SIMCO ION™
An ITW Company

IONIZATION SOLUTIONS

µWire AeroBar®

Model 5710

User's Manual

About Simco-Ion

Simco-Ion develops, manufactures, and markets system solutions to manage electrostatic charge. As the world's largest provider of electrostatics management products and services, Simco-Ion improves its customers' business results by providing a total solution to their electrostatic discharge and electromagnetic interference challenges. Simco-Ion Technology Group is a division of Illinois Tool Works (ITW), located in Alameda, California. For more information about Simco-Ion visit www.simco-ion.com or call 800-367-2452. Simco-Ion is ISO 9001 and ANSI ESD S20.20 certified.

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Important Safety Information

Carefully read the following safety information before installing or operating the equipment. Failure to follow these safety warnings could result in damage to your ionization system and/or voiding the product warranty.

- ☑ To avoid ionizer degradation, keep grounded objects away from the corona wire and the ionized air stream that is produced by the AeroBar.
- ☑ To avoid injury to one's self or the product, make sure all mounting clips and brackets are connected to a low-impedance earth ground.
- ☑ Do not clean the unit while the unit is powered. Doing so may result in additional contamination and possible shock.
- ☑ To avoid personal injury or damage to the equipment, perform only the maintenance described in this manual.
- ☑ Do not use this product in hazardous or explosive environments

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1

Description

1.1 µWire AeroBar Model 5710
1.2 Identification
1.3 Bar Lengths
1.4 Corona Wire Cartridge

1.1 µWire AeroBar Model 5710

The 5710 AeroBar uses patented µPulse technology to meet the performance, cleanliness, and low cleaning/maintenance requirements of the flat panel display industry.

The 5710 AeroBar has the following unique features and benefits:

- Patented µPulse technology with high efficiency output
- Corona wire is utilized to provide a uniform ion distribution with low field voltage
- Low swing voltage permitting close placement to work surfaces
- µPulse technology and wire emitters combine to provide long maintenance cycles

This manual covers the installation, operation, and maintenance of the 5710 AeroBar.

1.2 Identification

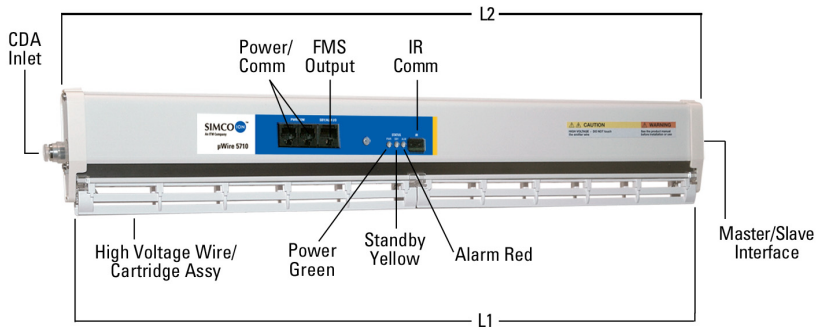


Figure 1. 5710 AeroBar Identification
Refer to Table 1 5710 AeroBar Lengths for AeroBar values of L1 and L2 for a particular bar length

1.3 Bar Lengths

The 5710 AeroBar is available in multiple lengths to fit any tool environment.

The 5710 AeroBar's active length (L1) should be equal or greater than the length of the area to be ionized.

Bar Length L1, mm	Bar Length L2, mm	No. of 150 mm Cartridges	No. of 250 mm Cartridges	No. of Mounting Brackets
400	410	1	1	2
500	510	0	2	2
650	660	1	2	2
750	760	0	3	2
900	910	1	3	2
1000	1010	0	4	2
1150	1160	1	4	2
1250	1260	0	5	3
1400	1410	1	5	3
1500	1510	0	6	3
1650	1660	1	6	3
1750	1760	0	7	3
1900	1910	1	7	3
2000	2010	0	8	3
2150	2160	1	8	3
2250	2260	0	9	4
2400	2410	1	9	4
2500	2510	0	10	4
2650	2660	1	10	4
2750	2760	0	11	4
2900	2910	1	11	4
3000	3010	0	12	4

L1 = Nominal active length of bar. L2 = Nominal physical length of bar.

Table 1. 5710 AeroBar Lengths

1.4 Corona Wire Cartridge

Configuration

There are two (2) 5710 AeroBar corona wire cartridges available, a 150 mm and a 250 mm. Both size cartridges share the same attributes, except length. Any given 5710 AeroBar will consist of one or more 250 mm cartridges and only one (1), if any, 150 mm cartridges. Refer to **Table 1 5710 AeroBar Lengths** for cartridges types in any particular 5710 AeroBar length.

Interchangeability

Cartridges of like sizes can be swapped with each other, or swapped between 5710 AeroBars.

2

Installation

2.1 Safety Information
2.2 Installation Guidelines
2.3 Mounting
2.4 Power Connection Options
2.5 Wiring Information
2.6 Factory Monitoring System (FMS)
2.7 Gas Requirements

2.1 Safety Information

Before installing or operating any component of the ionization system, carefully read the following safety information:

To avoid injury to one's self or the product, make sure to use the correct number of mounting clips for each bar. Refer to **Table 1** for how many are required.

To avoid injury to one's self or the product, do not place any conductive labels on the 5710 AeroBar chassis! Conductive labels may acquire an electrical charge over time and cause random ESD events.

To avoid ionizer degradation, keep grounded objects away from the corona wire and the ionized air stream that is produced by the AeroBar.

To avoid injury to one's self or the product, make sure all mounting clips and brackets are connected to a low-impedance earth ground.

Do not clean corona wire while the unit is powered. Doing so may result in additional contamination and possible shock.

To avoid personal injury or damage to the equipment, perform only the maintenance described in this manual.

Do not use this product in hazardous or explosive environments.

2.2 Installation Guidelines

Keep in mind the following considerations when determining locations for the 5710 AeroBars:

- Observe all site requirements and restrictions.
- Optimal performance will be obtained in an environment with stable temperature and humidity levels.
- Use proper mounting brackets and hardware as required by applicable building codes.
- Avoid installing the 5710 AeroBar near moving components or surfaces.
- Do not install the 5710 AeroBar in hazardous or explosive environments.
- The 5710 AeroBar should be mounted at least 150 mm (6 inches) away from any grounded painted surfaces.

To avoid injury to one's self or the product, do not place any conductive labels on the 5710 AeroBar chassis! Conductive labels may acquire an electrical charge over time and cause random ESD events.

To avoid degraded ionizer performance, keep grounded objects away from the corona wire and the ionized air stream that is produced by the AeroBar.

2.3 Mounting

The 5710 AeroBar has an integral rib molded along the top of its chassis. Mounting brackets can be securely clamped to this rib.

Specially designed stainless steel mounting brackets are available for the 5710 AeroBar and can be ordered from Simco-Ion. See **Section 5.4 Parts & Accessories** in this manual.

Mounting brackets should be equally spaced along the length of the bar. Refer to **Table 1 5710 AeroBar Lengths** for the recommended number of brackets for secure mounting of each length of the 5710 AeroBar.

To avoid injury to one's self or the product, make sure all mounting clips and brackets are connected to a low-impedance earth ground.

2.4 Power Connection Options

Electrical Wiring

Please refer to the diagrams below that show examples for possible electrical wiring schemes.

A hand-held terminal (HHT) is required to set up the operating parameters and to view the status codes of the 5710 AeroBar. To avoid inadvertent alteration of the bar's settings, it is recommended that the HHT be removed from the system when it is not required. The HHT can access the RS-485 communication bus by being connected to any of the RJ-11 Power/Communication cables in the system

Daisy-chain Configuration

If desired, a maximum of three 5710 AeroBars may be electrically connected together in a serial fashion ("daisy-chained"). Chaining bars together can create a simpler electrical wiring scheme that provides power and communication to all of the connected bars through a single bus with only one connection required to an HHT that can "talk" to all of the connected bars. Wiring connection is made from the RJ-11 jacks on the sides of the bars that are labeled "PWR/COM". See **Section 5.3 Wiring Options** for examples of several wiring schemes.

