QMI TRIPLEX™ OIL MIST MONITORING SYSTEM

Atmospheric Oil Mist Detection System Manual

TM4 / AUGUST 2018

QMI TRIPLEX™
Atmospheric Oil Mist Detection System Manual

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You have chosen a QMI oil mist detection system that has been providing a fast response without false alarms to protect lives and prevent fires since the early eighties.

The QMI TRIPLEX™ Atmospheric Oil Mist Detection Systems can locate a hazardous build up of oil mist in confined areas such as: pump rooms, bow thrusters, purifier rooms, hydraulic pack areas, and test cells.

We can provide QMI MULTIPLEX™ Atmospheric and Engine Oil Mist Detection Systems. The MULTIPLEX™ systems have up to 12 channels and can be used to monitor engine condition continuously to see when and where repairs are needed thus avoiding unnecessary engine wear and the resulting danger. The MULTIPLEX™ can also be used for larger Atmospheric Systems. For more information please see our website: **www.oilmist.com**

Type Approval from:

ABS

Lloyd's Register

Table of Contents

TECHNICAL SPECIFICATIONS

POWER SUPPLY	Nominally 110 - 240 VAC 50/60 Hz	
MAXIMUM POWER CONSUMPTION	100W	
MAXIMUM SAMPLING CHANNELS	3	
CYCLE TIME	500 milliseconds simultaneously on all channels	
MEASURING SYSTEM	Time multiplex analogue signal	
SYSTEM OUTPUTS - RELAYS	All relays fitted with maximum change contacts voltage rating 110V @ 8A to 240V @ 5A	
Main Alarm	Normally energised with 1 set of change over contacts	
Early Warning Alarm	Normally energised with 1 set of change over contacts	
Shutdown Alarm NOT INCLUDED IN SELF TEST SEQUENCE	Normally de-energised with 1 set of change over contacts	
Fault Alarm	Normally energised with 1 set of change over contacts	
OPERATING TEMPERATURE	5°C - 70°C Monitor, Sensor and Fan Unit	
	DIMENSIONS (mm)	**WEIGHT (Kg)**
Q01T Triplex Monitor	280 x 230 x 128	5.2
Sensor (DH)	359 x 113 x 73	2.3
Sealed to IP65 or better	Monitor, Sensor and Fan Unit	
MAXIMUM CABLE DISTANCE	Maximum distance between Sensor and Monitor is 100 metres.	
Fuse - FS1 Internal	Sensor Interface 1.25A anti-surge	
Fuse - FS2 Internal	12V DC Fan Failure Supply 400mA anti-surge	
Fuse - FS3 External	110 - 240 VAC 3.15A anti-surge	
FEATURES	Continuous self-monitoring fault diagnosis Manual test facility of all functions Including shutdown facility (e.g. hydraulic pack)	

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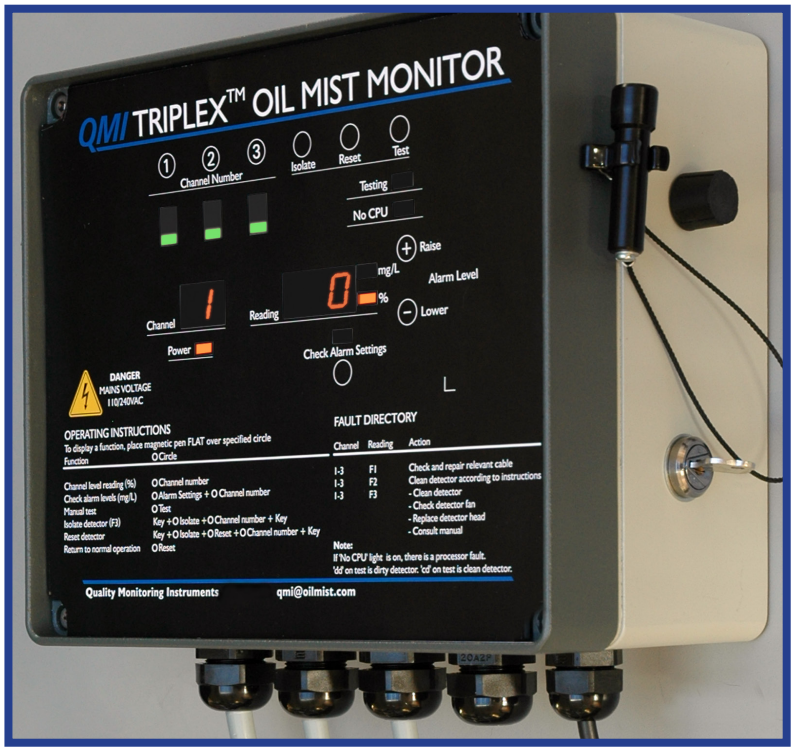
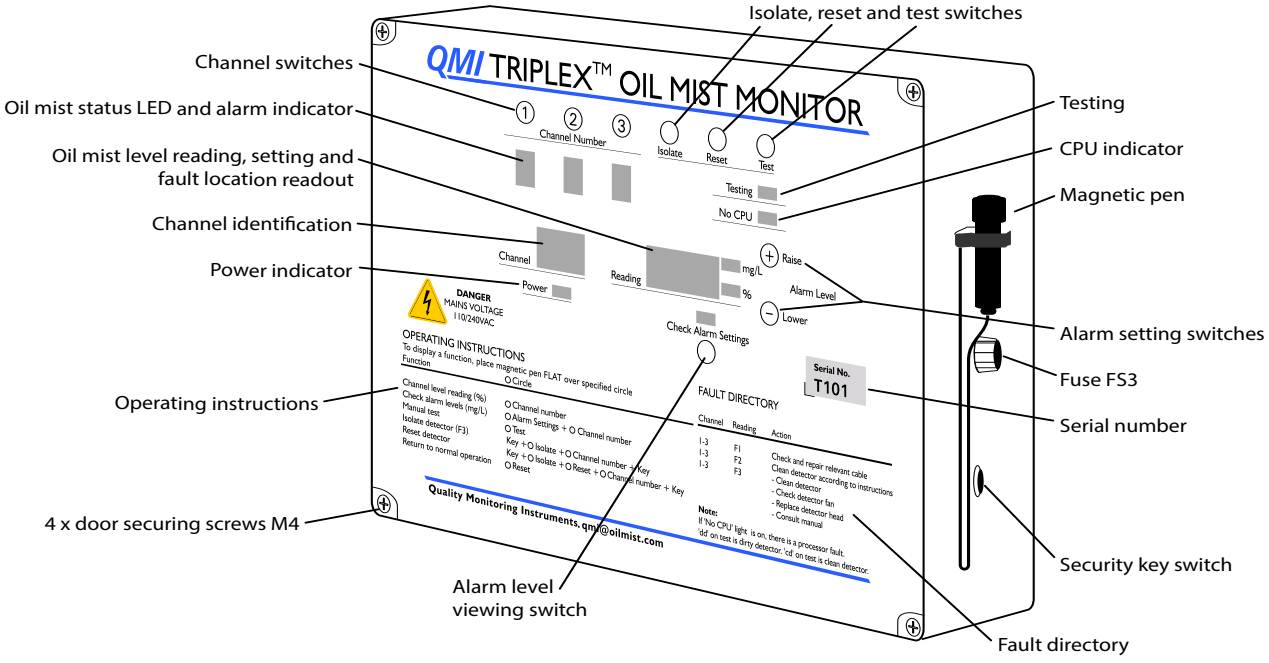
QMI TRIPLEX CENTRAL MONITOR UNIT (CMU) (Q01T): PHOTOGRAPH AND FEATURES



Glands (as shown above) are not supplied.
The Monitor is supplied with blind grommets.



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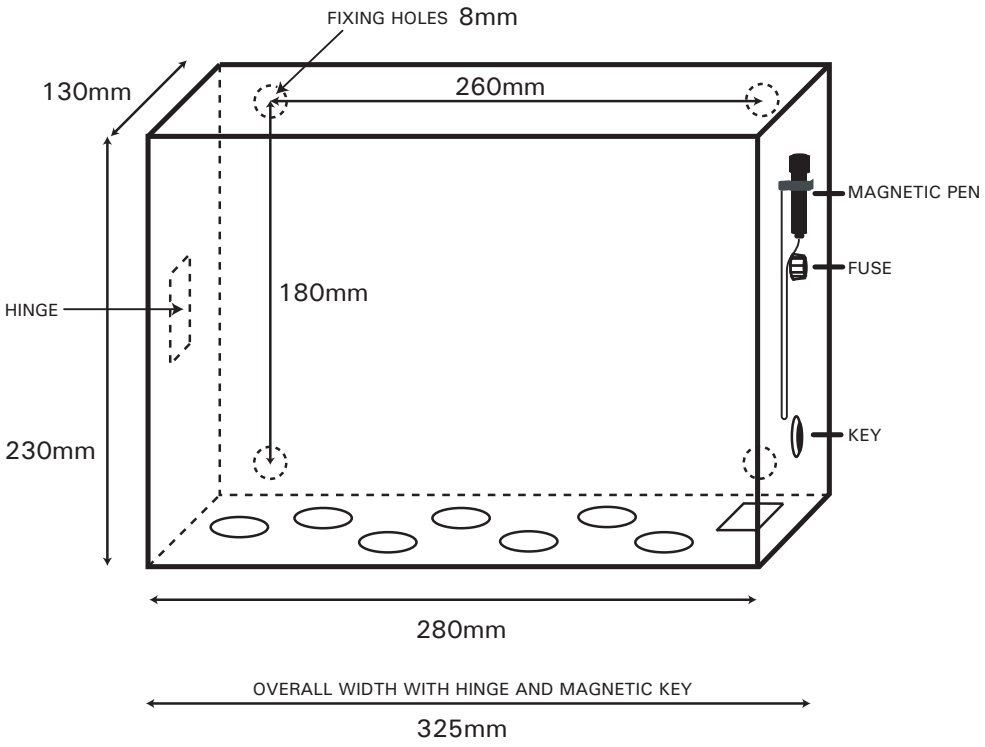
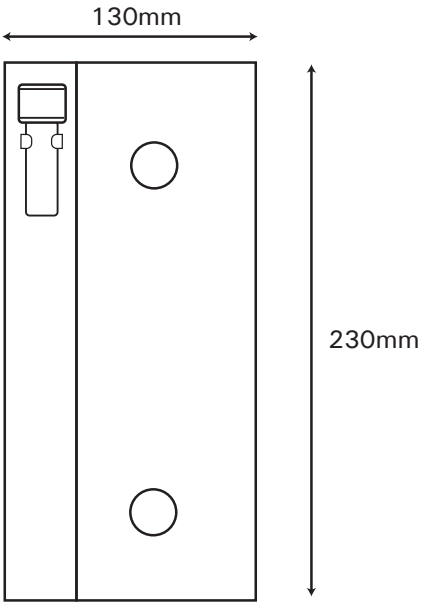
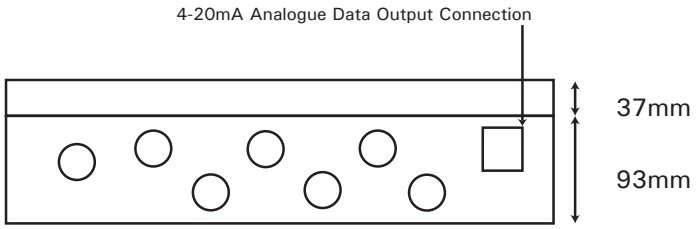
DIMENSIONS OF TRIPLEX MONITOR







8 Holes of 20mm diameter
SPACE BETWEEN HOLES IN BOTTOM OF MONITOR
IS APPROXIMATELY 46mm

THIS DRAWING IS NOT TO SCALE

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DESCRIPTION OF TRIPLEX MONITOR (Q01T)

The Monitor Enclosure contains:

Display Panel
Power Supply Board (PSB)
Plugs and sockets for relevant connections
Fuses
Keyed Security Switch

The Display Panel
The display panel is mounted on a hinged bezel which is secured to the enclosure by (4) M6 Captive socket head screws. Releasing the screw allows access to the TRIPLEX PCB and the power supply board within.

TRIPLEX PCB (Q01T04)
The back of the display panel carries the Triplex MP3 Processing Board, Binary Switch and Flash Chip. The PCB is held to the panel with (5) M4 cheese head screws.

Power Supply Board (Q01T05) with PSU
Mounted on the board is a Power Supply Unit, fuses, TR1 transistor, alarm relays, and termination sockets.

NOTE:

THE PLUGS ARE SHAPED AND CAN ONLY BE FITTED ONE WAY.
INCORRECT FITTING DAMAGES THE SOCKET CAUSING UNIT MALFUNCTION.

Fuses
FS1 (Q0114) is a 1.25A anti-surge fuse connected to TR1 and supplies the Sensor. The LED continually flashes in operation.

FS2 (Q0112) is a 400mA anti-surge fuse for the 12V power supply to the fan. The LED is permanently lit in operation.

FS3 (Q0115) is a 3.15A anti-surge fuse (in a holder) fitted to the side of the Monitor.

Security Key Switch on the right side of the Monitor.
THE SECURITY KEY IS REQUIRED TO CHANGE SETTINGS.
HORIZONTAL = LOCKED MODE
VERTICAL = SETTING MODE

NOTE:

THERE IS NO MAINS ISOLATOR FITTED TO THE MONITOR.

QMI RECOMMEND A SECURE MAINS ISOLATOR IS FITTED TO PREVENT POWER INTERRUPTION TO THE SYSTEM.

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DESCRIPTION OF Q10 ATMOSPHERIC SENSOR

See drawing Sheet-10

The Sensor operates using the principle of light scatter (nephelometry). The power and signal are transmitted to and from the Monitor through a single cable sending a timed analogue signal. All Sensors sample simultaneously and continuously every half-second (500 milliseconds).

The assembled Sensor comprises:

(a) Articulated Joint and mounting flange
(b) Chamber

a) ARTICULATED JOINT AND MOUNTING FLANGE

See drawing Sheet-10

The Articulated Joint is fitted to bulkhead or deck allowing the Sensor to be positioned facing the flow of air in the chamber being monitored.
The sub-assembly is fitted to the Articulated Joint by 4 screws, which can be removed if and when the Sensor lens requires cleaning.

b) CHAMBER

Inside the unit are the PCB, integral fan, and sensing lenses. Power is supplied to the 12-volt fan by a single cable, which is connected to the
Monitor (or to a junction box). The fan draws the sample of air past the sensors through the outlet ports.

In the front of the Sensor unit are the air intake louvers, and an LED, which shows green when the fan is working. The electronics are mounted on the back of the chamber casing and are protected by the cover sealed to IP 65.

At the back of the unit is the multi-purpose power and signal socket. Next to the socket is the mounting spigot.

NOTE: The integral fan is interchangeable without recalibrating the Sensor.
It is a consumable item and does not come under warrantly. New Fans can be purchased from your Agent.

