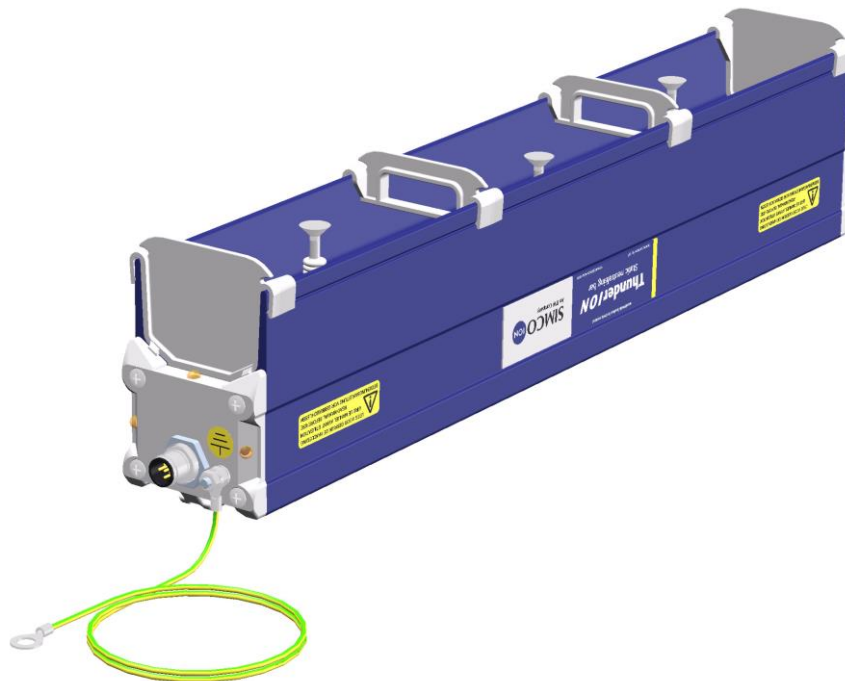


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Thunder/ON (IQ) 2.0



Static Neutralising System

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Preface

This manual must be available at all times to staff operating the equipment.
Read through the entire manual before installing and commissioning the product.
Follow the instructions set out in this manual to ensure proper operation of the product and to retain your entitlement under the guarantee. The terms of the guarantee are set out in the Simco-Ion Netherlands General Terms and Conditions of Sale.

This manual describes the installation and usage of the anti-static system Thunder/ON.
Where the word 'bar' or Thunder/ON is used in this manual, it refers in all cases to the Thunder/ON 2 series, standard or IQ versions.

Explanation of symbols



Warning

Indicates special information for preventing injury or significant damage to the product or the environment.



Danger

Indicates information for preventing electrical shocks.



Note

Important information for making the most efficient use of the product or for preventing damage to the product or the environment.



[ ] If icons are between [], this means, depending on where you are in the menu, it may be necessary to first select the icons between [] before you can go to the desired page where the follow-up instruction can be given.

With the   buttons you can scroll through the various pages.

1 Introduction

The Thunder/ON is designed to neutralise the static charge of sheets, webs and other materials. The bars can be used in combination with a 24 V DC power supply.

The 24 V is converted in the bar into a positive and negative high voltage.

The high voltage generates an electrical field at the emitters of the anti-static bar, which causes the air molecules around the emitters to be converted to positive and negative ions.

When an electrostatically-charged material comes close to the bar, electrons are exchanged until the material is neutral.

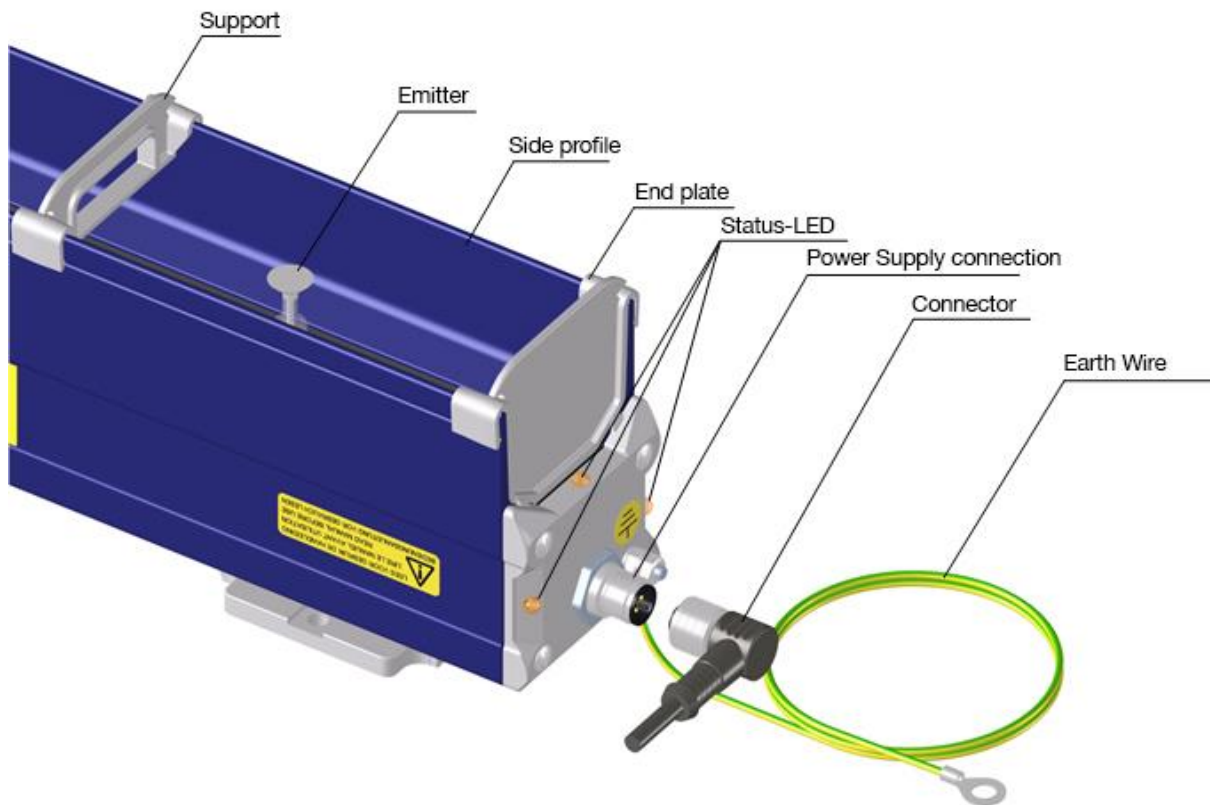


Figure 1: Thunder/ON

2 Description and operation

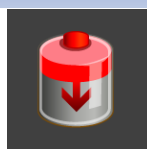
In the standard Thunder/ION analog interfacing is possible through the M12 connector. Remote on and off switching and high voltage OK signalling are available.

In the Thunder/ION IQ the bar interfaces with auxiliary equipment through a serial protocol. It must be connected to compatible Simco-ION IQ equipment.

The anti-static bar is supplied with replaceable screwable emitters. The side panels and end plates are replaceable as well. The replaceable parts makes it easier, quicker and more convenient to clean the bar.

By default, the bar operates with a pulse frequency of 5 Hz. This pulse frequency is used to produce positive and negative ions alternately. For special applications this pulse frequency has to be adjusted for optimum discharge results.

Various parameters, limit values and information on the operation can be displayed and logged with a Manager IQ Easy. Refer to the user manual of the Manager IQ Easy for this as well.



The background colour of the anti-static bar icon displays the status of the sensor bar.



Inactive or no communication



Active and operating OK, without warnings or alarms



Standby, waiting for start command



Active, but with a warning



Active, but with an alarm

3 Safety



Warning:

- Work on the equipment must be carried out by a skilled and qualified electrical engineer according to the applicable national and local regulations.
- The anti-static bar is only designed for neutralising electrostatically charged surfaces.
- When working on the equipment, always disconnect the power supply to the equipment.
- Make sure that the equipment is properly earthed (see H 5.6.2).
Earthing is needed to ensure safe and proper operation.
- The emitters are sharp and can cause physical injury.
- High voltages are hazardous for people who have a pacemaker.

The high-voltage emitters (30 kV) are limited to a current of 150 μ A, which means that they are electrically safe to touch and shockproof.

Coming close or making contact with a emitter from one polarity can have the effect that a person will become electrostatically charged and gets a shock reaction when the person discharges to other earthed or uncharged objects (maintain a distance of at least 300 mm from the bar).

When an overload occurs the high voltage will be regulated down until the max. internal current level is reached.

