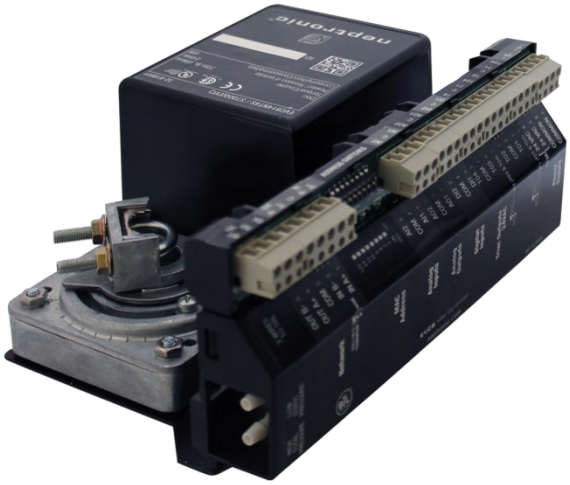
EVCB14S Series

Modbus Communication Module User Guide



EVCB14NIT0S	(0 TRIACS / pressure independent)
EVCB14NIT2S	(2 TRIACS / pressure independent)
EVCB14NIT4S	(4 TRIACS / pressure independent)
EVCB14NDT4S	(4 TRIACS / pressure dependent)
EVCB14NIT0SF	(0 TRIACS / pressure independent / with feedback)
EVCB14NIT4SF	(4 TRIACS / pressure independent / with feedback)

Introduction

The EVCB14S Series Modbus Communication Module User Guide provides information for using Neptronic® communication feature. The controller uses Modbus communication protocol over serial line in the RTU mode and provides a Modbus network interface between client devices and Neptronic EVCB14S Series devices.

The EVCB14S Series Modbus Guide assumes that you are familiar with Modbus terminology.

The following are the requirements for Modbus:

- *Data Model*. The EVCB Modbus server data model uses only the Holding Registers table.
- *Function Codes*. The EVCB Modbus server supports a limited function codes subset comprising:
    - Read Holding Registers (0x03)
    - Write Single Register (0x06)
    - Write Multiple Registers (0x10)
- *Exception Responses*. The EVCB Modbus server supports the following exception codes:
    - Illegal data address
    - Illegal data value
    - Slave device busy
- *Serial Line*. The EVCB 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 9600, 19200, 38400, and 57600.
    - 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 EVCB 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

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
0	40001	Modbus Address and Product Type.	Unsigned	MSB = Product type (e.g. 111 for EVCB) LSB = Modbus Address (e.g. 1-246)	W
1	40002	MSTP Baud Rate.	Unsigned *Scale 100*	0, 9600, 19200, 38400, or 57600 0 = Auto Baud Rate Detection *Value/100 (e.g. 38400 baud = 384)*	W
2	40003	Modbus Slave Communication Port Configuration.	Unsigned	1= No parity, 2 Stop bits 2= Even parity, 1 stop bit 3= Odd parity, 1 stop bit	W
3	40004	Product Name (characters 8 & 7).	ASCII	1 to 65,535 char 8: 0x53 = S char 7: 0x00 =	W
4	40005	Product Name (characters 6 & 5).	ASCII	1 to 65535 char 6: 0x49 = I char 5: 0x34 = 4	W
5	40006	Product Name (characters 4 & 3).	ASCII	1 to 65535 char 4: 0x42 = B char 3: 0x4E = N	W
6	40007	Product Name (characters 2 & 1).	ASCII	1 to 65535 char 2: 0x45 = E char 1: 0x56 = V	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
7	40008	Product actual firmware version.	Unsigned	1 to 65535 (e.g. 410)	RO
8	40009	Product actual EEPROM version.	Unsigned	1 to 65535 (e.g. 203)	RO
9	400010	System Status 1.	Bit String	[B0 – B11]: Reserved **B12: CO2 alarm** *0 = Normal; 1 = Alarm* **B13: Pressure mode (actual status)** *0 = Independent; 1 = Dependent* **B14: Air Flow** *0 = Normal; 1 = Error*	RO
10	40011	System Status 2.	Bit String	[B0-B11, B13-B14]: Reserved **B12: Alarm override** *0 = Normal; 1 = Alarm*	RO
11	40012	Internal Temperature.	Unsigned *Scale 100*	0 to 5000 *Value x 100 (e.g. 23°C = 2300)*	RO
12	40013	External Temperature.	Signed *Scale 100*	-4000 to 10000 *Value x 100 (e.g. 18°C = 1800)*	RO
13	40014	Change Over Temperature.	Signed *Scale 100*	-4000 to 10000 *Value x 100 (e.g. 18°C = 1800)*	RO
14	40015	Internal Humidity Internal humidity, reading of the integrated humidity sensor of TRLH or TRLGH/TDU (models with humidity sensor). If not available, the value will be fixed to 0x7FFF (32767).	Unsigned *Scale 10*	0 to 1000 *Value x 10 (e.g. 45%RH = 450)*	RO
15	40016	Input 3 reading, pressure sensor value *Not available on all models.	Unsigned *Scale 10*	0 to 2500 *Value x 10 (e.g. 10 Pa = 100)*	RO
16	40017	Analog input 1 value.	Unsigned *Scale 100*	0 to 1000 *Value x 100 (e.g. 2 mV = 200)*	RO