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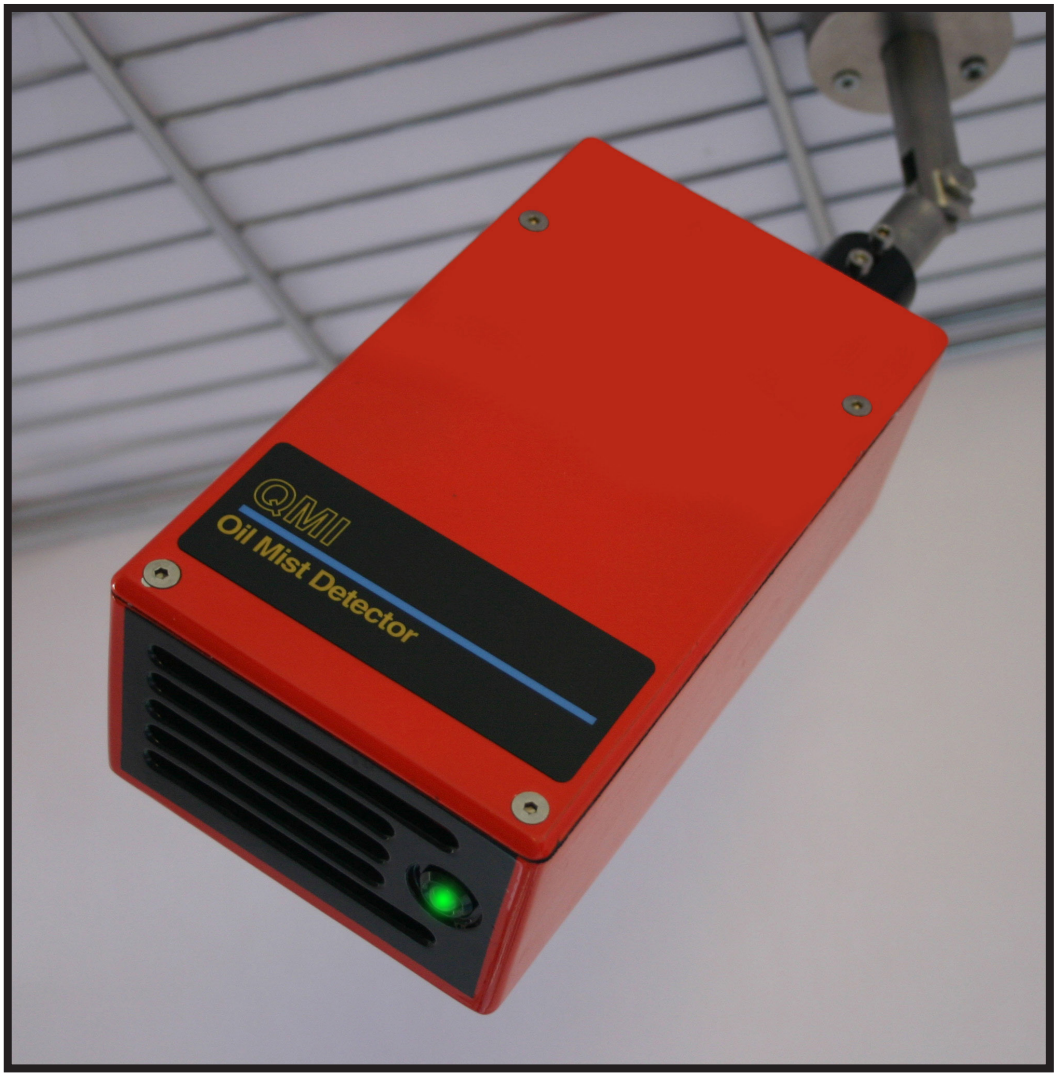
PHOTOGRAPH OF Q10 ATMOSPHERIC SENSOR



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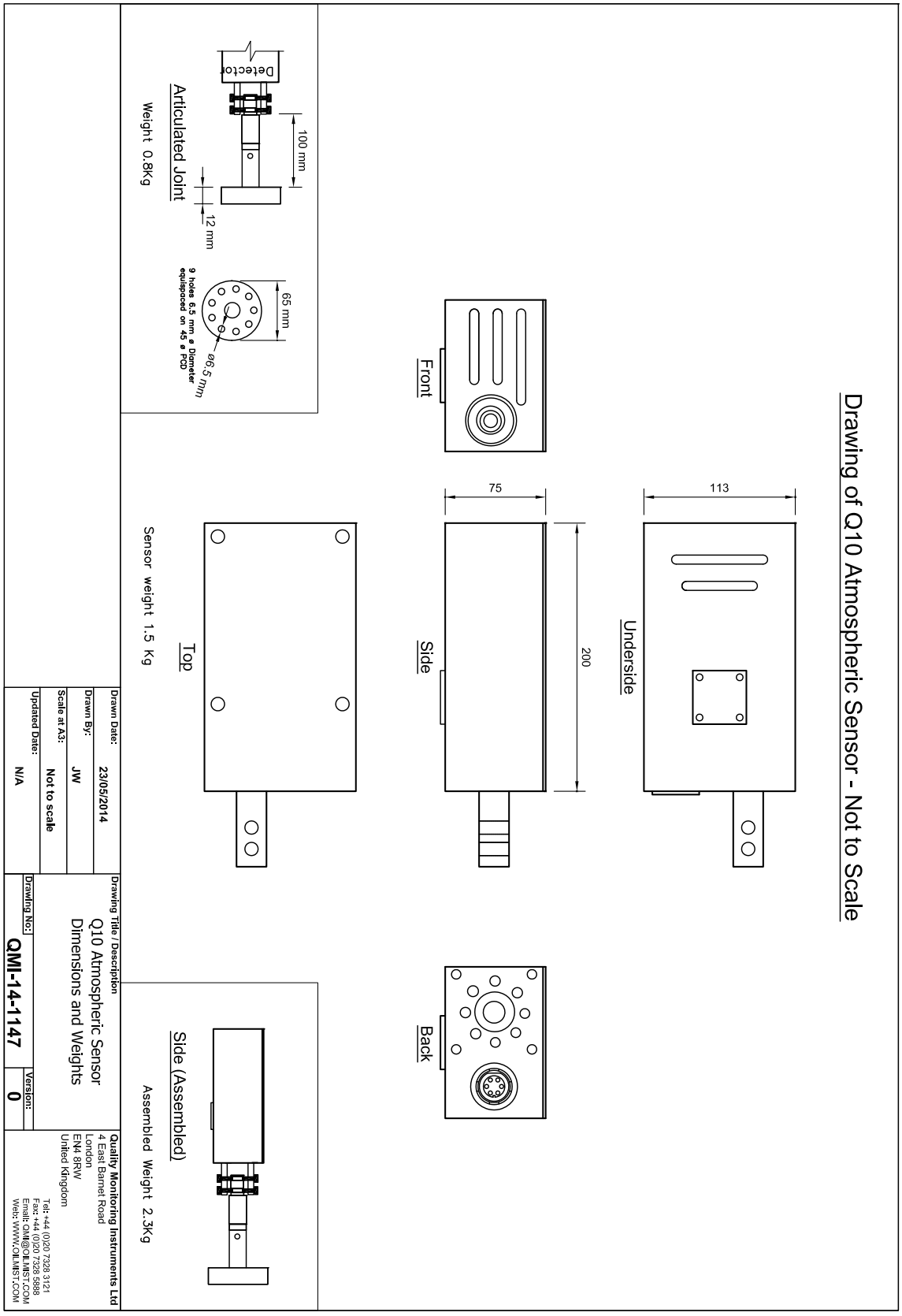
DRAWING OF Q10 ATMOSPHERIC SENSOR



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POSITIONING AND LOCATION OF ATMOSPHERIC SENSORS

NUMBER OF SENSORS REQUIRED

It must be taken into consideration that the number of Sensors will depend on the pressure being released into the atmosphere which is relative to the volume of the space. It will also depend on the amount of air movement.

In a large engine room you may need 4 or 5 Sensors (for which you would use a QMI MULTIPLEX Atmospheric Oil Mist Detection System), for a hydraulic pack room 1 to 3 Sensors are sufficient. In purifier and compressor rooms one is usually enough. For all other spaces such as steering gear or bowthruster housing use 1 or 2 Sensors.

Remember, any spare channels can be used later.

NOTE: Sensors cannot be used in cargo pump rooms as they have not been certified for hazardous zones.

LOCATION OF SENSORS

Please follow the guidelines outlined below to get the best results.

We recommend using a smoke test aerosol or a smoke generator to judge the way the air flows over the machinery. Normally air will move toward ventilation extractors or the turbo charger, therefore, the Sensor must be placed in the air stream facing the airflow as close as possible to the machinery.

The Sensor comes with a fixing flange which is welded on the Articulated Joint.We suggest the length of cable that runs to the Sensor is longer than required to enable the Sensors to be moved at a later date if necessary.

To confirm that the Sensors are correctly positioned you should carry out the following test; wait until the engines, ventilation and other machinery are fully operational, then once again use your smoke test aerosol or smoke generator to prove the Sensors are correctly positioned. The Sensor should be rotated until positioned mid airflow as indicated by the movement of smoke.

NOTE: Always place the Sensor in a position so that it can be easily maintained as the Sensors should be cleaned regularly.

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POSITIONING OF Q10 ATMOSPHERIC SENSOR

We discuss below how the movement of oil mist in the atmosphere responds in working environments and suggest how the placement of Sensors in an optimum position is determined by flow of air. The Sensors may have to be adjusted when setting up the system or even later when any structural alterations, machinery changes or more powerful fans are introduced within the area.

There are so many variables in the detection of oil mist in the atmosphere that it is by no means an exact science. Common sense has a part to play when positioning Sensors.

HOW MUCH AIR DOES THE SENSOR DRAW?

It pulls through 23 cubic feet/min or 0.65 m^3/min

WHAT IS THE DETECTING RANGE?

There is no detecting range for the Sensor. The Sensor uses its internal fan to draw in air, which is measured for oil mist. Three sensors inside the atmospheric Sensor measure backscatter of light in the air drawn into the Sensor, and dirt on the lenses.

WHAT ARE THE FACTORS THAT DETERMINE THE POSITIONING AND NUMBER OF SENSORS NEEDED?

Four factors determine good positioning and number of Sensors. These factors should be considered together and a smoke generator is a good way to observe air movement and test positioning of the Sensors.

a. Size of room or chamber (e.g. hydraulic pack area or engine room)

The fan in the Sensor has a through-put of 0.65m^3 per minute. In a large room, more Sensors will allow a faster response. Also, dispersal of oil mist will be greater in a larger space and will require more careful positioning on the Sensors in the path of airflow.

b. Air circulation

In addition, the movement of air affects how many Sensors should be installed. If a room has only one vent then the Sensor placed near this vent will be able to sample the air extracted from the room. However, if there is more than one vent or point of extraction a Sensor is best placed in each path of air being drawn from towards each of these vents. This is why a smoke generator or a smoke test aerosol is used to ensure that the Sensor points towards the potential source of oil mist. The Sensor should be installed with the intake louvers facing the path of the smoke as shown by the smoke generator. The smoke generator will also show any eddies or paths that the air may follow in the chamber which is important to ensure that Sensors are correctly positioned.

In hydraulic pack areas there should be a Sensor between each extractor and the packs which normally means 2 to 3 Sensors especially if the pack is in the engine room. This should be bourne in mind with any areas are being monitored.

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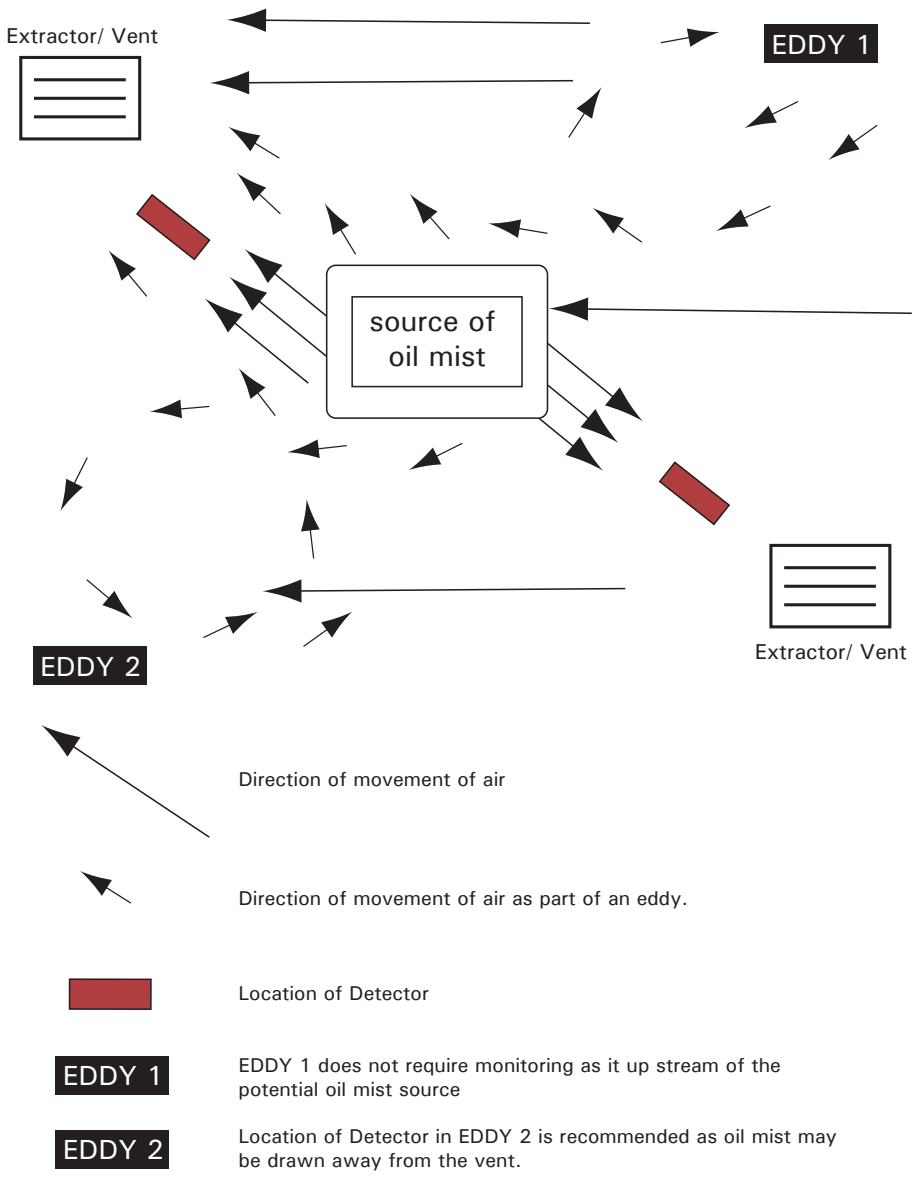
c. Proximity to potential source of oil mist

A Sensor should be placed downstream of the airflow around a potential source of oil mist (e.g. hydraulic pump). The closer the Sensor is to the machinery, the faster the response time should be.

d. Number of potential sources of oil mist

A fourth factor is the number of potential sources of oil mist. To make it easier to determine the source of oil mist, each piece of machinery or potential oil mist source should have a Sensor installed immediately down-stream of the airflow to ensure the fastest response possible.

In an engine room several Sensors are needed but the exact location will vary according to airflow.



