

The RAD is a complete remote angle monitoring system capable of coordinating multiple sensors from one display.



Photo A: RAD2-70-E2 ( $\pm 70^\circ$ , dual remote sensor boxes, horizontal mount)



Photo B: RAS2-70-D0 LCD display box + CS9 remote sensor.

### Features

- Hand Held Display Box
- Rugged Remote Sensors
- XLR Cord Plug Connectors
- $\pm 30^\circ$  and  $\pm 70^\circ$  Measuring Ranges
- Non-symmetrical Ranges Available
- Angle Displayed in Degrees
- 0.1° or 0.01° LCD Display Resolution
- 9V Battery Powered
- ON/OFF Switch
- Low Battery Warning
- Relative Zero or Relative Difference
- Minimum/Maximum Angle Display
- RS232 Output Available

### Applications

- Sound System Remote Alignment
- Line Array/Speaker Positioning/Installation
- Remote Platform Leveling

### Description

The (RAD) Remote Angle Display was specially designed for line array/speaker positioning.

Available as a single line display reading one sensor at a time (RAS2, see Photo B) or a dual line display to measure two sensors at the same time (RAD2, see Photo A), multiple sensors can be used interchangeably with one display box to coordinate multiple remote locations.

Each system includes a display box with a number of matched sensors; typically 1, 2, or 4 sensors (see Photos C & D). Both the sensor unit and the display box use standard type audio XLR cord plug connectors.

The RAD system has two sensor options (see Figures 3 & 4) in ranges of  $\pm 30^\circ$  ( $60^\circ$  total range) or  $\pm 70^\circ$  ( $140^\circ$  total range). The display can be calibrated to anywhere within the total range of the sensors specified. For example, a  $\pm 70^\circ$  sensor can be scaled to read  $+50^\circ$  to  $-90^\circ$ . (Typical V-DOSC configuration).

### MIN/MAX Button:

The MIN/MAX function provides the smallest and largest angle the device has sensed since it was last reset.

### Relative Zero (REL) Button:

*Standard on all display models:* The REL button allows the user to set a new zero position after the RDI is mounted. Press the REL button and release and the display will read REL ON \* for 1 sec then 0.00° \*. The ( \* ) indicates the measurement is not referenced to the true calibrated 0, but a referenced zero. The MIN/MAX angles are now referenced to the new referenced zero. Press the REL button again and the display will read REL OFF for 1 second then return to the true calibrated zero. The MIN/MAX angles are now again referenced to the true calibrated zero.

### Relative Difference (REL) Button:

*Available for RAD2 only:* The REL button is programmed to give the difference between the TOP and BOTTOM sensors. A RAD2 with this feature would display the following: SENSOR 1/SENSOR 2: SENSOR 1 would be placed on top of the speaker array = TOP LINE OF DISPLAY = TOP CONNECTOR on side of box; SENSOR 2 will be placed on the bottom of the speaker array = BOTTOM LINE OF DISPLAY = BOTTOM CONNECTOR on side of box.



# RAD Series

## Remote Angle Display for Sound Engineers

Input Parameters	
<b>Sensor Measuring Ranges</b>	±70° (standard), ±30° (optional)
<b>Optional Non-Symmetrical</b>	+50/-90° (other scaling options available)
<b>Power Supply</b>	9 VDC Battery (Standard) Wall adapter (110 or 240VAC) or 8-30VDC Non-regulated (Optional)
<b>Remote Sensor</b>	Option A (N+Nema, see <i>Figure 3</i> ) Option B (CS9, see <i>Figure 4</i> )
Display Parameters	
<b>Output Units</b>	Degrees
<b>LCD Display</b>	Dual Line (RAD2, see <i>Figure 1</i> ) Single Line (RAS2, see <i>Figure 2</i> )
<b>Display Resolution</b>	0.1° (0.01° optional)
<b>Min / Max Readings - Standard</b>	Stored in Volatile Memory
<b>Relative Zero - Standard</b>	Stored in Volatile Memory
<b>Relative Difference - Optional</b>	Stored in Volatile Memory
Optional Features (request only)	
<b>Display LEDs</b>	Activated per customer request only* (1 green, 1 yellow, 1 red)
<b>Open Collector Outputs</b>	Up to 4 provided
<b>Open Collector Current</b>	1A each
<b>Switch Function</b>	Normally Open or Normally Closed
<b>Switch Trip Delay</b>	0 to 16 seconds
<b>Switch Trip Angles</b>	Anywhere within sensor range
Optional RS232 Output (request only)	
<b>RS232 Output</b>	Decimal Output
<b>Baud Rate</b>	9600
<b>Data Bits</b>	8
<b>Parity</b>	None
<b>Stop Bits</b>	1
Display Mechanical Characteristics	
<b>Display Housing</b>	Die Cast Aluminum – Painted Black
<b>Mounting Holes</b>	Two M4 x 0.7 or Two #8-32
<b>Outline Dimensions</b>	4.53" x 3.54" x 2.21" (115 x 90 x 56mm)
<b>Electrical Connection</b>	Female XLR Cord Plug Receptacle (Switchcraft PN D3F)
<b>Display Box Weight</b>	16 ounces
<b>Operating Temperature</b>	-20°C to +70°C
<b>Storage Temperature</b>	-40°C to +85°C

\*LED trip angles can only be set within the measuring range of the device and must match the open collector switch outputs if they are chosen.

