



neptronic®

Universal Room Controller

AROB Series

Modbus Communication Module User Guide



AROB24T (Temperature sensor)

AROB24TH (Temperature and Humidity sensors)

AROB24TGH (Temperature, Humidity, and CO2 sensors)

AROB24TGVH (Temperature, Humidity, VOC, and CO2 sensors)



Introduction

The AROB Series Modbus Communication Module User Guide provides information for using the Neptronic controller communication feature. The controller uses Modbus communication protocol over the serial line in the RTU mode and provides a Modbus network interface between client devices and Neptronic AROB Series devices.

The AROB Series Modbus Guide assumes that you are familiar with Modbus terminology. The following are the requirements for Modbus:

- **Data Model.** The controller Modbus server data model uses only the Holding Registers table.
- **Function Codes.** The controller Modbus server supports a limited function codes subset comprising:
 - Read Holding Registers (0x03)
 - Write Single Register (0x06)
 - Write Multiple Registers (0x10)
- **Exception Responses.** The controller Modbus server supports the following exception codes:
 - Illegal data address
 - Illegal data value
 - Slave device busy
- **Serial Line.** The controller Modbus over serial line uses RTU transmission mode over a two-wire configuration RS485 (EIA/TIA-485 standard) physical layer.
 - The physical layer can use fixed baud rate selection or automatic baud rate detection (default) as per the **Modbus Auto Baud Rate** device menu item or holding register index 1.
 - The supported baud rates are (0) Auto, 9600, 19200, 38400, 57600, and 76800.
 - The physical layer also supports variable parity control and stop bit configuration as per the **Modbus Comport Config** device menu item or holding register index 2.
 - In auto baud rate configuration, if the device detects only consecutive bad frames (2 or more) for one second with any given baud rate, it will reinitialize itself to the next baud rate.
- **Addressing.** The controller device only answers at the following address:
 - The device's unique address (1 to 246) that can be set through the device menu or through holding register index 0.

Holding Registers Table

Table Glossary

Name	Description	Name	Description
W	Writable Register	ASCII	For registers containing ASCII (8-bit) characters
RO	Read Only Register	MSB	Most Significant Byte
Unsigned	For range of values from 0 to 65,535, unless otherwise specified	LSB	Least Significant Byte
Signed	For range of values from -32,768 to 32,767, unless otherwise specified	MSW	Most Significant Word
Bit String	For registers with multiple values using bit mask (example, flags)	LSW	Least Significant Word

