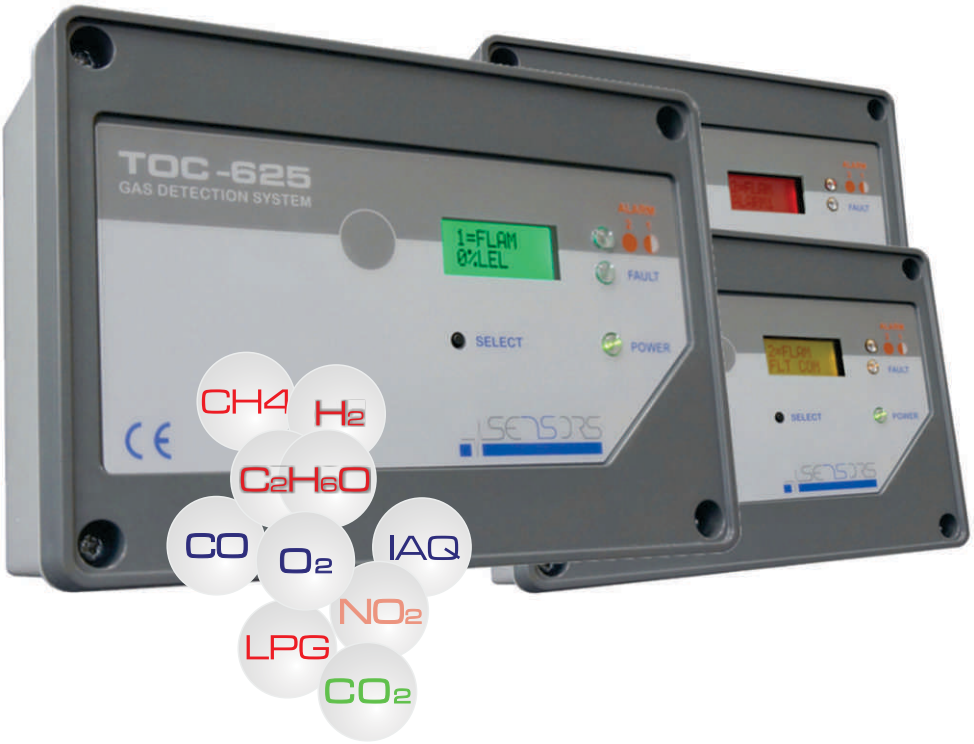
International Gas Detectors

TOC-625-630

Multi-Channel Sensor Controller



Installation and Operation Manual
Version 6

International Gas Detectors
Triton House
Crosby Street
Stockport
Sk2 6SH
England

Tel: +44 (0)161 483 1415
Fax: +44 (0) 161 484 2345
Email: sales@internationalgasdetectors.co.uk
Website: www.internationalgasdetectors.co.uk

FS646773

INDEX

Who should read this manual.

This manual is intended for use by trained installers of gas detection systems who are technically competent and have all necessary tools to undertake installation and maintenance on this type of equipment.

Failure to install and maintain the equipment properly can render the detector ineffective.

You should not undertake any of the procedures in this manual if you do not have access to the correct equipment, have not undertaken training on this or similar equipment or are not technically qualified to install this equipment.

Calibration gases and test equipment is available from Sensors.

EC Declaration of Conformity

Issuers name and address:

Oliver IGD Limited of
Triton House
Crosby St
Stockport
SK2 6SH
UK

Declares that the product listed as:
TOC-625
Single or Multi-Channel Detector Control Panel

Are in conformity with the provisions of the following European Directive(s) when installed, operated, serviced and maintained in accordance with the installation and operating instructions contained in the product documentation.

2004/108/EC	**EMC Directive**
2006/95/EC	**Low Voltage Equipment Directive** *(note not applicable to 24V DC Powered Versions)*

And that the standards and/or technical specifications referenced below have been applied or considered.

EN 60079-29-1:2016	Explosive atmospheres. Gas detectors. Performance Requirements Of Detectors For Flammable Gases
EN 50271:2018	Electrical apparatus for the detection and measurement of combustible gases, toxic gases or Oxygen: requirements and tests for apparatus using software and or digital technologies. *Excluding requirements for SIL*
EN 61000-6-2: 2005	EMC Generic standards. Immunity for industrial environments
EN 61000-6-4/A1: 2011	EMC Generic standards. Emission standard for industrial environments
EN 61000-3-2: 2014	EMC Limits. Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
EN 61000-3-3: 2013	EMC Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase
Technical File Reference	T625-TF9

Oliver IGD Limited Operate and Independently assessed ATEX/IECEX QAN.

Quality Assurance Certificate Number
ExVeritas 16PQAN0014

Quality Assurance Notification Number:
2585

ExVeritas,
Units 16-18,
Abenbury Way,
Wrexham Industrial Estate,
Wrexham, UK, LL13 9UZ

Oliver IGD Limited operate an independently assessed ISO9001:2015 Quality Management System.

Quality Management Certificate Number
FS 646773

BSI Assurance UK LTD,
Chiswick High Road,
London
W4 4AL
UK

Testing Agency:

TUV - SUD
Octagon House
Concorde Way
PO 15 5RL
Fareham

Mehr Sicherheit. Mehr Wert.

TUV Certificates and reports can be checked on-line at https://www.tuev-sued.de/industry_and_consumer_products/certificates

Issued on: At Oliver IGD Limited, Stockport, SK2 6SH , United Kingdom

Signature:

Declaration of Conformity in accordance with EN ISO/IEC 17050-1:2010

Name Andrew J Collier M.I.O.D

Position: Managing Director

Date: 15 October 2018

Declaration Ref: TOC-625-DEC-2

Standard Specifications

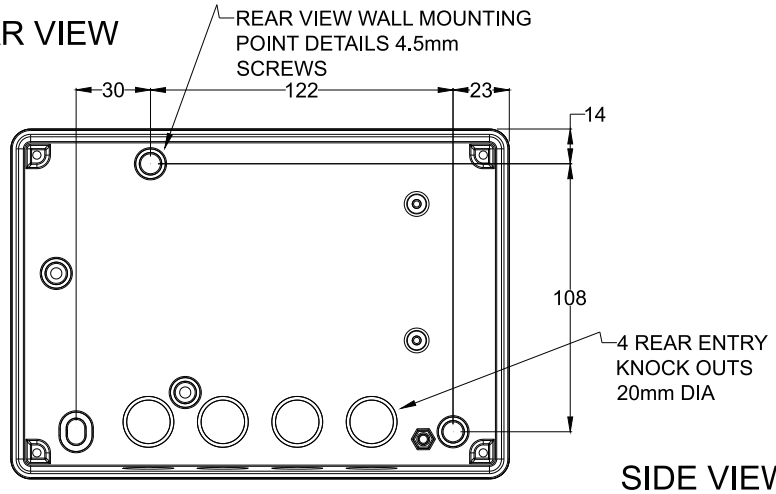
Do not exceed listed ratings.

Failure to observe interface ratings and environmental operating conditions may have an adverse affect on the controller.

Power	110/230V AC 50/60Hz 30W Standard 24V DC Option (12 to 28V DC)
Construction	ABS
Display	2 Lines x 8 Digit LCD Display Multi-Colour Backlight (Red-Alarm, Yellow-Fault, Blue-Normal)
Outputs	2 off SPCO Relays 4A Non-Inductive User Configurable 3 off 4-20mA Linear Outputs User Configurable
Other I/O	Sounder 80dB @ 100mm (Mutable) RS485 Port Modbus
Inputs	8 off Addressable Series Detectors or I/O Modules
Temperature	-5 to 55 Deg C
Humidity	0-95% RH Non-Condensing
Sealing	IP54

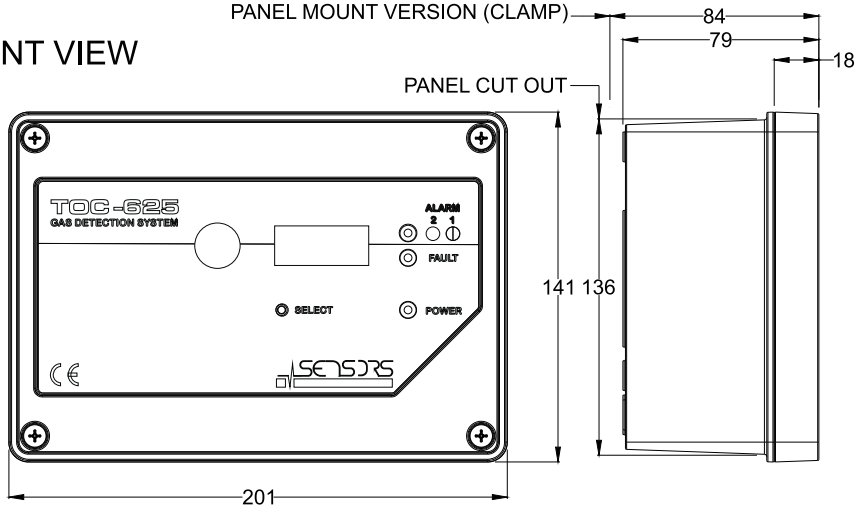
Physical Details

REAR VIEW

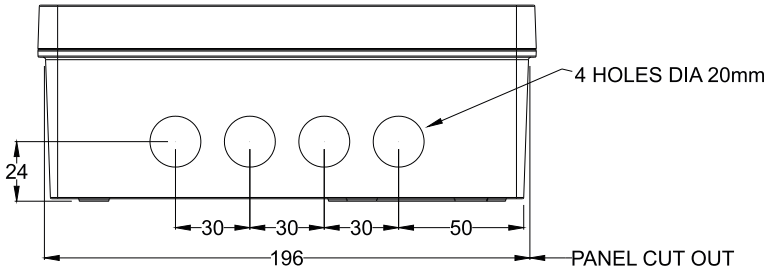


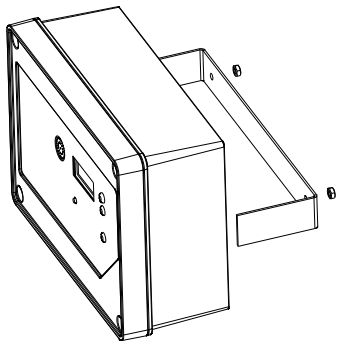
SIDE VIEW

FRONT VIEW

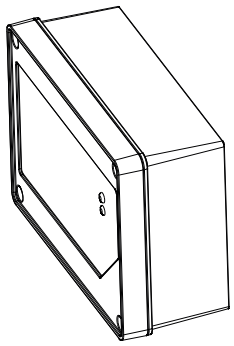


BOTTOM VIEW





Optional Panel Mounting Kit
PN 5686401



Optional Battery Backup Kit
PN 5686601

Note this module uses the same style enclosure as the TOC-625 and houses batteries and charge control. It is usually mounted below the TOC-625 and is supplied with all required connectors.

NOTE

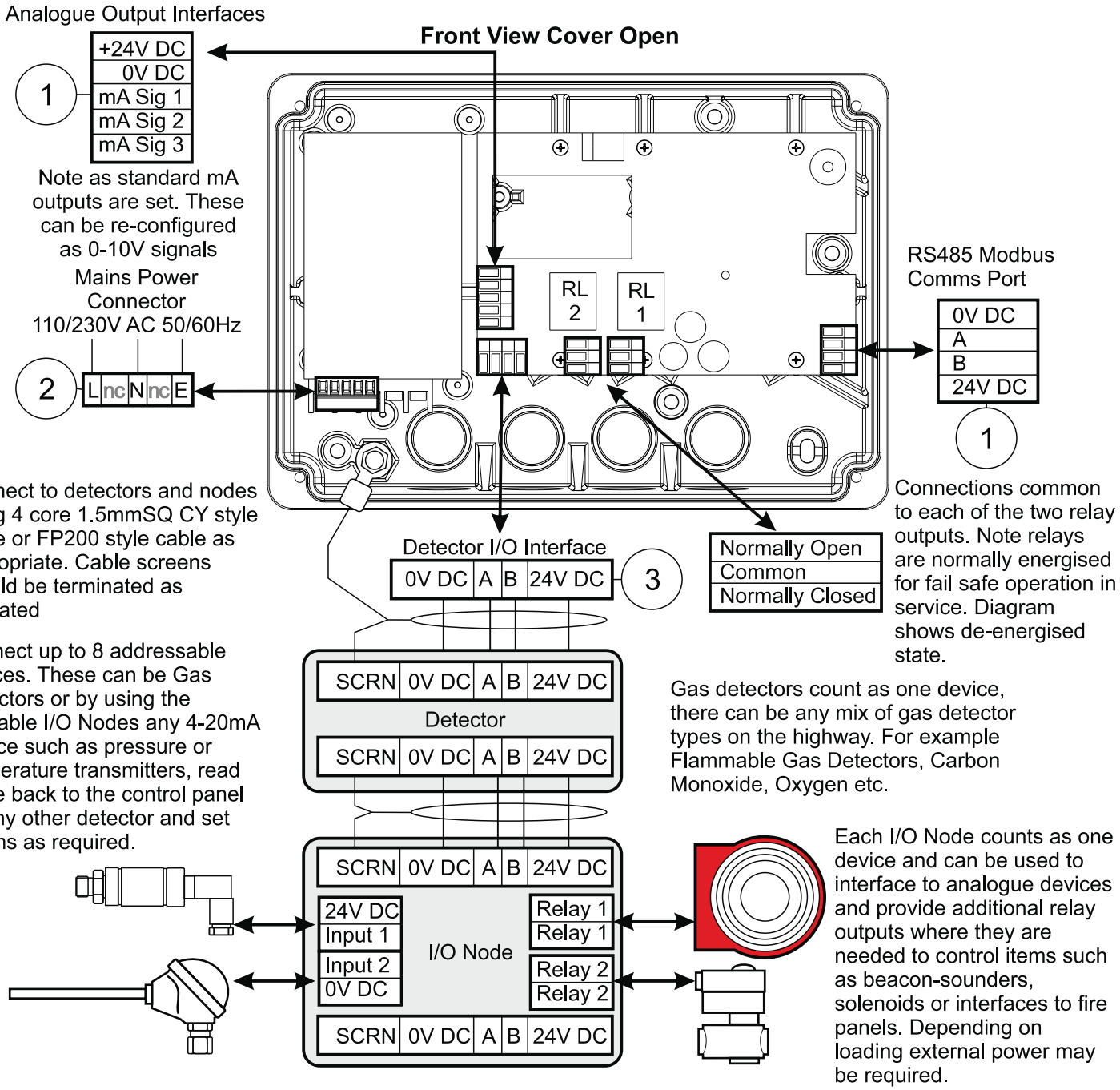
Main power connections should only be made by a qualified electrician. Mains power should be fed via a fused spur.

The following information shows the main electrical connection points labelled as points 1, 2 and 3. These points are referred to in the manual supplied. When installing ensure you have the full manual available. This page is also supplied inside the TOC-625 enclosure as a quick reference for site engineers.