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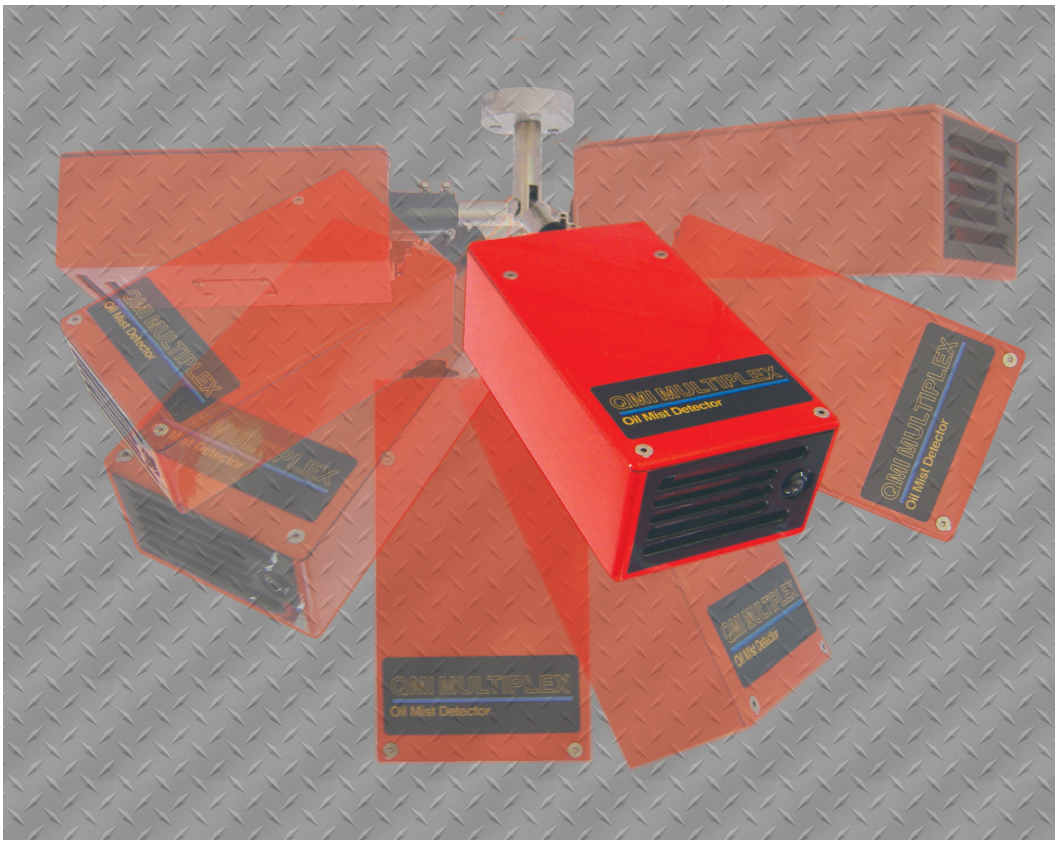
SCHEMATIC OF POSITIONING OF SENSORS AND BEST PRACTICE



The articulated joint allows the Sensor to be positioned mid airflow.

See Sheet-10 for the drawing of the Sensor and articulated joint.

BEST PRACTICE

Until the ship is in operation, to avoid contamination of the lenses after installation, cover Sensors with a plastic bag. This will prevent paint or other materials dirtying or damaging the lenses, blocking the Sensor louvers and fan. **These outcomes may permanently damage the Sensors and/or require Sensors to be returned to QMI for repair.**

NOTE: Any damage of this nature will not be covered by our guarantee.

When oil mist detection system is in operation:

- **Do not conduct painting in the space with the Sensors.**
- **Never cover Sensors**

When Sensors are installed but not in operation:

- **Keep Sensors in sealed plastic bag**

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SETTING ALARM LEVELS

For setting alarm levels see Sheet-31 of this manual for this procedure. Begin by setting all the Sensors at 0.05mg/L. There will always be areas where there is oil mist; for instance in the purifier room. The alarm level must be set to a higher level than needed so that the system does not go into alarm when there is no problem.

TEST PROCEDURE

As these Sensors are sensitive to smoke, steam or oil mist, artificial smoke can be used to test the Sensors. This is the most effective way of proving the Sensors are working.

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FAULT ALARM AND CABLE SPECIFICATION

When fault alarm is activated, the Monitor will still process information. On activation, the lights will flash: Green, Amber or Red status and F1, F2 or F3 will be indicated on the display.

Fault codes are on the display panel on the Monitor and in the Manual.

CABLE SPECIFICATION – RECOMMENDED TYPE AND SIZE

Halogen free instrumentation, control and communication cable or equivalent appropriate specification for your application.

Conductor: Standard Copper, annealed, IEC228 Class 2
Insulation: According to appropriate standards
Pairs: 2 Core twisted cable size 1 x 4 x 0.5 mm or 0.75 mm
Standing: Pairs Stranded together
Screening: Braid of annealed copper wires. Filler tape under braid

Connection	Number of Conductors and Cross section in mm	HELKAMA of Finland
Monitor > Shutdown	4 x 2 x 0.5 mm	RFE - HF
Monitor > Alarms	4 x 2 x 0.5 mm	RFE - HF
Monitor > Power	3 x 1.5mm rating Minimum, 3A LNE, not twisted	LKM - HF
Monitor > Sensor	4 x 2 x 0.5mm (for distance under 100 meters) 4 x 2 x 0.75mm (for distance over 100 meters)	RFE - RF

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WIRING DESCRIPTION

The wires are terminated into screw type plugs. These plug into the connectors on the TRIPLEX power supply board (PSB). They have to be plugged in the correct way round. See photograph of power supply board Sheet-20.

WIRING FOR POWER SUPPLY 110/240 VAC

The Mains connector is a 3-pin with Live, Neutral, and Earth. On the Power Supply Board this is marked L, N +

Cable is 3 core of 1.5mm^2 and can be sourced from Helkama part number is LKM - HF 3 x 1.5.

WIRING FOR SENSORS

The Sensors are wired using 3 twisted - pair cable. Each connector is wired left to right and numbered 1 to 6. The cable specification is 3 twisted pair of 0.5mm^2 or 3 twisted pair of 0.75mm^2 where distance is over 100 meters.

This cable can be sourced from Helkama: part number is RFE - HF 4 x 2 x 0.5mm^2 or 4 x 2 x 0.75mm^2.

Terminal 1 = Sensor supply +
Terminal 2 = Sensor signal
Terminal 3 = Sensor supply common
Terminal 4 = Sensor signal common
Terminal 5 = Drain wire/ screen
Terminal 6 = Fan 12 volt DC supply

See drawing for wiring connectors (Sheet-23 and Sheet-28)

The cable to use for wiring of alarms can be the same as used for wiring of air sensors. If you intend to use all four alarms you will need a 4 twisted pair cable.

Glands are not supplied as we do not know what diameter cable will be used. The Monitor is supplied with Blind Grommets.

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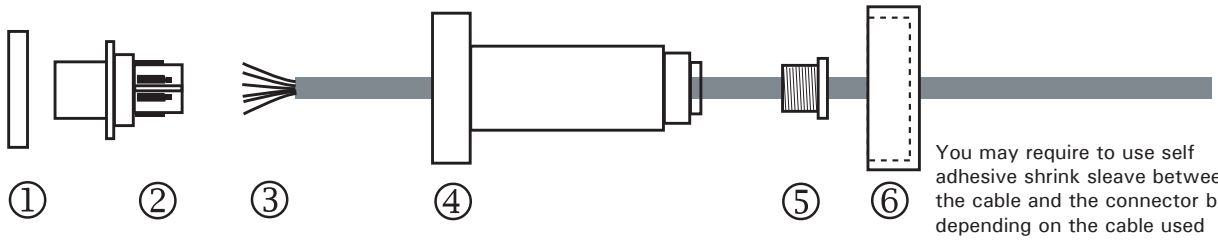
WIRING OF SOCKET



1. Retaining ring
2. Terminal Connecting Block
3. Bared and tinned wires
4. Socket Body
5. Cable locking nut
6. Socket locknut

CONNECTOR ASSEMBLY INSTRUCTIONS

a. Strip back cable sheathing, separate wires, twist and tin screen. Strip back the wires, twist and tin.
b. To assemble socket, pass the prepared cable through parts 6, 5 and 4 in that order.
c. Secure wires and screen to the correct numbered terminals of the connector terminal block. (Also see Sheet-14)
d. Re-assemble and lock with part 1.
e. You may need to heat shrink from the cable to the connector body depending on what cable is used.

IMPORTANT NOTES for wiring the Monitor and Sensor Connector

1. The Terminal connectors on the Triplex Power Supply PCB are numbered in sequence from left to right – 1, 2, 3, 4, 5, 6.

2. The connector drawing (see Sheet-14) shows the terminations of the twisted pairs and their location on the connector and the PCB, in the WIRING TERMINATION sequence of 1, 3, 2, 4, 5, 6.

3. The 'Common Supply' wires MUST NOT BE INTERCHANGED. Thus - with the first twisted pair, Supply + goes to terminal 1 on the PCB and Connector respectively and the common supply goes to terminal 3 on the PCB and connector respectively as shown on the Wiring information diagram. (See Sheet-14).

4. The recommended cable is: HELKAMA RFE – FR (0.5mm sq 4 twisted pair) Nominal 0 Dia 11.5mm. Cut the 4th pair off.

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WIRING FOR SYSTEM LAYOUT

A TRIPLEX system with 1 Sensor will always use Wiring Option 1. However, there are two wiring options for a TRIPLEX system with 2 or 3 Sensors. An optional unboxed 3-way PCB can be installed to reduce the size of bulkhead penetrations and the amount of cable needed, see Wiring Option 2 below.

WIRING FROM THE TRIPLEX CMU (for both options)

Photograph of Power Supply Board (Sheet-20)
Drawings QMI-06-118: Power Supply Board (Sheet-21)
Schematic of enlarged section of Power Supply Board connectors (Q01T05) (Sheet-21)

WIRING OPTION 1 (Sheet-22 to Sheet-24)

For 1, 2, or 3 Sensors where each Sensor has individual cables connected to the Monitor. All wiring connectors for the Sensors, alarms and power are on the Power Supply Board.

Schematic of layout for Wiring Option 1 Sheet-22

Drawings:
QMI-06-119: Connections from Sensors to Monitor Sheet-24
QMI-06-120: Wiring from Sensors to Monitor Sheet-23

WIRING OPTION 2 (See Sheet-25 to Sheet-30)

For 2 or 3 Sensors with wiring from the Monitor to the plant room with 1 cable the cable is wired into a PCB mounted in a junction box (supplied by the installer). Then individual cables are run to the Sensor.

Benefits: Less cable is needed.

Schematic of layout for Wiring Option 2, see Sheet-25
Photograph of unboxed 3-way PCB for a junction box Sheet-26

Drawings:

QMI-06-115: Unboxed 3-way PCB see Sheet-25
QMI-06-117: Wiring connectors from PCB to Sensor see Sheet-28
QMI-06-116: Wiring from Junction box to Monitor See Sheet-29
QMI-06-121: Wiring from Junction box to Sensors See Sheet-30

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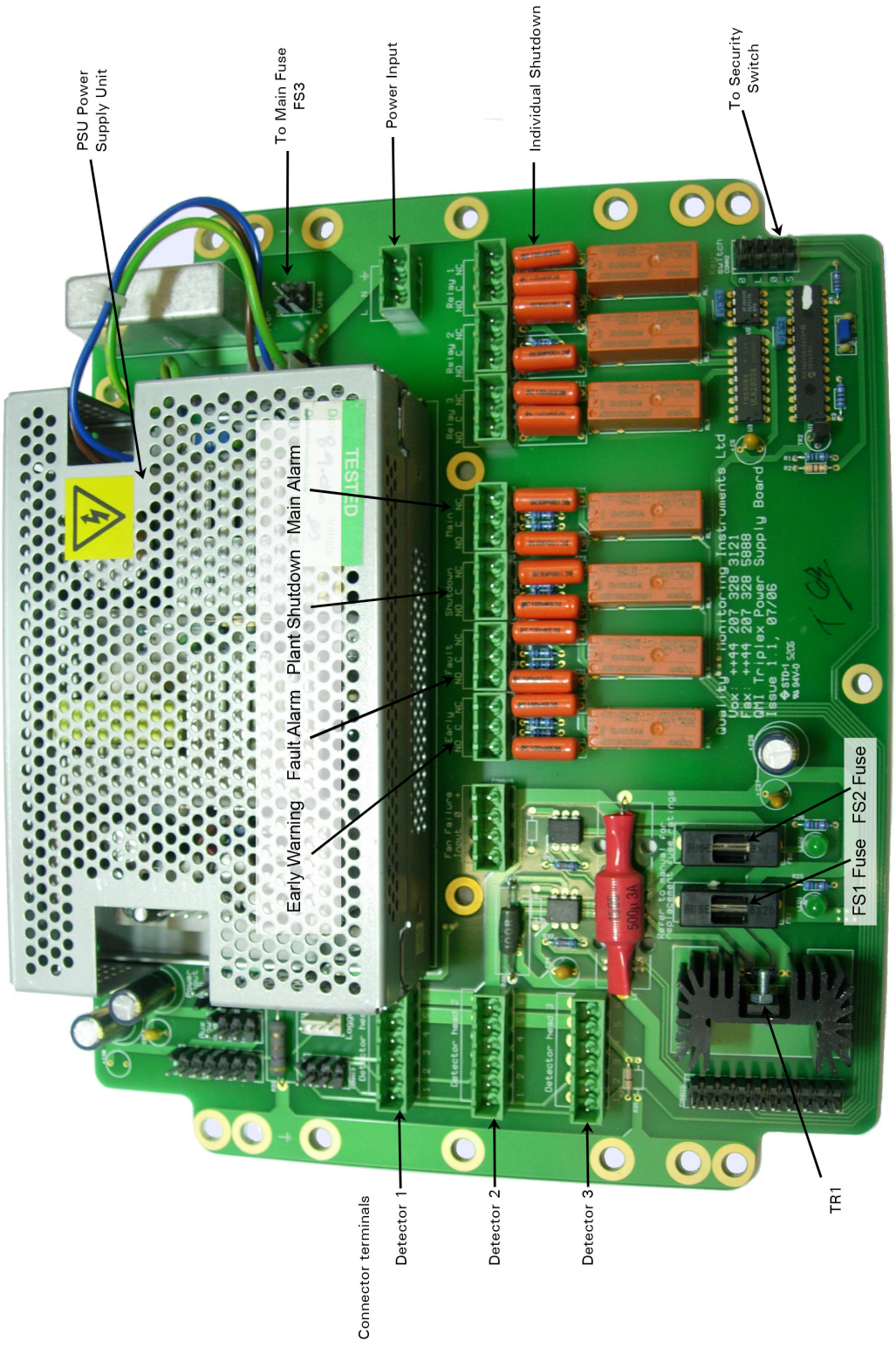
PHOTOGRAPH OF POWER SUPPLY BOARD (Q01T05)