Holding Register Table

Register Index	Description	Data Type	Range	Writable
40000	Address - Neptronic ID and Modbus address of the current device	Unsigned	MSB = Product id (18), not writable LSB = Modbus address (1 to 246), writable	R/W
40001	Baud Rate	Unsigned Scale 100	0, 9600, 19200, 38400, and 57600, 0 = Auto Baud Rate Detection Value/100 (e.g. 38400 baud = 384)	R/W
40002	Communication port configuration	Unsigned	0 = No parity, 2 Stop bits 1 = Even parity, 1 stop bit 2 = Odd parity, 1 stop bit	R/W
40003	Product Name (characters 1 & 2)	ASCII	MSB = char 0, LSB = char 1	R/W
40004	Product Name (characters 3 & 4)	ASCII	MSB = char 2, LSB = char 3	R/W
40005	Product Name (characters 5 & 6)	ASCII	MSB = char 4, LSB = char 5	R/W
40006	Product Name (characters 7 & 8)	ASCII	MSB = char 6, LSB = char 7	R/W
40007	Actual firmware version	Unsigned	1 to 65,535 (e.g. 106)	RO
40008	Actual ROM version	Unsigned	1 to 65,535 (e.g. 127)	RO
40009	Alarms Status 1	Bit String	[B0 – B15]: Reserved	RO
40010	Alarms Status 2	Bit String	[B0 – B15]: Reserved	RO
40011	CO2 Level, requires a functioning CO2 sensor installed.	Unsigned	Unit: PPM, Range: 0 PPM to 2,000 PPM	RO
40012	VOC Level, requires a functioning VOC sensor installed.	Unsigned	Unit: PPB, Range: 0 PPB to 1000 PPB	RO
40013	Temperature Level	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C Value x 10 (e.g. 33°F = 330 or 23°C = 230)	RO
40014	Humidity Level, requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 0% RH to 100% RH, Value x 10 (e.g. 30% RH = 300)	RO
40015	Reserved			
40016	Enthalpy, requires a functioning humidity sensor installed.	Signed Scale 100	Unit: BTU/lb or kJ/kg, Range: -133.19 to 148.56 BTU/lb or -327.68 to 327.67 kJ/kg, Value x 100 (e.g. 200.75 BTU/lb = 20,075 or 105.75 kJ/kg = 10575)	RO
40017	Dew Point, requires a functioning humidity sensor installed.	Signed Scale 10	Unit: °F/°C, Range: -40°C to 125°C or -40°F to 257°F Value x 10 (e.g. 23°C = 230 or 33°F = 330)	RO
40018	External Temperature Level	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C, Value x 10 (e.g. 23°C = 230 or 33°F = 330), Reg.42000 must be set to OAT Sensor .	RO
40019	Reserved			
40020	Binary Input 1 Reading	Unsigned	0 = Opened 1 = Closed	RO
40021	CO2 sensor calibration, requires a functioning CO2 sensor installed.	Signed	Unit: PPM, Range: -200 PPM to 200 PPM	R/W
40022	VOC sensor calibration, requires a functioning VOC sensor installed.	Signed	Unit: PPB, Range: -100 to 100 PPB	R/W



Register Index	Description	Data Type	Range	Writable
40023	Temperature sensor calibration	Signed Scale 100	Unit: °F/°C, Range: -18°F to 18°F or -10°C to 10°C Value x 100 (e.g. 10°F = 1000 or 5°C = 500)	R/W
40024	Humidity sensor calibration, requires a functioning humidity sensor installed.	Signed Scale 100	Unit: % RH, Range: -10% RH to 10% RH Value x 100 (e.g. 5% RH = 500)	R/W
40025	Reserved			
40026	External temperature sensor calibration	Signed Scale 100	Unit: °F/°C, Range: -18°F to 18°F or 10°C to 10°C, Value x 100 (e.g. 10°F = 1000 or 5°C = 500), Reg.42000 must be set to OAT Sensor .	R/W
40027	Analog Output 1 value	Unsigned Scale 10	Unit: %, Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	R/W
40028	Analog Output 2 value	Unsigned Scale 10	Unit: %, Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	R/W
40029	Binary Output 1 value	Unsigned	0 = Opened 1 = Closed	R/W
40030	Binary Output 1 value	Unsigned	0 = Opened 1 = Closed	R/W
40031	Display Options	Bit String	[B4-B6, B9-B15]: Reserved B0: Display CO2 0 = No, 1 = Yes B1: Display VOC 0 = No, 1 = Yes B2: Display Temperature 0 = No, 1 = Yes B3: Display Humidity 0 = No, 1 = Yes B7: Enable Backlight 0 = Off, 1 = On B8: Enable Autoscroll 0 = Off, 1 = On	R/W
40032	Reserved			
40033	Local units of display on the device	Unsigned	0 = Metric 1 = Imperial	R/W
40034	Units of display over the network	Unsigned	0 = Metric 1 = Imperial	R/W
40035	Lock options	Bit String	[B0 – B3, B8 – B15]: Reserved B4: Keypad Upperleft Lock 0 = Off, 1 = On B5: Keypad Bottomleft Lock 0 = Off, 1 = On B6: Keypad Arrows Lock 0 = Off, 1 = On B7: Program Mode Lock 0 = Off, 1 = On	R/W
42000	Analog Input 1 Mode	Unsigned	0 = Off 1 = OAT Sensor 2 = Occupancy 3 = Night Setback 4 = Dirty Filter 5 = Air Flow Switch 6 = Air Flow Lockout	R/W
42001	Binary Input 1 Mode	Unsigned	0 = Off 1 = Occupancy 2 = Night Setback 3 = Dirty Filter 4 = Air Flow Switch 5 = Air Flow Lockout	R/W

