

NOVATRAFFIC MONITORING RADAR

NT-MR2-010

DOPPLER RADAR FOR TRAFFIC COUNTING AND VOLUMETRIC LIGHTING

This radar with its compact, discreet and robust black polycarbonate housing is designed to detect moving vehicles. It is very easy to install and can count the traffic on two lanes, in both directions and up to 150 meters away. This radar is connected to a NovaCity Outdoor Gateway.



IN BRIEF

This device is an accessory for the NovaCity Outdoor Gateway that allows you to count road traffic for traffic statistics or to adapt the light intensity of the public lighting of a given section.

The detection is done with a Doppler radar. The radar emits an electromagnetic wave which is reflected by the road users. By reflecting, the wave is slightly modified allowing when it is captured in return by the radar, to determine the direction and the speed of the user. When the vehicle approaches the radar, the wave is somehow compressed, while when it moves away, the wave is relaxed. This difference makes it possible to determine the direction of passage.

This product can be installed on a pole or on the front of a building with the help of a mounting bracket specially designed by Novaccess. This support is extremely robust and durable because it is made of 3 mm thick stainless steel. It can be installed at a height of between 2 and 5 meters maximum, the ideal being about 3 meters.

This radar can be configured on site very simply, to set the minimum detected speed, the detection sensitivity, or the use of a detection LED. The sensitivity of the radar allows to define a detection distance of about 100 to 150 meters.

It is possible to filter certain users by setting the minimum detection speed. For example, pedestrians travel at speeds as low as 4kmph, while vehicles and bicycles travel at speeds as low as 8 to 10kmph.

KEY ELEMENTS

- > CW Doppler radar
- > Detection on 2 traffic lanes
- > Adjustable detection up to 150 meters
- > Detection direction: approach, distance or omnidirectional
- > Adjustable trip points from 4 to 150 km/h
- > Adjustable orientation
- > Stainless steel pole or wall mount included
- > Detection contact on single optocoupler output
- > 12/24VDC power supply (supplied with the NovaCity Outdoor Gateway)
- > Option for mounting several radars on the same mast with a crown.

TECHNICAL SPECIFICATIONS

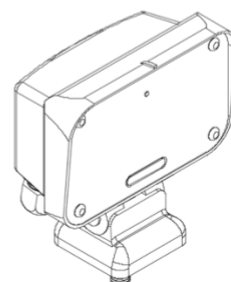
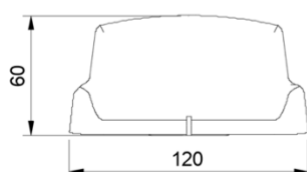
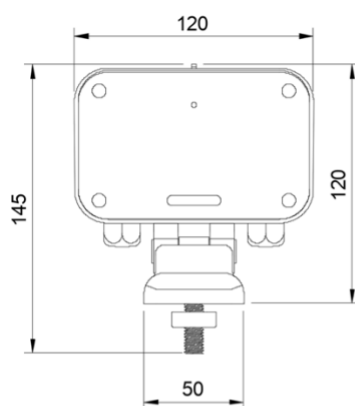
GENERAL CHARACTERISTICS

Detection technology	<i>Radar (CW Doppler 24GHz)</i>
Detection distance	<i>Up to 150m</i>
Range of measured speeds	<i>From 4 to 120 km/h</i>
Degree of protection	<i>IP65</i>
Housing material	<i>Polycarbonate (UL94 V-2)</i>
Angle material	<i>Acid-resistant stainless steel</i>
Operating temperature range	<i>-20 to +60 [°C]</i>

MECHANICAL CHARACTERISTICS

The radar can be oriented vertically or horizontally by an adjustment screw. The radar is mounted on a bracket using the M10 screws supplied. The cable is pre-mounted at the factory and must be connected to the main box during installation. A viewfinder on the top of the box allows the detector to be oriented at the time of installation.

DIMENSIONS FOR INSTALLATION	VALUE	UNIT
Dimensions (Height, Width, Depth)	120,120,60	[mm]
Cable length	5	[m]
Mounting height (min...max)	2...5	[m]



ELECTRICAL CHARACTERISTICS

ELECTRICAL PARAMETERS	MIN	TYPE	MAX	UNIT
Radar power supply	19	24	29	[V]
Typical power consumption at 24 [V].		50		[mA]
Typical power		1.2		[W]

