



# **XRADAR1**

# 1 Brief Introduction

The speed sign XRADAR1 provided by Industrial by AccessPro. is a monomeric radar speed sign with high performance and multiple functions. By adopting the DOPPLER principle, the speed sign manages to measure and display the radial velocity of the ground moving target. When a vehicle passes by, the speed sign is able to display the measured results to the driver and reminds the driver not to drive with excessive speed. To install XRADADR1 speed sign at black spots and at the sectors where the speed is restricted will help remind the driver of the speed and ensure safe driving. This product is applicable to various places where traffic management is required, such as highways, railways, airports, factories and mines, enterprises, schools and hospitals.

The XRADAR1 speed sign's radar adopts pulsed mode. The advantages of the pulsed mode are low radiation; low power consumption and anti-radar detector is void.

The particular time control function of the product makes it possible to open or close the speed sign radar module according to the days of a week or the time quantum and the bound of the speed could be set separately.

## Principles of DOPPLER radar

The working principle of the DOPPLER radar as follows: when an impulse wave of fixed frequency transmitted into the sky by the radar meets motional targets, the frequency difference between the echo frequency and the frequency of the transmitted wave is called Doppler frequency. Based on the Doppler frequency, the speed of the radial relative moving target to the radar could be measured.

# 2 Installation Guide

The XRADAR1 speed sign is designed with multiple functions and various installations means, and is applicable to different power supply modes.

## 2.1 Steady Rest Installation Mode

First, fix one end of a square or round shaped steel tube with a diameter of 8cm on the ground, with 2m length above the ground. (2m is the suggested length and the user could buy a steel tube according to own need.)

Second, fix the speed sign to the supporting stand by fitting the back bracket onto the top of the steel tube.

Third, adjust the direction of the speed sign display screen toward the highway, and tighten the handle screw on the bracket.

Fourth, debug and fix the radar within the speed sign according to the direction and angle of the coming vehicle.

Please refer to A if AC power supplies are applied, and refer to B if battery supply is applied.

A Put the 3-core aviation plug into the socket and tighten it.

B Put the 2-core aviation plug into the socket and tighten it.

Turn on the control module power source to start.

## 2.2 Portable Installation Mode

Put the portable supporting stand onto the level ground, lay flat and fix the four supporting legs.

Fix the speed sign to the supporting stand by fit the back bracket onto the top of the steel tube.

Adjust the direction of the speed sign display screen toward the highway, and tighten the handle screw on the bracket.

Debug and fix the radar within the speed sign according to the direction and angle of the coming vehicle.

## 2.3 Vehicle Installation Mode

Put the vehicle installation supporting stand at the back of the prowl car and fix it with the bumper support at the bottom of the car.

Fix the speed sign to the supporting stand by fit the back bracket onto the top of the steel tube.

Adjust the direction of the speed sign display screen toward the highway, and

tighten the handle screw on the bracket.

Debug and fix the radar within the speed sign according to the direction and angle of the coming vehicle.

## 2.4 Power Supply Options

Different power supply modes are available according to actual application.

Power supply only

Battery supply only

Solar battery supply



### **WARN**

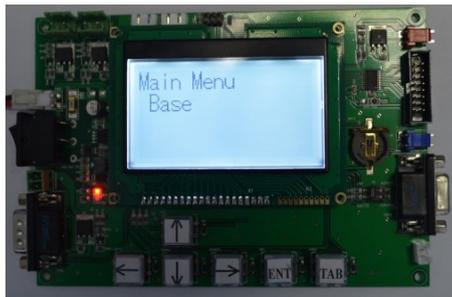
**Please assign professional persons to install in order to avoid possible damage by accident.**

## 3 Operation Guideline

Only a few steps of operation according to the indication are required to fulfill the setup of the speed sign. Below are the explanations of configuration and detailed steps.

When open the front panel of the speed sign, the display LCD screen of main controller board automatically works and enters into the main interface (see Graph 3.1). Now radar sensor and LED display turn off automatically.

