

# Smart Chock™ Models SC0650 thru SC0654



**Smart Chock™**  
The Safest, Most Cost Effective Restraint Package

*A Product of*



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# Smart Chock™ Installation Guide

## INTRODUCTION

This manual is used for models SC650 through SC654 Series **Smart Chock™** model types. Be sure to check your smart chock model type before consulting or servicing. The control board is programmed for each model's function. The description explains the difference between model types. Each model is programmed and configured specifically for desired functionality.

Model #	Part #	Description
650	SC0650	Standard Smart Chock™ <i>No options: No outlets or interlocks</i>
651	SC0651	Powers & controls one outlet for dock light <i>Dock light turns off when door is closed</i>
652	SC0652	Powers & controls two outlets <i>Dock light &amp; fan turn off when door is close</i>
653	SC0653	Powers & controls two outlets & interlocks Electric/Hydraulic leveler <i>Dock light and fan turn off when door is closed</i> <i>Leveler will not run when door is closed</i>
654	SC0654	Powers & controls two outlets & interlocks Pneumatic leveler <i>Dock light and fan turn off when door is closed</i> <i>Leveler will not run when door is closed</i> <i>Fan turns off when leveler runs</i>

### ELECTRICAL RATINGS:

INPUT VOLTAGE	120 VAC to 240VAC
INPUT FREQUENCY	60 HZ /50HZ
MAXIMUM INPUT CURRENT	12 A
INPUT CURRENT WITH NO OUTLET(S) OR LEVELER LOAD	<.5 A (MODEL 650)
MAXIMUM OUTLET(S) CURRENT	12 A
MAXIMUM LEVELER LOAD CURRENT (J7 OR J8)	12 A
OUTSIDE LIGHT BOX VOLTAGE	12 VDC
MAXIMUM OUTSIDE LIGHT BOX LOAD CURRENT	1.25 A (12 V POWER SUPPLY CURRENT LIMIT)
SENSOR VOLTAGE (J2, J3, J4 & J16)	12 VDC
MAXIMUM SENSOR CURRENT (J2, J3, J4 & J16)	.2 A (J2, J3 & J4 PROTECTED BY PTC THERMISTOR)

## **Smart Chock™** **---Sequence of Operations---** **Testing**

**POWER ON – Smart Chock enters a startup routine that turns the LED's and Relays on and off a few times. The startup routine runs for approximately 20 Seconds.**

### Loading Dock Door is Closed, Wheel is Unchecked

- Inside Red Light is on
- Outside Green Light is flashing

### Wheel gets Chocked and after a 0 to 5 Second Delay

- Outside Red/Amber Chock Icon turns on
- Inside light changes from red to green "CHOCKED"
- Outside Green Light turns off

### Door Open

- Outside top Red Light starts flashing
  - Interlocks turn on – the outlets for a fan and dock light are enabled
- (1) See note for Optional Sensor information

### Door closes and after a (2) 5 to 15 Second Delay

- Outside flashing Red Light turns off
- Interlocks turn off – the outlets for a fan and dock light are disabled

### Driver Removes Chock

- Outside Red/Amber Chock Icon turns off
- After a 5 to 15 second delay, Outside Green flashing light turns on
- Inside light changes from green "CHOCKED" light to Red Light

### Safety Situations

#### **\*\*\* Chock Pulled Prematurely with Door Open (After a (2) 3 to 15 Second Delay)\*\*\***

- Inside light changes from green "CHOCKED" light to Red Flashing Light
- Versa Light® Dock Light flashes and Inside Audible Alarm Sounds for 5 minutes, fan outlet is disabled
- Interlocks are disabled
- Outside Red/Amber Chock Icon turns off, outside red stay on
- Outside Alarm turns on for 10 minutes

#### **\*\*\* Door opens without a truck wheel chocked\*\*\***

- Versa Light® Dock Light flashes and Inside Audible Alarm Sounds for 5 minutes, fan outlet is disabled
- Interlocks are disabled
- Outside Red/Amber Chock Icon turns off, outside red stay on and Outside Alarm comes on for 10 Minutes

#### **\*\*\* Chock Cable gets Cut or Disconnected from Chock\*\*\***

- Inside lights alternately flash from green to red, on board yellow system LED comes on
- Outside Red comes on and if wheel was chocked, Chock Icon turns off and Outside Alarm comes on for 10 Minutes
- Interlocks are disabled
- Inside Alarm turns on and does not turn off until power is turned off or cable is plugged back in

(1) An Optional Second Sensor can be connected to the Control Board at J3 or OPT2 (See page 12 for connection information). The Optional Second Sensor negates the actions caused by the Door Sensor when the Door is Open. The Outside Red Light, Interlocks and Outlets are turned off.

# Smart Chock™ Installation Guide

**WARNING!!!!**

**Do not use in hazardous or corrosive environments!**

## REQUIRED TOOLS

- Drill bits, masonry bit for tap-con / wood bits 3/16" for pilot hole in dock seal
- Tape measure
- Wire strippers
- Hammer
- Felt tip marker
- 9/16" Wrenches for Chock Handle Assy.
- Hammer Drill
- Drill screw gun
- Precision flat blade screwdriver 1/8" wide
- Wire labels

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## YEARLY MAINTENANCE

- Inspect inside connections for any damage
- Inspect mounting bolts for tightness
- Clean unit with compressed air
- Clean Photo Sensor Lenses
- Inspect chock cable for damage or wear
- Check chock handle for damage
- Clean chock & ensure of debris
- Check choc for corrosion of plug connections
- For chocks with yellow cords, be sure connection is tight with channel-locks

# Smart Chock™ Installation Guide

## Installer-supplied hardware & fasteners

Mounting Surface	Inside Light Box	Outside Light Box
Cement Block	(4) ¼" x 1¼" Tapcon	(4) #10 x 1" Tapcon
Tip up concrete panel	(4) ¼" x 1¼" Tapcon	(4) #10 x 1" Tapcon
Sheet Metal	Sheet metal walls are not thick enough to hold inside box	Sheet metal walls are not thick enough to hold outside box
Steel	(4) ¼" x ¾" self-drilling screws	4) ¼" x ¾" self-drilling screws
Bollard	Use DL Manufacturing supplied kit	
Pole Bracket / Chock Hanger		(4) 3/8 Dia. Concrete Anchors

## Also needed:

Wiring – Outside Box to Inside Box	7 conductor 18 gauge wire	½" flexible conduit with connector for 7/8 knockout
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## Field Notes:

FOR SERVICE ASSISTANCE CALL DL MANUFACTURING TOLL FREE 866-235-7468

Smart Chock Model #: \_\_\_\_\_

Smart Chock Serial #: \_\_\_\_\_

(LOCATED LOWER PORTION OF CONTROL BOARD)

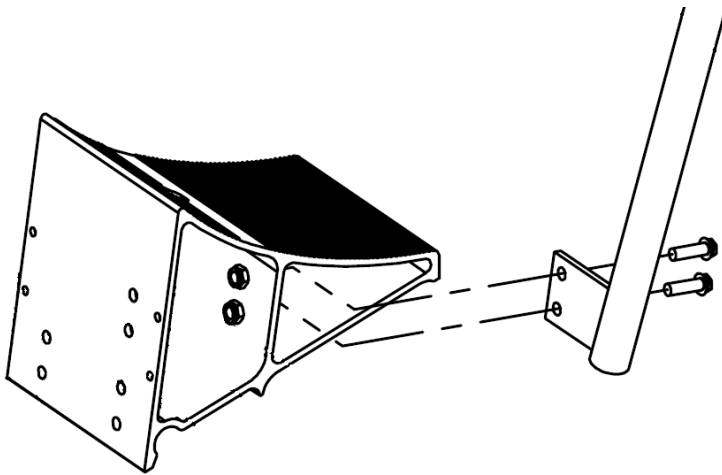
Door Location: \_\_\_\_\_

Customer: \_\_\_\_\_

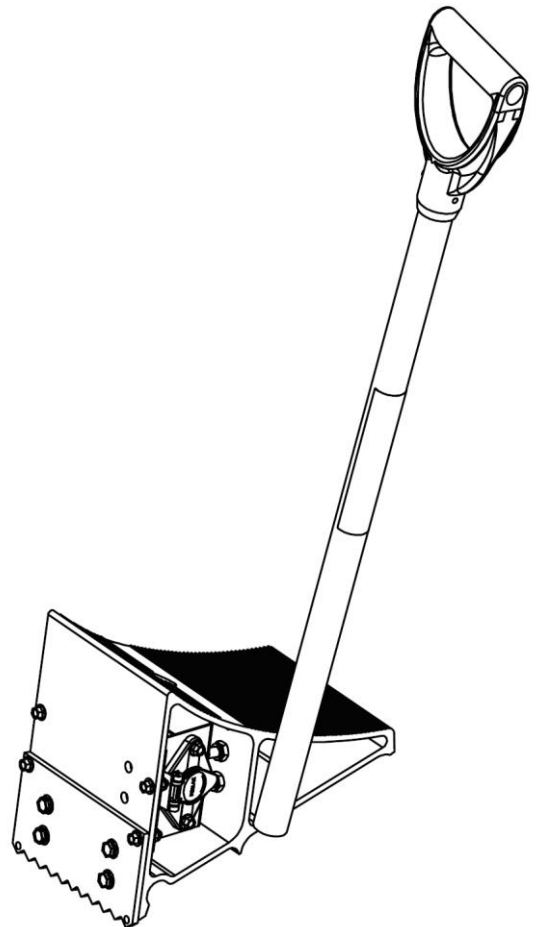
# Smart Chock™ Installation Guide

## **OPTION 1: STANDARD CHOCK HANDLE MOUNTING INSTRUCTIONS**

1. Remove the Nuts and Bolts from the Handle Assembly.
2. Attach the Handle Assembly to the Chock as shown below using the Hardware from Step 1.