XLR Connecting Wire	
<b>Pin 1</b>	Sensor Ground
<b>Pin 2</b>	Sensor Signal Output
<b>Pin 3</b>	Sensor Supply Voltage

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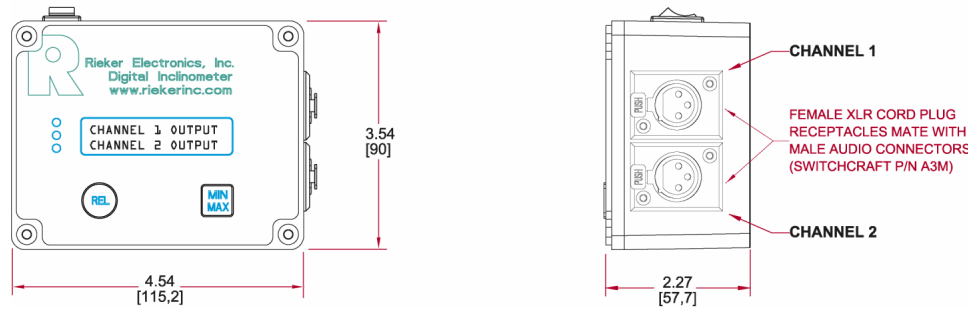
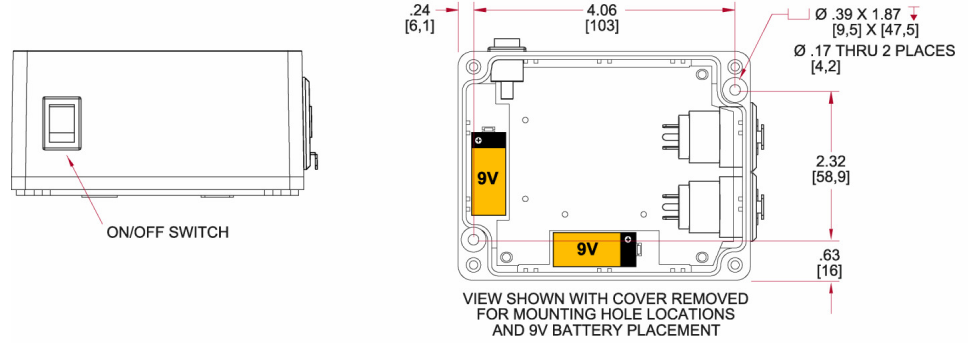


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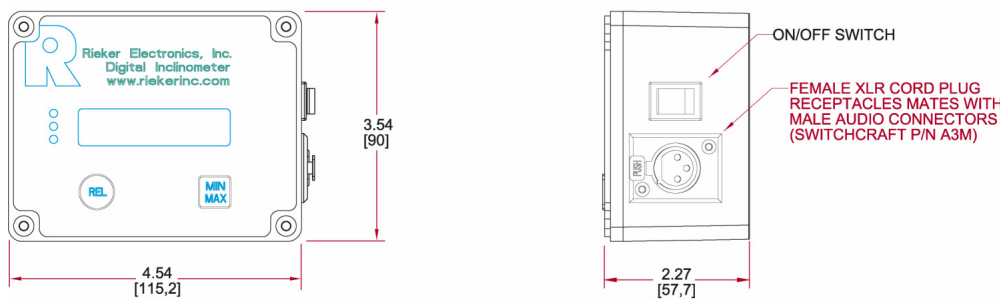
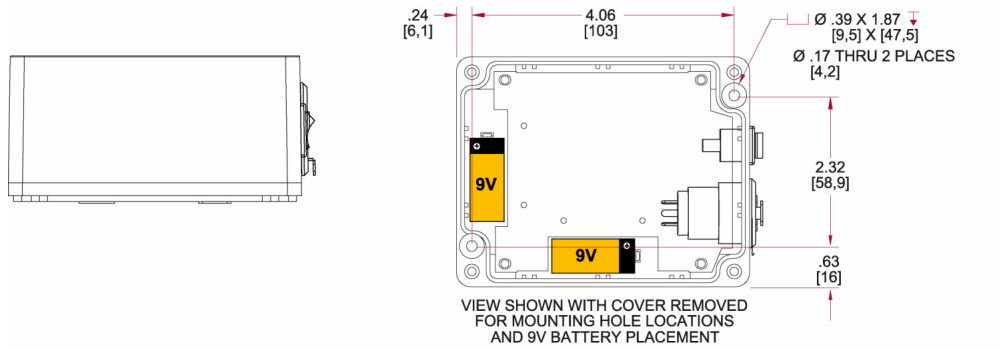
# RAD Series

## Remote Angle Display for Sound Engineers

**Figure 1:** RAD2 Dimensions (inches [mm])  
Dual Line LCD Display Box - battery operated, hand-held two (2) sensor "reader".