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
17	400**18**	Analog Input 2 value.	Unsigned *Scale 100*	0 to 1000 *Value x 100 (e.g. 3 mV = 300)*	RO
18	400**19**	CO2 value in ppm If using TRLG or TRLG/TDU (models with CO2 sensor) and CO2 is in TRL mode, it is the sensor value in ppm. If using AI1 or AI2 and CO2 is set in Analog mode, the reading is from the external sensor.	Unsigned *Scale 100*	100 to reg 400**99** *Value x 100 (e.g. 5 ppm = 500)*	RO
19	400**20**	Air supply temperature.	Signed *Scale 100*	-4000 to 10000 *Value x 100 (e.g. 5°C = 500)*	RO
20	400**21**	Control temperature.	Signed *Scale 100*	-4000 to 10000 *Value x 100 (e.g. 25°C = 2500)*	W
21	400**22**	Heating demand for heating ramp 1.	Unsigned *Scale 10*	0 to 1000 *Value x 10 (e.g. 25% = 250)*	RO
22	400**23**	Cooling demand for cooling ramp 1.	Unsigned *Scale 10*	0 to 1000 *Value x 10 (e.g. 25% = 250)*	RO
23	400**24**	Temperature offset applied on internal temperature.	Signed *Scale 100*	-500 to 500 *Value x 100 (e.g. 0.5°C = 50)*	W
24	400**25**	Temperature offset applied on external temperature.	Signed *Scale 100*	-500 to 500 *Value x 100 (e.g. 0.5°C = 50)*	W
25	400**26**	Temperature setpoint used during the occupancy period of the day.	Unsigned *Scale 10*	Range: 400**27** to 400**28** *Value x 10 (e.g. 20°C = 200)*	W
26	400**27**	Minimum temperature setpoint used during the day.	Unsigned *Scale 10*	Range: 100 to 400**28** *Value x 10 (e.g. 10°C = 100)*	W
27	400**28**	Maximum temperature setpoint used during the day.	Unsigned *Scale 10*	Range: 400**27** to 400 *Value x 10 (e.g. 40°C = 400)*	W
28	400**29**	Cooling setpoint during No Occupancy / Night Set Back.	Unsigned *Scale 10*	Range: 400**30** to 400 *Value x 10 (e.g. 22°C = 220)*	W
29	400**30**	Heating setpoint during No Occupancy / Night Set Back.	Unsigned *Scale 10*	Range: 100 to 400**29** *Value x 10 (e.g. 16°C = 160)*	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
30	40031	Cooling demand for proportional band 1.	Unsigned *Scale 10*	5 to 50 *Value x 10 (e.g. 0.3°C = 3)*	W
31	40032	Heating demand for proportional band 1.	Unsigned *Scale 10*	5 to 50 *Value x 10 (e.g. 0.3°C = 3)*	W
32	40033	Cooling dead band for proportional band 1.	Unsigned *Scale 10*	0 to 50 *Value x 10 (e.g. 0.3°C = 3)*	W
33	40034	Heating dead band for proportional band 1.	Unsigned *Scale 10*	0 to 50 *Value x 10 (e.g. 0.3°C = 3)*	W
34	40035	Changeover temperature setpoint.	Unsigned *Scale 10*	100 to 400 *Value x 10 (e.g. 12°C = 120)*	W
35	40036	Night setback override delay in minutes.	Unsigned	0 to 180 minutes	W
36	40037	Integral time factor for heating in seconds.	Unsigned	0 to 250 seconds	W
37	40038	Cooling anti-cycle delay: delay in minutes before activating or reactivating the cooling contact.	Unsigned	0 to 15 minutes	W
38	40039	Floating time 1: Indicates the time in seconds required by the actuator to complete a 90° run.	Unsigned	15 to 250 seconds	W
39	40040	Occupancy Delay Mode in minutes.	Unsigned	0 to 180 minutes	W
40	40041	Cooling demand for cooling ramp 2.	Unsigned *Scale 10*	0 to 1000 % *Value x 10 (e.g. 30% = 300)*	RO
41	40042	Proportional band for cooling ramp 2	Unsigned *Scale 10*	5 to 50 *Value x 10 (e.g. 0.2°C = 2)*	W
42	40043	Dead band for cooling ramp 2.	Unsigned *Scale 10*	0 to 50 *Value x 10 (e.g. 0.2°C = 2)*	W
43	40044	Heating demand for heating ramp 2.	Unsigned *Scale 10*	0 to 1000 % *Value x 10 (e.g. 30% = 300)*	W
44	40045	Proportional band for heating ramp 2.	Unsigned *Scale 10*	5 to 50 *Value x 10 (e.g. 0.2°C = 2)*	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
45	400**46**	Dead band for heating ramp 2.	Unsigned *Scale 10*	0 to 50 *Value x 10 (e.g. 0.2°C = 2)*	W
46	400**47**	Changeover demand for the VAV box.	Unsigned *Scale 10*	0 to 1000 % *Value x 10 (e.g. 30% = 300)*	RO
47	400**48**	Changeover proportional band: the range in which the controller modulates the cooling and heating output from 0 to 100%.	Unsigned *Scale 10*	5 to 50 *Value x 10 (e.g. 0.2°C = 2)*	W
48	400**49**	Changeover deadband: the range at which the controller takes no action when the temperature is above or below the setpoint.	Unsigned *Scale 10*	0 to 50 *Value x 10 (e.g. 0.2°C = 2)*	W
49	400**50**	AO1 min Vdc: minimum voltage of analog output 1.	Unsigned *Scale 10*	Range: 0 to reg. 400**52** *Value x 10 (e.g. 2 Volts = 20)*	W
50	400**51**	AO2 min Vdc: minimum voltage of analog output 2.	Unsigned *Scale 10*	Range: 0 to reg. 400**53** *Value x 10 (e.g. 2 Volts = 20)*	W
51	400**52**	AO1 max Vdc: maximum voltage of analog output 1.	Unsigned *Scale 10*	Range: reg. 400**50** to 100 *Value x 10 (e.g. 10 Volts = 100)*	W
52	400**53**	AO2 max Vdc: maximum voltage of analog output 2.	Unsigned *Scale 10*	Range: reg. 400**51** to 100 *Value x 10 (e.g. 10 Volts = 100)*	W
	∗ = The minimum and maximum voltages correspond to 0 to 100% demand. The minimum voltage is always applied to the output. The maximum voltage is applied when the demand reaches 100%. For reheat applications, we recommend leaving the minimum voltage at 0Vdc to avoid heating when the demand is 0%.				
53	400**54**	Time of numerical filter of delta pressure in seconds. Not effective on all models.	Unsigned	1 to 10 seconds	W
54	400**55**	Factor of V=K*sqrt(dP), where dP = 1. Not effective on all models.	Unsigned	Range: 100 to 9995 CFM	W
55	400**56**	Minimum air flow for cooling. Not available on all models.	Unsigned	Range: 0 or (12.7%) Kfac to reg 400**57** CFM	W
56	400**57**	Maximum air flow for cooling. Not available on all models.	Unsigned	Range: reg 400**56** to reg 400**55** CFM	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
57	400**58**	Minimum air flow for heating. Not available on all models.	Unsigned	Range: 0 or (12.7%) Kfac to reg 400**59** CFM	W
