LIQUID LEVEL SWITCHES HORIZONTAL

ELL.. EL..

To monitor liquid level in tanks and switch pumps or an alarm in the event of high or low level. Two switches are required when using both high and low level or limit and alarm functions. EL-041 / 093 switches contain magnets, therefore ensure that no metal objects are present in the liquid.

Volt free contacts

Max. ambient 70°C

Liquid sp. gravity > 0.75

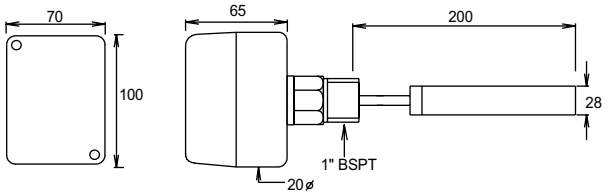
Enclosure Flammability:
ELL.. = UL94-V0
EL.. = Metal

Media :
ELL.. Oil, Diesel, Water, Non aggressive fluids
EL-041/ 093 Oil, Diesel, Water, Some aggressive fluids

Type	Mounting Cut-in	Diff. mm	Max. Media Temp °C	Max. Media Press. Bar	230VAC SPDT	Media Contact Materials	Enclosure
ELL-01	Horizontal	12	90	4	15(8)A	Brass/Phosphor Bronze/Polypropylene	IP54
ELL-02	Horizontal	12	90	4	15(8)A	Brass/Phosphor Bronze/Polypropylene	IP65
EL-041	Horizontal	12	330	25	10(5)A	Stainless steel	IP65
EL-093	Horizontal	125/550 adj.	330	25	10(5)A	Stainless steel	IP65

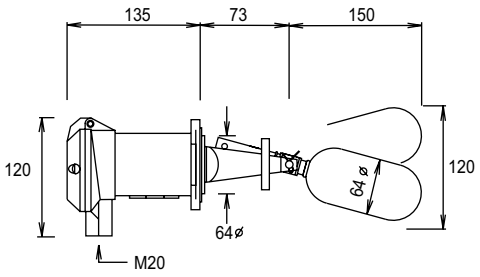
DIMENSIONS

ELL-01 / 02

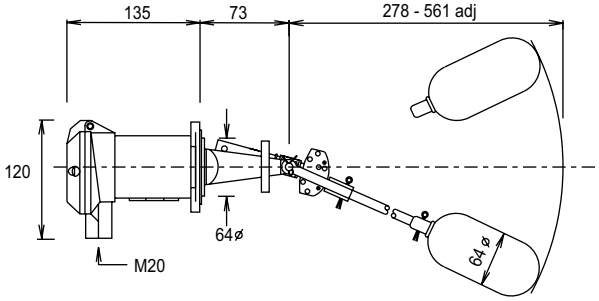


NOTE:
LEVEL SWITCHES MUST BE MOUNTED HORIZONTALLY WITH THE ELECTRICAL ENTRY FACING DOWNWARDS.

EL-041

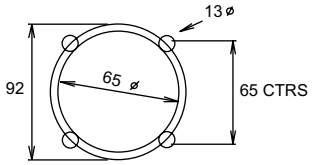


EL-093



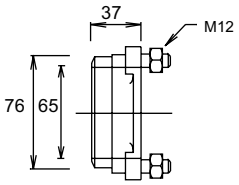
DRILLING DETAIL:

EL-041 DIRECT MOUNTING



Use M12 studs to project 30mm

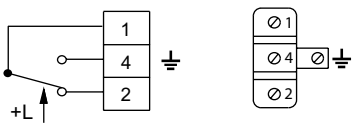
EL-MF.. WELDED MATING FLANGE



ACCESSORIES: WELDED MATING FLANGE for EL-041, 093 **EL-MF** Carbon Steel **EL-MF/ST** Stainless Steel

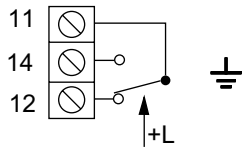
WIRING:

ELL..



On level rise contacts 1-4 close 1-2 open.
On level fall contacts 1-2 close 1-4 open.

EL..



On level rise contacts 11-14 close 11-12 open.
On level fall contacts 11-12 close 11-14 open.

LEVELS

LIQUID LEVEL SWITCHES HIGH - LOW SWITCHING

EL..

These level switches are suitable for mounting from the top of a tank to monitor the level of liquid. The float follows the surface of the liquid level. The switches within the float operate according to the tilting action.

