

Start-Up Guide

OM 1393

Group: **Applied Terminal Systems**

Part Number: **OM1393**

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PreciseLine® D-Kit VRV Integration

The purpose of this guide is to provide instruction on the integration of the Daikin EEV Kit for DOAS (D-Kit) with a Daikin Applied PreciseLine unit with MicroTech® controls. It provides information on the required field installed wiring and MicroTech controller configurations that are necessary for proper unit operation.

Refer to the Daikin EEV Kit for DOAS installation manual, Daikin Applied PreciseLine unit installation manual, and the Daikin EEV Kit installation instructions for more information on the unit.

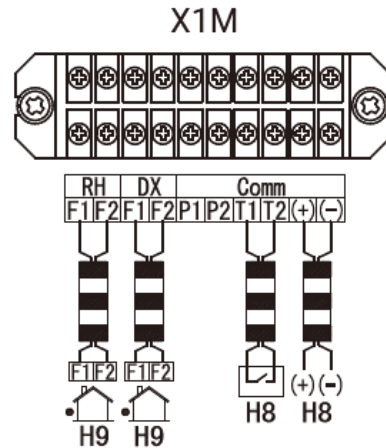
NOTE: The PreciseLine MicroTech controller must have software 2507490200 or later.

Communications Wiring and Addressing

The PreciseLine MicroTech® controller communicates with up to four VRV D-Controllers through RS485 communications. Communication wires to all devices on the network, including the PreciseLine controller, shall be field installed. All devices in the communications network shall be daisy chained in any order using 18 to 22 AWG twisted pair stranded shielded wire. This daisy chain shall connect T12 A1+ and B1- to the + and - terminals on X1M on all the D-Controllers. Polarity must be maintained with T12 A1+ connected to X1M + and T12 B1- being connected to X1M -. Do not "Star" or "T" the network wire.

The PreciseLine controller must be configured based on the number of D-Controllers to which it will be connected. In the Unit Configuration menu, the Compressor Stages parameter must be set to VRV-D and the D-Kit Quantity parameter must match the number of D-Controllers to connected to the PreciseLine controller.

Figure 1: VRV D-Controller Wiring



D-Controller Communication Setting

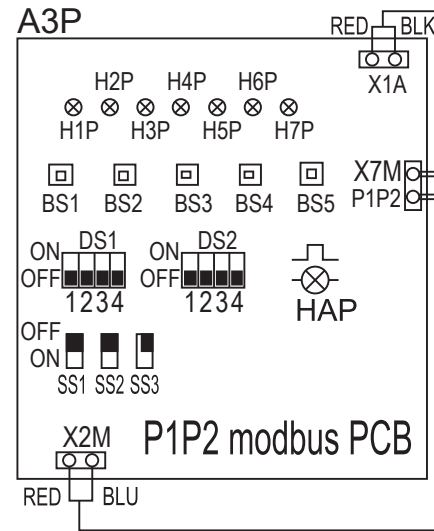
On all D-Controllers the DS1 switch on the P1/P2 Modbus® Adaptor PCB in the D-Controller shall be set as follows:

- DS1-1 = OFF
- DS1-2 = ON
- DS1-3 = ON
- DS1-4 = OFF

The Modbus address of the D-Controller is set using the DS-2 DIP switches on the P1/P2 Modbus Adaptor PCB in the D-Controller. The D-Controllers must be addressed from 1-4 with no gaps in the address. If there is only 1 D-Controller it must be address 1, if there are two D-Controllers they must be address 1 and 2, if there are four D-Controllers, they must be address 1, 2, 3, and 4. The following DS-2 DIP switch settings correspond to each of the addresses.

