Operating Manual

Meech

HYPERION™
A Meech Innovation

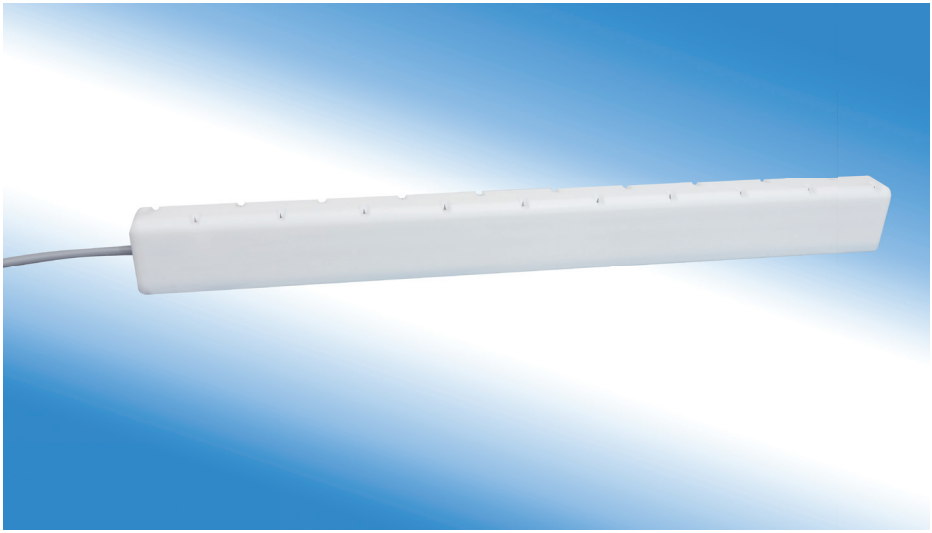
Hyperion 314IPS

Hygienic Short-Range DC Bar

Software Version:3.02 Copy Version:1

Contents

Introduction



The 314IPS is a compact pulsed DC ionising bar specifically designed for use in hygienic applications. Its PTFE construction is ideally suited to use on Hygienic food and pharmaceutical machinery. It is used to control static electric charges in short-range applications (20-150mm). To remove the potential for dirt traps, the bar is fitted with an integral power cable; allowing the connection to 24V to be made in a non-hygienic area of 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 314IPS. 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 dual alarm lines provide separate signals for cleaning requirements and system faults, allowing the easy scheduling of maintenance. 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.

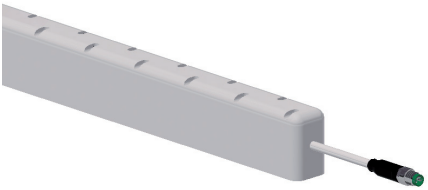
Unpacking And Inspection

Your Hygienic 314IPS 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.

Contents

Standard



314IPS Hygienic Bar

Optional Extras

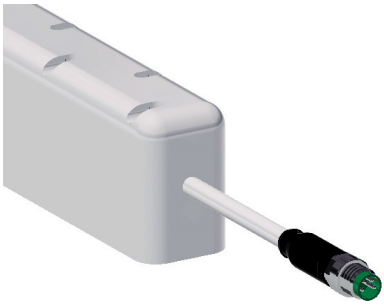
SmartControl Touch

BarMaster

24v Switch Mode Power Supply

Features and Benefits

Low Voltage Wiring and Integrated Power Supply



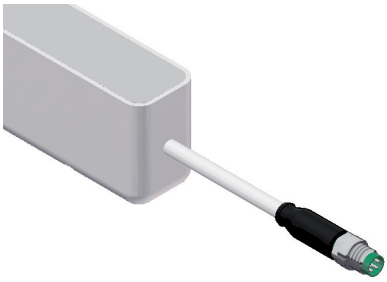
314IPS Hygienic Bar - Cable

The 314IPS Hygienic is powered by 24V DC via a 4-pin M8 Cable.

Shockless Emitters

The Titanium emitter pins on the 314IPS are resistively coupled to the high voltage supply. This avoids sparking and operator shocks.