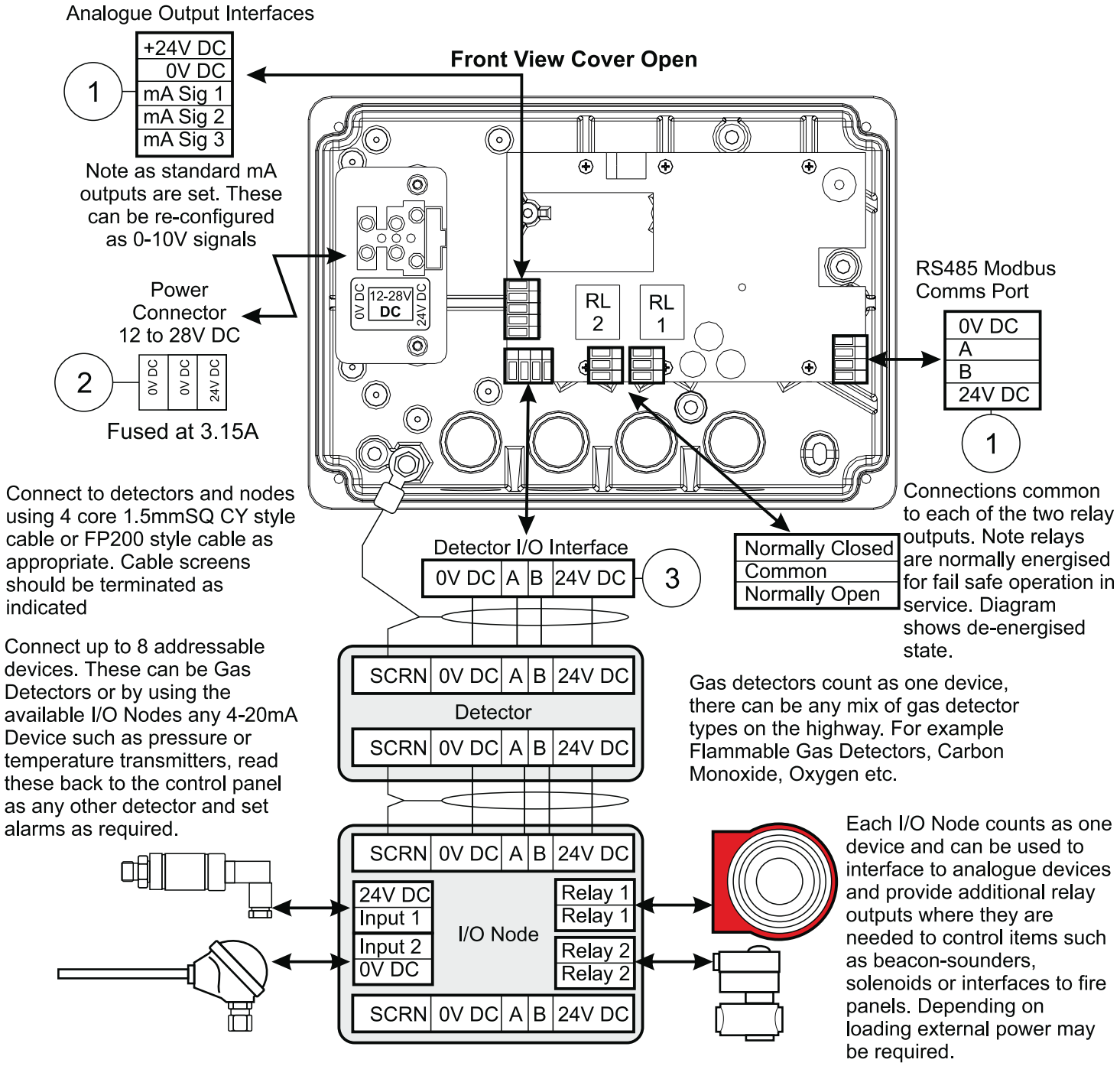
Cabling: When using stranded cable fit bootlace ferrules to prevent stray wire strands shorting. Mains power must be supplied via a two pole isolating supply

Cable glands must be used for cable entries.

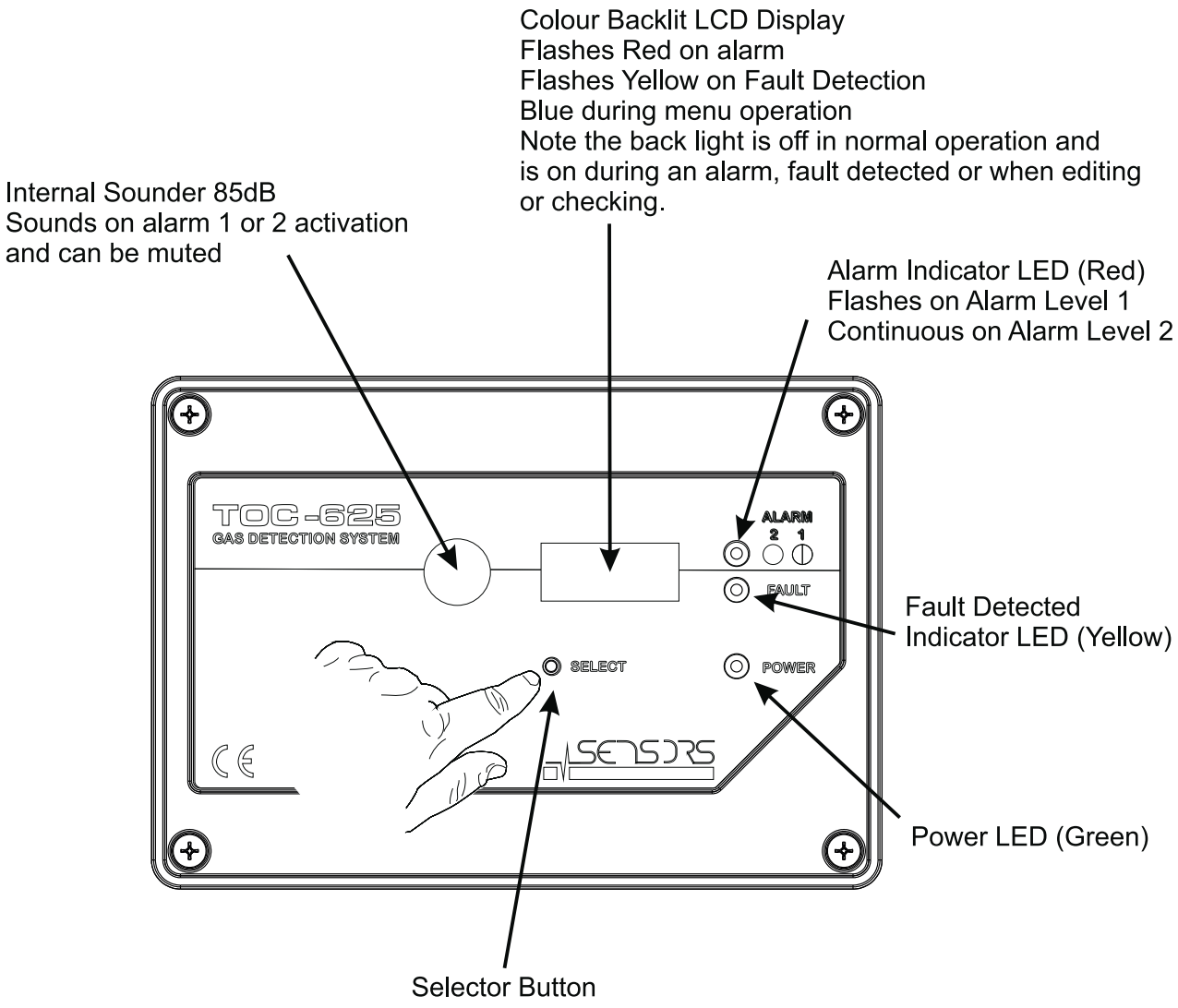
Electrical Details Figure 1 110/230V AC Operation



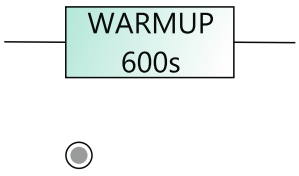
Electrical Details Figure 2 24V DC Operation



Controller Overview



Typical display during warm up



On initial power up the backlight will perform the following cycle:

Backlight cycles: green-yellow-red

The display then shows:

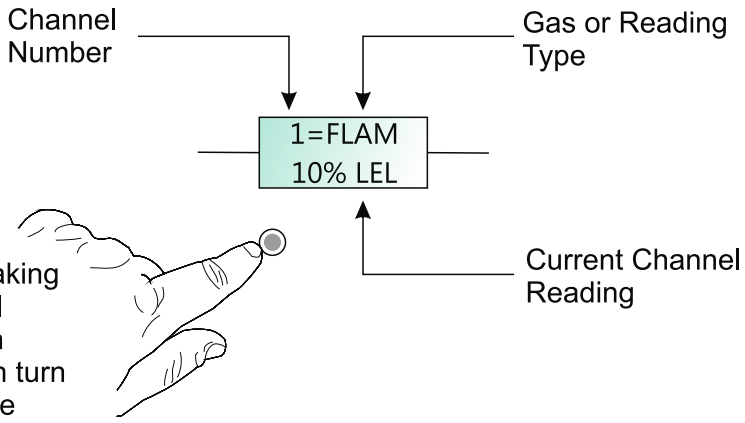
Software Version
Software checksum and date
Connected sensor info

Finally a countdown starts to enable connected sensors to stabilise prior to normal operation.

User Actions....Day to Day Operation

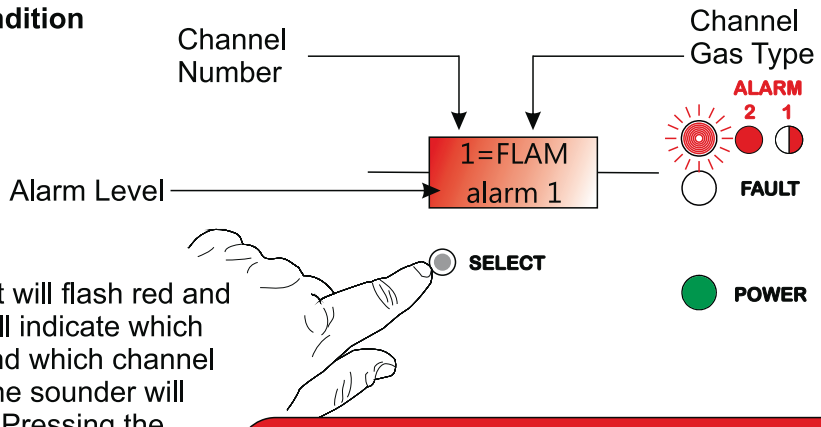
Once fully installed the TOC-625 controller will continuously monitor connected gas detectors and sensors and compare current values with any set alarm thresholds. The display will cycle to display each channel in turn. Normally the backlight will be switched off.

To access the display click the button



The back light turns on making it easier to see the channel information. Note that each channel will be displayed in turn as indicated by pressing the button.

In Alarm Condition



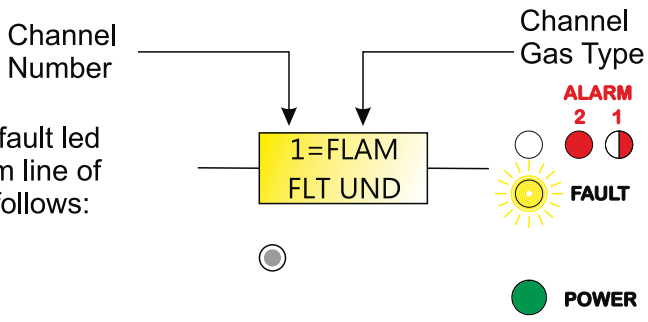
In alarm mode the RED alarm led will either be flashing for alarm level 1 or solid for alarm level 2. The bottom line of the display will indicate:

Alarm 1
Alarm 2
Alarm 1&2

The back light will flash red and the display will indicate which alarm level and which channel is in alarm. The sounder will also activate. Pressing the button will silence the sounder. If the gas is still breaching the alarm threshold it will not be possible to reset the alarm

In the event of alarm or fault, CALL FOR SERVICE.
The owner operator is not usually a gas engineer or competent person as defined by Health and Safety guidelines. If there is any doubt call your service company and get it checked.

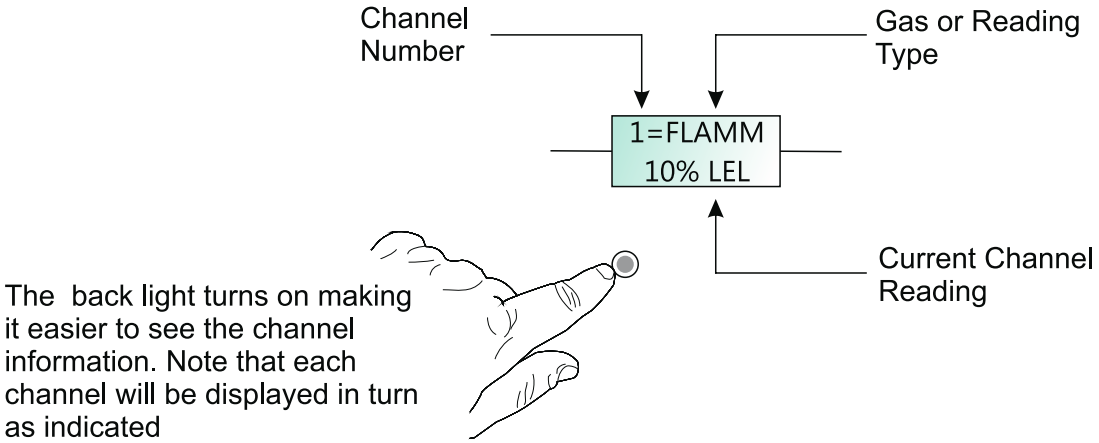
In Fault Condition



In FAULT mode the Yellow fault led will either be on. The bottom line of the display will indicate as follows:

