

The new XM-3z Expansion Module is designed to expand a three zone model BMPlus-3z zone control, and create a six or nine zone intelligent HVAC system.

One XM-3z Expansion Module is included when you order a model BMPlus-6z (6 zone) Zone Control system.

Two XM-3z Expansion Modules are included when you order a model BMPlus-9z (9 zone) Zone Control system.

You can also expand an *existing* BMPlus-3z system by installing one or two XM-3z Expansion Modules *in the field*.

Create up to nine air zones in your home or small business and efficiently control 24vac multi-stage HVAC systems.



Model XM-3z Expansion Module

6 to 9 Zone Capacity

Create 4, 5 or 6 zones by connecting a single XM-3z expansion module to a BMPlus-3z. Create 7, 8 or 9 zones by connecting two XM-3z expansion modules to a BMPlus-3z.

Compatible HVAC Systems

Control 24v single stage or two stage Heat with single or two stage Cool HVAC systems (*Gas, Oil, Electric, Hydronic*). You can also control three stage Heat with two stage Cool Heat Pumps.

Compatible Thermostats

The XM-3z is compatible with typical 24vac single stage Heat/Cool thermostats and 2 Heat/ 1Cool Heat Pump thermostats. Hard wired, Battery or Power Robbing types are also compatible. The XM-3z is compatible with Smart WiFi thermostats as well, assuming a sufficient number of wires exist at each thermostat location.

See the BMPlus-3z Tech Bulletin.

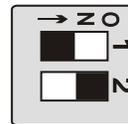
Status LED

A single green LED blinks at a steady pace to indicate the XM-3z is powered and the micro-processor is functioning.

Damper LED's

Three green LED's labeled (*Zone 4 OPEN, Zone 5 OPEN & Zone 6 OPEN*) are provided on the BMPlus-6z system. In addition to these, three green LED's labeled (*Zone 7 OPEN, Zone 8 OPEN & Zone 9 OPEN*) are provided on the BMPlus-9z system.

Easy Set Address



A dip switch is provided on each XM-3z, so the Installer can set the address of each XM-3z Expansion Module. This allows the BMPlus-3z to identify which XM-3z is controlling zones 4, 5 and 6, and which XM-3z is controlling zones 7, 8 and 9. **NOTE:** *These dip switches are preset for you on a BMPlus-6z or BMPlus-9z system ordered from the factory. See Page 2 for the correct field settings.*

EWCnet DATA Port

The XM-3z has a 2 way "Data" terminal that you must connect to the BMPlus-3z "Data" terminal, so they can "talk" to each other. This allows the BMPlus-3z to communicate directly with one or two XM-3z Expansion Modules to create a 6 zone system or a 9 zone system.

24vac Power Input

Power the XM-3z by connecting it's 24vac power *input* terminals, to the 24vac Accessory *output* of the BMPlus-3z zone controller. **In order to ensure polarity and stable 2 way communication, you must power the XM-3z modules from the BMPlus-3z zone control!** This means the BMPlus-3z must have a dedicated 24vac power transformer.

See page 2 for details.

INSTALLATION INSTRUCTIONS

The zoned installation shall be performed by qualified persons in compliance with National and / or Local Mechanical / Building Code including applicable ANSI standards.

MOUNTING: Mount the XM-3z in close proximity to the BMPlus-3z. Suitable locations are on the Return Duct, a Nearby Gypsum Wall or Plywood mounted to wall studs. **Do Not** mount the XM-3z on the Supply duct. **Do Not** mount the XM-3z directly to the Air-Handler, Furnace, Hydronic Coil Cabinet or Evaporator Cabinet. **Do Not** mount the XM-3z in an "open" return air stream. **Do Not** mount the XM-3z inside a clothes closet or any other tight enclosure that inhibits natural air movement.

POWER SUPPLY: The XM-3z must receive power from the BMPlus-3z Zone Control 24vac output terminals! **Do Not steal 24vac power from the HVAC system! Doing so will void the warranty. The zoned installation shall comply with National and/or Local Electrical Code.**

WIRING: Use 18awg solid copper multi-conductor cable. Plenum rated where applicable. Connect the 24vac "input" (and data) terminals on the XM-3z, straight to the 24vac "output" (and data) terminals on the BMPlus-3z.

DO NOT install wet switches or other safety devices into these 3 circuits!

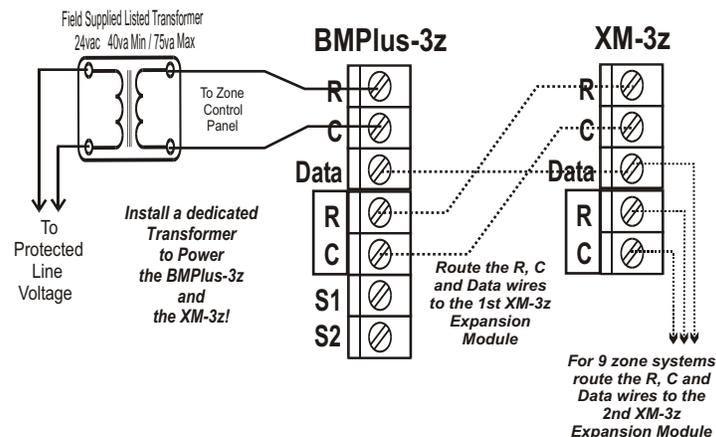
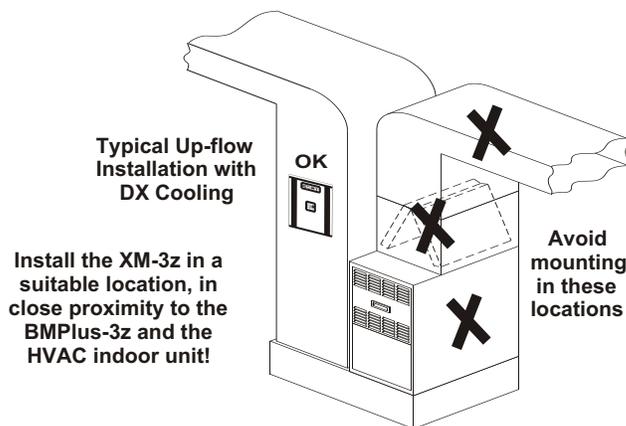
Connect your zone thermostat and zone damper wiring using the openings provided on the housing as the cable/wire entry-way. Stripping the cable's jacket back to the point where the cable enters the housing, reduces bulk and allows easy routing of the individual wires to each terminal block. Use the housing's wire tie loops to secure the wiring and achieve a professional looking installation.

