

Universal Packaging Module

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Introduction

Application Overview

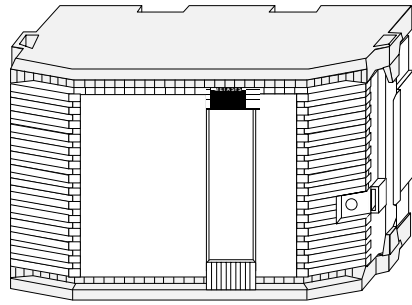
The Universal Packaging Modules (UPMs) make up an expandable enclosure system, which house a wide range of controllers and accessories. Typical uses include:

- *Applications Specific Controllers:* Air Handling Unit Controllers, Unitary Controllers, Lab and Central Plant Controllers, and System 9100 Controllers.
- *Auxiliary Gear:* Relay kits, transformer kits, off-the-shelf timers, gauges, pressure regulator valves, etc.

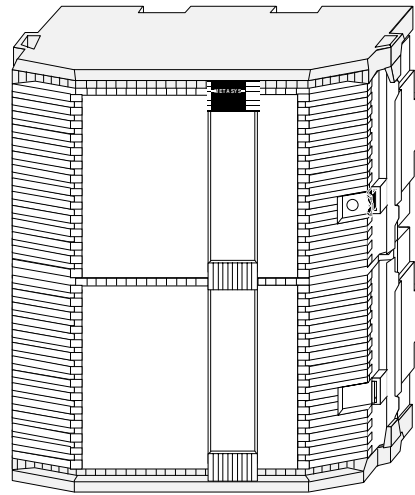
Four completely assembled sizes of the units are available. Refer to Figure 1. However, due to its modular design, you can modify each unit to customize the enclosure to its site. (Johnson Controls Panel Unit wires and configures a unit, complete with gear, to your specifications.) If system requirements change for units that are already mounted, the enclosure's modular construction lets you increase the unit's capacity without having to unwire and rewire the existing controls.

Built-in features include separate line- and low-voltage wiring troughs, pre-formed holes to eliminate drilling, wall thickness to accommodate standard conduit fasteners, easily accessible grounding, and a removable door.

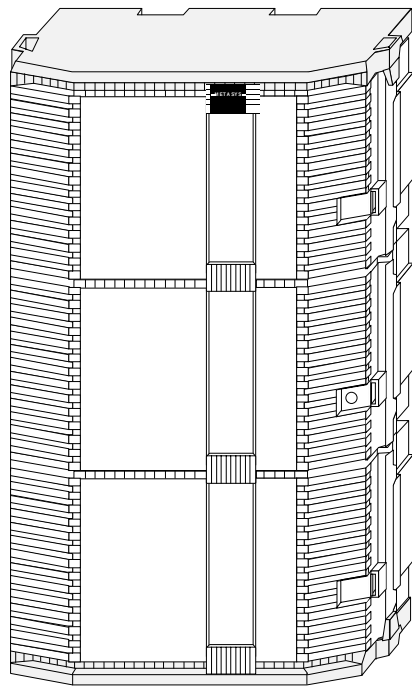
A full window option such as EN-WIN101-0 allows you to view the internal equipment while keeping it secure. Powered versions include a 24 volt transformer to simplify installation.



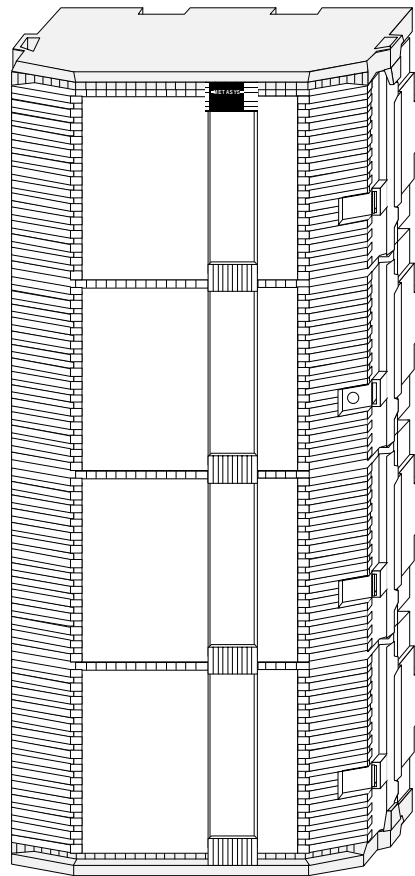
EWC10



EWC20



EWC30



EWC40

UPMPB1

Figure 1: Universal Packaging Modules

Engineering

Design Considerations

There are several pre-assembled sizes of enclosures available. These include the EN-EWC10-0, EWC20, EWC30, or the EWC40. You can order any of these sizes to include a 24 VAC transformer and power box (EN-EWC15-0, EWC25, EWC35, EWC45). Table 1 describes configuration options for typical applications.

Table 1: UPM Configuration Options

Application	UPM Configuration*
NCM300	EN-EWC22-0
UNT	EN-EWC15-0
DX-9100	EN-EWC25-0
Network Terminal (no window)	EN-EWC10-0
Network Terminal (window)	EN-EWC10-0 and EN-WIN101-0
Zone Terminal (either internal or mounted on the front)	EN-EWC10-0
Relay Kit	All Types

* UPM configuration options indicate the smallest enclosure for each application. You may select a larger unit if desired.

Planning

Dimensions

The following figures detail the footprint and interior dimensions of the standard enclosures. Use these dimensions to select the appropriately sized enclosure to fit the controller and auxiliary gear that you wish to house. Remember, in addition to these enclosures you can also use other UL Listed EN-EWC100, 200, and 500 series of enclosures to house base frame controllers, or larger configurations of gauges, relays, function modules, and application specific controllers.

To assist you in laying out and wiring any configuration in these enclosures, contact the Johnson Controls Panel Unit with your design requirements.

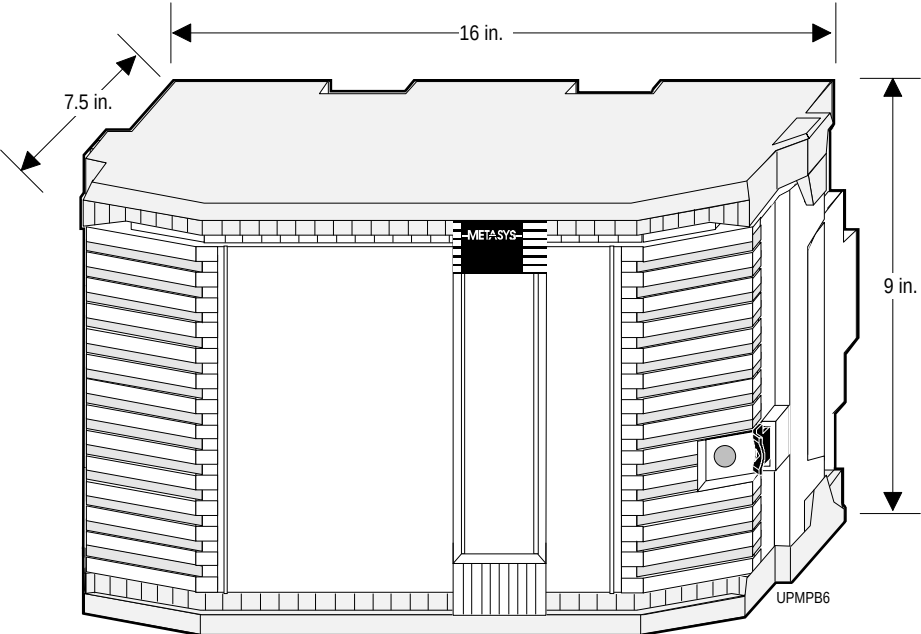


Figure 2: Exterior Dimensions

Footprint dimensions (H x W x D) of the standard enclosures:

EN-EWC10-0	9 in. x 16 in. x 7.5 in.	(23 x 41 x 19 cm)
EN-EWC20-0	16 in. x 16 in. x 7.5 in.	(41 x 41 x 19 cm)
EN-EWC30-0	23 in. x 16 in. x 7.5 in.	(59 x 41 x 19 cm)
EN-EWC40-0	30 in. x 16 in. x 7.5 in.	(76 x 41 x 19 cm)

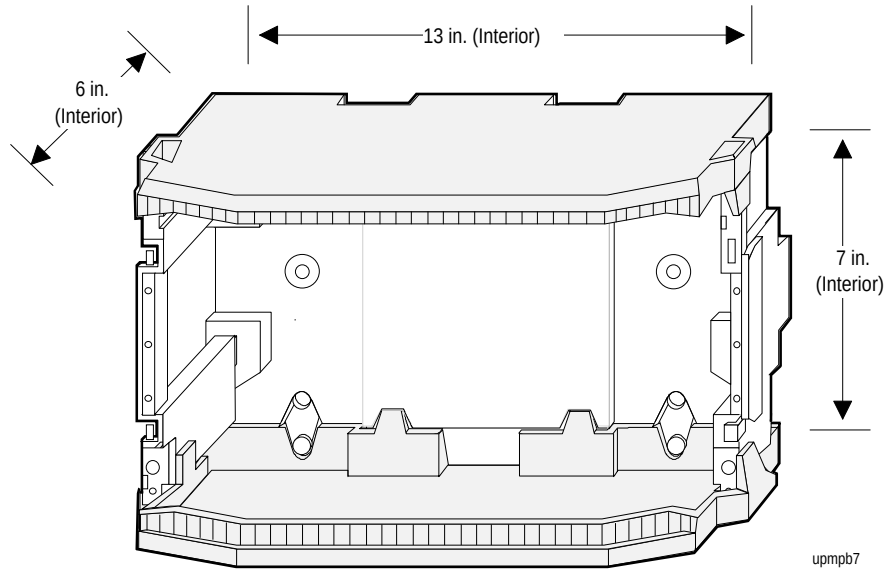


Figure 3: Interior Dimensions

Note: When selecting a powered enclosure size, be sure to account for the transformer and power box.

