TUC2 / TUCH2

Model Series   Installation Instructions

PLEASE READ INSTRUCTIONS CAREFULLY BEFORE INSTALLATION!

APPLICATION

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.

INSTALLATION

Precautions

- **REMOVE POWER BEFORE WIRING. NEVER CONNECT OR DISCONNECT WIRING WITH POWER APPLIED. DO NOT ALLOW LIVE WIRES TO TOUCH THE CIRCUIT BOARD.**
- **AN ISOLATION TRANSFORMER IS RECOMMENDED WHEN POWERING THE DEVICE WITH 24VAC.**
- **DO NOT RUN THE TUC2 OR TUCH2 WIRING IN ANY CONDUIT WITH LINE POWERED WIRING.**
- **FAILURE TO WIRE DEVICES WITH THE CORRECT POLARITY WHEN USING A SHARED TRANSFORMER MAY RESULT IN DAMAGE TO ANY DEVICE POWERED BY THE SHARED TRANSFORMER.**

Mounting

Carefully separate the cover from the base by pulling the cover and base apart towards the bottom of the device. The hex screw may need to be turned in to release the cover.
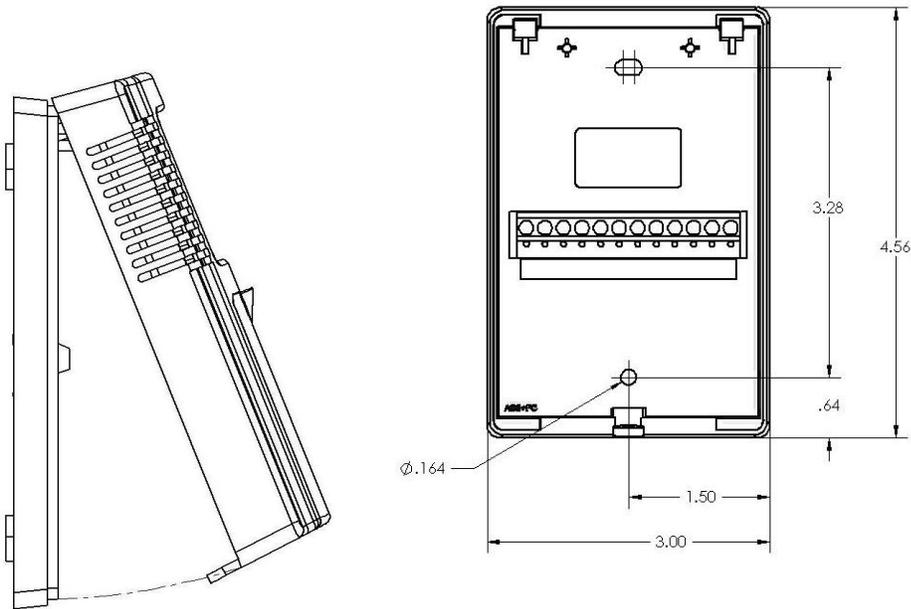
Route the wires through the access hole in the center of the base and screw them into the terminal blocks. Refer to the wiring instructions to make the necessary connections. Attach the base directly to drywall, or to a standard 2" x 4" junction box using the hardware provided. After wiring, attach the cover to the base and turn out the hex screw until the cover cannot be removed.

Wiring

A 16 to 22 AWG shielded cable is recommended for all sensor installations. 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.

Notes:
1. TUC2 units do not have RH or RHS terminal locations loaded.
2. 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.

+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
TS	-	Temperature set point signal to controller
O/R	-	Override signal to controller
F/A	-	Fan signal to controller
OFB	-	Occupied feedback signal from controller
S1	-	3.5mm phone jack ring / Digital input or output
S2	-	3.5mm phone jack tip / Digital input or output
S3	-	3.5mm phone jack shield
RH	-	RH signal to controller
RHS	-	RH set point or system signal to controller

+V	COM	T	TS	O/R	F/A	OFB	S1	S2	S3	RH	RHS
□	□	□	□	□	□	□	□	□	□	□	□

Communication Jack Wiring

Modular Telephone Jack

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.

