How to retrofit a Rytec Spiral® Prewire door with the SmartSurround™ light curtains, Advanced³ light curtains and CAN bus cabling

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IMPORTANT: Read this entire bulletin before proceeding.


The meaning of signal words

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 that, if not avoided, could result in death or serious injury.

Safety icons used in this bulletin

- Shock hazard
- Fall hazard
- Crush hazard
- Cut hazard

Other icons used in this bulletin

- IMPORTANT
- Indicates instructions which, if not followed, could result in damage to the door or voiding of the warranty.
- TIP
- Indicates best practice. This is how Rytec Technical Support does the job.

Printing this manual

If printing this manual, ensure it's printed on 11’ x 17’ paper at Actual Size and not Shrink to Fit so that the included drilling templates are accurate.

Get this manual on your device:

- Scissor lift that meets the following specifications:
  - Can hold both service personnel.
  - Minimum height ability: door height

- Alternatively, two ladders of sufficient height to safely access the door head assembly

Requirements – Staffing

- Two service personnel are recommended.
- A licensed electrician is recommended for making all electrical connections

Requirements – Lifts

Tools and supplies you will need

- Tools
  - Angle grinder or jig saw
  - Power drill with these drill bits: 9.5mm, 13mm, 5/32", 5/16", 3/8", 7/16"
  - File
  - (2) Saw horses
  - (2) C-clamps
  - Laser level
  - Tape measure
  - Cement drill
  - (2) Vise grips
  - T40 screwdriver
  - 1/4" Hex wrench
  - Utility knife

- Supplies
  - Electrical tape and wire nuts
  - Alcohol wipes
  - Cable ties and anchors
  - Cabling
  - Cutting pliers

Retrofit safety

- Do not service any Rytec product until you have read and understood the safety information and instructions.
  - Make sure all applicable regulations are observed and obeyed at all times.
- Observe these precautions while installing the door:
  - Only trained, qualified and authorized individuals are to service the door.
  - The service site comprises the physical area required to safely unpack and stage components and service the door.
  - Make sure all personnel at the site have been informed of the date, time and location of the service.
  - Make sure there is no pedestrian or vehicular traffic within the service site for the duration of the service.
  - Make sure you have and use all required Personal Protective Equipment.
  - Make sure you are aware of the location of all power lines, piping and HVAC systems within the installation site.
SmartSurround™ light curtains
The SmartSurround™ light curtains replace the Pathwatch LED strips, and combine the function of a light curtain and an alert system.
- When the retrofit is complete, the door will have three light curtain detection planes.
- You remove the current photo eyes or light curtains and replace them with the Advanced® light curtains, which you install into the door track.
- In addition, you install two sets of SmartSurround™ light curtains. One set is mounted on the side column covers (cover mounted), the other is installed on the walls of the door opening (jamb mounted).
- The SmartSurround™ light curtains also replace the Pathwatch LED strips, which you remove. The SmartSurround™ LEDs are larger and brighter than the Pathwatch, and can display multiple colors and patterns.

CAN bus cabling
- CAN bus cabling is a single chain (series) of cables that replaces the multiple cables needed for the Pathwatch LED strips and light curtains or photo eyes.
- The cabling starts at the controller and runs through the CAN repeater box in the head assembly, then the CAN repeater box at the base of the drive side side column, then across the rear spreader to terminate at the CAN distribution box at the base of the non-drive side side column.
- It also replaces the X10 junction box in the head assembly.
- CAN-enabled Rytec devices can plug into any available port in any CAN box. During this retrofit, you will plug all six light curtains into the boxes you will install onto the baseplates of the side columns.
- Ports must be jumpered if they are not connected to a device so that the signal path remains unbroken until it terminates at the distribution box.

Reversing edge
The SmartSurround™ system, in combination with the Advanced® light curtains located within the door line, meets the requirements for entrapment protection. SmartSurround™ offers a contactless method of object recognition that is an improvement over the reversing edge system; this makes the reversing edge system redundant. The reversing edge system is disabled as part of this retrofit.

The reversing edge system can be reenabled if a full height sensing system is required. See Page 38.
Before you begin – three (3) steps to make sure the door and kit are ready for the retrofit

1: Open the kit and stage the parts. Match components to hardware to location in the door where they will be installed. NOTE: drive side may be LH (left) or RH (right); RH components shown here.
2: Secure the door in the open position, then switch the controller to parameter mode and record the door profile and (wireless doors only) mobile address

1. **Loosen the bolts and remove the side column covers on both side columns.**

2. **Set the door in the fully open position.**
   - Place vice grips in the door track below the bottom roller on both sides of the door to secure it in place.
   - You start in run mode.

   - 1x to open the door
   - Door Is Opening
   - 1x to stop the door in the fully open position
   - Door Is Stopped

3. **Put the door in parameter mode and enter the passcode for Service level access**
   - 1x to move cursor to the right (edit value)
   - You can now change the value of parameter P:999.

4. **16x to set value to hexadecimal 10**
   - P: Password
   - 999= 0010?#00
   - Set the value to 10
   - (Service level password).

5. **until question mark changes to checkmark (value saved)**
   - P: Password
   - 999= 0010#00
   - The Service level password is saved.

6. **1x to move cursor to left (parameters)**
   - P: Password
   - 999= 0010#00
   - You can now go to a different parameter.

7. **until you reach parameter P:991**
   - P: Defaults
   - 991= 44 #
   - This is the profile (door model) of the door

8. **Write down the value you find here.**
   - You will re-enter it later.

