HyperStat Modbus and BACnet Mapping document

Register Type	Register Number	Register Type	Register Address	Parameters	Description	Type	Units	Values
Holding Register	40001	Holding	0	Set Temperature Heating	Temperature setpoint hyperstat will heat to when operating mode = heating	uint16	2 x Fahrenheit	120-180 (60.0 - 90.0)
Holding Register	40002	Holding	1	Set Temperature Cooling	Temperature setpoint hyperstat will cool to when operating mode = cooling	uint16	2 x Fahrenheit	120-180 (60.0 - 90.0)
Holding Register	40003	Holding	2	Fan Speed	Configure the fan speed of hyperstat	uint8	NA	0 = OFF 1 = AUTO 2 = LOW 3 = MEDIUM 4 = HIGH
Holding Register	40004	Holding	3	Conditioning Mode	Configure the conditioning mode of the hyperstat	uint8	NA	0 = OFF 1 = AUTO 2 = HEATING 3 = COOLING
Holding Register	40005	Holding	4	Max Heating User Temp	Maximum heating set temperature user can set	uint16	degrees Fahrenheit	60-90
Holding Register	40006	Holding	5	Min Heating User Temp	Minimum heating set temperature the user can set	uint16	degrees Fahrenheit	60-90
Holding Register	40007	Holding	6	Max Cooling User Temp	Maximum cooling set temperature user can set	uint16	degrees Fahrenheit	60-90
Holding Register	40008	Holding	7	Min Cooling User Temp	Minimum cooling set temperature the user can set	uint16	degrees Fahrenheit	60-90
Holding Register	40009	Holding	8	Temperature Offset	Offset added to measurement room temperature	int16	1/10 degrees Fahrenheit	-100 - 100 (-10.0 - 10.0)
Holding Register	40010	Holding	9	Heating Deadband	Amount above set temperature at which heating is activated	uint16	1/10 degrees Fahrenheit	0-100 (0.0-10.0)
Holding Register	40011	Holding	10	Cooling Deadband	Amount below set temperature at which cooling is activated	uint16	1/10 degrees Fahrenheit	0-100 (0.0-10.0)
Holding Register	40012	Holding	11	Temperature Mode	Temperature mode defining how temperature setpoints and deadbands can be configured and how they will be applied	uint8	NA	0 = Single Setpoint 1 = Dual Setpoint Fixed Deadband 2 = Dual Setpoint Variable Deadband
Holding Register	40013	Holding	12	Humidity Min Setpoint	Threshold at which hyperstat will attempt to humidify if humidity level is less than	uint8	%	20-100
Holding Register	40014	Holding	13	Humidity Max Setpoint	Threshold at which hyperstat will attempt to dehumidify if humidity level is greater than	uint8	%	20-100
Holding Register	40015	Holding	14	CO2 Alert Threshold	Threshold of CO2 level at which an alert will be indicated	uint16	ppm	400-10000
Holding Register	40016	Holding	15	VOC Alert Threshold	Threshold of VOC level at which an alert will be indicated	uint16	ppb	0-10000
Holding Register	40017	Holding	16	PM2.5 Alert Threshold	Threshold of PM2.5 level at which an alert will be indicated	uint16	ug/m3	0-10000
Holding Register	40018	Holding	17	Profile	Profile in which Hyperstat shall run	uint8		0 = None 1 = Conventional Package Unit 2 = Heat Pump Unit 3 = 2 Pipe Fancoil Unit 4 = 4 Pipe Fancoil Unit 5 = VRV 6 = Sense