ADDRESS: Confirm the XM-3z address (zone 4, 5 & 6) or (zone 7, 8 & 9) via the Dip Switch bank on the lower right corner of the housing.

LABELS: Place the correct label (provided) on the XM-3z housing(s), to identify the Zone position LEDs on each expansion module:

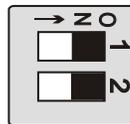
1. Use the label marked **Status, Zone 4, 5 & 6** for a 6 zone system.
2. Use two labels **Status Zone 4, 5 & 6 & Status Zone 7, 8 & 9** for a 9 zone system.

Refer to the BMPlus-3z Tech Bulletin to configure your multi-zone HVAC system. **See Technical Bulletin 090512A0279**



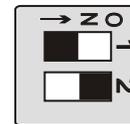
Confirm address dip switch settings for your system!

BMPlus-6z (one XM-3z)
Switch 1 = OFF/left
Switch 2 = OFF/left



Switch position is WHITE.

BMPlus-9z (2nd XM-3z)
Switch 1 = ON/right
Switch 2 = OFF/left



XM-3z SPECIFICATIONS:

NUMBER OF ZONES: Expandable to 6 or 9 zones using 1 or 2 model XM3 Expansion Modules. Create your own BMPlus-6z system or BMPlus-9z system.

COMPATIBLE EQUIPMENT: 24vac Gas/Oil/Electric/Hydronic systems – 1 or 2 Stage Heat & 1 or 2 Stage Cool. Or 24vac Conventional or Dual Fuel Heat Pump systems – Up to 3 Stage Heat & 2 Stage Cool.

COMPATIBLE THERMOSTATS: 24vac single stage Heat/Cool Thermostats. (WiFi is OK). Or 24vac 2 stage Heat, 1 Stage Cool Heat Pump Thermostats. (WiFi is OK).

COMPATIBLE DAMPERS: 24vac EWC® Models URD, ND, and SID 3 wire (Power Open/Power Close) type dampers.

MAX. DAMPERS Per 6 Zone System @ 50va power supply: ND, URD, or SID Dampers @ (2.0va) per motor = 7 total including a Model EBD or SBD2 bypass Damper.

MAX. DAMPERS Per 9 zone System @ 75va power supply: ND, URD, or SID Dampers @ (2.0va) per motor = 10 total with Model DAPC, EBD or SBD2 bypass Damper.

OVER-CURRENT (Auto-Reset) PROTECTION:

F1 = 300mA OC protection for the Primary Logic Circuit.

F2 - F4 = 750mA OC protection for each Zone Circuit.

F5 = 100mA OC protection for the Data circuit.

NOTE: Solid State OC protection de-rates approx 20% at high ambient temperatures.

XM-3z Current & Power: 160mA / 4va (**BMPlus-6z = 1.75Amp / 42va**) with 6 Dampers & 6 Thermostats.

POWER SUPPLY: 24vac 50/60 Hz - 50va recommended. 40va Min - 75va Max.

AMBIENT OPERATING CONDITIONS:

TEMPERATURE: -4° to 158°F (-20° to 70°C).

HUMIDITY: 0% - 95% Rh Non-Condensing.

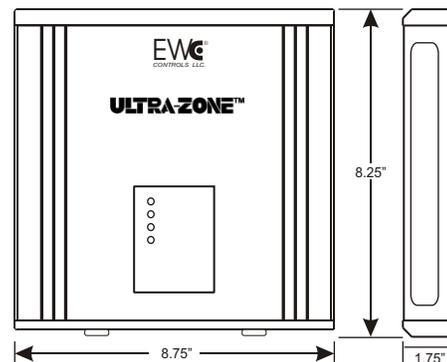
HOUSING SPECIFICATIONS: High Strength Impact Polystyrene. HB flame rating. UV resistant.

TERMINAL BLOCK SCREW TORQUE: 3.5 inch lb (0.4nM).

ACCESSORIES:

Labels (qty 2 included) for placement and identification of Zones 4, 5 & 6 and Zones 7, 8 & 9.

Wire ties (qty 6 included) for strain relief/securing the conductors inside BMPlus-3z and XM-3z housing.



