

	<h1>640</h1>	
	<b>PEDESTRIAN DETECTION</b>	
	Pedestrian Wait Area Detector	



# PRODUCT MANUAL



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# INTRODUCTION

## PRODUCT & TECHNOLOGY



# 640

The 640 has been designed for the detection and monitoring of pedestrians waiting to cross the road to ensure the crossing phase is only called when pedestrians are present. The dual optical system is designed to view a detection zone adjacent to the pole to which it is mounted. The 640 stereo digital vision detector operates in the visible and near infra-red spectrum. It is able to discriminate between '3D' pedestrian targets and '2D' shadows in the set zone.

## KEY FEATURES

- Advanced stereo vision technology for detection of stationary or moving pedestrians in the wait area
- Dual optical system for shadow rejection in default 3m x 2m zone
- Enhanced or standard operating modes
- Lightweight, compact units for ease of deployment
- Bluetooth and serial interface connectivity as standard (non-Bluetooth version available)
- User adjustable zone and hold/presence time parameters
- Infra-red illumination of zone for enhanced night-time detection
- LED detection and bluetooth indication to front face
- Power supply options of 24Vac, 42Vac or 230Vac
- Patent GB2448617 applies

## PRODUCT RANGE

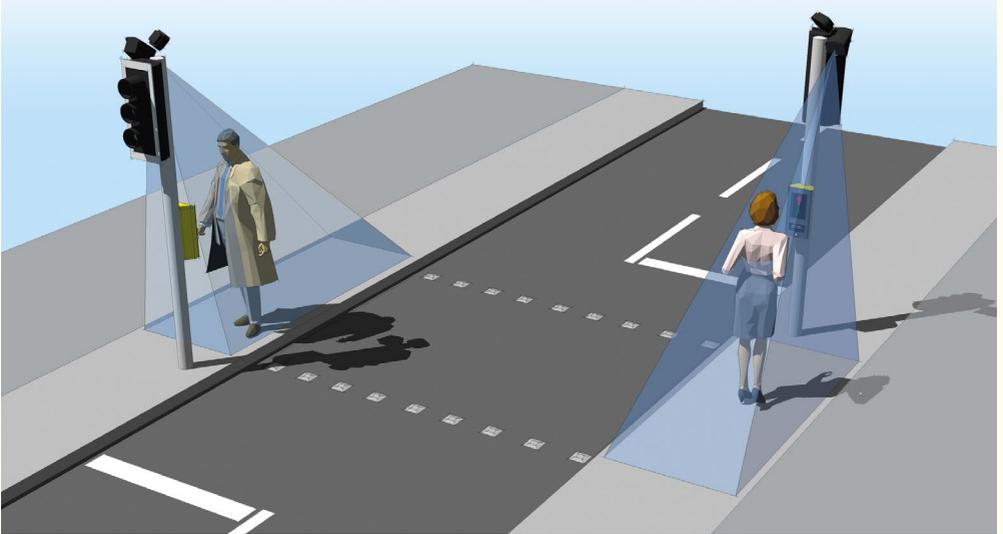
Series	640-2xx-xxx	640-3xx-xxx	640-7xx-xxx
Options			
24Vac	✓	✗	✗
230Vac	✗	✓	✗
42Vac	✗	✗	✓
Customer bespoke requirement	✓	✗	✓

# INTRODUCTION

## TYPICAL APPLICATIONS

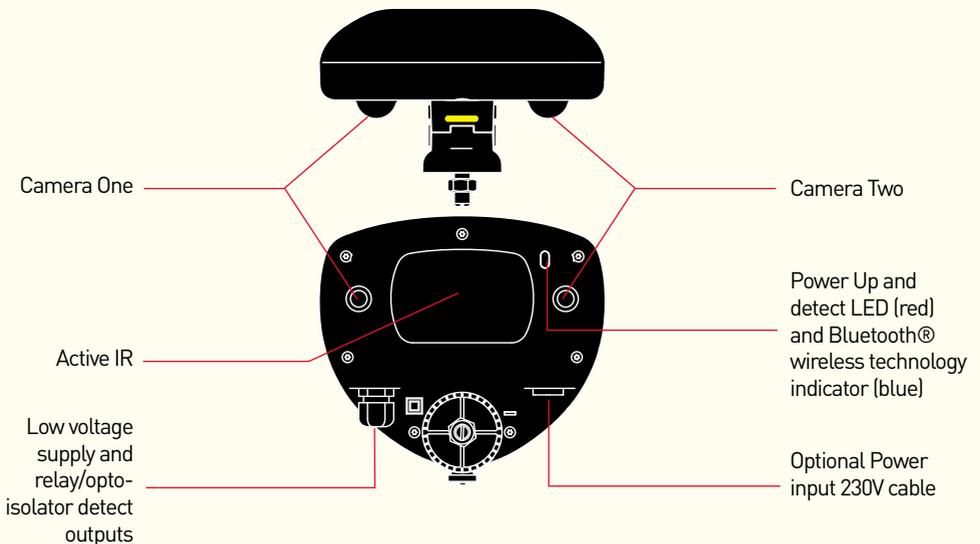
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### Pedestrian Detection



## PRODUCT OVERVIEW

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# INTRODUCTION

## PRODUCT OVERVIEW

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The AGD640 has been designed to monitor pedestrians who are waiting to cross the road and is intended to maximize pedestrian safety in local crossing strategies.

The dual optical system of this detector is designed to view a detection zone adjacent to the pole to which it is mounted. The 640 uses both ambient light and its own infra-red illumination system to perform a twenty-four hour detection function in conditions ranging from bright sunlight to urban night-time. In the default **Enhanced** operating mode the detector offers good shadow rejection in zone sizes up to a maximum of **3m x 2m**. For zone sizes above 3m x 2m a **Standard** operating mode can be deployed which is optimised for larger zone sizes. Pedestrians that are waiting to cross in the designated zone will generate a detect state.

