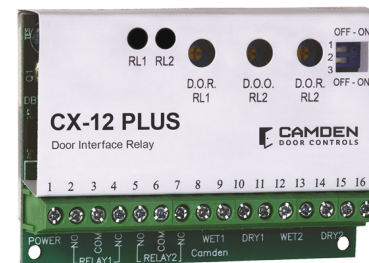


CX-12 PLUS

Door Interface Relay

INSTALLATION INSTRUCTIONS



1. GENERAL DESCRIPTION

Camden CX-12 PLUS Door Interface Relay provides all the functionality of the CX-12 and the CX-22 combined into 1 package. In addition, a new Ratchet Relay mode is provided, making the CX-12 PLUS one of Camden's most versatile door control relays available.

Used as a make/break relay (or Switching Network), it eliminates the binding of locked automatic doors, by delaying the door operator until the strike or maglock de-activates first.

2. SPECIFICATIONS

Input Voltage	12/24V AC/DC	Contact Rating	3 Amps @ 30 VDC
Current Draw	20 mA Idle 60 mA Operating	Response Time	0.3 Seconds
Inputs	2 Wet & 2 Dry, N.O. (3-30V AC/DC, Optically isolated, non-polarity sensitive)	Outputs	2 x Form C (SPDT)
Electrical Life	100,000 @ Rated Capacity	Modes	8
Time Delay	D.O.R #1: 1-30 Seconds D.O.O #2: 1-30 Seconds D.O.R #3: 1-30 Seconds	Dimension	3-1/4" W x 2-5/16" H x 11/16" D (83mm x 59mm x 18mm)

3. OPERATION

There are 8 modes of operation, selectable by DIP switches:

DIP SWITCH			MODE	DESCRIPTION
SW1	SW2	SW3		
OFF	OFF	ON	1a & 1b	Momentary & Momentary Apartment
ON	OFF	ON	2	Access Control (Maintained)
ON	ON	ON	3	Smoke Evac.
OFF	ON	ON	4	Latching / Ratchet Mode
OFF	OFF	OFF	5	Bi-Directional Sequencer - Momentary
ON	OFF	OFF	6	Bi-Directional Sequencer - Maintained
OFF	ON	OFF	7	Restroom Control - Normally Unlocked
ON	ON	OFF	8	Restroom Control - Normally Locked

Momentary Operation

In the Momentary position, even a stuck switch input will allow the door to time out and close, thereby providing security to occupants. The CX-12 PLUS will however, still operate normally if one of the other inputs is activated. Essentially, it ignores the faulty activation source, as all inputs are isolated.

The inputs to the CX-12 PLUS may be either dry or wet (powered), meaning that 3-terminal radio receivers may be connected directly to the CX-12 PLUS without fear of malfunction. See Diagram 1.

Additionally, we provide a direct connection from an apartment interphone panel. Only Relay #1 (strike) will operate when a voltage is applied to this input. A vestibule courtesy switch will be energized for the time set by Pot. 1. **See Diagram 2b or 2c.**

Maintained Operation

Select **Relay 1 Maintained** for an Access Control application. When a maintained signal is applied to WET 1 input, the lock will remain energized, while the DRY 2 input allows a wall switch to open the door.

An input on **DRY 1** will always unlock and open the door.

See Diagram 2a.

Select **Relay 2 Maintained** if you are connecting the CX-12 PLUS to a fire alarm panel, or to a presence sensor.

In this mode the lock will fire momentarily but the operator relay will be held in as long as the input is maintained. **See Diagram 3.**

Latching/Ratchet Operation

In this mode the CX-12 PLUS will latch Relay2 with a momentary activation on Dry/Wet1. Relay2 is released when Dry/Wet1 are activated a second time. If Dry/Wet2 are activated, Relay1 and Relay2 are latched until Dry/Wet2 are activated again.

Washroom Door Controller

In this mode, complete control of a single occupant barrier-free washroom is obtained. It allows the user lock and secure the door from the inside by depressing a Push-to-Lock button. The exterior wall switch is removed electronically from the circuit. To exit the washroom, simply exit manually via the lever-handle set (the Door Contact Switch resets the relay), or, press the interior wall switch to unlock and activate the door operator. The door remains unlocked upon closure.

Another feature is the ability to use the CX-12 PLUS on "Normally Secure" washrooms. In this mode, the door is usually locked. To gain access, the user must first swipe a card, or enter a code into the Access System (ie. Keypad), which then signals the CX-12 PLUS to unlock and open the door. Once inside, the occupant presses the Push-to-Lock button, which removes the exterior wall switch from the circuit.

Exiting may be accomplished manually via the lever-handle set (the Door Contact Switch resets the relay), or, by pressing the interior switch to unlock and activate the door operator.

The door will re-lock upon closure.

Note: We highly recommend the use of a regulated power supply when powering strikes for barrier-free washroom applications where the strike power may be maintained from a few minutes to many hours.

We offer a low-cost board-only regulated power supply - CX-PS13 V3, which can be powered from a small 24VAC transformer, (or the auxiliary power on the door control) and will supply clean, filtered & regulated 24VDC power for the strike.

Bi-Directional Door Sequencer

In this mode, the relay will sequence two Automatic doors, in both directions. Upon a switch closure from one side, a signal is sent to the first door (relay 1), then after an adjustable delay, the second door (relay 2) receives a signal. When a switch closure is made from the opposite side, the sequence is reversed – Relay 2 is activated, then after the adjustable delay, relay 1 activates.

When used as a door sequencer the user can select either momentary position for the inputs, or maintained position.

In the momentary position, even a stuck switch input will allow the door to time out and close, thereby providing security to the occupants.

The CX-12 PLUS will however, still operated normally if one of the other inputs is activated. Essentially, it ignores the faulty activation source, as all the inputs are isolated. In the maintained position, a switch that is held on will cause its respective relay (operator) to be held on. So switch #1 would hold in relay #1, and switch #2 would hold in relay #2.

If an emergency (or anti-entrapment) switch is desired in the vestibule, then wire that switch directly to one of the operator inputs. Usually the exterior door is used in this case.

IMPORTANT: Do not apply power until you have read the instructions fully and made the required adjustments.

4. INSTALLATION

Mounting

The LED's are visible through the wrap-around sleeve, which also has cutouts for adjusting the potentiometers, and setting the dip switch. Once the unit has been adjusted, it may be tucked up into the operator header or affixed using the supplied Velcro.

Wiring

Wiring of this unit is dependent on the mode desired, however the following commonalities apply.

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS

Note: Do not wire Safety devices to the CX-12. If installed, wire your safety device directly to the operator control box as per usual.

IMPORTANT: Do not apply power to the unit until all secondary wiring is complete, and dip switches have been set.

Both relay outputs are Form C and are rated at 3 amps maximum. Use relay # 1 for the strike or electromagnet. Generally, the **N.O. & COM.** Terminals (#3 & 4) are used for a strike, and **COM & N.C.** (#4 & 5) are used with an electromagnet. The door operator will be wired to relay #2 **N.O. & COM** terminals (#6 & 7). In a door sequencing application, door 1 is relay #1, and door 2 is relay #2. The unit will operate on 12 or 24 volts, AC or DC. Connect to Terminals 1 & 2, which are non-polarity sensitive.

4. APPLICATIONS & SET-UP INSTRUCTIONS

Standard Timer Mode (Mode 1)

	OFF / ON
1	☒
2	☒
3	☒

Set dip switches as shown. **Also refer to Diagram 1.**

Connect a dry contact such as a wall switch to **DRY1** (Terminals 11 & 12). A Wet (powered) output connects to **WET 2** (Terminals 13 & 14). Upon a switch activation the strike relay will fire for the time set by potentiometer 1 (**DOR RL1**). After a delay, adjustable by potentiometer 2 (**DOO RL2**), the operator relay will fire. The hold time for relay #2 is set with potentiometer 2 (**DOR RL2**).

