Marvair®
An ACS Brand

CommStat™ 10

PRODUCT DATA SHEET/MANUAL

Controller for Redundant HVAC Systems

General Description

The Marvair CommStat 10 HVAC controller is designed for controlling up to 10 non-PLC air conditioners or heat pumps in industrial and/or telecommunication applications. The CommStat 10 can control both single stage and 2-Stage Marvair air conditioners or heat pumps.

In addition to the control of the air conditioners or heat pumps, the CommStat 10 controller features built-in network communication and has multiple configurable outputs for remote alarms or notification.

The CommStat 10 System Controller installs with ease and is factory programmed with standard industry set points, but can be configured on site. Settings are retained indefinitely in the event of a power loss.

Marvair CommStat 10 Part Number K/40167
Additional Humidity & Dry Bulb Sensor (1 Included, Up to 4 Max) 70676
Dry Bulb Sensor 70916

Features

➤ **Programmable Logic Controller with User Friendly HMI Interface**
- *Balanced Use of Conditioning Equipment*
- *Sequence the Operation of 10 Air Conditioners or Heat Pumps*
- *Ensures Maximum Efficiency*
- *Independent Economizer Control with Remote Access*

➤ **Remote Unit Notification of Alarms and Lockouts**
- *High Pressure Alarm/Lockout*
- *Low Pressure Alarm/Lockout*
- *Low Temperature*
- *High Temperature Stage 1*
- *High Temperature Stage 2*
- *Smoke*
- *Low Voltage Loss*
- *Dirty Filter*
- *Emergency Ventilation*

➤ **Summed Unit Notification Dry Contact Alarm Outputs**
- *Notification of HVAC Unit Failure*
- *High/Low Pressure Lockout*
- *Low Temperature*
- *High Temperature Stage 1*
- *High Temperature Stage 2*
- *Smoke*

➤ **Native Support for Network Protocols:**
- *BACnet IP*
- *BACnet MS/TP*
- *MODBUS TCP*
- *MODBUS RTU (RS 485)*

➤ **Dehumidification Control**

Benefits

➤ **Continuous Visibility of HVAC Systems via Remote Access**

➤ **Ease in Wiring Due to Inter-Unit Communication Using RJ-11 Cables**

➤ **Unit Controllers are Daisy-Chained with a Single Lead to the CommStat 10**

➤ **Flexible Platform for Customization**

➤ **Built-in Webserver for Remote Access**

Introduction

The purpose of this document is to explain how to navigate through the interface along with describing the function of each selectable option on the screen.

> **⚠ WARNING**
>
> **Failure to observe the instructions contained in this document may result in personal injury and/or property damage along with voiding warranty. Read this manual before installing, replacing or using the product.**

Prerequisites

1. **Power to Controller**
   Controller requires a 100-240 VAC to operate. This can be taken from any independent HVAC unit. If independent power is required, a power supply can be supplied upon customers request. Note that the typical power supply has a 100-240 VAC input requirement and sourcing this input would be the user's responsibility.
2. **Network Wiring**
   System needs to be appropriately wired to facilitate proper communication. Please follow wiring diagram provided and manufacturers best practice recommendation. Deviation from instructions/guidelines could result in poor or interrupted communication between devices. Note that connection between each unit requires RJ11 cable. These are supplied by the end user. Units are wired in serial configuration (daisy chained).
3. **Unit PCB Setup**
   Communication between each unit is predefined in the controller and it requires the end user to manually set the unique MODBUS ID on each unit that is being controlled. It also requires configuration of some common variables. See table below

UNIT	MODBUS ID
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

HMI Interface Navigation

➤ HOME Screen

This is the first page that is populated when the HMI is powered up.

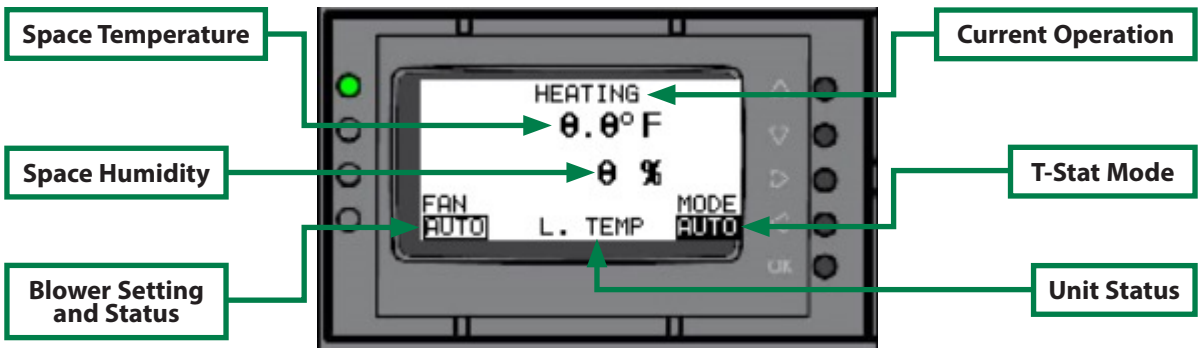


Figure 1. "Home" Screen

The Home Screen allows the user to make the following setting:

1. Press and hold the ***Up*** button on any screen to go to the Home Screen.
2. **T-Stat Mode** – Use the Left and Right arrows to scroll between modes.
   a. *OFF* – Turns the Thermostat "Off". No Air conditioning operation can be active.
   b. *COOL* – Allows the cooling process ONLY.
   c. *HEAT* – Allows the heating process ONLY
   d. *AUTO* – Allows both the Cooling and Heating process with respect to User defined setpoint.
3. **Space Temperature** – This variable displays the measured temperature of the space.
   a. To toggle between ºF (default) and ºC, use the ***Up*** or ***Down*** button to navigate to "F" on the Main Screen, press "OK", then press ***Down***. The Display will change to "C", then press "OK'".
4. **Space Humidity** – This variable displays the measured humidity of the space.
5. **Blower Mode** – This allows the user to dictate how the Indoor Motors should operate. It provides 3 selections:
   a. *AUTO* (DEFAULT) – This option only brings on the Indoor Blower when there is an active request for an air conditioning operation. The Indoor Blower goes off once the setpoint for the respective operation is satisfied.
   b. *ON* – This option can be described as continuous blower operation. That is, the Indoor blower does stays On, irrespective of a air conditioning request.
   c. *CYCLE* – This option provides the user with the ability to have the Indoor blower cycle ON and OFF for a user defined period in minutes. Note that during an air conditioning request, the blower runs continuously and will not cycle

➤ **T-Stat Setup 1**

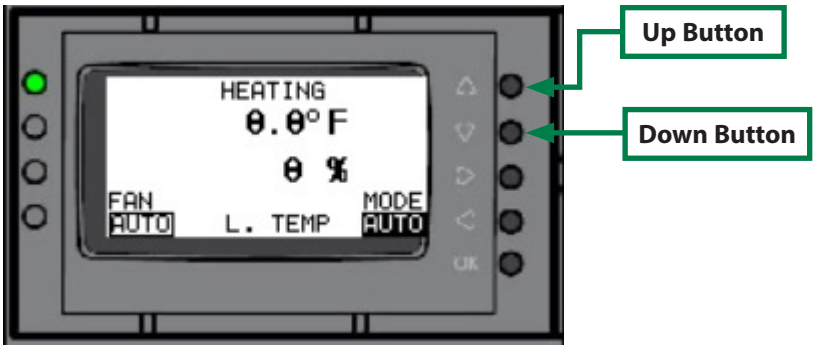


Figure 2. "T-Stat Setup 1" Screen

1. **Cooling Differential (*COOL DIF*)** – This variables dictates when the subsequent stage is energized in the cooling process. For example, if the "Cool SP" = 80 and "Cool Dif" = 2. The first cooling stage is energized at 80, the second cooling stage is energized at 82, the third cooling stage is energized at 84 and so on..... ***Default = 2.0***
2. **Heating Differential (*HEAT DIF*)** – This variable dictates when the subsequent stage is energized in the heating process. For example, if the "Heat SP" = 50 and "Heat Dif" = 4. The first hgeating stage is energized at 50, the second heating stage is energized at 46, the third heating stage is energized at 42 and so on..... ***Default = 2.0***
3. **Humidity Control Enabled** – This variable give the user the ability to 'Enable" or "Disable" the dehumidication operation. If "Yes", Dehumidifcation is "Enabled". The opposite occurs if "No" is selected..... ***Default = No***
4. **Humidity Setpoint** – This variable displays the Humidity measurement at which the dehumidification process is activated. See sequence of operation for description..... ***Default = 65***
5. **Heat Setpoint** – This variable displays the Room Temperature measurement at which the Heating process is activated. See sequence of operation for description..... ***Default = 50***
6. **Cool Setpoint** – This variable displays the Room Temperature at which the Cooling process is activated. See sequence of operation for description..... ***Default = 80***

➤ T-Stat Setup 2

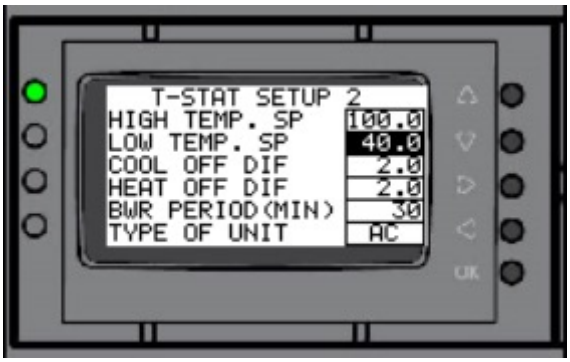


Figure 3. "T-Stat Setup 2" Screen

1. **High Temperature Setpoint** – This variable dictates the Room Temperature measurement at which the High Temperature Alarm Output is energized. See sequence of operation document for further description.... ***Default = 100***
2. **Low Temperature Setpoint** – This variable dictates the Room Temperature measurement at which the Low Temperature Alarm Output is energized. See sequence of operation document for further description..... ***Default = 40***
3. **Cool Off Differential** – This variable gives the user the ability to dictate the differential between the cooling setpoint and the point at which the cooling process is terminated. For Example, if Cooling Setpoint = 80, and Cool Off Differential = 5, The cooling process is terminated at 75..... ***Default = 2***
4. **Heat Off Differential** – This variable gives the user the ability to dictate the differential between the cooling setpoint and the point at which the cooling process is terminated. For Example, if Heating Setpoint = 50, and Cool Off Differential = 3, The cooling process is terminated at 53..... ***Default = 2***
5. **Blower Period** – This variable provides the user with the ability to periodic cycle the indoor blower when the unit is idling. The period of the idle is user and the unit is minutes. Note that this is only applicable if "Fan Mode" on "Home Screen" is set to "PERI"..... ***Default = 30 minutes***
6. **Type Of Unit** – This variable represents the type of unit being controlled. "AC" represents Air conditions. "HP" represents Heat-pumps..... ***Default = AC***