For larger zones over 3m i.e. Toucans then AGD recommend deployment of 2 detectors if the Enhanced Shadow Rejection is required.

The integrated vision sensors and processing utilise the AGD Livewire based platform to adapt the detector's performance for a given installation. AGD Livewire provides the facility to adjust the zone size, presence and hold time.

The 640 is supplied fully Bluetooth and Serial Cable Livewire enabled as standard offering the added benefits of detector parameter adjustment and maintenance from the safety of ground level. A non-Bluetooth version is also available.

Attention is drawn to site lighting conditions. Whilst the detector is designed to work at low lighting levels, adequate illumination should be provided from a pedestrian safety perspective. It is recommended that the zone is illuminated to a minimum lux level for pedestrian crossing areas as stated in BS5489: Code of practice for the design of road lighting / lighting of roads and public amenity areas.

## GEOGRAPHIC REGIONS

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As a vision based product the 640 can be deployed globally. There are Bluetooth and non Bluetooth versions available (Serial cable) to cover all geographic locations.

# INSTALLATION

## QUICKSTART GUIDE

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### WHAT YOU NEED TO SET UP THE AGD640

The following pages make reference to the 640 Trial Kit. If you are not using the detector as part of a trial kit, please modify instructions and apparatus accordingly.

#### INCLUDED IN AGD640 TRIAL KIT



AGD640



AGD640 Trial kit disk



Cables, CA-188 & CA-190



Bluetooth® Dongle MS-076



Product manual (included on disk)

#### NOT INCLUDED IN AGD640 TRIAL KIT



24V/42V/230V Power supply



Computer or laptop

# INSTALLATION

## DETECTOR MOUNTING

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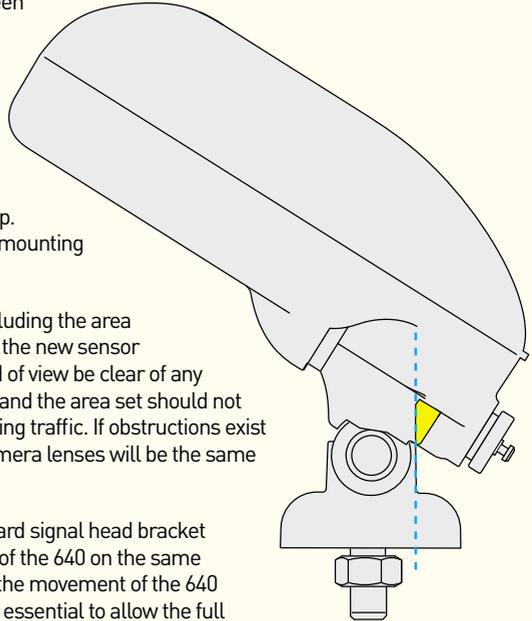
The AGD640 has optical performance that has been tuned to a typical mounting height of between 3.0m and 4.0m (The detector can be mounted outside of these parameters but please seek advice from AGD for recommendations).

Optimum operation of the detector can only be achieved with correct installation. Mount the 640 and adjust the tilt angle so that the arrow marking on the housing and mounting foot line up. Ensure that the detector is securely fixed and all mounting nuts are tight.

View the wait area from the detector position, including the area immediately in front of the push button. Owing to the new sensor technology it is imperative that the detectors field of view be clear of any disturbance such as moving foliage, pedestrians and the area set should not encroach onto any area where there may be moving traffic. If obstructions exist remove them. Ensure that the view from both camera lenses will be the same i.e. one of lenses not obscured by backing board.

The detector would normally be fitted on a standard signal head bracket positioned above the nearside signal unit. Fitting of the 640 on the same bracket as an on-crossing detector may impede the movement of the 640 for correct alignment. Correct use of bracketry is essential to allow the full movement of the detector for alignment and viewing of the detection zone.

**Detector Alignment** - when first installing the 640 please utilise the markings as shown to set the optimum alignment angle for the unit. Further adjustment may be required in occasional circumstances to accommodate particular site conditions.



# INSTALLATION

## CONNECTING POWER

Cable connections for the AGD640 radar are as detailed. The 640 is powered by 24Vac, 42Vac or 230Vac dependent on the model supplied



24V/42V/230V Power supply



640

## POWER & WIRING - 24VAC

When the 640 is powered by a 24Vac supply it is essential that the detector is connected to the correct power supply. Consideration must be given to multiple grounding of supplies and to its effect on the whole system. In the case of an ac supply, it is recommended that the supply is fully floating, i.e. transformer derived. However, the ac supply may be earthed separately if required, but the earthed side must be connected to pin 2 (black) only. If the detector is supplied without the connector the connection colours for the flying lead remain as below.

Upon power up, owing to the nature of the equipment's power supply, typically an initial surge current of up to 5A can be drawn for a couple of milliseconds and the supply should be fused appropriately. Day time current drain in non-detect state is 200mA rms but the waveform peaks to 500mA rms. Night time current drain is 250mA but the waveform peaks to 900mA rms. These figures are based on 24V ac.

The relay is a SPCO (SPDT) type rated at 1A maximum at 24Vac The installation of this equipment must conform to the latest edition of the IEE Wiring Regulations (BS7671).

Attention is drawn to the connection of multiple detectors to the same power supply and that the 640 draws significantly more current when site illumination fails/falls. The supply should be adequately rated and during supply interruptions multiple detectors on the same supply can significantly reduce the return of the supply. This effect is not desirable for re-powering the detectors and is magnified when other radar detectors are also loaded onto the same supply. AGD recommend that no more than four detectors are connected to the same ELV supply.

