TDU Series LCD Thermostat
For EFCB and EVCB Controllers

Models

Model #	Temp	RH	CO2	PIR	Color
TDU10-100	●				grey LCD white enclosure
TDU10-101	●	●			
TDU10-102	●	●	●		
TDU10-103	●		●		
TDU10-104	●			●	
TDU10-105	●	●		●	
TDU10-106	●	●	●	●	
TDU10-107	●		●	●	

Model #	Temp	RH	CO2	PIR	Color
TDU40-100	●				black LCD black enclosure
TDU40-101	●	●			
TDU40-102	●	●	●		
TDU40-103	●		●		
TDU40-104	●			●	
TDU40-105	●	●		●	
TDU40-106	●	●	●	●	
TDU40-107	●		●	●	

Model #	Temp	RH	CO2	PIR	Color
TDU70-100	●				black LCD white enclosure
TDU70-101	●	●			
TDU70-102	●	●	●		
TDU70-103	●		●		
TDU70-104	●			●	
TDU70-105	●	●		●	
TDU70-106	●	●	●	●	
TDU70-107	●		●	●	

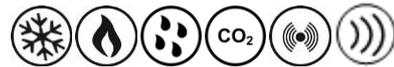**TDU10 Series**

TDU40 Series

TDU70 Series

Features

Onboard Sensors

- Temperature sensor (°C/°F)
- Humidity sensor (%RH), select models
- Carbon dioxide sensor (CO_2), select models
- PIR Motion detector sensor, select models

Functions

- 3.5" LCD display
- Slim design
- Universal wall-mount design
- Used to configure and operate the EVCB VAV controllers and EFCB Fan Coil controllers
- Selectable internal or external temperature sensor (10 KΩ)
- Three wire connection between thermostat and controller
- Selectable Fahrenheit or Celsius scale
- Network service port via on-board mini USB connector
- Approximate size 120mm x 92mm x 15mm (4.7" x 3.6" x 0.6")

Technical Specifications

Description	TDU10 / TDU40 / TDU70 Series
Temperature Sensor	
Setpoint Range	10ºC to 40ºC [50ºF to 104ºF]
Control Accuracy	Temperature: ±0.4ºC [0.8ºF]
Display resolution	±0.1ºC [0.2ºF]
Humidity Sensor (select models)	
Setpoint Range (EFCB only)	10 to 65%RH
Control Accuracy (EFCB only)	±3.5% RH
Display Resolution	0.1%
CO2 Sensor (select models)	
Operating Principle	Self-calibrating, Non-Dispersive Infrared (NDIR)
Sensor Range	400 to 2000 ppm
Accuracy	±30 ppm ±3% of reading (Accuracy is defined after minimum 3 weeks of continuous operation)
Response Time	2 minutes by 90%
Other	
Electrical connection	Three wires to EVCB/EFCB controller and two wires to BACnet/Modbus network 0.8 mm2 [18 AWG] minimum
Network service port	Mini USB connector
Power supply	24Vac
Power consumption	1VA
Operating temperature	0ºC to 50ºC [32ºF to 122ºF]
Storage temperature	-30ºC to 50ºC [-22ºF to 122ºF]
Relative Humidity	5 to 95 % non-condensing
Degree of protection of housing	IP 30 (EN 60529)
Weight	120 g. [0.25 lb]
Dimensions: A = 4.94" | 125mm B = 2.87" | 72.8mm C = 3.44" | 87mm D = 1.22" | 31mm E = 0.75" | 19mm F = 2.00" | 51mm G = 2.18" | 55mm	

Interface
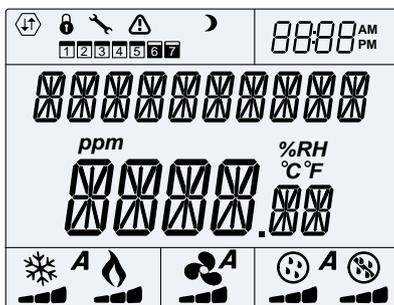
⇅	Network Communication	🔒	User Lock	🔧	Programming Mode (Technician Setting)
⚠	Alarm Status	☾	Energy Saving Mode (NSB/OCC)	1234567	Schedule
88:88 AM PM	Time	ppm	Parts Per Million	°C °F %RH	ºC: Celsius Scale ºF: Fahrenheit Scale %RH :Humidity
A	Automatic Mode	❄	Cooling	🔥	Heating
	Fan		Humidify (EFCB only)		De-humidify (EFCB only)

Wiring

We strongly recommend that all Neptronic products be wired to a separate grounded transformer and that transformer shall service only Neptronic products. This precaution will prevent interference with, and/or possible damage to incompatible equipment.

