

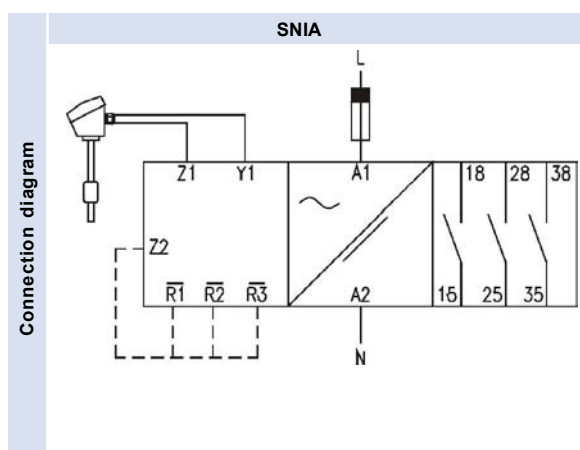
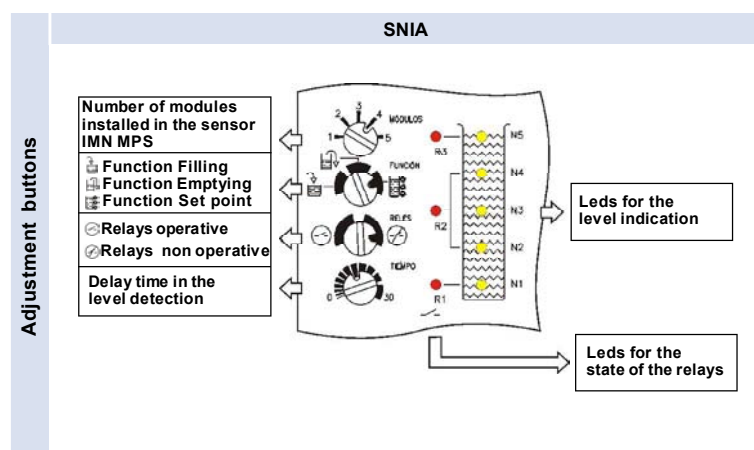
SNIA IMN MPS



MULTI-POINT CONTROL LEVEL SYSTEM



Application field	Control and signaling from 1 up to 5 level points in all kind of tanks.				
Operating principle	The control relay SNIA must operate together with the sensor MPS. In this sensor can be placed from 1 up to 5 level detection modules. The relay can operate in three modes, selected through a rotary switch in the front: filling control, emptying control and set-point control.				
	The operations done by the relay SNIA are in function of the selected working mode and of the number of the level detection modules placed in the sensor MPS, and they are detailed in the following table:				
	OPERATION	MODULES Nr.	FILLING	EMPTYING	SET-POINT
	Minimum	1		●	
	Maximum	1	●		
	Maximum-Minimum	2	●	●	
	Maximum-Minimum-Min. Alarm	3		●	
	Maximum-Minimum-Max. Alarm	3	●		
	Maximum-Minimum-Min. Alarm-Max. Alarm	4	●	●	
	Set-point	<i>n</i> (1~5)			●
	The level indication by means of yellow leds is always available, with independence of the selected working mode.				
	Each output relay is related to a single operation, in function of the selected working mode (see the function diagram).				
Leds indication	Power on: Green Relays on (3): Red Level indication (5): Yellow				
Voltage in sensor	1 V DC, maximum				
Current in sensor	1 mA				
Timing	By using the adjustable delay through the button “TIME”, the action of the waving over the float can be avoid. The delay is associated to each active relay, in function of the selected working mode. The timing operates either when the level of the liquid is raising and when it is falling. Until the detection of one level is not maintained for a time longer than the pre-set one, the associated relay does not operates or release.				
Relays reverser	To make the user automatism easier, is possible to reverse the state of each relay by making a link between the terminal Z2 and the terminals $\overline{R1}$, $\overline{R2}$ and/or $\overline{R3}$.				
Characteristics of the sensor cable	Be used shielded twisted pair wire, similar to that used for data transmission.				
	Being a weak signal, it is advised that the cable does not flow parallel to other cables that can carry voltages and/or high loads.				
	The screen must be connected to electrical ground only one end of the cable.				
	The maximum cable distance depends on the resistivity of the whole, which must be less than 25 ohms. In general, it would be advisable not to exceed 100 meters.				



