

Level switch with DX-ELF motor is used for level control in silos and tanks where materials with solid particles are stored. Full and empty signals can be received by performing level control in many demanding applications with different probe and pedal varieties in a safe manner. It can be connected horizontally and vertically.

Working Principle:

A paddle selected according to the material is installed on the tip of the motorized level switch which can be installed on the tank wall. It revolves idly with the revolution speed of the probe motor. Material to be detected reaches to the level of the paddle and covers its circumference and creates a counter-force according to the revolution force. Firstly, level information alarm contact is activated. Then, the other contact is triggered and stops the motor. Adjustment of the spring in four different torque values according to specific weight of the material can be realized by the user. When the material level at the end of the paddle is decreased the created force is released and the motor starts to revolve, consequently, changing the alarm position.

Applications ;

Plastic Industry ; PVC, PVDF, PP granular etc..

Food Industry ; Grain Dust, Ground Corn, Sugar-Granulated, Cacao, Malt-Graoung Dry, Sunflower Corn, Whead, Peanuts-Shelled, Clays- Kaoline, Talcum Powder, Ground-Paprika, Coffee-Roasted vb..

Build Industry ; Rocks-Limestone Crushed, Lime, Cement Powder, Rubber Ground, Lime Hydrate Dust, Calsium Dust, Iron Chips, Silica Sand, Moulding Sand, Styrofaam etc..

Wood Industry ; Wooden Fiberst, Saw Dust etc..

Other Chemistry Industry ; Coal Lump, Ash-Coal Dry etc..



Certification

II 2G Ex db IIC Tx Gb	For Gas
II 1/2 G Ex h IIC Tx Ga/Gb	For Gas
II 2D Ex tb IIIC Tx Db	For Dust
II 1/2 D Ex h IIIC Tx Da/Db	For Dust

* Have a look at the temperature class chart.

Technical Specifications :

Working Temperature (TP)	(-) 20 °C(+) 90 °C (-) 20 °C(+) 60 °C (For Plastic Connection Models) Opt. Max.150 °C With High Temperature Type Max.200 °C With High Temperature Type
Ambient Humidity	0-98 % Rh (Non Condensate)
Ambient Temperature (Ta)	(-) 20 °C ... (+) 60 °C
Working Pressure	(-) 0,6 bar ... (+) 0,6 bar
Material Connection	Aluminium Opt. 304 / 316 Stainless Steel
Housing	Aluminium Enjection - AISi12Fe (Std) Black (RAL:9005)
Paddle And Rode	304 Stainless Steel, (Std) Ops. 316 Stainless Steel
Extension Pipe	304 Stainless Steel, (Std) Ops. 316 Stainless Steel
Grounding Apparatus	304 Stainless Steel
O-Ring for Cover	Elastomer Thermoplastic 120°C (Std) Ops.FPM (Viton) 150°C
Bearing	Dust Protected Double Bearing (120 °C) Ops. 280 °C
Dust Protected Felting	NBR (Std) Opt. FPM (Viton) 150 °C, PTFE 200 °C
Connection	1" BSP (Std) , Opt. 1 1/4" BSP , 1 1/2" BSP Male Thread
Power Consumption	Max. 4W (220 VAC) , Max.3W (24 VDC)
Revolutions Per Minute	5 d/d (Std) (Clockwise - When Looking Paddle Side) Opt. 1,5-1,8 d/d
Power Supply	24 VDC ± % 10 , 24 / 48 / 110 / 220 VAC 50 / 60 Hz ± % 10
Cable and stopper input	M20 x 1,5 (Std)
Relay switching capacity	10 A / 250 VAC - 4 A / 30 VDC 2 x NANK (SPDT) 5E4
LED	Power LED: Green , Alarm LED: Red
Max. Grain Structure	50 mm
Min. Density	0,04 g/cm³ (According to paddle type)
Torque Rating	4 Stages, adjustable
Load on probe	Max. 500 N (Extention Pipe)
Protection Class	IP 66/68 (EN60529)
Certification	CE Declaration , EMC , LVD , ATEX

DX-ELF ROTARY LEVEL SWITCH

DX-ELF 101
DX-ELF 102
DX-ELF 103
DX-ELF 103p
DX-ELF 104
DX-ELF 105
DX-ELF 106
DX-ELF 106m
DX-ELF 108
DX-ELF 109

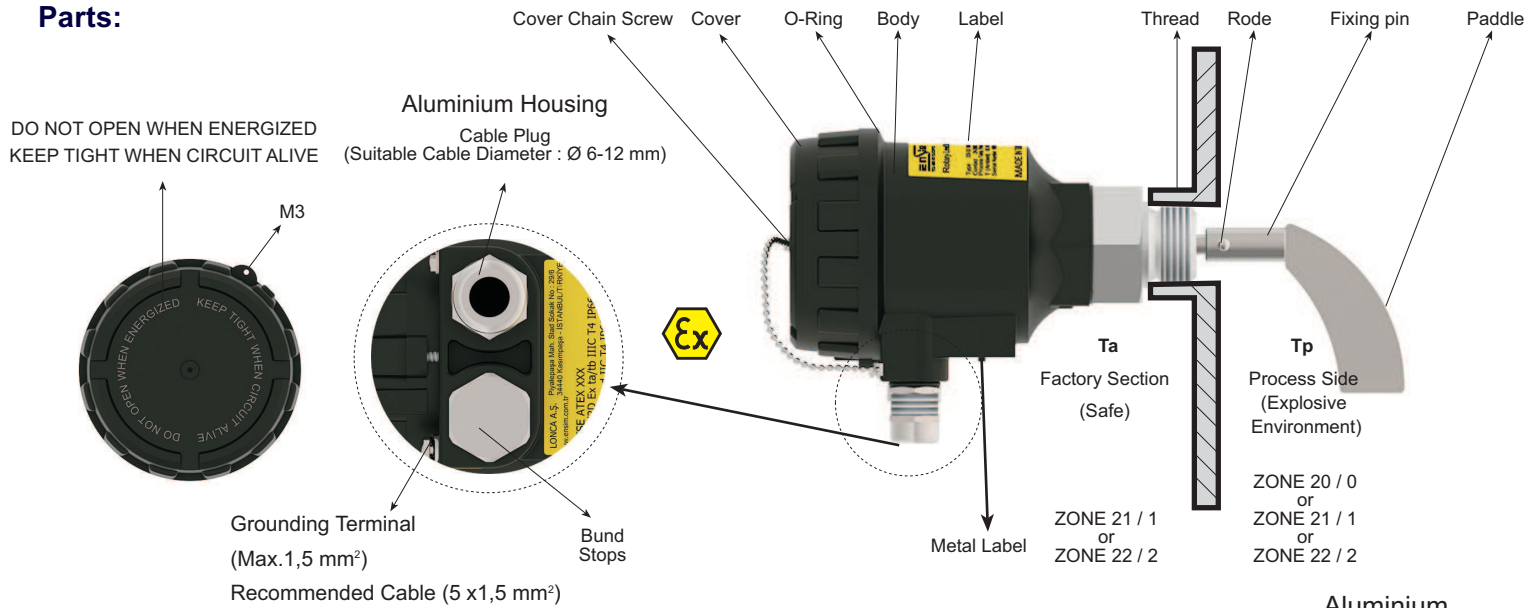
Advantages :

