

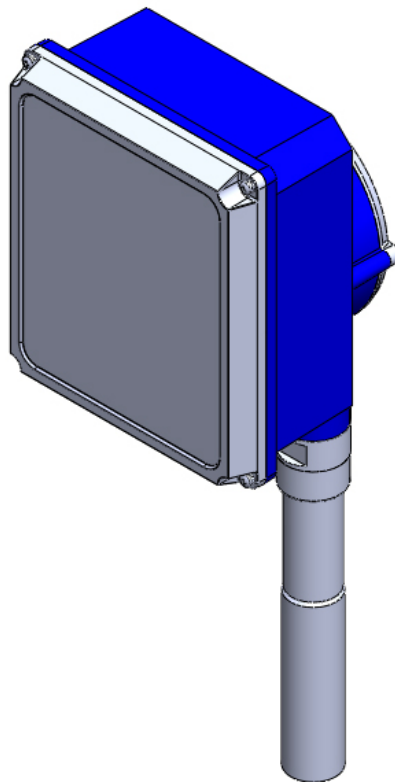


1

ILS (E-F)

*CONTINUOUS LEVEL
MEASUREMENT*

TECHNICAL CATALOGUE



Manual No. TOR.179.--.T.EN Issue: A
Latest Update: December 2011

ORIGINAL INSTRUCTIONS IN ENGLISH



All the products described in this catalogue are manufactured according to **TOREX S.p.A. Quality System procedures**. The Company's Quality System, certified according to **ISO 9001-2008** guarantees that the entire production process, from the customer's order to the after sales service, can fulfil the product quality standard.

**This publication cancels and replaces any previous edition and revision.
We reserve the right to implement modifications without notice.
This catalogue cannot be reproduced, even partially, without prior consent.**

SUMMARY

1.0	DESCRIPTION AND TECHNICAL FEATURES	1
1.1	Type	1
1.2	Description	1
1.3	Function	1
1.4	Applications	1
1.5	Features	2
1.6	Diagnostics	2
2.0	GENERAL LAYOUT	3
2.1	Introduction	3
2.2	Internal view	4
2.3	Technical data	5
3.0	OVERALL DIMENSION	8
3.1	Overall dimensions	8
4.0	SENSOR WEIGHT OVERALL DIMENSIONS	9
4.1	Sensor weight overall dimensions	9
5.0	ACCESSORIES	10
5.1	Rain shield cover	10
A	ATTACHMENTS	11

1.1 Type

Continuous level indicator.

1.2 Description

It is an electromechanical level indicator meant for continuous measurements of the level or quantity in volume of the material present in the silo, hopper or tank.

1.3 Function

The ILS indicator is installed on the top of the silo. The sensor weight is lowered into the silo. This sensor weight is fitted at the end of rope or tape wound around a pulley operated by an electrical motor.

When the sensor weight touches the material, the motor changes the winding direction restoring the sensor weight to the upper stop position.

During the descending movement of the sensor weight, the distance is measured electronically by the rotation of the pulley inside which the tape or rope is rolled.

The microprocessor converts the distance measured into the output signal, which is a specific signal for the volume based on the silo geometry.

The output signal is updated every time the sensor weight touches the bulk material.

The measurement begins with the external start signal (by remote control) or automatic internal signal given by a timer which allows start up of the measurement within the predefined time.

1.4 Applications

The continuous level indicator ILS can be used for the following applications:

- Powder bulk materials
- Small grain size materials
- Big grain size materials

Some of the many industries in which the level indicator can be used are:

- Chemical
- Food
- Cement and building constructions
- Mining
- Plastic
- Others

1.5 Features

Process

- Suitable for all kinds of bulk material
- Absolute insensitive to the features of the bulk material, such as:
 - a) Dielectricity and conductivity of the material
 - b) Dusty atmosphere of the silo
 - c) Bulk material moisture variation
 - d) Product that tends to stick
- No mechanical force applied to the silo cover, the sensor weight touches the bulk material only on the surface
- Very accurate measurements

Service

- Very simple installation and set up operations
- Easy to understand measurements and advanced technology
- Rope, tape and motor with long operating time
- Very little, easy maintenance

Mechanics

- Measuring range: up to 30 m
- Different sensor weight suitable for different types of application
- Internal device for cleaning tape in case of difficult products
- Sturdy die-cast enclosure with IP 66 protection degree

Electronics

- Measurement controlled by microprocessor with intelligent control
- Possibility of easy understand diagnostics
- Signal output: analogical output 4-20 mA
- Measurement start with external signal or built-in timer

1.6 Diagnostics

The diagnostics are easy to understand:

- The measurements are made by comparing the distance travelled between the downward movement and upward movement, checking for the discrepancies, if any.

