MicroMetl

Since 1965

Power Exhaust
PC-MRT-M-D
Install Guide

MicroMetl

Since 1965

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INSTALLATION INSTRUCTIONS
Power Exhaust Option
Centrifugal Blower

GENERAL

IMPORTANT: *Read these instructions completely before attempting to install this economizer accessory.*

These instructions are intended as a general guide and do not supersede Building and/or Electrical codes in any way.

All phases of the installation must comply with all NATIONAL, STATE and LOCAL CODES.

IMPORTANT: *This document is the property of the end user and is to remain with the equipment.*

Installation and servicing of air conditioning equipment can be hazardous due to high pressures of hazardous gases, moving parts, and electrical components. Only trained and qualified service personnel should install, service, or repair air conditioning equipment

Untrained personnel can perform basic maintenance functions of cleaning coils, and cleaning and replacing filters, but all other operations should be performed by trained service personnel.

When working on air conditioning equipment, observe precautions in literature, tags, and labels attached to the unit, and other safety precautions that may apply.

The optional Power Exhaust systems, available for Economizer applications, include Constant Volume Propeller Fan, Constant Volume Centrifugal Blower, and Variable (Modulating) Centrifugal Blower for building pressure control. In some cases, this assembly will replace the OA Hood and Relief Hood of the Economizer. In others only the Relief Hood is replaced.

The following instructions are for the installation of the RTU mounted exhaust for Downflow (Vertical) applications, and Duct Mounted (Horizontal) applications. Any wiring information provided in these instructions is provided for wire routing and generic connections, only. See Supplemental Instructions and/or provided wiring diagram for all electrical connections and/or Set Up procedures.

Optional motorized relief is also available for positive closure. See Motorized Relief Supplemental Instructions for more details.

Note: *A dedicated power source and disconnect may be required when installing a power exhaust.*

Note: *External Static will be specific to each job and will include everything external of the Power Exhaust cabinet, including the RTU and Return Air opening.*

SAFETY CONSIDERATIONS

⚠ WARNING

Turn off main power to the roof top unit (RTU) or air handling unit (AHU). Lockout and tag disconnect switch before starting installation, performing service, or maintenance operations.

Electrical shock and/or moving parts could cause personal injury, or death.

CAUTION

HEAVY OBJECT

To prevent personal injury use lifting aides and proper lifting techniques when installing, removing or replacing.

CAUTION

When working on air conditioning equipment, observe precautions in literature, tags and labels attached to the unit and other safety precautions that may apply.

Installation and servicing of air conditioning equipment can be hazardous due to high pressures of hazardous gases, moving parts, electrical components, and sharp sheet metal parts. Wear safety glasses and gloves.

Only trained and qualified service personnel should install, service, or repair air conditioning equipment. Untrained personnel can perform basic maintenance functions of cleaning coils, and cleaning and replacing filters, but all other operations should be performed by trained service personnel.

PRE-INSTALLATION

1. **Inspect Shipment for Damage** - File claim with shipping company if accessory is damaged or incomplete. Contact your supplier for any missing parts.

Important: *To eliminate any delays in shipping and to insure part(s) replacement accuracy, provide the Economizer/Power Exhaust Model Number and Production Number.*

2. **Check Unit Clearance** - In addition to the clearances required for the RTU, provide sufficient space for airflow clearance, wiring, and servicing this accessory after it is mounted on unit - See Submittal Data for unit dimensions and weight.

Exhaust/Outside Air Hood	24”
Access Door(s)	36”
Top	36”

INSTALLATION

Please read these instructions thoroughly before beginning the installation.

Constant Volume and Modulating Downflow Installations:

1. Follow the instructions provided with the economizer to complete the economizer installation.

2. Set Power Exhaust Assembly in front of HVAC unit and check to be sure all clearances are met - See Pre-Installation Step 2.

3. If provided attach Molex 4-pin plug (Orange / Yellow wires) to Receptacle in Economizer Panel for Start/Stop Control. If not, route the Start/Stop (Orange/Yellow) control wires to the Economizer Control Exhaust Fan terminals, Actuator Auxiliary Switch wires, or Building Management System for unit Start/Stop function. See Supplemental Instructions and/or provided wiring diagram for wiring details.

4. **Skip this step if not installing Modulating Power Exhaust.** If tubing was pre-installed prior to RTU installation, route MicroMetl factory supplied pressure tubing to the location the pre-installed tubing was terminated (cut to length if necessary). Connect factory tubing to the field installed tubing (may require a field supplied coupler)

Note: *If tubing not pre-installed, approximately 25 ft. of tubing is supplied with Power Exhaust that can be fed down the return air duct, or with stat wire, to building envelope.*

Important! *Do Not terminate tubing in ductwork! The negative pressure of the return air is not representative of building pressure - See Figure 1.*

5. Install room pressure sensing port (factory supplied) in ceiling or wall. Avoid close proximity to supply registers. A Coaxial cover plate (field supplied) may be used for a clean finish - See Fig. 1

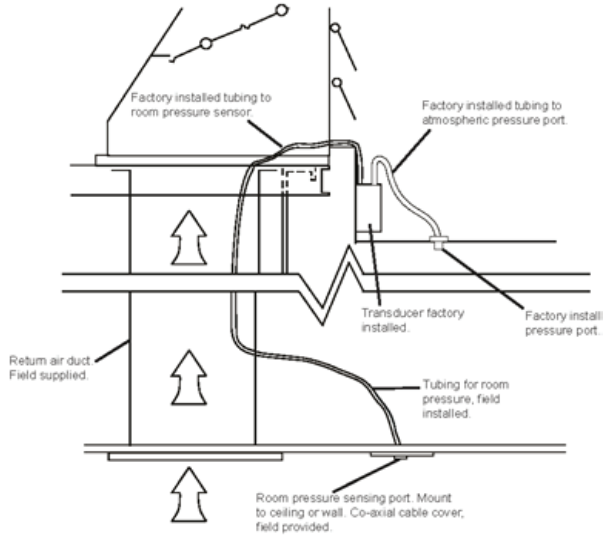

Fig. 1 - Typical Pressure Tubing Installation

6. Tip power exhaust back and elevate onto RTU base rail.

7. Being careful not to pinch control wires and/or tubing at bottom of unit, tilt power exhaust up to mate with RTU. Properly installed the top and both sides will be flush with RTU. Attach with provided screws. Use provided Blank-off panel where applicable.

8. Some models require a field installed Hood over the Relief Dampers. If a pre-installed Hood was removed for access to screws, re- install at this time.

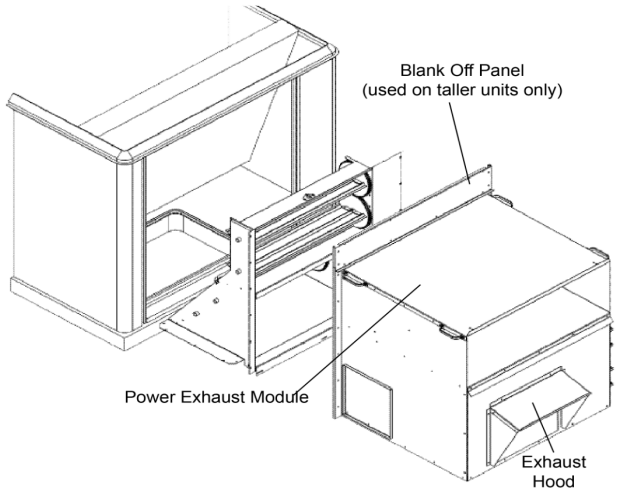

Fig. 2 - Typical Small to Midsize Downflow Power Exhaust with Built-in OA Hood (Not unit specific)

9. Install all Filler Panel(s) where necessary.

10. Caulk all seams to ensure weather tight seal

11. Connect Power Exhaust to an electrical source in accordance with voltage specified on the MicroMetl Name Plate affixed to the Power Exhaust Assembly. Please adhere to all applicable National, State, and Local Codes.

