



**neptronic®**

## **EVCB14N Series**

### **Modbus Communication Module User Guide**



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



## Introduction

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The EVCB14N Series Modbus Communication Module User Guide provides information for using Neptronic<sup>®</sup> 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 EVCB14N Series devices.

The EVCB14N 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

Register Index	Description	Data Type	Range	Writable
40000	Modbus Address and Product Type.	Unsigned	MSB = Product type (e.g. 111 for EVCB) LSB = Modbus Address (e.g. 1-246)	W
40001	MSTP Baud Rate.	Unsigned <i>Scale 100</i>	0, 9600, 19200, 38400, or 57600 0 = Auto Baud Rate Detection <i>Value/100 (e.g. 38400 baud = 384)</i>	W
40002	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
40003	Product Name (characters 8 & 7).	ASCII	1 to 65,535      char 8: 0x53 = S      char 7: 0x00 =	W
40004	Product Name (characters 6 & 5).	ASCII	1 to 65,535      char 6: 0x49 = I      char 5: 0x34 = 4	W
40005	Product Name (characters 4 & 3).	ASCII	1 to 65,535      char 4: 0x42 = B      char 3: 0x4E = N	W
40006	Product Name (characters 2 & 1).	ASCII	1 to 65,535      char 2: 0x45 = E      char 1: 0x56 = V	W

Register Index	Description	Data Type	Range	Writable
40007	Product actual firmware version.	Unsigned	1 to 65535 (e.g. 410)	RO
40008	Product actual EEPROM version.	Unsigned	1 to 65535 (e.g. 203)	RO
40009	System Status 1.	Bit String	[B0 – B11]: Reserved <b>B12: CO2 alarm</b> <i>0 = Normal; 1 = Alarm</i> <b>B13: Pressure mode (actual status)</b> <i>0 = Independent; 1 = Dependent</i> <b>B14: Air Flow</b> <i>0 = Normal; 1 = Error</i>	RO
40010	System Status 2.	Bit String	[B0-B11, B13-B14]: Reserved <b>B12: Alarm override</b> <i>0 = Normal; 1 = Alarm</i>	RO
40011	Internal Temperature.	Unsigned Scale 100	0 to 5000 <i>Value x 100 (e.g. 23°C = 2300)</i>	RO
40012	External Temperature.	Signed Scale 100	-4000 to 10000 <i>Value x 100 (e.g. 18°C = 1800)</i>	RO
40013	Change Over Temperature.	Signed Scale 100	-4000 to 10000 <i>Value x 100 (e.g. 18°C = 1800)</i>	RO
40014	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 <i>Value x 10 (e.g. 45%RH = 450)</i>	RO
40015	Input 3 reading, pressure sensor value (*Not available on all models)	Unsigned Scale 10	0 to 2500 <i>Value x 10 (e.g. 10 Pa = 100)</i>	RO
40016	Analog input 1 value.	Unsigned Scale 100	0 to 1000 <i>Value x 100 (e.g. 2 mV = 200)</i>	RO

