

Data Aire dap4

Modbus TCP/IP Protocol Integration Instructions

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Introduction

The purpose of this instruction booklet is to show user how to configure a dap4 Ethernet or idap communication card for Modbus TCP/IP protocol interface. A complete description of the Modbus TCP/IP protocol is not within the scope of this document. It is assumed that the BMS or BAS system Integrator is responsible for enter the IP address to dap4 and connect dap4 Ethernet card to the network.

I. Modbus TCP/IP Protocol Interface

The Modbus TCP/IP interface requires an optional Ethernet communication (pCOWeb or idap) card. This card is normally installed in the dap4 controller when it is ordered from the factory, but it can also be added in the field to an existing dap4 controller.



A. Ethernet Card (pCOWeb) Installation

1. Disconnect the power to the dap4 controller.
2. Find the dap4 BMS port (on top of connector J4 and J5) and remove the BMS port cover. DO NOT use the Field Bus card slot.



3. Insert the card to the dap4 BMS port



4. Secure the card with provided cover



B. Configure Ethernet Card for Network Connection

Before configuring an Ethernet card for network connection, make sure the dap4 or Mini-dap4 is set-up properly for Ethernet card or idap card communication. This is done by using Menu G: Network Config of the dap4. Then BMS PORT 1 should be set for the protocol "BACnet TCP/IP" and BMS PORT 2 protocol should be set to "N/A". Note: If the card was ordered with the unit, this step is done at the factory.

There are two different methods to program an IP address for a dap4 Ethernet or Idap card for network connection:

1. Configuring the card using the dap4 display

Note: This procedure applies to dap4 with BIOS version 5.18 or later and Ethernet card with firmware version 1.2.4 or later. Dap4 BIOS version number can be viewed on dap4 menu F- Information.

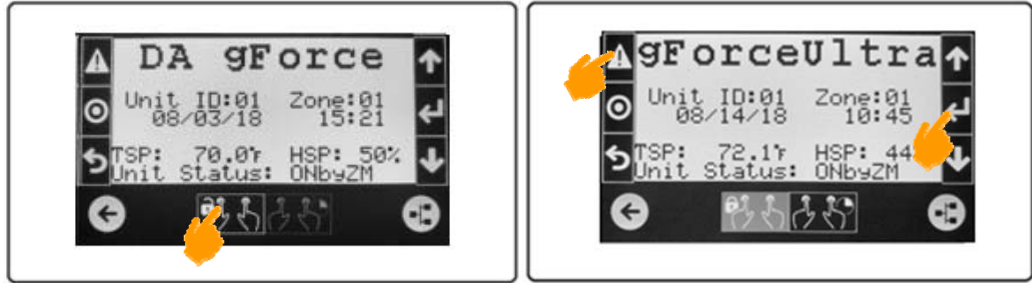
i. Unit with dap4touch display

Note: This procedure applies to dap4 with BIOS version 6.42 or later and dap4 software version 2.00 or later. Dap4 BIOS and software version number can be viewed on dap4 menu F- Information.

- a) Press Tool button to switch display from color graphic to monochrome LCD emulation mode.



- b) Press "Two Finger Lock" button to enable two fingers touch mode then press ALARM and ENTER key, the keys background will change from black to gray to indicate the keys are pressed.



- c) Press and hold "Two Finger Hold" button next to "Two Finger Lock" for about three seconds until display changes to System Information screen as below picture. Next follow steps ii.b to ii.J of the dap4 with Monochrome LCD display section below to program the IP address.



ii. Unit with dap4 monochrome LCD display

- a) Allow a couple minutes after powering up the controller for the Ethernet card to boot up and the green LED on the left side of the card is blinking. Press and hold ALARM and ENTER key simultaneously for 1 second, and the following screen will appear:



- b) Move the cursor down to OTHER INFORMATION then press Enter. The next screen will appear as follow:



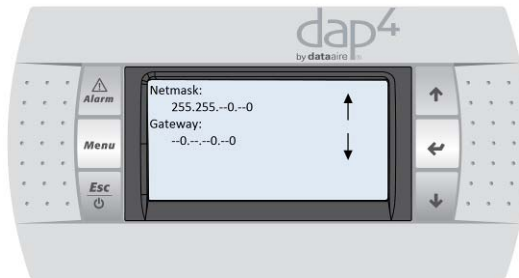
- c) Next, select PCOWEB/NET CONFIG and press enter. The PCOWEB and PCONET setting screen will appear:



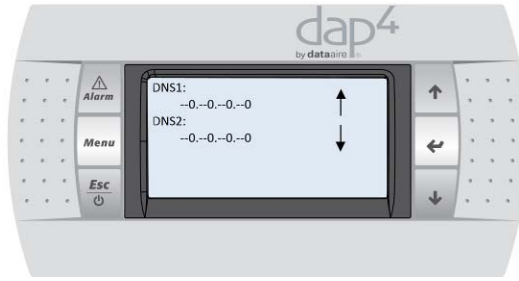
- d) Select PCOWEB settings option. The DHCP and IP address screen will appear. Set the DHCP to be OFF if a static IP address is used. Next, enter the IP address for the card. You may want to contact your Network Administrator for a recommended IP address. Data Aire is not responsible for assigning or setting this IP address.



- e) After setting the IP address, enter the netmask and gateway address if they apply.



- f) Use next screen to program DNS addresses if they are required.



- g) After the DNS screen, The BACnet ID screen will appear, keep BACnet ID at default BACnet ID which is 77000 if Modbus TCP/IP protocol is used.



- h) After the BACnet ID set-up screen The PCOWEB CONFIG ENABLE screen will appear, change the setting to “Yes” then press Enter.



- i) A message “Please wait for end of update” will appear for few seconds then the following screen will appear to prompt for a card reboot.



- j) Cycle the dap4 power to reboot the Ethernet card then wait for couple minutes until the green LED on the left side of the card will start to blink.

2. Configuring an Ethernet Card Using a computer connection

- a) When connecting a computer to the Ethernet card, a CAT-5 crossover cable is required.
- b) Use Menu G: Network Config to set BMS PORT 1 to “BACnet TCP IP” and BMS

- PORT 2 to "N/A". If the Ethernet card was ordered with the dap4, this step was already done at the factory.
- All Ethernet cards were set up for a DHCP server. The following steps explain how to enter a static IP address if required.
 - Perform a factory reset of the card by shutting off power to the dap4 controller. Then, press and hold the button on the card while restoring power to the dap4 controller. Wait approximately 20 seconds until the status LED begins to blink red. After the first blink, release the push button. The status LED continues to blink 2 more times (for total of 3 red blinks). Wait for approximately 50 seconds while the card is resetting.
 - The factory default settings will now be: IP address – 172.16.0.1, Net Mask – 255.255.0.0, Device Instance - 77000
 - Now you must configure your computer's IP address to 172.16.0.* (* any value other than 1 because that address is taken by the card). Ping the card IP address to verify the connection.
 - Open an Internet web browser such as Mozilla Firefox, Google Chrome or Internet Explorer and enter the card's IP address (172.16.0.1.) to access the Ethernet card configuration page.
 - The following prompt will be displayed on your PC's Screen. Enter the user name "admin" and password "fadmin".

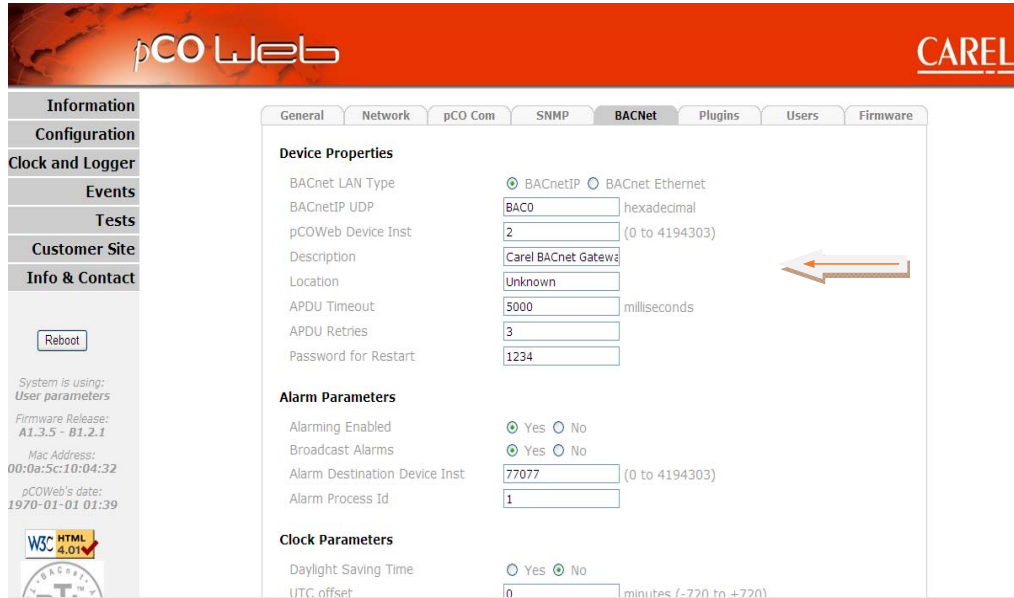


- After entering the correct information, you will be taken to the following screen.

