# 932

TARGET SIMULATION

Vehicle Radar Traffic Simulator

AGD CERTIFIED
INTELLIGENT DETECTION SYSTEM

## PRODUCT MANUAL


AGD PTY AUSTRALASIA

ISO 9001 Registered Quality Management

ISO 14001 Registered Environmental Management

# TABLE OF CONTENTS

# INTRODUCTION

## PRODUCT & TECHNOLOGY

AGD CERTIFIED
INTELLIGENT DETECTION SYSTEM

# 932

The AGD932 is a compact purpose designed portable radar target simulator that can be used to test radars on site for correct operation and speed reporting. A number of special features have been designed into the target simulator including user selectable pre-set speed values or capability to set specific speed values as required and vehicle type.

The target simulator features a number of user adjustable parameters via an intuitive user interface allowing quick and easy set up in a roadside environment.

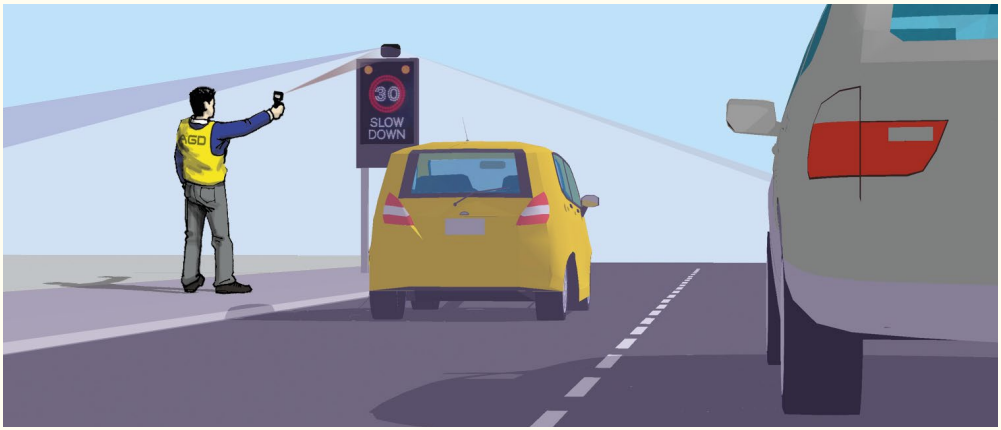
## KEY FEATURES

- Lightweight ergonomic profile
- State-of-the-art radar technology
- Ease of set up in road side environment
- Intuitive user Interface
- User selectable pre-set speed values
- User definable specific speed values
- Battery powered (2x AA)

# INTRODUCTION

## TYPICAL APPLICATIONS

Target simulation



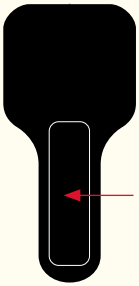

## PRODUCT OVERVIEW

Power on / off

press and hold for 1 second to power up or power down unit (auto power off after 5 minutes)

Up / Down

Scroll through options. Inverse highlighted item identifies the currently selected parameter



Battery compartment cover - takes 2x AA batteries


Information display

Select / Accept / Return

Select highlighted option / accept change

Activate Test

Audible confirmation given

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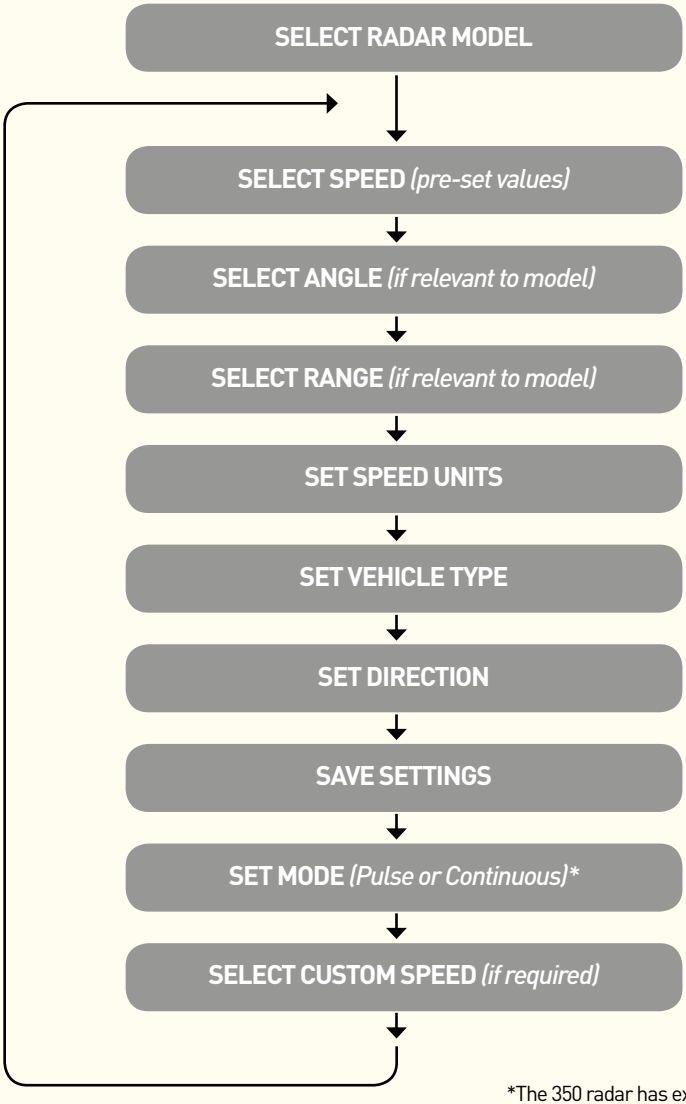
## SCREEN MODE OPERATION

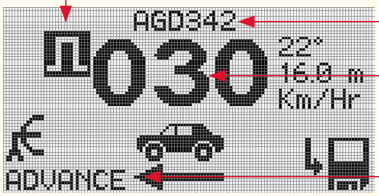
The 932 menu system works on a basic principal whereby the screen will cycle through the menu options as shown below. The return button allows you to enter a menu and the up/down arrows allow you to adjust settings, pressing the return button will cycle you to the next menu option.




