HYCONTROL
LEVEL MEASUREMENT SOLUTIONS

CAPACITANCE LEVEL SWITCHES

HYCONTROL CAPACITANCE LEVEL SWITCH RANGE

Hycontrol's ME Series capacitance level switches provide simple, accurate and reliable level control for a wide range of applications. They are suitable for use on liquids, solids, slurries, pastes, granules, powders and pellets in high temperature, high pressure and corrosive environments.

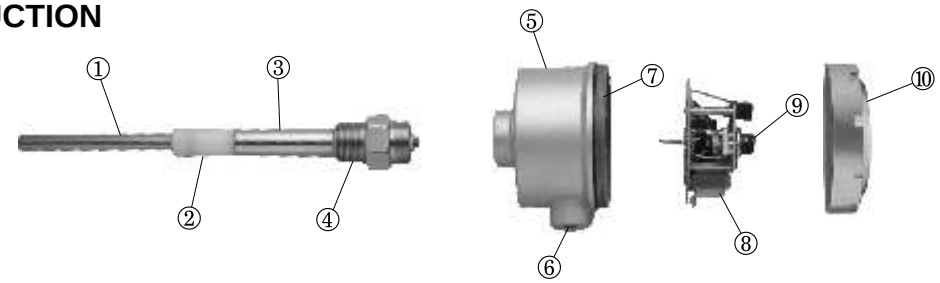
Unlike some other capacitive switches, this unit works independently of the tank walls using an integral grounding sleeve without the need for a reference probe, which enables it to be used in concrete, plastic or other non-metallic tanks.

This technology also provides an ideal solution for interface detection applications such as oil on water and liquid detection underneath a layer of foam.

CAPACITIVE SWITCH FEATURES

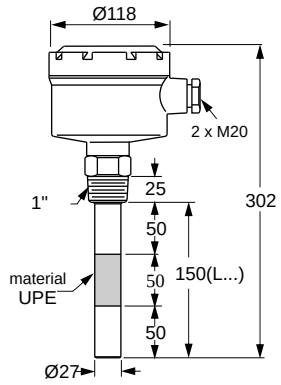
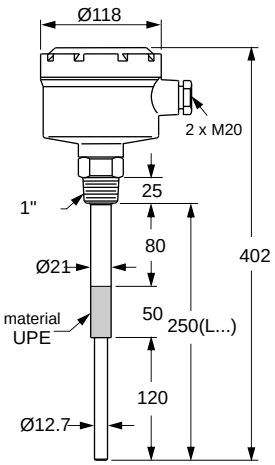
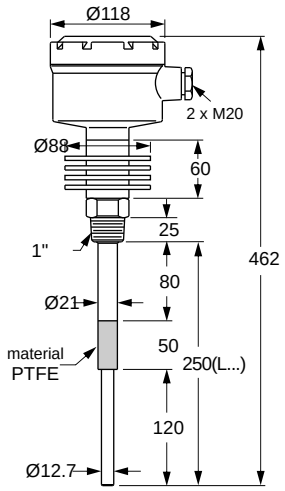
- Easy installation through a 1" BSP process fitting
- High corrosion and chemical resistance as standard options
- Universal design can be used for high or low level detection
- Failsafe options high and low selectable
- Multiple versions with rod and cable to simplify mounting options
- High temperature versions up to 800°C
- Low maintenance technology with no moving parts
- Hazardous area certified versions ATEX-approved
- Adjustable sensitivity for a wide range of products
- Adjustable time delay to stop spurious signals from surface ripple
- Anti-static probes for plastic pellet applications with high static probability
- Remote electronics option for high vibration applications
- Interface level detection for difficult applications

CONSTRUCTION

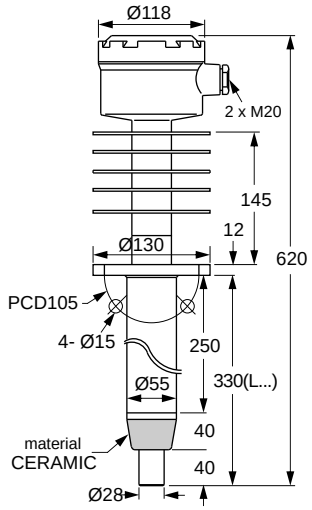
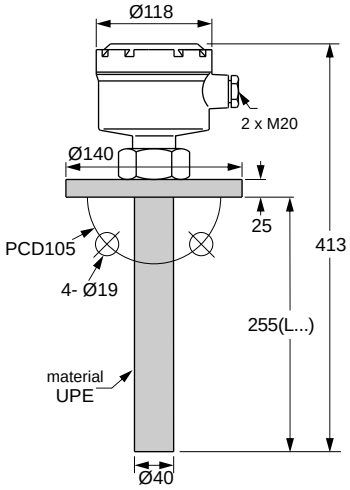
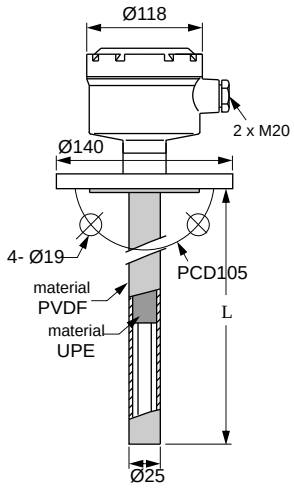


1. Probe : *304SS or 316SS*
2. Insulation : *UPE or PTFE*
3. Grounding Sleeve : *304SS or 316SS*
4. Connection : *1" BSP standard*
5. Housing : *Aluminum IP65 epoxy coated*
6. Conduit entry : *2 x M20*
7. Housing O-Ring : *NBR*
8. PC board : *A, B, C, D Type*
9. Sensitivity adjustment : *10pF, 20pF, 40pF*
Failsafe : *Hi / Low Selectable*
10. Cover : *Aluminum epoxy coated*

