DISIBEINT

NCAR AB PVC

LEAKAGE DETECTOR

Application	Leakage control for conductive liquids. The KNAA amplifier is integrated in the head itself. Particularly suitable for a leakage control in twin-chambered tanks.
Differential character	The device has a system to determine if it exists communication between the sensor and the amplifier. When the communication with the electrodes interrupts, the device indicates this state through intermittence in the output relay with a relationship of 30% activated and 70% deactivated.
Operating principle	The sensor uses the electrodes to detect liquid presence. When the liquid is in contact with the sensor, the relay activates as marked in the table 'Warning mode'. The warning mode should be defined between fixed or intermittent. If the warning mode is intermittent, the user could define the intermittence period of 1, 2 or 3 seconds. In order to adapt the installation characteristics easer, the state of the contact of the relay could be selected.

		Liquid detection	Cable break detection
Warning mode	Fixed	The relay is activated continuously while maintaining the leak.	The relay is activated through intermittence with a relationship of 30% activated, 70% deactivated for a period of 1 second.
	Intermittent	The relay is activated through intermittence with a relationship of 70% activated, 30% deactivated for a period of 1, 2 or 3 seconds, according to the selection.	The relay is activated through intermittence with a relationship of 30% activated, 70% deactivated for a period of 1, 2 or 3 seconds, according selection.

		Conductive	By float
Sensor	Process connection	Through the cable itself, attached to the head by M12 conector.	By the cable itself, attached to the head using an M12 connector.
	Model	NS2R	IMNCR 70
	Sensitivity	Fixed to 30 KΩ (33,3 μs)	-
			Any type of liquid

See amplifyed information in page 4

Housing	Material and dimensions	PBT. 64 x 95 x 110 mm
	Process connection	Bracket (see accessories)
	Protection	IP67
	Temperature	-20..+50 ºC
	Cable gland	M20 x 1,5 (IP68)
Output	Type	SPDT relay 6A/250VCA
	Response time	· At power on: 800 ms · At liquid detection: 500 ms

REFERENCE		PROCESS CONNECTION			SUPPLY VOLTAGE	
NCAR	Level sensor	AB	Holding bracket	PVC	024	24 VAC
					048	48 VAC
					110	110..125 VAC
					230	220..240 VAC
					901	15..70 VAC/DC
					902	60..240 VAC/DC

To compose a reference, select one option of each column.

Exemple: **NCAR AB PVC 024**

NCAR AB PVC

Start-up and adjustment

Prior to start working with the sensor NCAR it must be adjusted for getting a right operation. Adjustments can be modified whenever required. It must be taken into account that the behaviour of the device can be different whether the adjustments are done while the electrodes are in touch or not with the liquid.

Be sure that the options selector is right positioned. Each time that it is moved to a new option, the Ⓟ led flashes twice indicating that the option has been correctly reached.

Options selector

Use this button to select and adjust the differents options according to the following instructions.

Each option shows its default values framed with ☐ at the left column.

State of the relay contacts

(Relay NO (⌐‾): led Ⓟ OFF; Relay NC (⌐‾): led Ⓟ ON). When accessing to this option, the led Ⓟ shows the actual state of the adjustment. Each time the push-button PROG is pressed, it is reversed the state of the relay contacts.

⚠ WARNING: This option modifies the state of the relay and this could provoke undesired effects in the case that any device be connected to the contacts of the relay.

Warning mode

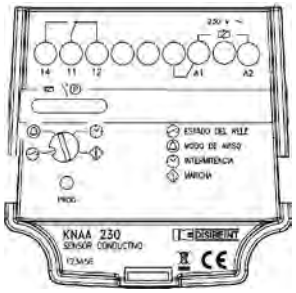
FIXED

(Fixed: led Ⓟ ON; Intermittent: led Ⓟ OFF). When accessing to this option, the led Ⓟ shows the state of the adjustment. Each time the PROG push-button is pressed, the adjustment switches between the two possible states.

