AutoJet® 1000+ Spray Control Panel

OWNER'S MANUAL

AutoJet® TECHNOLOGIES

Spraying Systems Co.®
Experts in Spray Technology

ML001000PLUS
spray.com

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SECTION 1

PREFACE

1.1 IMPORTANT

This AutoJet® Spray Control Panel and all components are produced, tested, and checked at the factory. This system can be dangerous if used incorrectly. Read this manual carefully and pay special attention to any safety instructions.

Operators must always follow the general safety instructions in the working area and aim to prevent accidents.

The manufacturer reserves the right to make changes in standard construction without prior notification.

Images and diagrams in this manual may not be exact representations of your system and/or configuration.

1.2 HOW TO USE THIS MANUAL

This manual is intended to be a source of information for the operators and/or technicians who may be installing, interacting with, or servicing/maintaining Spraying Systems Co.® systems and components.

This manual contains important safety warnings, installation instructions, operating instructions, troubleshooting, and maintenance information.

ICONS

WARNING: The user can be seriously injured, damage their health and/or damage the system.

CAUTION: Product, process, or environment can be damaged or be in danger if the instructions are not followed correctly.

ATTENTION: Supplementary information for the user that draws attention to possible problems.

SECTION 2

SAFETY

2.1 GENERAL SAFETY INFORMATION

READ AND FOLLOW INSTRUCTIONS

All safety related operating instructions should be read before the system is operated. Follow all operating instructions.

SERVICING

Do not attempt to service this system unless you have been trained or authorized to conduct repairs. Only authorized and qualified service personnel should attempt to service this system. Service by unauthorized personnel will void all warranties.

WARNING: Before performing any maintenance, make sure electrical power is off and any air/liquid pressure is bled from the system.

REPLACEMENT PARTS

This system has been designed with components that work together to provide the best system performance. When replacement parts are required, only Spraying Systems Co.® recommended components should be used to maintain proper system operation and electrical and pneumatic safety. The use of any unauthorized replacement parts will void any warranties.

UNINTENDED USE

Use of Spraying Systems Co.® equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property. Examples of unintended use of equipment:

- Using incompatible materials
- Making unauthorized modifications
- Removing or bypassing safety guards or interlocks
- Using incompatible or damaged parts
- Using unapproved auxiliary equipment
- Operating equipment in excess of maximum ratings

REGULATIONS AND APPROVALS

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Spraying Systems Co. equipment will be voided if instructions for installation, operation, and service are not followed. All phases of equipment installation must comply with federal, state, and local codes.

PERSONAL PROTECTIVE EQUIPMENT

Spraying Systems Co. strongly recommends the use of appropriate safety equipment when working in potentially hazardous environments and chemicals. This safety equipment includes, but is not limited to, the following:

- Protective hat
- Safety glasses or face shield
- Chemical-resistant or safety gloves and apron
- Long sleeve shirt and long pants

Users of this product should never place themselves in the path of the resulting spray. Users should consult and follow the recommendations of the Safety Data Sheet (SDS) of any chemical or fluid sprayed using this system.

PRESSURIZED SYSTEMS

It is important to recognize proper safety precautions when using a pressurized spray system. When dealing with pressure applications, the system pressure should never exceed the lowest rated component. Always know your system and all component capabilities, maximum pressures, and flow rates.

WARNING: Fluids under pressure can penetrate skin and cause severe injury.

ATTENTION: Always remember to carefully read the chemical manufacturer's labels, follow SDS and all directions.

WARNING OF SHOCK HAZARD

To reduce the risk of electric shock, do not open the cover on electrical control panel. For service contact Spraying Systems Co.® at 1-866-321-2250.

WARNING: Plug panels into A GFCI outlet.

WARNING: To prevent injury, avoid contact with potentially hot parts. Components can cause severe burns. Do not aim the spray at any person or part of the body. Do not place any part of your body in the spray pattern.

2.2 UNPACKING THE SYSTEM

The system components come carefully packaged to protect them from damage. Use caution when opening the packaging. The packaging will contain all parts needed to install the system. Parts of the unit may be wrapped in bubble wrap. Remove all of the packaging material wrapping the system. Once unpacked and removed the from the packaging, the system is ready for installation and connection.

CAUTION: The packaging may contain exposed cables, hoses, or other components. Always exercise caution when opening boxes to avoid accidental damage or slicing of various components.

SECTION 3

SYSTEM OVERVIEW

The AutoJet® 1000+ Spray Control Panel performs simple ON/OFF timing control for air and electric actuated spray nozzle operation.

The 1000+ has two independent timing channels (Channel A and Channel B) that have separate timing and trigger modes. In order to have both channels available, you must be using a hydraulic nozzle. If your system configuration uses air atomizing nozzles, only Channel A will be available for use. With the optional recipe based timing feature, the 1000+ will allow for the creation and storage of 20 unique user created recipes.

The 1000+ supports plug and spray compatibility as the entry-level spray control panel option in the SCS Series. This means that this spray control panel supports all SCS Series fluid delivery options, all Air Control Package (ACP) offerings, all Zone Control Panel offerings, and the SCS Series Single Frame Design and Mobile Cart option.

SPRAY CONTROL TIMING MODES

- Variable spray time mode – sprays only as long as trigger is present.
- Repeat spray mode – spray cycle is repeated on/off as long as trigger is present.
- Fixed spray mode – sprays once for a fixed time (single shot).

3.1 SPECIFICATIONS

- Dimensions: 11.34” H (288 mm) x 8” W (203.2 mm) x 5.34” D (135.6 mm)
- Weight: Approximately 10 lbs. (4.5 kg).
- 40° F ambient min., 104° F ambient max.
- 4.3” color HMI touch screen display
- 100-240 VAC/60Hz/1Ph, 3A (Plug into GFCI outlets)
- 24VDC output control. 3A max. total available output combined across both channels.
- One float switch input for both Channel A and Channel B
- Max nozzle distance: 15 m (55 ft)/min
- Green LED - solid green for system OK, flashes green when fault present.
- Max. no. of 10000AUH-03 PulsaJet® spray nozzles: 8
- Max. no. of 10000AUH-10 PulsaJet® spray nozzles: 2

3.2 MOUNTING

The 1000+ and SCS Series components are best when mounted on the SCS Series Frame with mobile cart. If the frame and mobile cart were not selected, the 1000+ and components will ship in their two-panel design configuration which allows for separate wall mounting of both the 1000+ and an Air Control Package (ACP).

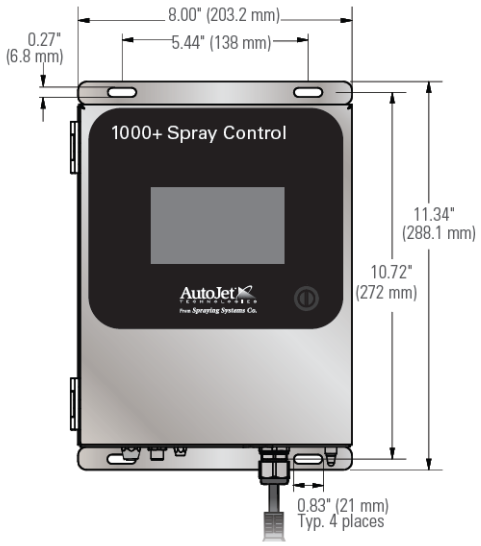
SCS SERIES SINGLE FRAME DESIGN AND MOBILE CART

If your system includes the single frame design with the SCS Series frame and mobile cart, it will be mounted on the frame at the factory. The ACP and fluid delivery version selected for your spray application will also be mounted, if applicable.

POSITION AND MOUNTING THE PANEL

The spray control panel should be mounted in a location where it will NOT be subjected to direct spray or misting from any nozzles.

If mounting on a wall use anchors that are designed to support at least 15 lbs. (6.8 kg), according to the anchor manufacturer's specifications. If mounting to an AutoJet® system use provided hardware. The mounting holes are on 5.44" (138 mm) x 10.72" (272 mm) centers and are made for 1/4" (6 mm) screws with 3/8" (10 mm) diameter screw heads.



3.3 CONNECT ELECTRICAL SPRAY NOZZLE

Connect the electric spray nozzles to OUT A or OUT B/ATOM connections on the control panel. If multiple nozzles, connect nozzles to a junction block and then connect the junction cable to a OUT A or OUT B/ATOM. (Connect up to 8 electric spray nozzles using the junction block, note if using both channels the total for both cannot exceed 8).

