RAD AV Series

Remote Angle Display for Sound Engineers

The RAD is a portable remote angle display monitoring system for line array alignment, capable of coordinating multiple sensors from one LCD reader.

Photo A: RAD2 (±70º, dual line display with remote sensor boxes - horizontal mount)

Features

- Hand Held Display Box
- Rugged Remote Sensors
- XLR Cord Plug Connectors
- ±70˚ Measuring Range
- Non-symmetrical Ranges Available
- Angle Displayed in Degrees
- 0.1˚ LCD Resolution
- Battery Powered
- ON/OFF Switch
- Low Battery Warning
- Relative Zero or Relative Difference
- Minimum/Maximum Angle Display
- RS232 Output Optional

Applications

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

Description

The (RAD) Remote Angle Display is a precision instrument designed for line array speaker positioning – allowing the sound engineer to quickly establish optimum position of the PA system during installation.

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 stacks.

The dual line RAD allows the installer to view to line arrays simultaneously and is typically sold as a set (ie (1) reader matched to (2) remote sensors).

For maximum flexibility, the single line reader works best for production companies needing to permanently install the remote sensors into various bumpers or rigs, while maintaining a smaller number of readers on the shelf. No more worrying about cross compatibility issues, especially when setting up multiple venues.

The RAD system has two sensor options (*see Figures 2 & 3*). A typical configuration includes one LCD Reader box with a number of matched sensors; typically 2 or 4 sensors. Both sensor and reader use standard type XLR connectors.

Custom angle range scaling available. For example, a ±70˚ sensor can be scaled to read +50˚ to -90˚. (Typical V-DOSC configuration).

Rieker Rugged. Rieker Reliable.™

RIEKER INC • 34 MOUNT PLEASANT ROAD • ASTON • PA • 19014 • USA

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INPUT PARAMETERS	
Sensor Measuring Range	±70°
Optional Non-Symmetrical	+50/-90º
Power Supply (default)	9 VDC Battery
Power Supply (optional)	Wall adapter (110 or 240VAC) or 8-30VDC Non-regulated
Remote Sensor Option A	"Black Box" Nema 4 Housing
Remote Sensor Option B	CS9 IP67 Housing
LCD DISPLAY PARAMETERS	
Output Units	Degrees
LCD Display RAD	Dual Line (see *Figure 1A*)
LCD Display RAS	Single Line (see *Figure 1B*)
LCD Resolution	0.1°
Min / Max Readings - Standard	Stored in Volatile Memory
Relative Zero - Standard	Stored in Volatile Memory
Relative Difference - Optional	Stored in Volatile Memory
OPTIONAL FEATURES	
Display LEDs	Activated per customer request only* (1 green, 1 yellow, 1 red)
Open Collector Outputs	Up to 4 provided
Open Collector Current	1A each
Switch Function	Normally Open or Normally Closed
Switch Trip Delay	0 to 16 seconds
Switch Trip Angles	Anywhere within sensor range
OPTIONAL RS232 OUTPUT	
RS232 Output	Decimal Output
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1
MECHANICAL CHARACTERISTICS - DISPLAY/REMOTE BOX	
Display Housing	Die Cast Aluminum – Painted Black
Mounting Holes	Two M4 x 0.7 or Two #8-32
Outline Dimensions	4.53" x 3.54" x 2.21" (115 x 90 x 56mm)
Electrical Connection	Female XLR Cord Plug Receptacle (Switchcraft PN D3F)
Display Box Weight	16 ounces
Operating Temperature	-20℃ to +70℃
Storage Temperature	-40℃ to +85℃
XLR CONNECTING WIRE - DISPLAY/REMOTE BOX	
Pin 1	Sensor Ground
Pin 2	Sensor Signal Output
Pin 3	Sensor Supply Voltage

*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.