NOMINAL DIMENSIONS
9" X 9" X 2"

XM-3z Features at a Glance

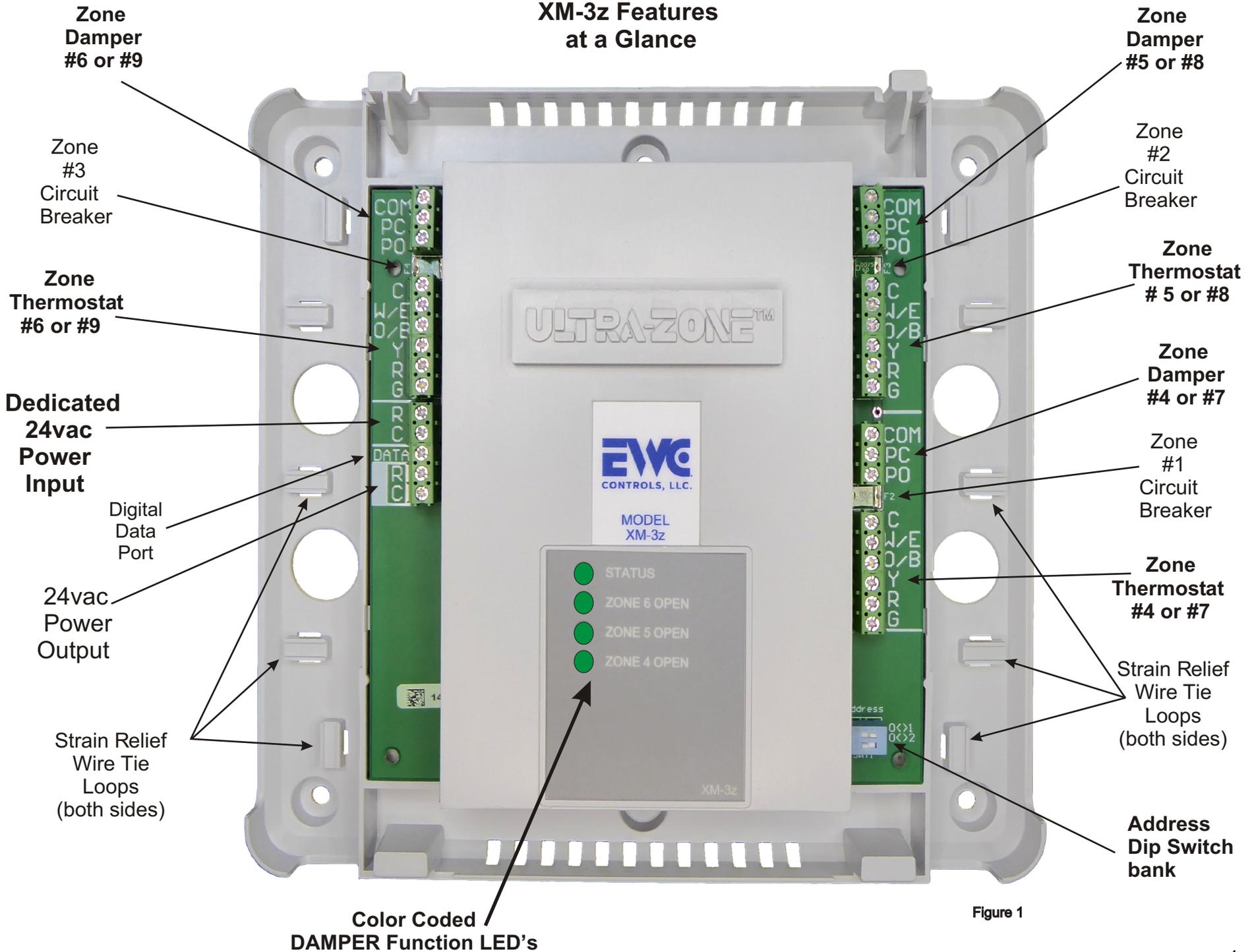


Figure 1

The Ultra-Zone BMPlus-3z, BMPlus-6z and BMPlus- 9z Zone Controllers from EWC Controls include a logical “Percentage of Demand” (Zone Weighting) system.

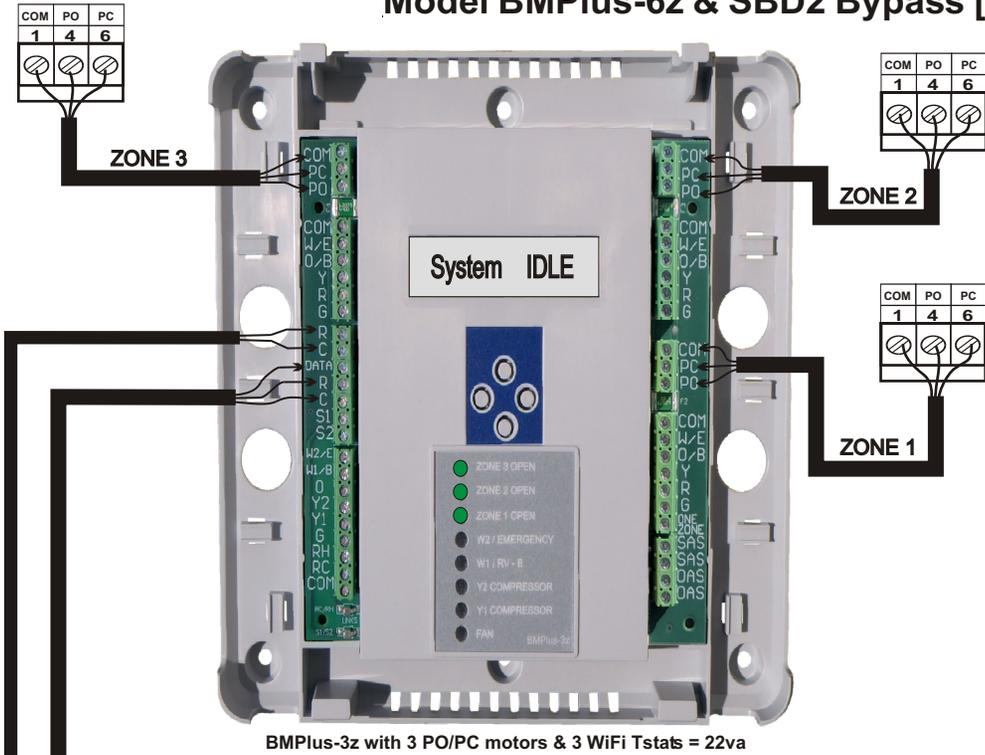
Each zone’s weight value (expressed in percentage) should be based on the physical size (sq ft) of each zone, the heat loss and heat gain of each zone. Other factors may be considered such as how frequently a zone is occupied.