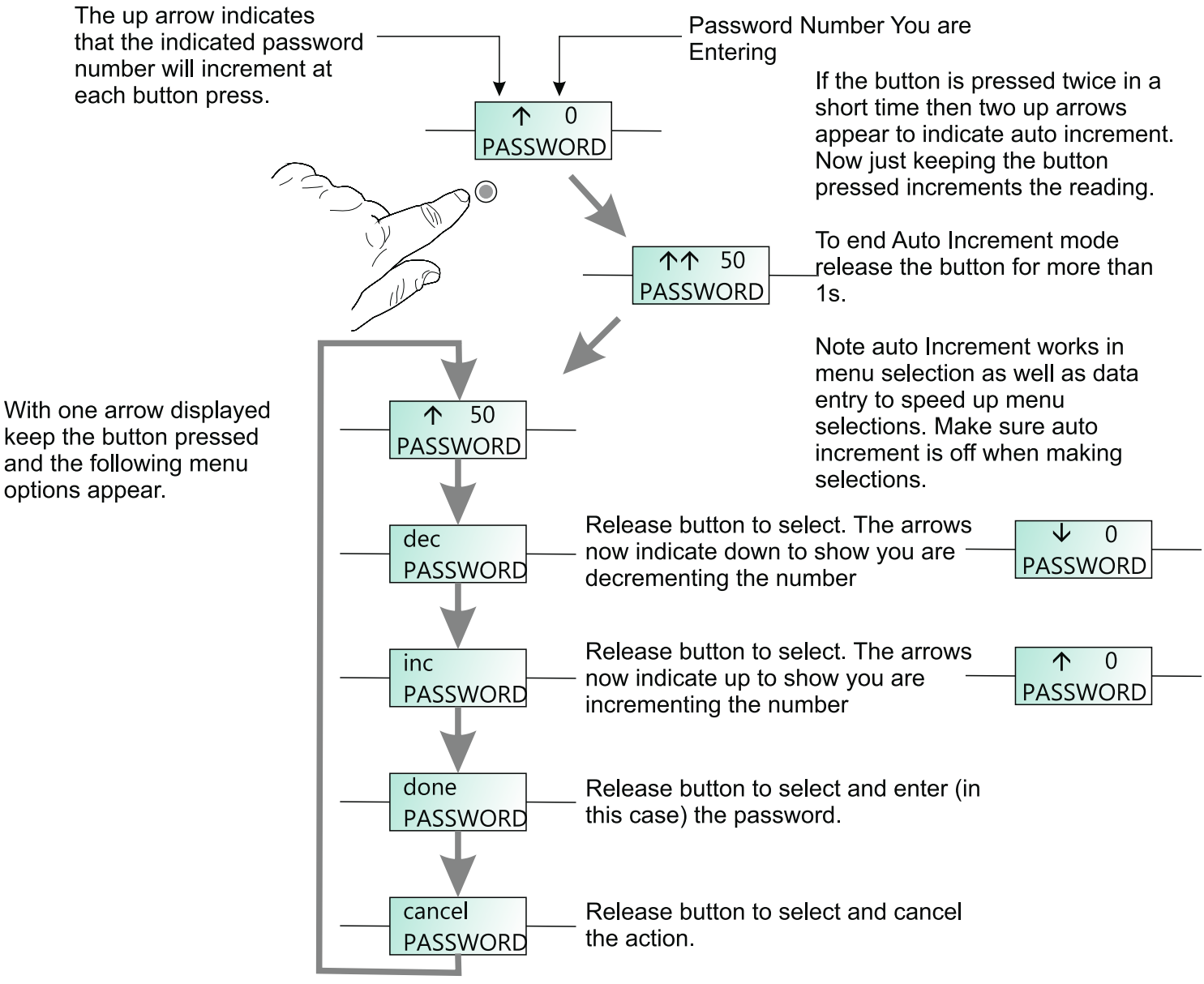
FLT COM	communication error to sensors
FLT SEN	Sensor Error
FLT OVR	Sensor Over Range
FLT UND	Sensor Under Range

To access the display press the button for 1-2 seconds

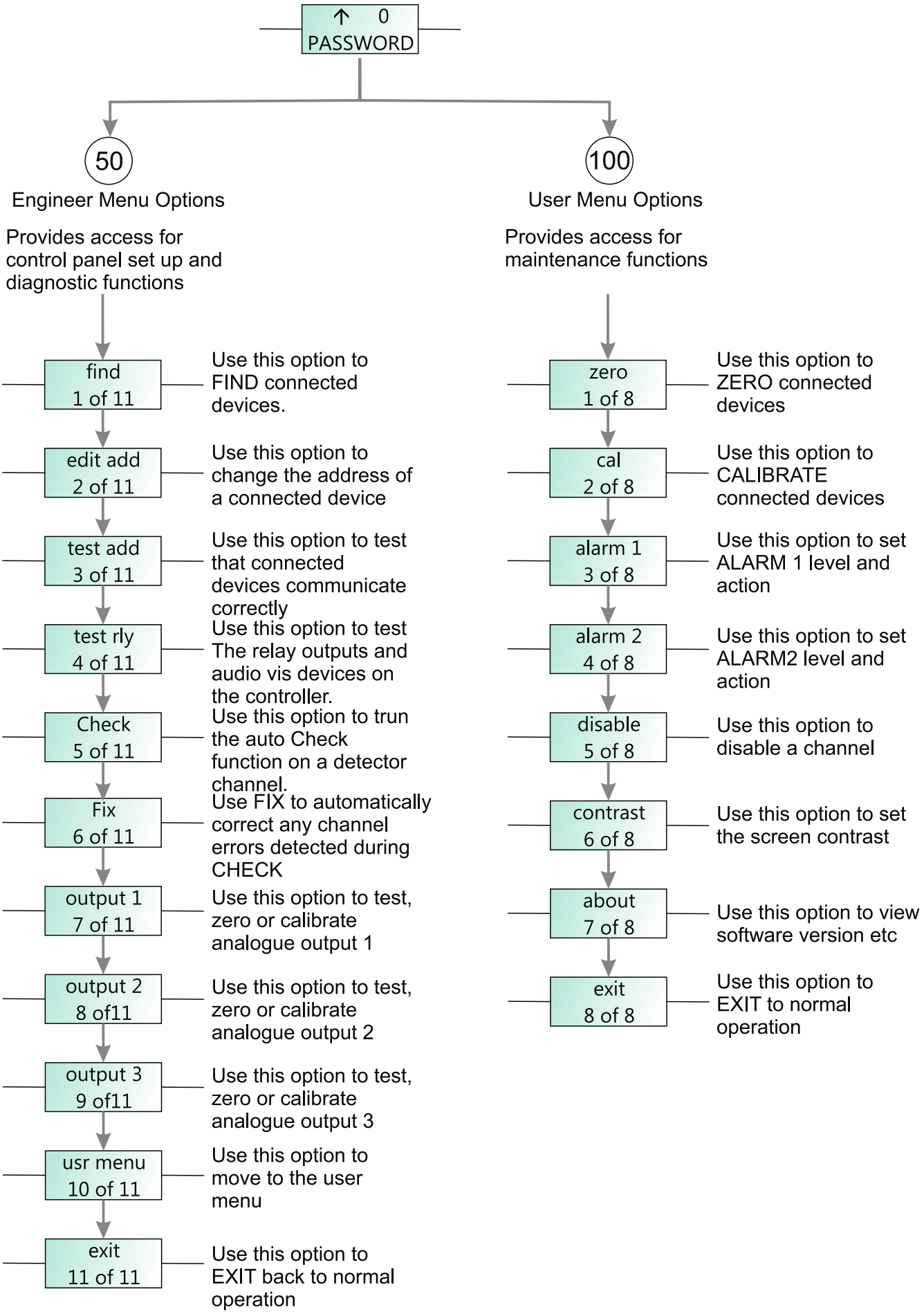


The back light turns on making it easier to see the channel information. Note that each channel will be displayed in turn as indicated

Data entry and menu selection using the password entry as an example. To access the menu system press the button until the message "Release button and enter password" message is displayed.



Toc-625 Menu Overview



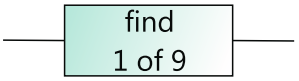
Putting Into Service

Note that this product should be supplied via a fused spur. Ensure cables used are suitable for both their intended area of operation and load capability. This product should only be installed by a competent person.

It is recommended to follow the set up sequence below when configuring and installing a control panel from new.

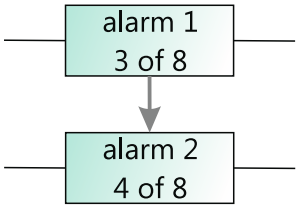
Follow the cable commissioning procedure T625-700-920.PDF
if you don't have a copy of this download it from www.sensors.ltd.uk

Perform a sensor FIND and automatically install detector data. Engineers Menu .... Find Option
(note panels are usually supplied pre-configured so this many not be necessary, check shipping documentation)



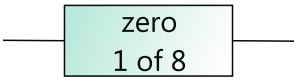
Set the sensor channel alarm levels. User menu ... Alarm Setup Options AL1 and AL2 for each channel.

(note panels are usually supplied pre-configured so this many not be necessary, check shipping documentation)

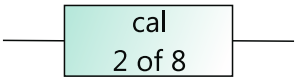


Allow the system to run for at least a few hours then:

Zero each connected detector. User Menu ZERO

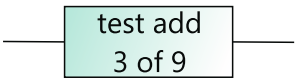


Calibrate each detector. User Menu CALibrate



EXIT to normal operation and check alarm operation by applying calibration gas and observing alarm activation.

Make sure all components are communicating correctly. Engineers menu TEST ADD option.



This Section Follows the Sequence for Putting Into Service to Describe the Menu functions

Figure 1 shows the electrical connections to the Tocsin 625 controller.

Mains power is supplied via connector 2 and should be from a fused spur. This connection should be made by a qualified electrician.

Cable Checks

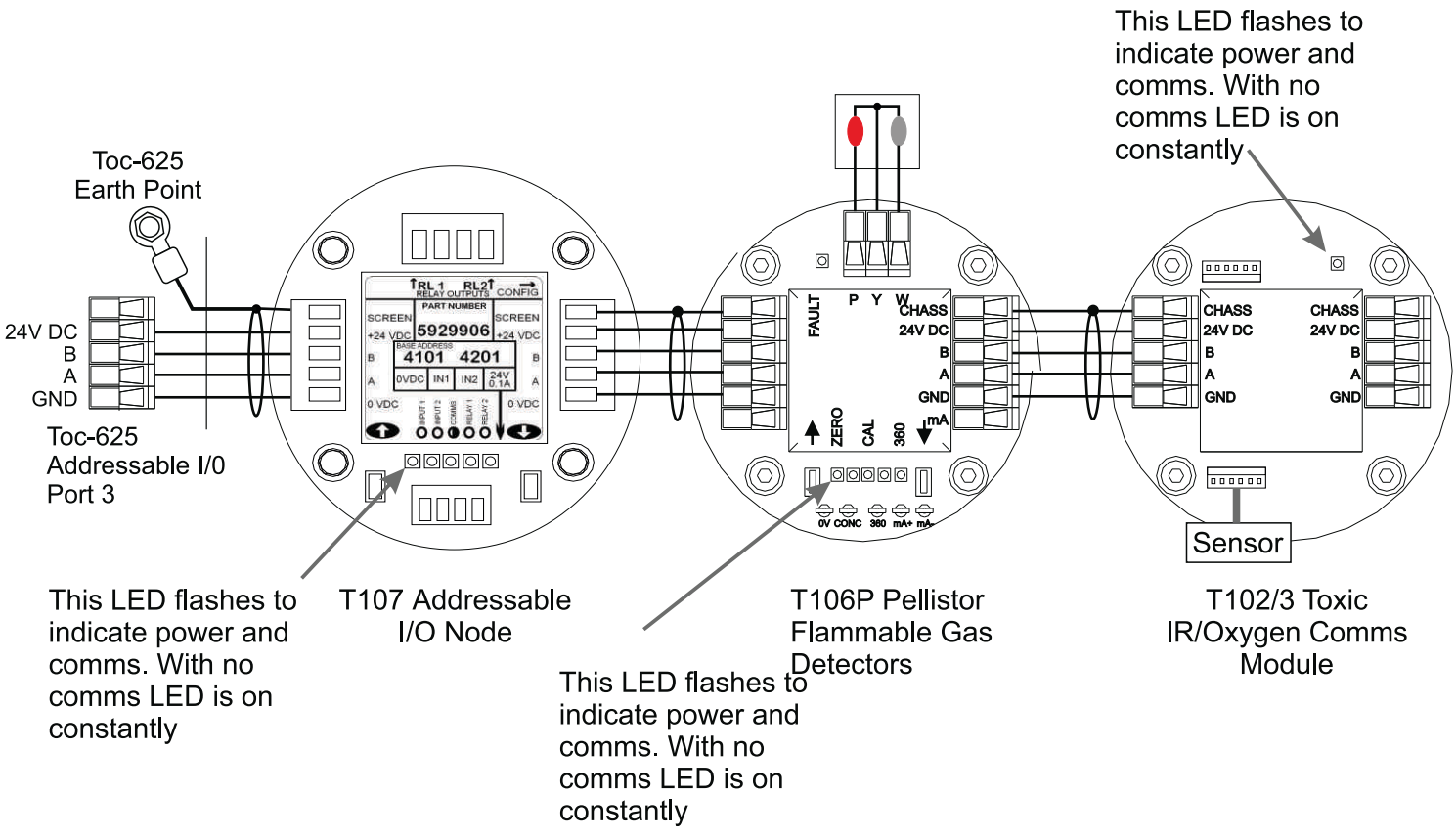
Detectors are interfaced to connector 3. It is important to ensure that all connected devices are wired in accordance with the details supplied in Figure 1 and each relevant detector or I/O node manual. Cabling should be rigorously checked to ensure there are no cross overs or shorts before any power is applied. If in doubt follow the cable check procedure listed in “Cable checks T625-700-920.PDF”.

Relay outputs and analogue outputs are indicated on Figure 1, connector 1 and RL1, RL2 respectively. These should be left unplugged at this stage.

Warm Up Period

With power applied the system should undertake its power up sequence and then commence a warm up period. The warm up period is there to allow connected detectors to stabilise before operation. Note that certain detector types, Oxygen sensors in particular may take up to 2 hours to fully stabilise.

During the warm up period check that each connected detector or device has power and communication. The following diagram shows the three main terminal PCB types for detectors and I/O interface nodes and the relevant check points.

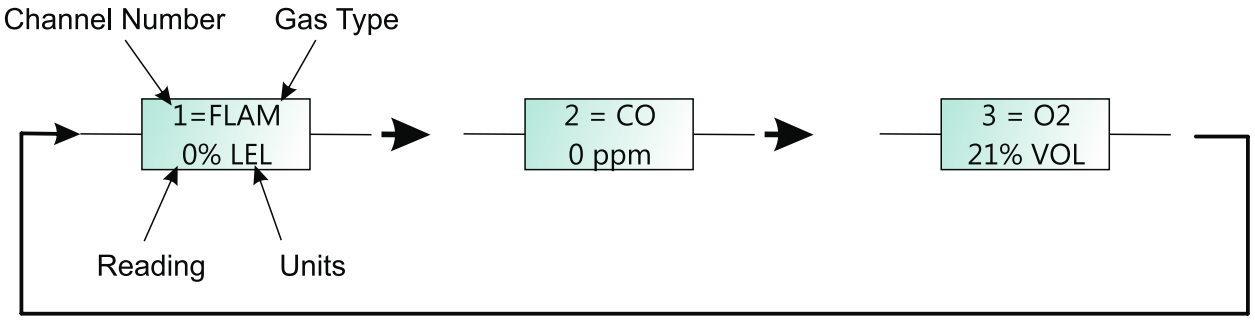


With sensors connected and after the TOC-625 controller has completed its warm up the operating system will go to normal operation mode.