Register Index	Description	Data Type	Range	Writable
40017	Analog Input 2 value.	Unsigned Scale 100	0 to 1000 Value x 100 (e.g. 3 mV = 300)	RO
40018	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 more, the reading is from the external sensor.	Unsigned Scale 100	100 to reg 40098 Value x 100 (e.g. 5 ppm = 500)	RO
40019	Air supply temperature.	Signed Scale 100	-4000 to 10000 Value x 100 (e.g. 5°C = 500)	RO
40020	Control temperature.	Signed Scale 100	-4000 to 10000 Value x 100 (e.g. 25°C = 2500)	W
40021	Heating demand for heating ramp 1.	Unsigned Scale 10	0 to 1000 Value x 10 (e.g. 25% = 250)	RO
40022	Cooling demand for cooling ramp 1.	Unsigned Scale 10	0 to 1000 Value x 10 (e.g. 25% = 250)	RO
40023	Temperature offset applied on internal temperature.	Signed Scale 100	-500 to 500 Value x 100 (e.g. 0.5°C = 50)	W
40024	Temperature offset applied on external temperature.	Signed Scale 100	-500 to 500 Value x 100 (e.g. 0.5°C = 50)	W
40025	Temperature setpoint used during the occupancy period of the day.	Unsigned Scale 10	Range: 40026 to 40027 Value x 10 (e.g. 20°C = 200)	W
40026	Minimum temperature setpoint used during the day.	Unsigned Scale 10	Range: 100 to 40027 Value x 10 (e.g. 10°C = 100)	W
40027	Maximum temperature setpoint used during the day.	Unsigned Scale 10	Range: 40026 to 400 Value x 10 (e.g. 40°C = 400)	W
40028	Cooling setpoint during No Occupancy / Night Set Back	Unsigned Scale 10	Range: 40029 to 400 Value x 10 (e.g. 22°C = 220)	W
40029	Heating setpoint during No Occupancy / Night Set Back	Unsigned Scale 10	Range: 100 to 40028 Value x 10 (e.g. 16°C = 160)	W

Register Index	Description	Data Type	Range	Writable
40030	Cooling demand for proportional band 1.	Unsigned Scale 10	5 to 50 Value x 10 (e.g. 0.3°C = 3)	W
40031	Heating demand for proportional band 1.	Unsigned Scale 10	5 to 50 Value x 10 (e.g. 0.3°C = 3)	W
40032	Cooling dead band for proportional band 1.	Unsigned Scale 10	0 to 50 Value x 10 (e.g. 0.3°C = 3)	W
40033	Heating dead band for proportional band 1.	Unsigned Scale 10	0 to 50 Value x 10 (e.g. 0.3°C = 3)	W
40034	Changeover temperature setpoint.	Unsigned Scale 10	100 to 400 Value x 10 (e.g. 12°C = 120)	W
40035	Night setback override delay in minutes.	Unsigned	0 to 180 minutes	W
40036	Integral time factor for heating in seconds.	Unsigned	0 to 250 seconds	W
40037	Cooling anti-cycle delay: delay in minutes before activating or reactivating the cooling contact.	Unsigned	0 to 15 minutes	W
40038	Floating time 1: Indicates the time in seconds required by the actuator to complete a 90° run.	Unsigned	15 to 250 seconds	W
40039	Occupancy Delay Mode in minutes	Unsigned	0 to 180 minutes	W
40040	Cooling demand for cooling ramp 2.	Unsigned Scale 10	0 to 1000 % Value x 10 (e.g. 30% = 300)	RO
40041	Proportional band for cooling ramp 2	Unsigned Scale 10	5 to 50 Value x 10 (e.g. 0.2°C = 2)	W
40042	Dead band for cooling ramp 2.	Unsigned Scale 10	0 to 50 Value x 10 (e.g. 0.2°C = 2)	W
40043	Heating demand for heating ramp 2.	Unsigned Scale 10	0 to 1000 % Value x 10 (e.g. 30% = 300)	W
40044	Proportional band for heating ramp 2.	Unsigned Scale 10	5 to 50 Value x 10 (e.g. 0.2°C = 2)	W

