Operating Manual

HYPERION™
A Meech Innovation

Hyperion 924IPSv3

Short-Range DC Bar

Contents

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Section 1.0: Safety Instructions

Before using equipment, read the following safety and operating instructions to ensure your own personal safety and help to protect your equipment. Failure to do so could result in injury. Connected equipment may require additional safety instructions. Observe all safety instructions for additional equipment connected before operating.

1.1 General Safety

Before setting up the equipment:

- Read the operating instructions carefully and ensure you understand how to correctly use the equipment.
- Installation and testing must only be completed by those suitably qualified.
- Inspect the working environment and ensure it is clean and clear of hazards before removing equipment from packaging and positioning the system.
- Visually check all equipment for damage. If damaged, contact your local Meech representative before continuing.
- Ensure a full understanding of the symbols attached to the equipment before operating.
- Keep all cables secured until ready for use.
- Keep a copy of the Operating Manual close to the system at all times.

1.2 Electrical Safety

Before installing, performing repairs or maintenance on equipment, ensure the system is electrically isolated. Failure of this could result in injury.

The 924IPSv2 has resistively coupled pins. The maximum pin current is 100µA. This renders them shockless to touch.

It should be noted that prolonged contact with the emitter pins can lead to an electrically isolated operator gaining a small charge and, subsequently receiving a mild shock when they touch a grounded object. This is harmless but should be avoided where possible. Hence, Meech recommend that the power supply to ionising bars is interlocked with the machine running state, so that they are unpowered during any operator intervention.

Before working on the equipment:

• Check the equipment is electrically isolated correctly.

• Check equipment and cables for damage. If damaged, contact your local Meech representative before continuing.

• Ensure all wiring is completed by competent persons.

• Check all connections in relation to the wiring diagram

Section 2.0: Introduction

The Hyperion 924IPSv3 is a compact pulsed DC ionising bar. It is used to control static electric charges in short range applications (20-150mm). An integral 7.5kV pulsed DC power supply allows for easy installation on printing, converting and packaging machinery. Requiring only a 24V DC supply, the 924IPSv3 removes the need to route high-voltage cabling through the machine.

In most installations the default settings of the bar will provide exceptional static control. The local LED indicator shows the operational status of the bar and advises when the bar requires cleaning.

Demanding installations can take advantage of the adjustable output of the 924IPSv3. Using the optional Hyperion BarMaster remote programmer or SmartControl Touch, the frequency, balance and voltage output can be optimised to suit the application. Additionally, the Ion Current alarm setting can be changed to guarantee the required performance levels on critical processes. The 924IPSv3 also features dual alarm lines to enable remote monitoring for both ionising system maintenance and system faults.

The Hyperion BarMaster remote programmer and SmartControl Touch are available for purchase from the Meech network: Visit www.meech.com to find your nearest Meech office or distributor for further product information.

Section 3.0: Package Contents

924IPSv3 Bar

Mounting Kit

Section 3.1: Optional Extras

SmartControl Touch

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

24V DC Supply & IEC cable

BarMaster remote programmer. Allows optimisation of the output of the 924IPSv3

Section 4.0: Unpacking And Inspection

Your Hyperion 924IPSv3 bar was carefully packed at the factory in a container designed to protect it from accidental damage. Nevertheless, we recommend careful examination of the carton and contents for any damage.

If damage is evident, do not destroy the carton or packing material and immediately notify the carrier of a possible damage claim. Shipping claims must be made by the consignee to the delivering carrier.

Section 5.0: Overview of 924IPSv3 - Features and Benefits

5.1: Low voltage wiring and Integrated Power Supply

The 924IPSv3 is powered by 24V DC via a 4-pin M8 Connector.

5.2: Shockless Emitters

The Titanium emitter pins on the 924IPSv3 are resistively coupled to the high voltage supply. This avoids sparking and operator shocks.

5.3: Sealed Construction

IP66 construction allows the bar to be mounted in areas subject to occasional wash- down or spillage. If the bar does become wet it must be thoroughly dried before being powered-up.

