

LED Luminous Virtual Window Surface Mount Installation Instructions (MRI) (Metric)

CAUTION: Care must be taken while handling and installing the LVW.

- **The light panel is mounted on the back of the LVW frame. It is composed of a thin white reflective panel, a 6.35mm diffusion panel and side lit LED's in an 8mm aluminum frame. The white reflective panel is exposed and can be torn or damaged during installation.**
 - **The image and image cover can remain in the LVW while installing. However, the image cover scratches easily and scratches show up when the LVW is lit.**
1. See Drawings W2, S1 and D1 for details of an installed LVW.
 2. We recommend the LVW to be placed at standard window height. Remember to take into account the lap of the trim over the metal frame. Depending on the size, the LVW will take two people to install.
 3. If your order included wood or aluminum trim, remove it and set aside. The trim is held by ball-catch hardware. Using both hands, grasp the trim and pull directly outward.
 4. If at all possible, locate the LVW so it spans at least two studs. If only one stud is available, see step 5.
 5. Once the location of the LVW is determined, locate the two 1/8 " x 1" x 1" (3mm x 25.4mm x 25.4mm) ledgers by measuring down 3mm below the LVW metal frame and 1/8" above the LVW metal frame and mark two level lines slightly less in length than the width of the LVW metal frame.
 6. Find the studs and anchor the ledgers to the wall.
 - a. Ledgers should be oriented so the brackets will lap over the LVW metal frame and hold it to the wall.
 - b. Pre-drill 5mm holes in the ledgers at the stud locations and use the included #12 x 2" (51mm) pan head screws.

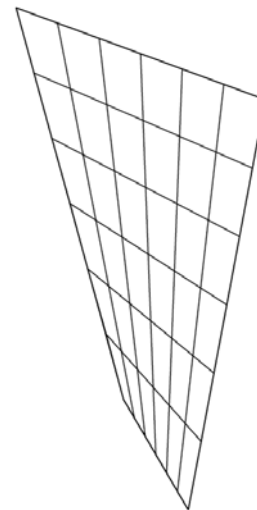
- c. If only one stud is available, we recommend using a 3/16" (5mm) toggle bolt as a second anchor point in each ledger. Place the toggle bolt approximately 7.6cm in from the end of the ledger farthest from the stud location.

7. **IMPORTANT:** Ledgers must allow LVW to sit in a single plane.

Any twist in the body front to back (see Figure 1.3) once it is installed may keep some of the ball catches from firmly seating and allow the trim to pop loose.

Any twist in the body front to back (see Figure 1.3) once it is installed may force the white back panel to interfere with the acrylic diffusion panel and cause dull spots to appear in the illuminated image.

