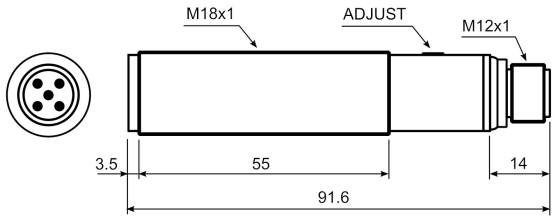
SNU 18P

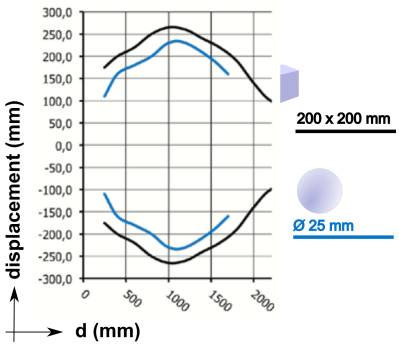
ULTRASONIC SENSOR

Operating principle	The sensor emits an ultrasound towards the material to be detected and measures the time it takes for the echo produced to return, converting the result into an electrical signal.
Application	They can detect objects of different shapes, colors, materials and colors, and can be liquid, solid or powdery as long as they are sound deflectors. The presence of air is essential to propagate the sound so they cannot work in vacuum installations.
Detection properties	
Detection range	200 .. 2200 mm
Beam angle	14º +/-2º
Thermal shift	± 2%
Sensor resolution	<= 3 mm
Hysteresis	1%
Repeatability	0,5%
Linearity error	1%
Analogical output	
Type	4-20 mA
Function	NO/NC
Switching frequency	2 Hz
Response time	500 ms
Digital output	
Type	PNP + IO-Link
Function	Positive ramp
Switching frequency	1 Hz
Response time	1 s
Electrical data	
Type	Connector M12x1, 5 pins
Power supply	10 .. 30 VDC
Consumption	<= 50 mA
Leakage current	10 µA @ 30 VDC
Tension fall	2,2 V max. (IL=100 mA)
Ripple	5%
Delay on connection	<= 300 ms
Status Indication	Green Led: ECHO · Yellow Led: OUTPUT
Mechanical data	
Body material	PBT. Parylene coating on the sensor end.
Operating temperature	-20 .. +70 ºC
Tightening torque	1 Nm
Weight	70 g
Protection	
Short circuit	Yes (autoreset)
Tension inverse	Yes
Induction	Yes

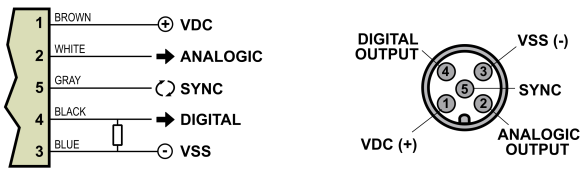
Certificates	
Generic	CE cULus
Electromagnetic compatibility	EMC directive according to EN60947-5-2
Shocks and vibrations	IEC EN60947-5-2 / 7.4
Protection degree	IP67
Dimensions	



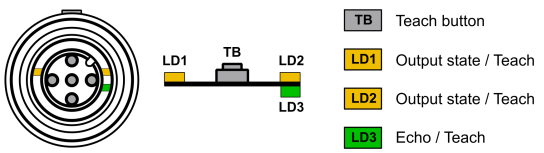
Installation tips	
Installation	Sensor installation must be done using the supplied plastic nuts and flexible gaskets. In case of installation conditions on a metallic support, whether threaded or not, or using metallic nuts, both the support and the nuts must be grounded. In addition, the active part of the sensor must be away from any metallic presence at least 5 mm.
Electrical connection	Make sure that the supply voltage and its ripple correspond to the specified values. If the noise produced by power lines exceeds the values established by the EMC directive (immunity to electromagnetic interference), separate the sensor cables from the high voltage lines and insert it into a metallic earth ground. It is advisable to connect the sensor directly to the power supply and not to other devices. To extend the supply and output cables, it is necessary to use a cable with 1 mm² conductors with a maximum extension of 100 m. In industrial environments we recommend using shielded cables to prevent possible disturbances caused by induced electromagnetic fields.
Temperature	Do not expose the sensor head to liquids above 50ºC, vapors, acids or solvents. In case of condensation inside the tank, wipe the active end of the sensor with a damp cloth and dry it. If the sensor is measuring through a variable temperature space, the compensation of the temperature will be less effective. The increase in temperature since start-up influences the reading of the measurement, which will stabilize after about 20 minutes.
Memory	The sensor maintains the last adjustment that has been made. Therefore, when starting the sensor after remaining disconnected, the last values established in points P1 and P2 will be maintained.
Response curve	



