Meech

Operating Manual

Model 924EX

Pulsed DC Ionising Bar

Contents

Introduction

The 924 is now available for use in Ex applications. The 924EX offers the same outstanding levels of performance, reliability, easy maintenance and features associated with Meech Pulsed DC technology. It is ATEX approved and can be used in zone 1 applications. It is designed to control static charges in short range applications and is particularly suited for use in hazardous areas and applications such as gravure printing, film extrusion and coating.

The 924EX is a compact pulsed DC ionising bar designed to be used on the most arduous static elimination problems. The special resistive coupling of its emitter pins renders them shockless, whilst giving powerful static neutralisation performance.

The 924EX is powered by the Hyperion 233v4 HL Pulsed DC Controller. They are designed to work together as a system meaning that customer's can now benefit from the features associated with the Hyperion range in hazardous environments. The output voltage, frequency and balance can all be adjusted to suit particularly difficult applications and very sensitive materials found in EX zones.

Certification

EC type examination certificate No:

BASEEFA 18ATEX0082X

Unpacking and Inspection

The Model 924EX Bar 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.

Package Contents

Standard

924EX Bar

Mounting Kit

Options

BarMaster remote programmer. Allows optimisation of the output of the 924EX

Hyperion 233v4 HL Pulsed DC Controller

Power Cable - 4 Pin M8 (straight or 90º elbow) Available in 2,3,5 and 10M lengths.

24V DC Supply & C5 cable

Features and Benefits of 924EX

Overall look

The profile of the 924 EX Bar provides ionisation through alternating positive and negative emitter pins mounted in a PC ABS extrusion. The emitter pins are resistively coupled to the high voltage pulsed DC source, rendering the emitters shockless to touch and will give many years of service.

Compact Size and Full Length Ionisation

The small cross-sectional size of the 924EX means that it will fit into tight installation positions. The bar has been designed to give full performance over its entire length, ensuring full coverage of webs that run close to machine frames.

Sealed Contruction

Sealed IP67 construction allows the bar to be used in harsh environments, subject to wash-down or where there is the likelihood of spillages. Please note. should the bar become wet, it must be thoroughly dried before being powered-up.

Shockless Titanium Emitters

As with our Hyperion range bars, the 924EX uses Titanium emitter pins. Almost indestructible, these pins will give many years service. For the comfort and safety of the operator, the pins are resistively coupled and shockless to touch.

Divider

The 924EX is designed to operate in dirty, factory environments. To minimise the impact of contamination and maximise the interval between cleaning, the bar features a divider between the positive and negative emitters. This divider is an essential feature of the bar.

T-Slot

Mounting of the bar is made easy using the T-Slot at the rear of the bar. The M4 T-Bolts used are the same as used on other Meech Pulsed DC bars.

Installation

The Model 924EX Bar should be located in the most convenient position so that the pins of the Bar are directed towards the target area. The bar should be positioned to give an unrestricted path for the ions to travel to the target area.

The Meech Model 924EX must be connected to a Pulsed DC Controller, which must be located outside of any EX zoned area.

POWER, INPUT AND OUTPUT (I/O) WIRING MUST BE IN ACCORDANCE WITH CLASS 1, DIVISION 1 WIRING METHODS ARTICLE 501.10(b) OF THE NATIONAL ELECTRICAL CODE , NFPA 70.

A) THIS EQUIPMENT IS SUITABLE FOR USE IN CLASS 1, DIVISION 1, II 2G IIC T4 GB, OR NON HAZARDOUS LOCATIONS ONLY

B) WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS 1, DIVISION 1

C) WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

The 924EX connects to the Pulsed DC Controller by plugging the male plugs, found at the end of the bar cabling, directly into the high voltage sockets of the controller. The plugs and sockets are marked with “+” positive and “-” negative indicators for correct connection to the power supply.

Connect ionising equipment using grey HT connections. Next, connect the mains supply to the Pulsed DC Controller and switch ON. The 924EX Bar will now produce Pulsed DC ionisation from the emitters of the Bar.

A grounding post on the controller is provided for this purpose. Meech recommend that, for certainty, the controller is grounded using this post, in addition to using a grounded 24V DC supply

WARNING

Meech Pulsed DC Controllers require a grounded 24V DC supply. The 0V line **must** be connected to ground. Failure to do so, will result in damage to the ioniser or the 24V supply and will void the warranty.