*The 350 radar has extra modes available, please refer to relevant section in this manual

# DISPLAY / CONFIGURATION

## INFORMATION DISPLAY 342

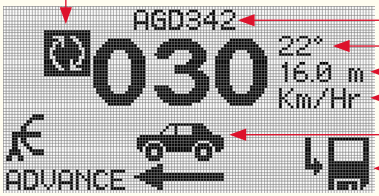



**PULSE/TRANSMIT MODE**

Radar type

Target speed preset values or user defined

Advance (recede)




**CONTINUOUS MODE**

Radar type

Cosine (radar mounting angle)

Radar range

Speed units

If relevant to radar type

Vehicle type

Save settings

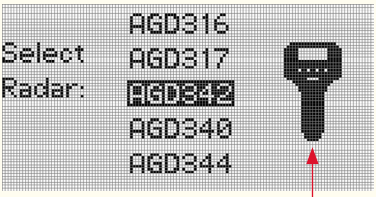
## SCREEN MODES

**Start up screen**

On powering up the 932 will display a splash screen. The current software version is shown on the bottom left, along with the detector model the 932 has been calibrated for.


**Select radar type**

The screen will switch to "Select Radar" automatically, here you can scroll up or down using the arrows to select the radar you wish to test. Press return to select and move to next screen.



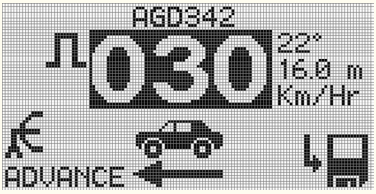

Please note that the orientation of the unit varies with radar type due to the e field polarisation - horizontal or vertical.

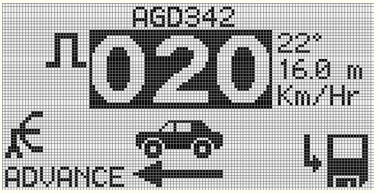
## SETTING THE TARGET SPEED VALUES

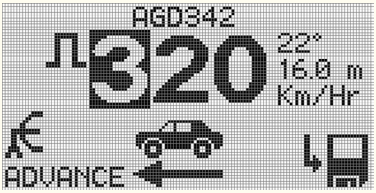
The large numbers indicating the pre-set speed setting is highlighted ready for input. The default setting is 30Km/Hr, press return to make active, the numbers will flash you can use the up/ down arrows to amend the speed, see the table on page 11 for the pre-set values. The presets will simply cycle through from minimum to maximum range - 20Km/Hr (12mph) to 320Km/Hr (200mph). To select the speed press the return button.

The sample screens show the minimum speed setting of 21Km/Hr and the maximum speed setting of 320Km/Hr.

NOTE: certain radars may only support certain speed values.

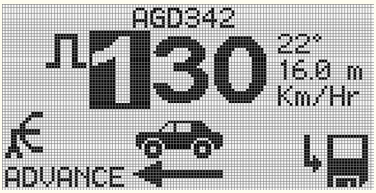


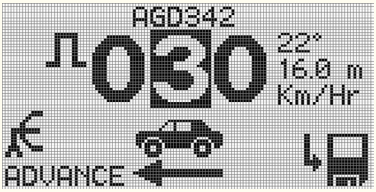



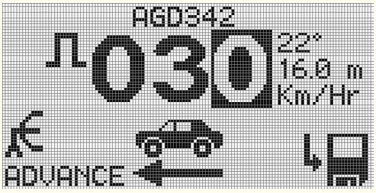




## USER SELECTABLE SPEED VALUES

You can highlight the individual numbers, i.e. hundreds, tens and units to set your own speed measurement. Toggle through each unit then press return to set.



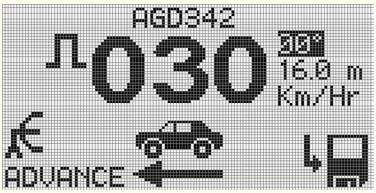



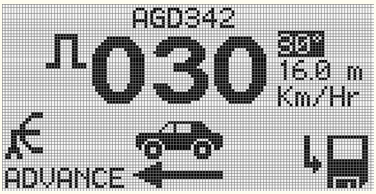



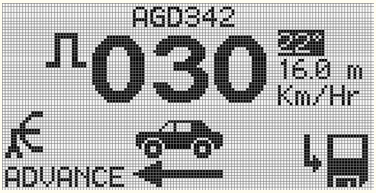
## SETTING THE RADAR MOUNTING ANGLE

The next setting displayed is the radar target mounting angle - top right. Minimum angle is 0º - maximum is 30º, use the return button to make active and arrows buttons to alter value, either up or down. Press return again to set.

NOTE: certain radars may not require mounting angle adjustment.



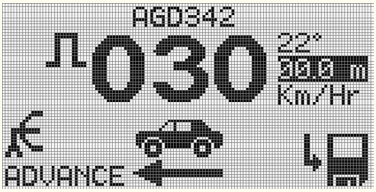



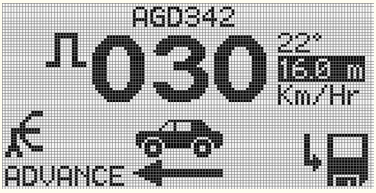



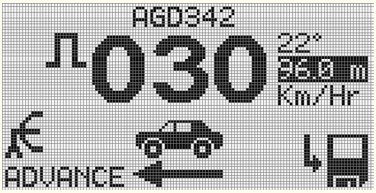

## SETTING THE RADAR RANGE

The radar range can be set from a minimum of zero metres to a maximum of 96 metres. The value increments will depend on the radar type.

NOTE: This function is only available on certain radar types.

