



Installation and Maintenance Manual

IM 1244-1

Group: Applied Air Systems

Part Number: IM1244-1

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MicroTech Unit Controller Options – Field-Installation Wiring

Models: DPS, MPS, RCS, RDT, RFS, RPS, SWP and SWT



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Introduction

Field Control Wiring

Daikin Applied Rooftop and Self Contained units are available with several control arrangements which may require low voltage field wiring. Detailed descriptions of various field control wiring options and requirements are included in the “Field Wiring” section of [IM 919](#), MicroTech® Unit Controller for Commercial Rooftop Systems, Applied Rooftop Systems and Self-Contained Air Conditioners. Refer to the unit wiring diagrams for additional installation information. Wiring must comply with applicable codes and ordinances. The warranty is voided if wiring is not in accordance with these specifications.

This equipment is to be installed by qualified personnel who are experienced with this type of equipment and familiar with local codes and regulations. Carefully read all instructions and take into account any special considerations prior to installing the unit. Give this manual to the owner and explain its provisions.

Unit Nameplate

The unit nameplate is located on both the interior and exterior of the main controls. It includes the unit model number, serial number, unit performance, and electrical characteristics.

Important Message to the Owner

Read these instructions carefully and keep them near the product for future reference. Although these instructions are addressed primarily to the installer, useful maintenance information is included. Have the installer acquaint you with the operation of the product and periodic maintenance requirements.

Recognize Safety Symbols, Words, and Labels

It is the owner’s and installer’s responsibility to read and comply with all safety information and instructions, as well as the accompanying hazard identification symbols (see below).

Failing to follow safety information increases the risk of property damage and/or product damage, serious personal injury, or death. Improper installation, operation or maintenance can void the warranty.

Hazardous Information Messages

The following symbols and labels are used throughout this manual to indicate immediate or potential hazards.

 **CAUTION**

Cautions indicate potentially hazardous situations, which can result in personal injury or equipment damage if not avoided.

 **WARNING**

Warnings indicate potentially hazardous situations, which can result in property damage, severe personal injury, or death if not avoided.

 **DANGER**

Dangers indicate a hazardous situation which will result in death or serious injury if not avoided.

NOTICE

Notices give important information concerning a process, procedure, special handling or equipment attributes.

Agency Listed



Installation

RDT, RFS and RPS, Units

⚠ DANGER

Electrical shock hazard. Can cause severe injury or death.

Connect only low voltage NEC Class II circuits to terminal blocks TB2 and TB5. Reinstall and secure all protective deadfront panels when the wiring installation is complete.

All field control wiring connections are made at the Class II terminal block TB2, which is located in the main control panel. Field wiring connections to the 115 volt receptacle and lights are made at terminal block TB7, which is also located in the main control panel. Refer to [Figure 1](#) and [Figure 2](#). Two 7/8" knockouts are provided for wire entry.

Figure 1: RDT, RFS and RPS Field Wiring Connections

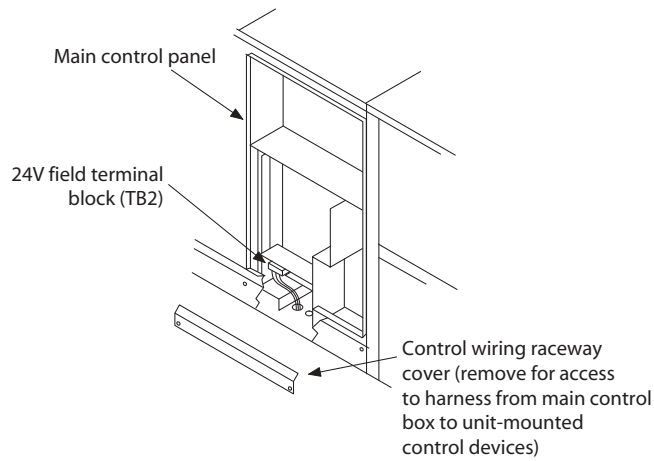


Figure 2: Control Wiring Raceway



RCS/RFS Units

⚠ DANGER

Electrical shock hazard. Can cause severe injury or death.

