FNR131

CUSTOM TEK
INDUSTRIAL WEIGHING SOLUTIONS

Série FNR

Wave sensor / Microwave Detector
Flow Sensor & Blockage
For Solid Products

Client	Matériel	Date
	□ FNR131K □ Fix : □ FNR131H	

Description

The FNR131 detector uses Doppler technology to send radar waves to bulk product to eventually push out or clear the jam. Detection is based on the speed of the product, speed needs to be a minimum of 0.1m/s and the direction in which the product moves will have no effect.

Measurement does not come in contact with the moving product in a metal pipe (1) or neither on a distance from 0 to 800mm.

Example:
- Free falling screws from a conveyor belt...
- Pneumatic Transportation

(1) In the case of a metal pipe, it is necessary to have a cross opening of 25mm minimum in diameter so that radar waves can spread.

General Characteristics

Housing	Aluminum and epoxy treatment	
Antenna	INOX (except P in PTFE version)	
Protection	IP66	
Ambient Temperature	Standard :-10 to +80°C High temperature : -10 to 800°C (Max total in continuous external temperature 40°C)	
Frequence	24.125 Ghz (Bande K)	
Maximum Operating Pressure (Ref. FTZ & PTT)	16	dBm
Maximum Pressure	1	Bar
Detection Zone	0 à 800	mm
Detection Angle	7	°
Detection Speed	0,1 à 30	M/s
Power Supply	24VDC+-10 % 0.5 A MAX	
Relay Output NO/NF	On a Relay contact OR 250V 3A SPST	
Static Output Q0	Active output 24V 0.3 A MAX	
Trigger Delay	0 to 30 seconds (TURN ON / TURN OFF selection)	
Weight	1	kg

Identification

FNR131 __ - __

Version

Standard INOX -10°C à +55°C	**K**
PTFE -0°C à +40°C	**P**
High temperature +800°C	**H**
Explosive atmosphere version	**A**

Fixation

INOX Thread M30x1.5	**M30**
INOX pas US 1'' PT / BSP	**1"PT**

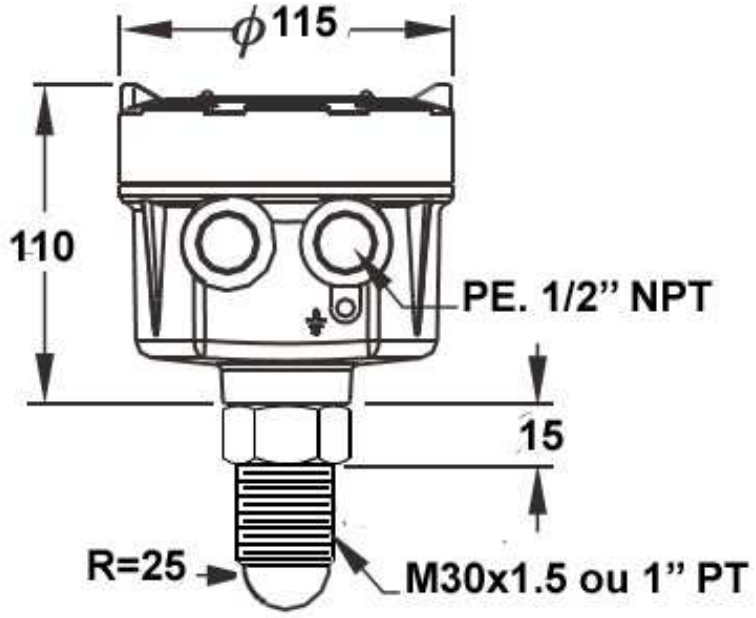
Other fixations possible, contact us

Note :
An adaptor DN40 is available for flange mounting.

