



## **Luminous Virtual Window DC Surface Mount Installation Packet**



### **Installation Packet Includes:**

Luminous Virtual Window DC Surface Mount Installation Instructions

Luminous Virtual Window Technical Specifications

Luminous Virtual Window Maintenance

LVW Layout (provided when needed for installations with multiple windows)

For technical support at any time during the installation, please call us **toll free at 866-759-3228**.  
We want your installation to go as smoothly as possible. Thank you for choosing The Sky Factory.

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## Provided Components:

LVW Light Box: extruded aluminum case with LED edge lit light panel, wiring covers and mounting brackets.

Image Tile: High resolution reproduction mounted on a .125" (3.175mm) acrylic panel.

Trim: Wood or anodized aluminum frame which attaches to the LVW case with ball catches and safety screw.

Electrical: External V AC to V DC power supply, 1/2" (12.7mm) box connector.

Mounting bracket hardware

## Client Supplied Components:

Electrical circuit, V AC switch, conduit (if required) and wiring appropriate to local code provided and run to the appropriate locations.

See chart on page 2 of the Technical Specifications for power consumption

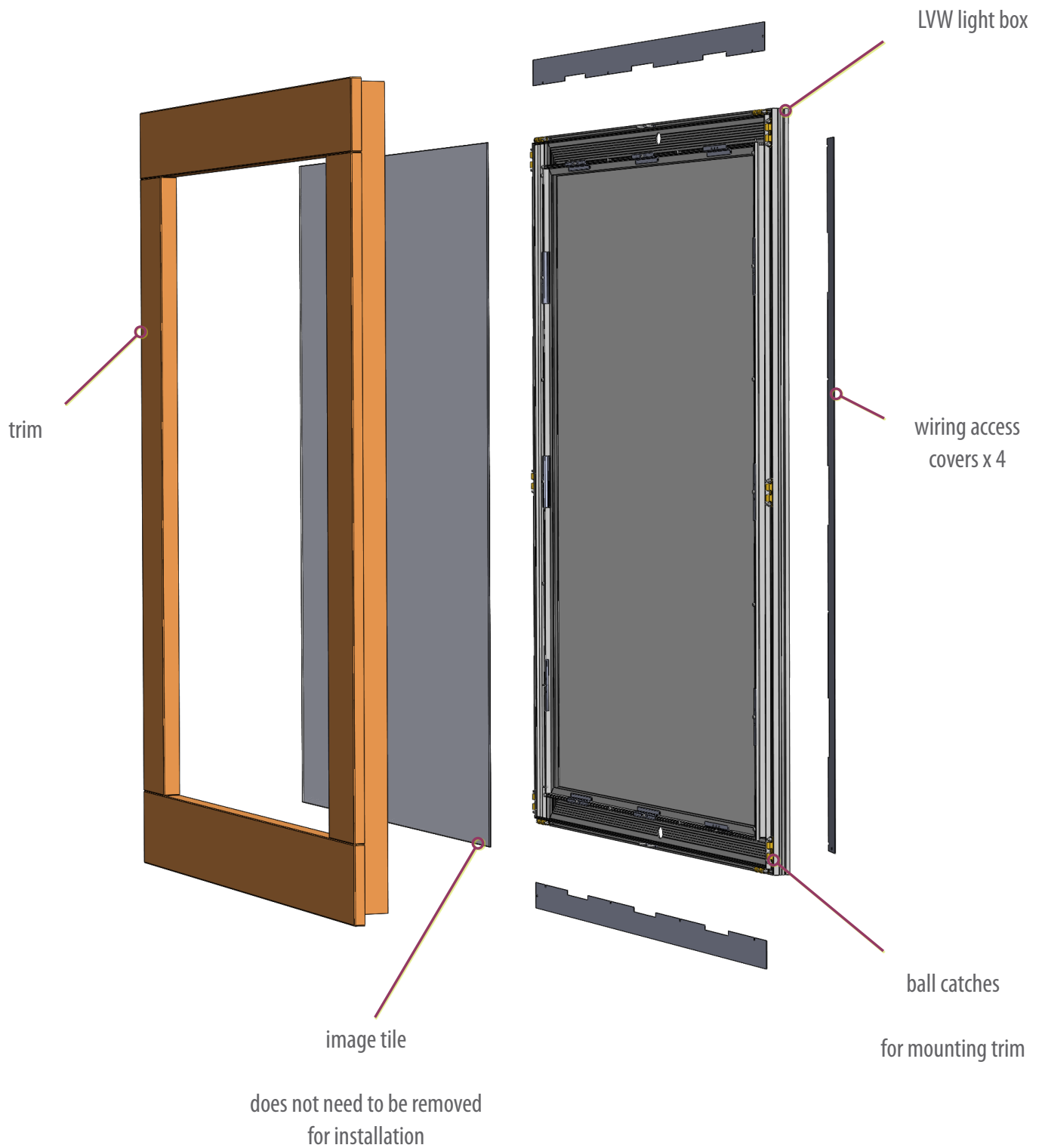
Miscellaneous hand tools

For larger LVW's, two installers may be needed.