In case of discrepancies, the sensor weight is withdraw to the upper position to make sure it is not inside the silo.

- Maintenance interval after a certain number of measurements and working period.
- Internal inspection of motor, electric motor and correct movement of the rope or belt pulley.

The diagnostics is compliant to the NAMUR NE 107 recommendations.

2.1 Introduction

ROPE VERSION



TAPE VERSION



2.2 Internal view

ELECTRONIC COMPONENTS

The unit is divided into two independent chambers, one for the electronic and the other for the mechanical part, sealed from each other.

The mechanical part chamber in which the rope or tape slides is the only part in contact with the inside of the silo during the measurements.

If the sensor weight is in upper stop position, it seals the opening between the unit and the silo.



Side with electronic components



Side with mechanical components

2.3 Technical data

MATERIAL OF CONSTRUCTION

MATERIALS OF CONSTRUCTION	
External body	Powder coated aluminium
Internal body	Aluminium
Flange	Powder coated aluminium
Socket pipe	Aluminium
Rope	SS 304 (1.4301)
Tape	SS 301 (1.4310)

MECHANICAL DATA

MECHANICAL DATA	
Protection	IP66
Flanges connection	Thread 1 1/2" DIN 2999
Color	Body, Flange RAL 5010
	Cover RAL 9006
Weight	With thread: 9 Kg
	With flange: 11 Kg
Rope diameter	Ø1,25 mm
Tape	12x0.2mm
Max. permitted tractive force	800 N
Measuring range	Max.30 m
Speed	ca. 0.2m/s (media)
Deviation of vertical mounting	max.2°

ELECTRICAL DATA

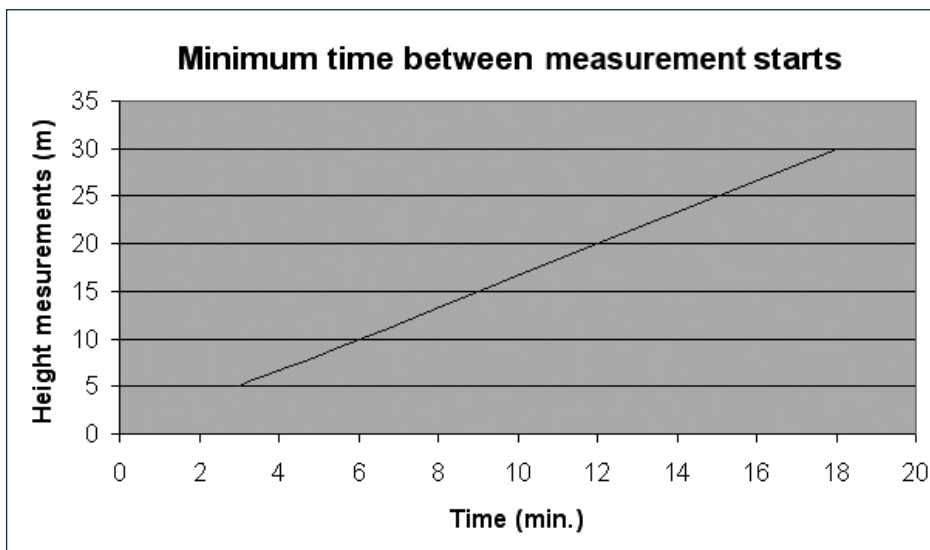
ELECTRICAL DATA	
Power supply	Version AC: 115V or 230V 50-60 Hz ±10% Version DC : From 20 V to 28 V ±10%
Installed load	Version AC: 150VA Version DC: 150 W
Connection terminal	max. 2,5mm ²
Screwed cable gland	N°1 M20x1,5 and N°1 M25x1,5 Blind plug:1xM20x1.5
Analogic signal output: 4-20 mA	Max. 500 Ω Linearity ±0,1mA
Protection class	I