- * Fast Delivery Time
- * Reverse Rotation Safety
- * Sensitivity Adjustable
- * Excellent Mechanical

CE 2284



Parts:



Housing:

ORDER CODE	TYPE	MATERIAL	PROTECTION CLASS	TEMP. (°C)	SIZE a x b (mm)
704	B21x	Aluminium	IP 66/68	(-) 40...(-) 200	132 x 104



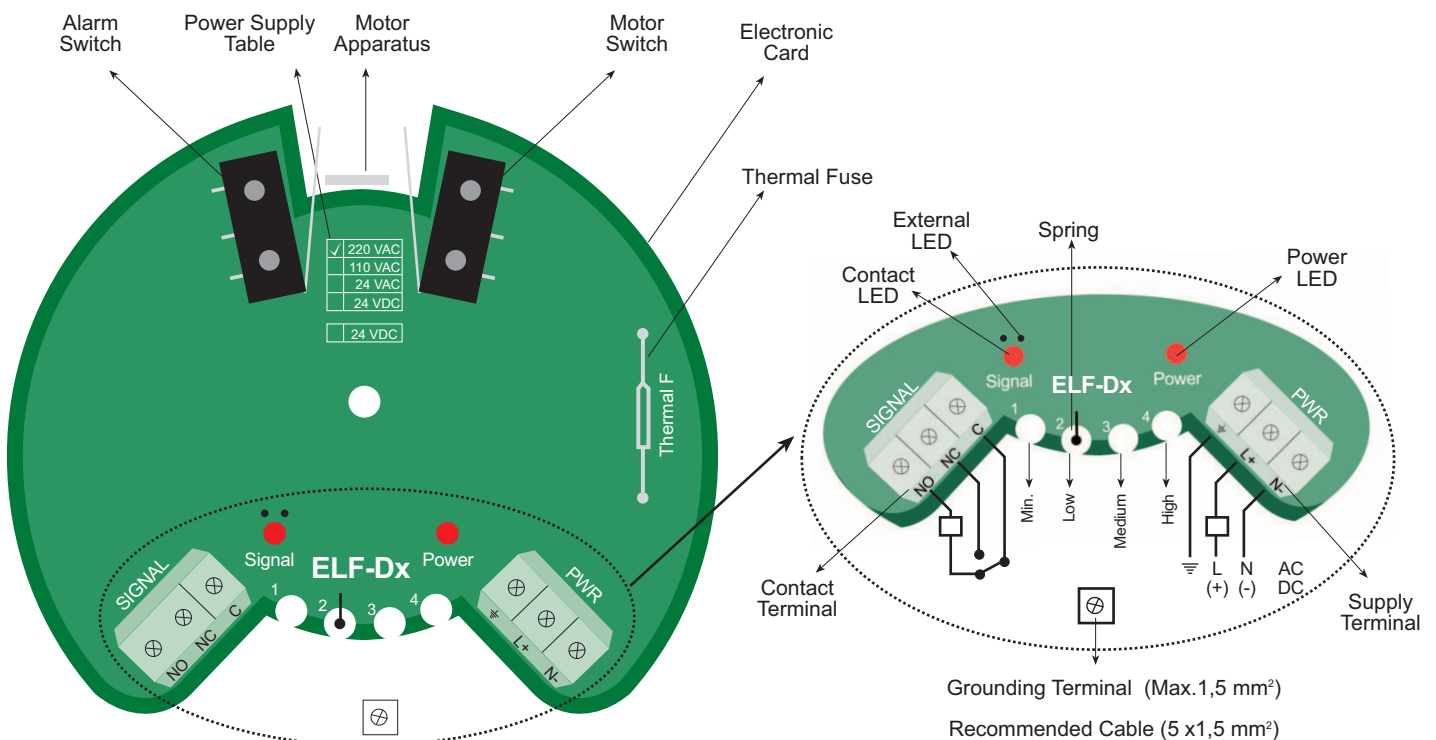
Cover Seal : NBR Nitrile Rubber 120 °C, Opt. FPM (Viton) 200 °C)

EU-Type Examination Certificate Number : IEP23ATEX1197X

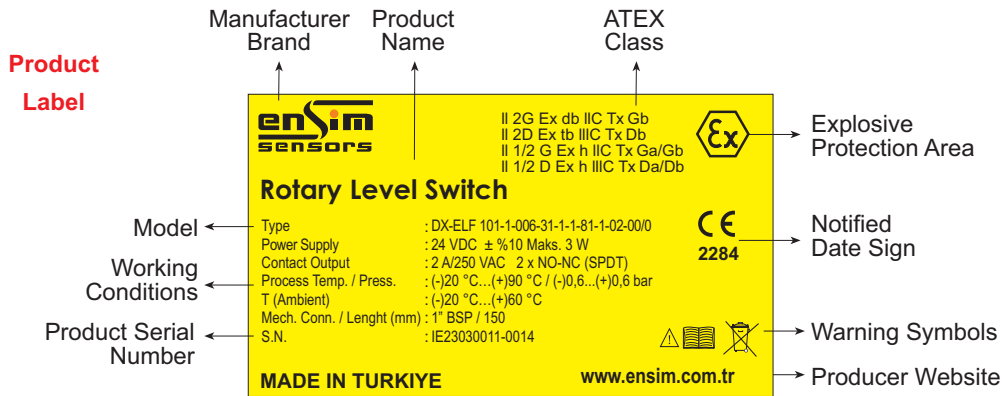
The marking of the equipment :