There are 6 menus under the main interface, <Base>, <Misc>, <Time>, <Advance>, <Test>, <Factory>. It is very easy operation, there are only <Base>, <Time>, <Advanced> 3 menus for user use. See pic-3



There are six keystrokes provided, which are [UP], [DOWN], [LEFT], [RIGHT],

[ENT], [TAP] or [TAB] sometimes.

Name of the keystrokes	Functions for menu navigation
[UP] [DOWN]	1.Increase or decrease value 2.Switch mode
[LEFT] [RIGHT]	[LEFT] is to select previous digit [RIGHT] is to select next digit
[ENT]	Enter the menu or save/cancel settings
[TAP] Or [TAB] sometimes	Switch menu under the main interface Switch setting Go back to previous menu

The functions of each keystroke are shown in Table 3.

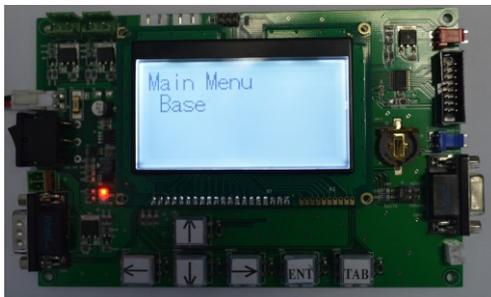
(Table 3)

User need to install a CR1220 cell battery on the main controller board, consider battery is not allowed to ship by air, we suggest user buy it locally, see battery location as follows:



### 3.1 Base

Press [ENT] to select <base menu>, see pic 3-1



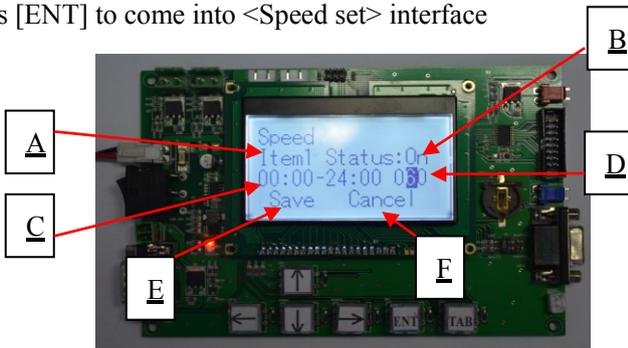
(pic3-1)

### 3.1.1 Speed set

Press [ENT] to come into menu <Base Speed>, see pic 3-1-1



Then press [ENT] to come into <Speed set> interface



(pic 3-1-1)

#### Parameter Explanation:

**A.** Item1–Item 4 is time section

Press [UP] or [DOWN] to select item.

User can set different speed limit for 4 most time section during 24 hours/day

For example

Item1 00(hour):00(minute) – 06:00

Item2 06:00 – 12:00

Item3 12:00 – 18:00

Item4 18:00 – 24:00

And Other

**B.** Status On/Off

ON /OFF means whether or not to carry out measuring work during this time section.

**C. 00:00 – 24:00**

Start time – end time in item 1 section.

**D. Speed limit**

The range is 10-199 for 3 digit display and 10-99 for 2 digit display.

**E. Save****F. Cancel****Operation guide:**

Press [TAP] to switch from one setting to another, press [UP] or [DOWN] to increase or decrease value or choose On/Off, press [LEFT] or [RIGHT] to select digit.

For example how to set 60 KPH speed limit in 24 hours/day.

The operation is follow <Item1> → <Status On> → <00:00 – 24:00> → <060> → <Save> see picture as follows:



1. Press [TAP] select <Status On>
2. Press [UP] show Status <On> (press [DOWN] show Status <Off>)
3. Press [TAP] select time section and set 24 hours time <00:00 – 24:00>  
Notice for this step, press [TAB] to switch start time to end time and from hour to minute setting.
4. Press [TAP] select speed limit and set value <060>
6. Press [TAP] select <Save>, finally press [ENT] to save setting.

### 3.1.2 Safe Display and Over Display see pic 3-1-4.

<Safe Disp> is LED displaying under speed limit.

