

2-WIRE SYSTEMS

Gas Detection Installers Guide

Please Refer to Specific Controller Manual and Full Version Installers Guide.



TOC-635



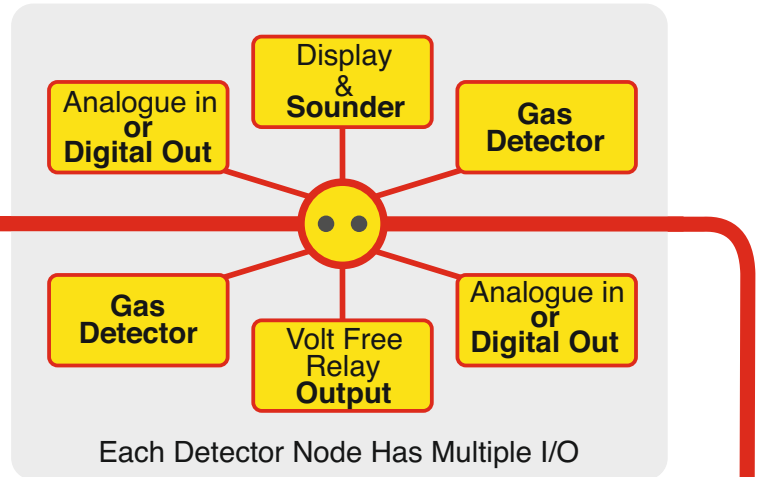
TOC-650



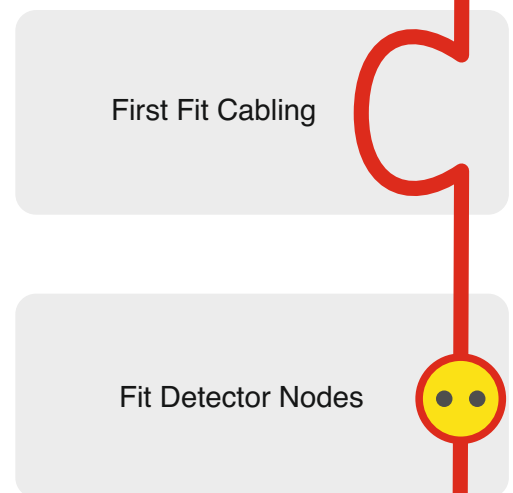
TOC-750



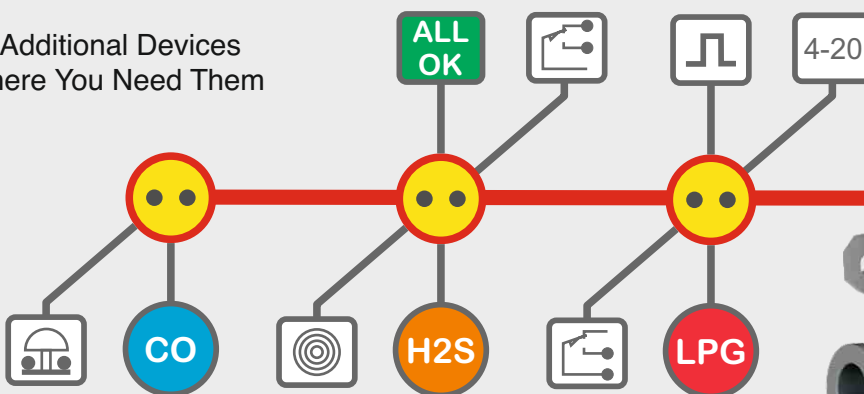
2-WIRE GAS DETECTION



- WiFi Setup and Service Tools
- 2 Core Cable Connects Detector Nodes
- No Cable Polarity
- 350 Detector Nodes/Devices Possible
- IOT Options, see alarms & data anywhere
- Modbus Compatible
- Battery Backup



Fit Additional Devices
Where You Need Them



Safety Assured



FS646773

www.internationalgasdetectors.com



INTRODUCTION

This installers guide is intended for the use of system specifiers, surveyors, designers and installers. The intention of this guide is to provide information for the correct installation of IGD's range of 2-Wire gas detection systems. This guide indicates correct cabling practice, types of cabling which can be used and options available to correctly design and install a 2-wire gas detection system. This guide is not intended as a design or specification guide, these are available separately.

Note that System control panels, detector nodes, battery backup modules and power boosters are all supplied with their own manuals. Their general specifications and performances are available both in their individual manuals and published data sheets. This data is not reproduced in this guide.

Failure to follow this installers guide could compromise operation of the 2-Wire gas detection system so please follow the enclosed information carefully.

Systems should be designed and installed by competent persons. A competent person being defined by the UK Health and Safety Executive as:

A competent person is someone who has sufficient training and experience or knowledge and other qualities that allow them to assist you properly. The level of competence required will depend on the complexity of the situation and the particular help you need.

IGD's gas detection systems are capable of installation by electrical installation engineers. Design of a system is not covered in this guide and should be undertaken by a competent person. The design should include:

- The Nature of the Gas Hazard and Appropriate Placement of Detectors
- Clear Indication to workers That a Gas Hazard Exists and the Action They Must Take
- Interaction Between the Gas Detection System and Other Systems
- The Necessary Safe Operating Procedures That Must be in Place

IGD can provide help to design systems where help is required and can also provide training for surveyors, specifiers, designers and installers.

All Gas Detectors shipped from IGD are pre-calibrated. It is not always necessary to re-calibrate a newly installed system on site but it is recommended that commissioning is undertaken.

Commissioning should be undertaken by persons trained to do so. Commissioning should ensure that the system performs and interfaces correctly to all connected devices, host systems and operates to the required cause and effect.

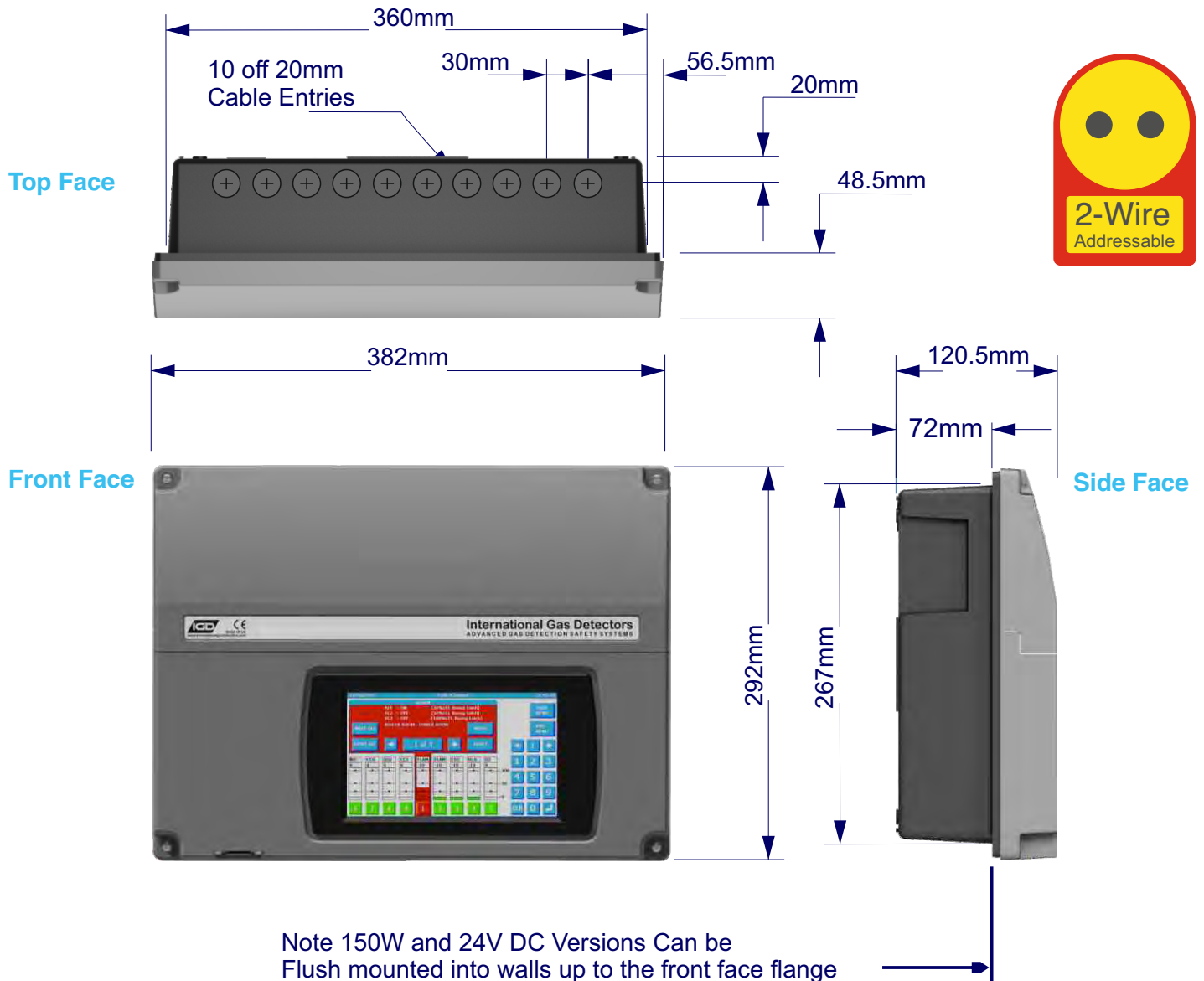
IGD are available to answer question using our on-line ticketing system available through our website.

NOTE that ATEX equipment has specific requirements for cable protection and glanding to housings. These requirements are detailed in manuals for such equipment available through our website.

SECTION 1

MOUNTING DETAILS FOR EQUIPMENT

TOCSIN 750 PHYSICAL



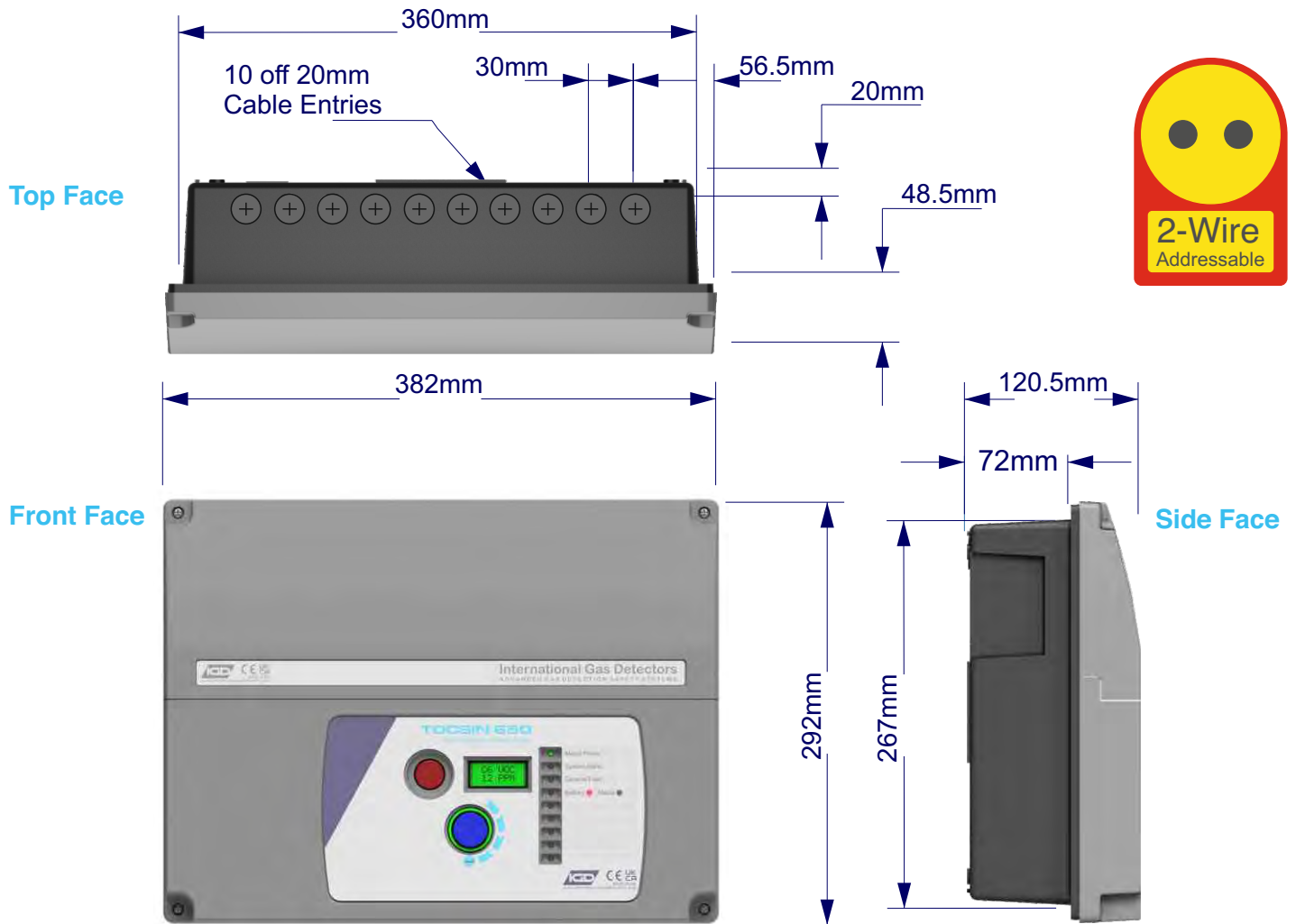
Note that the rear case can be rotated to allow 20mm entries to face either up or down

Installation Cables

Supported Installation Cables 2 Core 1.5mmSQ or 2.5mmSQ See IGD Cable System Calculator

Typically SWA, FP200, CY, screened or Similar

TOCSIN 750 PHYSICAL



Note 150W and 24V DC Versions Can be Flush mounted into walls up to the front face flange
300W Versions have active ventilation and must be surface mounted allowing 100mm clearance all round

Note that the rear case can be rotated to allow 20mm entries to face either up or down

Installation Cables

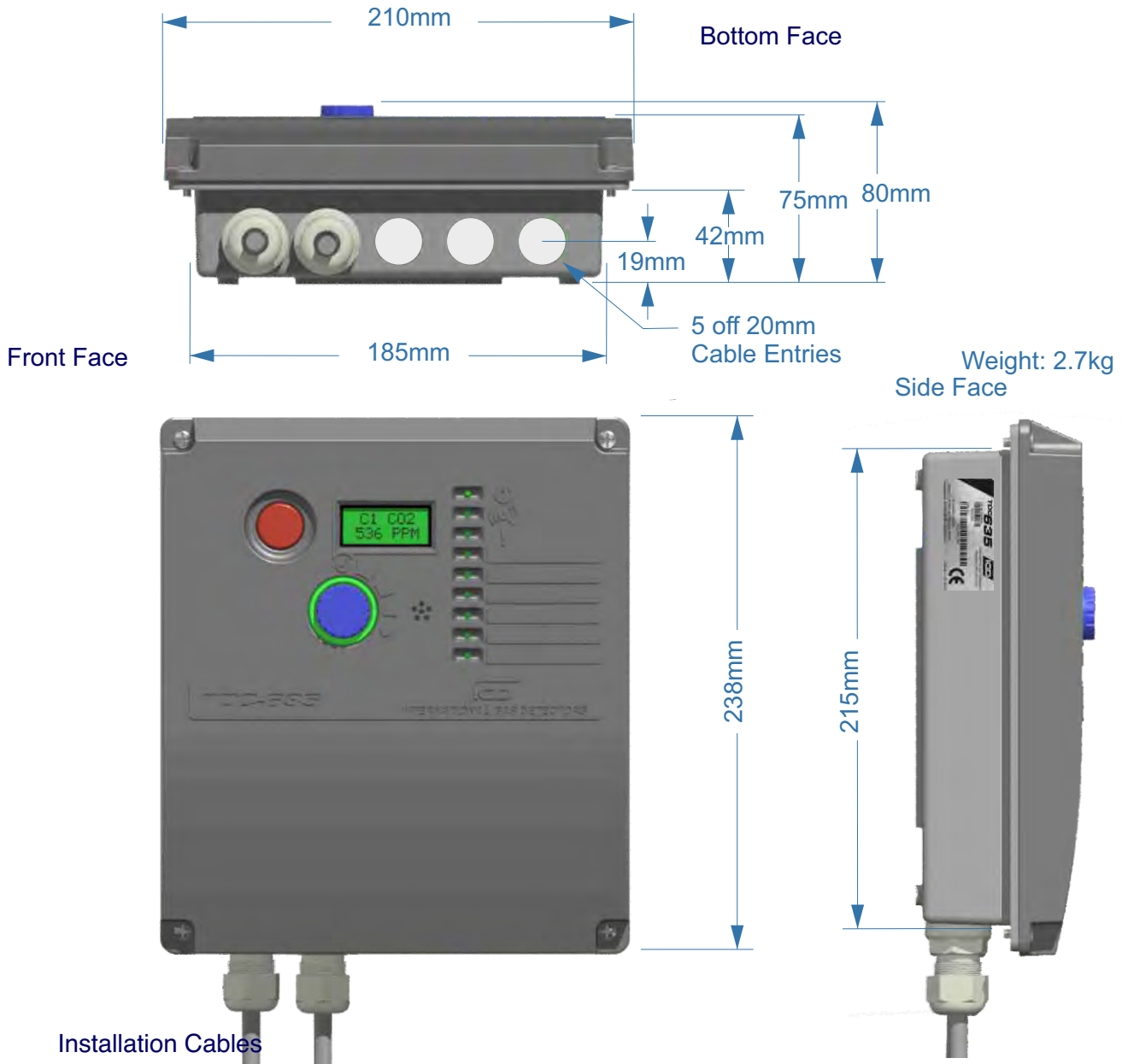
Supported Installation Cables 2 Core 1.5mmSQ or 2.5mmSQ See IGD Cable System Calculator

Typically SWA, FP200, CY, screened or Similar

TOCSIN 750 PHYSICAL



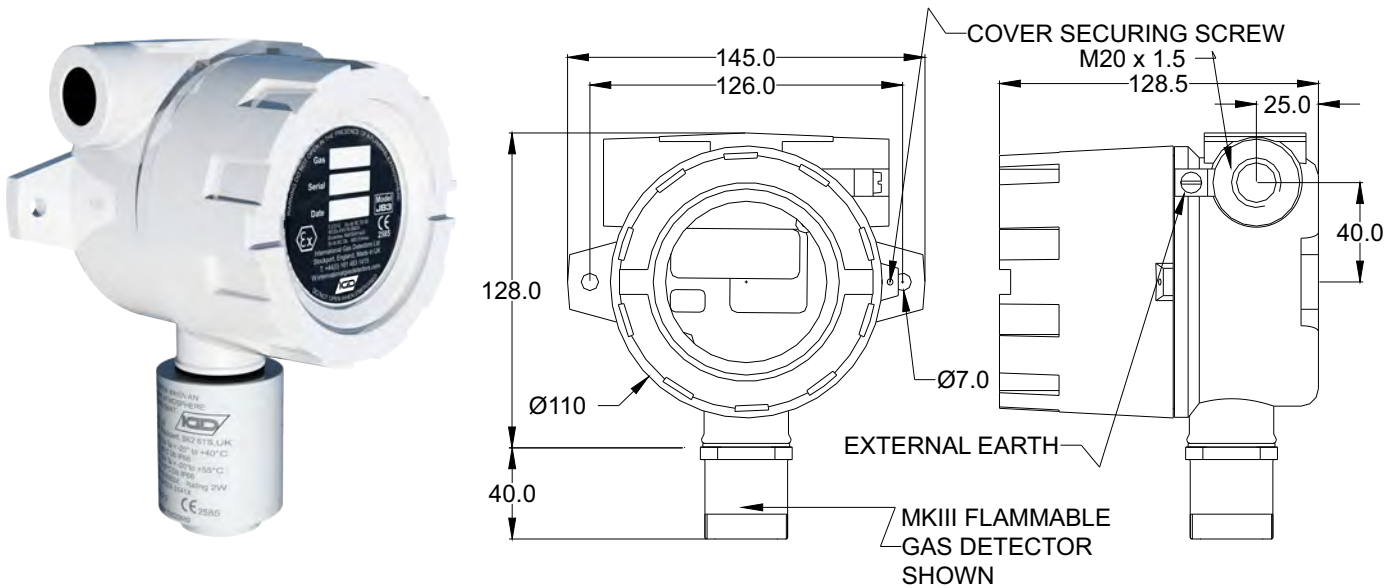
TOCSIN 635 MICRO AND PLUS PHYSICAL



Supported Installation Cables 2 Core 1.5mmSQ or 2.5mmSQ See IGD Cable System Calculator

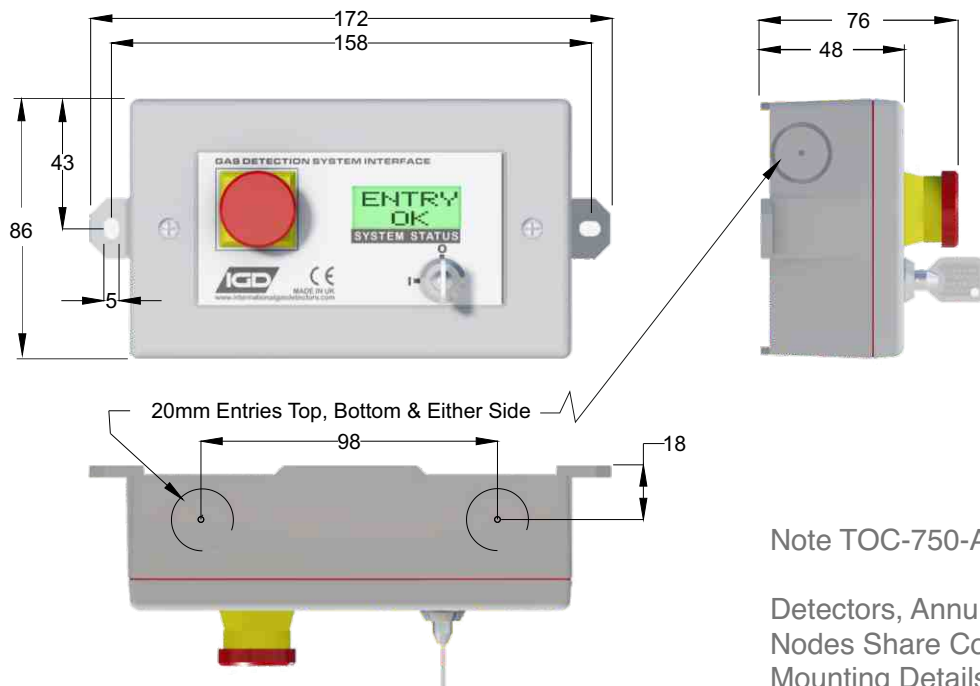
Typically SWA, FP200, CY, screened or Similar

ATEX MOUNTING DETAILS & DIMENSIONS



The ATEX version uses IGD's JB3 series ATEX EXD terminal enclosure. Please note that cable glanding and sealing must conform to ATEX requirements which is more fully described in the ATEX JB3 manual

Mounting Details and Dimensions Safe Area Versions



Gas Detector Types

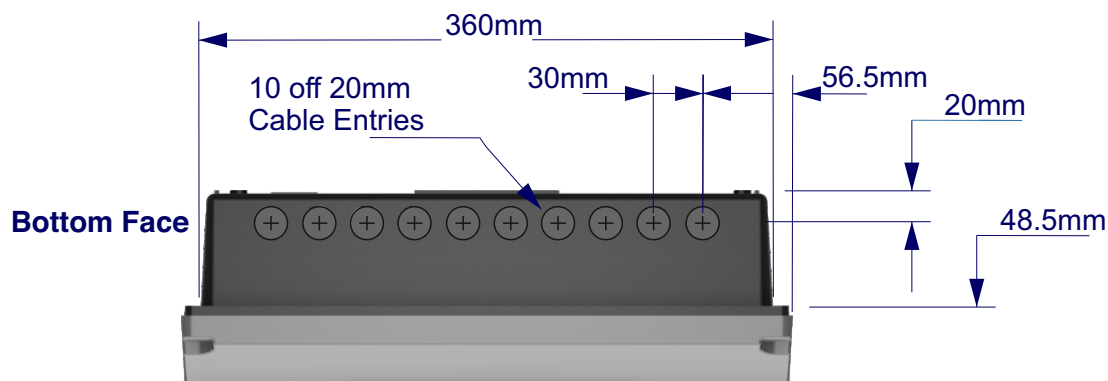
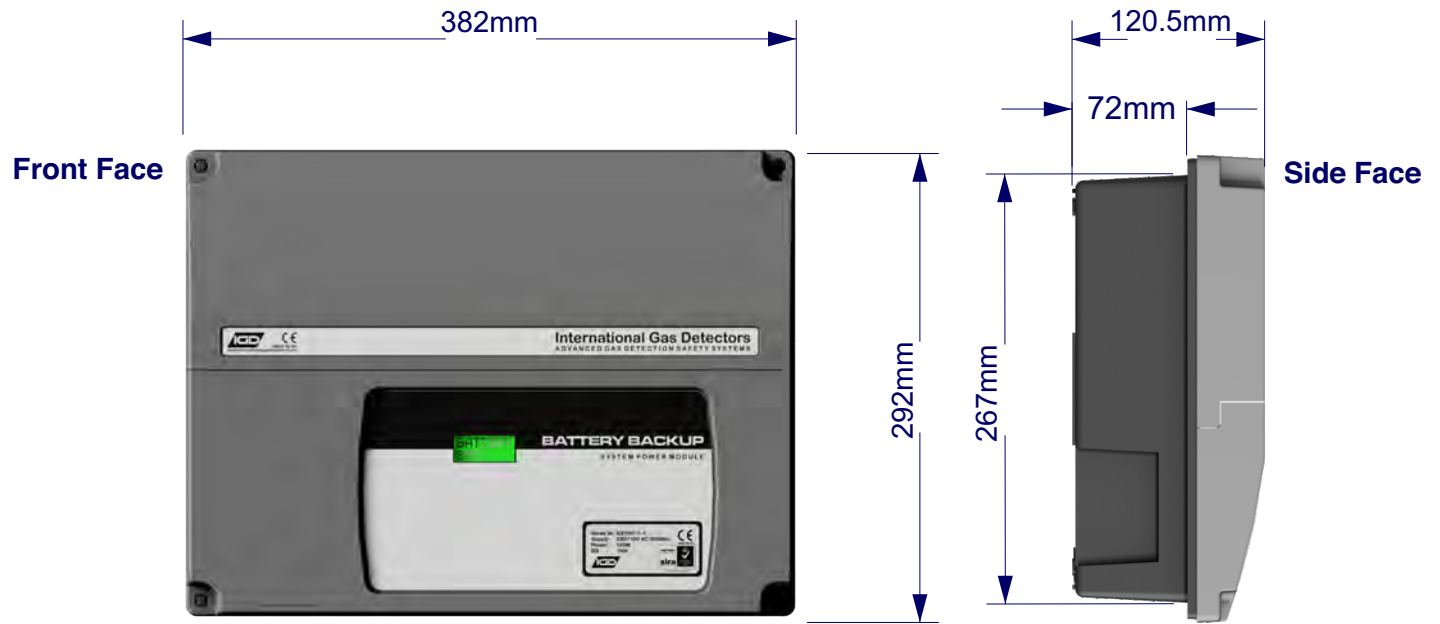
Refer to individual data sheets for specific data relevant to available gas detectors, types, accuracies and sensitivities available.

For pellistor type gas detectors complying to BS EN 60079-29-0 and 1, these general purpose flammable gas detectors are suitable for Methane and LPG detection in the range 0-100% LEL.

