



RADAR SPEED SIGN USER GUIDE

MODEL: SAS20-484



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INDEX

AGD RADAR SENSOR	3
SIGN PLACEMENT & RADAR POSITIONING	4
POLE INSTALLATION	6
SOLAR PANEL INSTALLATION	9
SIGN OPERATION – INTERNAL ISOLATOR SWITCH	11
EXTERNAL COMPONENTS	12
INTERNAL COMPONENTS	13
EXTERNAL SWITCH	14
DATA CONNECTIONS	15
CONNECTING VIA COM PORT	16
CONNECTING VIA ETHERNET	17
CHANGING THE RADAR SETTINGS	18
BRIGHTNESS ADJUSTMENT	20
RADAR SPEED SIGN DIMENSIONS	21

The Voxson Radar Speed sign incorporates the AGD 331 radar sensor which is manufactured in the UK and is Australian Compliant.

Voxson has chosen the AGD-331 radar sensor due to its capabilities and unlike traditional **Continuous-wave** (CW) Doppler radar for sign driving applications which have no ranging capability, the AGD-331 has a full multi-target acquisition platform, accurate target range determination and fast update rate.

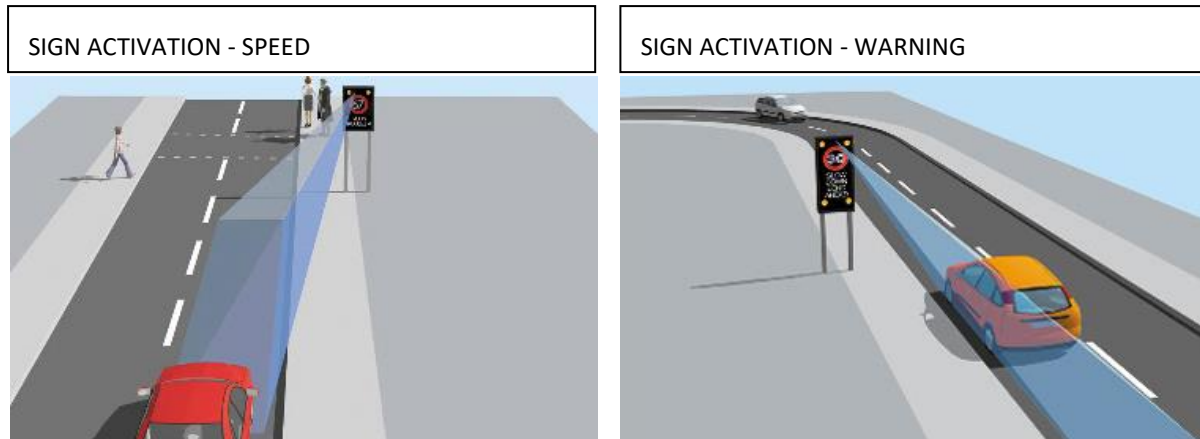
KEY FEATURES

- Speed measurement 11kph – 160 kph
- User selectable range up to 180m
- True ranging capabilities providing accurate count data in single lane environments.



SIGN PLACEMENT & RADAR POSITIONING

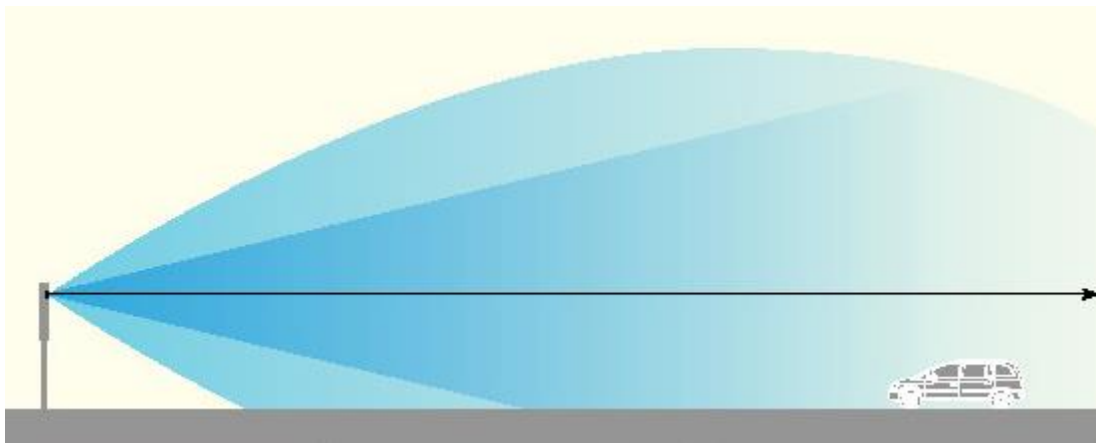
Typical Radar Applications



Installation – Position

The relatively wide beam profile of the K-band radar module ensures good detection coverage of single or dual lane approaches with relatively little adjustment of the sign in relation to the direction of approaching targets.

Mounting of the radar within the sign is recommended at between two and five meters from the ground (optimum 3m)



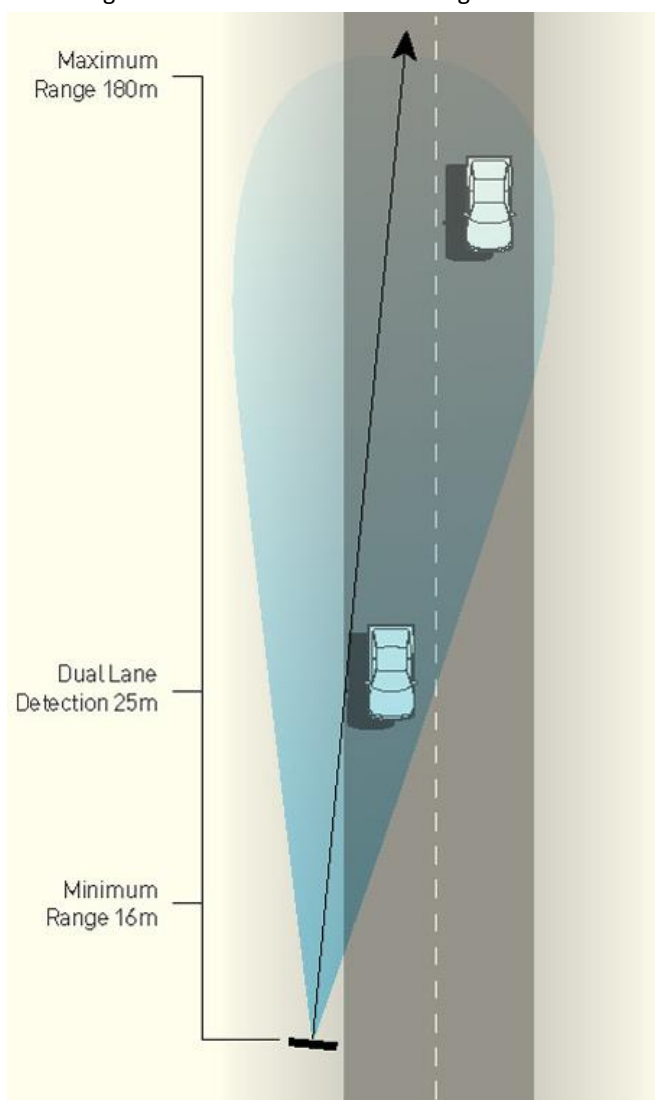
The radars planar antenna should be 90° to the road surface, inclines in the road surface should be catered for by adjusting the AGD 331 radar sensor mounting angle.

