TUC2 / TUCH2

Installation & Operation Instructions

Phone: 1-888-967-5224
Website: workaci.com

GENERAL INFORMATION

The TUC2 provides temperature space monitoring with a backlit LCD. The TUCH2 provides temperature and relative humidity monitoring with a backlit LCD. Depending on the configuration, the units can display and output Temperature, Relative Humidity, Setpoint, Fan Speed, System Status, and Occupied/Unoccupied Status.

The TUC2 and TUCH2 supports single temperature sensor operation for several common sensor types and it provides the flexibility to choose from numerous setpoint output options. The TUCH2 supports relative humidity output in all standard analog signals at 2%, 3%, or 5% accuracy. A setup menu provides easy output and display configuration changes.

MOUNTING INSTRUCTIONS

Carefully separate the cover from the base by pulling the cover and base apart towards the bottom of the device. The hex screws(1/16" Allen) may need to be turned in to release the cover. Route the wires through the access hole in the center of the base and screw them into the terminal blocks. Refer to the wiring instructions to make the necessary connections. Attach the base directly to drywall, or to a standard 2" x 4" junction box using the hardware provided.
***Reference FIGURE 2 (p. 2)**

WIRING INSTRUCTIONS
PRECAUTIONS

- **Do not run the temperature sensor wiring in any conduit with line voltage (24/120/230 VAC) if utilizing resistance temperature signal.**
- **Remove power before wiring. Never connect or disconnect wiring with power applied.**
- **When using a shielded cable, ground the shield only at the controller end. Grounding both ends can cause a ground loop.**
- **It is recommended you use an isolated UL-listed class 2 transformer when powering the unit with 24 VAC.**

FIGURE 1: ENCLOSURE DIMENSIONS

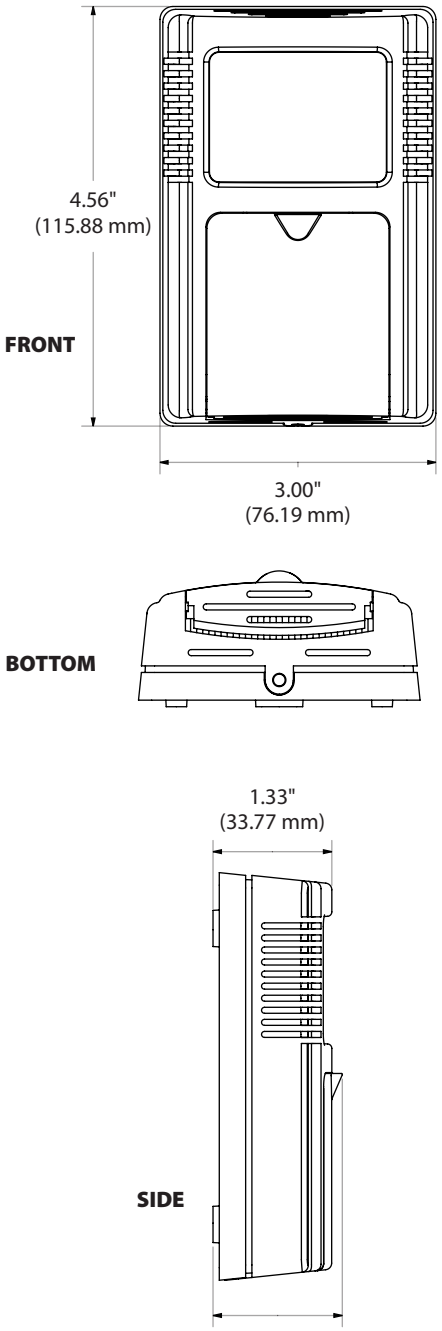

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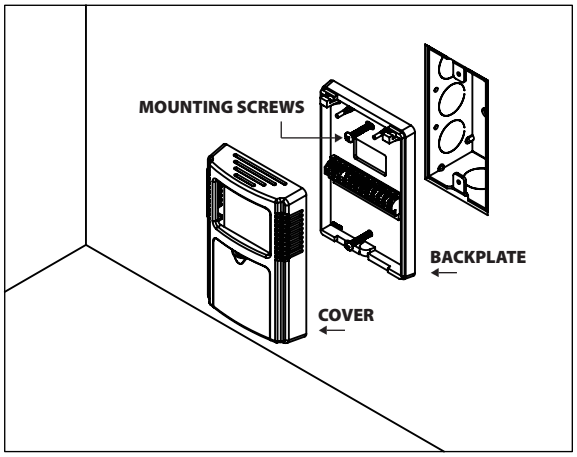
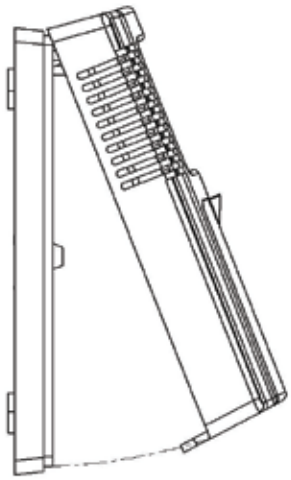
FIGURE 2: MOUNTING