➤ Controller Setup

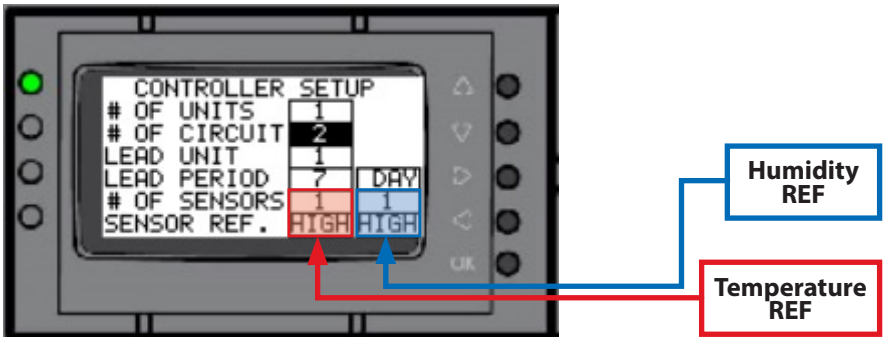


Figure 4. "Controller Setup" Screen

1. **Number of Units (# of UNITS)** – This variable gives the user the ability to dictate the number of units that is being controlled. Note that this number also dictates what unit can be a "LEAD" unit while the controller rotates the units. For example, if number of units = 5, and 6 units are being controlled, unit 6 can never be a lead. Also, unit 6 will only be called for after the previous 5 units are at full capacity..... ***Default = 1***
2. **LEAD Unit**– This variable displays the unit that will come on first if any operation is requested..... ***Default = 1***
3. **LEAD Period** – This variable provides the user with the ability to set how long a unit should remain as a "LEAD". This allows all systems being controlled to get equal runtime. The variable to the right gives the user the ability to select "DAYS", "HOURS" or "MINU" (minutes)..... ***Default = 7 DAYS***
4. **Number of Sensors** – This variable allows the user to define the number of sensors being used by the controller. Note that the "TEMP" tab for all sensor not being used should be equal to "0". The "OFFSET" variable of the respective sensor should be used to alter the "TEMP" of the sensor in question to 0. This is critical for calculation..... **Default = 1**
5. **Highest/Average** – This variable allows the user to select if the "HIGHEST" temperature measured should take priority in operation or "AVERAGE" temperature of the sensors should take priority. It is critical that the instructions in "No. of Sensors" above is followed..... ***Default = High***

➤ Unit Status

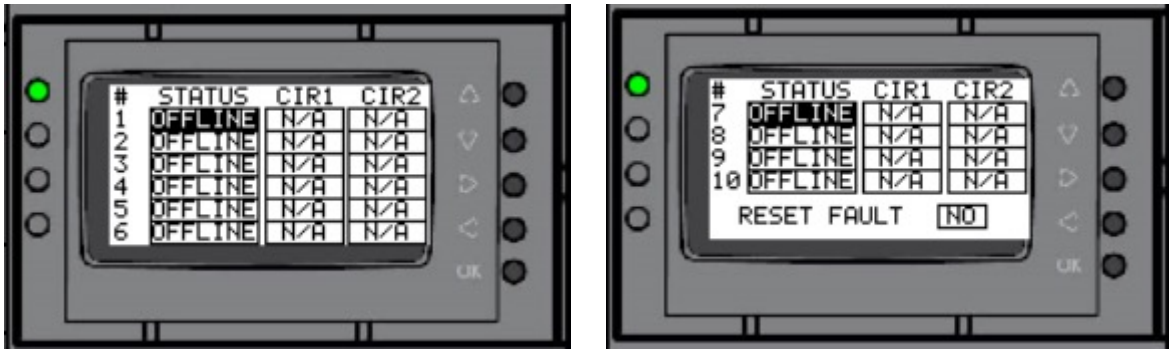


Figure 5. "Unit Status" Screen

This screen shows the status of the connection between the units and the controller as well as the associated pressure fault status of the respective HVAC unit.

1. **STATUS** – Allows user to monitor the communication status of the respective unit.
   - *OFFLINE* – Unit is not communicating
   - *ONLINE* – Unit is communicating
2. **CIRCUIT 1|2** – Allows the end user to monitor the status of the pressure faults for the respective circuits.
   - *OK* – No fault present
   - *HPS* – High Pressure Fault (for respective circuit)
   - *LPS* – Low Pressure Fault (for respective circuit)
   - *N/A* – Displayed if units are offline
3. **RESET FAULT** – Allows the end user to reset the pressure fault remotely. Note that if the fault is still present, the fault will not reset. To reset change "No" to "Yes". It will remain "Yes" for 3 seconds then revert to "No". If the faults are not present, ALL pressure faults will clear.

➤ Communication SetUp

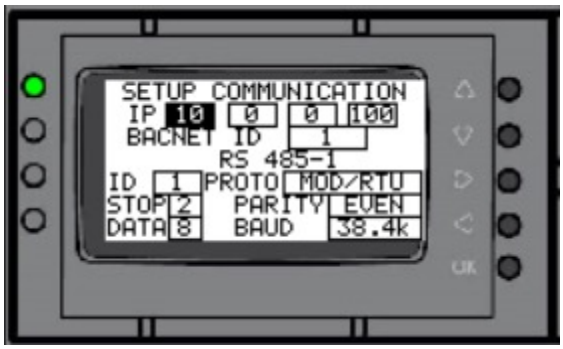


Figure 6. "Communication SetUp" Screen

1. **IP Address** – User defined IP address ..... ***Default = 10.0.0.100***
2. **BACNET ID** – User definer BACnet ID ..... ***Default = 1***
3. **RS 485-1 SetUp**
   - *ID – MODBUS ID* for the protocol selected ..... ***Default = 1***
   - *PROTO* – User defined protocol
     - *MODBUS RS 485* ..... ***(Default)***
     - *BACnet MS/TP*
   - Stop Bit – User Defined ..... ***Default = 2***
   - Parity – User Defined
     - *NULL*
     - *ODD*
     - *EVEN* ..... ***(Default)***
   - Databit – User Defined ..... ***Default = 8***
   - BAUD rate – User Defined
     - *9.6k*
     - *19.2k*
     - *38.4k* ..... ***(Default)***
     - *57.6k*
     - *76.8k*
     - *115.2k*

➤ Temperature & Humidity Sensor

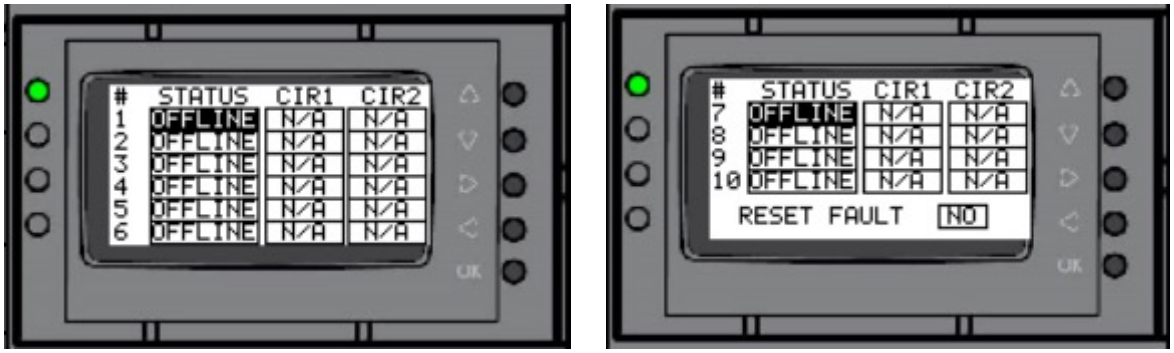


Figure 7. "Temperature Sensor" & "Humidity Sensor" Screen

1. **Offset** – This variable allows the end user to alter the measured space Temperature or Humidity for that respective sensor by the amount placed in this variable.
2. **Temperature|Humidity** – This variable displays the space Temperature / Humidity for the respective sensor.

Note that the "*TEMP*" AND "*HUM*" tab for all sensor not being used should be equal to "0". The "*OFFSET*" variable of the respective sensor should be used to alter this value to 0. This is critical for calculation.

➤ Economizer SetUp

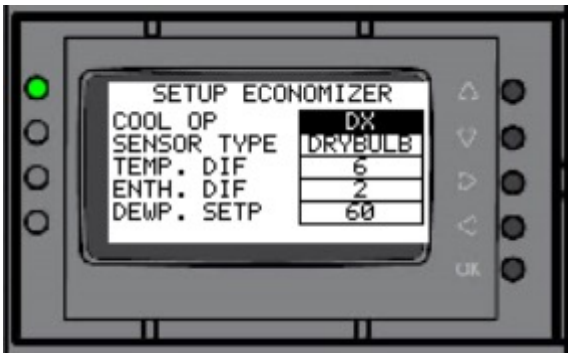


Figure 8. "Economizer SetUp" Screen

1. **Cool Option** – This variable allows the user to select if the system should run the free cooling feature (Economize) first or go directly to mechanical cooling.
   a. *ECONOMIZE* – If the outdoor conditions are satisfied, the system attempts to satisfy the cooling requirement by bringing in outside air. Note that if outside air is not desired, this feature should NOT be selected.
   b. *DX* (Default) – This feature energizes the compressor(s) to satisfy the cooling requirement. It will NOT bring in outside air to satisfy the cooling requirement.
2. **Sensor Type** – This allows the end user to select what psychrometric properties (in this case, Temperature or Enthalpy) should be used to energize the free cooling feature.
   a. *DRYBULB* – If "DRYBULB" is selected, only the Temperature property is considered when deciding to economize. See "Temp Setpoint" below.
   b. *TEMP/HUM* – If "TEMP/HUM" is selected, both the temperature setpoint and humidity setpoint must be satisfied for the system to economize. See "Temp Setpoint" and "Hum Setpoint" below.
3. **Temp Setpoint** – This is the maximum temperature at which the outdoor air will be allowed to be used for free cooling. Basically, the maximum temperature at which the economizer opens.
4. **Humidity/Enthalpy** - TBD.

➤ Damper SetUp

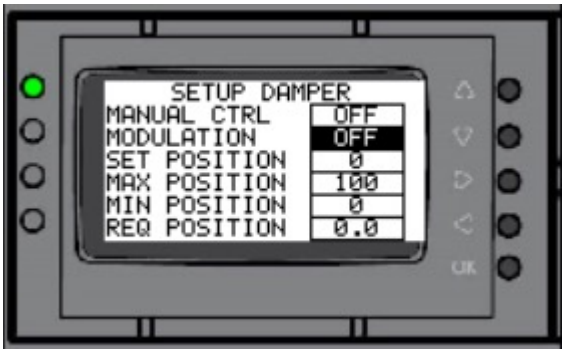


Figure 9. "Damper SetUp" Screen

1. **Modulation** – This dictates how the dampers will function during the economizer process.
   a. *ON* – If "ON" is selected, the damper would modulate to maintain a pre-defined mixed air temperature of 55°F.
   a. *OFF* – If "OFF" is selected, when there is a request for economizer, the damper will open to a user defined position ..... ***[Set Damper Pos %]***
2. **Manual Control** – This allows the end user to open the damper irrespective of a cooling request. Basically, the damper remains open continuously at a user defined position..... ***[Set Damper Pos %]***
3. **Requested Position** – Shows the position requested for the respective damper.
4. **Set Damper Pos %** - This allows the user to set the dampers to a user defined position. Note that this only works if "*Manual Control*" is set to "*ON*" or if there is an active request for economizer cooling and "*Modulation*" is set to "*OFF*".
5. **Damper Max Pos %** - This is the maximum position (0-100) that the damper will be allowed to open to during operation. This number is user defined.
6. **Damper Min Pos %** - This is the minimum position (0-100) that the damper will close to during operation. This number is user defined.