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

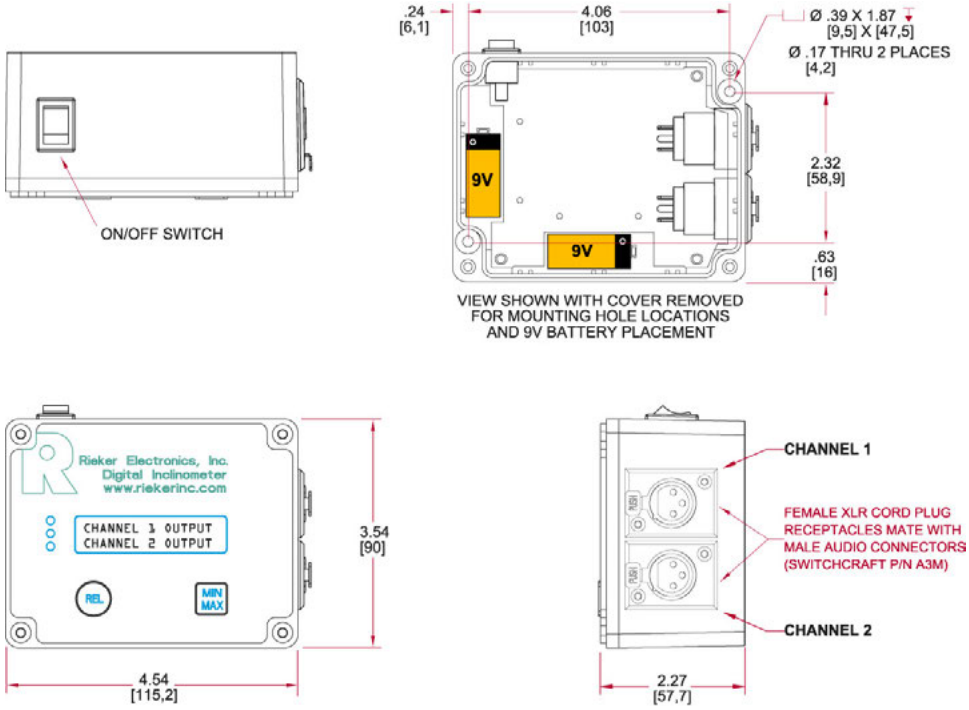
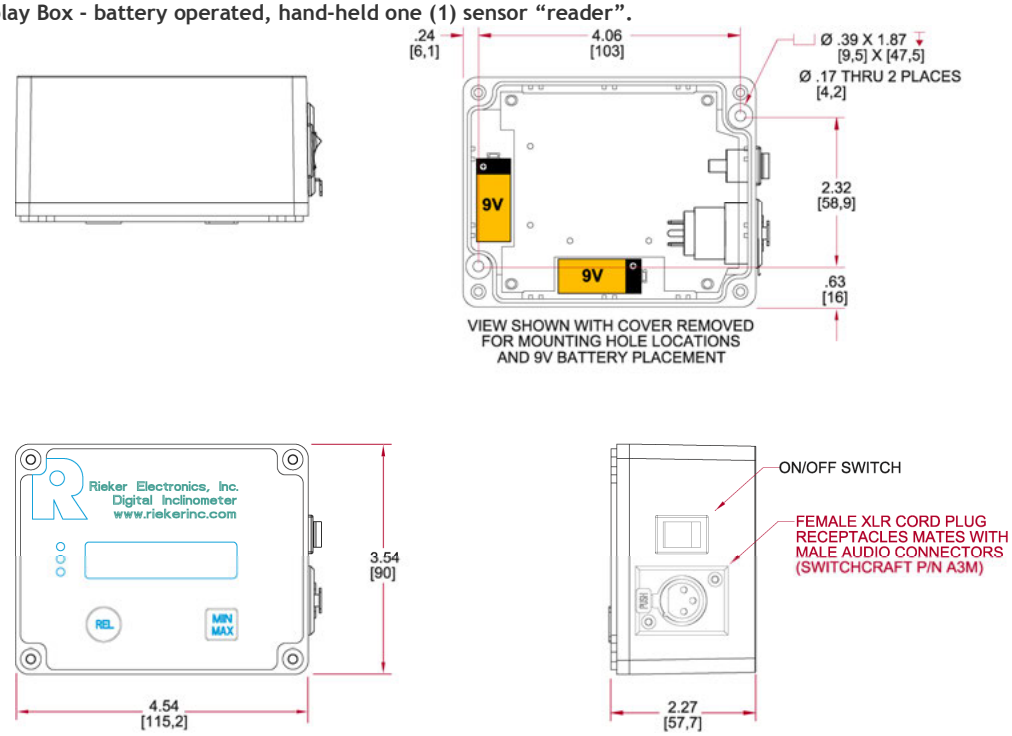