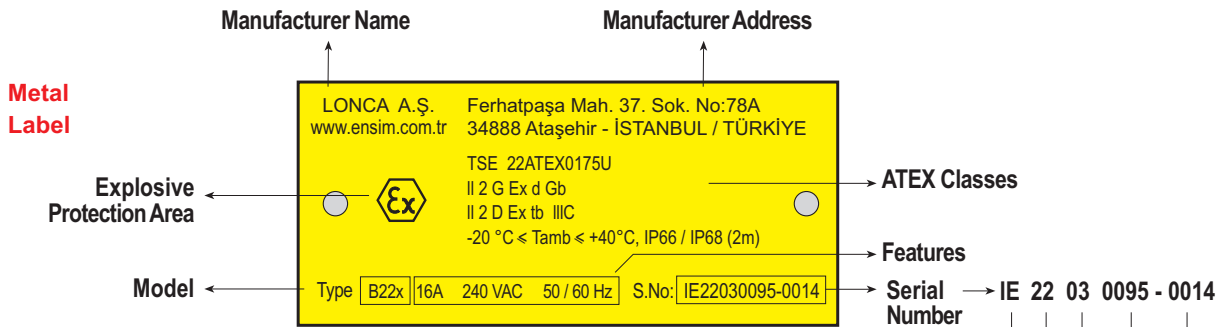
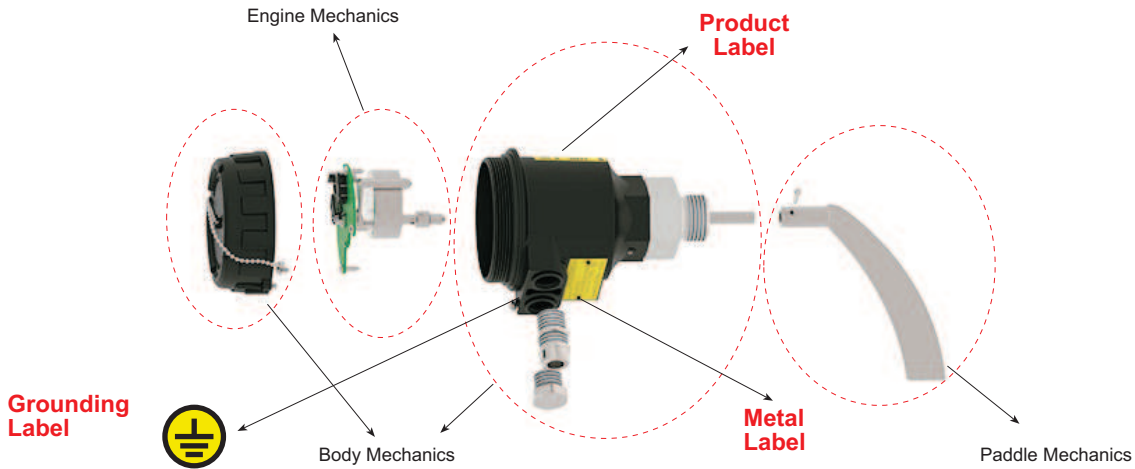
II 2G Ex d IIC Gb
II 2D Ex tb IIIC



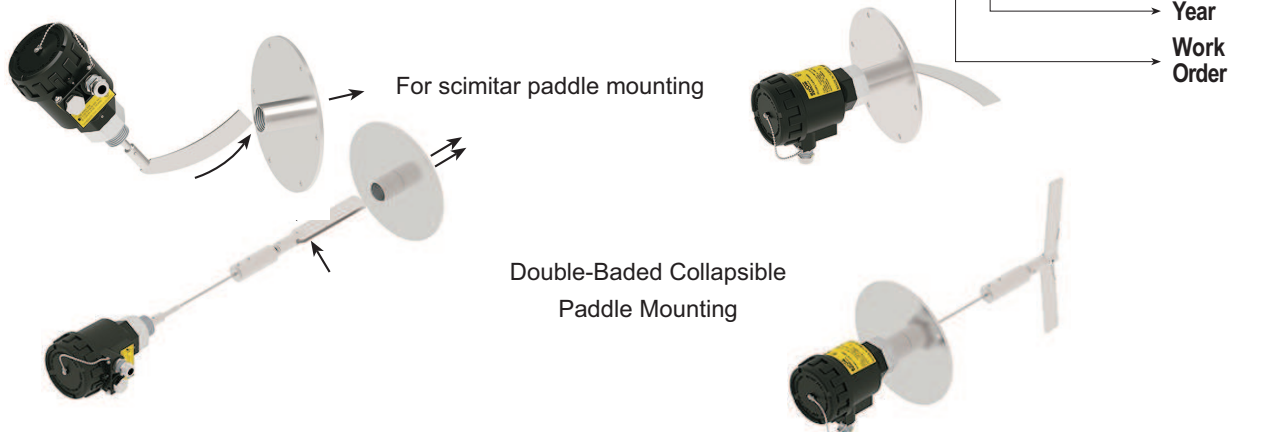
Note : It has been produced according to IPC A 600 class 2 conditions and tested with 100 % E-test. Moreover, HASL (non-lead) surface test has been applied.



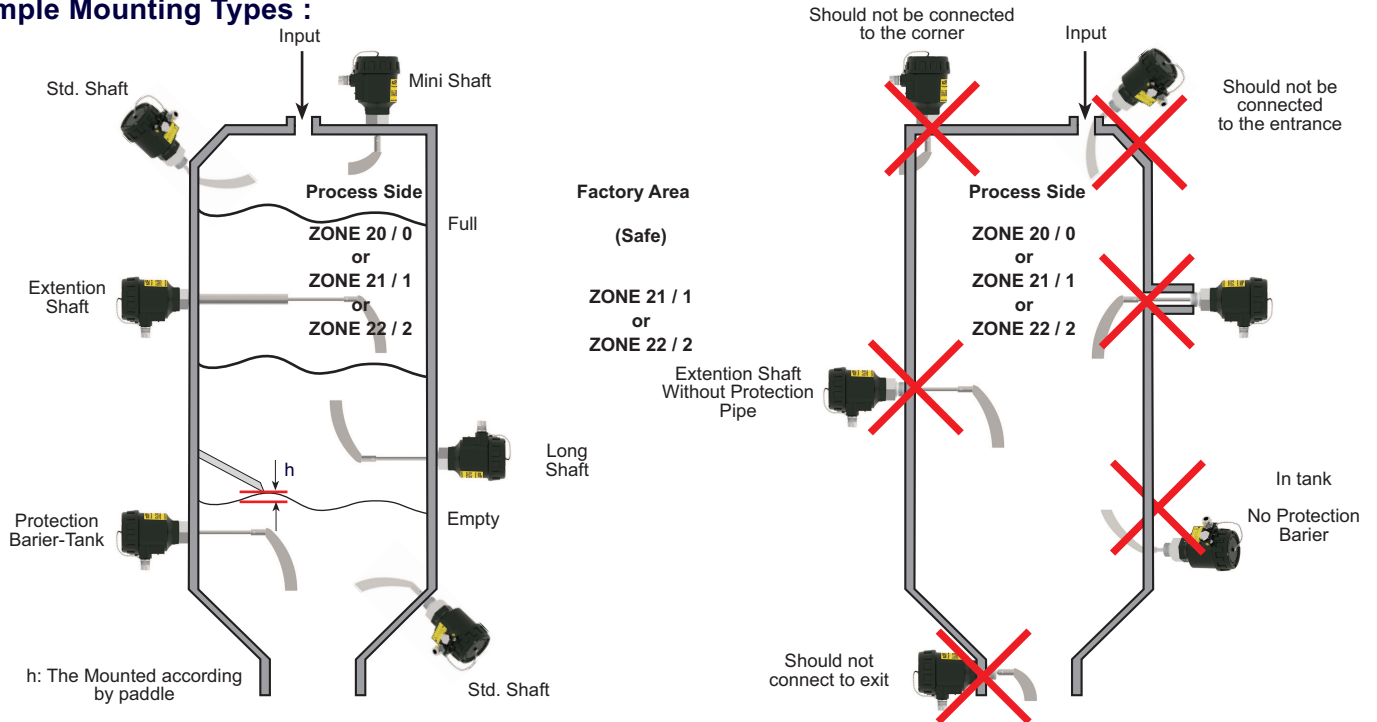
MODULAR STRUCTURE :