3.4 ADDITIONAL CONNECTIONS IF APPLICABLE

TRIGGER OR SENSOR

Connect trigger or sensor devices to the TRIG A and TRIG B connections that will be used to start spray sequence. Available triggers are as follows, the one used should be based on the customer's application.

- Trigger cable (for use with customer-supplied trigger signal)
- Sensors including:
  - – Object
  - – Proximity
  - – Laser (short/long)
  - – Thru-beam – Full spectrum color sensor
- Hand-held trigger unit
- Foot switch

FAN/ATOMIZING AIR

Fan/Atm Air electrical connection is used to actuate the air solenoids in our control panel. Connect the cable from the air control panel to OUT B/ATOM connection on the panel.

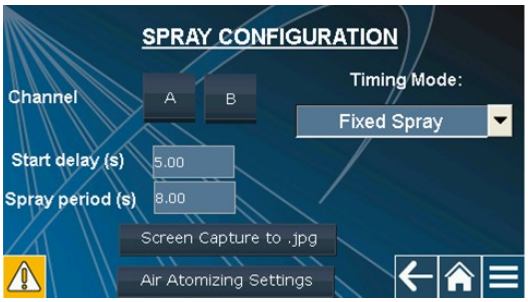
FLOAT SWITCH

Connect float switch cables to FLOAT A and/or FLOAT B. When the tank is low, an alert is displayed on the control panel HMI and the green system status LED flashes. The 1000+ has a digital input for a float switch, one per channel (2 total). Cables go to the Float A and/or Float B connections on the control panel. When tank is low, an alert is displayed on the control panel HMI and the green system status LED flashes.

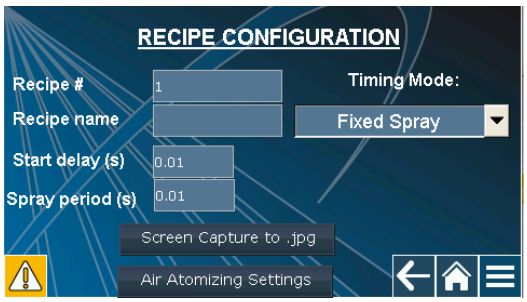
3.5 POWER UP THE PANEL

Plug into grounded 100/240VAC, 3A, single phase GFCI outlet. Turn power on. HMI display will illuminate. To set spray parameters and for HMI operation, please refer to the *Application Settings* in the owner's manual.

3.6 CONFIGURE SETTINGS



- **SET SPRAY CONFIGURATION:** Configuring the spray parameters for an available channel you can set the start delay, spray period, and select your desired timing mode. Timing modes include variable, repeat, and fixed spray.



- **SET RECIPE CONFIGURATION (OPTIONAL):** If you have recipe configuration it will allow you to select the recipe number, create a name, select the desired timing mode, set the start and stop delay, and set the interval on and off.

SECTION 4

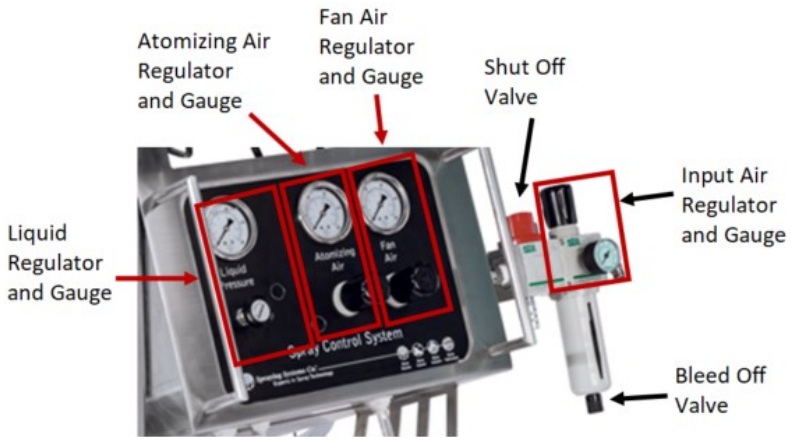
SUPPLY AIR TO THE SYSTEM

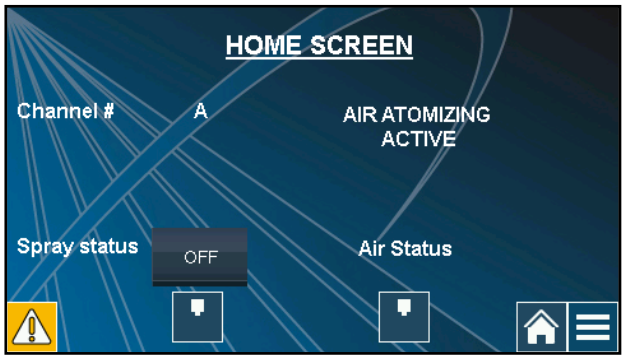
4.1 ADJUSTMENTS AND OPERATION

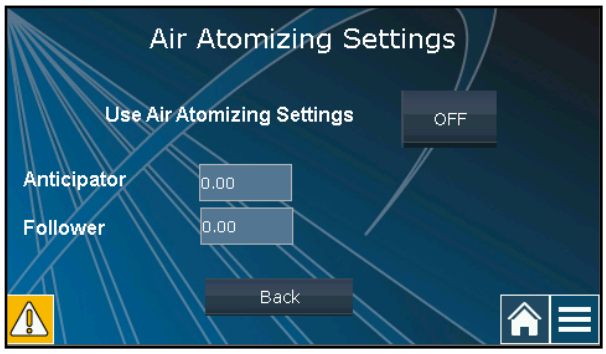
1. Turn the red valve on the air inlet valve/regulator/filter clockwise to the on position. Turn regulator that is on top of the air filter to an air pressure between 40-100 psi (2.8-6.9 bar). Air pressures higher than this will shorten the life of the pump.
2. Adjust the regulated air pressures (regulators on front panel).
   - If applicable, depending on your spray system you may have anywhere from Liquid Pressure regulation only to Liquid Pressure; Pump Air (preset); Atomizing Air (drop size); Fan Air (spray angle/pattern).
3. Each air control line is equipped with a manual air pressure regulator. The regulators can be adjusted by first pulling up on the knob to unlock the regulator and then turning clockwise to increase and counterclockwise to decrease the pressure.
4. When the proper air pressure is reached, press down on the knob on the regulator to lock it in place.

Note: Your system is equipped with cylinder air for air actuated spray nozzles. Cylinder air pressure is equal to the inlet air pressure to the system. It is not regulated; therefore, you must provide a minimum of 45 psi (3.1 bar) to the system. It must be above 45 psi (3.1 bar) to actuate air actuated nozzles like Spraying Systems Co.® 1/4JAU series.

5. Adjust the Liquid Pressure regulator. For pump version ensure that the pump inlet air valve is in the "open" position. The regulator can be adjusted by first pulling up on the knob and then turning clockwise to increase and counterclockwise to decrease the pressure. When the proper liquid pressure is reached, press down on the knob to lock it in place





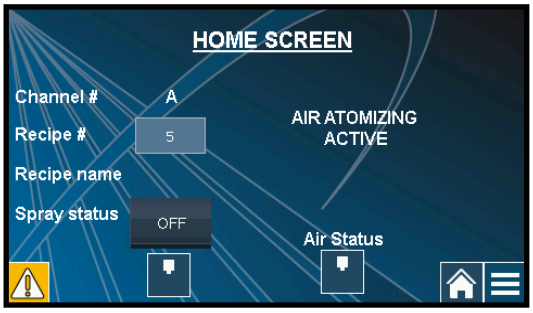


SECTION 5

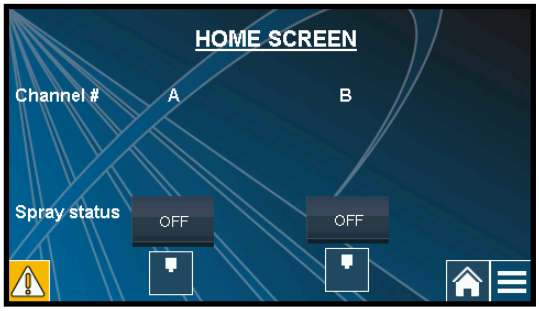
SYSTEM OPERATION

5.1 HOME SCREEN OVERVIEW

Power on the 1000+ by using the power switch located on the bottom of the spray control panel. A green LED on the front of the 1000+ will illuminate when power is on. The Home Screen will load after being powered on.