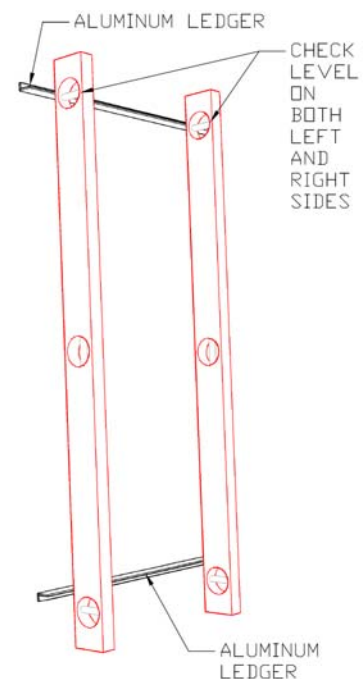
Figure 1.3



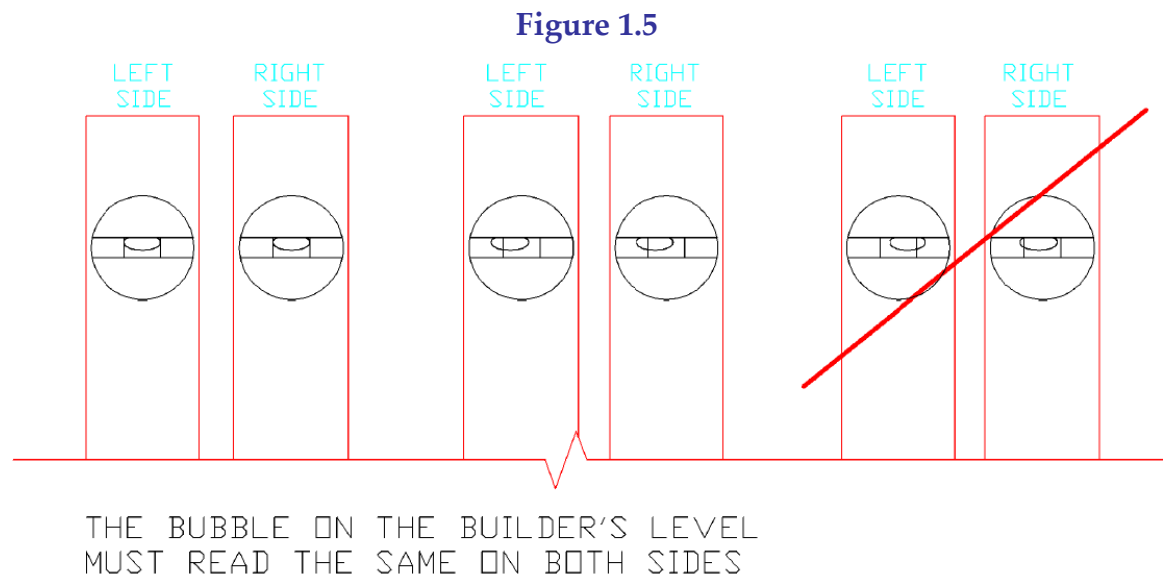
To determine whether the LVW body will sit in a single plane:

Hold a builder's level against the two ends of the ledgers to make sure the two vertical sides have equal plumb. See Figure 1.4

Figure 1.4



NOTE: The window does not have to sit plumb against the wall to function properly, but must sit in a single plane, which means the bubble on the builder's level must read the same for both vertical sides. See Figure 1.5



If the two sides do not read the same, shim out the end of one of the ledgers so they do.

To determine whether the LVW body is sitting in a single plane:

Once the LVW body is in place and before the trim is re-installed, use a builder's level against the face of the doors to make sure the two vertical sides have equal plumb. NOTE: Make sure the doors are completely closed before checking for equal plumb.

If one end of a ledger has been shimmed out, then the LVW body may also need to be shimmed out at the corresponding corner.

8. Once the two ledgers are installed and sit in a single plane, pre-set the brackets on the bottom ledger and temporarily remove the brackets on the top ledger.
 - a. The brackets have some adjustability. Set the brackets on the bottom ledger so the vertical lip is at its farthest setting from the wall.
 - b. Be sure not to over tighten the bolts, as they are threaded into aluminum.

9. Set LVW metal frame on the bottom ledger.
10. While holding the LVW frame in place, install the top brackets. **CAUTION:** If the wall is not flat, do not force the frame to twist when pressing it against the wall with the brackets. See Step 7.
 - a. Large LVW's may require a second person to hold the LVW in place while the brackets are installed.
 - b. To install the brackets, get the bolt started, slide the brackets against the LVW frame without forcing the frame to twist and then tighten the bolts.
 - c. **CAUTION:** Be sure not to over tighten the bolts, as they are threaded into aluminum.
11. Once the upper brackets are installed, loosen the brackets on the bottom ledger, slide the bottom brackets against the LVW frame and tighten the bolts. Again, care should be taken not to force the LVW frame to twist when adjusting the brackets.
12. Once the LVW is firmly in place, check to see if it sits in a single plane. See Step 7. If it does not, adjust the brackets and shim the LVW frame where necessary so it does.
13. Before installing the trim, connect the power. See **Wiring**.
14. Once the power has been connected and tested, install the trim.
 - a. Installing the LVW trim is easiest with two people.
 - b. Have one person lift the trim up so the eye screws in the back of the trim are at the same height as the safety cables on the LVW frame. Have the second person attach the quick clips to the eyes and screw the gates closed.
 - c. Then lower the trim until the ball-catches line up and press the ball-catch locations.
 - d. To adjust holding strength of ball catches loosen or tighten adjustment screws on the two ends of the ball catches attached to the LVW frame.
15. If side panels are included, install them now.
 - a. Remove the bolts and washers from the ends of the upper and lower ledgers.
 - b. Each panel has two angle brackets attached and the top end is labeled on the inside. The upper angle bracket will rest on top of the horizontal leg of the upper ledger, and the lower angle bracket will rest against the bottom face of the horizontal leg of the lower ledger. The brackets are adjustable.
 - c. The angle brackets have been installed to fit the appropriate spacing of the ledgers. However, slight variations in spacing often occur during installation. Adjust the brackets so the ends of each side panel sit flush to the top and bottom edges of the LVW trim. Then slide the panel in and insert the 8-32 x 3/8" (9.5mm) bolts and washers.

