



# QTS-1800

## QTS-1800 SOLID STATE SENSOR/TRANSMITTERS

The QTS-1800 Series are microprocessor based transmitters using a broad spectrum solid state sensor for the detection of hazardous gases such as Carbon Monoxide, Propane, Ammonia, and Freons. Typical applications include enclosed parking facilities, maintenance garages, loading bays, and chiller rooms. Temperature compensation is included as standard to maintain accuracy for all gas types. Humidity compensation is standard on Ammonia and Freon sensors, and is optional on CO and LEL sensors. The transmitter has an analog output of 4 to 20mA DC, linear to the measured gas range, for transmission to the BAS, or controller supplied by QEL or others. Test jacks are provided at the transmitter for true one-man calibration. The transmitter will accept input voltages of 24 VDC (three-wire) and 24 VAC (four-wire) with wide tolerances. The standard enclosure is ABS plastic NEMA 1, with NEMA 4x weatherproof as an option.



## MODEL NUMBER ORDERING CODE

Q T S - 1 8      1 X -      0 0

### Gas Type

(see Gas Selection Table for #)

### Revision

(Factory Provided)

### Enclosure

Commercial

NEMA 4x

### Options

(Enter 0 for NO Selection)

Humidity Compensation

Sensor Guard

Conformal Coating

Non-Standard Calibration

Special

C

N

H

G

W

X

S

## GAS SELECTION TABLE

GAS TYPE	#	STANDARD RANGE
Carbon Monoxide	16	0 TO 125 ppm in VE <sup>1</sup>
Combustibles	17	0 TO 50% LEL <sup>2</sup>
Ammonia	22	0 to 500 ppm
Freon R11	26	0 to 1000 ppm
Freon R12	27	0 to 1000 ppm
Freon R22	28	0 to 1000 ppm
Freon R123	29	0 to 100 ppm
Freon R134a	30	0 to 1000 ppm
Freon R407c	30	0 to 1000 ppm

1 - Measured in Vehicle Exhaust  
2 - Calibrated for Propane

Specify Gas When Ordering  
Other Gas Available, Consult Factory

## PRINCIPLE OF OPERATION

The solid state sensor utilizes a sintered tin dioxide element. When the sensor is heated to a high temperature, free electrons flow easily when no oxygen is present. In clean air (20.9% oxygen) the oxygen is absorbed onto the element surface causing a restriction to the electron flow thus increasing the electrical resistance of the element. As the sensor is exposed to the target gas, the tin dioxide element adsorbs molecules of the target gas and displaces oxygen molecules in a process known as oxidation. In the presence of CO, the sensor's conductivity increases depending on the gas concentration in the air. The microprocessor based electronics measures this change in conductivity and converts it to a 4-20 mA DC or 2-10 VDC output. The microprocessor performs an algorithm to linearize the final signal.

# SPECIFICATIONS

**Input Power:** 18 to 50 VDC, three wire  
15 to 36 VAC, 47 to 63 Hz  
floating ground, four wire

**Fuse:** Two 1 amp. Pico

**Output Signal:** 4 to 20 mA DC into 700 ohms  
at 24 VDC

**Enclosure Rating:** C, D-Nema 1 General Purpose  
N-Nema 4x Weatherproof

**Enclosure Materials:** Fire retardant ABS plastic, UL  
flammability rating 94 V-O

**Sensor Technology:** Solid State Semiconductor

**Response Time:** Typically less than 35 seconds  
for 90% response to a step  
change

**Sensor Life:** Typical 5 to 7 years

**Sensor Gas types:** See sensor selection table

**Temperature:** -4° to 104° F (-20 to 40°C)  
compensated over 32° to 104° F  
(0 to 40° C)

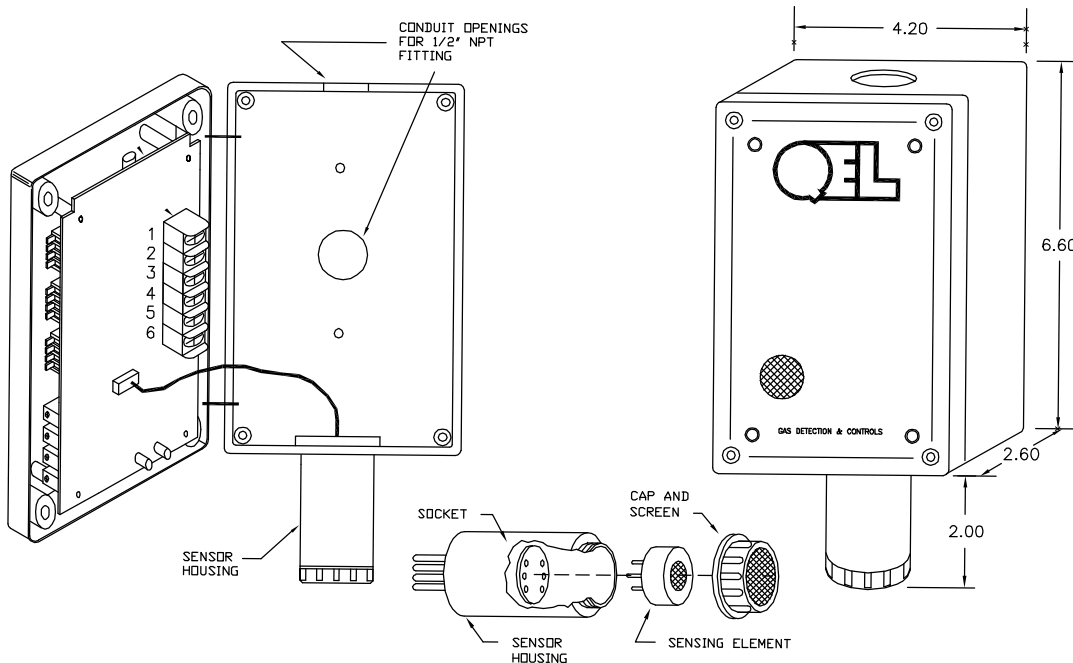
**Humidity:** 0 to 90% RH continuous  
operating, non-condensing,  
optional compensation

**Pressure:** Atmospheric +/- 10%

**Accuracy:** +/- 10% of range at reference  
conditions

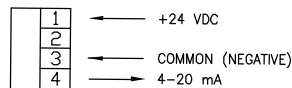
**Repeatability:** +/- 2.5%

**Shipping Weight:** 2 lb. (0.9Kg)

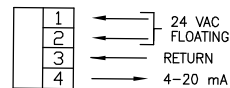


## WIRING CONNECTIONS

**ANALOG INSTALLATION**  
24 VDC OPERATION  
3-WIRE



**ANALOG INSTALLATION**  
24 VAC OPERATION  
4 WIRE



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This brochure includes general specifications which are subject to change without notice. Ensure a complete understanding of all applicable Federal, State, Provincial and Local Health and Safety laws and regulations before using these products.

**Read and understand fully all instructions before using these products.**

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