SNIA / IMN MPS

Number of
modules

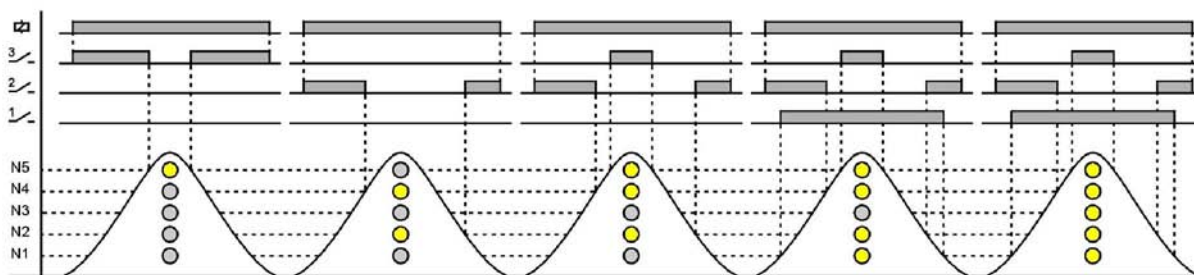
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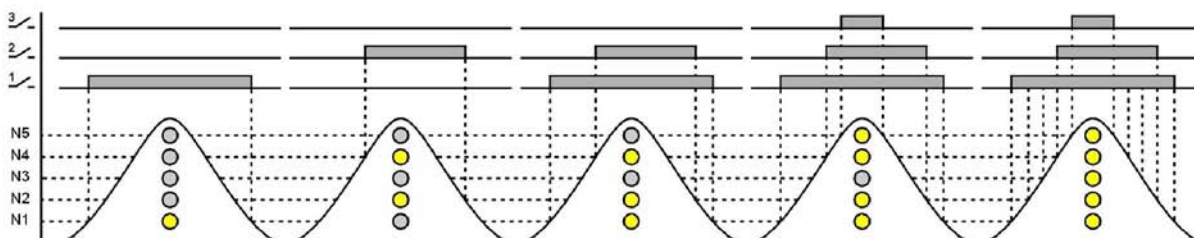
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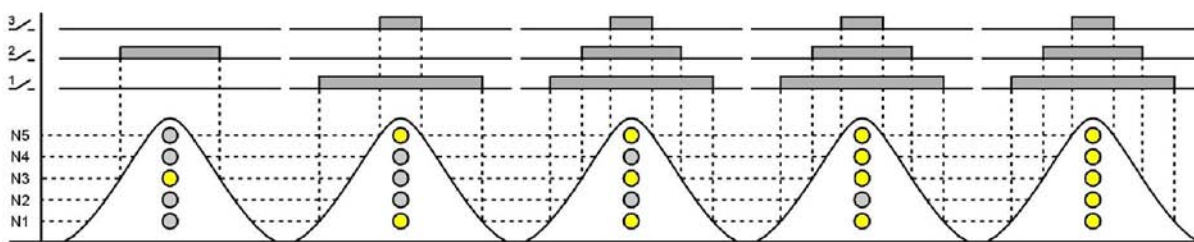
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FILLING



EMPTYING



SIGNALING

Function diagram

Operating characteristics

SNIA / IMN MPS

Operativity	The sensor MPS must be provided of the same number of modules as level points to be controlled or displayed, and must be connected to the relay SNIA.
Relays	With independence of the selected function or the number of installed modules, the relays R1, R2 and R3 are always associated to the same functions: R1: Alarm of minimum level; R2: Pump control; R3: Alarm of maximum level.
Safety	If in the switch "MODULES" is selected a number different of the modules installed in the sensor MPS, when the supply voltage is connected the five yellow leds (N1 to N5) get flashing and no-one operation is possible to do. The system is reestablished when the right number of modules is selected.
Timing	When a value greater than zero has been adjusted in the button "TIME" and the float reaches the height of one of the modules associated with a relay, the time circuit starts-up and the yellow led related to that module flashes until the pre-set time has gone.