Radar Installation – Range

The AGD 331 is a true ranging radar that allows the user to select at what range the radar needs to start reporting on tracked targets.

Each target needs to return sufficient signal in order for the radar to track its range. A target returns signal related to its Radar Cross Section (RCS) which is in part related to the reflecting area of the target. Targets that have a larger Radar Cross Section (RCS) will return a higher signal than those with a smaller RCS.

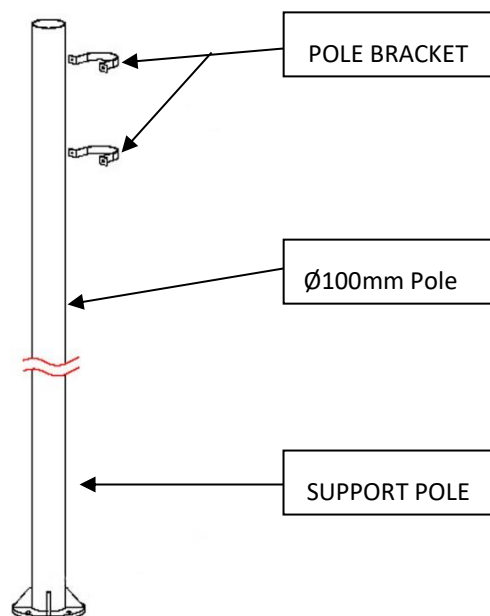
For example: If the detection range is set at 80 meters then all targets that have enough reflective power before this point will be tracked. meters will detection actuation of the sign



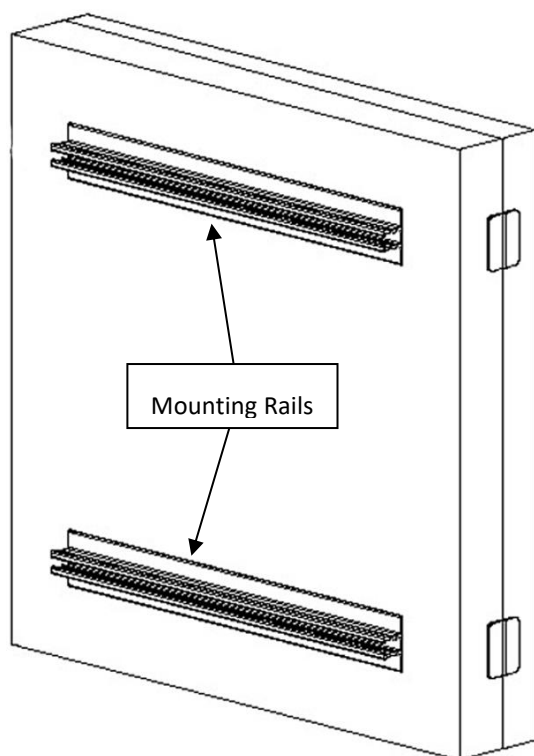
Only when the target is at 80 occur, allowing for accurate at the correct range.

The radar sensor that is fitted to the Voxson Radar Speed Sign is manufactured by **AGD** in the UK.

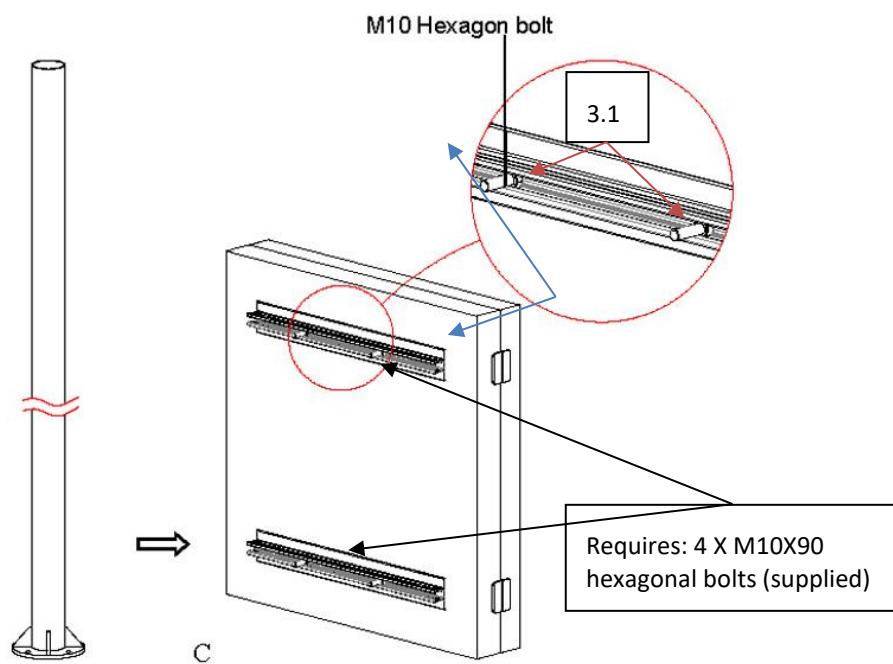
1. Pole Installation – support structure overview