9. **until you reach parameter P:F07**
   - P: FSx-Address
   - F07= D4A72 #
   - This is the mobile address for the mobile unit, it is a hexadecimal number, so it may contain alpha and numeric characters.

10. **Write down the value you find here.**
    - You will re-enter it later.

3: Check if the door has an MS4 or BTA4 user terminal, whether it will continue in use or be replaced, and prep it to be retrofit

1. **Check the kit to see if an optional BTA4 or MS4 user terminal is included in this retrofit.**
   - There may also be an updated circuit board for an existing MS4 user terminal.
   - There are additional, optional steps to install or retrofit the BTA4 and MS4 terminal when setting up the side column covers, as well as additional steps when removing old cabling and installing the CAN bus cabling.

   **IMPORTANT**
For a BTA4 user terminal:
push up, then swing out the user terminal to release it from the frame (1).
Unplug the quick connect cable from the connector on the rear of the unit (2).
- The user terminal will be connected to the CAN bus later in this procedure.
- The cable will be removed later in this procedure.

For an M54 user terminal that is being replaced
by a BTA4, remove it.
The cable will be removed later at the controller.
Get the BTA4 user terminal and hardware from the small parts box.

For an M54 user terminal that will continue in use:
Loosen the six screws and remove the front cover.
Check two things: whether the circuit board is input/output capable (terminal blocks on all sides rather than a single block in the upper left corner), and whether there is an ON/OFF switch.
- The user terminal will be connected to the CAN bus later in this procedure.
- The cable and connector will be removed later in this procedure.

For an MS4 user terminal:
Loosen the six screws and remove the front cover.
Check two things:
- Whether the circuit board is input/output capable (terminal blocks on all sides rather than a single block in the upper left corner), and whether there is an ON/OFF switch.
- The user terminal will be connected to the CAN bus later in this procedure.
- The cable and connector will be removed later in this procedure.

In ALL M54 user terminals:
Disconnect wires at terminals 380-383
380 = brown
381 = yellow
382 = green
383 = blue

In ALL MS4 user terminals:
Disconnect the wires at terminals 380-383
380 = brown
381 = yellow
382 = green
383 = blue

In MS4 user terminals with a single terminal block (NOT input/output capable)
If there is an ON/OFF switch, it connects directly to the red/white wires from the cable.
The switch must be connected to the circuit board or the switch will not function after the CAN bus is installed.
- Check the kit for a replacement circuit board (includes terminal blocks for input/output).
- Disconnect the ribbon cable from circuit board.
- Pop out the old circuit board and snap in the replacement board.
- Reconnect the ribbon cable.
- Cut red and white wires near connector and connect ON/OFF switch to terminals 330 and 331 on the new board. Either wire may be used in either terminal.
- CALL RYTEC TECHNICAL SUPPORT at 800-628-1909 if you do not find a replacement circuit board in the kit or if you have any questions.

In MS4 user terminals with terminal blocks (input/output capable)
If present, leave wires from ON/OFF switch to terminals 330-331 in place.

In MS4 user terminals with an I/O capable board
(>1 input/output capable)
Non-I/O capable board (single terminal block)
How to install the SmartSurround™ light curtains

1. If the side column is blocked so that the access cover would not be accessible, such as by a bollard positioned too close to the door, consult with the owner to see whether or not they want the access cover installed.

2. The left side side column cover is shown for these steps.

3. Remove the cutting templates (#1) from the next page of this manual.
   Separate the templates into left and right sides.
   Tape the templates to the side columns.

4. Drill out the four corners for the side column access port.
   - Drill out the two holes for the tek screws.

5. Cut between the corners with an angle grinder or jigsaw.
   File all edges smooth when you are done.

6. Secure the access cover in place with the two thread cutting screws from the kit.

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**INSIDER’S TIP**

If side covers were put back in place after previous steps, loosen the bolts and remove the side column covers on both side columns.

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**BEFORE REMOVING THE SIDE COLUMN COVER, remove this access cover and follow the instructions on the other side.**

**NOTICE**

Failure to do this may result in damage to the door.

**BEFORE REMOVING THE SIDE COLUMN COVER,** locate and disconnect the plugs labeled 01.

**AFTER REINSTALLING THE SIDE COLUMN COVER,** reconnect the plugs and reinstall the access cover.

**NOTICE**

If side covers were put back in place after previous steps, loosen the bolts and remove the side column covers on both side columns.

**IMPORTANT**

Make sure the c-clamps do not scratch the surface of the cover.
Template #1:
cutout for
side column
access port
This template is
used in
Step 2 on page 6

Before using template
verify printed dimensions
match shown dimensions.

IMPORTANT
Back of Template #1
Intentionally left blank
7 Flip and reclamp the side column.
   Remove the drilling templates (#2) from this page.
   Separate into drive and non-drive side and tape in place on the side columns.
   Drill out the holes for the bottom bolt and the SmartSurround™ cable.

8 Get the labeled SmartSurround™ transmitter and receiver, as well as the mounting hardware, from the kit.
   Check the labels and make sure the receiver goes on the drive side cover and the transmitter goes on the non-drive side cover.

9 Install the bolt and nut into the bottom hole in the SmartSurround™ mounting channel.
   Leave them loose until you have installed the top bolt/nut combination.
10 Line up the SmartSurround™ mounting channel with the edge of the side column.
   - There should be .25” distance from the edge the full length of the light curtain.
   - Drill out the top bolt hole through the top hole in the channel.

11 Install and tighten the top bolt and nut.
   - Tighten the bottom bolt and nut.
   - Remove the protective film from the light curtains once they are installed.