5.4: Clean Pin Alert and Fault LED

The local LED illuminates constant green to indicate that the bar is on and working correctly. Red flashing LED shows that bar is dirty and needs cleaning. Solid red illumination indicates a fault with the high voltage output.

- Green constant – OK
- Green flashing – BarMaster remote programmer connected
- Yellow Constant – Standby
- Flashing Yellow – Standby – HV output off, BarMaster/SmartControl connected
- Red flashing – Cleaning required
- Red constant – Fault

5.5: Dual Alarm Lines - Clean Pin Alert and Fault Output

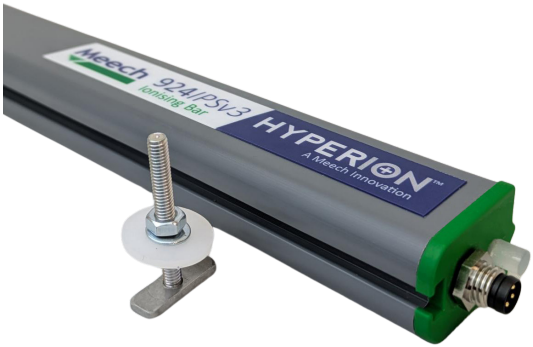
Dual alarm lines tell remote monitoring systems whether the ionising equipment needs routine maintenance or whether there is a more serious system failure. The flexible configuration of the alarm system, allows the alarm lines to be interfaced with PLC's, buzzers and remote lamps.

The 924 has dual configurable 0/24V or 24/0V signal lines.
Pin 2 will indicate when the bar required attention (cleaning etc.)
Pin 4 can be used for either, 1. indicating a fault with the Bar, or 2. as an input to put the bar into standby.
These options can be configured using a Meech Barmaster.

5.6: Divider

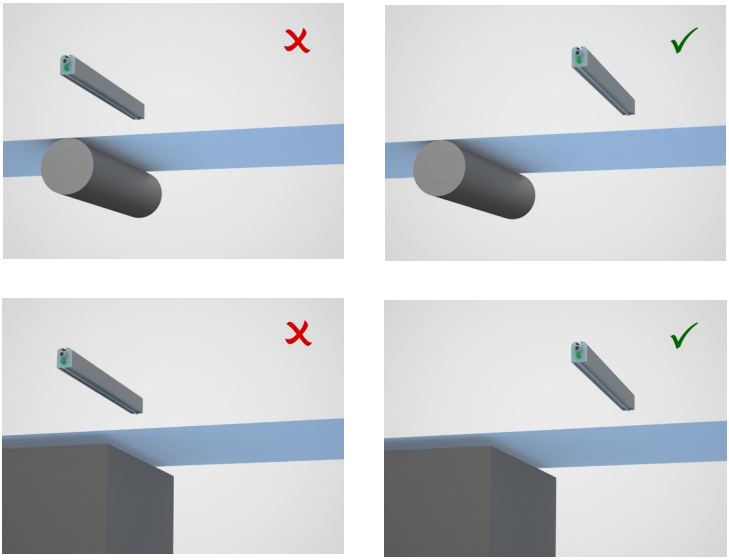
The 924IPSv3 is designed to operate in dirty, factory environments. To maximise the interval between cleaning the bar features a divider to increase the surface tracking distance between the two rows of high voltage pins. It is important to clean this area during cleaning operations.

5.7: T-Slot



The bar is mounted using the T-Slot at the rear of the bar. M4 T-bolts supplied with the bar maybe positioned to suit convenient mounting points.

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.

Where X lengths are equal.

