AGD 326

PEDESTRIAN ON-CROSSING DETECTOR

PRODUCT MANUAL

AGD **Touch-setup**
WIFI 3-CLICK TOUCH-SETUP

PRODUCT SOLUTIONS FOR
INTELLIGENT TRAFFIC SYSTEMS

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PEDESTRIAN ON-CROSSING DETECTOR

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AGD **Touch-setup**
WIFI 3-CLICK TOUCH-SETUP

safer, greener, more efficient

Introduction

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

PRODUCT & TECHNOLOGY

The AGD326 Pedestrian Detector is a smart, dynamic environment detector that makes crossings safer and more efficient by delivering robust detection day and night on wide crossings.

The AGD326 radar has been designed for the detection and monitoring of pedestrians and cyclists crossing the road at signalled installations and other applications where the detection and safety of moving pedestrians is required.

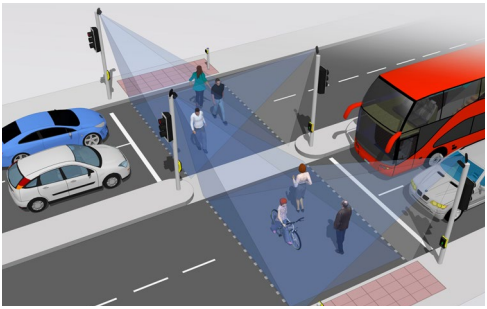
The 326 allows optimisation of the crossing phase, giving back more green time to traffic.
AGD Touch-setup provides safe, easy remote setup via a smart phone or tablet.

Suitable for stand-alone use or deployment as the ideal combination with AGD641 or AGD645 kerbside detectors for intelligent, safer, high-performance crossings.

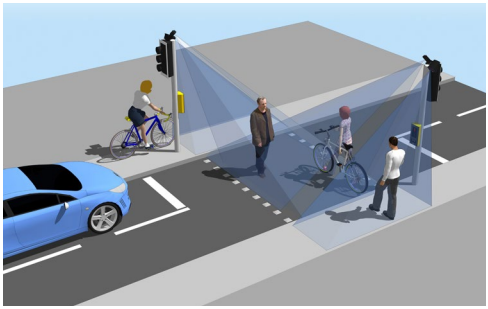
KEY FEATURES

- Monitors moving pedestrians and cyclists to enhance safety and optimise crossing performance
- 24GHz radar technology suitable for international deployments
- Dynamically adjustable range for new site designs
- Easy WiFi AGD Touch-setup – speeds installation and reduces risk
- Co-location of up to four detectors
- Compatibility with old and new controllers makes the AGD326 an ideal solution for any site.

TYPICAL APPLICATIONS



Pedestrian On-Crossing Detection

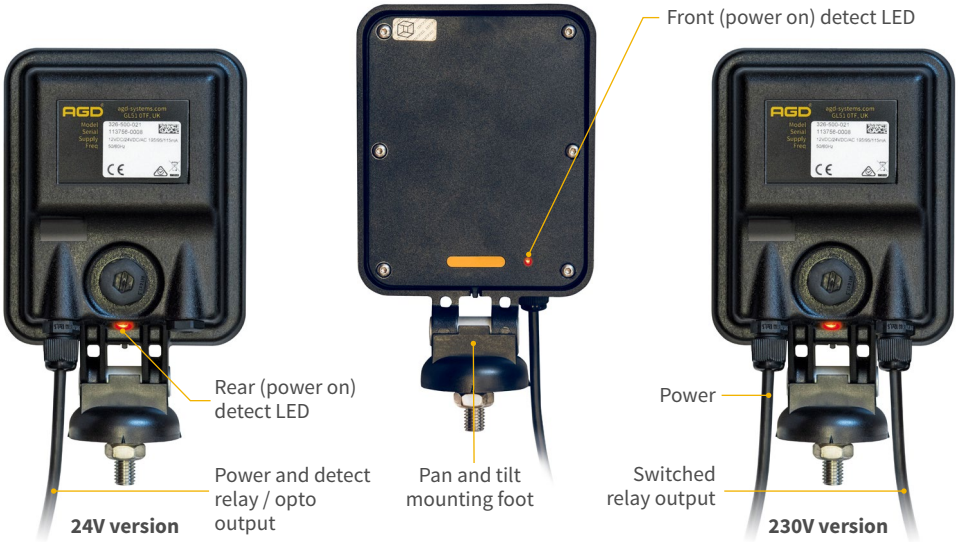


Cyclist /Pedestrian On-Crossing Detection

Introduction

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

PRODUCT OVERVIEW IMAGE



PRODUCT VARIANTS

Product No.	Description
326-300-021	On-crossing radar/230V/24 GHz/relay output/5m lead
326-500-021	On-crossing radar/12-24V/24 GHz/Single Opto output/1m lead + mating lead
326-503-021	On-crossing radar/12-24V/24 GHz/Single Opto output/5m Flying lead
326-504-021	On-crossing radar/12-24V/24 GHz/Single Opto output/1m lead + 4m mating lead

PRODUCT OVERVIEW

This AGD326 on-crossing detector features a custom designed 24GHz planar antenna coupled with advanced radar processing in a modular design. The unit is compact in size and lightweight for ease of installation in a robust polycarbonate housing.

It is designed to sense moving pedestrians and cyclists while they are traversing a pedestrian crossing in order that the crossing phase may be appropriately extended.

Connect to the detector using a WiFi enabled device (laptop, tablet or phone) and setup simply using a browser window.

From the browser you can alter the range (2 to 16m in steps of 1m), the width (2 to 10m in steps of 2m) and the channel transmit frequency (1-4).

Note: *It is an important feature of the radar within the UK Puffin strategy that it detects vehicles at the crossing between pedestrian phases. This is so the controller can monitor the radar output and corroborate with vehicle detections of say, loop detectors in the approach roads so that a high degree of confidence can be had that the radar is operating correctly, immediately before a pedestrian phase is called. This is so that if no detections are received by the controller after the ped phase is called then the phase can be confidently closed after the minimum time has expired and not that the detector has failed at some point, therefore reduce the risk of no extensions if there are pedestrians present.*

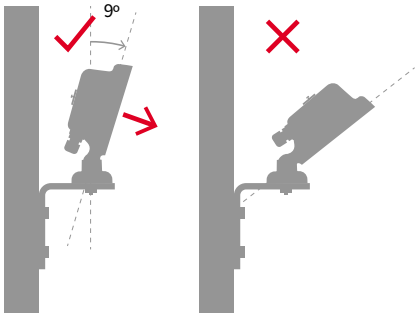
Installation and Commissioning

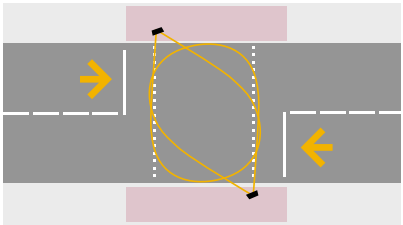
AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