1000+ home screen with air atomizing active and recipes enabled



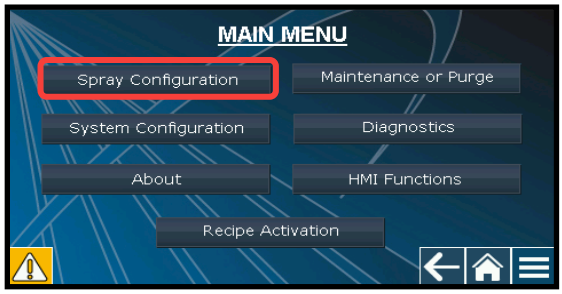
1000+ home screen with both channels available

The home screen will display the currently active channel, the currently active recipe number and name (if purchased), display the current spray status, and display text on the right-hand side of the screen if air atomizing is currently active. The spray icons below *spray status* and *air status* will illuminate if active. The icons are showing inactivity in the above home screen image.

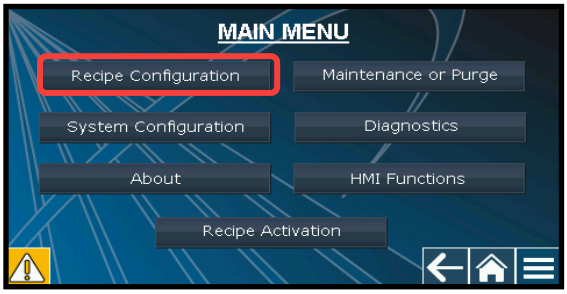
Selecting the menu icon will bring up the Main Menu. 

MAIN MENU

The Main Menu gives you access to Configuration settings, Maintenance or Purge, Diagnostics, About, HMI functions, and Recipe Activation. There are two versions of the main menu depending on if you have purchased the recipe functionality for your system. If you have, Recipe Configuration will replace Spray Configuration.



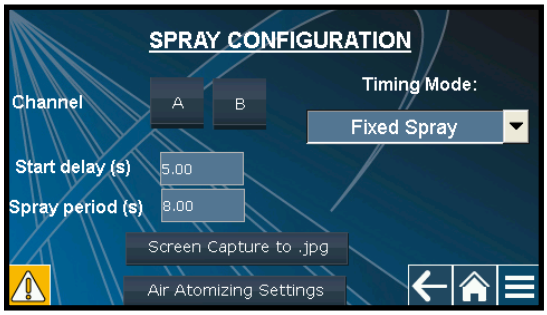
Main Menu screen, system without recipes



Main Menu screen, system with recipes

5.2 SPRAY CONFIGURATION SCREEN

Spray configuration settings will allow you to configure the spray parameters for an available channel. You can set the start delay, spray period, and select your desired timing mode. Timing modes include variable, repeat, and fixed spray.



Spray Configuration screen

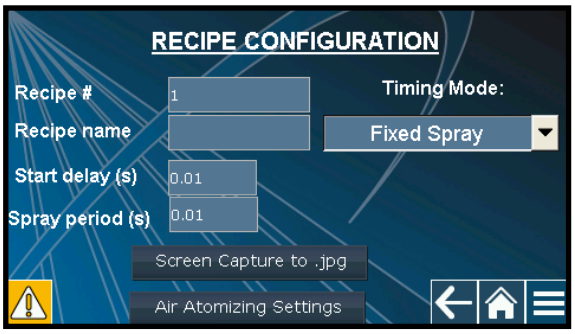
Recipe Activation menu

5.3 RECIPE CONFIGURATION SCREEN

A recipe is a pre-configured set of timing and spray parameters designed to help transition quickly from one application to the next. The 1000+ is capable of storing up to 20 user created recipes.

Note: If you did not purchase the recipe option for your panel and would now like to have access to recipes, you can contact your local Spray Specialist to purchase this option at any time. After your purchase, you will be provided with an activation code to enter into your 1000+ to enable recipes.

If you purchased the recipe option for your 1000+ configuration, you will have access to the Recipe Configuration settings. This will allow you to select the recipe number, create a name, select the desired timing mode, set the start and stop delay, and set the interval on and off.



Recipe Configuration screen

5.4 TIMING MODES

Timing modes are selected by going to the HMI settings page and selecting the “Timing” button. The system will spray for a predetermined time depending on the timing mode selected. The spray controller allows for accurate time-based control over the spray nozzle based on an external trigger signal.

When there is a start delay value of 0 sec., the spray will start immediately after the trigger signal is sent to the 1000+, and if the stop delay is set to 0 sec., the spray will stop immediately after trigger signal goes low. All delay values can be set from 0.00 - 320.00 sec., spray times can be set to 0.01 - 320.00 sec.

Note: Variable and repeat modes have start/stop delays that are user settable (fixed mode only has start delay).

Spray Period

- The spray period is the time the object remains under the spray nozzle or the time that it takes to dispense a dose. This will be in time units.

Start Delay

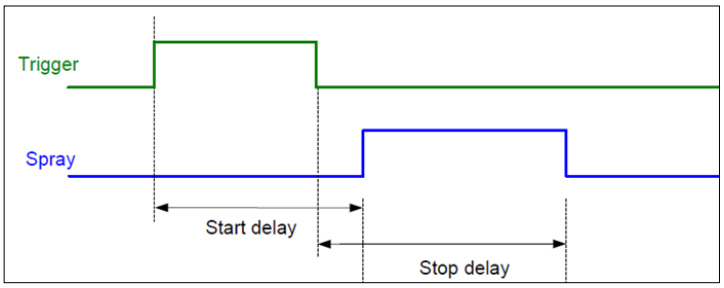
- The time that the system should wait between a trigger event and the start of the spray.
- Typically, this is the distance between the sensor and the spray nozzle.
- The start delay must always be longer than the configured minimum signal length of the trigger.

Stop Delay

- The time that the system should wait between the end of a trigger event and the end of the spray. Typically, this is the distance between the sensor and the spray nozzle.

VARIABLE SPRAY

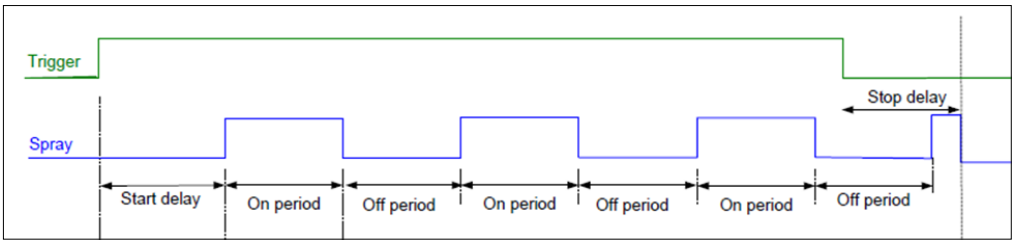
Used to create spray applications with variable length. The length of the spray depends on the specific time delays between the rising and falling edge of the trigger input. The spray will follow the trigger according to user settings. The system will spray after trigger goes high then stops when the trigger is low. For this timing mode you enter “Start Delay” and “Stop Delay”.



Variable spray mode diagram

REPEAT SPRAY MODE

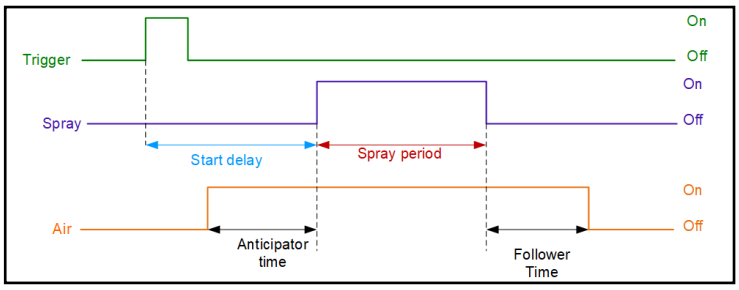
Repeat is used to create spray applications of specific time during a variable length spray period. The lengths of the spray depend on the specific time delays between the rising and falling edge of the trigger input. Spray follows trigger according to user settings. The system will spray after trigger goes high then stops until next trigger event. So for every trigger, there are repeated spray events. For this timing mode you enter “Start Delay”, “Interval Off”, “Interval On”, and “Stop Delay”.



