

Configurable Handbook Heimdall Detector

Document No.
667/HB/31900/080

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Health & Safety notices

Safety of Installation and Maintenance Personnel



In the interests of health and safety, when installing, using or servicing this equipment the following instructions must be noted and adhered to:

- (1) Only skilled or instructed personnel, with relevant technical knowledge and experience, who are also familiar with the safety procedures required when dealing with modern electrical/electronic equipment, are to be allowed to use and/or work on this equipment. All work shall be performed in accordance with the Electricity at Work Regulations 1989.
- (2) Such personnel must take heed of all relevant notes, cautions and warnings in this Handbook and any other Document or Handbook associated with the equipment including, but not restricted to, the following:
- (3) The equipment must be correctly connected to the specified incoming power supply.
- (4) Mains voltages may be present within traffic signal heads. Before any maintenance work within the signal head is carried out, any mains supply to it must be isolated / switched off.
- (5) Only trained / competent persons should work on this equipment.
- (6) Surfaces within the associated traffic signal get hot, e.g. lamp, lens and reflector. Therefore care should be taken when working in such areas.
- (7) Any power tools must be regularly inspected and tested.
- (8) Any ladders used must be inspected before use to ensure they are sound and not damaged.
- (9) When using a ladder, before climbing it, ensure that it is erected properly and is not liable to collapse or move. If using a ladder near a carriageway ensure that the area is properly coned off and signed.
- (10) Any personnel working on site must wear the appropriate protective clothing, e.g. reflective vests, etc.

RF radiation Safety



The Heimdall detector hardware is a radar device.

This product emits RF signals which are below the statutory requirements. However, it is recommended that precautions are taken to reduce prolonged exposure when operating directly in front of the Heimdall antenna area.

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Safety of Road Users



It is important that all personnel are aware of the dangers to road users that could arise during repair and maintenance of traffic control equipment.

Ensure that the junction area is coned and signed as necessary to warn motorists and pedestrians of any dangers and to help protect the personnel working on the site.

Personnel should also ensure the safety of pedestrians, especially children, who may come into contact with parts of the signal poles.

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Maintenance Provision (MP)**Product Reference**

Heimdall Above Ground Detector.

Installation and Commissioning

All the methods for installation and commissioning are included in this handbook there are no other documents that need to be referred to.

Spares and Maintenance

The Heimdall Above Ground Detector unit is designed for 'return to base' repair - there are no user serviceable parts contained within the enclosure. In the case of a faulty device, replace the unit, ensuring product settings (DIP switches, see section 4.8) and orientation (see section 4.7.1) are identical to those on the original unit.

Modifications

There are no approved modifications for this product.

Warning

Use of components other than those permitted above or modifications or enhancements that have not been authorised by Siemens Mobility, Traffic Solutions will invalidate Type Approval of this product.

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Change History

Version	Date	Change	Author
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2	28 October 2014	TS007704	H. Smyth

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1 INTRODUCTION

1.1 PURPOSE

This handbook gives a general description and specification for the configurable Heimdall product radar detector. It outlines the general procedures for installation, commissioning and maintenance.

1.2 RELATED DOCUMENTS

Document	Title
667/HB/31900/000	Heimdall detector – General handbook
667/HE/20661/000	General installation principles
667/HE/20662/000	Signals and poles (for reference only)
667/HE/20663/000	Detectors and cable terminations
667/HE/20664/000	Installation and testing
667/HE/20665/000	General Installation Guide for Above Ground Detectors

All these documents can be obtained from the Siemens Traffic Solutions website:
<http://www.siemens.co.uk/traffic/en/index/downloads.htm>

1.3 DOCUMENT SPECIFIC ABBREVIATIONS AND DEFINITIONS

Abbreviation	Definition
AGD	Above Ground Detector
CRC	Cyclic Redundancy Check
CR/LF	Carriage Return/Line Feed
DIP	Dual In-Line Package
DFM	Detector fault Monitor
EEPROM	Electrically Erasable and Programmable Memory
HA	Highways Agency
LED	Light Emitting Diode
MP	Maintenance Provisions
PCB	Printed Circuit Board
PDA	Personal Digital Assistant
PLL	Phase-locked Loop
RF	Radio Frequency
SCOOT	Split Cycle Offset Optimisation Technique
SieCOM	Siemens Intelligent Traffic Signal Communications Terminal
SiTOS	Siemens Traffic Communications Protocol
VA	Vehicle Actuated

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2 GENERAL DETECTOR INFORMATION

2.1 THE HEIMDALL DETECTOR

The Heimdall series of above ground detectors incorporates 'state of the art' radar antenna designs, tailored to the specific requirement of a range of detector operations. The range includes On Crossing, Kerbside, a range of Vehicle Approach, SCOOT & MOVA and Stop Line Data detectors.

The detector is housed in a low profile enclosure to minimise roadside clutter.



Figure 1 Heimdall detector

2.2 IDENTIFICATION LABEL

Each detector has an identification label affixed to the back of the unit, which identifies the detector type, part number, any optional extras and serial number.



Figure 2 Example of product label

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2.3 INTERFACE

The Heimdall detector has four external interfaces.

LED

An LED indicator is mounted on the side of the detector which gives a visual indication of the detector status. The LED will be ON for the detect state.

The LED indicator is built into the side access door, which may be fitted so that it either faces forwards (towards on-coming traffic) or backwards (away from on-coming traffic).

Interface cable & power cable

The configurable Heimdall detector is supplied with an interface cable fitted with a 7 way in-line Bulgin Buccaneer connector.

Note that most other Heimdall units use an industry standard 9 way crimped Bulgin Buccaneer connector that mates with a bulkhead connector.

Serial interface

This is an RS232 interface provided via a 3.5 mm jack socket located behind the side access door. It is used during commissioning for configuration.

Configuration DIP switches

All detectors are fitted with configuration DIP switches.

