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Find the *Keysight / Agilent E1708A* at our website: *Click HERE*

Keysight E1708A Remote Dynamic Receiver

- For use with the Keysight 10897B
- For moving systems

The E1708A Dynamic Receiver is designed for use in the most demanding applications requiring sub-nanometer resolution measurements of systems in motion. The receiver extends the performance of the 10897B High Resolution Laser Axis Board for VMEbus by providing system performance consistent with the high resolution and low variable data age of the 10897B.

The E1708A uses an optical fiber to transport the beam from a remote sensor assembly to the electronics. The E1708A improves measurement accuracy and repeatability by enabling you to mount heat dissipating electronics away from the measurement area. The fiber optic cable also allows mounting design flexibility and easier access to the receiver attenuation and squelch adjustments.

As the Doppler shift caused by motion of the system stage changes the measurement frequency, the E1708A ensures minimal phase processing errors. The receiver also provides immunity to errors induced by changes in measurement signal power level.



Keysight E1707A and E1708A Dynamic Receivers provide more accurate positioning data for moving systems.

Specifications

Optical Output

Data Format
Units: fractions of a wavelength

Sensitivity
2.2 µW (E1708A with 2-m cable,
5 µW with 10-m fiber cable)

Alignment Tolerances
Roll: ±3°
Pitch: ±l°
Yaw: ±1°

The E1708A is self-aligning when the remote sensor is mounted to the following optics: Keysight 10715A, 10716A, 10717A, 10719A, 10721A, 10735A, or 10736A.

Electrical Output

Output Signal
Differential square wave at Dopplershifted frequency (100 kHz to 7.2 MHz)

Fixed Data Delay: 86 ns (typical)*
0.15 ns/°C (typical)

Errors due to frequency variations and 3:1 amplitude variations:*
±1.2 nm for linear optics
±0.6 nm plane mirror optics
±0.3 nm for high resolution optics

Signal Strength Monitor
0–8 volts proportional to optical input signal

General Information

Power Requirements
15 Vdc ±1 V at less than 250 mA

Heat Dissipation
0.0 W for remote sensor
3.8 W typical for receiver

Temperature Range
0–40°C operating

Fiber-Optic Cable Length
2 m standard
10 m maximum

Weigh
170 g (6.0 oz) for E1708A 26 g (0.9 oz) for remote sensor with 2-m cable

*For input signal power
<150 µW for E1707A
<200 µW for E1708A

Comparison of Keysight E1708A/E1709A Receivers

Characteristic	E1709A Receiver	E1708A Receiver
Dynamic Range	25:1 to 6:1, depending on the AC/DC ratio	10:1
Sensitivity	.20 -.80 µW (depending on the AC/DC ratio), with 2 meter plastic cable	2.2 µW (E1708A with 2-meter fiber optic cable) 5 µW (10780F with 10-meter fiber optic cable)
Alignment Tolerance	For plastic fiber optic cable (Option 010) Roll: ±3° Pitch: ±1° Yaw: ±1° Keysight remote sensor is self-aligning with some interferometers.	For plastic fiber optic cable Roll: ±3° Pitch: ±1° Yaw: ±1° Keysight remote sensor is self-aligning with some interferometers
Output Signal Frequency (Differential square wave at Doppler-shifted frequency)	100 kHz to 15.5 MHz (slew rates to 1 m/s with plane mirror optics)	100 kHz to 7.2 MHz (slew rate to 500 mm/s with plane mirror optics)
Fixed Data Delay (typical)*	33.2 ns (typical) 0.01 ns/ÞC	86 ns
Errors due to frequency variations at fixed temperature*	For 25:1 to 6:1 input amplitude variations and frequency range of 100 kHz to 15.5 MHz < ±1.2 nm for linear optics < ±0.6 nm for plane mirror optics < ±0.3 nm for high resolution optics	For 3:1 input amplitude variations and frequency range of 100 kHz to 7.2 MHz < ±1.2 nm for linear optics < ±0.6 nm for plane mirror optics < ±0.3 nm for high resolution optics
Signal Strength Monitor	0 to 10 volts output, proportional to optical input signal power	0 to 8 volts output, proportional to optical input signal power
Power Requirements	15 Vdc ±1V at less than 267 mA	15 Vdc ±1V at less than 250 mA
Heat Dissipation	0.0 W for remote sensor 4.0 W typical for receiver	0.0 W for remote sensor 3.8 W typical for receiver
Temperature Range	0 to 40° C operating	0 to 40° C operating
Fiber-Optic Cable Length	Option 010: 2m (plastic Contact Keysight for longer) fiber optic cables.	2 m standard (plastic) Contact Keysight for longer fiber optic cables.
Weight	Receiver body:190 g Option 010: Remote sensor with 2 m cable: 26 g	Receiver body:170 g, Remote sensor with 2 m cable: 26 g
Dimensions	Height: 78.1 mm (3.075 in) Width: 115.6 mm (4.552 in) Depth: 19.8 mm (0.780 in)	Height: 78.1 mm (3.075 in) Width: 115.6 mm (4.552 in) Depth: 19.8 mm (0.780 in)
Dimensions (receiver body, mounting area)	4 holes at corners of a rectangle 40.0 mm (1.575 in) high 108.0 mm (4.250 in) wide, centered on receiver body centerline	4 holes at corners of a rectangle 40.0 mm (1.575 in) high 108.0 mm (4.250 in) wide, centered on receiver body centerline

* For ac input signal power:
E1708A: <200 µW
E1709A: <50 µW

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