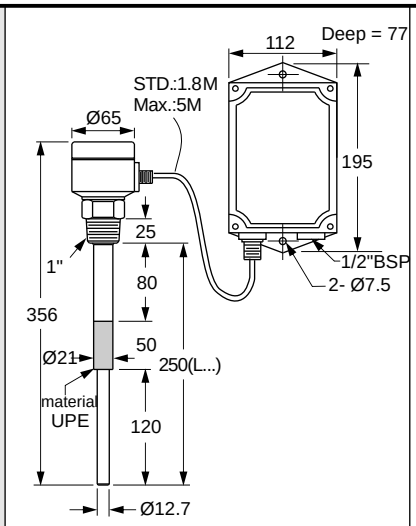
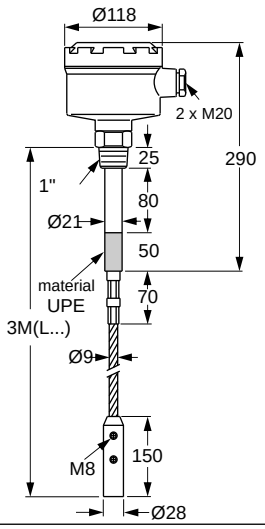
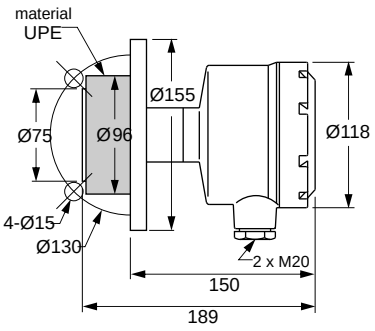
STANDARD GENERAL PURPOSE VERSIONS

Dimension			
Model	**ME10 A/B/C** **[STANDARD TYPE]**	**ME11 A/B/C** **[STANDARD TYPE]**	**ME20 A/B/C** **[HI-TEMP. TYPE]**
Operating Temp.	-20°C~80°C	-20°C~80°C	-20°C~200°C
Probe Material	304SS	304SS	304SS
Insulation Material	UPE	UPE	PTFE
Connection	1"BSP	1"BSP	1"BSP
Sensitivity Range	10pF, 20pF, 40pF	10pF, 20pF, 40pF	10pF, 20pF, 40pF
Weight	Approx. 1.9kg	Approx. 1.9kg	Approx. 2.4kg
Enclosure details	Aluminum IP65		
Supply Voltage	110/220VAC ±10% or 24VDC		
Delay Time	0~6 seconds		
Power Consumption	2W		
Contact Rating	5A/240VAC or 5A/30VDC, SPDT or NPN 100mA		

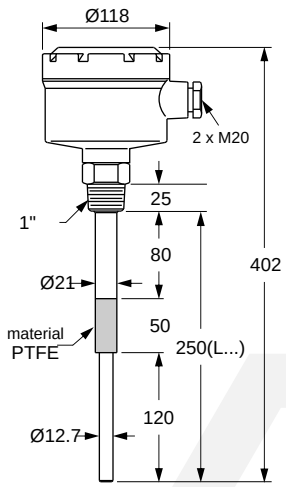
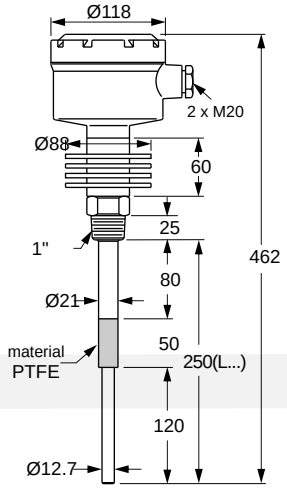
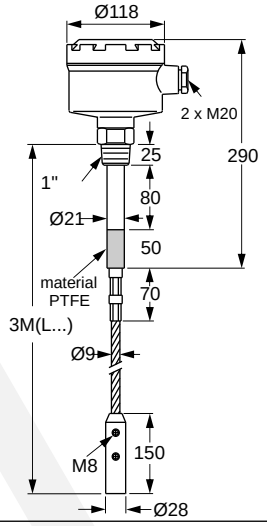
HIGH TEMPERATURE AND CORROSION RESISTANT VERSIONS

Dimension			
Model	**ME28 A/B/C** **[HI-TEMP.]**	**ME30 A/B/C** **[CORROSION-PROOF]**	**ME32 A/B/C** **[CORROSION-PROOF]**
Operating Temp.	-20°C~800°C	-20°C~80°C	-20°C~120°C
Probe Material	304 SS	304 SS	Wetted part: PVDF coating
Insulation Material	CERAMIC	Wetted part: UPE coating	UPE
Connection	2"x5kg/cm^2 JIS Flange (SS)	1-1/2"x10kg/cm^2 JIS Flange (UPE)	1-1/2"x10kg/cm^2 JIS Flange (SS) with PVDF Washer (5mm)
Sensitivity Range	10pF, 20pF	10pF	10pF, 20pF
Weight	Approx. 6.5kg	Approx. 2kg	Depends on the length
Enclosure details	Aluminum IP65		
Supply Voltage	110/220VAC±10% or 24VDC		
Delay Time	0~6 seconds		
Power Consumption	2W		
Contact Rating	5A/240VAC or 5A/30VDC, SPDT or NPN 100mA		