4 Pin 4 Connector

FRONT VIEW: REAR VIEW:

WIRE NUMBER:	WIRE COLOR:
1	BLK
2	RED
3	GRN
4	YEL

PIN 1

6 Pin 6 Connector

FRONT VIEW: REAR VIEW:

WIRE NUMBER:	WIRE COLOR:
1	BLU
2	BLK
3	RED
4	GRN
5	YEL
6	WHT

PIN 1
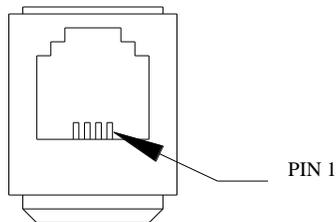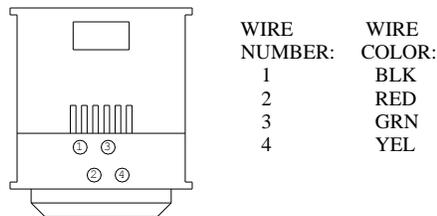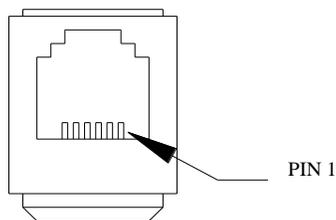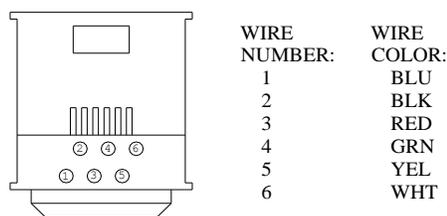
6 Pin 4 Connector

FRONT VIEW: REAR VIEW:

PIN 1
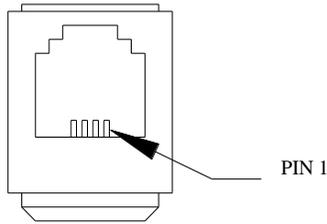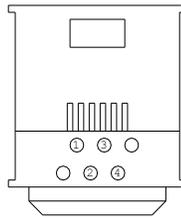
WIRE NUMBER:	WIRE COLOR:
1	BLK
2	RED
3	GRN
4	YEL

3.5mm Stereo Jack

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.

Shield   Ring   Tip
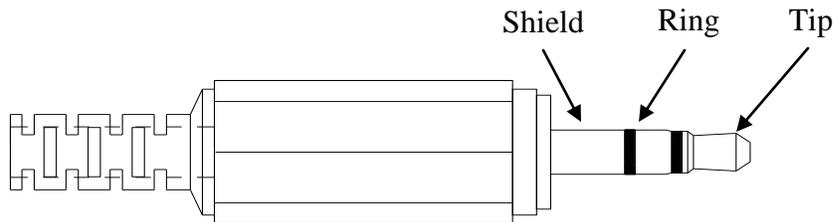
Terminal Block:	Jack Connections:
S1 Terminal	Ring
S2 Terminal	Tip
S3 Terminal	Shield

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.
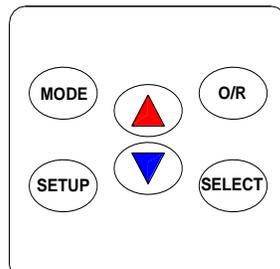
Normal Mode

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.
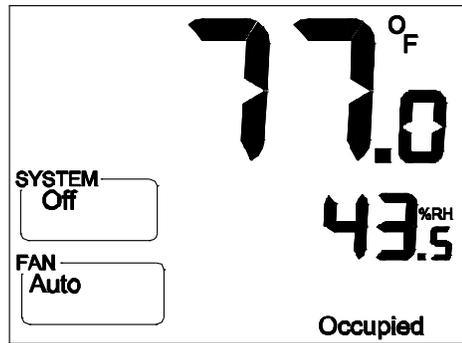
Setpoint Mode

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.
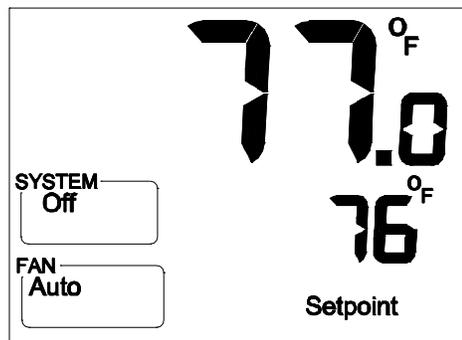
Fan/System Mode

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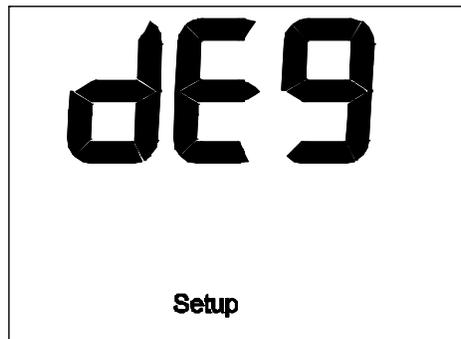
Setup Menu