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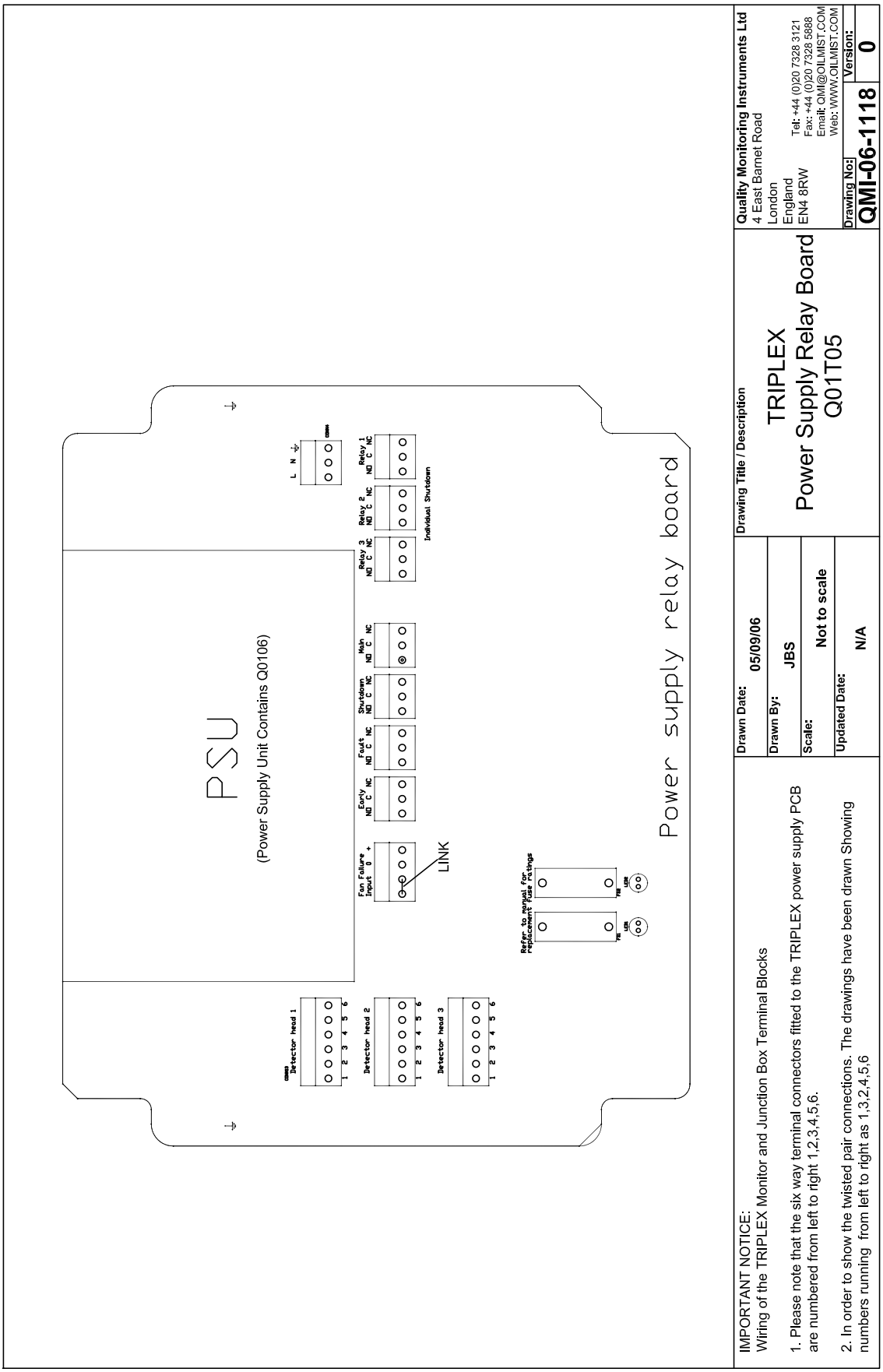

IMPORTANT NOTICE:
Wiring of the TRIPLEX Monitor and Junction Box Terminal Blocks

1. Please note that the six way terminal connectors fitted to the TRIPLEX power supply PCB are numbered from left to right 1,2,3,4,5,6.

2. In order to show the twisted pair connections. The drawings have been drawn Showing numbers running from left to right as 1,3,2,4,5,6

Drawn Date:	05/09/06
Drawn By:	JBS
Scale:	Not to scale
Updated Date:	N/A

Drawing Title / Description

TRIPLEX
Power Supply Relay Board
Q01T05

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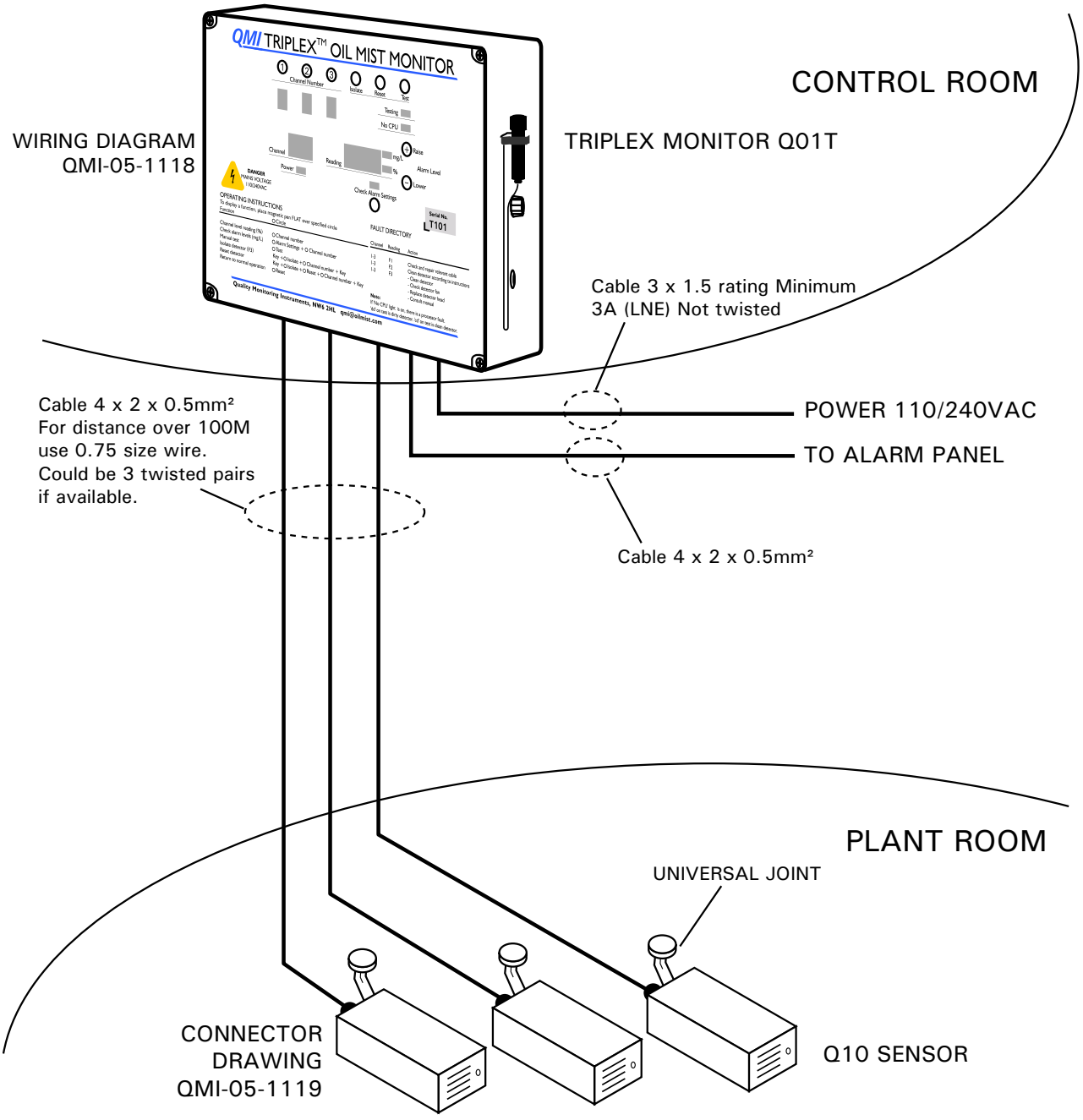
Fax: +44 (0)20 7328 5888
Email: QMI@OILMIST.COM
Web: WWW.OILMIST.COM

Drawing No: QMI-06-1118
Version: 0

SCHEMATIC OF LAYOUT FOR WIRING OPTION 1: FOR 1 TO 3 SENSORS



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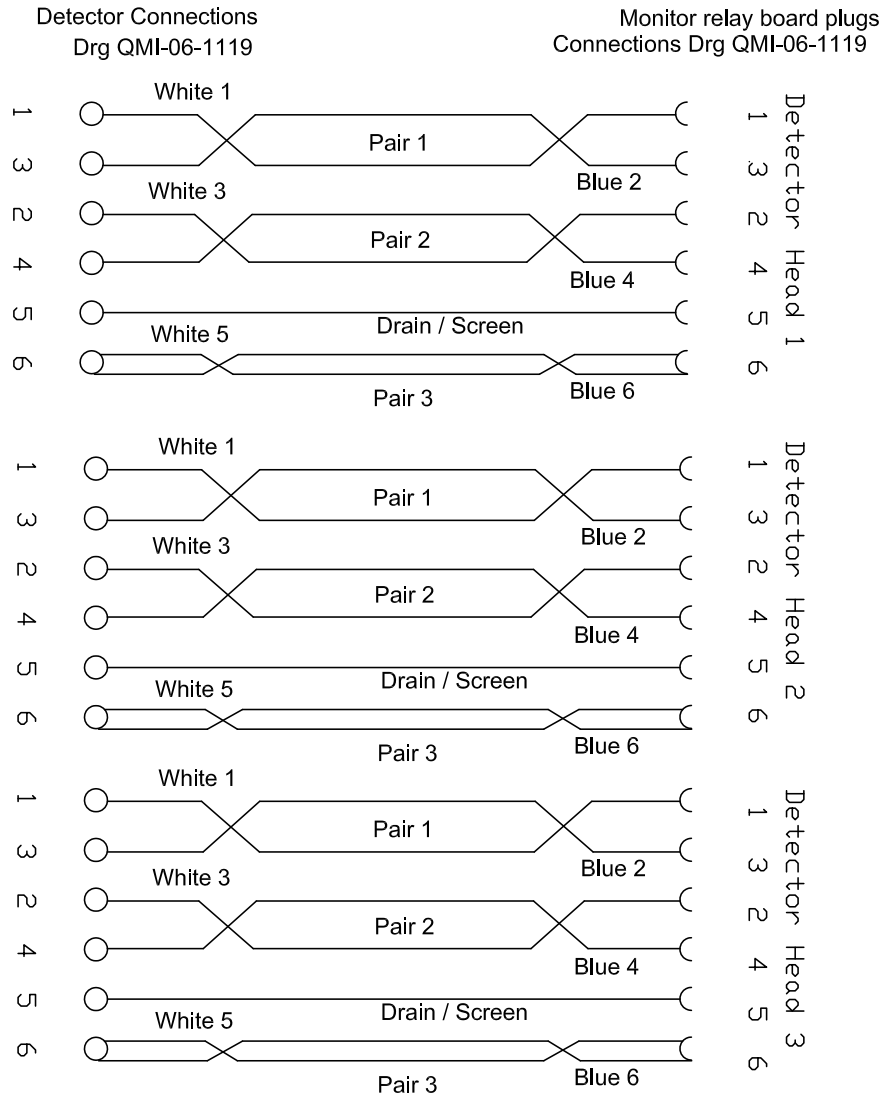

IMPORTANT NOTICE:
Wiring of the TRIPLEX Monitor and Junction Box Terminal Blocks

1. Please note that the six way terminal connectors fitted to the to Monitor and Detectors are numbered from left to right 1,2,3,4,5,6.

2. In order to show the twisted pair connections. The drawings have been drawn Showing numbers running from left to right as 1,3,2,4,5,6

Drawn Date: 05/09/06	**Drawing Title / Description**	**Quality Monitoring Instruments Ltd**
Drawn By: JBS	TRIPLEX Wiring from 1, 2 or 3 Q10 Detectors to Q01T Monitor	4 East Barnet Road London England EN4 8RW
Scale: Not to scale		Tel: +44 (0)20 7328 3121 Fax: +44 (0)20 7328 5888 Email: QMI@OILMIST.COM Web: WWW.OILMIST.COM
Updated Date: N/A		**Drawing No:** QMI-06-1120 / **Version:** 0

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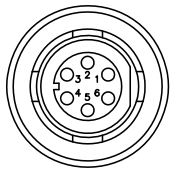
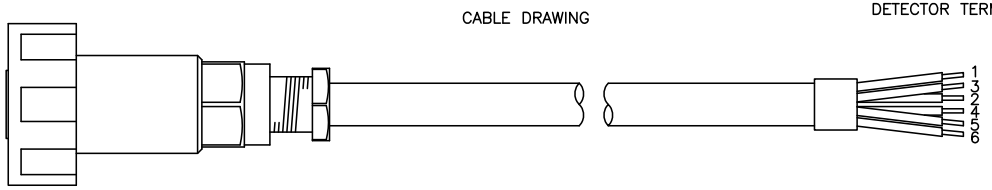
DETECTOR SOCKET



CABLE DRAWING

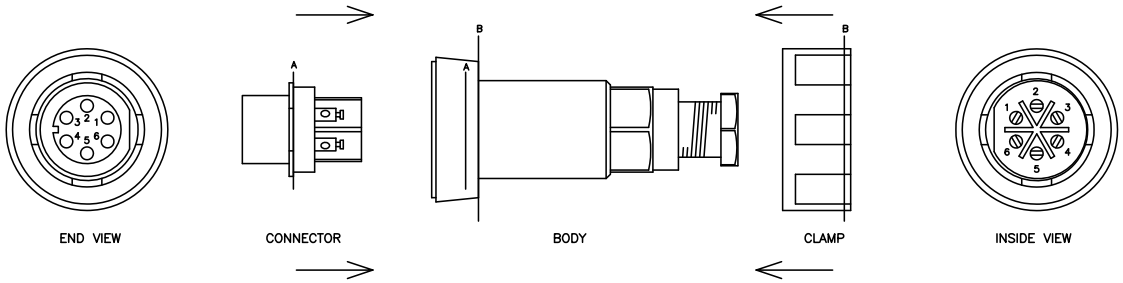


DETECTOR TERMINALS ON MONITOR RELAY BOARD

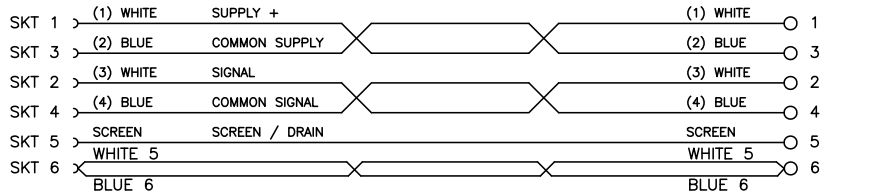
Left un–terminated
connect to corresponding
pins on power supply relay board
PSU – PCB
Detectors 1 – 3

See Part 2-10

EXPLODED VIEW OF CONNECTOR



WIRING INFORMATION



NOTES :

1) The cable for the above is specified thus :–

HELKAMA Cable Ref.
RFE–HF (0.5mm sq 2 pair)
with nominal o/s diam 10.5mm

(if not available, use equivalent and connect twisted pairs to same terminations).

IMPORTANT NOTICE:
Wiring of the TRIPLEX Monitor and Junction Box Terminal Blocks

1. Please note that the six way terminal connectors fitted to the TRIPLEX power supply PCB are numbered from left to right 1,2,3,4,5,6.