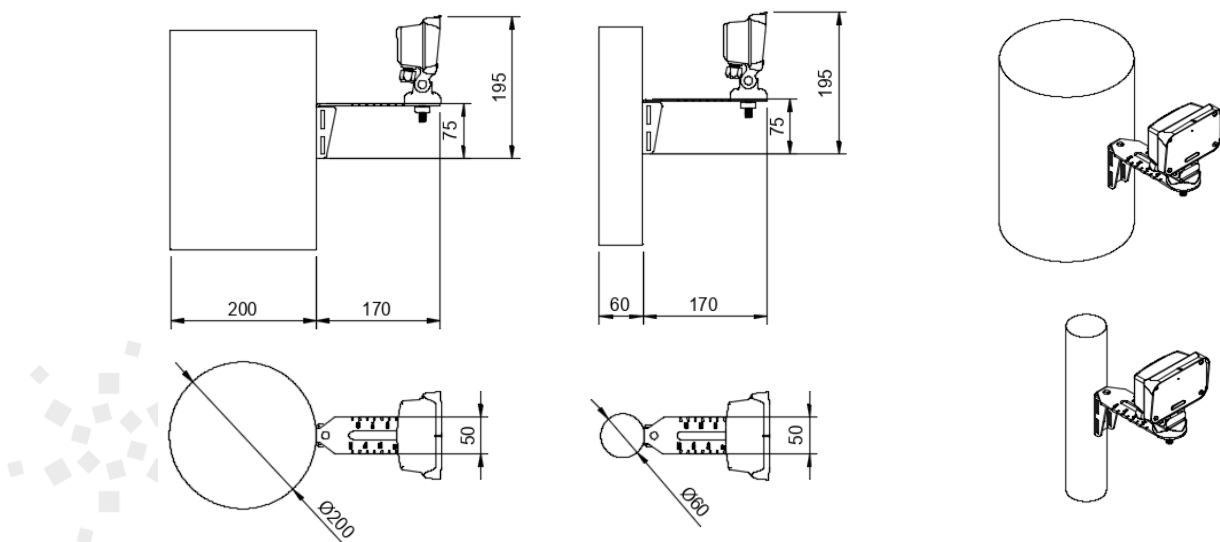
INTERFACE CABLE

The Doppler radar is delivered with a 5 meter long cable. The cable has been prepared by Novaccess to facilitate field installation and connection. Cables are either 10 wires or 6 wires depending on available stocks.

WIRE	COLOR	COUNT	FUNCTION
1	Red	X	24 VDC
2	Black	X	0 VDC
3	Green	-	Mass
4	White	X	Optocoupler output, common
5	Yellow	-	Optocoupler output, NC type contact
6	Blue	X	Optocoupler output, NO contact type
7	Brown	-	RS422 RXA
8	Violet	-	RS422 RXB
9	Orange	-	RS422 TXZ
10	Pink	-	RS422 TXY

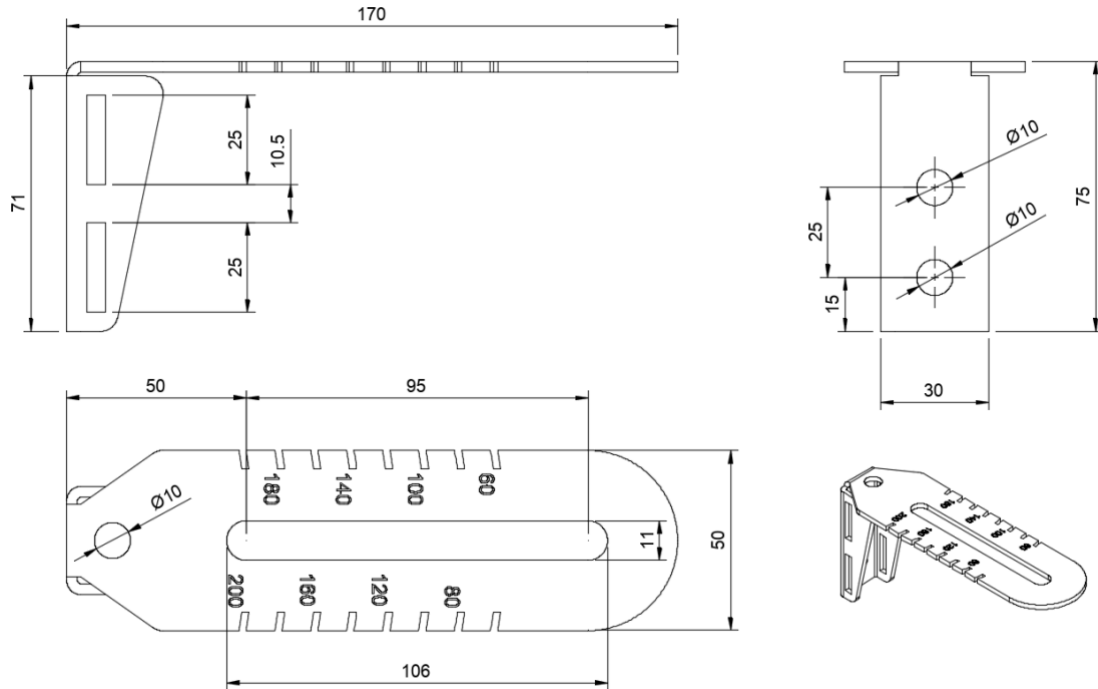
N/C = Normally Closed meaning that the dry contact is closed by default (the electrical signal passes through). N/O = Normally Open meaning that the contact is open (the signal does not pass).