Note: *A knockout and junction box is provided for external routing of High Voltage Power. High Voltage (SEOOW) Cable for internal routing of High Voltage Power is not provided. All High Voltage wiring and connections to be provided by others.*

12. Open the Blower Door for inspection of the following:

- Wires free from moving parts
- Tubing free from kinks and moving parts
- Belt(s) for tension and alignment
- Sheaves and Pulley’s properly tightened (Set Screws Tight).

13. Open the Control Door and inspect all electrical connections.

14. See Wiring Diagram for wiring information.

15. For Modulating units (VFD controlled) units, see Supplement Control Document for setup and wiring options

Constant Volume and Modulating Horizontal Installations:

1. Follow the instructions provided with the economizer to complete the economizer installation.

2. Set Power Exhaust assembly in front of intended mounting location of the Horizontal Duct and check to be sure all clearances are met - See Table 1 on pg. 2.

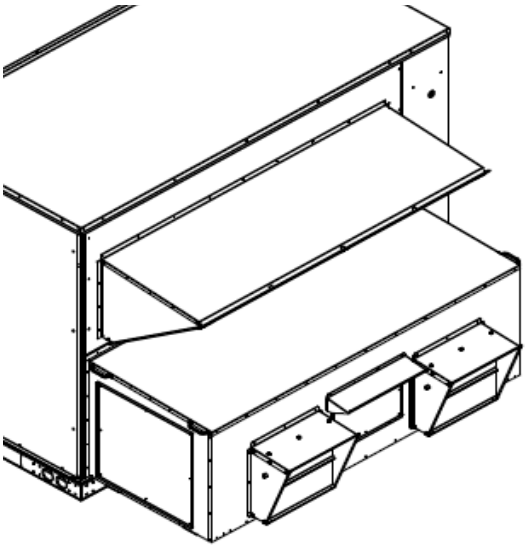

Fig. 3 - Typical Large Downflow Installation

3. Measure and cut opening in Horizontal Duct to match Power Exhaust opening.

4. Mount the Power Exhaust assembly to the duct with the provided screws and caulk all seams to ensure weather tight seal. Field fabricated support legs, or other support mechanism may be required. See Fig. 4.

Note: *Some units come with Duct Plenums - See Fig. 5 - as part of the assembly. In this case, attach the Plenum to the RTU then connect the ductwork. Set the Power Exhaust in front of the opening and route any tubing and wiring through the RA opening. Then lift and attach the Power Exhaust.*

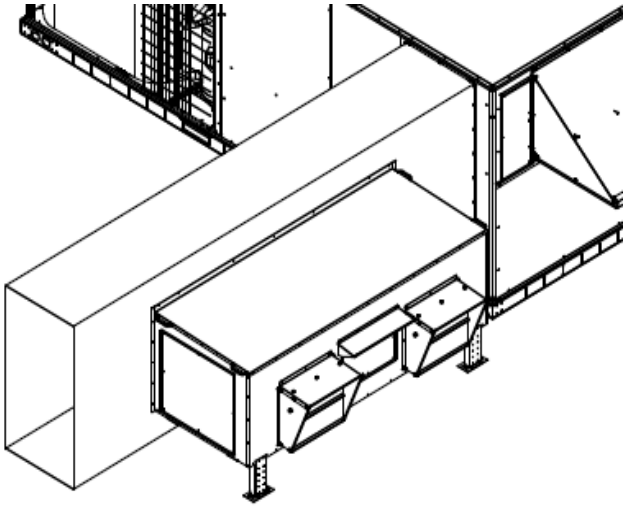

Fig. 4 - Typical Large Horizontal Power Exhaust Installation

5. Open the Blower Door to access the Start/Stop control wiring and pressure tubing (Modulating version only). Route the Start/Stop (Orange/Yellow) control wires to the Economizer Control Exhaust Fan terminals, Actuator Auxiliary Switch wires, or Building Management System for unit Start/Stop function. See Supplemental Instructions and/or provided wiring diagram for wiring details.

6. **Skip this step if not installing Modulating Power Exhaust.** If tubing was pre-installed prior to RTU installation, route MicroMetl factory supplied pressure tubing to the location the pre-installed tubing was terminated (cut to length if necessary). Connect factory tubing to the field installed tubing (may require a field supplied coupler)

Note: *If tubing not pre-installed, approximately 25 ft. of tubing is supplied with the Power Exhaust that can be routed to the building envelope.*

Important! *Do Not terminate tubing in ductwork! The negative pressure of the return air is not representative of building pressure - See Figure 1.*

7. Install room pressure sensing port (factory supplied) in ceiling or wall. Avoid close proximity to supply registers. A Coaxial cover plate (field supplied) may be used for a clean finish - See Fig. 1

8. Connect the Power Exhaust to an electrical source in accordance with voltage specified on the MicroMetl Name Plate affixed to the power exhaust assembly. Please adhere to all applicable National, State, and Local Codes.

Note: *A knockout and junction box is provided for external routing of High Voltage Power. High Voltage (SEOOW) Cable for internal routing of High Voltage Power is not provided. All High Voltage wiring and connections to be provided by others.*

9. Open blower door for inspection of the following:

- Wires free from moving parts
- Tubing free from kinks and moving parts
- Belt(s) for tension and alignment
- Sheaves and Pulley's properly tightened (Set Screws Tight).

10. Open control door and inspect all electrical connections.

11. See Wiring Diagram for wiring information.

12. For Modulating units (VFD controlled) see Supplement Control Document for setup and wiring options.

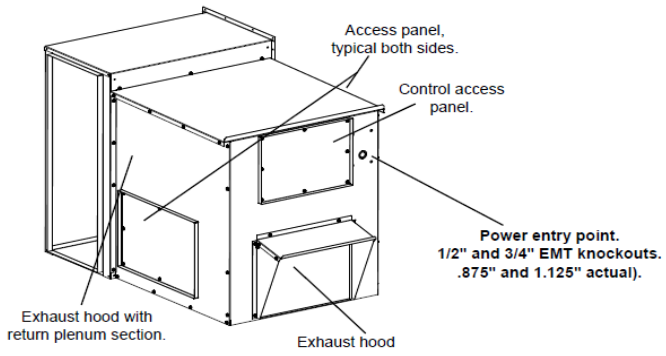

Fig. 5 - Horizontal Duct Mount with Plenum

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Indianapolis, IN 46226
1.800.MMC.HVAC (EST)
indycustomerservice@micrometl.com

MicroMetl Longview
201 Kodak Blvd.
Longview, TX 75602
1.903.248.4800 (CST)
longviewcustomerservice@micrometl.com

MicroMetl Sparks
905 Southern Way
Sparks, NV 89431
1.800.884.4662 (PST)
sparkscustomerservice@micrometl.com

Form No.IN-PEC-GP-A

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The MicroMetl optional Power Exhaust systems available for Economizer applications include Constant Volume Propeller Fan, Constant Volume Centrifugal Blower, and Variable (Modulating) Centrifugal Blower for building pressure control. The following pages will address the Modulating version.