FIGURE 1B: **RAS2 LCD Display "Reader" Box** Dimensions (inches [mm])
Single Line LCD Display Box - battery operated, hand-held one (1) sensor "reader".



RAD/RAS Button Functions

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.

REMOTE SENSOR OPTION A: "Black Box"

Description

Tilt angle sensor is mounted and calibrated into a rugged Nema-4 rated housing, which protects the electronics, provides cable strain relief, and allows either horizontal or vertical mounting.

Connection

(1) XLR connector is built into box for easy connection.

Mounting

Bolt or screw on for permanent mounting onto the frame or mount with gaff tap, heavy Velcro, or magnet for easy removal for transport and storage.

FIGURE 2A: **Remote Inclinometer Dimensions (inches [mm]) - (Horizontal Mount)**

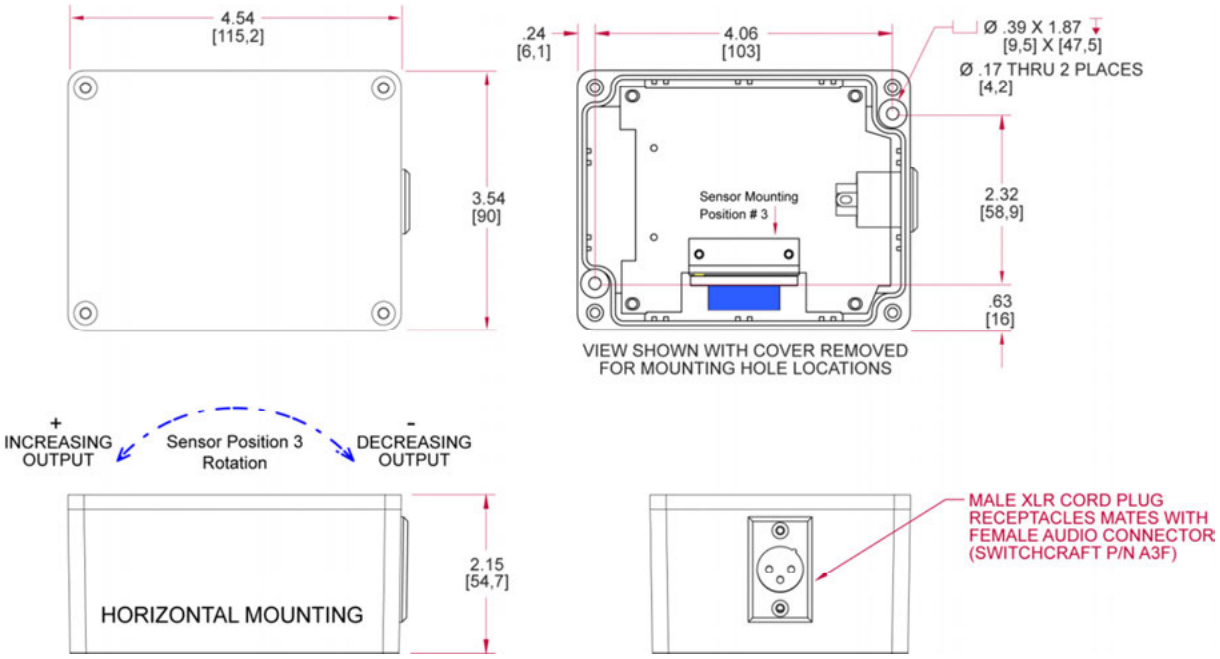
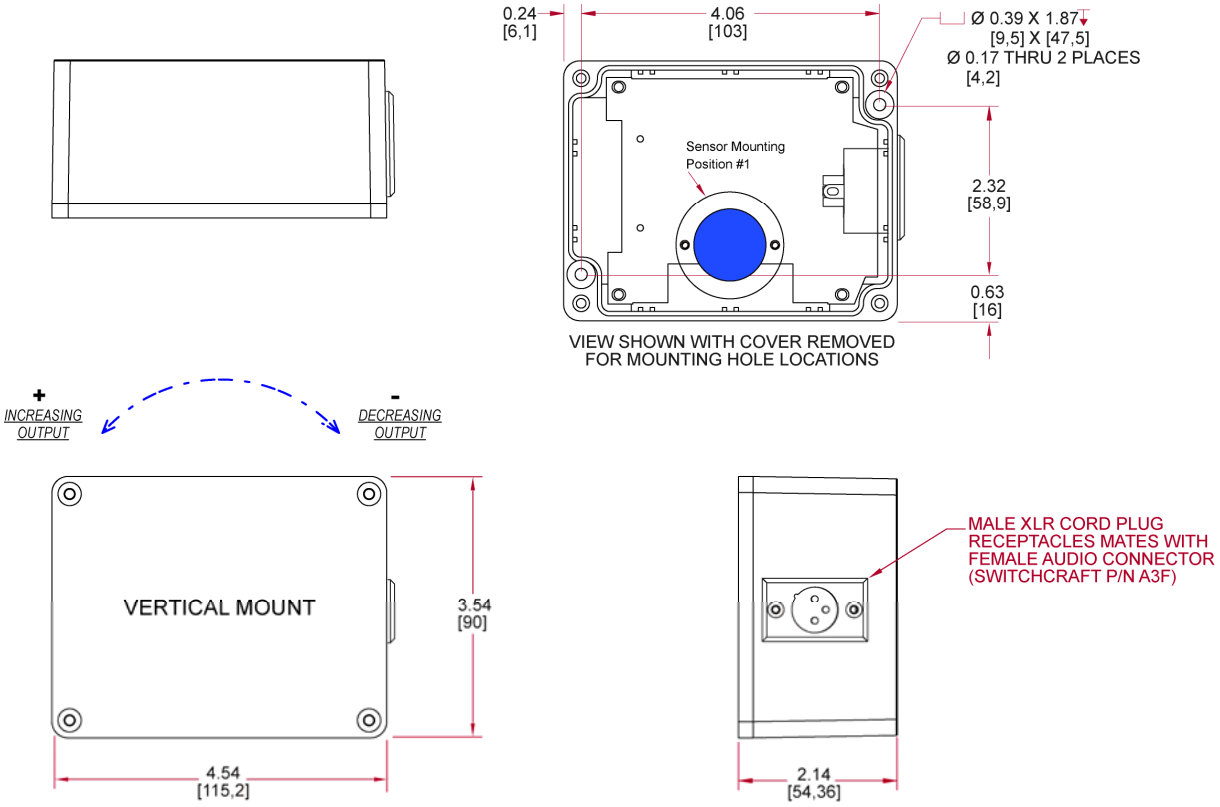


Figure 2B: **Remote Inclinometer Housing Dimensions (inches [mm]) - (Vertical Mount)**



