

### RIL600-V and RIL600 Magnetic Level Indicators

Riels RIL600-V and Riels RIL600 magnetic level indicators have been designed for optical viewing of liquid levels in most industrial applications. They are also suitable for high pressure and high temperature applications and the range is complemented by having a pharmaceutical grade option available when requested.

The indicators can be equipped with electrical contacts or with a potentiometer transmitter for full automation of process management, including pressurised tanks, vats, boilers, for the control of pumps, valves and alarm systems.

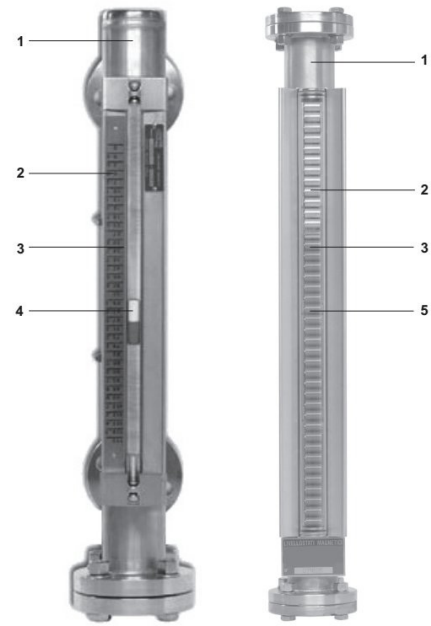
#### Standards and certification

Riels RIL600-V and Riels RIL600 magnetic level indicators comply with the following European Directives:

- PED 97 / 23 / EC - up to Class IV (plastic materials excluded).
- ATEX 94/9/EC (for electrical equipment only).
- 73 / 23 CEE (for electrical equipment only).
- Products intended for use in the Naval and Marine sectors are RINA and M.M.I (Italian navy) approved.
- Gost R

#### Mounting

Riels RIL600-V and Riels RIL600 magnetic level indicators are installed on the side of the tank (bypass system) or vertically on the top of the tank.



RIL600-V

RIL600

#### Indicator body sizes

##### Steel

25	Ø tube 25 - R type only (mounting on the top of the tank)
40	Ø tube 40 - Maximum pressure 6 bar g
50	Ø tube 48 - Maximum pressure 12 bar g
60	Ø tube 60
70	Ø tube 76

##### Plastic

70	Ø tubo 76 - Maximum pressure 6 bar g
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#### Materials

N°	PARTE	MATERIALI
1	Indicator body	304 / 316L / 316Ti / PVC / PP / PVDF/316Ti
2	Scale	Neutral or graduated
3	Glass tube	Polycarbonate or Pyrex
4	Two colour indicator	Plastic or alnico
5	Two colour rollers	Plastic or aluminium
6	Float (not shown)	316L / 316Ti / Titanio / Hastelloy PVC / PP / PVDF

#### Models



RIL600 LL

Side / side connections.  
All wetted parts are made of stainless steel or plastic.



RIL600 LF

Side / bottom connections.  
All wetted parts are made of stainless steel or plastic.



RIL600 LT

Side / top connections.  
All wetted parts are made of stainless steel or plastic.



RIL600 TF

Top/bottom connections.  
All wetted parts are made of stainless steel or plastic



RIL600 R

Top connection.  
Indicator for tanks or vats that are difficult to access, and in the event of especially viscous fluids, covering liquids, sludge.  
All wetted parts are made of stainless steel or plastics.



RIL600 GV e GDV

Side/side connections.  
All wetted parts are made of stainless steel.  
Specifically designed to control methane-gas odorant