A "daisy-chain" set up will typically consist of two or three bars that are each addressed as "independent" bars. Each of the bars will have a unique address and will maintain its own set of operating parameters; the bars will share connection to +24 VDC power and to the RS-485 communication lines (to a hand held terminal).

If there is an alarm condition at one of the daisy-chained bars, the alarm will only be displayed on the status LEDs of the affected bar. **Daisy chain wiring does not provide global alarm monitoring capability**. See **Section 2.6 Factory Monitoring System (FMS)** for more information regarding alarm monitoring.

An individual connection to a CDA gas supply is required for each bar. There is no "daisy-chain" provision provided for connecting CDA between 5710 AeroBars.

Bars intended for use on a common wiring bus must be set for unique addresses. See **Section 3.2 Handheld Terminal, Bar Address** for information on how to set the address of a bar. Independent bars must be set for the addresses 1, 2 or 3.

Duplicated bar addresses on a single bus will cause communication errors! Please verify bar addresses to avoid problems caused by duplicate addresses in a system.

Master/Slave Configuration

A pair of 5710 bars may be wired together in a master / slave setup. This allows two bars to operate as a team and is typically used to provide ionization coverage over a large, common target area. (By contrast, a daisy-chain setup provides independent areas of ionization that can each be set up differently.) Connection between master and slave bars is made using a CAT-5 RJ-45 cable between the RJ-45 jacks on the ends of the bars labeled "To Slave". See **Section 5.3 Wiring Options** for examples of master/slave wiring. This cable must be not longer than 3 meters in order to in compliance with CE.

In a master/slave setup, timing oriented parameters will be automatically copied from the master bar over to the slave bar to keep the ionization generation/delivery between the bars synchronized. However, power and balance settings will remain settable independently at each of the bars.

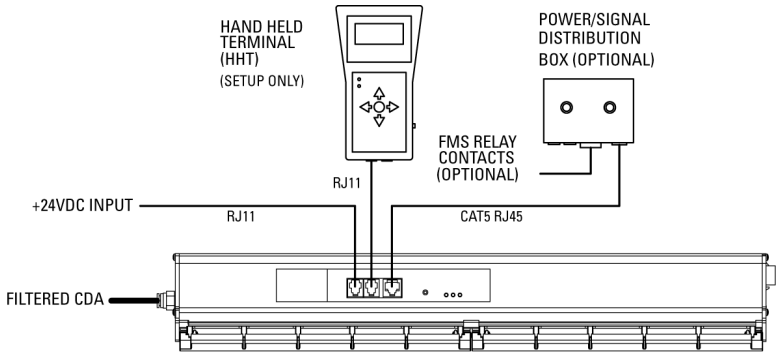
A master-slave pair must be addressed "M" for the master bar and "S" for the slave bar.

A master/slave pair may also be daisy-chained with a single independent bar. Note that a master-slave pair counts as two bars of the maximum limit of three.

Power/Signal Distribution Box (optional)

An optional "Power Signal Distribution Box" is available for use where a remote display of the bar's status indicator LEDs is desired (see **Section 5.4 Parts & Accessories**). This box provides two RJ-11 jacks for power/HHT connections, one terminal block for connection to the FMS relay contact and standby request, and one RJ-45 jack for connection to the "SBY/ALM I/O" connector on the 5710 bar.

A CAT-5 RJ-45 cable is required between the 5710 bar's "SBY/ALM I/O" jack and the "AUX/ALARM" jack on the remote box. In a master/slave setup, a single distribution box should be connected to the master bar, not to the slave.



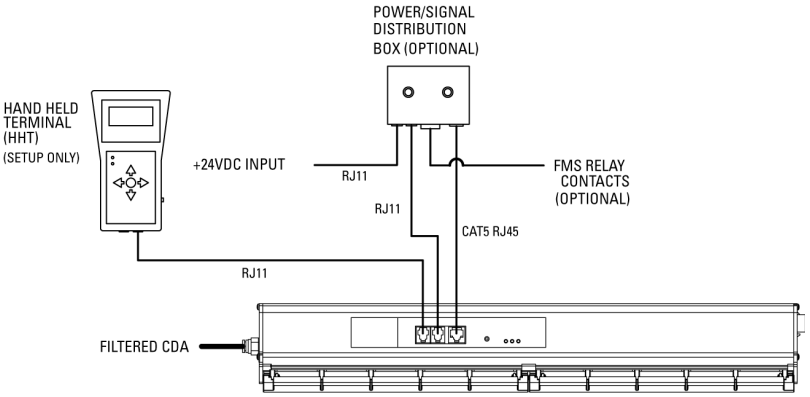


Figure 2. Power Connection using Power Signal Distribution Box

2.5 Wiring Information

Primary electrical connection to the 5710 AeroBar is made through the two RJ-11 jacks on the side of the bar that are labeled "PWR/ COM". These two jacks are wired in parallel and are functionally interchangeable. Either of these RJ-11 jacks can be connected to power or to a Handheld Terminal (HHT)

The 5710 AeroBar requires 24 VDC ±10%, 12W. max.

PIN	Description
1	24 VDC Input
2	Communications RS-485B
3	Power Ground
4	Power Ground
5	Communications RS-485A
6	24 VDC Input

Table 2. Power and Communication Connectors (PWR/COM RJ-11)

Typical cable used to connect to 24 VDC power or to a handheld terminal is 26AWG 6-conductor modular flat cable terminated with RJ-11 6/6 modular plugs.

CAT-5 RJ-45 cables are used between bars configured for a master/slave setup.

2.6 Factory Monitoring System (FMS)

The 5710 AeroBar provides for an Alarm output and a Standby input.

The alarm output is across pins 1 and 8 of the bar's "SBY/ALM I/O" RJ-45 connector and is a relay contact that is open when the 5710 AeroBar is either not powered or is in an alarm state (see **Table 5 5710 AeroBar Alarm Codes** for more information). The alarm relay contact is rated for +/-24 VDC @ 0.2A maximum.

The standby input (active low) allows the user to temporally stop the ion production without turning off the 5710 AeroBar. This is most useful when the ionization needs to stop when there is no product under the 5710 AeroBar, thus extending the maintenance interval on the 5710 AeroBar. Standby is activated by pulling pin 3 of the "SBY/ALM I/O" RJ-45 connector low. See **Section 3.4** for more information about Standby mode.

In addition, both the alarm output and standby input can be conveniently accessed through a terminal block on the optional Power-Signal Distribution Box. See **Table 4** for pinout information for this option.

Pin	Description
1	Alarm Contact 1
2	24 VDC Out
3	Standby Input (Active Low)
4	Signal Ground
5	Signal Ground
6	RESERVED
7	24 VDC Out
8	Alarm Contact 2

Table 3. 5710 AeroBar's "SBY/ALM I/O" RJ-45 Connector

Pin	Description
1	24 VDC Out
2	Alarm Contact 1
3	Alarm Contact 2
4	Signal Ground
5	Standby Input (Active Low)
6	RESERVED

Table 4. ALARM OUTPUT Terminal Block, Optional Power Signal Distribution Box

2.7 Gas Requirements

A flow meter is recommended for use in conjunction with gas input to the 5710 AeroBar. The use of a flow meter will help to establish a defined and uniform flow of air through the ionizer.

Gas Requirements

Simco-Ion strongly recommends using clean dry air (CDA) to improve performance of ion delivery to the target. A CDA supply should be appropriately filtered to remove moisture, oil, and particles. Filtration to the end user's desired cleanliness level is recommended (filtration systems are not supplied by Simco-Ion.) Using the 5710 without CDA will adversely affect decay times, as well as allowing more buildup on the wire, necessitating more frequent cleanings.

