

CAPACITANCE LEVEL TRANSMITTER

MICROCAP

2 wire (4 to 20 mA)

The MICROCAP transmitter is a 2 wire capacitance level transmitter for measuring continuous level in tanks containing liquids.

APPLICATION

The probe of the MICROCAP and the wall of the tank, forms an electric condenser. The dielectric of this condenser when the tanks is empty, is the air. When the liquid reaches the probe, the dielectric constant formed by the unit and tank, changes.

An electronic circuit sited in the connecting module of MICROCAP, converts this capacity change in a variable current and proportional to the height of the liquid.

Due to each application is different, given that the kind and the measures of the tank and the products that it contains change, every unit has to be adjusted to be adapted to each tank and product.

Using the menus of the MICROCAP, this operation is very easy.

The circuit, controled by microprocessor, stores all data and does the calculation. A display LCD guides us in the calibration process.

The output current signal is 4 to 20 mA. These values can be sited where we want in the probe.

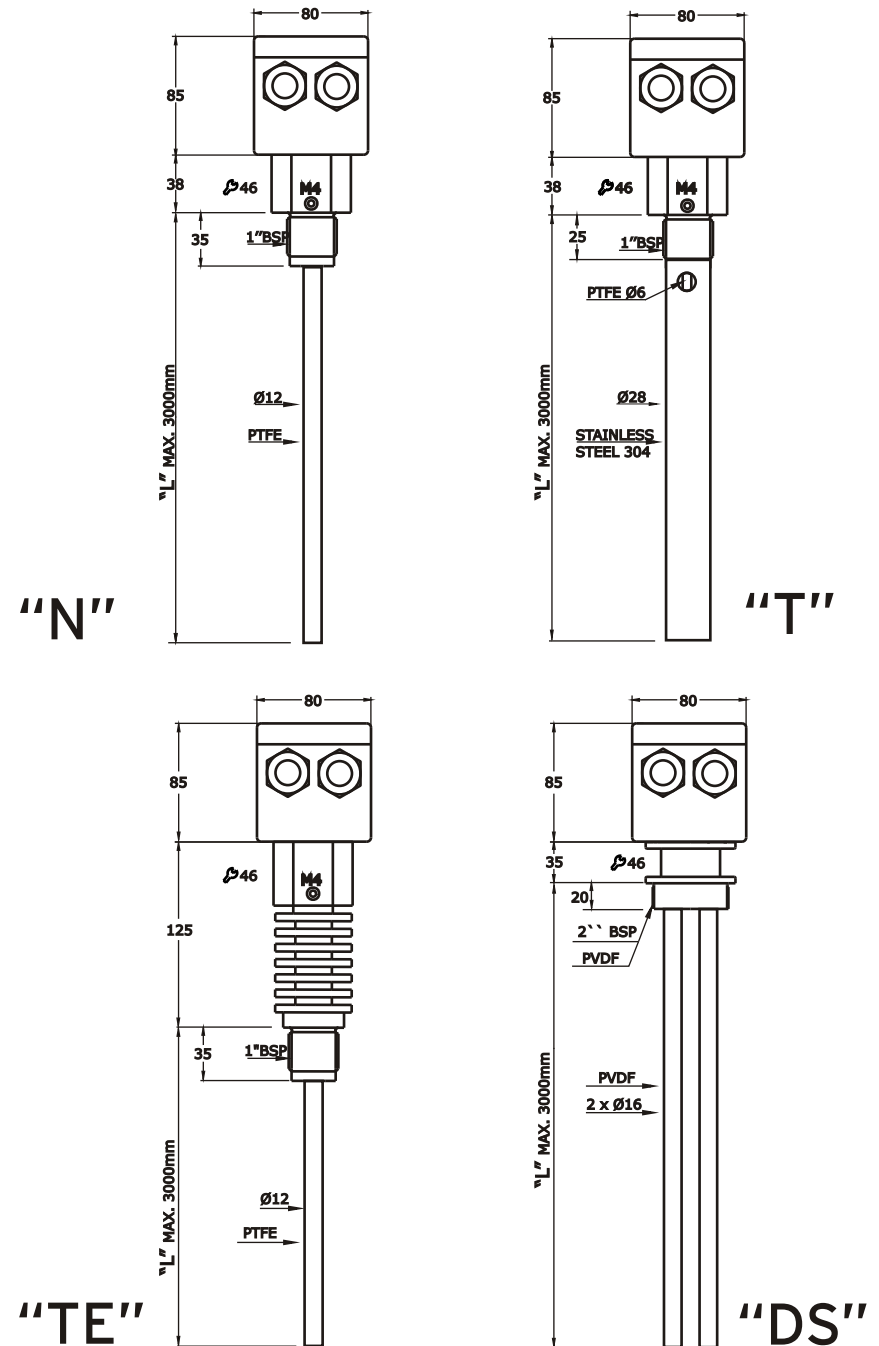
CURRENT SIMULATION

Using this option, the MICROCAP generates in the supply loop, a 4 to 20 mA current, in steps of 1 mA. This function is very useful to make tests with independence of the level of the tank.