Note: All economizer and damper settings are replicated on all devices. That is, each system cannot be setup independently from the controller.

➤ Disabled Units

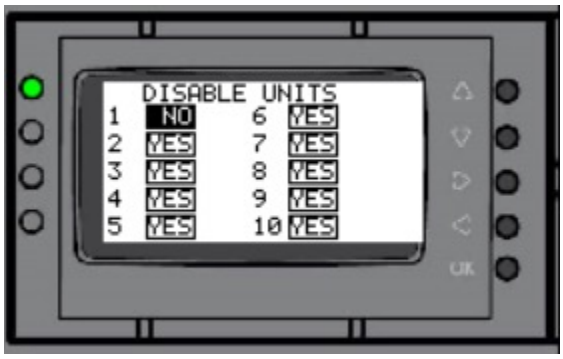


Figure 10. "Disabled Units" Screen

1. **No** – Unit is enabled. Communication and control can be established to that unit.
2. **Yes** – Unit is disabled. Communication and control cannot be established to that unit.
3. **Unit 1** – Defaults to being enabled.
4. **Unit 2 – 10** – Defaults to disabled from factory. User should only enable the respective units being used so communication can be optimized.

Sequence of Operation

Equipment should go through a commissioning/start up sequence recommended by manufacturer to ensure safety and system reliability. This document is only valid if the system is used as intended.

This section of the manual defines the manner and method of control of the system. It will cover the following operations and protections.

➤ 0.0 – Blower Fan Operation

- 0.1 – On Mode
- 0.2 – Auto Mode
- 0.3 – Cycle

➤ 1.0 - Cooling Operation

- 1.1 – Direct Expansion Cooling Only
- 1.2 – Economizer (If Applicable)

➤ 2.0 – Heating

- 2.1 – Electric Heat

➤ 3.0 – Dehumidification

- 3.1 – Electric Heat Dehumidification

➤ 4.0 – User Protection Inputs

- 4.1 – Emergency Shutdown
- 4.2 – Emergency Ventilation

Equipment, devices and necessary system components are specified in the respective section.

Note:

I. All requests from the Controller to the unit goes through a 5 seconds Time-On Delay to prevent nuisance request scenarios. Outputs in units go through a 5-10 seconds staggered Time On delay to prevent nuisance tripping of breaker due to the inrush associated with inductive loads.

I. Normal Operating Mode describes a mode in which there are no active faults which would interrupt the operation of the system.

➤ 0.0 - Fan Operation

Note that at 10ºF below the Cooling Setpoint, the controller goes into a "Pre-Cool" mode where it runs all Indoor Blowers in the units being controlled. Indoor Blower runs continuously once there is a request for any air-conditioning operation.

0.1 – *On-Mode*
Indoor Blower Motor Runs continuously.

0.2 – *Auto Mode*
Indoor Blower Motor runs when there is a request for Cooling, Heating or Dehumidification and continues to run for 90 Seconds after the Cooling, Heating or Dehumidification setpoint is satisfied.

0.3 – *Cycle*
In this mode, the indoor motor operates in a cyclic fashion based on the user defined period in minutes.

➤ 1.0 - Cooling Operation

1.1 – *Direct Expansion (DX) Cooling Only*
This section will describe the sequence of operation which takes place during Direct Expansion (DX) cooling without the introduction of any outside air.

Note that the controller is designed to produce 20 stages of cooling by controlling 10 different 2-stage HVAC units. Each Unit number is associated to a unique IP address and MODBUS ID.

In normal operating mode, when *[Space Temp >= Cooling Setpoint]*, the controller sends a request for *["STAGE 1 Cooling" to Lead Unit]*. The Indoor Fan along with compressor 1 for the Lead unit energize. When *[Space Temp >= Cooling Setpoint + Cooling Differential]*, *["STAGE 2 Cooling" to Lead Unit]* is energized. That is, the controller sends a request to bring on both Compressor 1 and Compressor 2 of the Lead unit. The indoor fan for these respective units will continue to run continuously while the outdoor fan is mechanically controlled by the head pressure.

At *[Space Temp >= Cooling Setpoint + Cooling Differential + Cooling Differential]*, Stage 3 cooling is energized. That is, the controller sends a request for *["STAGE 1 Cooling" to the first lag unit. This brings on the indoor fan and compressor 1 of the first lag unit. At [Space Temp >= Cooling Setpoint + Cooling Differential + Cooling Differential + Cooling Differential]*, Stage 4 cooling is energized. That is, the controller sends a request for *["STAGE 2 Cooling"*

to the first lag unit]. The indoor fan and Compressor 1 continue to run along with Compressor 2 energizing. As Space temperature continue to increase, the controller continues to stage on the subsequent lag units in a similar fashion as described until all 20 stages of cooling have been energized.

Note: Cooling is satisfied when the Space Temperature drops 20ºF below the Cooling Setpoint.

1.2 – *Economizer*

In this cooling mode, the HVAC unit optimizes the cooling process by attempting to maintain Space Cooling requirement by introducing outside air to the space when *[Space Temp >= Cooling Setpoint]*. This is contingent on the outdoor conditions being suitable based on the user defined Economizer Temperature setpoint (If Dry bulb Only) and Economizer Temperature and Humidity setpoints (If enthalpy). If the space temperature increases to *[Space Temp >= Cooling Setpoint + Cooling Differential]*, the second stage of cooling is requested for the respective unit. That is, Compressor 1 and 2 are energized along with the economizer closing. As the temperature, increases above *[Space Temp >= Cooling Setpoint + Cooling Differential]*, subsequent HVAC units [Lag units] will attempt to meet the cooling requirements by economizing first, and will go to full capacity based on request as the space temperature continues to increase.

➤ 2.0 – Heating

2.1 – *Electric Heat*

If *[Space Temperature <= Heating Setpoint]*, the controller request Heating operation on the Lead unit. If the temperature decreases to *[Space Temperature <= Heating Setpoint - Heating Differential]*, the controller energizes stage 2 heating request which brings on the Electric Heat in the first Lag unit. As the space temperature continues to decrease, subsequent Lag units are requested. For all instances described, the Indoor Fan will operate continuously in the respective unit.

Note:

I. Each unit has single stage heat.

II. Heating is satisfied when the Setpoint rises 20ºF above the Heating Setpoint.

➤ 3.0 – Dehumidification

3.1 – *Electric Heater Dehumidification*

In normal operation, if Dehumidification operation is enabled (Default: Disable) and the *[Space Humidity >= Humidity Setpoint]*, the controller sends a request for Dehumidification to the Lead Unit. If the *[Space Humidity >= Humidity Setpoint + 5%]*, the controller energizes second stage dehumidification which sends a request to the first lag unit. This Lag units continue to stage on as the space humidity moves at multiples of 5% away from the setpoint.

Note:

I. Dehumidification has the lowest priority of all other air conditioning operations. That is, Heating or Cooling request would be executed first before the system energizes the necessary request to initiate the dehumidification operation.

II. Dehumidification is satisfied when the Space humidity rises 5% below the Humidity Setpoint.

➤ 4.0 – User Protection Inputs

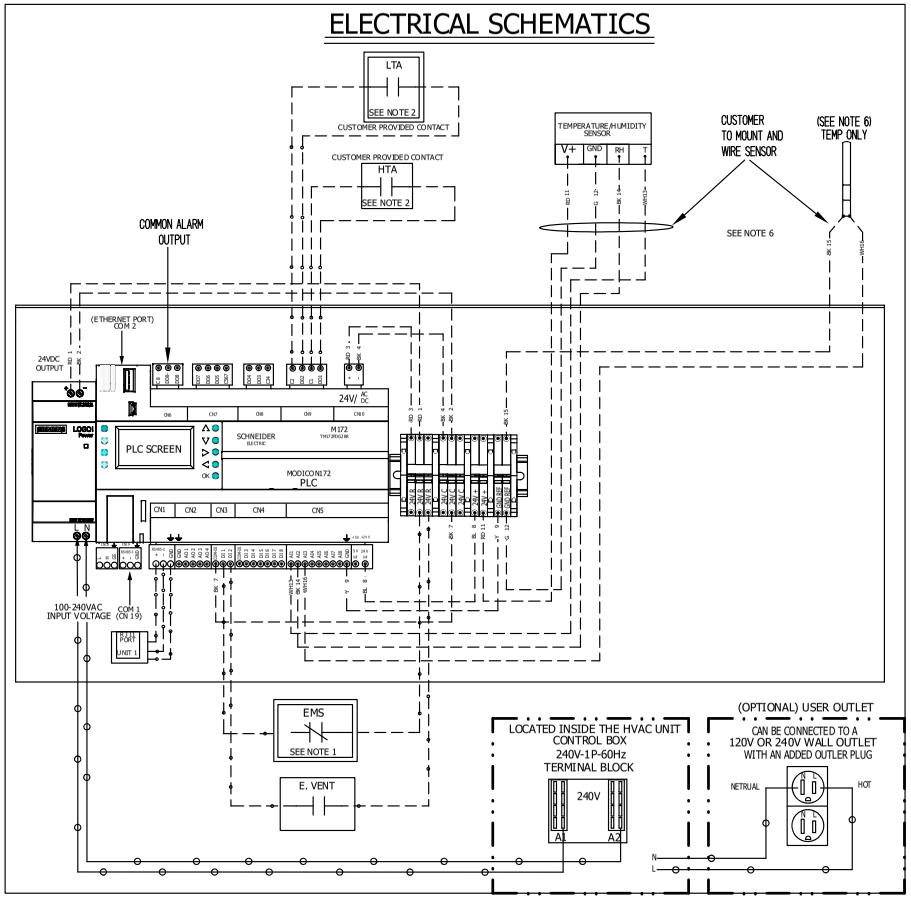
4.1 – *Emergency Shutdown*

This PLC input (DI1) requires 24VAC for the system to operate. This serves as the customers single interlock point to shutdown all operational request if the user deems it necessary. If this input is not energized, no operational request will be executed.

