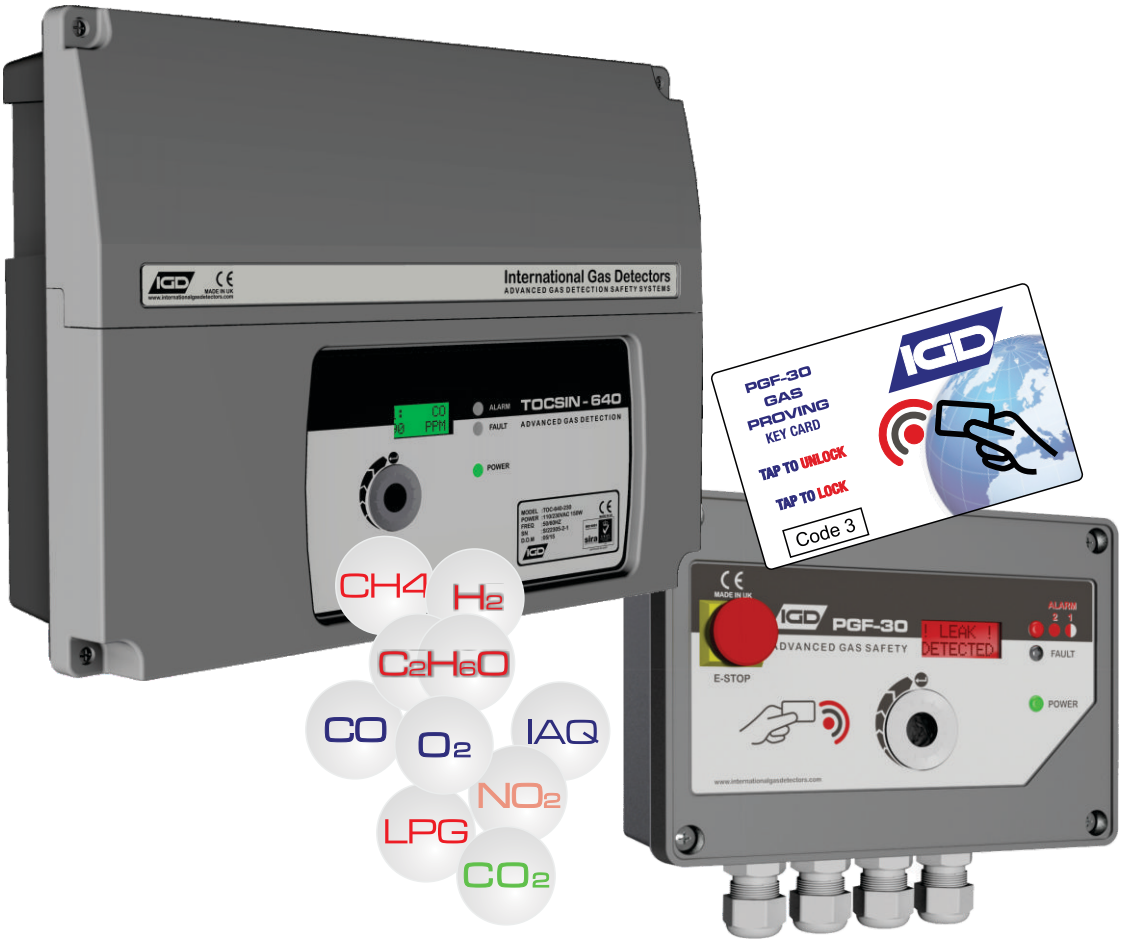
TOCSIN-640-PFG 30

Multi-Channel Sensor Controller
RFID Gas Pressure & Air Flow Proving



Installation and Operation Manual
Version 3.2

Triton House
Crosby St
Stockport
SK2 6SH
England

Tel: +44(0)161 483 1415
Fax: +44(0)161 484 2345
Email: sales@internationalgasdetectors.com
Web Site: www.internationalgasdetectors.com

Ref T640-32

INDEX

Page

3 CE Declaration
4 Gen Specifications
5 Main electrical Connection Points
6 24V DC Models
7 Modbus Interface
8 Modbus Memory Map
9 Addressable Gas Detection Wiring
10 Additional Relay Cards
11 Wiring Relays
12 Power supply Specification and Loadings
13 mA Output Port
14 Controller Overview
15 User Actions Day to Day Operation
16 Display Access and Menu Operation
17 Menu Overview
18 Putting into Service
19 Cable checks and Warm Up Sequence
20 Supplied Set up
21 Channel Setup Overview
22 Relay Connections, Analogue Output
23 Analogue Output Test
24 Putting into Service Schedule Summary
25 Sequence for a complete new setup
27 Adding or removing sensors
28 Alarm Setup
30 Copy Alarms
31 Calibrations
31 4-20mA Output Zero Function
32 4-20mA Output Calibration Function
33 Detector Zero Function
34 Detector Calibration Function
35 Check and Fix Function
36 Battery Backup
37 System Examples
39 **DETAILS SPECIFIC TO PGF-30**

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 detection system 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 International Gas Detectors.

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-640/PGF-30

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 61779-1:2000	Electrical apparatus for the detection and measurement of flammable gases, general requirements and test methods.
EN 50271:2001	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.
EN 61000-6-2-2005 EN 61000-6-4-2007 EN 61000-3-2 A2 2009 EN 61000-3-3 2008	*Excluding requirements for SIL*
Technical File Reference	T640-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 ISO9001:2008 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, SK7 5BW , United Kingdom

Signature: 

Declaration of Conformity in accordance with EN ISO/IEC 17050-1:2004

Name Andrew J Collier M.I.O.D

Position: Managing Director Date: 5.October 2017 Declaration Ref: TOC-640-DEC-2

Standard Specifications

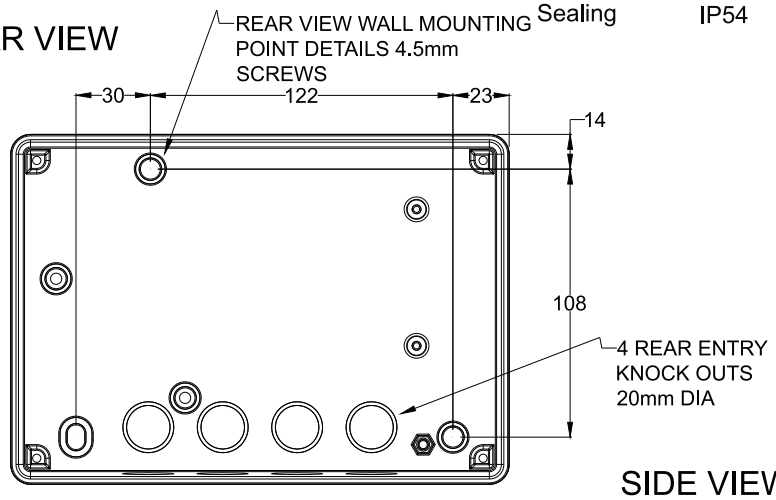
Do not exceed listed ratings.

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	3 off SPCO Relays 4A Non-Inductive User Configurable 1 off 4-20mA Linear Outputs User Configurable
Other I/O	Sounder 80dB @ 100mm (Mutable) 2 off RS485 Ports Modbus & addressable Gas Detectors
Inputs	Up to 32 Detectors as: 24 off Addressable Series Detectors or I/O Modules 1 off Internal Direct Connected Detector 2 off 4-20mA inputs 2 off Switch Inputs (Slam Switch, Fire etc)
Temperature	-5 to 55 Deg C
Humidity	0-95% RH Non-Condensing
Sealing	IP54

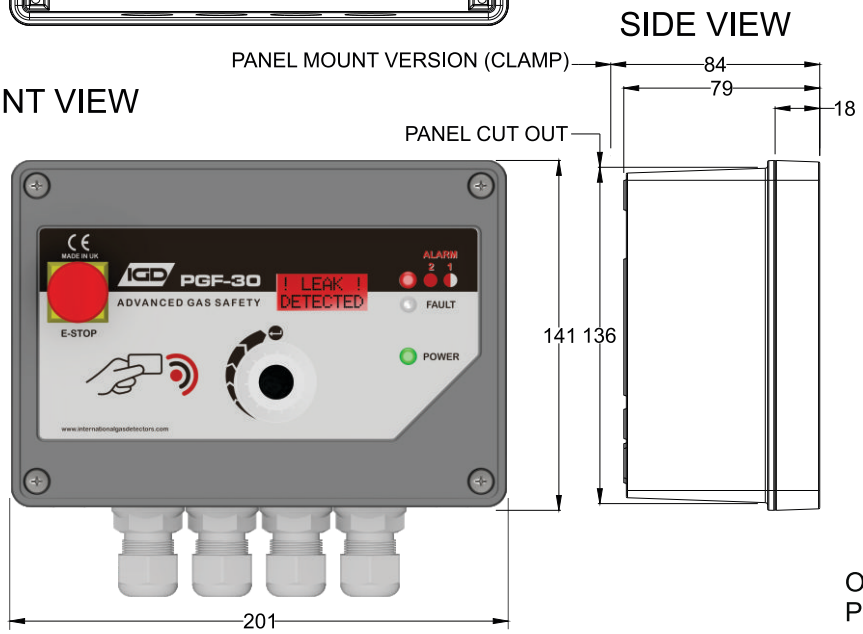
Physical Details

REAR VIEW

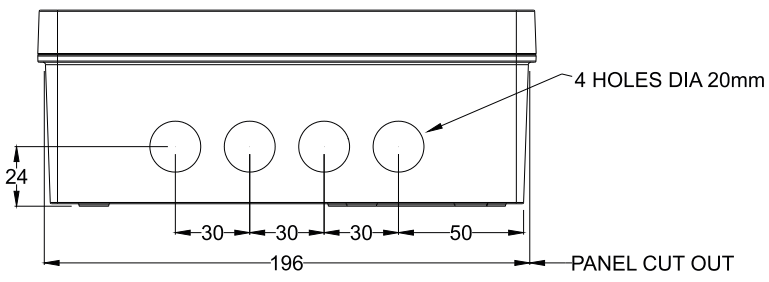


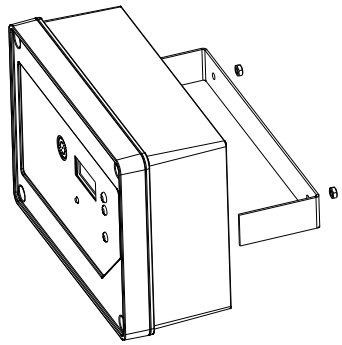
SIDE VIEW

FRONT VIEW

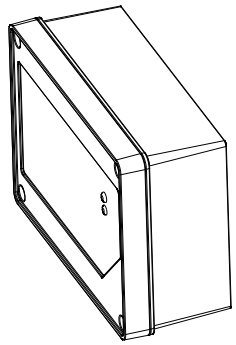


BOTTOM VIEW





Optional Panel Mounting Kit
PN 5686401



Optional Battery Backup Kit
PN 5686601

Note this module uses the same style enclosure as the TOCSIN-640 and houses batteries and charge control. It is usually mounted below the TOCSIN-640 and is supplied with all required connectors.

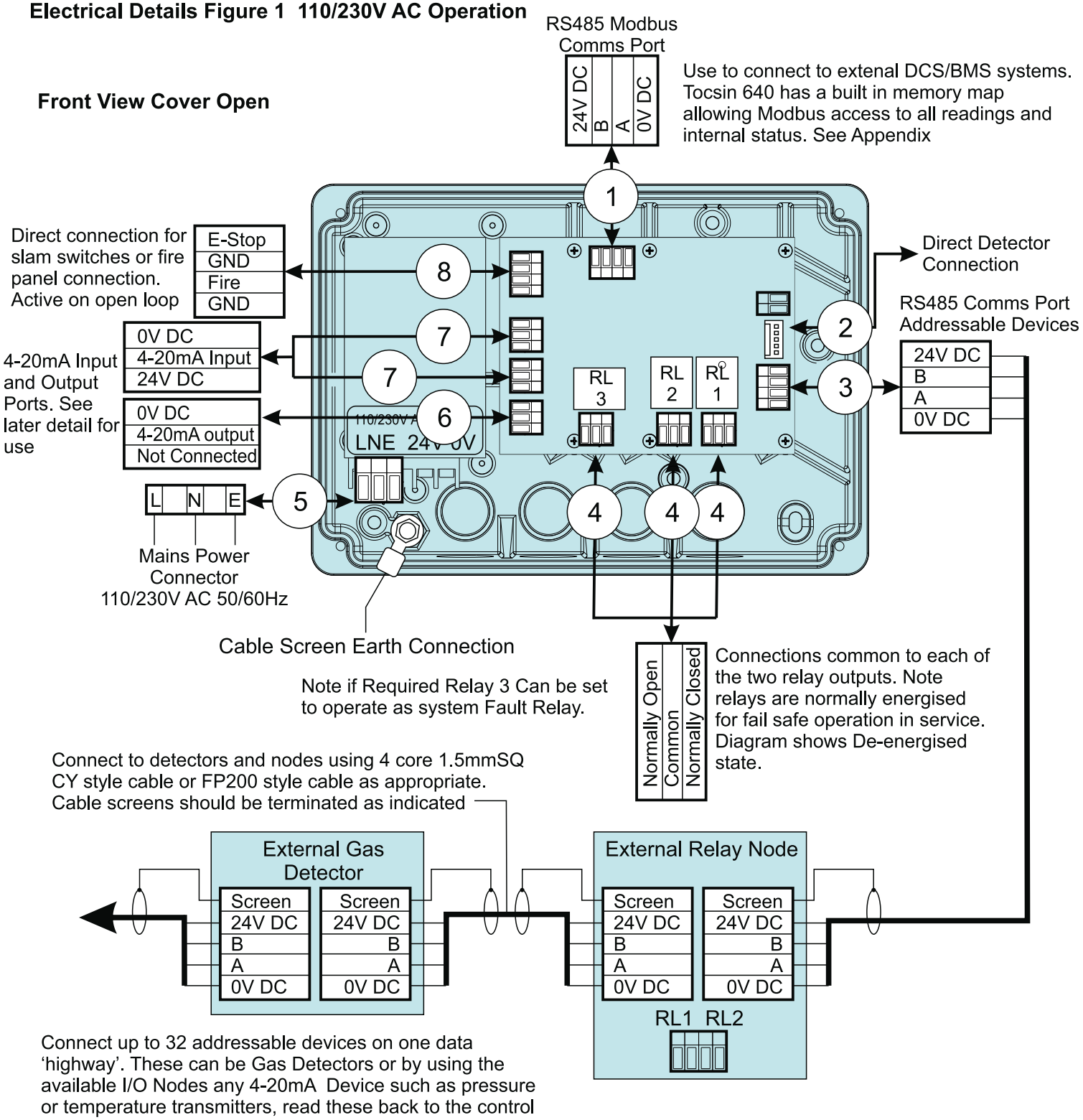
Optional Highway Booster PSU's in the same case style are available as PN TOC-640-BPSU

NOTE

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

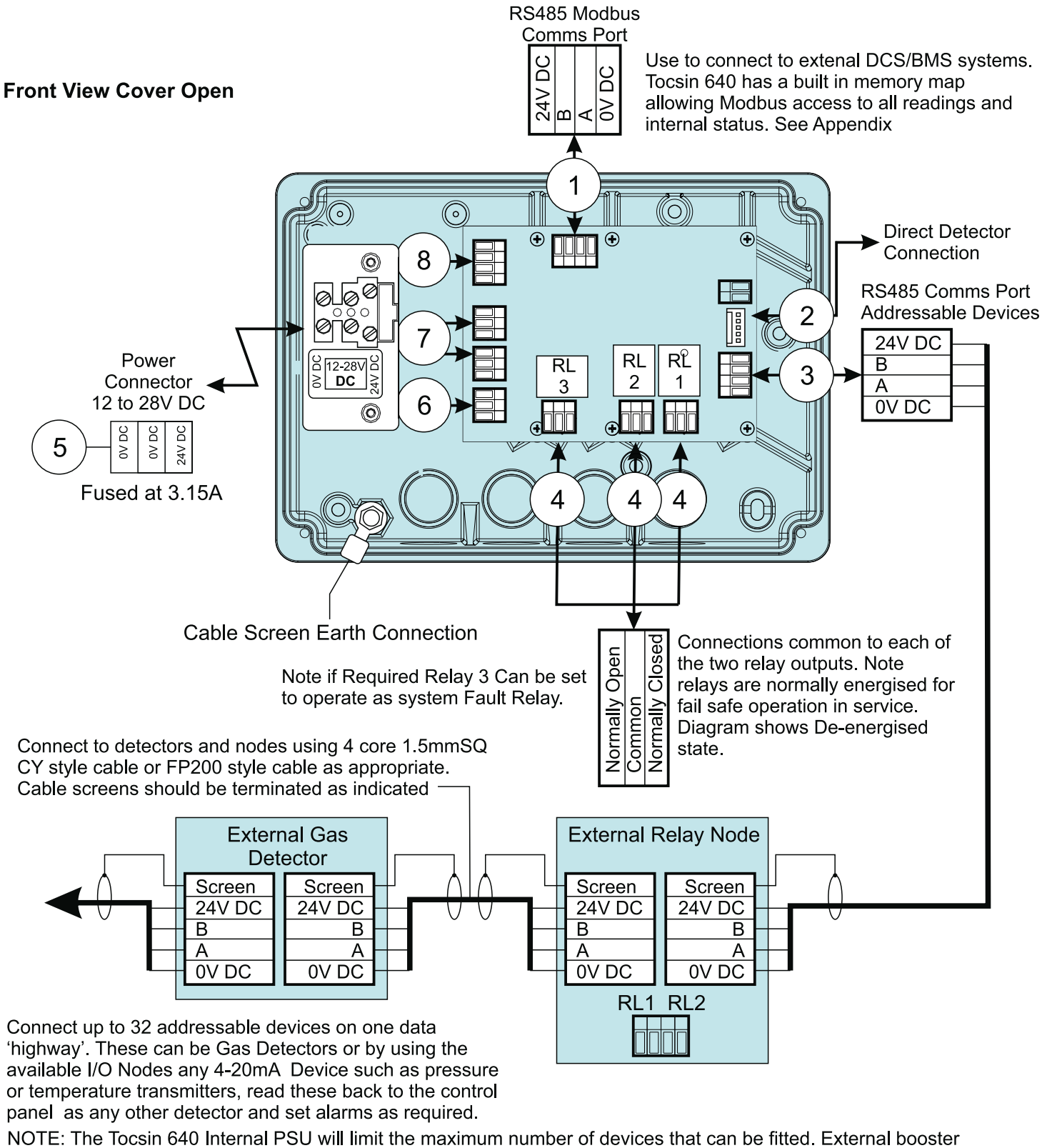
The following information shows the main electrical connection points labelled as points 1, 2, 3, etc. These points are referred to in the manual supplied. When installing ensure you have the full manual available. This page is also supplied inside the TOCSIN-640 enclosure as a quick reference for site engineers. If you do not have the full manual a copy is available on the IGD website at www.internationalgasdetectors.com

Electrical Details Figure 1 110/230V AC Operation



NOTE: The Tocsin 640 Internal PSU will limit the maximum number of devices that can be fitted. External booster PSU's are available to allow more devices or longer cable runs. IGD provide a cable calculator for use when sizing cables and determining device runs. Alternately contact IGD directly for advice.