12 Thread the cable through the hole in the side column cover.
   - Loop the cable and cable tie the loop to minimize loose cabling in the side column.
13. Drill out the hole in the rear of the side column for the cable from the jamb mounted SmartSurround™.

   **IMPORTANT**
   Make sure there are no cables where you are drilling. If necessary, wait until you have removed the current cabling before doing this step.
   Repeat these steps on both sides of the door.

   1. First, pull back the bottom of the rear seal to expose the lip of the side column. Drill out the lip.

   2. Mark the hole location on the seal, set it firmly back in place, and drill out the seal.

14. Get the jamb mounted SmartSurround™ transmitter and receiver from the kit.

   **IMPORTANT**
   Make sure the jamb mounted and cover mounted SmartSurround™ transmitters are both on the non-drive side of the door.
   Make sure the jamb mounted and cover mounted SmartSurround™ receivers are both on the drive side of the door.
   Check the labels at the bottom of the light curtains to match.

15. Install the jamb mounted SmartSurround™ light curtains and cables onto the drive side and non-drive side walls of the door opening.

   - Use supplied anchored or self-tapping screws to secure light curtains and P-clips.

   - Use two (2) supplied P-clips to secure cable tightly to wall
     - Place one clip one to two inches (1-2") from SmartSurrond™
     - Place the other clip one to two inches (1-2") from side column
   - Cable should run parallel to floor

   - If the floor is level, use the cover mounted SmartSurrond™ and a laser level to set the mounting height of the wall mounted light curtain.
   - The bottom of the aluminum retaining bracket should be 4" above base plate.
OPTIONAL: How to install the BTA4 user terminal frame

1. Cut out the drilling template for the BTA4 unit on the next page. Position it on the drive-side side column.
   - Make sure there is a flat, unobstructed space on the column that is large enough to fit:
     - the entire frame of the unit (4.5" x 6")
     - a minimum of 3" clearance from the outer edge of the side column.
   - Make sure the area where the holes will be drilled is free of all cables, hardware and components inside the column.
   - If there is not enough free, unobstructed space, install the frame into the wall next to the door.

2. If the side column can fit the template, use the template to drill the four screw holes in the side column.
   - If the side column cannot fit the template, use the template to drill the four screw holes in wall near the door.
   - Match the drill bit to the supplied hardware or your own.
   - If mounting to the wall, match the correct depth for the hardware.
   - Use a step bit to drill the large hole for the cable.

3. If you are mounting the unit to the wall and cannot run cable inside the wall, snap off the perforated tab at the bottom of the frame.

4. Install the BTA4 frame using the supplied hardware for side column or wall mounting, or your own.
   - If necessary, remove the side column cover to install the frame.

5. For side column mounting, install the grommet into the cable access hole.
OPTIONAL: How to install the MS4 user terminal

Check with the door owner whether they want the MS4 installed into the side column or remotely.

1. Locate the MS4 user terminal, mounting brackets and hardware in the small parts box.

2. Anchor the user terminal at an easily accessible height using the included hardware. The user terminal can be mounted onto the wall, flush to the wall using the optional bracket, or onto the side column using the optional z-bracket.

Side column mount
1. Remove plate 1 from non-drive side column.
2. Install the user terminal 2 onto the z-bracket 3 using supplied hardware.
3. Install bracket onto side column using screw holes from plate.

Flush mount (in-wall installation)
1. Cut hole: 6-3/8"W x 11-1/2"H.
2. Install the user terminal 1 onto the flush mount bracket 2 using supplied hardware.
3. Anchor bracket to wall using supplied hardware.
4. Install the cover plate 3.

NOTE: if the unit cannot be securely mounted to the side column using these specifications, the unit should be mounted to the wall.

Recommended height = 54-3/4" 1390mm
How to remove the Pathwatch, light curtains and internal cabling

1 Remove hood covers and panels all allow access to the head assembly consoles and the rear spreader.
   If the door has a hood cover, remove all of the top panels. Then remove the front panels on both ends of the door.
   Remove the front console cover on the non-drive side to allow access to the controller.

   ![Diagram](image1)

2 Loosen the secondary drive belt until there is considerable slack. This makes it easier to access the back of the side column.
   - You will need to loosen the screws and move the CAN bracket out of the way to access the pulley assembly.
   - It should not be necessary to remove the pulley assembly from the mounting bolt.

   ![Diagram](image2)

3 If necessary to freely access the back of the side column, remove the springs from the baseplate tube.
   If there are locking collars on the spring tabs, remove them first. You will reinstall them when the springs are reinstalled.
   Push down on the bottom of the spring to release the tab, slide the spring through the narrow slot, then pull out of the wide slot.

   ![Diagram](image3)
4 In both side columns, unplug the Pathwatch LED strips at the quick connect ①.
   Remove the Pathwatch strips from the side columns ②.
   Replace the screws ③ to maintain the appearance of the side columns.
   Cut the cable below the connector ④ and discard that part of the cable.

5 Remove the light curtain transmitter and receiver from the door tracks. Cut the cables below the connectors.
   Remove the track clip/wire chase that hold them in place.

There may be one long track clip or multiple smaller ones.

**IMPORTANT**

Service techs may have used additional strips of double sided tape or adhesive to secure the clips.

You may need to use a chisel to remove the clips from the door tracks.

Make sure the door tracks are not damaged, and fully clean the tracks to remove any adhesive residue.

The new track clips are held in place by friction.

Some doors have washers, bumpers or brackets added to the bottom of the door track to prevent the clips from slipping.