Single Cable 24Vac Supply Wiring (1m with Bulgin connector or 5m flying lead)						
Pin No.	Wire Colour	Function	Power Off	Power On - No Detect	Power On - Detect	
1	Red	24V ac	-	-	-	-
2	Black	24V ac	-	-	-	-
3	Green	Earth / Ground	-	-	-	-
4	White	Relay Common	-	-	-	-
5	Yellow	Relay Contact	N/O	N/C	N/O	-
6	Blue	Relay Contact	N/C	N/O	N/C	Not for use on Puffins/Toucans
7,8,9	-	Not connected	-	-	-	-

# INSTALLATION

## POWER & WIRING - 230VAC

When the 640 is powered by a 230Vac supply it is essential that the detector is connected to the correct power supply. Consideration must be given to the multiple grounding of supplies and to its effect on the whole system.

The 640 is classified as a double insulated product and therefore the supply cable is two core (live/neutral only). Both power and signal cables are supplied as 5m flying leads.

The relay is a SPCO (SPDT) type rated at 1A maximum at 24Vdc. The relay is not rated to switch voltages in excess of 110V (35W max. switched power). The installation of this equipment must conform to the latest edition of the IEE Wiring Regulations (BS7671).

Upon power up, owing to the nature of the equipment's power supply, an initial surge current of 40mA can be drawn and the supply should be fused appropriately. Current drain (non-detect state) for 230Vac in both day and night time mode is 10mA typical.

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 Common	-	-	-
	Blue	Relay Contact	N/C	N/O	N/C
	Green	Relay Contact	N/O	N/C	N/O

Power Options	24Vac	42Vac	230Vac
640 day time operation (non-detect state)	200mA	150mA	10mA
640 night time operation (non-detect state)	250mA	185mA	10mA
Supply tolerances	20V - 28Vac	40V - 48Vac	216V - 253Vac

# INSTALLATION

## POWER & WIRING - 42VAC

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When the 640 is powered by 42Vac consideration must be given to multiple grounding of supplies and to its effect on the whole system. It is recommended that the a.c. supply is fully floating, i.e. transformer derived. However, the a.c. supply may be earthed separately if required, but the earthed side must be connected to pin 2 (black) only.

Upon power up, owing to the nature of the equipment's power supply, typically an initial surge current of up to 5A can be drawn for a couple of milliseconds and the supply should be fused appropriately. Day time current drain in non-detect state is 150mA rms. Night time current drain is 185mA rms.

The relay is a SPCO (SPDT) type rated at 1A maximum at 42Vac The installation of this equipment must conform to the latest edition of the IEE Wiring Regulations (BS7671).

Attention is drawn to the connection of multiple detectors to the same power supply and that the 640 draws significantly more current when site illumination fails/falls. The supply should be adequately rated and during supply interruptions multiple detectors on the same supply can significantly damp the return of the supply. This effect is not desirable for re-powering the detectors and is magnified when radar detectors are also loaded onto the same supply. AGD recommend that not more than four detectors are connected to the same ELV supply.

### Single Cable 42Vac Supply Wiring (5m flying leads)

Wire Colour	Function	Power Off	Power On - No Detect	Power On - Detect	
Red	42Vac	-	-	-	
Black	42Vac	-	-	-	
White	Relay Common	-	-	-	
Yellow	Relay Contact	N/O	N/C	N/O	
Blue	Relay Contact	N/C	N/O	N/C	Not for use on Puffin/Toucans

## OVERVIEW OF DETECTION MODES

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### ENHANCED Mode - Default setting

Enhanced Mode utilises the two cameras on board the 640 to build up a stereoscopic “3D” image within the set zone of detection to detect pedestrian height in the zone and determine a valid input demand. This mode of operation provides high levels of shadow rejection in the set zone compared with previous generations of product. There is a limit to the size of zone that can be set in this mode, this being 3m x 2m.

When zones sizes are set outside of this, Livewire™ will offer the user the opportunity to continue in ENHANCED Mode and the user can monitor the effectiveness of the shadow rejection against the zone size. This would only be advisable when the zone size is only just outside the 3m x 2m zone recommended for enhanced shadow rejection. To achieve full shadow rejection over longer zone sizes ie Toucan, AGD would recommend the use of **TWO** detectors set in ENHANCED Mode.

### STANDARD Mode

Standard Mode utilises only one of the cameras (which camera is in use can be set by the user) and whilst a larger zone can be set than in Enhanced Mode users should note that Standard Mode will not offer shadow rejection performance. Optimum performance in Standard operating mode can be achieved by selecting ASH mode.

In this mode the sensitivity to changing light levels (non visible shadow) has been modified such that small changes in daylight levels will not cause a detect.

The program has also been modified to make it more robust to the “sun dial” effect i.e. slow moving (creeping) shadows due to the tracking of the sun during the day.

The detector will still “see” hard shadows as a detect and will operate as below:

- A vehicles shadow tracking through the pedestrian zone will be detected but will be dropped as the shadow leaves the zone. Any pedestrian in the zone will continue to be held as a detect.
- Hard shadows / visible change in day light level will cause a detect which will be held until either the light level returns to the setup default zone value or it is tuned out (time dependant on the set “presence time”)
- The detector “hold on” time will be as set in the detectors Hold Time setting (default 0.8 sec).

### STANDARD with ASH Mode

ASH Mode or Adaptive Shadow Heuristics mode has been specifically designed for use when the Standard Mode of the 640 Kerbside Detector is in use to limit environmental factors influencing the detector through visible/non-visible changes in light/shadows etc and enhance the detection performance. This function can be activated when the 640 is in Standard mode only.

In this mode the sensitivity to changing light levels (non visible and visible shadows) has been modified such that these changes in daylight levels will not now cause a detect to be “held”. The change will be seen and the detector will go into detect but only for approx 5 seconds at which point the change in light level will be tuned out and the detector will drop the detect. If a pedestrian is in the zone then detect will be held.