ASSEMBLY



MOUNTING BRACKET

The radar sensor is mounted on a 3mm thick stainless steel bracket with openings for ligatures up to 20mm wide. The bracket offers an adjustment of the installation depth of the sensor by an oblong. The sensor can be adjusted in the horizontal and vertical axis.



DIMENSIONS FOR INSTALLATION	VALUE	UNIT
Length	170	[mm]
Width	50	[mm]
Height	75	[mm]
Material	Stainless steel	

The bracket is equipped with side indexes numbered from 60 to 200, which are useful when mounting with the circular radar support - or crown.

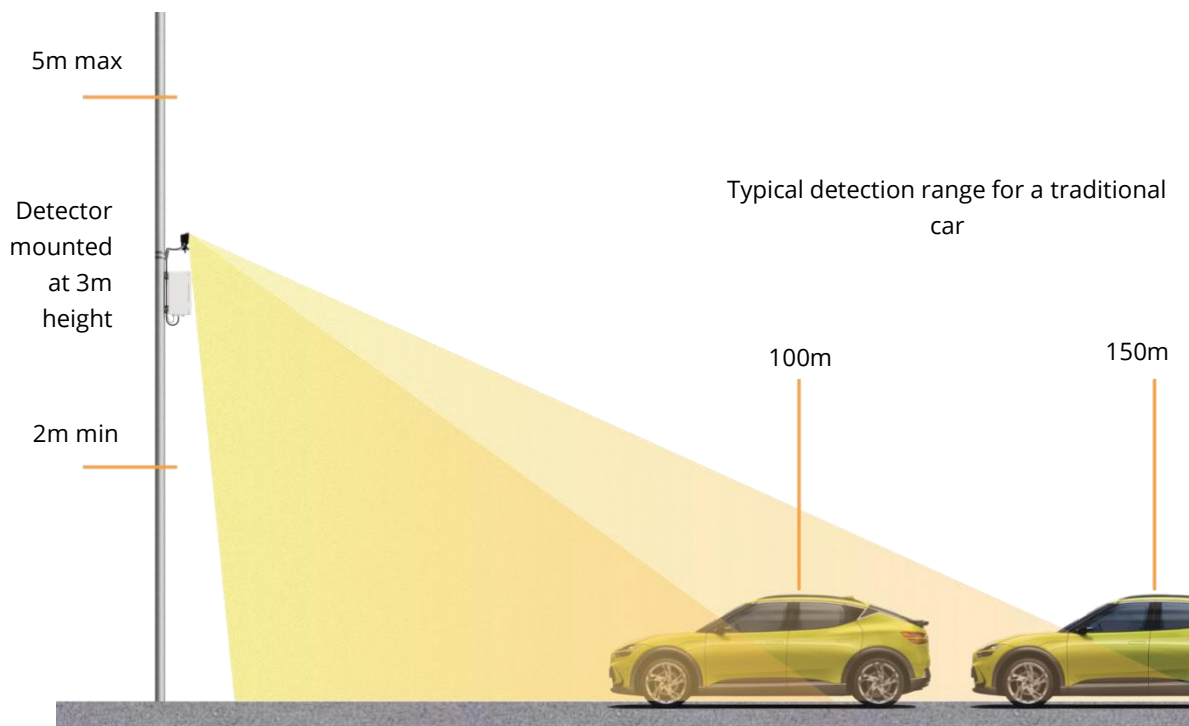
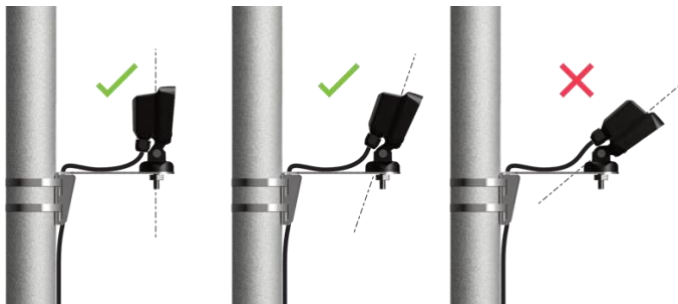
Once the bracket is mounted, the radar cable can be unwound to pass through the hole provided near the mast on the top of the bracket. By passing the radar cable through this hole, you ensure that it will stay in place over time and that it will run naturally along the mast.