Normal Operation

In normal operation mode the TOC-625 communicates to each detector or node in turn and displays the data on screen. In normal mode the back light will switch off. Pressing the button once will activate the back light, each button press then cycles the display through each channel.

For example a three channel system with a Flammable gas detector, a Carbon Monoxide Detector and an Oxygen detector would read as:



Supplied Set Up

Systems supplied as a complete 'set' or order will normally have been set up at the factory during final test. A set up report will be supplied with the controller to indicate how the control panel has been configured. Where a client advises a particular alarm set up requirement this will be incorporated. If no alarm set up is requested then systems will be shipped with alarms at 20% and 50% of detector range, rising latching alarms, for Oxygen sensors by default alarm 1 will be at 19% and alarm 2 at 18% falling non latching alarms. For example the report the three channel discussed above would read as follows:

Sales Order: S/36981 Client: A.N Other TOC-625 Set Up Report

Channel 1		Channel 2		Channel 3	
Address	4101	Address	4102	Address	4103
Gas	Methane	Gas	CO	Gas	Oxygen
Range	100% LEL	Range	100 ppm	Range	25% Vol
AL1	20%	AL1	35	AL1	19%
AL1 Type	Rising Latch	AL1 Type	Rising Latch	AL1 Type	Falling
AL1 Relay	1	AL1 Relay	1	AL1 Relay	1
AL2	50%	AL2	55	AL2	18%
AL2 Type	Rising Latch	AL2 Type	Rising Latch	AL2 Type	Falling
AL2 Relay	2	AL2 Relay	2	AL2 Relay	2
Analogue Output Channel	C1	Analogue Output Channel	C2	Analogue Output Channel	C3

Channel Set Up Overview

Using channel one as an example the following diagram explains a typical channel set up.

Channel 1	
Address	4101
Gas	Methane
Range	100% LEL
AL1	20%
AL1 Type	Rising Latch
AL1 Relay	1
AL2	50%
AL2 Type	Rising Latch
AL2 Relay	2
Analogue Output Channel	C1

The Channel Number as indicated on the TOC-625 display

The detector address for this channel. This address will be marked on the cover of the detector itself

The gas which this channels detector measures

The measurement range for this channel

The threshold limit for alarm level 1

Alarm Action (in this case the alarm latches once the threshold is exceeded

Which relay activates when alarm 1 threshold is exceeded

The threshold limit for alarm level 2

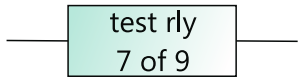
Alarm Action (in this case the alarm latches once the threshold is exceeded

Which relay activates when alarm 2 threshold is exceeded

Which analogue output relates to this channel.
Note there are three analogue outputs available on the TOC-625

If the control panel has been shipped pre-configured then once correctly connected the system will be operational. The controller should correctly cycle through each channel with no indicated errors.

Relay Test



The alarm relay outputs can now be connected (if they are being used). The relay outputs can be forced on and off using the 'test relay' function (TEST RLY).

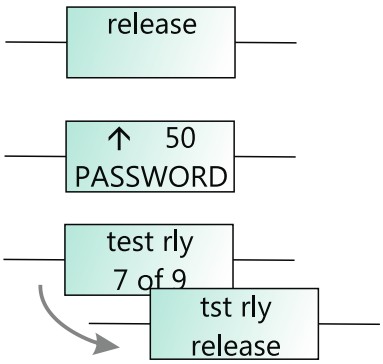
From Normal Operation press the function button until the display alters to show 'release button.

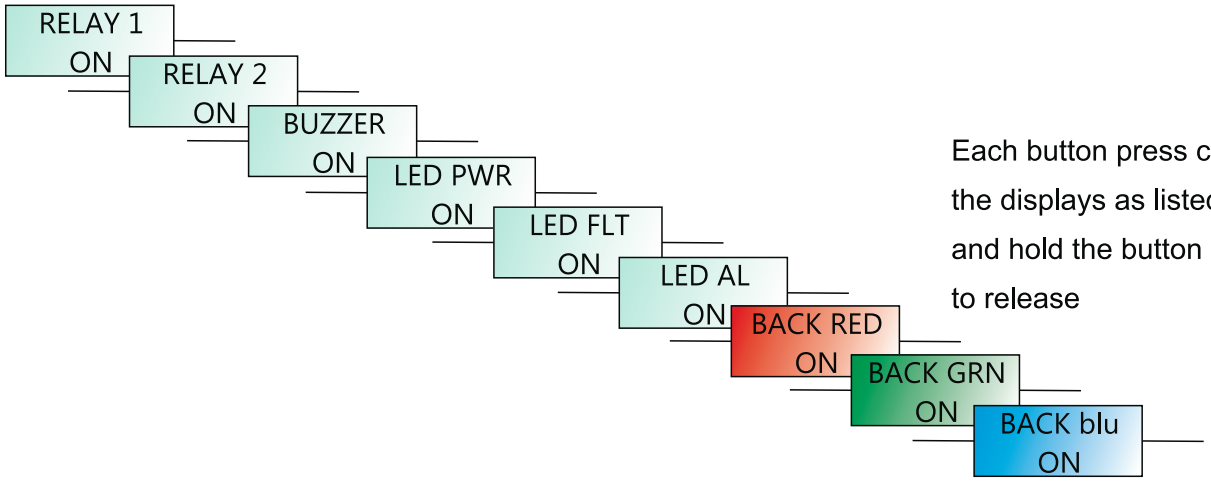
The system now requests a password. Enter 50 to enter the Engineer Menu.

Press the function button until option 7 of 9, TST RLY is displayed.

Now hold down the button until prompted to release.

The display will now indicate Relay 1 On (and relay 1 should be energised. At each press of the button each physical output is energised in turn as indicated on the display as:

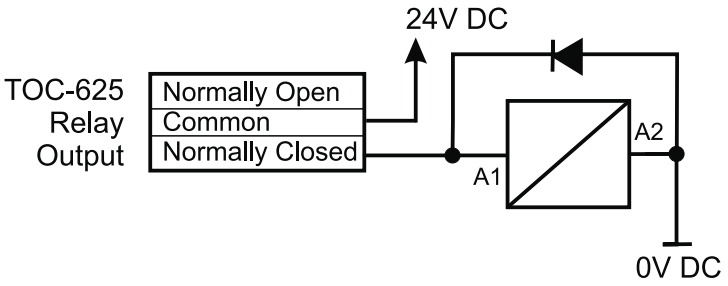




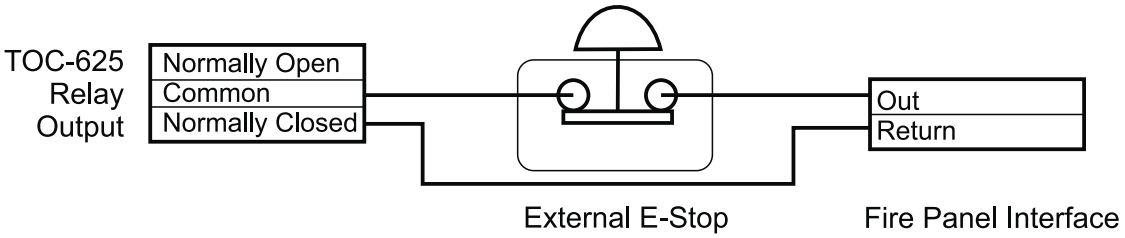
Each button press cycles through the displays as listed. To exit, press and hold the button until prompted to release

Relay Connection

As standard the TOC-625 controller is equipped with two relay outputs. The function of these two relay outputs can be user configured and is discussed in a later section. The relays are rated to operate 4A non inductive loads. Typical wiring arrangements are indicated below and show typical methods to protect the relays during installation.



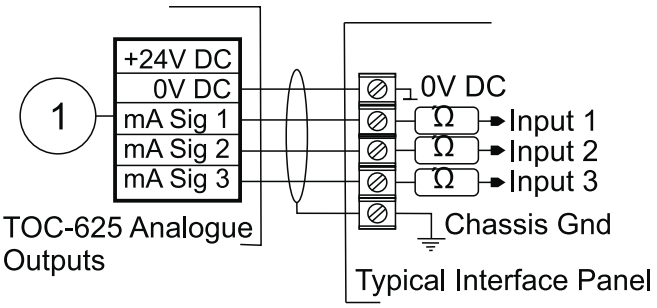
Example fit protection diodes when switching external DC loads.

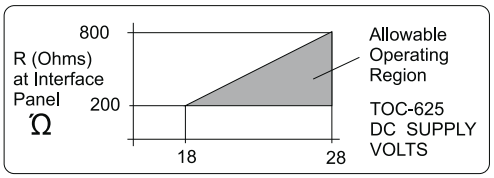


Analogue Outputs (mA)

As standard the TOC-625 is equipped with three analogue outputs. By default these are configured as 4-20mA current outputs. By request these can be set to 0-10V DC outputs during production. This is a factory only setting. The following diagrams indicate the connections

mA Analogue Output Interfaces



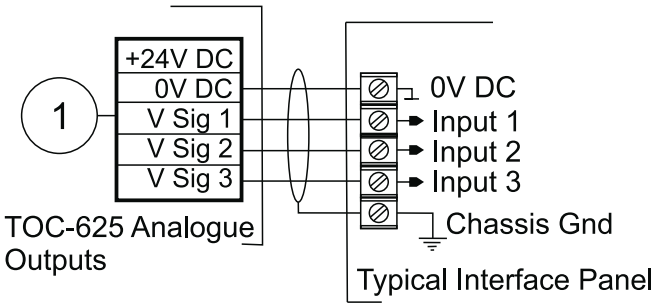


Note this diagram shows the use of screened cabling when interfacing signal cables. Signal cables should be segregated from power and control cables for best results.

Analogue Outputs (Voltage)

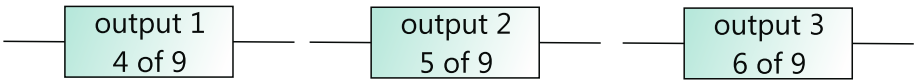
If requested at the time of ordering the TOC-625 can be supplied with its analogue outputs re-configured as 0-10V DC. The following diagrams indicate the connections

0-10V Analogue Output Interfaces



Note this diagram shows the use of screened cabling when interfacing signal cables. Signal cables should be segregated from power and control cables for best results.

Testing Analogue Outputs



The operating system has a simulation mode for the analogue output channels. This allows the commissioning engineer to force a signal output to prove correct interfacing at the host system.

From Normal Operation press the function button until the display alters to show ‘release button.

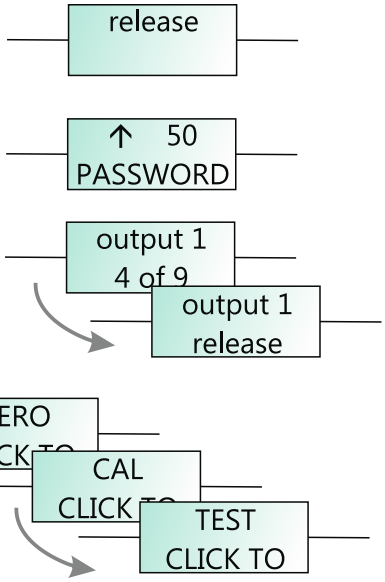
The system now requests a password. Enter 50 to enter the Engineer Menu.

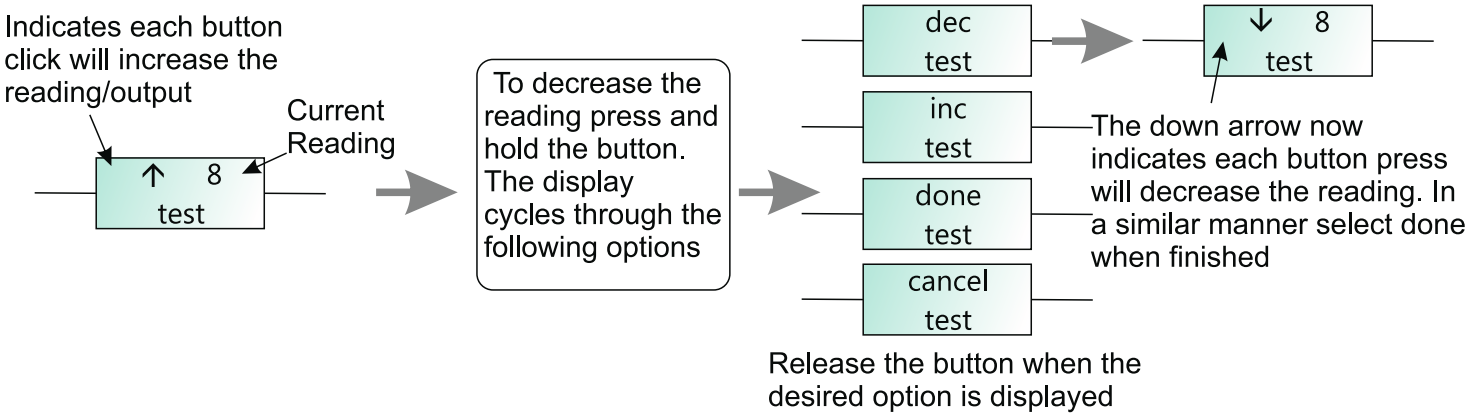
Press the function button until the required option, OUTPUT 1, 2 or 3 is displayed. Now hold down the button until prompted to release.

In this example output 1 will be tested.

Press the button until TEST is indicated and hold until prompted to release.

The display now shows a mV or mA output reading which can be increased or decreased as desired during testing as follows (mA output shown)..





Putting into Service Test Schedule

In conclusion by following the steps discussed your checklist for putting into service should be:

1 Ensure the mains power supply is via a fused spur and installed in accordance with local installation wiring regulations.
Check cable and glands are of suitable type for both the area of application and load carrying capacity.

2 Ensure terminations via glands provide a positive seal.
Leave all interfaces unplugged and check installation cabling terminations following IGD publication ref “Cable checks T625-700-920.PDF”.

3 Check the shipping TOC-625 SET UP REPORT to check how the controller and interfacing detectors and nodes have been configured. Ensure that the detector addresses match the document.

4 Plug in the connector (3) and power up the system. Check that all connected devices indicate that they have power and are communicating correctly.

5 Allow at least 1 hour for the detectors to correctly warm up and stabilise.

6 During this period, if the relay outputs are being used check the cabling then plug in and test using the TST RLY function the relay action.

7 During this period if the analogue outputs are being used check the cabling to connector (1), plug in and test using the OUTPUT 1, 2 or 3 functions.

8 After warm up is complete use instrument air or Nitrogen as appropriate to check the detector zero reading. Adjust if necessary (see later “zero and calibration function” section).

9 After warm up is complete use a suitable known calibration gas to check the detector calibration reading. Adjust if necessary (see later “zero and calibration function” section).

10 Complete any site paperwork as necessary and instruct the site responsible person regarding day to day operation (see later section “ user operation “).

