

POLYMER LIQUID CRYSTAL MAGIC GLASS

LIGHT TRANSMISSION CONTROL BY ELECTRICAL POWER
ON/OFF

Turning the power "ON" and the interior of a room is exposed!

Turning the power "OFF" and the interior cannot be seen!

provides privacy & blocks uv — a & b



Wherever Magic Screen Glass is used it provides privacy -widely applicable in , buildings, residential homes,shops,building exterior windows, office partitions, show rooms ,museums, conference rooms, shopping malls,hospitals,media centres,dressing room doors ,shower stalls,

VIDEO OR STILL IMAGE DISPLAY BY THE DIFFUSION EFFECT OF LIQUID CRYSTAL

BY USING A REAR PROJECTOR YOU CAN TURN YOUR MAGIC GLASS PANEL
INTO A LARGE PROJECTION SCREEN SHOWING ANY VIDEO IMAGES

advertising screens/windows

presentation screens

That can be used in —museums -shopping malls, indoor advertising boards, large screen displays, home theatres, retail storefront windows.

TECHNICAL MANUAL

Section 1.....	Caution Notices & Warnings
Section 2.....	Power Module PM1210
Section 3.....	Installation Instructions

Section 6.....	Limited Warranty
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CAUTION NOTICES & WARNINGS

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MAGIC GLASS

General Cautions

Silicone Reactivity Warning



STOP!



USE ONLY DOW 995 OR DOW 1199* NEUTRAL CURE SILICONE. USE OF ANY OTHER SEALANT COULD CAUSE PERMANENT DAMAGE TO THE PANEL

CRITICAL!

*The DOW 1199 is intended for use in a glass wall installation where a "Wet" butt joint is required. DO NOT use DOW 1199 as a back fill in a frame, such as a U-channel, window sash, or where the glass edge is bedded in the DOW 1199 and a frame caps the glass and silicone. This type of installation requires the use of DOW 995.

WARNING

Disconnect line power via fuses or circuit breakers BEFORE installation.

Carefully read installation instructions completely before installation.



DO NOT ATTEMPT INSTALLATION ON A "LIVE" CIRCUIT!



**FAILURE TO COMPLY WITH INSTALLATION STANDARDS
WILL NULLIFY MANUFACTURER'S WARRANTY**



POWER MODULE PM1210

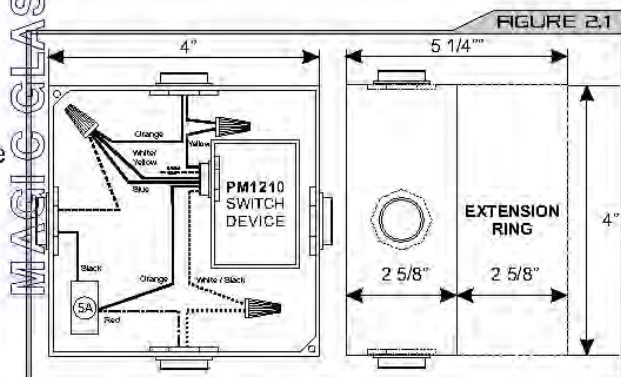
PM1210 Overview
Application Specifications
Typical Wiring Scenario

POWER MODULE OVERVIEW

- ✦ Installing a Glass panel without following these instructions can lead to unsafe conditions and/or cause permanent damage to the panel.
- ✦ This product may be installed in either a residential or commercial environment.
- ✦ Install only on a GROUNDED 120 VAC circuit protected by 15A fuse or breaker. The circuit must also be protected by a ground fault circuit interrupter (GFCI).
- ✦ All wiring connected to a PM1210 power module is at 120 VAC primary line levels and must be installed to conform to NEC requirements and any local building codes.
- ✦ The PM1210 Power Module circuitry is rated for a maximum continuous output of 4.0 amps. If the installation requires the operation of more than 125 square feet of glass surface from a single switch, the switch or relay lines from multiple power modules may be ganged together.
- ✦ Installing a single pole switch on the switch wires is considered standard, however relays or remotes can be used. Consult technical support for proper installation configuration.
- ✦ Using the switch wires, "three way" type switch arrangements are permissible. (See Installation Section)
- ✦ Do not connect any other devices or products to the output of the PM1210 Power Module.
- ✦ The PM1210 Power Module built into a standard 4" x 4" junction box and is designed to be used in conjunction with additional J-Boxes with an added extension ring. (**See Fig. 2.1**)
- ✦ Check NEC and local building codes to determine junction box size requirements relative to the number of conductors and connections.
- ✦ Each separately switched Glass panel must use a separate power module.
- ✦ There are no serviceable parts or replaceable parts within the PM1210 Power Module.



WARNING!
READ **ALL** INSTALLATION
INSTRUCTIONS BEFORE
PROCEEDING



APPLICATION SPECIFICATIONS

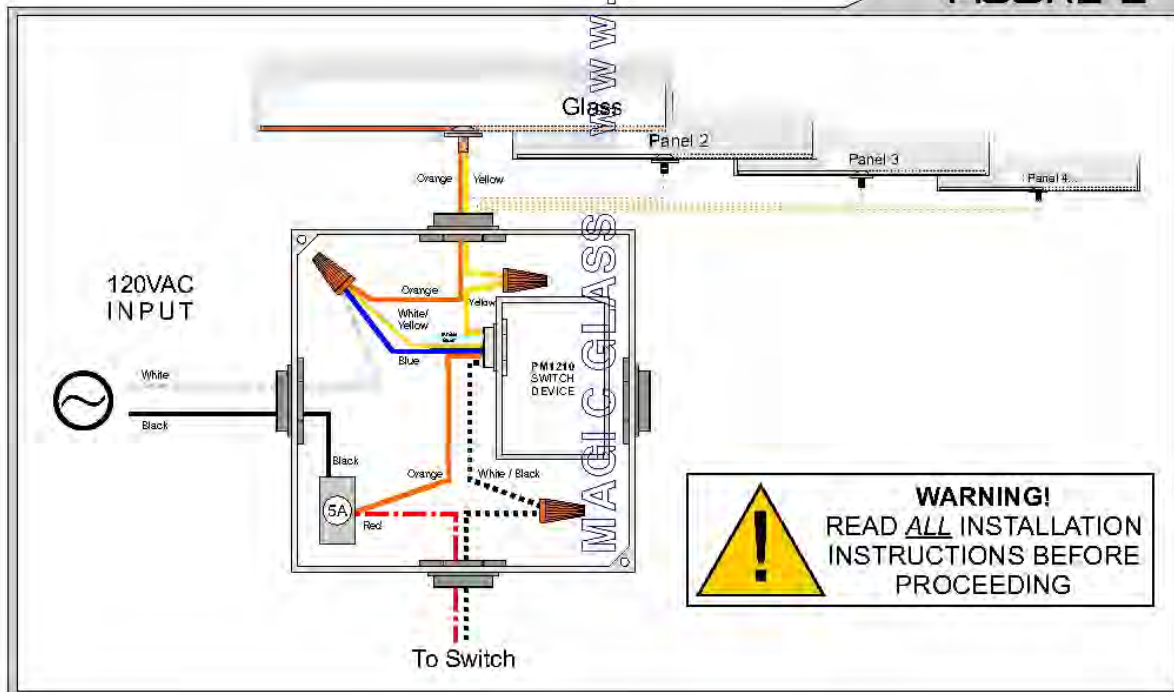
Glass panel uses 120 VAC line voltage for operation and the PM1210 Power Module provides the filtering and switching needed to ensure long life of the product. **Fig. 2** illustrates a typical single or multiple window installation. The PM1210 is supplied in a form that has the flexibility to be installed into different types of installations. The installer must provide the correct parts needed for a specific installation in order to meet applicable wiring codes and user requirements.

