

RAC5 Lite

Installation Instructions

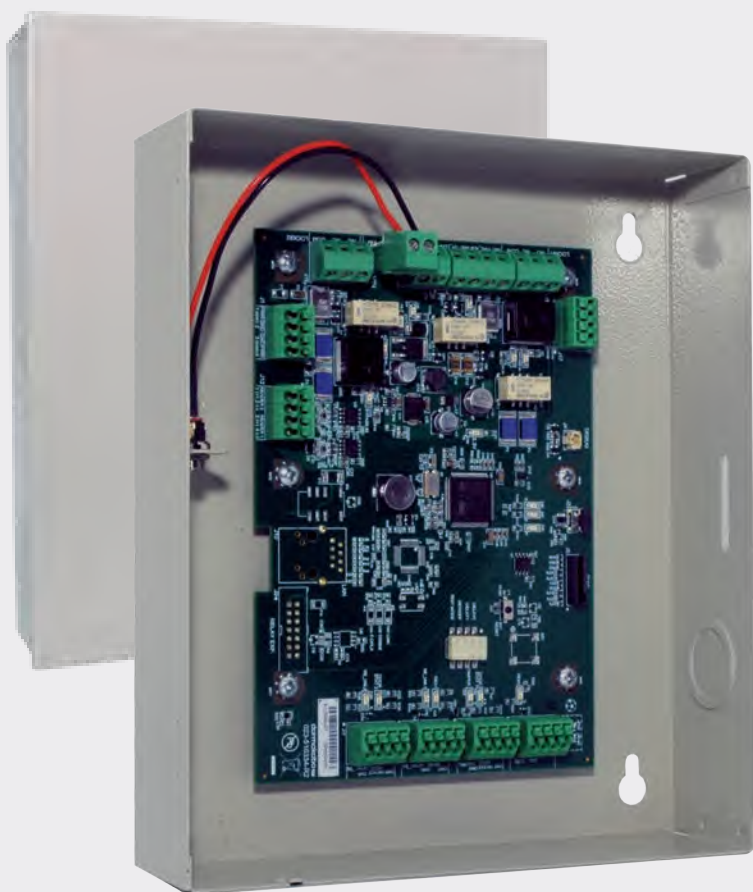


Table of Contents

- 1 Introduction and Disclaimers** 3
 - 1.1 Safety Procedures**..... 4
- 2 Product Description** 5
 - 2.1 Features**..... 5
 - 2.2 Components**..... 6
 - 2.2.1 Controller Box..... 6
 - 2.2.2 Contactless Card Reader..... 7
 - 2.2.3 Locking Devices 7
 - 2.2.3 Optional Peripherals..... 7
- 3 Checklist and Exploded Views** 8
 - 3.1 Parts and Tools List** 8
 - 3.1.1 RAC5 Lite Enclosure 8
 - 3.1.2 Cables (not shown) 8
 - 3.1.3 Card Reader(s) 8
 - 3.1.4 Locking Device 8
 - 3.1.5 Power Adapter 8
 - 3.1.6 Other Peripherals (optional) 8
 - 3.1.7 Programming Device 9
 - 3.1.8 Installation Hardware Bag 9
 - 3.1.9 Tools Required (not supplied) 9
 - 3.2 Exploded View** 10
- 4 System Installation Overview** 10
 - 4.1 Pre-installation Procedures** 11
 - 4.2 Installation and Wiring Procedures** 12
 - 4.2.1 Mount the Enclosure..... 12
 - 4.2.2 Mount the Contactless Card Reader..... 13
 - 4.2.3 Connect Peripheral Wiring 13
 - 4.2.3.1 Electric Strike or Electromagnetic Lock (Locking Device) 14
 - 4.2.3.2 Request to Exit Button (REX)..... 14
 - 4.2.3.3 Remote Unlock Button 14


4.2.3.4 Motion Detector	15
4.2.3.5 Fire Alarm Panel	15
4.2.4 Install Strain Relief Bushing (For Power Adapter Only)	15
4.2.5 Complete the Installation	16
5 Settings and Operation	16
5.1 Testing.....	16
5.2 Programming and Auditing	16
5.3 Power Failure	17
5.4 Loading Recommendations	17
5.5 System Deactivation	17
6 Annex A: Wiring Diagram and Tables	18
7 Annex B: Peripheral Wiring Diagrams.....	19
8 Annex C: Electromagnetic Interference	24
9 Annex D: Quick Troubleshooting Guide	25
9.1 Power Troubleshooting.....	25
9.2 Card Reading Troubleshooting	25
9.3 External Inputs Troubleshooting.....	25
9.4 Locking Device Troubleshooting.....	26
9.5 Programming and Auditing Troubleshooting.....	26
10 Annex E: Reader Drilling Template	27


1 Introduction and Disclaimers

Please read and follow all directions carefully.

These instructions are designed for qualified installers or individuals with knowledge of common safety practices and the competence to perform the steps described herein. For a typical installation, a professional electrician is not necessary since the RAC5 Lite is a low-voltage system.

dormakaba Canada Inc. is not responsible for damage or malfunction due to incorrect installation.

-  **CAUTION**

Carefully inspect windows, doorframes, doors, etc. to ensure the installation procedures will not cause any damage. dormakaba Canada Inc.'s standard warranty does not cover damages caused by installation. The RAC5 Lite should always be installed in a secured room or facility with controller access to prevent access to the system.
-  **WARNING**

Card reader or other peripheral installations within elevators must only be done with prior consultation of the elevator manufacturer. A technician from the elevator manufacturer should always be present for installation. Do not connect to a receptacle controlled by a switch.

If installing the RAC5 LITE in an elevator cage environment, or in proximity to any other equipment that may generate high levels of electromagnetic interference, follow the installation requirements as indicated in Annex C to prevent any operational instability.

The Table below outlines Access Control Levels as they pertain to certain Features.

Feature	Level
Destructive Attack Level	I
Line Security	I
Endurance Level	IV
Standby Power	I
Single Point Locking Device with Key Locks	I

RAC5 Lite Model #: T51-XXXXX

Firmware #: FW-516334-V 10.07.20.4

For indoor use only.

1.1 Safety Procedures

Installation is to be done following standard safety procedures and using adequate equipment and protection as prescribed. Power is to be off during the installation process as well as for any maintenance procedures.

⚠ CAUTION Wear safety glasses when using any tools.

NOTE: This equipment has been tested and found to comply with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in an installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Adhere to UL STD 294

Adhere to the National Electrical Code ANSI/NFPA 70

Statement according to FCC part 15

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

2 Product Description

2.1 Features

The RAC5 Lite is designed to operate electrical locking or control devices where a stand-alone electronic lock is not practical. It provides programmable ingress & egress access control.

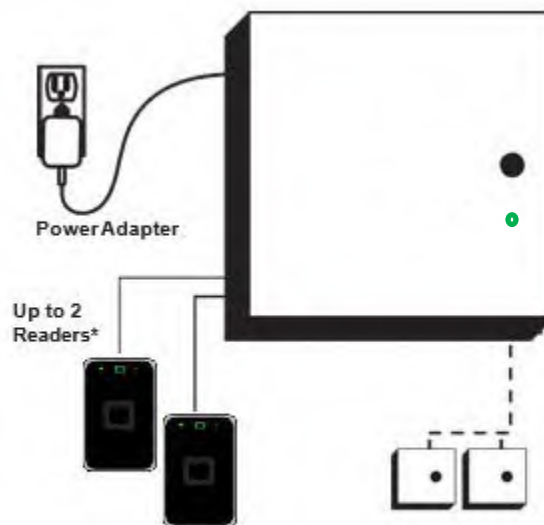
The system controls any door or access point up to 1,000 feet (300 m) away when using a contactless reader.

* Recommended cable is 22AWG CMP cable (Belden 8723 or equivalent).

The Contactless Card Reader mounts directly on doorframes as narrow as 2 inches (5.1 cm), while the insert card reader can only be installed in an elevator panel.

The RAC5 Lite is a simple access control solution for a dual-card reader, providing features as per the feature list below. See Figure 1 for a typical configuration.

