



Ver. RIL300.01 anno 2016

RIL300

Instruction and Maintenance manual



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Section I

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Declaration of conformity



The undersigned Maria Alberta Righetti with head office at No. 28, Via Guido Rossa – 35020 – Ponte San Nicolò (PD) – ITALY. In her capacity of legal representative of the Riels Instruments s.r.l. Company, Partita IVA: 02488080280:

Declares

that product: Ultrasounds level transmitter

Model: RIL300

Year of construction: 2016

It was manufactured in compliance with the following rules:

- *Directive 2014/35/EU known as "Low voltage Directive"*
- *Directive 2014/30/EU known as "Electromagnetic compatibility Directive"*
- *Directive 2011/65/EC known as "RoHS Directive"*
- *add any rules followed by the manufacture of the product.*

And is therefore in conformity with the current regulations

Ponte San Nicolò 10 gennaio 2016

Signature

A handwritten signature in black ink, appearing to read 'Maria Alberta Righetti'.



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DATI DEL COSTRUTTORE

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PRESENTATION OF THE MANUAL



NOTE

UPON RECEIPT OF THE CAPACITY MEASURER, BEFORE CARRYING OUT ANY OPERATION, READ CAREFULLY THE INSTRUCTIONS AND MAINTENANCE MANUAL.

This Manual contains the instructions for the installation, the use and the maintenance of the RIL300 level measurer.

The Manual consists of several Sections, each of which deals with a number of topics, divided into Chapters and paragraphs. The general index lists all the topics of the entire Manual.

Page numbering is progressive and on each page is shown its number. This Manual is intended for the personnel assigned to the Installation, use and maintenance of the RIL300, and it relates to the technical life after its production and sale.

In the event that later it may be sold to third parties for any reason (sale, loan of use, or any other reason), the device must be delivered complete with all the documentation.

Before starting any operation on any unit, it is necessary to have read the entire Manual.

This Manual contains information of confidential proprietary and it cannot be, even partially, supplied to third parties for any use and in any form without the prior written consent of Riels Instruments S.r.l.

Riels Instruments S.r.l. declares that the information contained in this Manual is consistent with the specifications of the product for which the Manual refers.

Copy in conformity of this Manual is filed in the RIF030P technical Dossier, kept at the Manufacturer's Company.

Riels International S.r.l. disclaims any documentation that has not been produced, issued or distributed by the latter or by one of its authorised representative.

ANNEXED DOCUMENTATIONS



NOTE

BEFORE USING THE RIF030P DEVICE, CHECK THAT ALL THE LISTED ANNEXED DOCUMENTATIONS ARE PRESENT.

To the product are Annexed the following documents:

- Manual
- Declaration of conformity

In the event that besides this Manual no other documentations are annexed to the product at the time of the sale, eliminate the paragraph.



NOTE

IN THE EVENT THAT RIL300 IS TRANSFERRED TO THIRD PARTIES, ALL THE DOCUMENTATION MUST BE DELIVERED WITH IT.

AUTHORISED ASSISTANCE

The Riels Instruments S.r.l. Manufacturing Company carries out directly any type of intervention on the product.

Restitution of the instrument

To send a capacity measurer to RIELS INSTRUMENTS, for Example, for repair or calibration, take the Following measures:

- Always attach a "Declaration of decontamination" form, carefully filled out. RIELS INSTRUMENTS may transport, examine and repair the devices returned by the customers only in the presence of this document.

! Note!

A copy of the "Declaration of Decontamination" is given in the concluding part of this Manual.

- If necessary, attach any special handling instructions, for example, safety cards, in compliance with the EC Regulation No 1907/2006 REACH.
- Remove any residue. Pay particular attention to the gasket grooves and any cracks, which could hide deposits, and it is all the more important above all if the substance is hazardous to health, for example, flammable, toxic, caustic, carcinogenic, etc..

Caution!

- Do not return a measurer unless you are absolutely certain that all traces of hazardous substances have been removed, for example, substances penetrated into the interstices or filtered through the plastic.
- Costs incurred for the removal of residuals or for any injuries (burns, etc.) due to insufficient cleaning are at the plant owner's charge.



Section II

Guarantee

Technical features

General description

Planned and not planned use

GUARANTEE

The guarantee rules, listed integrally in the Sales Contract , have value only if the RIL300 device is used under the planned use conditions.

Once excluded the regular and extraordinary maintenance interventions described in Section MAINTENANCE and executed, following the indicated procedures, any repair or modification brought about to the device by the user or by unauthorised companies makes the guarantee void.

The guarantee does not extend to damages caused by incompetence or negligence in the use of the RIL300, or by poor or omitted maintenance.