REF : FNR131BRIDE

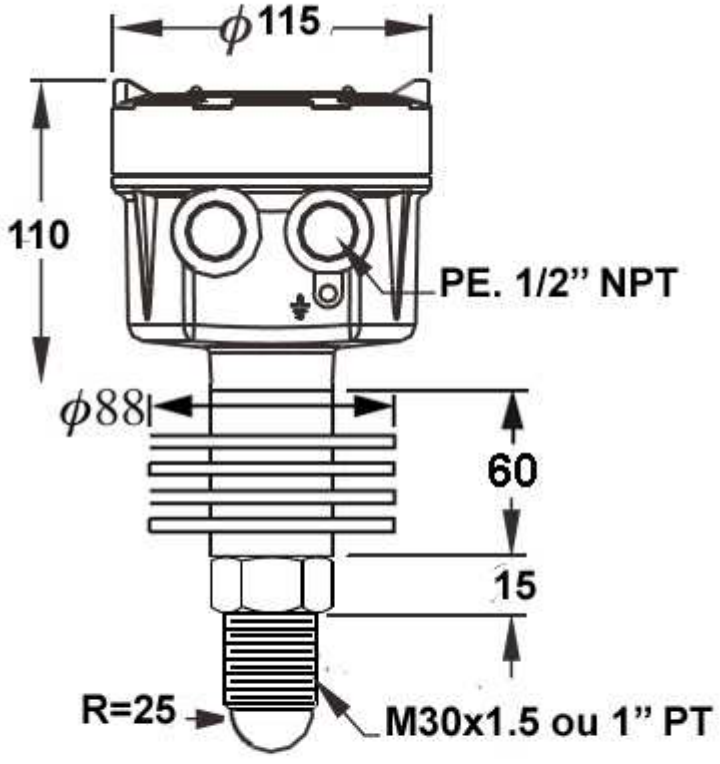
Congestion

FNR131K
FNR131P



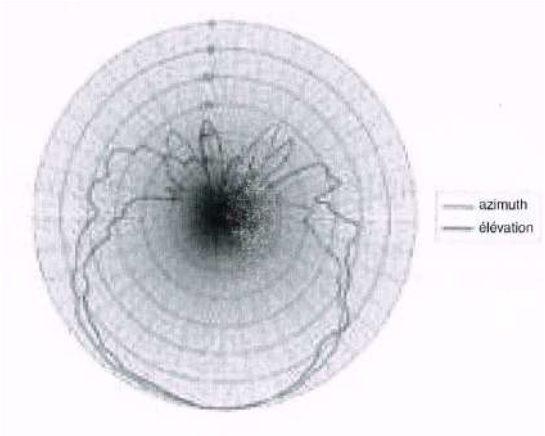
Dimensions en mm

FNR131H



Dimensions en mm

Antenna Diagram



Installation

Pre-conditions

1/ The detector has to be assembled at a 45°-90° angle in relation to the direction of the material installed.

2 / The detector has to be assembled in a place **without vibrations.**

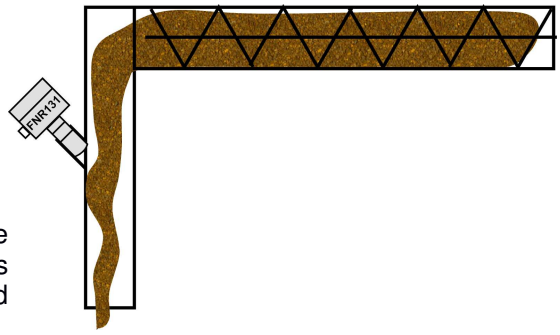
3 / No moving parts should be in the detection zone, this could be interpreted as a material flow,

If necessary, the moving pieces should be hidden from the detection zone by a metal sheet.
The sensor is to be encapsulated.

Pipe Mounting

Installation of the detector depends on site conditions.

For example the detector can be:
- Nailed directly on a thread M30 ou 1'' PT
- Placed on a flange DN40
- Attached with a bracket (free installation)



Check before installation that the temperature and the pressure in the piping does not exceed the limit permitted. It is necessary to add a protection system that can be penetrated by microwaves.
In the case of installation on pipes that are made of non-metallic (PVC, Rubber...), the measurement is made through the walls of the piping. It is therefore not necessary to create a window in the latter.

Conveyor Belt Installation

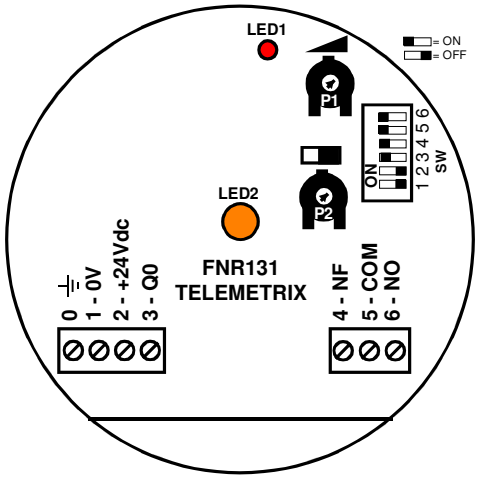
The detector must be mouonted in the loading or unloading area of the conveyor belt so that it does not detect the movement of the vacuum belt.
If not, install the detector with an angle of 70-80° minimum.

Electrical Connection

Connection on a screw terminal block.

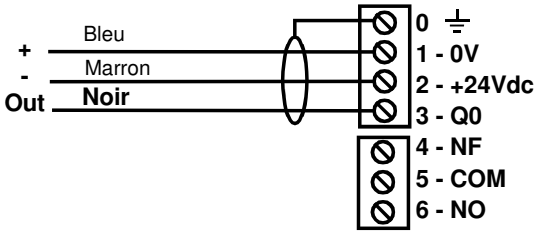
Please connect to the ground.

