INSTRUCTIONS

ULTRABOX

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ELECTRICAL INDUSTRIES
ALWAYS RUGGED. ALWAYS RELIABLE.

INTRODUCTION

Dairyland UltraBox modular junction boxes are a new approach to bonding solutions used in the cathodic protection industry. Instead of permanently-fixtured shunts and resistors found in traditional junction boxes, the UltraBox uses shunt, resistor, and isolated terminal modules which mount to DIN rails via a snap-in clip assembly integral to the module. Combinations of modules can be configured as needed on either horizontal or vertical DIN rails. Modules can be added or rearranged at any time, and all hardware and field connections are accessible, overcoming challenges with other industry boxes that require box disassembly to fix loose connections or to add a component. Field wiring connects to the modules via user-installed conduit entries.

The UltraBox can be used for a wide variety of bonding applications including rectifier-to-anode junctions, rectifier-to-pipe junctions, interference bonds and other combinations.

See the UltraBox Technical Literature for a detailed description of the UltraBox and its components.

These instructions outline how to install and operate the Dairyland UltraBox.

Figure 1: A typical UltraBox configuration using an 18"Hx16"Wx10"D stainless steel enclosure with dual horizontal DIN rails, six shunt and resistor modules and an isolated terminal module.

⚠ WARNING

The internal and external surfaces of the stainless steel UltraBox may be hot during normal operation. Wear gloves when opening the enclosure or touching internal components.

⚠ WARNING

Safety precautions should be taken by the user to protect from coming in contact with high voltages. Dairyland provides suggested procedures for installing and operating this equipment. But the user must be responsible for and approve the procedures to be used by its workers when initially installing the equipment in a field retrofit installation because Dairyland cannot be familiar with each user's safety.

⚠ WARNING

The UltraBox is for installations in "ordinary" locations only and not in defined hazardous locations

⚠ WARNING

Before handling conductors connected to the pipeline, measure the AC voltage as outlined in the section WORKER SAFETY and follow the described safety procedures.

UltraBox®

Premium Modular Junction Boxes

by Dairyland

NOTICE

Ensure that rectifier and/or field wiring to the UltraBox are de-energized prior to handling and connection.

NOTICE

Due to the amount of heat that can be generated by the resistors, do not install resistors in a polycarbonate UltraBox enclosure.

NOTICE

Recommended maximum internal power dissipation:

18x16x10" Stainless enclosure

With 8-position Isolated Terminals installed:

350W (120°F/49°C ambient)

500W (72°F/22°C ambient)

Without 8-position Isolated Terminals installed:

425W (120°F/49°C ambient)

600W (72°F/22°C ambient)

24x24x10" Stainless enclosure

With 8-position Isolated Terminals installed:

500W (120°F/49°C ambient)

700W (72°F/22°C ambient)

Without 8-position Isolated Terminals installed:

600W (120°F/49°C ambient)

850W (72°F/22°C ambient)

Note that maximum power dissipation limits above relate to actual values based on current flow, not the sum of the total resistor wattage ratings.

WORKER SAFETY

Before beginning the installation, it is important to know the voltage associated with the pipeline connections that will be handled during the installation process. Do not contact conductors connected to the pipeline before determining if such action is safe as determined by your company's safety guidelines. If the structure voltage is not at a safe touch potential (i.e.,>15VAC to ground), then electrically insulated gloves should be used.

REQUIRED TOOLS

Required installation tools include:

a) Multimeter to measure AC voltage

b) Large flat-blade screwdriver

c) Small flat-blade (1/8" wide) screwdriver

d) Electrically insulated gloves

e) 7/16" nut driver

f) Greenlee hole punch tool, hole saw, drill or other tool to create conduit entrances in the enclosure.

g) #1 Phillips head screwdriver (for adjusting resistor values)

INSTALLATION INSTRUCTIONS

Mounting

Mount the enclosure on a panel or posts using the mounting brackets included with the UltraBox. Stainless enclosures have two integrated mounting brackets, one on the top and one on the bottom of the enclosure. Polycarbonate enclosures come with two stainless steel brackets and hardware which ship loose. 18" x 16" x 10" and smaller polycarbonate enclosures use 4x #10-32 screws to mount the stainless steel brackets. All 24" x 24" x 10" polycarbonate enclosures are designed to be mounted using 6X ¼-20 hardware to secure the stainless steel brackets. See the attached enclosure dimensional drawings 100115, 100116, 100117,100119, 100120. For mounting to round poles, kit MEPK-2-10 is available. See drawing 100141.

Environmental Exposure

The polycarbonate enclosures are rated IP66/NEMA 4X with a continuous operating temperature range of -40°F to +176°F (-40°C to +80°C).

The stainless enclosures are rated NEMA 3R with a continuous operating temperature range of -40°F to +248°F (-40°C to +120°C) (up to 284°F/140°C without the 8-position terminal module). Note that these maximum temperatures limit the total internal power dissipation from the resistors (see Notice statement).

Conduit Entry

For Dairyland built UltraBox applications, given initial customer input requirements, Dairyland provides recommended UltraBox configurations that attempt to provide the space needed for cable entry and exit. Before punching conduit entries, be sure to examine the location of the modules and their input and output terminals.

Module Connections

Attach incoming and outgoing conductors to the terminals of the appropriate modules. In some cases, it may be desired to rotate the terminals so that connections can be made more easily, as shown in Figure 2. In this case, use a 7/16" nut driver to loosen the nut retaining the terminal. Then rotate the terminal as needed and retighten the nut.

See the attached dimensional drawings for shunt modules (100121), resistor modules (100122, 100125), isolation terminal modules (100123), rheostat modules (100127), links and terminals (100124) and DIN rail kits (100126).

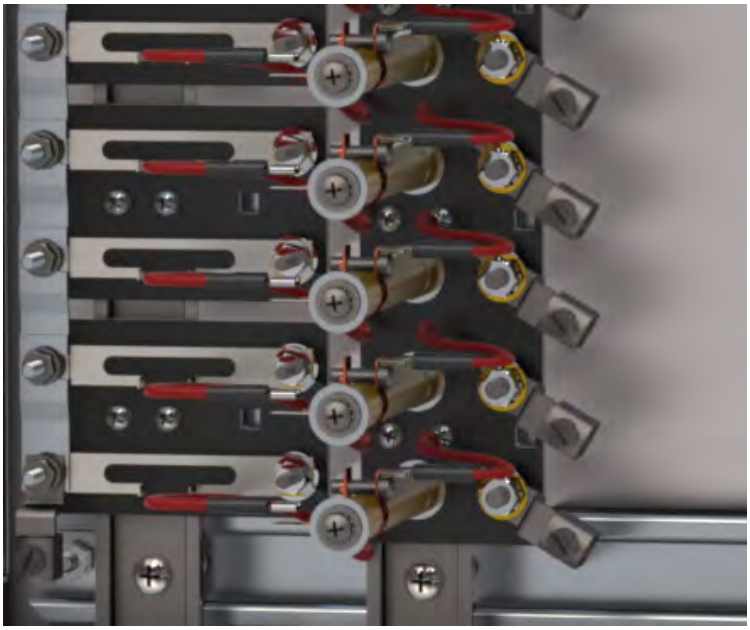


Figure 2. Terminal orientation can be adjusted to align with conductors.

Circuit Labeling

Included with the UltraBox are adhesive-backed labeling sheets that can be used to identify the modules and the circuits to which they belong. The labels can be attached to the base of each module as shown in Figure 3.

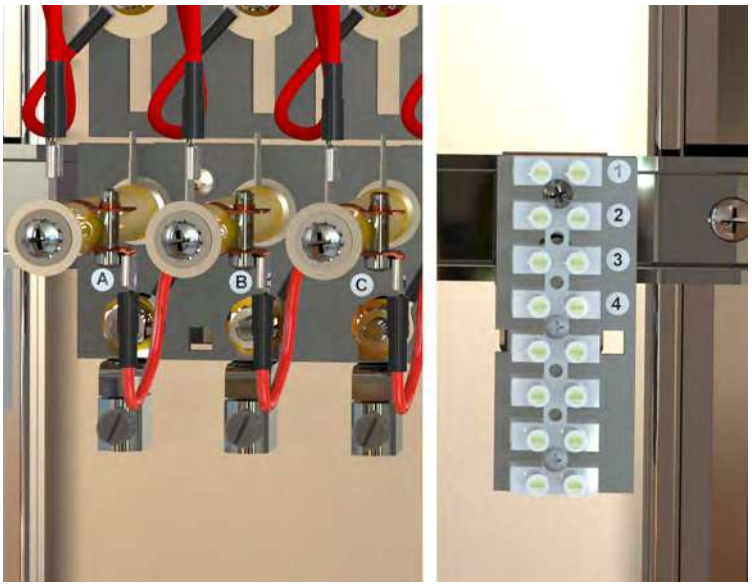


Figure 3. Adhesive circuit labels provided with the UltraBox may be applied to the modules by the customer.

OPERATION

Removing/Attaching DIN Modules

The modules can be easily removed from the DIN rail by pushing downward on the clip release tab either by hand or with a small screwdriver. The notch on all modules provides access to the DIN rail clip release tab as shown in Figure 4. While depressing the tab, rotate the lower end of the module base outward to remove.

To attach the module, simply hook the fixed end of the clip on one edge of the DIN rail, then rotate the spring-loaded end of the clip onto the other edge of the DIN rail until it snaps in place

Figure 4. Removing a module from the DIN rail.

Use of Shunts

Please contact Holloway Shunts (www.hollowayshunts.com) for information on the use of their shunts.

Adjusting Resistor Values

The circuit resistance, and thus the current, is adjusted by changing the position of the slider on the resistor element as shown in Figure 5. Note that the resistor is set to its minimum value with the slider located at the top of the resistor element and is set at its maximum value with the slider located at the bottom of the resistor toward the base of the module. To adjust the slider position, loosen the slider screw with a #1 Phillips head screwdriver, reposition as desired and retighten the slider screw.

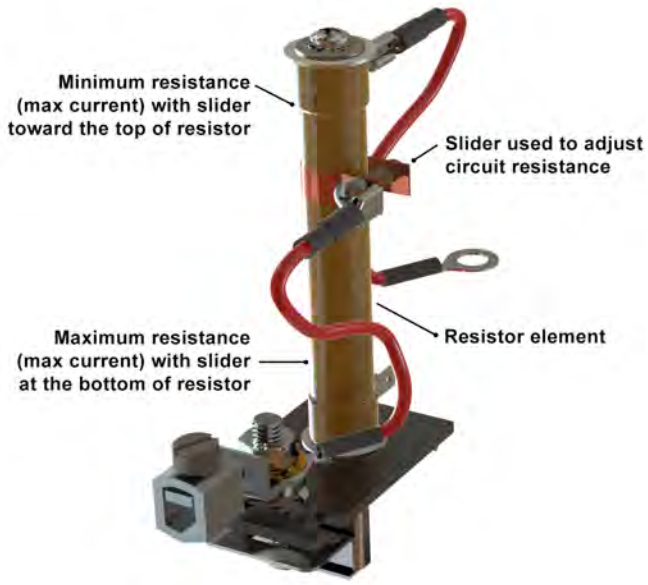


Figure 5. Adjusting Circuit Resistance.

Figure 6. Shunt Links shown in closed position

Figure 7. Shunt Link shown in open position.

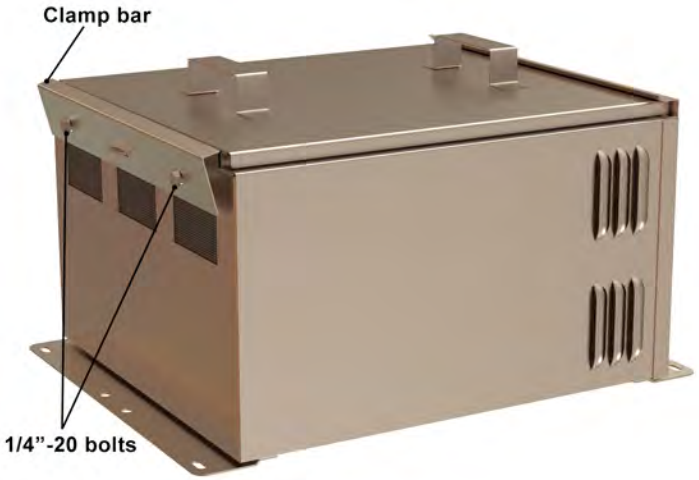


Figure 8. Operating the cover on the stainless steel enclosures.

Figure 9. Operating the cover on the stainless steel enclosures.

Shunt Links

Parallel shunts are connected using nickel-plated copper links as shown in Figure 6. To open a linked connection, use a 7/16” nut driver to loosen the two nuts holding the link in place. Then rotate the link counterclockwise as shown in Figure 7. Note that different links are used to connect different shunt types depending on the thickness of the shunt. So, if shunts are rearranged or new shunt modules are added, then additional links may be required depending on the new combination of shunts. This link construction allows for future expansion of the header bus. See the Technical Literature for information on selecting appropriate link sizes.

Stainless Steel Enclosure Cover Operation

The cover on the stainless steel UltraBox enclosure is held in place with a clamping bar at the bottom of the enclosure. To remove the cover, use a 7/16” wrench or nut driver to loosen the two bolts on the underside of the clamp bar. Back out the bolts such that the clamp bar opens enough to remove the cover as shown in Figure 8. Note that the bolts are captured so that they will not come out all the way.

To replace the cover, first make sure that the clamping bar is open as shown in Figure 9. Then insert the top edge of the cover under the drip edge on the front of the enclosure roof. Next rotate the cover so that it is flush with the enclosure opening. Slide the clamping bar over the cover and secure by tightening the two bolts. The enclosure can be locked by inserting a padlock in the slotted tab that protrudes through the clamping bar on the bottom of the enclosure.

Adding/Rearranging Modules

Several different shunt, resistor and terminal modules are available to add to an existing UltraBox. Available models can be found on the Dairyland website.When adding resistors, be aware that resistors are not to be installed in polycarbonate enclosures and that the total power dissipation in the resistors is limited for both enclosures (see Notice statement). When adding shunts to connect to an existing header, new links may also be required. See the section on Shunt Links.

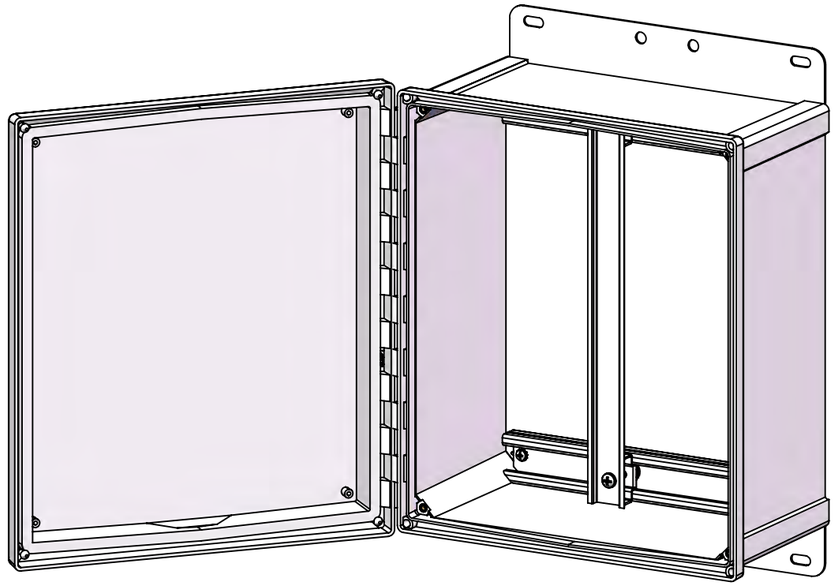
Adding Rails

Some enclosures have adequate space for an additional rail, to be installed parallel to an existing rail. See the Dairyland website for additional information.

MAINTENANCE

Regularly inspect the enclosure vents to ensure they remain clear of obstructions such as mud wasp nests.

In some deep well anode installations, it is possible for chlorine gas to migrate into the enclosure via conduit and cause accelerated corrosion problems inside the junction box. The vented stainless enclosure is likely to avoid this problem, however for the polycarbonate enclosure, which is not vented, take reasonable precautions to prevent this from occurring.



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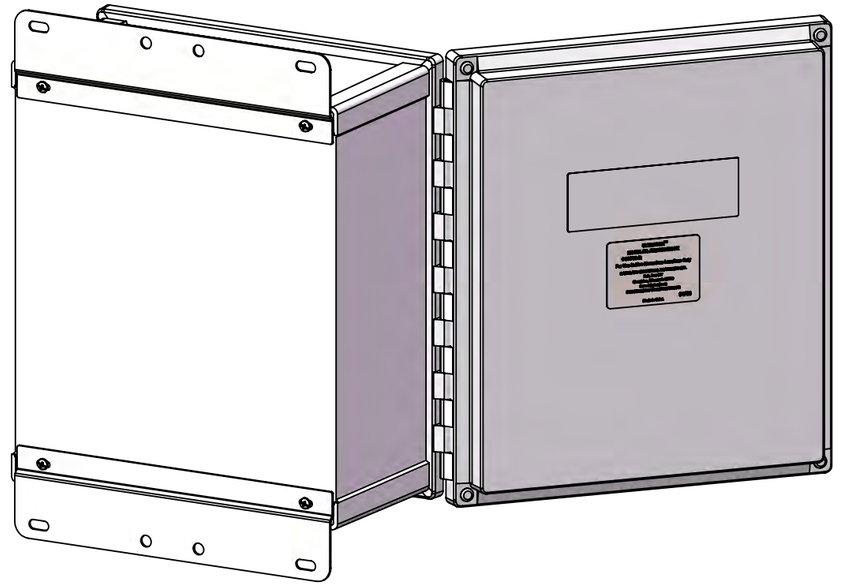

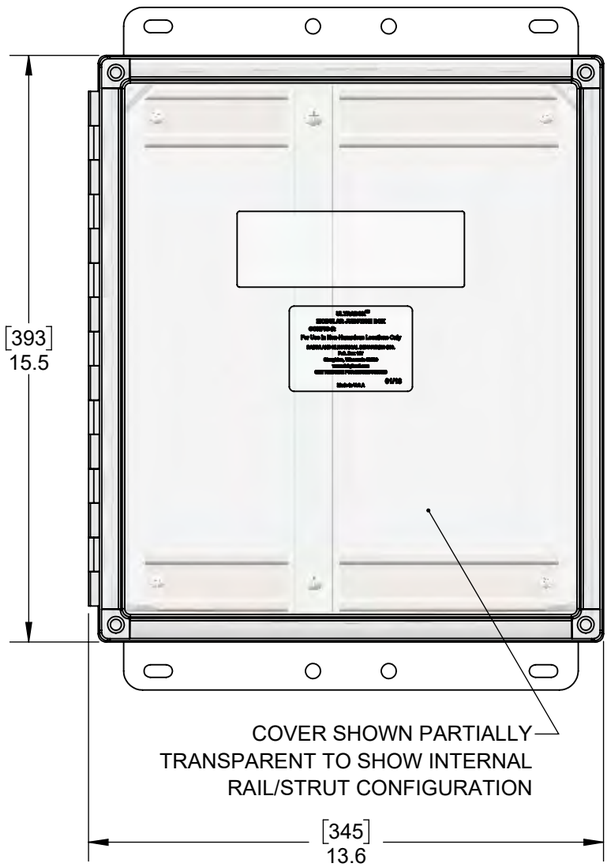

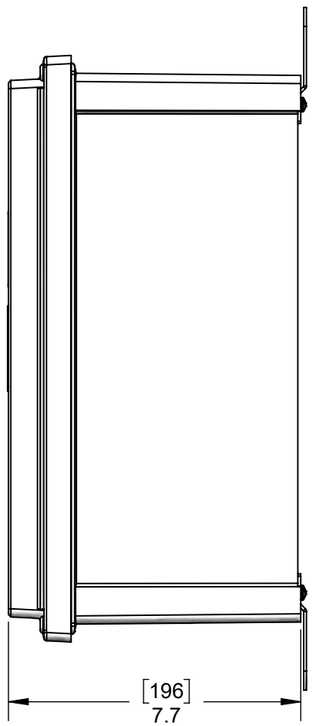

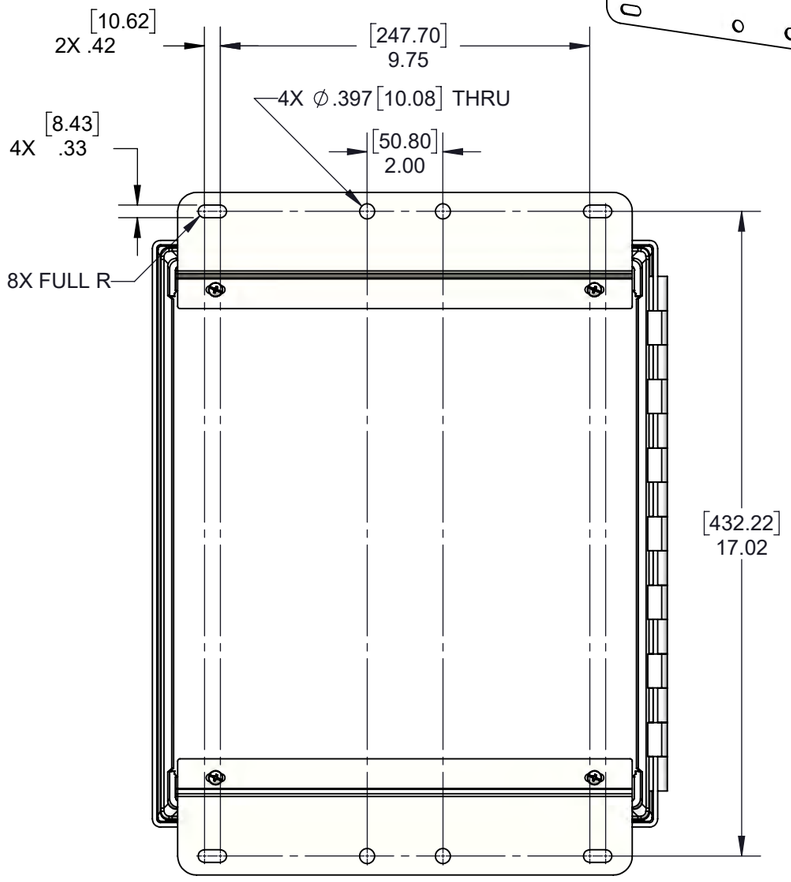

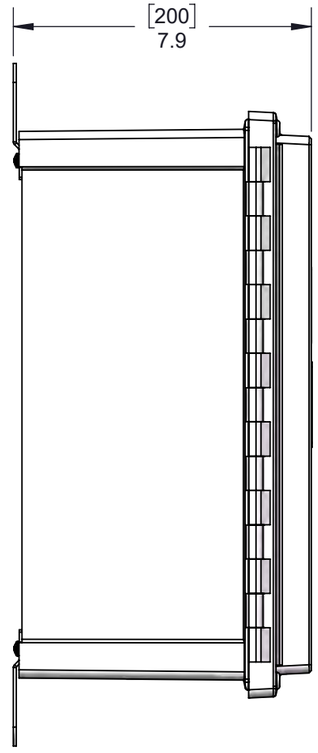

ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
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63