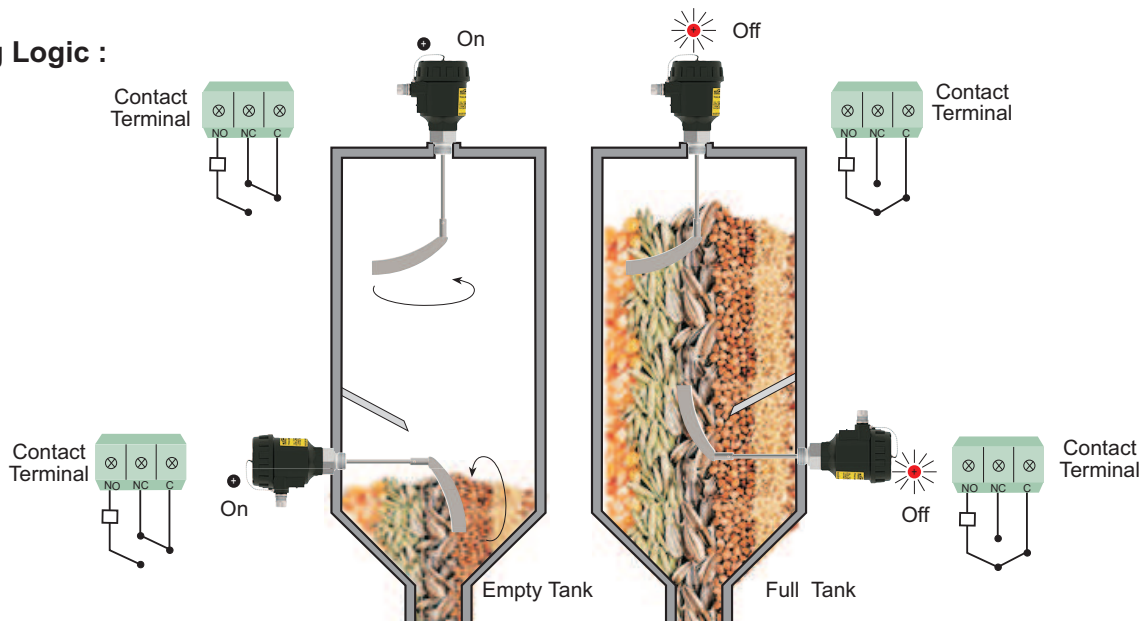
Note : If the ATEX certificate metal label is damaged,
you can contact the manufacturer with the serial number.



Example Mounting Types :



Switching Logic :



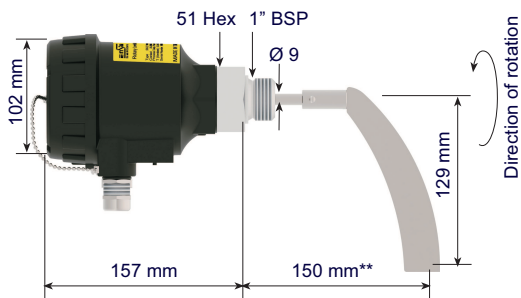
Working Position	Supply	Motor Position	Output Position	Alarm LED Position
Normaly Working	Yes	Stop	-	On light
	Yes	Stop	Full	On light
During an Alarm	Yes	Stop	Full	On light
	No	-	Full	Uninspiring

Torque calibration mechanism :

Torque spring should be used for recalibration of shaft's output torque which is set as low and weak in factory settings. Calibration of torque spring can be adjust to material's weight and density which is specified by customer. If the density of measured material is high, please set the spring to strong position until to get optimal working conditions. High torque setting must be choosen in materials that has adhesion tendency and moist properties. Low torque setting must be choosen for materials that has low density and dry properties.

Sample Models :