When ordered with modulaing controls, the MicroMetl Power Exhaust comes standard with VFD for motor modulation, a Pressure Transducer to monitor building pressure, and fuses. About 25' of vinyl tubing and a pressure terminal is also provided to be routed into the building. The VFD is programmed for stand alone function and does not require any setup. However, occasionally the building pressure setpoint may need to be addressed.

The system may also be ordered without the Transducer for Third Party Control. If oredered for Third Party Control, a standard program will be uploaded; however, the program can be field modified as needed.

Optional Motorized Relief is available for positive closure. See supplemental instructions for the Motorized Relief for more details.

SAFETY CONSIDERATIONS

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Setting the PI Setpoint

The controller is programmed to maintain building pressure of .03" w.c. If necessary, however, that PI Control Setpoint can be field changed. The following steps explain the procedure:

After power is applied the controller will flash PIC then show three dashes (- - -). This indicates the controller is ready for operation. To insure blower does not run during set up disconnect the Start/Stop Control – either wire connected to terminal 1 or 14.

1. Expose the setpoint by pressing the UP or DOWN Arrow key, once

2. Lower the settings by pressing the DOWN Arrow key

3. Raise the setting by pressing the UP Arrow key

4. Press the Mode key, or wait a few seconds. The screen will revert back to three dashes. The change made will remain in memory.

See Fig. 3 on page 3 for location of programming buttons.

Note: *Most jobs can be satisfied with a .03" (30.0 PI Units) to .05" (50.0 PI Units) setting – See Table 1*

Transducer Output		*Space Pressure*	*PI Units*
Vdc	*or mA*	*" w.c.*	*(Sreen Display)*
0	*4.00*	*0.00*	*00.0*
1	*5.60*	*0.01*	*10.0*
2	*7.20*	*0.02*	*20.0*
3	*8.80*	*0.03*	*30.0*
4	*10.40*	*0.04*	*40.0*
5	*12.00*	*0.05*	*50.0*
6	*13.60*	*0.06*	*60.0*
7	*15.20*	*0.07*	*70.0*
8	*16.80*	*0.08*	*80.0*
9	*18.40*	*0.09*	*90.0*
10	*20.00*	*0.10*	*100.0*

Table 1 – Pressure Chart – Screen displays in PI Units

Parameter Setpoints

MicroMetl pre-programs all VFDs to the values listed in Table 2. These values will always be present and can be re-established at any time; as can the AC TECH Default values. This can be accomplished by exercising the reset option in parameter 48 (see notes at bottom of Table 2).

Any parameter(s) changed in the field will not be retained in long term memory. If the VFD is Reset to either the AC TECH or MicroMetl Default Values all parameters set in the field will be lost.

Table 3, 4 and 5 provide some of the most common field change requests. Call MicroMetl for other options.

To access all Parameters take the following steps:

1. Press the MODE button once.

2. Press the UP Arrow to 14.

3. Press the MODE button again; P01 will appear.

   a. Use the MODE button to enter and set values.
   b. Use the UP/DOWN arrows to scroll thru the parameters and to change values.
   c. After a value is changed press the MODE button once to exit, press MODE button twice to return the last parameter.

To access all the View Only parameters take the following steps:

1. Press the MODE button twice – P50 will appear.

2. Press the UP/DOWN arrows to scroll thru parameters.

   a. See Table 2 Parameters P50-P60 and P69-P71.

3. To exit the View Only parameters press MODE once.

See LENZE/AC TECH I&O Manual for more information and detailed troubleshooting.

Pressure Transducer

The MAMAC transducer is set at the factory to sense building pressure between 0.0" to 0.1" w.c, to operate in concert with the AC Tech with a 0-10Vdc output for Uni-directional control. See Fig. 1 for Dip Switch settings. See Table 1 for scaling values.

For more information see MAMAC Technical Information (TI.274/275).

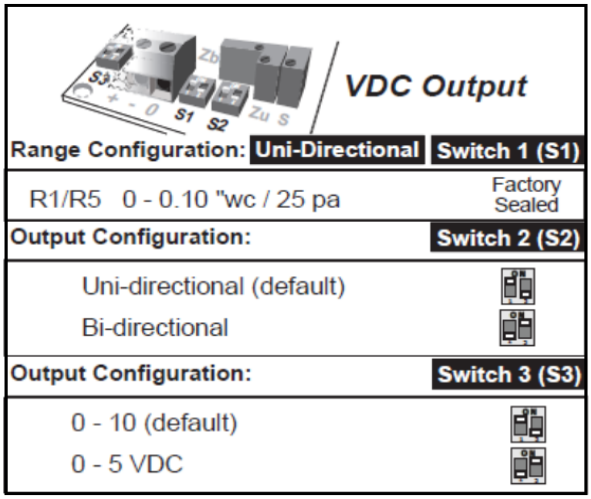

Fig. 1 - Dip Switch Settings

For 4-20mA control, an Ashcrift transducer is used. The pressure range of operation is also 0.0" to 0.1" w.c., but of course, the output is 4-20mA. Unlike the MAMAC transducer, however, these are fixed values and cannot be changed. For more information see Ashcroft Installation & Operation Manual 011-10130 AMR 1M.

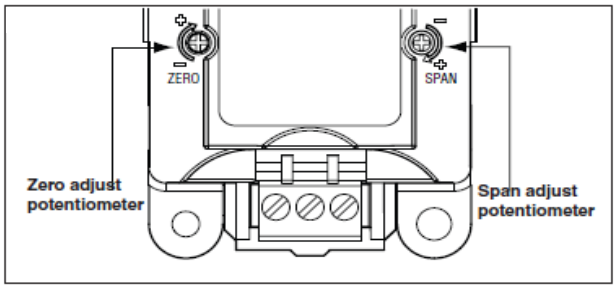

Fig. 2 - Ashcroft Pressure Transducer

While field calabration is acceptable on both the MAMAC and Ashcroft transducers, it is not recommended unless the instruments used for testing have been labratory calabrated within the last 12 months.

If field calabration is required the following steps should be followed:

MAMAC:

1. Connect terminals [+] and [-] to the appropriate power source. The [-] terminal is also the negative output terminal.

2. Connect a Digital Volt Meter on DC volts across [O] and [-] terminal.

3.Disconnect both the High and Low pressure ports. If configured for uni-direction, adjust Zu trimmer to achieve the desired low output value. If configured for bi-direction, adjust Zb trimmer to achieve desired low output.

4. Apply high pressure (0.10 w.c.) to the unit and adjust span trimmer [S] to obtain the desired voltage output.

5. Repeat steps 3 and 4 until desired calibration is achieved.

Ashcroft:

1. To find true zero differential pressure, pneumatically connect the high and low pressure connections together using a short piece of vinyl tubing.