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STOUGHTON,
WI 53589
608-877-9900
DAIRYLAND.COM

DESCRIPTION
MJB-P-1412-XX-YY ENCLOSURE DIN RAIL-STRUT OPTIONS

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
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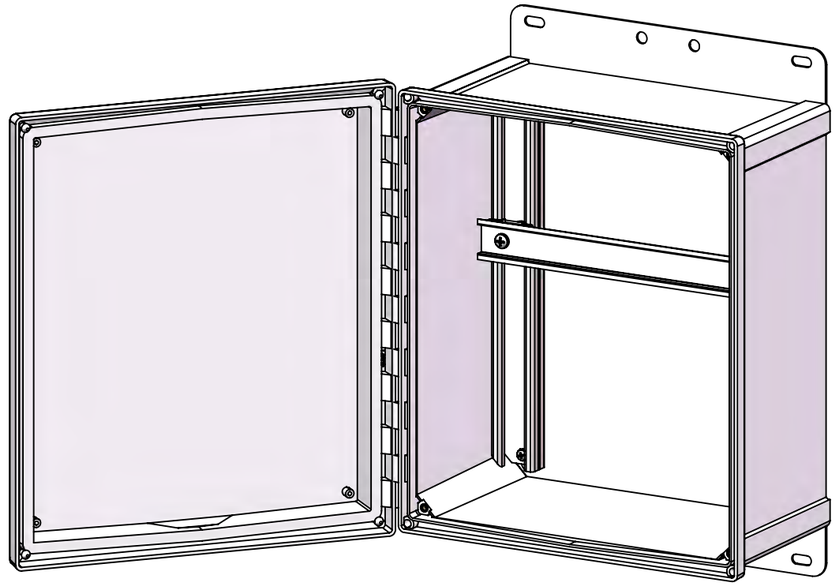

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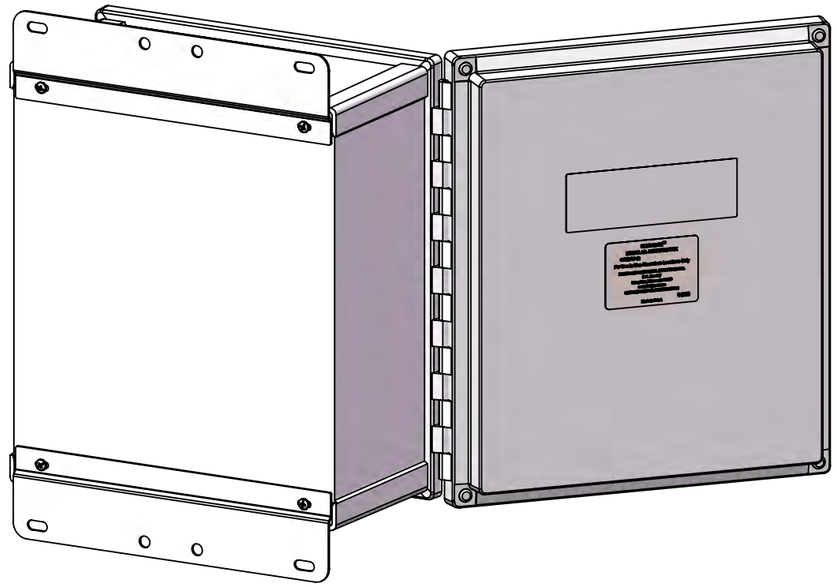

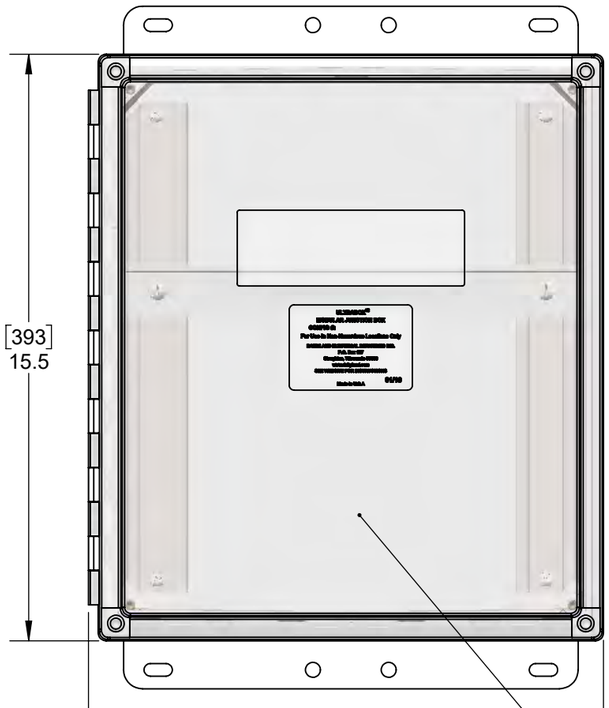

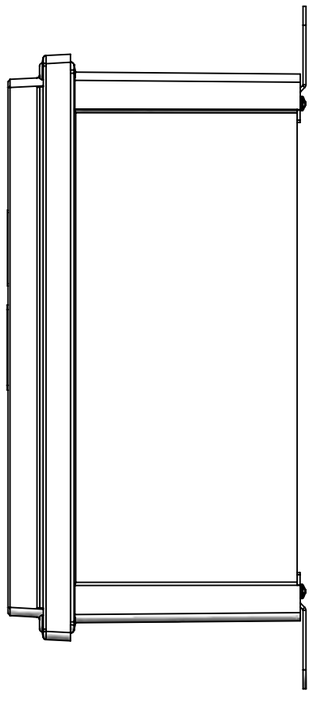

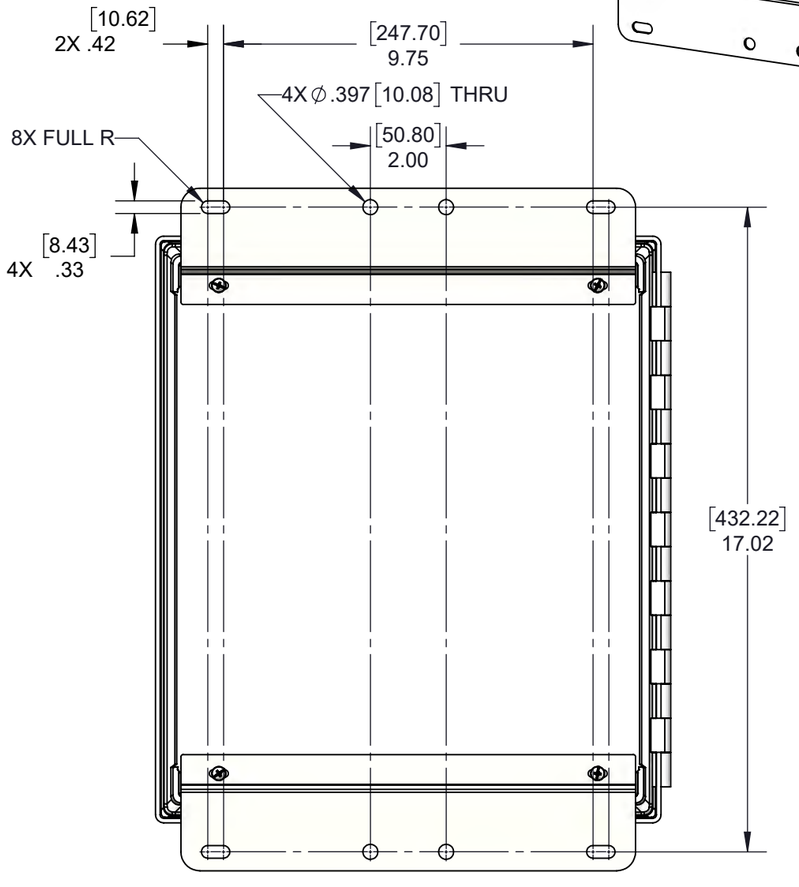

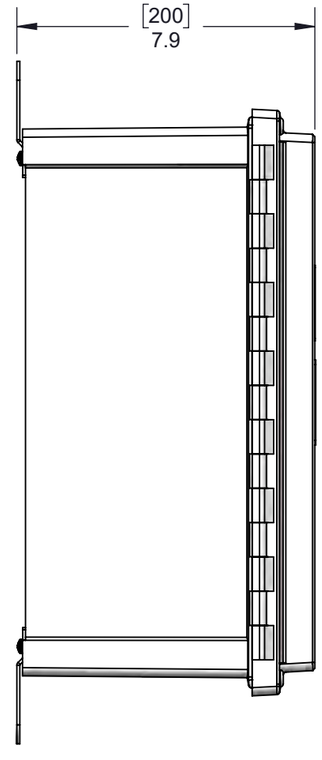

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WI 53589
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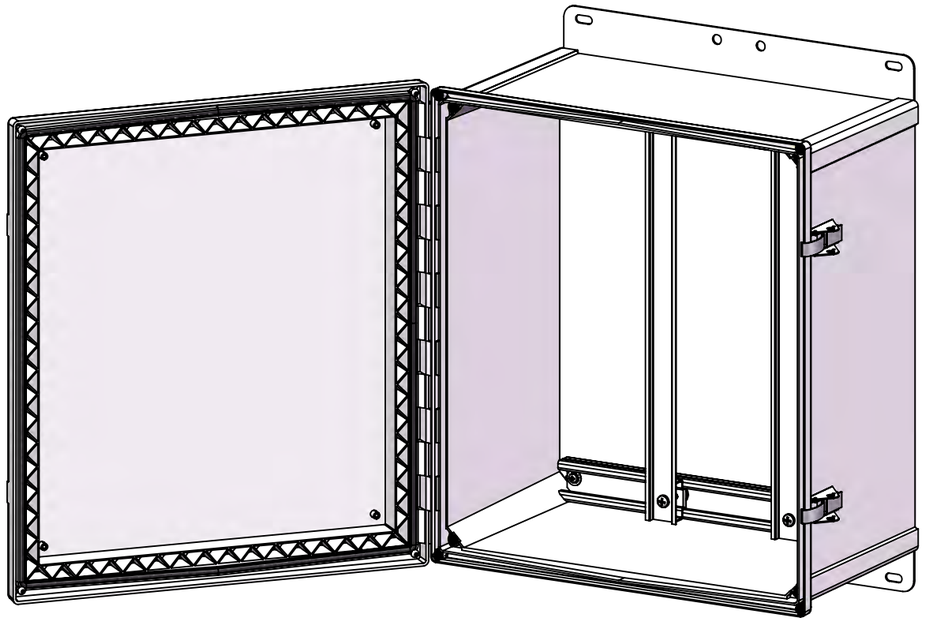

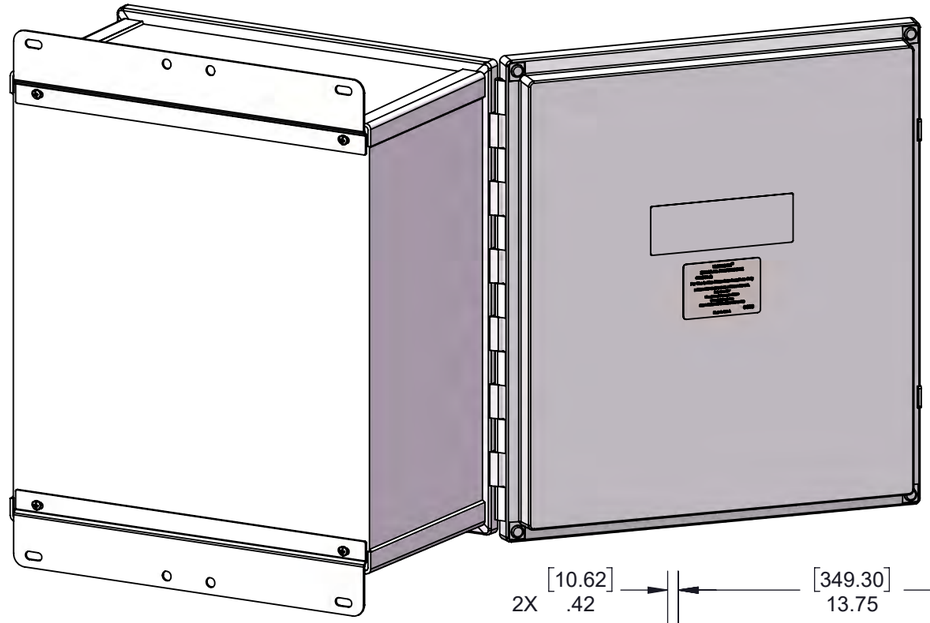

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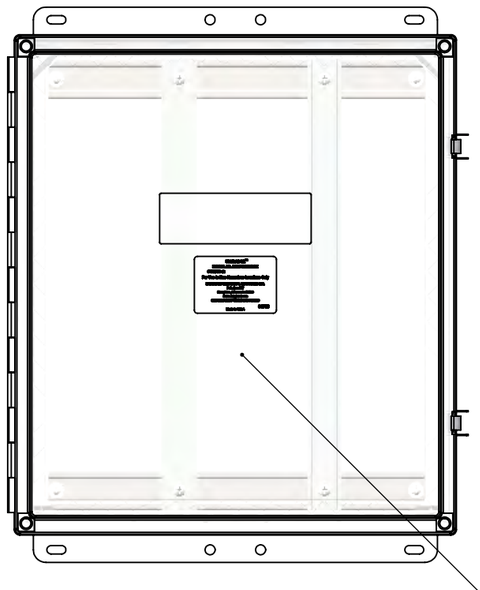

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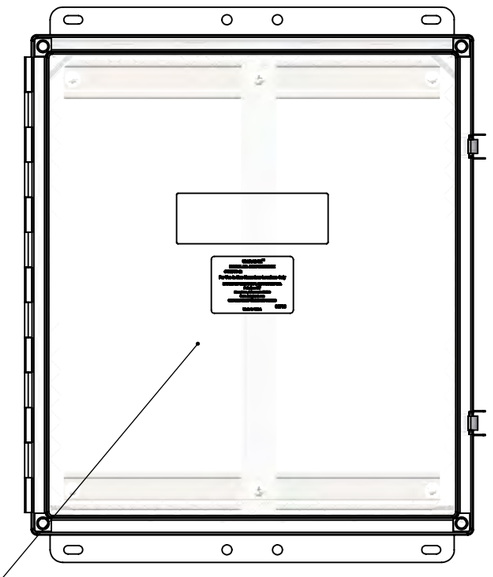

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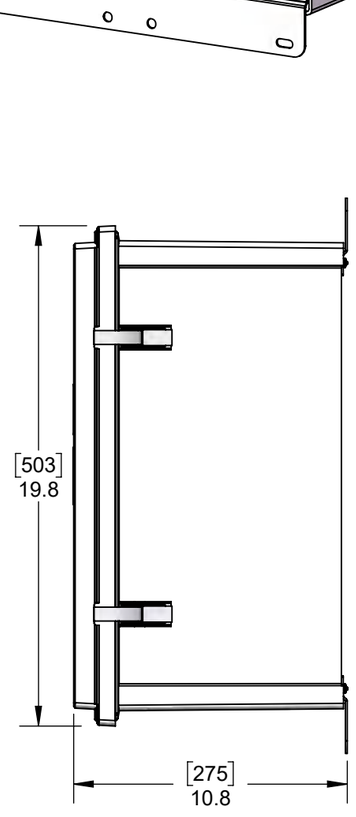

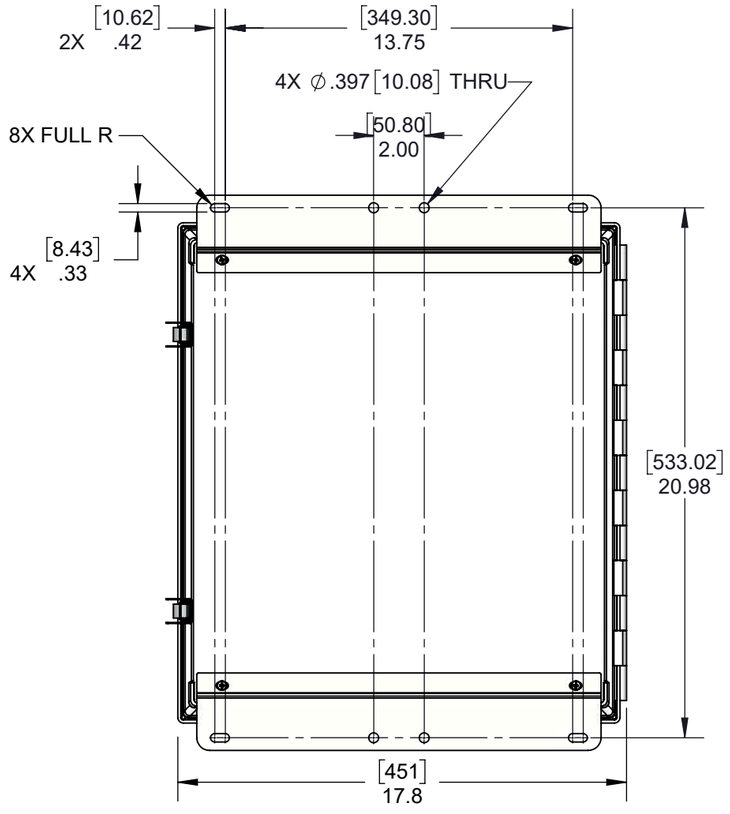

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P.O. BOX 187
STOUGHTON,
WI 53589
608-877-9900
DAIRYLAND.COM

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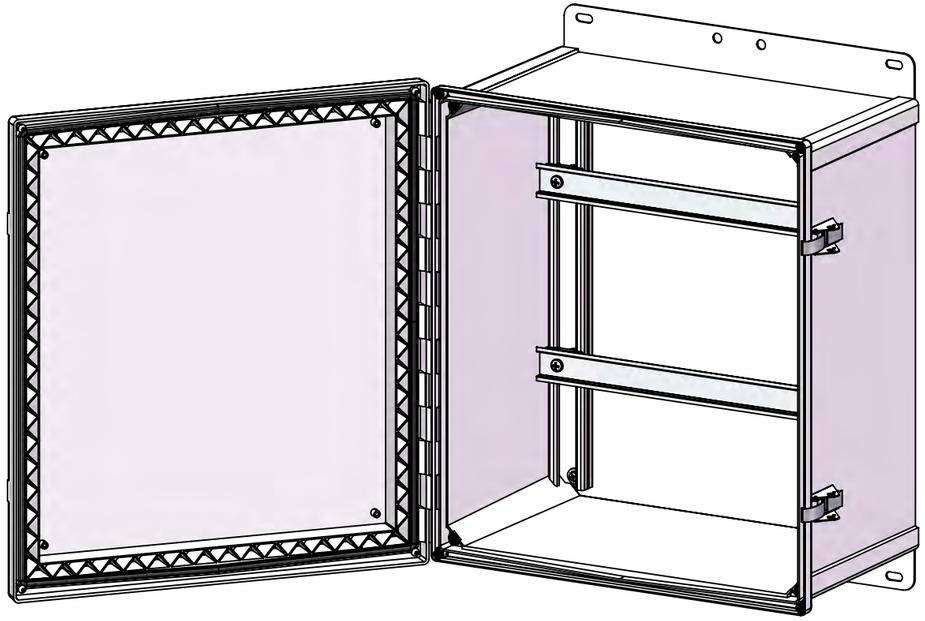

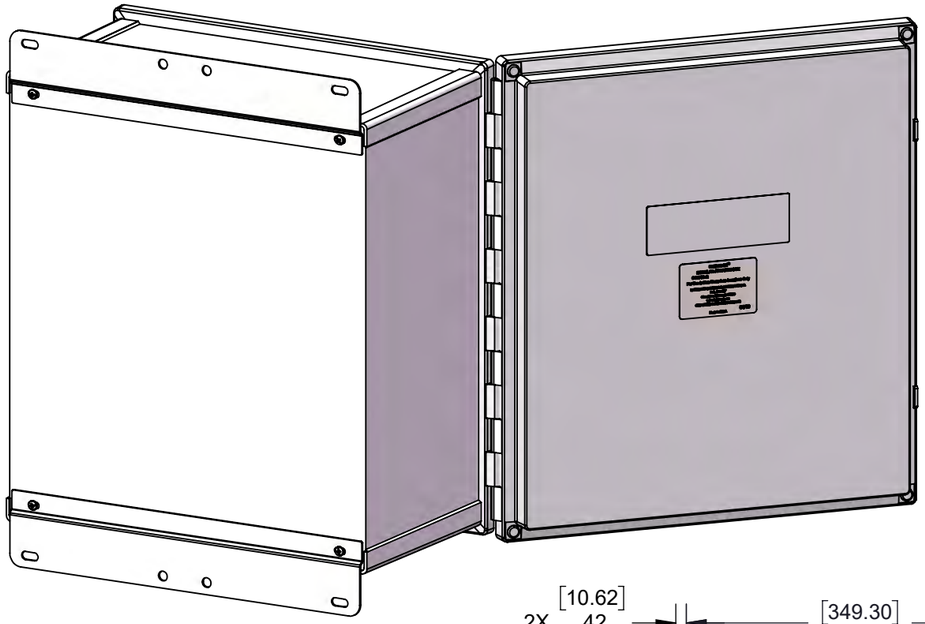

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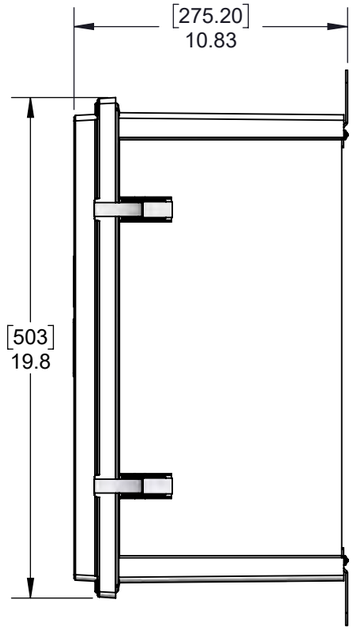