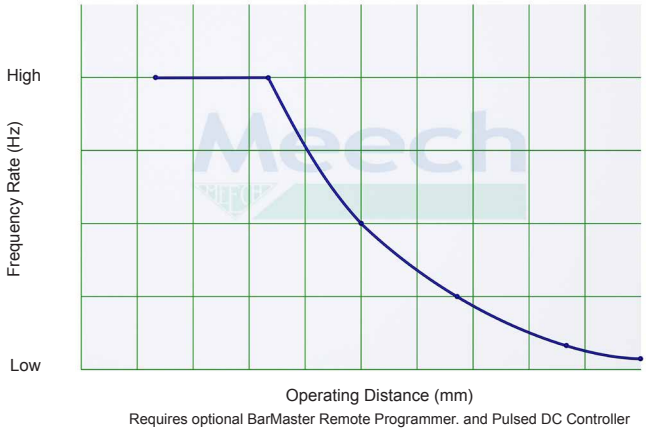
The shockless emitter pins produce ions of positive and negative polarity. These, because of the product's unique design, propel themselves away from the emitter points towards the target area.

The maximum output voltageis 5.5kV to respect the ATEX certification of the 924EX bar.

Optimum static elimination can be achieved by adjustment of the "Rate" (frequency of pulsing) and the "Balance" (proportion of positive to negative ions generated) on the Controller.

If the bar is positioned a long distance from the target area the "Rate" should be set to the lowest setting. If the bar is positioned close to the target area the "Rate" should be set towards its maximum.

Optimum Frequency Vs Operating Distance for 924EX



Requires optional BarMaster Remote Programmer. and Pulsed DC Controller

If the polarity of the static charge to be removed is known, the balance can be adjusted to give a faster decay speed.

I.E. a) If the static charge is known to be positive the balance should be adjusted towards negative on the controller.

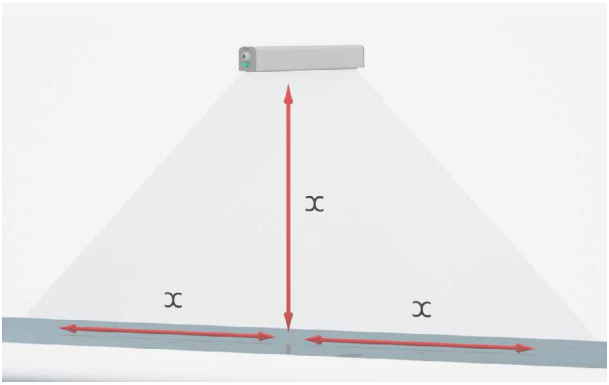
b) If the static charge is known to be negative the balance should be adjusted towards positive on the controller.

Mechanical Installation

The 924EX is a short to mid-range bar. Dependent on the application, the bar will be mounted between 20mm and 200mm from the target surface.

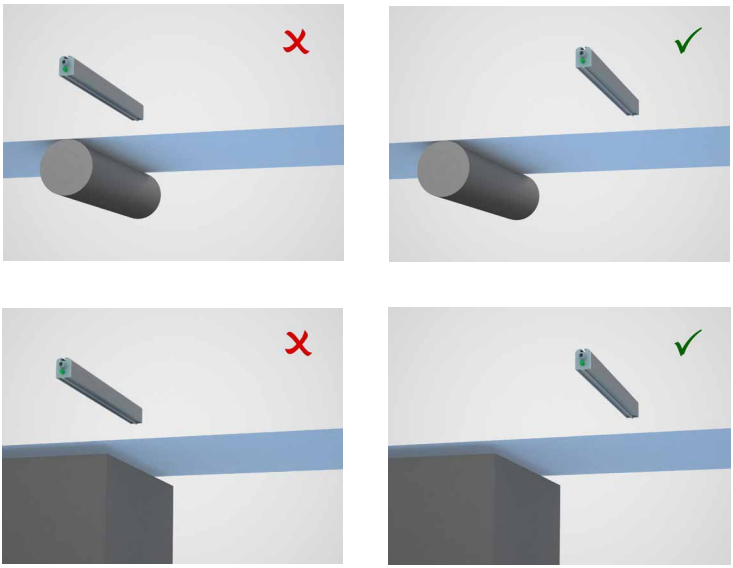
The bar should be mounted securely, using all the M4 T-bolts provided with the bar.