**Figure 2:** RAS2 Dimensions (inches [mm])  
Single Line LCD Display Box - battery operated, hand-held one (1) sensor "reader".



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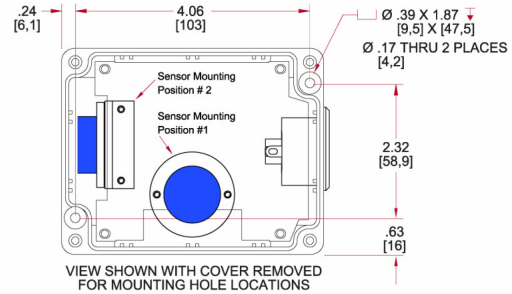
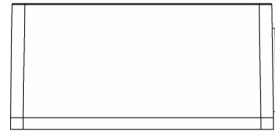
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## Remote Angle Display for Sound Engineers

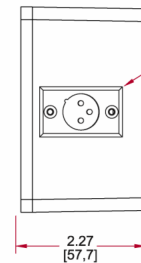
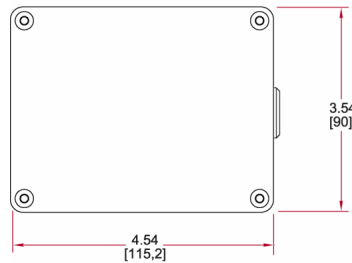
**Figure 3:** Remote Inclinator Sensor Option A Dimensions (inches [mm])



Photo C: Remote Sensor Box (Nema 4 protection) Vertical Mount



VIEW SHOWN WITH COVER REMOVED FOR MOUNTING HOLE LOCATIONS



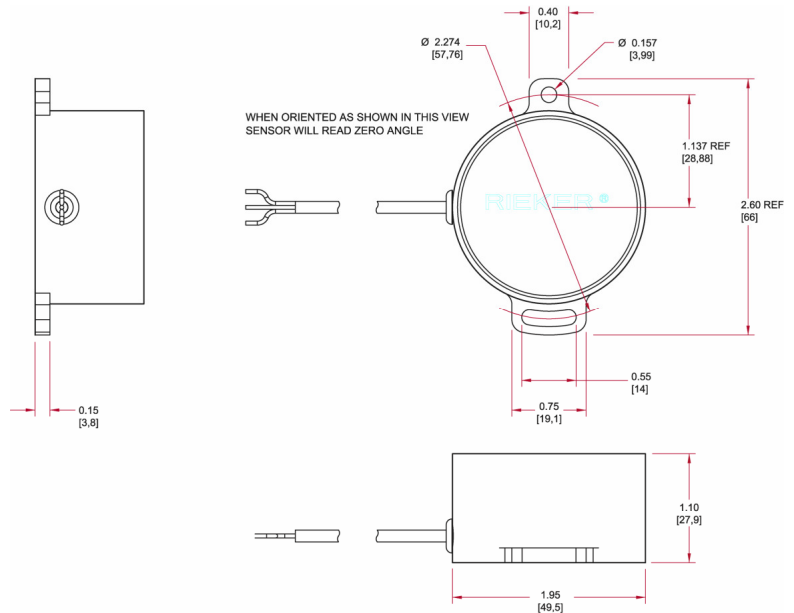
MALE XLR CORD PLUG RECEPTACLES MATES WITH FEMALE AUDIO CONNECTOR (SWITCHCRAFT P/N A3F)

**Sensor Option A:** “Sensor+Nema-4 Box”; internal sensor is mounted and calibrated into a rugged Nema-4 box for extra protection, cable strain relief, and more flexible mounting position. Vertical or horizontal mounting is specified at time of order. Includes XLR connector built into box. Bolt on or mount with gaff tape or heavy Velcro for easy removal for transport and storage.

**Figure 4:** Remote Inclinator Sensor Option B Dimensions (inches [mm])



Photo D: CS9 Remote Inclinator Sensor with XLR connector.



**Sensor Option B:** “CS9”; Solid Zinc metal housing, ±70° range, small footprint, sturdy and extra rugged, screw or bolt to bumper or speaker frame for a more permanent mounting. Includes XLR connector. Mounts vertically.

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