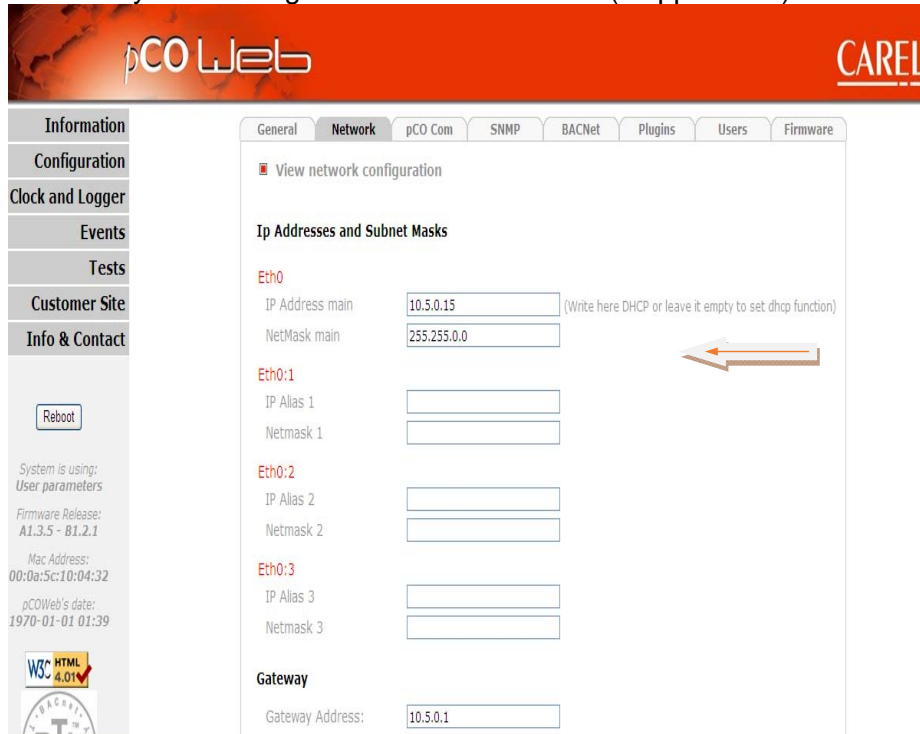
Var Idx	Digital Variables											
1-15	0	0	0	0	0	0	0	0	0	0	0	0
16-30	0	0	0	0	0	0	0	0	0	0	0	0
31-45	0	0	1	0	1	0	0	0	0	0	0	0
46-60	0	0	0	0	0	0	0	0	0	0	0	0
61-75	0	0	0	0	0	0	0	1	0	0	0	0
76-90	0	0	0	0	0	0	0	0	0	0	0	0
91-105	0	0	0	0	0	0	0	0	0	0	0	0
106-120	0	0	0	0	0	0	0	0	0	0	0	0
121-135	0	0	0	0	0	0	0	0	0	0	0	0
136-150	0	0	0	0	0	1	0	0	0	0	0	0
151-165	0	0	0	0	0	0	0	0	0	0	0	0
166-180	0	0	0	0	0	0	0	0	0	0	0	0
181-195	0	0	0	0	0	0	0	0	0	0	0	0
196-207	0	0	0	0	U	U	U	U	U	U	U	U

Var Idx	Analog Variables											
1-15	4.0	88.7	90.0	55.0	0.2	0.0	88.7	0.0	55.0	0.0	30.9	0.0
16-30	91.2	85.0	55.0	45.0	5.0	30.9	10.0	86.0	10.0	50.0	0.0	0.0
31-45	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0
46-60	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0
61-75	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76-90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
91-105	0.0	0.0	0.0	2.0	0.0	30.9	65.0	85.0	-50.0	35.0	60.0	88.7
106-120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
121-135	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	U	U	U	U
136-150	U	U	U	U	U	U	U	U	U	U	U	U
151-165	U	U	U	U	U	U	U	U	U	U	U	U
166-180	U	U	U	U	U	U	U	U	U	U	U	U
181-195	U	U	U	U	U	U	U	U	U	U	U	U

- j) Click the Configuration tab on the left. Then click the BACnet tab if required otherwise skip this step if only Modbus TCP /IP interface required.



- k) The variable ranges can be set on the same page. Scroll to the bottom to change these ranges.
- l) After you have set up your card, click Submit.
- m) While still under the Configuration tab, click the NETWORK tab. This screen allows you to change the card's IP address (if applicable.)



- n) Under Eth0, change the IP address and Netmask to your desired values. Scroll to the bottom of the screen and click submit.
- o) It will take approximately 5 minutes for a change to the IP address to complete. The card may have to be manually rebooted by cycling the dap4 power if the reboot command on this screen does not respond. Wait for 1 minute after the card restarts, then access the card using its new IP address.

II. Troubleshooting

Problem	Possible Cause	Possible Remedy
- Cannot connect to the card. LEDs on the card do not light or blink.	<ul style="list-style-type: none"> - Dap4 does not have power. - Card is not properly inserted into dap4 BMS port. - BMS port 1 is not set for BACnet TCP/IP protocol. 	<ul style="list-style-type: none"> - Turn on dap4 power and wait couple minutes for card to reboot. - Turn power off and check to make sure card is properly plugged into BMS port. - Check menu G- Network Config setting to make sure BMS port 1 is set for BACnet TCP/IP
- Cannot connect card to the network, Ping test fails	<ul style="list-style-type: none"> - Card's IP address has not been set or Incorrect IP address is entered. - Bad network wiring connection - Programmed IP address is not in the same network with Host PC. 	<ul style="list-style-type: none"> - Check the IP address setting. - Allow card 3 minutes time to fully boot up. - Check network cable. - Check host PC network address and card IP address.
- Able to connect to the card. Ping tests Ok but cannot read any data. Left hand side LED of the card is red.	<ul style="list-style-type: none"> - Dap4 controller is not communicating with card. Incorrect protocol setting in Menu G- Network Config BMS port 1 protocol. - Dap4 is still in the reboot time delay. - Dap4 and card software mismatch. 	<ul style="list-style-type: none"> - Check dap4 menu G- Network Config BMS port 1 protocol. It should be programmed to BACnet TCP/IP. - Wait for dap4 and card to complete their reboot process, this should take about 3 minutes. Left hand side LED blinks green when reboot process is completed. - Collect dap4 and card software versions then contact Data Aire Tech Support. Use menu F to find dap4 software information. Card firmware revision displays on the home page.
- IP address is entered	- pCOWeb Enable is not changed	- Reenter the address then

Problem	Possible Cause	Possible Remedy
<p>but they keep disappearing after a restart.</p>	<p>to “Yes” at the end of the configuration process to store the changes.</p> <ul style="list-style-type: none"> - If Windows web browser is used to modify the address, the Submit tap may not be clicked before rebooting the card. - Windows web browser is used to change the addresses, but web browser does not refresh. 	<p>select yes on Config Enable before restarting the dap4.</p> <ul style="list-style-type: none"> - Press Ctrl+ F5 key to refresh the web browser or close then re-open web browser and recheck the addresses.
<ul style="list-style-type: none"> - Reading incorrect data or invalid data 	<ul style="list-style-type: none"> - Incorrect point index is mapped. - Sensor or device is optional and not installed. - Software and hardware mismatch or software does not support required points. 	<ul style="list-style-type: none"> - Check point list to make sure correct point index is applied - Check sensor or device to make sure they are installed and report valid reading on dap4 display - Check dap4 software revision and contact Data Aire Technical support for verification.
<ul style="list-style-type: none"> - Forgot or lost IP address setting. 	<ul style="list-style-type: none"> - User did not record the IP address but wants to retrieve or view it. - Change the existing IP address. 	<ul style="list-style-type: none"> - Use configuration steps in section I.B.1 above to view the current IP - Use factory reboot steps in section I.B.2 above to temporary reset the card IP address to factory programmed IP address which is 172.16.0.1 then use a laptop to connect to card to find the programmed IP address.