Polypropylene float - PVC cable
Volt free contacts
Liquid sp. gravity > 0.7
Enclosure Flammability = UL94-HB
Media : Water, non-combustible and non-aggressive fluids.
Max pressure 2 bar

Type	Mounting	Difference mm Approximatly	Media Temp °C	PVC Cable Length	Switch Rating	Function	Switch Operation
EL-AL	Vertical	40	0-55	5m	230VAC 6(3)A	Low level alarm	Close on low level & Open on rise
EL-AH	Vertical	40	0-55	5m	230VAC 6(3)A	High level alarm	Close on high level & Open on fall
EL-AHL	Vertical	250/1200 adj. Dead band	0-55	5m	230VAC 6(3)A	Hi & Lo level alarm	Close on high – Off – Close on low
EL-PF	Vertical	250/1200 adj.	0-55	5m	230VAC 6(3)A	Pump filling	Close on low level until high level
EL-PE	Vertical	250/1200 adj.	0-55	5m	230VAC 6(3)A	Pump emptying	Close on high level until low level

DIMENSIONS

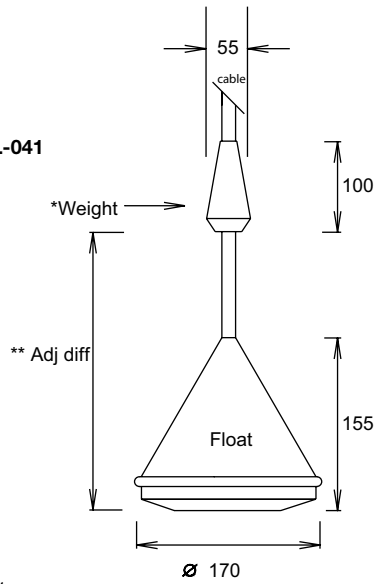
EL..

Fix the bracket to the wall/tank, leaving the float to hang on the cable.

Bracket

Adjust cable length according to the switching level required.

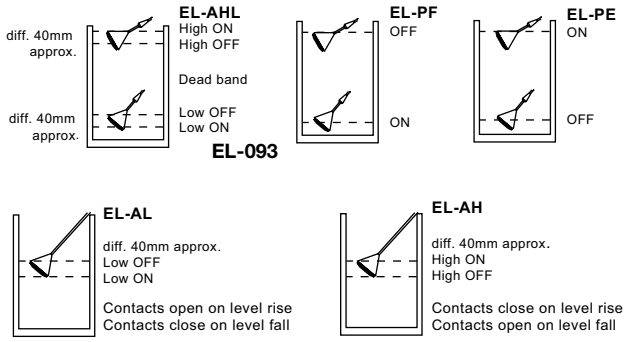
EL-041



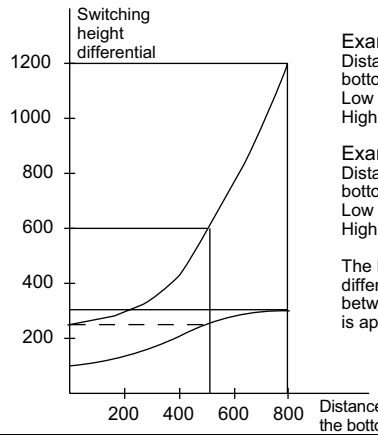
A fixing bracket to secure the cable at the top of the tank is included.

*EL-AL & EL-AH do not use a weight. The switching point can be set by adjusting the length of cable in the tank.

**On other types the switching differential is at minimum when the weight is nearest to the float.



EL-AHL, EL-PF & EL-PE
Adjustable Weight-Switching Differential



Example 1
Distance of weight from the bottom of the float 500mm :
Low switching 250mm Approx.
High switching 600mm Approx.

Example 2
Distance of weight from the bottom of the float 800mm :
Low switching 300mm Approx.
High switching 1200mm Approx.

The Maximum switching differential which can be set between high and low switching is approximatly 900mm.

