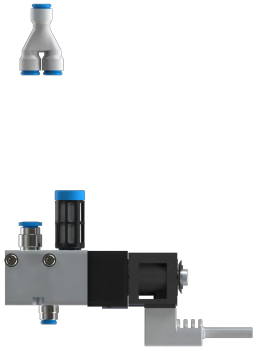
240-5203 Remote Color Change Kit for RM2 and RF2



RF2

RM2

To get RF2 or RM2 service manuals in other languages and for additional product information, please scan the corresponding QR code above.

CONTENTS

SAFETY

SAFETY PRECAUTIONS

electrostatic coating system, read and understand all of the technical and safety literature for your products. This manual contains information that is important for you to know and understand. This information relates to **USER SAFETY and PREVENTING EQUIPMENT PROBLEMS.**

⚠ WARNING

A WARNING! states information to alert you to a situation that might cause serious injury if instructions are not followed.

⚠ CAUTION

A CAUTION! states information that tells how to prevent damage to equipment or how to avoid a situation that might cause minor injury.

NOTE

A NOTE is information which is relevant to the procedure in progress.

To help you recognize this information, we use the following symbols. Please pay particular attention to these sections.

While this manual lists standard specifications and service procedures, some minor deviations may be found between this literature and your equipment. Differences in local codes and plant requirements, material delivery requirements, etc., make such variations inevitable. Compare this manual with your system installation drawings and associated equipment manuals to reconcile such differences.

Careful study and continued use of this manual will provide a better understanding of the equipment and process, resulting in more efficient operation, longer trouble-free service and faster, easier troubleshooting. If you do not have the manuals and safety literature for your equipment, contact your local Carlisle Fluid Technologies representative or Carlisle Fluid Technologies technical support.

⚠ WARNING

The user **MUST** read and be familiar with the Safety Section in this manual and the Ransburg safety literature therein identified.

This equipment is intended to be used bytrained personnel **ONLY**.

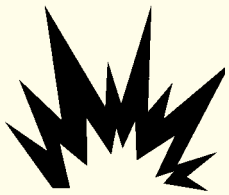
This manual **MUST** be read and thoroughly understood by **ALL** personnel who operate, clean or maintain this equipment! Special care should be taken to ensure that the **WARNINGS** and safety requirements for operating and servicing the equipment are followed. The user should be aware of and adhere to **ALL** local building and fire codes and ordinances as well as **NFPA-33 AND EN 50176 SAFETY STANDARDS, LATEST EDITION**, or applicable country safety standards, prior to installing, operating, and/or servicing this equipment.

⚠ WARNING

The hazards shown on the following pages may occur during the normal use of this equipment.

Repairs may only be performed by personnel authorized by Carlisle Fluid Technologies.

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Spray Area 	**Fire Hazard** Improper or inadequate operation and maintenance procedures will cause a fire hazard. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if any safety interlocks are disabled during operation. Frequent Power Supply or Controller shutdown indicates a problem in the system requiring correction.	Fire extinguishing equipment must be present in the spray area and tested periodically. Spray areas must be kept clean to prevent the accumulation of combustible residues. Smoking must never be allowed in the spray area. The high voltage supplied to the atomizer must be turned off prior to cleaning, flushing or maintenance. Spray booth ventilation must be kept at the rates required by NFPA-33, OSHA, country, and local codes. In addition, ventilation must be maintained during cleaning operations using flammable or combustible solvents. Electrostatic arcing must be prevented. Safe sparking distance must be maintained between the parts being coated and the applicator. A distance of 1 inch for every 10KV of output voltage is required at all times. Test only in areas free of combustible material. Testing may require high voltage to be on, but only as instructed. Non-factory replacement parts or unauthorized equipment modifications may cause fire or injury. If used, the key switch bypass is intended for use only during setup operations. Production should never be done with safety interlocks disabled. The paint process and equipment should be set up and operated in accordance with NFPA-33, NEC, OSHA, local, country, and European Health and Safety Norms.

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Spray Area 	**Explosion Hazard** Improper or inadequate operation and maintenance procedures will cause a fire hazard. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if any safety interlocks are disabled during operation. Frequent Power Supply or Controller shutdown indicates a problem in the system requiring correction.	Electrostatic arcing must be prevented. Safe sparking distance must be maintained between the parts being coated and the applicator. A distance of 1 inch for every 10KV of output voltage is required at all times. Unless specifically approved for use in hazardous locations, all electrical equipment must be located **outside** Class I or II, Division 1 or 2 hazardous areas, in accordance with NFPA-33. Test only in areas free of flammable or combustible materials. The current overload sensitivity (if equipped) MUST be set as described in the corresponding section of the equipment manual. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if the current overload sensitivity is not properly set. Frequent power supply shutdown indicates a problem in the system which requires correction. Always turn the control panel power off prior to flushing, cleaning, or working on spray system equipment. Before turning high voltage on, make sure no objects are within the safe sparking distance. Ensure that the control panel is interlocked with the ventilation system and conveyor in accordance with NFPA-33, EN 50176. Have fire extinguishing equipment readily available and tested periodically.
General Use and Maintenance 	Improper operation or maintenance may create a hazard. Personnel must be properly trained in the use of this equipment.	Personnel must be given training in accordance with the requirements of NFPA-33, EN 60079-0. Instructions and safety precautions must be read and understood prior to using this equipment. Comply with appropriate local, state, and national codes governing ventilation, fire protection, operation maintenance, and housekeeping. Reference OSHA, NFPA-33, EN Norms and your insurance company requirements.

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Spray Area High Voltage Equipment 	**Electrical Discharge** There is a high voltage device that can induce an electrical charge on ungrounded objects which is capable of igniting coating materials. Inadequate grounding will cause a spark hazard. A spark can ignite many coating materials and cause a fire or explosion.	Parts being sprayed and operators in the spray area must be properly grounded. Parts being sprayed must be supported on conveyors or hangers that are properly grounded. The resistance between the part and earth ground must not exceed 1 meg ohm. (Refer to NFPA-33.) Operators must be grounded. Rubber soled insulating shoes should not be worn. Grounding straps on wrists or legs may be used to assure adequate ground contact. Operators must not be wearing or carrying any ungrounded metal objects. When using an electrostatic handgun, operators must assure contact with the handle of the applicator via conductive gloves or gloves with the palm section cut out. NOTE: REFER TO NFPA-33 OR SPECIFIC COUNTRY SAFETY CODES REGARDING PROPER OPERATOR GROUNDING. All electrically conductive objects in the spray area, with the exception of those objects required by the process to be at high voltage, must be grounded. Grounded conductive flooring must be provided in the spray area. Always turn off the power supply prior to flushing, cleaning, or working on spray system equipment. Unless specifically approved for use in hazardous locations, all electrical equipment must be located **outside** Class I or II, Division 1 or 2 hazardous areas, in accordance with NFPA-33. Avoid installing an applicator into a fluid system where the solvent supply is ungrounded. Do not touch the applicator electrode while it is energized.

