CM-241/CM-242
ValueWave+™ Touchless Exit Switch
INSTALLATION INSTRUCTIONS

THIS PACKAGE INCLUDES:

1 - CM-241 ValueWave+™ Switch (or CM-242)
2 - 6-32 x 1/2" Oval PH SS Screws
2 - 6-32 x 1/2" Snake Eye FH Screws
7 - Wire Nuts
1 - Tamperproof Key
1 - Faceplate Gasket

1. GENERAL DESCRIPTION

CM-241/CM-242 ValueWave+™ Touchless Exit Switches are microwave sensor switches designed for automatic door and access control applications.

CM-241/CM-242 ValueWave+™ Touchless Exit Switches respond to motion quickly and maintain reliable performance in harsh environmental conditions with smoke, dust, varying light, and temperature changes.

CM-241/CM-242 ValueWave+™ Touchless Exit Switches are supplied with a stainless steel faceplate, in single gang or double gang configurations.

Features:

- **CM-241** with built-in Red and Green Indication
  Factory default = Red (Standby), Green (Triggered)
- **CM-242** with built-in Blue and Green LED indication
  Factory default = Blue (Standby), Green (Triggered)
- Versatile bi-color LED Red/Blue and Green LEDs can be controlled by sensors or remote external control
- All-Weather, All-Climate Reliability with IP65 rating
- Sunlight and Reflection Resistant Detection
  Microwave sensing technology minimizes false activations caused by reflective surface and ambient sunlight, delivering reliable and accurate operation in challenging environment
- Adjustable detecting distance: 4 to 16 inches (10cm to 40cm)
- Adjustable active state hold time delay: 2, 5, 10, 20 seconds
- Toggle function selection available

2. SPECIFICATIONS

Voltage	12 - 24 VDC
Current Draw	Standby: < 150mA Active : < 150mA
Contact Rating	1 A @ 30 VDC
Contacts	Common / N.O. / N. C.
Temperature Range	-4ºF to 140ºF (-20ºC to +60ºC)
Time Delay	2/5/10/20s (Pulse Mode) Pulse and Toggle
Detecting Distance	Range: 4/8/12/16" (10/20/30/40cm)
IP Rating	IP65
Dimensions	Single Gang: 4-1/2" H x 2-3/4" W x 11/16" D (114.3mm x 69.9mm x 17.5mm) Double Gang: 4-1/2" H x 4-1/2" W x 11/16" D (114.3mm x 114.3mm x 17.5mm)

Attention:
Do Not use AC Voltage for this unit. The CM-241/CM-242 is a VDC device only and will accept a range of VDC power from 12VDC to 24VDC (+/- 10%). Please see Section 4.2 for power requirements.

3. OPERATION AT A GLANCE

In a typical application, as you approach the CM-241/CM-242, the LED will turn red/blue. When you wave your hand in front, the LED will turn to green, and triggers to change state and unlock your door, or trigger the door operator to open the door.

The toggle feature can be used to trigger the door to remain in the unlocked position, until you wave your hand a second time to relock it.

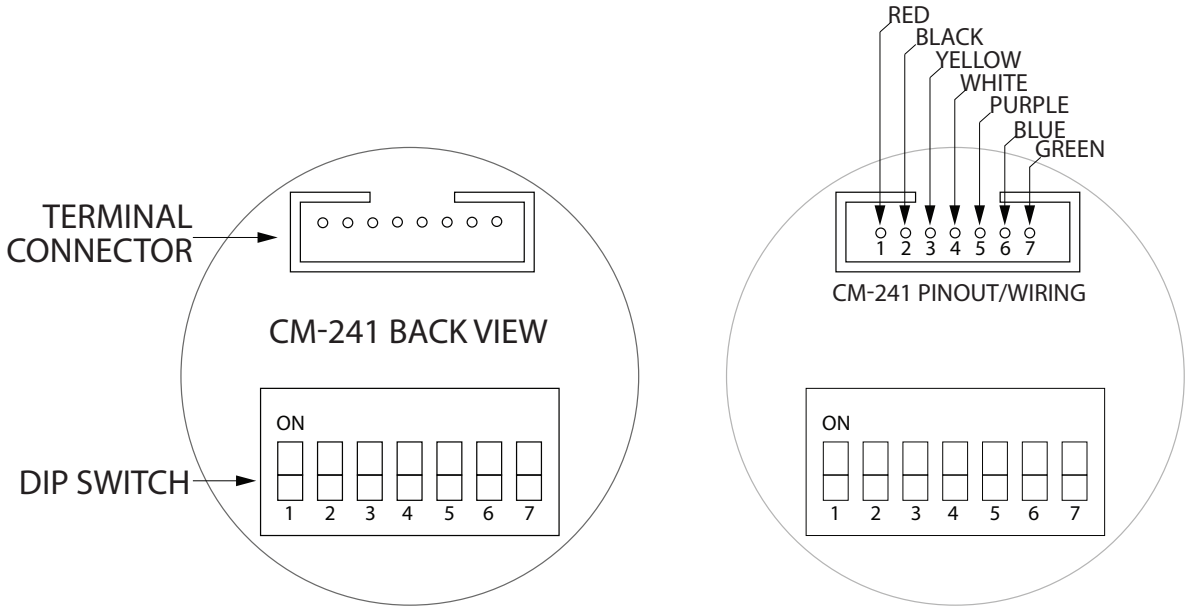
4. INSTALLATION

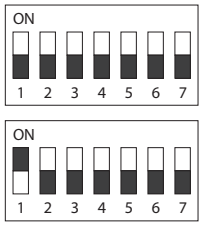
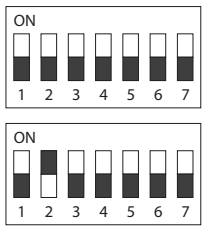
4.1 CONFIGURING THE DIP SWITCH SETTINGS

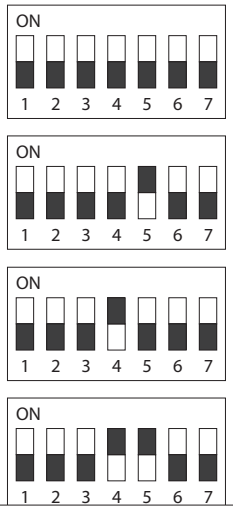
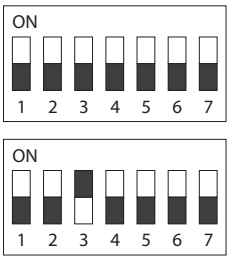
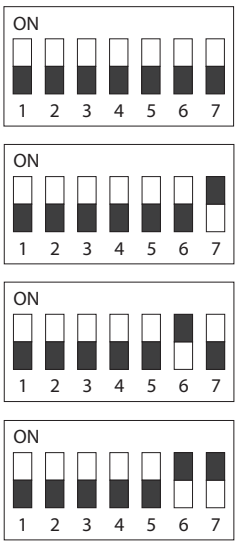
Located at the back of the CM-241/CM-242 are DIP Switches (S1 - S7) to configure its funtional settings.