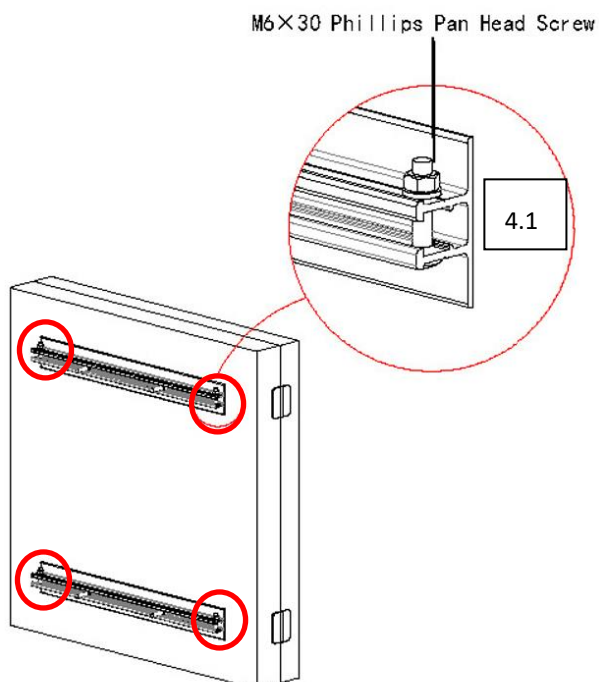
2. Rear of Cabinet



3. Fit the 2 x M10X90 bolts in to the top and bottom mounting rail of the radar speed sign as pictured in image 3.1.



4. Fit the 4 X M6X30 Phillips Pan Head Screws to the end of the mounting rail, as pictured in image 4.1. *This must be done at both ends of the top and bottom mounting rail, preventing removal of the radar speed sign.*

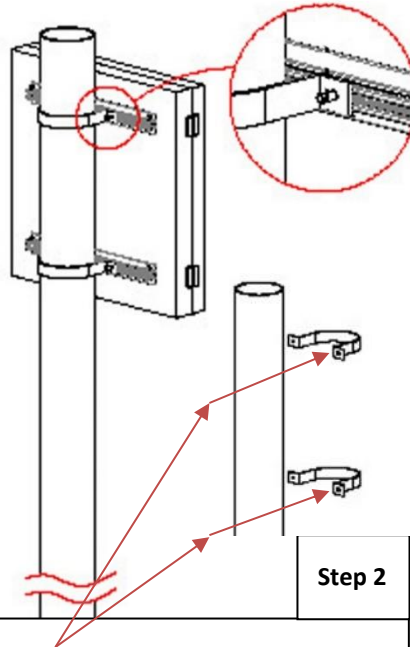


5. Securing cabinet to pole support

Leave at least 250mm minimum from top of pole for the solar panel bracket.

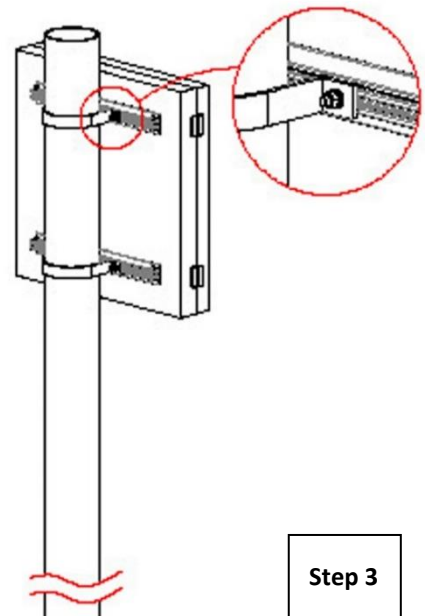
Step 1

5.1) Lift the cabinet to the required height on the pole. **Leave at least 250mm of space at the top of the pole** to install the solar panel mount and solar panel.



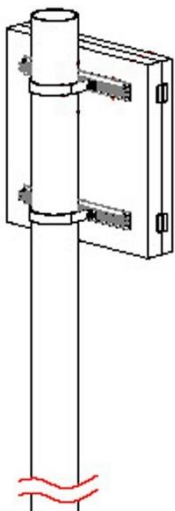
Step 2

5.2) Insert the M10x90 hex bolt through the hole of the mounting brackets around the pole.



Step 3

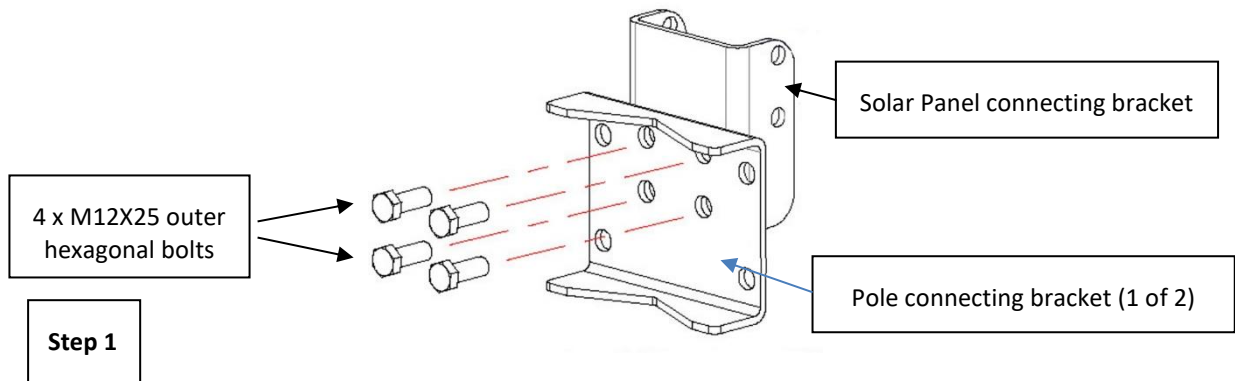
5.3) Use the M10 nuts to lock the mounting bracket to the mounting rail of the radar speed sign. Make sure the nuts are tightened and the radar speed sign is secure to the pole.