WIRING INSTRUCTIONS *(Continued)*

Failure to wire the devices with the correct polarity when sharing transformers may result in damage to any device powered by the shared transformer.

- **If the 24 VDC or 24VAC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, DC/AC Transorb, Transient Voltage Suppressor (ACI Part: 142583), or diode placed across the coil or inductor. The cathode, or banded side of the DC Transorb or diode, connects to the positive side of the power supply. Without these snubbers, coils produce very large voltage spikes when de-energizing that can cause malfunction or destruction of electronic circuits.**

Carefully separate the cover from the base by pulling the cover and base apart towards the bottom of the device. ACI recommends 16 to 26 AWG twisted pair wires or shielded cable for all sensors. Be sure to connect the cable shield to the ground at the controller only. The number of wires needed depends on the application, with 3 wires minimum required to support the outputs of the TUC2 unit. Generally, one wire is required for each output, one wire for power, and one wire for ground. All outputs are common ground referenced. All wiring must comply with all local and National Electric Codes. After wiring, attach the cover to the base and turn out the hex screw(1/16" Allen) until the cover cannot be removed. A 1/16" Hex driver is needed to secure the cover to the base.

Note: TUC2 units do not have RH or RHS terminal locations loaded.

Attach the required wires to the proper terminal locations. The TUC2 or TUCH2 supports three signal wires, ring, tip, and shield. The number of wires needed depends on the application.

Note: ACI's stats are not two-way communicating. Communication jacks allow the user to query and modify operating parameters of the local room terminal unit from the portable operator's terminal (laptop). This feature allows a technician to commission or service the controller via the sensor.

Temperature Wiring Instructions

Signal wiring must be run separate from low and high voltage wires (24/120/230 VAC). All ACI thermistors and RTD temperature sensors are non-position sensitive.

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WIRING INSTRUCTIONS

(Continued)

Note: If your TUC2 or TUCH2 has any output configured with a 10V or Current output, the voltage at the +V terminal must be at least +18 VDC.

Communication Jack Wiring

Before mounting the base to the wall, make the appropriate connections to the communication jack as described below. The number of wires needed depends on the application. Using the provided wire nuts, attach the required wires to the proper connector pins used by your application.

***Reference FIGURE 4 (right, below)**

TABLE 1: TERMINAL BLOCK CONNECTIONS

TERMINAL BLOCKS	CONNECTIONS
+V	+12 to +40 VDC or 20 to 28 VAC
COM	Ground or signal common, 20 to 28 VAC
T	Temperature sensor signal to controller analog input
TS	Temperature set point signal to controller analog input
O/R	Override signal to controller analog input
F/A	Fan signal to controller analog input
OFB	Occupied feedback signal from controller analog input
S1	3.5 mm phone jack ring / Digital input or output
S2	3.5 mm phone jack tip / Digital input or output
S3	3.5 mm phone jack shield
RH	RH signal to controller analog input
RHS	RH set point or system signal to controller analog input