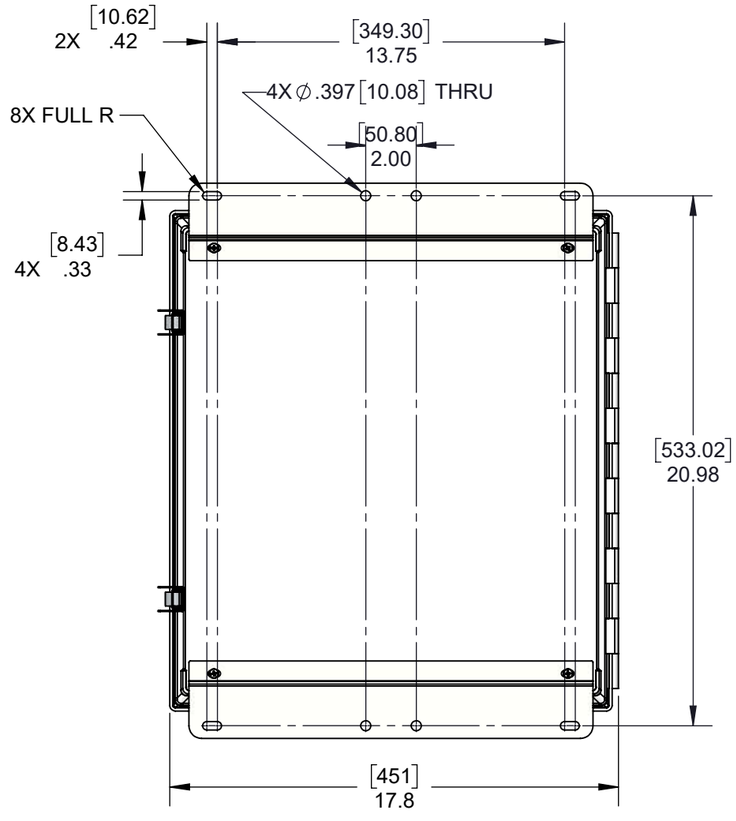

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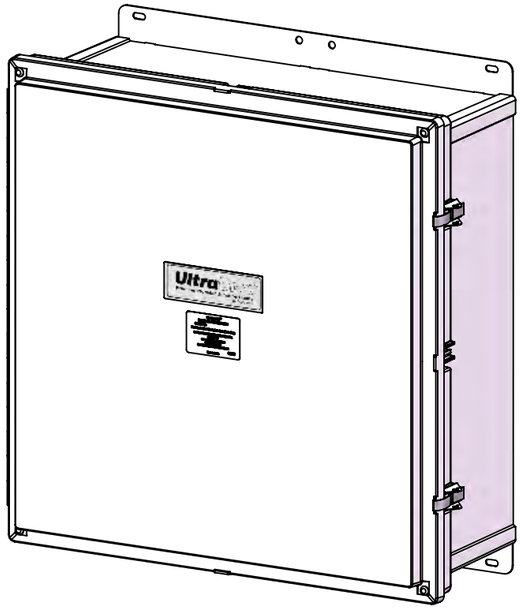

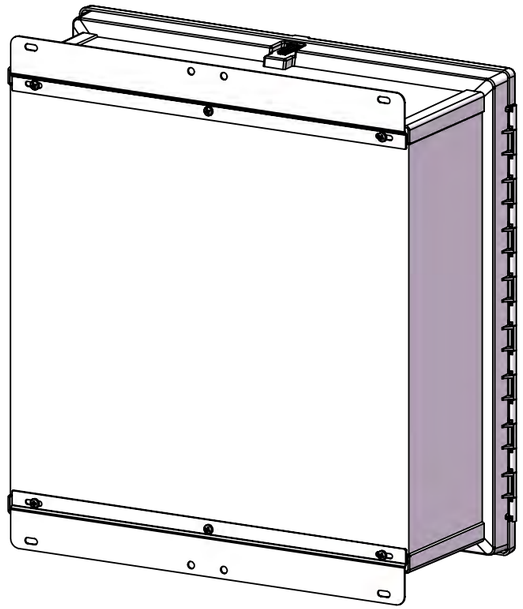

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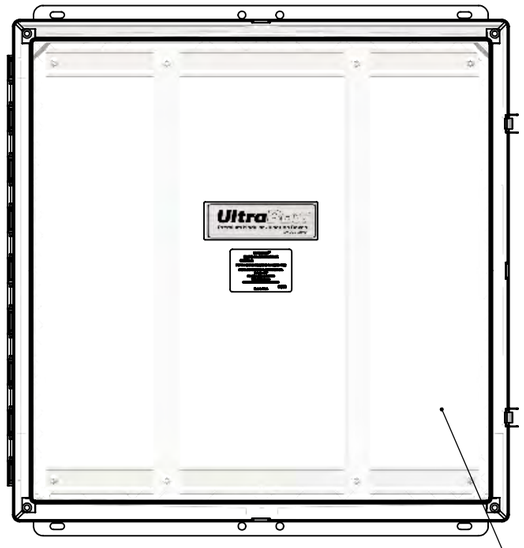

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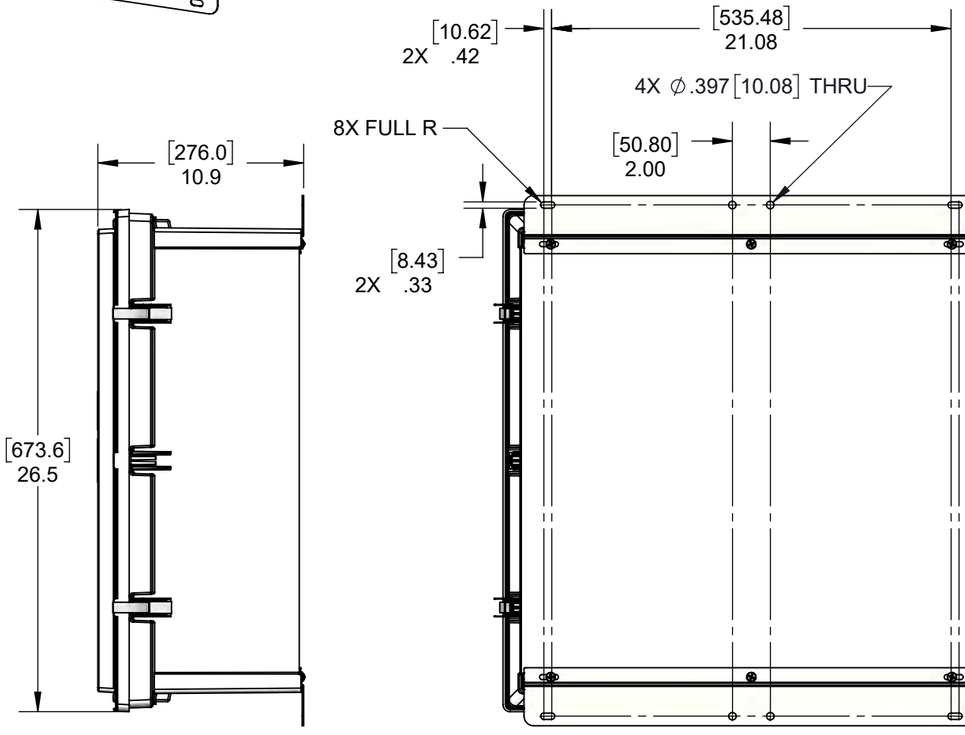

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WI 53589
608-877-9900
DAIRYLAND.COM

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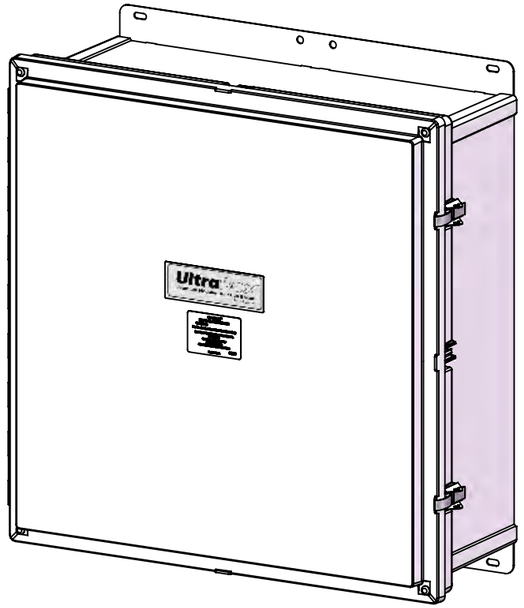
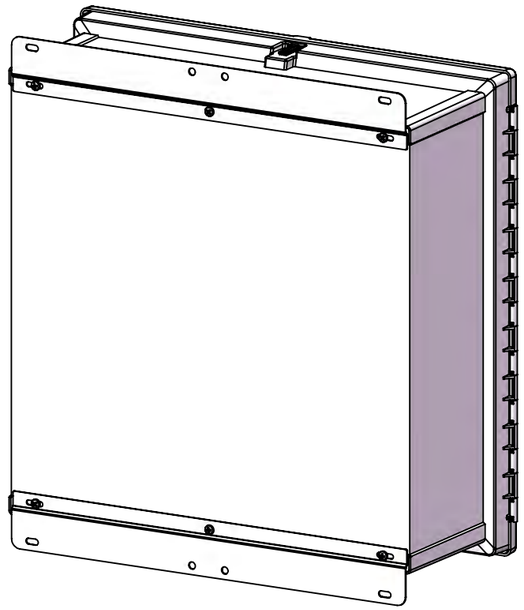
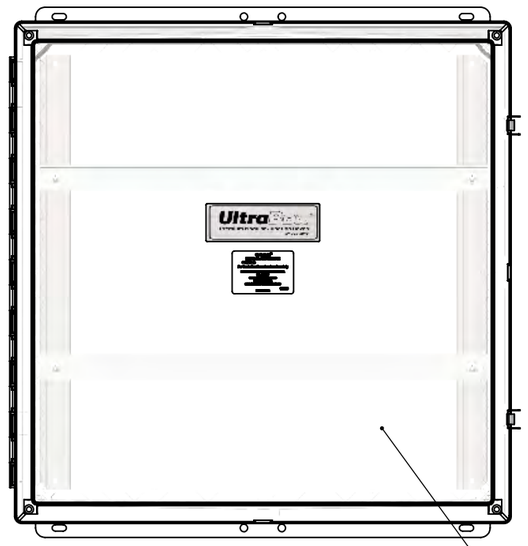


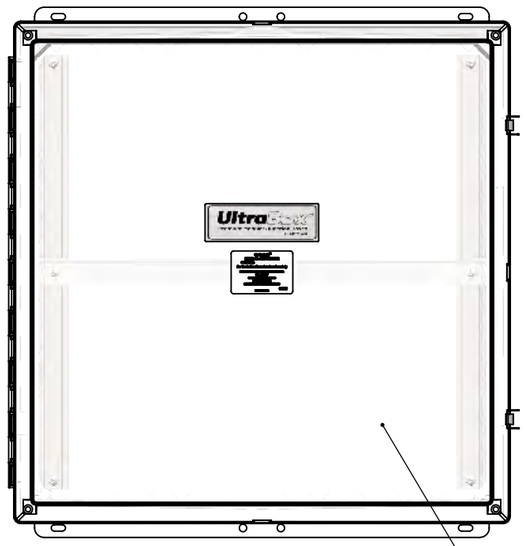


MJB-P-2424-2H-NV

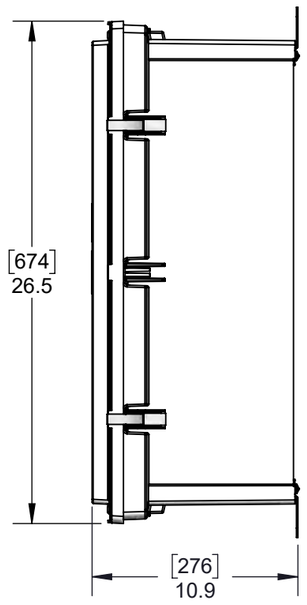


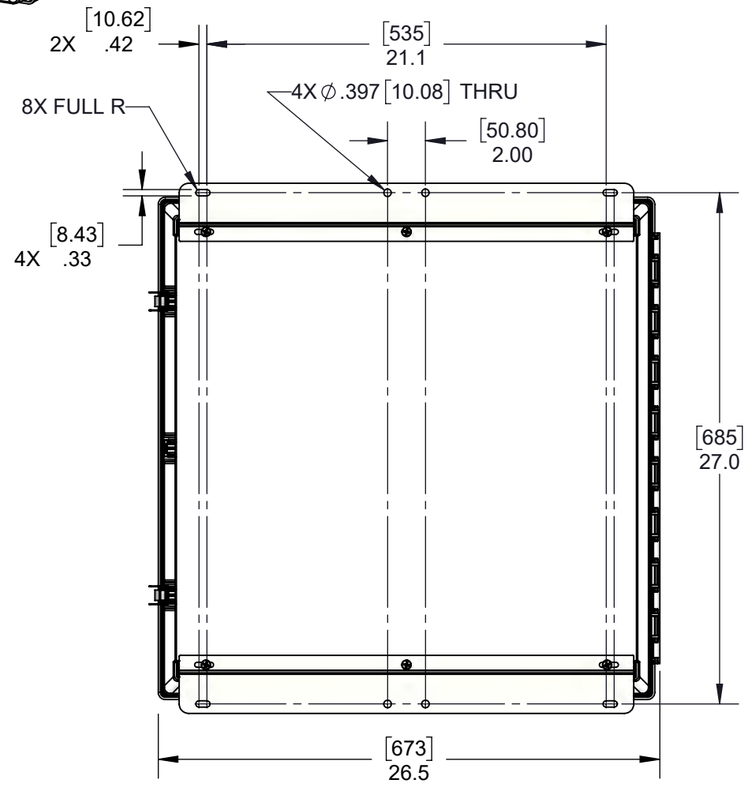
COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION

MJB-P-2424-1H-NV



COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION





ANSI Y14.5M 1994 APPLIES

UNLESS NOTED UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1
63

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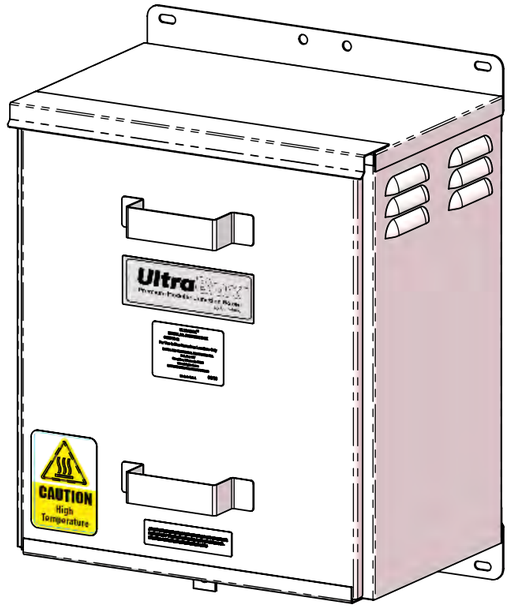
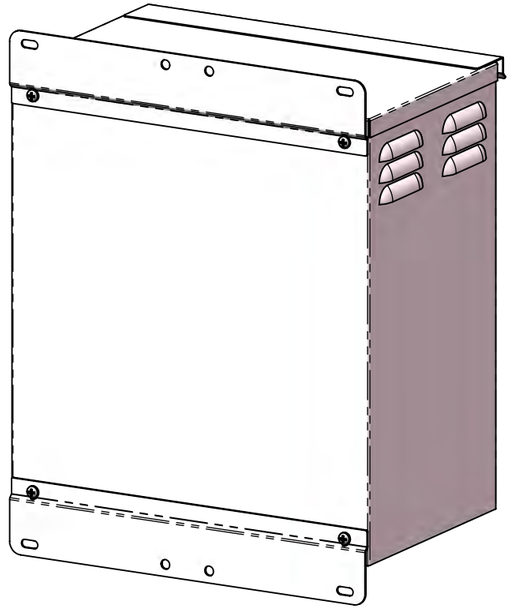
608-877-9900
DAIRYLAND.COM

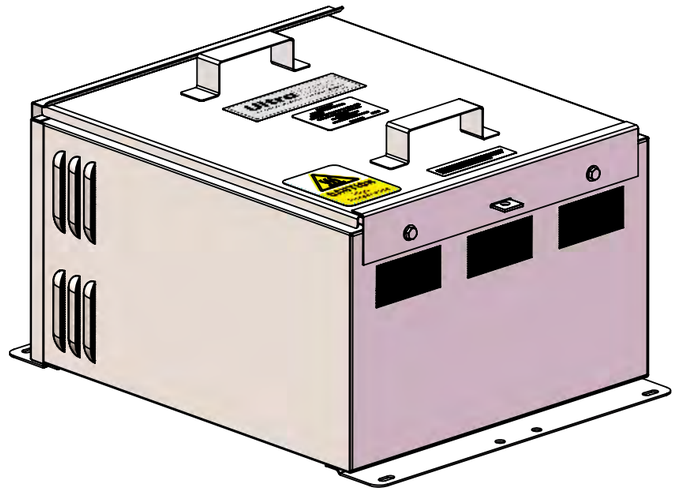
DESCRIPTION: MJB-P-2424-XX-YY ENCLOSURE DIN RAIL-STRUT OPTIONS

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100117	B	2018-10-07	B	2019-06-28

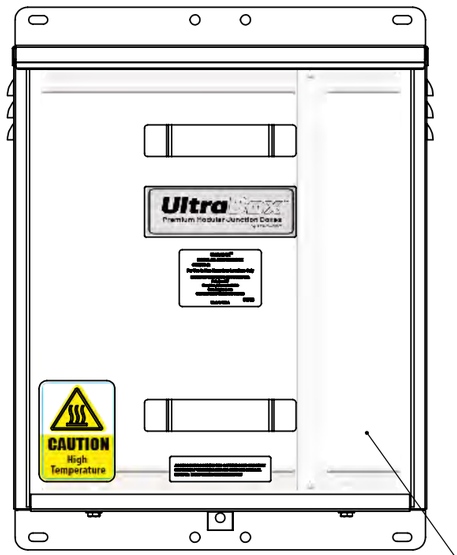
SCALE	DRAWN:	SHEET:	DWG APPROVAL:
1:8	JPW	2 OF 2	RJH





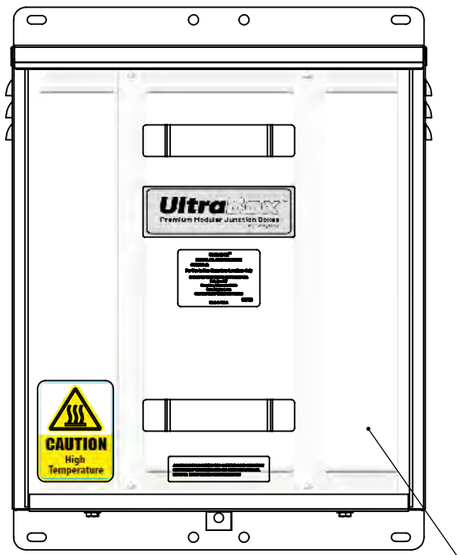


MJB-S-1816-1V-SV

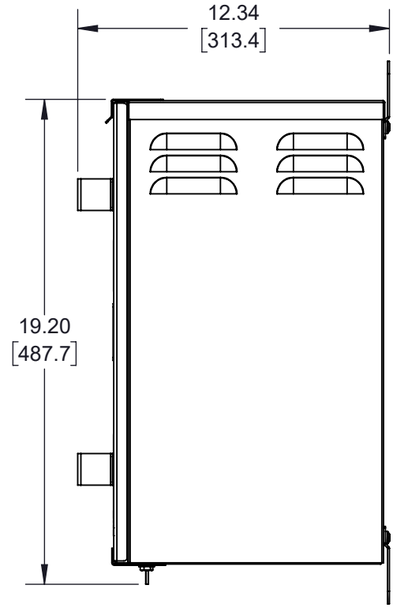


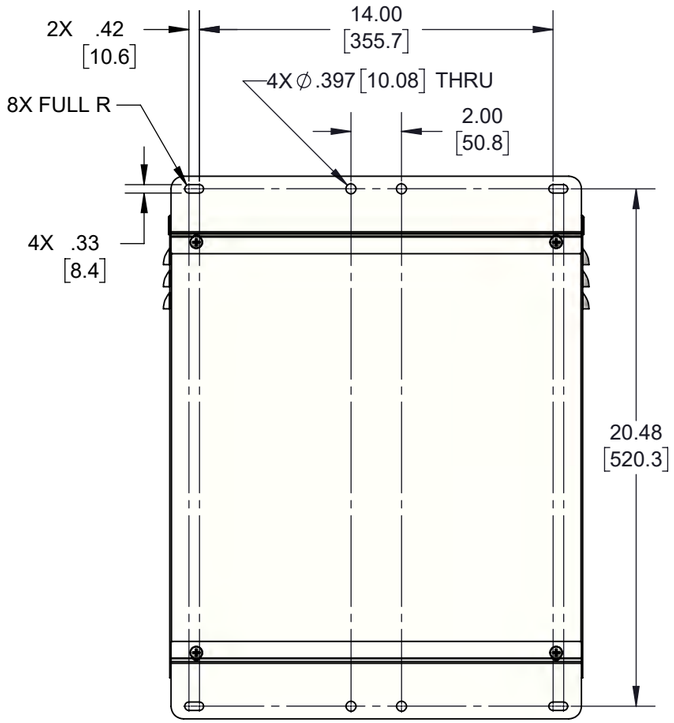
COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION

MJB-S-1816-2V-SV



COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION





ANSI Y14.5M 1994 APPLIES

UNLESS NOTED 63
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

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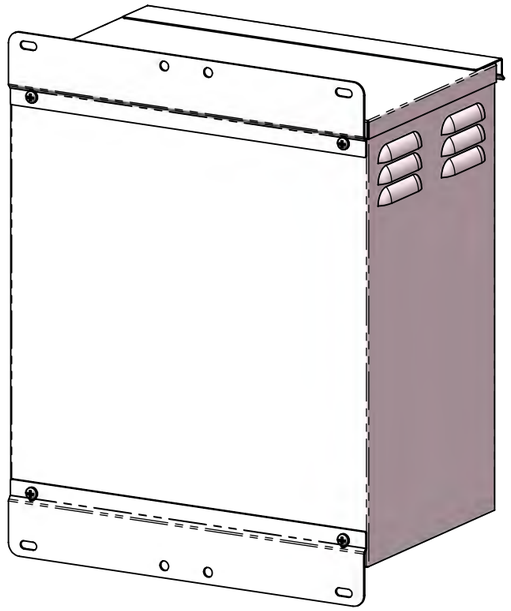
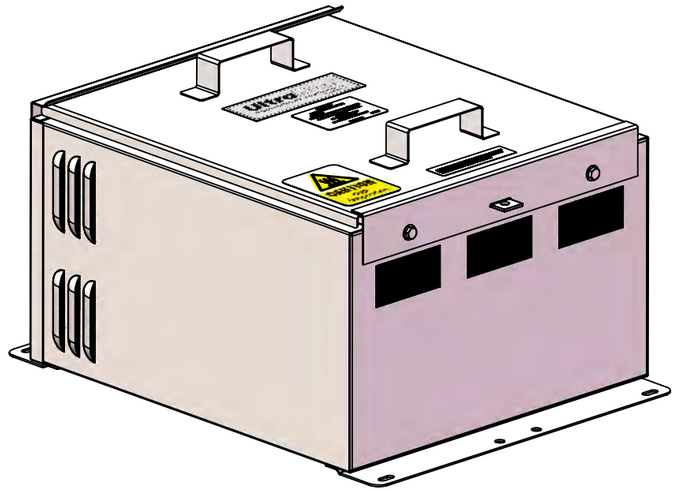
DESCRIPTION
MJB-S-1816-XX-YY ENCLOSURE DIN RAIL STRUT OPTIONS

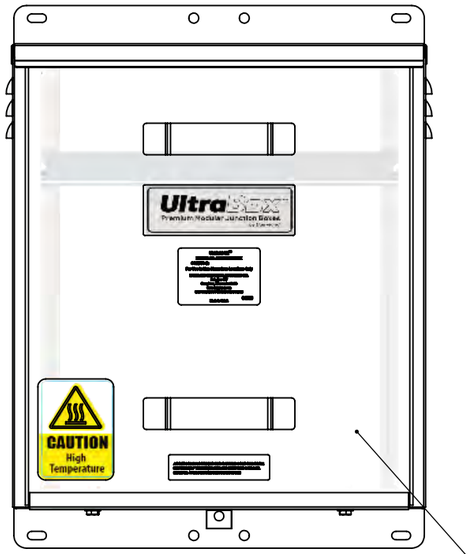
DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100119	B	2018-10-15	B	2019-06-28

SCALE	DRAWN:	SHEET:	DWG APPROVAL:
1:6	MAD	1 OF 2	RJH



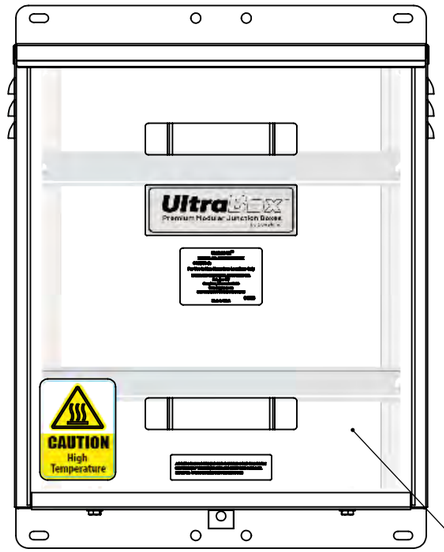


MJB-S-1816-1H-SV

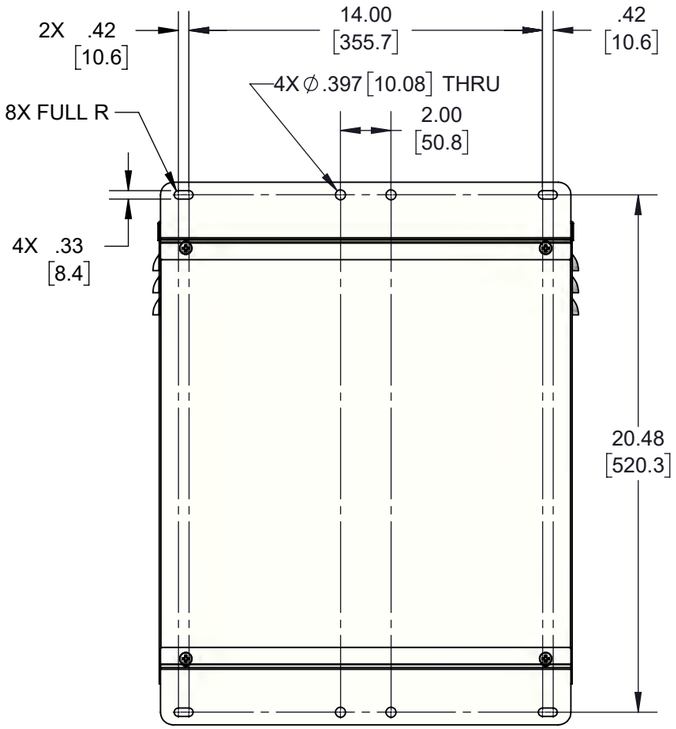


COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION

MJB-S-1816-2H-SV



COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION



ANSI Y14.5M 1994 APPLIES

UNLESS NOTED 63
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

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STOUGHTON, WI 53589
608-877-9900
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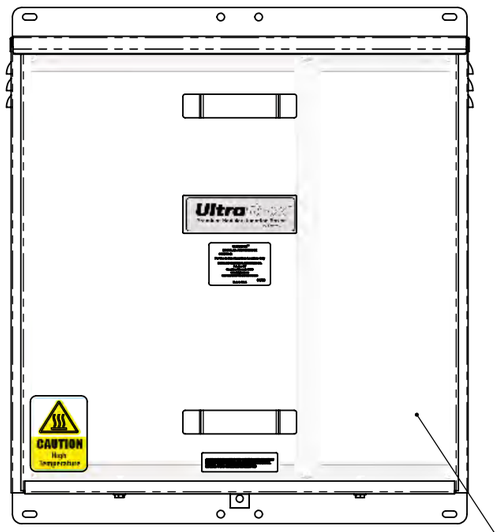
DESCRIPTION
MJB-S-1816-XX-YY ENCLOSURE DIN RAIL STRUT OPTIONS

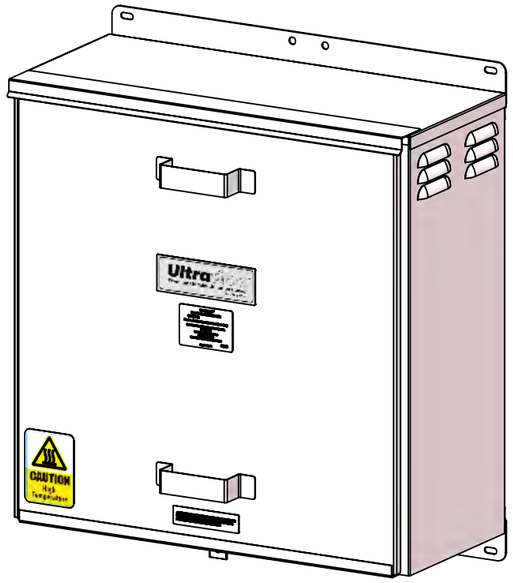
DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100119	B	2018-10-15	B	2019-06-28

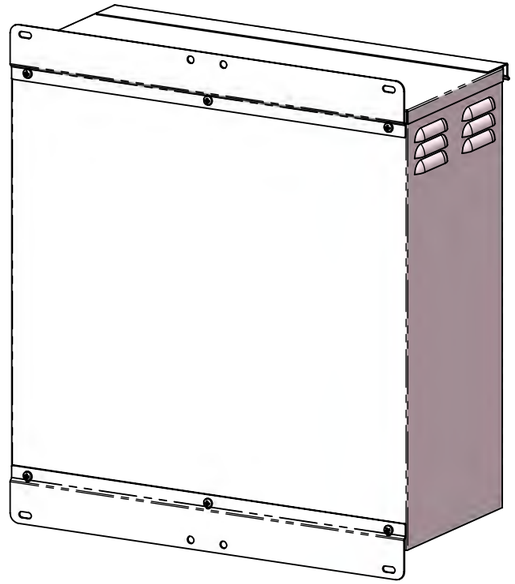
SCALE 1:6	DRAWN: MAD	SHEET: 2 OF 2	DWG APPROVAL: RJH

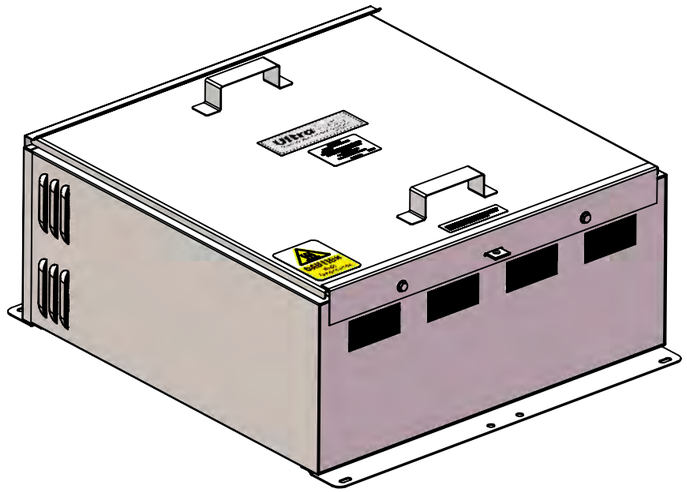
MJB-S-2424-1V-SV



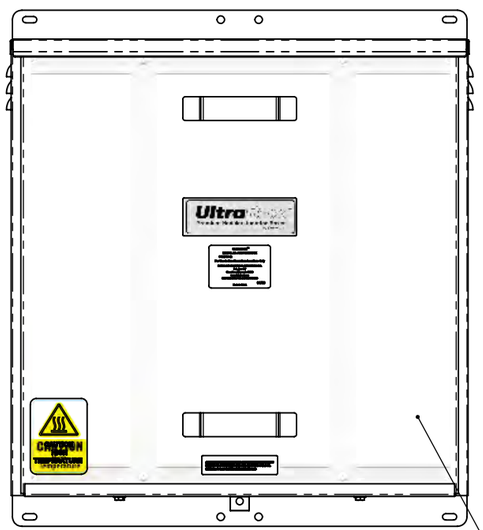
COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION





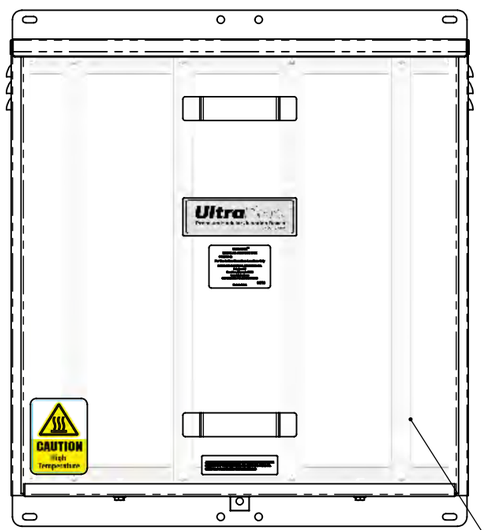


MJB-S-2424-2V-SV

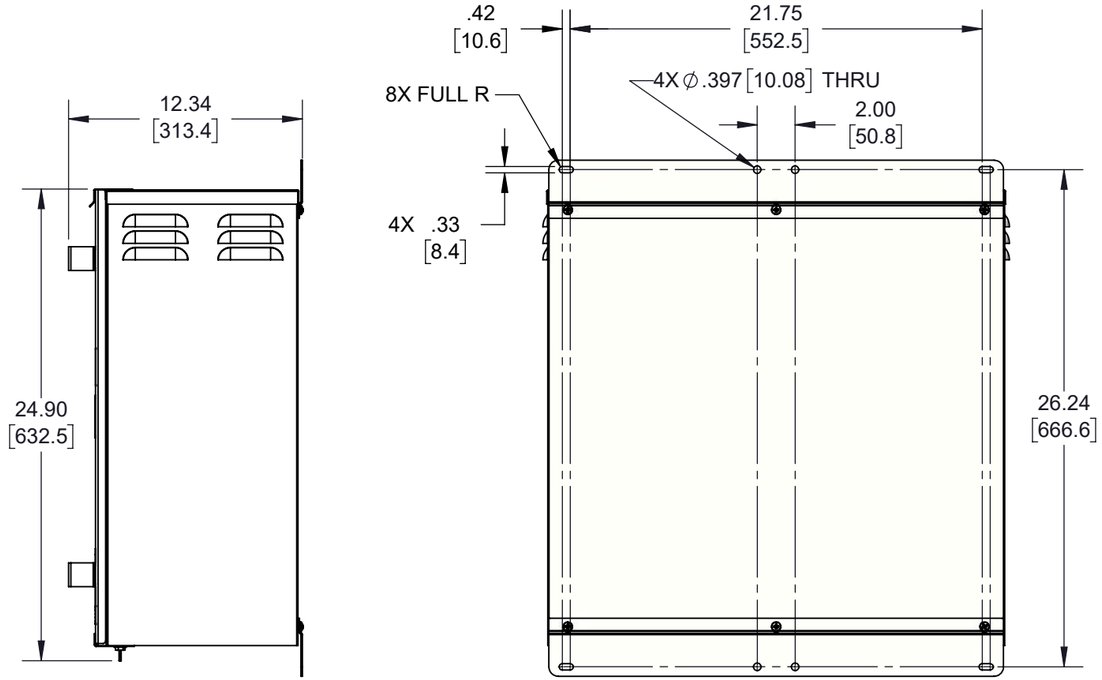


COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION

MJB-S-2424-4V-SV



COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION



ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

63

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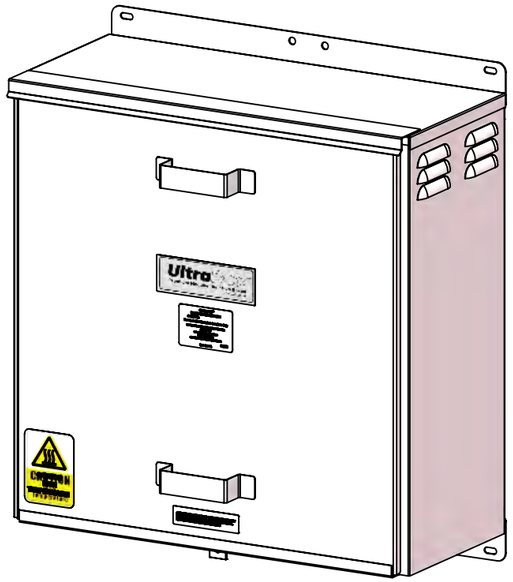
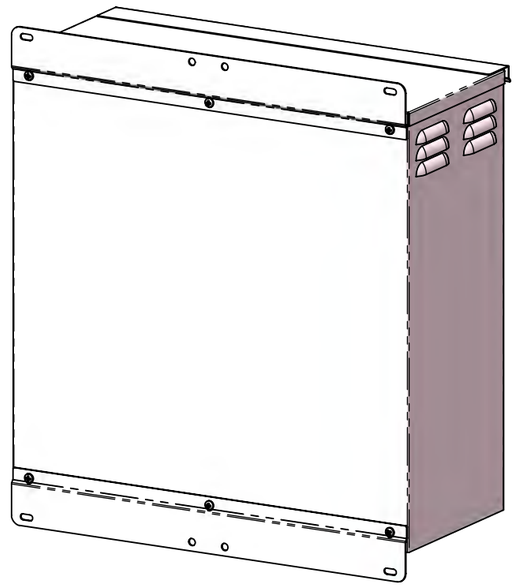
P.O. BOX 187
STOUGHTON,
WI 53589
608-877-9900
DAIRYLAND.COM

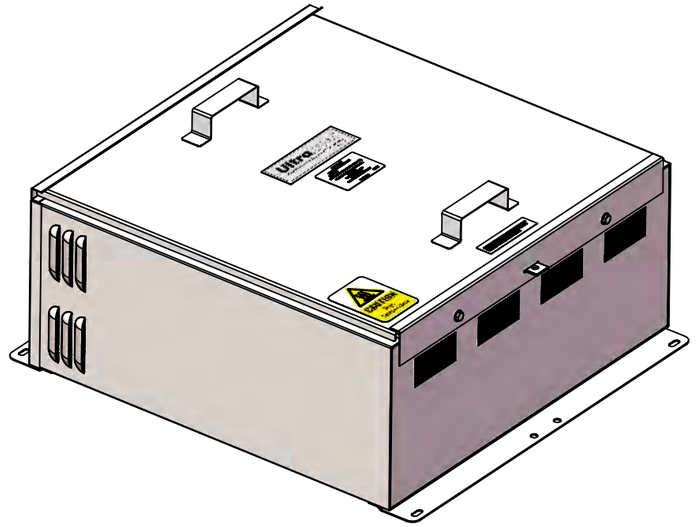
DESCRIPTION
MJB-S-2424-XX-YY ENCLOSURE DIN RAIL STRUT OPTIONS

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100120	B	2018-10-15	B	2019-06-28

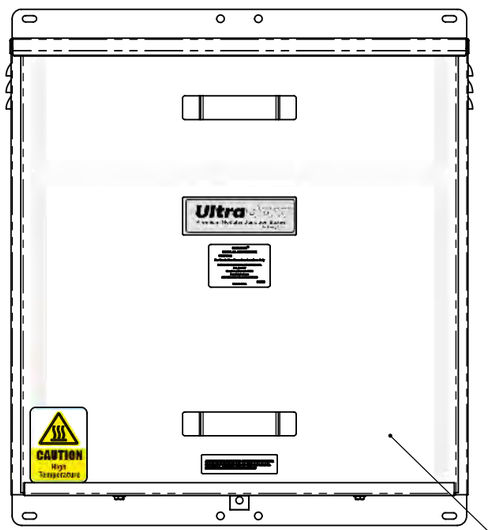
SCALE	DRAWN:	SHEET:			DWG APPROVAL:
1:8	MAD	1	OF	2	RJH





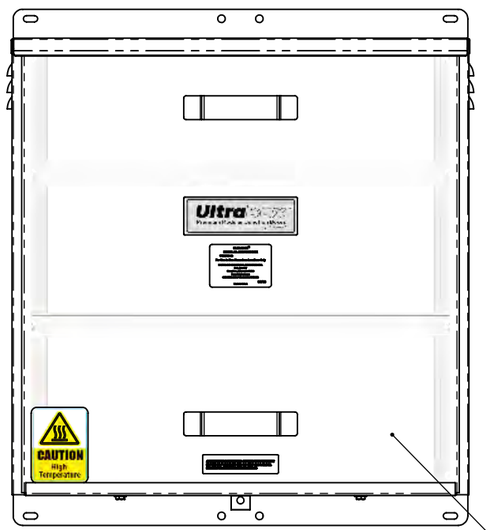


MJB-S-2424-1H-SV

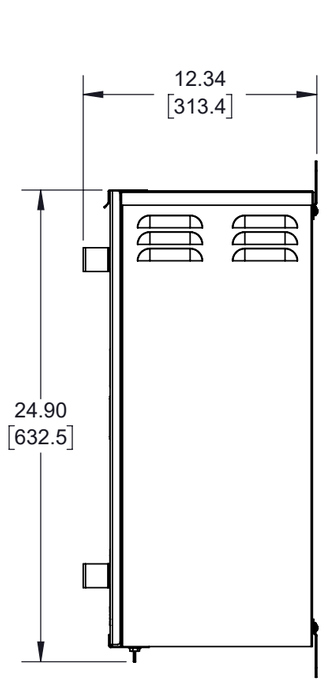


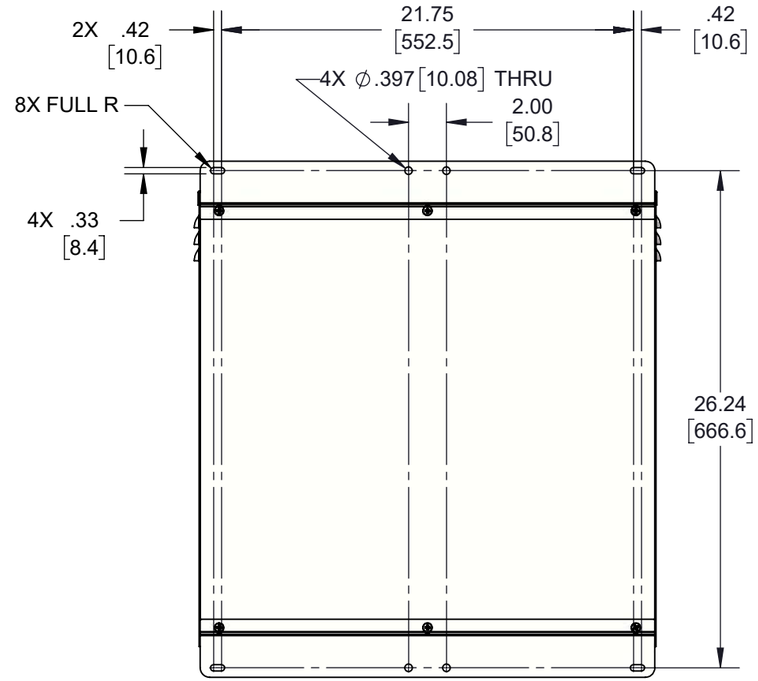
COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION

MJB-S-2424-2H-SV



COVER SHOWN PARTIALLY TRANSPARENT TO SHOW INTERNAL RAIL/STRUT CONFIGURATION





ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

63

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P.O. BOX 187
STOUGHTON,
WI 53589
608-877-9900
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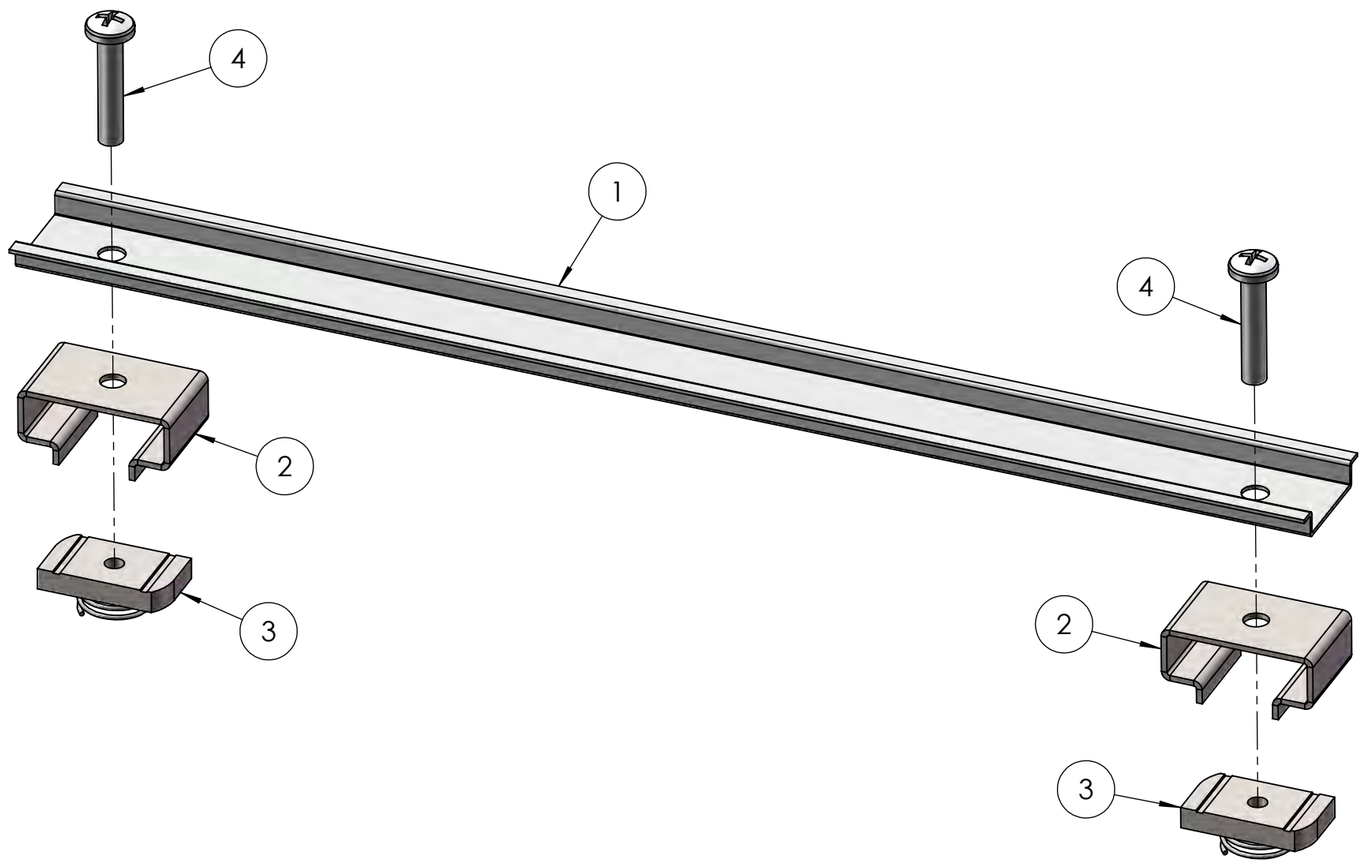
DESCRIPTION
MJB-S-2424-XX-YY ENCLOSURE DIN RAIL STRUT OPTIONS

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100120	B	2018-10-15	B	2019-06-28

SCALE	DRAWN:	SHEET:	DWG APPROVAL:
1:8	MAD	2 OF 2	RJH

MODEL #'s SHOWN ON TABLE TO THE RIGHT INCLUDE THESE ITEMS		
LINE NO.	DESCRIPTION	QTY.
1	Din Rail	1
2	Spacer DIN Rail	2
3	Nut Strut	2
4	Screw Pan Head PH 1/4-20x1.250"	2

MODEL #	DESCRIPTION
DIN 12-K	HORIZONTAL DIN RAIL FOR 14" x 12" ENCLOSURE
DIN 14-K	VERTICAL DIN RAIL FOR 14" x 12" ENCLOSURE
DIN 16-K	HORIZONTAL DIN RAIL FOR 18" x 16" ENCLOSURE
DIN 18-K	VERTICAL DIN RAIL FOR 18" x 16" ENCLOSURE
DIN 24-K	HORIZONTAL OR VERTICAL DIN RAIL FOR 24" x 24" ENCLOSURE



ANSI Y14.5M 1994 APPLIES

UNLESS NOTED 63
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

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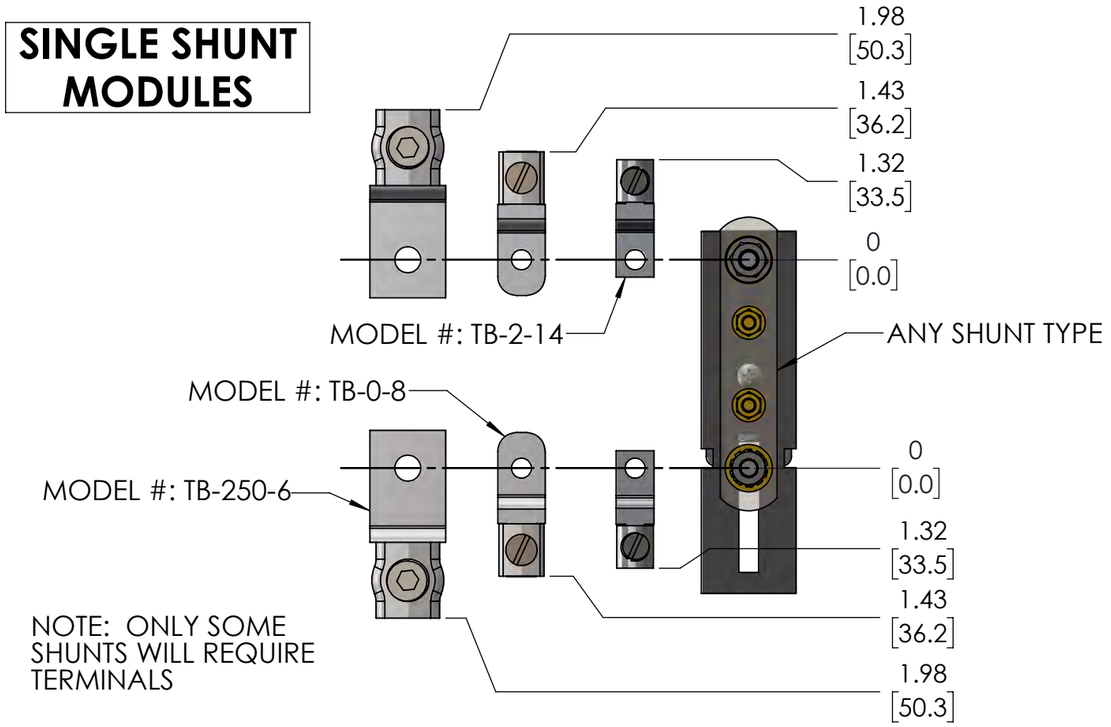
STOUGHTON,
WI 53589
608-877-9900
DAIRYLAND.COM

DESCRIPTION
MJB DIN RAIL KITS

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100126	A	2018-10-26	B	2018-10-25

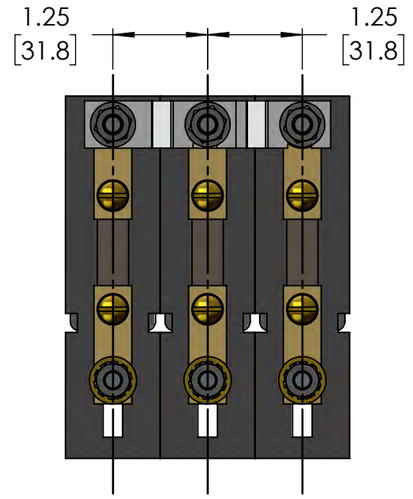
SCALE 2:3	DRAWN: JPW	SHEET: 1 OF 1	DWG APPROVAL: HNT

SINGLE SHUNT MODULES

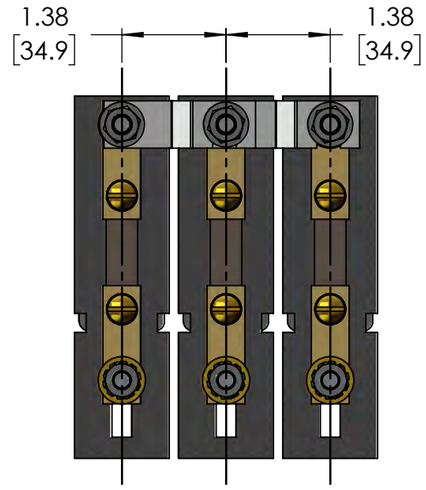


SPACING BETWEEN LINKED SHUNTS

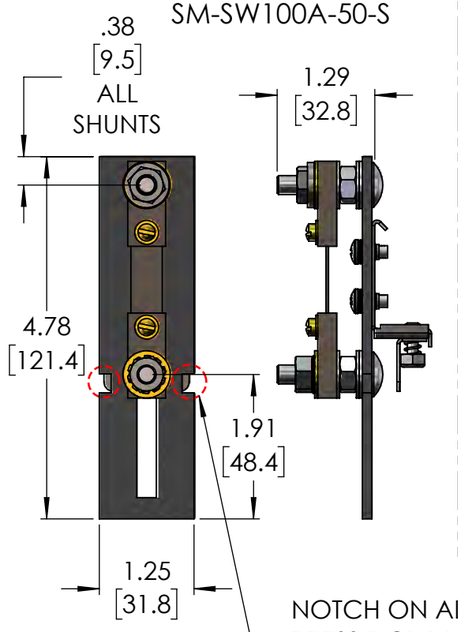
IN "SHUNTS ONLY" ENCLOSURES WITH NO PROVISION FOR RESISTORS, THE SHUNT SPACING CAN BE 1.25" TO 1.38".



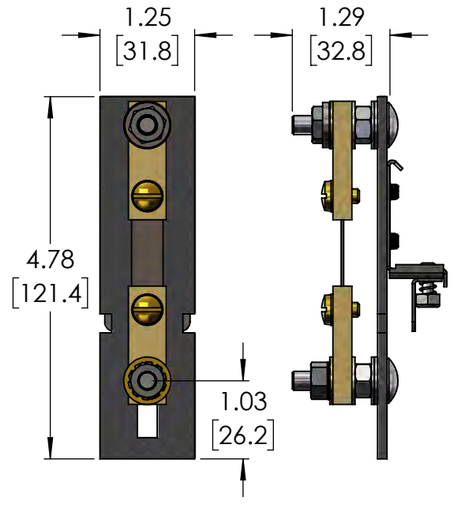
IN ENCLOSURES WITH SHUNTS AND RESISTORS, THE SHUNT SPACING MUST BE 1.38" TO ALIGN WITH THE RESISTOR SPACING



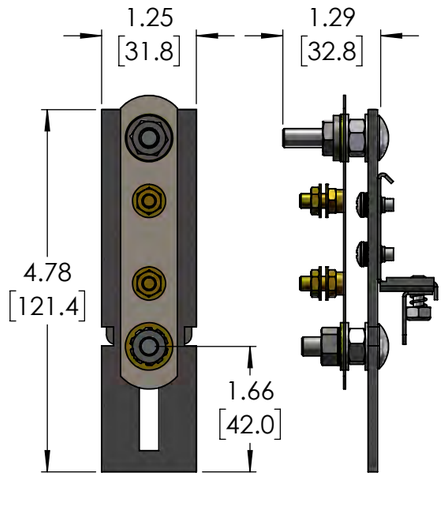
MODEL #:
SM-SW5A-50-S
SM-SW50A-50-S
SM-SW100A-50-S



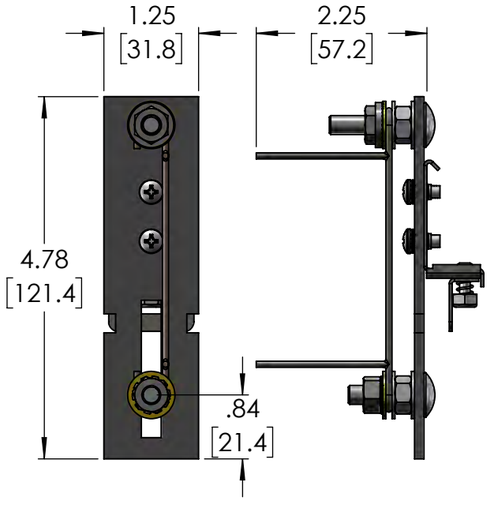
MODEL #:
SM-SO50A-50-S



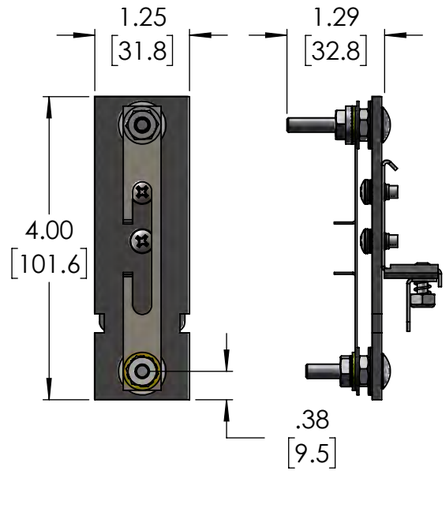
MODEL #:
SM-SS25A-25-S



MODEL #:
SM-RS5A-50-S



MODEL #:
SM-JB5A-50-S



NOTCH ON ALL SHUNT MODULES PROVIDES ACCESS TO THE DIN RAIL CLIP RELEASE. PRESS DOWN ON CLIP RELEASE WITH A SMALL SCREWDRIVER AND SIMULTANEOUSLY ROTATE THE LOWER END OF THE SHUNT BASE OUTWARD TO REMOVE

ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1
63

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P.O. BOX 187
STOUGHTON, WI 53589
608-877-9900
DAIRYLAND.COM

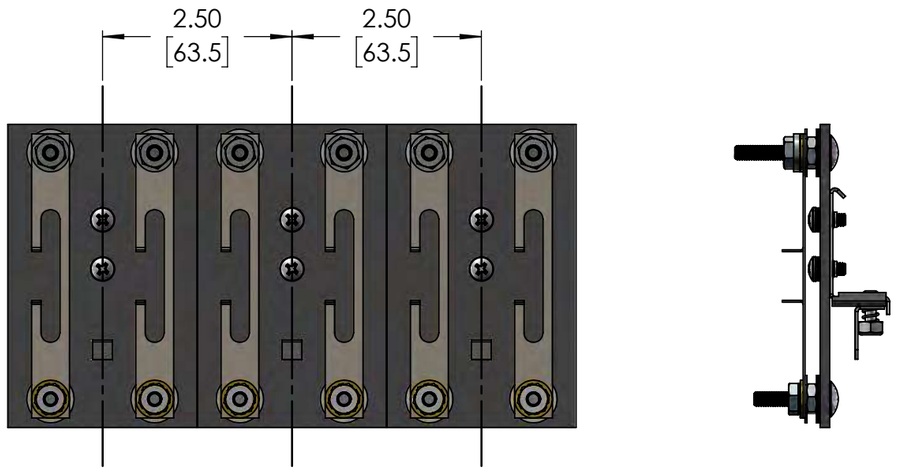
DESCRIPTION
MJB SHUNT MODULES

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100121	A	2018-10-12	B	2018-10-19

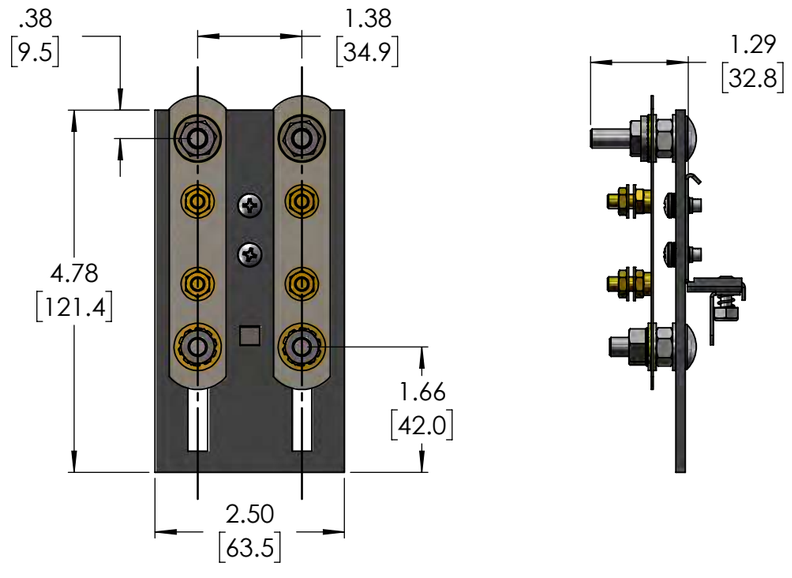
SCALE 1:2 | DRAWN: JPW | SHEET: 1 OF 2 | DWG APPROVAL: TC

DOUBLE SHUNT MODULES

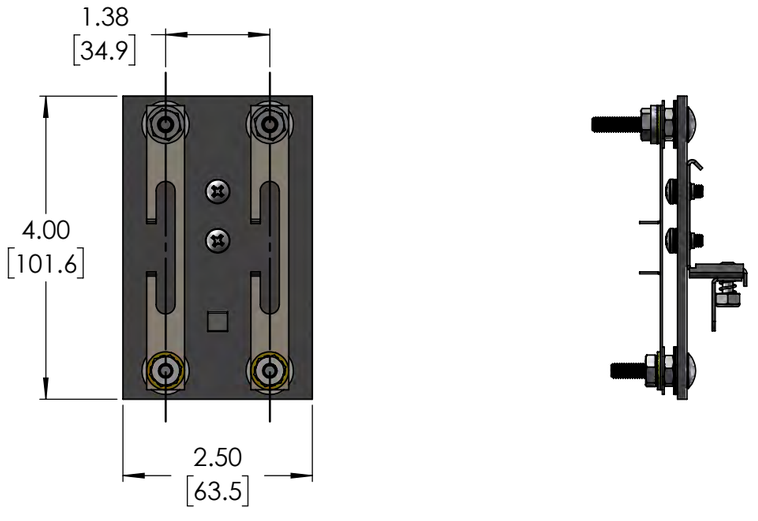
NOTE: ANY TWO IDENTICAL SHUNTS CAN BE PLACED IN A DOUBLE MODULE



MODEL #: SM-SS25A-25-D



MODEL #: SM-JB5A-50-D



THE DIMENSIONS SHOWN APPLY TO ALL DOUBLE SHUNT MODULES EXCEPT THE JB

ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

DAIRYLAND ELECTRICAL INDUSTRIES, INC.
P.O. BOX 187
STOUGHTON, WI 53589
608-877-9900
DAIRYLAND.COM

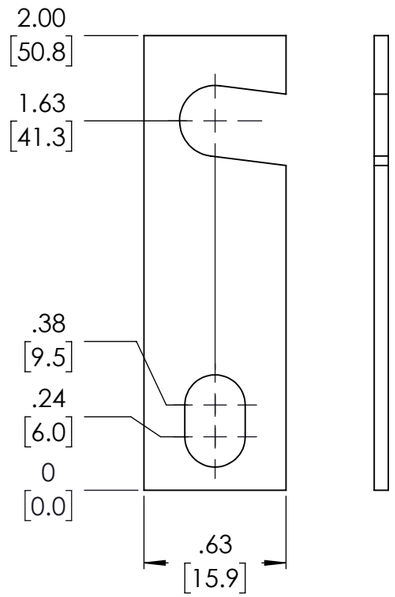
DESCRIPTION: MJB SHUNT MODULES

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100121	A	2018-10-12	B	2018-10-19

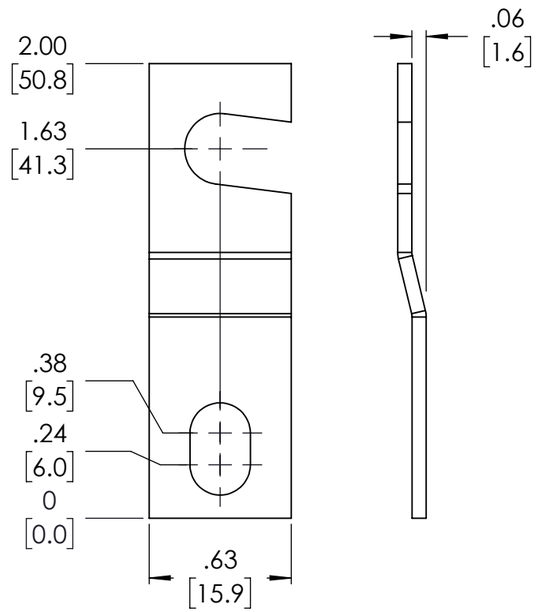
SCALE 1:2 | DRAWN: JPW | SHEET: 2 OF 2 | DWG APPROVAL: TC