The full setup menu with descriptions of all the options is shown on page 7. 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.
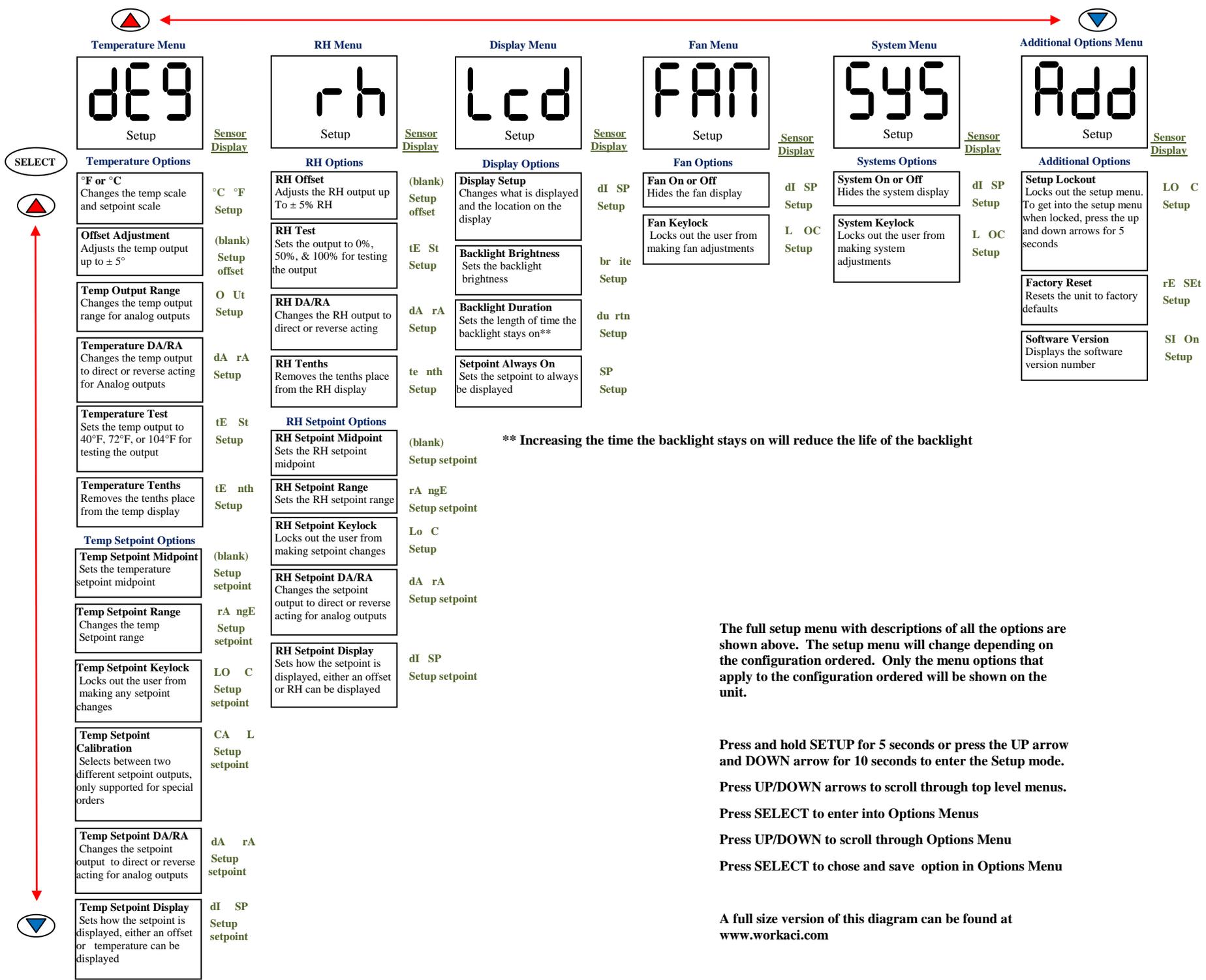
Temperature Menu

dE9

Setup

Temperature Options

°F or °C
Changes the temp scale and setpoint scale

Sensor Display: °C °F Setup

Offset Adjustment
Adjusts the temp output up to ± 5°

Sensor Display: (blank) Setup offset

Temp Output Range
Changes the temp output range for analog outputs

Sensor Display: O Ut Setup

Temperature DA/RA
Changes the temp output to direct or reverse acting for Analog outputs