***Reference FIGURE 3 (below)**

FIGURE 3: TERMINAL BLOCK

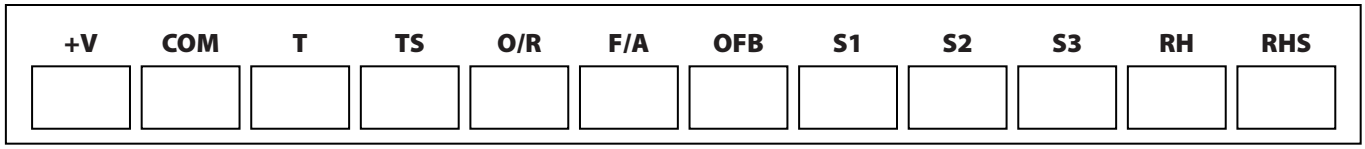


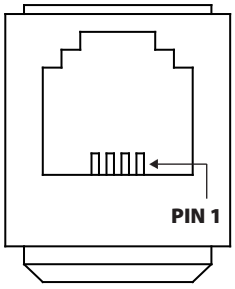
FIGURE 4: COMMUNICATION JACK

(4.1): 4 PIN, 4 CONNECTOR

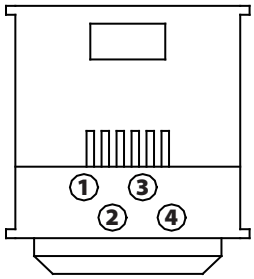
WIRING

#	COLOR
1	BLACK
2	RED
3	GREEN
4	YELLOW

FRONT VIEW



REAR VIEW

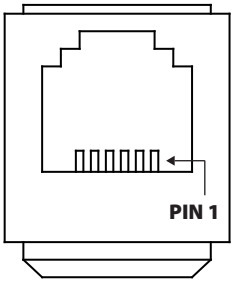


(4.2): 6 PIN, 6 CONNECTOR

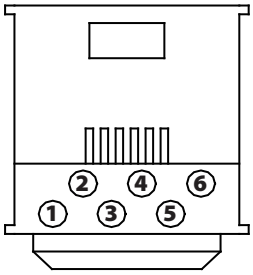
WIRING

#	COLOR
1	BLUE
2	BLACK
3	RED
4	GREEN
5	YELLOW
6	WHITE

FRONT VIEW



REAR VIEW

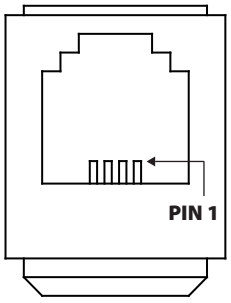


(4.3): 6 PIN, 4 CONNECTOR

WIRING

#	COLOR
1	BLACK
2	RED
3	GREEN
4	YELLOW

FRONT VIEW



REAR VIEW

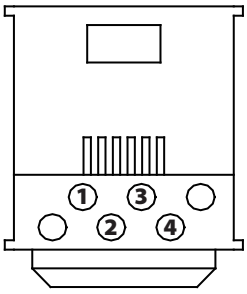


FIGURE 5: 3.5 mm STEREO JACK

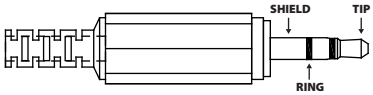


TABLE 2: STEREO JACK CONNECTIONS

TERMINAL BLOCKS	JACK CONNECTIONS
S1 Terminal	Ring
S2 Terminal	Tip
S3 Terminal	Shield

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OPERATION

Keypad

The keypad comes in a 2 button, 3 button, 4 button, 5 button, or 6 button version. A 6 button keypad is needed for fan or system mode. A 3 button or 5 button keypad is needed for override mode.

Normal Mode

The LCD can display temperature, RH, occupied status, system mode, and fan mode. The display configuration can be setup when ordered or changed through the setup menu. The backlight will turn on when the any key is pressed and will turn off 10 seconds after the last key press.

Setpoint Mode

Press ▲ or ▼ to get into setpoint mode and change the setpoint. If a temperature and RH setpoint are used, pressing SELECT or ▲ and ▼ will switch the large numbers between temperature and RH. If temperature is displayed in the large numbers, the temperature setpoint will adjust when ▲ or ▼ is pressed. If RH is displayed in the large numbers, the RH setpoint will adjust when ▲ or ▼ is pressed. If no keys are pressed for 10 seconds the unit will automatically return to normal operation.

Fan/System Mode

Press MODE to change the fan or system setting. The fan or system setting will start blinking after MODE is pressed. Press SELECT or ▲ and ▼ to switch between the fan and system modes. The mode that is blinking will change when ▲ or ▼ is pressed. Press MODE to return to normal operation. If no keys are pressed for 10 seconds the unit will automatically return to normal operation.

Setup Mode

Press and hold SETUP for 5 seconds or press and hold ▲ and ▼ for 10 seconds to enter setup mode. Once in the setup menu, ▲ or ▼ will scroll through the setup menu. Press SELECT or ▲ and ▼ to enter menus. Press SELECT or ▲ and ▼ to save menu selections.