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Electrical Equipment 	**Electrical Discharge** High voltage equipment is utilized in the process. Arcing in the vicinity of flammable or combustible materials may occur. Personnel are exposed to high voltage during operation and maintenance. Protection against inadvertent arcing that may cause a fire or explosion is lost if safety circuits are disabled during operation. Frequent power supply shutdown indicates a problem in the system which requires correction. An electrical arc can ignite coating materials and cause a fire or explosion.	Unless specifically approved for use in hazardous locations, the power supply, control cabinet, and all other electrical equipment must be located outside Class I or II, Division 1 and 2 hazardous areas in accordance with NFPA-33 and EN 50176. Turn the power supply OFF before working on the equipment. Test only in areas free of flammable or combustible material. Testing may require high voltage to be on, but only as instructed. Production should never be done with the safety circuits disabled. Before turning the high voltage on, make sure no objects are within the sparking distance.
Toxic Substances 	**Chemical Hazard** Certain materials may be harmful if inhaled, or if there is contact with the skin.	Follow the requirements of the Safety Data Sheet supplied by coating material manufacturer. Adequate exhaust must be provided to keep the air free of accumulations of toxic materials. Use a mask or respirator whenever there is a chance of inhaling sprayed materials. The mask must be compatible with the material being sprayed and its concentration. Equipment must be as prescribed by an industrial hygienist or safety expert, and be NIOSH approved.
Spray Area 	**Explosion Hazard — Incompatible Materials** Halogenated hydrocarbon solvents for example: methylene chloride and 1,1,1, - Trichloroethane are not chemically compatible with the aluminum that might be used in many system components. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.	Spray applicators require that aluminum inlet fittings be replaced with stainless steel. Aluminum is widely used in other spray application equipment - such as material pumps, regulators, triggering valves, etc. Halogenated hydrocarbon solvents must never be used with aluminum equipment during spraying, flushing, or cleaning. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your coating supplier. Any other type of solvent may be used with aluminum equipment.

EUROPEAN ATEX DIRECTIVE 94/9/EC, ANNEX II, 1.0.6

The following instructions apply to equipment covered by certificate number Sira 05ATEX5127X:

1. The equipment may be used with flammable gases and vapors with apparatus groups II and with temperature class T6.
2. The equipment is only certified for use in ambient temperatures in the range +12.8°C to +55°C and should not be used outside this range.
3. Installation shall be carried out by suitably trained personnel in accordance with the applicable code of practice e.g. EN 60079-14:1997.
4. Inspection and maintenance of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice e.g. EN 60079-17.
5. Repair of this equipment shall be carried out by suitable trained personnel in accordance with the applicable code of practice e.g. EN 60079-19.
6. Putting into service, use, assembling, and adjustment of the equipment shall be fitted by suitably trained personnel in accordance with the man

   Refer to the "Table of Contents" of this service manual. Manufacturer's documentation.

   a. Installation
   b. Operation
   c. Maintenance
   d. Parts Identification

7. Components to be incorporated into or used as replacement parts of the equipment shall be fitted by suitably trained personnel in accordance with the manufacturer's documentation.
8. The certification of this equipment relies upon the following materials used in its construction:

   If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised.

   Aggressive substances: e.g. acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials.

   Suitable precautions: e.g. regular checks as part of routine inspections or establishing from the material's data sheets that it is resistant to specific chemicals.

   Refer to "Specifications" in the "Introduction" section:

   a. All fluid passages contain stainless steel or nylon fittings.
   b. High voltage cascade is encapsulated with a solvent resistant epoxy.

9. A recapitulation of the certification marking is detailed in the "ATEX" section, on the next page, drawing numbers: 80108, A13850, A13851, and A13384.
10. The characteristics of the equipment shall be detailed e.g. electrical, pressure, and voltage parameters.

The manufacturer should note that, on being put into service, the equipment must be accompanied by a translation of the instructions in the language or languages of the country in which the equipment is to be used and by the instructions in the original language.

Remote Color Change Kit

The remote color change kit is used with the IntelliFlow system for in-booth control of flushes, color changes, and alarm resets.

For proper operation of this accessory, the IntelliFlow system requires a Zener barrier wired in a series with the electrical component used in the hazardous area. The barrier is installed in a box attached to the back of the IntelliSpray control enclosure. The box can accept up to three barriers for in-booth capability of:

- Remote color change box
- Paint flow meter (on IntelliSpray fluid panel)
- Solvent flow meter (on IntelliSpray fluid panel)

This manual describes the installation of the barrier box and remote color change box. For information on installation of the barriers for in-booth use of the flow meters, see manual **77-3155**.

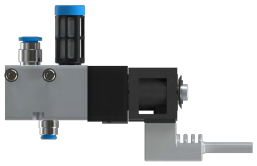
240-5203 Package Contents:

- Remote color change box with 50’ [15m] cable
- NEMA 4 barrier box with Zener barrier, mounting hardware, and 15m cable
- Pneumatic solenoid valve, wye fitting, 1’ of 1/4” tubing, and 100'(30m) of 5/32" tubing

NOTE

This kit does not include a barrier for in-booth operation of the paint flow meter. To order a package for in-booth fluid panel mounting capabilities for the RF2, order **310-8020** or **310-8021** for 2 or 3 channel dual probe flow meters, or **310-8022** or **310-8023** for 2 or 3 channel fiber optic flow meters. For the RM2, order **240-5206 or 240-5337**.