Interior dimensions (H x W x D) of the standard enclosures:

EN-EWC10-0	7 in. x 13 in. x 6 in.	(18 x 33 x 15 cm)
EN-EWC20-0	14 in. x 13 in. x 6 in.	(36 x 33 x 15 cm)
EN-EWC30-0	21 in. x 13 in. x 6 in.	(53 x 33 x 15 cm)
EN-EWC40-0	28 in. x 13 in. x 6 in.	(71 x 33 x 15 cm)

(Transformer and power box dimensions):

50 VA Transformer	3.875 x 3.25 in.	(9.8 x 8.3 cm)
100 VA Transformer	3.75 x 3.625 in.	(9.5 x 9.2 cm)
Power Box	4 x 3.75 in.	(10.2 x 9.5 cm)

The window in the optional covered window section measures 7.25 in. x 6 in. (18 x 15 cm).

Load Bearing	Select a wall space or area with sufficient room to mount the enclosure and install conduit. The load-bearing capacity of the wall must be able to support the full configuration weight. Wood surfaces generally only require bolting the enclosure to the wall; dry wall surfaces require anchors for the bolts. Due to the rigidity and strength of the molded plastic enclosure, the weight supported by an individual enclosure is probably higher than any application requirement. The pull-out value of the screw holes on the backbone is 200 pounds (90.7 kg). However, in securing a very heavy object, the best practice is to distribute the weight over a number of screws. The weight resting on the bottom endcap must not exceed 50 pounds (22.6 kg).
Environment	The enclosure is for indoor use. Avoid areas where water leakage may occur.
Power	The power option provides an integrated 50 VA (EN-EWC15, EN-EWC25) or 100 VA (EN-EWC35, EN-EWC45) transformer. A switch activates the transformer. Two utility outlets inside a metal power entrance box are also included. Power to the power box must be 120 VAC at 60 Hz.
Wiring Separation	One side of the enclosure should be used to route low-voltage wiring and the other side for line-voltage wiring. Off-the-shelf inserts from RICHCO Plastics plug into the mounting holes of the backbone to help route wires. The hole size is 0.31 inch (7.87 mm). Refer to the <i>Specifications/Ordering Information</i> section of this document for specific details regarding wire routing guides. Follow UL/NEC standards when using inserts to separate low- and line-voltage wiring by a minimum of two inches.

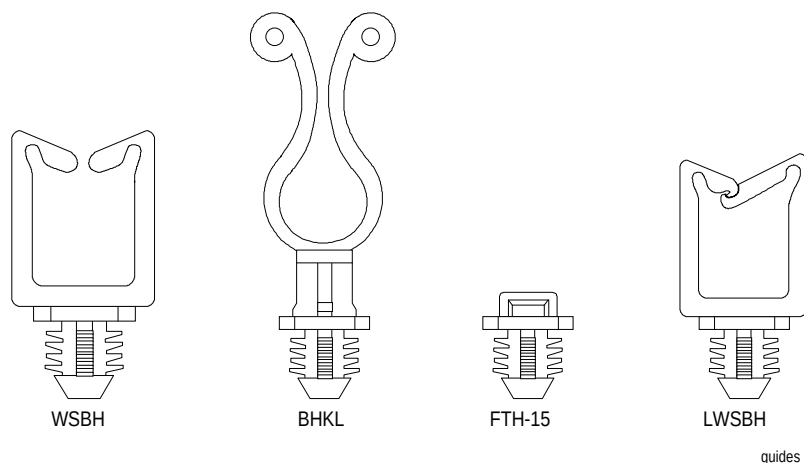


Figure 4: Wiring Guides for the Universal Packaging Module

Installation

Tools Needed

- 1/4 in. bolts
- No. 8 Plastite™ screws (for maximum holding power of 200 lb, 90.7 kg). No. 8 sheet metal screws, type A or AB are an alternative. However, these screws have a maximum holding power of 100 lb (45.3 kg).
- Wrench and screwdriver appropriate for the bolt and screw heads

Tools Needed for Expanding the Enclosure

- Torx® screwdriver
- T-20 Recessed Torx screws (included with expansion kits.)

General Mounting

Follow the steps below when mounting an enclosure:

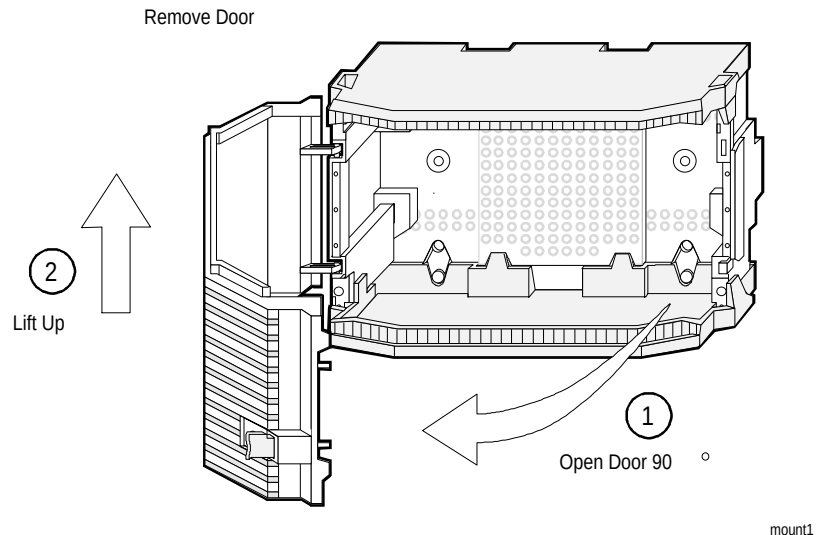


Figure 5: Mounting a Universal Packaging Module

1. To remove the cover, turn the key counterclockwise until the key is in an upright position. Pull out on the blue latch and then pull the cover out to a 90° angle from the base. Finally, pull the cover off the hinge, up and away to completely remove it.
2. Position the unit on the wall and mark the location of the mounting slot on the upper-most section. Each section of an enclosure has a center mounting slot and two mounting holes (Figure 6).
3. Drill a hole to accommodate a 1/4 inch bolt. Anchor the bolt, leaving a 3/8 inch to 1/2 inch protrusion on which to hang the backbone.

4. Hang the backbone over the bolt. Plumb the box. Mark the appropriate mounting holes along the wiring channels. (For units with multiple backbone sections, it is only necessary to install bolts in the four outside perimeter mounting holes, and alternate holes in the remaining sections--see Figure 7.)
5. Drill into the wall to accommodate the mounting holes (the units can be left in place or removed from the wall). Secure the unit with 1/4 inch bolts. If field gear is already mounted in the box, remove the box from the wall before mounting.
6. Mount the gear, using the No. 8 screws (seating torque should be 25 pound•inch minimum) and replace the door.

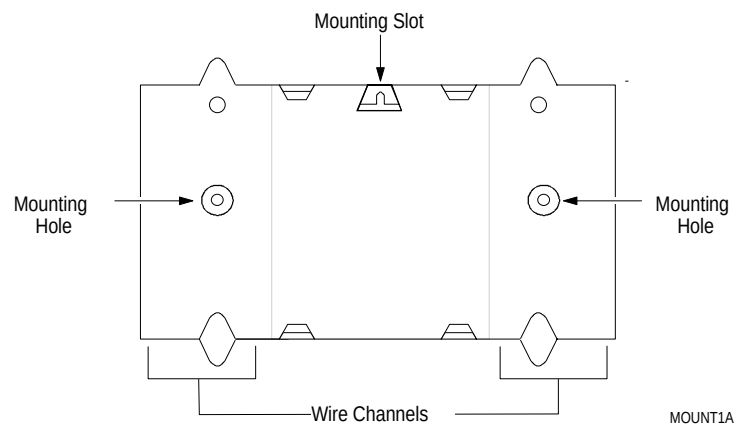


Figure 6: Bolt Locations when Mounting a Single Enclosure

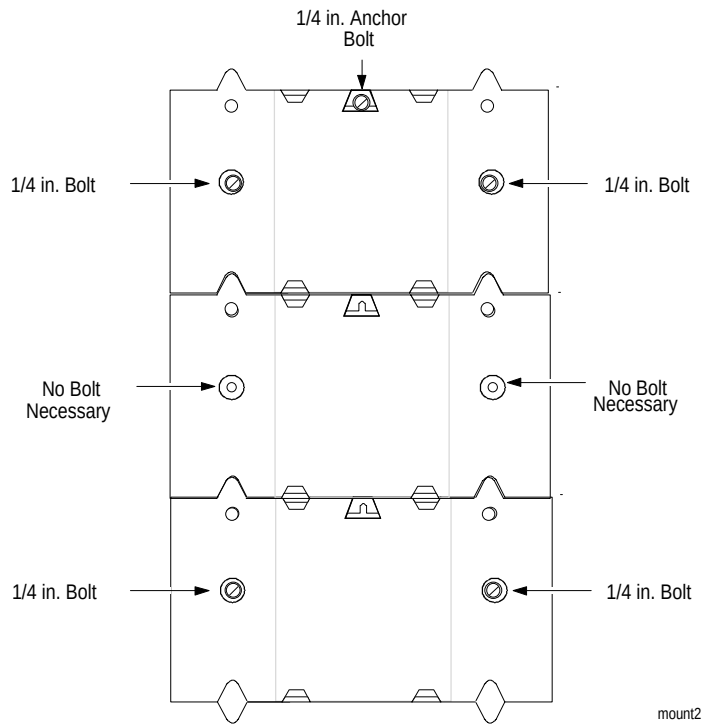


Figure 7: Bolt Locations When Mounting Multiple Enclosures

IMPORTANT: The EWC12/22 supplies power via the utility outlets and two switched power wires in the power box. If the devices being powered use only the utility outlets, make sure that the switched power wires remain wired-nutted and electrically insulated.

