



Installation and Owner's Manual

System 4+® Controller

1211137-0

Rev 01 07/26

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	⚠ WARNING
	Read and understand all operation, warning and safety instructions in this manual before operating or servicing the door. When instructed to do so, follow lockout/tagout procedure before servicing the door.



 	⚠ WARNING	
	Any time you shut off power to the controller, you must set the disconnect switch at the fused disconnect to the OFF position and perform a lockout/tagout of the high-voltage disconnect before opening the controller.	
	This MUST be done at the fused disconnect, even if there is a disconnect switch on the controller.	
	Then wait 5 MINUTES after the lockout/tagout is done before opening the controller.	
	Do not set the disconnect switch back to the ON position until the controller has been closed and the cover secured.	
	FAILURE TO COMPLY COULD RESULT IN SHOCK, BURNS OR DEATH.	

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Abbreviations used in this manual

Unit	Abbreviation
Celsius	°C
Counter	Cnt
Current (Ampere)	A
Cycles	Cyc
Digits	Dig
Fahrenheit	°F
Gigahertz	GHz
Hertz (Frequency)	Hz
Horsepower	hp
Increments	Inc

Unit	Abbreviation
Milliampere	mA
Megahertz	MHz
Milliseconds	Ms
Minute	Min
Number	#
Percentage	%
Seconds	Sec
Voltage (Volt)	V
Alternating current Voltage	VAC
Direct current voltage	VDC



IMPORTANT

This manual is intended for the System 4+[®] controller only. Installation and operation information specific to your door is detailed in the installation and owner's manuals that were shipped with the door.

The information contained in this manual will allow you to install and operate the **System 4+ controller** in a manner which will ensure maximum life and trouble-free operation.

Any unauthorized changes to these procedures, or failure to follow the steps as outlined, will automatically void the warranty. Any changes to the working parts, assemblies, or specifications as written, which are not authorized by Rytec Corporation, will also cancel the warranty. The responsibility for the successful operation and performance of this door lies with the owner.

DO NOT OPERATE OR PERFORM MAINTENANCE ON THIS CONTROLLER UNTIL YOU READ AND UNDERSTAND THE INSTRUCTIONS CONTAINED IN THIS MANUAL.

If you have any questions contact your Rytec representative or **call the Rytec Technical Support Department at 800-628-1909**. Always refer to the serial number of the controller when calling the representative or Technical Support.

A set of wiring schematics is provided with each individual door or retrofit kit specifically covering the control panel and electrical components of that door. The schematics are shipped in the box with the controller.

Overview

The System 4+ controller is a solid-state, microprocessor-based control system designed exclusively to operate Rytec doors. It is based on the previous System 4[®] controller, modernized with the experience of the past years and ready for the future.

This is a robust and highly customizable system that allows for both precise control of all door functions and coordinated control of multiple optional accessories such as activators, detection systems, and alert systems.

Door performance can be customized to meet the needs of most installations.

In a standard installation, the controller is located within view of the door, at working height. Spiral doors can also be ordered with the controller prewired into the head assembly, with a BTA4 remote door controller installed at working height.

How to find the serial number

IMPORTANT

You will need to know the **serial number** of your door any time you call Rytec Technical Support.

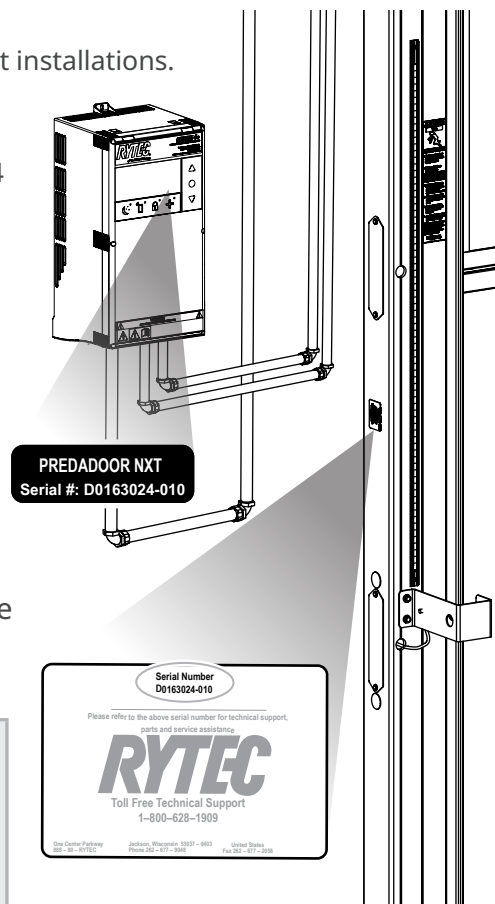
There are **labels** displaying the serial number in several locations on the door.

The **easiest labels to locate** are at roughly eye level on the left side side column of the door and at the bottom of the display on the controller (PredaDoor[®] shown here).

IMPORTANT

If you are installing multiple doors at the same location, **make sure** that the serial number on the controller and the serial number on the door match before connecting them electrically.

Connecting a door to a controller with a different serial number can damage the door.



Safety information and the meaning of signal words

Summary



Technical content produced by Rytec includes safety information which must be read, understood and obeyed to reduce the risk of death, personal injury, or equipment damage. This information is boxed to set it apart from other text. The boxed text identifies the nature of the hazard and appropriate steps to avoid it.

The safety alert symbol identifies a situation that can result in personal injury. The accompanying signal word indicates the likelihood and potential severity of the injury. The meaning of the signal words is as follows:

	WARNING WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Safety icons used in this manual

The safety icons used in this manual indicate the hazards listed in the boxed text shown here.

 	WARNING Any time you shut off power to the controller, you must set the disconnect switch at the fused disconnect to the OFF position and perform a lockout/tagout of the high-voltage disconnect before opening the controller. This MUST be done at the fused disconnect, even if there is a disconnect switch on the controller. Then wait 5 MINUTES after the lockout/tagout is done before opening the controller. Do not set the disconnect switch back to the ON position until the controller has been closed and the cover secured. FAILURE TO COMPLY COULD RESULT IN SHOCK, BURNS OR DEATH. 
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 	WARNING CRUSH AND BODY CRUSH HAZARD BEFORE WORKING ON THE DOOR: - Make sure the high voltage fused disconnect has been set to the OFF position and a lockout/tagout has been performed. WHEN WORKING ON THE DOOR: - Make sure the door panel is secured at all times, proper procedures and safety measures are followed, and tools meet recommended specs. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY 
------	--

⚠ WARNING	
 	CRUSH AND BODY CRUSH HAZARD This door may contain counterweights or springs that may contain stored kinetic energy. This hazard continues to exist even after a lockout/tagout of the electrical power. ▪ Do not adjust or replace these components unless specifically directed. Maintenance procedures include steps to safely work with these components. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY IF THE SPRINGS MOVE UNEXPECTEDLY.
⚠ WARNING	
	FALLING HAZARD ▪ Make sure ladders and scissor lifts have the correct load rating and are of sufficient height to safely access the door head assembly. ▪ Follow all safety instructions. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY
⚠ CAUTION	
	CRUSH HAZARD KEEP HANDS CLEAR OF PINCH POINTS ▪ Be aware of potential hazards if you place your hands in places where you cannot see them. ▪ Make sure all proper procedures and safety instructions are followed. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY
⚠ WARNING	
	CUT AND BLADE HAZARD KEEP HANDS CLEAR OF ALL BLADES AND SHARP EDGES ▪ Be aware of potential hazards if you place your hands in places where you cannot see them. ▪ Make sure all proper procedures and safety instructions are followed when operating power tools. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY

Additional safety icons used in this manual



General hazard



Shock hazard



Perform lockout/tagout

Other icons used in this manual



Indicates instructions which, if not followed, could result in **damage to the door or voiding of the warranty.**



Indicates a feature of the controller that is **new or enhanced** in the System 4+ controller.

Operational and maintenance safety

Operational precautions

Observe these precautions while using the door.

- Make sure that all individuals who use the door have been informed about the correct use of the door and all activating devices, and that they understand all safety devices for the door.
- Make sure that only individuals who are trained, qualified and authorized can access the control system, system software and control parameters.
- Do not run through the door opening or attempt to cross the threshold before you are able to do so while walking fully upright.
- Do not drive a vehicle through the door until the door is completely open and has stopped moving.
- Do not climb on or hang on the door.
- Do not touch any part of the door or door frame while the door is opening or closing.
- Only operate the door at the approved supply voltage.
- If the door is to be kept open for a sustained period of time, use the control system to put the door in jog mode, and jog to the desired height. For servicing, set the door to the desired height, then set the power disconnect to the OFF position and perform a lockout/tagout. Make sure all personnel are informed that the door is not operational during this time.
- Safety devices must not be modified or put out of service. Do not use the door if there is any indication that a safety device is not operating correctly.

Maintenance precautions

Observe these precautions while performing maintenance on the door.

- Maintenance of the door and the control system is to be done by trained, qualified and authorized individuals only.
- Make sure all routine maintenance is performed as scheduled in the instructions for the door.
- Make sure the power disconnect is set to the OFF position and a correct lockout/tagout procedure has been performed before servicing any component of the door that is powered by the control system.
- The control system includes components that remain charged after the power has been disconnected. Do not open the control box until at least 5 (five) minutes have elapsed after power is disconnected.
- Do not pass through or stand in the door panel pathway while the door is being serviced.
- Make sure you have and use all required Personal Protective Equipment.
- Make sure that you are aware of the location of all power lines, piping and HVAC systems within the work site.
- Make sure all components and hardware used to service the door are approved by the manufacturer.

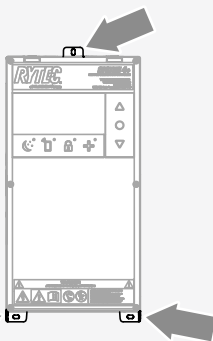
The System 4+® controller - parts of the controller and Rytec naming conventions

Mounting holes (3) secure the enclosure to the wall.

Enclosure must be anchored at all three points during installation.

IMPORTANT

The mounting surface must be **structurally sound** and **free of mechanical shock or vibration**.



Capture screws (6) secure the front cover to the enclosure.

Loosen them fully to release front cover, then swing up to access internal components.

Outside the control box

Terms:

Controller = components inside enclosure

Enclosure = plastic case and cover for controller

Control box = controller + enclosure

Keypad has three buttons for direct user control of the door.

- **UP arrow** (open)
- **STOP button** (circle)
- **DOWN arrow** (close)

To operate the door:

Press the UP arrow to open the door.

Press the DOWN arrow to close the door (after internal timer delay)

Press the STOP button to pause the door when opening and closing.

Press and hold DOWN arrow and STOP button at the same time for five seconds to enter or exit from jog mode.

Press and hold UP arrow and STOP button at the same time for five seconds to enter parameter mode.

Second keypad adds four new functions that can be accessed directly.



- **Night mode** (moon), disables all activators from outside of the installation site.
- **Bluetooth** (smartphone) activates Bluetooth pairing.
- **Lock** (lock) deactivates everything except the UP arrow, DOWN arrow and STOP button.
- **Plus** (plus sign) can be optionally programmed to perform a wide variety of functions.

Each button has an LED light to indicate if it is active or deactivated.

Fused disconnect

Required for each controller.

In sites where there are multiple doors, there must be a separate disconnect for each controller.

Lockout/tagout

Disconnect should be set to the OFF position and a lockout/tagout performed before opening the controller once it has been powered on.

You should then wait five minutes, to allow accumulated charge to dissipate at the two capacitors at the top of the power board.

Controller disconnect

Optional feature, with several options for external switch.

A separate fused disconnect is still recommended for controllers with this optional feature.

Rotary switch

Disconnect and conduit**High voltage cables**

Must run in light metal conduit.

Must be run in separate conduit from the low voltage cables.

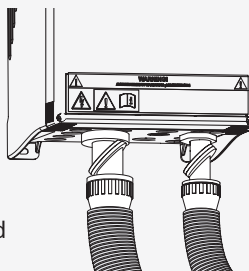
Conduit should be run as far from the low voltage conduit as the installation site allows.

Must enter the controller through the **BOTTOM LEFT** side and be grounded to the grounding pad.

Liquid tight conduit

Some installation sites require liquid tight conduit instead of light metal.

Conduit and connectors are shipped with the door on new installations, and should already be in place on retrofits.

**Low voltage cables**

Can be run in light metal, PVC, ENT, or HDPE conduit.

Multiple low voltage cables can share conduit. Do not overcrowd.

Should enter through the bottom right side of the controller, but may use the left side to avoid overcrowding.

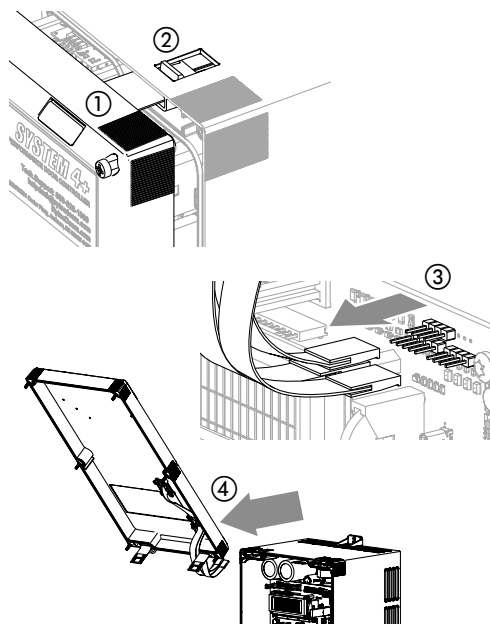
- Protect the components inside the controller from metal chips when installing conduit.
- Seal the point of connection if the conduit entering the controller is coming from an area having a different temperature (warmer or colder) than the area where the controller is located.

Inside the control box

The System 4+ cover is designed to swing up and remain in place.

If there is not enough vertical clearance, it can be removed:

- ① Fully loosen all six capture screws and pull the cover away from the enclosure.
- ② Push down on the tabs of the two hinges to free the cover.
- ③ Unplug the three pin connectors that connect the electrical harness to the microcontroller board (mark the three ribbon cables so you can plug them in to their correct connectors).
- ④ Remove the cover.



Microcontroller (top) board

- Terminal blocks for most low-voltage connections.
- Internal clock battery.
- USB-A and USB-C connectors for system software.
- Bluetooth expansion card mounted at top left. **WHAT'S NEW**

Electrical harness

- Three-part ribbon cable connects microcontroller board to both keypads. **WHAT'S NEW**
- Display board is a plug-in extension board that mounts on the microcontroller board.

Power (lower) board

- Terminal blocks for all high-voltage connections; also low-voltage brake and Pathwatch blocks.
- Connectors for radio and ground loop expansion cards.
- Held in place in enclosure by plastic brackets with pull-down tabs for easier release. **WHAT'S NEW**

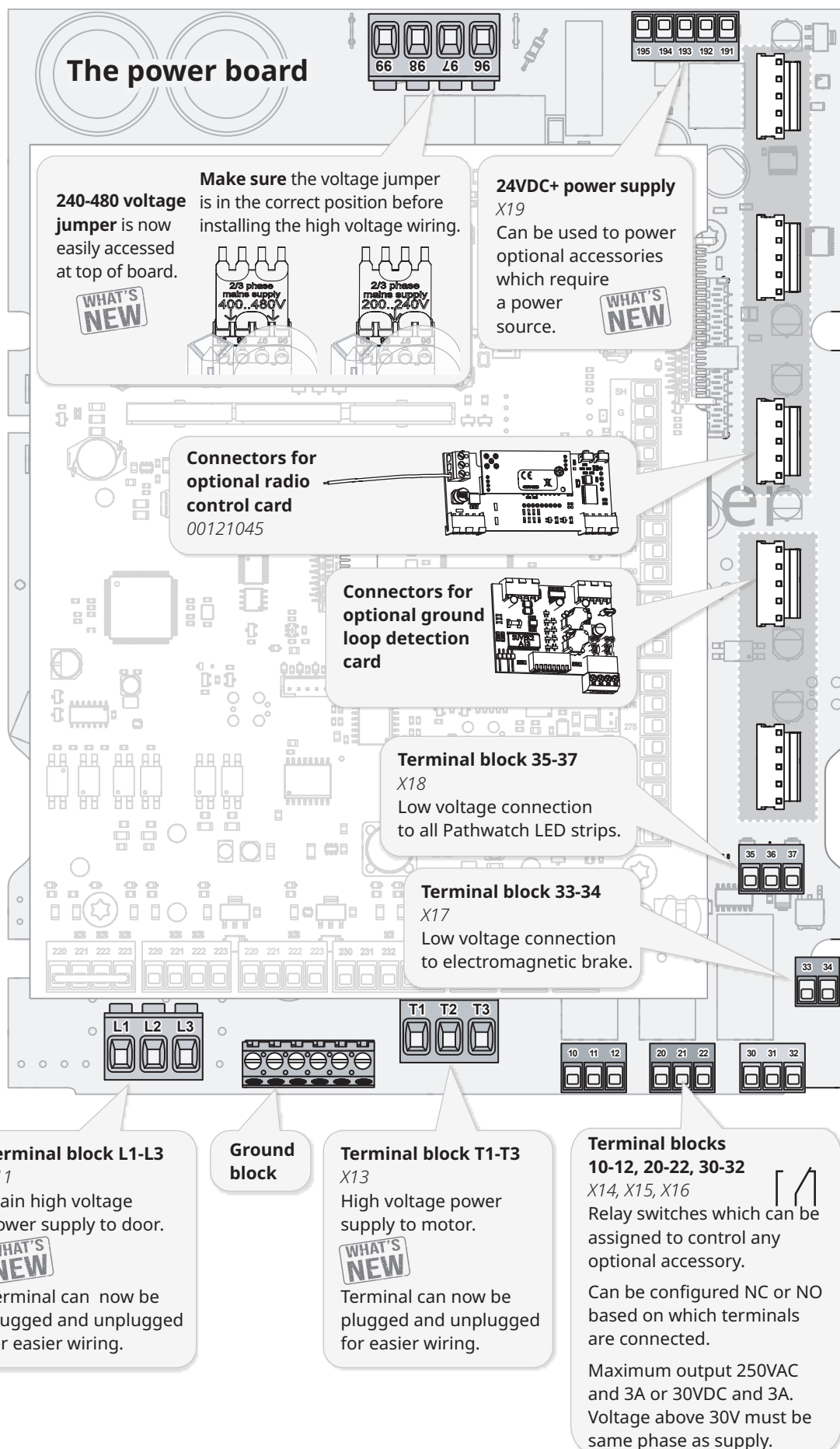
User display (scrolling display)

2-line, 16 character LCD display.