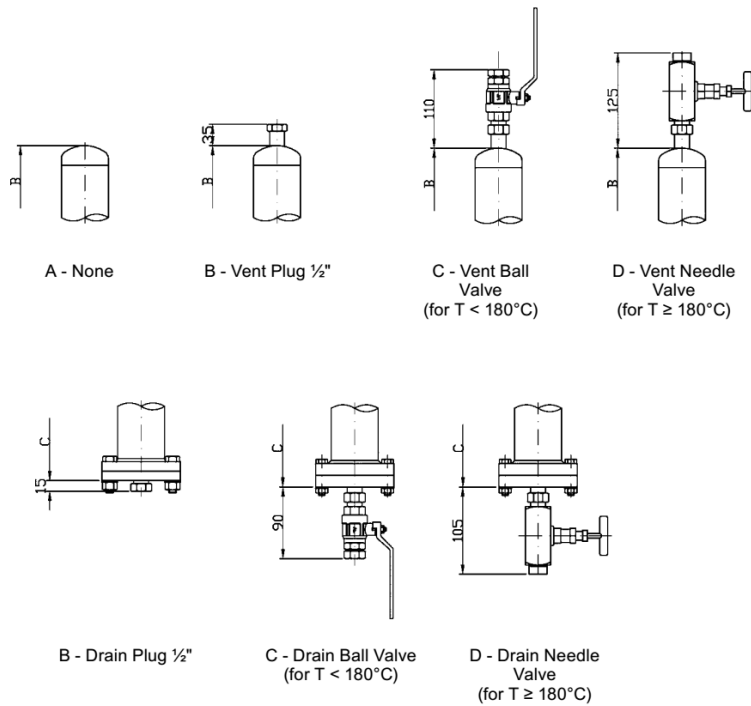
## Side process connections horizontally to the process (types LL, LF, LT)

- Flanged (FL) EN
- ASME/ANSI
- Screwed (TH)
- Socket weld (SW)

## Top and bottom process connections vertical to the process (types TF, LF, LT)

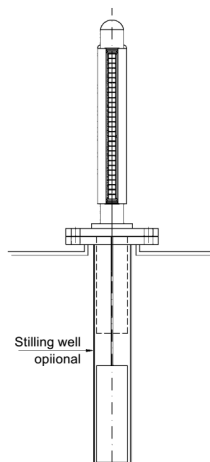
- Flanged (FL) EN
- ASME/ANSI
- Screwed (TH)
- Socket weld (SW)

## Drainage and vent types



## Connection type R

External diameter flange: minimum 100 mm



## Design conditions

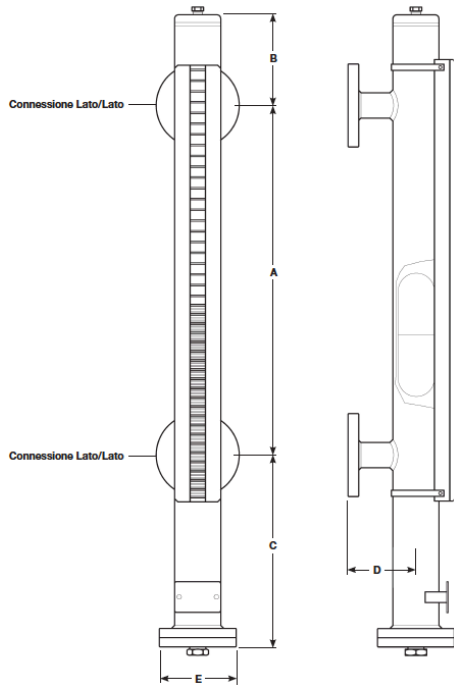
TMA - Maximum allowable temperature	Steel	-25	+350°C	
	Plastic	PVC	-20	+70°C
		PP	-20	+105°C
		PVDF	-20	+130°C
PMA - Maximum allowable pressure	Steel	< 120 bar		
	Plastic	< 6 bar		
Specific gravity of fluid	Steel and plastic	> 0,8 kg/l		
	Buna N / Titanio	> 0,5 kg/l		
Specific gravity of fluid	Polycarbonate	T < 230°C		
	Aluminium	T < 350°C		

## Dimensions / weights (approximate) in mm and Kg

A	Minimum length	200
	Maximum length	5700
B	Minimum	100
C	Depending on fluid specific gravity and pressure	Starting from 250
D	Depending on fluid specific gravity and pressure	Starting from 80
E	Depending on fluid specific gravity and pressure	Starting from 85
Weights	Dipende dalla dimensione A	

## Valves

The indicators are supplied with a hole and ss plug or with a 1/2" drainage valve. A vent can also be supplied on request. Isolation valves between the indicator attachments and the tank should be installed to aid maintenance work.



## Accessories

### Contacts

Bistable SPDT or DPDT contacts, fixed onto the guide system fitted outside of the indicator body.  
Also available in explosion-proof type, ATEX II 1/2 G Ex d IIC T6, or intrinsically safe Ex-ia ATEX 94/9/EC Ex-ia/G/Gost.  
Protection degree IP67.  
Operation points are always field adjustable.