Register Index	Description	Data Type	Range	Writable
40045	Dead band for heating ramp 2.	Unsigned Scale 10	0 to 50 Value x 10 (e.g. 0.2°C = 2)	W
40046	Changeover demand for the VAV box.	Unsigned Scale 10	0 to 1000 % Value x 10 (e.g. 30% = 300)	RO
40047	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
40048	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
40049	AO1 min Vdc: minimum voltage of analog output 1.	Unsigned Scale 10	Range: 0 to reg. 40051 Value x 10 (e.g. 2 Volts = 20)	W
40050	AO2 min Vdc: minimum voltage of analog output 2.	Unsigned Scale 10	Range: 0 to reg. 40052 Value x 10 (e.g. 2 Volts = 20)	W
40051	AO1 max Vdc: maximum voltage of analog output 1.	Unsigned Scale 10	Range: reg. 40049 to 100 Value x 10 (e.g. 10 Volts = 100)	W
40052	AO2 max Vdc: maximum voltage of analog output 2.	Unsigned Scale 10	Range: reg. 40050 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 to leave the minimum voltage at 0Vdc to avoid heating when the demand is 0%.				
40053	Time of numerical filter of delta pressure in seconds. Not effective on all models.	Unsigned	1 to 10 seconds	W
40054	Factor of $V=K*\sqrt{dP}$ , where $dP = 1$ . Not effective on all models.	Unsigned	Range: 100 to 9995 CFM	W
40055	Minimum air flow for cooling. Not effective on all models.	Unsigned	Range: 0 or (12.7%) Kfac to reg 40056 CFM	W
40056	Maximum air flow for cooling. Not effective on all models.	Unsigned	Range: reg 40055 to reg 40054 CFM	W
40057	Minimum air flow for heating. Not effective on all models.	Unsigned	Range: 0 or (12.7%) Kfac to reg 40058 CFM	W

Register Index	Description	Data Type	Range	Writable
40058	Maximum air flow for heating. Not effective on all models.	Unsigned	Range: reg 40057 to reg 40054 CFM	W
40059	Integral time factor of air flow in minutes. Not effective on all models.	Unsigned	0 to 60 minutes	W
40060	Actual air flow converted from delta pressure sensor. Not effective on all models.	Unsigned	Range: 0 to reg 40054 CFM	RO
40061	Air flow calculated from system demand. Not effective on all models.	Unsigned	Range: 0 to 9999 CFM	RO
40062	Configuration value for Air Flow Max used during airflow balancing sequence. Refer to EVCB-Airflow Balance Instructions. Not effective on all models.	Unsigned	Range: 0 to 9999 CFM	W
40063	Analog output 1 value.	Unsigned Scale 10	Unit: Volt, Range: reg 40049 to reg 40051 Value x 10 (e.g. 5 Volts = 50)	W
40064	Analog output 2 value.	Unsigned Scale 10	Unit: Volt, Range: reg 40050 to reg 40052 Value x 10 (e.g. 5 Volts = 50)	W
40065	Percentage of demand to close TRIAC output 1. Not available on all models.	Unsigned	15 to 80%	W
40066	Percentage of demand to close TRIAC output 2. Not available on all models.	Unsigned	15 to 80%	W
40067	Percentage of demand to close TRIAC output 3. Not available on all models.	Unsigned	15 to 80%	W
40068	Percentage of demand to close TRIAC output 4. Not available on all models.	Unsigned	15 to 80%	W
40069	Percentage of demand to open TRIAC output 1. Not available on all models.	Unsigned	0 to reg 40065-4%	W
40070	Percentage of demand to open TRIAC output 2. Not available on all models.	Unsigned	0 to reg 40065-4%	W
40071	Percentage of demand to open TRIAC output 3. Not available on all models.	Unsigned	0 to reg 40065-4%	W



Register Index	Description	Data Type	Range	Writable
40072	Percentage of demand to open TRIAC output 4. Not available on all models.	Unsigned	0 to reg 40065-4%	W
40073	Integral time factor for cooling in seconds.	Unsigned	0 to 250 seconds	W
40074	Motor position. Not effective on all models.	Unsigned	0 to 100%	RO
40075 to 40080 - Reserved				RO
40081	Air flow offset calibration. Refer to EVCB-Airflow Balance Instructions. Not effective on all models.	Signed	-500 to 500 CFM	W
40084	Configuration value for Air Flow Min used during airflow balancing sequence. Refer to EVCB-Airflow Balance Instructions. Not effective on all models.	Unsigned	Range: 0 to 9999 CFM	W
40082, 40083, and 40085 to 40095 - Reserved				RO
40096	Network fallback timeout Present Value in minutes.	Unsigned	0 to 60 minutes	W
40097	Reserved			RO
40098	Maximum range of the CO2 sensor connected to AI1 or AI2.	Unsigned	100 to 5000 PPM	W
40099	Maximum concentration of CO2 before the EVC activates an alarm.	Unsigned	Range: 100 to the greater ppm value between 2000 and reg 40098	W