III. Dap4 Modbus TCP/IP Point Definitions

Note: All points in this list are applied to dap4 software version 1.32 or later. Some points may not be applied if you have older dap4 software version.

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
Standard DX and Chilled Water System					
1	Temperature of return air	R	Ret_Air_Tmp	A	30002
2	Maximum Return air temp in last 24hrs	R	Maximum	A	30003
3	Minimum Return air temp in last 24hrs	R	Minumum	A	30004
4	Temperature setpoint	R/W	Temp_Setpoint	A	40005
5	Amount from setpoint before a comp is staged on	R/W	Temp_Deadband	A	40006
6	Humidity Sensor Calibration	R/W	Ain_offs	A	40007
7	Return Temperature Sensor Calibration	R/W	Ain_offs	A	40008
33	Amount temp must change for each stage of heat/cool	R/W	Stage_sp	A	40034
34	High Dewpoint setpoint (applies only when humidifier configured to dewpoint control)	R/W	Dewpoint_Hi_SP	A	40035
35	Deadband of Hi dewpoint (applies only when humidifier configured to dewpoint control)	R/W	Dewpoint_Hi_Dband	A	40036
36	Low dewpoint setpoint (applies only when humidifier configured to dewpoint control)	R/W	Dewpoint_Lo_SP	A	40037
37	Deadband of low dewpoint (applies only when humidifier configured to dewpoint control)	R/W	Dewpoint_Lo_Dband	A	40038
42	Dew point of return air (only display in dewpoint control mode)	R	Ret_Air_Dewpt	A	30043
56	Model 0= DA gForce 1= DATA AIRE Series 2=MINI-PLUS 3=MINI 4=LCS 5= InRow Cool 6=gForceR DX 7=gForceUltra 8=gPOD	R	Model	A	30057
2	Relative humidity displayed as xx%	R	Humidity_dis	I	35003
3	Cooling Stages On = Cooling stages are currently on – This point applies to DX unit only	R	Stages_On	I	35004
4	Number of heat stages running	R	Heaters_On	I	35005
5	Maximum humidity in last 24hrs	R	Maximum	I	35006
6	Minimum humidity in last 24hrs	R	Minumum	I	35007
7	Cooling Utilization Over Last Hour -Percentage of cooling is used in the last hour of operation; this point applies to DX unit.	R	Comp_duty	I	35008
8	Heating Utilization Over Last Hour -Percentage of heating is used in the last hour of operation	R	Heat_duty	I	35009
9	Humidifier Utilization Over Last Hour -Percentage of humidifier is used in the last hour of operation	R	Hum_duty	I	35010
10	Compressor 1 Runtime -This point applies to DX unit with one compressor -high	R	C1_Hours_H	I	35011
11	Compressor 1 Runtime -This point applies to DX unit with one compressor -low	R	C1_Hours_L	I	35012
12	Compressor 2 Runtime -This point applies to DX unit with dual compressor - high	R	C2_Hours_H	I	35013
13	Compressor 2 Runtime -This point applies to DX unit with dual compressor - low	R	C2_Hours_L	I	35014
14	Heater 1 Runtime - high	R	Ht1_Hours_H	I	35015
15	Heater 1 Runtime - low	R	Ht1_Hours_L	I	35016
16	Current second	R	CURRENT_SECOND	I	35017

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
17	Current minute	R	CURRENT_MINUTE	I	35018
18	Current hour	R	CURRENT_HOUR	I	35019
19	Current day	R	CURRENT_DAY	I	35020
20	Current month	R	CURRENT_MONTH	I	35021
21	Current year	R	CURRENT_YEAR	I	35022
22	Firestat setpoint	R/W	Firestat_SP	I	45023
23	Humidity upper limit alarm	R/W	Hum_Hi_SP	I	45024
24	Upper limit alarm of return air temp	R/W	Ret_Air_Hi_SP	I	45025
25	Humidity lower limit alarm	R/W	Hum_Lo_SP	I	45026
26	Lower limit alarm of return air temp	R/W	Ret_Air_Lo_SP	I	45027
27	Humidity deadband	R/W	Hum_deadband	I	45028
28	Humidity setpoint	R/W	Hum_setpoint	I	45029
29	system start delay-Time before the system starts up	R/W	Start_dly	I	45030
30	Optional Alarm 1 Delay	R	Del	I	35031
31	Optional Alarm 2 Delay	R	Del	I	35032
32	Optional Alarm 3 Delay	R	Del	I	35033
33	Message on optional alarm screen 1, some also add function	R	Alarm1_txt	I	35034
34	Message on optional alarm screen 2, some also add function	R	Alarm2_txt	I	35035
35	Message on optional alarm screen 3, some also add function	R	Alarm3_txt	I	35036
36	Message on optional alarm screen 4, some also add function	R	Alarm4_txt	I	35037
37	Comps 0=none, 1=one, 2=one+UL, 3=two, 4=two+UL, 5=Four/two circuit	R	Comp_sel	I	35038
38	0=none, 1= comp limited, 2=twocomp limited, 3= comp unlimited, 4=twocomp unlimited	R	Dehum_mode	I	35039
39	0=None, 1=one, 2=one elect, 3=two, 4=three, 5=three elect	R	Reheat_sel	I	35040
40	0=none, 1=comp mod, 2=comp non, 3= comf mod, 4= conf non mod	R	Hum_sel	I	35041
41	Alarm contact message-Text displayed on all alarm screens	R	Alm_Contact_msg	I	35042
42	0= start wo/alarm, 1= start w/alarm, 2= requires reset of alarm	R	PowerUp_sel	I	35043
43	0=None, 1=short beeps, 2=long beep, 3=Constant	R	Buzzer_Select	I	35044
44	% of Chilled water valve opening (of 10VDC of analog output #1)	R	CW_disp	I	35045
45	Chilled Water Utilization Over Last Hour - This applies to Chilled water or Energy saver units.	R	WtrVlv_duty	I	35046
46	Humidifier Runtime - high	R	Hum_Hours_H	I	35047
47	Humidifier Runtime - low	R	Hum_Hours_L	I	35048
48	Blower Runtime - high	R	Blower_Hours_H	I	35049
49	Blower Runtime - low	R	Blower_Hours_L	I	35050
50	Optional Alarm 4 Delay	R	Del	I	35051
51	0= no comp assist, 1=one comp assist, 2= two comp assist, 3... 4...	R	Assist_sel	I	35052
52	Water valve type 0=none, 1=chill, 2=Engy, 3=Aux chill, 4=Disc Reg	R	WtrVlv_sel	I	35053
53	Water valve voltage 0= 0-10, 1=2-10, 2=7-10, 3=6-9, 4=4-7	R	WtrVlv_Volts_sel	I	35054