These switches are used for basic configuration changes. More in depth configuration is set by the serial interface.

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3 PRODUCT SPECIFICATIONS

3.1 PRODUCT DESCRIPTION

Heimdall configurable
Part number: 667/1/31900/083

3.2 OPERATIONAL PERFORMANCE

Operating range	3 to 40 m
Lane width	Single vehicle lane width (3.5 m)
Default LED orientation	Rear facing

3.3 ELECTRICAL SPECIFICATIONS

3.3.1 Operating voltage

The Heimdall detector may be powered by a nominal 24 volts a.c. or d.c.

Supply voltage (a.c.)	24 V a.c. \pm 20%
Supply frequency range	48 to 63 Hz
Supply voltage (d.c.)	10.8 V d.c. to 28.8 V d.c.
Absolute maximum voltage	29.0 V a.c. or d.c.

3.3.2 Relay output

Two high reliability solid state relays.
Voltage free output, NO or NC outputs.
On impedance 30 Ω (typ), 40 Ω (max), includes 5 Ω series resistance.
Maximum continuous relay current 120 mA per contact.
60 V over-voltage protection provided.

3.3.3 Operating current

Input voltage	Current
24.0 V d.c.	113 mA
24.0 V a.c.	143 mA

The Heimdall draws the following inrush currents on power up.
DC supply: 3.2 A (max) < 2 ms from 29 V d.c.
AC supply: 4.2 A (max) < 2 ms from 29 V a.c.

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3.4 RADIO FREQUENCY EMISSIONS

Detector variant	Frequency of operation (GHz)	Detection technique	Sweep rate ¹ (MHz/ms)	Max EIRP ² (dBmW)
Configurable	24.05 – 24.25	FMCW	13.17	18.0

¹ Measurement Sweep from F_L to F_H

² Measurement conditions: T_{min} :0 °C, T_{max} :55 °C, U_{min} :19.2 V, U_{max} :28.8 V

3.5 MECHANICAL SPECIFICATIONS

3.5.1 Weight

0.6 kg (without bracket)

3.5.2 Dimensions

150 mm high x 135 mm wide x 90 mm deep

3.5.3 Fixings

M8 bolt mount

Two 13 mm hex nuts for horizontal and vertical adjustment and installation

Two 1.5 mm hex key fixings for access door

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3.6 ENVIRONMENTAL PERFORMANCE SPECIFICATIONS

3.6.1 Operating temperature

Minimum	-40 °C
Maximum	+70 °C

3.6.2 Ingress protection rating

IP56

3.6.3 Vibration performance

EN 60068-2-64 Test Fh

3.6.4 EMC specifications

The Heimdall Detectors have been designed and tested against the following specifications:

Standard	Title
EN50293	Electromagnetic compatibility. Road traffic signal systems. Product standard.
EN300 440	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range.

3.7 HIGHWAYS AGENCY (HA) SPECIFICATIONS

The Heimdall Detectors have been designed and tested against the following HA specifications:

Standard	Title
TR2130	Environmental Tests for Motorway Communications. Equipment and Portable and permanent Traffic Control Equipment.
TR2205	Performance Specification for Above Ground Vehicle Detector Systems for use at Permanent Traffic Signal Installations.
TR2206A	Performance Specification for Above Ground On-Crossing Pedestrian Detection Systems.
TR2207A	Performance Specification for Kerbside Detection Systems for use with Nearside Signals and Demand Units.
667/BH/31900/040	Heimdall Above Ground SCOOT and MOVA Specification.

3.8 MANUFACTURING SPECIFICATIONS

The Heimdall Detectors have been designed and evaluated against the following specifications:

Standard	Title
2002/95/EC	RoHS Directive.
2002/96/EC	WEEE Directive.

3.9 PRODUCT SAFETY

The Heimdall Detectors have been designed and tested against the following specification:

Standard	Title
EN60950	Product Safety

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4 INSTALLATION INSTRUCTIONS

4.1 TOOLS REQUIRED

The following tools are required when installing and maintaining the Heimdall Detector:

- 17 mm hex spanner – for tightening the gland on the in-line socket
- 3 mm flat bladed terminal screwdriver for in-line socket terminals
- 13 mm Socket spanner – for angular adjustment and installation of detector
- 1.5mm Allen key – for side access door and lid
- T-8 Torx driver – alternative tool for side access door and lid
- Small flat bladed screwdriver – for DIP switch adjustment

4.2 ORDER OF INSTALLATION

The recommended order in which installation should take place is as follows:

- 1) Read and understand the safety warnings in the initial pages of this handbook.
- 2) Unpack items from packaging
- 3) Wire the in-line socket to the supply cable
- 4) Set configuration DIP switches (in most cases the detectors will be supplied ready to fit)
- 5) Fit the detector to appropriate mounting
- 6) Perform initial detector alignment
- 7) Connect detector to the inline female mating connector
- 8) Commission the unit

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4.3 DETECTOR PACKAGING

Heimdall detectors are supplied individually in a packing box. The label on the side of the box details the detector type and part number.

Each configurable Heimdall package contains the following:

- 1) Heimdall detector with the interface lead attached
- 2) An in-line mating socket and sealing cap
- 3) Quick installation guide



Figure 3 Heimdall detector

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4.4 DETECTOR INSTALLATION

4.4.1 Detector location

The configurable Heimdall should be located as low as possible and initially set to an alignment angle of 10 degrees. It should be between 3 and 5 m of the closest detection zone when measured horizontally along the ground. It can be mounted further than 5 m from the detection zone but range will start to be reduced the further away it is mounted.

4.4.2 Detector mounting

The detector can be mounted either way up, it should be located on a suitable mounting pole or solid structure that doesn't move. It should be aligned central to the path of vehicles it is intended to detect.