DX-ELF 101

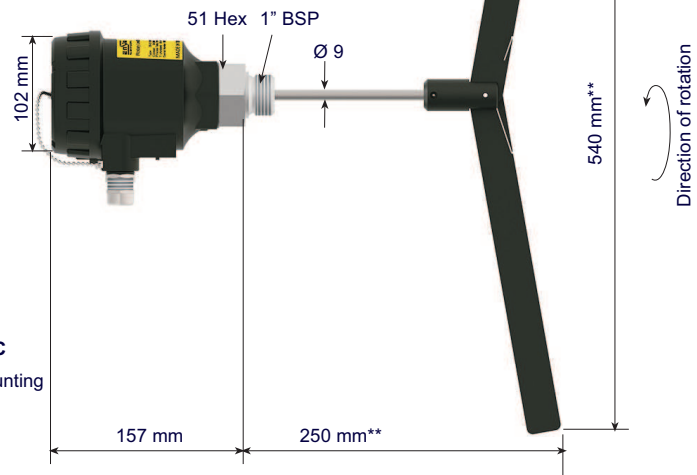


90 °C Opt. 150 °C

Vertical / Horizontal Mounting

Weight 2,1 kg

DX-ELF 103p For EPS-XPS

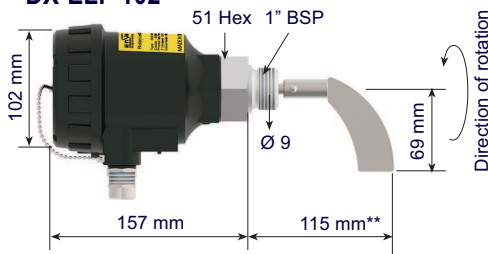


(-20) °C ... (+) 60 °C

Vertical / Horizontal Mounting

Weight 2,2 kg

DX-ELF 102

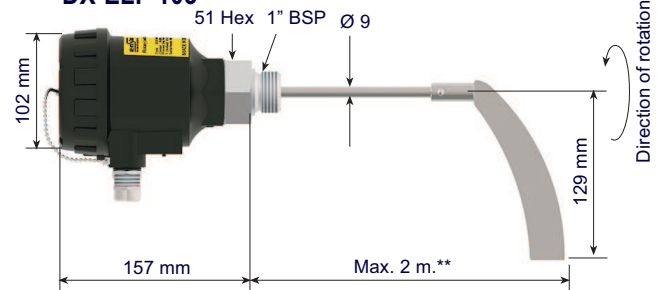


90 °C Opt. 150 °C

Vertical / Horizontal Mounting

Weight 2,1 kg

DX-ELF 103

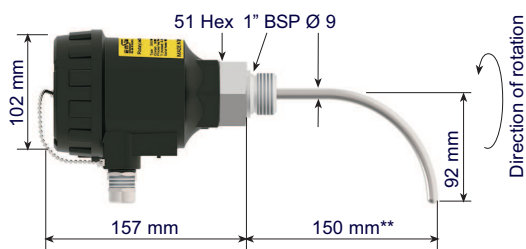


90 °C Opt. 150 °C

Vertical Mounting

Weight 2,2 kg

DX-ELF 104

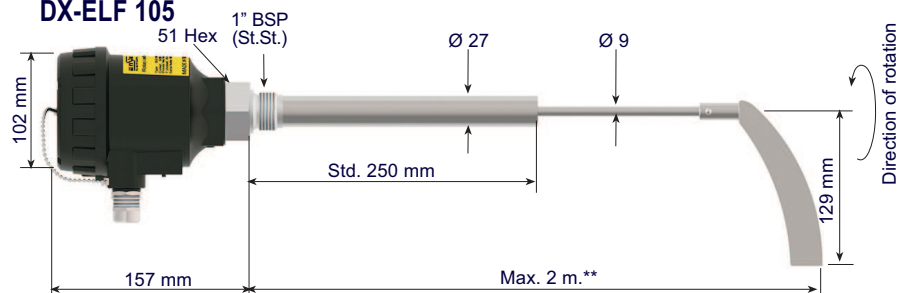


90 °C Opt. 150 °C

Vertical / Horizontal Mounting

Weight 2,1 kg

DX-ELF 105



90 °C Opt. 150 °C

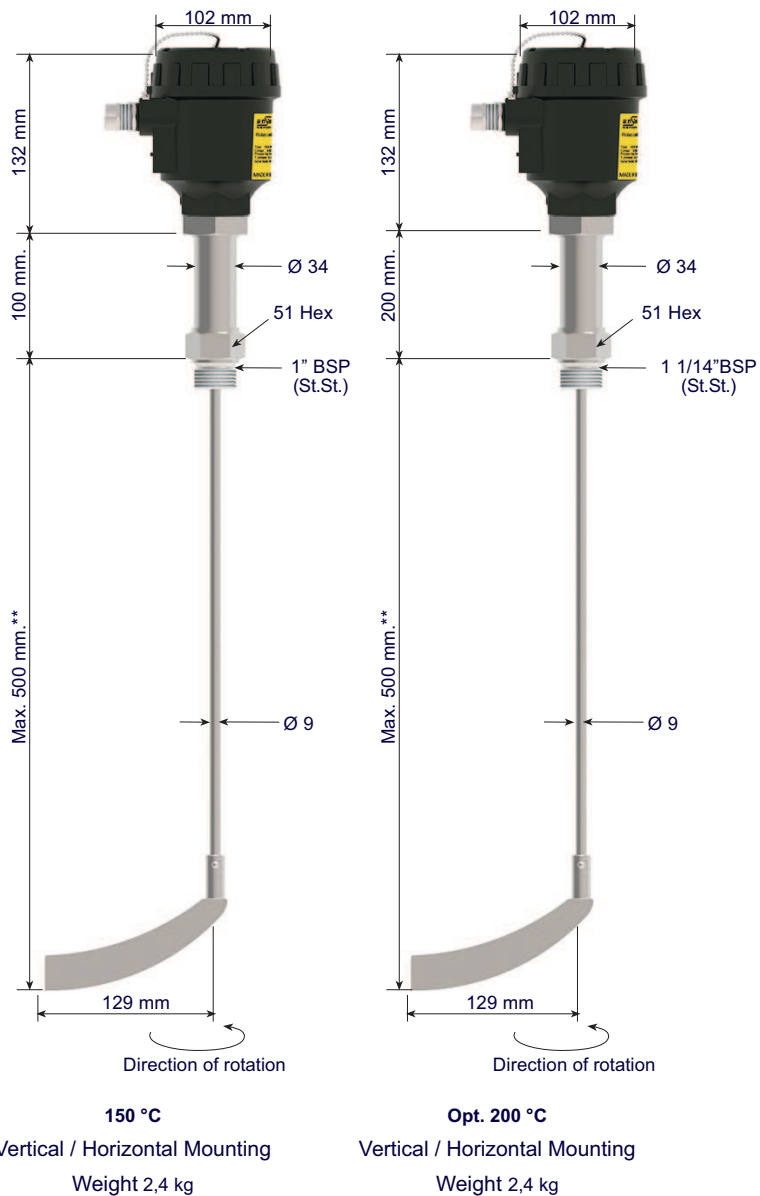
Vertical / Horizontal Mounting

Weight 2,6 kg

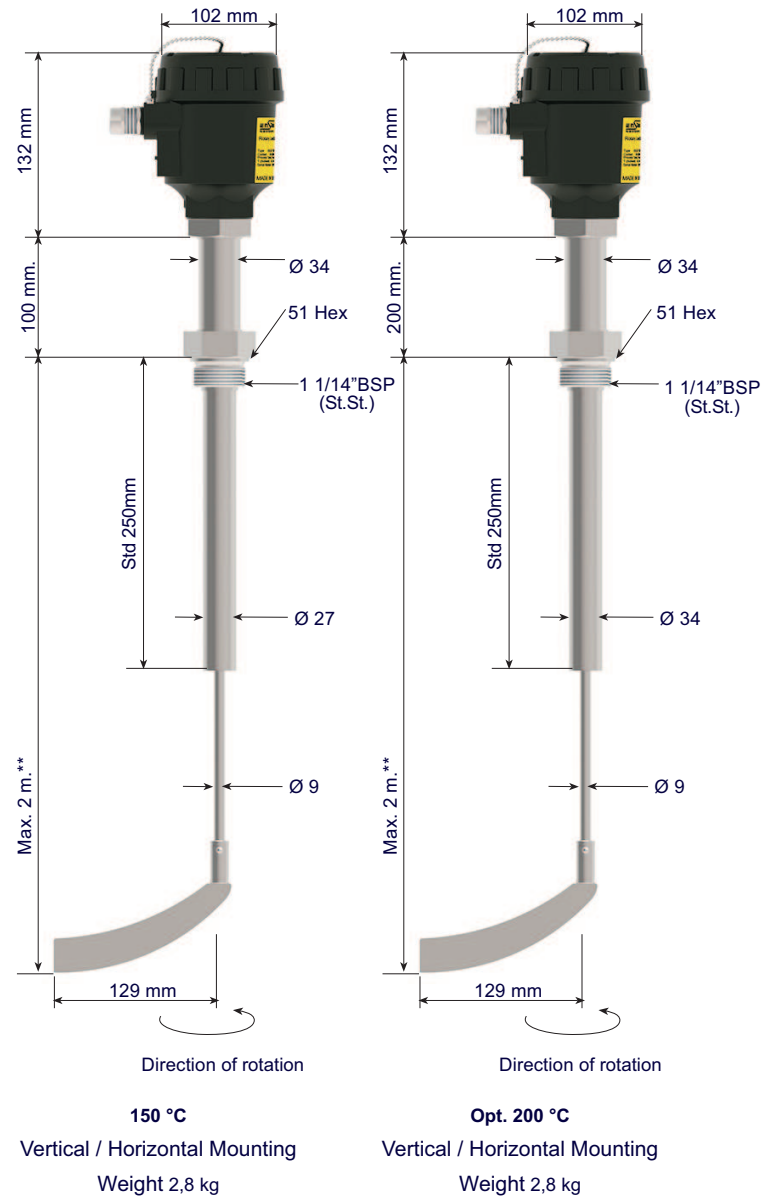
** Tolerance +/- 5 mm .

Sample Models :

DX-ELF 106m



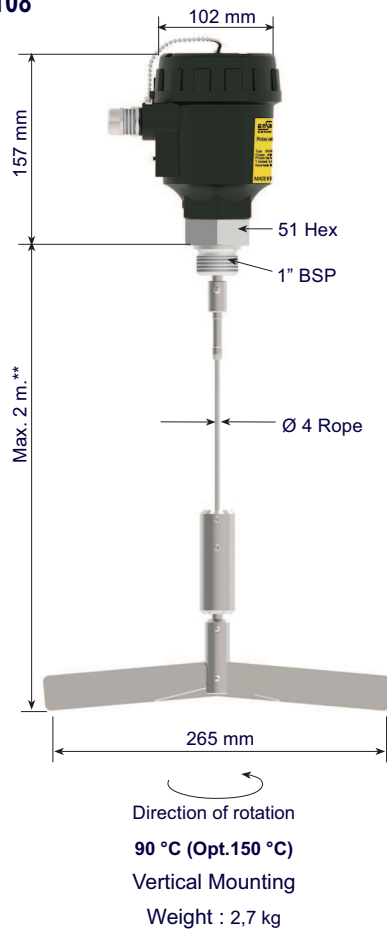
DX-ELF 106



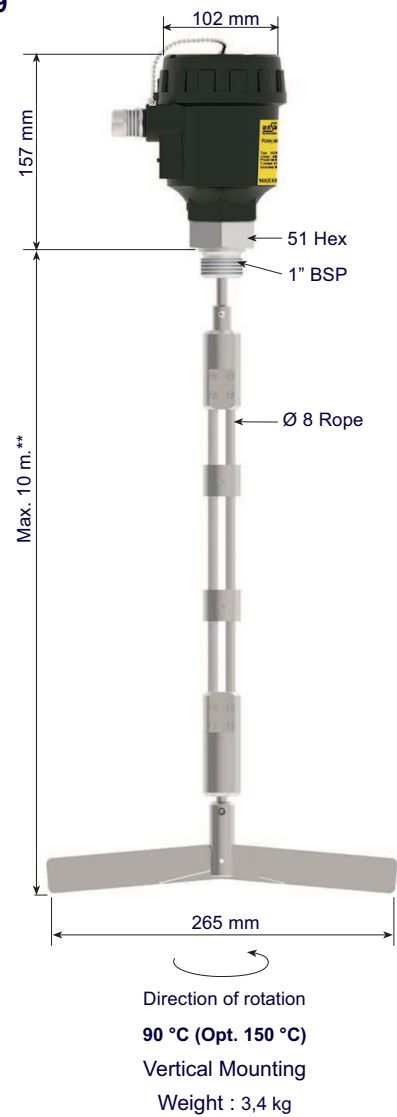