Theses can remain in place.

6 Remove the light curtain and Pathwatch cabling all the way to the controller.

There are cable ties at both ends of the spreader.

Then the cables run together around the inside of the non-drive side console, then down to the controller.

Cut both cables at the controller and discard.

Then open the controller.

At the top of the side columns, disconnect the coiled cord and discard.

Fish the cable to the controller up through the raceway.

On the drive side, this cable is coiled and goes across the rear spreader, then to the controller.

Pathwatch and light curtain cables terminate at a y-splitter at the rear base of the side column.

Cut all cable ties and the tie at the splitter, then cut the ties to free the coil cord that goes up the side column.
How to rewire the controller and replace an older comm board

**WARNING**
Set the fused disconnect to the OFF position and perform a lockout/tagout of the high-voltage disconnect before opening the control box. Do not set the disconnect switch to the ON position until told to do so by these instructions. Failure to comply could result in shock, burns or death.

1. **Loosen** the six capture screws and **open** the control box.

   **Locate** the comm board (1) and the interface board (2) and identify the wires and cables that need to be removed or reconnected.

   The interface board is plugged in to terminal block 270-277.

**Proximity sensor cable**
Wire colors: black, blue, brown
The proximity sensor cable stays in place. Wires are trimmed, then installed into terminals 234, 240, and 241 after the interface board is removed.

**Encoder cable**
Wire colors: white, green, yellow, blue, gray, pink, red, brown
The encoder cable stays in place. Wires are trimmed, then installed into terminal block 270-277 after the interface board is removed.

**Light curtain and Pathwatch cables**
Wire colors (12-pin): purple, black, peach, orange, red, blue, pink, gray, green, yellow, brown, white
Wire colors (7-pin): blue, pink, gray, yellow, green, brown, white
Both of these cables are removed after the Pathwatch and light curtains are removed.

**Comm board**
Wire colors vary
The **comm board** may be the newer version (a), which stays in place, or the older version (b), which is removed and replaced by the newer version comm board included in the kit.

The **cable**, whether it goes to an MS4 or BTS4, is removed.

**New version** stays in place
**Old version** removed

**Wires from interface board**
Wire colors (2-pin): blue, pink
Wire colors (5-pin): pink, white, gray, brown, black
These wires are disconnected from their terminal connections and removed with the interface board.
Cut the wires for the encoder and the proximity sensor.
Disconnect the wires from the interface board.
Leave the cables in place.

Remove the interface board from terminal block 270-277.
Pull terminal block 270-277 off the microcontroller board, loosen the eight terminal screws, then pull off the interface board.
Plug terminal block 270-277 back into the microcontroller board.
Cut the two light curtain/Pathwatch cables where they enter the controller, loosen the cable glands to release the rest of the cables, and discard the board, cables and attached wires.

Trim the wires for the encoder and the proximity sensor to minimize slack, expose 1/4" of clean copper, and reconnect the wires into the terminals listed here.

Disconnect all wires to the comm board. There may be additional wires from the cable connected to other terminals. Disconnect them as well.
Remove and discard the cable.

You may need to use the cable to fish the replacement cable to the user terminal for wall mounted terminals.
1. If this controller has an older comm board installed, replace it with the comm board from the kit.
   - Get the comm board from the kit.
   - Loosen the four plastic screws and remove the old board, leaving the legs in place.
   - Pull out the four-wire and eight-wire connectors to free the board.
   - Discard the old board.
   - Remove the legs from the new board.

2. Plug in four-wire and eight-wire connectors on the new board, then reinstall the four plastic screws to secure the new board in place.

3. Get the 120Ω resistor from the kit.
   - The resistor should be placed inside the controller so that it can be found if there is a need to troubleshoot the CAN bus system.
   - Tape the resistor to the bottom of the controller.

How to install the Advanced® light curtain and side column CAN bus cabling

1. Get the two Advanced® light curtains, track clips and 9-foot (1210800-E) M8 cable from the kit.
   - Install the track clips into the door track. They are held in place by friction.
     - Line up the bottom of the clip with the bottom of the door track.
     - The fit is tight. Run a flathead screwdriver down the length of the clip to ensure it is fully seated in the track.
   - Install the Advanced3 light curtains into the clips. They are also held in place by friction.
     - Make sure the transmitter is installed into the drive side, and the receiver is installed into the non-drive side.
     - Line up the bottom of the light curtain with the bottom of the track.
   - Connect the 1210800-E M8 cables to the light curtains and run the cables inside the length of the clip.

Check labels!

Transmitter goes inside the drive side column

Receiver goes inside the non-drive side column
2. Get all parts from the kit for the drive side and non-drive side baseplates.

- Non-drive side side column baseplate
  - (2) M8 CAN cables
    - PN: 1210800-0B (0.3M)
    - PN: 1210800-0E (2.7M)
  - (1) M8 CAN cable with label
    - PN: 1210879-0 (0.3M)

- Drive side column baseplate
  - (2) M8 CAN cables
    - PN: 1210800-0B (0.3M)
    - PN: 1210800-0E (2.7M)

Parts shown are for a right-hand drive side door.

NOTE: CAN repeater boxes have two ports for M12 cables. In a Spiral Prewire, they are located on the drive side baseplate and the drive side console.

The CAN distribution box has one port for an M12 cable and is located on the non-drive side baseplate.

3. Repeat all steps on the drive and non-drive side of the door.

Do the next three steps BEFORE you install the brackets into the side column baseplates.

- Install the labeled 1-foot M8 cable into port 3 of the boxes on both brackets and through the top and bottom slots on the holders.