2. Adjust the Zero potentiometer to the desired low output value.

3. Remove the jumper tubing and connect the high and low pressure tubes.

4. Apply high pressure(0.10” w.c.) to the unit and adjust the Span potentiometer to the desired voltage output.

SEQUENCE OF OPERATION

The MicroMetl version of the AC Tech Variable Frequency Drive (VFD) is enabled when circuit TB1 and TB14 is closed. This can be done by installing a jumper between the two, or via a remote contact. This contact can be the Exhaust Option on the Economizer Logic marked EF and EF1 on the electromechanical version (W7212), the EXF 2-pin connector on the ReliaTel version (RTEM) – see Economizer instructions for Sequence of Operation, the auxiliary switch option on the Actuator Motor, or a relay. See page 4 for examples.

A Pressure Transducer is utilized to monitor the building pressure. Terminal 11 on the AC Tech VFD provides a minimum of 12Vdc output to the Pressure Transducer. The Transducer then provides a 0-10VDC signal back to terminals 2 and 5, or a 4-20mA signal at terminals 11 and 25 on the VFD to control the motor speed. On a scale of 0” to .10” w.c. the transducer will output ~ 3.0 VDC (8.5mA) @ .03” w.c. and ~ 5.0 VDC (11.5mA) @ .05” w.c.

If a jumper between TB1 and TB14 is used to enable the VFD the motor is commanded on and will run at minimum speed (15Hz) for a minimum of 5 minutes, if the building pressure stays below the PI Setpoint (typically .03” to .05” w.c.). When the building pressure rises above setpoint the frequency output to the motor will be increased for increased motor speed. If the pressure stays above setpoint, the motor will continue to increase in speed until it achieves maximum speed of 60Hz, or the building pressure decreases to below setpoint. If the building pressure stays below, or drops below the predetermined setpoint for longer than 5 minutes the motor is commanded OFF and the display will show SLP. This feature is called the Sleep Mode. Needless to say, if the pressure rises above the setpoint the motor will be commanded back on and the 5 minute Sleep Timer will be reset.

So, assuming a setpoint of .03” the transducer will output a VDC or mA signal in relation to the building pressure. Once the signal rises above the setpoint the motor will begin to increase in speed. The PI Protocol of the VFD controls the response time, however. So if the increase is only a spike the VFD may not respond right away, or possibly, not at all. Additionally, if the increase is minor and the pressure fails to decrease with the increase in motor speed, the VFD will continue to increase the frequency output to increase the motor speed. This is because the goal of the VFD is to try to maintain setpoint. Because of this, the frequency output of the VFD does not always correspond with the Transducer VDC output.

ELECTRICAL

Wiring for Single Phase and Three Phase Input

In applications where Single Phase is required, MicroMetl will provide a drive that is rated for Single and Three Phase inputs (SF200Y series). Whether Single Phase or Three Phase input the output to the motor will always be Three Phase. Therefore, in the case of Single Phase units the input wiring will be to terminals L1 and L2 only, where the wiring for Three Phase applications will be to terminals L1, L2, and L3.

For typical wiring of high voltage and control voltage see Fig. 5. For high voltage variations – i.e. Single Phase or Three Phase – see Fig. 4.

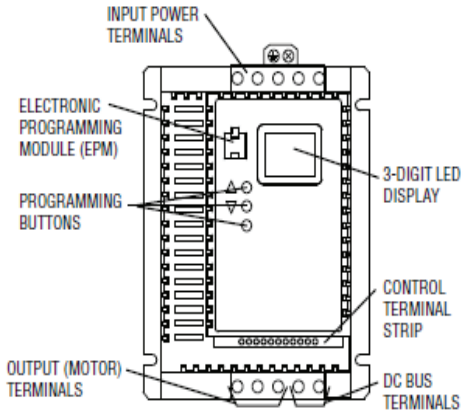

Fig. 3 – VFD Layout

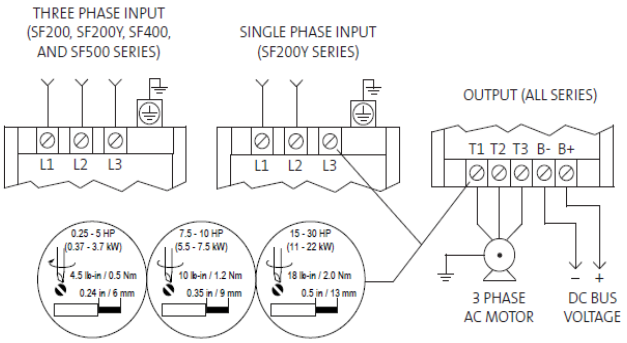

Fig. 4 - Examples of High Voltage Input Connections

Control Wiring

For full wiring options, see provided wiring document.

Choose one of the following options for controlling the ON/OFF function of the VFD:

1. Leave jumper between TB1 and TB14 (Fig. 5 & 6) for continuous ON operation. The Drive will sleep (turn off) during periods of low building pressure.

Note: *If jumper not removed the VFD will operate independent of the Economizer. This could result in undesirable operation and high energy consumption.*

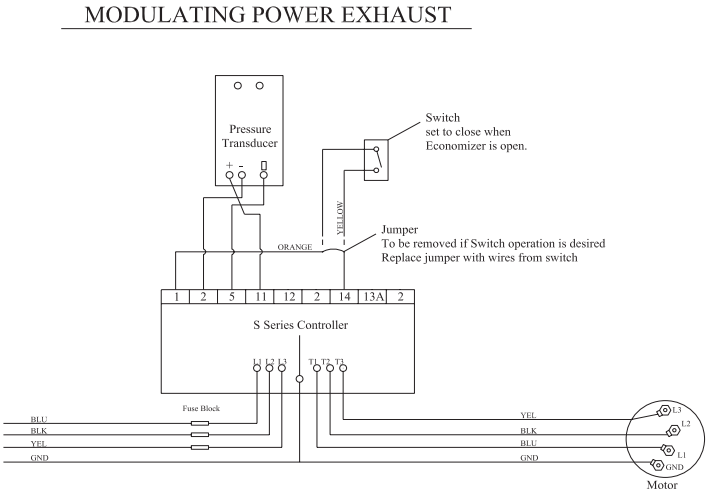

Fig. 5 – Typical 3 Phase and 0-10Vdc Control Wiring Configuration

2. Connect control wires to actuator auxiliary switch (if available) for ON/OFF operation.

a. Remove jumper between TB1 & TB14.
b. Connect Yellow and Orange control wires to TB1 & TB14.
c. Connect loose ends of Yellow and Orange control wires to Actuator auxiliary switch.

3. Install relay per Fig. 7 (field supplied or optional MicroMetl # 9901-0102 w/4 – 9901-0134 wire connectors) in Power Exhaust control panel or other conventient location for ON/OFF operation.

a. Remove jumper between TB1 and TB14
b. Connect Yellow and Orange wires to N.O. contacts (7&4, as shown, or 9&6) on the relay end and TB1 and TB14 on the other. Some applications will require these wires to be extended.
c. Connect the 24Vac Exhaust Fan output from the Economizer Control to Terminals A and B of the relay.