- The concentration of ozone generated varies per application and must be checked.
- If changes or modifications, etc. have been made without prior consent in writing, or if original parts have not been used for repairs, CE/UL approval for the equipment will be withdrawn and the equipment will no longer be under guarantee.

4 Technical specifications

Required power supply*

Supply voltage 24 V DC
Current consumption Max. 2 A DC

Max. total cable length @ supply	24 V DC $\pm$ 2%	24 V DC $\pm$ 5%	24 V DC $\pm$ 10%
Max. cable resistance per wire	1,26 Ω	0,9 Ω	0,3 Ω
Standard Simco 5 x 0,34 mm ² & M12 Male-Female cable	12,5 m	9 m	3 m
Optional Simco cable 5 x 0,75 mm ²	25 m	18 m	6 m
Supply	- IQ Easy Manager - Extension IQ Easy Manager - Simco DIN-rail Power supplies	- Simco Desktop Power supply	

Input

Remote on/off 10 – 30V
Inschakeltijd 30ms

Output

Output voltage Max. 30 kV positive and negative
Current per emitter to earth <150 uA

Environment

Operating environment Industrial
Ambient temperature UL 0 – 50°C
Ambient temperature non-UL 0 – 50°C
Cooling Convection
Operating distance 300 – 1000 mm

Local functions

Indication of pulse frequency setting Flashing red and green LEDs during start-up of the bar
[On] signaling Green LED
[Error] signaling Red LED lights up in the case of an internal overload.
For example:
- HV OK-output is overloaded
- supply voltage too low
- overheated power supply
- primary current too high
- communication broken

Remote functions

(standard version)

Remote On/Off input	Switching high voltage on and off Control voltage specifications: 10 V DC, 10 mA min. 30 V DC, 25 mA max.
Anti-static bar operating OK output (HV OK)	Indicates that the anti-static bar is operating correctly (when high voltage is switched on). Uo= Supply voltage — 1 V, Max. 50 mA

Remote functions
(IQ version)

Full control and readout via IQ Easy platform with an RS 485 serial connection to standard voltage levels (see manual IQ Easy manager)

Mechanical

Effective bar length	250 mm to 5125 mm
Dimensions (WxHxL)	61 mm x 114 mm x total length (Eff. Length + 195 mm)
Weight	0.8 kg + 2.4 kg/m
Housing	Plastic
Emitter (metal part)	Special alloy
Emitter holder (plastic part)	Silicone or PTFE
Mounting material	Brackets

*** The power supply must be a Limited Power Supply or NEC Class 2 power supply. The output of the power supply must be properly grounded! (See para. 4.4.1.) An LPS certified power supply has a limited output power, as a result of which it always generates a safe output voltage.**

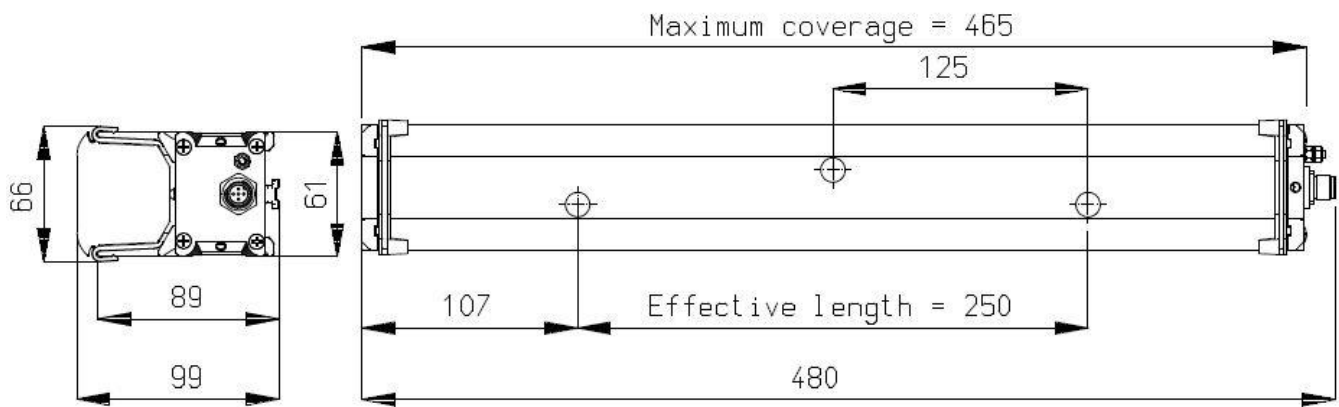


Figure 2: Dimensions Thunder/ON with 3 emitters

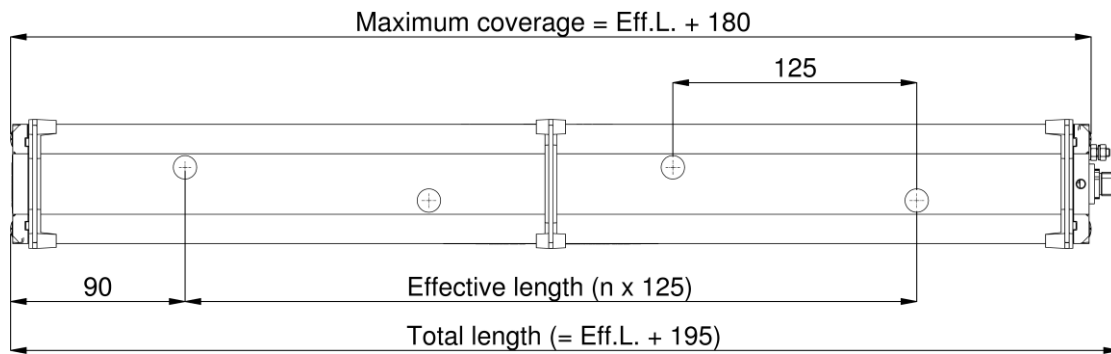


Figure 3: Thunder/ON with ≥ 4 emitters

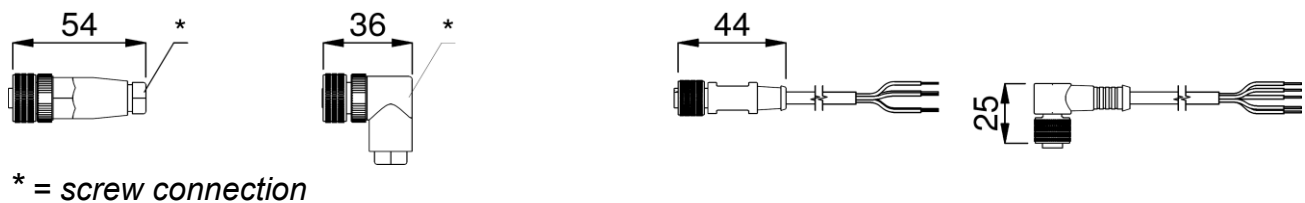


Figure 4: Optional connections

5 Installation



- Electrical installation and repairs must be carried out by a skilled electrical engineer according to the applicable national and local regulations.
- The equipment must be properly earthed. Earthing is required to ensure safe and proper operation and to prevent electrical shocks upon contact.
- Disconnect the power supply before carrying out work on the unit.
- The anti-static bar must only be powered by a Limited Power Source (LPS) or NEC Class 2 power supply. An LPS certified power supply has a limited output power, which means that it always generates a safe output voltage.
- Only connect the specified voltages to the circuits.

The 0 V of the power output must be earthed correctly (see section 5.2.3.).

The anti-static bar can be powered by a 24 V DC power supply already available on the machine (if it meets the above requirements), but also by a power unit from Simco-Ion Netherlands.

The power units recommended by Simco-Ion Netherlands:

Part number	Description
4524001200	Desktop, 100–240 V AC to 24 V DC for 1 Thunder/ON (IP40).
4510001400	Control module for max. 4 Thunder/ON's (IP 54)
7519020425	DIN rail power supply 100–240 V AC to 24 V DC for 1 Thunder/ON (IP20).
7519020430	DIN rail power supply 100–240 V AC to 24 V DC for 1 Thunder/ON (IP20).
1030002000	Manager IQ Easy 2.0 DC 24V

1030002010	Manager IQ Easy 2.0 AC 100-240V
1030000100	Extension IQ Easy DC 24V
1030000110	Extension IQ Easy AC 100-240V

5.1 Prior check

- Check that the equipment is free from damage.
 - Check that the details on the packing slip correspond to the details of the product received.
- If you have any problems and/or doubts, please contact Simco-Ion Netherlands or the agent in your region.*

5.2 Fitting the anti-static bar



Note:

- **Conductive machine parts in the vicinity of the anti-static bar have a negative influence on its operation.**
- **For optimum results, the anti-static bar must be fitted as per Figure 5.**
- **For minimum distances, see Figure 6.**
- **If the distances for optimum results can't be met, keep a distance of at least 50 mm from the side of bar to electrically conductive machine parts.**
- **Use the supplied mounting brackets**

Fit the anti-static bar:

- Directly in front of the place where static electricity causes problems.
- With the emitters facing in the direction of the material to be neutralised.
- In places where the material is neutralized, it must have a layer of air under it.
- The correct distance from the anti-static bar to the material should be established by experiment (for operating distance see technical specifications).
Normally the effectiveness of the bar increases with decreasing the distance to the web (not below minimum distance!).
- The emitters of the anti-static bar must not be covered.

