Meech

Operating Manual

Model 904CM

Current Monitoring AC Controller

Contents

Introduction

The 904CM system monitors the performance of AC ionising bars to allow maintenance to be carried out once the performance has dropped below a chosen level. Additional spark detection circuitry allows early detection of potential problems or damaged equipment to be identified and replaced.

The system comprises three parts, a modified 904 power unit, the 904CM monitoring unit and insulating brackets for AC bar.

The power unit has additional internal current sensing components and a modified method of connection for the conduit of the ionising bars.

The monitoring unit connects to the modified power unit using the existing jack socket with an additional earth wire.

The system measures the ion current leaving the ionising bar(s) and displays this as a performance percentage. 100% represents optimum performance when the bars are clean.

On the 904CM Front panel, green, orange and red LED's give indication of "OK", "Ionisation Low", "Cleaning Required". An internal relay provides simple operation of an external alarm, whilst a 0-5V analogue output allows remote monitoring of the ion current. Magnets on the rear of the unit make it simple to mount in an easy-to-see position.

The use of the 904CM Current Monitoring system provides the operator with helpful performance data. However, for hazardous area installations, regular visual inspection of the ionisation equipment is vital to ensure correct operation.

Inspection

The Model 904CM AC Controller was carefully packed at the factory. Nevertheless, we recommend careful examination of the carton and contents for any damage. If damage is evident, keep the packing material and immediately notify the carrier of a possible damage claim. Shipping claims must be made by the consignee to the delivering carrier.

Contents

A typical complete 904CM system will include:
Instruction Manual
904CM Monitoring unit
Signal cable
904 power unit with modified HT connection.
IEC cable
Plastic nuts for HT cable connection
Mounting brackets for 915

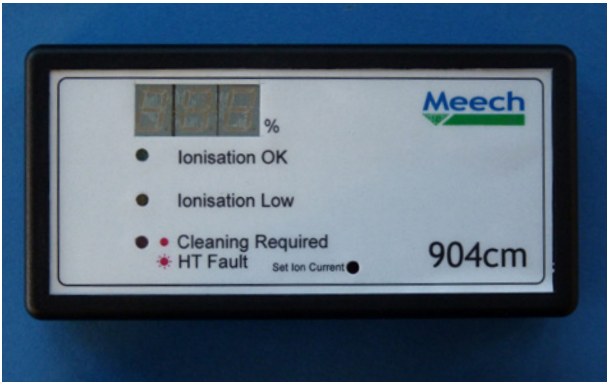
Option

Mini DIN cable

Features

904CM Monitoring Unit

Front Panel



3 digit numerical display. The performance of the ionising system is displayed as a percentage. 100% = full performance.

Green LED Ionisation OK. This signals that the performance of the ionising bars is good.

Orange LED Ionisation LOW. This signals that the performance has decreased and the ionising bars should be cleaned at the next opportunity.

Red LED Illuminated continuously – The output has decreased below satisfactory levels and the bars require cleaning urgently.

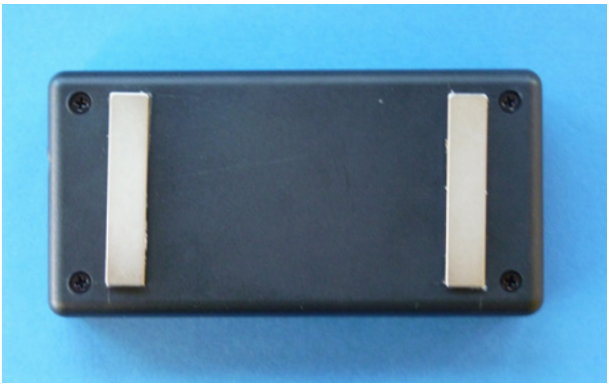
Flashing – HT Fault, either the HT supply has failed or the system has detected sparking (In this case the display will flash “SP”).