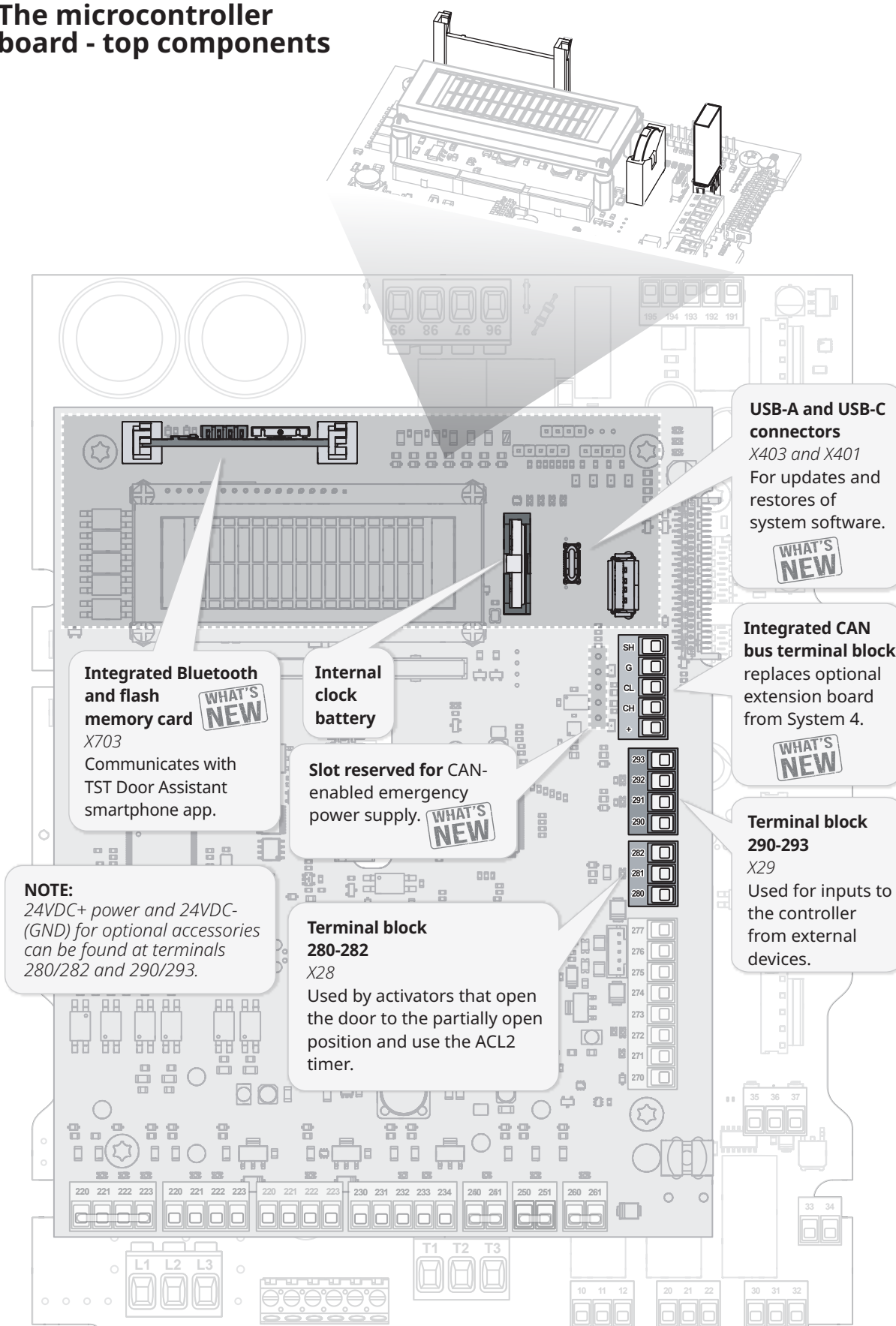
- Longer messages scroll in a continuous cycle.
- Display board is a plug-in extension board that mounts on the microcontroller board.

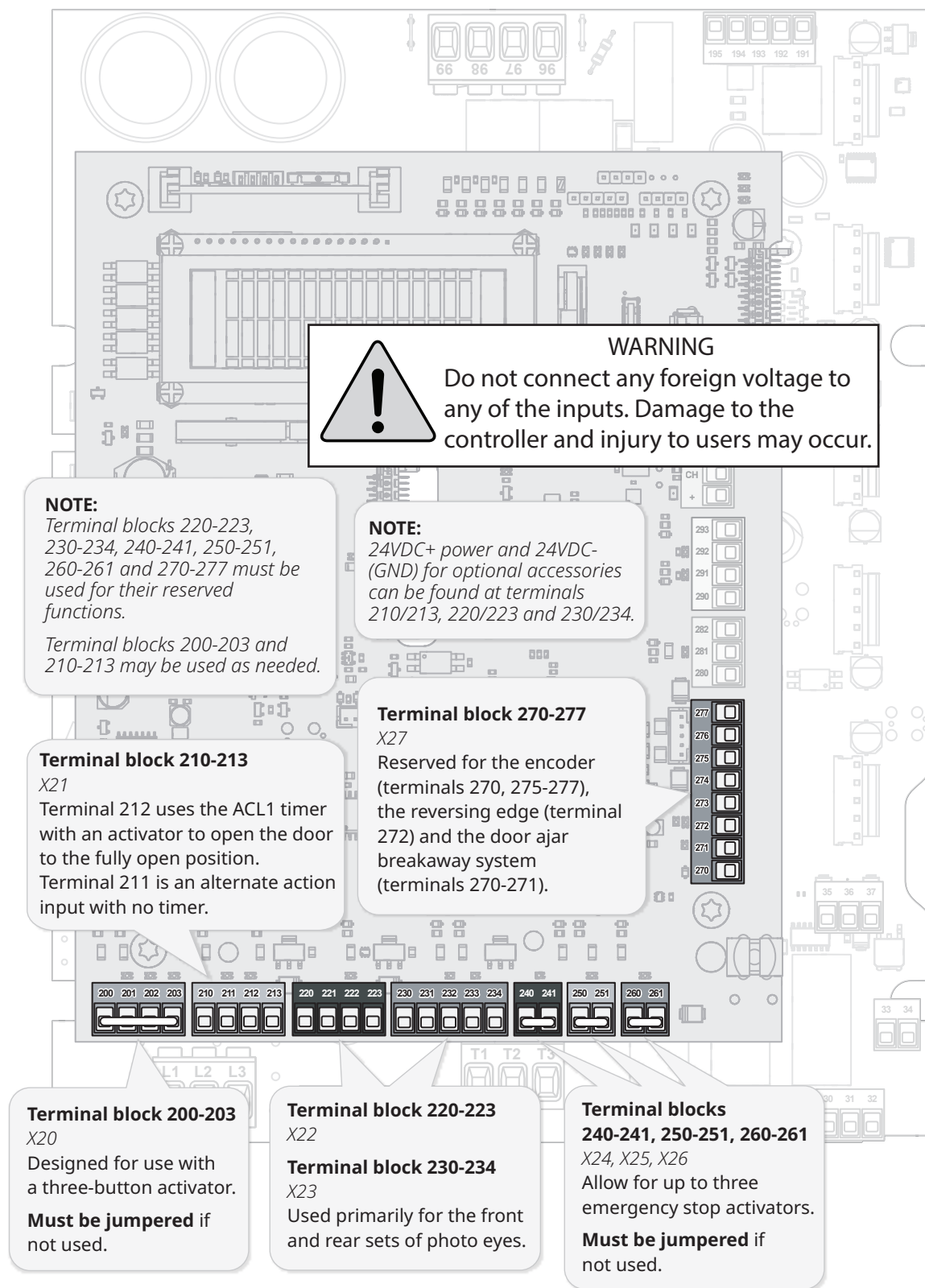
Grounding block

- All high-voltage connections must ground to the grounding block.



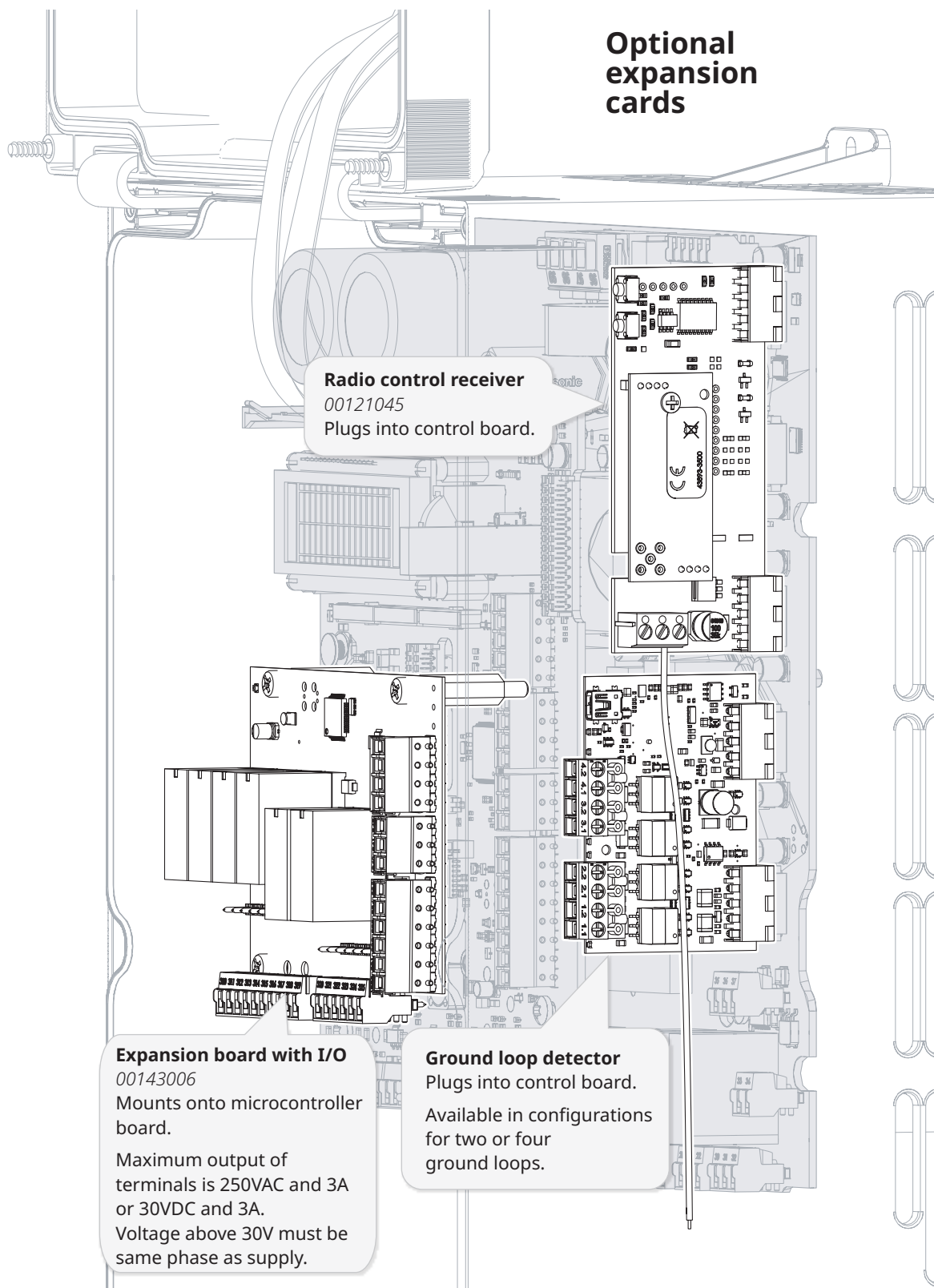
The microcontroller board - top components





The microcontroller board - bottom components

Optional expansion cards



Ferrite filters

Shown in shipping box

00112001 (large)

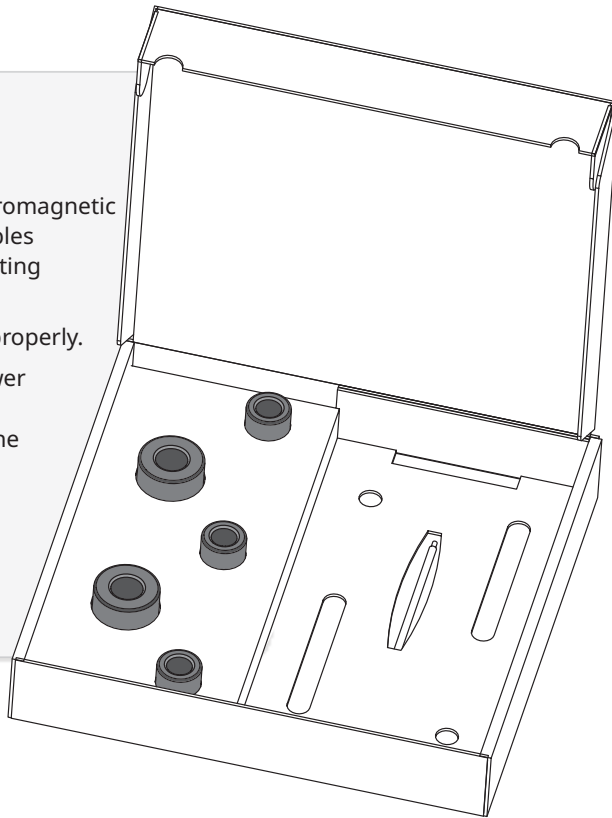
00112023 (small)

Magnetic filters that prevent electromagnetic interference from high voltage cables inside the controller from interrupting the signal in low voltage cables.

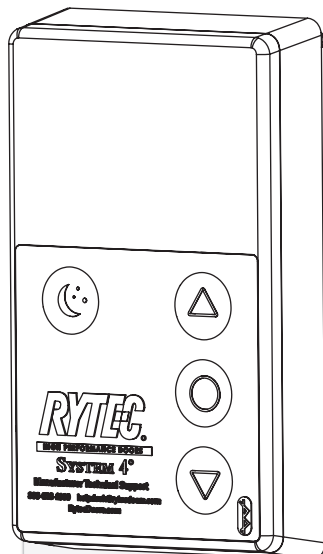
Required for the door to operate properly.

Large filters are placed on the power and motor cable. Small filters are placed on the individual wires of the power cable.

Shipped inside the controller box on new installations. Remove from previously installed controller and reuse on retrofits.



BTA4 Remote Door Controller



BTA4 remote door controller

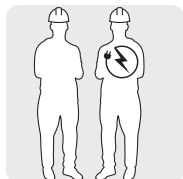
1210764-0

Bluetooth enabled.

Installation Requirements – Site Conditions

- Service techs must have unrestricted access to the door opening at all times during the service.
- Make sure there is no pedestrian or vehicular traffic within the service area for the duration of the service.

Installation Requirements – Staffing



- A licensed electrician is recommended for making any changes to the electrical connections for the door.

	⚠ WARNING
	Electrical work must meet all applicable local, state and national codes. FAILURE TO WIRE THE DOOR CORRECTLY CAN CAUSE SHOCK, BURNS OR DEATH TO THE PEOPLE WHO INSTALL, USE OR SERVICE THE DOOR. Failure to comply also voids the warranty for the door.

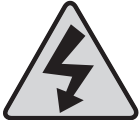
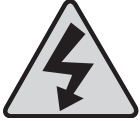
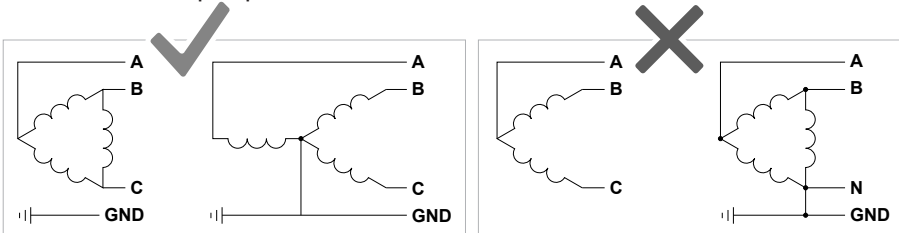
IMPORTANT

The System 4+ installation must meet all of the standards and follow all of the steps shown in these instructions. Failure to do so voids the warranty for the door.