Sealed and Hygienic Construction



314IPS Hygienic Bar - Base

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. Hygienic constructions also enable the use inside clean room conditions where contaminants and residue on the bar are less than desired.

Clean Pin Alert and Fault LED

314IPS Hygienic Bar - Red 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.

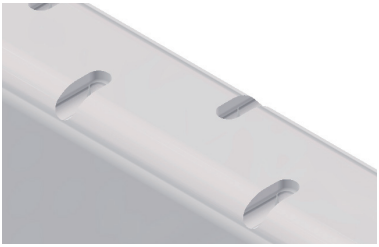
- Green constant – OK
- Green flashing – BarMaster remote programmer connected
- Red flashing - Cleaning required
- Red constant - Fault

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.

Dual output signals indicate when the bar needs cleaning and when a fault has been detected. The signal is 0V/24V output on pin 2 for Clean Pin Output and 0V/24V output on pin 4 for Fault Alert Output. The default for Bar OK = 24V and for Bar needs cleaning = 0V. For the Fault Alert Output the default is 0V. If required the signal can be inverted using a BarMaster Remote Programmer or SmartControl. For example, Bar OK = 0V, Cleaning Required = 24V

Cleaning Recesses



Cleaning Recesses

The 314IPS is designed to operate in clean, hygienic environments. To maximise the interval between cleaning, the design incorporates a unique feature surrounding each high voltage pin, which increases the tracking distance between the two rows of pins. It is important to clean this area during cleaning operations.

Mounting

314IPS Hygienic Mounting Locations up to 600mm in length

When ordering a 314IPS bar up to 600mm in length, it will be supplied with two M5 female mounting points spaced evenly along the bar's length.

When ordering a 314IPS bar 600mm and above in length, it will be supplied with four M5 female mounting points spaced evenly along the bar's length.

314IPS Hygienic Mounting Locations 600mm and above

These are built into the bar, providing a hygienic mounting option which is suitable for use in clean rooms and also environments where hygienic practises are of high importance.

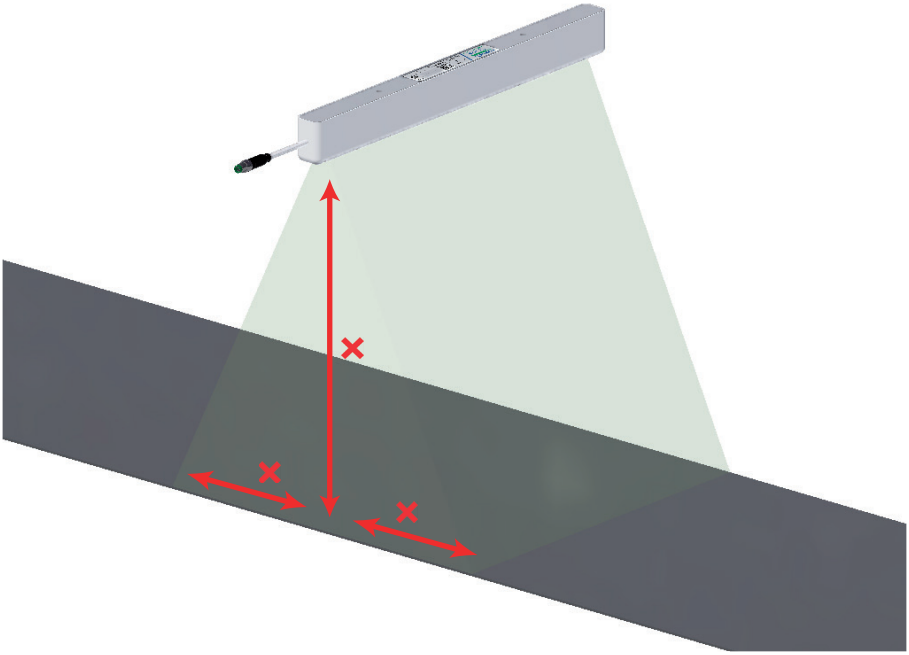
Installation

Mechanical Installation

CAUTION
The 314IPS Bar should only be installed in the manner which it is designed for. If the 314IPS Bar is used in any other way than instructed in this manual, it will be considered improper use.