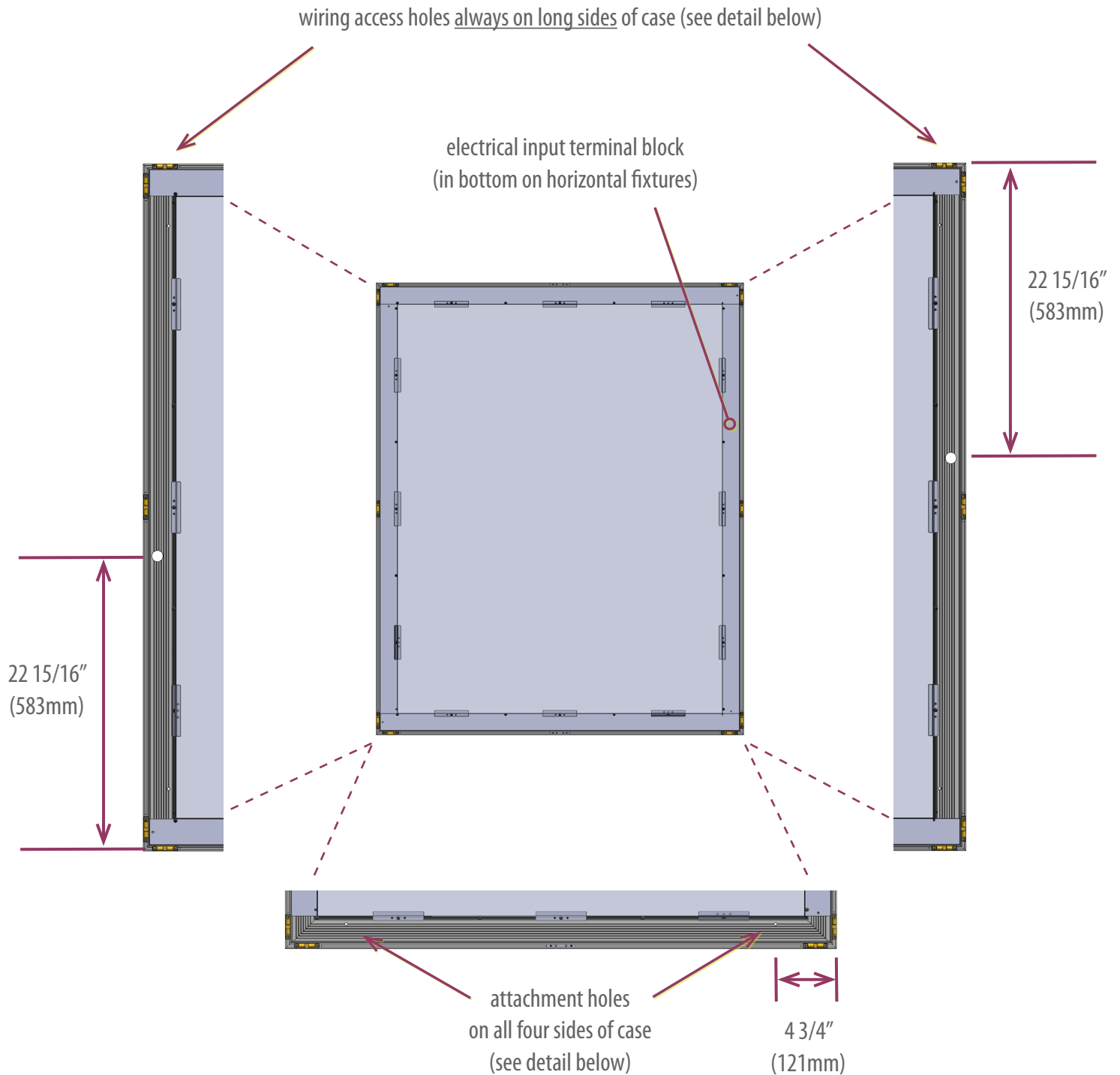
*Electrical work must be performed by a qualified electrician and must conform to all local and national codes.*