ORIENTATION OF THE RADAR

The radar must be vertical and perpendicular to the direction of traffic flow. The sensor has a relatively wide angle of view allowing it to take single and dual lane roads. The range of the radar can be configured at installation by a screwdriver knob. The radar can be easily oriented with the viewfinder located on top of its housing.

The radar sensor can be tilted horizontally and vertically as required.



Start-up procedure



The front LED will flash 5 times and the back LED will be on for 1 to 2 seconds

CONFIGURATION

The Doppler radar can be set up to best suit the needs of the project. Switches and a rotary selector are used to configure it. Both are located in the radar housing, accessible by unscrewing the access port on the back of the housing with an imbus key. The recommended values are listed below.



Remove the cover using an 8mm wrench to access the rotary switch and DIP switches.



Select the desired parameters.
Replace and securely tighten the access port cover.

SPEED (ROTARY SWITCH)



The Doppler radar can detect passages from 4 to 120 km/h. It is possible to select the minimum detection speed by a rotary selector which is located in the configuration chamber of the box, accessible by unscrewing the circular back cover with a wrench. To turn the selector, we recommend the use of a flat screwdriver size 0 or 1.

By default, the Doppler radars delivered by Novaccess are configured on the minimum speed, i.e. position 1 for 4km/h. The 0 position must not be used.







The minimum speed can be modified to suit the project. For example, if pedestrians do not need to be detected and it is unlikely that traffic jams will be present on the section, the minimum speed threshold can be raised to a higher value that seems appropriate, e.g. 10km/h.

CONFIGURATION (DIP SWITCHES)



The operation of the Doppler radar can be configured by changing the combination of the 4 DIP switches located in the rear access port of the housing. The switches have two positions, in the direction of the numbers 1 through 4, representing a 0 state; or in the direction of the ON sign representing an active state. The default values are specified below. To change the switch positions, we recommend using a flathead screwdriver with a size of 0 to 1.

DIP switch	Parameter	Value at the bottom	Value on ON
	Detected directions	Traffic coming towards the radar	Traffic going in both directions. Bidirectional.
	Activation of the front detection LED	No	Yes. The LED will light up for each detection.
	Sensitivity/range	Average Up to 100m for a traditional car	High Up to 150m for a traditional car
	Signal holding time	0.5 seconds	2 seconds

RECOMMENDED CONFIGURATIONS

RECOMMENDED CONFIGURATION FOR TESTING



The following configuration is applied to the Doppler radars delivered by Novaccess. They allow to check the correct operation of the counter during the installation. However, it is recommended to apply the operational configuration after validating the installation in test mode.

For the tests, the Doppler radar picks up traffic in both directions, it switches on the front signal LED on detection, it has a medium sensitivity and a signal holding time of 0.5 seconds.

RECOMMENDED CONFIGURATION IN PRODUCTION



In operational mode, we recommend that the front detection LED be switched off. Simply turn the DIP switch to number 2. We recommend to make the changes with the radar switched off so that the next time the system is switched on, the radar will start with the correct settings.

The Doppler radar is usually connected in the Novalight Gateway Outdoor's cabinet in one of the 4 positions provided for this purpose. To configure the Doppler radar(s), the power supply to the cabinet can be switched on directly using the contactor provided.

COMPLIANCE

Mark	EC (RED 2014/53/EU) RoHS (2011/65/EU)
EMC	EN 301 489-1/51 EN 50293
Radio	EN 300 440
Security	EN 60950-1 EN 50556 EN 62479
RoHS	EN 50581

GENERAL INFORMATION

PRODUCT REFERENCES

PRODUCTS	REFERENCE
NovaTraffic Monitoring Radar	NT-MR2-010

CONTENTS OF THE DELIVERY

- A counting radar with M10 fastening screws, 5m cable prepared and preconfigured
- A stainless steel bracket for pole or wall mounting

Not included in the delivery

- Strapping for fixing the bracket to a mast or screws for fixing to the façade

CHANGE LOG

REVIEW	DATE	DESCRIPTION
R01	November 4, 2021	General version

CONDITIONS

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