REMOTE AND CABLE VERSIONS

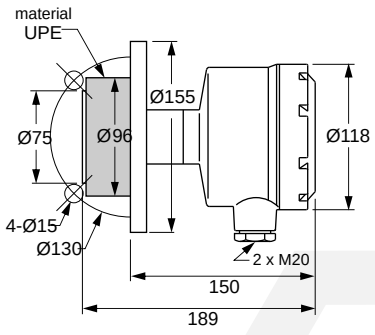
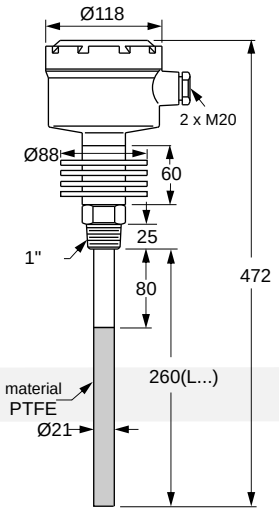
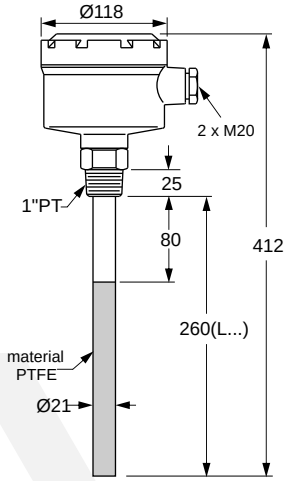
Dimension			
Model	**ME40 A/B/C** **[REMOTE PROBE TYPE]**	**ME50 A/B/C** **[WIRE-PROBE TYPE]**	**ME60 A/B/C** **[PLATE TYPE]**
Operating Temp.	-20°~100°C	-20°C~80°C	-20°C~80°C
Probe Material	304 SS	304 SS cable	304 SS
Insulation Material	UPE	UPE	UPE
Connection	1"BSP (SS)	1"BSP (SS)	2-1/2"x 5kg/cm^2 JIS Flange (SS)
Sensitivity Range	10pF	10pF, 20pF, 40pF	10pF, 20pF, 40pF
Weight	Approx. 3kg	Approx. 4.1kg	Approx. 3.2kg
Enclosure details	Aluminum IP65		
Supply Voltage	110/220VAC±10% or 24VDC		
Delay Time	0~6 seconds		
Power Consumption	2W		
Contact Rating	5A/240VAC or 5A/30VDC, SPDT or NPN 100mA		

INTRINSICALLY SAFE VERSIONS FOR HAZARDOUS AREAS

Dimension			
Model	**ME70D (with EX-75U)** **[STANDARD TYPE]**	**ME72D (with EX-75U)** **[HI-TEMP. TYPE]**	**ME75D (with EX-75U)** **[WIRE-PROBE TYPE]**
Operating Temp.	-20°C~80°C	-20°C~200°C	-20°C~80°C
Probe Material	304 SS / 316 SS	304 SS / 316 SS	304 SS / 316 SS cable
Insulation Material	PTFE or UPE	PTFE or UPE	PTFE or UPE
Connection	1"BSP (SS)	1"BSP (SS)	1"BSP (SS)
Sensitivity Range	10pF, 20pF, 40pF	10pF, 20pF, 40pF	10pF, 20pF, 40pF
Weight	Approx. 1.9kg	Approx. 2.4kg	Approx. 4.1kg
Enclosure details	Aluminum IP65		
Supply Voltage	16~24VDC		
Enclosure Protection	ATEX EEx ia IIC (¤)		
Power Consumption	2W		
Contact Rating	NPN 100mA		

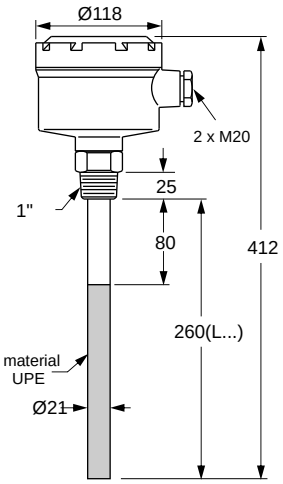
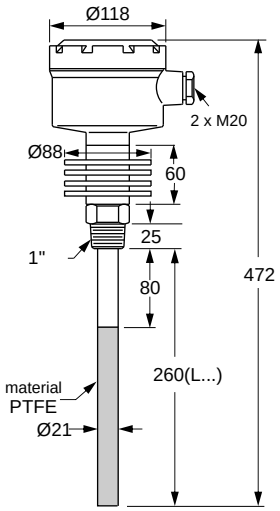
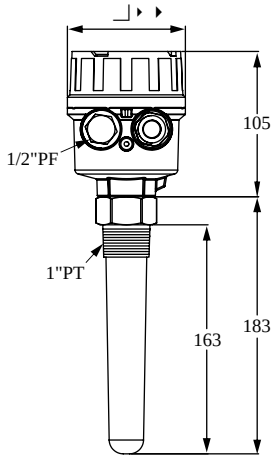
(¤) For ATEX approvals contact the office

INTRINSICALLY SAFE VERSIONS FOR HAZARDOUS AREAS

Dimension			
Model	**ME76D (with EX-75U)** **[PLATE TYPE]**	**ME77D (with EX-75U)** **[ANTI-STATIC TYPE] HI-TEMP.**	**ME78D (with EX-75U)** **[ANTI-STATIC TYPE]**
Operating Temp.	-20°C~80°C	-20°C~200°C	-20°C~80°C
Probe Material	304 SS / 316 SS	PTFE or UPE coating	PTFE or UPE coating
Insulation Material	PTFE or UPE	PTFE or UPE	PTFE or UPE
Connection	2-1/2"x 5kg/cm^2 JIS Flange (SS)	1"BSP (SS)	1"BSP (SS)
Sensitivity Range	10pF, 20pF, 40pF	10pF, 20pF	10pF, 20pF
Weight	Approx. 3.2kg	Approx. 3.1kg	Approx. 2kg
Enclosure details	Aluminum IP65		
Supply Voltage	16~24VDC		
Enclosure Protection	ATEX EEx ia IIC (¤)		
Power Consumption	2W		
Contact Rating	NPN 100mA		

