


Humidistat

Model TCI-W11-UH, TCI-W11-U
Model TRI2 with BACnet®



 *Installation, Operation, and
Maintenance Manual*

Read and save these instructions

Warnings and cautions

THESE INSTALLATION INSTRUCTIONS ARE FOR THE HUMIDISTAT ONLY!

For DriSteem equipment installation, follow DriSteem equipment installation instructions.

WARNING

This product must be installed by a qualified heating and air conditioning contractor. Failure to do so can result in serious injury from electrical shock or damage to product, and can void product warranty due to possible product misapplication.

WARNING

1. Contact with energized electrical circuits can cause serious injury from electrical shock. Disconnect electrical power to the equipment before starting installation.

CAUTION

1. Do not set humidity higher than recommended or moisture can accumulate, which can cause bacteria and mold growth or dripping water into building spaces. Dripping water can cause property damage; bacteria and mold growth can cause illness.
2. Do not set humidity up to recommended levels if there is condensation on the inside of windows. Condensation damage can result.

Table of contents

WARNINGS	2
OVERVIEW	4
Features and parameters	4
TCI display	5
TRI2 display	6
SPECIFICATIONS	7
Model TCI and TRI2 specifications	7
Dimensions	9
INSTALLATION	10
Installation instructions	10
TRI2 wiring diagram	11
OPERATION	12
Changing the parameters	12
BACnet® communication with DriSteem humidistats	13
Configuration of BACnet® humidistat devices	15
Object list	17
Description of available objects	20
Application Options for using Digital Outputs with BACnet for Dehumidifier	22
Model TRI2 BACnet humidistat parameters	23
MAINTENANCE	25
Accessing the internal humidity sensor AES1-HT-Ax	25
TROUBLESHOOTING	26
REPLACEMENT PARTS	27

Features and parameters

FEATURES

- Digital display of humidity and setpoint.
- Mount to wall or standard junction box.
- One universal input for a remote humidity sensor.
- One 0 - 10VDC or 4 - 20mA output (for DriSteem modulating humidifiers).
NOTE: Actuators: Choose modulating actuators with an input signal type of 0 - 10VDC or 4 - 20mA. Minimum and maximum signal limitations may be set with parameters. 3-point point actuators with constant running time are recommended. The default parameters are for 2 - 10VDC actuators.
- Input voltage of either 24VAC or 24VDC.

ROOM MODELS

- Standard with 3% humidity element
- Replaceable internal humidity element (optional)

MODEL TRI2

- Touchscreen digital display of humidity and setpoint
- BACnet communications
- Two universal inputs for alarm inputs.
- Two digital outputs for on/off control (for DriSteem dehumidifiers).

PARAMETERS

The following functions can be changed from the parameters menu.

- Configure universal input for a 0 - 10VDC, 2 - 10VDC, 0 - 20mA, or 4 - 20mA remote humidity sensor, default is 0 - 10VDC
- Configure output for 0 - 10VDC, 2 - 10VDC, 0 - 20mA, or 4 - 20mA, default is 2 - 10VDC
- Monitor alarms for high and low humidity, default disabled.
- Set min or max humidity display, default 0% and 100%
- Calibrate sensor
- Tune the PI control loop (for modulating analog output only)
- Enable security to prevent user from changing parameters.
- Convert between Fahrenheit or Celsius display.
- Change BACnet communication settings (Model TRI2).
- Monitor alarms for duct high limit air flow on BACnet models and dehumidifier errors.

WARNING!

This device is intended to be used for comfort applications. Where a device failure endangers human life and/or property, it is the responsibility of the owner, designer and installer to add additional safety devices to prevent or detect a system failure caused by such a device failure. The manufacturer of this device cannot be held liable for any damage caused by such a failure.

WARNING!

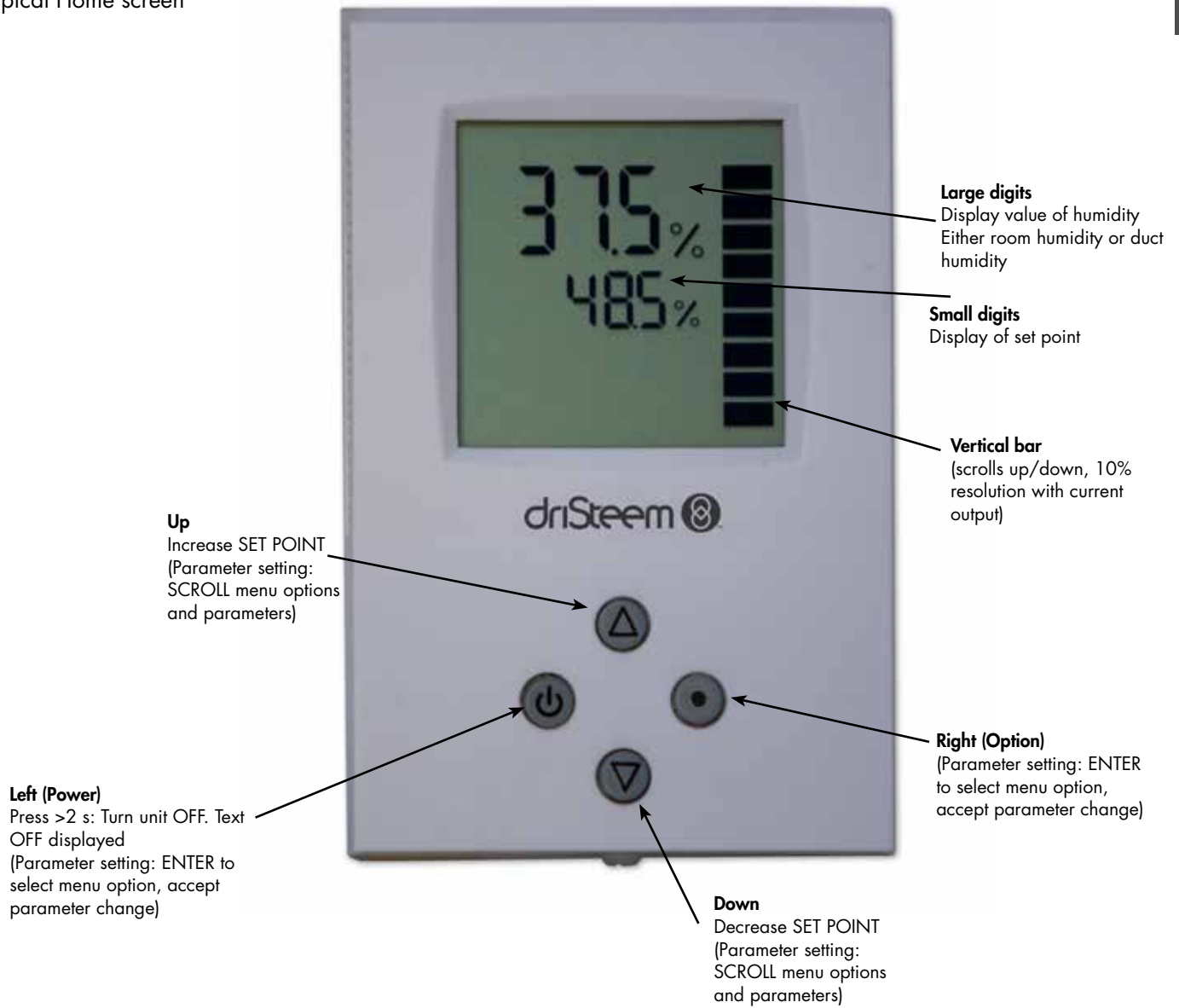
Live electrical components

During installation, testing, servicing and troubleshooting of DriSteem products, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