Correct positioning of the bar is vital for effective static control. There must be no metallic objects or obstruction between the bar and the material. The diagram shows the area that should be kept clear.



Where “x” lengths are equal.

When installed at short range over a web or sheet, the bars must be positioned away from surfaces and rollers, as shown in the following diagrams.



Your Meech distributor will be able to assist with questions regarding positioning of your equipment.

Specific Conditions of Use

- If there is any damage to the web or material that is being neutralised by the static eliminator bar, then the bar must be checked for damage and relevant maintenance or replacement of the bar carried out.
- The equipment may not be used in association with dusts having an electrical resistance equal to or less than $10^3\Omega$.m.
- The Meech 924EX static eliminator bar shall be supplied only by the Meech Hyperion 233v4HL Pulsed DC Controller that is set to produce 5.5kV peak maximum.
- The equipment must be installed so that it is shielded from UV light.
- The user must determine, in consultation with the manufacturer, the suitability of the apparatus for use with particular solvents.
- The plastic case presents a potential static discharge risk and while in a hazardous area must be cleaned only with a damp cloth.

Operation

Having connected the male grey HT plugs to the power supply, power up the power supply and check the Pulsed DC Controller. The controller will indicate that the bar is running correctly with a good ion output.

CAUTION:
Always turn off the power supply before connecting or disconnecting the male grey HT plugs. Failure to do so could result in stored charges giving a small electric shock.

Maintenance

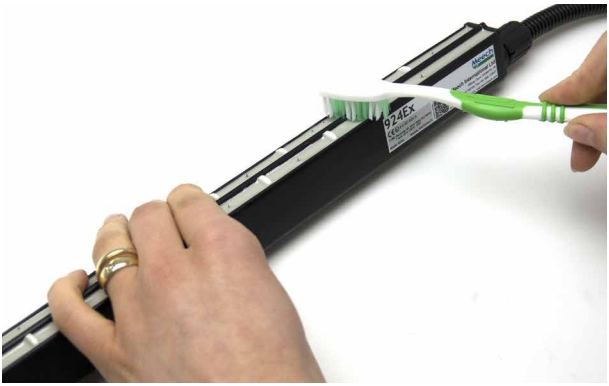
Ionising bars become contaminated with usage. Dirt build-up on the body of the ioniser and, particularly on the pins, will cause a drop in performance. To get the best from your bar, it should be cleaned as part of regular machine maintenance.

If regular cleaning is not carried out, the controller will detect the drop in performance and trigger the Clean Pin alert. See operating manual for the DC Controller.

Before cleaning, ensure that the equipment is switched off.

Emitter pins can be cleaned very effectively with a brush. A dry toothbrush is ideal.

Make sure the central divider is also cleaned and the pin surface of the bar.



Ionising bars will need periodic wiping to clean grey deposits from the surface of the bar. A cloth moistened with a small amount of IPA or methylated spirits is recommended.

Let dry for a minute and turn back on.

Fault Finding

Tests must be completed by a qualified electrical engineer.
If in doubt contact the Meech head office or your local distributor.

CAUTION:
Whilst no danger to personnel exists, it is essential that any high voltage ionising equipment makes no contact with water or water based fluids.

Should such an event occur, disconnect immediately and return equipment to the manufacturer for water damage assessment.

The Model 924EX ionising bar forms part of a system, comprising the bar itself and a Meech Pulsed DC Controller.

To verify where a fault may have occurred it is important to test each item of the system individually. Should more than one bar be connected to a power supply, each must be tested individually.

To check the Pulsed DC system follow the procedure detailed below:

Disconnect the electrical supply to the system.

Disconnect all bars from the controller.

Having checked the power unit reconnect one 924EX ionising bar.

CAUTION:
This test must only be carried out when the installation area is non-hazardous. This may require the bar to be removed from its normal installation position.

Using a high voltage probe and meter measure the voltage on the pins of the ionising bar. This voltage should be approximately 2-5.5kV

If the voltage is well below the output voltage of the DC Controller then the bar should be returned to Meech for service and/or repair.