WIRING:

EL-AL	1-2 close on low level. When the level increases by about 40mm (diff) the contact opens.
EL-AH	1-2 close on high level. When the level decreases by about 40mm (diff) the contact opens.
EL-AHL	1-2 close on high level. When the level decreases by about 40mm (diff) the contact opens. 1-3 close on low level. When the level increases by about 40mm (diff) the contact opens.
EL-PF	1-2 close on low level until high level
EL-PE	1-2 close on high level until low level

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LIQUID LEVEL SWITCHES VERTICAL

EL-140 / 141, ETF-1

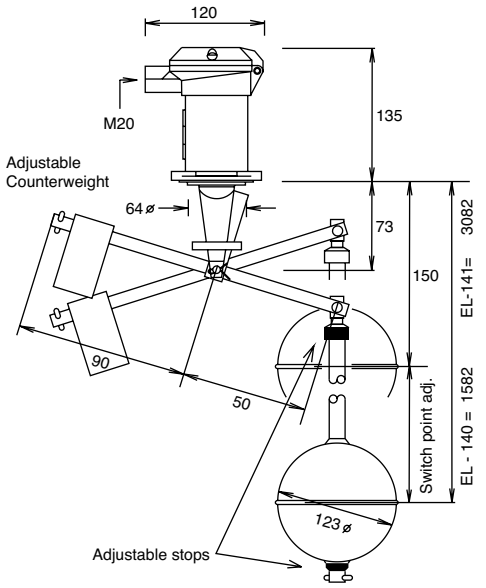
To monitor liquid level in tanks and switch pumps or an alarm in the event of high or low level. Two switches are required when using both high and low level or limit and alarm functions. EL-140 / 141 switches contain magnets, therefore ensure that no metal objects are present in the liquid.

Volt free contacts
Max. ambient 70°C
Liquid sp. gravity > 0.75
Enclosure Flammability:
EL.. = Metal ETF.. = UL94-HB
Media :
ETF.. Oil, Diesel, Water, Non-aggressive fluids
EL-140 / 141 Oil, Diesel, Water, Some aggressive fluids

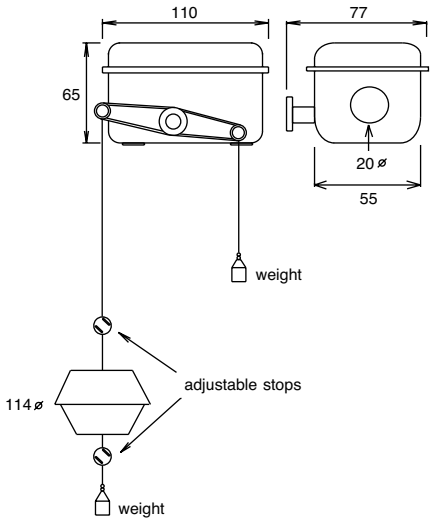
Type	Mounting Cut-in	Diff. mm	Max. Media Temp °C	Max. Media Press. Bar	230VAC SPDT	Media Contact Materials	Enclosure	
EL-140	Vertical	30/1340 adj.	330	25	10(5)A	Stainless steel	IP65	SPECIAL ORDER ONLY
EL-141	Vertical	30/2340 adj.	330	25	10(5)A	Stainless steel	IP65	
ETF-1	Vertical	30/900 adj.	65	5	10(5)A	Nylon/Plastic	IP54	

DIMENSIONS

EL-140 / 141



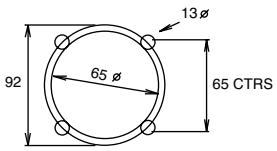
ETF-1



When float reaches upper adj stop C-NC close : When float reaches lower adj stop C-NO close
EL-140/141 - The counter balance/weight on the arm/lever should be adjusted for correct operation.

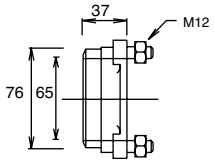
DRILLING DETAIL:

EL-041 DIRECT MOUNTING

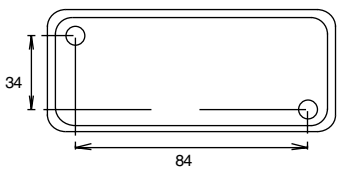


Use M12 studs to project 30mm

EL-MF.. WELDED MATING FLANGE



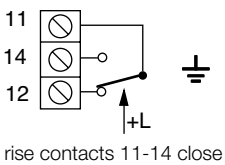
ETF-1



ACCESSORIES: WELDED MATING FLANGE for EL-041, 141 **EL-MF** Carbon Steel **EL-MF/ST** Stainless Steel

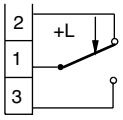
WIRING:

EL..



On level rise contacts 11-14 close 11-12 open.
On level fall contacts 11-12 close 11-14 open.

ETF..



On level rise contacts 1-3 close 1-2 open.
On level fall contacts 1- 2 close 1-3 open.

