EG3 (ERIC Generation 3) Controller

Installation and Operating Manual

(Software version V1.12.02)

Revision History

Revision	Date	Notes
1-540825-1	03/01/2016	New template – First version
1-540825-2	03/09/2017	Updates of: Software version from V1.05 to V1.12.02, Model variants, List of available EG3 product codes, Loading a HELEN database into EG3, Accessing other functions of the EG3, External Inputs I0 and I1, Network, Volumes Menu in Simulation Mode, Sign test function, Appendix C: Builds Features, Appendix F: Protocols - Port options, Appendix H: Configuration code options (AM, DI, DK, IK, LT, TV, QG, Qn), Appendix I: CONFIG.INI file

Please note that this document is subject to continual updating: please ensure you are using the latest edition.

This edition: **March 09, 2017**

CONTENTS

GLOSSARY

Explanations relate to the use of the word in this manual and other Hanover publications; the word or phrase may have other meanings elsewhere.

Automatic mode - automatic destination change by external protocol can be enabled by selecting the relevant protocol. In this case, the EG3 will then be in "automatic mode".

bootloader - the section of software a device runs when powered up that is responsible for starting the main application and for allowing software updates

browse - move up / down a list of options in order to find the desired item

controller - on-bus device used by driver to populate signs with text and graphics which have been prepared using Helen software

cycle - in the context of "cycling the power": a reference to the action of turning a piece of equipment off (cutting the power to it) and then on again

data loader - early controllers were able to be used to load other controllers with data; the EG3 simply uses a USB stick

database - information uploaded to a controller from a standard PC using HELEN sign-editing software. Includes destination / route number information, advertising and other service information (e.g. emergency announcements, school bus messages etc.)

DERIC - **D**iminished **E**lectronic **R**oute **I**ndicator **C**ontroller

(destination) code - the number used to identify a particular destination from a list. Each code must be unique within the list and can contain up to 10 alphanumeric characters. It is the code to be entered on the driver's controller

(destination) list - an electronic list of information for one or more routes / destinations specified by the HELEN software and deployed via a controller on a sign

display - sign

EEPROM - type of memory chip that retains its data when its power supply is switched off

ERIC - **E**lectronic **R**oute **I**ndicator **C**ontroller

Hancis - The Hancis Audio Video Computer provides the operator with video, audio and GPS within a single unit and can be placed anywhere within the vehicle. It can be interfaced to TFTs which give high quality display and functionality for on-bus passenger information

HELEN - **H**anover **E**xtended **L**ist **E**ditor for Destinatio**N** Displays - a software tool used to create and edit text, graphics and destination lists on a pc as they will appear on a Hanover sign

HTC - **H**anover **T**ransport **C**omputer - a location aware media player specifically designed for use within the public transport passenger information sector

IBIS - communications standard - mostly used on buses with German equipment

I/P - Input

LED - light-emitting diode: most Hanover signs use LED technology

Mini fit (connector) - two-piece pin and socket interconnection where cylindrical spring-metal pins fit into cylindrical spring-metal sockets. The pins and sockets are held in a rectangular matrix in a nylon shell.

multi-drop - connection of several devices to a single communication or power line (in 'daisy chain' configuration)

O/P - Output

PCB - **P**rinted **C**ircuit **B**oard

piezo sounder - electronic device commonly used to produce sound

RS485 - the main electrical communications standard used for communications between signs and controller

RTC - **R**eal **T**ime **C**lock

RX - reception channel of serial port

SAE J1708 - communications standard. SAE International, formerly the Society of Automotive Engineers, is a U.S.-based, globally active professional association and standards organisation for engineering professionals in various industries

sign - equipment used to present text and graphics for viewing by passengers, usually located on the front, side or rear of, or inside a bus

Super-X - display control language for determining the way text is presented on a sign

TX - transmit channel of serial port

UTC - Coordinated Universal Time: the primary time standard by which the world regulates clocks and time. It is one of several closely related successors to Greenwich Mean Time (GMT). For most purposes, UTC is synonymous with GMT.

1 Introduction

1.1 General

The best understanding of Hanover's ERIC Generation 3 (EG3 for short) controller will be gained by reading the complete manual - but this is not always practicable for the user. The document has therefore been written in a modular fashion in order to allow users to refer only to those parts of it they need: topics should thus appear relatively self-contained. However, there are several useful cross-references, both to other points within this manual, to other Hanover manuals and to external documents as appropriate. Accordingly, when consulting this document using a pdf reader, it is helpful to have the 'Back' (or 'Previous') and 'Next' (or 'Skip' / 'Forward') buttons enabled to obtain maximum benefit from the intra-document cross-references. For example, in Adobe Reader, press F8 to view the toolbar if it is not already visible. Right-click on a blank section of the toolbar and, in the 'Page Navigation' menu, please ensure that 'Previous View' and 'Next View' are ticked.

Reference is made to the LED destination signs and to the HELEN software used with the EG3: detailed manuals are available for these from Hanover.

Destination signs for buses and coaches are normally used on the front, side and rear of the vehicle. This practice is so widespread that Hanover often uses 'front, side and rear' to describe equipment used in those positions. However, it is important to stress that any sign can be used anywhere on a vehicle, subject to the relevant electrical / communications connections being made.

Information about the location of the controller is provided in section .

1.2 Scope of this manual

This manual covers the installation and operation of the Hanover EG3 controller. It also has troubleshooting and FAQs sections which address the more common problems and queries.

Manual covers	
Section 1	Introduction to the manual (also contains technical information for the controller) and the EG3
Section 2	Installation
Section 3	Operation
Section 4	Troubleshooting
Section 5	FAQs which address the more common problems and queries
Manual does not cover	
The destination or in-bus signs themselves: • The installation and service of the signs: for more details, please refer to the **LED destination display - installation and service manual (ref. 540156)** • Technical specification for individual signs: this is provided separately for each variant	
The use of the HELEN sign-editing software for composing messages for the signs: for more details, please refer to the **HELEN sign-editing software - Operating manual (ref. 540125)**	

Hanover produces many bespoke and custom systems - for example, with special wiring adaptations or software features. The EG3 controller will work well as part of a networked system (including with third-party hardware) but users are advised to consult their system-specific documentation and / or consult Hanover (please refer to section 4.3 Hanover Technical Support) where necessary.

1.3   Brief history of Hanover controllers

Year	History
1989	The first ERIC (**E**lectronic **R**oute **I**ndicator **C**ontroller) had an extensive keypad and four serial ports.
1991	The original and black front DERIC (**D**iminished **E**lectronic **R**oute **I**ndicator **C**ontroller) was introduced with 128k flash memory, later expanded to 1Mb.
1999	The grey front DERIC+ was introduced. As a more versatile controller, it boasted faster loading and could also be used as a data loader. The DERIC+ deployed a standardised communication plug-in and allowed firmware updates directly via a serial port instead of having to change an e-prom.
2003	Similar in many respects to the DERIC+, the ERIC+ introduced a graphic display to controllers and could be supplied with a 4Mb memory.
2005	The ERIC++ had the same features as the ERIC+ but contained a different and faster processor.
2011	The DG3 (DERIC Generation 3) was introduced, bringing a larger (more pixels) graphic display and USB connectivity. It worked across a wider voltage range (9-36V) than the DERIC (24-36V). An extra key was added to the front panel and it was generally easier to use. The DG3 cannot be used as a data loader however, although the USB facility renders the loss of this feature largely irrelevant.
2014	The arrival of the EG3 (ERIC Generation 3) heralded USB connectivity for the ERIC controllers family, has up to four secondary communications ports and a still faster processor. It also has Ethernet connectivity.
> 2014	DG3 will have Ethernet connectivity in future versions.

1.4   System overview

The EG3 is a powerful unit that controls how the information is presented on destination and in-bus signs located on buses and coaches. An on-board computer can also be used to deliver full colour, high resolution pictures, video clips and announcements. It has a key panel operation with all configuration settings hidden behind a user-programmable lock code. The EG3 can be used to show route / destination details, advertising and other information, all programmed using the HELEN sign-editing software. It can also be connected to (work with) other items of on-board equipment.

Figure 1 - diagram showing typical controller / signs configuration. Each unit is powered individually.
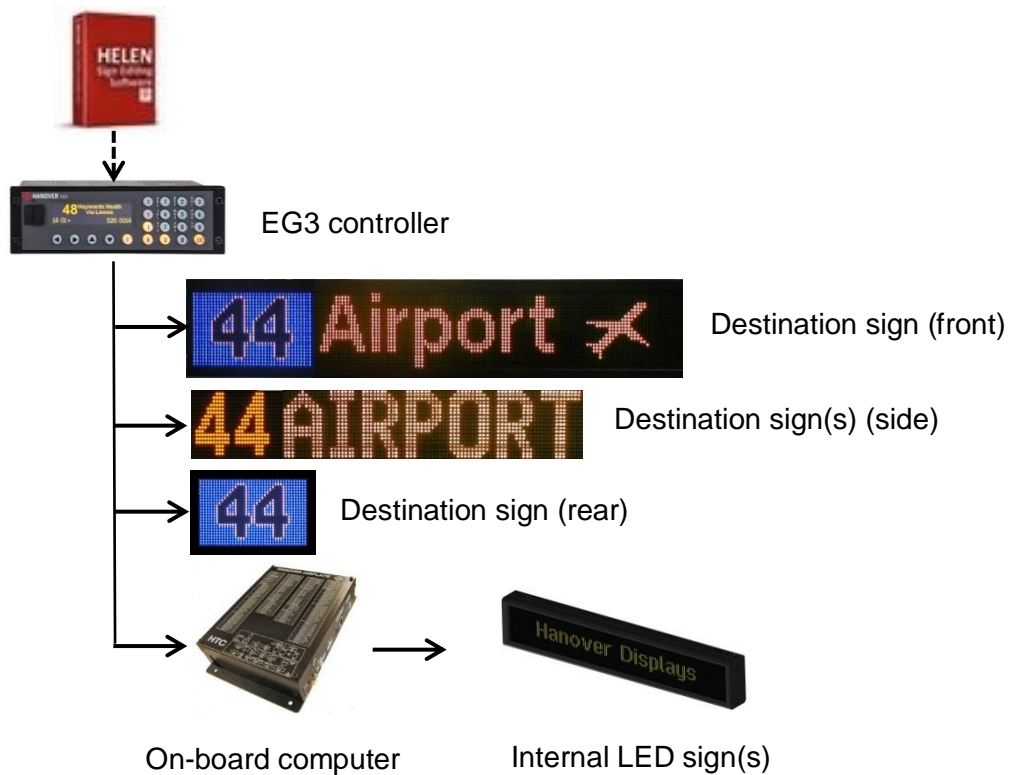
Figure 2 - diagram showing a communications network which includes an on-board computer.

A database of information for all signs within a system is created on a standard Windows PC, using HELEN software. The database is then uploaded to the controller. Each sign has a processor with an address switch that is associated with the configuration for that sign set within HELEN. This allows it to receive the appropriate information via the EG3 which is connected to the sign by a multi-drop communications network.

Note that any EG3 configuration parameters set in HELEN that are loaded into the controller will be overwritten by any manual changes to those parameters made later directly via the controller itself. Further list

downloads will overwrite such manual changes if the configuration option is selected when exporting the list from HELEN.

Note also that any manual alterations that conflict directly with HELEN-programmed parameters should be avoided as the results are unpredictable.
Full technical details are provided in section 3 Operation.

1.5   Identification

The controller's identification can be determined from the silver label on the casing of the controller or the sign depending on the installation.

In addition to identifying the model, it may be necessary to determine the software version installed, especially for technical support queries. To ascertain the version in use, go to 'Show status' in section 3.5.1 Status options.

Figure 3 – silver label on casing of controller

Features	Meaning	Description
Product no.	Product number	Identifies the specific model and is explained in section 1.5.1 Model variants.
Position	-	Indicates where the controller is likely to be fitted on the vehicle.
Type	-	Basic information provided.
Our order no.	Our order number	Number used for internal use by Hanover.
Your O/N	Your Order Number	Number used to identify the order for this controller.
Your Part no.	Your Part number	Specific to each controller.
S/N	Serial Number	Specific to each controller.
End User	-	Is generally the ultimate operator of the vehicle.
Builder	-	References the name/customer to which the product is shipped.
Job reference	-	For the use of builder or end user.
Manufactured	-	Date when the finished controller is available for shipment after all checks, tests and approvals are complete.
Made in the US	-	Shows the country of manufacture of the controller.
Exx-yyR-zznnnn	United Nations Standard Type Approval (EMark) number	xx = country code. yy = regulation number. zz = regulation revision number. nnnn = approval certificate number.

1.5.1 Model variants

The EG3 controller has a product number of **EG3RS-BT-IF1-IF2** where:

- **EG3** stands for **E**RIC **G**3

- **RS** stands for **R**adio **S**lot

- **BT** stands for **B**uild **T**ype

- **IF1** and **IF2** stand for **I**nterface **1** and **2** and indicate the two optional secondary communication interfaces

At present, the variants (variable parts of the product code) are as follows:

BT	IFA	IFB
01 – Base build	01 – RS232 02 – Reserved 03 – Built-in RS485 (no plug-in) 04 – Isolated RS485 05 – IBIS Slave 06 – J1708 07 – IBIS Master	00 – None Interface B site not present on the base build
02 – Intermediate build		00 – None 01 – RS232 02 – Reserved 03 – RS485/RS422 04 – Isolated RS485 05 – IBIS Slave 06 – J1708 07 – IBIS Master
03 – Obsolete		
04 – Full build		

1.5.2 List of available EG3 product codes

Product code	Features[1]	Link Jumpers[2] LK1/LK2	Retainer clip[3]
EG3RS-01-01-00	Base build 1 x RS485 3 x RS232	No	Yes
EG3RS-01-03-00	Base build 2 x RS485 2 x RS232	Yes[4]	No
EG3RS-01-04-00	Base build 1 x RS485 2 x RS232 1 x RS485ISO	No	Yes

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[1] For more information about builds features, please refer to Appendix C: Builds Features.
[2] Link jumpers LK1 and LK2 are fitted if Interface 1 (IF1) = 03 i.e. for any product code such as EG3RS-xx-03-xx.
[3] A retainer clip is fitted if any interface plugin is used. The retainer clip secures the plugin interfaces to the EG3 motherboard. Note: Part number is 5250-20-11. Refer to drawing in Appendix C: Builds Features.
[4] If LK1 and LK2 are fitted, any interface fitted to IF1 is not used and instead communication is routed via an internal RS485 hardware.

Product code	Features[5]	Link Jumpers[6] LK1/LK2	Retainer clip[7]
EG3RS-01-05-00	Base build 1 x RS485 2 x RS232 1 x IBIS Slave	No	Yes
EG3RS-01-06-00	Base build 1 x RS485 2 x RS232 1 x J1708	No	Yes
EG3RS-01-07-00	Base build 1 x RS485 2 x RS232 1 x IBIS Master	No	Yes
EG3RS-04-01-00	Full Build 1 x RS485 3 x RS232 1 x Ethernet	No	Yes
EG3RS-04-01-01	Full Build 1 x RS485 4 x RS232 1 x Ethernet	No	Yes
EG3RS-04-03-00	Full build 2 x RS485 2 x RS232 1 x Ethernet	Yes[8]	No
EG3RS-04-03-03	Full build 2 x RS485 2 x RS232 1 x RS485/RS422 1 x Ethernet	Yes[9]	Yes

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[5] For more information about builds features, please refer to Appendix C: Builds Features.

[6] Link jumpers LK1 and LK2 are fitted if Interface 1 (IF1) = 03 i.e. for any product code such as EG3RS-xx-03-xx.

[7] A retainer clip is fitted if any interface plugin is used. The retainer clip secures the plugin interfaces to the EG3 motherboard. Note: Part number is 5250-20-11. Refer to drawing in Appendix C: Builds Features.

[8 & 9] If LK1 and LK2 are fitted, any interface fitted to IF1 is not used and instead communication is routed via an internal RS485 hardware.

Product code	Features[10]	Link Jumpers[11] LK1/LK2	Retainer clip[12]
EG3RS-04-04-00	Full build 1 x RS485 2 x RS232 1 x RS485ISO 1 x Ethernet	No	Yes
EG3RS-04-04-04	Full build 1 x RS485 2 x RS232 2 x Isolated RS485 1 x Ethernet	No	Yes
EG3RS-04-05-00	Full build 1 x RS485 2 x RS232 1 x IBIS Slave 1 x Ethernet	No	Yes
EG3RS-04-06-00	Full build 1 x RS485 2 x RS232 1 x J1708 1 x Ethernet	No	Yes
EG3RS-04-07-00	Full build 1 x RS485 2 x RS232 1 x IBIS Master 1 x Ethernet	No	Yes

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[10] For more information about builds features, please refer to Appendix C: Builds Features.
[11] Link jumpers LK1 and LK2 are fitted if Interface 1 (IF1) = 03 i.e. for any product code such as EG3RS-xx-03-xx.
[12] A retainer clip is fitted if any interface plugin is used. The retainer clip secures the plugin interfaces to the EG3 motherboard. Note: Part number is 5250-20-11. Refer to drawing in Appendix C: Builds Features.

1.6 Controller overview

1.6.1 Front view

USB socket: for loading data and firmware

OLED display: high contrast, wide viewing angle

X & Y: round trip (aller-retour)

Alphanumeric keys: for entering route, destination, information and lock codes

Left, right, up and down arrow keys: for navigating through option list

F: Function
3.5 Accessing other functions of the EG3

I: Information
R: Route
D: Destination

Ent: Enter
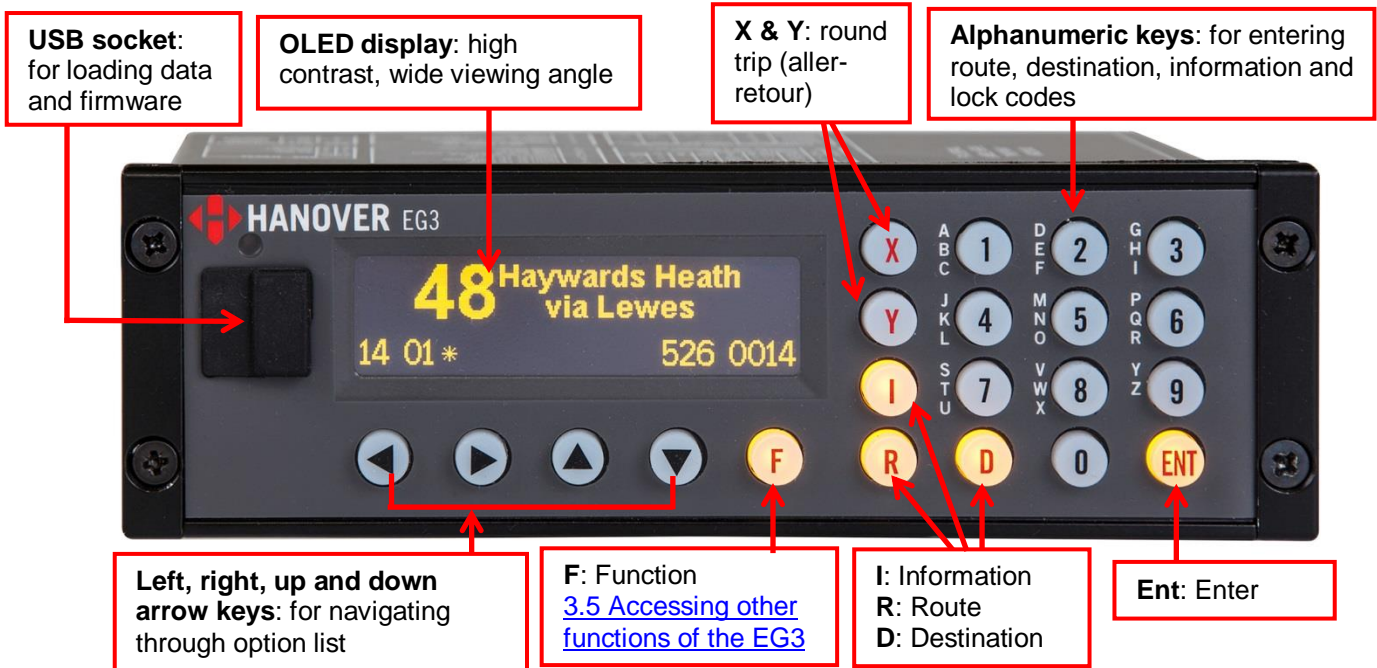
Figure 4 - diagram showing the front side of the controller

Notes:

- Keys currently valid are backlit for ease of use in reduced lighting conditions. Only the keys which are valid at any given point are backlit.
- Keypad illumination level adjusted according to ambient light
- Auto-screen dimming (adjusted according to ambient light) to reduce driver glare and prolong unit life. The dimming feature activates automatically a few seconds after the unit has been left idle.
- 8Mb internal flash memory ensuring it is capable of meeting the future requirements of the transport industry, with the ability to store large lists alongside complex firmware.
- Internal piezo sounder.

For more information about the other specifications of the EG3, please refer to 1.7.1 Specification.