FIGURE 6: KEYPAD

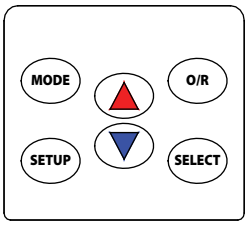


FIGURE 7: DISPLAY OCCUPIED

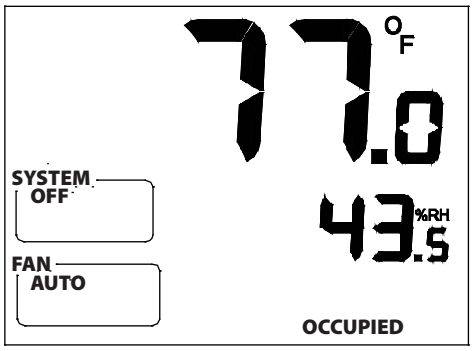


FIGURE 8: DISPLAY SETPOINT

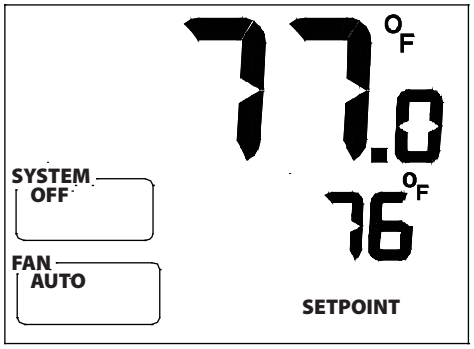
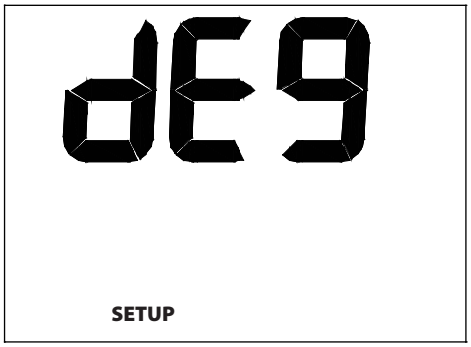


FIGURE 8: DISPLAY SETUP



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OPERATION *(Continued)*

Setup Mode *(Continued)*

Press (SETUP) to return to the previous menu. If no keys are pressed for 15 seconds the unit will automatically return to normal operation.

Setup Menu

The full setup menu with descriptions of all the options is shown on page 6. The setup menu will change depending on the configuration ordered. Only the menu options that apply to the configuration ordered will be shown. For instance, if no Fan or System were ordered then those menu options would not appear.

Setup Lockout

In the setup menu there is an option to lockout setup mode. This can be used if you do not want users to change the setup. Once the setup menu is locked, press (▲) and (▼) for 10 seconds to get into setup mode.

FULL SETUP MENU

The full setup menu with descriptions of all the options are shown on page 5. The setup menu will change depending on the configuration ordered. Only the menu options that apply to the configuration ordered will be shown on the unit.

Press and hold SETUP for 5 seconds or press the UP arrow and DOWN arrow for 10 seconds to enter the Setup mode.

Press UP/DOWN arrows to scroll through top level menus.

Press SELECT to enter into Options Menus

Press UP/DOWN to scroll through Options Menu

Press SELECT to chose and save option in Options Menu

A full size version of this diagram can be found at:
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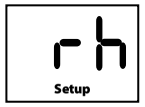
FULL SETUP MENU

NAVIGATE WITH ▲ ▼

Temperature

SELECT

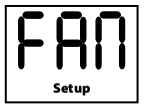


Relative Humidity (RH)