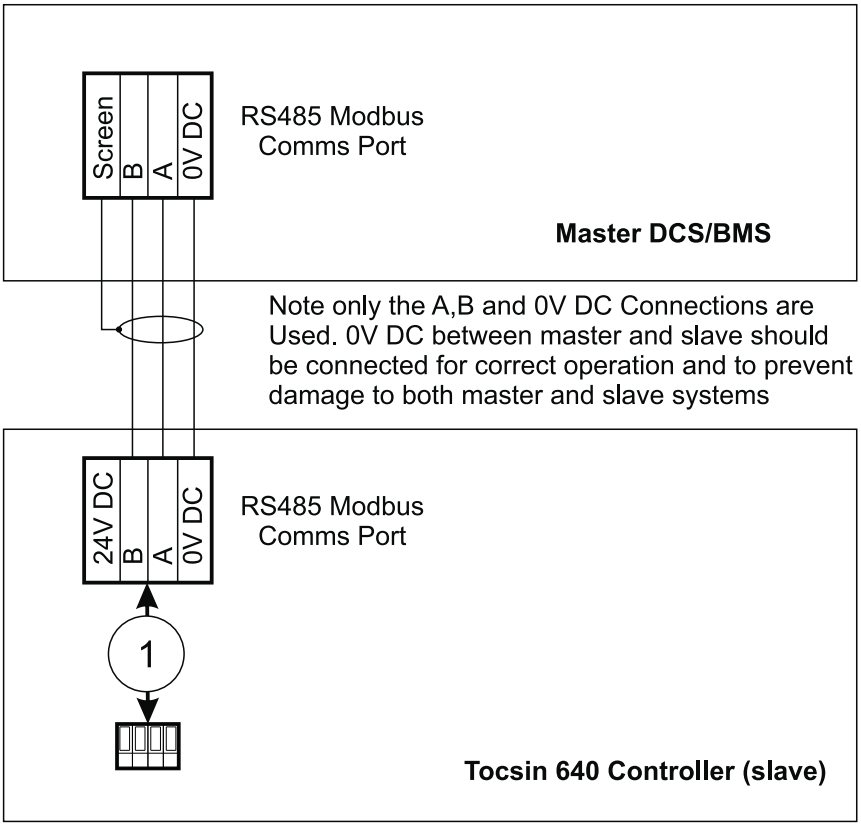
Electrical Details Figure 2 24V DC Operation



NOTE: The Tocsin 640 Internal PSU will limit the maximum number of devices that can be fitted. External booster PSU’s are available to allow more devices or longer cable runs. IGD provide a cable calculator for use when sizing cables and determining device runs. Alternately contact IGD directly for advice.

1 Interfacing to the Remote Modbus Port

The Tocsin 640 controller has an in-built memory map allowing access to alarm status, panel status, readings etc using Modbus RTU protocol. Wiring between units is as follows:



MODBUS INTERNAL MEMORY MAP ADDRESSES

COMMAND STRUCTURE

Parameter	Setting
1: Modbus Mode	RTU Mode Only
2: Operating Mode	Slave Mode Only
3: Response Time [#1]	Maximum = 100mS (5s for Zero Command)
4: Requests	Maximum = 32 per Second
5: Panel Address	100 to 131 (100=default)
6: Baud Rate	4800, 9600, 19200 (19200=default)
7: Start Bits	1
8: Data bits	8
9: Parity	None, Odd, Even (Odd=default. None=T700 only)
10: Stop	1, 2 (1=default & T700 only)
11: Flow Control	None
12: Physical Interface	2 Wire RS232, 2 Wire RS485 (2 Wire RS485=Optional on T900)
13: Bit Order	Least significant bit transmitted first
14: Byte Order	Least significant byte transmitted first
15: Inter-byte spacing	Maximum = 1.5 bytes times (781uS @ 19200 Baud)
16: Inter-packet spacing	Minimum = 3.5 bytes times (1823uS @ 19200 Baud)

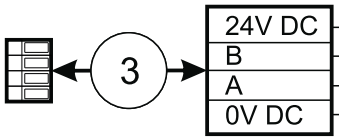
MODBUS INTERNAL MEMORY MAP ADDRESSES

FUNCTIONS:

Command	Function	Register	Sensor	Returned Word
Read Sensor Conc	04	30,001 to 30,999	1 to 999	Min = 0 (-10% LEL) Max = 1200 (110% LEL) Resolution = 0.1%
Read Sensor Volts	04	31,001 to 31,999	1 to 999	Min = 0 (0.00V) Max = 500 (5.00V) Resolution = 0.01V
Read Area Status (T700 = Common Alarms)	04	32,001 to 32,999	AREA 1 to 999	Bit0 = AL1 Bit1 = AL2 Bit2 = AL3 Bit3 = Fault Bit4 = Sensor Disabled Bit5 – Bit15 = Spare
Read Sensor Status	04	33,001 to 33,999	1 to 999	Bit0 = AL1 Bit1 = AL2 Bit2 = AL3 Bit3 = Fault Bit4 = Sensor Disabled Bit5 = Sensor Fault Bit6 = Under Range Fault Bit7 = Over Range Fault Bit8 = Comms Fault Bit9 = Spare Bit10 = Spare Bit11 = Spare Bit12 = Spare Bit13 = AL1 Muted Bit14 = AL2 Muted Bit15 = AL2 Muted
Mute all Alarms	05	1	ALL	Pass = 0 Fail = 1
Reset all Alarms	05	2	ALL	Pass = 0 Fail = 1
Disable Sensor	05	1,001 to 1,999	1 to 999	Pass = 0 Fail = 1
Enable Sensor	05	2,001 to 2,999	1 to 999	Pass = 0 Fail = 1
Zero Sensor	05	3,001 to 3,999	1 to 999	Pass = 0 Fail = 1
Set Add. Relay = On	05	4,201 to 4,232	4201 to 4232	Pass = 0 Fail = 1,2,3 (1=Timeout, 2=Already Used, 3=Not Implemented)
Set Add, Relay = Off	05	5,201 to 5,232	4201 to 4232	Pass = 0 Fail = 1,2,3 (1=Timeout, 2=Already Used, 3=Not Implemented)

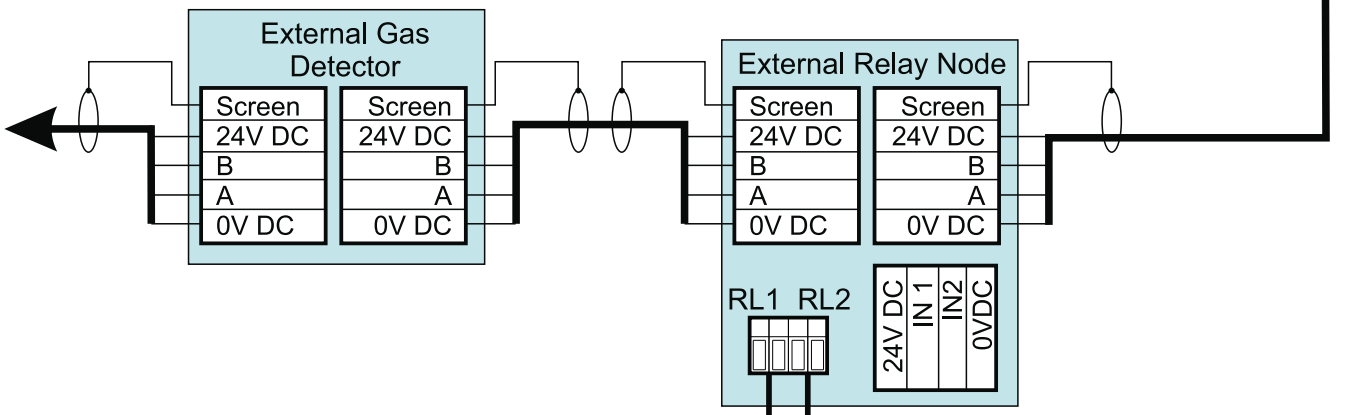
3 Addressable Gas Detector Wiring , 2 Way Relay Node Card (107 Series) and Addressable Annunciators

Connect up to 24 addressable devices on one data 'highway'. These can be Gas Detectors or by using the available I/O Nodes any 4-20mA Device such as pressure or temperature transmitters, read these back to the control panel as any other detector and set alarms as required.

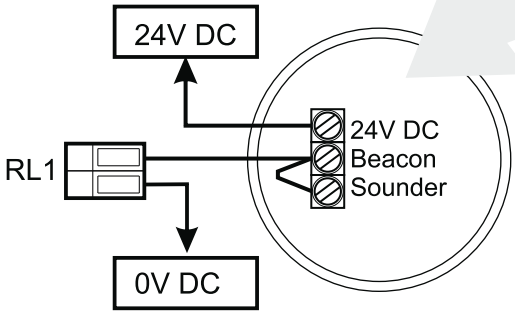


Cables must be screened using the earth connection provided at the control panel

Connect to detectors and nodes using 4 core 1.5mmSQ CY style cable or FP200 style cable as appropriate. Cable screens should be terminated as indicated



Typical Beacon Sounder Wiring
Using IGD Beacon Sounder 5083101
And I/O Node TOC-30A-NODE



The Relay Outputs Can be used to Switch LED Beacon Sounders if Required. Note that the 24V DC Output Terminals on the Node PCB are Fused at 100mA.

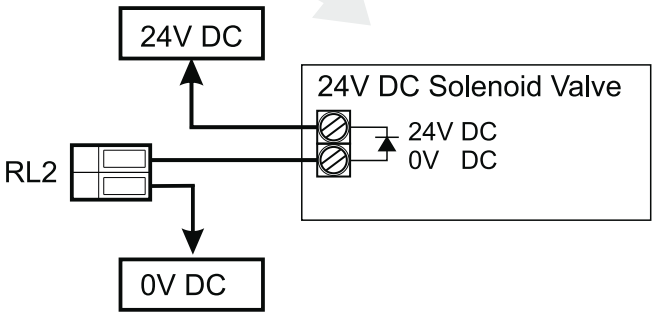
It is recommended to use IGD LED Beacon Sounders With a Power Consumption of only 50mA
Part Number 5083101

When using Other Manufacturers Devices do Not Exceed 100mA @ 24V DC.
Note That In-Rush Currents Can be a Problem if Excessive and Should be Checked Prior to Use.

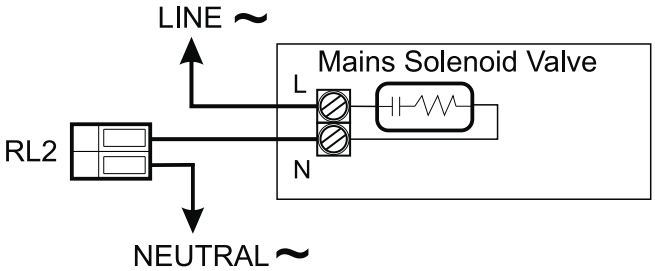
NOTE RELAY NODES CAN BE CONFIGURED AS NORMALLY OPEN OR NORMALLY CLOSED.

For more information refer to the T107 series I/O node manual.

Typical Beacon Solenoid Wiring Using IGD I/O Node TOC-30A-NODE



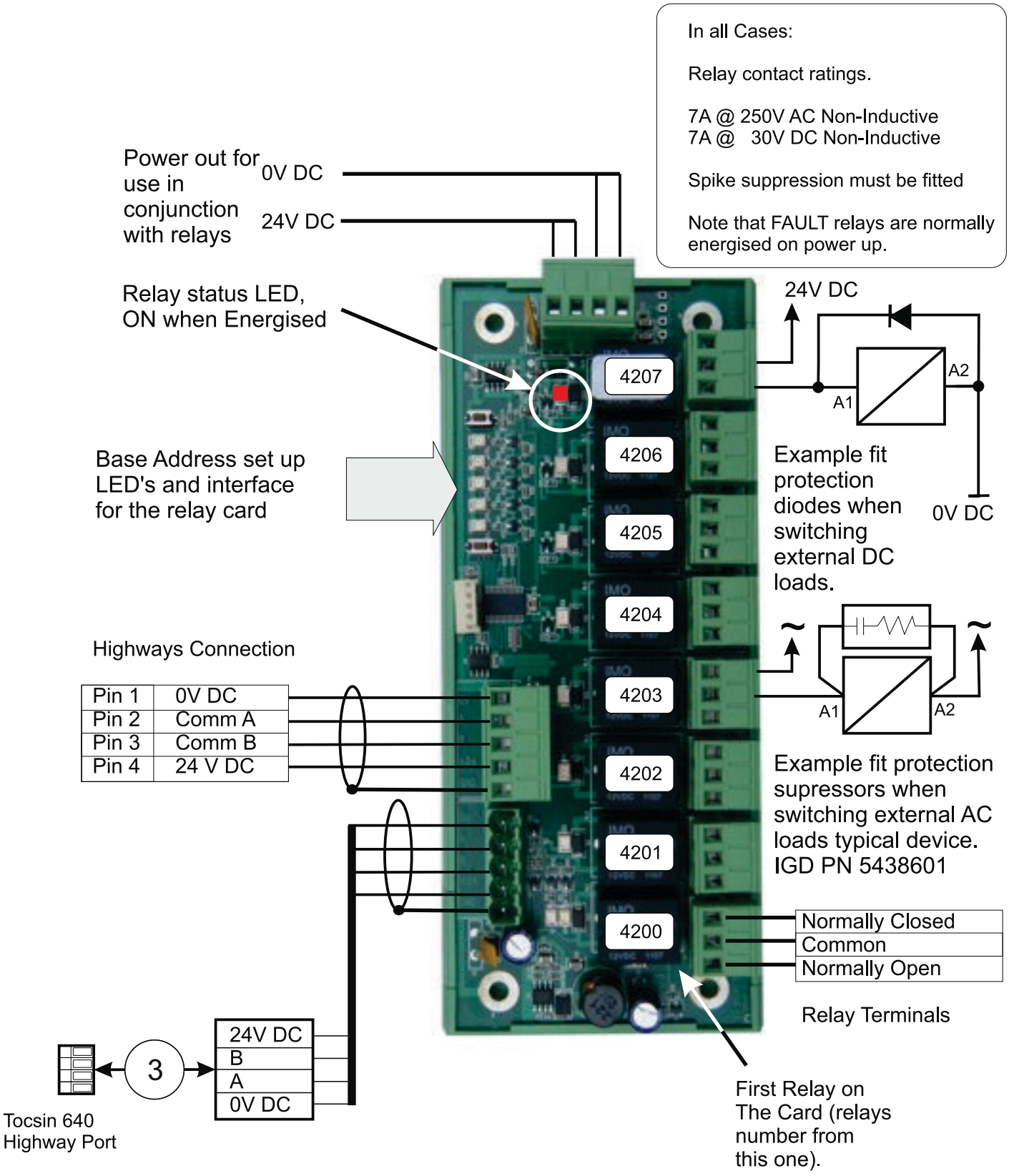
Solenoid Valves are Inductive Loads. It is Essential to Ensure Protection Diodes are Fitted as Shown. Many Modern CE Approved Devices Already have these Fitted to Meet the Requirements of the EMC Directive. Fit Diode 1N4005 if not Fitted. Do NOT use the 24V Device supply For Powering Solenoid Valves.



Fit protection suppressors when switching external AC loads such as solenoid valves typical device Farnell Ref 1438460

3 Addressable 8 Way Relay Card Wiring

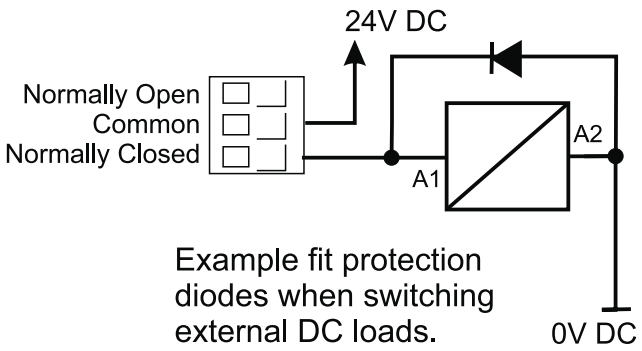
These cards can be supplied as DIN rail mount units to be mounted into IGD field box enclosures for local use or directly into third party equipment.



4 TOCSIN 640 Relay Outputs

There are three relays directly fitted to the Tocsin 640 controller. These are configured as normally energised in operation. One of the relays, relay 1 can be configured as a system fault relay. See later programming details regarding alarm and fault relays.

Switching DC Loads



Example fit protection diodes when switching external DC loads.

In all Cases:

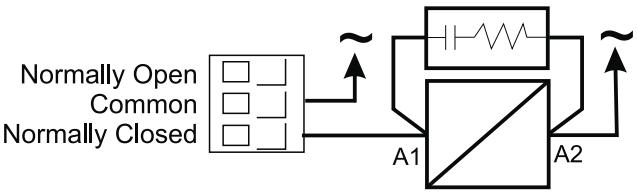
Relay contact ratings.

7A @ 250V AC Non-Inductive
7A @ 30V DC Non-Inductive

Spike suppression must be fitted

Note that FAULT relays are normally energised on power up.

Switching AC Loads



Example fit protection supressors when switching external AC loads typical device IGD Part Number 5438601

In all cases switched loads should have appropriate EMC protection as indicated in the diagram above. Loads should be fused. DC inductive loads should not be powered from the controller PSU. Inductive loads such as solenoids or motors can have high in-rush currents well above the steady state current indicated on data sheets. These high in-rush currents can interfere with the correct operation of the controller and so powering from the control panel is to be avoided.

Notes

5 TOCSIN 640 Power Supply

The Tocsin 640 controller can be supplied in two power variants.

110/230V AC 50/60Hz

or 24V DC

In either case the controller should be fed from a fused supply allowing service isolation

Specifications for both are listed as follows:

Mains Power Supply Specification

Min Supply Voltage	90V AC
Max Supply Voltage	264V AC
Min Supply Frequency	47Hz
Max Supply Frequency	63Hz
Mains Power Consumption	<0.5A Max
Standard PSU Rating	1.0A @ 25 Deg C Ambient or Max 0.69A at 55 Deg C

DC Power Supply Specification

Min Supply Voltage	12V DC
Max Supply Voltage	28V DC
PSU Noise	Max 1.0V Peak to Peak, DC to 1MHz
DC Power Consumption (Controller only)	0.150A

Device Power Loadings

Device	Load Each Unit
Addressable Toxic or Oxygen Gas Detectors	0.02A
Addressable IR CO2 or Flammable Gas Detectors	0.1A
Pellistor Addressable with MK3, Flammable Gases	0.08A
Pellistor Addressable with MK6, Flammable Gases	0.04A
2 Way Relay Output Node	0.06A
8 Way Relay PCB	0.17A
IGD Safe Area Beacon Sounder	0.05A
TOC-30 Series Annunciator	0.04A

Example

Tocsin 640 Series Controller	=1 x 0.015A	= 0.15A
10 off MK6 Flammable Gas Sensors	=10 x 0.04A	= 0.4A
1 off 2 Way Relay Node	=1 x 0.06A	= 0.06A
1 off Beacon	=1 x 0.04A	= 0.04A
	Total Load	= 0.65A

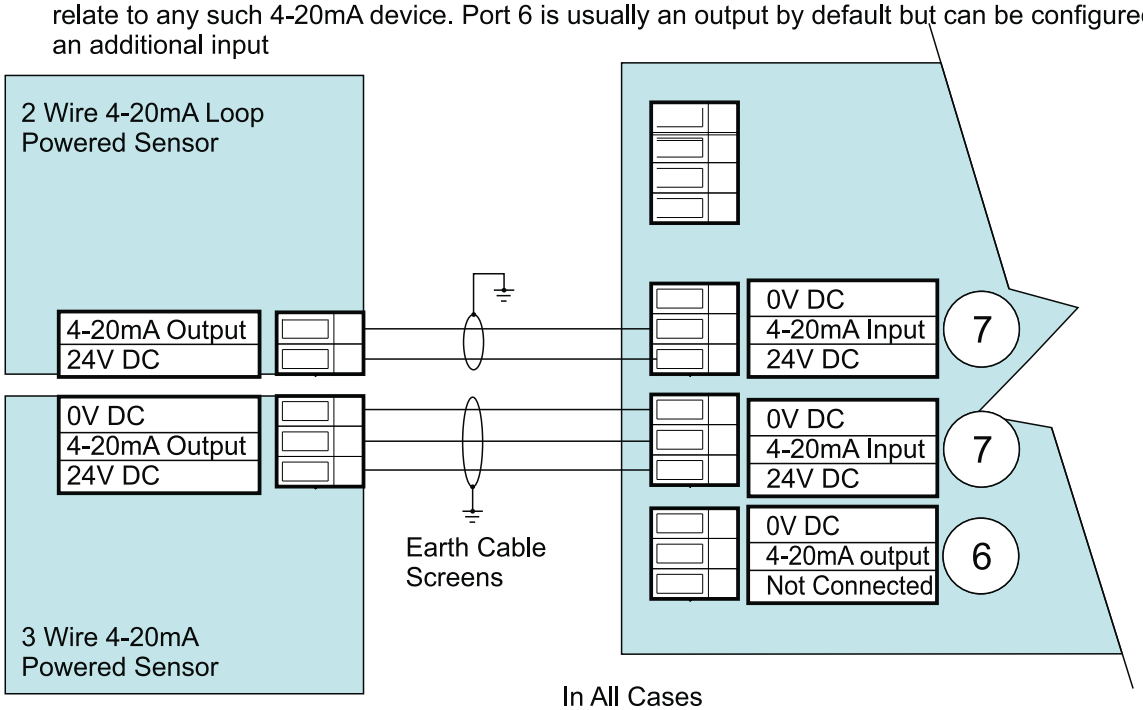
This example the standard PSU is adequate for the system load.