- In this mode if a pedestrian is in the zone and they then exit the zone, the detector will “hold” the detect for a time greater than the set “hold on” time (for possibly greater than 30 seconds).
- A vehicles shadow, tracking through the pedestrian zone will be detected but will be dropped as the shadow leaves the zone. Any pedestrian in the zone will continue to be held as a detect.

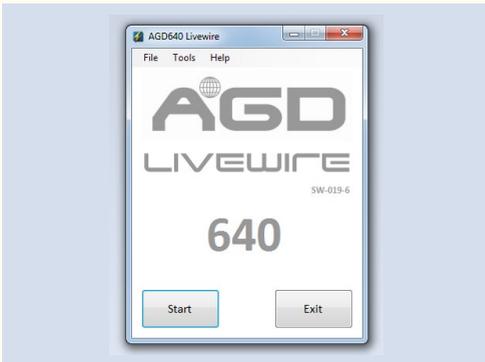
# USER CONFIGURATION

## BLUETOOTH SETUP CONNECTION

1. Launch AGD640 Livewire™ software using the Desktop Shortcut or the shortcut found in Start Button -> All Programs -> AGD640 Livewire



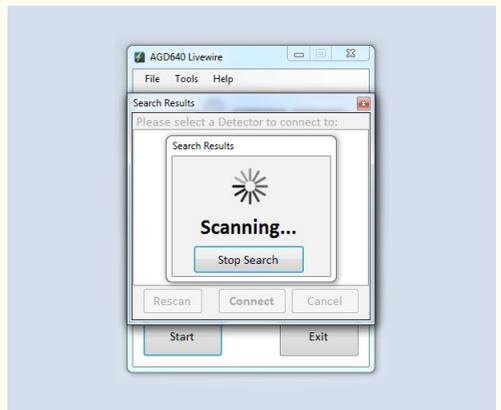
2. When loaded, select the **Start** button from the program



3. Select the **Bluetooth** connection type from the options

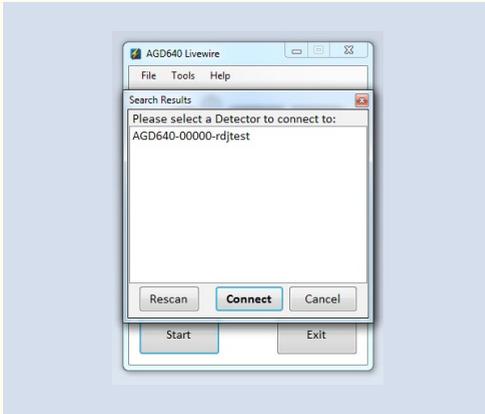


4. Livewire will now find and list all 640 detectors within range. If no detectors are found ensure the unit is powered on and properly connected to your PC before rescanning. If you receive a Bluetooth dongle error, ensure that your computer's Bluetooth device is enabled and running the Microsoft Bluetooth stack (for further information log onto: [www.agd-livewire.com](http://www.agd-livewire.com) and look under **Bluetooth Support for Toolkits**)



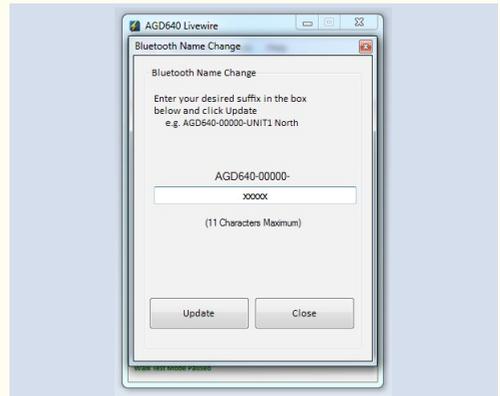
## BLUETOOTH SETUP CONNECTION

5. Carefully select the detector from the results list and press the **Connect** button. The detector's LED will light blue and you will be prompted to check that you are connecting to the intended detector.



6. If the detector is new, you will be prompted to name it for future connections. This field is limited to eleven characters

*N.B. There is an inherent problem with the Microsoft Bluetooth Stack whereby the new Bluetooth name may not appear when searching for the detector. Please be assured that the name has been changed, however your computer has associated the original name with this detector to help speed up future connections. This pairing can be difficult to remove, though there is a resolution discussed in the document "Sticky Bluetooth Detector Name" (for further information log onto: [www.agd-livewire.com](http://www.agd-livewire.com) and look under "Bluetooth Support for Toolkits")*



*End of Bluetooth connection instructions now go to configuration of 640.*

# USER CONFIGURATION

## CABLE SETUP CONNECTION

1. Connect to the detector using serial cable CA-190 and if required USB extension cable CA-188

2. Launch AGD640 using the Desktop Shortcut or the shortcut found in

Start Button -> All Programs -> AGD640 Livewire



3. When loaded, select the **Start** button from the program



4. Select the **Cable** connection type from the options

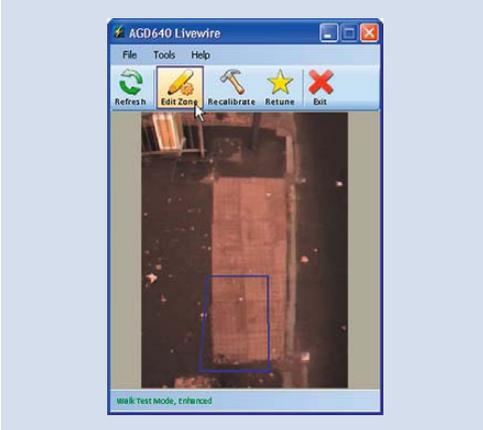


5. Livewire will now find and automatically connect to the first 640 detector connected to your computer. If no detectors are found ensure the unit is powered on and properly connected to your PC before rescanning