EWC has assigned “default” values to each air zone for you! If you change some or all of the weight values, write them down in the “field settings” column below for future reference.

3 ZONE SYSTEM	DEFAULT	FIELD SETTING	RANGE TO SELECT
Z1 H Weight	50%		0% - 100% (1% increments)
Z1 C Weight	50%		0% - 100% (1% increments)
Z2 H Weight	30%		0% - 100% (1% increments)
Z2 C Weight	30%		0% - 100% (1% increments)
Z3 H Weight	20%		0% - 100% (1% increments)
Z3 C Weight	20%		0% - 100% (1% increments)
6 ZONE SYSTEM			RANGE TO SELECT
Z1 H Weight	25%		0% - 100% (1% increments)
Z1 C Weight	25%		0% - 100% (1% increments)
Z2 H Weight	15%		0% - 100% (1% increments)
Z2 C Weight	15%		0% - 100% (1% increments)
Z3 H Weight	15%		0% - 100% (1% increments)
Z3 C Weight	15%		0% - 100% (1% increments)
Z4 H Weight	15%		0% - 100% (1% increments)
Z4 C Weight	15%		0% - 100% (1% increments)
Z5 H Weight	15%		0% - 100% (1% increments)
Z5 C Weight	15%		0% - 100% (1% increments)
Z6 H Weight	15%		0% - 100% (1% increments)
Z6 C Weight	15%		0% - 100% (1% increments)
9 ZONE SYSTEM			RANGE TO SELECT
Z1 H Weight	20%		0% - 100% (1% increments)
Z1 C Weight	20%		0% - 100% (1% increments)
Z2 H Weight	10%		0% - 100% (1% increments)
Z2 C Weight	10%		0% - 100% (1% increments)
Z3 H Weight	10%		0% - 100% (1% increments)
Z3 C Weight	10%		0% - 100% (1% increments)
Z4 H Weight	10%		0% - 100% (1% increments)
Z4 C Weight	10%		0% - 100% (1% increments)
Z5 H Weight	10%		0% - 100% (1% increments)
Z5 C Weight	10%		0% - 100% (1% increments)
Z6 H Weight	10%		0% - 100% (1% increments)
Z6 C Weight	10%		0% - 100% (1% increments)
Z7 H Weight	10%		0% - 100% (1% increments)
Z7 C Weight	10%		0% - 100% (1% increments)
Z8 H Weight	10%		0% - 100% (1% increments)
Z8 C Weight	10%		0% - 100% (1% increments)
Z9 H Weight	10%		0% - 100% (1% increments)
Z9 C Weight	10%		0% - 100% (1% increments)

- 1 - You may assign weight amongst the various zones however you like.
- 2 - Avoid weight values like 1%, 9%, 13%, 17%, etc, that are difficult to add up in your head.
- 3 - Use weight values that are easy to add up in your head. ie 5%, 10%, 15%, 20%, 25%, 30%, etc.
- 4 - The sum of all zone weight values does not have to equal 100%, but you cannot exceed 100%.
- 5 - If you enable FA function on a 6 or 9 zone system, you may re-assign Zone 3’s weight to any other zone(s) you like.

Model BMPlus-6z & SBD2 Bypass [Power & Zone Damper Wiring]