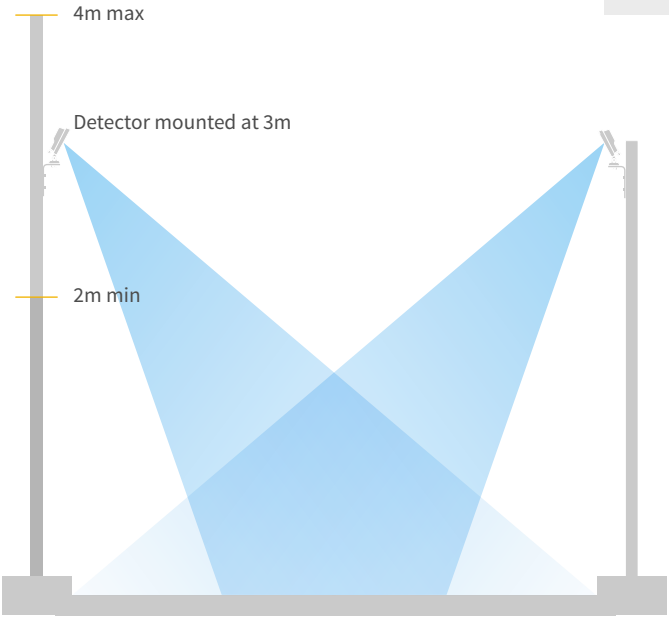
PHYSICAL INSTALLATION

STEP 1 - MOUNTING HEIGHT - The AGD326 radar has been designed to operate at a mounting height of between 2m-4m, with an unobstructed view of the detection zone (optional height extension bracket BR-129 is available if required).

STEP 2 - DETECTOR ALIGNMENT - The AGD326 should be mounted using the supplied hardware. Direct the radar to point at the centre of the furthest point of detection. On a level carriageway, this will typically result in a declination angle of approximately. 9 degrees. Lightly tighten the mounting nut to prevent any movement.







STEP 3 - VERIFICATION AND ADJUSTMENT - Confirm that the radar is correctly aligned by ensuring that targets are reliably detected within the specified detection zone. Adjust if necessary and retest. Once aligned correctly, ensure that the mounting nut is fully tightened and that the detector is secure.

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

ELECTRICAL INSTALLATION

The detector is powered using a 12 / 24V ac/dc (+/- 20%) or 230Vac supply. The power is applied to the detector using a multi-pin mating connector.

The AGD326 On Crossing Detector is provided with a Buccaneer Series PX0728/S 9 pole connector to enable direct connection to the traffic control system. The pin outs of the connector and detector function are highlighted in the table below.

12/24V ac/dc supply wiring (1m with Bulgin connector or 5m flying lead)

The output is an SPCO (SPDT) Opto with the impedance state of the relay being the same for a detect state or power off condition. Connection is via a Bulgin Buccaneer 9-pin connector as above with pins 7, 8 and 9 not connected. Upon power up, owing to the nature of the equipment's power supply, at 24V an initial current of up to 2amp for 2ms can be drawn. This product must be protected by a 1A circuit breaker or in line fuse. The installation of this equipment must conform to the latest edition of the IEE Wiring Regulations (BS7671).

Note: The mating half for the Bulgin plug is supplied with the detector.

1 metre mating half part number: **CA-083**
4 metre mating half part number: **CA-107**

Voltage tolerances of supply are as follows:

- Vdc: 10 - 29V
- Vac: 24Vac +/- 20%

Nominal current is:

- 12Vdc 50mA
- 24Vdc 26mA
- 24Vac 50mA

Single Cable 12Vdc/24V ac/dc Supply Wiring (1m lead with multi-pin connector)

Pin No.	Wire Colour	Function	Power Off	Power On-No Detect	Power On-Detect
1	Red	12/24Vdc (+) — or 24Vac	-	-	-
2	Black	0V — or 24Vac	-	-	-
3	-	Not Connected	-	-	-
4	White	Opto 1 Common	-	-	-
5	Yellow	Opto 1 N/O	N/O	N/C	N/O
6	Blue	Opto 1 N/C	N/C	N/O	N/C

Single Cable 12Vdc/24V ac/dc Supply Wiring (5m flying lead)

Pin No.	Wire Colour	Function	Power Off	Power On-No Detect	Power On-Detect
1	Red	12/24Vdc (+) — or 24Vac	-	-	-
2	Black	0V — or 24Vac	-	-	-
3	Green	Earth Ground	-	-	-
4	White	Opto 1 Common	-	-	-
5	Yellow	Opto 1 N/O	N/O	N/C	N/O
6	Blue	Opto 1 N/C	N/C	N/O	N/C

N/O = high impedance switched output. **N/C** = low impedance switched output.

ELECTRICAL INSTALLATION

230Vac - 5m FLYING LEADS - 230Vac single relay output

The detector is powered by 230Vac and it is essential that the detector is connected to the correct power supply. The detector is supplied with two 5m flying leads. One is the power supply for the detector and the other is the signal output and the correct cables should be identified before connection. The 326 is classified as a double insulated product and therefore the supply cable is two cores (live/neutral). The detection output is via a relay.

Twin Cable 230Vac Supply Wiring (5m flying leads)					
Cable	**Wire Colour**	**Function**	**Power Off**	**Power On - No Detect**	**Power On –Detect**
Power	Brown	230Vac Live	-	-	-
	Blue	230Vac Neutral	-	-	-
Signal	Red	Relay 1 Common	-	-	-
	Blue	Relay 1 N/C	N/C	N/O	N/C
	Green	Relay 1 N/O	N/O	N/C	N/O

Upon power up, owing to the nature of the equipment's power supply, an initial current of up 40 amps can be drawn. This product must be protected with a 3A circuit breaker. Current drain for 230Vac is 10.1mA typical. Current drain in detect and non-detect states is the same. The installation of this equipment must conform to the latest edition of the IEE Wiring Regulations (BS7671).

OPTO-COUPLER & RELAY RATINGS

The ratings of the opto-coupler are;

- Max current 100mA
- Max Voltage 100V
- Max on-state impedance 25 Ohms

The switched outputs on the 230V variants are relays.

It should be noted that the relays are rated at Max 230Vac and 0.5Amp but also must have a minimum whetting load of 12Vdc 100mA. In addition, the relay outputs are protected by a protection device which limits current to 0.5A and has a serial impedance of approximately 15 Ohms.

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

ELECTRICAL INSTALLATION

APPLYING POWER

- Make sure the power supply is the correct voltage, which can be found on the label on the unit.
- Connect the unit to the supply.
- Once powered, the front and rear LEDs should flash five times whilst the radar performs its self check routines.

Upon power up, owing to the nature of the equipment's power supply, an initial current of up to 200mA can be drawn and the supply should be fused as follows:

230V models: This product must be protected by a 3A circuit breaker.