11 Use the CHECK function to ensure detector channels are correctly set up and calibrated (see section Addendum 1).

In the event that the controller needs amendment to set up follow the instructions in the following sections.

a) Adding detectors or nodes to the controller or complete set up

b) Adding or changing alarm levels

c) Assigning relay outputs

d) Zero and Calibration Function (detectors)

e) Zero and Calibration Function (analogue outputs)

Adding detectors or nodes to the controller or complete set up

If you need to either:

1. Perform a complete new set up

2. Add or remove detectors from a system

3. Change the type of sensors connected to a system

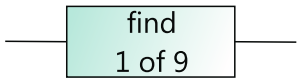
Then presuming the system is correctly installed and cabled the process would be as follows:

1. Use the FIND command to discover connected devices and install them to the controller

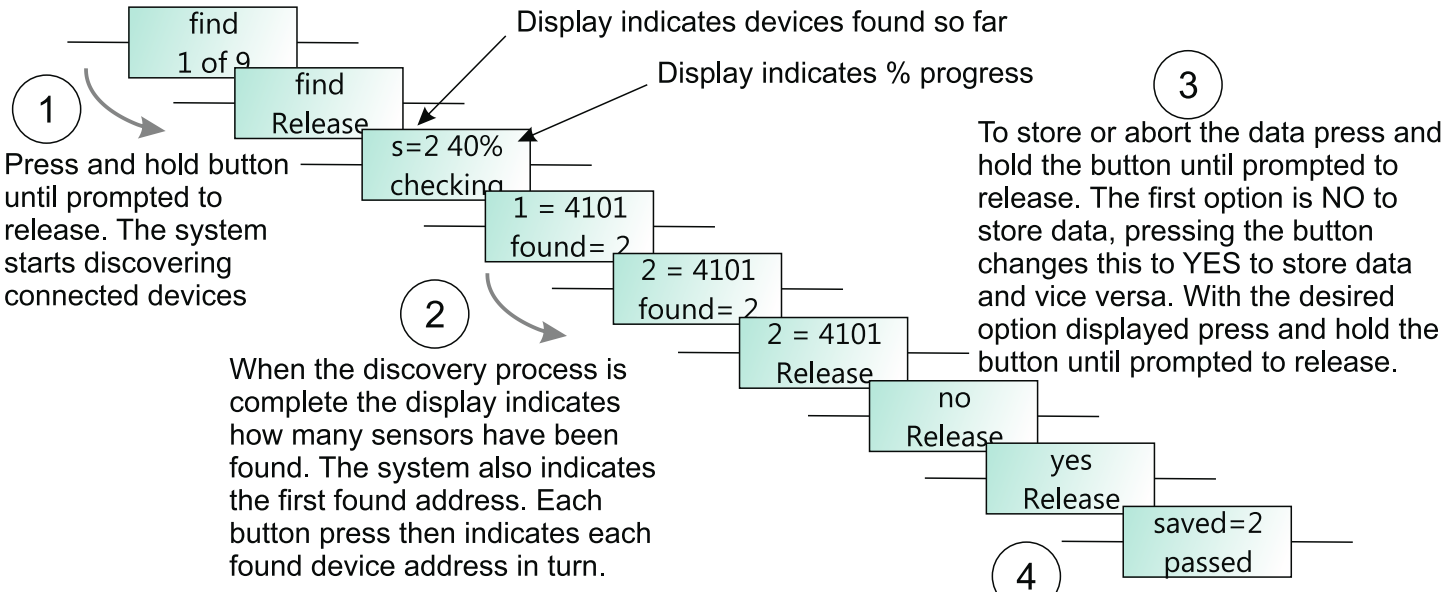
2. Set up the required alarm levels and relay actions

3. Test using zero and calibration gases

The following dialogues describe each function to use

The FIND Command 

As previously described enter password mode and enter password 50 to gain access to the engineers menu. The first menu option (menu option 1 of 9) is the FIND menu. To run this option the detectors must be correctly connected to the controller and displaying green power LED function as a minimum (some of the green power LED's may be flashing if detectors already have communication.) The FIND function then works in the following manner



Once the correct number of devices (either detectors or nodes) have been found and saved (installed). Then the alarm levels can be set in the following manner.

From the TOC-625 SET UP REPORT it can be seen that each connected and installed detector or channel can have two alarm levels set. These can be different for each device. For example a two channel system for Methane and Carbon Monoxide may have Alarm 1 level for Methane at 20% LEL and Alarm 1 level for Carbon Monoxide set at 35ppm.

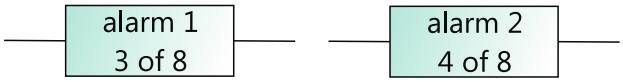
Sales Order: S/36981 Client: A.N Other TOC-625 Set Up Report

Channel 1		Channel 2		Channel 3	
Address	4101	Address	4102	Address	
Gas	Methane	Gas	CO	Gas	
Range	100% LEL	Range	100 ppm	Range	
AL1	20%	AL1	35	AL1	
AL1 Type	Rising Latch	AL1 Type	Rising Latch	AL1 Type	
AL1 Relay	1	AL1 Relay	1	AL1 Relay	
AL2	50%	AL2	55	AL2	
AL2 Type	Rising Latch	AL2 Type	Rising Latch	AL2 Type	
AL2 Relay	2	AL2 Relay	2	AL2 Relay	
Analogue Output Channel	C1	Analogue Output Channel	C2	Analogue Output Channel	

Note in this example that either channel alarm level 1 sets off relay 1 on the controller once the set threshold is exceeded. By default once the FIND function has been run and detectors installed the alarm levels will be preset at 20 and 50 % of the detector or channels range and the alarm action will be rising latching.

Alarm levels are set by the following method:

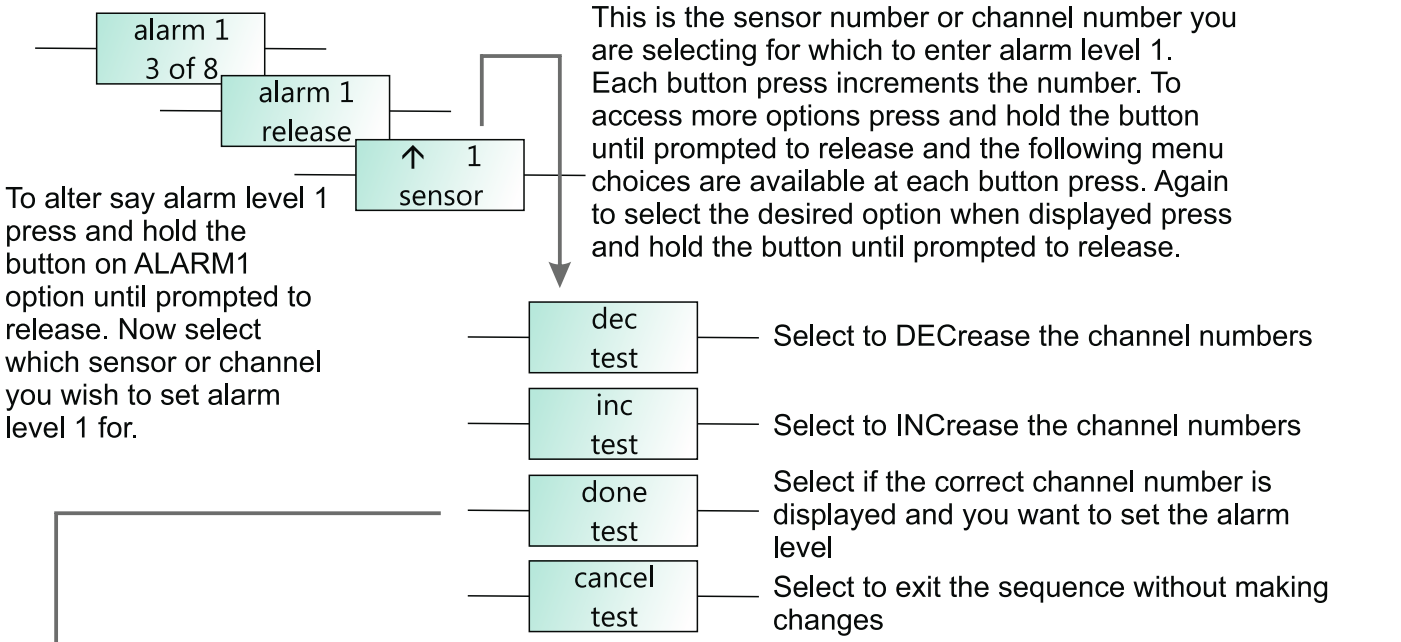
Alarm Level Set Up

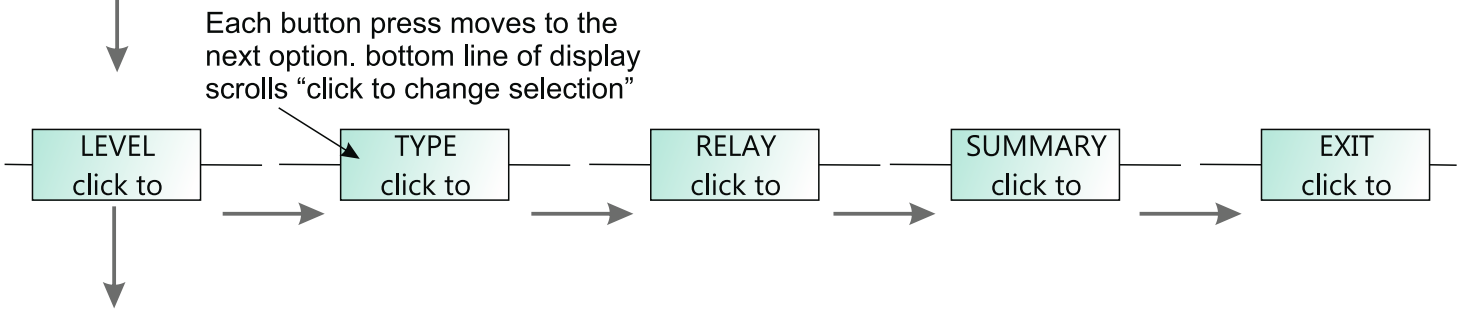


As previously described enter password mode and enter password 100 to enter the user menu.

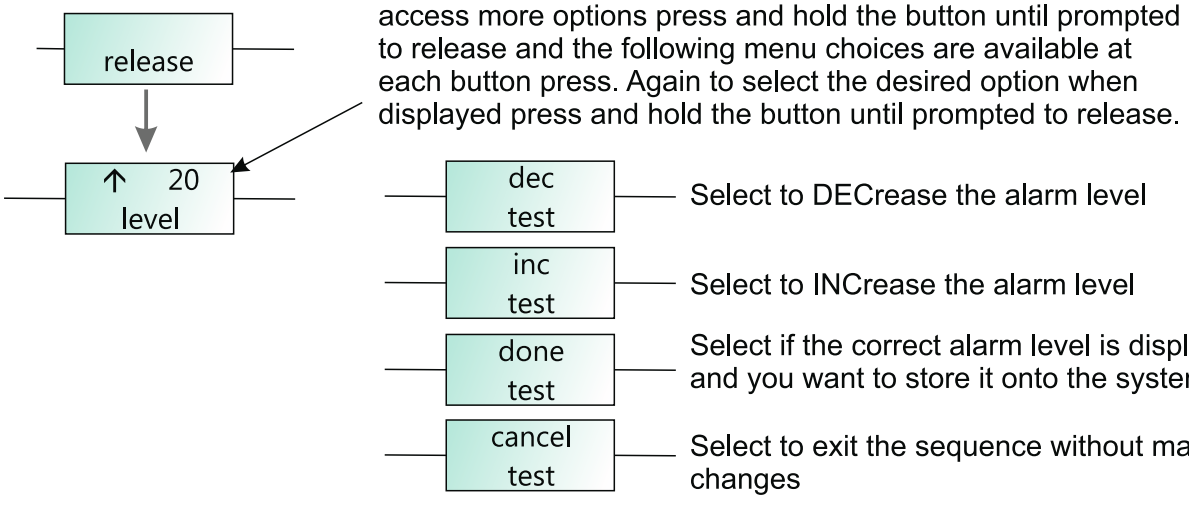
Press the button until either menu 3 or 4 is displayed and hold the button until prompted to release.

The set up sequence for the alarm level selected is as follows:

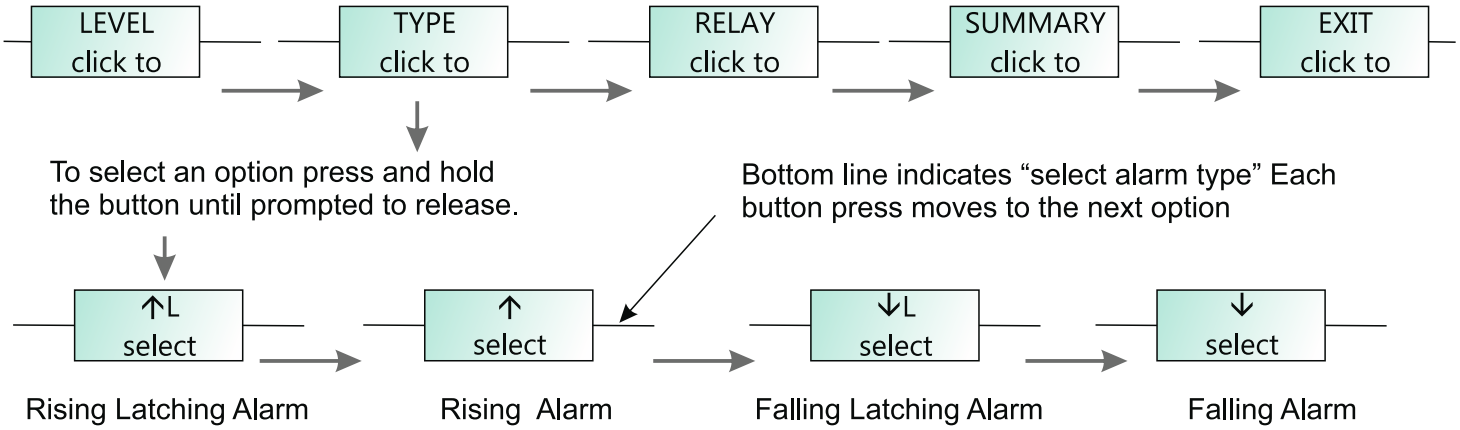




To select an option press and hold the button until prompted to release.



Once the alarm level has been set you then need to set the Alarm TYPE and decide which relay activates once the set alarm level is breached. The following sequence continues from the previous page and describes the set up sequences



Rising Latching Alarm

Latching alarms remain set until the button is pressed to reset the alarm. The gas level must be below the alarm level threshold for the reset to operate. This type of alarm is typically used in safety applications. Where alarm is required in response to rising gas levels

Press and hold until prompted to release to select this option.

Rising Alarm

Rising alarms will automatically reset once the gas level falls below the alarm threshold. This type of alarm is typically used in control applications where action is required in response to rising gas levels.

