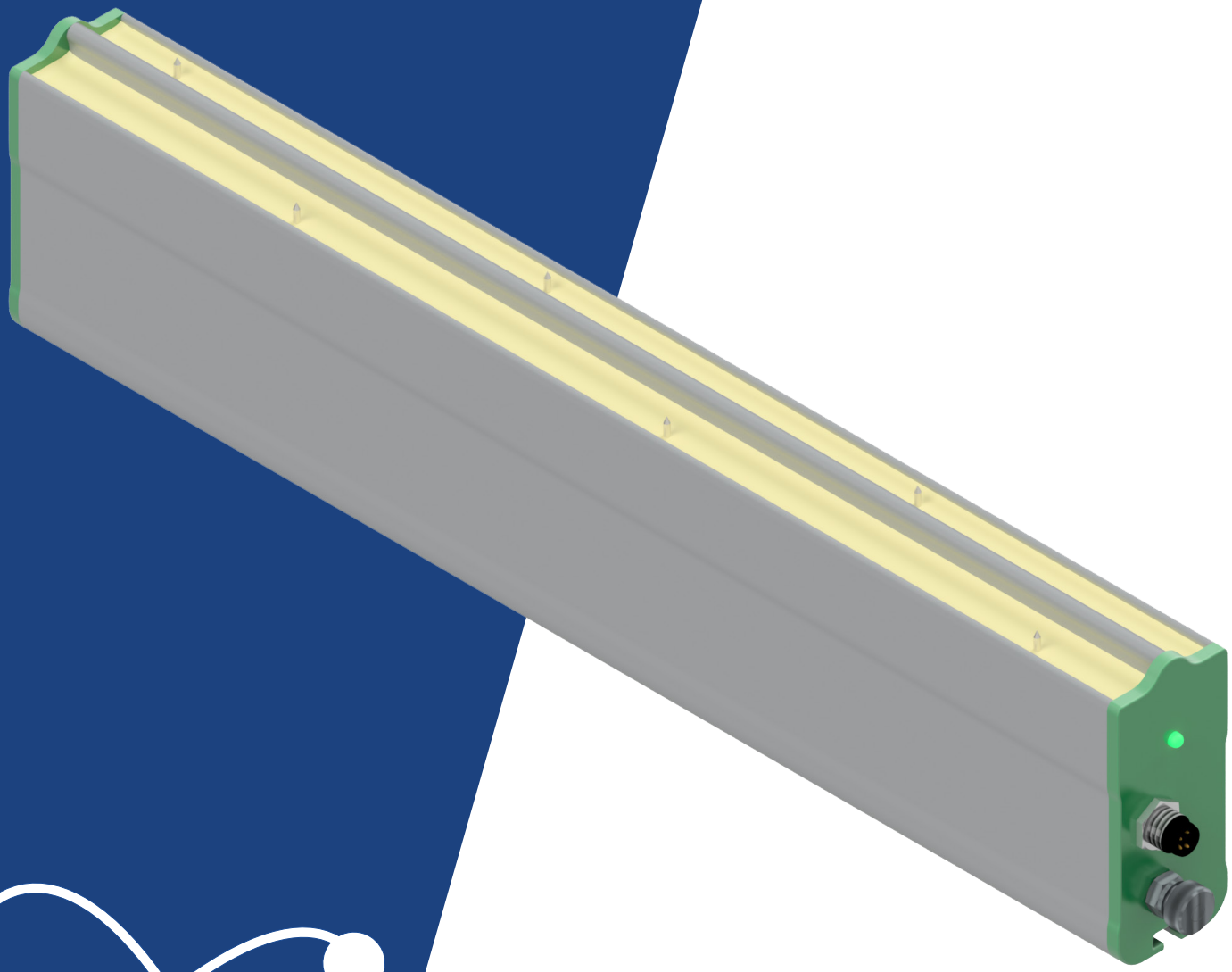
Operating Manual

Meech



HYPERION™
A Meech Innovation

Hyperion 945IPS
Pulsed DC Ionising Bar

Contents

M0040 – REV2 CN0558

1.Safety instructions

Before using this product, read the following safety and operating notes to ensure your own personal safety and to help 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 before operating.

1.1.Definition of safety warnings & symbols

Safety and operating notes found in the document will be supplemented with the following warnings and symbols.

Safety warnings	**Caution**	A low-risk hazardous situation where minor or moderate injury can occur
	Notice	A low-risk hazardous situation where damage to the equipment & products can occur
Symbols	**General hazard** 	This symbol draws attention to a hazardous situation
	Electrical shock 	This symbol draws attention to the risk of electrical shock
	Notice 	This symbol draws attention where instructions must be followed
	Referral 	This symbol instructs the reader to consult to a separate information source

1.2.General safety

Before setting up the equipment:

- Read the operating instructions carefully and ensure you understand how to correctly use the equipment.
- Installation & testing must only be completed by suitably qualified personnel.
- Inspect the working environment and ensure it is clean and clear of hazards before removing equipment from packaging & product installation.
- Visually check all equipment for damage. If damaged, contact your local Meech representative before continuing.
- Always keep a copy of the operating manual close to the system to refer to.