Most modern door operators have built-in time delays, and if so, it is usually desirable to use them to add sufficient hold-open time. In this case adjust the CX-12 PLUS to send just a momentary pulse (1 or 2 seconds only). Observe the door and adjust timers until desired operation is observed.

The above dip switch setting is also used for applications such as apartment entries with an interphone panel. Refer to Diagrams 2b & 2c. In each case the interphone input (**WET 1**) will activate the strike relay only. If a courtesy switch is located in the vestibule, it is connected to **DRY 2** (Terminals 15 & 16).

This input is only active when the strike relay is energized. Another application using this mode is door sequencing in one direction only. Connect Door 1 operator to relay 1, and door 2 operator to relay 2. The delay between the two doors is adjusted via the **DOO RL2** potentiometer. For bi-directional sequencing refer to specific set-up instructions below.

Access Control Mode (Mode 2)

	OFF / ON
1	☒
2	☒
3	☒

Set dip switches as shown. **Also refer to Diagram 2a.**

Typically the access panel (or time clock) will be wet (powered) therefore connect to **WET 1** (Terminals 9 & 10).

The exterior activating switch is wired to **DRY 2** (Terminals 15 & 16). This input signals the door operator (Relay 2), and is only active when the strike relay is energized.

An interior switch may be connected to **DRY 1** (Terminals 11 & 12). This input will always unlock and open the door when activated. (Regardless of the status of input connected to **WET 1**). If the interior switch is Wet (powered) connect to **WET 2** (Terminals 13 & 14).

Smoke Evac. Mode (Mode 3)

	OFF / ON
1	☒
2	☒
3	☒

Set dip switches as shown. **Also refer to Diagram 3.**

Suitable for connection to a Fire Alarm Panel, this mode will fire the electric lock momentarily, then hold in the operator relay until the input is released.

Connect the Wet (powered) output of the Fire panel to **WET 2** (Terminals 13 & 14) A device with a dry output such as a Presence sensor will connect to **DRY 1** (Terminals 13 & 14).

Latching/Ratchet Mode (Mode 4)

	OFF / ON
1	☒
2	☒
3	☒

Set dip switches as shown.

Also refer to Diagram 4a & 4b.

Latching - Upon receipt of a signal (or contact closure) on WET1 or DRY1, RELAY1 will activate for an adjustable time. Then after an adjustable time, RELAY2 will activate. RELAY2 will stay held until a second contact closure contact closure on DRY/WET1.

Ratchet - Upon receipt of a signal (or contact closure) on WET2 or DRY2, RELAY1 will activate and stay latched. Then after an adjustable time, RELAY2 will activate and stay latched. A second activation of WET/DRY2 will release both relays.

Bi-Directional Sequencing Mode

	MOM OFF / ON	MAIN OFF / ON
1	☒	☒
2	☒	☒
3	☒	☒

Mode 5: Momentary

Mode 6: Maintained

Set dip switches as shown. **Also refer to Diagram 4.**

Turn on power and activate the Interior input (switch). Observe **LED1**, which should light immediately. The length of hold time is determined by adjusting the pot marked DOR/RL1, clockwise for more time, counter clockwise for less time. The delay between the two doors is adjusted via the DOO RL2 potentiometer. After the above-mentioned delay, **LED2** should light. The length of hold time is adjusted by the pot marked DOR/RL2.

The ideal time delay between the two doors is best set by actual walk-testing. It should be set so that a person can walk in either direction without having to pause before the second door activates. Test in both directions.

If an emergency (or anti-entrapment) switch is desired in the vestibule, then wire that switch directly to one of the operator inputs. Usually the exterior door is used in this case. Once the desired operation is achieved, proceed to Section 4, for **System Inspection Instructions.**

Washroom Door Controller

For Normally Unlocked Door set dip switches as shown.

Also refer to Diagram 6.

For Normally Locked Door set dip switches as shown.

Also refer to Diagram 7.

	OFF / ON
1	●
2	●
3	●

	OFF / ON
1	●
2	●
3	●

Connect the inputs from the various switches according to the appropriate diagram. Please note that the Magnetic contact switch should be a Normally Closed switch (contacts closed when door is closed (at rest), and contacts open when the door opens).

The "Push to Lock" switch should be a normally-open momentary switch. The door lock is connected to **Relay 1** (Terminals 3 & 4, or 4 & 5). Both fail safe, and fail secure locks may be used with the CX-22 controller.

The Automatic Door Operator is typically connected to **Relay 2** (N.O. Terminals 6 & 7). The unit will operate on 12 or 24 volts, AC or DC. Connect to Terminals 1 & 2, (they are non-polarity sensitive).

Set up

Apply power to the CX-12 PLUS and observe the LED's. Pot **DOR/RL1** adjusts the Lock release time (up to 30 seconds). The Pot marked **DOO/RL2** adjusts the delay before the Door operator relay fires, and the Operator hold time is adjusted with Pot **DOR/RL2**.

Normally Unlocked Mode (Mode 7):

Press the exterior wall switch. If the washroom is unoccupied the door will open automatically. After entering the washroom, wait for the door to close, then push the "Lock" button.

The CX-12 PLUS will energize the lock, and remove the outside wall switch from the circuit.

To exit the washroom, two options are available:

1. To have the door unlock and open automatically, push the interior wall switch. This also resets the relay for the next person to use.
2. Manual use. The door may also be used manually. To exit the washroom, turn the lever handle and pull (push) the door open. The magnet switch resets the relay for the next person to use.

If a CM-9600 switch is used with this system, you can connect the LED's using a CM-9600C harness. Wire as per Diagram 6.

If using an **"OCCUPIED WHEN LIT"** sign, such as our CM-AF500, wire as per Diagram 6.

Normally Locked Mode (Mode 8):

In this situation the door is always locked from the exterior.

Enter code or swipe card. The door unlocks and after the adjustable delay, opens the door. After entering the washroom, wait for the door to close, then push the "Lock" button. You will hear a brief double click of the strike indicating the door is now locked, and the outside access control device is removed from the circuit.

To exit the washroom, two options are available:

3. To have the door unlock and open automatically, push the interior wall switch. This also resets the relay for the next person to use.
4. Manual use. The door may also be used manually. To exit the washroom, turn the lever handle and pull (push) the door open. The magnet switch resets the relay for the next person to use. Once the desired operation is achieved, proceed to Section 4, for **System Inspection Instructions**.

