantee all the products for a period of 24 months from their sale, against all faulty materials, manufacturing or performance. This warranty does not cover failures which might be imputed to misuse, use in an application different to that specified in the order, the result of service or modification carried out by personnel not authorized by Tecfluid S.A., wrong handling or accident.

This warranty is limited to cover the replacement or repair of the defective parts which have not damaged due to misuse, being excluded all responsibility due to any other damage or the effects of wear caused by the normal use of the devices.

Any consignment of devices for repair must observe a procedure which can be consulted in the website www.tecfluid.com, "After-Sales" section.

All materials sent to our factory must be correctly packaged, clean and completely exempt of any liquid, grease or toxic substances.

The devices sent for repair must enclose the corresponding form, which can be filled in via website from the same "After-Sales" section.

Warranty for repaired or replaced components applies 6 months from repair or replacement date. Anyway, the warranty period will last at least until the initial supply warranty period is over.

TRANSPORTATION

All consignments from the Buyer to the Seller's installations for their credit, repair or replacement must always be done at freight cost paid unless previous agreement.

The Seller will not accept any responsibility for possible damages caused on the devices during transportation.



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Quality Management System ISO 9001 certified by



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The technical data described in this manual is subject to modification without notification if the technical innovations in the manufacturing processes so require.