Power Box and Transformer Location

The power box and transformer can be located in different areas of the enclosure, depending on the requirements of the other installed equipment. There are four discrete locations for the power box, designated as A, B, C, or D on the outside of the endcap. The power box is generally located in area C. Set the power box on the inside of the unit over two bosses corresponding to one of the locations; A, B, C, or D. Position the transformer to within 1/2 inch (1.2 cm) of the power box.

IMPORTANT: You must reconnect the ground wires if you move the power box.

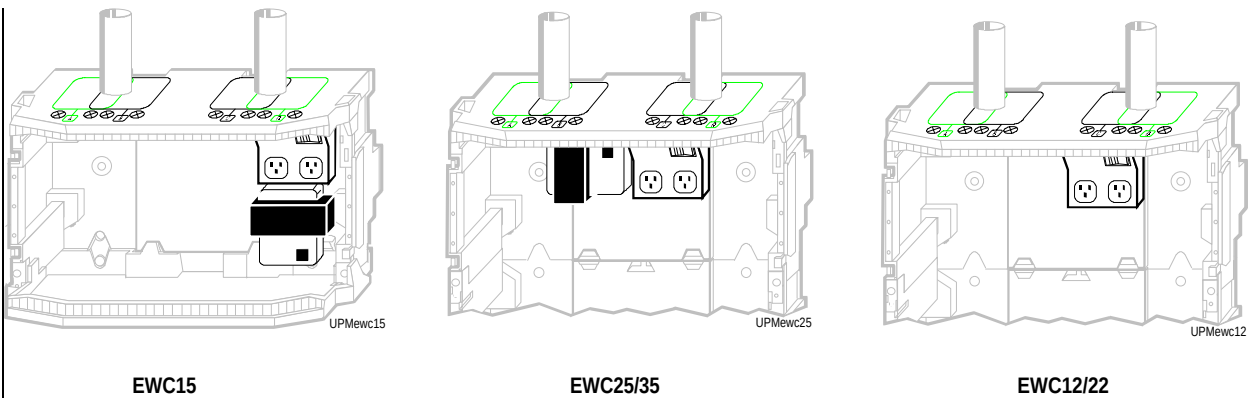


Figure 8: Power Configuration Options

Wiring

Landing Conduit

We recommend that you use a step bit, taper bit, or Greenlee® punch when drilling conduit holes.



CAUTION: Equipment Damage Hazard. Do not use a spade bit to drill conduit holes. Using a spade bit damages the ground plane.

Top Entry

There are four 3 inch by 3 inch areas designated A, B, C, or D on the outside of the endcap for conduit entry into the power box. After noting the location of the power box, drill or punch a hole in the selected area to land the conduit (Figure 9).

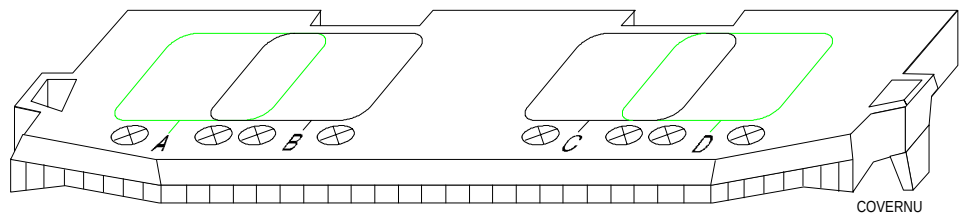


Figure 9: Line Voltage Conduit Entry from the Top of the Enclosure

Side Entry

A “guide” groove has been molded onto each side of the backbone section to help locate a drill point. Drill or punch a hole in the groove at the point closest to the front (Figure 10) to land a conduit at the side of the enclosure.

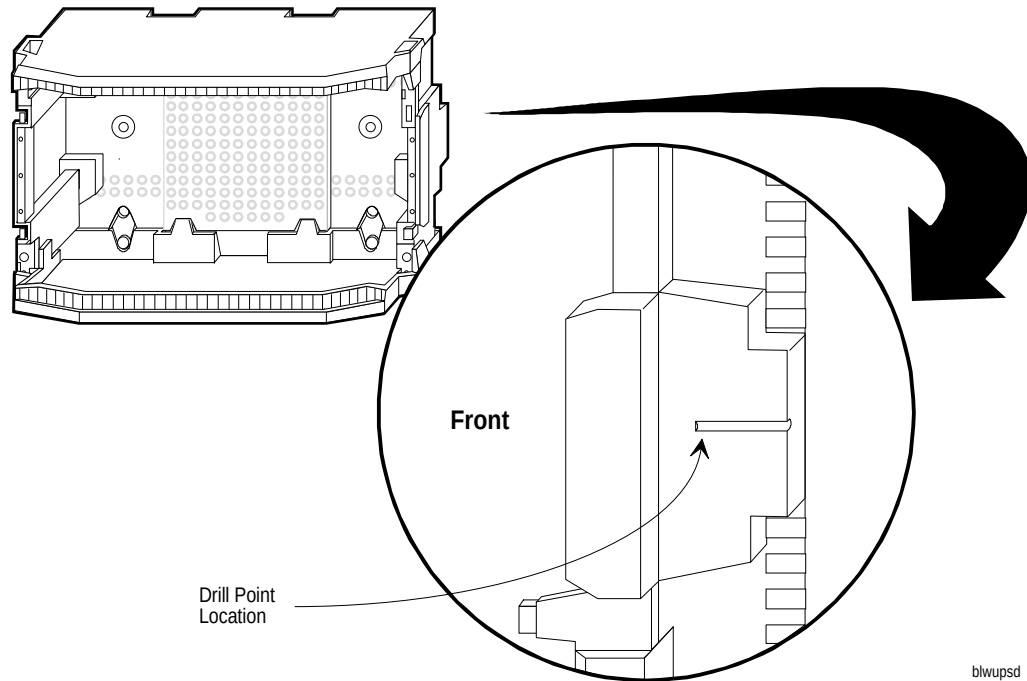


Figure 10: Line-Voltage Conduit Entry from the Side

Power Connections

Use wire-nuts to connect the power source hot and neutral lines to the corresponding lines inside the power box. Use wire-nuts to connect the *power source* ground wire to the green power box wire. This grounds the power outlets (which are internally connected to a ring terminal on the grounding screw). The *transformer* is already connected to the second ring terminal on the same grounding screw.

This connection completes the line-voltage wiring to the power outlets and the transformer. Internal connections to power outlets, switch, and ground are made at the factory. Switches control power to the transformer.

Grounding and Bonding

Installing the power box in any of the four designated positions locates one of the rear slots of the box over a grounding screw at the back of the endcap (each endcap has two grounding screws). The power box must be referenced (grounded) to a green-wire earth ground.

When bringing multiple conduits into one end of the enclosure, the standard conduit connectors automatically connect to the ground plane, grounding all conduits together. Attaching other devices to the opposite screw on the same endcap also grounds those devices via the aluminum ground plane.

If conduit is connected to the bottom endcap (opposite the powerbox), electrically bond the endcap to the grounded endcap, attach a ground wire from the open screw of the power box endcap to either of the grounding screws of the second endcap (Figure 11).

Table 2: Wire Selection Guide

Incoming Service	
15 amp	14 AWG minimum (1.628 mm diameter)
20 amp	12 AWG minimum (2.053 mm diameter)
30 amp	10 AWG minimum (2.588 mm diameter)

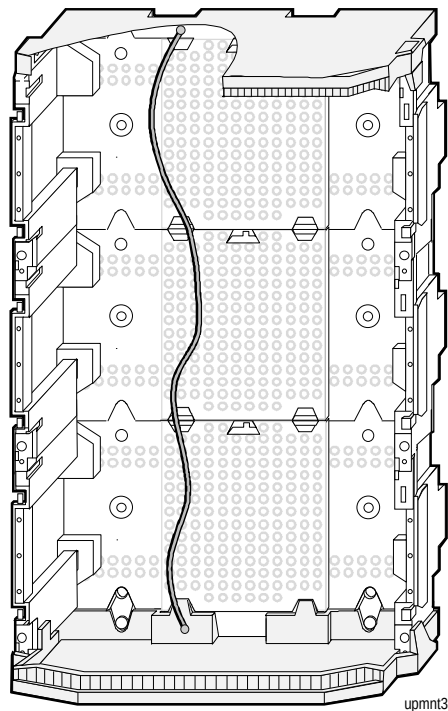


Figure 11: Power and Grounding/Bonding Terminations

Adding Sections to Existing Units

You may add a backbone and cover to an existing unit without having to rewire the original controls. Figure 12 illustrates the enclosure expansion units.