- d. Adjust the panels horizontally so that both panels sit equidistant from the vertical edge of the trim and are as close as possible to the ledgers and LVW frame. Tighten the bolts, being careful not to strip the threads.

Wiring

The image cover and image panel can remain in the LVW while making the power connection. **If the image cover and image panel need to be removed, see the LVW Maintenance document on how to safely remove and re-install them.**

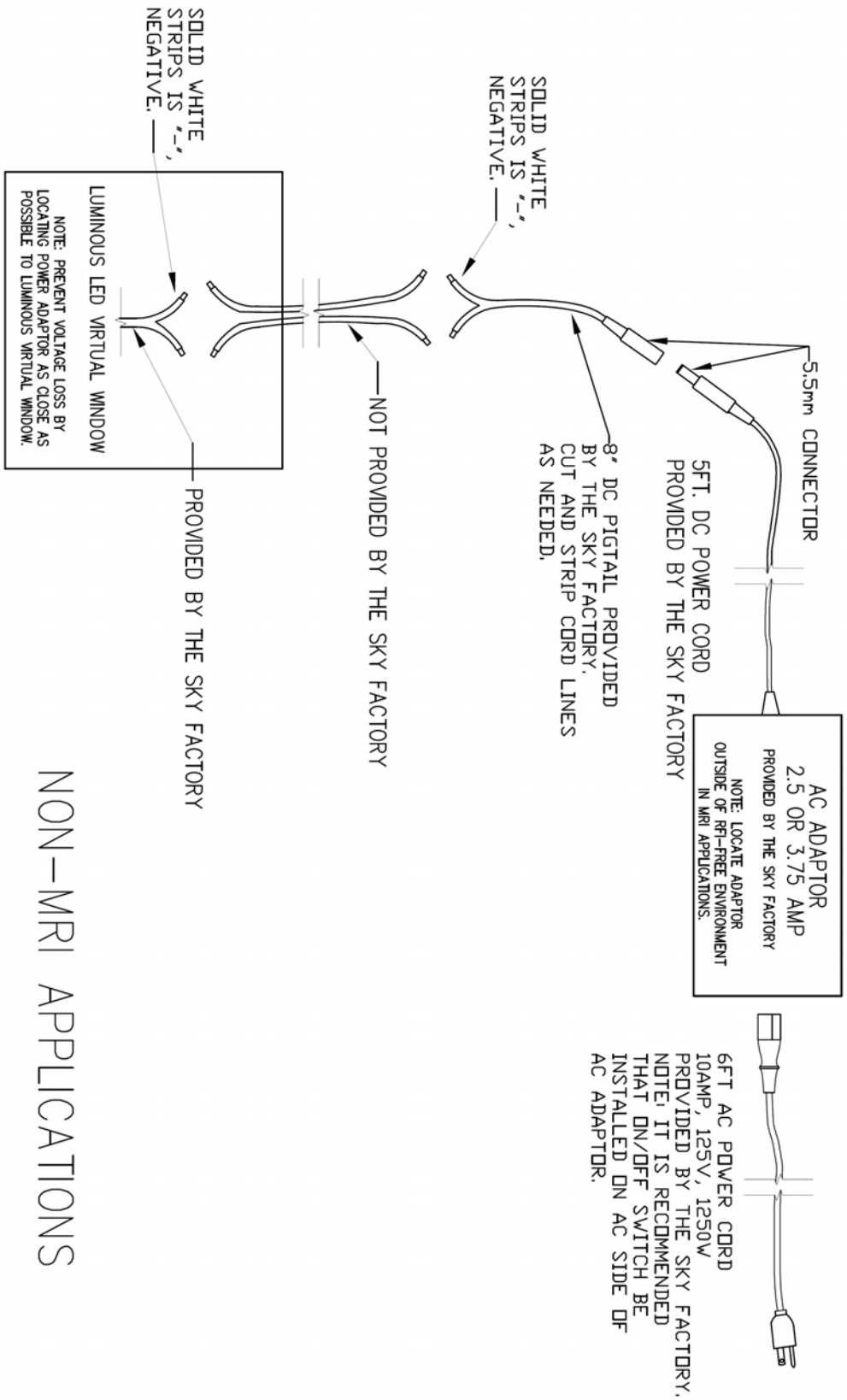
1. To access the power, open the bottom snap-frame door, leaving the other three doors closed to hold the image cover and image panel in place. To open the door, hook thumb in the v-groove on the inside edge of the door, gently slide the door toward the outside edge of the LVW, then flip up and out.
2. Power is connected to the pair of leads inside the aluminum frame, bottom right (as viewed from the front) unless otherwise specified. **The lead with the solid white strips is "-", (negative).** See **Figure 1.6** and **1.7** attached.
3. Fasten a 1/2" cable clamp in the 7/8" (22mm) hole on the back in the bottom right corner of the LVW frame (unless otherwise specified) and make the electrical connection inside the LVW.
4. Run two continuous wires from the LVW leads to the power supply. To **minimize voltage drop** and **maintain desired brightness**, use the attached Wire Sizing Chart **as a guide** to determine appropriate wire gauge.
5. A 20cm pigtail with an appropriate power connector on one end is provided to connect the wires to the power supply.
6. Connect power (24 VDC) in conformance to local and national Electrical Codes.
7. **Install the switch on the AC side** of the power supply.
8. The DC Power Supply is auto-ranging to adapt to 100 – 240 VAC, 50 – 60 Hz.