4. Install the other 1-foot M8 cables into port 2 of the boxes on both brackets and through the second and fourth slots in the holders.

   - This cable connects to the cable from the jamb mounted SmartSurround™ light curtain.
   - Push the connector through the opening in the bracket.

5. Install the jumper into port 1 of the boxes on both brackets.

6. Place the brackets into the baseplates of the side columns.

   IMPORTANT
   DO NOT bolt them in place.
   You will secure them in place later.
7 Route the cable from the Advanced3 light curtains in both side columns through both openings in the brackets.
Plug the connector into port 4.
Remove the protective film from the Advanced3 light curtains once they are installed.

8 Route the cable from the jamb mounted SmartSurround™ light curtain down the back channel of the vertical track BEHIND and separate from the door track to the floor of the baseplate.

   IMPORTANT
This routing keeps the cable clear of the door panel rollers when the door opens and closes.
Line up the embossed arrows on the connectors to align the guide notch and contacts correctly, and plug the cable into the cable that connects to port 2.
Route the cables through both openings in the gasket.

For all M12 connections: on female connectors, a drop of WD-40 behind the nut on the locking ring makes it easier to turn the ring and fully secure the connection. Spin the ring to distribute evenly. Do not overlubricate.

9 Place cable ties in the holes of the two flanges near the side of the baseplates in both side columns to route the cables running up the side columns.
Also place a cable tie and anchor against the rear wall of each side column, near the outer wall and 4 inches above the base plate.

   IMPORTANT
Wipe area down with supplied alcohol wipes before placing cable tie anchors.

   IMPORTANT
This routing keeps the cables clear of the spring assemblies.

10 Space cable ties and anchors every two feet up the rear wall of each side column.
Make sure to wipe down the surface with supplied alcohol wipes before securing anchor.
If the side column has built-in cable tie anchors (lance bridges), use them and skip this step.

   IMPORTANT
This routing keeps the cables tight to the rear wall.
11 **Plug in the two M12 cables, run them through the opening at the bottom front of the bracket, and through the cable ties to the top of the side column.**

**IMPORTANT**

- There are **two cables** on the non-drive side and **one cable** on the drive side.
- In the non-drive side, the cable that terminates in a **male connector** connects via the short M12 cable to the CAN repeater in the console.
- The cable that terminates in a **female connector** connects to the M12 cable across the rear spreader.

12 **Peel off the backing from the three strips of tape on the cable raceway, and install it against the rear of the side column just above the bottom anchor and touching the outer wall of the side column.**

**If there is extra length in the cables, fold it over and slide it behind the raceway.**

**Set all cable anchors tight.**
How to install the head assembly CAN components and connect the rest of the CAN bus cables

1. Cut out and line up template #3 from the previous page with the top of the drive side console and the rectangular access port.
   Larger doors (-S and -US size) use the larger template.
   Drill holes for the bolts that secure the CAN repeater box.

2. Get all parts from the kit for the drive side console.
   NOTE: The kit includes an extra bolt and nut for the CAN repeater box in the console. Discard them if they are not needed.
   The flying lead is the only M12 cable with a connector on one end and bare wires on the other.

3. Install the CAN repeater into the drive side console.
4. Plug the jumpers into port 1 and port 2.

5. Get the short 1210855-0X M12 cable. Inside the drive side console, connect the female M12 connector for the cable to the male M12 connector for the cable running up the side column. **IMPORTANT** Line up the embossed arrows on the connectors to align the guide notch and contacts correctly. The connectors will only fully connect if they are aligned correctly.

6. Connect the male M12 connector for the short cable to the CAN repeater in the head assembly. Run the cable through the raceway from the side column to the head assembly. Use existing cable ties or place new cable ties to keep the cable close to the side of the console.

7. Get the longer 1210855-0X M12 cable. This cable connects the CAN bus cabling across the rear spreader. Secure cable with cable ties around cable and spreader at both ends and at middle of spreader. Fold over and cable tie extra length of cable to minimize slack. On the non-drive side, run the cable through the raceway and connect the male M12 plug to the cable up the side column with the female M12 plug. On the drive side, connect the female M12 plug to the head assembly repeater box, then run the cable across the spreader.
Get the flying lead cable to the controller.
Connect to the male M12 plug in the non-drive side side column.
Run the cable up the raceway.

Run cable along inside of the non-drive side console, through the access port, to the controller.
Add cable ties as shown here or use existing ties.
Run the cable into controller through one of the cable glands used by the light curtain/Pathwatch cables that were discarded.

**IMPORTANT**
If there is extra length of cable, coil it OUTSIDE of the controller.

**OPTIONAL:** connect the BTA4 user terminal to the CAN bus system

- Connect the BTA4 to the CAN bus system.
- Remote mounting: Remove jumper from Port 1 in the head assembly repeater box and plug in BTA4 cable here.
- Side column mounting:
  - Place anchors 6” below BTA4 access hole, 6” above CAN bracket, and half-way in between.
  - Wipe surface with supplied alcohol wipes before applying anchors.
  - Route cable through anchors and upper notch in bracket.
- M8 CAN cable PN: 1210800-0B short for side column mounting or long for remote mounting.

- Cable ties
OPTIONAL: connect the MS4 user terminal to the CAN bus system

1. **Connect** the M8 flying lead cable to the head assembly repeater box and **route** it to the MS4 user terminal.

2. **Loosen** the six screws and **remove** the cover plate. **Loosen** the cord grip and **thread** the M8 flying lead into the user terminal.