## LVW Component Details:

### Major components:



## Attachment holes and wiring access:



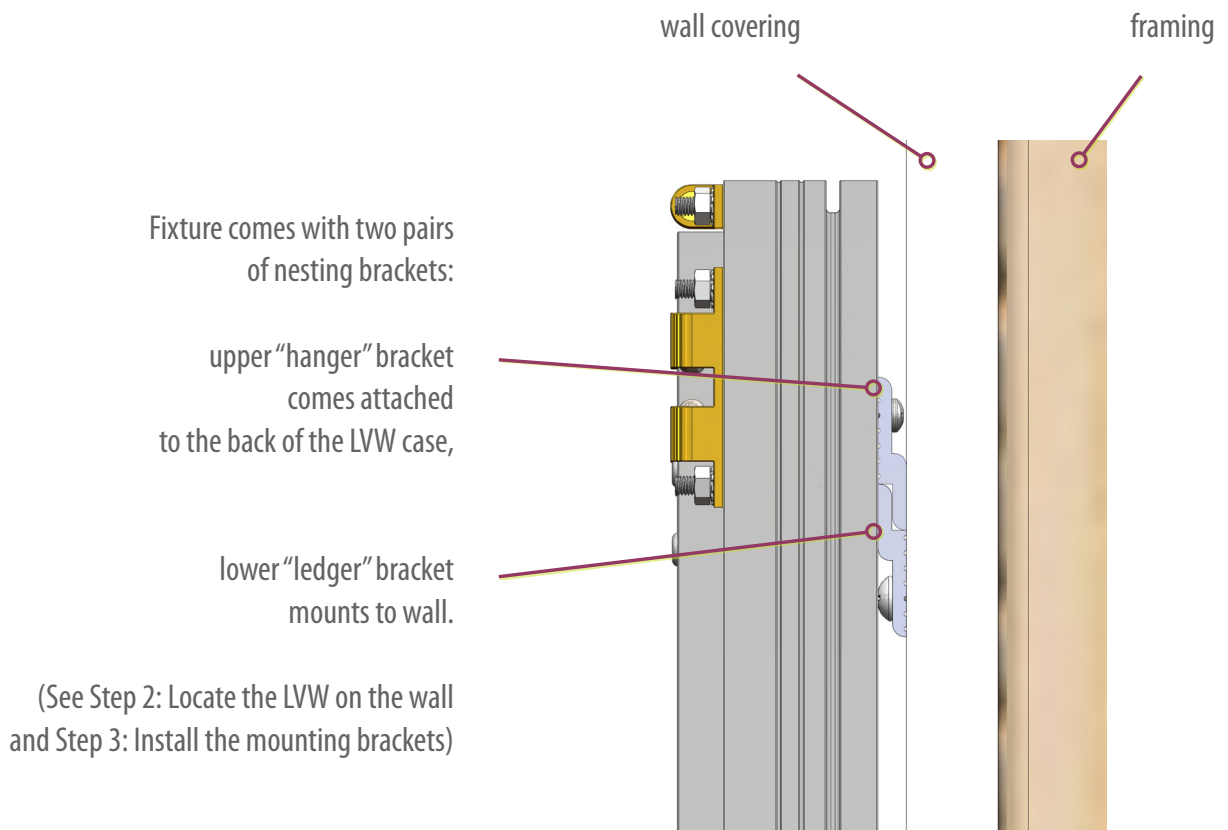
Wiring access holes — 1/2" trade size (7/8" [22.2mm] dia.) , centered 1 1/6" (27mm) in from outside edge and 22 15/16" (583mm) in from end

Attachment holes for locking mounting brackets only —

3/16" (4.8mm) dia., centered 1 15/16" (49mm) in from inside edge and 4 3/4" (121mm) in from ends

**IMPORTANT:** For stabilizing mounting brackets only; do not use for weight bearing. See Step 4

## Mounting brackets:



## Step 1: Unpack the LVW

**IMPORTANT:** LVW comes with trim attached.

Do not try to lift the LVW out of the wrapper by pulling up on the trim.

The trim is held to the LVW case by ball-catch hardware.

To remove the trim:

remove any shrink wrap holding it to the LVW case,  
then, using both hands, grasp the trim and pull it directly away from the case.

Installation hardware is shipped above and/or along one side of the LVW(s).

## Step 2: Locate the LVW on the wall

- For all standard LVW dimensions and rough openings, see Luminous Virtual Window Dimensions Chart on page 14
- For Custom, Twin and Triple LVW installations, see Drawing “LVW1” included
- For wiring access and attachment hole locations, see page 4-5

We recommend the LVW is placed at standard window height.

Where possible, always attach top ledger bracket to at least two studs.

See Step 3, pages 7-8

Where only one stud is available, bracket preferably centered on stud with a 3/16" (9.5mm) toggle at each end.

When placing an LVW on an exterior wall, appropriate precautions must be taken to maintain the building envelope and prevent condensation from forming on or in the LVW.

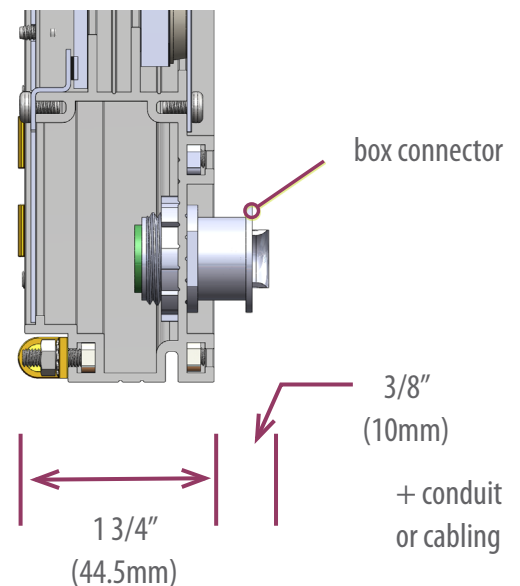
Adequate room for box connector and cabling to penetrate the wall covering will be required.

Case depth: 1 3/4" (44.5mm).

Added depth for box connector and conduit or cabling is needed

A location for the external power supply needs to be established.

See “Step 5: Wiring the LVW”, page 10 and Wiring Diagrams on pages 15-16.



### Step 3: Install the ledger brackets

See also wall layout detail on next page.

