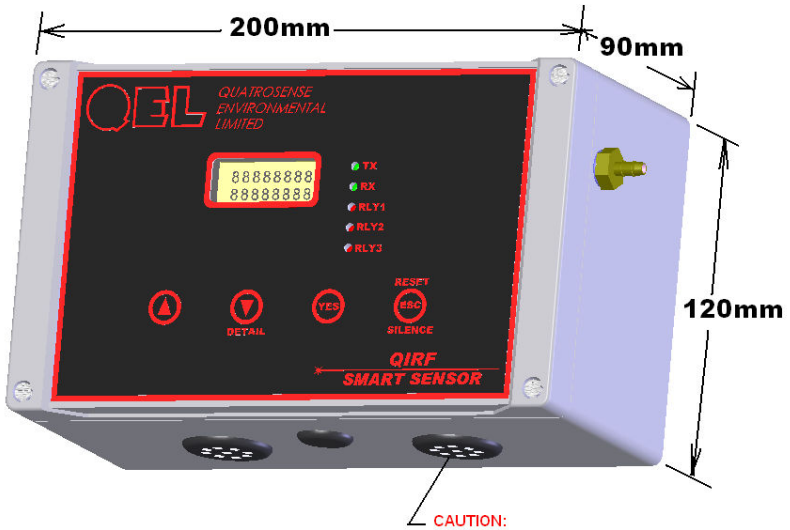
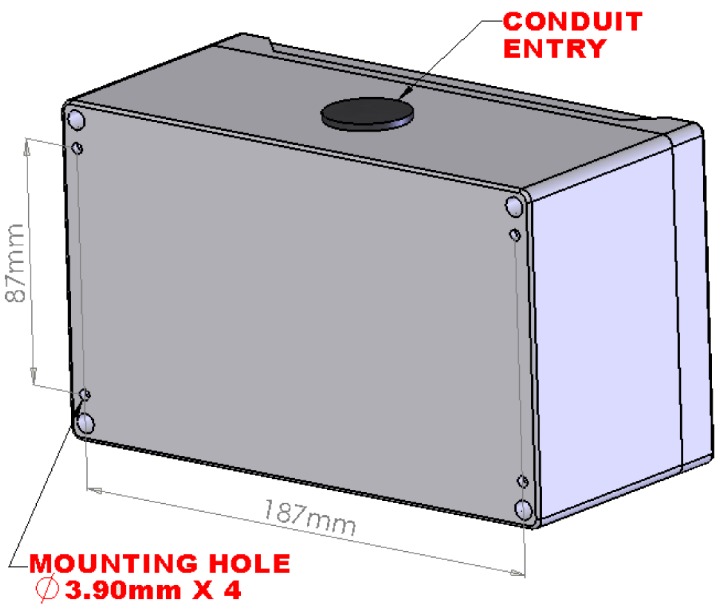
REVISIONS						
ECN	REV.	DESCRIPTION	DATE	DRAW	CHECK	APPROVED
	A	Initial Release	2011/03/09	XY	XY	XY





SPECIFICATION

INPUT POWER:
+24VDC nominal, range: 18 to 30VDC 1.0A DC Total Max.
~24VAC nominal, range: 15 to 24VAC 50/60HZ 1.0A AC Total Max.
(AC must not be grounded)

FUSE:
F1 on Display Board: Polyswitch 1.6A
F2 on Display Board: Polyswitch 50mA
Polyswitch device resets after the fault is cleared and power to the circuit is removed

SENSOR:
INFRARED REFRIGERANT

OUTPUT SIGNAL:
RS-485 with OPTIMUX PROTOCOL AND MODBUS PROTOCOL
AVAILABLE CONTROLLER: M-CONTROLLER or Q4 CONTROLLER
4-20mA Analog Output
3X SPDT RELAYS: 1.0A MAX. @30VDC (RESISTIVE LOAD)
0.3A MAX. @125VAC (RESISTIVE LOAD)

ENCLOSURE:
IP 66 & NEMA 4, 4X, 12 & 13
COVER SCREWS SHOULD BE TORQUED TO 2.5 lbs-in (30 cN-m)

OPERATING TEMPERATURE:
-45 °C TO 65 °C

AMBIENT HUMIDITY:
5% TO 95% RH (NON- CONDENSING)