3. **Trim jacket** on M8 flying lead to expose wires, and **connect** wires to terminals 380-383.

4. **Tighten** the cord grip, **replace** the cover and **reinstall** the six screws.
How to finish the installation

1. **Reset** the tension on the secondary drive belt and, if necessary, **reinstall** the spring.
   1. Tighten the top front nut to increase the tension a.
   2. Press the front and rear legs of the belt together to test tension. Adjust the height of the top nut as needed until it requires considerable effort to manually bring the two legs of the belt together b.
   3. Push down on the bottom of the spring, **slide** the spring tab into the wide slot c and through the narrow slot d, then **push up** to set it into the retaining slot e. If door has tab collars f, reinstall.

2. **Secure** CAN brackets in place
   - FROM KIT
   - Hardware shown actual size
   - 17mm
   - 13mm
   - 2 per bracket

3. **Reinstall** the side column covers.
   - **INSIDER’S TIP**
   - Use one screw each to hold them in place; it may be necessary to open them to make adjustments during testing.
   - Do not secure them fully until all testing is complete.
   - Reconnect the two cables labeled “01”.
   - Line up the embossed arrows on the connectors to align the guide notch and contacts correctly.
   - The connectors will only fully connect if they are aligned correctly.

4. **Replace** all panels when the testing of the door is complete.
   - Flat hood cover
   - Slanted hood cover
   - KEEP
   - REUSE
   - T40
How to wire the CAN bus cable to the controller

1. Connect the CAN bus wiring.
   Shielding: wire mesh
   Gauge: 20 AWG

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.
3. Twist shielding into fifth wire to terminal block.
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.

2. Disable the reversing edge.
   - Remove the pink wire from terminal 272
   - Trim the pink wire
   - Terminate the pink wire with a wire nut.

3. Get the USB drive with the updated system software from the kit.
   - Plug in the drive to the USB port in the controller. If there is a drive already in place, remove it.
   - Close and secure the front cover of the control box.

4. Make sure the protective film has been removed from ALL light curtains on both sides of the door before turning on power to the door.

   Inform the door owner that Rain-X® 620036 Plastic Treatment applied to the light curtains reduces static and helps keep them clear of dirt and dust.
   Available at most hardware stores.

5. Restore power to the door.
First: set the controller to Parameter mode and access Service level parameters

<table>
<thead>
<tr>
<th>Do This</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> OFF ON</td>
<td>Turn on power to controller. The door starts in run mode.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>until the parameter screen displays. You are in Parameter mode. Go to parameter 999.</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>2x to reach parameter P:999. The Password screen displays.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>1x to move cursor to the right (edit value). You can now change the value of parameter P:999.</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>16X to set value to hexadecimal 10. Set the value to 10 (Service level password) until question mark changes to checkmark (value saved). The Service level password is saved.</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>1x to move cursor to left (parameters). You can now go to parameter P:989 to update the system software.</td>
</tr>
</tbody>
</table>

Next: update the system software

<table>
<thead>
<tr>
<th>Do This</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>until you reach parameter P:989. P: Prog. update S 989=select S until download begins.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>1x to go to the value side. P: Prog. update S 989=select S until download begins.</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>until the software version displays. You may also see an F:910 hardware error or an SPI:915 error for a few seconds before the F:964 error displays. This is normal.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>until you reach parameter P:989. P: Prog. update S 989=select S until download begins.</td>
</tr>
</tbody>
</table>
Next: go back parameter mode and re-enter the passcode for Service level access

Do This | Result
---|---
1△ until the parameter screen displays
You are in Parameter mode.

2△ 2X to reach parameter P:999
The Password parameter P:999 screen displays.

3△ 1X to move cursor to the right (edit value)
You can now change the value of parameter P:999.

Next: reset defaults and parameter for the new system software

Do This | Result
---|---
1△ 1X to move cursor to the right (edit value)

2△ 1X to set the value to 1
This is the value to reset the system defaults.

3△ until question mark changes to checkmark (value saved)

The next steps vary based on the configuration of the door:

- Most doors have additional custom parameter settings that must be reset.
- One or more files to update these parameters are included on the disk. You do this at parameter P:944.
- They are numbered 0001, 0002, etc. Each file must be downloaded separately.

Do This | Result
---|---
6△ 16X to set value to hexadecimal 10
until question mark changes to checkmark (value saved)

7△ until question mark changes to checkmark (value saved)

8△ The controller resets the factory defaults.

9△_until you reach parameter P:944

10△ 1X to move cursor to the right (edit value)

11△ 3X to go to the first file

12△ until blinking dot displays

13△ 1X to go to the next file

14△ 1X to move cursor to left (parameters)
Next: activate the SmartSurround™ system synchronization

<table>
<thead>
<tr>
<th>Do This</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ▲ until you reach parameter A:060</td>
<td></td>
</tr>
<tr>
<td>2 ▲ 1x to move cursor to the right (edit value)</td>
<td></td>
</tr>
<tr>
<td>3 ▲ 4x to set the value to 4</td>
<td></td>
</tr>
</tbody>
</table>

**IMPORTANT**

If you assign the wrong light curtains to parameters L:201, L:401 or L:501, return to parameter A:060, set the value to 0, save that value, then start again at Step 2.

Do This Result

4 ▲ to save the value

5 ▲ 1x to move cursor to left (parameters)

Next: assign the two Advanced® light curtains to parameter L:201

**NOTE:** the values you will see at parameters L:201, L:401 and L:501 will be the IDs for the light curtains included in the kit, and will not match the values shown here.