Thermostat Display Universal (TDU)

Mode Selector Jumper
RUN = Operation Mode
PGM = Programming Mode

JP1 RUN PGM

TB1

1 2 3 4 5 6 7

COM PWR DATA A+ B-

Connect to EVCB/EFCB

Optional: connect to BACnet network to enable service port

BACnet service port

CO_2 sensor

Avoid touching the CO 2 sensor as this may cause incorrect readings

Temperature and Humidity sensors
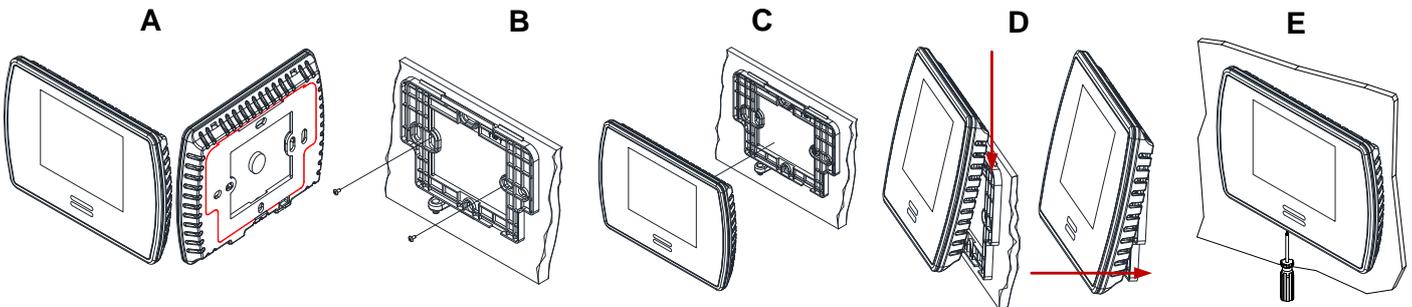
Mode Selection (JP1)

JP1 RUN PGM	**RUN:** Thermostat is in **Operation Mode**. Thermostat must be set in this mode to operate properly. If not locked, following setpoint and control mode options can be modified by the end user: • Heating and Cooling ON • Cooling only ON • Heating only ON • OFF (EFCB only) • Fan ON • Humidify and De-humidify ON • Humidify only ON • Dehumidify only ON
JP1 RUN PGM	**PGM:** Thermostat is set in **Programming Mode**.
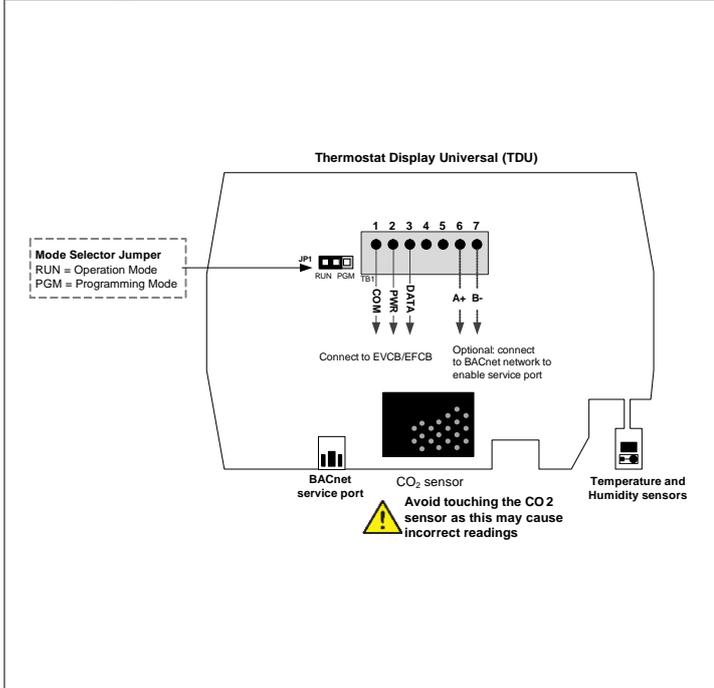
Mounting Instructions