Gas Connections

The 5710 AeroBars have a quick push-connect gas inlet fitting on one end of the bar.

Bars of length 400 mm to 1500 mm utilize a quick fitting that mates with 6 mm O.D. tubing.

Bar of length 1650 mm to 3000 mm utilize a quick fitting that mates with 8 mm O.D. tubing.

To connect the air supply tubing to the 5710 AeroBar:

- Insert the tubing into the gas quick fitting on the endcap. Be sure the tubing is fully inserted by gently tugging back on the tubing to lock the tube into place.
- To remove the tubing from the fitting, push in the fitting collar towards the bar to release the tubing.

The amount of CDA required will be a function of many factors, including the presence of airflow from HEPA filters, decay time and

swing voltage requirements, and distance from the bar to the product. Simco-Ion recommends a minimum of at least 6 liters/minute flow for each 150 mm grill assembly on the bar and 10 liters/minute flow for each 250 mm grill assembly on the bar. (See Table 1 for the number of each size grill assemblies on the bar.)

For example:

5710-500 mm = 20 liters/minute (total flow per bar)
5710-1500 mm = 60 liters/minute
5710-2150 mm = 86 liters/minute

More CDA than this may be necessary to meet a specific application performance requirement. See **Section 3.1** for more information on the trade-off between CDA airflow and bar performance.

3

Operation

3.1 Settings
3.2 Handheld Terminal (HHT)
3.3 Alarms
3.4 Standby
3.5 Master/Slave

3.1 Settings

The 5710 AeroBar comes from the factory with default settings that can be optimized for a particular application. For best performance, the settings should be tuned for your specific application--size of the target, distance to the target, purging airflow, HEPA airflow, etc.

There are only four settings that need to be adjusted to optimize the 5710 AeroBar's performance in your environment: Frequency, Positive Power, Negative Power and Balance:

- **Frequency**: Sets the rate of positive and negative ions being supplied to the target. A lower frequency will increase the swing voltage present on the target. Conversely, a higher frequency will decrease the swing voltage present on the target. Typically, a lower frequency will reduce decay time as measured on a CPM.
- **Positive Power**: Sets the amount of positive ions produced. Increasing the Positive power level will produce more positive ions, shift the ion balance in the positive direction and will reduce the negative decay time.
- **Negative Power**: Sets the amount of negative ions produced. Increasing the Negative power level will produce more negative ions, shift the ion balance in the negative direction and will reduce the positive decay time.
- **Balance**: Sets the ratio of positive and negative ions produced for each cycle. Adjust the Balance value to coarsely adjust the ion balance at the target. Then, use the Positive Power and/or Negative Power settings to fine tune the ion balance at the target.

Setup Guidelines

The 5710 AeroBar is designed for easy setup and calibration. In order to obtain the optimum performance for your environment, perform an initial setup with a charged plate monitor (CPM) positioned at the targeted area under the ionizer. The Simco-Ion Model 280A CPM is recommended.

Below is list of guidelines to keep in mind when setting up the 5710 AeroBar:

- Lower the frequency and increase the voltage levels to reduce ion recombination prior to the ions reaching the target.
- For small target areas that are close to the AeroBar (typically within 50-150 mm to the bar), lower the ±power levels to reduce the ion emission and use a higher frequency setting to decrease the swing voltage.
- For long distance applications, a setup with lower frequencies is appropriate.
- For short distance applications, a setup with higher frequencies is appropriate.
- Adjust the balance to ensure that equal numbers of positive and negative ions reach the target area
- Balance can be "fine-tuned" by using the Positive and Negative Power setting.

Example of a Typical Setup

1. If the installation will be a multi-bar setup utilizing daisy-chained wiring, it can be helpful to set the bar addresses before installing the bars in place. See **Section 3.2 Handheld Terminal, Bar Address** for information on how to change a bar's address. (Addresses can be changed later but this requires disconnecting the bar from the bus so it can be communicated with singly.)
2. Securely mount the bar (see **Sections 2.2 and 2.3**). Place a Charged Plate Monitor (CPM) at the actual target location for the ionized air stream.
3. Connect filtered CDA to the bar. (see **Section 2.7**)
4. Connect power to the bar. (see **Sections 2.4 and 2.5**)

The Model 5710 bar will be powered up as soon as 24 VDC power is connected to the bar.

Use either a wired connection to a Handheld Terminal (HHT) or IR communication from a battery powered HHT to adjust the bar's operating parameters.

5. Set the operating Frequency. Select the Frequency based on the maximum +/- swing allowed at the target area.

   Set the Frequency at the value that provides a +/- swing that is as close as possible to the maximum limit allowed, but without exceeding the limit.

6. Set both the Positive and Negative Power settings for a starting value somewhere between 75-85%
7. Use the Pulse Balance screen of the HHT to adjust the Pulse Balance value either more (+) or (-) to center the +/- swing around zero.
8. If necessary, use the Positive Power and Negative Power adjustments to increase or decrease the peak amount of +/- swing.
9. If needed, adjust the Pulse Balance to re-center the +/- swing around zero.

The general performance of the 5710 AeroBar will be determined by a number of factors:

- The bar's adjustable operating parameters set by the end user
- The CDA flow rate through the ionizer. A higher CDA flow rate generally means a faster CPM decay at the target.
- Any HEPA air flow rate in the target environment. Higher environmental air flow from the bar to the target area generally results in a faster CPM decay rate at the target.
- The proximity of nearby grounds. Grounded surfaces near the ionizer or in the ionized air stream can cause shifts in balance and/or slower decay times.
- The maintenance level of the bar's corona wire system. A poorly maintained ionizer will result in reduced ionizer performance for both decay times and balance.

3.2 Handheld Terminal (HHT)

Use the Handheld Terminal (HHT) to change the settings of the 5710 AeroBar. The HHT can be used to monitor the 5710 AeroBar during operation (It is recommended that the HHT be removed from the system after setup to prevent inadvertent changes to the operating parameters.)

The HHT has an LCD display, two LED indicators, 5 menu navigation buttons, an IR (infrared) Communications interface, two RJ-11 ports, and a Power On/Off switch:

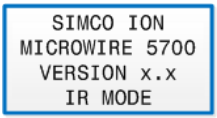
- **LCD Display** is where the setting and 5710 AeroBar information is displayed.
- **COM/STATUS** (Green) displays the current HHT and Bar Status:
  - A flashing indicator indicates the HHT is communicating to the 5710 AeroBar.
  - A solid on indicator indicates the bar is on and ionizing.

Fault (Red) displays fault at either the HHT or 5710 AeroBar:

- A flashing indicator indicates that the 5710 AeroBar and HHT are not communicating.
- A solid on indicator indicates the 5710 AeroBar is in alarm or standby and may not be ionizing. Some alarm states still allow the bar to operate, see Table 5 Alarm Codes, for more information.

Menu Navigation buttons allows the user view or set 5710 AeroBar parameter:

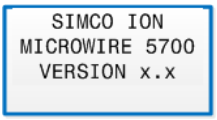
- ***<UP>/<Down>*** Arrows increment or decrement the parameter value.
- ***<LEFT>/<RIGHT>*** Arrows navigate to screens menus.
- ***<ENTER>*** sends the parameter value shown on the “NEW” line to the bar or performs the requested act.



IR (infrared) Communications interface allows two way line-of-sight communications to the 5710 AeroBar. A 9 VDC battery (internal) is required for using the IR interface. When the HHT is turned on and not wired to the 5710 AeroBar it will automatically switch to IR mode. The IR range is approximately 8 feet.

In IR Mode the HHT does not update automatically. To refresh the screen, point the HHT at the 5710 AeroBar and press the <ENTER> key.

In wired Mode the HHT updates automatically.