- **The high-voltage and low-voltage conduits must be separated** by a distance that meets all applicable federal, state and local codes and regulations.
 - ▶ High and low voltage cables must be routed in separate conduit.
 - ▶ Metal conduit is recommended. Flexible EMT, FMC, or Sealtight (LFMC/LFNC) conduit is permitted where needed; UL-listed code-compliant per NEC, state, and local AHJ requirements.
- **Use shielded wiring** where indicated in these instructions
- **Wires must be cut to length.** Do not loop wires or leave excess length untrimmed.
- Encoder and SmartSurround cables **can never be spliced**. Rytec recommends **not splicing the motor cable**.
- If splicing cable:
 - ▶ **You must use** the same gauge wire for the entire length. Gauge is listed in the steps in these instructions. **Shielded cables** must be spliced to a shielded cable for the entire length.
 - ▶ **All spliced field wiring** must maintain the voltage and temperature rating supplied by Rytec.

Contact Rytec technical support at 800-628-1909 or email rytec.helpdesk@nucor.com before starting the installation if you cannot meet any of these standards or have questions about how to implement them.

Electrical Requirements

	⚠ WARNING All electrical work must meet all applicable local, state and national codes. It is recommended that all electrical work be done by a certified electrician. Improper wiring could result in controller, motor, or door damage and shock, burns, or death to the people who install, use or service the door.
	⚠ WARNING The high-voltage power to the controller must meet the controller specifications. Improper voltage could result in controller, motor, or door damage and shock, burns, or death to the people who install, use or service the door. ▪ Input Voltage: 208 to 480VAC ($\pm 10\%$) at 50 to 60 Hz ▪ Single or 3-Phase Voltage ▪ Short Circuit Current Rating: Suitable for use on a circuit capable of delivering not more than 5000 rms symmetrical amperes, max 208/480 V, when protected by UL Listed Class CC fuses, rated max 20 A (see nameplate). The Voltage Rating of the external fuses(s) shall be at least equal to the input voltage of the door controller.
	⚠ WARNING The high-voltage power to the controller must be properly grounded. Improper grounding could result in controller, motor, or door damage and shock, burns, or death to the people who install, use or service the door.  ▪ If the service is floating, ungrounded or open delta type power, an isolation transformer must be installed. ▪ Metal conduit entering the bottom left of the control box contacts the metal protection ground plate inside the controller. ▪ If non-metallic conduit is used, a protection ground conductor must be used.
	⚠ WARNING A fused electrical disconnect must be used for each controller. ▪ A UL Listed Class CC fuse, rated for the input voltage and 20A or current must be used in the disconnect. ▪ If multiple controllers are installed, each must have its own disconnect.

How to install the System 4+ controller and wire the door

IMPORTANT

All wiring & conduit from the fused electrical disconnect to the controller, from the controller to any optional junction box and the door, and from controller to the floor if a floor loop is used, must be supplied by the door owner.

Before you begin

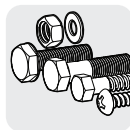
1

Make sure you have all supplies and tools.

Supplies
that you
provide



Conduit for high-voltage
and low-voltage wiring



Mounting hardware
for controller (3 anchors)

Tools
you will
need



Power drill



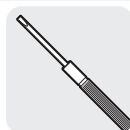
Step drill bit



#2 Phillips



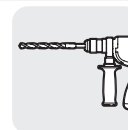
T20 Torx
screwdriver



Precision
screwdriver



Wire tool



Cement drill
(if needed to
mount controller)

2

Check the job site.

- The ambient temperature must be between **-4°F** and **149°F** at all times.
- **NOTE: for freezer doors**, the controller and fused disconnect must be mounted on the warm side of the door.
- **The mounting surface** for the System 4+ controller and fused disconnect must be structurally sound and free of mechanical shock and vibration.

3

Find the schematics for the door.

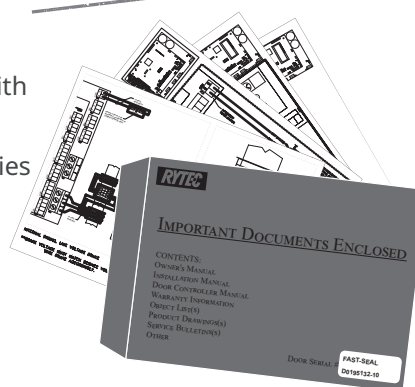
If this is an **install**, they will be in the same box that holds the System 4+® controller.

If this is a **retrofit**, they will be in an envelope in the box with the controller.

Also, check the crate and small parts boxes for accessories such as activators or safety devices and any schematics included with them.

If the schematics differ from the wiring you see in this manual, **follow the schematics** instead of this manual. This manual only shows some of the standard wiring configurations.

IMPORTANT



How to install the System 4+ controller

- 1 **Install** the high-voltage power supply.
 - **Provide a high-voltage power supply** that matches the electrical spec for the System 4+ controller.
 - **A fused disconnect is required.** Fuses must meet NEC code for FLA listed on the electrical spec for the System 4+ controller.

- 2 **Make sure** the high-voltage and low-voltage cables from the head assembly of the door are separate and routed in separate conduit.



Label the controller end of the cables.

Label them again if you cut or trim them.

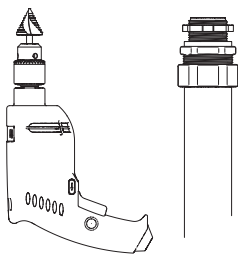
- 3 **Open** the System 4+ controller box and **remove** the controller and ferrite filters.
Loosen the capture screws on the control box cover and **open** the cover panel.
Verify that the serial number and electrical specs for the controller match the door.
 On CAN bus doors, **locate** the 120Ω resistor for testing the CAN bus.

- 4 **Install** the control box onto the wall using the hardware you have supplied.
 The control box should be installed **as close to the door as possible**, and at a **height that is easily reached**.

- 5 **Drill** holes through the bottom of the control box for the conduit.

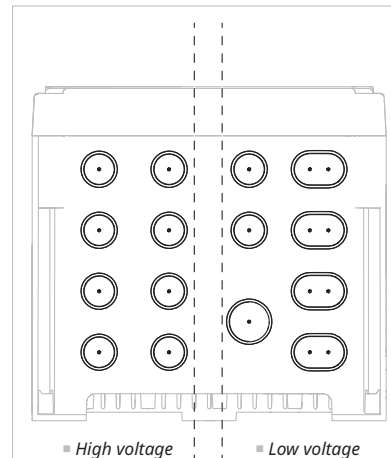
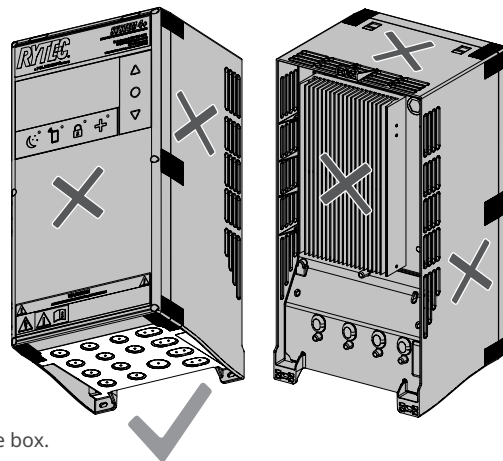
IMPORTANT

- **Conduit must enter through the bottom of the control box.** Drilling holes in the **front, back, top or sides** of the control box voids the warranty.
- **High-voltage wires** must enter through the left side of the box bottom.
- **Low-voltage wires** must enter through the right side of the box bottom.
- **Holes must be drilled.** The indentations in the box bottom are not knockouts.



ONLY drill holes and install conduit through the **bottom** of the control box.

DO NOT drill through the front, back, top or sides of the box.

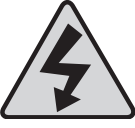


How to install the high-voltage wiring

IMPORTANT

All wiring illustrations in this manual show typical wiring configurations. Reference the schematics that came with the door or controller retrofit for correct wiring specific to that door.

Steps 1 and 2 apply to all doors.



⚠ WARNING

Set the disconnect switch to the OFF position and perform a lockout/tagout of the high-voltage disconnect before installing wiring to the controller.

Do not set the disconnect switch to the ON position until the wiring installation is complete and the controller is fully earth grounded per instructions.

Do not remove the motor or high voltage terminal blocks while power is applied.

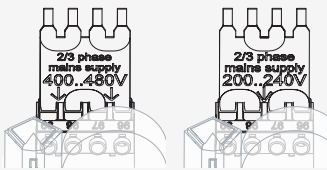
Failure to comply could result in shock, burns or death.



1 Connect the supply voltage wiring from the disconnect (3 phase).

12 AWG

Make sure the voltage jumper is in the correct position before installing the high voltage wiring.





DO NOT use power tools

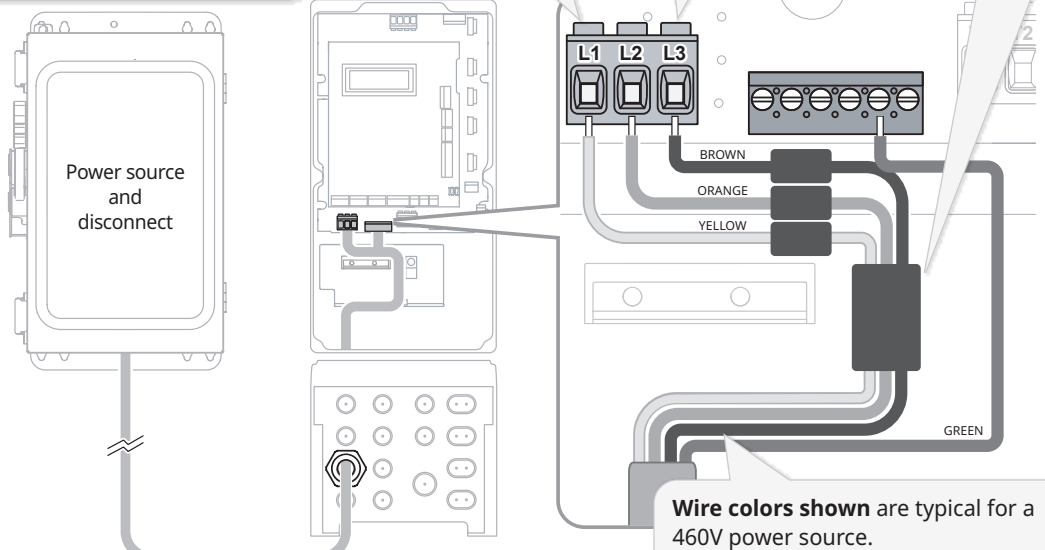


For terminals

High voltage terminal blocks in the System 4+ controller can be removed and reinstalled for easier wiring.

Maximum torque for all screws is **2.5 in-lbs.**

Place one large ferrite filter around all three wires, and **one small filter** around each individual wire.



Power source and disconnect

3-Phase Power Supply

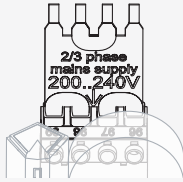
Wire colors shown are typical for a 460V power source.

Wire colors for 230V power are typically L1=red, L2=black, L3=blue.

1 Connect the supply voltage wiring from the disconnect (1 phase).

12 AWG

Make sure the voltage jumper is in the correct position before installing the high voltage wiring.



DO NOT
use
power tools

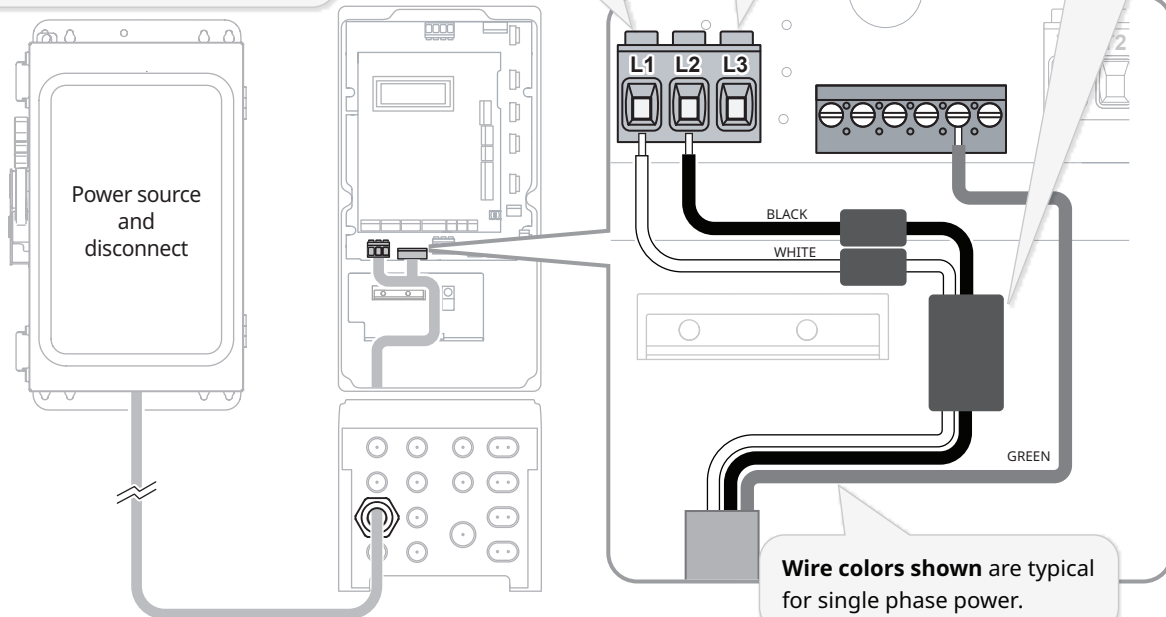


For
terminals

High voltage terminal blocks in the System 4+ controller can be removed and reinstalled for easier wiring.

Maximum torque for all screws is **2.5 in-lbs.**

Place one large ferrite filter around both wires, and **one small filter** around each individual wire.



Single Phase Power Supply

Wire colors shown are typical for single phase power.

2 Connect the high-voltage wiring from the motor. **Shielding:** braided copper mesh and drain wire.

16 AWG

DO NOT
use
power tools



For
P-clip
T20

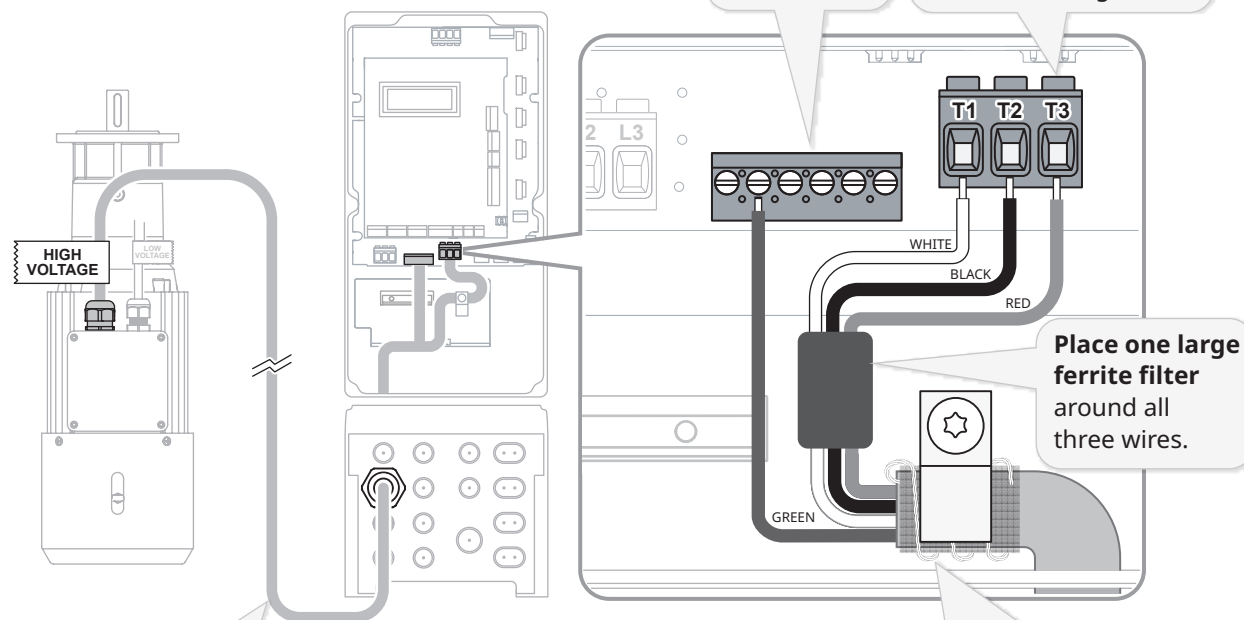


For
terminals

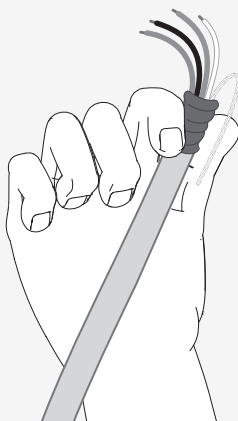


**Maximum
torque**
for all screws
is **2.5 in-lbs.**

**High voltage terminal
blocks** in the System 4+
controller can be
removed and reinstalled
for easier wiring.



Maximum wire length
between motor
and controller:
100' (one hundred feet).



