Accessory Enclosure

Installation, Commissioning and Maintenance Instructions for Vortex Systems

The Accessory enclosure enables flammable gas detectors with a pellistor mV bridge output to be connected to Vortex or any other 4-20mA control panel. These instructions refer to Crowcon's Vortex system, but can be used as guidance for any similar control system. Other 4-20mA type gas detectors or fire detectors should be connected directly to the Vortex panel.

The Accessory Enclosure contains between 1 and 4 sensor amplifier PCB's which convert the sensor mV bridge signal to a 4-20mA signal which can be monitored by the control panel. The amplifier PCB's are designed for use with catalytic beads rated at 2V dc 300mA (approx).

1. Installation

The Accessory Enclosure should be fixed to a wall adjacent to the control system using the 6mm (1/4") mounting holes provided. Connections to the Vortex panel should be made using a multi-core cable (see below). The flammable gas detectors should be connected directly to the Accessory Enclosure as shown in Figure 3. An earth continuity plate is fitted for bonding cable glands.

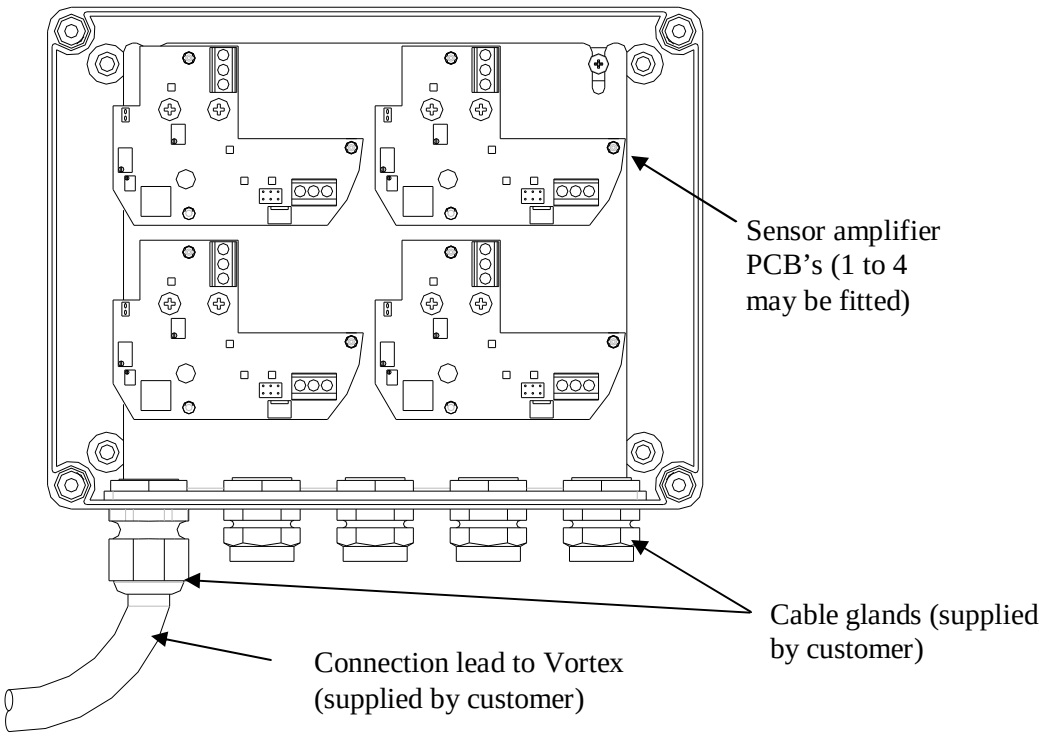

Figure 1 Accessory Enclosure Layout

M07647
Issue 4
January 2015

Connecting to Vortex

Each amplifier PCB fitted within the Accessory Enclosure must be connected to a separate input channel on the Vortex Quad Input Module (see the Vortex manual Page 63 for details). The appropriate input channel should be set as 'Detector Sink' (see Vortex manual Page 22). A typical wiring diagram is shown below, and should be repeated for each amplifier PCB fitted. A screened multi-core cable with minimum 0.5mm^2 conductors should be used for connecting the enclosure. It is recommended that the enclosure be fitted close to the Vortex, however the connecting cable can be up to 100m in length provided the Accessory Enclosure is not mounted in a hazardous area.