Ensure the installation location of the detector is clear from obstructions, such as signs, trees etc. such that there is a clear line of sight from the detector to the carriageway. Also ensure that there are no close objects in a 2 metre hemisphere in the front of the detector that may move or encroach on the radar.

4.4.3 Detector height

The detector should be mounted at a height between 2 m and 4 m. Mounting height and detection zone are related. Ideally the detector should face the centre of the detection zone and be angled parallel to the ground for longest range, lower mounting heights are preferable. Mounting the detector high up may require it to be angled down to target the detection zone reducing its range and causing ground reflections.

4.4.4 Detector angle

Initially set the alignment angle to 10 degrees. During commissioning this can be refined to optimise its detection capabilities.

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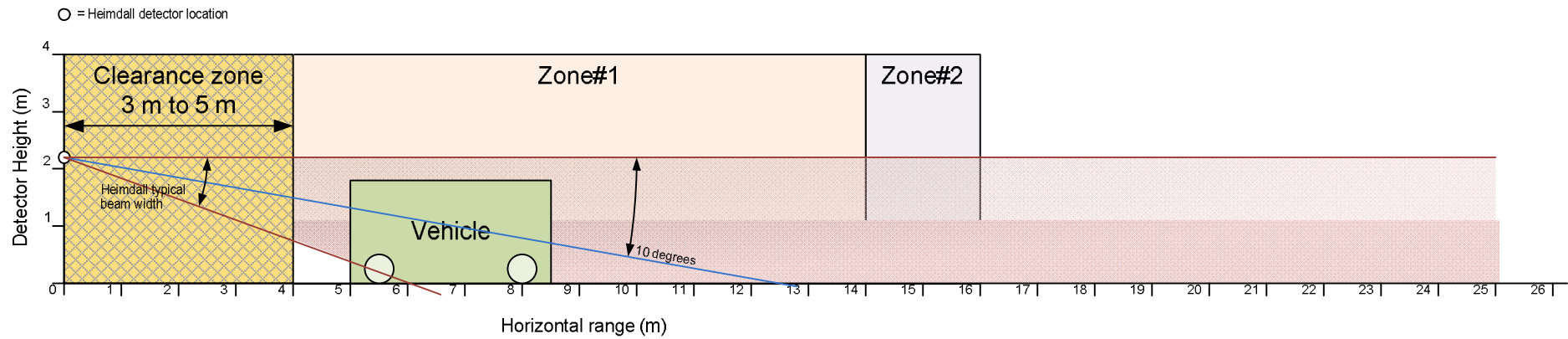


Figure 4 Heimdall configurable location in relation to detection zones

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4.5 ELECTRICAL CONNECTIONS

4.5.1 General

The wires from this connector should be terminated in accordance with the details shown in sections below.



Note 1: Particular attention should be paid to the correct termination of the power supply wires. The RED wire should be used for the POSITIVE AC/DC supply feed and the Black wire for the NEGATIVE supply return.



Note 2: When installing this detector with a 24 AC source, please ensure the 24 AC source is derived from an earthed secondary transformer (as used in standard traffic installations).



Note 3: When using 24 AC supply, only use battery powered interface equipment (e.g. laptop, PDA). Do not connect mains powered/connected interface equipment to the Heimdall series of detectors, as this will cause the detector's fuse to fail.



Note 4: When installing this detector with a Siemens ELV controller or a Siemens ELV controller additional supply, please ensure the RED wire of the interface cable is connected to the POSITIVE (common) connector, the BLACK wire is connected to the NEGATIVE (-24VDC) source and the GREEN (screen), if included, is connected to the POSITIVE (common) connector.

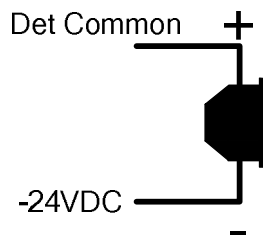


Figure 5 ELV detector power connections

All Heimdall configurable units are supplied with a standard 7 pin 'Bulgin Buccaneer' in-line socket, Bulgin PX0746/S (RS components part number 275-5409). This connector has screw terminals and accepts cable core diameters of up to 1.5mm² (16 AWG). To disassemble the in-line socket you require a Bulgin PX0733 sealing cap/assembly tool. This is provided in the Heimdall packaging. This acts as a sealing cap to the socket when not in use and an assembly tool for the connector when you need to access the terminals. The castellation on the rear of the cap locate in the socket insert and allow it to be unscrewed.



Figure 6 Bulgin PX0733 sealing cap/assembly tool

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4.5.2 Wiring connections

For maximum cable lengths and power options refer to the Heimdall general handbook. This document has tables for cable length, combinations of detectors and different power options.

Pin number	Wire colour	Description
1	Red	Detector Supply (Positive) AC/DC
2	Black	Detector Supply (Negative) AC/DC
3	White	Detector O/P #1 and 2 (Common)
4	Yellow	Detector O/P #1 (Normally Open)*
5	Blue	Detector O/P #1 (Normally Closed)*
6	Violet	Detector O/P #2 (Normally Open)*
7	Pink	Detector O/P #2 (Normally Closed)*

Note: * This signal condition refers to the state when the detector is un-powered (detect state).

Wire colours shown here are those of the internal cabling of the Heimdall the user may chose different colours for external wiring.

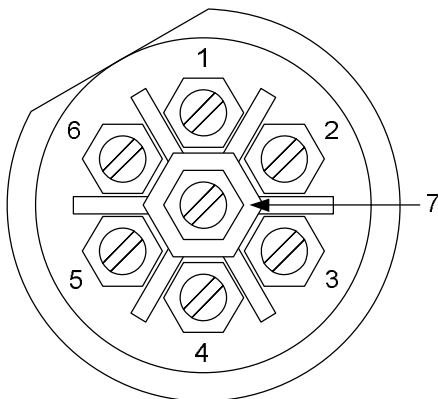


Figure 7 Configurable Heimdall interface socket

Strip the multicore sheath wire back to 35 mm and then for each wire core remove 4 mm of insulation. Cut off or fold back unused cores. Reassemble the in-line socket as shown, a 17 mm hex spanner is required to tighten up the gland on the rear of the connector.