Tocsin 640 Series Controller	=1 x 0.015A	= 0.15A
14 off MK6 Flammable Gas Sensors	=14 x 0.04A	= 0.56A
3 off 2 Way Relay Node	=3 x 0.06A	= 0.18A
3 off Beacon	=3 x 0.04A	= 0.12A
	Total Load	= 1.01A

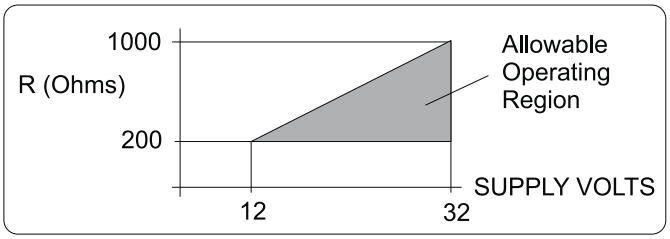
This example the standard PSU limit of 1A is exceeded so a booster PSU will need to be added onto the highway. Booster PSU's are part number TOC-640-BPSU

6 7 TOCSIN 640 4-20mA I/O Ports

Tocsin 640 is equipped with three 4-20mA Ports. (6) Can be configured either as an input or output. Ports (7) are 4-20mA input only. The 4-20ma inputs require current sourcing detectors and are wired as follows. The wiring examples show IGD two and three wire 4-20ma detectors but relate to any such 4-20mA device. Port 6 is usually an output by default but can be configured as an additional input

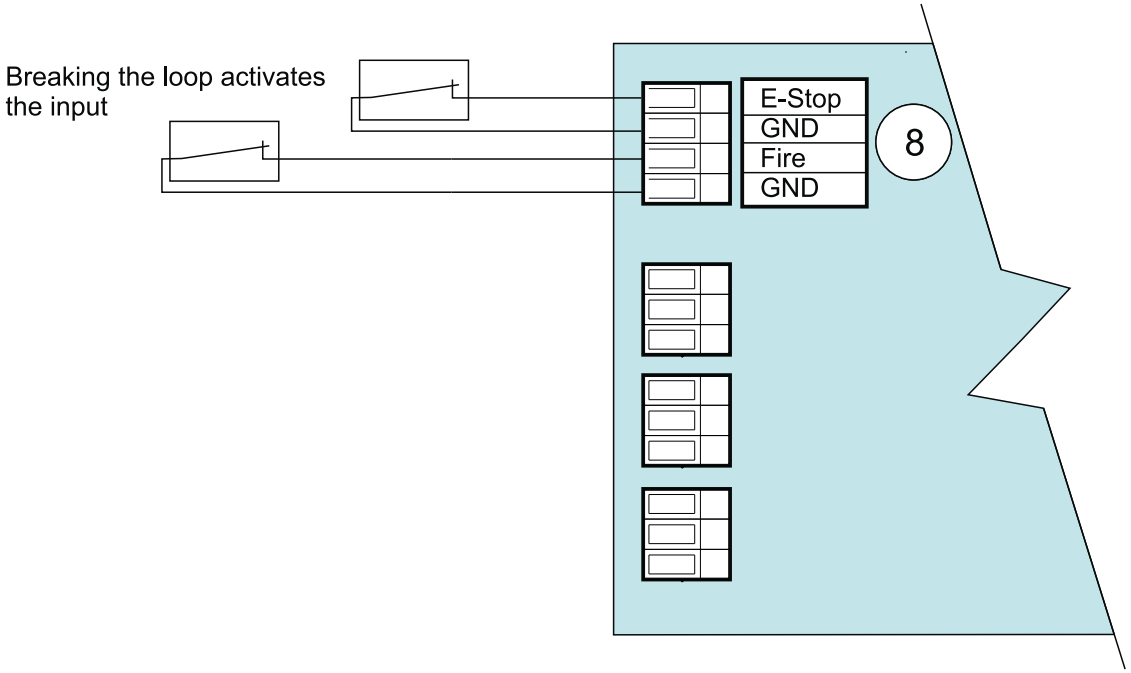


In All Cases

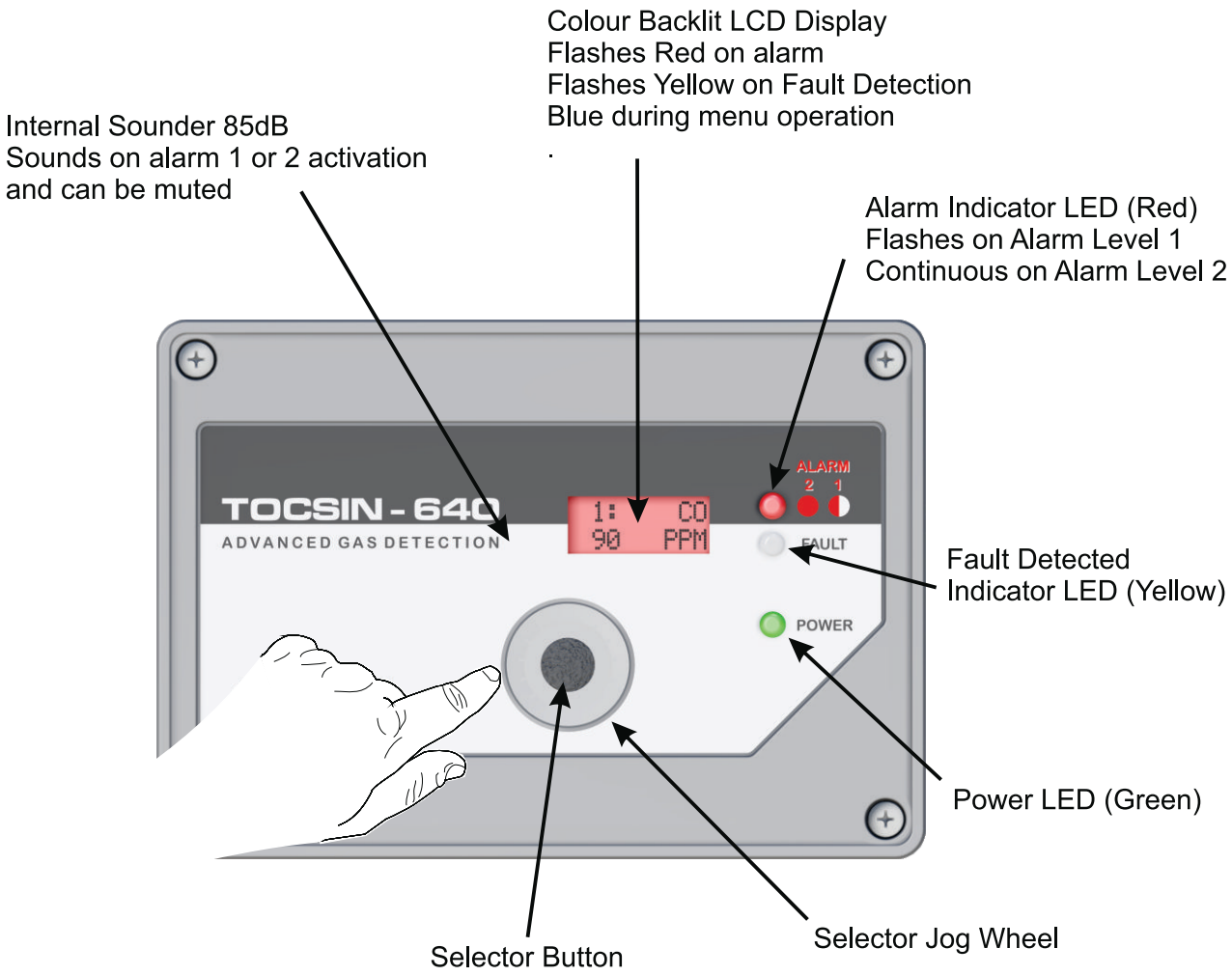


8 TOCSIN 640 External Input Port

Tocsin 640 is equipped with two digital inputs for direct interface to slam switches or fire detection panels. The two inputs are supplied linked. These two inputs can be programmed as any other input channel and will become active (alarm) on open loops. See later details on alarm programming.



Controller Overview



Typical display during warm up

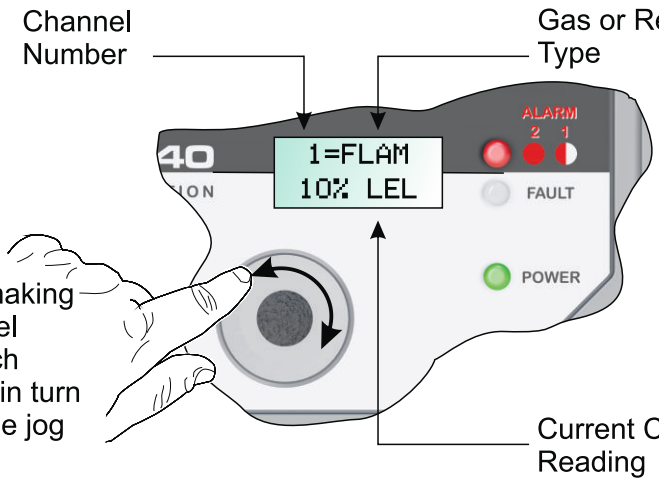


- Initial power up sequence is:
  - o Indicate board tested status (end user should see “PASSED” with a green backlight)
  - o Display then shows Software version, Checksum and date, Display version, display checksum and date, connected sensor info
  - o Countdown

User Actions....Day to Day Operation

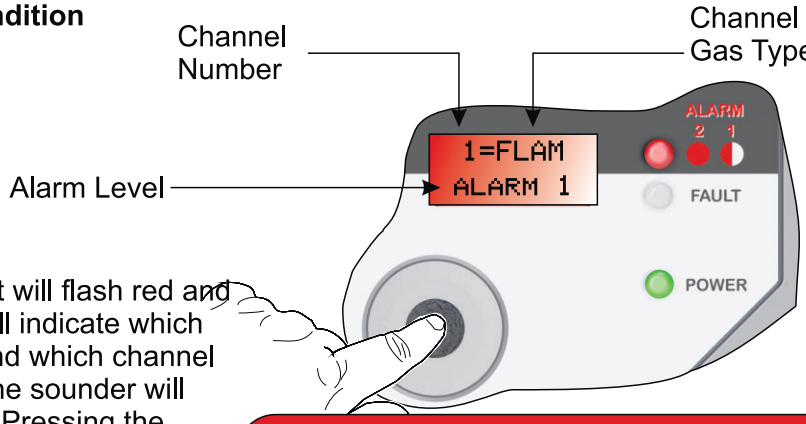
Once fully installed the TOC-640 controller will continuously monitor connected gas detectors and sensors and compare current values with any set alarm thresholds. The display will cycle to display each channel in turn.

To access the display and switch the backlight on rotate the jog wheel



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 rotating the jog wheel

In Alarm Condition



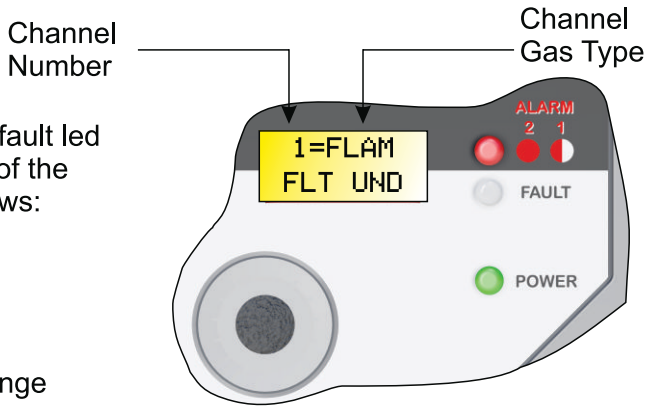
In alarm mode the RED alarm led will either be flashing for alarm level 1 or solid for alarm level 2. The bottom line of the display will indicate:

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.

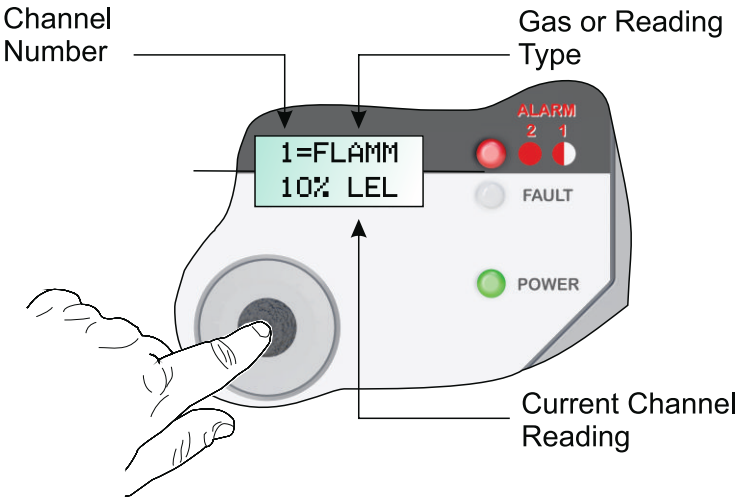
In Fault Condition



In FAULT mode the Yellow fault led will 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 rotate the Jog Wheel

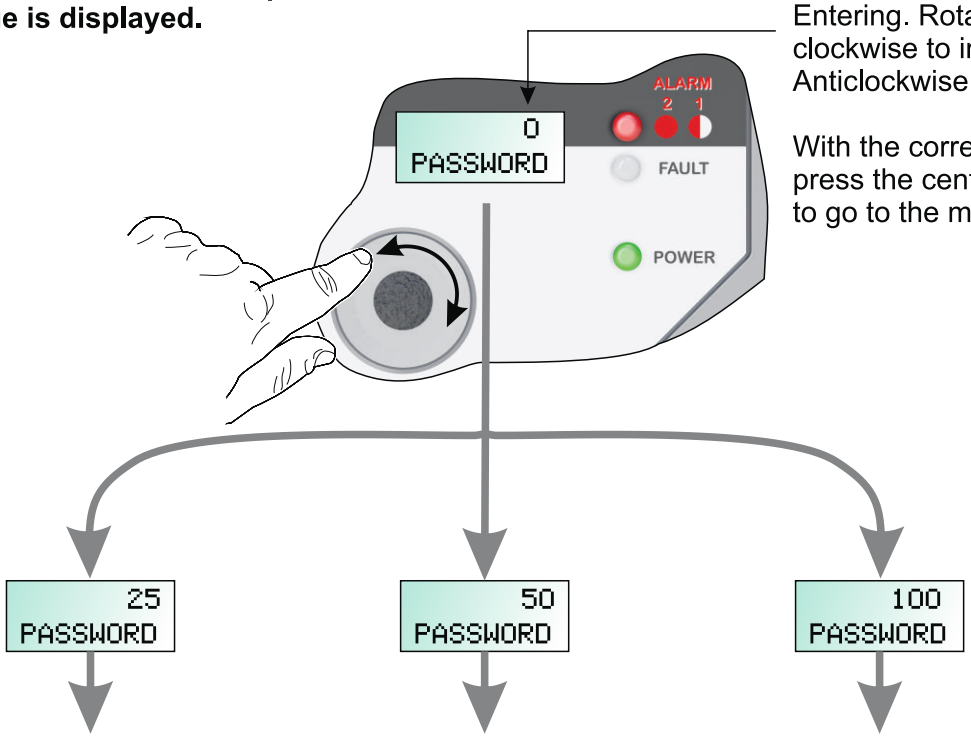


Data entry and menu selection using the password entry as an example.

To access the menu system press the button until the message "Release button and enter password" message is displayed.

Password Number You are Entering. Rotate the jogwheel clockwise to increment or Anticlockwise to decrement

With the correct password displayed press the centre selection button to go to the menu or function.



INHIBIT

Inhibit the control panel for up to 60 minutes. Use this option if calibrating or accessing the connected devices using a laptop running IGD Configurator software. Inhibiting the panel means it stops communicating to connected devices this prevents alarms or data clashes during PC access.

USER MENU CALIBRATIONS & ALARMS

Zero and Calibrate Sensors. Setup alarm levels and relay actions.

ENGINEER MENU PANEL TEST & SETUP

Test I/O Functions, FIND connected devices. Setup channels, Modbus addressing etc.

Toc-640/PGF-30 Menu Overview

Master key card required for PGF-30

↑ 0
PASSWORD



50 ⟷ 100

Engineer Menu Options

Provides access for control panel set up and diagnostic functions

FIND 1 OF 23	Use this option to FIND connected devices.
ADD 2 OF 23	Use this option to ADD another sensor to an existing setup
REMOVE 3 OF 23	Use this option to REMOVE an existing sensor
EDIT ADD 4 OF 23	Use this option to alter the address of a connected sensor
TEST ADD 5 OF 23	Use this option to check for correct communication to addressable sensors.
DURATION 6 OF 23	Use this option to set the Duration of the Gas Proving Period
PRESSURE 7 OF 23	Use this option to set Pressure Leak Thresholds
GAS PULSE 8 OF 23	Use this option to set the Duration of a Gas Proving 'Pulse'
AIR FLOW 9 OF 23	Use this option to set up Options for Ventilation Air Flow Probe
TIMEOUTS 10 OF 23	Use this option to set up the Run Time For the Controller
CHECK 11 OF 23	Use to CHECK the set up on Pellistor Channels
FIX 12 OF 23	Use FIX to automatically correct errors detected during CHECK
TEST RLY 13 OF 23	Use this option to manually turn system relays on and off.
TEST EXT 14 OF 23	Use This Option to test I/O on J11 & 15
MA OUT 15 OF 23	Use to zero, calibrate and test the mA output function.
REMOTE 16 OF 23	Use this option to set up the remote modbus connection.
RFID 17 OF 23	Use this option to set the RFID card code
ALARMS 18 OF 23	Use to select either 2 alarm relays and a fault relay or three alarm relays
SOUNDER 19 OF 23	Use this option to enable or disable the panel sounder
SELF TEST 20 OF 23	Use this option to Self Test the Controller Functions
DEFAULTS 21 OF 23	Use this option to Set the Controller Back to its Default State
USR MENU 22 OF 23	Use this option to jump to the User Menu
EXIT 23 OF 23	Use this option to EXIT back to normal operation

User Menu Options

Provides access for maintenance functions

ZERO 1 OF 15	Use this option to ZERO connected devices
CAL 2 OF 15	Use this option to CALIBRATE connected devices
ALARM 1 3 OF 15	Use these options to set ALARM Levels 1 to 4 and the alarm action. Note options will depend on panel setup for available relays as: 3 alarms and Fault or 4 alarms
ALARM 2 4 OF 15	
ALARM 3 5 OF 15	
ALARM 3 6 OF 15	
ALARM 4 7 OF 15	
AL. DEF. 8 OF 15	Use this option to set alarm levels back to channel defaults
DISABLE 9 OF 12	Use this option to disable a channel
CONTRAST 10 OF 15	Use this option to set the screen contrast
SET TIME 11 OF 15	Use this option to set the Time. Sub menu sets in/out operation time for PGF-30
SET DATE 12 OF 15	Use this option to set the Date
SEN INFO 13 OF 15	Use this option to See the Sensor Channel Set up
ABOUT 14 OF 15	Use this option to view software version etc
EXIT 15 OF 15	Use this option to EXIT back to normal operation
	Denotes a Menu Option Only Displayed on PGF-30 Versions of the Controller

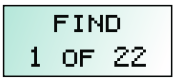
Putting Into Service

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.