Register Index	Description	Data Type	Range	Writable
42002	Analog Output 1 Demand	Unsigned Scale 10	Unit: %, Range: 0% to 100%, <i>Value x 10 (e.g. 30% = 300)</i>	RO
42003	Analog Output 1 Value in Millivolts	Unsigned	Unit: Millivolts (mV), Range: 0 mV to 10,000 mV	RO
42004	Reserved			
42005	Analog Output 1 Minimum Voltage	Unsigned Scale 100	Unit: Volts (V), Range: 0 V to 10 V (0 V to Reg.42006) <i>Value x 100 (e.g. 2 V = 200)</i>	R/W
42006	Analog Output 1 Maximum Voltage	Unsigned Scale 100	Unit: Volts (V), Range: 0 V to 10 V (Reg.42005 to 10 V) <i>Value x 100 (e.g. 2 V = 200)</i>	R/W
42007	Analog Output 1 Control Mode	Unsigned	0 = Highest 1 = Average	R/W
42008	Analog Output 1 direction	Unsigned	0 = Direct Mode 1 = Reverse Mode	R/W
42009	Analog Output 1 cooling	Unsigned	0 = No 1 = Yes	R/W
42010	Analog Output 1 heating	Unsigned	0 = No 1 = Yes	R/W
42011	Analog Output 1 Dehumidification Requires a functioning humidity sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42012	Analog Output 1 Humidification Requires a functioning humidity sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42013	Analog Output 1 VOC Requires a functioning VOC sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42014	Analog Output 1 CO2 Requires a functioning CO2 sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42015	Analog Output 1 Fan	Unsigned	0 = No 1 = Yes	R/W
42016	Analog Output 2 Demand Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned Scale 10	Unit: %, Range: 0% to 100%, <i>Value x 10 (e.g. 30% = 300)</i>	RO
42017	Analog Output 2 Value in Millivolts Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	Unit: Millivolts (mV), Range 0 mV to 10,000 mV	RO
42018	Reserved			
42019	Analog Output 2 Minimum Voltage Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned Scale 100	Unit: Volts (V), Range: 0 V to 10 V (0 V to Reg.42020) <i>Value x 100 (e.g. 2 V = 200)</i>	R/W
42020	Analog Output 2 Maximum Voltage Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned Scale 100	Unit: Volts (V), Range: 0 V to 10 V (Reg.42019 to 10 V) <i>Value x 100 (e.g. 2 V = 200)</i>	R/W
42021	Analog Output 2 Control Mode Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = Highest 1 = Average	R/W
42022	Analog Output 2 direction Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = Direct Mode 1 = Reverse Mode	R/W
42023	Analog Output 2 cooling Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	R/W