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
55	Dehumidifier Runtime - High	R	Dehum_Hours_H	I	35056
56	Dehumidifier Runtime - Low	R	Dehum_Hours_L	I	35057
58	Time between drain cycles 0=12hr, 1=24hr, 2=48hr, 3=96hr, 4=None	R	AutoFlush_dly	I	35059
70	CW Fan speed (%) sent via BMS (Fan speed controlled by BMS mode)	R/W	CW_Fan_Speed_bms	I	45071
71	DX Fan speed (%) sent via BMS (Fan speed controlled by BMS mode)	R/W	DX_Fan_Speed_bms	I	45072
72	Maximum Fan speed (% of output) modulation.	R/W	Fan_Speed_max	I	45073
73	Minimum Fan speed (% of output) modulation.	R/W	Fan_Speed_min	I	45074
81	Heater 2 Runtime - high	R	Ht2_Hours_H	I	35082
82	Heater 2 Runtime - low	R	Ht2_Hours_L	I	35083
83	Heater 3 Runtime - high	R	Ht3_Hours_H	I	35084
84	Heater 3 Runtime - low	R	Ht3_Hours_L	I	35085
87	Chilled Water Runtime - This applies to chilled water units only - high	R	CW_Hours_H	I	35088
88	Chilled Water Runtime - This applies to chilled water units only - low	R	CW_Hours_L	I	35089
89	Compressor 3 Runtime - This applies when unit has four stages tandem compressors - high	R	C3_Hours_H	I	35090
90	Compressor 3 Runtime - This applies when unit has four stages tandem compressors - low	R	C3_Hours_L	I	35091
91	Compressor 4 Runtime - This applies when unit has four stages tandem compressors. - high	R	C4_Hours_L	I	35092
92	Compressor 4 Runtime - This applies when unit has four stages tandem compressors. - low	R	C4_Hours_H	I	35093
93	Condenser Runtime - high	R	Cond_Hours_H	I	35094
94	Condenser Runtime - low	R	Cond_Hours_L	I	35095
95	Fan speed (% of output) when compressor cooling (Constant DX fan speed setting).	R	DX_Fan_Speed	I	35096
96	Fan speed (% of output) when cold water cooling (Constant CW fan speed setting).	R	CW_Fan_Speed	I	35097
109	Fan speed modulation (for monitoring)	R	Fan_Out	I	35110
132	Maint required alarm delay (Hrs)	R/W	Maint_dly	I	45133
138	Low part of the job number	R	Job_Number_L	I	35139
139	High part of the job number	R	Job_Number_H	I	35140
152	Part of the serial number that reflects the year	R	Ser_Date	I	35153
153	Serial number of the processor board	R	Ser_Number	I	35154
154	Last letter of the serial number	R	Ser_Suffix	I	35155
169	Selection of what controls status output contact 0=on 2=ht 3=dx4=hum 5=dehum	R/W	Status_Out_sel	I	45170
171	First part of the model number (large controller only)	R	Mod_Txt1	I	35172
172	Second part of model number	R	Mod_Txt2	I	35173
173	Second part of model number (mini controller only)	R	Mod_Txt2s	I	35174
174	Third part of model number (large controller only)	R	Mod_Txt3	I	35175
175	Third part of model number (mini controller only)	R	Mod_Txt3s	I	35176
176	Fouth part of model number	R	Mod_Txt4	I	35177
177	Fouth part of model number (mini controller only)	R	Mod_Txt4s	I	35178

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
178	Last part on model number	R	Mod_Txt5	I	35179
196	Part of the model number (not on minidap)	R	Mod_Number	I	35197
197	Part of the model number (minidap only)	R	Mod_Txt1s	I	35198
1	Dehumidify mode is running	R	Dehum_On	D	10002
2	Humidifier is running	R	Hum_On	D	10003
7	Dehum is inhibited	R	Dehum_Inhibit	D	10008
8	reheat during dehum	R	Rht_during_dehum	D	10009
9	Water under floor alarm	R	Floor_Wtr_alm	D	10010
10	No air flow alarm	R	Air_Flow_alm	D	10011
11	Dirty filter alarm	R	Filter_alm	D	10012
13	Firestat alarm	R	Firestat_alm	D	10014
14	Compressor short cycle alarm	R	Shortcycle_alm	D	10015
15	Humidity sensor is out of range	R	Humidity_fail	D	10016
16	Return air temperature sensor is out of range	R	Ret_Air_fail	D	10017
17	Maintenance Schedule Due alarm	R	Maint_alm	D	10018
18	High pressure alarm compressor 1	R	C1_HP_alm	D	10019
19	Low pressure alarm compressor 1	R	C1_LP_alm	D	10020
20	High pressure alarm compressor 2	R	C2_HP_alm	D	10021
21	Low pressure alarm compressor 2	R	C2_LP_alm	D	10022
25	Temperature of return air above alarm limit	R	RA_Tmp_hi_alm	D	10026
26	Temperature of return air below alarm limit	R	RA_Tmp_lo_alm	D	10027
27	Humidity above alarm limit	R	Hum_hi_alm	D	10028
28	Humidity below alarm limit	R	Hum_lo_alm	D	10029
31	Custom alarm #1 -Optional alarm. Custom message displayed	R	Cust_msg_Sw1	D	10032
32	Custom alarm #2 -Optional alarm. Custom message displayed	R	Cust_msg_Sw2	D	10033
33	Custom alarm #3 -Optional alarm. Custom message displayed	R	Cust_msg_Sw3	D	10034
34	Custom alarm #4 -Optional alarm. Custom message displayed	R	Cust_msg_Sw4	D	10035
39	Manual override	R	Override_Alm	D	10040
40	High condensation from digital input	R	Condensation_alm	D	10041
41	Unit in standby	R	Unit_In_Standby	D	10042
44	Cooling operation inhibited by BMS	R/W	BMS_Cooling_inhibit	D	00045
45	Heat inhibited due to bms	R/W	BMS_Heat_inhibit	D	00046
46	Humidifier operation inhibited by BMS	R/W	BMS_Humidifier_inhibit	D	00047
47	Dehumidify mode inhibited by bms	R/W	BMS_DeHum_inhibit	D	00048
48	Inhibit fan by bms	R/W	Fan_Inhibit_bms	D	00049
49	Reduces control humidity cycling	R	Hum_Expect	D	10050
51	Units of temperature 0=F, 1=C	R/W	USAshr_f_c	D	00052
52	Lead compressor select 0= C1, 1= C2	R	Lead_Comp	D	10053
53	Water valve direct or reverse acting	R	WtrVlv_dir	D	10054

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
55	Loss of power requires manual reset of alarm	R	PwrUp_alm	D	10056
56	Local alarm #1: See tag inside door	R	SeeTag_cust_alm1	D	10057
57	Local alarm #2: See tag inside door	R	SeeTag_cust_alm2	D	10058
58	Local alarm #3: See tag inside door	R	SeeTag_cust_alm3	D	10059
59	Local alarm #4: See tag inside door	R	SeeTag_cust_alm4	D	10060
60	Enable short cycle alarm of the compressors	R	ShortCycle_alm_en	D	10061
61	BMS Supervisor On/Off Control (0=Unit on, 1=Unit off)	R/W	Superv_Off	D	00062
62	BMS Heart beat for supervisor on/off control. If enabled this variable must change at least once a minute or unit will turn on	R/W	BMS_Heartbeat	D	00063
66	On-Off unit state (0: Off; 1: On)	R	Sys_On	D	10067
67	Fan running	R	Blower_On	D	10068
80	Custom alarm #2	R	Alm_Out2	D	10081
144	Control mode 0=Return Temp 1=Supply Temp	R/W	Control_Mode	D	00145
148	Controller size 0=mini dap4 1=dap4	R	pCO_Large	D	10149
168	Unit in alarm (Alarm presents in this unit)	R	Alarm_On	D	10169
174	Custom alarm #3	R	Alm_Out3	D	10175
175	Custom alarm #4	R	Alm_Out4	D	10176
190	Enable hi humidity alarm	R/W	Hum_hi_alm_en	D	00191
197	Enable low humidity alarm	R/W	Hum_lo_alm_en	D	00198
198	Enable high return temp alarm	R/W	RA_Tmp_hi_alm_en	D	00199
199	Enable low return temp alarm	R/W	RA_Tmp_lo_alm_en	D	00200
	Optional Energy Saver or Auxiliary Chilled Water Cooling				
8	Temperature of chilled water	R	CW_Tmp	A	30009
11	Chilled Water Temperature Sensor Calibration - Optional sensor required (B10)	R/W	Ain_offs	A	40012
12	CW temperature setpoint for energy saver cooling-Temperature setpoint where E/S chilled water cooling is requested	R/W	EngSaver_Setpoint	A	40013
85	Energy Saver Runtime - This optional point applies to energy saver units only -high	R	Engy_Hours_H	I	35086
86	Energy Saver Runtime - This optional point applies to energy saver units only - low	R	Engy_Hours_L	I	35087
3	Energy saver is running	R	Engy_On	D	10004
	Optional Sensors and Alarms				
8	Temperature of chilled water	R	CW_Tmp	A	30009
9	Temperature of discharge air	R	Disch_Air_Tmp	A	30010
10	Discharge Temperature Sensor Calibration - Optional sensor required (B9)	R/W	Ain_offs	A	40011
11	Chilled Water Temperature Sensor Calibration - Optional sensor required (B10)	R/W	Ain_offs	A	40012
13	Value of the analog input	R	Opt1_Analog	A	30014
14	Value of the analog input	R	Opt2_Analog	A	30015
15	Value of the Auxillary analog	R	Opt3_Analog	A	30016
16	Value of the analog input	R	Opt4_Analog	A	30017
17	Analog Sensor 1 Minimum Value	R/W	Y1	A	40018