LINKS

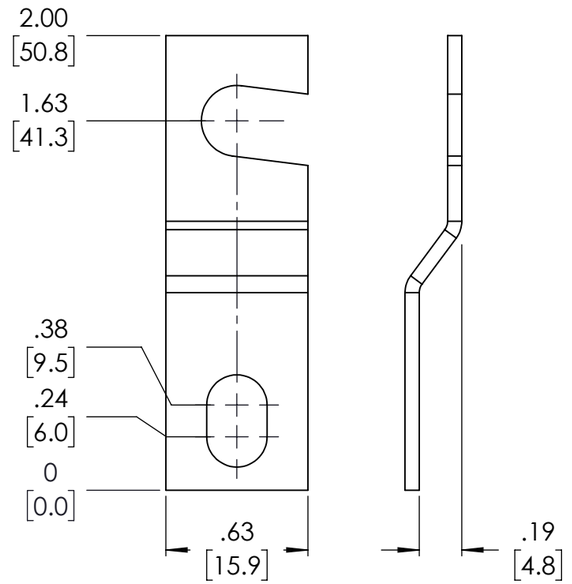
MODEL #: LNK-0



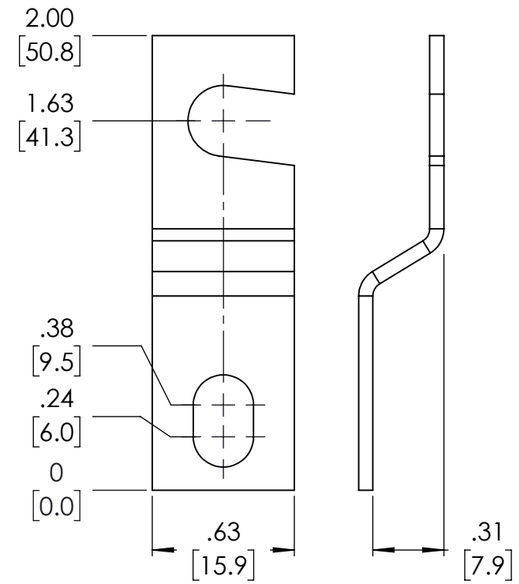
MODEL #: LNK-116



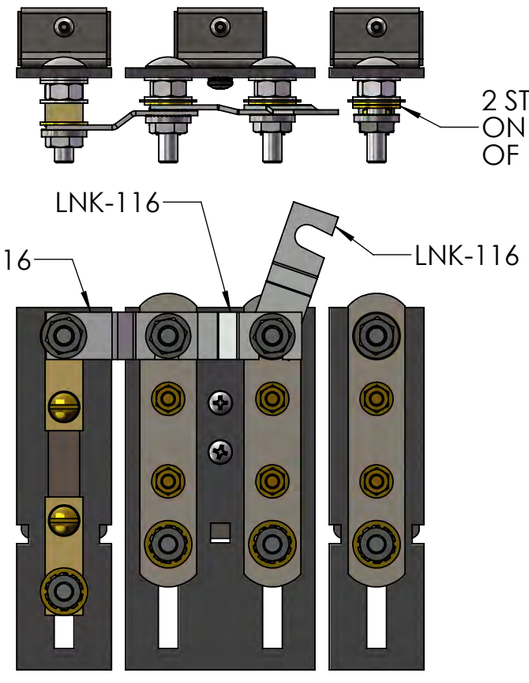
MODEL #: LNK-316



MODEL #: LNK-516



EXAMPLE: SW-50A-50mV SHOWN LINKED TO AN SS SHUNT. SEE TECHNICAL LITERATURE FOR OTHER ALLOWED COMBINATIONS.



ANSI Y14.5M 1994 APPLIES

UNLESS NOTED 63
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

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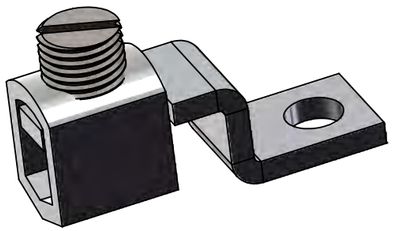
DESCRIPTION
MJB LINKS AND TERMINALS

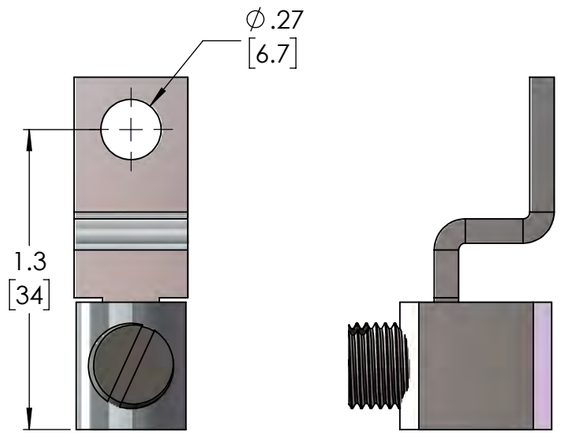
DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100124	A	2018-10-17	B	2018-10-19

SCALE 3:2	DRAWN: JPW	SHEET: 1 OF 2	DWG APPROVAL: TC

TERMINALS

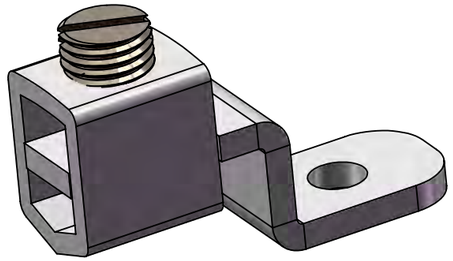
MODEL #: TB-2-14

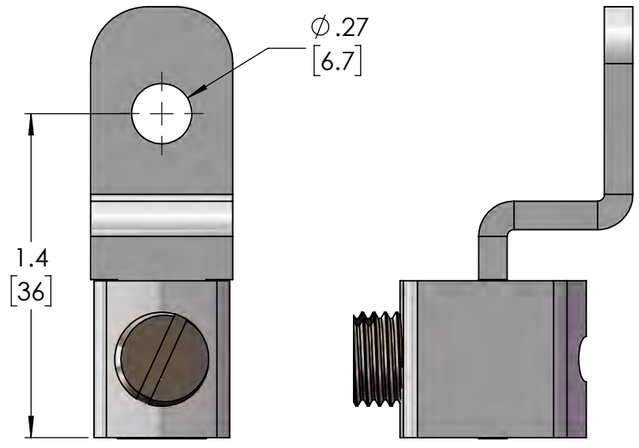




WIRE RANGE: #2-14 AWG

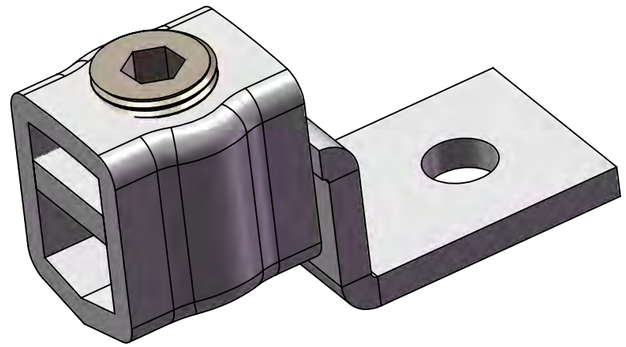
MODEL #: TB-0-8

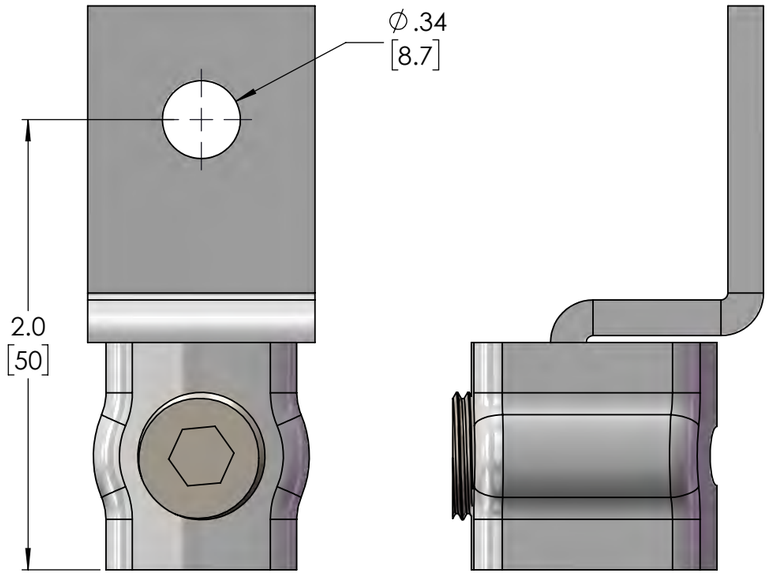




WIRE RANGE: #1/0-8 AWG

MODEL #: TB-250-6





WIRE RANGE: 250MCM-#6 AWG

ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

63

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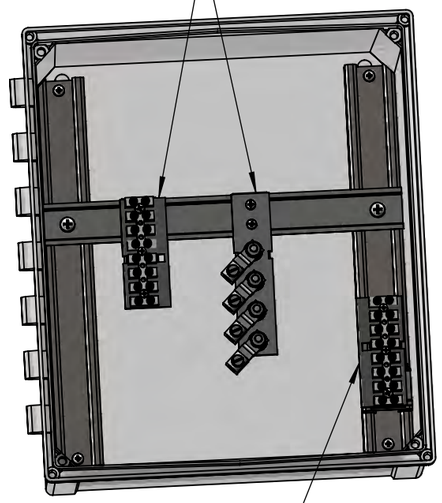
DESCRIPTION
MJB LINKS AND TERMINALS

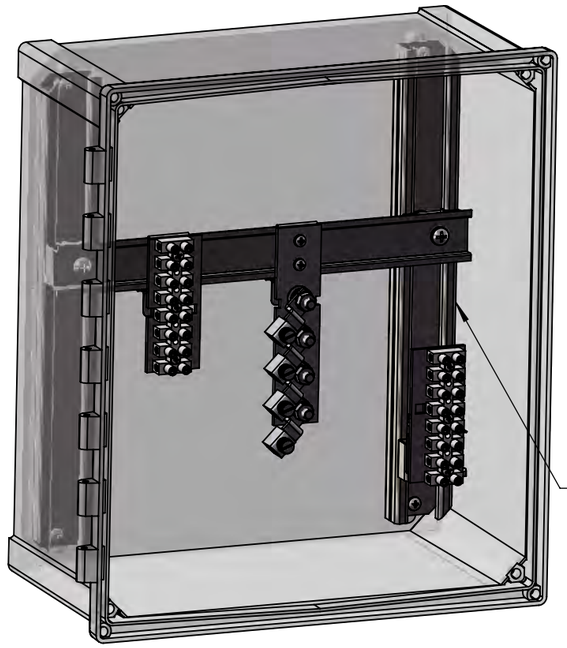
DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100124	A	2018-10-17	B	2018-10-19

SCALE 3:2	DRAWN: JPW	SHEET: 2 OF 2	DWG APPROVAL: TC

ISOLATED TERMINAL MODULES

DIRECT RAIL MOUNTING





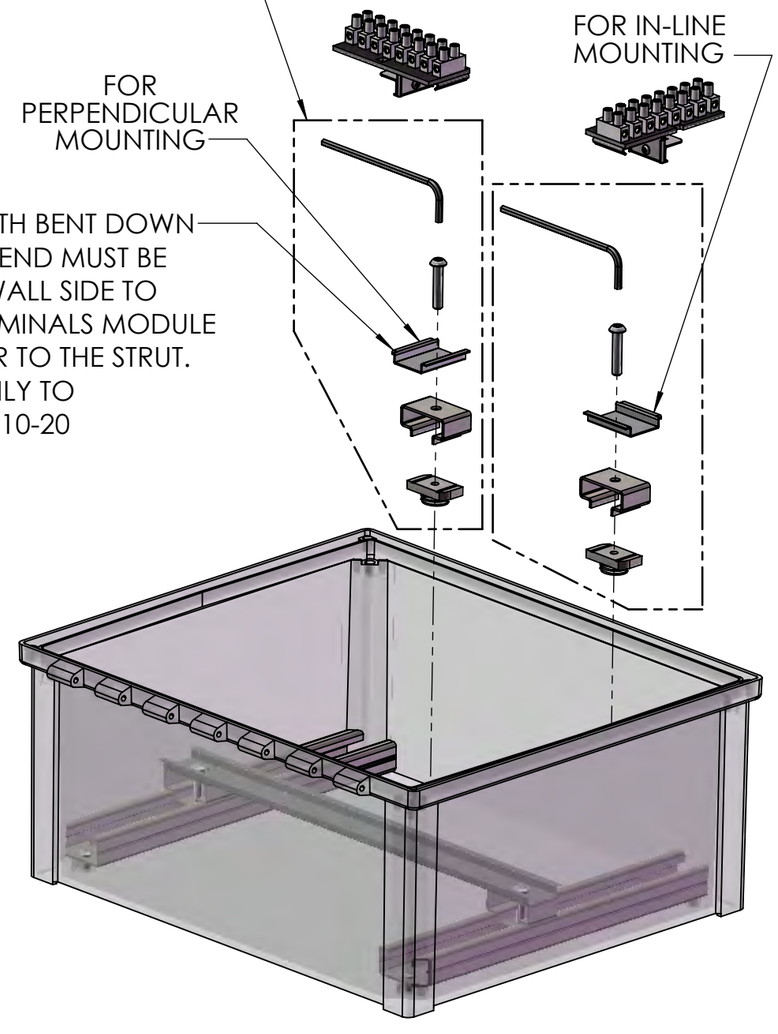
MODEL #: ITM8-10-20 WITH OPTIONAL RAIL KIT: MDS-1 MOUNTED IN-LINE WITH STRUT

SIDE OF RAIL WITH BENT DOWN TABS ON EACH END MUST BE OPPOSITE THE WALL SIDE TO MOUNT THE TERMINALS MODULE PERPENDICULAR TO THE STRUT. THIS APPLIES ONLY TO MODEL #: ITM8-10-20

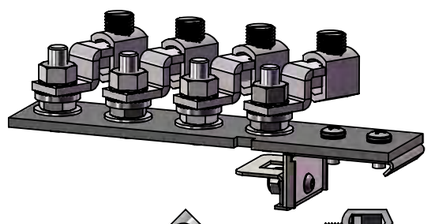
OPTIONAL MDS-1-KIT BELOW ALLOWS PERPENDICULAR OR IN-LINE MOUNTING OF THESE MODULES TO THE STRUT. NOTE REQUIRED KIT

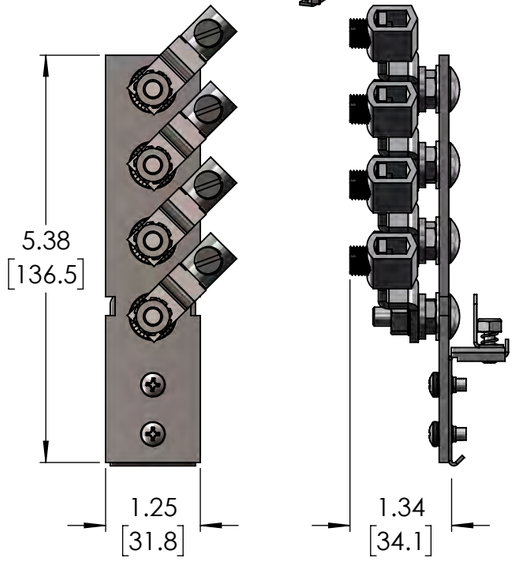
FOR PERPENDICULAR MOUNTING

FOR IN-LINE MOUNTING

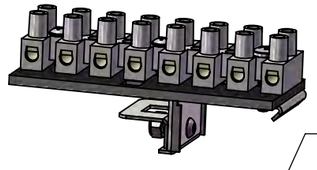


MODEL #: ITM4-2-14

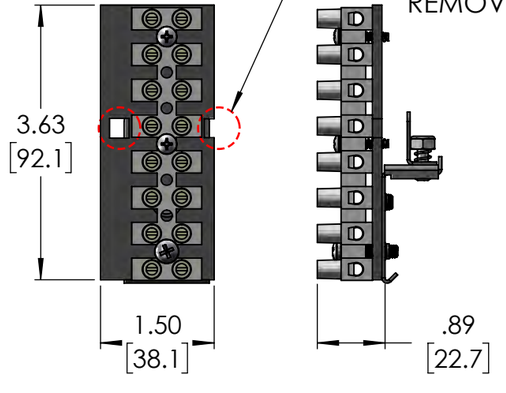




MODEL #: ITM8-10-20



NOTCH ON ALL MODULES PROVIDES ACCESS TO THE DIN RAIL CLIP RELEASE. PRESS DOWN ON CLIP RELEASE WITH A SMALL SCREWDRIVER AND SIMULTAINEOUSLY ROTATE THE LOWER END OF THE MODULE BASE OUTWARD TO REMOVE



ANSI Y14.5M 1994 APPLIES

UNLESS NOTED 63
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

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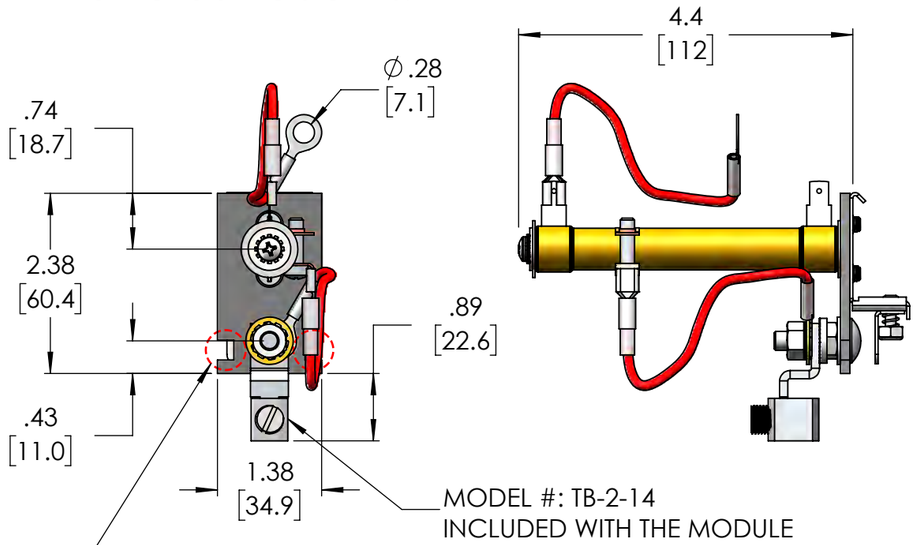
DESCRIPTION
MJB ISOLATION TERMINAL MODULES

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100123	A	2018-10-15	B	2018-10-19

SCALE 1:2 | DRAWN: JPW | SHEET: 1 OF 1 | DWG APPROVAL: TC

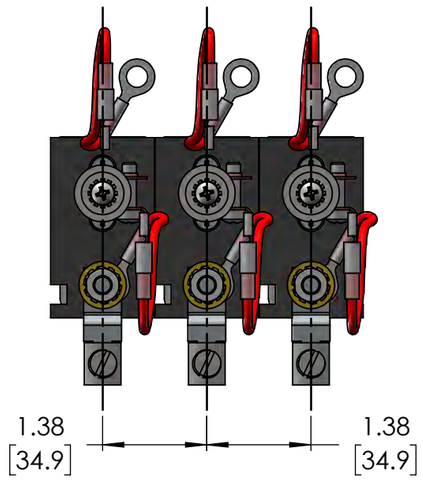
SINGLE RESISTOR MODULES

MODEL #: RM-90W-XX-S
WHERE XX IS THE OHM VALUE.
STANDARD RESISTANCE VALUES ARE 1 OR 2 OHMS,
WITH OPTIONS UP TO 5 OHMS.