Register Index	Description	Data Type	Range	Writable
42024	Analog Output 2 heating Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	R/W
42025	Analog Output 2 Dehumidification Only available for App Profile, 0 = No Profile (manual configuration). Requires a functioning humidity sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42026	Analog Output 2 Humidification Only available for App Profile, 0 = No Profile (manual configuration). Requires a functioning humidity sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42027	Analog Output 2 VOC Only available for App Profile, 0 = No Profile (manual configuration). Requires a functioning VOC sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42028	Analog Output 2 CO2 Only available for App Profile, 0 = No Profile (manual configuration). Requires a functioning CO2 sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42029	Analog Output 2 Fan Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	R/W
42030	Binary Output 1 Demand	Unsigned <i>Scale 10</i>	Unit: %, Range: 0% to 100%, <i>Value x 10 (e.g. 30% = 300)</i>	RO
42031	Binary Output 1 (Relay State)	Unsigned	0 = Off 1 = Set 2 = Reset	RO
42032	Binary Output 1 Control Mode	Unsigned	0 = Highest 1 = Average	R/W
42033	Binary Output 1 Type	Unsigned	0 = Normally Closed 1 = Normally Open	R/W
42034	Binary Output 1 Signal	Unsigned	0 = Time Proportional Modulation (TPM) 1 = Hysteresis Mode	R/W
42035	Binary Output 1 CPH (Cycles per hour)	Unsigned	0 = 8 CPH (1 cycle = 7.5 minutes) 1 = 4 CPH (1 cycle = 15 minutes) 2 = 3 CPH (1 cycle = 20 minutes) * = Reg. 42034 must be set to Time Proportional Modulation (TPM) .	R/W*
42036	Binary Output 1 Anti-cycle delay in seconds	Unsigned	Unit: Seconds, Range: 0 seconds to 300 seconds	R/W
42037	Binary Output 1 Hysteresis Low percent	Unsigned <i>Scale 10</i>	Unit: %, Range: 0% to 100% (0% to Reg.42038), <i>Value x 10 (e.g. 30% = 300)</i> , * = Reg. 42034 must be set to Hysteresis Mode .	R/W*
42038	Binary Output 1 Hysteresis High percent	Unsigned <i>Scale 10</i>	Unit: %, Range: 0% to 100% (Reg.42037 to 100%), <i>Value x 10 (e.g. 30% = 300)</i> , * = Reg. 42034 must be set to Hysteresis Mode .	R/W*
42039	Binary Output 1 Cooling	Unsigned	0 = No 1 = Yes	R/W
42040	Binary Output 1 heating	Unsigned	0 = No 1 = Yes	R/W
42041	Binary Output 1 Dehumidification Requires a functioning humidity sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42042	Binary Output 1 Humidification Requires a functioning humidity sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42043	Binary Output 1 VOC Requires a functioning VOC sensor installed.	Unsigned	0 = No 1 = Yes	R/W



Register Index	Description	Data Type	Range	Writable
42044	Binary Output 1 CO2 Requires a functioning CO2 sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42045	Binary Output 1 Fan	Unsigned	0 = No 1 = Yes	R/W
42046	Binary Output 2 Demand Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned Scale 10	Unit: %, Range: 0% to 100%, <i>Value x 10 (e.g. 30% = 300)</i>	RO
42047	Binary Output 2 (Relay State) Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = Off 1 = Set 2 = Reset	RO
42048	Binary Output 2 Control Mode Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = Highest 1 = Average	R/W
42049	Binary Output 2 Type Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = Normally Closed 1 = Normally Open	R/W
42050	Binary Output 2 Signal Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = Time Proportional Modulation (TPM) 1 = Hysteresis Mode	R/W
42051	Binary Output 2 CPH (Cycles per hour) Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = 8 CPH (1 cycle = 7.5 minutes) 1 = 4 CPH (1 cycle = 15 minutes) 2 = 3 CPH (1 cycle = 20 minutes) *= Reg. 42050 must be set to Time Proportional Modulation (TPM) .	R/W*
42052	Binary Output 2 Anti-cycle delay in seconds Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	Unit: Seconds, Range: 0 seconds to 300 seconds	R/W
42053	Binary Output 2 Hysteresis Low percent Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned Scale 10	Unit: %, Range: 0% to 100% (0% to Reg.42054), <i>Value x 10 (e.g. 30% = 300)</i> , *= Reg. 42050 must be set to Hysteresis Mode .	R/W*
42054	Binary Output 2 Hysteresis High percent Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned Scale 10	Unit: %, Range: 0% to 100% (Reg.42053 to 100%), <i>Value x 10 (e.g. 30% = 300)</i> , *= Reg. 42050 must be set to Hysteresis Mode .	R/W*
42055	Binary Output 2 Cooling Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	R/W
42056	Binary Output 2 heating Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	R/W
42057	Binary Output 2 Dehumidification Requires a functioning humidity sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42058	Binary Output 2 Humidification Only available for App Profile, 0 = No Profile (manual configuration). Requires a functioning humidity sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42059	Binary Output 2 VOC Only available for App Profile, 0 = No Profile (manual configuration). Requires a functioning VOC sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42060	Binary Output 2 CO2 Only available for App Profile, 0 = No Profile (manual configuration). Requires a functioning CO2 sensor installed.	Unsigned	0 = No 1 = Yes	R/W
42061	Binary Output 2 Fan Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	R/W