If no meter and probe is available, then a fast and simple test can be undertaken by shorting a pin of the bar to earth.

- Attach a short length of insulated wire to a known earth.
- Holding the wire insulation, approach any of the bar emitter pins with the bare end of the wire.
- As the pin is approached, a small faint spark should jump from the pin to the wire.
- As the spark is drawn a slight buzzing sound will also be heard. This indicates that the bar is functioning correctly.

If there is more than one bar to test, disconnect the first item and repeat the above steps with subsequent bars.

Technical and Construction

Dimensions (W x H) (mm)	22 x 32
Length	40mm increments between 300-1400mm
Pin Dimensions	1 x 10mm
Construction	PC ABS
Maximum Ambient Temperature	38°C
Mounting	'T' Slot with M4 x 20 Studs
HT Cable	TV20
Cable Length	5m standard, other lengths available on request
Connection	Grey HT Male Plugs
Power Supply	233v4HL Pulsed DC Controller
Operating Frequency	Default: 20Hz (Adjustable 1-20Hz)
Output Voltage	5.5kV
Operating Balance	Default: 54% Positive, 46% Negative (Adjustable)
Operating Range	20-200mm
Environmental Protection	IP68
Ozone Level	less than 0.01ppm
EX Zone Characteristics	II 2G IIC T4 Gb Ta = -20°C to + 38°C

Repairs And Warranty

The 924EX bar 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 bar 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 bar 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.

CE Approval

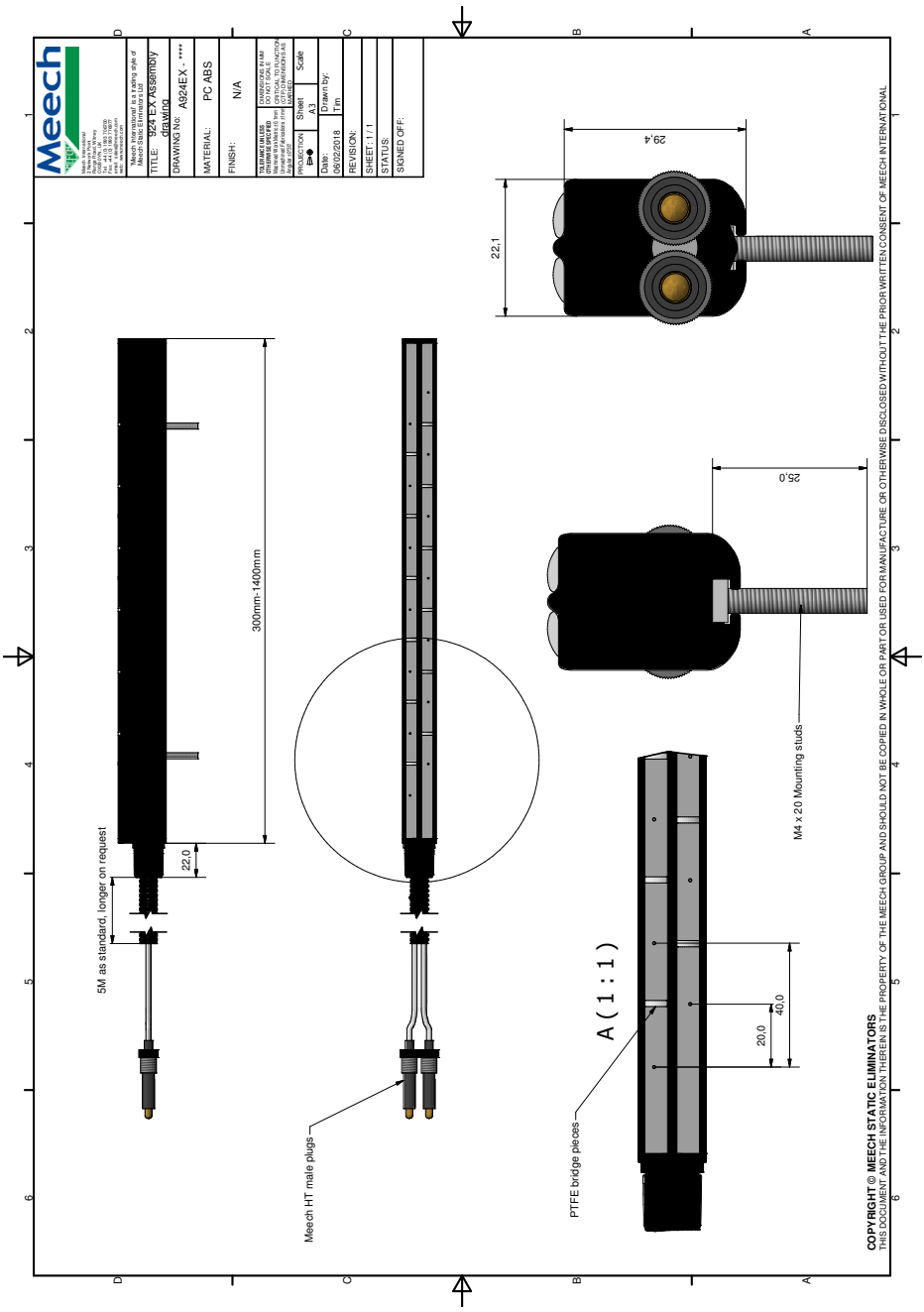
An EC Declaration of Conformity for this product exists in respect of the Low Voltage Directive: 72/23/EEC (“LVD”) & Electromagnetic Compatibility Directive: 89/336/EEC (“EMCD”)