Figure 1 – RAC5 Lite System

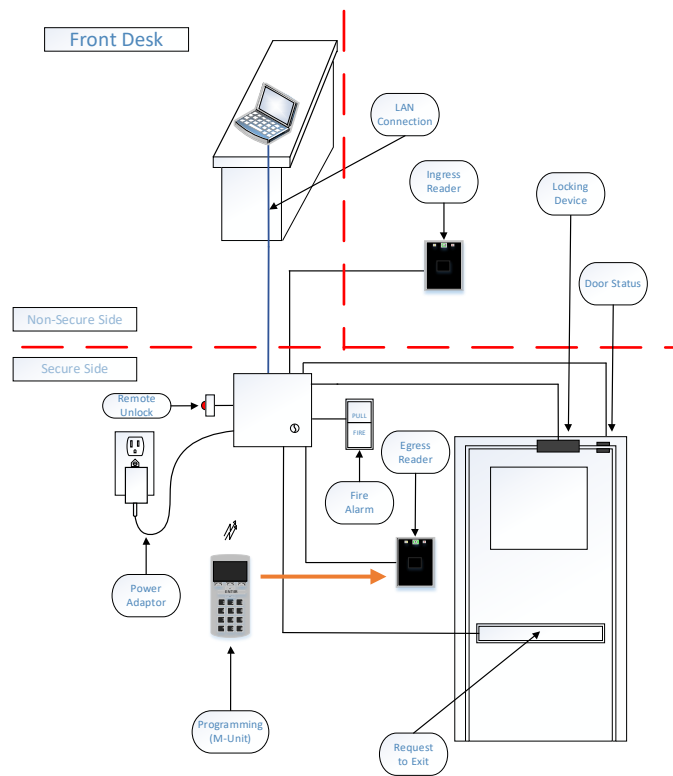


Features

- Variable access delay
- Power failure 3-way auto-recovery; Real Time Clock (RTC)
- Relay bypassing (passing function)
- Remote Unlock Input x2
- Relay Outputs x2
- Unlock delay programmable via an M-Unit
- Fire Alarm Input
- Request to Exit (REX) Input x2
- Card reader control
- NFC programming & auditing

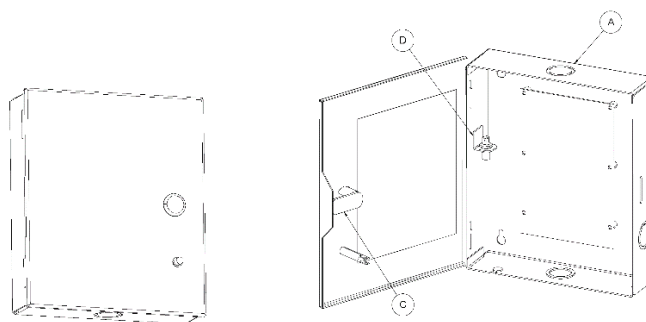
2.2 Components

Figure 2 – RAC5 Lite Layout



2.2.1 Controller Box

Figure 3 – RAC5 Lite Controller Box



(A) RAC5 Lite Enclosure & Access Door: Holds the controller board (PCB) and the power adapter jack.

Knockouts are available on 3 sides for routing of peripheral cables

(B) Controller Board (PCB): Controls all the features of the RAC5 Lite system

(C) DC Power Jack: Used for connecting to the 12 VDC power adapter to provide power to the controller PCB

(D) Cam-lock with Key: To provide secure locking and to control access to the RAC5 Lite enclosure

Not Shown:

(E) Cables: Cables required for connection to the controller PCB to the power adapter jack

2.2.2 Contactless Card Reader

The Contactless Card Reader with optional BLE (Bluetooth Low Energy) function is a small, vertical-mounted unit that protrudes from the wall and is used with RFID-based keycards and/or mobile phone credentials.

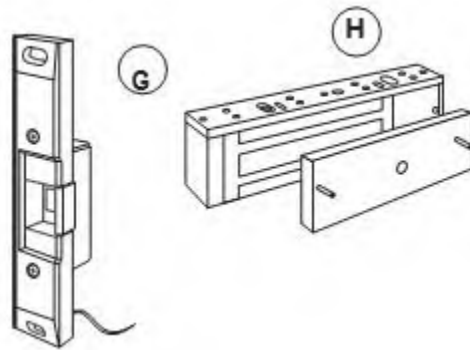
Figure 4 – Contactless Card Reader



2.2.3 Locking Devices

The RAC5 Lite controller PCB provides a single relay output that can be used to control an Electric Strike (G) or Electromagnetic Lock (H) as shown in Figure 5.

Figure 5 – Electric Strike & Electromagnetic Lock



2.2.3 Optional Peripherals

The RAC5 Lite can also be used with the following peripherals:

- Exit Devices
- Motion Detectors
- Panic Bars
- Request to Exit (REX) button
- Remote Unlock button

3 Checklist and Exploded Views

3.1 Parts and Tools List

NOTE: Some items are dependent on the options or configuration purchased. Please ensure all parts ordered and required for installation are available before starting. Parts are subject to change without notice. For letter designations, refer to Figure 6.

3.1.1 RAC5 Lite Enclosure

NOTE: All items below come factory installed.

- (A) RAC5 Lite enclosure with access door
- (B) Controller PCB
- (C) DC power jack
- (D) Cam-lock

3.1.2 Cables (not shown)

NOTE: Some items come factory installed.

- (E) System cables: Controller PCB to adapter jack and controller PCB jumpers (card reader type-dependent)

3.1.3 Card Reader(s)

- (F) Contactless reader (see Figure 4)

3.1.4 Locking Device

NOTE: Locking device(s) dependent on the system configuration ordered.

- (G) Electric strike
- (H) Electromagnetic lock

3.1.5 Power Adapter

NOTE: Dependent on the countries' electrical power requirements.

- (I) 1x North America 12 VDC output power adapter with integrated 6-foot (1.8 m) power cable. Input power requirements of 110-120 VAC, 60 Hz

Or

- (J) 1x International 12 VDC output power adapter with integrated 6-foot (1.8 m) power cable and interchangeable AC outlet prongs. Input power requirements of 220-240 VAC, 50-60 Hz

3.1.6 Other Peripherals (optional)

- (K) Request to Exit button
- (L) Remote Programming Interface (RPI) [not shown]
- (M) Remote Unlock (not shown)

3.1.7 Programming Device

IMPORTANT

Programming of the RAC5 Lite can only be done with the M-Unit (**NOTE:** Purchased separately).

Programming of the unit same as any access point.

3.1.8 Installation Hardware Bag

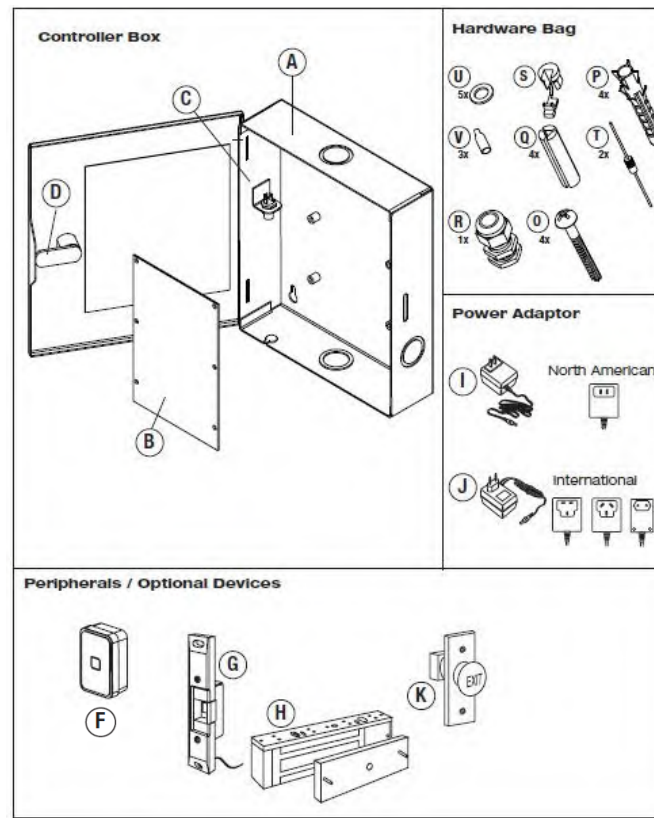
- (O) 4x Philips wood screw, #8 x 1-1/4"
- (P) 4x Nylon anchor, #6-10
- (Q) 4x Concrete anchor, #7-9
- (R) 1x Strain relief connector with locking nut
- (S) 1x Strain relief bushing
- (T) 2x Diode-rectifier
- (U) 5x Steel flat washer #8
- (V) 3x Crimp terminal B connector

3.1.9 Tools Required (not supplied)

- Safety glasses
- Electric drill
- 9/64" (3.5 mm) drill bit
- 7/32" (5.5 mm) drill bit
- 1/4" (6.5 mm) drill bit
- 3/8" (9.5 mm) drill bit
- Philips screwdriver - #2
- Slotted screwdriver – 3/32" tip width
- Adjustable wrenches
- Crimp tool – 18-22 AWG
- Pliers
- Wire cutter/stripper
- Ambiance or System 6000 via the M-Unit
- Hammer or rubber mallet
- Awl or center punch

3.2 Exploded View

Figure 6 – Exploded View



4 System Installation Overview

Before installation:

- Ensure all components ordered and materials/tools required are available
- Ensure all cabling is available for the peripherals/components being installed

IMPORTANT

All installations and wiring of RAC5 Lite enclosure & peripherals must comply with all applicable local building codes and regulations and National Electric Code, ANSI/NFPA 70.

⚠ CAUTION

Do not connect power to the enclosure until the end of the installation process. If installing the RAC5 Lite in an elevator cage environment, or in proximity to any other equipment that may generate high levels of electromagnetic interference, follow the installation requirements as indicated in Annex C to prevent any operational instability.