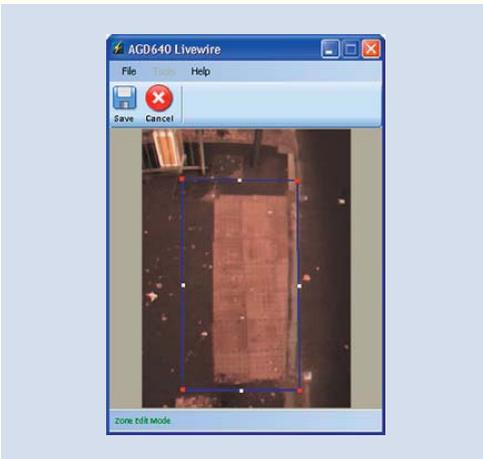


## CONFIGURATION OF THE 640

1. Once connected to the detector, 640 Livewire will download a new image and the current settings. The default screen is Walk Test Mode, Enhanced mode. To edit the zone boundaries, select the **Edit Zone** button from the toolbar



2. To customise your zone boundary, click and drag any of the four red corner points to their required positions. When complete, use the **Save** button to commit the changes to the detector



3. By default, the unit will run in **Enhanced Detection Mode**. Upon saving you **may** receive the following prompt. This will only occur if the selected zone size is larger than the recommended **Enhanced zone** area of 3m x 2m, or if the selected zone is close to the left/right or top limits of the zone. In either of these situations **Standard detection mode** may outperform Enhanced mode



4. (Optional). Where required, advanced zone configuration can be achieved by selecting **Tools > Edit Zone Blocks**. Editing the zone blocks allows specific areas within the zone, such as hedges, bollards or poles, to be excluded from detection

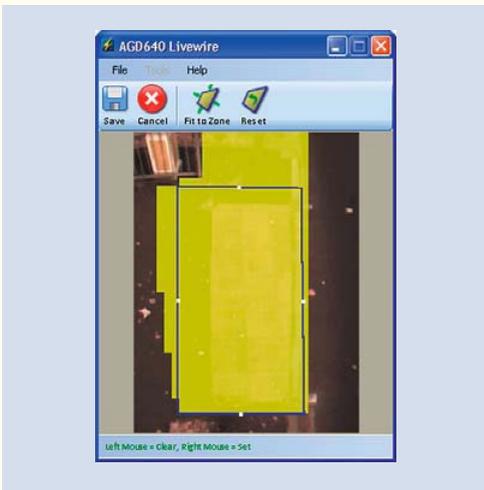


## CONFIGURATION OF THE 640

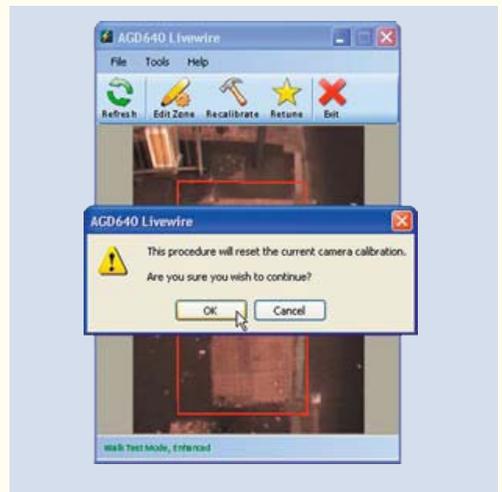
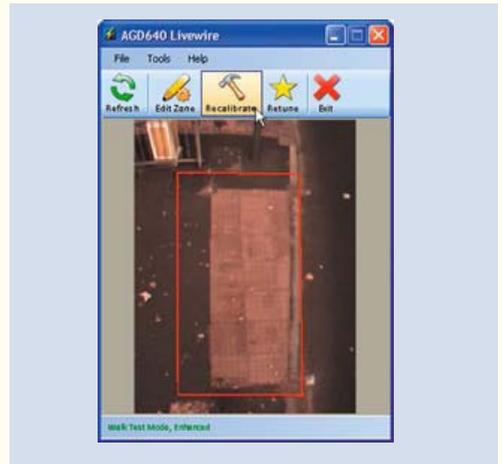
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5. (Optional). Zone blocks can be deselected or set using the left and right mouse clicks respectively. Any and all areas coloured in yellow will be monitored by the detector. When happy with the blocks set, select **Save** to commit the changes to the 640

*N.B. Each time the zone boundary is saved or detector mode is changed, the zone blocks will be updated to fit the zone boundary. This will overwrite any blocks previously excluded. Also, when running in **Enhanced** mode, the detector will automatically set blocks outside the zone boundary to compensate for a 3 dimensional extension of the flat (ground plane) zone boundary*



6. With the zone area now configured, select the **Recalibrate** button from the toolbar. Follow the onscreen prompts to reset & recalibrate the cameras. This procedure ensures that the two 640 cameras are synchronised with the zone to achieve optimised detection. Enhanced mode only.