Wye connector



Solenoid Valve

Barrier Box

Remote Color Change Box

Mounting Hole Dimensions

Barrier Box

On Mast

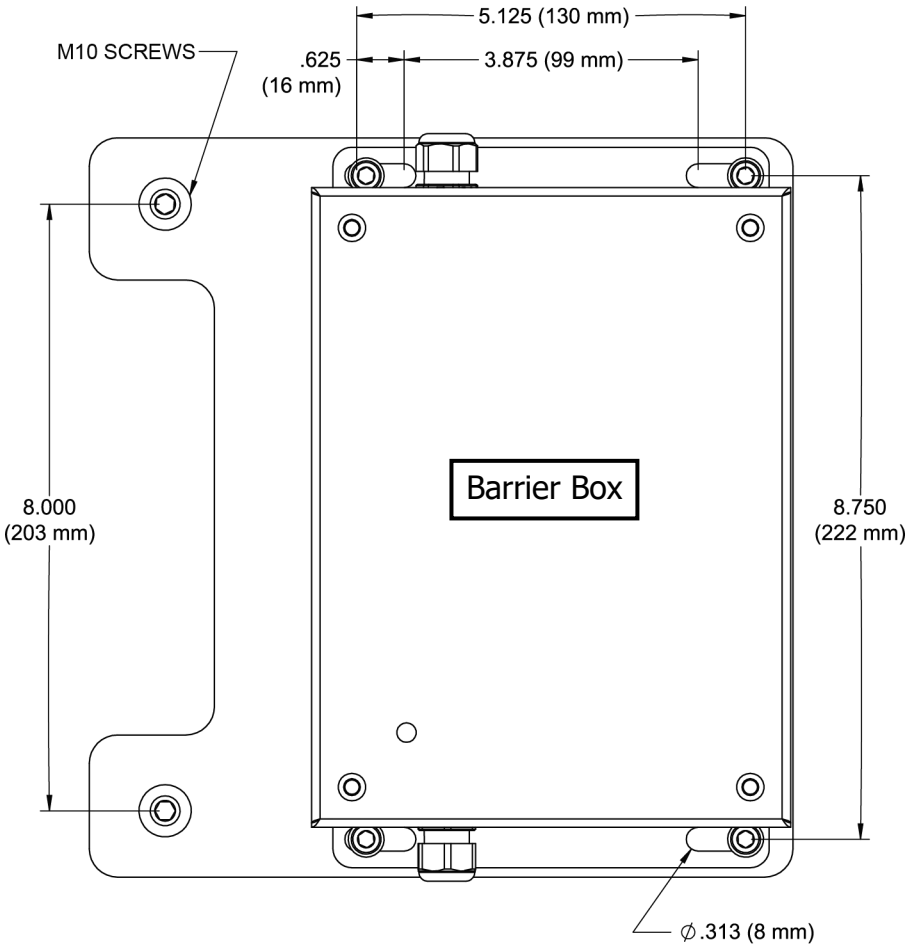
The back of the mast has pre-drilled clearance holes at both the left and right hand sides. See page 11, step 1.

Other Surfaces

1. Refer to the surface where the barrier box will be mounted and select the correct size and material-specific drill bit.
2. Drill holes according to the specified dimensions shown.
3. Use four (4) applicable fasteners to attach the box to the surface.

NOTE

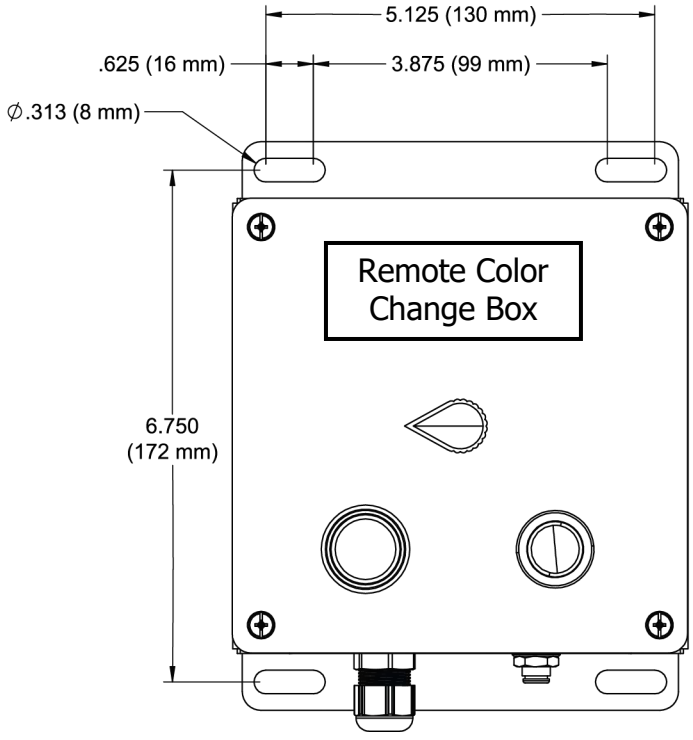
The metal bracket can be separated from the barrier box to directly attach the box to any intended mounting surface.



Remote Color Change Box

All Surfaces

1. Refer to the surface where the barrier box will be mounted and select the correct size and material-specific drill bit.
2. Drill holes according to the specified dimensions shown.
3. Use four (4) applicable fasteners to attach the box to the surface.



RM2 Remote Color Change Kit Installation

The remote color change box is designed to be used inside a hazardous environment, such as a spray booth. However, the Zener barrier box **must** remain in the non-hazardous area.

Mount the remote color change box in the desired location, ensuring adequate cable length for installation.

Mount the barrier box to the RM2 mast as described below, or remotely in the non-hazardous area. If you need to rewire the barrier box, see wiring schematic on page 22.

⚠ WARNING

Installation should be performed by a qualified electrician. Improper installation could create a spark, resulting in fire or explosion.

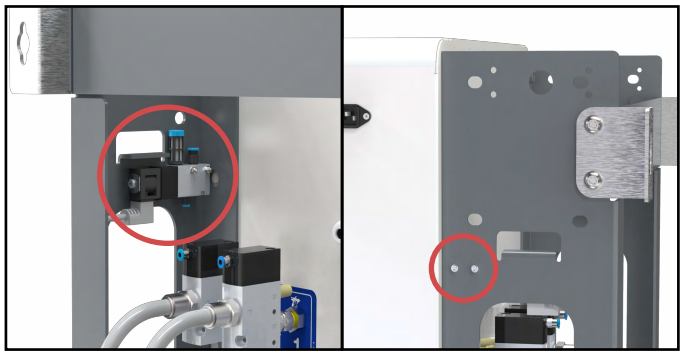
Mounting

1. To mount the barrier box to the RM2 mast, orient the bracket outwards away from the RM2 system, as shown. Use the supplied M10 screws to attach the bracket to the RM2 left or right (shown) mast and the barrier box to the mount.

⚠ CAUTION

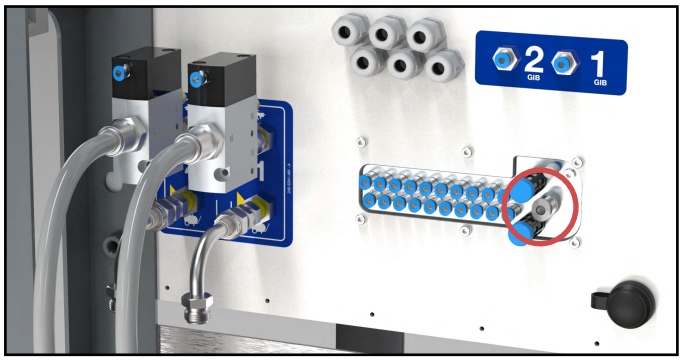
Before connecting the solenoid valve to the RM2, disconnect and depressurize the air supply for safety.

2. Mount the solenoid valve to the RM2 body facing inward, as shown. Push the provided fasteners through the two holes on the RM2 mast and into the solenoid valve.

