GMI welcomes comments on all our publications. Your comments can be of great value in helping us to improve our customer publications. Please send any comments that you have to our Sales Department at GMI. Contact details are provided inside the back cover of this handbook.

Instrument Service / Repair contact details are also provided inside the back cover of this handbook.

Copyright © Gas Measurement Instruments Ltd 2013
LICENCE AGREEMENT

This Licence Agreement is your proof of licence. Please treat it as valuable property. Please note that this licence agreement supersedes the “statement of Copyright Restrictions”.

IMPORTANT - READ CAREFULLY

This is a legal and binding contract between you (either an individual or an entity), the end user and Gas Measurement Instruments Limited (GMI). By opening sealed software packages or by installing, copying, or otherwise using the ‘flexiCal net’ or ‘GDUnet Results Manager’ programs (“SOFTWARE”), you agree to be bound by the terms of this agreement. If you do not agree to the terms of this agreement you should promptly return the software packages and accompanying items* (including written materials, binders and containers) to GMI.

‘flexiCal net’ & ‘GDUnet Results Manager’ - SOFTWARE LICENCE

1. GRANT OF LICENCE: The ‘flexiCal net’ and ‘GDUnet Results Manager’ Licence Agreement (Licence) permits concurrent use of the SOFTWARE on the number of computers for which this licence grants (that is: single user package licences one user; twenty user licence licences twenty users). Additional SOFTWARE licences may be purchased for each additional concurrent user.

If you have acquired this SOFTWARE in a multiple licence pack, you may make the number of additional copies of the SOFTWARE authorised on the printed copy of the licence. You may also store or install a copy of the network SOFTWARE on a storage device, such as a network server, used only to install or run the SOFTWARE on your other computers over an internal network; however you must acquire and dedicate a licence for each separate computer on which the SOFTWARE is installed or run from the storage device. A licence for the software may not be shared or used concurrently on different computers.

This licence is granted for use on the GMI products and for use on one computer. If you require a second copy you must purchase that from
GMI or its distributor. The documentation accompanying this software is essential for the correct and safe operation of the instruments.

This software is used on certified equipment which may be used in life critical applications. Only trained competent personnel should use this equipment and should be aware of the certification, calibration and Health and Safety issues associated with the product and its application.

2. COPYRIGHT: The SOFTWARE is owned by GMI and is protected by United Kingdom copyright laws and international treaty provisions therefore, you must treat the SOFTWARE like any other copyrighted material (for example, a book or musical recording) except that you may either (a) make one copy of the SOFTWARE solely for backup or archival purposes, or (b) transfer the SOFTWARE to a single hard disk provided you keep the original solely for backup and archival purposes. You may not copy the written materials accompanying the SOFTWARE.

3. OTHER RESTRICTIONS: You may not rent or lease the SOFTWARE, but you may transfer the SOFTWARE and accompanying written materials on a permanent basis to another individual. If you transfer the software, you must retain no copies and the recipient must agree to the terms of this agreement. You must not reverse engineer, decompile, or disassemble the SOFTWARE that is provided solely as executable programs (.EXE files) or dynamic link libraries (.DLL files). If the SOFTWARE is an update, any transfer must include the update and all prior versions.

30 DAY LIMITED WARRANTY

If the product was purchased in the UK, simply return the full product in resellable condition* within 60 days of purchase to GMI, together with your original receipt or invoice, for a full refund. If this product was not purchased in the UK, you should return the full product* to the place of purchase within 30 days of purchase for a full refund.

LIMITED WARRANTY

The CD and User Handbook that make up this software product are warranted by GMI to be free from defects in materials and workmanship for a period of 60 (sixty) days from the date you purchased this product. If you notify GMI within the warranty period of such defects in materials or workmanship, GMI will replace the defective CD or handbook.

The sole remedy for breach of this warranty is limited to replacement of defective CD or handbook and/or refund of purchase price and does not include any other kinds of damage.
Apart from the foregoing limited warranty, the software programs are provided “AS IS”, without warranty of any kind, either expressed or implied. The entire risk as to the performance of the program is with the purchaser. GMI does not warrant that the operation of the programs will be uninterrupted or error free. GMI assumes no responsibility or liability of any kind for errors in the program or documentation or for the consequences of any such errors.

INCIDENTAL AND CONSEQUENTIAL DAMAGES CAUSED BY MALFUNCTION, DEFAULT, OR OTHERWISE WITH RESPECT TO BREACH OF THIS WARRANTY OR ANY OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE NOT THE RESPONSIBILITY OF GMI AND ARE HEREBY EXCLUDED BOTH FOR PROPERTY AND, TO THE EXTENT NOT UNCONSCIONABLE, FOR PERSONAL INJURY DAMAGE.

The remedies described above are the exclusive remedies extended to you by GMI for any default, malfunction or failure of the product to conform with this warranty or otherwise for the breach of this warranty or any other warranty, whether expressed or implied.

* If the product is not in resellable condition, you will be charged a 20% restocking fee.

Should you have any questions concerning this agreement please contact the GMI sales department on +44 (0)141 812 3211.
COPYRIGHT

This User Handbook is copyright of Gas Measurement Instruments Ltd (GMI) and the information contained within is for use only with the GMI Gas Delivery Unit (GDUnet). Reproduction, in whole or in part, including utilisation in machines capable of reproduction or retrieval without written permission of GMI is prohibited. Reverse engineering is not permitted.

LIABILITY

Every care has been taken in the preparation of this handbook, however, GMI do not accept any responsibility for errors or omissions and their consequences. Information in this handbook is subject to change without notice. This handbook does not constitute a specification or basis for a contract. Your statutory rights under law are not affected.

MODIFICATION NOTICES

GMI aim to notify customers of relevant changes in the product operation and maintain this handbook up to date. In view of the policy of continuous product improvement there may be operational differences between the latest product and this handbook.

This handbook is an important part of the GDUnet product.

Please note the following points:

• It should be kept with the GDUnet for the life of the product.
• Amendments should be attached to this handbook.
• This handbook should be passed on to any subsequent owner/user of the product.
• Although every care is taken in the preparation of this handbook, it does not constitute a specification for the product.

DISPOSAL ADVICE

When no longer in use, dispose of the GDUnet carefully and with respect for the environment. Refer to WEEE directive statement, such as:

In compliance with the WEEE directive, GMI will dispose of the GDUnet without charge if the GDUnet is returned to GMI.
SAFETY PROCEDURES

The instruments which are used on the GDUnet can be used to protect life and property and certain elements may be used in potentially explosive, toxic, and oxygen deficient atmospheres.

- Never attempt to calibrate, adjust or repair the product unless you are fully trained, aware of all potential hazards and have been assessed by an authorised body as to your competence. Unauthorised adjustment of the product may endanger yourself and others.
- Gases are dangerous. Care should always be taken when monitoring or handling gases. All personnel should be trained and competent in their use.
- Some gases need special handling or delivery techniques since inappropriate use of material or techniques may influence the calibration result. Please contact GMI Customer Support if you have any queries.

Any right of claim relating to product liability or consequential damage to any third party against GMI is removed if the above warnings are not observed.

MAINTENANCE, SERVICING & CALIBRATION

Maintenance of the GDUnet should only be undertaken by trained competent personnel who have been authorised by the certificate holder or other licensed body who has passed on the relevant certification data. Failure to ensure this and the use of unauthorised parts or repairers may invalidate the approvals.

- Only GMI replacement parts should be used.
- All instruments and associated equipment should be regularly serviced and calibrated.
- Only certified traceable gases should be used in the maintenance / calibration of the GDUnet.
- Only calibrate the product in the gases it will be used for to ensure compliance with the specification. GMI does not recommend the use of correction factors for calibration or hazard monitoring.
# REVISION RECORD

<table>
<thead>
<tr>
<th>Date</th>
<th>Issue</th>
<th>Description Of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/04/2013</td>
<td>1</td>
<td>New User Handbook</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

LICENCE AGREEMENT ................................................................. i

  IMPORTANT - READ CAREFULLY........................................ i

  ‘flexiCal net’ & ‘GDUnet Results Manager’ - SOFTWARE
  LICENCE.................................................................................... i