Register Index	Description	Data Type	Range	Writable
42062	AO1 OAT (Outside Air Temperature) High lockout	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C (Reg.42063 to 257°F/125°C), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 must be set to OAT Sensor .	R/W*
42063	AO1 OAT (Outside Air Temperature) Low lockout	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C (-40°F/-40°C to Reg.42062), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 must be set to OAT Sensor .	R/W*
42064	AO1 OAT (Outside Air Temperature) Lock	Unsigned	0 = No 1 = Yes, Reg.42000 must be set to OAT Sensor .	RO
42065	AO2 OAT (Outside Air Temperature) High lockout Only available for App Profile, 0 = No Profile (manual configuration).	Signed Scale 10	Unit: °F/°C, Range: : -40°F to 257°F or -40°C to 125°C (Reg.42066 to 257°F/125°C), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 must be set to OAT Sensor .	R/W*
42066	AO2 OAT (Outside Air Temperature) Low lockout Only available for App Profile, 0 = No Profile (manual configuration).	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C (-40°F/-40°C to Reg.42065), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 must be set to OAT Sensor .	R/W*
42067	AO2 OAT (Outside Air Temperature) Lock Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes, Reg.42000 must be set to OAT Sensor .	RO
42068	BO1 OAT (Outside Air Temperature) High lockout	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C (Reg.42069 to 257°F/125°C), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 must be set to OAT Sensor .	R/W*
42069	BO1 OAT (Outside Air Temperature) Low lockout	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C (-40°F/-40°C to Reg.42068), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 must be set to OAT Sensor .	R/W*
42070	BO1 OAT (Outside Air Temperature) Lock	Unsigned	0 = No 1 = Yes, Reg.42000 must be set to OAT Sensor .	RO
42071	BO2 OAT (Outside Air Temperature) High level lockout Only available for App Profile, 0 = No Profile (manual configuration).	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C (Reg.42072 to 257°F/125°C), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 must be set to OAT Sensor .	R/W*
42072	BO2 OAT (Outside Air Temperature) Low level lockout Only available for App Profile, 0 = No Profile (manual configuration).	Signed Scale 10	Unit: °F/°C, Range: -40°F to 257°F or -40°C to 125°C (-40°F/-40°C to Reg.42071), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 must be set to OAT Sensor .	R/W*
42073	BO2 OAT (Outside Air Temperature) Lock Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes, Reg.42000 must be set to OAT Sensor .	RO
42074	Cooling Demand	Unsigned Scale 10	Unit: %, Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	RO
42075	Cooling Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0°C to 125°C (Reg.42076 to Reg.42077), Value x 10 (e.g. 33°F = 330 or 23°C = 230)	R/W
42076	Minimum Cooling Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0°C to 125°C (32°F/0°C to Reg.42077), Value x 10 (e.g. 33°F = 330 or 23°C = 230)	R/W
42077	Maximum Cooling Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0°C to 125°C (Reg.42076 to 257°F/125°C), Value x 10 (e.g. 33°F = 330 or 23°C = 230)	R/W