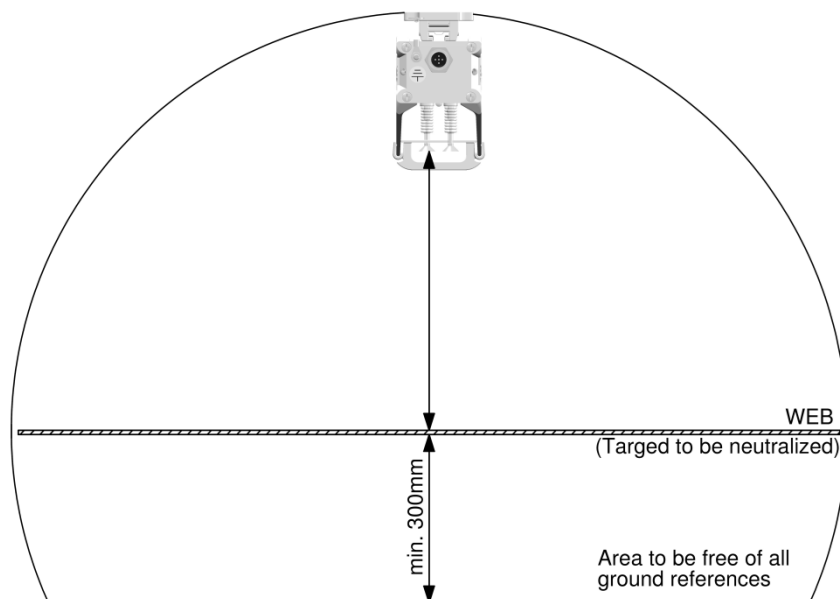


Figure 5

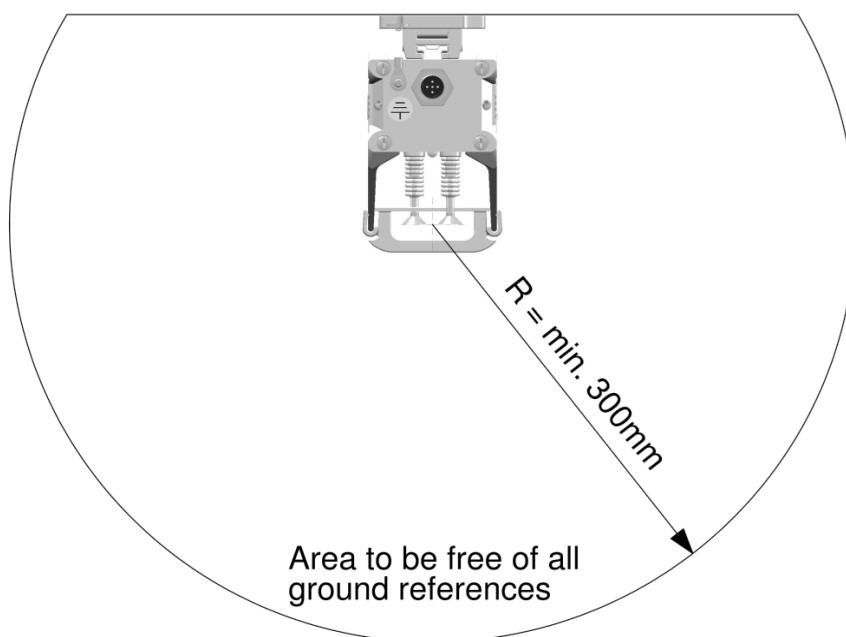
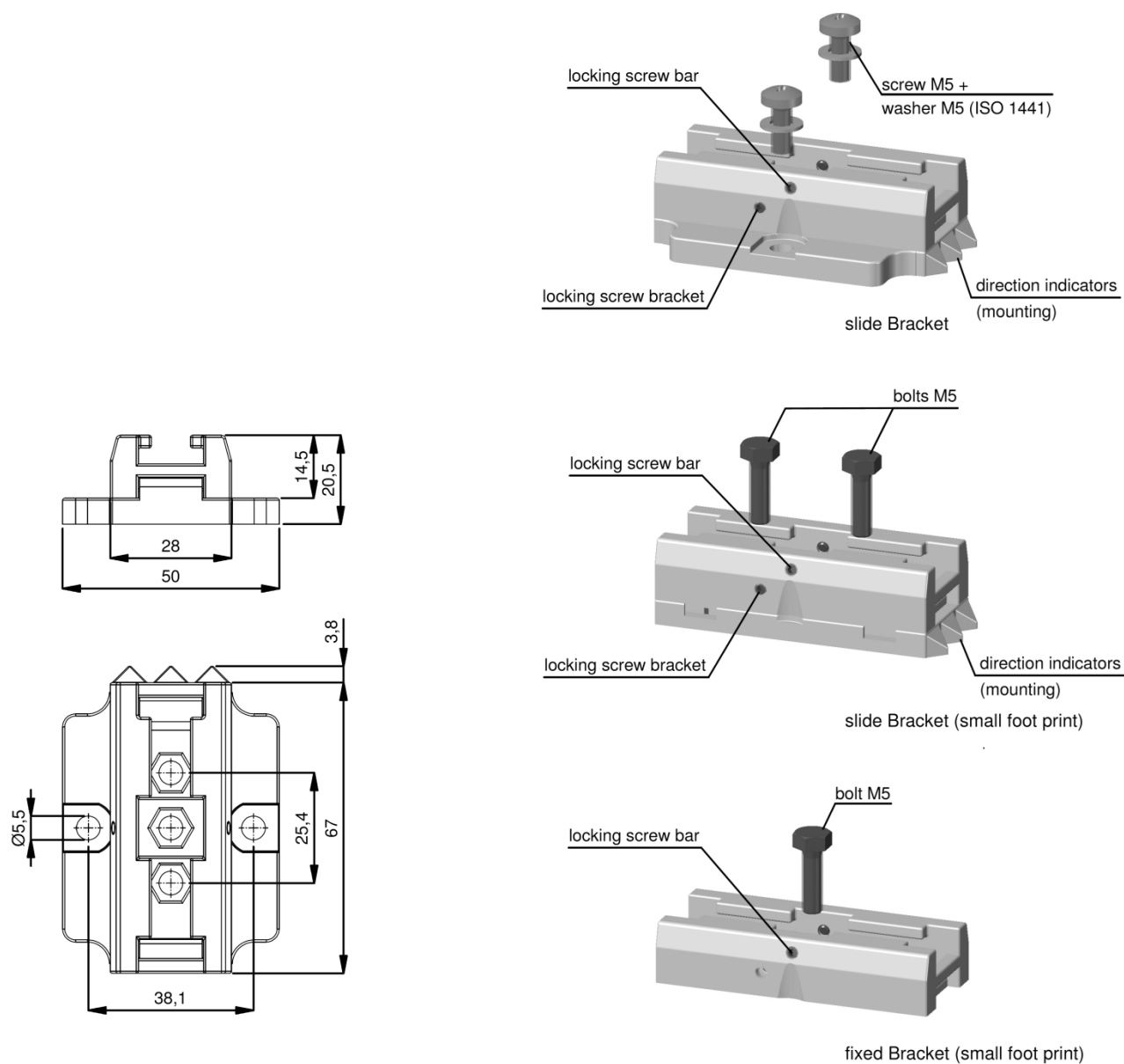