Reference SNIA	HOUSING		FUNCTION		OUTPUT		SUPPLY	
	S	Flush mounting	NI	Multipoint level control	A	3 SPDT	U24	24 VAC/VDC
							724	24 VDC
							024	24 VAC
							110	110...125 VAC
							230	220...230 VAC
							400	380...415 VAC

Reference MPS	TYPE		ATTACHMENT		SIZE		MATERIAL	
	IMN	MPS	TB	Top screw	1" 1/4	1" 1/4 GAS	PVC	PVC
					1" 1/2	1" 1/2 GAS	PP	Polypropylene
					2"	2" GAS	PVDF	Teflon PVDF
					2" 1/2	2" 1/2 GAS	INOX	SS AISI316
			DB	Flange	50	DN50		
					25	DN25	PVC	PVC
							PP	Polypropylene
							PVDF	Teflon PVDF

Ref. MODULE	MODULE	
	MPS 05	Level detection module

When performing an order for a complete equipment, the reference of each one of the parts must be composed: the relay SNIA, the sensor MPS and the required quantity of level detection modules. To do that, choose only one option of each column of each component.

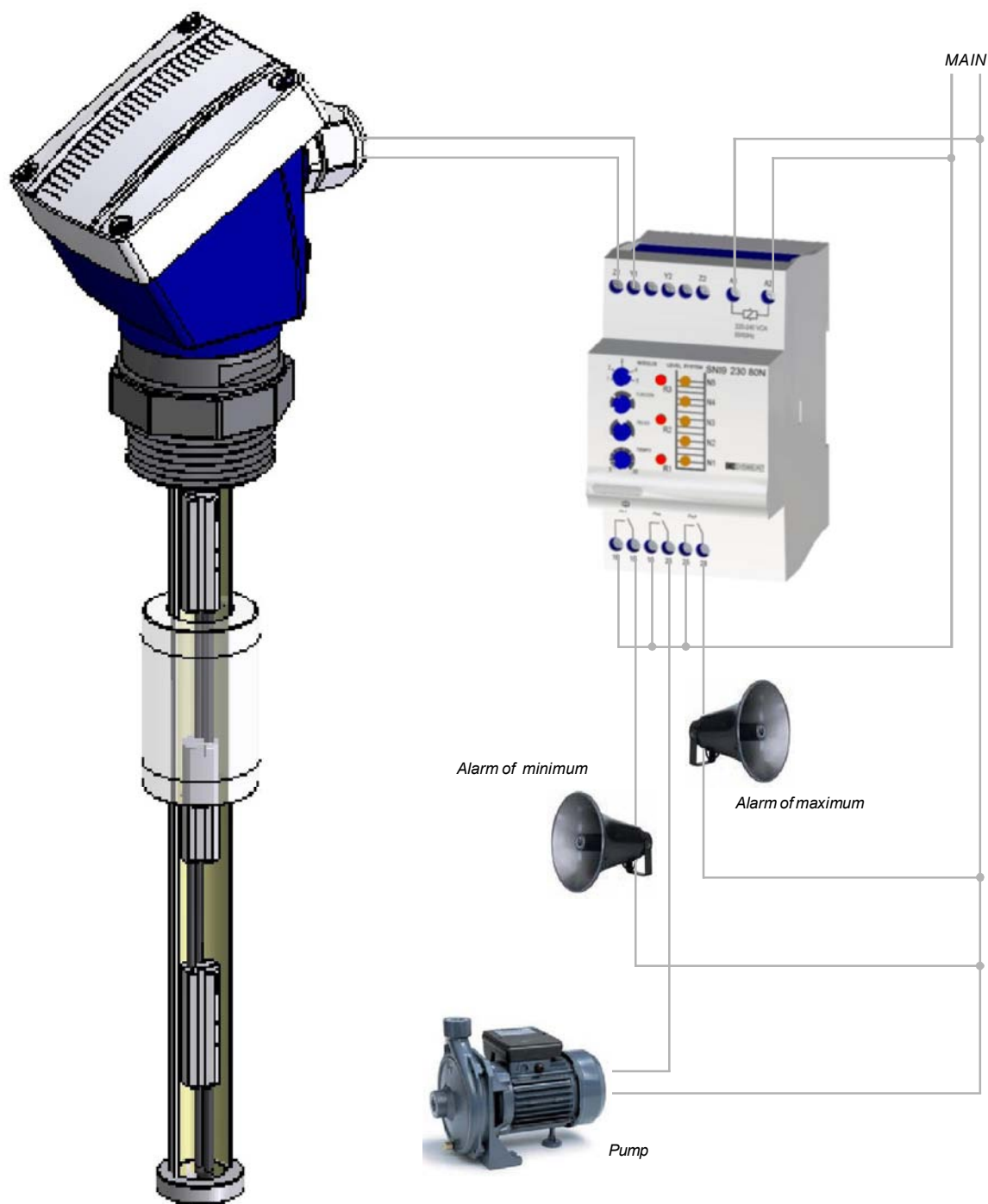
For example, we want to do the control over three levels in a PVC tank of 1 meter high, provided with a female connection of 1" 1/4 Gas. Supply voltage must be of 220 VAC:

