T80-CO Carbon Monoxide Monitor

Features

- Microprocessor based
- 4-20mA Analogue Output
- Voltage free relay contacts
- RS485 digital interface
- Alphanumeric dot-matrix display
- "One Person" calibration
- Gel based electrochemical sensor
- Standalone operation

The Monicon T80-CO is a high quality, self contained, toxic gas sensor that offers a host of sophisticated features to provide fast, reliable warnings against exposure to dangerous concentrations of carbon monoxide. The T80-CO is available with ranges of 0-50ppm, 0-100ppm, 0-250ppm, 0-500ppm and 0-1000ppm.

The range of T80 instriuments includes monitors for CL_2, CLO_2, CO, ETO, H_2S, O_2, O_3, H_2, HCl, HCN, HF, NH_3, NO, NO, PH_3 and other gases.

The T80-CO will operate as a standalone instrument or in conjunction with a controller or a computer. It is housed in an attractive, compact enclosure and may be configured or calibrated by one person.

The gas concentration is indicated on a rugged 8-character alphanumeric display which also indicates instrument status.

The T80-CO is fully user programmable and is easily calibrated by one person. All user variables are stored in non-volatile memory (EEPROM) and retained indefinitely even during total power failure.

The T80-CO is a 4-20mA, 3-wire transmitter. It is housed in a rugged, compact metallic enclosure. It incorporates advanced SMT electronics and an amperometric electrochemical sensor based on micro fuel cell technology, designed to be maintenance free and inherently stable.
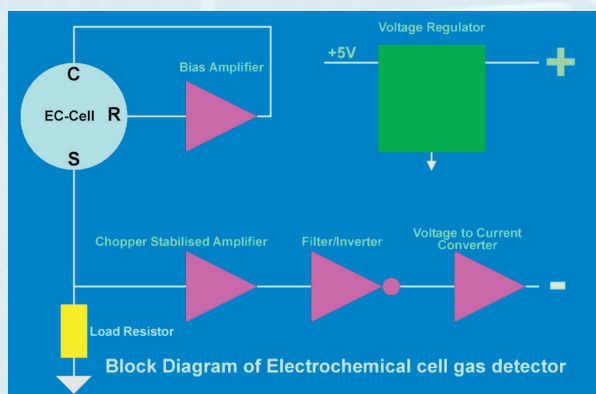
The sensor uses the highly successful capillary diffusion barrier technology, resulting in a low temperature coefficient and a direct response to concentration, relatively unaffected by pressure. The use of electrodes based on fuel cell technology gives a high reserve of activity which results in long term stability. The sensor is a small plug-in component and is easily replaced in minutes when it becomes depleted.

Gas diffusing to the sensor electrode reacts at the surface of the electrode by reduction (or by oxidation for some sensors). Reactions are catalysed by specially developed electrode materials and are designed to be specific to the gas being sensed.

The unit is calibrated or user-programmed by means of on-board pushbutton switches. The operator is then guided through a variety of options by a user-friendly menu. The CPU constantly verifies system operation. In the unlikely event of a fault, the operator is alerted with a helpful diagnostic display.
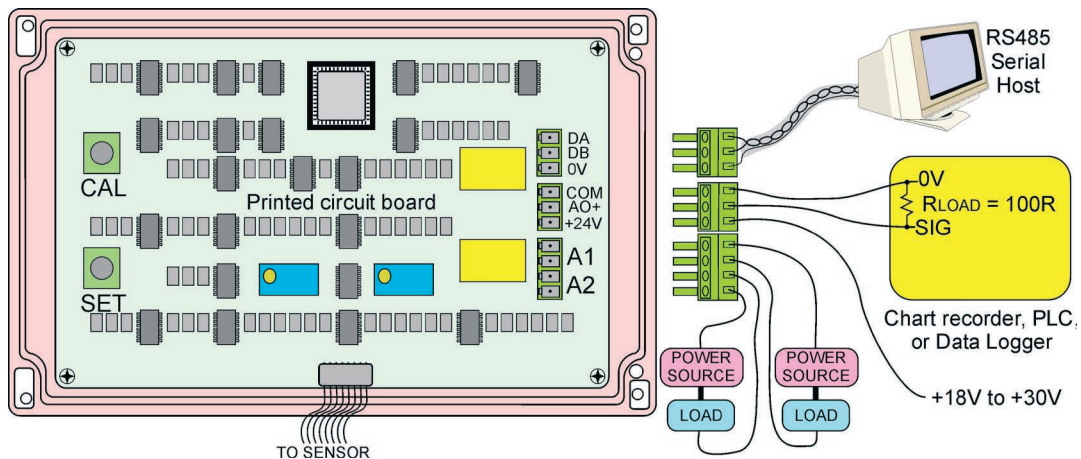
The T80-CO is cross-sensitive to other gases. The following table indicates some cross-sensitivities:

Gas	Concentration	Response	Temp
CO	100ppm	100ppm	20°C
H_2S	15ppm	38ppm	20°C
SO_2	10ppm	6ppm	20°C
N_2	100%	0ppm	20°C
HCl	5ppm	0ppm	20°C
CL_2	1ppm	-0.5ppm	20°C
CO_2	5000ppm	0ppm	20°C
NH_3	10ppm	0ppm	20°C
H_2	100ppm	60ppm	20°C

Block Diagram of Electrochemical cell gas detector

T80-CO Specifications

Supply voltage	*Nominal 24Vdc (operates from 20Vdc to 35Vdc)*
Power consumption	*2W nominal, 2.3W maximum*
Circuit protection	*Electronic current limiter, 1.5A auto-reset*
Transient Protection	*PCB mounted, 3 Joule, Metal Oxide Varistor*
Analogue output	*4-20mA current source referenced to 0V*
Analogue output load	*100 Ohms typical, 500 Ohms maximum*
Operating temperature	*-20˚C to +50˚C*
Storage temperature	*-40˚C to +50˚C*
Humidity range	*15%RH to 90%RH (Non-condensing)*
Preconditioning Requirements	*Operational: 30 seconds, Specification: 60 minutes*
Full-Scale range display	*0-50ppm, 0-100ppm, 0-250ppm, 0-500ppm, 0-1000ppm*
Response time (T90)	*Typically 25 seconds from 4 minute exposure time*
Drift, S.T.P. continuous duty in air	*<3% over three months at 20˚C*
Linearity	*±5%*
Repeatability	*±2%*
Resolution	*1%*
Recommended Calibration Interval	*6 months (depending on application)*
Weight	*1.5Kg (including sensor)*
RS485 operating mode	*Slave mode, half duplex, polled*
Max. units on RS485 loop	*100*
RS485 comm parameters	*1200-N-8-1*
RS485 error checking	*1 byte checksum*
Unit interrogation time	*400mS*
Relay contacts	*SPST, NO, 230V @ 1A each for A1 & A2*
Option setting	*Digital setting (all options fitted as standard and user selectable)*
Alarm setting	*Digital setting (fully adjustable between 10% and 90% of full scale)*
Alarm types	*Energised/de-energised. Enrichment/deficiency. User selectable*
Recommended calibration flow rate	*1 litre per minute*
Mounting holes	*4 holes, diam 5mm, spaced 145mm horizontally, 63mm vertically*
User variable storage	*Non-volatile RAM (EEPROM)*
Electromagnetic Conformance (EMC)	*EN61000-6-3, EN61000-6-2*
Cable gland entry	*M20 x 1.5*
Terminations	*Detatchable, PCB mounted terminal blocks to accept 1.5mm^2 cable*
Enclosure	*Epoxy coated aluminium. Size W: 160mm H: 100mm D: 60mm*
Literature supplied	*24-page detailed instruction manual with wiring diagram*

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