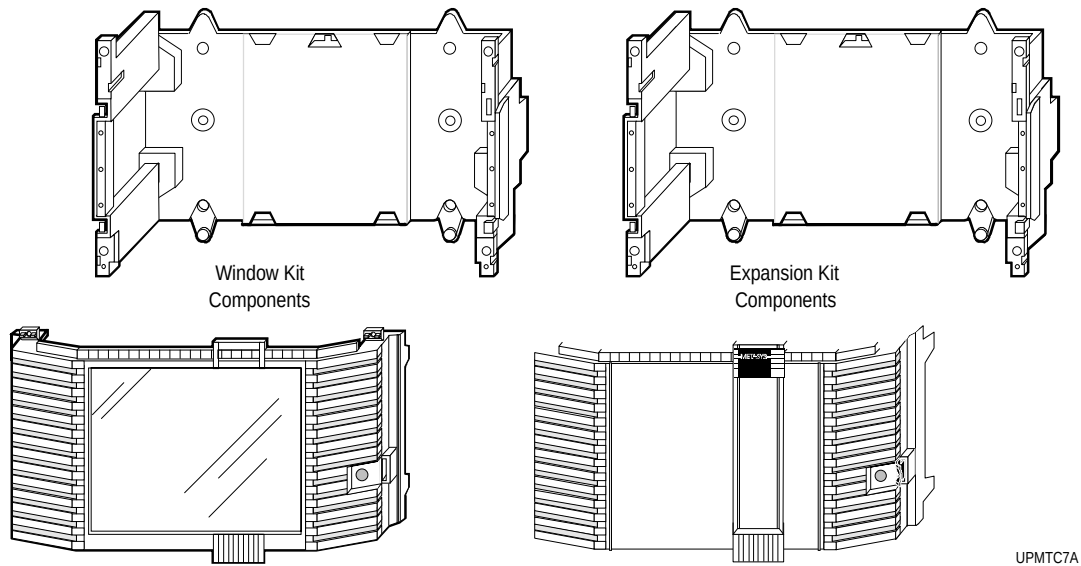


Figure 12: UPM Expansion Units

Window Kit Option

For those who want to monitor equipment such as gauges and LEDs, an optional full-window cover provides easy viewing while still having the equipment securely locked away from unauthorized users. The window expansion kit (EN-WIN101-0) includes a full-window cover, a backbone, and T-20 Torx screws (for fastening sections together). You can order this kit to expand an existing enclosure at the job site or as part of an original configuration through the Johnson Controls Panel Unit.

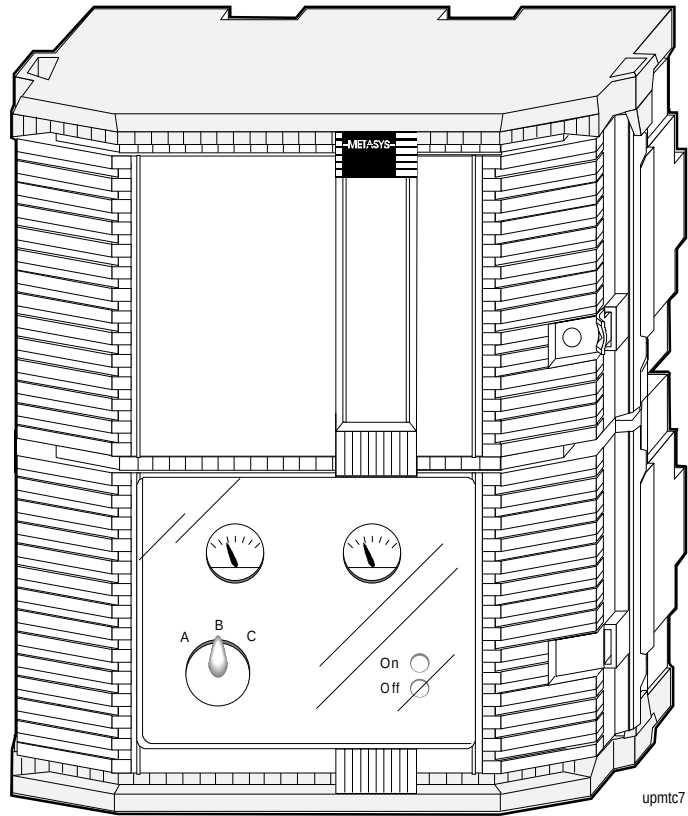


Figure 13: Enclosure Showing Equipment Mounted Behind Window

Expansion Kit Option

The expansion kit option provides additional storage capacity for equipment that does not need to be viewed. The expansion kit (EN-EXP101-0) includes a solid cover, a backbone, and T-20 Torx screws (for fastening sections together). You can order this kit to expand an existing enclosure at the job site or as part of an original configuration through the Johnson Controls Panel Unit.

Tools Needed for Expanding the Enclosure

- Torx screwdriver
- T-20 recessed Torx screws (included with the expansion and window units)

Expansion Unit Installation

Refer to Figure 14 and follow the steps below when installing expansion units.

1. Remove the two screws holding the endcap to the backbone.
2. Slide out the endcap.
3. Attach the endcap to the new backbone using the same screws as just removed.
4. Position the endcap and new section assembly flush against the main unit. Mark the holes and remove the new section.
5. Drill holes into the wall and reposition the new section.
6. Screw the sections together (using the included Torx screws) and secure them to the wall using two 1/4 inch bolts.
7. Install any gear. Be sure that any previously installed wiring for grounding or bonding is reinstalled.
8. Screw the new door piece to the new door.
9. Replace the door.

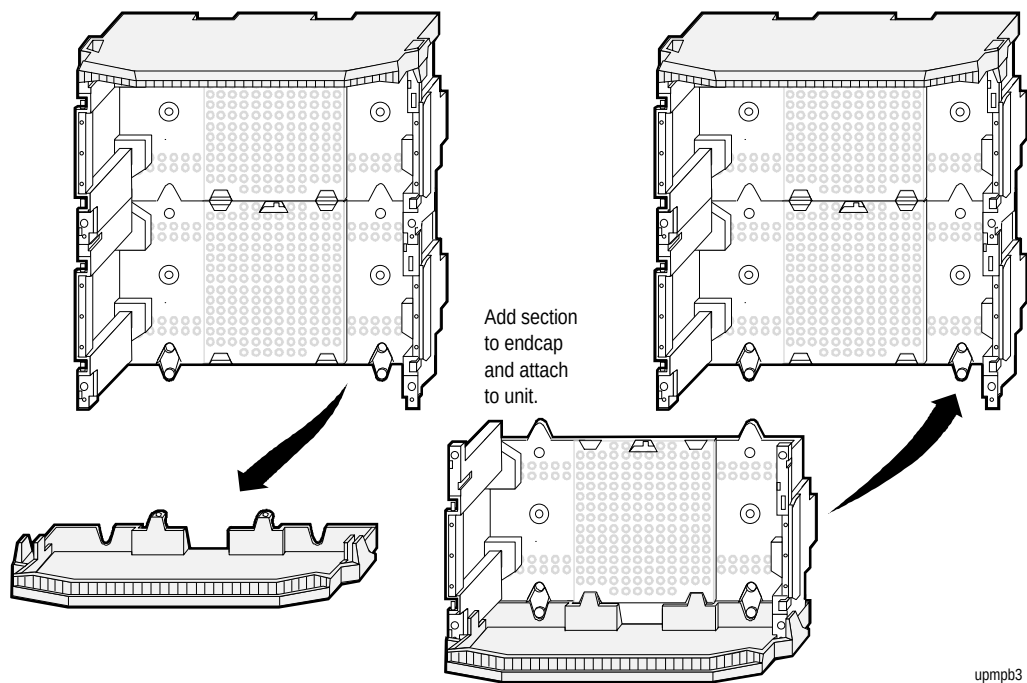


Figure 14: Expanding the Package

Modifying the Lock

We offer two types of keys, “A” (master) and “B” (tenant), for use with the EWC100, 200, and 500 enclosures. The UPM enclosures are built to operate with either of these keys. The “A” (master) key is supplied with the UPM and the “B” (tenant), key can be ordered (EN-KEY102-0.) If you wish to restrict access to only “A” key users, the UPM lock barrel can be changed to disable “B” key operation as follows:

1. Use the “A” key to open the enclosure door.
2. Remove the nut securing the lock and the cam inside the door. Notice the orientation of the cam in respect to the blue latch pawl.
3. Pull out the key with the lock plug still attached. Rotate it 180° as illustrated in Figure 14. Reinsert the plug.

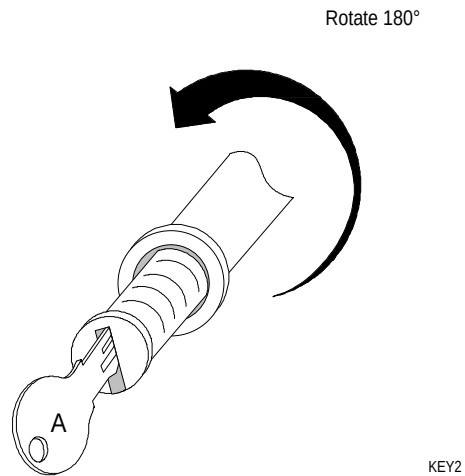


Figure 15: Rotating the Lock Plug

4. Reassemble the lock cam and tighten the nut.

The “B” key is disabled without affecting the operation of the “A” key.