** Tolerance +/- 5 mm .

Sample Models :

DX-ELF 108



DX-ELF 109



** Tolerance ± 5 mm .

Temperature Class Table

(-) 20°C ≤ Ta Ambient ≤ (+) 30°C ... (+) 60°C Working Temperature: (-) 20°C ... (+) 80°C / 90°C / 140°C / 190°C / 250°C			Group II
MODEL DX-ELF101 - DX-ELF102 - DX-ELF103 - DX-ELF104 - DX-ELF105 - DX-ELF108 - DX-ELF109			
Stand by time before opening the cover			20 sec.
Ta AMBIENT TEMPERATURE	Tp PROCESS TEMPERATURE	TEMPERATURE CLASS	
60°C	< 80°C	T6	
60°C	< 90°C	T5	
60°C	< 140°C	T4	
60°C	< 190°C	T3	
60°C	< 250°C	T2	

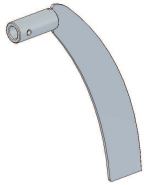
(-) 20°C ≤ Ta Ambient ≤ (+) 30°C ... (+) 60°C Working Temperature : (-) 20°C ... (+) 80°C / 90°C / 140°C / 190°C / 250°C			Group III
MODEL DX-ELF101 - DX-ELF102 - DX-ELF103 - DX-ELF104 - DX-ELF105 - DX-ELF106 - DX-ELF106m - DX-ELF108 - DX-ELF109			
Stand by time before opening the cover			20 sec.
Ta AMBIENT TEMPERATURE	Tp PROCESS TEMPERATURE	TEMPERATURE CLASS	
60°C	< 60°C	T6	