Connect only low voltage NEC Class II circuits to terminal blocks TB2 and TB5. Reinstall and secure all protective deadfront panels when the wiring installation is complete.

The RCS unit receives 115V and 24V control circuit power and a number of control signals from the RFS unit. Two 7/8" knockouts are provided in the right side of the RCS control box. Interconnecting wiring enters the RFS unit through 7/8" knockouts in the bottom of the main control panel. The interconnecting wiring is connected to TB4 in the RFS unit and TB5 in the RCS unit. Refer to [Figure 4](#). A 7/8" knockout is also available in the end of the unit base as shown in [Figure 3](#).

Figure 3: RCS 050D through 140D Wiring Connections

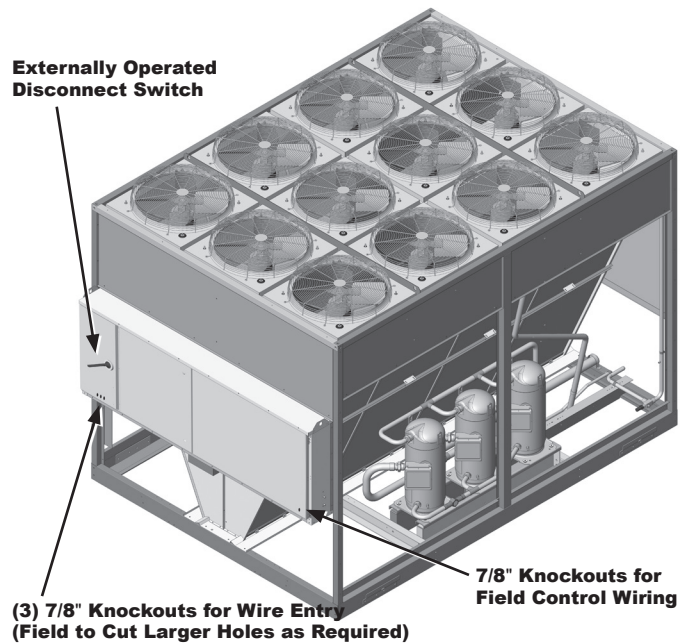
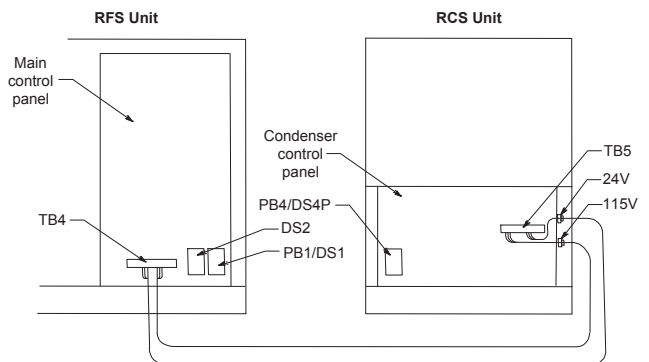


Figure 4: RCS and RFS Interconnecting Control Wiring



MicroTech® Controller

⚠ WARNING

- All field wiring must be powered using unit transformers
- Do not ground transformer for a field signal to chassis ground. Use the same ground as the controller to prevent a voltage potential above 3V. This voltage potential can damage the MicroTech Unit Controller
- If the unit transformer is not used, then dry contacts must be isolated with an isolation (RIB) relay

Inputs to MicroTech Unit Controller

- Zone Sensor
 - Analog Sensor w/tenant override
 - Analog Sensor w/tenant override & set point adjustment
 - Digital Sensor w/tenant override & Setpoint adjustment
- Humidity Sensor
- External Signal
 - External Outdoor Air Damper Reset
- External Time Clock
- Emergency Shutdown
- CO₂
- Outdoor Air Flow Station

Outputs from MicroTech Unit Controller

- Remote Alarm Output
- Fan Operation Signal
- Outdoor Damper for SCU only
- Pump Signal SCU only