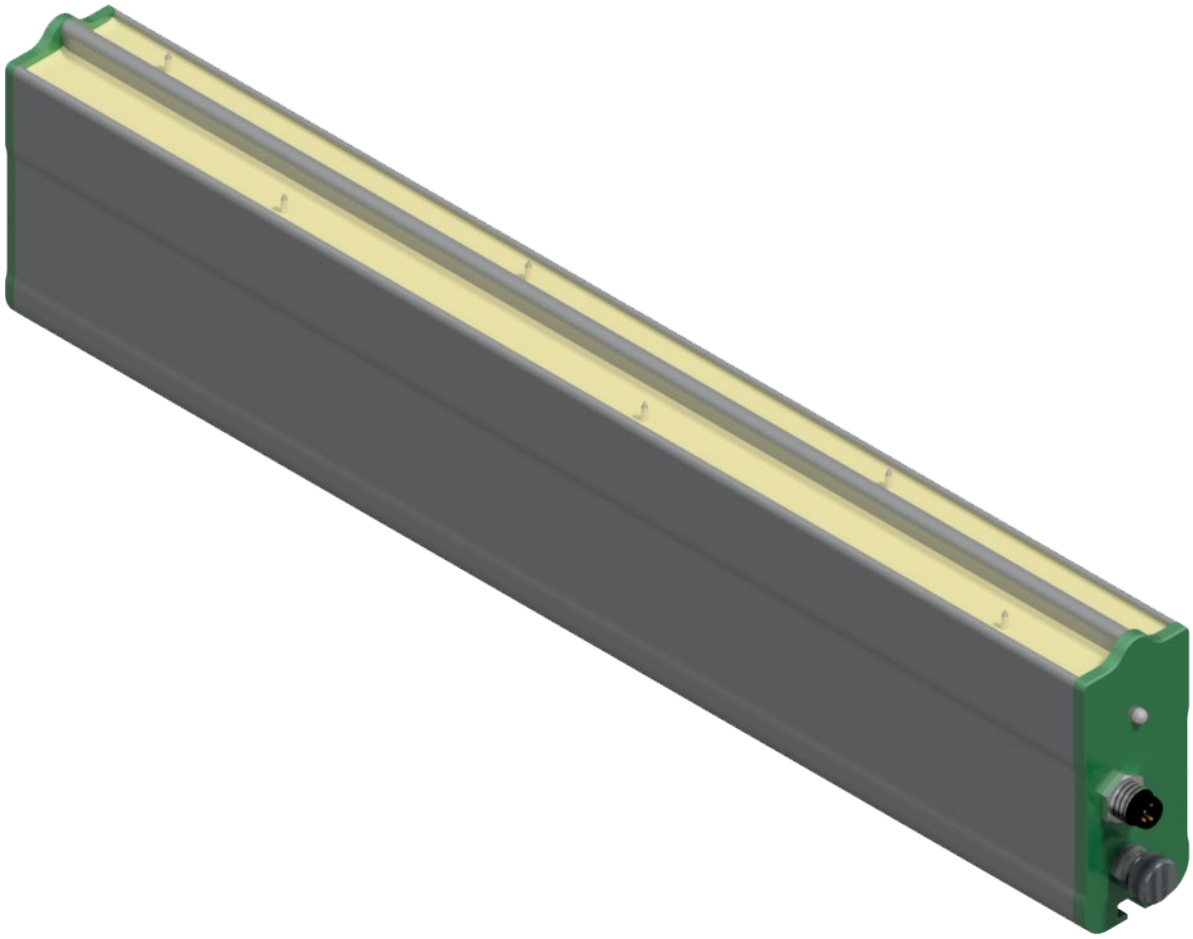
1.3.Electrical safety

Before working on the equipment:

- Before installing or performing maintenance on the equipment, ensure the system is electrically isolated. Failure to do so could result in injury.
- Check the equipment and cables for any damage. If damaged, contact your local Meech representative before continuing.
- Ensure all wiring is completed by suitably qualified personnel.
- Check all wiring connections are correct in relation to the wiring diagrams later in this manual.

2.Introduction

The Hyperion 945IPS is powered from a 24VDC power supply and produces an output of up to ±15kV, designed for use in short to mid-range applications (150 to 600mm).
Settings & configurations can be set with the following optional extra products: BarMaster controller or SmartControl Touch.



Hyperion 945IPS Pulsed DC Ionising Bar

3.Package contents

The following items will be found inside the 945IPS packaging:

Item	Product code
1x Hyperion 945IPS Pulsed DC Ionising Bar	A945IPS-XXXX
Mounting hardware	
1x Quick start guide	M0041

3.1.Options

The following items can be purchased from Meech to supplement & provide extra functionality to the 945IPS.

Item	Product code
Switchmode power adaptor *Switchmode Power Adaptors take the local electrical supply and convert it to a stable and filtered 24VDC output.*	A900IPS-SM2MS
BarMaster Remote Programmer *The BarMaster is a remote programmer used for changing parameters on Hyperion products.*	A900IPS-BARMASTER
SmartControl Touch *SmartControl Touch allows the user to monitor, control and adjust the performance of multiple connected Hyperion ionising bars and sensors via the built-in touchscreen or remotely via PLC, tablet or remote desktop computer.*	ASMARTCON-TOUCH
4-pin M8 2m connection cable *For connection of the bar to a customer's own 24VDC power supply.*	A900IPS-PCS2 Contact your local Meech representative for options.

4.Unpacking the Hyperion 945IPS Pulsed DC Ionising Bar

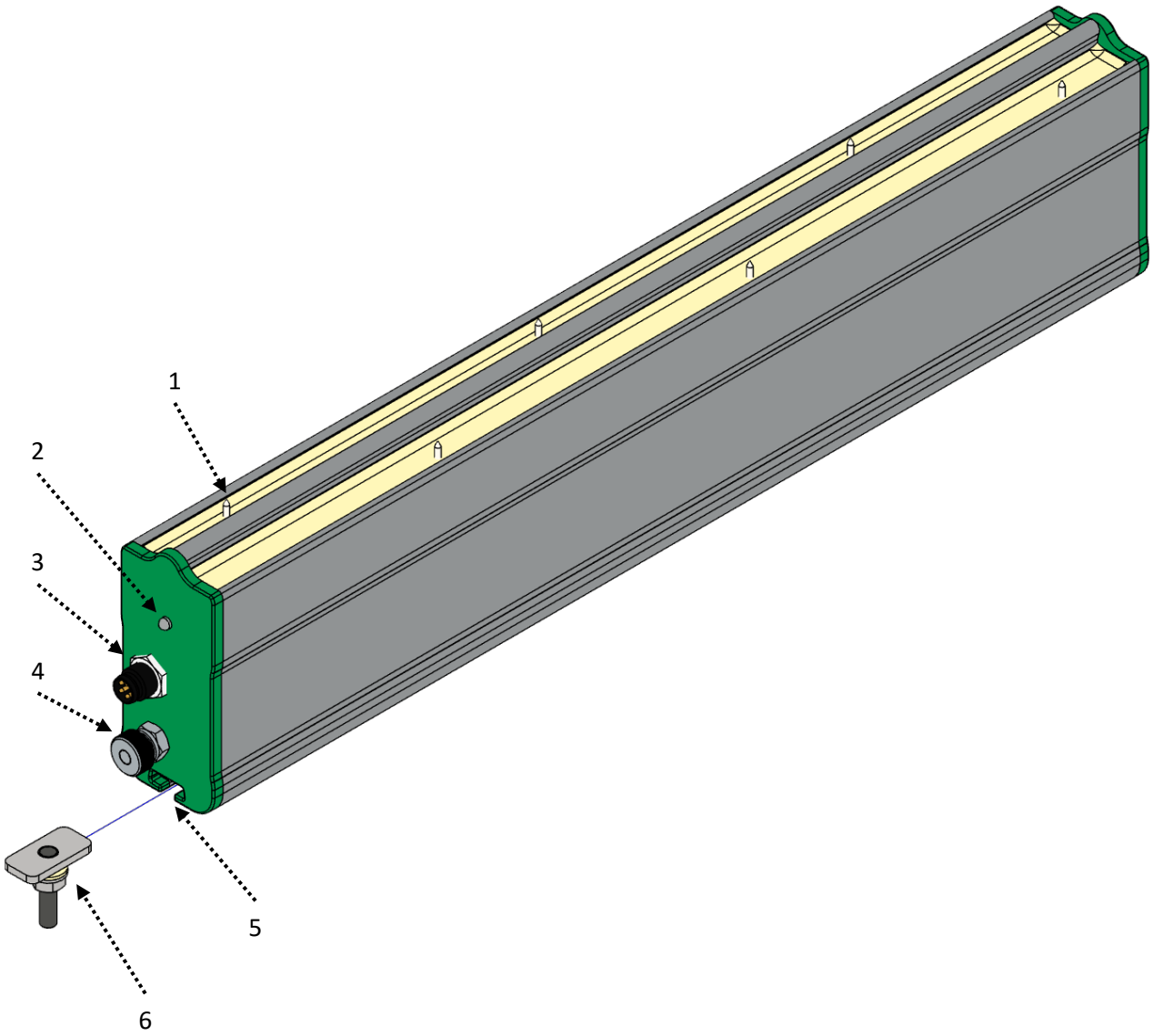
Carefully examine the packaging and its contents before use. If damage is evident, do not destroy the packaging and immediately notify the carrier of a possible damage claim. Shipping claims must be made by the consignee to the carrier.