Figure 6

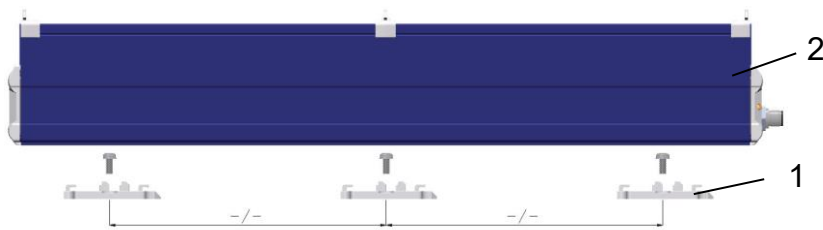
5.3 Bracket bars, mounting options



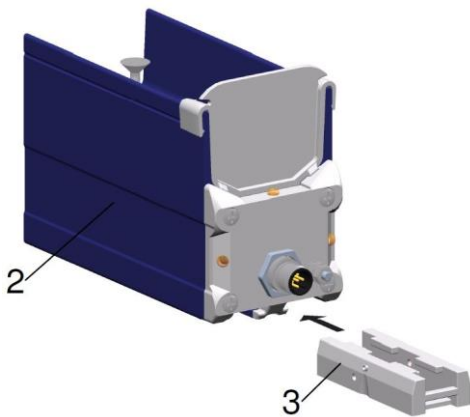
Description Parts (afb.7, 8 en 9)	
1	Mountain feet
2	Ionisatiestaaf ThunderION 2.0
3	Fex
4	Mounting feet fix screw
5	Ionisatiestaaf fix screw

Figure 7: Mounting options

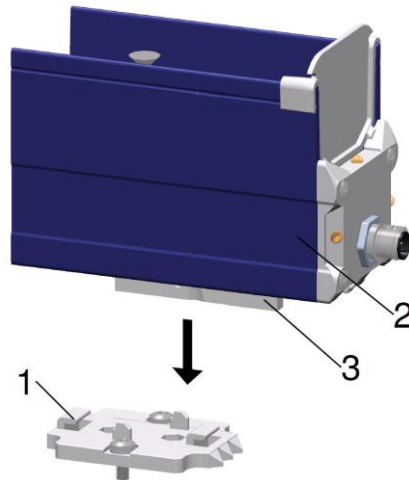
5.4 Mounting Thunder/ION (slide bracket)



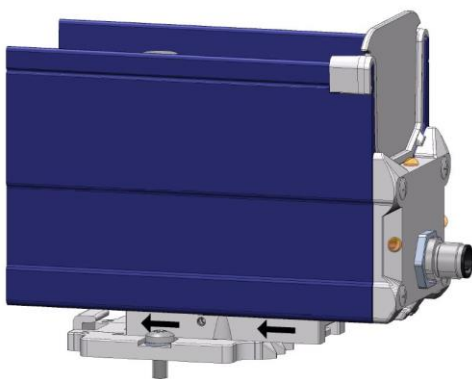
Spread the supplied mounting feet (1) along the length of the anti-static bar (2) and mount them on the machine, with the triangles pointing in the same direction.



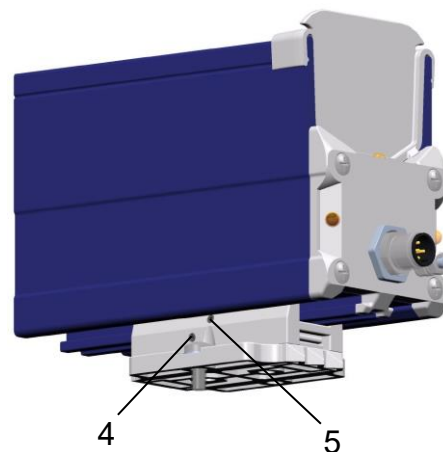
Slide the brackets (3) onto the anti-static bar (2).



Position the anti-static bar (2) with the brackets (3) onto the mounting feet.



Slide the brackets in the opposite direction of the triangles (mounting method).



Secure the brackets on the mounting feet by turning the adjusting screws (4). Position the ionisation points above the material to be neutralized and lock the anti-static bar to the brackets (5).

Figure 8: Mounting with slide bracket

5.5 Dismounting (slide bracket)

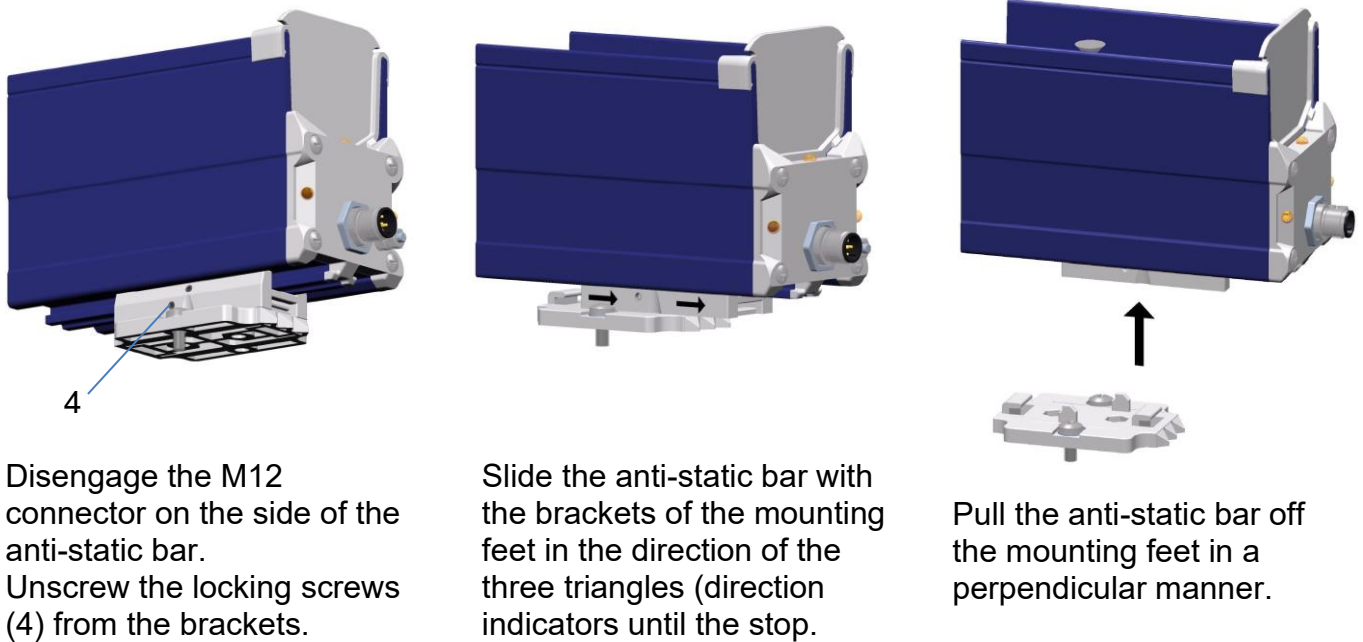


Figure 9: Dismounting with slide bracket

5.6 Connecting the anti-static bar



Warning:

- Note the warnings at the start of this chapter.

5.6.1 Connecting the *ThunderION* to the Desktop power supply

- Connect the external yellow/green wire to an earthed part of the machine.
- Connect the cable with the M12 connector from the Desktop power supply to the anti-static bar.
- Connect the power cable.

5.6.2 Connecting the Thunder/ION to the DIN rail power supply / external power supply & remote on/off input

- Attach the wiring as shown in figure 10.

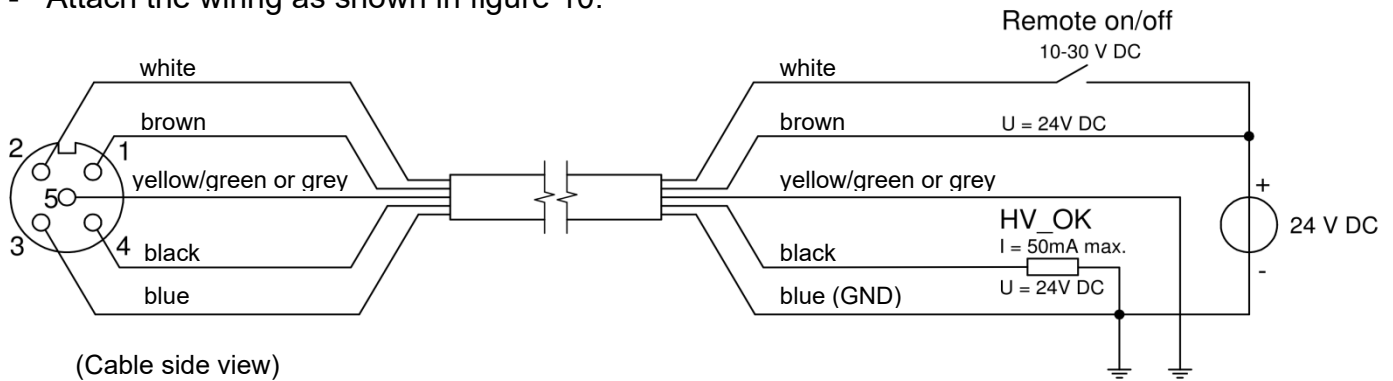


Figure 10: Wiring of the bar

For personal protection and to ensure proper functioning, the grey and the blue wire must **both** be connected to earth.