- Address 1: DS2-1,3=OFF DS2-4=ON
- Address 2: DS2-1,2,4=OFF DS2-3=ON
- Address 3: DS2-1,2=OFF DS2-3,4=ON
- Address 4: DS2-1,3,4=OFF DS2-2=ON

Figure 2: DS1 and DS2 Addressing Diagram



End of Line Resistance

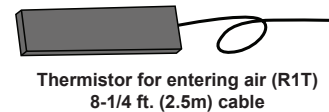
The first and last devices (end of line) on the daisy chain must have 120 ohms of terminating resistance. If the end of line device is a D-Controller this is accomplished by setting SS2 to ON and SS1 and SS3 to OFF on the P1/P2 Modbus Adaptor PCB in the D-Controller.

If the end of line device is the PreciseLine MicroTech controller, a ¼ Watt 120 ohm resistor shall be installed across T12 A1+ and B1- on the PreciseLine MicroTech controller.

Entering (Suction) Air Temperature Sensor

D-Controller installation kit includes an entering (suction) air temperature sensor and a discharge air temperature sensor. The entering (suction) air temperature sensor must be installed per the instructions provided with the D-Controller in a position where it can measure the temperature of the air entering the DX coil, downstream of any optional field installed preheater.

Figure 3: D-Kit Entering (Suction) Air Temperature Sensor



Discharge Air Temperature Sensor

The PreciseLine MicroTech controller has its own Discharge Air Temperature sensor (Part Number 910236951) which should be field installed and wired to TB12-T5 and TB2 Common for sizes 006-050 and wired to TB2-281,236 or sizes 060-100. See IM 1267 for details. The Discharge Air Temperature sensor included with the D-Kit does not need to be installed

Figure 5: MicroTech 4 Lite DAT Sensor

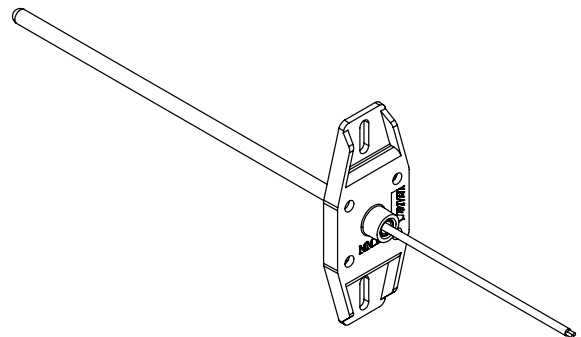
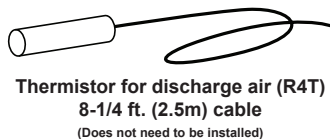


Figure 4: D-Kit Discharge Air Temperature Sensor



Test Operation

After installation of the D-Controller kit(s), connection of the communication wiring, and the field settings have been defined, the installer is obliged to verify correct operation. As part of the startup procedure or maintenance for VRV compressors, it may be necessary to put the VRV compressor(s) into Test Operation. During Test Operation the PreciseLine MicroTech controller will operate the supply fan, based on the commands of the VRV compressor. Before running a Test Operation, the Control Mode must be set to OFF,

and the Supply Fan Minimum Speed must be set to the supply fan nominal operating speed. See OM 1357 for more information about setting the Control Mode and Supply fan Minimum Speed, and the D-Controller Installation Manual for more information about the Test Operation procedure. The “Unit State” will change to “Test” for the duration of Test Operation. Once the Unit State is no longer “Test” and Test operation has successfully completed, the Supply Fan Minimum Speed can be reverted to the desired value.

OAT Control Setup

Setting the Control Temperature Source to Outdoor Air is recommended (but not required) for DOAS applications but can also be used for any application with an Outdoor Air Temperature sensor. When the Control Temperature Source is Outdoor Air, the controller will provide heating and cooling based on the OA Cooling and OA

Heating setpoints. The unit will provide cooling when the Outdoor Air Temperature is above the OA Cooling setpoint, heating when the Outdoor Air Temperature is below the OA Heating setpoint, and be in the Fan Only mode when the Outdoor Air Temperature is in between the OA Heating and OA Cooling setpoints.