Hardware & Handle orientation  
- Parts removed for clarity



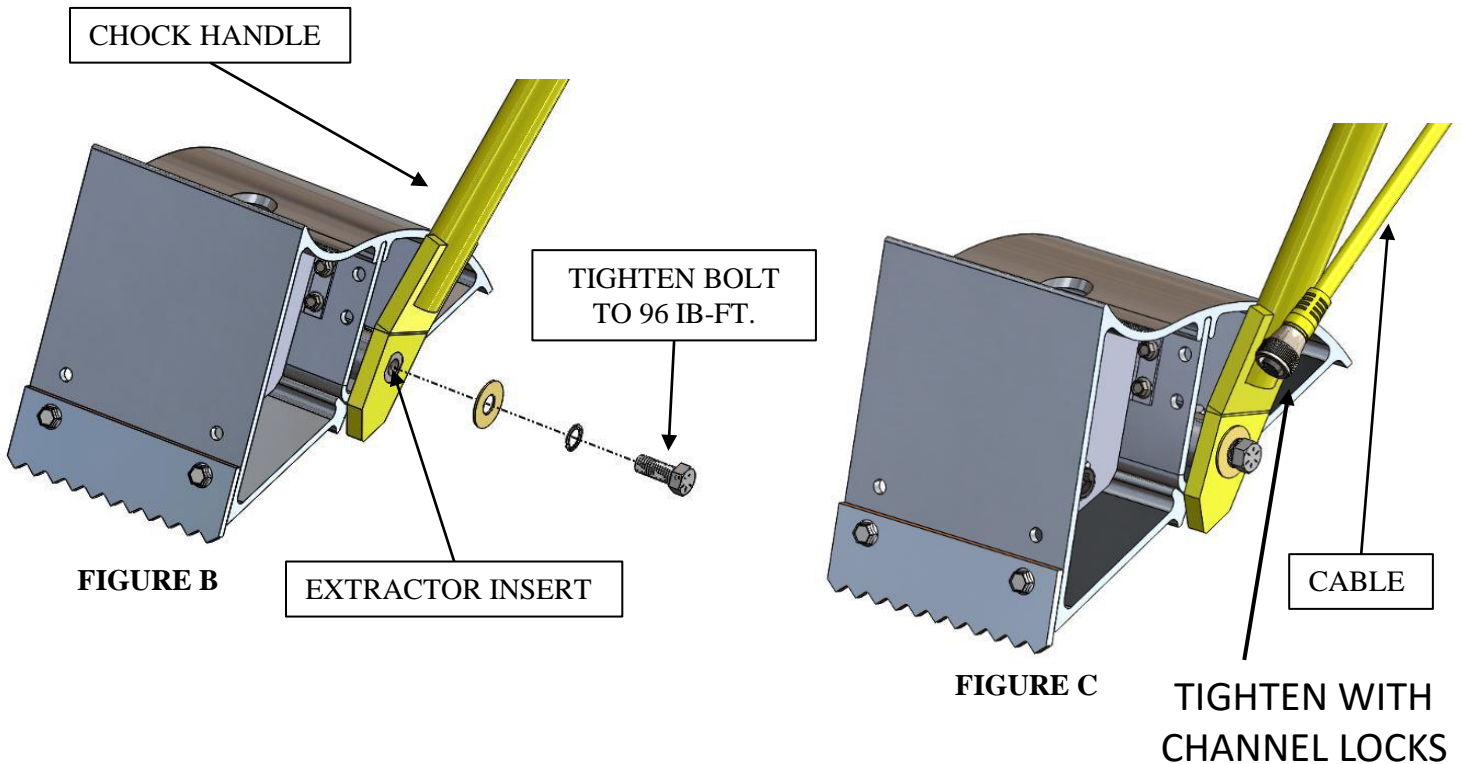
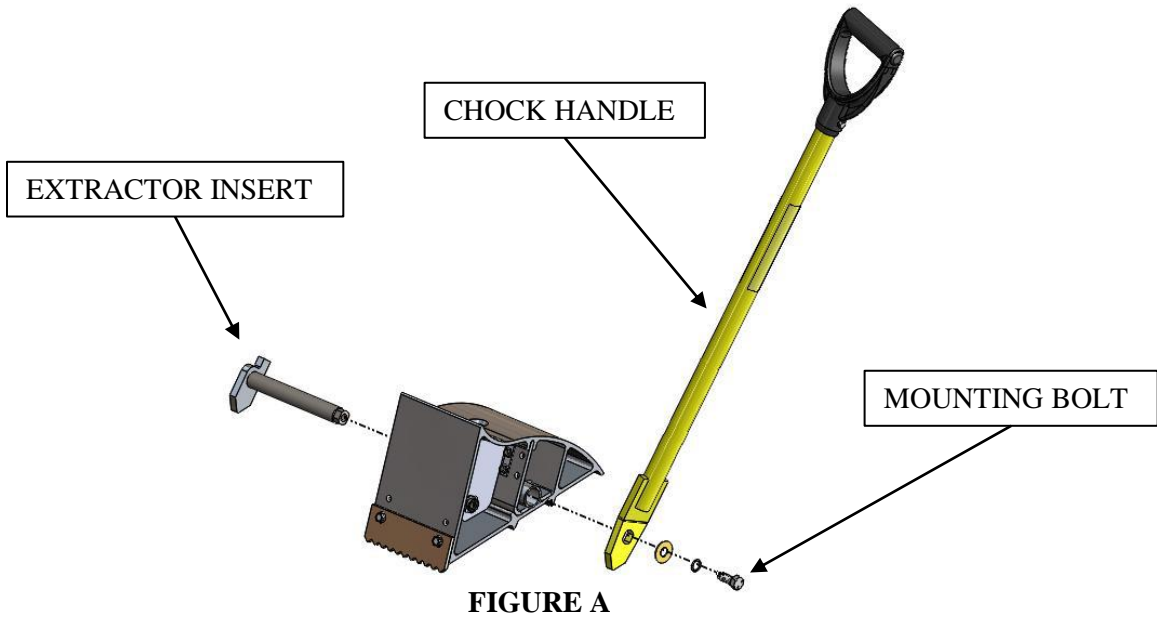
Chock after assembly

**TIGHTEN CONNECTION WITH CHANNEL LOCKS!**

# Smart Chock™ Installation Guide

## **OPTION 2: VECTOR CHOCK HANDLE MOUNTING INSTRUCTIONS**

- 1) Remove the Nuts and Bolts from the Extractor Assembly and Insert Extractor into Chock (Figure A.)
- 2) Slide Handle over Extractor. Place Washer, Lock Nut, & Bolt in that Order as Shown (Figure A.). Tighten Bolt with Torque Wrench to 96 lb-ft.

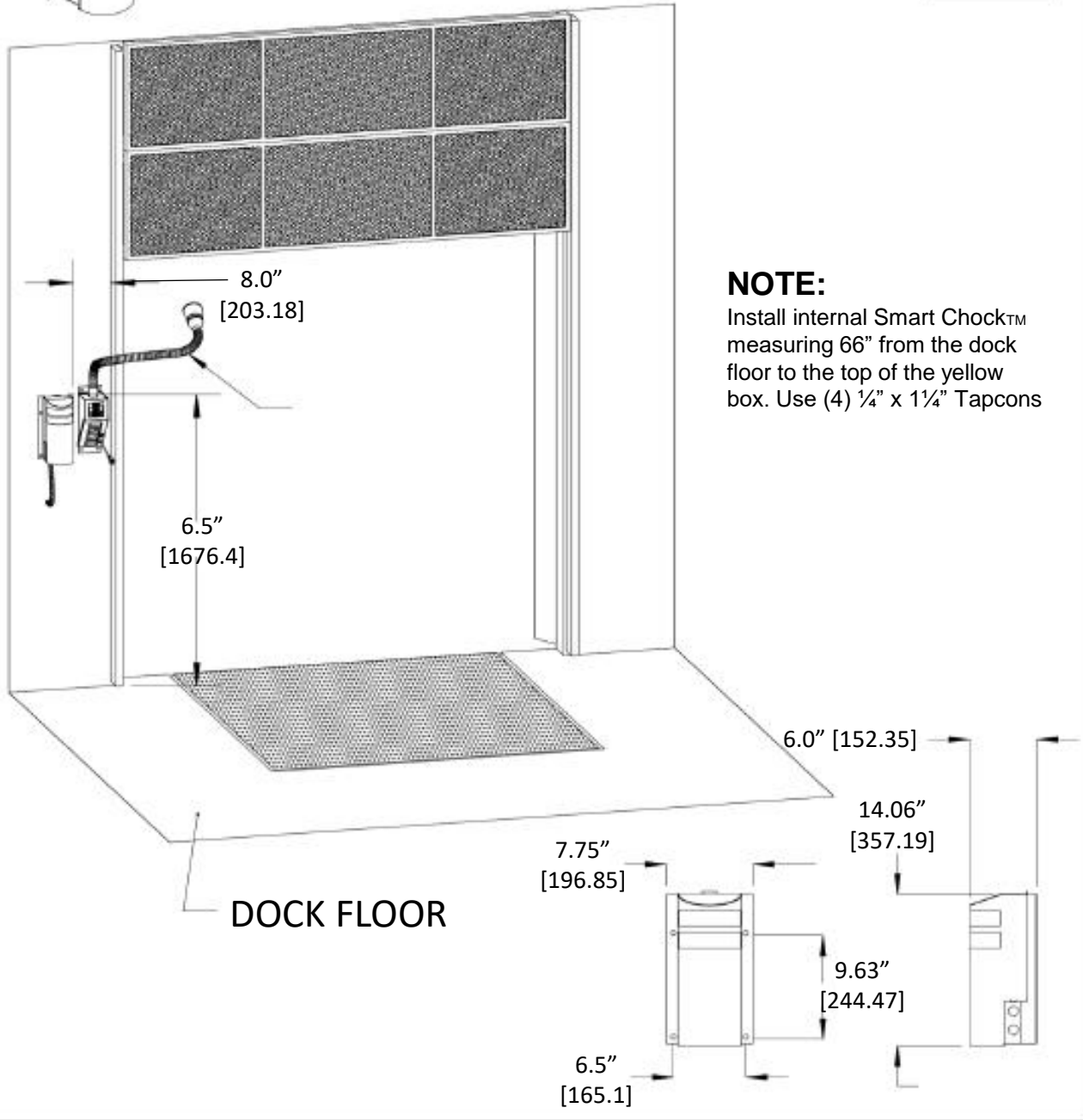
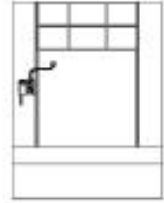
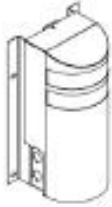


# SMART CHOCK™ INSTALLATION

## WALL MOUNTED STYLE

### INTERNAL

(YELLOW BOX)