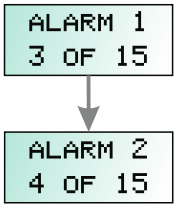
Follow the cable commissioning procedure T625-700-920.PDF
if you don't have a copy of this download it from www.internationalgasdetectors.com

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)



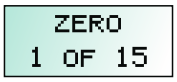
Set the sensor channel alarm levels. User menu ... Alarm Setup Options AL1 and AL2 for each channel.

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

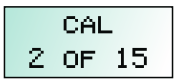


Allow the system to run for at least a few hours then:

Zero each connected detector. User Menu ZERO

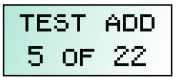


Calibrate each detector. User Menu CALibrate



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.



If you are uncertain how to zero/calibrate or locate your gas detectors and system components then use IGD's online training academy.

If your application is safety related you must ensure you are a competent person with demonstrable training. If in doubt check with IGD for help and support.

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

Figure 1 shows the electrical connections to the Tocsin 640 controller.

Mains power is supplied via connector 5 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”.

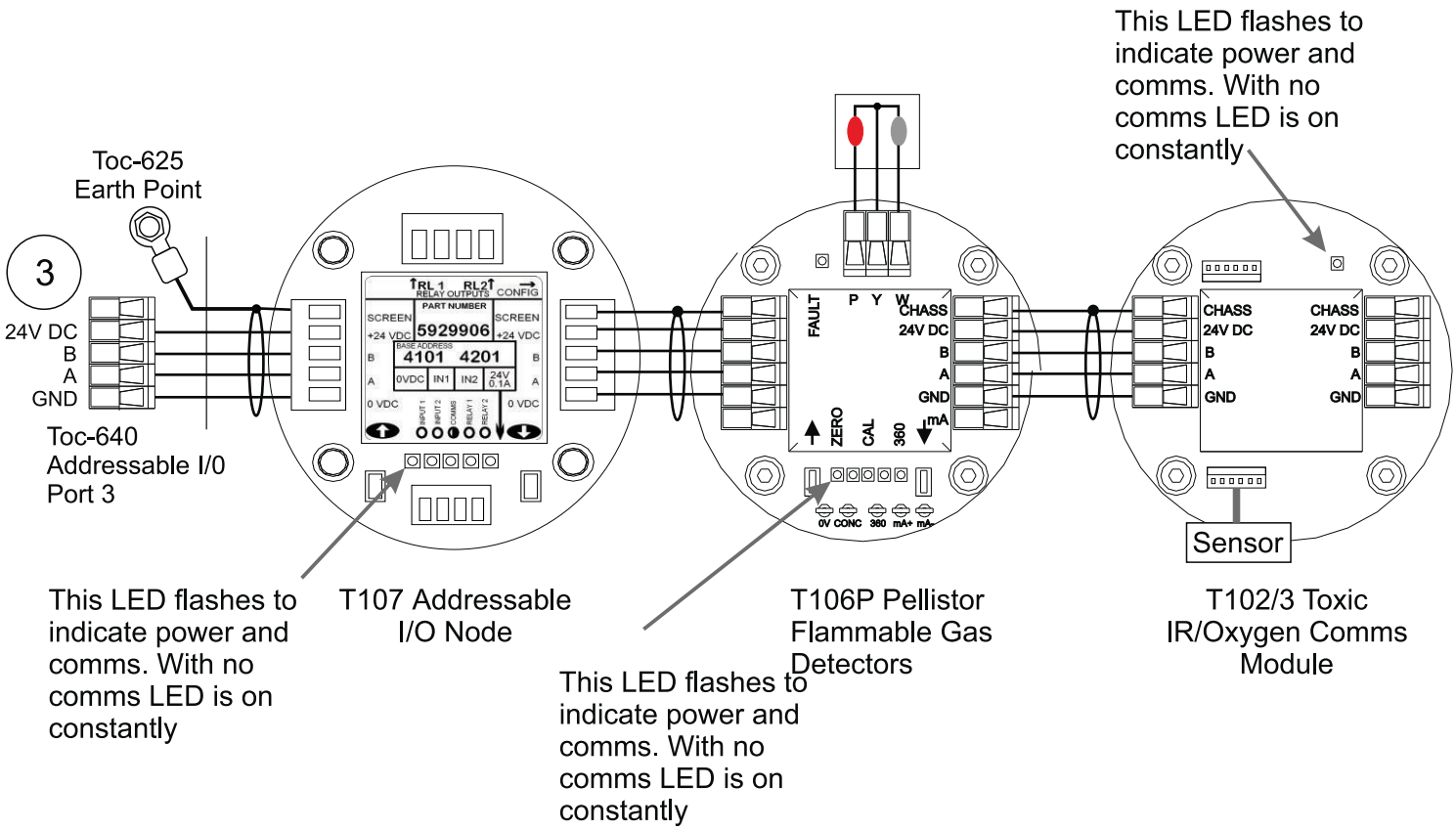
Relay outputs and analogue outputs are indicated on Figure 1, connector 1 and RL1, RL2 respectively. These should be left unplugged at this stage.

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.

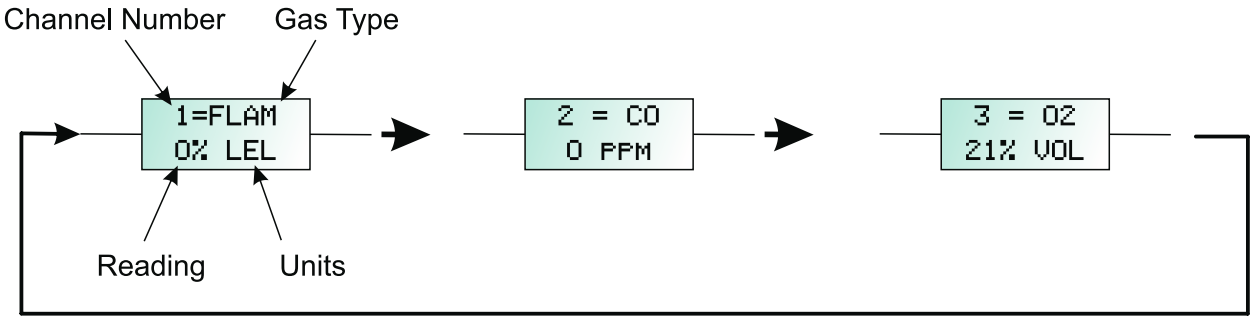


With sensors connected and after the TOC-640 controller has completed its warm up the operating system will go to normal operation mode.

Normal Operation

In normal operation mode the TOC-640 communicates to each detector or node in turn and displays the data on screen. 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-640 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-640 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

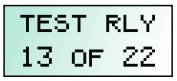
Alarm Action (in this case the alarm latches once the threshold is exceeded

Which relay activates when alarm 2 threshold is exceeded

Note analogue output tracks the highest output channel

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).

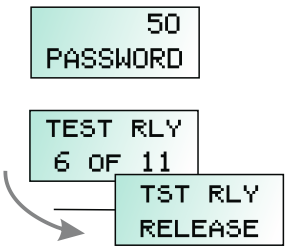
From Normal Operation press the function button until the display alters to show 'release button.

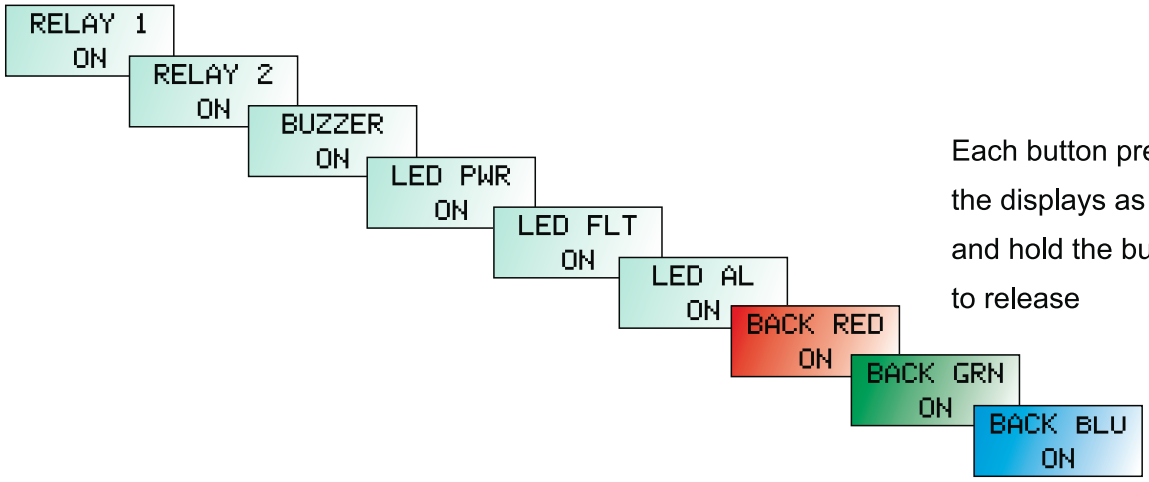
The system now requests a password. Enter 50 to enter the Engineer Menu.

Press the function button until option 6 of 11, 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:

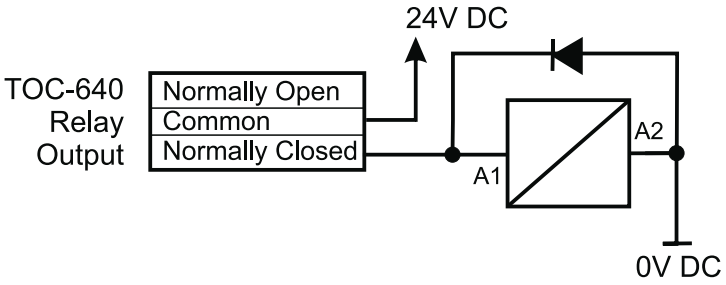




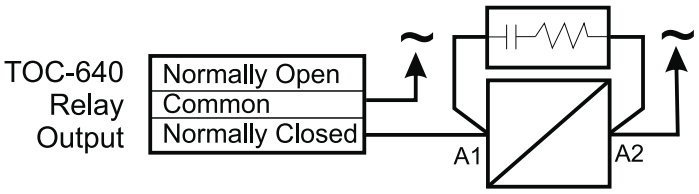
Each button press cycles through the displays as listed. To exit, press and hold the button until prompted to release

6 Relay Connection

As standard the TOC-640 controller is equipped with two relay outputs and a system fault relay. 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.

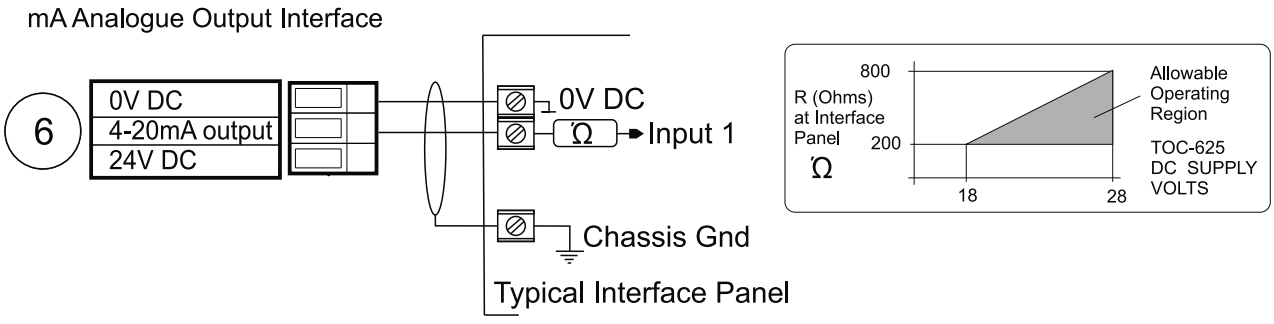


Example fit protection supressors when switching external AC loads typical device Farnell Ref 1438460 (0.22uF 47R X1)

6 Analogue Output (mA)

As standard the TOC-640 is equipped with port(6) configured as an analogue output. By default this is configured as a 4-20mA current output. The following diagrams indicate the connections.

The output will indicates either the highest reading on the controller across all connected detectors or can be forced to read one channel



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 Output

TEST MA
15 OF 22

The operating system has a simulation mode for the analogue output channel. 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.

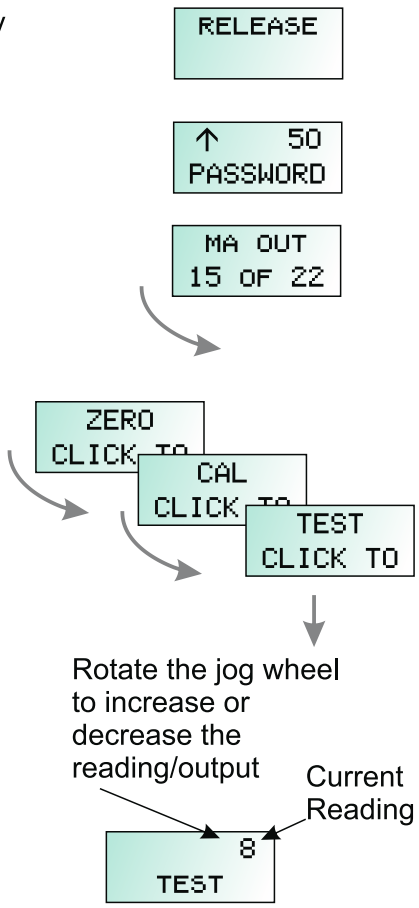
Rotate the jog wheel until option 7 of 11, mA OUT is displayed.

Now press the button to select the option

In this example the output will be tested.

Rotate the jog wheel until TEST is indicated and press the button to select

The display now shows a mA output reading which can be increased or decreased as desired using the jog wheel



Notes

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-640 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 (5) 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 output is being used check the cabling to connector (6), plug in and test using the mA OUT function.

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 output)

Sequence for a Complete New Setup

If you need to perform a complete new set up

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

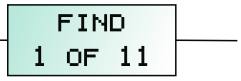
1. Use the FIND command to discover connected devices and install them to the controller

2. Set up the required alarm levels and relay actions

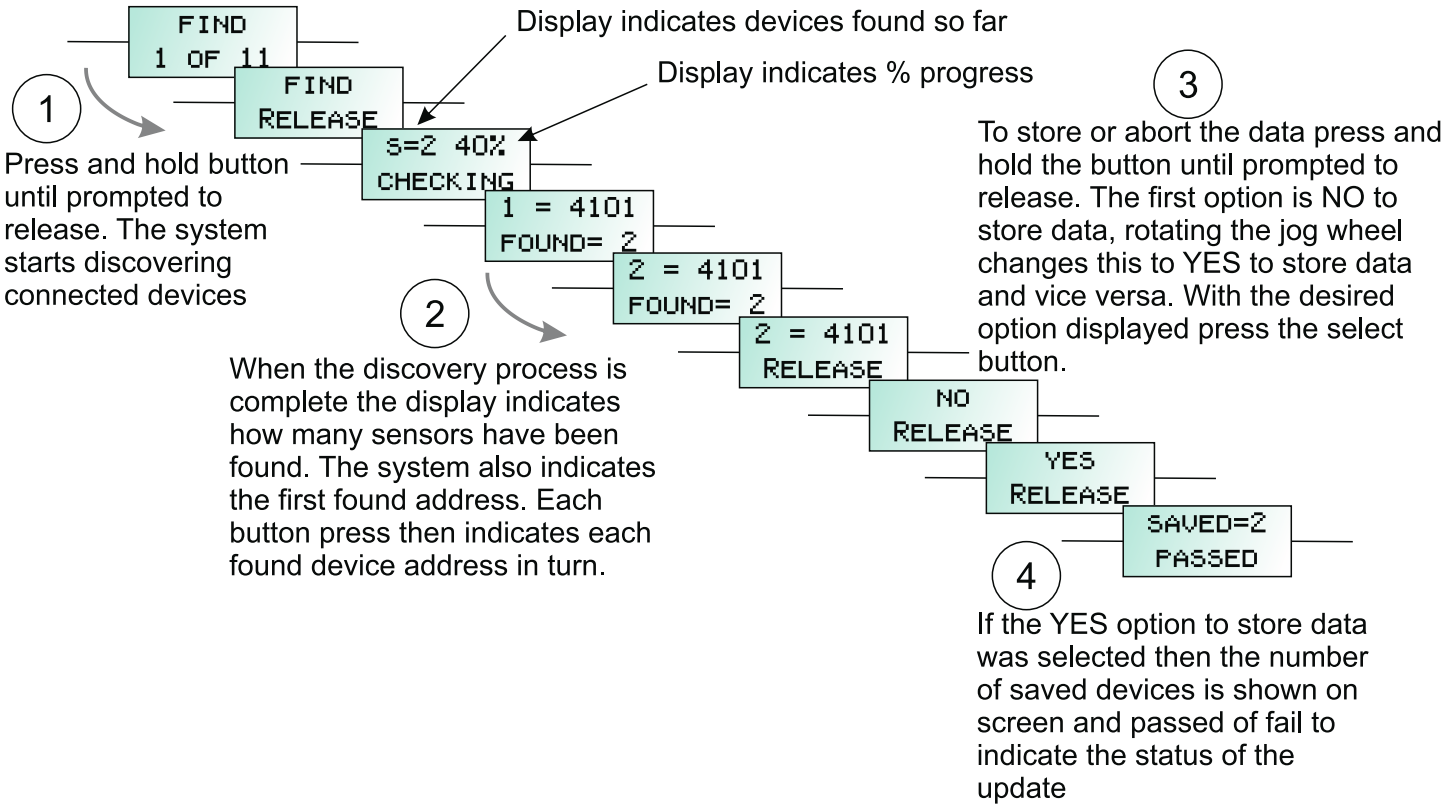
3. Test using zero and calibration gases

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 11) 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-640 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-640 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:

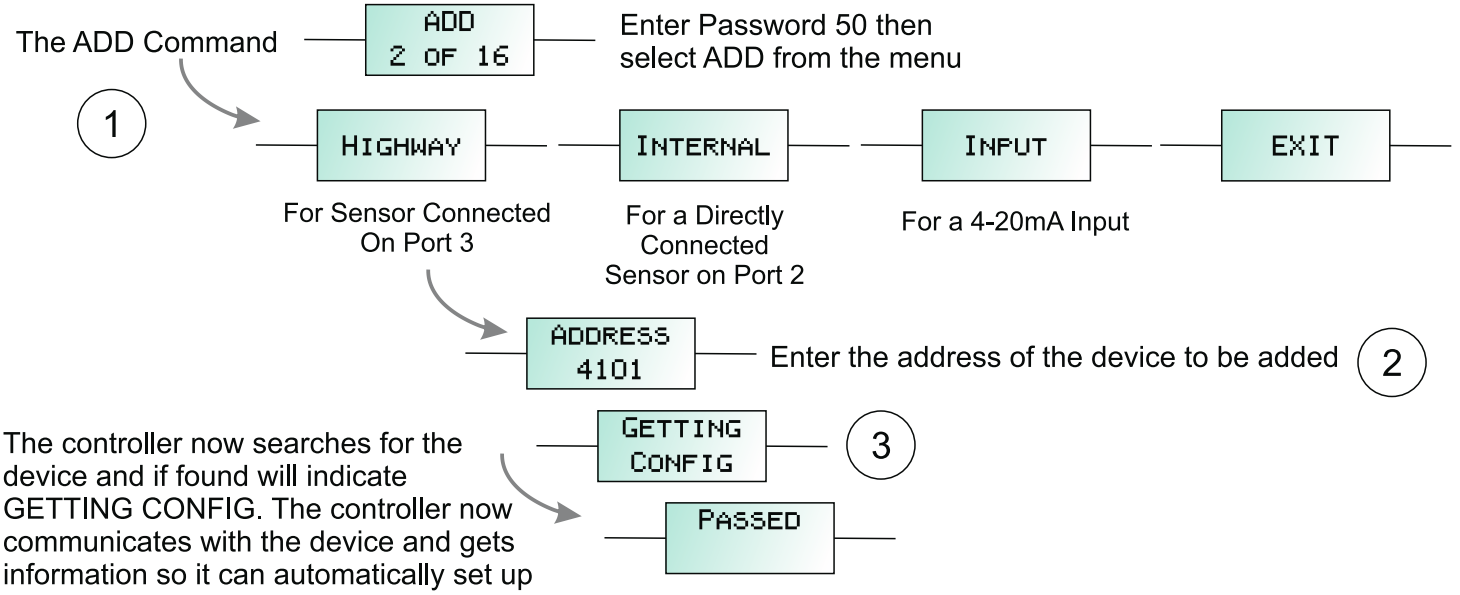
Notes

Sequence to ADD a sensor to an existing setup

If you need to add another sensor to an existing controller
Ensure the controller is not indicating any faults and communicates correctly to existing devices, the process would be as follows:

