

REVISIONS						
ECN	REV.	DESCRIPTION	DATE	DRAW	CHECK	APPROVED
940	A	Initial Release	2012-09-19	XY	XY	XY
1114	B	Remov FM	2017-10-03	XY	XY	XY

## SPECIFICATION

### INPUT POWER:

+24VDC nominal, range: 18 to 30VDC 0.3A DC Total Max.  
 ~24VAC nominal, range: 15 to 24VAC 50/60HZ 0.3A AC Total Max.  
 (AC must not be grounded)

### FUSE:

F2 on Main Board: Polyswitch 750mA  
 Polyswitch device resets after the fault is cleared and power to the circuit is removed

### SENSOR:

Combustible gases: Catalytic or NDIR  
 Toxic gases and Oxygen: Electrochemical  
 Carbon Dioxide: Non-Dispersive Infra-Red (NDIR)

### OUTPUT SIGNAL:

RS-485 with OPTIMUX PROTOCOL AND MODBUS PROTOCOL  
 4-20mA Analog Output, 1-5VDC, 2-10VDC Output  
 3X SPDT RELAYS: 1.0A MAX. @30VDC (RESISTIVE LOAD)  
 0.3A MAX. @125VAC (RESISTIVE LOAD)

### OPERATING TEMPERATURE:

-40°C to 70°C, depends on sensor specification

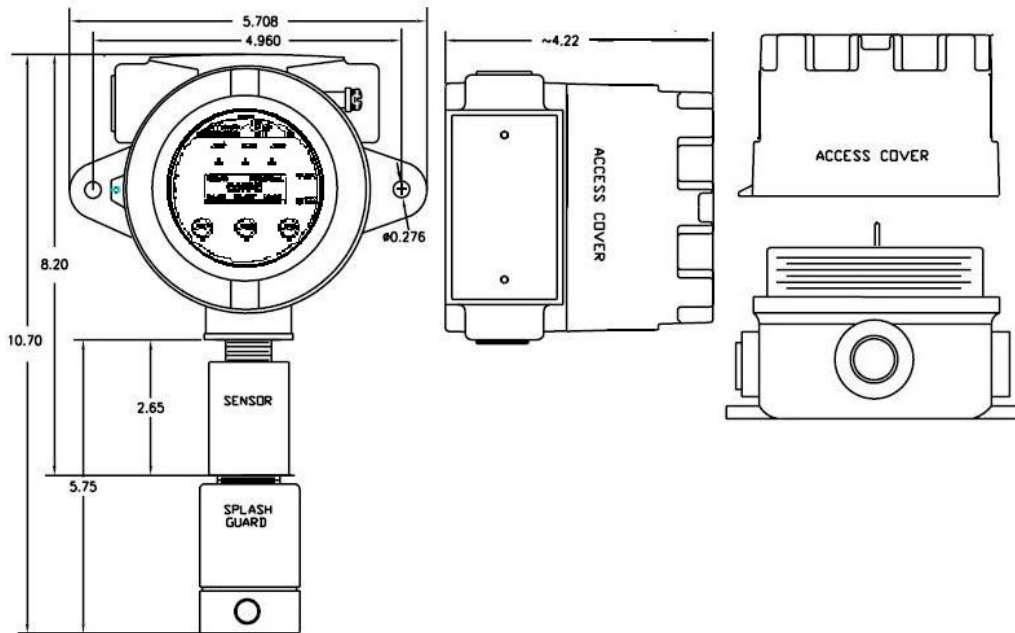
### AMBIENT HUMIDITY:

5% TO 95% RH (NON- CONDENSING)

### STORAGE TEMPERATURE:

0°C to 20°C, depends on sensor specification

### WEIGHT: LESS THAN 1.8kg



**ENCLOSURE:**  
 Aluminium Pressure Die-Casting  
 Entries: 2X ¾ NPT

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DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± 1/32 ANGULAR: MACH ± .5 degrees BEND ± TWO PLACE DECIMAL ± .02 THREE PLACE DECIMAL ± .010	DRAWN	XY	2012-09-19	TITLE:  <b>Q8</b>  <b>INSTALLATION DRAWING</b>	
	CHECKED	XY	2012-09-19		
	ENG APPR.	XY	2012-09-19		
	MFG APPR.				
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.		COMMENTS:	
MATERIAL					
FINISH				SIZE <b>B</b> DWG. NO. <b>86350-002-000</b> REV <b>B</b>	
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING		SCALE: 1:8	WEIGHT: SHEET 1 OF 6