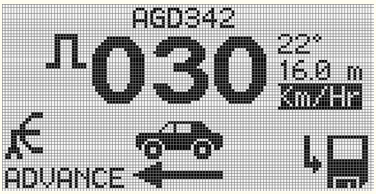


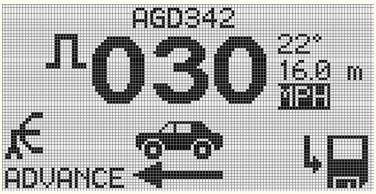



## SETTING MEASUREMENT - KPH/MPH

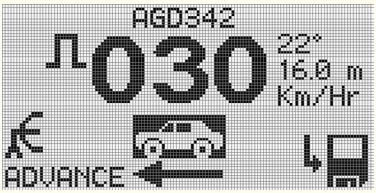
The next setting allows you to toggle between kph and mph.

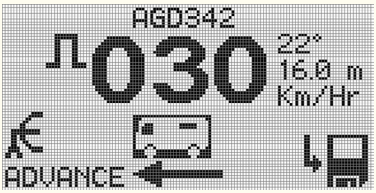


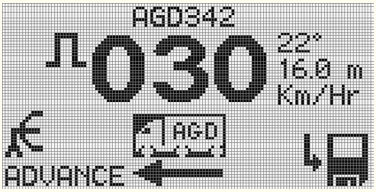




## SETTING THE TARGET TYPE

There are 3 options for target type, Car, Van and Lorry. Simple cycle through the options and press return to select.

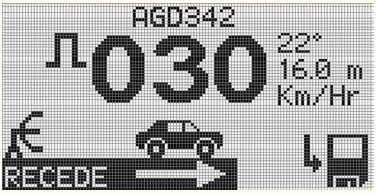


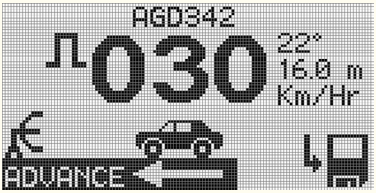



## SET TO RECEDE OR ADVANCE

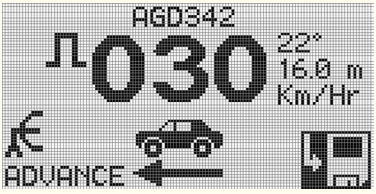
There is a simple toggle button to select either recede or advance. Press return to select.




## SAVE SETTINGS

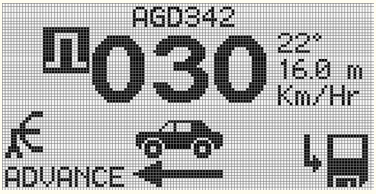
Arrow forward to the save settings button bottom right and press return.

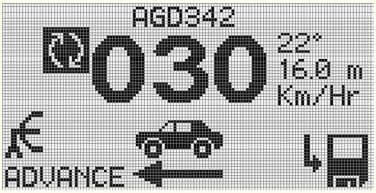




## TRANSMIT & CONTINUOUS MODE

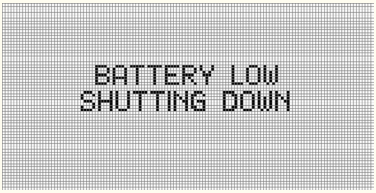
This option allows you to decide between transmit or continuous mode.



## LOW BATTERY WARNING

If during operation the batteries become depleted the unit will warn you with this message before automatically shutting down. Simply replace batteries x2 AA and restart to continue.