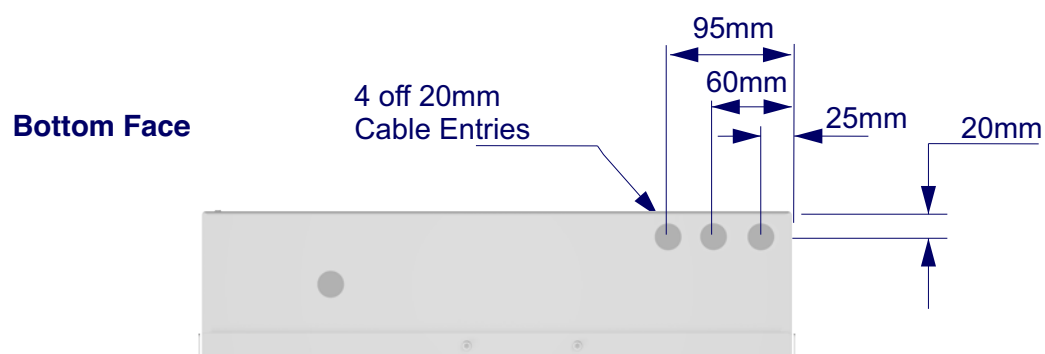
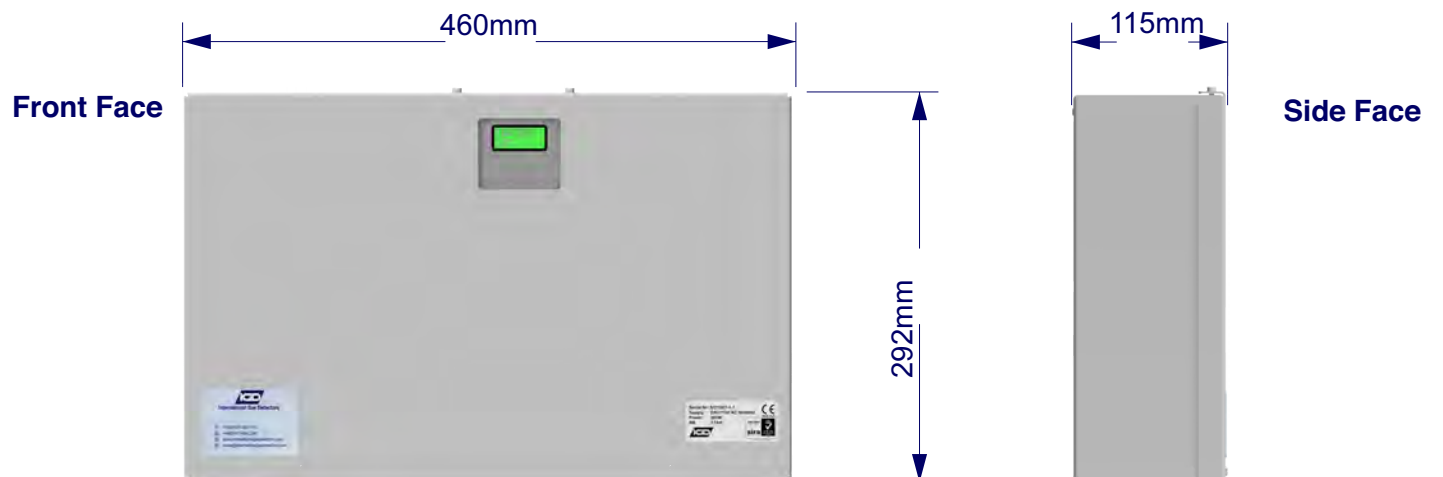
Relative response to Methane @ 4.4% Vol = 100% LEL Equivalent to 48.4% LEL N-Butane

BATTERY BACKUP MODULES

TOC-750-BAT1 7AH Battery Backup with 150W PSU



TOC-750-BAT2 17AH Battery Backup with 300W PSU



SECTION 2

SITING GAS DETECTORS

SITING GAS DETECTORS

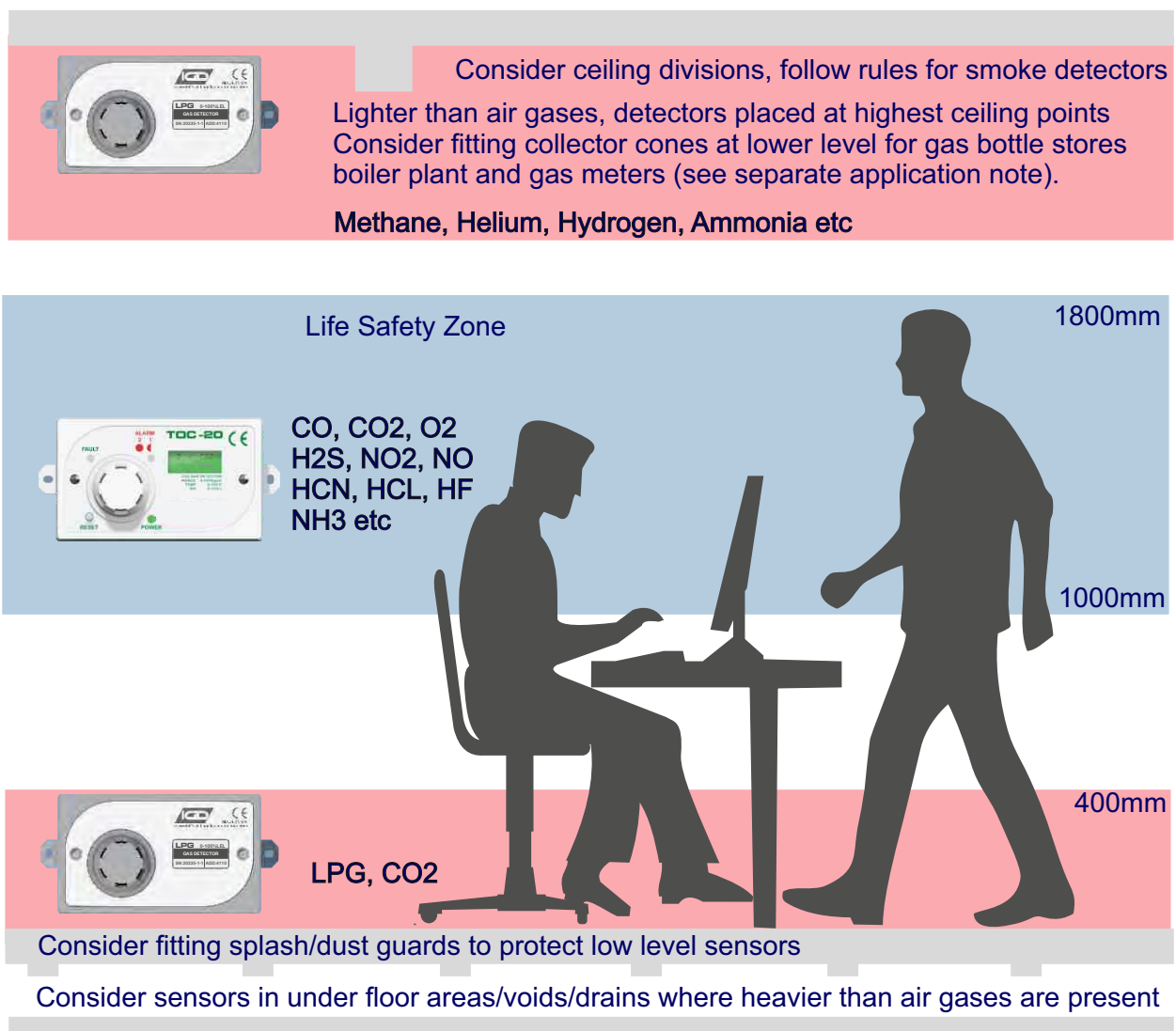
Gas detectors usually fall into two groups for placement

1. Plant Protection. Typically flammable gas detectors fall into this category. Aside from asphyxiation flammable gases are typically not directly toxic and so detectors are placed strategically where the gas is expected to accumulate based on its relative density to air (lighter or heavier)

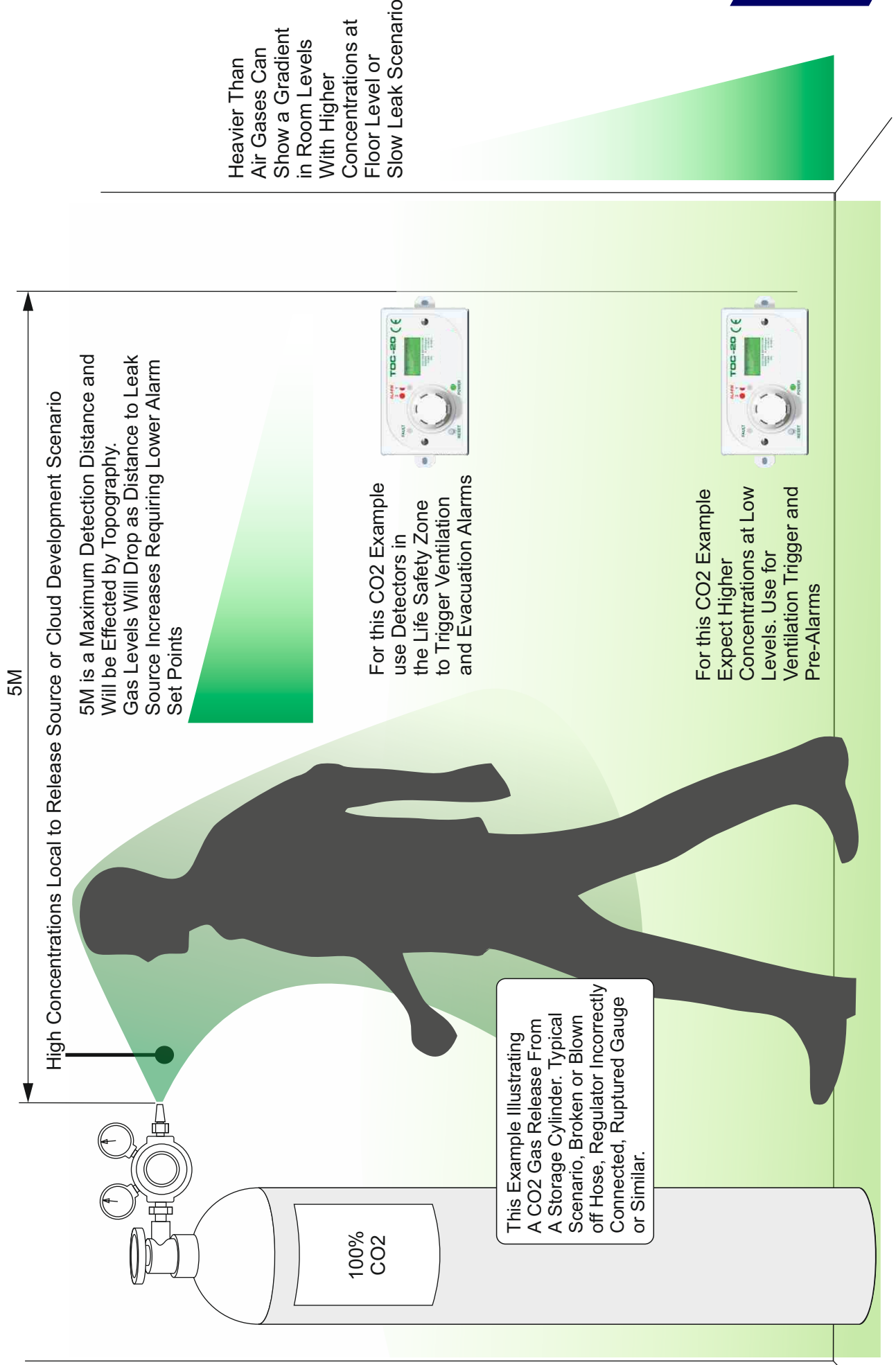
2. Life Safety Systems. Here the concern is that a toxic or asphyxiant gas is directly hazardous to personnel and so the gas detection is placed based on the normal operating zone for the people present

Note that in many cases both life safety and plant protection sensors may be appropriate on a site. For example a plant using liquid helium may have plant protection sensors at high level to ventilate roof spaces in the event of leaks. However in the event of ventilation failure Helium could accumulate down towards the zone where personnel operate. In this case a second set of life safety sensors would be appropriate.

Each site should be surveyed and assessed on its own merits. This document presents general guidance only.



SITING GAS DETECTORS



CRYOGENIC GAS DETECTION

Applications involving Cryogenically cooled gases such as liquid Nitrogen or Helium need careful consideration for gas detection. On initial release as cryogenically cooled gases can typically be at lower temperature and high density than their surroundings they will behave differently than when in their gaseous state. In such cases it should be considered if two sets of detection is required, one for the life safety zone and one for low level detection in the gases cooled state. Applications involving such gases are recommended to be surveyed.

AREA COVERAGE FOR GAS DETECTORS

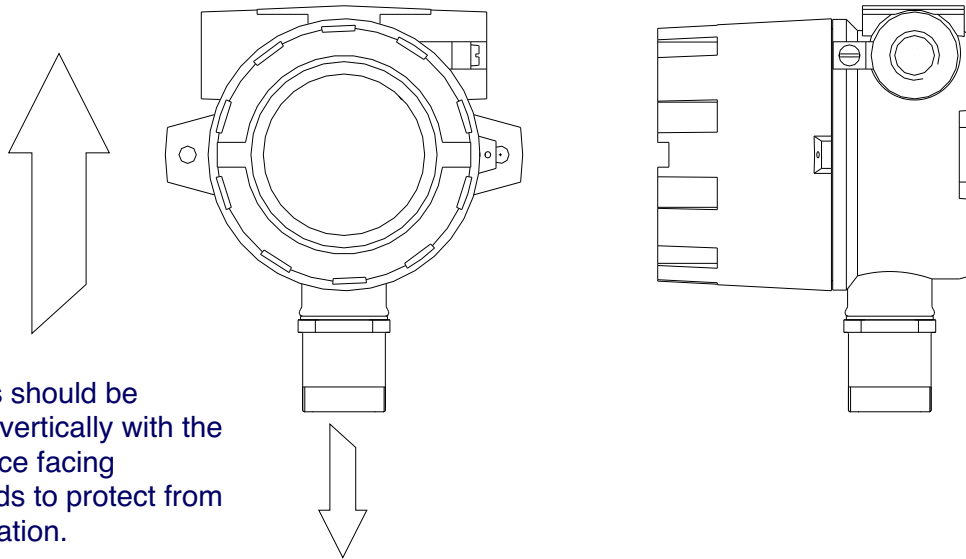
In a similar manner to smoke detectors, a gas detector can provide up to 75SQ M area coverage based on a 5M radius of operation. There are many factors affecting this, geometry of a room, equipment in the area, gas characteristics, ventilation air flows etc. IGD can support throughout the survey, design and installation process to ensure the best possible result on site.



CALIBRATION & SERVICE REQUIREMENTS FOR GAS DETECTION SYSTEMS

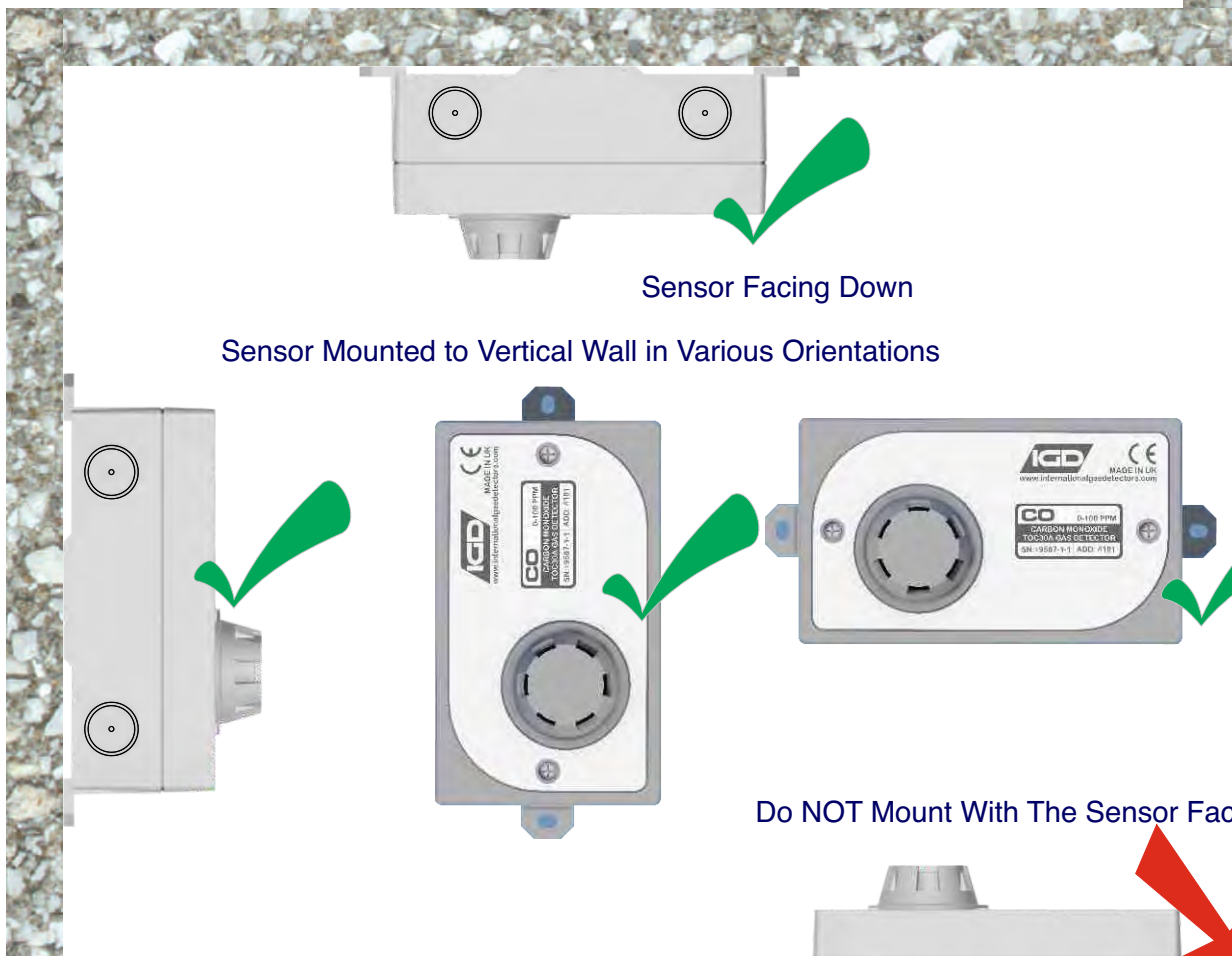
All gas detection systems require regular checking and calibration to be in compliance with the UK factories act. The service and calibration period will be a function of the application based on environmental in service conditions. It is extremely important to ensure a service plan is in place for any gas detection system installed as part of a site safety system. IGD can work with operators to provide advice, service and spares to ensure an appropriate level of cover.

GENERAL MOUNTING POSITIONS ATEX (BS EN 60079-29-1)



Detectors should be mounted vertically with the sensor face facing downwards to protect from contamination.

GENERAL MOUNTING POSITIONS SAFE AREA (BS EN 50194)



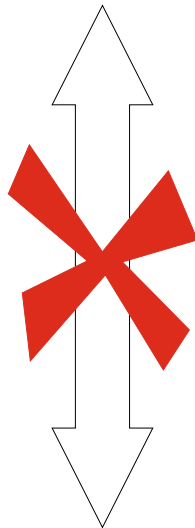
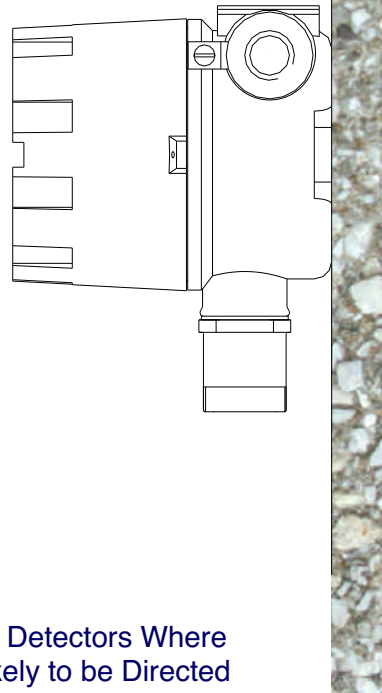
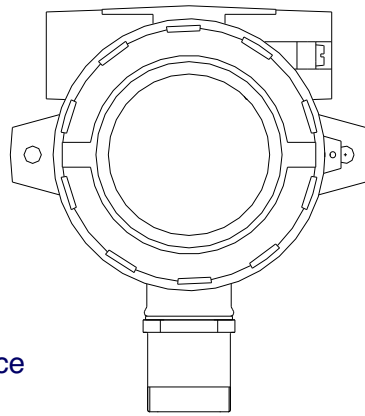
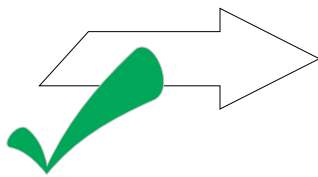
Sensor Facing Down

Sensor Mounted to Vertical Wall in Various Orientations

Do NOT Mount With The Sensor Facing Upwards

Detectors in Airflows Mounting Positions Atex (BS EN 60079-29-1)

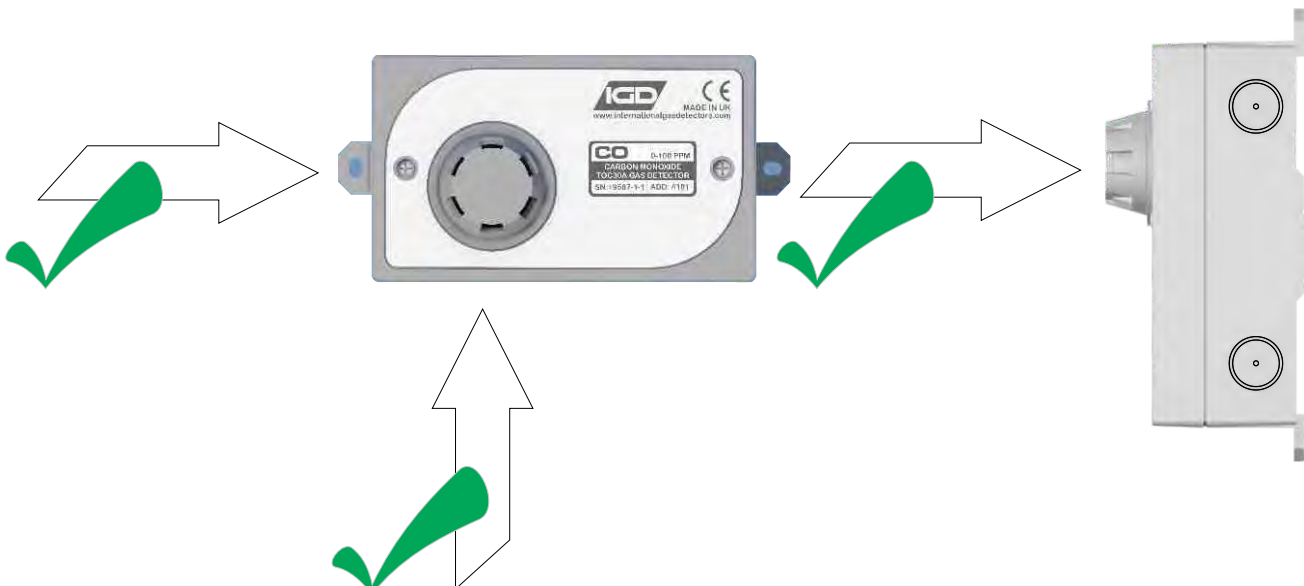
Air Flows up to 6M/S Are Allowable Without Any Performance Issue Across the front of The Sensor Face



Do NOT mount Detectors Where Airflows Are Likely to be Directed either onto or Away From the Sensor Face. This Situation May Result in Contamination and/or reduced Detection Capability

Detectors in Airflows Mounting Positions Safe Area (BS EN 50194)

Air Flows up to 1M/S Are Allowable Without Any Performance Issue



SITING SYSTEM COMPONENTS



Control Panels

These should be located outside of the area protected by its connected gas detectors.

The control panel should be accessible such that in the event of an alarm the area can be evacuated and gas levels viewed from the controller.

Consider the use of mimic panels, HMI panels or GSM options available from IGD to provide additional remote indication/alarm



Audio-Visual alarms

As a general rule if there is gas detection fitted to an area then there should be an audio-visual alarm (beacon sounder) to alert personnel who may be in the same area. Typically these will be standard beacon sounders where the sounder can be silenced from the control panel once an alarm is accepted. Standard LED beacon sounder modules are available from IGD and can be run from addressable I/O points to minimise cabling. Another option is to fit IGD's range of annunciators.



Annunciators

Annunciators are addressable devices typically fitted at door entry points. They provide a clear audible visual alarm in the event of a gas alarm to warn persons from entering an area where a gas hazard could be present.

They offer many advantages over standard beacon sounders. They can be fitted to standard dado trunking systems; cannot be confused with other alarms; the displayed alarm message and flashing colour display is unambiguous; they can be fitted with slam switches.



Gas Collector Cones and splash Guards

Where detectors are located above gas plant such as boilers or meters in rooms with high ceilings then consider the use of gas collector cones. These are fitted to detectors sited just above gas plant to enhance the detectors capability to detect gas leaks (see separate application note)

For detectors fitted at low level, fitting splash guards may be appropriate to protect sensors from dust, rain splash, floor washing etc.

SECTION 3
GENERAL CABLING PRINCIPLES
CABLE TYPES
AND
CABLE SIZING

CABLE TYPE GUIDANCE

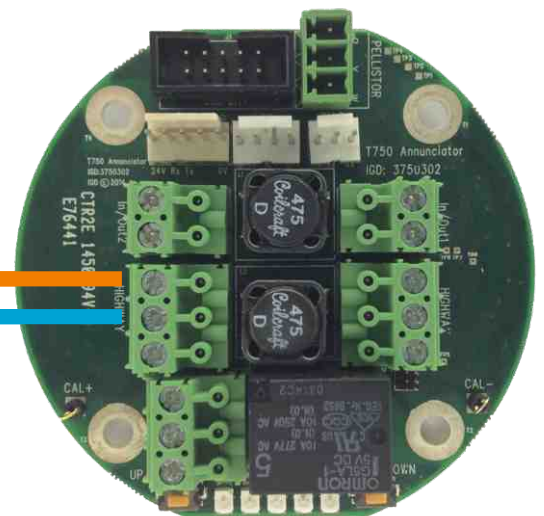
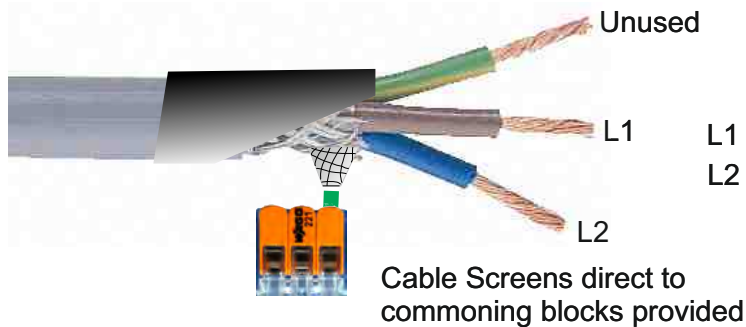
IGD's 2-Wire gas detection systems operate using screened cabling of appropriate cross sectional area. There are no specific requirements and our typical advised cable types are indicated below. Cable screens, either foil and drain wire, braid or armouring must be continuous between devices and grounded for effective operation. Ancillary devices such as stop buttons, beacons, sounders etc should be commoned to the earth blocks provided as indicated below.

Recommended Cable Preparation



CY Style Cable

CY Type cable has a braided screen which should be trimmed back to ensure no trimmed conductor ends up on sensitive PCB components, tracks or terminals where it may short. The screens of the incoming cables should be terminated to the floating terminal block provided to ensure screen continuity. Trim back any unused conductors and ensure the braid is insulated with heat shrink or insulation tape and/or sleeve.