TECHNICAL DATA

- Power supply: 10 to 35 Vdc (2 wire)
- Output 4 to 20 mA programmables
- Measure order until 1000 pF
- Display LCD
- Polycarbonate housing Ip65
- Environment Temperature: -10 to 60 °C
- Process Temp.: max. 90 °C (125 °C in mod. TE)
- Protection to polarity changes
- Cable Glands M20
- Thread 1" BSP (AISI 303), 2" BSP in PVDF in mod. DS
- Probe in PTFE in models N, TE and DS. Concentrical stainless steel model T.

MICROCAP MODELS



MICROCAP PROGRAMMING

<p>Calib. Probe -> OK Output Adj. -> + Output Sim. -> - Back -> ESC</p>	<p>1. Pressing any key, you enter in the main menu. You can access to calibration mode (OK), output adjustment 4 to 20 mA (+) or Output current Simulator (-). Press ESC to back to normal indication.</p>	<p>OUTPUT ADJUST. ¿Where do you want the 4 mA output? + and -: 005.0% ->OK</p>	<p>10. This asks where do you want the MICROCAP gives us 4 mA. If you want it in 5 % of the probe, using + and - we indicate this value in the display. Confirm with OK.</p>
<p>CALIBRATION ¿Sure? Yes -> OK NO -> ESC</p>	<p>2. Pressing (OK), we enter in calibration mode. To avoid mistakes asks again if you are sure that you want to calibrate the unit.</p>	<p>OUTPUT ADJUST. ¿Where do you want the 20 mA output? + and -:095.0% ->OK</p>	<p>11. We do the same for the 20 mA. In this case, if we want this current in the 95 % of the probe, we will indicate this value using + and -. Confirm with (OK).</p>
<p>CALIBRATION Low level -> OK High level -> +</p>	<p>3. If the level in the tank is low, we will choose the (OK) option to adjust the unit with the lowest level.</p>	<p>MEASURE FILTER Enter filter's level 0 to 4 + and -: 1 -> OK</p>	<p>12. Finished the adjustment, we can incorporate a filter to avoid oscillations caused by quick movements of the liquid's surface. This value is between 0 and 4 (maximum filtration). Confirm with (OK).</p>
<p>LOW LEVEL ADJUST. Enter the actual level in probe + and -: 010.0% ->OK</p>	<p>4. If, for example, when you adjust the low level, the level of the tank is the 10 % of the capacitance, we will indicate it in the display using the + and - keys. Confirm with (OK).</p>	<p>049.8 % 12.04 mA</p>	<p>13. This screen shows the level value in the tank, and the output current.</p>
<p>Calibrating PROBE for low levelWAIT....</p>	<p>5. Pressing (OK), the microprocessor makes the operations to choose the best measurement range. This operation takes some seconds.</p>	<p>In this point the MICROCAP is adjusted. The number in % indicates the height that reaches the level in the probe (0 a 100 %). The value of the current will depend on the adjustment of the points 10 and 11 and it can be in any point of the probe. It can be in the 4 mA at maximum point and in the 20 mA at the minimum.</p>	
<p>***PROBE CALIBRATED***</p>	<p>6. When this operation is finished, the display shows the message "PROBE CALIBRATED" (to the low level). Automatically the display shows the high level adjust mode. When the tank will be as full as possible, return to initial menu and adjust the HIGH level.</p>	<p>SIMULATE OUTPUT Back -> ESC + and -: 04 mA -> OK</p>	<p>In the screen 11, we can choose the Sim. Output option. In this case, using the + and - keys, the loop current (2 wire) will change in steps of 1 mA. With this option you can do current tests without a mA generator.</p>
<p>HIGH LEVEL ADJUST. Enter the actual level in probe + and -:080.0% ->OK</p>	<p>7. If when you adjust the high level, the liquid in the tank is 80 % of the capacitance, we will indicate it in the display using the + and - keys. Confirm with (OK).</p>	<p><u>MICROCAP MODELS</u></p> <p><u>MICROCAP.N</u> Rigid probe in PTFE, to general applications in metallic tanks. Thread 1" BSP in stainless steel.</p> <p><u>MICROCAP.T</u> Rigid probe in PTFE with concentric stainless steel tube (ground tube). Thread 1" BSP in stainless steel. To NON METALLIC tanks.</p> <p><u>MICROCAP.TE</u> Rigid probe in PTFE to general applications. Thread 1" BSP in stainless steel to high temperature (125°C).</p> <p><u>MICROCAP.DS</u> Double rigid probe in PVDF to NON METALLIC tanks containing aggressive liquids. Thread 2" BSP in PVDF.</p>	
<p>Calibrating PROBE For high levelWAIT.....</p>	<p>8. The microprocessor makes the operations to calibrate the maximum level of the unit. This operation takes some seconds.</p>		
<p>***PROBE CALIBRATED***</p>	<p>9. The display shows this message to indicate the MICROCAP has finished the calibration internal process. When the liquid level will be in the minimum point, it will indicate 00.0 % and when the liquid level will be in the maximum, 100.0 %.</p>		

INSTALLATION

The MICROCAP is installed using a 1" BSP (2" BSP in DS version).