1.6.1.1 Example of OLED display

Content of front sign or driver message for current destination

Information code

Destination code

Advert code

* displayed if there is one or more sign errors

Route code
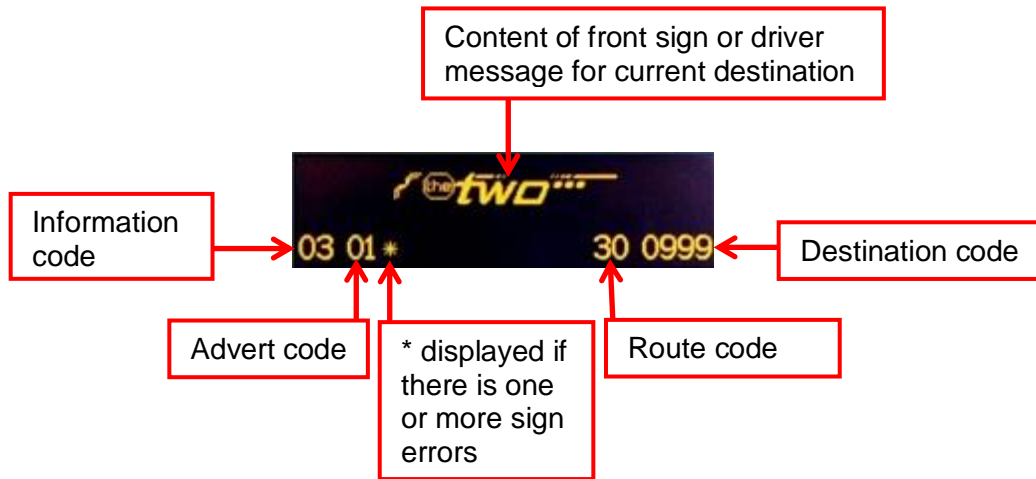
Figure 5 - diagram showing an example of OLED display

1.6.2 Rear view

Appendix D-5: SK5 M12 ETHERNET

Appendix D-4: SK4 MISC I/O: 6-way mini fit connector

Appendix D-2: SK2 RS232: 8-way mini fit conector

Appendix D-7: SK6 SMA CONNECTOR

Appendix D-6: CONFIGURATION SWITCHES

Appendix D-3: SK3 COMMS OPTIONS: 12-way mini fit connector

Appendix D-1: SK1 EG3 MASTER PORT: 18-way mini fit connector
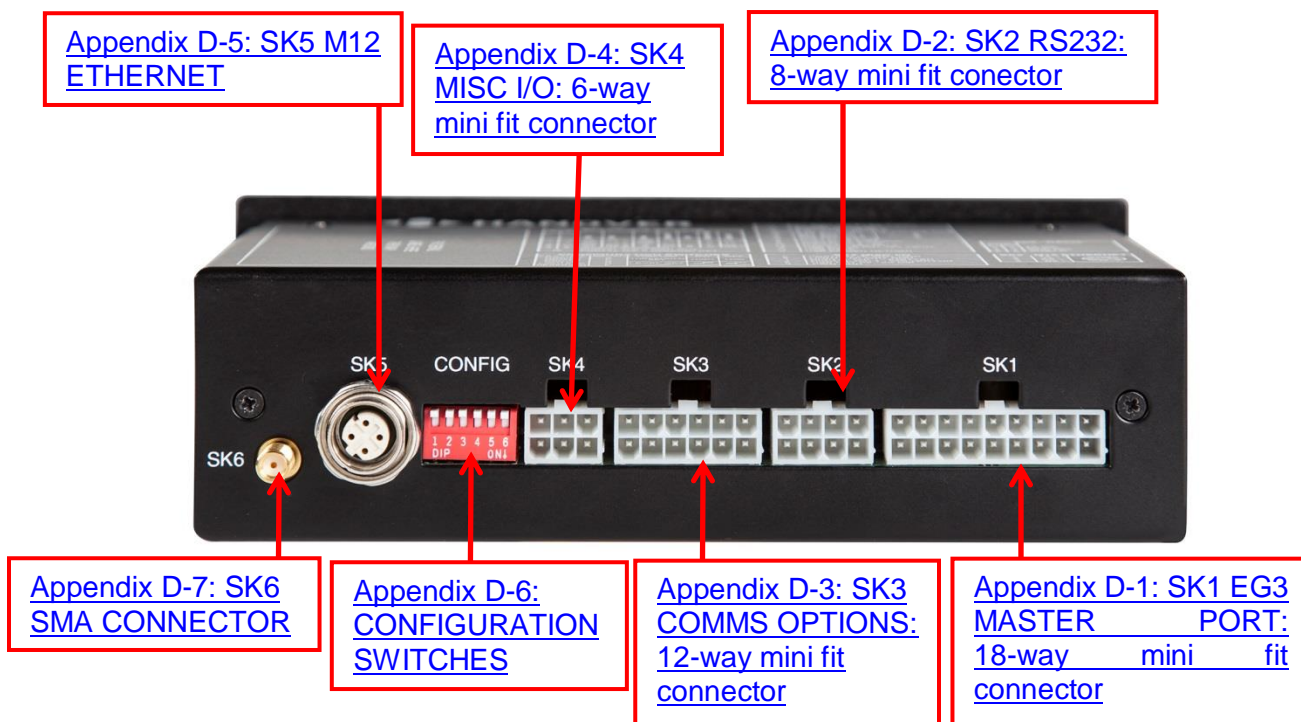
Figure 6 - diagram showing the rear side of the controller

1.6.3 Isometric view

DIN radio slot to fit standard radio slot aperture

4 similar screws to be removed before using the extractor tools

DIN standard extractor tools
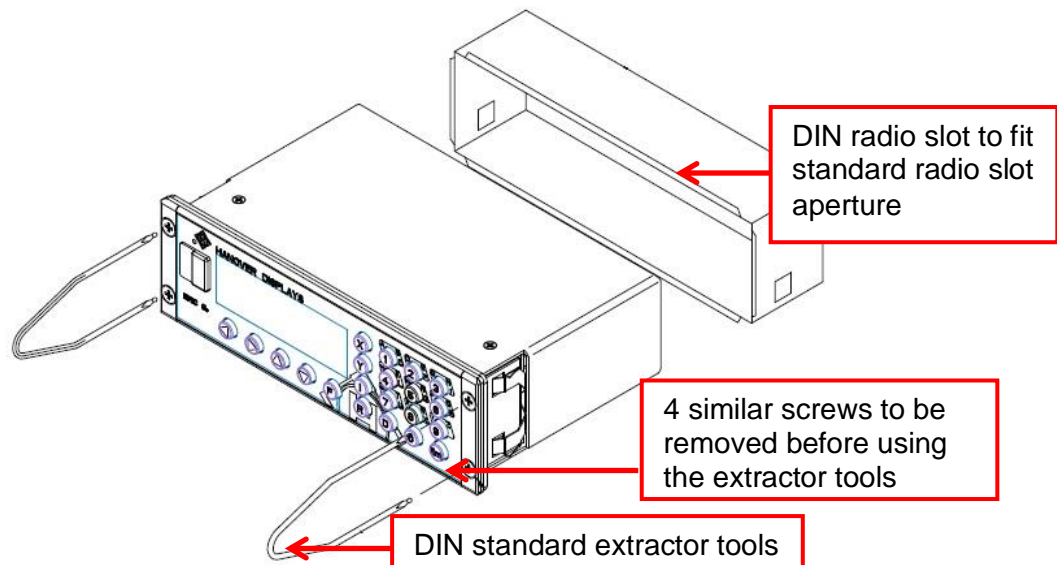
Figure 7 - diagram showing the isometric view of the controller

1.7 Technical information

1.7.1 Specification

Specification	Values / Description
Case dimensions	W188mm x H59mm x D115mm
Mounting	Dashboard / panel, using DIN radio slot to fit standard radio slot aperture
Dismounting	Removal of screws before using DIN standard extractor tools
Cut out required	W179mm x H50mm
Depth required	109mm minimum
Screen dimensions	71mm x 18mm
Screen display	high resolution 256 x 64 pixels with one, two or three lines of text
Weight	0.8kg approx.
Communications	• Built-in RS485 comms • 2 built-in RS232 comms
Operating voltage	9-36Vdc
Typical operating power	0.11A @ 24Vdc (approx. 2.7W)
Operating temperature range	-20°C to +60°C

Note: A few hardware features are also described in 1.6.1 Front view.

1.7.2   System supply voltages

All Hanover 24V devices are suitable for the full voltage supply range found on vehicles with a 24V battery. Some Hanover signs and controllers are compatible with 12V systems. For supply voltage details, please refer to the technical information for a specific product.

2 Installation

2.1 Fitting the controller

Standard positions for the controller are:

- on the dash, to the right or left-hand side

- in the sign pod

- above or below the driver's window.

For more information about the mounting options of the EG3 controller, please refer to:

- Appendix A: Installation Drawing No. 5250/03/03 – Base Build

- Appendix B: Installation Drawing No. 5250/03/04 – Ethernet + 2 x RS485

Care must be taken to ensure enough space is provided at the rear of the controller unit for the power and communication cables.

It is important to mount the controller in a suitable position for the driver for best access and visibility.

Position	Advantages	Disadvantages
Above or below the driver's window or above the windscreen in the sign pod	This area usually has sufficient space to accommodate the controller and the cabling. It also allows easy access for maintenance.	Awkward for drivers to operate and difficult for them to view.
Left or right on the dash	Good visibility and access. Wiring and servicing is normally straightforward.	Difficult to find sufficient depth of space on modern vehicles.
Below the pod above the driver's head	Good visibility and access. Wiring and servicing is normally straightforward.	Possible water damage if window is opened.

> The controller is not waterproof. Do not position the unit where it is likely to come into contact with water / moisture - for example, under an opening window.
>
> Water ingress is not covered by the product warranty.

> **Warning: Drivers should never attempt to operate the controller whilst driving.**

2.2 System wiring

The controller should be connected after the master switch but before the ignition switch such that the vehicle engine need not be running for the controller to work. However, should the user only need it to be operative whilst the engine is running, the EG3 can be inserted after the ignition switch.

2.2.1 Power and communication

Power and communication connections to the EG3 controller are by means of an 18-way mini fit connector found on the rear of the controller. If a DERIC+ or an ERIC++ was fitted before and was to be replaced by an EG3, an adaptor cable CX330K, CX330X or CX330N can be used. The standard length of the spiral cable wrap is 200mm. However, it can be customised according to the customer's needs. Please refer to section 2.2.2.1 CX330K – For replacing a DERIC+ controller when replacing a DERIC+ or to section 2.2.2.2 CX330X or CX330N – For replacing an ERIC++ controller when replacing an ERIC++.

2.2.2 Adaptor cable

2.2.2.1 CX330K – For replacing a DERIC+ controller

The CX330K adaptor cable allows the EG3 to replace a DERIC+ controller in an existing installation.
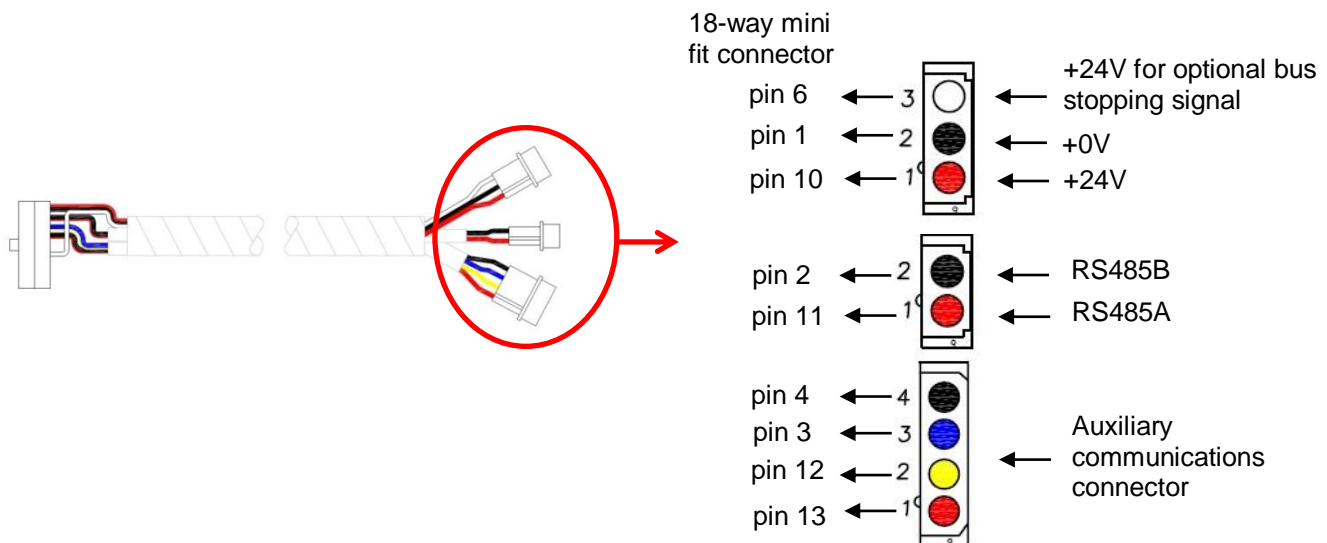
Figure 8 - CX330K cable & pinouts

The four-pin connector allows third-party equipment to be connected through minifit pins 3, 4, 12 and 13. The connections vary according to the secondary communications protocol deployed. For more details, refer to Appendix D-1: SK1 EG3 MASTER PORT: 18-way mini fit connector.

2.2.2.2 CX330X or CX330N – For replacing an ERIC++ controller

- **Controller with external input options available**

The CX330X adaptor cable allows the EG3 to replace an ERIC++ controller in an existing installation using external input options.

Figure 9 - CX330X cable & pinouts

Note: For an ERIC++ controller, the 25-way D-type connector is used for external input options. So, when replacing an ERIC++ using external input options with an EG3, a CX330X cable must be used.

Pins 5 and 6 of the 18-way mini fit connector are mainly used for bus reversing and battery guard. But they can be used for any other external inputs such as for emergency message, bus stopping or information message.

For more details about the ERIC++ bus reversing and battery guard connection cable, please refer to Appendix A: Cable Assembly Drawing in the ERIC++ Controller - Installation and Operating Manual (ref. 540114).

- **Controller with external input options unavailable**

The CX330N adaptor cable allows the EG3 to replace an ERIC++ controller in an existing installation not using external input options.

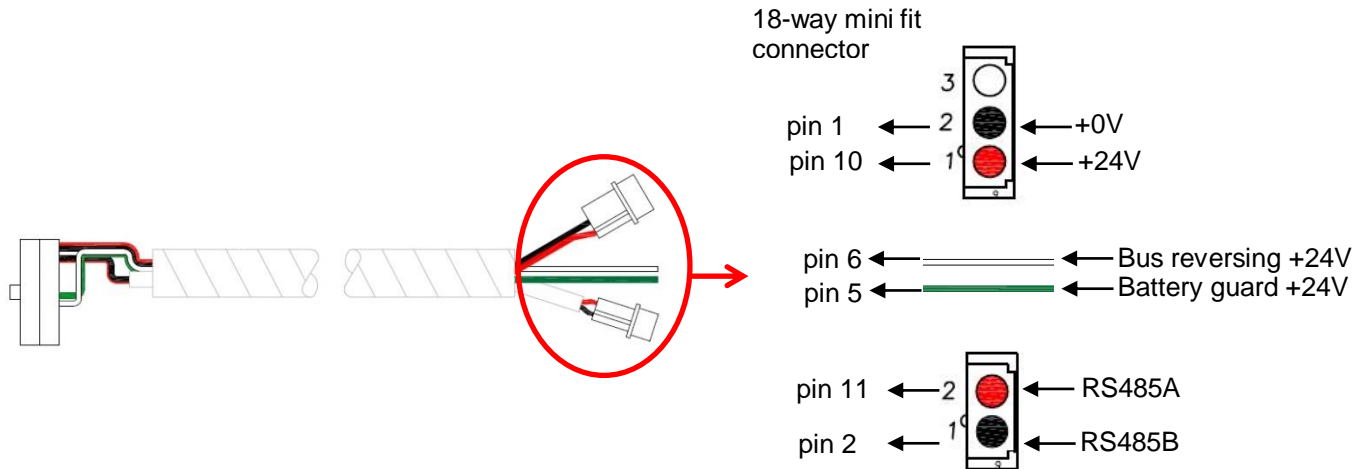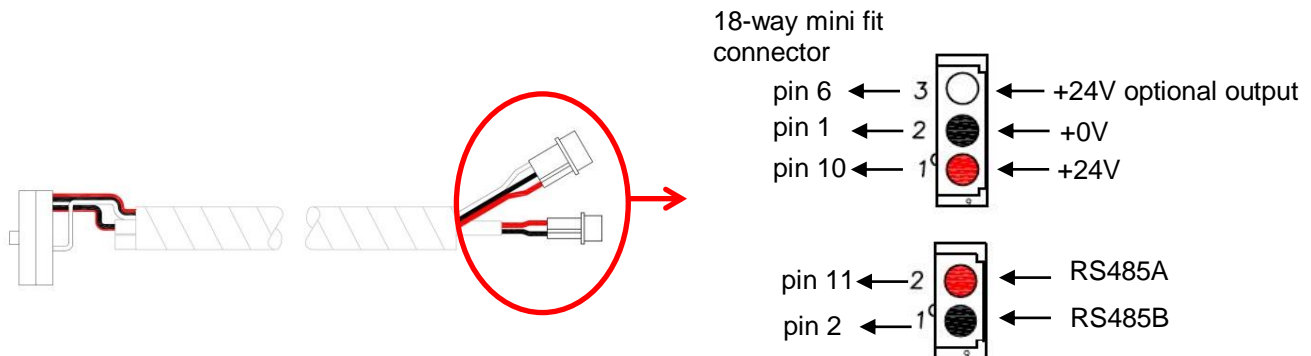Figure 10 - CX330N cable & pinouts

For more details about bus stopping, please refer to section Displaying 'Bus stopping'.
For more details about the 18-way mini fit connector, please refer to section Appendix D-1: SK1 EG3 MASTER PORT: 18-way mini fit connector.
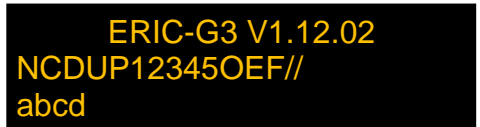
3   Operation

3.1   Getting started

3.1.1   Boot screens on power-up

Whenever the EG3 is powered up or restarted, it carries out a series of initialising checks. Normally, this sequence is rapid and can be ignored.

No.	Description	Figure
1	A splash screen as shown will then appear as the main application starts up.	**HANOVER**
2	The controller goes through a basic initialisation process as shown. If everything is correct, it will change to the driver's information screen where the software version is displayed. However, if an error occurs during software initialisation, the screen may freeze while showing one of the codes. If so, the user should restart the process. If this does not work, the issue should be reported to 4.3 Hanover Technical Support.	ERIC-G3 V1.12.02 NCDUP12345OEF// abcd

3.2   Loading a HELEN database into the EG3

HELEN database can be loaded into the EG3 in the two following ways:

- Either 3.2.1 Via "Wireless Data Manager" software on FTP server
- Or 3.2.2 Formatting the USB stick

3.2.1   Via "Wireless Data Manager" software on FTP server

It is possible to update the HELEN database into the EG3 via the "Wireless Data Manager" software on FTP server (standard port 20 and 21). For more details about "Wireless Data Manager" software, refer to Wireless Data Manager – Softare User Guide (ref. 1-540937).
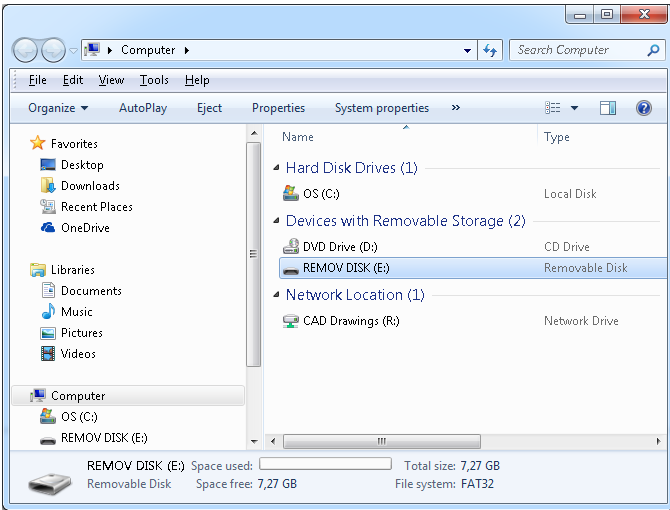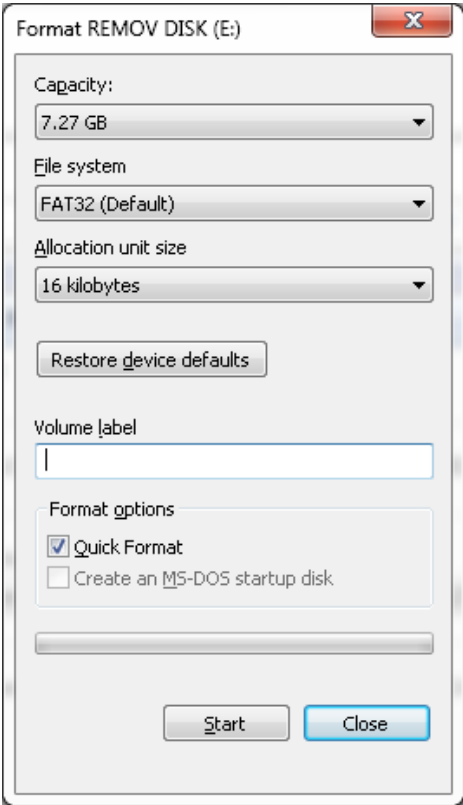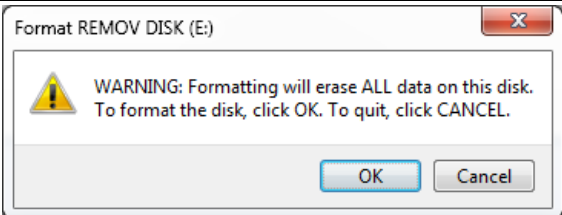
The controller should be configured by loading a CONFIG.INI file using an USB stick (which has a folder structure: Hanover/eg3/config.ini). For more details about the parameters of CONFIG.INI file, refer to Appendix I: CONFIG.INI file.
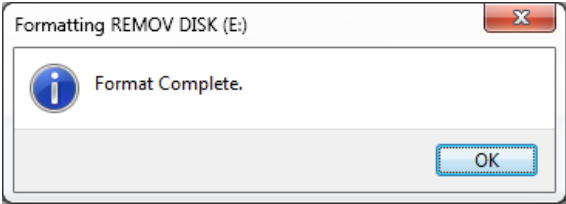
3.2.2   Formatting the USB stick

The EG3 uses a USB stick to load a destination list via its USB port. The stick must be formatted to use the FAT32 file system.