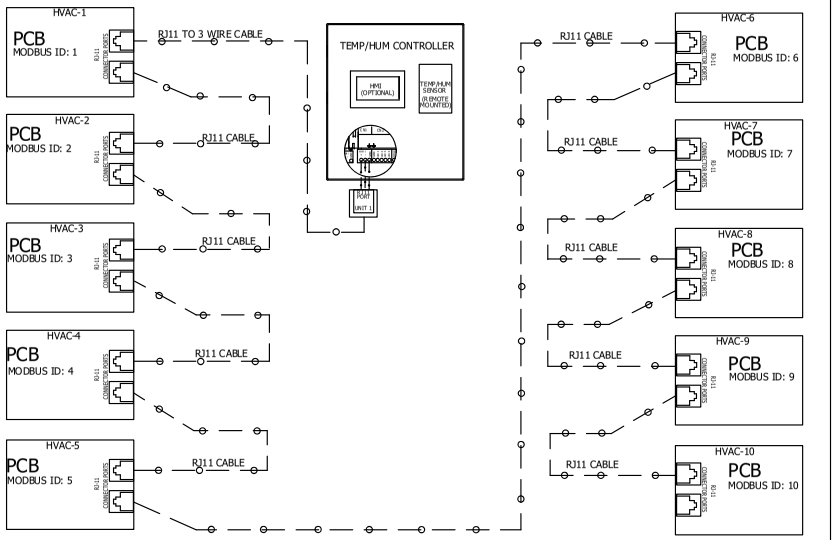
4.2 – *Emergency Ventilation*

This function is enabled when 24VAC is applied to PLC input (DI2). When energized, the controller sends a “Emergency Ventilation” request to all units being controlled. Each unit will terminate all air conditioning operation immediately, drive dampers to 100% open and run the blower at speed associated to Fan Motor.

ELECTRICAL SCHEMATICS



NETWORK ARCHITECTURE



SEE HVAC MANUAL FOR MORE DETAILS ON PRINTED CIRCUIT BOARD MODBUS SETTINGS
PCB PARAMETERS THAT NEEDS TO BE SET ON THE PCB INSIDE THE HVAC UNITS

VARIABLE 20 - SET TO "C" (DEFAULT TO "H")
VARIABLE 21 - SET TO "1-10" (MOBUS ID. DEFAULTS TO 1)
VARIABLE 22 - SET TO "19" (DEFAULT TO 19)

COMMUNICATION
COM 1 IS USED FOR BACNET MS/TP, MODBUS RTU (RS485)
COM 2 IS USED FOR BACNET IP, MODBUS TCP/IP, ACCESS TO WEB SERVER

SCHEMATIC DIAGRAM

CAUTION: ELECTRICAL SHOCK HAZARD
DISCONNECT POWER BEFORE SERVICING

TITLE: TEMPERATURE AND HUMIDITY SYSTEM CONTROLLER - COMMSTAT 10

CUTSHEET | ECON | AC | HEATER

ELECTRICAL LEGEND

HMI	HUMAN MACHINE INTERFACE (DISPLAY)
HTA	HIGH TEMPERATURE ALARM
LTA	LOW TEMPERATURE ALARM
PS	POWER SUPPLY
PCB	PRINTED CIRCUIT BOARD
PLC	PROGRAMMABLE LOGIC CONTROL

GENERAL NOTES

1. EMERGENCY SHUTDOWN INPUT. IF OPEN, SYSTEM WILL NOT OPERATE. JUMPER INSTALLED AT FACTORY.
2. TEMPERATURE ALARM TERMINALS. "HTA" REPRESENTS HIGH TEMP ALARM. "LTA" REPRESENTS LOW TEMP ALARM. CLOSES ON FAULT
3. RS485 COMMUNICATION. USE 3 WIRE SHIELDED CABLE. ONE TRUNK COMES FROM CONTROLLER. UNITS ARE DIASY CHAINED TOGETHER. SAMPLE ILLUSTRASTRATION IS SHOWN IN SCHEMATICS ABOVE. 120 OHM TERMINATING RESISTOR NEEDED ON LAST UNIT IN TRUNK SEE NETWORK ACHITECTURE FOR NOTE 4 AND 5.
4. INCOMING POWER. 100-240 VAC
5. ON 6 OF THE PLC IS THE LOCKOUT RELAY. "C#" IS THE COMMON, "DO# -" IS NORMALLY CLOSED AND "DO#" IS NORMALLY OPEN FOR PLC "TM172PDG16S" USES DO3 FOR COMMON LOCKOUT INTERLOCK. PLC "TM172PDG28S" USES DO8 FOR COMMON LOCKOUT TERMINALS
6. ALL SUBSEQUENT TEMPERATURE PROBES SHOULD BE WIRED TO "AI5" AND "AI6" WITH THE OTHER END OF BOTH SENSORS WIRED TO "GND" NOTE THAT THE NUMBER OF SENSORS BEING USED NEED TO BE CONFIGURED ON THE SCREEN OF THE CONTROLLER

VOLTAGE LEGEND

- LINE VOLTAGE FACTORY
- LINE VOLTAGE FIELD
- LOW VOLTAGE FACTORY
- LOW VOLTAGE FIELD
- ALT. VOLTAGE (FIELD SPEC.)

COLOR CODE

BK - BLACK	O - ORANGE
BL - BLUE	R - RED
BR - BROWN	RB - BLACK WITH RED STRIPE
GY-GRAY	Y - YELLOW
G - GREEN	WH-WHITE

ECO	DATE	SYM	REVISION RECORD	DR	CK
23627	7/20/2023		ORIGINAL PRODUCTION MODEL	DH	

Marvair — Crispaire Division of AIRXCEL, Inc. — Cordele, GA

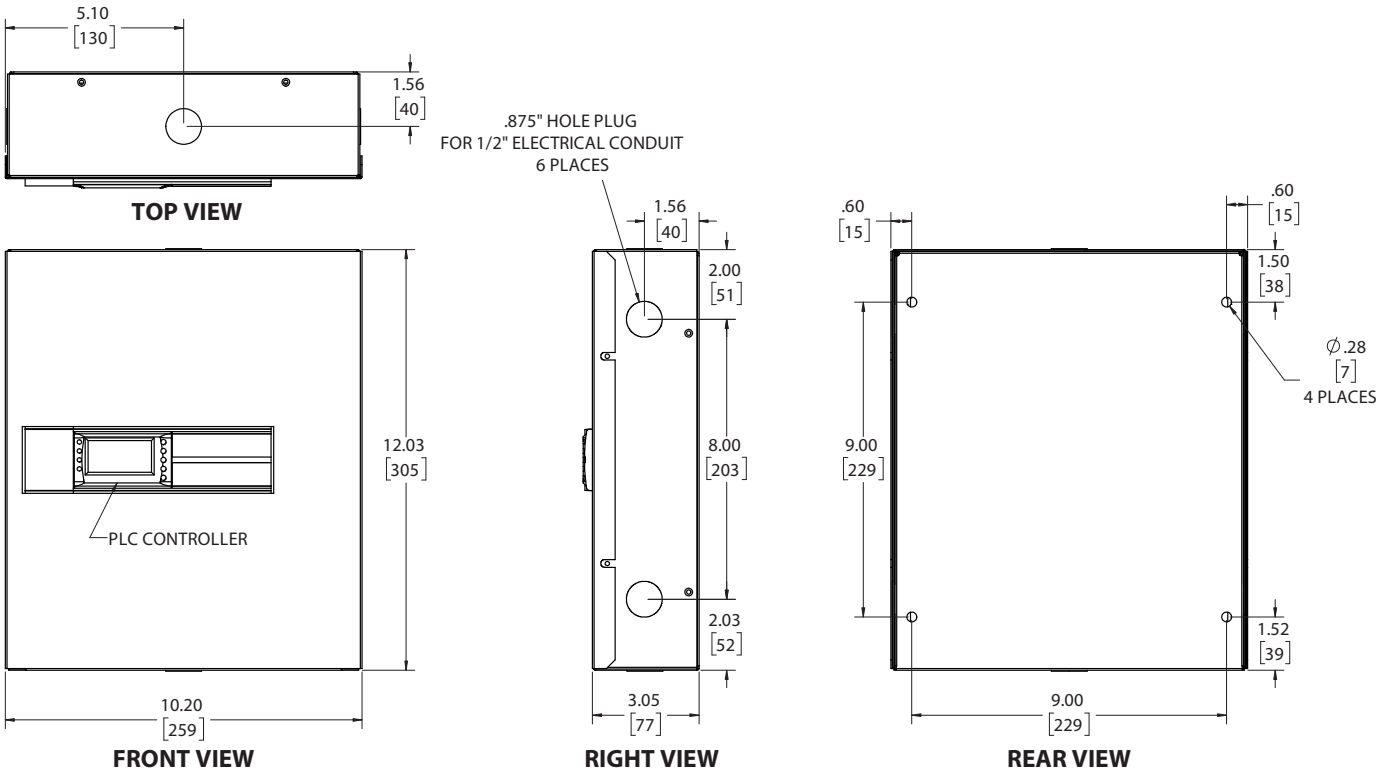
TOLERANCES EXCEPT AS NOTED			
DECIMAL ±	MGA	SCALE NTS	DRAWN BY A. SAMUELS
FRACTIONAL ±	TITLE TEMPERATURE AND HUMIDITY SYSTEM CONTROLLER - COMMSTAT 10		
ANGULAR ±	DATE 5/2/2023	DRAWING NUMBER ES53032	REV. 1

Remote Sensors

The Marvair CommStat 10 HVAC Controller includes one (1) 70676 combination humidity/dry bulb sensor. The installer must select an appropriate mounting location for the sensor. Additional 70676 combination sensors may be installed, and combined with 70916 dry bulb sensors. See the table below for maximum number of sensors which can be used with the basic CommStat 10. Additional I/O's may be added to accommodate more sensors. Contact your Marvair sales representative for CommStat 10 expansion options.

Sensor	Maximum Quantity			
70676 Combination Humidity/Dry Bulb Sensor	4	3	2	1
70916 Dry Bulb Sensor	0	1	2	3

Dimensional Drawing

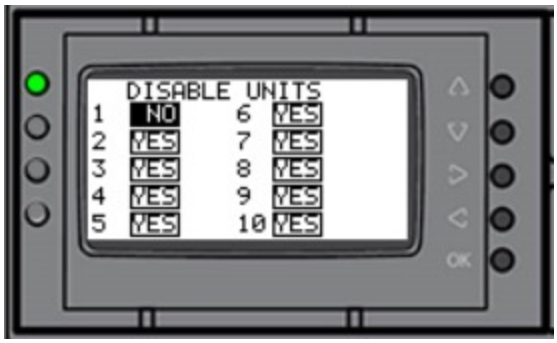


APPENDIX A - QUICKSTART GUIDE

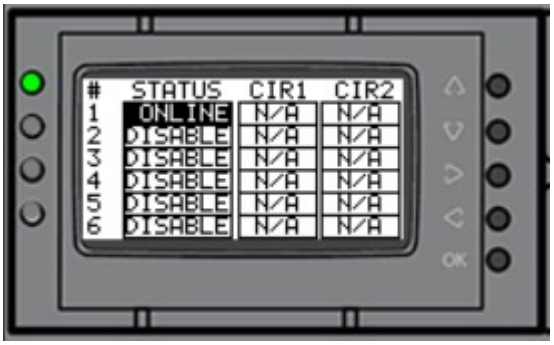
➤ 1.0 – Quick SetUp Guide for CommStat 10 HVAC Controller

Follow the Steps below to establish communication to the CommStat 10 controller

1. Power-On the HVAC units and set the following parameters on the PCB in the HVAC unit's control box.
   - **b.** Set Parameter 20 to "C"
   - **c.** Set Parameter 21 to "1-10". This IDs the unit and must be unique to each HVAC unit
   - **d.** Set Parameter 22 to "19"
2. Power On the CommStat 10 HVAC Controller
3. Navigate to "*DISABLE UNITS*" screen. Change only the units you have connected to "NO".