Step 4

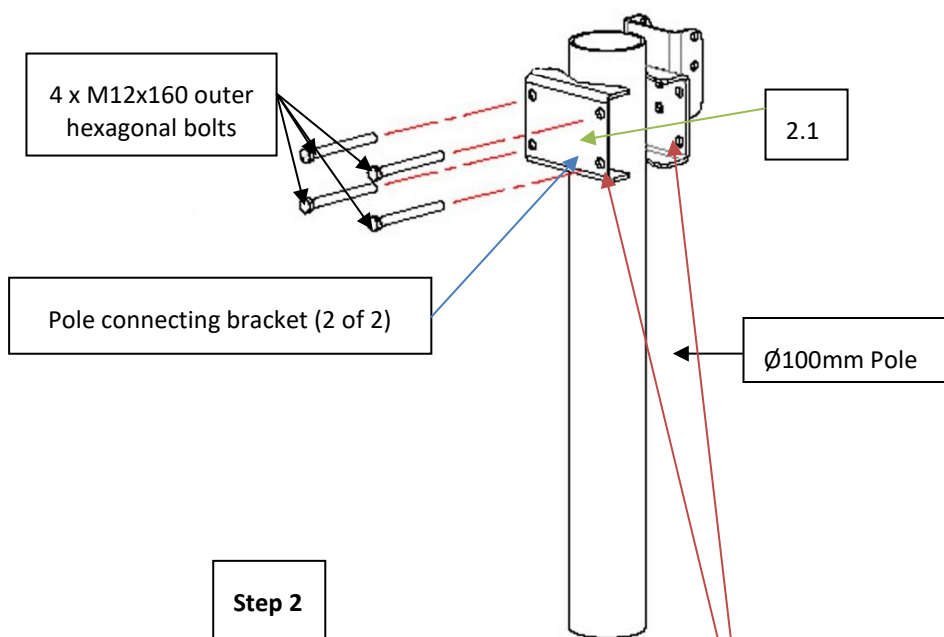
5.4) Make sure all bolts are tightened and the sign is secure. Installation of the Radar speed sign to the pole is complete.

1. Assembling the solar panel mounting bracket



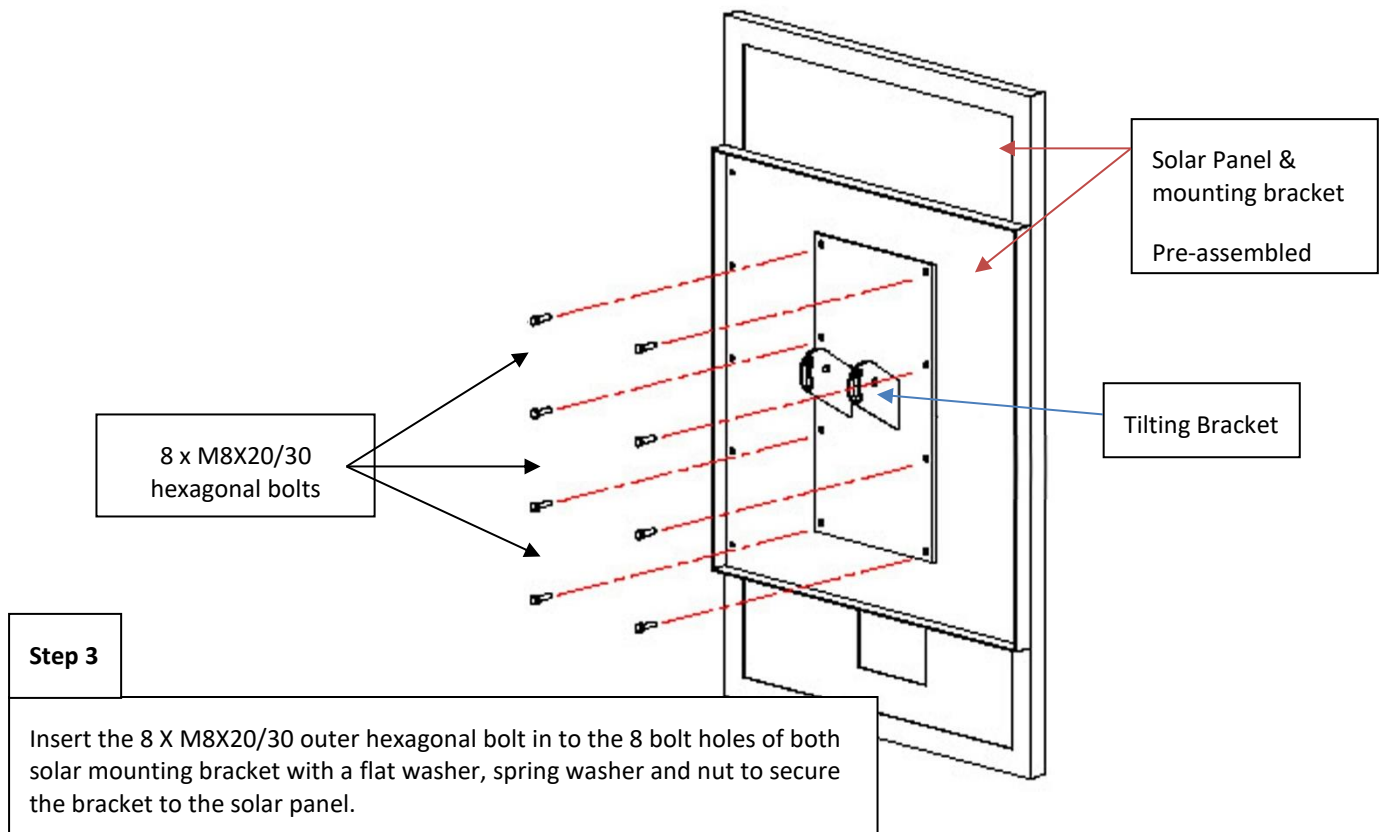
Insert the 4 X M12x25 outer hexagonal bolt in to the 4 bolt holes of the pole & solar panel connecting bracket, secure using the M12 flat washer, spring washer and nut, tighten all bolts and nuts.