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
18	Analog Sensor 1 Maximum Value	R/W	Y2	A	40019
19	Analog Sensor 1 Calibration	R/W	Ain_offs	A	40020
20	Analog Sensor 2 Minimum Value	R/W	Y1	A	40021
21	Analog Sensor 2 Maximum Value	R/W	Y2	A	40022
22	Analog Sensor 2 Calibration	R/W	Ain_offs	A	40023
23	Analog Sensor 3 Minimum Value	R/W	Y1	A	40024
24	Analog Sensor 3 Maximum Value	R/W	Y2	A	40025
25	Analog Sensor 3 Calibration	R/W	Ain_offs	A	40026
26	Analog Sensor 4 Minimum Value	R/W	Y1	A	40027
27	Analog Sensor 4 Maximum Value	R/W	Y2	A	40028
58	Temperature proportional band (P value) for chilled water unit with discharge air temperature control	R/W	Temp_Band	A	40059
97	Amount from setpoint that heat is on (supply control only)	R/W	Heat_Deadband	A	40098
1	Lower limit alarm of discharge air temp	R/W	Disch_Air_Lo_SP	I	45002
54	% of optional modulating humidifier output (from 10volts of analog output #2)	R	Hum_Volts	I	35055
59	Value sent to optional analog output#1 for SCR control	R	Y4_Out	I	35060
62	Name of the sensor	R	Opt_Snsr1_name	I	35063
63	Analog Sensor 1 Type {0=NTC 1=PT1000 2=0-1VDC 3=0-10VDC 4=4-20mA 5=ON/OFF 6=0-5VDC 7=NTC HT 8=-50T90 9=10T170}	R	Ain_type	I	35064
64	Name of the sensor	R	Opt_Snsr2_name	I	35065
65	Analog Sensor 2 Type {0=NTC 1=PT1000 2=0-1VDC 3=0-10VDC 4=4-20mA 5=ON/OFF 6=0-5VDC 7=NTC HT 8=-50T90 9=10T170}	R	Ain_type	I	35066
66	Name of the sensor	R	Opt_Snsr3_name	I	35067
67	Analog Sensor 3 Type {0=NTC 1=PT1000 2=0-1VDC 3=0-10VDC 4=4-20mA 5=ON/OFF 6=0-5VDC 7=NTC HT 8=-50T90 9=10T170}	R	Ain_type	I	35068
68	Name of the sensor	R	Opt_Snsr4_name	I	35069
69	Analog Sensor 4 Type {0=NTC 1=PT1000 2=0-1VDC 3=0-10VDC 4=4-20mA 5=ON/OFF 6=0-5VDC 7=NTC HT 8=-50T90 9=10T170}	R	Ain_type	I	35070
110	Setting of HP alarms/hr before comp is locked out, 1=disabled	R/W	HP_Lockout_Cnt	I	45111
111	Number of HP alarms C1 had within an hour	R	C1_HP_Count	I	35112
112	Number of HP alarms C2 had within an hour	R	C2_HP_Count	I	35113
131	Band of temp below setpoint that Y4 will be at 10v (per step x10) for optional SCR reheat steps control	R/W	SCR_band	I	45132
134	Y2 on mini dap4 is selectable 0=none 1=Hum 2=CW for optional Modulating humidifier or CW valve control	R/W	Y2_Sel	I	45135
5	Heat inhibited due to alarm condition	R	Heat_Held	D	10006
6	Humidifier stopped due to alarm	R	Humidifier_inhibit	D	10007
12	Alarm from humidifier digital input	R	Humidifier_alm	D	10013
22	Optional Smoke detected from digital input	R	Smoke_alm	D	10023
23	No water flow alarm (stays high 5min longer if set to lockout)	R	Wtr_Flow_alm	D	10024
24	Discharge air temperature sensor is out of range	R	Disch_Air_fail	D	10025
29	Fan overload / Fan fail	R	Fan_Overload	D	10030

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
30	Standby pump on	R	Stdby_Pump_On	D	10031
35	Humidifier stopped due to custom alarm switch	R	HumSw_Inhibit	D	10036
36	Heat inhibited due to custom switch alarm condition	R	Heat_inhibit	D	10037
37	Reheat and humidification inhibited from operation	R	Rht_Hum_inhibit	D	10038
38	Temperature of discharge air below alarm limit	R	Disch_Tmp_lo_alm	D	10039
42	Chilled water temperature sensor is out of range	R	CW_sns_fail	D	10043
43	Humidifier stopped due to custom alarm switch	R	HumSw_Chk_Cyl	D	10044
54	Alarm: UPS power on	R	Ups_On_alm	D	10055
63	HP count lockout reset (seperate from normal alarm resets. This requires optional auto-reset switch)	R/W	Lockout_Reset	D	00064
64	C1 disabled due to excessive HP alarms	R	C1_Lockout	D	10065
65	C2 disabled due to excessive HP alarms	R	C2_Lockout	D	10066
68	Power A operating (notice only)	R	Pwr_A_Operating	D	10069
69	Power B operating (notice only)	R	Pwr_B_Operating	D	10070
70	Power A Not Available alarm	R	PwrNA_A_alm	D	10071
71	Power B Not Available alarm	R	PwrNA_B_alm	D	10072
73	C2 pressure and temp count reset	R/W	Lockout_Reset2	D	00074
75	Optional freezestat alarm- Discharge air temp below freeze alarm setpoint	R	Freeze_alm	D	10076
189	Enable low discharge temperature alarm	R/W	Disch_Air_lo_alm_en	D	00190
	Electronic Expansion Valves EEV & Variable Speed Compressor				
51	Superheat read from EVD C1	R	EVO_Superheat	A	30052
52	Valve position read from EVD in % (100.0)= full open C1	R	EVO_Posistion	A	30053
53	Suction line pressure in PSI from EVD C1	R	EVO_Suction_Pr	A	30054
54	Suction line temperature from EVD C1	R	Suc_Temp	A	30055
60	Temperature setpoint offset based on humidity	R	Latent_SP	A	30061
64	Suction line pressure in PSI from EVD C2	R	EVO2_Suction_Pr	A	30065
65	Superheat read from EVD C2	R	EVO2_Superheat	A	30066
66	Valve position read from EVD in % (100.0)= full open C2	R	EVO2_Posistion	A	30067
67	Suction line temperature from EVD C2	R	Suc_Temp2	A	30068
131	Temperature band for variable compressor (supply air regulation)	R/W	Temp_Band_Vcmp	A	40132
132	Offset from setpoint where variable comp will turn off	R/W	C1_Offs_ofs	A	40133
134	Offset from setpoint where fixed comp will turn off (when used with variable)	R/W	C2_Off_ofs	A	40135
60	Value sent to variable speed compressor from optional analog output#2	R	Y5_Out	I	35061
133	Low suction pressure setpoint	R/W	Suc_Tmp_Lo_SP	I	45134
140	Low suction temp setpoint deadband	R/W	Suc_Tmp_Lo_db	I	45141
141	Number of low pressure alarms before comp is locked out	R/W	Suc_Pr_Lockout_Set	I	45142
142	Constant speed that the compressor runs 1800 to 5400rpm	R/W	Var_Const_Speed	I	45143
143	Min run time of compressors (in mins)	R/W	MRT	I	45144