DIP Switch	Function
S1	Internal/External LED Control
S2	Timer Delay/Toggle for Relay Function
S3	LED Standby/Active Color Configuration Red/Blue (standby)/Green (active) or Red/Blue (active)/Green (standby)
S4/S5	Delay Time Selecting to Hold Active State (2s, 5s, 10s, 20s)
S6/S7	Detecting Distance Selection (4”/10cm, 8”/20cm, 12”/30cm, 16”/40cm)

CM-241(CM-242) Wiring Information		
#	Color	Function
1	Red	12 to 24V DC
2	Black	0 VDC (Ground)
3	Yellow	Green LED controlled by External Mode
4	White	Red/Blue LED, controlled by External Mode
5	Purple	Relay: Normally Closed
6	Blue	Relay: Common
7	Green	Relay: Normally Open



Mode	DIP Switch Settings	Function
Internal/External Selecting: (LED Control) • **Internal Mode: S1 OFF** (Factory Default) • **External Mode: S1 ON**		DIP Switch S1 will configure how the LED is controlled: • Set DIP Switch S1 OFF (default) if the LED will be controlled internally. • Set DIP Switch S1 ON if the LED will be controlled from an external device.
Timer Delay/Toggle: • **Timer Delay: S2 OFF** (Factory Default) • **Toggle ON/OFF: S2 ON**		DIP Switch S2 will configure if active state will be held for a set time or configured to toggle On or Off: • Set DIP Switch S2 OFF (default) to hold the active state and configure DIP Switches S4 and S5 to select the corresponding Hold Time Delay. • Set DIP Switch S2 ON to toggle ON or OFF the active state.

Mode	DIP Switch Settings	Function
Delay Time Selection (S2 must be OFF)		DIP Switch S4 and S5 will configure how long the Active State will hold if S2 is OFF: • S4 (OFF) / S5 (OFF) = 2 seconds delay • S4 (OFF) / S5 (ON) = 5 seconds delay • S4 (ON) / S5 (OFF) = 10 seconds delay • S4 (ON) / S5 (ON) = 20 seconds delay
LED Standby/Active Color		DIP Switch S3 will configure the LED Color that turns On when the CM-241/CM-242 is on Standby and when Active: • Set DIP Switch S3 OFF (default) to trigger the RED LED for Standby and the GREEN LED for Active. • Set DIP Switch S3 ON to trigger the RED LED for Active and GREEN LED for Standby.
Detecting Distance Selection		DIP Switch S6 and S7 will configure how far away the CM-241/CM-242 can reliably detect motion: • S6 (OFF) / S7 (OFF) = 4″ (10cm) • S6 (OFF) / S7 (ON) = 8″ (20cm) • S6 (ON) / S7 (OFF) = 12″ (30cm) • S6 (ON) / S7 (ON) = 16″ (40cm)

4.2 POWER

The CM-241/CM-242 is a VDC device only and will accept a range of VDC power from 12VDC to 24VDC (+/- 10%). Do not connect AC voltage to the CM-241/CM-242 at any time.

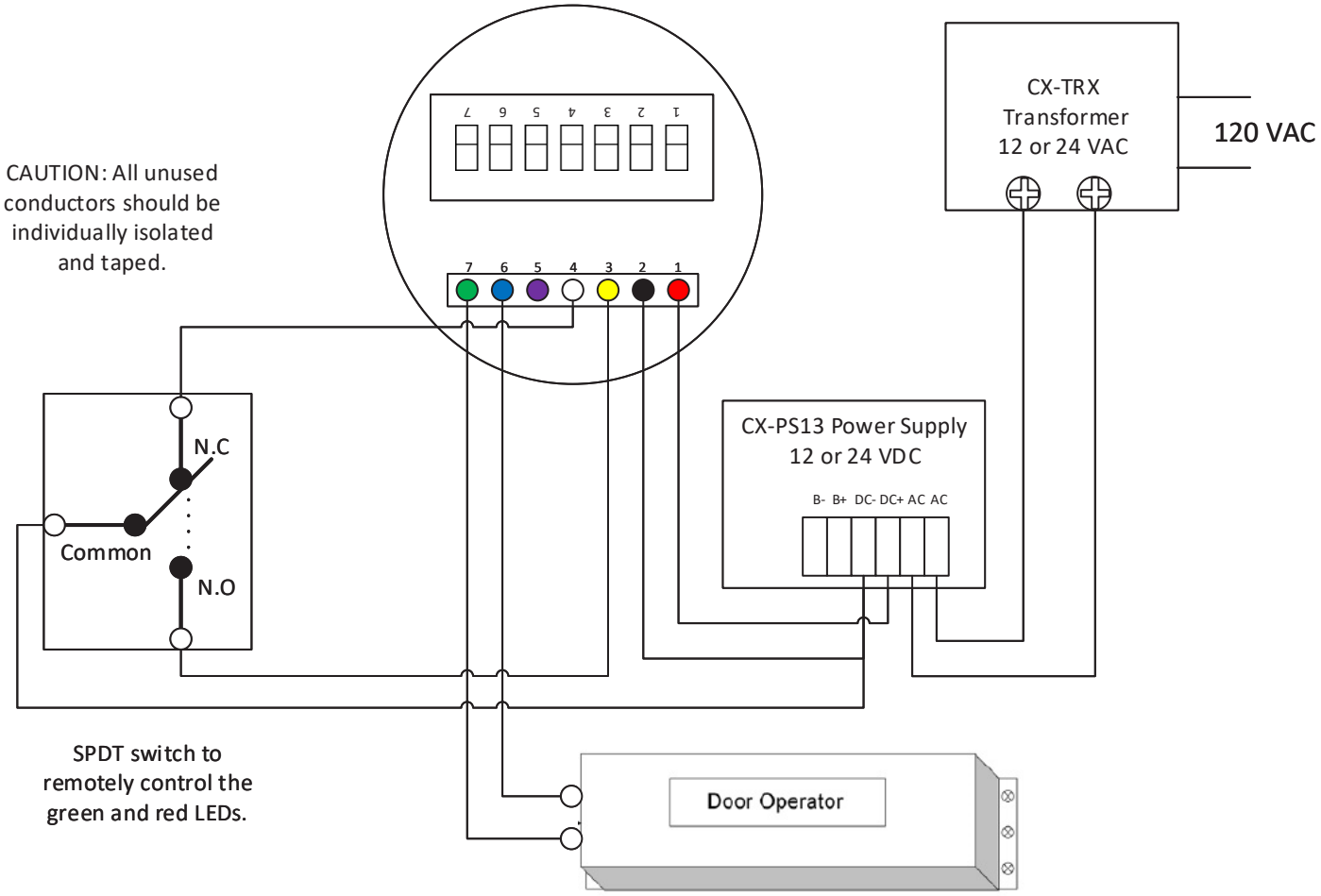
Note: A linear output VDC power supply is strongly recommended. If using power from other than Camden's CX-PS13 filtered regulated power supply, you must measure the provided power before applying power to the CM-241/CM-242. Voltages of more than 10% over the specified acceptable range or using a power supply with large amounts of AC voltage on it (unfiltered unregulated power such as a transformer and a rectifier) may damage the CM-241/CM-242 and void the warranty.