Section 6.0: Mechanical Installation

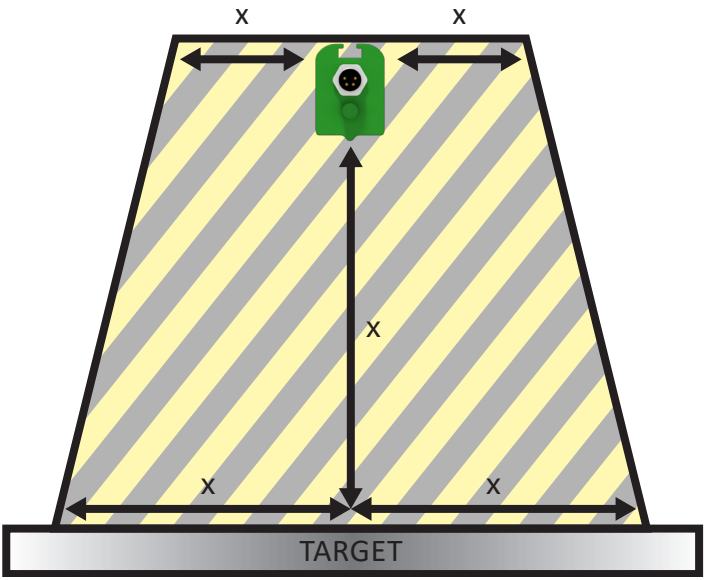
6.1: Positioning

The 924IPSv3 is a short to mid-range bar. Dependent on the application, the bar will be mounted between 20mm and 150mm 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 show the area that should be kept clear.

For optimum ionisation performance and maximum emitter pin life, the ionising bar should be mounted on insulating mountings 25mm from conductive materials.



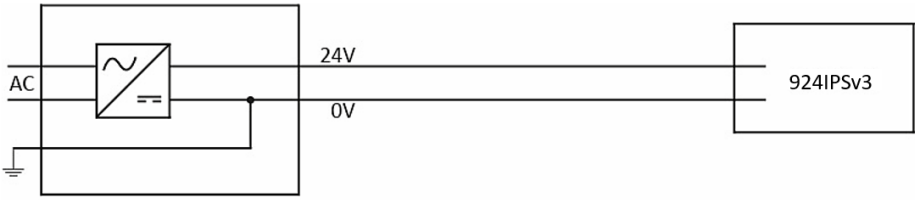
Section 7.0: Electrical Installation

WARNING

THE 924IPSV3 REQUIRES A GROUNDED 24V DC SUPPLY. THE 0V LINE MUST BE CONNECTED TO GROUND. FAILURE TO DO SO, WILL RESULT IN DAMAGE TO THE BAR OR THE 24V SUPPLY AND WILL VOID THE WARRANTY.

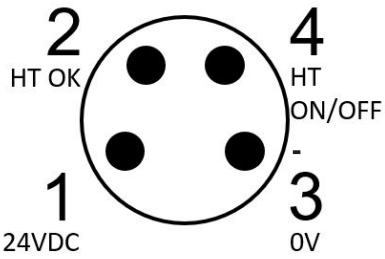
Connection using a grounded 24V DC power supply. E.g. Meech part number A900IPS-SM-15-XX.

- Meech 24V DC supplies are grounded internally. They are supplied with a three wire IEC C5 cable.
- The ground connection must be correctly connected at the mains connection.

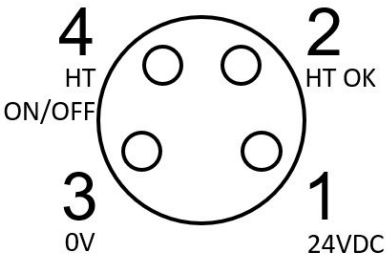


Grounded 24V supply
e.g. Meech A900IPS-SM2MS

Connection to the 924IPSv3 is via an industrial M8 4 Pin connector. With the following pin-outs:



Male connector on bar



Female connector on cable

Pin	Colour	Function Specification
1	Brown	24V (21-27V)
2	White	Clean Pin and fault alert Output 0V/24V
3	Blue	0V/ Ground
4	Black	Fault alert output/ standby input

Connection using Meech 24V DC power supply

Meech 24V DC supplies are grounded internally. It is important that the mains connection offers a ground connection. Two-pin outlets without a ground connection must not be used.