5.Component overview

The 945IPS comprises of the following components:

1. Ionising emitter pins
2. Status LED
3. M8 4-pin socket
4. M4 earth post
5. Mounting channel
6. Mounting hardware

Each component is highlighted in the image below.



Major components of the 945IPS bar

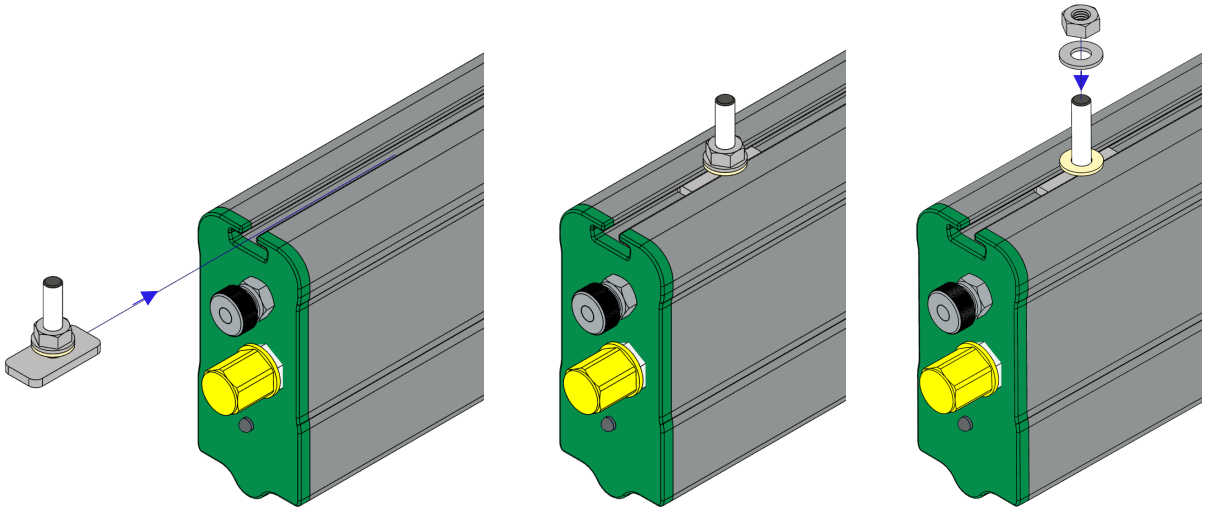
Caution –
Sharp object

The emitter pins are sharp, handle with care.

6.Installation

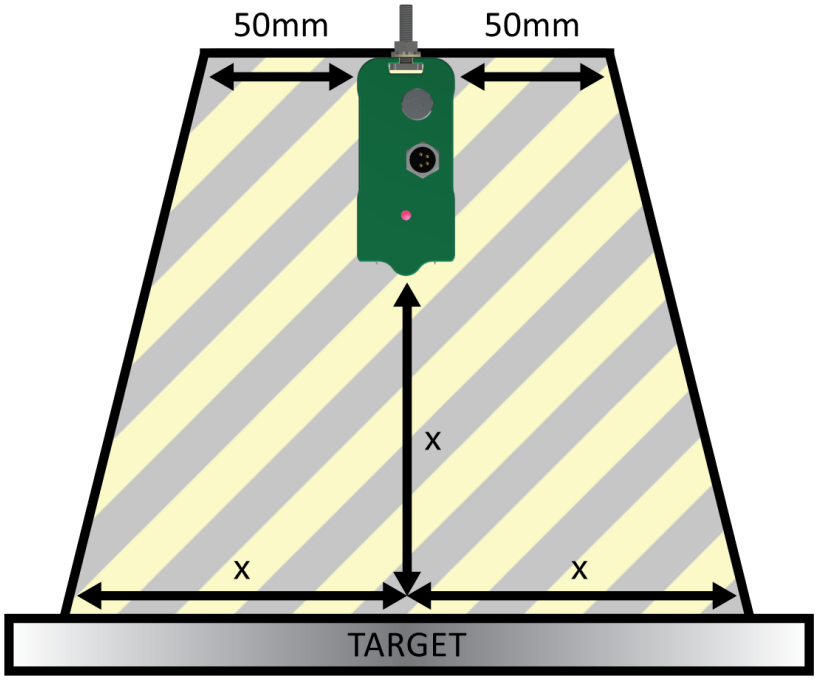
6.1.Mechanical installation

The 945IPS must be mounted securely using the supplied M4 hardware, which should be positioned along the bar as evenly as possible. Where this is not possible, a maximum of 300mm should be between each bracket and a minimum of two brackets must be used.



Use a 7mm spanner to tighten the M4 mounting hardware nuts

To ensure optimum performance, the bar must be positioned so there are no metallic objects or obstructions between it and the target material. The diagram below shows the area that must be kept clear, where x lengths are equal.



Caution –
Risk of injury & equipment damage

Keep area indicated above clear of metallic objects or obstructions.