4. Confirm connection. Navigate to the "*STATUS*" screen. All connected units that are enabled should show "ONLINE" in their respective status. If "FAULT" is displayed, communication is not established. If "DISABLE" is displayed, see "STEP 3" above.
5. If setup is correct, verify the following:
   - **a.** Wiring
     - **i.** Cables between HVAC unit circuit boards are straight through and not reversed (See Appendix A for illustration).
     - **ii.** Ensure that the wiring on the PLC in the CommStat 10 controller is correct
   - **b.** MODBUS parameters – Ensure that the "Step 1" was completed correctly



Appendix B - Network Setup

1.0 – Network Architecture

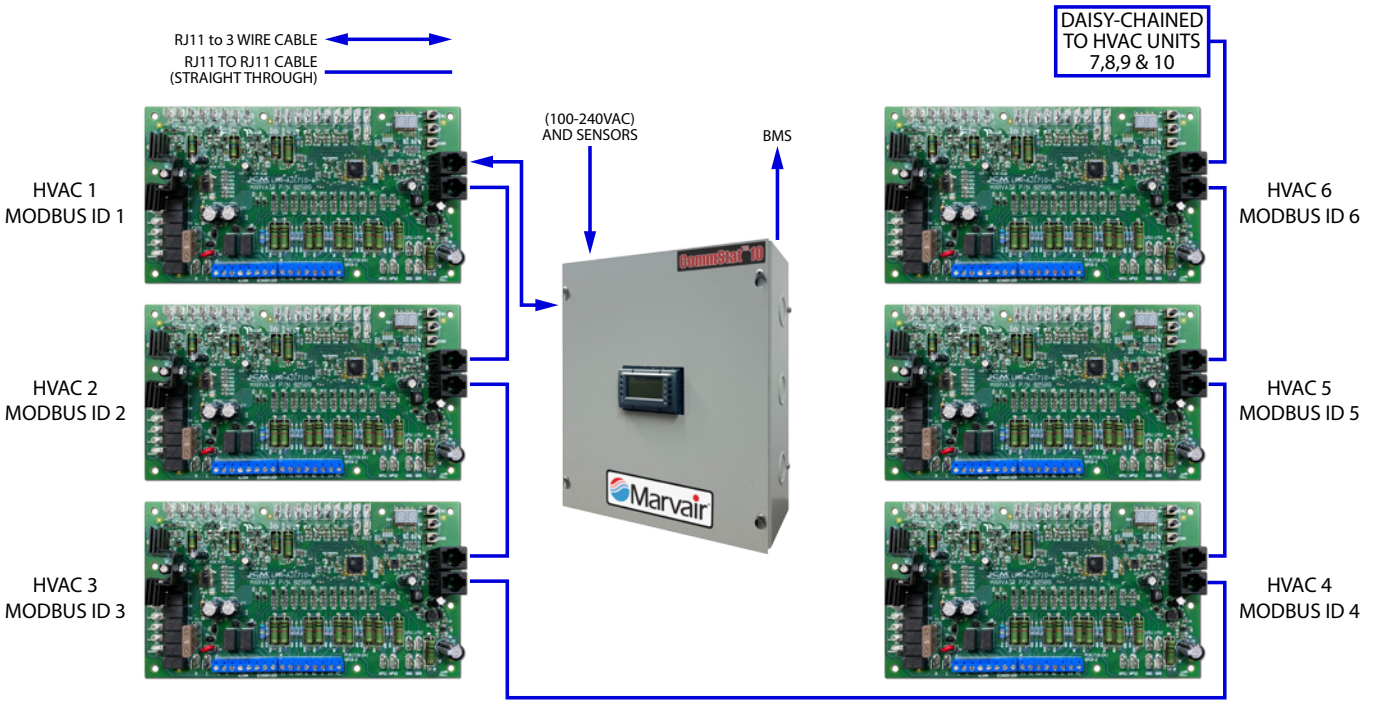


Figure 1. Overall Network Architecture with 92589 Printed Circuit Board
***Note:** Character 23 of Model ID must be "3" for this configuration*

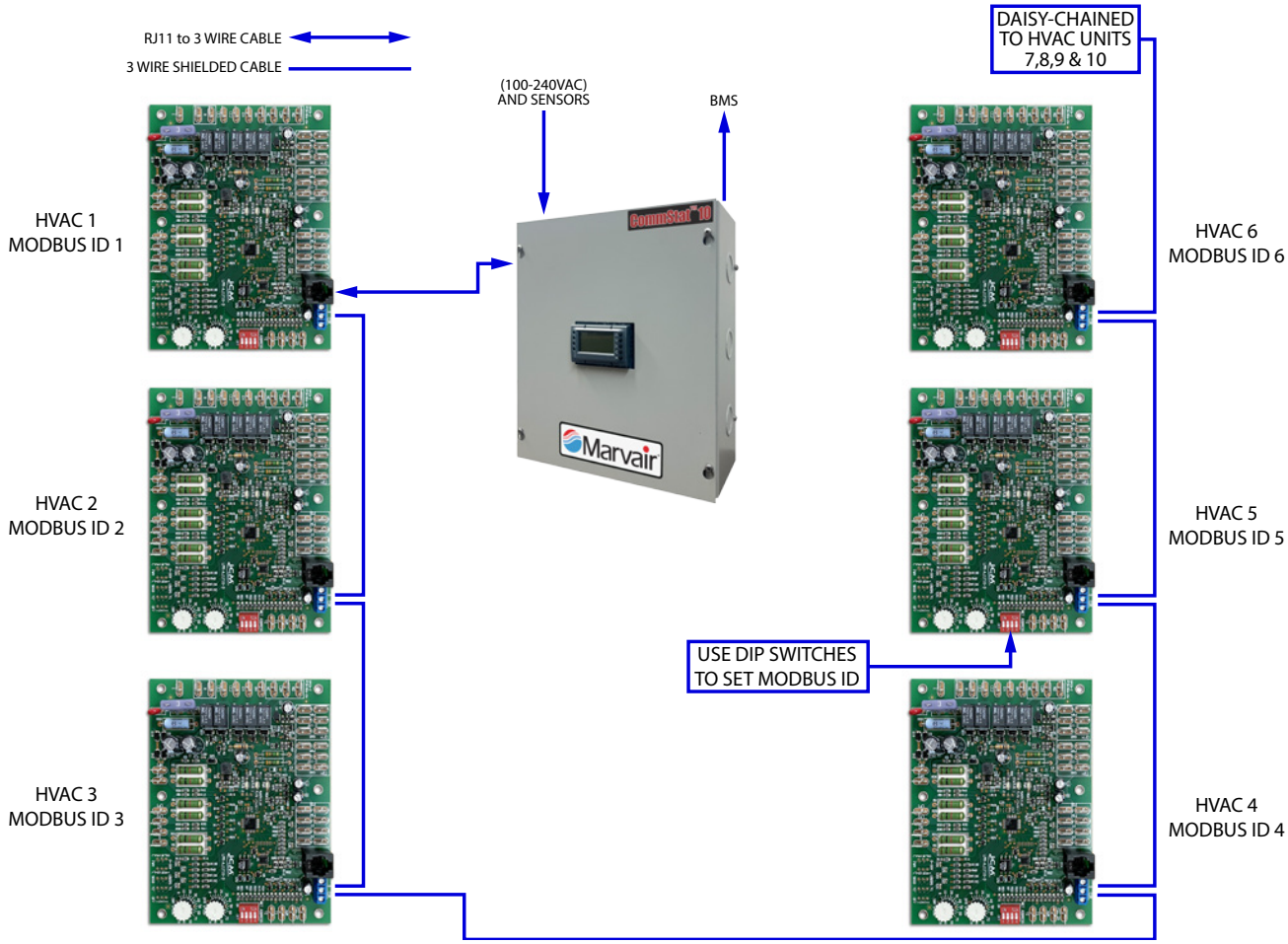


Figure 2. Overall Network Architecture with 70947 Printed Circuit Board
***Note:** Character 23 of Model ID must be "2" for this configuration*

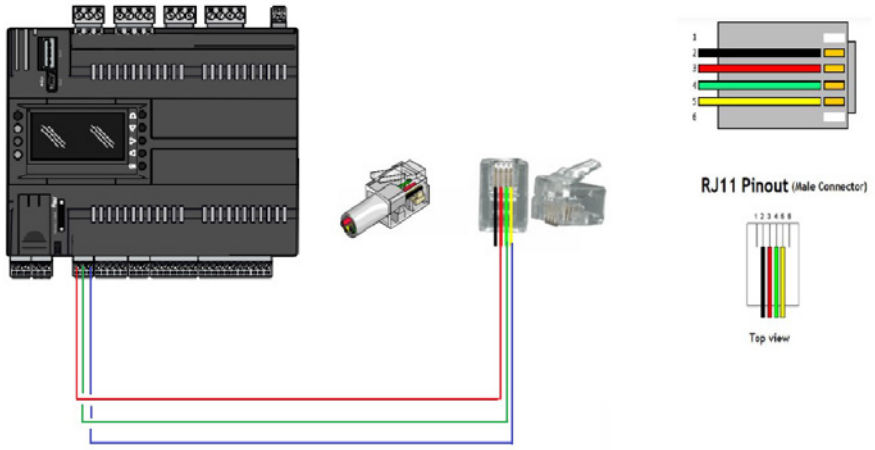


Figure 3. RJ11 to 3 Wire Cable Wiring

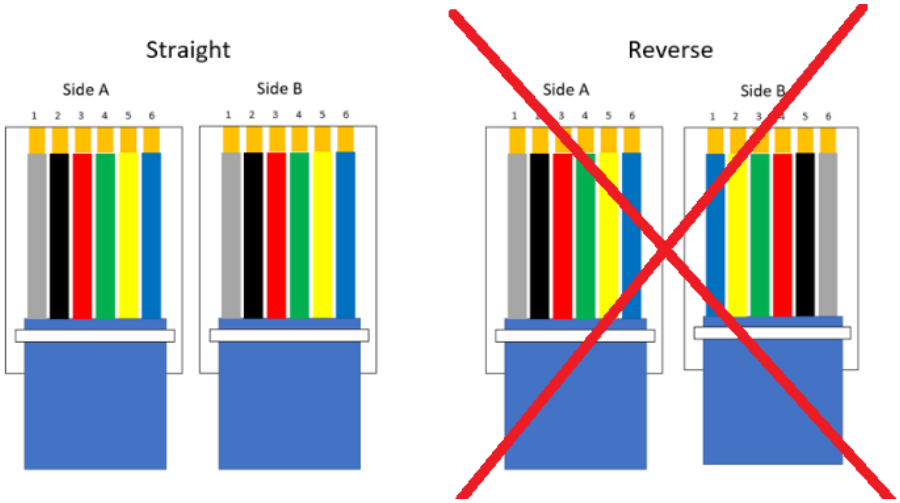


Figure 4. RJ11 to RJ11 Cable Wiring
Note: Use "Straight Through" Cable and Not Reversed

➤ 2.0 – Communication Setup Basic Rules

1. **Cable Length** - Total Length of the MODBUS communication trunk must be no longer than 1200 meters. Longer branches could cause signal reflections and generate disturbances and consequently errors in data transfer.