58	400**59**	Maximum air flow for heating. Not available on all models.	Unsigned	Range: reg 400**58** to reg 400**55** CFM	W
59	400**60**	Integral time factor of air flow in minutes. Not available on all models.	Unsigned	0 to 60 minutes	W
60	400**61**	Actual air flow converted from delta pressure sensor. Not available on all models.	Unsigned	Range: 0 to reg 400**55** CFM	RO
61	400**62**	Air flow calculated from system demand. Not available on all models.	Unsigned	Range: 0 to 9999 CFM	RO
62	400**63**	Configuration value for Air Flow Max used during airflow balancing sequence. Refer to Refer to EVCB-Airflow Balance Instructions. Not available on all models.	Unsigned	Range: 0 to 9999 CFM	W
63	400**64**	Analog output 1 value.	Unsigned *Scale 10*	Unit: Volt, Range: reg 400**50** to reg 400**52** *Value x 10 (e.g. 5 Volts = 50)*	W
64	400**65**	Analog output 2 value.	Unsigned *Scale 10*	Unit: Volt, Range: reg 400**51** to reg 400**53** *Value x 10 (e.g. 5 Volts = 50)*	W
65	400**66**	Percentage of demand to close TRIAC output 1. Not available on all models.	Unsigned	15 to 80%	W
66	400**67**	Percentage of demand to close TRIAC output 2. Not available on all models.	Unsigned	15 to 80%	W
67	400**68**	Percentage of demand to close TRIAC output 3. Not available on all models.	Unsigned	15 to 80%	W
68	400**69**	Percentage of demand to close TRIAC output 4. Not available on all models.	Unsigned	15 to 80%	W
69	400**70**	Percentage of demand to open TRIAC output 1. Not available on all models.	Unsigned	0 to reg 400**66**-4%	W
70	400**71**	Percentage of demand to open TRIAC output 2. Not available on all models.	Unsigned	0 to reg 400**67**-4%	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
72	400**72**	Percentage of demand to open TRIAC output 3. Not available on all models.	Unsigned	0 to reg 400**68**-4%	W
73	400**74**	Percentage of demand to open TRIAC output 4. Not available on all models.	Unsigned	0 to reg 400**69**-4%	W
74	400**75**	Integral time factor for cooling in seconds.	Unsigned	0 to 250 seconds	W
75	400**76**	Motor position. Not effective on all models.	Unsigned	0 to 100%	RO
76 to 80	40077 to 40081	*Reserved address space*			
81	400**82**	Air flow offset calibration. Refer to EVCB-Airflow Balance Instructions. Not available on all models.	Signed	-500 to 500 CFM	W
82	400**83**	Configuration value for Air Flow Min used during airflow balancing sequence. Refer to EVCB-Airflow Balance Instructions. Not available on all models.	Unsigned	Range: 0 to 9999 CFM	W
83	400**84**	*Reserved address space*			
84	400**85**	*Reserved address space*			
85 to 95	400**86** to 400**96**	*Reserved address space*			
96	400**97**	Network fallback timeout Present Value in minutes.	Unsigned	0 to 60 minutes	W
97	400**98**	*Reserved address space*			
98	400**99**	Maximum range of the CO2 sensor connected to AI1 or AI2.	Unsigned	100 to 5000 PPM	W
99	40**100**	Maximum concentration of CO2 before the EVC activates an alarm.	Unsigned	Range: 100 to the greater ppm value between 2000 and reg 400**99**	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
100	40**101**	System Option 1. Φ Not available on all models.	Bit String	B3, B13-B14: Reserved **B0: Tstat temperature units** *0 = Celsius; 1 = Fahrenheit* **B1: Modbus temperature units** *0 = Celsius; 1 = Fahrenheit* **B2: Temperature setpoint lock** *0 = Unlocked; 1 = Locked* **B4: TO1/TO2 floating direction**Φ *0 = Direct; 1 = Reverse* **B5: TO3/TO4 floating direction**Φ *0 = Direct; 1 = Reverse* **B6: Onboard motor direction**Φ *0 = Direct; 1 = Reverse* **B7: Freeze protection** *0 = Disabled; 1 = Enabled* **B8: User system off mode** *0 = User can set Tstat to OFF* *1 = User cannot set Tstat OFF* **B9: Keypad bottom left lock** *0 = Unlocked; 1 = Locked* **B10:Keypad upper left lock** *0 = Unlocked; 1 = Locked* **B11: Keypad arrows lock** *0 = Unlocked; 1 = Locked* **B12: Program lock** *0 = Unlocked; 1 = Locked* **B15: Schedule** *0 = Disabled; 1 = Enabled*	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
101	40**102**	System Option 2. Notes B14: Applies only if DI2 is in OverHeat or Override. B15: Configuration value of the fan operation when an output ramp is configured with the option "Fan On". When set to (0) On, the fan is continuously in operation even when EVC is off. When set to (1) Off, the fan turns off during the following conditions: User System Mode is set to OFF, when in night setback mode, scheduler forces the EVC OFF or when Digital Input 2 is set to Override and is active. Φ Not available on all models.	Bit String	B0-B1, B13: Reserved **B2: Auto baud rate detection** *0 = Enabled; 1 = Disabled* **B3: Night setback mode** *0 = Tstat ON; 1 = Tstat OFF* **B4: AO1 direction** *0 = Direct; 1 = Reverse* **B5: AO2 direction** *0 = Direct; 1 = Reverse* **B6: TO1 direction**Φ *0 = Direct; 1 = Reverse* **B7: TO2 direction**Φ *0 = Direct; 1 = Reverse* **B8: TO3 direction**Φ *0 = Direct; 1 = Reverse* **B9: TO4 direction**Φ *0 = Direct; 1 = Reverse* **B10: Display RH**Φ *0 = No; 1 = Yes* **B11: Pressure mode select**Φ *0 = independent;1 = dependent* **B12: Auto pressure mode**Φ **change** *0 = Enabled; 1 = Disabled* **B14: DI 2 Contact** *0: NO; 1: NC* **B15: Fan always "on" mode** 0 = Always on 1 = Follow NSB/NoOcc	W
102	40**103**	Status value of the actual changeover control mode.	Unsigned	0 = Cooling 1= Heating	RO
103	40**104**	System command status. Φ Not available on all models.	Unsigned	0 = No Command 1 = AirFlow 1 Balancing 4 = AirFlow 2 Balancing	W
104	40**105**	TO OnOff. * Not available on all models.	Unsigned	1 = TO1 OnOff 2 = TO2 OnOff 4 = TO3 OnOff 8 = TO4 OnOff	RO
105	40**106**	Occupancy or night setback mode commands.	Unsigned	1 = Locally 2 = Off 3 = Occupancy 4 = NoOccupancy 5 = Day 6 = Night	W
106	40**107**	Status of digital input 1.	Unsigned	0 = Open 1 = Close	RO