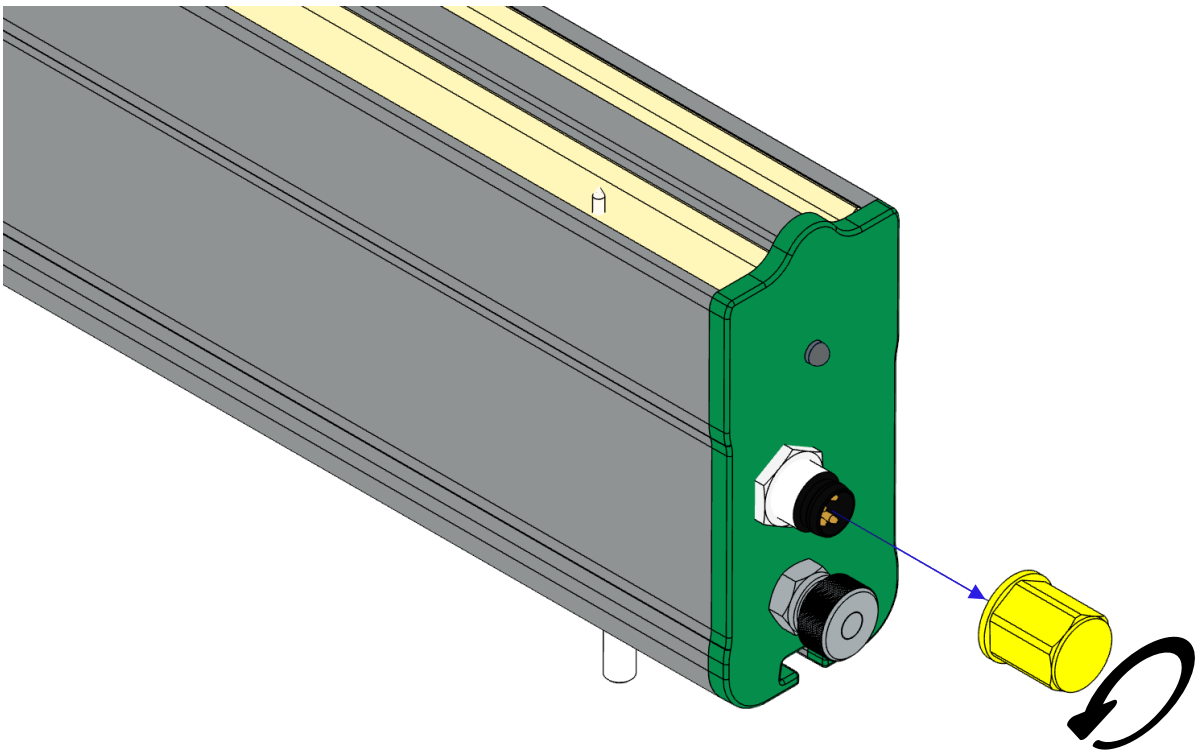
6.2. Electrical installation

The following sections detail how to directly connect the 945IPS bar to a power supply, BarMaster or SmartControl using the M8 connector on the end of the bar.

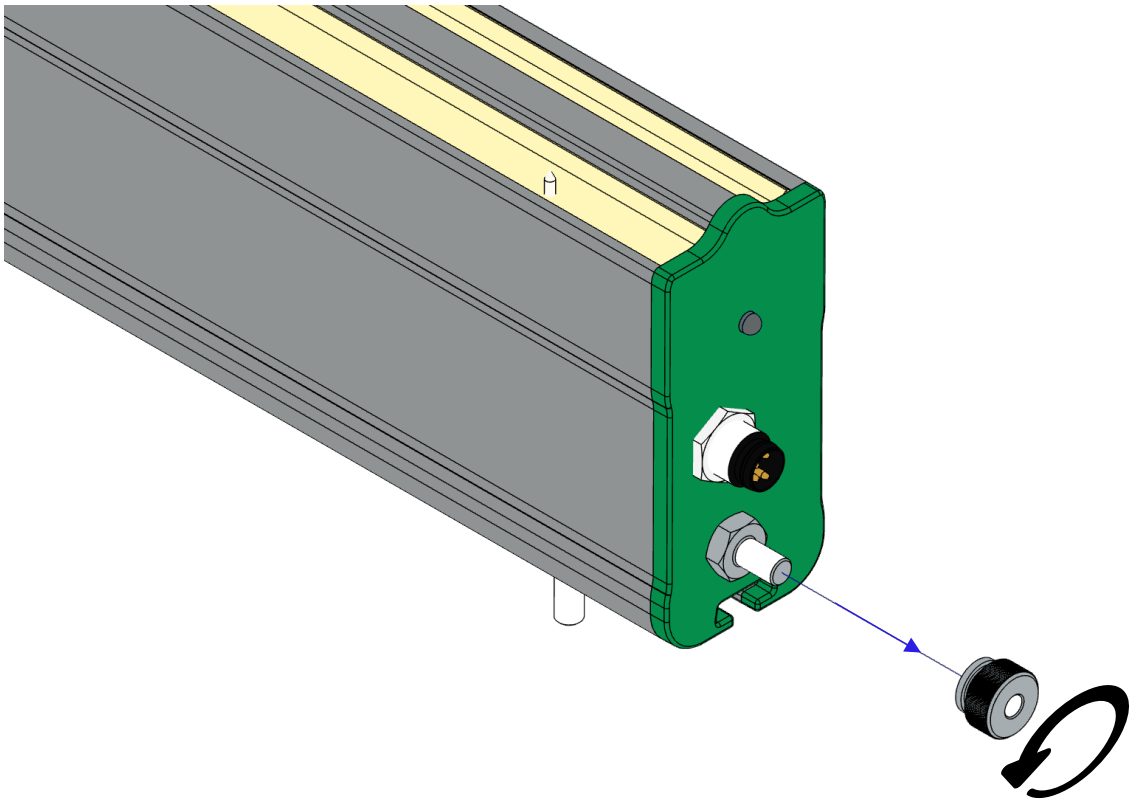
Notice –

Before making any connections, ensure the power supply is electrically isolated and switched off.

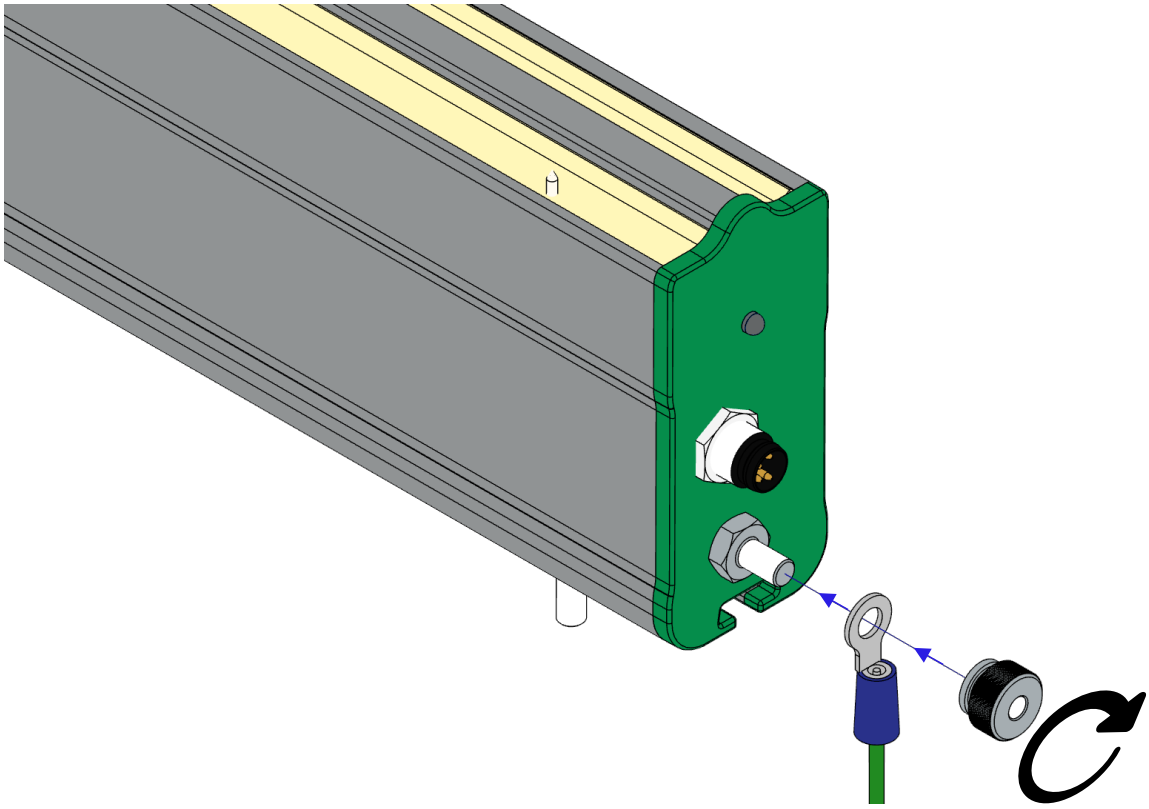
1. Remove the transit cap.