GENERAL CONSIDERATIONS

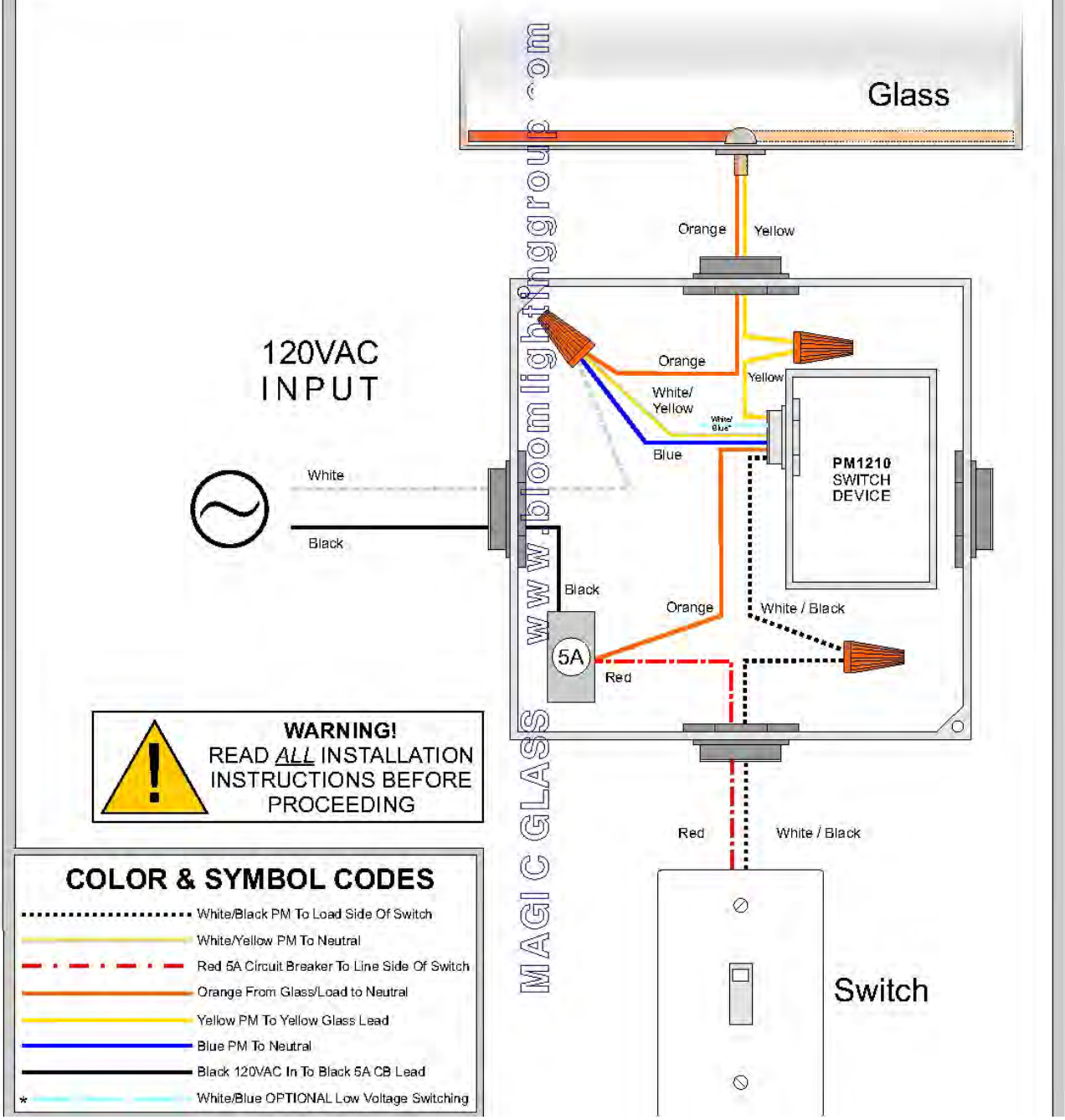
Any number of windows can be connected to the output of a PM1210 Power Module if the total combined area of all windows connected to a single module does not exceed 125 square feet of glass surface. This means a single power module can be used to power up to 125 square feet of glass surface by operation of a single switch or relay. Note that the switch or relay used for this device needs to carry only about 50mA per controller, but must still be rated for at least 120 VAC.

The PM1210 Power Module circuitry is rated for a maximum continuous output of 4.0 amps. If the installation requires the operation of more than 125 square feet of glass surface from a single switch, the switch/relay lines from multiple power modules may be ganged together.

FIGURE 2



TYPICAL WIRING SCENARIO



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INSTALLATION INSTRUCTIONS

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MAGIC GLASS

Installation Overview

Panel Detail

Wiring Diagrams

- Single Switch
- Three-Way Switch
- Relay Switching
- Switch + Relay

WBP Door Installation

- Switchable Door Overview
- Upper Pivot Detail
- Lower Pivot Detail
- Available Options

Electrified Hinge Installation

- Hinge Overview & Install

Butt Joint Installations

- Wet & Dry Joint Procedures

INSTALLATION OVERVIEW

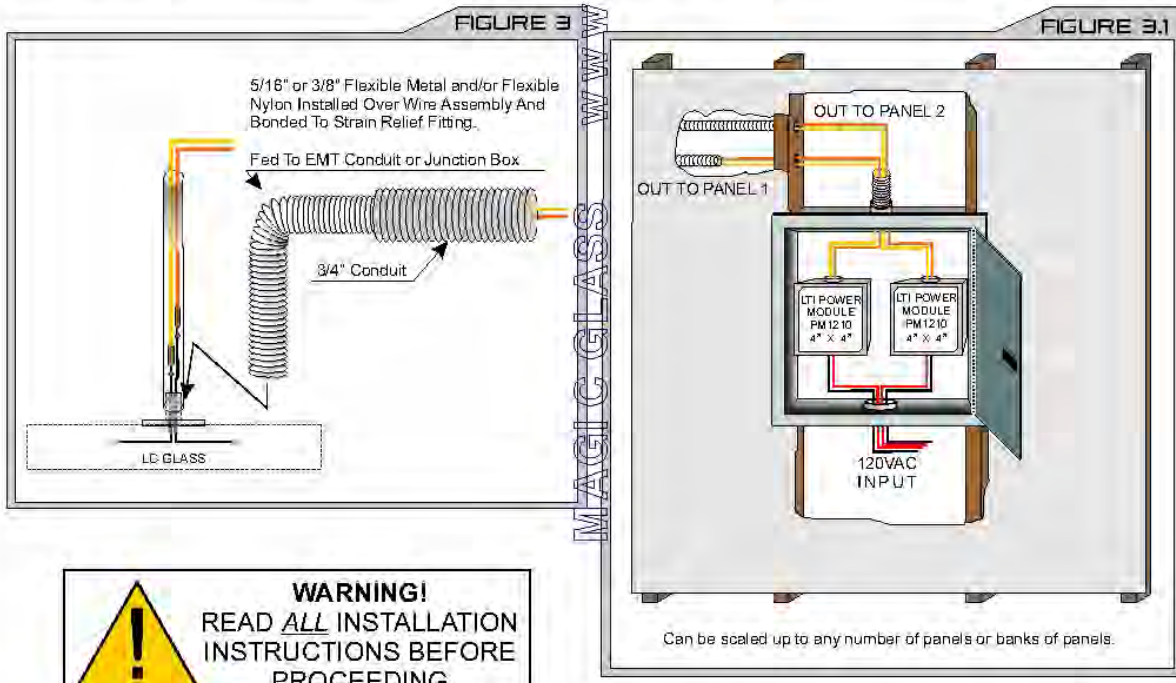
panels are supplied with a standard 6' of 5/16" nylon conduit containing the 2 conductor 18 ga. wire leads.