Holding Register	40019	Holding	18	Relay 1 Enable	Configure if relay 1 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40020	Holding	19	Relay 2 Enable	Configure if relay 2 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40021	Holding	20	Relay 3 Enable	Configure if relay 3 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40022	Holding	21	Relay 4 Enable	Configure if relay 4 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40023	Holding	22	Relay 5 Enable	Configure if relay 5 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40024	Holding	23	Relay 6 Enable	Configure if relay 6 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40025	Holding	24	Relay 1 Mapping	Configure the mapping of relay 1 Note: This value is only used if the relay is enabled	uint8		0 = None 1 = Cooling Stage 1 2 = Cooling Stage 2 3 = Cooling Stage 3 4 = Heating Stage 1 5 = Heating Stage 2 6 = Heating Stage 3 7 = Fan Low Speed 8 = Fan Medium Speed 9 = Fan High Speed 10 = Fan Enable 11 = Occupied Enable 12 = Humidifier 13 = Dehumidifier
Holding Register	40026	Holding	25	Relay 2 Mapping	Configure the mapping of relay 2 Note: This value is only used if the relay is enabled	uint8		0 = None 1 = Cooling Stage 1 2 = Cooling Stage 2 3 = Cooling Stage 3 4 = Heating Stage 1 5 = Heating Stage 2 6 = Heating Stage 3 7 = Fan Low Speed 8 = Fan Medium Speed 9 = Fan High Speed 10 = Fan Enable 11 = Occupied Enable 12 = Humidifier 13 = Dehumidifier
Holding Register	40027	Holding	26	Relay 3 Mapping	Configure the mapping of relay 3 Note: This value is only used if the relay is enabled	uint8		0 = None 1 = Cooling Stage 1 2 = Cooling Stage 2 3 = Cooling Stage 3 4 = Heating Stage 1 5 = Heating Stage 2 6 = Heating Stage 3 7 = Fan Low Speed 8 = Fan Medium Speed 9 = Fan High Speed 10 = Fan Enable 11 = Occupied Enable 12 = Humidifier 13 = Dehumidifier
Holding Register	40028	Holding	27	Relay 4 Mapping	Configure the mapping of relay 4 Note: This value is only used if the relay is enabled	uint8		0 = None 1 = Cooling Stage 1 2 = Cooling Stage 2 3 = Cooling Stage 3 4 = Heating Stage 1 5 = Heating Stage 2 6 = Heating Stage 3 7 = Fan Low Speed 8 = Fan Medium Speed 9 = Fan High Speed 10 = Fan Enable 11 = Occupied Enable 12 = Humidifier 13 = Dehumidifier
Holding Register	40029	Holding	28	Relay 5 Mapping	Configure the mapping of relay 5 Note: This value is only used if the relay is enabled	uint8		0 = None 1 = Cooling Stage 1 2 = Cooling Stage 2 3 = Cooling Stage 3 4 = Heating Stage 1 5 = Heating Stage 2 6 = Heating Stage 3 7 = Fan Low Speed 8 = Fan Medium Speed 9 = Fan High Speed 10 = Fan Enable 11 = Occupied Enable 12 = Humidifier 13 = Dehumidifier
Holding Register	40030	Holding	29	Relay 6 Mapping	Configure the mapping of relay 6 Note: This value is only used if the relay is enabled	uint8		0 = None 1 = Cooling Stage 1 2 = Cooling Stage 2 3 = Cooling Stage 3 4 = Heating Stage 1 5 = Heating Stage 2 6 = Heating Stage 3 7 = Fan Low Speed 8 = Fan Medium Speed 9 = Fan High Speed 10 = Fan Enable 11 = Occupied Enable 12 = Humidifier 13 = Dehumidifier
Holding Register	40031	Holding	30	Analog In 1 Enable	Configure if analog input 1 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40032	Holding	31	Analog In 1 Mapping	Configure the mapping of analog input 1 Note: This value is only used if the analog input is enabled	uint8		0 = Current 0-10 1 = Current 0-20 2 = Current 0-50 3 = Keycard 4 = Door Window

Holding Register	40033	Holding	32	Analog In 2 Enable	Configure if analog input 2 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40034	Holding	33	Analog In 2 Mapping	Configure the mapping of analog input 2 Note: This value is only used if the analog input is enabled	uint8		0 = Current 0-10 1 = Current 0-20 2 = Current 0-50 3 = Keycard 4 = Door Window
Holding Register	40035	Holding	34	Analog Out 1 Enable	Configure if analog output 1 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40036	Holding	35	Analog Out 1 Mapping	Configure the mapping of analog output 1 Note: This value is only used if the analog input is enabled	uint8		0 = Cooling 1 = Fan Speed 2 = Heating 3 = DCV Damper