Repeat spray mode diagram

FIXED SPRAY MODE

This timing mode is used to create a delayed spray pulse for a fixed predetermined amount of time. The system will spray after a trigger, then stops until next trigger event occurs. For every trigger, there is a single spray event. For this timing mode you enter “Start Delay” and “Spray Period”.

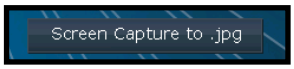


Fixed spray mode diagram

5.5 SCREEN CAPTURE

Once you’ve configured a recipe, tap the “Screen Capture to .jpg” button under the recipe configuration screen. This will save a screenshot of the recipe on a fat32 formatted USB stick that you’ve inserted into the USB-A port on the back of the HMI. You can save these images for easy recipe reference for line operators or engineers.

Once you are finished configuring the recipes, tap the menu button to continue the configuration. This will bring you back to the Main Menu.



5.6 AIR ATOMIZING SETTINGS

Air atomizing can be turned on or off from this screen. Air atomizing requires the connection of an air atomizing nozzle and an ACP. You can set your anticipator and follower times here. Air control package gets connected to output B.

Note: Only a single channel (Channel A) will be available for use when air atomizing is active.

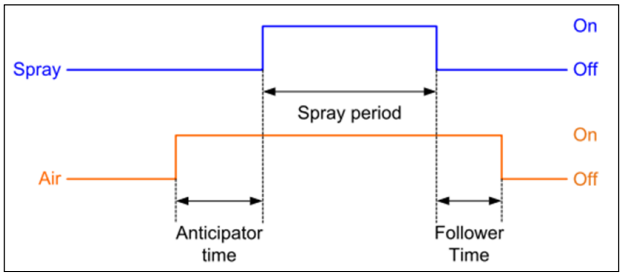
Air atomizing settings

ANTICIPATOR/FOLLOWER SPRAY TIME

When air atomizing settings are on, the 1000+ will use the set anticipator value to switch the air output to the nozzle on before it starts spraying to allow the spray pattern to fully develop. When the system stops spraying, the air will continue for a short period based on the set follower time to guarantee no large droplets can drip off of the nozzle.

Note: The anticipator time must not be shorter than the start delay time set in the timing settings.

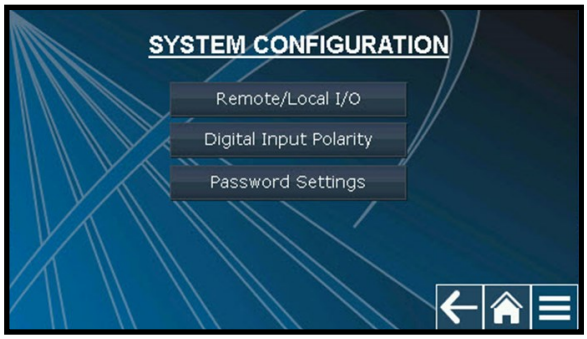
When a spray pattern is generated where the off-time is greater than the anticipator time plus the follower time, the air output to the nozzle remains on for the duration of the spray pattern.



Anticipator/Follower

5.7 SYSTEM CONFIGURATION SCREEN

System configuration settings allows you to configure your trigger and float switch settings, set the digital polarity for these accessories, and access password settings.



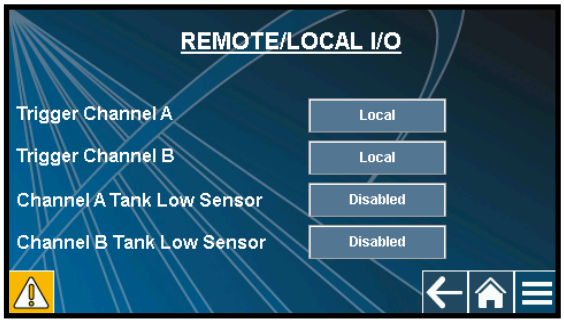
System Configuration settings

5.8 REMOTE/LOCAL I/O

This screen allows you to set the status of trigger and sensor inputs.

- **Trigger Channel A:** Toggle between *remote (X0)* and *local trigger*. While in *remote (X0)* the 1000+ is looking for the trigger input from an external sensor. When this option is set to *local*, the triggering option is done via a button that appears on the HMI.
- **Trigger Channel B:** Functions the same as Channel A, but for triggering Channel B.
- **Channel A Tank Low Sensor:** This enables or disables the tank low input. When enabled, it allows the 1000+ to see this input. When set to disabled, the 1000+ will not see a tank level input even if a float switch is connected.
- **Channel B Tank Low Sensor:** Functions the same as Channel A Tank Low sensor, but for Channel B.

Once you have finished your configuration, touch the back button to return to the system configuration screen.

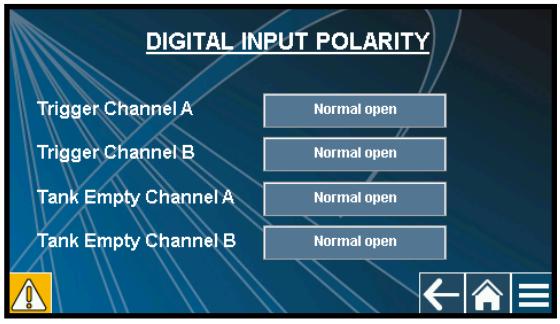


Remote/Local I/O screen

5.9 DIGITAL INPUT POLARITY

You set the polarity of your digital inputs to be normally open or normally closed. In a standard configuration, these are set to normally open.

Note: If you have enabled the tank empty inputs: remote/local I/O screen, and you set the polarity of these inputs to 'normally closed', you will see a fault displayed on the HMI and the green LED will flash

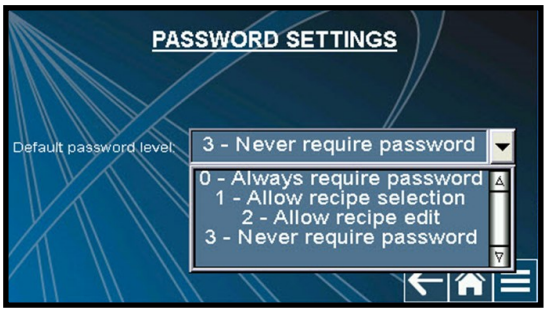


Digital input polarity screen

5.10 PASSWORD SETTINGS

The default 1000+ password setting is "3 - Never require passwords" and the 1000+ will never prompt the user for a password when changing parameters. If you require password protection, there are three password levels you can select, each with its own unique password.

Password settings



1000+ password protection levels

1000+ password protection levels are:

Level 0 – Always require password: The highest level of protection, every action will require the password.

Level 1 – Allow recipe selection: A user on this level can only change the currently active recipe.

Level 2 – Allow recipe edit: A user on this level can edit and select the currently active recipe.

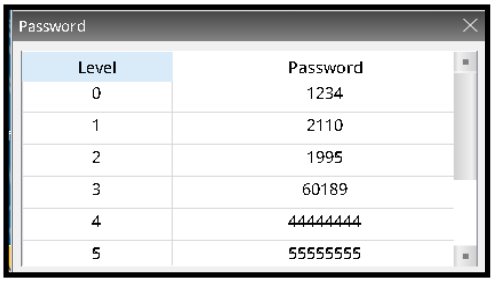
Level 3 – Never require password: This level allows full access to all 1000+ functionality.

CONFIGURE PASSWORDS

The password table (shown below) shows the default level passwords and can only be edited by a Level 3 user. Important information about passwords and password levels:

- Level 0 is the lowest and level 3 is the highest level.
- Once a password is entered, the security level will remain at that level until another password is entered.
  - For example, if the line manager needs to go change some of the high-level settings, they must enter the level 3 password.
  - Once they are finished editing, the HMI will remain in level 3 (no passwords required) until a lower password level is chosen.
- In case of errors or if passwords have been forgotten, the top-level password is 77777777.