(¤) For ATEX approvals contact the office

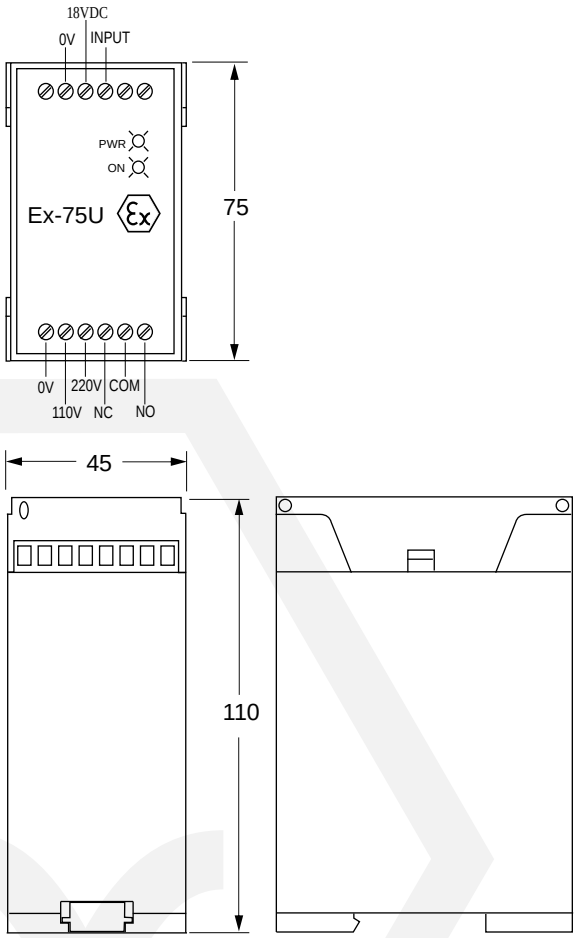
ANTI-STATIC AND TEFLON PROBE VERSIONS

Dimension			
Model	**ME80 A/B/C** **[ANTI-STATIC TYPE]**	**ME81 A/B/C** **[ANTI-STATIC TYPE] HI-TEMP.**	**ME90** **[MULTI-FUNCTION TYPE]**
Operating Temp.	-20°C~80°C	-20°C~200°C	-20°C~80°C
Probe Material	UPE coating	PTFE coating	PTFE, PP (ME90 R/N) (ME90R-M/ ME90N-M)
Insulation Material	UPE	PTFE	————————
Connection	1"BSP (SS)	1"BSP (SS)	1"BSP
Sensitivity Range	10pF, 20pF	10pF, 20pF	10pf (std.)
Weight	Approx. 2kg	Approx. 2.5kg	Approx. 0.8kg
Enclosure details	Aluminum IP65		Aluminum IP65
Supply Voltage	110/220VAC±10% or 24VDC		20~250Vac/dc, 50/60 Hz
Delay Time	0~6 seconds		0~6 sec
Power Consumption	2W		2W
Contact Rating	5A/240VAC or 5A/30VDC, SPDT or NPN 100mA		R: Relay SPDT, 5A/250Vac/30Vdc N: MOSFET 400mA/ 60Vac/dc

HAZARDOUS AREA INTRINSICALLY SAFE VERSION

EX-75U Zener barrier provides intrinsic safety to the ME7• D-type level switch by limiting the current from the control module in the safe area to the level switch in the hazardous zoned area.

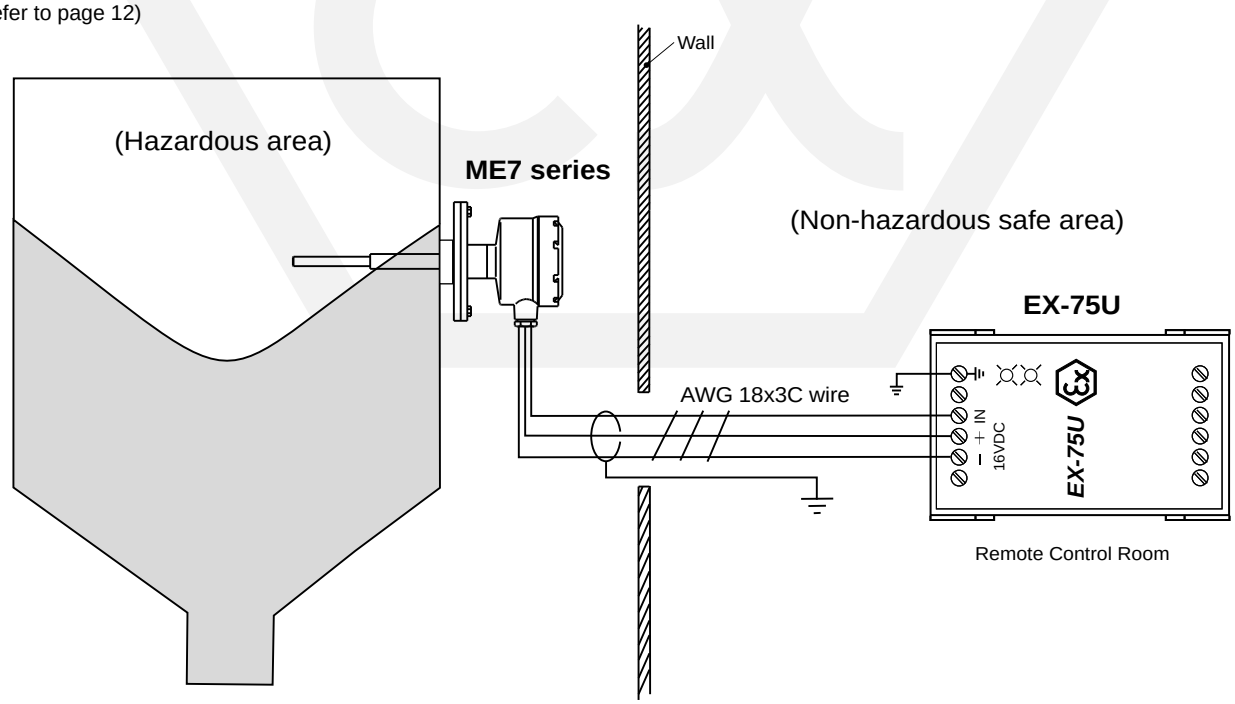
Please contact Hycontrol for certificate copies or more information if required.