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet 1	-	-



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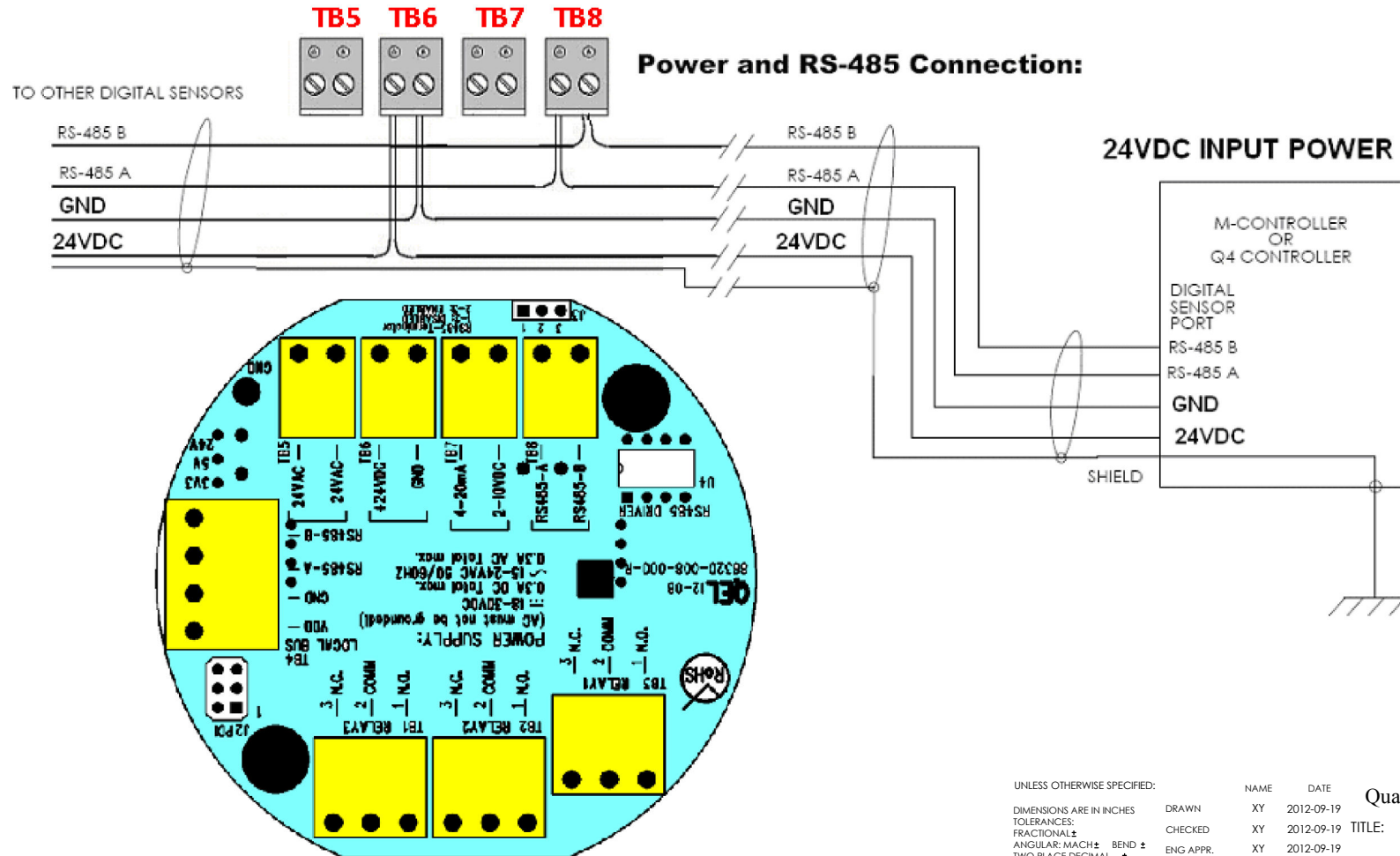
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TOLERANCES:			
FRACTIONAL ±		CHECKED	XY 2012-09-19
ANGULAR: MACH ± BEND ±		ENG APPR.	XY 2012-09-19
TWO PLACE DECIMAL ±			
THREE PLACE DECIMAL ±		MFG APPR.	
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.	
MATERIAL		COMMENTS:	
FINISH			
DO NOT SCALE DRAWING			