⚠️ **CAUTION: Remove power to avoid a risk of malfunction.**

A. Remove the wall mounting plate (highlighted) from the back of the thermostat.
B. Install the mounting plate on the gang box.
C. Pull the wires through the base hole and make the appropriate connections.
D. Mount the thermostat onto the wall plate. To mount the thermostat correctly, place the top of the thermostat on the mounting plate first and push it into the grooves to snap it into place.
E. Secure the thermostat using the screw (supplied).

A	B	C	D	E

Operation Mode

The Mode Selector Jumper JP1 must be set to the RUN position (Operation Mode). Refer to Wiring on page 3.

EVCB

CO2 reading in ppm
(CO2 display option must be enabled in programming mode)

Appears if in Night Set Back (NSB) or Occupancy (OCC) mode. Flashes if overridden by user.

neptronic
750 PPM
20.7 °C

Press twice to display setpoint

Press to toggle between °C and °F

Actual demand

Fan icon appears in fan-powered box applications only

Room temperature

45.0 %RH

Alternates between room temperature for 8 sec and then room humidity for 2 sec. (requires Humidity sensor thermostats, and Humidity Mode must not be OFF.)

Press for 5 sec. to display air flow (if using pressure sensors)

neptronic
AIRFLOW
634

Press once to display control mode

neptronic
CONTROL
Auto

neptronic
SETPNT
22.7 °C

Appears if setpoint adjustment is locked

Change setpoint value

Exits after 3 sec.

Setpoint value

Exits after 5 sec.

Scroll through the following values:
"Airflow"*
"Airflow Setpoint"*
"Actual Damper Pos Percent"
"Air Supply Temp" †

* appears only in pressure independent mode
† appears only if "AST" is selected for the Analog Input Signal Type

Exits after 5 sec.

Press to change mode:
- AUTO
- OFF
- COOL ONLY
- HEAT ONLY

EFCB

CO2 reading in ppm
(CO2 display option must be enabled in programming mode)

Appears if in Night Set Back (NSB) or Occupancy (OCC) mode. Flashes if overridden by user.

750 PPM
20.7 °C

Press twice to display Setpoint Mode

Press both keys for 3 sec. to toggle between °C and °F

Actual demand

Room temperature

45.0 %RH

Alternates between room temperature for 8 sec and then room humidity for 2 sec. (requires Humidity sensor thermostats, and Humidity Mode must not be OFF.)

Press for 5 sec. to display Humidity Setpoint Mode

HUMIDTY
40.0 %RH

Appears if setpoint adjustment is locked

Change setpoint value

Exits after 5 sec.

Setpoint value

Press once to display Fan Speed Mode

FAN SPD
Auto

Press once to display Control Mode

CONTROL
Auto

SETPNT
22.7 °C

Appears if setpoint adjustment is locked

Change setpoint value

Exits after 3 sec.

Setpoint value

Exits after 5 sec.

Press to change mode:
- AUTO
- LOW
- MEDIUM
- HIGH

Exits after 5 sec.

Press to change mode:
- AUTO
- OFF
- COOL ONLY
- HEAT ONLY

Power Up

Upon power up, the LCD illuminates and all segments appear for 2 seconds. The thermostat then displays its current version of the thermostat for 2 seconds followed by the current version of the controller for 2 seconds. Pressing any key on the thermostat illuminates the LCD for 4 seconds.

Temperature Display and Setpoint

The thermostat displays the temperature reading. If the sensor is disconnected or short circuited, the unit displays the sensor's limits. To toggle the temperature scale between ºC and ºF, press ◄ key for EVCB and both the ▲ and ▼ keys for 3 seconds for EFCB.

To display the setpoint, press the ▲ or ▼ key twice. The setpoint appears for 5 seconds. To adjust the setpoint, press the arrow keys while the temperature is displayed. If the setpoint adjustment has been locked, the lock 🔒 symbol appears.

CO₂ (thermostat with CO₂ sensors)

If enabled via the configuration menu, the thermostat displays the CO_2 reading on the first line above the temperature reading. If CO_2 display is enabled, the time will not be displayed.