The table below shows how to format your USB stick:
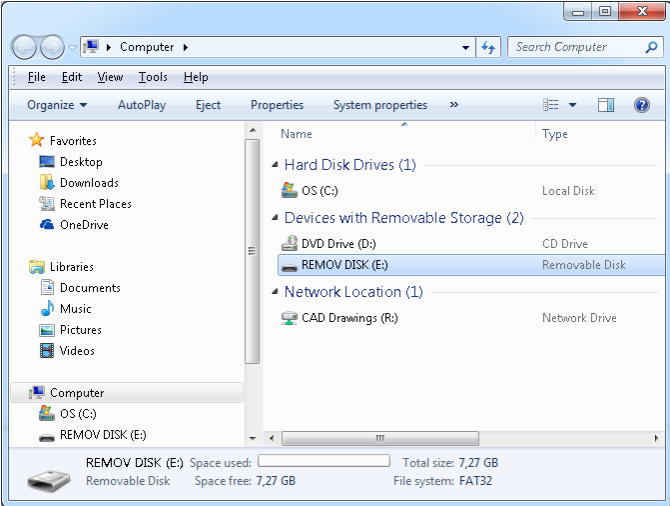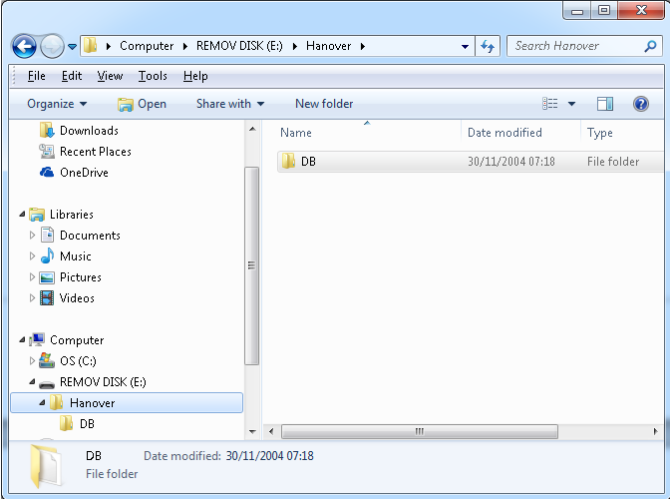
Step	Description	Figure
1	Insert the USB stick into the PC and locate it. It appears as **REMOV DISK (E:)**. **Note:** The name and drive letter is variable and in this case, the drive letter allocated to the USB stick by the PC is 'E:'.	
2	Right-click on the drive E and select 'Format…'. The following window appears.	
3	Under 'File system', use the dropdown arrow to select 'FAT32 (Default)' and click Start.	
4	A warning will appear as shown. Ensure the stick is empty before formatting starts. Click OK.	

Step	Description	Figure
5	A window will then appear indicating that the formatting is complete. Click OK.	Formatting REMOV DISK (E:) Format Complete. OK
6	Click Close on the original formatting window as shown in step 2. The USB stick is now formatted to FAT32 and is ready for use.	

3.2.2.1 Configuring the USB stick for loading

To ensure the correct data is loaded, an ERIC.BIN file is saved on the USB stick using the directory structure **X:\Hanover\DB** (where X is the drive allocated by the PC to the USB stick).

The table below shows how to configure the USB stick:
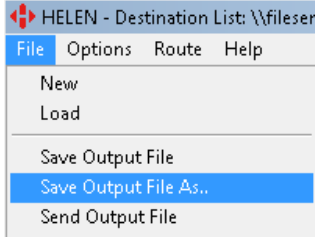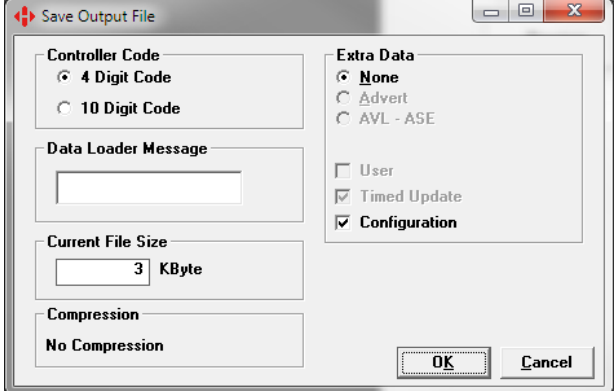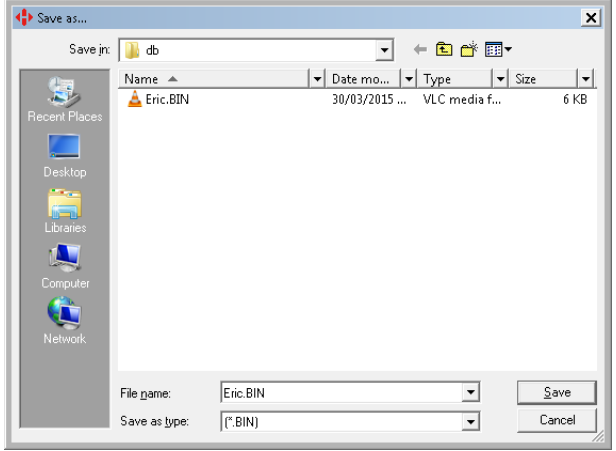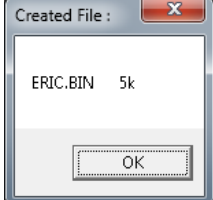
Step	Description	Figure
1	Insert the USB stick into the PC and locate it. It appears as **REMOV DISK (E:)**. **Note:** The name and drive letter are variable and in this case, the drive letter allocated to the USB stick by the PC is 'E:'.	
2	On the USB drive, create a folder called '**Hanover**'. Open this folder and create another folder within it and name it '**DB**'. **Note:** 'DB' stands for DataBase.	
3	The USB drive is now set up to download any ERIC.BIN file into the 'DB' folder.	
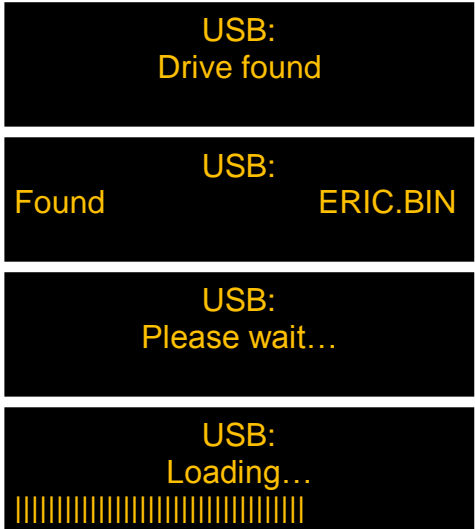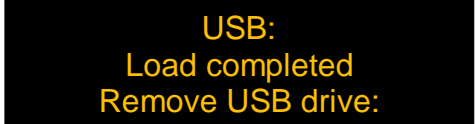
⚠️ USB sticks sometimes fail: try another stick before assuming the problem lies elsewhere.
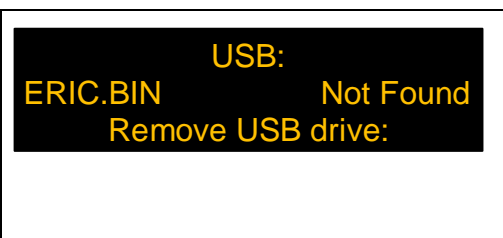
3.2.2.2 Transferring the database to the USB stick using HELEN

To load the database to the USB stick using HELEN, please ensure the USB drive is connected to the PC.

Step	Description	Figure
1	In the main HELEN window, click File → Save Output File As.. as shown.	
2	Verify that the options selected are correct and then click OK. For more details, refer to HELEN sign-editing software operating manual (ref. 540125).	
3	The 'Save As…' window will appear as shown (it may be necessary to browse to the USB folder → Hanover folder → DB folder). Ensure the text in the 'File name:' box is Eric (or Eric.BIN) and that the 'Save as type:' box has [*.BIN] in it.	
4	Click Save. Note that subsequent downloads will already have a file called Eric.BIN shown in this window: it will be overwritten.	
5	The database has been saved to the USB stick inside the DB folder. Click OK.	

3.2.2.3 Transferring the database from the USB stick to the EG3

Step	Description	Figure
1	Insert the USB stick into the port in the front of the controller. The EG3 will automatically find, transfer and save the database as shown.	USB: Drive found USB: Found ERIC.BIN USB: Please wait… USB: Loading… ||||||||||||||||||||||||||||||
2	When it has finished, a request to remove the USB stick will appear as shown.	USB: Load completed Remove USB drive:
3	The EG3 will re-boot once the USB stick is removed and will show the last inputted destination code. However, this number may not correspond with the new list loaded, in which case 'Bad destination' will then be shown: try inputting a number from the new list. If the controller is in 'remote' mode (i.e the displays are being driven by an on-board computer), its screen will show 'Idle'.	USB: Load completed Rebooting… **HANOVER** ERIC-G3 V1.12.02 abcd ERIC-G3 V1.12.02 ||||||||||||||||||||||||||||||| ERIC-G3 V1.12.02 NC0123456DUP12345OEF//

Note that if the Eric.BIN file is corrupt, or no valid files can be found on the stick, the controller will show the following message 'Remove USB drive:' and will flash and beep continuously until the USB stick is removed, whereupon the EG3 will reboot. This will not make any change to the current loaded file.	USB: ERIC.BIN Not Found Remove USB drive:

3.3   Selecting the information to be shown on the signs

The controller uses the database loaded from HELEN to populate the vehicle's signs. Route/destination information and/or adverts and other information can be stored in the database. You can access this information on the EG3 by pressing the F, D, R or I key when the controller is in the normal operational mode. This will allow you to cycle through the various code and menu options.

> When a configuration code option is set to enable in the configuration status of the controller, the corresponding key on the front panel will be backlit for ease of use and fast location of required function.

In normal operational mode, the default position of the EG3 is to show the current route / destination code : the controller will revert to this state after 20 seconds of inactivity, regardless of what has been showing on its screen. Although rarely needed by the vehicle driver, the lock code is also included in this cycle. For more details, please refer to section 3.5 Accessing other functions of the EG3.

> Where changes are being made to the settings behind the lock code, the user is asked whether or not they wish to save those changes: if the user makes no decision, the controller will assume the changes are required and save them by default.

3.3.1   Destination code

The destination code is accessible using the D key on the front panel of the controller (if the configuration code DN is set to enable (refer to Appendix H: Configuration code options)). It determines the information shown on the destination and in-bus signs and is used in a standard configuration. The information is usually in the form of a place name and/or route number whilst the code itself is a four to ten-digit number. It is shown on the front of the controller as **Dest no:**.

Dest no:
0 0 2 3

In the example below, the controller is set to show destination code 23: if the operator does not select another destination code within 20 seconds, it will default to showing the destination details for code 23. Suppose the choice was made to change from destination code 23 (route 382, destination Lion Green via Town Centre) to destination code 14 (route 73A, destination Brownford).

The keystrokes and results would be as follows:

Step	Description	Figure
1	Example of an initial screen where the information code has previously been set to 32 and the advert code to 19	382 LION GREEN VIA TOWN CENTRE 32 19 * 0023
2	Press the D key and 'Dest no:' appears	Dest no: 0 0 2 3̄
3	Press the alphanumeric key (refer to section 1.6.1 Front view) to choose your new destination number, for example 14	Dest no: 1 0 0 2 3 Dest no: 14 0 0 2 3
4	Press 'Ent' key to select your new destination number and the destination Brownford will appear as shown	73A BROWNFORD 32 19 * 0014

Note: To toggle from manual mode to automatic mode, press the D key followed by "0". This will also update the destination code to the last valid destination code received over protocol while in manual mode.

3.3.2   Route code

The route code is accessible using the R key on the front panel of the controller (if the configuration codes RN and RB are set to enable (refer to Appendix H: Configuration code options)). Where several destinations for a particular route are managed together, the 'Route Browse' function can be used (refer to the HELEN sign-editing software - Operating manual (ref. 540125)). The route code (ideally the same number as the route number - but not necessarily) is then used to group these destinations together. Route code is also used for entering a route number with a destination. It is shown as **Route no:**.

Route no:
4̄3

3.3.3   Information code

The information code is accessible using the I key on the front panel of the controller (if the configuration code IN is set to enable (refer to Appendix H: Configuration code options)). The information code refers to a general passenger information message which is periodically shown on **external** destination signs, for example, 'Merry Xmas!' or 'No evening service today'. Each message has its own code number. It is shown as **Info no:**.

Info no:
1̄9

In this case, the information code is set to 19; a similar process to that used for changing the destination code applies if a change is required.

3.3.4 Advert code

The advert code is accessible using the I key on the front panel of the controller (if the configuration code AN is set to enable (refer to Appendix H: Configuration code options)). It is shown as **Advert no:**.

Advert no:

\- -

In the same way, each advertising message to be shown on an in-bus sign is selected using its own code.

All the codes are set up using HELEN software (for more details, please refer to HELEN software sign-editing software – Operating manual (ref. 540125)) and stored in the database deployed by the controller for use by the driver or whoever needs to decide what is shown on a vehicle's signs.

Note: An advert code (used for internal signs) can be used at the same time as an information code (used for external signs).

3.3.5 Lock code

The lock code is accessible using the F key on the front panel of the controller. This 4-digit password provides access to a large range of configuration and other settings - please refer to section 3.5 Accessing other functions of the EG3. It is shown as **Lock code:**.

Lock code: _

3.3.6 Round trip (Aller- Retour)

The round trip (aller-retour) is accessible using the X and Y keys on the front panel of the controller (if the configuration code RT is set to enable (refer to Appendix H: Configuration code options)).

For the outbound destination, press the X key. It is shown as **Out no:**.

Out no:

For the return destination, press the Y key. It is shown as **Return no:**.

Return no:

3.4 Other configurations

The EG3 controller can be configured in several other ways, for example, to use the route browse or driver-selectable route number functions or to show only a route number. These options are set using the HELEN software. Details are given in the HELEN sign-editing software - operating manual (ref. 540125).

Possible configurations include:
- Driver selectable route number
- Route browse
- Route number only
- Out and return (round trip)
- Two-line display

3.5 Accessing other functions of the EG3

A wide range of EG3 settings are accessible via the 'lock code' feature. Using the alphanumeric keypad to key in the appropriate 4-digit lock code provides access to these settings. EG3 configuration is best carried out by configuring the settings in HELEN and downloading them into the controller. However, manual changes to those parameters can then be made directly via the controller itself if required. Note that any such changes will then be overwritten by a future download from HELEN.

> The 4-digit lock code is 9876 by default or if a factory reset is performed. However, if an EG3 is loaded with a list from Helen, the lock code will be changed to 0101 as Helen has by default a lock code of 0101.

The functions are arranged hierarchically: in its normal operating mode, the controller shows level 1. The table below shows how to navigate to the other functions. The left arrow acts as the 'back' key.

1st level	2nd level	3rd level
Reach this list by pressing the F key	• Reach this list by keying in the lock code and using the Ent key. • Navigate through this list by using the up / down arrow keys • Reach an option in this list by using the Ent key	• Navigate through the option list by using the up / down keys • Reach an option in this list by using the Ent key • To change this option, navigate through the list by using the up / down arrow keys and using the Ent key
Lock code:	Show status?	3.5.1 Status options
	Test signs?	3.5.2 Running the signs test
	Configure?	3.5.3 Configuration options
	System?	3.5.4 System options
	Ports?	3.5.5 Port options
	Signs?	3.5.6 Sign options
	Dump data?	3.5.7 Dump data screen sequence
	HANCIS	3.5.8 HANCIS
	Set clock?	3.5.9 Setting the clock
	Functional Test	3.5.10 Functional Test
	Network	3.5.11 Network
	AUTO / MAN	3.5.12 AUTO / MAN
	Preview Dest?	3.5.13 Preview destination
	Firmware Update?	3.5.14 Firmware update
	Back	

> If any changes have been made in the settings of the EG3, the controller will prompt for confirmation. If there is no confirmation of the changes after a set period of time, the controller will save the changes (by default) and then revert to the last destination programmed.
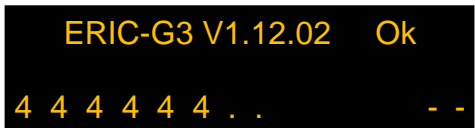
3.5.1 Status options

This option provides access to information about the status and configuration of the controller and the signs connected to it. The two ways to access this option are:

- either by holding down the Ent button for about 3 seconds. The HTC menu will be displayed first if connected. Then, press the up arrow key to access the status option.

- or by entering the lock code. 'Show status?' can be found from within the list and then selected using the Ent key. Use the up and down arrow keys to navigate between each one.
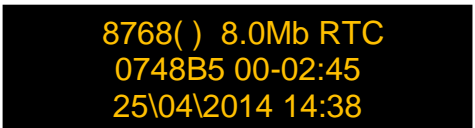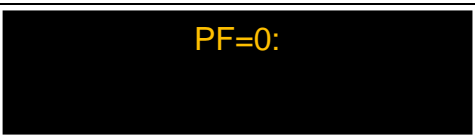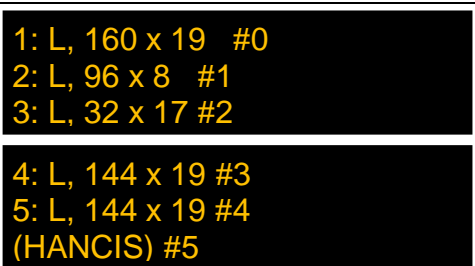
Note: If accessing the status options by holding down the Ent button, the status options screen will be displayed temporarily (only for a few seconds) and the EG3 will revert to its previous state. Whereas via the lock code, the status options screen will remain displayed until the user presses on the left arrow key or Ent key to quit this option.

The following table shows all functions available in the status options:

No.	Figure	Description
1	ERIC-G3 V1.12.02 Ok 4 4 4 4 4 4 . . - -	- **ERIC-G3**: software name - **V1.12.02**: software version number - **Ok**: indicates database loaded successfully (otherwise, error code shown) - **4 4 4 4 4 4 . .**: status of individual signs[13] - **- -**: 2 external voltage signal inputs (**#** = active; **-** = inactive)

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[13] This code monitors the status fed back from up to 8 passenger information signs that can be connected to the RS485 port. Each digit corresponds to one sign. The possible values and their meanings are:

.	No sign connected
0	Sign connected and working correctly
1	Message content error
2	Checksum error
3	Halogen bulb failure (applies to flip dot signs only but not to LED type signs)
4	No response from sign
5	Bad status reply
6	Communications error

No.	Figure	Description
2	8768( ) 8.0Mb RTC 0748B5 00-02:45 25\04\2014 14:38	• **8768( )**: database file size in bytes (value in brackets no longer used) • **8.0Mb**: flash memory capacity (needs to accommodate both download file and operational database file) • **RTC** : Real Time Clock (optional) • **0784B5**: database file checksum value • **00-02:45**: timer / clock showing length of time in use since last reboot (DD-HH:MM = days-hours:minutes) • **25\04\2014**: date (is displayed only if RTC is fitted and enabled) • **14:38**: time (is displayed only if RTC is fitted and enabled)
3	PF=0:	• **PF**: controller profile[14] • **PF=X**: where X indicates the value of the profile
4	1: L, 160 x 19 #0 2: L, 96 x 8 #1 3: L, 32 x 17 #2 4: L, 144 x 19 #3 5: L, 144 x 19 #4 (HANCIS) #5	• **1:, 2:, 3:, 4:, 5:, 6:**: sign numbers (+1) as set by HELEN software[15] • **L**: indicates route number set to left of sign (R=right) • **(HANCIS)**: sign options - refer to Appendix G: Sign options • **160 x 19**, **96 x 8, 32 x 17**: sign sizes (LED columns x LED rows) • **#X**: X is the sign address as determined by its switch setting[16]
5	Network: ID9876 IP DHCP-0.0.0.0 FTP 62.7.92.72 EG3	• **Network**: refers to the customer reference assigned to the unit that is used when it connects to the FTP server. If for example, the ID is 9876, it will navigate to the 9876 folder on the FTP server and carry out relevant FTP tasks (upload a status file, download any pending updates etc.) • **IP DHCP- / IP DHCP+**: is the IP address assigned to the unit if it has been given one by a DHCP server. If no DHCP server is present, it will show 0.0.0.0. "DHCP-" will be displayed if the unit has not detected a DHCP server and "DHCP+" will be displayed if it has received its IP from a DHCP server.