The 6' flexible pigtail is permanently attached to the glass to provide strain relief for wires. To be able to re-glaze, the glass and pigtail must be removable as a unit (do not apply inaccessible clamps to the pigtail). The flexible pigtail is designed to be slip fed through the 3/4" EMT or flexible conduit, raceway from the rough opening to an accessible junction box in order to facilitate glazing replacement (**Fig 3**).

Any bends in the conduit should be of a sufficient radius to facilitate fishing of the flexible conduit pigtail.

When the panel is installed into a suitable frame the window system is UL listed. The switchable panel alone is UL recognized. If the pigtail needs to be cut to fit, the conduit must be carefully measured and cut to length to prevent damage to the 18 ga. leads. The pigtail is permanently attached to the glass and cannot be replaced.

In an installation where multiple PM1210 power modules are necessary, a Hoffman or Wiegmann type box may be utilized in an adjoining closet, laundry, basement or utility room to facilitate accessible installation (**Fig 3.1**).



PANEL DETAIL

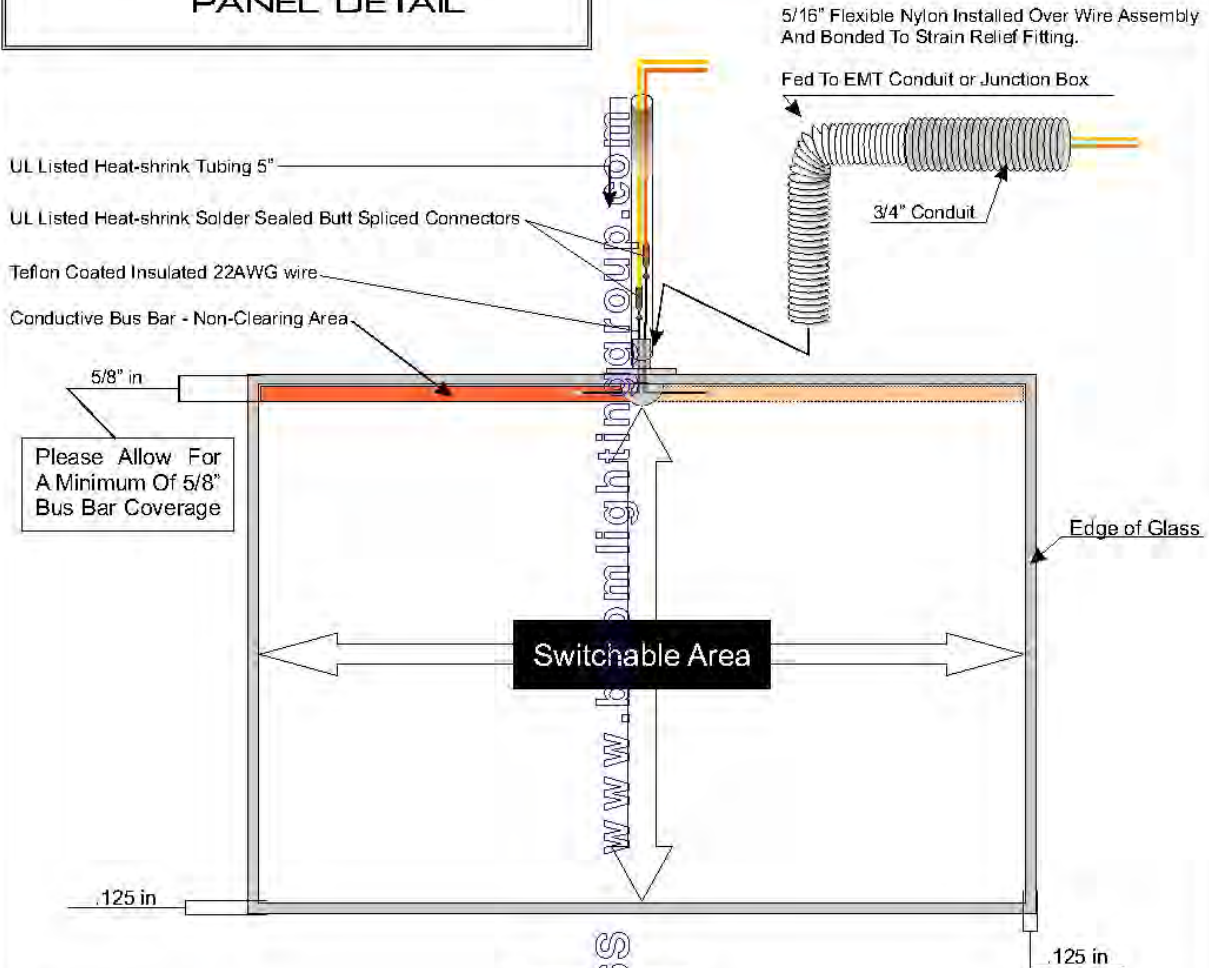
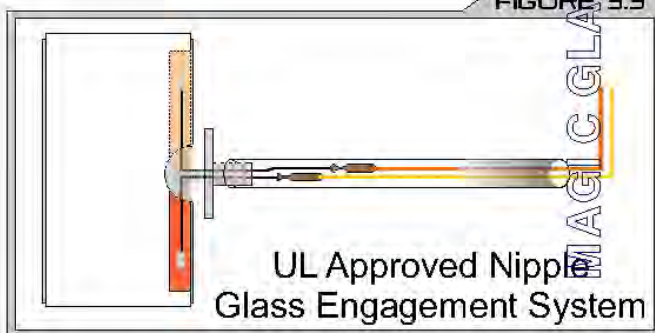