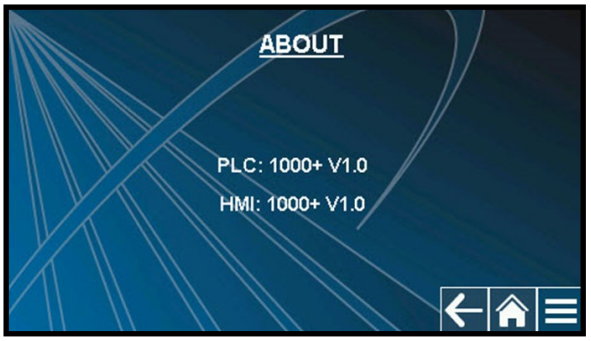
Configure passwords



Password table

5.11 ABOUT SCREEN

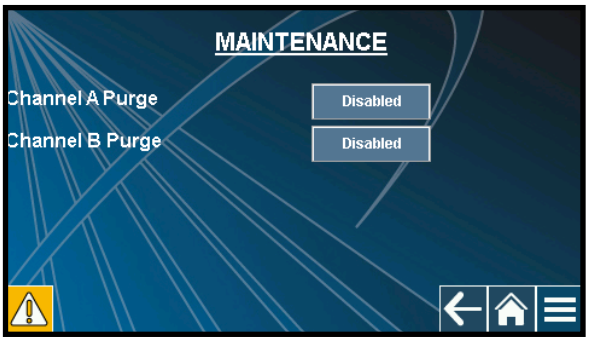
Displays the PLC and HMI firmware versions.



About screen

5.12 MAINTENANCE (PURGE) SCREEN

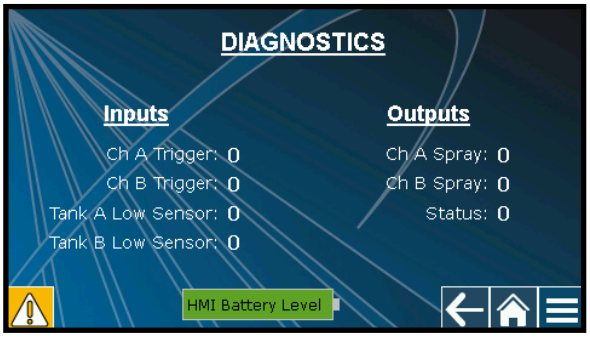
The Maintenance (Purge) screen is used for cleaning and purging fluid lines. Pressing the button next to the desired channel will cause the nozzle output for that channel to be fully open until the button is pressed again to stop the spray for that channel. The purge feature will override any other system triggers.



Purge screen

5.13 DIAGNOSTICS SCREEN

This screen can be used for set up and troubleshooting. Input and output signals are shown live as they occur. For example, when setting up trigger sensors, you can view if the 1000+ is seeing the trigger signal. 0 occurs for no signal detected, 1 occurs when the signal is active. The HMI battery level is an indicator for the internal (replaceable) RTC clock battery.

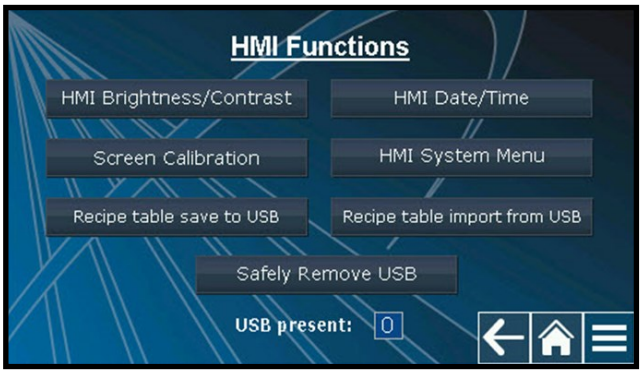


Diagnostics screen

5.14 HMI FUNCTIONS SCREEN

HMI Functions contains settings and adjustments that relate to basic 1000+ HMI operation.

- HMI Brightness/Contrast: Adjusts HMI brightness
- Screen Calibration: If the touch points seem off or different from where you touch, this will allow you to recalibrate the HMI.
- HMI time/date: For setting Real Time Clock (RTC) in HMI.
- HMI system menu: Base level menu in HMI software.
- Recipe table save to USB: Save the recipes currently created on your 1000+ to a USB stick.
- Recipe table import from USB: Import previously created recipes.
- Safely remove USB: For safely removing USB stick, ensures any data written to USB stick is saved.
- USB present: Sows a 1 for USB stick present, 0 for no USB stick detected.



HMI Functions screen

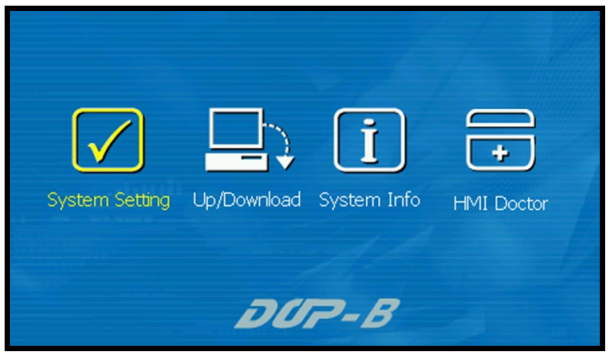
MAINTENANCE SETTINGS

6.1 Recalibrating the HMI

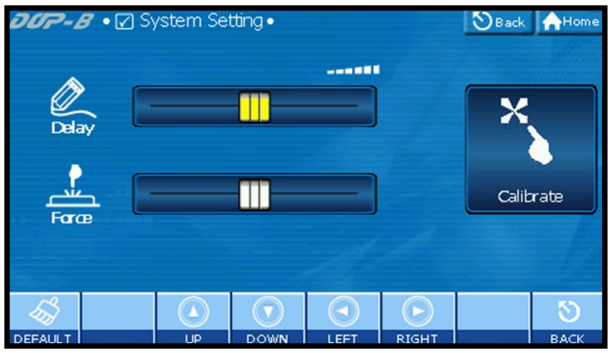
If the buttons on the HMI screen no longer seem to work or you must touch outside a button to get it to function you have lost your calibration. To recalibrate follow these steps.

NAVIGATE TO THE HMI FUNCTIONS SCREEN AND SELECT THE FOLLOWING:

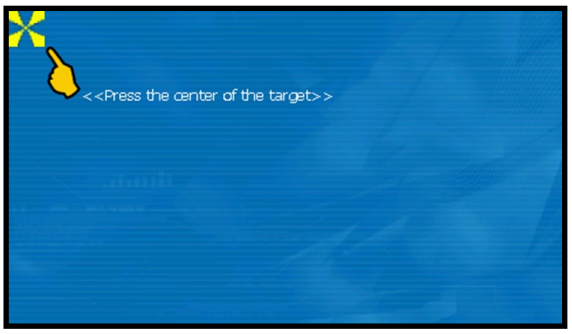
1. Select “Screen Calibration”



2. Touch “System Setting”



3. Select “Calibrate”



4. Follow the prompts on the screen and touch the three spots it prompts you to touch. For greater accuracy use a small stylus type object.

5. Once done, touch the *home* button and reboot the 1000+ and the screen will now be recalibrated.

SECTION 7

FAULTS AND TROUBLESHOOTING

FAULTS

When there is a fault present, it will show on the HMI as a fault and the green LED on the front of the 1000+ will flash. User must first correct the fault to resume standard 1000+ operation.

Faults screen

Faults can occur on either Channel A or Channel B depending on your current spray configuration.

Channel A and B	Cause	Solution
Tank Empty	Low signal received from float switch	Fill fluid supply tank
Too Many Trigger	External triggered turned on/off/on too fast according to the settings	Adjust trigger frequency

TROUBLESHOOTING

Common 1000+ spray control panel problems and their solutions are listed below. Contact your local Spray Specialist if your 1000+ issue is not resolved by following the suggested solutions.

Problem	Solutions

Green light indicator not lit or flashing	• Not lit- check power at wall or internal fuse on DIN rail (replace w/ MDA-5-R, 5 amp, 1/4"x1-1/4", ceramic, slow blow.
	• Solid green – all systems normal.
	• Flashing green – system fault is present.
	  ◦ Look on HMI for active fault, clear fault.
	  ◦ Tank low – indicates tank for channel A or B – fill tank and clear fault from screen.

Nozzles are not spraying	• Check nozzles and cords for shorts. Make sure nozzles are not clogged. • Check trigger- look on diagnostics page for trigger and channel you are on. When system is triggered you should see a '1' for that input. If not check trigger or sensor wiring/ installation. If you are using your own sensor it must be wired according to the wiring diagram at the back of this manual and it must be NPN style.
Channel A "Tank empty" fault on screen when float switch is not connected	• Go to main menu >> system configuration >> remote local I/O, then disable the float inputs not in use.
The light on the sensor lights up when an object passes by but the nozzle does not start spraying	• Make sure your recipe is set correctly. You must have a timing mode and timing values set for the spray to initiate. ◦ Check your spray delay. For example, if the value is 200 seconds, the nozzle will not spray until the delay has elapsed.
I've forgotten my user passwords	• The high-level password is 77777777. Type this in where prompted to change or view password table. Only engineers and managers should have access to this password so change it if necessary.