12/24V Models: This product must be protected by a 1A circuit breaker or in-line fuse.

Typical Power Consumption

- 12Vdc - 84mA (peak 195mA)
- 24Vdc - 43mA (peak 95mA)
- 24Vac - 66mA (peak 115mA)
- 230Vac - 10.1mA (peak 20mA)

The installation of this equipment MUST conform to the latest edition of the IEE Wiring Regulations (BS7671).

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

CONNECTING

The AGD326 Traffic Control Radar has been designed with efficiency and ease of use in mind. Connect using a WiFi enabled device (laptop, tablet or phone) and setup simply using a browser window.

This step-through process describes the actions required to connect to the radar.

Connecting Wifi

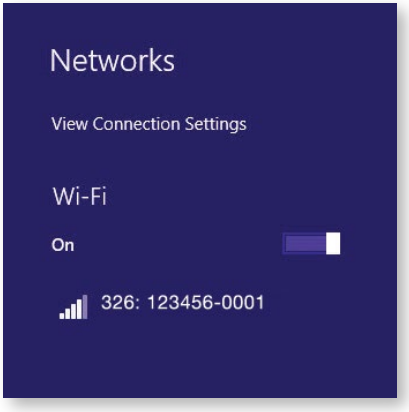
Upon powering up, wait for the LED on the bottom of the unit to flash 5 times, this signifies that the firmware has correctly started. Search for the unit and identify the unit by its **serial number**:

326:XXXXXX-XXXX (the **'X'** denotes the S/N)

Click 'connect' and input the **default password:**

AGD326:XXXXXX-XXXX (the **'X'** denotes the S/N)

The LED on the bottom of the unit should now be illuminated blue to show WiFi is successfully connected and your device should show connected.



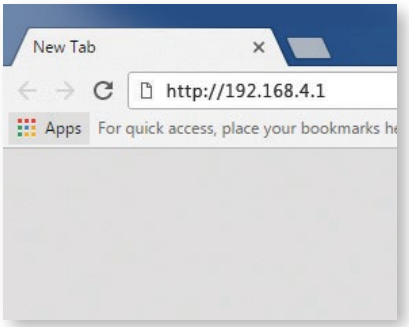
Connecting Device

Complete Wifi connection step as above.

Launch a browser on your smartphone, tablet or laptop (Modern versions of: Internet Explorer, Google Chrome and Safari are all supported - 2016 onwards).

In the address bar of your browser, enter the 'IP Address': **http://192.168.4.1**

You will be presented with your initial AGD Touch-setup page.



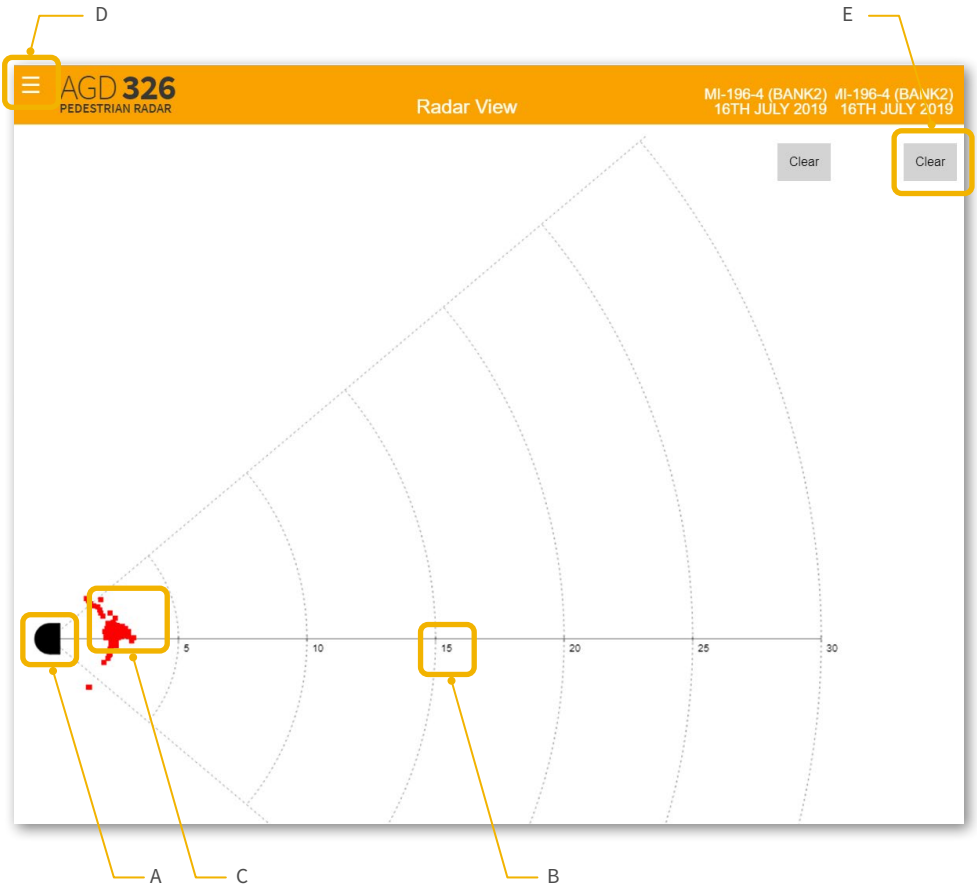
AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

AGD **Align**
AN AGD TOUCH-SETUP TOOL

USER INTERFACE

Homepage

A Radar Unit.
B Distance (m)
C Target Tracks (shown as “red dots”)
D Menu
E Clear Button (Resets target tracking information)