1. Ensure the device is correctly wired to the data highway.
2. Use the ADD (50 Password Menu) command to discover the new sensor.
3. Set up the required alarm levels and relay actions
4. Test using zero and calibration gases

The following dialogues describe each function to use



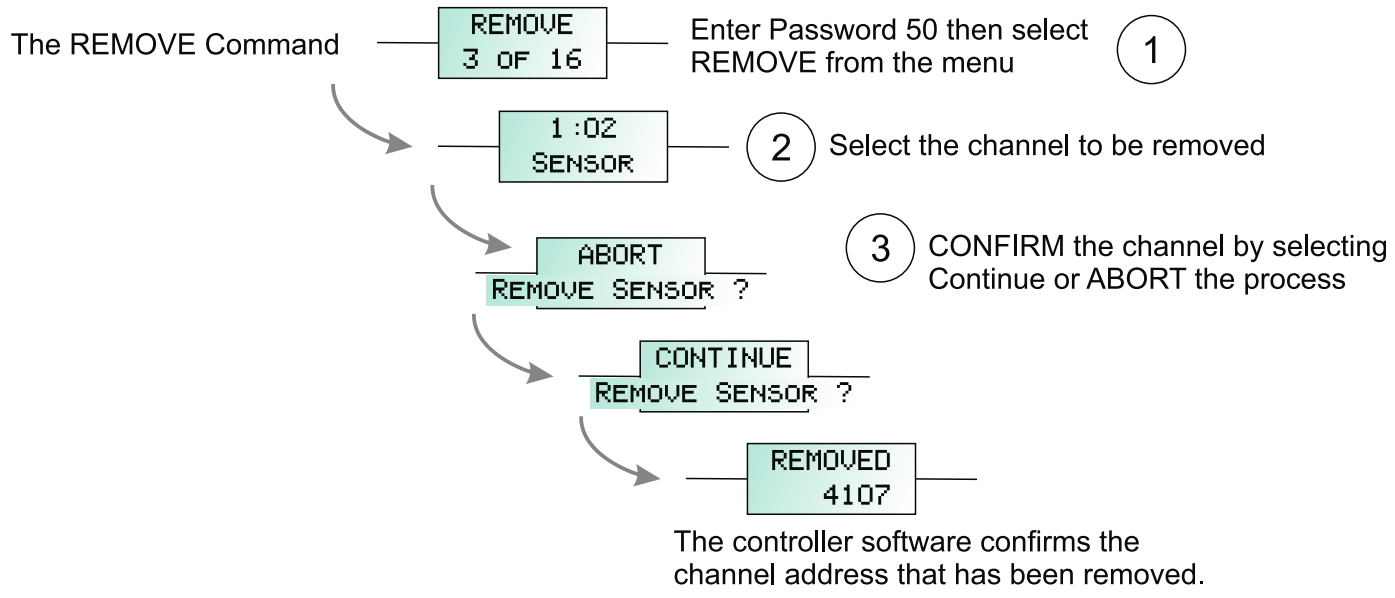
the new channel. Alarm levels will be automatically set to 20 and 50 % of the range of the newly discovered sensor, this can be ammended later.

The internal sensors use special “Reserved” addresses:

- 4195 = mA1
- 4196 = mA2
- 4197 = ESTOP
- 4198 = FIRE
- 4199 = KEY

FIND will not look for these addresses by default, and they should not be used in a T640 system. Cal and Zero will also not work on addresses 4197 - 4199.If one if these inputs is removed using the REMOVE menu item, the input’s flag is removed so FIND will not find it again.

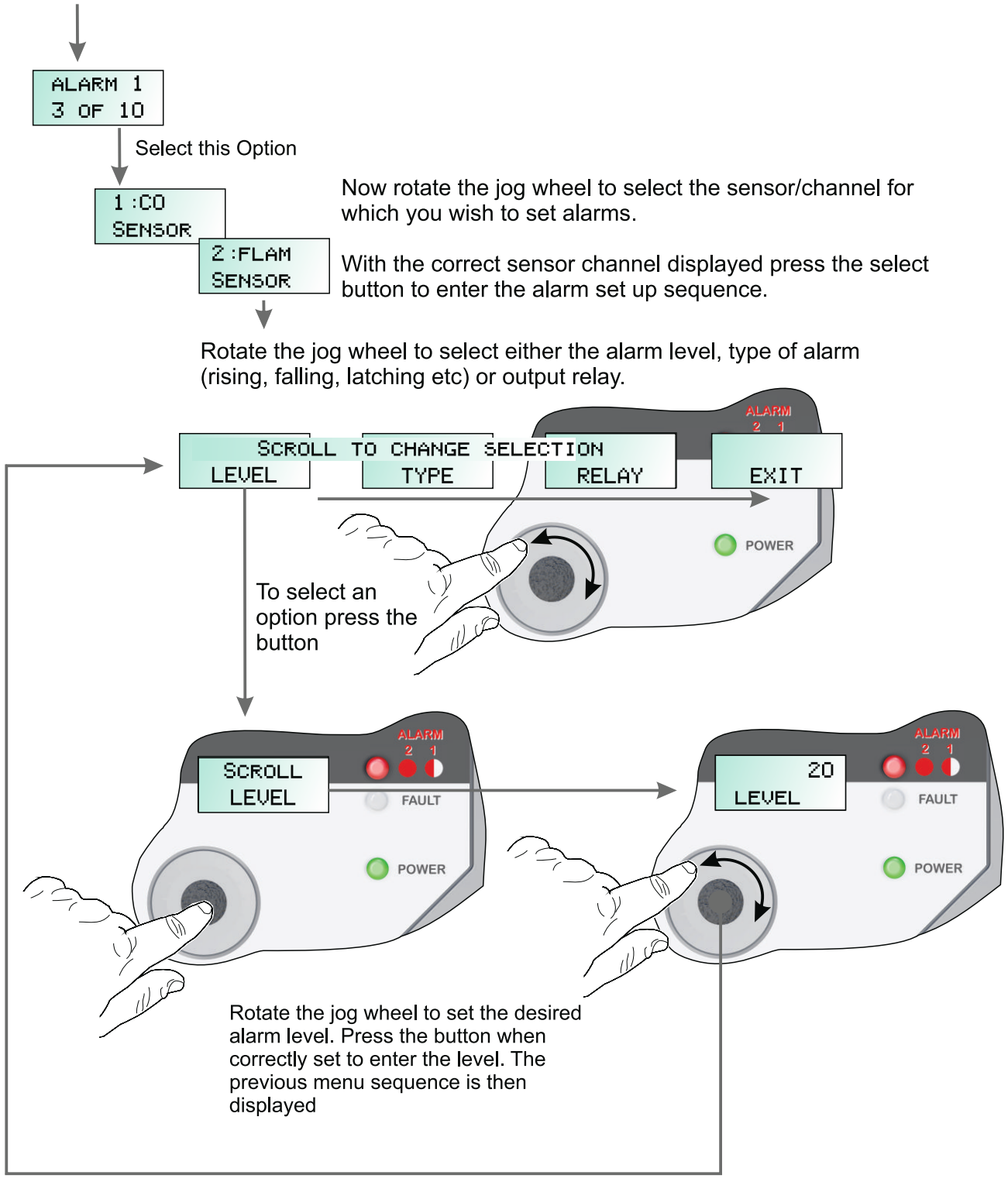
Sequence to REMOVE a sensor from an existing setup



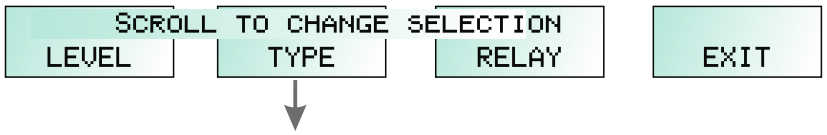
Alarm Level Set Up

ALARM 1 3 OF 15	ALARM 2 4 OF 15	ALARM 3 5 OF 15	ALARM 3 6 OF 15

As previously described enter password mode and enter password 100 to enter the user menu. Rotate the jog wheel until either menu 3,4,5 or 6 is displayed and press the select button. Note the alarm function of relay 3 can be preset as a fault relay or another alarm relay. Dependant on this setting determines how many alarm relay setup options are present The set up sequence for the alarm level selected is as follows:



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



To select an option rotate the jog wheel and press the selection button to select the required option

Top line indicates “select alarm type” Rotate the jog wheel to select the desired alarm type option. Press the selection button to select.



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.

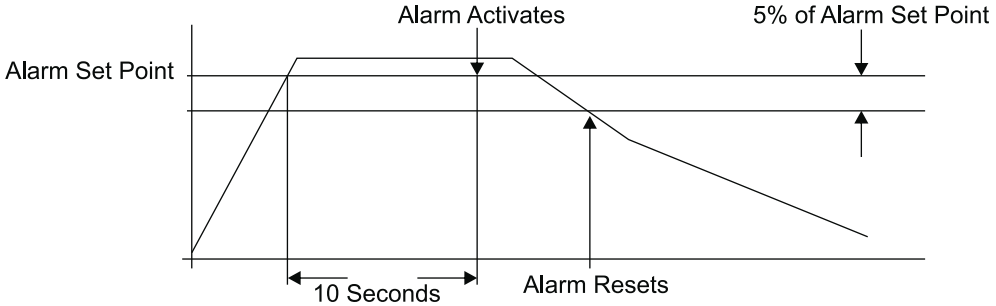
Press and hold until prompted to release to select this option.

Falling Alarm

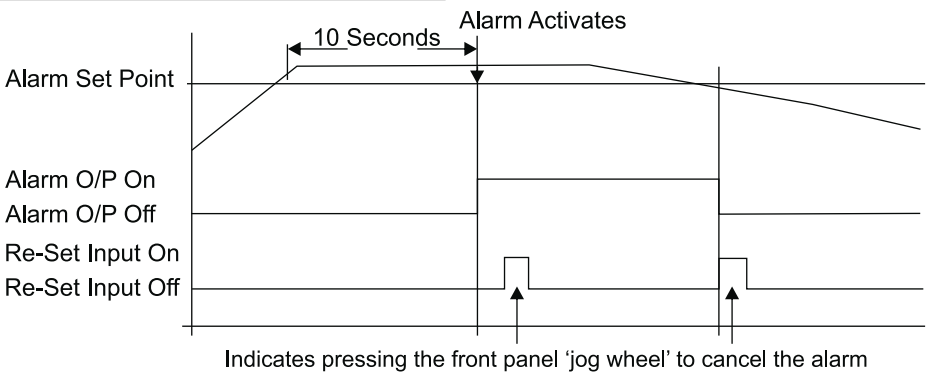
Falling alarms will automatically reset once the gas level rises above the alarm threshold. This type of alarm is typically used in control applications where action is required in response to falling gas level (typical in Oxygen deficiency applications).

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

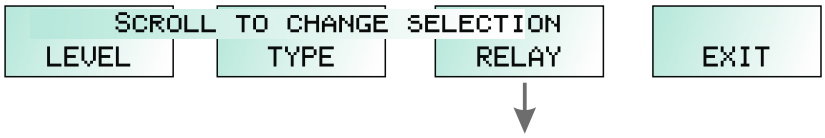
Rising and Falling Non Latching Alarms



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 rotate the jog wheel and press the selection button to select the required option in this case RELAY

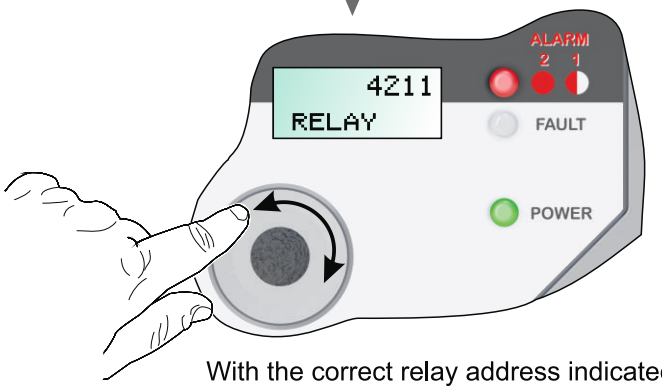


The display now changes to indicate the relay address that will be activated when the alarm level previously set is exceeded.

Rotate the jog wheel to select the desired relay address

Relay address numbers 1,2 and 3 are physically on the control panel.

additional external addressable relays will have numbers starting from 4200

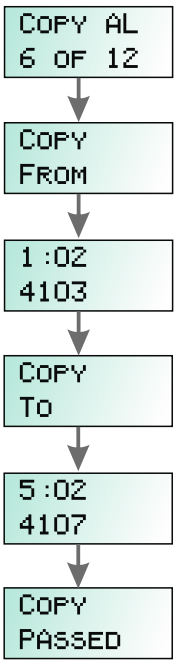


With the correct relay address indicated press the select button to enter and return to the main alarm menu.

COPY Alarm setup

Where channels of the same gas type are required to have the same alarm set up, this can be copied from one existing channel to another as follows.

Enter 100 when prompted as a password and select COPY AL



Select which channel has the alarm setup from which to copy

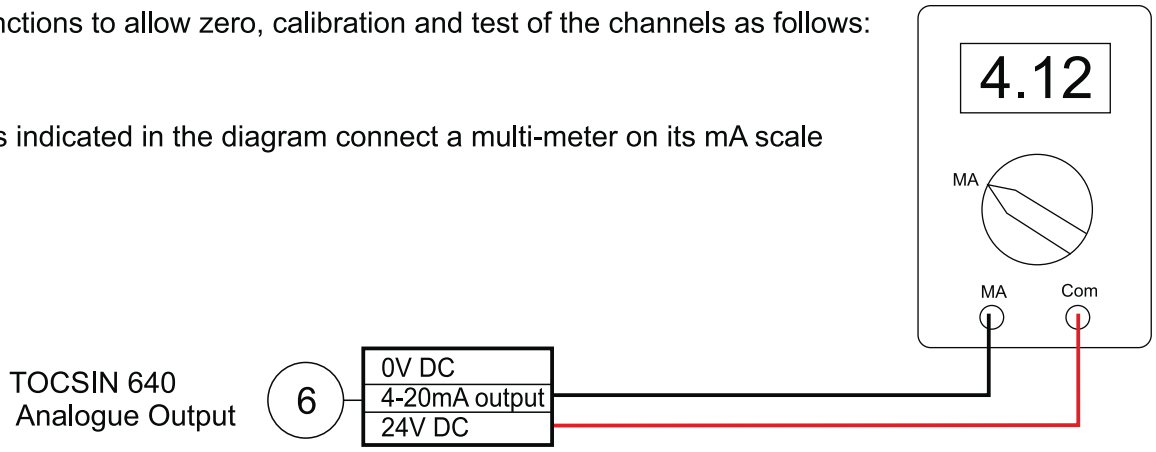
Select which channel to copy the alarm setup to. Note that the range and gas type must match the channel you are copying from

CALIBRATIONS

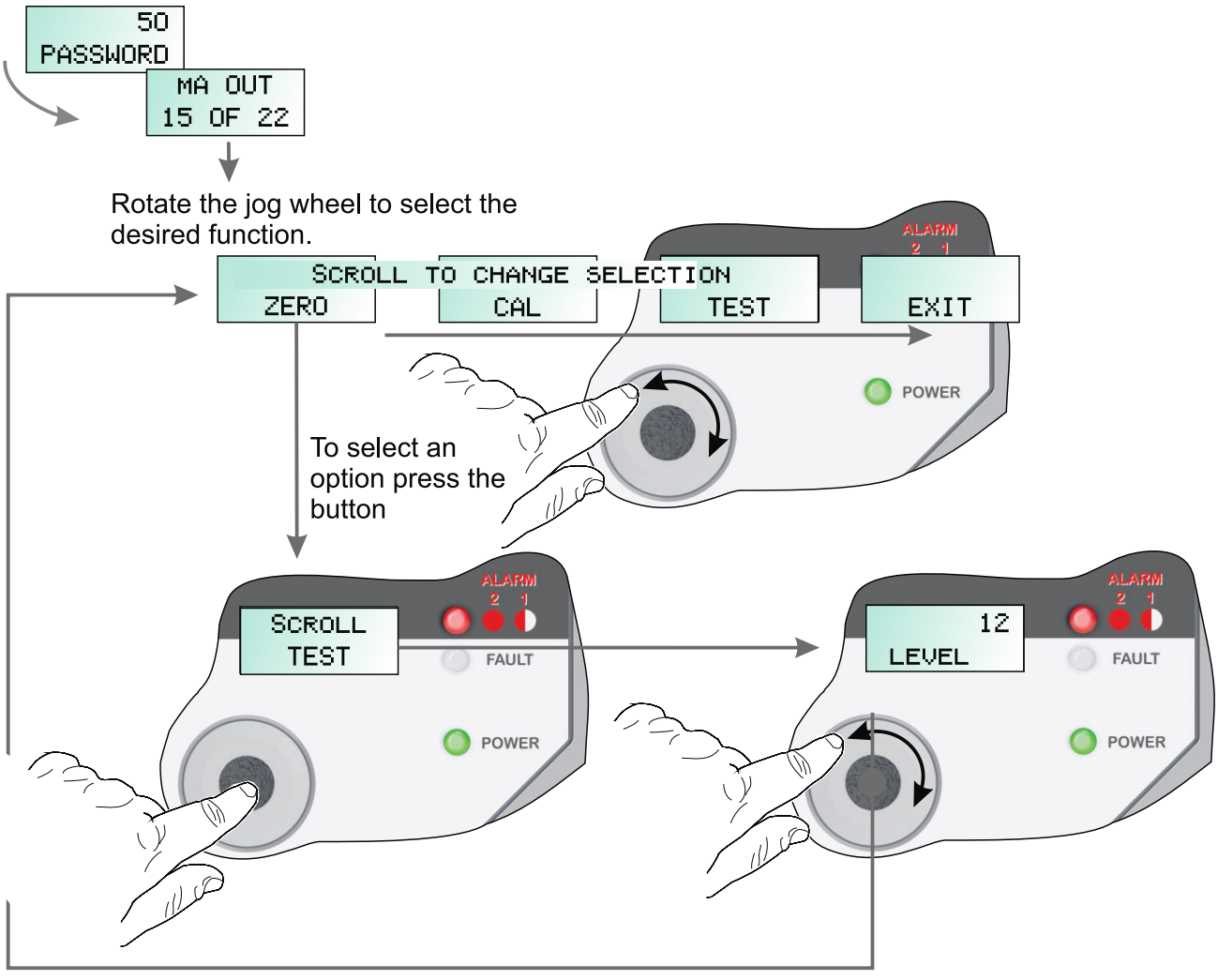
6 4-20mA Output Calibration and Test

The TOCSIN 640 can have its port (6) set up as a 4-20mA analogue output port. The port can be set to track a desired channel or be the highest output channel, this option being typical for ventilation applications where all connected detector ranges are the same. Normally this is factory pre-configured and pre-calibrated. It should not normally be necessary to calibrate this channel. The system has functions to allow zero, calibration and test of the channels as follows:

As indicated in the diagram connect a multi-meter on its mA scale

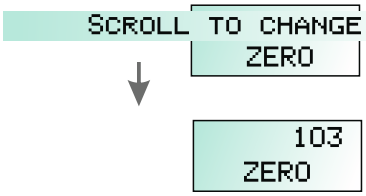


As previously described enter password mode and enter password 50 to enter the engineer menu.