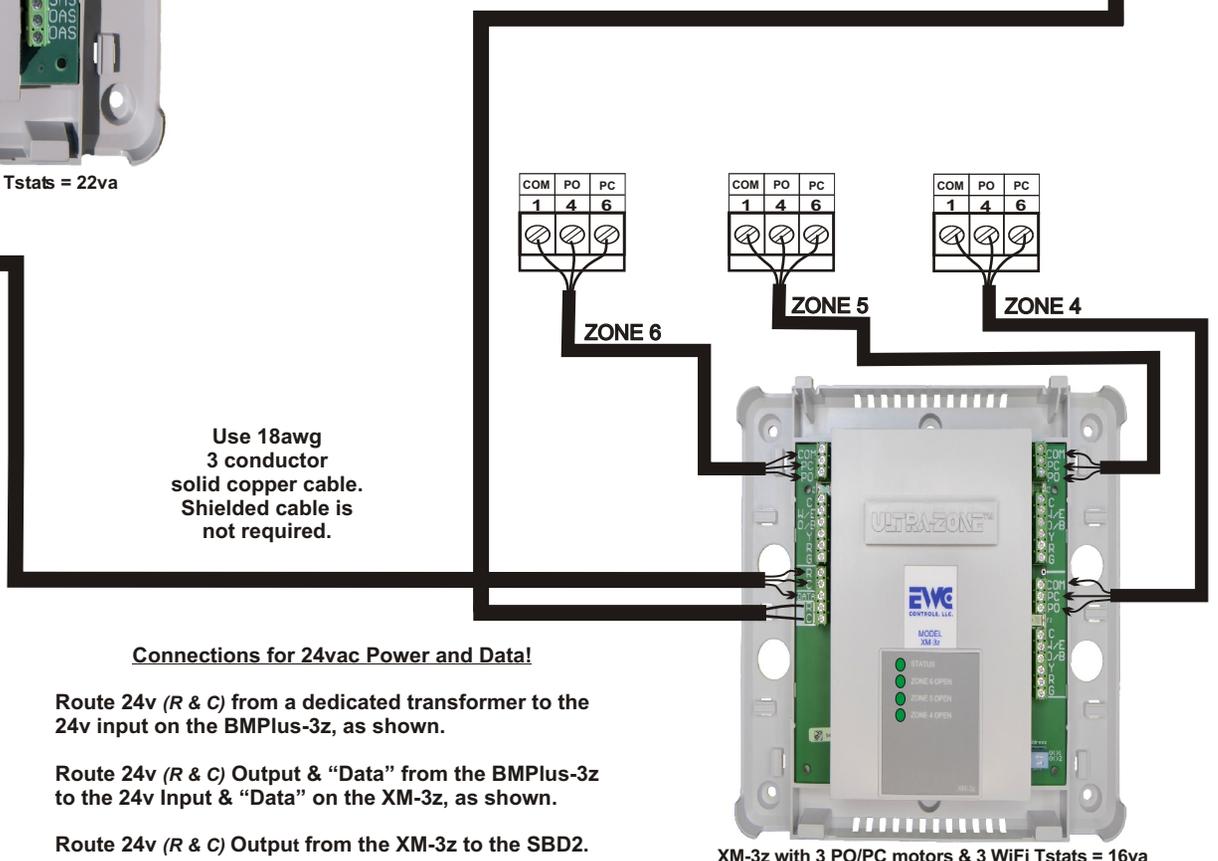
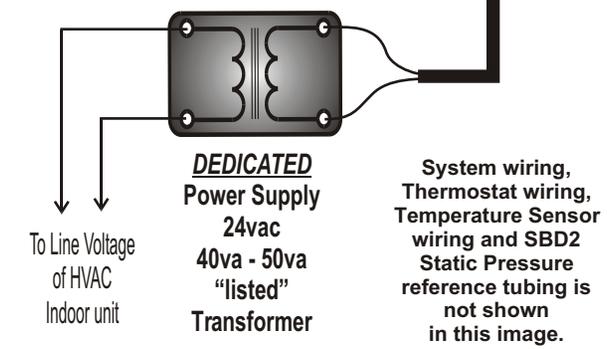
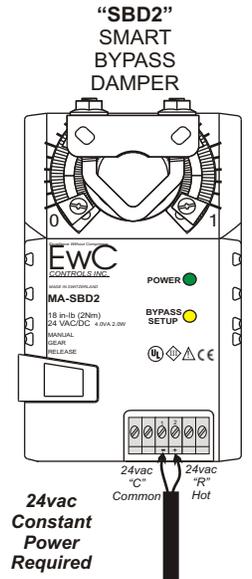
Model BMPlus-3z with one XM-3z Expansion Module, creates a new model BMPlus-6z system!

Note that a model SBD2 Smart Bypass is also included. When it becomes necessary, the SBD2 will modulate to control the static pressure of the HVAC system and manage excess airflow.

The calculated loads in this scenario (BMPlus-3z, XM-3z, 6 Thermostats, 6 PO/PC dampers and the SBD2) equals 44va.

Although a dedicated 40va transformer almost covers this load, you should increase to a dedicated 50va transformer to insure sufficient power is available!

If this BMPlus-6z only had 4 or 5 zones, then a 40va transformer will suffice.

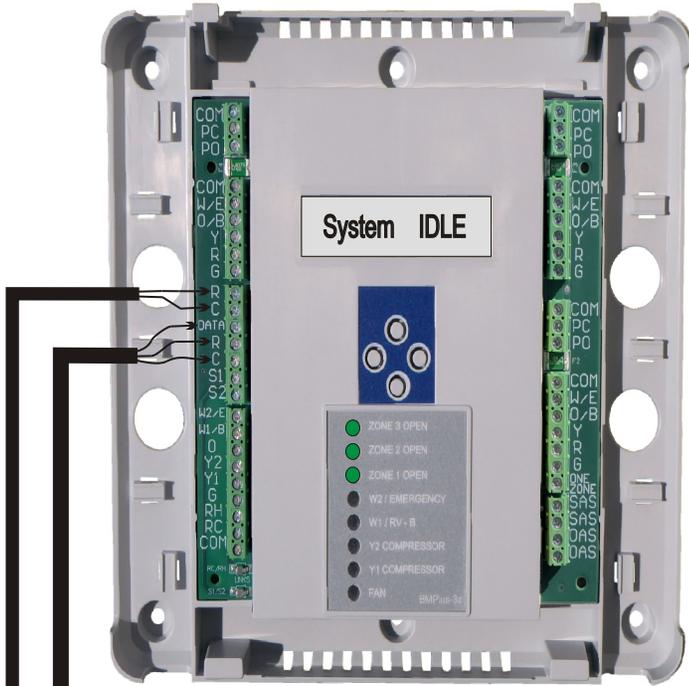


Use 18awg 3 conductor solid copper cable. Shielded cable is not required.

Connections for 24vac Power and Data!

- Route 24v (R & C) from a dedicated transformer to the 24v input on the BMPlus-3z, as shown.
- Route 24v (R & C) Output & "Data" from the BMPlus-3z to the 24v Input & "Data" on the XM-3z, as shown.
- Route 24v (R & C) Output from the XM-3z to the SBD2.

Model BMPlus-6z and DAPC [Power, Data & Zone Damper Wiring]



BMPlus-3z with 3 WiFi Tstats = 16va power

Model BMPlus-3z with one XM-3z Expansion Module, creates a new model BMPlus-6z (six zone) system!

Note that a model DAPC is included and will control Zone 1, 2 & 3 damper motors via the Data port on the BMPlus-3z.