STORAGE TEMPERATURE:
-45 °C TO 70 °C

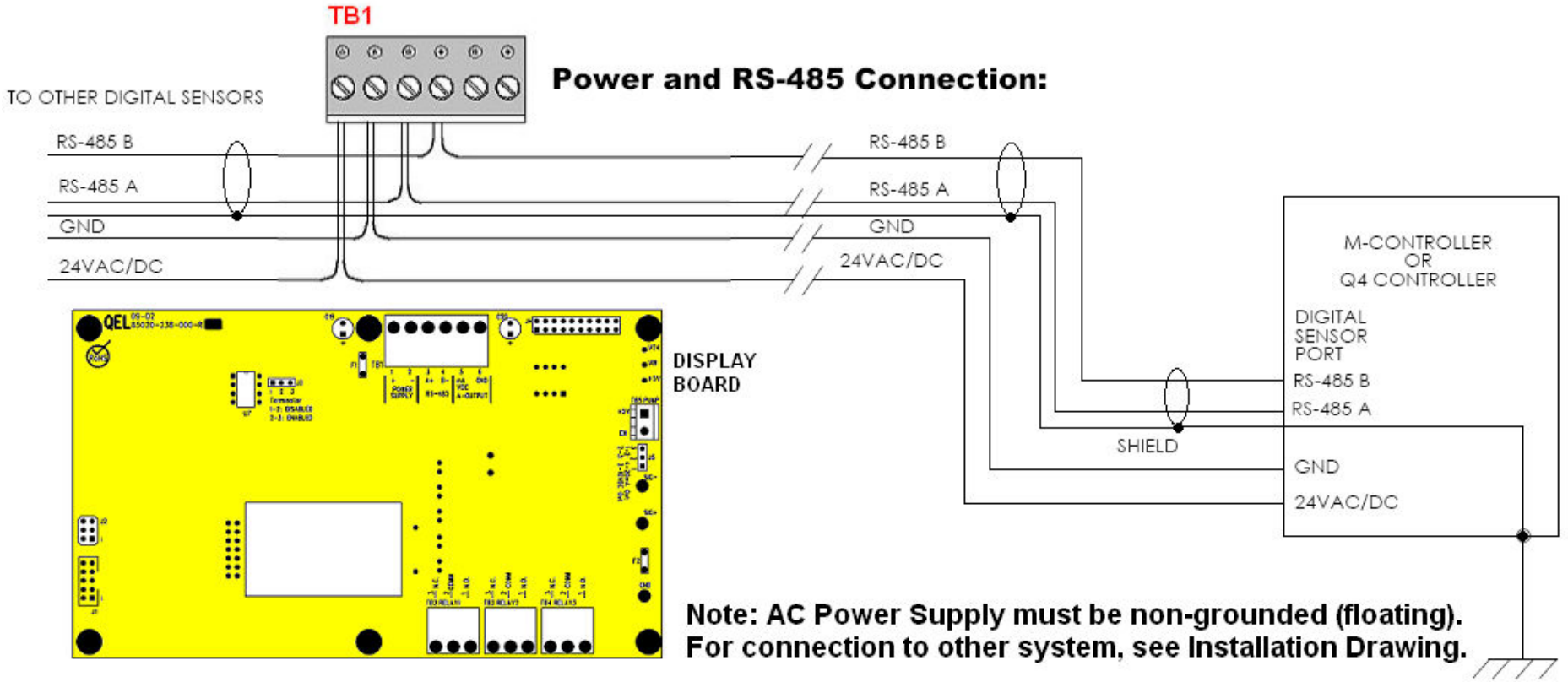
SIZE:
200mm X 120mm X 90mm

WEIGHT:
LESS THAN 1.5lbs (0.680 kg)

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Quatrosense Environmental Ltd	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/32 ANGULAR: MACH ± .5 degrees BEND ± TWO PLACE DECIMAL ± .02 THREE PLACE DECIMAL ± .010	DRAWN	XY	2011/03/09	TITLE: QIRF INSTALLATION DRAWING	
	CHECKED	XY	2011/03/09		
	ENG APPR.	XY	2011/03/09		
	MFG APPR.				
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.				
MATERIAL	COMMENTS:			SIZE B / DWG. NO. 85050-302-000 / REV A	
FINISH				SCALE: 1:2 / WEIGHT: / SHEET 1 OF 5	
NEXT ASSY / USED ON					
APPLICATION / DO NOT SCALE DRAWING					

Power and RS-485 Connection:

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



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

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	XY	2011/03/09
CHECKED	XY	2011/03/09
ENG APPR.	XY	2011/03/09
MFG APPR.		
Q.A.		