   In order to increase the extent of the Modbus network, signal amplifying and regenerating devices provided with two communication ports can be used transfer to each what they receive from the other.

2. **Type of Cable** - The cable to be used is a shielded twisted pair (telephone type) cable. This reduces interference and noise on the communication trunk as well as facilitates much faster communication.

3. **Earth Connection** - The cable shield must be earthed only in one point. Normally, this connection is made at one end of the main cable.

4. **Termination Resistor** – A **120 Ohm** termination resistor must be fitted on the end of the main cable. If the total length of the main cable is **less than 50 meters** termination resistances can be avoided at the ends of the main cable.

Appendix C - Modbus Map

General Notes for Correct Addressing

1. Use Big Endian - byte swap
2. OFFSET of "1" might be necessary for correct addressing

ADDRESS	NAME	TYPE	Read/ Write	Default Value	Min	Max	Description
9024	MOD_Unit1_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 1
9025	MOD_Unit1_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 1
9026	MOD_Unit1_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 1
9027	MOD_Unit1_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 1
9028	MOD_Unit2_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 2
9029	MOD_Unit2_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 2
9030	MOD_Unit2_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 2
9031	MOD_Unit2_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 2
9032	MOD_Unit3_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 3
9033	MOD_Unit3_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 3
9034	MOD_Unit3_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 3
9035	MOD_Unit3_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 3
9036	MOD_Unit4_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 4
9037	MOD_Unit4_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 4
9038	MOD_Unit4_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 4
9039	MOD_Unit4_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 4
9040	MOD_Unit5_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 5
9041	MOD_Unit5_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 5
9042	MOD_Unit5_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 5
9043	MOD_Unit5_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 5
9044	MOD_Unit6_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 6
9045	MOD_Unit6_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 6
9046	MOD_Unit6_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 6
9047	MOD_Unit6_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 6
9048	MOD_Unit7_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 7
9049	MOD_Unit7_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 7
9050	MOD_Unit7_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 7
9051	MOD_Unit7_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 7
9052	MOD_Unit8_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 8
9053	MOD_Unit8_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 8
9054	MOD_Unit8_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 8
9055	MOD_Unit8_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 8
9056	MOD_Unit9_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 9
9057	MOD_Unit9_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 9
9058	MOD_Unit9_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 9
9059	MOD_Unit9_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 9
9060	MOD_Unit10_HPS1	Boolean	RO	0			Circuit 1 High Pressure Switch Status - Unit 10
9061	MOD_Unit10_HPS2	Boolean	RO	0			Circuit 2 High Pressure Switch Status - Unit 10
9062	MOD_Unit10_LPS1	Boolean	RO	0			Circuit 1 Low Pressure Switch Status - Unit 10
9063	MOD_Unit10_LPS2	Boolean	RO	0			Circuit 2 Low Pressure Switch Status - Unit 10
9104	MOD_Y1_REQ_UNIT1	Boolean	RO	0			Request for Stage 1 Compressor Operation Unit 1
9105	MOD_Y1_REQ_UNIT2	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 2

ADDRESS	NAME	TYPE	Read/ Write	Default Value	Min	Max	Description
9106	MOD_Y1_REQ_UNIT3	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 3
9107	MOD_Y1_REQ_UNIT4	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 4
9108	MOD_Y1_REQ_UNIT5	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 5
9109	MOD_Y1_REQ_UNIT6	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 6
9110	MOD_Y1_REQ_UNIT7	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 7
9111	MOD_Y1_REQ_UNIT8	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 8
9112	MOD_Y1_REQ_UNIT9	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 9
9113	MOD_Y1_REQ_UNIT10	Boolean	RO	0			Request for Stage 1 Compressor Operation_Unit 10
9124	MOD_Y2_REQ_UNIT1	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 1
9125	MOD_Y2_REQ_UNIT2	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 2
9126	MOD_Y2_REQ_UNIT3	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 3
9127	MOD_Y2_REQ_UNIT4	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 4
9128	MOD_Y2_REQ_UNIT5	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 5
9129	MOD_Y2_REQ_UNIT6	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 6
9130	MOD_Y2_REQ_UNIT7	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 7
9131	MOD_Y2_REQ_UNIT8	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 8
9132	MOD_Y2_REQ_UNIT9	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 9
9133	MOD_Y2_REQ_UNIT10	Boolean	RO	0			Request for Stage 2 Compressor Operation_Unit 10
9144	MOD_G_REQ_UNIT1	Boolean	RO	0			Request for Blower Operation_Unit 1
9145	MOD_G_REQ_UNIT2	Boolean	RO	0			Request for Blower Operation_Unit 2
9146	MOD_G_REQ_UNIT3	Boolean	RO	0			Request for Blower Operation_Unit 3
9147	MOD_G_REQ_UNIT4	Boolean	RO	0			Request for Blower Operation_Unit 4
9148	MOD_G_REQ_UNIT5	Boolean	RO	0			Request for Blower Operation_Unit 5
9149	MOD_G_REQ_UNIT6	Boolean	RO	0			Request for Blower Operation_Unit 6
9150	MOD_G_REQ_UNIT7	Boolean	RO	0			Request for Blower Operation_Unit 7
9151	MOD_G_REQ_UNIT8	Boolean	RO	0			Request for Blower Operation_Unit 8
9152	MOD_G_REQ_UNIT9	Boolean	RO	0			Request for Blower Operation_Unit 9
9153	MOD_G_REQ_UNIT10	Boolean	RO	0			Request for Blower Operation_Unit 10
9164	MOD_DEHUM_REQ_UNIT1	Boolean	RO	0			Request for Stage Dehumidification_Unit 1
9165	MOD_DEHUM_REQ_UNIT2	Boolean	RO	0			Request for Stage Dehumidification_Unit 2
9166	MOD_DEHUM_REQ_UNIT3	Boolean	RO	0			Request for Stage Dehumidification_Unit 3
9167	MOD_DEHUM_REQ_UNIT4	Boolean	RO	0			Request for Stage Dehumidification_Unit 4
9168	MOD_DEHUM_REQ_UNIT5	Boolean	RO	0			Request for Stage Dehumidification_Unit 5
9169	MOD_DEHUM_REQ_UNIT6	Boolean	RO	0			Request for Stage Dehumidification_Unit 6
9170	MOD_DEHUM_REQ_UNIT7	Boolean	RO	0			Request for Stage Dehumidification_Unit 7
9171	MOD_DEHUM_REQ_UNIT8	Boolean	RO	0			Request for Stage Dehumidification_Unit 8
9172	MOD_DEHUM_REQ_UNIT9	Boolean	RO	0			Request for Stage Dehumidification_Unit 9
9173	MOD_DEHUM_REQ_UNIT10	Boolean	RO	0			Request for Stage Dehumidification_Unit 10
9184	MOD_W2_REQ_UNIT1	Boolean	RO	0			Request for Heater Operation_Unit 1
9185	MOD_W2_REQ_UNIT2	Boolean	RO	0			Request for Heater Operation_Unit 2
9186	MOD_W2_REQ_UNIT3	Boolean	RO	0			Request for Heater Operation_Unit 3
9187	MOD_W2_REQ_UNIT4	Boolean	RO	0			Request for Heater Operation_Unit 4
9188	MOD_W2_REQ_UNIT5	Boolean	RO	0			Request for Heater Operation_Unit 5
9189	MOD_W2_REQ_UNIT6	Boolean	RO	0			Request for Heater Operation_Unit 6
9190	MOD_W2_REQ_UNIT7	Boolean	RO	0			Request for Heater Operation_Unit 7
9191	MOD_W2_REQ_UNIT8	Boolean	RO	0			Request for Heater Operation_Unit 8
9192	MOD_W2_REQ_UNIT9	Boolean	RO	0			Request for Heater Operation_Unit 9

ADDRESS	NAME	TYPE	Read/ Write	Default Value	Min	Max	Description
9193	MOD_W2_REQ_UNIT10	Boolean	RO	0			Request for Heater Operation_Unit 10
9264	MOD_CC1_Stat_UNIT1	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 1
9265	MOD_CC1_Stat_UNIT2	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 2
9266	MOD_CC1_Stat_UNIT3	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 3
9267	MOD_CC1_Stat_UNIT4	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 4
9268	MOD_CC1_Stat_UNIT5	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 5
9269	MOD_CC1_Stat_UNIT6	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 6
9270	MOD_CC1_Stat_UNIT7	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 7
9271	MOD_CC1_Stat_UNIT8	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 8
9272	MOD_CC1_Stat_UNIT9	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 9
9273	MOD_CC1_Stat_UNIT10	Boolean	RO	0			Compressor 1 Status [0:OFF, 1:ON] _ Unit 10
9284	MOD_CC2_Stat_UNIT1	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 1
9285	MOD_CC2_Stat_UNIT2	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 2
9286	MOD_CC2_Stat_UNIT3	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 3
9287	MOD_CC2_Stat_UNIT4	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 4
9288	MOD_CC2_Stat_UNIT5	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 5
9289	MOD_CC2_Stat_UNIT6	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 6
9290	MOD_CC2_Stat_UNIT7	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 7
9291	MOD_CC2_Stat_UNIT8	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 8
9292	MOD_CC2_Stat_UNIT9	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 9
9293	MOD_CC2_Stat_UNIT10	Boolean	RO	0			Compressor 2 Status [0:OFF, 1:ON] _ Unit 10
9304	MOD_RH_Stat_UNIT1	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 1
9305	MOD_RH_Stat_UNIT2	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 2
9306	MOD_RH_Stat_UNIT3	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 3
9307	MOD_RH_Stat_UNIT4	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 4
9308	MOD_RH_Stat_UNIT5	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 5
9309	MOD_RH_Stat_UNIT6	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 6
9310	MOD_RH_Stat_UNIT7	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 7
9311	MOD_RH_Stat_UNIT8	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 8
9312	MOD_RH_Stat_UNIT9	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 9
9313	MOD_RH_Stat_UNIT10	Boolean	RO	0			Reheat Status [0:OFF, 1:ON] _ Unit 10
9324	MOD_EH_Stat_UNIT1	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 1
9325	MOD_EH_Stat_UNIT2	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 2
9326	MOD_EH_Stat_UNIT3	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 3
9327	MOD_EH_Stat_UNIT4	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 4
9328	MOD_EH_Stat_UNIT5	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 5
9329	MOD_EH_Stat_UNIT6	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 6
9330	MOD_EH_Stat_UNIT7	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 7
9331	MOD_EH_Stat_UNIT8	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 8
9332	MOD_EH_Stat_UNIT9	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 9
9333	MOD_EH_Stat_UNIT10	Boolean	RO	0			Electric Heater Status [0:OFF, 1:ON] _ Unit 10
9344	MOD_SetSpeedY1_UNIT1	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 1
9345	MOD_SetSpeedY1_UNIT2	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 2
9346	MOD_SetSpeedY1_UNIT3	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 3