Register Index	Description	Data Type	Range	Writable
40100	System Option 1. <sup>Φ</sup> Not effective on all models.	Bit String	B3, B13-B14: Reserved <b>B0: Tstat temperature units</b> <i>0 = Celsius; 1 = Fahrenheit</i> <b>B1: Modbus temperature units</b> <i>0 = Celsius; 1 = Fahrenheit</i> <b>B2: Temperature setpoint lock</b> <i>0 = Unlocked; 1 = Locked</i> <b>B4: TO1/TO2 floating direction<sup>Φ</sup></b> <i>0 = Direct; 1 = Reverse</i> <b>B5: TO3/TO4 floating direction<sup>Φ</sup></b> <i>0 = Direct; 1 = Reverse</i> <b>B6: Onboard motor direction<sup>Φ</sup></b> <i>0 = Direct; 1 = Reverse</i> <b>B7: Freeze protection</b> <i>0 = Disabled; 1 = Enabled</i> <b>B8: User system off mode</b> <i>0 = User can set Tstat to OFF</i> <i>1 = User cannot set Tstat OFF</i> <b>B9: Keypad bottom left lock</b> <i>0 = Unlocked; 1 = Locked</i> <b>B10: Keypad upper left lock</b> <i>0 = Unlocked; 1 = Locked</i> <b>B11: Keypad arrows lock</b> <i>0 = Unlocked; 1 = Locked</i> <b>B12: Program lock</b> <i>0 = Unlocked; 1 = Locked</i> <b>B15: Schedule</b> <i>0 = Disabled; 1 = Enabled</i>	W

Register Index	Description	Data Type	Range	Writable
40101	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. <sup>ϕ</sup> Not effective on all models.	Bit String	B0-B1, B13: Reserved <b>B2: Auto baud rate detection</b> 0 = Enabled; 1 = Disabled <b>B3: Night setback mode</b> 0 = Tstat ON; 1 = Tstat OFF <b>B4: AO1 direction</b> 0 = Direct; 1 = Reverse <b>B5: AO2 direction</b> 0 = Direct; 1 = Reverse <b>B6: TO1 direction<sup>ϕ</sup></b> 0 = Direct; 1 = Reverse <b>B7: TO2 direction<sup>ϕ</sup></b> 0 = Direct; 1 = Reverse <b>B8: TO3 direction<sup>ϕ</sup></b> 0 = Direct; 1 = Reverse <b>B9: TO4 direction<sup>ϕ</sup></b> 0 = Direct; 1 = Reverse <b>B10: Display RH<sup>ϕ</sup></b> 0 = No; 1 = Yes <b>B11: Pressure mode select<sup>ϕ</sup></b> 0 = independent; 1 = dependent <b>B12: Auto pressure mode<sup>ϕ</sup> change</b> 0 = Enabled; 1 = Disabled <b>B14: DI 2 Contact</b> 0: NO; 1: NC <b>B15: Fan always "on" mode</b> 0 = Always on; 1 = Follow NSB/NoOcc	W
40102	Status value of the actual changeover control mode.	Unsigned	0 = Cooling, 1= Heating	RO
40103	System command status. <sup>ϕ</sup> Not effective on all models.	Unsigned	0 = No Command, 1 = AirFlow 1 Balancing, 4 = AirFlow 2 Balancing	W
40104	TO OnOff. * Not available on all models.	Unsigned	1 = TO1 OnOff 2 = TO2 OnOff 4 = TO3 OnOff 8 = TO4 OnOff	RO
40105	Occupancy or night setback mode commands.	Unsigned	1 = Locally 2 = Off 3 = Occupancy 4 = NoOccupancy 5 = Day 6 = Night	W
40106	Status of digital input 1.	Unsigned	0 = Open, 1 = Close	RO