LIQUID LEVEL TRANSMITTER 4-20MA ULTRASONIC

ELU-8

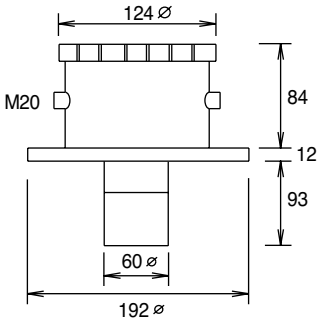
Used to measure fluid depth or target distance in tanks or sumps / slurries. The unit produces a 4-20mA output signal linear across the desired measuring range. Suitable for use with BMS systems. The unit eliminates spurious echoes and ensures a steady output.

Accuracy 0.25% of measuring range.
Pressure -0.25 / +2 bar
Programmable display : 4 digit concealed
Flange mounting : DN80 PN16, BS10 TABLE D 3î, ANSI 3î.
Load at 24VDC 250Ω
Ultrasonic cone angle 12°
Materials : UPVC, Polypropylene
The unit is not suitable for use with any media that has visible fumes.

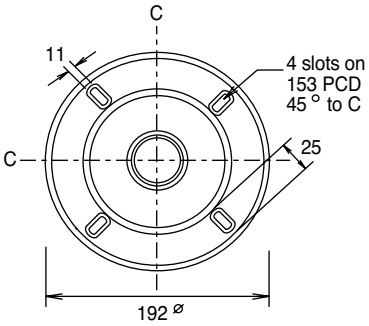
Type	Measuring Range	Operating Temp °C	Span Min	Resolution	Supply ± 15%	Output 2 wire	Max Power	Protection
ELU-8	0.5 / 8m	-10/+60	100mm	1mm	24VDC	4-20mA loop	0.5W	IP68

DIMENSIONS

SIDE VIEW

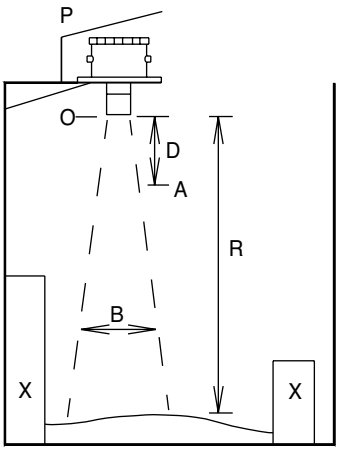


PLAN VIEW

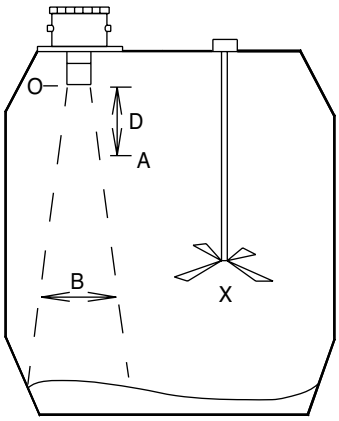


INSTALLATION:

OPEN TANK / SUMP



CLOSED TANK



O : Origin of measurement. All measurements (distances / depths) are taken from O.
D : Dead band 500mm.
A : Max media height for signal range. If measurement is required to the top of the tank, mount the transmitter 500mm higher.
P : Protect the unit from sunlight.
B : Beam width 0.21 x Range (R)
X : Beam must not touch any obstacles. Ensure that the beam path is uninterrupted.

Mounting :

OPEN TANK ñ Mount at least 0.5m above the highest media level and 105mm away from walls for every 1m of media depth.
CLOSED TANK ñ Mount at least 0.5m above the highest media level. Do not mount the unit in the centre of the tank to monitor powder or granules etc. which can form into a cone shape and give inaccurate readings - in this case the unit should be mounted close to the edge as shown.
Use plastic mounting bolts. Do not over-tighten as this may cause acoustic coupling to the mounting and give false readings.
The transmitter must be mounted on the gasket supplied.

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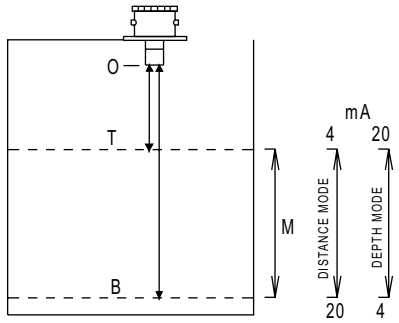
LIQUID LEVEL TRANSMITTER 4-20MA ULTRASONIC

MEASUREMENT :



The unit can be set to read in either Distance or Depth mode.
M : minimum distance between set points must be > 100mm
D : 500mm Dead band O : Start of measurement