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
107	40**108**	Analog input 1 signal. * Not available with EVCB14NDT4S.	Unsigned	1 = OFF 2 = EtS (External Sensor) 3 = SENS (changeover sensor) 4 = NoCL (Changeover Contact Normally Open Cool) 5 = NoHT (Changeover Contact Normally Open Heat) 6 = StFL* (Airflow Setpoint) 7 = CO2 Sensor (carbon dioxide) 8 = Ast (air supply temp) 9 = mor (motor position) 10 = Sensor External 50K (E50) (external 50KΩ sensor) 11 = TSTAT Temperature Sensor (tESE) (thermostat temperature sensor) 12 = TSTAT Setpoint (StP1) (thermostat setpoint 0-10Vdc) 13 = TSTAT Setpoint 2-10V (StP2) (thermostat setpoint 2-10Vdc)	W
108	40**109**	User System Control Mode.	Unsigned	1 = AUTO 2 = HEAT 3 = COOL 4 = OFF	W
109	40**110**	Sets the permissions or restrictions to change the system control mode by the user.	Unsigned	1 = AUTO 2 = HEAT 3 = COOL 4 = COOL-HEAT 5 = AUTO-LOCK	W
110	40**111**	Indicates the status of the Night Setback mode.	Unsigned	1 = Day 2 = Night 3 = Derogation	RO
111	40**112**	Configuration of DI1 mode. Night setback or no occupancy status.	Unsigned	1=Off 2= Occupancy NO 3= Occupancy NC 4= Night Set Back NO 5= Night Set Back NC 6= Unoccupancy damper	W
112	40**113**	Analog input 2 signal. * Not available with EVCB14NDT4S.	Unsigned	1 = OFF 2 = EtS (External Sensor) 3 = SENS (changeover sensor) 4 = NoCL (Changeover Contact Normally Open Cool) 5 = NoHT (Changeover Contact Normally Open Heat) 6 = StFL* (Airflow Setpoint) 7 = CO2 Sensor (carbon dioxide) 8 = Ast (air supply temp) 9 = mor (motor position) 10 = Sensor External 50K (E50) (external 50KΩ sensor) 11 = TSTAT Temperature Sensor (tESE) (thermostat temperature sensor) 12 = TSTAT Setpoint (StP1) (thermostat setpoint 0-10Vdc) 13 = TSTAT Setpoint 2-10V (StP2) (thermostat setpoint 2-10Vdc)	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
113	40**114**	Occupancy status of the zone.	Unsigned	1 = No Occupancy 2 = Occupancy 3 = Derogation	RO
114	40**115**	AO1: Analog output 1 control ramp Notes: Options 12 and 13 are for fan powered applications and only available with models: EVCB14NIT4S, EVCB14NDT4S, and EVCB14NIT4SF. * Not available with EVCB14NDT4S	Unsigned	1 = OFF 2 = CR1 (cooling ramp 1) 3 = CR2 (cooling ramp 2) 4 = HR1 (heating ramp 1) 5 = HR2 (heating ramp 2) 6 = ArFL (airflow reading) 7 = CO2 Alarm (carbon dioxide) 8 = STFL* (setpnt airflow 0-10Vdc) 9 – 11 = reserved 12 = Fan Auto (follow demand) 13 = Fan On (always on)	W
115	40**116**	AO2: Analog output 2 control ramp Notes: Options 12 and 13 are for fan powered applications and only available with models: EVCB14NIT4S, EVCB14NDT4S, and EVCB14NIT4SF. * Not available with EVCB14NDT4S.	Unsigned	1 = OFF 2 = CR1 (cooling ramp 1) 3 = CR2 (cooling ramp 2) 4 = HR1 (heating ramp 1) 5 = HR2 (heating ramp 2) 6 = ArFL (airflow reading) 7 = CO2 Alarm (carbon dioxide) 8 = STFL* (setpnt airflow 0-10Vdc) 9 – 11 = reserved 12 = Fan Auto (follow demand) 13 = Fan On (always on)	W
116	40**117**	TO1: Configuration of the ramp used to modulate (pulse or floating) or activate/deactivate (On/Off) TO1 based on demand. Notes: Options 12 and 13 are for fan powered applications and only available with models: EVCB14NIT4S, EVCB14NDT4S, and EVCB14NIT4SF. * Not available on all models.	Unsigned	1 = OFF 2 = CR1 (cooling ramp 1) 3 = CR2 (cooling ramp 2) 4 = HR1 (heating ramp 1) 5 = HR2 (heating ramp 2) 6 = reserved 7 = CO2 Alarm (carbon dioxide) 8 -11 = reserved 12 = Fan Auto (follow demand) 13 = Fan On (always on)	W
117	40**118**	TO2: Configuration of the ramp used to modulate (pulse or floating) or activate/deactivate (On/Off) TO2 based on demand. Notes: Options 12 and 13 are for fan powered applications and only available with models: EVCB14NIT4S, EVCB14NDT4S, and EVCB14NIT4SF. * Not available on all models.	Unsigned	1 = OFF 2 = CR1 (cooling ramp 1) 3 = CR2 (cooling ramp 2) 4 = HR1 (heating ramp 1) 5 = HR2 (heating ramp 2) 6 = reserved 7 = CO2 Alarm (carbon dioxide) 8-11= reserved 12 = Fan Auto (follow demand) 13 = Fan On (always on)	W
118	40**119**	TO3: Configuration of the ramp used to modulate (pulse or floating) or activate/deactivate (On/Off) TO3 based on demand. Notes: Options 12 and 13 are for fan powered applications and only available with models: EVCB14NIT4S, EVCB14NDT4S, and EVCB14NIT4SF * Not available on all models.	Unsigned	1 = OFF 2 = CR1 (cooling ramp 1) 3 = CR2 (cooling ramp 2) 4 = HR1 (heating ramp 1) 5 = HR2 (heating ramp 2) 6 = reserved 7 = CO2 Alarm (carbon dioxide) 8-11 = reserved 12 = Fan Auto (follow demand) 13 = Fan On (always on)	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
119	40**120**	TO4: Configuration of the ramp used to modulate (pulse or floating) or activate/deactivate (On/Off) TO4 based on demand. Notes: Options 12 and 13 are for fan powered applications and only available with models: EVCB14NIT4S, EVCB14NDT4S, and EVCB14NIT4SF * Not available on all models.	Unsigned	1 = OFF 2 = CR1 (cooling ramp 1) 3 = CR2 (cooling ramp 2) 4 = HR1 (heating ramp 1) 5 = HR2 (heating ramp 2) 6 = reserved 7 = CO2 Alarm (carbon dioxide) 8-11= reserved 12 = Fan Auto (follow demand) 13 = Fan On (always on)	W
120	40**121**	TO1: Signal output type for TRIAC output 1. * Not available on all models.	Unsigned	3 = Pulsing 4 = On_Off 5 = Floating	W
121	40**122**	TO2: Signal output type for TRIAC output 2. * Not available on all models.	Unsigned	3 = Pulsing 4 = On_Off	W
122	40**123**	TO3: Signal output type for TRIAC output 3. * Not available on all models.	Unsigned	3 = Pulsing 4 = On_Off 5 = Floating	W
123	40**124**	TO4: Signal output type for TRIAC output 4. * Not available on all models.	Unsigned	3 = Pulsing 4 = On_Off	W
124	40**125**	Pressure independent output selection for VAV damper actuator. * Not available on all models.	Unsigned	3 = Floating1 4 = Floating2 5 = Motor	W
125	40**126**	Motor ramp: Configuration of the ramp used to modulate the actuator based on demand. * Not available on all models.	Unsigned	1 = Reserved 2 = CR1 (cooling ramp 1) 3 = CR2 (cooling ramp 2) 4 = HR1 (heating ramp 1) 5 = HR2 (heating ramp 2) 6-7 = Reserved 8 = STFL* (setpnt airflow 0-10Vdc) 9 = COR (changeover ramp) 10 = CH1 (cool/heat 1) 11 = ANLG (analog 0-10Vdc) 12-13 = Reserved	W
126	40**127**	Changeover control mode status that indicates the source of changeover values.	Unsigned	1 = Local 2 = Cooling 3 = Heating	W
127	40**128**	*Reserved address space*			
128	40**129**	*Reserved address space*			