  30 DAY LIMITED WARRANTY.................................................. ii

  LIMITED WARRANTY............................................................ ii

COPYRIGHT ...................................................................................... v

  LIABILITY.................................................................................... v

  MODIFICATION NOTICES...................................................... v

  DISPOSAL ADVICE ..................................................................... v

  SAFETY PROCEDURES........................................................... vi

  MAINTENANCE, SERVICING & CALIBRATION ......................... vi

REVISION RECORD................................................................. vii

INTRODUCTION............................................................................. 1-1

  1.1  BASIC CONCEPTS............................................................. 1-1

  1.2  CALIBRATION GASES....................................................... 1-3

    1.2.1  Recommended Types................................................ 1-3

    1.2.2  Traceability................................................................. 1-3

    1.2.3  Limits of Preparation................................................ 1-3
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.4 Analysis</td>
<td>1-4</td>
</tr>
<tr>
<td>1.2.5 Preferred Values</td>
<td>1-4</td>
</tr>
<tr>
<td>1.3 CALIBRATION LIMITS</td>
<td>1-5</td>
</tr>
<tr>
<td>1.3.1 Gas Limits</td>
<td>1-5</td>
</tr>
<tr>
<td>1.3.2 Standards</td>
<td>1-5</td>
</tr>
<tr>
<td>1.4 flexiCal net</td>
<td>1-6</td>
</tr>
<tr>
<td>1.5 GDUnet RESULTS MANAGER</td>
<td>1-6</td>
</tr>
<tr>
<td>flexiCal net INSTALLATION</td>
<td>2-1</td>
</tr>
<tr>
<td>2.1 SYSTEM REQUIREMENTS</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2 INSTALLATION</td>
<td>2-1</td>
</tr>
<tr>
<td>flexiCal net OPERATION</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1 INITIAL SETUP</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1.1 Server Name</td>
<td>3-3</td>
</tr>
<tr>
<td>3.1.2 Database Connection</td>
<td>3-4</td>
</tr>
<tr>
<td>3.2 NAVIGATION</td>
<td>3-6</td>
</tr>
<tr>
<td>3.3 CALIBRATE</td>
<td>3-7</td>
</tr>
<tr>
<td>3.3.1 Calibration Setup Options</td>
<td>3-7</td>
</tr>
<tr>
<td>3.3.2 Calibration Setup Editor</td>
<td>3-8</td>
</tr>
<tr>
<td>3.3.3 Edit Calibration Option</td>
<td>3-10</td>
</tr>
<tr>
<td>3.3.4 Edit Setup / New Template</td>
<td>3-12</td>
</tr>
<tr>
<td>3.3.5 Delete Setup / Template</td>
<td>3-14</td>
</tr>
<tr>
<td>3.3.6 Advanced Editor</td>
<td>3-14</td>
</tr>
<tr>
<td>3.3.7 GDUnet Selection</td>
<td>3-15</td>
</tr>
<tr>
<td>3.3.8 Test or Calibrate Selection</td>
<td>3-15</td>
</tr>
<tr>
<td>3.3.9 Test / Calibrate Instrument</td>
<td>3-16</td>
</tr>
<tr>
<td>3.4 ADVANCED EDITOR</td>
<td>3-18</td>
</tr>
</tbody>
</table>
CONTENTS

3.4.1 Edit Gases................................................................. 3-20
3.4.2 Edit Gas Range......................................................... 3-21
3.4.3 Edit Gas Limit(s)....................................................... 3-23
3.4.4 Edit Default Conversion Factors ....................... 3-23
3.4.5 Edit Purge Time......................................................... 3-24

3.5 ADDITIONAL FILE MENU ITEMS ......................... 3-24
3.5.1 File Menu ............................................................... 3-25
3.5.2 Edit Menu ............................................................... 3-25
3.5.3 Help Menu .............................................................. 3-26
3.5.4 GDU Status Check.................................................. 3-27

3.6 PREFERENCE SETTINGS ........................................... 3-29
3.6.1 ‘General’ Tab ........................................................... 3-30
   3.6.1.1 Cal Due (Gasurveyor 500 series only) ............... 3-31
   3.6.1.2 Service Due...................................................... 3-31
   3.6.1.3 Stop On Zero Failure........................................ 3-31
   3.6.1.4 Stop On First Span Failure................................ 3-31
   3.6.1.5 Allow Cal Due update on incomplete test............ 3-32
   3.6.1.6 Disable Instrument on Fail................................ 3-32
   3.6.1.7 Enable Hardware Zero ...................................... 3-32
   3.6.1.8 Leak Checking .................................................. 3-32
   3.6.1.9 Default Conversion Factors ............................... 3-33
   3.6.1.10 Password.......................................................... 3-33
   3.6.1.11 Reset Settings ................................................ 3-34
   3.6.1.12 Select IMS ..................................................... 3-35
   3.6.1.13 Add GDU ........................................................ 3-38
   3.6.1.14 Edit GDU ....................................................... 3-39

3.6.2 ‘Ranges’ Tab........................................................... 3-41
   3.6.2.1 Reset All Range Defaults ................................. 3-41
   3.6.2.2 Zero Air Limit .................................................. 3-42
   3.6.2.3 Gas Limit ........................................................ 3-42
CONTENTS

TEST / CALIBRATION SETUP OF GMI PORTABLE INSTRUMENT ......................................................... 6-1

6.1 CALIBRATE GASURVEYOR 526 INSTRUMENT .... 6-1
   6.1.1 Start Software .......................................................... 6-1
   6.1.2 Create New Setup Template ................................. 6-3
   6.1.3 Send Calibration File ............................................. 6-9

INDEX................................................................................................. i
INTRODUCTION

1.1 BASIC CONCEPTS

The Gas Delivery Unit (GDUnet) can be used in two different applications:

- As a gas delivery unit in an Instrument Management System (IMS) - see paragraph (a).
- As a gas delivery unit in a workshop system - see paragraph (b).

Fig. 1-1 Gas Delivery Unit (GDUnet)
The GDUnet, as illustrated in Fig. 1-1, is used to automatically deliver gas to Gascoseeker / Gasurveyor / First Responder / Leak Surveyor / Oxygas / Shipsurveyor instruments, via one of the applications detailed below:

(a) The GDUnet as a gas delivery unit in an Instrument Management System (IMS).

The GDUnet is used by instrument operators to automatically test or calibrate instruments on a regular basis, e.g. every two weeks.

Test and calibration files are sent to the GDUnet by a networked PC or laptop running flexiCal net software.

Test and calibration results stored on the GDUnet are retrieved from the GDUnet, and sent to an IMS database, by a networked PC or laptop running GDUnet Results Manager software.

Network communication is made via Ethernet. Multiple GDUnet’s can be connected to the network at any time.

The GDUnet can be defined as ‘operating-system independent’ - once the test files are received the GDUnet operates as a standalone system.

The setup consists of a GDUnet, a networked PC, gases, flexiCal net software and GDUnet Results Manager software.

The objective of using a GDUnet, is to ensure that the instrument is tested on a regular basis, to check and correct calibration, ensuring instrument compliance and to maintain records of the instrument performance.

(b) The GDUnet as a gas delivery unit in a workshop system.

A workshop system is used by an instrument technician to service, repair and calibrate / test instruments annually, or more frequently if required.

The workshop system is used as a standalone system and consists of a GDUnet, a PC, gases and flexiCal Plus software. Communication is made via USB.
1.2 CALIBRATION GASES

The GDUnet is connected to cylinders of calibration gas to ensure that a consistent standard can be maintained against which the instrument can be checked. The GDUnet can connect up to 8 gas cylinders (a 4 gas cylinder version is also available).

1.2.1 Recommended Types

The instrument should be calibrated in the gas it will be used in, rather than using calibration factors, i.e. Propane instruments should be calibrated with Propane gas etc.

Gases should be full scale or mid range of scale rather than lower end; i.e. calibrate 100% LEL range at 50% LEL rather than 10% LEL.

Heavier hydrocarbon gases may take longer to clear the system than lighter ones like Methane, and should be carefully organised in terms of location on the manifold position and test sequence.

1.2.2 Traceability

Gases should be analysed and traceable to National Standard. The Test Certificate should have the total gas analysis including air components.

1.2.3 Limits of Preparation

The limits of preparation of the gas should be clear, e.g. ±2%. These limits should be better than the accuracy required from the instrument.

The accuracy of preparation of the gas mixtures together with the analysis accuracy should be clearly marked on the cylinder.
1.2.4 Analysis

The cylinder analysis should be known and within the operating requirements as specified by the operating organisation.

- Individual cylinders should be analysed.
- Limits on analysis should be clear.
- Method of analysis should be known.

1.2.5 Preferred Values

The typical values that would be used for instruments are given below. The list is not exhaustive but can be used as a general guide.

FOR ALL INSTRUMENTS ZERO RANGE - Control Air
Methane Instruments with 10% LEL Range - 0.5% CH$_4$
Methane Instruments with 100% LEL Range - 2.5% CH$_4$
Methane Instruments with %GAS Range - 100% CH$_4$
Methane Instruments with ppm Range - 800ppm CH$_4$
Methane Instruments with CO Range - 500ppm CO
Methane Instruments with H$_2$S Range - 50ppm H$_2$S

Note: This list is for guidance only and does not cover all the ranges or gases that GMI instruments will cover.

1.2.6 Specification

For detailed specifications on test limits and gases users should consult instrument manuals, service bulletins, operating procedures and specifications to ensure that the specifications and limits suit their need and are in line with their Company procedures.

The manufacturer or his agent should be consulted for up to date instrument information.
1.3 CALIBRATION LIMITS

1.3.1 Gas Limits

Gas limits for calibration or test are at the discretion of the customer and are set up via flexiCal net. Limits should be based on the application but must always make allowance for the instrument specification and for the accuracy of the calibration gas.

Limits for various types of gases may change calibration test parameters.

e.g.

Butane requires wider limits than Methane because of increased gain requirements, thus the same limit cannot be applied to different calibrations.

1.3.2 Standards

Reference should be made to the manufacturer’s standards for the instrument and equipment as well as end users’ own standards. These should all be compatible.

1.4 flexiCal net

flexiCal net is GMI’s Windows™ based software package that will allow customers to easily setup test and calibration files to be sent to the GDUnet for testing and calibrating instruments.