1. Supply voltage : *110 / 220VAC*
2. Power consumption : *2W*
3. Input signal : *NPN transistor resistance Ri= 500Ω*
4. Output voltage : *16~24 VDC*
5. Short circuit current : *25mA max.*
6. Relay output : *SPDT 10A /30VDC 10A /220VAC*
7. Operating temp. : *-20°C ~ 60°C*
8. Weight : *0.3 kg*
9. Enclosure mounting : *DIN Rail*

WIRING CONFIGURATION

(Refer to page 12)



Hycontrol level switches must be installed and wired in accordance with the appropriate National Standards concerning installation in hazarous environments.

ADJUSTMENT

COARSE CALIBRATION

With the probe in contact with the material being detected, set the ***SENSITIVITY ADJ*** pointer to position **H** and then using a blade screwdriver set the ***COARSE*** adjustment until the ***INDICATOR*** lamp is on. Rotating the ***COARSE*** adjustment clockwise and counter-clockwise will turn the ***INDICATOR*** lamp on and off. Ensure the lamp is on before moving on to adjusting the sensitivity.

SENSITIVITY ADJUSTMENT

After setting the ***COARSE*** calibration the ***INDICATOR*** lamp will switch on when probe is touching the material and off when in free air.

Make sure the probe is in contact with the material and then turn the ***SENSITIVITY ADJ*** knob clockwise until the ***INDICATOR*** lamp turns off. Set the ***SENSITIVITY ADJ*** pointer half way between **H** and the point that the ***INDICATOR*** lamp switches off.

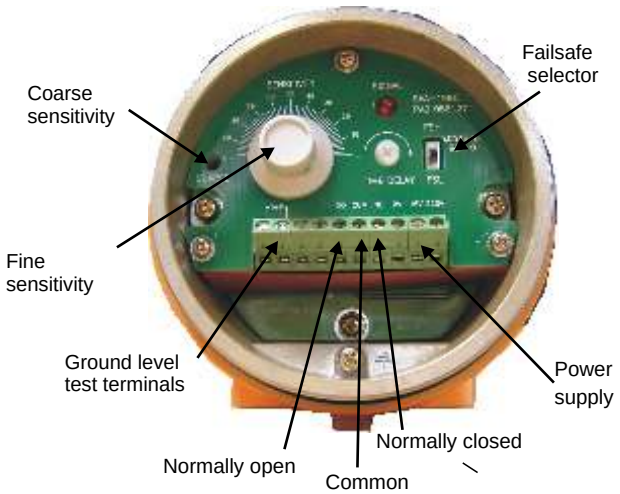
Calibration is now complete.

DELAY FUNCTION SETTING

This feature is used to stop any spurious signals to the switch from surface ripple or agitation of the product. It also protects the relay from premature wear by eliminating contact chatter by adding a small time delay from when product contacts the probe .

The factory setting is zero seconds with the ***DELAY*** screw fully counter clockwise.

Turning the screw in a clockwise direction introduces a delay between the ***INDICATOR*** lamp coming on and the relay changing its state.



ME10,20,30,50,60,70,80 A/B/C/D

CALIBRATION STEP OF SENSIVITY

If LED indicator is not on after the above calibration, please perform the following procedures:

1. Set sensitivity to be ***OFF*** (*Figure 2*).
2. Turn ***COARSE*** until red ***SIGNAL LED*** just turns on.
3. Set sensitivity ***ON*** (90%) in dip switch 1 (*Figure 3*). LED indicator will turn off and no signal output. Then set sensitivity all in ***OFF*** position. LED indicator will turn on again to complete the calibration procedure.

Figure 1

Figure 2

Figure 3

Sensitivity Adjustment

Sensitivity Adjustment	4 Step DIP Switch				
	(1)	(2)	(3)	(4)	Adjust Mode
1P	●				Switch (1) ON?Switch (2+3+4) OFF
2P		●			Switch (2) ON?Switch (1+3+4) OFF
3P			●		Switch (3) ON?Switch (1+2+4) OFF
4P				●	Switch (4) ON?Switch (1+2+3) OFF
5P		●	●		Switch (2+3) ON?Switch (1+4) OFF
6P	●	●	●		Switch (1+2+3) ON?Switch (4) OFF
7P			●	●	Switch (3+4) ON?Switch (1+2) OFF
8P	●		●	●	Switch (1+3+4) ON?Switch (2) OFF
9P		●	●	●	Switch (2+3+4) ON?Switch (1) OFF
10P	●	●	●	●	Switch (1+2+3+4) ON

Fail Safe Selection

FSH Mode:

Fail-Safe High means that the relay will be energized when the sensing probe is uncovered by the medium (***SIGNAL LED*** is on) and will de-energize when the probe is covered (***SIGNAL LED*** is off). In this mode, a power failure will cause the relay to de-energize like the probe is covered.