4.3 WIRING

A. Connection to a Door Operator

- Connect the two trigger wires from the door operator to the blue and green wires on the CM-241/CM-242.
- Connect the black wire of the CM-241/CM-242 sensor to the ground (-) of VDC power supply.
- Connect the red wire of the CM-241/CM-242 sensor to the positive (+) of the VDC power supply.
- Adjust to your needed range and output duration, using the DIP Switches located on the back of the CM-241/CM-242.

CM-241/CM-242
Touchless Switch wired to door operator.
(Remote LED control)

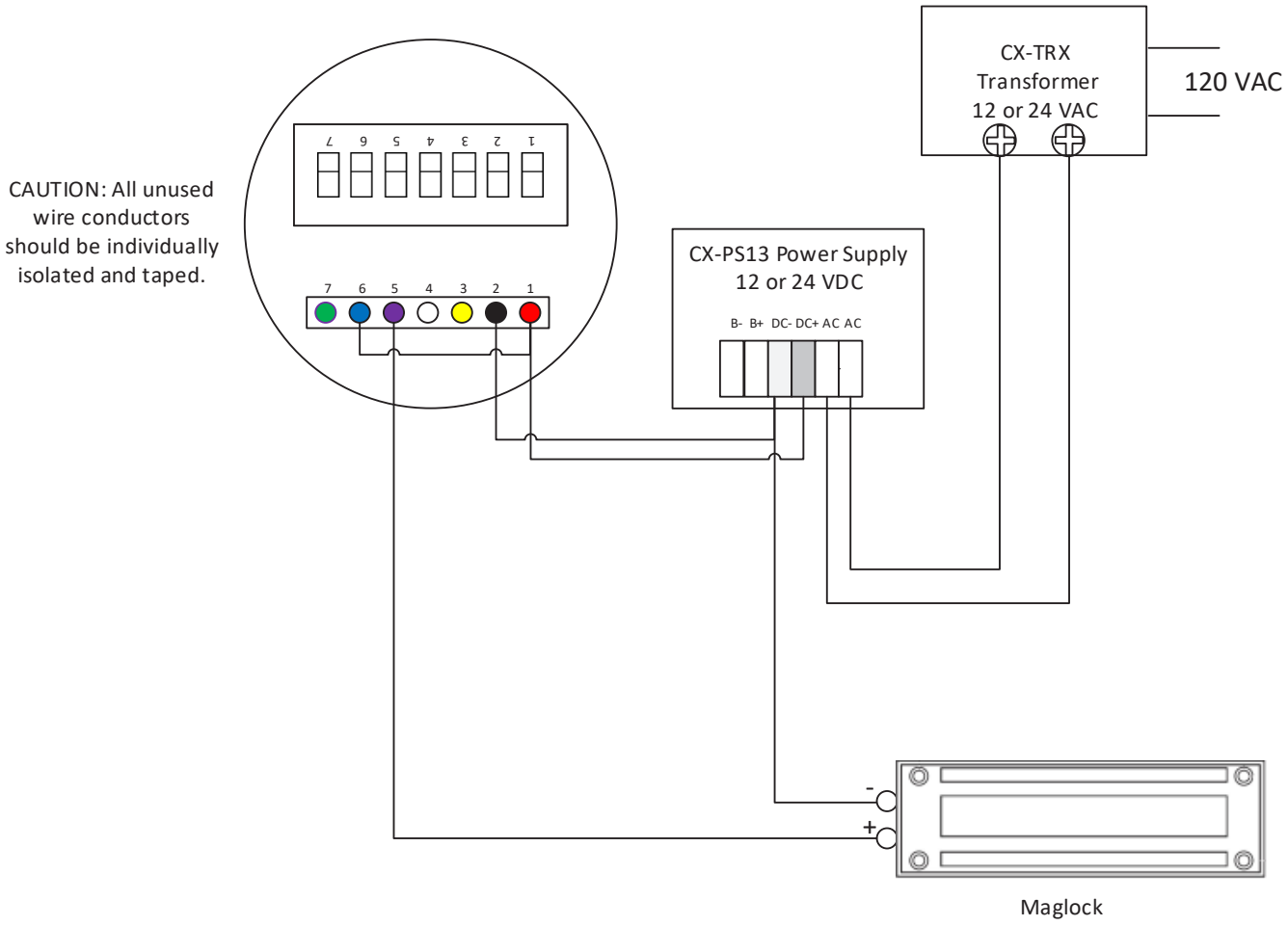


#	Color	Function
1	Red	12 to 24 VDC
2	Black	0 VDC (Ground)
3	Yellow	Green LED controlled by external mode.
4	White	Red/Blue LED, controlled by external mode.
5	Purple	Relay: Normally Closed
6	Blue	Relay: Common
7	Green	Relay: Normally Open

B. Connection to a Maglock

- Connect the ground (-) of the maglock to the ground (-) of VDC power supply.
- Connect the positive (+) of the maglock to the purple wire of the CM-241/CM-242.
- Connect the blue wire to the to the positive (+) of the VDC power supply.
- Connect the black wire of the CM-241/CM-242 to the ground (-) of VDC power supply.
- Connect the red wire of the CM-241/CM-242 to the positive (+) of the VDC power supply.
- Adjust to your needed range and output duration using the DIP Switches located on the back of the CM-241/CM-242.