Connection

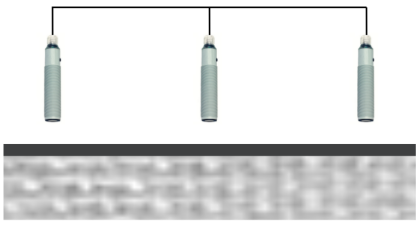


Command and signaling



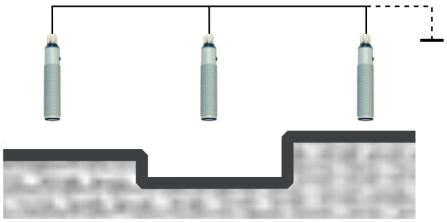
Operativity

Synchronism



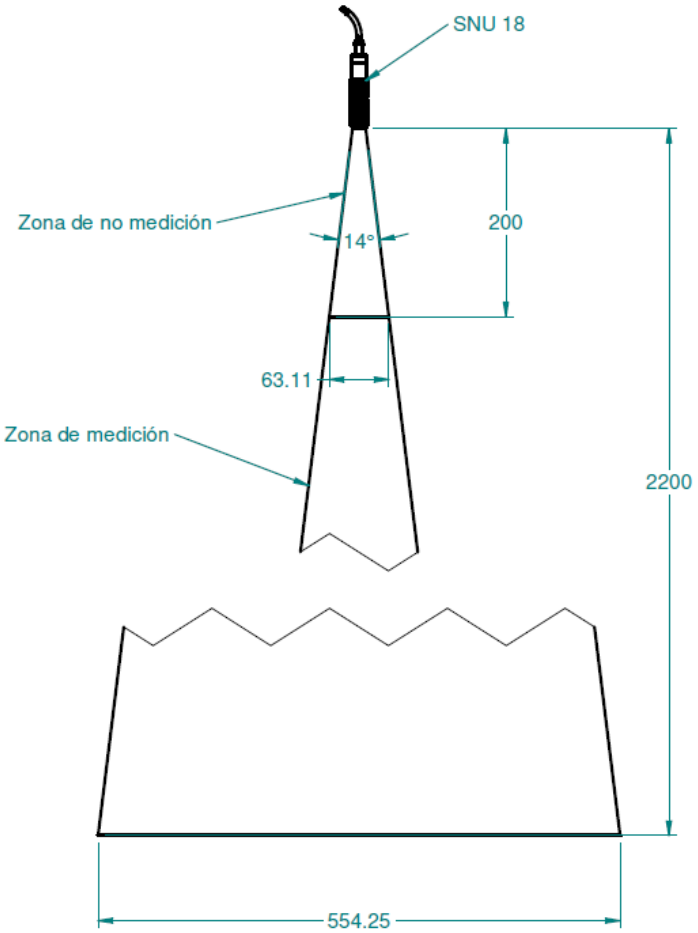
In this working mode all the sensors measure simultaneously. All sync terminals (SYNC) must be connected to each other and the system must be powered.
The product to be controlled must be flat and the sensors must be at the same distance. This is a mandatory condition for the correct operation of the sensors.
The sensors have to be individually adjusted before the sync connection.

Multiplexing



In this working mode the sensors measure in a chain. All sync terminals (SYNC) must be connected to each other and also to ground (Vss). Power up the system and after 5 seconds disconnect SYNC from the ground.
The sensors must be individually adjusted before the multiplex connection.

Beam angle



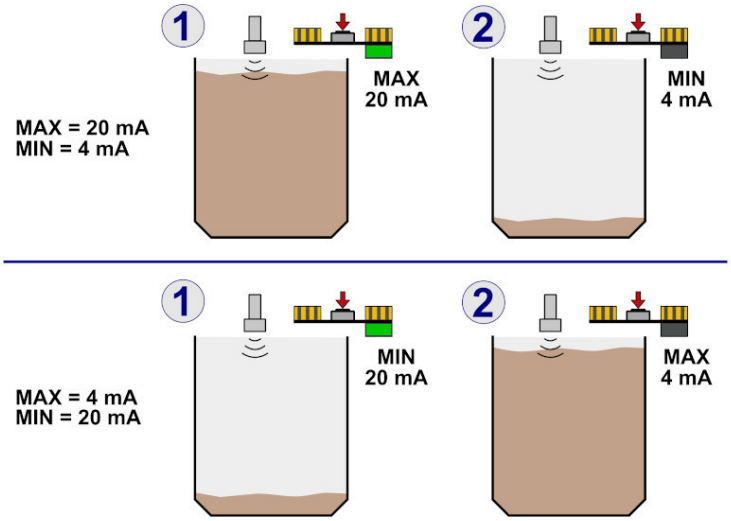
Setting mode

Quick adjustment is carried out with only 2 presses of the "adjustment button".

The first press corresponds to the setting for the 20 mA value. When pressed, the green LED will remain on and the two orange LEDs will flash slowly.

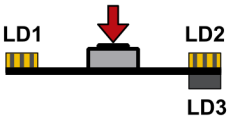
Next, press the second button to configure the 4 mA value, the two orange LEDs will flash quickly for 2 seconds and the green LED will turn on.