"Hanger" brackets are pre-mounted on back of fixture:

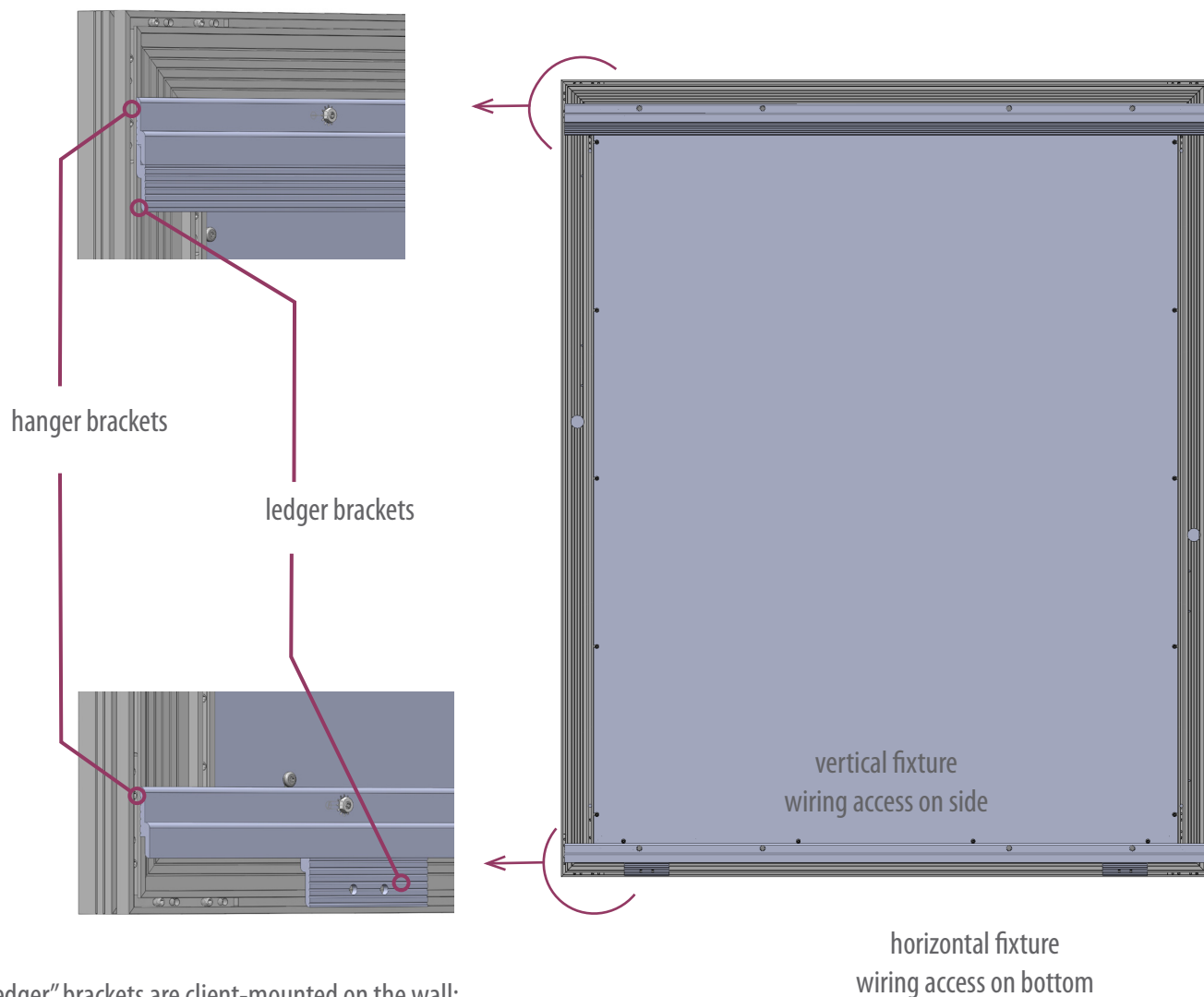
On vertical fixtures (in which sides are longer):

Top and bottom brackets are continuous

On horizontal fixtures (in which sides are shorter):

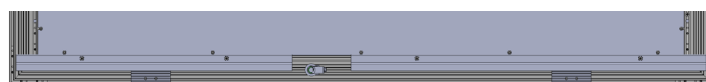
Top bracket is continuous;

bottom bracket is split to accomodate wiring access hole



"Ledger" brackets are client-mounted on the wall:

- Top ledger is 1" (25mm) shorter than width of case and is centered on fixture
- Two bottom ledgers are 3" (76mm) long and are mounted with as much spread between them as possible