---

[14] This is a feature that makes it easy to manage a fleet of vehicles fitted with many different signs but all using the same destination list. Full details are given in the Helen sign-editing software - Operating manual (ref. 540125).

[15] Helen allocates numbers to each destination (and internal) sign configured by the software. By convention, these start at 0. However, within the controller, 0 is reserved for the driver's sign on the front of the controller itself so all these numbers are incremented by 1.

[16] There may be other signs with different switch settings included in the controller's configuration; in this example, these signs are not currently connected to the controller and are thus 'inactive'.

No.	Figure	Description
		• **FTP**: displays the IP address of the FTP server the unit will try to connect to along with the username it will try to log in with.
6	MAC: Invalid 31323531353047140031 0043 Subnet 255.255.0.0	• **MAC**: displays the MAC address assigned to the unit by Hanover. • **Series of numbers:** displays the unique ID assigned to the processor chip by the manufacturer. This is used to "tag" the Status files the unit sends back to the FTP server so it is capable of identifying the individual EG3s within the fleet if you change its network ID. • **Subnet**: is the assigned Subnet mask used for establishing the EG3's connection to the FTP server.

3.5.2 Running the signs test

This test can be used to determine the source of a problem, i.e. hardware, address settings or programming. The controller sends a message via the communications network and activates the signs' internal test mode. To use this feature, the lock code must be entered, 'Test signs?' found from within the list and then selected using the Ent key. 'Testing…' will flash until you press on the left arrow key to stop the test or press Ent key again to return to destination.

For more details, please refer to the section 4.1.5 Sign test function.

3.5.3 Configuration options

When a database is downloaded from a PC, it incorporates parameters that determine how the EG3 operates and thereby drives the signs. Using the configuration function, these parameters can be viewed and altered according to the user's requirements. To use this feature, the lock code must be entered, 'Configure?' found from within the list and then selected using the Ent key.

On the controller screen, there are currently 52 options plus 'Back' (available in this edition). The active option is bright whilst the other two are dimmed. Use the up and down arrow keys to navigate between each one. An example screen looks like this:

```
AM - Auto/Man menu Enable    0
AL - Advertising Signs       1
Back
```

For more details about the range of configuration code options, please refer to Appendix H: Configuration code options.

3.5.3.1 Configuration code option: Time entry (TV)
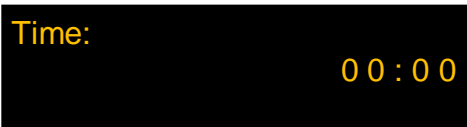
This feature provides a fixed time to be shown or a countdown timer. The function only works if the clock plugin has been fitted and enabled on the EG3's processor. The default setting is TV = 0 (feature disabled); for more details, please refer to TV entry in Appendix H: Configuration code options.

The table below shows the two different settings for configuration parameter TV:

Value of configuration parameter: TV	Function	Refer to section
TV = 1	Set a fixed time	TV = 1 (for more details, please refer to TV entry in Appendix H)
TV = 2	Use the countdown timer	TV = 2 (for more details, please refer to TV entry in Appendix H)

- **TV = 1 (for more details, please refer to TV entry in Appendix H)**

How to set a fixed time:

Step	Description	Figure
1	Further to setting TV=1 in the EG3's configuration, press the F key on the front panel of the controller.	
2	The screen showing the time in hh:mm (in 24-hour format) is displayed.	Time: 00:00
3	The '00' for hh will flash. Use the up arrow key to increase its value or the down arrow key to decrease its value. Then, press Ent key to confirm.	
4	The '00' for mm will flash.	

Step	Description	Figure
	Use the up arrow key to increase its value or the down arrow key to decrease its value. Then, press Ent key to confirm and exit the function. **Note:** The left arrow key can be used to toggle between hours and minutes at this stage if required.	

Note: The time entered here will be substituted for any '~' (tilde) character within the HELEN destination or driver display database. It is sometimes used by drivers 'on the fly' for entering departure times. The destination message might thus be 'Bus departs at ~'.

> ⚠ The message generated in Helen for the sign must be in text mode for this function to work.

- **TV = 2 (for more details, please refer to TV entry in Appendix H)**

How to use the countdown timer:

Step	Description	Figure
1	Further to setting TV=2 in the EG3's configuration, press the F key on the front panel of the controller. The screen showing the countdown in minutes (can be set between 1 and 99) is displayed.	Minutes: 0 0
2	The default value '00' will flash until a value is set. Either use the alphanumeric keypad or use the up arrow key to increase its value or the down arrow key to decrease its value. Then, press Ent key to confirm and exit the function.	

Note: The value entered here will be substituted for any '~' (tilde) character within the HELEN destination lists: this causes the destination / route code containing the tilde character ('~') to start counting down to zero on the sign when the code is selected. When zero is reached, the clock stops and '0' remains on the sign until another destination / route code is selected. The destination message might thus be 'Bus departs in ~ minutes'.

3.5.3.2 External inputs I0 and I1: emergency message, bus reversing, bus stopping, battery guard, information message or Hanvox message

Two external inputs can be accomodated using the I0 and I1 settings which are connected directly into the 18-way mini fit connector.

The available I0 and I1 values and their uses are described in the following table:

I0 or I1 Values	Use for	Refer to
1	Emergency message (latched)	Emergency message
2	Emergency message (latched (inverted))	
3	Emergency message (unlatched) or Bus reversing	Emergency message or Displaying 'Bus reversing'
4	Emergency message (unlatched (inverted))	Emergency message
5	Blanking (battery guard)	Blanking the sign (battery guard)
6	Blanking (battery guard) (inverted)	
7	Bus stopping	Displaying 'Bus stopping'
8	Bus stopping (inverted)	
9	Emergency message (toggle)	Emergency message
10	Emergency message (toggle (inverted))	
IN	Information message	Information message
INI	Information message (inverted)	
DV	Destination VOX (Hanvox)	Destination VOX (Hanvox) audio message
DVI	Destination VOX (Hanvox) (inverted)	
BR	Bus reversing	Displaying 'Bus reversing'
BRI	Bus reversing (inverted)	

For more details, please refer to the I0 and I1 entries in the configuration code options table in Appendix H: Configuration code options.

1) Emergency message

Setting I0 and I1 to the values 1, 2, 3, 4, 9 and 10 are all for emergency messages. When the input is activated, the message (for example, "Emergency - Call Police") associated with a particular destination code is shown on the signs. By default, this is 9999, or (0000 9999 for route browse). This code can be changed by adding the parameter EC = nnnn to the database configuration, where nnnn is the preferred emergency destination code. This is done in HELEN via the Extensions box on the Advanced tab of a particular profile in 'Controller Config'.

By not setting a driver's message for this emergency destination, the driver's controller screen will not change from the previous destination when the input is activated, although the destination signs will. The user may decide that this is preferable if, for example, the driver is being threatened or is under attack.

Note: Value 3 is being mainly used for bus reversing. However, the bus reversing function can now be set using the values BR or BRI (refer to Displaying 'Bus reversing').

I0 or I1 Value	Meaning	Description
1	latched	When the input is activated (volts on input), the emergency destination will remain, even if the input is deactivated. The destination must be manually reset.
2	latched (inverted)	As above but input sensing is inverted (volts = inactive; no volts = active).
3	unlatched	Once the input is activated (volts on input), the emergency destination will remain for only as long as the input remains active.
4	unlatched (inverted)	As above but input sensing is inverted (volts = inactive; no volts = active).
9	toggle	Activating the input momentarily will set the emergency destination: activating it again will cancel it.
10	toggle (inverted)	As above but input sensing is inverted (volts = inactive; no volts = active).

2) Blanking the sign (battery guard)

Setting I0 and I1 to the values 5 and 6 are for blanking the sign (designed to save battery life). When the input is activated, the controller works as normal. When deactivated, the signs will be blanked after a time delay set by EG3 configuration parameter BT = n where n is in minutes (default n = 0). For more details about BT, please refer to entry BT in Appendix H: Configuration code options.

Another parameter BL, meaning Blanking Level expressed as a percentage (0 (by default) means maximum brightness, 1 means minimum brightness and 2-99 means actual maximum brightness) sets the brightness of exterior LED displays during the BT-defined time delay period. For more details about BL, please refer to entry BL in Appendix H: Configuration code options.

I0 or I1 Value	Meaning	Description
5	blanking	When inactive (no volts), signs will be blanked after period BT.
6	blanking (inverted)	As above but input sensing is inverted (volts = inactive; no volts = active).

When the Blanking Timer (BT) is up, the screen looks like this:

Blanking the sign in this way should not be confused with the 'Blank code' facility, which is a destination code set within HELEN that defines what is shown on an otherwise blank sign - for example, if a non-existent code is selected or the controller is set to an idle state. For more details, please refer to the HELEN sign-editing software - Operating manual (ref. 540125). However, the destination defined by that code will also be shown during the BT-defined delay described above.

3) Displaying 'Bus stopping'

Setting I0 and I1 to the values 7 and 8 are to set up 'Bus stopping' on a sign. On activation, in-bus signs will automatically show 'Bus stopping', overriding the previous message.

Alternatively, the 'bus stopping' message can be programmed for in-bus signs under a destination code containing the two characters 'BS' - for example: BS01 (or BS00000001) or 0000 BS01 for route browse.

In both cases, the parameter LN = n must be used to indicate the number allocated to the in-bus sign, where n is any of the values provided in sign options. The LN setting is made within 'Sign options' (for more details, please refer to section 3.5.6 Sign options).

I0 or I1 Value	Meaning	Description
7	bus stopping	Whilst the input is active (volts on input), the in-bus sign will show the programmed message.
8	bus stopping (inverted)	As above but input sensing is inverted (volts = inactive; no volts = active).

4) Information message

Values IN and INI are for information messages. An information message is selected on activation of the external input, having been set up within the HELEN database in a similar way to a destination message.

The message is enabled by adding the parameter IC = nn, where nn = 01 - 99. This is done in HELEN via the Extensions box on the Advanced tab of a particular profile in 'Controller Config.' (nn corresponds with the message number in the HELEN database).

The parameter IP is used in conjunction with this. Please refer to the IP entry in the table in Appendix H: Configuration code options.

I0 or I1 Value	Meaning	Description
IN	information	Whilst the input is active (volts on input) the information message will be selected.
INI	information (inverted)	As above but input sensing is inverted (volts = inactive; no volts = active).

5) Destination VOX (Hanvox) audio message

Values DV and DVI are Destination VOX (Hanvox). On activation, if Hanvox is configured and present within the system, an mp3 audio message associated with the destination / route code currently in use by the controller will be played twice. This works by Hanvox receiving a message from the controller in the form 'p /e Dnnnn' where nnnn is the current destination code. If the system is configured to use Route Browse, the route code must be a maximum of three characters: this is because Dnnnn can be a maximum of eight characters.

This feature is enabled in HELEN via the Extensions box on the Advanced tab of a particular profile in Controller Config: it is sufficient simply to add 'DV' or 'DVI' as appropriate in the box.

I0 or I1 Value	Meaning	Description
DV	Destination Hanvox	Message is played twice when input active (volts on input)
DVI	Destination Hanvox (inverted)	As above, but input sensing is inverted (volts = inactive; no volts = active).

Note: When using the Extensions box in HELEN software, several different configuration codes can be added if required; they should be separated by a comma.

6) Displaying 'Bus reversing'

Values BR and BRI are for 'Bus reversing'. The bus reversing message is programmed under a destination code whose most significant two characters are 'BR' - for example: BR01 (or BR00000001) or 0000 BR01 for route browse.

The destination code should only contain a message for the signs which are to show it, i.e if the front sign is not to change, no message content should be entered for the front sign for this destination.

I0 or I1 Value	Meaning	Description
BR	bus reversing	Whilst the input is active (volts on input), the signs will show the programmed message.
BRI	bus reversing (inverted)	As above, but input sensing is inverted (no volts = active).

Note: The bus reversing message can also be set using a destination code of 9999 (please refer to Emergency message).

3.5.4   System options

The system function codes determine how the EG3 is set up as a controller. To use this feature, the lock code must be entered, 'System?' found from within the list and then selected using the Ent key. On the controller screen, there are currently 10 options plus 'Back' (available in this edition). The active option is bright whilst the other two are dimmed. Use the up and down arrow keys to navigate between each one.

An example screen looks like this:

```
DA – Daylight Saving        1
AS – Auto Speed         57600
Back
```

The list of system options in the EG3 controller is provided in Appendix E: System Options.

3.5.5 Port options

This setting allows a different comms protocol to be set for each port for use with the sign. To use this feature, the lock code must be entered, 'Ports?' found from within the list and then selected using the Ent key. There are currently 5 options plus 'Back' (available in this edition). The active option is bright whilst the other two are dimmed. Use the up and down arrows to navigate between each one.

An example screen looks like this:

```
P1 - Port 2                    -
P0 - Port 1               SIGN
Back
```

⚠️ Do not use the same protocol on more than one port: the results are unpredictable.

The list of protocols available in the EG3 controller is provided in Appendix F: Protocols – Port options.

Note: Controllers are not necessarily supplied with every possible protocol enabled.

For more details about any protocol, please contact Hanover (please refer to section 4.3 Hanover Technical Support).

3.5.6 Sign options

⚠️ Be careful when using sign options as the physical sign addresses may be different from the sign addresses set up in Helen.

This is an optional manual override to enable the contents of a sign to be changed to display a different programmed sign in HELEN. To use this feature, the lock code must be entered, 'Signs?' found from within the list and then selected using the Ent key. There are currently 17 options plus 'Back' (available in this edition). The active option is bright whilst the other two are dimmed. Use the up and down arrows to navigate between each one.

An example screen looks like this:

```
S1 - Sign 1                    *
S0 - Sign 0                    *
Back
```
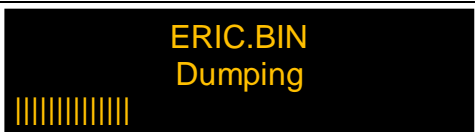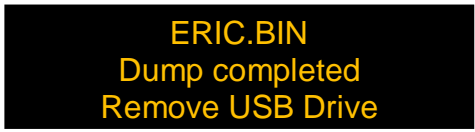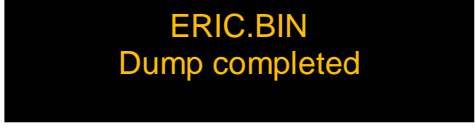
The list of sign options available in the EG3 controller is provided in Appendix G: Sign options.

3.5.7 Dump data screen sequence

This facility allows the database to be 'dumped' back on to a USB stick if required - generally to enable the list to be copied to another controller. The USB stick will need the same folder structure in place as used when data is being loaded on to the controller. If Hanover\DB\eric.bin already exists on the USB stick, it will be backed up and renamed Hanover\DB\eric~1.bin, Hanover\DB\eric~2.bin etc.

Note: USB sticks sometimes fail: try another stick before assuming the problem lies elsewhere.

The table below shows the procedure for dumping data:

Step	Procedure	Figure
1	Enter the lock code, find 'Dump data?' from within the list and then select it using the Ent key.	
2	'Insert USB Drive:' is displayed on the controller screen.	Insert USB drive:
3	If an USB drive is not inserted for about 10 seconds, data dump will be aborted as shown and will go back to the initial screen	DUMP ABORTED
	On the other hand, if a USB drive is inserted, dump then starts automatically as shown followed by steps 4 to 6	USB: Drive found
4	Data dump progress shown by |||||||||||||	ERIC.BIN Dumping |||||||||||||
5	'Remove USB Drive' flashes. The USB drive can now be removed safely.	ERIC.BIN Dump completed Remove USB Drive
6	This screen is shown for two seconds - then reverts to operational status	ERIC.BIN Dump completed

Note: The list copied from the controller using "Dump data" cannot be used in HELEN.

On controllers with firmware up to and including v1.12.02, the message 'Insert USB Drive:' is also shown. **This should be ignored** as doing so will in fact initiate a fresh dataload (see section 3.2.4 Transferring the database from the USB stick to the EG3): no action should be taken until the controller reverts to its previous state, whereupon the process should be restarted from the status option to selection of 'Dump data?'.

3.5.8 Hanover passenger information – Simulation mode

This menu item will only become enabled if your EG3 has an HTC unit connected to the physical sign system in your vehicle and if the HTC is selected as a sign. Setting the sign no. to the 'HTC' value (refer to 3.5.6 Sign options) will enable the EG3 to remotely control certain features (for example, the audio, IP address, etc.) of the HTC unit.

If an HTC is present in the system, the simulation mode will create a file to simulate a route on the internal information display. So, when a route is selected, the internal information display appears to travel the complete route triggering all the points at an exaggerated speed.

To switch on the simulation mode, the 'HANCIS' feature is accessible via the lock code (refer to 3.5 Accessing other functions of the EG3 or if configured via Hanover Central software, press and hold the Ent key.

The 3.5.8.1 HTC Terminal Menu allows the modification of settings via the:

- 3.5.8.2 Simulation Menu

- 3.5.8.3 Volumes Menu

- 3.5.8.4 System Tests

- 3.5.8.5 Settings Menu

Note:

To save any new settings:

- Either press and hold Ent key for 6 seconds to return to normal operating screen.

- Or if the controller is left for 20 seconds of inactivity, it will assume the changes are required and will save them by default.