FP Style Cable (Preferred Option)

FP style cable is fitted with a foil screen and drain wire. Generally this is easier to terminate than CY type cable. Trim back any unused cores and foil screen. Ensure the drain wire is insulated with suitable size sleeving and terminates to the cable screen terminal



SWA Style Cable

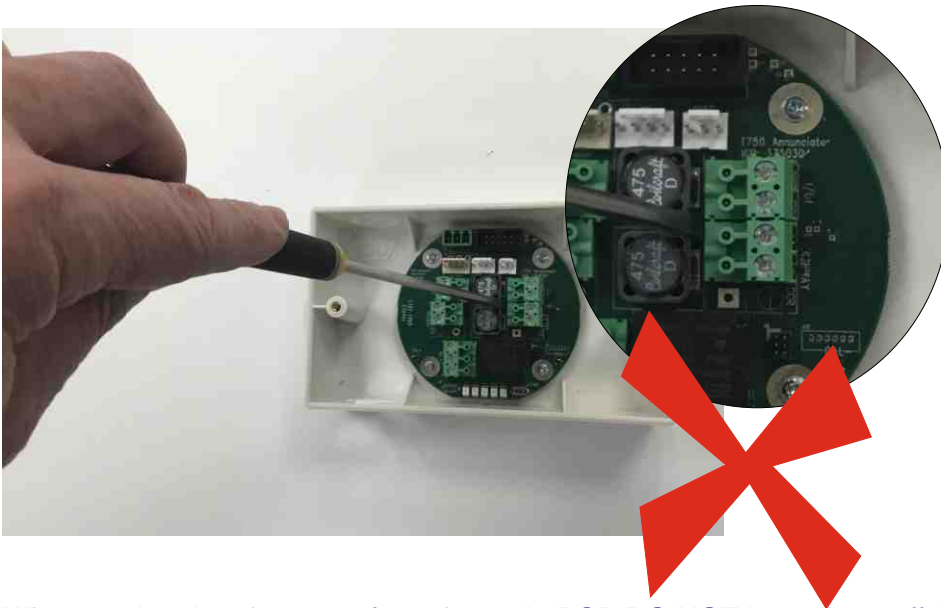
SWA style cables are usually only recommended for use with ATEX EXD housings where the universal cable glands ground the cable armour to the housing. This provides both an effective EMC screen and mechanical protection. Ensure unused conductors are trimmed back and isolated. If terminating to plastic enclosures fit 'pan handles' and terminate on the outside of the enclosure to ensure screen continuity



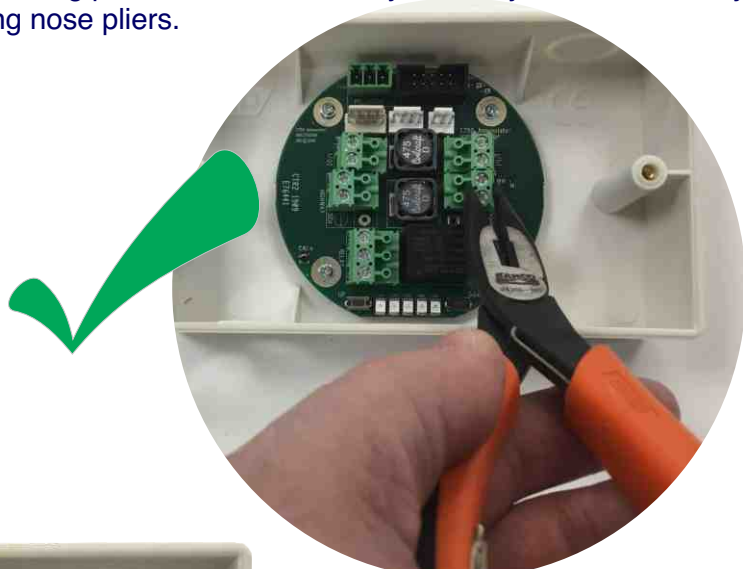
Note: AWG vs mm² Cable Sizes

2.5mm ²	13 AWG
1.5mm ²	15 AWG

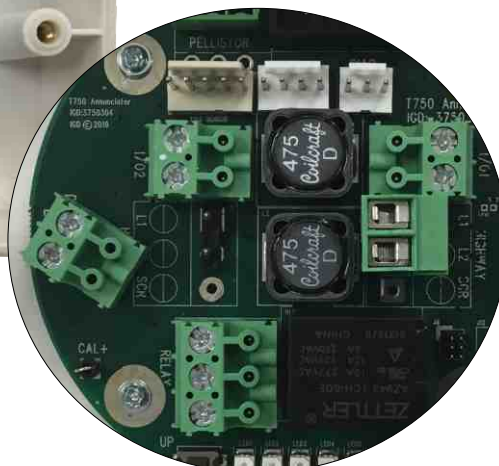
MAIN BASE PCB CONNECTORS



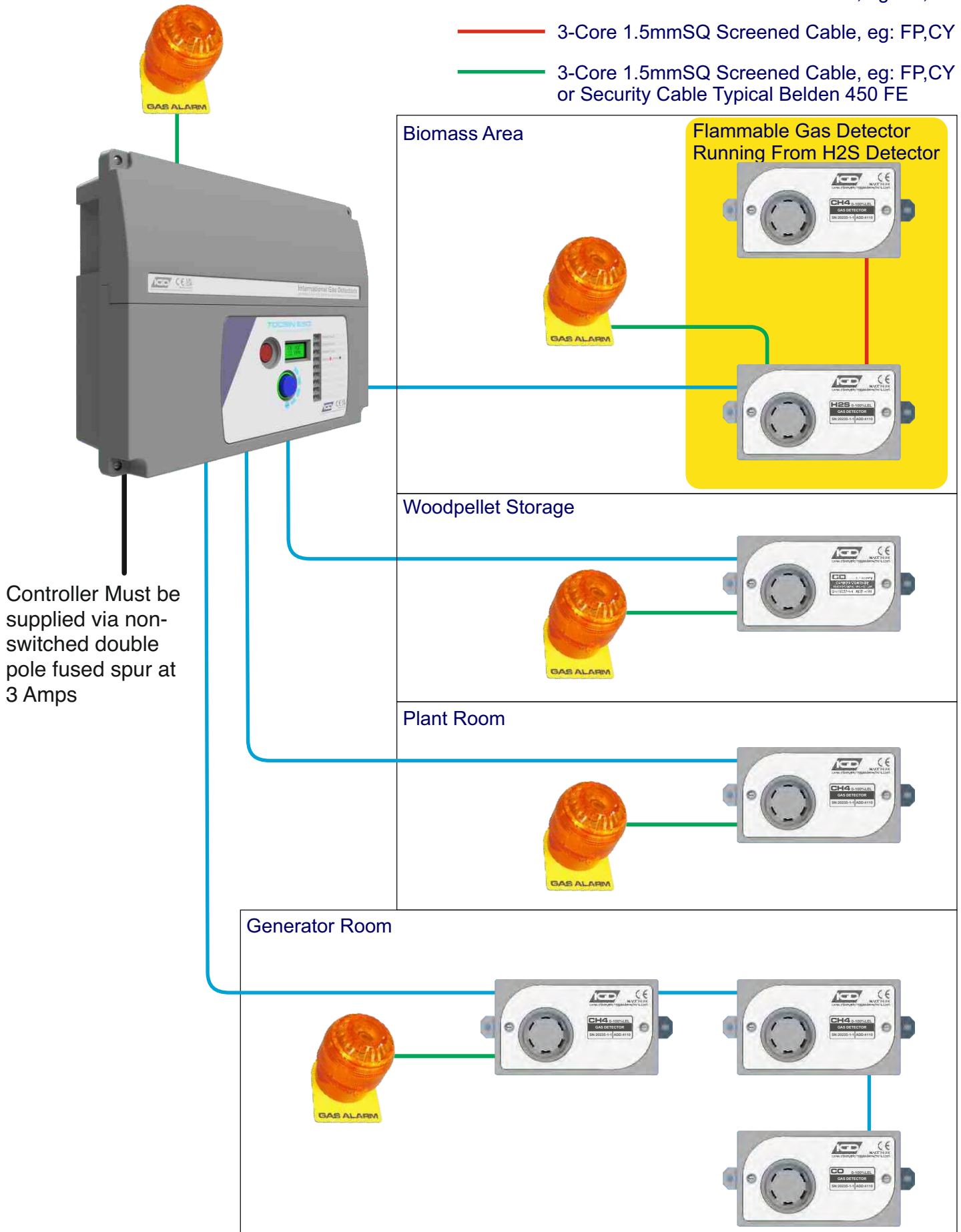
When unplugging detectors from the main PCB DO NOT lever them off. This will potentially cause damage to the PCB and/or connector mating parts and invalidate any warranty. If it is necessary to remove the PCB connectors use long nose pliers.



Note that connectors can be plugged either vertically or Horizontally to the PCB



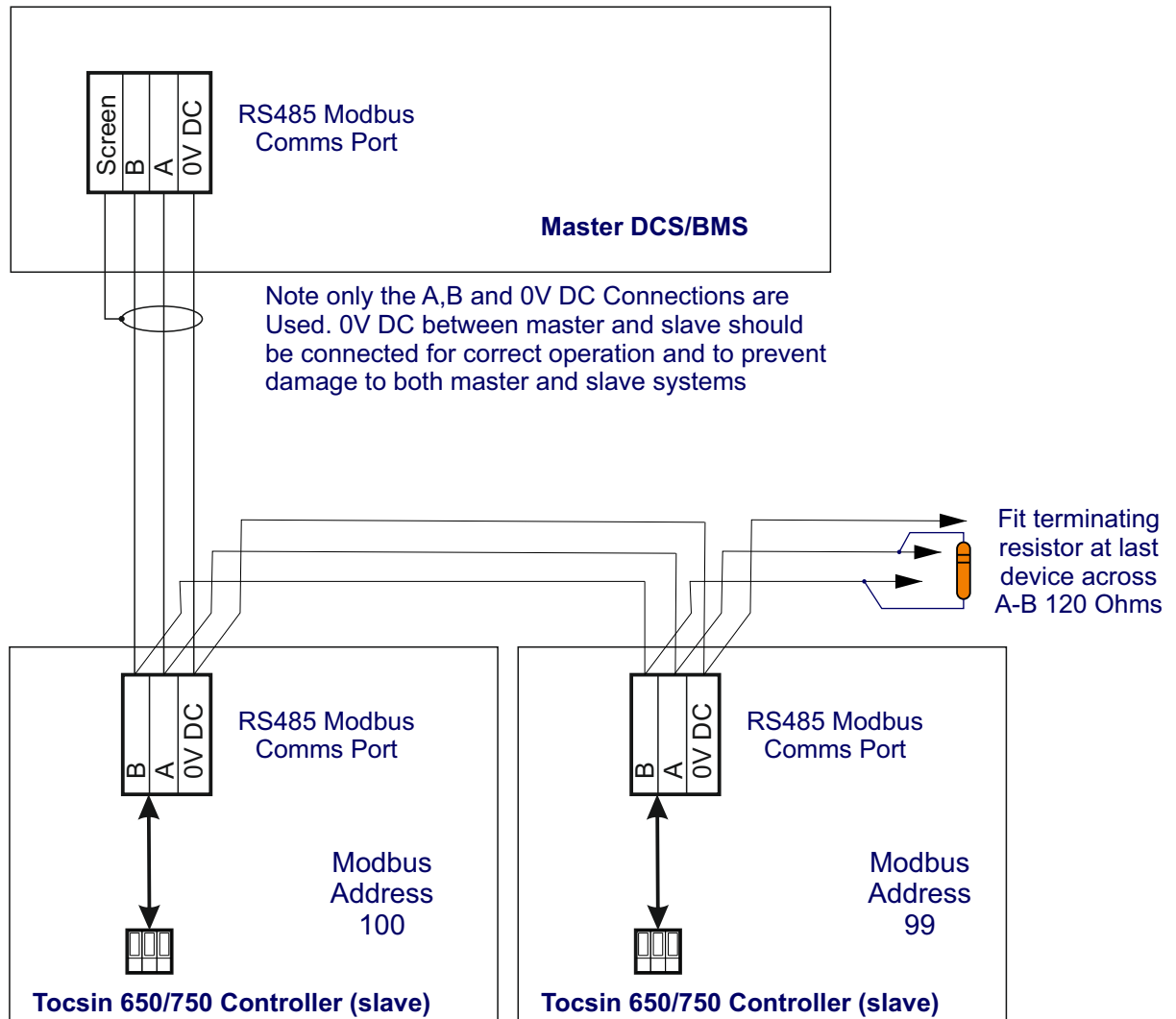
- 2-Core 1.5mmSQ Screened Cable, eg: FP,CY
- 3-Core 1.5mmSQ Screened Cable, eg: FP,CY
- 3-Core 1.5mmSQ Screened Cable, eg: FP,CY or Security Cable Typical Belden 450 FE



Example shows an addressable cable run to each 'zone' in a biomass plant. Note that these could all be on the same addressable cable or any combination that suits the building layout.

INTERFACING REMOTE MODBUS PORT

The Tocsin 750 series controllers have an in-built memory map allowing access to alarm status, panel status, readings etc using Modbus RTU protocol. Wiring between units is as follows:



More than one controller can be interfaced on the same Modbus cable by assigning individual Modbus addresses to each controller.

Refer to users guide for Modbus channel mapping

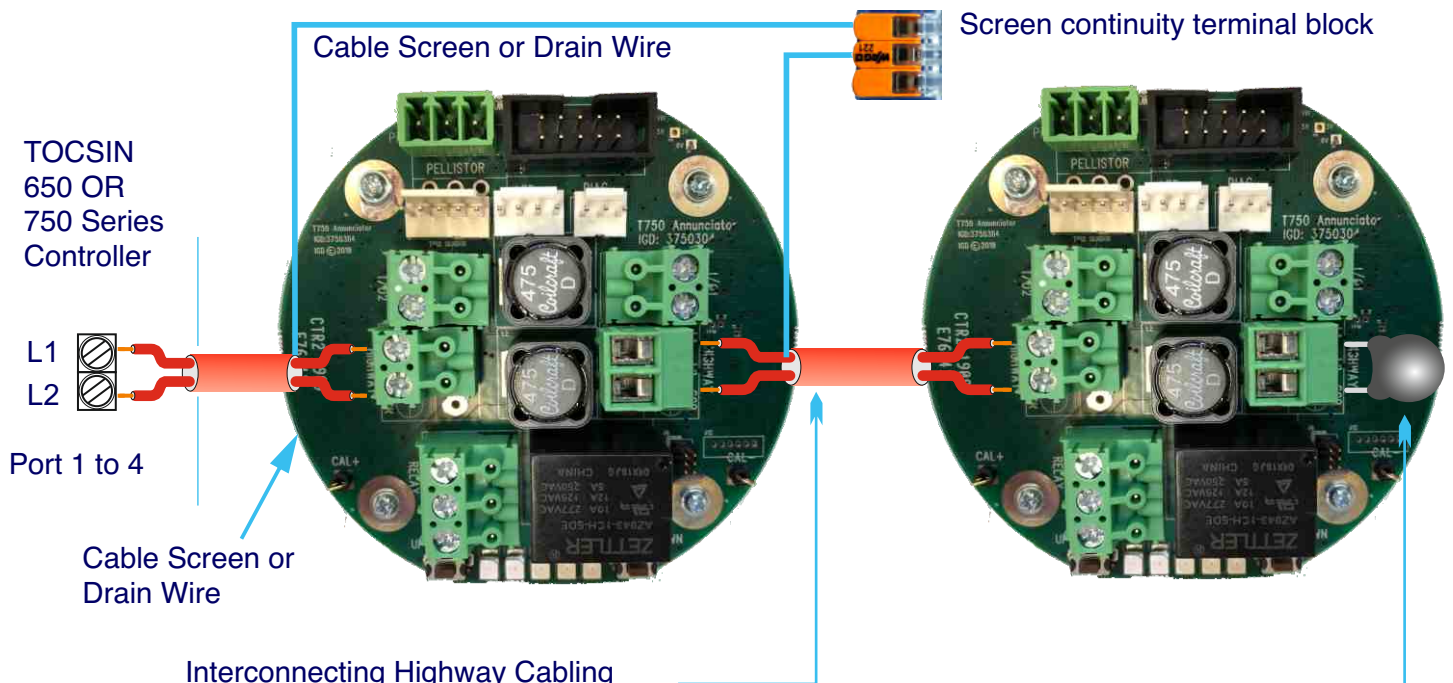
Cable Sizing

Up to 400m use minimum 1.0mm² 3 Core cable with an overall cable screen.

Cable runs over 400m use 1.5mm² 3 Core cable with an overall screen

INTERCONNECTING MODULES ON A DATA HIGHWAY

Tocsin 750 Series Annunciator Modules are interconnected as follows using two core cable. The system is designed to operate using screened cable. In some circumstances, for instance in ATEX Zone 1 areas a protective armour may be desirable to provide mechanical protection. The system provides both power and digital communication over the single pair of wires. The system is also polarity insensitive although best practice would be to connect L1 to L1 to L1 and L2 to L2 to L2 etc for continuity. It is necessary to fit an IGD terminator at the last device as indicated for operation of the system. In-coming and out-going screens must be connected as indicated, ensuring screening continuity. IGD provide screw-less terminal blocks for this purpose. Ancillary cabling to push buttons, beacons, sounders etc should also be screened.



Interconnecting Highway Cabling
For 2-Wire Addressable Systems:

For Safe Area Detectors Use 2 Core
Cable 1.0 to 2.5mmSQ Cable
Depending on Distance.

Ensure Cable Screens are Correctly
Terminated and cables are stripped to
the enclosed guide.

For ATEX Units Typically Use 2 Core
SWA Cable 1.0 to 2.5mmSQ
Depending on Distance

See Cable Calculator for Cable Core
Size vs Distance VS Number of
Devices

End of Line Terminators Must
be Fitted at the Last Module in
Line as Indicated Across the
L1 and L2 Terminals.

Terminators are Shipped With
All Control Panels.

Spare Terminators Can be
Ordered Using Part Number :
TOC-750-TRM.

Failure to Fit Terminators Will
Prevent System Operation

Cable Sizing

The total number of devices that can be supported on a cable highway will be limited by the reset fuse on the PCB, the cable length and size fitted and the power requirement for each module. The controller reset fuse is set to 2A. The following table is intended as a guide to show the number of devices that can be run taking into account the volt drop for differing cable sizes before boosters need to be employed.

1.0mm² Cable / 17AWG

Length (M)	Toxic	Pellistor MK6/7*	Pellistor MK3**
250	32	32	23
500	32	21	14
750	26	14	9
1000	20	10	7
Booster Module Required For Increased Detector Nodes Beyond Indicated Numbers			

1.5mm² Cable / 15AWG

Length (M)	Toxic	Pellistor MK6/7*	Pellistor MK3**
250	32	32	25
500	32	30	20
750	32	21	14
1000	30	16	11
Booster Module Required For Increased Detector Nodes Beyond Indicated Numbers			

2.5mm² Cable / 13AWG

Length (M)	Toxic	Pellistor MK6/7*	Pellistor MK3**
250	32	32	28
500	32	32	24
750	32	31	21
1000	32	26	18
Booster Module Required For Increased Detector Nodes Beyond Indicated Numbers			

* – Also Ann & Toxic & Relay – Also Ann & Toxic & Display – Also Ann & Beacon/Sounder

** – Also Ann & MK6/7 & Relay – Also Ann & MK6/7 & Display

NOTES:1: Assumes PSU voltage is 26.5V2: Assumes all Annunciators are spaced evenly on cable3: Assumes on other outputs or inputs are disabled on Annunciator4: Assumes voltage drop across Ann L1 to L1 is less than 25mV5: Assumes voltage drop across Ann L2 to L2 is less than 25mV6: Ann with T102A=0.6W, Ann with MK6/7=1.1W, Ann with MK3=1.6W

SECTION 4

MAKING DEVICE CONNECTIONS TO DETECTOR NODES

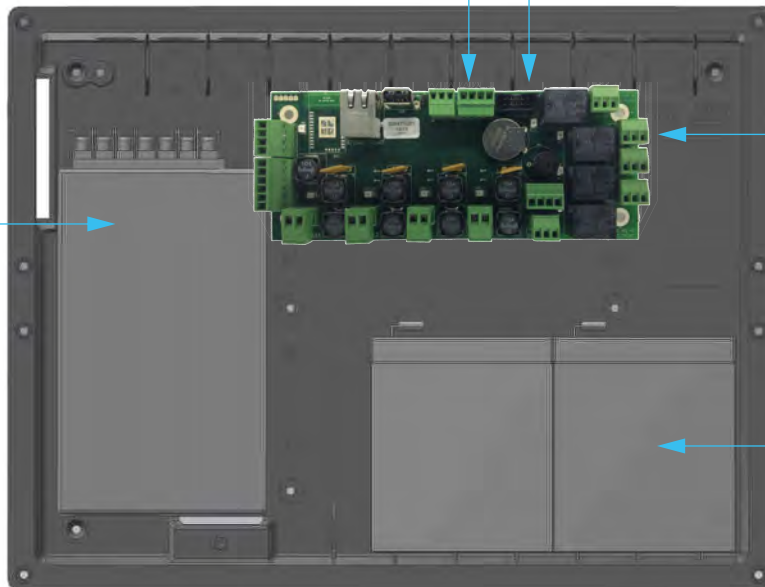
MAINS POWER & CONTROLLER OVERVIEW



Display Option 1 (750)
7" Colour Touch Screen HMI



Display Option 2 (650/635)
2 x 8 RGB LCD and Jog
Wheel



PSU Options:

70W
150W
300W

All Closed Frame
Stock Switched
Mode PSU With
their Own
Approvals

Hub Card PCB Common
to All Assemblies.
Note entry level 635 version
is a part populated PCB
supporting fewer detectors.

2 off 5AH Lucas Gell
Lead Acid Batteries.
Fitted as an option
where battery backup
required

Important

In all cases mains connection must be made via a 2-Pole Isolating supply

Where stranded cable is used for mains power termination, fit bootlace
ferrules to ensure there is no possibility of stray wire strands

Controllers with mains power supplies must be fed via a unique unswitched fused spur fused at 3A with double pole circuit disconnect.

Use ferrules or 4mm fork crimps to prevent stray wire strands and potential shorting

Note incoming Earth connection

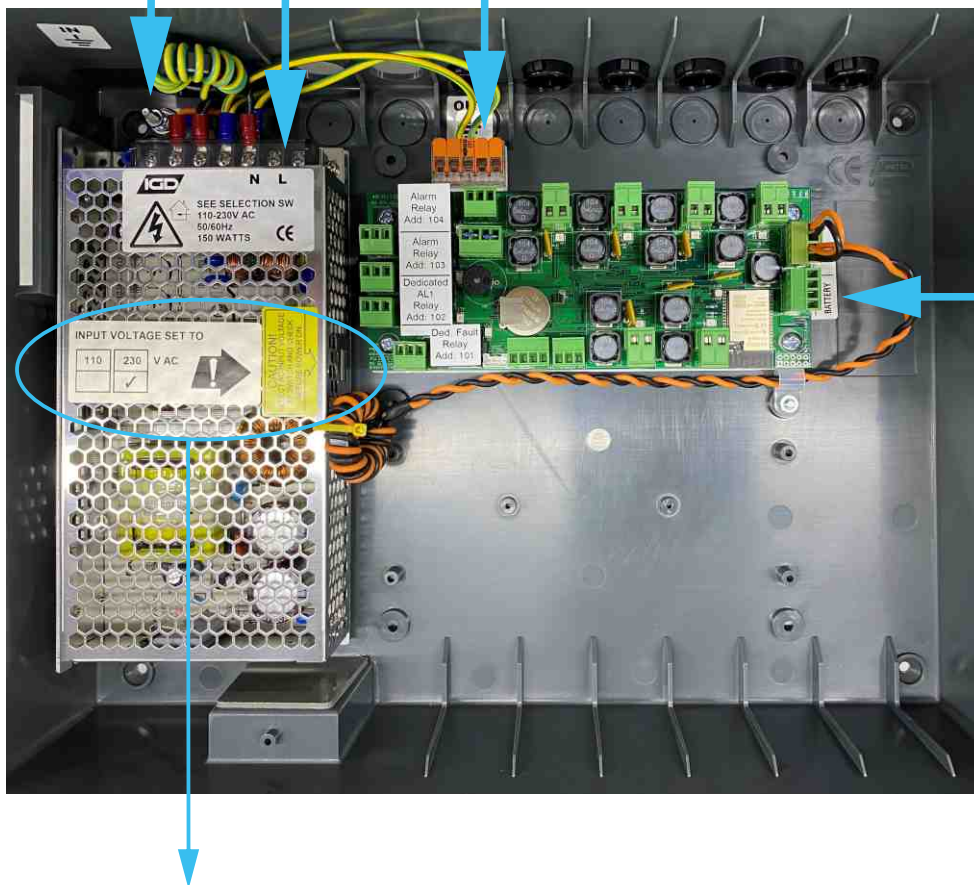
650 and 750 Series Controllers

Incoming Panel Earth

L N

Cable Screens

Note the backbox can be mounted so cable entries face either UP or DOWN the wall to suit the installation



Battery Backup
Battery
Connection Point

Power supplies are switched mode types.

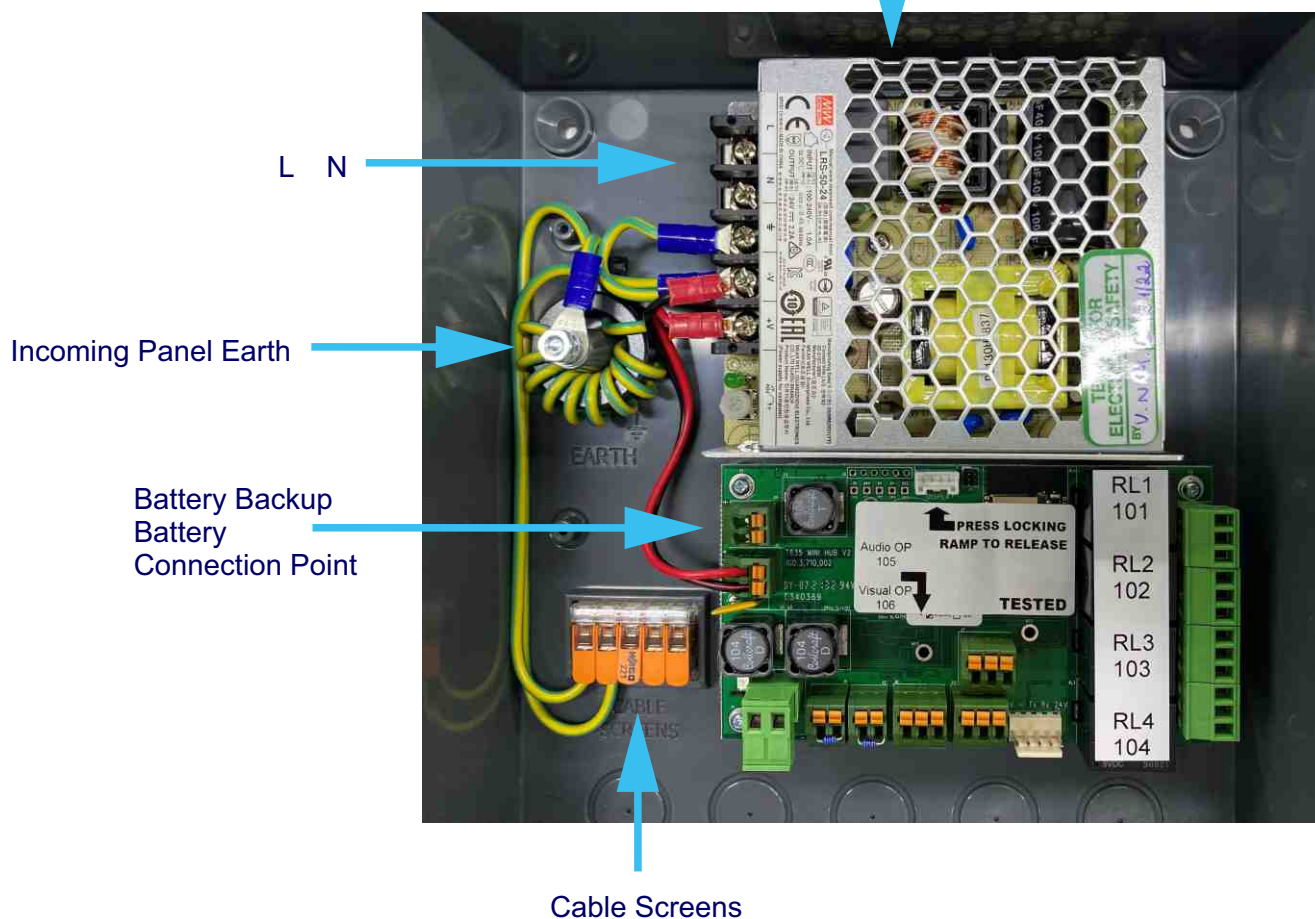
Note dependent on PSU type the incoming voltage may require to be set using a switch setting between 110V AC and 230V AC. If this is the case note the current switch setting indicated on the PSU label before connecting power. If the setting requires changing to suit the incoming voltage then make this change before connecting power and re-label accordingly.