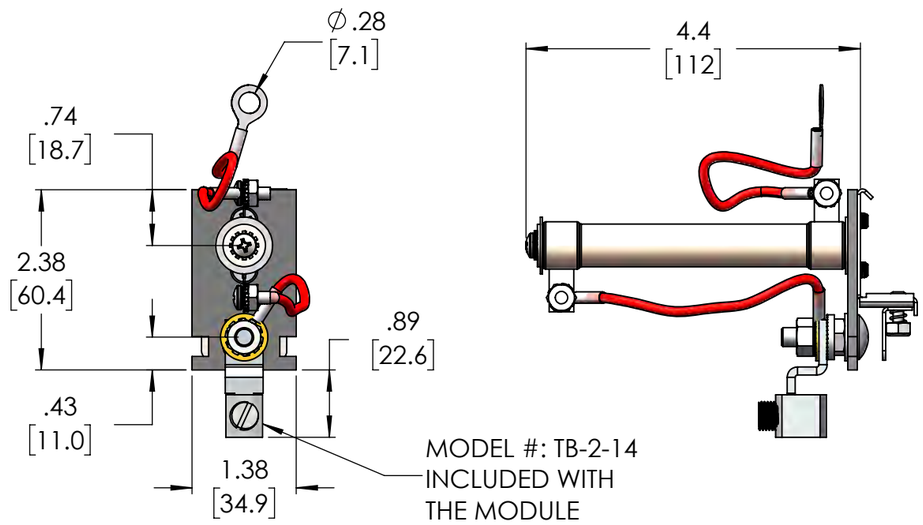


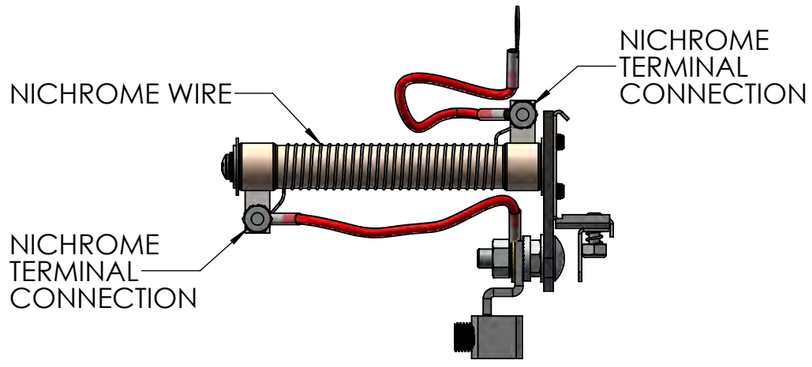
NOTCH ON ALL RESISTOR MODULES PROVIDES ACCESS TO THE DIN RAIL CLIP RELEASE. PRESS DOWN ON CLIP RELEASE WITH A SMALL SCREWDRIVER AND SIMULTANEOUSLY ROTATE THE LOWER END OF THE SHUNT BASE OUTWARD TO REMOVE

SPACING BETWEEN ADJACENT MODULES



MODEL #: RM-90W-0-S
FOR USER INSTALLATION OF CUSTOM LENGTH NICHROME WIRE





ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

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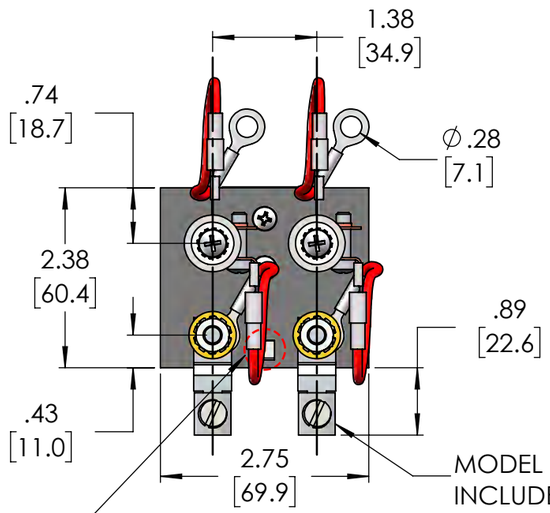
DESCRIPTION: MJB RESISTOR MODULES 90W

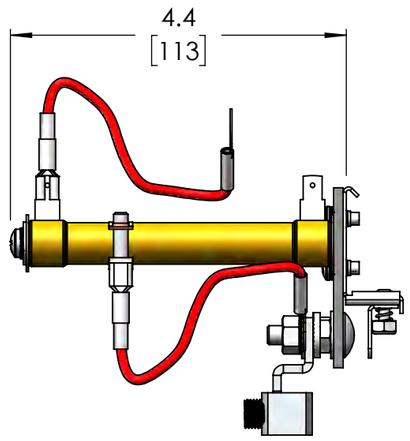
DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100122	A	2018-10-17	B	2018-10-19

SCALE 1:2 | DRAWN: JPW | SHEET: 1 OF 2 | DWG APPROVAL: TC

DOUBLE RESISTOR MODULES

MODEL #: RM-90W-XX-D
WHERE XX IS THE OHM VALUE.
STANDARD RESISTANCE VALUES ARE 1 OR 2 OHMS,
WITH OPTIONS UP TO 5 OHMS.

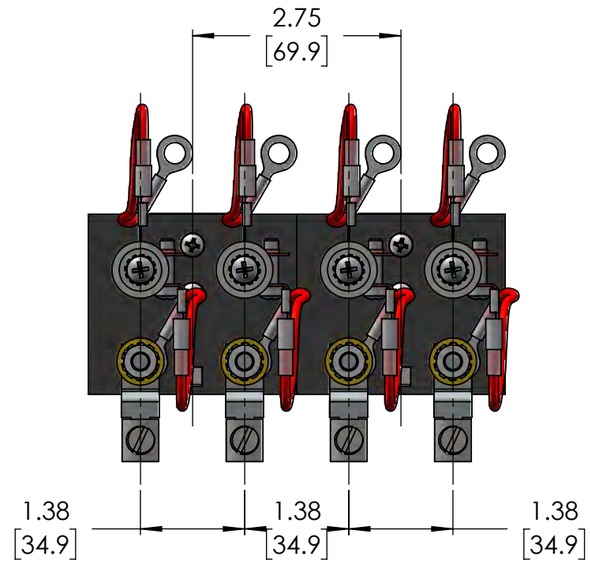




MODEL #: TB-2-14
INCLUDED WITH THE MODULE

NOTCH ON ALL RESISTOR MODULES PROVIDES ACCESS TO THE DIN RAIL CLIP RELEASE.
PRESS DOWN ON CLIP RELEASE WITH A SMALL SCREWDRIVER AND SIMULTANEOUSLY
ROTATE THE LOWER END OF THE SHUNT BASE OUTWARD TO REMOVE

SPACING BETWEEN
ADJACENT MODULES



ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

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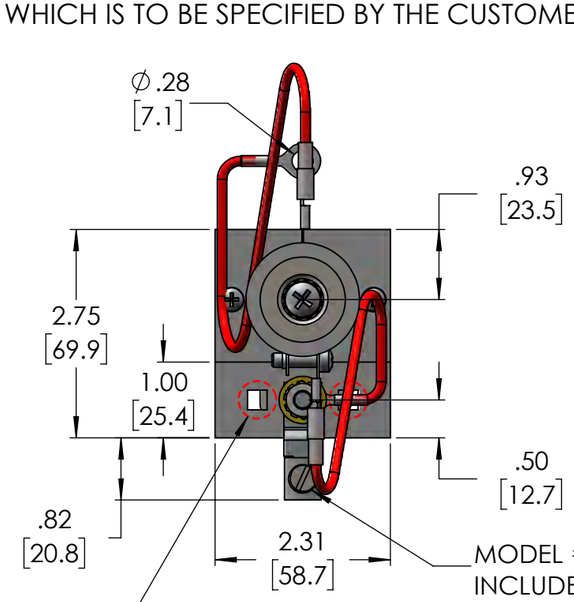
DESCRIPTION
MJB RESISTOR MODULES 90W

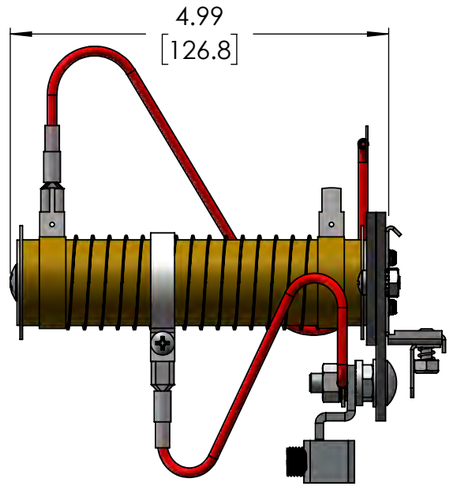
DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100122	A	2018-10-17	B	2018-10-19

SCALE 1:2	DRAWN: JPW	SHEET: 2 OF 2	DWG APPROVAL: TC

175 WATT RESISTOR MODULES

MODEL #: RM-175-XX-S
WHERE XX IS THE OHM VALUE
WHICH IS TO BE SPECIFIED BY THE CUSTOMER

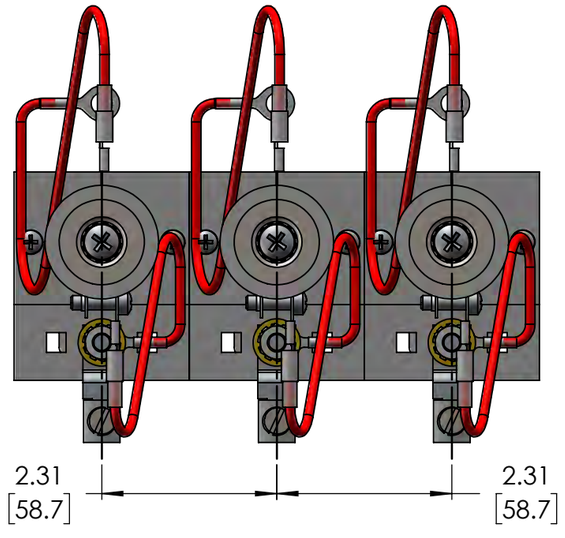




MODEL #: TB-2-14
INCLUDED WITH THE MODULE

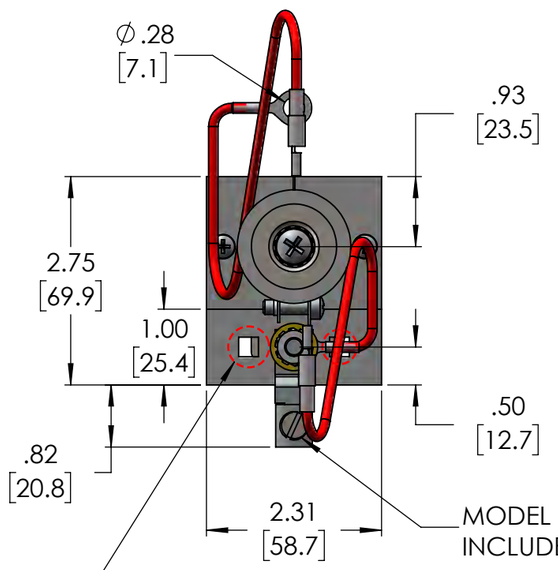
NOTCH ON ALL RESISTOR MODULES PROVIDES ACCESS TO THE DIN RAIL CLIP RELEASE. PRESS DOWN ON CLIP RELEASE WITH A SMALL SCREWDRIVER AND SIMULTANEOUSLY ROTATE THE LOWER END OF THE SHUNT BASE OUTWARD TO REMOVE

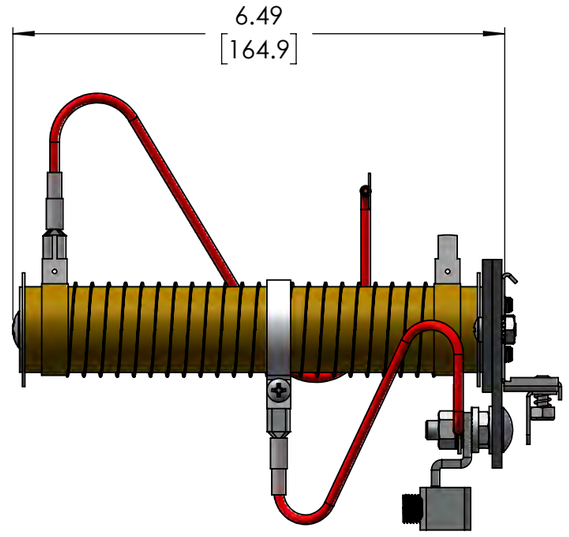
SPACING BETWEEN MODULES IS THE SAME FOR BOTH RESISTOR WATTAGES. BOTH WATTAGES ARE ONLY AVAILABLE AS SINGLE RESISTOR MODULES



220 WATT RESISTOR MODULES

MODEL #: RM-220-XX-S
WHERE XX IS THE OHM VALUE
WHICH IS TO BE SPECIFIED BY THE CUSTOMER





MODEL #: TB-2-14
INCLUDED WITH THE MODULE

NOTCH ON ALL RESISTOR MODULES PROVIDES ACCESS TO THE DIN RAIL CLIP RELEASE. PRESS DOWN ON CLIP RELEASE WITH A SMALL SCREWDRIVER AND SIMULTAINEOUSLY ROTATE THE LOWER END OF THE SHUNT BASE OUTWARD TO REMOVE

ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

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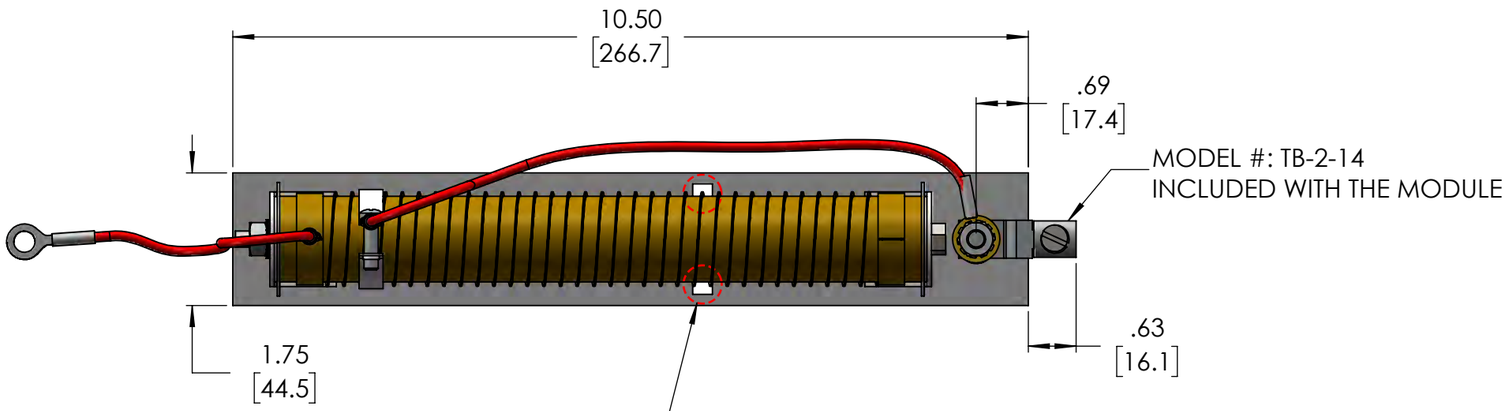
DESCRIPTION
MJB HIGH WATTAGE RESISTOR MODULES

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100125	A	2018-11-19	B	2018-11-20

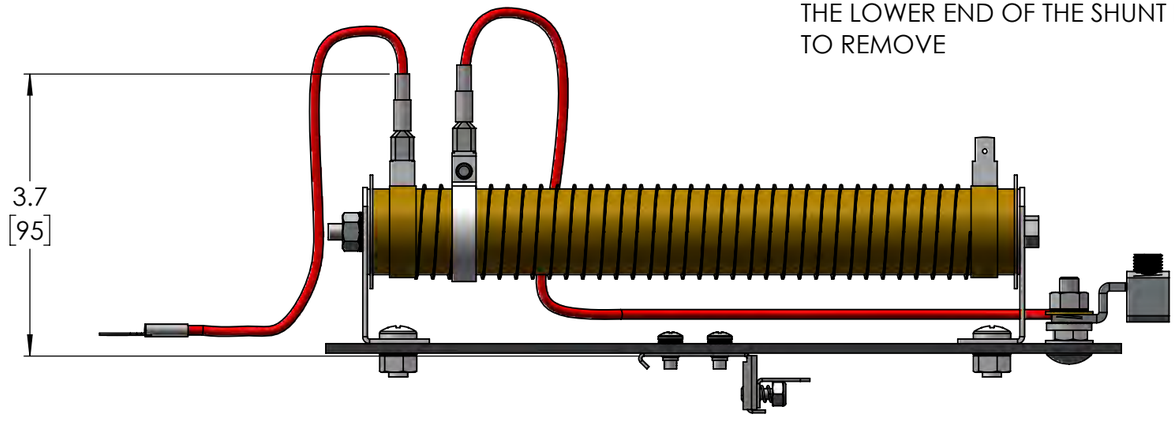
SCALE 1:2	DRAWN: JPW	SHEET: 1 OF 2	DWG APPROVAL: MHT

300 WATT RESISTOR MODULES

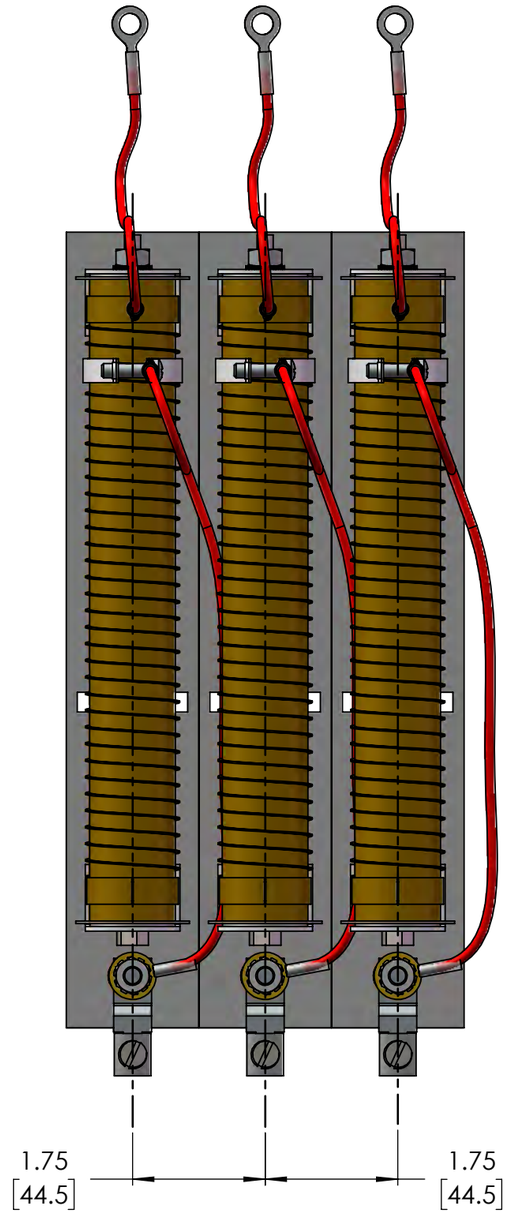
MODEL #: RM-300-XX-S
WHERE XX IS THE OHM VALUE
WHICH IS TO BE SPECIFIED BY THE CUSTOMER



NOTCH ON ALL RESISTOR MODULES PROVIDES ACCESS TO THE DIN RAIL CLIP RELEASE. PRESS DOWN ON CLIP RELEASE WITH A SMALL SCREWDRIVER AND SIMULTANEOUSLY ROTATE THE LOWER END OF THE SHUNT BASE OUTWARD TO REMOVE



SPACING BETWEEN ADJACENT MODULES



ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1
63

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DESCRIPTION
MJB HIGH WATTAGE RESISTOR MODULES

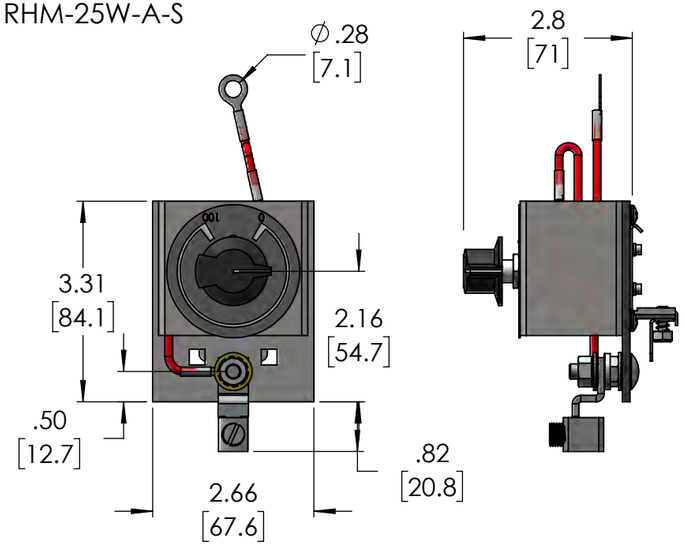
DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100125	A	2018-11-19	B	2018-11-20