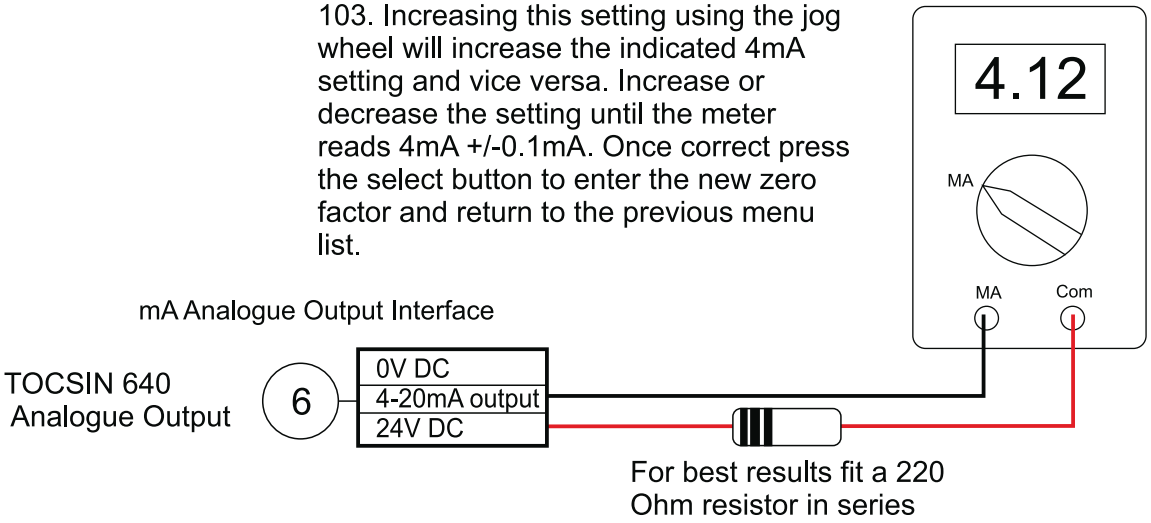
Rotate the jog wheel to set the desired alarm level. Press the button when correctly set to enter the level. The previous menu sequence is then displayed

4-20mA Output Zero Function



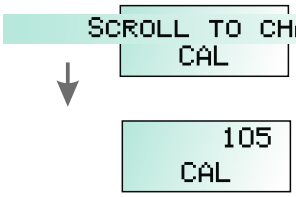
From the menu previously described select the zero option.

The display now shows the current 'setting' for the channel zero, in this case 103. Increasing this setting using the jog wheel will increase the indicated 4mA setting and vice versa. Increase or decrease the setting until the meter reads 4mA +/-0.1mA. Once correct press the select button to enter the new zero factor and return to the previous menu list.



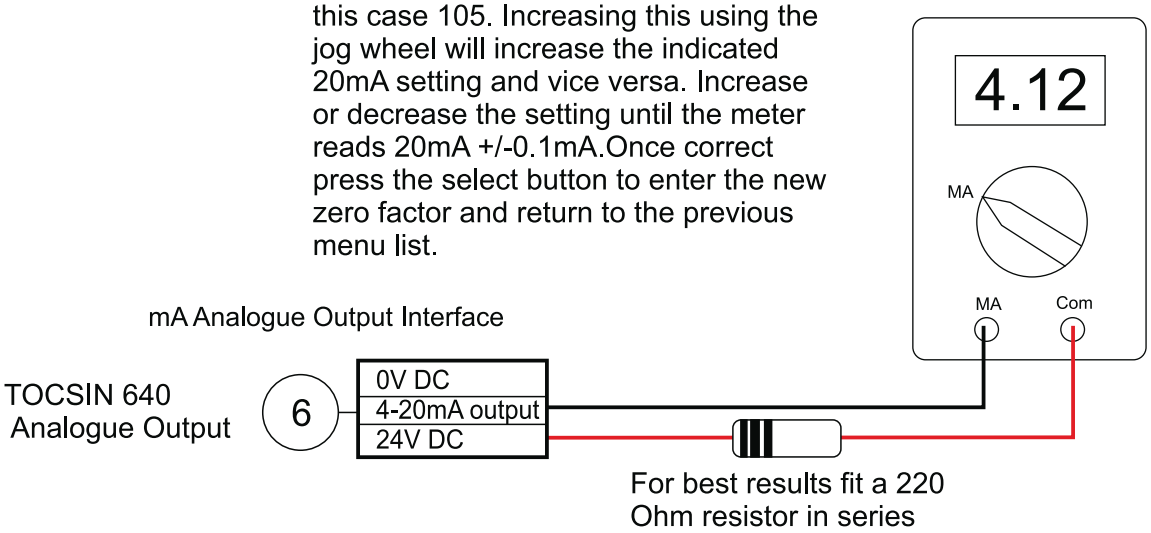
For best results fit a 220 Ohm resistor in series

4-20mA Cal Function



From the menu previously described select the CAL option.

The display now shows the current 'setting' for the channel Calibration, in this case 105. Increasing this using the jog wheel will increase the indicated 20mA setting and vice versa. Increase or decrease the setting until the meter reads 20mA +/-0.1mA.Once correct press the select button to enter the new zero factor and return to the previous menu list.



For best results fit a 220 Ohm resistor in series

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

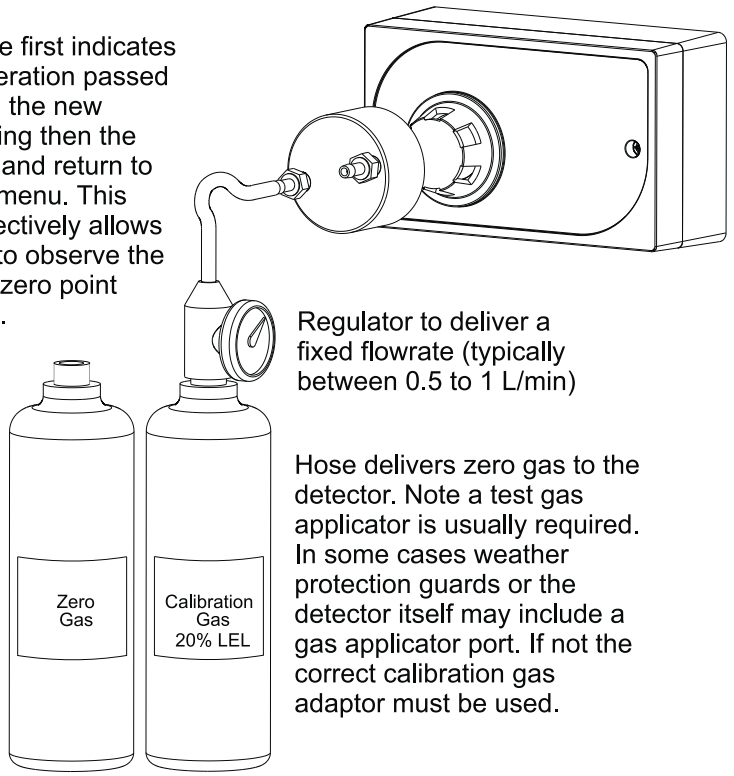
```
ZERO
1 OF 10
```

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.

This sequence first indicates if the zero operation passed or failed, then the new detector reading then the option to end and return to the engineer menu. This sequence effectively allows the engineer to observe the new detector zero point before exiting.



Regulator to deliver a fixed flowrate (typically between 0.5 to 1 L/min)

Hose delivers zero gas to the detector. Note a test gas applicator is usually required. In some cases weather protection guards or the detector itself may include a gas applicator port. If not the correct calibration gas adaptor must be used.

Bottled Nitrogen or Instrument grade zero air

```
0  PPM
CONTINUE
```

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

```
ZERO
PASSED
```

The reading is now displayed so the result of the zero request can be observed.

```
0 PPM
CLICK TO
```

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.

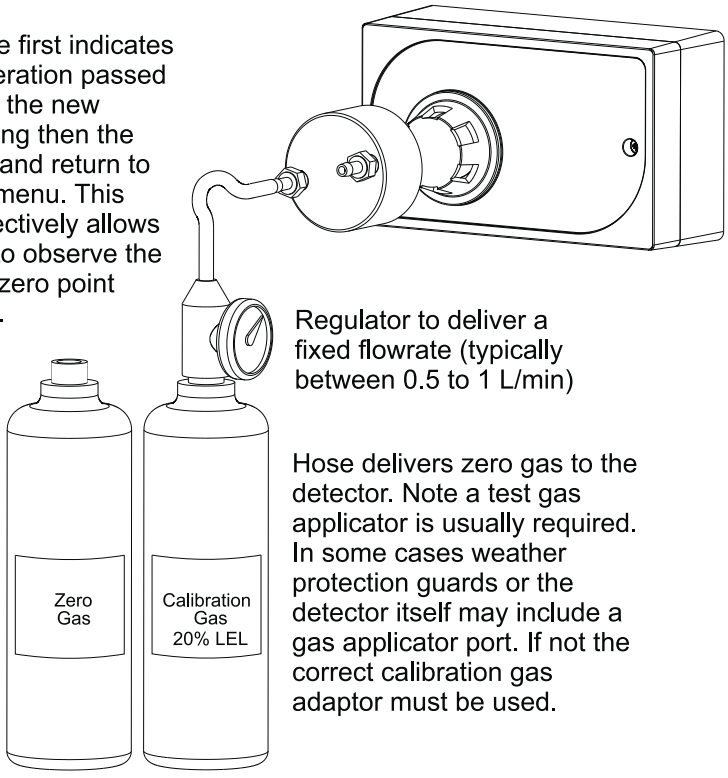
```
55  PPM
CONTINUE
```

```
  CAL
PASSED
```

```
50 PPM
CLICK TO
```

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

This sequence first indicates if the zero operation passed or failed, then the new detector reading then the option to end and return to the engineer menu. This sequence effectively allows the engineer to observe the new detector zero point before exiting.



Regulator to deliver a fixed flowrate (typically between 0.5 to 1 L/min)

Hose delivers zero gas to the detector. Note a test gas applicator is usually required. In some cases weather protection guards or the detector itself may include a gas applicator port. If not the correct calibration gas adaptor must be used.

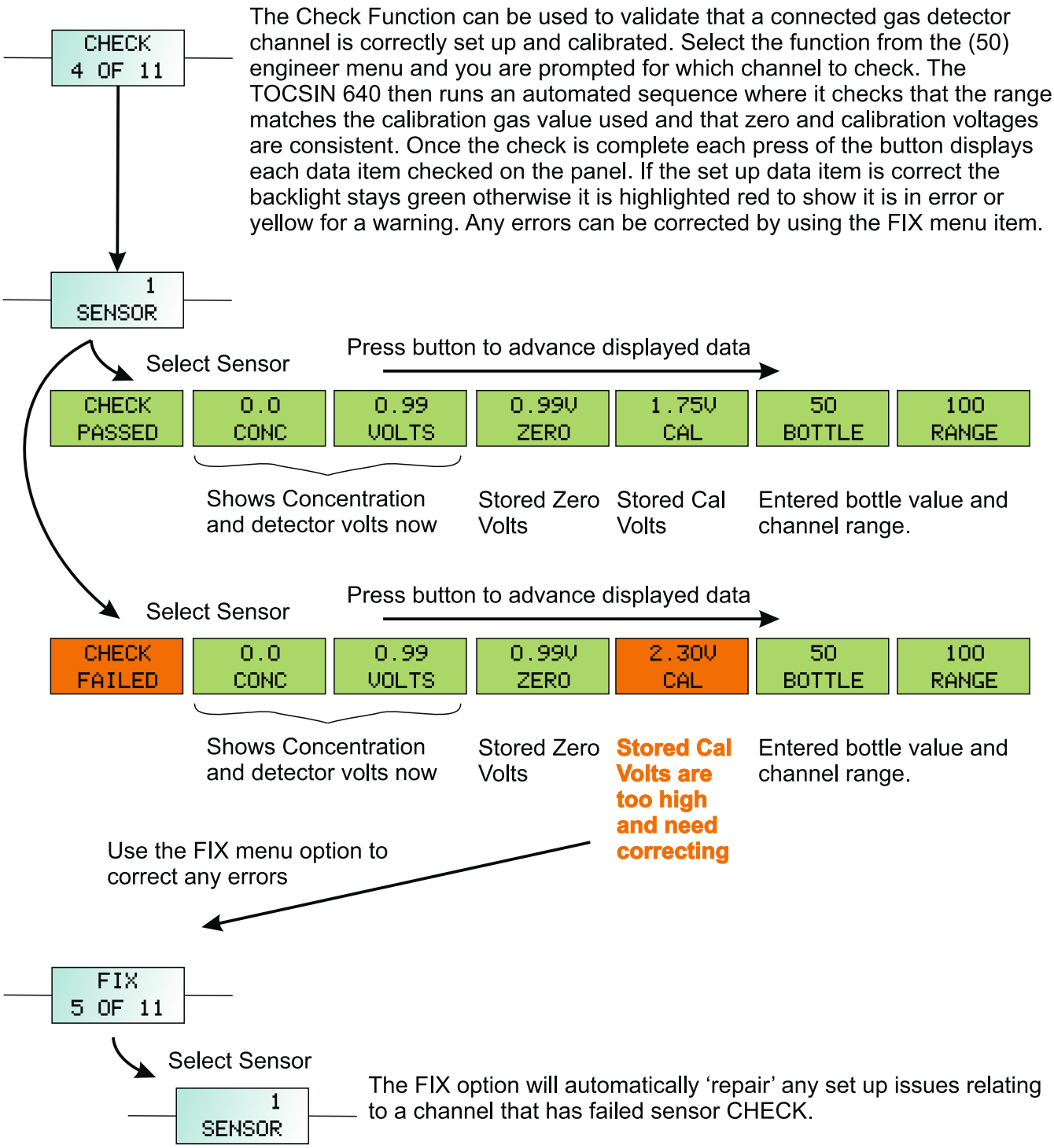
Bottled Nitrogen or Instrument grade zero air

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.

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 TOCSIN 640 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:

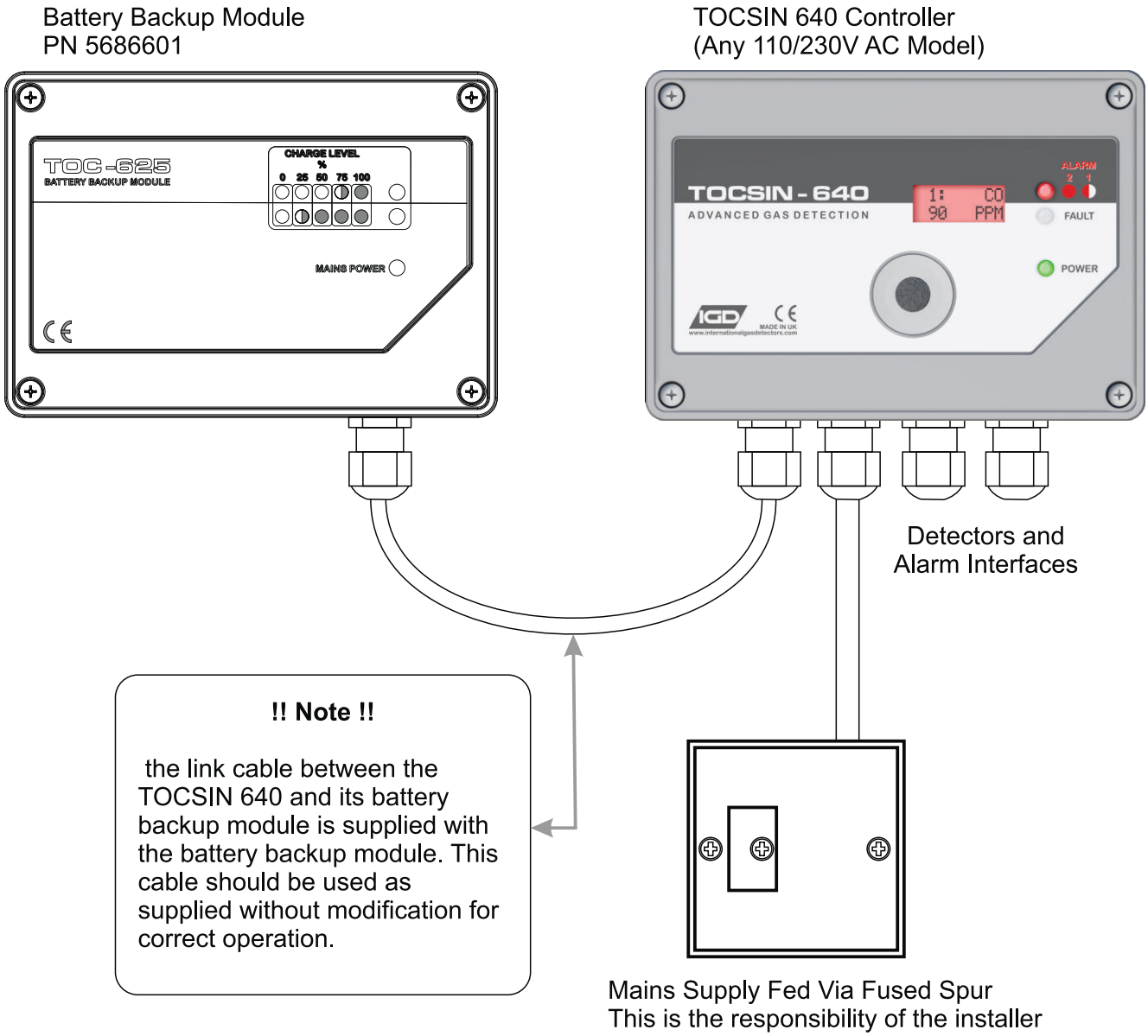
Number and type of detectors fitted to the panel

Battery age and condition

Accessories fitted to the main panel

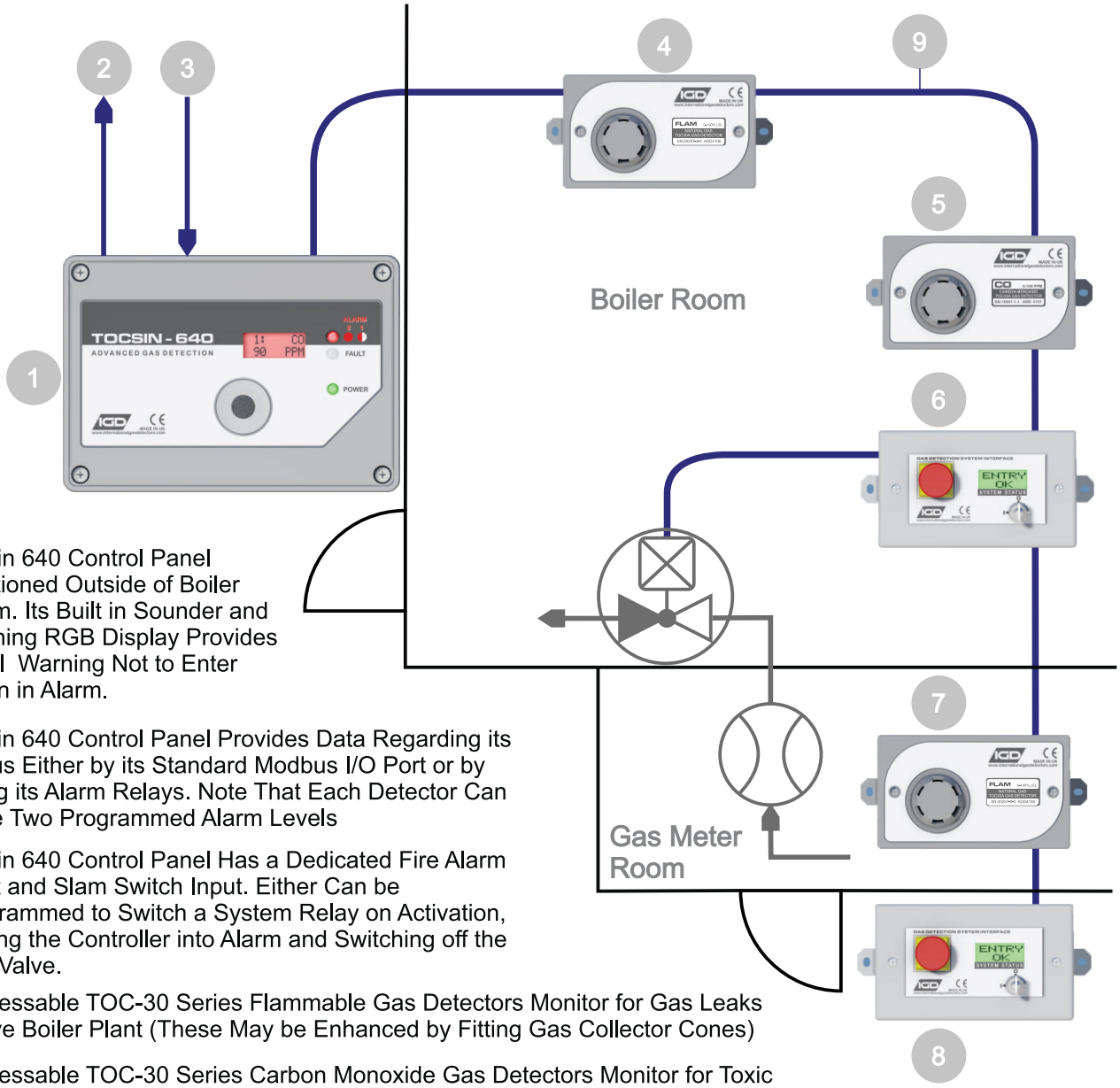
For full details refer to the TOC-625 Battery Backup Manual

The following diagram indicates a typical installation with this option.



eg

TOCSIN 640 & Boiler Plant Rooms



1 Tocsin 640 Control Panel Positioned Outside of Boiler Room. Its Built in Sounder and Flashing RGB Display Provides Local Warning Not to Enter When in Alarm.