TRIGGER DEVICES AND ACCESSORIES

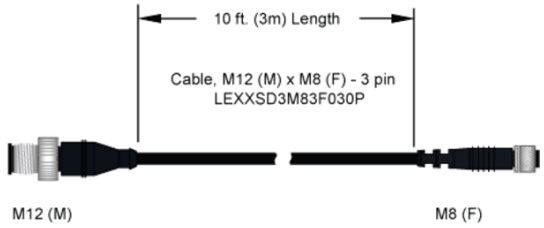
8.1 ELECTRIC NOZZLE CORD SET

If the system is designed to operate Spraying Systems Co.® PulsaJet or AA250 electric actuated spray nozzles, the system is supplied with a cord to connect the spray nozzle to the Control Panels. All the electric actuated nozzle cord sets are wired as shown in the diagram.

AA10000 SERIES PULSAJET NOZZLE CABLE

- Panel connection: Main
- Part number: LEXXSD3M83F030P
- Cable: 9.8 ft. [3 m] cord length
- Connector – M8 3 pin female
- Connector – M12 3 pin male

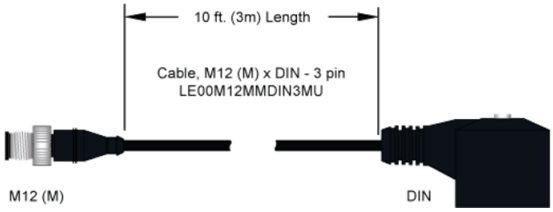
AA10000 Series Cable
LEXXSD3M83F030P



AA250AUH ELECTRIC NOZZLE CABLE

- Panel connection: Main
- Part number: LE00M12MMDIN3MU
- Cable: 9.8 ft. [3 m] cord length
- Connector – Mini DIN
- Connector – M12 3 pin male

AA250AUH Cable
LE00M12MMDIN3MU



ELECTRICAL JUNCTION BLOCK

If multiple PulsaJet or AA250 electric spray nozzles are used the system comes complete with a junction block to connect the spray nozzles to the unit. The junction block is available in two versions: four (4) and eight (8) nozzle connections.

8.2 TRIGGER CABLE

Optional trigger cable offering: Un-terminated flying lead cable and connector.

REQUIRED INPUT

- Part number - LE00M12F5M – M12(f) x bare lead trigger cable
- NPN – Switch to 0 VDC to turn on spray trigger.
  - Requires NPN Sensor or dry contact switch.
- Connects to the connector labeled “Trig.” On the bottom of the panel.

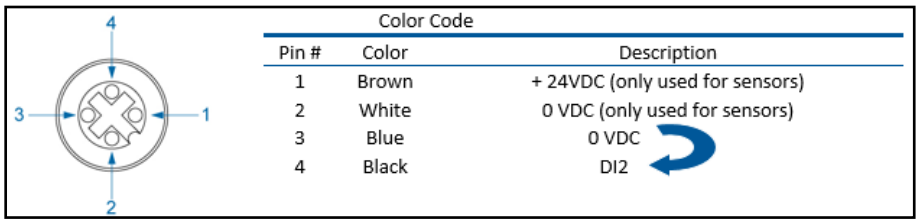
ASSEMBLY SPECIFICATIONS:

- Panel connection: Trig (Software trigger choice - DI2)
- Cable: 16.4 ft. [5 m] cord length
- Flying Leads
- Connector end—M12 4 pin female

Trigger cable

Note: Connect pins 3 & 4 with a switch or dry contact relay to initiate trigger.

WARNING: Never connect pin 1 (24vdc) to any other pin unless you are wiring in your own 24VDC sensor. Doing so could cause equipment damage. (Cut the brown and white wire if you're not using them)



Color Code

Pin #	Color	Description
1	Brown	+ 24VDC (only used for sensors)
2	White	0 VDC (only used for sensors)
3	Blue	0 VDC
4	Black	DI2

8.3 PHOTOELECTRIC OBJECT SENSOR

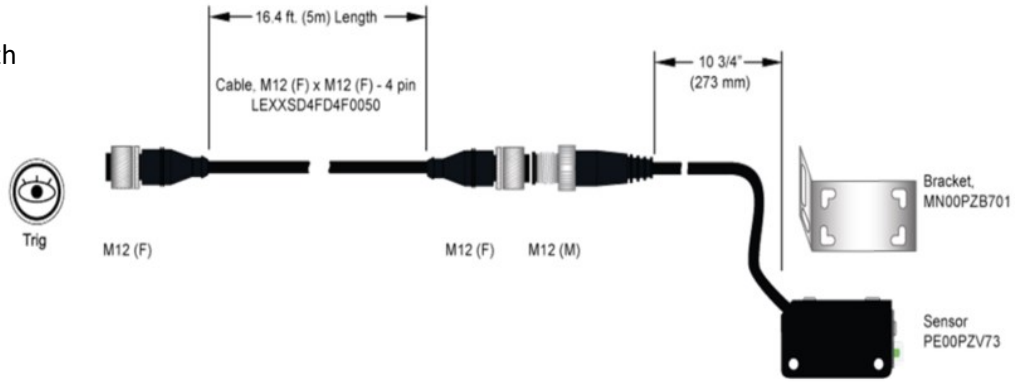
Infrared – direct reflection sensor with cable and connector, this is our standard sensor offering, it should work in most cases.

SPECIFICATIONS:

- Kit number: 040TS04000014W0
- Photoelectric sensor – Infrared – direct reflection sensor with cable, connector, and bracket.
- NPN – NO + NC
- 35 inch [900 mm] sensing range
- Setting distance adjustable between 6 and 36 inches [150 and 900 mm]
- Working temperature range = -4°F to 158°F [-20°C to 70°C]
- IP67; CE rated

ASSEMBLY SPECIFICATIONS:

- Panel connection: Trig
- Cable: 16.4 ft. [5 m] cord length
- Connector – M12 4 pin female



8.4 COLOR SENSOR

Full-Spectrum color, detects color/brightness/surface finish/intensity, NPN/PNP, IP65/ IP67 rating, 1.18 to 19.69 in. detectable distance.

8.5 PROXIMITY SENSOR

For sensing metallic objects. Kit includes sensor, with mounting nuts and locking washer, and cable.

SPECIFICATIONS:

Proximity sensor – Detects all metals 10mm max. sense dist., 24vdc, NPN outputs N.O./N.C., shielded, IP67, 5m cable wired

- Kit number: 040TS04000118W0
- NPN – NO + NC
- Working temperature range = -13°F to 176°F [-25°C to 80°C]
- IP67, NEMA type 6 (waterproof); CE rated

8.6 TRIGGER INTERLOCK

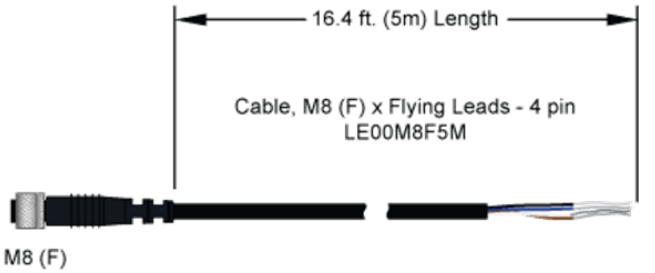
SCS Series spray control panels feature an optional secondary run enabled trigger (Trigger Interlock feature) or a digital input for a level switch.

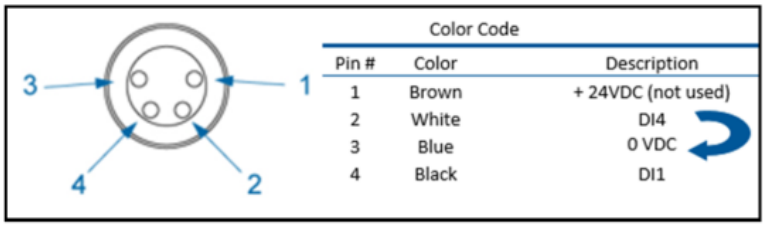
For the secondary run trigger (DI4), this feature provides a way for you to provide a run signal to the spray control panel. If this signal is not present, then the system will ignore the trigger signal. An example of this would be if you do not want the nozzle to spray unless the conveyor is running and there is a part present to spray. This input always goes to 0V, pin 3. To activate this feature on the HMI, go to settings/trigger and pick trigger source DI2+DI4.