Set Ion Current- This recessed button is used to set the system to 100% when the bars are clean and running at full performance.

Side Panel

3.5mm Jack Socket	For signal cable from 904 power unit
8 pin Mini DIN Socket	Provides Alarm a relay and monitoring outputs for remote signalling and logging.

Rear Panel



Magnetic mounts Magnets for mounting the unit to steel surfaces.

904 Power unit

With the exception of the HT conduit connection, the 904 power unit used with the 904CM System is similar to the standard 904. For mounting and mains voltage connection information, please refer to the 904 power unit instruction manual.

HT Connection plate

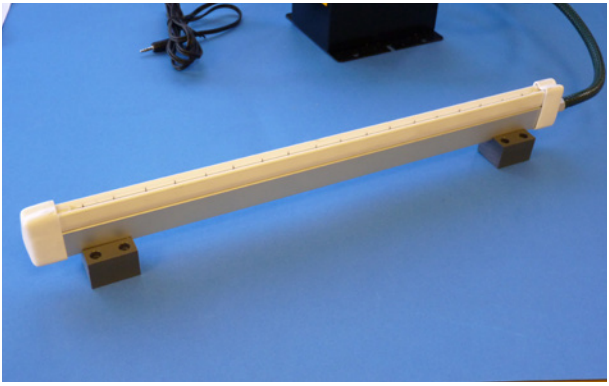
For correct operation of the monitoring system, the conduit from the ionising bar(s) must be connected using the modified connection plate.

The conduit must be fastened in place using the plastic nuts provided (metal nuts must not be used).

915 Ionising Bar

With the exception of the mountings, the 915 ionising bar used with the 904CM System is similar to the standard 915. For positioning and care information, please refer to the 915 instruction manual.

Mounting blocks



For correct operation the 915 ionising bar(s) must be mounted using the insulating mounting blocks supplied by Meech. The bars must not be grounded at any point.

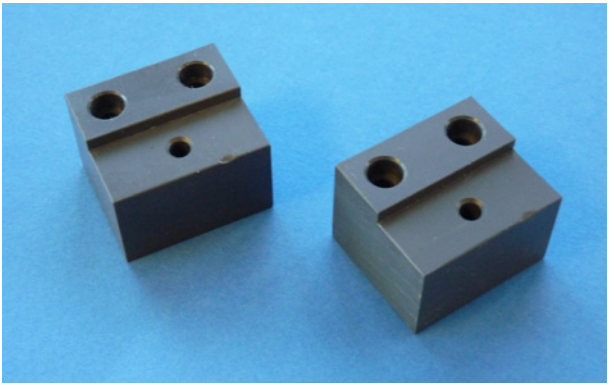
Installation

904 Power Unit and 915 Ionising Bar.

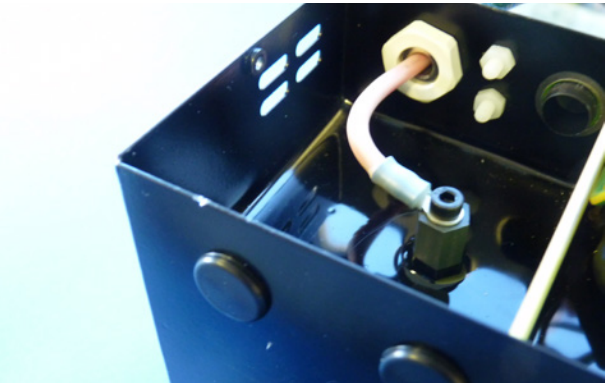
The 904 power unit should be sited and installed as per pages 4 and 5 of the 904 instruction manual.

The 915 ionising bar should be sited as recommended by your Meech Sales engineer. Extra positioning help is available from pages 6-7 of the 915 Instruction manual.