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
144	Speed that VFD is requested to run 1800 to 5400rpm	R	Comp_Speed_disp	I	35145
145	Selection for IRDX temperature regulation	R/W	IRDX_Regulation	I	45146
146	High suction temp setpoint	R/W	Suc_Tmp_Hi_sp	I	45147
147	High suction temp setpoint deadband	R/W	Suc_Tmp_Hi_db	I	45148
148	Number of low pressure alarms C1 had within an hour	R	C1_Suction_Lo_Count	I	35149
149	Number of suction high temp alarms C1 had within an hour	R	C1_Suction_Hi_Tmp_Count	I	35150
150	Number of low pressure alarms C2 had within an hour	R	C2_Suction_Lo_Count	I	35151
151	Number of suction high temp alarms C2 had within an hour	R	C2_Suction_Hi_Tmp_Count	I	35152
155	Number of temperature alarms before comp is locked out	R/W	Suc_tmpHi_Lockout_Set	I	45156
157	Time modulation of of variable comp will run a max when C2 starts	R/W	Suspend_C1_Dly	I	45158
158	Intigration time for variable compressor modulation ret air	R/W	Int_ret_air	I	45159
159	Intigration time for variable compressor modulation supply air	R/W	Int_Vcmp	I	45160
164	Delay before C2 will join variable compressor	R/W	C2_Stg_Dly	I	45165
165	Derivative time for var comp PID in supply air regulation	R/W	Der_Vcmp	I	45166
166	Number of CW operating hours before switch to DX for a short time	R/W	Sw_DX_dly	I	45167
167	Delay before C2 can turn off when used with variable comp	R/W	C2_Off_Dly	I	45168
168	Threshold of discharge humidity where temp setpoint will begin to offset	R/W	Latent_Dband	I	45169
146	Compressor VFD alarm	R	VFD_alm	D	10147
166	Low suction pressure alarm C1	R	Low_Suc_Prs1_alm	D	10167
167	Low suction pressure alarm C2	R	Low_Suc_Prs2_alm	D	10168
170	Low suction temp alarm C1	R	Low_Suc_Tmp1	D	10171
171	Low suction temp alarm C2	R	Low_Suc_Tmp2	D	10172
172	High suction temp alarm C1	R	Hi_Suc_Tmp1	D	10173
177	EVD memory fault alarm	R	EVO_eeprom_alm	D	10178
180	EVD valve 1 motor fault	R	EVO_Motor_alm	D	10181
182	EVD C1 high evap temp alarm	R	EVO_Hi_EvapT_alm	D	10183
185	EVD sensor 1 fault	R	EVO_S1_alm	D	10186
187	EVD sensor 2 fault	R	EVO_S2_alm	D	10188
191	EVD valve 2 motor fault	R	EVO2_Motor_alm	D	10192
194	EVD sensor 3 fault	R	EVO_S3_alm	D	10195
195	EVD sensor 4 fault	R	EVO_S4_alm	D	10196
201	C2 High suction temp alarm	R	EVO2_suc_tmp2_alm	D	10202
202	Enable C2 suction pressure alarm	R/W	Suc_Prs2_alarm_en	D	00203
203	Enable C1 suction pressure alarm	R/W	Suc_Prs_alarm_en	D	00204
205	High evap temp alarm C2	R	EVO2_Hi_EvapT_alm	D	10206
	Optional Airside Economizer				
28	Offset for Outside Air Humidity sensor	R/W	Ain_offs	A	40029

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
29	Temperature setpoint for cooling in economizer mode	R/W	Econ_CI_Setpoint	A	40030
30	Temperature deadband for cooling in economizer mode	R/W	Econ_CI_Deadband	A	40031
31	Temperature setpoint for heating in economizer mode	R/W	Econ_Ht_Setpoint	A	40032
32	Temperature deadband for heating in economizer mode	R/W	Econ_Ht_Deadband	A	40033
38	Deadband of enthalpy for economizer	R/W	Enthalpy_Deadband	A	40039
39	Offset for Outside Air Temperature probe	R/W	Ain_offs	A	40040
40	Temperature of the outside air	R	Outside_Temp	A	30041
41	Dew point of outside air	R	Outside_Dewpt	A	30042
98	Maximum damper (% of output) modulation.	R/W	Damper_max	I	45099
80	Minimum Damper (% of output) modulation.	R/W	Damper_min	I	45081
103	Economizer Runtime - high	R	Econ_Hours_H	I	35104
104	Economizer Runtime - low	R	Econ_Hours_L	I	35105
105	Relative humidity of the outside air in %	R	Outside_Hum_dsp	I	35106
106	Outside air enthalpy in KJ or BTU	R	Outside_Enthalpy	I	35107
107	Return air enthalpy in KJ or BTU	R	Return_Enthalpy	I	35108
108	Analog value of damper in %	R	Damper_Mod_dsp	I	35109
72	BMS signal to close damper is economizer mode	R/W	BMS_Damper_Inhibit	D	00073
143	Airside economizer feature enabled	R	Economizer_En	D	10144
	Optional Rack Temperature Sensor				
43	Setpoint for fan modulation by return or rack temperature	R/W	RA_Fan_Setpoint	A	40044
44	Amount from setpoint before fan starts ramping up	R/W	RA_Fan_Deadband	A	40045
45	The highest of the rack temp sensors connected to this unit	R	Rack_Temp	A	30046
46	The highest rack temp of all units in this zone (Zone master required)	R	Zone_Rack_Temp	A	30047
47	T1 displayed value regardless of inclusion	R	T1_Dis	A	30048
48	T2 displayed value regardless of inclusion	R	T2_Dis	A	30049
49	T3 displayed value regardless of inclusion	R	T1_Dis	A	30050
59	Setpoint for delta of Ret-Sply temp for fan modulation	R/W	Delta_SP	A	40060
61	Return temp minus supply temp	R	Delta_Temp	A	30062
68	T4 displayed value regardless of inclusion	R	T2_Dis	A	30069
69	T5 displayed value regardless of inclusion	R	T1_Dis	A	30070
70	T6 displayed value regardless of inclusion	R	T2_Dis	A	30071
71	T7 displayed value regardless of inclusion	R	T1_Dis	A	30072
72	T8 displayed value regardless of inclusion	R	T2_Dis	A	30073
73	T9 displayed value regardless of inclusion	R	T1_Dis	A	30074
74	T10 displayed value regardless of inclusion	R	T2_Dis	A	30075
75	T11 displayed value regardless of inclusion	R	T1_Dis	A	30076
76	T12 displayed value regardless of inclusion	R	T2_Dis	A	30077
77	T13 displayed value regardless of inclusion	R	T1_Dis	A	30078

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
78	T14 displayed value regardless of inclusion	R	T2_Dis	A	30079
79	T15 displayed value regardless of inclusion	R	T1_Dis	A	30080
80	T16 displayed value regardless of inclusion	R	T2_Dis	A	30081
81	T17 displayed value regardless of inclusion	R	T1_Dis	A	30082
82	T18 displayed value regardless of inclusion	R	T2_Dis	A	30083
83	T19 displayed value regardless of inclusion	R	T1_Dis	A	30084
84	T20 displayed value regardless of inclusion	R	T2_Dis	A	30085
85	T21 displayed value regardless of inclusion	R	T1_Dis	A	30086
86	T22 displayed value regardless of inclusion	R	T2_Dis	A	30087
87	T23 displayed value regardless of inclusion	R	T1_Dis	A	30088
88	T24 displayed value regardless of inclusion	R	T2_Dis	A	30089
89	T25 displayed value regardless of inclusion	R	T1_Dis	A	30090
90	T26 displayed value regardless of inclusion	R	T2_Dis	A	30091
91	T27 displayed value regardless of inclusion	R	T1_Dis	A	30092
92	T28 displayed value regardless of inclusion	R	T2_Dis	A	30093
93	T29 displayed value regardless of inclusion	R	T1_Dis	A	30094
94	T30 displayed value regardless of inclusion	R	T2_Dis	A	30095
95	T31 displayed value regardless of inclusion	R	T1_Dis	A	30096
96	T32 displayed value regardless of inclusion	R	T2_Dis	A	30097
98	Excludes rack sensors outside the average plus or minus this band	R/W	Rack_Exc_Band	A	40099
100	Average temperature of sensors in Group A	R	Group_Temp_A	A	30101
101	Average temperature of sensors in Group B	R	Group_Temp_B	A	30102
102	Average temperature of sensors in Group C	R	Group_Temp_C	A	30103
103	Average temperature of sensors in Group D	R	Group_Temp_D	A	30104
104	Average temperature of sensors in Group E	R	Group_Temp_E	A	30105
105	Average temperature of sensors in Group F	R	Group_Temp_F	A	30106
106	Average temperature of sensors in Group G	R	Group_Temp_G	A	30107
107	Average temperature of sensors in Group H	R	Group_Temp_H	A	30108
108	Average temperature of sensors in Group I	R	Group_Temp_I	A	30109
109	Average temperature of sensors in Group J	R	Group_Temp_J	A	30110
110	Average temperature of sensors in Group K	R	Group_Temp_K	A	30111
111	Average temperature of sensors in Group L	R	Group_Temp_L	A	30112
112	Average temperature of sensors in Group M	R	Group_Temp_M	A	30113
113	Average temperature of sensors in Group N	R	Group_Temp_N	A	30114
114	Average temperature of sensors in Group O	R	Group_Temp_O	A	30115
115	Average temperature of sensors in Group P	R	Group_Temp_P	A	30116
116	Calculated rack temp of unit 2	R	Rack_Temp_U2	A	30117
117	Calculated rack temp of unit 3	R	Rack_Temp_U3	A	30118
118	Calculated rack temp of unit 4	R	Rack_Temp_U4	A	30119