In the Simco-Ion Desktop power supply, these connections have already been made.



Note:

Pin 2 (white) is the remote On/Off input and can be used for external switching on / off the anti-static bar. When not needed connect pin 2(white) to the 24V DC supply voltage

Connecting High voltage operating OK signaling

It is possible to check the anti-static bar's functioning remotely with a PLC, for instance. For this purpose, an output (HV_OK) is available on the connector. When the output is active ($U = U_{supply} - 1V$, max 50mA), the ionization bar is active and functionality is ok.

5.6.3 Connecting the Thunder/ION IQ anti-static bar

Connect the anti-static bar to one of the outputs of the Manager IQ Easy or Extension IQ Easy, using an 1:1 M12 connection cable, Male-Female, 5 pins.

The standard M12 connector can be connected during operation of the IQ Manager Easy. Hence, it doesn't need to be powered down.

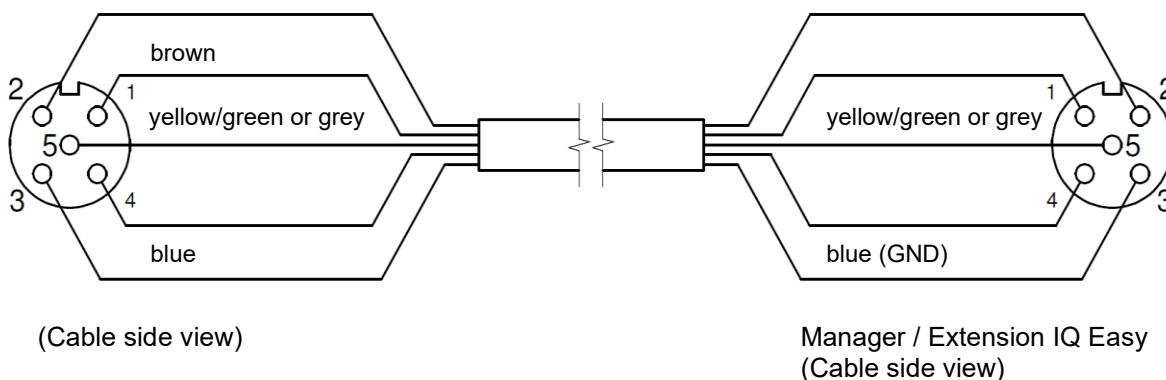


Figure 11: Wiring Thunder/ION IQ to IQ Easy platform

6 Commissioning



Warning:

- High voltage can be dangerous to people with a pacemaker.
- Check that the bar is earthed correctly (see H5.6.1 and H5.6.2).
- Coming close to one polarity can lead to unpleasant discharge shock.



Note:

- The anti-static bar does not work if the emitters are covered.

6.1 Thunder/ION

If the anti-static bar is connected to a 24 V power supply without the manager, the bar will not have IQ functionality. The anti-static bar can however be switched on/off remotely with the pin on the M12 connector and feedback will be provided on whether the high voltage is active on the corresponding pin of the M12 connector (see figure 10).

- Switch on the power supply of the anti-static bar.
- Connect 24 V DC to the Remote On/Off input of the bar*.
- When 24 V DC supply voltage is connected and the Remote On/Off input is activated, the anti-static bar will be switched on.

* With a desktop power supply provided by Simco-Ion, the Remote on/off is already connected internally with the 24 V supply voltage. If this power supply is used, the anti-static bar will hence be activated as soon as the power supply is switched on.

6.2 Commissioning the Thunder/ION IQ through the IQ Easy Platform



If an "Undefined param" appears on the info screens of the Thunder/ION 2 Manager, the manager must be updated with the latest software. Download the latest software version on www.simco-ion.co.uk/software and follow the "Upgrade" instructions as described in the Manager manual.

When the M12 connection cable connects the anti-static bar and the IQ Easy platform, communication will be established automatically, which is indicated by flashing status LEDs. By default, the bar will activate after all information has been gathered by the manager. This is



indicated by the background colour of  changing to blue.

Please refer to the Manager IQ Easy user manual for a general explanation.

The anti-static bar will now ionise.



GB

6.2.1 Selecting EXPERT mode for setting parameters or maintenance

In order to set parameters and carry out maintenance, you need expert user privileges. A password may be required. For a detailed description, please refer to chapter 6.4 of the manual Manager IQ Easy.

Once logged in at this user level, you will remain on this level until selecting a new user level.

- Go to the main screen , select settings  and choose expert.
- Enter the password and confirm with  or return directly to the system settings page of the manager, if no password is required.
- Click  and then click on device to check and/or change the parameters by clicking  behind the parameter or desired action.
- By clicking  you will return to the main screen.

6.2.2 Operating modes (expert)

The anti-static bar has 4 operating modes:

- 1 Fixed
The anti-static bar has a fixed ionisation. Ionisation works like a Thunder/ON 2.0. A fixed number of positive and negative ions are produced. Depending on the application, the static charge will be neutralised and residual charge will remain.
- 2 Manual
For test applications or very specific applications the ratio between positive and negative ions (balance) can be set manually. In position 0, the same amount of positive (+) and negative (-) ions will be produced (fixed), where -100 = maximum negative and +100 = maximum positive.
- 3 CLFB (Closed Loop FeedBack)
For this mode a Sensor bar IQ Easy bar has to be connected to the platform. After the film or object to be neutralised has passed the Thunder/ON IQ, the sensor will measure the residual charge. This value is communicated to the ionisation bar which will regulate the ratio of positive and negative ions automatically, so that the residual charge will be as close to neutral (0) as possible.
- 4 Auto tune (not yet available)

To select the different modes, go to expert mode 6.2 (if not selected earlier):

- Click on the *Information* tab of the Thunder/ON IQ  



- Click on the settings button



- Click on  behind *Operation mode*
- Select the desired operation mode
(*CLFB & Auto tune* is not available at this time)

6.2.2.1 Operation mode Manual

After Manual mode is selected, go to the parameter *HV Balance offset* using the next page  symbol:

By sliding the slider or pushing the button  towards -100, increasingly more negative ions will be produced for neutralising the positive charge and towards +100 more positive ions will be produced for neutralising the negative charge.

 Note: the final balance can be disturbed if a too extreme setting is chosen.



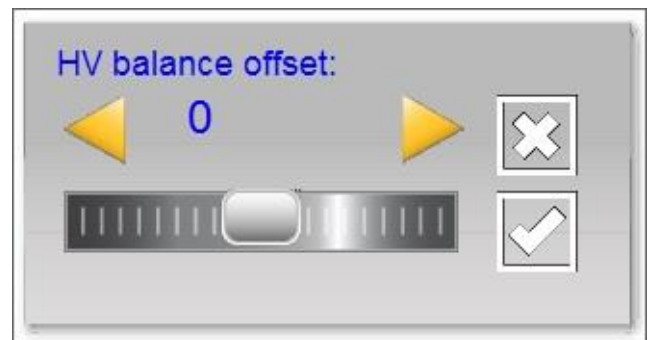
"HV balance offset"



slide slider or with   to the desired value

and confirm with ]

The ionisation will now be continued with this setting.



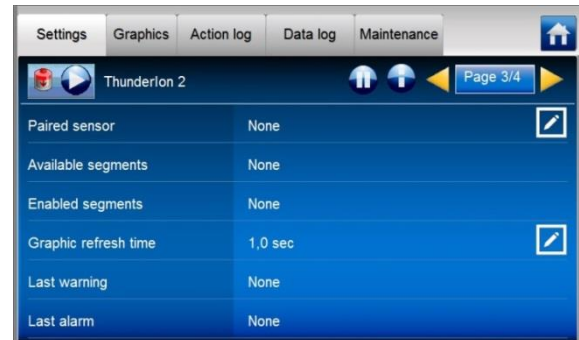
6.2.2.3 Operating mode CLFB (Closed Loop FeedBack) with sensor IQ Easy (not yet available)

After the CLFB mode is selected, a sensor has to be coupled for using the measurement values for regulation: Go to section 6.2.2.3. for coupling a sensor.

6.2.2.3 Coupling sensor bar values

The sensor bar has to be connected to the Thunder/ON IQ. With the next page  icon, go to the parameter *Paired sensor*.

- Click behind *Paired sensor* 



- Select the Sensor IQ Easy which will provide the anti-static bar with measurement values.