CM-241/CM-242
Touchless Switch wired to Maglock

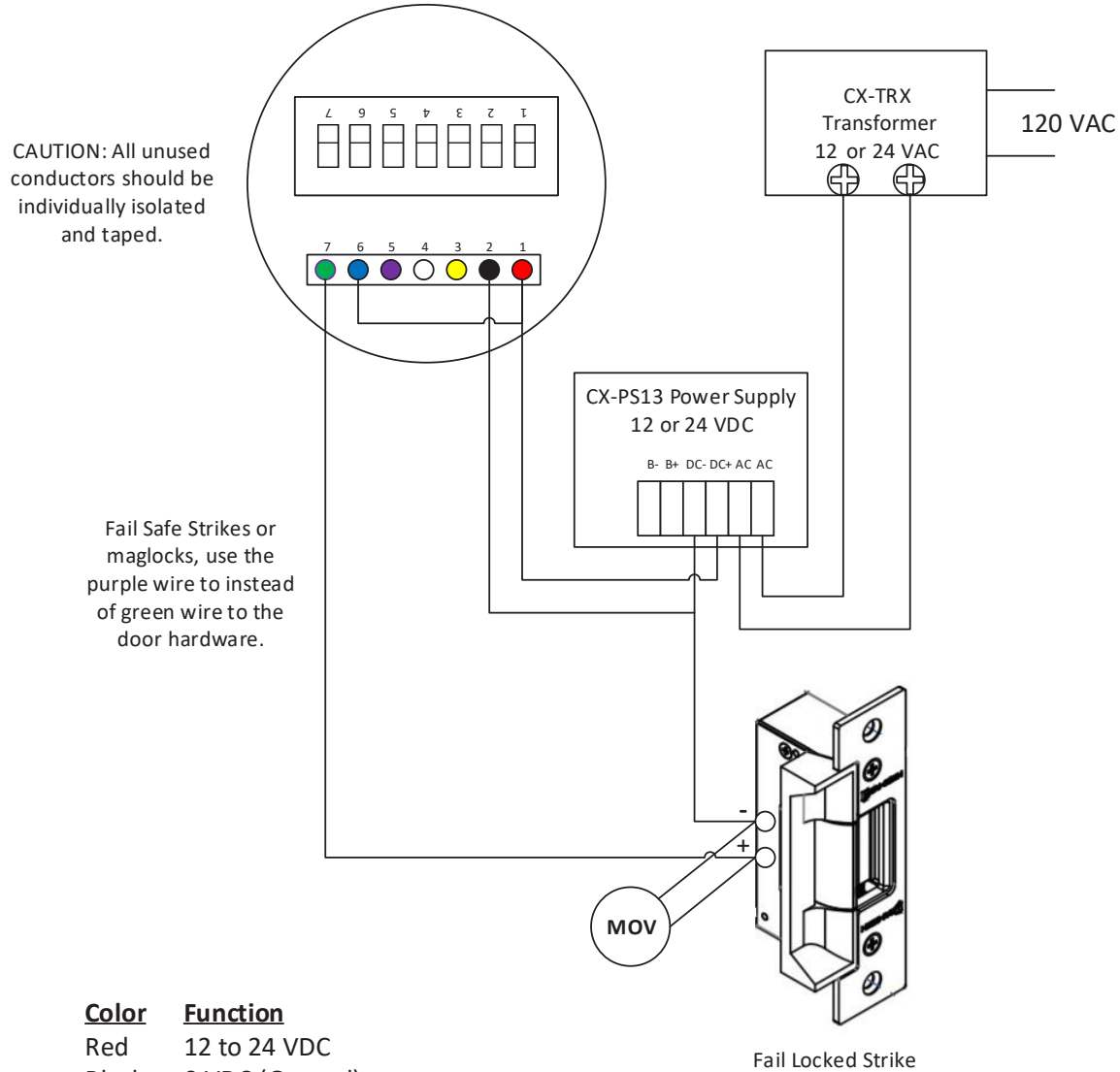


#	Color	Function
1	Red	12 to 24 VDC
2	Black	0 VDC (Ground)
3	Yellow	Green LED controlled by external mode.
4	White	Red/Blue LED, controlled by external mode.
5	Purple	Relay: Normally Closed
6	Blue	Relay: Common
7	Green	Relay: Normally Open

C. Connection to an External Strike

- Connect the ground (-) of the strike to the ground (-) of VDC power supply.
- Connect the positive (+) of the strike to the green wire of the CM-241/CM-242.
- Connect the blue wire to the to the positive (+) of the VDC power supply.
- Connect the black wire of the CM-241/CM-242 to the ground (-) of VDC power supply.
- Connect the red wire of the CM-241/CM-242 to the positive (+) of the VDC power supply.
- Adjust to your needed range and output duration, using the DIP Switches located on the back of the CM-241/CM-242.

CM-241/CM-242
Touchless Switch wired to door strike



#	Color	Function
1	Red	12 to 24 VDC
2	Black	0 VDC (Ground)
3	Yellow	Green LED controlled by external mode.
4	White	Red/Blue LED, controlled by external mode.
5	Purple	Relay: Normally Closed
6	Blue	Relay: Common
7	Green	Relay: Normally Open