Register Index	Description	Data Type	Range	Writable
42078	Cooling Proportional Band	Unsigned Scale 10	Unit: °F/°C, Range: 3.6°F to 90°F or 2°C to 50°C, Value x 10 (e.g. 33°F = 330 or 23°C = 230)	R/W
42079	Cooling Integral Time in seconds	Unsigned	Unit: Seconds, Range: 1 second to 120 seconds	R/W
42080	Cooling Unoccupied Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0°C to 125°C (Reg.42081 to Reg. 42082), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 or Reg.42001 must be set to Occupancy .	R/W*
42081	Minimum Cooling Unoccupied Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0°C to 125°C (32°F/0°C to Reg. 42082), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 or Reg.42001 must be set to Occupancy .	R/W*
42082	Maximum Cooling Unoccupied Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0 to 125°C (Reg.42081 to 257°F/125°C), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 or Reg.42001 must be set to Occupancy .	R/W*
42083	Heating Demand	Unsigned Scale 10	Unit: %, Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	RO
42084	Heating Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0°C to 125°C (Reg.42085 to Reg.42086), Value x 10 (e.g. 33°F = 330 or 23°C = 230)	R/W
42085	Minimum Heating Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0°C to 125°C (32°F/0°C to Reg. 42086), Value x 10 (e.g. 33°F = 330 or 23°C = 230)	R/W
42086	Maximum Heating Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0°C to 125°C (Reg.42085 to 257°F /125°C), Value x 10 (e.g. 33°F = 330 or 23°C = 230)	R/W
42087	Heating Proportional Band	Unsigned Scale 10	Unit: °F/°C, Range: 3.6°F to 90°F or 2°C to 50°C Value x 10 (e.g. 2°F = 20 or 1°C = 10)	R/W
42088	Heating Integral Time in seconds	Unsigned	Unit: Seconds, Range: 1 second to 120 seconds	R/W
42089	Heating Unoccupied Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0 to 125°C (Reg.42090 to Reg. 42091), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 or Reg.42001 must be set to Occupancy .	R/W*
42090	Minimum Heating Unoccupied Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0 to 125°C (32°F/0°C to Reg. 42091), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 or Reg.42001 must be set to Occupancy .	R/W*
42091	Maximum Heating Unoccupied Setpoint	Unsigned Scale 10	Unit: °F/°C, Range: 32°F to 257°F or 0 to 125°C (Reg.42090 to 257°F/125°C), Value x 10 (e.g. 33°F = 330 or 23°C = 230) * = Reg.42000 or Reg.42001 must be set to Occupancy .	R/W*
42092	Dehumidification Demand Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: %, Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	RO
42093	Dehumidification Setpoint Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 0% RH to 100% RH (Reg.42094 to Reg.42095), Value x 10 (e.g. 30% RH = 300)	R/W
42094	Minimum Dehumidification Setpoint Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 0% RH to 100% RH (0% RH to Reg.42095), Value x 10 (e.g. 30% = 300)	R/W



