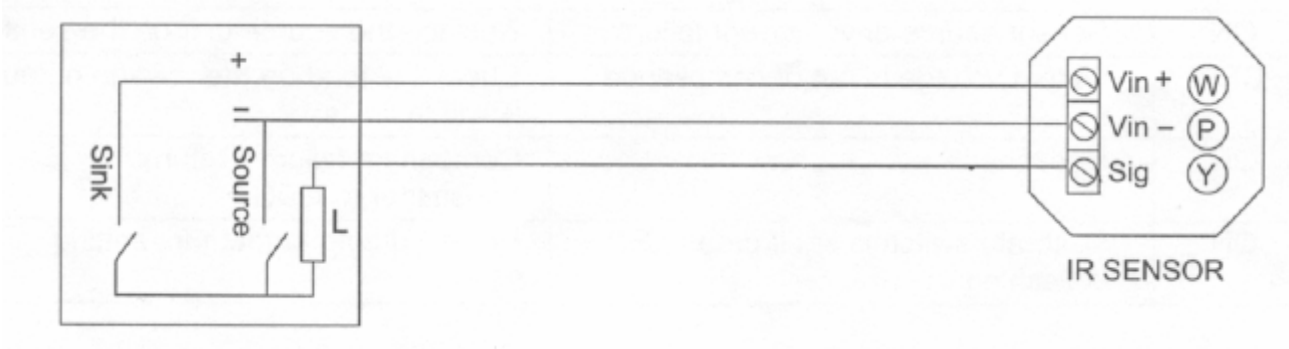
Red Line IR CO_2 Detector

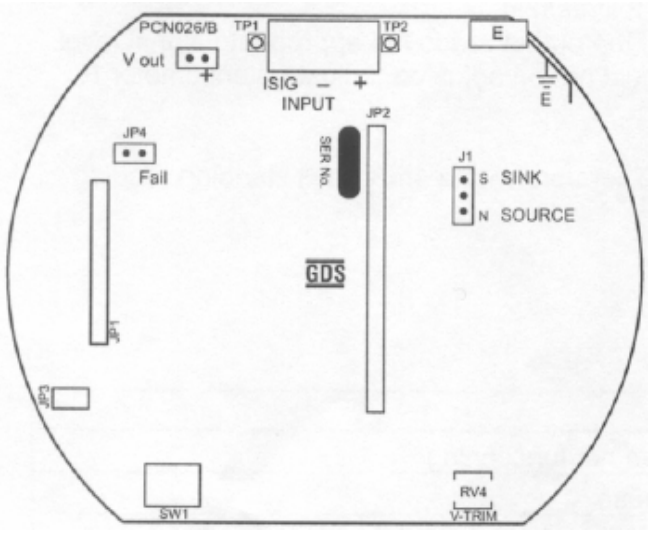
Installation, Operating and Maintenance Instructions

Field Connections

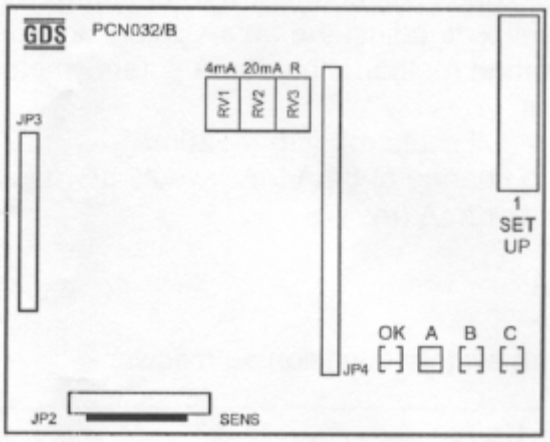


V in - Input supply voltage 12 to 35Vdc

Sig - Signal output (4-20mA) set selector link J1 on Main PCB for Sink or Source modes, Crowcon recommend that the detector is set to CURRENT SINK mode when connecting to any Crowcon control system.
Voltage output (1-5V) using connector JP6 (V out - see below)



Main PCB



Sub PCB

PCB push-on connectors:
J1: Link top two pins for Current Sink mode, link bottom two pins for Current Source mode.
JP4: Fault output signal: open collector output (switched to 0V).
JP6 (V out): 1-5Vdc signal output.