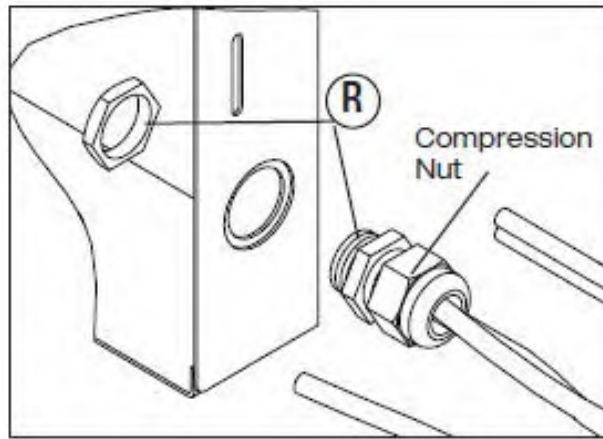
4.1 Pre-installation Procedures

1. Identify a secure location for the RAC5 Lite enclosure.

IMPORTANT

- Access to the RAC5 Lite enclosure must be restricted to authorized personnel
 - AC power must be available within distance specified in section 3.1.5.
 - The location temperature must be from 0 to 49 °C (32 to 120 °F) and sheltered against weather hazards and dripping water with relative humidity conditions less than 85% at 32 °C (90 °F)
 - The enclosure must be installed using only the hardware supplied
 - The enclosure should be mounted at a workable height with clearance to completely open the access door
 - The enclosure can be placed either horizontally in the ceiling or vertically on a concrete, wood or plaster wall
2. Identify location(s) for contactless readers and peripherals.
 - Contactless card readers must be placed within 1,000 feet (300 m) from the RAC5 Lite enclosure
 - The card readers should be installed in an obvious location at an ergonomic height near the access door or elevator being controlled
 - The space to use the contactless reader must be large enough to allow for adequate clearance for the card being presented to the reader
 - For remaining peripherals: Determine the location(s) required for any other peripherals (REX, motion detector, etc.) and ensure that all required cabling is available as required in the following steps. Install as per manufacturer's instructions and route wires to the RAC5 Lite enclosure for connection to the controller PCB
 3. Set the desired access delay.
 - The default factory setting for the delay on access devices is 4 seconds. To change this value, configure the controller PCB using the M-Unit (the gauge is 1 to 255 seconds).
 4. Install the strain relief.
 - One strain relief is provided in the hardware bag to secure the wires leading into the enclosure and to help prevent wire tampering
 - a) Determine the routing needed for all wiring of the RAC5 Lite card reader and peripherals and select the enclosure knock-out to be removed for installation of the strain relief
 - b) Remove the selected knock-out using a hammer and screwdriver / awl, and from the inner side of the enclosure, tap out the small metal disc
 - c) Based on the amount of wires to be routed, attach the appropriate strain relief to the enclosure as shown in Figure 7 on the next page. Do not attempt to route an excessive amount of wires. If extra strain reliefs are required, please contact dormakaba Canada Inc.

Figure 7 – Strain Relief



5. Utilize a dip switch (SW2) to configure the system and test parameters.

- Number of Devices switch setting (SW3)
 - a) **OFF** – One locking device
 - b) **ON** – Two locking devices
- Test Mode switch setting (SW4)
 - a) **OFF** – Normal operation
 - b) **ON** – Test mode

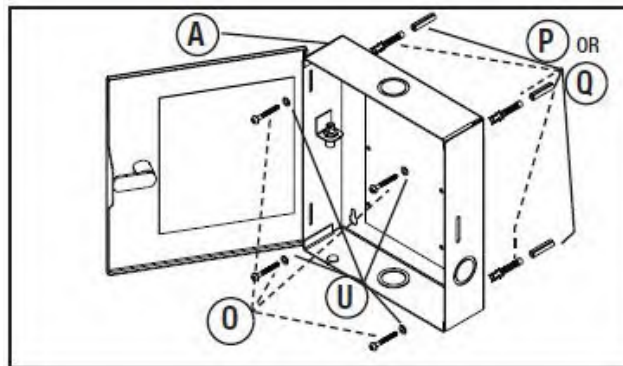
4.2 Installation and Wiring Procedures

4.2.1 Mount the Enclosure

Install the enclosure in the desired location using the appropriate items from the hardware bag.

NOTE: For easier access, we recommend removing the access door prior to installation

Figure 8 – Enclosure



4.2.2 Mount the Contactless Card Reader

NOTE: All readers are rated IP 54.

CAUTION

Do not exceed the maximum cable length indicated by the manufacturer of the products being connected. Refer to the wiring label on the access door, the wiring diagram & tables in Annex A, or the detailed peripherals connections in Annex B.

IMPORTANT

Every wire must pass through the strain relief as connected in the pre-installation procedures.

1. Remove the back plate and use it to mark the holes for the cables and screws.
NOTE: Do not use the actual drawing from Annex E of this document to mark the hole locations as the drawing is not to scale.
2. Drill the holes in the wall according to the diameters indicated on the drilling template in Annex E, based on the type of surface the reader is being installed on:
 - a) Metal surface mounting: Install the back plate onto the wall with the metal screws provided in the installation hardware bag
 - b) Drywall surface mounting: Tap the wall inserts (provided in the installation hardware bag) into the wall using a rubber mallet. Install the back plate onto the wall with the wood screws provided
3. Connect the included cable to the terminal block of the reader as shown in Annex A. Ensure the correct wire colour is attached to the correct terminal block connection.
4. Route the card reader's wire through the grommet of the back plate and assemble the front of the reader onto the back plate. Assemble by tightening down the screw (provided in the card reader's installation bag) on the bottom of the card reader.
5. Connect the card reader wire to the terminal blocks of the controller PCB as per Annex A.

IMPORTANT

Ensure that the jumper wires are also connected on the controller PCB.

NOTE: If required, to differentiate between the ingress and egress, ensure that the appropriate connector on the controller PCB is used.

4.2.3 Connect Peripheral Wiring

CAUTION

Do not exceed the maximum cable length indicated by the manufacturer of the products being connected. In addition, the wire used to connect the peripherals to the controller PCB must be of the proper gauge and type as specified by the manufacturer. Refer to the wiring label on the access door or the wiring diagrams in Annex B.

IMPORTANT

Every wire must pass through the strain relief as connected in the pre-installation procedures. Follow the indications below for the different peripherals being connected. The actual items to connect will vary based on the system configuration ordered.

4.2.3.1 Electric Strike or Electromagnetic Lock (Locking Device)

1. Refer to Annex B for detailed wiring.

IMPORTANT

dormakaba Canada Inc. does not provide technical or field support for third party locking devices. Please consult the device manufacturer for support.

The following table indicates the maximum recommended wire length that can be used for typical locking devices, based on wire gauge.

Locking Device Type	Typical Current (A)	Maximum Recommended Wire Length, One-Way (feet)			
		AWG 18	AWG 16	AWG 14	AWG 12
Electromag. Lock	0.28	168	266	425	675
Electric Strike	0.45	105	166	265	420
Double Electro. Lock	0.46	102	162	258	410
Other Devices	0.75	63	100	160	250

NOTE: The Maximum Recommended Wire Length is the approximate wire length that causes a 5% voltage loss, using a 12-volt locking device at the rated current included.

⚠ CAUTION

The table is for reference only. Actual wiring requirements for specific devices may differ. Always follow the locking device manufacturer's wiring recommendations as well as local building codes.

2. Install and route a 2-conductor cable from the controller PCB to the desired location of the electric strike or electromagnetic lock.
3. If installing an electric strike, install the diode across the terminals of the locking device, using the crimp connectors provided in the hardware bag if needed.

IMPORTANT

Do not reverse the diode polarity as indicated on the wiring diagram.

⚠ CAUTION

To prevent a possible short, the diode must not be in contact with electric strike. If required, cut the diode ends shorter.

4. Mount the locking device in the desired location and connect as per manufacturer's instructions. For connections between locking device and controller PCB, refer to Annex B.

4.2.3.2 Request to Exit Button (REX)

1. Refer to Annex B for detailed wiring.
2. Mount the device at the desired location and run a 2-conductor cable from the request to exit button to controller PCB connector J8, pins 3 & 4. Connect as per Annex B.

4.2.3.3 Remote Unlock Button

1. Refer to Annex B for detailed wiring.
2. Mount the device at the desired location and run a 2-conductor cable from the remote unlock button to the controller PCB connector J8, pins 1 & 2. Connect as per Annex B.

4.2.3.4 Motion Detector

1. Refer to Annex B for detailed wiring.
2. Mount the device at the desired location and run a 4-conductor cable from the motion detector relay's terminal block to controller PCB connector J8, pins 3 & 4.
3. To power the motion detector, connect the +12V input of the motion detector to the red wire connecting the +DC OUT terminal on the power supply and the 12V input of the controller PCB (J16, pin 1), as shown in Annex B. Then, connect the GND input of the motion detector to the black wire connecting the -DC OUT terminal on the power supply and the GND input on the controller PCB (J16, pin 2). The use of wire connectors/caps is recommended to ensure reliable electrical connections.

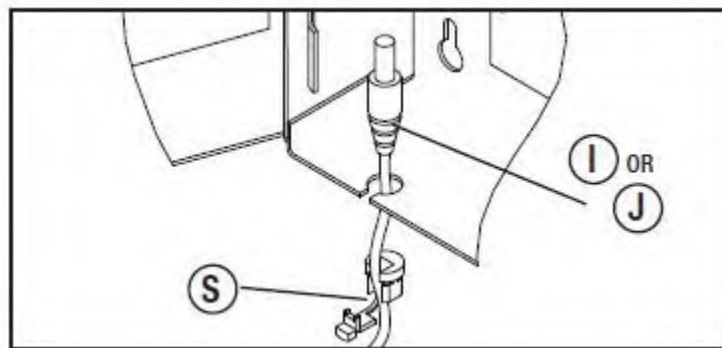
4.2.3.5 Fire Alarm Panel

1. Refer to Annex B for detailed wiring.
2. Remove the jumper wire connected between pins 3 and 4 of connector J18 on the controller PCB and complete the fire panel installation as per manufacturer's indications.