2. Connecting the solar panel bracket to the pole

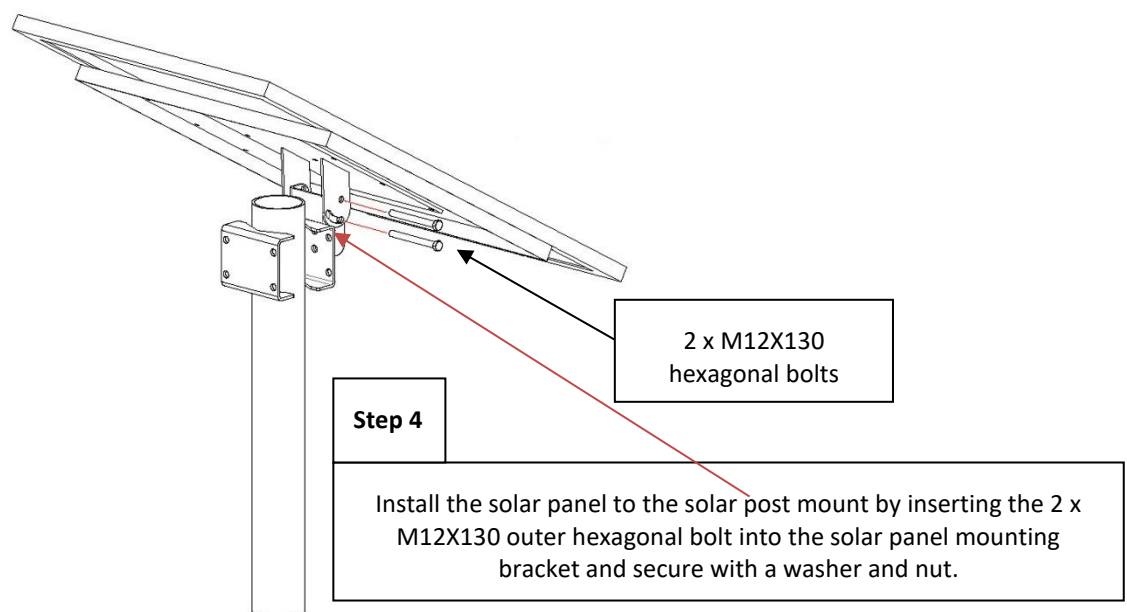


Insert the M12x160 outer hexagonal bolt in to the 4 bolt holes of both pole connecting brackets image 2.1 with a flat washer, spring washer and nut to secure the bracket to the pole.

3. Solar Panel mounting bracket installation



4. Mounting the solar panel to the pole bracket



SWITCHING THE SIGN OFF (BATTERY ISOLATION)

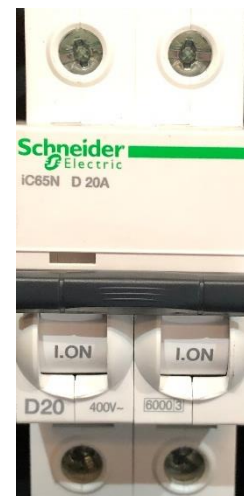
1. To switch the sign off, move the grey switch to the OFF position.
2. The flag on the master switch will change from ON to OFF (green as pictured).
3. The radar speed sign is now OFF, and the battery is isolated, the battery will not charge while the isolator is in the OFF position.

NOTE: THE SIGN WILL NOT CHARGE WITH THE BATTERY ISOLATOR SWITCH IN THE OFF POSITION



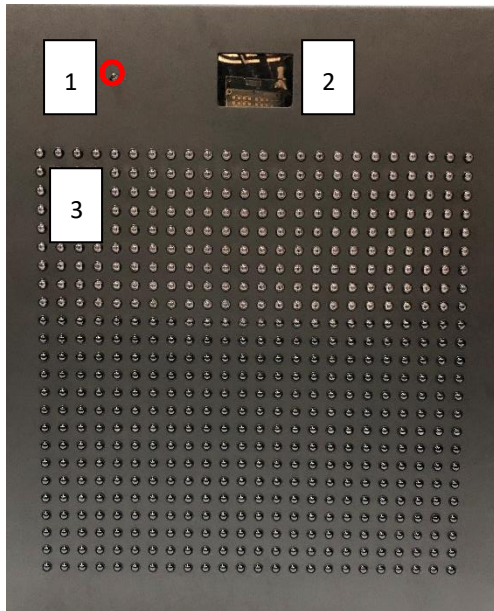
SWITCHING THE SIGN ON

1. To switch the sign ON, move the grey switch to the on position.
2. The flag on the master switch will indicate that it is now switched ON (as pictured)
3. The radar speed sign will now run from the internal battery & charge via the solar panel.

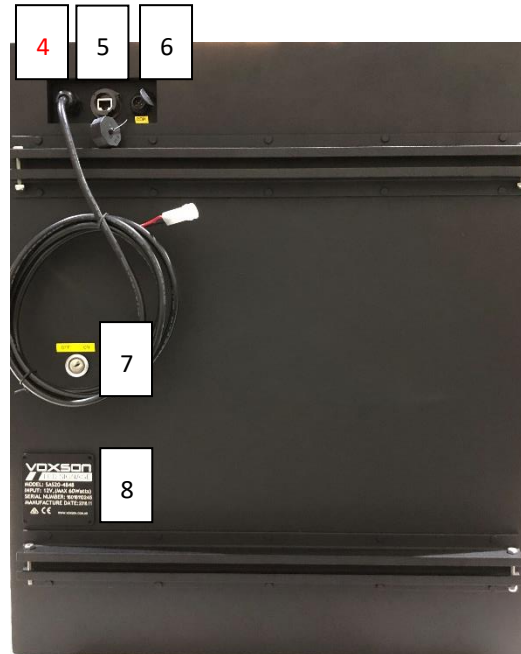


EXTERNAL COMPONENTS

FRONT of Radar Speed Sign

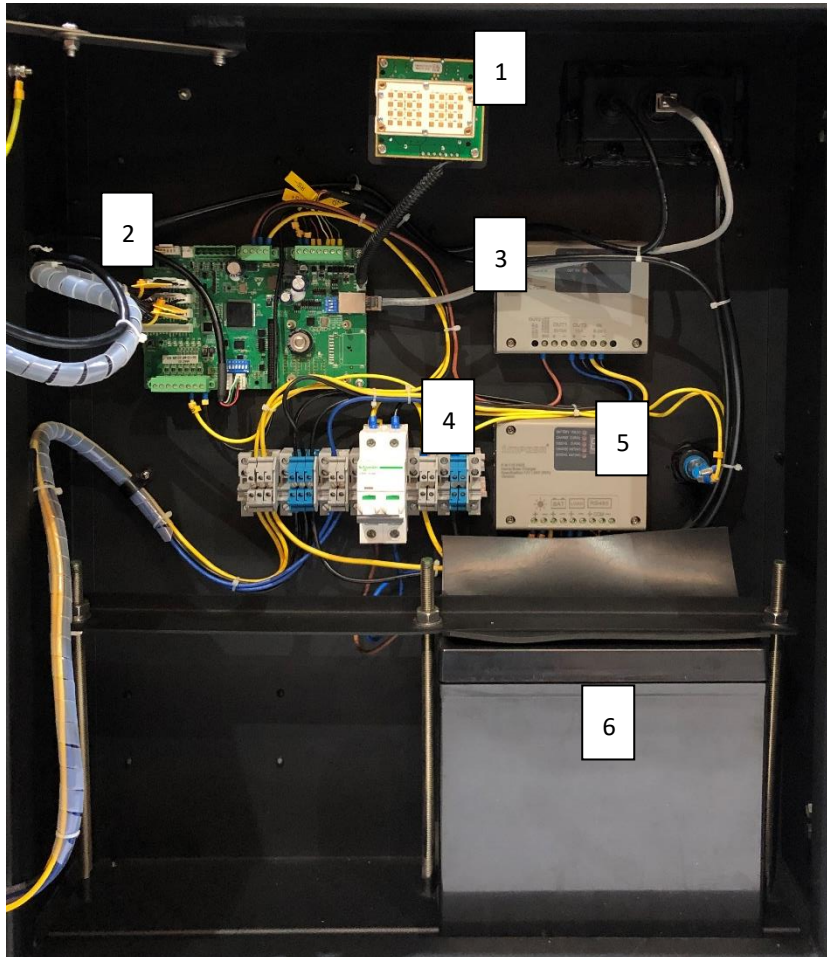


BACK of Radar Speed Sign



1. Light Sensor (DO NOT COVER).
2. Radar Window (DO NOT COVER).
3. LED Display.
4. Solar Panel Connection (**WARNING: DO NOT CONNECT TO MAINS POWER**)
5. Ethernet connection.
6. Serial RS232 connection.
7. LED Display power switch.
8. Product Information & serial number.