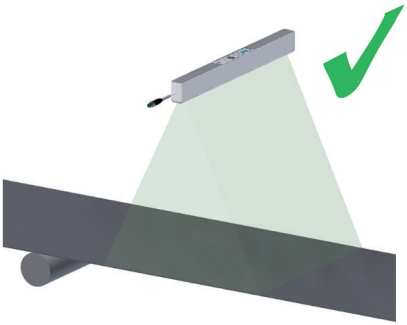
To install the 314IPS Bar the provided M5 female mounting points need to be used. When ordering a 314IPS bar up to 600mm in length, it will be supplied with two M5 female mounting points spaced evenly along the bar's length.

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.

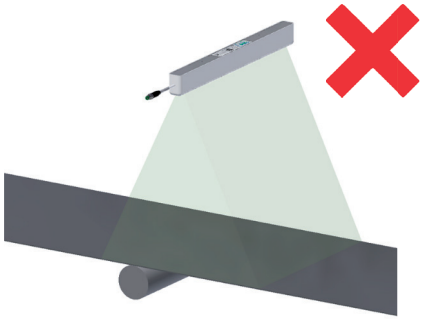


Effective Distance vs Grounded Metal Where X Lengths are Equal

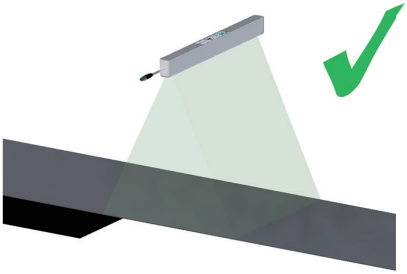
The bar should also not be placed with the target over a conductive/grounded object. This will hamper the ionisation performance and unsatisfactory results may be seen. Figures below illustrate the correct method of installing in these locations.



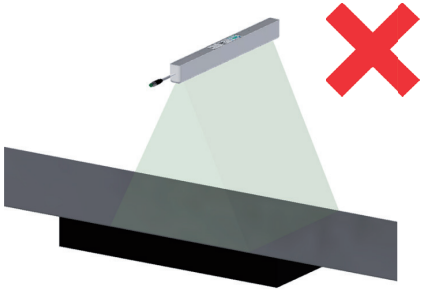
Good positioning away from grounded roller



Bad positioning over roller



Good positioning away from frame



Bad positioning over metal frame

Electrical Installation

WARNING

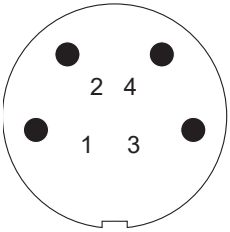
THE 314IPS REQUIRES A GROUNDED 24V DC SUPPLY. THE 0V LINE MUST BE CONNECTED TO GROUND. FAILURE TO DO SO, WILL RESULT IN DAMAGE TO THE BAR OR THE 24V SUPPLY AND WILL VOID THE WARRANTY.

Connection using a grounded 24V DC power supply. E.g. Meech part number A900IPS-SM2MS.

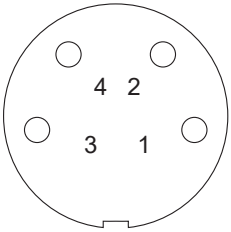
- Meech 24V DC supplies are grounded internally. They are supplied with a three wire IEC C5 cable.
- The ground connection must be correctly connected at the mains connection.

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

Connection to the 314IPS is via an industrial M8 4 Pin cable end, with the following pin-outs:



Male connector on Power supply panel / connector



Female connector on bar 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 0V/24V

Connection using Meech 24V DC power supply

314IPS Hygienic Bar with cable

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.

