T100-NO2 Nitrogen dioxide Gas Detector
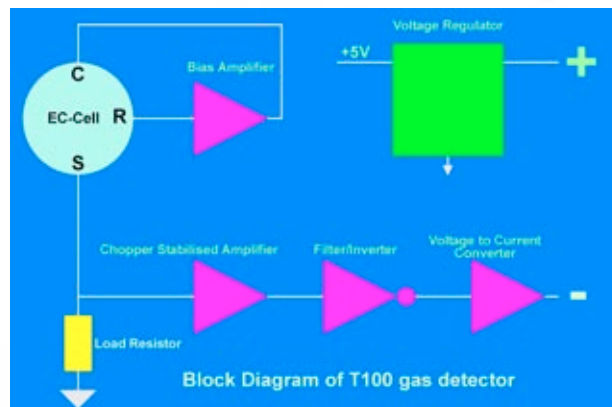
· **2-wire, 4-20mA Transmitter**
· **Plug-in electrochemical sensor**
· **Built-in ZERO & SPAN controls**
· **One person calibration**
· **SMD electronic circuitry**
· **Enhanced RFI and EMI resistance**
· **Cost effective with high performance**
· **Works with most 4-20mA controllers**
· **Certified ATEX II 2G Exia IIC T4**

Block Diagram of T100 gas detector

The T100-NO2 is a 4-20mA, 2-wire transmitter to measure nitrogen dioxide gas in the range 0-10ppm, 0-20ppm, 0-50ppm or 0-100ppm. 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.

Gas diffusing to the sensor electrode reacts at the surface of the electrode by reduction. Reactions are catalysed by specially developed electrode materials and are designed to be specific to the gas being sensed.

The T100 electronics use advanced surface mount technology and a simple yet rugged design to minimise component count for optimum reliability of the electronic circuitry.

The MTBF (mean time Between Failure) of the electronic circuitry on the T100 was calculated to be 1.2 million hours (calculations based on MIL-HDBK-217F). The calculations do not include the sensor as this is a consummable part.

The sensor is a small plug-in component and is easily replaced in minutes when it becomes depleted.

The sensor and preamplifier circuitry is housed in a stainless steel cylinder. This is attached to a rugged, IP67 rated, metallic enclosure which houses and protects the remaining electronics and terminals.

The T100 has been independantly tested and certified ATEX II 2G Exia IIC T4. With any suitable third party IS barrier, it may be installed in a Zone, Zone 1 or even Zone 0 Hazardous Area.

Careful product design and rigorous product testing combined with a stringent ISO9002 quality assurance program at Monicon's state-of-the-art manufacturing facility ensure ultimate reliability where safety matters.
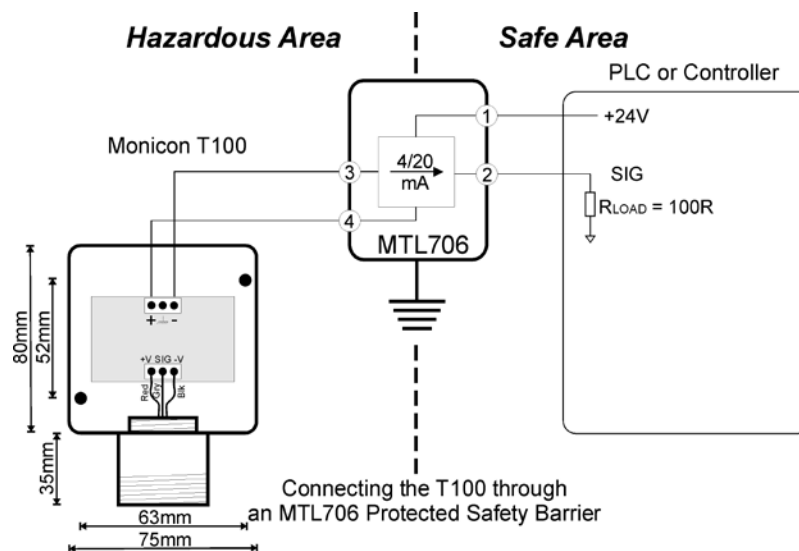
T100-NO$_2$ Specifications

Supply voltage	*Nominal 24Vdc (operates from 12Vdc to 30Vdc)*
Supply current	*Normal: 4mA, full-scale 20mA*
Ec-cell operating life in air at S.T.P.	*Typically 18 - 24 months*
Ec-cell warranty	*12 months*
Response time (T50)	*<30 seconds calculated from 4 minute exposure time*
Response time (T80)	*<40 seconds calculated from 4 minute exposure time*
Preconditioning Requirements	*1 Hour (24 hours recommended for optimum performance)*
Measuring ranges available	*0-10ppm, 0-20ppm, 0-50ppm, 0-100ppm*
Operating temperature range	*-20°C to +40°C*
Effect of operating temperature on sensitivity	*<20% of the sensitivity at 20°C*
Operating pressure range	*Ambient ± 10%*
Effect of operating pressure on accuracy	*Approximately 0.05% signal per mm Hg*
Operating RH range	*15% to 90% non-condensing*
Effect of humidity	*Humidity causes NO$_2$ absorbtion. Abrupt change may cause transient.*
Position sensitivity	*None*
Drift, S.T.P. continuous duty in air	*<2% Full Scale per month*
ATEX certification	*II 2G Exia IIC T4 Ga (Certificate number Baseefa11ATEX0115X)*
Size	*W: 75mm, D: 58mm, H: 80mm (excluding sensor)*
Weight	*400g*
Electromagnetic Conformance (EMC)	*Complies with EN50081 and EN50082*
Enclosure material	*Durable aluminium ALSi12, magnesium content <0.4%,finished in stove enamel gray RAL7001. Stainless Steel sensor compartment.*

Cross sensitivity to other gases

The T100-NO$_2$ is cross sensitive to some other gases. The following table gives an indication of cross sensitivities:

Gas	CO	H$_2$S	SO$_2$	N2	NO	H$_2$	HCN	CL$_2$	HCl	O$_3$	CO$_2$	C$_2$H$_4$	BR$_2$
Concentration	300	10	10	100%	35	100	10	5	5	10	5000	100	10
Response ppm	0	-1	-0.1	0	0	0	0	5	0	15	0	0	5
Temperature	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C

Connecting the T100 through an MTL706 Protected Safety Barrier

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