D. Connection to any Device using External LED Control

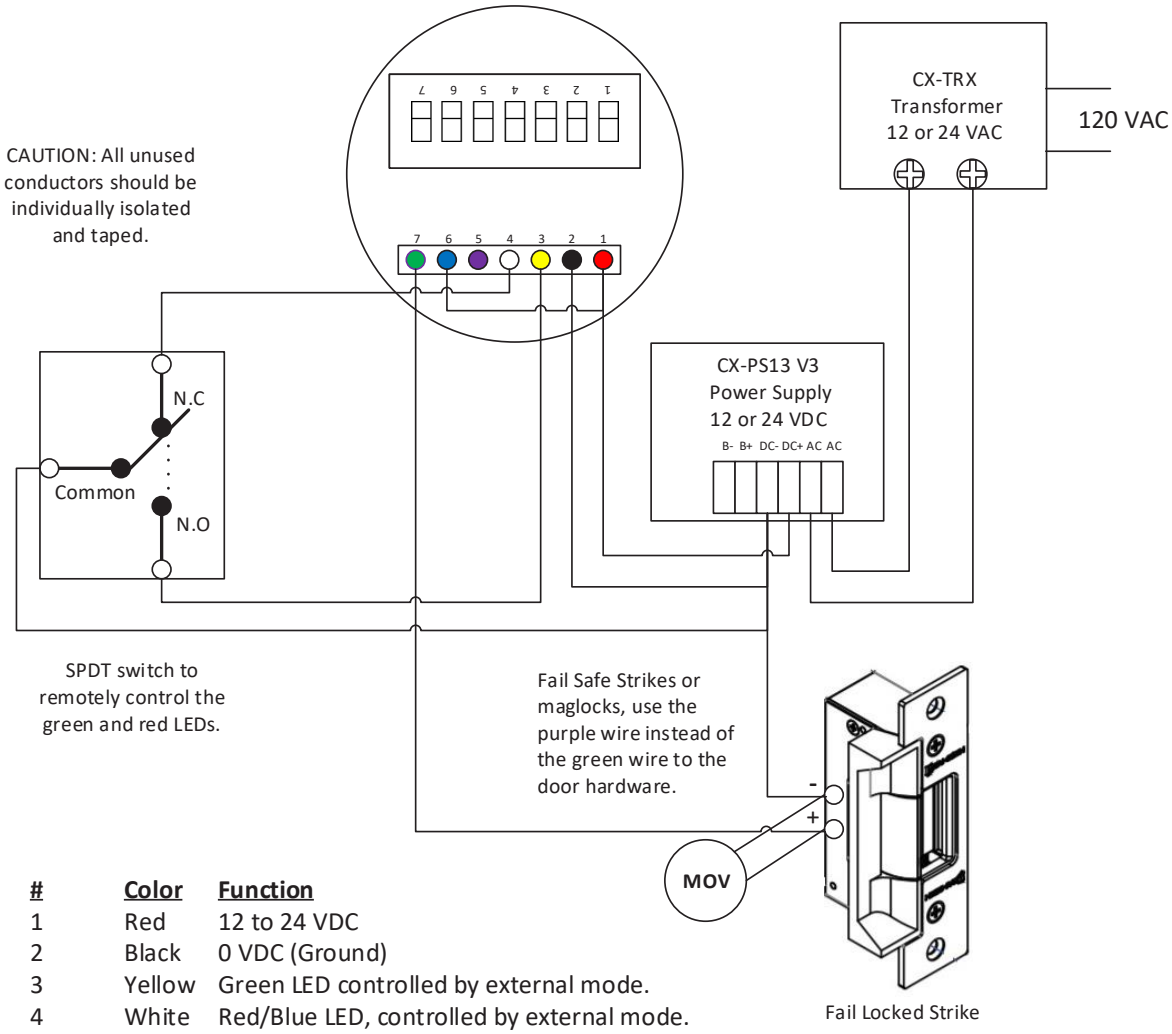
After using one of the typical wiring layouts as described for any normally open or closed device you can now set up the remote LED triggering of the CM-241/CM-242.

The red/blue and green LED control wires will be wired through a SPDT (single pole double throw) contact.

- First, determine which color will be On and which color it will be switched to when remotely triggered.
- If you would like red/blue to be On as the default, then connect the white wire from the CM-241/CM-242 to the normally closed pole of the remote contact doing the switching.
- Then, connect the yellow wire to the normally open pole of the SPDT contact.
- Next, connect the common pole of the SPDT contact to the VDC (-) ground of the VDC power supply being used.

When the remote triggering system changes its contact, it will disconnect the white wire from the VDC ground and turn it off. At the same time, it will switch the yellow wire to ground turning on the green LED. If the opposite colors need to be switched then simply reverse the white and yellow wires on the contact.

CM-241/CM-242
Touchless Switch wired to door strike.
(Remote LED control)



#	Color	Function
1	Red	12 to 24 VDC
2	Black	0 VDC (Ground)
3	Yellow	Green LED controlled by external mode.
4	White	Red/Blue LED, controlled by external mode.
5	Purple	Relay: Normally Closed
6	Blue	Relay: Common
7	Green	Relay: Normally Open

4.4 Testing & Operation

You can pre-test the basic operation of the CM-241/CM-242 as per your configuration:

1. Connect and turn-on DC power (12VDC to 24VDC only).
2. Wave your hand across the Switch within the distance range and radius that was set.

   Configured for Time Delay:
   - The Switch is triggered within the distance range and radius that was set.
   - If set to default, the LED color will be red on standby and turns to green when a change of state is triggered by your hand wave to unlock or open the door.
   - The active state will hold for the period of time selected, if the Time Delay and Time Selection modes were set.

   Configured for Toggle:
   - If set to Toggle On/Off, your hand wave will trigger the door to remain unlocked until you wave the second time to lock.

4.5 Mounting

ValueWave+™ may be mounted on door jambs, single or double gang electrical boxes.

Note: The sealing gasket (included) is recommended for outdoor or wet locations. If using with automatic doors install in accordance with ANSI A156.10 / A156.19. Select from one of the following mounting subsections:

Single Gang Electrical Box Installation: (Figure 4.5.2)

1. Ensure that the in-wall electrical box is plumb, square and flush with the wall surface (See Figure 4.5.1)
2. Bring DC power and door operator wires through the back or side of the electrical box and leave approximately 6" tail for wiring connection.
3. Make the electrical connections to the device according to the wiring configuration in Section 4.3 Wiring.
4. Set DIP Switches to assign the operating modes. (See Section 4.1 Configuring the DIP Switch Settings)
5. Attach and secure the unit with the two #6-32 screws provided.
6. Apply power and test the unit.