## Wall layout detail::

### Top ledger —

must be drilled at stud locations

where possible, always attach ledger  
to at least two studs

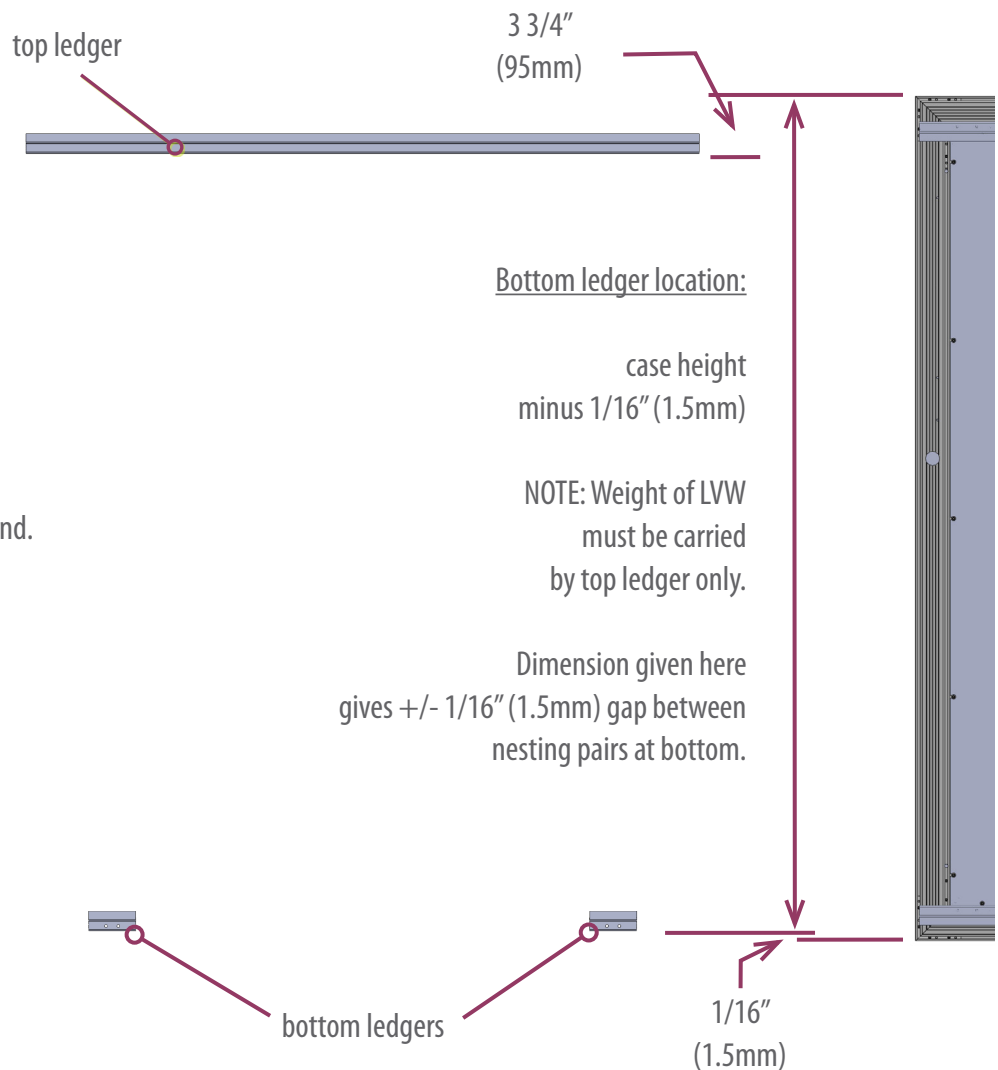
where only one stud is available,  
ledger preferably centered on stud  
with a 3/16" (9.5mm) toggle at each end.

### Bottom ledgers —

attached to studs with as much spread  
between them as possible

fasteners toenailed using both holes

ledgers mounted so they don't bear  
weight of fixture



**IMPORTANT:** Ledger brackets must be mounted flat, plumb, square and dimensionally accurate.

- Ledger brackets must be mounted so LVW is not twisted or trim may not securely latch  
Any excessive twist in the installed LVW case may keep some of the ball catches from latching and allow the trim to pop loose.  
See "Appendix A: Checking for Flatness" on page 16 for determining if the LVW will sit in a single plane.
- Ledger brackets must be mounted so wall covering is not more than 1/16" (1-1.5mm) forward of back of brackets.  
If wall is too far forward, trim will not fully seat on ball catches, and latches may fail causing trim to pop loose.  
Use a straight edge to determine the most forward point of the wall surface.

## Step 4: Install the LVW

### Remove the trim (if provided):

**IMPORTANT:** Make sure the safety cables are not connected.

Trim is held by ball catch hardware. Using both hands, grasp the trim and pull it directly away from the LVW case.

### Remove the top, bottom and right side wiring covers:

Covers remove with T15 Torx driver.

Cover screws need to be loosened only.

**IMPORTANT:** WHEN REPLACING THE WIRING COVERS, SNUG SCREWS ONLY!  
(OPTIONAL SCREW SLOTS ARE PROVIDED IF A SCREW STRIPS IN CHANNEL.)

### Insert the box connector:

If using a comparable box connector, it must meet local and national codes.

See page 10 for box connector specifications.

Make sure power cable is available and enters the LVW case at the proper location.

### Hang the LVW on the wall:

Pass the power cable through the box connector while lifting the LVW into position and hanging it on the interlocking mounting brackets.

### **IMPORTANT:**

Before wiring the LVW, make sure the trim will securely latch.

If the trim is not secure, the LVW may need to be removed and the ledger brackets adjusted.

See bottom of page 8.

### Lock mounting brackets:

Nesting mounting brackets **MUST** be locked in place before trim is attached.

Run #10 x 1 1/2" pan head screws through holes in back wall of case at top and bottom.

See hole locations on page 4.



**Notice:** Mounting brackets **MUST** be locked in place so LVW cannot shift or be knocked loose.

## Step 5: Wire the LVW

- See Wiring Diagrams on pages 15-16 and Wire Sizing Chart on page 17.



**Notice:** The LED fixtures are 24DC ONLY.  
AC voltage connected directly to the fixtures  
will destroy the lighting system.

Each LVW has an external V AC to V DC Class 2 power supply:

Input: 100 – 240V AC/277V AC, 0.85A/0.40A, 50 – 60 Hz

(277V AC for North America only)

Output 24 V , 3.4A

UL8750 Listed (U.S. and Canada) and CE Compliant

Max operating temperature 50° C (120° F)

Power supply surface mountable, suitable for dry/damp/wet conditions.

See mounting schematic on pages 15-16

Power supply comes with a junction box on each end

Junction box wiring access holes limited to 1/2" nominal trade size conduit

Power supply must be located outside the room in all MRI, shielded applications.

See "LVW Technical Specifications" for amperages of individual fixtures.

In MRI applications, an RF filter is required and will be supplied by others.