<Over Disp> is LED displaying over speed limit.

It is same operation for these 2 settings.

#### Operation guide:

<Main Menu>→<Base>→<Safe Display>



(pic 3-1-2)

Press [TAP] select <Mode> → <Time> → <Save> → <Cancel>.

2 functions of press [UP] or [DOWN]

a. When select <Mode>, switch Mode <Static>/<Flash>.

b. When select <Time>, increase or decrease value.

Press [LEFT] or [RIGHT] to switch Hold Time from first digit to second digit (Min 0.6 second to Max 9.9).

After setting is finished, press [TAB] move to <Save> and press [OK]

#### Parameter Explanation:

**Static** When indicating the speed of the tested vehicle, the LED display screen is in a static status.

**Flash** When indicating the speed of the tested vehicle, the LED display screen flashes with a frequency of 1HZ.

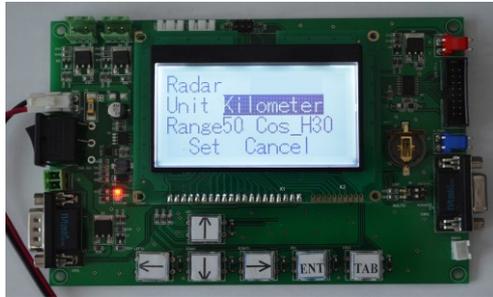
### 3.1.3 Radar

#### Operation guide:

<Main Menu>→<Base>→<Radar>



(pic 3-1-3)



Press [TAP] move <Unit> → <Range> → <Cos>

- a. When select <Unit>, switch Speed Units <Kilometer>/<Mile> by [UP] or [DOWN].
- b. After setting is finished, press [TAP] select <Save>, press [ENT]

#### Parameter Explanation:

**Kilometer:** The speed unit of the tested vehicle is kilometer per hour.

**Mile:** The speed unit of the tested vehicle is mile per hour.

**Range and Cos:** They will be set at factory, don't change them if unnecessary.

## 3.2 Time



### 3.2.1 Set local area time

#### Operation guide:

<Main Menu> → <Time> → <Time Adj>



a. Press [TAP] to select <Year>(YY) → <Month>(MM) → <Day>(DD) → <Hour> (HH) → <Min> (MM) → <Second>(SS) → <Save> → <Cancel>

b. Press [UP] or [DOWN] to increase or decrease time value.

c. Press [LEFT] or [RIGHT] to select digit.

After setting is finished, press [TAP] select <Save> and press [ENT].



### 3.2.2 Set working day during a week.

#### Operation guide:

<Main Menu> → <Time> → <Day of Week>, see picture as below:



#### Operation guide:

- a. Press [TAB] to select <MON\_1>(Monday) → <On> → <Save> → <Cancel>.
- b. Select week day by pressing [DOWN], <MON\_1> will turn to <TUE\_2> → <WED\_3> → <THU\_4> → <FRI\_5> → <SAT\_6> → <SUN\_7>, press [UP] to turn previous weekday.
- c. When select <On>, press [UP] or [DOWN] to switch <On>/<Off>.
- d. After setting is finished, press [ESC] move to <Save> and press [OK]



#### Parameter Explanation:

<On> The speed sign measurement that day is enabled under the time control mode.

<Off> The speed sign measurement that day is disabled under the time control mode.

### 3.3 Advanced

<Main Menu>→<Advanced>



#### 3.3.1 Cut Speed

<Main Menu>→<Advanced>→<Cut Speed>



#### Operation guide:

- a. Press [TAB] to select Cut Speed <Value>→ <Save> → <Cancel>.
- b. Press [LEFT] or [RIGHT] to choose digit.
- c. Press [UP] or [DOWN] to increase or decrease value.



#### Explanation:

- a. Cut Speed means if vehicle speed is higher than Cut Speed setting, radar speed sign will not display anything.
- b. As usual the value is 199, don't touch it if unnecessary.