2. In order to show the twisted pair connections. The drawings have been drawn Showing numbers running from left to right as 1,3,2,4,5,6

Drawn Date:	05/09/06
Drawn By:	JBS
Scale:	Not to scale
Updated Date:	18/10/06

Drawing Title / Description

Connection from Q10 Detector to Q01T Monitor power supply relay board Q01T05

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Web: WWW.OILMIST.COM

Drawing No:	**Version:**
QMI-06-1119	**0**

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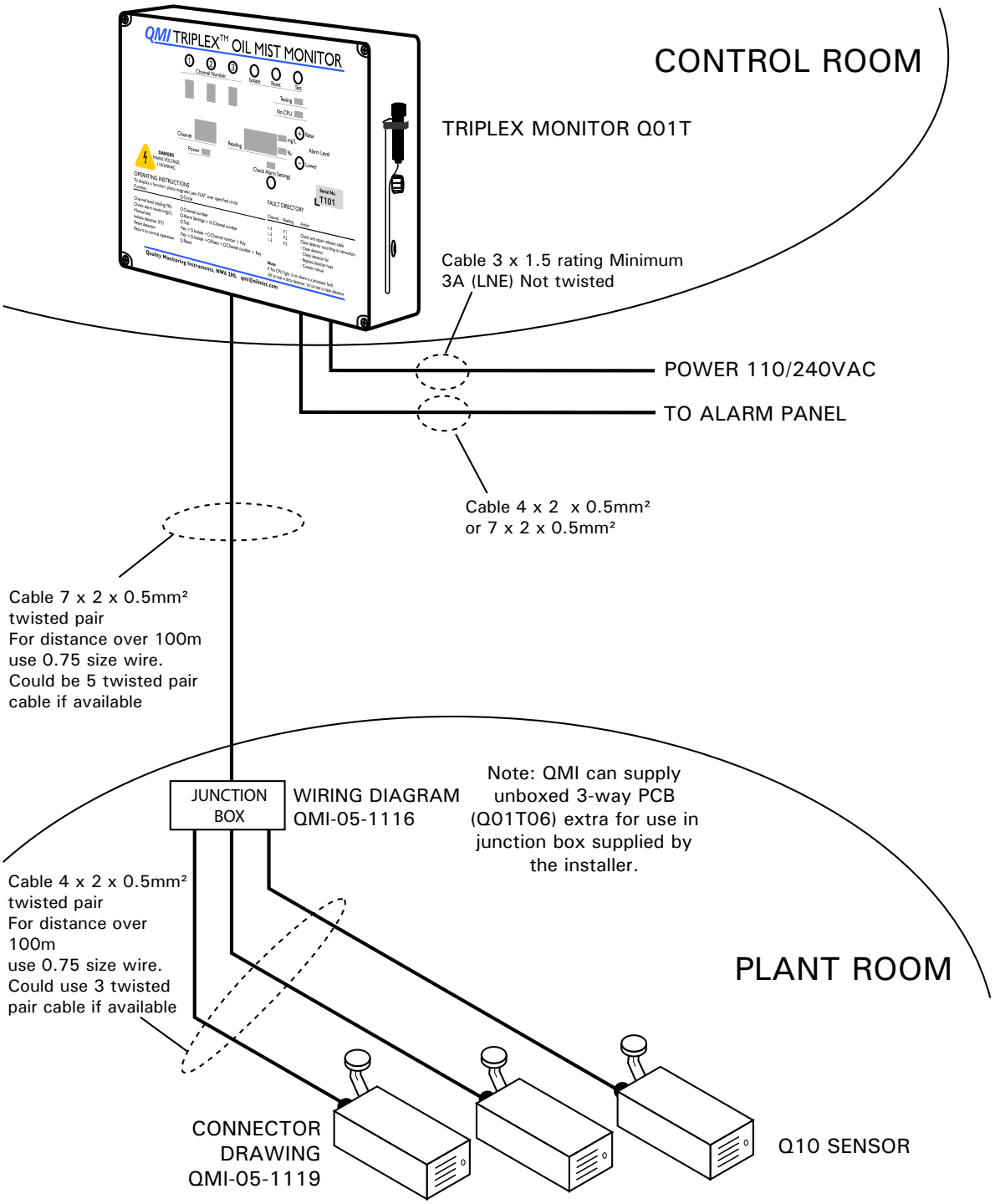
SCHEMATIC OF LAYOUT FOR WIRING OPTION 2: FOR 2 OR 3 SENSORS USING A JUNCTION BOX



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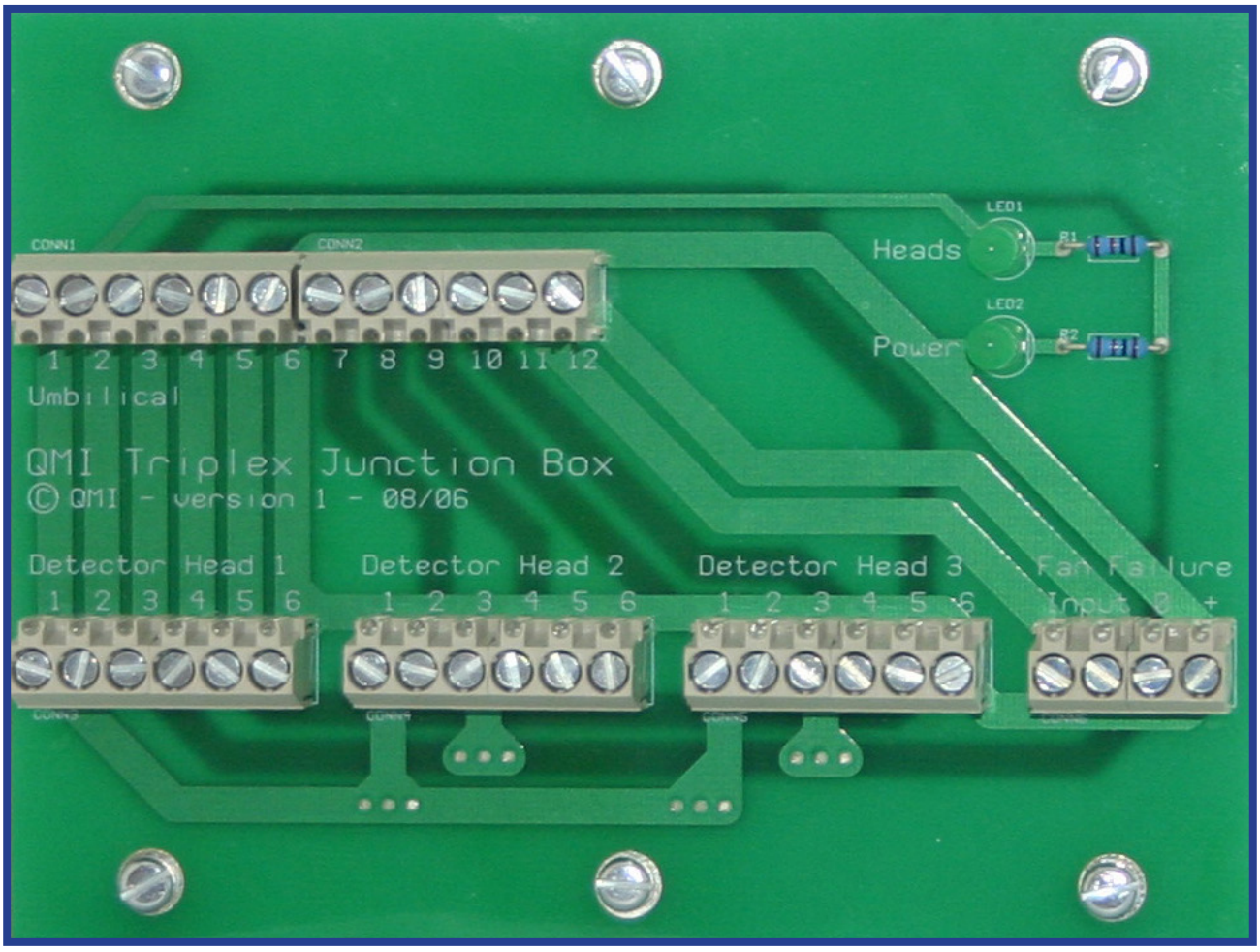
PHOTOGRAPH OF UNBOXED 3 - WAY PCB (Q01T06)



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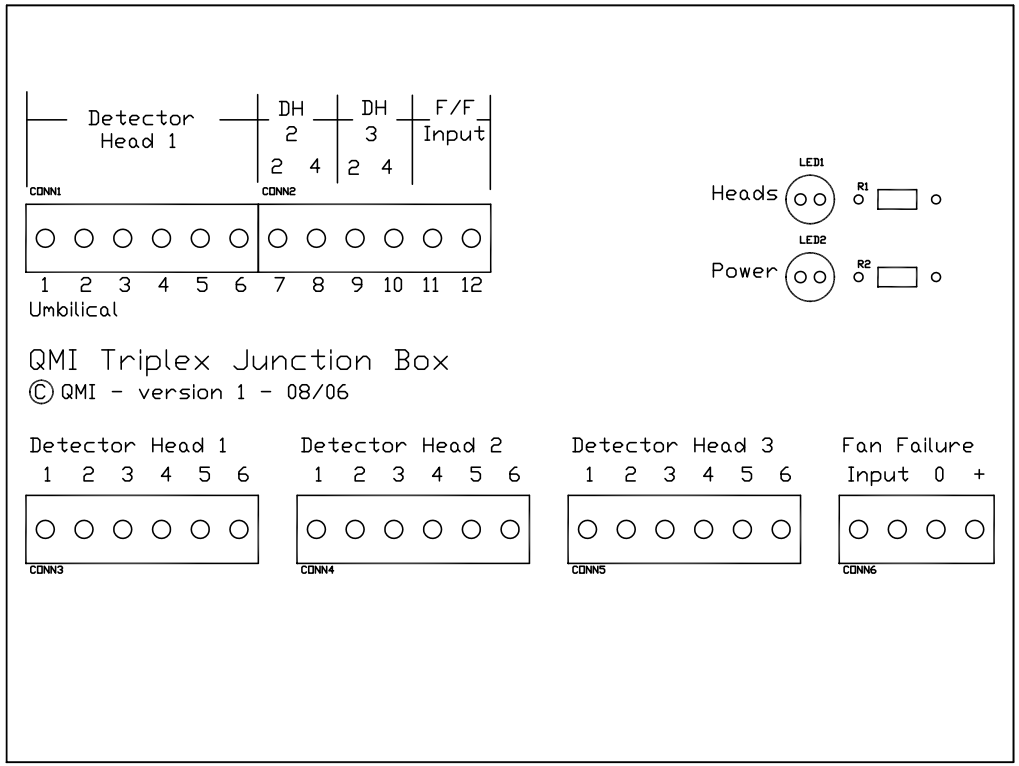

Dimensions of PCB

Width 13cm
Height 10cm
Depth 3.5cm

IMPORTANT NOTICE:
Wiring of the TRIPLEX Monitor and Junction Box Terminal Blocks

1. Please note that the six way terminal connectors fitted to the TRIPLEX power supply PCB are numbered from left to right 1,2,3,4,5,6.

2. In order to show the twisted pair connections. The drawings have been drawn Showing numbers running from left to right as 1,3,2,4,5,6

Drawn Date:	05/09/06
Drawn By:	JBS
Scale:	Not to scale
Updated Date:	N/A

Drawing Title / Description

TRIPLEX Unboxed 3 way PCB Q01T06 for Connecting Monitor to Detectors

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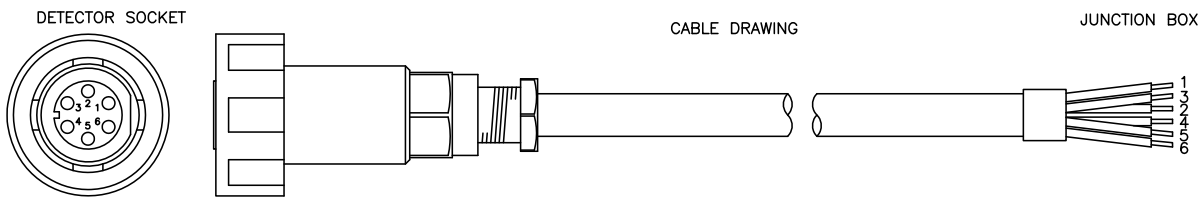
Drawing No:	**Version:**
QMI-06-1115	**0**

TRIPLEX OIL MIST DETECTION

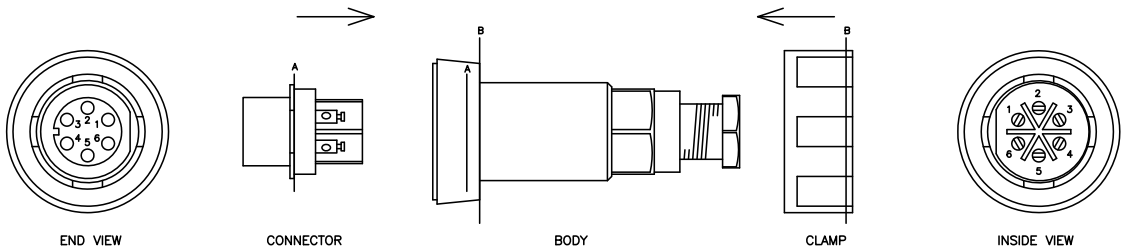
QMI

Atmospheric Oil Mist Detection System

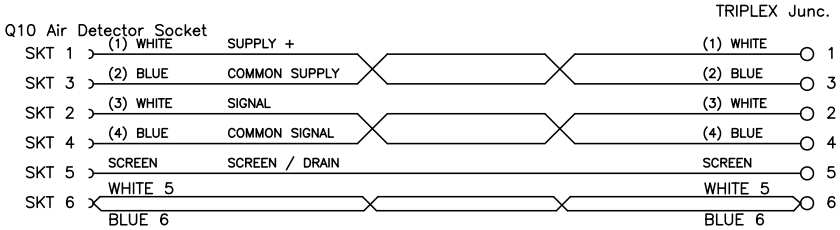


Left un–terminated
connect to corresponding
pins on TRIPLEX Junction Box PCB
PSU – PCB
Detectors 1 – 3

EXPLODED VIEW OF CONNECTOR



WIRING INFORMATION



NOTES :

1) The cable for the above is specified thus :–

HELKAMA Cable Ref.
RFE–HF (0.5mm sq 2 pair)
with nominal o/s diam 10.5mm

(if not available, use equivalent and connect twisted pairs to same terminations).

IMPORTANT NOTICE:
Wiring of the TRIPLEX Monitor and Junction Box Terminal Blocks

1. Please note that the six way terminal connectors fitted to the TRIPLEX power supply PCB are numbered from left to right 1,2,3,4,5,6.

2. In order to show the twisted pair connections. The drawings have been drawn Showing numbers running from left to right as 1,3,2,4,5,6

Drawn Date:	05/09/06
Drawn By:	JBS
Scale:	Not to scale
Updated Date:	N/A

Drawing Title / Description

TRIPLEX Wiring from Q01T06 PCB to Q10 Detector Socket

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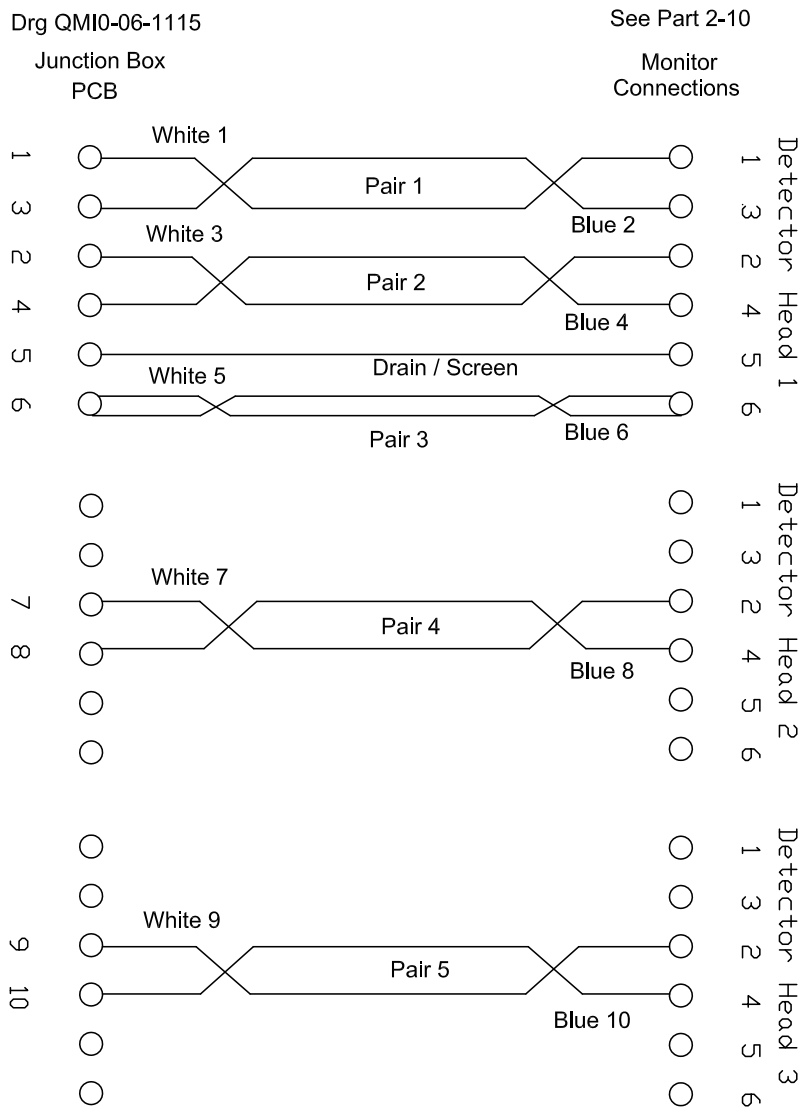
Drawing No:	Version:
QMI-06-1117	0



IMPORTANT NOTICE:
Wiring of the TRIPLEX Monitor and Junction Box Terminal Blocks

1. Please note that the six way terminal connectors fitted to the TRIPLEX power supply PCB are numbered from left to right 1,2,3,4,5,6.