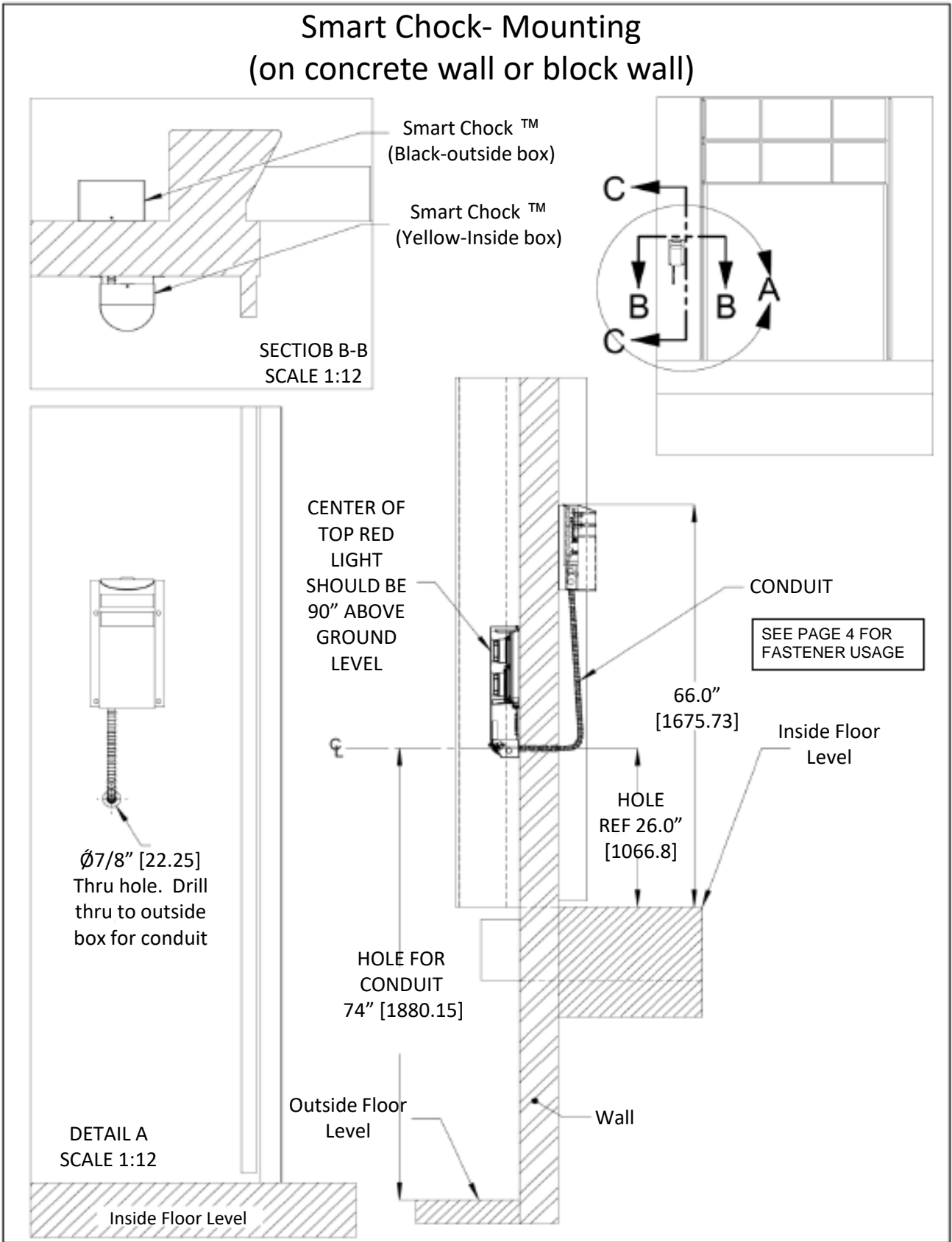


## INSIDE LIGHT BOX MOUNTING



# Smart Chock™ Installation Guide

## Smart Chock- Mounting (on concrete wall or block wall)



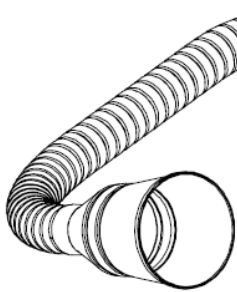
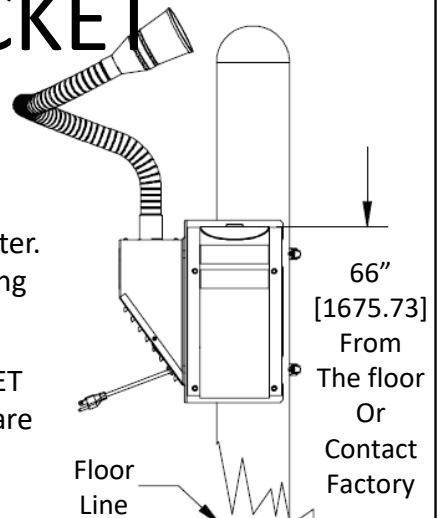
## INSIDE LIGHT BOX MOUNTING CON'T.

# BOLLARD BRACKET

PART # MK5027

**BOLLARD BRACKET**  
Used on bollards 4 to 10 inch diameter.  
(2) Hose clamps & 12 ¼-20 mounting  
Bolts are included.

**BOLLARD BRACKET**  
(mounting hardware  
included)



VERSA LIGHT™

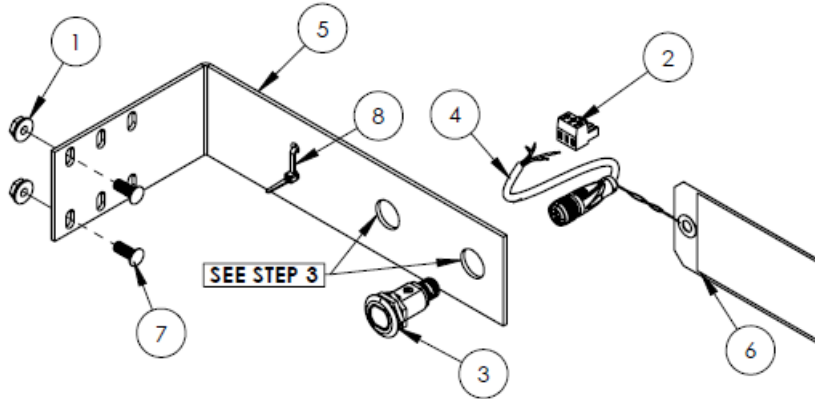
Hsc ¼-20X1/2  
12 Places  
(provided)



SMART CHOCK™

Hose Clamps

# PHOTOEYE INSTALLATION GUIDE



**STANDARD LOCATION  
(ABOVE DOOR HEADER)  
MOUNTING INSTRUCTIONS:**

**STEP 1**

MEASURE 18" ABOVE THE DOOR.  
**SEE DETAIL A**

**STEP 2**

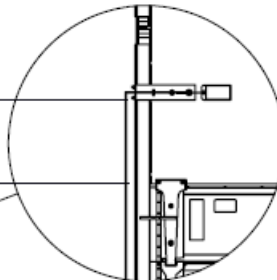
DRILL TWO HOLES IN ROLLER TRACK (USE 17/64" DRILL BIT).

**STEP 3**

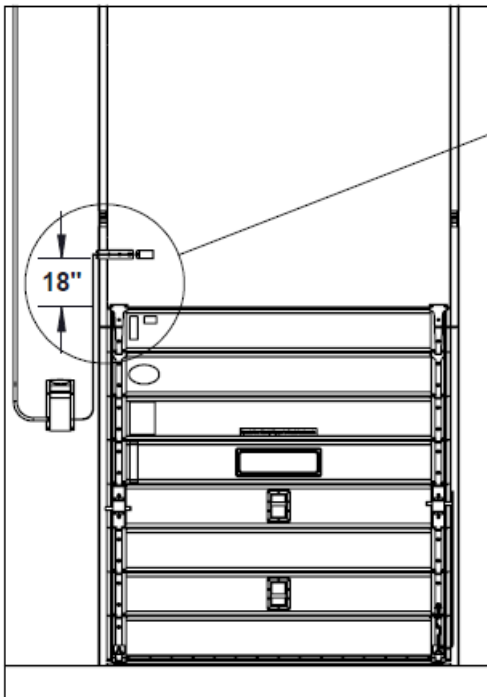
USE MOUNTING HOLE THAT BEST LOCATES PHOTOEYE TO DETECT THE DOOR AND NO OTHER OBSTACLES, SUCH AS LIFTING CABLE.

**STEP 4**

ORIENT PHOTOEYE SO DISTANCE ADJUSTMENT SCREW IS FACING TOWARDS THE FLOOR.



**DETAIL A  
SCALE 1 : 30**



**WIRING & DISTANCE ADJUSTMENTS:**

**STEP 1**

FOR STANDARD LOCATION WIRING SEE FIGURE #1. FOR REVERSE LOCATION WIRING SEE FIGURE #2.

**STEP 2**

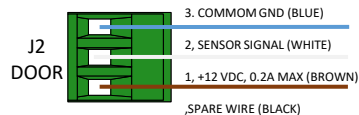
PHOTOEYE BEAM IS FACTORY PRESET TO 4" DISTANCE. THIS DISTANCE CAN BE ADJUSTED TO A MAXIMUM OF 9". **IMPORTANT:** FOR BEST RESULTS, PHOTOEYE BEAM SHOULD POINT AT A NON-REFLECTIVE SURFACE.

**STEP 3**

START UP CHECK: THE PHOTOEYE INDICATOR LIGHT SHOULD BE SOLID GREEN WHEN BEAM DOES NOT DETECT THE DOOR. THE INDICATOR LIGHT SHOULD BE YELLOW WHEN BEAM DETECTS THE DOOR. INDICATOR LIGHT WILL BLINK IF AN ERROR OCCURS.

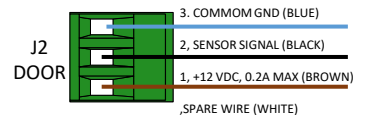
ITEM NO.	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
CP5036	1	CP2048	1/4-20 FLANGE NUT	2
	2	CP3216	3 POLE TERMINAL BLOCK	1
	3	CP3397	P&F PHOTO SENSOR (GLV18-8-H-8083/73/120)	1
	4	CP3398	FEMALE CORD SET	1
	5	CP4052	P&F PHOTOEYE BRACKET	1
	6	CP9077	PHOTO EYE INSTALLATION MTG. INSTR. TAG	1
	7	DR2119	1/4"-20 X 5/8" SLOTTED TRACK BOLT	2
	8	VL2028	4" x 1/8" TIE WRAP	5

**STANDARD LOCATION  
MOUNTING  
(ABOVE DOOR HEADER)**



**FIGURE #1**

**REVERSE LOCATION  
MOUNTING  
(BELOW DOOR HEADER)**



**FIGURE #2**

CP9078 – REV E

## PHOTO EYE INSTALL - TYPICAL & MxV DOORS

# Smart Chock™ Installation Guide

## MAGNETIC SENSOR INSTALLATION GUIDE

DLM MODEL:CP5038

**NOTE:**

SENSOR DOES NOT REQUIRE ANY POWER TO WORK. DO NOT RUN SENSOR WIRE IN SAME CONDUIT WITH 115 AND HIGHER VOLTAGE. TRANSIENTS CAN DAMAGE CONTROL BOARD.

**STANDARD LOCATION**

**MOUNTING INSTRUCTIONS:**

**STEP 1**

RECOMMENDED MOUNTING HEIGHT IS 36" (48" MAX.) FROM THE FLOOR. SENSOR CAN BE MOUNTED LEFT OR RIGHT SIDE OF DOOR.

**STEP 2**

MOUNT SENSOR AT DESIRED HEIGHT AND TIGHTEN TO DOOR CHANNEL WITH 1/4"-20 SET SCREWS.