TCI display

FIGURE 5-1: USING THE DRISTEEM MODEL TCI HUMIDISTAT DISPLAY

Typical Home screen



TRI2 display

FIGURE 6-1: USING THE MODEL TRI2 BACNET DRISTEEM HUMIDISTAT DISPLAY

Typical Home screen

Large digits
 Display value of humidity
 Either room humidity or duct humidity

Small digits
 Display of set point

Vertical bar (output)
 (scrolls up/down, 10% resolution with current output)
 Note: Not visible for on/off control.

Left (Power)
 Press >2 s: Turn unit OFF. Text OFF displayed
 (Parameter setting: ENTER to select menu option, accept parameter change)

Up
 Increase SET POINT
 (Parameter setting: SCROLL menu options and parameters)

Down
 Decrease SET POINT
 (Parameter setting: SCROLL menu options and parameters)

Right (Option)
 (Parameter setting: ENTER to select menu option, accept parameter change)

Time Schedules
 Default disabled.



Model TCI and TRI2 specifications

Table 7-1: Model TCI and TRI2 specifications		Model TCI	Model TRI2
Power Supply	Power requirements	24 AC/DC $\pm 10\%$, 50/60 Hz, Class 2, 2.0A, 48 VA max. SELV to HD 384.	
	Power consumption	Maximum 3 VA	Maximum 5 VA
	Electrical connection	Terminal connectors 0.34 - 2.5 mm ² wire (AWG 22 - 13)	Terminal connectors 0.34 - 1.3 mm ² wire (AWG 22 - 16)
Signal Inputs	Universal input	Setting for voltage or current or digital input	
	Input signal	0 - 10 V or 0 - 20 mA	
	Resolution	9.76 mV or 0.019 mA (10 bit)	
	Impedance	Voltage: 98k Ω , Current: 240 Ω	
	Humidity sensor AEs3-HT-Ax	Capacity sensor	
	Range	0 - 90% rH	
	Measuring accuracy	$\pm 3\%$	
	Hysteresis	$\pm 1\%$	
	Repeatability	$\pm 0.1\%$	
Stability	<0.5% / year		
Passive Input	Range	UI4 to UI5, Passive Temperature NTC or open contact NTC (Sxx-Tn10) 10k Ω , Type 2 -40...100 °C (-40...212 °F)	
Signal Outputs	Analog output	-	
	Output signal	DC 0 to 10V/0 to 20mA	
	Resolution	9.76 mV / 0.019 mA	
	Maximum load	Voltage: 5k Ω , Current: 250 Ω	$\geq 1k\Omega$
	Insulation strength between relays contacts and system electronics	2000 VAC to EN60730-1	1500 VAC to EN60730-1 1000 VAC to EN60730-1
	Relay outputs	AC Voltage: 0...48 VAC, full-load current (1.2) A DC Voltage: 0...30 VDC, full-load current 2 A	
Environment	Operation	To IEC 721-3-3	
	Climatic conditions	class 3K5	
	Temperature	0 to 50°C (32 to 122°F)	
	Humidity	< 95% RH non-condensing	<85% RH non-condensing
	Transport & storage	To IEC 721-3-2 and IEC 721-3-1	
	Climatic conditions	class 3K5 and class 1K3	
	Temperature	-25 to 70°C (-13 to 158°F)	
	Mechanical conditions	class 2M2	

Continued on next page

Model TCI and TRI2 specifications (continued)

Table 8-1:
Model TCI and TRI2 specifications (continued)

		Model TCI	Model TRI2
Standards	CE conformity, EMC standard, low voltage directive		2014/30/EU 2014/35/EU
	Automatic electrical controls for household and similar use		EN 60730-1
	Special requirement on temperature dependent controls	EN 60730-2-9	-
	Electromagnetic compatibility for industrial and domestic sector	-	Emissions: EN 60 730-1 Immunity: EN 60 730-1
	Degree of protection		IP30 to EN 60529
	Pollution class		II (EN 60730-1)
	Safety class	III (IEC60536)	II (IEC60536)
	Overvoltage category	I (EN60730-1)	II (EN60536)
General	Material: Cover, back part, mounting plate	Fire proof ABS plastic (UL94 class V-0) Galvanized steel	
	Dimensions (H x W x D)	Front part: 15 X 113 X 72 mm (0.6 X 4.5 X 2.8in) Power case: 58 x 32 mm (2.3" x 1.3")	Front part: 14 X 113 X 72 mm (0.6 X 4.5 X 2.8in) Power case: 50 x 50 mm (2.0" x 2.0")
	RoHS compliant according to	2011/65/EU	
	Weight (including package)	253 g (8.9 oz)	184 g (6.5 oz)
Network	Hardware interface	-	RS485 in accordance with EIA/TIA 485
	Max nodes per network	-	128
	Max nodes per segment	-	64
	Conductors	-	Shield twisted pair (STP) cable
	Impedance	-	100 - 130 ohm
	Nominal capacitance	-	100 pF/m 16 pF/ft. or lower
	Galvanic isolation	-	The communication circuitry is isolated
	Line termination	-	A line termination resistance (120 ohm) shall be connected between the terminals (+) and (-) of the furthestmost node of the network
	Network topology	-	Daisy chain according EIA/TIA 485 specifications
Recommended maximum length per chain	-	1200 m (4000 ft).	
BACnet	Communication standard	-	BACnet MS/TP over RS485 BTL tested and listed B-ASC
	Communication speed	-	9600, 19200, 38400, 57600, 76900, 115200