CE

Health and Safety

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

Technical Drawing



Follow the test procedure for the 233v4 HL Pulsed DC Controller. This can be found in the instruction manual of the products.

EX Certification

1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

3	EU - Type Examination Certificate Number:	**Baseefa18ATEX0082X**
4	Product:	**924ex Static Eliminator Bar**
5	Manufacturer:	**Meech Static Eliminators Limited**
6	Address:	**Range Road, Witney, Oxfordshire, OX29 0YN**

7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 SGS Baseefa, Notified Body number 1180, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **16(C)0194**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

See report 16(C)0194.

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following :

⟨Ex⟩ II 2G IIC T4 Gb (Ta = -20°C to +38°C)

SGS Baseefa Customer Reference No. **1402** Project File No. **16/0194**

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pp M POWNEY
Certification Manager
R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

EX Certification

13 **Schedule**

14 **Certificate Number Baseefa18ATEX0082X**

15 Description of Product

The 924ex Static Eliminator Bar is designed to neutralise the charge on any material that is passed in front of it.

It is to be powered by a Meech 233v4HL Pulsed DC Controller that can produce a maximum peak voltage of 5.5kV. Optionally, a Meech Hyperion BarMaster or SmartControl may also be present.

The bar comprises an encapsulated thermoplastic extruded moulding with protruding emitter pins along one surface. High voltage resistors inside the potting limit the discharge from the emitter pins to safe levels.

The ends of the bar are closed off with covers which on one end provide an entry for the supply cable which is protected from damage by flexible conduit.

The length of the bar may be modified to suit particular applications up to a maximum of 4000mm.

16 Report Number

16(C)0194

17 Specific Conditions of Use

1. If there is any damage to the web or material that is being neutralised by the static eliminator bar, then the bar must be checked for damage and relevant maintenance or replacement of the bar carried out.
2. The equipment may not be used in association with dusts having an electrical resistance equal to or less than $10^3\Omega$.m.
3. The Meech 924EX static eliminator bar shall be supplied only by the Meech 233v4HL Pulsed DC Controller that is set to produce 5.5kV peak maximum.
4. The equipment must be installed so that it is shielded from UV light.
5. The equipment must be installed in a manner that provides complete protection against impact.
6. The user must determine, in consultation with the manufacturer, the suitability of the apparatus for use with particular solvents.
7. The plastic case presents a potential static discharge risk and while in a hazardous area must be cleaned only with a damp cloth.

18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements (EHSRs) are addressed directly in the report.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
A924EX-____-01-BAS-01	1 & 2	13	09/10/2018	924EX drawing for Baseefa EX sign off
C2388	1	1	07/08/2018	924EX M12x1.5 Tapped End Cap
C2816	1	2	13/04/2018	80MΩ Resistor (Single)
D2387	1	1	07/08/2018	924EX Blank End Cap
D2417	1	-	07/08/2018	924EX Extrusion
WI-A924EX- Potting	1 to 5	1	25/09/18	Potting procedure for 924 EX

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