FSL Mode:

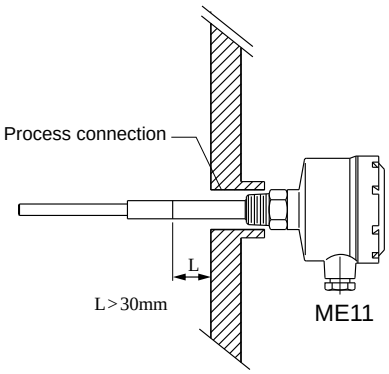
Fail-Safe Low means that the relay will be de energized when the probe is uncovered (***SIGNAL LED*** is off) and will energize when the probe is covered(***SIGNAL LED*** is on). In this mode, a power failure will cause the relay to de-energize like the probe is uncovered.

Time Delay:

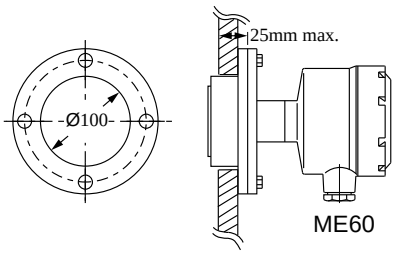
1. Time delay allows the level switch to change state within a range from 0-6 seconds, when the condition changes from a *covered* to an *uncovered* condition or from an *uncovered* to a *covered* condition. If the delay mode is not set, the level switch will change state immediately when the probe is covered by the medium.

2. Turn the time-delay knob clockwise to increase delay time and counter-clockwise to decrease delay time.

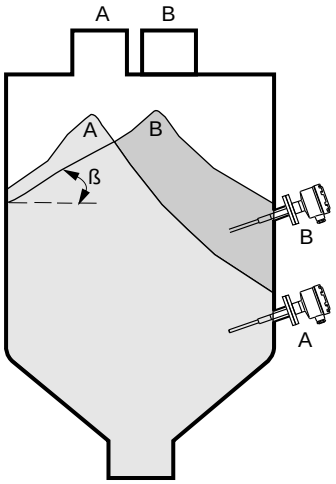
INSTALLATION GUIDE



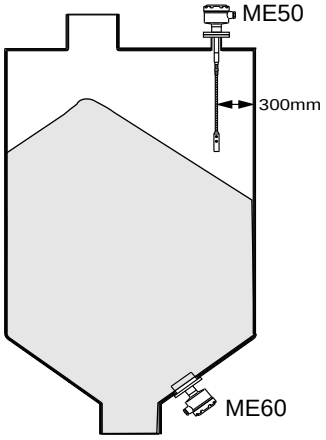
The grounding sleeve must be mounted to protrude at least 30mm from the vessel wall.



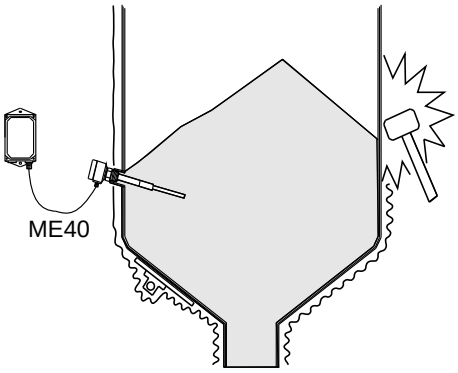
For the ME60 type to be mounted properly the vessel walls should not exceed 25mm thickness.



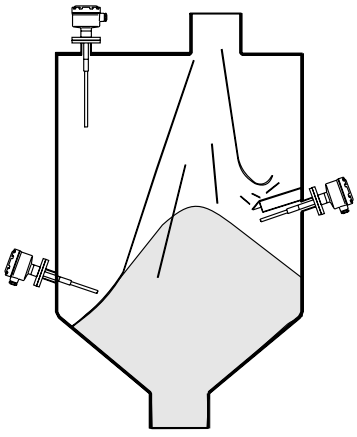
To prevent false readings on solids applications it is best to make sure the material flows symmetrically. If the inlet is not located in the centre portion of the tank roof, check the flow pattern (a angle) of your material and place the probe in the appropriate location.



If the probe is mounted on the top, make sure the length of probe is enough to touch the highest level of raw material.
The ME50 type must have at least 300mm from the silo wall.
The ME60 type is usually located at the lower position.

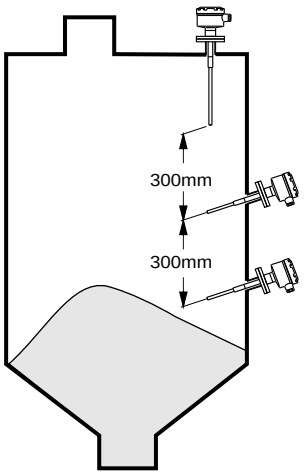


For Non-Stationary or material that will be vibrated a separate control unit such as the ME40 type is recommended.

