

L21 – Magnetic Level Indicator

Manual, assembly, operation and maintenance guide

Level indicator L21 is made for indication of level of liquids, liquid gases or interface of liquids.

Warning

- 1) It is not allowed to install and operate device in case of missing or damaged parts.
- 2) Device has to be used within the conditions specified by the identification plate and corresponding documentation.
- 3) Device cannot be used as a mean of supply of any other devices or mechanisms. Its equipment could be damaged.
- 4) If there is any danger present at the place of installation, corresponding signs has to be placed in accordance with regulations.
- 5) Operator has to wear protective clothes and has to be trained for the use of device. Manuals and datasheets including technical specifications has to be provided.
- 6) User of the device is responsible for taking precautions against unauthorized access and manipulation with the device.
- 7) If the device is passed to 3rd party, complete documentation has to be provided, including manuals, datasheets and drawings.
- 8) **In case of use of open or valve float**, changes in pressure must not be faster than 10 bar/min. Otherwise there is a risk of float damage. The upper part of the float (valves) must not be sunk. Pressure vessel test (by water) always perform without inserted float.
- 9) In all cases quick pressure changes must be avoided.

Unpacking

- 1) Packaging should be checked for any damage prior to assembly.
- 2) Unpack carefully the unit, check if all the equipment is at its place according to assembly drawing. All the equipment should be connected and should not require any additional assembly. In case of some required modification (e.g. position of the switches) please consult corresponding manual.
- 3) Any concealed damage must be immediately reported to the carrier.

Assembly

- 1) Level indicator is assembled in vertical position the way label text is in horizontal position.
- 2) Label data should be checked before the assembly.
- 3) Geometrical accuracy of connected counter-piece should be verified in order not to put additional stress into the structure of level indicator.
- 4) The shape, structure and material should be verified in connection with measured medium characteristics, especially maximum pressure, temperature and corrosive effects.
- 5) It is suitable to place shut-off valves for possible maintenance between the level indicator and the tank (pipeline).
- 6) The assembly shall be done using connection screws. It is recommended to use fan-shaped pads to secure electrical connection. If the level indicator is equipped with grounding slug, this should be connected with the grounding system.
- 7) In case the float is supplied individually, it is necessary to put it into the level indicator facing up. Float cover stampings securing magnetic circuit are in upper part of the float. Float orientation requires increased attention. Upper end can be also easily determined by using a magnet (magnetic part is the upper one).
- 8) If the float is already installed in level indicator, it is necessary to avoid any sudden position changes of level indicator, which could cause its possible damage.

- 9) Using a magnet moving along indication strip we can level the rollers, that white side of the rollers is visible in the area above the float and red or other side of the rollers is visible in the area below the float.

Operation

The operator is only focused on monitoring of boundary of white and red side of the rollers, which indicate level position, suppose medium density is met. It is necessary to avoid pressure shocks during operation.

Maintenance

Maintenance is focused on tightness control (especially connections) as well as cleaning and drain using a plug, eventually a valve, placed in lower part of the device. Before dismantling measuring chamber it is necessary to decompress the chamber, for instance by closing connection valves (if installed) and carefully opening the drain hole.

Safety and health protection during operation

All regulations must be obeyed during assembly, operation and maintenance works. It is necessary to ensure appropriate protection against chemically aggressive and hot substances, or against outflow of high pressured liquids and gases, during any manipulation, for inst. by protective shield, gloves etc.

Level, which is equipped with sensors SP1, SP2, SP4 is taken as a simple device within the meaning of Article 5. 4. CSN EN 50020: 1995. Max. Input parameters are intrinsically safe circuit: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$ $L_i = 0$, $C = 0$ when using more than one sensor is to be used for cabling associated apparatus according to EN 50039: 1993. Designed, manufactured and tested according to standards EN 60079-0 and EN 60079-11

Instructions for explosive areas installation

In explosive areas it is necessary to obey all regulations and rules, for inst. degassing close to the drain hole, use of appropriate non-sparking tools etc. All wiring operations must solely be carried out with the power disconnected. The special regulations including EN 60079-14 and local installation regulations must be observed.

SP4 position sensor

Sensor SP4 consists of two parts, sensor and transmitter. Sensor acts as linear resistive sensor of the position. It is usually called linear R. Analog output is the most common configuration using HART compatible transducer, it can communicate with the sensor via HART protocol.

Digital communication can also be used.

There are many possible variants of the transducers. Current version of the manuals including installation instructions is available for download at following websites and is always included in the supply.

All the technical parameters and instructions are included in corresponding manuals. Read the instruction manual before assembly.

Transducers are factory preset and calibrated.

PRElectronics

5331A, 5331D, 5102, 5131A, 5333A, 5333D, 5335A, 5335D, 5337A, 5337D, 5350A, 5350B, 5343A, 5343B, 6331A, 6331B, 6333A, 6333B, 6335A, 6335D, 6335D, 6337A, 6337D, 6350A, 6350B

<http://www.prelectronics.com/products>

Optional equipment (displays, power supplies etc.)

5715, 5714, 5531B, 5531A, 8335, 8501, 9420, 9107B, 9202B, 9116B, 5107B, 5105B, 5114B, 5115B, 5116B, 5131B, 5202B

Rosemount 248

<http://www2.emersonprocess.com/en-us/brands/rosemount/temperature/single-point-measurement/248/pages/index.aspx>

JSP

5310, 5311, 5315

<http://www.jsp.cz/en/products/transmitters/>

Limit switches

There are two versions of the switch for explosive atmospheres Ex d and Ex ia.

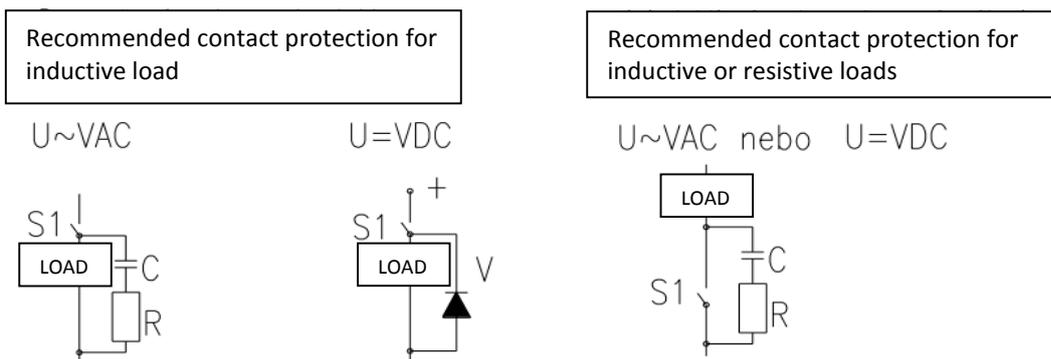
Ex ia

It can be connected to the intrinsically safe circuit with following parameters.

Max. input parameters $U_i = 30\text{ V}$ $I_i = 100\text{ mA}$, $L_i = 0$, $C = 0$

Ex d

Cable is always supplied with the switch. It has to have at least 3m and cannot be shortened.



For physical and electrical characteristics, please consult corresponding datasheets and supplied documentation.

Special conditions

If titanium floats are used, care must be taken during the installation and the operation that these floats cannot cause any frictional and impact sparks.