Register Index	Description	Data Type	Range	Writable
40107	Analog input 1 signal. * Not available on all models. Φ Not effective on all models. ** Only available with EVCB14NIT0S.	Unsigned	1 = OFF 2 = ETS (external temp) 3 = SENS (changeover sensor) 4 = NoCL (normally cool) 5 = NoHT (normally heat) 6 = STFL* (setpnt airflow 0-10Vdc) 7 = CO2 (carbon dioxide) 8 = AST (air supply temp sensor) 9 = mor <sup>Φ</sup> (motor position) 10 = EXT50K** (external 50KΩ sensor) 11 = TSTAT temp sensor** (thermostat temperature sensor) 12 = TSTAT Setpoint** (thermostat setpoint 0-10Vdc) 13 = TSTAT Setpoint 2-10V** (thermostat setpoint 2-10Vdc)	W
40108	User System Control Mode.	Unsigned	1 = AUTO 2 = HEAT 3 = COOL 4 = OFF	W
40109	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
40110	Indicates the status of the Night Setback mode.	Unsigned	1 = Day, 2 = Night, 3 = Derogation	RO
40111	Configuration of DI1 mode. Night setback or no occupancy status. * Only available with EVCB14NIT0S.	Unsigned	1=Off 2= Occupancy NO 3= Occupancy NC 4= Night Set Back NO 5= Night Set Back NC 6= Unoccupancy damper*	W
40112	Analog input 2 signal. * Not available on all models. ** Only available with EVCB14NIT0S.	Unsigned	1 = OFF 2 = ETS (external temp) 3 = SENS (changeover sensor) 4 = NoCL (normally cool) 5 = NoHT (normally heat) 6 = STFL* (setpnt airflow 0-10Vdc) 7 = CO2 (carbon dioxide) 8 = AST (air supply temp sensor) 9 = mor (motor position) 10 = EXT50K** (external 50KΩ sensor) 11 = TSTAT temp sensor** (thermostat temperature sensor) 12 = TSTAT Setpoint** (thermostat setpoint 0-10Vdc) 13 = TSTAT Setpoint 2-10V** (thermostat setpoint 2-10Vdc)	W
40113	Occupancy status of the zone.	Unsigned	1 = No Occupancy, 2 = Occupancy, 3 = Derogation	RO
40114	AO1: Analog output 1 control ramp Notes: Options 11 and 12 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 = ArFL (airflow reading) 7 = CO2 (carbon dioxide) 8 = STFL* (setpnt airflow 0-10Vdc) 9 – 10 = reserved 11 = Fan Auto (follow demand) 12 = Fan On (always on)	W

Register Index	Description	Data Type	Range	Writable
40115	AO2: Analog output 2 control ramp Notes: Options 11 and 12 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 = ArFL (airflow reading) 7 = CO2 (carbon dioxide) 8 = STFL* (setpnt airflow 0-10Vdc) 9 – 10 = reserved 11 = Fan Auto (follow demand) 12 = Fan On (always on)	W
40116	TO1: Configuration of the ramp used to modulate (pulse or floating) or activate/deactivate (On/Off) TO1 based on demand. * 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 = CO2 (carbon dioxide) 7 = STFL* (setpnt airflow 0-10Vdc) 8 = COR* (changeover ramp) 9 = CH1* (cool/heat 1) 10 = ANLG* (analog 0-10Vdc) 11 = Fan Auto (follow demand) 12 = Fan On (always on)	W
40117	TO2: Configuration of the ramp used to modulate (pulse or floating) or activate/deactivate (On/Off) TO2 based on demand. * 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 = CO2 (carbon dioxide) 7 = STFL* (setpnt airflow 0-10Vdc) 8 = COR* (changeover ramp) 9 = CH1* (cool/heat 1) 10 = ANLG* (analog 0-10Vdc) 11 = Fan Auto (follow demand) 12 = Fan On (always on)	W
40118	TO3: Configuration of the ramp used to modulate (pulse or floating) or activate/deactivate (On/Off) TO3 based on demand. * 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 = CO2 (carbon dioxide) 7 = STFL* (setpnt airflow 0-10Vdc) 8 = COR* (changeover ramp) 9 = CH1* (cool/heat 1) 10 = ANLG* (analog 0-10Vdc) 11 = Fan Auto (follow demand) 12 = Fan On (always on)	W
40119	TO4: Configuration of the ramp used to modulate (pulse or floating) or activate/deactivate (On/Off) TO4 based on demand. * 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 = CO2 (carbon dioxide) 7 = STFL* (setpnt airflow 0-10Vdc) 8 = COR* (changeover ramp) 9 = CH1* (cool/heat 1) 10 = ANLG* (analog 0-10Vdc) 11 = Fan Auto (follow demand) 12 = Fan On (always on)	W
40120	TO1: Signal output type for TRIAC output 1. * Not available on all models.	Unsigned	3 = Pulsing, 4 = On_Off, 5 = Floating	W
40121	TO2: Signal output type for TRIAC output 2. * Not available on all models.	Unsigned	3 = Pulsing, 4 = On_Off	W
40122	TO3: Signal output type for TRIAC output 3. * Not available on all models.	Unsigned	3 = Pulsing, 4 = On_Off, 5 = Floating	W