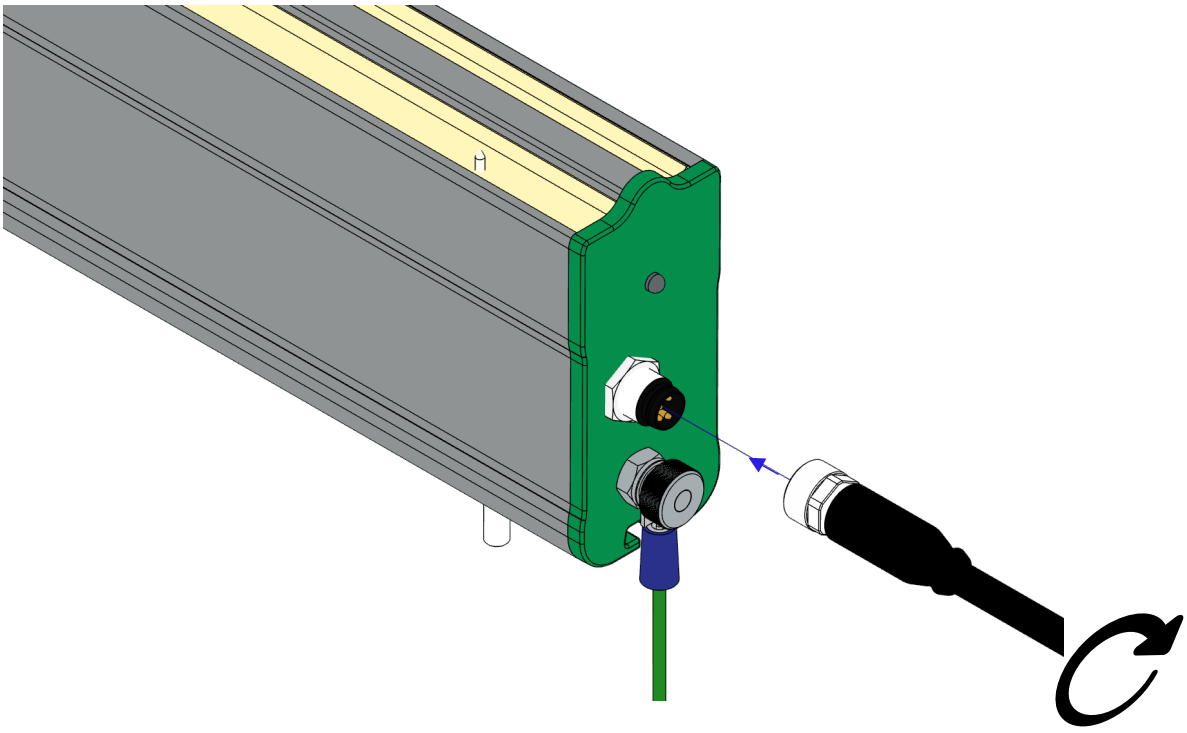
2. Remove the M4 thumb nut from the earth post.