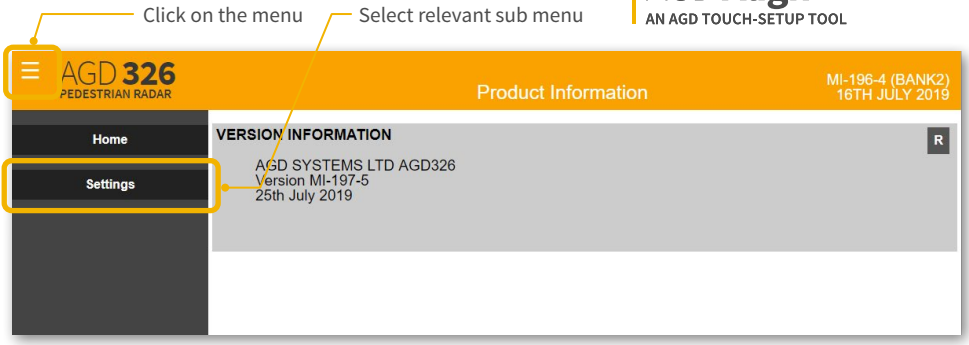


AGD 326
PEDESTRIAN ON-CROSSING DETECTOR

AGD Align
AN AGD TOUCH-SETUP TOOL

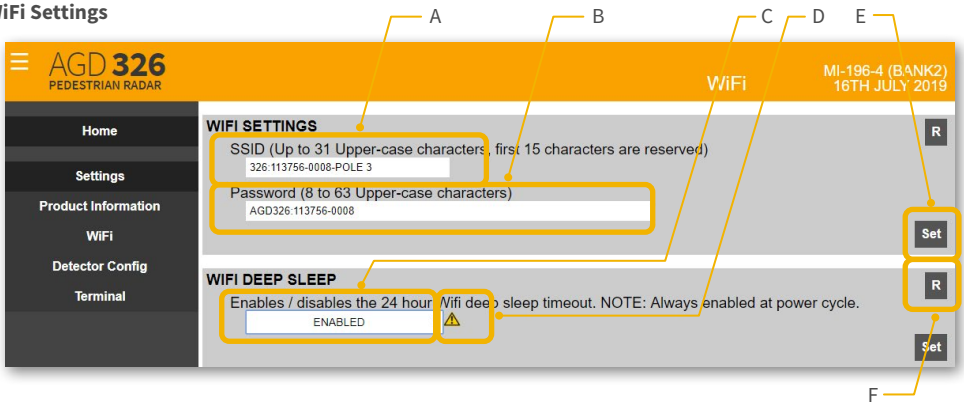
USER INTERFACE

Settings



Product information – This provides the user with AGD326 version information.

WiFi Settings



A **SSID** – Allows the user to amend AGD326 WiFi SSID. Format of SSID as standard is as follows:

AGD326:XXXXXX-XXXX (where 'X' denotes the serial number of the unit). Characters after this can be amended to allow for easy unit identification whilst on-site

B **Password** – allows user to change WiFi password from default. Default password is as follows:

AGD326:XXXXXX-XXXX (where 'X' denotes the serial number of the unit). *Please note – password is case sensitive and includes special characters*

AGD Systems advises leaving the password as the serial number.

C **WiFi Deep Sleep** – This setting (when enabled) will disable the WiFi connection after 24 hours of initial power up. If a WiFi connection is required after this period, then the unit will need to be power cycled prior to any connection attempts. Default setting is 'enabled'.

D If any changes are made to ANY settings, this is represented by an exclamation mark at the end of the box

E **Set** - Send the new setting to the detector.

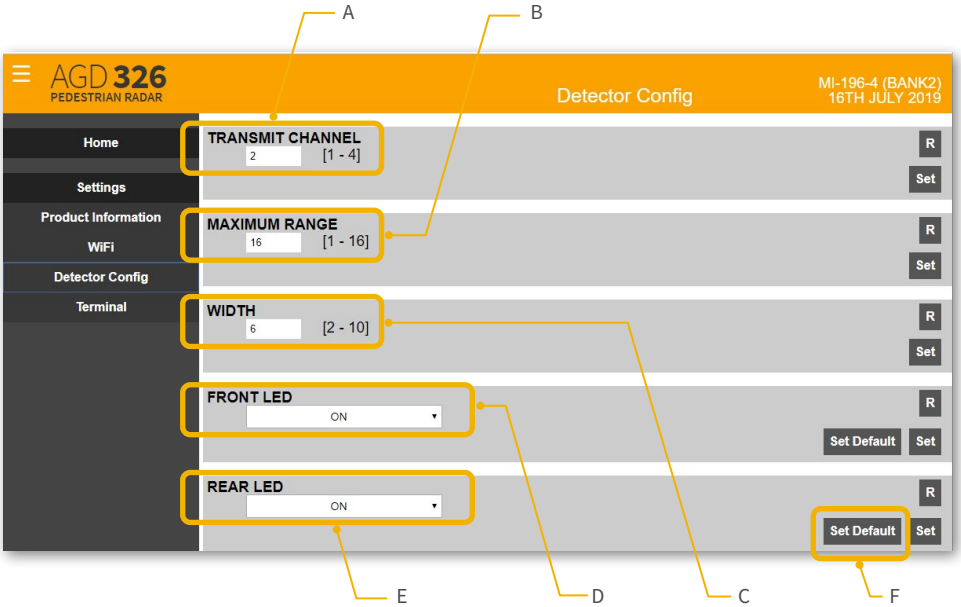
F **R** - Reload / query

AGD 326
PEDESTRIAN ON-CROSSING DETECTOR

USER INTERFACE

AGD Align
AN AGD TOUCH-SETUP TOOL

Detector Configuration



A **Transmit channel** - Set 'Transmit Channel' To avoid crosstalk, it is important to set the detectors to different transmit frequencies. Examples are shown on page 13.

B **Maximum range** - The range can be set from 2 to 16m in 1m increments. Set the range of the detector to the edge of the kerb, on the opposite side of the road. If you are picking up pedestrians on the opposite pavement with the range correctly set, you may need to angle the detector downwards.

C **Width** - Set the width for the width of the crossing plus 2m to allow for pedestrians walking to the side of the crossing. After the range has been set carry out a walk test.

Using the front LED check, you are picked up by the detector as you walk off the opposite kerb.

Check you are picked up at each side of the pedestrian crossing as you walk across.

D **Front LED** - This LED can be disabled, but during commissioning leave the LED enabled for the walk test.

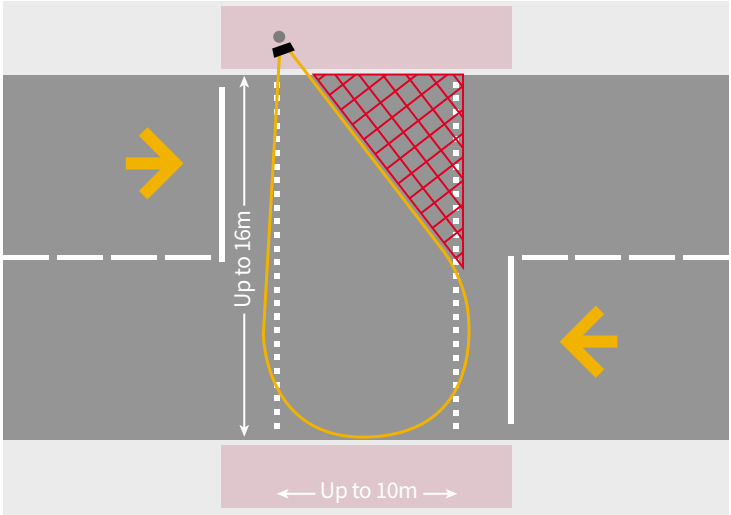
E **Rear LED** - This LED can be disabled. The blue LED to show a WiFi connection is not disabled.

F **Set Default** - Set to default.