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
119	Calculated rack temp of unit 5	R	Rack_Temp_U5	A	30120
120	Calculated rack temp of unit 6	R	Rack_Temp_U6	A	30121
121	Calculated rack temp of unit 7	R	Rack_Temp_U7	A	30122
122	Calculated rack temp of unit 8	R	Rack_Temp_U8	A	30123
123	Calculated rack temp of unit 9	R	Rack_Temp_U9	A	30124
124	Calculated rack temp of unit 10	R	Rack_Temp_U10	A	30125
125	Calculated rack temp of unit 11	R	Rack_Temp_U11	A	30126
126	Calculated rack temp of unit 12	R	Rack_Temp_U12	A	30127
127	Calculated rack temp of unit 13	R	Rack_Temp_U13	A	30128
128	Calculated rack temp of unit 14	R	Rack_Temp_U14	A	30129
129	Calculated rack temp of unit 15	R	Rack_Temp_U15	A	30130
130	Calculated rack temp of unit 16	R	Rack_Temp_U16	A	30131
160	Number of rack temp sensors installed	R/W	SHR_T_Num	I	45161
161	Number of groups used	R/W	SHR_Group_Num	I	45162
162	High rack temp alarm setpoint	R/W	SHR_T_Hi_Alm	I	45163
163	Low rack temp alarm setpoint	R/W	SHR_T_Lo_Alm	I	45164
74	Enable limit of fan speed when return air temp too high (For optional rack temperature control)	R/W	Fan_Ht_Limit_en	D	00075
76	Temp of rack sensor above setpoint - T1	R	T1_Hi_Alm	D	10077
77	Temp of rack sensor above setpoint - T2	R	T2_Hi_Alm	D	10078
78	Temp of rack sensor above setpoint - T3	R	T1_Hi_Alm	D	10079
79	Temp of rack sensor above setpoint - T4	R	T2_Hi_Alm	D	10080
81	Temp of rack sensor above setpoint - T5	R	T1_Hi_Alm	D	10082
82	Temp of rack sensor above setpoint - T6	R	T2_Hi_Alm	D	10083
83	Temp of rack sensor above setpoint - T7	R	T1_Hi_Alm	D	10084
84	Temp of rack sensor above setpoint - T8	R	T2_Hi_Alm	D	10085
85	Temp of rack sensor above setpoint - T9	R	T1_Hi_Alm	D	10086
86	Temp of rack sensor above setpoint - T10	R	T2_Hi_Alm	D	10087
87	Temp of rack sensor above setpoint - T11	R	T1_Hi_Alm	D	10088
88	Temp of rack sensor above setpoint - T12	R	T2_Hi_Alm	D	10089
89	Temp of rack sensor above setpoint - T13	R	T1_Hi_Alm	D	10090
90	Temp of rack sensor above setpoint - T14	R	T2_Hi_Alm	D	10091
91	Temp of rack sensor above setpoint - T15	R	T1_Hi_Alm	D	10092
92	Temp of rack sensor above setpoint - T16	R	T2_Hi_Alm	D	10093
93	Temp of rack sensor above setpoint - T17	R	T1_Hi_Alm	D	10094
94	Temp of rack sensor above setpoint - T18	R	T2_Hi_Alm	D	10095
95	Temp of rack sensor above setpoint - T19	R	T1_Hi_Alm	D	10096
96	Temp of rack sensor above setpoint - T20	R	T2_Hi_Alm	D	10097
97	Temp of rack sensor above setpoint - T21	R	T1_Hi_Alm	D	10098
98	Temp of rack sensor above setpoint - T22	R	T2_Hi_Alm	D	10099

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
99	Temp of rack sensor above setpoint - T23	R	T1_Hi_Alm	D	10100
100	Temp of rack sensor above setpoint - T24	R	T2_Hi_Alm	D	10101
101	Temp of rack sensor above setpoint - T25	R	T1_Hi_Alm	D	10102
102	Temp of rack sensor above setpoint - T26	R	T2_Hi_Alm	D	10103
103	Temp of rack sensor above setpoint - T27	R	T1_Hi_Alm	D	10104
104	Temp of rack sensor above setpoint - T28	R	T2_Hi_Alm	D	10105
105	Temp of rack sensor above setpoint - T29	R	T1_Hi_Alm	D	10106
106	Temp of rack sensor above setpoint - T30	R	T2_Hi_Alm	D	10107
107	Temp of rack sensor above setpoint - T31	R	T1_Hi_Alm	D	10108
109	Temp of rack sensor above setpoint - T32	R	T2_Hi_Alm	D	10110
110	Temp of rack sensor below setpoint -T1	R	T1_Lo_Alm	D	10111
111	Temp of rack sensor below setpoint -T2	R	T2_Lo_Alm	D	10112
112	Temp of rack sensor below setpoint -T3	R	T1_Lo_Alm	D	10113
113	Temp of rack sensor below setpoint -T4	R	T2_Lo_Alm	D	10114
114	Temp of rack sensor below setpoint -T5	R	T1_Lo_Alm	D	10115
115	Temp of rack sensor below setpoint -T6	R	T2_Lo_Alm	D	10116
116	Temp of rack sensor below setpoint -T7	R	T1_Lo_Alm	D	10117
117	Temp of rack sensor below setpoint -T8	R	T2_Lo_Alm	D	10118
118	Temp of rack sensor below setpoint -T9	R	T1_Lo_Alm	D	10119
119	Temp of rack sensor below setpoint -T10	R	T2_Lo_Alm	D	10120
120	Temp of rack sensor below setpoint -T11	R	T1_Lo_Alm	D	10121
121	Temp of rack sensor below setpoint -T12	R	T2_Lo_Alm	D	10122
122	Temp of rack sensor below setpoint -T13	R	T1_Lo_Alm	D	10123
123	Temp of rack sensor below setpoint -T14	R	T2_Lo_Alm	D	10124
124	Temp of rack sensor below setpoint -T15	R	T1_Lo_Alm	D	10125
125	Temp of rack sensor below setpoint -T16	R	T2_Lo_Alm	D	10126
126	Temp of rack sensor below setpoint -T17	R	T1_Lo_Alm	D	10127
127	Temp of rack sensor below setpoint -T18	R	T2_Lo_Alm	D	10128
128	Temp of rack sensor below setpoint -T19	R	T1_Lo_Alm	D	10129
129	Temp of rack sensor below setpoint -T20	R	T2_Lo_Alm	D	10130
130	Temp of rack sensor below setpoint -T21	R	T1_Lo_Alm	D	10131
131	Temp of rack sensor below setpoint -T22	R	T2_Lo_Alm	D	10132
132	Temp of rack sensor below setpoint -T23	R	T1_Lo_Alm	D	10133
133	Temp of rack sensor below setpoint -T24	R	T2_Lo_Alm	D	10134
134	Temp of rack sensor below setpoint -T25	R	T1_Lo_Alm	D	10135
135	Temp of rack sensor below setpoint -T26	R	T2_Lo_Alm	D	10136
136	Temp of rack sensor below setpoint -T27	R	T1_Lo_Alm	D	10137
137	Temp of rack sensor below setpoint -T28	R	T2_Lo_Alm	D	10138
138	Temp of rack sensor below setpoint -T29	R	T1_Lo_Alm	D	10139