The switchmode power supply has a standard IEC C13 mains socket and a 2000mm HT cable to M8 Connector. A break-out wire from the switchmode power supply provides the Clean Pin Alert output signal and fault alert.

Connection using customer's own power supply:

It is the customer's responsibility to check that the 24V power supply they will be using is grounded.

The 24V supply should be protected with a 1 Amp fuse.

7.1: Dual Alarm Alert - Remote Monitoring

Remote monitoring of the need to clean the bar is provided by the output signal on pin 2 (white) and fault alert is provided on pin 4 (black). The signal is 0V-24V suitable for direct connection to a PLC input. The output impedance of the signal is 2.2kΩ. The output can also be configured to power an external relay to provide volt-free contacts for other monitoring systems.
Using a BarMaster remote programmer or SmartControl Touch the output can be set to Alarm True = Lo which is factory default or Alarm True = Hi.

NOTE: Make sure that BarMaster is not connected when using the dual alarm remote monitoring feature.

Alarm Pins

Pin-2(White)	This pin is used to report when the ionising performance of the equipment is low and that it requires cleaning. This is considered as a warning signal. The LED pattern on the unit is **flashing red**.
Pin-4(Black)	This pin is used to report when the HV output of the equipment is critically low. This is considered as a serious fault. The LED pattern on the unit is **solid red** (unless configured as standby input – see section 9.2).

7.1.1: Standby input

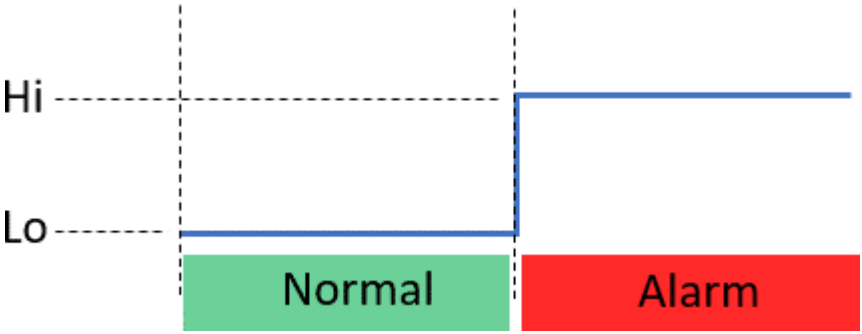
The 924IPS can be put into standby mode. This is done by performing the following steps:
1. Adjust Pin 4 setting from Fault (output) to Standby (input) with a BarMaster.
2. When Pin 4 (Black) is connected to 0V, the bar will go into standby.

7.1.2: Alarm Logic Level

This is given by the configuration of the “Alarm True” setting using the BarMaster or SmartControl Touch.

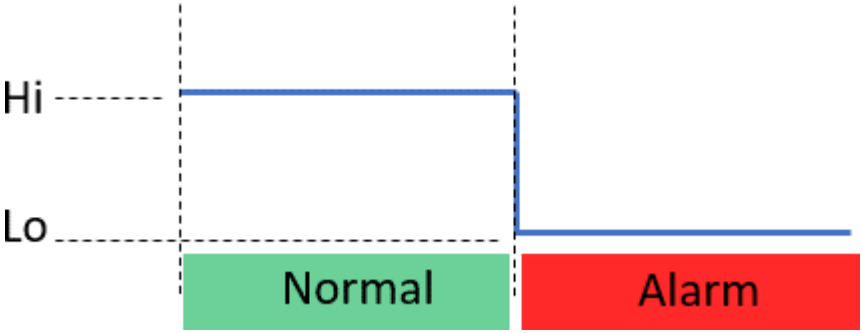
Alarm True = hi

This means the logic on both the alarm pins is active high.



Alarm True = lo

This means the logic on both the alarm pins is active low.