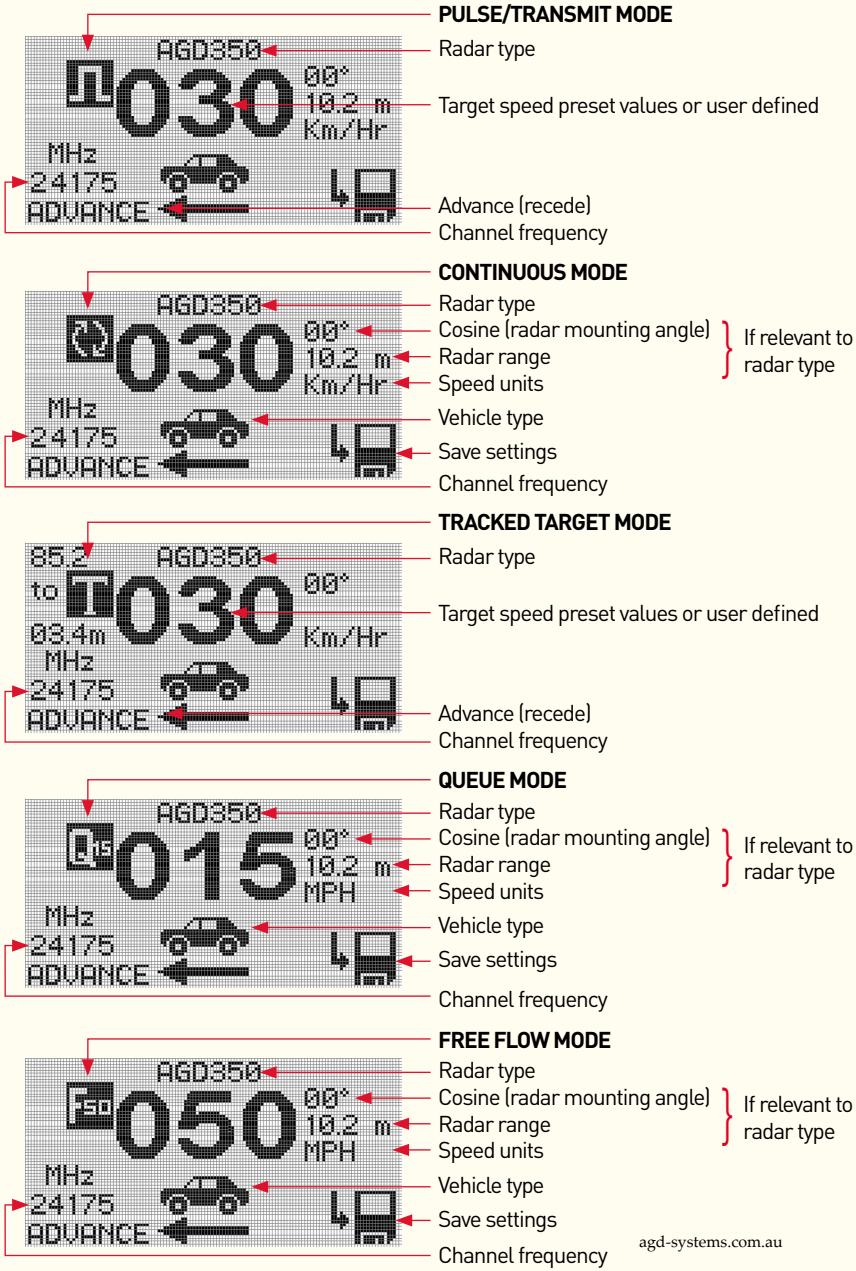



## SHUTTING THE UNIT DOWN

Holding the power on button for more than one second will shut the unit down. We would advise removing the batteries if the unit is not going to be used for long period.

# DISPLAY / CONFIGURATION 350 RADAR

## INFORMATION DISPLAY 350



## SCREEN MODES

**Start up screen**

On powering up the 932 will display a splash screen. The current software version is shown on the bottom left, along with the detector model the 932 has been calibrated for.


**Select radar type**

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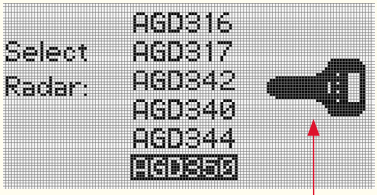


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## SETTING THE TARGET SPEED VALUES

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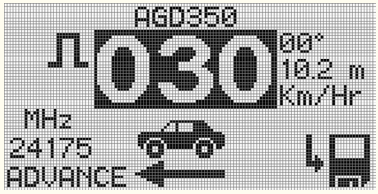
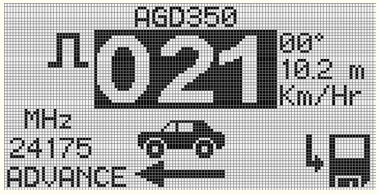
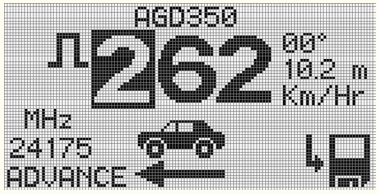
NOTE: certain radars may only support certain speed values.




## USER SELECTABLE SPEED VALUES

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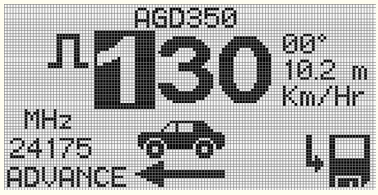
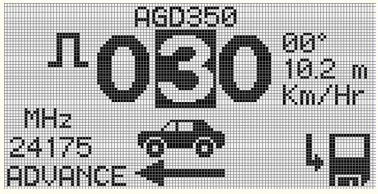
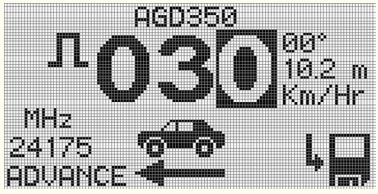


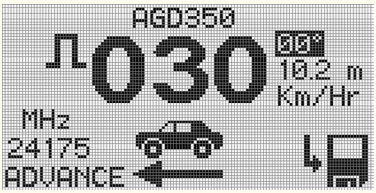



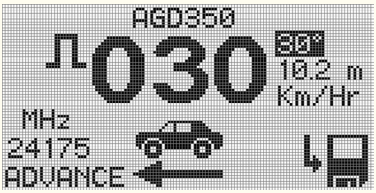



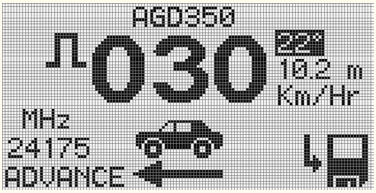
## SETTING THE RADAR MOUNTING ANGLE

The next setting displayed is the radar target mounting angle - top right. Minimum angle is 0º - maximum is 30º, use the return button to make active and arrows buttons to alter value, either up or down. Press return again to set.

NOTE: It is advised to use the radar in a setting of 0º for the 350 radar. Please ensure to also set the mounting angle correctly in the radar.



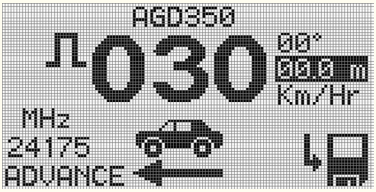



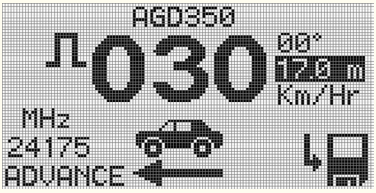



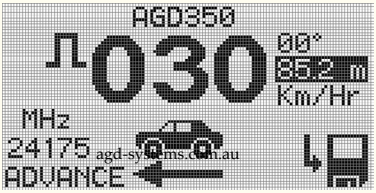

## SETTING THE RADAR RANGE

The radar range can be set from a minimum of zero metres to a maximum of 85.2 metres. The value increments will depend on the radar type.

NOTE: This function is only available on certain radar types.

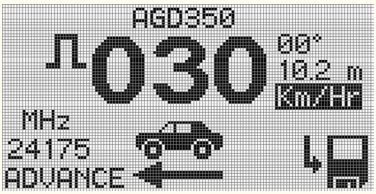


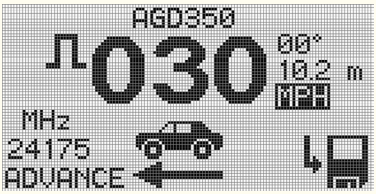



## SETTING MEASUREMENT - KPH/MPH

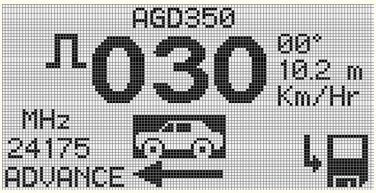
The next setting allows you to toggle between kph and mph.