Dimensions

FIGURE 9-1: TCI HUMIDISTAT DIMENSIONS

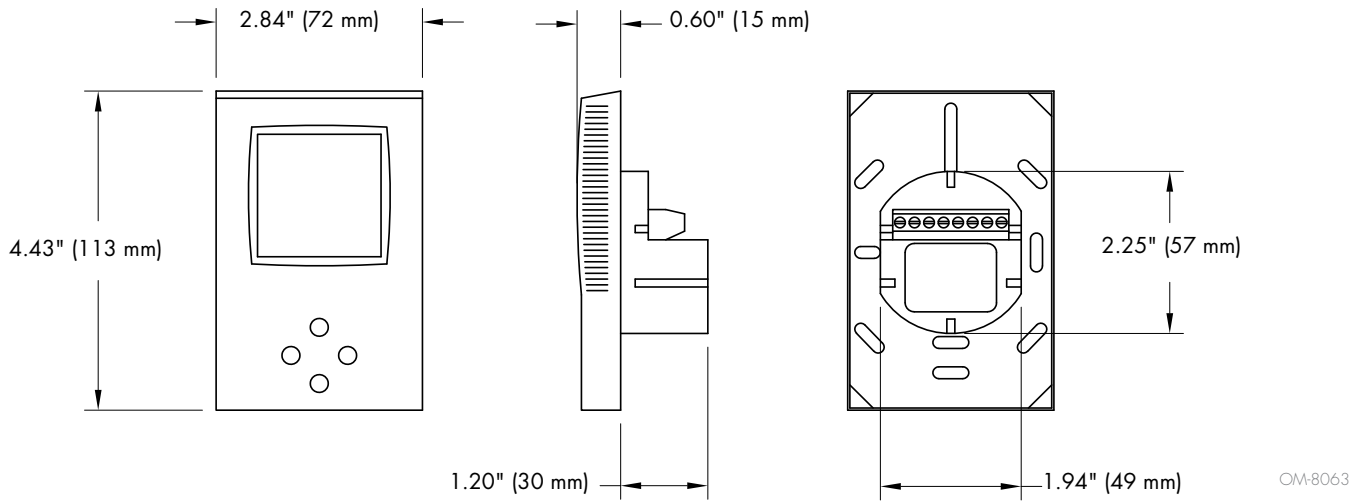
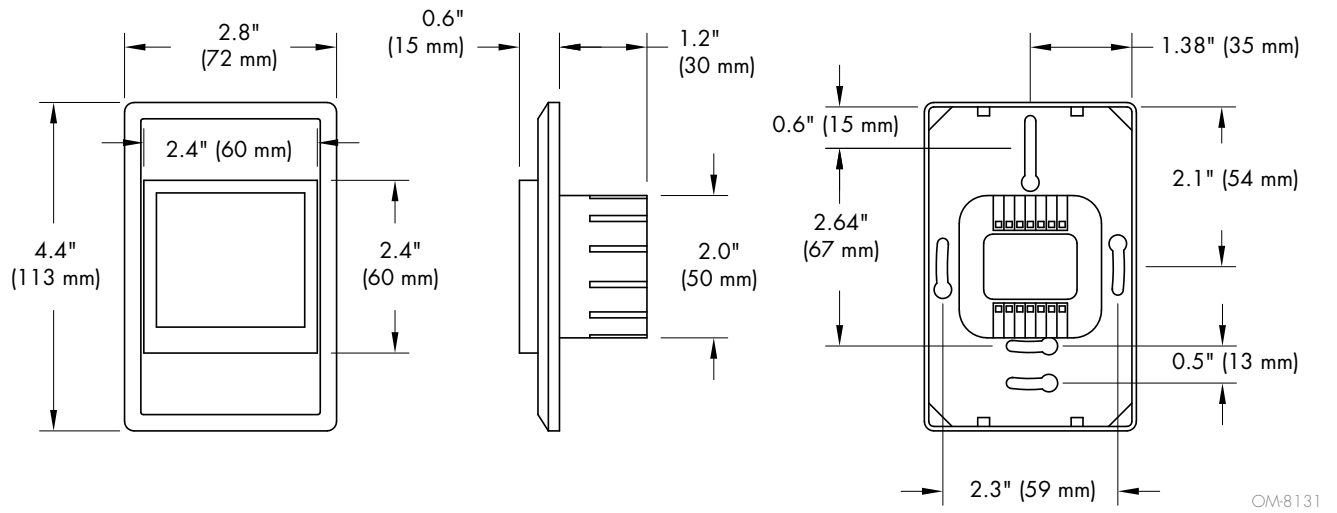


FIGURE 9-2: TRI2 HUMIDISTAT DIMENSIONS



Installation instructions

INSTALLATION

- Install the controller on an easily accessible interior wall, approximately 1.5 m above the floor in an area of average temperature.
- Avoid direct sunlight or other heat sources (e.g. above radiators and heat emitting equipment).
- Avoid locations behind doors, outside walls, and below or above air discharge grills and diffusers.
- Location of mounting is less critical if external sensors are used.
- Ensure adequate air circulation to dissipate heat generated during operation.
- Observe local regulations.
- Do not mount in a wet or condensation prone environment.

INSTALLATION INSTRUCTIONS

1. Connect the wires to be connected to the terminals of the power case according to wiring diagram.
2. Install the mounting plate to the flush mounting box.

Notes:

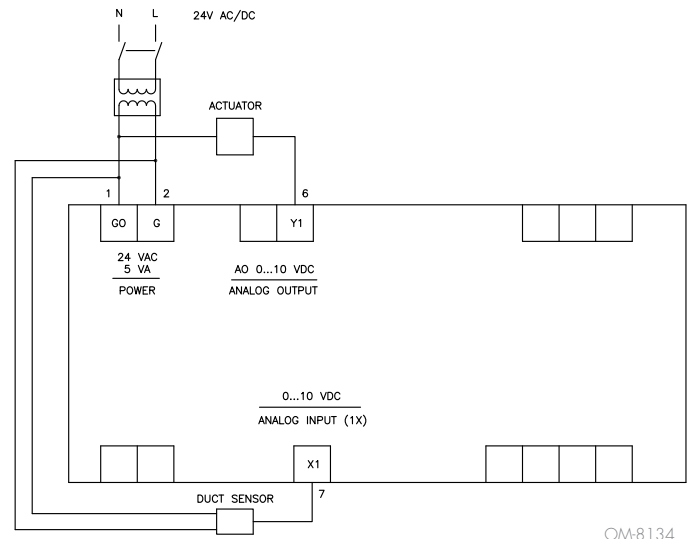
- Make sure the nipple with the front holding screw is facing to the ground (TCI models only).
 - Make sure the mounting screw heads do not stand out more than 0.2" (5 mm) off the surface of the mounting plate.
3. Ensure the jumpers are set correctly (TCI models only).
 4. Slide the two latches located on the top of the front part into the hooks at the upper side of the mounting plate.
 5. Carefully lower the front part until the interconnector reaches the mounting-plate. Continue pressing in a gentle way until the front part is fully connected. While inserting the connectors, a slight resistance can be felt. This is normal. Do not use excessive force.
 6. With a Phillips-type screw driver of size #2, carefully tighten the front holding screw to secure the front part to the mounting plate. This screw is located on the front lower side of the unit. There is no need to tighten the screw too much (TCI models only).