Failure to ensure the PSU is correctly set to match the incoming voltage will result in permanent damage.

CONTROLLERS MUST BE CORRECTLY EARTHED TO ENSURE CORRECT OPERATION

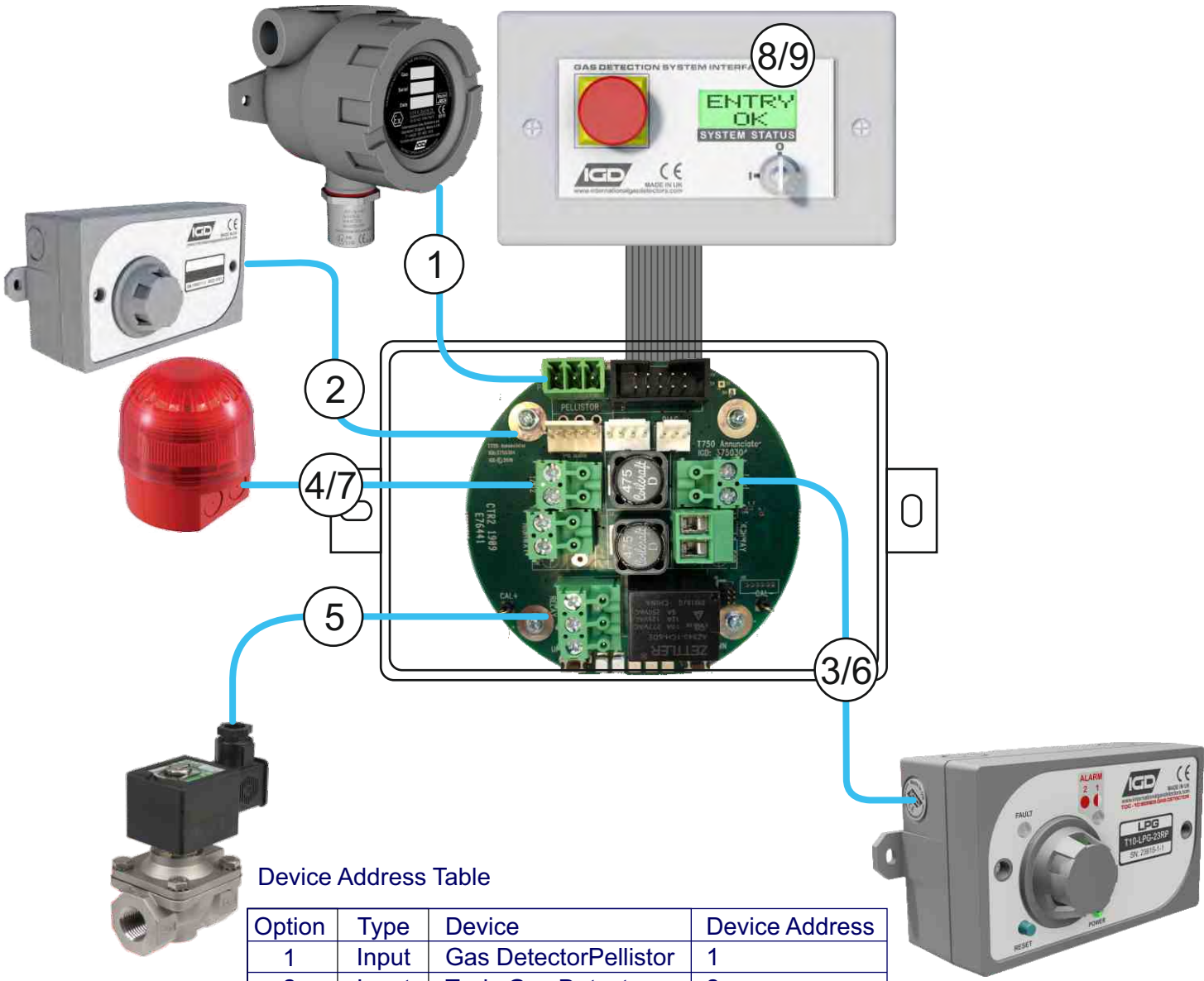
Note the backbox can be mounted so cable entries face either UP or DOWN the wall to suit the installation

PSU is 100 to 240V AC 50/60Hz



CONNECTION POSSIBILITIES

The 750 Series Module PCB Operates as an Interface 'Hub' on the Addressable 2-Wire Highway. The Diagram Below Shows a Typical Set of Connection Possibilities



Device Address Table

Option	Type	Device	Device Address
1	Input	Gas Detector Pellistor	1
2	Input	Toxic Gas Detector	2
3	Input	TOC-10	3
4	Input	4-20mA	4
5	Output	Relay & OP1	102
6	Output	Solid State Output	103
7	Output	Solid State Output	104
8	Input	E-Stop	5
9	Input	Key Switch	6

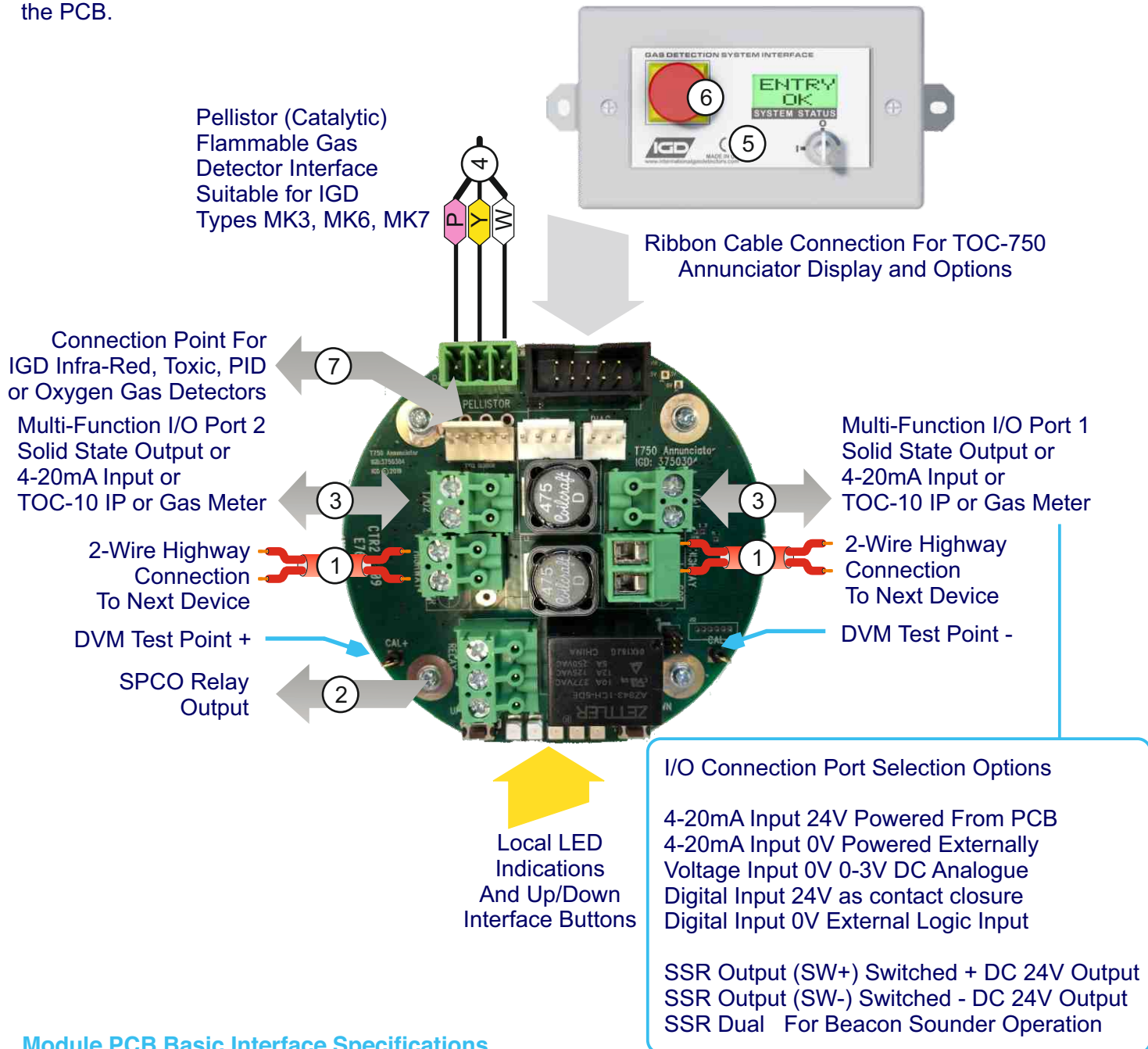
I/O Port 2
Either Input
or Output

I/O Port 1
Either Input
or Output

Note that one 2-Wire addressable highway running Sentinel+ protocol can support up to 32 modules. Each module can have up to 8 connected devices. IGD Configuration software is used to configure the module PCB to switch devices on and off and set addresses (see Tocsin 650/750 Manual). If the connected devices have already been configured then the base address can be set from which all other module addresses will sequentially follow. This is described later in this manual. Device addresses indicated in the table are typical but can be individually set.

Module PCB Features

The following diagram indicates features available on the TOC-750 'module' PCB. Please note that failure to observe and make correct connections or exceed ratings may result in damage to the PCB.

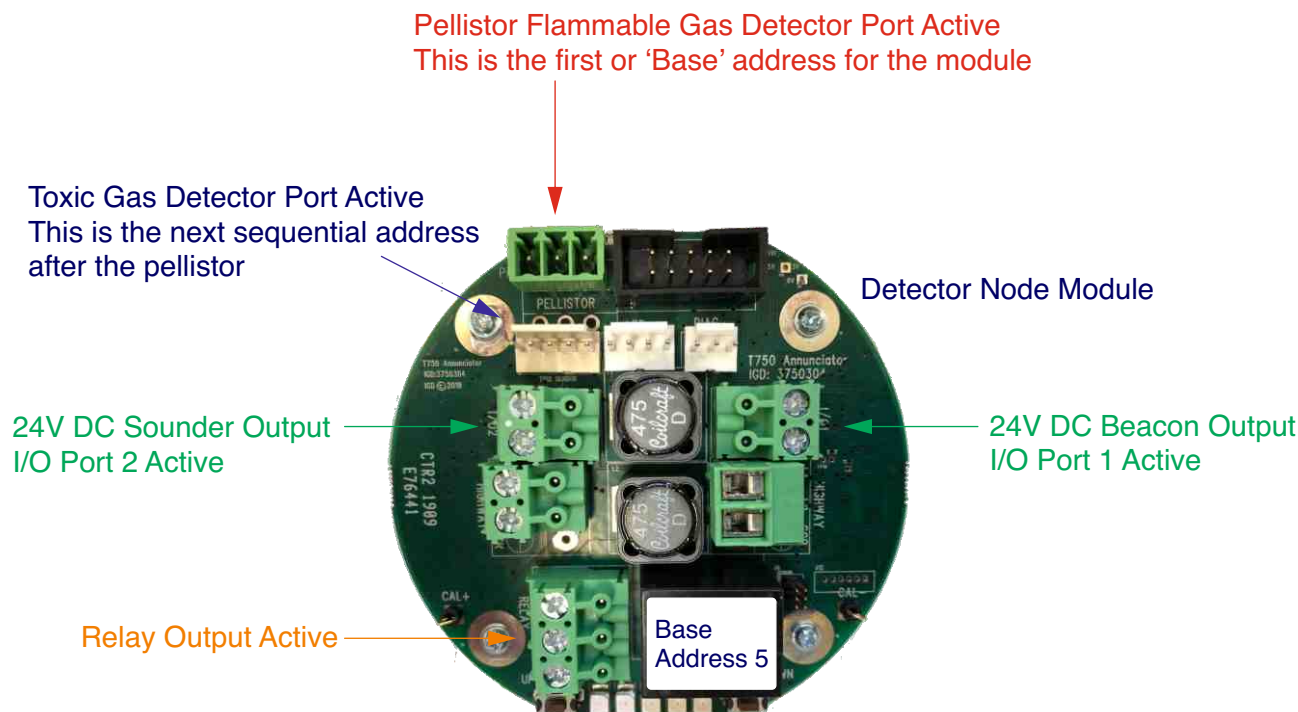


Module PCB Basic Interface Specifications

Housing	TOC-750 Series ABS or Copper Free Aluminium For ATEX Versions
Sealing	IP65 (using suitable glanding) for TOC-750, IP68 for ATEX Versions
Environment	0 -95% RH Non Condensing
Temperature	0-55 Deg C
Voltage	12-28V DC
1 Communication	IGD 2-Wire Highway Operating IGD Sentinel+ Protocol Not Polarity Dependant
2 Relay	5A Non Inductive Loads 230V AC
3 Digital Output	24V DC 100mA Combined For Both Outputs Typically for LED Beacon Sounders
Digital Input	Suitable for use with TOC-10 Link Function
4 Pellistor Port	Option to Interface to MK3, MK6 or MK7 Pellistors
5 Sounder	85dB (Option for TOC-750 Annunciators)
6 Display	2 x 8 Programmable LCD with RGB Backlight (Option for TOC-750 Annunciators)
7 Comm Port	Supports IGD Infra-Red, PID, Toxic and Oxygen Gas Detectors

Internal to each detector is a detector node module PCB (see illustration). This is common to both ATEX and safe area detectors. The module is a common connection point onto the system for gas detectors and also other inputs and outputs.

The default setup for a detector node is indicated as follows.



Note the module lets you have a Toxic and Flammable gas detector running at the same time. You can also operate a beacon sounder from the module so long as its operating current at 24V DC is less than 100mA. In addition there is a relay output that can be used.

Addressing the module differs from older 4-wire systems. By setting one 'base' address you set all other addresses on the module. The example above shows base address 5. Module addresses in this case would be:

Inputs to the Module:	Address
Pellistor	5
Toxic	6
Outputs From the Module	
I/O Port 1 (Beacon)	105
I/O Port 2 (Sounder)	106
Relay	107

Note:

Detector Addresses now run from 1 to 99

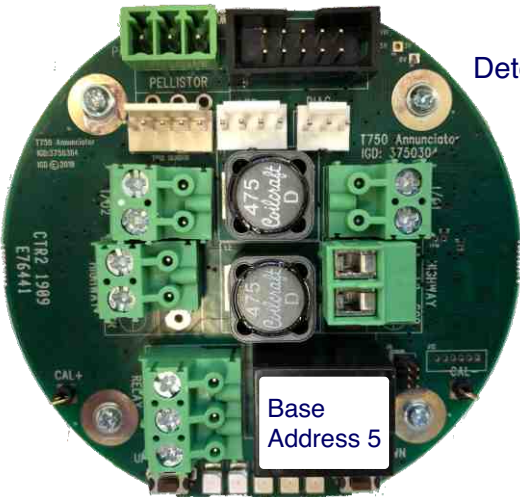
Outputs start 100 on from the set base address.

Output addresses are from 101 to 199

So addresses do not overlap the next logical base address in this example would be 8, so the addresses on the next module would be:

Pellistor address: 8
 Toxic address: 9
 I/O Port 1 address: 108
 I/O Port 2 address: 109
 Relay address: 110

The LED's on the bottom edge of the PCB indicate the PCB setup and status at a glance.



Detector Node Module

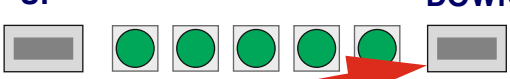
Base Address 5

	Powered	Communicating	Fault
		1s	10s
LED 1: Pellistor			
LED 1: Toxic/O2			
LED 1: I/O Port 1			
LED 1: I/O Port 2			
LED 1: Relay			

In addition there are two push buttons that can be used to view and/or change the module address.

UP

DOWN



1: Press and hold the right hand button, release when all LED's go out. The LED's now indicate the address in binary

	1	2	4	8	16
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

	1	2	4	8	16
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					

2: The LED pattern now indicates the base address in binary. Note it is only possible to see addresses up to 31.

The base address can now be altered by using the two buttons in UP/DOWN mode. Each button press increments the address UP or DOWN

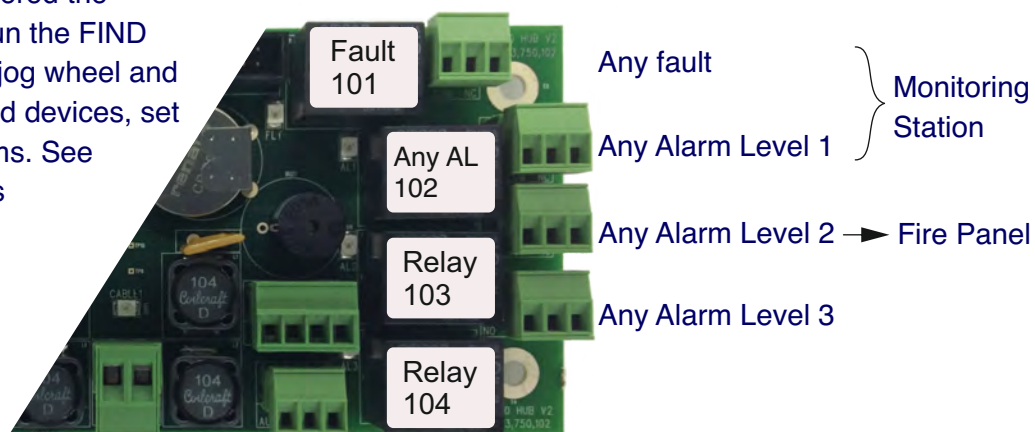
3: When complete press and hold the RIGHT button, release when all the LED's go out. The unit is back to normal operation

DEFAULT ALARM SETUP



When the controller is first powered the option is displayed for 10s to run the FIND wizard. Select by pressing the jog wheel and the controller will find connected devices, set up detector channels and alarms. See controller manual for full details

Beacon Sounders Connected Directly to the Controller A-V Output Are Active on Any Alarm



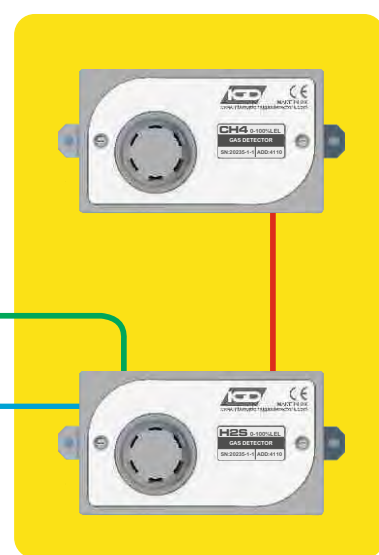
Note Sounders Connected Directly to the Controller Will Mute by Accepting Alarms (Press Jog Wheel) Beacons and Relays Remain Active Until Alarms Can Be Reset.



Controller Relays

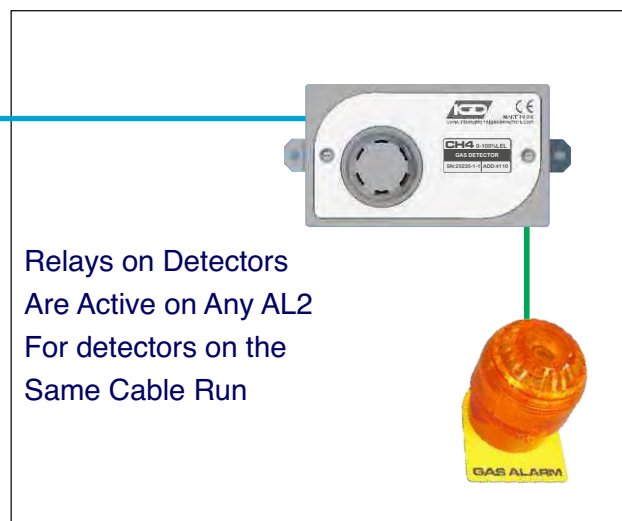
Beacon Sounders Connected Directly to Detectors activate on any AL1 for detectors on the same cable run.

Cable 1



Each Cable Run MUST Have a Unique Set of Addresses, No Duplicates

Cable 2



Relays on Detectors Are Active on Any AL2 For detectors on the Same Cable Run

Default Alarm Levels:

Flammable Gases (Default Methane)	AL1 10% LEL AL2 20% LEL
Hydrogen Sulphide (H2S)	AL1 5ppm AL2 10ppm
Carbon Monoxide (CO)	AL1 20ppm AL2 55ppm

See IGD Publication OIGD193 for full details

All 2-Wire addressable controllers have additional inputs available on their control cards and these all have addresses. If the I/O port is on the control card then these are treated as being on CABLE 0. You can connect to the controllers via WiFi for service and setup. Explanation videos show how to do this. When viewing a controllers setup over WiFi you will see that the cable number forms part of the address. So for example Cable 0 relay 103, is a relay on the controller card. Cable 1 relay 105 is a relay on a cable 1 addressable highway.

Each controller has the following inputs on the control card (cable 0)

Digital Input 1 (used for slam switches or Inputs from fire panels etc), shows as channel 1

Digital Input 2 (used for slam switches or Inputs from fire panels etc), shows as channel 2

Direct connected sensor (disabled by default so does not display on screen), shows as channel 3

Front Panel E-Stop (can be disabled in panel setup) shows as channel 4

This means the first 'in-field' detector will always show as Channel 5

Channel label stickers are provided for easy identification post commissioning for which detector address is which channel. By connecting via WiFi and viewing the controller setup you can see which channel is which detector address.

Access to the controllers remains the same as previous controllers:

Password 5: WiFi Reset (New Feature)

Password 25: Used to inhibit a controller

Password 50: Engineer access

Password 100: Access to alarm levels, zero's and calibrations

Note that with 2-Wire system controllers you will not be able to calibrate a detector that has not already been zeroed on the same day.

Remote system displays can be connected, this is shown in the main installers guide.

To use the embedded WiFi web pages please view the training video guide on the IGD-Academy Website.

A guide to log on to the controller via WiFi is included with the controller and can be viewed on line here:

Note 635 Micro Controllers do NOT support WiFi

WiFi Login

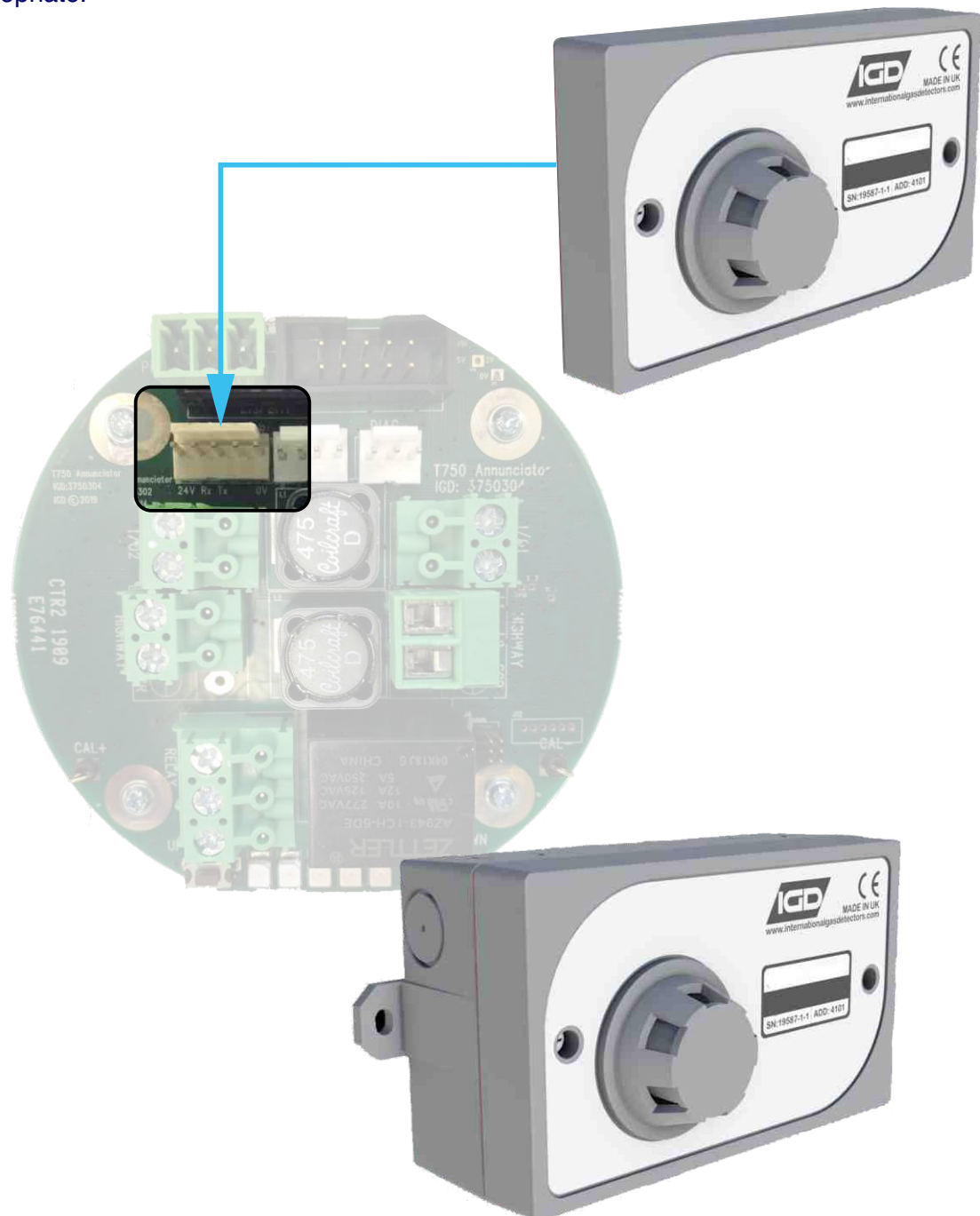


Gas Detector Connection

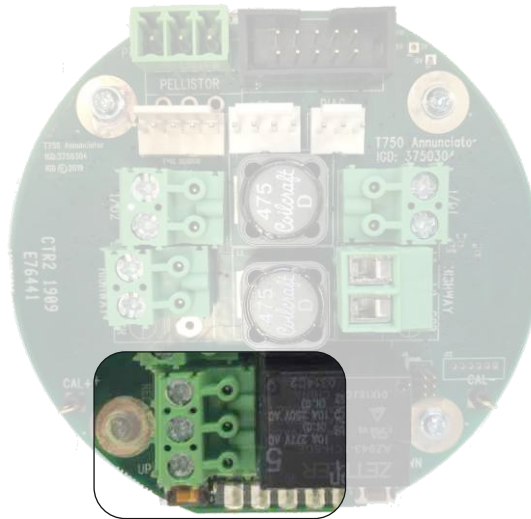
The most commonly supplied detector node comes pre-fitted with a gas detector. The detector front assembly simply plugs onto the indicated connector. Note that all detector front assemblies have a common system address. The detector node module is designed to read the data from this address and report it back to the control panel using its own 'unique' address.

This makes service replacement very simple as the detector assembly is pre-calibrated and can just be plugged in to enable operation.

If detector modules are changed to add or change the detected gas type then the controller will need to be amended so the channel reads and scales correctly and so that alarm levels are appropriate.



Relay Output



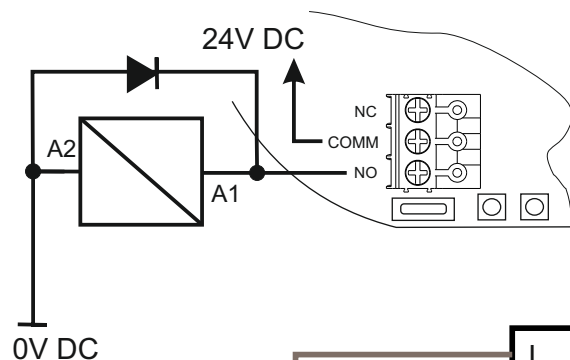
The Detector Node relay output can be used as an alarm interface to external systems, run additional audio visual alarms or directly control other devices. Typical applications could be gas solenoid valves, boiler shut down interfaces or similar. When switching external loads it is important to consider the nature of the load being switched. For inductive loads suitable protection from induced back EMF must be fitted. Many modern devices conforming to the European EMC Directive may already have devices fitted as part of their design to limit in-rush currents and back EMF. Where these are not fitted the following two diagrams provide guidance. Failure to observe this may result in damage to the Detector Node.