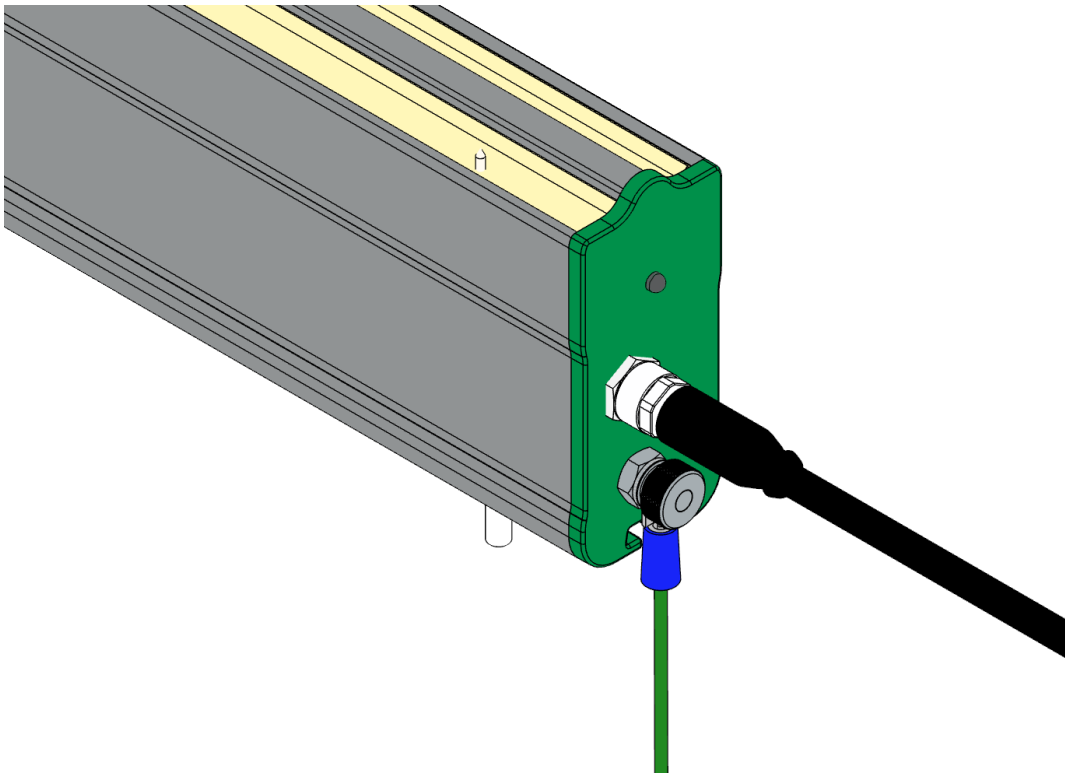


3. Fit one end of the earth cable onto the earth post and refit the M4 thumb nut.



4. Connect the 24VDC supply cable into the 24VDC input port.



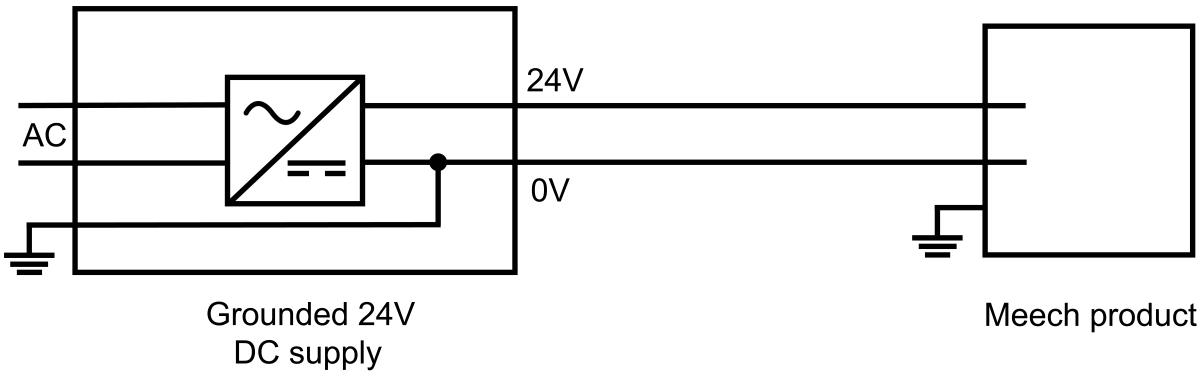


7.Grounding & 24VDC supply

The 945IPS must be grounded through the power supply, as well as the M4 earth post on the unit.

7.1.Powering using a Meech 24VDC power supply

This refers to the use of a Meech A900IPS-SM2MS 24VDC power supply to power the 945IPS, which is grounded internally & supplied with an IEC C5 cable.

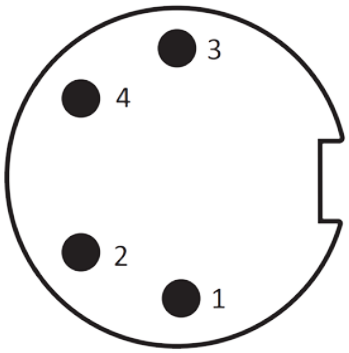


Grounded 24VDC supply schematic e.g. Meech A900IPS-SM2MS

7.2.Powering using customers own 24VDC power supply

It is the customers responsibility to check that the 24VDC power supply being connected is grounded.

- The 24V power supply must be protected with a 2A fuse.
- Connection to the 945IPS is through the M8 24VDC input 4-pin socket. The figure below shows the pin numbers of the connector.



Male connector on 945IPS, as viewed from the mating face

Pin	Colour	Function	Specification
1	Brown	V_{in} (625mA max)	24VDC (22 to 26VDC)
2	White	Alert output	0V/24V
3	Blue	GND	0V
4	Black	Fault output/standby input	0V/24V

8. Monitoring

The Hyperion 945IPS continually monitors its internal health and can trigger an alarm should any parameter fall outside a predetermined range. This includes parameters such as ion current monitoring, meaning that the user can be alerted when an ionising bar needs cleaning.
Alarms can be monitored either via the status LED, or through the alarm outputs.

8.1. Status LED

The LED colour combinations are as follows.

LED colours	**Alarm status**	**Description – *corrective actions***
Green	Normal	Normal operation
Yellow	Normal	Standby
Flashing green	Normal	Normal operation – BarMaster/SmartControl connected
Flashing yellow	Normal	Standby – HV output is off, BarMaster/SmartControl connected
Red	Fault	HV (Overcurrent) – *Check outputs*
Flashing red	Alert	Low ion current – *Check for contamination*
Flashing green/red	Fault	Internal issue – *Restart the device*
Flashing red/yellow	Fault	Real Time Fault Monitoring (RTFM) – *See table below*
Flashing green/yellow	Alert	Real Time Fault Monitoring (RTFM) – *See table below*

- **Fault** – The 945IPS has a fault, and the output has been shut off.
- **Alert** – Attention may be required for the 945IPS.

8.1.1. Real Time Fault Monitoring codes

For the 945IPS, the following RTFM codes may be observed through a red or green LED with yellow flashes to provide a more detailed status on the bar's health.
Below, red and green LEDs are shown as black for simplicity.

Yellow flashes	**Description – *corrective actions***
2	HV output: Over current – *Reduce output load*
3	24VDC power supply: Under voltage – *Check power supply*
4	24VDC power supply: Over voltage – *Check power supply*
5	Internal temperature: Too high – *Ensure bar has sufficient cooling*

8.2.Electronic alarms

8.2.1.Remote monitoring

- Remote monitoring is provided by Pins 2&4 of the 24VDC input port. These signals output approximately 0V/24V and are suitable for direct connection to a PLC input, or to control an external 24V relay.
- On bar power-up, Pins 2&4 will remain in Hi state for up to 60 seconds before they are used as outputs.
- **Note: When a BarMaster remote programmer is connected, alert and fault outputs are temporarily disabled.**

8.2.2.Alarm outputs

- **Alert (Pin 2 White)**
  This pin is used to report when attention may be required for the 945IPS.
- **Fault (Pin 4 Black)**
  This pin is used to report when the bar has a fault, and the output has been shut off (unless configured as standby input – see section 9.2).

8.2.3.Drive options

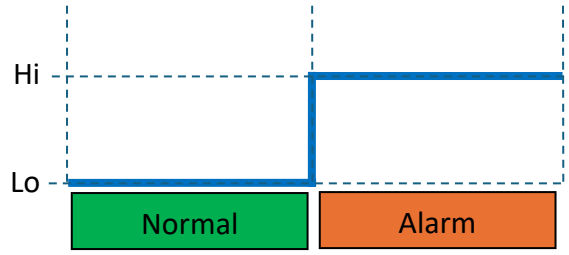
Using a BarMaster*, the output can be configured to meet most requirements. As standard, the 945IPS will be supplied with a factory preset configuration of Output drive = NPN, where Alarm True = Lo.

There are 3 different output drive options which are designed to allow easy integration with most PLC equipment.

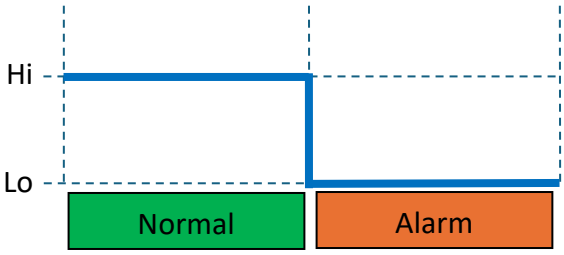
1. **Output drive = NPN** – 24V is supplied via an internal 2.2kΩ resistor, 0V is supplied directly. **
2. **Output drive = PNP** – 24V is supplied directly, 0V is supplied via an internal 2.2kΩ resistor. **
3. **Output drive = N+P** – Both 24V & 0V are supplied directly. ***

The output polarity (Alarm True) can be set to go to Hi (24V) or Lo (0V) when there is an issue.