Holding Register	40037	Holding	36	Analog Out 1 At Min Setting	Voltage at which the cooler/damper/fan mapped to the analog output is at minimum position	uint8	1/10 Volts	0 - 100 (0.0 - 10.0)
Holding Register	40038	Holding	37	Analog Out 1 At Max Setting	Voltage at which the cooler/damper/fan mapped to the analog output is at maximum position	uint8	1/10 Volts	0 - 100 (0.0 - 10.0)
Holding Register	40039	Holding	38	Analog Out 1 Pulse Enabled	Determines if PWM channel 1 shall be a pulsed or constant voltage	bool		0 = Constant Voltage 1 = Pulsed Voltage
Holding Register	40040	Holding	39	Analog Out 2 Enable	Configure if analog output 2 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40041	Holding	40	Analog Out 2 Mapping	Configure the mapping of analog output 2 Note: This value is only used if the analog input is enabled	uint8		0 = Cooling 1 = Fan Speed 2 = Heating 3 = DCV Damper
Holding Register	40042	Holding	41	Analog Out 2 At Min Setting	Voltage at which the cooler/damper/fan mapped to the analog output is at minimum position	uint8	1/10 Volts	0 - 100 (0.0 - 10.0)
Holding Register	40043	Holding	42	Analog Out 2 At Max Setting	Voltage at which the cooler/damper/fan mapped to the analog output is at maximum position	uint8	1/10 Volts	0 - 100 (0.0 - 10.0)
Holding Register	40044	Holding	43	Analog Out 2 Pulse Enabled	Determines if PWM channel 2 shall be a pulsed or constant voltage	bool		0 = Constant Voltage 1 = Pulsed Voltage
Holding Register	40045	Holding	44	Analog Out 3 Enable	Configure if analog output 3 is enabled/disabled	bool		0 = Disabled 1 = Enabled
Holding Register	40046	Holding	45	Analog Out 3 Mapping	Configure the mapping of analog output 3 Note: This value is only used if the analog input is enabled	uint8		0 = Cooling 1 = Fan Speed 2 = Heating 3 = DCV Damper
Holding Register	40047	Holding	46	Analog Out 3 At Min Setting	Voltage at which the cooler/damper/fan mapped to the analog output is at minimum position	uint8	1/10 Volts	0 - 100 (0.0 - 10.0)
Holding Register	40048	Holding	47	Analog Out 3 At Max Setting	Voltage at which the cooler/damper/fan mapped to the analog output is at maximum position	uint8	1/10 Volts	0 - 100 (0.0 - 10.0)
Holding Register	40049	Holding	48	Analog Out 3 Pulse Enabled	Determines if PWM channel 3 shall be a pulsed or constant voltage	bool		0 = Constant Voltage 1 = Pulsed Voltage
Holding Register	40050	Holding	49	TH1 Airflow Temperature Enable	Enable or disable thermistor input 1 which is used for measuring airflow temperature	bool		0 = Disabled 1 = Enabled
Holding Register	40051	Holding	50	TH2 Enable	Enable or disable thermistor input 2 which is used for measuring airflow temperature	bool		0 = Disabled 1 = Enabled
Holding Register	40052	Holding	51	Use TH1 As Room Temp Sensor	When enabled, Hyperstat will use the thermistor connected at TH1 input for determining room/zone temperature instead of the onboard temperature sensor	bool		0 = Disabled 1 = Enabled
Holding Register	40053	Holding	52	Zone CO2 Damper Opening Rate	TBD	uint8	%/100 ppm	0-100
Holding Register	40054	Holding	53	Zone CO2 Threshold	Determines the point where Hyperstat starts controlling dampers to maintain CO2 at target value	uint16	ppm	0-2000
Holding Register	40055	Holding	54	Zone CO2 Target	Target value of CO2	uint16	ppm	0-2000
