

Instruction Manual

Model 2099-10 10MHz Reference

April 2019, Rev. E



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INSTRUCTION MANUAL
MODEL 2099-10, 10MHz Reference

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MODEL 2099-10, 10MHz Reference

1.0 General

1.1 Equipment Description - The 2099-10, 10MHz Reference provides two 10 MHz outputs from a ± 0.01 ppm high stability oven controlled crystal oscillator. Front panel LEDs provide indication of DC power and oven warm-up. The level is +7 dBm and the 2099-10 works into either a 75 or 50 ohm load (Option D). Connectors are BNC female. A relay contact closure or open indicates when the oscillator oven is stabilized. Powered by a 100-240 ($\pm 10\%$) VAC power supply; 1 3/4" X 19" X 14" rack mount chassis.

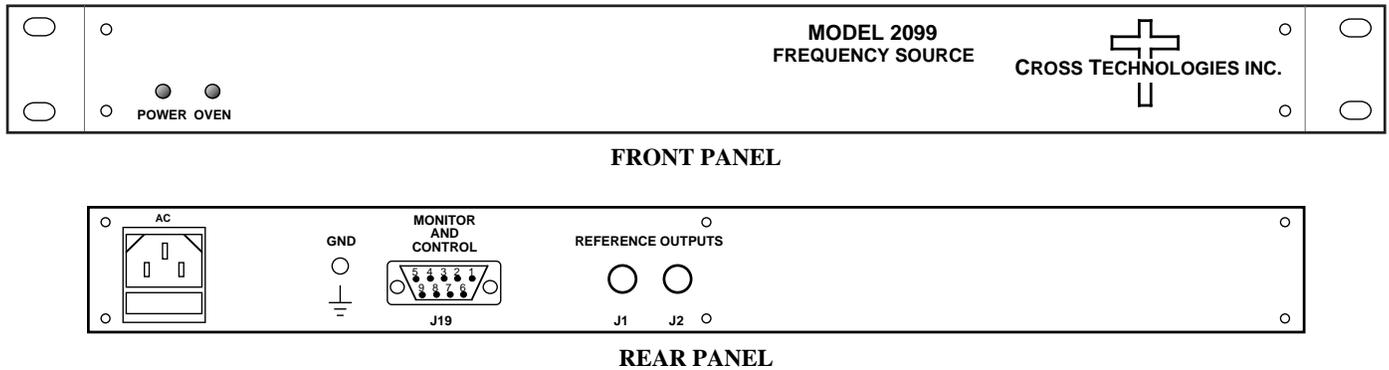


FIGURE 1.1 Model 2099-10 Front and Rear Panels

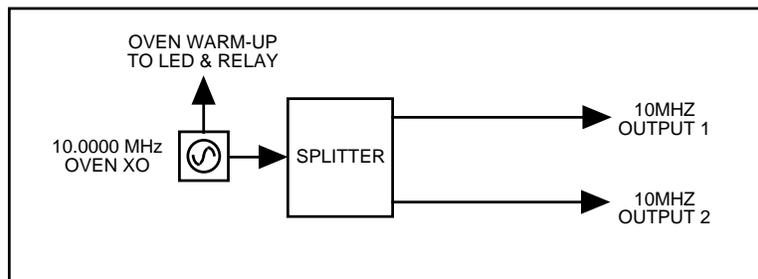


FIGURE 1.2 Model 2099-10, 10MHz Reference Block Diagram

1.2 Technical Characteristics

TABLE 1.0 2099-10, 10MHz Reference Specifications*

Output Characteristics

Number of Outputs	2
Impedance	75Ω
Return Loss	> 18 dB
Frequency	10.0000 MHz
Output Level	+7 dBm ± 3 dBm
Harmonics	< -30 dBC, < -40 dBC typ.
Spurious	< -75 dBC

Oscillator Stability

Oven Temperature	±0.01 ppm max, 0°C to +50°C
Aging, per day	±0.001 ppm
Aging, per year	±0.1 ppm
Warm-Up, in 4 minutes	±0.1 ppm
Warm-Up, in 1 hour	±0.01 ppm
Mechanical adjustment	±0.1 ppm