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9	TITLE:	
9		Q8
		INSTALLATION DRAWING

SIZE <b>B</b>	DWG. NO. 86350-002-000	REV B
SCALE: 1:2		SHEET 2 OF 6

## Power and RS-485 Connection for Q8:



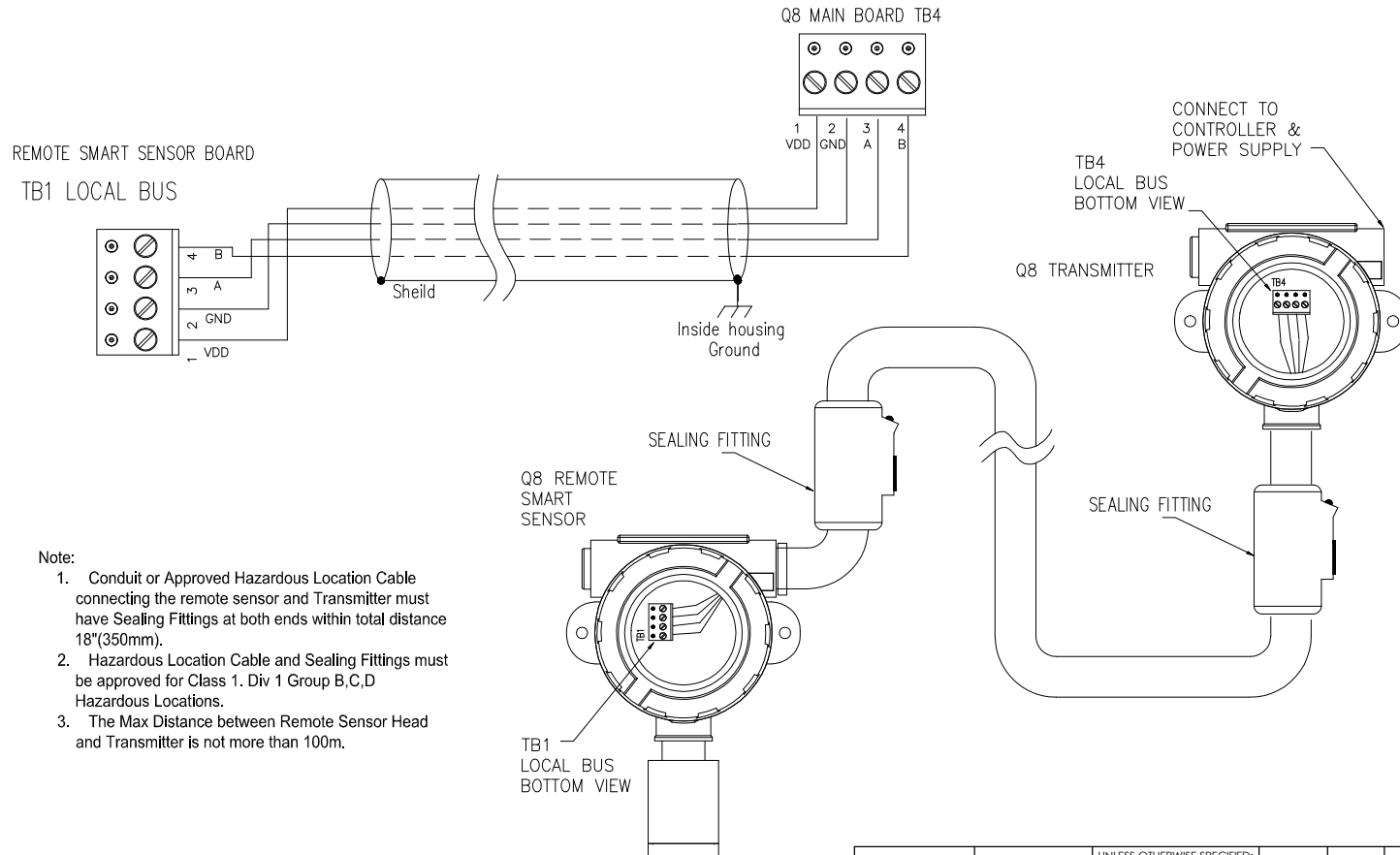
- NOTE:
1. GROUND THE SHIELD IN CONTROLLER SIDE
  2. GROUND ON ONE END ONLY

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		THREE PLACE DECIMAL ±	MFG APPR.			Installation Drawing		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.	XY	2012-09-19	SIZE <b>B</b>	DWG. NO.	REV <b>B</b>
		MATERIAL	COMMENTS:				86350-002-000	
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2	WEIGHT:	SHEET 3 OF 6

# Q8 and Remote Smart Sensor Assembly Connection

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-

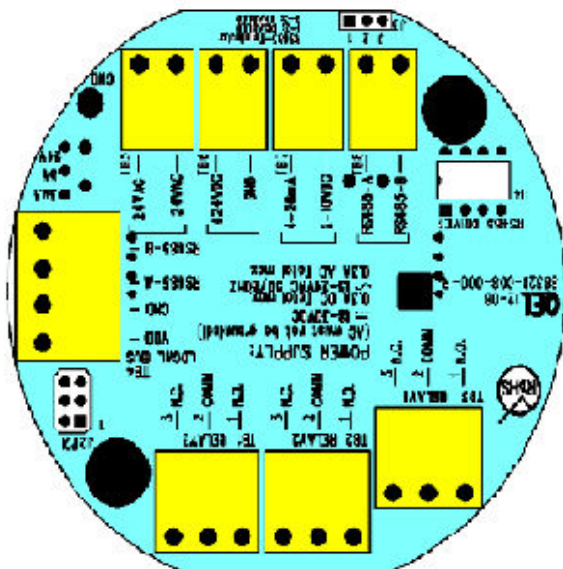


- Note:
1. Conduit or Approved Hazardous Location Cable connecting the remote sensor and Transmitter must have Sealing Fittings at both ends within total distance 18"(350mm).