3.5.8.1 HTC Terminal Menu

The flow chart below shows the procedure for accessing the different options of the HTC Terminal Menu:
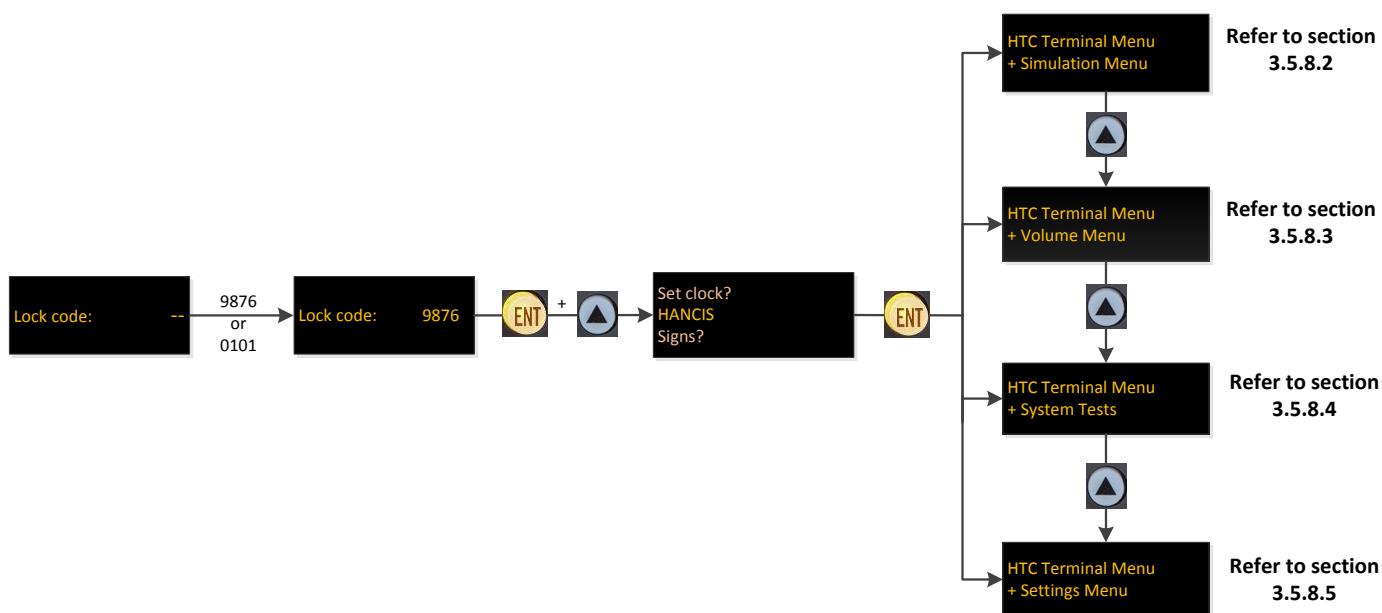
3.5.8.2 Simulation Menu

The flow chart below shows the procedure for accessing the different options of the Simulation Menu:

*Simulation Sim Door Wait (4)	ENT	Sim Door Wait sec 0..60 4	▲ or ▼	Sim Door Wait sec 0..60 N	ENT	*Simulation Sim Door Wait (N)
*Simulation Sim Open Door (Yes)	ENT	Sim Open Door Yes/No Yes	▲ or ▼	Sim Open Door Yes/No No	ENT	*Simulation Sim Open Door (No)
*Simulation Sim Wait@Stop (8)	ENT	Sim Wait@Stop sec 0..60 8	▲ or ▼	Sim Wait@Stop sec 0..60 N	ENT	*Simulation Sim Wait@Stop (N)
Simulation Sim Enabled (No)	ENT	Sim Enabled Yes/No No	▲ or ▼	Sim Enabled Yes/No Yes	ENT	Simulation Sim Enabled (Yes)
*Simulation Sim Speed (13)	ENT	Sim Speed m/s 0..60 13	▲ or ▼	Sim Speed m/s 0..60 N	ENT	*Simulation Sim Speed (N)

HTC Terminal Menu + Simulation Menu — ENT

Simulation - Back

*Option subject to controller firmware version

3.5.8.3 Volumes Menu

The flow chart below shows the procedure for accessing the different options of the Volumes Menu:

N: modified setting

*'Driver Microphone' will be displayed if 'Driver Microphone' option is enabled in Hanover Central
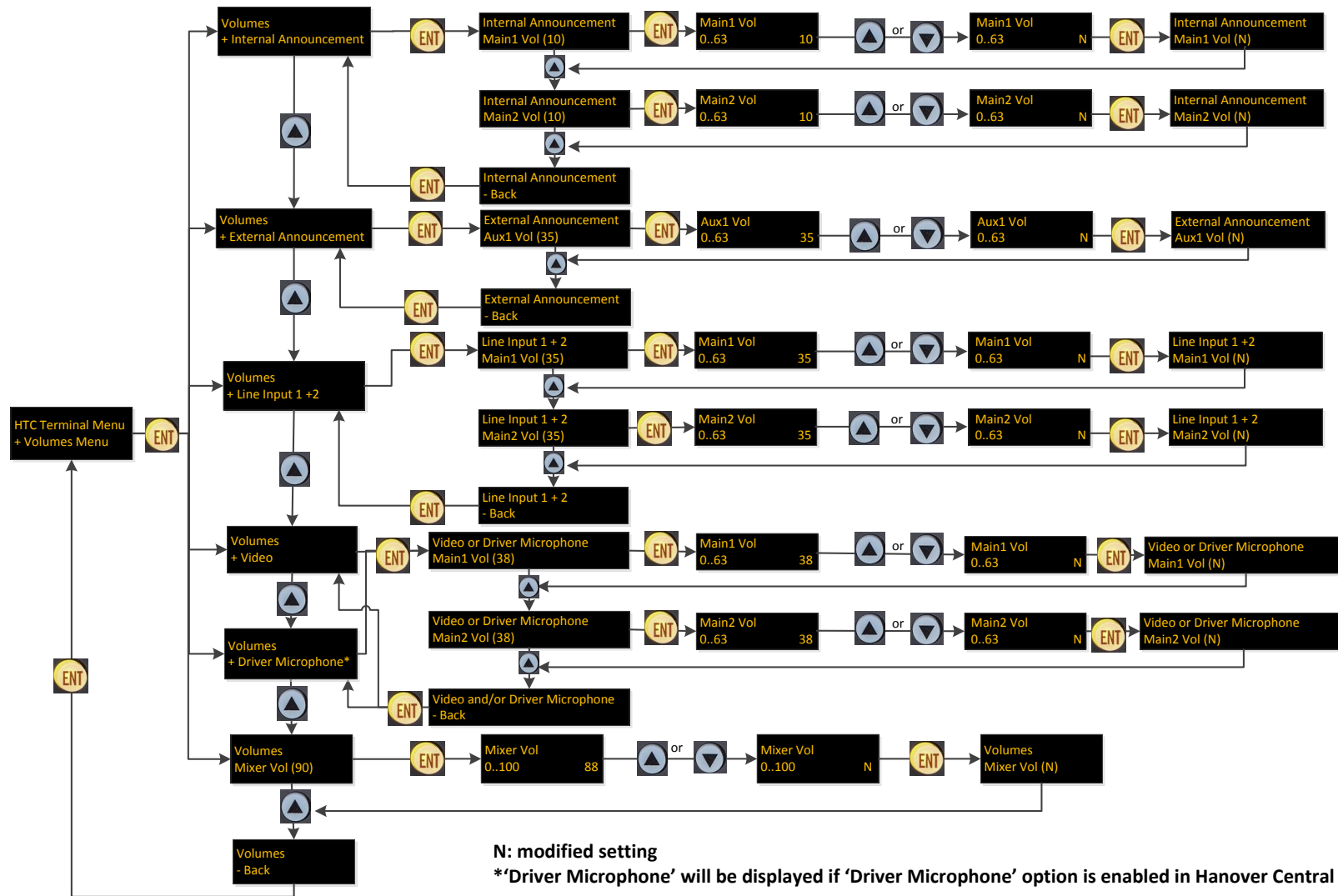
3.5.8.4 System Tests

The flow chart below shows the procedure for accessing the different options of the System Tests:

N: modified setting
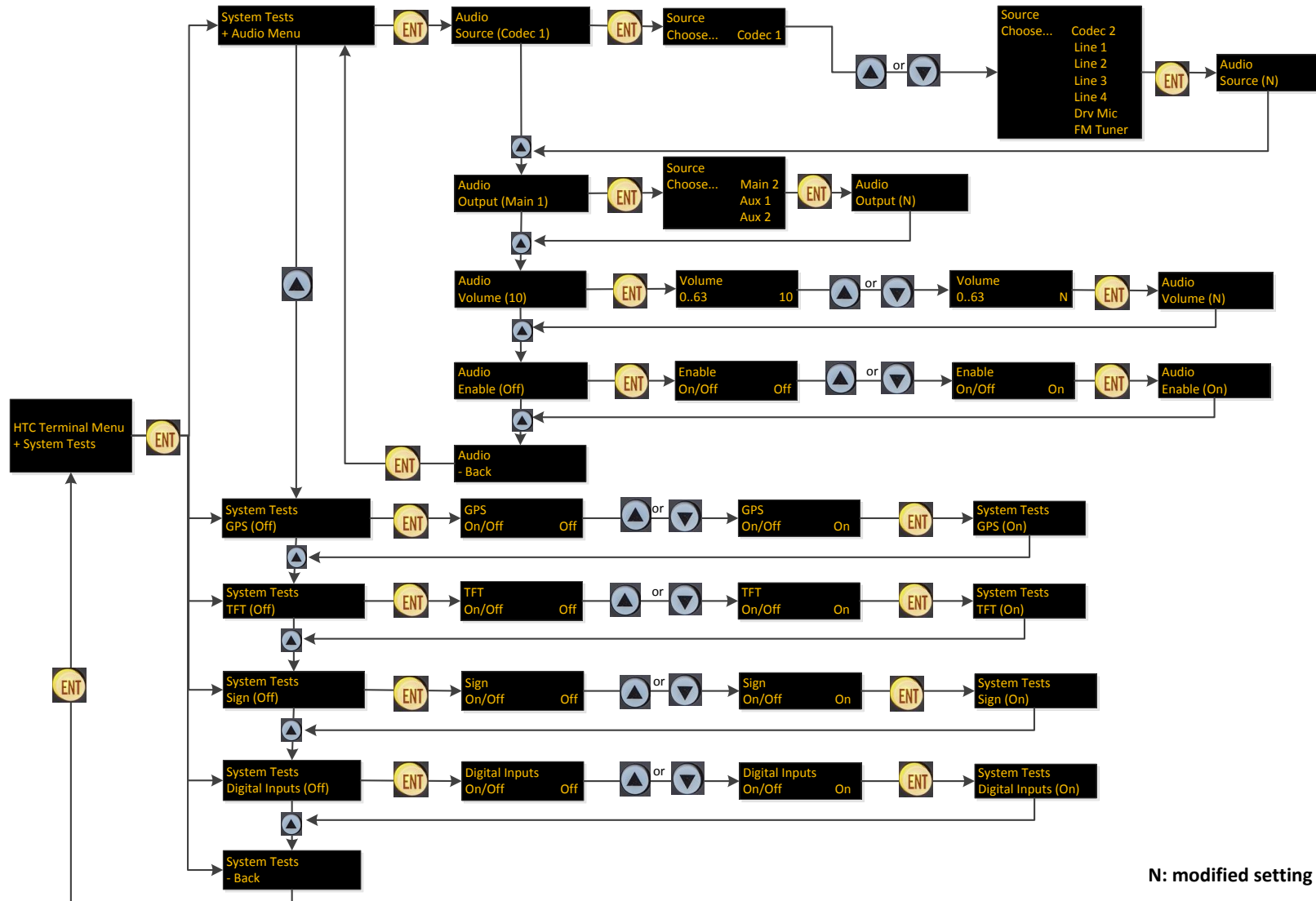
3.5.8.5 Settings Menu

The flow chart below shows the procedure for accessing the different options of the Settings Menu:

Settings / AVL Enabled (Yes)	**ENT** → **AVL Enabled** / Yes/No Yes	▲ or ▼ → **AVL Enabled** / Yes/No No → **ENT** → **Settings** / AVL Enabled (No)

```
HTC Terminal Menu
+ Settings Menu        ENT
```

Settings
AVL Enabled (Yes)   ENT   AVL Enabled
                          Yes/No   Yes   or   AVL Enabled
                                                   Yes/No   No   ENT   Settings
                                                                             AVL Enabled (No)

Settings
Vehicle ID (NONE)   ENT   Vehicle ID
                          ID   NONE   ENT   Settings
                                                    Vehicle ID (NONE)

Settings
Save New ID? (No)   ENT   Save New ID?
                          Yes/No   No   or   Save New ID?
                                                   Yes/No   Yes   ENT   Settings
                                                                              Save New ID? (Yes)

Settings
- Back

3.5.9   Setting the clock

⚠️ This feature only works properly if RTC is fitted.

To use this feature, the lock code must be entered, 'Set clock?' found from within the list and then selected using the Ent key.

3.5.9.1   How to set the date:

Step	Description	Figure
1	The screen for the date is displayed as shown: dd/mm/yyyy for day/month/year.	Date: 2 8 / 0 4 / 2 0 1 4
2	The dd will flash. Use the up arrow key to increase the dd or the down arrow key to decrease the dd. Then, press Ent key to confirm your day.	
3	The mm will flash. Use the up arrow key to increase the mm or the down arrow key to decrease the mm. Then, press Ent key to confirm your month.	
4	The yy will flash. Use the up arrow key to increase the yy or the down arrow key to decrease the yy. Then, press Ent key to confirm your year.	

3.5.9.2   How to set the time:

Step	Description	Figure
1	The screen for the time is displayed as shown: hh:mm (in 24-hour format) for hours:minutes.	Time: 1 1 : 1 4
2	The hh will flash. Use the up arrow key to increase the hh or the down arrow key to decrease the hh. Then, press Ent key to confirm your hours.	
3	The mm will flash. Use the up arrow key to increase the mm or the down arrow key to decrease the mm. Then, press Ent key to confirm your minutes.	

3.5.9.3 How to set the timezone:

Step	Description	Figure
1	The screen for the timezone is displayed as shown.	Timezone: (+/- UTC) [+ 0]
2	The '+ 0' will flash. Use the up arrow key to increment the value by 15 minutes or the down arrow key to decrease the value by 15 minutes. Then, press Ent key to confirm your timezone.	

3.5.9.4 How to confirm new clock settings:

Step	Description	Figure
1	The confirmation screen is displayed as shown.	Confirm? 28/04/2014 11:14 (+0) Yes ------- No
2	Use the left arrow key to confirm the new clock settings or the up arrow key if you do not want to confirm the changes made.	

3.5.10 Functional Test

Feature used only by Hanover to test final assembly and to load factory-set parameters such as serial number, manufacture date and MAC address (Ethernet).

3.5.11 Network

⚠️ Be careful when using these functions. Incorrect or improper use will render your network not to function properly.

This setting contains the FTP Configuration Data. To use this feature, the lock code must be entered, 'Network' found from within the list and then selected using the Ent key. On the controller screen, there are currently 11 options. Use the up and down arrow keys to navigate between each one.
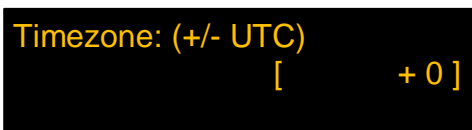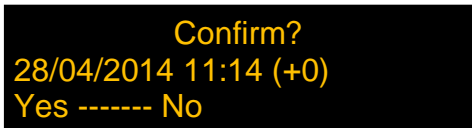
An example screen looks like this:

1 ENABLE_DHCP
1

The list of network options in the EG3 controller is provided in Appendix I: CONFIG.INI file.

Note: FTP Username and FTP Password should accept any characters, however, attempting to change these from the front panel will only allow to enter characters in the ranges a-z, A-Z and 0-9. If non-alphanumeric characters are used for username and password fields, these fields can be edited using the CONFIG.INI file. Both Username and Password have a maximum acceptable length of 29 characters.

3.5.12 AUTO / MAN

Feature which will only appear on the main menu if "AM – Auto/Man menu enable" has been set to 1 within the configure sub-menu (refer to Appendix H: Configuration code options). It is also a shortcut to allow the user to turn AM back to 0 without having to go back into the configure sub-menu again.

It is shown on the front of the controller as:

Auto/Man:
                    AUTO

3.5.13 Preview destination

This option allows the user to directly visualize the list of destinations available in his database by simply using the up or down arrow keys to navigate through the list.

To use this feature, the lock code must be entered, 'Preview Dest?' found from within the list and then selected using the Ent key.

3.5.14 Firmware update (via Ethernet)

This option allows the firmware update of either the sign or the EG3 (if connected via Ethernet to FTP site). To use this feature, the lock code must be entered, 'Firmware Update?' found from within the list and then selected using the Ent key.

Note: There is also the option that allows the firmware update of the EG3 via an USB stick. Please refer to section 3.7.3 Firmware update via USB stick.

The table below shows the different possible downloads for firmware update:

Level 1	Level 2	Level 3: Download -	Level 4: Update sign address -
Firmware Update?	Sign Firmware	OLED.BIN	0
		OLEMS.BIN	1
		OLED-FC-MX.BIN	2
		OLED-FC-DD.BIN	3
		TLED.BIN	.
		ILED.Bin	. 15
	EG3 Firmware	Connecting to server	

3.6 Reset options

	Be careful when using these functions. Incorrect or improper use will erase the currently stored database and / or may reset all configuration and system parameters rendering your EG3 unusable within the vehicle until a database is reloaded.

There are 3 types of reset options available for EG3: factory lock code reset, configuration reset and factory reset as described below.

- **Factory lock code reset:** for resetting the lock code to the default factory value (9876).

- **Factory reset:** for resetting all the parameters behind the lock code to their default values and erasing the database.

3.6.1 Factory lock code reset

Step	Procedure
1	Switch off power to the EG3
2	Hold both the up and down arrow keys
3	Switch on power to the EG3 while maintaining the up and down arrow keys pressed for at least 3 seconds
4	The lock code will now be reset to the default factory value (9876) although there is no display on the screen to confirm this

3.6.2 Factory reset

Step	Procedure
1	Switch off power to the EG3
2	Hold both the F and Ent keys
3	Switch on power to the EG3 while maintaining the F and Ent keys pressed for at least 3 seconds
4	All parameters within the EG3 will be reset to their default factory values confirmed by the following screen: ERIC-G3 V1.12.02 NCDUP12345OEF// Factory settings loaded This will reset all the settings behind the lock code to their default values and erase the database as shown by the following screen: NO DATA

3.7 Firmware

3.7.1 Overview

Occasionally, it may be necessary to update the firmware in the EG3 for any of the following two reasons:

- There is an error in the functionality of the controller that affects its operation.

All software changes are tested thoroughly before release but even in the most rigorous test regime, it is possible for bugs to remain undetected. Most installations deploying standard, well-proven functions are very unlikely to be affected by bugs of this type.

- An update is needed in connection with a new feature.

> Be careful as a firmware update will erase the controller's database which will need to be uploaded again afterwards.

3.7.2 EG3's firmware version

To know which firmware version your EG3 is equipped with, there are two ways of checking it:

- 1st way: Press the Ent key for a few seconds. The firmware version will be displayed as ERIC-G3 V1.0X. In this case, the firmware version will remain on the screen for a few seconds before it reverts to the last standard driver's screen before Ent key was pressed.

- 2nd way: Press the F key, the lock code must be entered, 'Show status?' found from within the list and then selected using the Ent key. The firmware version will be displayed as ERIC-G3 V1.0X. In this case, the firmware version will remain on the screen until you exit the function by pressing on the Ent key.
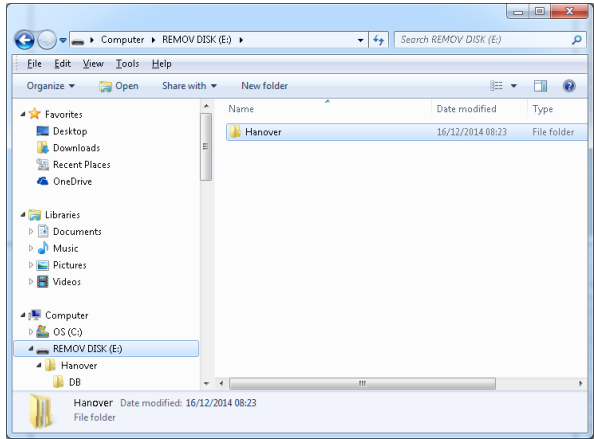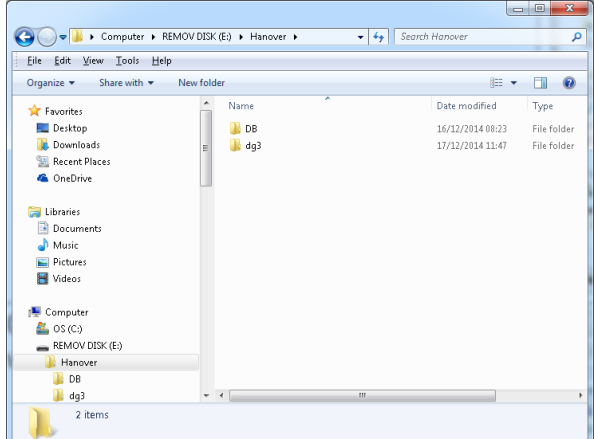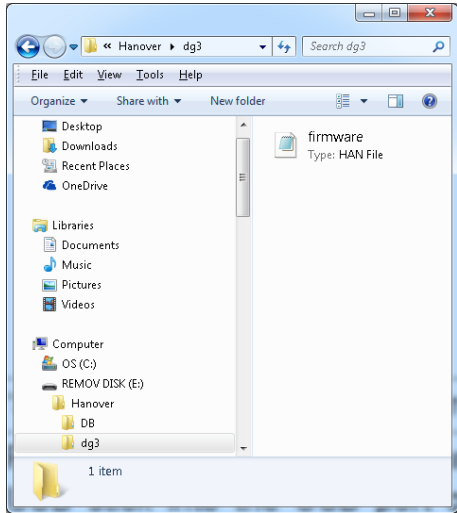
For any enquiry about the latest released firmware version, please contact Hanover (please refer to section 4.3 Hanover Technical Support).
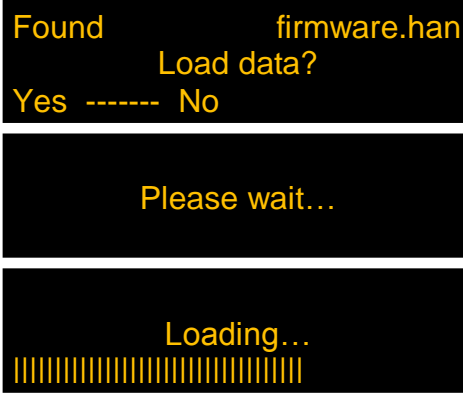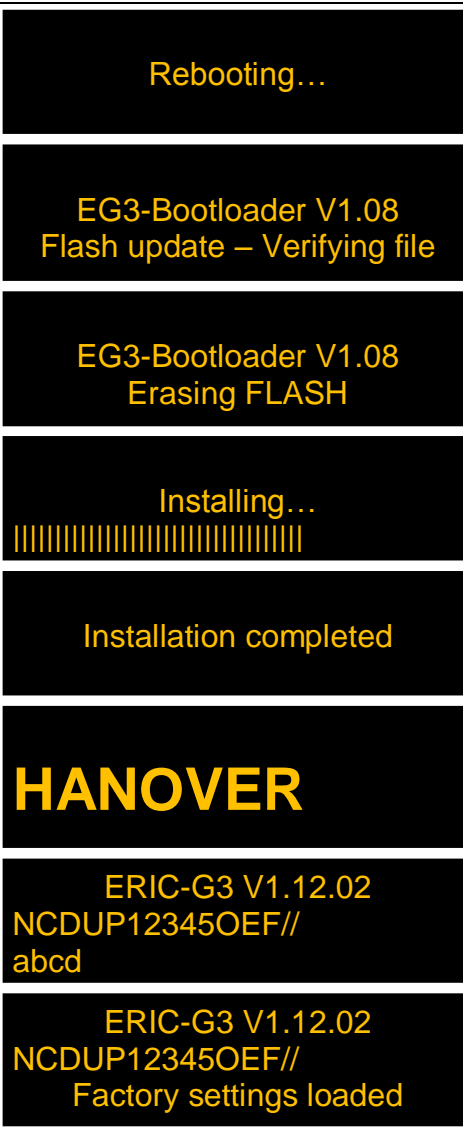
3.7.3 Firmware update via USB stick

Note: There is also the option that allows the firmware update of either the sign or the EG3 (if connected via Ethernet to FTP site). Please refer to section 3.5.14 Firmware update (via Ethernet).
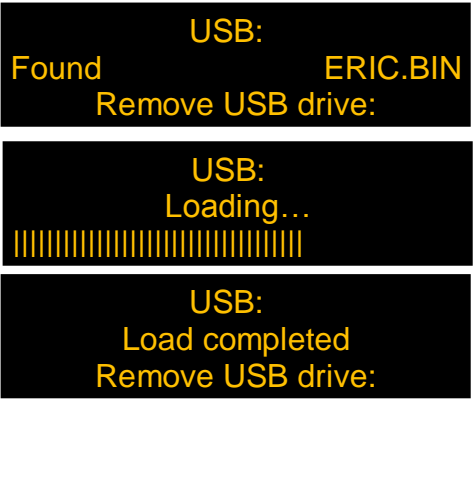
Firmware for the EG3 can be loaded via an USB stick as follows:

Step	Description	Figure
1	Obtain a copy of the latest firmware from Hanover and save the file on a standard Windows PC. The file will be named: **firmware.han**.	
2	Insert the USB stick into the PC and locate it. It appears as **REMOV DISK (E:)**. **Note:** The drive letter is variable and in this case, the drive letter allocated to the USB stick by the PC is 'E:'.	