The **shield** (braided copper mesh) and **drain wire** (bare metal) must be in contact with the **P-clip**.

To ensure a tight contact:

1. Loosen the P-clip.
2. Strip high-voltage cable jacket to expose braided shield, then pull back shield and wrap drain wire around it.
3. Run wires, shield and wrapped drain wire under clip.
4. Tighten clip.
5. Trim excess drain wire.

How to install the low-voltage wiring

IMPORTANT


- Low-voltage wires can be run in the **same conduit**.
- All low-voltage wiring must be 24VDC+ only, installed per NEC to Class II power supply requirements.
- Maximum torque for all System 4+ controller screws is **2.5 in-lb**.
DO NOT use power tools.

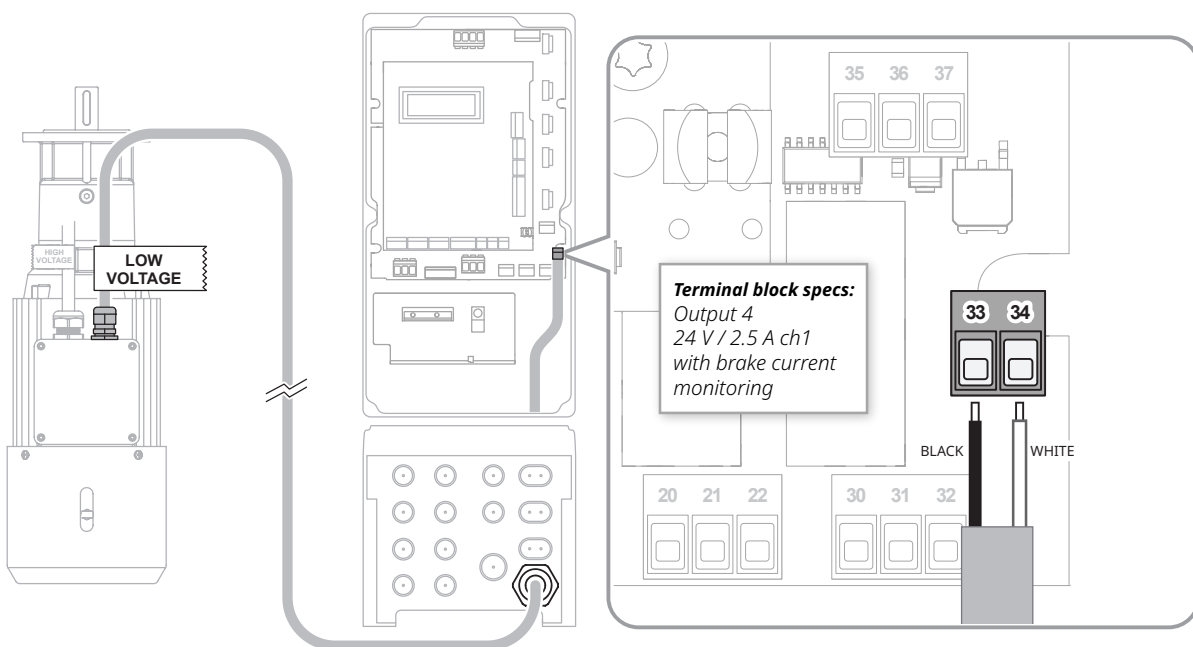
Refer to the illustrations on the following pages for a description of the function of each low voltage terminal block on the microcontroller and power boards, including which have specific signal and voltage functions and which can be used on an ad hoc basis as a signal connection or Class 2 24VDC+ power source for optional accessories.

How to wire the electromagnetic brake

This step applies to all doors.

1

Connect the brake wiring from the motor.
Shielding: unshielded.

18 AWG


How to wire the bottom bar features (reversing edge and door ajar breakaway system)

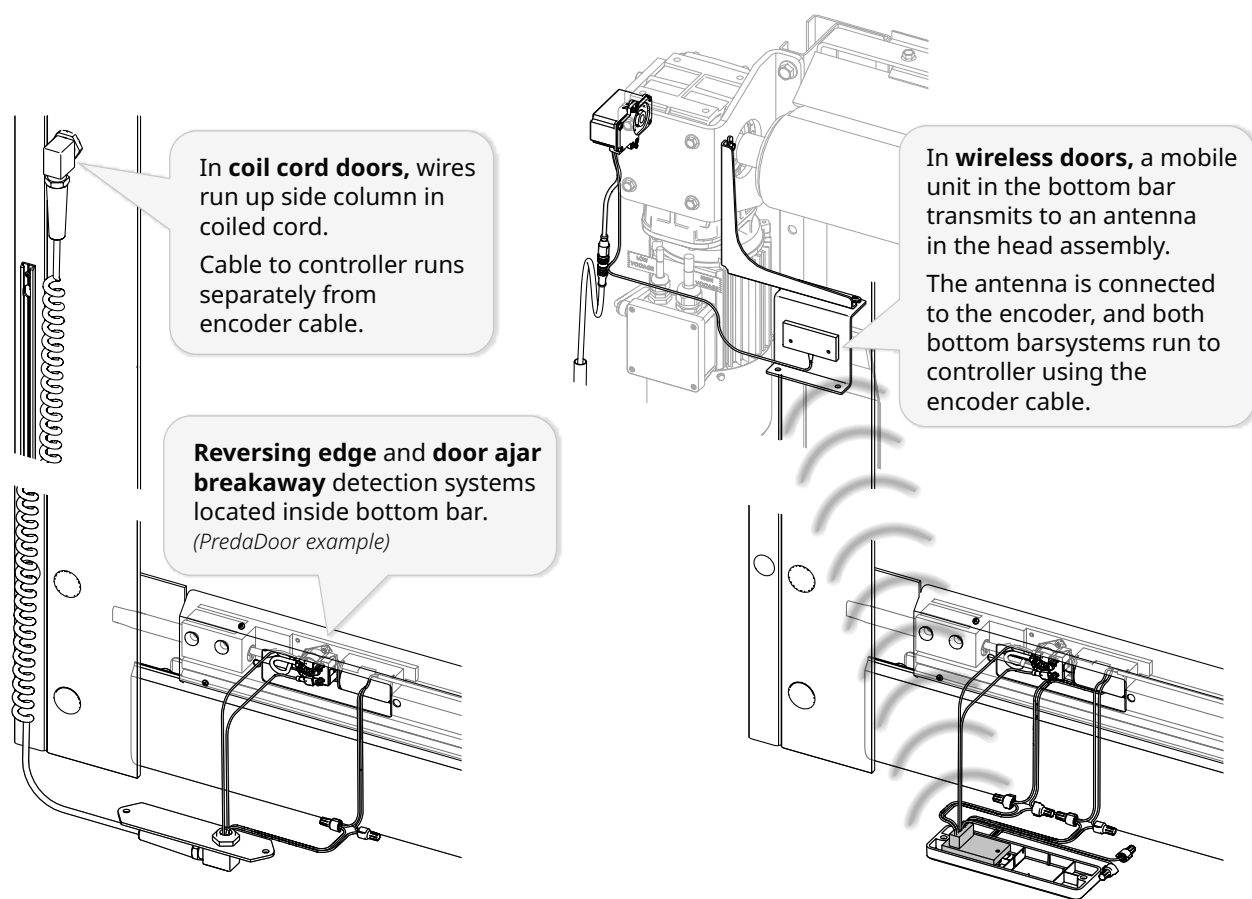
Almost all Rytec doors have detection systems built into the bottom bar. The specific sensors used for these features vary based on the door.

The reversing edge is located below the bottom bar and reverses the door during closing if a physical obstacle makes contact with the edge.

The door ajar breakaway system senses if the door has been knocked out of the track during opening or closing, and stops the door to prevent damage to the door panel. Some doors automatically refeed the door panel, others require an operator to assist.

Connections to these systems may run **in the encoder cable** or **in a separate cable**.

See the specific door installation for wiring instructions. The schematic pack will also have door-specific wiring instructions; these supercede installation manuals.



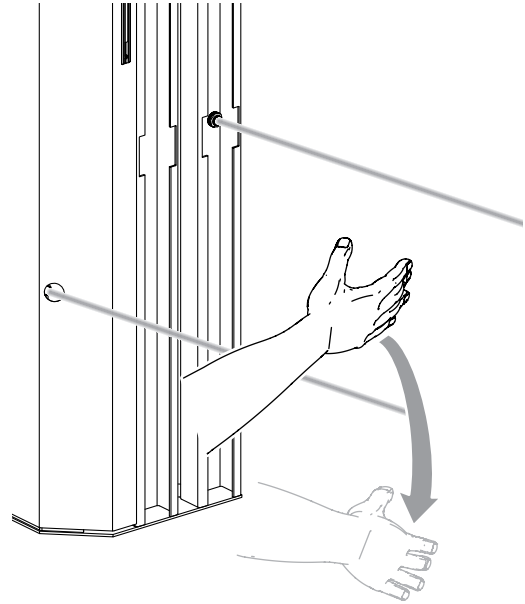
How to wire the photo eyes

Photo eyes are a standard feature of some Rytec doors.

The **photo eyes** stop then reverse the door when a potential obstruction crosses the beam in front of, or to the rear of, the door opening. They then hold the door open until the obstruction is removed.

Depending on door model, the photo eyes may be installed into the side columns, or mounted on brackets.

See the specific door installation for wiring instructions. The schematic pack will also have door-specific wiring instructions; these supercede installation manuals.

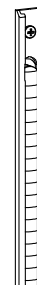


How to wire the Pathwatch LED strip

The **Pathwatch® LED strips**, are a standard feature on some Rytec doors. They are mounted on both side columns and alert users when the door is active.

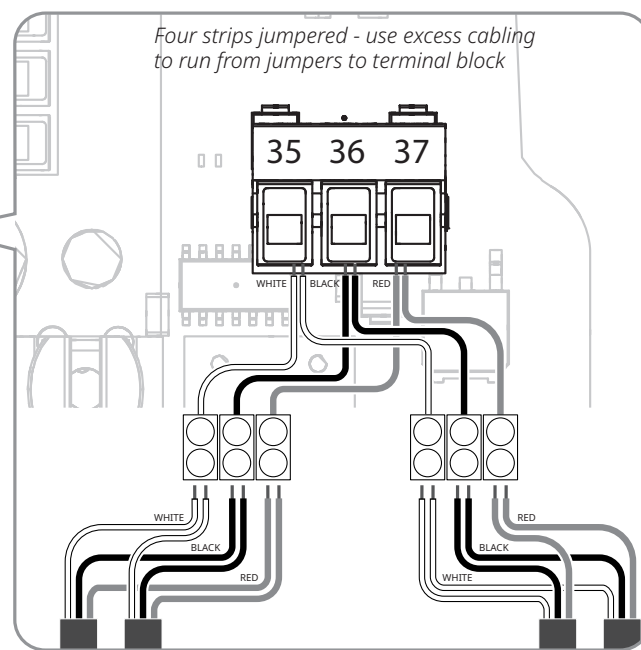
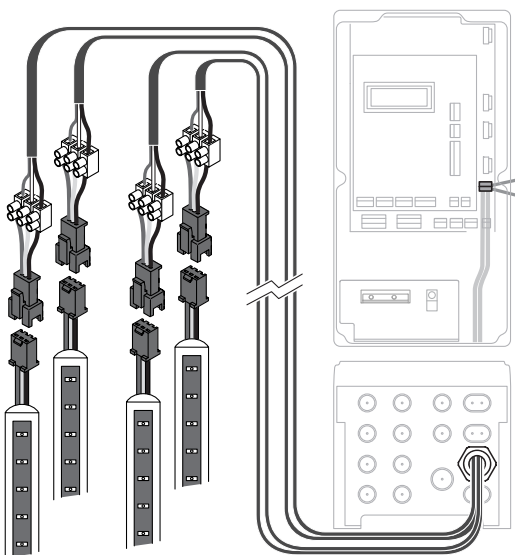
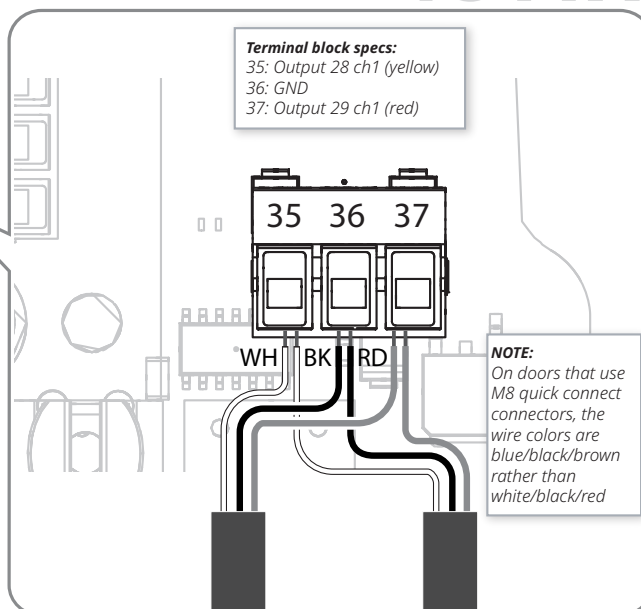
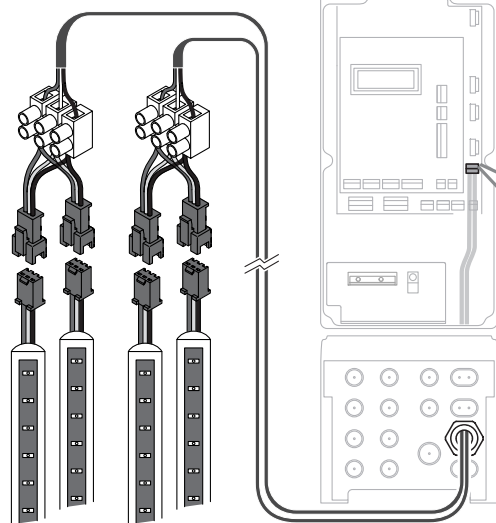
- **Before the door closes:** blinking yellow for three seconds
- **While the door closes:** continuous red until the door stops

Since all Pathwatch strips respond in the same way, multiple strips can be spliced or jumpered to minimize wiring inside the controller.



1 Connect the wiring from the Pathwatch LED strips. Shielding: unshielded

18 AWG



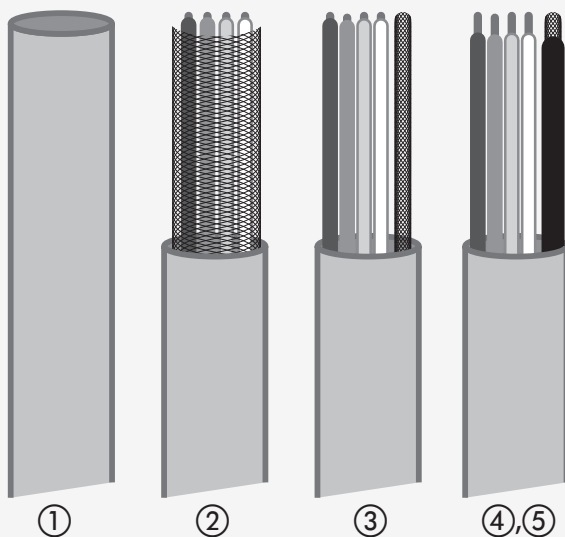
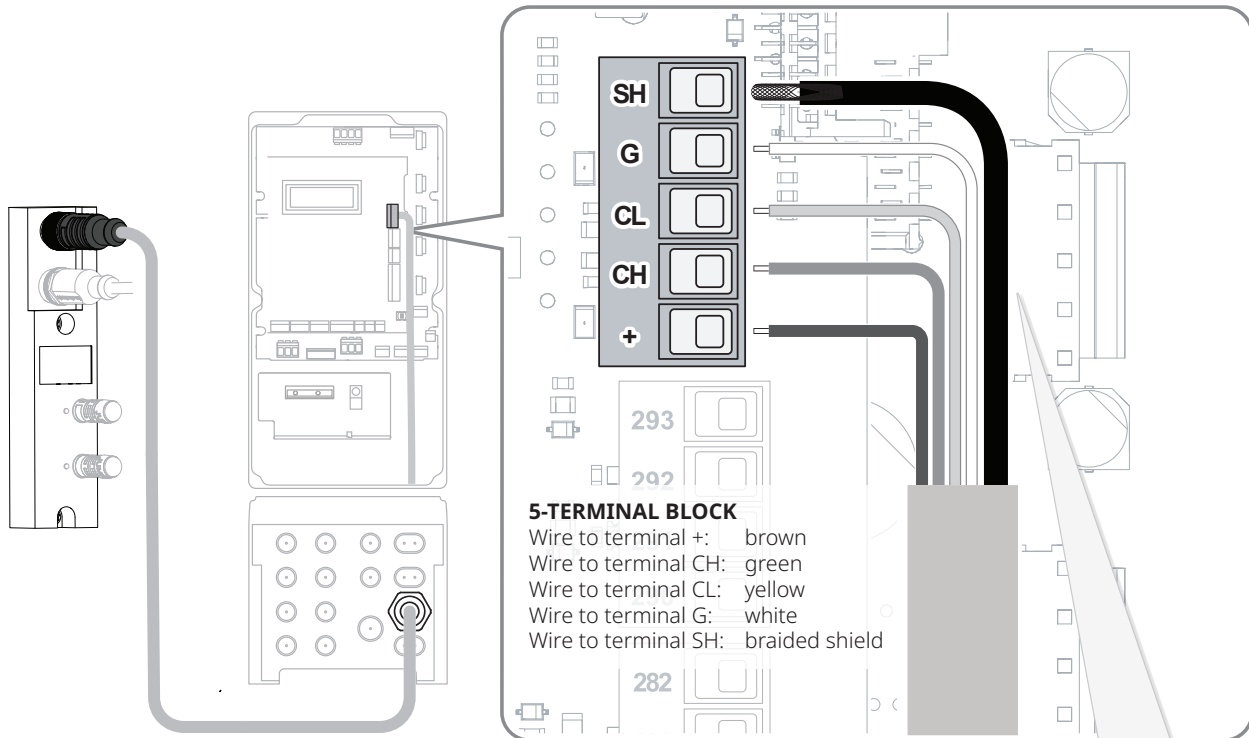
How to wire a CAN bus door

For doors which feature CAN bus cabling and wiring, some of the low voltage wiring is replaced by CAN bus cables. The CAN bus cables route through CAN bus distribution boxes and a single CAN bus cable connects to a terminal block on the microcontroller board. Depending on door configuration, other low voltage wiring may still be present. This cabling still connects to the appropriate terminal blocks.