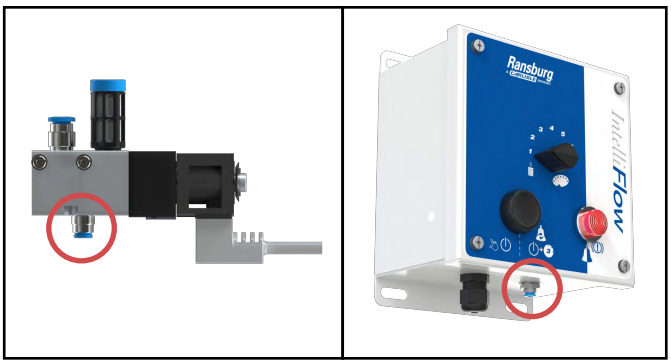


Connecting To The RM2

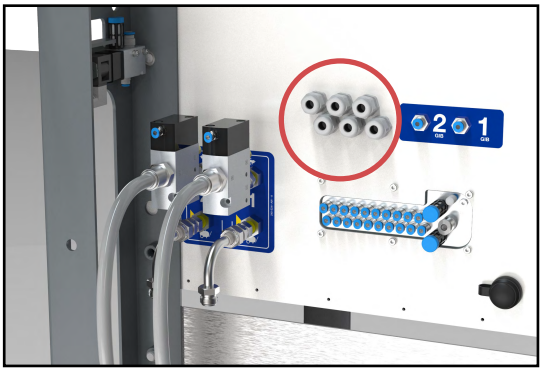
1. Disconnect the valve bank air supply from shown fitting. Connect the provided 1/4” tubing to the fitting. Then connect the 1/4” tubing to the provided wye connector. Connect another 1/4” tubing from the wye connector to the solenoid valve.
2. There should be one open fitting left on the wye connector. Connect that other wye connector fitting to an external air supply using 1/4” tubing.



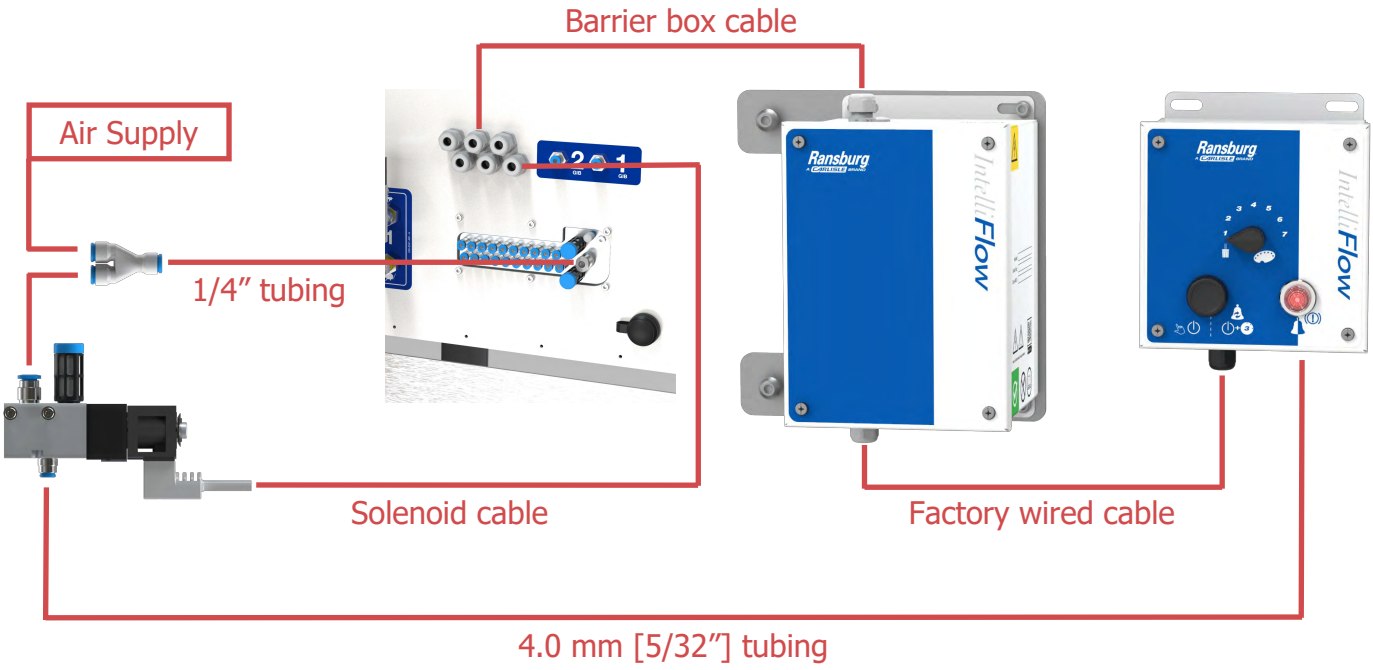
3. Refer to the connection diagram below to verify connections.
4. Next, connect the provided 5/32” pneumatic tubing to the solenoid valve fitting, shown.
5. Connect the provided 5/32” pneumatic from the solenoid valve to the remote color change box indicator fitting, shown.



6. Route the solenoid cable from the solenoid valve through an available strain relief and into the RM2 enclosure.
7. Route the barrier box cable from the barrier box into the RM2 enclosure either (1) through an available strain relief, shown, or (2) by replacing the hole plug with the strain relief included with the RM2 controller.
8. Refer to the next page for terminal connection information