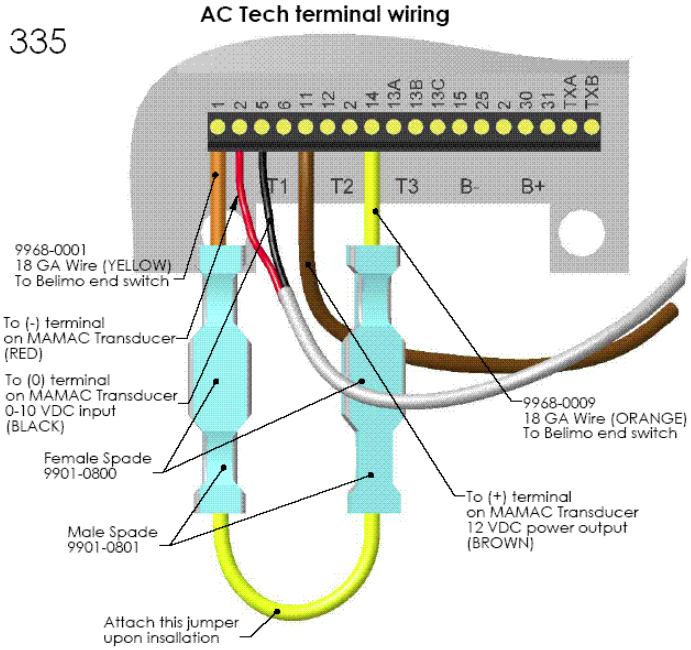

Fig. 6 – Typical AC Tech 0-10Vdc wiring

4. Install Tilt Switch to Damper or Gear for ON/OFF operation

a. Remove jumper between TB1 and TB14
b. Connect control wires to TB1 & TB14
c. Connect other ends of control wires to Tilt Switch

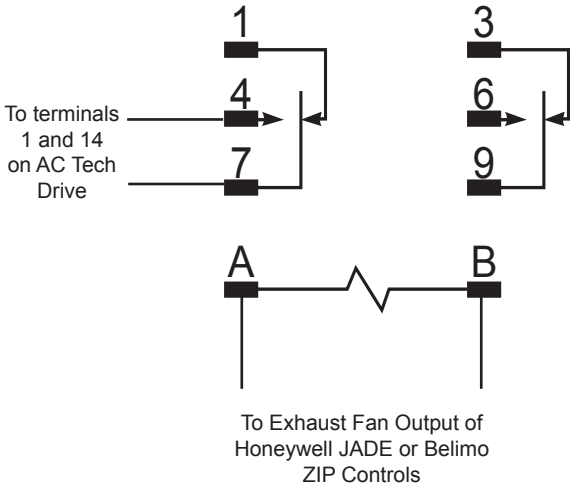

Fig. 7 – Optional Relay Connections

5. Connect to Building Management (Automated) System (aka BMS or BAS) for ON/OFF operation

a. Basic

i. Remove jumper between TB1 and TB14.

ii. Connect BMS/BAS Start/Stop (Dry Contact) Control to TB1 and TB14

b. Full Control

i. See Table 4 on page 7

SETUP AND PROGRAMMING

PARAMETERS			DESCRIPTION
#	Default	MMC	
P01	01	01*	Line Voltage*
P02	02	**05**	Carrier Freq. - Modified 10kHz
P03	01	**02**	Start Method - On Power Up
P04	01	**03**	Stop Method - Ramp to Stop
P05	01	01	Standard Speed Source
P06	01	**13**	TB14 Output**
P08	01	**02**	TB30 Output***
P09	01	01	TB31 Output - None
P10	01	**13**	TB13A Function****
P11	01	01	TB13B Function - Disabled
P12	01	01	TB13C Function - Disabled
P13	01	01	TB15 Output - Disabled
P14	01	01	Control Source Selection
P15	02	02	SERIAL LINK
P16	02	**01**	Allows Parameter and Keypad speed editing in .10s of Units
P17	01	01	Rotation - Forward
P19	20.0	**5.0 (sec)**	Main Acceleration Time (0 to 60 Hz)
P20	20.0	20.0 (sec)	Main Deceleration Time (60 to 0 Hz)
P21	0.0	0.0	DC Brake Time
P22	0.00	0.0	DC Brake Voltage
P23	0.0	**15.0**	Speed Source Minimum Motor Run Frequency
P24	60.0	60.0	Speed Source Maximum Motor Run Frequency
P25	180	**150**	Current Limit – (%) of Maximum allowable output current of Drive
P26	100	**100+**	% Value of Motor Overload+
P27	60.0	60.0	Base Frequency
P28	1.0*****	NA*****	Fixed Boost
P29	0.0	0.0	Acceleration Boost
P30	0.0	0.0	Slip Compensation
P31	0.0	0.0	Preset Speed
P32	0.0	0.0	Preset Speed
P33	0.0	0.0	Preset Speed
P34	0.0	0.0	Preset Speed
P35	0.0	0.0	Preset Speed
P36	0.0	0.0	Preset Speed
P37	0.0	0.0	Preset Speed
P38	0.0	0.0	Skip Bandwidth
P39	0.0	0.0	Speed Scaling
P40	60.0	60.0	Frequency Scaling
P41	200	200	Load Scaling
P42	20.0	20.0	Aux. Acceleration/Deceleration
P43	01	01	Serial Address
P44	225	**14**	PASSCODE – If system is reset to RESET 60 (P48) the passcode will revert back to 225
P45	0.0	**15.0**	PI Minimum Motor Run Frequency
P46	60.0	60.0	PI Maximum Frequency

Table 2 - MicroMetl Default Settings (Notes for Table 2 on page 6)

PARAMETERS			DESCRIPTION
#	Default	MMC	
P50	N/A	N/A	**VIEW ONLY - Fault History**
P51	N/A	N/A	**VIEW ONLY - Software Code (Version)**
P52	N/A	N/A	**VIEW ONLY - DC Bus Voltage (%)**
P53	N/A	N/A	**VIEW ONLY - Motor Voltage (%)**
P54	N/A	N/A	**VIEW ONLY - Motor Load (%)**
P55	N/A	N/A	**VIEW ONLY - 0-10Vdc Analog Input (%)**
P56	N/A	N/A	**VIEW ONLY - 4-20mA Analog Input (%)**
P57	N/A	N/A	**VIEW ONLY - Terminal Strip Status**
P58	N/A	N/A	**VIEW ONLY - Keypad & Protection Status**
P59	N/A	N/A	**VIEW ONLY - TB30 Analog Output (%)**
P60	N/A	N/A	**VIEW ONLY - TB31 Analog Output (%)**
P61	01	**05**	PI Mode Enabled - Set to 1 to Disable
P62	0.0	0.0	Min Feedback
P63	100	**100**	Max Feedback - 250 for R2 MAMAC
P64	5.0	5.0	Proportional Gain
P65	0.0	**10.0**	Integral Gain
P66	20.0	20.0	PI Acceleration/Deceleration
P67	0.0	**7.0**	Lo Limit Feedback (Old setting was 30)
P68	0.0	**100**	Hi Limit Feedback - 250 for R2 MAMAC
P69	N/A	N/A	**VIEW ONLY - 0-10Vdc Feedback**
P70	N/A	N/A	**VIEW ONLY - 4-20mA Feedback**
P71	N/A	N/A	**VIEW ONLY - Actual Output Frequency**
P74	2	2	Analog Input Filter
P75	0.0	**15.0**	Sleep Threshold (Hz)
P76	30.0	**300**	Sleep Delay (Seconds)
P77	0.0	0.0	Sleep Bandwidth - Min/Max