The products sold by us are covered by guarantee regarding the product at the following conditions:	
1	The guarantee is valid for a period of twelve/twenty-four (12) months
2	The Manufacturing Company undertakes to replace, at its discretion, the malfunctioning parts or incorrect manufacturing, only after careful quality control and detection of bad manufacture.
3	The cost of transport and/or delivery are always at the purchaser's charge in case of misuse of the guarantee terms
4	During the period of guarantee, the replaced products become the property of the Manufacturer
5	Of this guarantee can only benefit the original purchaser who has met the maintenance instructions contained in the Manual. Our liability on the guarantee becomes void when the original owner transfers the property of the product, or changes are made on the product.
6	The guarantee does not cover damages caused by excessive stress such as, for example, use of the product after detection of an anomaly, use of unsuitable operating methods as well as failure to follow the use and maintenance instructions.
7	The manufacturer disclaims any liability for any difficulties that might arise in the resale or using abroad due to provisions in force in the Country where the product was sold.
8	The product part of the defective product must be delivered to the Manufacturing Company for replacement; otherwise the replaced part will be charged to the purchaser.
9	Riels Instruments S.r.l. guarantees that its Products are free from defects in materials and/or workmanship for 12 months from their delivery to the purchaser.
10	12) The guarantee is not valid for products that have been tampered with, repaired by third parties or used in a manner not in conformity with the planned conditions of use. Products with defects caused by transportation, accidents, tampering, repair, negligence, abuse or improper use, lack of reasonable or proper maintenance, tampering or methods that made by unauthorised persons, accident, wear and deterioration due to use and any other cause not attributable to defects in the product are not covered by the guarantee.
11	14) The Purchaser must, under penalty of forfeiture of the guarantee, report in writing the defect to Riels Instruments S.r.l. within 8 days from receipt of the products for visible defects and 8 days from the detection of hidden defects. Where Riels Instruments S.r.l. acknowledges the existence of the reported defects or discrepancies, the guarantee will be limited, at its discretion, to repair or replacement free of charge, in the normal time required, or the issuance of a credit note for the invoice value of the product acknowledged to be defective, by way of a consensual and final settlement of any damage claimed by the purchaser or third parties, with the exclusion of any other legal or conventional guarantee or entitled to reimbursement of any expenses and compensation for damages both direct and indirect, except in cases of wilful misconduct or gross negligence.

Notice: if use of the guarantee is deemed necessary, please indicate the following data:

1	Type
2	Date of purchase (presentation of the purchase document)
3	Detailed description of the problem

**NOTE**

IF A FAILURE TO MEET THE RIF030P INSTALLATION, USE AND MAINTENANCE METHODS DESCRIBED IN THIS DOCUMENTATION IMPLIES VOIDANCE OF THE GUARANTEE TERMS.

GENERAL DESCRIPTION

RIL300 is an ultrasonic level transmitter intended to be used in safe environments without potentially explosive.

All behaviours that may present a risk of generating sparks or start fires must be strictly avoided.

The sensor of the RIL300 meter pulses in the direction of the product surface. There, they are reflected back and received by the sensor. The meter measures the time t between pulse transmission and reception.

The described measurer in these operating Instructions can be used only to measure the LEVEL of liquids in vessels.

Examples:

- Water, Acids, alkalis, paint, oils;

TECHNICAL DATA

Range (m)	4.00	6.00	8.00	12.00	20.00	30.00
Blanking distance (m)	0.20	0.25	0.30	0.50	0.80	1.2
Display resolution	1 mm	1 mm	1 mm	1 cm	1 cm	1 cm









basic data

Power supply	DC24V (±10%) 30mA
Display	4 digit LCD
Display resolution	0.03% of the actual range
Output current	4-20mA
Output load	0-500Ω
Temperature range	-40°C...75°C
Pressure range	±0.1MPa (press definitely)
Temperature compensation	full range of automatic compensation
Cable diameter	Φ 6...Φ12 mm
Single wire diameter	Φ0.5...Φ1.78 mm
Measuring Cycle	1.5 seconds
8°(3db) for range	Plane Type Sensor (4m 6m 8m 12m 20m 30m)
5°(3db) for range	Horn Type Sensor (20m,30m)
Electronic unit shell material	die-casting aluminum with plastic-sprayed surface
The sensor material	ABS/PVC/PTFE
Protect grade	IP67
Installation	Thread or Flange or bracket
Cable Entry	M20
Parameter set up	3 induction buttons

Identification label

The RIL300 device has a label onto which are shown the identification details.

Identification Label

Riels Instruments srl 	
Modello: RIL300	Anno: 2016
Working temperature: $-40 \div +70^{\circ}\text{C}$	
Working pressure: $-0,1 \div +0,1 \text{ MPa}$	
Output: $4 \div 20\text{mA}$	
Power: 24Vdc	
Range: 4 m	
Protexction class: IP67	Numero Seriale:
 	  
	
Made in Italy	



CAUTION

TO SAFEGUARD THE INTEGRITY OF ALL THE DEVICE COMPONENTS IT IS ESSENTIAL TO CONFORM WITH THE TECHNICAL DATA SHOWN IN THE LABEL.

PLANNED USE AND NOT PLANNED USE

Planned use

The device is designed and manufactured exclusively to be used as a level of a fluid for purposes of NOT-COMMERCIAL NATURE (trading of water or any other fluid, of which the capacity is measured).

RIL300 can be used in private homes and in businesses, for all permitted civilian uses.

Installation, commissioning and operation

Please note the following points:

- The installation, the connection onto the electrical supply mains, commissioning and maintenance of the instrument must be performed by qualified and appropriately trained technicians authorised to carry out such operations by the Owner/Manager of the establishment.
- The technician must read and make sure to have understood these instructions, by conforming with them during carrying out the operations.
- The instrument must be operated by personnel authorised and trained by the Owner/Manager.
- It is recommended to strictly adhere to these operating Instructions.
- The Riels instruments' technical personnel is available to describe in depth the chemical resistance features of parts in contact with special fluids, including detergents.
- However, even small variations in temperature, of the concentration or the degree of contamination of the process can lead to a variation of the corrosion resistance.
- For this reason, Riels instruments cannot guarantee or assume any liability for the corrosion resistant properties of wetted parts materials for specific applications.
- The operator is responsible of the choice of wetted parts materials suitable for the process.
- If welding on piping is performed, the welding machine must not be earthed through the measurer.
- The fitter operator must make ensure that the measuring system is connected as shown in the wiring diagrams. The transmitter must be earthed, unless there have been already taken special protection measures (for example, SELV or PELV galvanically isolated electrical power supply).
- Anyhow, always comply with the local regulations, governing the opening and repair of electrical devices.