## CONFIGURATION OF THE 640

6. (Continued)

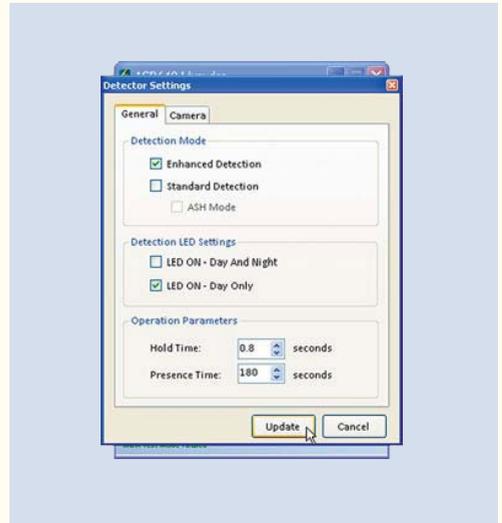


7. Further detector settings can be found from the **Tools > Settings** menu. When setup, the **Update** button will save the changes back to the detector & reinitialise Livewire accordingly



### Default settings

	Defaults	Min	Max
Hold	0.8 secs	0.5 secs	5 secs
Presence	180 secs	1.0 secs	3600 secs

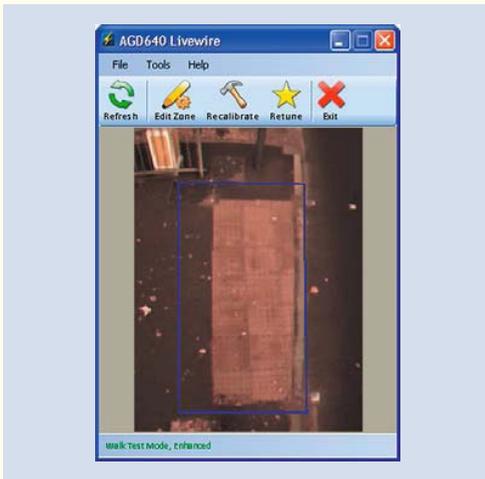


# USER CONFIGURATION

## CONFIGURATION OF THE 640

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8. The 640 is now correctly configured for your zone. The walk test will verify the operation of the detector for the set zone. When in Walk Test mode, the zone boundary will flash blue & red. When the detector enters a detect state, the zone area will fill red



9. To close the connection to the detector, select the **Exit** button from the toolbar. To exit Livewire completely, select the **Exit** button from the start up screen.



## FREQUENTLY ASKED QUESTIONS - FAQ'S

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What is Livewire™

Livewire can refer to a number of items. A detector may be referred to as "Livewire Enabled" - meaning the user can connect to the detector using a computer running special software via a Serial Cable or Bluetooth connectivity. This software is known as the "Livewire" or the "AGD Livewire Toolkit" whose purpose is to provide a user friendly, graphical set-up for AGD detectors. You may have also heard reference to the cable connecting a detector to a computer (5pin to USB) as the "Livewire Cable".

What is the Microsoft Stack

The Microsoft Stack is essentially a driver for the Bluetooth device on your computer. It contains a list of commands that the Operating System (and programs there upon) require. Other Bluetooth Stacks are available, such as the Widcomm Stack and Toshiba Stack, though these are currently unsupported by AGD. There is a separate document detailing the Microsoft Stack named "Detector Communication Support – Switching to the Microsoft Stack"

Can I use Livewire with the WIDCOMM or Toshiba Bluetooth Stack

Yes you can, but not natively. You will need to set-up a Virtual COM Port between your computer and the detector using the Bluetooth stack installed. This will create a COM Port on your computer which Livewire can treat this as a Cabled connection. If your Bluetooth device uses the Widcomm Stack, please see the separate document "Using Livewire with the WIDCOMM Bluetooth Stack"

I'm not using Windows XP - does this document apply to me

AGD640 Livewire is also fully compatible with Windows Vista. We are not able to support Livewire for previous versions of Windows, such as 2000 or 98. Due to the lack of demand and shift towards Netbooks/Laptops, a PDA version of 640 Livewire does not exist.

## MOUNTING

What height should the 640 be mounted at?

The 640 should optimally be mounted at a height of between 3.5 -4.0 metres from the ground and at the recommended angle of declination indicated on the customer information sheet for correct operation and have no obstructions from adjacent Signal Head hoods, backing boards etc as this will impair detection performance.

Is there a recommended angle that the 640 should be installed at?

When first installing the 640 the tilt angle should be adjusted so that the triangular arrow marking on the housing is aligned with the vertical edge of the mounting foot. A diagram showing this optimum angle alignment can be found on page 6.

## FREQUENTLY ASKED QUESTIONS - FAQ'S

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### CONNECTIVITY

What methods can I use to connect to the 640 for set up?

There are two methods both made via a suitable Notebook PC. A direct 'Livewire' cable connection (CA-190) between the detector and PC, or connection can also be made via 'Bluetooth' between PC and detector using the recommended Bluetooth dongle (MS-076).

When connecting to an 640 via Bluetooth, how do I know which detector I am connected to as there are more than one on site?

After searching for all available 640's on site via Bluetooth, a list will be populated. To connect to an 640 on this list, the detector should be highlighted with the mouse and the **connect** button should be clicked. A Blue LED will light up on the detector that you are trying to connect to and a window prompt will ask you if this is the right detector. If the Blue LED is not lit up on the detector of interest, simply click 'NO' on the prompt box and select another 640 to connect to.

Is it possible to connect to more than one 640 at a time using the Bluetooth Connection mode?

No, it is only possible to connect to one 640 at a time and the Blue LED on the unit that you are connected to will be lit to indicate this.

I have changed the Bluetooth name on my 640, but it doesn't seem to appear when I carry out another search afterwards. Why is that?

The Bluetooth name has been changed, however this will not normally be displayed until the 640 Livewire program is closed down and your PC is re-booted. This is due to the Microsoft Bluetooth protocols contained in Windows which can only handle limited device name changes. Once re-booted and the 640 Livewire software is re-started, the name change will be displayed when a further search of the 640 units is carried out.

## FREQUENTLY ASKED QUESTIONS - FAQ'S

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### DETECTION ZONES AND OPERATING MODES

How many zones can be set using the 640?

The 640 has only one zone of detection which can be set in two different modes of operation, 'Enhanced' or 'Standard'.

What is Enhanced Mode?

Enhanced Mode utilises the two cameras on board the 640 to build up a stereoscopic "3D" image within the set zone of detection to detect pedestrian height in the zone and determine a valid input demand. This mode of operation provides high levels of shadow rejection in the set zone compared with previous generations of product.