The flexiCal net software configures the GDUnet to test or calibrate instruments automatically. This allows the user to specify how instruments will be tested or calibrated and includes gases, concentrations and pass or fail criteria.

flexiCal net is also used to register additional GDUnet’s to the network.

The installation of the software is detailed in Chapter 2.

The operation of the software is detailed in Chapter 3.
1.5 GDUnet RESULTS MANAGER

All test and calibration results are stored on the GDUnet. GDUnet Results Manager is a software package that retrieves the test and calibration results, from the GDUnet, and downloads them to an IMS database.

After setup this application runs in the background on the networked PC or laptop.

The installation and setup of the software is detailed in Chapter 4.
flexiCal net INSTALLATION

2.1 SYSTEM REQUIREMENTS

To install the flexiCal net software package, you require the following minimum system requirements:

- PC / Laptop running Windows XP™ or newer
- 256Mb RAM
- A minimum of 280Mb of free hard disk space
- CD-ROM drive
- Ethernet port
- .NET Framework 4 or newer

2.2 INSTALLATION

**Important:** The GDUnet cannot test or calibrate an instrument until the flexiCal net software package has been fully installed and initial file transfer has been undertaken.

The flexiCal net software package is supplied on CD-ROM (Part No. 14767).

To install the software on a PC / Laptop using Microsoft Windows XP™ or newer, proceed as follows:

1. Switch on the PC and start Windows™ operating system.
2. Insert GDUnet CD-ROM into the appropriate CD drive in your PC / Laptop.

The CD-ROM should auto-run, displaying the ‘Open folder to view files’ option, as illustrated in Fig 2-1.

Should the CD-ROM not run automatically, select ‘Start’ then ‘Computer’ to find the CD-ROM drive, then, double-click to open.

The following window is displayed:

![CD-ROM AutoPlay](image)

*Fig. 2-1 CD-ROM AutoPlay*

Open the folder to view CD-ROM options.

3. GMI recommend that before using this software program, the user reads the User Handbook.

Adobe Reader must be installed on your PC / Laptop to view the User Handbook.

4. Before installing the flexiCal net software program, it is recommended that the user exits all other Windows programs.
5. To start installation, select the GMI flexiCal net Setup installer, a security warning as illustrated in Fig. 2-2 will be displayed. Click **Run** to continue.

![Fig. 2-2 Security Warning](image)

6. The setup wizard will be displayed, as illustrated in Fig. 2-3. Click **Next** to continue.

![Fig. 2-3 Setup Wizard](image)
7. To proceed with software installation, select an installation folder. The installer creates the folder destination, C:/Program Files/Gas Measurements Instruments Ltd/flexiCal net/, where the software will be installed, as illustrated in Fig. 2-4. Click Next to continue.

An alternative folder destination can be chosen, if preferred.

![Installation Folder](image)

*Fig. 2-4 Installation Folder*

8. To confirm and start installation, click Next as illustrated in Fig. 2-5.
9. On completion of installation, the window illustrated in Fig. 2-6 is displayed. Click **Close** to exit the installation.
10. The **flexiCal net** software installation is now complete.

   The CD-ROM can now be removed from the CD drive.

A **flexiCal net** icon is automatically placed on the PC desktop for easy access to the software.
flexiCal net OPERATION

3.1 INITIAL SETUP

To start the flexiCal net software package:
Select Start / All Programs / Gas Measurement Instruments Ltd / flexiCal net or, double click flexiCal net on the desktop.

On first use of flexiCal net; the IMS server MUST be setup. The following prompt, as illustrated in Fig. 3-1, will be visible, select to continue.

![Fig. 3-1 Select IMS Server](image)

The initial setup of the IMS server is required for a GDUnet to successfully connect to the network, therefore, the following MUST be setup correctly:

- **Server name** - this is the database management system which contains the IMS database.
- **Database connection** - this is the IMS database which stores all registered GDUnet's to the network.
The connections properties window, as illustrated in Fig. 3-2 will now be present:

![Connection Properties Window](image)

**Fig. 3-2  Connection Properties**
3.1.1 Server Name

To setup the server name:
Click the drop down arrow from the Server name section and select the appropriate server name to be used, as illustrated in Fig. 3-3.
3.1.2 Database Connection

To setup a database connection:
Click the drop down arrow from the **Select or enter a database name** section and select or enter the appropriate database connection to be used, as illustrated in Fig. 3-4.

![Database Connection](image)

*Fig. 3-4 Database Connection*
Click **OK** to confirm server name and database connection.

The main *flexiCal net* window, as illustrated in Fig. 3-5 can now be seen.

*Fig. 3-5  Main Window*
3.2 NAVIGATION

From this window, it is possible to navigate through the main functions required to setup any GDUnet on the network to test/calibrate an instrument.

![Calibrate Tab](image)

**Fig. 3-6 Navigation**

Note: Details of ‘File’, ‘Edit’ and ‘Help’ drop down items are included in section 3.5 of this handbook. All other items are detailed in the following procedure.
3.3 CALIBRATE

This function is used to define the gases to be applied to the instrument and then sends the test or calibration setup files to a GDUnet. There is also the option to select which GDUnet the setup files are sent too.

3.3.1 Calibration Setup Options

A drop down menu allows the user to select templates of test / calibration applications. This method greatly reduces setup time for future tests / calibrations of same instrument type.

To view / select alternative templates, select the drop down menu ‘arrow’, highlighted in Fig. 3-7, to view stored list.

![Fig. 3-7 Setup Template(s)](image)

Note that the flexiCal net software package is pre-loaded with the ‘GDUnet Setup Template’ and is used as an example in the following process.

Calibration templates for GMI instruments can be accessed / selected as detailed in section 3.3.2.

Up to four (4) or eight (8) gases (flammable, toxic and oxygen) can be fully defined.

Typically, instruments can be calibrated with Methane, Propane, Butane or Pentane gases.

Generally, either a label on the instrument, or detailed on instrument display during warm-up, identifies the calibration gas type.

For calibration gas concentrations and gases required, refer to GMI Instruction Sheet, Part No. 13939.
3.3.2 Calibration Setup Editor

Calibration Setup Editor allows the user to select calibration options for a range of GMI instruments.

To access this feature, select the Setup Editor button. The window, illustrated in Fig. 3-7, is displayed.

Navigation

From the Setup Editor window, illustrated in Fig. 3-8, it is possible to navigate through the main functions required to create a new setup, or edit an existing setup for test / calibration.

The Setup Editor has GDUnet selected by default as the equipment of choice for performing the test / calibration of the instrument.

In this example, gas types and values, for the GDUnet can be viewed / edited.

There is also a facility to edit the gas test / calibration limits, conversion factors, purge time, via the ‘Advanced Editor’ button in the Setup Editor window. A password is required to perform this function.
As illustrated in Fig. 3-8, the ‘GDUnet Setup Template’ references ‘GDUnet’ as the hardware required to test / calibrate instruments.
3.3.3 Edit Calibration Option

To view / setup, gas types and values, for the GDU\textit{net}, proceed as follows:

The ‘GDU\textit{net} Setup Template’, using the ‘GDU\textit{net}’, includes the following:

**Gas 1**: This is always ‘Zero Air’, used for zeroing the instrument’s ranges. This cannot be edited.

**Gas 2**: Methane will be applied to the instrument, as listed in this template. The template gases / values must be consistent with the gases / values indicated on the label of gas cylinder used.

If the gas type to be used is CombiGas, the following example is a guide for CombiGas setup:

1. Select CombiGas, as illustrated in Fig. 3-9.

![Image of Setup Editor](image.png)

*Fig. 3-9 CombiGas Selection*
2. To edit default template, select the ‘CombiGas Settings’ button, as illustrated in Fig. 3-10.

![Fig. 3-10 Select ‘CombiGas Settings’](image)

Fig. 3-10 Select ‘CombiGas Settings’

Fig. 3-11 displays the contents of an example CombiGas template.

![Fig. 3-11 CombiGas Contents](image)

Fig. 3-11 CombiGas Contents

3. The template gases / values, illustrated in Fig. 3-11, can be compared and must be compatible with the corresponding gases / values on the gas cylinder label.

4. If compatible, proceed to section 3.3.7.
3.3.4 Edit Setup / New Template

To edit template gas type or value proceed as follows:

1. The ‘gas type’ drop down arrow allows selection of an alternative gas to the one displayed in adjacent window, as illustrated in Fig. 3-12.

![Fig. 3-12 Edit Gas Type](image)

2. Similarly, the unit of measure can also be edited by selecting the adjacent drop down arrow, as illustrated in Fig. 3-13.

![Fig. 3-13 Edit Gas Measurement](image)
3. If the gas value requires editing, highlight current value then type replacement value, as illustrated in Fig. 3-14.

![Fig. 3-14 Edit Gas Value](image1)

4. On completion, select **Done** to return to the setup editor window, as illustrated in Fig. 3-8.

5. To save edited setup as a new template, highlight then edit template name (e.g. New Template), as illustrated in Fig. 3-15.

![Fig. 3-15 Re-name Template](image2)

6. To save New Template, click .

**Remember that template gases / values must be compatible with the corresponding gases / values on the gas cylinder label.**
3.3.5 Delete Setup / Template

1. To delete an unwanted setup / template, use the drop down arrow illustrated in Fig. 3-16, then select the unwanted template (‘Old Template’ in example) from the displayed list.