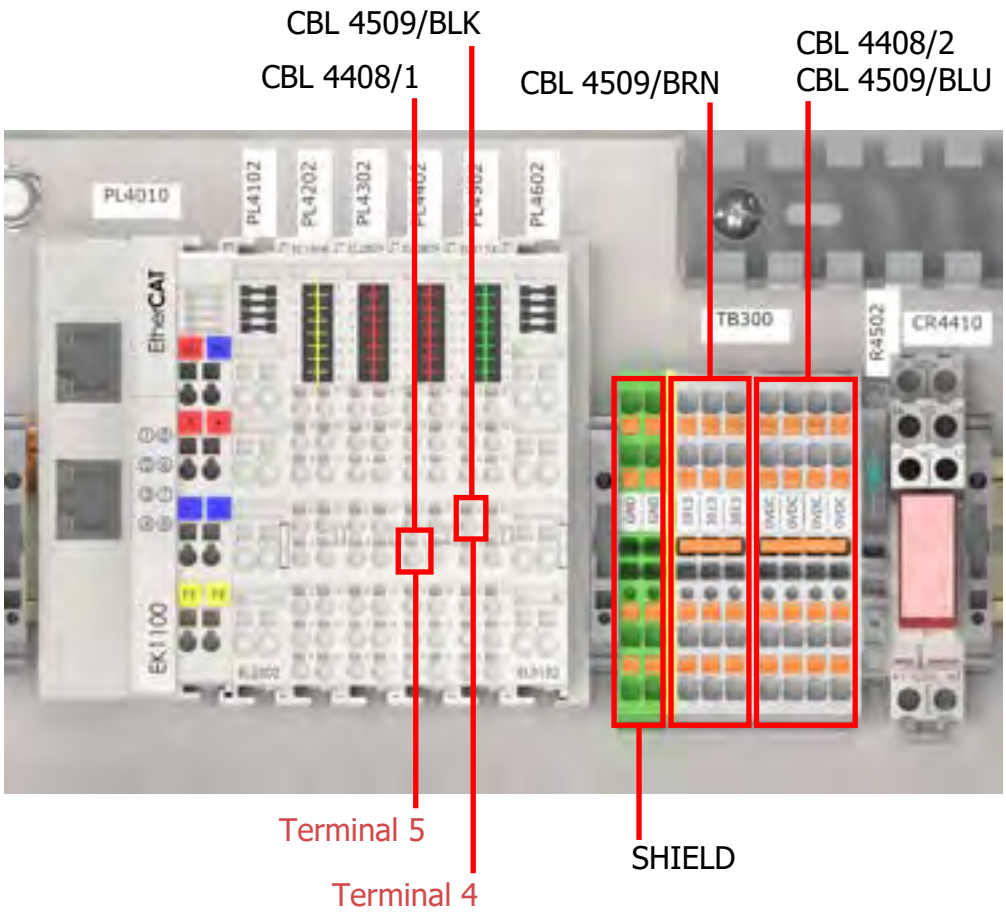


Refer to the diagram below to verify connections.



RM2 Low Pressure Setup

Reroute the new harness into the enclosure and connect the barrier box cable and solenoid valve cable to the terminals as shown below.



Refer to the table below to verify the solenoid valve to color change box connections and solenoid valve to alarm indicator connections.

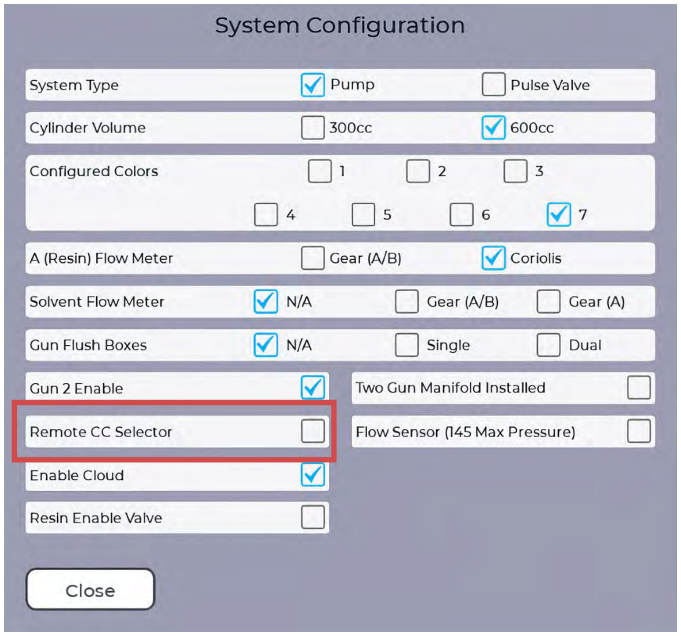
Color Change Box Cable	PLC and Terminal Blocks
CBL 4509/BRN	TB300—3013
CBL 4509/BLU	TB300—0VDC
CBL 4509/BLK	PL4502 TERMINAL 4
CBL 4509/SHLD	GND T.B.

Solenoid Valve Cable	PLC and Terminal Blocks
CBL 4408/1	PL4402 TERMINAL 5
CBL 4408/2	TB300—0VDC

Enabling In The RM2 Low Pressure User Interface

RM2 User Interface Setup

On the RM2 user interface, select “menu” from the top left drop-down and then "settings.” Select “system configurations” and check the box labelled “Remote CC Selector”, as shown.



Next, press the In-Booth Control button on the global configuration screen to open the Remote Color Change Box Configuration screen. This screen is for calibrating the remote color change box.

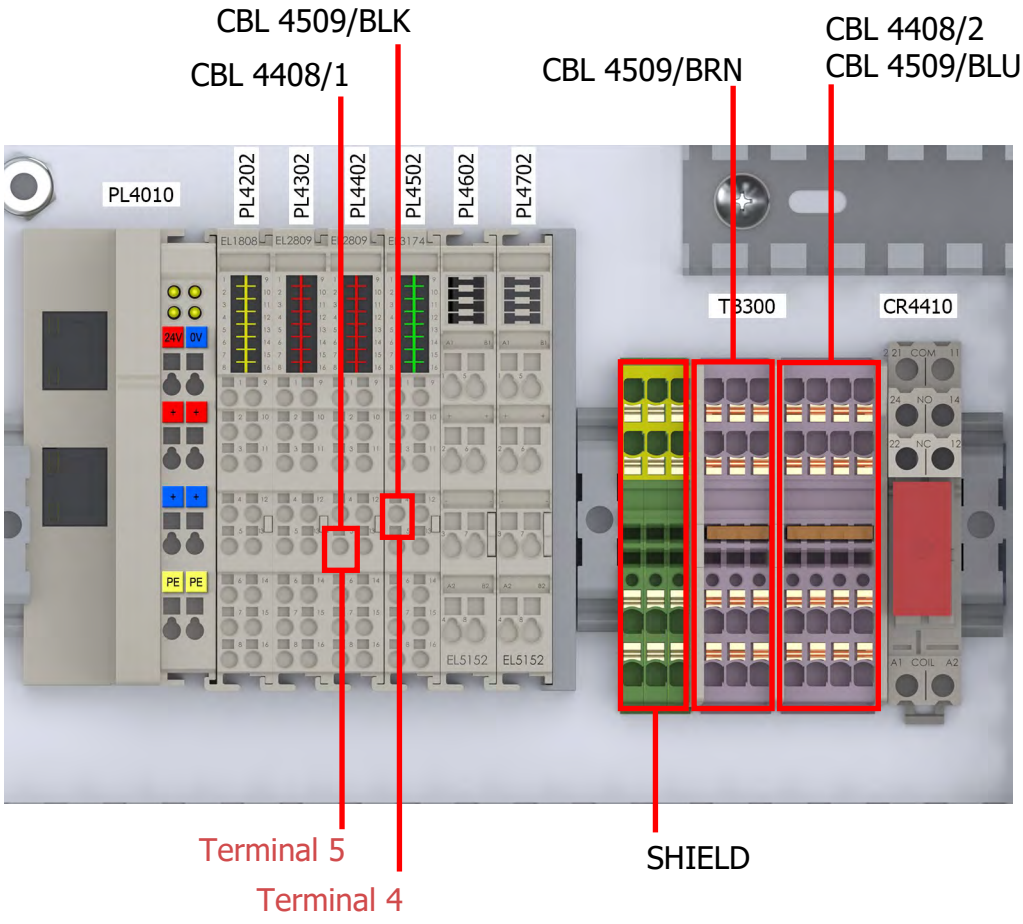
Each ‘color’ (0-7) selector switch can be set by pressing ‘Set X’ when an analog value is present.