ACCURACY OF MEASUREMENTS

ACCURACY OF MEASUREMENTS			
Output	Measuring range	Precision rope version	Precision tape version
4-20mA	<30 m	1.5% measure	1% measure

OPERATING CONDITIONS

OPERATING CONDITIONS	
Silo pressure	-0,2 / +0,2 bar
Silo temperature	-40°C / +80°C
Ambient temperature	-20°C / +60°C
Moisture	0-100%
Altitude	Max.2000 m

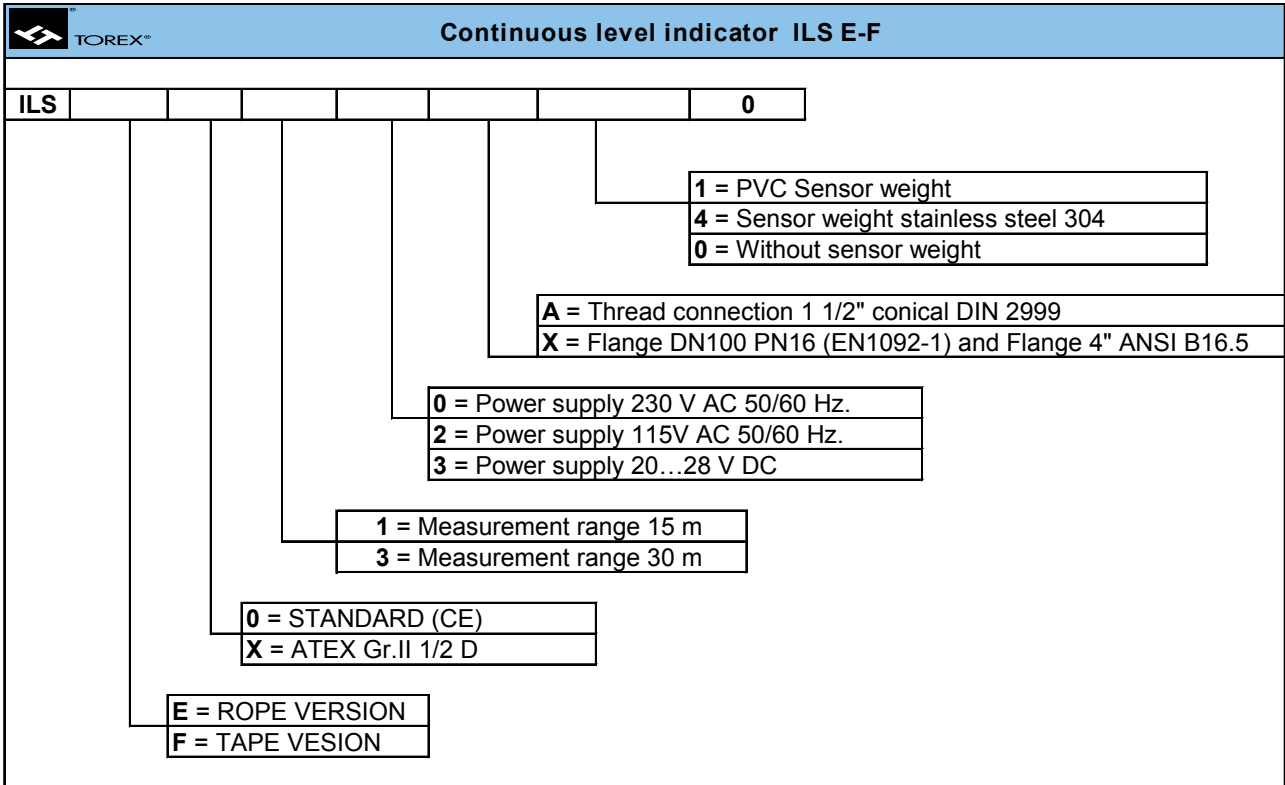
MINIMUM TIME BETWEEN MEASUREMENT STARTS


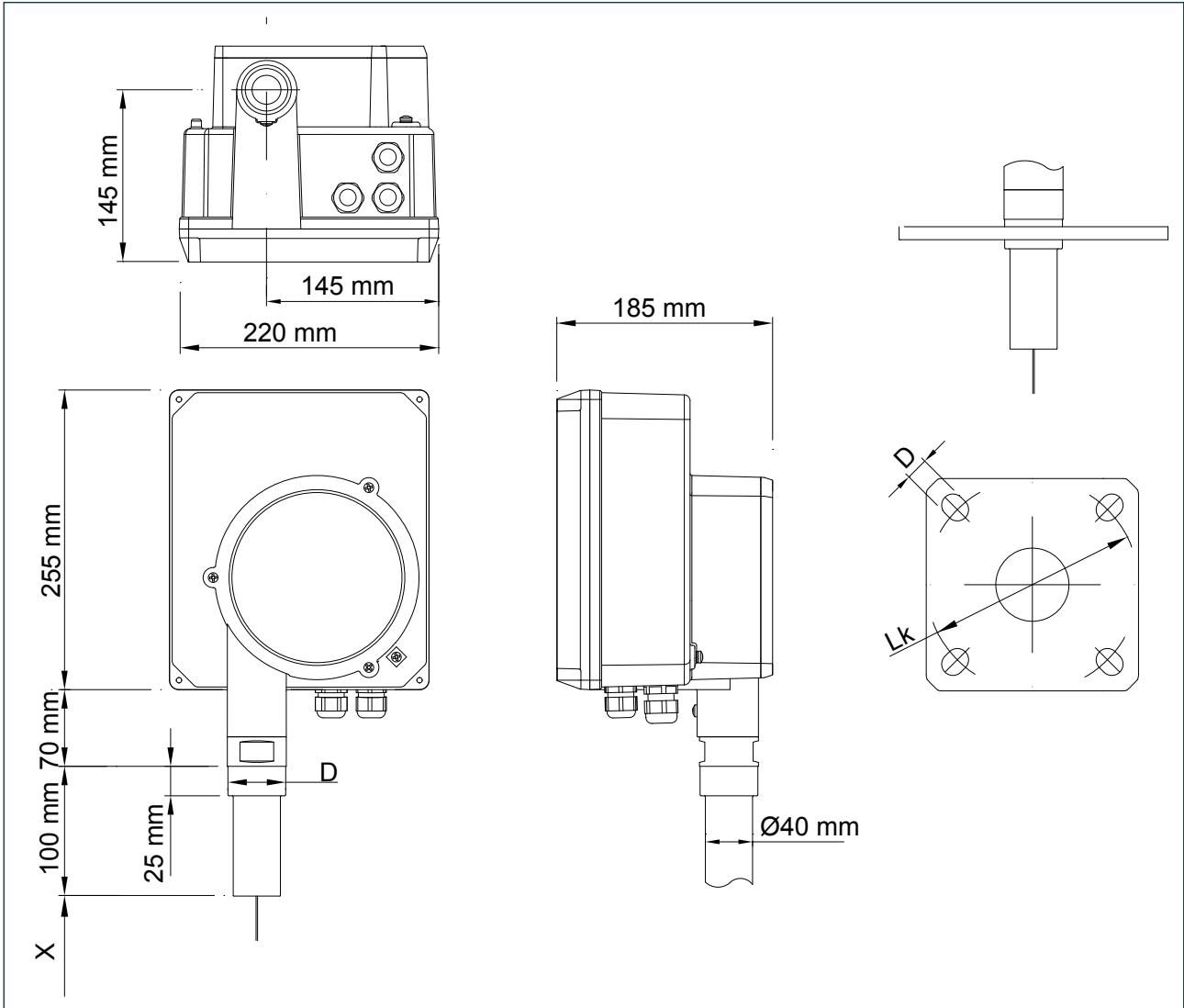
Height (m)	Time (min)
5	3
10	6
20	12
30	18

SENSOR WEIGHT

Sensor weight guide							
Sensor weight	* Bulk material density (g/l)	Material consistence	Angle of repose	Max. Process temperature	Rope version weight (Kg)	Tape version weight (Kg)	Note
PVC	>300	Granulate, powder	Flat	80°C	1	2,1	Standard sensor
Stainless steel	>300			250°C	1	2,1	Standard sensor

* The above mentioned data represents a guideline and it is valid in case of material settled after the filling.