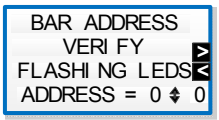
Two RJ-11 ports on the bottom of the HHT allow for power and communication connections to a 5710 AeroBar over a wired RS-485 balanced pair serial interface.

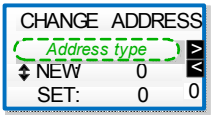
Power ON/OFF switch allows the user to turn on or off the HHT. In the IR mode it is best to turn off the HHT when not in use to conserve battery power.

BAR ADDRESS shows or sets the 5710 AeroBar's communication address. In order to set a bar's operating parameters, the HHT needs to be set to the desired 5710 AeroBar's address.

- Press the ***<Up>*** or ***<Down>*** Arrow to select a different 5710 AeroBar address.

While on this menu screen and the 5710 AeroBar's address matches the address shown on the display, all three of the LEDs on the 5710 AeroBar will quickly blink. This allows you to locate the bar that is being addressed. **The HHT cannot be used in IR mode to change a bar's address setting**.

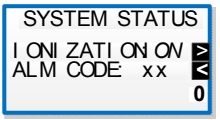




To Change the address of the bar, press and hold the <Enter> key for about 5 seconds to activate a "CHANGE ADDRESS" menu screen. Using this screen, an address of 1, 2 or 3 can be set. Addresses 1, 2 and 3 are used to denote "independent" bars that will each operate as stand-alone units.

A pair of 5710 AeroBars can be set to work together in a "master" and "slave" configuration. In this case, set the address to "M" for the master and "S" for the slave (see **Section 3.5 Master/Slave** for more information).

SYSTEM STATUS shows the current status of the 5710 AeroBar:

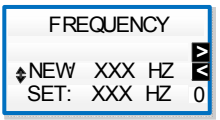


"Ionization" is a short notification of the 5710 AeroBar's state and will display:

- "ON" when Ionization is normal;
- "SB" when the 5710 AeroBar is in standby;
- "TS" when the 5710 AeroBar is in Alarm Test; or
- "AL" when the 5710 AeroBar has some type of Alarm.

"ALM Code" will help diagnose any problems that might occur. All states of the 5710 AeroBar including a normal state have an associated number code (see **Table 5 5710 AeroBar Alarm Codes**) to aid in diagnosing any alarms that might occur.

FREQUENCY shows or sets the 5710 AeroBar's ionization cycle rate which is the



rate at which the ionization changes polarity. By using the **<UP>** or **<Down>** arrow keys, you can change the rate at which the ionization polarity changes from 0.1Hz to 35Hz. After the value is keyed in, press the **<ENTER>** key to save the new value in the 5710 AeroBar.

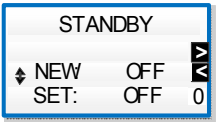
POSITIVE POWER shows or sets the 5710 AeroBar's positive ionization output level.

Setting a larger value will increase positive ion production and shift the ion balance in the positive direction. By using the ***<UP>*** or ***<Down>*** arrow keys you can change the positive ionization level from 1, the minimum power level, to 100, the maximum power level.

NEGATIVE POWER shows or sets the 5710 AeroBar's negative ionization output level.

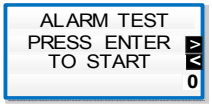
Setting a larger value will increase negative ion production and shift the ion balance in the negative direction. By using the ***<UP>*** or ***<Down>*** arrow keys you can change the negative ionization level from 1, the minimum power level, to 100, the maximum power level.

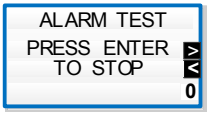
STANDBY shows or sets the 5710 AeroBar's Standby mode.



Setting the standby to "ON" will temporarily pause the ionization of the 5710 AeroBar. This state will also be shown in the **SYSTEM STATUS** screen as "SB" with an alarm code of 4.
This screen will also show the state of the standby input request from the RJ-45 "SBY/ALM I/O" port. Note that a standby request from the RJ-45 port will override a standby request set using the HHT.

ALARM TEST activates or deactivates the alarm output.



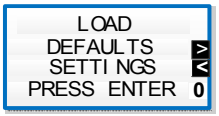


On this screen you can turn on or off the alarm circuit to test FMS connection to your equipment. Pressing the ***<Enter>*** key will activate the alarm output relay and show a *walking* (✹✹✹) LED display on the 5710 AeroBar. To stop the Test simply press the ***<Enter>*** key again.

This state will also be shown in the **SYSTEM STATUS** screen as "TS" with an alarm code of 11.

The Alarm Test will not change the 5710 AeroBar's ion production. If the ionizer HV is enabled when the Alarm Test is activated, the HV remains enabled during this test.

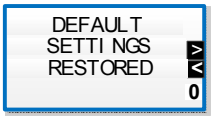
LOAD DEFAULTS to restore a set settings.



Each 5710 AeroBar contains pre-defined settings that can be recalled to return the 5710 AeroBar to a known operational state.

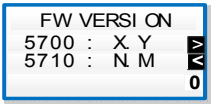
Upon pressing the <Enter> key, you must confirm this request. Using the ***<Up>*** or ***<Down>*** arrow keys, select either **CANCEL** (default) or **ACCEPT** then press ***<Enter>***.

- Selecting ACCEPT will change all the 5710 AeroBar's settings to the pre-defined values (except the 5710 AeroBar's address).
- Selecting CANCEL will return you the previous menu screen.



After selecting "**ACCEPT**", the HHT will display "Default Settings Restored" for 2 seconds. The restored settings will take effect immediately.

FIRMWARE VERSION shows the versions of both the 5710 AeroBar and HHT.



Displays the firmware version of the addressed AeroBar (Model 5710) and of the Handheld Terminal (HHT, Model 5700).

3.3 Alarms

An alarm condition is indicated by the 5710 AeroBar's LEDs and the HHT's red LED (if connected). Alarms are caused by one or more of the following possible conditions:

Code	Grn LED	Yel LED	Red LED	Alarm Contacts	Comments
xx	○	○	○	OPEN	No Power
1	●	○	○	CLOSED	Normal, All OK
2	✹	○	○	CLOSED	Wire Communication
3	✹	✹	○	CLOSED	IR Communication
4	●	●	○	CLOSED	Standby Mode
5	●	✹	○	OPEN	Input Power Warning
6	○	○	●	OPEN	Local Power Supply Fault
7	○	○	✹	OPEN	SLAVE Reporting Fault
8	○	○	●	OPEN	ARC Detected[1]
9	●	●	✹	OPEN	Broken Wire Detected
10	●	✹	✹	OPEN	SLAVE Sync Failure
11		✹✹✹		OPEN	Alarm Test

Off: ○ On: ● Blink: ✹ Walking: ✹✹✹

1. When an ARC is detected, the AeroBar's high voltage will turn off for 30 second after which the high voltage will turn back on and the AeroBar will resume operation.

Table 5. 5710 AeroBar Alarm Codes

For safety, the 5710 AeroBar is designed to shut off the high voltage ionization any time an arc is detected in the area of the corona wire. This alarm is indicated by a steady Green and Red LED and an Alarm state 8.

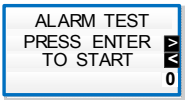
Status codes reported for a bar that is addressed "S" (slave) will be the standard code value plus 20. For example, an arc-event alarm at a slave bar will be reported as an alarm code "28" rather than the standard "8".

To restore bar operation after a HV shutdown due to an arc event, cycle the 24VDC power to the bar.

If the red alarm LED continues to stay lit, contact Simco-Ion Technical Support (techsupport@simco-ion.com or 510-217-0460).

Alarm Test (for wiring testing, etc.)

The alarm output can be tested without affecting the ionization output. Connect the HHT to the Ionizer (refer to **Section 2.4** for more information on connecting the HHT to the 5710 AeroBar.)



Navigate to the Alarm Test Screen, press the ***<Enter>*** key on the HHT to start the alarm test.

This will open the Alarm relay contacts, simulating an alarm condition.