1 unit SNIA 230

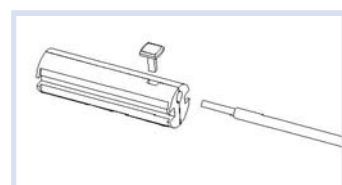
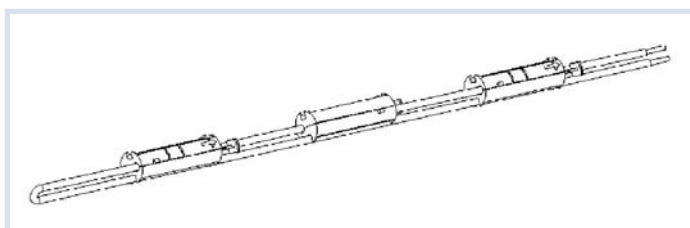
1 unit IMN MPS TB 1" 1/4 PVC L1000

3 units MPS 05

To define the possible lengths of the sensor, see the technical data in page 4.



MODULES

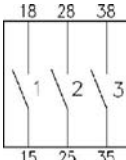


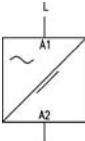
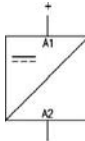
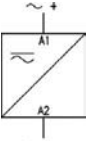
The picture shows the level detection module once the rigid cable has been connected. In the case that one level point is to be moved, the module can be opened and placed it in the new position.

Detail of mounting of the rigid cable into the level detector module.

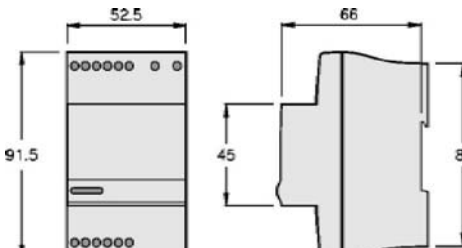
MPS 05 modules have function of Assembly, being indicated by the word "TOP" marked on one side. This point should be the one closest to the head of the IMN MPS sensor (see drawing on the example of connections). All modules have been set up in the same position. The cable must be stripping 10 mm.

To facilitate the accurate placement of the modules on the desired point of detection, each one of them has been marked a continuous line that indicates their point of performance when the level is rising. Likewise, a discontinuous line indicates its point of deactivation when the level drops.