**STEP 3**

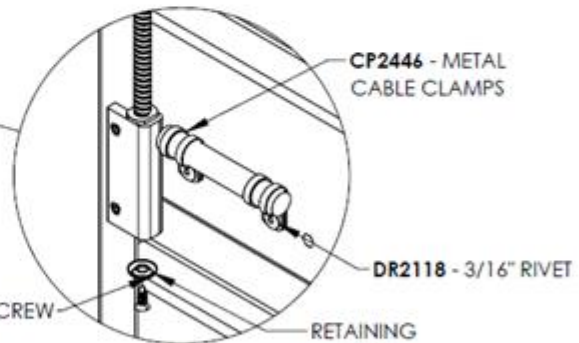
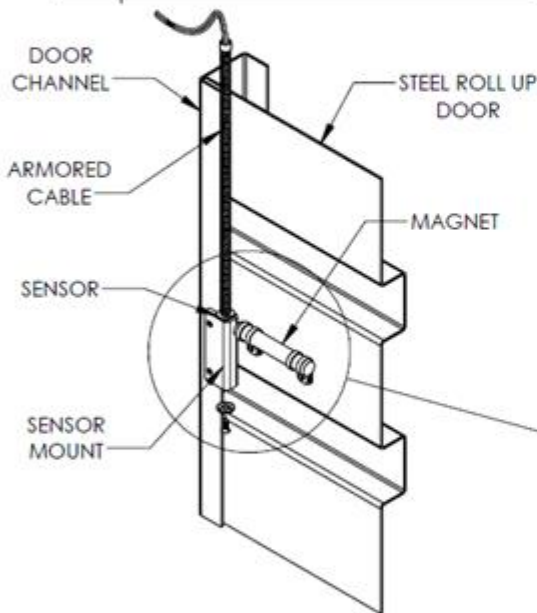
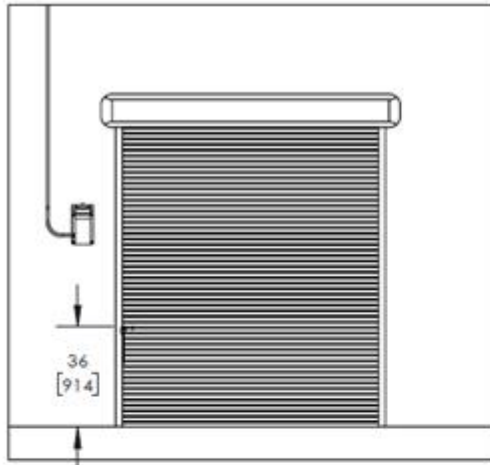
MOUNT FACE OF THE MAGNET WITHIN 1/4"-1/2" FROM THE EDGE OF THE SENSOR MOUNT. MARK AND PRE-DRILL TWO 3/16" HOLES FOR DR2446 -CABLE CLAMPS. ATTACH TO STEEL DOOR WITH TWO DR2118 - 3/16" BLIND RIVETS.

**NOTE:**

FOR BEST PERFORMANCE AND OPERATION, THE MAGNET MUST BE POSITIONED ONE END OR OTHER OF THE SENSOR MOUNT.

**STEP 4**

CONFIRM PROPER OPERATION BY MOVING DOOR UP AND DOWN. MAGNETIC CONTACT WILL CHANGE LIGHTS ON CONTROL BOARD ACCORDING TO THE "SEQUENCE OF OPERATION" IN THIS MANUAL.



DETAIL A  
SCALE 1 : 3

**WIRING INSTRUCTIONS:**

WIRE SENSOR TO CONNECTOR "J2" LABELED "DOOR" ON CONTROL BOARD. CONNECT THE RED AND BLACK WIRES TO PIN 1 AND TO PIN 2 (PIN 3 NOT USED).

THE SENSOR IS A PASSIVE SWITCH; IT DOES NOT MATTER WHICH WIRE IS CONNECTED TO PIN 1 OR PIN 2. SEE FIGURE #1

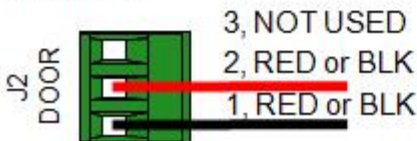
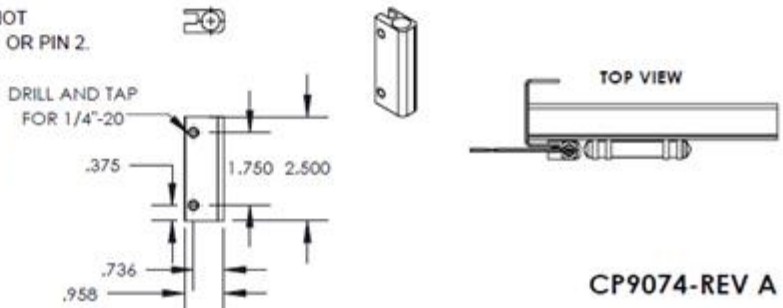


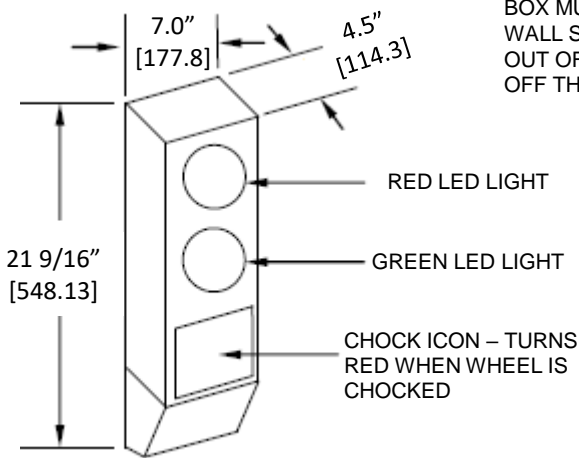
FIGURE: #1



CP9074-REV A

## MAGNETIC CONTACT INSTALL - ROLLING STEEL DOORS

## INSTALLATION OF OUTSIDE COMPONENTS

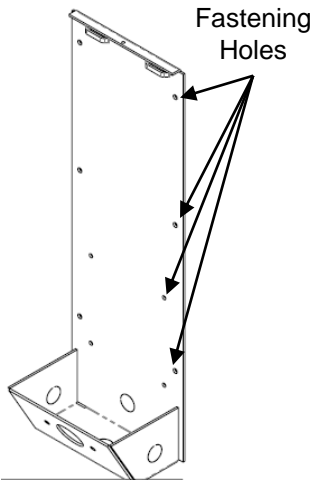


BOX MUST BE SECURELY FASTENED TO WALL SO WHEN CABLE IS PULLED, IT SNAPS OUT OF SOCKET BEFORE BOX IS PULLED OFF THE WALL.

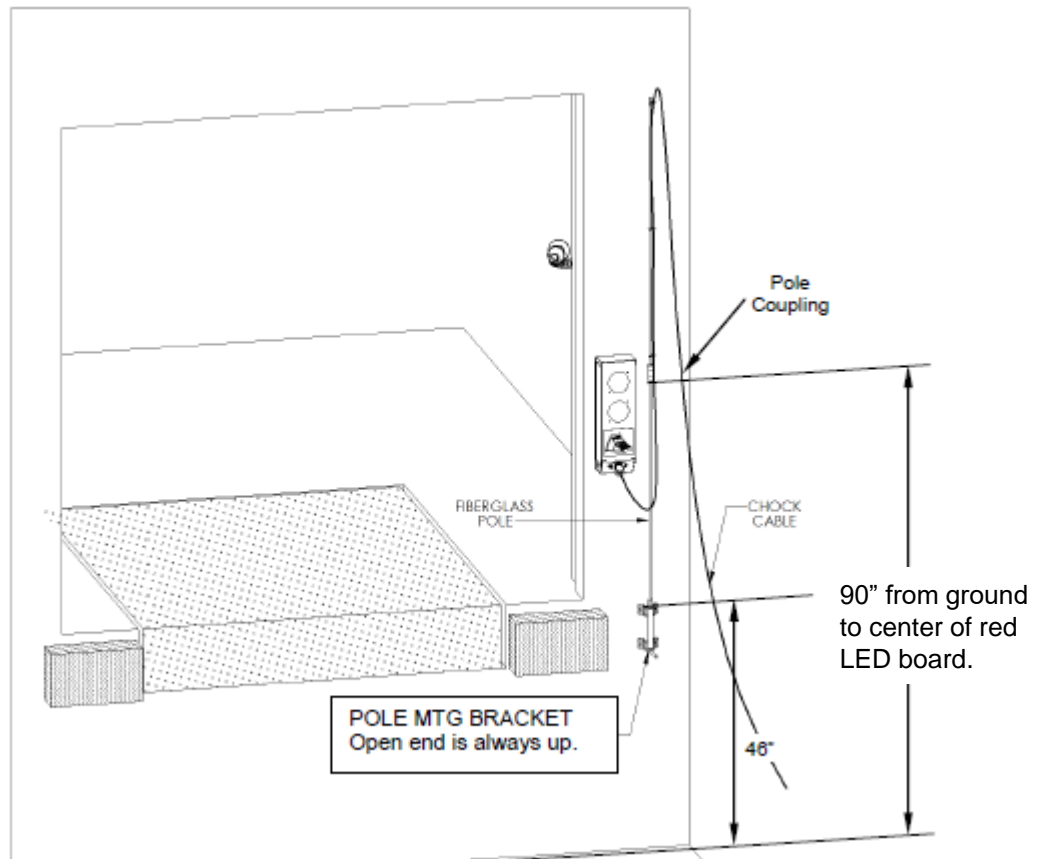
See Page 7 for Mounting Instructions.

### Pole Attachment

1. Attach Pole Mounting Bracket to wall using 3/8" anchors. Top of bracket should be 46" off the ground.
2. Attach Pole sections together and tighten set screw in the Coupling.
3. Slide bottom of Pole (with black tubing) into Mounting Bracket until it bottoms out. Pole is held in place by black rubber tubing.



Use appropriate fastening methods to fasten to building wall



## INSTALLATION OF OUTSIDE COMPONENTS

# Smart Chock™ Installation Guide

**REMOVE POWER BEFORE SERVICING. MUST BE INSTALLED BY QUALIFIED ELECTRICIAN**

**MODEL 654 LEVELER BUTTON**

**DO NOT APPLY VOLTAGE TO J6 TERMINALS, FOR SWITCH ONLY**

J6-1, 8.2 VDC, 3 mA MAX  
J6-2, COMMON GND

**OUTSIDE LIGHT BOX**

J15-1, +12 VDC, 1.25 A MAX  
J15-2, RED LIGHT  
J15-3, CHOCK ICON  
J15-4, GREEN LIGHT

**CHOCK**

J16-1, 8.2 VDC, 3mA max  
J16-2, COMMON GND  
J16-3, CHOCK SIGNAL

**1 AMP SLO-BLO 250V FUSE UNDER FUSE COVER**

**REPLACE WITH ONLY SAME TYPE AND RATING**

FOR BEST RESULTS WHEN REPLACING FUSE, PLACE FUSE IN COVER, THEN PLACE COVER OVER CLIPS AND THEN SNAP FUSE INTO CLIPS

**12 AMP BREAKER FOR SWITCHED VERSA LIGHT AND FAN OUTLETS ONLY. MANUAL PRESS TO RESTART.**

**120 VAC INPUT**  
120 VAC, 12 A MAX  
60 HZ

J1-1, 120 VAC LINE  
J1-2, 120 VAC NEUTRAL  
J1-3, GROUND

**OPTIONAL TERMINAL BLOCK JUMPERS FOR OPT2 & OPT 3**

Refer to Instructions that come with Replacement PC Boards

J3-3 OR J4-3, COMMON GND  
J3-2 OR J4-2, INPUT SIGNAL  
J3-1 OR J4-1, +12 VDC, .2A MAX

**OPTIONAL SENSOR**

SEE INSTRUCTIONS THAT OPTIONAL SENSOR COMES WITH SAFETY STRAP  
J3-3, COMMON GND  
J3-2, SENSOR SIGNAL  
J3-1, +12 VDC, .2A MAX