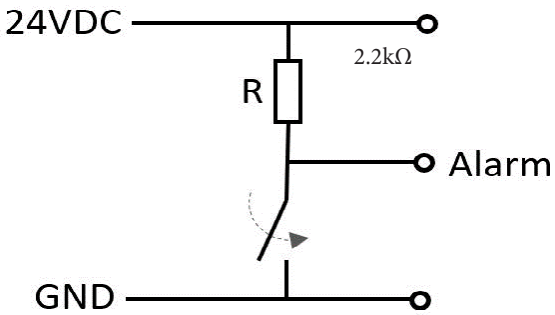


7.1.3: Dual Alarm Output Drive Option

There are 3 different output drive options which are designed to fulfill the vast majority of user requirements and to allow easy integration to PLC equipment.

Option 1 - NPN

Transistor-driven switch which presents a pull-up resistor to 24VDC on the alarm pin. This configuration is the same for both alarm pins (pin-2 and pin-4).



Simplified Diagram of NPN output

Logic Table

Alarm True = Hi

	Start State	Solid Green	Flashing Red	Solid Red
White	Hi	Lo	Hi	Hi
Black	Hi	Lo	Lo	Hi

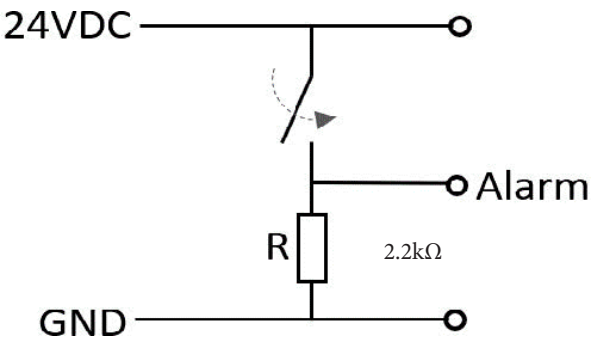
Alarm True = Lo

	Start State	Solid Green	Flashing Red	Solid Red
White	Hi	Hi	Lo	Lo
Black	Hi	Hi	Hi	Lo

Note: On unit power-up, both alarm pins remain in Hi state for up to 60 seconds before these are used as alarm pins.

Option 2 - PNP

Transistor-driven switch which presents a pull-down resistor to GND on the alarm pin. This configuration is the same for both alarm pins (pin-2 and pin-4).



Simplified Diagram of PNP output

Logic Table

Alarm True = Hi

	Start State	Solid Green	Flashing Red	Solid Red
White	Hi	Lo	Hi	Hi
Black	Hi	Lo	Lo	Hi

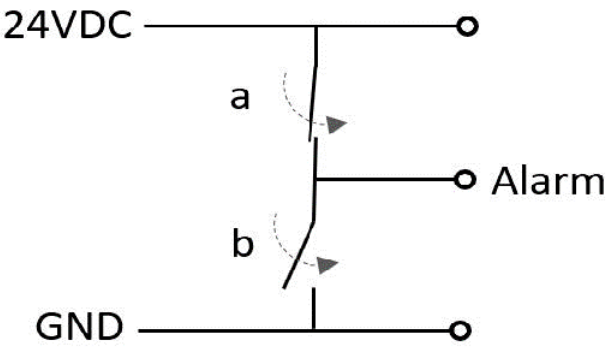
Alarm True = Lo

	Start State	Solid Green	Flashing Red	Solid Red
White	Hi	Hi	Lo	Lo
Black	Hi	Hi	Hi	Lo

Note: On unit power-up, both alarm pins remain in Hi state for up to 60 seconds before these are used as alarm pins.

Option 3 - N+P

This option presents the combination of both of the previous cases, NPN and PNP, however, the alarm lines are hard-driven to either 24VDC or GND. This configuration is the same for both alarm pins (pin-2 and pin-4).



Simplified Diagram of N+P output

Logic Table

Alarm True = Hi

	Start State	Solid Green	Flashing Red	Solid Red
White	Hi	Lo	Hi	Hi
Black	Hi	Lo	Lo	Hi

Alarm True = Lo

	Start State	Solid Green	Flashing Red	Solid Red
White	Hi	Hi	Lo	Lo
Black	Hi	Hi	Hi	Lo

Note: On unit power-up, both alarm pins remain in Hi state for up to 60 seconds before these are used as alarm pins.