Distance Mode :
The 4mA point is required to be closer to 'O' than the 20mA point
ie O-T = 1m = 4mA O-B = 5m = 20mA
At 2m the unit will give an output of 8mA

Depth Mode :
The 20mA point is required to be closer to 'O' than the 4mA point
ie O-T = 1m = 20mA O-B = 5m = 4mA
At 2m the unit will give an output of 16mA

INSTALLATION:

Press the following keys in sequence M ↑ ↓ ↑ ↓. The display now shows 'Ent'

1. Scaling Choose either Manual or Automatic scaling.

Manual Achieved by taking measurement from O to target distance for the 4mA & 20mA points.
Press E to display current setting. To change, press E again & use the ↑ ↓ keys to set the distance (m) for the 4mA setting. Press E to confirm setting - unit displays 'donE' & then the new setting. Press ↑ . Unit now displays current 20mA setting. To change, press E & use the ↑ ↓ keys to set the distance (m) for the 20mA setting. Press E to confirm the setting. The unit displays 'donE' and then the new setting. Press M twice to enter run mode.

Automatic : Achieved by adjusting physical tank contents to the the 4mA & 20mA points
Press ↑ . The unit displays 'Auto'. Press E once and the display will show the 4mA distance of media from the sensor. Press E to store the value. Press E to confirm. Unit displays 'donE' and then displays the current setting. Press ↑ . Unit displays the 20mA distance of media from the sensor. Press E to store the value. Press E to confirm. Unit displays 'donE' and then displays the current setting. Press M twice to enter run mode.

2. Display Selection:

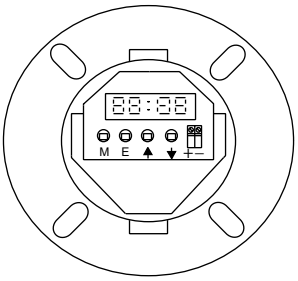
Press keys in sequence M ↑ ↓ ↑ ↓. Unit displays 'Ent' Press ↑ ↑. The unit now displays 'disP'. Press E.
To display depth/distance in metres : Use the ↑ ↓ keys to display depth above 4mA point or distance above 20mA point in metres. Press E to confirm the setting. Unit displays 'donE'. Press M twice to enter run mode.
To display depth/distance as % of range. Use the ↑ ↓ keys to display depth above 4mA point or distance above 20mA point in metres. Press ↓ . The unit now displays 'PerC'. Press E to confirm the setting The unit displays 'donE' Press M twice to enter run mode.

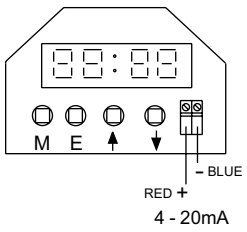
3. Lost Echo Response:

This occurs if the unit fails to receive 'good' echoes. When normal conditions resume, so do output & display.
Press keys in sequence M ↑ ↓ ↑ ↓ ↓. Unit displays 'LE'. Press E. then ↑ ↓ keys to select the 'lost echo' output required :-
Select '20mA' : drive to 20mA OR '4mA' : drive to 4mA OR '21mA' : drive to 21mA OR 'hold' : holds last 'good' reading.
Press E to confirm setting. The unit displays 'donE' Press M twice to enter run mode.

WIRING:

Detail showing keypad and display located under the transmitter cover





Terminals 0.5-1.5mm² Sensor / control signal cable size 7/0.2mm Max length 300m
Screened cable is recommended The screen should be earthed at controller end only
Keep sensor/control signal wires away from power cables/units which may cause interference.

TROUBL E SHOOTING :

1. Unit gives 'Lost Echo' reading 'LE'	Target is out of range or media is too dusty/steamy or excessive foam on liquid surface. Check tank conditions and/or re-site transmitter.
2. Reading not changing with level.	Obstruction interfering with echo ie agitator blade or tank wall. Re-site transmitter away from obstructions.
3. Reading erratic.	Media unsteady or within dead band. Electrical noise interference. Re-site transmitter ensuring media is 500mm away. Check wiring.
4. Reading occasionally high when tank not full.	Close range echo being detected. Acoustic coupling to mounting bracket. Re-site transmitter. Fit foam gasket and loosen mounting bolts.
5. No Display / Loop current.	Power failure. Check power supply.
6. Display reads " ---- " or " _ _ _ _ "	Media over or under range ie outside the 4-20mA setpoints. Reset the unit.
7. Display reads "Err"	4mA & 20mA setpoints are within 100mm of each other. Reset the unit.