FIGURE 3.3



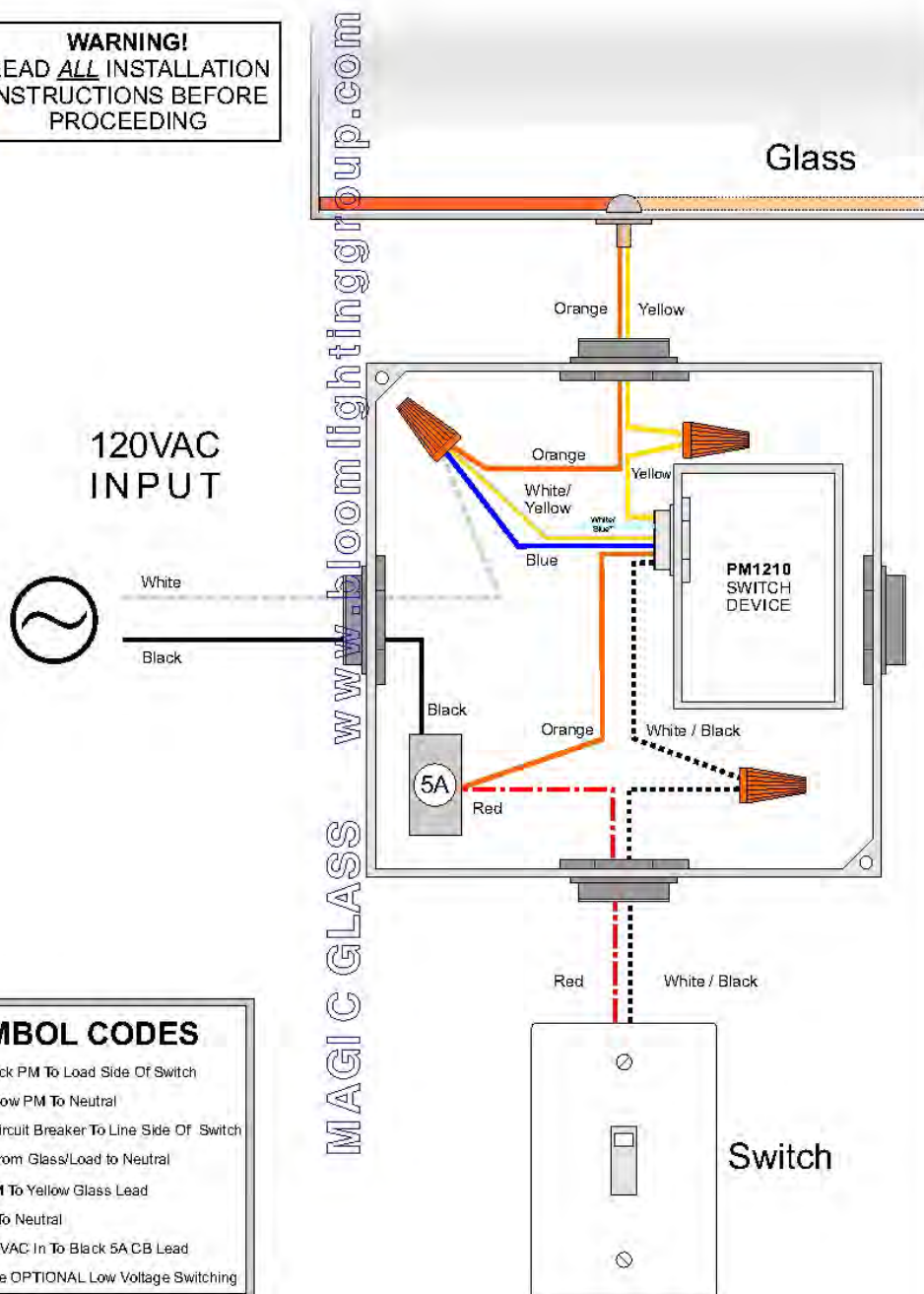
WARNING!
READ ALL INSTALLATION
INSTRUCTIONS BEFORE
PROCEEDING

Note: All wiring, Conduit and Connections
Must Conform To Local Electrical Codes

SINGLE SWITCH INSTALL



WARNING!
READ ALL INSTALLATION
INSTRUCTIONS BEFORE
PROCEEDING



COLOR & SYMBOL CODES

- White/Black PM To Load Side Of Switch
- White/Yellow PM To Neutral
- - - - - Red 5A Circuit Breaker To Line Side Of Switch
- Orange From Glass/Load to Neutral
- Yellow PM To Yellow Glass Lead
- Blue PM To Neutral
- Black 120VAC In To Black 5A CB Lead
- * White/Blue OPTIONAL Low Voltage Switching

3-WAY SWITCH INSTALL



WARNING!
READ *ALL* INSTALLATION
INSTRUCTIONS BEFORE
PROCEEDING

120VAC
INPUT



White
Black

Glass

Orange Yellow

Orange
White/
Yellow
Blue

White/
Blue*

PM1210
SWITCH
DEVICE

Black

Orange

Red

White / Black

Red

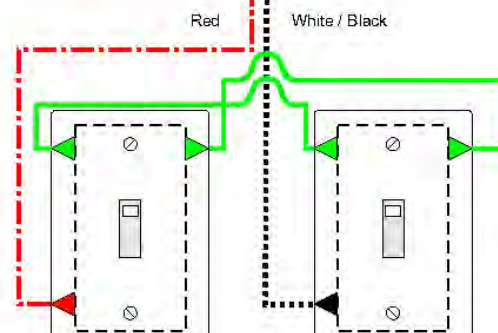
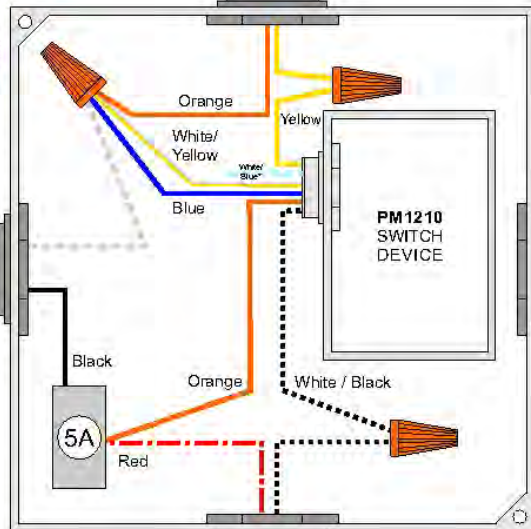
White / Black

COLOR & SYMBOL CODES

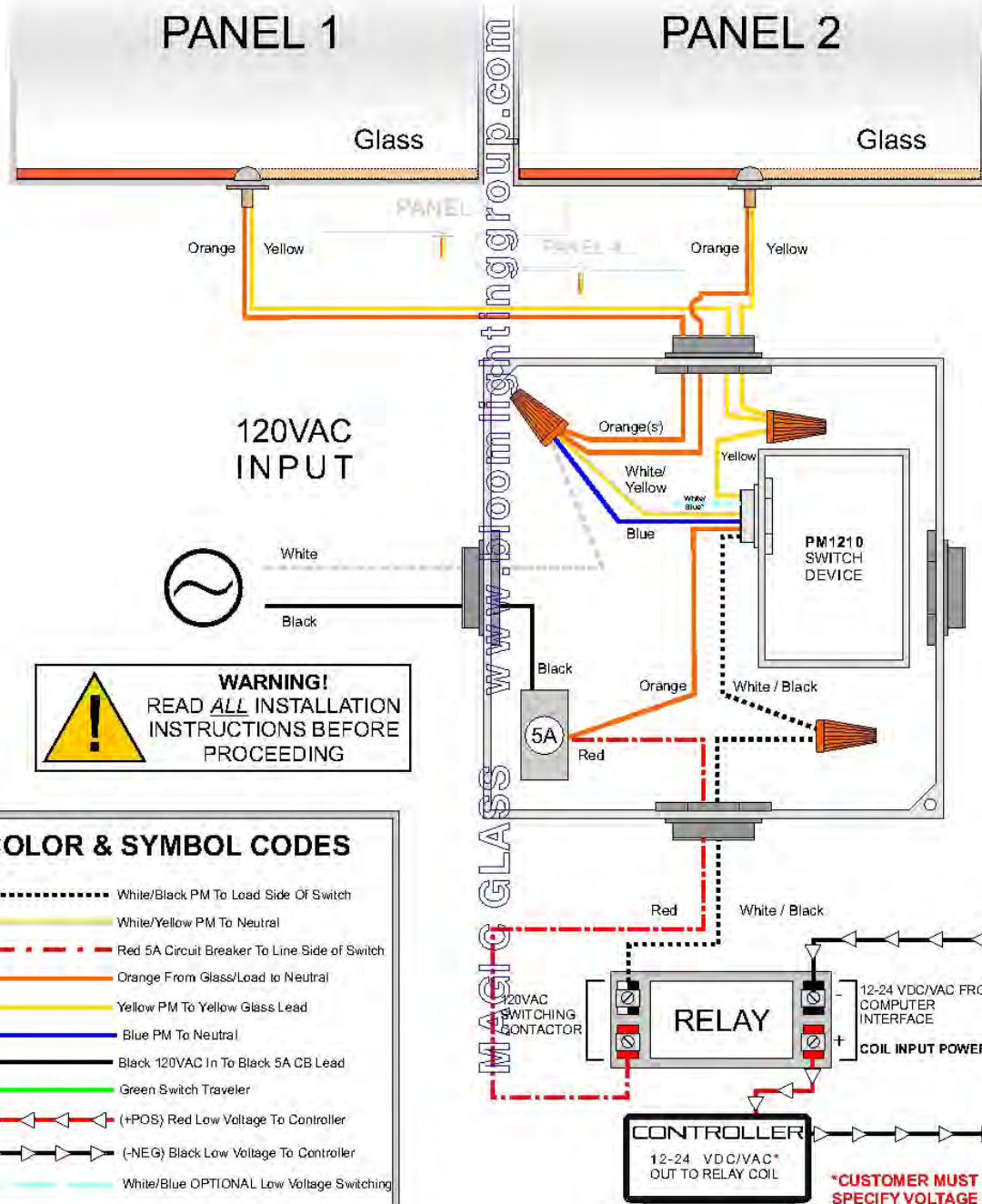
- White/Black PM To Load Side Of Switch
- White/Yellow PM To Neutral
- - - - - Red 5A Circuit Breaker To Line Side Of Switch
- Orange From Glass/Load to Neutral
- Yellow PM To Yellow Glass Lead
- Blue PM To Neutral
- Black 120VAC In To Black 5A CB Lead
- Green Switch Traveler
- * White/Blue OPTIONAL Low Voltage Switching