Register Index	Description	Data Type	Range	Writable
40123	TO4: Signal output type for TRIAC output 4. * Not available on all models.	Unsigned	3 = Pulsing 4 = On_Off	W
40124	Pressure independent output selection for VAV damper actuator. * Not available on all models.	Unsigned	3 = Floating1, 4 = Floating2, 5 = Motor	W
40125	Motor ramp: Configuration of the ramp used to modulate the actuator based on demand. * Not available on all models.	Unsigned	2 = CR1 (cooling ramp 1)      7 = STFL* (setpnt airflow 0-10Vdc) 3 = CR2 (cooling ramp 2)      8 = COR (changeover ramp) 4 = HR1 (heating ramp 1)      9 = CH1 (cool/heat 1) 5 = HR2 (heating ramp 2)      10 = ANLG (analog 0-10Vdc) 6 = Not Available	W
40126	Changeover control mode status that indicates the source of changeover values.	Unsigned	1 = Local, 2 = Cooling, 3 = Heating	W
40127	Reserved			RO
40128	Reserved			RO
40129	Configuration of DI2 mode. * Only available with EVCB14NIT0S.	Unsigned	1=Off      4=OverHeat2      7=ChangeOverNoHeating 2=Override      5=OverHeatAll      8=Unoccupancy damper* 3=OverHeat1      6=ChangeOverNoCooling	W
40130	Selected temperature control source (in Programming mode).	Unsigned	1 = Internal Temperature      4 = Average Temperature 2 = External Temperature      5 = Maximum Temperature 3 = Remote Temperature	W
40131	Airflow balance mode enter the balancing mode to adjust air flow factor. <sup>Φ</sup> Not effective on all models.	Unsigned	1 = Close      3 = Maximum Flow 2 = Minimum Flow      4 = Full Open	W
40132	Reserved			RO
40133	Configuration to set the motor position in night setback mode. <sup>Φ</sup> Not effective on all models.	Unsigned	1 = Auto 2 = Open	W
40134	Digital input 2 delay in seconds.	Unsigned	0 to 3600 seconds	W
40135	Time in seconds required by the actuator to complete a 90° run. * Not available on all models.	Unsigned	15 to 250 seconds	W
40136	Minimum motor position in percentage of stroke for cooling. * Not available on all models.	Unsigned	0 to 100%	W