JUMPER CONFIGURATION (TCI MODELS ONLY)

Jumpers are mounted vertically only.

1. A0 - Selection of output signal type
 - Left position: voltage output (0 - 10 V) factory default.
 - Right position: current output (0 - 20 mA)
2. UI - Selection of input signal type
 - Left position: voltage input (0 - 10 V) factory default.
 - Middle position: current input (0 - 20 mA)
 - Right position: RT or dry-contact input

FIGURE 10-1: CONNECTION (TCI MODELS ONLY)



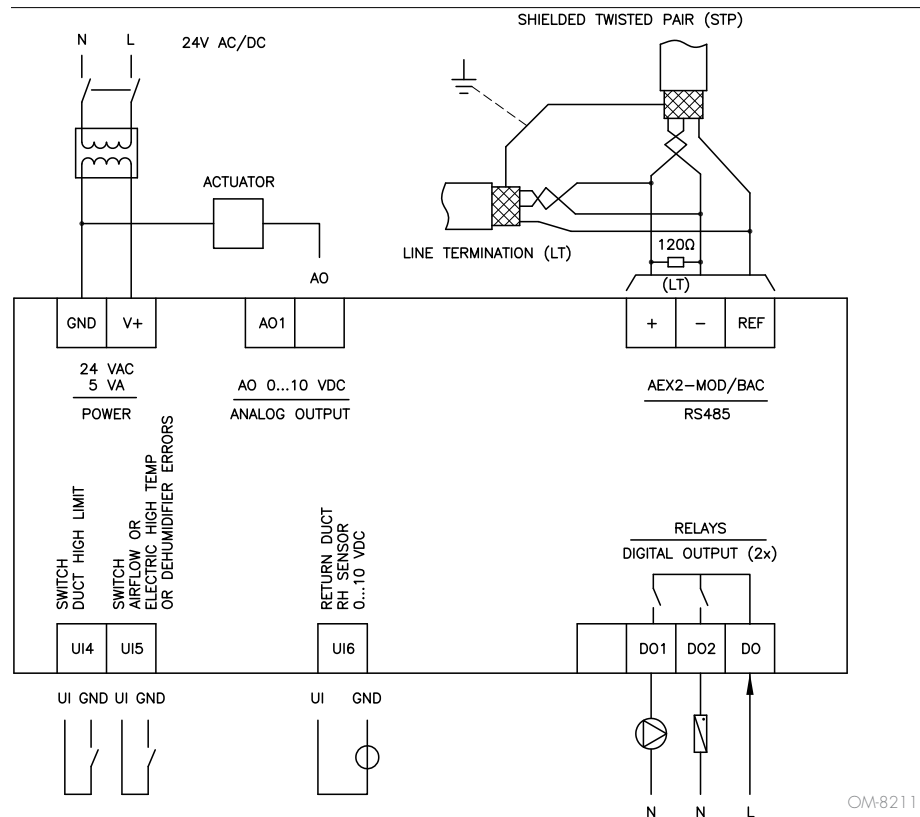
OM-8134

Table 10-1:
TCI Terminal connections

		TCI-W11-U-H (Room)	TCI-W11-U (Duct)
G0	Ground	1	1
G	24VAC/21VDC	2	2
Y1	Control output	6	6
X1	Duct sensor Input	—	7

TRI2 wiring diagram

FIGURE 11-1: TRI2 WIRING DIAGRAM



OM8211

		TRI2 (Room)	TRI2 (Duct)
GND	Ground	1	1
V+	24VAC/21VDC	2	2
AO1	Control output	3	3
UI4	Duct high limit switch	8	8
UI5	Air flow switch and/or electric high temp	9	9
UI6	Duct sensor input	—	10
+	BACnet +	5	5
-	BACnet -	6	6

		TRI2 (Room)	TRI2 (Duct)
GND	Ground	1	1
V+	24VAC/21VDC	2	2
DO1	Control output signal	12	12
DO	Control output power	14	14
UI4	RL Dehumidifier error code	8	8
UI6	Duct sensor input	—	10
+	BACnet +	5	5
-	BACnet -	6	6

Changing the parameters

1. Press the UP and DOWN button simultaneously for three seconds. The display will indicate the firmware version in the upper large digits and the revision in the lower small digits. Press the RIGHT or POWER key to start login.
2. CODE is shown in the small display.
3. The code for accessing the user parameters is 0009, for control parameters it is 0241.
4. Select this by using the UP or DOWN buttons.
5. Press the RIGHT or POWER button after selecting the correct code.
6. Once logged in the parameter group can be selected with the UP and DOWN key. Enter the group with the RIGHT or POWER key.
7. Once the group is selected, the parameter is displayed immediately.
8. Select the parameters with the UP/DOWN buttons. Change a parameter by pressing the RIGHT button. Arrows 8 to 10 show up and indicate that the parameter may be modified now. Use UP or DOWN buttons to adjust the value.
9. Once complete, press RIGHT or POWER in order to save the new value of the parameter and return to the selection level. Pressing the LEFT key will discard the value and return to the selection menu without saving.
10. Press the LEFT key again so as to leave the parameter menu and return to the group selection. Press LEFT key again while in the group selection to return to normal operation.
11. The unit will return to normal operation if no key is pressed for more than five minutes.

BACnet® communication with DriSteem humidistats

FEATURES

- BACnet® MS/TP communication over RS485
- B-ASC Device Profile
- Slave type of communication
- Supports up to 128 nodes on one network
- Galvanic isolated bus connection
- Baud rates: Auto / 9600 / 19200 / 38400 / 57600 / 76800 / 115200
- LED indicators

X2-BAC (TRI2) PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (PICS)

Vendor Name: Vector Controls

Product Name: X2 Controls series

X2 product description:

The X2 communicating BACnet® controllers are designed as universal controls equipment suitable for a large number of applications. They may be used in zoning and other applications which are monitored by a BACnet® MS/TP network.

Table 13-1:

Supported BACnet Interoperability Blocks (BIBB)

The BACnet interface conforms to the B-ASC device profile (BACnet® Application Specific Controller). The following BACnet Interoperability Building Blocks (BIBB) are supported.