Section 8.0: Operation

Having connected the M8 connector to the bar, power up the 24V supply and check for a green constant LED on the bar. This indicates that the bar is running correctly with a good ion output.

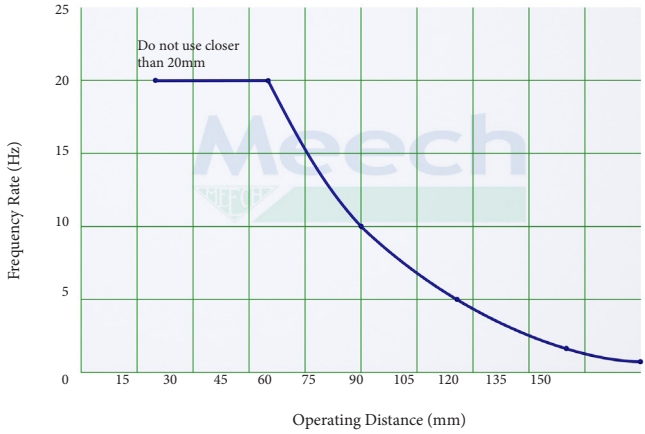
Caution

Always turn off the 24V supply before connecting or disconnecting the M8 connector. Failure to do so could result in stored charges giving a small electric shock.

8.1: Setting the Frequency Rate

The 924IPSv3 features a variable output frequency. The frequency that should be set depends on the ionising product and the distance to the target object.

Optimum Frequency Vs Operating Distance for 924IPSv3



Requires optional BarMaster Remote Programmer or SmartControl Touch.

Section 9.0: Technical and Construction Data

Dimensions (W x H)	22.1mm x 31.2mm
Maximum Length	3960mm
Operating Range	20mm – 150mm
Weight	0.5kg/metre
Construction	FR ABS
Mounting	'T' Slot with M4 x 35 studs
Emitters	Titanium pins
Input Current	Max 500mA
Electrical Connection	4 Pole M8
Input Voltage	24V DC (21-27VDC)
Output Voltage	Pulsed DC Adjustable up to +/- 7.5kV with BarMaster and SmartControl Touch
Maximum Emitter Pin Current	100µA
Output Frequency	Default Setting: 20Hz Adjustable with BarMaster and SmartControl Touch from 1Hz to 20Hz
Output Balance	Default Setting: 54%:46% Pos:Neg Adjustable with BarMaster and SmartControl Touch from 80:20 to 20:80 Pos:Neg
Dual Alarm Output Signals	Clean Pin Alert and Fault Alert 24V. Output resistance 2.2kΩ
Environmental Protection	IP66
Max Ambient Temperature	60 °C

Section 10.0: Maintenance

10.1: Cleaning

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 bar will detect the drop in performance and trigger the Clean Pin alert. The LED will flash red and the output signal will be activated. The clean pin alert is an indication and may not be triggered in all circumstances (depending on the nature of the contamination). Therefore, a regular visual inspection should be carried out.

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.

Section 11.0: Fault Finding

To reduce the time it takes to resolve a problem with a Hyperion product, the following process must be completed before requesting assistance from Meech.
The information below shows what is required for a 924IPSv2 bar however, the same process can be used for any of the Hyperion range of products.

If regular cleaning is not carried out, the bar will detect a drop in performance and this will trigger the Clean Pin alert. The LED will flash read and the output signal will be activated.
If the LED flashes red and the bar drops in performance, follow the cleaning procedure in the **Maintenance** section on page 21.