1. **Alarm True = Hi** – This means the logic on both the alarm pins is active high.
2. **Alarm True = Lo** – This means the logic on both the alarm pins is active low.



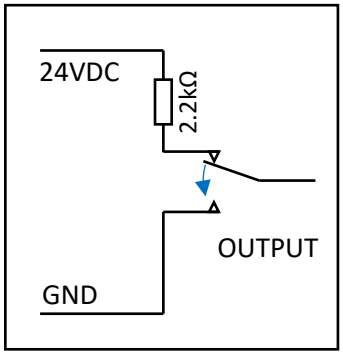
Alarm True = Hi



Alarm True = Lo

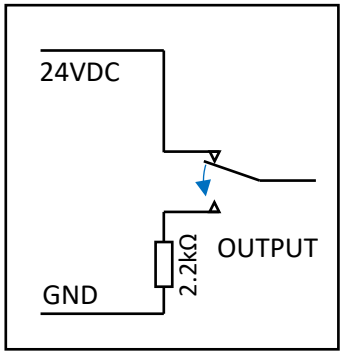
* = Please refer to the BarMaster operating manual.

Output Drive = NPN
Alarm True = Lo

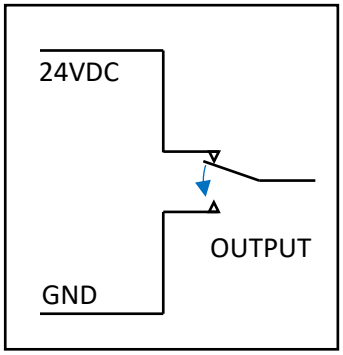


Default: Can be used with multiple devices in parallel.

Output Drive = PNP
Alarm True = Lo

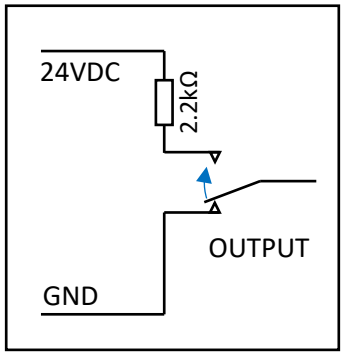


Output Drive = N+P
Alarm True = Lo

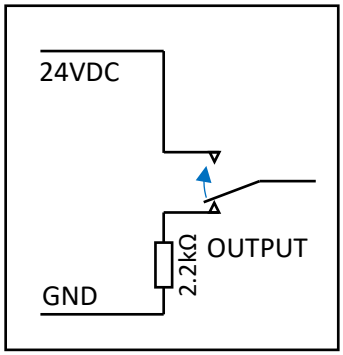


When Alarm True = Lo, OK = 24V & Alert/Fault = 0V

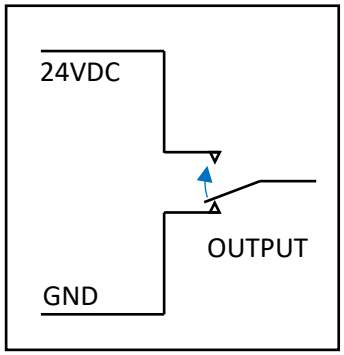
Output Drive = NPN
Alarm True = Hi



Output Drive = PNP
Alarm True = Hi



Output Drive = N+P
Alarm True = Hi



On power on, the output signal stays high for 60 seconds, so Alarm True=Hi may cause issues on power cycle.

When Alarm True = Hi, OK = 0V & Alert/Fault = 24V

** = Using NPN (Alarm True = Hi) or PNP (Alarm True = Lo) allows for multiple products to be connected in parallel, triggering a common alert without interfering with each other's operation.

*** = Using N+P **does not** allow for any products to be connected in parallel.

9.Operation

When 24VDC is supplied to the bar through the M8 connector, the status LED will illuminate green to indicate it is running correctly with a good ion output.

9.1.Output setup

The 945IPS has variable outputs that can be monitored and adjusted using a BarMaster or SmartControl, to ensure optimum performance. The output values should be set dependent on both the target object and its distance from the bar.

9.1.1.Output voltage

The default voltage setting is 12.5kV. This combines both good performance and good emitter pin life. For faster applications, the voltage can be increased.

9.1.2.Output frequency

The default frequency setting is 5Hz, which is effective for longer ranges of 450 to 600mm. For shorter ranges of 150 to 450mm, the frequency can be increased for additional performance.

9.1.3.Output balance

The default balance setting is 58% (58:42 Pos:Neg). On applications where the target is charged with a negative bias, the balance can be increased. Alternatively, targets with a positive bias should have the balance reduced.

Notice –
Ionising equipment will not operate at its optimum if the output parameters are incorrectly set.

Ensure that after any adjustment is made, clean the bar as described in the maintenance section.

9.2.Standby input

The 945IPS 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. See section 7.2 for details on the input port.