![Fig. 3-16 Delete Template](image)

2. With the unwanted template name displayed in the window adjacent to drop down arrow, click \(\times\) to delete ‘Old Template’ setup.

3.3.6 Advanced Editor

**Warning:** Advanced Editor settings should not normally be accessed as gases, gas ranges and corresponding limits are factory set and should not require adjustment. GMI cannot be held responsible if these values are edited.

This option is password protected and is accessed by selecting ‘Advanced Editor’ button \(\mathcal{E}\) from the ‘Setup Editor’ window, illustrated in Fig. 3-8.

For further details on using this option, refer to section 3.4 of this handbook.
3.3.7 GDUnet Selection

To test or calibrate an instrument, a GDUnet must have the required test or calibration files received via the network.

To select a GDUnet registered on the network, in the ‘Send To’ section, click the drop down arrow and select the required GDUnet, as illustrated in Fig. 3-17.

![Fig. 3-17 GDUnet Selection](image)

3.3.8 Test or Calibrate Selection

‘Send To’ also contains the selection to ‘Test’ or ‘Calibrate’ instruments as the required process.

- The ‘Test’ process is selected to simply apply gas then record instrument status.
  This process does not update instrument calibration settings in any way.

- The ‘Calibrate’ process is selected to perform a full calibration of the instrument. Gases are applied and the instrument settings are automatically adjusted until the instrument reading is the same as each gas applied.
  This process updates stored data including new ‘cal-due’ date.

To select ‘Test’ or ‘Calibrate’ option, select the appropriate ‘radio’ button, highlighted in Fig.3-18.
3.3.9 Test / Calibrate Instrument

In this example, an instrument is the subject of a calibration procedure using the pre-loaded GDUnet Setup Template and GDUnet GMI02010009 - Prototype 009.

When you are ready to send the setup across the network, select to send the calibration file to GMI02010009 - Prototype 009, as illustrated in Fig. 3-19.

flexiCal net now generates the calibration test files to be sent to the GDUnet, as illustrated in Fig. 3-20.
Fig. 3-20 Generating Tests

Following this the GDUnet is cleared prior to the test file being sent, as illustrated in Fig. 3-21.

Fig. 3-21 Preparing GDUnet

After being cleared the test files are then transferred to the GDUnet, as illustrated in Fig. 3-22.

Fig. 3-22 File Transfer in Progress
3.4 ADVANCED EDITOR

Warning: The Advanced Editor should not normally be accessed as gases, gas ranges and corresponding limits are factory set and should not require adjustment. GMI cannot be held responsible if these values are edited.

This option is password protected, and can be accessed by selecting ‘Advanced Editor’ button from the ‘Setup Editor’ window, illustrated in Fig. 3-8.

Note: Advanced Editor options are only applicable to each currently displayed gas setup.

Next, a password is required to proceed. Refer to Fig. 3-23.

![Password Request](image)

**Fig. 3-23 Advanced Editor Password Request**

Note: The factory set password is ‘default’. This password can be edited in ‘Preference Settings’ as detailed in section 3.6.

1. To proceed, enter the required password then click ‘OK’. The following ‘Advanced Editor’ window is displayed:

   In this example, illustrated in Fig. 3-24, a CombiGas cylinder is used.
2. To view the gases, select ‘CombiGas’ to display list of individual gas ranges, as illustrated in Fig. 3-25.
3.4.1 Edit Gases

Apply Gas Application Time Value: (not normally applicable to CombiGas)

If, for example, a number of individual gases were listed in the ‘Gases’ window, a specific time value for application of each gas type can be specified. Simply, position cursor in panel adjacent to highlighted gas, then type a value (in seconds).

Select button to save time value, if applicable.

Other Instruments:

If, for example, the instrument is configured to be calibrated using methane as the flammable calibration gas and methane is unavailable, the instrument can be calibrated using an alternative calibration gas, e.g. Butane; Propane; Pentane. flexiCal net software compensates for the alternative gas selected.

To select an alternative calibration gas, firstly make sure that the gas type is highlighted in the ‘Gases’ window, then select a gas from the ‘Other Instruments’ section. In the example illustrated in Fig. 3-26, Butane is selected as the alternative calibration gas.

Select button to save alternative flammable gas.
Delete Gas:
If, for example, a number of individual gases were listed in the ‘Gases’ window, a gas type could be removed from the list by highlighting the gas type, then selecting to remove from list.

Delete Range:
To delete a gas range from list in the ‘Ranges’ window, highlight the gas range to be removed, e.g. Carbon Monoxide is highlighted in Fig. 3-27, then select to remove from list.

Save Range:
Use to save any ‘Range’ amendments, for example, if ‘Low’, ‘Target’ or ‘High’ values are edited, as detailed in example, section 3.4.2.

3.4.2 Edit Gas Range

1. To edit the gas range, select a gas range, e.g. Carbon Monoxide, to display gas and corresponding ‘Low’, ‘Target’ or ‘High’ values in the editing panels, as illustrated in Fig. 3-27.
2. To edit gas range, select the drop down arrow, adjacent to existing gas range in editing panel, to display comprehensive list of gas ranges, as illustrated in Fig. 3-28.

3. To select a different gas range, highlight the required gas from the list and select.

   In the example, illustrated in Fig. 3-28, Carbon Monoxide will be replaced by the newly selected gas range from the drop down list.

Fig. 3-27 Edit Gas Range

Fig. 3-28 Edit Gas
4. Select **Save Range** to store updated range.

### 3.4.3 Edit Gas Limit(s)

1. To edit the gas ‘Low’, ‘Target’ or ‘High’ value for a particular range, highlight gas value in editing panel, e.g. ‘High’ limit 550.0, as illustrated in Fig. 3-29.

![Fig. 3-29 Edit Gas Limit(s)](image)

**Warning:** Care should be taken if editing gas limits.

2. Type new value in editing panel.

3. Select **Save Range** to store updated value.

### 3.4.4 Edit Default Conversion Factors

The advanced Editor window displays the default conversion factors for Methane, Pentane, Propane and Butane calibration gases, as illustrated in Fig. 3-30.

![Fig. 3-30 Default Conversion Factors](image)

1. To edit the conversion factor (Methane in example), highlight value in panel adjacent to gas type, as illustrated in Fig. 3-30.

2. Type new conversion factor value in panel.
3. Select to store updated value, if no further ‘advanced editing’ is required.

3.4.5 Edit Purge Time

1. To edit the purge time (in seconds), select radio button adjacent to panel displaying time value, as illustrated in Fig 3-31. Use up / down arrows to increase / decrease purge time value respectively.

2. Value can be set from 30 to 240 seconds.

3. Select to store updated value, if no further ‘advanced editing’ is required.

Note: A longer purge time ensures all the gas is cleared from the instrument.

3.5 ADDITIONAL FILE MENU ITEMS

From the ‘File’, ‘Edit’ and ‘Help’ menus, the user can access additional items, details of which are explained in the following paragraphs:
3.5.1 File Menu

From the ‘File’ menu, the following item can be accessed:

Exit:

The ‘Exit’ button closes the `flexiCal net` software package. Note that any unsaved changes will be lost.

3.5.2 Edit Menu

From the ‘Edit’ menu, the following items can be accessed:

Preferences:
Refer to section 3.6 for ‘PREFERENCE SETTINGS’.

Fig. 3-32 File Menu Items
3.5.3 Help Menu

From the ‘Help’ menu, the following items can be accessed:

Open User Handbook:
This link provides the user with access to the GDU\textit{net} User Handbook. The user handbook can also be accessed in a separate folder in the root directory on software CD-ROM.

\textbf{flexiCal net Folders:}
There are two folders accessed via this link. All are located on the PC / Laptop hard disk and include the following:

- **Data Folder:** This folder contains all stored data files (open .accdb files using MsAccess\textsuperscript{TM} 2007 or later).
- **Application Folder:** This folder contains all stored instrument application files - access not recommended for users.

\textbf{GDU Status Check:}
Selecting will check the status of ALL GDU\textit{net} devices connected to the network. Status refers to whether a GDU\textit{net} is:

- **Online** - connected to the network, or
- **Offline** - not connected to the network.

For further detail regarding GDU Status Check, refer to section 3.5.4.

\textbf{About flexiCal net:}
This link displays \textbf{flexiCal net} software version number.
3.5.4 GDU Status Check

This application allows the user to check the current status of all GDUnet devices connected to the network. To access this application, from the Help menu, select GDU Status Check, as illustrated in Fig. 3-33.

![Fig. 3-33 Select GDU Status Check](image)

The application will open and communicate with each GDUnet connected to the network and provide the following details, as illustrated in Fig 3-34:

![Fig. 3-34 GDU Status Checker](image)

- **GDUnet** - name, description and serial no.
- **Status** - GDUnet will be either ONLINE or OFFLINE.
- **IP Address** - Any ONLINE GDUnet will show an assigned IP Address.
- **Last Synced** - this is the last time the GDUnet synchronised with the IMS database.
The menu bar, illustrated in Fig. 3-35, provides the user with the following options:

- **Refresh** - the application will check the current status of each GDU*net* device connected to the network.