BIBB	Type	Name
DS-RP-B	Data sharing	Read property - B
DS-RPM-B	Data sharing	Read property multiple - B
DS-WP-B	Data sharing	Write property - B
DM-DCC-B	Device management	Device communication Control - B
DM-DDB-B	Device management	Dynamic device binding - B
DM-DOB-B	Device management	Dynamic object binding - B
DM-TS-B	Device management	Time synchronization - B
DM-UTC-B	Device management	UTC Time synchronization - B
DM-RD-B	Device management	Reinitialize device - B

BACnet® communication with DriSteem humidistats

SUPPORTED STANDARD BACNET® APPLICATION SERVICES

- ReadProperty
- ReadPropertyMultiple
- WriteProperty
- DeviceCommunication. Needs a password which is "Vector" (case sensitive and without the quotes).
- I-Am
- I-Have
- TimeSynchronisation
- UTCTimeSynchronisation
- ReinitializeDevice ("cold" or "warm"). Needs a password which is "Vector" (case sensitive and without the quotes).

SUPPORTED STANDARD OBJECT TYPES

- Device
- Analog input
- Analog value
- Binary value
- Multi-state Value

LED INDICATORS

The BACnet interface features a green LED and a red LED for indication of traffic on the RS-485 bus. The green LED is lit when an incoming packet is received, and the red LED is lit when an outgoing packet is transmitted to the bus. At power-up, both LED blink twice simultaneously as a sign of the boot process being completed. A constantly lit LED serves as an indication of a fault condition in the reception or sending process.

Configuration of BACnet® humidistat devices

CONFIGURATION OF BACNET HUMIDISTAT DEVICES

The communication parameters may be set via operation terminals. Login to the controller as follows:

1. Press UP/DOWN buttons simultaneously for three seconds. The display will show firmware version and revision number. Press the OPTION button to start login.
2. CODE is shown in small display.
3. Select 241 using UP/DOWN buttons.
4. Press OPTION after selecting the correct code.
5. Once logged in with 241 control modules are displayed (Lp1, Lp2, 1u, 2u, etc.) – select with UP/DOWN the communication parameters CO and open with OPTION. As soon as the module is open its parameters are displayed.
6. Select the parameters with the UP/DOWN buttons. Change a parameter by pressing the OPTION button. Three arrows are displayed to indicate that the parameter may be modified. Use UP/DOWN buttons to adjust the value.
7. After you are done, press OPTION to save the new value and return to the selection level (arrows disappear when selection is saved). Pressing left hand POWER button without pressing OPTION will discard the value and return without saving. For control parameters press POWER again to leave parameter selection and return to control module selection.

Press the POWER to leave the menu. The unit will return to normal operation if no button is pressed for more than 5 minutes.

Configuration of BACnet® humidistat devices

Table 16-1:
COM Parameters

Parameter	Description	Range	Default
CO 00	Bus plug-in hardware id (read only)	0...255	3
CO 01	Bus plug-in software version (read only)	0...255	12
CO 02	Bus plug-in software revision (read only)	0...255	13
CO 03	Communication address (must be unique in network)	1...127	1
CO 04	Baud rate: 0 = Auto-detect1 1 = 9600 2 = 19200 3 = 38400 4 = 57600 5 = 76800 6 = 115200	0...6	0 (Auto-detect)
CO 05	Highest master	1...127	127
CO 06	Device object ID1 000000xx	0...99	00
CO 07	Device object ID2 0000xx00	0...99	00
CO 08	Device object ID3 00xx0000	0...99	01
CO 09	Device object ID4 0x000000	0...4	0
CO 10	Send I-am at boot	1, 0 (ON, OFF)	1 (ON)
CO 11	Not used.	0...255	255
CO 12	Not used.	0...255	255
CO 13	Not used.	0...255	255
CO 14	Not used.	0...255	255
CO 15	Auto increment2 and auto-build3 of "device object name" flags: 0 = Auto increment and auto-build of device object name disabled 1 = Auto increment is enabled, auto-build of device object name disabled 2 = Auto increment disabled; auto-build of device object name enabled 3 = Auto increment and auto-build of device object name enabled	0...3	2

1 "Auto-detect baud rate"-mode

When this option is selected, the AEC-BAC will detect the baud rate of the RS485 network. The AEX-BAC will stay in baud rate detection mode until it successfully decodes a package sent from device with address = 0 with a baud rate which is supported by the AEX-BAC. The baud rate detection mode will be entered once at hardware start-up and after a prolonged communication failure.

2 "Auto increment"-function

When this function is enabled and an automatic AEC-PM1 parameter load is executed at power up of the controller, the following variables will be incremented and written back to the AEC-PM1 unit:

- CO03 Communication address. This is incremented only if the value is not already 127 with respect to CO05 – the address of the highest master. If CO05 is equal or less than the newly incremented value of CO03, then CO05 is written to be 127 (the maximum value of CO05 possible).
- CO06 ... CO09 Device object ID. This is incremented only if the value is not already "4194304".

3 "Auto-build of device object name"-function

The BACnet standard requires that the each BACnet endpoint has a unique name on the network (device object name). The initial name of the AEX-BAC module is "AEX-BAC" equal for all devices. This means that device object names need to be edited manually.

Using the auto-build-function the device object name can be automatically assembled using the label AEX-BAC followed by the contents of CO06 – CO09 (The device object ID). For example, AEX-BAC-01050001.

If one writes the device object name manually through BACnet, the auto-build function will automatically be disabled (CO15 set to 0 or 1). In this case, the auto increment function will not have an effect on the device object name, only on the device object ID.

Object list

Table 17-1: Object List			
Property	Description	Range/Type	R/W
Device Object			
APDU_Timeout	Time between retransmissions in milliseconds. This device does not support retransmissions, so this always reads as "0".	0	R
App Software Version	Controller Firmware Version (assembled by firmware) XX.XrYY ("X" = version; "Y" = revision)	String	R
Database_Revision	Increases if the settings change	16 bit	R
Daylight_Savings_Status	Daylight savings status of host controller	True/False	R
Description	Description of controller or location	32 Bytes	R/W
Device Address Binding	Address binds	List	R
Firmware_Revision	BACnet Firmware Revision	String	R
Local_Date	Date of host controller in format YYYY-MM-DD-DOW	YYYY-MM-DD-DOW	R
Local_Time	Time of host controller in format HH:MM:SS	HH:MM:SS	R
Max APDU Length Accepted	The maximum APDU length supported by this device is 480.	16 bit	R
Max Info Frames	The value specifies the maximum number of information frames the node may send before it must pass the token.	1	R/W
Max_Master	Number of the highest addressed node	1...127	R/W
Model_Name	"X2-abcde-BAC" (assembled by firmware) a = number of loops b = number of passive inputs c = number of universal inputs d = number of binary outputs e = number of analog outputs	String	R
Number_of_APDU_Retries	Number of retransmissions. This device does not support retransmissions, so this always reads as "0".	0	R
Object_Identifier	Device object identifier (CO06...CO09)	22 bit	R/W
Object_Name	Name of device	32 Bytes	R/W
Object_Type	The value is always "Device" for the device object	10 bit	R
Protocol_Objects_Supported	The enumeration of the supported object types	List	R
Protocol_Services_Supported	The enumeration of the supported services	List	R
Protocol_Version	BACnet protocol version number	1	R
Protocol_Revision	BACnet protocol revision number	14	R
Segmentation_Supported	This device does not support segmentation, so this always reads as "NO_SEGMENTATION (3)".	0...3	R
System_Status	Current physical and logical status supported: • OPERATIONAL (0) • DOWNLOAD_REQUIRED (2) (IF INT. EEPROM CONF. ERRORS) • NON_OPERATIONAL (4) (IF INT. I2C BUS ERRORS)	0...5	R
UTC_Offset	Offset to UTC time in case UTC time synchronization is used	-780...780	R/W
Vendor_Identifier	561		R
Vendor_Name	Vector Controls GmbH	String	R
Object_List	List of all objects currently implemented in the device	List	R