2 Tocsin 640 Control Panel Provides Data Regarding its Status Either by its Standard Modbus I/O Port or by Using its Alarm Relays. Note That Each Detector Can Have Two Programmed Alarm Levels

3 Tocsin 640 Control Panel Has a Dedicated Fire Alarm Input and Slam Switch Input. Either Can be Programmed to Switch a System Relay on Activation, Putting the Controller into Alarm and Switching off the Gas Valve.

4 Addressable TOC-30 Series Flammable Gas Detectors Monitor for Gas Leaks Above Boiler Plant (These May be Enhanced by Fitting Gas Collector Cones)

5 Addressable TOC-30 Series Carbon Monoxide Gas Detectors Monitor for Toxic Gas Leaks From Flues or Leaking Products of Combustion.

6 Addressable TOC-30 Series Annunciators Provide Local Alarm, Both Audible and Visual for Anyone in the Plant Room. The Integral Slam Switch Allows Fast Integrated Shut Down And Alarm in an Emergency. The Built in Relay on the TOC-30 Annunciator Can be Used to Control the Gas Feed Valve.

7 Addressable TOC-30 Series Flammable Gas Detectors Monitor for Gas Leaks Above Gas Meters (These May be Enhanced by Fitting Gas Collector Cones)

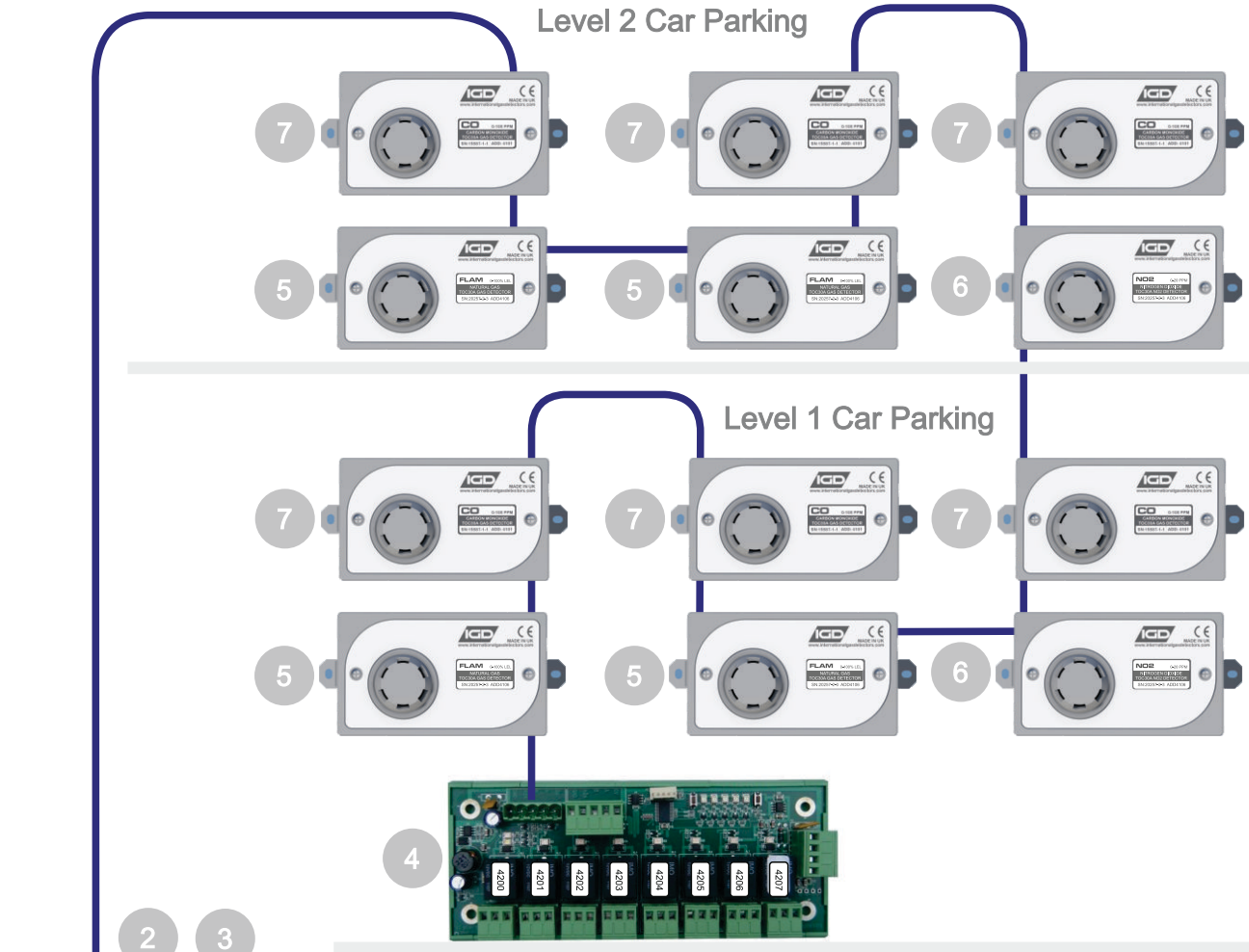
8 Addressable TOC-30 Series Annunciators Provide Local Alarm, Both Audible and Visual for Anyone about to enter the gas meter room. The RGB display is green with an ‘OK TO ENTER’ message when all is well and flashing red warning ‘GAS ALERT’ when leaks are detected.

9 One 4 Core FP200 or CY Style Cable Connects All System Components, Fast to Install Efficient in Operation

Addendum 4

eg

TOCSIN 640 For Underground Car Parks



Tocsin 640 Controller Addressably Connected to a Network of Toxic and Flammable Gas Detectors in an Underground Car Park. Each Cable Run (Highway) Can Support up to 32 Detectors. 1

Ventilation Fan Speeds Controlled Directly From the Tocsin 640 Controller. The 640 has 3 relay sbuilt in available for control functios. Additional relays can be added (see 4) 2

Tocsin 640 Control Panel Provides Data Regarding its Status using its Standard Modbus I/O Port to an Overall BMS Sytstem 3

Local Relays can be added where required onto the addressable highway to perform local control functions, in this instance fan speed control. 4

Addressable TOC-30 Series Flammable Gas Detectors Monitor at Low Level For LPG Fuel Leaks, an Increasing Safety Consideration as LPG Finds Increased use as an Alternative fuel 5

Addressable TOC-30 Series Toxic NO2 Gas Detectors Monitor Pollution Levels From Diesel Fuelled Vehicles, Particularly at Delivery Vehicle Loading Bays. 6

Addressable TOC-30 Series Toxic Carbon Monoxide Gas Detectors Monitor Pollution Levels From Vehicles 7

4 Core FP200 or CY Style Cable Highways Connects All System Components Quickly Networking Everything Together. Additions or Changes to the System can be Quickly Accommodated. Alert Levels can be Easily Adjusted to Ensure Good Air Quality Whilst Minimising Energy Usage.

PFG 30

Multi-Channel Sensor Controller
Gas Pressure & Air Flow Proving



Detail Specific to PGF-30

Hold Key Card Over Jog Wheel Area to Lock or Un-lock the Controller Ready For Use

Note the display indicates the Key Code required which is marked on the card



1

IGD Gas Proving Controllers are based on our Proven Gas Detection Technology.

Simple Clear Indications With a Multi-Colour LCD Display Advises in Plain English What to do and What Actions to Take

PRESS TO START

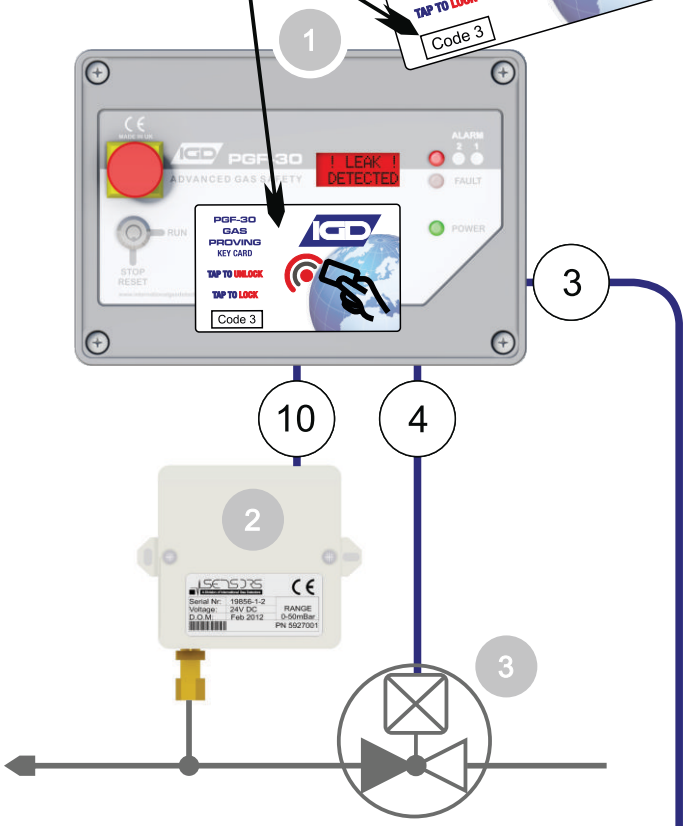
TESTING 19 MB

! LEAK ! DETECTED

CHECK OUTLETS

PRESS TO START

E-STOP PRESSED



2

Direct Gas Pressure Measurement

IGD Gas Proving Systems Directly Measure the Gas Pressure Downstream of the Supply Valve. Doing this allows leak testing based on decay rate and alarming on low running pressure. This is the only technique capable of doing this.

3

The gas Supply Valve is Directly Controlled From the PGF-30 and will shut down, on:

Emergency Stop Activation,
Key Switch Removal,
Failure to Prove,
Low Running Pressure,
Input From Fire Alarm.

Optionally by Fitting Extra Sensor Options: Shut Down on:
Gas Leak Detectors, CO2, CO,
Ventilation Flow Failure and More.

Add as Required on One Addressable Cable



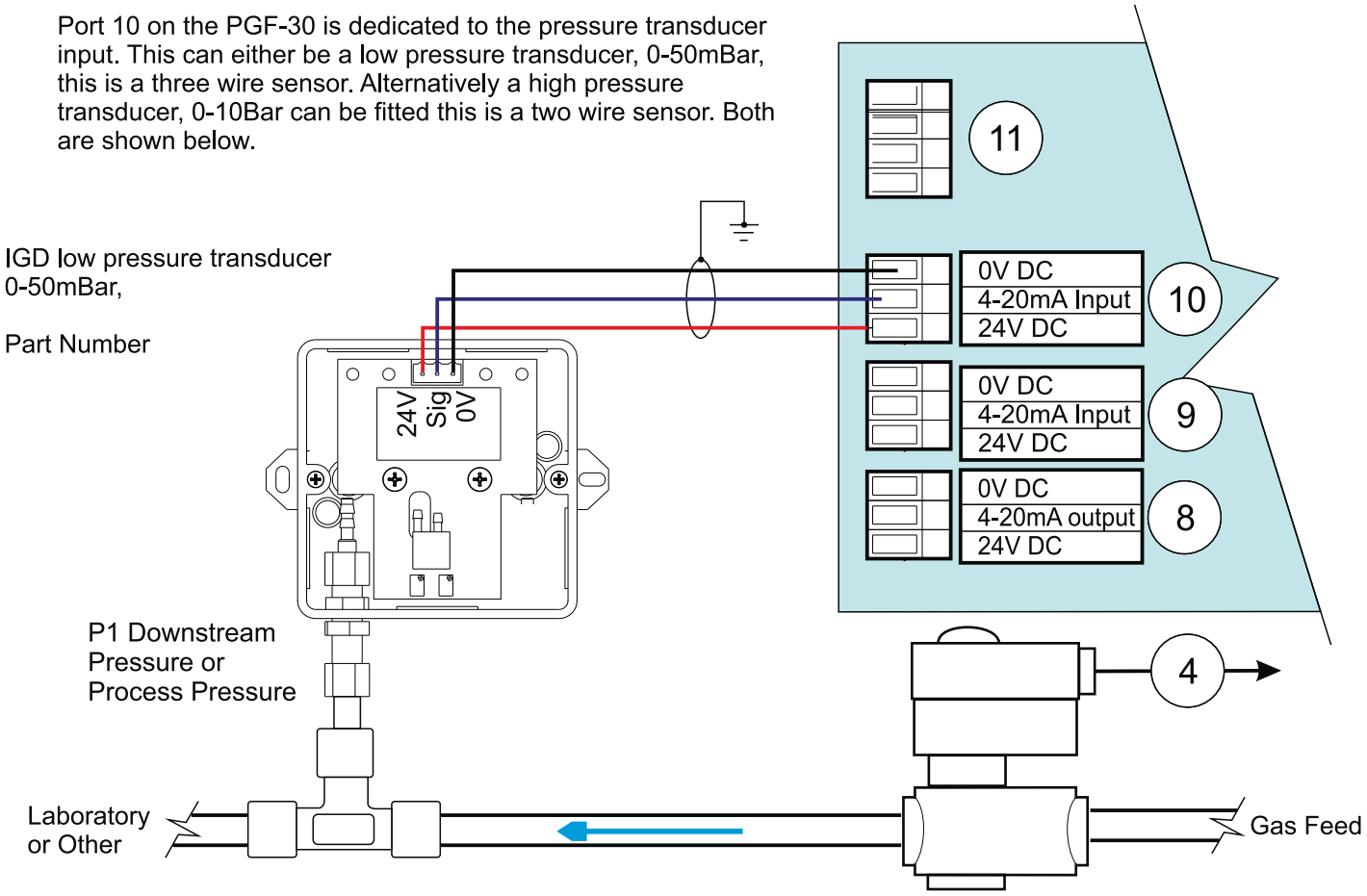
Add CO2 Measurement As Required by Building Bulletin-100

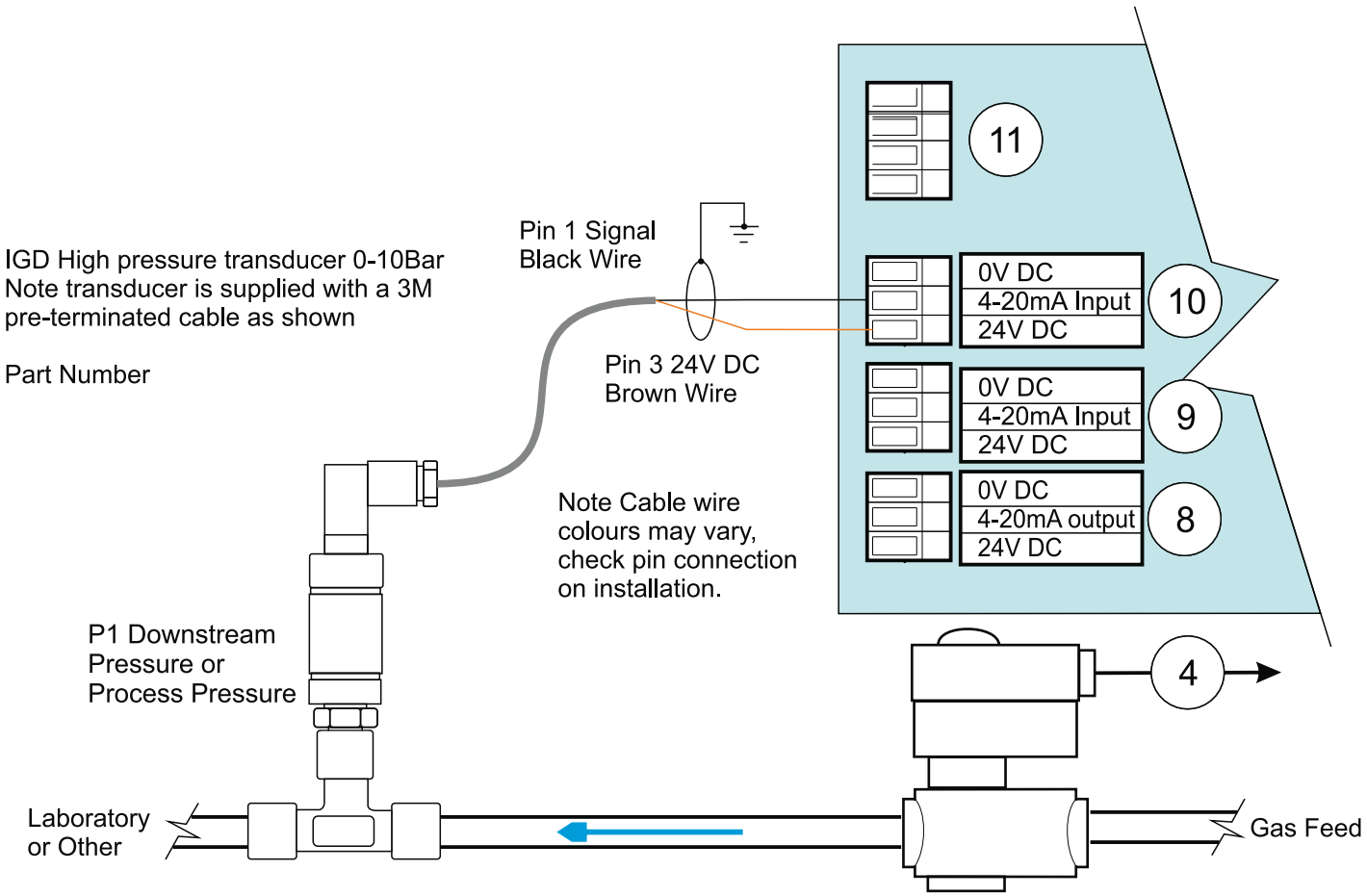
Add Flammable Gas Detectors or Toxic Gas Detectors For Additional Protection When Using Gas in Confined Spaces, Don't Just Rely on Ventilation Rates.