Press and hold until prompted to release to select this option.

Falling Latching Alarm

Latching alarms remain set until the button is pressed to reset the alarm. For a falling alarm the gas level must be above the alarm level threshold for the reset to operate. This type of alarm is typically used in safety applications for Oxygen deficiency monitoring where you are monitoring for a falling Oxygen level.

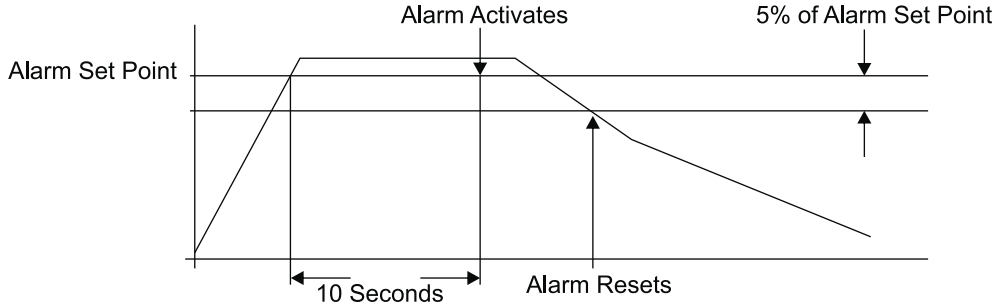
Press and hold until prompted to release to select this option.

Falling Alarm

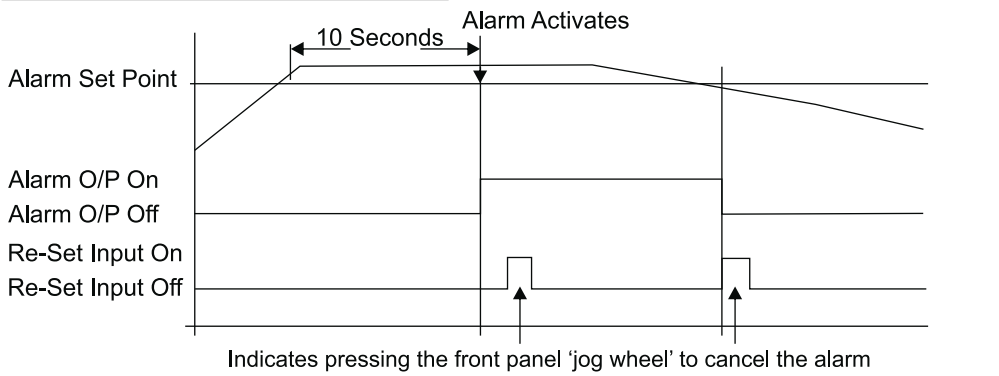
Falling alarms will automatically reset once the gas level rises above the alarm threshold. This type of alarm is typically used in control applications where action is required in response to falling gas level (typical in Oxygen deficiency applications).

Press and hold until prompted to release to select this option.

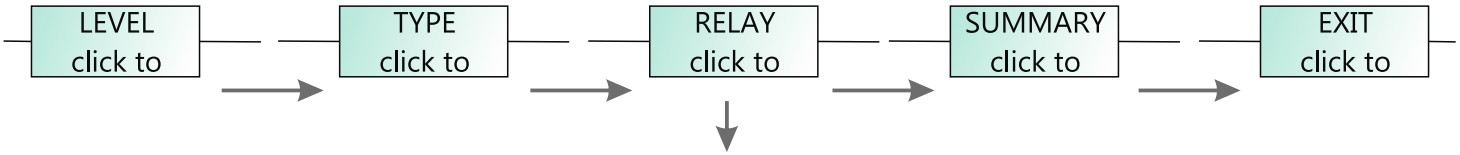
Rising and Falling Non Latching Alarms



Rising and Falling Latching Alarms

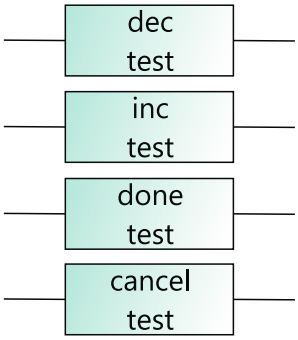


Once the alarm TYPE has been set you then need to set the RELAY output, that is deciding which relay activates once the set alarm level is breached. The following sequence continues from the previous page and describes the set up sequence



To select an option press and hold the button until prompted to release.

Each button press increments the indicated relay to activate. Note that relays 1 and 2 are physically on the control panel. If you increment past 2 then the panel assumes the relay is addressable and jumps to start from 4201. In this case enter the address of the addressable relay to activate. To access more options press and hold the button until prompted to release and the following menu choices are available at each button press. Again to select the desired option when displayed press and hold the button until prompted to release.



Select to DECrease the relay number

Select to INCrease the relay number

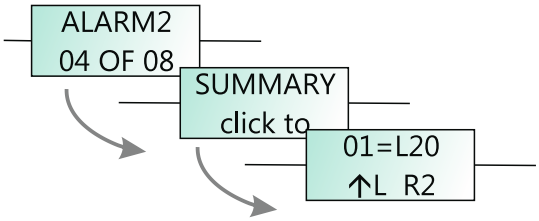
Select if the correct relay number is displayed and you want to store it onto the system.

Select to exit the sequence without making changes

Selecting SUMMARY from this group of menu options allows you to see what has already been set up

To select an option press and hold the button until prompted to release.

In this example a two channel system has two alarm level 1's set up. When you enter the option alarm level one settings for the channel are displayed. Click the button to return to the previous menu options. To view alarm level 2 settings go back and select ALARM2 option. Note you only view the summary one channel at a time.

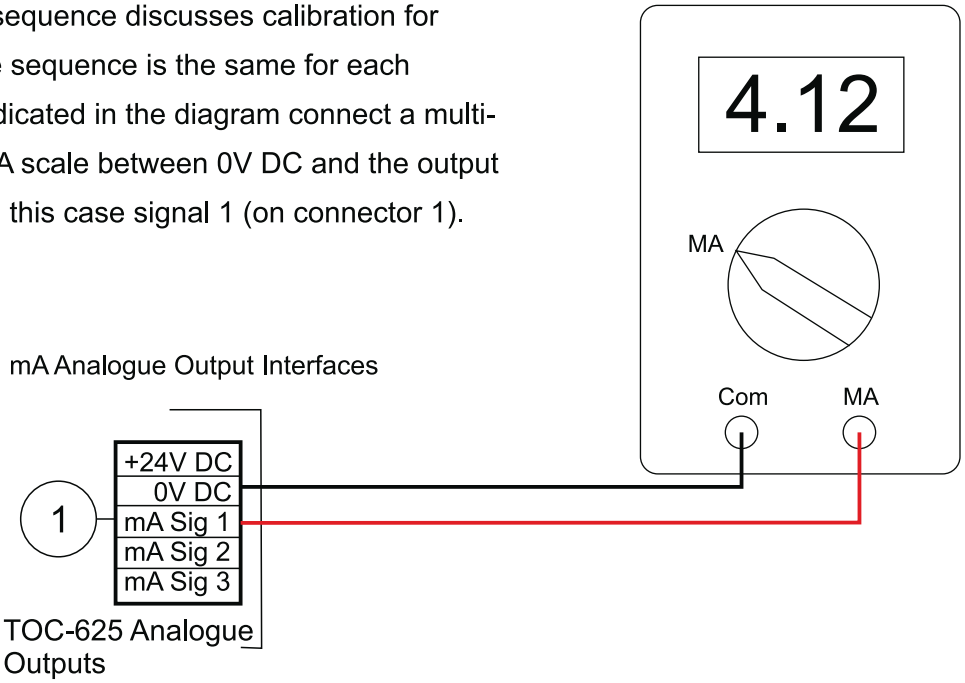


CALIBRATIONS

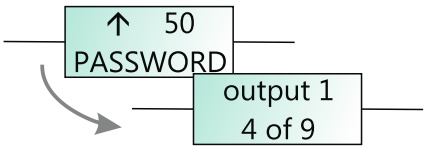
4-20mA Output Calibration and Test

The TOC-625 is equipped with three 4-20mA analogue outputs. By default these are configured so that output 1 relates to input channel 1, output 2 is input channel 2 and output 3 is input channel 3. The TOC-625 is shipped with these channels pre-calibrated. It should not normally be necessary to calibrate these channels. The system has functions to allow zero, calibration and test of these channels as follows:

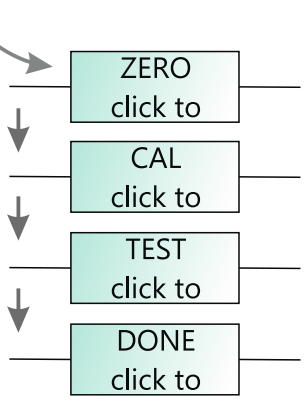
The following sequence discusses calibration for channel 1. The sequence is the same for each channel. As indicated in the diagram connect a multi-meter on its mA scale between 0V DC and the output to be tested, in this case signal 1 (on connector 1).



As previously described enter password mode and enter password 50 to enter the engineer menu. Press the button until either menu 3, 4 or 5 is displayed depending on the required output channel and hold the button until prompted to release. The following sequence shows output 1 being calibrated as an example.:



Each click of the button now cycles you through the available menu options as follows. As with previous menu's press and hold the button to select the displayed option:



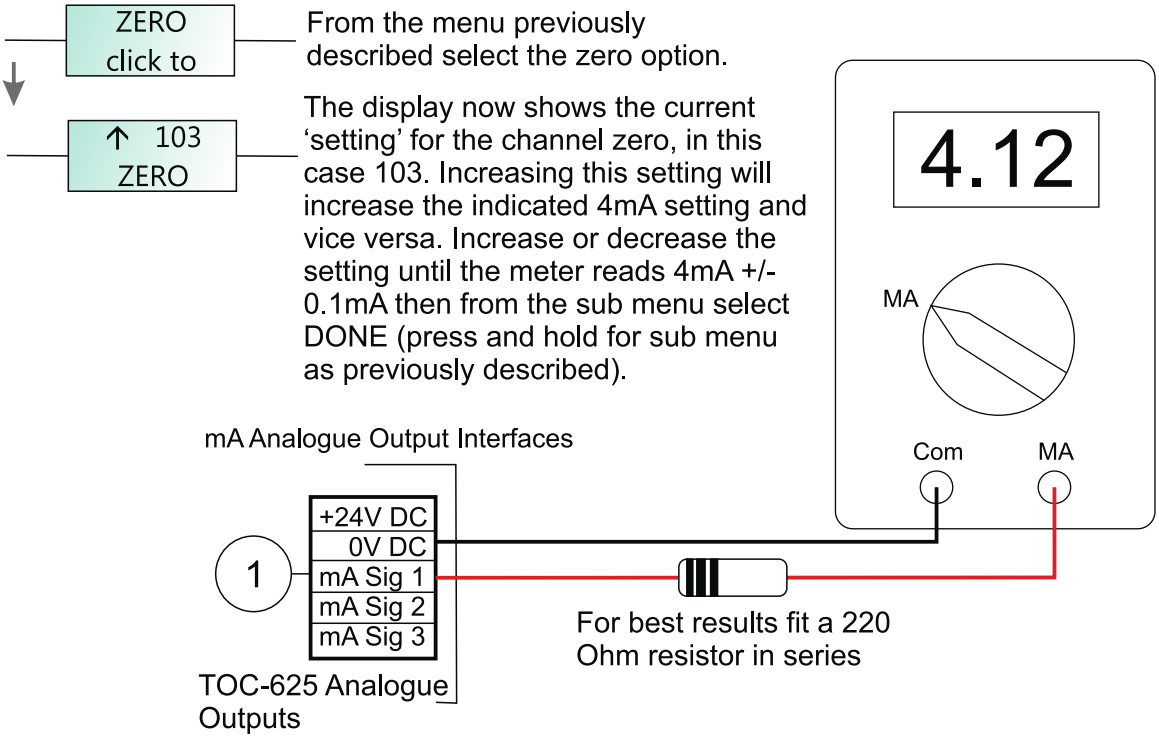
Select this option to zero the channel

Select this option to calibrate the channel

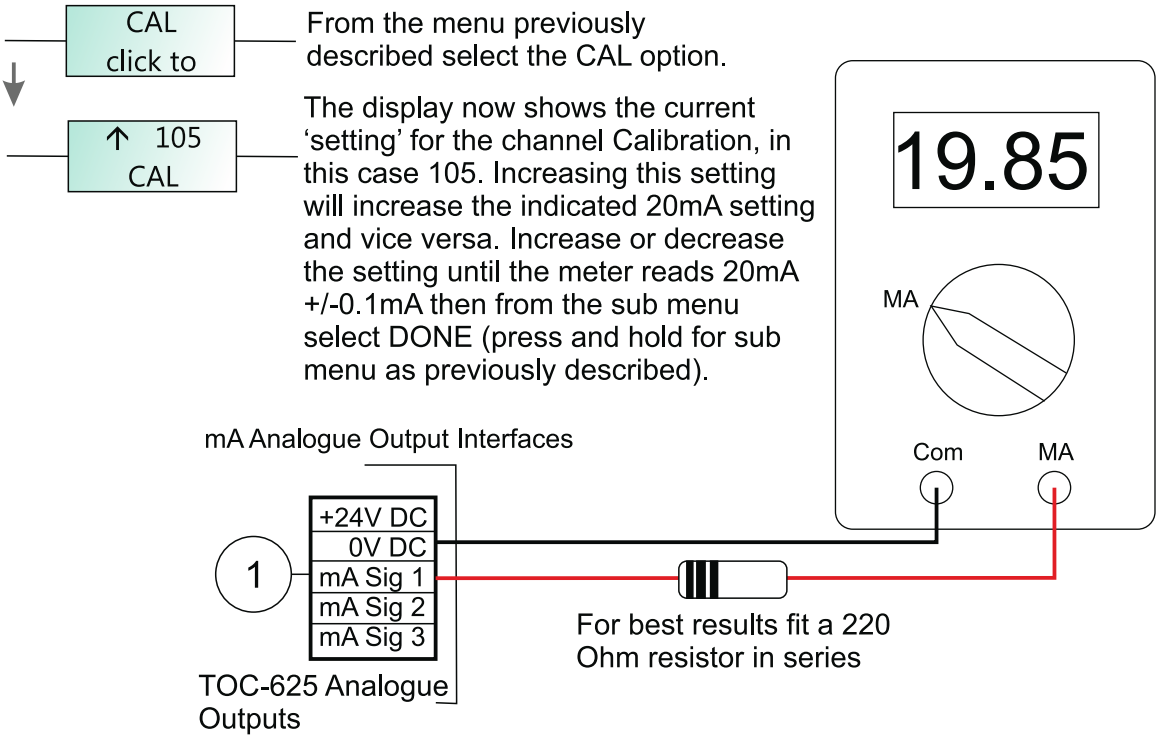
Select this option to test the channel, this option forces the output to whatever mA output is required.