(-) 20°C ≤ Ta Ambient ≤ (+) 30°C ... (+) 60°C Working Temperature : (-) 20°C ... (+) 80°C / 90°C / 140°C / 190°C / 250°C			Group II
MODEL DX-ELF103p			
Stand by time before opening the cover			5 sec.
Ta AMBIENT TEMPERATURE	Tp PROCESS TEMPERATURE	TEMPERATURE CLASS	
60°C	< 60°C	T6	

(-) 20°C ≤ Ta Ambient ≤ (+) 30°C ... (+) 60°C Working Temperature : (-) 20°C ... (+) 80°C / 90°C / 140°C / 190°C / 250°C			Group III
MODEL DX-ELF103p			
Stand by time before opening the cover			5 sec.
Ta AMBIENT TEMPERATURE	Tp PROCESS TEMPERATURE	TEMPERATURE CLASS	
60°C	< 60°C	T6	

Paddle Shapes:

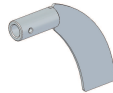
**Standard
Scimitar Paddle**
(258 mm)



Weigh 105 g.

Paddle 01 (304 St.St.)
Paddle 02 (316 St.St.)

**Mini
Scimitar Paddle**
(138 mm)



Weigh 75 g.

Paddle 03 (304 St.St.)
Paddle 04 (316 St.St.)

**Double-Baded
Collapsible Paddle**
(265 mm)



Weigh 235 g.

Paddle 05 (304 St.St.)
Paddle 06 (316 St.St.)

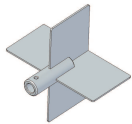
**Double-Baded
Collapsible Paddle**
(540 mm)



Weigh 120 g.

Paddle 11 (Plexiglass)

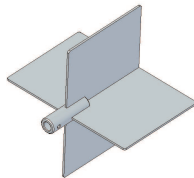
**Cross-Wing
Paddle**
(105x90 mm)



Weigh 185 g.

Paddle 09 (304 St.St.)
Paddle 10 (316 St.St.)

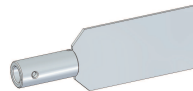
**Cross-Wing
Paddle**
(148x98 mm)



Weigh 515 g.

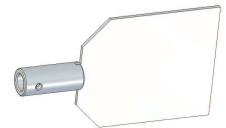
Paddle 07 (304 St.St.)
Paddle 08 (316 St.St.)

**Single Wing
Paddle**
(75x35 mm)



Paddle 12 (304 St.St.)
Paddle 13 (316 St.St.)

**Single Wing
Paddle**
(80x65 mm)



Paddle 14 (304 St.St.)
Paddle 15 (316 St.St.)

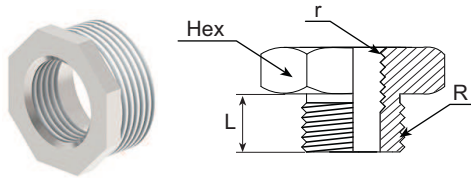
Density of examples that can be applicable :

Material	Min.Density (Kg/m ³)	Material	Min.Density (Kg/m ³)
Chopped Corn	550	Metals, Iron Chips	2650
Crushed limestone	1350-1510	Coal Pellet	400-800
Sawdust	50-160	Dry Malt Floor	310
Rubber Floor	400-800	Dry Coarse Coal	560-725
Tea Leaves	195	Grain - Oat	400-560
Shelled Peanut	550-710	Sugary Granule	880
Dusting Powder	730-990	Wheat	400-500
Acrylic Resin	330	Breadstuff	600-800
Wheat flour	480-560	Aquaous Lime Powder	400-500
Cement Dust	1370-1510	Powder PVC	300-600
Silica Sand	1510	Granule PVC	300-600
Lumpy Polypropylene	540-575	Sunflower Marsh	300-500
Roasted Coffee	350-480	Red Pepper	800-1000

Accessories :

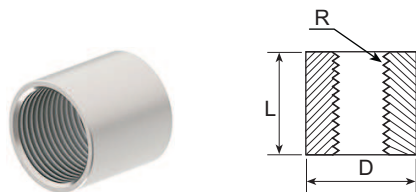
You can consult our company for ex-proof models.

Reduction :



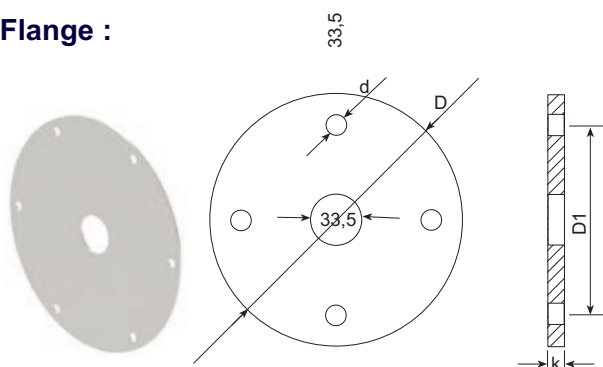
Order Code	R	r	L mm	Hex	Material
/ R1	1" BSP	1 1/4" BSP	21	44	304 St.St.
/ R2	1" BSP	1 1/2" BSP	19	50	304 St.St.
/ R7	1" BSP	2" BSP	25	60	304 St.St.
/ R3	1" BSP	1 1/4" BSP	21	44	316 St.St.
/ R4	1" BSP	1 1/2" BSP	19	50	316 St.St.
/ R5	1" BSP	1 1/4" BSP	22	45	ST 37 Steel
/ R6	1" BSP	1 1/2" BSP	22,5	50	ST 37 Steel

Muff :



Order Code	R	D mm	L mm	Material
/ M1	1" BSP	Ø 37	41	304 St.St.
/ M2	1 1/4" BSP	Ø 47,5	46,5	304 St.St.
/ M3	1 1/2" BSP	Ø 54,4	48,1	304 St.St.
/ M4	1" BSP	Ø 37	41	316 St.St.
/ M5	1 1/4" BSP	Ø 47,5	46,5	316 St.St.
/ M6	2" BSP	Ø 54,4	48,1	316 St.St.
/ M7	1" BSP	Ø 37,6	40,2	ST 37 Steel
/ M8	1 1/4" BSP	Ø 47,8	47	ST 37 Steel
/ M9	1 1/2" BSP	Ø 52,6	46,5	ST 37 Steel