*Electrical work must be performed by a qualified electrician and must conform to all local and national codes.*

### **Wiring Source V AC to power supply:**

Run power to V AC side of the power supply:

Line to **ACL (BROWN)**

Neutral to **ACN (BLUE)**

Ground to  **(GREEN/YELLOW)**

Wire gauge must conform to local and national codes.

Install the power switch on the V AC input side of the power supply.

### **Wiring power supply V DC to LVW:**

Run two continuous wires from the LVW terminal block to the V DC side of the power supply, positive (+) to positive (+) and negative (-) to negative (-).

LVW “+” to power supply **V+ (RED)**

LVW “-” to power supply **V- (BLACK)**

Terminal block wire range is #12 - #22 AWG.

To minimize voltage drop and maintain desired brightness, use the Wire Sizing Chart on page 17 as a guide to determine appropriate wire gauge.

A wiring cover must be removed to access terminal block.

Always turn circuit off before removing a wiring cover.

T15 Torx drive mounting screws need to be loosened only

When replacing the cover, make sure all mounting screws are tight.

**IMPORTANT: WHEN REPLACING THE WIRING COVERS, SNUG SCREWS ONLY!**

**DO NOT OVERTIGHTEN SCREWS AND STRIP SCREW CHANNEL! (See page 8)**

Fasten the provided 1/2” (12.7mm) box connector in the 7/8” (22mm) wiring access hole and make the electrical connection inside the LVW.

Power cable must meet MC/MCI-A or HDFMCI-A specifications; size range .38” (9.65mm) min to .61” (15.49mm) max

Power entry hole is limited to 1/2” nominal trade size conduit.

Connect DC power in conformance to local and national Electrical Codes.

**Replace wiring covers and test the fixture before installing the trim.**

## Step 6: Install the trim

### Attach the trim:

Lower the trim onto the LVW case until the ball catches engage and then press the trim against the case.

Make sure trim is secure and all the catches latch before installing the safety screw.

If trim is not secure, wall may be pushing it out. If so, remount LVW case so trim clears wall..

See **Adjusting the ball catches** below if adjustment is necessary.

### Insert the safety screw:

Safety screw locks the LVW trim so it can't be jarred loose of the ball catches.

#6-32 x 3/4" Phillips machine screw (provided) is inserted through hole in extension trim at top of LVW

Screw threads into a screw boss on LVW case.

Screw has been pre-threaded at factory. However, press firmly when driving screw to make sure it engages.

IMPORTANT: Screw needs to be snug only. Do not overtighten and strip the threads.

### Adjusting the ball catches (if necessary):

IMPORTANT: Ball catches are set at the factory and should not need adjustment in the field. Use the following directions only if absolutely necessary.

To adjust the holding strength of a ball catch -

Loosen or tighten adjustment screws on the two ends of the half attached to the LVW case.

To adjust the location of a ball catch -

Loosen the Phillips head screws holding the catch to the LVW case

slide the catch to the appropriate location in the track, and

re-tighten the screws.

## Step 7: Check installation using Final Inspection list.



Is the image evenly lit??

- If there are shadows, dark spots, or bright lines on the image, clean the SkyTile. See LVW Maintenance.

Is the trim securely latched?

- If trim pops off easily, and rubs against wall when it is installed:

LVW case is most likely recessed too far into the wall. Remove LVW and shim between framing additions and back of case.

- If trim pops off easily, and there is a gap between trim and wall all the way around:

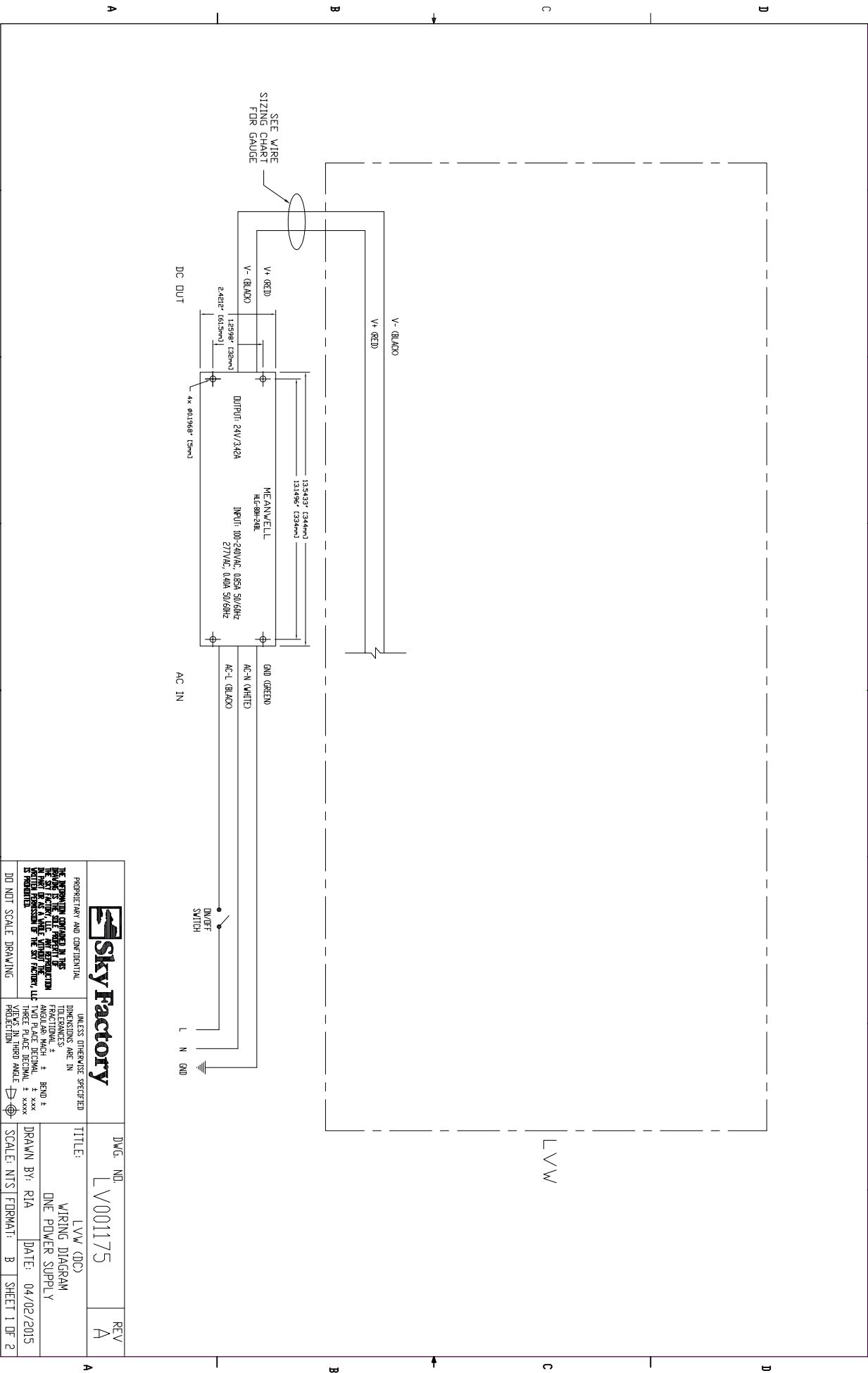
Strength of trim ball catches needs to be adjusted.