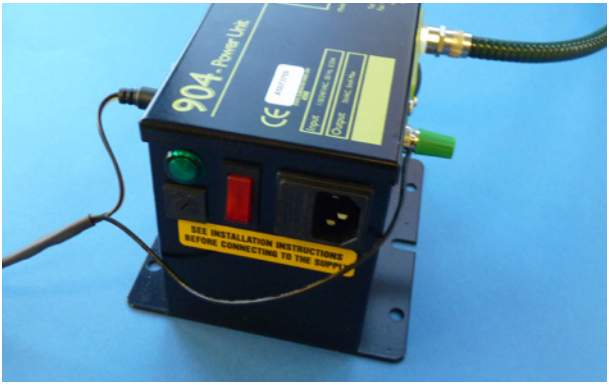
The bar must be mounted using the grey insulating mounting blocks supplied. It is important that the metal chassis of the bar is not grounded to the machine in any way. Failure to ensure this will result in incorrect performance readings.



The 915 should be connected to the power unit using the modified connection plate as shown below. The spare unmodified connection ports must not be used. The conduit fitting should be connected through the plate and secured using the plastic nut provided. The eyelet on the red HT cable should be fastened down to the central HT terminal post.



The 904CM monitoring unit is connected to the 904 Power unit using the signal cable provided. At the power unit, connection is made using the socket in the power unit wall with the trailing wire connected to the earth terminal.



Connection to the monitoring unit is made using the 3.5mm jack plug.

Ideally the unit will be positioned where it can be seen easily by the operator. The magnetic strips on the rear of the unit allow it to be mounted easily on any steel surface.

Operation

Getting Started

The correct operation of the ionising bar(s) and power unit should be verified. A meech model 984v2 Ion Sensor is ideal for this purpose. If a 984v2 is not available, the green neon on the power unit will indicate the presence of high voltage on the output of the 904.

Setting the Orange and Red Alarm Points

The 904CM is pre-programmed to trigger the Orange LED at 75% and the Red LED at 50% Ion Current. These levels have been chosen to give a good balance between cleaning frequency and performance. Applications requiring more precise static control may require these levels to be increased.

To set the orange and red alarm points:

1. Undo the four casing screws at the rear of the unit. Remove the rear cover to expose the four programming buttons.

2. Connect the cable to the 904 power unit and turn the system on.

3. To set the orange or red LED, depress and hold Red or Orange as appropriate and use the Up and Down buttons to change the percentage to the desired value.

Setting the Spark Detection Threshold

Should a cable or ionising bar become damaged, sparking is likely to occur. The 904CM has circuitry that detects this. The system will indicate a fault after a pre-set number of sparks are detected within a one second period. This threshold is pre-programmed to 20. This level can be altered between 1 and 25 if required.
Note that setting too low a value may result in false detections caused by fluctuations on the incoming mains supply.

To set the spark detection threshold:

1. Undo the four casing screws at the rear of the unit. Remove the rear cover to expose the four programming buttons.

2. Connect the cable to the 904 power unit and turn the system on.

3. Depress and hold both the Red and the Orange buttons. Use the Up and Down buttons to change the percentage to the desired value.

Setting the Reference Ion Current

The percentage display and the LED's operate by comparing the instantaneous Ion Current with the Reference Ion Current measured when the system is clean and running at its optimum level.

Once the system has been installed and with the web in place, the Reference Ion Current can be set using the recessed button on the front panel. Note that the reference point should be set when the web is STATIONARY.

A single press of the button will set the reference current. After releasing the button the display will show 100, or close to 100. The system is now ready for use.

Operating Status

Green LED Illuminated

When the Green (Ionisation OK) LED is lit, the system is running effectively and static control will be good.

Orange LED Illuminated

Over time, contamination will build up on the pins of the ionising bar. This will reduce the effectiveness of the bar. As this contamination builds-up, the percentage displayed on the 904CM will slowly decrease. When the performance has decreased to the pre-set level the Orange (Ionisation Low) LED will illuminate. At the next available opportunity, the bar should be cleaned. The display will return to 100 or near to 100.