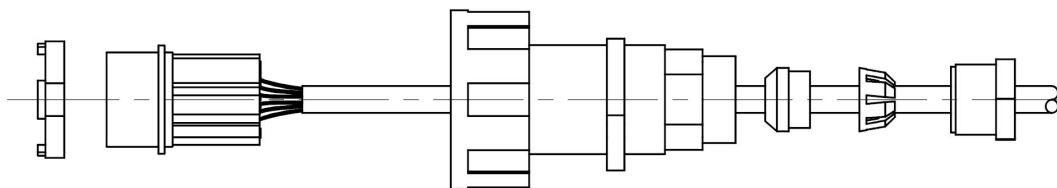


Figure 8 In-line socket assembly

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4.6 CONFIGURATION DIP SWITCHES

All Heimdall detectors are equipped with switches to perform base configuration of the unit. In the case of the configurable Heimdall very few of these switches are used as almost all of its configuration is through a PC.

Access to these switches is gained by removal of the side access door. This comes with a 'built-in' retention mechanism to prevent it falling to the ground when removed from the body. Before removal, make a note of the cover's orientation and ensure it is replaced the same way round.

The switches on the PCB nearest the front of the detector (Digital Processor Board) control the basic functions of the detector and are described in more detail in the appropriate section of this handbook. This switch is referred to, throughout this document, as the 'Detector Configuration DIP Switch'.

The switches provided on the PCB nearest the rear of the detector (Special I/O Board) control the operation of the Siemens Serial Interface (SiTOS). They serve no purpose on the configurable Heimdall and are not used.

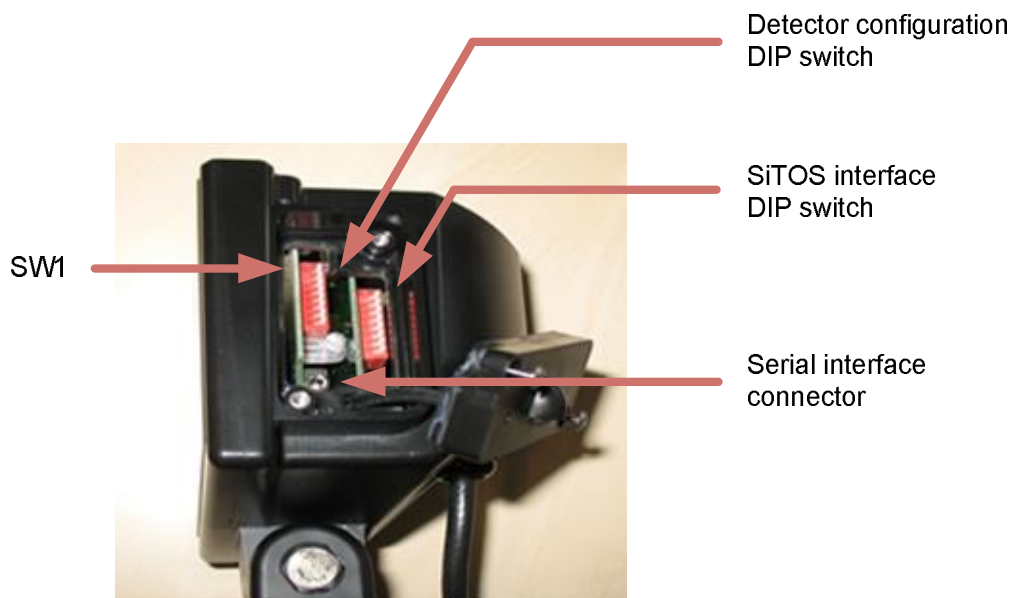


Figure 9 Heimdall detector (view with access door removed)

Note that SW1 nearest the top of the Heimdall on both switches. In the diagram the switch position to the right represents off (0) and the switch positioned to the left represents on (1).

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Table 1 Configuration DIP switch settings

No.	Description	Default
1	Not used	0
2		0
3	Detector LED	0
4	0,0 = Normal detector output 0,1 = LED disabled 1,0 = Shows detector output for 20 mins, thereafter disabled 1,1 = Normal detector output	0
5	Not used	0
6	Not used	0
7	Not used	0
8	Not used	0

There is a second DIP switch on the configurable Heimdall. This switch isn't used on this variant of Heimdall and the switch positions have no effect on operation. The default switch positions for this switch is 0000 0000 for consistency.

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4.7 ALIGNMENT

The Heimdall unit has vertical and horizontal adjustment via a integral mounting-base. Both horizontal and vertical adjustment requires a 13 mm socket or spanner.

4.7.1 Angle Markings

The Heimdall detector mounting-base has a series of graduations which denote 5 degree angle steps. These graduations assist an installer in quickly aligning a Heimdall to the desired angle.

The Heimdall detector body has an arrow which lines up with one of several graduations that are moulded onto the mounting-base. The long graduations represent 15 degree increments and the short graduations 5 degree steps.

With the arrow lined up with the first graduation (the one nearest to the rear of the detector) the angle of the detector is zero (horizontal). Each subsequent graduation angles the detector towards the ground a further 5 degrees.