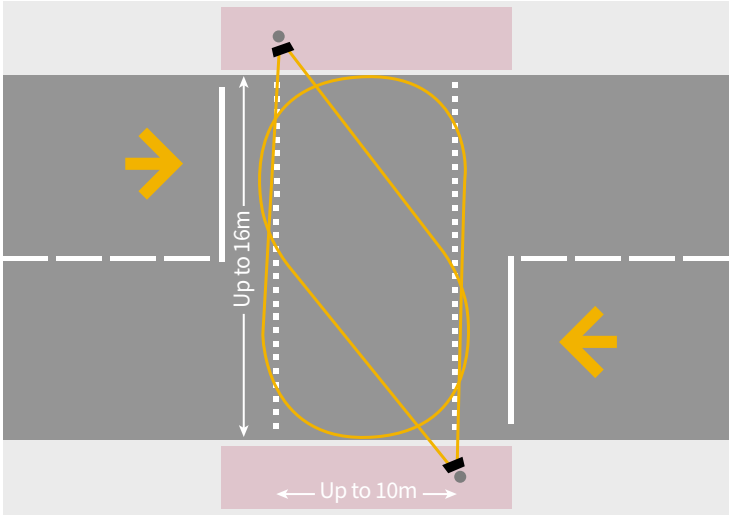
PHYSICAL INSTALLATION

The AGD326 has been designed to be installed as a pair, this is to ensure coverage of the entire crossing is achieved. Each detector covers the far side of the crossing, this causes dead spots which the opposite detector must cover.

One detector cannot cover the entire crossing by itself, the beam pattern the radar produces can not cover the dead zone marked below. The bigger the crossing the bigger the dead zone. E.g. on a 16mx10m crossing the dead zone can reach up to 8m long, this area will be covered by the paired detector.

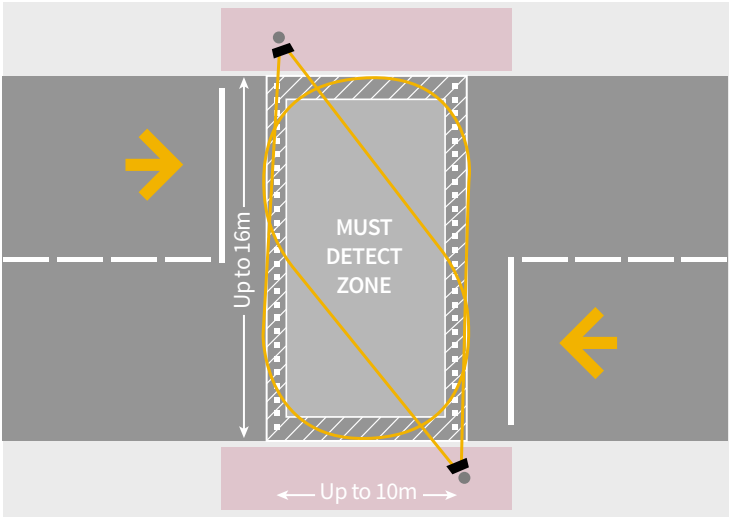


Two detectors installed together cover described dead spots.



PHYSICAL INSTALLATION

Marked area shows the must detect zone that the pair of detectors must cover.



Please note: The radars have a 'may detect zone' surrounding the must detect zone to avoid false detections from the kerb edge and vehicles encroaching on the stop line. The AGD326 also has a ±1meter accuracy due to the calibration encoded on the detector. This is more noticeable on the extremities of the radars range E.g. a 16m x 10m crossing could have 1m dead spots on the edge of the zone.

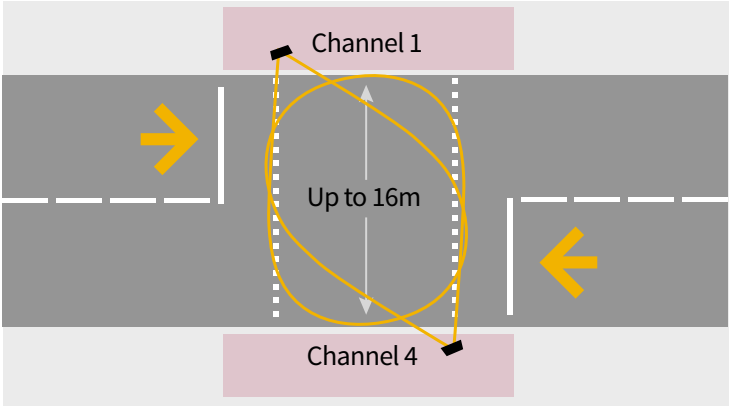
TRANSMIT CHANNELS - TYPICAL SCENARIOS

Co-Location of AGD Detectors

Installing two or more AGD detectors e.g 306, 326 or 316, 326 on the same traffic signal pole can result in crosstalk and a degradation in performance if they are on the same frequency.

Please be mindful of additional AGD products located on the same pole or in the vicinity of any new installation.

Example 1: **Standard crossing layout two AGD326 detectors**



Equipment: 2 x AGD326 Pedestrian On-Crossing Detectors

Channel(s): 1 and 4

***Important information**

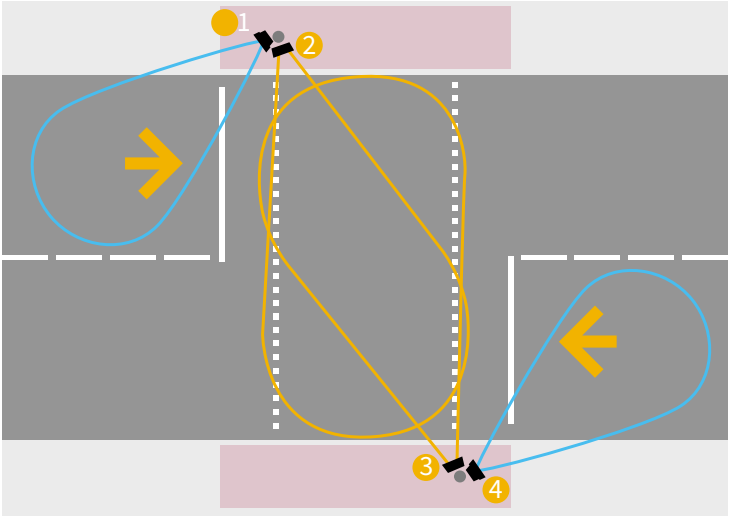
AGD326 Pedestrian Detectors are shipped from the factory with different channel frequencies assigned to different serial numbers, follow the guide below when selecting serial numbers at point of installation:

Serial Number	Channel
0001	1
0002	2
0003	3
0004	4
0005	1
0006	2
0007	3
0008	4

TRANSMIT CHANNELS - TYPICAL SCENARIOS

Co-Location of AGD Detectors

Example 1: **Standard crossing layout two AGD326 detectors alongside two radars**



The devices numbered 1 to 4 are representive of radar traffic detectors, these can be either AGD306, AGD326, AGD316 or AGD318.

The tables right indicate suggested channels for the products when the configuration is as above.