2. In order to show the twisted pair connections. The drawings have been drawn Showing numbers running from left to right as 1,3,2,4,5,6

Drawn Date: 05/09/06	**Drawing Title / Description** TRIPLEX Wiring from Q01T Monitor to Q01T06 PCB for 2 or 3 Q10 Detectors	**Quality Monitoring Instruments Ltd** 4 East Barnet Road London England EN4 8RW Tel: +44 (0)20 7328 3121 Fax: +44 (0)20 7328 5888 Email: QMI@OILMIST.COM Web: WWW.OILMIST.COM
Drawn By: JBS		
Scale: Not to scale		
Updated Date: N/A		**Drawing No:** QMI-06-1116 **Version:** 0

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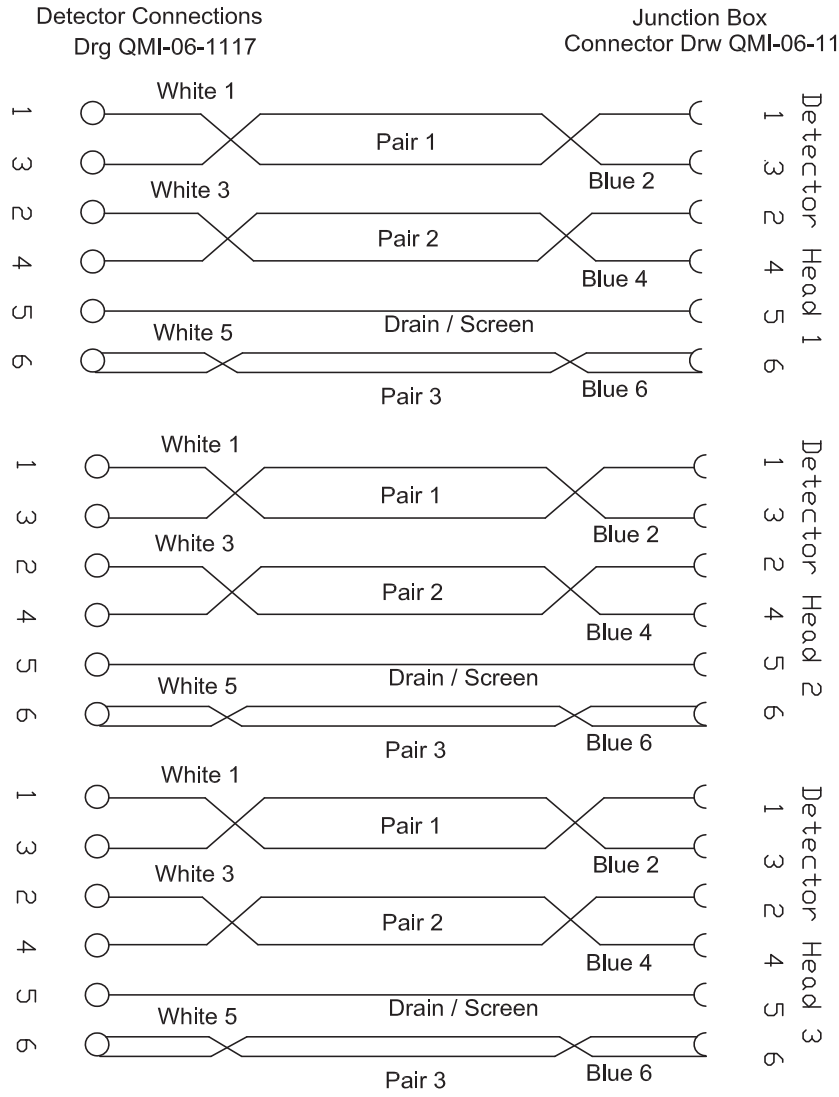

IMPORTANT NOTICE:
Wiring of the TRIPLEX Monitor and Junction Box Terminal Blocks

1. Please note that the six way terminal connectors fitted to the to Monitor and Detectors are numbered from left to right 1,2,3,4,5,6.

2. In order to show the twisted pair connections. The drawings have been drawn Showing numbers running from left to right as 1,3,2,4,5,6

Drawn Date: 05/09/06	**Drawing Title / Description**	**Quality Monitoring Instruments Ltd** 4 East Barnet Road London England EN4 8RW Tel: +44 (0)20 7328 3121 Fax: +44 (0)20 7328 5888 Email: QMI@OILMIST.COM Web: WWW.OILMIST.COM
Drawn By: JBS	TRIPLEX Wiring from Q01T06 PCB to 2 or 3 Q10 Detectors	
Scale: Not to scale		
Updated Date: N/A		**Drawing No:** QMI-06-1121 **Version:** 0

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ALARM OUTPUTS AND ALARM LEVELS

1. The alarm outputs are transmitted from the Monitor to the Customers Control system.

2. The following alarms are fitted:

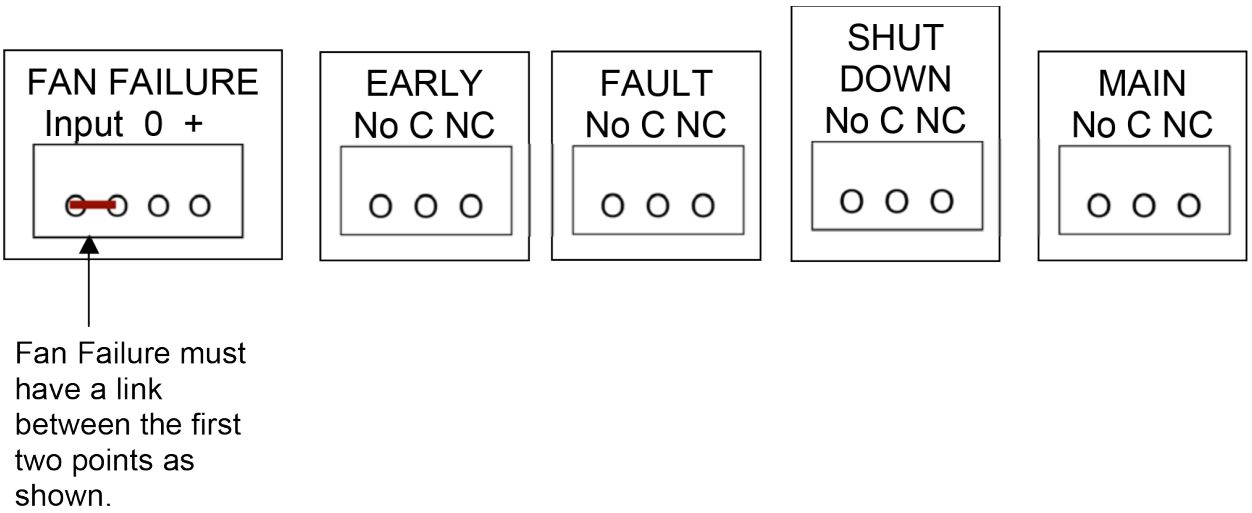
A. Early Warning Alarm	B. Fault Alarm
C. Shutdown Alarm	D. Main Alarm

3. The alarms operate via Open or Closed contacts (Relays).

4. Wiring one side of each block either open or closed requires a 6 core cable for 3 Alarms.
   Wiring both sides of each block requires a 9 core cable for 4 Alarms.
   Note: Cable core size 0.25mm (Minimum) to 2.50mm (Maximum).

5. To close on alarm, wire one core to NO and one core to C.
   To open on alarm, wire one core to NC and one core to C.

SCHEMATIC OF ALARM CONNECTIONS ON MONITOR RELAY BOARD (Q01T05)



	% of Alarm Level	Lights displayed
	0% to 79%	Green
	80% to 99%	Amber Flashing
	100%	Red Flashing
Relays activated	80%	Early warning alarm
	100%	Alarm and plant shutdown - Main alarm and, or shutdown (NOTE - Shutdown alarm is not included in the test sequence)

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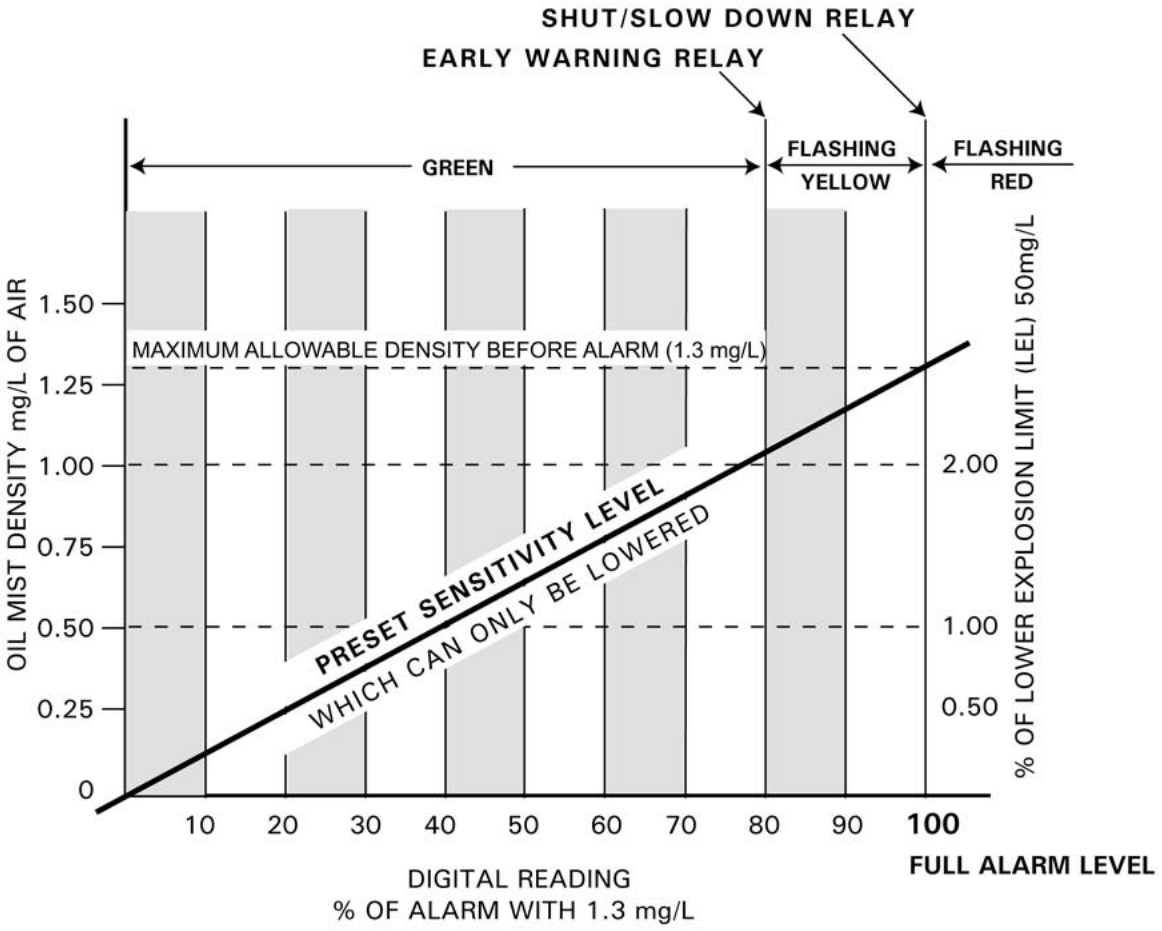
GRAPH TO SHOW RELATIONSHIP BETWEEN OIL MIST CONCENTRATION AND DIGITAL ALARM READOUT



Calibration Graph for 1.3 mg/L and the LEL for Oil Mist

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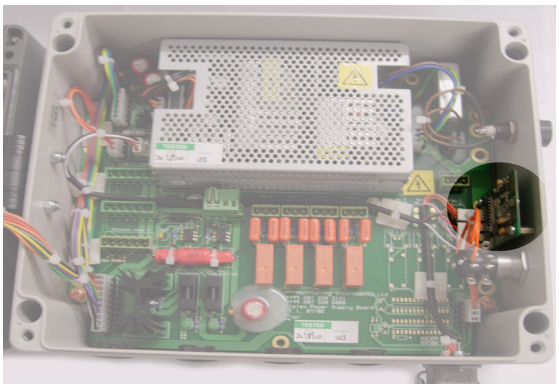
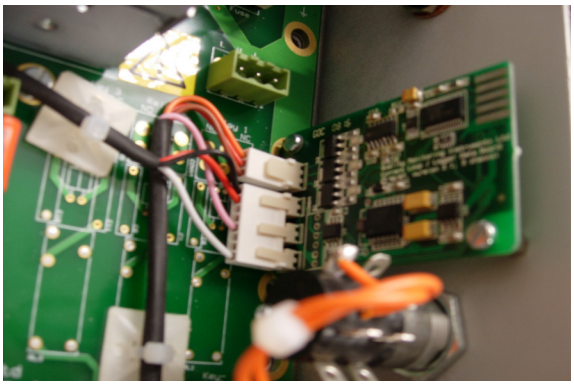
QMI TRIPLEX 4-20MA ANALOGUE DATA OUTPUT (OPTIONAL)



Location of Data Logger PCB



Close up of Data Logger PCB

The data collected can be used to determine the cause of a build-up towards a possible explosion and help find a solution.

The Monitor sends out a 4-20mA signal corresponding to the displayed mist percentage for each Sensor. This is a digitally calculated reading taking into account temperature non-linearities of the Sensors and oil deposit build-ups within the Sensor.

The signal can be recorded using a chart recorder, or data logger and corresponds to the reading shown in the display.

Current = (Display % x 16 ÷156) + 4

Display	0	10	20	30	40	50	60	70	80	90
mA	4.00	5.00	6.00	7.10	8.10	9.10	10.20	11.20	12.20	13.20

Display	100	110	120	130	140	150	160	170	180
mA	14.30	15.30	16.30	17.30	18.40	19.40	20.41	21.40	22.50

The 4-20mA output from the Monitor is available on the 5-way connector, bottom right of the Monitor as shown in the location of the data logger PCB image above.

