PRECAUTIONS

- **DO NOT RUN THE WIRING IN ANY CONDUIT WITH LINE VOLTAGE (24/120/230 VAC).**
- **THE OPTIONAL ACI/LCD MUST BE POWERED WITH EITHER A 24 VAC OR 9-35 VDC POWER SOURCE.**

MOUNTING INSTRUCTIONS

Separate the cover from the base. The ACI/LCD is shipped as a two-piece unit. The LCD Module must be unplugged from the 10 pin connector before the base of the sensor may be mounted. Attach the base directly to the wall or to a standard 2" x 4" junction box using the (2) #6-32 x 1" screws provided.

Take care when mounting. Check local code for mounting height requirements. Typical mounting heights are 48-60" (1.2-1.5 m) off the ground and at least 1.5' (0.5 m) from the adjacent wall. The sensor should be mounted in an area where air circulation is well mixed and not blocked by obstructions - see **FIGURE 2** (next page).

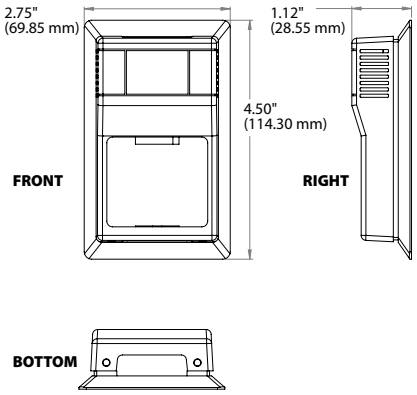
For optimal readings, follow these tips:

- Avoid confined areas such as shelves, closed cabinets, closets, and behind curtains.
- Eliminate and seal all wall and conduit penetrations. Air migration from wall cavities may alter temperature readings.
- Do not install near heat sources, eg: lamps, radiators, direct sunlight, copiers, chimney walls, walls concealing hot-water pipes.
- A thermally-insulated backing should be used when fitting to solid walls (concrete, steel, etc.). *ACI part: A/ROOM-FOAM-PAD*
- Do not install on external walls.
- Avoid air registers, diffusers, vents, and windows.

Refer to the wiring instructions (p. 1-2) to make necessary connections.

FIGURE 1: ROOM DIMENSIONS

ROOM, VERSION 1 [R]



MOUNTING *(Continued)*

LCD Installation

The LCD Module should then be gently inserted into the 10 pin connector. Tighten the cover down, using the (2) 1/16" Allen screws located in the bottom of the housing. Take care to make sure the LCD module lines up with the enclosure LCD window. The LCD module can be bent if adjustments are needed. A 1/16" Hex driver is needed to secure the cover to the base.

WIRING INSTRUCTIONS

ACI recommends 16 to 26 AWG twisted pair wires or shielded cable for all sensors. Signal wiring must be run separate from low and high voltage wires (24/120/230 VAC). All ACI thermistors and RTD temperature sensors are both non-polarity and non-position sensitive. All thermistor type room units are supplied with a two-pole terminal block. The number of wires needed depends on the application.

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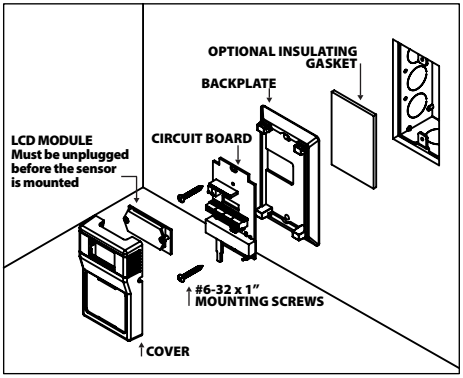
WIRING INSTRUCTIONS
(Continued)

All wiring must comply with all local and National Electric Codes.

Note: When using a shielded cable, be sure to connect only (1) end of the shield to ground at the controller. Connecting both ends of the shield to ground may cause a ground loop. When removing the shield from the sensor end, make sure to properly trim the shield to prevent any chance of shorting.