Mounting Control Equipment

Network Terminal Installation

You may want to house a Network Terminal (NT) inside an enclosure for security reasons. Two methods are available, depending on whether or not you want to view the NT screen.

View NT Screen

This method requires a minimum of two sections of backbone and door, one of which must be the Window Expansion Kit.

After the two sections of the enclosure are assembled, secure the NT Cradle Kit inside with two No. 8 mounting screws. To ensure that the cover closes over the NT Cradle, position the center slot eight holes from the left edge of the backbone.

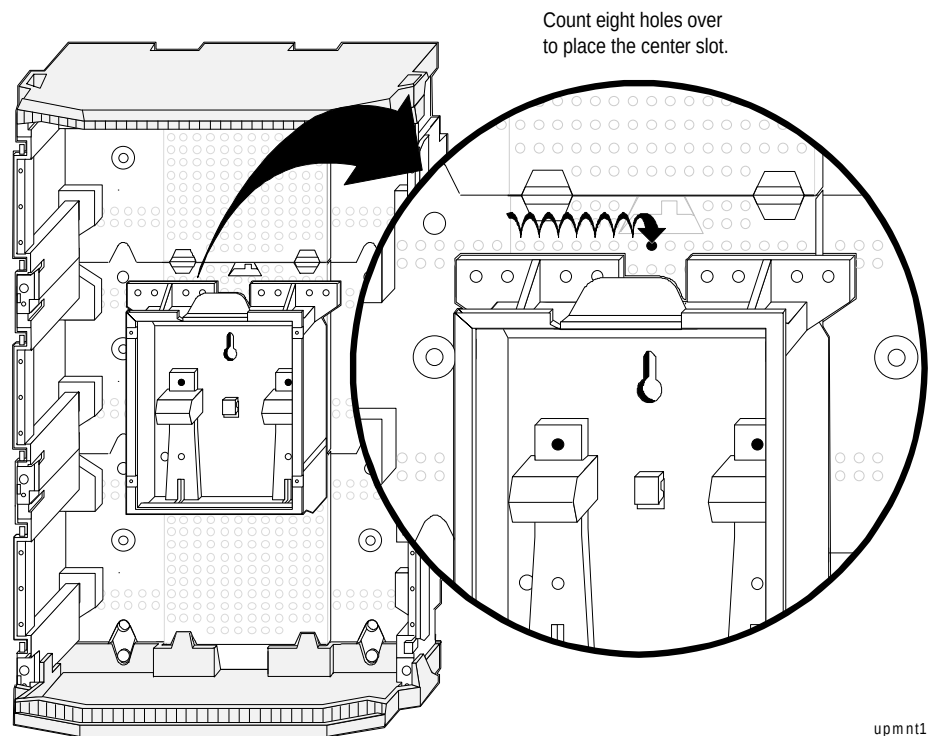


Figure 16: Mounting the NT for Viewing

NT Screen Not Viewed

This method requires only one section of backbone and door. The NT can rest at an angle on the boss mounts of the bottom endcap (Figure 17).

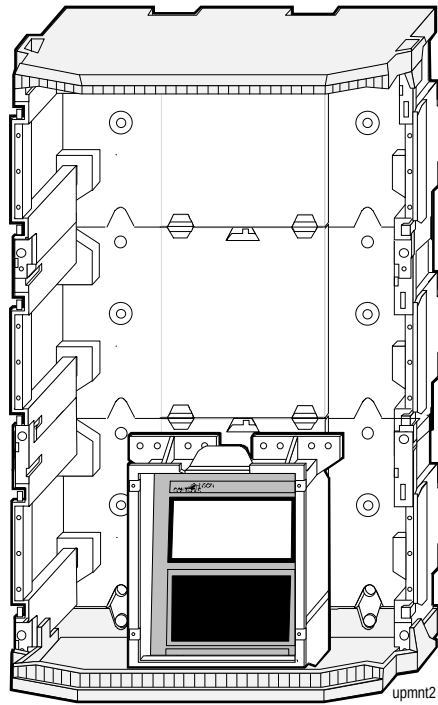


Figure 17: Mounting the NT for Security Inside the Enclosure

**Mounting
Companion™
(with a
Modem)**

Follow the directions below to mount Companion into a dual high box (EWC26) with modem.

1. Mount EWC on wall.
2. Run 120 VAC line voltage wiring through conduit in area C. See Figure 20.
3. Mount other conduit as needed for low voltage bus/phone line.
4. Mount electronics board with screws provided on upper bracket.
5. Set modem in lower bracket and secure with two straps provided.

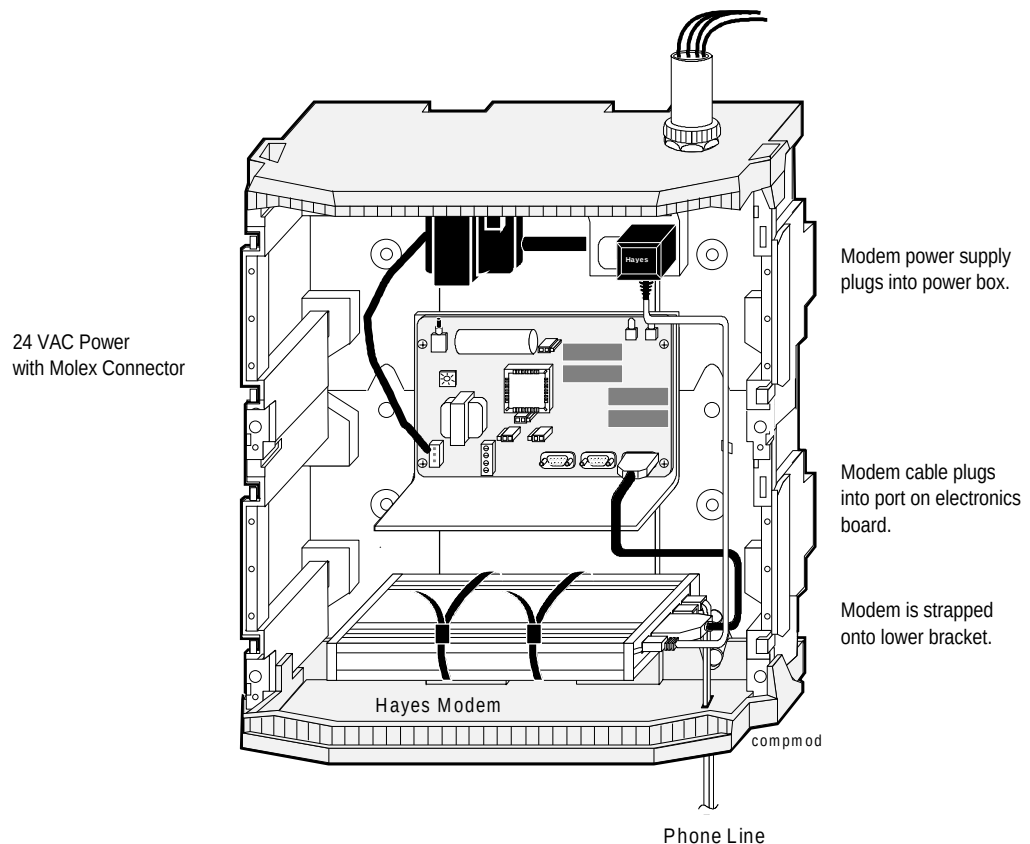


Figure 18: Companion Mounting with Modem

Metasys Integrator® Mounting

Follow the directions below for mounting Metasys Integrator as recommended in a single high box (EWC13).

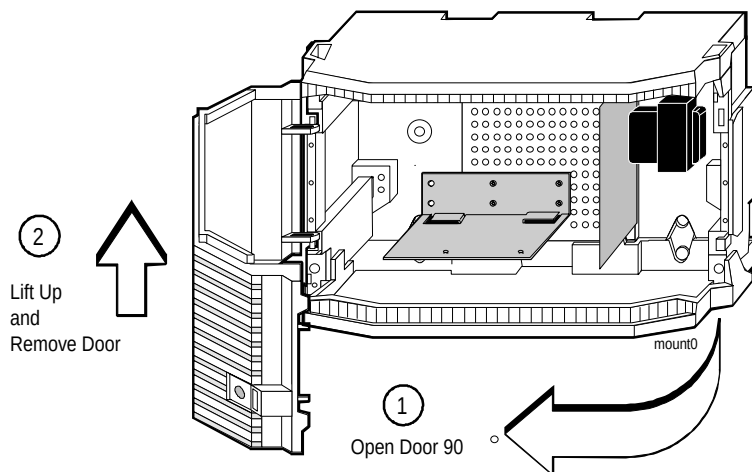


Figure 19: Metasys Integrator Mounting

1. After mounting the EWC on the wall, run line voltage conduit onto top of the unit into shaded area D of the this illustration. Use only the portion of area D that is not also a portion of area C.