Data Logger Harting Plug PIN Out

Harting PIN	Channel / Voltage
1	1/0
2	2/0
3	3/0
4	12 + Volts
5	No connection should be made to this terminal

Cable must be 4 core with a diameter of 0.5 mm^2.

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OPERATION OF ALARM RELAYS

The relays work in conjunction with the lights on the CMU display panel:

ALARM SEQUENCE

The minimum alarms used are the Main alarm and Fault alarm. The functional shutdown (or slowdown) can be used to shutdown the plant.

If used, the functional first relay activates at 80% and is an early warning alarm.

The second main alarm and third (slow or shutdown) alarm are activated at 100%.

FAULT ALARM (See Sheet-39)

A fault alarm relay is completely divorced from the other relay systems and is only activated after a fault has developed in the oil mist detection system. No relays will activate for 2.5 seconds, as the Monitor will check first that the fault is in the system and not a problem with the environment.

Even when this fault alarm relay is activated the instrument goes on monitoring unless there is a major malfunction of the Monitor or Sensor. Information is also being continuously given as a digital display of the highest concentration of oil mist and its location.

The digital display will always indicate the channel (i.e. area) with the highest level of oil mist. **IN THE EVENT OF A FAULT ALARM IT WILL BE THE FIRST CHANNEL TO GO INTO THE FLASHING GREEN, AMBER, RED CONDITION THAT IS INDICATED ON THE DISPLAY (F1, F2, AND F3)**.

NOTE: THERE IS A ONE - MINUTE DELAY when the fault alarm sounds. After a self - test or a channel check the display will always revert to the channel with the highest oil mist level reading.

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ALARM LEVEL, CHECKING AND CHANGING

To check alarm level setting

1. Place the magnetic pen over the circle marked ALARM LEVEL, the alarm level indicator will illuminate.

2. Place the magnetic pen over the CHANNEL number and the channel identification display will show digitally the value of the mist density.

To change alarm level setting

NOTE: During the setting procedure, normal Monitor functions are disabled.

1. Fit and turn the Security Key clockwise ¼ turn, the light above CHECK ALARM SETTINGS will illuminate.

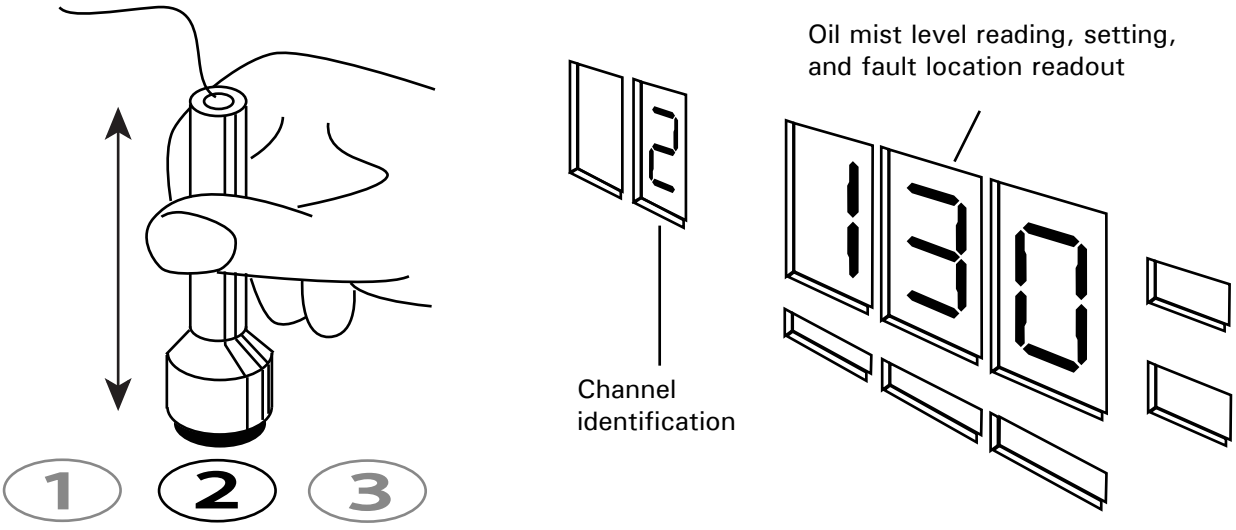
2. Place the magnetic pen on the circle marked CHECK ALARM SETTINGS.

3. Place the magnetic pen on the circle marked RAISE ALARM SETTING ('+' RAISE or '-' LOWER) lift the magnetic pen and replace to change the level by 1 increment. Continue until the required setting is achieved. The level will be shown on the digital display.

4. Place the magnetic pen on the selected circle CHANNEL NUMBER to set that channel to the level selected.

5. The setting is complete, turn the Security Key ¼ turn anti-clockwise, (to lock the system) and remove the key.

CHANGING THE DIGITAL DISPLAY USING THE MAGNETIC PEN (Q0109)



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TEST SEQUENCE

Before beginning the test sequence, inform all relevant personnel.

To activate the test procedure:

Place the Magnetic Pen over the circle marked 'TEST'
The sequential testing will commence as follows:

1. Testing indicators will illuminate Software Version - 1.03 followed by all operational LEDs illuminating in the order below:
   Operating (GREEN)
   Warning (AMBER)
   Alarm (RED)

2. All Digital readouts will indicate '8'
   followed by:
   All Digital readouts will then indicate '111' showing that all segments of the numerical display are working without fading.

3. Each Sensor lens will be indicated thus:
   'Cd' Clean Sensor – indicates clean lens
   'dd' Dirty Sensor – indicates lens meaning that the lens are less than 80% clean and 'F2' will appear on the display; if ignored, the display will show 'F3'.

4. All external relays, with the exception of the functional relay will operate for 10 seconds. The test includes a test of the fault monitoring circuit when 'F9' will appear momentarily. 'F9' permanently displayed indicates a Monitor failure and the Power Supply Board will need replacing.

5. Final part to the test is the 'No CPU' Light which will flash once or twice depending on what part of the data cycle it is in. Both once or twice are normal to show the CPU is functioning.

6. After the Test Sequence is completed the Monitor will automatically return to display the channel with the highest oil mist reading.

7. After 'Power On' or 'Reset' procedures are implemented and completed, the relay outputs are inhibited for 2 minutes, this also applies in the event of an alarm. Therefore two full minutes must pass to enable the system to reset. This is to allow the software to latch back into the correct running mode, otherwise erroneous signals may be displayed. During this sequence, the isolated Sensor may be displayed 'Cd'.

8. During the Test Sequence should any function fail to operate as specified, refer to the fault finding section.

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CHANNEL NUMBERS, CHANGING

TRIPLEX PCB (VERSION 3.2)

The TRIPLEX Monitor can accommodate up to 3 Sensors simultaneously.
The number of Sensors is set using the DiP switch on the TRIPLEX PCB.

NOTE: The Monitor is supplied, set for Channel 1 unless otherwise requested.

Switches 1 to 4 are for the number of Sensors to be set up.

SENSOR	SW 1	SW 2	SW 3	SW 4
Number 1	On	Off	Off	Off
Number 2	Off	On	Off	Off
Number 3	On	On	Off	Off

ALWAYS	SW 6	SW 7	SW 8	SW 9	SW 10
ALWAYS	Off	Off	Off	Off	Off

SW 5 is for oil mist range

Switch On - Range 0 to 1.3mg/l

Switch Off - Range 0 too 2mg/l

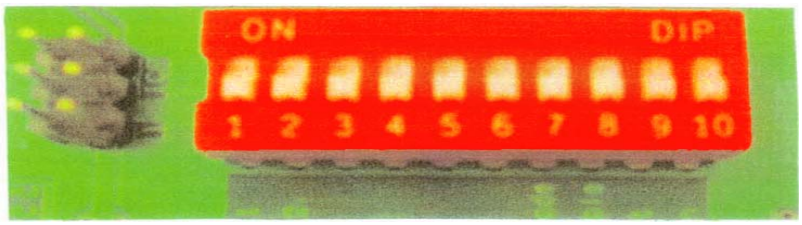
If changed, reset alarm levels for each channel

When unused channels are selected the display will show a fault 'F1' and the lights will flash amber, green, red.

To change the channel no. and cancel the original channel, the procedure is as follows:

1. Disconnect power supply to the Monitor (at source) and remove the 3 Pin power supply plug from the Monitor.
2. Release the (4) M6 Screws retaining the Display Bezel and open the enclosure to reveal the Triplex PCB on the inside of the display panel.
3. Reset the Binary switches (as required) as per the above table.
4. Replace the 3 Pin power supply plug to the Monitor.
5. Restore the power supply to the Monitor (at source).

Location of DiP switch on Triplex PCB



To read individual channels

Place the magnetic pen over the required 'Number Circle'.
The channel display will show the selected Channel No.
The % display will show the % of oil mist density (of the pre-set alarm level).
After one minute, the display reverts to the channel with the highest % of mist reading.

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TO ISOLATE OR RESTORE A CHANNEL

If a Sensor becomes faulty and requires changing ‘F3’ will appear on the display and the green, amber and red display will flash. If a Sensor requires cleaning ‘F2’ will appear on the display. If either the Sensor is not changed or the lens cleaned, the fault number will obscure all other readings and the oil mist reading will not be displayed.

As a temporary measure it is possible to isolate the Sensor from the Monitor panel (’isolate’ in this instance is to remove the Sensor signal from the Monitor via the software).

To carry out the isolate function, turn security switch key to set mode, place the magnetic pen on ‘ISOLATE’ circle, then place it over the ‘CHANNEL’ number. Turn the key back to RUN mode. The channel /Sensor is now isolated and the display will now be blank. If the pen is placed over the isolated ‘CHANNEL’ number ‘IC’ will appear on the display.

After the Sensor has been replaced and/or the lens cleaned, reinstate the channel by turning the key to set mode, place the magnetic pen on ‘ISOLATE’ circle then on to ‘RESET’. Finally place the magnetic pen on to the ‘CHANNEL’ number and turn the security key to operating mode. This will put the channel and associated Sensor back on line.

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RESTORE ALARMS

There are two stages of oil mist alarm indication:

1. ANTICIPATORY / EARLY WARNING

At 80% the light will assume the 'flashing' mode.

The channel number will be indicated and the digital reading will indicate the percentage density of the pre-set mist alarm level. The early warning alarm relay will operate.

NOTE: This alarm is automatically operated when the oil mist density level reaches 80% of the pre-set alarm level.

2. FULL ALARM

At 100% of alarm level the red indicator will flash indicating that the oil mist level is above the pre-set alarm level. The offending channel will be displayed alongside the digital read-out level. The functional shutdown relay alarm RL9 will operate if wired into the system. At this level RL10, the main alarm, will be activated. Further action should be taken in accordance with the standard procedures.

Over-riding the QMI TRIPLEX system during procedures that may introduce particles into the atmosphere (e.g. painting) is at the operator's discretion. If such a function is required it should be incorporated in the ship's overall system.

IMPORTANT: When any alarm sounds all personnel should leave the area.

IMPORTANT NOTICE:

With Atmospheric Oil Mist Detection Systems, the alarm point should be set quite low, so that the Main Alarm activates as soon as there is any Oil Mist sensed in the Atmosphere.

The Oil Mist level will increase so quickly that the Early Warning and Main Alarm will activate almost simultaneously.

The Early Warning Alarm would normally be used in Engine Crank Case Oil Mist Detection systems where the Oil Mist increase, usually, more slowly.

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3. FAULT ALARMS

The fault alarms indicate if there is any fault in the monitoring system. The Monitor faceplate has a list of the fault alarms and their significance. This uses relay RL8. See table below for the fault conditions as presented on the Monitor faceplate. For more information see the fault directory - Sheet-41 - Sheet-42.

Channel	Reading	Response
1 - 3	F1	Check & repair relevant cable
1 - 3	F2	Clean Sensor according to instructions using an **Isopropyl Alcohol**
1 - 3	F3	Clean Sensor Check Sensor fan Replace Sensor See Fault Directory Sheet-41 of Manual
C	IC	Check operating instructions

If 'No CPU' light is on, there is a processor fault.
'dd' on test indicates when the Sensor is dirty so it is necessary to clean the lens.
'cd' on test indicates when the Sensor is clean.

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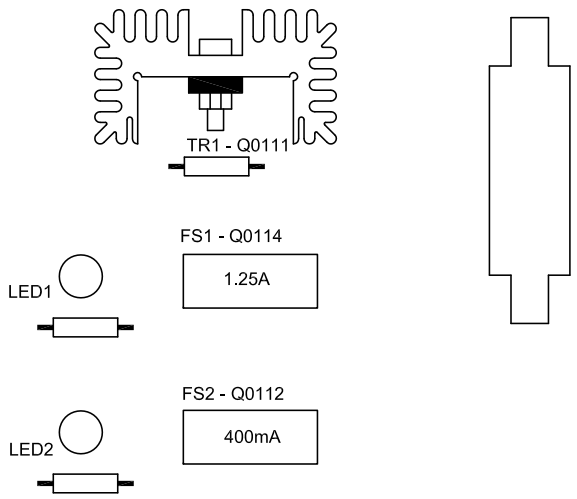
Notes:

LED 1 will flash when 12v power is being supplied to the detector heads. If LED 1 is not flashing then fuse FS1 has blown and needs to be replaced with a 1.25 amp anti-surge fuse. If FS1 continues to blow check system for faults in wiring or a faulty detector head.

Led 2 will light continuously when 12v is being supplied to theQ07 junction box psu failure on atmospheric systems.

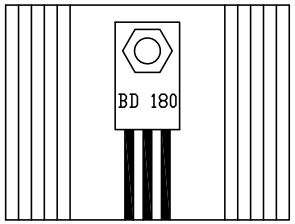
If LED 2 does not light then fuse FS 2 may have blown, check wiring for faults then replace FS 2 fuse with a 400ma anti-surge fuse.



Notes:

If LED 1 is not flashing and you have checked the fuse is ok, it could be that TR 1 has gone faulty. You should then check the system for wiring faults or shorts. If you are satisfied that the system is ok, TR 1 can be replaced using the replacement from the maintenance kit.