- **Data source** - opens the connection properties window for selecting a new server name and database connection. Refer to section 3.1.1 and 3.1.2 to setup the server name and database connection.

- **About** - provides information about GDU Status Checker, e.g. current version.

*Fig. 3-35 Menu Bar*
3.6 PREFERENCE SETTINGS

The preferences dialogue sets the global conditions for **flexiCal net** software to setup the IMS server / database, add a GDUnet to the network, enable visible gas ranges, default limits on instrument tests and also gas application times.

Select ‘Preferences’ from the ‘Edit’ menu, as illustrated in Fig. 3.36.

![Select Preferences](image)

*Fig. 3-36  Select Preferences*

The following ‘Password’ dialogue box is displayed:

![Password Protected](image)

*Fig. 3-37  Password Protected*

Enter password then click ‘OK’ button.

Note: The factory set password is ‘default’. The password can be edited as detailed later in this chapter.
The preferences dialogue box is now displayed. The dialogue box contains two selectable tabs: ‘General’ and ‘Ranges’. General tab is illustrated in Fig. 3-38.

![Fig. 3-38 Preferences - General](image)

For ‘General’ tab details / contents, refer to Section 3.6.1
For ‘Ranges’ tab details / contents, refer to Section 3.6.2

**3.6.1 ‘General’ Tab**

To save any preference change then close window, select Close.
To reject any preference change and return to factory default settings, select **Reset to Factory Defaults**.

**Note:** Previously made changes will also be discarded.

### 3.6.1.1 Cal Due (Gasurveyor 400, 500 & earlier series only)

Following calibration, the calibration due (Cal Due) date is normally set as one year from present date (i.e. ‘365’ value in window).

This preference can be replaced with a time period, in days, ranging from 0 days to 365 days.

Use **D** to select number of days required.

### 3.6.1.2 Service Due (Not applicable to the Gasurveyor 400 series and earlier)

Following servicing of GMI instruments, the service due (Ser Due) date is normally set as two years from present date (i.e. ‘24’ value in window).

This preference can be replaced with a time period, in months, ranging from 0 months to 36 months.

To override this setting, place a **✓** in the ‘Service Due’ box.

Use **D** to select number of months required.

### 3.6.1.3 Stop On Zero Failure

By default, stopping the test / calibration process due to an instrument zero failure is disabled.

To override this setting, i.e. enable feature, place a **✓** in the ‘Stop On Zero Failure’ box.

### 3.6.1.4 Stop On First Span Failure

By default, stopping the test / calibration process due to an instrument span failure is disabled.

To override this setting, i.e. enable feature, place a **✓** in the ‘Stop On First Span Failure’ box.
3.6.1.5 Allow Cal Due update on incomplete test

By default, allowing the software to update the instrument ‘Cal Due’ date if a ‘Test’ process is not completed, is disabled.

To override this setting, i.e. enable feature, place a ✓ in the ‘Allow Cal Due update on incomplete test’ box.

3.6.1.6 Disable Instrument on Fail

By default, allowing the software to disable the instrument if it fails a Test / Calibration process, is disabled.

To override this setting, i.e. enable feature, place a ✓ in the ‘Disable Instrument on Fail’ box.

Note: This feature applies to any instrument that has ‘Cal Due’ date, but the instrument must be configured to ‘switch off when overdue’.

3.6.1.7 Enable Hardware Zero

- Applicable to Gasurveyor 500, First Responder, Leak Surveyor, Oxygas 500, and Gascoseeker 500 instrument types only.

This feature allows full zeroing of the following instrument hardware ranges: Volume Gas, LEL and PPM flammable (excl. semiconductor).

Care must be taken, as large adjustments are possible.

By default, allowing the software to enable hardware zero is disabled.

To override this setting, i.e. enable feature, place a ✓ in the ‘Enable Hardware Zero’ box.

3.6.1.8 Leak Checking

During the Test / Calibration process, both instrument pump and gas supply are stopped simultaneously. A leak test is performed while gas is trapped in the instrument.

If the Volume Gas reading drops by a level greater than ‘% Delta Allowed’, the instrument records a ‘Fail’ condition.
To adjust the % Delta Value, use . Value can be adjusted from 0 to 10%.

Time value, in seconds, relates to the duration that the pump and gas supply is temporarily halted.

To adjust the Time Value, use . Value can be adjusted from 0 to 20 seconds.

3.6.1.9 Default Conversion Factors

The value (factor) displayed in each calibration gas type window represents 100% LEL of that particular gas type.

This value can be edited if your company policy dictates adjustment to a specific value that your company has determined equates to 100% LEL.

To adjust the default conversion factors, use to display option values for each gas type.

3.6.1.10 Password

The preferences dialogue box, illustrated in Fig. 3-38, is password protected to prevent users modifying test / calibration parameters.

Note: If password is forgotten, contact GMI for recovery details.

To change the password, select from the ‘General’ tab in the ‘Preferences’ window.

The window illustrated in Fig. 3-39 is displayed:

![Image of the Password window]

*Fig. 3-39 Enter Current Password*
Enter current password then select ‘OK’ button.
The window illustrated in Fig. 3-40 is displayed:

![Fig. 3-40 Enter New Password]

Enter new password then select ‘OK’ button.

Note: If no password is entered and only ‘OK’ selected, then the password entry dialogue is disabled and free access to ‘Preferences’ is enabled.

The window illustrated in Fig. 3-41 is displayed:

![Fig. 3-41 Repeat New Password]

Re-type new password then select ‘OK’ button.

Note: If no password was entered in previous step, then this dialogue would also remain blank, thus enabling free access to ‘Preferences’.

3.6.1.11 Reset Settings

This feature allows the user to reject any preference change and return to factory default settings by selecting [Reset to Factory Defaults], illustrated in Fig. 3-38.
3.6.1.12 Select IMS

For a GDUnet to connect and be recognised on the network, each GDUnet has to be registered to the IMS database.

To setup the IMS database, select IMS.

The window illustrated in Fig. 3-42 is displayed:

![Connection Properties Window]

*Fig. 3-42 Connection Properties*
For the GDUnet to successfully connect to the network, the following **MUST** be setup correctly:

- **Server name** - this is the database management system which contains the IMS database.
- **Database connection** - this is the IMS database which stores all registered GDUnet’s to the network.

**Server Name**

To setup the server name:

Click the drop down arrow from the **Server Name** section and select the appropriate server name to be used, as illustrated in Fig. 3-43.

![Connection Properties](image)

**Fig. 3-43  Server Name**
Database Connection

To setup a database connection:
Click the drop down arrow from the **Select or enter a database name** section and select or enter the appropriate database connection to be used, as illustrated in Fig. 3-44.

![Database Connection](image)

**Fig. 3-44 Database Connection**

Click **OK** to confirm server name and database connection.
3.6.1.13 Add GDU

To register a GDUnet to the IMS database, select Add GDU. The window illustrated in Fig. 3-45 is displayed:

![Fig. 3-45 Enter GDU Details](image)

Enter the serial no. and a description of the GDUnet to be registered to the network, then select OK to confirm details.

Note: The serial no. is the 6 digit number found on the serial no. label of the GDUnet. As an example, GDUnet with serial no. ‘000003’ and the description ‘Prototype 3’ are to be used, as illustrated in Fig. 3-46.

![Fig. 3-46 Example GDU Details](image)

**Warning:** If the serial no. is entered incorrectly the GDUnet will not be found. Ensure the serial no. matches the serial no. label, as, once registered the serial no. cannot be deleted.
The example GDUnet added to the network can now be seen when the drop down menu is selected in the ‘Send To’ section of the main window, as illustrated in Fig. 3-47.

![Example GDUnet Selection](image)

Fig. 3-47 Example GDUnet Selection

Note: The GMI02 prefix is the GDUnet identifier.

### 3.6.1.14 Edit GDU

To amend the description details of a registered GDUnet, select ![Edit GDU](image). The window illustrated in Fig. 3-48 is displayed:

![Edit GDUnet Description](image)

Fig. 3-48 Edit GDUnet Description

Select the serial no. of the GDUnet to amend from the drop down list, amend the description of the GDUnet, then select ![OK](image) to confirm.
As an example, GDUnet with serial no. ‘000003’ is to have the description amended to ‘Prototype 4’, as illustrated in Fig. 3-49.

![Example GDUnet Description Change](image)

**Fig. 3-49 Example GDUnet Description Change**

Confirm the amendments are correct, as illustrated in Fig 3-50.

![Confirm Description Change](image)

**Fig. 3-50 Confirm Description Change**

Confirmation the record has been updated will be displayed. The example GDUnet, with the description changed, can now be seen when the drop down menu is selected in the ‘Send To’ section of the main window, as illustrated in Fig. 3-51.

![Example GDUnet Selection](image)

**Fig. 3-51 Example GDUnet Selection**
3.6.2 ‘Ranges’ Tab

If the ‘Ranges’ tab is selected from Preferences window, the dialogue box illustrated in Fig. 3-52 is displayed:

![Fig. 3-52 Preferences - Ranges](image)

To save any preference change then close window, select Close.