No.	AGD Product	Channel
1	AGD316 Stopline Radar	n/a
2	AGD326 Pedestrian Detector	1
3	AGD326 Pedestrian Detector	2
4	AGD316 Stopline Radar	n/a

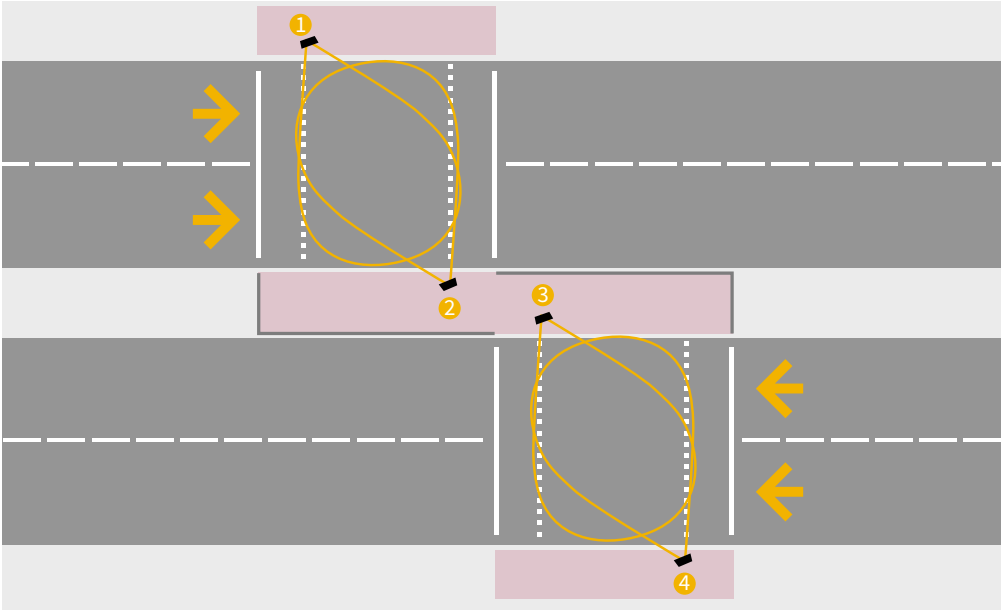
No.	AGD Product	Channel
1	AGD306 Traffic Control Radar	1
2	AGD326 Pedestrian Detector	1
3	AGD326 Pedestrian Detector	2
4	AGD306 Traffic Control Radar	2

No.	AGD Product	Channel
1	AGD318 Traffic Control Radar	1
2	AGD326 Pedestrian Detector	1
3	AGD326 Pedestrian Detector	2
4	AGD318 Traffic Control Radar	2

TRANSMIT CHANNELS - TYPICAL SCENARIOS

Co-Location of AGD Detectors

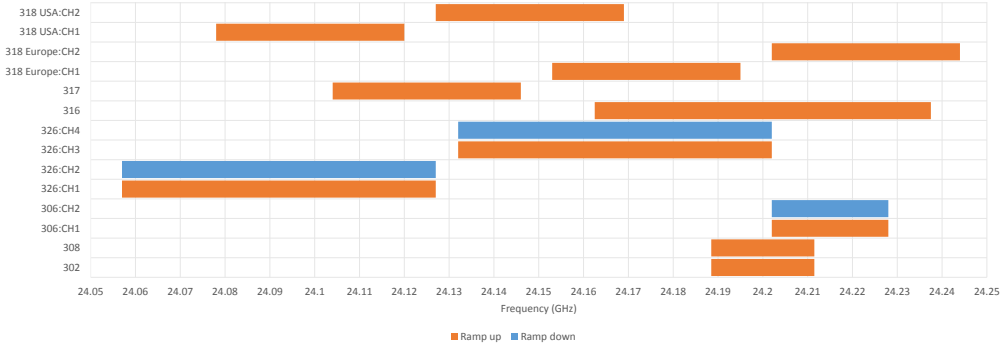
Example 2: **Dual crossing layout four AGD326 detectors**



No.	AGD Product	Channel
1	AGD326 Pedestrian Detector	1
2	AGD326 Pedestrian Detector	2
3	AGD326 Pedestrian Detector	3
4	AGD326 Pedestrian Detector	4

TRANSMIT CHANNELS - TYPICAL SCENARIOS

Table 1: AGD 24GHz Radar Channels



PHYSICAL INSTALLATION

PHYSICAL INSTALLATION

What height should the AGD326 be mounted at and what angle of declination is recommended?

The 326 should be mounted at a nominal height of between 2-4 metres from ground level and have a clear view of the pedestrian crossing area to be covered with no obstructions from other street furniture for correct operation.

- Initially mount the detector so it is vertical.
- Set the maximum range to the length of the pedestrian crossing.
- If you are seeing pedestrians on the opposite pavement after setting the maximum range, then tilt the detector downwards slightly.
- Carry out a walk test and ensure you are being seen by the detector on the opposite kerb edge, and not on the pavement.

Users should note that in normal operation the angle of declination will be less than that of previous versions.

CONNECTING / COMMISSIONING

What is the Lowest Speed Threshold that the AGD326 will detect pedestrians at?

The Low Speed Threshold of the 326 is 1.5 kph, which equates to approximately 0.4m/per sec and will detect any pedestrian moving faster than this speed in the detection zone.

What size zone of detection can be set on the AGD326?

The 326 can have a single zone set up to 2 to 16 metres in length (user selectable via the maximum range adjustment on the GUI) and up to 10 metres wide depending upon the width setting.

I've noticed that the AGD326 has a front detect LED. Can this front LED be switched off?

Yes, the front LED can be switched off via the GUI.

Why do you have 4 frequencies?

If the channels of two 326's looking at each other are set at the same frequency, then they will crosstalk with each other. So, the opposing detector should be set to a different channel to avoid crosstalk.

I have poor performance when located alongside another AGD detector.

If two detectors are on the same frequency and co-located there will be a degradation in performance. The 326 will need to be switched to a different frequency. Please see page 13.

Does the detector have a hold time after the target has exited the zone?

Yes, the standard detector comes with an in-built 800mS hold time.

What is the Elexon code for the AGD326?

Please visit the Elexon website at: www.elexon.com

RADAR CHARACTERISTICS

The radar has been designed to have a specific set of functional characteristics which make it suitable for traffic control applications.

Radar Antenna

The antenna is a planar patch array with the following performance;

Parameter	Specified	Notes
Horizontal Beam-width	33°	-3dB (HPBW)
Vertical Beam-width	33°	-3dB (HPBW)
Side-lobe suppression	>20dB	
E-Field	Vertical	Plane polarised

Operating Frequency Band and Power

The 326 radar uses a temperature compensated transceiver design. The hardware of the transceiver has been uniquely designed to operate in the 24.050 to 24.250GHz Band

Parameter	Specified	Notes
Centre Frequency (channel 1	24.092 GHz	
&2) Centre Frequency (channel 3	24.167 GHz	
& 4) Power	<100mW EIRP	
Field Strength	Typically, 750m V/m	At 3m
ITU Code	70MOFXN	

Centre Frequency for USA & Canada 24.125 GHz

The WiFi frequency and power is as follows:

Frequency range (MHz): 2412 -2472

Highest EIRP power in the range (dBm): 18.52

Radar Characteristics

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

FREQUENCY VARIANTS

Several versions of this product are available at frequency options which are for use in different geographic regions related to the radio requirements of that specific jurisdiction as follows;

Frequency Variant	EU Country of Use	Other Countries	Notes
24GHz	No current restrictions within the EU	AU, NZ, TR	

For other countries please contact AGD.