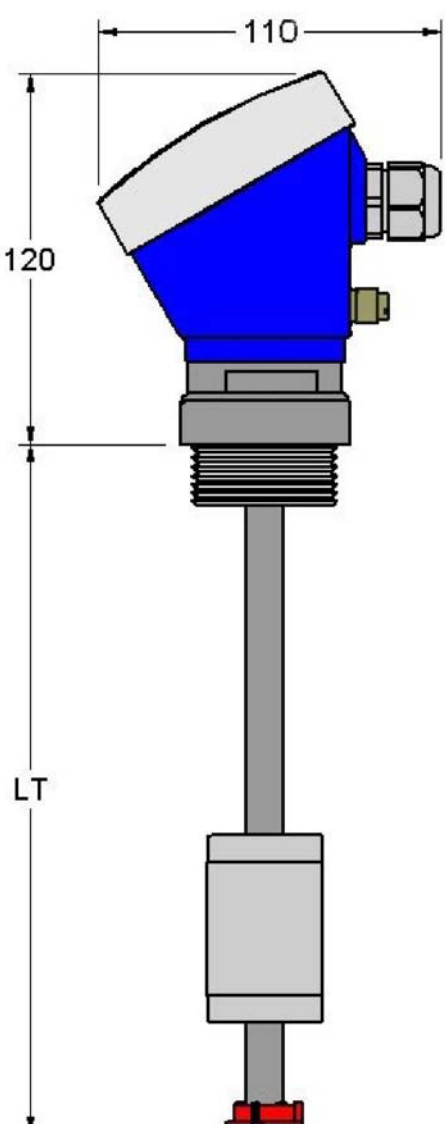
		SNIA	
			
Output relays	Resistive load	AC	6 A / 250 V
		DC	0,2 A / 200 V 6 A / 24 V
	Inductive load	AC	3 A / 250 V
		DC	3 A / 24 V
	Mechanical life		> 30 x 10 ⁶ operations
	Max. mech. operations		72.000 operations / hour
	Electrical life at full load		350 operations / hour
	Contact material		AgNi 0.15
	Maximum voltage		400 VAC
	Operating voltage		400 VAC
	Voltage between relays		1000 VAC
	Voltage between contacts		1000 VAC
Voltage coil/contact		4000 VAC	
Distance coil/contact		8 mm	
Isolation resistance		> 10 ⁴ MΩ	

Supply voltage		AC	DC	AC-DC
				
	Galvanic isolation	Yes	No	9XX: Yes UXX: No
	Consumption	1,6 VA	1,2 W	1,7 W
	Frequency	50 / 60 Hz	-	-
	Operating margins	±10%...-15%	±10%	
	Positive	-	Terminal A1	Terminal A1
	Protected polarity	-	Yes	Yes

Constructive and environmental data		SNIA	
		Voltage phase-neutral	300 V
		Overvoltage category	III
		Rated impulse voltage	4 kV
		Pollution degree	3
		Protection degree	IP 20
		Approximate weight	280 g
		Storage temperature	-50...+85°C
		Operating temperature	-20...+50°C
		Humidity	30...85% HR
		Housing	Cyclopol - Light grey
		Leds window	Lexan - Transparent
		Buttons, terminal block, clip	Technyl - Dark blue
		Terminals	Brass
		Approvals	Designed and manufactured under EEC norms. Electromagnetic compatibility, directives 89/366/EEC & 92/31/EEC. Electric safety, directive 73/23/EEC. Plastics: UL 91 V0

Dimensions		SNIA	
			

Characteristics of the sensor	IMN MPS				
	Material	PVC	PP	PVDF	INOX
	Operating temperature	+ 60 °C			
	Minimum density (g/cm³)	0,5	0,5	0,9	0,7
	Nominal pressure (kg/cm²)	2	2	3	30
	Protection degree	IP 65			
	Connection box	Din B - Noryl - Colour black			
	Stem (mm)	Ø16x1,2	Ø16x1,8	Ø20x1,8	Ø15x1
	Stem length (mm)	Minimum 100 - Maximum 2500			
	Standard lengths (mm)	300 - 600 - 900 1100 - 1500 - 1850 - 2450			
	Other lengths	For lengths longer than the previously stated, please consult. For very large lengths and in order to facilitate the transport handling, is possible to supply the complete kit of the IMN MPS sensor without the stem, in such a way that the customer assembles itself the equipment near the installation.			
	Internal cable	Rigid cable 1 x 1mm². PVC cover, with a maximum external diameter of 2,4mm. The rigid cable is supplied beside the level detection modules.			