Flange :

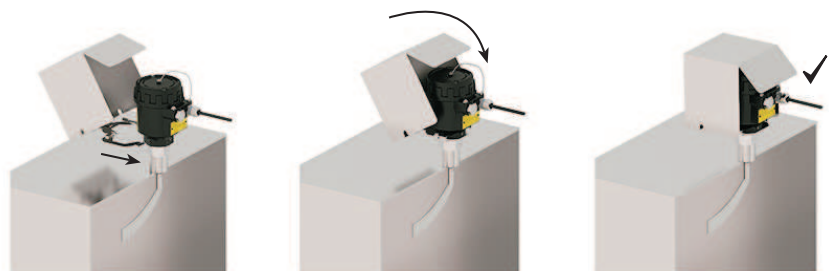


Order Code	D	D1	d	k	Number of Hole	Material
/ F1	110	90	8	2	4	304 St.St.
/ F2	110	90	8	2	4	316 St.St.
/ F3	200	180	8	2	6	304 St.St.
/ F4	200	180	8	2	6	316 St.St.

Note : 1"BSP With 1" Nut-Aluminium

Protection Case:

Material : 304 St. St.
Welded Production
Open - Close hinged
For Protection of switch from external conditions



1 MODEL DX-ELF

Standart.....1

2 CERTIFICATE

None.....0 (EN10204-3-1) Material Certification.....1

3 SHAFT TYPE - (STEM LENGHT) (mm) L

Standart Shaft - L= 150 mm.....1	Shaft With Extention Tube - L= 2m.(For High Temperature).....6
Mini Shaft - L= 75 mm.....2	Mini-Shaft With Extention Tube - L= 150mm Max.500.....6m
Long Shaft - L= 500 mm 3	Rope Shaft - L= 2000 mm).....8
Standart Shaft - L= 250 mm.....3p	Reinforced Rope (28 KN) - L= Max.10 m.....9
Single Shaft - L= 500 mm 4	Special.....x
Cable Extented Shaft - L= 500 mm.....5	

4 PADDLE TYPE

Without Paddle (184 mm) 00	Cross-Wing Paddle (148x98 mm).....304 St. St. 07
Standart Scimater Paddle (258 mm).....304 St. St. 01	Cross-Wing Paddle (148x98 mm).....316 St. St. 08
Standart Scimater Paddle (258 mm).....316 St. St. 02	Cross-Wing Paddle (105x90 mm).....304 St. St. 09
Mini Paddle (138 mm).....304 St. St. 03	Cross-Wing Paddle (105x90 mm).....316 St. St. 10
Mini Paddle (138 mm).....316 St. St. 04	Double-Baded Collapsible Paddle-Plexiglass (540 mm)....11
Double-Baded Collapsible Paddle (265 mm)....304 St. St. 05	Single Wing Paddle (75x35 mm).....304 St. St. 12
Double-Baded Collapsible Paddle (265 mm)....316 St. St. 06	Single Wing Paddle (75x35 mm).....316 St. St. 13
	Single Wing Paddle (80x65 mm).....304 St. St. 14
	Single Wing Paddle (80x65 mm).....316 St. St. 15
	Special.....x

5 CONNECTION

* 1" BSP Male Thread (Std).....0006	1 1/2" BSP Male Thread 0010
1 1/4" BSP Male Thread 0008	Special.....x

***Those can be choosen(applicable)only products with 90 Celcius working temperature.**

6 CONNECTION MATERIAL

304 Stainless Steel.....0001	Special.....x
316 Stainless Steel.....0002	
Aluminium (Std).....031	

7 POWER SUPPLY

24 VDC.....1	220 VAC 50/60 Hz ± %10.....4
24 VAC 50/60 Hz ± %10 2	48 VAC 50/60 Hz ± %10.....5
110 VAC 50/60 Hz ± %10.....3	Special.....x

8 REVOLUTIONS PER MINUTE (rpm)

5 rpm (Std) 1	Special.....x
1,5 rpm 2	

9 MATERIAL OF POWDER FEELTING

PTFE Max. 200 °C.....0066	Special.....x
NBR (Std) Max.90 °C.....0081	
FPM Maxs. 150 °C.....0085	

10 ROLLER

Metal Ball Bearing (Std) 120 °C.....1	Metal Ball Bearing 280 °C.....3
Ceramic Ball Bearing.....2	Metal Ball Bearing 200 °C.....4
	Metal Ball Bearing 330 °C.....5
	Special.....x

11 HOUSING MATERIALS

Aluminum B21x , IP66/68.....704	Special.....x
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12 ELECTRICAL CONNECTION

With Terminal.....00	Special.....x
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13 OPTIONAL

None...../ 0	Muff 1" BSP 304 St.St...../ M1
Reduction 1" BSP - 1 1/4" BSP 304 St.St...../ R1	Muff 1 1/4" BSP 304 St.St...../ M2
Reduction 1" BSP - 1 1/2" BSP 304 St.St...../ R2	Muff 1 1/2" BSP 304 St.St...../ M3
Reduction 1" BSP - 1 1/4" BSP 316 St.St...../ R3	Muff 1" BSP 316 St.St...../ M4
Reduction 1" BSP - 1 1/2" BSP 316 St.St...../ R4	Muff 1 1/4" BSP 316 St.St...../ M5
Reduction 1" BSP - 1 1/4" BSP ST 37 Steel...../ R5	Muff 1 1/2" BSP 316 St.St...../ M6
Reduction 1" BSP - 1 1/2" BSP ST 37 Steel...../ R6	Muff 1" St 37 Steel...../ M7
Reduction 1" BSP - 2" BSP 304 St.St...../ R7	Muff 1 1/4" ST 37 Steel...../ M8
Flange with muff 110 mm 304 St.St...../ F1	Muff 1 1/2" ST 37 Steel...../ M9
Flange with muff 110 mm 316 St.St...../ F2	M12 x 5 pin socket (Max. 60 V)...../ S1
Flange with muff 200 mm 304 St.St...../ F3	External LED socket...../ L1
Flange with muff 200 mm 316 St.St...../ F4	Change for body - Cover/ Z1
Protection plate 304 St.St...../ K1	Special.....x
Shelter - (For the outside of the tank) 304 St.St. / K2	

Important Note : In high temprature aplications , felting and protection material must be selected appropriately.

SAMPLE

DX-ELF 101-01-0006-031-1-1-0081-1-703-00/0

Rotary Level Switch , DX-ELF 101 , Standard Paddle , L=150 mm , 1" BSP, 24VDC