Retrofits of older CAN bus Spirals may require updating the encoder to the CAN-enabled version.

1 Connect the CAN bus wiring. Shielding: wire mesh

20 AWG



①

②

③

④, ⑤

Heat shrink tubing
from kit

The **shielding** (braided wire mesh) is used as a fifth "wire" and plugs into terminal SH.

To ensure a tight contact:

- ① **Trim** CAN bus cable so it reaches com board, plus six inches (6") additional length.
- ② **Trim** jacket to expose wire mesh shielding.
- IMPORTANT** **DO NOT** cut through shielding.
- ③ **Twist** shielding into fifth wire to terminal block.
- IMPORTANT** **Make sure** shielding is twisted tight enough to fit into terminal.
- ④ **Use** heat shrink tubing from kit to insulate the shielding so only one quarter inch (1/4") is exposed.
- ⑤ **Trim** other wires to expose one quarter inch (1/4") of clean copper.

Before powering up the door



⚠ WARNING

It is recommended that this pretest be done by a certified electrician.

1

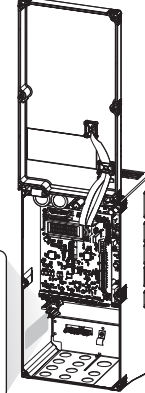
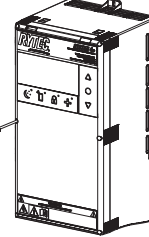
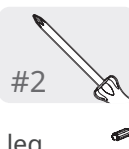
Make sure the power to the door is correct.

- **Open** the System 4+ control box and check the power supply listed on the label inside.
- **Test** the voltages at the disconnect. Test leg to leg and leg to ground.
- If power is correct close the control box cover and **power up** the door.



Multimeter

#2



Sample electrical specs shown

POWER SUPPLY: 460v +/- 10% 3 PH, 60Hz@ 7.1 FLA
LARGEST MOTOR LOAD: 2.0 Hp
ENVIRONMENTAL PROTECTION TYPE: 4x
SHORT CIRCUIT CURRENT: 5kA RMS SYMMETRICAL
D0079721-010

After powering up the door

First, make sure the door responds correctly to the UP arrow and DOWN arrow

It is possible that the typical motor wiring can put the door out of phase. This means the door will close when the UP arrow is pressed, and open when the DOWN arrow is pressed.

This can be fixed by entering parameter mode, getting Service level access, and changing the value at **parameter P:130**.

Do This

Result

1



until parameter displays

P: Mtr Rotation S
130= 0 #

Value is either 0 or 1.

2



1X to move cursor to the right (edit value)

P: Mtr Rotation S
130= 0 #

3



press either arrow to change value

P: Mtr Rotation S
130= 1 #

Change the 0 to 1, or change the 1 to 0.

Do This

Result

4



P: Mtr Rotation S
130= 1 #

The new value is saved.

5



1X to move cursor to left (parameters)

P: Mtr Rotation S
130= 1 #

You can now return to run mode.

Next, check that the internal clock is correct

Clock parameters are set at Rytec for **Central Standard Time**.

Parameter P:C00 can be used to show the current date and time of the internal clock.

The date and time can be adjusted by entering parameter mode and changing the following Service level parameters. See Page 38 or the Rytec Technical Education Center at tec.rytecdoors.com for information on accessing Service level parameters.

Parameter	Function
P:C00	Shows the current date and time the internal clock has been set to
P:C01	Adjusts the hour of the clock
P:C02	Adjusts the minutes of the clock
P:C03	Adjusts the seconds of the clock
P:C04	Adjusts the day and month of the clock
P:C06	Adjusts the year of the clock
P:C07	Adjusts daylight saving time changeover: 0 = Ignore daylight saving time changeover 1 = EU: Changeover on the last Sunday in March from 02:00 am to 03:00 am and on the last Sunday in October from 03:00 am to 02:00 am. 2 = UK: Changeover on the last Sunday in March from 01:00 am to 02:00 am and on the last Sunday in October from 02:00 am to 01:00 am. 3 = USA: Changeover on the second Sunday in March from 02:00 am to 03:00 am and on the first Sunday in November from 03:00 am to 02:00 am.

Finally, refer to the installation manual that came with the door

This will show you the correct steps to follow to set limits for the door, as well as the correct open and close limit for the door.

It will also show you the other tests you should run on the door before putting it into service.

The System 4+[®] controller - NEW and enhanced features

New features of the controller

Redesigned 24V power supply

This new power supply meets the UL class 2 standard and doubles the power supply of the previous System 4 controller, giving the new controller enough power to run more devices. The power supply protects the processor from a hard power-off in case of a short circuit or other faults in external circuits and prevents damage to the controller from overloads and short circuits.

The 24V power supply creates 3 separate circuits:

- One circuit powers the display and processor to report faults if the other circuits are overloaded.
- One circuit powers the (lower) power board and its devices.
- One circuit powers the (upper) microcontroller board and its devices.
- The two board circuits are NEC class 2 approved.

New features of the (lower) power board

Main Power and Motor Terminals are plug-in terminals. These were soldered in place in the System 4 controller.

Phase Jumper is now accessible at the top of the board. This could only be accessed by removing the microcontroller board in the System 4 controller. It is now a reversible card that slots into a terminal block, instead of a wire jumper.

IMPORTANT DO NOT remove the card unless power has been shut off and a lockout/tagout performed.

New features of the (upper) microcontroller board

Fully integrated CAN interface.

The main branch of the CAN bus connects to the controller via a plug-in block terminal that is mounted on the microcontroller board. This required a separate COMM board in the System 4 controller

A second CAN bus block terminal can be added without modifications. This is intended for the emergency power supply but can also be used to expand the use of CAN-enabled devices.

USB-A and USB-C terminals

Both are now available for plugging in USB drives.

Three new indicator lights

These rectangular lights are located directly below the user interface

- Green LED indicates the door is running with no fault codes
- Red flashes while door is moving
- Blue indicates that Bluetooth is active

New features of the front cover

Four new buttons:

- Night Switch - disables activation of the door by any activator outside of the installation site.
- Bluetooth Button - activates/deactivates connection via Bluetooth.
- Lock Button - toggling command to lock/unlock all functions other than the open, close, and stop buttons. Can be optionally used with a password to limit functions. It toggles a "stop" command to "lock" the door into position.
- Plus Button - No default setting, can be programmed per owner request.

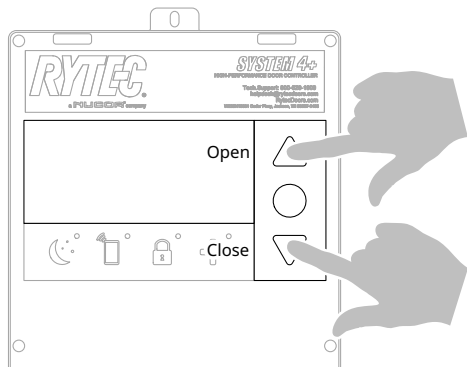
The three modes of the door

Run mode: normal operation. Door responds to user pressing the OPEN button, or to an activator, and opens. It remains open for a set amount of time, then closes until the next activation.

Jog mode: used mostly during service calls. Door moves up or down in response to user pressing the UP or DOWN button, then remains at that level until the next activation.

Parameter mode: allows access to the parameters that determine all functions of the door.

Run mode - how to open and close the door using the System 4+ controller



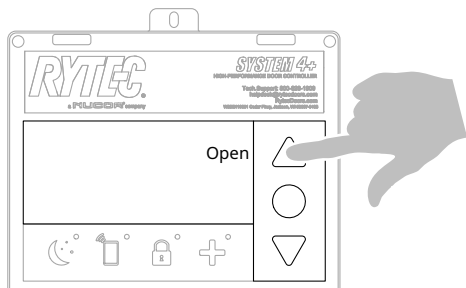
- Press the **UP arrow** to manually open the door.
- Press the **DOWN arrow** to manually close the door.
- Press the **STOP button** to stop the door. It will remain stopped until one of the arrows is pressed, or until any other activator is triggered.
- Under typical operating conditions, the door closes automatically **after internal timers** hold it open.
- There is also a short delay when the **DOWN arrow** is pressed.

Run mode - how activators open and close the door

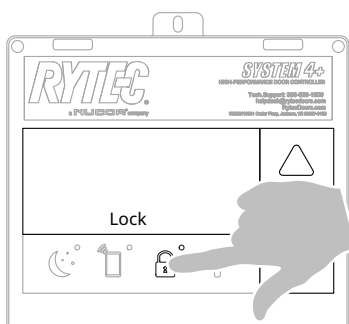
Rytec offers a wide range of **automatic and manual activators**, which make it unnecessary under normal operating conditions to use the controller to open and close the door.

Run mode - how to hold the door open

- 1 Press the **UP arrow** to open the door.



- 2 Press the **Lock** button on the controller to hold the door open.



Run mode - the timers that hold the door open.

There are two timers: the **Auto close (Acl)** timer and the **Delay to close (Dtc)** timer.

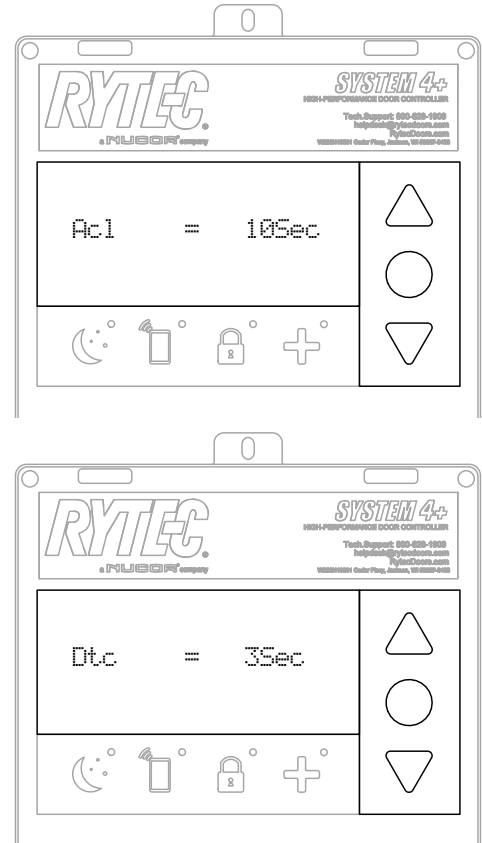
The Auto close (Acl) timer

- A timer that determines how long a door should remain open before closing.
- Runs before the Dtc timer.
- Typically, alerts do not activate during this delay.
- The parameters to set this timer can be accessed by door owners as well as service techs.
- There are three different Acl timers. They can be assigned to respond to any activation, but by default respond to different activators.
 - ▶ **ACL1** is initiated by activators that open the door to the **fully open** position.
 - ▶ **ACL2** is initiated by activators that have been programmed to open the door to the partially open position, and is usually set to less time than ACL1.
 - ▶ **ACL3** is initiated by secondary activators, and interrupts ACL1 or ACL2. It is usually set lower than ACL1 and ACL2.

For instance, a door with sensors on both sides of the door would have ACL1 initiated by the front sensor, which activates when a vehicle approaches the door, and ACL3 initiated by the rear sensor, which activates when the vehicle is clear of the door.

The Delay to close (Dtc) timer

- The Dtc timer typically starts after the Acl timer expires.
- Systems such as the Pathwatch LED strips or SmartSurround light curtains blink to indicate the door is about to close.
- The default value of the Delay to close timer is 3 seconds.



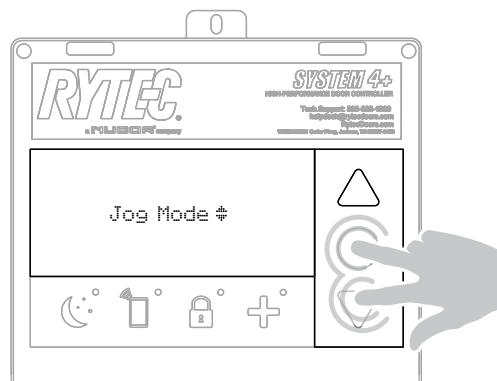
Run mode - status messages in the display screen

Displayed Message	Description
Rytec Door Type Cycle count	Indicates door is in run mode and operating correctly
Door Is Opening	Door is opening.
Door Is Open	Door open in fully open position.
Acl1 = [x] Sec	Auto close delay timer 1 (by default, activators connected to terminal 212; can be programmed to others).
Acl2 = [x] Sec	Auto close delay timer 2 (by default, activators connected to terminals 233 and 281; can be programmed to others).
Acl3 = [x] Sec	Auto close delay timer 3 (can be programmed to any input).
Dtc = [x] Sec	Delay to close timer
Partial Open Position	Door in partially open position.
Door Is Closing	Door is closing.
Door Held Open	Door is being held open. Input terminal of device shown in lower right of display.
Door Is Stopped	Door is stopped; controller is waiting for next command.
Stop-Keypad	The STOP button on the keypad was pressed, stopping the door.
Emergency Jog	Door travel possible in jog mode only. All safety and limits ignored.
Emergency Stop ⬆	An emergency stop has activated.
Error Jog ⬆ Only	Door travel possible in jog mode only. A fault code (error code) has been generated.
Locked Closed	Door locked in closed position. Input terminal of device locking the door in place shown in lower right corner of display.

Jog mode

How to enter, use and exit jog mode

- To enter jog mode, press and hold the **STOP button and DOWN arrow** at the same time for five seconds, or until the user display changes to show Jog Mode.
- In jog mode, the door panel **remains at its current level** until you press the UP arrow or DOWN arrow to move it. It then remains at that position.
- Press and hold** to move the door smoothly up or down.
- Press once** to move the door in increments of ~1/10 inch at a time.
- Once the door is at the desired working height, **shut off power and do a lockout/tagout**.
- To **exit jog mode**, press and hold the STOP button and DOWN arrow at the same time until the user display changes to show the door model above the cycle count (standard display for run mode).



Jog mode - status messages in the display screen

Displayed Message	Description
Jog Mode 	Manual door operation — jog mode only.
Door Is Opn (door is open)	Door jogged fully open, additional door open travel not possible.
Door Is Cls (door is closed)	Door jogged fully closed, additional door close travel not possible.

Parameter mode

Parameters give precise control over **all functions of the door**.

Most parameters should **remain at the default values** set by Rytec. Problems caused by variations in the job site environment or operational conditions may require parameters to be changed to improve performance. Also, some routine tasks such as testing the door and setting limits require that certain parameters be set to specific values.

There are three levels of parameter access:

Operator level: these parameters do not require a password and are available to both service tech and door owners.

Service level: these parameters are password protected and should only be accessed by service techs.

Rytec level: these parameters can only be accessed after a one-time password has been obtained from Rytec technical support. They should only be changed under the guidance of technical support.

The Controller Display

Parameter name

P: Password

Parameter number
All three digits are hexadecimal

001

Parameter value
? = value being changed
✓ = change saved

1979V05c

Access level

0 = Operator level
S = Service level
Accesses more parameters
R = Rytec level
Accesses all parameters
Requires password from technical support

Blinking cursor
On left side of display: press arrows to change parameter number
On right side of display: press arrows to change parameter value

The Controller Controls

UP Arrow

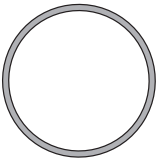
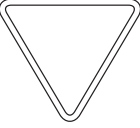
- **Press** to increase a value or parameter number
- **Press and hold** to increase values or parameter numbers quickly

STOP Button

- **Press** to toggle the flashing cursor between parameters and values
- **Press and hold** to save changes to a value or return to run mode

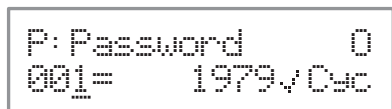
DOWN Arrow

- **Press** to decrease a value or parameter number
- **Press and hold** to decrease values or parameter numbers quickly

How to use the controller buttons in parameter mode

Cursor on parameter side



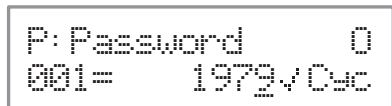
UP or DOWN Arrow

- **Press** or **Press and hold** to move between parameters
- **INSIDER'S TIP:** while pressing and holding one of the arrow buttons, tap the other button to jump by multiple parameters at a time.