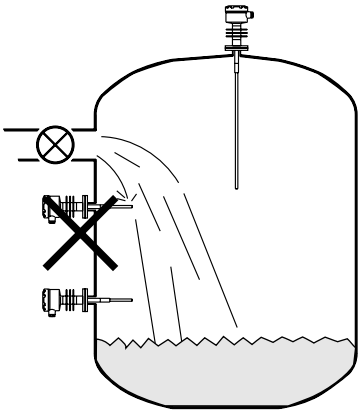


Where possible install the probe away from the inlet to reduce the risk of inflowing material damaging the probe. If the probe is near an inlet, we recommend placing a protective cover 200mm above the probe. The cover should be parallel to the probe and the same length.

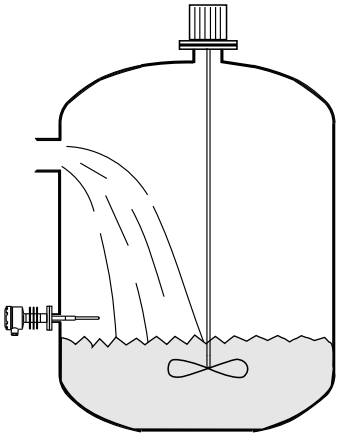
INSTALLATION GUIDE



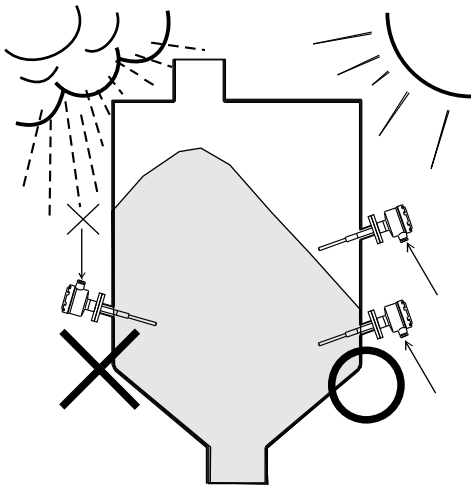
If multiple probes are mounted In the same vessel they must be separated by at least 300 mm to reduce probe to probe interference .



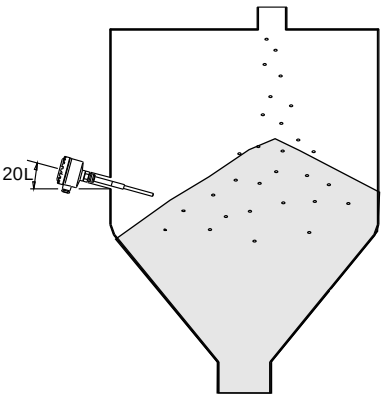
The probe should not be mounted underneath a liquid inlet otherwise it will switch on erroneously.



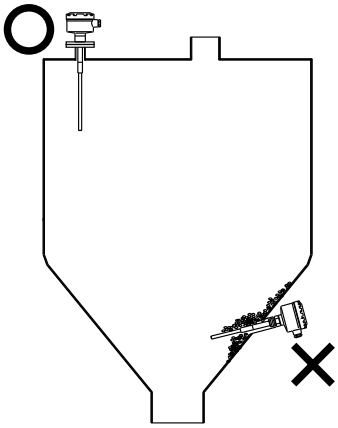
If the tank is equipped with an agitator, please use the time-delay function to stop spurious signals



The cable inlet should face downward to avoid rainwater ingress.



Mounting the probe at a 20° incline optimizes the results and increases the switch sensitivity.



Mounting the probe at top of tank will help avoid material bridges from forming and reduce false alarms.

ORDER INFORMATION

ME 10 A DT 0250 MD G

Model

10 --- Standard Type
20 --- Hi-Temp Type
28 --- Ultra Hi-Temp Type
30 --- Corrosion Proof Type
40 --- Remote Probe Type
50 --- Wire Probe Type
60 --- Plate Type
80 --- Anti-static Type
81 --- Anti-static Hi-Temp Type

Terminal Arrangement

A---110/220VAC
B---DC24V, Relay output
C---DC24V, NPN transistor output
D---Designed for use with EX-75U

Connection

Flange / screw	***flange rating***	
D---1" (25mm)	M---JIS 5kg/cm^2	W---PN 10
E---1-1/2"(40mm)	N---JIS 10kg/cm^2	X---PN 16
F---2" (50mm)	O---ANSI 150 Lbs	Y---PN 25
G---2-1/2"(65mm)	P---ANSI 300 Lbs	Z---PN 40
H---3" (80mm)	Q---PT	
I ---4" (100mm)	R---PF	
J---5" (125mm)	T---BSP	
K---6" (150mm)	S---Others	
	U---NPT	

S---Others (please consult Hycontrol with your requirements)

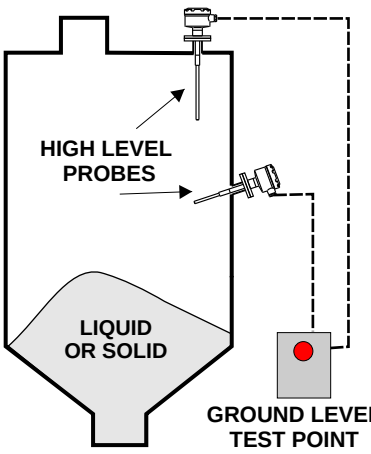
Probe Length (mm)

- Tolerance of the total product length is ±5mm.

MD

New housing with integral failsafe High and Low selector and 2 x M20 entry enclosure

Ground level test (G)



Capacitance switches with this option have an additional pair of terminals provided in the switch head that simply require a push button switch to connect these two terminals together and this is usually mounted at *ground level local to the vessel fill point.*

After pushing the button, the circuit is then loaded as if a product has touched the active part of the probe and the electronics (if working correctly) will detect this change and activate the relay to change its state. Any audio or visual alarms wired to this relay will then be activated and will continue until the ground level test button is released. If the test is successful then the operator can proceed to fill the silo confident that the high alarm will operate if required to do so.