If cleaning does not rectify the problem:

Supplying the following information when you first contact Meech will ensure your claim is processed quickly:

1. Connect to a BarMaster and turn on the equipment
2. A readout will appear on screen and we will require the following information:

a. Product Code
b. Software information
c. Frequency
d. Balance
e. Output voltage
f. Alarm %
g. Ion Level %
h. Reset Ion Ref
i. Alarm True (Hi or Lo)
j. Output drive

3. Status of the LED (i.e. solid green, flashing red, solid red, flashing green)
4. Please provide a photo of the equipment as it is installed
5. A description and a photo or video of the problem you are experiencing
6. The action you want Meech to take e.g. repair, replace, warranty etc.

Section 12.0: LED Status

When the equipment powers on, the LED will show green whilst the system monitors the bars performance. If it then starts to flash red or go solid red, check the ion level with the BarMaster.

Flashing Green LED		BarMaster remote programmer or SmartControl Touch is connected.
Solid Green LED		The bar is operating correctly with good ionisation performance.
Solid Yellow LED		Standby
Flashing Yellow		Standby - HV output is off, BarMaster/SmartControl connected
Flashing Red LED		Bar needs cleaning.
	Action	Switch off power supply and clean as described in maintenance section. Turn the power on and check for green solid LED.
Solid Red LED		Significant performance drop. Bar heavily contaminated. Abnormal output current detected.
	Action	Switch off power supply and clean as described in maintenance section. Turn the power on and check for green solid LED.

If the Output voltage was reduced for example from 7500V to 4000V and the Ion level was not reset. This will affect the calibration and the bar will alarm repeatedly after a short period. Adjust the output voltage to 7500V and ensure the ion level reads 99% and the LED is green.

a. If Ion level is 0% bar is faulty.
b. If 10-34% with a 35% alarm setting, return to the clean bar section.

If after cleaning a 80-99% Ion level is reached, you should then reduce the output voltage to the required level. Only then can you reset the Ion Ref.
If the Ion level is well below the alarm level % the Ion output, it will shut down and a solid red LED will show. Should the solid red LED persist, connect your BarMaster and follow the Troubleshooting section or contact your local Meech distributor.

Warning

Do not reset the Ion Reference without cleaning the ionising bar first. Resetting the Ion Reference with a low or 0% reading will provide a green LED, but will only mask any problem with the system.

The 924IPSv2 requires a grounded 24V DC supply. The 0V line must be connected to ground. Failure to do so, will result in damage to the bar or the 24V supply and will void the warranty.

Section 13.0: Troubleshooting

Solid Green LED	Meaning	In normal operation the LED on the bar will illuminate Green. This indicates that the bar is operating correctly with good ionisation performance.
No LED	Meaning	No power to bar
	Action	Check 24V Power Supply over pins 1 and 3. (Brown and Blue wires)
Flashing Green LED	Meaning	BarMaster remote programmer or SmartControl Touch is connected.
	Action	For BarMaster, after programming, reconnect directly to the power supply to resume normal operation.
Flashing Red LED	Likely cause	Contamination causing a drop in performance.
	Action	Switch off power supply and clean as described in Maintenance section. Turn the power on and check for green solid LED
Solid Red LED	Likely Cause	Abnormal output current detected
	Action	Check installation for metallic objects on the emitter pins. Should the solid red LED persist, contact your Meech distributor

Section 14.0 : CE Approval

A CE Declaration of Conformity for this product exists in respect of the Electromagnetic Compatibility Directive 2014/30/EU.

CE

Section 15.0 : UL Approval

The Hyperion 924IPS DC electrode has been tested by UL to the following standards: UL 60950-1 & CAN/CSA C22.2 No. 60950-1-07.