IMPORTANT NOTE: Power to switch external devices is NEVER provided from the gas detection system and in all cases is from an external power source.

Switching DC Loads

Example fit protection diodes when switching external DC loads.
1N4004 Diodes.

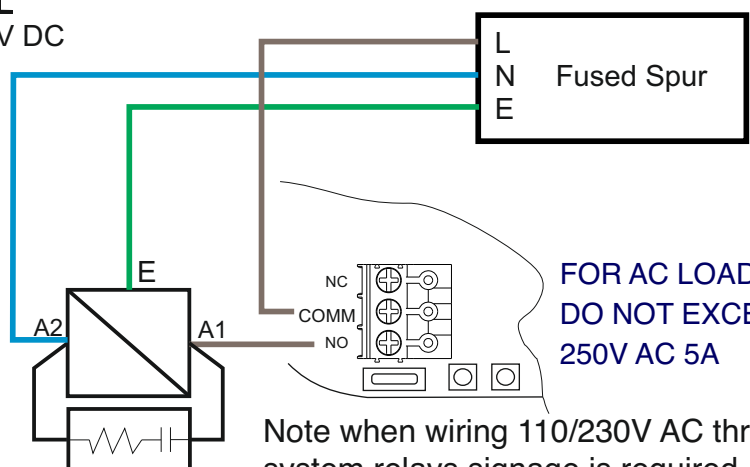
For Diode Packs
IGD PN: TOC-750-DIO



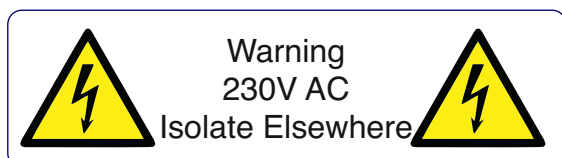
Switching AC Loads

Example fit protection suppressors when switching external AC loads typical device provided with each module 47R 1uF

For Additional Units
IGD PN: TOC-750-SNB

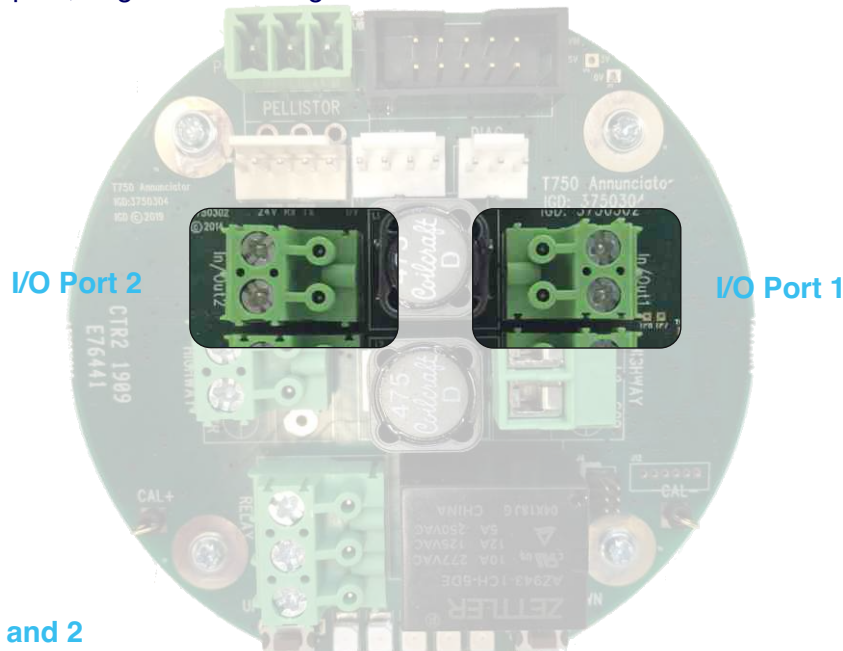


Note when wiring 110/230V AC through system relays signage is required according to BS 7671 warning for live terminals and electric shock risk. Labels available as IGD PN TOC-LIVE-SGN. Suitable fusing to BS 7671 must be in place, with cable identification to BS 7671.



Solid State Output

Each Detector Node has 2 multi-function input - output ports. These can be configured independently as either 4-20mA inputs, Digital Inputs or solid state outputs. The solid state outputs are typically intended to switch small loads such as LED beacon sounder modules or small signal interface relays as indicated below. As standard Detector Nodes Ship with I/O Port 1 and 2 setup as Solid state outputs, negative switching



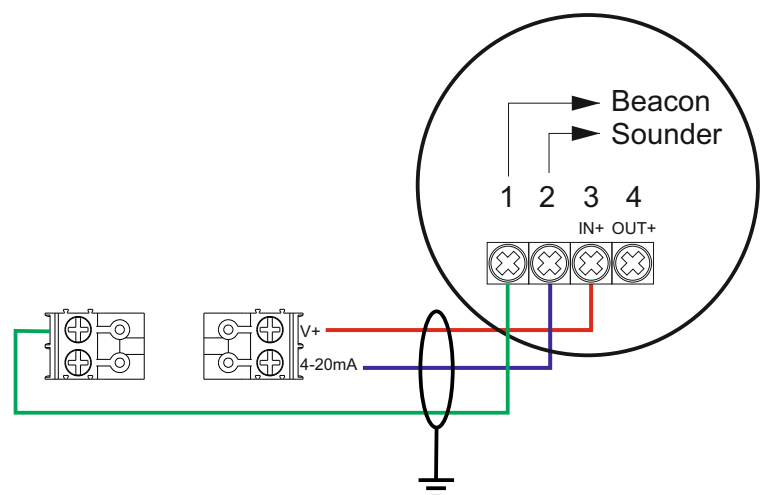
Wiring to I/O Port 1 and 2 Select OUT SSR DUAL SW Option

The Solid State Outputs Can be used to Switch LED Beacon Sounders if Required.

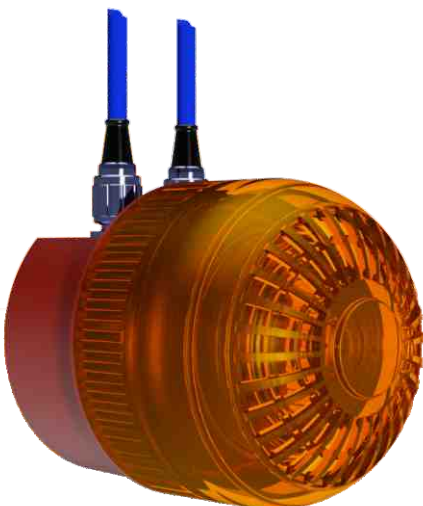
It is recommended to use IGD LED Beacon Sounders Part Number 5083101 Connections Shown are for 5083101 and shown one output switching the beacon and one port switching the sounder. This allows the controller to mute the sounder on accepting an alarm.

When using Other Manufacturers Devices do Not Exceed 100mA @ 24V DC Total combined Load for Port 1 and Port 2 Use screened cabling

Standard Beacon Sounder PN 5083101

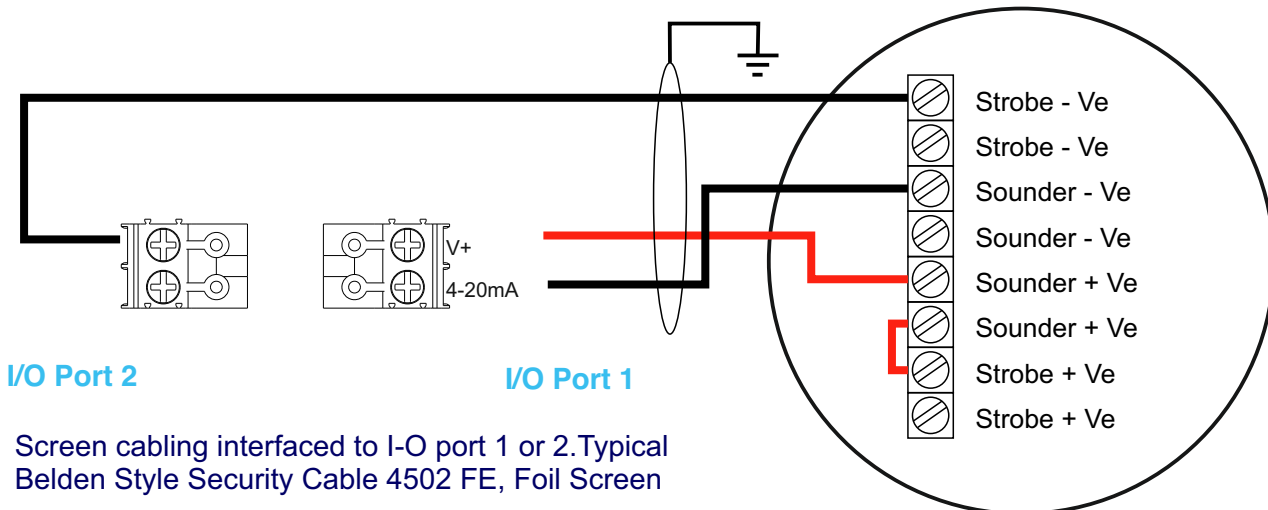


Screen cabling interfaced to I-O port 1 or 2. Typical Belden Style Security Cable 4502 FE, Foil Screen



Solid State Output Cont..

Alternative Banshee Excel Version Beacon Sounder PN 5083101



The Solid State Outputs Can be used to Switch LED Beacon Sounders if Required.

Wiring to I/O Port 1 and 2 Select OUT SSR DUAL SW Option

It is recommended to use IGD LED Beacon Sounders Part Number 5083101 (Klaxon or Banshee Excel) Connections Shown are for 5083101 Banshee Excel and shown one output switching the beacon and one port switching the sounder. This allows the controller to mute the sounder on accepting an alarm. Typically one port can switch 2 beacon sounders

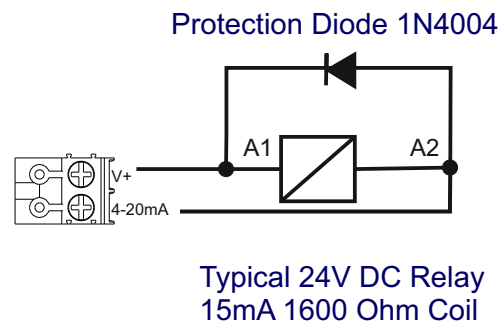
When using Other Manufacturers Devices do Not Exceed 100mA @ 24V DC Total combined Load for Port 1 and Port 2 Use screened cabling

Solid State Output Small Signal Relay Switching

When Switching Small interface relays ensure protection diodes are fitted as indicated, these are supplied with the module. Failure to do so can result in damage to the output. Ensure relay coil is rated at 24V DC and Max 100mA or Min 240 Ohms.

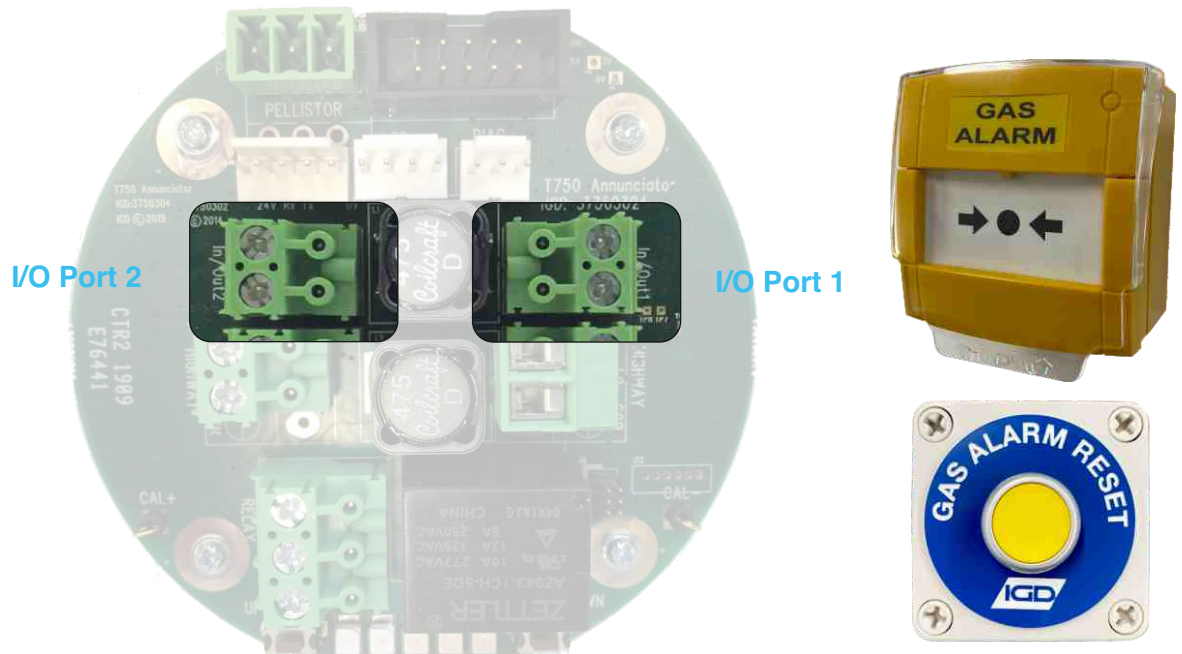
Do not exceed 100mA Load Port 1 and Port 2

Select OUT SSR SW+ or SW- Option



Digital Input

Each Detector Node has 2 multi-function input - output ports. These can be configured independently as either 4-20mA inputs or solid state outputs. The digital inputs are typically intended to totalise pulse counts, mainly from gas meters, or use for slam switch/ E-Stop and non illuminated call point applications

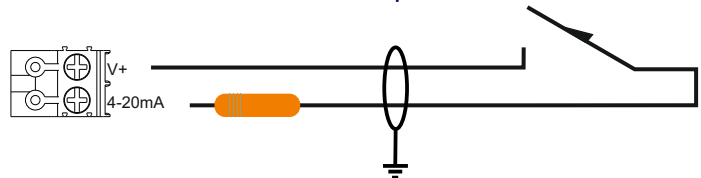


Wiring to I/O Port 1 and 2

If You Are Wiring Digital Inputs (24V) Option Then You Need to Include a 560 Ohm Resistor to Limit Current Around the Circuit

Select IN DIGITAL 24V Option

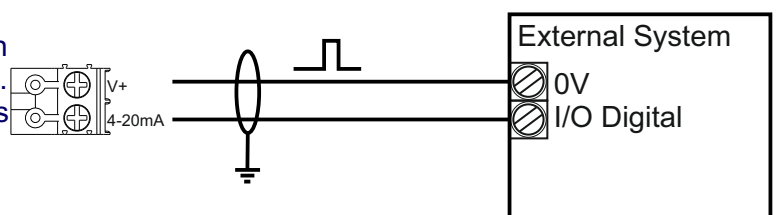
The resistor is not required from the PCB version 4.



Screen cabling interfaced to I-O port 1 or 2. Typical Belden Style Security Cable 4502 FE, Foil Screen

If You Are Wiring Digital Inputs (0V) Option Allows Logic inputs from External Devices. Anything Less Than 1.5V DC is Treated as Off Anything Greater is On

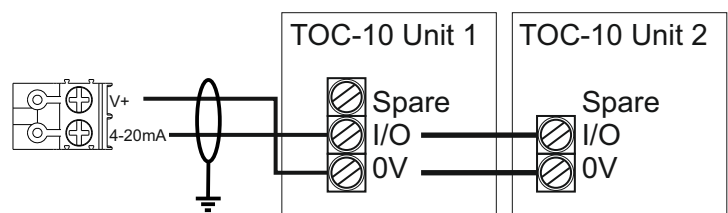
Select IN DIGITAL 0V Option



Solid State Input From TOC-10 Gas Detector

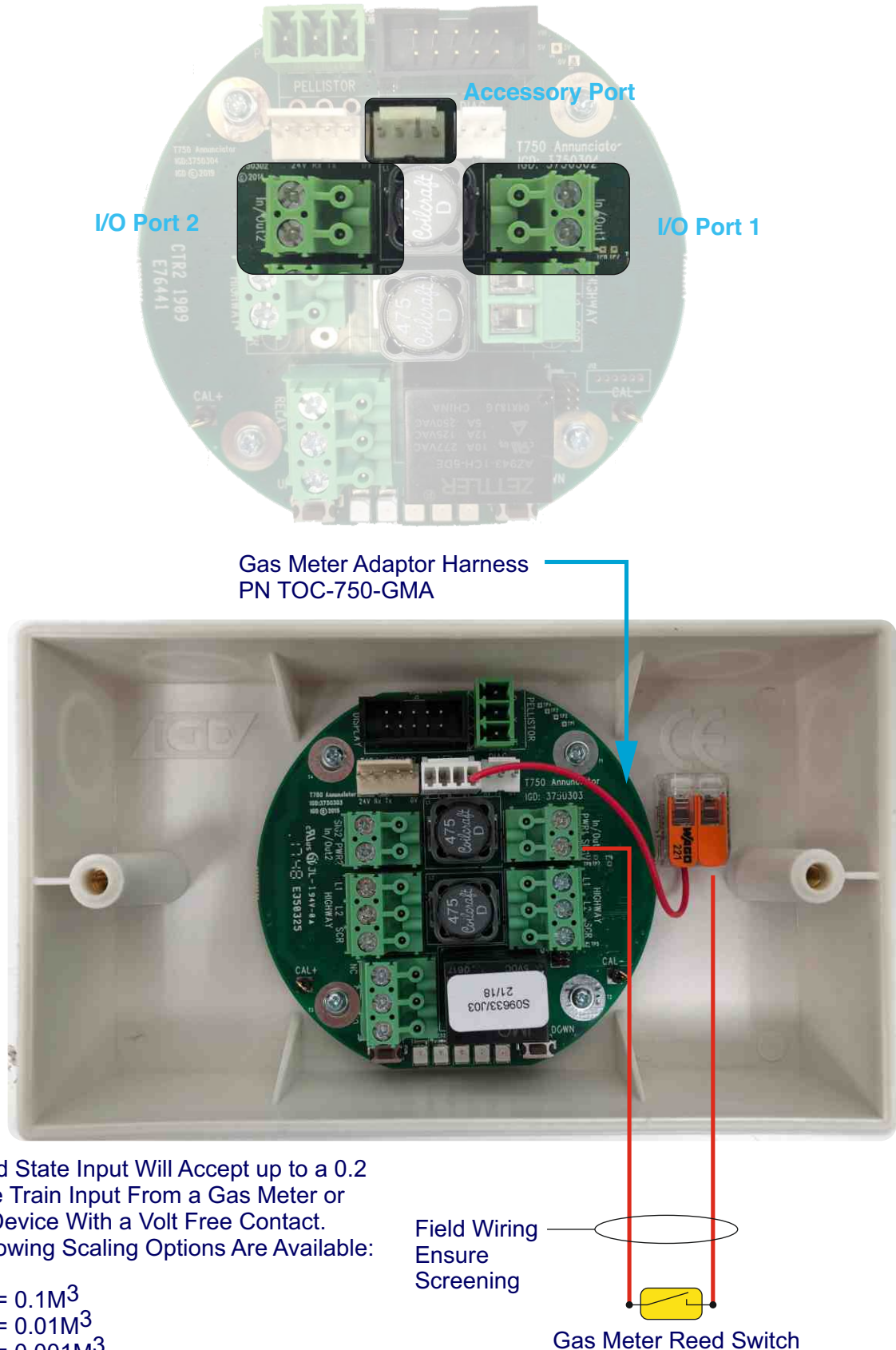
The Solid State Input can be used to interface to IGD TOC-10 Series Flammable Gas Detectors. Wire as Indicated and the Input Will Read the Two Alarm Levels From the TOC-10. This will display on an Addressable Controller in the Same Manner as Any Other Gas Detector. Up to 6 TOC-10 Detectors can be Daisy Chained to the Input

Select IN DIGITAL 0V Option



Digital Input.... Gas Meters

To be able to read a digital pulse train from a gas meter volt free contact or similar it is necessary to use adaptor cable part number TOC-750-GMA. The following diagram indicates fitting the cable and field wiring to a volt free contact.



The Solid State Input Will Accept up to a 0.2 Hz Pulse Train Input From a Gas Meter or Similar Device With a Volt Free Contact. The Following Scaling Options Are Available:

- 1 Pulse = 0.1M³
- 1 Pulse = 0.01M³
- 1 Pulse = 0.001M³

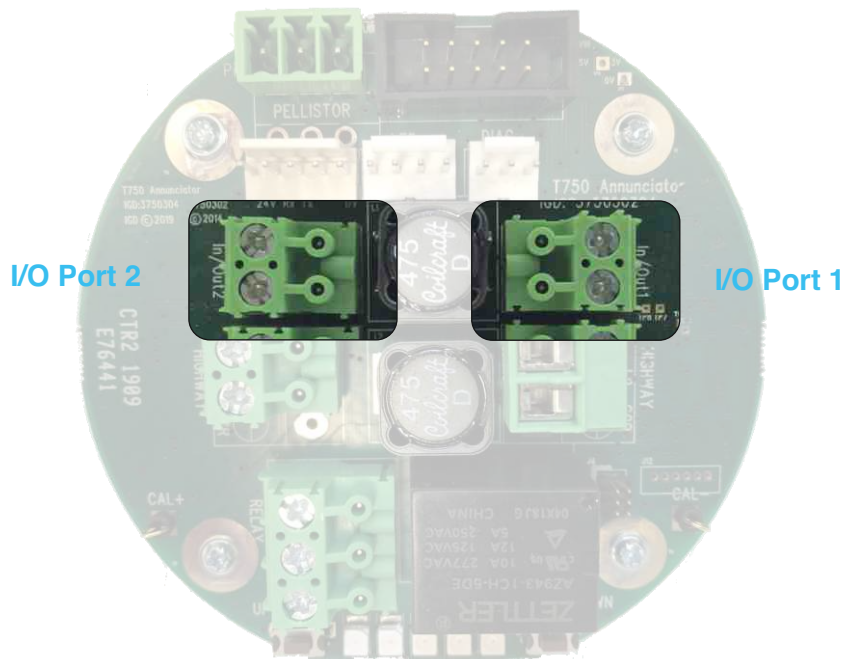
Select IN GM, 0V ... M3 Option, depends on the Gas Meter's Resolution.

Field Wiring
Ensure
Screening

Gas Meter Reed Switch

4-20 mA Inputs

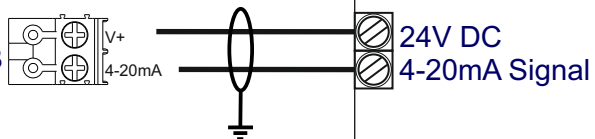
Each Detector Node has 2 multi-finction input - output ports. These can be configured independently as either 4-20mA inputs or solid state outputs. When used as 4-20mA inputs any standard 4-20mA loop powered can be read in as an analogue signal. Using the setup routine the signal can be scaled and then read back addressably onto the system controller.



Wiring to I/O Port 1 and 2

- a) For a 2 Wire Loop Powered Device
Select OUT 4-20MA 24V Option

The Input Sources a 24V DC supply then sinks the signal current on the module PCB across a 122 Ohm resistor on the PCB

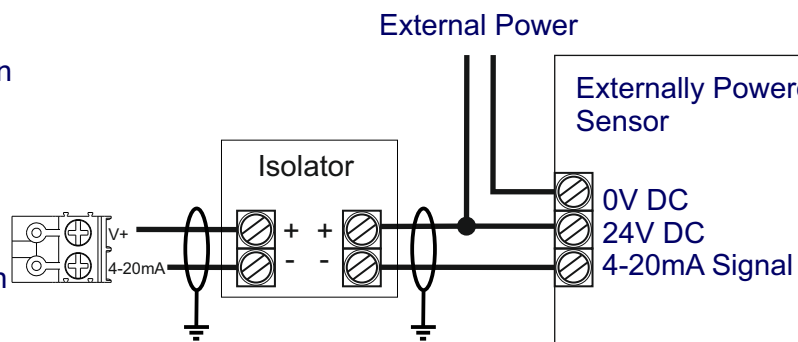


Loop Powered 2 Wire Sensor

24V DC
4-20mA Signal

- b) For a 2 Wire 4-20mA Device Externally Powered Device
Select OUT 4-20MA 0V Option

24V DC Power is supplied from an external source then sinks the signal current on the module PCB across a 100 Ohm resistor on the PCB. Note if the externally powered sensor does not have an isolated output then a separate isolator must be fitted as indicated. These may or may not require external power. The IGD Option shown is loop powered PN TOC-MA-ISO



External Power

Externally Powered 4-20mA Sensor

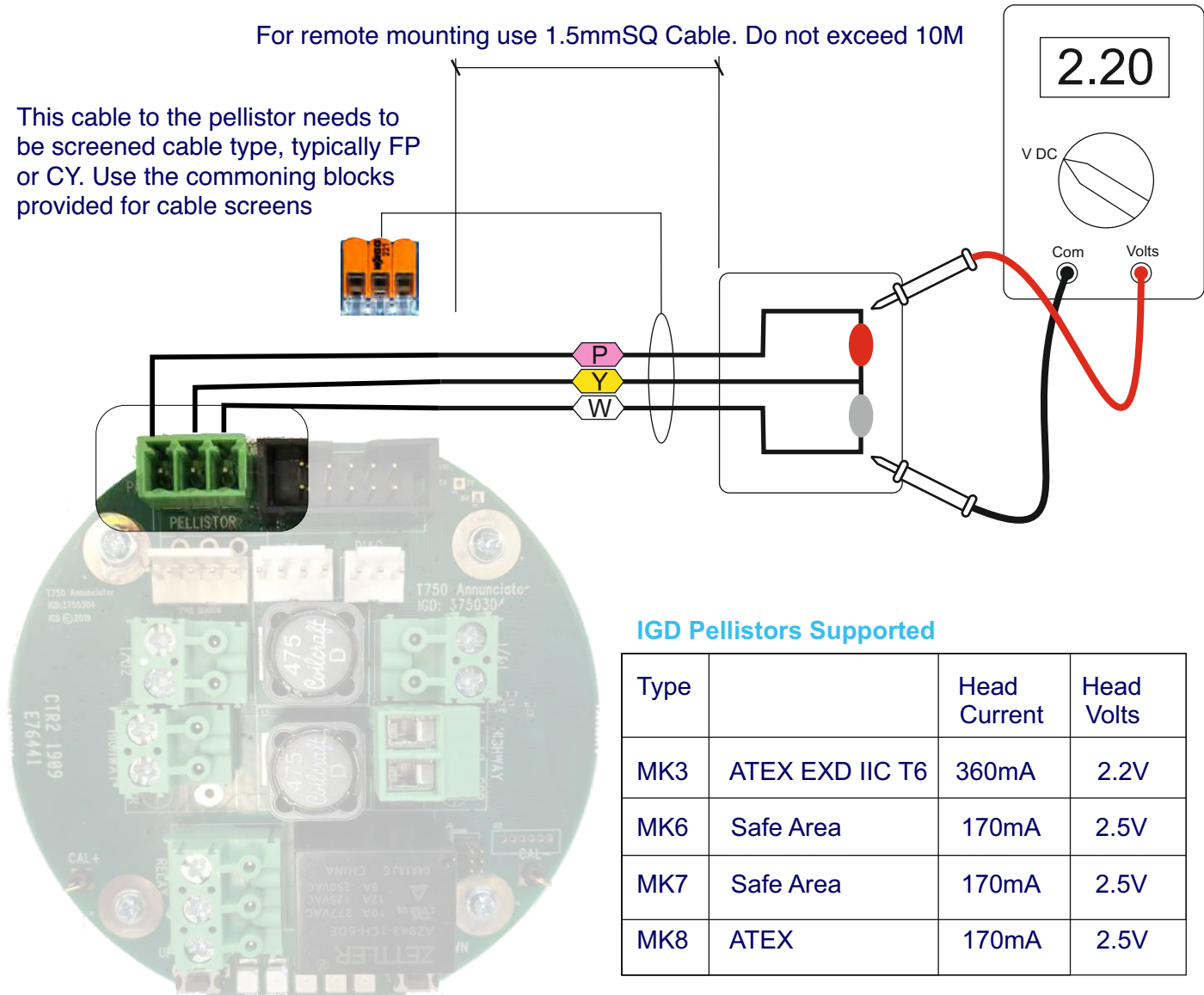
0V DC
24V DC
4-20mA Signal

PELLISTOR (CATALYTIC) FLAMMABLE GAS DETECTOR INTERFACE



The Detector Node PCB is equipped with a Pellistor or Catalytic flammable gas detector interface. This supports all IGD manufactured pellistors as indicated below. Note that the correct pellistor option must be selected in the setup software routine for the pellistor to operate correctly.