Select this option to return to the previous menu

4-20mA Output Zero Function



4-20mA Cal Zero Function



Gas Detector ZERO Function

All gas detectors will require periodic ZERO and CALIBRATION. The calibration interval depends on a number of environmental factors such as: temperature variance, exposure to wind chill, rain, humidity changes and vibration to list a few. As a guide line gas detectors should be checked at least yearly. As with any measuring instrument if calibration is not held over the intervening interval then a shorter calibration interval may be required. Detectors should always be zeroed first and then calibrated. Alarms should be isolated during this process. A normal calibration sequence would consist of:

1. Assess zero reading in pre-zero condition and record by applying a zero gas typically Nitrogen or Instrument air
2. Assess calibration point by applying a known calibration gas. and record
3. If the zero and calibration points are within +/-2% of range then take no further action. zeroing and calibrating a detector that already reads correctly will not improve its performance. If either is out then proceed to step 4.
4. Apply a suitable zero gas and zero the channel, observe and record result.
5. Apply a known calibration gas and calibrate the channel, observe and record the result.

Notes

Do not rely on the ambient environment to provide a zero point, Nitrogen or Instrument air should always be used as appropriate. If there is a background level of the target gas and a zero is performed then the zero point will not be correctly set.

To Zero the detector enter password mode as previously described and enter password 100 to enter the user menu. Select menu item 1 ZERO

zero
1 of 8

The top line of the display shows the current reading. The bottom line shows the current option.

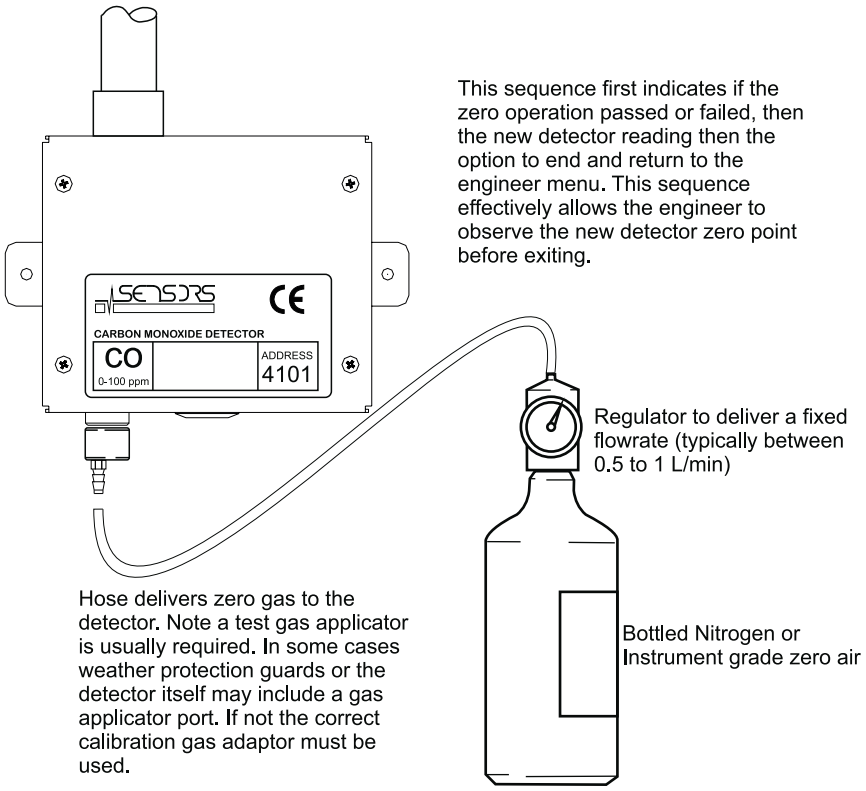
8 PPM
Abort

With zero gas flowing and the reading stable press the button to select CONTINUE. Now press and hold the button until prompted to release to action the zero request.

0 PPM
Continue

ZERO
PASSED

0 PPM
CLICK TO



The display shows the result of the zero request, note that the actual zero and calibration values are stored on the individual detector heads. When carrying out a zero or calibration the controller sends the request to the detector head for action and monitors the result. This means that detectors can be supplied pre-calibrated

The reading is now displayed so the result of the zero request can be observed. The reading should be stable. Click the button to return to the previous menu. Repeat the sequence if you are not within +/-2% of zero.

Gas Detector CAL Function

Gas detectors must be calibrated with known calibration gases traceable to National Standards. As previously discussed detectors require regular calibration. Calibration gases should have values chosen that either:

a) Are at the alarm set point to get maximum accuracy at this point

or

b) Are between 50 to 90% of the range of the detector. The detector measuring range will normally be marked on the detector.

To CAL the detector enter password mode as previously described and enter password 100 to enter the user menu. Select menu item 2 CAL

CAL 2 of 8

Enter the channel number you wish to calibrate.

↑ 1 sensor

Enter the calibration gas value, this will be marked on the gas bottle and enter.

↑ 50 BOTTLE

The top line of the display shows the current reading. The bottom line shows the current option.

55 PPM Abort

With CAL gas flowing and the reading stable press the button to select CONTINUE. Now press and hold the button until prompted to release to action the zero request.

55 PPM Continue

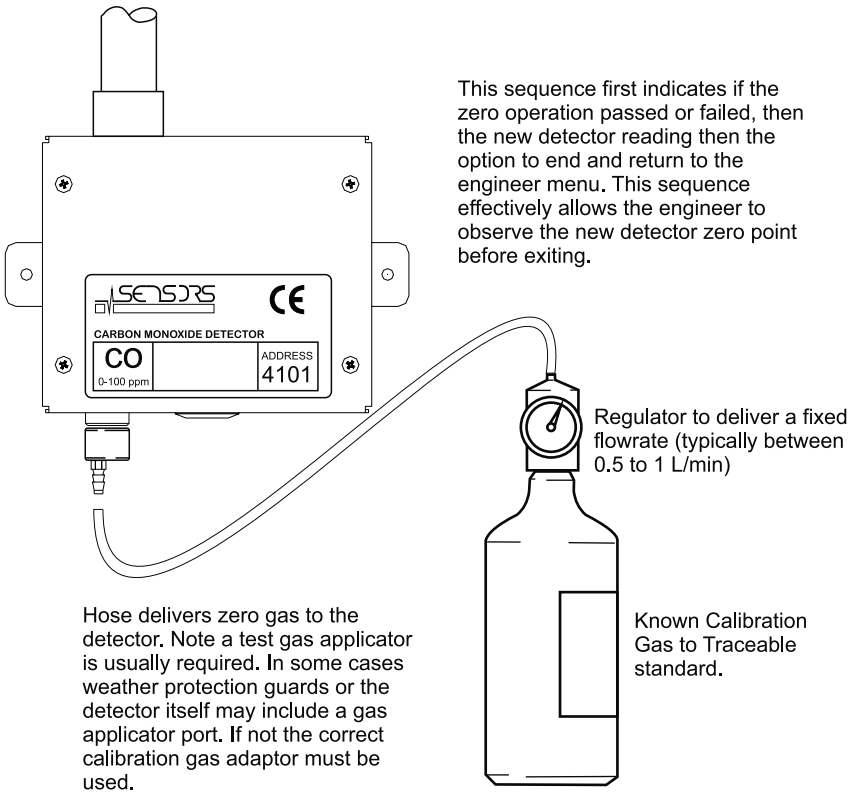
CAL PASSED

50 PPM CLICK TO

The display shows the result of the cal request, note that the actual zero and calibration values are stored on the individual detector heads. When carrying out a zero or calibration the controller sends the request to the detector head for action and monitors the result. This means that detectors can be supplied pre-calibrated

The reading is now displayed so the result of the cal request can be observed. The reading should be stable. Click the button to return to the previous menu.

Repeat this sequence if you are not within +/-2% of the gas bottle value.



Additional Information for TOC-630 Versions with GSM Module

Introduction

When equipped with a GSM module the TOC-625 becomes a TOC-630.

In this mode of operation the TOC-630 operates in a different manner. As a TOC-630 the controller:

Accepts a pulse input from a gas meter and has additional software functions to provide, totalised counts, account numbers, gas meter serial numbers etc

Controls a gas supply solenoid valve

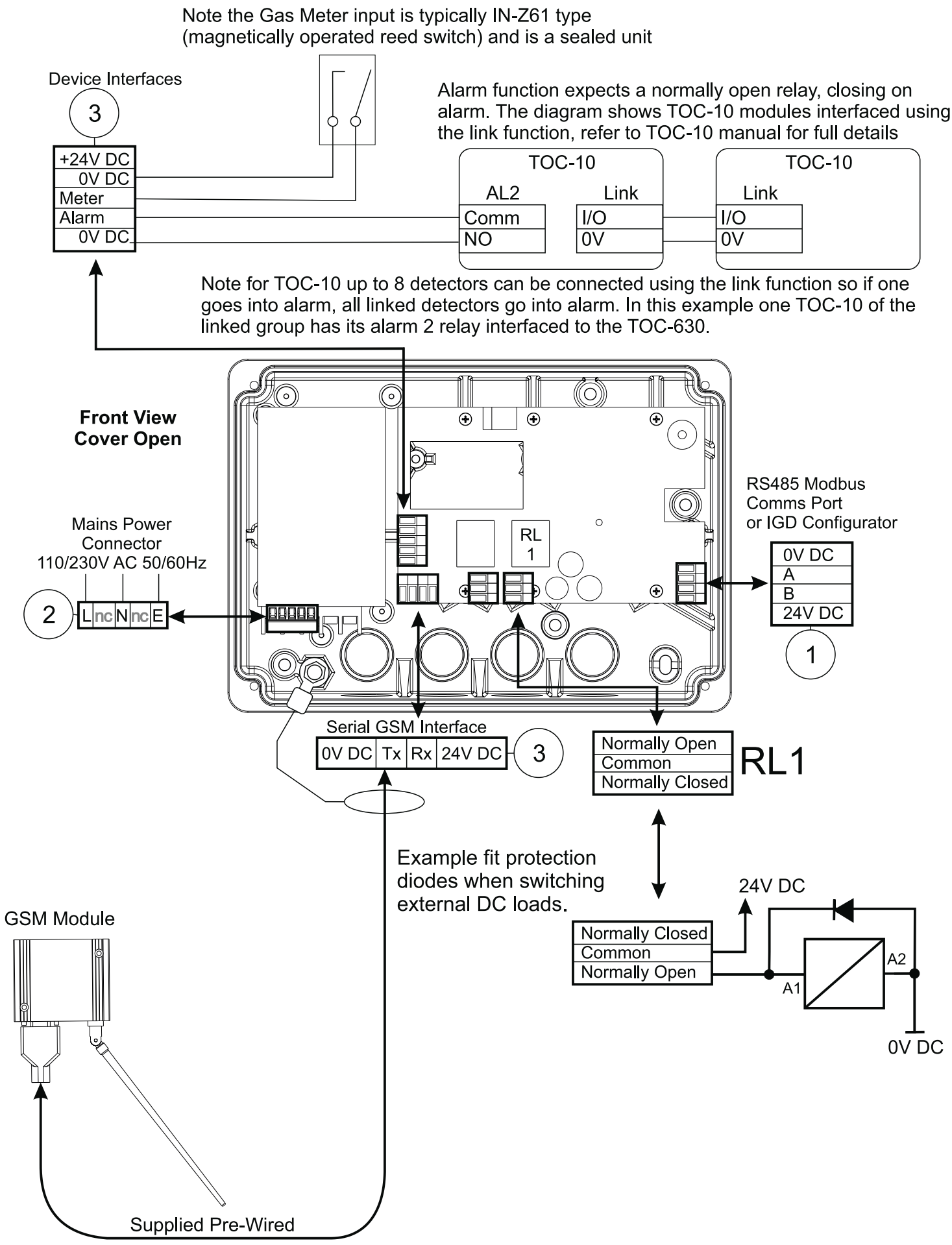
Accepts a contact closure input from external safety devices such as gas detectors such that the control solenoid is automatically turned off if the input signal is detected.

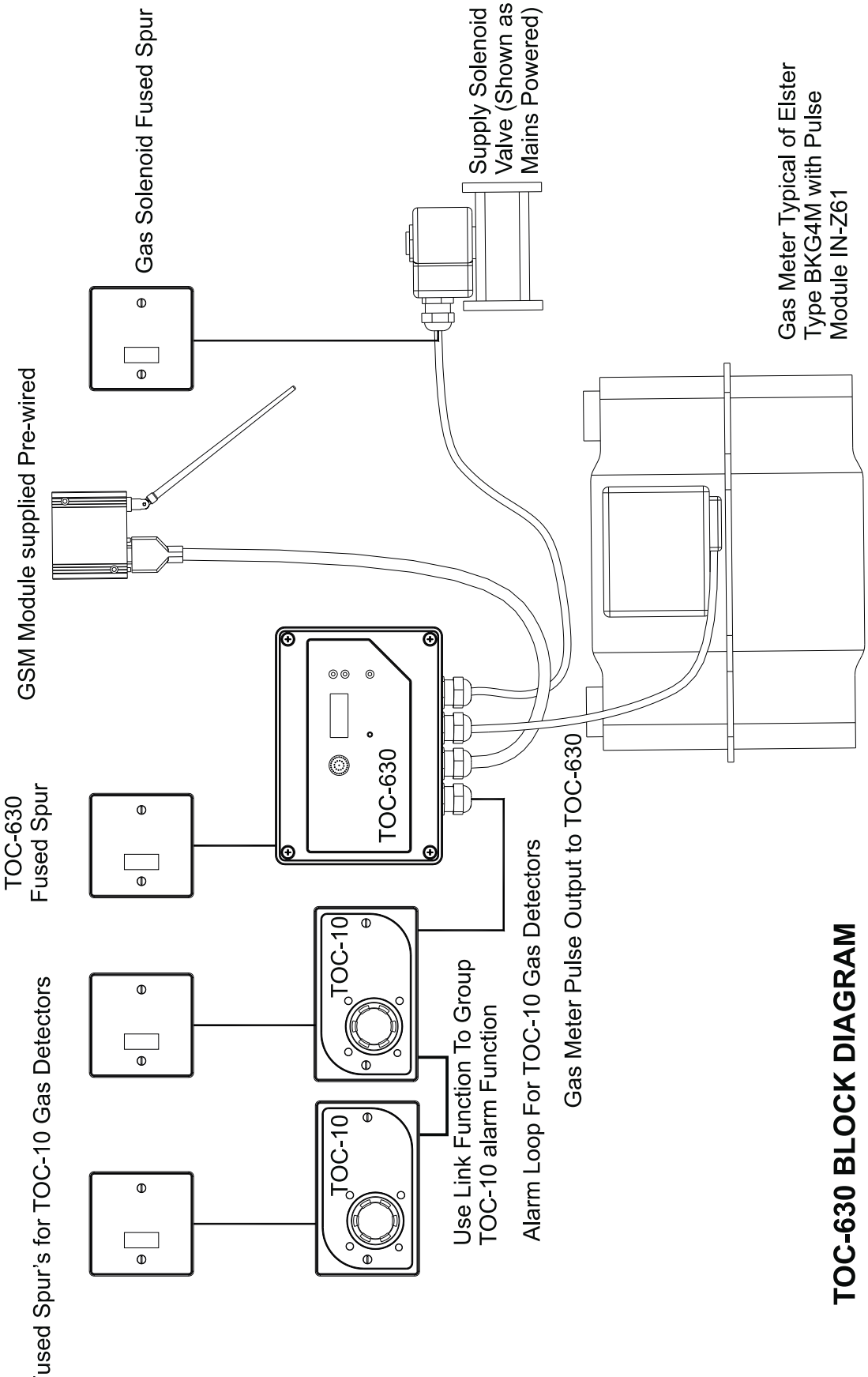
Is connected to a GSM module allowing remote SMS M2M functionality.