What Is Standard Mode?

Standard Mode utilises only one of the cameras (which camera is in use can be set by the user) and whilst a larger zone can be set than in Enhanced Mode users should note that Standard Mode will not offer shadow rejection performance. Optimum performance in Standard operating mode can be achieved by selecting ASH mode.

What is ASH Mode?

ASH Mode or Adaptive Shadow Heuristics mode has been specifically designed for use when the Standard Mode of the 640 Kerbside Detector is in use to limit environmental factors influencing the detector through visible/non-visible changes in light/shadows etc and enhance the detection performance. This function can be activated when the 640 is in Standard mode only.

What is the maximum zone size of the 640?

The 640 has two modes of operation, 'Enhanced' and 'Standard'. The zone sizes are up to 3 Metres x 2 Metres in Enhanced Mode and when Standard mode is deployed it can be optimised for larger zone sizes. For wider Toucan crossings AGD recommends deployment of an 640 at each end of the wide zone for optimum detection performance in Enhanced mode.

How do I know if my 640 is in Enhanced or Standard mode?

When you connect to the detector using the 640 Livewire Software, the zone is downloaded and displayed. At the bottom left hand side of this screen, text will tell you which mode of operation the detector is currently in.

I have a zone of 5 Metres in length and need to use two 640's on two signal poles (one at each end of zone) to cover this area. Will the two 640's interact or crosstalk with each other if the zones overlap in the middle?

The 640 is a Vision Detector and does not transmit any RF signal, so having zones overlapping from two separate units will not make them interact with each other.

## FREQUENTLY ASKED QUESTIONS - FAQ'S

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### DETECTION ZONES AND OPERATING MODES

I only have one Signal Pole to mount an 640 to and want to utilise the Enhanced Mode feature to detect pedestrians in a zone size of more than 3 metres x 2 metres. Can I mount two 640's on this signal pole and set one of them up to cover the recommended enhanced area zone of 3m x 2m and the other to cover the extended length beyond 3 metres?

No, it is not possible to cover a zone of more than 3 metres in length in the Enhanced mode of operation by using two 640's from the same mounting position. The Enhanced mode detection will only support height detection of pedestrians in zones of up to 3 metres in length away from the mounting position.

Can I re-calibrate the cameras on the 640 before I set up the zone of detection, or can this be done afterwards?

Re-calibration of the cameras during set-up is recommended following zone set-up and after any subsequent adjustments have been made. This operation can however be performed at any time in the set-up process and will not affect any other parameters or settings already made.

What is the minimum height that the 640 will detect someone standing in the zone?

The 640 will detect any pedestrian from 1.0 Metre in height upwards as specified in HA Specification TR 2507.

In enhanced mode my 640 holds on

Check the zone blocks and ensure all items with height are edited out. Items that are not edited out will be dropped after the presence time, however valid detection will result in the object being seen as a valid target again.

or

Painted lines on the road with hard edges at the end of the zone can be seen as height, careful editing of the zone blocks can overcome this.

### MISCELLANEOUS AND POWER RATING

Can the 640 be used in low light levels and at night?

Yes the 640 employs infra-red LED illumination of the zone to enable it to be used at nighttime and in very low light conditions (minimum of 10 lux recommended ambient light) to maintain full detection of pedestrians in the zone at all times of day (24hrs).

Can the 640's detect LED be switched off at night?

Yes, the detect LED can be switched off via the Tools/Settings tab of the 640 Livewire software.

What is the current consumption of the 640?

The current consumption of the 640 is 160Ma @24Vac and 10mA typical at 230Vac (non-detect state) for day time operation (see table page 9).

What is the Elexon code for the 640?

The Elexon code for the AGD640 is:- 79 52 003 001 100

## FREQUENTLY ASKED QUESTIONS - FAQ'S

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### MISCELLANEOUS AND POWER RATING

When should I choose 'Refresh Image' in Tools menu ?

Refreshing the image is useful if you have changed the physical mounting angle of the unit or the image of the zone has changed ie. Someone stood in the zone when the original image was taken.

Why should I choose 'Restore Factory Defaults' in Tools menu ?

The factory default option is a great fail safe if the user has adjusted lots of settings but for some reason would like to start again.

When should I choose 'Upload Firmware' in Tools menu ?

This tool is only required if a new version of firmware is released by AGD. Please note the update should only be carried out over the livewire cable and is not a regular activity carried out by end users.

What is 'Hold Time' in 'View settings' ?

The hold time is the period of time that the relay output stays engaged after the pedestrian has left the zone.

What is 'Presence Time' in 'View settings' ?

The presence time is the period of time after which the relay output disengages even if a target is still seen.

Is it possible to monitor more than one zone ?

The unit has been designed to only have one zone of detection.

Is it possible to choose between omnidirectional and unidirectional detection?

No, the detector has no direction sensing as it only looks for a presence.

What kind of internal fault could occur ?

In the unlikely instance the unit fails we can put them in to three classes

1. Output opto/relay failure
2. Electronic component failure
3. Power failure

What happens in that/those situations ?

The controller may monitor for long periods of inactivity from the 640 such that the controller can flag this non detect event for further investigation.

If an electronic failure happens the unit will fail to detect, after 72 hours the unit will output a permanent demand. The host equipment should monitor the permanent demand as a fault although it may have picked a failure up as a non-detect fault as detailed above.

If there is a power failure the relay will fail safe giving a permanent demand. The host equipment should monitor the permanent demand as a fault.