4.2.4 Install Strain Relief Bushing (For Power Adapter Only)

One strain relief bushing is provided in the hardware bag to secure the power adapter cable leading into the RAC5 Lite enclosure to help prevent the possibility of wire tampering.

Figure 9 – Enclosure

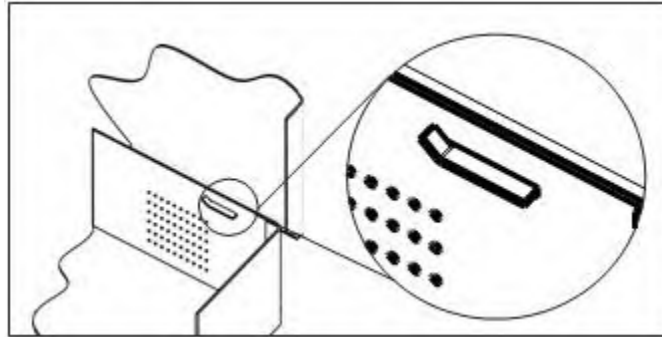


1. Remove the keyhole knock-out on from the inner side of the enclosure using a hammer and screwdriver or awl to tap out the small metal disc.
2. Determine the routing needed for the wiring of the power adapter from the AC power source to the enclosure.
3. Open the strain relief bushing and route the power adapter cable in. Leave enough cable length to plug the power adapter's connector into the power jack inside the enclosure. To obtain the desired strain relief effect, firmly close the plug of the bushing onto the flat cable.
4. Attach the strain relief bushing with cable onto the enclosure and connect the power adapter's connector to the power jack on the inside of the enclosure.
5. If using the International Power Adapter, attach the appropriate AC outlet prong to the power adapter.

4.2.5 Complete the Installation

1. If the access door was removed, reinstall the door to the RAC5 Lite enclosure.
2. **Bend the two tabs on the door to a maximum of 30 degrees as shown in Figure 10.**
3. Plug the power adapter into the AC power source and/or turn on the main AC power to the system.

Figure 10 – Door Tabs



5 Settings and Operation

5.1 Testing

1. If not already done, connect the AC power adapter and/or turn on the AC current.
2. Verify that the Heartbeat LED (D46) on the controller board (B) blinks continuously and D48 and D37 are on (if 2 readers are used).
3. Activate the Bypass Switch, SW3 on the controller board (B).
4. Verify the locking device is activated. If it is not activated, verify the Fire Alarm input is properly connected or that a jumper wire is connected between J18 pins 3 and 4.
5. De-activate the bypass switch, SW3 and SW5 on the controller board (B).
6. If a Request to Exit (REX) button is connected, press it and verify that the door unlocks. Verify the door unlocks for 5 seconds (delay is configurable) and then relocks afterwards.
7. If a Remote Unlock button is connected, press it and verify that the door unlocks for as long as the button is pressed, and then relocks when the button is released.
8. If the RAC5 Lite is connected to a Fire Panel and the electromagnetic lock powered by the 12 VDC output of the RAC5 Lite, verify that the electromagnetic lock or a fail-safe electric strike is deactivated when the Fire Alarm is active (open input).
9. The RAC5 Lite is now ready to be initialized and programmed.

5.2 Programming and Auditing

Programming of the RAC5 Lite can only be done with the M-Unit. Consult the M-Unit User Guide for more information.


5.3 Power Failure

In the event of an electrical failure, the system will recover automatically and should require no additional programming if electrical power is restored within 24 hours. However, after 24 hours, the RAC5 Lite will need the time reprogrammed using the M-Unit.

When electrical power is restored after a power failure, verify the status of the LED D46 on the controller board (B) is blinking. Refer to Annex A for Status LED definitions.

NOTE: When the power to the RAC5 Lite is lost, the controller PCB stops functioning and the on-board relay will return to its normal state. Any peripheral connected to the relay will then be either in a Normally Open (NO) or Normally Closed (NC) state, dependent on the wiring.

5.4 Loading Recommendations

 **CAUTION** Do not exceed the load limitations of the control panel.

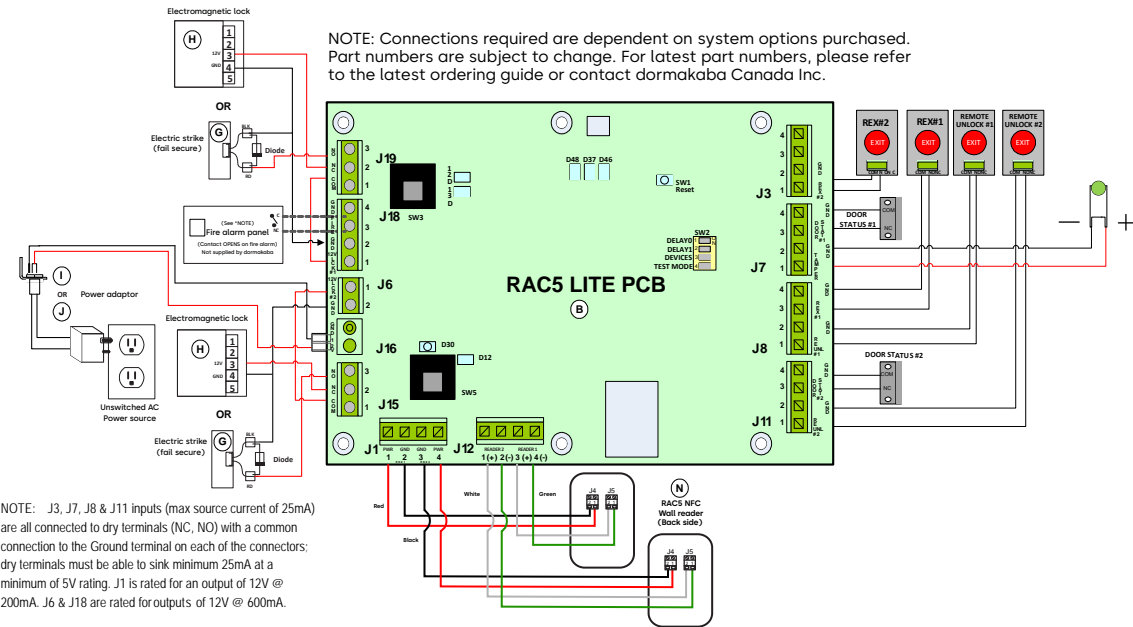
The maximum recommended load for the output relay in the RAC5 Lite system is 1 Amp at 30 VDC. The current supplies by the controller PCB for each locking device used is 600mA from connector J18, pin 1 and J6, pin 1. Refer to Annex A.

5.5 System Deactivation

In order to deactivate the card reader control panel, disconnect the AC power either by removing the power adapter from the wall outlet, or by shutting off the main breaker switch for the AC line to the wall outlet the control panel is connected to.

6 Annex A: Wiring Diagram and Tables

Figure 11 – Remote Access Controller RAC5 Lite



DIP SW2 Configuration		
Number of Devices (SW3)	OFF - One locking device	ON - Two locking devices
Test Mode (SW4)	OFF - Normal operation	ON - Test mode

Controller Board - RAC5 Peripherals Connections			
Controller Board		Peripheral	
Signal	PCB Conn.	Wire / Conn.	Description
REM UNL	J8 pin 1	-	Remote Unlock #1
GND	J8 pin 2	-	
REX	J8 pin 3	-	Request to Exit #1
GND	J8 pin 4	-	
FIRE ALM	J18 pin 3	BLACK	Fire Alarm
GND	J18 pin 4	BLACK	
12V_LOCK_DEV#1	J18 pin 1	-	Strike or Maglock Device #1
GND	J18 pin 2	-	
COM	J19 pin 1	-	
NC	J19 pin 2	-	
NO	J19 pin 3	-	Strike or Maglock Device #2
12V_LOCK_DEV#2	J6 pin 1	-	
GND	J6 pin 2	-	
COM	J15 pin 1	-	
NC	J15 pin 2	-	
NO	J15 pin 3	-	Remote Unlock #2
REM UNL 2	J11 pin 1	-	
GND	J11 Ppin 2	-	Request to Exit #2
REX	J3 pin 1	-	
GND	J3 pin 2	-	
TAMPER	J7 pin 1	RED	
GND	J7 pin 2	BLACK	DC Power

Controller board RAC5 Reader Connections			
Controller Board		Contactless Reader	
Signal	Reader Config	Wire Color	Term Block
12V Batt	J1 pin 1	RED	J4 - TB-2
GND	J1 pin 2	BLACK	J4 - TB-1
GND	J1 pin 3	BLACK	J4 - TB-1
12V Batt	J1 pin 4	RED	J4 - TB-2
RD2 Data +	J12 pin 1	WHITE	J5 - TB-3
RD2 Data -	J12 pin 2	GREEN	J5 - TB-4
RD1 Data +	J12 pin 3	WHITE	J5 - TB-3
RD 1 Data -	J12 pin 4	GREEN	J5 - TB-4
Wire connection to back of contactless card reader			
TB-1 (BLACK), TB-2 (RED, TB-3 (WHITE), TB-4 (GREEN)			

PCB Status LED	
LED	Description
D38	12V Power
D39	3.3V Power
D48	Reader #1
D37	Reader #2
D46	Heartbeat
D31	Lock #1
D21	Lock #1 Bypass
D30	Lock #2
D12	Lock #2 Bypass