**IMPORTANT: The LED light fixtures are DC ONLY.
AC VOLTAGE CONNECTED DIRECTLY TO THE LIGHT
FIXTURES WILL PERMANENTLY DAMAGE THE LED'S.**

9. **IN MRI APPLICATIONS, AN RF FILTER IS OPTIONAL AND IF USED, SUPPLIED BY THE SHIELDING COMPANY.** See **Figure 1.7** attached.
10. Once the lighting has been tested, return to Step 14 of the Recessed Installation.

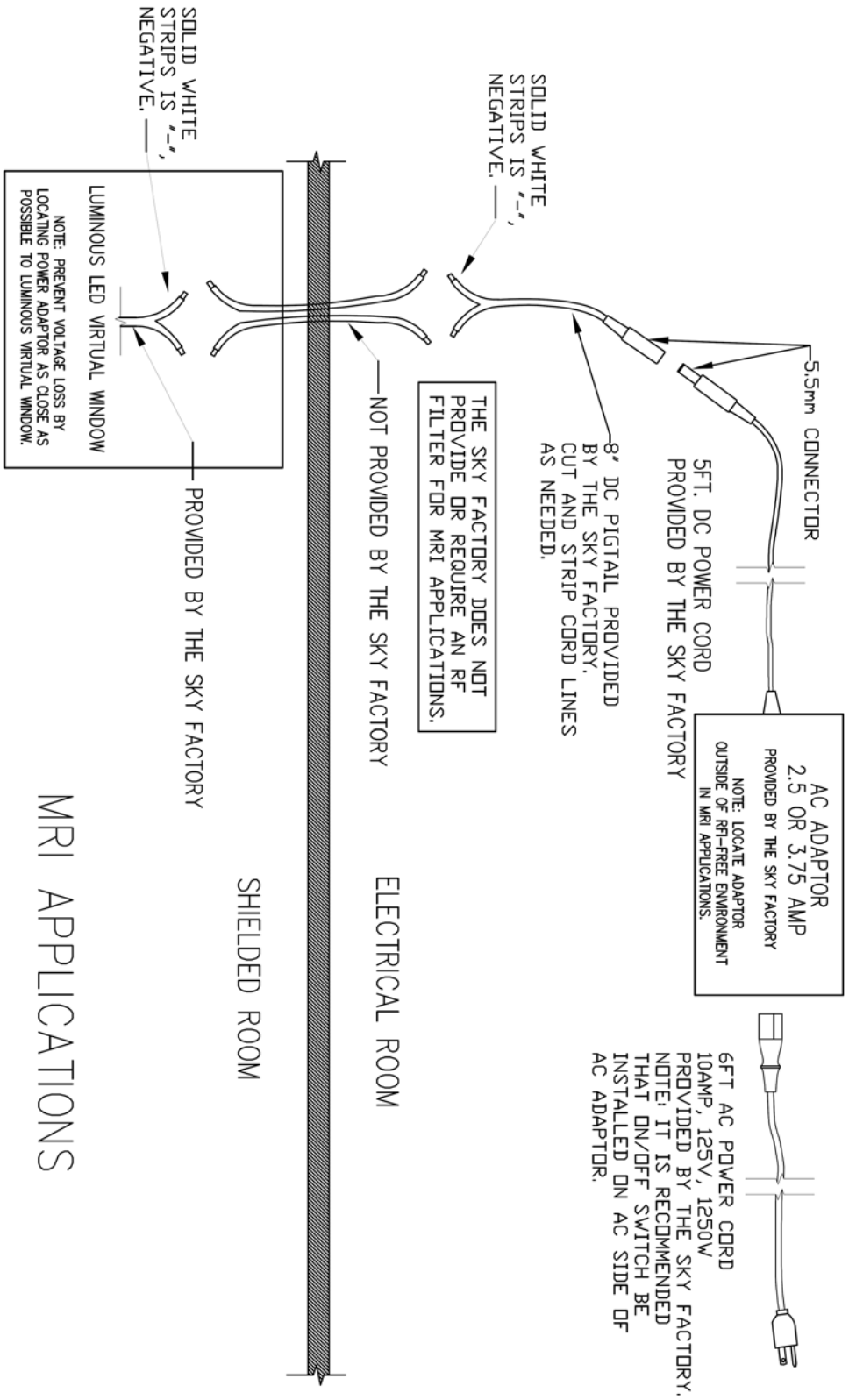
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Figure 1.6



NON-MRI APPLICATIONS

Figure 1.7



Wire Sizing Chart

This is a **GUIDELINE** for recommended wiring practice.

	Distance - Feet							AWG/MM Size Conversion				
	10	15	20	25	30	40	50	AWG	MM	-	AWG	MM
Amps	Wire Gauge							26	.12826		11	4.156
5	18	16	14	12	12	10	10	25	.162		10	6.271
10	14	12	10	10	10	8	6	24	.205		9	6.626
15	12	10	10	8	8	6	6	23	.255		8	8.350
20	10	10	8	6	6	6	4	22	.322		7	10.544
25	10	8	6	6	6	4	4	21	.411		6	13.292
30	10	8	6	6	4	4	2	20	.516		5	16.755
40	8	6	6	4	4	2	2	19	.653		4	21.137
50	6	6	4	4	2	2	1	18	.823		3	26.653
60	6	4	4	2	2	1	0	17	1.039		2	33.606
70	6	4	2	2	1	0	2/0	16	1.308		1	42.384
80	6	4	2	2	1	0	3/0	15	1.652		0	53.454
90	4	2	2	1	0	2/0	3/0	14	2.088		00	67.399
100	4	2	2	1	0	2/0	3/0	13	2.629		000	84.004
120	4	2	1	0	2/0	3/0	4/0	12	3.302		0000	104.091
140	2	2	0	2/0	2/0	4/0	4/0					
160	2	1	0	2/0	3/0	4/0	4/0+4					
180	2	1	2/0	3/0	3/0	4/0+10	4/0+2					
200	2	0	2/0	3/0	4/0	4/0+4	4/0+0					

Observe Proper Wire Size

The most important wiring practice is to observe proper wire size. Failure to use adequate size can result in fire. Even if fire doesn't result, wires that are too small will cause marginal performance of electrical equipment.

Using the Table

The table shows the wire size required for a 3% voltage drop *in 12 Volt* circuits. To use the table, first calculate the total length of the wire from the source to the device and back again. Next, determine the amount of current in the wire. The wire gauge is found at the intersection of Amps and Feet. In most load circuits, a 3% drop is quite acceptable. In charging circuits it often pays to have less of a drop. Always use one size bigger if practical.