Intermittence period (T)

1s

If the warning mode is FIXED, when accessing to this option the led Ⓟ keeps on flashing, showing that this option is not available. If the warning mode is INTERMITTENT, when accessing this option the led Ⓟ emits as many flashes as the number of seconds adjusted in the timer, between 1 and 3 seconds. Each time the push-button is pressed, the time value increases in 1 second, except when the value is 3 that moves to 1. If it is pressed longer than 3 seconds, the time value moves to 1.



Run

Normal operation mode.

The state of the led Ⓟ matches with the state of the relay contact (led ON = relay activated).

Confirm configuration

Settings are stored when you disconnect and reconnect the equipment

Assembly conditions

Position: The sensor must be placed at bottom of the dual chamber tank where you want to detect a possible leak (see figure 1).

Installation: Fix the bracket to a firm element and introduce the head pressing frontally taking care of leave the gland in the position that allows to connect the necessary cabling. Fix the locking piece.

Electrical cable: Use an appropiate cable to the load that will support the relay. It is convenient that the gland close fully the electrical connection cable and it is essential in the case that it could exist environmental humidity or it is installed outdoors. In these cases, make a loop in the cable to provide the elimination of the accumulated drops (see figure 2).

Sensor cable: A male connector M12 is supplied in order to connect the ampifier to the sensor NS2R.

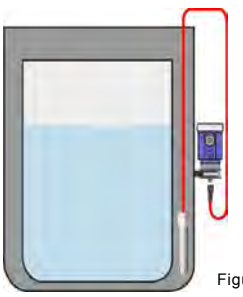


Figure 1

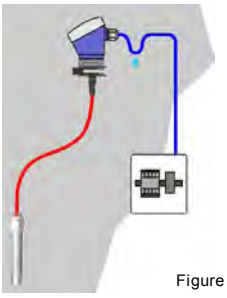
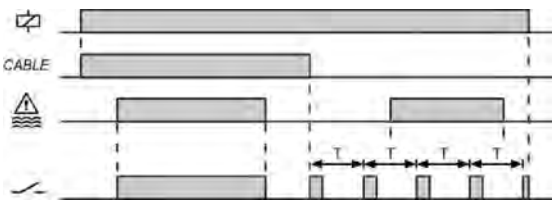


Figure 2

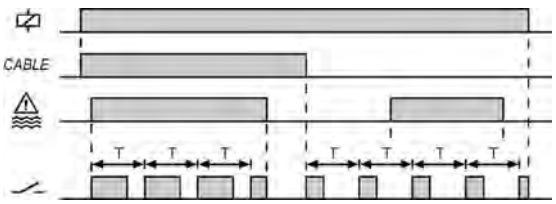
Operating diagrams

FIXED



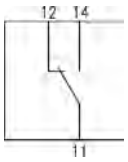
Warning mode: Fixed
Relay contact: NO
Timing while detects: Does not apply
Timing with cable breaks: 1 second

INTERMITTENT



Warning mode: Intermittent
Relay contact: NO
Timing while detects: 1, 2 or 3 seconds
Timing with cable breaks: 1, 2 or 3 seconds

Output relay

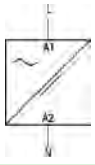
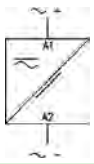
		KNAA
		
Resistive load	AC	6 A / 250 V
	DC	0,2 A / 200 V 6 A / 24 V
Inductive load	AC	3 A / 250 V
	DC	0,12 A / 200V 3 A / 24 V
Mechanical life		> 30 x 10^6 operations
Max. mechanical operations		72.000 operations / hour
Electrical life at full load		360 operations / hour
Contact material		AgNi 0.15
Maximum voltage		400 VAC
Operating voltage		400 VAC
Volt. between changeovers		1000 VAC
Voltage between contacts		1000 VAC
Voltage coil/contact		4000 VAC
Distance coil/contact		8 mm
Isolation resistance		> 10^4 MΩ