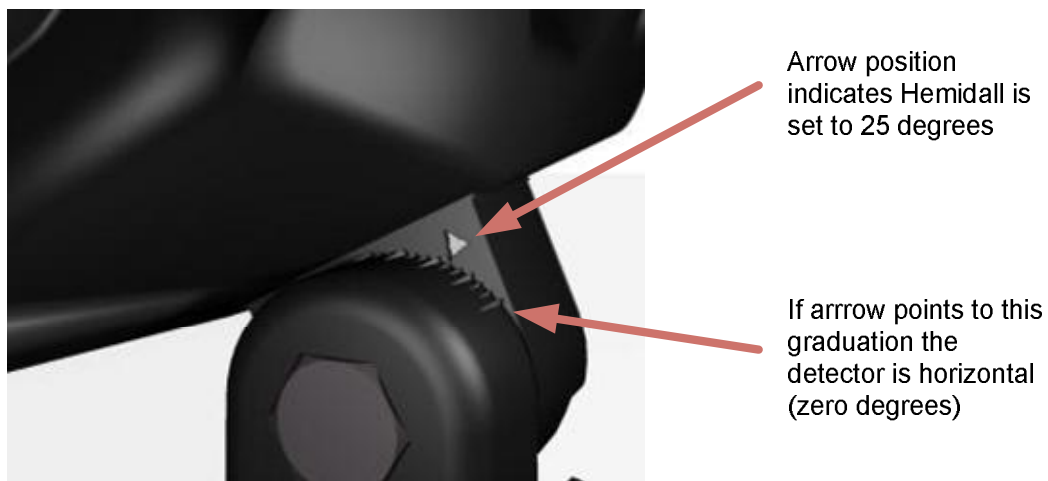


Figure 10 Angle graduations on Heimdall detector

It should be noted that these angles are all in relation to the mounting surface of the detector which is not necessarily the same as that of the road surface.

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4.7.2 'Gun-sight'

'Gun-sight' features are moulded onto the detector case lid, which an installer may use to help align the detector to the centre of the carriageway or the desired detection zone.

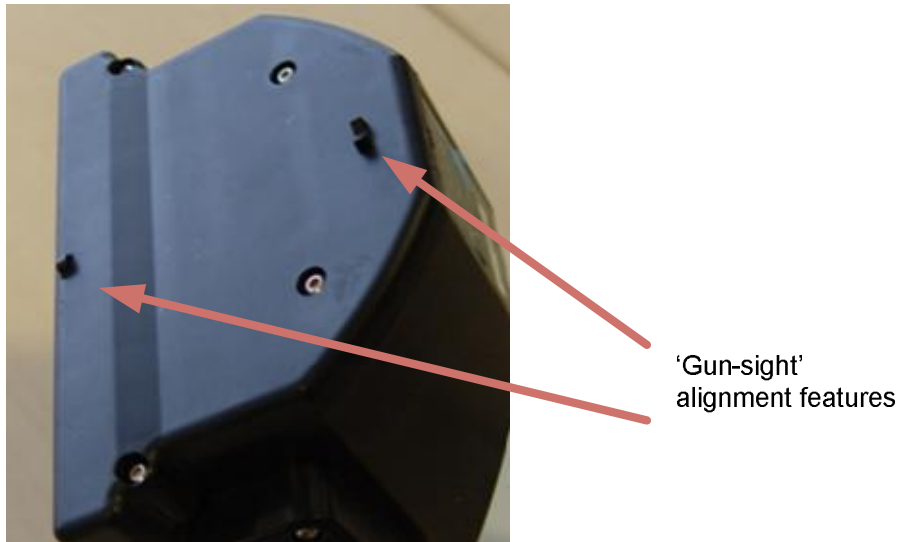


Figure 11 'Gun-sight' features on Heimdall detectors

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5 COMMISSIONING

5.1 TOOLS REQUIRED

The following tools are required when installing and maintaining the Heimdall Detector:

- 1.5mm Allen key – for side access door and lid
- T-8 Torx driver – alternative tool for side access door and lid
- 13 mm Socket spanner – for angular adjustment and installation of detector
- Small flat bladed screwdriver – for DIP switch adjustment
- Serial interface cable
- Windows PC with Heimdall configuration tool software

5.2 GENERAL INSTALLATION CHECK

The detector will be installed as per the preceding sections, which include the appropriate adjustments for the tilt / alignment to the specific point on the road surface



Before applying power to the Detector, ensure that the following checks are undertaken:

- The detector power leads are connected to the correct terminals all the way back to the power source.
- The correct detector relay outputs are used, normally closed or open as is necessary.
- The detector basic configuration has been set by the DIP switches as desired.

5.3 COMMISSIONING PROCEDURE

Confirm power is applied to the Heimdall. An easy way to do this is to disconnect the inline connector to the unit and then reconnect. On power up the Heimdall will illuminate its detection LED.

Remove the access door and connect the serial interface cable. Use a PC with the configuration tool to setup the detector's parameters.

In the appendix of this document is a parameter form where the settings for the Heimdall unit can be noted. This allows them to be duplicated if the unit needs replacement.

If the unit can't be setup as desired via the configuration tool alone, slacken off the mounting fixings and adjust it. A second person may be required to view the signal profile while the unit is adjusted. Take note of any ground reflections. These will occur if the unit is facing downwards at too greater angle, this will mask vehicle detection to the right of the reflection so must be avoided.

Retighten the detector fixings after adjustment. Paint or coloured varnish may be used to mark the unit with the adjustments to prevent this exercise being repeated if the unit is knocked or moved.

Ensure the detector configuration access door is replaced correctly.

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6 HEIMDALL CONFIGURABLE SETUP

6.1 SERIAL INTERFACE

All Heimdall detectors are equipped with 3.5 mm jack socket serial interface connector. This allows the Heimdall to be configured using standard terminal interface software or specific configuration software for that unit. The use of a terminal interface cable is required (667/1/31962/000), this cable is unique to the Heimdall product.

Access to the serial interface connector is gained by removal of the side access door. This comes with a 'built-in' retention mechanism to prevent it falling to the ground when removed from the body. Before removal, make a note of the cover's orientation and ensure it is replaced the same way round.