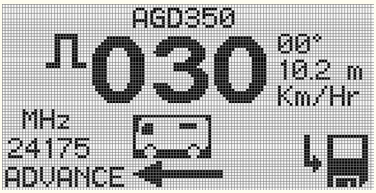


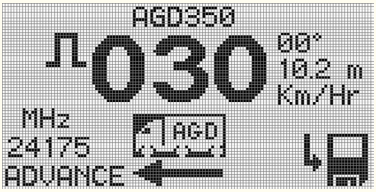




## SETTING THE TARGET TYPE

There are 3 options for target type, Car, Van and Lorry. Simply cycle through the options and press return to select.



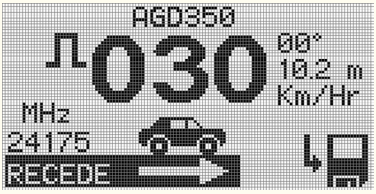



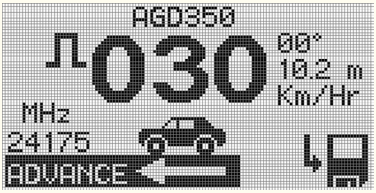



# DISPLAY / CONFIGURATION 350 RADAR

## SET TO RECEDE OR ADVANCE

There is a simple toggle button to select either recede or advance. Press return to select.



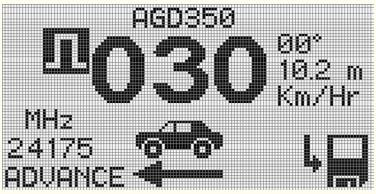



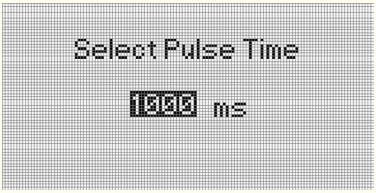

## MODES OF OPERATION (PULSE)

This option allows you to choose between five modes in the 350 radar:

**Pulse/transmit Mode:**

This mode is selected by highlighting the mode of operation icon. Selecting this mode will then give the option of adjusting the pulse time. This value is adjustable between 100ms and 1000ms in 100ms steps. To adjust the on-screen value, select using the return key and adjust tthe value using the up/down keys. Hitting return will exit to the main screen with the selected value.



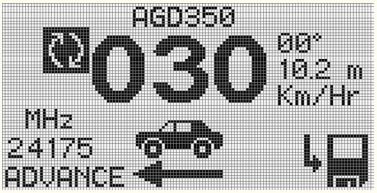




## MODES OF OPERATION (CONTINUOUS)

This option allows you to choose between five modes in the 350 radar:

**Continuous Mode:**

This mode is selected by highlighting the mode of operation icon. Selecting this mode will then give a continously repeated target which has a one second off period before re-transmitting. There are no adjustable parameters associated with this mode.



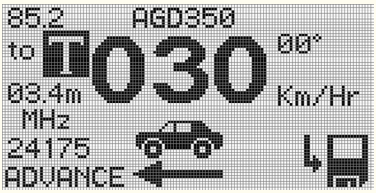
## MODES OF OPERATION (TRACKED)

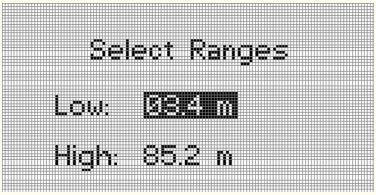
This option allows you to choose between five modes in the 350 radar:

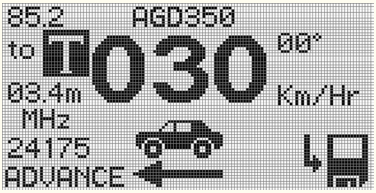
**Tracked Mode:**

This mode is selected by highlighting the mode of operation icon.

Selecting this mode will generate a target either advancing or receding that steps in range toward or away from the radar. Upon selecting the 'tracked target' icon, the screen will display a low and high range figure in metres. Simply press the down arrow to accept these figures and move back to the home screen, or hit the return key on the highlighted parameter to adjust. Pressing the down arrow after adjustment will return to the home screen



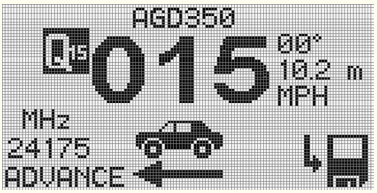

## MODES OF OPERATION (QUEUE)

This option allows you to choose between five modes in the 350 radar:

**Queue Mode:**

This mode is selected by highlighting the mode of operation icon.

Represented as Q15 in the display, selecting this mode will simulate a target with a pre-set speed of 15mph, pulsed as such to generate a queue when using the queue detection function in the 350 radar. Both speed and direction may be adjusted when using this parameter.



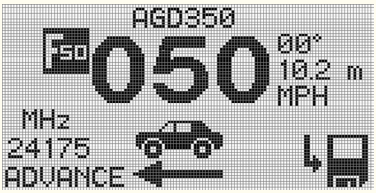

## MODES OF OPERATION (FAST FLOW)

This option allows you to choose between five modes in the 350 radar:

**Fast Flow Mode:**

This mode is selected by highlighting the mode of operation icon.

Represented as F50 in the display, selecting this mode will simulate a target with a pre-set speed of 50mph, pulsed as such to release the queue generated using the above queue function when using the queue detection function in the 350 radar. Both speed and direction may be adjusted when using this parameter.