Not planned use

It is not planned any different use than those described in paragraph PLANNED USE.

It is also absolutely forbidden:

- in environments ATEX classified;
- use of the equipment or parts of it for operations other than those planned;
- use of the equipment with electrical power supplies and electrical power suppliers other than those indicated in technical features and not acknowledged by Riels Instruments S.r.l.
- use of RIL300 as a device for commercial purpose measurements

Reuse of any unit after the decommissioning of the equipment relieves the Manufacturing Company from any liability arising from the use of the unit.



NOTA

RIELS INSTRUMENTS S.R.L. CANNOT BE DEEMED IN ANY CASE LIABLE OF ACCIDENTS OR DAMAGES RESULTING FROM USES NOT PLANNED OF THE DEVICE. ANY NOT PLANNED USE OF DMTF-EX. IMPLIES FURTHERMORE THE VOIDNESS OF THE GUARANTEE TERMS.

RESIDUAL RISKS

The risk of explosion is connected to the environmental situation and can change over time, the device is suitable for this type of environment, but the operators must keep constantly in mind the environmental situation.

During the connection and the subsequent use of the product there may occur operating situations which are incorrect and not planned in the Manuals.

These situations, completely abnormal, sometimes can be caused by environmental factors or by incidental faults unplanned by the Manufacturer.

In the event that there should occur any not planned anomaly after powering the device, it is recommended to follow the following procedure:

- turn it off (see Section 4);
- contact immediately the technical assistance.

In the event that there should occur any not planned anomaly after connecting the measurer to a data reading device, it is recommended to follow the following procedure:

- turn it off (see Section 4);
- contact immediately the technical assistance.

In the event that there should occur any communication problems with radio equipment after powering the device, it is recommended to follow the following procedure:

- turn it off (see Section 4);
- disconnect it from the electrical power supply (see Section 4);
- contact immediately the technical assistance.

In the event that there should occur any not planned electrical nature anomaly after powering the device, it is recommended to follow the following procedure:

- disconnect the electrical current from the place where it is connected;
- disconnect it from the electrical power supply (see Section 4);
- contact immediately the technical assistance.

Add any other instructions to be followed in the event of other anomalies that you deem might happen; it is also possible to enter all the surveys in a table "Possible malfunctions and consequent interventions".

It is absolutely forbidden to bring about any modifications on the capacity measurer. Any damage to people, animals, and things as well as to this system, resulting from the use of the improperly modified equipment by an operator not authorised by the Manufacturer Company, relieves the latter from any liability.

Keep carefully this Manual and those Annexed, necessary for a correct and safe use of the device. Periodically check the state of the label applied on the product and if damaged restore it. (In necessary contact the Riels Instruments S.r.l. Company).

If, as a result of a fall and/or a knock, the outer casing of the product were to have edges or sharp corners, it is necessary to contact the Manufacturer, Riels Instruments S.r.l. Company and follow the received instructions.



HAZARD

ACCESS TO THE PROTECTED OR INTERNAL PARTS OF THE RIL300 DEVICE MUST BE PERFORMED ONLY FOR MAINTENANCE OPERATIONS, EXCLUSIVELY BY PERSONNEL AUTHORISED BY THE MANUFACTURER COMPANY.

Important:

do not wet with water or any other liquid to the electrical connections;
it is necessary to perform the maintenances described in the Manual;
the maintenances must be performed by following the instructions in the Manual.

OPERATIONS THAT INVOLVE RISKS FOR THE OPERATOR:

In the operations of use observe the general safety rules.

In particular:

Any work on the electrical parts must be performed with the instrument unplugged from the electrical mains.

Already in the design stage have been adopted solutions aimed to make the use of the device safe at all stages of use: transport, assembly, adjustment, activities and maintenance. Nevertheless, not all the possible risks for operators and the environment have been eliminated, both for technological reasons (reliability of the devices) and management (excessive difficulty of elimination), consequently are reported the residual risks present, for example, electrocution, etc.



Section III

Location

Product introduction

LOCATIONS

Warning

All devices are tested and tuned up by the Manufacturer Company prior to shipment and delivery to the Customer.

Below are listed and described the preparation operations and how and where to use the product. RIL300 is designed, manufactured and tested to meet the entire specific rules (see declaration of conformity), when used and connected properly.

The installation must be carried out so as to ensure that the instrument can work adequately.

The environmental characteristics must be those indicated by the Manufacturer. Inappropriate use and maintenance devoid the guarantee terms.

Conditions of use

The conditions of the environment use must meet the Following requirements:

Liquid level or material level measurement. Liquid level and material level are collectively referred to as level material level are collectively referred to as level.

PRODUCT INTRODUCTION

Application

To ensure that the ultrasonic transmission to the measured ultrasonic liquid level or material surface occasion. Such as: storage tank, chute, pool, Wells, drains, metering box, granary etc.