Sensor Display: dA rA Setup

Temperature Test
Sets the temp output to 40°F, 72°F, or 104°F for testing the output

Sensor Display: tE St Setup

Temperature Tenths
Removes the tenths place from the temp display

Sensor Display: tE nth Setup

Temp Setpoint Options

Temp Setpoint Midpoint
Sets the temperature setpoint midpoint

Sensor Display: (blank) Setup setpoint

Temp Setpoint Range
Changes the temp Setpoint range

Sensor Display: rA ngE Setup setpoint

Temp Setpoint Keylock
Locks out the user from making any setpoint changes

Sensor Display: LO C Setup setpoint

Temp Setpoint Calibration
Selects between two different setpoint outputs, only supported for special orders

Sensor Display: CA L Setup setpoint

Temp Setpoint DA/RA
Changes the setpoint output to direct or reverse acting for analog outputs

Sensor Display: dA rA Setup setpoint

Temp Setpoint Display
Sets how the setpoint is displayed, either an offset or temperature can be displayed

Sensor Display: dI SP Setup setpoint

RH Menu

rh

Setup

RH Options

RH Offset
Adjusts the RH output up To ± 5% RH

Sensor Display: (blank) Setup offset

RH Test
Sets the output to 0%, 50%, & 100% for testing the output

Sensor Display: tE St Setup

RH DA/RA
Changes the RH output to direct or reverse acting

Sensor Display: dA rA Setup

RH Tenths
Removes the tenths place from the RH display

Sensor Display: te nth Setup

RH Setpoint Options

RH Setpoint Midpoint
Sets the RH setpoint midpoint

Sensor Display: (blank) Setup setpoint

RH Setpoint Range
Sets the RH setpoint range

Sensor Display: rA ngE Setup setpoint

RH Setpoint Keylock
Locks out the user from making setpoint changes

Sensor Display: Lo C Setup

RH Setpoint DA/RA
Changes the setpoint output to direct or reverse acting for analog outputs

Sensor Display: dA rA Setup setpoint

RH Setpoint Display
Sets how the setpoint is displayed, either an offset or RH can be displayed

Sensor Display: dI SP Setup setpoint

Display Menu

Lcd

Setup

Display Options

Display Setup
Changes what is displayed and the location on the display

Sensor Display: dI SP Setup

Backlight Brightness
Sets the backlight brightness

Sensor Display: br ite Setup

Backlight Duration
Sets the length of time the backlight stays on**

Sensor Display: du rtn Setup

Setpoint Always On
Sets the setpoint to always be displayed

Sensor Display: SP Setup

Fan Menu

FAN

Setup

Fan Options

Fan On or Off
Hides the fan display

Sensor Display: dI SP Setup

Fan Keylock
Locks out the user from making fan adjustments

Sensor Display: L OC Setup

System Menu

SYS

Setup

Systems Options

System On or Off
Hides the system display

Sensor Display: dI SP Setup

System Keylock
Locks out the user from making system adjustments

Sensor Display: L OC Setup

Additional Options Menu

Add

Setup

Additional Options

Setup Lockout
Locks out the setup menu. To get into the setup menu when locked, press the up and down arrows for 5 seconds

Sensor Display: LO C Setup

Factory Reset
Resets the unit to factory defaults

Sensor Display: rE SEt Setup

Software Version
Displays the software version number

Sensor Display: SI On Setup

** Increasing the time the backlight stays on will reduce the life of the backlight

The full setup menu with descriptions of all the options are shown above. 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 www.workaci.com

Specifications

Supply Voltage	+12-40VDC (Resistance, 0-1V, 0-5V, 0.5-4.5V) +18-40VDC (0-10V, 2-10V, 0-20mA, 4-20mA) 20-28 VAC (All Outputs)
Supply Current	100mA max (Current Output Models) 16mA 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, 0-1V, 0.5-4.5V, 0-5V, 1-5V, 0-10V, 2-10V, 0-20mA, 4-20mA (500 ohms maximum load resistance on current outputs)
Setpoint Accuracy	+/- 5% Full Scale Output (Resistance) +/- 2% Full Scale Output (Analog)
Analog Setpoint Outputs	Resistive, 0-1V, 0.5-4.5V, 0-5V, 1-5V, 0-10V, 2-10V, 0-20mA, 4-20mA
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
Approvals	RoHS, REACH

Warranty Statement

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 AND TRANSMITTERS CATALOG or can be found on ACI's web site, which is: www.workaci.com