**RS485 CONNECTION**

5 VDC, 60 mA MAX  
9100 bps  
J10-3, COMMON GND  
J10-2, CHANNEL A  
J10-1, CHANNEL B

**PHOTO EYE DOOR SENSOR (STANDARD LOCATION MTG)**

J2-3, COMMON GND (BLU)  
J2-2, SENSOR SIGNAL (WHT)  
J2-1, +12 VDC, .2A MAX (BRN), SPARE WIRE (BLK)

**Switching Relays for J7, J8, Versa Light Outlet and Fan Outlet are Rated 120 VAC, 12 A .75 Power Factor**

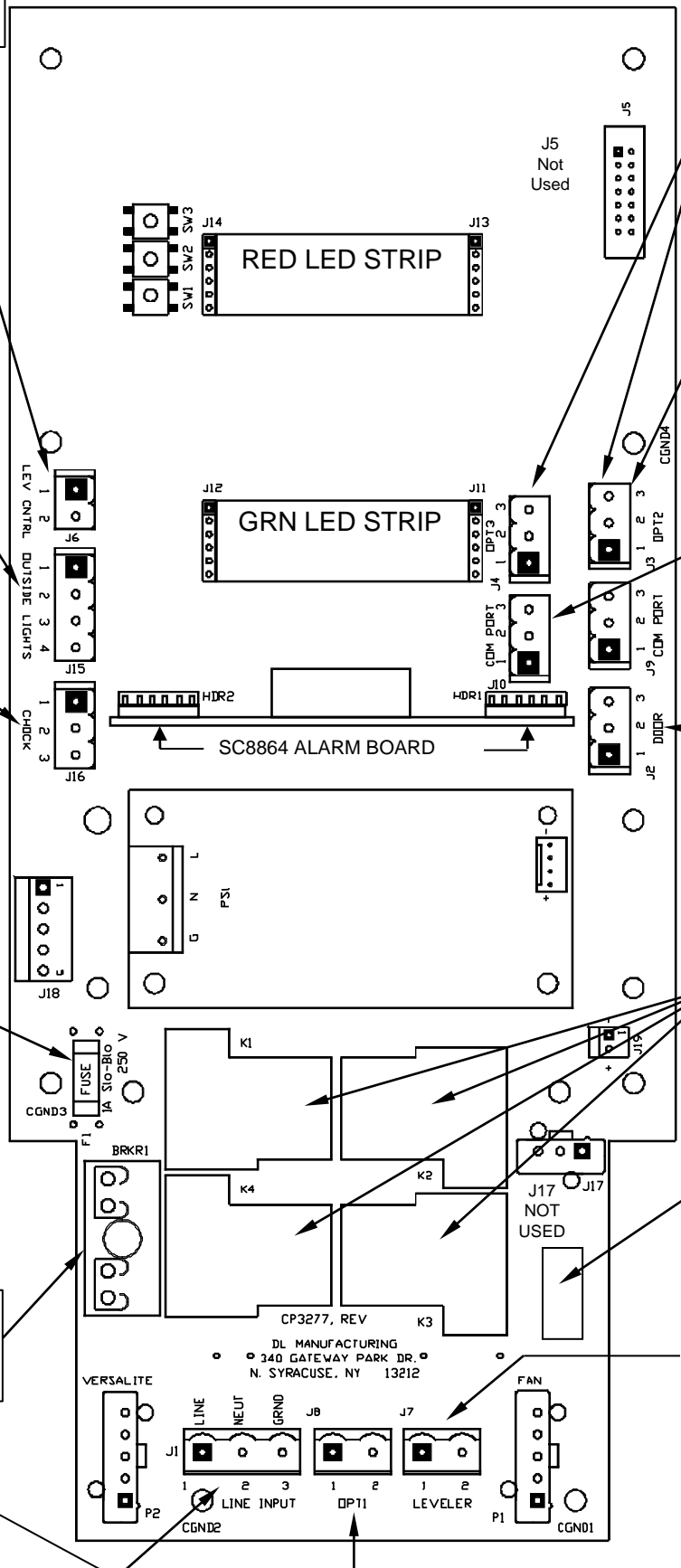
**ASSEMBLY NUMBER & REV. LABEL**

**MODEL 653 & 654 LEVELER INTERLOCK**



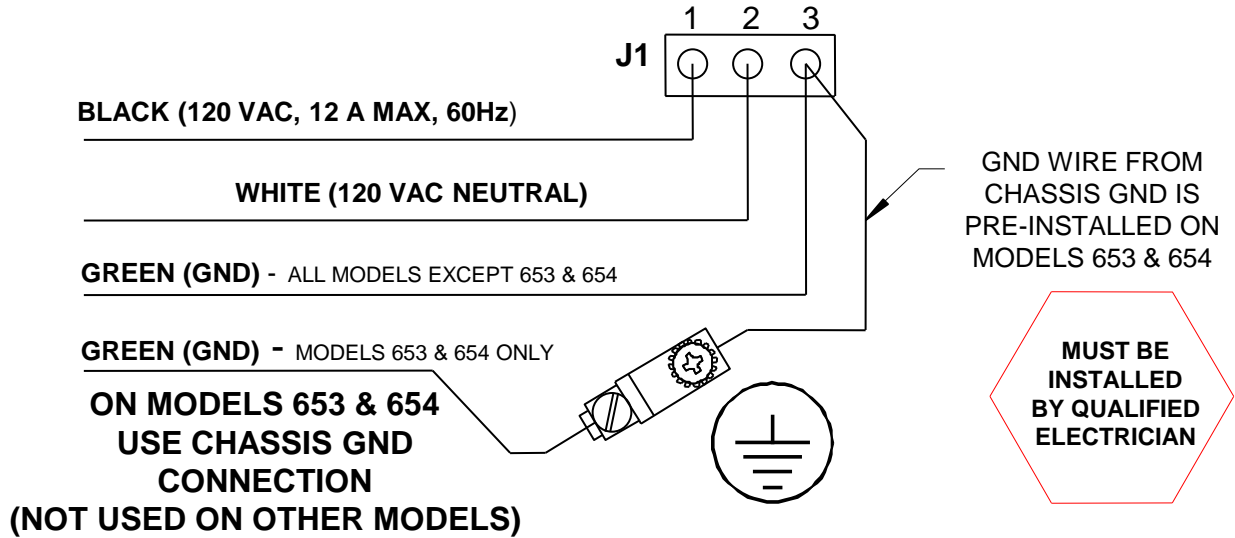
277 VAC, 30AC  
J7-1 & 2 CONNECTED TO K3 ISOLATED RELAY CONTACTS

**OPTIONAL ALTERNATE CONTACTS**



## WIRING OVERVIEW / INDEX

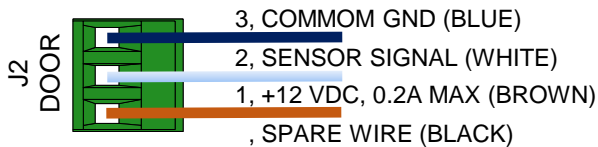
## SMART CHOCK™ FIELD WIRING DIAGRAM INCOMING POWER INTERNAL (YELLOW BOX)



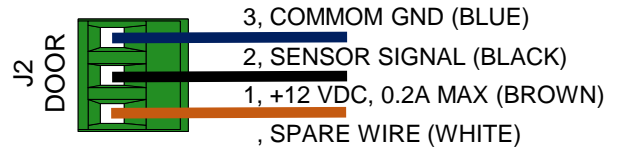
## PHOTO EYE DOOR SENSOR

PHOTO SENSOR IS 12 VDC. DO NOT RUN IN SAME CONDUIT WITH 120 AND HIGHER VOLTAGE. TRANSIENTS CAN DAMAGE CONTROL BOARD

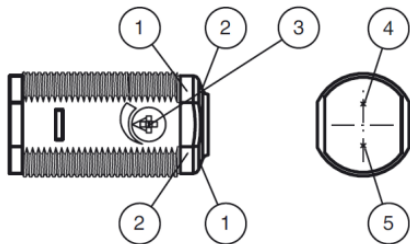
### STANDARD LOCATION MOUNTING (ABOVE DOOR HEADER)



### REVERSE LOCATION MOUNTING (BELOW DOOR HEADER)

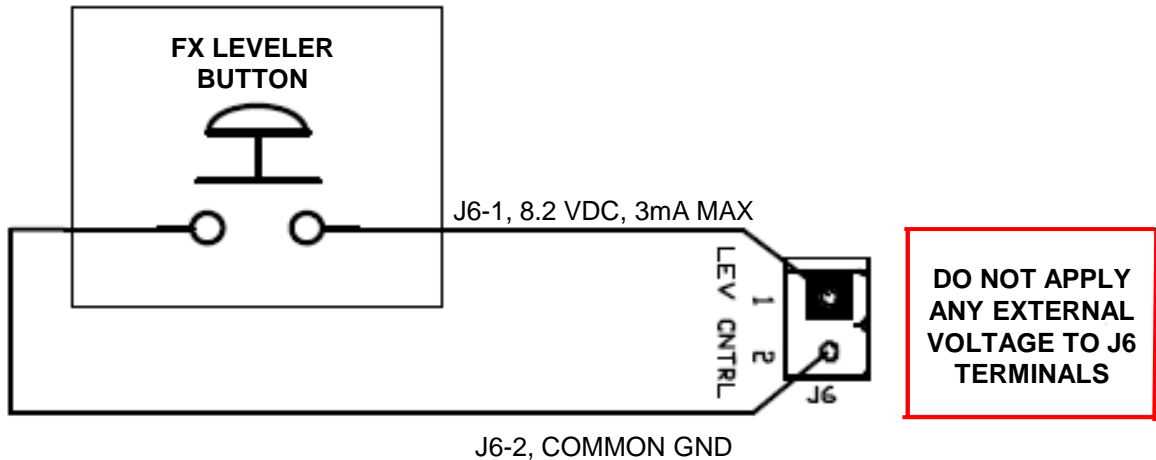


### Indicators/operating means



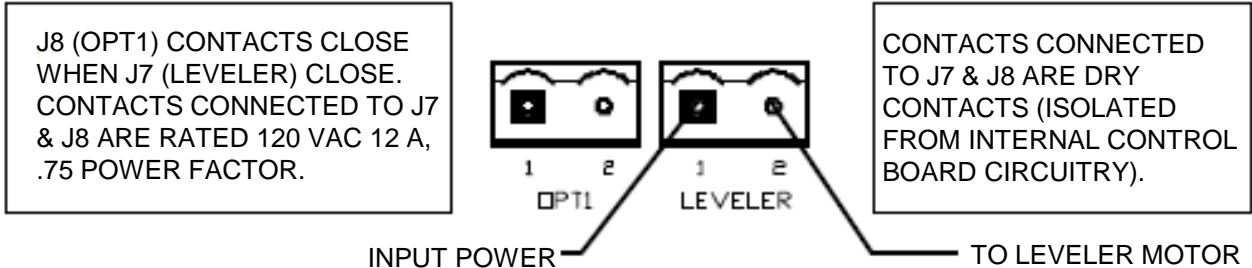
1	Operating display	green
2	Signal display	yellow
3	Detection range adjuster	
4	Emitter	
5	Receiver	

## SMART CHOCK™ FIELD WIRING DIAGRAM MODEL 654 LEVELER CONTROL SIGNAL



ON MODEL 654 SMART CHOCKS – WHEN THE LEVELER BUTTON IS PRESSED, THE FAN WILL POWER DOWN. AFTER A 2 SECOND DELAY, THE LEVELER (J7) WILL RUN. ONCE THE LEVELER BUTTON IS RELEASED, THE FAN WILL TURN BACK ON.