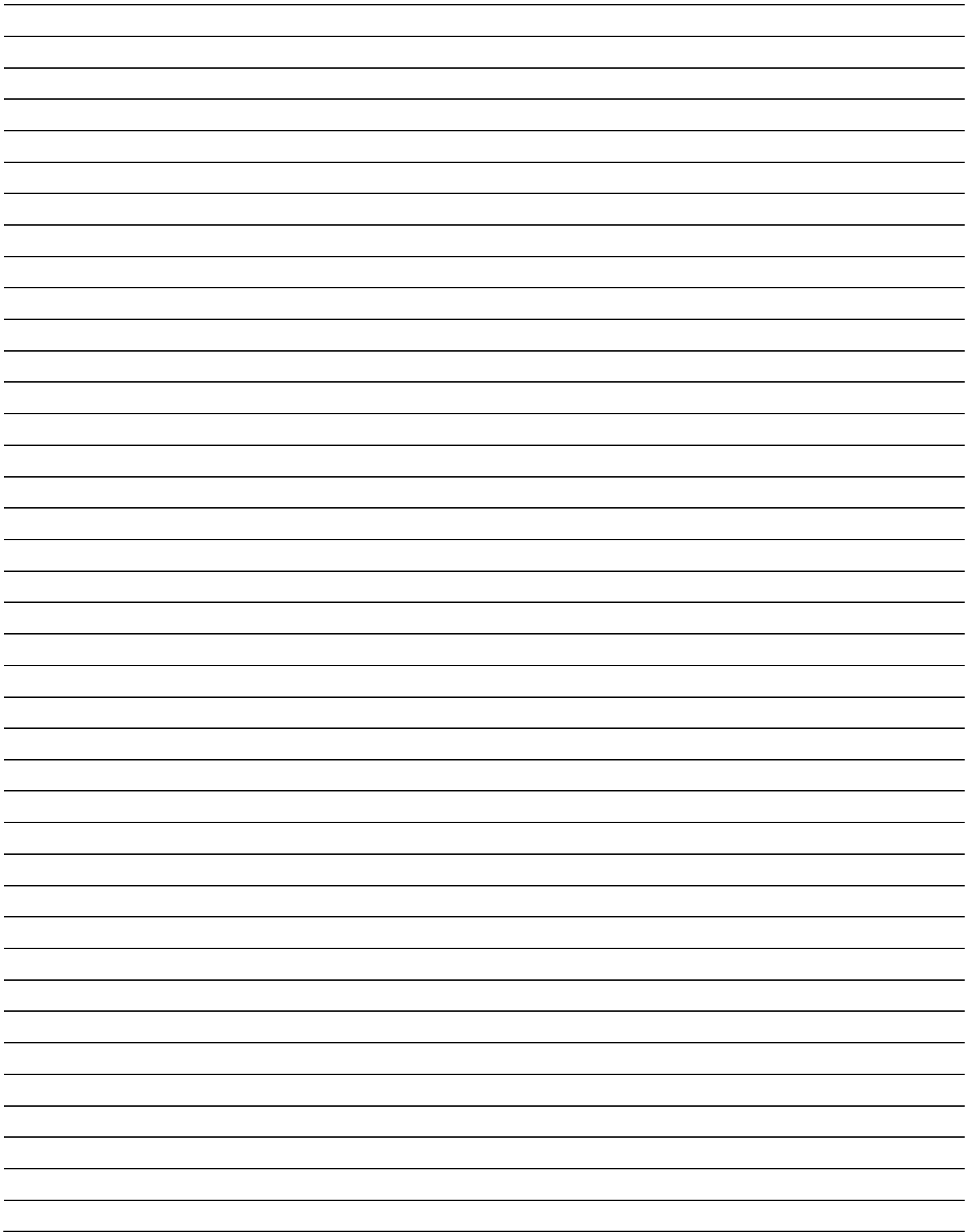
Register Index	Description	Data Type	Range	Writable
40137	Minimum motor position in percentage of stroke for heating. * Not available on all models.	Unsigned	0 to 100%	W
40138	Airflow Hysteresis Stop in percentage.* Not available on all models.	Unsigned	1 to 100%	W
40139	Airflow Hysteresis Start in percentage.* Not available on all models.	Unsigned	reg 40138 to 100%	W
40140	Airflow scale.*Not available on all models.	Unsigned	1 = Scale1, 2 = Scale10, 3 = Scale100	W
40141	Airflow fault deadband in percentage.* Not available on all models.	Unsigned	1 to 30%	W
40142	Airflow fault error in percentage.* Not available on all models.	Unsigned	0 to 100%	W
40143	Airflow fault hysteresis in percentage.* Not available on all models.	Unsigned	1 to 30%	W
40144	Airflow fault time.*Not available on all models.	Unsigned	2 to 59 minutes	W
40145	CL_HT SwitchTimer, waiting time before switching between the heating and cooling modes.	Unsigned	0 to 120 minutes	W
40146	CL_HT SwitchTimerCount, countdown to indicate the swap between heating and cooling modes.	Unsigned	0 to 4,294,967,295 seconds	RO
40147	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
40148	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
40149	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
40150	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
40151	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
40152	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