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

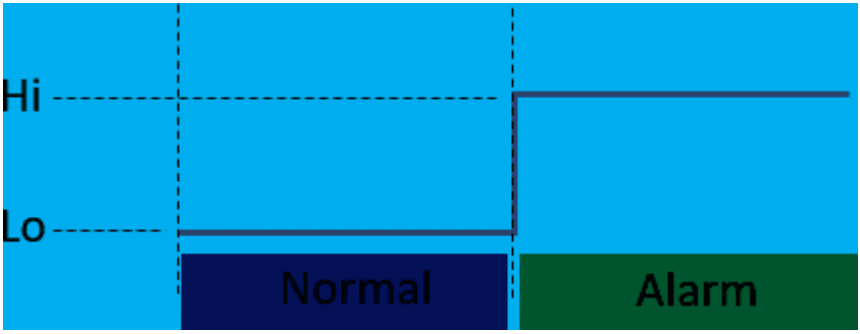
Pin-2 (White)	This pin is used to report when the ionising performance of the equipment is low and that it requires cleaning. This is considered as a warning signal. The LED pattern on the unit is **flashing red**.
Pin-4 (Black)	This pin is used to report when the HV output of the equipment is critically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

Alarm Logic Level

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

Alarm True = hi

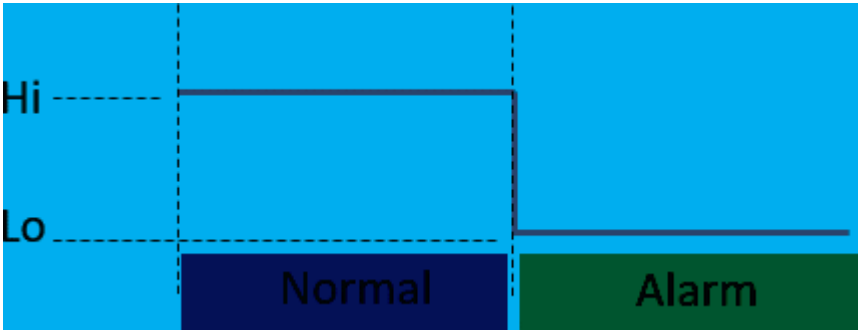
This means the logic on both the alarm pins is active high.



Alarm True, Hi Logic

Alarm True = lo

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



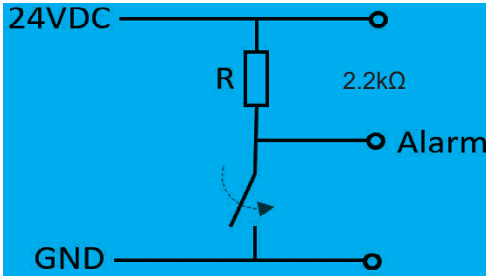
Alarm True, Lo Logic

Output Drive

There are 3 different output drive options which are designed to fulfil 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 (internally in bar)

Logic Table

Alarm True = Hi

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

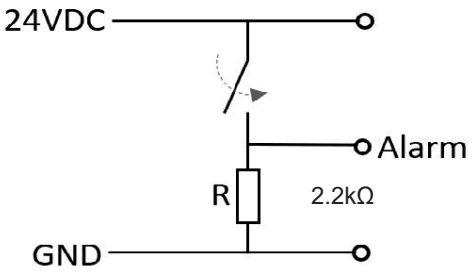
Alarm True = Lo

	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 (internally in bar)

Logic Table

Alarm True = Hi

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

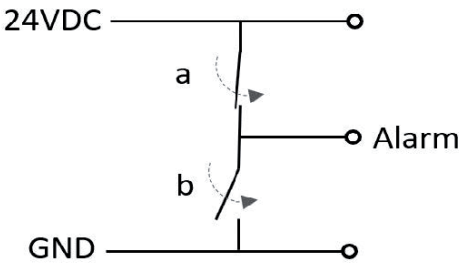
Alarm True = Lo

	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 (internally in bar)

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.

Operation

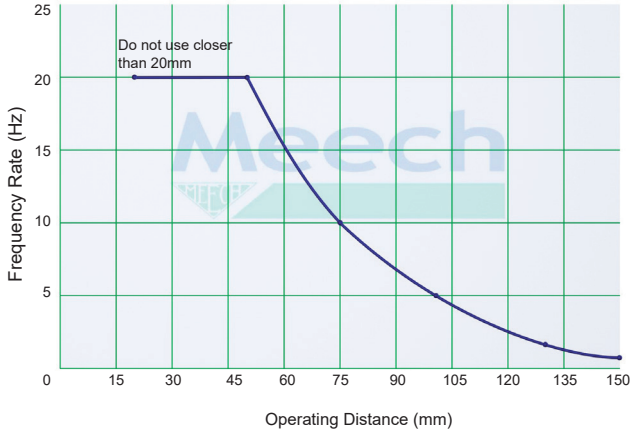
Having connected the M8 connector to the bar, power up the 24V supply and check for a green constant LED on the bar. This indicates that the bar is running correctly with a good ion output.