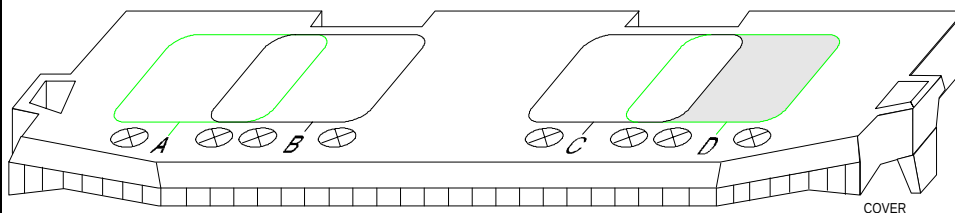


Figure 20: Line Voltage Conduit Entry from the Top of the Enclosure

2. Land low voltage conduit as needed.
3. Mount electronics board onto bracket with screws provided as shown in the *Metasys Integrator Technical Bulletin* in the *Metasys Connectivity Technical Manual (FAN 629.5)*.

Zone Terminal Mounting with UPM

Using the wall mounting base, follow the instructions below to mount the Zone Terminal in a UPM.

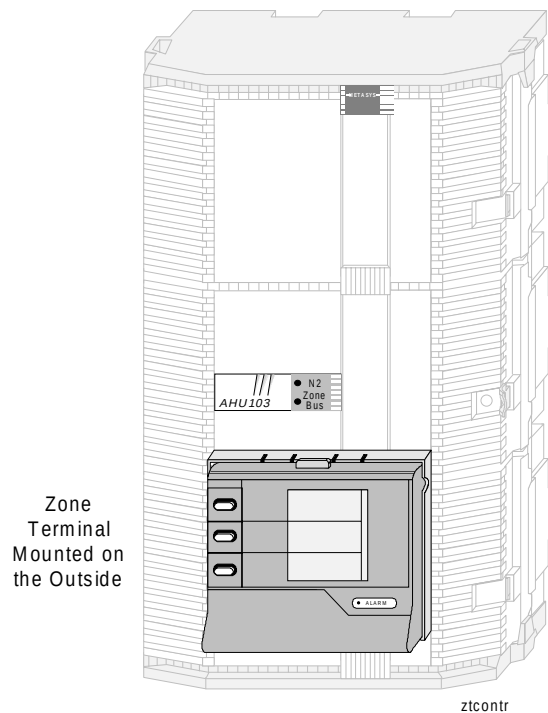


Figure 21: Wall Mounting the Zone Terminal with a UPM

1. Position the Zone Terminal Wall Mounting Base flush on the cover at eye level (approximately 65 inches).
2. Mark mounting holes.
3. Mark cable hole.
4. Drill three size 3/32 inch pilot holes for mounting the base.
5. Drill 5/8 to 1 inch hole for cable.
6. Mount the base to the UPM cover using three No. 6 thread forming or sheet metal screws. Use a No. 6 x 3/4 inch screw for the top hole and two No. 6 x 1/2 inch screws for the bottom screws.

***Mounting the ZT
Behind a
Window
Enclosure***

The Panel Unit in Poteau, Oklahoma has a bracket available for mounting the ZT behind a window that allows control equipment to be mounted behind the ZT, thereby maximizing the use of the UPM. Contact the Panel Unit for more information.

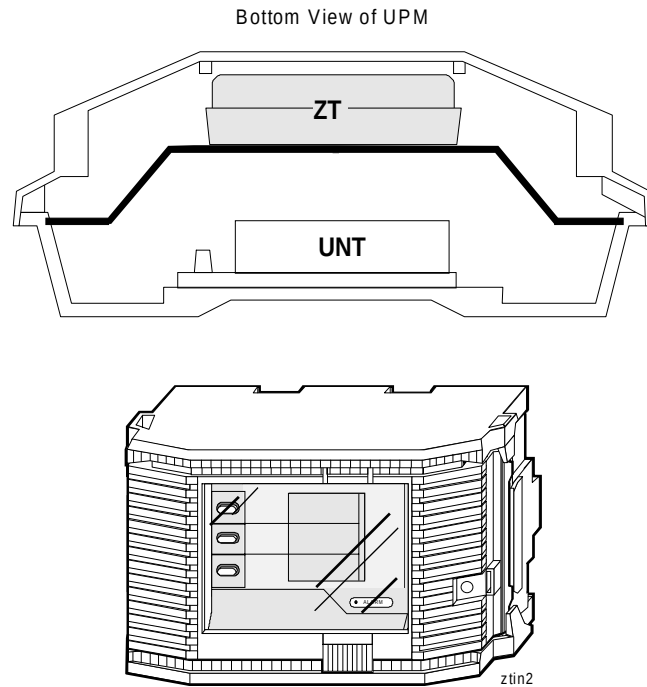


Figure 22: ZTU Wall Mount Bracket

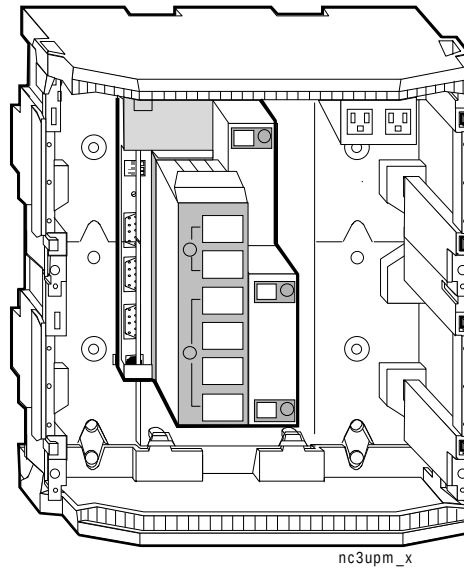


Figure 23: NCM300 in a UPM

The NCM300 fits into an EWC22 enclosure. For complete mounting and wiring details, refer to the *Network Control Module 300 Technical Bulletin* in the *Metasys Network Technical Manual (FAN 636)*.

AHU Controller

The AHU103 Controller fits into the UPM enclosure.

Note: Previous versions of the AHU Controller will not be supported in the UPM.

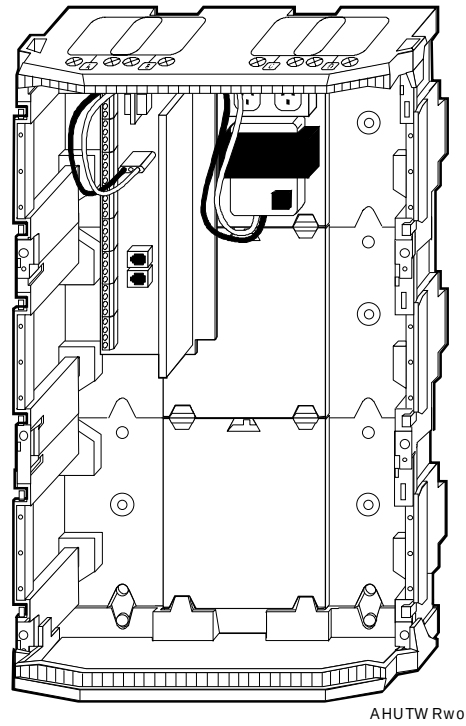


Figure 24: AHU Controller in UPM Enclosure

For wiring details, please refer to the *Air Handling Unit Controller (AHU) Technical Bulletin* located in the *Application Specific Controllers Technical Manual, FAN 636.3*.

VAV and UNT Controllers

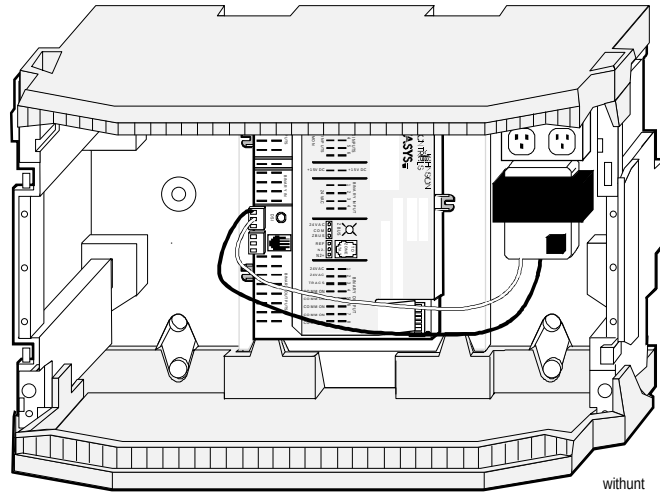


Figure 25: UNT in a UPM

You can mount a VAV or UNT controller into an EWC10 or larger enclosure. Refer to the *Commissioning Considerations* section of this document for specific drilling and mounting instructions.

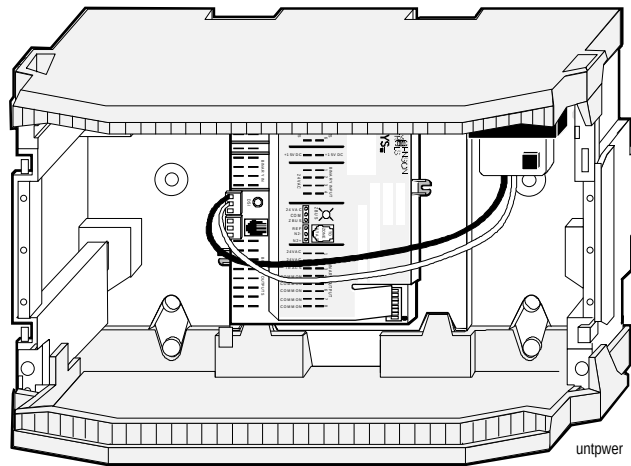


Figure 26: UNT Pre-mounted in Enclosure

If you purchase the UNT pre-mounted into an enclosure UNTxxx-101, it comes with a 50 VA transformer and no power entry box.