<table>
<thead>
<tr>
<th>Do This</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ▲ 1x to show the first set of light curtains</td>
<td></td>
</tr>
<tr>
<td>2 ▲ Check the Advanced® light curtains mounted in the door tracks of both side columns.</td>
<td></td>
</tr>
<tr>
<td>3 ▲ If the current selection does NOT light the LEDs:</td>
<td></td>
</tr>
<tr>
<td>4 ▲ If the current selection DOES light the LEDs:</td>
<td></td>
</tr>
<tr>
<td>5 ▲ If the current selection DOES light the LEDs:</td>
<td></td>
</tr>
<tr>
<td>6 ▲ The controller moves to parameter L:401.</td>
<td></td>
</tr>
</tbody>
</table>

Drive side

Non-drive side
Next: assign the two inside SmartSurround™ light curtains to parameter L:401

On doors that are mounted to interior walls, the cover mounted SmartSurrounds™ are considered to be the inside light curtains and are assigned to parameter L:401.

On doors that are mounted to exterior walls, the jamb mounted SmartSurrounds™ are considered to be the inside light curtains and are assigned to parameter L:401.

Next: assign the two outside SmartSurround™ light curtains to parameter L:501

On doors that are mounted to interior walls, the jamb mounted SmartSurrounds™ are considered to be the outside light curtains and are assigned to parameter L:501.

On doors that are mounted to exterior walls, the cover mounted SmartSurrounds™ are considered to be the outside light curtains and are assigned to parameter L:501.

Do This
Result
1
1X to show the first set of light curtains

L: SAI Slot4 401= 0932-9156?

2
Check the SmartSurround™ inside light curtains on both side columns.
  - If all LEDs are flashing, the cover mounted light curtains are synced correctly.
  - If other light curtains light up, go to the next value.

3
If the current selection does NOT light the LEDs:
1X to show the next set of light curtains

L: SAI Slot4 401= 0992-9187?

Re-check the light curtains.

4
If the current selection DOES light the LEDs:
until the setting is saved

L: SAI Slot4 401= 0992-9187#

5
The controller moves to parameter L:501.

L: SAI Slot5 501= - #

Do This
Result
1
1X to show the first set of light curtains

L: SAI Slot5 501= 0932-9156?

2
Check the SmartSurround™ outside light curtains on both side columns.
  - If all LEDs are flashing, the cover mounted light curtains are synced correctly.
  - If other light curtains light up, go to the next value.

3
If the current selection does NOT light the LEDs:
1X to show the next set of light curtains

L: SAI Slot5 501= 0923-9126?

Re-check the light curtains.

4
If the current selection DOES light the LEDs:
until the setting is saved

L: SAI Slot5 501= 0923-9126#

5
The controller ends at parameter P:000.

P: Door Cycles 5
000# 0000 Cyc

Do This
Result
1
Door mounted to interior wall

2
Door mounted to exterior wall

3
Cover mounted to interior wall

4
Cover mounted to exterior wall

5
Jamb mounted on interior wall

6
Jamb mounted on exterior wall
To finish: set limits

1. Scroll until the "Syncron." screen displays
   ! Syncron. !
   _0 Press Reset

   Scrolling message:
   Hold Reset button if position OK

2. 1x to start sequence
   
   _0 To Open Pos.

   Scrolling message:
   Hold Reset button if position OK

3. Set the open position.
   until open height is correct
   
   _0 To Open Pos.

   The bottom of the reversing edge should line up with the lintel (top of the door opening).

If necessary, manually adjust the close limit

1. Scroll until the parameter screen displays
   P: Password O
   001 = [xx] 00 00

   You are in Parameter mode.

2. until parameter displays
   P: Incremental S
   275 = -12 Inc

   The default value at P:275 is -12.

3. 1x to move cursor to the right (edit value)
   Search Edge
   -1330 Auto Close
   the door panel stops when it reaches the bottom of the light curtain, then you see:
   ! Auto Calibrate!
   Press Open butto

   You can now change the value.
   - The UP arrow increases the value and raises the close limit position for the door.
   - The Down arrow decreases the value and lowers the close limit for the door.
   - Each press of an arrow changes the limit by a fraction of an inch, which gives you precise control of the value.

4. until new value displays
   P: Incremental S
   275 = [xx] Inc

   Do not change the value by more than 5 increments. Then test the door.

5. until question mark changes to checkmark (value saved)
   P: Incremental S
   275 = [xx] Inc

   The new value is saved.

6. 1x to move cursor to left (parameters)
   275 = [xx]0 Inc00

   You can manually adjust the close limit after calibration is complete by changing parameter P:275. See next page

7. until door returns to run mode
   Spiral
   [xx] Cycles

- The door opens and closes automatically up to 12 times.
- The controller automatically sets the close limit position while the door calibrates.
- When calibration is complete, the door switches to Run mode.

**IMPORTANT**
- The door may not open or close completely during automatic calibration. This is normal.
- When calibration is complete, the door will open and close correctly.
- You can manually adjust the close limit after calibration is complete by changing parameter P:275. See next page
### How to test the door

1. **Make sure** the blue LED \( \text{(receiver)} \) and green LED \( \text{(transmitter)} \) on the Advanced light curtains are flashing once every two seconds, and that the red LED \( \text{(receiver)} \) and yellow LED \( \text{(transmitter)} \) are OFF.

2. **Make sure** the SmartSurround™ operates correctly as the door opens and closes:
   - An upward cascade of red lights while the door opens.
   - A sequence of blinking yellow lights matching the delay to close timer before the door starts to close.
   - A downward cascade of red lights while the door closes.