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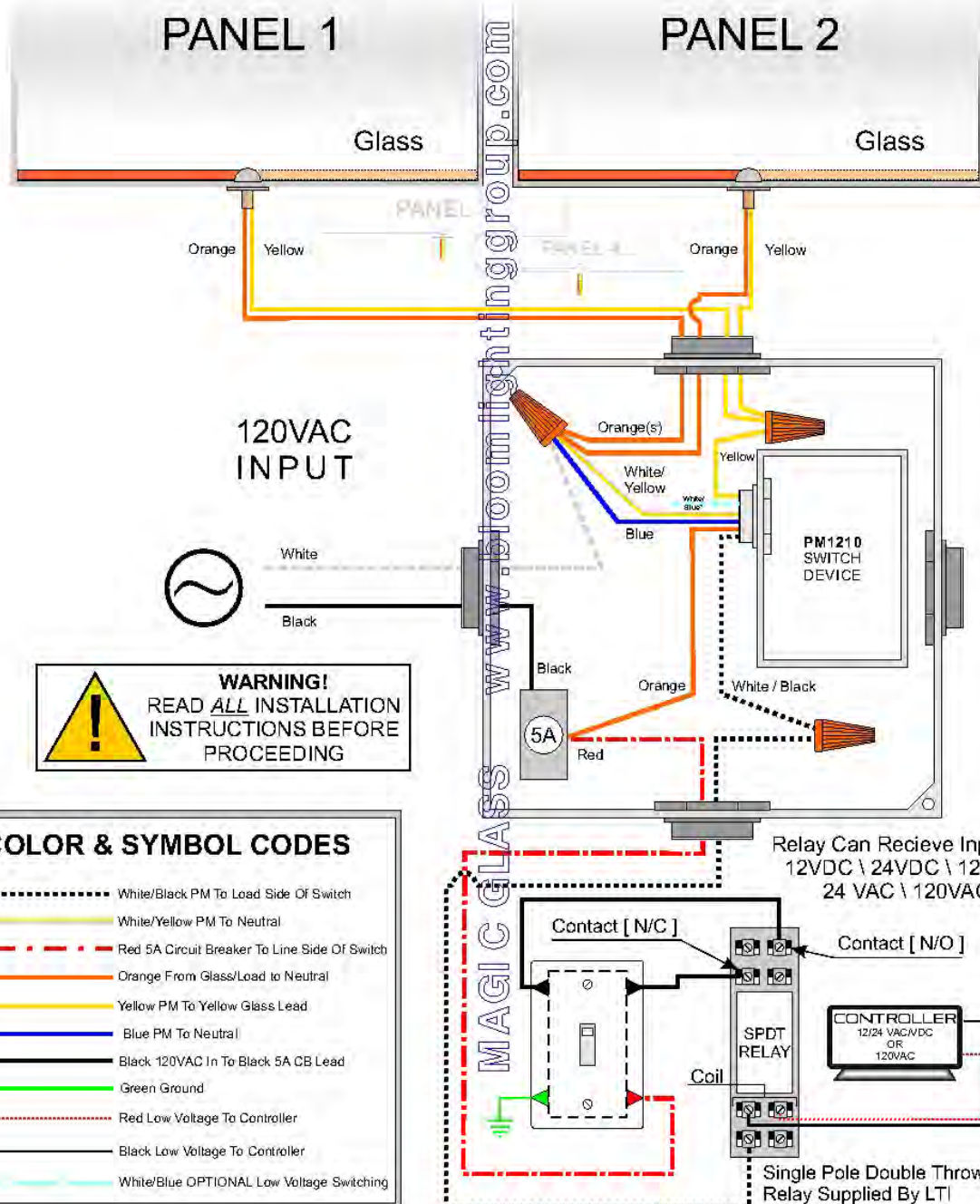
MAGIC GLASS



MULTI PANEL & RELAY INSTALLATION



SWITCH + RELAY INSTALLATION



SWITCHABLE DOOR INSTALLATION OVERVIEW

Door System arrives on site fully assembled and ready to install. The installation site should be prepared by installing the appropriate receiving equipment to allow for proper door function.

The site preparation should include the following (See also fig. 4):

- Holes bored and conduit put in place for the routing of door's power leads through the install site header.
- Installation of "Top Pivot" hardware included in the shipment of your Switchable Door Panel. (Part 2 of this section)
- Installation of "Lower Pivot" hardware included in the shipment of your Switchable Door Panel. (Part 3 of this section)
- Installation of Power Module PM1210 (covered in Section 2)

Following the installation instructions in this guide is paramount to the proper performance of your new Glass Panels. Please read ALL instructions before beginning the installation process of your door system as well as any and all other Glass Panels.

MAJOR COMPONENTS

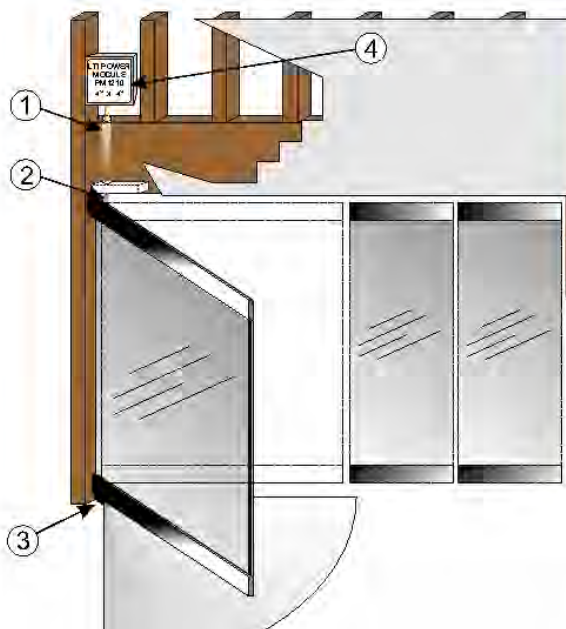


FIGURE 4

- ① **Wire Leads From Glass.** Leads will exit pivot system of door and will need to be routed through the header framing member via approved flexible conduit to engage Power Module.