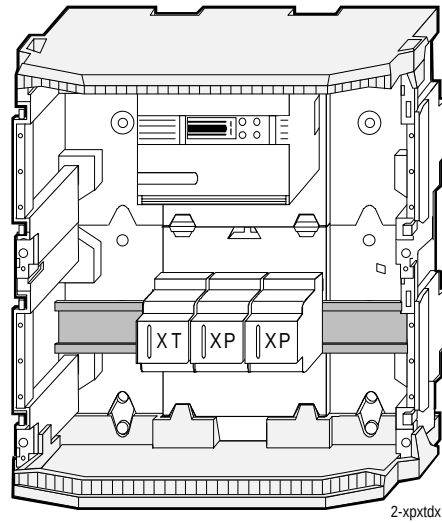


Figure 27: DX-9100 in a UPM

DIN Rail Mounting

You can mount units inside the enclosure on a DIN Rail for close to door viewing. Refer to Figure 28.

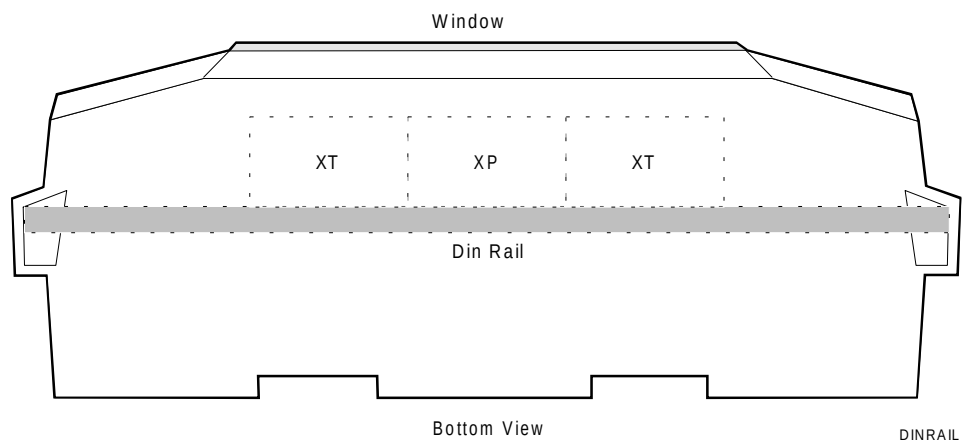


Figure 28: DIN Rail Mounting

**Function
Module Kit**

The FMK102 fits into the UPM enclosure.

Note: Previous versions of the Function Module Kit are not supported in the UPM.

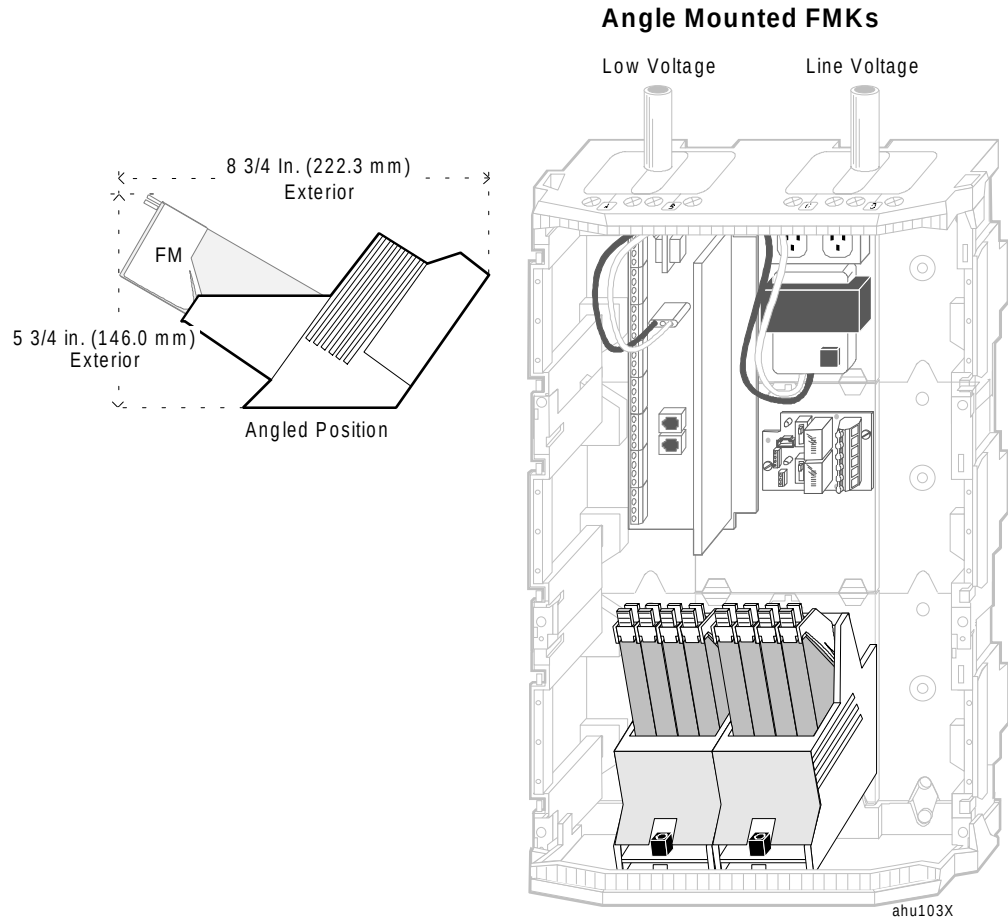


Figure 29: Installing the Function Module Kit

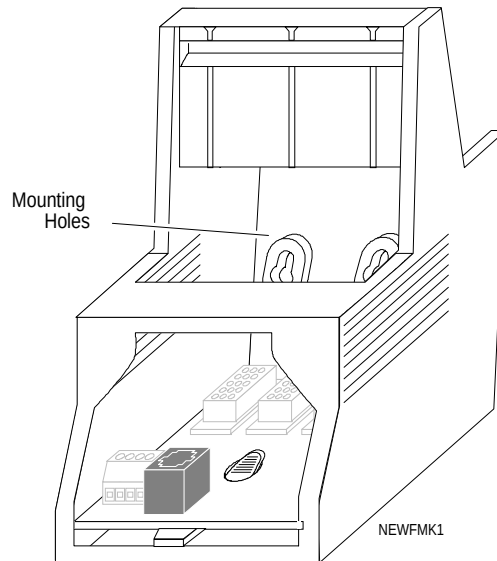


Figure 30: Function Module Kit

Refer to Figure 30 and follow the steps below when installing an FMK102 into the UPM.

1. Remove all Function Modules (FMs) from the FMK102. The mounting holes are accessible through this area.
2. Position the FMK in the desired area of the UPM. Ensure your selected mounting position will not interfere with door closure. Align the two mounting holes in the FMK with the grid pattern holes in the UPM. Mark these holes to reference the mounting area.
3. Set the FMK aside and install the two mounting screws provided in the desired holes. Insert the screws so there is approximately 1/2 inch thread visible.
4. Install the FMK mounting slots over the mounting screws. Slide the FMK into place so the screws are positioned at the small end of the slot.
5. Tighten the screws and insert the FMs.

RLY002

To install the RLY002, use the two enclosed screws.

Install the UPM in the desired location. Refer to the *Installation* section of this document for instructions on installing the UPM.

Position the RLY002 so the terminal for relay contacts is adjacent to the line voltage wiring in the UPM. Figure 31 illustrates one of the many options for positioning the RLY002.

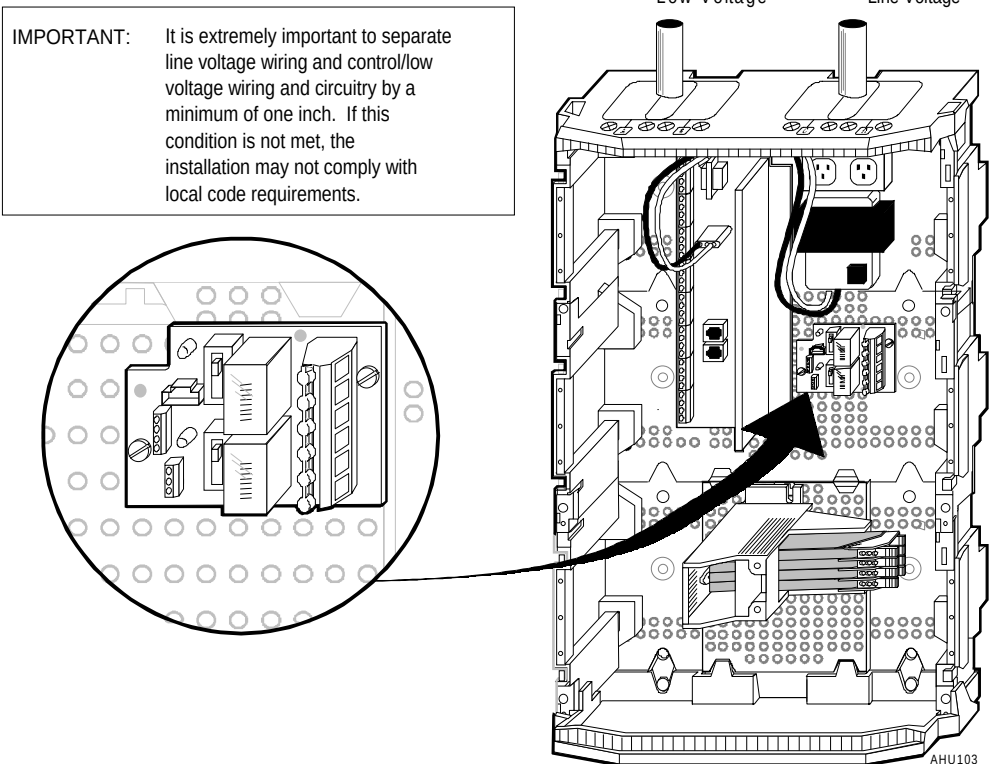


Figure 31: Mounting the RLY002 with Control Equipment

Use the two No. 8 sheet metal screws provided with the RLY002 to secure the relay to the UPM backbone. Use two of the four standoffs on the RLY002, keeping the mounting screws diagonally positioned from each other as illustrated in Figure 32.