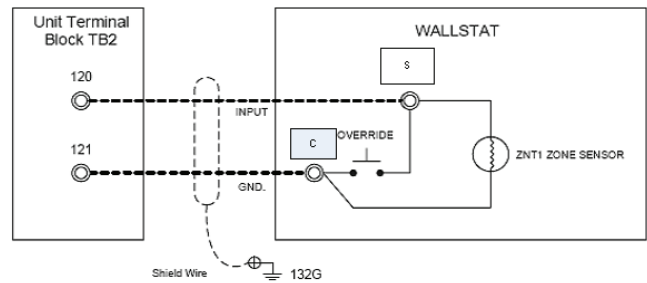
Inputs to MicroTech Unit Controller

Analog Sensor with Tenant Override and No Set Point Adjustment

On all unit styles (DPS/MPS/RTU/SCU)

The analog zone/space sensor is a 10K ohm thermistor with a tenant override feature. The zone/ space sensor is wired to terminals 120 and 121 on the terminal block 2 (TB2). A shielded wire needs to be installed to the ground terminal (typically 132G on terminal block 2). Review [Figure 5](#) for wiring connection details.

Figure 5: Wiring Diagram – Analog Sensor with Tenant Override and No Set Point Adjustment



Analog Sensor with Tenant Override and Set Point Adjustment

On all unit styles (DPS/MPS/RTU/SCU)

The analog zone/space sensor is a 1 10K ohm thermistor with a tenant override and manual cooling/heating set point adjustment feature. The zone/space sensor is wired from terminal S to terminals 120, C to 121 and P to 132 on the terminal block 2 (TB2). A shielded wire needs to be installed to the ground terminal (typically 132G on terminal block 2). Review [Figure 6](#) for wiring connection details.

Figure 6: Wiring Diagram – Analog Sensor with Tenant Override and Set Point Adjustment

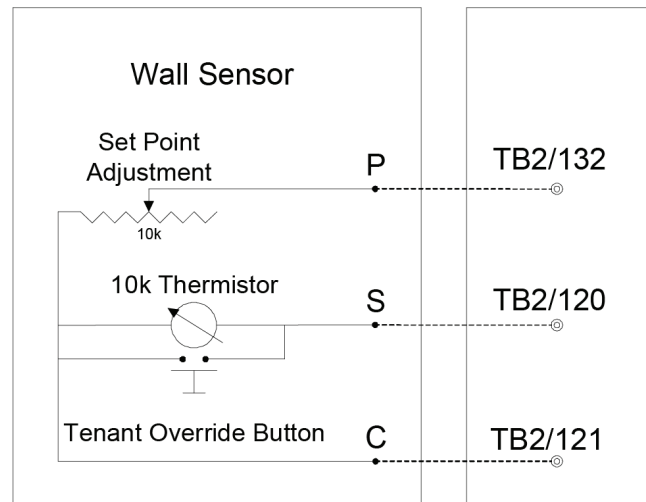


Figure 7: Analog Sensor Components

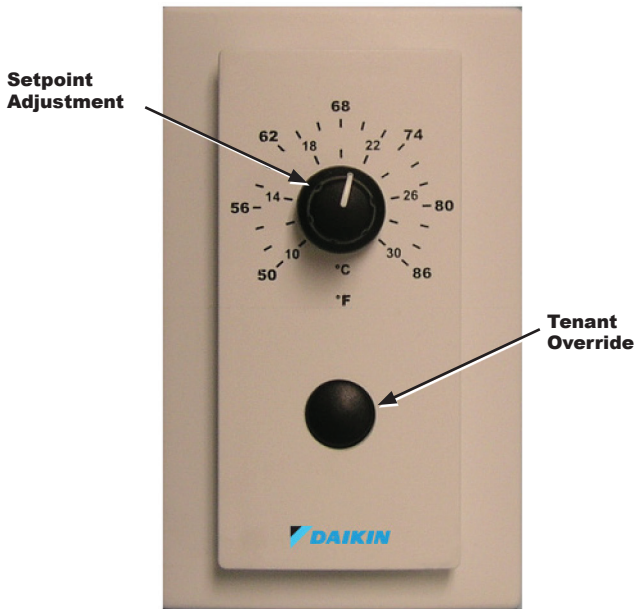


Figure 9: Digital Sensor Components



Digital Sensor with Tenant Override and Set Point Adjustment

On all unit styles (DPS/MPS/RTU/SCU)