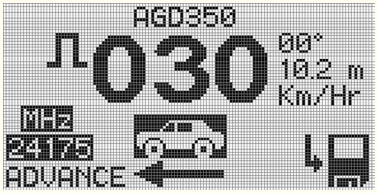


## SETTING THE CHANNEL FREQUENCY

This option allows you to select one of six transmit frequencies. Highlighting the transmit frequency in the display, select using the return button and using the arrows, the device can cycle through and select the following frequencies:

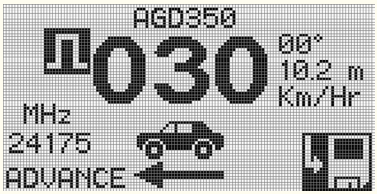
24.077GHz, 24.125GHz, 24.175GHz, 24.223GHz for CE marked models of the 350.

24.102GHz and 24.148GHz for FCC marked models of the 350.




## SAVE SETTINGS

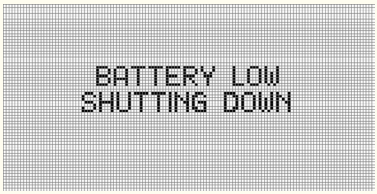
Arrow forward to the save settings button bottom right and press return.





## LOW BATTERY WARNING

If during operation the batteries become depleted the unit will warn you with this message before automatically shutting down. Simply replace batteries x2 AA and restart to continue.




## SHUTTING THE UNIT DOWN

Holding the power on button for more than one second will shut the unit down. We would advise removing the batteries if the unit is not going to be used for long period.

# CONFIGURATION

## ADJUSTABLE PARAMETERS

| Parameter | Value / range | Comments |
|---|---|---|
| Cosine | 0° - 30° | |
| Speed | 20 - 320 kph<br>(4 - 262 kph for 350 radar) | Pre-set or user adjustable |
| Speed units | kph / mph | User selectable |
| Target direction | Advance / recede | User selectable |
| Operating mode | Single burst / pulsed / continuous / tracked / queue / free flowing | Audible indication provided<br>(whilst simulating signal is active) |
| Vehicle type | Small / Medium / Long | Depicted as Car / Van / Lorry |
| Radar type | | Select radar model number |
| Range | | Pre-set range value available on select model type |

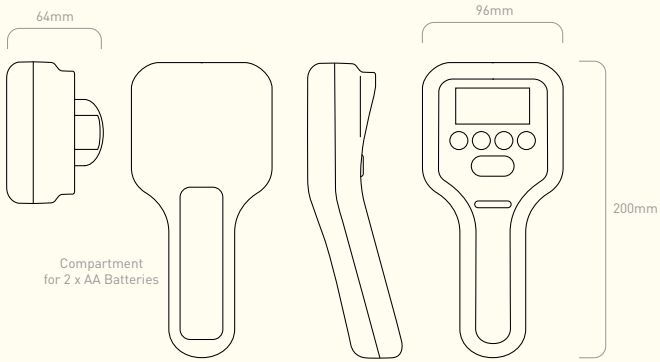
## PRE-SET SPEED VALUES

| Speed kph | Speed mph |
|---|---|
| 21 | 13 |
| 38 | 24 |
| 50 | 31 |
| 64 | 40 |
| 82 | 51 |
| 97 | 60 |
| 110 | 68 |
| 131 | 81 |
| 250 | 150 |

In addition to the pre-set speed values, user adjustable speed values between 20kph (12mph) and 320kph (200mph) can be set (4 - 262kph for 350 radar).

**NOTE**: standard operating distance is between 1 and 2 metres from detector face. Use outside of this recommended operating distance may result in data errors.

# TECHNICAL SPECIFICATIONS




## SPECIFICATIONS

| | |
|---|---|
| **Frequency** | K-Band 24GHz |
| **Simulation Range** | 20 - 320 kph<br>(4 - 262 kph for 350 radar) |
| **Operating Time** | 10 hours continuous use |
| **Operating Distance** | Min 1m - Max 2m |
| **Mounting** | Flange fixings or tripod mount |
| **Mounting Height** | 1 - 3.5m nominal |
| **Housing Material** | Polycarbonate |
| **Sealing** | IP52 |
| **Operating Temp** | -20º C to +50º C |
| **Power** | 40mA (120mA Transmit) |
| **Power Supply** | 2.2V - 3.6V (2 x AA Batteries) |
| **Approved to:** | BS EN 50293<br>EN 301-489<br>ETSI EN 300-440<br>AS/NZ 4268:2003 |

## NOTE

Standard operating distance is between 1 and 2 metres from detector face. Use outside of this recommended operating distance may result in data errors.

RoHS COMPLIANT
Restriction on Hazardous Substances

Owing to the Company's policy of continuous improvement, AGD Systems Limited reserves the right to change their specification or design without notice.

# CERTIFICATION

TRAC
testing regulatory and compliance

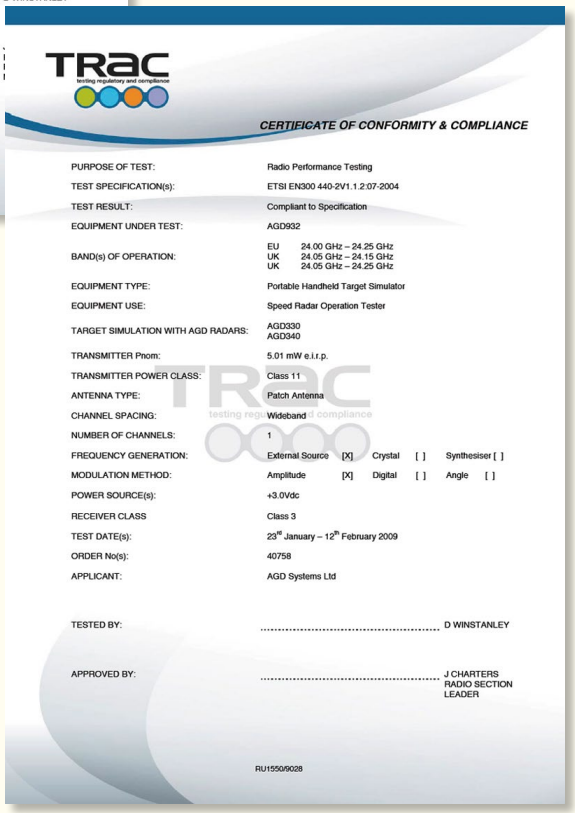
**CERTIFICATE OF CONFORMITY & COMPLIANCE**