Constructive and enviromanetal data

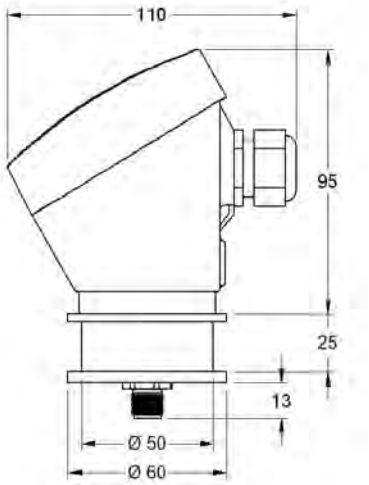
	KNAA
Voltage phase-neutral	300 V
Overvoltage category	III
Shocking voltage	4 kV
Pollution degree	2
Protection class	IP 20
Storing temperature	-50..+85ºC
Operating temperature	-20..+50ºC
Humidity	30..85% HR
Housing	Cycoloy - Light Grey
Socket	Lexan - Light Grey
Leds window	Lexan - Transparent
Buttons and terminal blocks	Technyl - Dark Blue
Terminals	Nickled brass

Designed and manufactured under EEC normative.
Directives referred:
Electromagnetic compatibility: EMC 2004/108/EEC.
Low voltage: LVD 2006/95/EEC.
Hazardous substances: 2011/65/EEC
Plastics: UL 91 V0

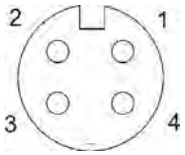
Supply voltage

	KNAA	
		AC/DC
		
Galvanic isolation	4000 v	2500 v
Frequency	50 / 60 Hz	-
Operating margins	±10..-15%	-
Positive	-	Terminal A1
Protected polarity	-	Yes

Dimensions



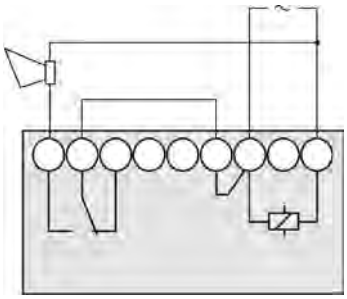
Electrical connection



Male connector M12

1	BROWN	NS2R (without polarity)
2	WHITE	
3	BLUE	n/c
4	BLACK	

Example of wiring connection



Accesories

	Bracket
Material	PVC
Dimensions	Ø inner 50 mm.

SENSORS FOR LEAK DETECTION

The NCAR detector receives the signal of the presence of a leak through the sensor to which it is connected. The choice of the appropriate sensor depends on the characteristics of the liquid:

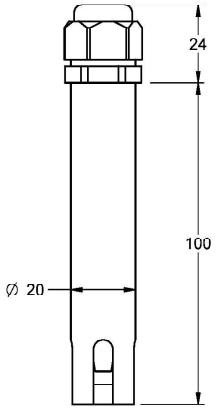
- Conductive liquids (wastewater, dissolved chemicals, etc.): NS2R Sensor
- Non-conductive liquids (fuels, hydrocarbons, etc.): IMNCR 70 Sensor. This sensor can also be used in conductive liquids.

The chemical compatibility between the manufacturing materials and the liquid to be controlled is not essential in this application since, under normal conditions, both parts will not be in contact, which means that the sensor does not have to be manufactured with specific technical materials, without making the installation more expensive. At the time of spillage, it is essential to ensure detection at the expense of the sensor element being damaged.

Conductive method

NS2R

· AISI316 stainless steel electrodes, 5 mm in diameter.
· M12 aerial connector, female.
· Cable characteristics and length: see table below.

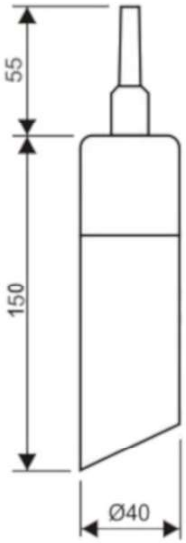


Non conductive method

IMNCR 70

· Float and stop in PP. Ø12 tube, PVC.
· M12 aerial connector, female.
· Cable characteristics and length: see table below.

Inside view



Cable type	PVC. 2 x 0,50 mm²
Code and length Add reference to chosen sensor	... 01 : 1 metro ... 02 : 2 metros ... 05 : 5 metros ... 10 : 10 metros
Other lengths	On demand

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