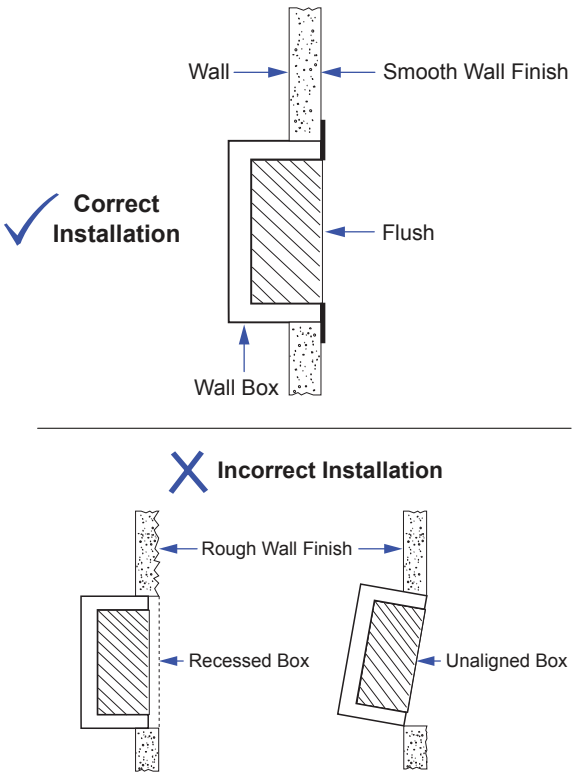


Figure 4.5.1 Proper Electrical Box Installation

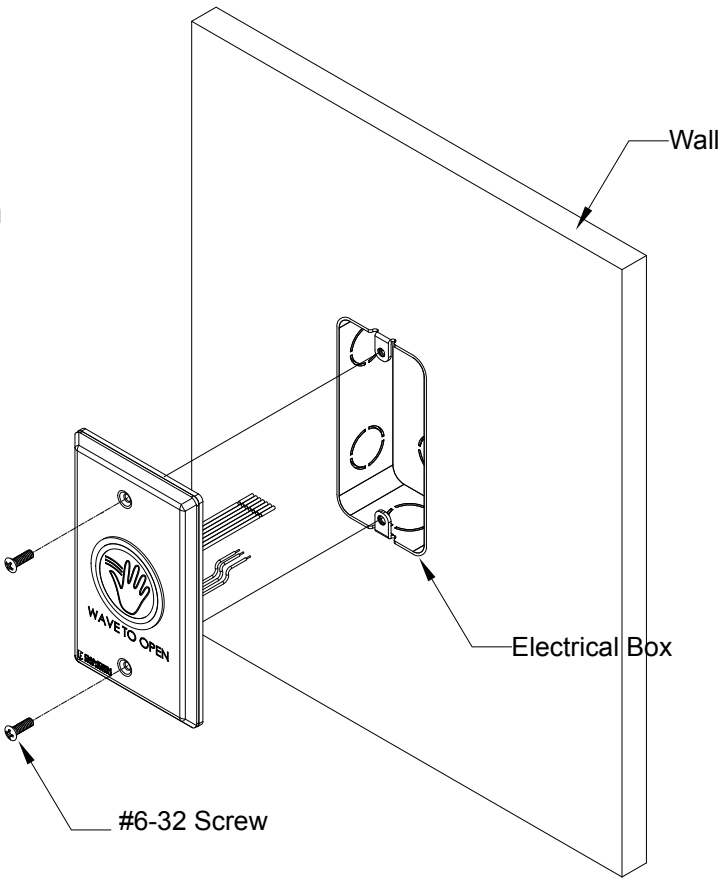


Figure 4.5.2 Single Gang Installation

Double Gang Electrical Box Installation: (Figure 4.5.3)

1. Ensure that the in-wall electrical box is plumb, square and lush with the wall surface (See Figure 4.5.1)
2. Bring DC power and door operator wires through the back or side of the electrical box and leave approximately 6" tail for wiring connection.
3. Make the electrical connections to the device according to the wiring configuration in Section 4.3 Wiring.
4. Set the DIP Switches to assign the operating modes. (See Section 4.1 Configuring the DIP Switch Settings)
5. Attach and secure the unit with the two #6-32 screws provided.
6. Apply power and test the unit.