Adjust the maximum and minimum value depending on how you want to receive the information.



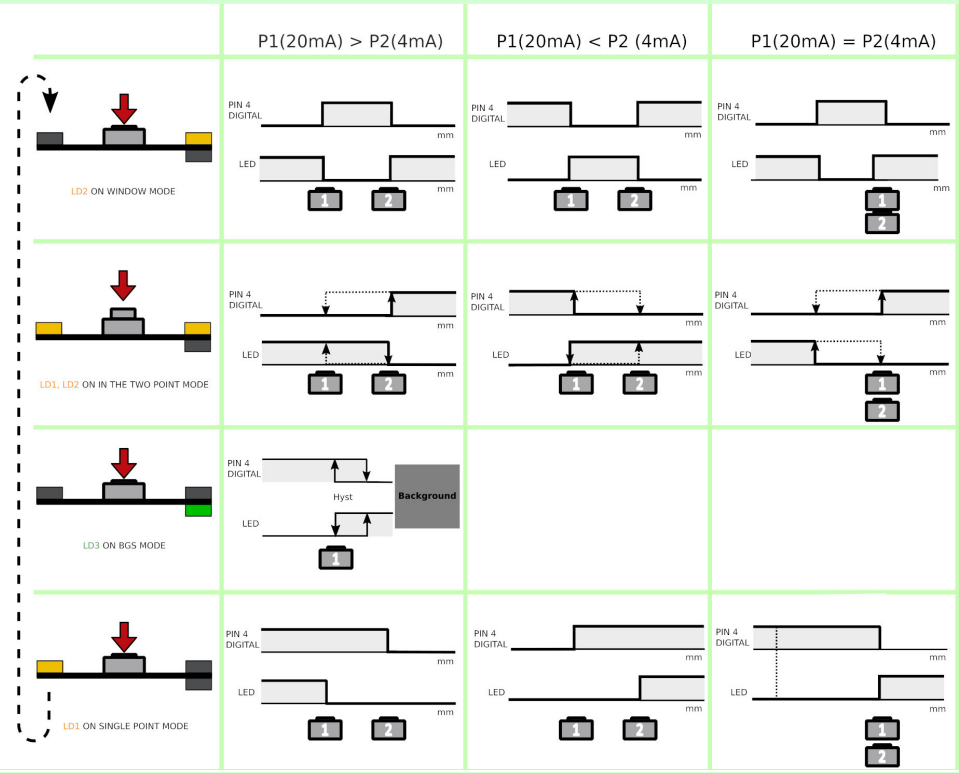
Operation mode setting

Adjustment lock

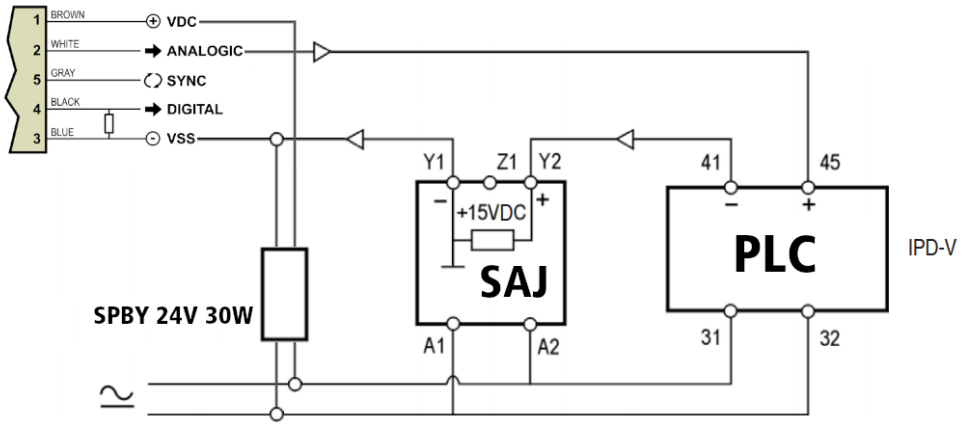


To modify the operating mode, keep it pressed for 8 seconds, the LD1 and LD2 leds light up intermittently @10Hz as confirmation that the setting mode has been entered.

Operating modes



Application example



Visualization of the level measured by the SNU using the SAJ display, connected to a PLC for automation. Loop 4..20mA is powered by the SPBY 24V 30W power supply.

SAJ programming	This section describes programming that can be carried out in the SAJ and on which page they can be found within its programming manual where they are explained in detail. To be able to visualize the units on the display according to the requirements and that these are related to a full scale corresponding to 4 and 20 mA. UNITS: Go to page 39 of the manual to determine the type of unit to display. FULL SCALE: Go to page 40 to determine the MAX and page 42 to determine the MIN. RELAYS 1,2,3: The relay states are configured in normal operation, according to MAX-MIN-SETPOINT, on pages 24 to 28.
Manual Location	https://arxiu.disibeint.com/productes/pdf/eng/man_prog_saa-i.pdf