Register Index	Description	Data Type	Range	Writable
40153	Over heat status.	Unsigned	1 = OverHeatNormal 2 = OverHeat1 3 = OverHeat2 4 = OverHeatAll	RO
40154	Configuration to override the motor position. * Not available on all models.	Unsigned	1 = Auto 2 = Open 3 = Close 4 = AirFlowCoolMin 5 = AirFlowCoolMax	W
40155	Information displayed on the TRL/TDU.	Unsigned	1 = Temp Demand 2 = Setpoint Demand 3 = Temp 4 = Setpoint 5 = Off	W
40156	Status of digital input 2.	Unsigned	0 = Open, 1 = Close	RO
40157	Reserved			RO
40158	System Options 3	Bit String	<p>[B0-B1, B4-B6, B8, B11-B15]: Reserved</p> <p><b>B2: CO<sub>2</sub> Display</b> 0 = No; 1 = Yes</p> <p><b>B3: CO<sub>2</sub> Control Source</b> 0 = Analog; 1 = TRLG</p> <p><b>B7: Occupancy Control Source</b> 0 = B1; 1 = Intern Sensor</p> <p><b>B9: Motor Position Control Temperature Fault</b> 0 = Close; 1 = Open</p> <p><b>B10: CO<sub>2</sub> Control Mode</b> 0 = Open; 1 = Control ramp</p>	W
40159	System Options 4	Bit String	[B0 – B15]: Reserved	RO
40160	Internal CO <sub>2</sub> , reading of the integrated CO <sub>2</sub> 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
40161	Internal light sensor reading in Luxes.	Unsigned	0 to 16000 Luxes	RO
40162	Internal VOC sensor reading in ppb.	Unsigned	1 to 60000 ppb	RO



Register Index	Description	Data Type	Range	Writable
40163	Internal PIR sensor reading.	Unsigned	0 = NoOccupancy, 1 = Occupancy	RO
40164	Occupancy minimum time in minutes.	Unsigned	0 to 240 minutes	W
40165	Configuration value of the minimum position in cooling/heating mode in %.	Unsigned	0 to 100 %	W
40166	Control SetPoint.	Unsigned Scale 1	10 to 40 Value x 1 (e.g. 30°C = 30)	RO
40167	CO2 ramp proportional band	Unsigned Scale 1	50 to 250 ppm Value x 1 (e.g. 50ppm = 50)	W
40168	CO2 ramp dead band	Unsigned Scale 1	10 to 50 ppm Value x 1 (e.g. 50ppm = 50)	W
40169	Temperature sensor combination	Unsigned	1 = TSTAT+AI1 2 = TSTAT+AI2 3 = TSTAT+AI1+AI2 4 = AI1+AI2	W
40170	Average temperature	Signed Scale 100	-4000 to 10000 Value x 100 (e.g. 5°C = 500)	RO
40171	Maximum temperature	Signed Scale 100	-4000 to 10000 Value x 100 (e.g. 5°C = 500)	RO
40172	External sensor value of analog input 2	Signed Scale 100	-4000 to 10000 Value x 100 (e.g. 5°C = 500)	RO







**neptronic®**

400 Lebeau blvd, Montreal, Qc, H4N 1R6, Canada

[neptronic.com](http://neptronic.com)

Toll free in North America: 1-800-361-2308

Tel.: (514) 333-1433

Fax: (514) 333-3163

Customer service fax: (514) 333-1091

Monday to Friday: 8:00am to 5:00pm (Eastern time)