For the level switch option (DI1), this feature allows you to wire in a normally open or normally closed level switch from a liquid tote or tank. When the tank runs low and the level switch contact closes or opens, the spray control panel will display a fault. To use these features, you need our cable part number LE00M8F5M. This input always goes to 0V, pin 3. To activate this feature on the HMI, go to settings/tank level and turn on under level sensor.

SPECIFICATIONS:

- Kit number: LE00M8F5M
- Panel connection: T. int.
- Cable: 16.4 ft. [5 m] cord length
- Flying Leads
- Connector end – M8 4 pin female





8.7 FOOT SWITCH

For manual triggering of the system. Heavy duty foot switch provides for hands free triggering in a manual triggering application.

SPECIFICATIONS:

- Kit number: 040TS04000130W0
- Momentary on switch
  - Wired normally open (can be wired normally closed)
- M12 (f) connector – connects to “Main” on control panel - 4 pin
- 16.4 ft (5m) cable length

8.8 HAND TRIGGER PENDANT

For manual triggering of the system. The unit offers two switches to independently trigger the system. Cable length offers flexibility in location of operation.

SPECIFICATIONS:

- Part number: SW001550M12HT
- 2 Switches
  - 1 - On/Off selector switch
  - 1 – Pushbutton – momentary on button
  - 1550, hand trigger pendant, selector switch and button, M12 female 4 pole, 5 meter cable.

8.9 THRU-BEAM SENSOR

Infrared - thru beam sensor with cables, wye connector and brackets. To set this up you need to use all three cables and the splitter. The thru beam has a sensor and a receiver. Each gets a cable connecting it to the splitter. Then the splitter has a cable to connect it to the system.

The receiver goes to port 1 on the wye splitter, and sensor cable goes to port 2. Refer to the manufacturers' data sheet for more information on setting up the sensor for use.

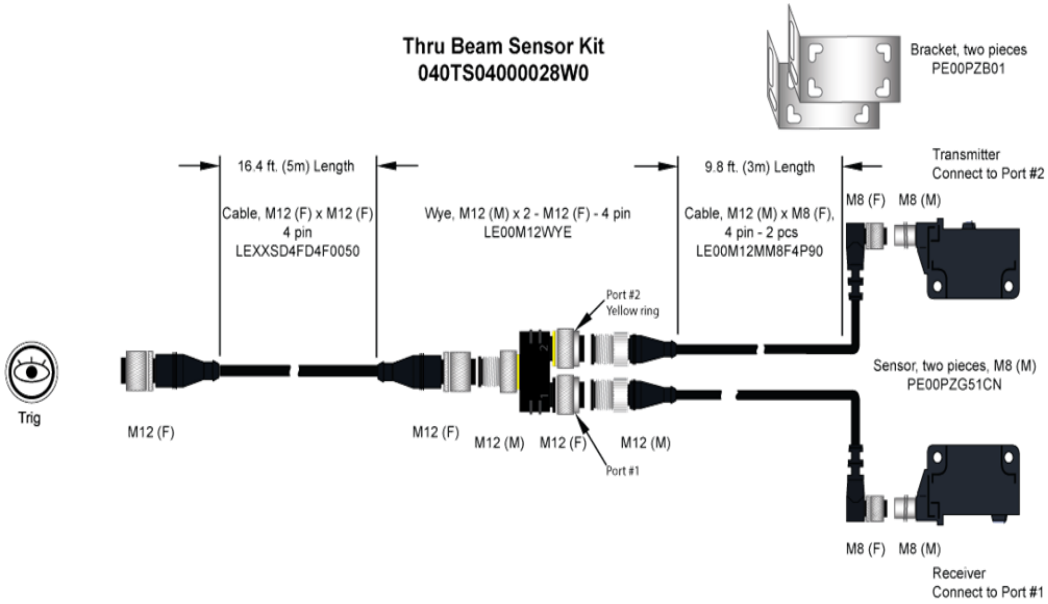
SPECIFICATIONS:

Photoelectric sensor – Infrared – direct reflection sensor with cable, connector, and bracket.

- Kit number: 040TS04000028W0
- NPN – NO + NC
- 65.6 feet [20 m] sensing range
- Working temperature range = -4°F to 130°F [-20°C to 55°C]
- IP67; CE rated
- IP67/IP69K rating, NPN output

ASSEMBLY SPECIFICATIONS:

- Panel connection: Trig
- Cable: 16.4 ft. [5 m] cord length, Connector – M12 4 pin female



8.10 LASER SENSOR (SHORT)

For accurate short distance sensing of objects (thin, shiny, dark, clear, multi-faceted)

SPECIFICATIONS:

Laser sensor – with cable, connector, and bracket.

- Kit number: 040TS04000135W0
- NPN – NO + NC
- 1.0” – 3.5” [25mm – 90mm] sensing range (1.5mm – 3mm deviation range).
- Working temperature range = 10°F to 122°F [-10°C to 50°C]
- IP69K, NEMA 4X; CE rated
- Mounting bracket, accurate short sensing distances of 25 to 90 mm, std. detectable deviation 1.5-3.0mm, NPN/PNP open collector, 24Vdc, M12 4 pin male connection, 5m cable.

8.11 LASER SENSOR (LONG)

For accurate long-distance sensing of objects (shiny, dark, clear, multi-faceted)

SPECIFICATIONS:

Laser sensor – with cable, connector, and bracket.

- Kit number: 040TS04000087W0
- NPN – NO + NC
- 1.38” – 19.69” [35mm – 500mm] sensing range (9mm – 50mm deviation range).
- Working temperature range = 10°F to 122°F [-10°C to 50°C]
- IP69K, NEMA 4X; CE rated
- 5m cable, and mounting bracket, 24Vdc, NPN. IP68/ IP69K.

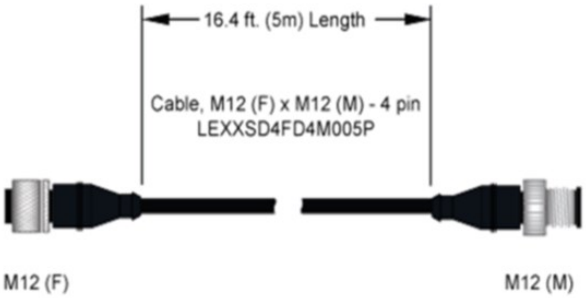
8.12 EXTENSION CABLE

If longer length cables are required, an extension cable is available that can be used to go between the nozzle cable and the junction block or the junction block cable and the system. This cable can also be used to extend the trigger device cable lengths.

This cable can be used to go between the nozzle cable and the junction block or the junction block cable and the system or extend the trigger device cable lengths. When using to extend electric nozzle cables, connect electric nozzle cable to M12 (F) connector. When using to extend electric nozzle cables, M12 (M) connects to “Main” connector on the control panel or junction block. When using to extend sensor cables, connect M12 (F) connector to “Trig” connector on the “Trig” Control Panel. When using to extend sensor cables, connect M12 (F) connector from sensor cable to M12 (M) connector of the extension cable.

Note: Due to voltage drop we recommend keeping the cable length to a reasonable length. Never attempt to chain more than four (4) cables together. Electric spray nozzle speed and performance will suffer.

- Part number: LEXXSD4FD4M005P
- Connect to Main or Trig on control panel
- Cable: 16.4 ft. [5 m] cord length
- Connector – M12 4 pin female
- Connector – M12 4 pin male



8.13 LEVEL SENSOR INPUT

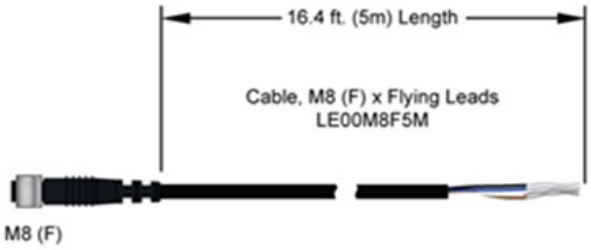
A level switch (any normally open or normally closed float switch) can be wired to the system, so when the tank level drops below a certain level, a fault will be shown on the HMI.