- With several sensor segments, a sensor segment can be switched off.
This may be necessary in case you are using a smaller conveyor and hence a segment of the sensor will be outside of the area of the conveyor. The anti-static bar will then calculate using the average measurement values of the active (enabled) segments.

To disable a segment, click  behind *Enabled segments*.

- Select the segments to be disabled.

Confirm the selection with 



The anti-static bar will now show the average (avg) of the enabled segments in the parameters and the Graphics Tab (and use the average to regulate ionisation – not yet implemented –).

6.2.3 Anti-static bar standby & active and set autorun

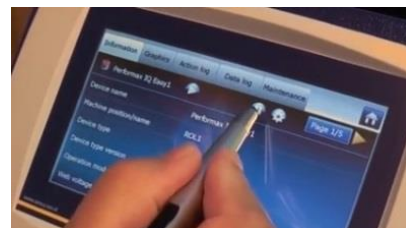
By default, the bar will become active once the manager has gathered all the information, because the parameter autorun is set to yes.

On each tab, you can set the device to standby  or active  mode.

The status is indicated in the left upper corner by means of the background colour of the icon:

Green = standby, blue = running, orange = warning, red = alarm.





If you do not want the bar to activate automatically after a power interruption or disconnection, the autorun parameter in expert mode (6.2) has to be set to no.

[   (n)x  Autorun  "No"]

6.2.4 Anti-static bar information parameters (expert mode)

If desired, various information parameters can be entered as required to make the different devices more recognisable.

If desired, adjust the parameters: Device name, Machine position, Mounting distance. These are information parameters neither the bar or the manager will use for calculations.

- Select the information page with the parameters to be changed by:

- [   (n)x  "parameter  ", enter name or value", confirm with ]

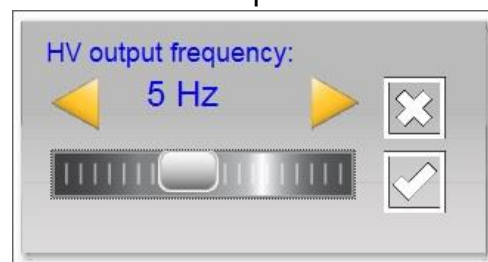
6.2.5 Adjusting the HV output frequency parameter (expert mode)

For most applications, the default setting of 5 Hz for the output frequency will be sufficient for achieving optimal neutralisation. For special applications it might be beneficial to adjust the output frequency.

Here, for a shorter mounting distance in relation to the object to be neutralised or higher speeds of the object, the frequency can be increased for a better result. For greater distances, reducing the frequency can be beneficial.

By default, the frequency is set to 5 Hz, but can be set to a different value in specific cases.

- [   (n)x  "HV output frequency" 
slide slider or with  to the desired value and confirm
with ]



6.2.6 Switching bar remotely on/off through the remote on/off input on the manager or via fieldbus (expert mode)

If desired, the manager can be switched on/off using the remote on/off input of the Manager or by means of an instruction of the optional Fieldbus (see user manual of the Manager).

Using this, one machine control can switch several selected devices on/off at the same time without any actions by the operator, including this bar.

For selecting this, the *Remote on/off source* parameter has to be changed from *Continuous* to *Remote* or *Fieldbus*.

- [   (n)x  "Remote on/off source"  select *Remote* or *Fieldbus*]

6.2.7 (De)activating Datalogging

If desired, the manager can log data regarding the operation of the bar.
To (de)activate this data logging, the parameter *Datalogging* has to be changed.
For detailed information on datalogging, please refer to the manual Manager IQ Easy.

- [   (n)x  "Data logging"  select On or Off]

6.2.7 Setting clean bar warning level (expert mode) (not yet available)

The Thunder/ON IQ will continuously monitor the effectiveness of the bar. Should the effectiveness get below the set *Clean bar warning* level due to dirt, covering or other cause, a warning (orange LEDs on the bar and orange background for the icon on the Manager) will be generated on the manager.

By default, this level is set standard to 50 %, but it can be set to a different value in specific cases.

- [,    (n)x  "Clean bar warning level"  slide slider or with  to the desired value and confirm with ]

7. Functional check

7.1 Controlling the neutralisation

To measure the efficiency of the anti-static bar, a field-strength meter can be used.
Connect the field-strength meter to earth, and maintain a minimum distance of 30 cm to the anti-static bar.

Measure the static charge on the material before and after it has passed the Thunder/ON.
The charge measured should be minimized after the product has passed the anti-static bar.

7.2 Functional check via the LEDs

The colour of the status LED's on the anti-static bar determine the status of the anti-static bar.

If the LEDs light up continuously red after starting, this indicates that the anti-static bar (high voltage) is being overloaded (see 7.5 and chapter 9).

7.2.1 Functional check via the LEDs (Thunder/ON)

During starting up the bar:

- Green flashing quick for 2 seconds

Table 1, overview status indication anti-static bar standard (non-IQ) version

Operation	Bar LED Thunder/ON
Standby	Green flashing 1Hz
In operation	Green on
Overloaded	Red on
HV OK output overload	Red flashing
Internal error	Red flashing

Possible causes of HV OK output overload are:

- Short circuit of the HV OK output signal
- Excessive load of the HV OK output signal

7.2.2 Functional check via the LEDs (connected to the IQ Easy platform)

During starting up the bar:

- Green flashing quick for 2 seconds
- Communication check: green flashing quick (5Hz) for maximum 5 sec.
- Standby (green flashing), operating mode (green on) or no communication (red flashing quick (5Hz))

Table 2, overview status indication anti-static bar IQ version

Display indication	LED indication	Status	High voltage
Green	Green flashing 1 Hz	Standby	Off
Blue	Green on	In operation	On
Orange	Orange	Clean bar	On/Off*
Red	Red on	High voltage overload	On
Grey	Red flashing 5 Hz	No communication (IQ)	On/Off*

* The high voltage can be on or off, depending whether the bar is/was active or on standby.

7.3 External: Anti-static bar HV operating OK output (Thunder/ON)

The external Anti-static bar HV operating OK output is active if the following three conditions are met:

- the supply voltage is present on the M12 connector
- the bar is Remote On/Off input is activated on the M12 connector, there is no error.

7.4 Functional check via the Manager IQ Easy (Thunder/ON IQ)

The display of the Manager IQ Easy displays information on the status of the anti-static bar. On the main screen as well as on the device screens, the status of the anti-static bar can be

viewed by means of the background colour behind the icon : Green = standby, blue = running OK, orange = warning, red = alarm.

Detailed information is provided on the *Information*, *Graphics*, *Action log* and *Data log* Tab.

7.4.1 Information tab

With the   buttons you can scroll through the various pages. Information regarding the operation to be found here:

- *Ionisation current [uA]*: both the negative and the positive ionisation current the anti-static bar provides will be displayed here.
- *HV output frequency [Hz]*: indicates the set frequency for the output voltage (default 5 Hz)
- *HV Balance offset xx*: xx indicates the deviation of the ratio of the ion output.
- *Last alarm*: indicates the last date and time of the last alarm after starting up the bar.

Not yet implemented:

- Last warning: indicates if and when the last warning has been issued that the efficiency of the anti-static bar has dropped below the set clean bar warning level.
- *Ionisation Efficiency xx%*: indicates the effectiveness of the anti-static bar. Should the bar be dirty or covered, this value will drop. If the bar is set on standby, this value will be 0 %. The value between the brackets will indicate the most recent value, e. g. 0 % (98 %).

If a sensor bar is connected, the display will also show:

- *Web voltage* [kV]: The current average (residual) charge measured of the active segments of the sensor bar.
- *Web voltage peak* [kV]: The maximum measured average negative & positive (residual) charge of the active segments of the sensor bar (during the last logfile refresh time). Every time the logfile is written, this value will be reset to 0.

7.4.2 Graphics tab

The *Graphics* tab graphically shows the operation as function of the time.

- Yellow: the positive and negative ion current.
- Brown: the net ion current (positive – negative current)

If coupled with a sensor bar:

- Green: the average (residual) charge measured by the sensor bar.

If the screen is clicked somewhere, the screen will “freeze”, and display *On hold*. Clicking the screen again will display the current value.