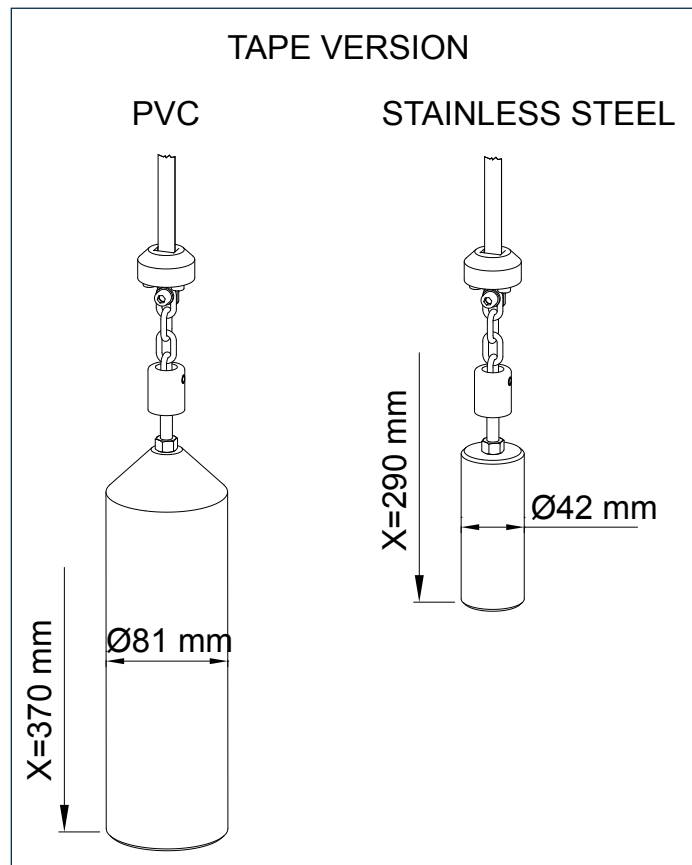
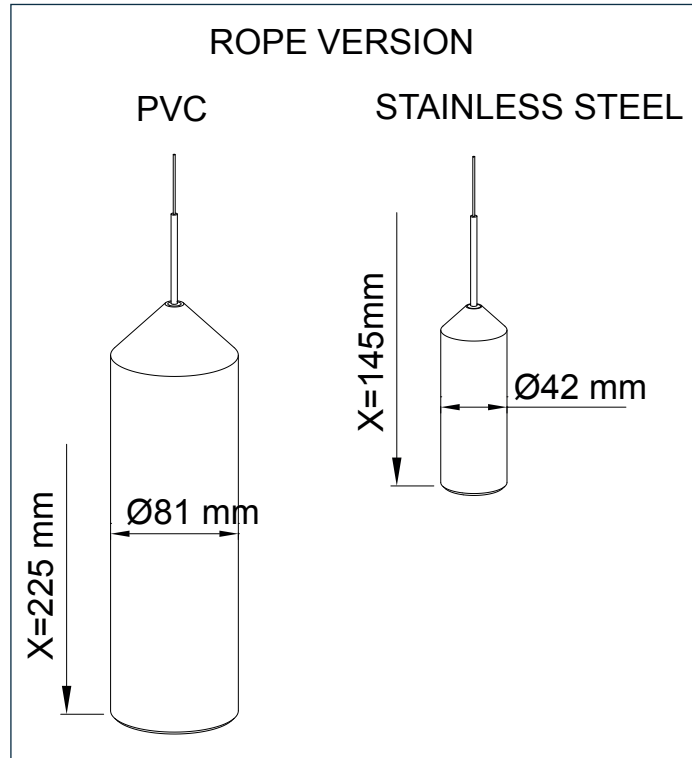
ORDER CODES