IMPORTANT: Always connect the largest (high CFM) zones to the BMPlus-3z / DAPC. Connect the smallest (low CFM) zones to the XM-3z Expansion module(s).

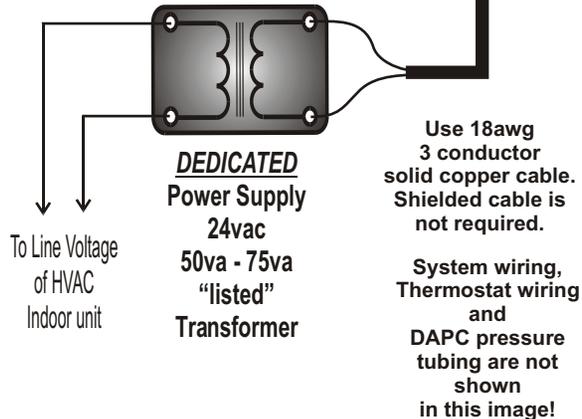
The DAPC will always look for and modulate Zone Dampers 1, 2 & 3, coming from the main BMPlus-3z, to control the static pressure of the HVAC system & manage the airflow.

Modulating the 3 highest CFM zones (on a 5 or 6 zone system) should provide excellent airflow management and static pressure control, without using a bypass.

You can modulate any 3 zone dampers you like, regardless of which device they are connected to (BMPlus-3z or XM-3z), if you wire the DAPC in legacy mode rather than digital mode as shown here. See the DAPC Tech Bulletin 090375A0270-D.

The calculated loads in this scenario are (BMPlus-3z, XM-3z, DAPC, 6 - Thermostats and 6 - PO/PC dampers) equals 46va.

Although a dedicated 50va transformer is sufficient to power this control system, you should consider increasing to a dedicated 75va transformer to insure sufficient power is available!

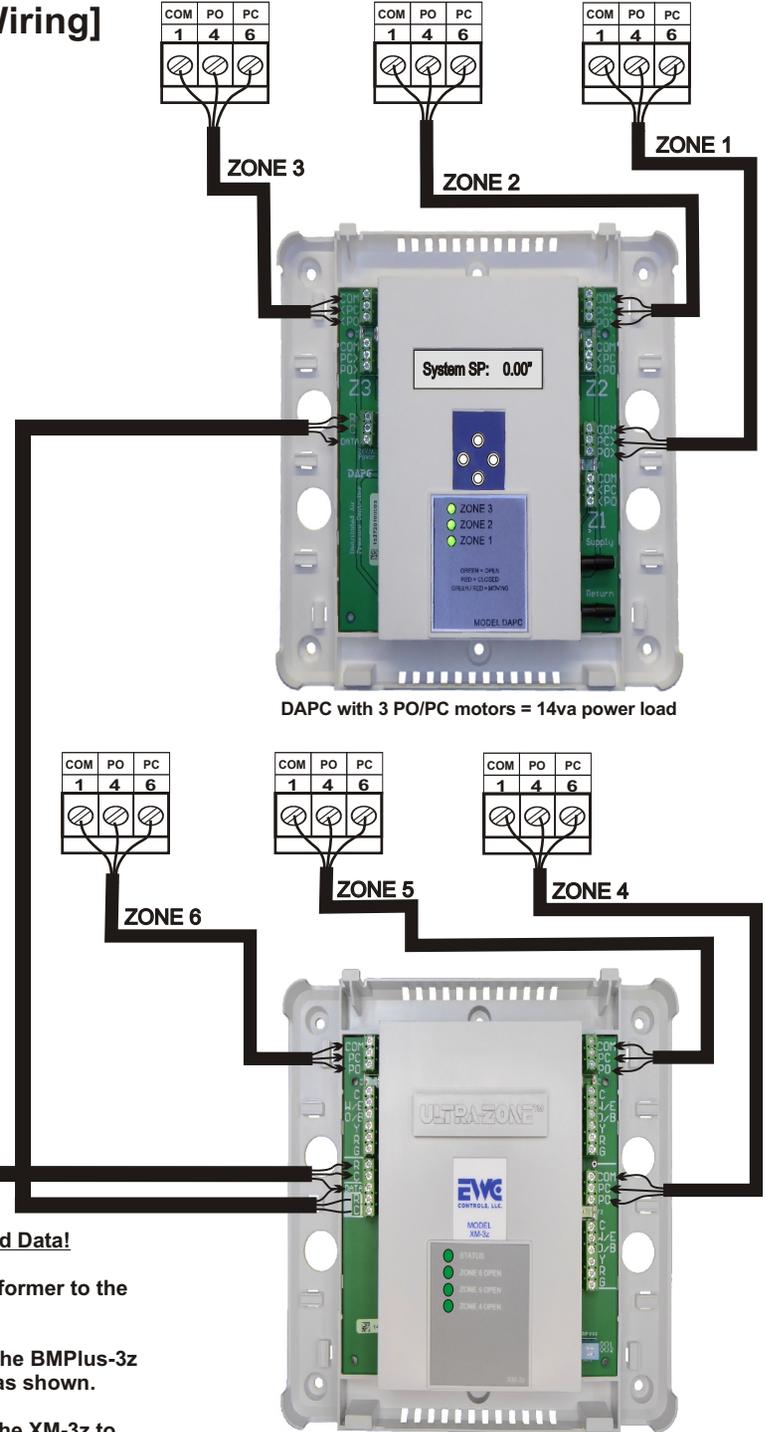


Connections for 24vac Power and Data!

Route 24v (R & C) from a dedicated transformer to the 24v input on the BMPlus-3z, as shown.

Route 24v (R & C) Output & "Data" from the BMPlus-3z to the 24v Input & "Data" on the XM-3z, as shown.