3.6.2.1 Reset All Range Defaults

To reset all gas ranges to factory set defaults, select Reset All Range Defaults.
3.6.2.2 Zero Air Limit

At the start of a Test / Calibration, zero air is applied to each range and will record a ‘Pass’ if the reading is within this amount of zero, or 20.9 for oxygen.

To edit ‘Zero Air Limit’ value, highlight existing value in window then type new value.

3.6.2.3 Gas Limit

The software opts for the higher value in either the Fixed Margin or Variable Margin window. When the range is tested with gas, it will record a ‘Pass’ if the reading is within this amount of the gas concentration.

To edit either the ‘Fixed Margin’ or ‘Variable Margin’ value, highlight existing value in relevant window then type new value.

3.6.2.4 Gas Application Accuracy

This feature allows the user to set the gas application time, for each selected gas range, as Fast, Medium or Slow. Note that the longer the instrument cell has to react, the more accurate the readings obtained.

The actual application time values can be edited in paragraph 3.6.2.5.

To edit the ‘Gas Application Accuracy’ for any gas listed in ‘Range’ window, highlight the required gas range, then select accuracy setting using 🜟 to display Fast, Medium or Slow options.

3.6.2.5 Gas Application Time

As detailed in paragraph 3.6.2.4, the gas application accuracy can be set as Fast, Medium or Slow. The ‘Gas Application Time’ feature allows a time value, in seconds, to be applied to each.

Note that the entered value is independent of gas range highlighted in ‘Range’ window.

To edit Fast, Medium or Slow time value, highlight existing value in window then type new value.
GDUnet RESULTS MANAGER

4.1 INTRODUCTION

The test results of all instruments that have been tested / calibrated on the GDUnet are stored in the GDUnet internal memory. The internal memory can store approximately 1000 test results.

These results are retrieved from the GDUnet and downloaded to the IMS database using the GDUnet Results Manager software package.

This package requires installation, setup, then must be left running in the background.

Important: PC running GDUnet Results Manager must be switched on at all times to ensure results are retrieved from any GDUnet connected to the network.

4.2 SYSTEM REQUIREMENTS

To run the GDUnet Results Manager software package, you require the following minimum system requirements:

- PC / Laptop running WindowsXP™ software or newer
- 96MB RAM and 280MB disk space
- SQL Server version 2005 or newer
- IMS Database version 1.0.8 or newer
- .NET Framework 4 or newer
- DHCP Network Addressing
4.3 INSTALLATION

Important: This procedure should be carried out by an IT operative with server ‘Administration Rights’.

The GDUnet Results Manager software package is supplied on CD-ROM (Part No. 14767).

To install the software on a PC / Laptop using Microsoft Windows XP™, Windows Vista™ or Windows 7™ platforms, proceed as follows:

1. Insert GDUnet CD-ROM into the appropriate CD drive in your PC / Laptop.

   The CD-ROM should auto-run, displaying the ‘Open folder to view files’ option, as illustrated in Fig 4-1.

   Should the CD-ROM not run automatically, select ‘Start’ then ‘Computer’ to find the CD-ROM drive, then, double-click to open.

   The following window is displayed:

   ![AutoPlay Window](image)

   Fig. 4-1 CD-ROM AutoPlay

   Open the folder to view CD-ROM options.
2. GMI recommend that before using this software package, the user reads the User Handbook.

   Adobe Reader must be installed on your PC / Laptop to view the User Handbook.

3. Before installing the **GDUnet Results Manager** software package, it is recommended that the user exits all other Windows programs.

4. To start installation, select the **GDUnet Results Manager** installer, a security warning as illustrated in Fig. 4-2 will be displayed. Click **Run** to continue.

![Fig. 4-2 Security Warning](image-url)
5. The Setup Wizard will be displayed, as illustrated in Fig. 4-3. Click [Next >] to continue.

![Fig. 4-3  Setup Wizard]

6. To proceed with software installation, select an installation folder. The installer creates the folder destination, C:\Program Files\GMI\GDUnet Results Manager\, where the software will be installed, as illustrated in Fig 4-4. Click [Next >] to continue.

An alternative folder destination can be chosen, if preferred.
7. To confirm and start installation, click **Next >**, as illustrated in Fig. 4-5.
8. On completion of installation, the window illustrated in Fig. 4-6 is displayed. Click to exit the installation.

![Fig. 4-6 Installation Complete](image)

9. The **GDU**net Results Manager** installation is now complete. The CD-ROM can now be removed from the CD drive.

A **GDU**net Results Manager shortcut is automatically placed on the PC desktop for easy access to the software.
4.4 SETUP

To setup the **GDUnet Results Manager** software package to transfer test results to the IMS database. Firstly, start the application by a double click of **GDUnet Results Manager**. The application starts minimised in the notification area, as illustrated in Fig. 4-7.

![Fig. 4-7 Main Window](image)

Double click from the notification area to maximise and bring up the main window, as illustrated in Fig. 4-8:

![Fig. 4-8 Main Window](image)

For this application to successfully run the following **MUST** be setup correctly:

- **Server name** - this is the database management system which contains the IMS database.
- **Database connection** - this is the IMS database which stores all the GDUnet test result information.
4.4.1 Server Name

To setup the server name:

1. Click **Connection** to open the connection properties window, as illustrated in Fig. 4-9.

![Connection Properties](image)

*Fig. 4-9 Connection Properties*
2. Click the drop down arrow from the **Server Name** section and select the appropriate server name to be used, as illustrated in Fig. 4-10.

![Connection Properties](image)

*Fig. 4-10  Server Name*
4.4.2 Database Connection

To setup a database connection:

1. Click **Connection** to open the connection properties window, as illustrated in Fig. 4-8.

2. Click the drop down arrow from the **Select or enter a database name** section and select or enter the appropriate database connection to be used, as illustrated in Fig. 4-11.

3. Click **OK** to confirm database connection and server name.

Fig. 4-11  Database Connection
4.5 TEST RESULT STORAGE

The GDU\textit{net} Results Manager software has two (2) functions:

1. To retrieve instrument test results from any GDU\textit{net} connected to the network.

2. To send the instrument test results to the IMS database (whilst archiving onto a PC).

4.5.1 Results Download

The GDU\textit{net} Results Manager software connects to GDU\textit{net}'s registered on the server; then looks for instrument test result files on each GDU\textit{net} (approximately every 30 seconds).

Any new test files are removed from the GDU\textit{net} and downloaded onto a PC (with GDU\textit{net} Results Manager installed).

Fig. 4-12 illustrates the ‘Results Download Progress’ tab and as an example GDU\textit{net}, GM102000003, connected and various instrument test results files downloaded.

![Image of Results Download](image-url)
4.5.2 Results Processing

The **GDUNet Results Manager** looks for any new test files to process; then archives the files onto the PC, whilst, sending the test results to the IMS database.

Fig. 4-13 illustrates the ‘Results Processing Progress’ tab and shows the instrument result test files being detected and then archived.

In the background the test results are also being sent to the IMS database.

**Fig. 4-13  Results Processing**

Instrument test results are now stored on the IMS database and can be viewed using the IMS Commander application.
GDUnet OPERATION

5.1 GDUnet Models

There are four (4) models of GDUnet, as follows:

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Gas Connections</th>
<th>Fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>14750</td>
<td>8</td>
<td>6mm.</td>
</tr>
<tr>
<td>14750Q</td>
<td>8</td>
<td>1/4 inch</td>
</tr>
<tr>
<td>14751</td>
<td>4</td>
<td>6mm.</td>
</tr>
<tr>
<td>14751Q</td>
<td>4</td>
<td>1/4 inch</td>
</tr>
</tbody>
</table>

The differences between the models are:

- Ability to test / calibrate an instrument with up to 4 or 8 gases
- Use of imperial or metric gas fittings

The actual operation of each of the models are identical.
5.2 MAIN FEATURES

The main features of the GDUnet are illustrated in Fig. 5-1 and described as follows:

1. Gas Connections
2. Communications
3. Microswitches
4. Gas Nozzle
5. Front Panel Lock
6. Test LED's
7. External Connectors
8. LCD

Fig. 5-1 Main Features
5.2.1 LCD

The LCD displays information relating to the status of a test being undertaken or has instructions for the user, as illustrated in the example in Fig. 5-2.

![Fig. 5-2 Example of LCD status](image)

5.2.2 Test LEDs

The front panel of the GDU\textit{net} contains six (6) LEDs relating to the current status of the GDU\textit{net} and instrument being tested.

![Fig. 5-3 Test LEDs](image)
5.2.3 External Connectors

There are three (3) external connectors on the GDUnet located at the side of the unit. There is the 12V power supply connection, an Ethernet connection for communication over the network and a USB connection for direct connection to an individual PC / laptop. The connector locations are illustrated in Fig. 5-4.

![External Connectors](image1.png)

Fig. 5-4 External Connectors

5.2.4 Gas Connections

The GDUnet can be fitted with 4 or 8 gas connections. The gases for testing and calibrating instruments are connected to the gas inlet adaptors as shown, in Fig. 5-5, below.

![Gas inlet adaptors](image2.png)

Fig. 5-5 Gas inlet adaptors
Note: For correct installation of gases, refer to the GDUnet Installation Guide, part no. 14766.