STOP Button

- **Press** to move cursor to the values side
- **Press and hold** to return to run mode

Cursor on values side



UP or DOWN Arrow

- **Press** or **Press and hold** to change value

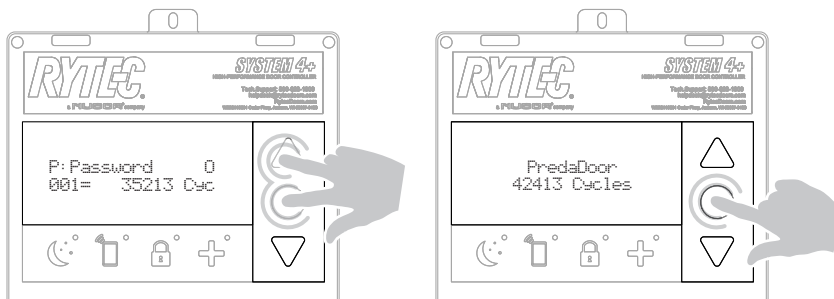
STOP Button

- **Press** to move the cursor back to the parameter side. This also **cancels** any changes that have not been saved.
- **Press and hold** to save changes.

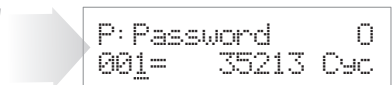
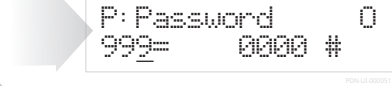
Icon key for the tasks in this section			
	Press	Press and hold for five seconds, or until display changes	Press UP or DOWN arrow, as needed
NOTE: The System 4+ display uses hexadecimal numbers to number parameters and for some values. The display uses the ten numeric characters (0-9), plus six letters (A-F), which represent the values from 10 through 15. In some cases it will be necessary to press the UP arrow sixteen times to change a value from 0000 to 0010.			

How to enter and exit parameter mode

- To enter parameter mode, press and hold the **STOP button and UP arrow** at the same time for five seconds, or until the user display changes to show P:Password.
- To return to run mode, make sure the blinking cursor is on the left side, then press and hold the **STOP button** for five seconds, or until the user display shows the door model and cycle count.



How to set the controller to parameter mode and access Service level parameters

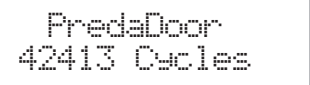
Do This	Result
1 	 The door starts in run mode.
2   	 until the parameter screen displays You are in Parameter mode. Go to parameter 999.
3   	2X to reach parameter P:999  The Password parameter P:999 screen displays.
4   	1X to move cursor to the right (edit value)  You can change the value of parameter P:999.
5   	16X to set value to hexadecimal 10  Set the value to 10 (Service level password).
6   	until question mark changes to checkmark (value saved)  The Service level password is saved.
7   	1X to return to parameter side 

How to access Rytec level parameters

IMPORTANT

Rytec technical support requires a **detailed justification** for this level of access before giving you the one-time password.

The password will not be given without an in-depth discussion of the current status of the door, what parameters you intend to change and why you believe this will improve performance.

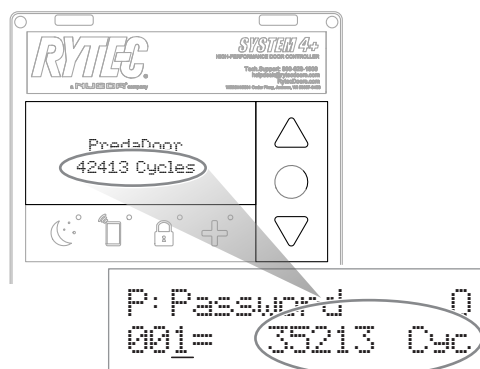
Do This	Result
1 	 The door starts in run mode.
2   	until the parameter screen displays  You are in Parameter mode.

IMPORTANT

If the controller does not open parameter mode at parameter P:001, **navigate to that parameter** before continuing.

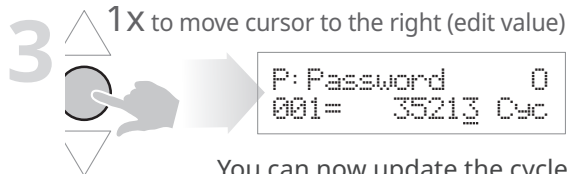
NOTE: the cycle count at parameter P:001 is the count from the last time Rytec level access was requested, and **will probably be considerably lower** than the cycle count shown in run mode.

The next steps bring parameter P:001 up to date, then lock in the new value.



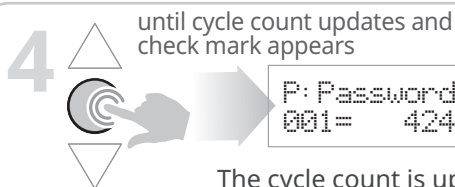
Do This

Result



P: Password 0
001= 35213 Cvc

You can now update the cycle count.



P: Password 0
001= 42413 Cvc

The cycle count is updated and saved.

IMPORTANT

Once the cycle count has been saved, **DO NOT ALLOW THE DOOR TO OPEN** until after you have entered the passcode you will receive from Rytec.

The code is based on the cycle count, and **will not work** if the count changes.



Record the cycle count and call Rytec technical support. Be prepared to explain why you need this access.



Record the passcode. It is a hexadecimal number, so expect both numbers and alpha characters.

Do This

Result

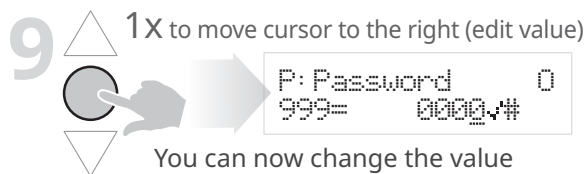


P: Password 0
001= 42413 Cvc



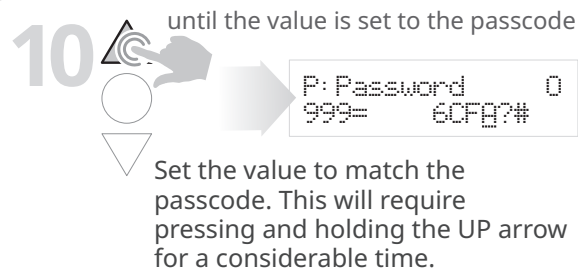
P: Password 0
999= 0000 #

The Password parameter P:999 screen displays.



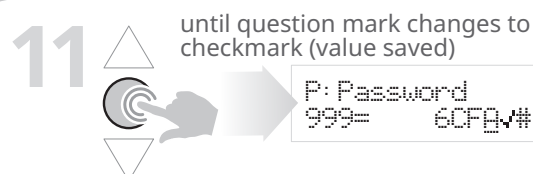
P: Password 0
999= 0000v#

You can now change the value of parameter P:999.



P: Password 0
999= 6CFA?#

Set the value to match the passcode. This will require pressing and holding the UP arrow for a considerable time.



P: Password R
999= 6CFAv#

The Service level password is saved.



P: Password R
999= 6CFAv#

How to check the error history of the door

Parameter P:920 stores the last eight error codes generated by the controller, as well as date and time. **This can alert you to issues** the door owner may not have told you about and should be a standard step in any service call.

Do This	Result
1  until parameter displays	 P: Err History S 920#Err1=F060 6:
2  1X to move cursor to the right (value side)	 P: Err History S 920#Err1=F060 6:
3  Let the value scroll to see date and time  Make a note of the information.	 P: Err History S 920#26:00 PM 10/1
4  Press UP or DOWN ARROW to scroll through errors  Note if any errors are recent and should be taken into account when testing components.	 P: Err History S 920#Err2=F060 5:
5  1X to return to parameter side	 P: Err History S 920#Err2=F060 5:

How to put the door into test mode

Parameter P:980 sets the operating mode for the door. When it is set to a value of 4, the door will cycle continuously.

On Spiral doors with SmartSurround, **if the side column covers are removed, you must set the value to 7** rather than 4 to have the door cycle continuously.

Do This	Result
1  until parameter displays	 P: Operat. Mode S 980= 0 # The default value is 0.
2  1X to move cursor to the right (edit value)	 P: Operat. Mode S 980= 0?# You can now change the value.
3  4X to change the value to 4	 P: Operat. Mode S 980= 4?#
4  until question mark changes to checkmark (value saved)  The new value is saved.	 P: Operat. Mode S 980= 4#
5  until door returns to run mode	 Spiral [xxx] Cycles
6  press either arrow to start cycling	 Act 1 5 Sec

List of operator level parameters

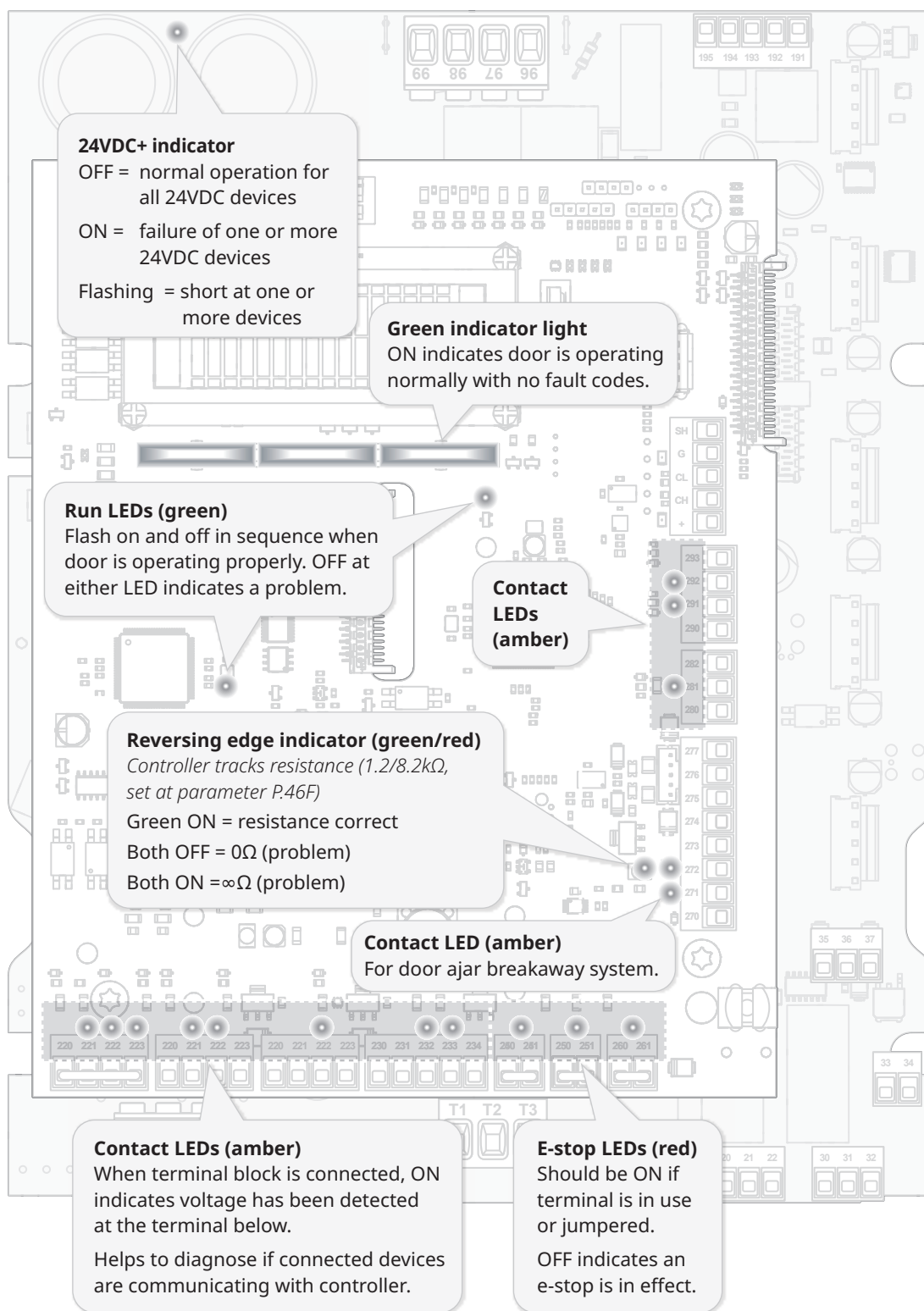
- These parameters can be accessed and changed by the door owner once you have shown them how to access parameters.
- They do not affect critical functions of the door.

Number	Description/values	Default or typical value
001	Cycle count - used by service tech to request Rytec level passcode	Cycle count last time Rytec-level passcode requested
010	Auto-close delay timer 1 - timer for any activator that opens door to fully open position. 0 = Off All other values in seconds	10 sec
011	Auto-close delay timer 2 - timer for any activator that opens door to partially open position. 0 = Off All other values in seconds	10 sec
015	Auto-close delay timer 3 - any secondary activator that can override ACL1 or ACL2 activator. 0 = Off All other values in seconds	5 sec
055	For freezer doors only - status of blower or blower/heater 0 = OFF 1 = LOW speed 2 = HIGH speed 3 = Automatic (HIGH speed if door is not closed) 4 = Automatic (High Speed, if door is not closed) when heater is in automatic timer mode	0 #
927	Serial number of door	varies by door
999	Password to access Service level parameters	0000 #
C00	Current time (read only) for controller internal clock	Example: 9:40:40 AM

Indicator lights

Indicator lights on the microcontroller and power board help you monitor the performance of the door and the controller, both to verify that door is operating properly, and to indicate specific sources of trouble if you have been called to fix a problem.

Checking the indicator lights and fault code history of the door should be part of any service call.



Fault codes (error messages)

The controller constantly monitors the performance of many components of the door, as well as operational parameters such as speed, acceleration/deceleration, open/close position. It may detect issues with the door before they become apparent to users.

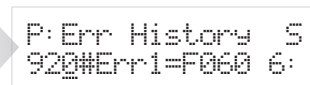
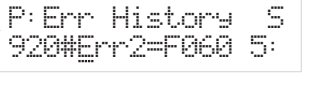
When the controller detects a problem with door operation, it generates a fault code, which can be seen in the user display.

The last eight fault codes are logged in memory, including date and time.

Fault codes are an important tool in diagnosing a door that is not operating properly, including making you aware of issues the door owner may not have told you about. Checking the logged fault codes should be a standard step in any service call.

How to check the logged fault codes (error history) of the door

You will first need to access Service level parameters.

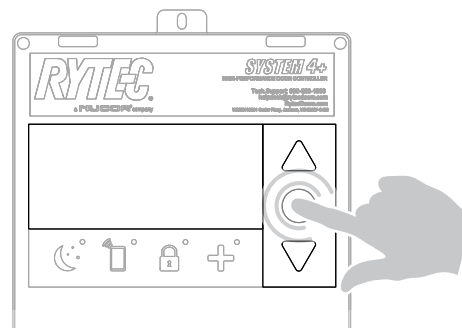
Do This	Result
1  until parameter displays 	
2  1X to move cursor to the right (value side) 	
3  Let the value scroll to see date and time   Make a note of the information.	
4  Press UP or DOWN ARROW to scroll through errors   Note if any errors are recent and should be taken into account when testing components.	
5  1X to return to parameter side 	

How to clear (acknowledge) a fault code

Once the problem has been resolved, you must clear the fault code before the controller will restart the door.

To clear the fault code, press and hold the STOP button for five seconds, until the user display returns to run mode. The door may need to be at full open to clear the fault depending on door type and fault code

If the fault code does not clear, or a different fault code appears, there are additional issues that require attention.



IMPORTANT

This is not a comprehensive list of codes the door may display. For a complete list of codes, descriptions, and possible reasons, see the Rytec Technical Education Center at tec.rytecdors.com.