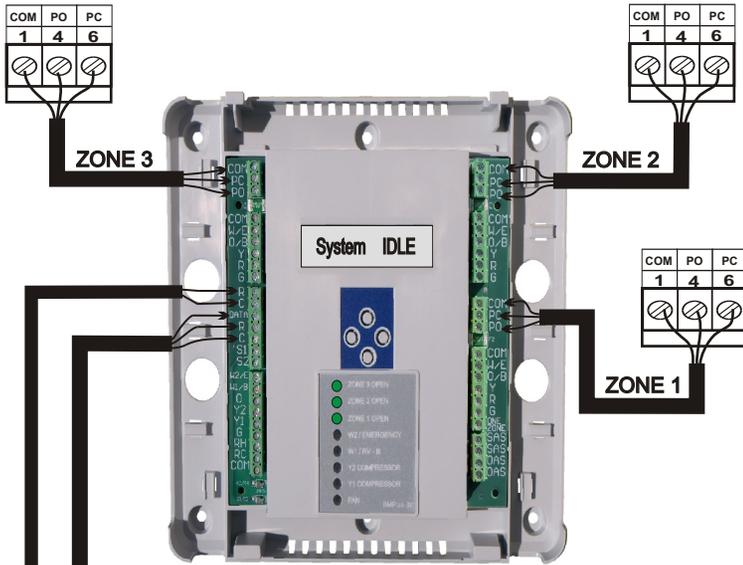
Route 24v (R & C) Output & "Data" from the XM-3z to the 24v Input & "Data" on the DAPC, as shown.



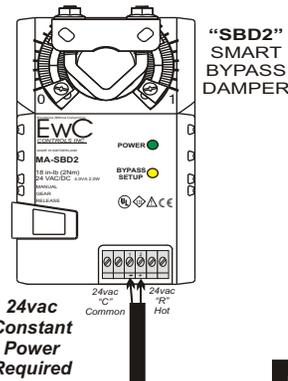
DAPC with 3 PO/PC motors = 14va power load

XM-3z with 3 PO/PC motors & 3 WiFi Tstats = 16va

Model BMPlus-9z and two XM-3z's [Power, Data & Zone Damper Wiring]

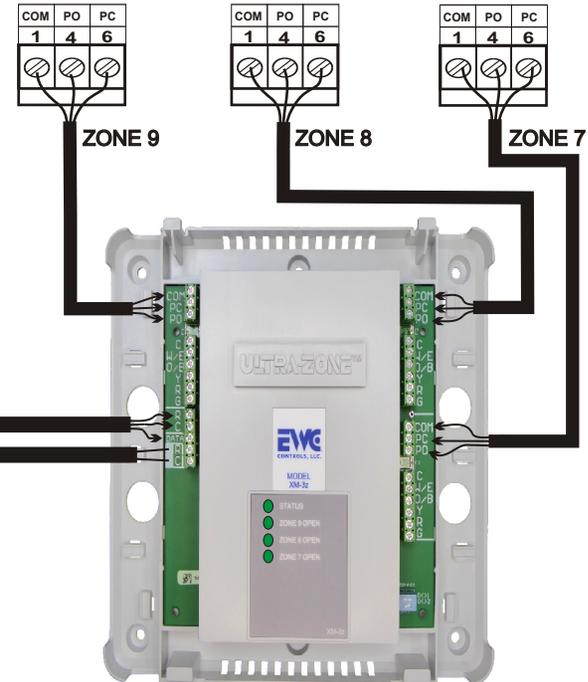


BMPlus-3z with 3 PO/PC motors & 3 WiFi Tstats = 22va

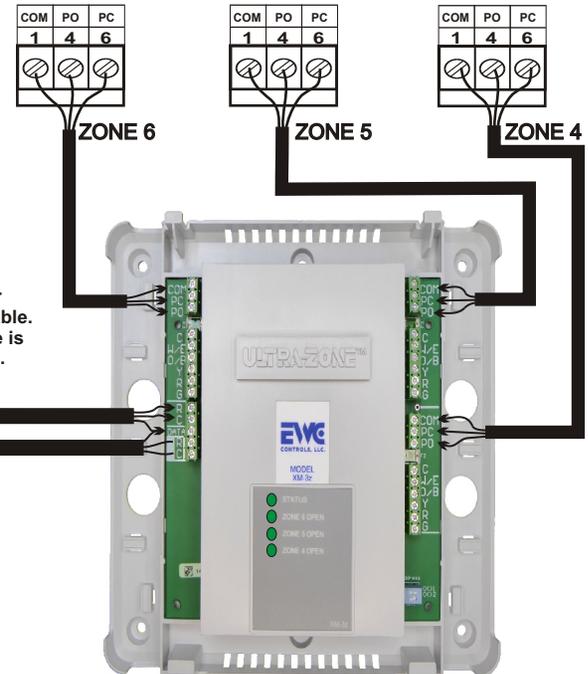


24vac
Constant
Power
Required

"SBD2"
SMART
BYPASS
DAMPER



2nd XM-3z with 3 PO/PC motors & 3 WiFi Tstats = 16va



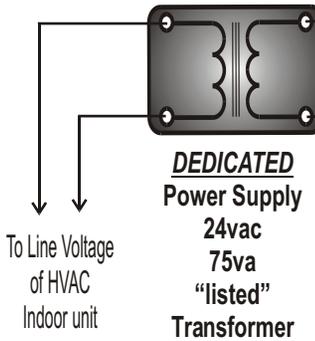
1st XM-3z with 3 PO/PC motors & 3 WiFi Tstats = 16va

Model BMPlus-3z with two XM-3z Expansion Modules, creates a new model BMPlus-9z system!