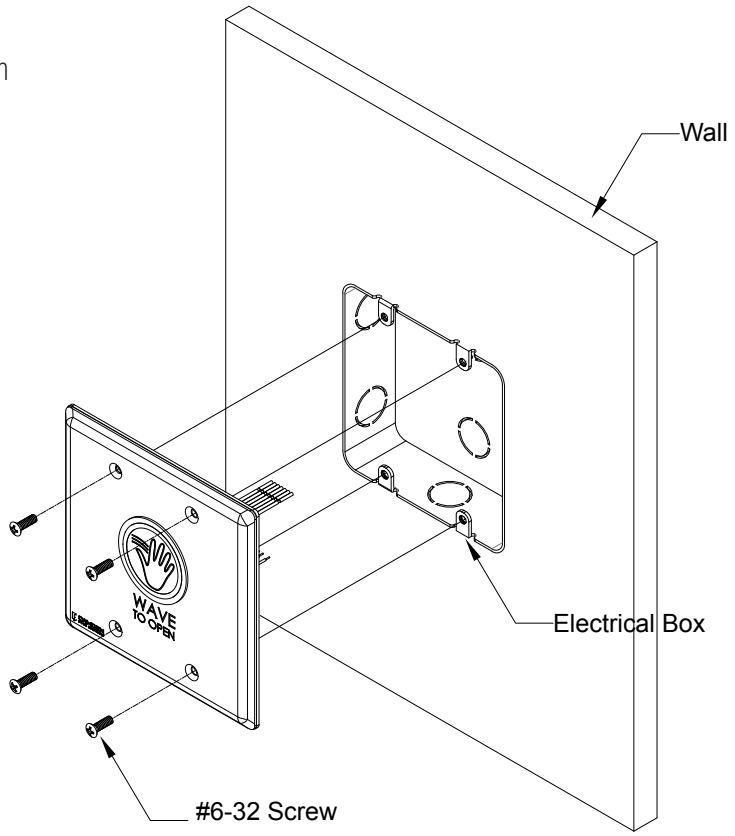


Figure 4.5.3 Double Gang Installation

5. DIMENSIONS

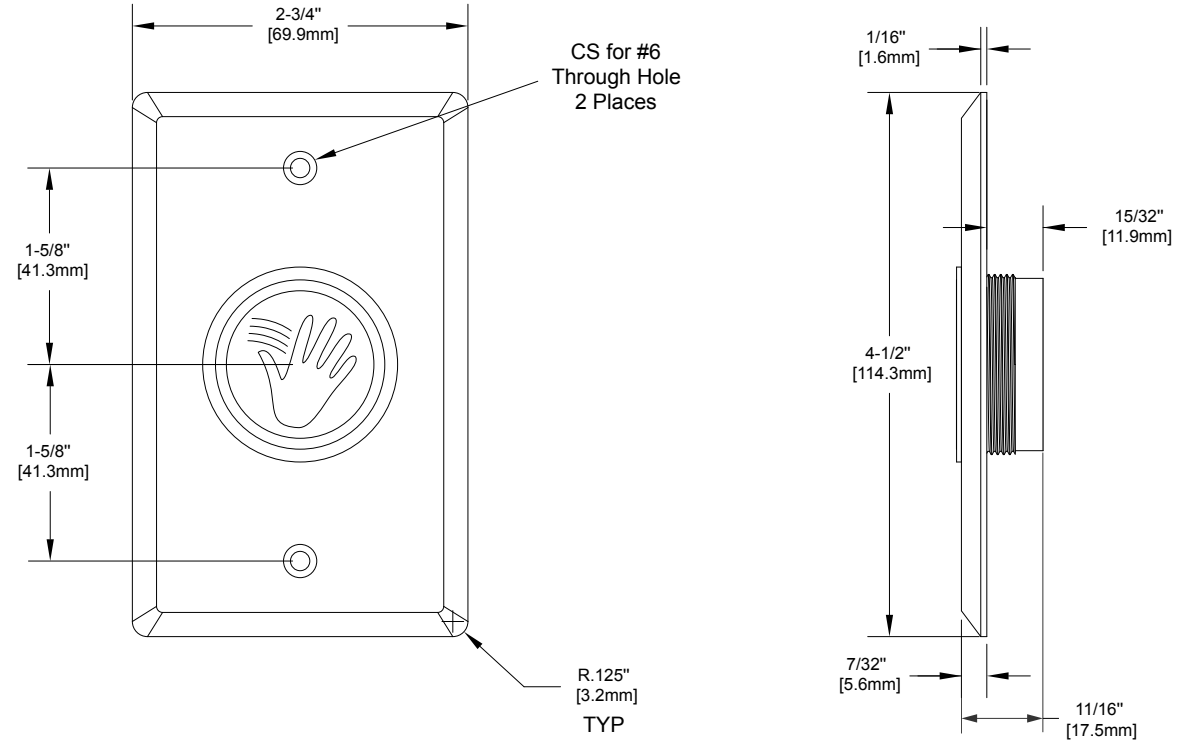


Figure 5.1 CM-241/CM-242 on Single Gang Faceplate

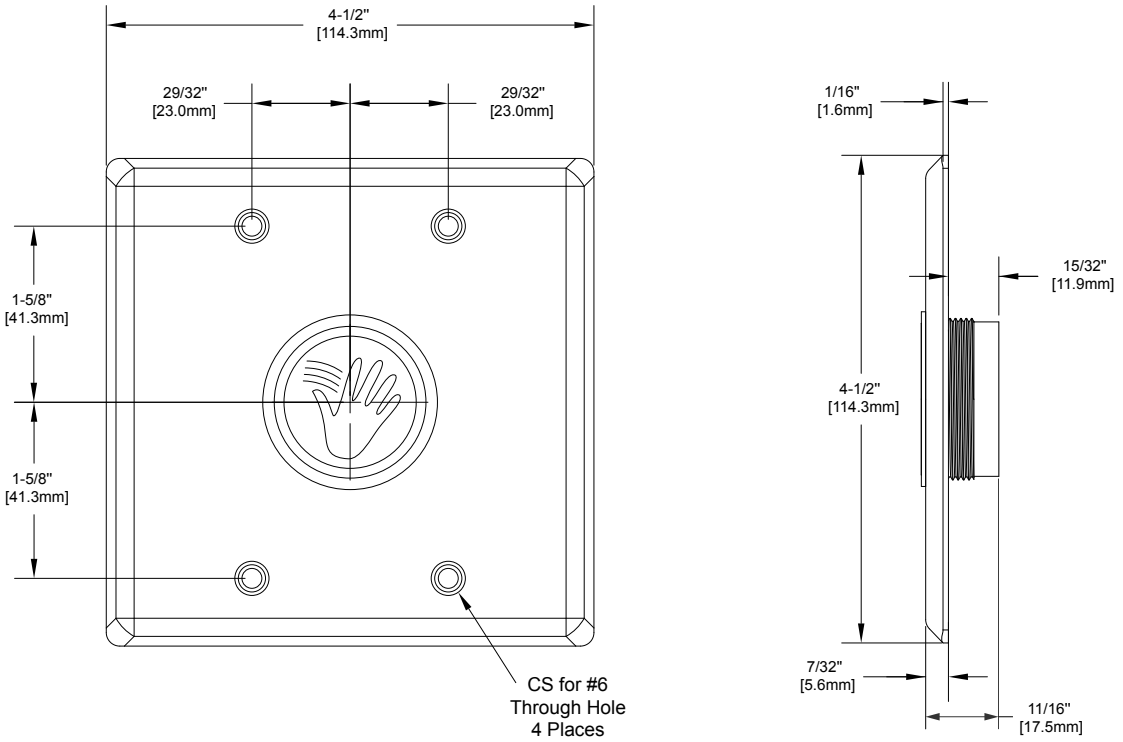
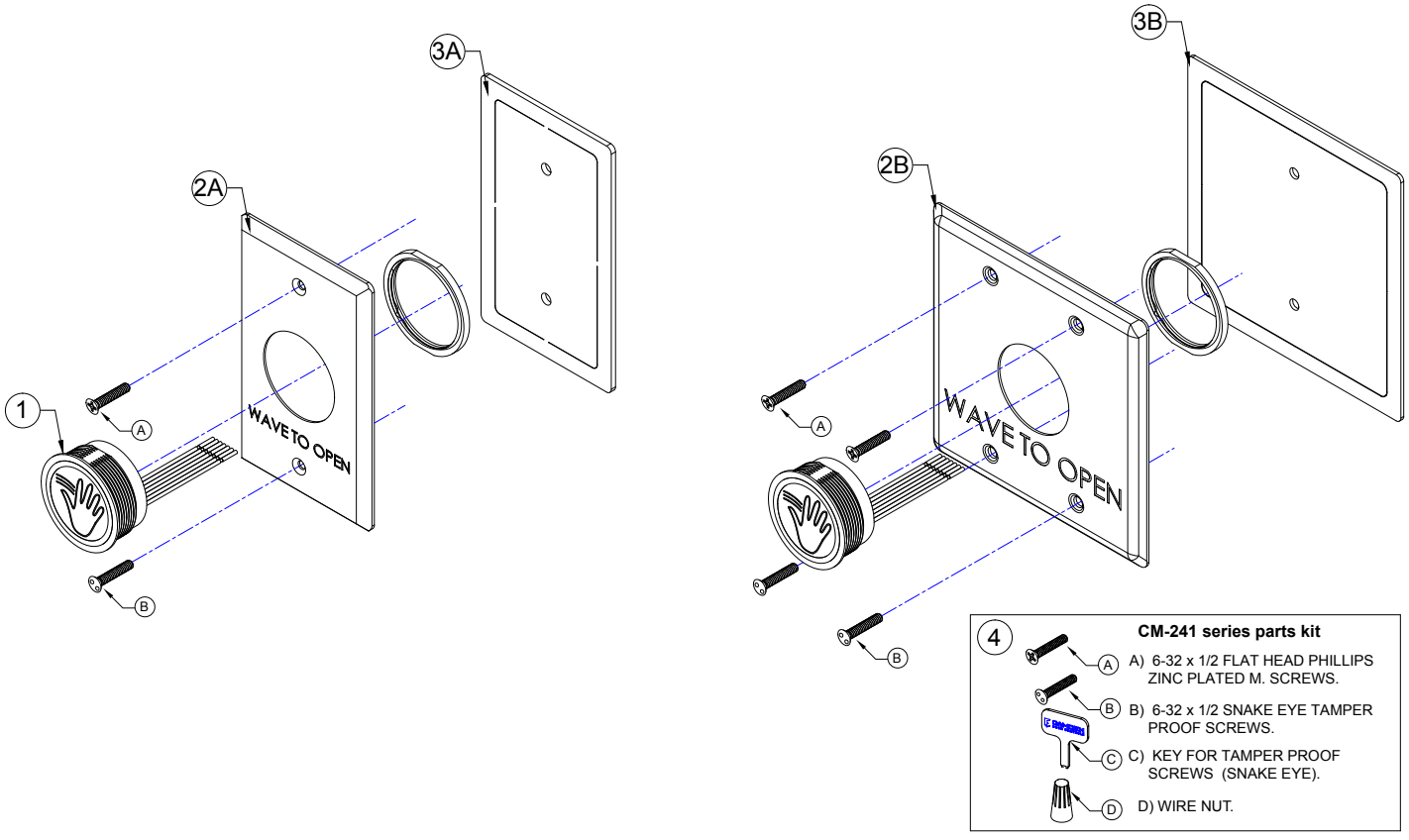