Object list (continued)

Table 18-1:
Object List (continued)

Property	Description / Property Description	Range/Type	R/W
Analog Input Object			
Object_Identifier	AI number	8bit	R
Object_Name	Name of the input, Assembled from template plus number	String	R
Description	Description of the input	16 Bytes	R/W
Preset_Value	Current value of input, writable only if out of service is set	Floating Point	R
Status_Flags	In_Alarm, Fault, Overridden, Out_Of_Service	Flags	R
Event_State	Always NORMAL	Flags	R
Reliability	NO_FAULT_DETECTED, NO_SENSOR, OVER_RANGE, UNDER_RANGE, OPEN_LOOP, SHORTED_LOOP, COMMUNICATION_FAILURE, UNRELIABLE_OTHER	List	R
Out_Of_Service	Writing to Out_Of_Service property is not supported	Flag	R
Units	Describes the units used. Degree Celsius or Fahrenheit has to be set by MV02.	8bit	R
Analog Value Object			
Object_Identifier	AV number	8bit	R
Object_Name	Name of the value, Assembled from template plus number	String	R
Description	Description of the input	16 Bytes	R/W ⁽¹⁾
Preset_Value	Current value of input, writable only if out of service is set	Floating Point	R/W ⁽²⁾
Status_Flags	In_Alarm, Fault, Overridden, Out_Of_Service	Flags	R
Event_State	Always NORMAL	Flags	R
Out_Of_Service	Writing to Out_Of_Service property is not supported	Flag	R
Units	Describes the units used. Degree Celsius or Fahrenheit has to be set by MV02.	Coded Value	R
Binary Value Object			
Object_Identifier	BV number	8bit	R
Object_Name	Name of the input, Assembled from template plus number	String	R
Description	Description of the input	16 Bytes	R/W ⁽³⁾
Preset_Value	True or False, writable only if out of service is set	ON, OFF	R/W
Status_Flags	In_Alarm, Fault, Overridden, Out_Of_Service	Flags	R
Event_State	Always NORMAL	Flags	R
Out_Of_Service	Writing to Out_Of_Service property is not supported	Flag	R
⁽¹⁾ Writable for objects with writable Present Value property only. (AVxx > AV11)			
⁽²⁾ Writable for AV indexes greater than 11.			
⁽³⁾ Writable for objects with Instance Number greater than 100.			

Object list (continued)

Table 19-1: Object List (continued)			
Property	Description / Property Description	Range/Type	R/W
Multi State Value Object			
Object_Identifier	MV number	8bit	R
Object_Name	Name of the input, Assembled from template plus number	String	R
Description	Description of the input	16 Bytes	R/W ⁽¹⁾
Preset_Value	Unsigned Integer	8bit	R/W
Status_Flags	In_Alarm, Fault, Overridden, Out_Of_Service	Flags	R
Event_State	Always NORMAL	Flags	R
Out_Of_Service	Writing to Out_Of_Service property is not supported	Flag	R
Number_Of_States	Unsigned Integer	8bit	R
State_Text	Array of strings	8bytes/state maximum	R

⁽¹⁾ Writable for objects with Instance Number greater than 100.

Description of available objects

Note: The DriSteem application of the X2 controller on DriSteem model TRI2 does not use all available BACnet points. This list includes only the BACnet points as used with DriSteem equipment. Some points apply only to duct sensor applications and others apply only to room wall sensor applications.

Table 20-1:
Description of Available Objects

Object	Name (8 Bytes)	Description	Range/Type	R/W
Controller Information				
Not Used by DriSteem: AV01, AV03, AV06, AV07, AV09, AV10, AV11				
*Not used by humidifiers				
**Not used by dehumidifiers				
AV 00	#CtrlP	Number of control loops	8bit	R
AV 02	#uln	Number of universal inputs	8bit	R
AV 04*	#BinOut	Number of binary output	8bit	R
AV 05**	#aOut	Number of analog outputs	8bit	R
AV 08	#Alarm	Number of alarms	8bit	R
Controller State				
Not Used by DriSteem: MV00, MV01, BV01, BV02, BV03, BV05, BV06, BV07, MV05				
BV 00	OpStOo	Operation state On - Off: Inactive / Active	BV	R/W
BV 04	AccSp	Enable access to set points	BV	R/W
MV 02	Degree	Operation state Celsius – Fahrenheit: 1 = Celsius, 2 = Fahrenheit	MV	R/W
MV 03	OpStOPMS	Operation State Master/Slave mode: "Master" / "Slave"	MV	R/W
MV 04	OpStWink	Operation State "Wink" function: "WinkON" / "WinkOFF"	MV	R/W
Universal Inputs				
Not Used by DriSteem: AI103, AV103, AI107, AV107, AI108, AV108				
-Not Used for duct models				
-- Not used for room models				
**Not Used for dehumidifiers				
AI 101	UI-01	Universal Input 01, temperature	16bytes	R
AV 101	UI-01-OS	Universal Input 01 Offset (calibration = 01u6), temperature	16bytes	R/W
AI 102-	UI-02	Universal Input 02, internal humidity	16bytes	R
AV 102-	UI-02-OS	Universal Input 02 Offset, internal humidity	16bytes	R/W
AI 104	UI-04	Universal Input 04	16bytes	R
AV 104	UI-04-OS	Universal Input 04 Offset	16bytes	R/W
AI 105**	UI-05	Universal Input 05	16bytes	R
AV 105**	UI-05-OS	Universal Input 05 Offset	16bytes	R/W
AI 106-	UI-06	Universal Input 06, remote humidity	16bytes	R
AV 106-	UI-06-OS	Universal Input 06 Offset, remote humidity	16bytes	R/W