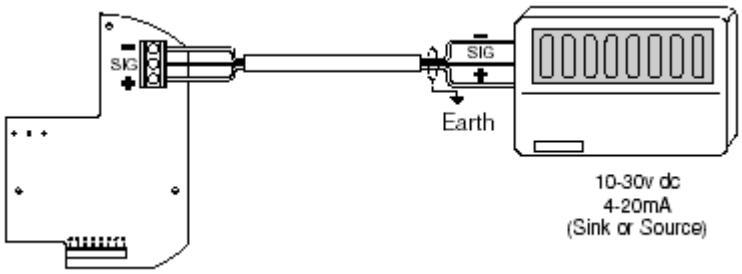

Figure 2 Amplifier PCB to Vortex Wiring

Connecting Detectors

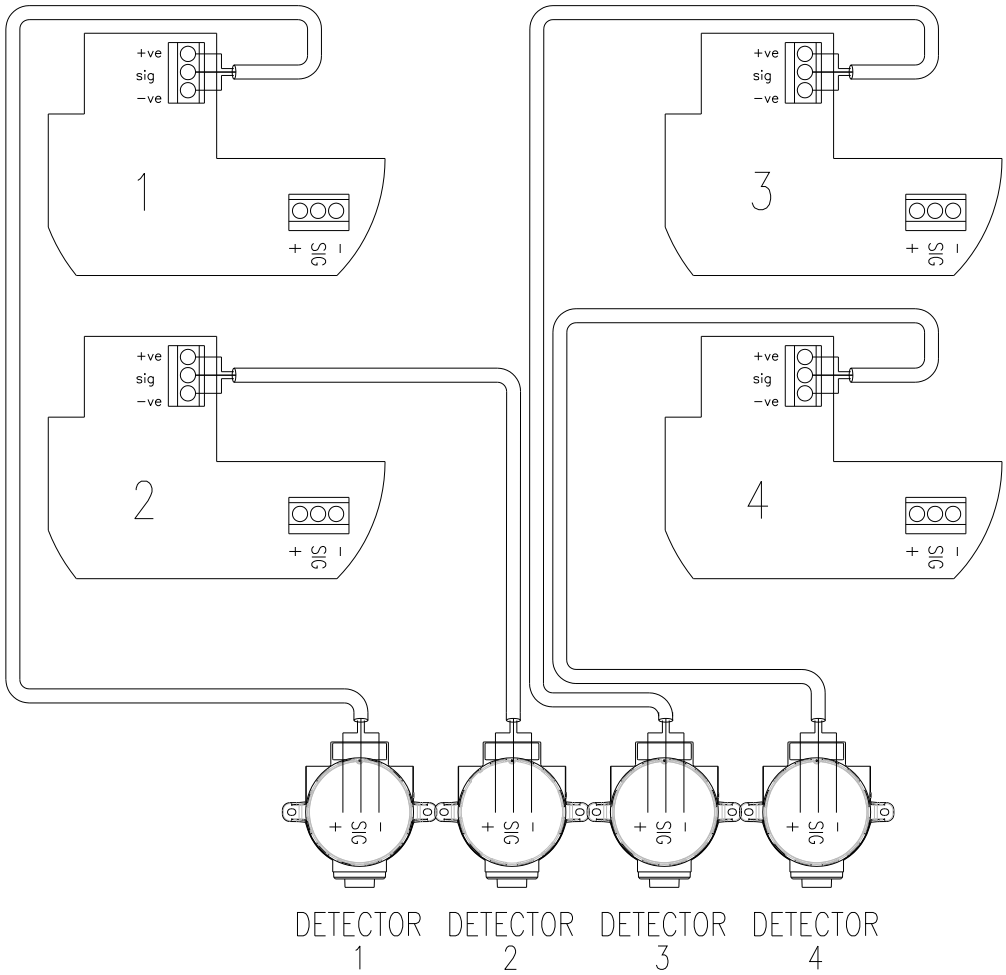

Figure 3 Accessory Enclosure Wiring

Warning: The Accessory Enclosure is designed only for use with 24Vdc 4-20mA control systems, on no account must mains voltages be applied to the product.