Note: Burn-In. New bars may exhibit particularly high currents when first installed. After the first four weeks of operation it is advisable to clean the bar(s) and reset the Reference Ion Current. This new reference point is a more realistic measurement of the bar's performance when clean.

Red LED Illuminated

If the bar(s) are not cleaned when the Orange (Ionisation Low) LED is illuminated, further loss of performance will cause the Red (Cleaning Required) LED to illuminate and the alarm relay to change state. At this point, the bar requires urgent cleaning to ensure proper static control.

Red LED Flashing, No Percentage Display

This indicates a fault on the HT supply. If the HT should fail, either through component failure or simply because the mains power is switched off, the red LED will flash. The LED is powered by an internal rechargeable battery that will cause it to flash for over 60 hours when fully charged. When the red LED flashes the cause of the failure should be investigated. See the operating manuals of the 904 Power unit and 915 bar for fault-finding guidance.

Note: Rechargeable Battery. During normal operation the internal battery is constantly being charged. When first installed the system may only power the flashing LED for a short period. After 24 hours of normal operation of the system, the battery will be fully charged.

Red LED Flashing, Percentage Display alternating “SP” and current reading.

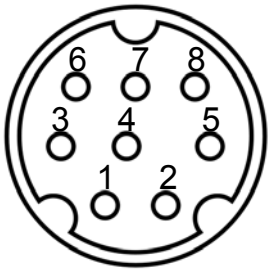
This indicates that sparking has been detected. This can be caused by damage to the bar or HT cabling. It can also be caused by conductive items touching the pins of the bar. An operator touching the emitter pins may be sufficient to cause detection.

Check that there is nothing touching the pins of the bar. Also check the equipment for any signs of damage especially the HT cable and conduit.

The alarm is reset by switching the power to the system off and back on again.

Outputs

Remote monitoring and logging of the system is provided through the 8 pin Mini DIN interface.



1. Alarm relay NC
2. Red LED. Open collector output, grounded if Red LED is on.
3. Alarm Relay COM
4. Orange LED. Open collector output, grounded if Orange LED is on.
5. Green LED. Open collector output, grounded if Green LED is on.
6. Alarm relay NO
7. Ion Current Percentage. 0-100% = 0 to 5V
8. GND / COM

Technical Characteristics

Dimensions	130 x 65 x 27mm
Weight	215g
Maximum operating temperature	50°C
Mounting	Magnetic
Cable length	1.8m
Output connection	8 Pin Mini DIN
Battery Rechargeable	PP9 9V
Alarm relay	Maximum 24VDC, 1A, SPCO
Open collector outputs	Maximum 36V, 1A

Repairs And Warranty

The 904 power supply is warranted by Meech Static Eliminators Ltd to the original purchaser against defects in material and workmanship for one year after purchase. Should any malfunction occur, please return the power supply directly to Meech Static Eliminators or your local distributor.

All products returned to the factory MUST be accompanied by a return authorisation number and must be shipped prepaid. For prompt service, ship the unit to the factory with the return authorisation number shown clearly on the label. Be sure it is well packed in a sturdy carton with shock absorbing material.

Include a note stating the nature of the problem as specifically as possible, and also include instructions for returning the power supply to you. We will pay one-way return surface shipping costs on any repairs covered under the warranty.

Field repairs should not be undertaken during the warranty period. Repair attempts by unqualified personnel will invalidate the warranty.

Maintenance

The only maintenance required is that the exterior of the power supply should be cleaned regularly to keep it free from dust and other contaminants.

CE Approval

A CE Declaration of Conformity for this product exists in respect of the Low Voltage Directive:72/23/EEC (“LVD”) & Electromagnetic Compatibility Directive: 89/336/EEC (“EMCD”)

Health and Safety

Emission of Ozone: Considerably below international standard of 0.1ppm.

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