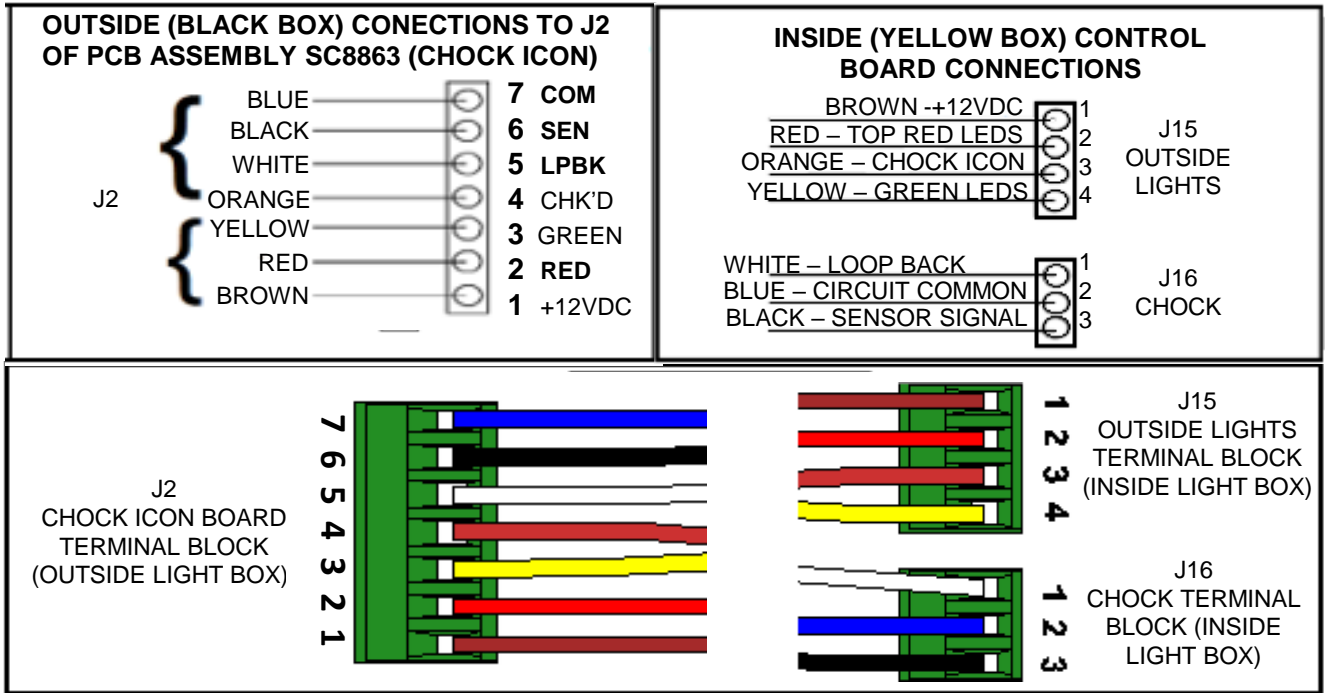
## MODEL 654 & 653 LEVELER INTERLOCK / OPT1



## WIRING DIAGRAM J6, J7 & J8

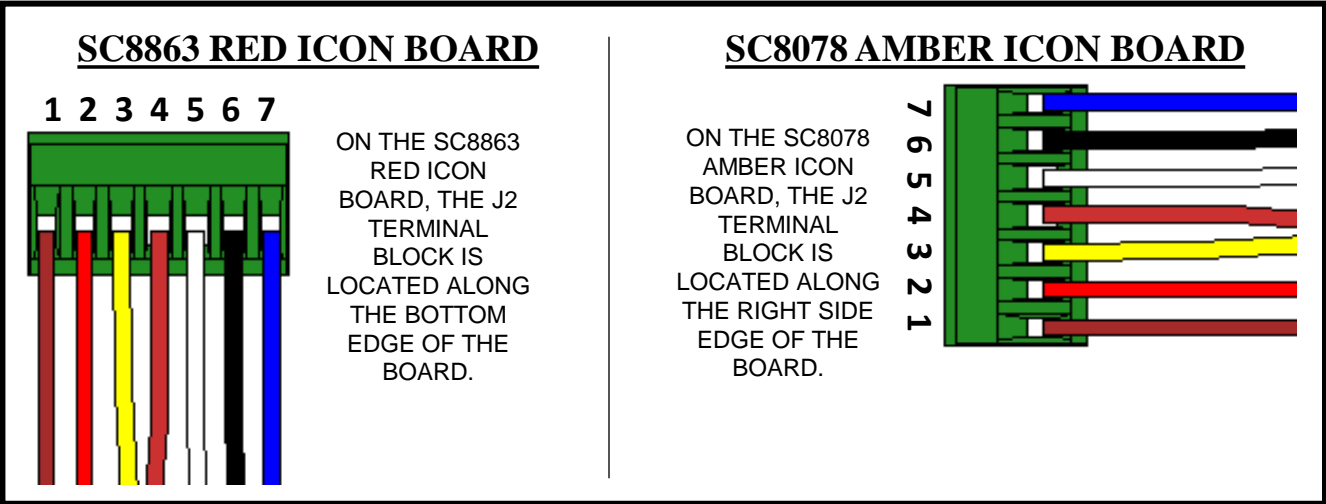


# SMART CHOCK™ FIELD WIRING DIAGRAM OUTSIDE LIGHTS



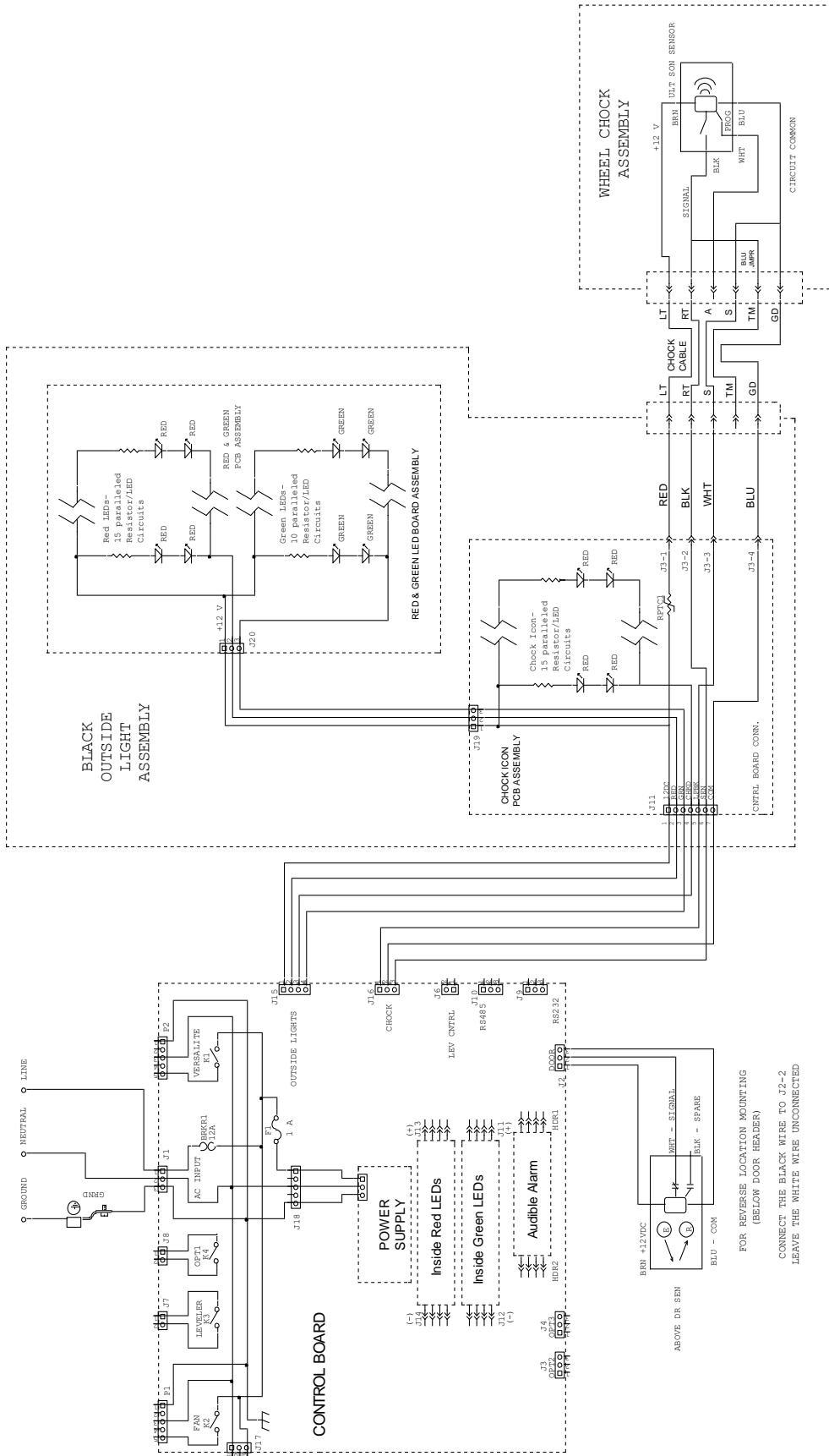
IMPORTANT!!!

OUTSIDE ICON BOARD TERMINAL BLOCK LOCATIONS FOR CONNECTOR J2 ARE DIFFERENT FOR RED VS AMBER ICON BOARDS:



## WIRING DIAGRAM – INSIDE TO OUTSIDE BOX

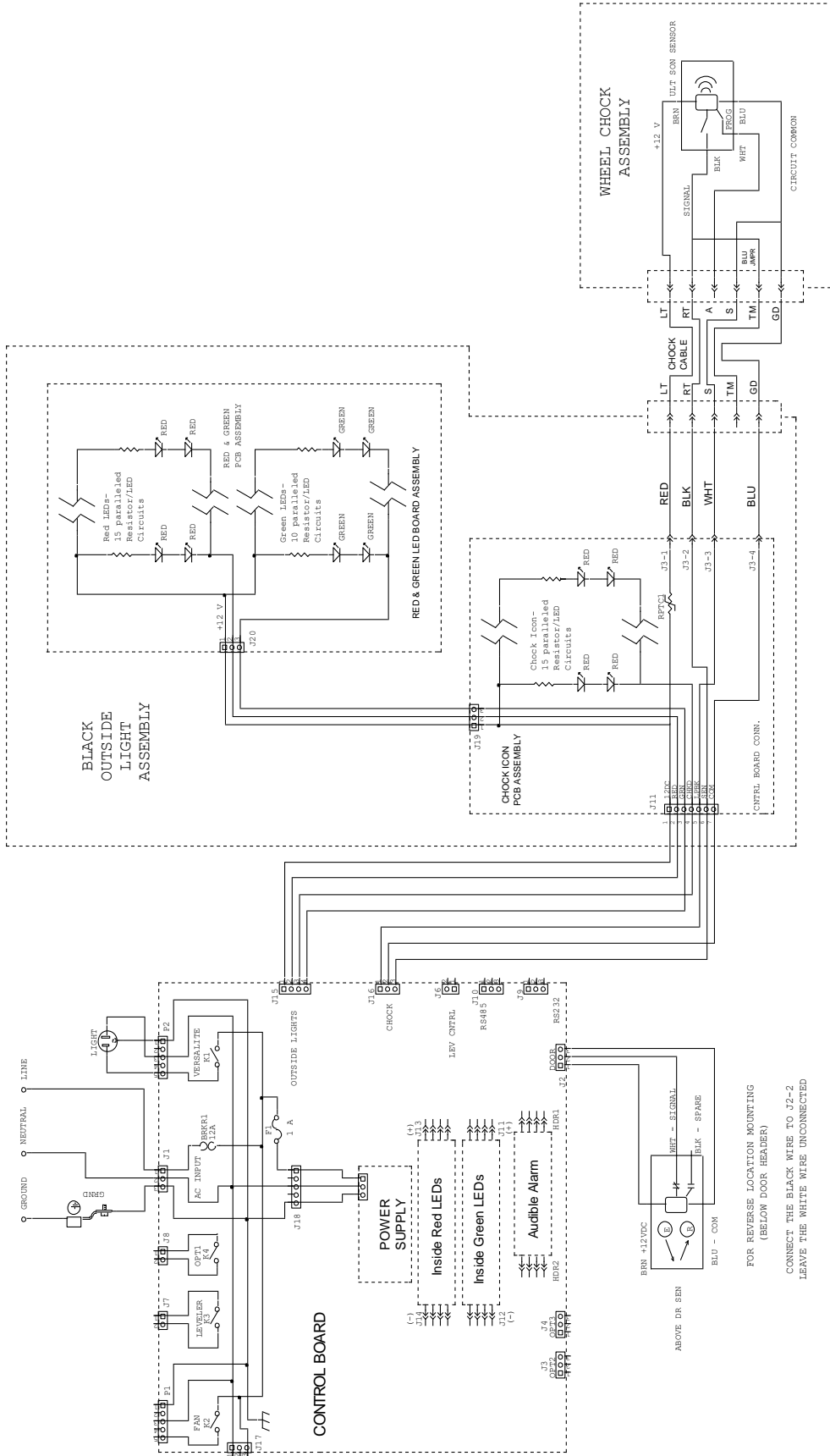
# Smart Chock™ Installation Guide



FOR REVERSE LOCATION MOUNTING  
(BELOW DOOR HEADER)  
CONNECT THE BLACK WIRE TO J2-2  
LEAVE THE WHITE WIRE UNCONNECTED

## MODEL 650 WIRING DIAGRAM

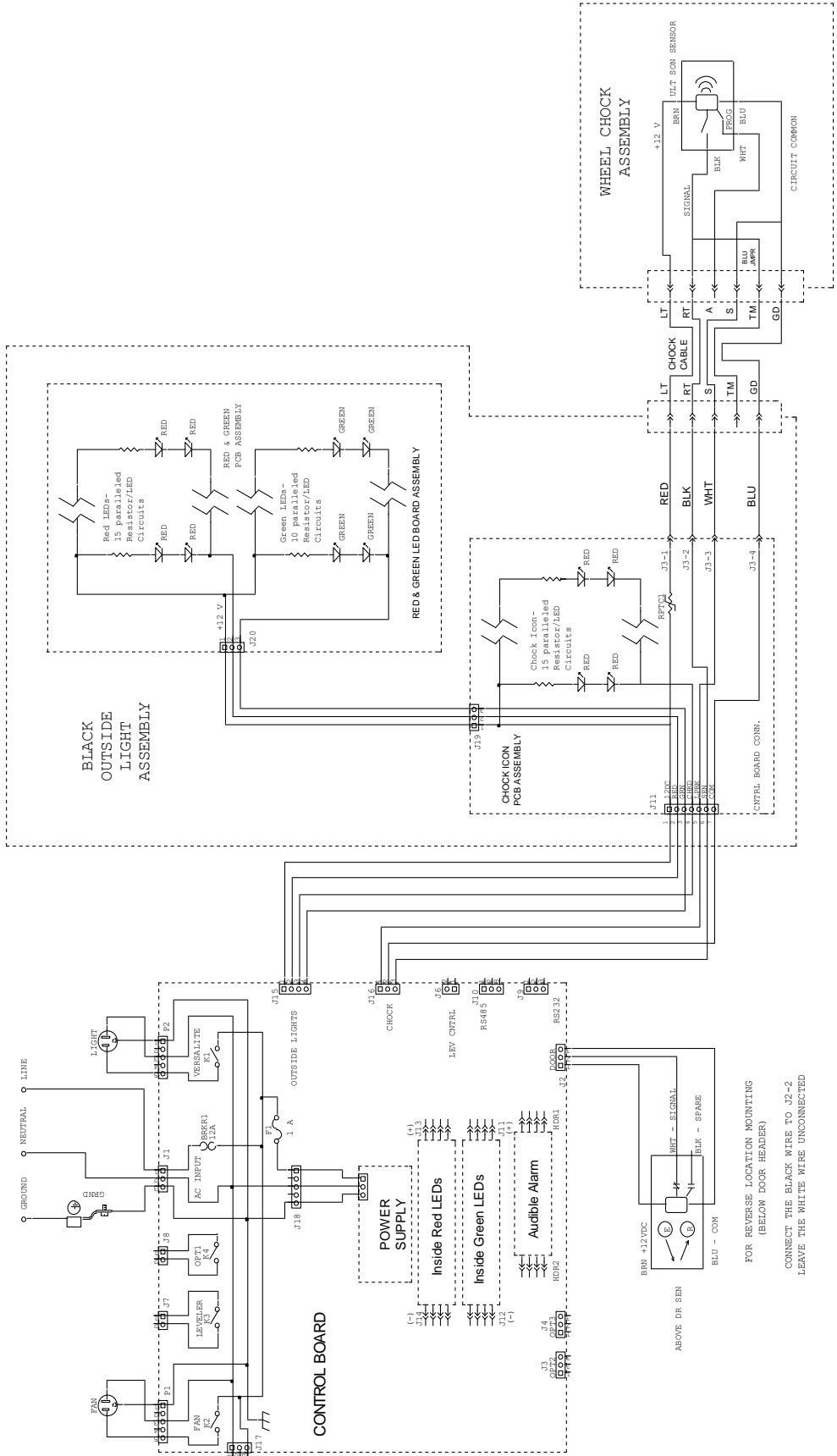
# Smart Chock™ Installation Guide



## MODEL 651 WIRING DIAGRAM

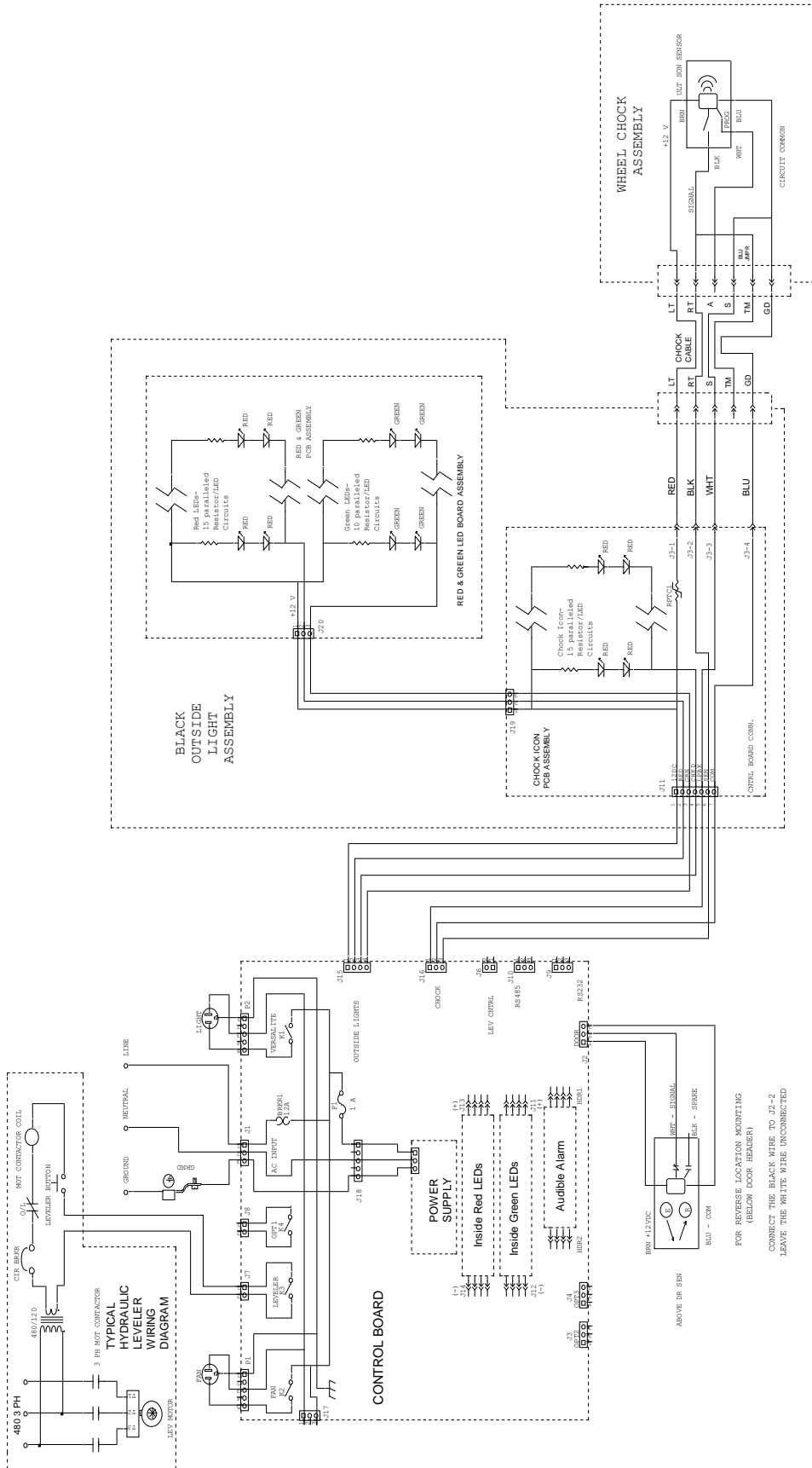
FOR REVERSE LOCATION MOUNTING  
(BELOW DOOR HEADER)  
CONNECT THE BLACK WIRE TO J12-2  
LEAVE THE WHITE WIRE UNCONNECTED

