

Dual mV Bridge Converter Module

Installation, Commissioning and Maintenance Instructions

The Dual mV Bridge Converter enables flammable gas detectors with a pellistor mV bridge output to be connected to control systems requiring a 4-20mA analogue input. The module is primarily intended for use with Crowcon or Detection Instruments 3-wire flammable gas detectors (eg 96HD or DI 5/6, Xgard Types 3 or 4). Please contact Crowcon if use with other detector types is required.

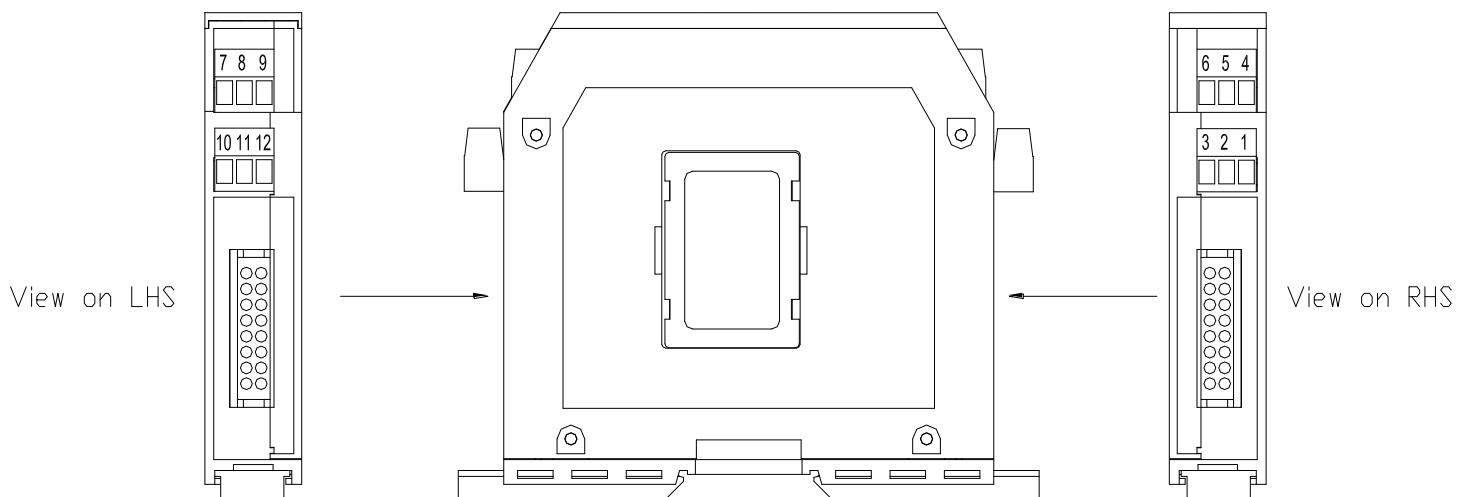
The mV Bridge Converter contains two separate channels to convert signals from two detectors. The amplifier is designed for use with catalytic beads rated at 2V dc 300mA (approx).

1. Installation

The mV Bridge Converter is designed to mount directly onto 'top-hat' type DIN rail. Once fitted to the rail the two retaining clips should be snapped into place by firmly squeezing towards the centre of the module.

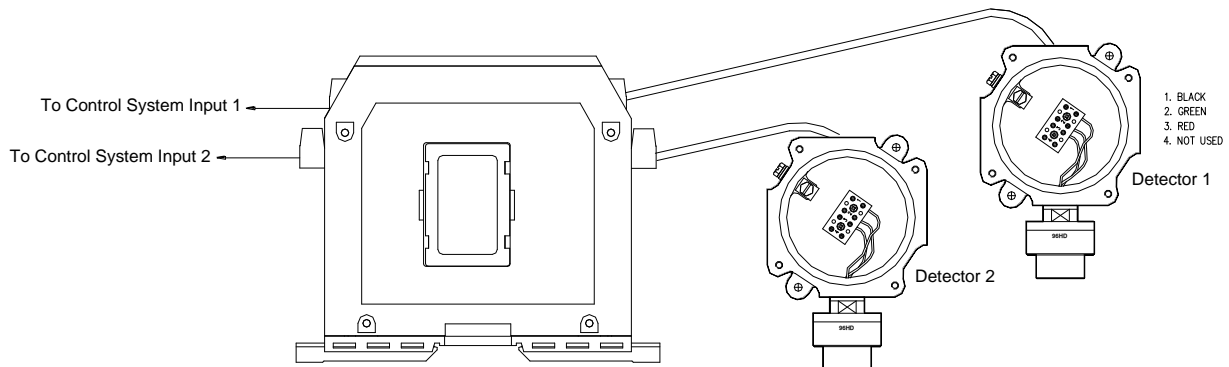
Removable 3-way connectors are provided for connecting field cables from detectors and signal cables from the control system. The connectors are suitable for cable with conductors up to 2.5mm² in cross-section. Screened cables must be used: cable screens should be grounded via the chassis of the enclosure into which the mV Bridge Converter Module is assembled.