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.

Setting the Rate

The 314IPS 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 314IPS



Requires optional BarMaster Remote Programmer or SmartControl Touch

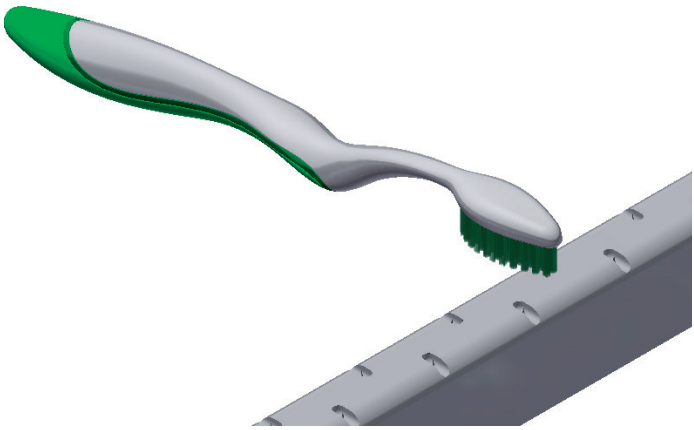
Maintenance

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 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.

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 pin recess is also cleaned and the pin surface of the bar.



Cleaning 314IPS Hygienic 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.

NOTE: AFTER CLEANING THE IONISING BAR WITH ANY FLUIDS, ENSURE IT IS COMPLETELY DRY BEFORE SWITCHING IT BACK ON.

Fault Finding

To reduce the time taken 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 314IPS bar however, the same process can be used for any of the Hyperion range of products.

Cleaning

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 20.

If cleaning does not rectify the problem:

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.

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.

Solid Green indicates there is no BarMaster connected.

Flashing Green indicates the BarMaster has been connected.

Flashing Red indicates more cleaning required.

Solid Red indicates the ion level has dropped well below the alarm setting, prompting a serious fault warning. Check installation for metallic objects on the emitter pins.

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 10-59% with a 60% alarm setting, return to the clean bar section.

If after cleaning an Ion level of 80-99% 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 314IPS 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.

Troubleshooting

Solid Green Light		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 the bar.
		Action	Check 24V power supply over pins 1 and 3. (Brown and Blue wires)
Flashing Green LED		Meaning	BarMaster remote programmer is connected.
		Action	After programming, reconnect directly to the power supply to resume normal operation.
Flashing Red		Likely cause	Contamination causing a drop in performance.
		Action	Switch off power supply and clean as described in the Maintenance section.
Solid Red		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.

Repairs And Warranty

The Meech 314IPS Bar is warranted by Meech Static Eliminators Ltd. to the original purchaser against defects in material and workmanship for two years after shipment.

The 314IPS 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.