  2. Hazardous Location Cable and Sealing Fittings must be approved for Class 1. Div 1 Group B,C,D Hazardous Locations.
  3. The Max Distance between Remote Sensor Head and Transmitter is not more than 100m.

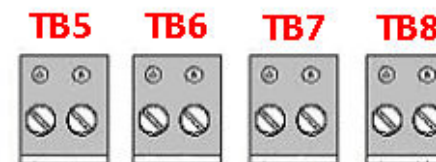
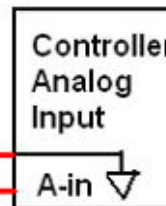
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		DIMENSIONS ARE IN INCHES	DRAWN	XY	2012-09-20	TITLE:  Q8 INSTALLATION DRAWING		
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		FRACTIONAL: ±	ENG APPR.	XY	2012-09-20			
		ANGULAR: MACH ± BEND ±	MFG APPR.					
		TWO PLACE DECIMAL ±	Q.A.	XY	2012-09-20			
		THREE PLACE DECIMAL ±	COMMENTS:			SIZE DWG. NO. REV B86350-002-000B		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
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APPLICATION		DO NOT SCALE DRAWING				SHEET 4 OF 6		

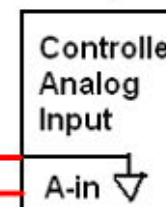
# 4-20mA and VDC Output for Q8:



4-20mA Input



mV Input



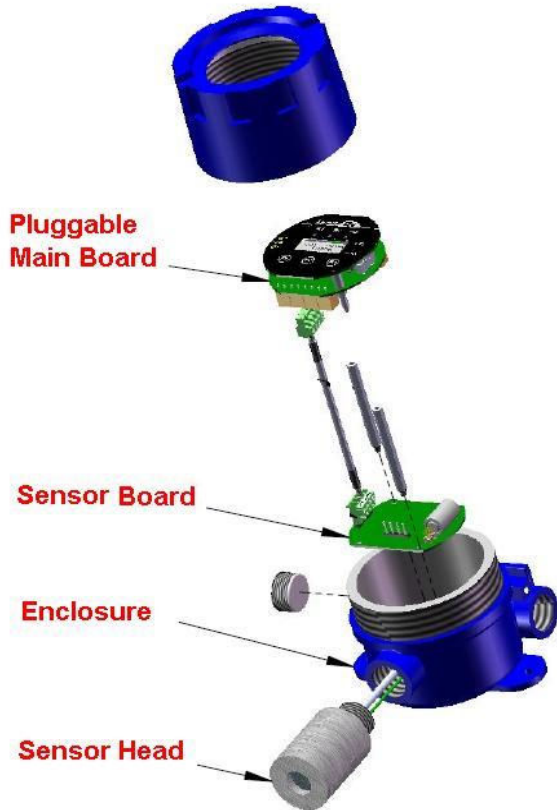
Q8 provides one channel 4-20 milliamp analog output and 1-5VDC or 2-10VDC analog output . The maximum output impedance is 600 ohms for 4-20mA output. The maximum current is 10 mA for VDC output.

Test point mA+ and mA- on top plate board are used to measure the 4-20mA Outut current inline when the Q8 is working in the field.

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			MFG APPR.								
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		MATERIAL	COMMENTS:								
		FINISH									
NEXT ASSY	USED ON										
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:2			SHEET 5 OF 6					

8 7 6 5 4 3 2 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-

### Twisted Pair?

RS-485 is designed to be a balanced system. The signal on one wire is ideally the exact opposite of the signal on the second wire. In other words, if one wire is transmitting a high, the other wire will be transmitting a low, and vice versa. Although RS-485 can be successfully transmitted using multiple types of media, it should be used with wiring commonly called "twisted pair."

### Terminator Enable/Disable?

The terminator on each end of the RS485 loop is designed to match the electrical impedance characteristic of the twisted pair loop, and will prevent signal echoes from corrupting the data on the line. The terminator should be enabled on BOTH ends of the RS485 loop. Short and medium length modbus/485 loops can operate without the terminating resistor. Longer runs may require the terminating resistors. But adding terminator dramatically increases power consumption.

### Sensor Location:

Several factors should be considered when selecting locations to install sensors. The following general suggestions should be considered to assure the detection of the target gas. Select the most suitable location for each sensor.

1. Air Currents: If there are fans, winds, or others sources of air movement, gases may tend to rise to collect in certain areas of a facility. The local air currents should be assessed to aid in selecting the sensor location. In outdoor situations considerations such as prevailing winds should be accounted for. Air convection can often be more important in determining gas concentrated areas than factors of Vapor Density.
2. Vapor Density: For the target gas heavier than air. Detecting location should be 9 - 18 inch (0.23m to 0.46m) above the floor.
3. Gas Emission Sources: As a rule, at least one sensor should be located in close proximity to each point where a leak is likely to occur. This is particularly important when a liquid having a low volatility is monitored.
4. Environmental Factors: Designed to rugged outdoor use consider the following in selecting locations. Install sensors where they will be protected from wind, dust, snow, water, vibration and shock.

### Note:

- Avoid running communication wires or sensor input wires next to AC power wires or the relay output wires. These can be sources of noise that can affect signal quality.
- When the Q8 input power is AC, the 24VAC must not be grounded. A dedicated floating 24VAC may be needed if other nodes on the network are grounded, otherwise a DC power supply is recommended.

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			ENG APPR.	XY	2012-09-19			
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		MATERIAL	COMMENTS:			SIZE DWG. NO.		REV
NEXT ASSY	USED ON	FINISH				B 86350-002-000		B
APPLICATION		DO NOT SCALE DRAWING			SCALE: 1:2		SHEET 6 OF 6	

8 7 6 5 4 3 2 1