INTERNAL components of Radar Speed



1. Radar module (**ELECTROSTATIC SENSITIVE COMPONENT – DO NOT TOUCH**)
2. Radar Speed Sign mainboard (**ELECTROSTATIC SENSITIVE COMPONENT – DO NOT TOUCH**)
3. Voltage Regulator
4. Master Power Switch
5. Solar Charger / Regulator
6. Battery (**BATTERY & CABINET MUST BE KEPT UPRIGHT AT ALL TIMES**)

EXTERNAL SWITCH

The manual switch can be used to switch the display ON or OFF without opening cabinet

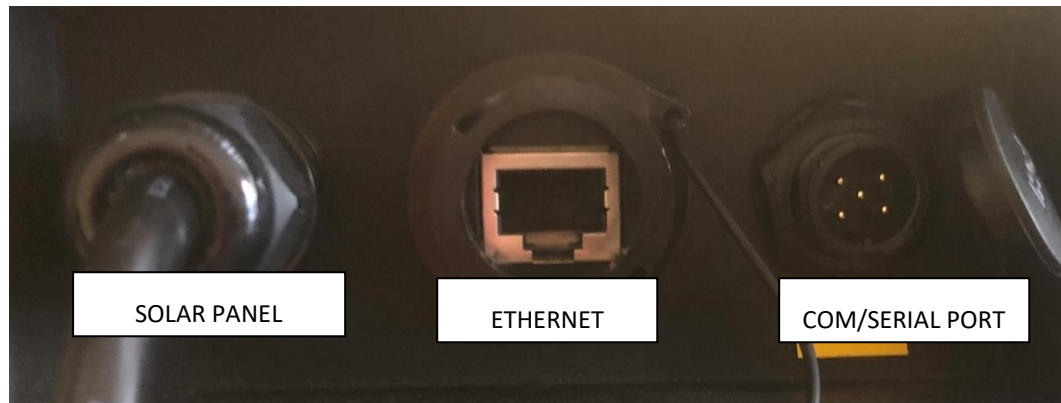
NOTE: The rear switch only turns the display ON or OFF it does not isolate the battery; the sign will still charge the internal battery.

The switch is installed on the rear of the cabinet.

- When the key is turned to the right, the display will be ON.
- When the key is turned to the left, the display will be OFF.



DATA CONNECTIONS



COM: Use the 9 PIN serial cable which is supplied. A USB to Serial converter will be required to connect to the radar sign using the serial port for communications (this is the PREFERRED connection method). See CONNECTING VIA COM PORT FOR CONNECTION INSTRUCTIONS.

USB TO SERIAL CONVERTER NOT SUPPLIED WITH RADAR SPEED SIGN

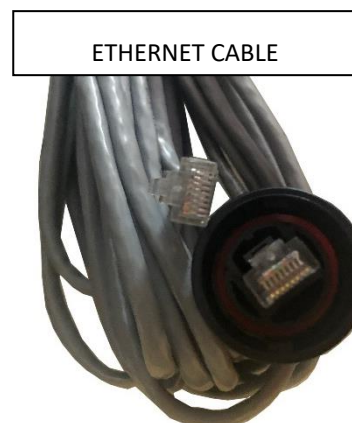


USB to Serial (RS232) converter

ETHERNET: A standard CAT 5/6 cable is used to communicate with the radar sign, the default IP address for the sign is 169.254.10.49 with a subnet of 255.255.255.0. (NOTE: the local ethernet adaptor will need to have a static IP address assigned to the computer EG: 169.254.10.40 with a subnet of 255.255.255.0) See CONNECTING VIA ETHERNET FOR CONNECTION INSTRUCTIONS.



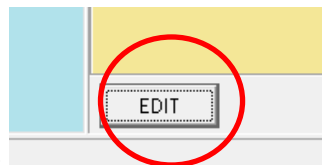
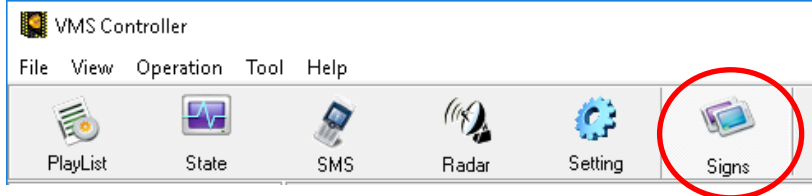
SERIAL CABLE RS232



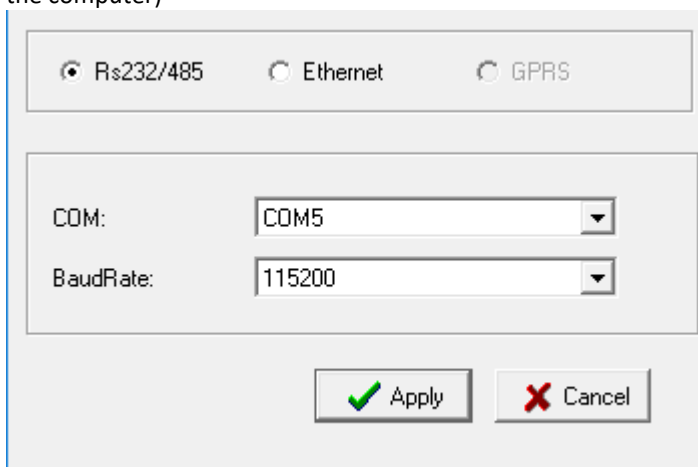
ETHERNET CABLE

CONNECTING VIA COM PORT

- 1) Connect USB to Serial adaptor to the computer that has the VMS/RADAR controller software installed.
- 2) Connect the 9-pin serial cable to the USB serial adaptor and connect the round end to the back of the sign. NOTE: be careful not to break any of the pins and that the round cable is orientated correctly to the socket on the back of the sign.
- 3) Open the VMS/RADAR controller software up and click on the "signs" button