Section 16.0: Health and Safety

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

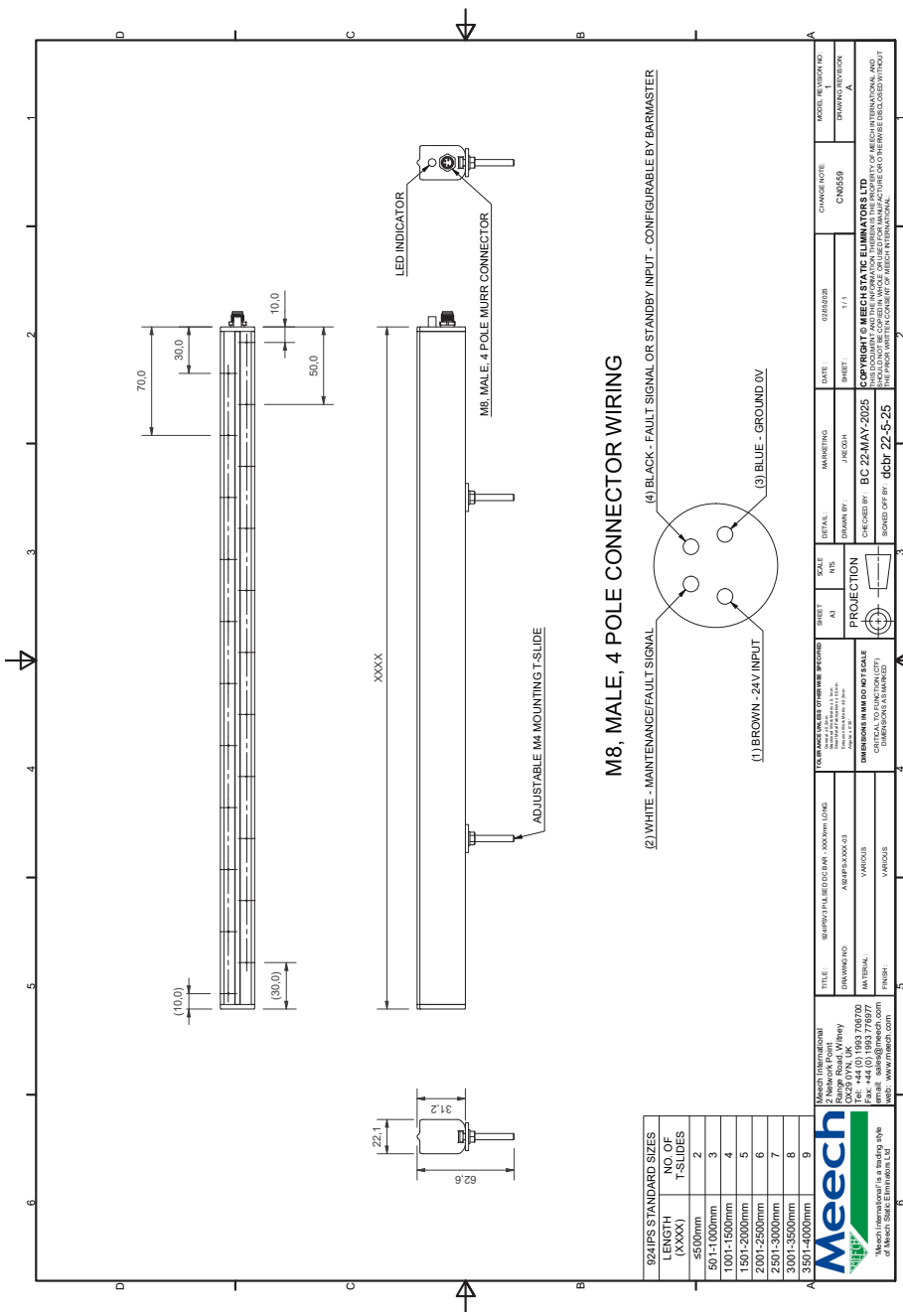
Section 17.0: Repairs And Warranty

The Meech 924IPSv3 Bar is warranted by Meech Static Eliminators Ltd. to the original purchaser against defects in material and workmanship for two years after shipment.

The 924IPSv3 requires a grounded 24V DC supply. The 0V line **must** be connected to ground. Failure to do so, will result in damage to the bar or the 24V supply and will void the warranty.

Should any malfunction occur, please return the bar directly to Meech Static Eliminators Ltd. or your local Meech 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 that 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 shipping costs on any repairs covered under the warranty.

Section 18.0: Technical Drawing



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