These products may **not** be used in the following geographic regions;

Restriction Type	EU Country	Other Countries
Relevant 24GHz Band not allocated		
Licence Required for Use		
Frequency Allocated but EIRP too high		

It is important to note that this table is updated from time to time. Please contact AGD for latest information if your intended country of use is not currently represented.

(Note: Countries are listed by their ISO 3166 2 letter code)

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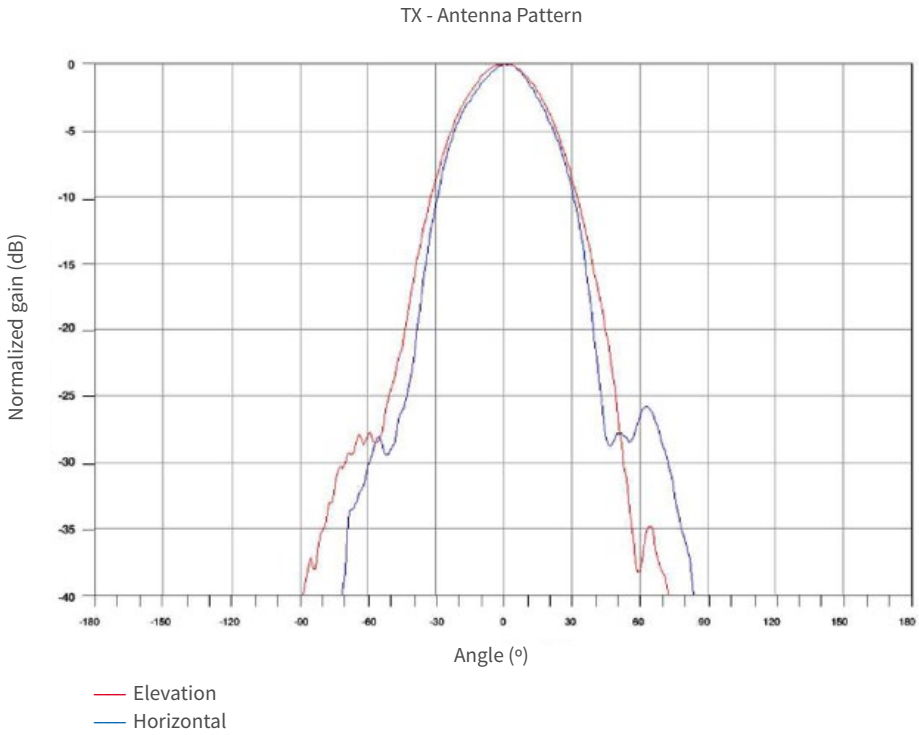
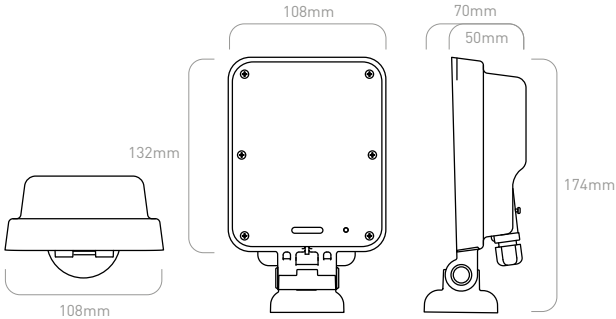
326 FIELD PATTERN



Technical Specifications

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

PRODUCT DIMENSIONS



SPECIFICATIONS

Description	Pedestrian/Cycle Detector
Technology	24GHz FMCW radar
Channel	Four selectable via WiFi
Band Width	70 MHz
Detection Range	Up to 16m across the crossing (1m increments)
Detection Width	Up to 10m
Low Speed Threshold	1.5kph
Mounting Height	2-4m (3m nominal)
Power Supply	12/24V ac/dc or 230Vac
Power	1.6W @ 24Vac @ 66mA or 2.2W @ 230Vac @ 10.1mA
WiFi Frequency	Frequency range (MHz): 2412-2472
Detect Output	Single Opto (or relay)
LED Indication	Front LED for detect Rear LED for detect and WiFi connection
Housing Material	Polycarbonate
Sealing	IP56
Operating Temperature	-15º C to +60º C
Configuration	WiFi AGD Touch-setup
Weight	650g
MTBF	20yrs based on field data of prior generation radar for 10,000 units installed over 3 years
Complies with	EN 301 489, EN 50293, AS/NZS 4268 **FCC Part 15.245** EN 300 440, EN 300 328, EN 62368 -1, EN 60950-22
Specification	TOPAS 2506A

ACCESSORIES

CA-083

Mating connector complete with 1.5m cable

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

RoHS COMPLIANT
Restriction on Hazardous Substances

Certification

EU Declaration of Conformity

Certificate No: CE-078 Issue: 1

PRODUCT SOLUTIONS FOR
INTELLIGENT TRAFFIC SYSTEMS

AGD Systems
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Cheltenham, GL51 0TF, UK

Tel: +44 (0) 1452 854212
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Web: agd-systems.com

We AGD SYSTEMS LTD
White Lion House
Gloucester Road
Staverton
Cheltenham
Gloucestershire
GL51 0TF
UNITED KINGDOM

as manufacturer hereby declare that the following product(s)

Equipment Model Type(s): 326-3xx-xxx

326-5xx-xxx-

Equipment Description: Pedestrian Radar

conform with the provisions of the following EC Directive(s), including all amendments, and with national legislation implementing this / these directive(s):

2014/53/EU relating to Radio Equipment.