7 Annex B: Peripheral Wiring Diagrams

Figure 12 – Contactless Reader Wiring

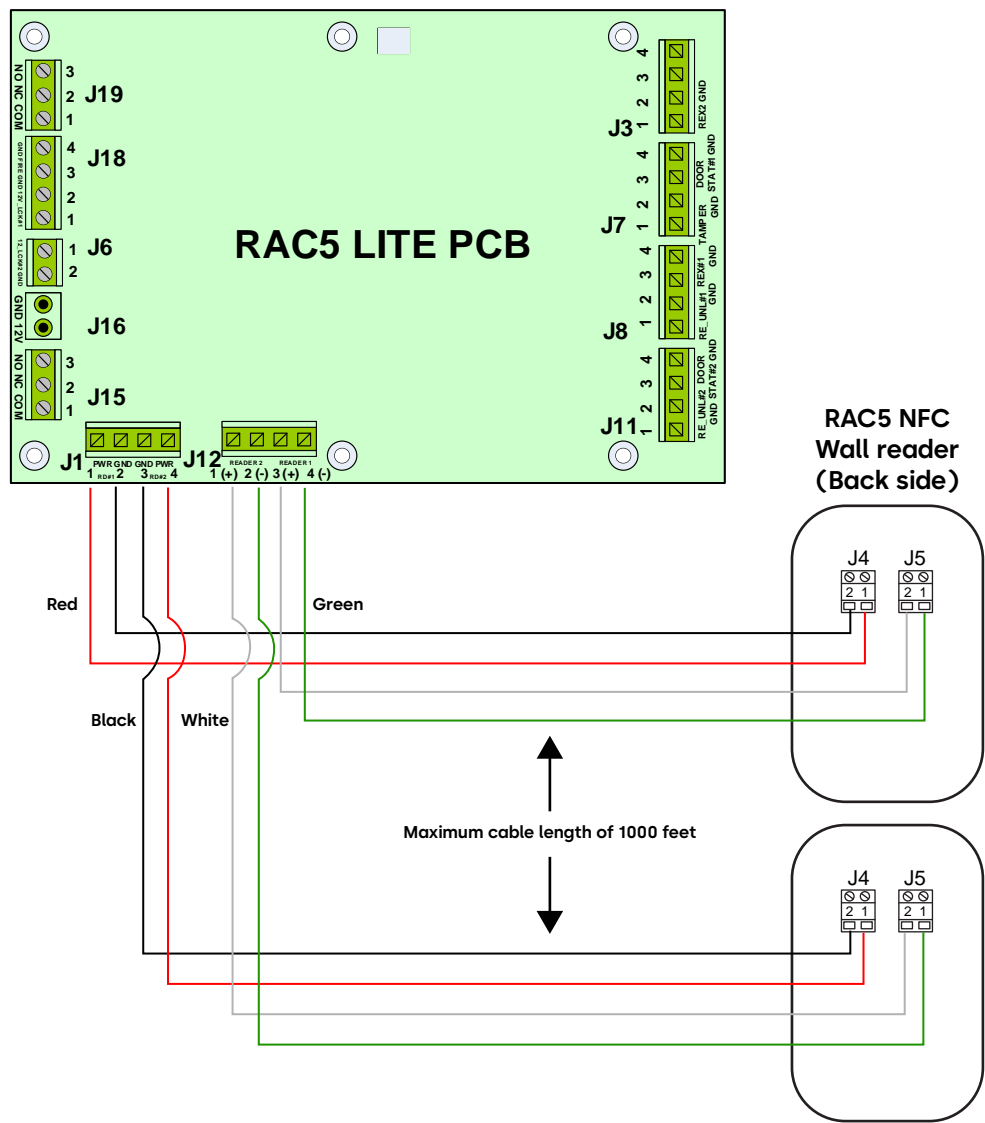


Figure 13 – Strike Wiring (Fail Secure)

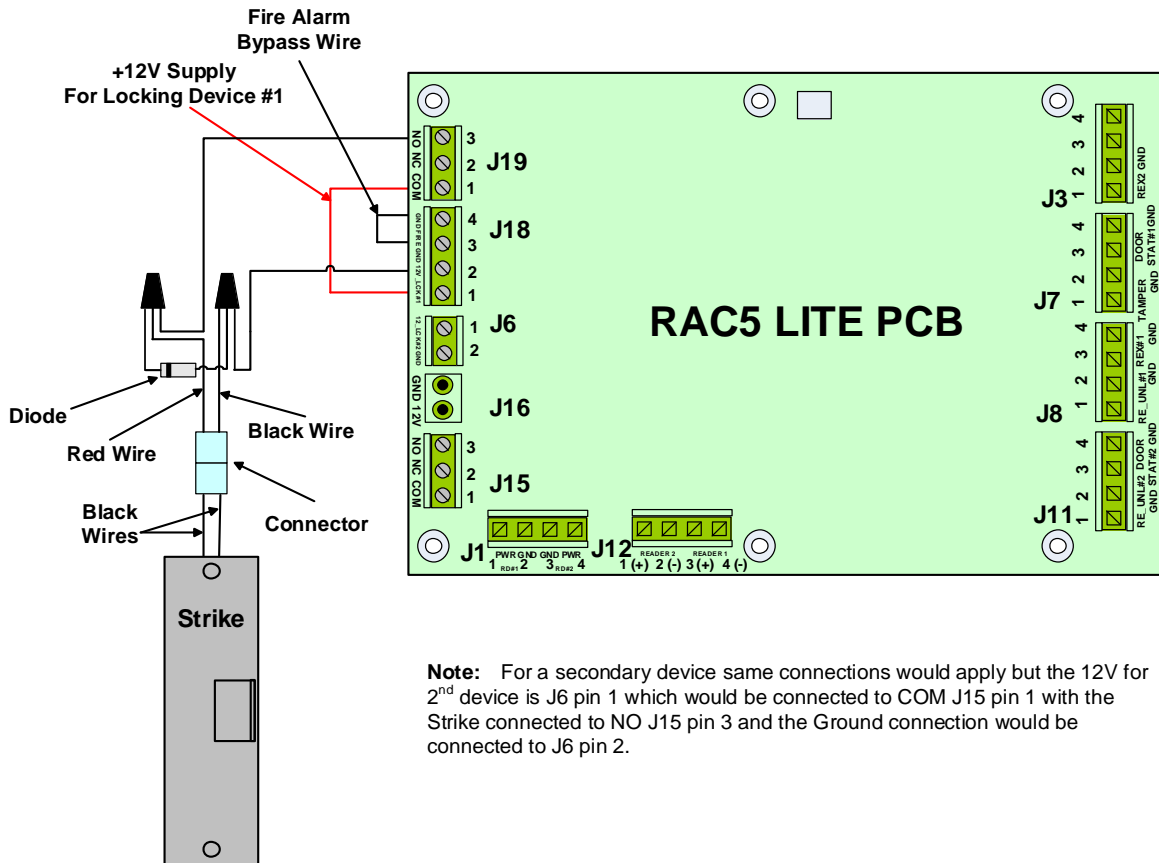


Figure 14 – Strike Wiring (Fail Safe)