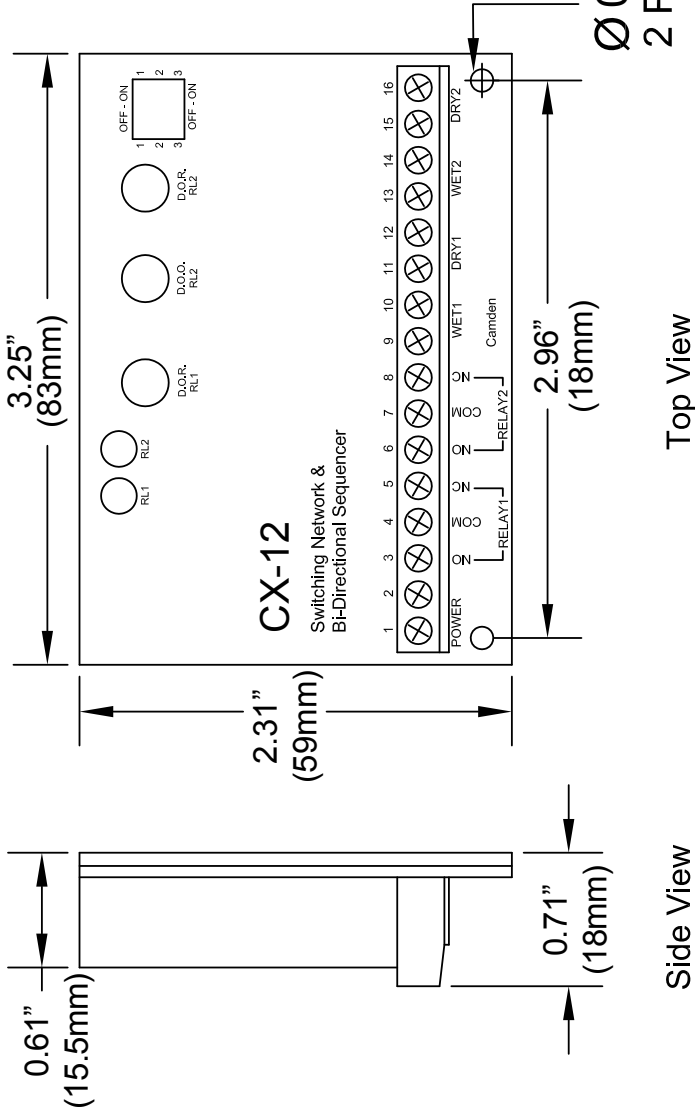
5. SYSTEM INSPECTION INSTRUCTIONS

After the Installation and operational check of the system:

1. Place warning label on the door (as per ANSI A156.10 or A156.19 guidelines). This will advise the person entering the swing side zone that the door will move.
2. Instruct the owner on door system operation and how to test it. This should be checked on a daily basis.
3. Instruct the owner on what to do if the door or any of its components become damaged.
4. Strongly recommend to the owner that the complete entry be inspected twice a year as part of the service agreement.

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS



1	Power Input	12/24V AC/DC Non-Polarized
2	Power Input	
3	Relay 1 - NO	
4	Relay 1 - COM	FORM C
5	Relay 1 - NC	
6	Relay 2 - NO	
7	Relay 2 - COM	FORM C
8	Relay 2 - NC	
9	Wet1 Input	
10	Wet1 Input	Powered Input 1
11	Dry1 Input	
12	Dry1 Input	Non-Powered Input 1
13	Wet2 Input	
14	Wet2 Input	Powered Input 2
15	Dry2 Input	
16	Dry2 Input	Non-Powered Input 2