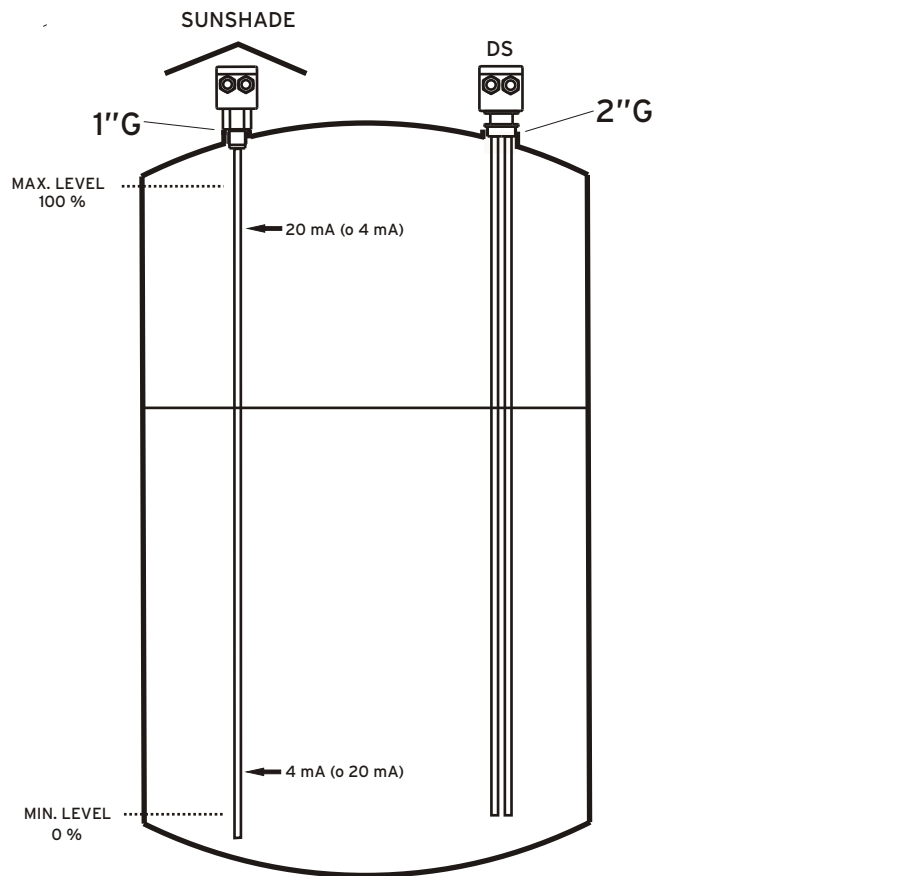
The probe must be installed avoiding the adhesion between the probe and the tank's wall.

Electronics of the MICROCAP unit should be protected with shelter against development of too high temperature by direct sunshine.

Be ensured that the connection 1" BSP to the tank has been done properly.

The MICROCAP's thread should not be forced.

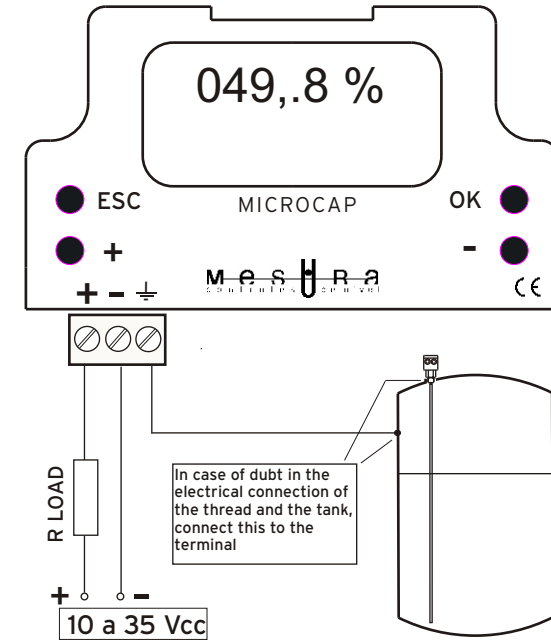
The electrical connection between the thread and the tank has to be good.



MICROCAP MODULE

The MICROCAP module contains all the electronic circuit that controls the different probes.

Incorporates a microprocessor that makes all measurement functions , digital conversion and indication in LCD display.



2 WIRE CONNECTION

The maximum resistance of the line in serie, depends on the power supply. These values have to be bear in mind for the good run of the MICROCAP.