COMMENTS:

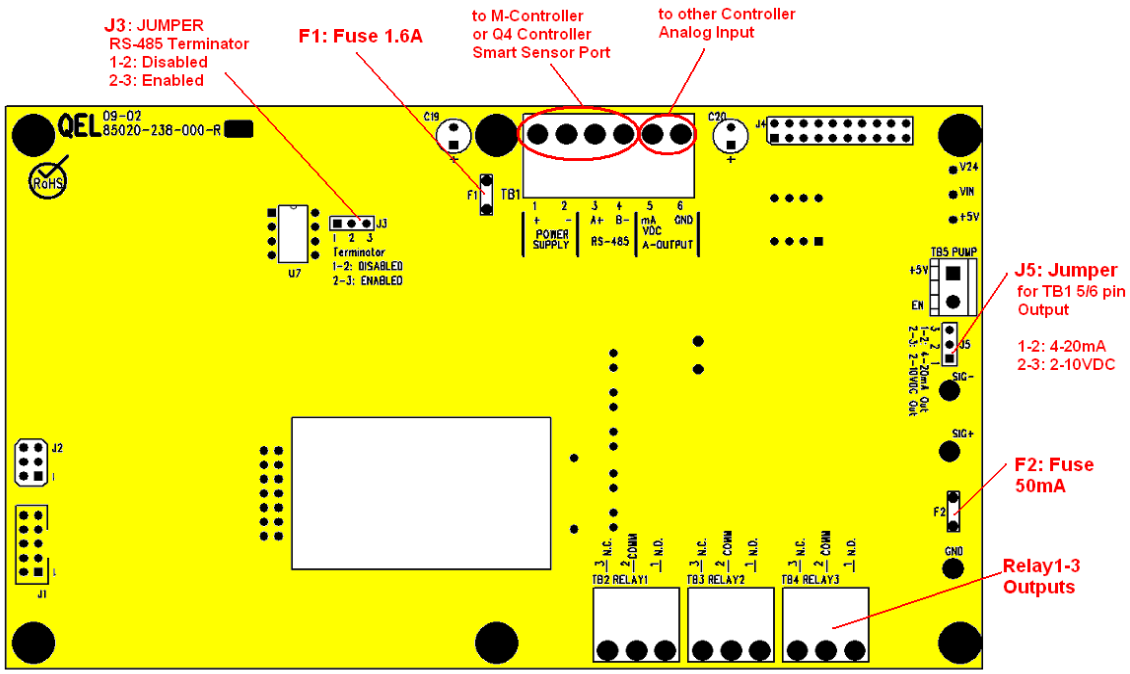
Quatrosense Environmental Ltd

TITLE:
QIRF
INSTALLATION DRAWING

SIZE	DWG. NO.	REV
B	85050-302-000	A

SCALE: 1:2 | SHEET 2 OF 5

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



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.

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."

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: R11, R22, R123 and R134a are 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.

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FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION | DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	XY	2011/03/09
CHECKED	XY	2011/03/09
ENG APPR.	XY	2011/03/09
MFG APPR.		
Q.A.		

COMMENTS:

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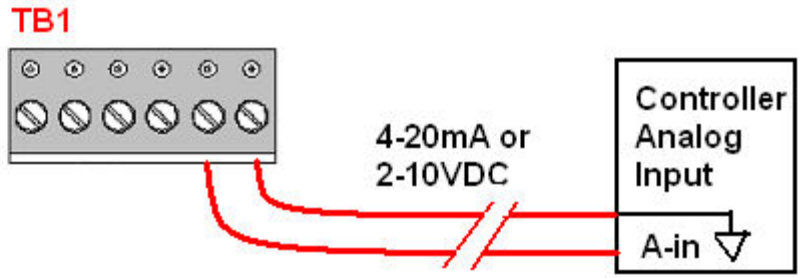
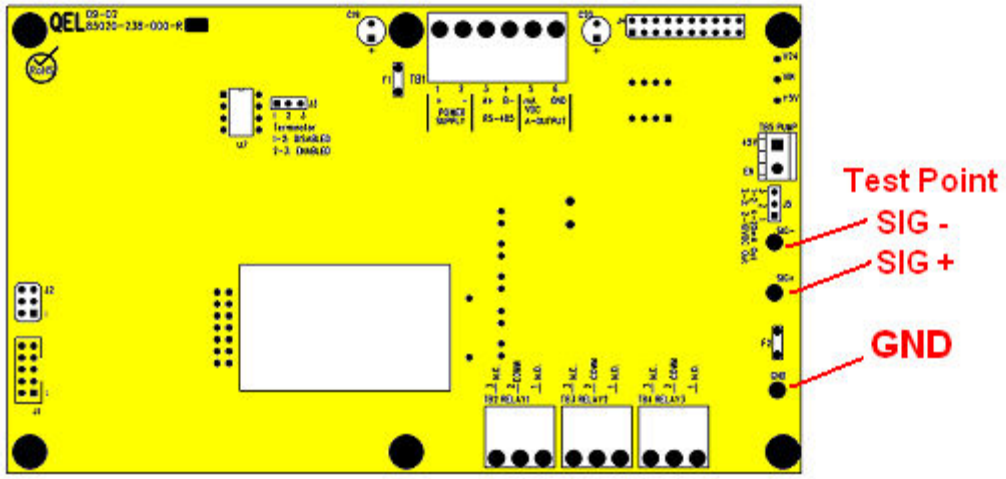
SIZE	DWG. NO.	REV
B	85050-302-000	A