Description of available objects

Table 21-1: Description of Available Objects				
Object	Name (8 Bytes)	Description	Range/Type	R/W
Alarms				
**Not used for dehumidifiers				
--Not Used for room models				
MV 601-	AL-01	Alarm 1: Not Active, Active, Need confirmation, humidity out of range	16 bytes	R/W ⁽¹⁾
MV 602	AL-02	Alarm 2: Not Active, Active, Need confirmation, DHL (humidifiers) or dehumidifier errors	16 bytes	R/W ⁽¹⁾
MV 603**	AL-03	Alarm 3: Not Active, Active, Need confirmation, air flow or temp switch	16 bytes	R/W ⁽¹⁾
MV 604	AL-04	Alarm 4: Not Active, Active, Need confirmation	16 bytes	R/W ⁽¹⁾
MV 605	AL-05	Alarm 5: Not Active, Active, Need confirmation	16 bytes	R/W ⁽¹⁾
MV 606	AL-06	Alarm 6: Not Active, Active, Need confirmation	16 bytes	R/W ⁽¹⁾
MV 607	AL-07	Alarm 7: Not Active, Active, Need confirmation	16 bytes	R/W ⁽¹⁾
MV 608	AL-08	Alarm 8: Not Active, Active, Need confirmation	16 bytes	R/W ⁽¹⁾
Control Loops				
Not Used by DriStem: Control loops 2-4, MV211				
AV 211	LP-01-SSP	Saved set point, 16 bytes		R/W
AV 213	LP-01-PROP	Proportional output		R
MV 212	LP-01-DO	Binary output: Stage OFF, Stage 1, Stage 2,		R
Analog Outputs				
Not Used by DriStem: AO 2-3				
Analog outputs are not used by dehumidifiers				
MV 311	AO-01-ST	Analog Output 1 state		R
AV 311	AO-01-VAL	Analog Output 1 Value		R
AV 312	AO-01-OV	Analog Output 1 Override Value		R/W
Digital Outputs in Binary Configuration				
Not Used by DriStem: DO 2-6				
Digital outputs are not used by humidifiers.				
BV 411	DO-01-BIN	Binary Output 1 in binary mode	16 bytes	R
BV 412	DO-01-BIN-OV	Binary Output 1 override value	16 bytes	R/W
AV 511	DO-01-RT	Run time totalizer	16 bytes	R
BV 511	DO-01-ALA	Run time limit exceeded	16 bytes	R
MV 411	DO-01-ST	Current State for Binary Output 1 - NORMAL /OVERRIDE	16 bytes	R
(1) Writable to "not active" only, if state is "not active, need confirmation".				

Application Options for using Digital Outputs with BACnet for Dehumidifier

HUMIDISTAT CONTROL WITH BACNET SETPOINT CONTROL OPTION (DEFAULT SETTING)

The dehumidifier on/off decision is made by the control loop of the humidistat based on the humidistat control loop setpoint and humidity input to the humidistat. The BACnet read-only points available include humidity input (AI 102 for room, AI 106 for duct) and dehumidifier alarm status (AI 104).

The status of the digital output signal to the dehumidifier is BV 411. Setpoint control can be done at the humidistat or by BACnet with read-write AV 211.

The Operation State, BV 00 can be changed by BACnet. Changing Operation State is the same as pushing the power button on the humidistat. An inactive state turns the dehumidifier off while an active states put the dehumidifier under humidistat control loop control. There is no true digital output override when using Humidistat Control and BV 412 cannot be used. If the humidity input is less than the setpoint, BACnet cannot be used to override the digital output to on.

BAS/BMS CONTROL (MANUAL CONTROL)

The building automation system (BAS) makes the decision to turn the dehumidifier on or off, usually with a control loop and humidity sensors connected to the BAS. The BAS will control the dehumidifier by writing to BV 412 to directly control the digital output. The control loop of the humidistat will be disabled and setpoint control can only be done at the BAS supervisor. Other applicable points include BV 00 for Operation State, BV 411 for the status of the digital output, and AI 104 to get the hard-wired alarm status from the dehumidifier.

SWITCH FROM HUMIDISTAT CONTROL TO BAS CONTROL

The humidistat by default will do Humidistat Control. The default setting for digital output parameter 1d 01 is (1-control loop). Change this parameter to (6-manual control) to let the BAS take control over the dehumidifier. See Tables 23-1 and 24-1.

Model TRI2 BACnet humidistat parameters

Table 23-1:
Model TRI2 BACnet humidistat parameters

Parameter	Description	Range	Desired Default
*1L 00	Select loop control input:	2,6	
	Universal Input 6		6 (Duct)
	Sensor input 2		2 (Room)
1L 01	Minimum setpoint limit	0-100	0
1L 02	Maximum setpoint limit	0-100	100
1L SP	Control loop set point:	0-100	50%
1L 09	Disable the Control Loop when the given Alarm is active.	Alarms 1-8	Alarm 1
**1L 10	Offset for PI Sequences	0 to 100	0
**1L 11	The proportional band for heating	0 to 100	10
**1L 13	Integral gain heating (0.1 steps):	0-25.5	0.1
	low = slow reaction, high = fast reaction.		
**1L 15	Measuring interval integral (seconds):	0-25.5	15
	low = fast reaction, high value = slow reaction.		
**1A 02	Type of output signal:	ON/OFF	ON
	0-10V, 0-20mA. OFF		
	2-10V, 4-20mA. ON		
**1A 03	Minimum limitation of output signal default	0-100%	0%
**1A 04	Maximum limitation of output signal default	0-100%	100%
*02 u0	Internal Sensor Type	0,2	0 (Duct)
	0=not active		
	2=internal humidity sensor		
02 u6	Sensor Calibration	-12.7 to 12.8	0
*06 u0	Universal Input Signal Type	0,1	0 (Room)
	0= not active		
	1= (0-10V or 0-20mA)		
UP 01	Enable access to setpoints from screen	ON/OFF	ON
1d 01	1=control loop control	1,6	1 (humidistat Control)
	6=manual control (BAS control)		
*	To switch between a sensor in the duct or the internal wall sensor for the room, change parameters 06 u0, and 1L00 to the appropriate values for duct or room and install the new sensor.		
**	OFF or Not Used for dehumidifiers.		
***	To switch from a humidifier to a dehumidifier, contact DriSteem for new programming.		