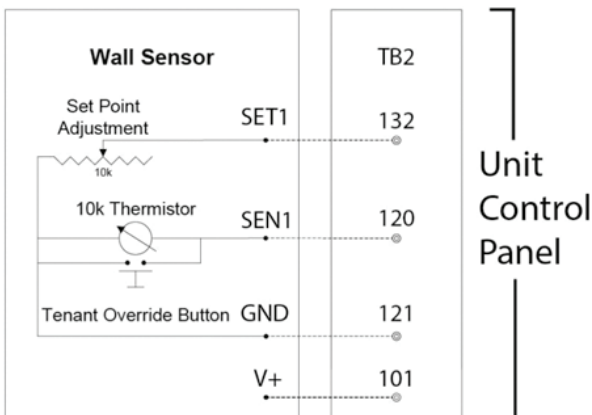
⚠ WARNING

It is crucial to have 24VAC power from TB(2) terminal 101 only and not from any field installed transformer.

The digital zone/space sensor is wired to field terminal block 2 (TB2) terminals 101, 120, 121 and 132. When pressed the tenant override button will not change status of the occupancy symbol on the sensor. There is no feedback from the MicroTech unit controller for occupancy to this sensor.

When installing this sensor, calibration through the MicroTech unit controller is necessary under "Commission unit" | "Htg/Clg Chag Ovr Set-Up" | "CalDRemSpt" @ 50F and 86F. Review Figure 8 for wiring connection details.

Figure 8: Wiring Diagram – Digital Sensor with Tenant Override and Set Point Adjustment



Humidity Sensor

⚠ WARNING

This sensor cannot be used as an analog space sensor since it does not have a 10K thermistor.

It is important that the internal J1 jumper in the humidity sensor is positioned in the 0-10 VDC position for the sensor to function properly with the controller.

Either a wall mount or duct mount humidity sensor is available. The sensor must be wired to terminals 126, 127 and 131 on the unit field terminal block (TB2).

Terminal 126 is wired to OUT, terminal 127 to COM and terminal 131 to IN on the humidity sensor.

These terminals are factory wired to the Expansion Board A AIX6. The sensor can deliver 0-10VDC for a 0% and 100% RH values. These values are adjustable via the Dehum Setup menu in the Commission Unit section on the keypad/display.