Typically the serial interface can be used with a cable up to 10 metres long allowing the configuration to be done from ground level. The standard Heimdall serial cable (667/1/31962/000), is 1 metre long. Suitable RS232 extension cables can be purchased from a variety of IT suppliers.

6.2 HEIMDALL CONFIGURATION TOOL

This tool is the easiest way to setup and configure the Heimdall. It reads data back from the Heimdall continuously and shows the signal the Heimdall is receiving in real-time. This allows appropriate threshold settings to be derived.

The tool runs on a Windows 7 or Windows XP machine. It requires the PC to have a serial port or alternatively a USB to RS232 convertor can be used although update performance be slower when using a USB convertor.

The software comes with a readme file. Use this to install it on the target machine.

When first using the software you have to select the desired com port. When a PC has an integrated serial port this is usually com1. If you are using a USB adaptor you will have to use the Windows device manager to identify to which com port the interface has been allocated.

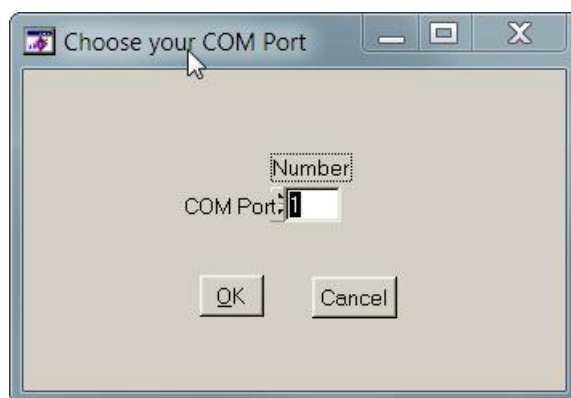
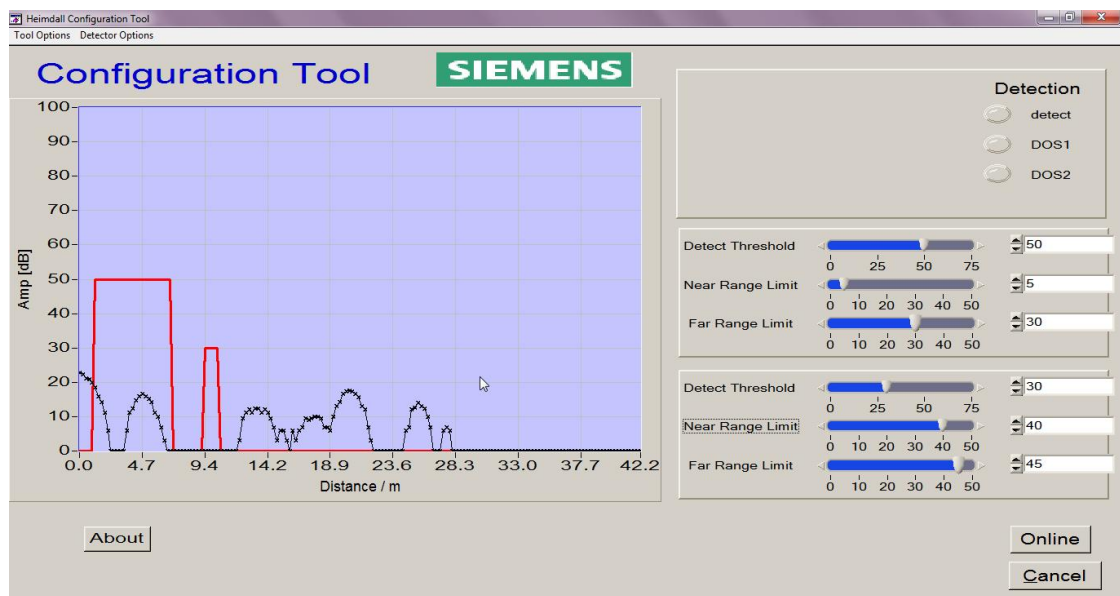
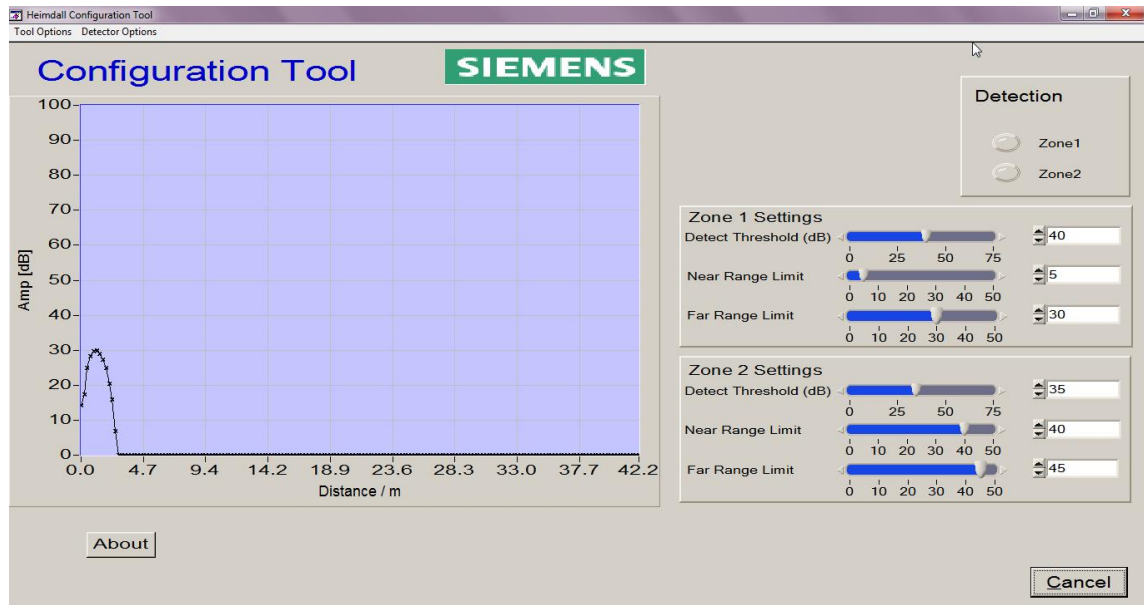


Figure 12 Heimdall config tool - select com port

Once the desired comm. port is selected and a powered Heimdall is connected you will see the signal profile appear on the screen and be updated. If this doesn't occur there is a communications issue with the Heimdall, recheck the cables to the detector's serial port.