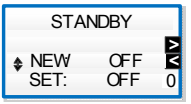
To stop the test and return to normal operation, press the ***<Enter>*** key on the HHT again.

3.4 Standby

Standby allows stopping the flow of ions while keeping the 5710 AeroBar's electronics powered on. This mode can be used to temporally turn off ionization when there is no product under the bar, thus reducing the contamination build up on the wire.

The 5710 AeroBar can be place in standby mode by:

- Connecting signal ground to the Standby input on either the bar's RJ-45 FMS I/O pin 5 or to Pin 3 of the optional Power/ Signal Distribution Box.
- On the HHT, navigate to the Standby screen, and press the up or down arrow keys + <ENTER> to set the 5710 AeroBar into standby ("ON") or normal operation ("OFF").



A standby request via the bar's "SBY/ALM I/O" connector or from a Power/Signal Distribution Box will override a standby request made via a HHT.

A master/slave setup, the standby request should be made to the master bar if it is desired to have both bars go into standby. A standby request made to a slave bar will only be applied to the slave bar and NOT to the master bar.

3.5 Master/Slave

In the case where two 5710 AeroBars are required to provide ionization coverage of a common area, two 5710 AeroBars can be connected together in a Master/Slave relationship. In a master/slave setup, timing oriented parameters (operating frequency and a sync signal) will be automatically copied from the master bar over to the slave bar to keep the ionization generation/delivery between the bars synchronized. However, power and balance settings may be set independently at each of the bars.

To configure two 5710 AeroBars into one master and one slave, simply address one bar as "M" for the master and the other as "S" for the slave. Refer to **Section 3.2 Handheld Terminal (HHT) BAR ADDRESS** for information on setting an 5710 AeroBar's address.

Use CAT-5 cable to connect from the master bar's "Slave RJ-45" endcap jack to the "Slave RJ-45" endcap jack on the slave bar. This CAT-5 cable will provide power, communication and sync signal information from the master to the slave bar.

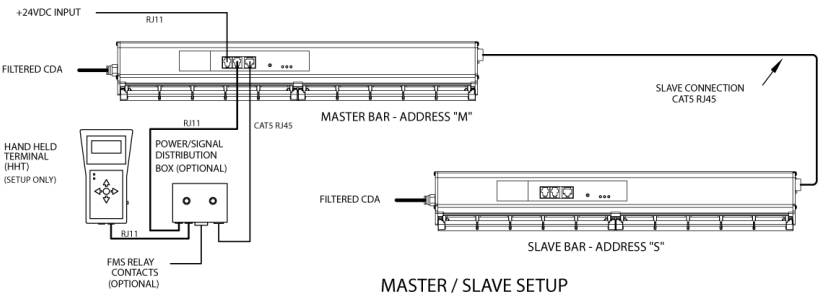


Figure 4. Typical Master/Slave Connection

To adjust the 5710 AeroBars, connect the HHT to the designated Master 5710 AeroBar (or, in IR mode, point the HHT at the designated Master).

Adjust the Master bar's operating parameters as you would for a single, independent 5710 AeroBar (refer to **Section 3.1 "Example of a typical setup"** for information on how to setup the operating

parameters of an ionizing bar system.) The frequency setting of the Master bar will automatically be copied and sent to the slave 5710 AeroBar. After setting up the master bar, proceed to set up the operating parameters for the slave bar.

Master/Slave Issues

If a master bar is placed into "Standby", the slave bar will also go into standby mode. However, if a slave bar is placed into standby, the master bar will NOT enter standby mode.

If an alarm occurs at a master bar, the alarm will only be reported and displayed at the master bar. If an alarm occurs at a slave bar, the alarm state will be visually displayed via LEDs at both the master and slave bar; however, the alarm status code reported by the HHT will be the standard status code value plus 20. For example, a master bar will report an arc-event alarm as a status code "8" while a slave bar will report a status code "28".

A bar that is addressed as a "master" must be connected to a bar addressed as a "slave" or an alarm (status code 10) will be enabled. (Likewise, a slave bar will alarm unless connected to a master.)

The Master/Slave interconnecting cable must be not longer than 3 meters in order to remain in compliance to CE.

If CDA purge gas is required for the master-slave bar operation, the CDA must be supplied individually to each of the bars. There is no provision for making a single gas connection that runs between bars.

If the master-slave combination uses a long bar (>1500 mm) and a short bar (<1500 mm), be aware of the difference in air fitting sizes (6 mm vs. 8 mm) between short and long bars as explained in **Section 2.7 Gas Requirements**.

4

Maintenance

4.1 Maintenance Considerations
4.2 Corona Wire Inspection & Cleaning
4.3 Cleaning the Corona Wire Cartridge Assembly & Chassis
4.4 Cartridge Insertion/Removal

4.1 Maintenance Considerations

As maintenance schedules will vary depending on installation conditions, the end user will need to develop a schedule that meets the requirements for their application. In general, equipment should be checked on a monthly basis to ensure it is operating as originally set.

There are no user-serviceable parts inside the 5710 AeroBar. Any unauthorized service will void the warranty and may result in additional repair charges.

4.2 Corona Wire Inspection & Cleaning

Remove power from the 5710 AeroBar before inspecting or cleaning the unit.

Do not clean the AeroBar while the unit is powered on. Doing so may result in particle contamination to the work area and possible shock.

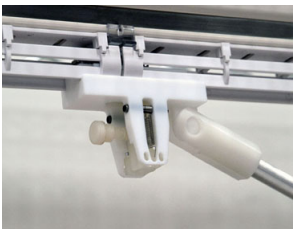
Inspection

Before performing any maintenance, the 5710 AeroBar must be powered down.

Dirty or eroded corona wires may result in reduced ionization output or failure. Contamination can be caused by a number of environmental factors, including non-visible airborne molecular contaminates (AMC). The corona wire should be checked regularly for erosion or material accumulating in or around the corona wire and cartridge.

Cleaning the Corona Wire Materials

Remove power from the 5710 AeroBar before performing any cleaning operations on the bar.



Cleaning is recommended every 6 months or longer depending on the application and/or environment.

Simco-Ion offers a specially designed 5710 AeroBar emitter wire cleaning tool. The tool will conveniently and safely clean the emitter wire using Simco-Ion self contained emitter cleaner. See Section 5.4 Parts and Accessories for part numbers of the 5710 AeroBar Cleaning Tool, Tool Extension Rod and Emitter Cleaner.

4.3 Cleaning the Corona Wire Cartridge Assembly & Chassis

Remove power from the 5710 AeroBar before inspecting or cleaning the unit.

Do not clean the AeroBar while the unit is powered on. Doing so may result in particle contamination to the work area and possible shock.

Use only 50% de-ionized water and 50% IPA to clean the exterior of the 5710 AeroBar chassis and corona wire cartridge grills. **Do not use any other cleaners or solvents.**

The external surfaces of both the 5710 AeroBar chassis and the corona wire Cartridge grill assembly can be cleaned if dirt has accumulated on the surface. Use a cleanroom-compatible cloth moistened with 50% de-ionized water and 50% IPA. Do not use a soaking wet cloth; the cleaning cloth should only be moistened with IPA. Change the cloth frequently to ensure that any dirt is completely removed from the surface to be cleaned. Do not use this method to clean the corona wire inside a cartridge assembly. Use the recommended Wire Cleaner tool that is described in **Section 4.2**. After cleaning, allow the bar to dry thoroughly before reapplying power to the bar.

The corona wire cartridge assembly may be cleaned in an ultrasonic bath using deionized water @ 50°C, maximum.

DO NOT ALLOW THE CORONA WIRES TO BE TOUCHED DURING THE WASHING PROCESS.

Care must be taken while loading or removing the corona wire cartridges from the ultrasonic bath.

Cartridges must be loaded into the ultrasonic bath in either a single layer or stacked in a crossed pattern to prevent tangling of the cartridges and damage to the corona wires.