Table 2 - MicroMetl Default Settings (CONTINUED)

* Field change required for 208 Volt applications – 01 = 230 Volts / 02 = 208 Volts
** Establishes TB1 with TB14 as START/STOP control with Min/Max Alarm. Turns off VFD when Feedback levels drop below, or rise above levels set in P67 and P68
*** Establishes TB2 with TB30 as analog output proportional to Motor Run Frequency. 0Vdc to 10Vdc = 0Hz to 60Hz.
**** Inverse Keypad - Eliminates the need for jumpers at TB2 and TB12 for Forward Control, or TB2 and TB13A to enable Keypad
for PI Control Setpoint
***** For better out-of-the-box performance the SCF series drives are shipped with a setting different than the factory default of 1.0%.
For best performance reset P26 to values below:
0.5 HP - 5.3
1.0 HP - 5.3
2.0 HP - 4.4
5.0 HP - 3.0
7.5 HP - 2.7
10.0 HP - 2.4
+De-ration of Drives is a manual input based on Drive/Motor combinations – e.g. the 5HP Drive must be de-rated to 80% to 89% (depending on voltage) when controlling 2 – 2H Motors, or to better match a drive to a motor. De-ration may be required when replacing motor with non-OEM part.
++All parameters can be reset to MicroMetl settings by changing parameter P48 to 03. Additionally, all parameters can be reset to AC Tech default settings by changing P48 to 04 (60Hz. applications). If parameters are reset to AC Tech setting, the passcode revert back to AC TECH default value (225).

Table 2 Notes

Changing programming in the field for Constant Volume Operation*
1) Change P48 to 04 - Reset 60 - Resets all Parameters to Default Values - Passcode is now 225
2) Change P31 to 60 - Speed in Hz - Can be any speed required between 15 Hz. and 60 Hz.
3) Change P28 to setting below+
4) Change P25 to 150 - Current Overload in %
5) Change P10 to 04 - Selects TB13A as Preset Speed Terminal
6) Change P05 to 02 - Standard Speed Source - Preset Speed
7) When applicable, change P01 to 02 (208 Volt application)
8) Install Jumper between TB2 and TB13A, and TB2 and TB12
9) Connect ON/OFF to TB1 and TB2
+Fixed Boost After Reset is 1.0%. For better performance reset P28 as follows:
0.5 HP - 5.3
1.0 HP - 5.3
2.0 HP - 4.4
5.0 HP - 3.0
7.5 HP - 2.7

Table 3 (Notes for Table 3 on page 8)

Changing programming for 3rd Party Control*
1) Change P48 to 04 - Reset 60 - Resets all Parameters to Default Values - Passcode is now 225
2) Change P28 to setting below+
3) Change P25 to 150 - Current Overload in %
4) Change P23 to 15 - Minimum Speed (Hz)
5a) Change P05 to 03 for 0-10Vdc - Standard Speed Source
5b) Change P05 to 04 for 4-20mA - Standard Speed Source
6) Change P02 to 05 - Carrier Frequency (Modified 10kHz)
7) When applicable change P01 to 02 (208 Volt applications)
8a) Connect 0-10VDC Control leads to TB2 (common) and 5 (positive)
8b) Connect 4-20mA Control leads to TB2 (common) and 25 (positive)
9) Install Jumper between TB2 and TB12
10) Connect ON/OFF to TB1 and TB2
+Fixed Boost After Reset is 1.0%. For better performance reset P28 as follows:
0.5 HP - 5.3
1.0 HP - 5.3
2.0 HP - 4.4
5.0 HP - 3.0

Table 4 (Notes for Table 4 on page 8)

Changing programming in the field for Multispeed Operation*
1) Change P48 to 04 - Reset 60 - Resets all Parameters to Default Values - Passcode is now 225
2) Change P37 to desired Hz above P34 - Sets Speed 3** (if more than 2 speeds are required)
3) Change P36 to same speed (Hz) as P37**
4) Change P35 to same speed (Hz) as P37**
5) Change P34 to desired Hz above P31 - Sets Speed 2**
6) Change P33 to same speed (Hz) as P37**
7) Change P32 to same speed (Hz) as P34**
8) Change P31 to 15 Hz or higher - Sets Speed 1**
9) Change P28 to setting below+
10) Change P25 to 150 - Current Overload in %
11) Change P12 to 04 - Selects TB13C as Speed 3
12) Change P11 to 04 - Selects TB13B as Speed 2
13) Change P10 to 04 - Selects TB13A as Speed 1
14) Change P03 to 02 - Sets the Start Method to Start On Power Up
15) When applicable change P01 to 02 (208 Volt applications)
16) Install Jumper between TB1 and TB2, and TB2 and TB12
17) Connect TB2 and TB13A to ON/OFF Speed 1 Dry Contact – Econ. Exh. Fan Term., Act. Auxiliary Switch, or other Dry Contact
18) Connect TB2 and TB13B to ON/OFF Speed 2 Dry Contact - See 16 above
19) Connect TB2 and TB13C to ON/OFF Speed 3 Dry Contact (if required) - See 16 above
+Fixed Boost After Reset is 1.0%. For better performance reset P28 as follows:
0.5 HP - 5.3
1.0 HP - 5.3
2.0 HP - 4.4
5.0 HP - 3.0

Table 5

Notes for Tables 3, 4, and 5:

*Remove all control wires, as new wiring configurations will be employed. Press MODE button once. Press UP Arrow to 14. Press MODE button once. P01 will appear. Go to P48.

**Only P31, P34, and P37 are required to be programmed for 3-speed operation. However, setting all the parameters (P31 thru P37) as described, above, will help avoid down time if any of the switches fail - e.g., if switch 1 has failed and switch 2 is made the blower will still run at medium speed. If switch 1 is made, switch 2 has failed, and switch 3 is made the blower will still operate at full speed.