Figure 10: Humidity Sensor Components

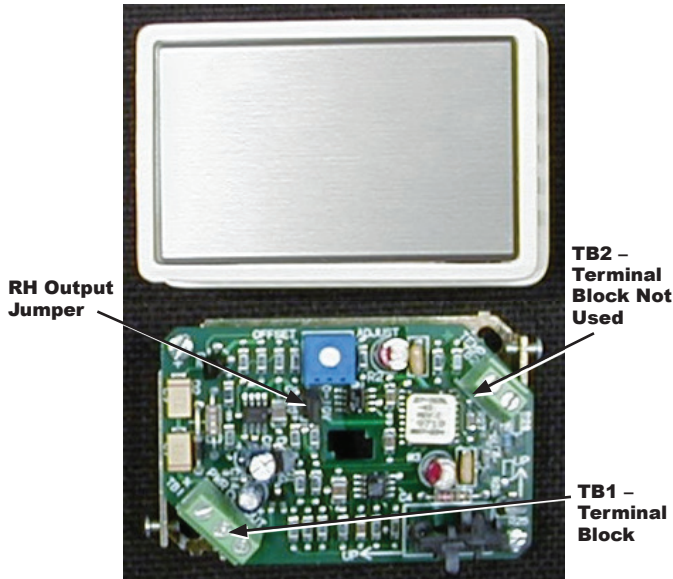


Figure 13: Wiring Diagram – Humidity Sensor, RPS and SCU

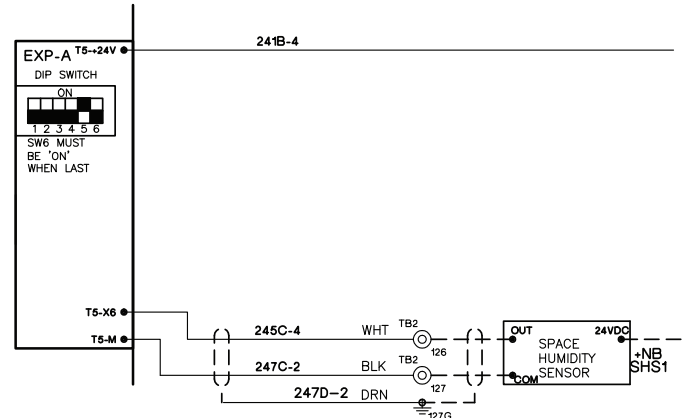


Figure 11: Wiring Diagram – Humidity Sensor, DPS Only

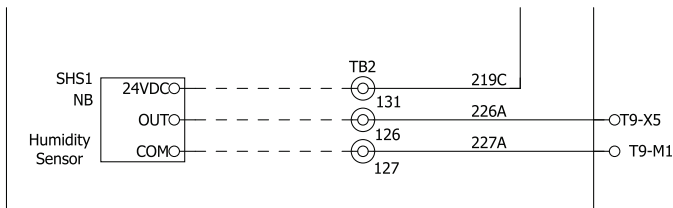
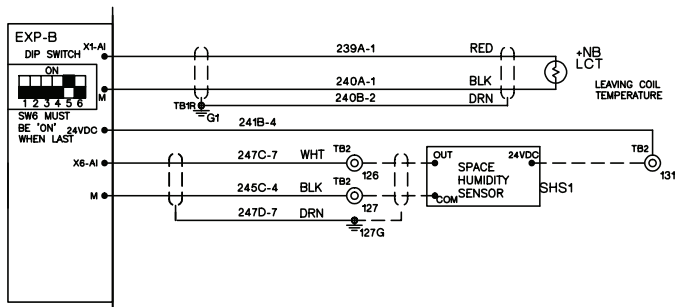


Figure 12: Wiring Diagram – Humidity Sensor, MPS Only



External Time Clock

An external time clock or a tenant override switch can be used by installing a set of dry contacts across terminals 101 and 102 on the field terminal block (TB2).

- When these contacts close, 24 VAC is applied to binary input MCB-DI3
- The overrides any internal or network schedule and placing the unit into occupied
- When the contacts open the unit acts according to the controller internal time schedule or a network schedule.
- ON-AUTO switch (S7) is a manual occupancy switch which bypasses the time clock or tenant override and can be mounted remotely if needed. If (S7) switch present along with an external time clock, it will need to be setup to AUTO.

Figure 14: Wiring Diagram – External Time Clock DPS and MPS Only

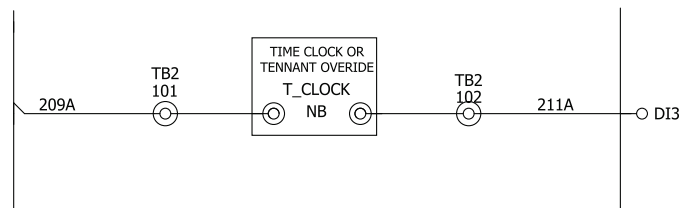
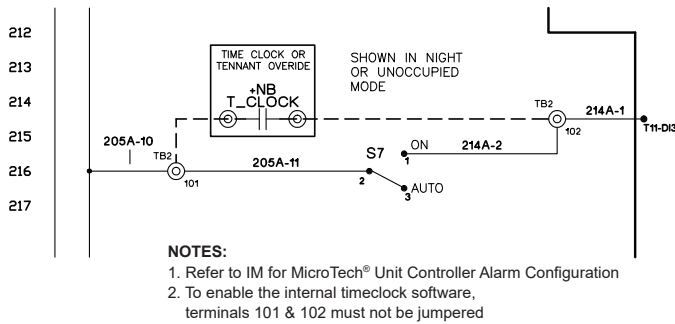


Figure 15: Wiring Diagram – External Time Clock RPS and SCU Only



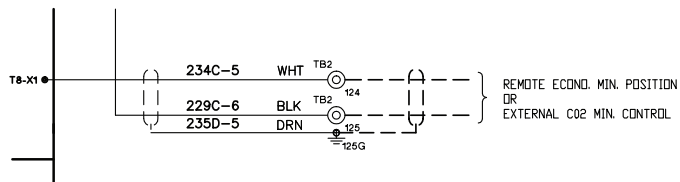
External Outdoor Air Damper Minimum Position Reset

The external reset requires a field supplied reset signal in the range of 0–10 VDC or 0–20 mA wired to terminals 124 and 125 on the field terminal block (TB2). Options are OA flow station, CO₂ sensor or field generated 0-10vDC/ 0-20mA. The min/max signal can be user defined if needed through the MicroTech unit controller. Default settings are 0vDC or mA min and 10vDC or 20mA max.