- 4) Click on the "edit" button in the sign's menu
- 5) Set the communications type as "RS232/485" and select the appropriate COM port for the serial adaptor (this will be different on each computer). Leave the Baud Rate as 115200 and press the apply button to set.
(NOTE: these settings may need to be updated every time the USB to Serial adaptor is connected to the computer)

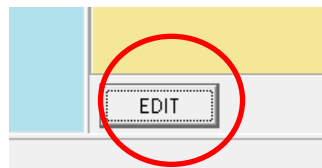
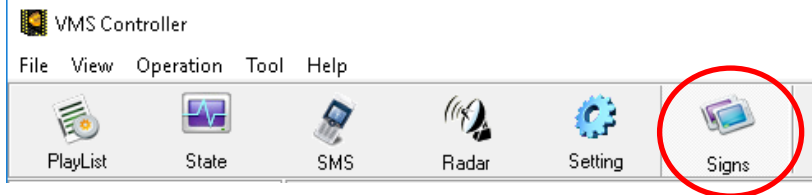


Connection Example: connect the USB to the laptop, connect the serial cable to the serial adaptor and connect the serial cable to the sign



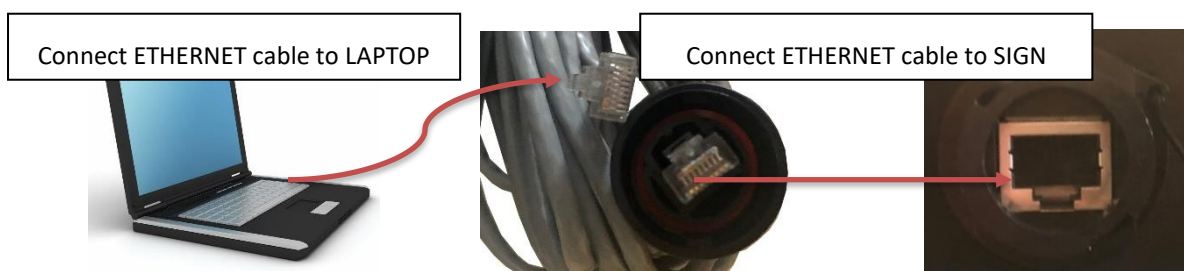
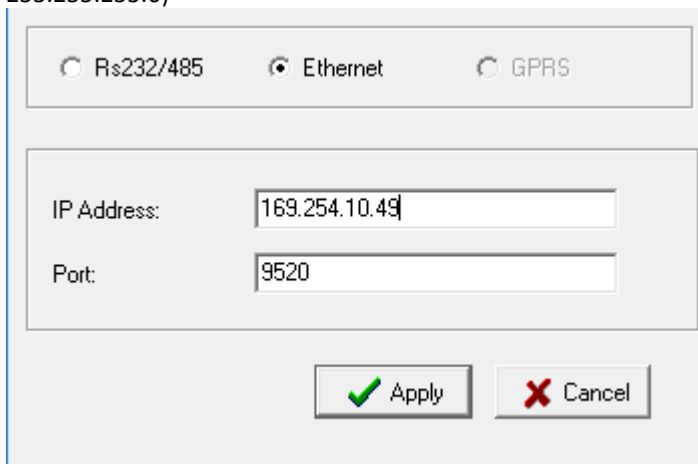
CONNECTING VIA ETHERNET

- 1) Connect the supplied EHTERNET cable to the radar sign.
- 2) Open the VMS/RADAR controller software up and click on the “signs” button



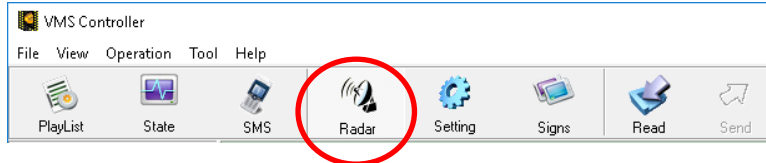
- 3) Click on the “edit” button of the sign’s menu
- 4) Set the communications type as “Ethernet” and set the IP address to 169.254.10.49 and port to 9520. Click “Apply” to set this as the communications type.

(NOTE: A standard CAT 5/6 cable is used to communicate with the radar sign, the default IP address to the signs is 169.254.10.49 with a subnet of 255.255.255.0. The local ethernet adaptor on the computer will need to have a static IP address assigned EG: 169.254.10.40 with a subnet of 255.255.255.0)



CHANGING THE RADAR SETTINGS

- 1) Open the VMS/RADAR Controller software and make sure the communications method has been set, select "Radar" from the top menu



- 2) Select "Read" to read the current settings from the Radar speed sign.



- 3) The current settings will be loaded to the Radar menu and changes will now be able to be made.

☒ Enabled

Radar Setting

Correct Vehicle Speed Range	<input type="text" value="1"/>	To	<input type="text" value="150"/>	[km/h]
<input checked="" type="checkbox"/> High Speed Cut Off	<input type="text" value="150"/>	[km/h]		
<input type="checkbox"/> Display Vehicle Speed Message				
<input type="checkbox"/> Speed Limit Message	<input type="text" value="\\VOXSONAC\Customer Data\Voxson Content\F"/>			<input type="button" value="..."/>
<input type="checkbox"/> Vehicle Approaching Message	<input type="text" value="\\VOXSONAC\Customer Data\Voxson Content\F"/>			<input type="button" value="..."/> <input checked="" type="checkbox"/> FL
<input checked="" type="checkbox"/> Correct Vehicle Speed Message	<input type="text" value="C:\MessageFiles\Texts\speed.Nmg"/>			<input type="button" value="..."/>
<input type="checkbox"/> Over Speed Message	<input type="text" value="\\VOXSONAC\Customer Data\Voxson Content\F"/>			<input type="button" value="..."/> <input checked="" type="checkbox"/> FL
<input checked="" type="checkbox"/> Enable Radar Log	<input type="text" value="10"/>			

- 4) The following settings are now available to make on the radar speed sign.

Enabled: Click to activate the radar

Correct Vehicle Speed Range: Is the maximum and minimum vehicle speed range.

High Speed Cut Off: If you set "Display Vehicle Speed Message", when the vehicle speed is detected higher than the preset speed, the sign will not display the vehicle speed.