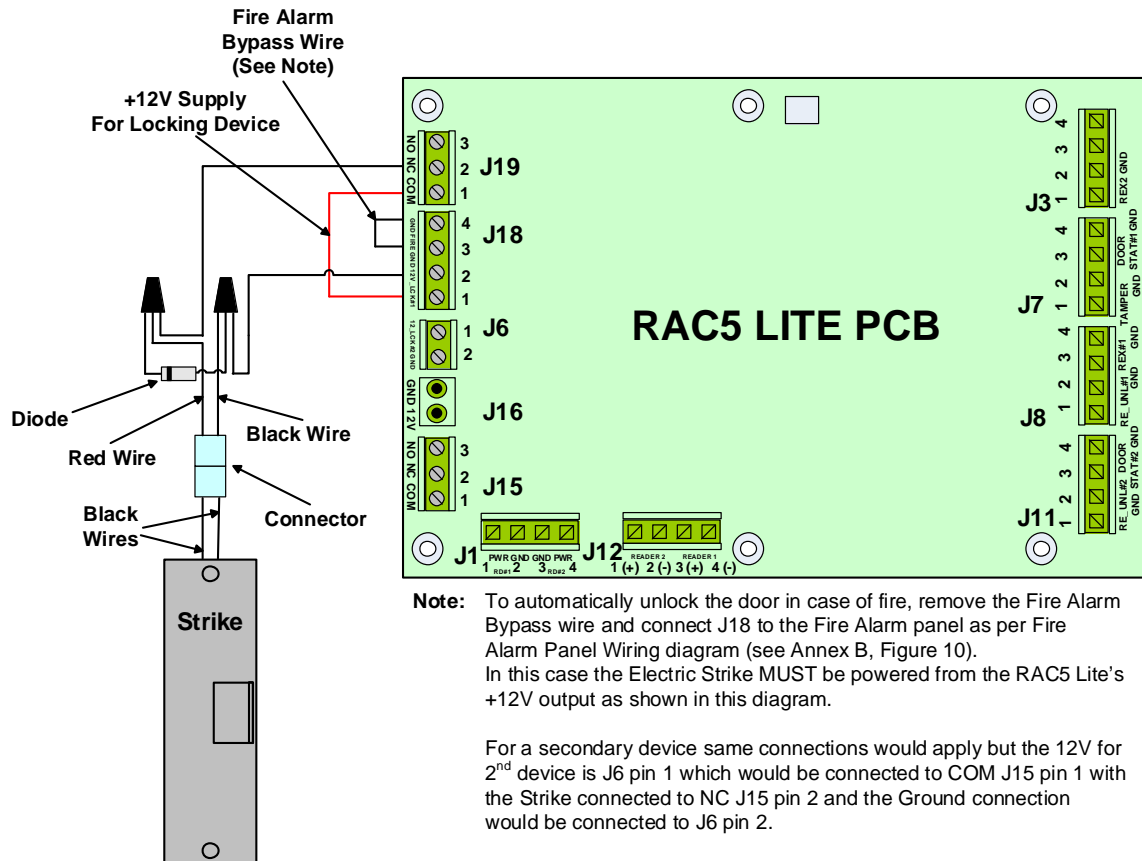
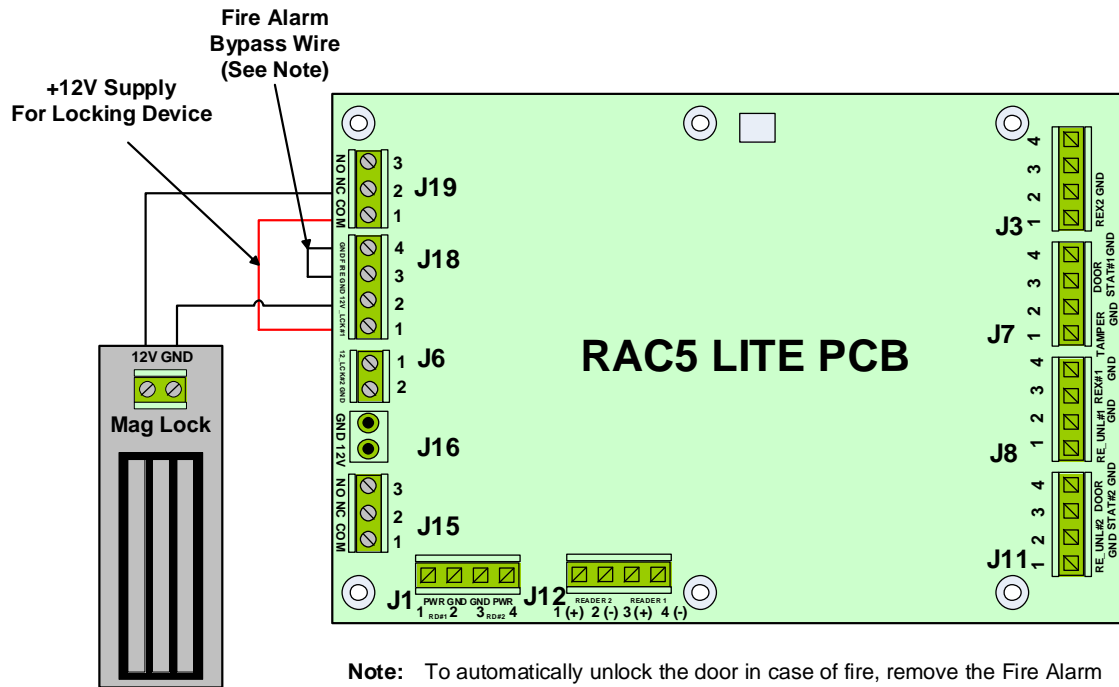


Figure 15 – Electromagnetic Lock Wiring

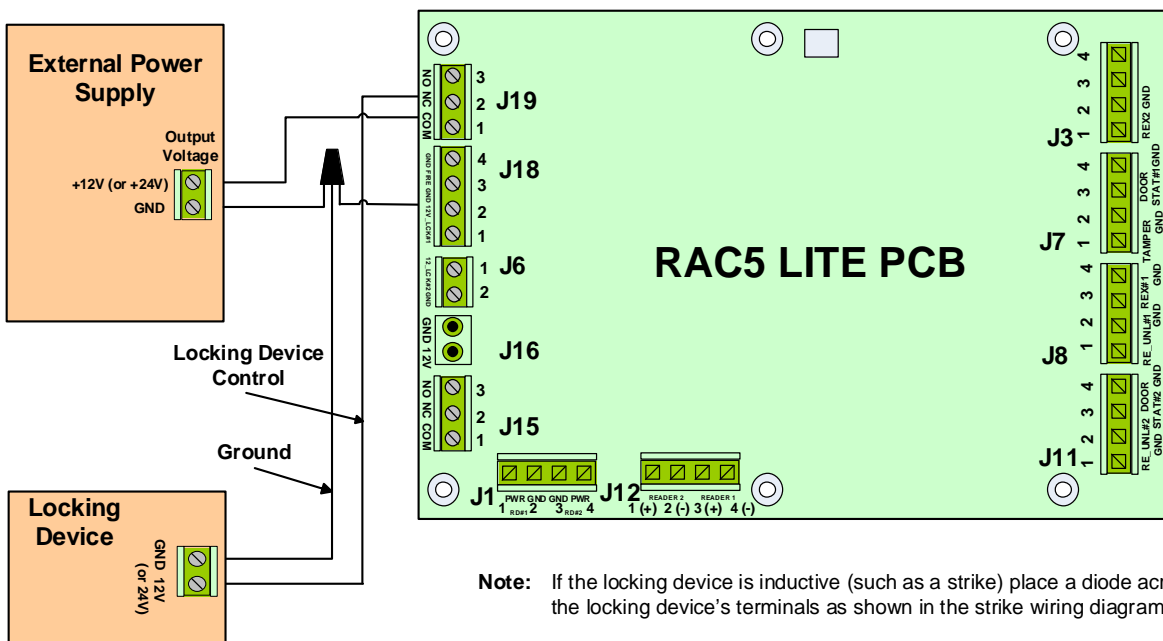


Note: To automatically unlock the door in case of fire, remove the Fire Alarm Bypass wire and connect J18 to the Fire Alarm panel as per Fire Alarm Panel Wiring diagram (see Annex B, Figure 10). In this case the Electromagnetic Lock MUST be powered from the RAC5 Lite's +12V output as shown in this diagram.

For a secondary device same connections would apply but the 12V for 2nd device is J6 pin 1 which would be connected to COM J15 pin 1 with the Mag Lock connected to NC J15 pin 2 and the Ground connection would be connected to J6 pin 2.

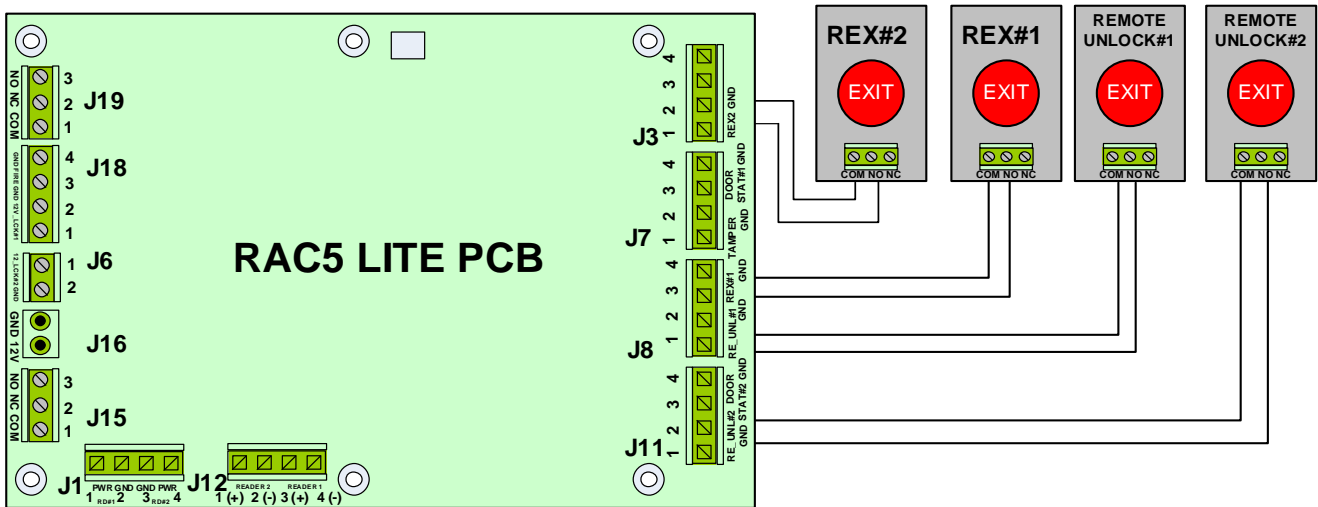
Figure 16 – Externally Powered Locking Device Wiring (+12V Only)

IMPORTANT: dormakaba does not provide Technical or Field Support on 3rd party locking devices. Please contact the device manufacturer for assistance on installation or functional issues.



Note: If the locking device is inductive (such as a strike) place a diode across the locking device's terminals as shown in the strike wiring diagrams.

Figure 17 – Request to Exit (REX) or Remote Unlock Button Wiring



The Remote Unlock 1 input (J8, pins 1 & 2) and Remote Unlock 2 input (J11, pins 1 & 2) unlocks the door only for the delay set by default, EVEN if the button stays pressed.

The REX input 1 (J8, pins 3 & 4) and REX input 2 (J3, pins 1 & 2) unlocks the door for as long as the button is pressed PLUS the delay set by the M-Unit.

The Exit Button can be connected to either the Remote Unlock or the REX input, depending on the required functionality. In both cases, the wires should be connected to the Normally Open contact of the Exit button.

In general, a Motion Detector or a manual override should be connected to the REX input (J8, pins 3 & 4) or REX input 2 (J3, pins 1 & 2).