| | |
|---|---|
| PURPOSE OF TEST: | Radio Performance Testing |
| TEST SPECIFICATION(s): | AS/NZS 4268:2003 |
| TEST RESULT: | Compliant to Specification |
| EQUIPMENT UNDER TEST: | AGD932 |
| BAND(s) OF OPERATION: | 24.00 GHz – 24.25 GHz |
| EQUIPMENT TYPE: | Portable Handheld Target Simulator |
| EQUIPMENT USE: | Speed Radar Operation Tester |
| TARGET SIMULATION WITH AGD RADARS: | AGD330<br>AGD340 |
| TRANSMITTER Pnom: | 5.01 mW e.i.r.p. |
| ANTENNA TYPE: | Patch Antenna |
| CHANNEL SPACING: | Wideband |
| NUMBER OF CHANNELS: | 1 |
| FREQUENCY GENERATION: | External Source [X] Crystal [ ] Synthesiser [ ] |
| MODULATION METHOD: | Amplitude [X] Digital [ ] Angle [ ] |
| POWER SOURCE(s): | +3.0Vdc |
| TEST DATE(s): | 23rd January – 12th February 2009 |
| ORDER No(s): | 40758 |
| APPLICANT: | AGD Systems Ltd |

TESTED BY: ..... D WINSTANLEY

APPROVED BY: .....

RU1550/9030



TRAC
testing regulatory and compliance

**CERTIFICATE OF CONFORMITY & COMPLIANCE**

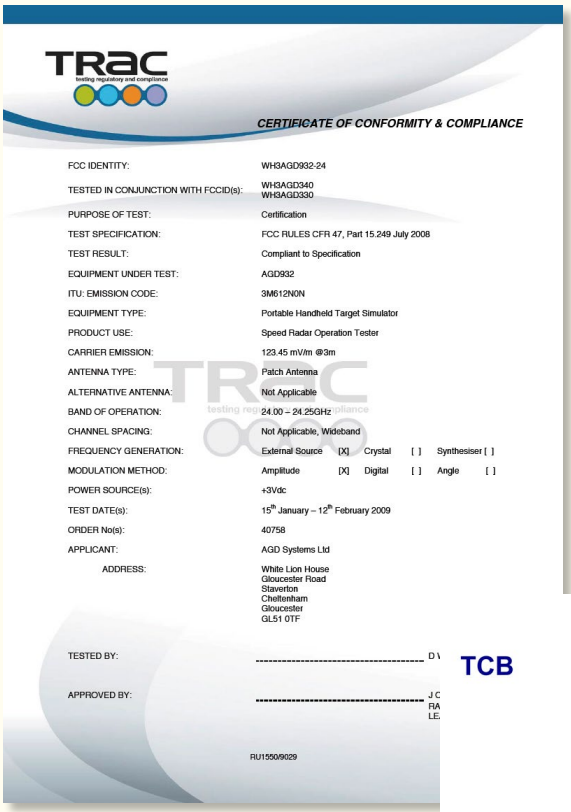
| | |
|---|---|
| PURPOSE OF TEST: | Radio Performance Testing |
| TEST SPECIFICATION(s): | ETSI EN300 440-2V1.1.2:07-2004 |
| TEST RESULT: | Compliant to Specification |
| EQUIPMENT UNDER TEST: | AGD932 |
| BAND(s) OF OPERATION: | EU 24.00 GHz – 24.25 GHz<br>UK 24.05 GHz – 24.15 GHz<br>UK 24.05 GHz – 24.25 GHz |
| EQUIPMENT TYPE: | Portable Handheld Target Simulator |
| EQUIPMENT USE: | Speed Radar Operation Tester |
| TARGET SIMULATION WITH AGD RADARS: | AGD330<br>AGD340 |
| TRANSMITTER Pnom: | 5.01 mW e.i.r.p. |
| TRANSMITTER POWER CLASS: | Class 11 |
| ANTENNA TYPE: | Patch Antenna |
| CHANNEL SPACING: | Wideband |
| NUMBER OF CHANNELS: | 1 |
| FREQUENCY GENERATION: | External Source [X] Crystal [ ] Synthesiser [ ] |
| MODULATION METHOD: | Amplitude [X] Digital [ ] Angle [ ] |
| POWER SOURCE(s): | +3.0Vdc |
| RECEIVER CLASS | Class 3 |
| TEST DATE(s): | 23rd January – 12th February 2009 |
| ORDER No(s): | 40758 |
| APPLICANT: | AGD Systems Ltd |

TESTED BY: ..... D WINSTANLEY

APPROVED BY: ..... J CHARTERS
RADIO SECTION
LEADER

RU1550/9028

# CERTIFICATION



TRaC
testing regulatory and compliance

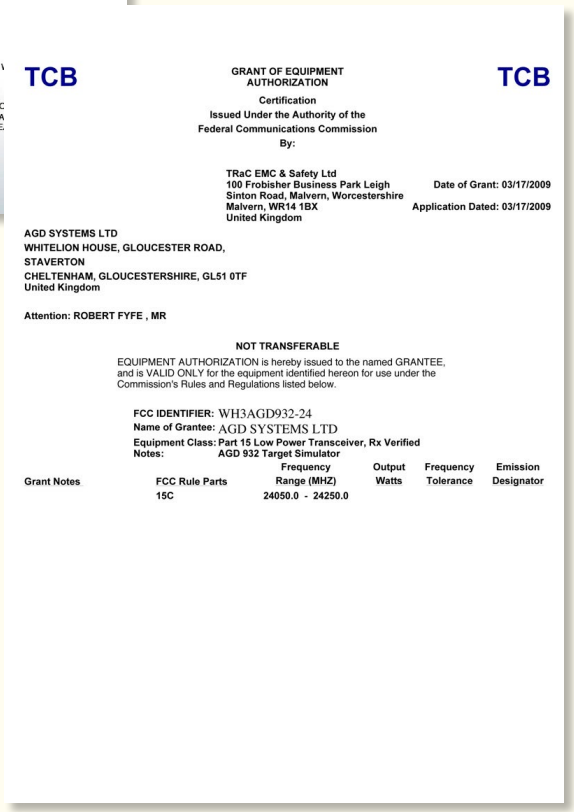
***CERTIFICATE OF CONFORMITY & COMPLIANCE***