Are the safety screw installed?

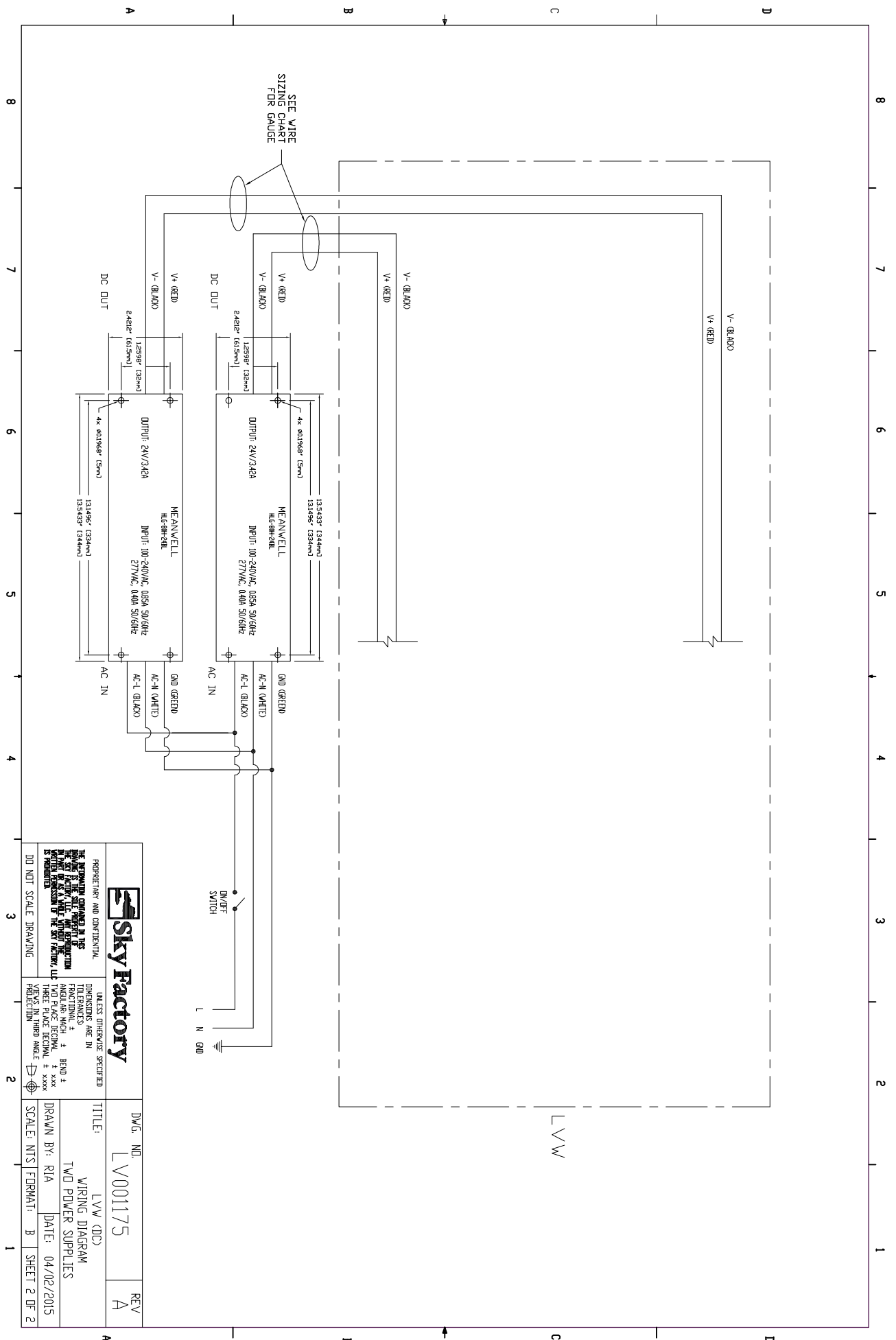
- Install screw.