Step	Description	Figure
3	Create a folder called '**Hanover**' on the USB stick.	
4	Open this folder and create another folder within it named '**eg3**'.	
5	Copy **firmware.han** to the eg3 folder on the USB drive, so that its full path name is **E:\Hanover\eg3\firmware.han**	
6	'Safely remove' the USB stick from the PC.	
7	Power up the EG3 controller and plug the USB stick into the USB port on the front panel[*].	
8	The message 'Load Data?' will appear on the screen. Confirm this action by pressing the left arrow key.	USB: Drive found

Step	Description	Figure
		Found firmware.han Load data? Yes ------- No Please wait… Loading… IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
9	The EG3 will reboot and start installing the firmware.	Rebooting… EG3-Bootloader V1.08 Flash update – Verifying file EG3-Bootloader V1.08 Erasing FLASH Installing… IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII Installation completed **HANOVER** ERIC-G3 V1.12.02 NCDUP12345OEF// abcd ERIC-G3 V1.12.02 NCDUP12345OEF// Factory settings loaded
10	After a firmware update, the database is deleted and the controller will show 'NO DATA'.	NO DATA
11	The USB stick should then be left in place. After a short while, the screen will show:	USB: Drive found

Step	Description	Figure
12	This screen appears if no database is found:	ERIC.BIN Not Found Remove USB drive:
	These screens appear if a database is found: At this point, the message 'Remove USB drive:' appears on the controller's display and starts flashing. It is now safe to remove the USB stick from the unit. The EG3 also starts beeping and will continue to do so until the USB stick is removed.	USB: Found ERIC.BIN Remove USB drive: USB: Loading… IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII USB: Load completed Remove USB drive:
13	The controller will then reboot once more, following which it will be ready to use - again, depending on how the reset option has been configured.	

* When a USB stick is inserted into the EG3, it will always look for (and download) a firmware file first before attempting to start a data download. There is thus no problem if the stick contains an up-to-date firmware.han file as well as an eric.BIN file. However, it does mean that if an updated eric.BIN file is later saved to the stick and downloaded to the EG3, the firmware.han file on the stick will also be downloaded first. There is thus a danger that an older version of the firmware will be downloaded if more recent firmware updates have been carried out using another USB stick. Accordingly, it may be sensible to keep one stick for data and another for firmware.

4 Troubleshooting

4.1 Overview

This section lists the more common queries that occur with the EG3 controller. The controller is not intended for disassembly by the user. Hanover shoul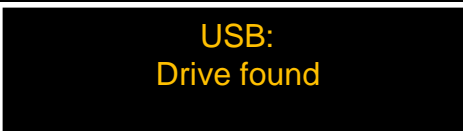d be consulted (please refer to section 4.3 Hanover Technical Support) if a solution cannot be found by means of altering settings manually or via the HELEN software as described below.

Section	Issue
4.1.1	No display or backlight on controller
4.1.2	No communication or required information not displayed on signs
4.1.3	List will not load into EG3 controller
4.1.4	EG3 loads list correctly but shows 'Bad Destination or Bad Route'
4.1.5	Sign test function
4.1.6	Information code on controller screen shows '??'
4.1.7	Advert code on controller screen shows '??'
4.1.8	On-screen response erratic when using keypad
4.1.9	Faults not listed here

4.1.1 No display or backlight on controller

No.	Description	Refer to section
1	Check that pins 1 and 10 on the mini fit connector are wired correctly by making sure the pins are pushed in securely into the connector and that the required voltage is present	Appendix D-1: SK1 EG3 MASTER PORT: 18-way mini fit connector

4.1.2 No communication or required information not displayed on signs

No.	Description	Refer to section
1	Check that the comms are wired correctly (pin 11 = red (+) and pin 2 = black (-)) by making sure the pins are pushed in securely into the connector	Appendix D-1: SK1 EG3 MASTER PORT: 18-way mini fit connector
2	Check all other cables and connections	
3	Run the signs test to check that power and communications are reaching each sign. When EG3 shows 'Testing…', a test pattern should be visible on the signs: • If visible, the destination list loaded is possibly not compatible with the sign system on the vehicle. Check that the HELEN database file has been configured correctly • If not visible, then there is probably a hardware / communications problem	3.5.2 Running the signs test 4.1.5 Sign test function
4	A sign status check can also be run	3.5.1 Status options

4.1.3   List will not load into EG3 controller

No.	Description	Refer to section
1	Check there is a valid destination list in the USB drive and that it has been correctly configured	3.2.2 Configuring the USB stick for loading
2	If problem still persists, check if the USB drive is faulty	

4.1.4   EG3 loads list correctly but shows 'Bad Destination or Bad Route'

No.	Description	Refer to section
1	Ensure a valid destination or route code is being entered	
2	The database may have been saved and loaded as a standard 4-digit code rather than a 10-digit route browse (or vice versa). Check in HELEN that the correct option has been selected	Figure of step 1 in 3.2.3 Transferring the database to the USB stick using HELEN
3	Resave the database to the USB drive if necessary and then upload it to the EG3 again	

4.1.5   Sign test function

The sign test function tests all the signs connected to the EG3 controller. This function is accessed via the menu behind the lock code (please refer to section 3.5 Accessing other functions of the EG3), 'Test signs?' found from within the list and then selected using the Ent key.

The screen looks like this:
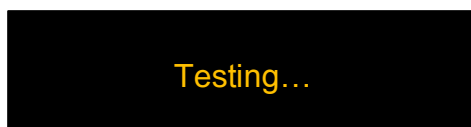
Testing…

The controller will then flash 'Testing' as shown above and send a message to all the connected signs for them to show a repeating test pattern. This test pattern verifies that the signs and the controller are communicating with each other and that for LED signs, the individual LEDs are working correctly.

LED signs will show a scrolling message followed by an alternating test pattern (the content of the scrolling message is described below) whilst flip dot signs will show just the test pattern. There will be some variation in what is scrolled across the sign, depending on firmware, display size etc., but the key areas will be the same.

Failure of this test sequence to appear indicates that power and / or communications are not present and / or cables may have been incorrectly connected.

Display test character string definition

LED signs will show scrolling text similar to that set out below, followed by a series of horizontal and vertical line test patterns:

Example: **OLED v1.15 (X1.15) #0 144x19 C=3D00 P=65/100**

OLED v1.15	=	the sign's base software type and version
(X1.15)	=	application software version (Super-X)
#0	=	sign address, set by the switch on the sign processor
144x19	=	sign size in LEDs (number of columns x number of rows)
(C=3D00)	=	for Hanover engineer
P= 65/100	=	brightness of sign (100/100 is max (100%) while 10/100 is min (10%))

Note: It is possible to show the switch address of the sign while Test Sign feature is running on the EG3 controller.

No.	Description

1	While the controller is flashing **Testing…**, press the ⬆ key to enter the address mode.
	
	• For Flip-dot signs:
	   ➢ will stop display of alternating test matrix
	   ➢ will display sign address only (e.g. #X where X is the sign address)
	
	On controller: will continue flashing **Testing…**
	
	• For LED signs:
	   ➢ will stop display of scrolling test pattern
	   ➢ will display sign address only (e.g. #X where X is the sign address)
	
	On controller: will continue flashing **Testing…**

2	Press ⬆ key to go back to normal mode.

4.1.6 Information code on controller screen shows '??'
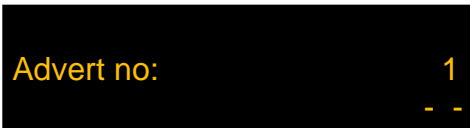
'??' will be shown if an invalid code has been selected – i.e it does not match any of the information codes stored in the database.

No.	Description	Figure
1	Further to setting "IN – Prompt for Info Num" to 1 in the configuration code options, press the I key and the following screen will appear.	Info no: _ 00
2	Use the alphanumeric keypad to type in a valid code and press Ent key to validate	Info no: 1 00
3	Press Ent key to validate.	

	4	The current route / destination will be shown, along with the chosen information message	

4.1.7 Advert code on controller screen shows '??'

'??' will be shown if an invalid code has been selected – i.e it does not match any of the advert codes stored in the database.

No.	Description	Figure
1	Further to setting "AN – Prompt for Ad Num" to 1 in the configuration code options, press the I key and the following screen will appear.	Advert no: _ - -
2	Use the up and/or left arrow keys until the required digit value is reached	Advert no: 1 - -
3	Press the Ent key to validate	
4	The current route / destination will be shown, along with the chosen advert message	

4.1.8 On-screen response erratic when using keypad

If EG3 does not reliably respond to a key press, the keypad may be faulty. Contact Hanover (please refer to section 4.3 Hanover Technical Support) to arrange a return for repair.

4.1.9 Faults not listed here

The most commonly occurring faults have been described above. However, other fault conditions can occur occasionally. These often arise during data loading or because of communication set-up problems. Such faults can be identified by using the 'Show Status' function. Please refer to section 3.5.1 Status options.

4.2 If troubleshooting does not solve the problem

If the troubleshooting guide fails to solve the problem, Hanover Technical Support should be contacted for advice. However, please gather the following list of information before contacting Hanover Technical Support:

No.	Information	Where it is found	Refer to section
1	Software version of EG3		3.7.2 EG3's firmware version
2	Product code of EG3	On the silver label on the casing (if accessible)	1.5 Identification
3	Product codes of signs connected to the EG3	On the rear panels of signs	
4	Nature of problem, including what is or is not being displayed by the EG3 and the signs connected to it		
5	The eric.bin and corresponding HELEN data files		

4.3   Hanover Technical Support

4.3.1   United Kingdom

Please do not hesitate to contact Hanover Technical Support located in Lewes, UK for any problem encountered or for any advice needed for using the EG3 controller:

Contact	
Phone	+44 (0)1273 477 528 Ext.615 or Option 2
Email	support@hanoverdisplays.com

4.3.2 United States of America

Please do not hesitate to contact Hanover Technical Support located in USA for any problem encountered or for any advice needed for using the EG3 controller:

Contact	
Phone	+1 (773) 334 9934
Email	STL@hanoverdisplays.com

5 Queries, FAQs and other information

5.1 Overview

The previous section provides in-depth information on diagnosing problems that can occur with the EG3. This 'how to' section provides answers to typical questions and queries associated with the unit and includes cross-references and links where appropriate to the relevant sections of the manual.

If the answer is not found here, users can contact Hanover Technical Support – please refer to section 4.3 Hanover Technical Support.

5.2 Queries

How to:	Refer to section
Format a USB stick prior to loading a database into the EG3	3.2.1 Formatting the USB stick
Configure a USB stick for loading a database into the EG3	3.2.2 Configuring the USB stick for loading
Determine the sizes and addresses of the signs	3.5.1 Status options
Mimic the content of a specific display on the controller screen	DD entry in Appendix H: Configuration code options
Reset the EG3	3.6 Reset options
Change the language setting in the EG3	LG entry in Appendix E: System Options
Add a 'bus reversing' message to the signs	Displaying 'Bus reversing'
Add an 'emergency' message to the signs	Emergency message
Use the clock function within the EG3	3.5.9 Setting the clock
Use the 'battery guard' feature	Blanking the sign (battery guard)

5.3 Frequently asked questions

Questions	Answers
Do I need a special loading device?	No, you can use an off-the-shelf USB flash drive. It should be noted that these are not 100% reliable so you may need to try more than one.
How do I load the EG3?	A database of destination information (plus adverts and other messages if required) is prepared on a standard Windows PC using HELEN sign-editing software. This is transferred to a USB stick and then loaded directly into the EG3. Please refer to section 3.2 Loading a database into the EG3 from HELEN.
Can I change a DERIC+ for an EG3?	Yes, you will need Hanover adaptor cable CX330K and a USB flash drive. Please refer to 2.2.2.1 CX330K – For replacing a DERIC+ controller and

Questions	Answers
	5.4.1 Replacing a DERIC+ or an ERIC++ controller with an EG3 controller.
	Note: The casing of the Deric+ is of different size to that of the EG3.
Can I change an ERIC++ for an EG3?	Yes, you will need Hanover adaptor cable CX330X or CX330N and a USB flash drive. Please refer to 2.2.2.2 CX330X or CX330N – For replacing an ERIC++ controller and 5.4.1 Replacing a DERIC+ or an ERIC++ controller with an EG3 controller.
	Note: The casing of the Eric++ is of different size to that of the EG3.
Do I need a new database for the EG3?	No, your existing database will work.
I have to use a HELEN-compressed database, will this work?	Yes.
My database uses profiles, will this work with the EG3?	Yes, the EG3 supports profile and container file databases.

5.4   Other information

5.4.1   Replacing a DERIC+ or an ERIC++ controller with an EG3 controller

No.	Description	Refer to section
1	The casing of the EG3 is of different size to that of the DERIC+ or ERIC++. Consequently, the actual position of the Deric+ or Eric++ is no longer appropriate for fitting an EG3. If it is not possible to modify the size of the actual position, look for another appropriate position (refer to 2.1 Fitting the controller) for fitting the EG3 while making sure the new wiring system is properly made. **Note:** The EG3 can be fitted using the DIN radio slot to fit standard radio slot aperture prior to using an adaptor kit. For more details, please contact Hanover (refer to section 4.3 Hanover Technical Support)	1.6.3 Isometric view
2	From the rear of the DERIC+ or ERIC++ controller, unplug the 2-way (communications) and 3-way (power) plugs	
3	Loosen and unclip the screw fixings holding the DERIC+ or ERIC++ controller in place: it should then slide out of its mounting	2.2.2 Adaptor cable
4	The EG3 controller can be used with a conversion cable CX330K (when replacing a Deric+) or CX330X or CX330N (when replacing an Eric++). This has an 18-way minifit connector which plugs into the rear of the EG3 and three connectors at the other end which can be connected directly to the power and communications plugs previously connected to the DERIC+ or ERIC++	

Note: DERIC+ has different features to the ERIC family of controllers: consult the DERIC+ Controller – Installation and Operating Manual (ref. 540126) if replacing one with an EG3.

Appendix A: Installation Drawing No. 5250/03/03 – Base Build
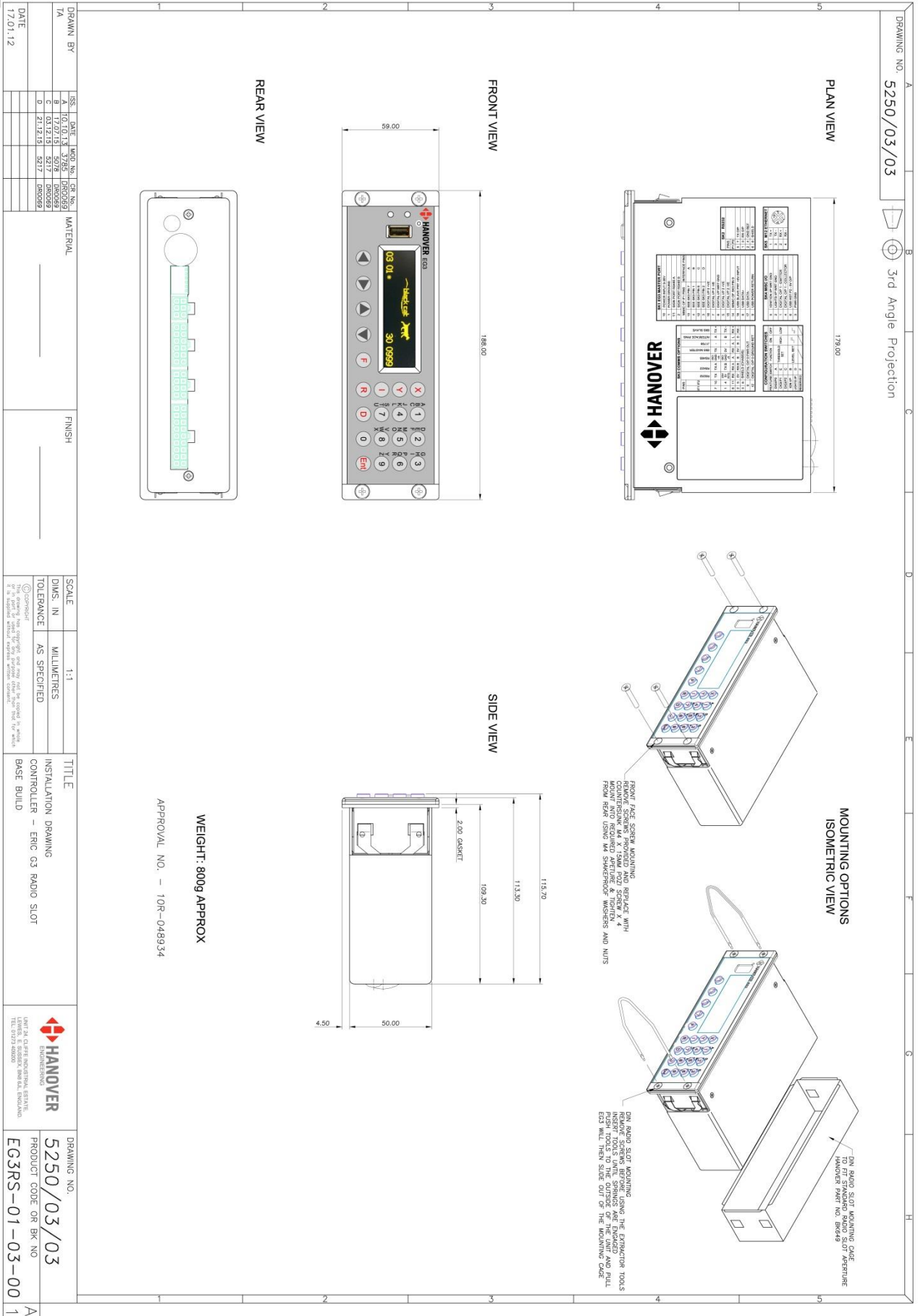
Appendix B: Installation Drawing No. 5250/03/04 – Ethernet + 2 x RS485
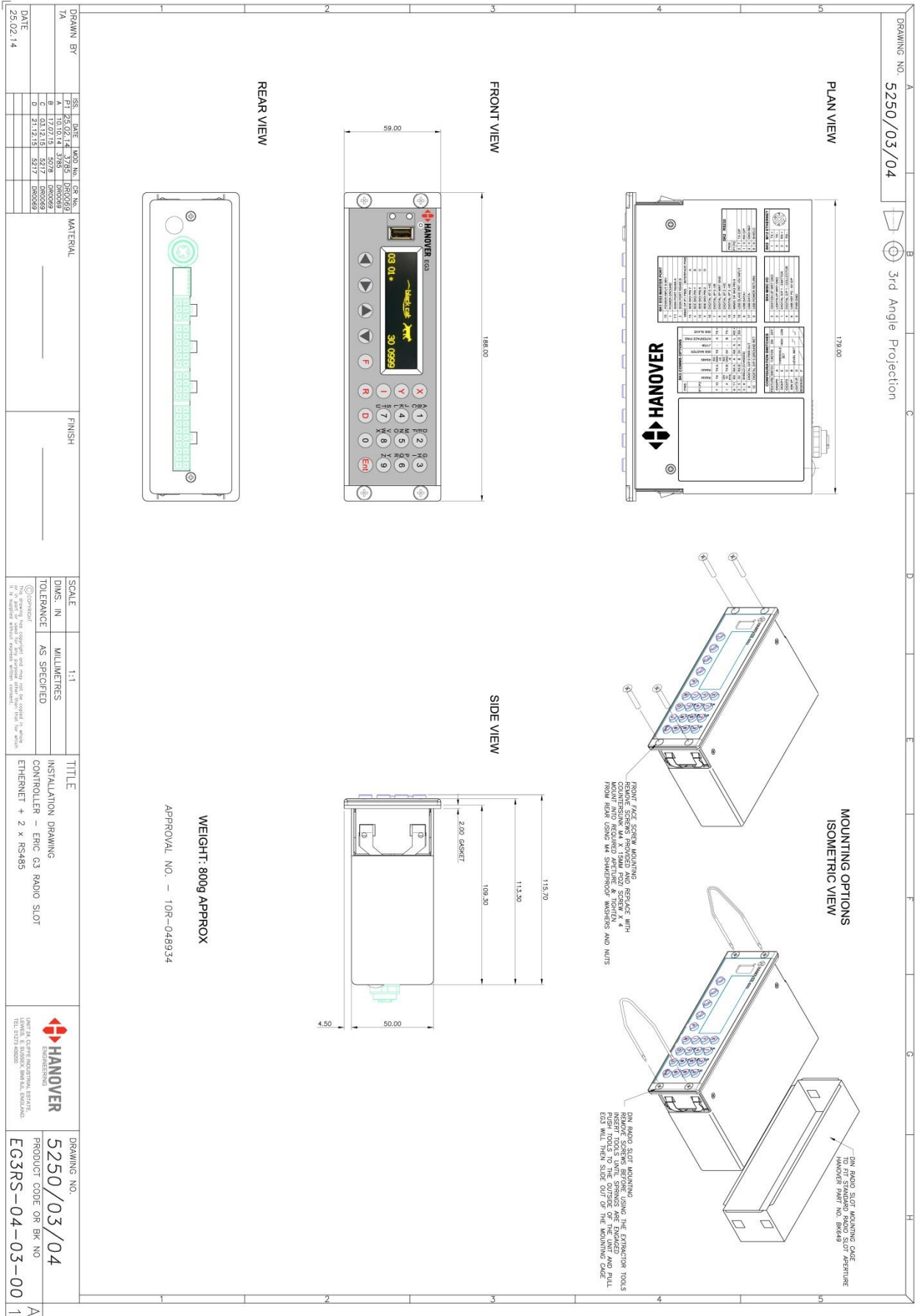
Appendix C: Builds Features

The table below describes the hardware feature present in each build.