ADDRESS	NAME	TYPE	Read/ Write	Default Value	Min	Max	Description
9347	MOD_SetSpeedY1_UNIT4	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 4
9348	MOD_SetSpeedY1_UNIT5	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 5
9349	MOD_SetSpeedY1_UNIT6	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 6
9350	MOD_SetSpeedY1_UNIT7	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 7
9351	MOD_SetSpeedY1_UNIT8	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 8
9352	MOD_SetSpeedY1_UNIT9	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 9
9353	MOD_SetSpeedY1_UNIT10	Signed 16-bit	RW	70	20	100	Stage 1 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 10
9364	MOD_SetSpeedY2_UNIT1	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 1
9365	MOD_SetSpeedY2_UNIT2	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 2
9366	MOD_SetSpeedY2_UNIT3	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 3
9367	MOD_SetSpeedY2_UNIT4	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 4
9368	MOD_SetSpeedY2_UNIT5	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 5
9369	MOD_SetSpeedY2_UNIT6	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 6
9370	MOD_SetSpeedY2_UNIT7	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 7
9371	MOD_SetSpeedY2_UNIT8	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 8
9372	MOD_SetSpeedY2_UNIT9	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 9
9373	MOD_SetSpeedY2_UNIT10	Signed 16-bit	RW	100	20	100	Stage 2 Compressor Operation Indoor Blower Speed [0-100%] _ Unit 10
9384	MOD_SetSpeedW2_UNIT1	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 1
9385	MOD_SetSpeedW2_UNIT2	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 2
9386	MOD_SetSpeedW2_UNIT3	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 3
9387	MOD_SetSpeedW2_UNIT4	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 4
9388	MOD_SetSpeedW2_UNIT5	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 5
9389	MOD_SetSpeedW2_UNIT6	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 6
9390	MOD_SetSpeedW2_UNIT7	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 7
9391	MOD_SetSpeedW2_UNIT8	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 8
9392	MOD_SetSpeedW2_UNIT9	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 9
9393	MOD_SetSpeedW2_UNIT10	Signed 16-bit	RW	100	20	100	Heater Operation Indoor Blower Speed [0-100%] _ Unit 10
9404	MOD_SetSpeedRH_UNIT1	Signed 16-bit	RW	800	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 1
9405	MOD_SetSpeedRH_UNIT2	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 2
9406	MOD_SetSpeedRH_UNIT3	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 3
9407	MOD_SetSpeedRH_UNIT4	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 4

ADDRESS	NAME	TYPE	Read/ Write	Default Value	Min	Max	Description
9408	MOD_SetSpeedRH_UNIT5	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 5
9409	MOD_SetSpeedRH_UNIT6	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 6
9410	MOD_SetSpeedRH_UNIT7	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 7
9411	MOD_SetSpeedRH_UNIT8	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 8
9412	MOD_SetSpeedRH_UNIT9	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 9
9413	MOD_SetSpeedRH_UNIT10	Signed 16-bit	RW	80	20	100	Reheater Operation Indoor Blower Speed [0-100%] _ Unit 10
9424	MOD_SetOFMSpeed_UNIT1	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 1
9425	MOD_SetOFMSpeed_UNIT2	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 2
9426	MOD_SetOFMSpeed_UNIT3	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 3
9427	MOD_SetOFMSpeed_UNIT4	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 4
9428	MOD_SetOFMSpeed_UNIT5	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 5
9429	MOD_SetOFMSpeed_UNIT6	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 6
9430	MOD_SetOFMSpeed_UNIT7	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 7
9431	MOD_SetOFMSpeed_UNIT8	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 8
9432	MOD_SetOFMSpeed_UNIT9	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 9
9433	MOD_SetOFMSpeed_UNIT10	Signed 16-bit	RW	800	200	1000	Max Outdoor Motor Speed [200-1000] _ Unit 10
9609	SpaceHumidityMem	Real	RO	0			Reference Humidity used to control dehumidification process
9639	SpaceHum1	Real	RO	0			Measured Value Humidity - Sensor 1
9641	SpaceHum2	Real	RO	0			Measured Value Humidity - Sensor 2
9643	SpaceHum3	Real	RO	0			Measured Value Humidity - Sensor 3
9645	SpaceHum4	Real	RO	0			Measured Value Humidity - Sensor 4
9680	CommActive_1	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 1
9681	CommActive_2	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 2
9682	CommActive_3	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 3
9683	CommActive_4	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 4
9684	CommActive_5	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 5
9685	CommActive_6	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 6
9686	CommActive_7	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 7
9687	CommActive_8	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 8
9688	CommActive_9	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 9
9689	CommActive_10	Boolean	RO	0			Status of communication [0 : not present | 1: present] - Unit 10
9696	EMS_MEM	Boolean	RO	0			Status of emergency shutdown input [0 : Fault | 1: OK]
9907	SpaceEnthalpy	Real	RO	0			Measured Space Enthalpy in US Customary Units
9931	HPS1LockOut_Unit1	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 1

ADDRESS	NAME	TYPE	Read/ Write	Default Value	Min	Max	Description
9932	HPS1LockOut_Unit2	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 2
9933	HPS1LockOut_Unit3	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 3
9934	HPS1LockOut_Unit4	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 4
9935	HPS1LockOut_Unit5	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 5
9936	HPS1LockOut_Unit6	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 6
9937	HPS1LockOut_Unit7	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 7
9938	HPS1LockOut_Unit8	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 8
9939	HPS1LockOut_Unit9	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 9
9940	HPS1LockOut_Unit10	Boolean	RO	0			Circuit 1 - High Pressure Switch Fault - Unit 10
9941	HPS2LockOut_Unit1	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 1
9942	HPS2LockOut_Unit2	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 2
9943	HPS2LockOut_Unit3	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 3
9944	HPS2LockOut_Unit4	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 4
9945	HPS2LockOut_Unit5	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 5
9946	HPS2LockOut_Unit6	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 6
9947	HPS2LockOut_Unit7	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 7
9948	HPS2LockOut_Unit8	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 8
9949	HPS2LockOut_Unit9	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 9
9950	HPS2LockOut_Unit10	Boolean	RO	0			Circuit 2 - High Pressure Switch Fault - Unit 10
9951	LPS1LockOut_Unit1	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 1
9952	LPS1LockOut_Unit2	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 2
9953	LPS1LockOut_Unit3	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 3
9954	LPS1LockOut_Unit4	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 4
9955	LPS1LockOut_Unit5	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 5
9956	LPS1LockOut_Unit6	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 6
9957	LPS1LockOut_Unit7	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 7
9958	LPS1LockOut_Unit8	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 8
9959	LPS1LockOut_Unit9	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 9
9960	LPS1LockOut_Unit10	Boolean	RO	0			Circuit 1 - Low Pressure Switch Fault - Unit 10
9961	LPS2LockOut_Unit1	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 1
9962	LPS2LockOut_Unit2	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 2
9963	LPS2LockOut_Unit3	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 3
9964	LPS2LockOut_Unit4	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 4
9965	LPS2LockOut_Unit5	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 5
9966	LPS2LockOut_Unit6	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 6
9967	LPS2LockOut_Unit7	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 7
9968	LPS2LockOut_Unit8	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 8
9969	LPS2LockOut_Unit9	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 9
9970	LPS2LockOut_Unit10	Boolean	RO	0			Circuit 2 - Low Pressure Switch Fault - Unit 10
9995	Circuit1Lockout_Unit1	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 1
9996	Circuit1Lockout_Unit2	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 2
9997	Circuit1Lockout_Unit3	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 3
9998	Circuit1Lockout_Unit4	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 4

ADDRESS	NAME	TYPE	Read/ Write	Default Value	Min	Max	Description
9999	Circuit1Lockout_Unit5	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 5
10000	Circuit1Lockout_Unit6	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 6
10001	Circuit1Lockout_Unit7	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 7
10002	Circuit1Lockout_Unit8	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 8
10003	Circuit1Lockout_Unit9	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 9
10004	Circuit1Lockout_Unit10	Signed 16-bit	RO	0			Circuit 1 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 10
10010	Circuit2Lockout_Unit1	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 1
10011	Circuit2Lockout_Unit2	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 2
10012	Circuit2Lockout_Unit3	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 3
10013	Circuit2Lockout_Unit4	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 4
10014	Circuit2Lockout_Unit5	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 5
10015	Circuit2Lockout_Unit6	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 6
10016	Circuit2Lockout_Unit7	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 7
10017	Circuit2Lockout_Unit8	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 8
10018	Circuit2Lockout_Unit9	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 9
10019	Circuit2Lockout_Unit10	Signed 16-bit	RO	0			Circuit 2 Status [0: No Fault | 1 : High Pressure | 2: Low Pressure | 3 : N/A (OFFLINE)] _ Unit 10
10026	OATCel	Real	RO	0			Measure Outdoor Air Temperature in Celcius
10028	OADCel	Real	RO	0			Measured Outdoor Dewpoint in Celsius
10030	OAE_SI	Real	RO	0			Measured Outdoor Enthalpy in kJ/Kg
10032	SpaceEnthalpySI	Real	RO	0			Measured Space Enthalpy in KJ/Kg
10034	SpaceTempCel	Real	RO	0			Measured Space Temperature in Celsius
10036	CommonUnitAlarm_Status	Boolean	RO	0			Common Alarm Output. Monitors Pressure and Communication Alarm for all units
10039	OAT_MEM	Signed 16-bit	RO	0			Measured Outdoor Air Temperature
10040	OAH_MEM	Signed 16-bit	RO	0			Measured Outdoor Humidity
10043	SpaceTempHMI	Real	RO	0			Reference Space temperature used for triggering the various air conditioning process
10045	HMI_Temp1	Real	RO	0			Measured Temperature - Sensor 1
10047	HMI_Temp2	Real	RO	0			Measured Temperature - Sensor 2
10049	HMI_Temp3	Real	RO	0			Measured Temperature - Sensor 3
10051	HMI_Temp4	Real	RO	0			Measured Temperature - Sensor 4
10067	CommStatus_Unit1	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 1
10068	CommStatus_Unit2	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 2
10069	CommStatus_Unit3	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 3

ADDRESS	NAME	TYPE	Read/ Write	Default Value	Min	Max	Description
10070	CommStatus_Unit4	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 4
10071	CommStatus_Unit5	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 5
10072	CommStatus_Unit6	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 6
10073	CommStatus_Unit7	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 7
10074	CommStatus_Unit8	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 8
10075	CommStatus_Unit9	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 9
10076	CommStatus_Unit10	Signed 16-bit	RO	0			Communication Status [0 : OK | 1 : FAULT | 2 : DISABLED] - UNIT 10
10077	CommFault_Unit1	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 1
10078	CommFault_Unit2	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 2
10079	CommFault_Unit3	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 3
10080	CommFault_Unit4	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 4
10081	CommFault_Unit5	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 5
10082	CommFault_Unit6	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 6
10083	CommFault_Unit7	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 7
10084	CommFault_Unit8	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 8
10085	CommFault_Unit9	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 9
10086	CommFault_Unit10	Boolean	RO	0			COMMUNICATION FAULT [0 : OK | 1: FAULT] - UNIT 10
10087	CommsCommonAlrm	Boolean	RO	0			COMMON COMMUNICATION FAULT