Figure 5.2 CM-241/CM-242 on Double Gang Faceplate

9. EXPLODED VIEW



ORDERING INFORMATION FOR REPLACEMENT PARTS			
ITEM NUMBER	**PART NUMBER**		**DESCRIPTION**
1.	60-31A090		VALUEWAVE+ SENSOR WITH RED/GREEN LED AND HAND ICON
	60-31A090-B		VALUEWAVE+ SENSOR WITH RED/GREEN LED AND BLANK FACEPLATE
	60-31A091		VALUEWAVE+ SENSOR WITH BLUE/GREEN LED AND HAND ICON
	60-31A091-B		VALUEWAVE+ SENSOR BLUE/GREEN LED AND BLANK FACEPLATE
FACEPLATES WITH GRAPHIC OPTIONS			
2A	60-49H041-42		CM-241/CM-242 SERIES 1 GANG STAINLESS STEEL WITH CHAIR SYMBOL & “WAVE TO OPEN”
	60-49H041-42F		CM-241/CM-242 SERIES 1 GANG STAINLESS STEEL WITH CHAIR SYMBOL & “AGITEZ POUR OUVRIR”
	60-49H041-A42		CM-241/CM-242 SERIES 1 GANG STAINLESS STEEL WITH ACTIVE WHEELCHAIR SYMBOL & “WAVE TO OPEN”
	60-49H041-A42F		CM-241/CM-242 SERIES 1 GANG STAINLESS STEEL WITH ACTIVE WHEELCHAIR SYMBOL & “AGITEZ POUR OUVRIR”
	60-49H041-46		CM-241/CM-242 SERIES 1 GANG STAINLESS STEEL WITH HAND ICON & “WAVE TO EXIT”
	60-49H041-46F		CM-241/CM-242 SERIES 1 GANG STAINLESS STEEL WITH HAND ICON & “AGITEZ LA MAIN POUR SORTIR”
2B	60-49H042-42		CM-241/CM-242 SERIES 2 GANG STAINLESS STEEL WITH CHAIR SYMBOL & “WAVE TO OPEN”
	60-49H042-42F		CM-241/CM-242 SERIES 2 GANG STAINLESS STEEL WITH CHAIR SYMBOL & “AGITEZ POUR OUVRIR”
	60-49H042-A42		CM-241/CM-242 SERIES 2 GANG WITH STAINLESS STEEL WITH ACTIVE WHEELCHAIR SYMBOL & “WAVE TO OPEN”
	60-49H42-A42F		CM-241/CM-242 SERIES 2 GANG STAINLESS STEEL WITH ACTIVE WHEELCHAIR & “AGITEZ POUR OUVRIR”
	60-49H042-46		CM-241/CM-242 SERIES 2 GANG STAINLESS STEEL WITH HAND ICON & “WAVE TO EXIT”
	60-49H042-46F		CM-241/CM-242 SERIES 2 GANG STAINLESS STEEL WITH HAND ICON & “AGITEZ LA MAIN POUR SORTIR”
FACEPLATE GASKETS			
3	A	60-59H001	GASKET FOR SINGLE GANG TOUCHLESS SWITCH
	B	60-59H003	GASKET FOR DOUBLE GANG TOUCHLESS SWITCH
PARTS KIT			
ITEM NUMBER	**PART NUMBER**		**DESCRIPTION**
4	**60-34B093**		(A) 6-32 X 1/2” OVAL HD PHILLIPS SS SCREW (B) 6-32 X 1/2” SNAKE EYE SCREW (C) KEY FOR TAMPER SNAKE EYE SCREW
COMPATIBLE MOUNTING BOXES OPTION			
ITEM NUMBER	**PART NUMBER**		**DESCRIPTION**
	FOR SINGLE GANG		
5	CM-34AL		SURFACE BOX, STANDARD DEPTH, THREADED CONDUIT ENTRY. HEAVY DUTY CAST ALUMINUM 2 3/4”W x 4 1/2”H x 1 3/4”D (70mm x 114mm x 45mm)
	CM-34BL		ONE GANG BLACK ABS BOX, SURFACE MOUNT 2 7/8’’W x 4 5/8’’H x 1 3/4’’ D (73mm x 117mm x 44mm)
	CM-66		FLUSH BOX & DRESS PLATE, STANDARD DEPTH BOX WITH 7’’ x 7’’ (178mm x 178mm) DRESS PLATE HEAVY GAUGE STAINLESS STEEL
	FOR DOUBLE GANG		
	CM-53		SURFACE BOX WITH STANDARD DEPTH DOUBLE WALL, FLAME/IMPACT RESISTANT BLACK POLYMER (ABS) 4 1/2’’W X 4 1/2’’H X 2’’D (115MM X 115MM X 51MM)