Register Index	Description	Data Type	Range	Writable
42095	Maximum Dehumidification Setpoint Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 0% RH to 100% RH (Reg.42094 to 100% RH) Value x 10 (e.g. 30% = 300)	R/W
42096	Humidity Proportional Band Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 2% RH to 50% RH Value x 10 (e.g. 30% = 300)	R/W
42097	Humidity Integral Time in seconds Requires a functioning humidity sensor installed.	Unsigned	Unit: Seconds, Range: 1 second to 120 seconds	R/W
42098	Humidification Demand Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: %, Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	RO
42099	Humidification Setpoint Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 0% RH to 100% RH (Reg.42100 to Reg.42101) Value x 10 (e.g. 30% RH = 300)	R/W
42100	Minimum Humidification Setpoint Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 0% RH to 100% RH (0% RH to Reg.42101) Value x 10 (e.g. 30% RH = 300)	R/W
42101	Maximum Humidification Setpoint Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 0% RH to 100% RH (Reg.42100 to 100% RH) Value x 10 (e.g. 30% RH = 300)	R/W
42102	CO2 Demand Requires a functioning CO2 sensor installed.	Unsigned Scale 10	Unit: % , Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	RO
42103	CO2 Setpoint Requires a functioning CO2 sensor installed.	Unsigned	Unit: PPM, Range: 0 PPM to 2,000 PPM (Reg.42104 to Reg.42105)	R/W
42104	Minimum CO2 Setpoint Requires a functioning CO2 sensor installed.	Unsigned	Unit: PPM, Range: 0 PPM to 2,000 PPM (0 PPM to Reg.42105)	R/W
42105	Maximum CO2 Setpoint Requires a functioning CO2 sensor installed.	Unsigned	Unit: PPM, Range: 0 PPM to 2,000 PPM (Reg.42104 to 2,000 PPM)	R/W
42106	CO2 Proportional Band Requires a functioning CO2 sensor installed.	Unsigned	Unit: PPM, Range: 10 PPM to 2,000 PPM	R/W
42107	CO2 Integral Time in seconds Requires a functioning CO2 sensor installed.	Unsigned	Unit: Seconds, Range: 1 second to 120 seconds	R/W
42108	VOC Demand Requires a functioning VOC sensor installed.	Unsigned Scale 10	Unit: %, Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	RO
42109	VOC Setpoint Requires a functioning VOC sensor installed.	Unsigned	Unit: PPB, Range: 0 PPB to 1,000 PPB (Reg.42110 to Reg.42111)	R/W
42110	Minimum VOC Setpoint Requires a functioning VOC sensor installed.	Unsigned	Unit: PPB, Range: 0 PPB to 1,000 PPB (0 PPB to Reg.42111)	R/W
42111	Maximum VOC Setpoint Requires a functioning VOC sensor installed.	Unsigned	Unit: PPB, Range: 0 PPB to 1,000 PPB (Reg.42110 to 1,000 PPB)	R/W
42112	VOC Proportional Band Requires a functioning VOC sensor installed.	Unsigned	Unit: PPB, Range: 10 PPB to 1,000 PPB	R/W
42113	VOC Integral Time in seconds Requires a functioning VOC sensor installed.	Unsigned	Unit: Seconds, Range: 1 second to 120 seconds	R/W

Register Index	Description	Data Type	Range	Writable
42114	Temperature Setpoint Deadband	Unsigned Scale 10	Unit: °F/°C, Range: 0°F to 36°F or 0°C to 20°C Value x 10 (e.g. 2°F = 20 or 1°C = 10)	R/W
42115	Humidity Setpoint Deadband Requires a functioning humidity sensor installed.	Unsigned Scale 10	Unit: % RH, Range: 0% RH to 20% RH, Value x 10 (e.g. 10% RH = 100)	R/W
42116	Main system mode	Unsigned	0 = Off 1 = On	R/W
42117	Temperature system mode	Unsigned	0 = Off 1 = Cool 2 = Auto 3 = Heat	R/W
42118	Humidity system mode Requires a functioning humidity sensor installed.	Unsigned	0 = Off 1 = Dehumidification 2 = Auto 3 = Humidification	R/W
42119	CO2 system mode Requires a functioning CO2 sensor installed.	Unsigned	0 = Off 1 = On	R/W
42120	VOC system mode Requires a functioning VOC sensor installed.	Unsigned	0 = Off 1 = On	R/W
42121	Fan system mode	Unsigned	0 = Off 1 = Auto 2 = On	R/W
42122	Fan ON Speed	Unsigned Scale 10	Unit: %, Range: 0% to 100%, Value x 10 (e.g. 30% = 300)	R/W
42123	App Profile * = Requires a functioning humidity and CO2 sensor installed.	Unsigned	0 = No Profile 1 = Temp Only 2 = Temp, RH, and CO2*	R/W
43000	Occupancy status based on selection at Reg.42000 or Reg.42001. Must be set to Occupancy or Night Setback .	Unsigned	0 = No 1 = Yes	RO
43001	Dirty Filter status based on selection at Reg.42000 or Reg.42001. Must be set to Dirty Filter . Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	RO
43002	Airflow Switch status based on selection at Reg.42000 or Reg.42001. Must be set to Air Flow Switch . Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	RO
43003	Airflow Lockout Protection status based on selection at Reg.42000 or Reg.42001. Must be set to Air Flow Lockout . Only available for App Profile, 0 = No Profile (manual configuration).	Unsigned	0 = No 1 = Yes	RO