FRONT VIEW OF TRANSISTOR AND HEATSINK



Drawn Date: 30/05/00 Drawn By: SAS Scale: Not to scale Updated Date: N/A	Drawing Title / Description Layout of Transistor TR1, LEDs and Fuses on PCB for PSB Q01T05	Quality Monitoring Instruments Ltd 4 East Barnet Road London England EN4 8RW Tel: +44 (0)20 7328 3121 Fax: +44 (0)20 7328 5888 Email: QMI@OILMIST.COM Web: WWW.OILMIST.COM Drawing No: QMI-06-1122 Version: 0

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FAULT DIRECTORY

FAULT	ACTION	REMEDY
F1 on display and channel number shown	Make up a short lead with 6 pin male and female connectors from the Maintenance Kit. Plug spare Sensor into Monitor on the defective channel number shown. If the display becomes steady this confirms there is a fault in the cable between the Monitor and Sensor	Check the cable is earthed between the Monitor and Sensor as the manual directs. Check there are NO OTHER earth leads, or copper earth trips as these will give interference.
F1 and Sensor number comes on.	Check cable between Monitor and Sensor	F1 denotes cable fault. Check for split or damaged cable or incorrect earthing - see wiring instructions
F1 and all Channel Lights Flash	Check Fuse FS1 on the Power Supply Board (Sheet-21).	If the fuse has blown replace it with a 1.25A fuse. If the fuse blows again, check complete wiring of the system for short - circuits or damaged wires
F1 and all Channel Lights Flash	Check the Fuse FS1 on the Power Supply Board (Sheet-21)	If the fuse is OK, then TR1 should be replaced
F2	Remove Sensor. Clean lens See Sheet-44	If a Sensor needs frequent cleaning investigate source of dirt
F3 and Sensor number is on	Check Sensor lens	Take Sensor off. Clean lens Replace Sensor. If F3 still shows, return Sensor to QMI for repair. Isolate channel if there are no spare Sensors.
F3 and Sensor number is on. L.E.D. on front of the Sensor flashes RED	Check Sensor fan	Isolate and remove Q10 Sensor. Replace fan with Q1004 following instructions supplied
“No CPU” light on	Check internal connections.	The CPU light indicates a fault on TRIPLEX Power Supply Board. This board is either carried as a spare or is ex-stock QMI
Fault alarm comes on. QMI Monitor shuts down and display ceases	Check FS3 fuse on side of Monitor above security key	3.15A anti-surge fuse may have blown due to an internal fault in the Monitor. Check FS3 (Q0115) fuse in the Monitor Note: Monitors are ex - stock QMI

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FAULT	ACTION	REMEDY
Fault alarm comes on. QMI Monitor shuts down.	Check fuse on side of the Monitor above security key FS3	If fuse is OK check external power supply to QMI system. Fault alarm (will sound) if power is shut down.
LED 1 on PSB Q01T06 not flashing	Check fuse FS1	Change blown fuse
LED 1 for TR1 does not light	FS1 fuse blown	Replace FS1 with 1.25A anti-surge fuse If fuse keeps blowing then check wiring and Sensor for faults (see Sheet-21)
	TR1 Faulty	Replace TR1 with spare in Maintenance Kit Q0111 (take care not to short TR1 during soldering)
LED 2 does not light	FS2 fuse blown	Replace FS2 with 400mA anti-surge fuse If LED 2 still does not light, check for fault in PSU (see Sheet-21)
On start up of the system Monitor the display is erratic and does not settle down	Check if cable is screened	If screened, check that screen is connected to Pin 5 at both ends of the cable. Make sure the braid or drain wire does not come into contact with other terminals at either end of the cable. If cable is not screened. Check to see if cable runs near any electrical power source. If it does, cover cable in steel conduit. There is no need for extra earthing, however the screen needs to be connected to pin 5 at both ends.

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MAINTENANCE PROCEDURES

The QMI TRIPLEX incorporates an operational fault finding system, which will identify operational and component breakdowns. During operational breakdowns, a fault code is displayed against the relevant Sensor number. The possible fault codes are listed on the Monitor front plate.

In the event of a component breakdown or fault, the CPU light will come on (see Fault Directory, Sheet-41 - Sheet-42)

With all fault indications the fault warning relay is non - energised. The relay may be returned to normal through the 'RESET' function. The warning indication on the digital display will persist until the fault is corrected or the channel isolated.

SENSOR CLEANLINESS

A large percentage of returns under Warranty are in fact due to dirty lenses. Very often, due to difficult working conditions and lack of experience, the lenses in the Sensor are not properly cleaned. This problem is made more difficult because the operator has to return to the Monitor in order to check the cleanliness of the lenses. A simple way to help the cleaning process is to use the suggestion on Sheet-44.

CLEANING SENSOR LENSES

The Monitor will indicate when the lenses need cleaning (Fault Directory Sheet-41)

To clean the lenses see Sheet-44.

REPLACING SENSOR FAN (Q1004)

The Monitor will indicate when there is a Fan Fault (Fault Directory Sheet-41)

To replace the Fan see Sheet-46.

NOTE: IT IS HIGHLY RECOMMENDED THAT A CLEAN AND WORKING SPARE SENSOR BE INSTALLED WHILE CLEANING A SENSOR.

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LENS CLEANING PROCEDURE

The "F2" Fault indicator indicates need for lens cleaning on the relevant channel on the TRIPLEX CMU (Q01T).
It is advisable to have a clean and working spare Q10 Sensor

To clean, the lens in the event of oil or condensation build up, use the following guidelines:

1. Isolate the relevant channel on the CMU:

   - Turn Security Key (QQ0103) to Setting Mode
   - Using Magnetic Pen (Q0109):
     - Touch Isolate Button
     - Touch Channel Button
   - Turn Key back to Working Mode

2. Unplug cable from Sensor

3. Holding the Sensor, undo the 4 screws fixing the Sensor body to the Articulated Joint. Use the Allen Key tool from the Maintenance Kit.

4. Replace with a spare Sensor, if available. Proceed to item (8).

5. In a clean area, remove cover plate by undoing the 4 Button Head Screws. The tool is in the Maintenance Kit.

6. 3 lenses will be visible inside the chamber. Using a clean cloth and a cleaning solution such as Isopropyl Alcohol to wipe the lenses clean. For badly contaminated lenses, repeat until clean. Polish the lenses with a clean and dry cloth. **DO NOT SATURATE THE LENSES WITH FLUID**.

7. Ensure the chamber is dry. Replace the cover Plate

8. Replace Sensor on Articulated Joint. Make sure Sensor is in original position.

9. Reset the Sensor on CMU:

   - Turn key to setting mode.
   - Using magnetic Pen:
     - Touch Isolate Button,
     - Touch Reset Button,
     - Touch Channel Button,
   - Turn Key to Operate Mode

SEE IMPORTANT NOTES OVERLEAF

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IMPORTANT NOTES

1. **The Sensor electronics are factory calibrated and cannot be serviced on site. In the event of a fault the Sensor must be sent back to QMI unless it is a faulty fan then just change the fan as shown in Sheet-47.**

2. **DO NOT USE diesel oil, acetone or kerosene to clean Sensors and Sensor lenses.**

3. **ONLY use an 'Isopropyl Alcohol' cleaning liquid to clean the lenses.**

4. **DO NOT IMMERSE Sensor in any cleaning solution.**

SUGGESTED MAINTENANCE PLAN FOR ATMOSPHERIC SENSORS

The only regular operation that can be built into a planned maintenance is to clean the lenses but if the manual test programme is initiate on the Monitor on a say weekly basis. The indication "dd" on any channel will mean that you have 20% of dirt on the lenses so it's a good idea to clean the lenses as soon as it feasible. The system however can compensate for up to 40% of contamination.

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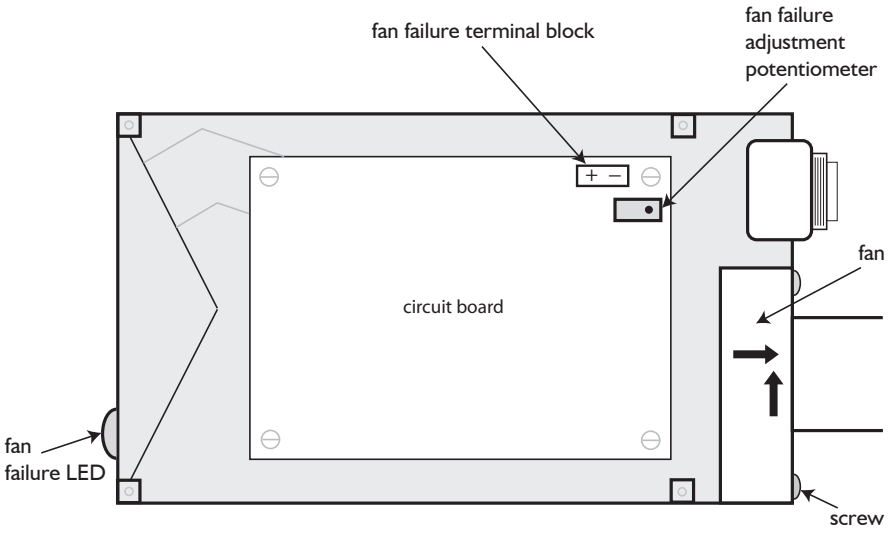
REPLACING FAN (Q1004) IN SENSOR

Remove lid by taking out the four countersunk Allen screws using 2.5mm Allen key (Q1007).
Remove **RED** and **BLACK** wires from fan failure terminal block.
Remove four buttonhead Allen screws holding fan to air sensor using 2.5mm Allen key.
Fit new fan by replacing four buttonhead Allen screws. Check direction arrows on fan.
Fit **RED** wire to the + terminal of fan failure terminal block.
Fit BLACK wire to the - terminal of fan failure terminal block.



ADJUSTING FAN FAILURE ON Q10 FAN

WARNING: Any attempt to adjust other components on the circuit board will invalidate the guarantee and may stop the sensor working.

1. Turn the potentiometer screw fully anti - clockwise (15 turns).
2. Connect Sensor to Monitor. The LED on the front of the air sensor will flash **GREEN**.
3. Allow 2 minutes before adjusting, by this time the LED should be **AMBER** with a **RED** pulse.
4. Slowly turn the potentiometer clockwise until the LED turns to a steady **GREEN.**
5. When the LED is showing steady **GREEN**, turn the same potentiometer a further quarter turn clockwise.
6. Test for fan failure operation by gently stopping the fan with your finger.
7. Check that the LED flashes **RED**.
8. Refit Sensor lid using the four countersunk Allen screws, ensuring red and black wires are not trapped.
9. Wait for two minutes and ensure LED remains constant **GREEN**.
10. Installation of the Q1004 fan is now complete. Refit Sensor in chosen position.

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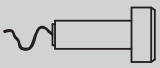
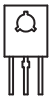
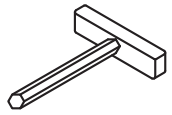
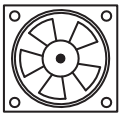
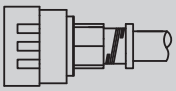
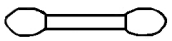
MAINTENANCE KIT Q01T07 CHECK LIST

Supplied with QMI TRIPLEX Monitor.

Code	Item	Quantity	Sketch
Q0109	QMI Monitor Magnetic Pen	1	
Q0111	QMI Monitor TRI Transistor	1	
Q0103	QMI Monitor Keys (Pack of 2)	1	
Q1007	QMI Sensor Lid, inspection cover and fan M2.5 Hex Allen Key	1	
Q0113	QMI Monitor M4 Hex Allen Key	1	
Q1008	QMI Sensor M3 Hex Allen Key	1	
Q0112	QMI Monitor Anti-surge Fuse 400mA (Pack of 5)	1	
Q0114	1.25A Fuse for FS1 on the Power Supply Board (Pack of 5)	1	
Q0115	3.15A Fuse for FS3 on the side of the Monitor (Pack of 5)	1	
Q1004	Replacement Fan with fixing screws	1	
Q1006	QMI Sensor 6-Pin In-line Socket	1	
Q1009	Cotton Buds (Approximately 100 per pack)	1	

Please Note: QMI Recommend IPA (Isopropyl Alcohol) to clean the Q10 Sensor Lenses. Clean All is no longer available.

It is recommended that a spare Atmospheric Sensor (Q10) is purchased.

Checked by

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SPARES, CODES AND DESCRIPTIONS

Code	QMI Product	Description
Q01T	QMI TRIPLEX Monitor	
Q01T02	Manual	Installation and Operation Manual
Q01T08	QMI TRIPLEX MP3 PCB for Monitor	For Monitor Processor Board for Version 3.2
Q01T05	PSU mounted on relay board	Fitted with switch mode Power Supply Unit (PSU) and PSU case
Q01T06	TRIPLEX Unboxed 3-way PCB	For optional Junction Box
Q01T07	Maintenance Kit	See Sheet-47

Q0103	Keys	Monitor Security Switch to change settings (Pack of 2)
Q0106	Switch mode power supply	No case, for Power Supply Unit for Monitor
Q0109	Magnetic Pen	To activate displays on Monitor
Q0111	TR1 Transistor	On Power Supply Board of Q01T
Q0112	Anti Surge Fuse 400 mA	For FS2 on Power Supply Board (Pack of 5)
Q0113	M4 Hex Allen Key	To open Q01T Monitor Lid
Q0114	1.25A fuse for FS1 on power supply board	For FS1 on Power Supply Board (Pack of 5)
Q0115	3.15A fuse for FS3 on side of Monitor	For FS3 on side of Monitor (Pack of 5)

Q10	Atmospheric Sensor	With Integral Fan
Q10C	Atmospheric Sensor	With Integral Fan, Mating Connector & Articulated Joint
Q1004	Replacement Fan	For Sensor, includes fixing screws
Q1006	Replacement Socket	For Sensor, 6 Pin Bulgin Socket
Q1007	M2.5 Hexagonal Allen Key	For Sensor lid, inspection cover and fan
Q1008	M3 Hexagonal Allen Key	For Articulated Joint on Sensor
Q1009	Cotton Buds	To clean Q10 Atmospheric Sensor (Approximately 100 per pack)

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RETURNS PROCEDURE

Guarantee Statement: Atmospheric Sensors returned for service or repair will be guaranteed for 18 months.

1. The equipment being returned has a report with it stating the fault with the equipment; list the fault number shown on the Monitor, the Serial No. of the Monitor (On the Monitor front plate) and the Serial No. of the Sensor (sticker inside front louvre) and the Serial No. of the Fan Unit if relevant.
   Return the Equipment in a CLEAN condition.
2. Issue a Numbered Purchase Order, with Invoice and Return address otherwise goods will not be processed.
3. Manifest/Packing note with shipment contents.
4. A note to advise us the return address for repaired or serviced equipment.
5. The above documents should be faxed and emailed to QMI, London.
   Fax: **+44 (0) 20 7328 5888**
   Email: **qmi@oilmist.com**
6. Despatch returned goods to:
   Attn: Repair Manager
   Quality Monitoring Instruments Ltd.
   C/o Cambertronics Ltd.
   Unit 12, Manfield Park Industrial Estate
   Guildford Road, Cranleigh
   Surrey GU6 8PT
   UK
   Tel: +44 (0) 1483 267619
   Fax: +44 (0) 1483 267700
   Email: **qmi@oilmist.com, cc: QMI@Cambertronics.ltd.uk**

Please ensure that you have included the information and documents in your fax or email to QMI to request repair of equipment. Providing this information will increase the speed at which we can repair and return the goods.

CHECKLIST

- ☐ Fault Report included/attached
- ☐ Fault Number Displayed F1____ F2____ F3 ____
- ☐ Monitor Serial Number
- ☐ Sensor Serial Number
- ☐ Equipment is clean
- ☐ Numbered Purchase Order with Invoice and Return address. E-mailed and included
- ☐ Manifest/Packing Note of shipment contents, E-mailed and included
- ☐ Name of Contact person email address, telephone number and fax number

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QMI REQUEST FOR AFTER SALES INFORMATION

Now that you are in charge of a

NEW QMI TRIPLEX Oil Mist Detection System

If you would take the time to provide us with the information outlined below. It will help us to respond more quickly to any questions or problems you might have in the future.

1. Name of vessel/or site: _____
2. Location of system: _____
3. Serial Number of Monitor: _____
4. Number of Q10 Sensors: _____
5. Serial Number of Sensors: ___ ___ ___ ___ to ___ ___ ___ ___
6. Email address: _____
7. Fax number: _____
8. Return address for equipment: _____

_____

_____

_____

_____

If you have any technical problems, please contact us on the following:

Email: qmi@oilmist.com
Tel: +44 (0) 20 7328 3121
Fax: +44 (0) 20 7328 5888

Should you need to return equipment for service or repair, please see Sheet 50 of this manual for details on how the equipment should be returned.

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QMI
Oil Mist Detection Systems


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Oil Mist Detection Systems

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