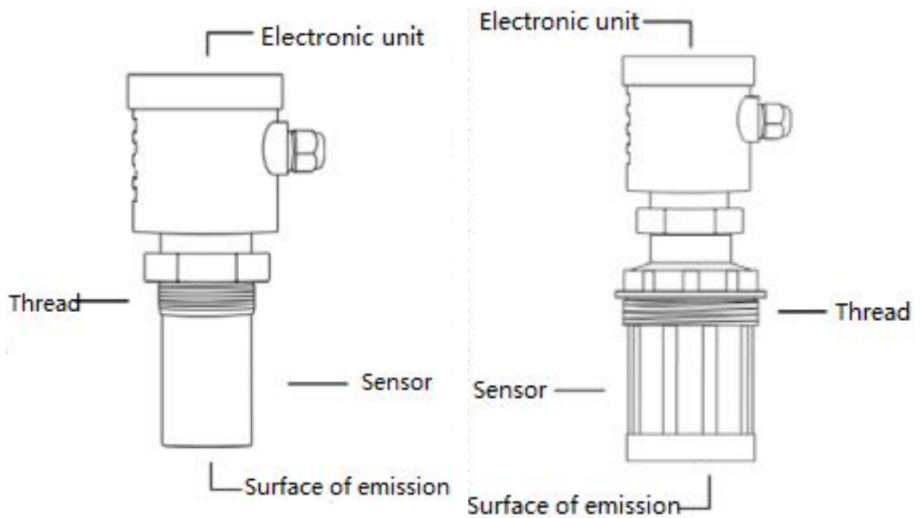
Features

- Integrated design, installed conveniently;
- Protected in the excessive voltage and current , protected in the thunder and lightning;
- The big show window of LCD is easy to debug and observe;
- Over-voltage over-current protection, lightning protection;
- Advanced since the clamp type terminal, to ensure that wiring never loose;
- Intellectual signal treatment technology, guarantee that the instrument meets various kinds of operating occasion;
- All plastic probe, acid and alkali resistant, adapt to bad environment;

Range

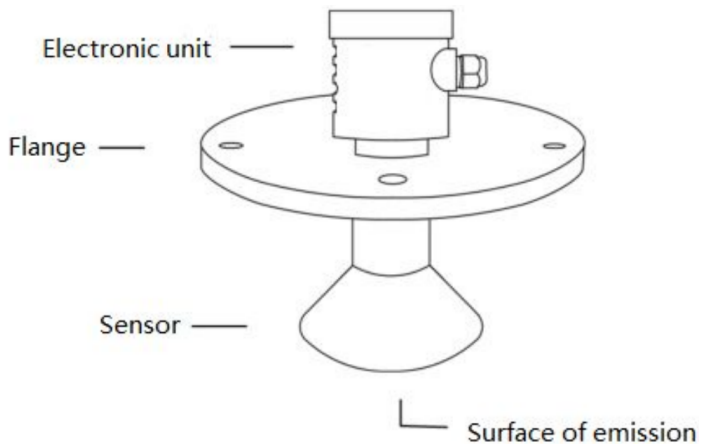
- The above range level measurement only,Material level measuring the effective range of about 50% of the data,material level measuring proposal chooses four wire or split type level gauge.
- Cold area outdoor installing applications, should prevent the probe surface frost or freeze.Can choose pipe long material level meter, the internal probe into the container,above model and model selection of the letter L.

Composition And Structure



Level meter of 4m, 6m, 8m type

Level meter of 12m, 20m, 30m type

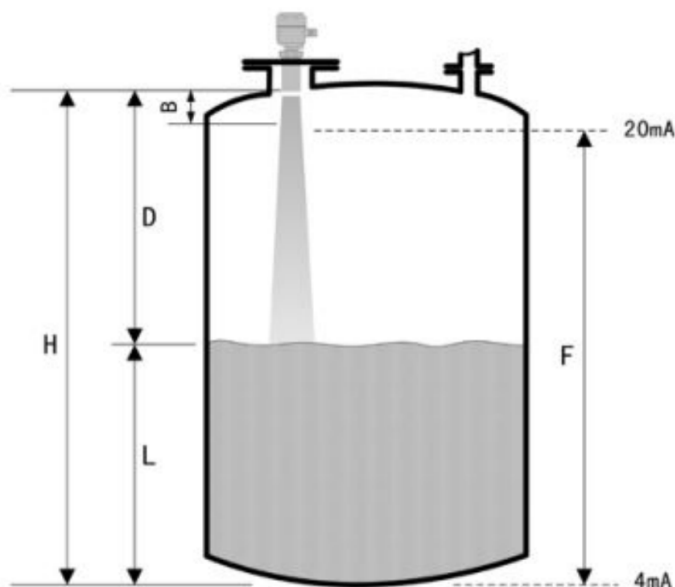


Level meter of 20m, 30m Horn type

Principle

The sensor of the meter pulses in the direction of the product surface. There, they are reflected back and received by the sensor. The meter measures the time t between pulse transmission and reception. The meter uses the time t (and the velocity of sound) to calculate the distance D between the sensor membrane and the product surface:

$D = c \cdot t / 2$. As the device knows the empty distance H from a user entry, it can calculate the level as follows: $L = H - D$.



B: Blanking distance

D: distance value

L: level value

H: installation height

F: level span

The ultrasonic velocity in gas is influenced by the gas temperature, So the level meter need to detect the gas temperature at work. So the material level meter need to detect the gas temperature at work, compensation for sound velocity.

Blanking distance: Span F may not extend into the blanking distance B . Level echo from the blanking distance cannot be evaluated due to the transient characteristics of the sensor.