CE Approval

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

CE

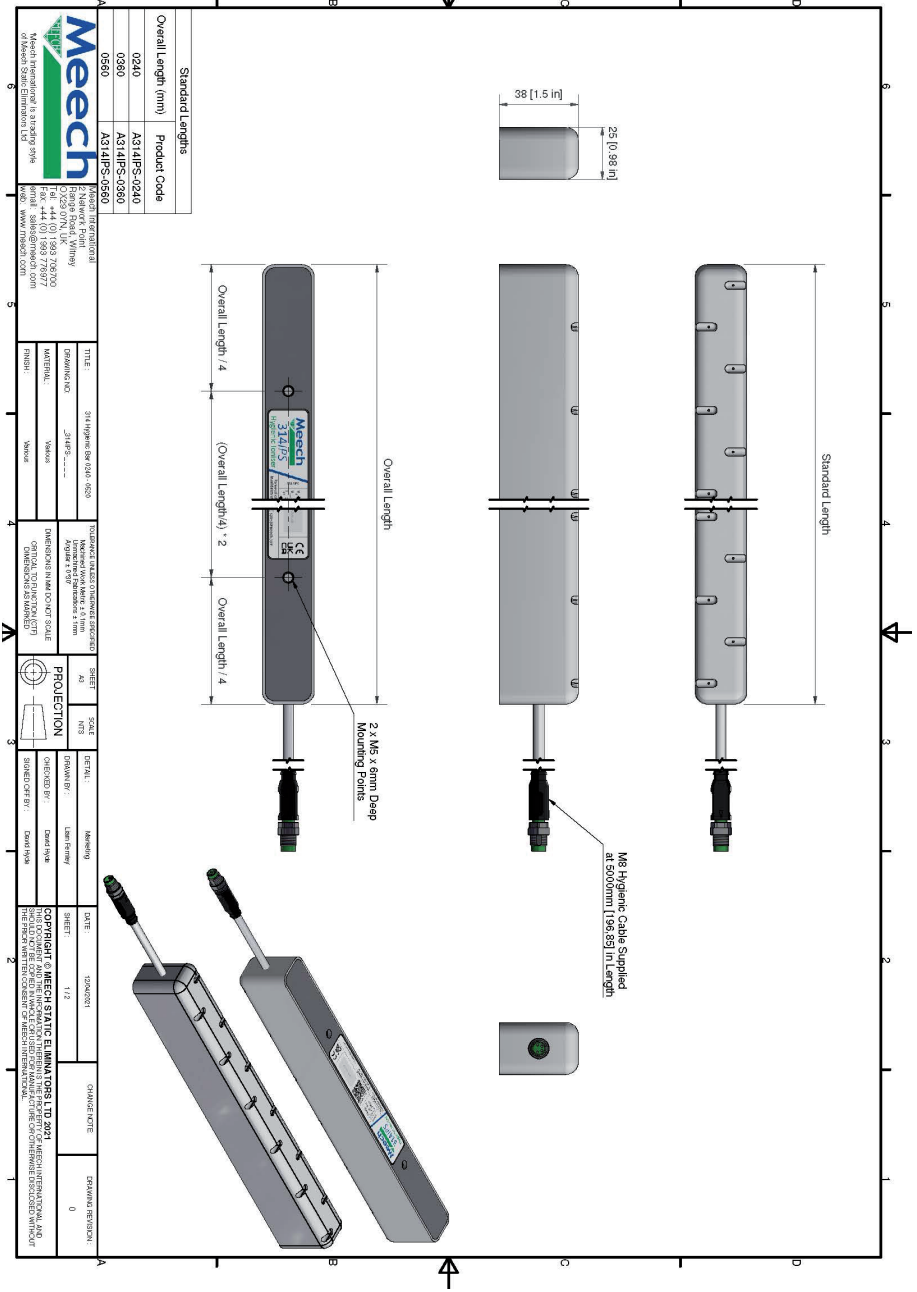
Health and Safety

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

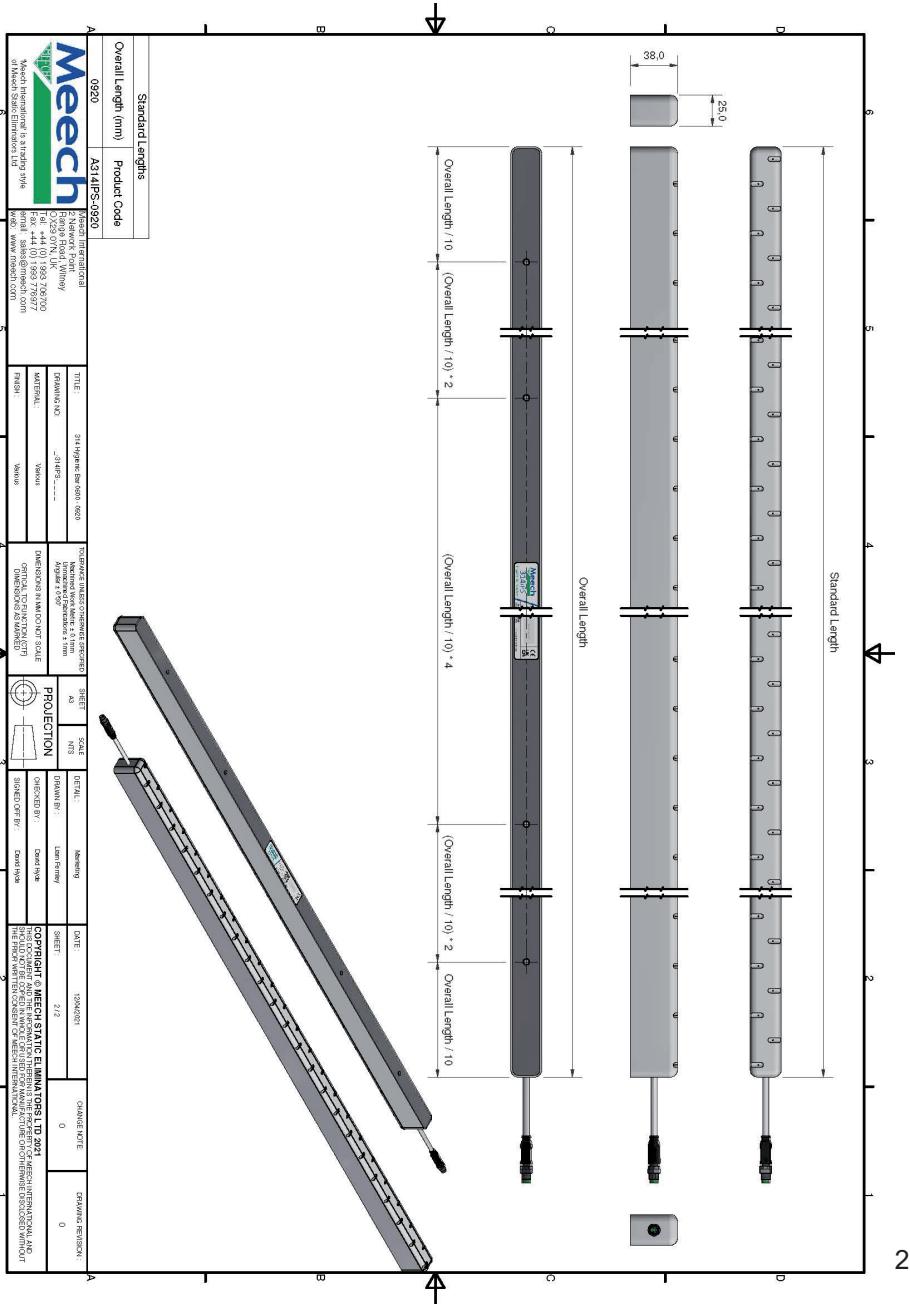
Technical and Construction

Dimensions (W x H)	25mm x 38mm
Maximum Length	920mm
Operating Range	20mm - 150mm
Weight	1.7kg/metre
Construction	PTFE (Body and Base)
Mounting	2 x M5 x 6mm Female Locations for lengths 0240mm; 0360mm and 0560mm. 4 x M5 x 6mm Female Locations for 0920mm length.
Emitters	Sharp Titanium Pins
Input Current	Max 500mA
Input Voltage	24V DC (21-27VDC)
Output Voltage	Adjustable from +/- 3kV to +/- 7.5kV Pulsed DC
Electrical Connection	4 Pole M8 5m Length
Clean Pin Output Signal	24V Output Resistance 2.2kΩ
Output Frequency	Default: 20Hz (Adjustable 1-99Hz with BarMaster and SmartControl Touch). Note: Frequency settings >20Hz are only required for specialist applications.
Output Balance	Default Setting: 54%:46% Pos:Neg Adjustable with BarMaster and SmartControl Touch from 80:20 to 20:80 Pos:Neg
Environmental Protection	IP66
Max Ambient Temperature	60 °C

Technical Drawing



Technical Drawing



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