SCALE 1:2	DRAWN: JPW	SHEET: 2 OF 2	DWG APPROVAL: MHT

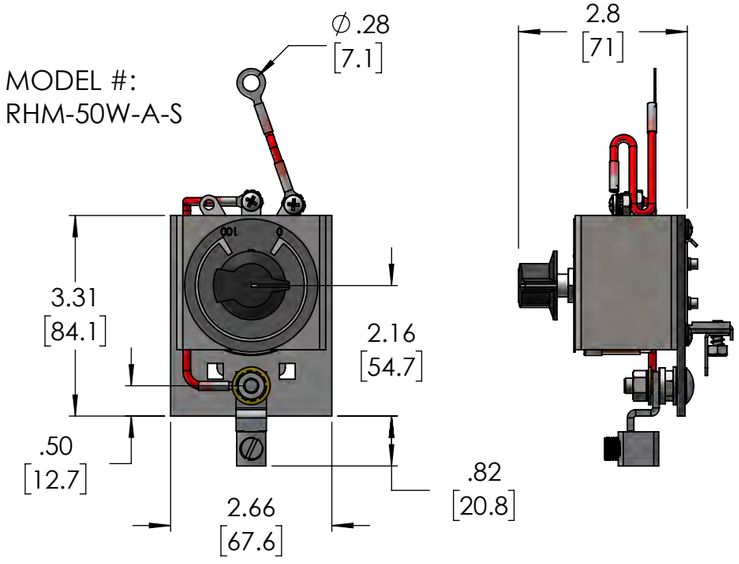
RHEOSTAT MODULES

'A' IS THE RHEOSTAT MAXIMUM OHMS VALUE (CUSTOMER SPECIFIED)
'S' INDICATES THAT ALL MODULES ARE A SINGLE RHEOSTAT

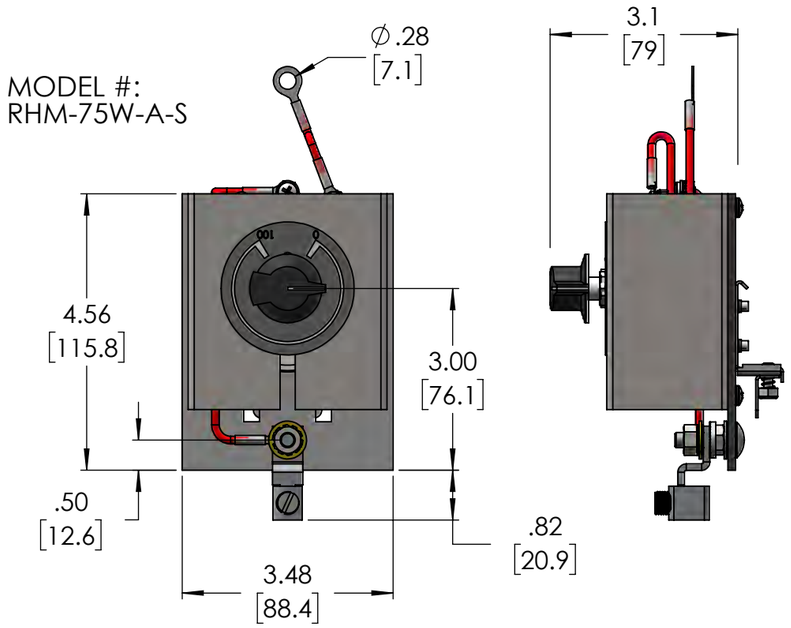
MODEL #:
RHM-25W-A-S



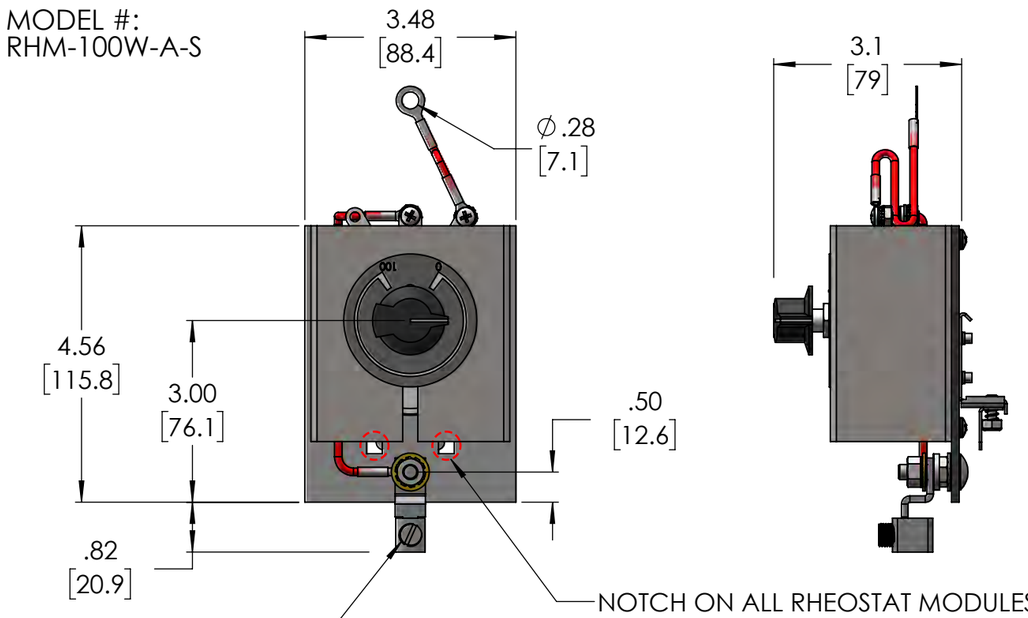
MODEL #:
RHM-50W-A-S



MODEL #:
RHM-75W-A-S



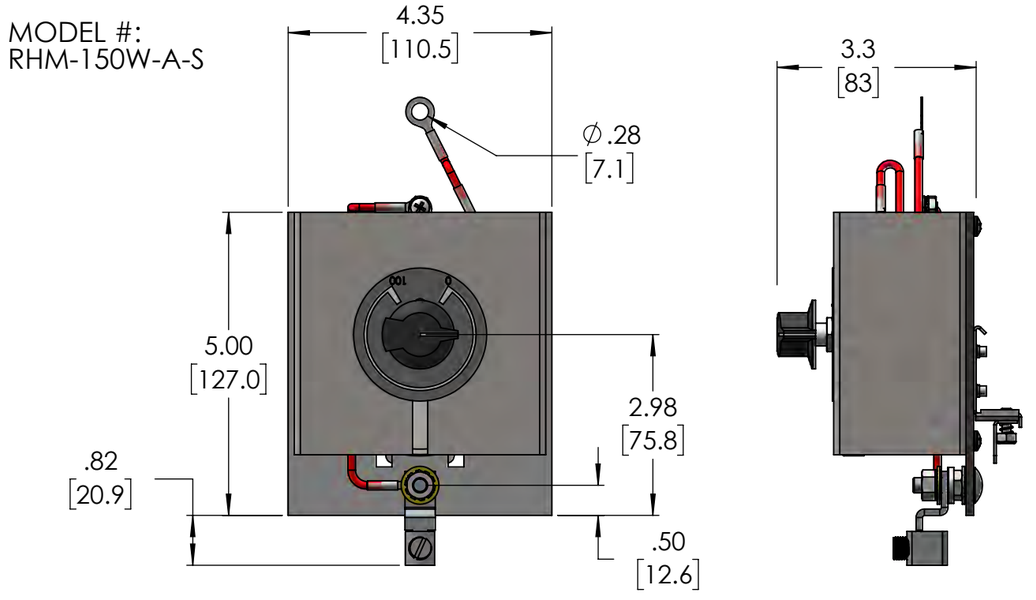
MODEL #:
RHM-100W-A-S



MODEL #: TB-2-14
INCLUDED WITH
THE MODULE

NOTCH ON ALL RHEOSTAT MODULES PROVIDES ACCESS TO THE DIN RAIL CLIP RELEASE. PRESS DOWN ON CLIP RELEASE WITH A SMALL SCREWDRIVER AND SIMULTANEOUSLY ROTATE THE LOWER END OF THE RHEOSTAT BASE OUTWARD TO REMOVE

MODEL #:
RHM-150W-A-S



ANSI Y14.5M 1994 APPLIES

UNLESS NOTED
UNITS: INCHES
3-PLACE: ±.005
2-PLACE: ±.015
1-PLACE / FRAC: ±.03
ANGULAR: ±1

63

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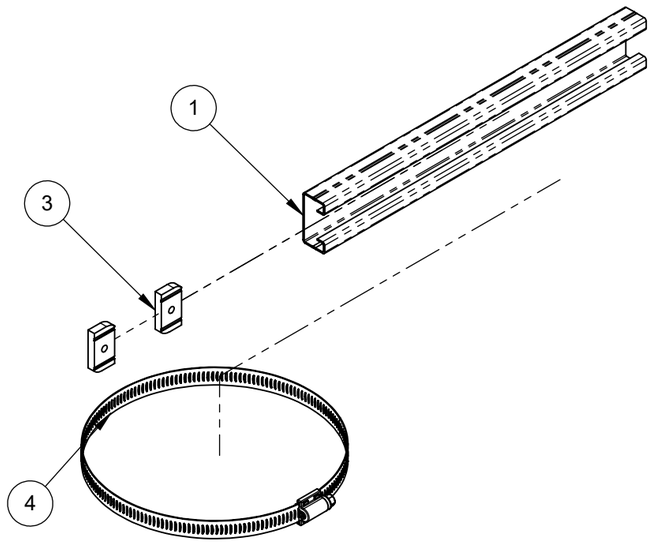
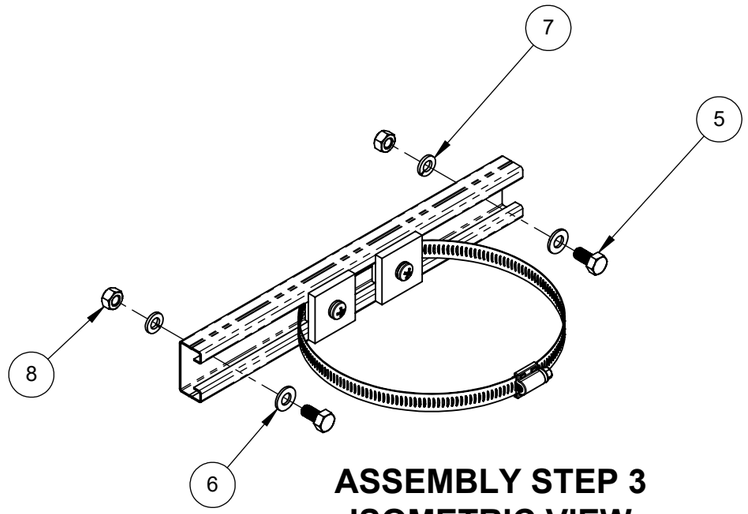
DESCRIPTION
MJB RHEOSTAT MODULES

DOCUMENT #	REV	DATE DRAWN	DWG SIZE	DATE APPROVAL
100127	A	2018-11-20	B	2018-11-26

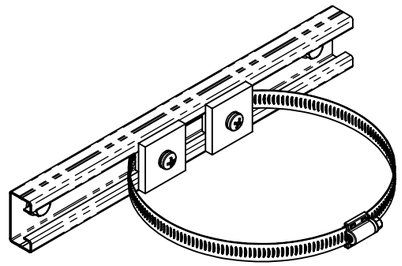
SCALE 2:5 | DRAWN: JPW | SHEET: 1 OF 1 | DWG APPROVAL: JVW



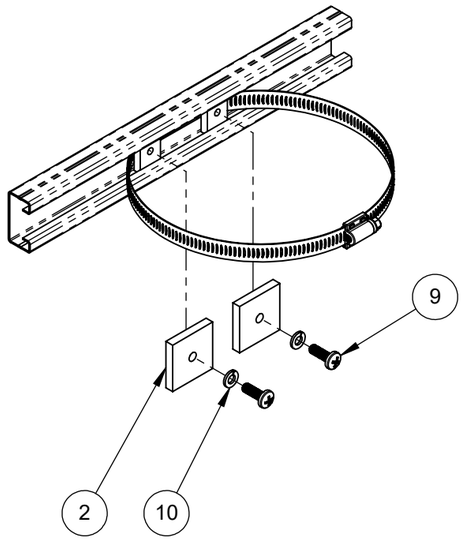
ASSEMBLY STEP 1
ISOMETRIC VIEW



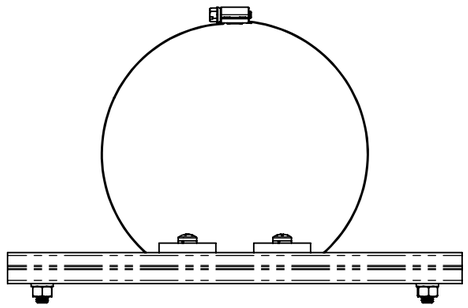
ASSEMBLY STEP 3
ISOMETRIC VIEW
THIS STEP DONE IN
CONJUNCTION WITH
ENCLOSURE MOUNTING BRACKET

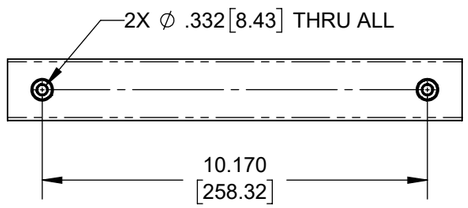


ISOMETRIC VIEW



ASSEMBLY STEP 2
ISOMETRIC VIEW





ITEM NO.	DESCRIPTION	QTY
1	STRUT ENCL POST MOUNT 12"	1
2	WASHER SQ. 1/4" FLAT ENCL POST MOUNT	2
3	NUT STRUT	2
4	CLAMP HOSE 9/16" X 9 /12" MAX	1
5	SCREW HEX 5/16-18X0.625"	2
6	WASHER FLAT 5/16"	2
7	WASHER SPLIT LOCK 5/16"	2
8	NUT HEX 5/16-18	2
9	SCREW PAN HEAD PH 1/4-20X0.750"	2
10	WASHER SPLIT LOCK 1/4"	2

ASME Y14.5M 2018 APPLIES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. COMPUTER-GENERATED DRAWING DO NOT EDIT MANUALLY.

.XXX = ±.005"
.XX = ±.01"
.X = ±.03"
ANGLES = ±1°

63

MATERIAL: **SEE BOM**

FINISH: **NA**

DRAWN: **MAD**

DATE DRAWN: **10/07/2021**

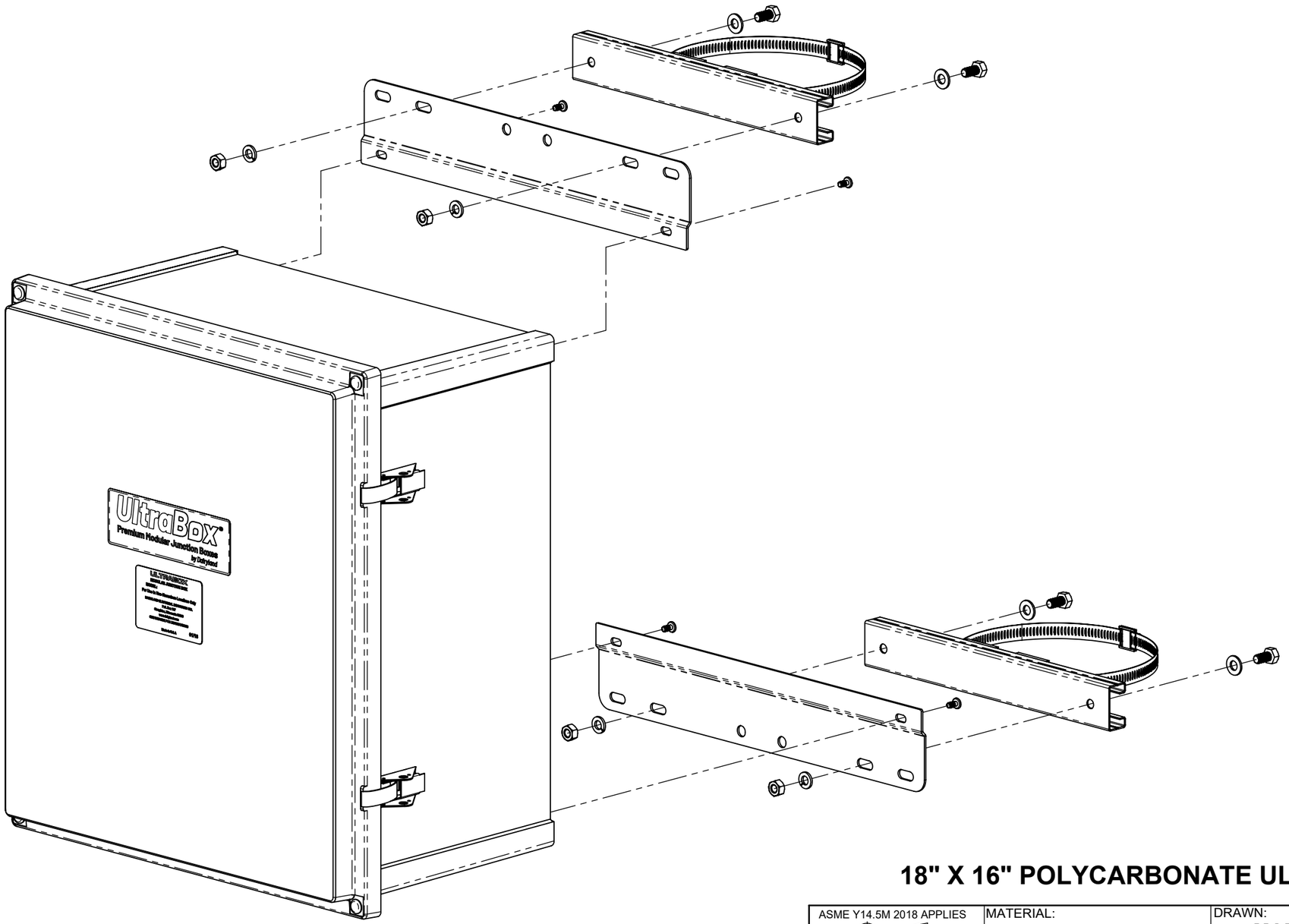
DWG APPROVAL: **RJH**

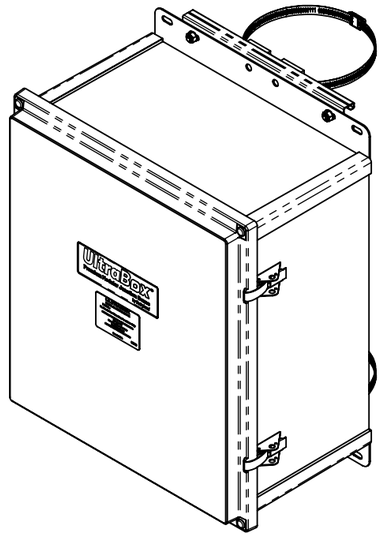
DATE APPROVAL: **10/21/2021**

TITLE: **MEPK 2-10**

DAIRYLAND ELECTRICAL INDUSTRIES, INC.
P.O. BOX 187
STOUGHTON, WI 53589
608-877-9900
DAIRYLAND.COM

SHEET: 1 OF 3 | DWG SIZE: B | SCALE: 1:4 | REV: A | PART #: 100141



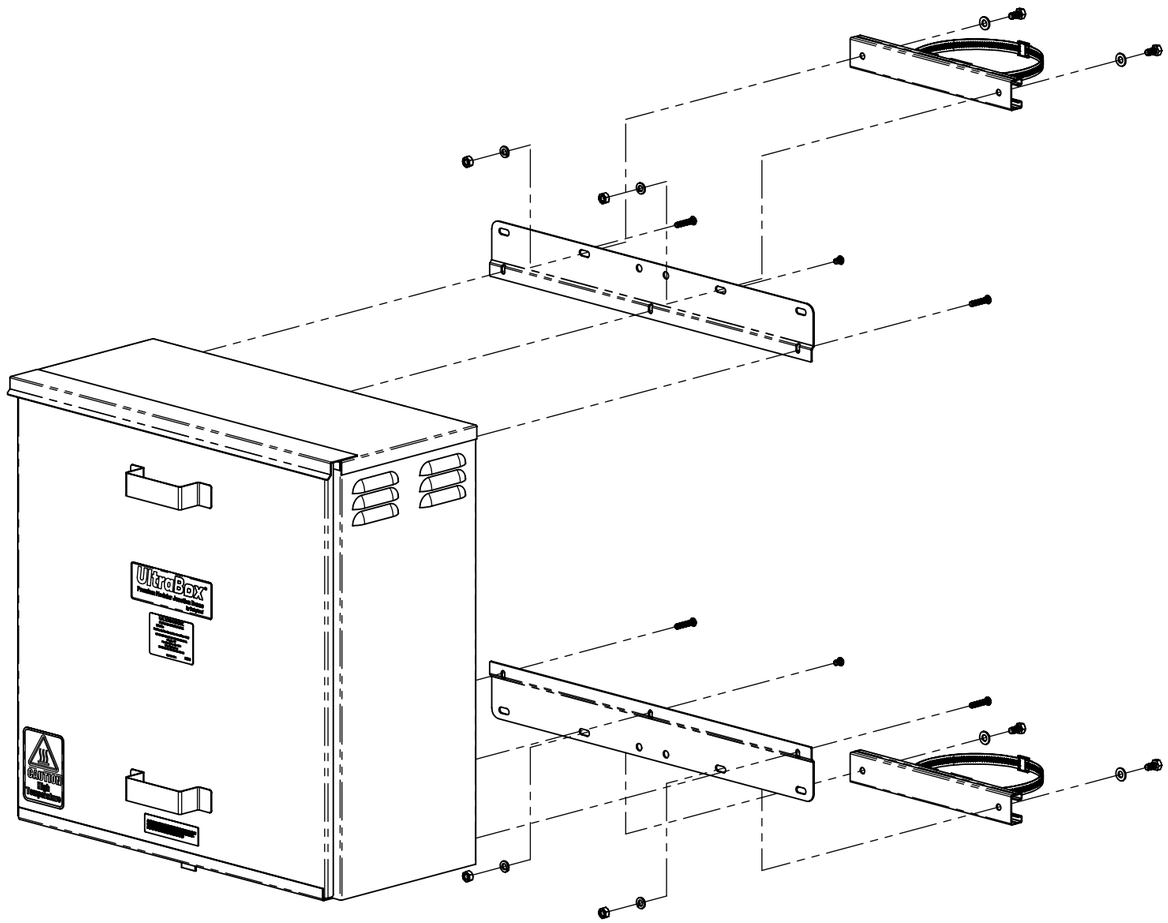


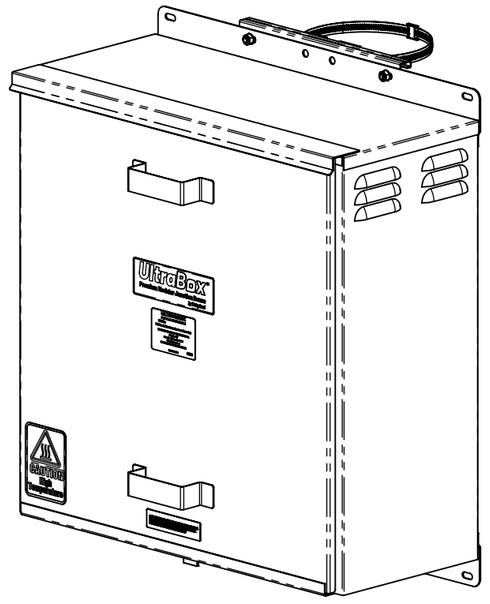
ISOMETRIC VIEW
SCALE 1:8

18" X 16" POLYCARBONATE ULTRABOX ENCLOSURE SHOWN

ASME Y14.5M 2018 APPLIES	MATERIAL: SEE BOM	DRAWN: MAD	DATE DRAWN: 10/07/2021	DAIRYLAND ELECTRICAL INDUSTRIES, INC. P.O. BOX 187 STOUGHTON, WI 53589 608-877-9900 DAIRYLAND.COM
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. COMPUTER-GENERATED DRAWING DO NOT EDIT MANUALLY.		DWG APPROVAL: RJH	DATE APPROVAL: 10/21/2021	
.XXX = ±.005" .XX = ±.01" .X = ±.03" ANGLES = ±1° 63	FINISH: NA	TITLE: MEPK 2-10		

SHEET: OF	DWG SIZE:	SCALE:	REV:	PART #:
2 3	B	1:4	A	100141





ISOMETRIC VIEW

24" X 24" STAINLESS STEEL ULTRABOX ENCLOSURE SHOWN

ASME Y14.5M 2018 APPLIES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. COMPUTER-GENERATED DRAWING DO NOT EDIT MANUALLY. .XXX = ±.005" .XX = ±.01" .X = ±.03" ANGLES = ±1° 63	MATERIAL: SEE BOM FINISH: NA	DRAWN: MAD DWG APPROVAL: RJH	DATE DRAWN: 10/07/2021 DATE APPROVAL: 10/21/2021	DAIRYLAND ELECTRICAL INDUSTRIES, INC. P.O. BOX 187 STOUGHTON, WI 53589 608-877-9900 DAIRYLAND.COM TITLE: MEPK 2-10

SHEET:	OF	DWG SIZE:	SCALE:	REV:	PART #:
3	3	B	1:8	A	100141