After washing, the cartridges must be completely dry before reinstalling into the bar. The temperature of the drying operation should not exceed 50°C, maximum.

4.4 Cartridge Insertion/Removal

Remove power from the 5710 AeroBar before inspecting, removing or installing any corona wire cartridges to the bar.

Failure to do so may result in particle contamination to the work area and possible shock.

Remove power to the 5710 AeroBar before touching the corona wire cartridges.

Squeeze the release tabs inward on either side of one end of the cartridge and gently pull the end of the cartridge away from the clear retaining clip, angling the cartridge away from the bar. If the other end of the cartridge does not release from its retaining clip as the cartridge angles away, squeeze the release tabs on that clip and gently pull the cartridge out.

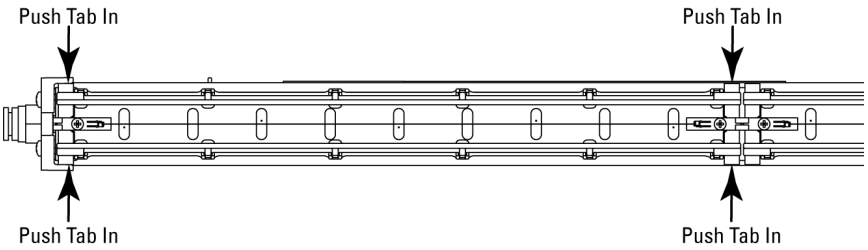


Figure 5. Location of Cartridge Release Tabs on Retaining Clips (top view)

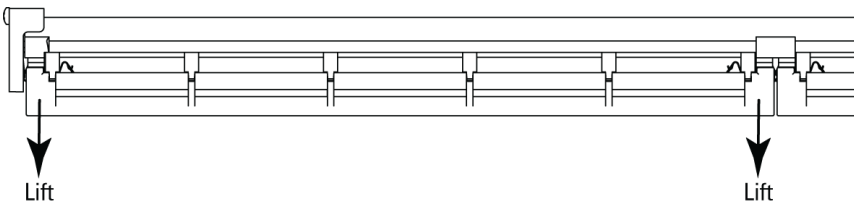
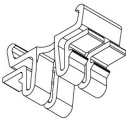


Figure 6. Lift/Pull Cartridge Out of Retaining Clips (side view)

To insert a cartridge, align the cartridge in between the clear retaining clips and gently press the cartridge toward the 5710 AeroBar, The retaining clips should click into place when the cartridge is completely seated. The base plate of the cartridge should be flat against the bar.



Replacement Cartridges

Replacements cartridge assemblies can be ordered from Simco-Ion. See **Section 5.4 Parts and Accessories** for further information.

5

Specifications

5.1 Specifications
5.2 Dimension Drawing
5.3 Wiring Options
5.4 Parts & Accessories
5.5 Factory Default Settings

5.1 Specifications

Input Voltage	24 VDC ±10%, 12W (max)
Output Voltage	Adjustable, 13 kV pk-pk (typ)
Range	50-2000 mm, application and performance specification dependent
Frequency	Default setting at 1 Hz, adjustable from 0.1-35 Hz
Balance	Inherently self-balancing system <±25V over the length of the bar; maintains balance performance >6 months without cleaning (in an ISO 14644-1 Class 4 or better environment)
Ion Emission	Micropulsed high voltage technology
Performance	3.5 sec decay average @ 600 mm (typ) measured at 5710 AeroBar center, 70 l/m purging air, no laminar flow; setting 1 Hz, 100% output, CPM: balance <±10V; swing 100V pk-pk
Corona Wire	Tungsten, 100 micron dia.
Gas Supply	Clean dry air (CDA)
Airflow	50 psi (optimal); 90 psi (max) through 6 mm O.D. quick fitting (400-1500 mm bars) or 8 mm O.D. quick fitting (1650-3000 mm bars)
Alarm Output	Relay contact, rated ±24 VDC @ 0.2A
Cleanroom Class	ISO 14644-1 Class 2 (better than Fed. Std. 209E Class 1)
Operating Env.	Temperature 15-35°C (59-95°F); humidity 30-60% RH, non-condensing
Ozone	<0.05 ppm
EMI	Below background level
Bar Settings	All operating parameters set via a Handheld Terminal (HHT) by either wired connection to the bar or by battery powered IR control
LED Indicators	Green POWER; Yellow COMMUNICATION; Red ALARM (combinations of LEDs indicate specific status conditions of the bar)
Enclosure	ABS chassis; stainless steel reference plates
Dimensions	3.3H x 1.3W x 15.75/19.7/25.6/29.5/35.4/39.4/45.3/49.2/55.1/59.1/65/68.9/74.8/78.75/84.65/88.6/94.5/98.4/104.3/108.25/114.15/118.1L in. (84H x 33W x 400/500/650/750/900/1000/1150/1250/1400/1500/1650/1750/1900/2000/2150/2250/2400/2500/2650/2750/2900/3000L mm)
Warranty	Two year warranty
Certifications	CE Nemko CSA C22.2 No. 60950-1 c UL us UL 60950-1 RoHS 2 Compliant, KCC