Humidity Setpoint Display and Adjustment (thermostat with humidity sensors)

If enabled via the configuration menu for EVCB and in a humidity mode other than OFF for EFCB, the thermostat displays the temperature reading for 8 seconds and then displays the humidity reading for 2 seconds. If the sensor is disconnected or short circuited, then the unit displays the sensor's limit.

To access the Humidity setpoint (EFCB only), press the ⊡ key for 5 seconds. The humidity setpoint will be displayed for 5 seconds. To adjust the setpoint press the ▲ and ▼ keys while the setpoint is displayed. The unit will return to normal mode if you do not press any key for 3 seconds. The changed values will be saved automatically.

Control Mode

To access the Control Mode, press the ⊡ key for EVCB and ◀ for EFCB. The Control Mode appears for 5 seconds. Press the ⊡ (EVCB) and ◀ (EFCB) key to scroll through the following control modes. These options can vary depending on the options configured by the installer.

- Auto (Automatic Cooling or Heating)
- Cooling only (on, with cooling symbol)
- Heating only (on, with heating symbol)
- OFF (if it is not disabled in Programming Mode)

Fan Speed Selection Mode (EFCB only)

To access the Fan Speed selection mode, press the ⊡ key. The mode appears for 5 seconds. These options can vary depending on the fan speed signal and auto mode settings. If in No Occupancy mode, the ⊡ button now serves as the override button.

- Automatic speed. Available only if enabled by the installer.
- Low speed
- Medium speed
- High speed

Night Set Back (NSB)

This function is only available if enabled by your installer. If the appropriate digital input contact is triggered, the thermostat enters NSB Mode (the ☽ symbol appears) and uses the NSB setpoints defined in program mode. Press any key to override NSB for the delay defined in program mode (default: 120 minutes). The ☽ symbol flashes to indicate that the NSB mode is overridden (during this time the standard setpoints are used). If the NSB Mode was set to OFF, all outputs will be off for the duration of the period and cannot be overridden.

Occupancy Mode

This function is only available if enabled by your installer. If the appropriate digital input contact is triggered, the thermostat enters Occupancy Mode (the ☽ symbol appears) and uses the NoOcc setpoints defined in program mode. If not locked, no occupancy mode can be overridden for a period by pressing the ⊡ button. Each time you press the ⊡ button, 15 minutes are added to the override (up to a maximum defined in program mode). Press the fan ⊡ button until "0" is displayed to disable the override. The ☽ icon will flash and the remaining override time will be displayed in minutes.

Set Time and Date

1. Press and hold the ◀ button for 5 seconds
2. Use the arrow keys to set the desired value. Press the ⊡ button to save and got to the next step. Press the ◀ button to go to the previous step without saving.
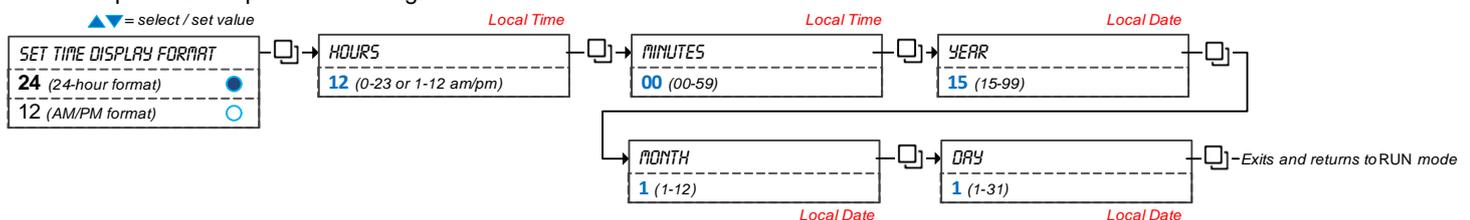
Airflow and Air Supply Temperature

Press and hold the ⊡ button for 5 seconds and use the arrow keys to view the *"AIRFLOW"*, *"AIRFLOW SETPNT"*, *"ACTUAL DAMPER POS PERCENT"* and *"AIR SUPPLY TEMP"*. After 5 seconds without any action, the thermostat returns to operation mode. The air supply temperature appears only if analog input AI1 or AI2 are configured with the AST option.

Notes