SELECT

LCD Display

SELECT



Fan

SELECT

System

SELECT

Additional

SELECT

TEMPERATURE OPTIONS	Sensor Display	RH OPTIONS	Sensor Display	LCD OPTIONS	Sensor Display	FAN OPTIONS	Sensor Display	SYSTEM OPTIONS	Sensor Display	ADDITIONAL OPTIONS	Sensor Display
°F or °C		**RH Offset**		**Display Setup**		**Fan On or Off**		**System On or Off**		**Setup Lockout**	
Changes the temperature scale and setpoint scale.	°C °F Setup	Adjusts the RH output up to ± 5% RH.	(blank) Setup offset	Changes what is displayed and the location on the display.	dI SP Setup	Hides the fan display.	dI SP Setup	Hides the system display.	dI SP Setup	Locks out the setup menu. To unlock, hold up and down arrows for 5 seconds.	L OC Setup
Offset Adjust *		**RH Test**		**Brightness**		**Fan Keylock**		**System Keylock**		**Factory Reset**	
Adjusts the temperature output up to ± 5°.	(blank) Setup offset	Sets the output to 0%, 50%, & 100% for testing the output.	tE St Setup	Sets the backlight brightness.	br ite Setup	Locks out the user from making fan adjustments.	L OC Setup	Locks out the user from making system adjustments	L OC Setup	Resets the unit to factory defaults.	rE SEt Setup
Output Range		**DA/RA**		**Duration**						**Software Version**	
Changes the temperature output range for analog outputs.	O Ut Setup	Changes the RH output to direct or reverse acting.	dA rA Setup	Sets the length of time the backlight stays on.	du rtn Setup					Displays the sotware version number.	SI On Setup
DA/RA		**Tenths**		**Always On**							
Changes the temperature output to direct or reverse acting for analog outputs.	dA rA Setup	Removes the tenths place from the RH display.	te nth Setup	Sets the setpoint to always be displayed	SP Setup						
Test *		**Setpoint Midpoint**									
Sets the temp output to 40 °F, 72 °F, or 104 °F for the output.	tE St Setup	Sets the RH setpoint midpoint.	(blank) Setup setpoint								
Tenths		**Setpoint Range**									
Removes the tenths place from the temperature display.	tE nth Setup	Sets the RH setpoint range.	rA ngE Setup setpoint								
Setpoint Midpoint		**Setpoint Keylock**									
Sets the temperature setpoint midpoint.	(blank) Setup setpoint	Locks out the user from making setpoint changes.	Lo C Setup								
Setpoint Range		**Setpoint DA/RA**									
Changes the temperature setpoint range.	rA ngE Setup setpoint	Changse the setpoint output to direct or reverse acting for analog outputs.	dA rA Setup setpoint								
Setpoint Keylock		**Setpoint Display**									
Locks out the user from making any setpoint changes.	LO C Setup setpoint	Sets how the setpoint is displayed, either an offset or RH can be displayed.	dI SP Setup setpoint								
Setpoint Calibration											
Selects between two different setpoint outputs, only supported for special orders.	CA L Setup setpoint										
Setpoint DA/RA											
Changes the setpoint output to direct or reverse acting.	dA rA Setup setpoint										
Setpoint Display											
Choose offset or temperature.	dI SP Setup setpoint										

***Note:** Not avalible on units equipped with an RTD output (thermistor or Analog Output only)

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PRODUCT SPECIFICATIONS

SPECIFICATION	
Supply Voltage:	+12-40 VDC (Resistance, 0-1 V, 0-5 V, 0.5-4.5 V) +18-40 VDC (0-10 V, 2-10 V, 0-20 mA, 4-20 mA) 20-28 VAC (All Outputs)
Supply Current:	100 mA max (Current Output Models) 16 mA max (Voltage and Resistive Output Models)
Temperature Accuracy:	+/- 1 °F (+/- 0.56 °C)
Operating Temp. Range:	40 °F to 104 °F (5 °C to 40 °C)
Operating Environment:	32 °F to 122 °F (0 °C to 50 °C) 0 to 95% RH (non- condensing)
RH Measurement Range:	0 to 100% RH (non-condensing)
RH Accuracy at 77 °F:	10% to 95% RH +/-2%. +/-3%. +/-5%
Analog Outputs:	Resistive, 0-1 V, 0.5-4.5 V, 0-5 V, 1-5 V, 0-10 V, 2-10 V, 0-20 mA, 4-20 mA (500 ohms maximum load resistance on current outputs)
Setpoint Accuracy:	+/- 5% Full Scale Output (Resistance) +/- 2% Full Scale Output (Analog)
Analog Setpoint Outputs:	Resistive, 0-1 V, 0.5-4.5 V, 0-5 V, 1-5 V, 0-10 V, 2-10 V, 0-20 mA, 4-20 mA
Setpoint Resolution Increments:	+/-1°F (+/- 0.5 °C) for Temperature or +/-1% for RH
Setpoint Range:	See ordering information
Override, Fan, & System Options:	See ordering information
Communication Jack:	See ordering information
Housing Screw Size / Drive Size:	1/16" Allen screws (2 qty) / 1/16" Hex Driver

WARRANTY

The A/TUC2 Series and the A/TUCH2 Series are covered by ACI's Five (5) Year Limited Warranty, which is located in the front of ACI'S SENSORS & TRANSMITTERS CATALOG or can be found on ACI's website: www.workaci.com.

W.E.E.E. DIRECTIVE

At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with household waste. Do not burn.

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