FIGURE 2: MOUNTING



The ACI/LCD must be powered with either a 24 VAC or 9-35 VDC power source. The ACI/LCD uses a half-wave bridge rectifier to convert the AC voltage to a useable DC voltage. Two separate cables must be pulled for the ACI/LCD to work properly. One 2 conductor 18 to 22 AWG shielded cable for the supply voltage and a second 18 to 22 AWG 3 to 8 conductor shield cable for the Temperature sensor, Set Point and Override Outputs to the controller.

Note: When wanting to use a Single Common for all (3) of the Outputs on a Separate Input Sensor, connect one wire in series with one of the Sensor, Setpoint, and Override Terminals. These three terminals may then be tied to the common of the controller with one wire, while the other three terminals would need to be connected to the proper Analog Inputs on your controller.

FIGURE 3: LCD RJ11 REV1

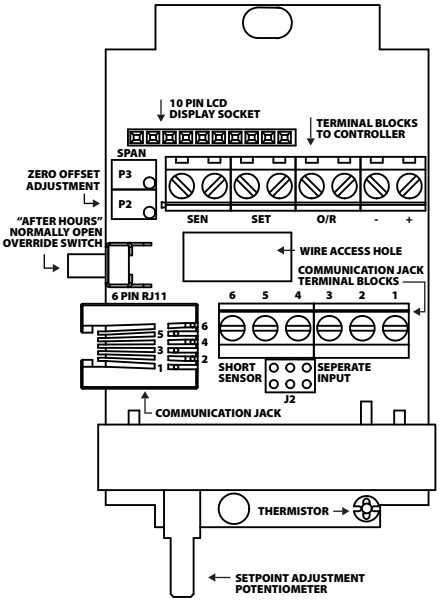


TABLE 1: TERMINAL BLOCK CONNECTIONS

TERMINALS	CONNECTIONS
SEN	Temperature sensor signal to controller analog input
SEN	Temperature sensor signal common to controller analog input
SET	Temperature set point signal to controller analog input
SET	Temperature set point signal common to controller analog input
O/R	Override signal to controller analog input
O/R	Override signal common to controller analog input
- (LCD only)	24VAC or 9-35VDC Ground/Common
+ (LCD only)	24VAC or 9-35VDC

TABLE 2: COMMUNICATION JACK CONNECTIONS

COM. TERM. BLOCKS	CONNECTIONS
1	Internally joined to Communication Jack Pin #1
2	Internally joined to Communication Jack Pin #2
3	Internally joined to Communication Jack Pin #3
4	Internally joined to Communication Jack Pin #4
5	Internally joined to Communication Jack Pin #5
6	Internally joined to Communication Jack Pin #6

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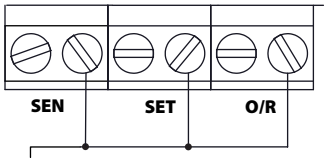
FIGURE 5: COMMON OUTPUT TO CONTROLLER



ANALOG SIGNAL COMMON TO CONTROLLER

WIRING INSTRUCTIONS *(Continued)*

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.

SETPOINT CONTROL

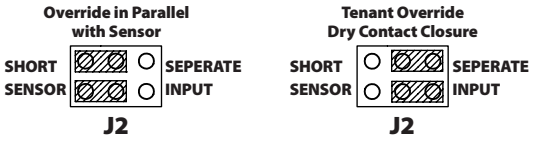
Adjust slider at bottom of housing for set point control. Slide to right to increase set point temperature. Slide to left to decrease temperature control. Units can be setup from factory for Direct Acting (resistance increases when adjusted to right), or Reverse Acting (resistance decreases when adjusted to right).

OVERRIDE ADJUSTMENTS

Override will be set to Override Short Sensor (default). Adjust J3 Jumpers to change.

***Reference FIGURE 4 (right)**

FIGURE 4: OVERRIDE OPTIONS JUMPER SETTINGS



TROUBLESHOOTING

PROBLEM	SOLUTION(S)
Sensor reading is incorrect	• Verify sensor wiring to controller is not damaged and has continuity. • Verify sensor or wires are not shorted together. • Verify controller is setup for correct sensor curve. • Disconnect wires from sensor terminal block, tighten terminal block screws down, and take a resistance (ohm) reading with a multimeter. • Compare the resistance reading to the Temperature Vs Resistance Curves online: *http://www.workaci.com/content/thermistor-curves-0* • Verify proper mounting location to confirm no external factors are affecting reading.
Sensor reads infinity/very high resistance	• Sensor or wires are open.
Sensor reads low resistance	• Sensor or wires are shorted together.
Erratic readings	• Condensation on PCB board • Bad wire connections.