Connect the positive, signal and negative terminals of the detector to the corresponding terminals of the appropriate Accessory Enclosure amplifier PCB using cable with a minimum core size of 1.0mm^2 (2.5mm^2 maximum). Crowcon recommend the use of steel wire armoured cable, but other cables types may be used provided appropriate standards are met.

Important: please note the correct polarity of the detector and the amplifier PCB, ensure that connections are made as shown in Figure 2 (i.e. +ve to +ve, -ve to –ve, sig to sig). If Crowcon's Xgard Type 3 detectors are to be connected to the accessory enclosure please ensure connections within the Xgard PCB are made with the polarity shown above (the Xgard -ve terminal is top, the +ve terminal is bottom). Remove and disregard labels that may be fitted to the detector PCB showing an inverted polarity.

Four detector cable holes are provided for M20 or ½"NPT cable glands. Gland holes are accessed by removing the blanking plugs. Cables screens should be earthed using the grounding plate fitted inside the Accessory Enclosure. The amplifier PCB's are designed to allow detectors to be fitted up to 1km (0.6 miles) from the Accessory Enclosure.

2. Commissioning

The following procedures should be repeated for each detector connected to the Accessory Enclosure.

1. When the detector has been connected, ensure that the 'Head Volt' potentiometer VR5 (see figure 3) on the amplifier PCB is set to its fully clockwise position (a clicking sound will be heard when the potentiometer travel is at its limit). This will ensure excessive voltage is not applied to the detector when power is applied.

2. Connect the Accessory Enclosure to the Vortex panel and apply power.

3. Access the detector and measure the voltage between the '+' and '-' terminals, adjust VR5 on the amplifier PCB until 2Vdc +/- 0.1Vdc is obtained at the detector.

4. Leave the sensor to stabilise for 1 hour.

5. The amplifier must be balanced to achieve correct operation. Connect a volt meter set to the mV range to test points T1 (see figure 3), and adjust VR4 until the meter reads '0.00mV'. Re-connect the test leads to test points TP3 and TP4 and adjust VR3 until the meter reads '0.00mV'. the detector and amplifier are now balanced

Zeroing the detector

6. Connect a volt meter to the test points marked 'TP1' and 'TP2' (see figure 3). **Ensure the detector is in clean air** and adjust the potentiometer marked ZERO (VR1) so that the meter reads 40mV. Check the Vortex channel display reads zero, if adjustment is required follow the instructions given in the Vortex manual.

Calibrating the detector (ensure the Vortex is inhibited prior to calibration to prevent false alarms and/or shutdowns).

7. With the volt meter still connected to the test points marked 'TP1' and 'TP2' and apply 50% LEL calibration gas to the detector at a flow rate of 0.5 to 1 litre per minute. Allow the gas reading to stabilise (usually 30 to 60 seconds) and adjust the potentiometer marked CAL (VR2) so that the meter reads 120mV. Check that the Vortex display reads 50% LEL, if adjustment is required follow the instructions given in the Vortex manual. Remove the gas and ensure the reading returns to zero.

Note: If the gas reading appears to go negative when gas is applied it is highly likely that the detector '+' and '-' connections are inverted. Reverse the connections and re-balance, zero and calibrate the detector. Once calibration is complete on all sensors the Accessory Box can be closed and the Vortex should be taken out of inhibit state.

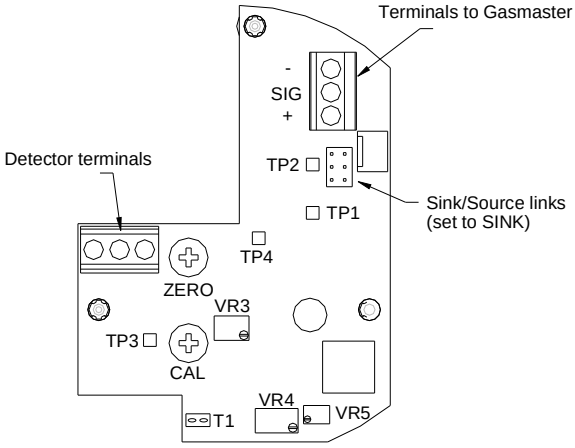

Figure 3 Amplifier PCB Layout

3. Maintenance

Detectors connected via an Accessory Enclosure should be calibrated and maintained in accordance with the instructions provided with them. As a minimum Crowcon recommends that detectors are tested every six months and re-calibrated as necessary.