Oscillator Phase Noise

Phase Noise @ Freq	10Hz	100Hz	1kHz	10kHz
dBC/Hz	-110	-140	-155	-160

Controls, Indicators

Power	Green LED
Oven Warm-Up	Yellow LED, External contact closure (No contact closure with -Option W45)

Other

10MHz Connector	BNC (female) 50Ω or 75Ω per customer specification
Alarm Connector	DB9, female - NO or NC contact closure on Alarm
Size	19 inch, 1RU standard chassis 1.75" high X 14.0" deep
Power	100-240 (± 10%) VAC, 47-63 Hz, 20 watts max

Options

- D	50Ω Output
-W45	Provides Level Alarm Indicator and Contact Closure

*+10°C to +40°C; Specifications subject to change without notice.

2.0 Installation

2.1 Mechanical - The 2099-10 consists of one RF PCB housed in a 1 RU (1 3/4 inch high) by 14 inch deep chassis. A switching, ± 12 , +24, +5 VDC power supply provides power for the assemblies. The 2099-10 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the 2099-10 is assembled.

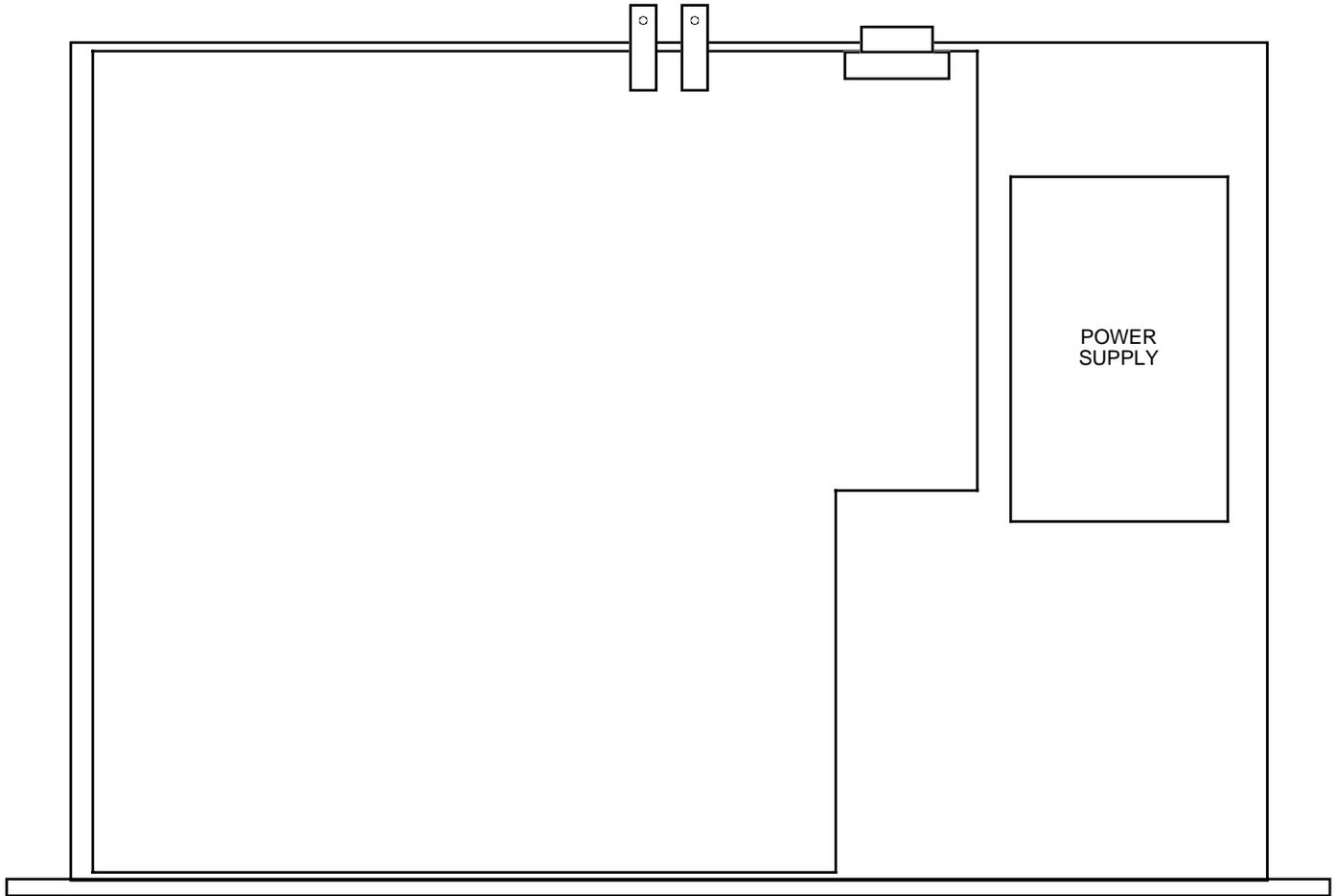


FIGURE 2.0 2099-10 Mechanical Assembly

2.2 Rear Panel Output Signals - Figure 2.1 shows the input and output connectors on the rear panel.

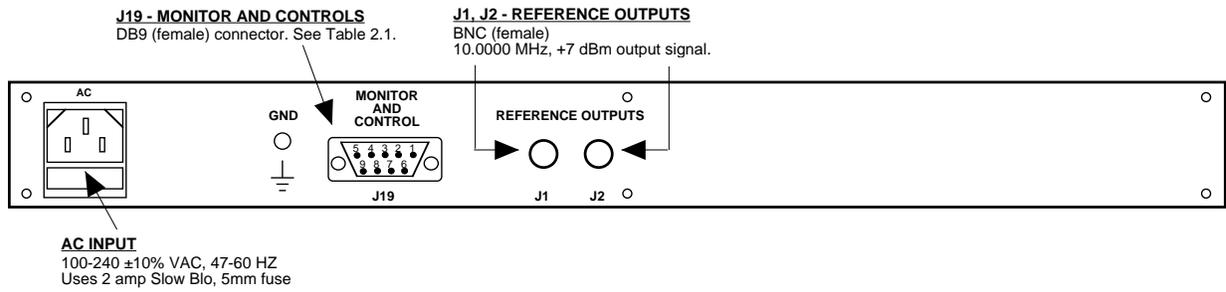


FIGURE 2.1 2099-10 Rear Panel Outputs

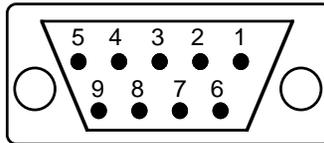


TABLE 2.1 J19 Pinouts (DB9)	
Pin	Function
1	Not Used
2	Not Used
3	Not Used
4	Not Used
5	GND
6	Alarm Relay: Common
7	Alarm Relay: Open=ALARM
8	Not Used
9	Alarm Relay: Closed=ALARM