Hycontrol provide complete alarm and test panel solutions for single or multi-point applications, however a simple push button can easily be retrofitted to existing panel installation with little or no disruption to the plant operations providing the alarms and sirens already exist.

HYCONTROL LEVEL TECHNOLOGIES

Product Range For Solids :-

(1) TDR Radar For Solids

(2) Ultrasonic, ‘Through Air’

(2) 2 Wire Ultrasonic Transmitter

(3) FMCW 2 Wire Radar

(4) Continuous ‘Servo’ Level Indicator

(5) FMCW 2 Wire Radar

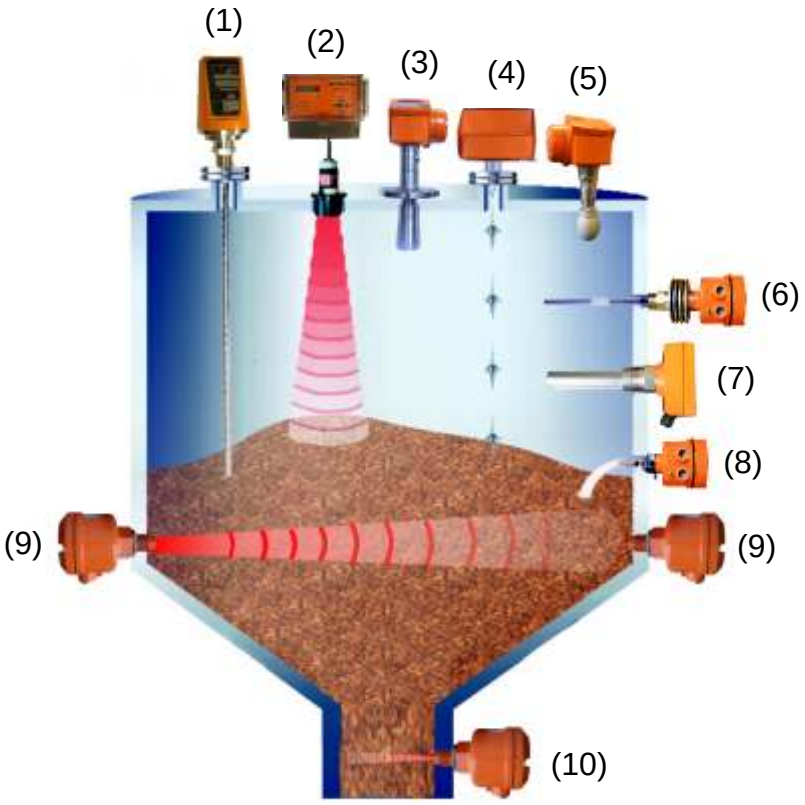
(6) Capacitance Level Switch

(7) Vibrating Probe Level Switch

(8) Rotating Paddle Level switch

(9) Microwave Level Switch

(10) Doppler Flow Switch



Product Range For Liquids :-

(1) By-Pass Level Indicator With Radar

(2) TDR Radar For Liquids

(3) 2 Wire Ultrasonic Transmitter

(4) FMCW ‘Horn’ Radar 2 Wire

(5) Magnetic Float Switches

(6) FMCW 2 Wire Radar

(7) Capacitance Level Switch

(8) RF Admittance Level Switch

(9) Side Mounting 316 SS Float Switch

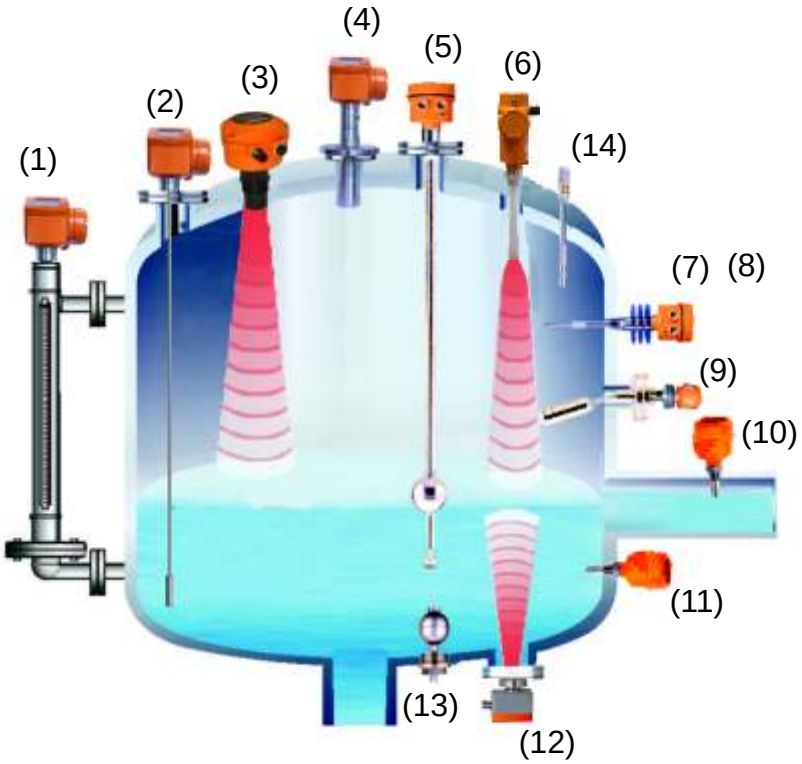
(10) Tuning Fork Level Switch

(11) Tuning Fork Level Switch

(12) Ultrasonics ‘Through Wall’

(13) Mini Magnetic Float Level Switch

(14) Foam Switch



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