5.2.5 Gas Nozzle

Gas is delivered to the instruments by the GDUnet via the outlet nozzle. When the instrument is located correctly in the tray the nozzle 'O' ring ensures there is a seal between the nozzle and the instrument, therefore no gas leakage.

Fig. 5-6 Gas outlet nozzle
5.2.6 Microswitches

The GDU\textit{net} contains two (2) contact microswitches located inside the instrument hood, as illustrated in Fig. 5-7.

The purpose of these microswitches is as follows:

**MICROSWITCH (1):** Detects when an instrument has been correctly located in the tray and activates the ‘Switch ON’ LED on the GDU\textit{net} front panel.

**MICROSWITCH (2):** Detects instrument type. The instrument type determines whether communications are via the optical port or IrDA window.

- Optical comms when microswitch 2 is activated.
- IrDA comms when microswitch 2 hasn’t been activated.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Fig_5-7_Microswitches}
\caption{Fig. 5-7 Microswitches}
\end{figure}
5.2.7 Optical Port

Optical communication occurs when microswitch 2 has been activated.

The following examples are types of instruments that use optical communications:

- Gasurveyors
- First Responders
- Leak Surveyor

The optical port is illustrated in Fig. 5-8 below.

Fig. 5-8 Optical Port
5.2.8 IrDA Window

Infrared communication occurs when microswitch 2 has not been activated.
The following examples are types of instruments that use infrared communications:

- Shipsurveyors
- Gascoseeker Acclaim

The IrDA window is illustrated in Fig. 5-9 below:

![IrDA Window](image)

**Fig. 5-9 IrDA Window**

5.2.9 Front Panel Lock

The front panel of the GDUnet can be secured with a key-lock, as illustrated in Fig. 5-10. Two (2) keys are supplied with the unit.

![Front Panel Lock](image)

**Fig. 5-10 Front Panel Lock**
5.3 STANDARD OPERATION

When the GDUnet is connected to a mains power supply, the green POWER ON LED will illuminate on the front panel, as shown in Fig. 5-11.

![POWER ON LED](image)

*Fig. 5-11 Power On*

The following start up sequence will begin:

1. The PASS and FAIL test LEDs will illuminate. The LCD backlight will be on but no messages are present.

2. After approximately 30 seconds the buzzer will sound and the 6 test LEDs will illuminate in sequence.

3. The ‘INSERT INSTRUMENT’ test LED will be illuminated and the LCD only now will display the message ‘GDUnet #010001 INSERT GMI’.

   (#010001 - example serial number of a GDUnet.)

4. The GDUnet is now ready to test / calibrate instruments.

---

**Note:** The start-up sequence gives the opportunity to observe the test LEDs and buzzer are functioning correctly.
5.3.1 Test / Calibration Procedure

The following procedure will allow correct operation for testing / calibrating an instrument.

1. Ensure correct hardware installation has taken place, refer to the GDUnet Installation Guide, part no. 14766.

2. Ensure flexiCal net software installation has taken place, refer to chapter 2 - flexiCal net Installation.

3. Send the required test / calibration files to the GDUnet, refer to chapter 3 - flexiCal net Operation.

4. Ensure GDUnet Results Manager installation and setup has taken place, refer to chapter 4 - GDUnet Results Manager.

5. The procedure for the testing or calibrating of an instrument is illustrated in Fig. 5-12. The test procedure shows each step taken during the testing of an instrument from inserting onto the GDUnet until the removal of the instrument.

---

**Note:** The test procedure also forms the quick operation guide shipped with the GDUnet, part no. 14768.

---

**Warning:** The GDUnet may reset if there is an interruption in the communications between the GDUnet and instrument under test. This interruption may be due to the instrument battery power being low, dirt in the optical communication windows, or electromagnetic interference.
GDUnet Quick Operation Guide

1. **INSERT GMI**

2. **SWITCH ON**

3. **TEST IN PROGRESS**

4. **ALL TESTS PASS**

**Fig. 5-12 Quick Operation Guide**
The following procedure details how to setup the test / calibration file for a GMI portable instrument using GMI flexiCal net software.

6.1 CALIBRATE GASURVEYOR 526 INSTRUMENT

In this example, calibration is to be performed on a GMI Gasurveyor 526 instrument.

To perform calibration, the calibration file for the instrument must be sent to a GDUnet.

To setup the Gasurveyor 526 calibration file, ensure flexiCal net has been installed and the GDUnet has been registered on the IMS server. Refer to chapters 2 and 3 for details.

6.1.1 Start Software

To start the flexiCal net software package:
Select Start / All Programs / Gas Measurement Instruments Ltd / flexiCal net or, double click on the desktop.

The window is illustrated in Fig. 6-1 is now displayed:
Select the drop down menu arrow, illustrated in Fig. 6-2, to view stored setup templates.

If there is an existing template in the drop down menu for the Gasurveyor 526 instrument, select template. The calibration gas setup can be viewed / verified in ‘Setup Editor’ if required.

If there is no template available in the drop down menu for Gasurveyor 526, a new setup template can be created. Proceed to ‘Setup Editor’.
6.1.2 Create New Setup Template

1. Select the Setup Editor button. The window illustrated in Fig. 6-3 is displayed.

![Fig. 6-3 Setup Editor](image)

2. Select ‘New Setup’ button from the ‘Setup Editor’ window. The window illustrated in Fig 6.4 is displayed:

![Fig. 6-4 New Setup](image)
3. Select the drop down menu arrow, illustrated in Fig. 6-5, to display the GDUnet as the calibration station and gas delivery unit suitable for all GMI instrument types:

![Image of GDUnet interface]

Fig. 6-5 Select Rig

4. The gases can now be specified. A total of seven gases can be loaded (Nos. 2 to 8), together with ‘Zero Air’, always listed as No. 1. ‘Zero Air’ is used for zeroing the instrument’s ranges and cannot be edited. The Gasurveyor 526 features four gas ranges, calibrated for Methane as follows:

- 0 to 1000 PPM Flammable
- 0 to 100% LEL
- 0 to 100% Volume Gas
- 0 to 1000ppm Carbon Monoxide

Remember that template gases / values entered must be compatible with the corresponding gases / values on each gas cylinder label.

5. To specify gas No.2 (0 to 1000 PPM Flammable), select to display gases drop down list, as illustrated in Fig. 6-6.
6. From drop down list, select ‘Methane’. PPM, LEL and VOL options are then displayed, as illustrated in Fig. 6-7.
7. From list illustrated in Fig. 6-7, select ‘PPM’. The displayed ‘value’ window automatically selects ‘PPM’ as the unit of measure.

8. The value on the gas cylinder label in this example is 800 PPM. To enter this (800) value, highlight existing (0) value then type new value in window, as illustrated in Fig. 6-8.

![Fig. 6-8 Specify Gas Value](image)

9. To specify gas No.3 (0 to 100% LEL), select to display gases drop down list, as illustrated in Fig. 6-6.

10. From drop down list, select ‘Methane’. PPM, LEL and VOL options are then displayed. Select ‘LEL’, as illustrated in Fig. 6-9.
11. Depending on supplied cylinder gas concentration, a corresponding value should be entered in ‘%’ window. The value on the gas cylinder label in this example is 50%. To enter this (50) value, highlight existing (0) value then type new value in window.

12. To specify gas No.4 (0 to 100% VOL), select to display gases drop down list, as illustrated in Fig. 6-6. Select Methane / VOL / from drop down list. The value on the gas cylinder label in this example is 100% VOL. To enter this (100) value, highlight existing (0) value then type new value in window.

13. To specify gas No.5 (0 to 1000ppm CO), select to display gases drop down list, as illustrated in Fig. 6-6. Select Carbon Monoxide / PPM / from drop down list. The value on the gas cylinder label in this example is 500 PPM. To enter this (500) value, highlight existing (0) value then type new value in window.
On completion of gas entries, a setup template name can now be added.

14. To name ‘gas setup’, position cursor in window then type name of setup template, as illustrated in example Fig 6-10.

![Figure 6-10 Name Template](image)

15. To save template, select ‘Save Setup’ button to store new ‘Gsv 526’ setup.

**Note:** There is an ‘Advanced Editor’ feature available, as detailed in Chapter 3, section 3.4. This feature should not normally be accessed as gases, gas ranges and corresponding limits are factory set and should not require adjustment. GMI cannot be held responsible if these values are edited.
6.1.3 Send Calibration File

1. From the main window, select ‘Gsv 526’ from drop down setup menu, as illustrated in Fig. 6-11

2. In this example ‘Calibrate’ and GDUnet ‘GMI02000003 - Prototype 3’ are selected from the ‘Send To’ section.

3. When you are ready to send the ‘Gsv 526’ calibration file to GDUnet ‘GMI02000003 - Prototype 3’, select to proceed.

When the file transfer is complete, Gasurveyor 526 instruments can now be calibrated on GDUnet ‘GMI02000003 - Prototype 3’.
INDEX

A
About flexiCal net 3-26
Add GDU 3-38
ADDITIONAL FILE MENU ITEMS 3-24
ADVANCED EDITOR 3-14, 3-18
Advanced Editor Password 3-18
AGREEMENT, LICENCE i
Allow Cal Due update on incomplete test 3-32
Apply Gas Application Time Value 3-20