Humidity Control Setup

The PreciseLine MicroTech controller can be configured to provide dehumidification based on the outdoor air or the space conditions. To provide dehumidification based on the space conditions, in the Unit Configuration Menu set the Dehumidification Source to Outdoor Air. To provide dehumidification based on the outdoor air conditions, in the Unit Configuration Menu set the Dehumidification Source to Outdoor. To provide dehumidification based on an average of the space and outdoor air conditions, in the Unit Configuration Menu set the Dehumidification Source to Space and Outdoor.

The additionally the PreciseLine MicroTech controller can be configured to initiate dehumidification based on a relative humidity setpoint, or a dewpoint setpoint. To initiate dehumidification based on the comparing the Relative Humidity Setpoint to the measured relative humidity (of the space, outdoor air, or an average of the space and outdoor air depending on the Dehumidification Source

parameter), in the Unit Configuration Menu set the Dehumidification Method to Relative Humidity. To initiate dehumidification based on the comparing the Dewpoint Setpoint to the measured dewpoint (of the space, outdoor air, or an average of the space and outdoor air depending on the Dehumidification Source parameter), in the Unit Configuration Menu set the Dehumidification Method to Dewpoint.

Desired Dehumidification Control	Dehumidification Source	Dehumidification Method
Outdoor Dewpoint	Outdoor	Dewpoint
Space Dewpoint	Space	Dewpoint
Outdoor/Space Average Dewpoint	Space and Outdoor	Dewpoint
Outdoor Relative Humidity	Outdoor	Relative Humidity
Space Relative Humidity	Space	Relative Humidity
Outdoor/Space Average Relative Humidity	Space and Outdoor	Relative Humidity

Remote Integrated Thermostat

For units with where the Control Temperature source is Outdoor Air, the Remote Integrated Thermostat is not required for proper operation. The remote thermostat is required for all other setting of the Control Temperature Source as well as any time the Supply Fan Control is set to Single Zone VAV. In the cases where the Remote

Integrated Thermostat is not required setting the Remote Sensor parameter in the Unit Configuration Menu to Not Installed, will prevent Remote Integrated Thermostat/space temperature sensor related alarms from occurring.

Field Installed Preheater

In order for the unit to provide compressor heat, the temperature of the air entering the unit must be above 16°F. An optional field installed preheater can be used to help ensure that the Entering Unit Temperature is above 16°F. The MicroTech controller can be set up

to control either a single stage of electric preheat, or a modulating SCR electric preheater. See OM 1357 for more information on the preheat sequence of operations.

Field Installed 1 Stage Preheater Setup

To set up the MicroTech to control a single stage of electric preheat, in the Unit Configuration Menu, set the Electric Heat to 1-Stage, and set the Electric Heat Type to Preheat or Pre/Supplemental Heat.

Field Installed SCR Preheater Setup

To set up the MicroTech to control an SCR electric preheater, in the Unit Configuration Menu, set the Electric Heat to SCR, and set the Electric Heat Type to Preheat or Pre/Supplemental Heat.

NOTE: Preheat control is not available if the Electric heat is None or 4 Stages.

Field Installed 1 Stage Preheater Wiring

When configured for 1 stage of preheat, the MicroTech controller will provide a 24VAC signal with preheat is required. A 1 stage preheater

shall be wired to TB4-T2 and TB2-Common on sizes 006-050, and wired to TB2 222C and N24 on sizes 060-100.

Field Installed SCR Preheater Wiring

When configured for an SCR electric preheater, the MicroTech controller will provide a 0-10VDC signal to modulate an electric preheater when preheat is required. An SCR preheater shall be

wired to TB4-T3 and TB2-Common on sizes 006-050, and wired to TB2 222 and N24 on sizes 060-100.

Hot Water Valve Preheat

While the controller is designed to be used with electric preheaters, it is possible for an on/off or modulating hot water valve to be used as well if certain requirements are met. If you're using a HW valve, it must be normally closed, 24VAC on/off, or 0-10VDC modulating.

- Set up a normally closed 24VAC on/off valve as if it was a 1 stage on/off electric preheater.
- Set up a normally closed 0-10VDC modulating valve as if it was an SCR electric heater.



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