- ② **Upper Pivot Receiver.** This piece of hardware will accompany your LC Switchable door shipment. You must mortise the door header to accommodate this part.

- ③ **Lower Pivot Receiver.** This piece of hardware will accompany your LC Switchable door shipment. This will either be a stationary lower pivot or door closer based on your order. Either case requires the floor to be prepared. The closer unit installs below floor level.



Door Closer



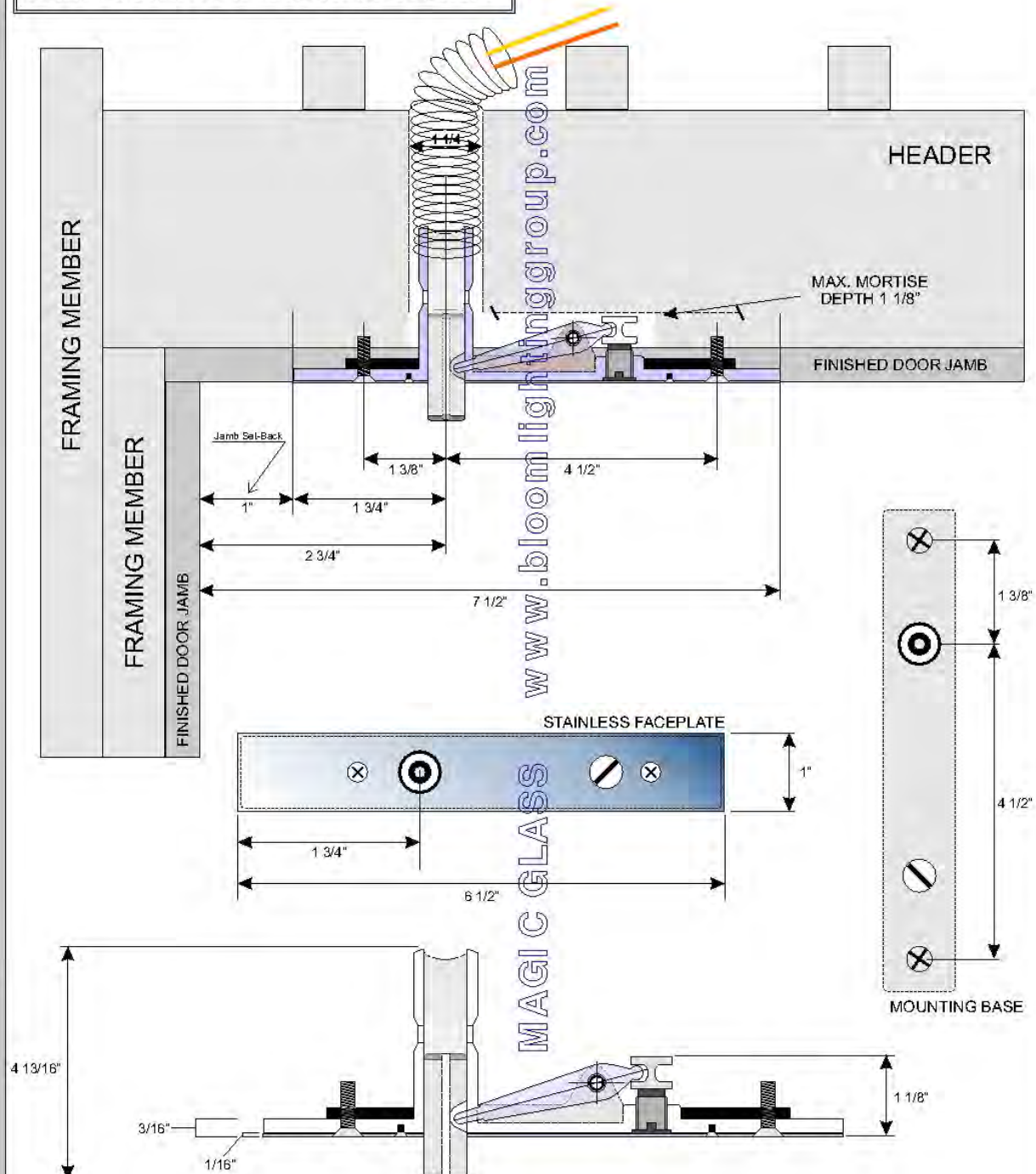
Door Pivot

- ④ **Power Module PM1210.** Installation of this part is covered in Section 2 of this manual