C
Cal Due (Gasurveyor 500 series only) 3-31
CALIBRATE 3-7, 3-15
CALIBRATION GASES 1-3
CALIBRATION LIMITS 1-5
Calibration Setup Editor 3-8
Calibration Setup Options 3-7
CD-ROM Options 2-2
Check for Updates 3-26
CombiGas 3-10
CombiGas Settings 3-11
Connection Properties 3-2, 3-35
COPYRIGHT ii, v
Create New Setup Template 6-3

D
Database connection 3-1, 3-4, 3-36
Data source 3-28
Default Conversion Factors 3-33
Delete Gas 3-21
Delete Range 3-21
Delete Setup / Template 3-14
Delete Template 3-14
Disable Instrument on Fail 3-32
DISPOSAL ADVICE v

E
Edit Calibration Option 3-10
Edit Default Conversion Factors 3-23
Edit Gas 3-22
Edit Gases 3-20
Edit Gas Limit(s) 3-23
Edit Gas Measurement 3-12
Edit Gas Range 3-21
Edit Gas Type 3-12
Edit Gas Value 3-13
Edit GDU 3-39
Edit GDUnet Description 3-39
Edit Menu 3-25
Edit Purge Time 3-24
Edit Setup / New Template 3-12
<table>
<thead>
<tr>
<th>Feature</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable Hardware Zero</td>
<td>3-32</td>
</tr>
<tr>
<td>Enter a database name</td>
<td>3-4</td>
</tr>
<tr>
<td>Enter GDU Details</td>
<td>3-38</td>
</tr>
<tr>
<td>Ethernet</td>
<td>1-2, 5-4</td>
</tr>
<tr>
<td>External Connectors</td>
<td>5-4</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td></td>
</tr>
<tr>
<td>File Menu</td>
<td>3-25</td>
</tr>
<tr>
<td>File Menu Items</td>
<td>3-25</td>
</tr>
<tr>
<td>Fittings</td>
<td>5-1</td>
</tr>
<tr>
<td>flexiCal net</td>
<td>2-1</td>
</tr>
<tr>
<td>flexiCal net Folders</td>
<td>3-26</td>
</tr>
<tr>
<td>flexiCal net icon</td>
<td>2-4</td>
</tr>
<tr>
<td>flexiCal net INSTALLATION</td>
<td>2-1</td>
</tr>
<tr>
<td>flexiCal net OPERATION</td>
<td>3-1</td>
</tr>
<tr>
<td>flexiCal Plus</td>
<td>1-2</td>
</tr>
<tr>
<td>Front Panel Lock</td>
<td>5-8</td>
</tr>
<tr>
<td><strong>G</strong></td>
<td></td>
</tr>
<tr>
<td>Gas Application Accuracy</td>
<td>3-42</td>
</tr>
<tr>
<td>Gas Application Time</td>
<td>3-42</td>
</tr>
<tr>
<td>Gas Connections</td>
<td>5-1, 5-4</td>
</tr>
<tr>
<td>Gas Delivery Unit (GDUnet)</td>
<td>1-1</td>
</tr>
<tr>
<td>Gas inlet adaptors</td>
<td>5-4</td>
</tr>
<tr>
<td>Gas Limit</td>
<td>3-42</td>
</tr>
<tr>
<td>Gas Limits</td>
<td>1-5</td>
</tr>
<tr>
<td>Gas Nozzle</td>
<td>5-5</td>
</tr>
<tr>
<td>GDUnet icon</td>
<td>2-2</td>
</tr>
<tr>
<td>GDUnet Installation Guide</td>
<td>5-5</td>
</tr>
<tr>
<td>GDUnet internal memory</td>
<td>4-1</td>
</tr>
<tr>
<td>GDUnet Models</td>
<td>5-1</td>
</tr>
<tr>
<td>GDUnet OPERATION</td>
<td>5-1</td>
</tr>
<tr>
<td>GDUnet RESULTS MANAGER</td>
<td>4-1</td>
</tr>
<tr>
<td>GDUnet Results Manager shortcut</td>
<td>4-6</td>
</tr>
<tr>
<td>GDUnet Selection</td>
<td>3-15</td>
</tr>
<tr>
<td>GDUnet Setup Template</td>
<td>3-7</td>
</tr>
<tr>
<td>GDU Status Check</td>
<td>3-27</td>
</tr>
<tr>
<td>‘General’ Tab</td>
<td>3-30</td>
</tr>
<tr>
<td><strong>H</strong></td>
<td></td>
</tr>
<tr>
<td>Help Menu</td>
<td>3-26</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td></td>
</tr>
<tr>
<td>IMS database</td>
<td>3-1, 3-35, 4-1</td>
</tr>
<tr>
<td>IMS installation</td>
<td>4-12</td>
</tr>
<tr>
<td>INITIAL SETUP</td>
<td>3-1</td>
</tr>
<tr>
<td>INSTALLATION</td>
<td>2-1, 4-2, 5-1</td>
</tr>
<tr>
<td>Installation folder</td>
<td>4-4</td>
</tr>
<tr>
<td>Instrument Management System (IMS)</td>
<td>1-1</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1-1</td>
</tr>
<tr>
<td>IrDA Window</td>
<td>5-8</td>
</tr>
<tr>
<td><strong>K</strong></td>
<td></td>
</tr>
<tr>
<td>Key-lock</td>
<td>5-8</td>
</tr>
<tr>
<td><strong>L</strong></td>
<td></td>
</tr>
<tr>
<td>Last Synced</td>
<td>3-27</td>
</tr>
<tr>
<td>LCD</td>
<td>5-3</td>
</tr>
<tr>
<td>Leak Checking</td>
<td>3-32</td>
</tr>
<tr>
<td>LIABILITY</td>
<td>v</td>
</tr>
<tr>
<td>LICENCE AGREEMENT</td>
<td>i</td>
</tr>
<tr>
<td>LIMITED WARRANTY</td>
<td>ii</td>
</tr>
<tr>
<td><strong>M</strong></td>
<td></td>
</tr>
<tr>
<td>MAIN FEATURES</td>
<td>5-2</td>
</tr>
<tr>
<td>MAINTENANCE, SERVICING &amp; CALIBRATION</td>
<td>vi</td>
</tr>
<tr>
<td>Main Window</td>
<td>3-5</td>
</tr>
<tr>
<td>Menu Bar</td>
<td>3-28</td>
</tr>
</tbody>
</table>
INDEX

Microswitches 5-6
MODIFICATION NOTICES v

N
Name Template 6-8
NAVIGATION 3-6
Network communication 1-2
New Setup 6-3
New Template 3-13

O
Open Quick Start Guide 3-26
Open User Handbook 3-26
Operating-system independent 1-2
Optical Port 5-7
‘O’ ring 5-5
Other Instruments 3-20

P
Password 3-33
Power On 5-9
Power supply 5-4
Preferences 3-25
PREFERENCE SETTINGS 3-29
Preferred Values 1-4
Purge time 3-24

Q
Quick Operation Guide 5-11

R
‘Ranges’ Tab 3-41
Refresh 3-28
Reset All Range Defaults 3-41
Reset Settings 3-34
Results Download 4-11
Results Processing 4-12
Retrieve instrument test results 4-11

REVISION RECORD vii

S
SAFETY PROCEDURES vi
Save Range 3-21
Select GDU Status Check 3-27
Select IMS 3-35
Select IMS Server 3-1
Select Preferences 3-29
Select Rig 6-4
Send Calibration File 3-16, 6-9
Send To 3-15
Server name 3-1, 3-3, 3-36
Service Due 3-31
Setup Editor 3-8
Setup Template 6-3
Setup Template(s) 3-7
Setup Wizard 4-4
Software Licence i
Specification 1-4
Specify Gas Range 6-5
Specify Gas Type 6-5
Specify Gas Value 6-6
STANDARD OPERATION 5-9
Standards 1-5
Start Software 6-1
Start up sequence 5-9
Status 3-27
Stop On First Span Failure 3-31
Stop On Zero Failure 3-31
SYSTEM REQUIREMENTS 2-1, 4-1

iii
T
Templates 3-7
Test 3-15
Test / Calibrate Instrument 3-16
Test / Calibration Procedure 5-10
TEST / CALIBRATION
SETUP OF GMI PORTABLE INSTRUMENT 6-1
Test LEDs 5-3
Test or Calibrate Selection 3-15
TEST RESULT STORAGE 4-11

U
USB 1-2, 5-4

V
View Gas Ranges 3-19

W
WARRANTY ii
Workshop system 1-1

Z
Zero Air 3-10
Zero Air Limit 3-42

Symbols
30 DAY LIMITED WARRANTY ii
CUSTOMER ASSISTANCE, MANUFACTURING AND SERVICE LOCATIONS

CORPORATE HEADQUARTERS
Heath Consultants Incorporated
9030 Monroe Road
Houston, Texas 77061
Phone: (713) 844-1300
Fax: (713) 844-1309

MANUFACTURING AND WARRANTY SERVICE CENTERS
Heath Consultants Factory Service Center
9030 Monroe Road
Houston, Texas 77061
Phone: (713) 844-1350
Fax: (713) 844-1398

Heath Consultants Incorporated operates under a continual product improvement program and reserves the right to make improvements and/or changes without prior notification.