Technical data

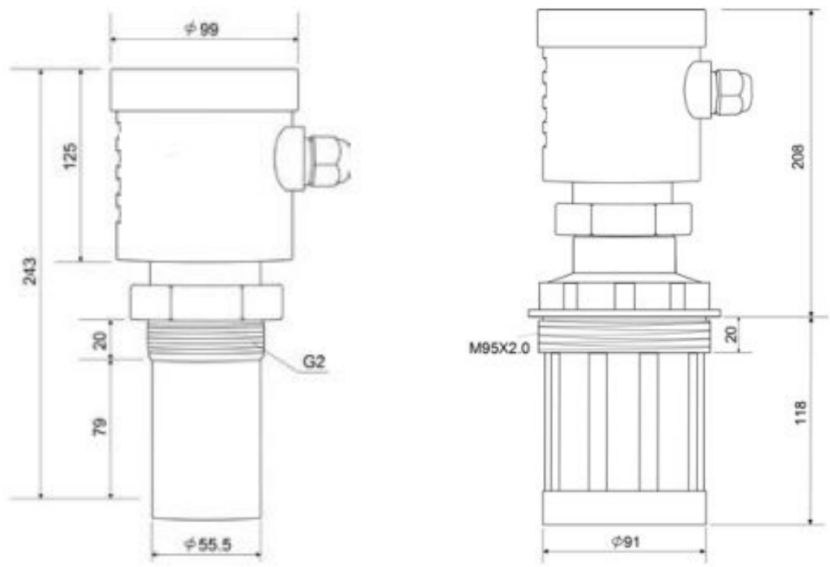
The measuring range

Range (m)	4.00	6.00	8.00	12.00	20.00	30.00
Blanking distance (m)	0.20	0.25	0.30	0.50	0.80	1.2
Display resolution	1 mm	1 mm	1 mm	1 cm	1 cm	1 cm

basic data

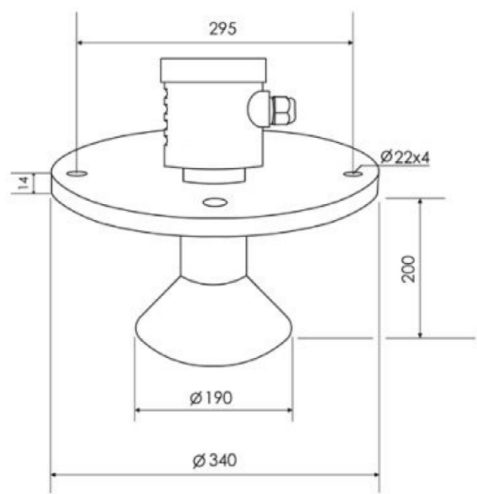
Power supply	DC24V (±10%) 30mA
Display	4 digit LCD
Display resolution	0.03% of the actual range
Output current	4-20mA
Output load	0-500Ω
Temperature range	-40°C...75°C
Pressure range	±0.1MPa (press definitely)
Temperature compensation	full range of automatic compensation
Cable diameter	Φ 6...Φ12 mm
Single wire diameter	Φ0.5...Φ1.78 mm
Measuring Cycle	1.5 seconds
8°(3db) for range	Plane Type Sensor (4m 6m 8m 12m 20m 30m)
5°(3db) for range	Horn Type Sensor (20m,30m)
Electronic unit shell material	die-casting aluminum with plastic-sprayed surface
The sensor material	ABS/PVC/PTFE
Protect grade	IP67
Installation	Thread or Flange or bracket
Cable Entry	M20
Parameter set up	3 induction buttons

Dimension



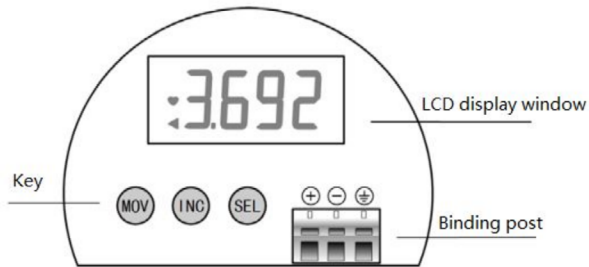
Level meter of 4m, 6m, 8m type

Level meter of 12m, 20m, 30m type

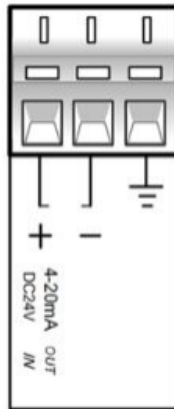


Level meter of 20m, 30m Horn type

The Electronic Unit Panel Layout



Wiring Diagram



Note: Power supply for DC24V level meter itself. Please pay attention to the wiring signs. Outer loop should be have current power supply capability of 30mA.



Section IV

Use

Level Meter Operation

Display Method

This level meter has 4 digits LCD display.

Key Board

Keys	Function
SEL	Selection of the display content or parameter
INC	Changing the value of the certain digit from 0 to 9 in turn
MOV	Selection of the digit to be changed

Two Working Mode

The instrument has two working mode: running state and operating state. Press the two keys SEL and MOV to change within two different modes. In running mode, green lamp will keep on lighting. In programming mode, green lamp will flash.

On measuring mode, level meter will carry out normal measuring, at this time, press the SEL key, displayed location value, empty value and temperature will be alternated.

display mode	LCD
Thing location value	3692
Empty from value	2586
Temperature value	16.2

There will be a ▲ mark on the right side of LCD screen, which will flash to show that returned wave can be received.

The unit of location and empty value are meter(m), the unit for temperature is (°C).

When power this level meter, or return from programming mode, location value will be displayed first.