SPDT execution

DPDT execution (two simultaneous SPDT contacts, no version ATEX)

### Transmitter

Potentiometer transmitter with 5, 10, 20 mm resolution for the continuous evaluation of the liquid level inside the tank.

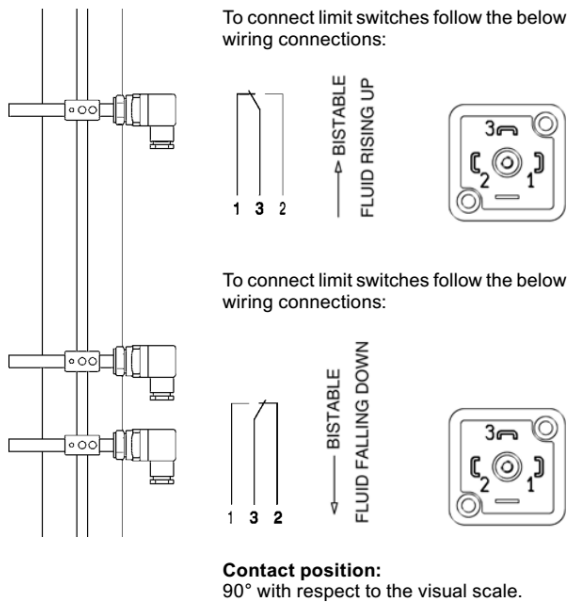
\* For applications requiring 0.1 mm or 1 mm resolution, solutions can be evaluated upon request using magnetostrictive level transmitters

## Characteristics contact

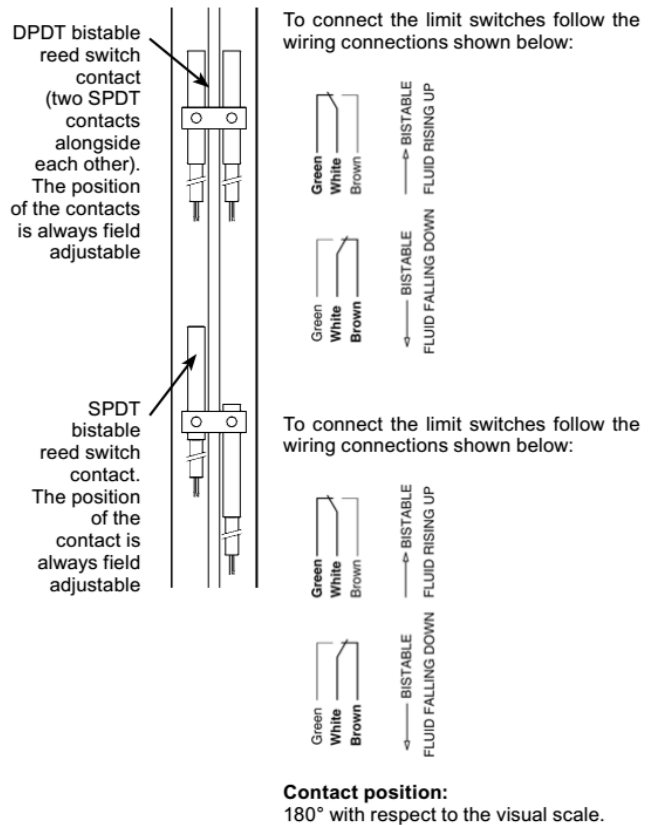
Bistable SPDT or DPDT contacts, fixed onto the guide system fitted outside of the indicator body.

Contact data	Reed switch contact
	Ermetically sealed in inert gas
	Tungsten, Rhodio coated.
	60 W/VA 1A 250 V ≈
	Shock and vibratrion resistance: 30g 11ms
Maximum allowable temperature -20°C +200°C	

## RIL600-V Collegamento elettrico contatti



## RIL6000 Characteristics contact



## Potentiometer transmitter characteristics

A potentiometer is placed in the vertical weather-proof tube outside the level indicator:

The total resistance of a known value is measured at the ends of this potentiometer:

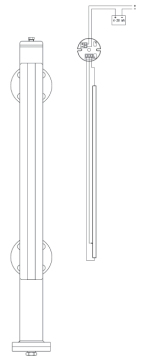
The float, following the liquid level trend, activates the potentiometer's reed contact chain through its own magnetic field, locally closing the signal.