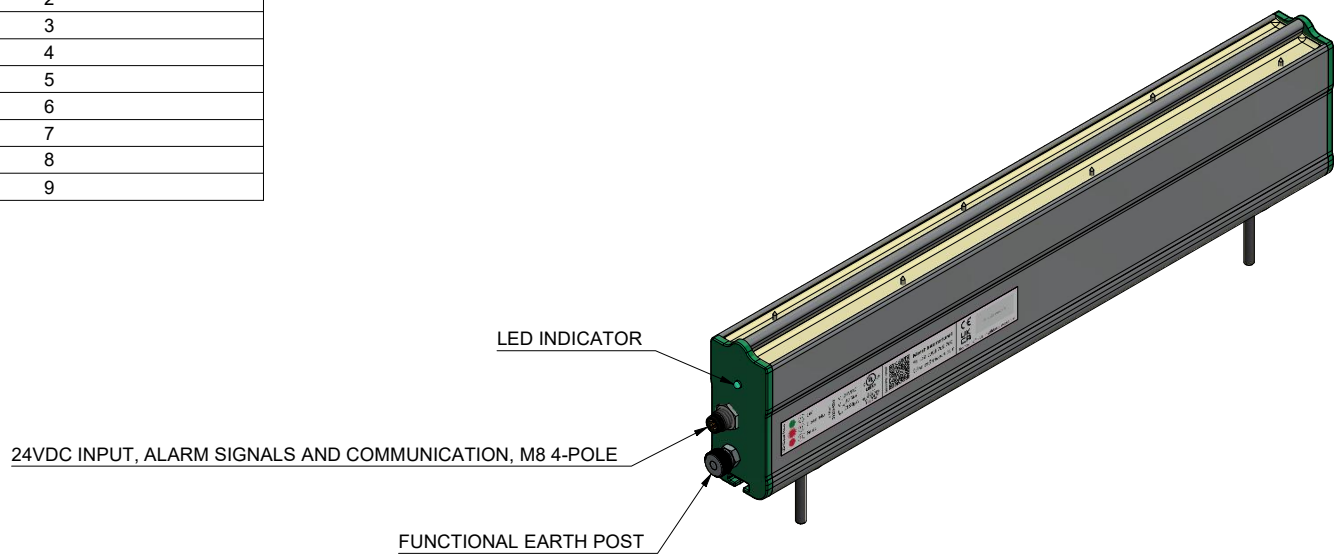
10. Technical & construction data

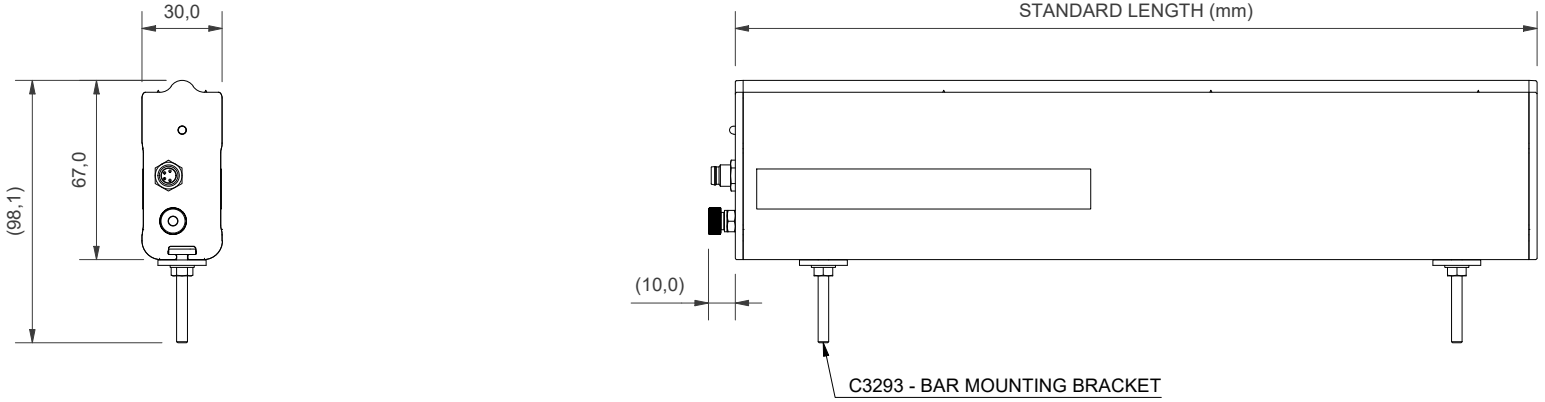
Dimensions (LxWxH)	300 to 3900mm x 30mm x 67mm
Weight	Approx. 0.9kg/metre
Maximum ambient temperature	60^{o}C
Mounting	'T' slot with M4 x 35mm studs
Mounting height	To comply with UL 62368-1, the 945IPS must be mounted at a height ≤2m
Optimum operating range	150 to 600mm
Enclosure	FR ABS
Emitters	Titanium pins
Electrical connections	4-pin M8 & earth terminal
Input current	Maximum 625mA
Input voltage	24VDC (22 to 26VDC)
Output voltage	BarMaster or SmartControl adjustable between 2 to 15kV Pos/Neg (Default 12.5kV)
Output frequency	BarMaster or SmartControl adjustable between 1 to 20Hz (Default 5Hz)
Output balance	BarMaster or SmartControl adjustable between 80:20 to 20:80 Pos:Neg (Default 58:42 Pos:Neg)
Alarm input/output	Dual outputs for Alert/Fault monitoring (0V/24V) 1x Alert output (eg. clean pin alert) 1x Fault output/standby input (adjustable via BarMaster)
Alarm output drives	Compatible with IEC 61131-2 type 1,2,3 plc inputs
Local indication	Green/yellow/red LED
Protection class	IP66 construction

11. Technical drawings

For additional technical drawings, contact Meech customer services at customerservice@meech.com, providing the model code (see section 3).

945IPS STANDARD SIZES	
STANDARD LENGTH (mm)	NO. OF C3293 - BAR MOUNTING BRACKETS
300 - 500	2
600 - 1000	3
1100 - 1500	4
1600 - 2000	5
2100 - 2500	6
2600 - 3000	7
3100 - 3500	8
3600 - 3900	9





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'Meech International' is a trading style of Meech Static Eliminators Ltd

TITLE :	HYPERION 945IPS PULSED DC BAR - XXXXmm
DRAWING NO:	A945IPS-XXXX
MATERIAL :	VARIOUS
FINISH :	VARIOUS

TOLERANCE UNLESS OTHERWISE SPECIFIED
General ± 0.2mm
Machined Work Metric ± 0.1mm
Sheet Metal Fabrications ± 0.5mm
Extrusion Work Metric ± 0.2mm
Angular ± 0°30'

DIMENSIONS IN MM DO NOT SCALE

CRITICAL TO FUNCTION (CTF) DIMENSIONS AS MARKED

SHEET	SCALE
A3	NTS

PROJECTION

DETAIL :	MARKETING
DRAWN BY :	J KEOGH
CHECKED BY :	BC 21-OCT-2024
SIGNED OFF BY :	D HOLDING

DATE :	21/10/2024
SHEET :	1 / 1

CHANGE NOTE:	N/A
MODEL REVISION NO:	1
DRAWING REVISION:	A

12. Maintenance

Ionising bars become contaminated with usage, so cleaning of the bar should be scheduled alongside regular machine maintenance. As well as dirt build-up on the body of the bar, contamination of the emitter pins will cause a drop in performance.

A bar that requires cleaning will trigger a Clean Pin alert signal and the status LED will flash red. Before cleaning, ensure the equipment is switched off and electrically isolated.

The emitter pins can be cleaned effectively with a dry brush, which will agitate any accumulated corona residue.

The body of the bar can be cleaned with a cloth moistened with a small amount of Isopropanol Alcohol (IPA) or Methylated spirits. Ensure the bar has been left to dry completely before switching the power on.

13. CE approval

A CE Declaration of Conformity for this product exists and can be provided on request.

14. Health & safety

- **Emission of Ozone**
  Considerably lower than the international standard of 0.1ppm.
- **Output current**
  The maximum output current is less than 5mA to prevent serious harm to the operator, nevertheless any contact with the ionising emitter pins should be avoided where possible.

15. Repairs & warranty

The Hyperion 945IPS Pulsed DC Ionising Bar is warrantied by Meech International Ltd. to the original purchaser against defects in material and workmanship for 2 years after shipment.

For support, contact your local Meech representative. Alternatively, more details can be found at:

https://meech.com

support@meech.com

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