Figure 1: mV Bridge Converter Module Layout



Connecting Detectors

Figure 2: mV Bridge Converter Module Wiring



Connect the positive, signal and negative terminals of the detector(s) to the corresponding terminals of the appropriate input channels on the mV Bridge Converter Module (see diagram). The module terminals are arranged as follows:

Terminal Number	Function	Connect to
1	Channel 2 Detector –ve	Detector 2 –ve (black wire 96HD or DI 5/6, red wire Xgard Type 4)
2	Channel 2 Detector Sense	Detector 2 Sense (green wire 96HD or DI 5/6, white wire Xgard Type 4)
3	Channel 2 Detector +ve	Detector 2 +ve (red wire 96HD or DI 5/6, black wire Xgard Type 4)
4	Channel 1 Detector –ve	Detector 1 –ve (black wire 96HD or DI 5/6, red wire Xgard Type 4)
5	Channel 1 Detector Sense	Detector 1 Sense (green wire 96HD or DI 5/6, white wire Xgard Type 4)
6	Channel 1 Detector +ve	Detector 1 +ve (red wire 96HD or DI 5/6, black wire Xgard Type 4)
7	Channel 1 Supply 0V	Control System Input 1 0V
8	Channel 1 Signal	Control System Input 1 Signal
9	Channel 1 Supply 24V	Control System Input 1 24V
10	Channel 2 Supply 0V	Control System Input 2 0V
11	Channel 2 Signal	Control System Input 2 Signal
12	Channel 2 Supply 24V	Control System Input 2 24V

The amplifier is designed to allow detectors to be fitted up to 700 metres from the mV Bridge Converter Module (with 2.5mm² cable).

2. Commissioning

The following procedures should be repeated for each channel of the mV Bridge Converter Module.

1. When the detector has been connected, ensure that the HV (Head Volt) potentiometer (see figure 3) on the amplifier PCB is set to its fully clockwise position (a maximum of 11 turns). This will ensure excessive voltage is not applied to the detector when power is applied.
2. Connect the mV Bridge Converter Module to the control system and apply power.
3. Access the gas detector and measure the voltage between the '+' and '-' terminals (red and black wires), adjust the HV potentiometer until 2Vdc +/- 0.1Vdc is obtained at the detector.

4. Leave the detector to stabilise for at least 1 hour.
5. The mV Bridge Converter Module amplifier must be balanced to achieve correct operation. Connect a volt meter set to the mV range to test points marked HB- and HB+ on the appropriate channel (see figure 3), and adjust the HB (Head Balance) potentiometer until the meter reads '0.00mV'.. the detector and amplifier are now balanced

Zeroing the detector

6. Re-connect the test leads to test points marked mA- and mA+ on the appropriate channel, **ensure the detector is in clean air** and adjust the Z (Zero) potentiometer until the meter reads '40mV'. Check the control system display reads zero, if adjustment is required follow the instructions given in the control system manual.

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

7. With the volt meter still connected to the test points marked mA- and mA+, 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 C (Calibrate) on the appropriate channel so that the meter reads 120mV. Check that the control system display reads 50% LEL, if adjustment is required follow the instructions given in the control system 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.

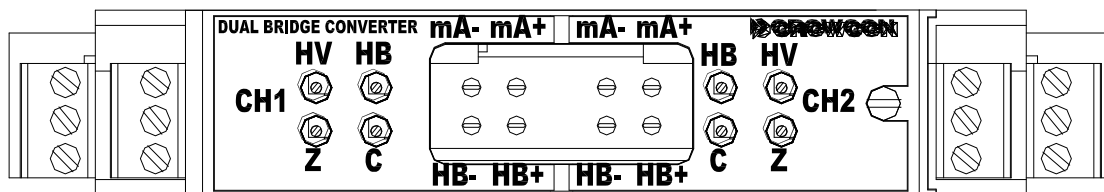


Figure 3: Potentiometer and Test Point Layout

3. Maintenance

Detectors connected via a mV Bridge Converter should be calibrated and maintained in accordance with their instruction. 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 mV Bridge Converter and the detectors and control panel should be checked to ensure they are secure.

4. Specifications

Part Number: 00011E

Electrical Data

Certification: NOT CERTIFIED FOR USE IN A HAZARDOUS AREA
Operating voltage: 3 wire, 18 - 30Vdc (24V nominal)
Current consumption: 75mA per channel max
Detector input: Catalytic Beads 2Vdc (nominal) 300mA
 Signal: 10-20mV per % CH4 typical
Maximum detector cable length: 700m (using 2.5mm² cable)
Output: 4~20mA (current source)
 Maximum loop resistance in source mode is 500Ω
Fault signal: <3mA

Mechanical Data

Dimensions: 25(d) x 140(w) x 125(h)mm
Weight: 0.17kg
Mounting: Din Rail (Top Hat)

Environmental Data

Ingress protection: Indoor use only, intended for inclusion in control systems cabinet
Humidity: 0 ~95% RH (non-condensing)
Temperature: -10 ~ +50°C (14 to 122° F)

Spare Parts and Accessories

Connector E07101



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