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
129	40**130**	Configuration of DI2 mode.	Unsigned	1=Off 2=Override 3=OverHeat1 4=OverHeat2 5=OverHeatAll 6=ChangeOverNoCooling 7=ChangeOverNoHeating 8=Unoccupancy damper	W
130	40**131**	Selected temperature control source (in Programming mode).	Unsigned	1 = Internal Temperature 2 = External Temperature 3 = Remote Temperature 4 = Average Temperature 5 = Maximum Temperature	W
131	40**132**	Airflow balance mode enter the balancing mode to adjust air flow factor. ΦNot effective on all models.	Unsigned	1 = Close 2 = Minimum Flow 3 = Maximum Flow 4 = Full Open	W
132	40**133**	*Reserved address space*			
133	40**134**	Configuration to set the motor position in night setback mode. Φ Not effective on all models.	Unsigned	1 = Auto 2 = Open	W
134	40**135**	Digital input 2 delay in seconds.	Unsigned	0 to 3600 seconds	W
135	40**136**	Floating time 2: Time in seconds required by the actuator to complete a 90° run. * Not available on all models.	Unsigned	15 to 250 seconds	W
136	40**137**	Minimum motor position in percentage of stroke for cooling. * Not available on all models.	Unsigned	0 to 100%	W
137	40**138**	Minimum motor position in percentage of stroke for heating. * Not available on all models.	Unsigned	0 to 100%	W
138	40**139**	Airflow Hysteresis Stop in percentage. * Not available on all models.	Unsigned	1 to 100%	W
139	40**140**	Airflow Hysteresis Start in percentage. * Not available on all models.	Unsigned	reg 40**139** to 100%	W