| | |
|---|---|
| FCC IDENTITY: | WH3AGD932-24 |
| TESTED IN CONJUNCTION WITH FCCID(s): | WH3AGD340<br>WH3AGD330 |
| PURPOSE OF TEST: | Certification |
| TEST SPECIFICATION: | FCC RULES CFR 47, Part 15.249 July 2008 |
| TEST RESULT: | Compliant to Specification |
| EQUIPMENT UNDER TEST: | AGD932 |
| ITU: EMISSION CODE: | 3M612N0N |
| EQUIPMENT TYPE: | Portable Handheld Target Simulator |
| PRODUCT USE: | Speed Radar Operation Tester |
| CARRIER EMISSION: | 123.45 mV/m @3m |
| ANTENNA TYPE: | Patch Antenna |
| ALTERNATIVE ANTENNA: | Not Applicable |
| BAND OF OPERATION: | 24.00 – 24.25GHz |
| CHANNEL SPACING: | Not Applicable, Wideband |
| FREQUENCY GENERATION: | External Source [X] Crystal [ ] Synthesiser [ ] |
| MODULATION METHOD: | Amplitude [X] Digital [ ] Angle [ ] |
| POWER SOURCE(s): | +3Vdc |
| TEST DATE(s): | 15th January – 12th February 2009 |
| ORDER No(s): | 40758 |
| APPLICANT: | AGD Systems Ltd |
| ADDRESS: | White Lion House<br>Gloucester Road<br>Staverton<br>Cheltenham<br>Gloucester<br>GL51 0TF |

TESTED BY: ---------- D V

APPROVED BY: ---------- J C
RA
LE

RU1550/9029



**TCB** **GRANT OF EQUIPMENT AUTHORIZATION** **TCB**

**Certification**
**Issued Under the Authority of the**
**Federal Communications Commission**
**By:**

**TRaC EMC & Safety Ltd**
**100 Frobisher Business Park Leigh**
**Sinton Road, Malvern, Worcestershire**
**Malvern, WR14 1BX**
**United Kingdom**

**Date of Grant: 03/17/2009**
**Application Dated: 03/17/2009**

**AGD SYSTEMS LTD**
**WHITELION HOUSE, GLOUCESTER ROAD,**
**STAVERTON**
**CHELTENHAM, GLOUCESTERSHIRE, GL51 0TF**
**United Kingdom**

**Attention: ROBERT FYFE , MR**

**NOT TRANSFERABLE**

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

**FCC IDENTIFIER:** WH3AGD932-24
**Name of Grantee:** AGD SYSTEMS LTD
**Equipment Class:** Part 15 Low Power Transceiver, Rx Verified
**Notes:** AGD 932 Target Simulator

| Grant Notes | FCC Rule Parts | Frequency Range (MHZ) | Output Watts | Frequency Tolerance | Emission Designator |
|---|---|---|---|---|---|
| | 15C | 24050.0 - 24250.0 | | | |

# IMPORTANT SAFETY INFORMATION

## SAFETY PRECAUTIONS

All work must be performed in accordance with company working practices, in-line with adequate risk assessments. Only skilled and instructed persons should carry out work with the product. Experience and safety procedures in the following areas may be relevant:

- Working with mains power
- Working with modern electronic/electrical equipment
- Working at height
- Working at the roadside or highways

1. This product is compliant to the Restriction of Hazardous Substances (RoHS - European Union directive 2011/65/EU).
2. Only the specified access port should be used to access and replace batteries (2x AA).
3. The product must be correctly connected to the specified power supply. All connections must be made whilst the power supply is off or suitably isolated. Safety must take always take precedence and power must only be applied when deemed safe to do so.
4. No user-maintainable parts are contained within the product. Removing or opening the outer casing is deemed dangerous and will void all warranties.
5. Under no circumstances should a product suspected of damage be powered on. Internal damage may be suggested by unusual behaviour, an unusual odour or damage to the outer casing. Please contact AGD for further advice.
6. This device complies with part 15 of the FCC Rules.

   • Operation is subject to the following two conditions:

   (1) This device may not cause harmful interference, and
   (2) This device must accept any interference received, including interference that may cause undesired operation.

   • This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance such that the module should not be installed in equipment intended to be used within 20cm of the body.

   • The transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

   • Changes or modifications not expressly approved by AGD Systems Ltd could void the user's authority to operate the equipment.

# NOTES

# NOTES

# NOTES

# DISCLAIMER

While we (AGD Systems) endeavour to keep the information in this manual correct at the time of print, we make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability or availability with respect to the information, products, services, or related graphics contained herein for any purpose.

Any reliance you place on such information is therefore strictly at your own risk. In no event will we be liable for any loss or damage including without limitation, indirect or consequential loss or damage, or any loss or damage whatsoever arising from loss of data or profits arising out of, or in connection with, the use of this manual.

## WARRANTY

All AGD products are covered by a 12 month return to factory warranty. Products falling outside this period may be returned to AGD Systems for evaluation, repair, update or re-calibration, any of which may be chargeable.

AGD PTY AUSTRALASIA
PRODUCT SOLUTIONS FOR
INTELLIGENT TRAFFIC SYSTEMS

**AGD Systems Pty Ltd:** Unit 17/15 Valediction Rd, Kings Park NSW 2148
**Tel:** (02) 9653 9934 **Email:** admin@agd-systems.com.au **Web:** agd-systems.com.au