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139	Temp of rack sensor below setpoint -T30	R	T2_Lo_Alm	D	10140
140	Temp of rack sensor below setpoint -T31	R	T1_Lo_Alm	D	10141
141	Temp of rack sensor below setpoint -T32	R	T2_Lo_Alm	D	10142
142	Lost communications to external temp module	R	Ext_T_Offline_alm	D	10143
147	Rack sensor mode 0=use highest 1=use average	R	Hi_Ave	D	10148
188	Allow offset to cooling setpoint if fan is running at max speed	R/W	En_SP_Offset	D	00189
	Optional Zone Master Control				
50	Temperature setpoint of the Zone Master	R	Master_Temp_Setpoint	A	30051
55	Power in KW currently being consumed in the zone. (Optional Power meter required)	R	Zone_KW	A	30056
141	Temperature of return air from U2	R	Ret_Air_Tmp2	A	30142
142	Temperature of return air from U3	R	Ret_Air_Tmp3	A	30143
143	Temperature of return air from U4	R	Ret_Air_Tmp4	A	30144
144	Temperature of return air from U5	R	Ret_Air_Tmp5	A	30145
145	Temperature of return air from U6	R	Ret_Air_Tmp6	A	30146
146	Temperature of return air from U7	R	Ret_Air_Tmp7	A	30147
147	Temperature of return air from U8	R	Ret_Air_Tmp8	A	30148
148	Temperature of return air from U9	R	Ret_Air_Tmp9	A	30149
149	Temperature of return air from U10	R	Ret_Air_Tmp10	A	30150
150	Temperature of return air from U11	R	Ret_Air_Tmp11	A	30151
151	Temperature of return air from U12	R	Ret_Air_Tmp12	A	30152
152	Temperature of return air from U13	R	Ret_Air_Tmp13	A	30153
153	Temperature of return air from U14	R	Ret_Air_Tmp14	A	30154
154	Temperature of return air from U15	R	Ret_Air_Tmp15	A	30155
155	Temperature of return air from U16	R	Ret_Air_Tmp16	A	30156
155	Temperature of return air from U16	R	Ret_Air_Tmp16	A	30156
99	Zone Airflow Setpoint (1/100th of actual). (Optional unit airflow measurement kit required)	R/W	ZM_Airflow_SP	I	45100
100	Zone Airflow Setpoint from the server (LSB) 000-999. (Optional unit airflow measurement kit required)	R/W	Unity_Airflow_SP_Isb	I	45101
101	Zone Airflow Setpoint from the server (1/100th actual cfm) (Optional unit airflow measurement kit required)	R/W	Unity_Airflow_SP	I	45102
102	1/10th of the total zone airflow (Optional unit airflow measurement kit required)	R	ZM_Airflow	I	35103
113	Number of units selected by ZM for standby based on current schedule	R	Num_Stdby	I	35114
114	Number of units currently running in the zone	R	Num_Units_On	I	35115
115	State of unit (at address 1). 1,12&13 = On, 2 thru 9 = Off	R	Status	I	35116
116	State of U2 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit2_status	I	35117
117	State of U3 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit3_status	I	35118
118	State of U4 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit4_status	I	35119
119	State of U5 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit5_status	I	35120

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120	State of U6 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit6_status	I	35121
121	State of U7 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit7_status	I	35122
122	State of U8 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit8_status	I	35123
123	State of U9 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit9_status	I	35124
124	State of U10 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit10_status	I	35125
125	State of U11 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit11_status	I	35126
126	State of U12 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit12_status	I	35127
127	State of U13 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit13_status	I	35128
128	State of U14 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit14_status	I	35129
129	State of U15 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit15_status	I	35130
130	State of U16 when zone master is enabled. (1,12&13 is running, 2-9 is Off)	R	Unit16_status	I	35131
135	Cause slaves to take setpoint of the master in ZM, 1=Sync	R/W	Sync_Mstr_SP	I	45136
136	Cause slaves to take time of the master in ZM, 1=Sync	R/W	Sync_Clock	I	45137
137	Address of the controller on the pLAN network	R	PLAN_BMS	I	35138
4	Cooling inhibit from Zone Master	R	Cool_Inhibit	D	10005
	Optional CO2 Sensor Control in gPod system				
136	Maximum CO2 level in last 24 Hrs	R	Maximum	A	30137
137	Minimum CO2 level in last 24 Hrs	R	Minimum	A	30138
180	CO2 Level in PPM (gPOD only)	R	CO2_Level	I	35181
181	CO2 Low level alarm setpoint in PPM (gPOD only)	R/W	CO2_Low_SP	I	45182
182	CO2 High level alarm setpoint in PPM (gPOD only)	R/W	CO2_High_SP	I	45183
183	CO2 hysteresis of setpoint in PPM (gPOD only)	R/W	CO2_Deadband	I	45184
184	CO2 Setpoint in PPM (gPOD only)	R/W	CO2_Setpoint	I	45185
199	CO2 valve duty cycle in 10 percent steps (gPOD only)	R/W	CO2_PWM	I	45200
151	Lights On (gPOD only)	R	Lights_On	D	10152
154	CO2 solenoid valve output (gPOD only)	R	CO2_On	D	10155
155	Enable high CO2 level alarm (gPOD only)	R/W	CO2_High_alm_en	D	00156
156	Enable low CO2 level alarm (gPOD only)	R/W	CO2_Low_alm_en	D	00157
157	CO2 Low level alarm (gPOD only)	R	CO2_Lo_alm	D	10158
158	Enable CO2 control at night (gPOD only)	R/W	CO2_Offset	D	00159
200	CO2 High level alarm (gPOD only)	R	CO2_Hi_alm	D	10201
	Optional Power Meter				
63	Total Instantaneous power in watts (X10)being consumed now	R	PM_Power_VA	A	30064
158	Voltage of phase 1 to neutral (Opt Pwr Meter)	R	PM_Phase1N_Voltage	A	30159
159	Voltage of phase 2 to neutral (Opt Pwr Meter)	R	PM_Phase2N_Voltage	A	30160
160	Voltage of phase 3 to neutral (Opt Pwr Meter)	R	PM_Phase3N_Voltage	A	30161

Point Index	Definition	Read/Write	Variable Name	Data Type	Modbus TCP/IP
161	Voltage of phase 1 to phase 2 (Opt Pwr Meter)	R	PM_Phase12_Voltage	A	30162
162	Voltage of phase 2 to phase 3 (Opt Pwr Meter)	R	PM_Phase23_Voltage	A	30163
163	Voltage of phase 3 to phase 1 (Opt Pwr Meter)	R	PM_Phase31_Voltage	A	30164
164	Amperage of phase 1 in 1/10th amp resolution (Opt Pwr Meter)	R	Phase1_Amps	A	30165
165	Amperage of phase 2 in 1/10th amp resolution (Opt Pwr Meter)	R	Phase2_Amps	A	30166
166	Amperage of phase 3 in 1/10th amp resolution (Opt Pwr Meter)	R	Phase3_Amps	A	30167
167	Power Factor as a ratio 1:0.xxx (Opt Pwr Meter)	R	Power_Factor	A	30168
168	Total kWh used one hour ago (Opt Pwr Meter)	R	KWH_1	A	30169
169	Total kWh used so far today (Opt Pwr Meter)	R	Kwh_Daily	A	30170
170	Total kWh used one day ago (Opt Pwr Meter)	R	Kwh_Day_1	A	30171
100	Total kWh used in the last 30 days (Opt Pwr Meter)	R	Kwh_Day_30	I	30101
149	Power meter offline alarm	R	PM_Offline_alm	D	10150
150	Power phase lost alarm	R	Phase_alm	D	10151
153	Power meter feature enabled	R/W	P_Meter_en	D	00154
157	SCOP Rating (/10). This requires special sensors. Contact factory for details.	R	SCOP_Rating	A	30158
	Optional Static Pressure Control				
57	Fan pressure setpoint inches of water	R/W	Fan_Pr_sp_hi	I	45058
74	Fan pressure setpoint (0.001 inches of water)	R/W	Fan_Pr_sp	I	45075
75	Fan pressure band (0.001 inches of water)	R/W	Fan_pr_band	I	45076
170	Fan pressure band in full inches of water	R/W	Fan_Pr_band_hi	I	45171
57	Amount of change that fan can make in 1 second	R/W	Fan_Rate	A	40058
99	Differential pressure (.01" Water) used for fan speed modulation	R	Air_Pressure	A	30100
	Optional Airflow Measurement kit				
61	1/10th Current Fan Airflow - Based on calculated Pressure Diff formula	R	Air_Flow	I	35062
97	Fan air flow setpoint (cfm) 1/10th scale	R	Fan_AF_sp	I	35098
76	Maximum air flow that the unit can deliver	R/W	Fan_AF_max	I	45077
77	Minimum air flow limit of setpoint from BMS or valve modulation.	R/W	Fan_AF_min	I	45078
78	Fan K Factor	R/W	Fan_Kfactor	I	45079
79	Number of fans installed in this unit	R/W	Num_Fans	I	45080
145	Airflow enabled by unit or zone master	R	Air_Flow_en	D	10146
	Scheduler with Night Set-back setpoint offset				
62	Scheduler heating offset	R/W	Ht_Temp_sp_offset	A	40063
133	Cooling setpoint with Temp Setpoint plus scheduler CL offset	R	Cool_sp	A	30134
135	Heating setpoint with Temp Setpoint minus scheduler HT offset	R	Heat_sp	A	30136
172	Scheduler cooling offset	R/W	CL_Temp_sp_offset	A	40173
179	Dehumidify setpoint offset used by scheduler	R/W	Dehum_sp_offset	I	45180
185	Setpoint for humidifier with scheduler offset	R	Humidifier_sp	I	35186
186	Offset for humidification used by scheduler	R/W	Hum_sp_offset	I	45187

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187	Setpoint for dehumidifier with scheduler offset	R	Dehum_sp	I	35188