2011/65/EU RoHS Directive

and that the following harmonised standards and Technical Specifications have been applied:

EMC (Art 3.1(b)):	EN50293:2012
	EN301 489-17 V3.2.0
	EN301 489-51 V2.1.0
	EN301 489-1 V2.1.1
Health & Safety (Art 3.1(a)):	EN 62368-1:2014
	EN 60950-22:2006
	EN 62479:2010
Spectrum (Art 3.2):	EN 300 328 V2.1.1
	EN300 440 V2.2.1
ROHS	EN 50581:2012

Notified Body Element Materials Technology 0891

EU type certificate EMT19RED1136

Signed Dated: 17/9/19

For and on behalf of AGD Systems Ltd
P M Hutchinson
Managing Director

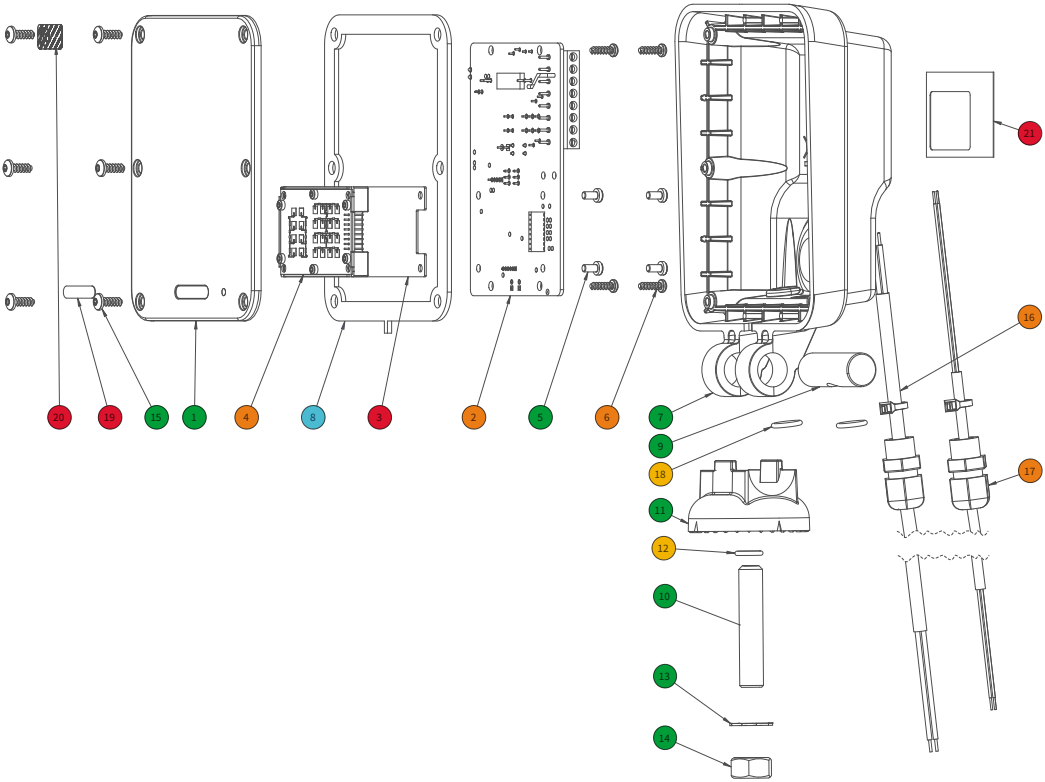
safer, greener, more efficient

Registered in England and Wales No. 2666988

End Of Life – Disposal Instructions (EOL)

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

AGD326 PEDESTRIAN ON-CROSSING DETECTOR



Item	Qty	Material
1	1	Polycarbonate
2	1	Printed Circuit Board
3	1	FR4
4	1	Printed Circuit Board
5	4	Stainless Steel
6	4	A2 Stainless Steel
7	1	Polycarbonate
8	1	Neoprene / SBR Rubber
9	1	Aluminium
10	1	Stainless Steel
11	1	Polycarbonate

Item	Qty	Material
12	1	Nitrile
13	1	Stainless Steel
14	1	Stainless Steel
15	6	A2 Stainless Steel
16	1	Metals, PVC, Nylon
17	1	Metals, PVC, Nylon
18	2	EDPM
19	1	Polyester
20	1	Polyester
21	1	Polyester

- Reuse / Recycle
- Separate & Recycle
- Downcycle
- Hazardous Recovery
- Non - Recyclable

Important Safety Information

AGD **326**
PEDESTRIAN ON-CROSSING DETECTOR

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. Should the product feature user-accessible switches, an access port will be provided. Only the specified access port should be used to access switches. Only non-conductive tools are to be used when operating switches.

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 and contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s) .**
   • 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.

7. This Product is Compliant with the European Radio Equipment Directive 2014/53/EU.
   There is no restrictions of use within any EU Member state for this product.
   This product is Receiver Category 2.

8. Indicates compliance with all applicable Australian ACMA technical standards and associated record-keeping (including testing) arrangements.

IMPORTANT INFORMATION

Low Power Non-Ionising Radio Transmission and Safety

Concern has been expressed in some quarters that low power radio frequency transmission may constitute a health hazard. The transmission characteristics of low power radio devices is a highly regulated environment for the assurance of safe use.

There are strict limits on continuous emission power levels and these are reflected in the testing specifications that the products are approved to. These type approval limits are reflected in the product specifications required for a typical geographic area such as those for the EU (ETS300:440), for the USA (FCC part 15c) and for Australia/New Zealand (AS/NZS 4268). The limits adopted in these specifications are typically replicated in many other localized specifications.

The level of safe human exposure to radio transmission is given by the generally accepted guidelines issued by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). This body has issued guidance for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz) which are quoted below.

	Radar and ICNIRP limit comparison			Typical Informative Limits for Radar Transmission Approval		
	Radar Transmitted Level (Note 4)	ICNIRP Limit (Table 6)	Exposure Margin	ETS300:440	FCC (part15c)	AS/NZS 4268
Power (mW EIRP)	<100mW (<20dBm)	N/A	N/A	100mW (20dBm)	1875mW (Note 1)	100mW (20dBm)
Max Power Density (mW/cm2)	3.18µW/cm2 at 50cm (Note 3)	<50W/m2 (5mW/cm2) (Note 2)	0.064%	N/A	N/A	N/A
Field Strength (V/m) at 3m	<0.58V/m (5.8mV/cm) (Note 1)	<137V/m (1370mV/cm)	0.42%	0.58V/m (5.8mV/cm) (Note 1)	2500mV/m (25mV/cm)	0.58V/m (5.8mV/cm) (Note 1)

Note 1 Values are calculated conversions for comparison purposes.

Note 2 Other equivalent limits include; Medical Research Council Limit of 10mW/cm2, IACP limit of 5mW/cm2 (at 5cm) and UK CAST limit of 5mW/cm2. Power density at the radome typically 4µW/cm2.

Note 3 Calculation is made on the assumption antenna is a point source therefore the actual value is likely to be significantly less than that quoted. Note that a theoretical max level at a 5cm distance (which gives 0.318mW/cm2) is at a point in the field where the radar beam is not properly formed.

Note 4 Comparison for product model 326 operating in the 24GHz band.

From the table it can be seen that it is extremely unlikely that a potentially hazardous situation could occur owing to the use of such low power devices.

It is considered to be good practice not to subject humans to radiation levels higher than is necessary. In a works environment where multiple equipment on soak test are to be encountered then it is considered good practice to contain the equipment in an appropriate enclosure lined with radar absorbing material.

Notes

Notes

Notes

Disclaimer

While we (AGD Systems) endeavour to keep the information in this manual correct at the time of download or 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.

PRODUCT SOLUTIONS FOR
INTELLIGENT TRAFFIC SYSTEMS

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