Build	Description
Base build	USB host for loading database via the front USB port.
	Sign mimic allows the controller to mimic any sign display, including graphic images.
	Keypad illumination level adjusted according to ambient light.
	3 digital inputs (2 are isolated, 1 is not).
	Multi-tone (piezo) sounder.
	8 Mb capacity for destination database.
	Built-in RS485 comms.
	2 Built-in RS232 comms.
	Plug-in interface 1 available. Refer to 1.5.1 Model variants.
	Backlit keys with contextual illumination.
	Digital output 2 (opto-isolated).
Intermediate build (As base build plus:)	Real time clock for the display of time and date on the internal sign.
	Plug-in interface 2 available. Refer to 1.5.1 Model variants.
	Ignition input dedicated to wake the device when permanently powered.
	Digital output 1: with high current capability added (max. 1.5A).
	Digital output 2: opto-isolated (already present on the base build) is now current limited.
Full build (As intermediate build plus:)	Ethernet (database, firmware and configuration file can be loaded by Ethernet).

Notes:

- Link jumpers LK1 and LK2 are fitted if Interface 1 (IF1 = 03) i.e. for any product code such as EG3RS-xx-03-xx.

- If LK1 and LK2 are fitted, any interface fitted to IF1 is not used and instead communication is routed via an internal RS485 hardware.

- A retainer clip is fitted if any interface plugin is used. The retainer clip secures the plugin interfaces to the EG3 motherboard. Note: Part number is 5250-20-11. Refer to diagram (in red) below.
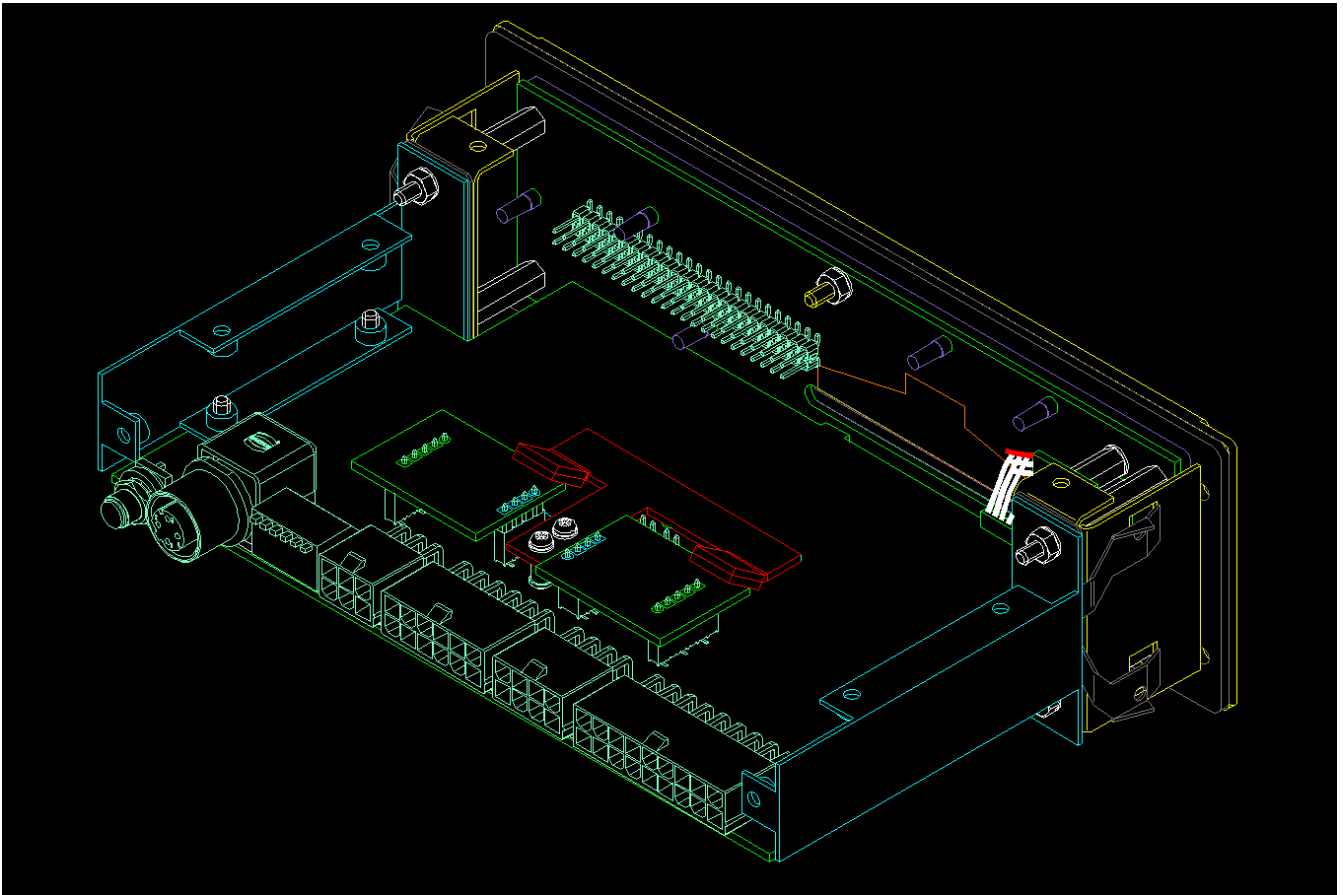
Figure 11 - diagram showing the retainer clip (in red)

Appendix D: Function of connectors on rear of EG3 controller

The functions of the four types of mini fit pins (SK1, SK2, SK3 and SK4), M12 Ethernet (SK5), configuration switches and SMA connector (SK6) are described in this appendix.

Appendix D-1: SK1 EG3 MASTER PORT: 18-way mini fit connector
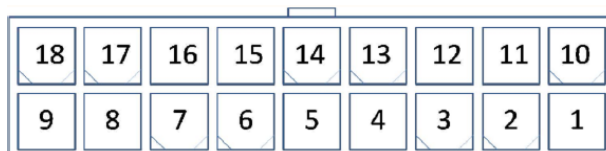
Figure 12 - diagram showing the 18-way mini fit connector

Pin	Function	Description (printed on casing of EG3)	
1	PGND	POWER GROUND	
2	SIGN_RS485B	SIGN PORT RS485 B	
3	SG/B 3	**INTERFACE PIN**	**MIMIC OF IF1 PIN**
		D	SEE SK3 PIN 2
4	NC/B 3	**INTERFACE PIN**	**MIMIC OF IF1 PIN**
		B	SEE SK3 PIN 1
5	DIGIN2_RAW_A	DIGITAL I/P 2 +VE	
6	DIGIN1/ODO_RAW	DIGITAL I/P WRT (With Respect To) GND	
7	DIGIN0_RAW_K	DIGITAL I/P 0 -VE	
8	USB1DP	USB DATA+	
9	0V (For USB)	USB POWER RETURN	
10	24V_VIN	POWER INPUT 9-36V	
11	SIGN_RS485A	SIGN PORT RS485 A	
12	RX/A 3	**INTERFACE PIN**	**MIMIC OF IF1 PIN**
		C	SEE SK3 PIN 8
13	TX/A 3	**INTERFACE PIN**	**MIMIC OF IF1 PIN**
		A	SEE SK3 PIN 7
14	DIGOP_OUT0	MIMIC OF SK3 PIN 9	
15	DIGIN2_RAW_K	DIGITAL I/P 2 -VE	
16	DIGIN0_RAW_A	DIGITAL I/P 0 +VE	
17	USB1DM	USB DATA-	
18	USBSLV	USB SLAVE PRT +5V INPUT (where PRT: PORT)	

Note: Please make sure that Pin 6 and pair of Pins 7 and 16 correspond to the correct external input in HELEN software:

- Pin 6 (digital input 1 of EG3) corresponds to external input I0 in HELEN software

- Pair of pins 7 and16 (digital input 0 of EG3) corresponds to external input I1 in HELEN software

Example of battery guard (sign blanking) in HELEN software:
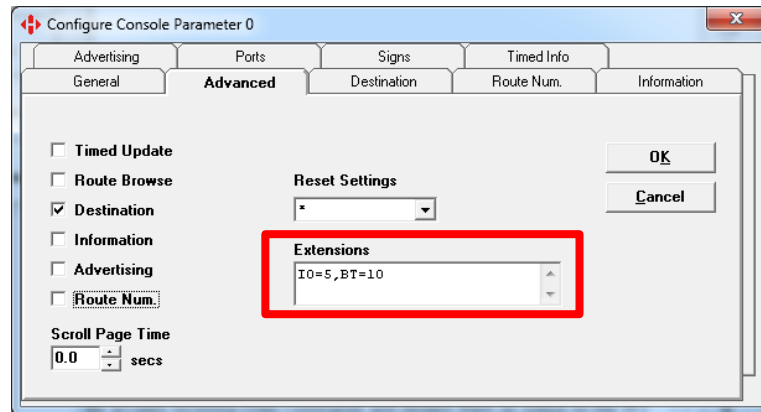
Appendix D-2: SK2 RS232: 8-way mini fit connector
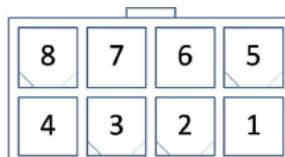
Figure 13 - diagram showing the 8-way mini fit connector

Pin		Function	Description (printed on casing of EG3)
P1	**P2**		
1		RS232_RX1	RX O/P
2		0V	GND REF
	3	RS232_RX2	RX O/P
	4	0V	GND REF
5		RS232_TX1	TX O/P
6		CHASSIS	SHIELD
	7	RS232_TX2	TX O/P
	8	CHASSIS	SHIELD

Note: Please make sure that Pin P1 and P2 correspond to the correct Port in HELEN software:

- Pin **P1** corresponds to **Port 2** in HELEN software

- Pin **P2** corresponds to **Port 3** in HELEN software

Appendix D-3: SK3 COMMS OPTIONS: 12-way mini fit connector

PGND (DIGITAL O/P 0 GROUND REF)   DIGOP_OUT0 (DIGITAL O/P 0 PWR OUT)

SHIELD (CHASSIS)   SHIELD (CHASSIS)
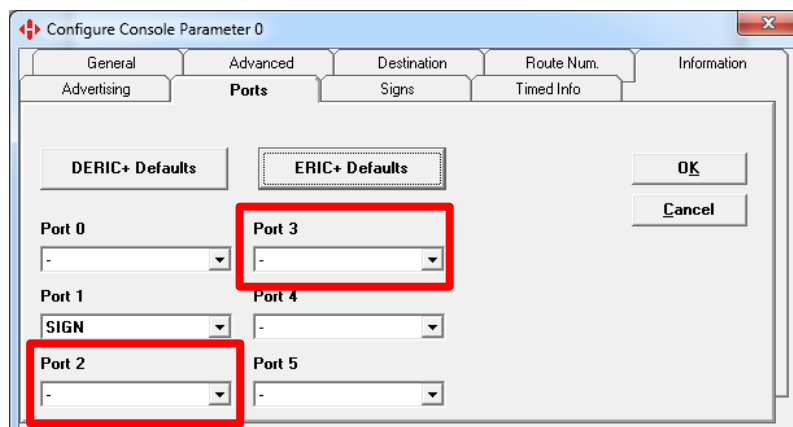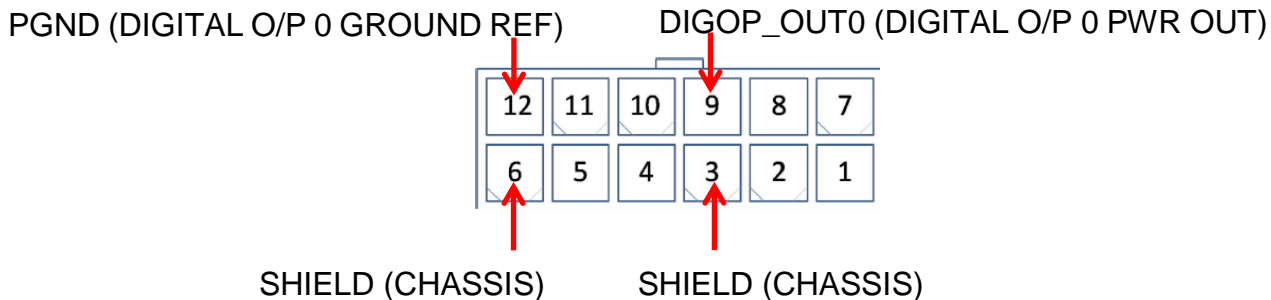
Figure 14 - diagram showing the 12-way mini fit connector

		IF1				IF2			
Pin		1	2	7	8	4	5	10	11
Function		NC/B_3	SG/B_3	TX/A_3	RX/A_3	NC/B_4	SG/B_4	TX/A_4	RX/A_4
COMMS	**RS232**	23V 5V RTS*	0V	TX	RX	23V 5V RTS*	0V	TX	RX
	RS422	TX B	RX B	TX A	RX A	TX B	RX B	TX A	RX A
	RS485	ISO GND -R	B	ISO GND +R	A	ISO GND -R	B	ISO GND +R	A
	IBIS MASTER	0V	0V	TX	RX	0V	0V	TX	RX
	J1708	-	B	-	A	-	B	-	A
	INTERFACE PINS	B	D	A	L	B	D	A	L
	IBIS SLAVE	TX-	RX-	TX+	RX+	TX-	RX-	TX+	RX+

*RTS: Request To Send

Note: Please make sure that Pin IF1 and IF2 correspond to the correct Port in HELEN software:

- Pin **IF1** corresponds to **Port 4** in HELEN software

- Pin **IF2** corresponds to **Port 5** in HELEN software
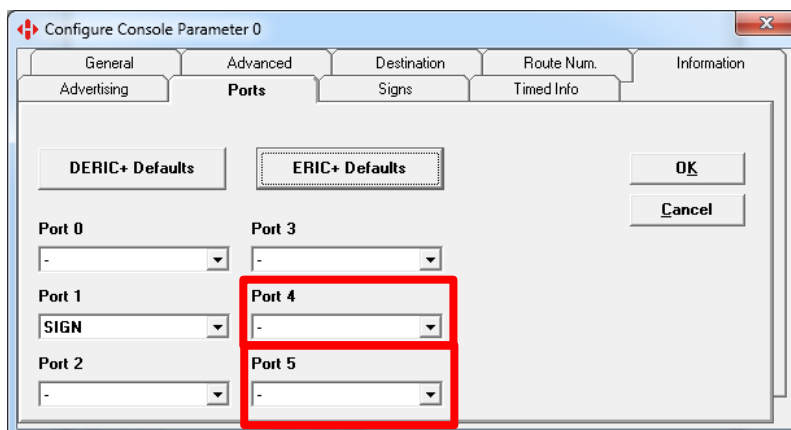
Appendix D-4: SK4 MISC I/O: 6-way mini fit connector
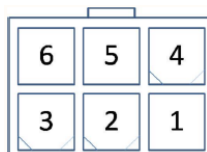
Figure 15 - diagram showing the 6-way mini fit connector

Pin	Function	Description (printed on casing of EG3)
1	DIGOP_E1	DIGITAL O/P 1 - EMITTER
2	LIGHTS_INP_RAW	LIGHTS I/P WRT (With Respect To) GND
3	PGND	PWR GND
4	DIGOP_C1	DIGITAL O/P 1 - COLLECTOR
5	IGN_INP_RAW	IGNITION I/P WRT (With Respect To) GND
6	USB_HST_PWR1	USB HST P2 - 5V O/P

Appendix D-5: SK5 M12 ETHERNET
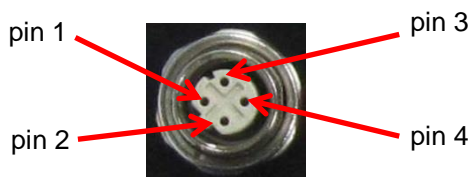
Figure 16 - diagram showing the M12 Ethernet connector

Pin	Function	Description (printed on casing of EG3)
1	ETH TX+	TX +
2	ETH RX+	RX +
3	ETH TX-	TX -
4	ETH RX-	RX -

Appendix D-6: CONFIGURATION SWITCHES
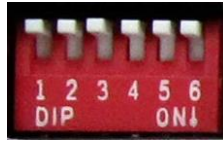
Figure 17 - diagram showing the configuration switches

Switch	Feature	Function	ON	OFF
1	Digital input 0 (refers to input known as I1)	Sets the voltage threshold for digital input 0. Either a low or high threshold can be set.	HIGH (~12V)	LOW (~4V)
2	-	Not used	-	-
3	-	Not used	-	-
4	-	Not used	-	-
5	Digital input 1 (refers to input known as I0)	Sets the voltage threshold for digital input 1. Either a low or high threshold can be set.	HIGH (~12V)	LOW (~4V)
6	Reserved	Connected to CPU and can be used to set a mode or similar. Exact function undefined.	Undefined	Undefined

Appendix D-7: SK6 SMA CONNECTOR

Figure 18 - diagram showing the SMA connector

The SMA connector is a high-performance sub-miniature connector for microwave frequencies. It will be used for connecting the controller to an external antenna. As this will be fitted to the EG3 controller and will be operational only in future versions of the controller, further details about this connector will be provided in next versions of the EG3 Controller – Installation and Operating manual.

Appendix E: System Options

This appendix lists all functions available in the system and their values selected by using the Ent key:

Option	Possible values		Value by default	Description
AS - Auto Speed	2400, 4800, 9600, 19200, 38400, 57600, 115200		57600	Sets transfer speed of sign firmware updating (for example, an oled.bin file)
DA - Daylight Saving	1 = enabled 0 = disabled		1	In Europe (only), the controller will automatically adjust clock for daylight saving. Adjustment must be made manually for other territories (only applies if clock enabled in both cases).
DC - Disp Clock	1 = enabled 0 = disabled		0	Display of the current time if RTC fitted and enabled.
DP - Date pos.	1 = UK: date/month/year 2 = USA: month/date/year		1 (31/12/2010)	Position of date and month (only applies if RTC fitted and enabled)
LC - Lock Code	0000 - 9999		9876	Allows lock code to be set
LG - Language (ISO 639.2 codes)	DA - Danish EN - English FI - Finnish FR - French DE - German ID - Indonesian IT - Italian PT - Portuguese	ES - Spanish SV - Swedish NO- Norwegian RO - Romanian TR - Turkish ZH - Chinese NL - Dutch	EN	Determines the language used by controller (Not all languages are programmed into HELEN by default)
PF - Profile	0 - 99		0	Controller configuration set in HELEN. For more details, please refer to HELEN sign-editing software - Operating manual (ref. 540125).
SS - Sign Speed	AUTO, 4800, 9600, 19200, 38400		4800	Baud rate = data transmission speed between the controller and the signs. Signs themselves must have their processors set to the same baud rate as the controller and as each other. The AUTO setting is rarely used.