0	Mise à la terre du boîtier
1	Power Supply - 0V
2	Power Supply + 24V
3	Static Output Q0
4	Relay Contact NF
5	Relay common
6	Relay contact NO



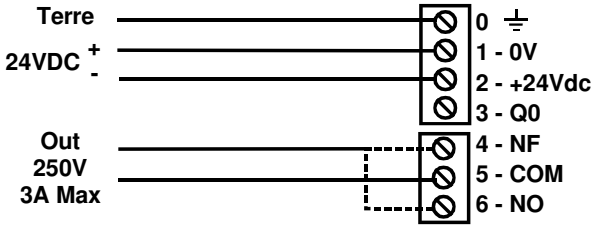
3-wire cable

3-wire cable(compatible with NPN / PNP) static output (Q0)
The output Q0 can be turned over by SW5



Relay Cable (separate circuit)

Connection in 24VDC
Output on isolated contact SPDT on electro-mechanical outlay,



Note :
Select the NO or NF depending on the default action when the detector is not powered on or off. Then depending on the position of the SW5,

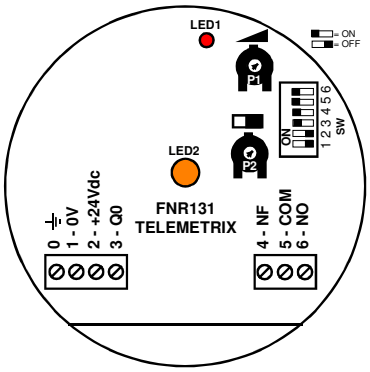
Commissioning

Selector SW1

<table>
<tr><td>1</td><td>Sensitivity adjustment « Adjustments»
<table>
<tr><th>SW1</th><th>SW2</th><th>SW3</th><th>SENSIBILITY</th></tr>
<tr><td rowspan="2">2</td><td>OFF</td><td>OFF</td><td>OFF</td><td>MAXIMUM</td></tr>
<tr><td>OFF</td><td>OFF</td><td>ON</td><td>MEDIUM 1 (1)</td></tr>
<tr><td rowspan="2">3</td><td>OFF</td><td>ON</td><td>OFF</td><td>MEDIUM 2</td></tr>
<tr><td>ON</td><td>OFF</td><td>OFF</td><td>MINIMUM</td></tr>
</table></td></tr>
<tr><td>4</td><td>ON(1): Low filter pass on the signal
OFF: NO filter</td></tr>
<tr><td>5</td><td>ON : (1) OUTPUT ACTIVE = GREEN LIGHT
OFF : INVERSION FROM OUTPUT : ACTIVE = RED LIGHT</td></tr>
<tr><td>6</td><td>Detection Mode :

ON (1) : FLOW DETECTION
the output is instantly active when the product is moving.
The timer (P2) is engaged when the product has stopped.
The output is de-activated at the end of the timer and when the product stops.

OFF : LEAK DETECTION
The timer (P2) is engaged when the product is moving.
At the end of the timer, and if the product is still moving the output is activated.
The output is de-activated when the product has stopped.</td></tr>
</table>



Note : **(1) factory value**

LED Lighting

LED1	**SIGNAL DETECTION** **Red Light :** Detection of a moving productt (does not have to be constantly on)
LED2	**OUTPUT** **GREEN** Output not active **RED** Output active **ORANGE** Timing in progress **OFF** Detector off

Potentiometer

P1	**SIGNAL THRESHOLD** Clockwise direction should be on RED LIGHT, Adjust the detection threshold in the presence of the moving product to be detected.
P2	**TIME SETTING 0 à 30 secondes** Counter clock-wise : No timing Clockwise : Maximum timing

SETTING

Switch the system on so that the product is transported normally.

The **LED1** has to flash at each passage of the product. In order to do this, set the threshold with the potentiometer **P1**. When the product stops **LED1** must be turned off immediately.
If you do not have any change in the LED select a different sensebilty by **SW1 SW2 SW3**.
Repeat the regulation operation until the **LED1** functions normally.

The product is moving at a fast rate (pneumatic transport) it is necessary to use the the low-pass filter by **SW4**.

Put **P2** at minimum(counter-clockwise direction) , check that the output and the **LED2** change state with the changement of LED1. Finally, set the timer to **P2**

Depending on the desired operating mode, select a different operating mode with **SW5** and **SW6**. It is not necessary to switch off/ turn on each time the mode/function changes .

Troubleshooting

If **LED1** is turned on without any product flow, adjust P1 in the counter clockwise direction and check if the detector did not pick up on vibrations or a piece of moving product.

If **LED1** is not turned on although there was product flow, adjust P1 in the clockwise direction and check to see the cleanliness of the sensor as well as it's position.

If **LED2** s not turned on (RED or GREEN or ORANGE) this indicates a lack of power to the detector.