Retrieve an analog value by setting the selector switch on the remote color change box when in this menu. A level of 500 below and above the measured value will be set. Alternatively, the levels can be set manually by entering them in the associated fields.

The Remote Color Change Kit is now installed and connected to the RM2 system.

RM2 Medium Pressure Setup

Reroute the new harness into the enclosure and connect the barrier box cable and solenoid valve cable to the terminals as shown below.



Refer to the table below to verify the solenoid valve to color change box connections and solenoid valve to alarm indicator connections.

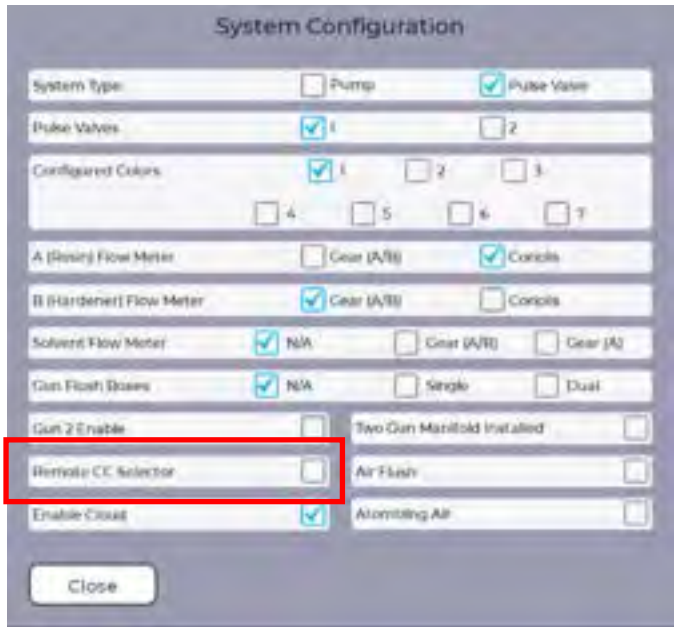
Color Change Box Cable	PLC and Terminal Blocks
CBL 4509/BRN	TB300—3013
CBL 4509/BLU	TB300—0VDC
CBL 4509/BLK	PL4502 TERMINAL 4
CBL 4509/SHLD	GND T.B.

Solenoid Valve Cable	PLC and Terminal Blocks
CBL 4408/1	PL4402 TERMINAL 5
CBL 4408/2	TB300—0VDC

Enabling In The RM2 Medium Pressure User Interface

RM2 User Interface Setup

On the RM2 user interface, select “menu” from the top left drop-down and then "settings.” Select “system configurations” and check the box labelled “Remote CC Selector”, as shown.



Next, press the In-Booth Control button on the global configuration screen to open the Remote Color Change Box Configuration screen. This screen is for calibrating the remote color change box.

Each ‘color’ (0-7) selector switch can be set by pressing ‘Set X’ when an analog value is present.

Retrieve an analog value by setting the selector switch on the remote color change box when in this menu. A level of 500 below and above the measured value will be set. Alternatively, the levels can be set manually by entering them in the associated fields.

The Remote Color Change Kit is now installed and connected to the RM2 system.

RF2 Remote Color Change Kit Installation

The remote color change box is designed to be used inside a hazardous environment, such as a spray booth, however, the Zener barrier box **must** remain in the non-hazardous area.

Refer to page 10 for mounting dimensions. Mount the remote color change box in the desired location, ensuring adequate cable length for installation.

Mount the barrier box near the RF2 controller in a non-hazardous area, as described below.

⚠ WARNING

Installation should be performed by a qualified electrician. Improper installation could create a spark, resulting in fire or explosion.

Mounting

1. A mounting bracket and M10 screws are included to assist with mounting the barrier box near the RF2 controller. You can remove the mounting bracket attached to barrier box if mounting by another method.

⚠ CAUTION

Before connecting the solenoid valve to the RF2, disconnect and depressurize the RF2 air supply for safety.

2. Next, mount the solenoid valve near the RF2 controller in a non-hazardous location.

Connecting To The RF2

1. Route 1/4" tubing from the solenoid valve to either (a) an external air supply or (b) a user -supplied 1/4" tube adapter attached to an available fitting on the air distribution manifold shown. Always supply the solenoid valve with clean, dry air.

2. Cut the required length of 5/32” pneumatic tubing to connect the solenoid valve to the remote color change box. Run the 5/32” tubing from the solenoid valve to the remote color change box pressure indicator fitting, as shown.