Option	Possible values	Value by default	Description
TU - Timed Update	1 = enabled 0 = disabled	0	Allows another controller configuration to be uploaded but not implemented until a pre-determined time
ZZ - Factory Code	00 - 99	00	For Hanover use only

Appendix F: Protocols – Port options

The protocols available in port options of the EG3 controller are as follows:

Option	Protocol	Description
P1 - Port 1 (fixed RS485),	SIGN	The standard Hanover Signs Protocol (HCP)
P2 - Port 2 (fixed RS232),	DIAG	Diagnostic tasks (RS232)
P3 - Port 3 (fixed RS232),	TERM	Terminal remote control (RS232)
P4 - Port 4 (configurable),	SOCRIE-A	Customer Specific
P5 - Port 5 (configurable)	SOCRIE-B	
	GTMH-1	
	HANO-1	
	HANO-2	
	AUBAGNE	
	RSL	
	SEREL	
	CGA_A	
	ELECT-A	
	SLE	
	ALMEX	
	MURCLOAD	
	MURCLOAD19	
	BKB	
	BKBMAT	
	BKBDIG	
	BKBVALENCIA	
	BKBCORUNA	
	VDV-IBIS	
	IBIS-2	
	HANVOX	
	BEEP	
	CIBOR	
	CIBOR2	
	DUBWAYF	
	TGX150-A	
	TGX150-C	

Option	Protocol	Description
	STP403S	Customer Specific
	TERNI	
	IBPERUGIA	
	PRODAT-A	
	PRODAT-B	
	ERG-A	
	ERG-C	
	ERG-D	
	ERG-E	
	DUHAMEL-A	
	NYCT	
	OCTA	
	J1708-3	
	J1708-2	
	J1708-2A	
	J1708-1	
	SPEC-A	
	SPEC-B	
	MS	
	VIGIE-A	
	NETNCE	
	GPSLOG-GPS	
	GPSLOG-LOG	
	SEMA	
	INEO-A	
	INEO-B	
	DUHATIER	
	HANAUTO	
	HTC-HCP	
	-	Indicates that the port function is disabled

Appendix G: Sign options

This appendix lists all functions available in the sign options and their values selected by using the Ent key:

Option	Values	Description
S0 - Sign 0	-	No setting (disabled)
S1 - Sign 1	*	Automatic assignment, i.e the switch number setting in the sign is the same as that in the controller's database, as determined by HELEN software
S2 - Sign 2		
S3 - Sign 3	0…31	The number of the sign assigned by HELEN software
S4 - Sign 4	EX	Adverts
S5 - Sign 5	HV	Hanvox voice announcement system
S6 - Sign 6	HANCIS/HTC	Hancis (or HTC) on-board computer
S7 - Sign 7		This parameter should only be used if your EG3 has a Hancis or HTC unit connected to the physical sign system in your vehicle.
S8 - Sign 8		
S9 - Sign 9		Setting sign no. to the 'Hancis/HTC' value will enable the EG3 to remotely control certain features (for example, the audio, IP address etc.) of the Hancis/HTC unit. It will also add an additional Hancis/HTC menu item under the main function menu.
SA - Sign 10		
SB - Sign 11		
SC - Sign 12	RN	To use this feature, you have to configure a sign to be "RN". If any signs are configured as RN, then the 'R' key will be available to accept a manually entered alphanumeric value which will be sent directly to only those signs configured as RN.
SD - Sign 13		
SE - Sign 14		
LN - Internal Sign Number		
EB - Escaped Binary	0: OFF 1: ON	When switched on, this option allows faster delivery of information to the sign and is thus used to speed up delivery of large-sized graphic messages. **Note:** It has no effect on Super-X messages, whether or not they contain graphic images.

Appendix H: Configuration code options

This appendix lists the parameters for configuration of the EG3 and their meaning:

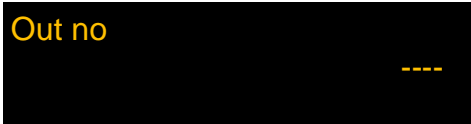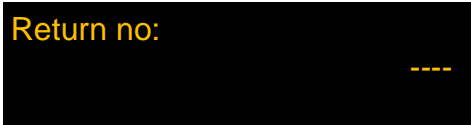| Code shown as	Possible values	Value by default	Description
AL – Advertising Signs	0 - 4	0	Sets the quantity of advertising signs connected to the controller and causes their addresses to be numbered immediately following the last-addressed destination sign. **Note:** This is not the preferred method of address-setting for the advert signs; it is better done from within the HELEN software, using the expression Sn=EX (where n= the address number of the sign carrying the advertising message) in the "Extensions" box (refer to the HELEN sign-editing software - Operating manual (ref. 540125)). More than one expression can be used if more than one sign is showing the advertisement; they should be separated by a comma.
AM – Auto/Man menu enable	0 = disabled 1 = enabled	0	If this is active (AM=1), a prompt "AUTO/MAN" is available from behind the lock code. The controller can be fixed into 'auto' (where it is not possible for the driver to alter the destination) or 'man' (where only driver-entered destination codes will be accepted). When in AM mode (AM=1), the EG3 automatically disables DK and IK settings which allow entry of Destination and Info numbers without having to press D or I key.
AN – Prompt for Ad Num	0 = disabled 1 = enabled	0	Controls: • advert only messages on internal signs and • advert number prompt on the controller screen
BI – Browse to Idle	0 = disabled 1 = Browse to Idle is only allowed if RM = 1 2 = Browse to Idle is always allowed	1	Allows: • destination browse to include destination 0000 and • route code 0000 to browse to Idle in route browse mode
BR – Destination Browser	0 = disabled 1 = enabled	0	Requires Destination to be enabled (DN=1) and is not available if 'Route Browse' enabled (RB=1). With the up and down keys, all destinations can be scrolled through and selected.

Code shown as	Possible values	Value by default	Description
			Note: Do not confuse this code with that for bus reversing, which is set as an external input option - please refer to section <u>Displaying 'Bus reversing'</u>.
BT – Blanking Timer	0 - 100	0	Blanking timer in minutes (used with battery guard feature - please refer to section <u>Blanking the sign (battery guard)</u>)
BL – Blanking Level	0 - 100 where: 0 = 100% (maximum brightness) 100 = 0%	0	Brightness limit of signs during BT-defined period (please refer to BT above) following which, signs go blank - please refer to <u>Blanking the sign (battery guard)</u>
CB – Confirm Browse	0 = does not prompt 1 = prompts	0	Prompts for selection confirmation when driver browses destinations in a route
CM – Canned Vox	0 = disabled 1 = enabled	1	If CM=1, just pressing any of the numeric keys 0-9 will cause a hanvox play command to be sent for playing files called M0.mp3 to M9.mp3.
DD – Driver's Display	* = use of driver's controller display text from HELEN 0 - 9, A - E = show content from selected sign on driver's display	*	Determines what is shown on driver's controller display
DI – Drivers ID	0 = disabled 1 - 5 = number of digits allowed	0	Prompt for driver's ID (i.e. PIN). This is used by the HTC, Hancis etc: when activated, it leads to PIN request. ID number length is set by DI value. On reboot, screen will display: PIN:
DM – Display Mode	0 = use of only the top line of the controller screen 1 = use of the top two lines of the controller screen 2 = attempts a 'best-fit' of driver's message within controller screen (if necessary, by re-sizing) T = shows time in hours, mins, secs (24h	1	Controls how driver's message is displayed on the controller screen

Code shown as	Possible values	Value by default	Description
	clock) - where clock is enabled T12, T12S, T24, T24S = displays (12h / 24h) clock without / with seconds - where clock is enabled		
DN – Prompt for Dest Num	0 = no 1 = yes	1	In standard destination mode: it controls if • destination information and numbers are shown on the passenger signs and • destination codes can be viewed and changed on the controller. In route browse mode: this feature has no effect.
DS – Destination Code Size	3 - 8	4	Controls the size of the destination code shown on the controller screen; it can be set from 3 to 8 digits.
DK – D key for Dest	0 = disabled 1 = enabled	1	If DK=1, the 'D' key must be pressed to enter the destination code as in normal. If DK=0, then simply pressing a numeric key 0-9 will start entering the destination code. This cannot work in conjunction with CM=1 or IK=0. **Note:** DK setting will be automatically disabled when AM (Auto/Man mode)=1.
GB – Group browse	0 = disabled 1 = Mode 1 2 = Mode 2	0	**Variations on Route-Browse.** **Mode 1:** When a route no. is entered with the 'R' key, the user can then browse all entries with this route no., but also any other destinations which share the same 3 'group' digits (if not 000). When subsequently browsing with the Up and Down keys, the entries available will be those provided by the original Route no. entry with 'R' key, not the currently active route no. which may be different. **Mode 2:** 'SBS lookup' mode, which requires a specially ordered database (customer specific).
HA – Hide Adverts	0 = does not require lock code 1 = requires lock code	0	Adverts are shown on passenger signs and the advert code is shown on the controller screen. This feature controls whether changing the advert code requires the lock code.
HD – Hide Dest	0 = does not require lock code 1 = requires lock code	0	Destinations are shown on passenger signs and the destination code is shown on the controller screen. This feature controls whether changing the destination code requires the lock code.

Code shown as	Possible values	Value by default	Description
HI – Hide Information	0 = does not require lock code 1 = requires lock code	0	Information is shown on passenger signs and the information code is shown on the controller screen. This feature controls whether changing the information code requires the lock code.
I0 – Ext Input 0	-, 1, 2 … 10, IN, INI, DV, DVI, BR, BRI	7	Please refer to section External inputs I0 and I1: emergency message, bus reversing, bus stopping, battery guard, information message or Hanvox message
I1 – Ext Input 1	-, 1, 2 … 10, IN, INI, DV, DVI, BR, BRI	-	Please refer to section External inputs I0 and I1: emergency message, bus reversing, bus stopping, battery guard, information message or Hanvox message
IK – I key for INFO	0 = disabled 1 = enabled	1	If IK=1, the 'I' key must be pressed to enter the info code as in normal. If IK=0, then simply pressing a numeric key 0 -9 will start entering the info code. This cannot work in conjunction with CM=1 or DK=0. **Note:** IK setting will be automatically disabled when AM (Auto/Man mode)=1.
IN – Prompt for Info Num	0 = no 1 = yes (and can be changed)	0	Controls whether: • information code is visible or accessible on the controller, and • information is shown on the passenger signs
IP – Ext IP INFO mode	0 = The system behaves as with a normal HELEN-configured information message. 1 - 8 = The number of destination pages is limited to this value. After they have all been shown, the information message is shown. X = The information page is shown after every individual destination page.	0	Determines how the information pages are presented when IN / INI is activated – please refer to section External inputs I0 and I1: emergency message, bus reversing, bus stopping, battery guard, information message or Hanvox message
RB – Route Browse	0 = disabled 1 = enabled	0	A route number is first entered and then all destinations available for that route can be scrolled and selected. **Note:** the entries in the HELEN database must have 10 digit codes of the form 00RRRRDDDD where RRRR is the Route No to be entered and DDDD identifies the destination within that route.
RL – Route No	3 - 7	4	Defines the length of route number

Code shown as	Possible values	Value by default	Description
Len			
RM – Remote Enable	0 = no 1 = yes (default is 1 for comms-enabled versions)	0	Controls whether remote control function is enabled
RN – Route Number	0 = no 1 = yes	0	Controls whether driver-configurable route numbers can be viewed and changed on the controller. **Notes:** • Pre-configured route codes cannot be altered directly via the controller • This feature has no effect if the controller is in route browse mode.
RP – Remote Priority	0 = No remote priority – manual selections stay put 1 = Always remote priority – will always override any manual selection 2 = Temporary remote allows manual override, but if a different remote number is requested to that manually overridden, it will override the manual 3 = Special for Dublin bus 4 = Do not allow remote to set 'Idle'	0	This is a way of specifying the way the driver-entered destinations can override remote commands and vice-versa.
RS – Reset Settings	When RM = 1 (enabled): * = All visible parameters are reset, passenger signs are blank and EG3 enters into IDLE mode. If a number is now entered manually, EG3 stays in Local mode and will not respond to further remote inputs until 0 for destination or 99 for information is entered locally. 0 = No reset: passenger and driver signs return to their pre-reset state. 1 = Same as * except that locally entered parameters (but not remotely entered	*	Resets controller in various ways, depending on whether or not remote control is enabled.

Code shown as	Possible values	Value by default	Description
	parameters) are retained after power up. 2 = Returns to last remotely selected destination, or to IDLE mode if no previous selected remote location is available.		
	When RM = 0 (disabled): * and 0 = No reset. Passenger and driver displays show Destination, Route Number and Information as normal. 1 and 2 = EG3 reset to IDLE mode. Passenger signs are blank.	*	
RT – Round Trip	0 = pressing X or Y has no effect on controller display 1 = enables to press X to set destination code for 'Out' prompt and Y for 'Return' prompt.	0	Out no ---- Return no: ----
RZ – Route Zeros allow	0 = do not allow 1 = allow	0	Determines whether or not leading zeros of a route number are shown. If RZ = 0, leading zeros are deleted (single zero is allowed).
T0 – Timer 0	10 - 3000	30	Sets the display time in deciseconds of the first destination page.
T1 – Timer 1	10 - 3000	30	Sets the display time in deciseconds of the second and subsequent destination pages.
T2 – Timer 2	10 - 3000	30	Sets the display time in deciseconds of all the information pages.
T3 – Timer 3	0 - 3000	30	This will set the time that a Super-X scrolling page is allowed to scroll.
TL – SPEC timer	0 - 1000	300	Both SPEC-A and SPEC-B interfaces simply send out the current destination code whenever it changes or at time intervals. SPEC-A sends out the current 4 digit destination code with leading space characters instead of zeros. SPEC-B sends out a 10 digit code with leading zeros and can be used with route browse.

Code shown as	Possible values	Value by default	Description
			Both use a parameter TL=n, where n is in 1/10 seconds. This is the time period of the message (the message is however, always sent out upon a change of destination). TL=0 means 'only send out the message on power-up and when destination is changed'.
TV – Time Entry	0 = feature disabled 1 = sets time in hours and mins 2 = countdown timer in mins	0	1 = used to set a fixed time, which will be substituted for any '~' character within the HELEN destination or driver display database. 2 = counts down from a specified number of minutes when destination code containing '~' is selected
TZ – Adjust sign timing	0 = disabled 1 = enabled	0	To adjust the time of the signs connected to the controller. Subtracts the transmission time from the page time set in T0 T1 T2 can sometimes make page timings more accurate.
VI – Vehicle ID	0 - 5	0	To set a driver-entered ID for the vehicle
WD – Wayfarer Device No	0 - 15 (default depends on Wayfarer interface)	0	Function depends on Wayfarer settings
WA – Wayfarer Address No	0 - 15 (default depends on Wayfarer interface)	0	Function depends on Wayfarer settings
WT – Wayfarer Timer	0 - 100	10	Function depends on Wayfarer settings
XY – XY allez/retour flag	0 = function not used 1 = X key selects out and Y key selects return	0	Specifies how the X and Y keys will operate in aller-retour (round trip) mode. **Note**: RT also needs to be enabled for this setting to be effective
ZW – ZW browse mode	0 = browse disabled until route number entered 1 = browse enabled	0	This setting requires RN=1 and BR=1 to work.
ZY – ZY (HTC)	0 = function disabled 1 = renders first six digits of 10-digit code as zeros	0	This feature requires RB =1 (route browse 'on') to work. Applies to a message sent to an HTC or another on-board computer as a 'd' message.*
XB – X-Browse mode	0 = disabled 1 = enabled	0	Only applies if EG3 is being used by a specific customer. • If current destination code is between 1000-3999 and if the current

Code shown as	Possible values	Value by default	Description
			destination code plus 3000 exists, then add 3000 to destination code when X key is pressed. • If current destination code is between 4000-6999 and if the current destination code minus 3000 exists, then substract 3000 from destination code when X key is pressed.
QF – QF	0 = disabled 1 = sends destination code to controller screen and connected signs if 'bad destination'	0	Instead of 'Bad destination' appearing on the EG3 screen, the relevant destination code is sent as a text message to the signs and is also shown on the controller.
QG – QG	0 = disabled 1 = enabled	0	Feature should be enabled when the controller has both RN and DN active with no route or destination selected.
Qn – Timed Info n (n: 1 to 4)	01/01 – 31/12	--/-- --/-- --	Configurable date and time sensitive info messages • **When adding configuration to database:** ➤ **Date-sensitive info messages** Qn = d1/m1 – d2/m2 [ii] (i.e Qn = StartDate – EndDate [Info_code]) The config should be typed without spaces (except between d2/m2 and ii) e.g. Q1=01/01-31/03 01 means between 1st Jan and 31st Mar, info code 01 will be active. ➤ **Time-sensitive info messages** QTn = hh/mm hh/mm ii (i.e QTn = StartTime EndTime Info_code) The config should be typed without spaces (except between hh/mm and ii) e.g. QT1 = 01/00 01/30 01 means between 01:00 and 01:30, info code 01 will be active. **Note:** If Q1 is also present, then the time and date are combined such that from 01:00 on 1st Jan until 01:30 on 31st Mar, info 01 will be active. If you wish to 'nest' the time within a date range, for instance to enable Info code 01 between the hours 01:00 and 01:30 every day from 01st Jan to 31st Mar, you need to enter a Qn date range and a QTn Time range with the same Info No. but with different values of n. • **When entering manually from the 'Configure' menu:** Manual entry allows for a time range to be entered as well as date, this in effect is incorporating the parameter Qn and QTn under a single menu item Qn. Info no: [* *] Date: * * / * * - * * / * * Time: * * : * * - * * : * *

Code shown as	Possible values	Value by default	Description
			Example: Info no: [0 1] Date: 0 1 / 0 1 – 3 1 / 0 3 Time: 0 1 : 0 0 – 0 1 : 3 0 This means between the hours 01:00 and 01:30 every day from 1st Jan and 31st Mar, info code 01 will be active.
LT – Lock Terminal Mode	0 = disabled 1 = enabled	0	When enabled, it will challenge the driver for the lock code when trying to enter the terminal mode by holding down the Ent key. An incorrect lock code will still allow the viewing of the Status Pages.

* The EG3 can be networked with an on-board computer such as an HTC. Messages are sent periodically from the controller to the computer in the form of 'd' messages (destination data), 'i' messages (information data) or 't' messages (time data).

Appendix I: CONFIG.INI file

The CONFIG.INI file has the following paramaters:

Parameter	Description
ENABLE_DHCP	***Enable/Disable DHCP*** If "1", the unit will attempt to connect to a DHCP server to obtain an IP address for the unit. If it fails to communicate with a DHCP server, it will default back to the manual IP address as if "0" had been selected. Acceptable values are: "1" or "0".
IP_ADDRESS	***Static IPv4 Address*** The manually entered IP address the unit will use as its own address if DHCP is set to "0" or fails to locate a DHCP server when set to "1" Acceptable values of the format X.X.X.X where X can range from 0-255.
SUBNET_MASK	***Static subnet mask*** The subnet mask associated with the unit for attempting to connect to the FTP server. Acceptable values of the format X.X.X.X where X can range from 0-255.
DEFAULT_GATEWAY	***Static default gateway*** Acceptable values of the format X.X.X.X where X can range from 0-255.
FTP_SERVER_IP	***IPv4 address of FTP server*** The IP address of the FTP server that the unit will attempt to connect to. Acceptable values of the format X.X.X.X where X can range from 0-255.
FTP_SERVER_USER_NAME	***Username of FTP account*** The username required to log into the FTP server – 29 character limit.
FTP_SERVER_PASSWORD	***Password of FTP account*** The username required to log into the FTP server – 29 character limit.
FTP_SERVER_DELAY_WAIT	***Period within which the unit will poll the FTP server*** The amount of time in seconds that the unit should leave between attempting to connect to the FTP server – value must be numerical.
UNIT_ID	***Id of unit*** Refers to the customer reference assigned to the unit that is used when it connects to the FTP server to locate the relevant files for transfer – 29 character limit, must be Alphanumeric (0-9, a-z, A-Z), must not be one of the following reserved names: "CON", "PRN", "AUX", "NUL", "COM1", "COM2", "COM3", "COM4", "COM5", "COM6", "COM7", "COM8", "COM9", "LPT1", "LPT2", "LPT3", "LPT4", "LPT5", "LPT6", "LPT7", "LPT8", "LPT9".

Parameter	Description
CTRL_LOADING_ROUTEDEST	***Route/destination pairs (up to 10 pairs) that must match the selected Route/destination for the unit to access the FTP server*** -1|-1 (loads file in any destination code, 0000|0001 loads list in only route no. 0, destination code 1 etc.). Multiple codes can be specified and separated by a comma.
FTP_PORT	The port used when attempting to connect to the FTP server – value must be numerical.

Note: All the above parameters are not compulsory in the CONFIG.INI file. Only required parameters are to be included in the CONFIG.INI file.

- **Example of CONFIG.INI file:**

ENABLE_DHCP=1
IP_ADDRESS=10.0.0.1
SUBNET_MASK=255.255.0.0
DEFAULT_GATEWAY=10.0.0.10
FTP_SERVER_IP=10.0.254.254
FTP_SERVER_USER_NAME=hanover
FTP_SERVER_PASSWORD=9876
FTP_SERVER_DELAY_WAIT=30
UNIT_ID=UNITID00001
CTRL_LOADING_ROUTEDEST=-1|-1
FTP_PORT=21