### 3.3.2 LED Pwm (LED brightness)

<Main Menu>→<Advanced>→<LED Pwm>



#### Operation guide:

- b. Press [TAB] to select Green L <XXX> → Green H <XXX> → Red L <XXX> → Red H <XXX> → <Save> → <Cancel>.
- b. Press [LEFT] or [RIGHT] to choose digit.
- c. Press [UP] or [DOWN] to increase or decrease value.



#### Explanation:

L means low level range from (100 to 500)

H means High level range from (100 to 1000)

### 3.3.3 Extended if needed

<Main Menu>→<Advanced>→<Extended>



#### Operation guide:

- Press [TAB] to select <Always> → <Flash> → On<XX> → Off <XX> → <Save> → <Cancel>.
- Press [LEFT] or [RIGHT] to choose digit.
- Press [UP] or [DOWN] to increase or decrease value.



**A:** Click [UP] or [DOWN] to change extended equipment working way

<Always>: Flash light is always working for 24hours/day

<Off>: Flash light stops working

<Over>: Flash light only works for vehicle over speed limit

<O+S>: Flash light only works while radar detect coming vehicle.

**B:** <Flash>: the extended equipment is flash light

**C:** Flashing light holding time, time unit is 0.1Second, 03 means 0.3 second

**D:** Useless

## 4. Radar Module Characteristics

Parameter Description	Range	Condition
Radar Transmission Frequency	24.150GHz	
Radar Working Mode	Frequency hopping	
Tested Speed range	10-199km/h	
Distance for speed test	(Santan $\geq$ 200m)	The acceptance range for Santana by Volkswagen on flat highway section is not less than 200m.
Speed Test Precision	Static $\pm$ 1km/h Dynamic $\pm$ 2km/h	When test is carried out with the speed sign installed on the moving prowl car, the speed of the prowl car should be within the range of 30~150 km/h. If the tested vehicle is moving in the same direction as the prowl car, the speed of the tested vehicle should be 5km/h faster than the prowl car.
Radiation Field Angle	14°	
Speed Test time	Not more than 0.3S	
Radiological Safety of the Product	qualified	

## LED Display Module Characteristics

Parameter Description	Range	Condition
LED Character Size	520X360mm	14 inches per character
		The visual range of the

LED Character visual range	$\geq 200\text{M}$	speed sign on the flat highway section should not be less than 200m.
Red LED wavelength	$625\pm 5$	
Red LED Angle	$30^\circ\pm 3$	
Red LED Brightness	2500-3500mcd	
Yellow LED Wavelength	$590\pm 5$	
Yellow LED Angle	$30^\circ\pm 3$	
Yellow LED Brightness	2500-3500mcd	

## 5 Frequently Asked Questions and Solutions

### 5.1 No character is displayed on the LCD after the front panel is opened.

You may check...	Solutions
If the switch of the door is triggered in an effective way.	Close the front panel, and reopen the front panel.
If LCD display brightness is turned down to the lowest.	Rotate the LCD brightness regulating resistance to an appropriate position.

### 5.2 21 04 A FAILED in Error

You may check...	Solutions
If the radar module data wire is connected in a correct way.	Reconnect the radar module data wire
If the radar module power cord is connected in a correct way.	Reconnect the radar power cord.
	Try to save the parameter again.

### 5.3 Nothing on the LED display screen

You may check...	Solutions
If the systematic working parameters are configured in a correct way.	Reconfigure the parameters.

If the LED screen wire is connected in a correct way.	Test if the display is as normal.
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#### 5.4 The systematic time stops running after power failure

You may check...	Solutions
If the button cell is working.	Replace the button cell with a new one and readjust the systematic time.

#### 5.5 LED display screen indicates E1

You may check	Solutions
If the radar module data wire is connected in a correct way.	Reconnect the radar module data wire.
If the radar module power cord is connected in a correct way.	Reconnect the radar power cord.
	Restart the system.

### History:

#### File Revision History

Date	Version	Revision
2015/08/12	1.0	Original Version