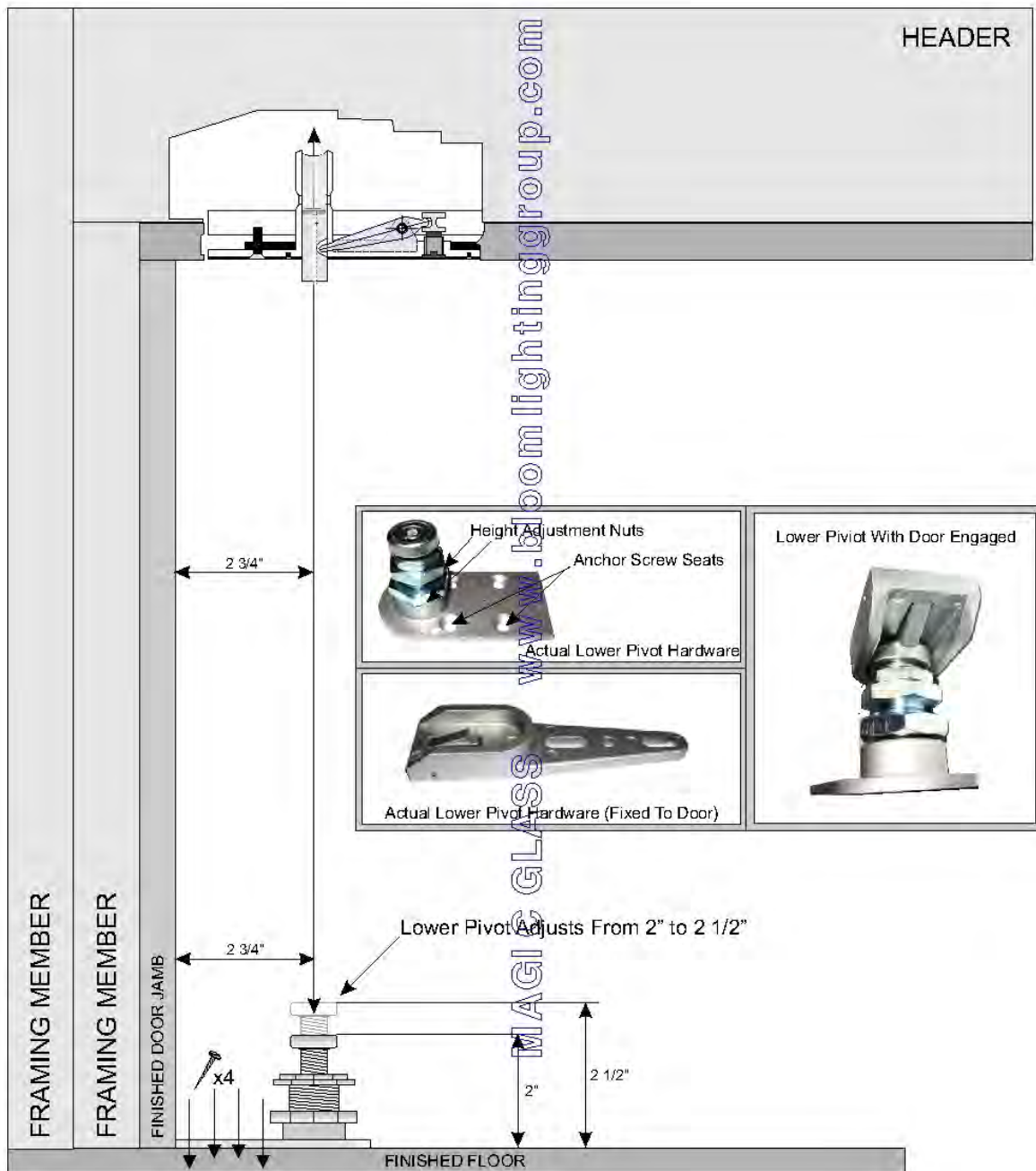


POWER
MODULE
PM1210

SWITCHABLE DOOR UPPER PIVOT INSTALLATION



-- SWITCHABLE DOOR LOWER PIVOT INSTALLATION



SWITCHABLE DOOR AVAILABLE OPTIONS

Holes
&
Custom Milling

There are hundreds of various types of glass door hardware. LTI provides several ready solutions, however we can accommodate most types of custom or specialty hardware including:

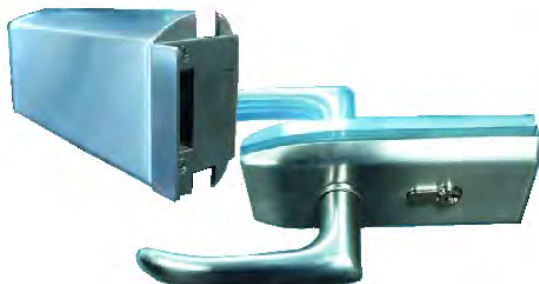
Handle & Strike Sets - With or without locks

Pulls & Knobs

Patch Fittings

Specialty Fixtures Requiring Milling of Glass

Sliding Door Systems



IN-FLOOR DOOR CLOSER

CRL Automatic Door Closer sets flush into the floor and is finished in stainless steel.

Closer can be adjusted to customize the close speed.



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MAGIC GLASS

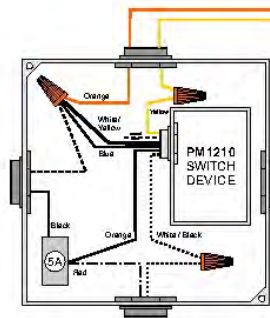
Etching



ELECTRIFIED DOOR HINGE FOR LC DOOR PANELS

ELECTRIFIED HINGE IS NON-LOAD BEARING!

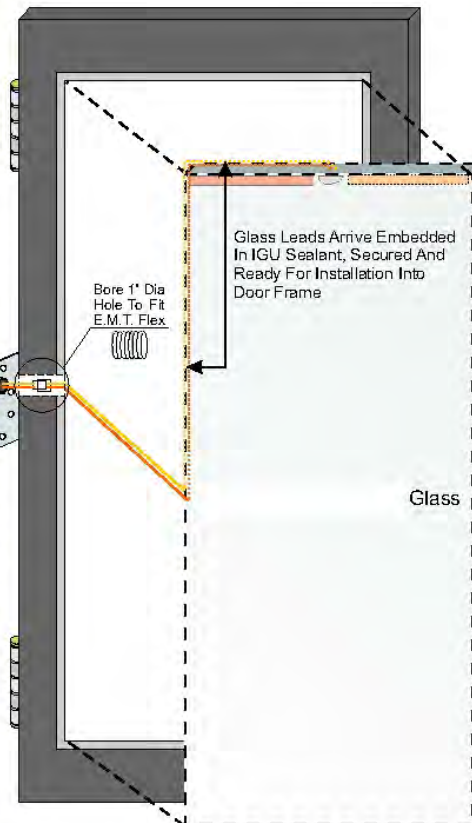
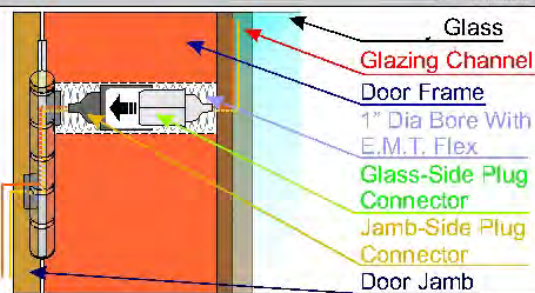
MUST BE INSTALLED AS CENTER HINGE WITH A MINIMUM OF TWO STANDARD STRUCTURAL HINGES



Out To LTI Power Module
(See Section 2: PM1210)

Requires Relief Hole In Door Jamb and
In Door Hinge Slot. (See Fig. 5)

FIGURE 5



ELECTRIFIED HINGE

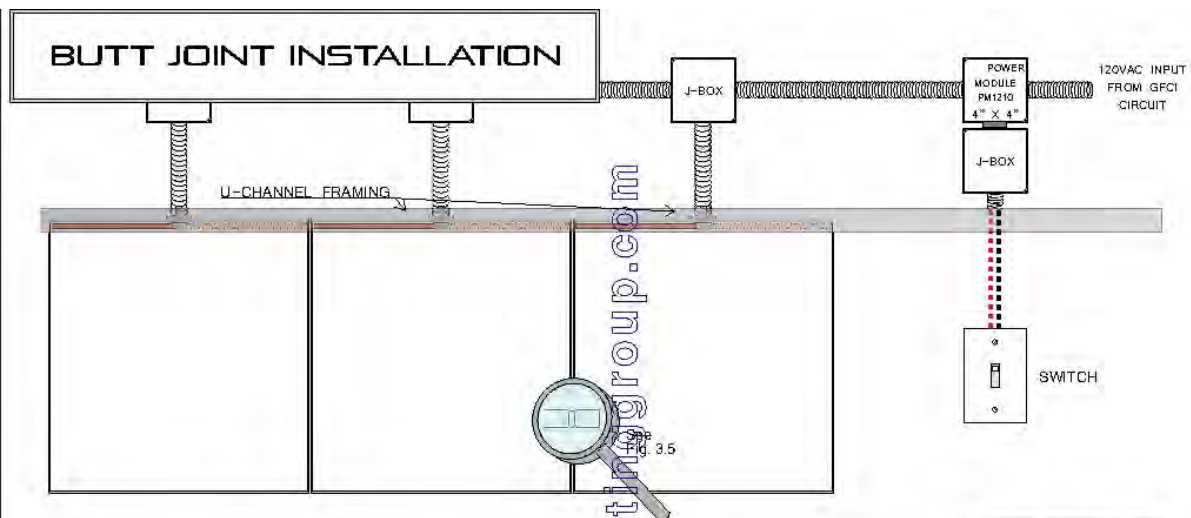
Hinge Face



Hinge Features:

- Hinge Face Looks Like Standard Door Hinge; Perfect Integration
- Custom Milled From Standard Size Hinges Ensuring Exact Fit
- UL Listing Assures User The Product Is Tested And Safe
- Quick And Simple Installation Makes Hinge Easy To Use
- Available In Most Any Standard Finish Or May Special Order