CAMDEN DOOR CONTROLS

5502 Timberlea Blvd.
Mississauga, Ontario
L4W 2T7

SCALE: NONE

DRAWN BY: J. LEWIS

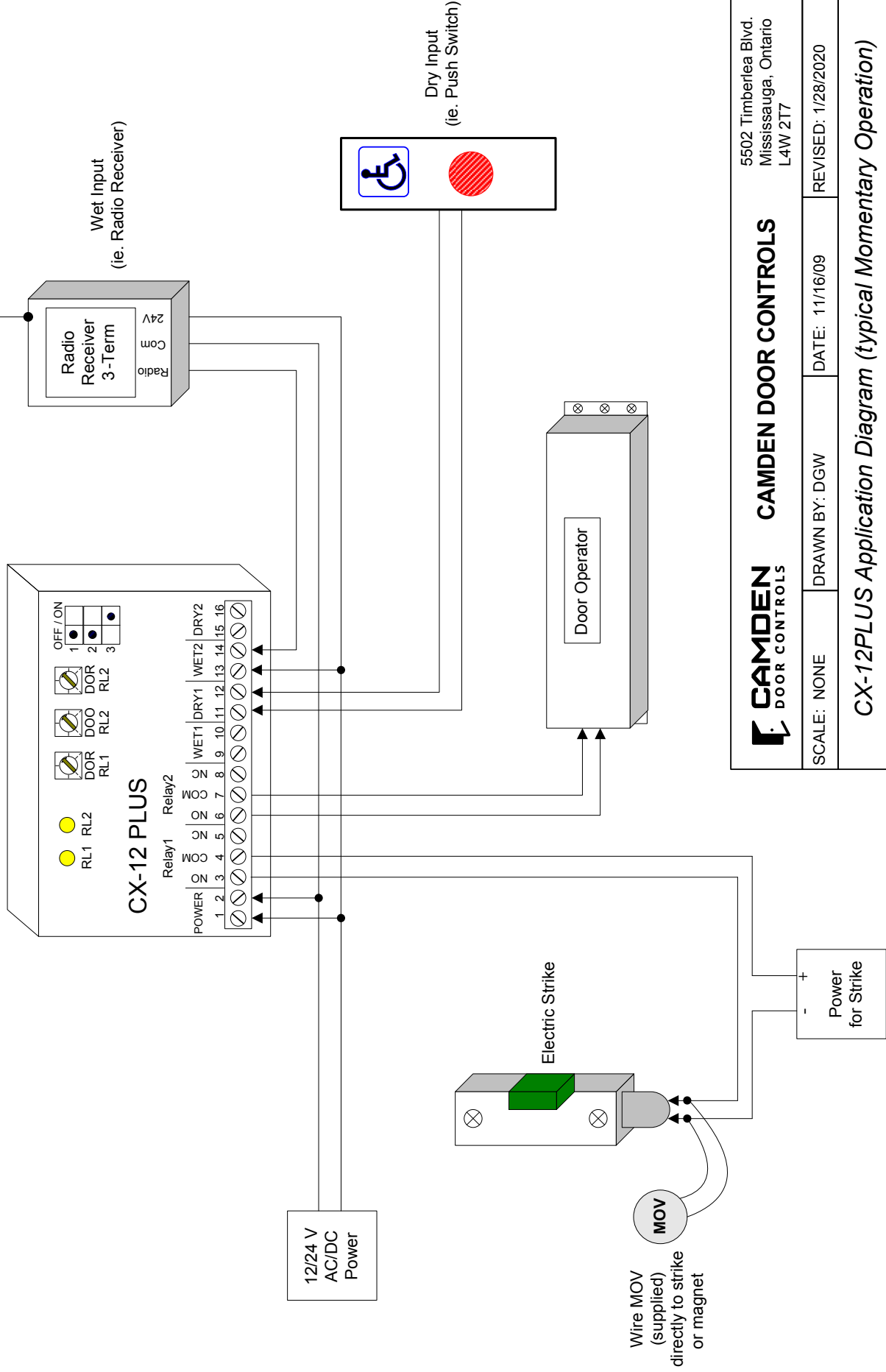
DATE: 01/13/10

CX-12 Electrical and Mechanical

FILENAME: CX-12PLUS-CAD.ai

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS



CAMDEN DOOR CONTROLS
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CAMDEN DOOR CONTROLS

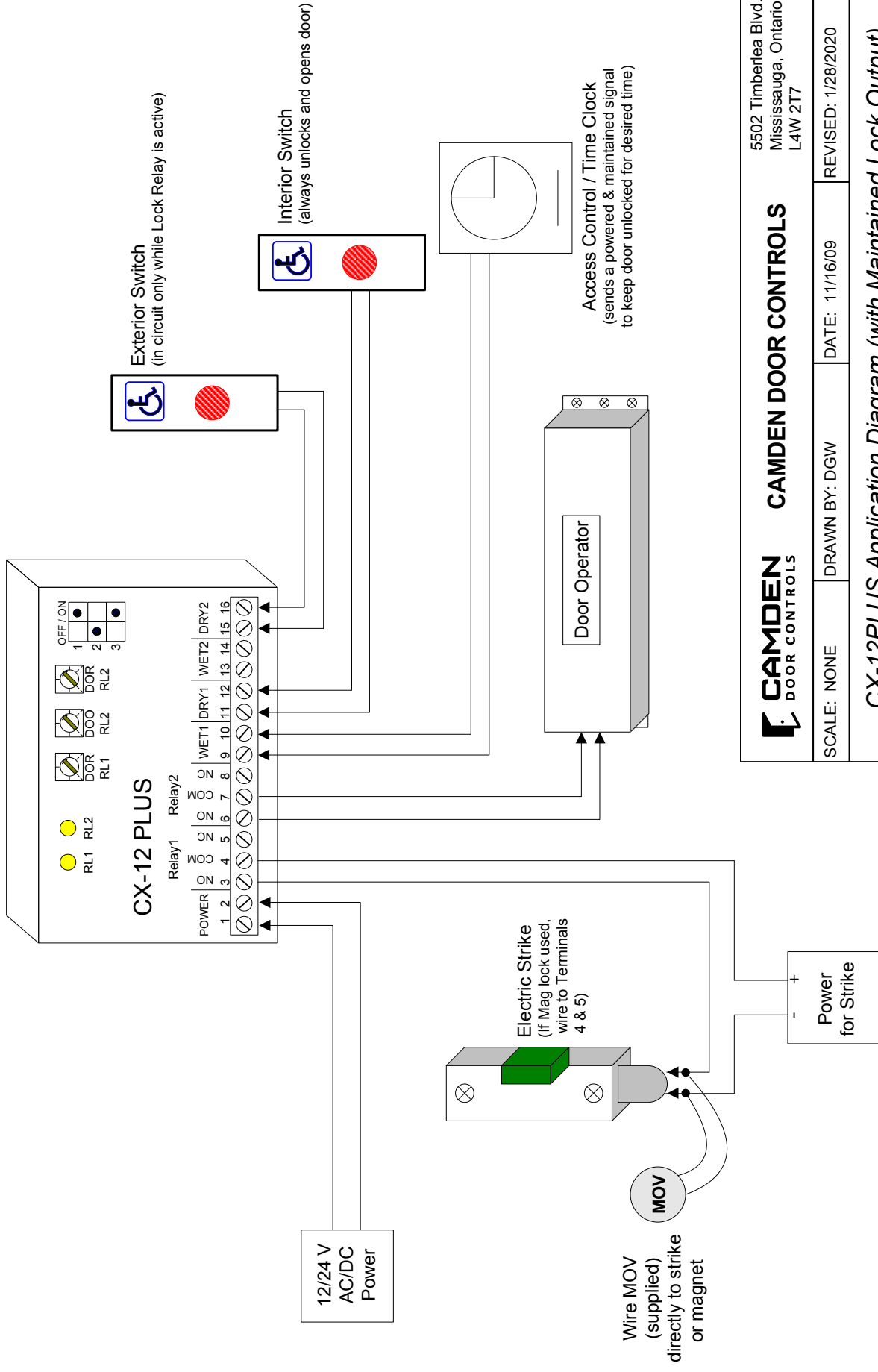
SCALE: NONE DRAWN BY: DGW DATE: 11/16/09 REVISED: 1/28/2020

CX-12PLUS Application Diagram (typical Momentary Operation)

DRAWING No: DRG-CX-12PLUS-01 FILENAME: CX-12PLUS-Diagram1.ai

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS



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L4W 2T7

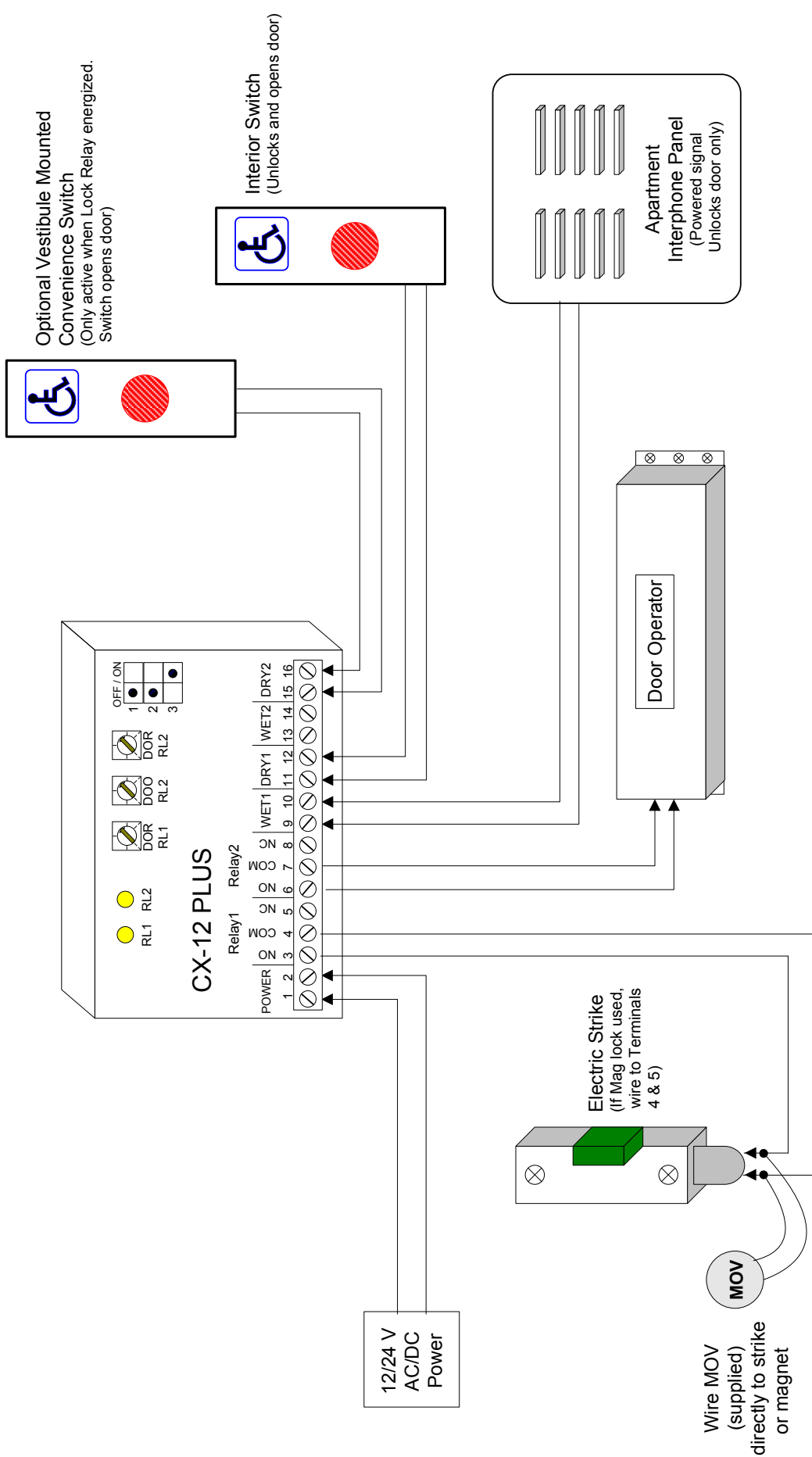
SCALE: NONE DRAWN BY: DGW DATE: 11/16/09 REVISED: 1/28/2020

CX-12PLUS Application Diagram (with Maintained Lock Output)