Thing location value	Empty value	Temperature
----------------------	-------------	-------------

- Press the SEL key, displayed location value, empty value and temperature will be alternated.
- Press the SEL key, displayed location value, empty value and temperature will be alternated.
- User ought to unlash the keys when press them down. For that, level mete could display alternately.
- In running state, press the INC or MOV, this operation is invalid.
- Press SEL and MOV at the same time, and then unlash them, this operation could get into operating state.
- Press SEL and MOV at a long time, the level meter will be reset.
- This level meter will get distance measurement directly. Thing location value is got from the height of installation detract distance measurement . So distance measurement ought to be correct, and the the height of installation ought or set correctly.
- Local temperature have much to do with the accuracy of measurement. So the displayed temperature ought to be correct.
- No matter which value is showed on the screen, the output of level meter is homologous with distance measurement. Also user could ask the manufacturer to adjust the homologous value of measured distance and 4-20mA.
- Installation height ought to be higher or equal to measured distance, if it's less than measured distance, that there will be a signal flash on the left sight of screen, ting location value and analog value will be changed, the value of measure distance will be changed.

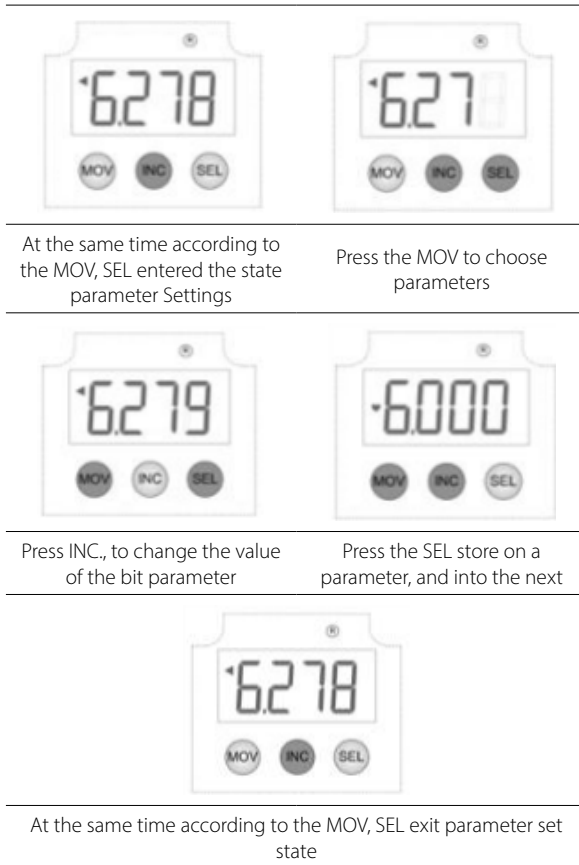
Operation State

- In this state, the level meter will display sorts of parameter, which ought to be set by user. Press SET to choose and parameter will be displayed as follows: Height of installation: this height means the distance from sensor to the bottom of tank.
- Output range: It means the max value of measured material, which is homologous with 4-20mA.
- Inner password: Input the correct values, the instrument enter into the state of internal work parameter Settings. The user does not have to set the secret code values, do not enter into the state of internal work parameter Settings. Press SEL and Leave this parameter, Or at the same time press the SEL, MOV key to exit the parameter setting state.

display mode	LCD
Thing location value	6.278
Empty from value	6.000
Temperature value	00

- According to SEL key parameter choice, according to MOV choose one to make it darker, Press INC to modify.After the modification Should a SEL button again. The instrument can store the parameters.

- At the same time press the SEL, MOV key and loosening can exit the parameter Settings, and store the set of parameters.
- Set the installation height must be accurate, otherwise the level value may be correct, Installation height not less than the range value of material level meter, otherwise the level value remains the same.



Level Meter Testing

- This level meter ought to be supplied with correct power-DC24V.
- Let the probe be perpendicular to a wall, and make sure the measuring distance is larger than the blacking distance, and no barriers within the beam angle zone.
- Level meter will display HLUE firstly, and then show thing location value.
- Turn on the power and after a few seconds the instrument will enter the running mode. And check the level value, the empty value and the temperature value in turn through SEL key.
- Move the probe slowly , the level value and the empty value should change slowly accordingly. When this level meter is moving in a short distance (within 1 meter), The

moving speed ought to be no more than 0.1m/s. There has a preset reactive ambit in this level meter. When target is beyond the ambit, the level meter need about 5s to make a new measuring. Level meter (full scale within 10m) has a reactive ambit $\pm 0.5\text{m}$. Level meter (full scale beyond 10m) has a reactive ambit $\pm 1.2\text{m}$. Because of reactive ambit, if the measuring distance has a sudden change from far to near, an error may come out of the level meter, although the sudden change on distance won't happen on factual work condition.

- Press SEL and MOV keys simultaneously and then enter the operating mode. Advise the installation height value, the displayed level value and empty value should change accordingly.
- User could use ammeter to measure 4-20mA output.

Instrument installation

Reasonable instrument installation is the key to its reliable work.

Level meter installed on the top of the container, Probe surface vertical point to liquid level.

If is airtight container, should be adopted flange installation. Other conditions can use bracket installation.

Flange installation should be according to the thread sizes make the flange of the level meter. 20m, 30m type has directly equipped with the flange.

Suggestion: Installation be carried out by trained person in accordance with the manual.