No.	Description	Possible Reasons
F.000	Door Beyond Open Position	The encoder sees the current increment count to be higher than the open position increment count. Try resetting limits by setting P.210 to a value of 5.
f01	Edge Trip at mobile unit	The mobile unit is seeing an edge trip on input 1 (terminals 1-2 or white wires) of the mobile unit. Confirm 8200ohms in the wires and Normally Open on the switch (if applicable). If green terminal block style and there is water on the mobile unit, remove all the wires and dry the mobile unit and terminal blocks
f03	Door ajar at mobile unit	The mobile unit is seeing a door ajar fault on input 3 (terminals 5-6 or blue wires) of the mobile unit. Confirm the two wires on 5-6 (blue wires) have a closed circuit. If green terminal block style and there is water on the mobile unit, remove all the wires and dry the mobile unit and terminal blocks
F.005	Door Beyond Close Position	The encoder sees the current increment count to be lower than the close position increment count. Try resetting limits by setting P.210 to a value of 5.
F.030	Motor Stall	The door is not moving as expected. There are many things that could cause a motor stall fault. Some things to look at include: - Where is the stall happening? Is it always in the closed or open position, always sticking at a certain place in the travel, always the same or different? Check for binding in those places on the track/guides. Verify side columns and door panel are Plumb/Level/Square. If stalling in the close position, try resetting limits, door may be coming down too far and trying to close against floor/ground (troubleshoot why limits were off) - Confirm incoming power from phase to phase and phase to ground - Possible encoder issue, run the door in emergency jog fully open and fully closed. If the door does not stop or stall in emergency jog, check the encoder magnet is not loose, the encoder shaft is not loose, and the encoder mounting is not loose - Possible brake issue. Try running the door while manually pulling the brake, check voltage to the brake from the controller, check voltage to the brake in the motor junction box - Check for broken straps/belts/springs, tension straps and counterweight straps If the issue persists, call technical support
F.031	Travel Direction Error	The motor is rotating in a direction that is opposite from what the encoder is expecting it to be. This typically occurs on start up after phasing has been swapped. Try resetting limits by setting P.210 to a value of 5. If it occurs after start up, confirm your incoming power voltage. If the door is counter-balanced, confirm the belts are intact. Contact tech support if parameter changes need to be made.
F.049	D3 Function Error	P.010 and P.025 must be at least 3 seconds on doors with smart surround
F.060	Door Ajar	The controller thinks the door has been knocked out of the guides. Make sure any breakaway features are reset. Run the door full open (not required on fast seal) and hold the reset button for 3-5 seconds. If it does not clear, confirm the breakaway switches have continuity and follow the signal to either the mobile unit or the control board if there is a coil cord.
F.090	Parameter Missing	The controller is missing a required parameter, contact tech support to default controller
F.101	Incompatible CAN or RS485	A device on the CAN bus or the RS485 bus has an unknown software version or serial number
F.102	Faulty CAN bus	High and low voltage interference (ensure the CAN bus cable is ran separate from the motor high voltage cable), missing ferrites on the motor or incoming power cable, bad device on the CAN bus (check connections)

No.	Description	Possible Reasons
F.103	CAN bus fault	Short circuit on the CAN bus, non-terminated CAN bus (make sure you have something in every port on every CAN block), bad device or poor wiring (check connections)
F.106	CAN bus parameterization	Light curtains not assigned properly, possible wiring issue (bad connection, bad wires or component), perform 120 ohm test
F.109	New Safety	New device not recognized by controller in can system, re-assign the light curtains with A.060 to 0 then back to 4
F.10A	Device Missing	Missing CAN bus light curtain (i.e. transmitter OR receiver), verify all components are plugged in, check for damaged cable, check light curtain status lights, perform 120 ohm test
F.10B	Device Missing	Missing CAN bus component, verify all components plugged in, check for damaged cable, check light curtain and CAN block status lights, perform 120 ohm test
All the F.11x faults will be for the newer style loop card on 4+ with no DIP switches		
F.110	Defective hardware loop detector card	Possible defective loop card, verify P.803 (bottom slot)=400 and L.100=1
F.111	Disturbed detector loop card	Possibly faulty loop card, reset controller, verify P.803=400
F.112	Detector loop card not plugged in	Slot was activated with P.802 (top slot) or P.803 (bottom slot) = 400 but card not plugged in
F.113	Detector loop card slot not activated	Detector plugged in, but slot not activated. Set P.802 (top slot) or P.803 (bottom slot) =400
F.114	Detector loop card incompatible with control unit	Software version of the loop card and controller don't match
All the F.12x faults will be related to light curtains in slot 2 (in-track curtains)		
F.120	LGD receiver defect	LGD receiver has an internal defect and will need to be replaced, look for any external damage
F.121	LGD transmitter defect	LGD transmitter has an internal defect and will need to be replaced, look for any external damage
F.122	LGD teach in failed	Restart the teach in process (can get this after re-assigning light curtains if the position were changed, if just re-assigned, try a soft reset)
F.123	LGD communication error	One of the LGD light curtains is failed and needs to be replaced, might be accompanied by F.121 or F.122, if not, check the status lights and the one with the fast flashing light is the failed light curtain
F.127	LGD receiver Comm	LGD receiver not communicating with controller, check for status lights on the receiver, check connection to the CAN block, verify CAN block has power, perform 120 ohm resistor test
F.128	LGD transmitter Comm	LGD transmitter not communicating with controller, check for status lights on the receiver, check connection in to the CAN block, verify CAN block has power, perform 120 ohm resistor test
F.129	LGD test failed	Typically wiring issue, bad connection, wiring to comm board, bad CAN bus, check for obvious status lights, otherwise 120 ohm test
F.12A	LGD quality test failed	Ensure alignment is at 100% (L.254), ensure plastic film is removed and light curtain cleaned off, ensure light curtains properly cross installed
All the F.14x faults will be related to light curtains in slot 4 (interior light curtains)		
F.140	LGCA receiver defect	LGCA receiver has an internal defect and will need to be replaced, look for any external damage
F.141	LGCA transmitter defect	LGCA transmitter has an internal defect and will need to be replaced, look for any external damage

No.	Description	Possible Reasons
F.142	LGCA teach in failed	Restart the teach in process (can get this after re-assigning light curtains if the position were changed, if just re-assigned, try a soft reset)
F.143	LGCA communication error	One of the LGCA light curtains is failed and needs to be replaced, might be accompanied by F.141 or F.142, if not, check the status lights and the one with the fast flashing light is the failed light curtain
F.147	LGCA receiver Comm	LGCA receiver not communicating with controller, check for status lights on the receiver, check connection in to the CAN block, verify CAN block has power, perform 120 ohm resistor test
F.148	LGCA transmitter Comm	LGCA transmitter not communicating with controller, check for status lights on the receiver, check connection in to the CAN block, verify CAN block has power, perform 120 ohm resistor test
F.149	LGCA test failed	Typically wiring issue, bad connection, wiring to comm board, bad CAN bus, check for obvious status lights, otherwise 120 ohm test
F.14A	LGCA quality test failed	Ensure alignment is at 100% (L.454), ensure plastic film is removed and light curtain cleaned off, ensure light curtains properly cross installed
All the F.15x faults will be related to light curtains in slot 5 (exterior light curtains)		
F.150	LGCA receiver defect	LGCA receiver has an internal defect and will need to be replaced, look for any external damage
F.151	LGCA transmitter defect	LGCA transmitter has an internal defect and will need to be replaced, look for any external damage
F.152	LGCA teach in failed	Restart the teach in process (can get this after re-assigning light curtains if the position were changed, if just re-assigned, try a soft reset)
F.153	LGCA communication error	One of the LGCA light curtains is failed and needs to be replaced, might be accompanied by F.151 or F.152, if not, check the status lights and the one with the fast flashing light is the failed light curtain
F.157	LGCA receiver Comm	LGCA receiver not communicating with controller, check for status lights on the receiver, check connection in to the CAN block, verify CAN block has power, perform 120 ohm resistor test
F.158	LGCA transmitter Comm	LGCA transmitter not communicating with controller, check for status lights on the receiver, check connection in to the CAN block, verify CAN block has power, perform 120 ohm resistor test
F.159	LGCA test failed	Typically wiring issue, bad connection, wiring to comm board, bad can bus, check for obvious status lights, otherwise 120 ohm test
F.15A	LGCA quality test failed	Ensure alignment is at 100% (L.554), ensure plastic film is removed and light curtain cleaned off, ensure light curtains properly cross installed
F.1B0	Defective BTA4 hardware	Controller sees a defect with the BTA4, check connection to BTA and to CAN block or comm board
F.1B2 F.1B3	BTA4 Communication errors	BTA4 is not communicating with the controller, check connections
F.211	External E-Stop 1 tripped	The controller sees a break in the closed E-Stop 1 circuit. If there are wires in the E-Stop (terminals 240-241) confirm the attached device has continuity. Spiral doors and some PharmaSeal doors have a proximity sensor on the motor for the brake release, verify the brake release handle is returned to the neutral position and adjust the proximity sensor if necessary
F.212	External E-Stop 2 tripped	The controller sees a break in the closed E-Stop 2 circuit. If there are wires in the E-Stop (terminals 250-251) confirm the attached device has continuity.
F.213	External E-Stop 3 tripped	The controller sees a break in the closed E-Stop 3 circuit. If there are wires in the E-Stop (terminals 260-261) confirm the attached device has continuity.

No.	Description	Possible Reasons
F.320	Obstacle during opening	Only for the turbo slide, detected an obstacle during opening, check if panel is binding, try resetting limits and letting the door calibrate. If the fault persists, contact technical support
F.325	Obstacle during closing	Only for the turbo slide, detected an obstacle during closing, check if panel is binding, try resetting limits and letting the door calibrate. If the fault persists, contact technical support
F.361	Edge Trip	The controller sees the edge has tripped the maximum number of times. Check the Edge LED Status. Run the door open and hold the reset for 3-5 seconds. If it does not clear, confirm the edge switch is set open and there is proper resistance on the resistor. Follow the normally open signal and resistance back to the mobile unit or to the controller if there is a coil cord.
F.363	Edge Open	The controller does not see the correct resistance from the edge circuit. Check the Edge LED Status. Confirm the edge resistance and follow the resistance to the mobile unit or to the controller if there is a coil cord.
F.410	Motor Over Current	The controller is putting too much current to the motor. Confirm door is not sticking or binding. Confirm the brake is working. If the door is counter-balanced, confirm the straps are intact. The current boost settings (P.140 and P.145) may be set too high. Consult factory for actual settings.
F.420	DC Bus Overvoltage	The controller sees too much voltage in the DC bus. Check the brake resistor, should be 50ohms on the wires on the left-hand side of the lower/back power board. If the resistance is incorrect, replace the controller.
F.425	Overvoltage	The controller sees either too much voltage or fluctuating voltage to the controller. Confirm the incoming voltage and monitor for one minute.
F.427	Incorrect phase jumpers	The phase jumper card is set up for high voltage (460-480), but controller is detecting low voltage. Verify incoming voltage, if less than 268V change to low voltage configuration. CAUTION: A HIGH VOLTAGE SUPPLY MAY DESTROY THE CONTROLLER IF SET TO LOW VOLTAGE CONFIGURATION
F.430	Temperature cooler outside of working range Limit 1	The temperature of the heat sink is too low. If there is a control box heater, wait 30 minutes after power up for the controller to get warm inside. If there is no control box heater, you may need one.
F.435	Housing temperature high	The temperature in the controller housing is too high
F.440	Overcurrent in DC-bus Limit 1	The controller is putting too much current to the motor. Confirm door is not sticking or binding. Confirm the brake is working. If the door is counter-balanced, confirm the straps are intact. The current boost settings (P.140 and P.145) may be set too high. Consult factory for actual settings.
F.510	Motor Over Current	The controller is putting too much current to the motor. Confirm door is not sticking or binding. Confirm the brake is working. If the door is counter-balanced, confirm the straps are intact. The current boost settings (P.140 and P.145) may be set too high. Consult factory for actual settings.
F.513	Brake chopper overloaded, not installed or defective	Check the brake resistor, 50ohms on the two wires on the left-hand side of the lower/back power board. If the resistance is incorrect, replace the controller.
F.515	Motor protection function detected overcurrent	The controller is putting too much current to the motor. Confirm door is not sticking or binding. Confirm the brake is working. If the door is counter-balanced, confirm the straps are intact. The current boost settings (P.140 and P.145) may be set too high. Consult factory for actual settings.
F.519	IGBT chip overcurrent	The controller sees an overcurrent to the IGBT chip. Remove the motor and brake leads from the controller. Try running the door with the motor and brake unhooked. If the 519 comes back with the motor unhooked, replace the controller. Check the motor windings with megohm meter and confirm the motor cable and windings are ok. If you do not have access to a megohm meter, a multimeter can confirm the cable is ok but not necessarily that the motor is ok. It can confirm if the winding is shorted at that point it is resting on.
F.520	DC Bus Overvoltage	The controller sees too much voltage in the DC bus. Check the brake resistor, 50ohms on the wires on the left-hand side of the lower/back power board. If the resistance is incorrect, replace the controller.

No.	Description	Possible Reasons
F.525	Overvoltage to the Controller	The controller sees either too much voltage or fluctuating voltage to the controller. Confirm the incoming voltage and monitor for one minute.
F.527	Incorrect phase jumpers	The phase jumper card is set up for high voltage (460-480), but controller is detecting low voltage. Verify incoming voltage, if less than 268V change to low voltage configuration. CAUTION: A HIGH VOLTAGE SUPPLY MAY DESTROY THE CONTROLLER IF SET TO LOW VOLTAGE CONFIGURATION
F.530	Heatsink Temperature Low	The temperature of the heat sink is too low. If there is a control box heater, wait 30 minutes after power up for the controller to get warm inside. If there is no control box heater, you may need one.
F.535	Housing Temperature High	The temperature of the control box is too high.
F.540	Overcurrent in DC-bus Limit 2	The controller is putting too much current to the motor. Confirm door is not sticking or binding. Confirm the brake is working. If the door is counter-balanced, confirm the straps are intact. The current boost settings (P.140 and P.145) may be set too high. Consult factory for actual settings.
F.542	Thermal overload of 24v power supply	This error is always displayed with F.435
F.550	Overcurrent 24V controller board	Overcurrent 24V on the control board (front board), too many devices wired in to the control board 24V power supply or failed device
F.551	Overcurrent 24V power stage board	Overcurrent 24V on the back power board, too many devices wired in to the power board 24V power supply or failed device
F.552	Short circuit 24V controller board	24V short on the control board (front board), perform a low voltage short test by powering off the door and removing all low voltage, including the ribbon cables to the front buttons and the usb stick and then power back up, if fault clears, return terminals one at a time to trace the short
F.553	Short circuit 24V power stage board	24V short on the power board supply, perform a low voltage short test by powering off the door and removing anything powered by the power board 24V circuit including pathwatch and additional supply at the top of the 4+, then power back up, if fault clears, return terminals one at a time to trace the short
The F.6xx faults are for the LGB light curtains, not SmartSurround		
F.601	Bad light curtain quality	Verify light curtains are lined up (set P.937=1, then check P.938=100%), verify clear film is removed, verify light curtains are cleaned off
F.610	Light line alignment	Limits need to be reset so the controller can learn the alignment, set P.210=5 and reset limits
F.611	Light line not plausible	Verify nothing in the path of the light curtains and re-set the limits
F.612	RS 485 fault	Check the wiring for the light curtain to interface board or x-10 junction box. Check each light curtain has power/status lights and no damage to the cables. Remove the interface board from controller and leave the terminal blocks plugged in to it, first ohm between 34 and 35 on the receiver light curtain, should be 60 ohms, if 120 ohms remove the receiver (black) terminal block and check ohms again at 34 and 35. If OL check connections at x-10 block or in to light curtain, could be a bad light curtain. If 120 ohms, check green and yellow wire for encoder, could be bad encoder, damaged encoder cable, or potentially bad interface board. If also getting the F852 it is likely an encoder fault and that troubleshooting should go first.
F.613	Internal RS 485	Communication fault between the transmitter and receiver light curtain. Check wiring to interface board and x-10 box. Check the connections to terminal 10 and 11 in the x-10 box, ensure the wires from both light curtains are twisted together. If still faulting, try swapping a light curtain with a working door, could also be a bad cable
F.615	Internal transmitter error	Check connections for the transmitter, check for damaged cable, replace transmitter
F.616	Internal receiver error	Check connections for the receiver, check for damaged cable, replace receiver

No.	Description	Possible Reasons
F.617	Light curtain incompatibility	Check P.931 (transmitter) and P.932 (receiver). Normally would read something like "LGBTC V00-3.27 HW04", if you see a question mark ? in place of one of the letters, that light curtain will need to be replaced
F.621	Light curtain transmitter test error	Transmitter light curtain test failed, check the wiring and cable connections
F.622	Light curtain receiver test error	Receiver light curtain test failed, check the wiring and cable connections
F.626	Light curtain test error	Test error at terminal 222, check connections/wiring to the board
F.627	Light curtain test error	Test error at terminal 232, check connections/wiring to the board
F.700	No Encoder Positions	The controller doesn't see any set positions. Set P.210-5 and press the reset button for 3-5 seconds to clear the fault. If the fault continues, contact technical support.
F.752	Encoder Fault	The controller does not see any information from the encoder. Check all encoder connections, including the quick connect and the internal plug in. Check P205 and P200, they should both match and be set to 8 for encoder that wires to controller or 11 for encoder that wires to CAN bus. Try and reset the encoder per SB154 if PD, not able to reset a PD2 encoder. This fault is for a non-wireless encoder system, if you have a wireless bottom bar, check P.f00=1.
F.762	Encoder Position Fault	See solutions for 700 and 752
F.766	Limits not set	Will get this message if encoder battery is low and power is cycled on the door, or if the encoder is reset. Press and hold the controller reset button for 3-5 seconds and controller should prompt to set limits, if limit set not prompted, set P.210-5.
F.768	Encoder Battery Voltage	The battery on the positioning encoder is dead. Any time the power is turned off, the door will lose limits. Replace the encoder battery.
F.76A	Encoder magnet position off	The encoder magnet needs to be moved farther out towards the encoder, should be about ¼ inch off the shaft towards the encoder
F.770	Encoder resolution off	Encoder count is too high for the doorway, typically comes in when trying to set limits. The value at P.202 may be incorrect, contact technical support for the correct value
F.784	System 4+ expansion board not activated	The system 4+ expansion board is plugged in but not activated. Set P.800=8
F.801	Wrong Test of input 1 of the mobile unit TST FSx	The mobile unit is seeing a fault on input 1 (terminals 1-2/ white wires) of the mobile unit. Confirm 8200ohms in the wires and Normally Open on the switch. If there is water on the mobile unit, remove all the wires and dry the mobile unit and terminal blocks.
F.803	Wrong Test of input 3 of the mobile unit TST FSx	The mobile unit is seeing a fault on input 3 (terminals 5-6/ blue wires) of the mobile unit. Confirm the two wires on 5-6 (blue wires) have a closed circuit. If there is water on the mobile unit, remove all the wires and dry the mobile unit and terminal blocks.
F.811	Wrong Test of output 1 of the stationary unit TST FSx	The mobile unit is seeing a fault on input 1 (terminals 1-2/ white wires) of the mobile unit. Confirm 8200 ohms in the wires and Normally open on the switch. For system 3 and 4 doors, check the encoder jumper is set correctly (8k2 vs 1k2 position).
F.813	Wrong Test of output 3 of the stationary unit TST FSx	The mobile unit is seeing a fault on input 3 (terminals 5-6/ blue wires) of the mobile unit. Confirm the two wires on 5-6 (blue wires) have a closed circuit. If there is water on the mobile unit, remove all the wires and dry the mobile unit and terminal blocks.
F.822	Wrong parameter setting input 2 of mobile unit	Input 2 of the mobile unit (terminals 3-4/ brown wires) are shorted. We do not have anything connected to terminals 3-4 (brown wires) and it is showing a short across the terminals, the brown wires should be capped separately. If older style mobile unit with green terminal blocks, when there is condensation, ice, or water on the mobile unit. Remove all the wires from the mobile unit and dry out the mobile unit and terminal blocks.