Holding Register	40056	Holding	55	Proportional Constant	Tuner that produces an output action that is proportional to the deviation between the set point and the measured process value for a PI Loop	uint8	1/100	0-100
Holding Register	40057	Holding	56	Integral Constant	Condition with which the controller output is proportional to the amount of time the error is present	uint8	1/100	0-100
Holding Register	40058	Holding	57	Proportional Temperature Range	Defines the band of temperature, or range of temperature, over which the output of the controller is proportional. Example controlling the damper opertions	uint16	1/10 degrees Fahrenheit	0-100 (0.0-10.0)
Holding Register	40059	Holding	58	Integration Time	Defines the amount of time PI loop in the system integrates the error over a period until error value reaches to zero. It limits the speed of response and affects stability of the system	uint16	minutes	5-100
Holding Register	40060	Holding	59	Unoccupied Setback	Determines how many degrees from the desired temperature the zone will be allowed to drift during unoccupied	uint8	1/10 degrees Fahrenheit	10-200 (1.0-20.0)
Holding Register	40061	Holding	60	Relay Activation Hysteresis	Condition at which relay will turn off after being turned on to control based on load	uint8	%	1-50
Holding Register	40062	Holding	61	Analog Fan Speed Multiplier	Tuner that determines how fast a fan can move based on heating or cooling load	uint8	1/10	1-100 (0.1-10)
Holding Register	40063	Holding	62	Humidity Hysteresis	Tuner that determines a condition at which humidier / dehumidifier will turn off after being turned on to control inside humidity	uint8	%	1-100
Holding Register	40064	Holding	63	Forced Occupied Time	During unoccupied time in case there is occupancy detected or user interacts with or edits user intent points then system enters in occupied mode for this tuner period only	uint8	minutes	0-255
Holding Register	40065	Holding	64	Auto Away Time	During Occupied period of the zone (Not during preconditioning period), if an Occupant is not detected for this tuner duration, the zone should enter 'Auto Away' mode if occupancy is enabled	uint8	minutes	0-255
Holding Register	40066	Holding	65	Auto Away Zone Setback Temp	Determines how many degrees from the desired temperature the zone will be allowed to drift during auto away	uint8	1/10 Degrees Fahrenheit	10-200 (1.0 - 20.0)
Holding Register	40067	Holding	66	FCU Aux Heating 1 Activate	Represents the difference between the current temp and heating desired temp in which the FCU Aux Heating 1 will activate. For example, if any relay is enabled and associated with Aux Heating State 1, the relay will be activated when currentTemp < Heating Desired Temp - FCU Aux Heating 1 Activate	uint8	1/10 Degrees Fahrenheit	10-100 (1.0 - 10.0)
Holding Register	40068	Holding	67	FCU Aux Heating 2 Activate	Represents the difference between the current temp and heating desired temp in which the FCU Aux Heating 2 will activate. For example, if any relay is enabled and associated with Aux Heating State 2, the relay will be activated when currentTemp < Heating Desired Temp - FCU Aux Heating 2 Activate	uint8	1/10 Degrees Fahrenheit	10-100 (1.0 - 10.0)
Holding Register	40069	Holding	68	FCU Two Pipe Heating Threshold	For a 2 pipe FCU, this tuner determines if the central plant is providing hot water when compared to supply water temp sensor. If Th2 (Supply water sensor) is more than 2pipeFancoilHeatingThreshold (85) then the central plant is providing hot water	uint8	Degrees Fahrenheit	70-130