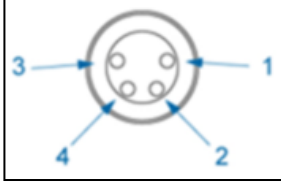
Wire the level sensor/float switch to the panel utilizing the cable shown below. You will only use the black and blue wires (dry contacts - polarity not important), carefully cut back and tape the brown and white wires. Run the cable back to the spray control panel and plug into the port labeled “T. Int.”.

Activate level sensor option, go to settings in the HMI then “Tank level” and turn on.

Specifications:

- Part number: LE00M8F5M.
- Panel connection: T. int. (Software - DI2+DI4)
- Cable: 16.4 ft. (5 m) cord length
- Flying leads
- Connector end - M8 4 pin female
- Cable, M8 Female, 4 pole, bare leads, 5 meter

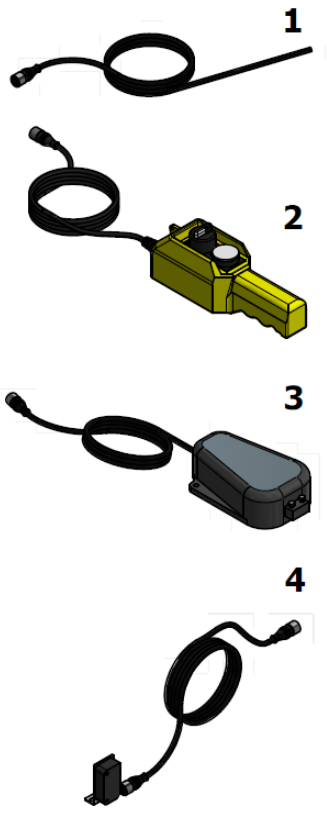




Color Code

Pin #	Color	Description
1	Brown	+ 24VDC (not used)
2	White	not used
3	Blue	0 VDC
4	Black	DI1

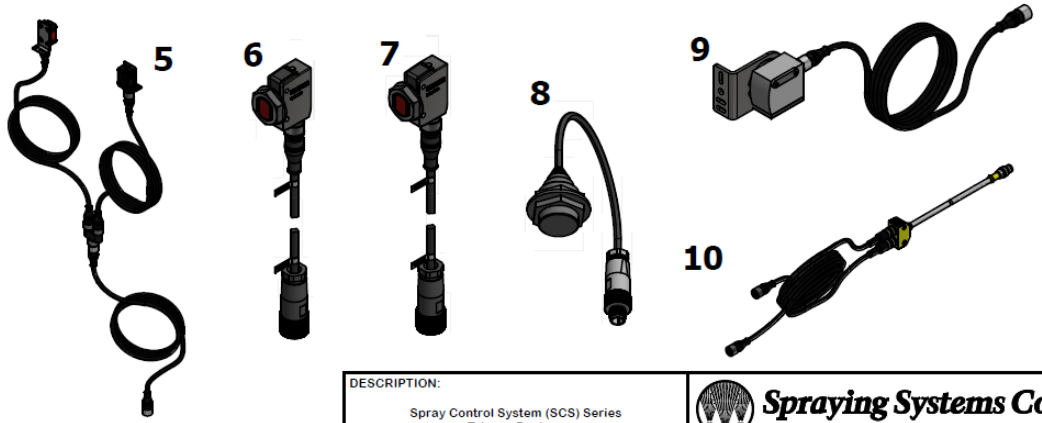
8.14 TRIGGER DEVICES OVERVIEW



Trigger Devices

ID	Trigger Method	Part Number	Cable Length	Description
1	Customer Supplied	040TS04000056W0	5 m	Trigger cable - M12 female, 4 pole, bare leads
2	Hand Pendant	040TS04000057W0	5 m	Hand-held trigger device
3	Foot Switch	040TS04000130W0	5 m	Foot switch trigger device
4	Object Sensor - Photoelectric	040TS04000014W0	5 m	Detectable Distance - 0.79 to 35.43 in., mounting bracket included, IP67 Rating, NPN output
5	Object Sensor - Thru-Beam	040TS04000028W0	5 m	Detectable Distance - 65.6 ft, mounting brackets included, IP67/IP69K rating, NPN output
6	Laser Sensor - Short Distance	040TS04000135W0	5 m	Detectable Distance - 0.98 to 3.54 in., mounting bracket included, IP68/ IP69K rating, NPN/ PNP output
7	Laser Sensor - Long Distance	040TS04000087W0	5 m	Detectable Distance - 1.38 to 19.69 in., mounting bracket included, IP68/ IP69K rating, NPN output
8	Proximity Sensor	040TS04000118W0	5 m	Ferrous metals, 10 mm (0.39 in.) detectable distance, NPN Open collector, IP67 rating
9	Color Sensor	040TS04000179W0	5 m	Full-Spectrum color, detects color/brightness/surface finish/intensity, NPN/PNP, IP65/ IP67 rating, 1.18 to 19.69 in. detectable distance
10	Trigger Adapter - Dual Channel	070TS07000051W0	5.3 m	Single Trigger Splitter for Dual Channel Systems

NOTE: CONTACT A SALES ENGINEER TO DETERMINE WHICH SENSOR BEST FITS YOUR APPLICATION AND SYSTEM CONFIGURATION.



WARNING
Trigger device IP rating only applies when all cables are properly connected and secure

DESCRIPTION:
Spray Control System (SCS) Series
Trigger Devices

Spraying Systems Co.®
Spray Nozzles and Accessories
P.O. Box 7900 - Wheaton, IL 60187-7901

REVISION NO. 1
REFERENCE: 1
Data Sheet No.
SCS Series - Trigger Devices
SHEET: 1 OF 1
DWG SIZE: B

SPARE AND REPLACEMENT PARTS

Accessory Kits	Part Number
Photoelectric Object Sensor: Object Sensor Kit, Trig, 5 m cord length, M12 4 pin (F)	040TS04000014W0
Proximity sensor: Detects all metals 10mm max. sense dist., 24vdc, NPN outputs N.O./N.C., shielded, IP67, 5m cable wired	040TS04000118W0
Thru-Beam Sensor: Trig, 5 m cord length, connector—M12 4 pin female, IP67/ IP69K rating, NPN output	040TS04000028W0
Laser Sensor (Short): mounting bracket, accurate short sensing distances of 25 to 90 mm, std. detectable deviation 1.5-3.0mm, NPN/PNP open collector, 24Vdc, M12 4 pin male connection, 5m cable	040TS04000135W0
Laser Sensor (Long): 5m cable, and mounting bracket, 24Vdc, NPN. IP68/ IP69K.	040TS04000087W0
Level Switch Cable Kit: Main/T. int., M12 (M) x 2 M12 (F), 1 m whip cord length. Cable Kit, Level Switch to Alarm Output Cable, 24VDC	040TS04000064W0

Accessory Cables	Part Number
Electric Nozzle Cable: Main, 3 m cord length, Mini DIN, M12 3 pin male	LE00M12MMDIN3MU
PulsaJet Nozzle Cable: Main, 3m cord length, M8 3 pin female, M12 3 pin male	LEXXSD3M83F030P
Extension Cable: Main/Trig, 5 m cord length, M12 4 pin (F/M)	LEXXSD4FD4M005P
Trigger Cable: Trig, 5 m cord length, flying leads, M12 4 pin female	LE00M12F5M
Trigger Interlock: T. int. 5 m cord length, flying leads, M8 4 pin female	LE00M8F5M
Level Sensor Input: Cable, M8 Female, 4 pole, bare leads, 5 meter	LE00M8F5M
Input Signal: M8 4 pin male, 4-20mA, 5 m cord length, flying leads	LE00M8M5M
Level Switch Cable Adapter: Splitter, wye, M12, 4 pole, trunk = male M12 1m whip, 2 branches x M12 female coupling nuts, TPU, parallel wiring	LE00M12WYE1M
Level Switch Cable: Main, M12 Male, 4 pin, 4 wire, bare leads, 5 meter	LE00M12M5M

Accessory Switches	
Hand Trigger Pendant: hand trigger pendant, selector switch and button, M12 female 4 pole, 5 meter cable	SW001550M12HT
Foot Switch: Momentary on switch, M12 (f) connector, 5 m cable length	040TS04000130W0

Warranty is one (1) year on non-wear parts from ship date. Wear items are covered for manufacturing defect only for a period of one (1) year. Wear items include, but may not be limited to, Liquid pump and Liquid regulator. Seller warrants that its products will conform to and perform in accordance with the products' specifications.

Seller warrants that the products do not infringe upon any copyright, patent, or trademark.

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THOSE CONCERNING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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