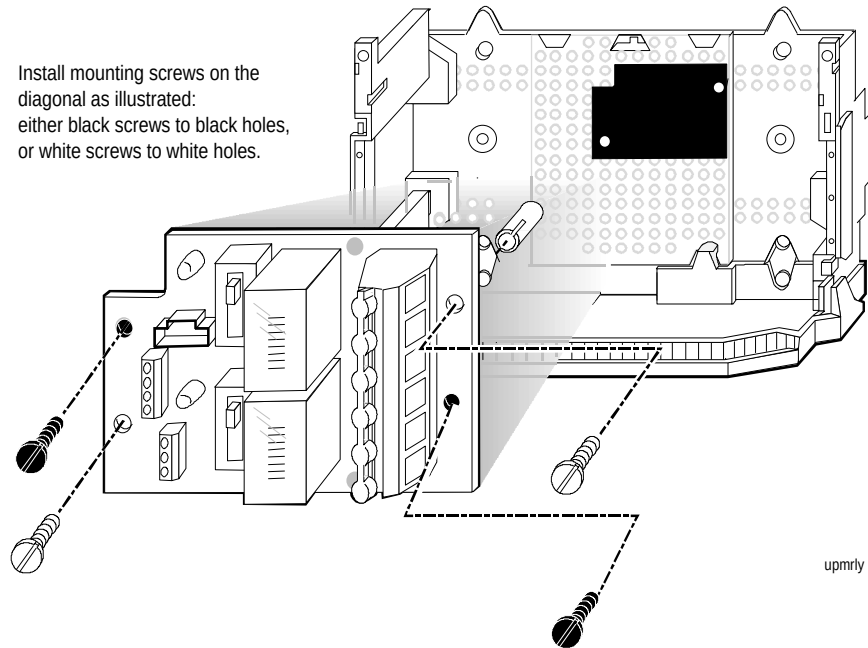


Figure 32: Mounting the RLY002

For complete installation instructions for the RLY002, refer to *AS-RLY050-0 / AS-RLY100-1 / AS-RLY002 Relay Module Installation Sheet*.

Commissioning Procedures

Commissioning Considerations

- Take care when drilling or punching conduit holes to not introduce metal chips from the ground planes onto any electronic circuitry.
- Be sure to mount the unit high enough to provide room at the bottom if you plan to add extra sections in the future. To further allow for future expansion, bring conduit into the top or side of the unit, leaving the bottom removable without rewiring.
- Equipment whose mounting holes are not on 1/2 inch center can still be mounted by drilling the appropriate pilot holes directly into the backbone (e.g., use a No. 27 drill 9/64 inch diameter for a No. 8 self-tapping screw). For maximum holding force, drill the holes above or below (instead of to the left or right) of the existing molded-in screw holes.

Specifications/Ordering Information

Table 3: Specifications and Ordering Information

Code Number	Description	Shipping Weight	Typical Uses
Universal Packaging Modules without Power Components			
EN-EWC10-0	UPM (Single unit)	5.0 lb (2.3 kg)	Auxiliary Gear Mounting
EN-EWC20-0	UPM (Dual unit)	8.0 lb (3.6 kg)	Auxiliary Gear Mounting
EN-EWC30-0	UPM (Triple unit)	11.0 lb (5.0 kg)	Auxiliary Gear Mounting
EN-EWC40-0	UPM (Quad unit)	14.0 lb (6.4 kg)	Auxiliary Gear Mounting
Universal Packaging Modules with Power Entry Box Only			
EN-EWC12-0	UPM (Single unit)	5.5 lb (2.5 kg)	N2 Dialer
EN-EWC22-0	UPM (Dual unit)	8.5 lb (3.9 kg)	NCM 300
Universal Packaging Modules with Power Entry Box and Transformer			
EN-EWC15-0	UPM (Single unit with 50 VA)	7.3 lb (3.3 kg)	UNT/VAV
EN-EWC25-0	UPM (Dual unit with 50 VA)	10.3 lb (4.7 kg)	DX9100
EN-EWC35-0	UPM (Triple unit with 100 VA)	15.8 lb (7.2 kg)	AHU
EN-EWC45-0	UPM (Quad unit with 100 VA)	18.8 lb (8.5 kg)	Multiple Controllers
Universal Packaging Modules with Brackets			
EN-EWC13-0	UPM with 1 bracket and 50 VA	7.3 lb (3.3 kg)	Companion/ Metasys Integrator
EN-EWC 26-0	UPM with 2 brackets and 50 VA and power box	10.4 lb (4.7 kg)	Companion with Modem
Expansion Units			
EN-EXP101-0	Expansion cover and backbone kit; endcaps not included	3.2 lb (1.5 kg)	Expand existing enclosure
EN-WIN101-0	Window cover and backbone kit; endcaps not included	3.0 lb (1.4 kg)	Showing internal equipment
Accessories			
EN-UTLBRK-0	Utility bracket	0.5 lb (.2 kg)	Mounting Modems
EN-KIT103-0	NT Cradle Kit	3.0 lb (1.4 kg)	Mounting NTU
AS-ZTUWMB-0	ZTU Wall Mount Bracket	0.5 lb (.2 kg)	Mounting ZTU
Power Requirements			
120 VAC at 60 Hz (1 amp)			
Agency Listings			
UL 916 Listed and CSA Certified as part of Metasys®			

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Johnson Controls Panel Unit wires and configures units, complete with accessories, to your specifications. The ZTU internal mounting bracket is also available.

Contact:

Panel Unit -- Poteau
3100 North Broadway
P.O. Box 1088
Poteau, OK 74953
(918) 647-2195
FAX: (918) 647-9405 (Customer Service)

***Vendor Code
Numbers***

You can order Plastite screws from:

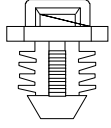
Larson & Company
3811 N. Port Washington Ave.
Milwaukee, WI 53212
(414) 264-2210

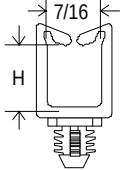
**Wire Routing
Accessories**

The following tables list code numbers and descriptions for wire routing accessories. Refer to the illustrations in the tables prior to ordering to ensure proper dimensions. All of the listed wire routing accessories are available from:

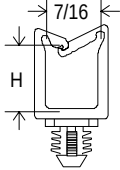
AA Electric
1220 Washington Ave.
P.O. Box 325
Cedarburg, WI 53012-0325
(800) 558-7033
Toll Free FAX: (800) 638-4969

Table 4: Wire Routing Accessories

Code Number	Description
 FTH-15	Press fits into a 0.312 in. (7.92 mm) diameter hole in a 0.25 in. (6.35 mm) minimal thickness panel Accommodates WIT-18 and WIT-30 ties Standard Pack: 100 or 1,000 per bag

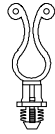
 WSBH	Press fits into a 0.312 in. (7.92 mm) diameter hole in a 0.25 in. (6.35 mm) minimal thickness panel Standard Pack: 1,000 per bag
--	--

Code Number	H = Interior Height in Inches (mm)
WSBH-1-01	0.17 (4.3)
WSBH-2-01	0.39 (9.9)
WSBH-3-01	0.74 (18.8)
WSBH-4-01	1.06 (26.9)

 LWSBH	Press fits into a 0.312 in. (7.92 mm) diameter hole in a 0.25 in. (6.35 mm) minimal thickness panel Standard Pack: 1,000 per bag
--	--

Code Number	H = Interior Height in Inches (mm)
LWSBH-1-01	0.14 (3.6)
LWSBH-2-01	0.35 (8.9)
LWSBH-3-01	0.71 (18.0)
LWSBH-4-01	1.03 (26.2)

Continued on next page . . .

Code Number (Cont.)	Description
 BHKL	Press fits into a 0.312 in. (7.92 mm) diameter hole in a 0.25 in. (6.35 mm) min. thick panel Standard Pack: 1,000 per bag
Code Number	Bundle Diameter Range in Inches (mm)
BHKL350-4-01	0.30 - 0.40 (7.6 - 10.2)
BHKL350-6-01	
BHKL350-8-01	
BHKL350-10-01	
BHKL450-4-01	0.40 - 0.50 (10.2 - 12.7)
BHKL450-6-01	
BHKL450-8-01	
BHKL450-10-01	
BHKL750-4-01	0.70 - 0.80 (17.6 - 20.3)
BHKL750-6-01	
BHKL750-8-01	
BHKL750-10-01	

JOHNSON
CONTROLS

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 Milwaukee, WI 53201

FAN 636.3
 Application Specific Controllers Technical Manual
 Printed in U.S.A.