Figure 18 – Motion Detector Wiring

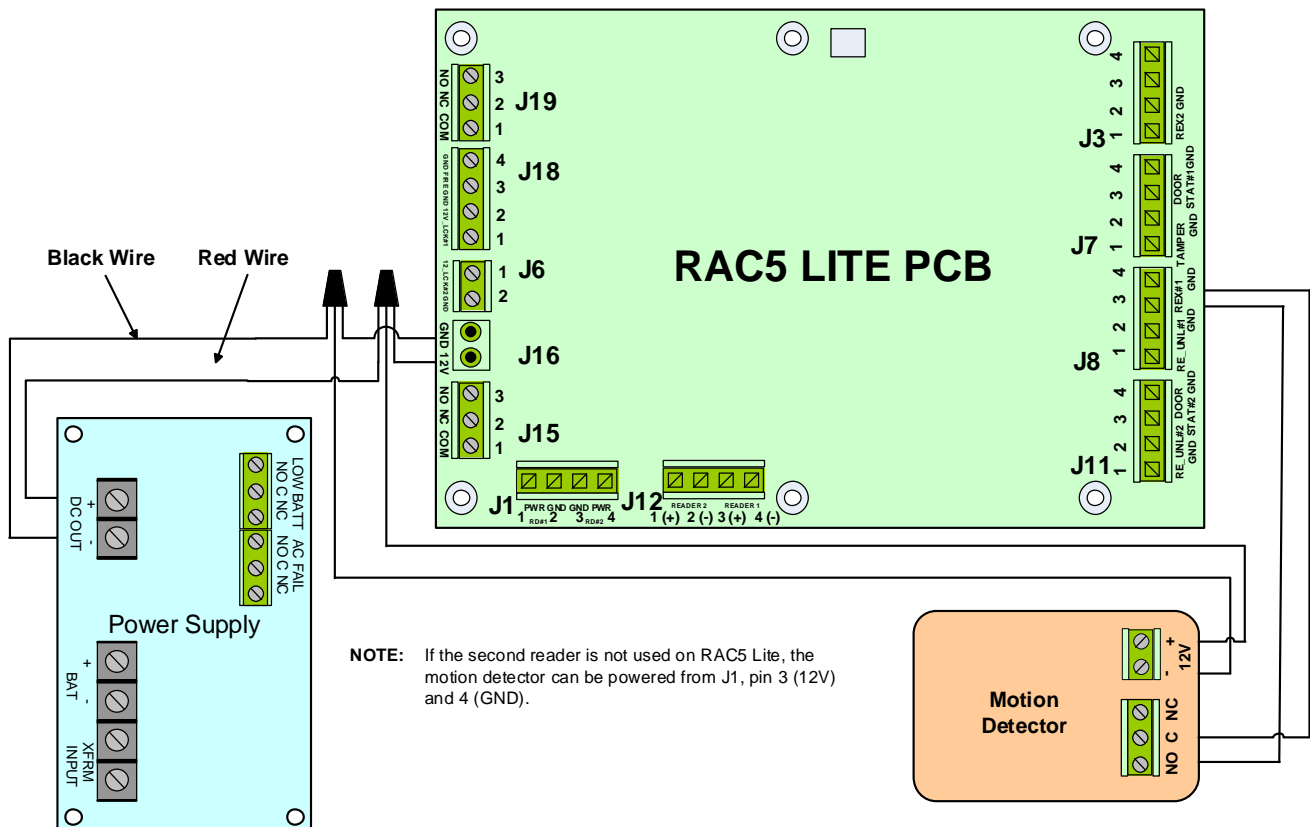
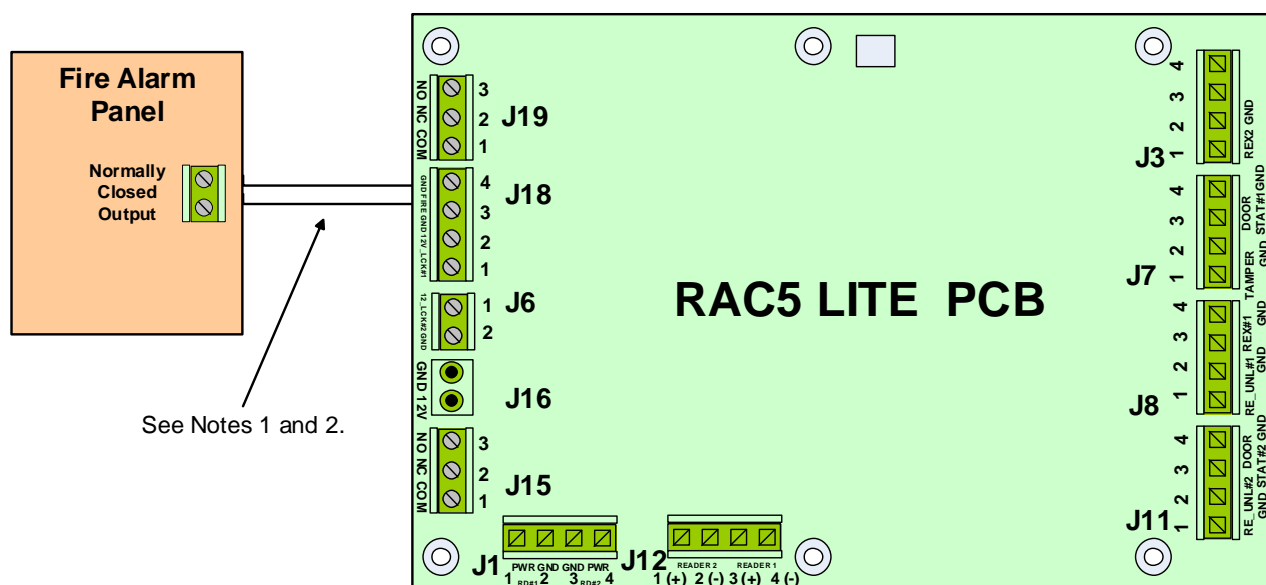


Figure 19 – Fire Alarm Panel Wiring



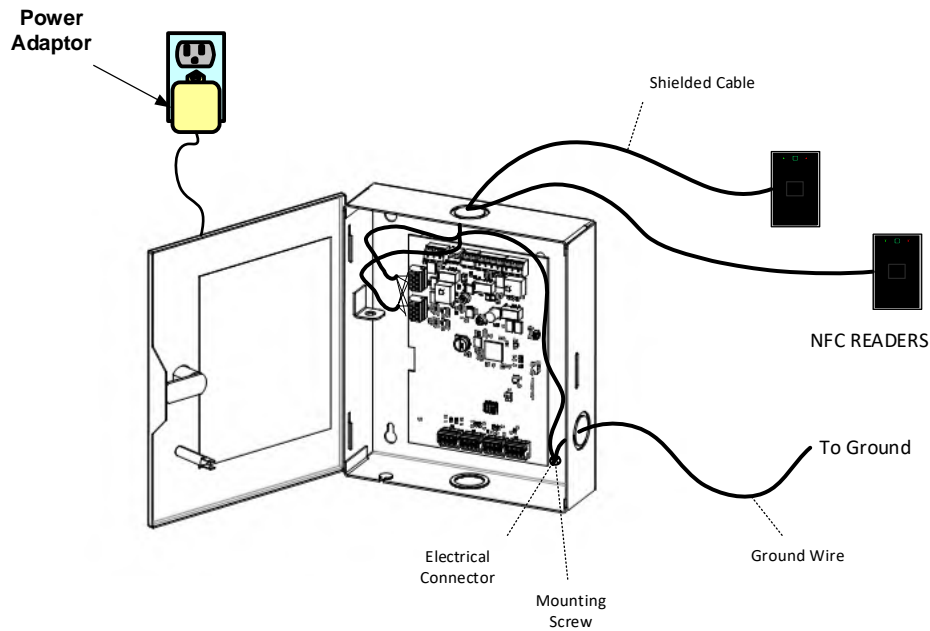
Note 1: When the RAC Lite is connected to a Fire Alarm Panel, it must be connected to a Normally Closed dry contact output.

Note 2: If the Fire Alarm Panel connection is not required, place a jumper wire between pin 3 and 4 of J18.

8 Annex C: Electromagnetic Interference

As per any other electronic equipment, the RAC5 Lite can be affected by electromagnetic interference caused by industrial electrical equipment, such as elevator motors. To prevent the unit from operational instability, such as 'freezing' or losing programming, shielded cables should be used and connections made as per the diagram below.

Figure 20 – Protection from Electromagnetic Interference



1. Use shielded cables for the reader.
2. Connect the shield wire of the reader cable to the Ground wire.
3. Connect the wires to the mounting screw of the RAC5 Lite. (Remove the paint under the mounting screw for good electrical contact).

9 Annex D: Quick Troubleshooting Guide

The following sections show basic troubleshooting for some common problems that may occur during installation. For detailed assistance, please contact Technical Support.