# LUMINOUS VIRTUAL WINDOW DIMENSIONS CHART

| LUMINOUS VIRTUAL WINDOW | ACTUAL CASE DIMENSIONS (INCHES) |    | ACTUAL CASE DIMENSIONS (CM) |       |
|-------------------------|---------------------------------|----|-----------------------------|-------|
|                         | WIDTH / HEIGHT                  |    | WIDTH / HEIGHT              |       |
| 2240                    | 22                              | 40 | 55.9                        | 101.6 |
| 4022                    | 40                              | 22 | 101.6                       | 55.9  |
| 3440                    | 34                              | 40 | 86.4                        | 101.6 |
| 4034                    | 40                              | 34 | 101.6                       | 86.4  |
| 2852                    | 28                              | 52 | 71.1                        | 132.1 |
| 5228                    | 52                              | 28 | 132.1                       | 71.1  |
| 1864                    | 18                              | 64 | 45.7                        | 162.6 |
| 6418                    | 64                              | 18 | 162.6                       | 45.7  |
| 3464                    | 34                              | 64 | 86.4                        | 162.6 |
| 6434                    | 64                              | 34 | 162.6                       | 86.4  |



|                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
|-----------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
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| DWG. NO.<br>LV001175        |  | TITLE:<br>LVV (DD)<br>WIRING DIAGRAM<br>ONE POWER SUPPLY                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| DRAWN BY: RJA               |  | DATE: 04/02/2015                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| SCALE: NTS                  |  | FORMAT: B                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| SHEET 1 OF 2                |  | REV<br>A                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |



# Wire Sizing Chart

This chart is a guideline for recommended wiring practice.

Applies to 24V DC power only, i.e. from “fixture to power supply”.

Not meant for “V AC to power supply”.

Wire sizes in AWG Conversion chart below.

| Distance: Feet (Meters)                    | AWG for 5A | AWG for 10A | AWG for 15A |
|--------------------------------------------|------------|-------------|-------------|
| 20 (6)                                     | 18         | 14          | 12          |
| 30 (9)                                     | 16         | 12          | 10          |
| 40 (12)                                    | 14         | 10          | 10          |
| 50 (15)                                    | 12         | 10          | *           |
| 60 (18)                                    | 12         | 10          | *           |
| 80 (24)                                    | 10         | *           | *           |
| 100 (30)                                   | 10         | *           | *           |
| * Terminal block wire range #10 - #22 Awg. |            |             |             |

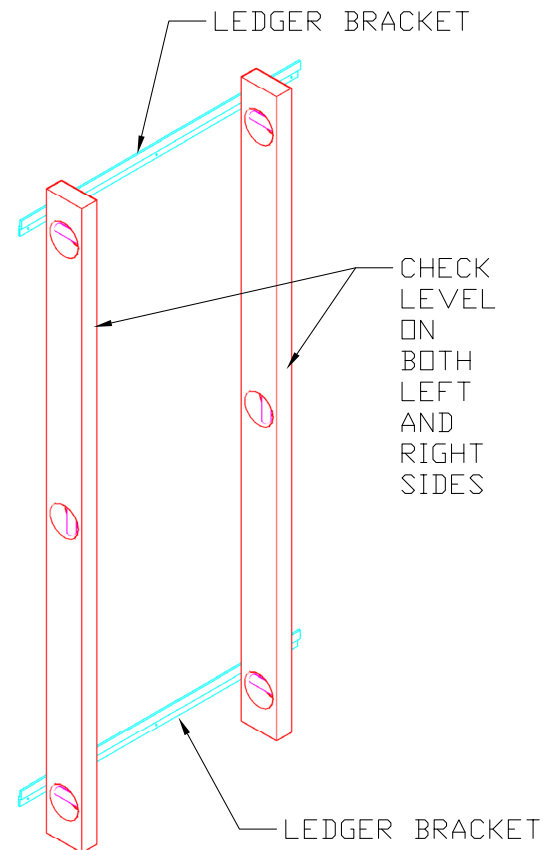
| AWG | MM    |
|-----|-------|
| 10  | 6.271 |
| 11  | 5.156 |
| 12  | 3.302 |
| 13  | 2.629 |
| 14  | 2.088 |
| 15  | 1.652 |
| 16  | 1.308 |
| 17  | 1.039 |
| 18  | 0.823 |

## Appendix A: Checking for flatness

### Making sure the LVW will sit in a single plane:

Hold a builder's level against the mounting brackets to make sure the two vertical sides have equal plumb.

NOTE: The window does not have to sit plumb in the opening to function properly, but must sit in a single plane.



Bubbles on the builder's level must read the same for both vertical sides.

If the two sides do not read the same, shim brackets accordingly.



### Making sure the LVW is sitting in a single plane:

Use a builder's level against the LVW case to make sure the two vertical sides have equal plumb. Shim case as necessary.

IMPORTANT: Make sure level is sitting parallel to LVW case before checking for equal plumb.