All alarm output functions from the control panel should be verified on a six-monthly basis, and connections between the Accessory Enclosure and the detectors and control panel should be check to ensure they are secure.

4. Specifications

Part Numbers (compatible with Xgard Type 3, Xgard Type 4 and Xsafe mV):
C011013: Single amplifier PCB
C011014: Two amplifier PCB's
C011015: Three amplifier PCB's
C011016: Four amplifier PCB's

Electrical Data

Certification:	**NOT CERTIFIED FOR USE IN A HAZARDOUS AREA**
Operating voltage:	3 wire, 18 - 30Vdc (24V nominal)
Current consumption:	50mA per detector
Detector input:	Catalytic Beads 2Vdc (nominal) 300mA Signal: 10-20mV per % CH4 typical
Maximum detector cable length:	1km (0.6 miles) using 1.0mm^2 (17AWG) cable
Output:	4~20mA (link selectable as sink or source) Maximum loop resistance in source mode is 450R
Fault signal:	<3mA

Mechanical Data

Dimensions:	220mm (8.6") x 168mm (6.6") x 107mm (4.2")
Weight:	1.5Kg (3.3lbs) approx.
Mounting:	Four 6mm (1/4") mounting holes at 130mm (5.1") x 180mm (7.1") centres

Environmental Data

Ingress protection:	Indoor use only
Humidity:	0 ~95% RH (non-condensing)
Temperature:	-10 ~ +50ºC (14 to 122º F)

Spare Parts an Accessories

Amplifier PCB:	S011753/2
Connector loom (for fitment to a control panel)	E07632

5. Warranty

Warranty Statement

This equipment leaves our works fully tested and calibrated. If within the warranty period of 1 year, the equipment is proved to be defective by reason of faulty workmanship or material, we undertake at our discretion either to repair or replace it free of charge, subject to the conditions below.

Warranty Procedure

To facilitate efficient processing of any claim, contact our customer support team on 01235 557711 with the following information:

Your contact name, phone number, fax number and email address.
Description and quantity of goods being returned, including any accessories.
Instrument serial number(s).
Reason for return.

Obtain a Returns form for identification and traceability purpose. This form may be downloaded from our website 'crowconsupport.com', along with a returns label, alternatively we can 'email' you a copy.

Instruments will not be accepted for warranty without a Crowcon Returns Number ("CRN"). It is essential that the address label is securely attached to the outer packaging of the returned goods.

Units returned to Crowcon as faulty and are subsequently found to be 'fault free' or requiring service, may be subject to a handling and carriage charge.

Warranty Disclaimer

The guarantee will be rendered invalid if the instrument is found to have been altered, modified, dismantled, or tampered with. Any service by 3rd parties **not** authorized & certified by Crowcon will invalidate the warranty on the equipment. Use of alternative manufacturer's sensors which have not been approved by Crowcon will invalidate the warranty of the product as a whole. The warranty does not cover misuse or abuse of the unit.

Any warranty on batteries may be rendered invalid if an unreasonable charging regime is proven.

Crowcon accept no liability for consequential or indirect loss or damage howsoever arising (including any loss or damage arising out of the use of the instrument) and all liability in respect of any third party is expressly excluded.

The warranty and guarantee does not cover the accuracy of the calibration of the unit or the cosmetic finish of the product. The unit must be maintained in accordance with the Operating and Maintenance Instructions.

Our liability in respect of defective equipment shall be limited to the obligations set out in the guarantee and any extended warranty, condition or statement, express or implied statutory or otherwise as to the merchantable quality of our equipment or its fitness for any particular purpose is excluded except as prohibited by statute. This guarantee shall not affect a customer's statutory rights.

For warranty and technical support enquiries please contact:

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