# Smart Chock™ Installation Guide



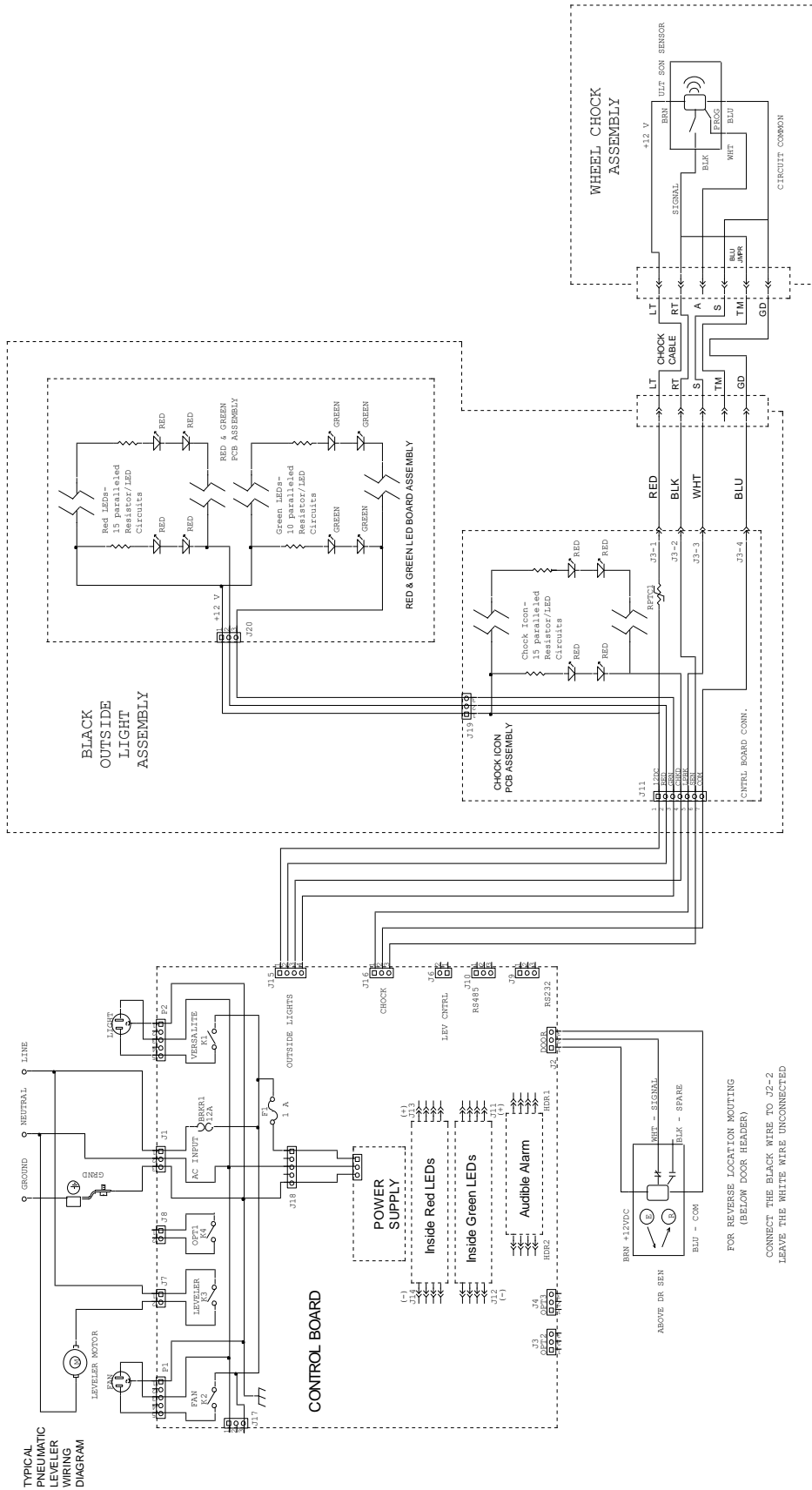
## MODEL 652 WIRING DIAGRAM

# Smart Chock™ Installation Guide



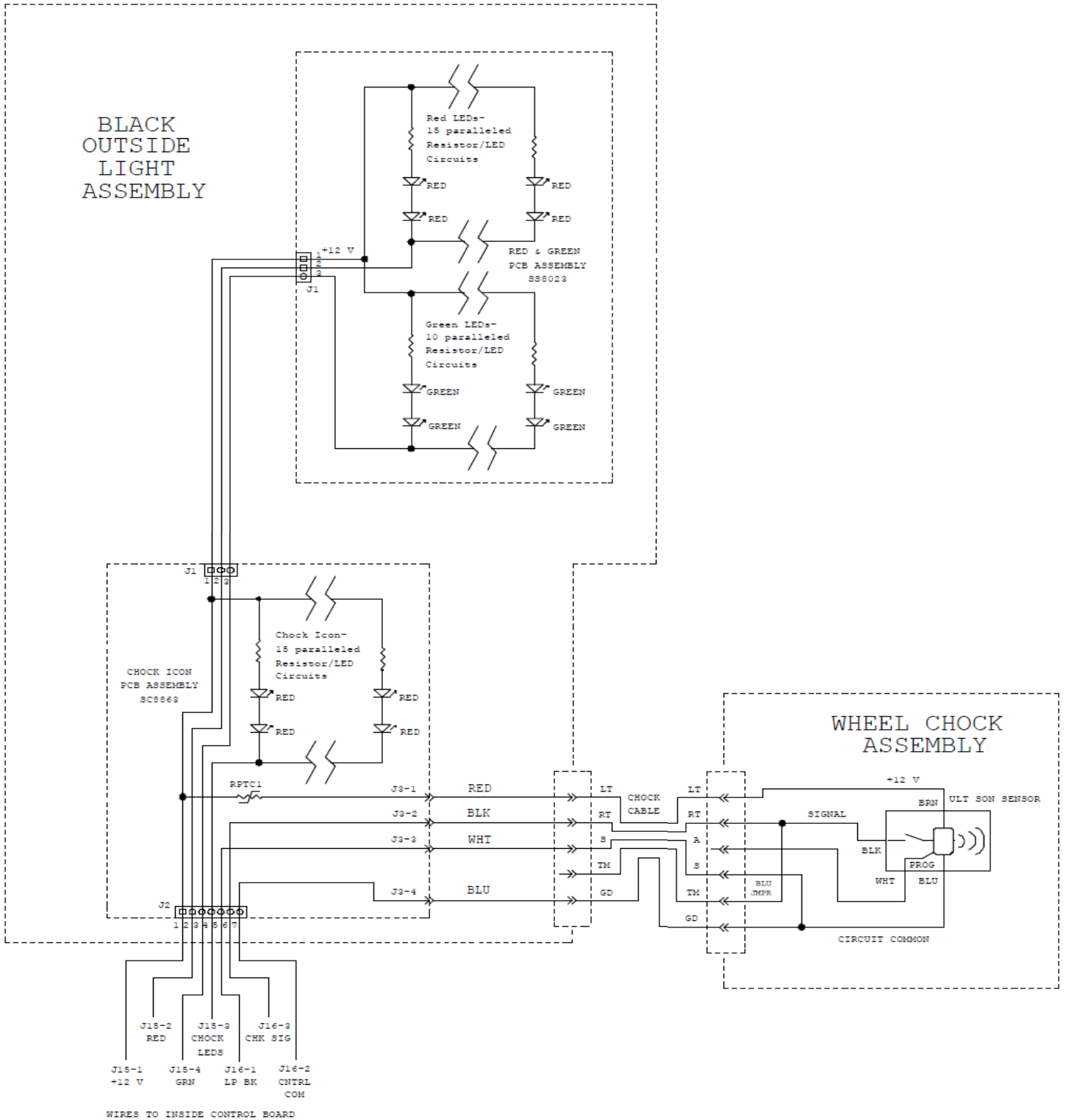
## MODEL 653 WIRING DIAGRAM

# Smart Chock™ Installation Guide



## MODEL 654 WIRING DIAGRAM

# OUTSIDE LIGHT BOX / CHOCK WIRING DIAGRAM



# OUTSIDE LIGHT BOX / CHOCK WIRING DIAGRAM

*DL Manufacturing*  
**Terms / Conditions/ Warranty**

**Shipping Times**

~ Orders for stock items received by 3:00pm EST will be processed for shipment the next day. Orders requesting 2nd Day Air or Overnight Air received by 1:00pm will be processed for same day shipment.

**Shipments / Freight**

~ All DL Manufacturing orders will ship directly from our facility in North Syracuse, NY.  
~ All parts will be shipped via UPS Ground unless you authorize a different service. UPS shipments are prepaid and the charges are added to your invoices.  
~ For orders shipping by common carrier, the freight will be FOB, North Syracuse, NY. When "best way" is the preferred shipping method on your order, DL Manufacturing will choose the carrier, unless otherwise stated, for the orders shipping from this facility. No adjustments will be made after the order has shipped.

**Returns**

~ DL Manufacturing will issue a Returned Material Authorization (RMA) number for any product, parts and accessories. Products should not be returned without an RMA number.  
~ Replacement parts will be invoiced at the time of shipping. Invoices will be credited upon receipt and inspection of Returned Material Authorization (RMA).  
~ Freight for returns is paid for by the shipper unless otherwise specified by DL Manufacturing.  
~ A restocking fee of 35% of net price is charged for returns.  
~ All replacement parts are warranted for a period of 90 days from shipment.

**Cancellation Fees**

~ Cancellation charges may be incurred on orders cancelled with DL Manufacturing. Please contact DL Manufacturing to discuss each situation.

**Warranty Policy**

~ All Products (excluding bulbs) manufactured by DL Manufacturing are warranted to be free from defects for a period of 12 months from the date of shipment, excluding doors, which have a warranty period of 12 months from date of installation or 18 months from shipment, whenever occurs first.

This warranty does not cover unreasonable/improper use or use beyond rated conditions, improper storage, negligence or accident; damage because of incorporated use of equipment with Goods, after Customer has or reasonably should have, knowledge of any defect; or improperly installed by any other Person that is unauthorized by DL Manufacturing. This warranty is subject to customer covenants to inform all subsequent buyers of the Goods of the limitation on and exclusive of warranties provided for herein. Customer hereby indemnifies and agrees to hold DL Manufacturing harmless from and against all losses, costs and expenses, including reasonable attorney's fees incurred by DL Manufacturing as a result of any third party claim relating to the purchase, sale or use of, or otherwise relating to, the Goods covered by this Agreement.

In no event shall DL Manufacturing be required to repair, replace or reimburse Customer for more than the part or material that is found to be defective and DL Manufacturing's liability shall in such event be no greater than the invoiced price of the item and shall not include labor, shipping or other costs incurred in connection with the reshipment of defective Goods to DL Manufacturing or the reinstallation of such Goods after any repair or replacement. The remedy set forth in this paragraph is expressly agreed to be the sole and exclusive remedy for any breach of warranty. This warranty is exclusive and in lieu of all other warranties expressed or implied, including but not limited to any warranty of merchantability or of fitness for a particular purpose.

Limitation of Liability - In no event as a result of breach of contract, warranty or negligence shall DL Manufacturing be liable for special, or consequential damages including but not limited to loss of profits or revenues, loss of any equipment, cost of capital, cost of substitute equipment, facilities or services, downtime costs or claims of purchasers of the Customer for such damages. Additionally, DL Manufacturing will not be liable for any delay in the performance of contracts and orders, or in the shipment and delivery of goods, or for any damage suffered by the Customer by reason of delay, when such delay is, directly or indirectly, caused by force majeure, including war, Government interference, strikes, embargoes, shortage of labor, fuel, fires, floods, or any other cause or cause whether or not similar in nature to any of those herein before specified beyond DL Manufacturing's control.