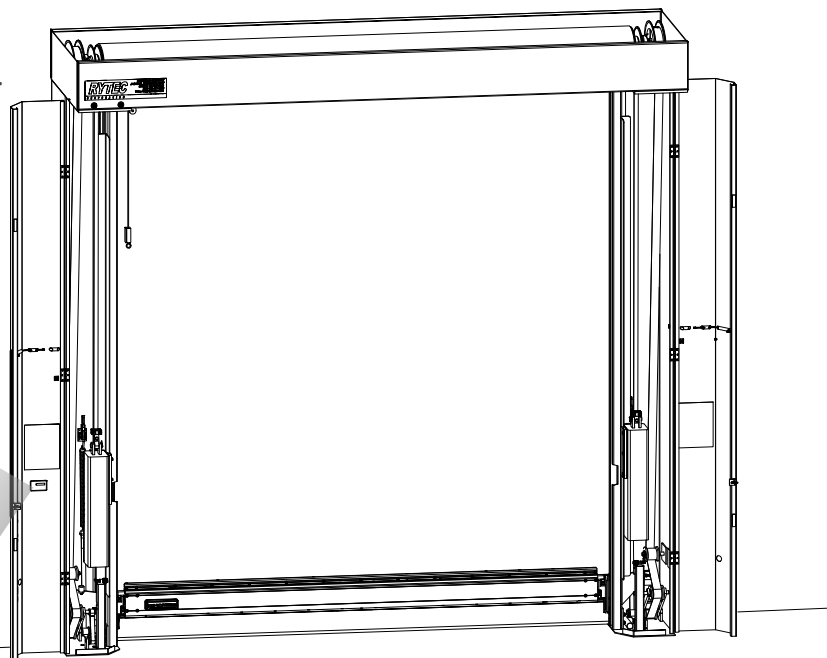
No.	Description	Possible Reasons
F.831	Disturbed input 1 of mobile unit TST FSx	The edge is reading open at the mobile unit and does not see the required 8200ohms. Confirm the resistance on the 2 wires. Re-do the resistor connection on the air switch. Strip back and re-land the connections on the air switch and the mobile unit. If the bottom bar looks damaged, replace the edge wire running through the bottom bar.
F.833	Disturbed input 3 of mobile unit TST FSx	The mobile unit is seeing a fault on input 3 (terminals 5-6 / blue wires) of the mobile unit. Confirm the two wires on 5-6 (blue wires) have a closed circuit. If there is water on the mobile unit, remove all the wires and dry the mobile unit and terminal blocks.
F.851	Encoder wireless signal fault	Ensure encoder cable is ran separately from high voltage. Check mobile unit battery is reading greater than 3.60VDC, check P.F01=250
F.852	Encoder or Antenna Fault	The controller does not see any information from the wireless. Check all encoder connections, including the quick connect and the internal plug in. Check P205 and 200, they should both be set to 8 for encoder that wires directly to controller or 11 for encoder that wires to CAN bus. Try and reset the encoder per SB154, if PD2 not resettable. Confirm there is no damage to the antenna. This is for the wireless PD encoder system, if you have a non-wireless system check P.f00=0.
F.856	No Wireless Communication	Confirm that the wireless battery is 3.60vdc or higher while plugged in. 3.59vdc is not enough voltage to communicate effectively. Also confirm the mobile address on the wireless matches PF07. Check P92B. If it's 3.79, make sure the mobile unit has a 3.79 sticker. If It's 4.02, make sure the mobile unit has a 250kbit sticker. Confirm there is no damage to the antenna. Try unplugging the battery from the mobile unit, wait a minute, and reconnect the battery.
F.857	Mobile unit low battery	The battery monitoring function needs to be disabled. This does not actually indicate the battery voltage is low, but it should be checked. To deactivate this error message, set P.F09 and P.F0B to 0.
F.861	Mobile unit Fault	Internal fault of the mobile unit, disconnect the battery from the mobile unit, wait approximately 30 seconds and reconnect. If message doesn't clear or comes up more frequently, replace the mobile unit
F.910	No communication to expansion board	No communication to expansion board, BTA4, or MS4. Check cable connections. For BTA4 wired through CAN bus system, this could come up with another CAN bus fault. Check the main system 4 controller display for faults and troubleshoot those first, typically will have no function on expansion board/BTA4/MS4 with this fault.
F.915	Control Board Communication	This fault message will occasionally show in the history. If the fault is not constantly on the display, pay no attention to the fault. If it is constantly on the display contact tech support. Possible low voltage short, can come up if something is feeding voltage in to an input
F.924	24V brake output defective	Defective hardware for brake power 24V power supply
F.928	Photo eye test fail	The controller did not see a successful test of the photo eyes. Confirm the front and rear eyes are not cross talking. Also confirm if there are multiple doors next to each other, confirm the eyes are not cross talking with the door next to it. Confirm the brown wires on 221 and 231 are coming from the emitters. If there are sunlight issues, contact Rytec tech support.
F.930	External watchdog incorrect	Confirm there is no 24V short by powering down the controller and disconnecting all low voltage (this includes the ribbon cable to the front buttons, the usb stick and the brake wires), then power back up. If fault clears, determine which component is shorting, if issue persists, contact technical support
F.935	Stack Error	Possible short or loose wiring in the control board, try a soft reset (hold all three buttons together until the display cuts out), verify high and low voltage are separate, try removing the USB stick and cycling power, if issue persists, contact technical support
F.960	Wrong parameter checksum	The controller has no default package. Contact Rytec tech support to default the controller
F.964	Program version/manufacturer code	The controller has no default package. Contact Rytec tech support to default the controller

No.	Description	Possible Reasons
F.969	Internal clock error	Controller sees a loss of time in the internal clock. Reset P.C01 through P.C06 with the correct time (24-hour clock), date and year. Could indicate the small battery on the controller needs to be replaced
F.C52	Encoder communication	The controller has lost communication with the CAN PD2 encoder. Check encoder connections at CAN block, quick connect, and internal connection. If the door does NOT have the CAN encoder, check P205, it should be set to 8 for encoder that wires to the controller, check for damage to antenna.
i.060	Self Resetting crash is active	The door has gone ajar and is trying to reset. Run the door full open and press the reset button for 3-5 seconds
i.100	Speed in open position too high	The door is trying to calibrate and is seeing an error going open. If it persists and will not calibrate, contact Rytec tech support.
i.150	Speed in close position too high	The door is trying to calibrate and is seeing an error going closed. If it persists and will not calibrate, contact Rytec tech support
i.320	Obstacle during opening (Turbo slide only)	See F.320
i.325	Obstacle during closing (Turbo slide only)	See F.325
i.510	Calibration OK	Door finished calibration and ready for normal operation
i.515	Calibration run	The door is performing a calibration run. The door will run 2-12 cycles on its own. Do not allow traffic through the opening or allow any activators to be triggered during this time
i.520	Speed Error	The door is not reaching the required speeds during either opening or closing. Contact technical support to fine tune the calibration
i.60A	LGX Blocked	The environmental tolerance is active, the light curtains assigned to slot 5 are blocked for the required amount of time and the door will now continue to operate, check light curtains are cleaned off and film is removed
i.60D	Abnormal traffic	The light curtains were not blocked in straight order and the door will close at a slower speed
i.60E	Door unused	The door was activated and nothing passed through the light curtains, the door will close at a slower speed
i.610	Light line alignment complete	Indicates the limits were set successfully on doors with track light curtains
i.615	Light line alignment starts	The door is going in to limit setting with track light curtains, press reset to go in to setting limits, or set P.210=5
i.767 i.768	Encoder low battery faults	Indicates the encoder battery voltage is approaching the low set point, a battery should be ordered, but does not yet need to be replaced
i.856	Mobile unit communication	See F.856
i.907	Boot Loader	The door is expecting a parameter load from the USB stick, pull the USB stick to clear the message
i.916	USB stick missing or full	The USB storage is full or has been removed. Contact technical support to disable the USB drive
i.917	Log file initiating	The controller is reading the programming on the USB stick, typically comes up on initial power up, should clear on its own after a few minutes, if it doesn't clear after 15 minutes, pull the USB stick until start up is complete
i.A21	Initialization of light curtains completed	Comes up at the end of calibration indicating the light curtains were successfully programmed
i.A22	Initialization of the light curtain started	Comes up in the last cycle of calibration, part of light curtain synchronization

No.	Description	Possible Reasons
i.A24	Light curtain signal quality low	The light curtains in slot 2 have too low of signal quality, check the film is removed, light curtains are properly aligned and are cleaned off, verify light curtains are properly cross installed
i.A44	Light curtain signal quality low	The light curtains in slot 4 have too low of signal quality, check the film is removed, light curtains are properly aligned and are cleaned off, verify light curtains are properly cross installed
i.A54	Light curtain signal quality low	The light curtains in slot 5 have too low of signal quality, check the film is removed, light curtains are properly aligned and are cleaned off, verify light curtains are properly cross installed

How to order parts

- 1** **!IMPORTANT! Make sure** you have the serial number of your door before you start.



Check on the inside of the covers for both side columns, and on the control box, for labels showing the serial number.

!IMPORTANT! Make sure all numbers match. Tell the person you speak with if they do not.

- 2** **Use** the parts lists on the following pages to find the part numbers and descriptions for the parts you need.

- 3** **Call** your local dealer or Rytec at **800-628-1909**.

Enter **#1** for technical support, or **#2** for the parts department.

You can also e-mail the parts department at **rytec.parts@nucor.com**.

YOU MUST contact the parts department and request a quote before you can order parts. All requests for quote must include the **door's serial number**.



NOTE: Rytec Corporation also has an online parts store at **www.rytecdors.com**.

- You must have a user account to access the site. Contact the Rytec parts department at **800-628-1909 Ext. 2** to request an account.
- The site stocks standard parts such as bearings, spools and encoders, as well as straps at precut lengths. Parts listed as "configured" in this manual **are not available** on the site.

How to return unwanted parts

- 1** For returns covered by warranty, call Rytec technical support at **800-628-1909 Ext. 1** for authorization.
For returns NOT covered by warranty (physical returns), call the Rytec parts department at 800-628-1909 Ext. 2 for authorization. Requests for quotes, or part orders, should also be e-mailed to **rytec.parts@nucor.com**.
 - Your call will be redirected if necessary to put you in touch with the correct department.
 - There may be a **restock fee** for the returned part.
 - **Electrical parts which have been energized**, such as the System 4® controller, the brake assembly, the mobile unit, the light curtains or third party activators, cannot be returned.
 - Also, there are restrictions on returns for **configured parts** that were built to match the specifications of your door.

Warranty return

- 1** Rytec will create a **Return Merchandise Authorization (RMA)** and assign you an **incident number**.
- 2** **You will receive** replacement parts, a prepaid return label, and the RMA paperwork.
NOTE: Rytec may determine that it is not necessary to return the warranted parts in order to receive the replacement parts.
- 3** Use the box and prepaid label to return the warranted parts to Rytec **within 30 days of receiving the replacements**.
!IMPORTANT! You must include the RMA paperwork with the returned parts.

Physical return

- 1** Rytec will assign you an **incident number**.
- 2** **Box and return** the parts.
!IMPORTANT!
You must include the incident number with the returned parts.
 Unless you are told otherwise by Rytec, shipping costs for a physical return **are your responsibility**. Call the Rytec parts department at **800-628-1909 Ext. 2** if you have any questions.
- 3** **When Rytec receives the parts**, we will inspect them. When we have determined the parts are in good working order, we will issue a refund to your account, or send a check by mail **within 30 days**.

Why you may be sent substitute parts

Many Rytec doors are custom engineered to meet the unique needs of the installation site, so the parts used for your door may be different from those shown in this manual.

If a part has been improved or updated since your installation, the new part will be substituted for the part ordered. The new part may have a revised part number.

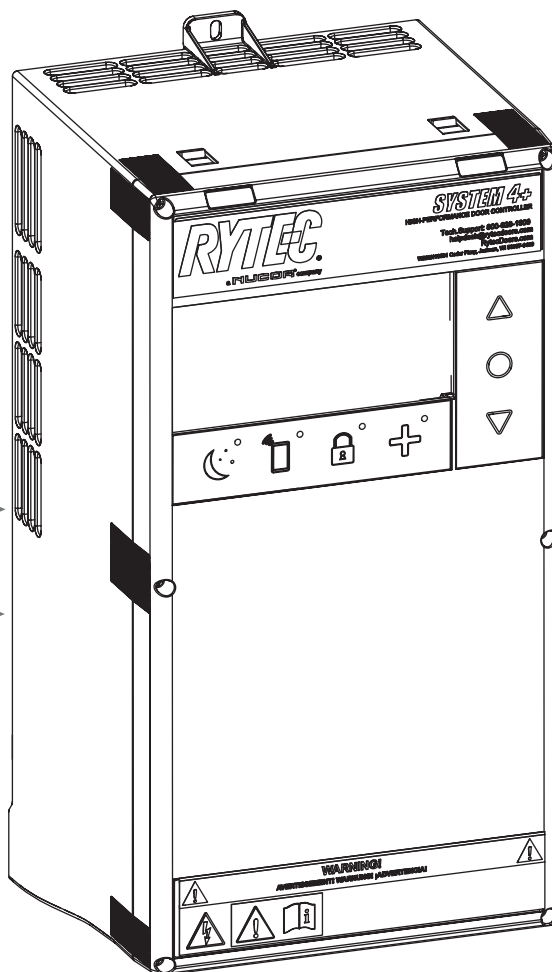
Rytec Technical Knowledge Center

The Rytec Technical Knowledge Center, reached via the Customer Support page at **www.rytecddoors.com**, holds manuals, service bulletins, and video presentations for all Rytec model doors.

System 4+® Controller, Expansion Boards and Accessories

00143000
SYSTEM 4+ CONTROL
ASSY, PER DOOR
*Configured part:
requires door serial
number to order*

00143005
ENCLOSURE, EMPTY



00142020 USB DRIVE

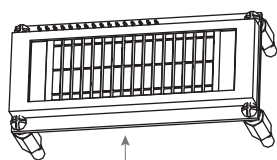


00142015 BATTERY, BUTTON
CELL, CR2032, 3V LITHIUM



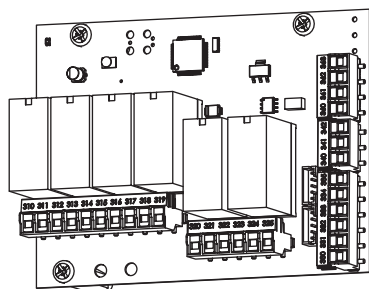
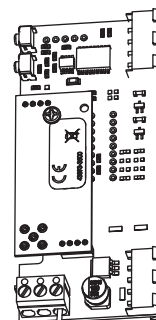
00112023 MAGNETIC FILTER,
14.2 MM FERRITE CORE
Qty: 3

00112001 MAGNETIC FILTER,
26 MM FERRITE CORE
Qty: 2



00143014
DISPLAY ONLY, SYS4+

00121045 RC RECEIVER,
24VDC AM, 2 CHANNEL



00143006 EXPANSION BOARD
WITH I/O, SYS4+

Installation and Owner's Manual

System 4+® Controller



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www.rytecddoors.com
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For original Rytec parts

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