SCALE: 1:2 | SHEET 3 OF 5

4-20mA Output:

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





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

Test point SIG+ and SIG- are used to measure the current online when the IR-FREON-D is working in the field.

- **Jump J5 2-3 : 2-10VDC Output**
- **Jump J5 1-2 : 4-20mA Output (Default)**

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED:		NAME	DATE
APPLICATION		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	XY	2011/03/09
			CHECKED	XY	2011/03/09
			ENG APPR.	XY	2011/03/09
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
		DO NOT SCALE DRAWING			

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TITLE:

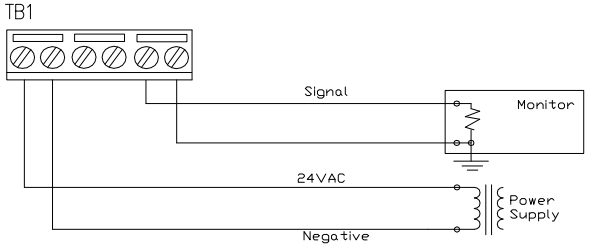
QIRF
INSTALLATION DRAWING

SIZE	DWG. NO.	REV
B	85050-302-000	A

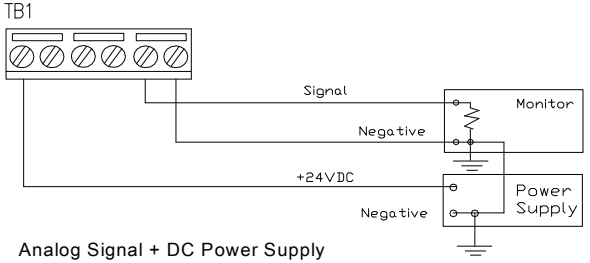
SCALE: 1:2 | SHEET 4 OF 5

CONNECTION TO DCS

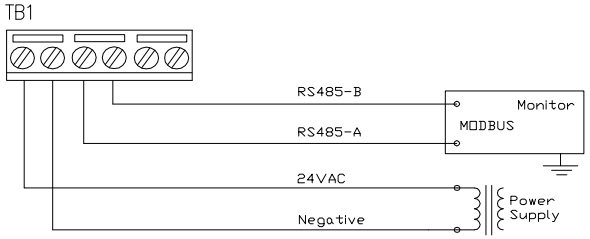
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



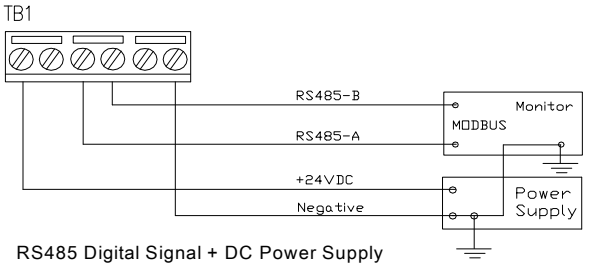
Analog Signal + Floating AC Power Supply



Analog Signal + DC Power Supply



RS485 Digital Signal + Floating AC Power Supply



RS485 Digital Signal + DC Power Supply

Application Note:

1. If the device is connected to M-Controller or Q4 Controller, and the power supply is 24VAC, the 24VAC must be a floating AC Power Supply, which means the Negative post of the 24VAC must not be connected to a wire ground referenced to earth. Failure to comply can result in the device damage or other damage.

2. For long distance wiring, choose proper cable to ensure the voltage on each device in nominal range. Lower voltage will expect longer warmup process, and longer time to stabilize.

NEXT ASSY	USED ON
APPLICATION	DO NOT SCALE DRAWING

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TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

	NAME	DATE
DRAWN	XY	2011/03/11
CHECKED	XY	2011/03/11
ENG APPR.	XY	2011/03/11
MFG APPR.		
Q.A.	XY	2011/03/11

COMMENTS:

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QIRF
INSTALLATION DRAWING

SIZE	DWG. NO.	REV
B	85050-302-000	A

SCALE: 1:2 | SHEET 5 OF 5