Red Line IR CO_2 Detector

Calibration
The detector is supplied calibrated and ready for use and should not require adjustment or calibration. Crowcon do however recommend that the detector is gas tested during commissioning and at six-monthly intervals. Where adjustments are necessary, the following procedure should be carried out.

Zero setting (4mA)

1. Connect a digital meter to test points TP1 and TP2 (shown in Main PCB diagram on page 1) set to the dc mV range.
2. Apply 100% nitrogen to the sensor and adjust the RV1 (4mA) potentiometer until the meter reads 4mV.

Span Setting

1. Apply test gas using the supplied spigot at a rate of 2 litres per minute.
2. Adjust the RV2 (20mA) potentiometer until the meter reads the appropriate level:
   12mV if 1% CO_2 calibration gas is used
   20mV if 2% CO_2 calibration gas is used

The RV3 (R) potentiometer should not be adjusted.

Status LED's

Four LED's are fitted to the Sub PCB to indicate the status of the detector.

The green OK LED indicates the following system conditions:

Green LED	Condition
OFF	Non-recoverable fault has occurred; system not functioning.
Short ON pulses	Fault detected; red LED's will light to indicate cause.
Flashing @ 2Hz	Initial start-up self check procedure in progress.
Flashing @ 4Hz	a) Indicates normal system function. b) Indicates fault recovery in progress; red LED's light to indicate cause. c) Indicates unit is in calibration mode if all red LED's are lit.

The red LED's indicate the following system conditions:

LED A	LED B	LED C	Fault Mode	Action
ON	ON	ON	Hardware integrity failure detected during start-up.	Non-recoverable. Return detector to Crowcon.
ON	ON	OFF	Undefined.	Component failure. Return detector to Crowcon.
ON	OFF	ON	Mathematics routine error or under-range condition.	Recoverable. Normal operation will resume when the fault has cleared.
ON	OFF	OFF	Input voltage is out of range.	Check the power supply.
OFF	ON	ON	Sensor source drive current failure.	Replace the source unit on the sensor.
OFF	ON	OFF	Output voltage is out of compliance.	Check the load on the voltage output is within limits.
OFF	OFF	ON	Undefined.	Component failure. Return detector to Crowcon.

Fault Recovery
If the circuit develops a recurring fault or if there are other problems, the software can be reset by pressing the RESET push-button SW1. This forces a full software reset and re-initialises the transmitter. The calibration settings are unaffected by a reset.

Red Line IR CO_2 Detector

Specifications for Red Line IR CO_2 detector (Crowcon part number C01986).

General

This information relates to the device operating continuously.

Operation: continuous diffusion NDIR (dual wave-length)
Measuring Range: 0~2% Vol CO_2
Repeatability: ± 2%
Warm up time to zero: < 20 seconds
Response time to target gas: T90 < 25 seconds
Long term zero drift: ± 25ppm CO_2/ month

Electrical Data

Certification:	CE – C509 **NOT CERTIFIED FOR USE IN A HAZARDOUS AREA**
Input voltage:	3 wire, 12 to 35V DC (24v DC nominal - polarity protected)
Maximum current consumption:	130mA
Voltage Output:	1~5V, maximum current draw 5mA
Resolution:	0.15% of span
Current Output:	4~20mA (link selectable as sink or source) Maximum loop resistance in source mode is 250R
Output resolution:	0.02mA
Maximum offset drift:	± 20µA
Over-range output:	21.3mA (typical)
Fault signal:	3mA
Fault indicator:	Open collector output switched to 0V

Mechanical Data

Internal plug in sensor (NDIR)
Processor and terminal enclosure material Polycarbonate - light grey
Dimensions: 122mm x 120mm x 56mm
Weight: 270g
Mounting Detail: Four 4mm – 110mm vertical, 90mm horizontal

Environmental Data

Ingress protection: IP64 (Water Shield fitted as standard)
Humidity: 0 ~100% RH (non-condensing)
Temperature: -10 to +50ºC

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