The total value of the resistance is measured 100% at its maximum level and 0% at its minimum level.

The end poles of the potentiometer are connected to a converter that transforms the input value into Ohm and the output into mA.

## Transmitter characteristics

Reading resolution available	5 mm - 10 mm - 20 mm
Resistance input	1 k ÷ 100 k Ohm
Maximum allowable temperature	-20°C +100°C

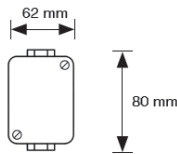


## Converter's housings

Three types of enclosures are available depending on the intended area of use:

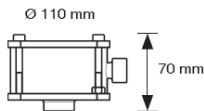
### Housing for safe area

Weather-proof IP65, plastic.  
Process temperature  
max 180°C  
min -20°C



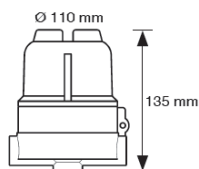
### Housing for safe area, high temperature

Special type suitable to low temperatures or installation in high concentration saline environments and for use in the food industry. Entirely in stainless steel. Protection degree IP67. On request IP68. Up to two cable entrances. Process temperature >180°C.



### Housing for hazardous area, ATEX certified

ATEX certified Ex II 1/2 G Ex d IIC T6, for use in hazardous areas. In pressure die-cast aluminium with a polyamide paint. Protection degree IP67. Up to two cable entrances.



Ambient temperature limits -20 ÷ 40 °C

Marking Ex II 1/2 G EEx d IIC T6

Temperature class	T6
Permitted temperature variation range	-20 ÷ 40 °C

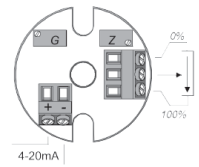
Suitability for area of: 0, 1, 2, GAS Group II (Directive 99/92/CE)

## Converter types

The Ohm in mA signal converters, included in the housing, are available in three types:

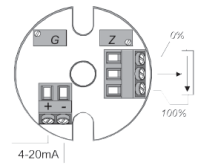
### Converter for safe area

Field set using two trimmers [for the Z (zero) gauging and G (gain) gauging], without resorting to interconnecting systems.



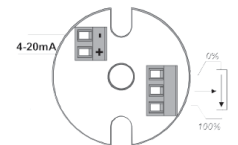
### Converter for intrinsically safe area

Field set using two trimmers [for the Z (zero) gauging and G (gain) gauging], without resorting to interconnecting systems.



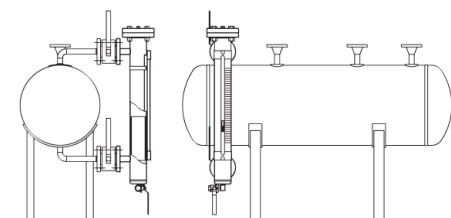
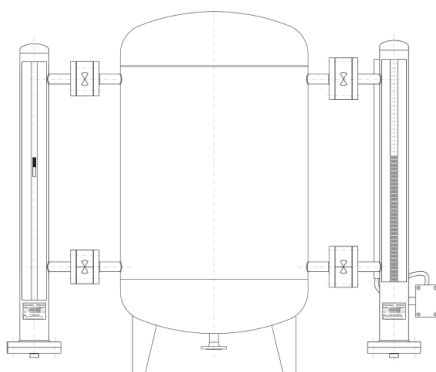
### Converter Hart® protocol version 5.3 for intrinsically safe area

Converter regulated with an interconnection cable.



Resistance input: 1 k ÷ 100 k Ohm  
Current output: 4 ÷ 20 mA

## Typical vessel installations



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## How to request and order the RIL600

Each unit is identified by an alphanumeric code that defines the construction characteristics that are best suited to the application. Please indicate the following information for the correct configuration of the product.

1. type of fluid:
2. fluid temperature (min and max):
3. working pressure:
4. interaxis between the holes:
5. tank construction material:
6. Is a continuous measurement of the level or of the on/off contacts required?:
7. preference of flanged connection, threaded or to weld?:
8. Installation area (safe area or ATEX)?:

## How to order spare parts

The components subject to possible wear or damage are:

- a. Floating
- b. Electric crew

For the request it is necessary to supply the serial number of the instrument placed on the identification plate.