Whilst additional screen menu’s are available to provide additional diagnostic data any set up changes required should be made via the IGD configurator software package.

It should be noted that changes to the set up away from default settings supplied can have unintended consequences.

Electrical Details TOC-630 Figure 2



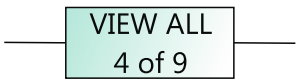


TOC-630 BLOCK DIAGRAM

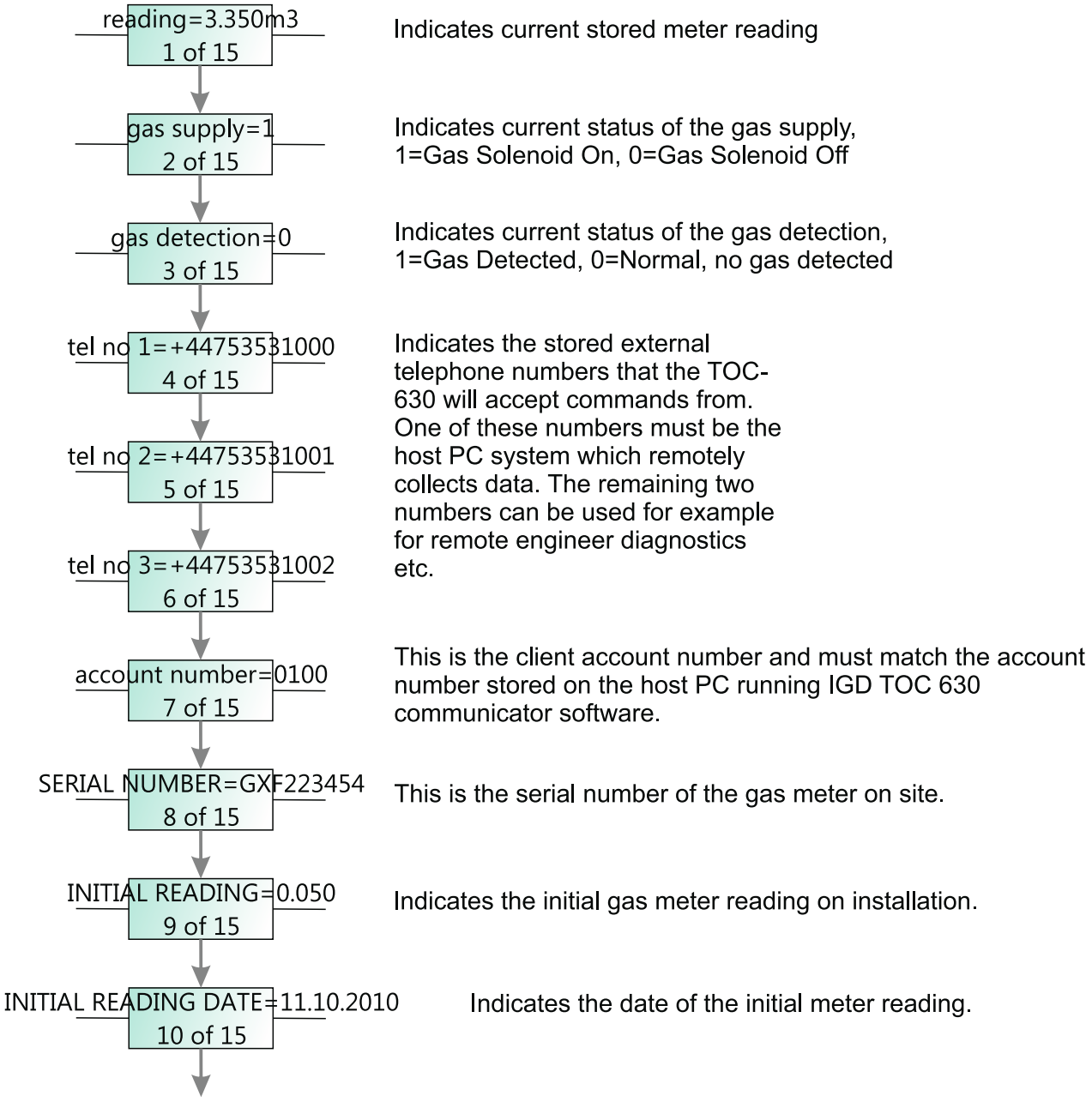
Additional Menu's for Gas Metering.

If the controller is configured as a TOC-630 then additional menu's are available to interrogate and test the unit.

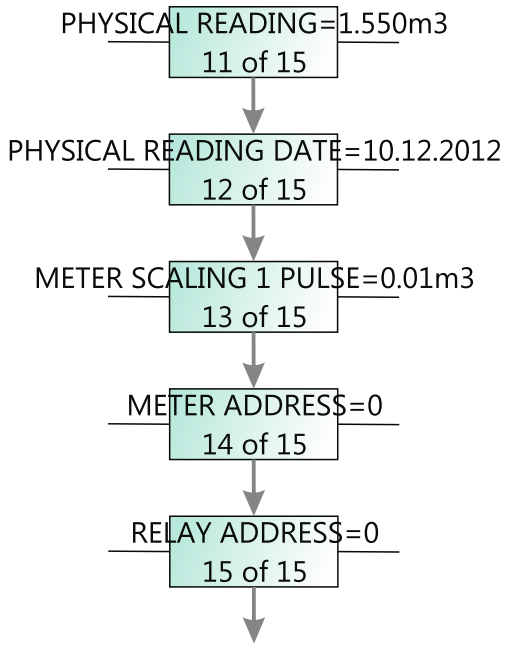
The VIEW ALL Menu



This menu provides information only. Each button press displays the next data item. To adjust any of these parameters requires access to IGD configurator software. In each case the top line of the display scrolls to display the data.



The VIEW ALL Menu.....continued



Indicates the last physical meter reading entered onto the TOC-630. This reading is used to calculate billing.

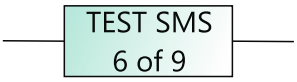
Indicates the date on which the last physical meter reading was taken.

Indicates the value for each incremental pulse from the gas meter.

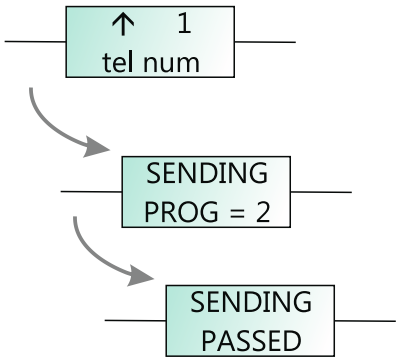
Indicates the address of the gas meter input, 0 indicates it is a physical input on the TOC 630.

Indicates the address of the gas meter supply valve relay, 0 indicates it is a physical output on the TOC 630.

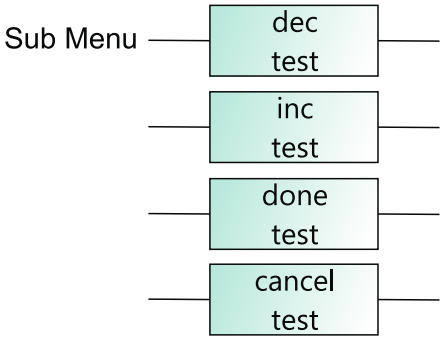
The TEST SMS Function



This diagnostic option sends a test SMS message to one of the three entered telephone numbers as selected to prove communication function.

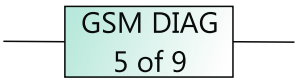


Each click of the button increments the stored telephone number to use. The sub menu can be used to decrease the displayed number, cancel the action or accept the number. A test SMS message is then sent to the selected phone number (1,2 or 3 as stored). A progress indicator is displayed as the message is sent and a result as either Passed or Failed is indicated.

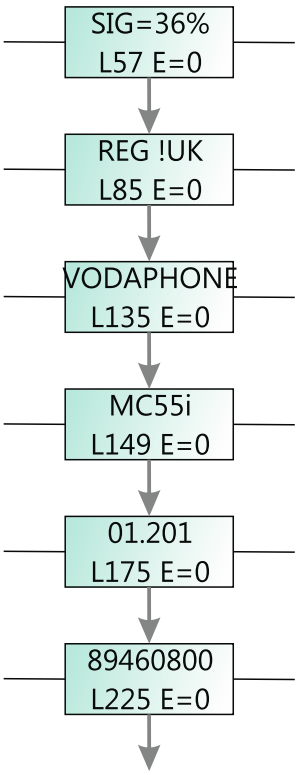


Release the button when the desired option is displayed

The GSM Diagnostics Function



This function displays diagnostic data for the GSM modem. Each button press advances through the available data display options as follows:



Displays the modem signal strength which should ideally be better than 50%. the L number indicates how many command loops have been transmitted between the modem and the TOC-630. The E number is the error rate which should be zero. Note this data is shown on the bottom line of each display item.

Indicates where the SIM is registered, the ! symbol is a NOT indicator so in this example indicates NOT UK registered (roaming)

Indicates currently connected network.

Indicates the connected modem model

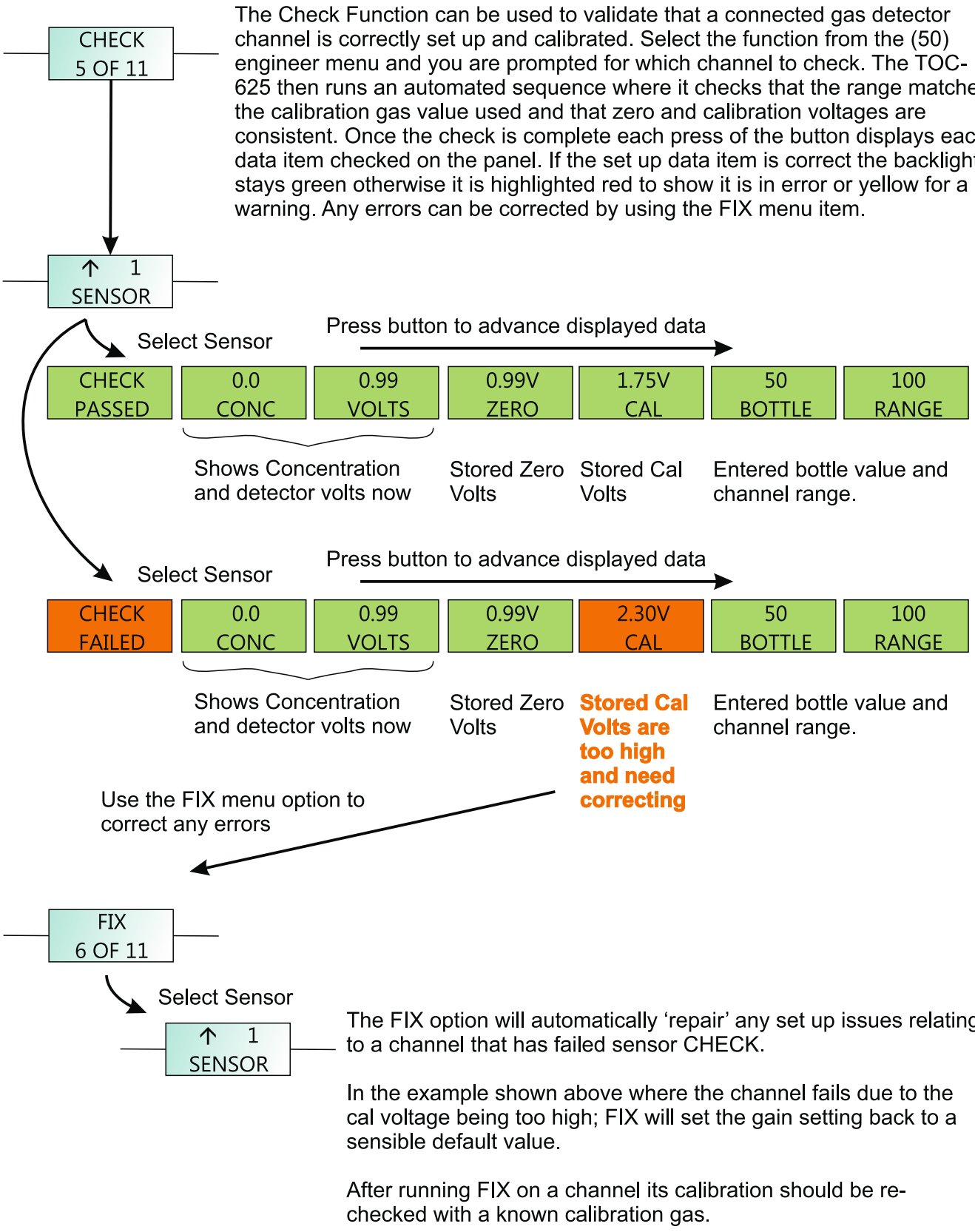
Indicates the modem software version

Indicates the last eight digits of the SIM card number

Press and hold after the last menu item until prompted to return to the main menu.

Addendum 1

CHECK and FIX Functions



The Check Function can be used to validate that a connected gas detector channel is correctly set up and calibrated. Select the function from the (50) engineer menu and you are prompted for which channel to check. The TOC-625 then runs an automated sequence where it checks that the range matches the calibration gas value used and that zero and calibration voltages are consistent. Once the check is complete each press of the button displays each data item checked on the panel. If the set up data item is correct the backlight stays green otherwise it is highlighted red to show it is in error or yellow for a warning. Any errors can be corrected by using the FIX menu item.

The FIX option will automatically ‘repair’ any set up issues relating to a channel that has failed sensor CHECK.

In the example shown above where the channel fails due to the cal voltage being too high; FIX will set the gain setting back to a sensible default value.

After running FIX on a channel its calibration should be re-checked with a known calibration gas.

Addendum 2

Battery Backup

Overview

The TOC 625 battery back up module is designed to fit to the standard TOC-625 range of gas detection control panels and provide battery operation in the event of mains power failure. The battery back up period will be dependant on a number of variables including:

Number and type of detectors fitted to the panel

Battery age and condition

Accessories fitted to the main panel

For full details refer to the TOC-625 Battery Backup Manual

The following diagram indicates a typical installation with this option.