Note that a model SBD2 Smart Bypass is also included. When it becomes necessary, the SBD2 will modulate to control the static pressure of the HVAC system and manage excess airflow.

The calculated loads in this scenario (1 - BMPlus-3z, 2 - XM-3z, 9 - Thermostats, 9 - PO/PC dampers and 1 SBD2 Bypass damper) equals 58va.

A dedicated 75va transformer is required to handle this electrical load.



To Line Voltage of HVAC Indoor unit

System wiring, Thermostat wiring, Temperature Sensor wiring and SBD2 Static Pressure reference tubing is not shown in this image.

Connections for 24vac Power and Data!

- Route 24v (R & C) from a dedicated transformer to the 24v input on the BMPlus-3z, as shown.
- Route 24v (R & C) Output & "Data" from the BMPlus-3z to the 24v Input & "Data" on the 1st XM-3z, as shown.
- Route 24v (R & C) Output & "Data" from the 1st XM-3z to the 24v Input & "Data" on the 2nd XM-3z, as shown.
- Route 24v (R & C) Output from the 2nd XM-3z to the SBD2.

Use 18awg 3 conductor solid copper cable. Shielded cable is not required.

T R O U B L E S H O O T I N G

SYMPTOM	SOLUTIONS / CORRECTIVE ACTION
No LED's are illuminated at all. Status LED will not blink.	Check for power at the "24vac Power Input" terminal block. Check transformer line voltage. Check system line voltage. XM-3z & BMP-3z <i>must be powered by a dedicated 24vac transformer (40va - 75va)</i> . DO NOT rob 24vac power from the HVAC system.
Status LED is blinking and some expansion Zone LED's are illuminated, but others are not. XM-3z demands for Heat, Cool or Fan are not honored and the BMPlus-3z LCD screen displays " Comm Failure " for Zones, 4, 5 & 6 and/or Zones 7, 8 & 9.	Check the Dip Switch settings on one or both XM-3z Expansion Modules. If the DS settings are incorrect, the BMP-3z cannot detect Zones 4, 5 and 6 or Zones 7, 8 and 9. Refer to page 2 for the correct Dip Switch settings. Power down, move the switches and power back up again. Expanding a BMPlus-3z in the field requires defaulting to factory settings upon power-up. See page 2 on how to default. Check the Data and 24v wiring from the BMP-3z to each XM-3z for proper polarity and shorts to 24v "R" or "C". Expansion modules MUST be powered from the BMP-3z & polarity MUST be maintained from the BMP-3z to each Expansion module. See " Isolating 24vac Shorts " below for advice on troubleshooting the Data wire.
No airflow in a single zone or airflow going to the wrong zone.	Zone Damper wiring is incorrect. Check Com, PO, PC polarity from damper terminal block to damper motor. Zone 2 damper connected to Zone 1 terminal block, etc. Trace cabling from each damper terminal to the correct damper motor.
LED's function, but one or more zone thermostat/damper combos will not power up. Other zones work OK.	Check 24vac power (R&C) at the specific thermostat terminal block. If zero, the 750mA breaker protecting that zone has tripped. Check thermostat sub-base and damper wiring for proper wiring/connections. Use an Ohm meter and test thermostat wires and damper wiring for shorts to 24v common & shorts to earth ground. The 750mA breaker will auto-reset when the shorted wiring is repaired!
HVAC system not responding but BMPlus 3z, 6z, 9z is working.	If 24vac short has occurred in the HVAC "system" wiring, the Indoor unit's 24vac low voltage fuse may be blown. Check equipment low voltage. Find & Repair the short.
ISOLATING 24vac SHORTS <i>750mA circuit breakers protect each zone and react to a short in the Thermostat or Damper Motor Field wiring.</i>	Disconnect wire(s) from the "R & C" terminals on the BMP-3z (XM-3z) thermostat terminal blocks and the "C/PC/PO" terminals on the damper motor terminal blocks. If the short is no longer present the 750mA breaker will restore power automatically after a few minutes. Test the thermostat & damper field wiring for shorts to 24v common and to earth ground. Repair/replace wires as necessary.
If the Data Wire is shorted to 24v "R" or 24v "C", the XM-3z cannot communicate with the BMPlus-3z.	If the Data wire is shorted to 24v "R", your volt meter will measure 24vac between the Data terminal and the 24v "C" terminal...If the Data wire is shorted to 24v "C", your volt meter will measure 0vac between the Data terminal and the 24v "C" terminal. Find & Repair the short! If the Data wire is not shorted, your volt meter will measure 1.5vac between the Data terminal and the 24v "C" terminal.

XM-3z LCD & LED DESCRIPTION, COLOR AND FUNCTION

ZONE 4, 5 or 6 - Steady GREEN = Open Zone *or* OFF (*Not Green*) = Closed Zone. **Note:** All zones may be Open or Closed when idle.

ZONE 7, 8 or 9 - Steady GREEN = Open Zone *or* OFF (*Not Green*) = Closed Zone. **Note:** All zones may be Open or Closed when idle.

Status LED - Blinking green = Expansion Module has power and processor is functioning.

Refer to the BMP-3z Technical Bulletin #090375A0279 for additional troubleshooting tips on the entire zoned HVAC system!

TECHNICAL SUPPORT

EWC® Controls provides superior Troubleshooting Support for this product when you are on the job site!

When calling for Technical Support from the job-site, please have a good quality multi-meter, pocket screwdriver, and wire cutters/strippers on hand. Call 1-800-446-3110 Monday - Friday 8am to 5pm EST.

Register your BMP-6z or BMP-9z 5 year warranty at <https://ewcccontrols.com/warranty/>