The Pellistor can be mounted remotely from the PCB. When doing so do not exceed the indicated cable length.

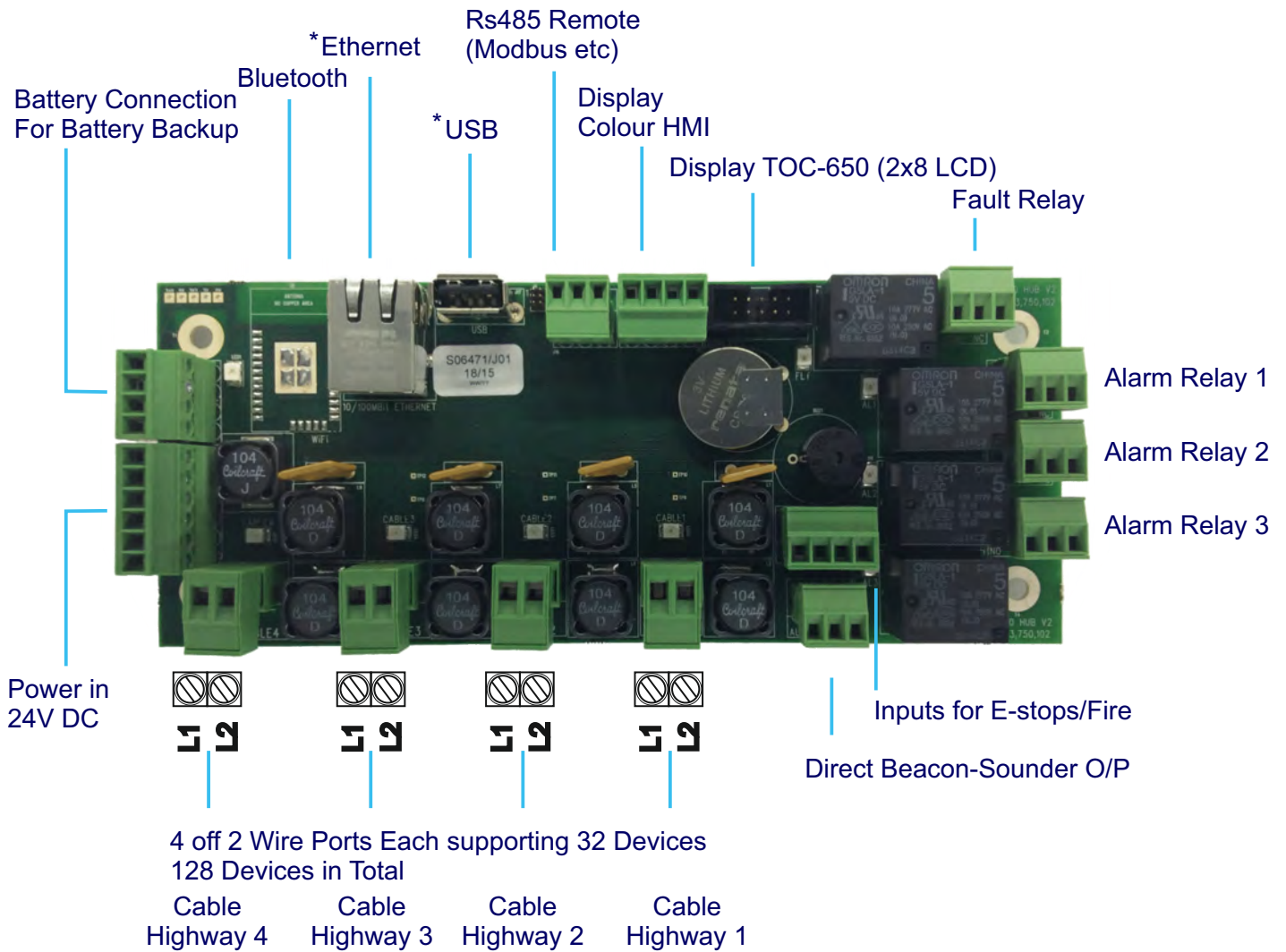


In operation and with zero air applied correctly to the detector the ‘balance’ between the two detector ‘beads’ as measured P-Y and Y-W should not show a difference of more than 70mV. If the difference is larger than this then it could be an indication of aging or damage and the detector should be replaced.

SECTION 5

Control Panel Interfaces and Connections

Tocsin 650 and 750 Control Panel & New 2 Wire Hub PCB Features for 4 port card



Notes

Two display options, either 650 style with jog wheel

or

HMI Style touch screen display

Note both displays can be fitted at the same time which can allow the HMI display to be remote from the panel and used as a system repeater or mimic.

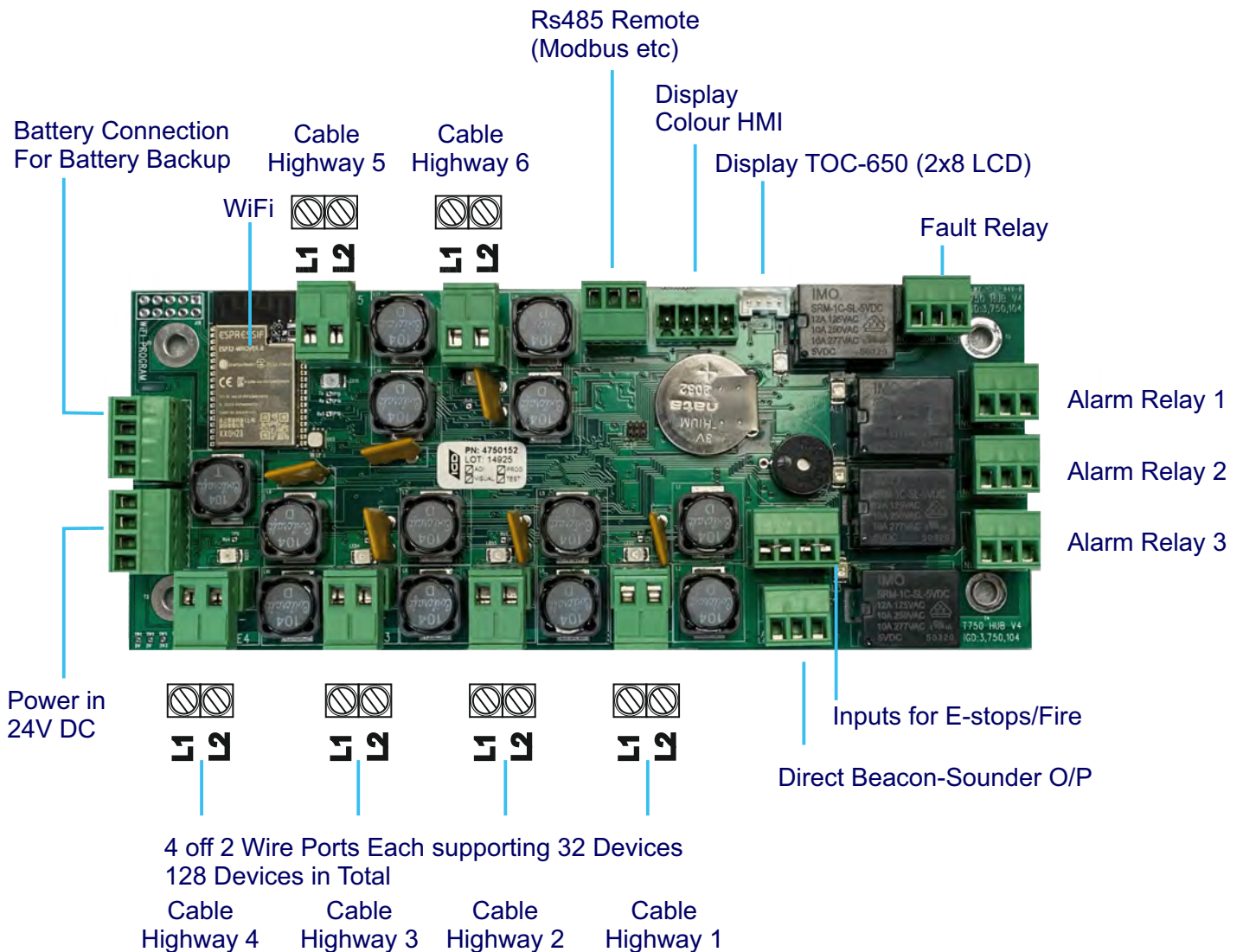
Maximum of 32 Devices on a highway.

Maximum of 99 Sensor address on a highway.

Maximum of 99 Relay address on a highway.

Maximum of 2A per Highway Without Additional Power Booster Modules.

Tocsin 650 and 750 Control Panel & New 2 Wire Hub PCB Features for 6 port card



Notes

Two display options, either 650 style with jog wheel

or

HMI Style touch screen display

Note both displays can be fitted at the same time which can allow the HMI display to be remote from the panel and used as a system repeater or mimic.

Maximum of 32 Devices on a highway.

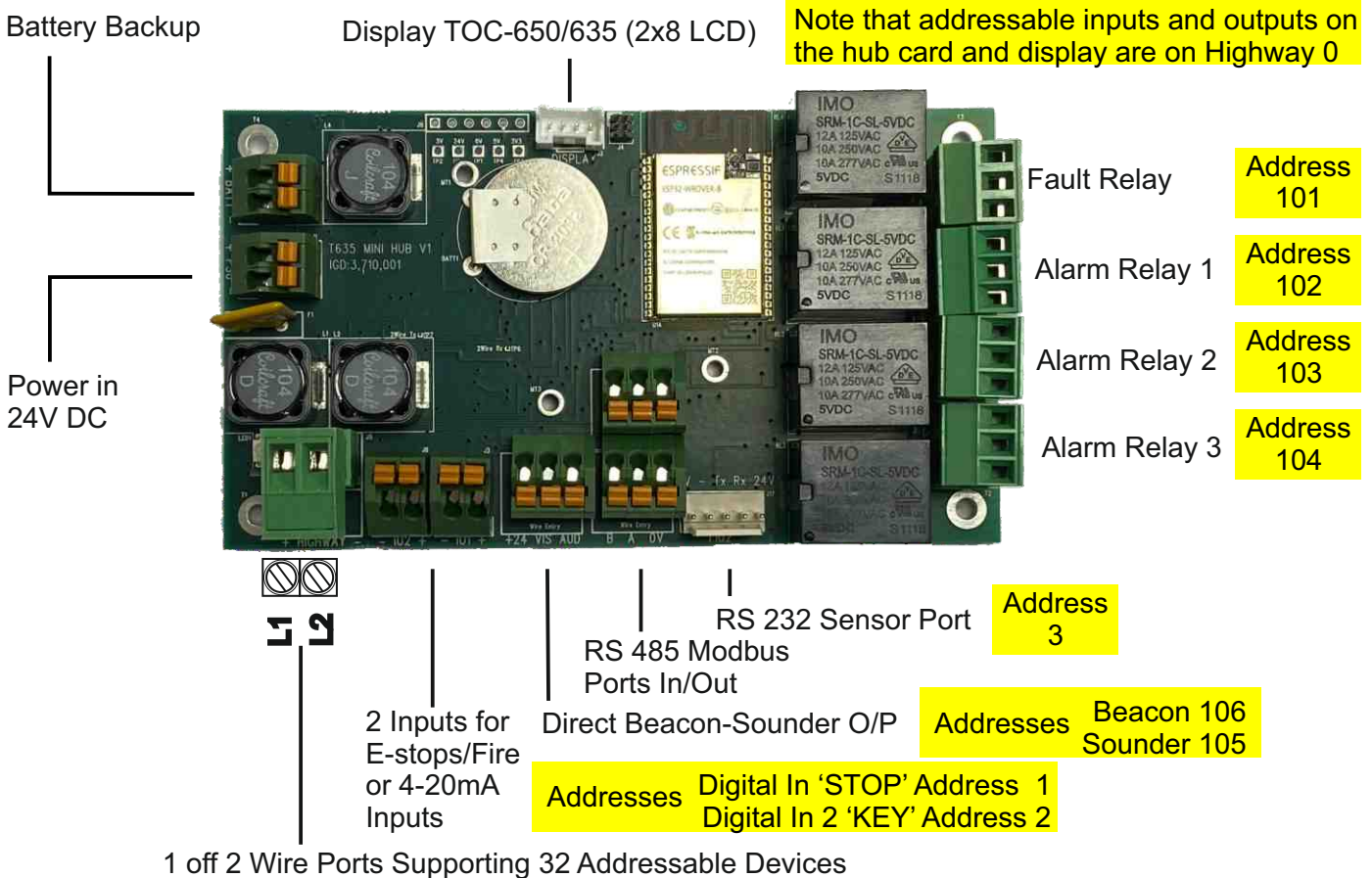
Maximum of 99 Sensor address on a highway.

Maximum of 99 Relay address on a highway.

Maximum of 2A per Highway Without Additional Power Booster Modules.

T635 PLUS Control Panel & 2 Wire Hub Controller PCB Features & I/O Addresses

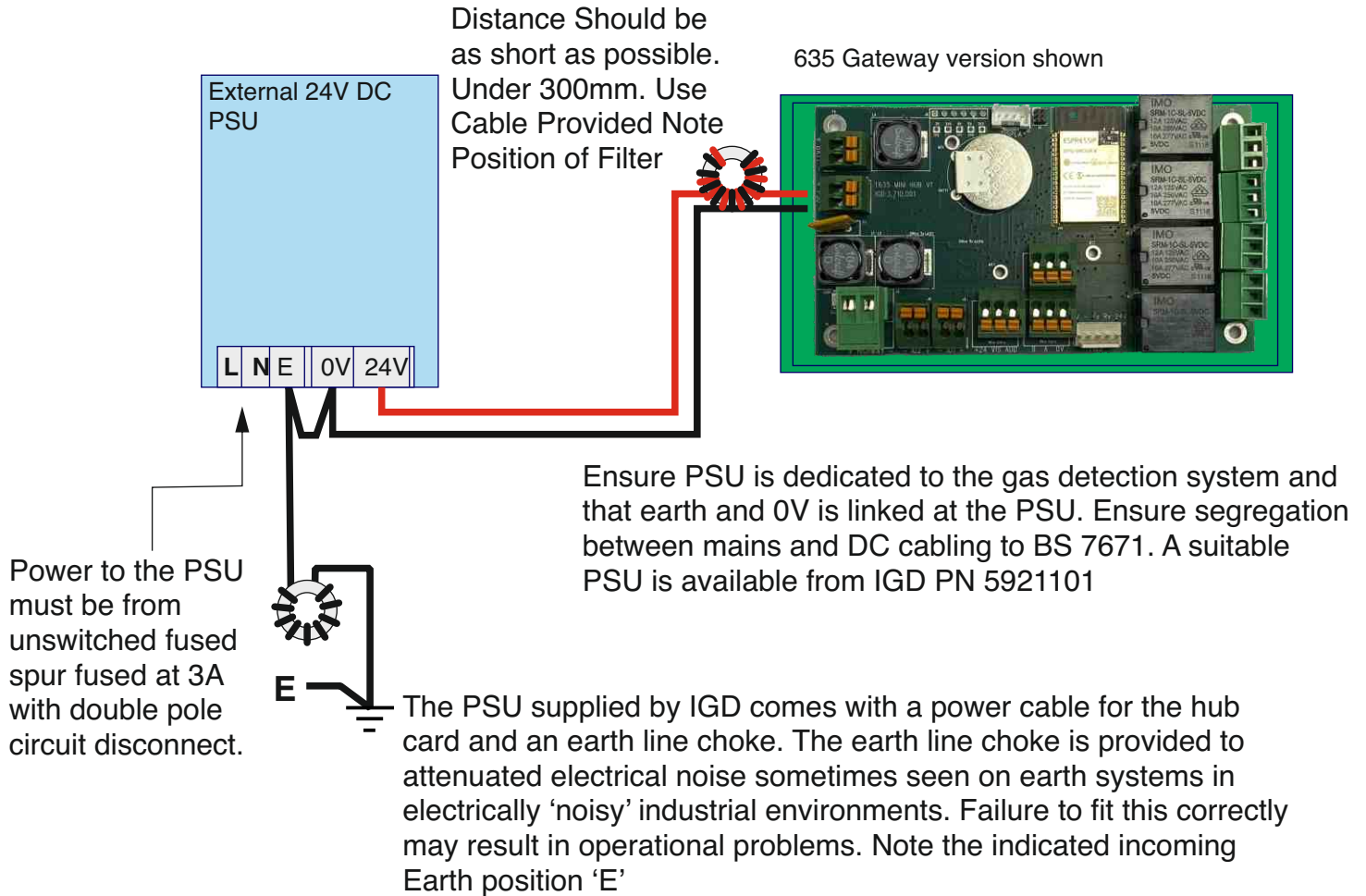
Fitted to Controller PN TOC-635-PLUS



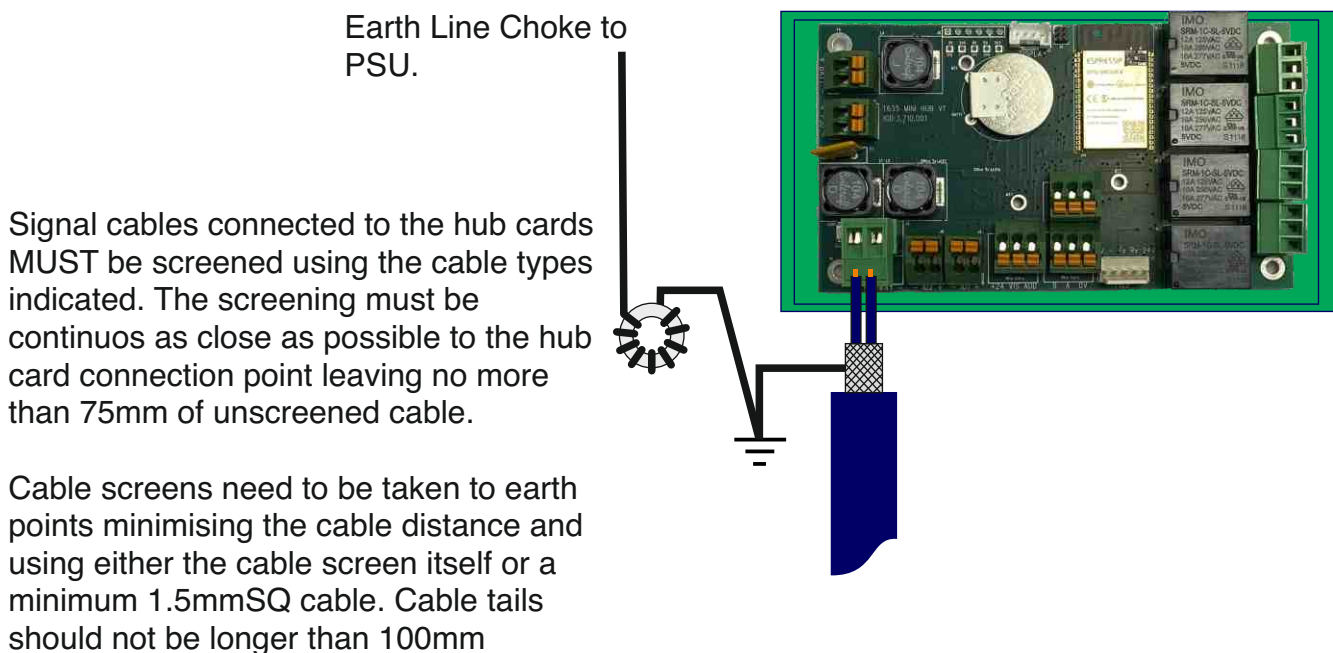
Gateway Product Versions.

The hub cards indicated can be purchased as 'Gateways'. These are used in applications where it is desirable to build gas detection into systems where local displays and alarms are not required. Examples include OEM equipment, ventilation control and similar. In these applications the hub card is supplied on its own DIN rail base ready for integration. When using gateways a suitably sized DIN rail PSU should be used which is dedicated just to the gateway. The PSU must not be shared with other systems that may interfere to the detriment of the gateway. Power supplies should be nominally 24V DC adjusted to 27V DC. This is the same for DIN rail mounted versions of the TOC-750 HUB card

Gateway Product Versions, General Requirements



Note the link between the PSU earth and PSU 0V connections.



Panel Inputs 1 and 2 Cable 0

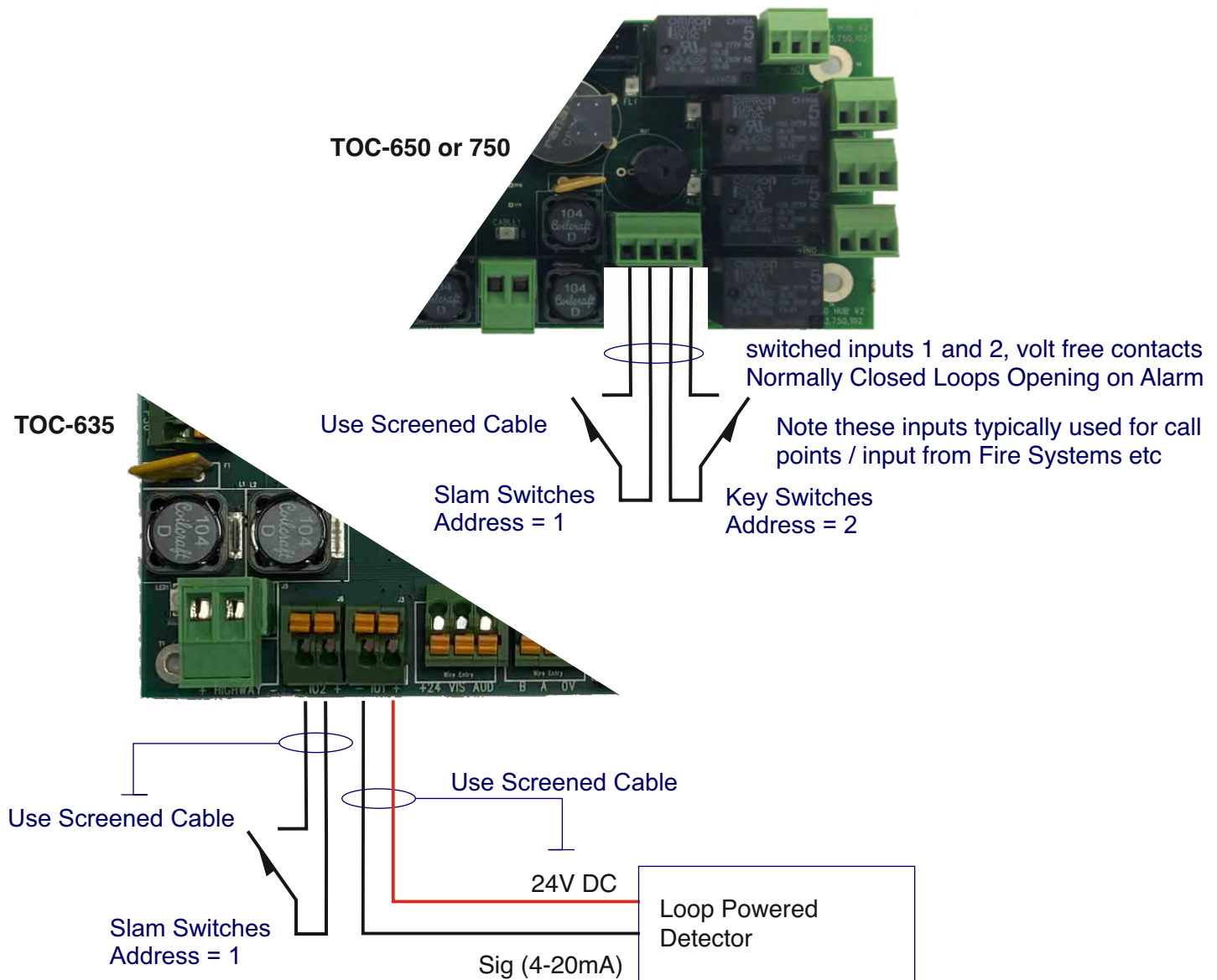
The 635/650/750 hub cards are fitted with two multi-function which can be configured either as digital or analogue input function. The digital inputs are for use when interfacing to volt free contacts. These can be used for example with slam switches or a relay output from another system such as a fire alarm panel.

The analogue inputs can be used with 4-20mA loop powered detectors (current sourcing).

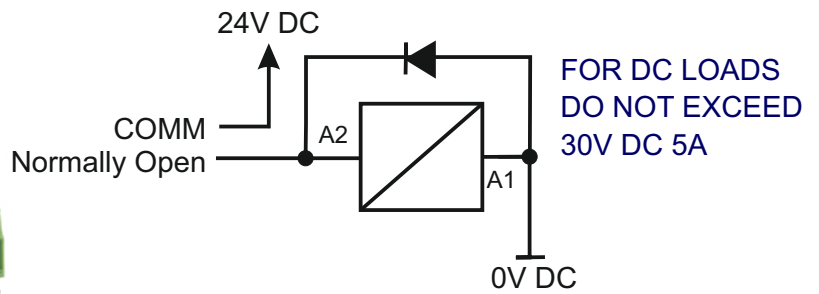
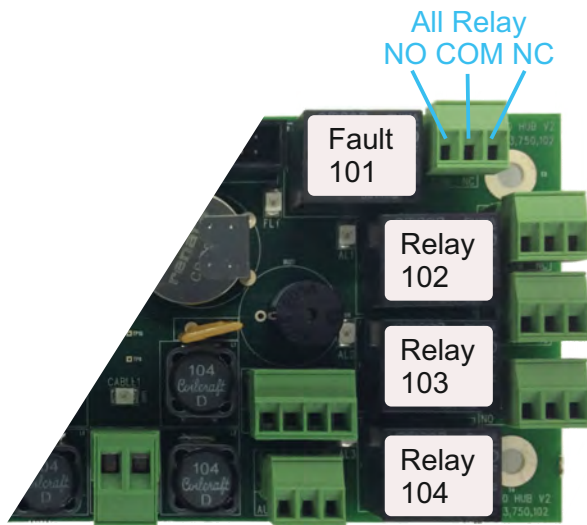
The inputs can be configured using the WiFi interface. If using the mA inputs these will need correct scaling and a one time calibration.

Note that these two inputs are shipped linked with resistors and as digital inputs. This is to prevent damage should the port be set to mA input. The resistor prevents port damage should the port be configured to a mA input and the links left in place.

They appear during a FIND command on cable 0 (internal to the hub card) and will have input addresses 1 and 2 assigned by default. Alarms can be set against these two channels in the same manner as any other detector. Note these channels are supplied linked out and will always be the first two channels on the control panel.



Alarm and Fault Relays



Example fit protection diodes when switching external DC loads. 1N4004 Diodes are provided with each module.

For Additional Diode Packs
IGD PN: TOC-750-DIO

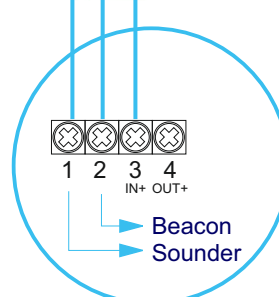
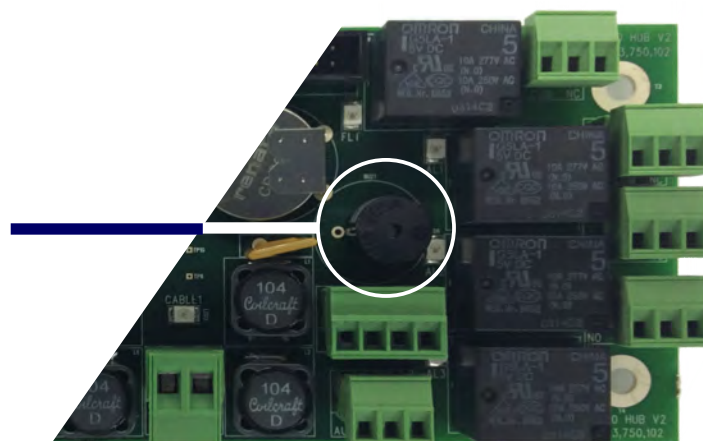
The four relays included on the hub card can be assigned to alarm levels in the relay alarm routine. They appear on internal cable 0 during a relay FIND.