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
140	40**141**	Airflow scale.*Not available on all models.	Unsigned	1 = Scale1 2 = Scale10 3 = Scale100	W
141	40**142**	Airflow fault deadband in percentage. * Not available on all models.	Unsigned	1 to 30%	W
142	40**143**	Airflow fault error in percentage. * Not available on all models.	Unsigned	0 to 100%	W
143	40**144**	Airflow fault hysteresis in percentage. * Not available on all models.	Unsigned	1 to 30%	W
144	40**145**	Airflow fault time.*Not available on all models.	Unsigned	2 to 59 minutes	W
145	40**146**	CL_HT SwitchTimer, waiting time before switching between the heating and cooling modes.	Unsigned	0 to 120 minutes	W
146	40**147**	CL_HT SwitchTimerCount, countdown to indicate the swap between heating and cooling modes.	Unsigned	0 to 4,294,967,295 seconds	RO
147	40**148**	FloatingTO1/TO2, TRIAC output 1 or 2 when set to floating, indicates the floating signal demand. * Not available on all models.	Unsigned *Scale 10*	0 to 1000% *Value x 10 (e.g. 15% =150)*	RO
148	40**149**	FloatingTO3/TO4, TRIAC output 3 or 4 when set to floating, indicates the floating signal demand. * Not available on all models.	Unsigned *Scale 10*	0 to 1000% *Value x 10 (e.g. 15% =150)*	RO
149	40**150**	TO1 Pulsing, TRIAC output 1 when set to Pulsed, indicates the pulse signal demand. * Not available on all models.	Unsigned *Scale 10*	0 to 1000% *Value x 10 (e.g. 15% =150)*	RO
150	40**151**	TO2 Pulsing, TRIAC output 2 when set to Pulsed, indicates the pulse signal demand. * Not available on all models.	Unsigned *Scale 10*	0 to 1000% *Value x 10 (e.g. 15% =150)*	RO
151	40**152**	TO3 Pulsing, TRIAC output 3 when set to Pulsed, indicates the pulse signal demand.* Not available on all models.	Unsigned *Scale 10*	0 to 1000% *Value x 10 (e.g. 15% =150)*	RO
152	40**153**	TO4 Pulsing, TRIAC output 4 when set to Pulsed, indicates the pulse signal demand.* Not available on all models.	Unsigned *Scale 10*	0 to 1000% *Value x 10 (e.g. 15% =150)*	RO