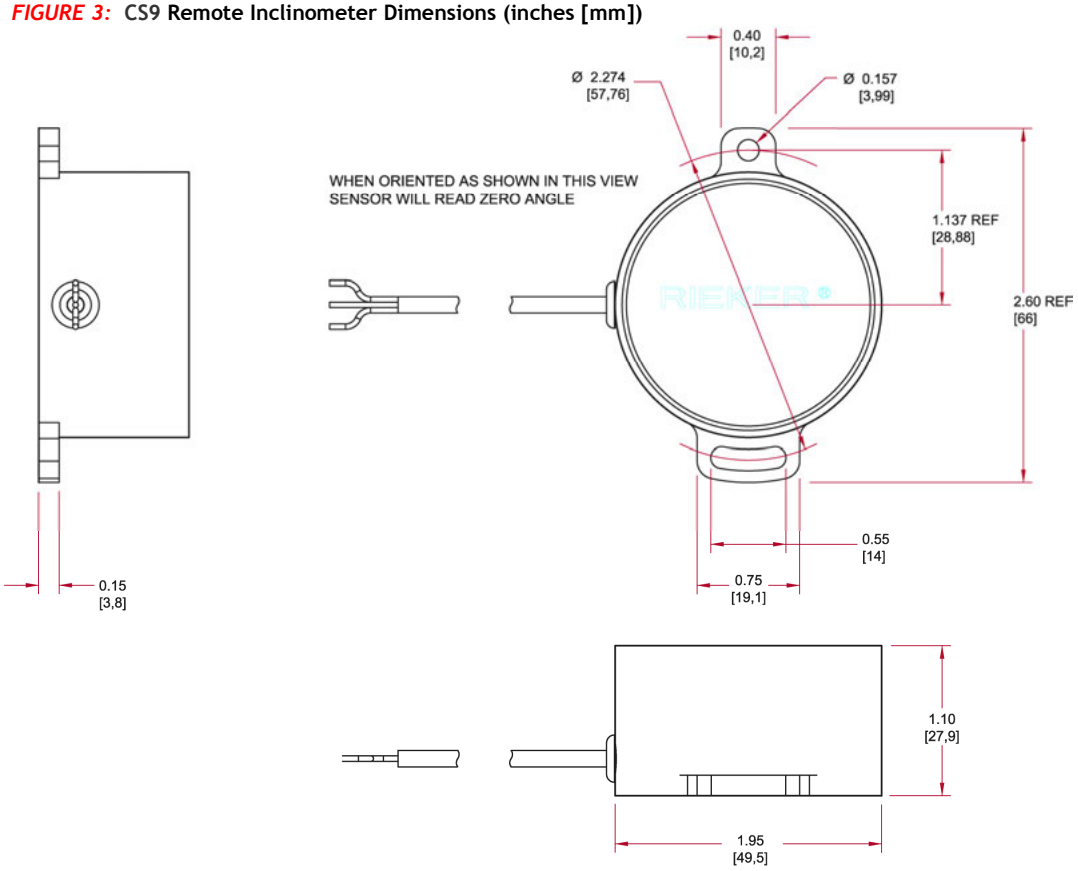
REMOTE SENSOR OPTION B: "CS9"

Description
This ±70° tilt angle sensor has a rugged potted all-weather Die-Cast metal housing, which protects the electronics in a space saving small footprint.

Connection
XLR connector attached to the robust built-in 3" cable for easy connection.

Mounting
Bolt or screw on for permanent mounting onto the frame. Mounts on a flat vertical surface, like a clock on the wall.

FIGURE 3: **CS9 Remote Inclinometer Dimensions (inches [mm])**



CS9 MECHANICAL CHARACTERISTICS	
HOUSING	Die Cast Zinc
MOUNTING HOLES	Two #6-32
MOUNTING PLANE	Vertical Surface
OUTLINE DIMENSIONS	Ø1.95" x 1.1" (Ø49.5 x 28mm) See Drawing
ELECTRICAL CONNECTION	1ft. Teflon Cable with 3 pigtail leads
WEIGHT	8 ounces (227 grams)