7.4.3 Action log tab

In the *Action log* tab, the changing status of the bar is logged step-by-step. This is indicated including the date and time the status change has occurred. Main messages:

- *HV OK*: the bar is turned on and is functioning properly
- *HV NOT OK*: the bar is turned off so the HV doesn't function properly

7.4.4 Data log tab

In the *Data log* tab, all available measurement data of the anti-static bar is logged at fixed times. If the parameter *Datalogging* is activated, these values will also be saved in the log file of the manager. The interval between logging is determined by the setting in the Manager IQ Easy. See user manual of the Manager in Chapter 6.6.3

Main measurement values:

- U- : the output voltage of the negative high-voltage.
- U+ : the output voltage of the positive high-voltage.
- I- : the output current of the negative high-voltage.
- I+ : the output current of the positive high-voltage.
- U: the supply voltage of the bar

7.5 Causes for overloading

Causes for overloading of the high voltage may be:

- Fouling of the anti-static bar.
- Direct contact between conductive material and emitters.
- The anti-static bar is mounted too close to conductive (machine) parts.

8 Maintenance



Warning:

- When working on the equipment, always disconnect the power supply to the equipment.
- Emitters can be removed by unscrewing them, except for ThunderIONs with the serial numbers 13470001 to 14450243. See explanation “*Remove emitter.*”

+ Attention:

- Do not damage the emitters.
- Let the bar and emitter-parts completely dry before switching on the bar.
- Keep the anti-static bar clean.
- If fouled: clean the anti-static bar with a hard non-metal brush.
- If fouled: clean the anti-static bar with a block brush and isopropyl alcohol. Blow the anti-static bar completely dry before use. Veconova 10 may also be used in the event of stubborn fouling (www.eco-nova.de)
- During cleaning, clean the black mounting surface of the emitters as well as the rest of the housing also the external surfaces). For easy cleaning the side panels, support an end plates can easily clicked off.
- The emitters can be removed for separate cleaning or replacement. After removing the emitter be sure no cleaning agent or contamination will enter the screw hole or the tube end (depending on the emitter type) for the emitters. Covers are supplied for easy protection during cleaning (see: “**Anti-static bar with protective covers**”, **figure 16 and 17**).
- The emitters itself can be cleaned separately in a cleaning agent (ultrasonic bath) or they can easily be replaced by new emitters. The emitter is always a construction of the metal emitter, a spring and the silicon holder (see Par 12 spare parts).

Removing emitter: depending on emitter type!

Emitter, screw: 4509001035
(from serial number: 14450243)

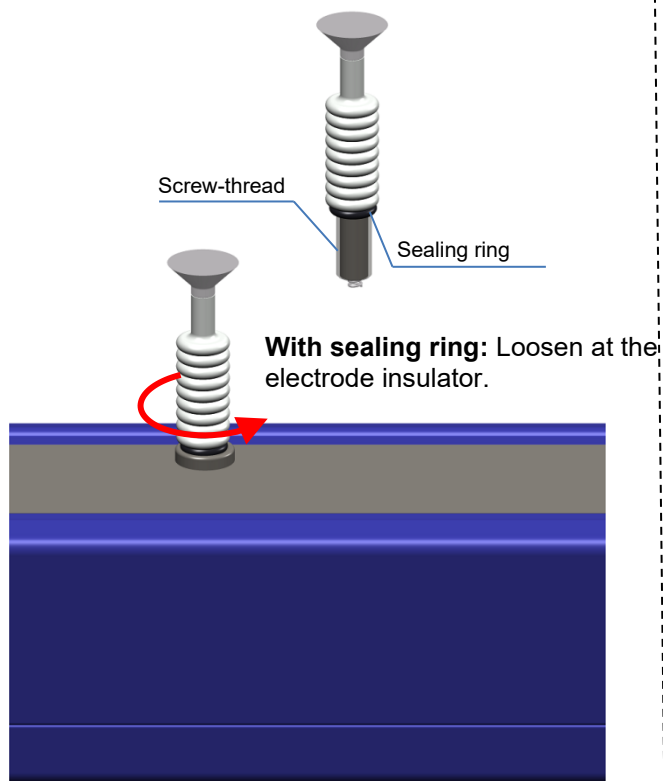


Figure 12

Emitter, pull: 4509001030
serial number: 13470001 till 14450243

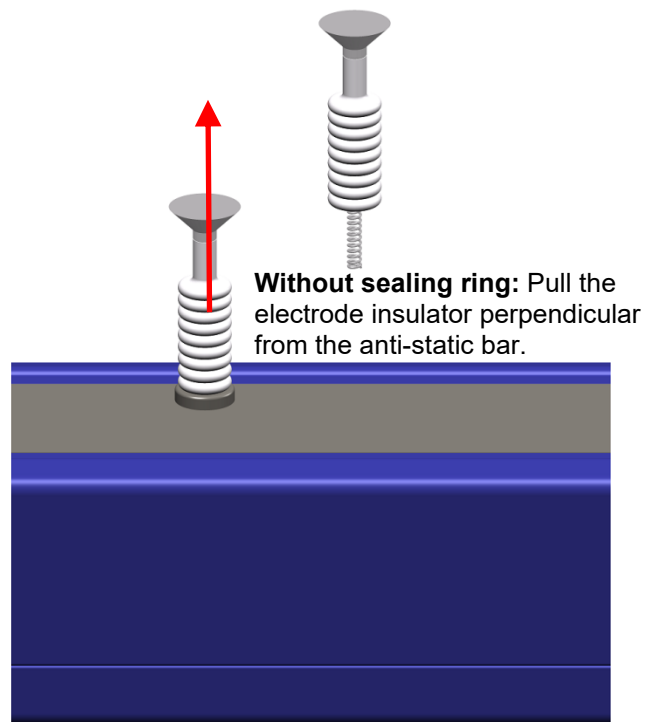


Figure 13

UL version Thunderion 2.0 (IQ):

Emitter PTFE, screw: 4509001037
For Thunderion 2.0 UL bar

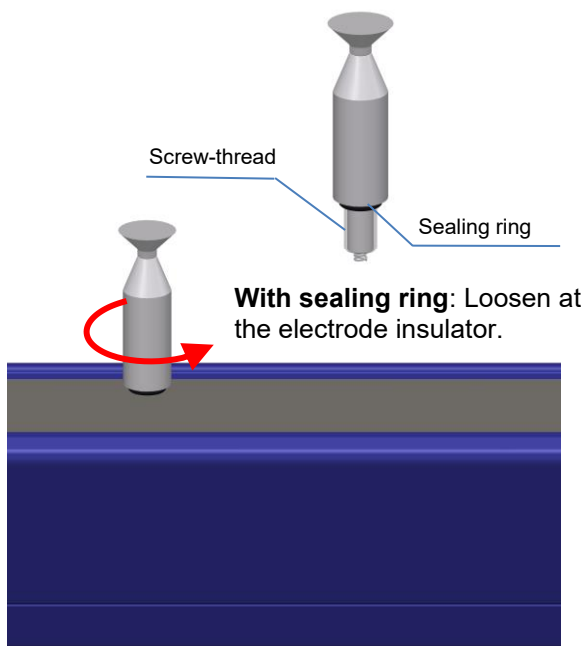


Figure 14

Position in which the electrode insulator must be held to mount/dismount the emitter.

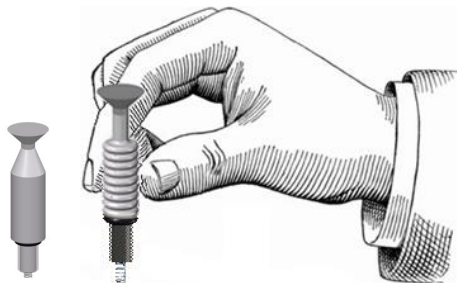


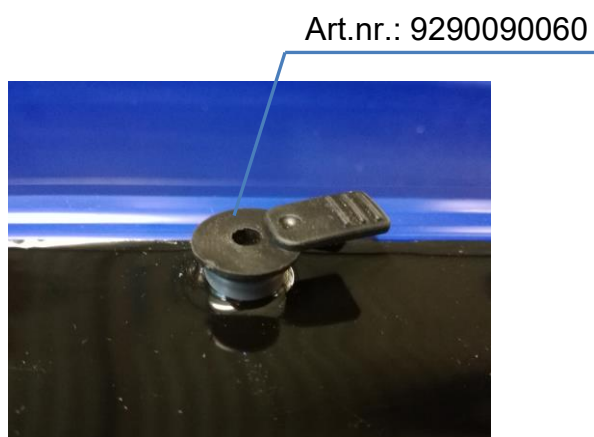
Figure 15

Anti-static bar with protective covers:

Screw protection



Afbeelding 16



Afbeelding 17

9 Faults

9.1 Faults Thunder/ON

Table 4, faults when connected to a 24 V DC power supply

Signaling	Problem	Cause	Remedy
Green Continuous HVOK active (external)	No/poor ionisation However high voltage on emitters (can be checked with a high voltage meter/ Tension)	Anti-static bar is fouled.	Clean anti-static bar.
		Emitters are damaged.	Replace emitters.
		Emitters are covered.	Remove the cover.
		Position of neutralizing not OK	Change position
No LED	No high voltage on emitters.	Cable, connectors or power supply not connected	Restore supply voltage
HVOK not active (external)		Bar faulty.	Return anti-static bar
Green flashing HVOK not active (external)	No high voltage on emitters.	“Remote operation” input is not controlled	Set Remote to On (5.6.2)
Red Continuous HVOK not active (external)	(lower) High voltage on emitters	Bar placed too close to conductive parts	Move anti-static bar.
		Bar is extremely fouled.	Clean anti-static bar.
		Bar faulty.	Return anti-static bar.
Red flashing	Internal hardware error	Supply voltage too low	Check power supply and length of the cable
		Internal Temp too high	Tamb > 50°C or anti-static bar faulty
		HV OK overload	Reduce load

9.2 Faults Thunder/ON IQ

Table 3, faults when connected to a IQ Manager

Signalling	Problem	Cause	Solution
LEDs on anti-static bar do not light up	No high voltage on the emitters	No supply voltage	Switch on manager
		Wiring fault	Detect fault and repair, see 5.6
LEDs on anti-static bar flashing green 1 Hz	No high voltage on the emitters	Bar is in standby mode	Turn on the bar using the manager
		No Remote on/off signal from Manager Remote on/off source= Remote input1	Send remote on signal on I/O connector of the manager or select Remote on/off source = continuous
LEDs on anti-static bar light up red	Anti-static bar overload	Anti-static bar is dirty	Clean anti-static bar
		Anti-static bar mounted too close to conductive machine parts.	Move anti-static bar
LEDs on anti-static bar light up orange	No/poor ionisation, but high voltage on the emitters	Anti-static bar is dirty	Clean anti-static bar
		Emitters are damaged	Replace the anti-static bar
		Anti-static bar positioned incorrectly	Reposition anti-static bar, see section 5.2
		Emitters are covered	Remove cover
LEDs on anti-static bar flashing red (1 Hz) However, high voltage to the emitters.	High voltage not maximum	Supply voltage too low	Check 24 V DC manager or increase diameter of connection cable or shorten the connection cable
		Internal temperature too high	Check for metal parts close to the bar.
LEDs on anti-static bar flashing red (5 Hz)	No communication with IQ Easy platform	If connected to outputs 5 or 6: these are configured for analog I/O	Select Serial mode in the Backplane of the Manager
		Wiring fault	Detect fault and repair, see 5.6.2

10 Repair



Warning:

- When working on the equipment, always disconnect the power supply to the equipment.
- Repairs must be made by a skilled electrical engineer.
- When opening the equipment, parts under hazardous voltage can be touched.

SIMCO (Nederland) B.V. recommends that you return the Thunder/ON anti-static bar if repairs are required.

To request an RMA number for this purpose, please run through the internet form procedure which can be found at <https://www.simco-ion.co.uk/contact/repairs/>

Pack the equipment properly and mention the RMA number clearly on the outside of the package.

11 Disposal

Comply with locally applicable environmental and other regulations when disposing of the product.

12 Spare parts

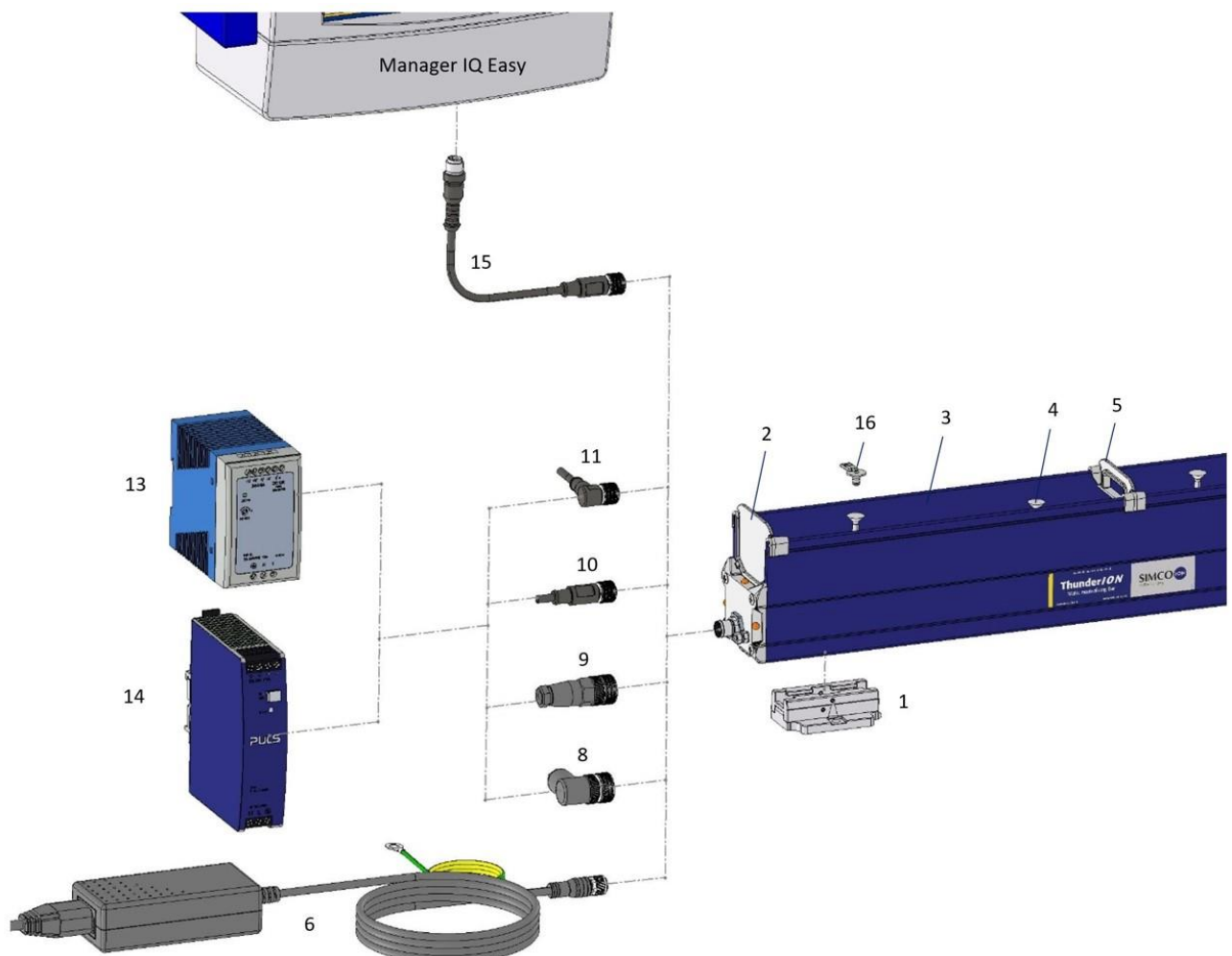


Figure 18: Spare parts

Pos.	Part number	Description
1	4532000100	Mounting foot anti-static bar
2	7509004160	Endplate
3	450990xxxx	Side profile, xxxx = effective length
4a	4509001035	Emitter for Thunderion 2.0 (IQ) from sn. 144550244
4b	4509001030	Emitter for Thunderion 2.0 (IQ) sn. 13470001 t/m 14450243
4c	4509001037	Emitter PTFE for Thunderion 2.0 (IQ) UL version
5	7509004170	Support side profile
6	4524001200	Power Supply 100-240V/24VDC with Power cord and connector
8	7519020355	5-pin right-angle M12-connector (with screw connector)
9	7519020350	5-pin straight M12-connector (with screw connector)
10a	7519020365	5-strand cable with straight M12-connector, 5 m
10b	7519020366	5-strand cable with straight M12-connector, 10 m
11a	7519020375	5-strand cable with angled M12-connector, 5 m
11b	7519020376	5-strand cable with angled M12-connector, 10 m
13	7519020425	DIN rail power supply, 100 - 240 V AC to 24 V DC 4A.
14	7519020430	DIN rail power supply, 100 - 240 V AC to 24 V DC 3,3A, (UL listed)
15a	7519020391	Device cable, M12 female – male, 5 m straight
15b	7519020392	Device cable, M12 female – male, 10 m straight
15c	7519020386	Device cable, M12 female – male, 5 m for cable carrier
15d	7519020387	Device cable, M12 female – male, 10 m for cable carrier
15e	7519020383	Device cable, M12 female – male, 5 m shielded for cable carrier
15f	7519020384	Device cable, M12 female – male, 10 m shielded for cable carrier
16	9290090060	Protective covers M6