Display Vehicle Speed Message: If set this will display the detected radar speed on the display

Speed Limit Message: When radar detect the vehicle is higher than a preset value, the sign will display this message.

Vehicle Approaching Message: When the vehicle is approaching, the sign will display this message.

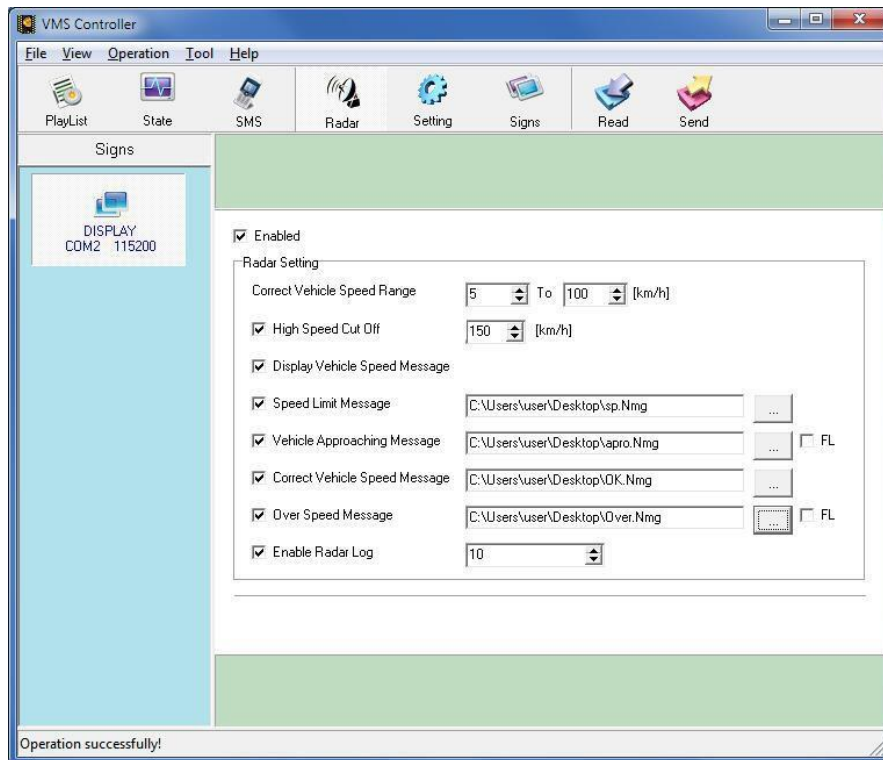
Correct Vehicle Speed Message: When the vehicle speed is within the Correct Vehicle Speed Range, the sign will display this message.

Over Speed Message: When the vehicle speed is higher than the Maximum Correct Vehicle Speed Rang, will display this message.

Enable Radar Log: The radar logs will be recorded every 10-radar data.

Click "Send" after finishing the changes to save the settings to the Radar Speed Sign.

Please see the following example:



Example Configuration:

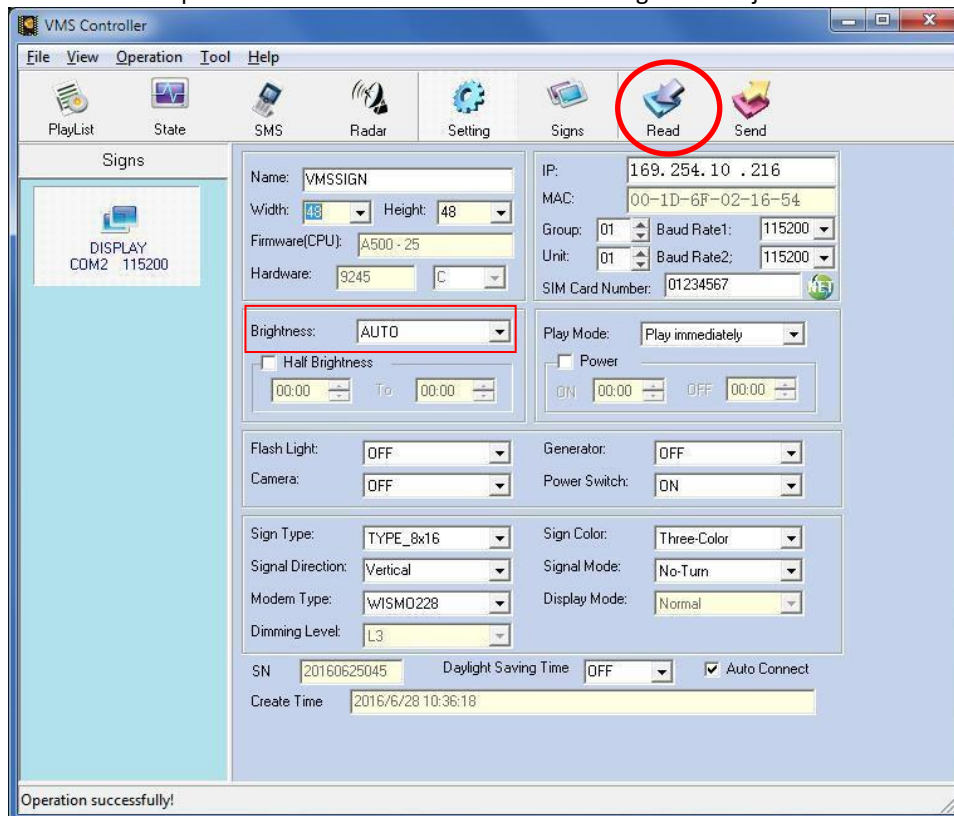
- I. According to this setting, the radar will detect the vehicle speed.
- II. When the speed < 5 , the display will be blank.
- III. When $5 \leq \text{speed} \leq 100$, the displaying sequence will be: apro.Nmg, the current speed value, OK.Nmg, sp.Nmg.
- IV. $100 < \text{speed} < 150$, the displaying sequence will be: apro.Nmg, the current speed value, Over.Nmg.

BRIGHTNESS ADJUSTMENT

NOTE: Before making changes to the sign press the “READ” button to get the current settings loaded in the VMS/RADAR controller software.

You can use the VMS/RADAR controller software to set the brightness.

There are two options available manual and automatic brightness adjustment.



Manual control: Choose the brightness percentage and send to the sign.

Auto brightness: Set Brightness to AUTO, send to the sign. The sign will adjust its brightness automatically according to the ambient brightness.

Auto brightness levels are: 1,5,12,17,22,30,40,50.

The sign will stay at the minimum auto brightness when the brightness sensor fails or is removed from the sign.

RADAR SPEED SIGN DIMENSIONS