DRAWING No: DRG-CX-12PLUS-02 FILENAME: CX-12PLUS-Diagram2a.ai

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS

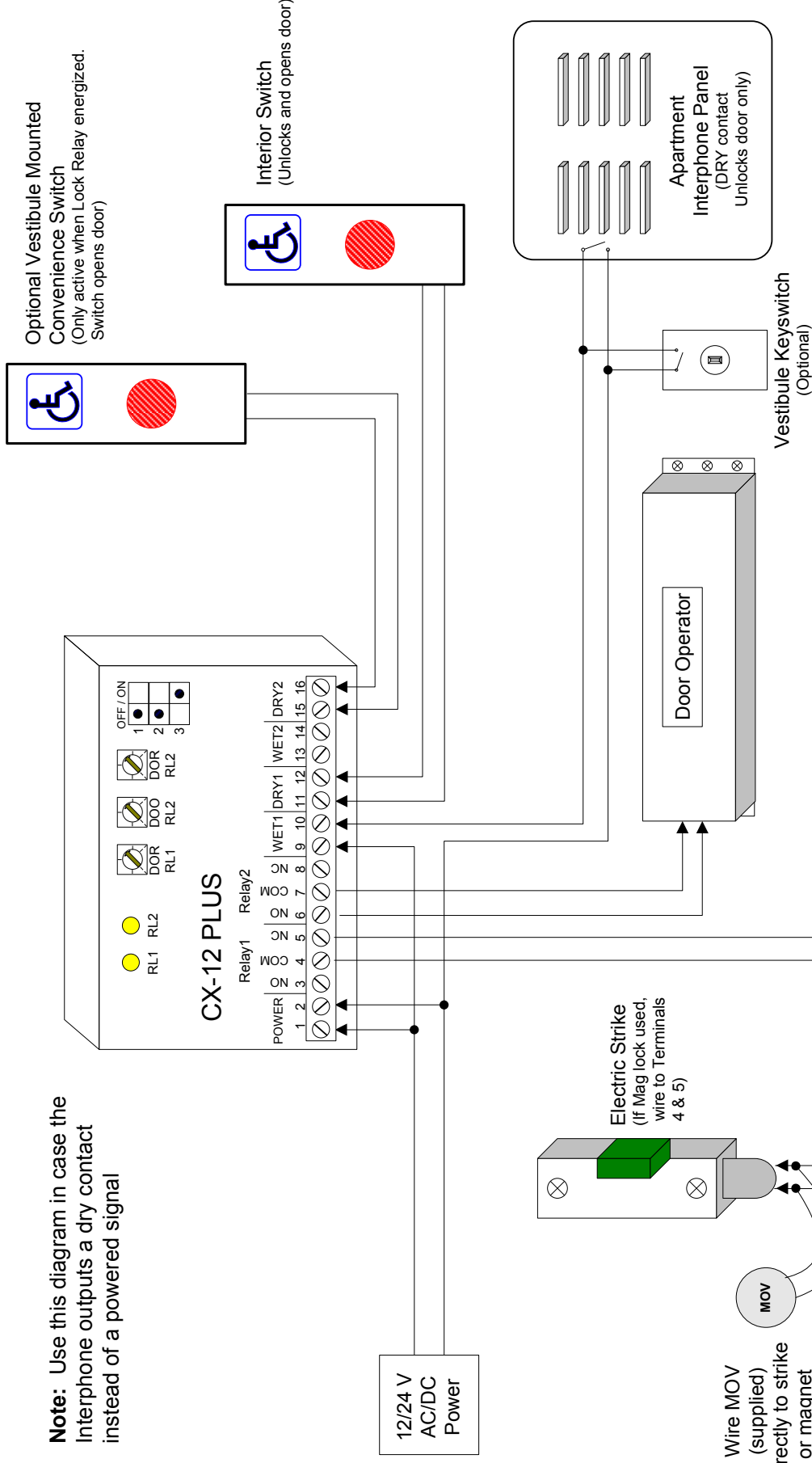


CAMDEN DOOR CONTROLS		5502 Timberlea Blvd. Mississauga, Ontario L4W 2T7	
CAMDEN DOOR CONTROLS	CAMDEN DOOR CONTROLS	CAMDEN DOOR CONTROLS	CAMDEN DOOR CONTROLS
SCALE: NONE	DRAWN BY: DGW	DATE: 11/16/09	REVISED: 1/28/2020
CX-12PLUS Application Diagram for Apartment (typical)			
DRAWING No: DRG-CX-12PLUS-02b	FILENAME: CX-12PLUS-Diagram2b.ai		

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS

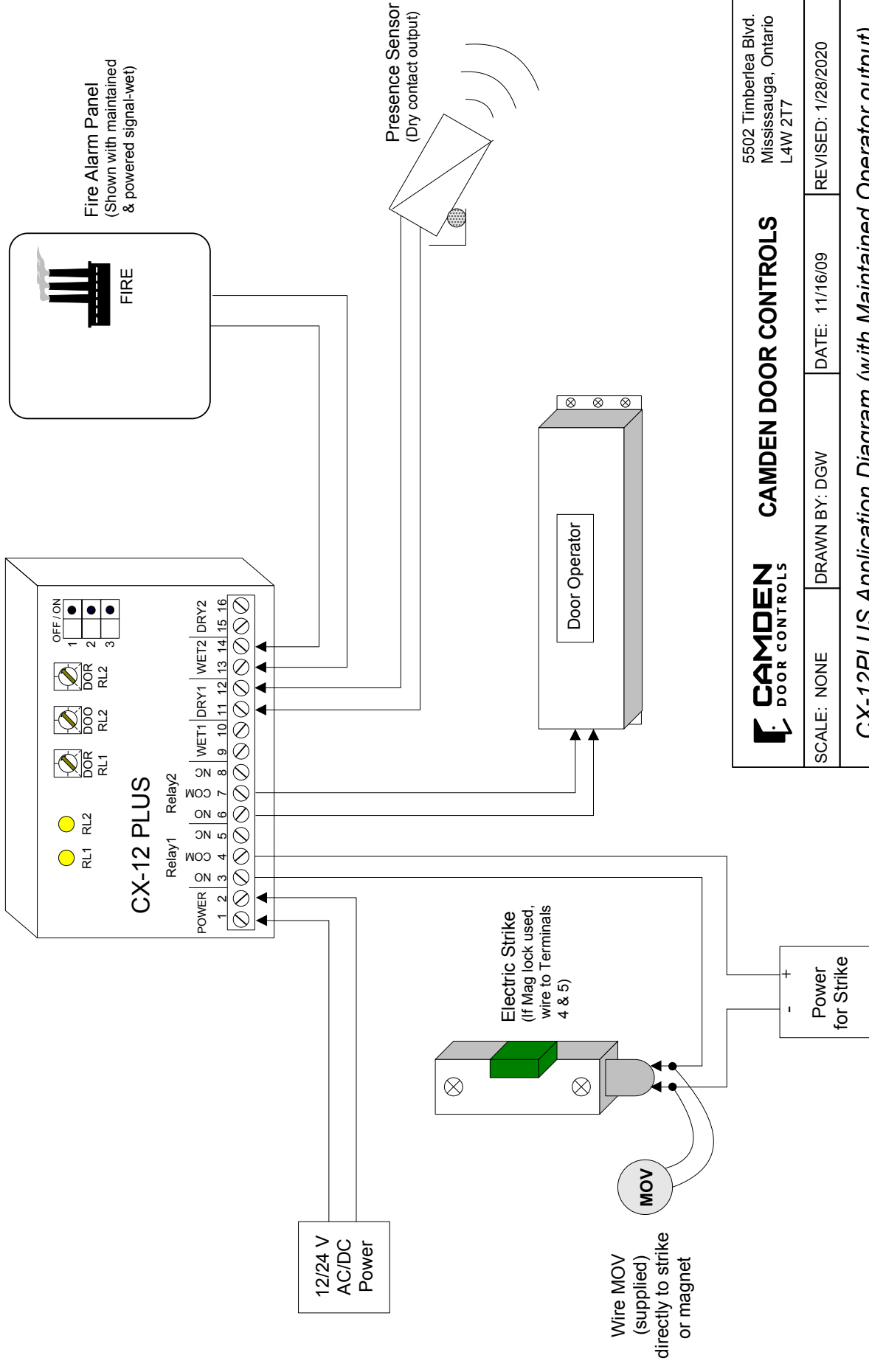
Note: Use this diagram in case the Interphone outputs a dry contact instead of a powered signal