Dimensions		IMN MPS	
			

Beginning manual SNIA + IMN MPS



Operating principle	<p>The system of level detection and control is based in the combination of the sensor IMN MPS and the controller SNIA. Inside the IMN MPS sensor is placed one array of modules (from 1 to 5) in serial connection and separated between each two of them by the distance that the user decides. A float running along the tube is able to activate or deactivate the contact placed in each module. The generated signal is managed by the controller SNIA which operates or releases three relays depending on the position of the float when reaches the height of a certain module.</p>
Modules MPS05	<p>Each module is activated when the float reaches its height while raises up due to the action of the liquid level. On the opposite case, the module is deactivated.</p> <p>Assemble the modules in the sensor IMN MPS according to the operation you need to do. It will define the number of modules to be used:</p> <ul style="list-style-type: none"> - Control of only one level: 1 module - Control of Maximum-Minimum: 2 modules - Control de Maximum-Minimum-Maximum or minimum alarm: 3 modules - Control de Maximum-Minimum-Maximum and minimum alarms: 4 modules - Independent set points: from 1 to 3 modules, as required - Correct percentage visualization: 5 modules
Output relays	<p>The relays (R1, R2 and R3) are assigned automatically to the different operation modes based on the number of installed modules:</p> <ul style="list-style-type: none"> - Control of only one level: R2 - Control of Maximum-Minimum: R2 - Control de Maximum-Minimum-Maximum alarm: R2 = pump; R3 = alarm - Control de Maximum-Minimum-Minimum alarm: R2 = pump; R1 = alarm - Control de Maximum-Minimum-Maximum and minimum alarms: R2 = pump; R3 = maximum alarm; R1 = minimum alarm - Independent set points: R1 = low level; R2 = medium level; R3 = high level <p>To make the operation easier, the state of each relay can be inversed by linking terminal Z2 with the terminals $\overline{R1}$, $\overline{R2}$ and $\overline{R3}$, respectively.</p>
Adjustment of the controller SNIA	<p>1º - Set the number of installed modules by means on the button MODULES.</p> <p>2º - Set the function by means of the button FUNCTION: filling, emptying or set-point.</p> <p>3º - If the controller SNIA wants to be simply used as a level display throughout the column of yellow leds, the operativity of the relays can be deactivated by turning the button RELAYS at the right side. On the opposite case, turn the button at left.</p> <p>4º - If waving in the liquid could appear, timing can be activated by means of the button TIME. This time delay is applied so much to the detection as to the release, in all the modules related with some action of a relay, except in R2 in the filling or emptying modes.</p>
Start-up of the complete unit	<p>1º - Connect the sensor IMN MPS to the terminals Z1 and Y1 of the controller SNIA.</p> <p>2º - Do not connect the relays so far.</p> <p>3º - Connect the supply cables to the terminals A1 and A2. Apply the supply voltage.</p> <p>4º - Move the float to the top of the sensor and move it again to the bottom.</p> <p>5º - Now you can verify how the unit works by moving manually the float and simulating the effect of the liquid.</p> <p>6º - If everything is right, turn off the supply voltage and read the following point. On the contrary, review the previous steps from the beginning. Read the document «MPS05 Assembly instructions» if necessary.</p> <p>7º - Install the sensor IMN MPS in its definitive place inside the tank. Do it carefully, avoiding nor bend neither twist the tube and protecting it of blows that can damage the modules. Leave the float at the bottom of the sensor when introduce it into the tank.</p> <p>8º - Connect the wiring related to the relays according the indications above.</p> <p>9º - The unit is ready to be used.</p>

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