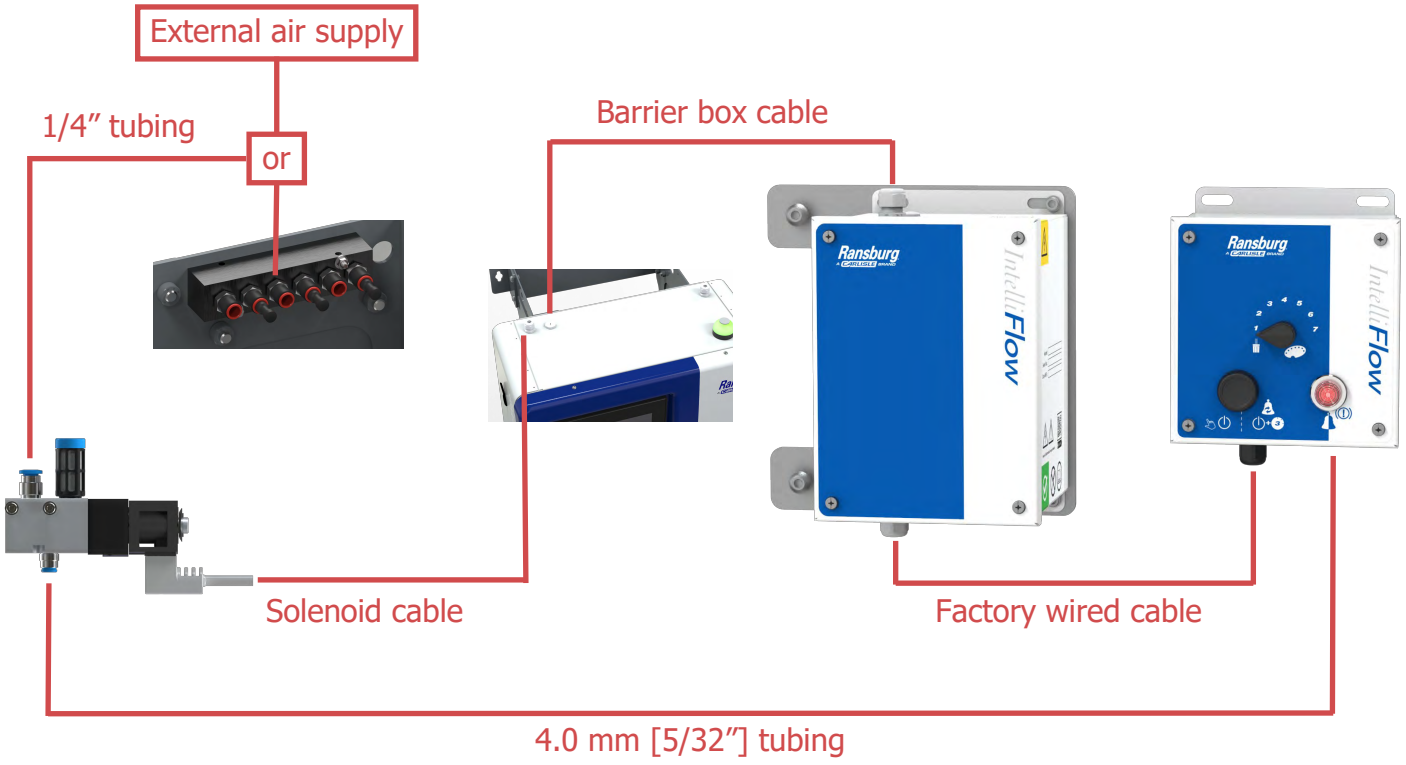
3. Route the barrier box cable from the barrier box into the RF2 enclosure either (1) through an available strain relief, shown, or (2) by replacing the hole plug with the strain relief included with the RF2 controller.

4. Refer to next page for terminal connection information.

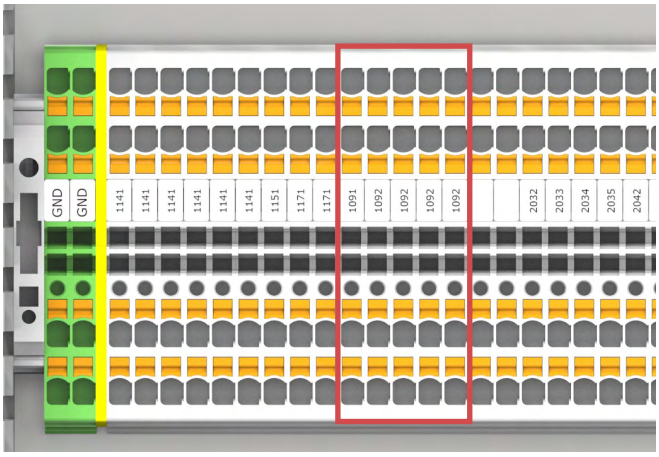
5. Route the solenoid cable from the solenoid valve through an available strain relief and into the RF2 enclosure.

6. Refer to the next page for terminal connection information.

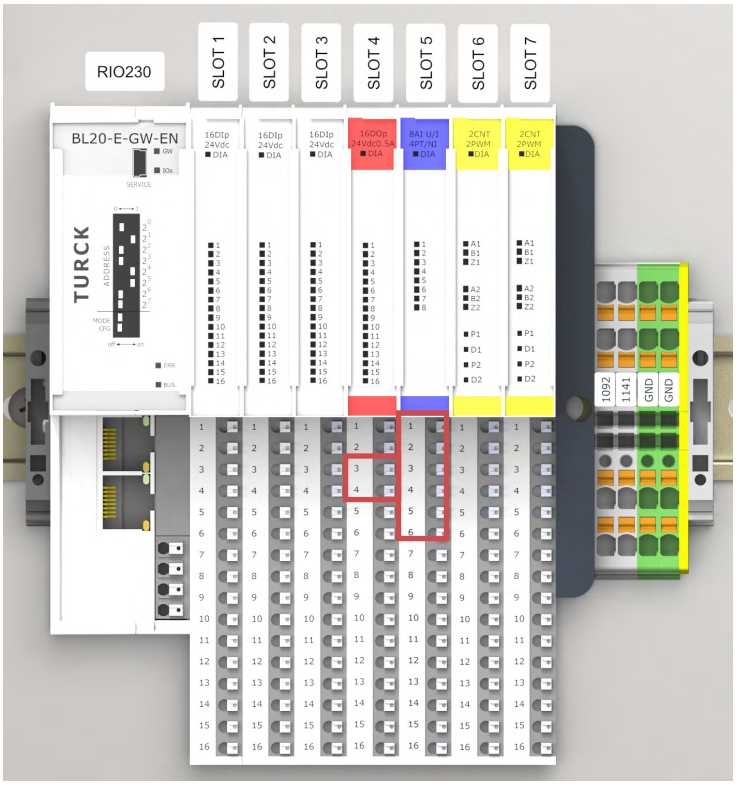
Refer to the diagram below to verify connections.



Once in the enclosure, the barrier box cable and solenoid valve cable connect to the terminals indicated below. Reroute the new harness into the enclosure and connect wires. Refer to the connection tables.



Verify the connection of the solenoid valve cable to the color change box, and remote color change box cable to the alarm indicator by referring to the tables below.



Color Change Box Cable	PLC and Terminal Blocks
CBL 4509/BRN	24VDC—1141
CBL 4509/BLU	0VDC—1092
CBL 4509/BLK	SLOT 5 TERMINAL 1
CBL #/SHLD	GND T.B.
JUMPER 1092	SLOT 5 TERMINAL 2

Solenoid Valve Cable	PLC and Terminal Blocks
CBL 4408/1	SLOT 4 TERMINAL 3
CBL 4408/2	0VDC—1092

If you are installing a second color change box to the RF2, please refer to the connection tables below.