5.2 Dimension Drawing

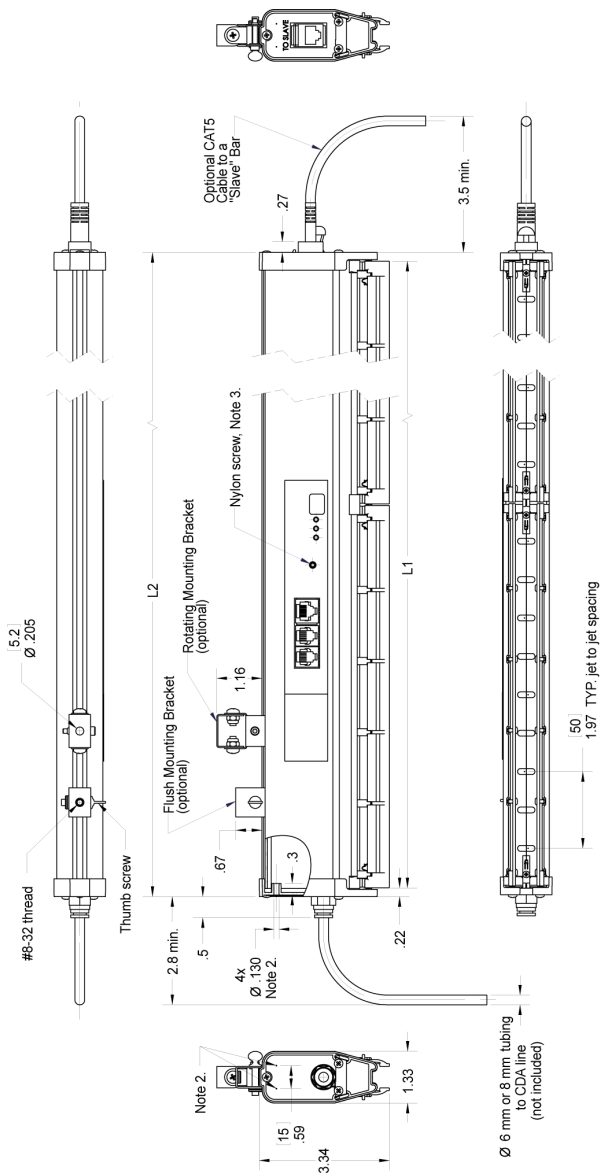
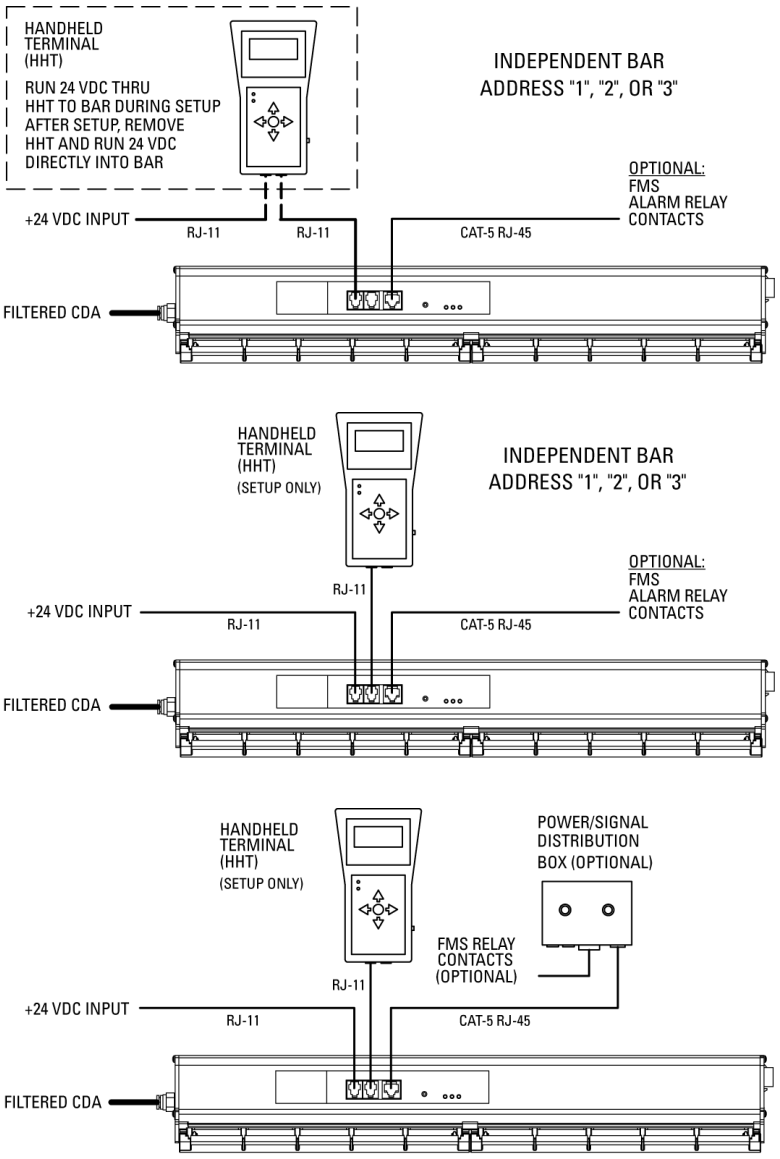
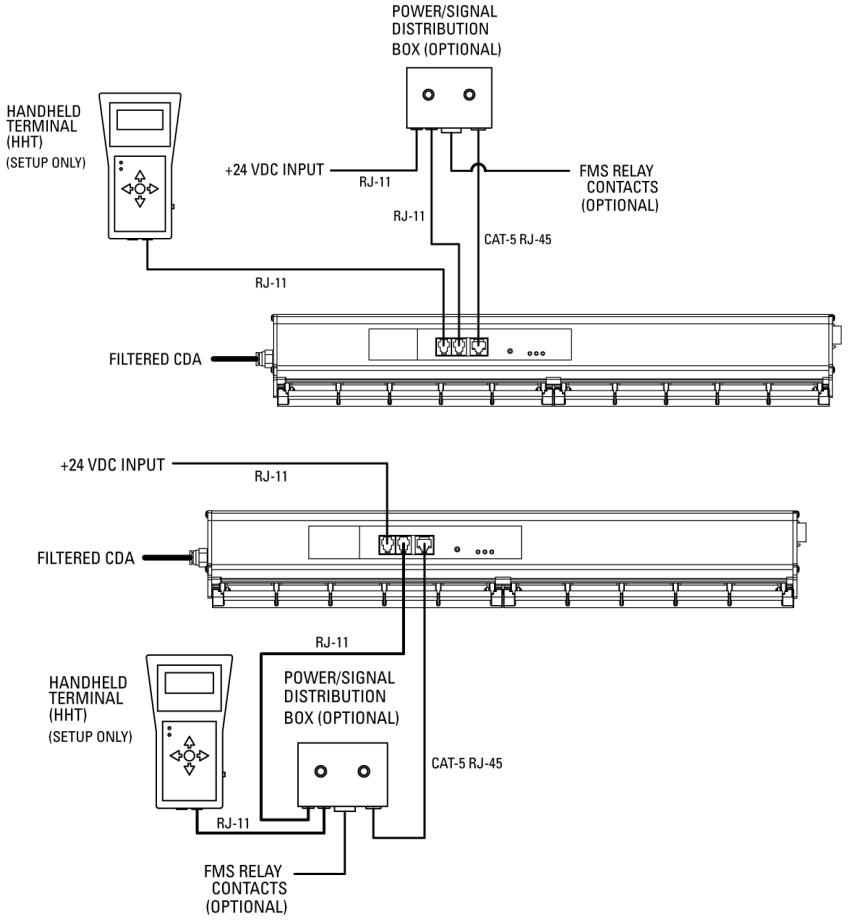


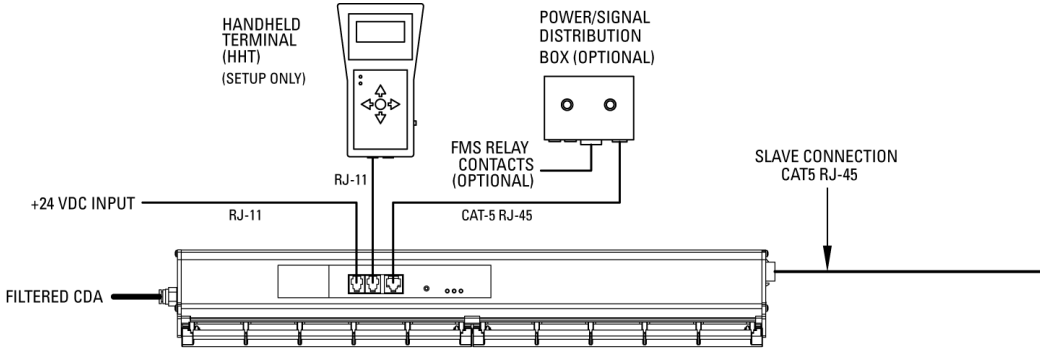
Figure 7. 5710 AeroBar Dimension Drawing
Refer to Table 1 5710 AeroBar Lengths for 5710 AeroBar values of L1 and L2 for a particular bar length

5.3 Wiring Options



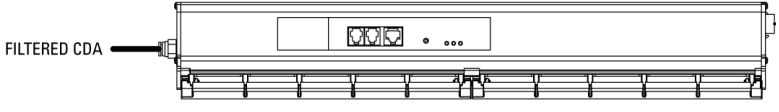
INDEPENDENT BAR WITH OPTIONAL POWER / SIGNAL DISTRIBUTION BOX


POWER/SIGNAL
DISTRIBUTION
BOX (OPTIONAL)
HANDHELD
TERMINAL
(HHT)
(SETUP ONLY)
+24 VDC INPUT
RJ-11
FMS RELAY
CONTACTS
(OPTIONAL)
RJ-11
CAT-5 RJ-45
RJ-11
FILTERED CDA
+24 VDC INPUT
RJ-11
FILTERED CDA
RJ-11
HANDHELD
TERMINAL
(HHT)
(SETUP ONLY)
POWER/SIGNAL
DISTRIBUTION
BOX (OPTIONAL)
CAT-5 RJ-45
RJ-11
FMS RELAY
CONTACTS
(OPTIONAL)