MicroTech unit controller set up is required for this setpoint. Go to OM 920 for details on commissioning the unit; minimum outdoor air set up; outdoor air reset.

Refer to the unit wiring diagrams for wiring termination details.

Figure 16: Wiring Diagram – External Outdoor Air Damper Minimum Position Reset



Immediate Emergency Shutdown – Smoke

The terminals 105 & 106 on TB2 can be used for any field supplied component that requires a unit emergency shutdown.

When these terminals are used, the factory installed jumper must be removed.

- Emergency shutdown Faults can be set to automatically clear once the condition that caused the alarm is corrected. This can be accomplished by navigating to Commission Unit | Alarm Configuration | Emerg Stop and changing the default No value to Yes.
- Check building codes to verify if this does not violate fire safety.

NOTE:

- All field wiring must be powered using unit transformers
- Do not ground transformer for a field signal to chassis ground. Use the same ground as the controller to prevent a voltage potential above 3V. This voltage potential can damage the MicroTech Unit Controller
- If the unit transformer is not used, then dry contacts must be isolated with an isolation relay

Figure 17: Wiring Diagram – Immediate Emergency Shutdown, Smoke DPS and MPS Only

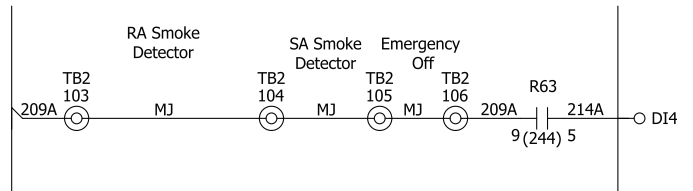
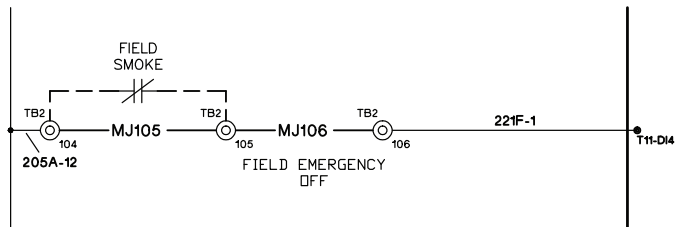


Figure 18: Wiring Diagram – Immediate Emergency Shutdown, Smoke RPS and SCU Only



Ventilation Override (Smoke Purge) DPS Only

The MicroTech Unit Controller has been configured via modbus to perform a ventilation override if terminals Din2 and GND at Terminal strip 3 on the ECM are made. Install an isolation relay that would make a dry NO contact across the return/exhaust fan Din2 and GND.

Outdoor Air Damper Flow Station and CO2 Reset Setup

- At the MicroTech Unit controller enter password 6363.
- Scroll down to “Unit Configuration” and click on it.
- Scroll down to “OA Flow Stn” and select “6” for “FS/Rst”

9	OA Flow Station	<p>0 = NONE 1 = DF_015-030 (800) 2 = DF_036-042 (802) 3 = DF_045-075 (047) 4 = DF_080-135 (077) 5 = Generic Flow Station 6 = DGeneric Flow Station w/ CO₂ 7 = Ebtron MB</p>
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- Scroll up to “Apply Changes” and select “yes” which will cause the controller to restart.
- Enter password 6363 then scroll down to “Commission unit” and click on it.
- Scroll down to “Min OA setup” menu and click on it.
- Scroll down to Min OA reset and select “IAQ VDC” or “IAQ mA” depending on the type of sensor installed.
- Scroll up to “Apply Changes” and select “yes” which will cause the controller to restart.