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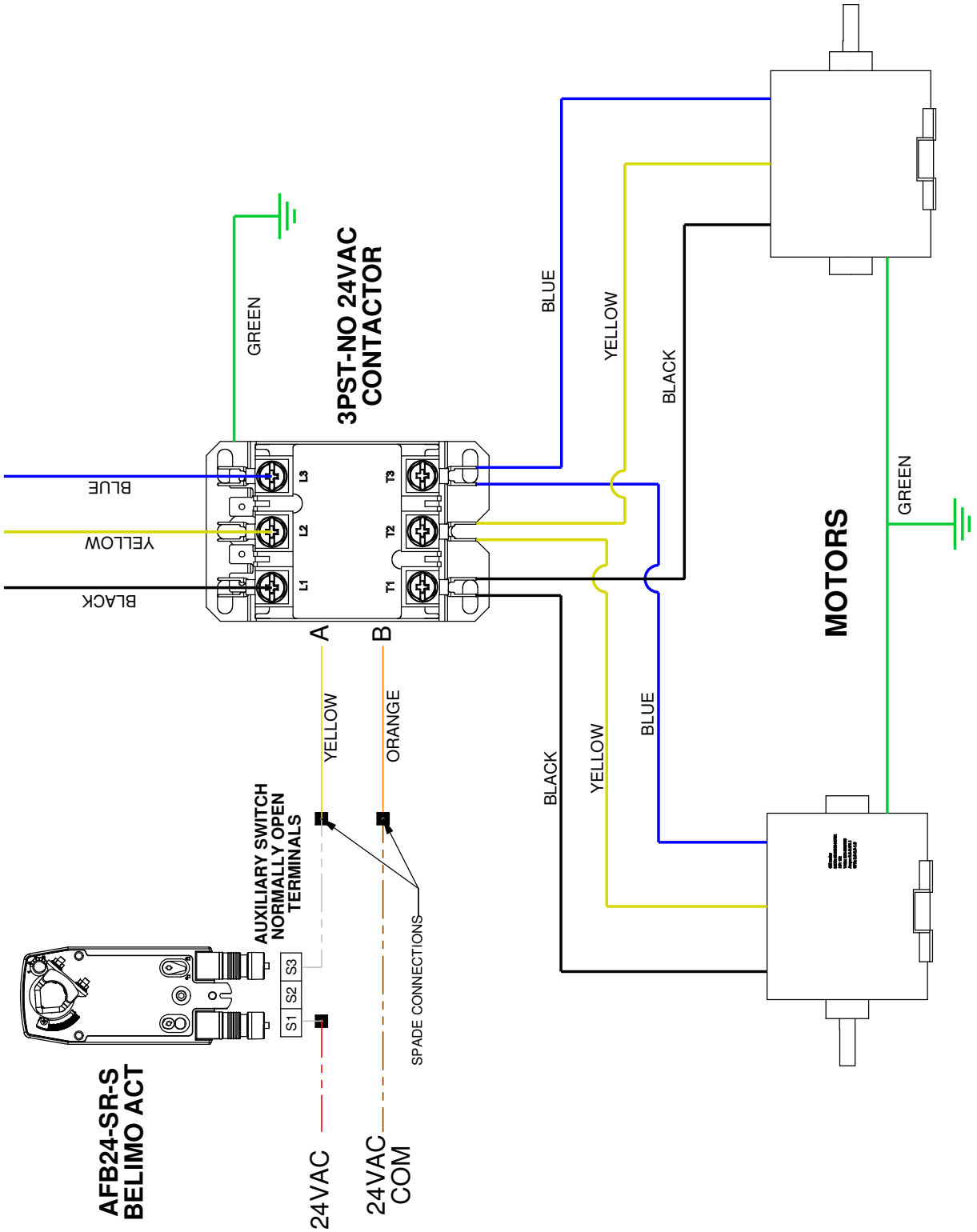
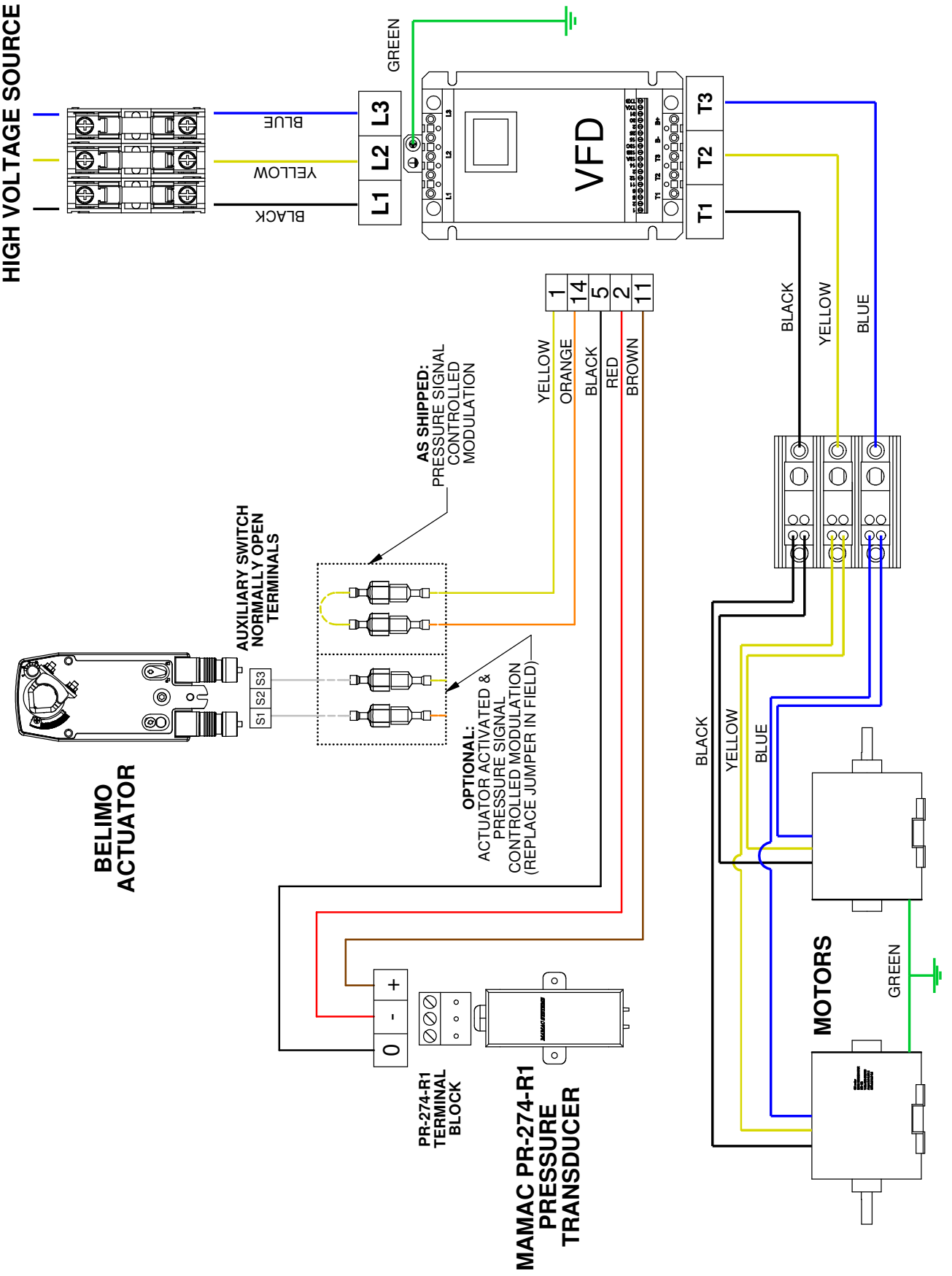
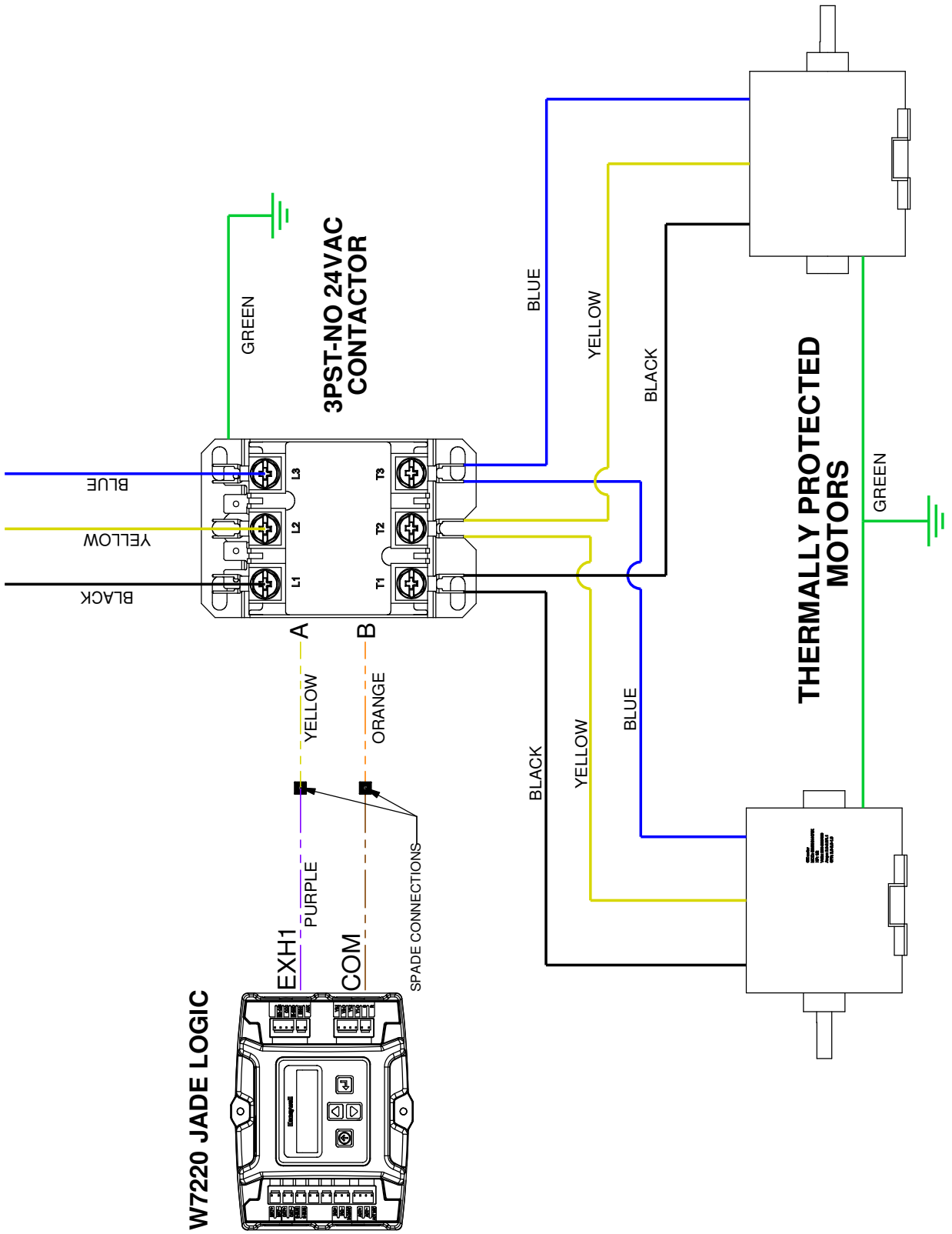