## MAINTENANCE

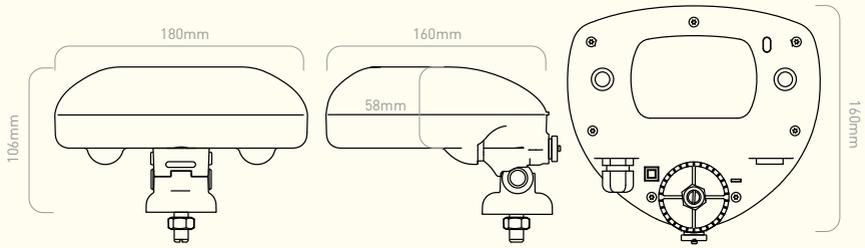
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Being a vision product it is important that the two front lens areas of the detector are periodically cleaned of surface grime and traffic film. Abrasive cleaning agents or materials should NOT be used on the lens area as this will impair the operational performance of the detector.

It is recommended to use clean water and a lint free, non abrasive cloth. Dependent on the installation location this cleaning cycle may need to be adjusted to suit local conditions.

Security of fixings and integrity of cable connections should also be checked.

# TECHNICAL SPECIFICATIONS



## SPECIFICATIONS

<b>Technology</b>	Stereo Digital Vision
<b>Detection Zone</b>	3m x 2m default (see Option 1)
<b>Mounting Height</b>	3-4m nominal
<b>Presence Time</b>	3min default (see Option 1)
<b>Hold Time</b>	0.8 sec default (see Option 1)
<b>LED Indication</b>	Front LEDs for Detect and Bluetooth® Connection
<b>Weight</b>	600g
<b>Housing Material</b>	Black Polycarbonate
<b>Housing Finish</b>	Self coloured black
<b>Sealing</b>	IP65
<b>Operating Temperature</b>	-20° C to +60° C
<b>Power Supply</b>	24 Vac (see Option 2)
<b>Power</b>	3.0-4.0W @ 24Vac day/night dependent
<b>Lux Level</b>	Recommended ambient lighting to minimum of 10 lux
<b>Current</b>	180mA average @ 24Vac - use day + night
<b>Detect Output</b>	SPCO Relay (SPDT) (see Option 3)
<b>Configuration Interface</b>	Livewire Bluetooth® wireless technology or Serial cable
<b>MTBF</b>	Based on field data from 9000 units installed over 3 years we are able to provide with a 90% confidence that the AGD 640 will achieve an MTBF of greater than 20 years.
<b>Approved to:</b>	BS EN 50293, BS EN 60950, TR2507
<b>Patent No.</b>	GB 2448617

## OPTIONS

1. User configurable via Livewire platform
2. Power supply option of 42Vac and 230Vac available
3. Opto isolator output available

## ACCESSORIES

- Mating connector complete with 1.5m cable
- USB detector configuration cable set (with or without Livewire User Login Details)
- Laptop Bluetooth adapter kit (with or without Livewire User Login Details)
- Livewire configuration hardware

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



Restriction on Hazardous Substances

# MANUFACTURING TEST PROCESS

	TEST EQUIPMENT:	<b>PANDORA™</b>	
	PRODUCT TEST:	<b>640</b>	
	TEST FUNCTION:	<ul style="list-style-type: none"> <li>Stereo image final alignment</li> <li>Test cycle time 10 minutes</li> <li>Full operational parameters recorded</li> <li>Equipment dimensions: 2.5x2.0x1.5m</li> </ul>	

**Pandora™** and **Atlas™** are bespoke sets of test equipment designed and developed by AGD Systems. They are dedicated to the testing of the 640 digital vision pedestrian wait area detector and 100% of units manufactured at AGD are Certified by Pandora and Atlas.



The key test functions performed by Pandora to Certify the premium performance of your Intelligent Detection System are:

- Stereo image final alignment
- Full operational parameters recorded
- Verification of Bluetooth and serial communication to detector
- Day and night-time simulated operation
- Test cycle time of 9 minutes



## PRECISION

**PANDORA** analyses the 640 camera images allowing extremely accurate final stereo image alignment. Both cameras will then view a concurrent zone area when mounted at the recommended height and declination angle in the field

The key test functions performed by **Atlas** to Certify the premium performance of your Intelligent Detection System are:

- Focussing and alignment of individual cameras
- >15 hour burn-in
- Test cycle time of 12 minutes

Strong emphasis is placed on the individual camera focussing and alignment during the Atlas test process. This is achieved by progressive comparison of the independent images of target information from each camera.



**Pandora** is a sophisticated lightproof chamber measuring 2.5 x 2.0 x 1.5metres. Projection of simulated target zone information on to the inside back-wall is viewed by both cameras of the 640 allowing very precise final stereo image alignment to be performed. Both cameras will then accurately view a concurrent zone area when mounted at the recommended height and declination angle in the field.

Day and night time simulated operation are possible within Pandora and the night time cycle confirms full operation of the detector's IR illumination.

## LIFETIME PRODUCT TRACEABILITY

There are clearly defined pass and fail criteria at all stages within the Pandora and Atlas test processes. The test results in association with the product build revision are recorded on a product serial number basis. The full suite of test measurements is instantly sent to the dedicated product database within the AGD secure server facility, providing full traceability during the product lifetime.

The AGD Certified symbol is your mark of assured performance.

	TEST EQUIPMENT:	<b>ATLAS™</b>	
	PRODUCT TEST:	<b>640</b>	
	TEST FUNCTION:	<ul style="list-style-type: none"> <li>Camera focussing and alignment</li> <li>Equipment dimensions: 2.0x0.6x0.6m</li> <li>Burn in &gt;15hrs</li> <li>Test cycle time 12 minutes</li> </ul>	

ATLAS was designed and developed by AGD Systems.

# IMPORTANT SAFETY INFORMATION

## SAFETY PRECAUTIONS

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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 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 always take precedence and power must only be applied when deemed safe to do so.
  4. No user maintainable parts are included within the product. Repairing or modifying the PCB, components or antenna 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 PCB, components or antenna. Please contact AGD for further advice.



# 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

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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.



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