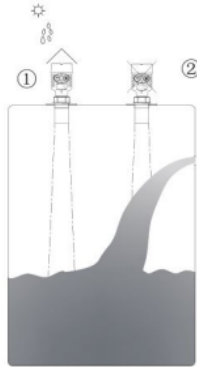
General Instruction

- The temperature of the process may not exceed 75 °C, and the pressure may not exceed $\pm 0.1\text{ MPa}$.
- For exposed or sunny locations a protective hood is recommended.
- Level meter must be some distance from the tank wall.
- There's beam angle when Energy transducer radiate ultrasonic pulse. From energy transducer lower edge to measured medium, please avoid A.B obstacle in the radiation region of ultrasonic wave beam. (For example: human ladder; level switch etc).
- Please make sure ultrasonic beam angle can not intersect with feed stream.
- Please make sure the max material level can not enter into measuring blind area.
- Please try to make sure the energy transducer radiate direction vertical to the medium level.

Installation Notice

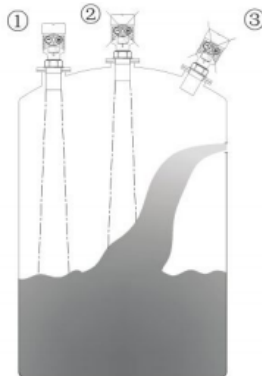
Please take some methods to avoid the level meter from sun shading and rain. Please do not install the meter on the top of material infusion entrance.

1. Correct
2. Wrong



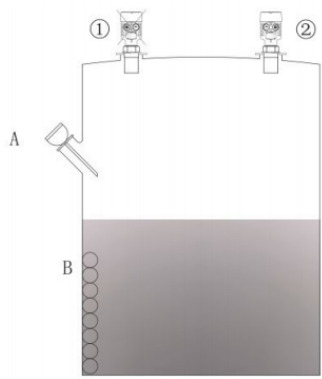
Energy transducer should be vertical to the measuring medium surface Please note meter can not be install in the middle of the tank(to avoid reflection echo)

1. Correct
2. Wrong
3. Wrong

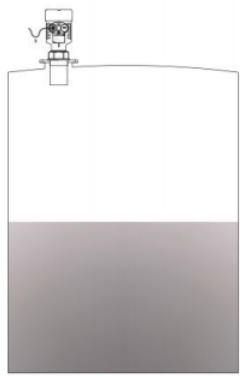


Meter Installation should be avoid A.B obstacle

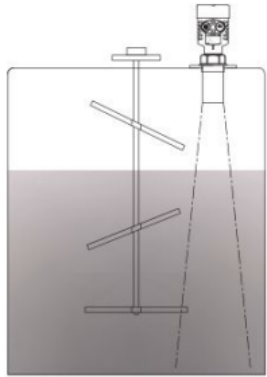
1. Correct
2. Wrong



If install outside or in moist environment, please tighten seal gland of the cable. Also please make the cable as “U” at the cable entrance.



If there's mixing in the tank, please install meter far away from the mixer. Please use guide wave tube installation type if there's some foam or wave.

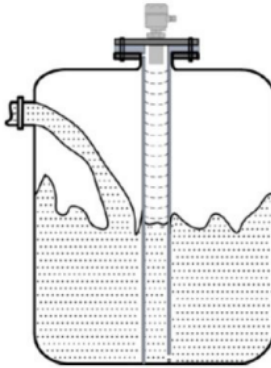


If is closed tank, the flange and connection tube should be follow below:

Model	4m,6m,8m	12m	20m,30m
Requirement	Flange bore size should be bigger than 65mm; Flange connection tube should with smooth inner wall surface, and length shorter than 400mm	Flange bore size should be bigger than 100mm; Flange connection tube should with smooth inner wall surface, and length shorter than 150mm	Flange bore size should be not smaller than 200mm; Flange connection tube length is shorter than 200mm; Sensor should be out from installation mouth.

If there's big liquid wave fluctuation or there's float ball or other obstacle may reflect the wave, user can add a plastic tube inside the tank. Plastic tube can make the wave only transmit in the plastic tube and make sure the measurement stability.

Plastic tube inner size should be larger than the outer size of sensor, with smooth inner wall surface, straightness, and full-face. Install the plastic tube from the flange mouth to the bottom of the tank. Please open a hole on the top and bottom of the tube to make sure to keep the same level inside and outside the tube.



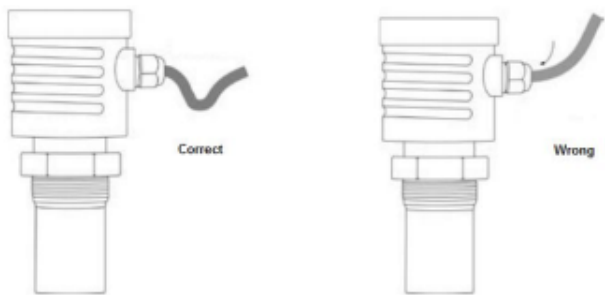
When install to the cold area, should choose the lengthen sensor of the level meter, make the sensor extend into the container, shun frost and icing.



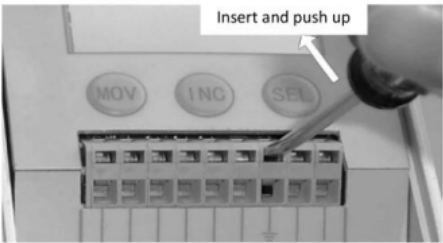
lengthen sensor of the level meter

Seal

After setting parameters and level meter in normal operation, please tighten the cable entrance water-proof gland. The outer end of cable should be down warping to avoid rain water seeping into.



Connect the wiring



The terminal blocks are all self-tightening ones. Use a straight screwdriver to wire as follow. Please noted the the power supply specification and polarity. Outer ring circuit should with 30mA current power supply capability.