CO₂ Sensor Wiring

AI 3					Outdoor Temperature	10K Thermistor (STD)	All
Universal Inputs/Outputs							
#	DI	AI	DO	AO	Point	Comments	Config. Code Condition
X 1		X			CO ₂ /Min OA/OA CFM	0-10VDC or 4-20 mA	8 = 1, 2, 3, 5, 6, 7, 8 or 9

On all style units (MPS/DPS/RTU/SCU) the CO₂ sensor needs to be wired to terminals X1 and M at the MicroTech unit Controller. Terminal M is the common for all analog inputs. Make sure the field wiring polarity is correct to read a valid PPM value.

EBTRON or Field Outdoor Air Damper Flow Station Wiring

MPS (17-50 Tons)/DPS Expansion Module B

X 2				X	Reheat #1	0-10 VDC
X 3	X				Gas Heat LS2 Switch	Dry Contact
X 3		X			OA Flow	0-10 VDC or 4-20 mA
X 4	X				FSG Alarm Input (FSG-3)	
X 4		X			Supply Temp Leaving Wheel	10K Thermistor (STD)
X 5		X			Exhaust Temp Leaving Wheel	10K Thermistor (STD)

DPS (15 Tons) with EV Type = 3, 4, 5 or 6 Expansion Module D

X 9		X			Supply Temp Leaving Wheel	10K Thermistor (STD)
X 10		X			Exhaust Temp Leaving Wheel	10K Thermistor (STD)
X 11		X			OA Flow	0-10 VDC or 4-20 mA

RTU/SCU/MPS (62-70 Tons) Expansion Module E

X 1		X			OA Flow	0-10 VDC or 4-20 mA
X 2						

On Maverick (MPS) and Rebel (DPS 3-12 ton) units the outdoor air damper flow station needs to be wired to terminals X3 and M on expansion module B. On Rebel DPS (15 ton) units confirm EV (Expansion Valve) type under unit configuration at the MicroTech unit controller. If EV type is 3, 4, 5, or 6, then the outdoor air damper flow station needs to be wired to terminals X11 and M on expansion module D. On Rooftop (RTU) and Self Contained (SCU) units, the outdoor air damper flow station needs to be wired to terminals X1 and M on expansion module E. Terminal M is common for all analog inputs. Make sure the polarity is correct on the field wiring to read a valid CFM value.

Outputs from the MicroTech Unit Controller

Remote Alarm Output

The digital alarm output indicates the alarm group that contains the highest priority active alarm. This output (MCB-DO9) is ON when no alarms are active. The options for the action of this output when an alarm occurs are ON, Fast Blink, Slow Blink, or OFF. These can be configured via the Alarm Out Config menu in the Extended menus on keypad/display.

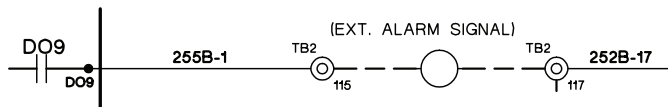
Table 1: Alarm Default Values

Alarm	Display
Warnings	OFF
Problems	Slow Blink
Faults	Fast Blink

The Remote Alarm Output (MCB-DO9) supplies 24 VAC to terminal 115 on the field terminal block (TB2) when the output is ON.

To use this signal, wire the coil of a field supplied / installed 24 VAC pilot relay across terminals 115 and 117 on TB2. When this output is ON, 24 VAC is supplied from the T3 control transformer through the output relay to energize the field relay. Refer to the as-built wiring diagrams.

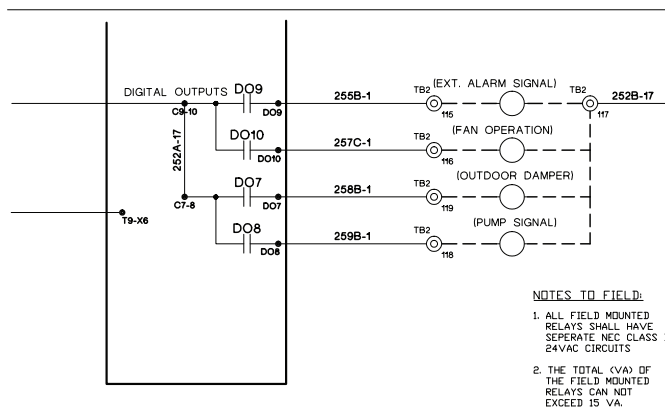
Figure 20: Wiring Diagram – Remote Alarm