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
153	40**154**	Over heat status.	Unsigned	1 = OverHeatNormal 2 = OverHeat1 3 = OverHeat2 4 = OverHeatAll	RO
154	40**155**	Configuration to override the motor position. * Not available on all models.	Unsigned	1 = Auto 2 = Open 3 = Close 4 = AirFlowCoolMin 5 = AirFlowCoolMax	W
155	40**156**	Information displayed on the TRL/TDU.	Unsigned	1 = Temp Demand 2 = Setpoint Demand 3 = Temp 4 = Setpoint 5 = Off	W
156	40**157**	Status of digital input 2.	Unsigned	0 = Open 1 = Close	RO
157	40**158**	*Reserved address space*			
158	40**159**	System Options 3.	Bit String	[B0-B1, B4-B6, B8, B11-B15]: Reserved **B2: CO_2 Display** *0 = No; 1 = Yes* **B3: CO_2 Control Source** *0 = Analog; 1 = TRLG* **B7: Occupancy Control Source** *0 = BI1; 1 = Intern Sensor* **B9: Motor Position Control Temperature Fault** *0 = Close; 1 = Open* **B10: CO_2 Control Mode** *0 = Open; 1 = Control ramp*	W
159	40**160**	System Options 4.	Bit String	[B0 – B15]: Reserved	RO