CAMDEN DOOR CONTROLS		5502 Timberlea Blvd. Mississauga, Ontario L4W 2T7	
CAMDEN DOOR CONTROLS	CAMDEN DOOR CONTROLS	CAMDEN DOOR CONTROLS	CAMDEN DOOR CONTROLS
SCALE: NONE	DRAWN BY: DGW	DATE: 11/16/09	REVISED: 1/28/2020
CX-12PLUS Application Diagram for Apartment (w/ Vestibule Keyswitch)			
DRAWING No: DRG-CX-12PLUS-02c	FILENAME: CX-12PLUS-Diagram2c.ai		

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS



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CAMDEN DOOR CONTROLS

SCALE: NONE DRAWN BY: DGW DATE: 11/16/09 REVISED: 1/28/2020

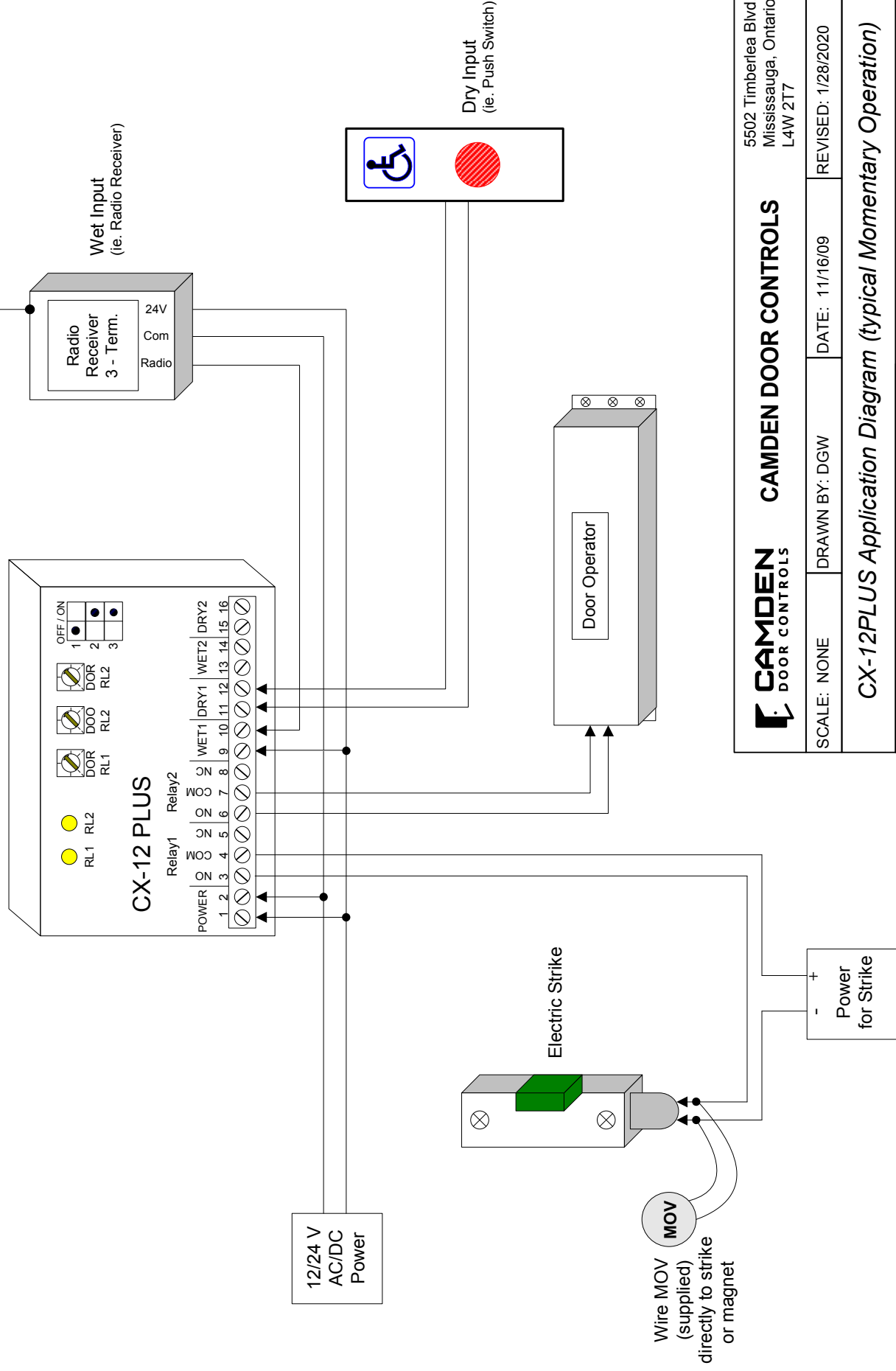
CX-12PLUS Application Diagram (with Maintained Operator output)