Fan Operation Output

The Fan Operation Output supplies 24 VAC to terminal 116 on the field terminal block (TB2) when the supply fan output is ON. To use this signal, wire the coil of a field supplied and installed 24 VAC pilot relay across terminals 116 and 117 on TB2. When this output is ON, 24 VAC is supplied from the T3 control transformer through the output relay to energize the field relay.

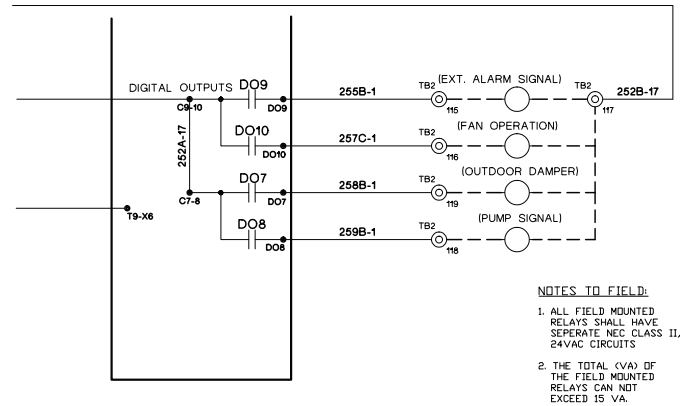
Figure 21: Wiring Diagram – Fan Operation Output



Outdoor Damper (Self-Contained Unit Only)

The Outdoor Damper Output supplies 24 VAC to terminal 119 on the field terminal block (TB2) when the output is ON. To use this signal, wire the coil of a field supplied and installed 24 VAC pilot relay across terminals 119 and 117 on TB2. When this output is ON, 24 VAC is supplied from the T3 control transformer through the output relay to energize the field relay.

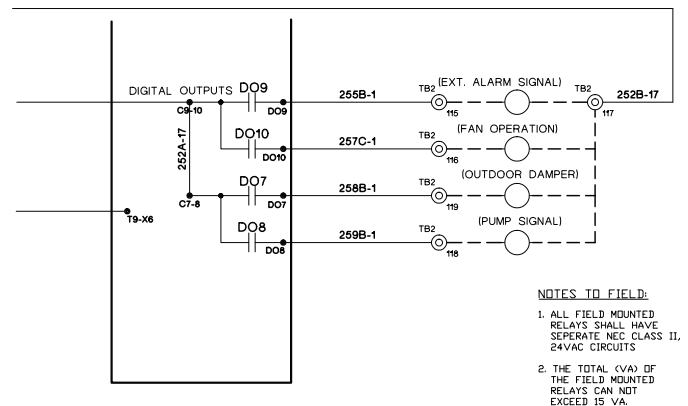
Figure 22: Wiring Diagram – Outdoor Damper



Pump Signal Output (Self-Contained Unit Only)

When applicable the Pump Signal Output supplies 24 VAC to terminal 113 on the field terminal block (TB2) when the output is ON. To use this signal, wire the coil of a field supplied and installed 24 VAC pilot relay across terminals 113 and 117 on TB2. When this output is ON, 24 VAC is supplied from the T3 control transformer through the output relay to energize the field relay. Refer to the as-built wiring diagrams.

Figure 23: Wiring Diagram – Pump Signal Output





Daikin Applied Training and Development

Now that you have made an investment in modern, efficient Daikin Applied equipment, its care should be a high priority. For training information on all Daikin Applied HVAC products, please visit us at www.DaikinApplied.com and click on Training, or call 540-248-9646 and ask for the Training Department.

Warranty

All Daikin Applied equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied Representative for warranty details. To find your local Daikin Applied Representative, go to www.DaikinApplied.com.

Aftermarket Services

To find your local parts office, visit www.DaikinApplied.com or call 800-37PARTS (800-377-2787). To find your local service office, visit www.DaikinApplied.com or call 800-432-1342.

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