All 4 relays are normally energised, de-energising on alarm or on loss of power to panel

Panel Beacon Sounder Output

The 750 hub card is fitted with two SSR outputs intended for use with Beacon Sounders. During a FIND command these will appear on cable 0 (internal to the hub card) and can be assigned to alarm levels during the alarm setup routine. Addresses will be assigned as 105 and 106 during the FIND operation.

The 750 Hub Card also incorporates a built in sounder. This also has its own address and will appear by default as relay O/P 107 after a FIND operation.



Output Drive 24V DC
@ 100mA

Sounder is Address 105
Beacon is Address 106

Panel Displays

Two display options are available. A 2 x 8 RGB LCD, supplied as standard on the 650 model and a colour HMI touchscreen supplied as standard on the 750 model. Both run from different ports on the same hub card.



TOC-750 Style display connects through an RS485 Interface which allows the display to be remote from the hub if required



TOC-650 Style display connects using an RS485 connection via 4 way JST style connector

Note the hub PCB can run either display, both together with the HMI display remote or the hub can run 'blind' with no connected display.



Notes

TOCSIN 650/750

ADDRESSABLE RELAY CARD

In all Cases:

Relay contact ratings.

5A @ 250V AC Non-Inductive

5A @ 30V DC Non-Inductive

Spike suppression must be fitted

Note that FAULT relays are normally energised on power up.

Power out for use in conjunction with relays

0V DC

24V DC

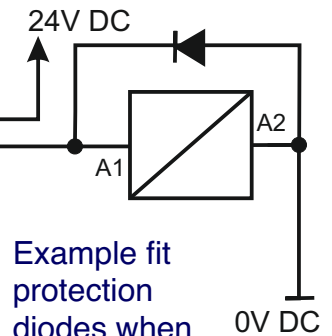
Relay status LED, ON when Energised

10 off Digital/Analogue Input Ports

2-Wire Highway Connections

Pin 1	Line 1
Pin 2	Line 2

Pin 1	Line 1
Pin 2	Line 2



Example fit protection diodes when switching external DC loads.

Normally Open
Common
Normally Closed

Relay Terminals

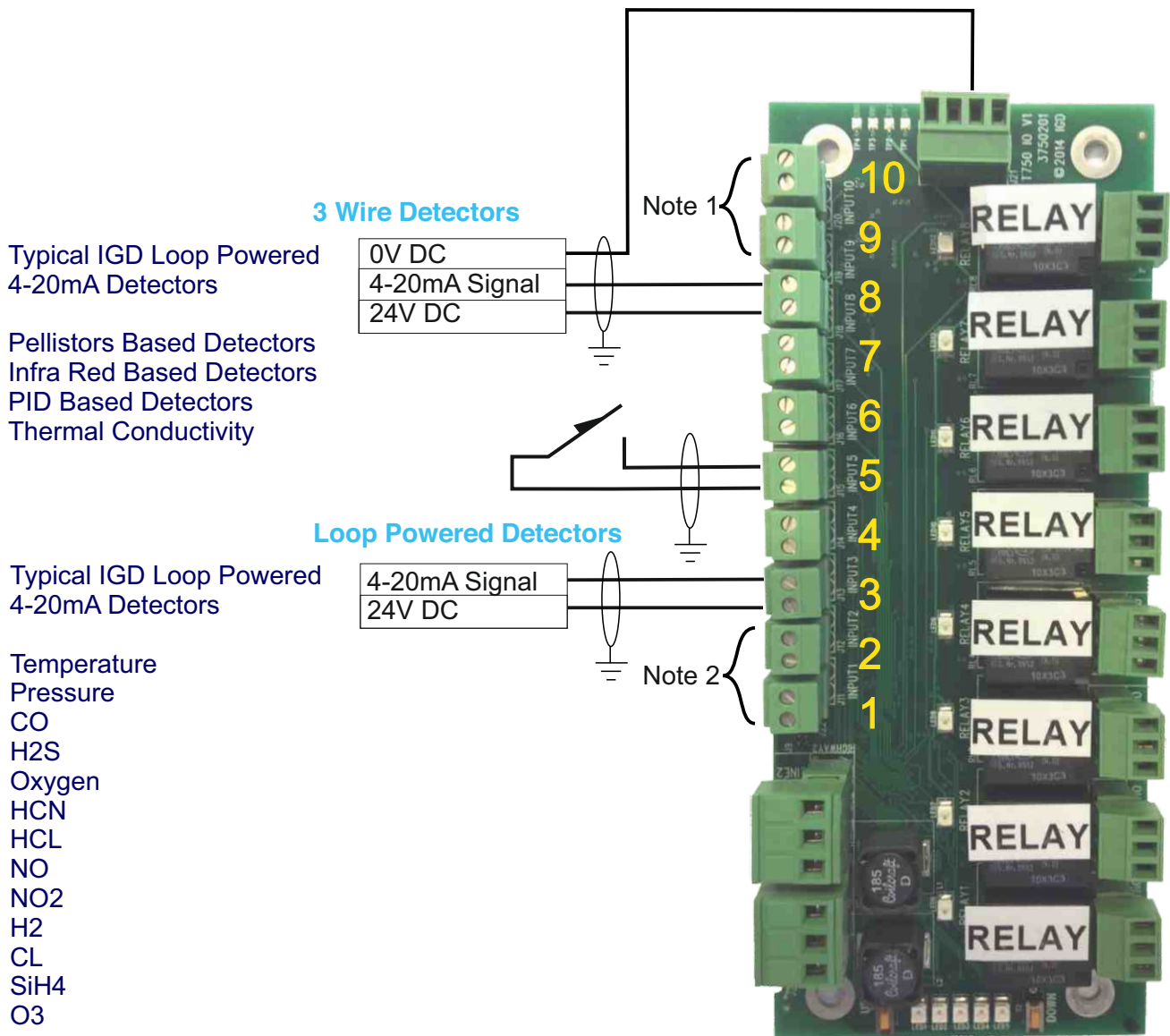
First Relay on The Card (relays number from this one).

Base Address set up LED's and interface for the relay card

Cable Screens Must Be Connected and be Continuous

Tocsin 650/750 Addressable Relay Card Input Ports

Relay cards also have analogue and digital inputs that can be used to read data onto the system from external devices. Setup of the inputs, type, range, addressing etc is controlled via IGD's Android Apps. Wiring options are indicated below. Note the differences between Version 1 and 2 PCB assemblies.



Note 1 These Ports are designated to be digital inputs only.

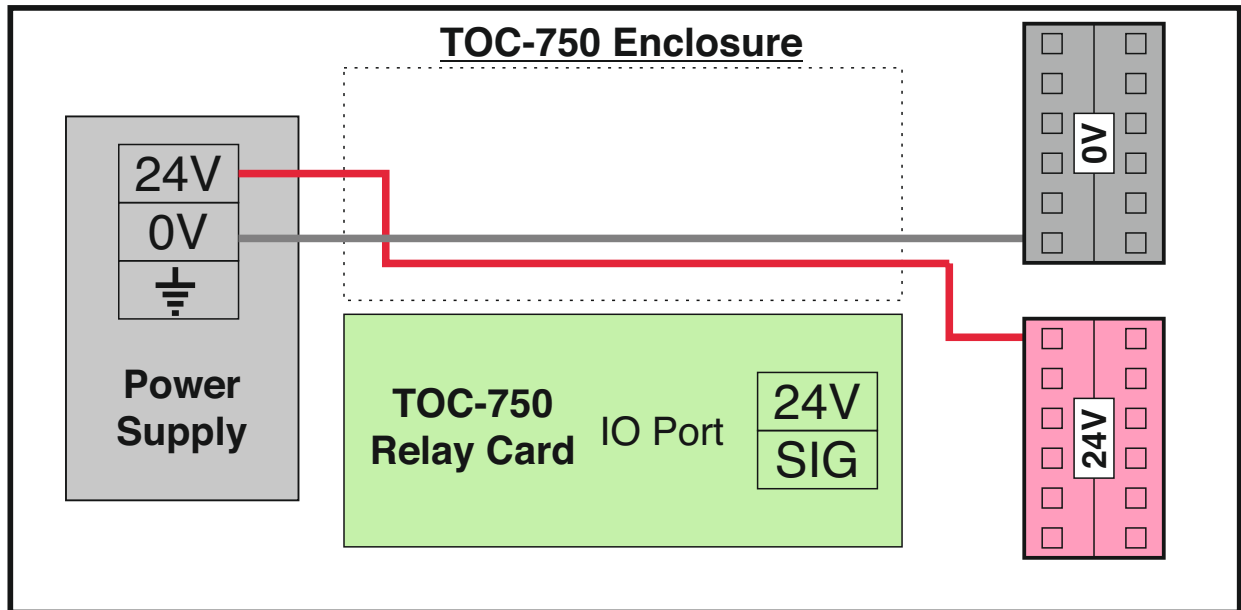
Note 2 These Ports are not used on version 1 PCB assemblies limiting the PCB to a maximum of 6 analogue inputs or 8 digital inputs including ports 9 and 10

Adding Power Terminals to the Controller

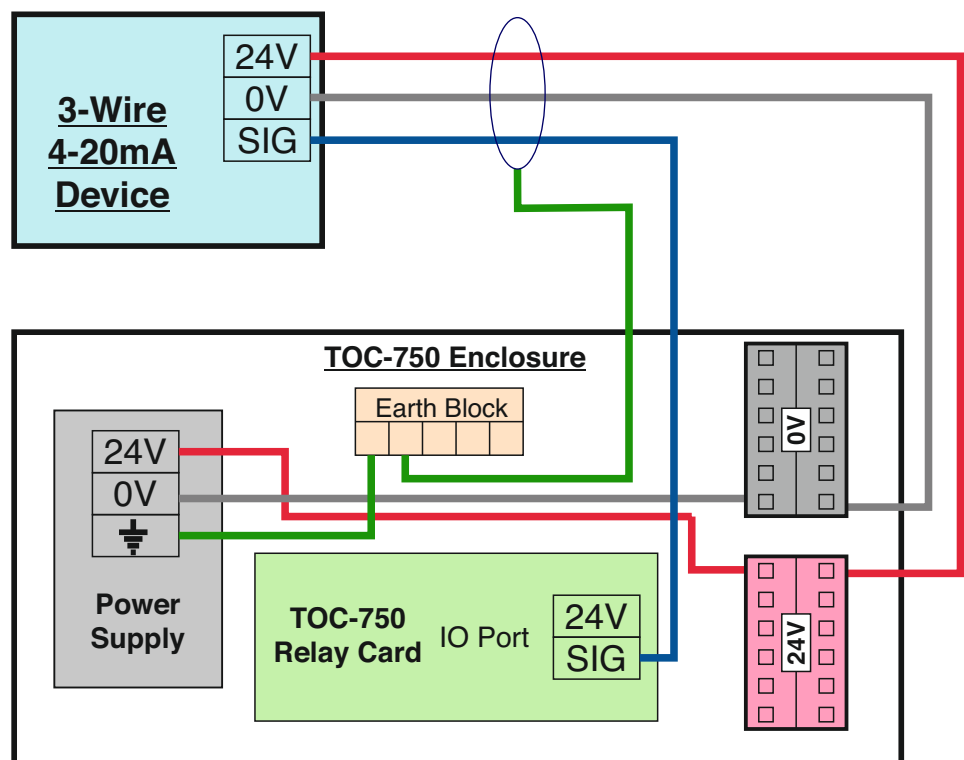
In some cases it may be necessary to add additional 0V and 24V DC terminals to the controller to allow easier interfacing to accessories.

PN TOC-AUX-PSU

This part number adds a cable loom and Wago style screwless terminal blocks to the controller. The additional terminals can then be used to provide power to external devices. Care should be taken not to exceed the overall capability of the internal PSU. **This option is a factory fit item.**



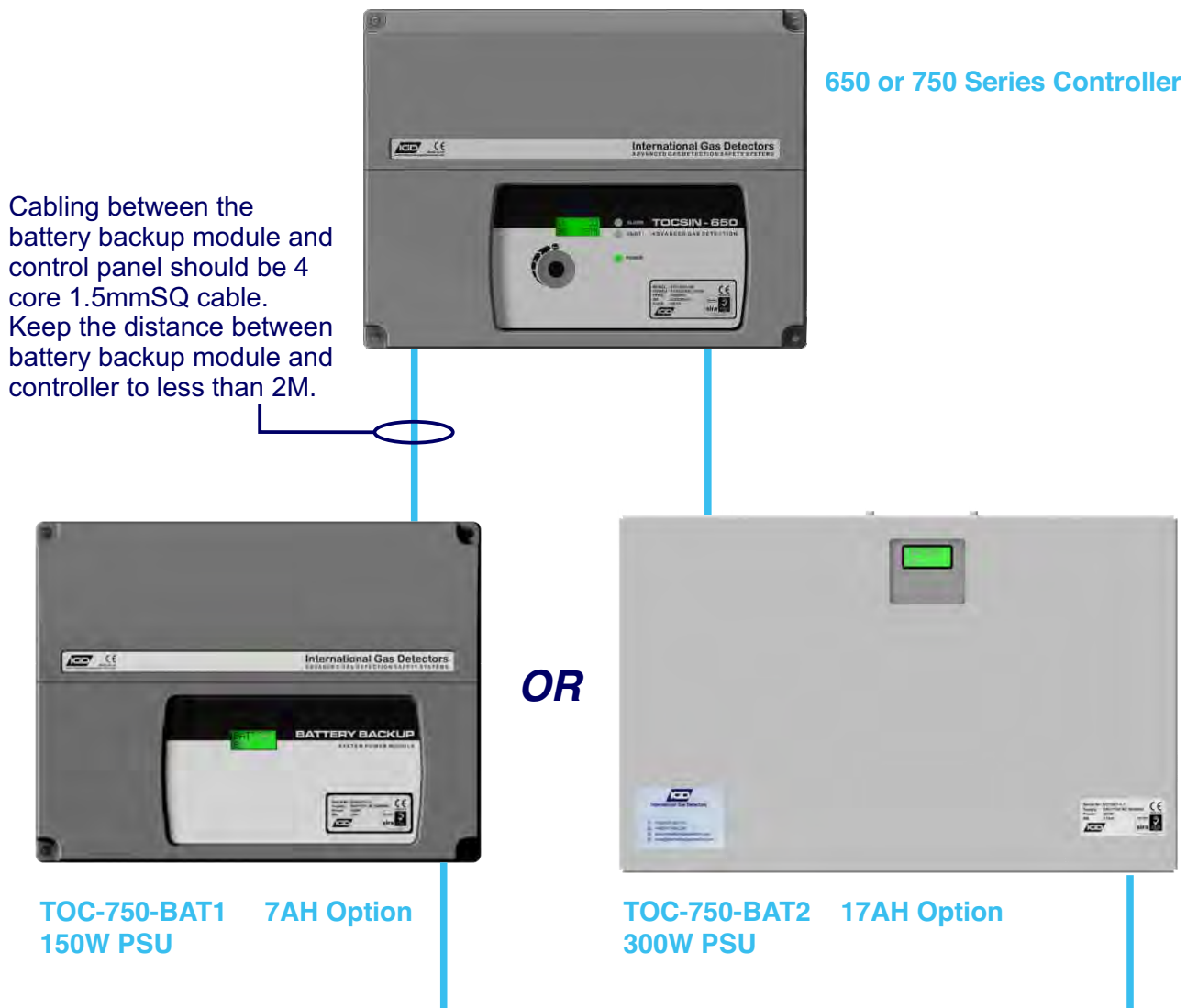
A typical example shown here indicates using an I/O card to interface 3-Wire 4-20mA detectors. The additional terminal blocks power the external analogue detectors with only the signal cable interfacing to the card. The card has 10 such input ports so this makes wiring much easier



External Battery Backup and Power Booster Modules

Both the 650 and 750 series 2-Wire control panels can accommodate 5AH internal batteries for battery backup. If battery backup is required for longer time periods than the internal batteries allow then external battery backup units can be employed.

Two external battery back options are available. 7AH and 17AH as follows:



Note that the main control panel needs to be a 24V DC version as the external battery backup units house a mains power supply. The battery backup modules should be fed from a mains fused spur.

Device Loadings for Battery Backup Run Time Calculation

Indicated power for typical system devices, relays and I/O ports in energised state

Device	Typical PN	Max Power
		Watts
TOC 750 Controller	TOC-750-150	13.00
TOC 650 Controller	TOC-650-150	8.00
TOC 635 Controller	TOC-635-PLUS	4.20
I-O Card	TOC-750-IO1 or 2	8.50
IGD Beacon Sounder (Typically 25mA@24V DC)	5083101	0.63
NODE With IGD Beacon Sounder & Relay	TOC-750(X)-NDE	1.40
NODE With Relay	TOC-750(X)-NDE	0.79
Room Status Indicator	TOC-750-AN(x)	1.03
Flammable or CO2 IR Sensor	TOC-750(X)-xxx	0.96
Infra Red Refrigerant Sensor	TOC-750X-IRR	1.56
SF6 Sensor	TOC-750X-SF6	1.56
PID VOC Sensor	TOC-750(X)-PIDxx	0.96
Toxic Gas or O2	TOC-750(X)-(gas)	0.65
Refrigerant Sensor	TOC-750(X)-R1 or R2	0.98
iCO2 Sensor with or Without Temp & Humidity	TOC-750-iCO2(TH)	0.77
Pellistor Gas Detector MK6, MK7	TOC-750(X)-MK7	1.01
	TOC-750(X)-PHC	
Pellistor Gas Detector MK8	TOC-750(X)-MK8	1.30
Cable Dissipation 1000M 1.0mmSQ Cable (Est)		4.25
Cable Dissipation 1000M 1.5mmSQ Cable (Est)		2.17
Cable Dissipation 1000M 2.5mmSQ Cable (Est)		1.18

Table 1

Calculating System Run Time (conforming to IEEE 485)

- Step 1 Use the table provided to work out the total system load in Watts (Table 1)
- Step 2 Add 20% to the total system load to obtain the total system power

$$1.2 \times \text{Total Load (W)}$$
- Step 3 Use the proposed battery backup AH rating to calculate available battery power

$$\text{AH} \times 24 \text{ (W)}$$
- Step 4 Calculate the uncorrected run time
$$\frac{\text{Total System Power}}{\text{Available Battery Power}}$$
- Step 5 Choose a suitable minimum operating temperature de-rating factor (Table 2)
- Step 6 Calculate the corrected run time as:

$$\frac{\text{Uncorrected Run Time} \times \text{Aging Factor} \times \text{Temp De-rating Factor}}{\text{Design Margin}}$$

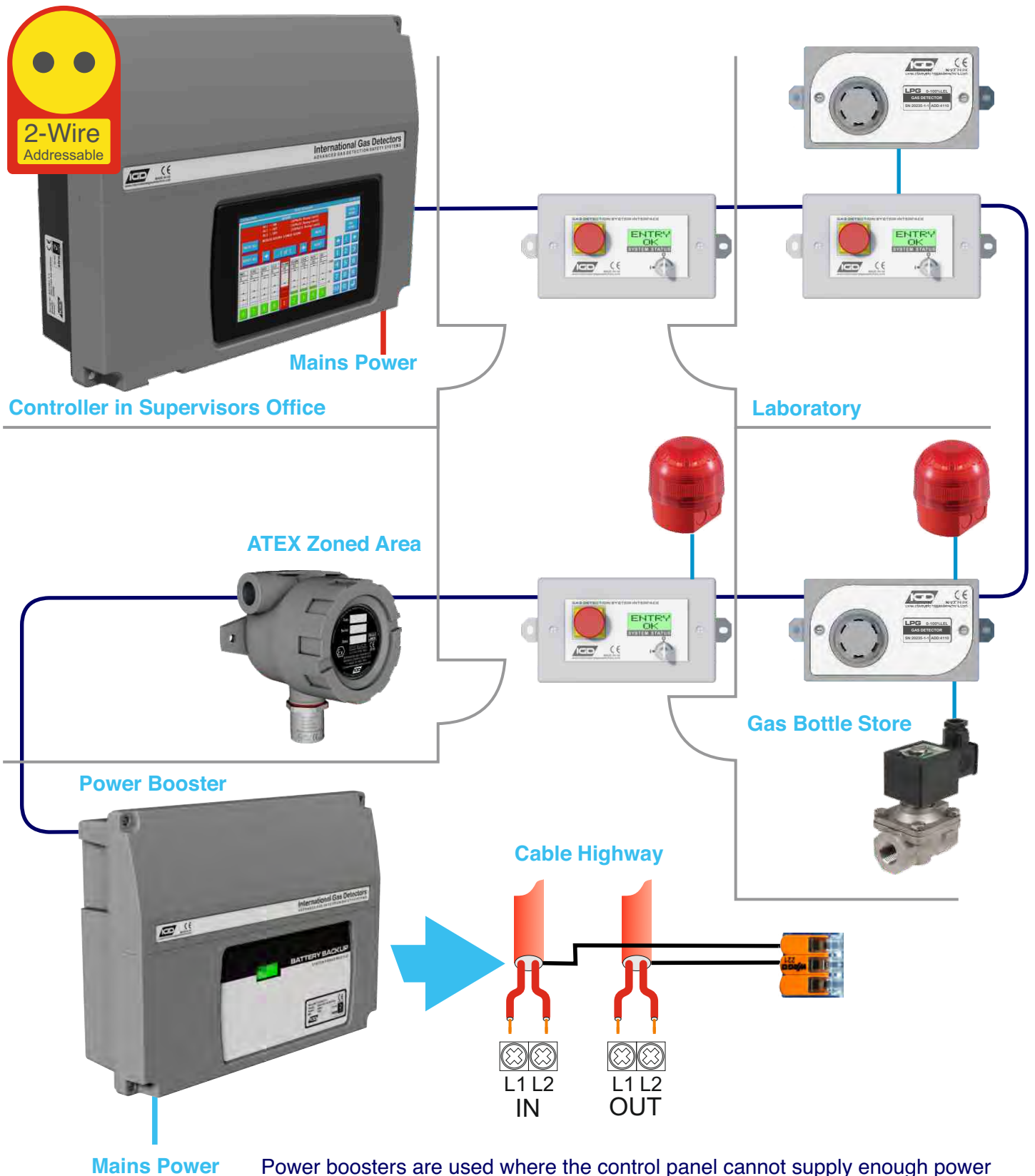
The following worked example is provided

Example Calculation			
TOC-635-PLUS Controller with 10 Flammable Gas Detectors			
<u>Item Description</u>	<u>Qty</u>	<u>Load in Watts (In alarm mode)</u>	<u>Total Load in watts (in alarm mode)</u>
TOC-635-PLUS Controller	1	4.200	4.200
TOC-750X-PHC Gas Detector	10	1.010	10.100
Sounder (25mA @24V DC)	1	0.600	0.600
Cabling- 1000M 1.5mmSQ	1	2.170	2.170
Total load in Watts on Alarm Mode	17.07		
Total System Power in watts on Alarm Mode	1.20	17.07	20.48
Proposed Battery Rating (Ah)	2.4		
Available Battery Power	2.40	24.00	57.60
Uncorrected Run Time in Hours (Alarm Mode)	2.81		
Aging factor (per IEEE 485 6.3.4)	0.75		
Min. Operating Temperature (degrees Celcius)	35.00	0.93	
Design margin factor (per IEEE 485 6.3.3)	1.15		
Corrected Run Time in Hours (Alarm Mode)	1.71		

Electrolyte Temperature Correction (per IEEE 485 Table 1)						
Temp (oC)	4.4	10	15.6	20	25	35
Equivalent capacity	0.7	0.81	0.89	0.944	1	0.93

Table 2

BOOSTER MODULES



Power boosters are used where the control panel cannot supply enough power for the installed cable system. This may be due to the cable size being too small resulting in a large volt drop over the cable run or that there are a large number of devices drawing power. Booster modules are mains powered and can have an internal battery backup if required. There are IN and OUT connections such that the booster can be located at the end or part way down a cable run. Typically the booster should be located at the point that the cable voltage drops to 22V DC or if this is not known and boosters are planned from the start then located at the end of a cable run.

CABLE INSTALLATION STANDARDS

IGD Installations are undertaken to the requirements of BS7671:2018 and subsequent amendments, in particular Annex A444. Note that this is not concerned with placement of gas detectors but relates to the installation cabling requirements.

In Addition to BS7671 there are other relevant standards relating to cable segregation to minimise electrical interference. In the UK are BS6701:2016, which is safety standard, and BS EN 50174-2 Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings. BS EN 50174-2 is more concerned about the electromagnetic compatibility issues (interference) between power and data cables, rather than safety, but does state that safety issues take precedence over EMC issues. Within the Process sector, the current guidance is BS6739:2009 - Code of practice for instrumentation in process control systems: installation design and practice. For this standard IGD addressable systems are considered as Classification 4. Communications signals. This group includes fieldbuses, ethernet and other digital communication systems such as CAN-based systems, and analogue/digital hybrids.

For our purposes a power cable is defined as above 50 V AC with a 10 A rating

In General

- Parallel runs of instrument cables and power cables should be avoided; however, where unavoidable, adequate physical separation should be provided. A spacing of 200 mm is recommended from a.c. power cables up to 10 A rating. For higher ratings the spacing should be progressively increased.
- Where a cross-over between signal and power cables is unavoidable, the cables should be arranged to cross at right angles with separation of at least 200 mm maintained by positive means
- Power and gas detection cables are installed with a 200 mm separation wherever possible
- A 600 mm separation should be maintained between gas detection cabling and three phase power cables
- Where 200 mm separation isn't possible then the reduced distances of Table 3 may be used
- A 50 mm separation must be included as defined in BS 6701
- A suitably earthed armoured power cable may be considered as 'screened' for the purposes of cable segregation
- Failure to observe the above rules may lead to non compliance with The Electricity at Work Regulations 1989 and the EMC Regulations 2006 (SI 2006/3418) July 2007
- Failure to observe the above rules may lead IGD to withdraw any terms of Warranty associated with their Gas Detection products for the specific installation concerned

Type of installation	Separation distance			
	Without a divider	With a non-metallic divider	Aluminium divider	Steel divider
Unscreened power cable and unscreened IT cable	200-mm	200-mm	100-mm	50-mm
Unscreened power cable and screened IT cable	50-mm	50-mm	50-mm	50-mm
Screened power cable and unscreened IT cable	50-mm	30-mm	50-mm	50-mm
Screened power cable and screened IT cable	50-mm	0-mm	50-mm	50-mm
Note that EN 50174 permits no separation for the final 15 metres of the horizontal cable run but BS6701 always requires the separation, regardless of length except in the two highlighted cases seen in the table above.				