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The configurable Heimdall has the following settings that can be changed via the configuration tool:

Zone#1 detect threshold

This is the detection threshold for the zone closest to the detector. Its units are dB. It can range from 0 to 75 dB. It can either be typed in or entered by using the sliding bars. Use the signal profile to determine a suitable value for this figure.

Zone#1 near range limit

This is the distance closest to the detector when you want the left most edge of the zone. Its units are bins rather than metres. In a later update to the tool it will be equated to metres.

Zone#1 far range limit

This is the distance from the detector where you want the right most edge of the zone. As before its units are bins rather than metres.

Zone#2 settings

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These are set the same way as those for zone 1.

After the zones are setup a red line will appear on the signal profile to indicate the zones and their relationship to the signals the Heimdall is receiving.

Detection window

Above the zone settings is a status display showing the Heimdall detection status for the different zones. This can be used to confirm activation of each zone.

Detector output settings

Second output

This is a checkbox to indicate if the relay 2 should be used for the zone#2 activation. If it isn't selected relay 2 is inhibited.

Two zone tracking

Two zone tracking is used to link the two zones and provide the output to relay 1 and the Heimdall's status LED.

Zone#2 has to be activated followed by Zone#1 to then cause relay 1 to switch on. If the zones aren't activated in this order the relay will remain off even if Zone#1 has a signal that has breached its threshold.

Detector on/off timings

On timer

This is the duration of the activation that is required before the relay will be switched on. Its units are in seconds and it can be set from 1 s to 10 s. This is used to prevent nuisance activations if a momentary rise in signal causes false activation.

Off timer

This is the hold time the relay will be held on after the detection signal has dropped below the required level. Its units are in seconds and it can be set from 1 s to 10 s. This is to prevent premature off activations if a momentary drop in signal cause the detector signal to drop below the threshold.

Specific zone parameters are changed through the tools main window. Detector output settings are done via the menu bar of the tool. This gives access to two windows as shown in the following figures.

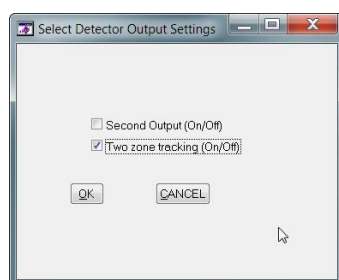


Figure 13 Detector output settings window

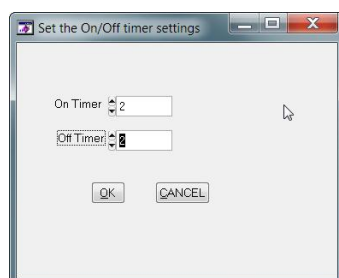


Figure 14 On/Off timer settings window

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6.3 TERMINAL CONFIGURATION

The configurable Heimdall can be configured manually via the terminal interface. A disadvantage of this method is that you can see the signal profile as it is purely a test input/output terminal. It does allow settings to be quickly checked or tweaked but the configuration tool should be used for initial commissioning.

Either a PC or a PDA, in conjunction with terminal software, may be used as a terminal. Suitable terminal software is Hyperterm or PDA ZTerm.

The terminal (either PC or PDA) should be connected to the serial interface connector on the detector the serial interface cable (667/1/31962/000).

The Heimdall serial interface settings are as follows:

Description	Parameter
Bit rate (bps):	19200
Data bits:	8
Parity:	None
Stop bit:	1
Flow control:	None

When the Terminal is connected and the '**return**', '**enter**' or '**CR/LF**' key pressed a number of times '**SIEMENS**' should be displayed together with a prompt character '**>**' indicating that the terminal has been recognised and is awaiting a user command.

The following commands are used with the configurable Heimdall product. For a comprehensive list of commands including fault codes please refer to the Heimdall general handbook, 667/HB/31900/000.

Bootloader revision

Enter

BLR

Response

v1.00.000

This shows that the bootloader revision is 1.00.000. The bootloader is a special piece of firmware that allows the Heimdall main firmware to be updated.

Firmware revision

Enter

PIC

Response

PIC.31972 V0.00.006

This is the firmware release version number. PIC stands for Program Identity Code.

Powered on time

Enter

OHC

Response

OHC 00:000:07

OHC stands for Operational Hours Counter. The Heimdall continuously monitors how long it has been operational, this data survives a power cycle. The response is of the form yy:ddd:hh.

Relay state

Enter

DOS

Response

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DOS 0: 0

This shows that relay 1 is off (relay 1 = DOS 0)

Enter

+

This advances the command to the next relay output.

DOS 1: 1

This shows that relay 2 is on (relay 2 = DOS 1). This response continually shows the relay state so you can monitor it to see under what situations it changes.

Configurable Heimdall settings

All the configurable settings can be viewed or changed using the ERA command.

Enter

ERA

Response

ERA 0: 5

Use the + key to step through each of the settings.

ERA number	Parameter description
ERA 0	Zone#1 near range limit
ERA 1	Zone#1 far range limit
ERA 2	Zone#1 detect threshold
ERA 3	Zone#1 detect threshold
ERA 4	na
ERA 5	na
ERA 6	na
ERA 7	On timer
ERA 8	Off timer
ERA 9	Zone#2 near range limit
ERA 10	Zone#2 far range limit
ERA 11	Zone#2 detect threshold
ERA 12	Zone#2 detect threshold
ERA 13	Two zone tracking enabled
ERA 14	Relay#2 enabled

Change the ERA settings as follows:

Enter

ERA 0=10

This example changes the ERA 0 parameter to 10.