Holding Register	40070	Holding	69	FCU Two Pipe Cooling Threshold	For a 2 pipe FCU, this tuner determines if the central plant is providing cold water when compared to supply water temp sensor. If Th2 (supply water sensor) is less than 2pipeFancoilCoolingThreshold (65) then the central plant is providing cold water	uint8	Degrees Fahrenheit	35-70
Holding Register	40071	Holding	70	FCU Water Valve Sampling On Time	If FCU water temperature is greater than FCU Two Pipe Heating Threshold Amount or less than FCU Two Pipe Cooling Threshold, then if the water valve relay has not been enabled for the last FCU Water Valve Sampling Wait Time, this value represents the amount of time the water valve relay will be enabled	uint8	minutes	0-30
Holding Register	40072	Holding	71	FCU Water Valve Sampling Wait Time	If FCU water temperature is greater than FCU Two Pipe Heating Threshold Amount or less than FCU Two Pipe Cooling Threshold, then if the water valve relay has been enabled for the last FCU Water Valve Sampling On Time, this value represents the amount of time the water valve relay will be disabled	uint8	minutes	5-255
Holding Register	40073	Holding	72	FCU Water Valve Sampling During Loop Deadband On Time	If FCU water temperature is between FCU Two Pipe Heating Threshold and FCU Two Pipe Cooling Threshold, then if the water valve relay has not been enabled for the last FCU Water Valve Sampling During Loop Deadband Wait Time, this value represents the amount of time the water valve relay will be enabled	uint8	minutes	0-30
Holding Register	40074	Holding	73	FCU Water Valve Sampling During Loop Deadband Wait Time	If FCU water temperature is between FCU Two Pipe Heating Threshold and FCU Two Pipe Cooling Threshold, then if the water valve relay has been enabled for the last FCU Water Valve Sampling During Loop Deadband On Time, this value represents the amount of time the water valve relay will be disabled	uint8	minutes	5-255
Holding Register	40075	Holding	74	Enable Force Occupied	Configure if Force Occupied feature is enabled/disabled. If Force Occupied = Enable, the Hyperstat will enter occupied mode for duration defined by Forced Occupied Time when occupancy is detected or user interacts with Hyperstat.	bool		0 = Disabled 1 = Enabled
Holding Register	40076	Holding	75	Enable Auto Away	Configure if Auto Away feature is enabled/disabled. If Auto Away = enabled, the Hyperstat will apply the Auto Away Setback Temps when no motion has been detected for a duration greater than the Auto Away Time	bool		0 = Disabled 1 = Enabled
Holding Register	40077	Holding	76	Unoccupied Mode	Indicates if occupied or unoccupied settings shall be followed	bool		0 = Occupied 1 = Unoccupied
Holding Register	40078	Holding	77	Show Centigrade	Determine if Hyperstat display shall use units of Celcius or Fahrenheit	bool		0 = Disabled 1 = Enabled
Holding Register	40079	Holding	78	Display CO2	Configures if CO2 sensor value is displayed on Hyperstat home screen	bool		0 = Disabled 1 = Enabled
Holding Register	40080	Holding	79	Display PM2.5	Configures if PM2.5 sensor value is displayed on Hyperstat home screen	bool		0 = Disabled 1 = Enabled
Holding Register	40081	Holding	80	Display VOC	Configures if VOC sensor value is displayed on Hyperstat home screen	bool		0 = Disabled 1 = Enabled
Holding Register	40082	Holding	81	Display Humidity	Configures if Humidity sensor value is displayed on Hyperstat home screen	bool		0 = Disabled 1 = Enabled
Holding Register	40083	Holding	82	System Time Days	Configures the system time of the Hyperstat in days	uint8		0 = Sunday 1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday
Holding Register	40084	Holding	83	System Time Hours	Configures the system time of the Hyperstat in hours	uint8	hours	0-23
Holding Register	40085	Holding	84	System Time Minutes	Configures the system time of the Hyperstat in minutes	uint8	minutes	0-59
Holding Register	40086	Holding	85	DeviceReset	Used to perform a hard reset of the Hyperstat. Note: The Hyperstat will perform a hard reset when this value of "Reset" is written	bool		1 = Reset
Input Register	30001	Input	0	Room Temperature	Temperature level sensor reading	uint16	1/10 degrees Fahrenheit	
Input Register	30002	Input	1	Humidity	Humidity level sensor reading	uint16	1/10 %	
Input Register	30003	Input	2	CO2	CO2 level sensor reading	uint16	ppm	
Input Register	30004	Input	3	Occupancy	Occupancy Status	uint8		
Input Register	30005	Input	4	Illuminance	Illuminance level sensor reading	uint16	Lux	
Input Register	30006	Input	5	Ultraviolet Index	Ultraviolet Index sensor reading	uint16		
Input Register	30007	Input	6	Sound	Sound level sensor reading	uint16	dB	
Input Register	30008	Input	7	VOC	Volatile organic compound sensor reading	uint16	ppb	
Input Register	30009	Input	8	PM2.5	PM2.5 level sensor reading	uint16	ug/m3	
Input Register	30010	Input	9	PM10	PM10 level sensor reading	uint16	ug/m3	
Input Register	30011	Input	10	Analog Input 1	Voltage level at analog input 1	uint16	1/10 volts	0-100 (0.0-10.0)
Input Register	30012	Input	11	Analog Input 2	Voltage level at analog input 2	uint16	1/10 volts	0-100 (0.0-10.0)
Input Register	30013	Input	12	Thermistor Input 1	Resistance level reading at thermistor input 1	uint16	1/10 kOhm	
Input Register	30014	Input	13	Thermistor Input 2	Resistance level reading at thermistor input 2	uint16	1/10 kOhm	
Input Register	30015	Input	14	Relay 1	Contains the current value of relay 1	bool		0 = Off 1 = On
Input Register	30016	Input	15	Relay 2	Contains the current value of relay 2	bool		0 = Off 1 = On

Input Register	30017	Input	16	Relay 3	Contains the current value of relay 3	bool		0 = Off 1 = On
Input Register	30018	Input	17	Relay 4	Contains the current value of relay 4	bool		0 = Off 1 = On
Input Register	30019	Input	18	Relay 5	Contains the current value of relay 5	bool		0 = Off 1 = On
Input Register	30020	Input	19	Relay 6	Contains the current value of relay 6	bool		0 = Off 1 = On
Input Register	30021	Input	20	Analog Out 1 Percent	PWM channel 1 output level	uint8	%	0-100
Input Register	30022	Input	21	Analog Out 2 Percent	PWM channel 2 output level	uint8	%	0-100
Input Register	30023	Input	22	Analog Out 3 Percent	PWM channel 3 output level	uint8	%	0-100
Input Register	30024	Input	23	Threshold Alert	Bitmap representing each alert thresold (CO2, VOC, PM2.5)	uint16		Bit Index 0 = CO2 Bit Index 1 = VOC Bit Index 2 = PM2.5
Input Register	30031	Input	30	FW Version Major	Major version number component of FW version string	uint8		0-255
Input Register	30032	Input	31	FW Version Minor	Minor version number component of FW version string	uint8		0-255
Input Register	30033	Input	32	Modbus Address	Address of modbus server	uint8		0-255
Input Register	30034	Input	33	Baud Rate	Configured RS485 baud rate	uint8		0 = 9600 1 = 19200 2 = 38400 3 = 57600 4 = 115200
Input Register	30035	Input	34	Parity	Configured RS485 parity bit	uint8		0 = None 1 = Odd 2 = Even 3 = Mark 4 = Space
Input Register	30036	Input	35	Stop Bit	Configured RS485 stop bit	uint8		0 = 1 Stop Bit 1 = 1.5 Stop Bits 2 = 2 Stop Bits