9.1 Power Troubleshooting

Symptom	Action
All controller board (B) LEDs are OFF	<ul style="list-style-type: none">• Verify that the RAC5 Lite controller is connected properly to the power adapter as per Annex A• Verify AC power is active for the wall mount power adapter• If qualified, with a multi-meter, verify that 12VDC is present across J16-1 and J16-2 with the power adapter connected and AC power turned on

9.2 Card Reading Troubleshooting

Symptom	Action
No feedback on reader when using a card	<ul style="list-style-type: none">• Verify that the RAC5 Lite controller is active. If not, reset the RAC5 Lite controller: Press the Reset Switch (SW1) or disconnect and reconnect the power• Check that the Reader LED (D48, D37) is steady ON. If not, verify reader wiring• Verify the card is encoded properly

9.3 External Inputs Troubleshooting

Symptom	Action
Request to Exit (REX) does not work	<ul style="list-style-type: none">• Verify that the REX LED (D33) on the RAC5 Lite controller turns on when the button is pressed. If not, verify the wiring to the Request to Exit (REX) button
Request Unlock does not work	<ul style="list-style-type: none">• Verify that the Remote Unlock LED (D36) on the RAC5 Lite controller turns on when the button is pressed. If not, verify the wiring to the Remote Unlock button

9.4 Locking Device Troubleshooting

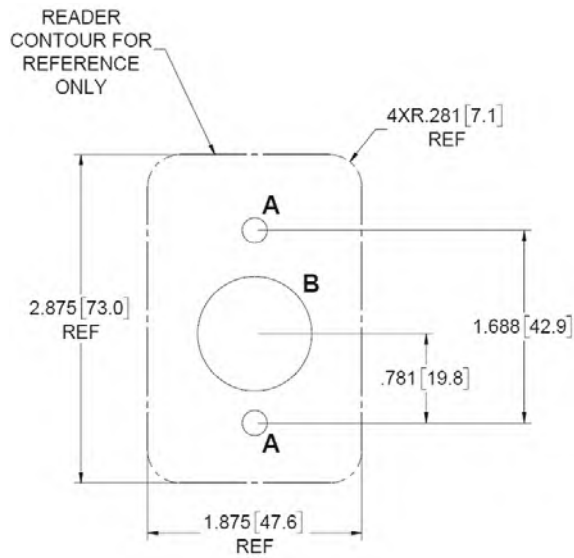
Symptom	Action
Locking Device always unlocked	<ul style="list-style-type: none"> • If the Locking Device Relay LED (D31) on the RAC5 Lite controller is ON: <ul style="list-style-type: none"> • Verify that the lock is not in Passage Mode • If the Locking Device Relay LED (D31) on the RAC5 Lite controller is OFF: <ul style="list-style-type: none"> • Verify that the Bypass Switch is not active (Bypass LED, D21 [D12 for the second device] is OFF) • Verify that the Fire Alarm input is not active (input contact closed, Fire Alarm LED, D47, is ON) • Verify the wiring to the locking device
Locking Device does not unlock	<ul style="list-style-type: none"> • If the Locking Device Relay LED (D31 [D30 for the second device]) turns ON: <ul style="list-style-type: none"> • Verify the Fire Alarm input is not active (input contact closed, Fire Alarm LED, D47, is on) • Verify the wiring to the locking device • If a diode is installed on the locking device, verify the polarity • If the locking device Relay LED (D31 [D30 for the second device]) does not turn ON: <ul style="list-style-type: none"> • Verify that Request to Exit (REX) or Remote Unlock activation unlocks the door • Verify the card is encoded properly • Verify the RAC5 Lite is not in Lockout Mode • Verify the RAC5 Lite is programmed properly
Fire Alarm does not Unlock door	<ul style="list-style-type: none"> • Verify the Fire Alarm input is connected to a Normally Closed (NC) contact • Verify the Fire Alarm LED (D47) is normally on and turns off when the Fire Alarm is present • Verify the 12V_Lock (Dev#1 or Dev#2) output of the RAC5 Lite controller is connected to the COMMON of the respective locking device relay
RAC5 Lite Controller PCB resets when relay is activated	<ul style="list-style-type: none"> • Verify that there is no short-circuit on the locking device wiring • If a diode is installed on the locking device, verify the polarity

9.5 Programming and Auditing Troubleshooting

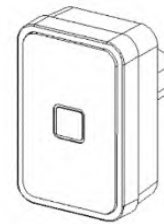
Symptom	Action
Cannot program or audit the RAC5 Lite	<ul style="list-style-type: none"> • Verify the RAC5 Lite controller is active: The Heartbeat (D46) should be blinking and Reader LED (D48, D37) LEDs should be ON. If not, reset the RAC5 Lite controller: Press the Reset Switch (SW1) or disconnect and reconnect the power

12 Annex I: Reader Drilling Templates

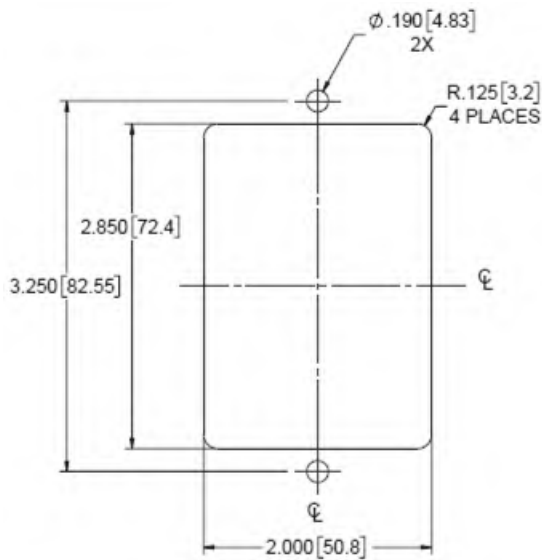
Reader Drilling Templates (not to scale)



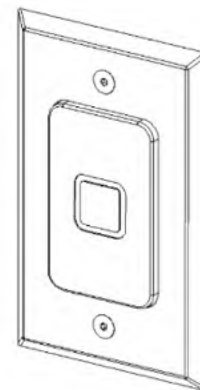
SURFACE MOUNT PREP



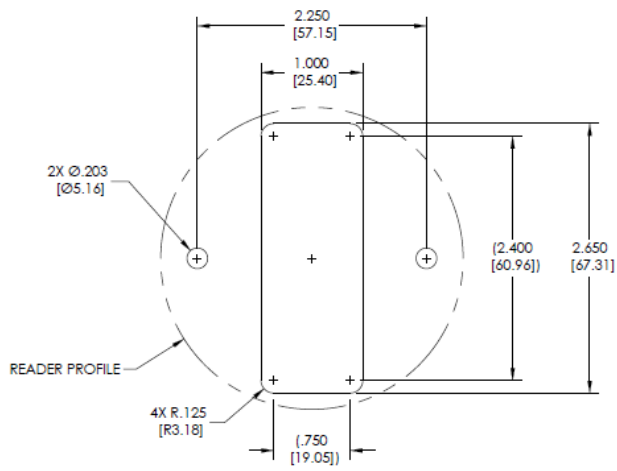
SURFACE MOUNT READER



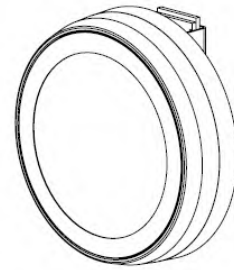
FLUSH MOUNT PREP



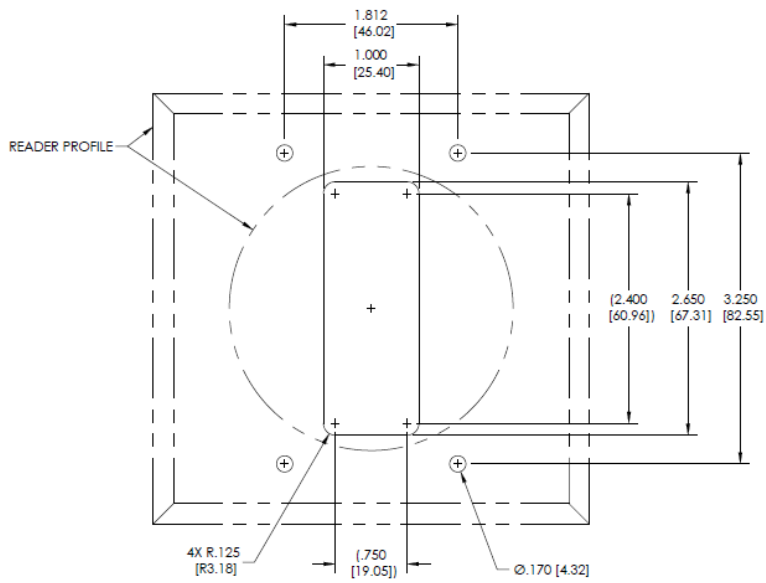
FLUSH MOUNT READER WITH TRIM PLATE



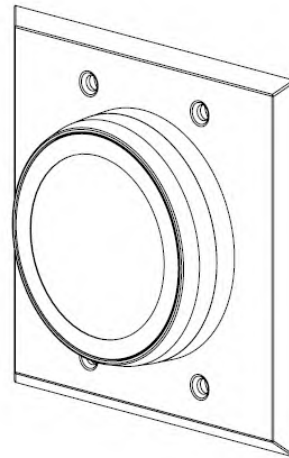
ROUND READER FOR DIRECT PANEL MOUNT PREP



ROUND READER WITH TRIM PLATE REMOVED



ROUND READER WITH TRIM PLATE PREP



ROUND READER WITH TRIM PLATE

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dormakaba.com

Online consumable orders
dormakabalodgingstore.com

Technical support
lodgingsupport@dormakaba.com
www.dormakabalodgingsupport.com

dormakaba USA inc.
6161 E 75th Street
Indianapolis, IN 46250

T: 1 800 999 6213
dormakaba.us