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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PRODUCT SPECIFICATIONS

SENSOR NON-SPECIFIC INFORMATION		
Number Temperature Sensing Points:	One	
Housing Screw Size / Drive Size:	1/16" Allen screws (2 qty) / 1/16" Hex Driver	
Override Option:	Short Thermistor (Default); Field (Jumper) Selectable "Dry Contact" Closure (Separate Input)	
Operating Temperature Range:	1.5 to 50 °C (35 to 122 °F)	
Storage Temperature Range:	-40 to 65 °C (-40 to 149 °F)	
Operating Humidity Range:	10 to 95% RH, non-condensing	
Connections | Wire Size:	Screw Terminal Blocks (Non-Polarity Sensitive) | 16 (1.31 mm^2) to 26 AWG (0.129 mm^2)	
Terminal Block Torque Rating:	0.5 Nm (Minimum); 0.6 Nm (Maximum)	
Enclosure Material | Color:	**"-R2" Enclosure:** ABS Plastic | White, UL94-HB	
	"R" Enclosure: ABS Plastic | Beige UL94-HB	
THERMISTOR		
Sensor Output @ 25 °C (77 °F):	**A/1.8K:** 1.8 KΩ nominal **A/3K:** 3 KΩ nominal **A/AN (Type III):** 10 KΩ nominal **A/AN-BC:** 5.238 KΩ nominal **A/CP (Type II):** 10 KΩ nominal	**A/CSI:** 10 KΩ nominal **A/10KS:** 10 KΩ nominal **A/10K-E1:** 10 KΩ nominal **A/20K:** 20 KΩ nominal **A/100KS:** 100 KΩ nominal
Accuracy @ 0-70 °C (32 - 158 °F):	**A/1.8K Series:** +/- 0.5 °C @ 25 °C (77 °F) and (+/-1.0 °C) (+/-1.8 °F)	**A/10K-E1 Series:** +/- 0.3 °C (+/- 0.54 °F) **All Else:** +/- 0.2 °C (+/- 0.36 °F)
PLATINUM		
Sensor Output @ 0 °C (32 °F):	**A/100:** 100 Ω nominal	**A/1K:** 1 KΩ nominal
Accuracy:	+/- 0.06% Class A (Tolerance Formula: +/- °C = (0.15 °C + (0.002 * |t|)) where |t| is the absolute value of Temperature above or below 0 °C in °C)	
	@ 0 °C (32 °F): +/- 0.15 °C (+/- 0.27 °F)	**@ 50 °C (122 °F):** +/- 0.25 °C (+/- 0.45 °F)
BALCO		
Sensor Output @ 21.1 °C (70 °F):	1 KΩ nominal	
Accuracy:	**@ 21.1 °C (70 °F):** +/- 1%	
NICKEL		
Sensor Output @ 21.1 °C (70 °F):	1 KΩ nominal **@ 0 °C (32 °F):** +/- 0.4 °C (+/- 0.72 °F)	**@ 54.4 °C (130 °F):** +/- 0.56 °C (+/- 1.00°F)
Accuracy:	**@ 21.1 °C (70 °F):** +/- 0.17 °C (+/- 0.34 °F)	
LCD SPECIFICATIONS		
LCD Display Supply Voltage:	+9 to 35 VDC / 24 VAC (50/60 Hz)	
LCD Display Supply Current/VA:	< 4 mA / 0.12 VA	
LCD Display Accuracy:	+/- 2°F or +/- 2°C @ 71°F (21.5°C) Typical	
LCD Display Descriptor:	°F (Fahreinheit) or °C (Celsius)	
LCD Display Life Expectancy:	50000 Hours Minimum	

WARRANTY

The ACI Room Series temperature sensors 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.

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