Add Intelligent Annunciators For Door Entry Control in Emergencies - OK to Enter Alarm - Gas Leak. These Have Sounders and Multi-Colour Flashing Displays on Alarm. Available With or without E-Stops.

10 PGF-30 Gas Pressure Transducer Input Port (Low Pressure 0-50mBar Sensors)

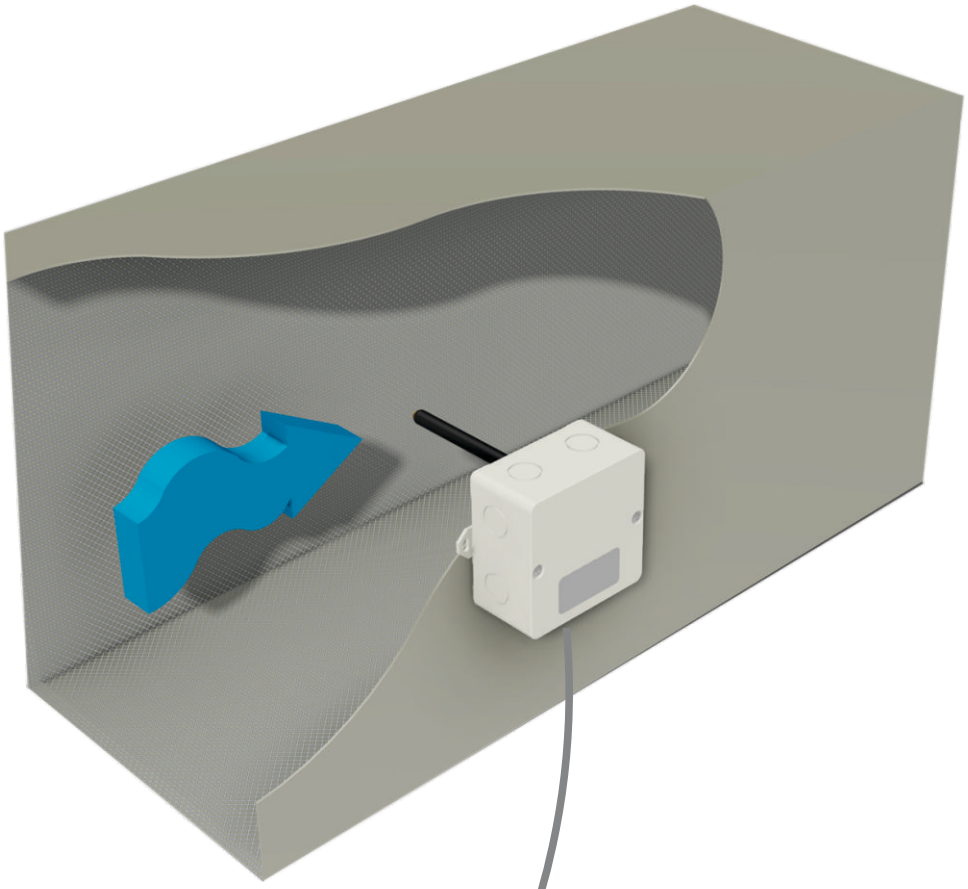
Port 10 on the PGF-30 is dedicated to the pressure transducer input. This can either be a low pressure transducer, 0-50mBar, this is a three wire sensor. Alternatively a high pressure transducer, 0-10Bar can be fitted this is a two wire sensor. Both are shown below.

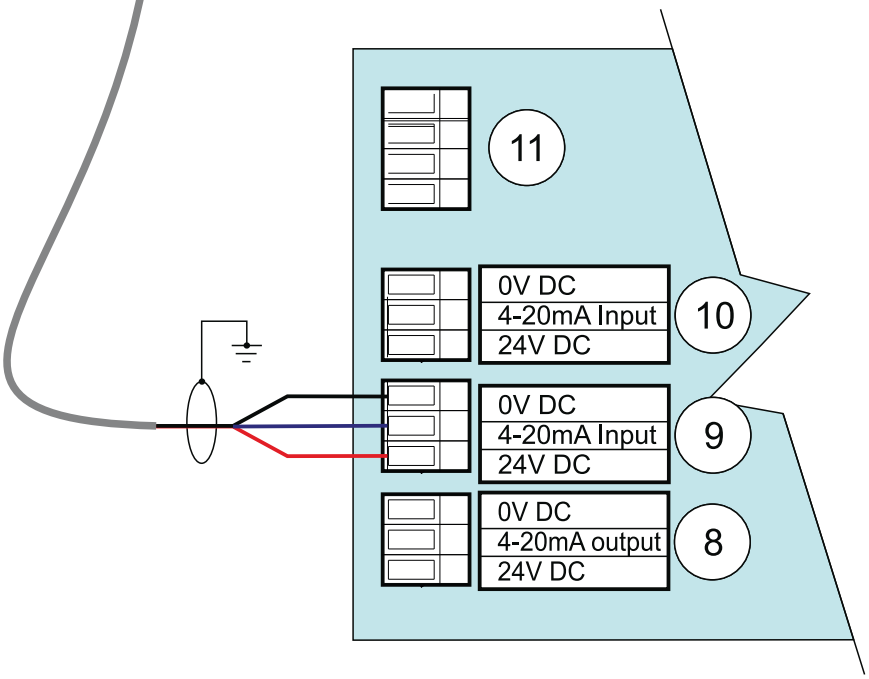




9 PGF-30 Flow Transducer Port

PGF-30 can be fitted with an air flow transducer. This then forms part of the testing cycle such that ventilation air flow must be initiated before the PGF-30 will start the gas proving cycle. This is a common requirement in many laboratories and commercial kitchens. The airflow probe has both analogue and addressable interfaces. Either can be used when wiring the system. For addressable connection refer to page 5 port 3. The following diagram illustrates connection of the analogue interface. Note that the flow probe should be located in a straight section of pipe. For best performance locate 3 duct diameters away from bends, baffles etc.





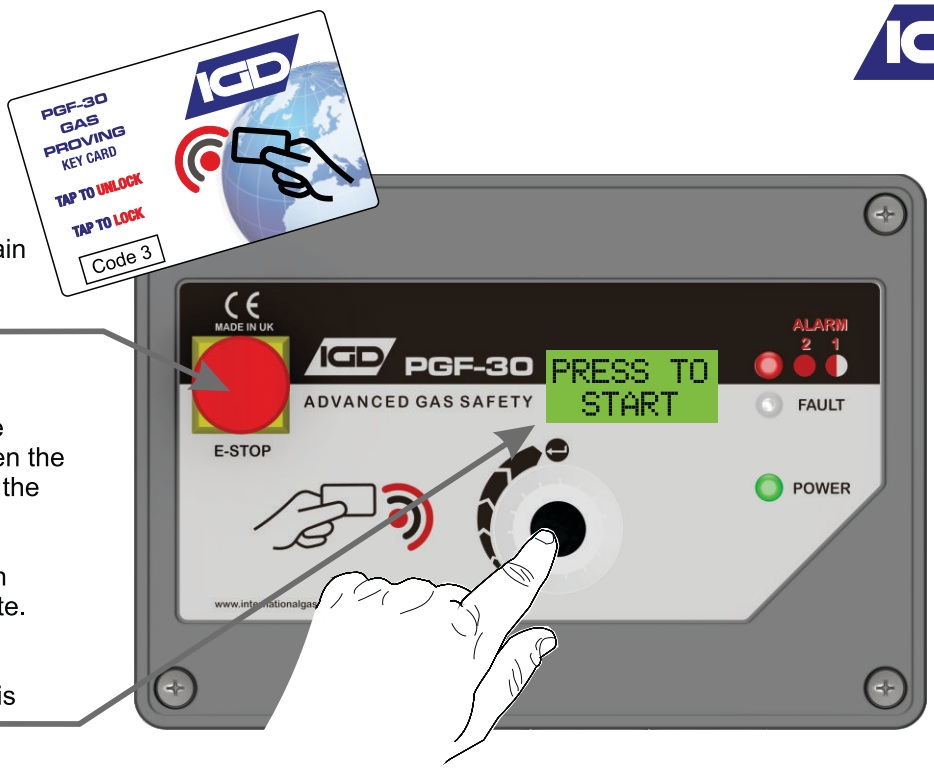
The air flow sensor must be enabled in software before it can be used.

Once enabled the airflow must be detected (switch on and running) before the proving cycle can commence.

Day to Day Operation

To Initiate Gas Supply

Use the Key Card to Unlock the controller
Note if the controller is already unlocked then using the card again will lock the controller



Ensure the E-Stop is pulled 'out'

If an airflow sensor is fitted to the associated ventilation system then the airflow must be operating before the proving cycle will commence.

If there are external E-Stops then these must be in the Inactive state.

If the system is connected to a fire alarm then this must also not be activated.

If gas detection is fitted then it must be in its 'safe' state i.e no gas detected.

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.

With 'Press to Start' indicated press the selection button to commence the proving cycle. The display will indicated each stage of the cycle as it takes place

PRESS TO START	
GASPULSE 0.5S	The gas supply solenoid is turned on briefly to introduce a small amount of gas into the system
CLOSING VALVE	The valve closes
PRESSURE TEST	A test pressure is established. This test pressure must be maintained for the set duration. Failure to do so will indicate a leak.
TESTING 20S 11MB	

TEST PASSED → GAS ON → SYSTEM RUNNING → 1:PRESS 25MB → 2:FLOW 5M/S

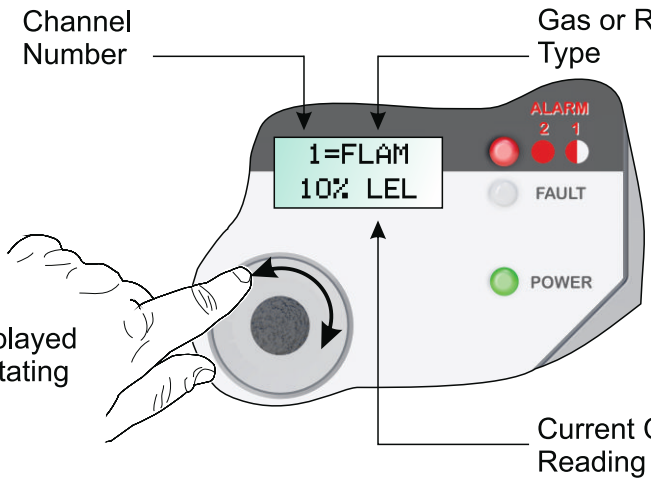
Once the gas supply has been proved and established the controller display cycles to show the system is running and the gas pressure. If a flow sensor is fitted to the ventilation system then the airflow is also shown. If gas detectors are fitted then the reading from each detector will also be sequentially indicated.

Fault Messages

! LEAK ! DETECTED ↔ CHECK OUTLETS	If a gas leak is detected during proving these messages are displayed. Check that all gas outlets are closed and repeat proving. If this does not rectify the problem then call a qualified gas engineer.
E-STOP PRESSED	A connected E-Stop has been pressed. These must be reset to continue
SYSTEM OFF ↔ USE KEY TO START	The key switch is in the off position. Switch the key switch to the on position to commence the proving cycle.
4:= CO2 4000PPM	A connected gas detector is in alarm. The channel number, detector type and reading is displayed. Evacuate and follow site procedure
FIRE !	The FIRE input has been triggered by a remote system, normally the fire alarm. Evacuate and follow site procedures.

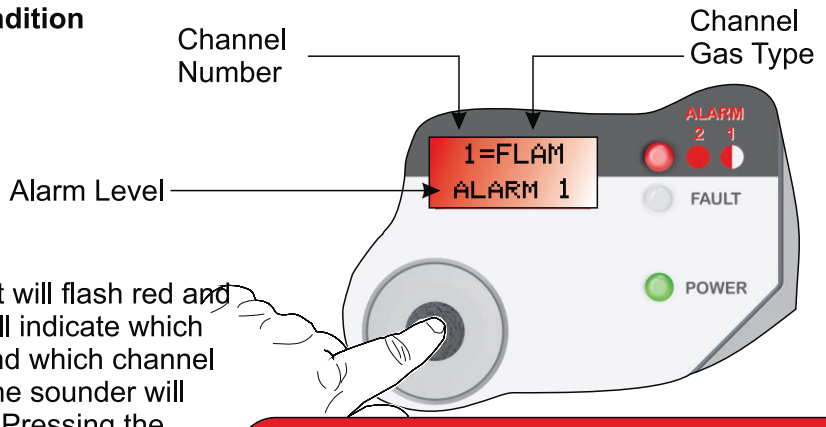
User Actions....Day to Day Operation....When Gas Detection is Fitted

The PGF30 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 until the option to commence gas proving is selected.



Each channel will be displayed in turn as indicated by rotating the jog wheel

In Alarm Condition



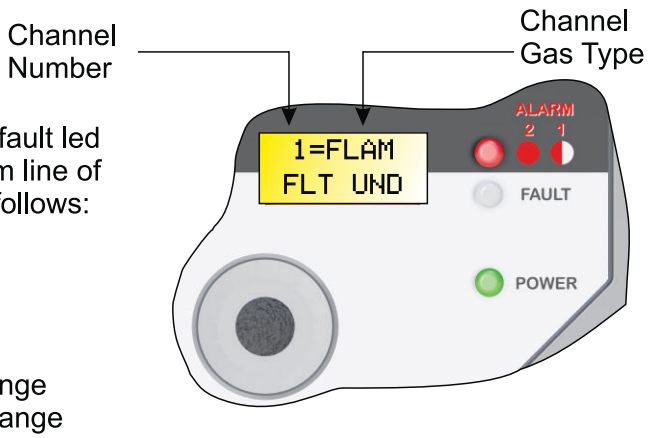
In alarm mode the RED alarm led will either be flashing for alarm level 1 or solid for alarm level 2. The bottom line of the display will indicate:

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

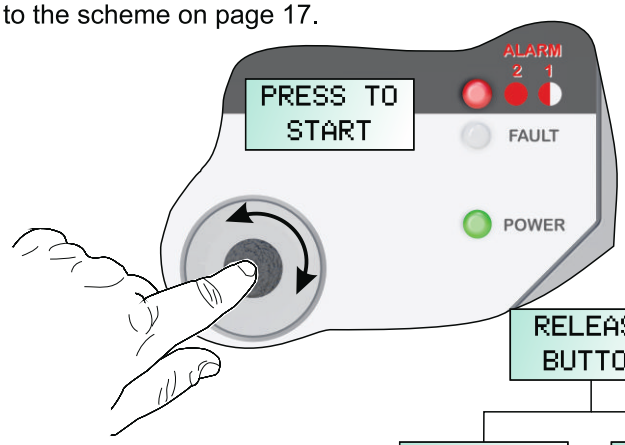
Master Key Operations



Day to day operation of the PGF-30 is initiated using a coded key card.

The setup menu system can only be accessed using a 'master' key card. This is indicated on the menu system layout on page 17

Once unlocked with a master keycard press and hold the jog wheel. Initially the display will show 'Press to start' after a short period you will be prompted to 'Release Button' You can then select either the Engineer or User Menu according to the scheme on page 17.



Example below shows the sequence to set up in and out of operating times for the gas proving function.

RELEASE BUTTON

SELECT ENGINEER

SELECT USER

Rotate jog wheel to select Menu, Press button to select

SET TIME

SCROLL TO CHANGE SELECTION HOUR

SCROLL TO CHANGE SELECTION MINUTE

Use to set correct time on the control panel.
Date amendment is a similar procedure by selecting the date option from the menu

SCROLL TO CHANGE SELECTION FROM/TO

Use to limit what times the gas proving panel can be operated (in and out of hours function)

SCROLL TO CHANGE SELECTION FROM

Set a 'From' time using this option

SCROLL TO CHANGE SELECTION TO

Set a 'To' time using this option

SCROLL TO CHANGE SELECTION DAYS

Enable which days of the week for which the gas proving panel can be active

MONDAY ENABLED

Use the scroll wheel to Enable or Disable each day of the week. Controller can then only be used to prove gas lines for 'Enabled' days of the week

Once set the proving panel can only be used between the times set and the days of the week that have been enabled

Addendum 3

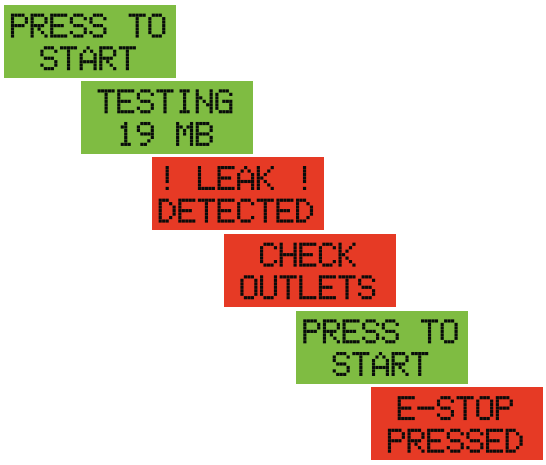
Gas Proving Systems From IGD

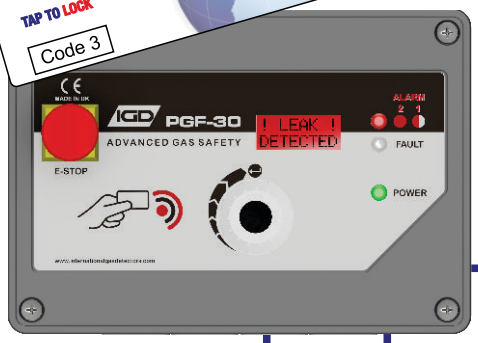


1

IGD Gas Proving Controllers are based on our Proven Gas Detection Technology.

Simple Clear Indications With a Multi-Colour LCD Display Advises in Plain English What to do and What Actions to Take

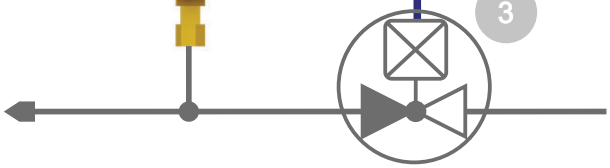




1



2



3

2

Direct Gas Pressure Measurement

IGD Gas Proving Systems Directly Measure the Gas Pressure Downstream of the Supply Valve. This is a huge Advantage Over Pressure Switch Based Systems.

- **Minimal Gas Introduced During System 'Proving'. PGF-30 Can 'Learn' the System Characteristics on Commissioning. Nothing For Installers to Adjust - Fast -Simple - Intelligent**
- **Measuring the Gas Running Pressure Relative to Atmospheric Pressure Allows For Alarming on Abnormal Usage - Low Running Pressure, Detecting Pipe or Hose Ruptures in Operation**

Intelligent Systems

Making Life Easier For Installers & Users

3

Gas Supply Valve is Directly Controlled From the PGF-30 and will shut down, on Emergency Stop Activation, Key Switch Removal, Failure to Prove, Low Running Pressure, Input From Fire Alarm. Optionally by Fitting Extra Sensor Options: Shut Down on Gas Leak Detectors, CO2, CO, Ventilation Flow Failure and More.

Expandable Systems

Simple Upgrades

Add as Required on One Addressable Cable



4 Add CO2 Measurement As Required by Building Bulletin-100

5 Add Flammable Gas Detectors or Toxic Gas Detectors For Additional Protection When Using Gas in Confined Spaces, Don't Just Rely on Ventilation Rates.

6 Add Intelligent Annunciators For Door Entry Control in Emergencies - OK to Enter Alarm - Gas Leak. These Have Sounders and Multi-Colour Flashing Displays on Alarm. Available With or without E-Stops.

Gas Proving & Gas Detection For Schools, Laboratories & Building Services

Build Your Intelligent Solution to Meet the Job