DRAWING No: DRG-CX-12PLUS-03

FILENAME: CX-12PLUS-Diagram3.ai

CX-12 PLUS DOOR INTERFACE RELAY

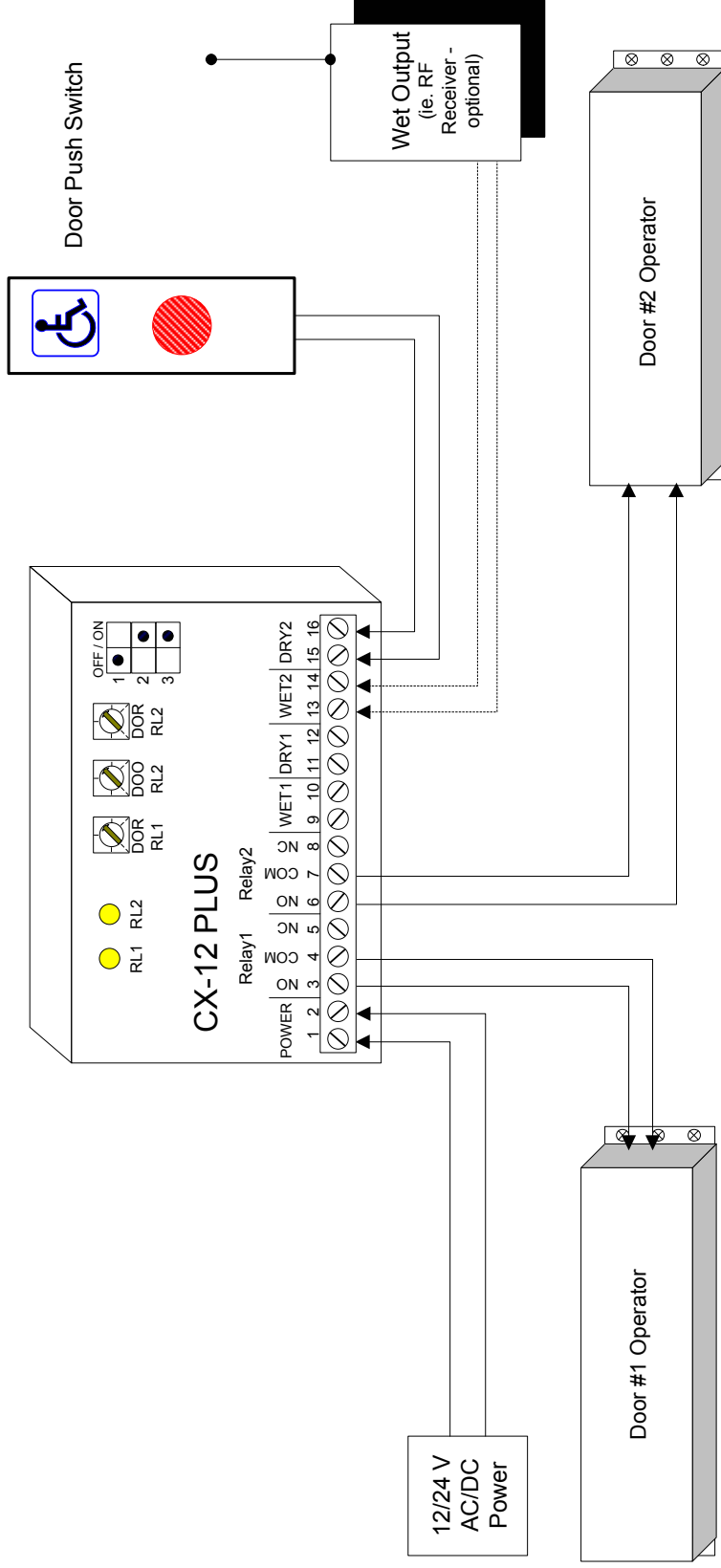
INSTALLATION INSTRUCTIONS

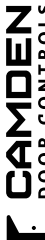


CAMDEN DOOR CONTROLS		5502 Timberlea Blvd. Mississauga, Ontario L4W 2T7	
CAMDEN DOOR CONTROLS	CAMDEN DOOR CONTROLS	DATE: 11/16/09	REVISED: 1/28/2020
SCALE: NONE	DRAWN BY: DGW	CX-12PLUS Application Diagram (typical Momentary Operation)	
DRAWING No: DRG-CX-12PLUS-04a	FILENAME: CX-12PLUS-Diagram4a.ai		

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS

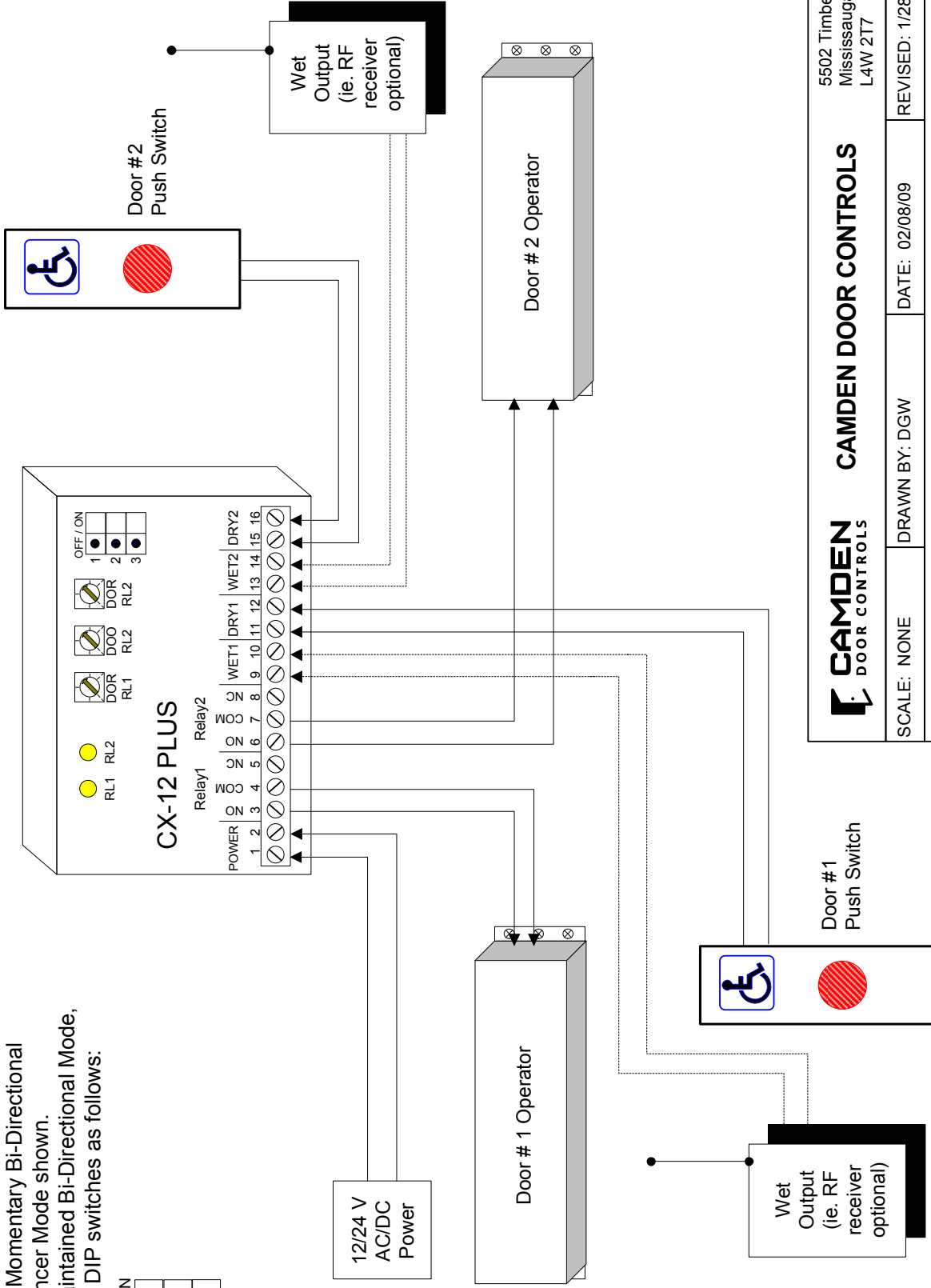
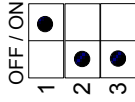


 CAMDEN DOOR CONTROLS			CAMDEN DOOR CONTROLS			5502 Timberlea Blvd. Mississauga, Ontario L4W 2T7		
SCALE: NONE		DRAWN BY: DGW		DATE: 02/08/09		REVISED: 1/28/2020		
CX-12PLUS Door Ratchet Wiring Diagram								
DRAWING No: DRG-CX-12PLUS-04b						FILENAME: CX-12PLUS-Diagram4b.ai		

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS

Note: Momentary Bi-Directional Sequencer Mode shown.
For Maintained Bi-Directional Mode, set the DIP switches as follows:



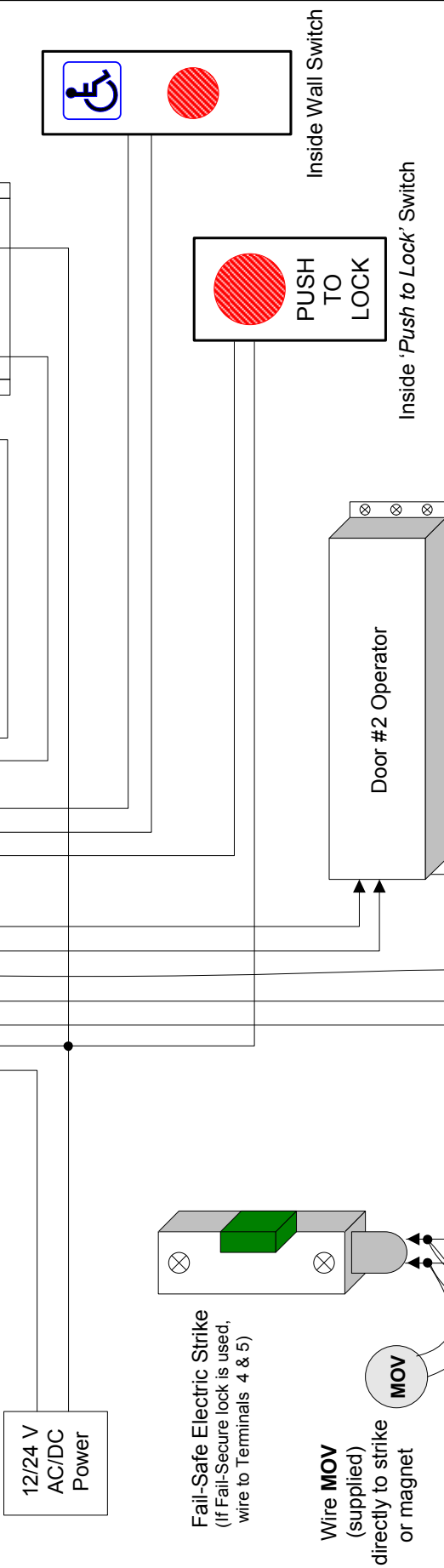
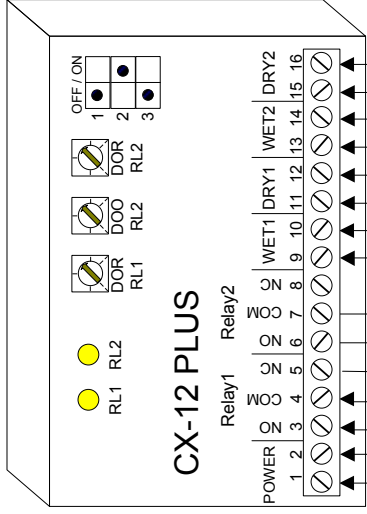
 CAMDEN DOOR CONTROLS		CAMDEN DOOR CONTROLS		5502 Timberlea Blvd. Mississauga, Ontario L4W 2T7	
SCALE: NONE		DRAWN BY: DGW		DATE: 02/08/09	REVISED: 1/28/2020
CX-12PLUS Bi-Directional Sequencer Wiring Diagram					
DRAWING No: DRG-CX-12PLUS-05				FILENAME: CX-12PLUS-Diagram5.ai	

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS

Note: Optional annunciators may be used to indicate the door status.

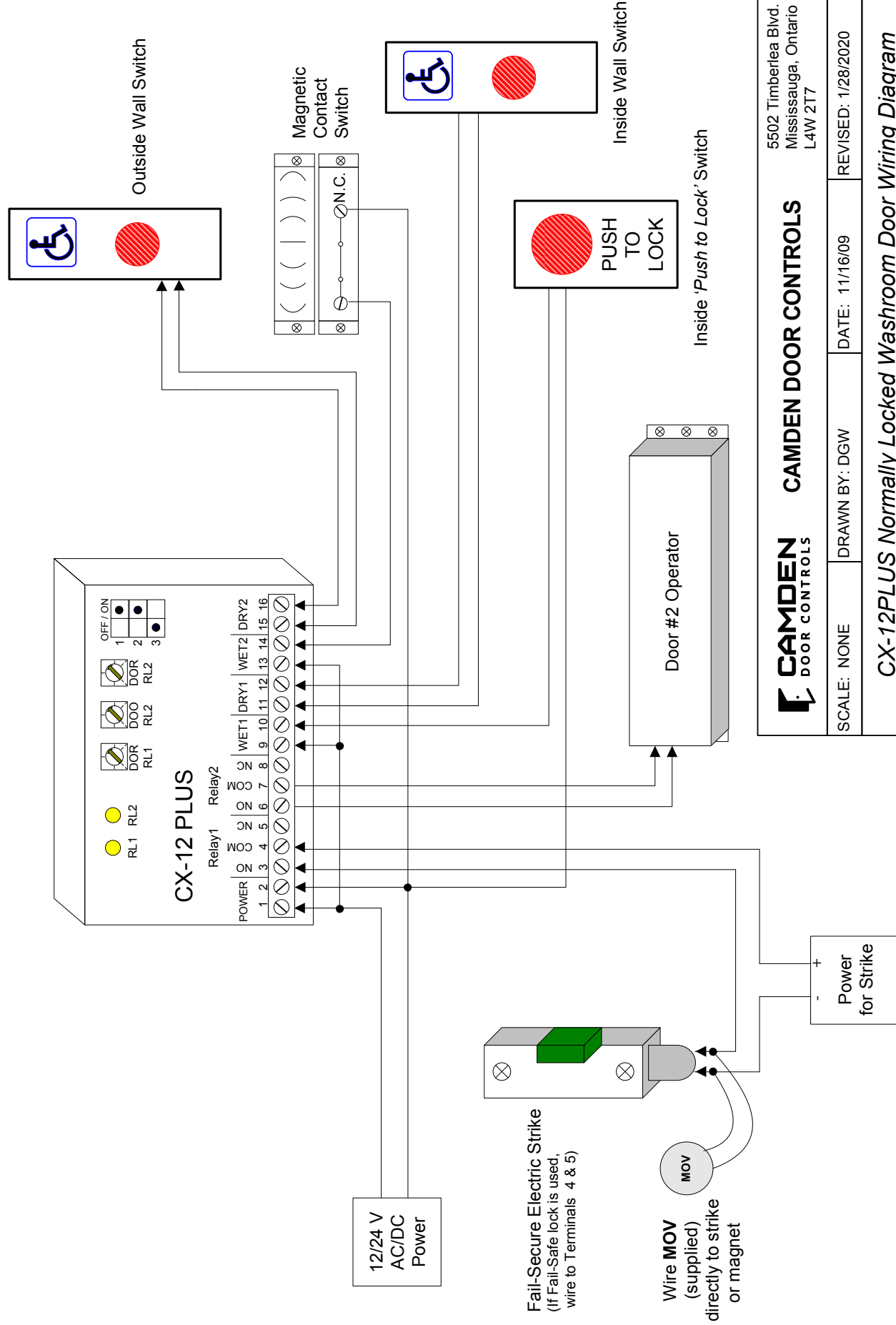
- CM-9600 piezo switch uses optional harness for remote LED control
- CM-AF500 LED annunciator



 CAMDEN DOOR CONTROLS		CAMDEN DOOR CONTROLS		5502 Timberlea Blvd. Mississauga, Ontario L4W 2T7	
SCALE: NONE		DRAWN BY: DGW	DATE: 11/16/09	REVISED: 1/28/2020	
CX-12PLUS Normally Unlocked Washroom Door Wiring Diagram					
DRAWING No: DRG-CX-12PLUS-06			FILENAME: CX-12PLUS-Diagram6.ai		

CX-12 PLUS DOOR INTERFACE RELAY

INSTALLATION INSTRUCTIONS



CAMDEN DOOR CONTROLS

5502 Timberlea Blvd.
Mississauga, Ontario
L4W 2T7

SCALE: NONE

DRAWN BY: DGW

DATE: 11/16/09

REVISED: 1/28/2020

CX-12PLUS Normally Locked Washroom Door Wiring Diagram

DRAWING No: DRG-CX-12PLUS-07

FILENAME: CX-12PLUS-Diagram7.ai