Protocol Address	Convention Notation	Description	Data Type	Range	Writable
160	40**161**	Internal CO2, reading of the integrated CO2 sensor of TRLG or TRLGH/TDU (models with humidity sensor). If not available, the value will be fixed to 0x7FFF (32767).	Unsigned	0 to 2000 ppm	RO
161	40**162**	Internal light sensor reading in Luxes.	Unsigned	0 to 16000 Luxes	RO
162	40**163**	Internal VOC sensor reading in ppb.	Unsigned	1 to 60000 ppb	RO
163	40**164**	Internal PIR sensor reading.	Unsigned	0 = NoOccupancy 1 = Occupancy	RO
164	40**165**	Occupancy minimum time in minutes.	Unsigned	0 to 240 minutes	W
165	40**166**	Configuration value of the minimum position in cooling/heating mode in %.	Unsigned	0 to 100%	W
166	40**167**	Control SetPoint.	Unsigned *Scale 1*	10 to 40 *Value x 1 (e.g. 30°C = 30)*	RO
167	40**168**	CO2 ramp proportional band.	Unsigned *Scale 1*	50 to 250 ppm Value x 1 (e.g. 50ppm = 50)	W
168	40**169**	CO2 ramp dead band.	Unsigned *Scale 1*	10 to 50 ppm Value x 1 (e.g. 50ppm = 50)	W
169	40**170**	Temperature sensor combination.	Unsigned	1 = TSTAT+AI1 2 = TSTAT+AI2 3 = TSTAT+AI1+AI2 4 = AI1+AI2	W
170	40**171**	Average temperature.	Signed *Scale 100*	-4000 to 10000 *Value x 100 (e.g. 5°C = 500)*	RO
171	40**172**	Maximum temperature.	Signed *Scale 100*	-4000 to 10000 *Value x 100 (e.g. 5°C = 500)*	RO
172	40**173**	External sensor value of analog input 2.	Signed *Scale 100*	-4000 to 10000 *Value x 100 (e.g. 5°C = 500)*	RO

Notes

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