Model TRI2 BACnet humidistat parameters

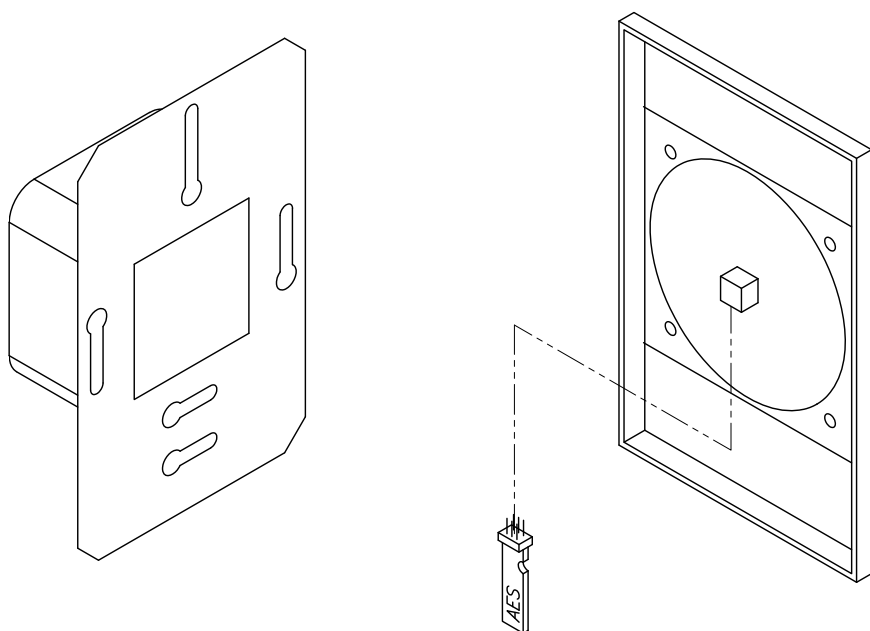
Table 24-1:
Model TRI2 BACnet humidistat parameters

Parameter	Description	Range	Desired Default
AL1	Alarm 1	0,1	1
	0=not active		
	1=Low Limit Alarm for the supervised input		
AL2	Alarm 2	0,1	1
	0=not active		
	1=Duct High Limit alarm as wired to universal input 4 1=dehumidifier error for dehumidifiers		
AL2	Alarm 2	0,1	1
	0=not active		
	1=no airflow alarm or US XV high temp switch as wired to universal input 5		

Accessing the internal humidity sensor AES1-HT-Ax

1. With a Phillips-type screw driver of size #2, un-tighten the front holding screw to loosen the front part to the mounting plate. This screw is located on the front lower side of the unit. (TCI models only).
2. Locate the notch in the bottom of the front cover. Using the screw driver, carefully lift the front cover until the cover loosens from the mounting-plate.
3. Slide the front cover off to expose the circuit board and pins for the AES1-HT-Ax sensor. See Figure 25-1.
4. If present, slide the existing AES1-HT-Ax out of the pins and replace with a new one.
5. Follow the installation instructions starting on Page 10 to put back together.
6. Change parameters according to Table 23-1.

FIGURE 25-1: ACCESSING THE INTERNAL HUMIDITY SENSOR



OM-8133

Troubleshooting

Table 26-1:
Troubleshooting

Issue	
Power failure	Check for proper supply voltage.
	Check for wiring shorts; reset breaker.
Error message	Err1: An assigned input is not enabled or missing. All control loops, functions, and outputs tied to this input will be disabled. Verify input connections, jumper settings and parameter settings for the input involved.
	Err3: A function refers to a disable input. Disable the function or enable the input.
	Err4: Internal failure. Product must be replaced.
1ALO Hi/Lo w/input	The humidity reading is outside of the allowed limits. Output will cease.
Alarms	ALA1: Room or Return Duct RH too low. For model 600965-001, verify the internal humidity element is installed per page 25 of this manual. For models 600966(8)-001, connect the duct RH sensor to UI6, terminal 10, and to the ground of the humidistat.
	ALA2: Supply duct humidity is above 80% and output is suspended. Check connection: duct high limit sensor to UI 4, terminal 8, and humidistat ground. For dehumidifiers, ALA2 is a dehumidifier error. Consult onboard controller for error code.
	ALA3: There is no air flow or US XV high temp switch has tripped and output is suspended. Check connection: air flow switch to UI5, terminal 9, and humidistat ground. The Ultra-sorb Electric High Temp switch can also be connected in series with the air flow switch.
	Notes: <ul style="list-style-type: none"> • If there is no duct high limit or air flow switch, or if a Vapor-logic board is present, put a jumper in place of the sensor to make the alarm go away. • To make multiple connections to the humidistat ground, use a wire nut to create a humidistat ground hub.

Replacement parts

Table 27-2: Replacement parts		
Model	Description	Part Number
TRI2	HUMIDISTAT CONTROLLER BACNET DUCT 0 - 10V	600966-002
	HUMIDISTAT DEHUM BACNET ROOM ON/OFF	601184
TRI2	HUMIDISTAT CONTROLLER BACNET ROOM 0 - 10V	600965-002
	HUMIDISTAT DEHUM BACNET DUCT ON/OFF	601185
TRI2 kit	HUMIDISTAT BACNET KIT W/DUCT SENSOR	600968-002
TCI-W11-U-W26 kit	HUMIDISTAT KIT W/DUCT SENSOR 3% 0 - 10V	600968
TCI-W11-U-W26	HUMIDISTAT DUCT 0 - 10V - DS BRANDED	600966
TCI-W11-U-H-W24	HUMIDISTAT ROOM 3% 0 - 10V - DS BRANDED	600965
	Accessories	
	SENSOR HUMIDITY Q-DUCT SAFE 3% 0-10V	600967
AES1-HT-A2	ELEMENT HUMIDITY 2% FOR TCI-W11-U	600983
AES1-HT-A3	ELEMENT HUMIDITY 3% FOR TCI-W11-U	600982
	TRANSFORMER 120V TO 24VAC 40VA	408700-001

Expect quality from the industry leader

Since 1965, DriSteem has been leading the industry with creative and reliable humidification solutions. Our focus on quality is evident in the construction of the XT Series humidifier. DriSteem also leads the industry with a Two-year Limited Warranty and optional extended warranty.

For more information

www.dristeem.com
sales@dristeem.com

For the most recent product information visit our Web site: www.dristeem.com

DRI-STEEM Corporation

a subsidiary of Research Products Corporation
DriSteem U.S. operations are ISO 9001:2015 certified

U.S. Headquarters:
14949 Technology Drive
Eden Prairie, MN 55344
800-328-4447 or 952-949-2415
952-229-3200 (fax)

Continuous product improvement is a policy of DriSteem Corporation; therefore, product features and specifications are subject to change without notice.

DriSteem, Rapid-sorb, Ultra-sorb, Vapor-logic are registered trademarks of Research Products Corporation and are filed for trademark registration in Canada and the European community.

Product and corporate names used in this document may be trademarks or registered trademarks. They are used for explanation only without intent to infringe.

© 2025 Research Products Corporation



Form No. TCHOM-EN-REVF-0125
Part No. 890000-280 Rev F