Trouble Shooting

Trouble	Reason	Solution
No display and do not work	<ol style="list-style-type: none"> 1. Power supply error. 2. Wiring error. 	<ol style="list-style-type: none"> 1. Check the power supply. 2. Check the wiring.
With display but do not work	<ol style="list-style-type: none"> 1. The sensor doesn't aim at the liquid or the material. 2. The surface has large fluctuations. 3. Level of material is very uneven. 4. Liquid surface with lots of foam. 5. After emptying the tank, the tank bottom is not flat. 6. Over the measuring range. 	<ol style="list-style-type: none"> 1. Adjust the sensor and aim at the material. 2. Add a plastic tube to the tank.(refer to installation instruction). 3. Change to level meter with larger range. 4. Change to level meter with larger range or take other measurement method. 5. After infusing liquid or material, the level meter will back to normal work. 6. Change to level meter with larger range.
Display unstable or the measured value has a great deviation.	<p>The level enters the blanking distance.</p> <p>The range value is bigger than installation height.</p> <p>There is strong electromagnetic interference.</p> <p>There is obstacle obstruct the ultrasonic wave.</p> <p>Flange plate is metallic not plastic.</p> <p>The sensor emitting surface or side surface contact with the metal.</p>	<p>Increase the installation height or prevent the level is too high. Change the installation height to a correct value.</p> <p>Make sure the level meter grounding very well to make it with shielding.</p> <p>Change installation location or add a plastic tube.(refer to installation instruction)</p> <p>Change to use plastic flange plate.</p> <p>Use a rubber gasket to make it isolate with the metal.</p>
For the tank with installation mouth or sensor is in round tube.	<p>4m,6m,8m tank flange connection tube length should shorter than 400mm.</p> <p>12m tank flange connection tube length should shorter than 150mm.</p> <p>20m,30m sensor should out from the installation mouth.</p>	



Section V

Maintenance and disposal of

MAINTENANCES AND DISPOSAL OF

Safety

All maintenance operations possibly performed at the place of installation must take into consideration that the operations take place in a safe area.

During operations, actions that could trigger sparks and consequent explosion must be avoided. It is always appropriate to keep the room fully ventilated during all maintenance operations. The maintenance operations must be performed by personnel qualified and/or authorised by the Riels Instruments S.r.l. Company, and who have previously read the Manual.

Any type of intervention, whether internal or that includes the use of a liquid or a product for cleaning, must always be carried out with the device disconnected from the electrical power supply network. In performing these operations, strictly follow the instructions described in this Manual.



HAZARD

DISCONNECT THE DEVICE FROM ANY OF ITS ELECTRICAL POWER SUPPLY SOURCE BEFORE PERFORMING ANY CLEANING OR MAINTENANCE OPERATION.

For any intervention of maintenance, assembly, disassembly, reassembly and replacement of components, besides the indications contained in this Manual, the general safety rules must be met and possibly the specific safety rules current in the place in which these operations are carried out.

Regular maintenances

The measuring system of the RIL300 capacity does not require special maintenance interventions.

External cleaning

To clean the outside of the measurer always use cleaning agents that do not attack the surface of the casing and the gaskets.

Extraordinary maintenances

The extraordinary maintenances are required in cases of failures or breakages, following unplanned incidents or an inappropriate use of RIL300.

The situations which from time to time can be created are completely unpredictable, and therefore it is not possible to describe appropriate intervention procedures.

If necessary contact the Riels Instruments S.r.l.'s Technical Service to receive appropriate instructions with respect to the situation.

All interventions, mechanical or electrical, regular or extraordinary, must anyhow be carried out by specialised personnel.

Inappropriate maintenances and/or performed by personnel not authorised also invalidate the product guarantee terms.

Deactivation of the device

RIL300 is produced and manufactured according to criteria of robustness, durability and flexibility that allow using it for several years. Once reached its end of the technical and service life, it must be decommissioned and placed in such conditions as not to be used again for the purposes for which originally it had been designed and manufactured.

The same procedures of deactivation must be met in all the following cases:

- decommissioning of the device and storage in the warehouse;
- final deactivation and subsequent disposal of.

NOTE



THE MANUFACTURING COMPANY DISCLAIMS ANY LIABILITY FOR DAMAGES TO PERSONS OR PROPERTY RESULTING FROM THE REUSE OF INDIVIDUAL PARTS OF THE DEVICE FOR FUNCTIONS OR IN DIFFERENT ASSEMBLY CONFIGURATIONS FROM THE ORIGINAL ONES.

THE MANUFACTURING COMPANY DISCLAIMS ANY ACKNOWLEDGEMENT, IMPLICIT OR EXPLICIT, OF SUITABILITY FOR PARTICULAR PURPOSES OF THE DEVICE'S PARTS REUSED AFTER THE FINAL DEACTIVATION IN VIEW OF ITS DISPOSAL OF.

Disposal of

The RIL300 manufacture materials do not require any special procedures for disposal of. If necessary, refer to local rules for the disposal of electrical and electronic equipment.

For no reason at all disperse the product in the environment.

NOTE



THE MANUFACTURING COMPANY IS NOT IN ANY WAY LIABLE FOR DAMAGES CAUSED BY THE DEVICE IF NOT USED IN THE INTEGRAL VERSION, AND FOR THE USES AND METHODS OF USE SPECIFIED IN THIS MANUAL.

THE MANUFACTURING COMPANY IS IN NO WAY LIABLE FOR ANY DAMAGE TO PERSONS OR PROPERTY RESULTING FROM THE RECOVERY OF PARTS OF THE PRODUCT USED AFTER ITS DISPOSAL OF.



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