3. **Test the SmartSurround™ system**:
   - **Make sure** the light curtains flash rapidly whenever either of the planes are broken.
   - If one plane is broken but the other is not, the light curtains should reverse/hold the door, then the door should count down and descend at creep speed.
   - If all planes are broken, the light curtains should reverse/hold the door, then the door should count down and descend at normal speed.

4. **LEDs on the CAN repeaters and distributor** indicate if the system is working correctly
   - LEDs next to the ports (blue) should be ON steadily (no flashing).
   - The CAN status LED (yellow) should be flashing one to four times per second.
   - The power status LED (green) should be ON steadily (no flashing).

   **Contact technical support if you do not see this.**

5. **Any time a CAN bus cable is disconnected while the power is on**, you MUST do a soft reboot of the controller to re-sync the CAN bus system when all cables have been reconnected.
   - Press and hold all three buttons until the display goes blank.
   - Release the buttons. You see Self-Check or the system software versions number.

### OPTIONAL: How to enable the reversing edge on Spiral doors

The SmartSurround™ system, in combination with the Advanced light curtains located within the door line, meets the requirements for entrapment protection. SmartSurround™ offers a contactless method of object recognition that is an improvement over the reversing edge system; this makes the reversing edge system redundant. The reversing edge system is disabled as part of the retrofit.

The reversing edge system can be reenabled if a full height sensing system is required.

- **This procedure requires Rytec Level access to change the parameters.**
- To get the passcode for Rytec Level access, you must lock the cycle count, then contact Rytec technical support for a passcode.
- The passcode changes if the cycle counts changes, so make sure the door does not open or close until you have used the passcode and gained access.

#### First: Connect the pink wire to terminal 272 in the controller

![Diagram of controller with pink wire connection](image-url)

**WARNING**

Set the fused disconnect to the OFF position and perform a lockout/tagout of the high-voltage disconnect before opening the control box. Do not set the disconnect switch to the ON position until told to do so by these instructions.

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

1. **Open** the controller, remove the wire nut from the pink wire, and **connect** it to terminal 272.

2. **Restore** power to the door.
### Next: set the controller to Parameter mode and lock the cycle count

1. **Do This**
   - Turn on power to controller.
   - The door starts in run mode.

2. **Do This**
   - until the parameter screen displays:
     - **P: Door Cycles 0 000= 32321 Cyc**
     - **P: Password 0 001= 21073 Cyc**

   **Note:** The cycle count at parameter P:001 is from the last time it was locked, so it may not match the current count for the door.

3. **Do This**
   - **1x to move cursor to the right (edit value)**
   - **1x to reach parameter P:001**
   - **P: Password 0 001= 21073 Cyc**

4. **Do This**
   - **1x to move cursor to the right (edit value)**
   - **until the cycle count updates and the checkmark appears**
   - **P: Password 0 001= 32321 Cyc**

5. **Do This**
   - **until you reach the value of the Rytec passcode**

6. **Do This**
   - **until question mark changes to checkmark (value saved)**
   - **P: Password 999= A6C3 R**

   **Note:** The “R” in the top right corner indicates you have Rytec level access.

7. **Do This**
   - **1x to move cursor to left (parameters)**
   - **P: Password R**

### Next: get and enter the passcode

1. **Do This**
   - Contact Rytec technical support by phone or e-mail:
     - **800-628-1909**
     - **support@rytecdoors.com**

   Be prepared to tell them the **cycle count** and the **reason you need** Rytec level access.

   Reference the **approval you have already submitted**.

2. **Do This**
   - **The Rytec level passcode is a hexadecimal number.**
   - This means it uses the ten numeric characters (0-9), plus six letters (A-F), which represent the values from 10 through 15.
   - It also means the passcode is a large number. For example a passcode of A6C3 equates to a value of 42,691.

### Next: go to parameters P:F00, P:F07, and P:460 and set the values

**Note:** If the door has an energy chain instead of a wireless system, skip to step 11.

1. **Do This**
   - **until you reach parameter P:F00**
   - **P:FSx-Activate R F00=alse**

2. **Do This**
   - **1x to move cursor to the right (edit value)**
   - **P:FSx-Activate R F00=alse**

3. **Do This**
   - **1x to change the value to 1**
   - **P:FSx-Activate R F00=1**

4. **Do This**
   - **until question mark changes to checkmark (value saved)**
   - **P:FSx-Activate R F00=1**

5. **Do This**
   - **1x to move cursor to left (parameters)**
   - **P:FSx-Activate R F00=1**
Do This | Result
---|---
6. ▲ until you reach parameter P:07
   - This is the mobile unit address that you recorded earlier.
   - The software update restored the ORIGINAL address from when the door was purchased. This may or may not match the address for the CURRENT mobile unit.
   - If the value displayed matches the value you recorded, go to step 11. Otherwise, change the value to the one you recorded using the following steps.

7. ▲ 1X to move cursor to the right (edit value)
   - The mobile address is a large number; for example, this value is 87,1026. So it will take a while to reach it.
   - The speed of the change increases the longer you hold down the UP arrow.

8. ▲ until you reset the value to the original value

9. ▲ until question mark changes to checkmark (value saved)

10. ▲ 1X to move cursor to left (parameters)

11. ▲ until you reach parameter P:460

12. ▲ 1X to move cursor to the right (edit value)

13. ▲ 1X to change the value to 1

14. ▲ until question mark changes to checkmark (value saved)

15. ▲ 1X to move cursor to left (parameters)

16. ▲ until door returns to run mode