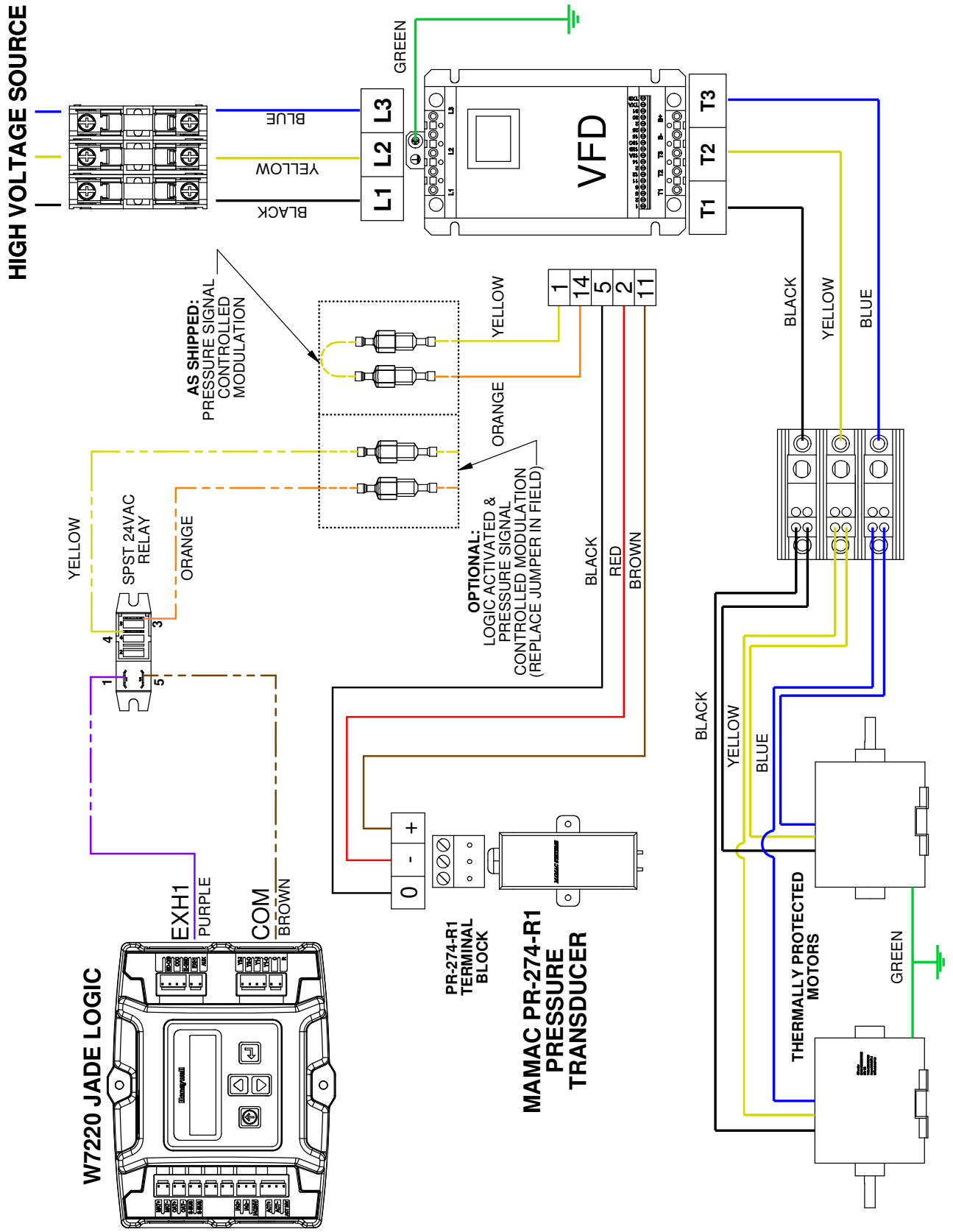
POWER EXHAUST WIRING
FOR MODULATING VFD AND BELIMO W/AUX SWITCH



POWER EXHAUST WIRING
FOR CONSTANT VOLUME & JADE LOGIC



POWER EXHAUST WIRING
FOR MODULATING VFD AND JADE LOGIC



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