3.1 Overall dimensions


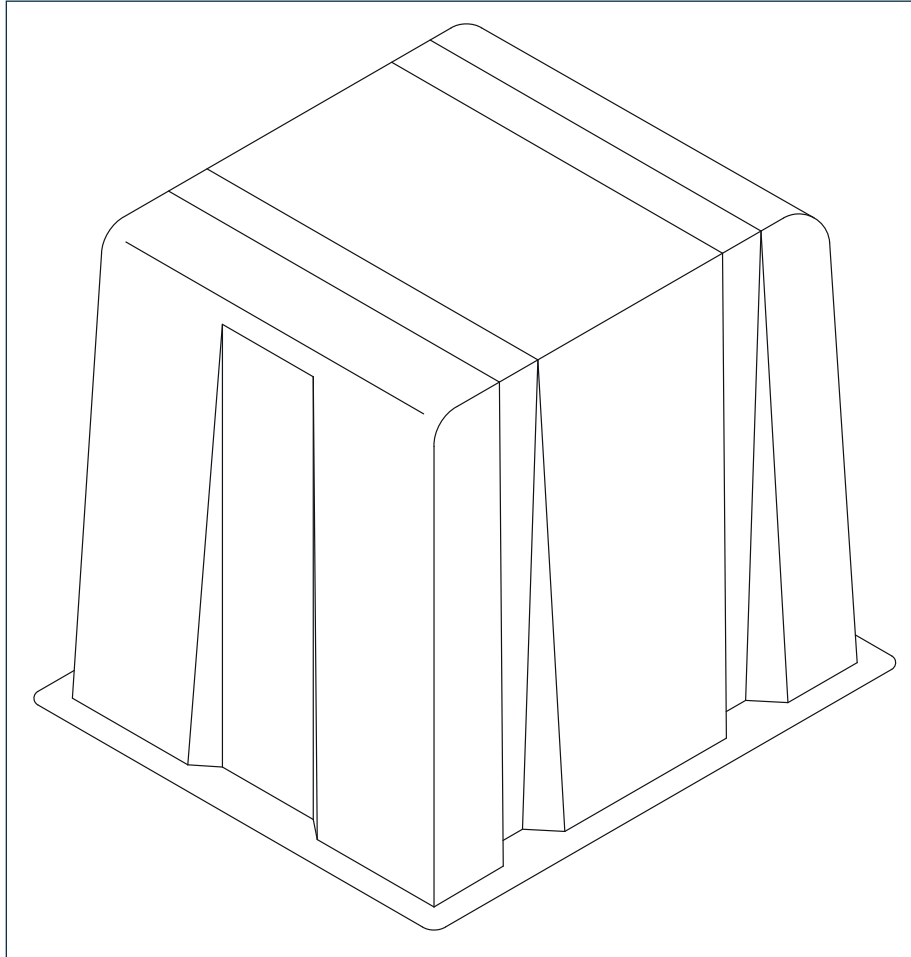
VERSION	D	LK		X
Thread	1 ½" DIN 2999			The length of the sensor weight part in upper stop position depends on the sensor weight type.
Flange	19 mm	180 mm	190.6 mm	

Dimension mm

4.1 Sensor weight overall dimensions



5.1 Rain shield cover



It is recommended as protection from atmospheric agents when the ILS level indicator is used outdoor:

- Rain
- Condensation
- Excessively high temperature
- Excessively low temperature in winter

Construction material: PE, stable at high temperatures and to atmospheric agents.

The use of this protection in hazardous areas is only allowed for ZONE 22.



Order form

Order form		COMPANY _____
		ORDER _____
MACHINE CODE _____	DATE _____	
Type of material		
Product.....	Throughput.....	Specific weight.....
Humidity.....	Temperature of material.....	Size of material.....
Features of material		
Flowable <input type="checkbox"/>	Adhesive <input type="checkbox"/>	Hygroscopic <input type="checkbox"/>
Abrasive <input type="checkbox"/>	Explosive <input type="checkbox"/>	Inflammable <input type="checkbox"/>
Installation		
Pressurized tank <input type="checkbox"/>	Silo roof <input type="checkbox"/>	Hopper <input type="checkbox"/>
Pressurized tank.....bar	Other.....	
Indicator configuration and technical features		
<input type="checkbox"/> Power supply 115V AC 50/60 Hz	<input type="checkbox"/> Power supply 230 V AC 50/60 Hz	<input type="checkbox"/> Power supply 20....28 V DC
Standard version <input type="checkbox"/>	ATEX version II 1/2 D <input type="checkbox"/>	
Tape version <input type="checkbox"/>	Rope version <input type="checkbox"/>	
Sensor weight features		
PVC sensor weight <input type="checkbox"/>	Stainless steel 304 <input type="checkbox"/>	
Other.....		
External display technical features		
Without Display <input type="checkbox"/>		
Digital Display for filling percentage display only <input type="checkbox"/>		
Notes:.....		
.....		
.....		