Appendix D - Read/Write Variables

ADDRESS	VARIABLE NAME	DATA TYPE	Read/Write	DEFAULT	MIN	MAX	DESCRIPTION
16384	TSTAT_MODE	INT	RW	0	0	3	0:OFF| 1:COOL| 2:HEAT| 3:AUTO
16385	CoolingDifferential	REAL	RW	2	0.5		VARIABLE FOR SETTING COOLING STAGE DIFFERENTIAL
16387	HeatingDifferential	REAL	RW	2	0.5		VARIABLE FOR SETTING HEATING STAGE DIFFERENTIAL
16389	SP_COOLING	REAL	RW	80	0		VARIABLE FOR SETTING COOLING SETPOINT
16391	SP_HEATING	REAL	RW	50			VARIABLE FOR SETTING HEATING SETPOINT
16393	SP_HUMIDITY	INT	RW	65			VARIABLE FOR SETTING HUMIDITY SETPOINT
16394	NumOfUnits	INT	RW	1	1		VARIABLE FOR SETTING THENUMBER OF UNITS BEING CONTROLLED
16395	SwapTimeMultiplier	INT	RW	0	0	2	Used to select Day[0]| Hr[1] or Min[2] option for Swapping
16396	LeadSwapTime	REAL	RW	7			Variable for setting the length of time a unit remains as lead
16398	IBM_MODE	INT	RW	0	0	2	0:AUTO| 1:CONTINUOUS| 2:PERIODIC
16399	PeriodicIBM_Multiplier	REAL	RW	30	10		SETS THE PERIOD FOR PERIODIC BLOWER OPERATION
16401	EvapOP_LeadOnly	BOOL	RW	0			0: LEAD ONLY | 1 : ALL UNITS (CONTROLS BLOWER OPERATION)
16402	TempOffset_1	REAL	RW	0			CALIBRATION OFFSET - TEMPERATURE SENSOR 1
16404	TempOffset_2	REAL	RW	0			CALIBRATION OFFSET - TEMPERATURE SENSOR 2
16406	TempOffset_3	REAL	RW	0			CALIBRATION OFFSET - TEMPERATURE SENSOR 3
16408	TempOffset_4	REAL	RW	0			CALIBRATION OFFSET - TEMPERATURE SENSOR 4
16410	HumOffset_1	REAL	RW	0			CALIBRATION OFFSET - HUMIDITY SENSOR 1
16412	HumOffset_2	REAL	RW	0			CALIBRATION OFFSET - HUMIDITY SENSOR 2
16414	HumOffset_3	REAL	RW	0			CALIBRATION OFFSET - HUMIDITY SENSOR 3
16416	HumOffset_4	REAL	RW	0			CALIBRATION OFFSET - HUMIDITY SENSOR 4
16418	NumOfTempSensors	INT	RW	1	1		NUMBER OF TEMPERATURE SENSORS
16419	NumOfHumSensors	INT	RW	1	1		NUMBER OF HUMIDITY SENSORS
16420	AVG_Highest_Temp	BOOL	RW	0			TEMPERATURE REFERENCE [0 : AVERAGE | 1 : HIGHEST]
16421	AVG_Highest_Hum	BOOL	RW	0			HUMIDITY REFERENCE [0 : AVERAGE | 1 : HIGHEST]
16439	EnableComm_Unit1	BOOL	RW	1			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 1
16440	EnableComm_Unit2	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 2
16441	EnableComm_Unit3	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 3
16442	EnableComm_Unit4	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 4
16443	EnableComm_Unit5	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 5
16444	EnableComm_Unit6	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 6
16445	EnableComm_Unit7	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 7
16446	EnableComm_Unit8	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 8

ADDRESS	VARIABLE NAME	DATA TYPE	Read/Write	DEFAULT	MIN	MAX	DESCRIPTION
16447	EnableComm_Unit9	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 9
16448	EnableComm_Unit10	BOOL	RW	0			VARIABLE TO ENABLE UNIT [0 : DISABLE | 1 : ENABLE] - UNIT 10
16459	CoolOption	INT	RW	0			0 : DX COOLING ONLY| 1 : ECONOMIZE
16460	EconomizerTempDif	REAL	RW	6			REQUIRED TEMPERATURE DIFFERENTIAL BETWEEN RETURN AIR AND OUSIDE AIR TO INITIATE ECONOMIZER
16462	EconomizerEnthalpyDif	REAL	RW	2			REQUIRED ENTHALPY DIFFERENTIAL BETWEEN RETURN AIR AND OUSIDE AIR TO INITIATE ECONOMIZER
16464	EconomizerDewpointSP	REAL	RW	60			REQUIRED VALUE FOR OUTDOOR DEWPOINT TO INITIATE ECONOMIZER
16466	EconomizerSensorType	INT	RW	0			0 : DRYBULB| 1 : ENTHALPY | 2 : DEWPOINT
16467	EconomizerMATSP	REAL	RW	55			TEMPERATURE AT WHICH THE DAMPER MODULATES TO MAINTAIN IN ECONOMIZER MODE
16469	EconomizerManCtrl	BOOL	RW	0			DAMPER POSITIONAL CONTROL. 0 : MODULATION| 1 : USER DEFINED POSITION
16470	DamperManCtrl	BOOL	RW	0			DAMPER FUNCTIONAL CONTROL. 0 : AUTO| 1 : MANUAL
16471	EconomizerManSP	REAL	RW	0			USER DEFINED DAMPER POSITION. "DAMPER MANUAL POSITION" NEED TO BE SET TO 1 TO OVERWRITE DAMPER POSITION
16473	DamperHighLimit	INT	RW	100			MAXIMUM ALLOWED DAMPER POSITON
16474	DamperLowLimit	INT	RW	0			MINIMUM ALLOWED DAMPER POSITION
16476	UnitSelect	BOOL	RW	0			VARIABLE FOR SELECTING THE TYPE OF UNIT BEING CONTROLLER. [0 : AC | 1 : HP]
16502	LowTempSP	REAL	RW	40			LOW TEMPERATURE SETPOINT
16504	HighTempSP	REAL	RW	100			HIGH TEMPERATURE SETPOINT
16437	Differential_CoolOff	REAL	RW	2			NUMBER OF DEGREES BELOW COOLING SETPOINT AT WHICH COOLING PROCESS TERMINATES
16506	Differential_HeatOff	REAL	RW	2			NUMBER OF DEGREES BELOW HEATING SETPOINT AT WHICH COOLING PROCESS TERMINATES
16508	uiBACnet_ID	UINT	RW	1			BACNET ID FOR THE CONTROLLER
16509	usiBACnet_Subnet	USINT	RW	0	0	63	
16510	xBACnet_IP_Enable	BOOL	RW	1			BACNET SETTING. DO NOT MODIFY
16511	uiBACnet_IP_Port	UINT	RW	47808			BACNET STANDARD PORT. DO NOT MODIFY THIS NUMBER [47808]
16512	FahCelsius	INT	RW	0	0	1	0 : FAHRENHEIT| 1 : CELSIUS
16513	RV_FanPurge	INT	RW	1			Indoor Motor Time Off Delay
16516	Y2Speed_Unit1	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 1
16517	Y2Speed_Unit2	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 2
16518	Y2Speed_Unit3	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 3
16519	Y2Speed_Unit4	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 4
16520	Y2Speed_Unit5	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 5
16521	Y2Speed_Unit6	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 6
16522	Y2Speed_Unit7	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 7
16523	Y2Speed_Unit8	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 8
16524	Y2Speed_Unit9	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 9
16525	Y2Speed_Unit10	INT	RW	85			COOLING STAGE 2 SPEED - UNIT 10

ADDRESS	VARIABLE NAME	DATA TYPE	Read/Write	DEFAULT	MIN	MAX	DESCRIPTION
16527	Y1Speed_Unit1	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 1
16528	Y1Speed_Unit2	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 2
16529	Y1Speed_Unit3	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 3
16530	Y1Speed_Unit4	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 4
16531	Y1Speed_Unit5	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 5
16532	Y1Speed_Unit6	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 6
16533	Y1Speed_Unit7	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 7
16534	Y1Speed_Unit8	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 8
16535	Y1Speed_Unit9	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 9
16536	Y1Speed_Unit10	INT	RW	65			COOLING STAGE 1 SPEED - UNIT 10
Heating	W2Speed_Unit1	INT	RW	85			HEATING SPEED - UNIT 1
16538	W2Speed_Unit2	INT	RW	85			HEATING SPEED - UNIT 2
16539	W2Speed_Unit3	INT	RW	85			HEATING SPEED - UNIT 3
16540	W2Speed_Unit4	INT	RW	85			HEATING SPEED - UNIT 4
16541	W2Speed_Unit5	INT	RW	85			HEATING SPEED - UNIT 5
16542	W2Speed_Unit6	INT	RW	85			HEATING SPEED - UNIT 6
16543	W2Speed_Unit7	INT	RW	85			HEATING SPEED - UNIT 7
16544	W2Speed_Unit8	INT	RW	85			HEATING SPEED - UNIT 8
16545	W2Speed_Unit9	INT	RW	85			HEATING SPEED - UNIT 9
16546	W2Speed_Unit10	INT	RW	85			HEATING SPEED - UNIT 10
16547	RHSpeed_Unit1	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 1
16548	RHSpeed_Unit2	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 2
16549	RHSpeed_Unit3	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 3
16550	RHSpeed_Unit4	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 4
16551	RHSpeed_Unit5	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 5
16552	RHSpeed_Unit6	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 6
16553	RHSpeed_Unit7	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 7
16554	RHSpeed_Unit8	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 8
16555	RHSpeed_Unit9	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 9
16556	RHSpeed_Unit10	INT	RW	65			DEHUMIDIFICATION SPEED - UNIT 10
16557	MOD_PCBEconTempSP	INT	RW	70			ECONOMIZER TEMPERATURE SETPOINT (REMOTE VALUE AT PCB BEING CONTROLLED)
16558	HumidityDIfferential	REAL	RW	10			DIFFERENTIAL REQUIRED TO REQUEST SUBSEQUENT HUYMIDITY STAGE
16560	HumidityOffDif	INT	RW	5			PERCENTAGE BELOW HUMIDITY SETPOINT AT WHICH HUMIDITY PROCESS TERMINATES
16561	PreCoolDif	REAL	RW	1			NUMBER OF DEGREES BELOW SETPOINT AT WHICH ALL BLOWERS OPERATE BEFORE INITIATING COOLING OPERATION

NOTES

NOTES

Please consult the Marvair® website at www.marvair.com for the latest product literature. Detailed dimensional data is available upon request. A complete warranty statement can be found in each product's Installation/Operation Manual, on our website or by contacting Marvair at 229-273-3636. As part of the Marvair continuous improvement program, specifications are subject to change without notice.

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