Color Change Box Cable	PLC and Terminal Blocks
CBL 4509/BRN	24VDC—1141
CBL 4509/BLU	0VDC—1092
CBL 4509/BLK	SLOT 5 TERMINAL 3
CBL #/SHLD	GND T.B.
JUMPER 1092	SLOT 5 TERMINAL 4

Solenoid Valve Cable #2	PLC and Terminal Blocks
CBL 4408/1	SLOT 4 TERMINAL 4
CBL 4408/2	0VDC—1092

Enabling In The RF2 User Interface

RF2 User Interface Setup

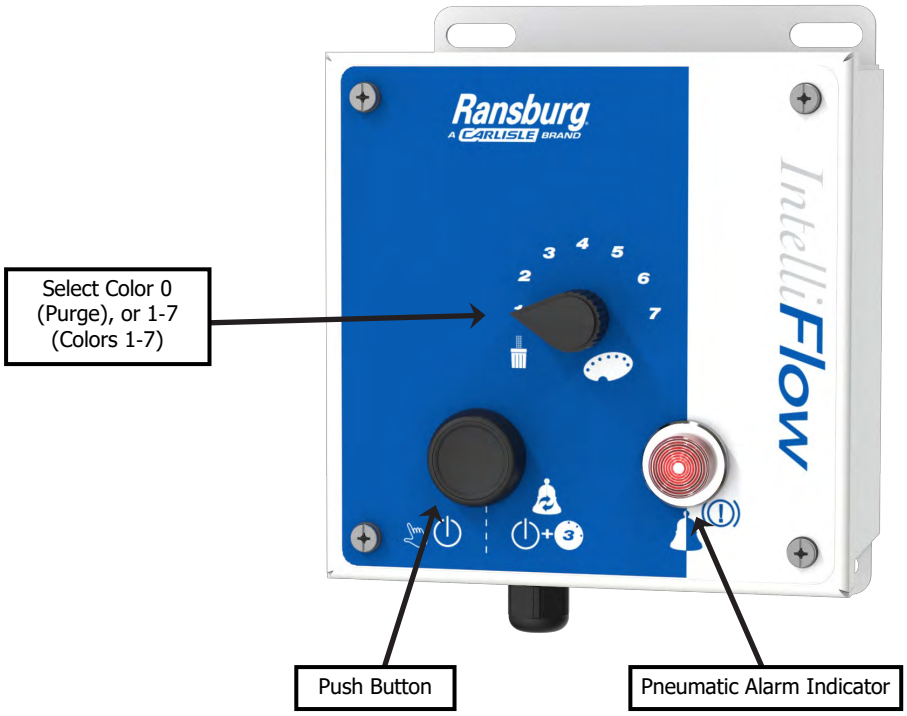
Turn on the RF2. From the home screen of the RF2 user interface, select "menu", "settings", and "system configurations." Select "Next" until the screen labelled "Analog Input Configurations."

Select the analog input connected to the Remote Color Change Box, and select "In-Booth Controller" from the corresponding drop-down. Analog input 1 is the in-booth controller 1 and analog input 2 is the in-booth controller 2. Press 'finish' once you are complete.

The HMI will restart automatically once you press "finish." Log back into the user. Then select "menu", "settings", "In-Booth Selections." Select "station #1."

Selections 1-7 are recipes. Each is an editable field for recipe selection. Select values from 1 to 250, corresponding to recipes.

Remote Color Change Operating Instructions



Loading or changing a color: When a color change or load is required, shut off atomizing air to the spray gun. Turn the rotary switch to the desired color number, and press the push button until the flushing and / or loading process begins. Trigger the gun into a grounded metal waste container. Flow will stop when the paint is loaded and ready to spray. Engage atomizing air to begin spraying.

Alarms: The pneumatic indicator will show when the unit is in alarm mode. To silence and reset the alarm, press and hold the push button for three seconds. If the alarm repeats, the operator should return to the IntelliFlow control and resolve the alarm at the touch screen.

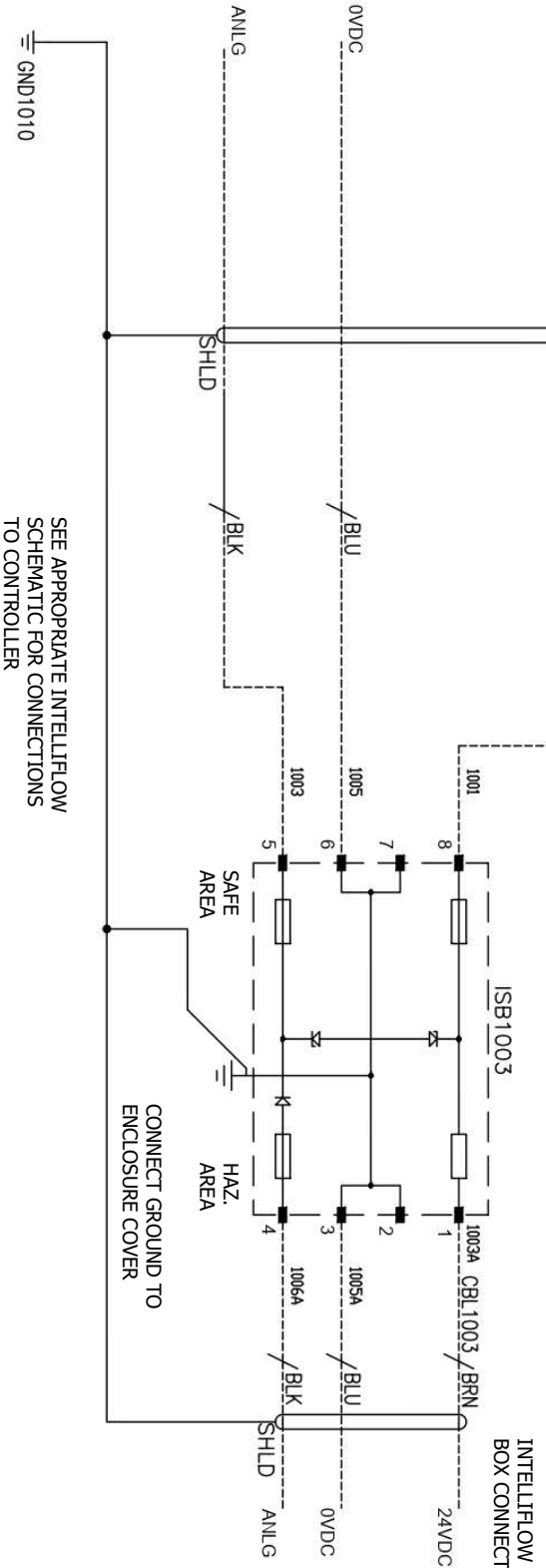
Using with Flush Boxes: Place the gun in the flush box and close the lid completely before starting a color change or load.

NOTE

The remote color change box is designed to only be used with single gun systems. It can still work with the Two Gun Manifold Kit (**240**-**5200**), given both spray guns are flushed and changed to the same color.

APPENDIX

SCHEMATICS



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WARRANTY POLICY

This product is covered by Carlisle Fluid Technologies' materials and workmanship limited warranty. The use of any parts or accessories, from a source other than Carlisle Fluid Technologies, will void all warranties. Failure to reasonably follow any maintenance guidance provided, may invalidate any warranty.

For specific warranty information please contact Carlisle Fluid Technologies.

For technical assistance or to locate an authorized distributor, contact one of our international sales and customer support locations.

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China	Tel: +8621-3373 0108 Fax: +8621-3373 0308	
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