Note that the Heimdall configuration tool ensures that you can't enter in appropriate parameters. There is no such check on the terminal and you could change settings that will stop the Heimdall from functioning correctly so make changes with care.

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7 MAINTENANCE



Before undertaking any maintenance work on the product read the safety warnings in the front section of this handbook.

7.1 ROUTINE MAINTENANCE VISITS

The interval between visits depends on local conditions but may consist of the following:

- Check the detector securing bolt to ensure it has not worked loose.
- Re-align the detector if necessary.
- Ensure the configuration access door is properly retained and seated.
- Clean the LED indicator lens with a soft cloth to remove dirt and grime.
- Check the connection lead for any damage.

7.2 FIRST LINE MAINTENANCE

First line maintenance will be achieved on a modular replacement basis.

Check which type of detector is fitted, make a note of its alignment to the installation and only replace with a similar part. When carrying out detector maintenance or replacement, wherever possible, remove the suspect item from its mounting position and work on the ground.

Ensure the replacement detector configuration switches are set to the same positions as the original unit.

Read the accompanying installation information to see if the detector requires any additional special configuration using the terminal interface.

Install and re-align the detector to the previously noted position.

7.3 SECOND LINE MAINTENANCE

All faulty units should be returned for repair to the following address:

Siemens Mobility, Traffic Solutions
Sopers Lane
Poole
Dorset
BH17 7ER
United Kingdom

7.4 FIRMWARE UPGRADE

All Heimdall units can have their firmware upgraded using the serial interface cable. To do this upgrade software and the firmware image in hex format is required. Siemens can provide this in exceptional circumstances. This feature isn't offered as part of Siemens standard support as it has the possibility of rendering the unit unusable if applied to the wrong unit or incorrectly. If a unit becomes damaged in this way it will have to be sent back to Siemens manufacturing facility for reprogramming.

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8 PART NUMBERS

Listed below are the part numbers for the Siemens Heimdall Above Ground Detector to be used as spares.

Description	Part number
Heimdall configurable detector	667/1/31900/083
Serial interface cable (Heimdall)	667/1/31962/000
Helios side mount & AGD bracket assembly	667/1/30200/058
Heimdall extension arm bracket assembly	667/1/31941/000
Heimdall spacer bracket assembly	667/1/31942/000
Heimdall kerbside mounting bracket kit	667/1/31910/000
Heimdall kerbside extension bracket kit	667/1/31911/000
Heimdall kerbside straight bracket kit	667/1/31914/000
Heimdall inline installation assistance cable	667/1/31912/000

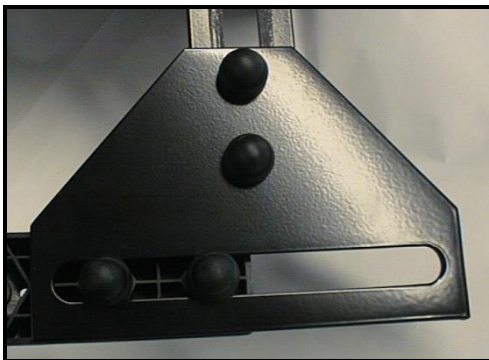


Figure 15 Helios side mount & AGD Bracket Assembly (667/1/30200/058)



Figure 16 Heimdall Extension Arm Bracket Assembly (667/1/31941/000)

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Figure 17 Heimdall Spacer Bracket Assembly (667/1/31942/000)

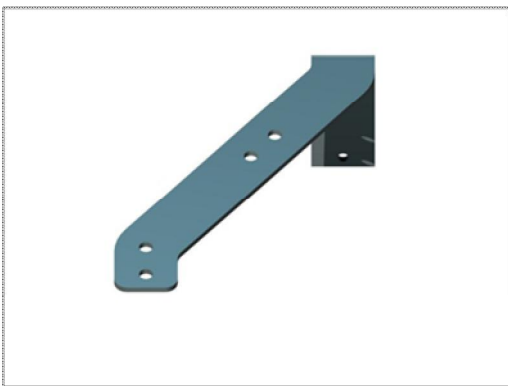


Figure 18 Kerbside Mounting Bracket (667/1/31910/000)



Figure 19 Heimdall Kerbside Extension Bracket (667/1/31911/000)

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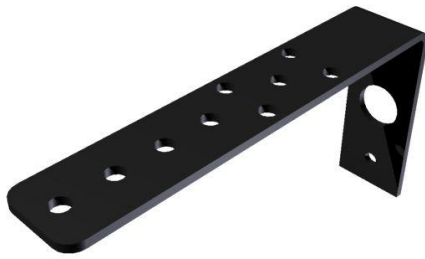


Figure 20 Heimdall Kerbside Straight Bracket (667/1/31914/000)

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9 APPENDIX

9.1 HEIMDALL SETTINGS SHEET

Site location	
Site reference	
Date	

Heimdall part no:	667/1/31900/083
Heimdall serial no:	
Heimdall firmware ver:	
Detector height (mm)	
Detector hypotenuse (mm)	
Detector down angle	

Detection zone #1

Detection threshold (dB)		ERA2, ERA3
Near range limit		ERA0
Far range limit		ERA1

Detection zone #2

Detection threshold (dB)		ERA11, ERA12
Near range limit		ERA9
Far range limit		ERA10

Relay#2 enabled		ERA14
Two zone tracking enabled		ERA13

On timer (s)		ERA7
Off timer (s)		ERA8

Zone #1 is that nearest the detector

Detector height is measured from ground to the lowest part of the detector.

Detector hypotenuse is the distance from the centre of the detector antenna to the ground surface. It is can only easily be measured with a laser measurement tool.

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