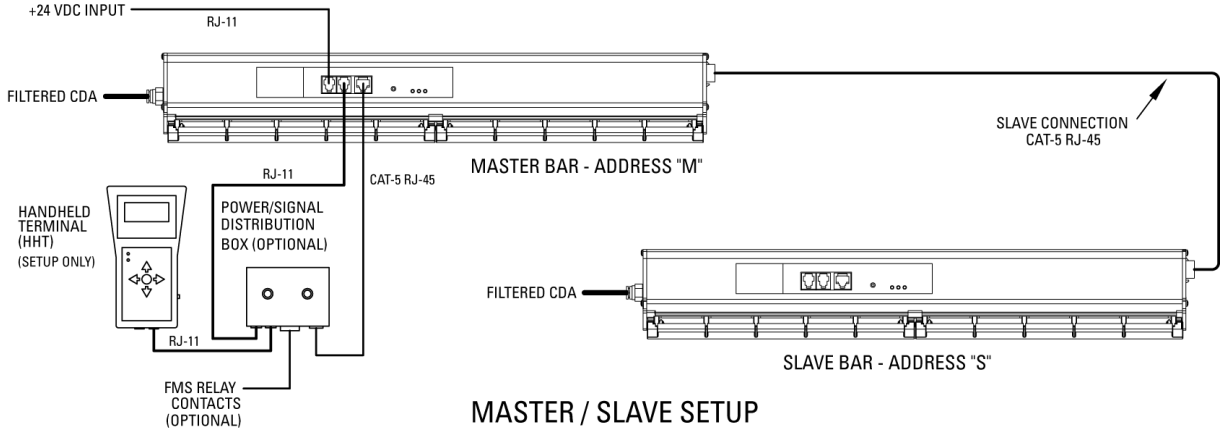


MASTER BAR - ADDRESS "M"

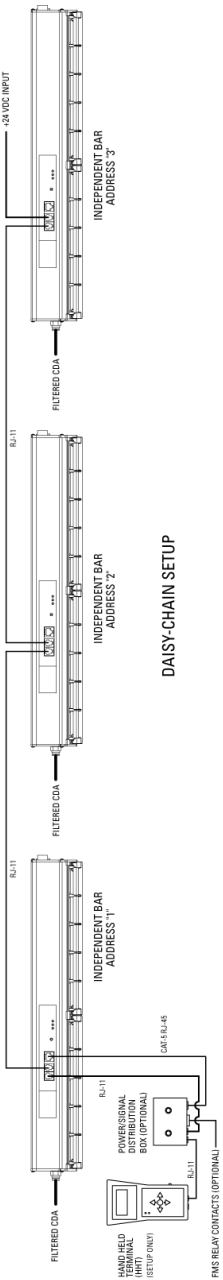
MASTER / SLAVE SETUP



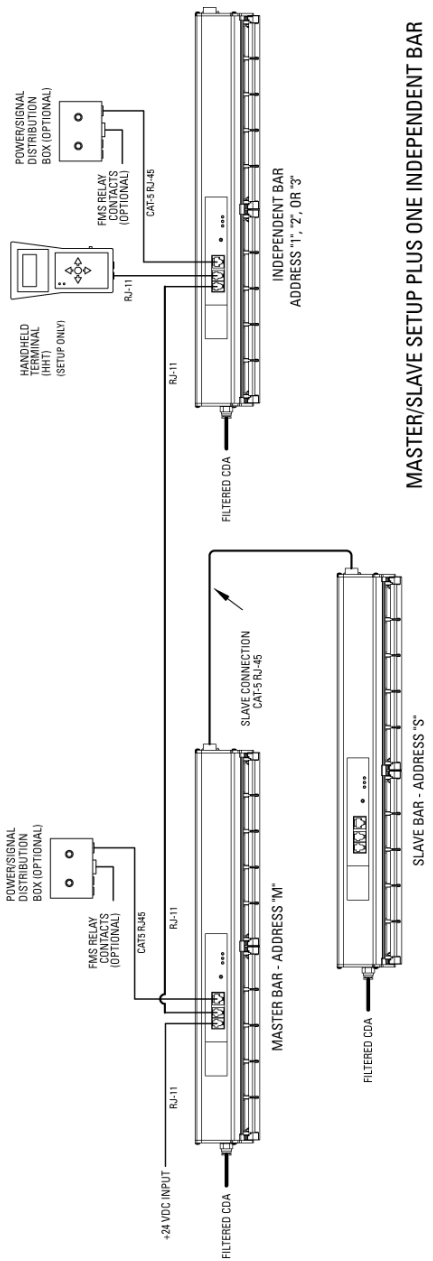
SLAVE BAR - ADDRESS "S"



MASTER / SLAVE SETUP



DAISY-CHAIN SETUP

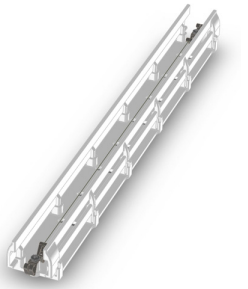

MASTER/SLAVE SETUP PLUS ONE INDEPENDENT BAR
POWER/SIGNAL DISTRIBUTION BOX (OPTIONAL)
FMS RELAY CONTACTS (OPTIONAL)
CAT-5 RJ-45
RJ-11
HANDHELD TERMINAL (HHT) (SETUP ONLY)
INDEPENDENT BAR ADDRESS "1", "2", OR "3"
FILTERED CDA
SLAVE CONNECTION CAT-5 RJ-45
MASTER BAR - ADDRESS "M"
SLAVE BAR - ADDRESS "S"
+24 VDC INPUT

5.4 Parts & Accessories

33-2840-01

Cartridge, 150 mm

33-2850-01



Cartridge, 250 mm

33-1710-7 (7 ft)
33-1710-10 (10 ft)
33-1710-15 (15 ft)
33-1710-20 (20 ft)
33-1710-40 (40 ft)

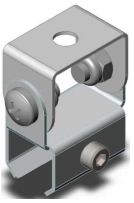
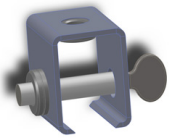
RJ-11 6 pin, 6 wire Power and communication cable

25-0540-6 (6 ft)
25-0540-10 (10 ft)
25-0540-15 (15 ft)

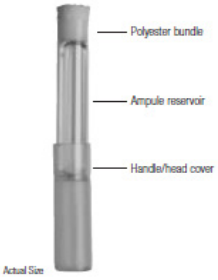
CAT-5 with RJ-45 Ethernet Cable for connection to Power Signal Distribution Box or Master/Slave connection

33-5700-01

Power Signal Distribution Box

32-2211-01		Swivel Mounting Bracket
32-2213		Mounting Bracket
33-5701-1		24 VDC Power Supply
91-5700-HHT-01		Handheld Terminal (HHT)
91-5700-01		Emitter Wire Cleaner 3 ft. Rod (must order 22-1000)
33-5715-01		Emitter Wire Cleaner 3 ft extension rod

22-1000



Emitter Cleaner (box of 50)

5.5 Factory Default Settings

The 5710 AeroBar will ship from the factory with the following factory default operating settings. If custom defined default settings are required, please contact Simco-Ion for further information prior to ordering.

Bar Address:	1 (Independent mode)
Frequency:	1 Hz
Positive Power:	50
Negative Power:	50
Pulse Balance:	0
Standby:	OFF

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Warranty & Service

Simco-Ion provides a limited warranty for the µWire AeroBar Model 5710. New products manufactured or sold by Simco-Ion are guaranteed to be free from defects in material or workmanship for a period of two (2) years from date of initial shipment. Simco-Ion liability under its new product warranty is limited to servicing (evaluating, repairing, or replacing) any unit returned to Simco-Ion that has not been subjected to misuse, neglect, lack of routine maintenance, repair, alteration, or accident. In no event is Simco-Ion liable for collateral or consequential damages. Consumable items such as, but not exclusive to, emitter points, corona wires, batteries, filters, fuses or light bulbs are only covered under this warranty if found defective as received with the new product.

To obtain service under this warranty, please contact Simco-Ion Technical Support at techsupport@simco-ion.com or (510) 217-0470.

Notes

Notes

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