WARNING!
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 INSTRUCTIONS BEFORE
 PROCEEDING

FIGURE 3.5

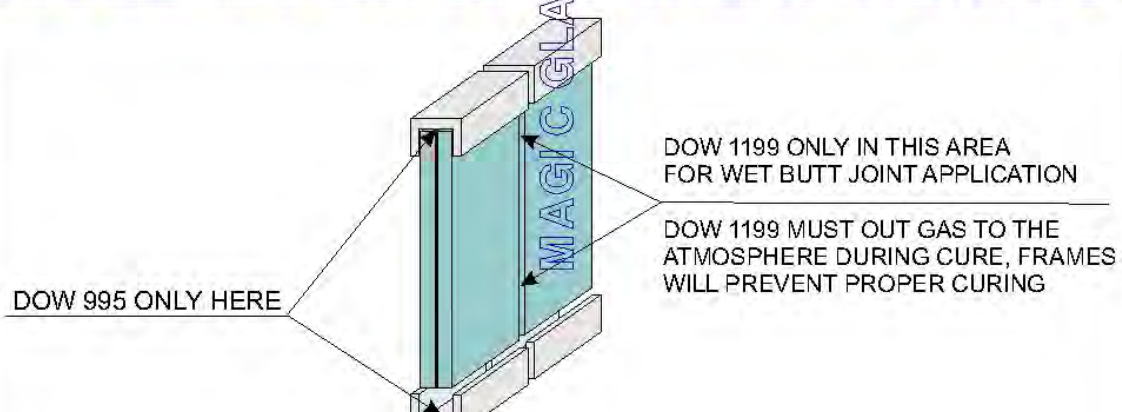
VERIFY DOW 1199 SILICONE HAS NOT PASSED SHELF LIFE CODE. DO NOT USE SILICONE THAT IS OLD OR DISCOLORED. DOW 1199 SHOULD BE CLEAR WHEN CURED.

GAP-1/8"
 SEAL

DOW 1199 MUST OUT GAS TO THE ATMOSPHERE DURING CURE, FRAMES WILL PREVENT PROPER CURING.

Butt Joint Detail

SILICONE SEAL USE: ONLY DOW 995 OR DOW 1199

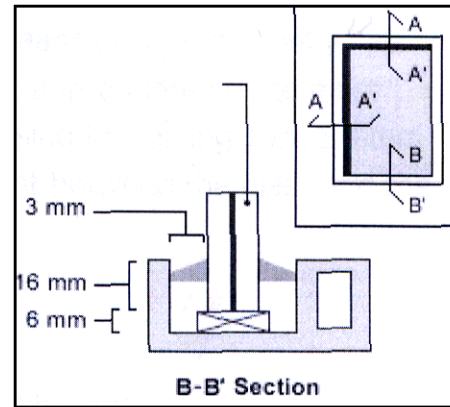


MAGIC GLASS INSTALLATION GUIDELINES

FOR ADDITIONAL INFORMATION PLEASE CONTACT OUR OFFICE.

Glazing in a Frame

The illustration to the right shows the minimum rebate requirements. Frames used for traditional curtain walls can be used. For the metal frame, the frame should be grounded and no moisture should come into the frame. To fix MagicGlass, the fitter must check that the limits of the mentioned dimensions are being respected. Any pressure increased on the glazing is to be strictly avoided. The electrical wires from MagicGlass should be placed at the upper edges of the glass.



Framing System

The framing system must be designed to provide structural support to the glass and essentially allow the glass to “float” within the frame. The frame must not exert any loads or pressure points on the glass at any time.

The holes will have to be installed into the frame for the electrical connections. It is extremely important that the glaziers and the electricians coordinate the installation process. The MagicGlass conduit connector must not have any pressure applied to it, especially at the frame-connector interface. It is critical that the centerlines for the frame hole(s) line up with the centerline of the MagicGlass conduit connector. The manufacturer recommends over sizing the hole to prevent lateral pressure on the connector. Failure to follow this recommendation could result in unreparable damage to the electrical connection.

Glass Support and Clearance

All glass plies must be supported by two setting blocks. The blocks should have a Shore a Durometer hardness of 85 +/- 5 and be silicone compatible. The preferred location of the setting blocks is at quarter points. The conduit or conduit connector must not be used to support the glass.

Inadequate clearances can cause glass breakage as a result of glass to frame contact. The manufacturer recommends a minimum face clearance of 3 mm (1/8”), minimum edge clearance of 6 mm (1/4”) and minimum glass bite of 12 mm (1/2”). If the glazing system requires edge blocks or anti-walk blocks, a 3 mm (1/8”) clearance between the edge of the glass and the block is recommended. Uniform face clearances should be maintained by installing a resilient cushioning material between the framework and the glass components. Glass bite must be sufficient to hold the glass in place under maximum loading conditions. Minimum glass bite is also necessary to hide the unswitchable clear perimeter bands associated with MagicGlass.

Weep System

The edges of MagicGlass must not be exposed to standing water. This situation can cause premature failure in laminated glass units. The manufacturer requires either impervious weather seals or an adequate weep system to prevent this occurrence. The glazing system manufacturer or designer is ultimately responsible for the design of the weep system and its proper performance.

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LIMITED WARRANTY

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MAGIC GLASS

Warranty Details

WARRANTY INFORMATION

LIMITED WARRANTY DETAILS

will, at its exclusive option, repair or replace any glass or polycarbonate laminate products found by it to be defective via delamination while under normal use and maintenance for a (2) two year period from date of shipment to purchaser.

Additionally, SELLER warrants to the original consumer purchaser only that it will, at its exclusive option, repair or replace any glass or polycarbonate Liquid Crystal Privacy Glass laminate product found by it to be defective via electrical failure causing the laminate to become inoperable as a result of a manufacturing defect for a (1) one year period from date of shipment to purchaser.

This limited warranty DOES NOT COVER the following:

1. Defects or damage arising from shipping, improper installation, alterations, accidents, abuse, misuse, lack of proper maintenance and use of other than genuine replacement parts and components, in all cases whether caused by a contractor, service company, the owner or any other person or entity.
2. IN NO EVENT WILL GLASS, INC. BE LIABLE FOR THE COST OF REPAIR OR REPLACEMENT OF ANY INSTALLATION MATERIALS, INCLUDING BUT NOT LIMITED TO, TILES, SHEETROCK, FRAMING, ETC.
3. Postage or shipping costs for returning products for repairs or replacement under this limited warranty and labor or other costs incurred in connection with product removal or installation under this limited warranty.
4. ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, ALL OF WHICH ARE HEREBY EXPRESSLY DISCLAIMED, OR THE EXTENSION BEYOND THE DURATION OF THIS LIMITED WARRANTY OF ANY IMPLIED LIMITED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR AN INTENDED PURPOSE. Some jurisdictions do not allow limitations on how long an implied limited warranty lasts, or the exclusion or limitation of incidental or consequential damages, so these limitations and exclusions may not apply to you.
5. Responsibility for compliance with local code requirement. (Since code requirements vary greatly, distributors, dealers, installation contractors and users of glazing products should determine whether there are any code restrictions on the installation or use of a specific product.)



PRIVACY
MAGIC GLASS
OFF



TURN MAGIC
GLASS ON
AND THE GLASS
IS CLEAR



PRIVACY
MAGIC GLASS
OFF



TURN MAGIC GLASS ON
AND THE GLASS IS
CLEAR

MAGIC GLASS A TECHNOLOGICAL
ADVANCEMENT