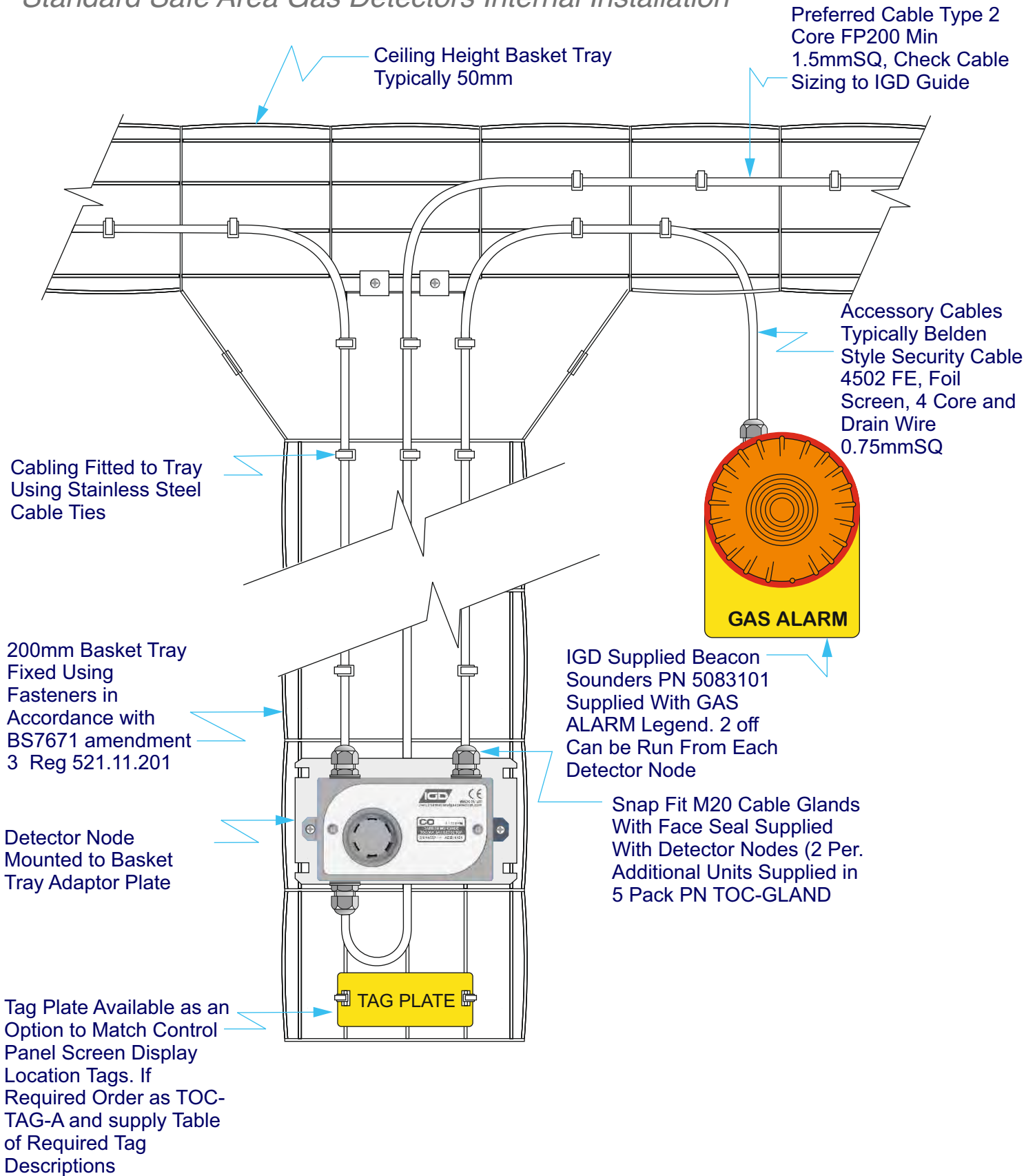
Table 3: Worst case conditions of EN 50174 and BS 6701 overlaid on each other

The Following Examples Show Typical Cabling Schemes

TYPICAL INDUSTRIAL INSTALLATION

SCHEME A

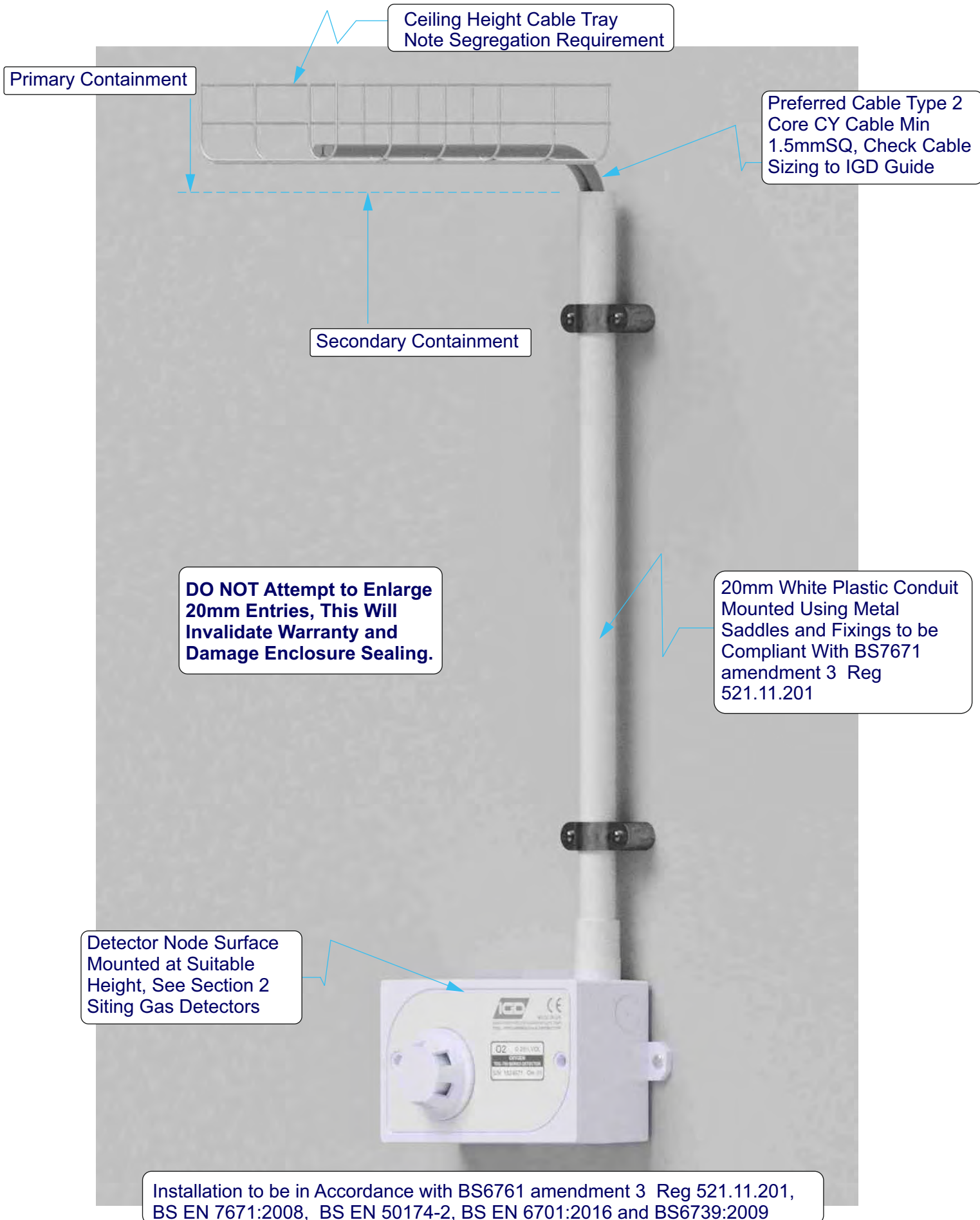
Standard Safe Area Gas Detectors Internal Installation



Installation to be in Accordance with BS6761 amendment 3 Reg 521.11.201,
BS EN 7671:2008, BS EN 50174-2, BS EN 6701:2016 and BS6739:2009

TYPICAL INSTALLATION SCHEME B

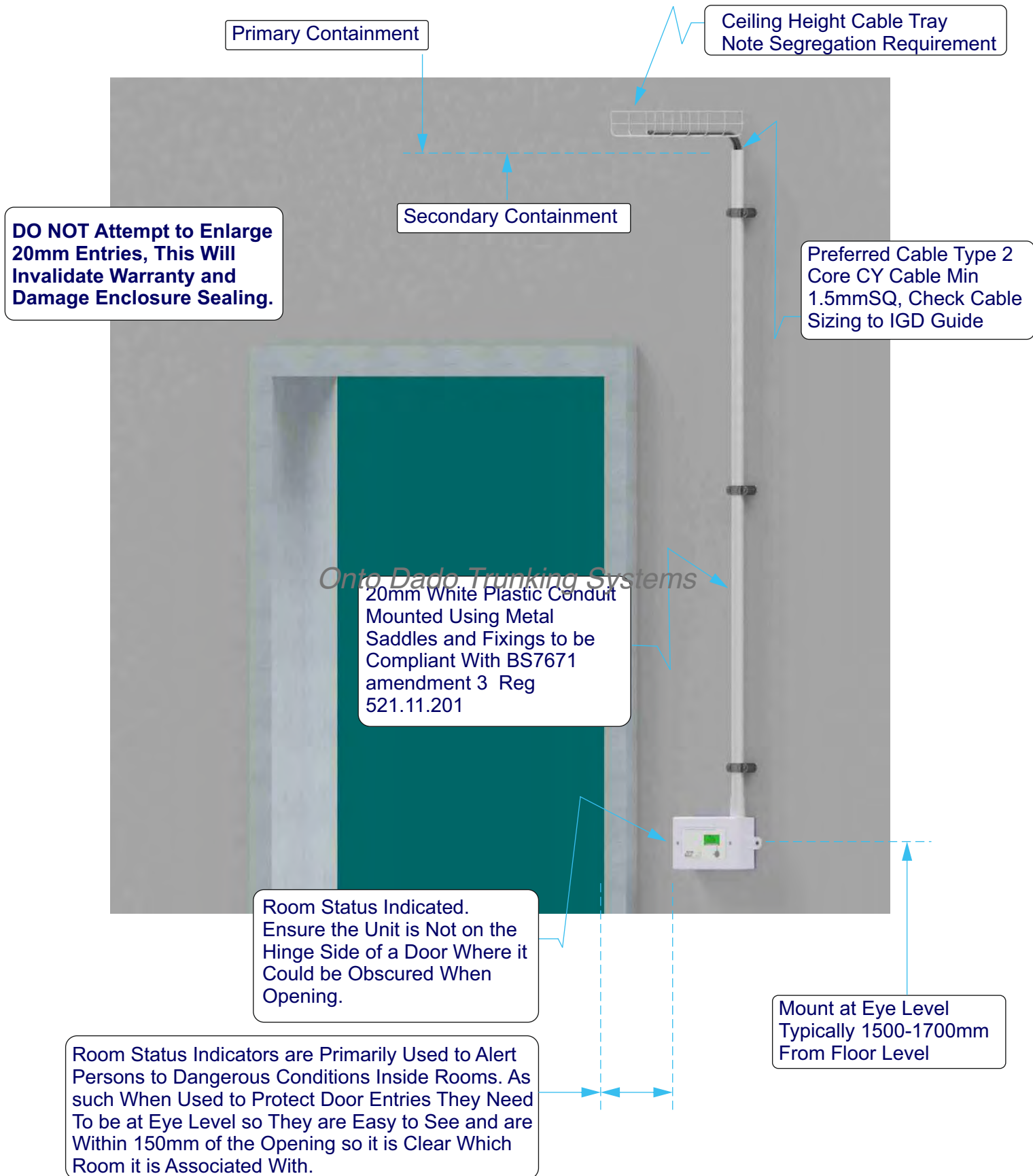
Standard Safe Area Gas Detectors Internal Installation



TYPICAL INSTALLATION SCHEME D



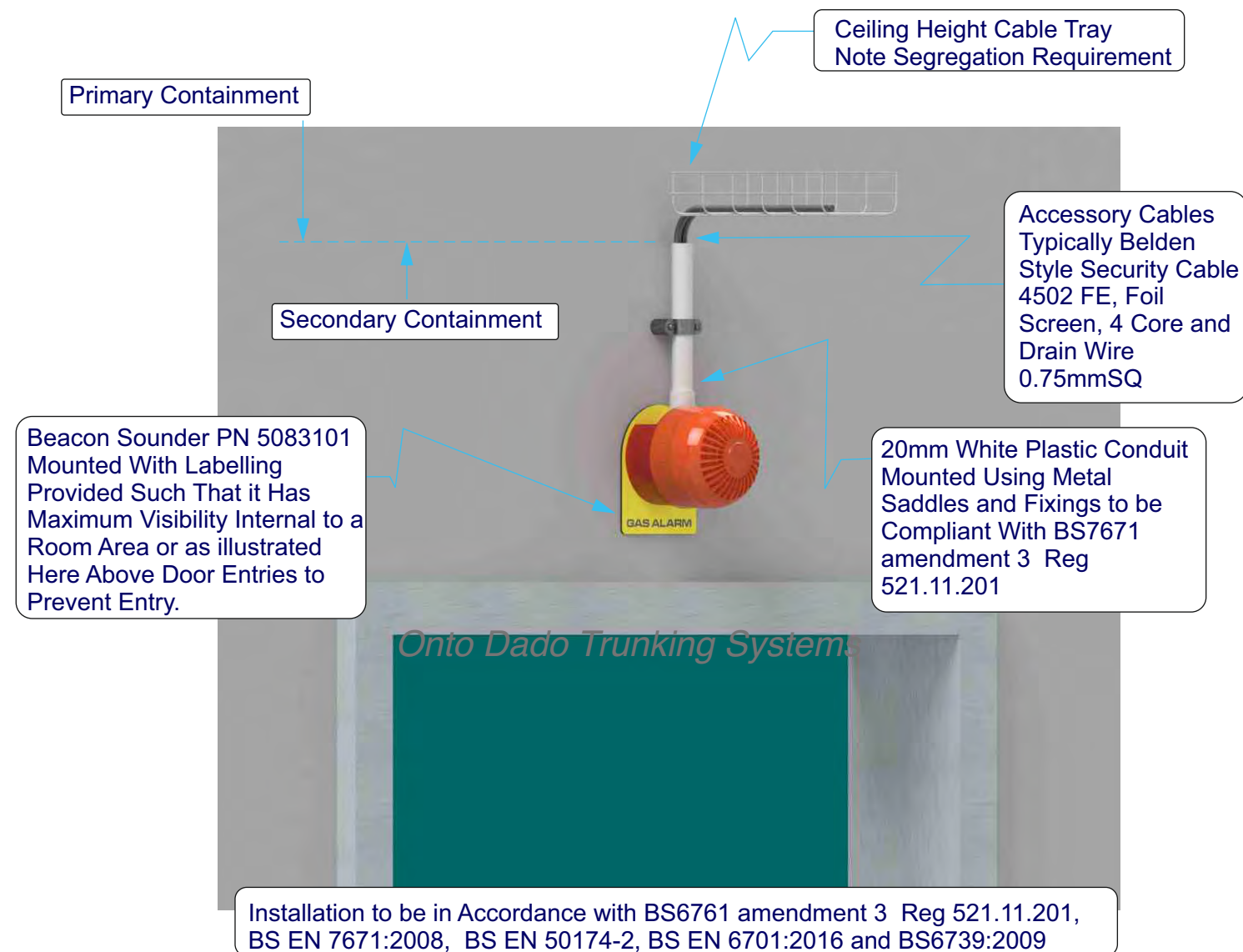
Room Status Indicators Systems



Installation to be in Accordance with BS6761 amendment 3 Reg 521.11.201, BS EN 7671:2008, BS EN 50174-2, BS EN 6701:2016 and BS6739:2009

TYPICAL INSTALLATION SCHEME E

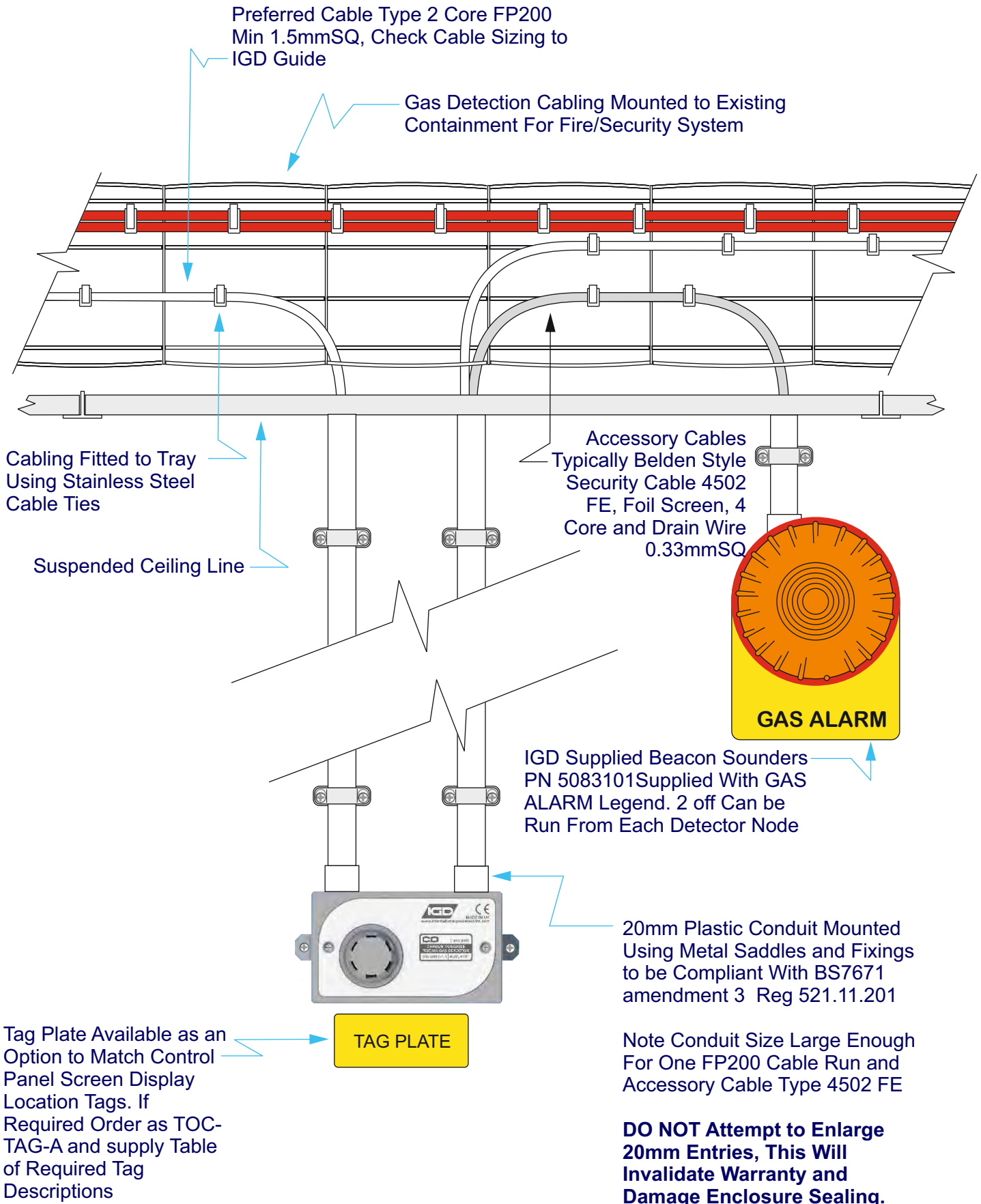
Beacon Sounders



**DO NOT Attempt to Enlarge
20mm Entries, This Will
Invalidate Warranty and
Damage Enclosure Sealing.**

TYPICAL ROOM INSTALLATION SCHEME F

Typical of Laboratories and Similar



Installation to be in Accordance with BS6761 amendment 3 Reg 521.11.201,
BS EN 7671:2008, BS EN 50174-2, BS EN 6701:2016 and BS6739:2009

TYPICAL ROOM INSTALLATION SCHEME G

Onto Dado Trunking Systems



Use the data compartment DO NOT mix with mains

Gas Detectors Mounted Above/Below Dado Style Wall Trunking System.

Ensure Segregation From Mains Cabling. Ensure Cable is Only Run in Trunking Data Compartments. Where Other Cables Use This Compartment Ensure They Are Only Data Cables. Do Not Run Any Mains Powered Loads Through The Data Section of the Trunking

Installation to be in Accordance with BS6761 amendment 3 Reg 521.11.201, BS EN 7671:2008, BS EN 50174-2, BS EN 6701:2016 and BS6739:2009

INSTALLATION REQUIREMENTS FOR SAMPLERS



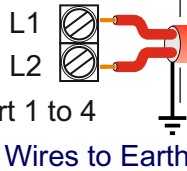
Interconnecting Highway Cabling
For 2-Wire Addressable Systems:

For Safe Area Detectors Use 2
Core Cable 1.0 to 2.5mmSQ
Cable Depending on Distance.

Ensure Cable Screens are
Correctly Terminated and cables
are stripped to the enclosed
guide.

See Cable Calculator for Cable
Core Size vs Distance VS
Number of Devices

TOCSIN
650 OR
750 Series
Controller



Drain Wires to Earth

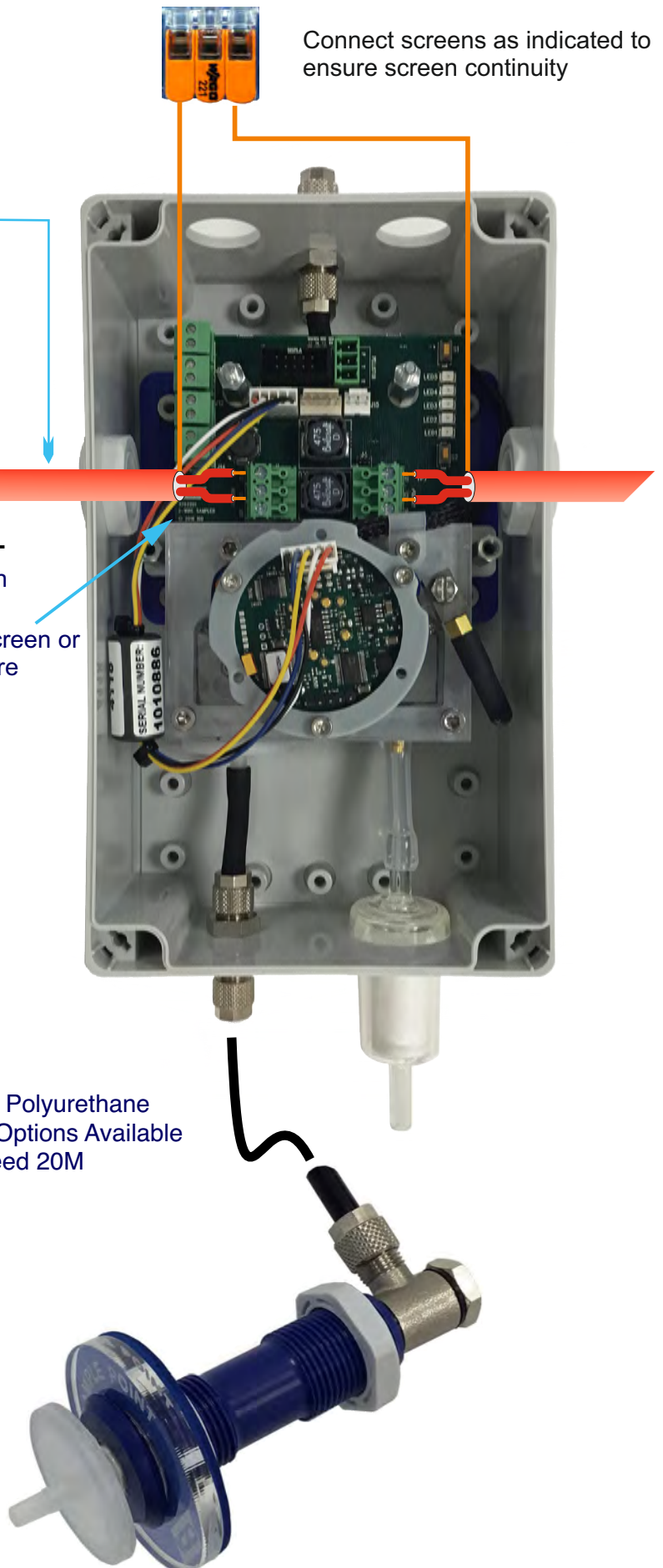
Cable Screen or
Drain Wire

Connect screens as indicated to
ensure screen continuity

Refer to TOC-750 Series Sampler
Manual for Full Details

Tubing 6 x 4 Polyurethane
Other Tube Options Available
Do Not Exceed 20M

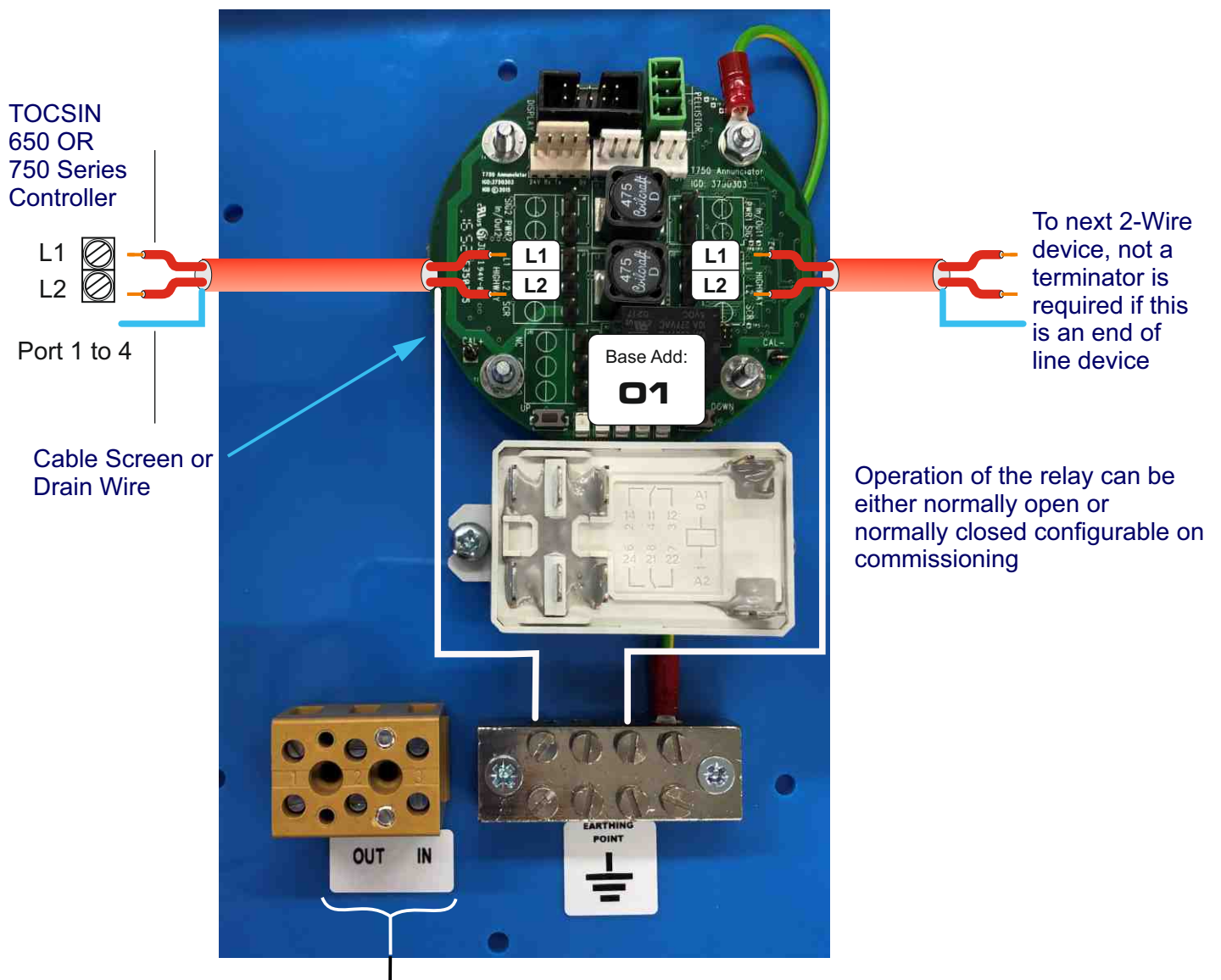
A variety of End of Line Termination
Points Are Available Contact IGD For
Further Details



INSTALLATION REQUIREMENTS FOR NO-VOLT RELEASE MODULES

No Volt-Release modules are fitted in situations where user intervention is required after resetting a gas alarm before a signal is re-instated.

An example of its use would be where an output from the gas detection system is being used to control a gas supply to a process. On detecting a gas leak the system shuts off the gas supply. If a normal relay is used then on resetting the gas alarm the relay will also re-set and automatically bring back on the gas supply. This may not be desirable. For example if the gas supply is feeding bunsen burners in a lab, then there may be a number of open taps which would potentially leak unburnt gas if the supply automatically re-instates. By fitting a no-volt release module to control the power to the gas valve this then requires manual re-set of the supply before it is re-instated. With the module fitted, to re-instate the supply; there must be no gas alarm or other alarm on the system controller, the e-stop on the no-volt release must be in the safe position. At that point the supply can be manually re-instated.



Unit provides a volt free contact rated at max 30A 250V AC
Note this is a volt free contact designed to switch an external load powered from an external supply.

Notes



International Gas Detectors

2-WIRE SYSTEMS

Gas Detection Installers Guide

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