2.3 Front Panel Indicators -The following are the front panel indicators.

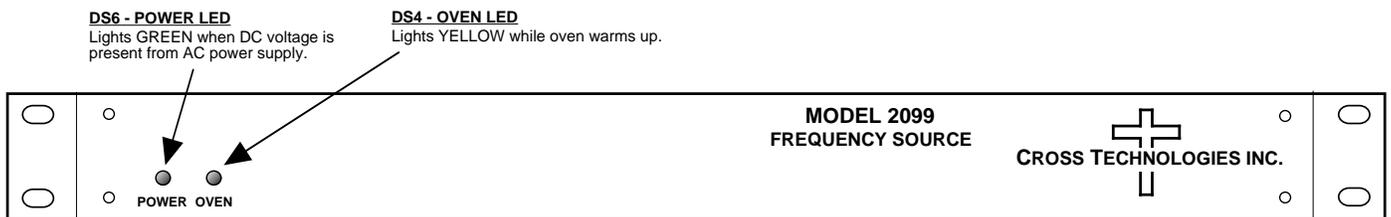


FIGURE 2.2 2099-10 Front Panel Controls and Indicators

2.4 Installation / Operation

2.4.1 Installing and Operating the 2099-10, 10MHz Reference

- 1.) Connect REFERENCE OUTPUTS, J1 and/or J2, to the external equipment (Figure 2.1).
- 2.) Connect 100- 240 ($\pm 10\%$) VAC, 47 - 63 Hz to AC connector on the back panel.
- 3.) Be sure DS6 (green, POWER) is on (Figure 2.2).
- 4.) Wait for DS4 (yellow, OVEN WARM-UP) to go off and/or contact closure at DB9 ALARM connector, J19, to occur to insure that the oscillator oven is stabilized.
- 5.) **AC Fuse** - The fuse is a 5 mm X 20 mm, 2 amp slow blow (Type T) and is inserted in the far slot in the drawer below the AC input as shown in Figure 2.3. There is a spare fuse in the near slot. If a fuse continues to open, the power supply is most likely defective.

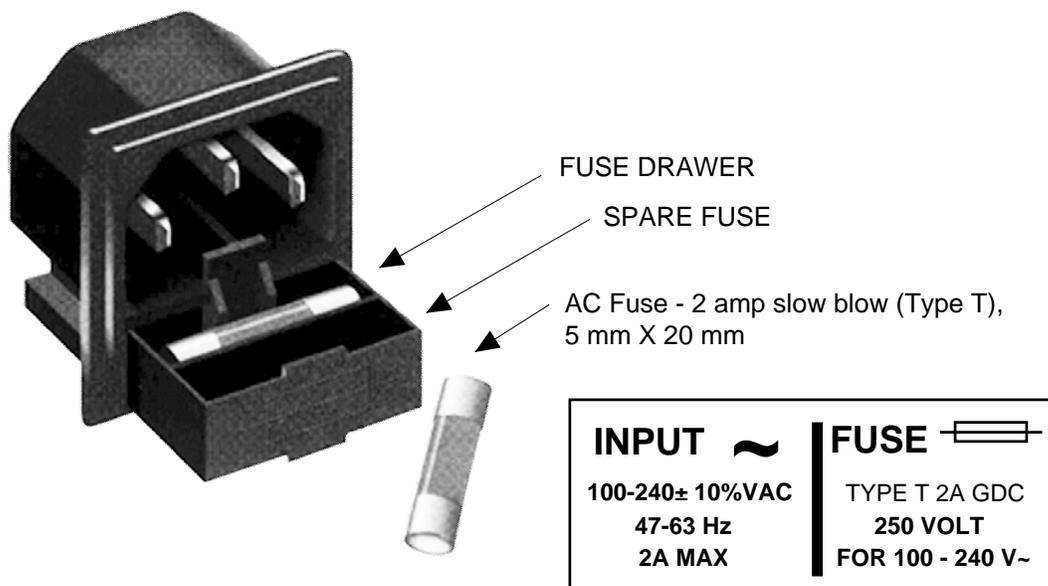


FIGURE 2.3 Fuse Location and Spare Fuse

3.0 Environmental Use Information

- A. **Rack-Mounting** - To mount this equipment in a rack, please refer to the installation instructions located in the user manual furnished by the manufacturer of your equipment rack.
- B. **Mechanical loading** - Mounting of equipment in a rack should be such that a hazardous condition does not exist due to uneven weight distribution.
- C. **Elevated operating ambient temperature** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack may be greater than room ambient temperature. Therefore, consideration should be given to Tmra.
- D. **Reduced air flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Additional space between units may be required.
- E. **Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits could have on over current protection and supply wiring. Appropriate consideration of equipment name plate rating should be used, when addressing this concern.
- F. **Reliable Earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connection to the Branch (use of power strips).
- G. **Top Cover** - There are no serviceable parts inside the product so, the Top Cover should not be removed. If the Top Cover is removed the ground strap and associated screw **MUST BE REINSTALLED** prior to Top Cover screw replacement. **FAILURE TO DO** this may cause **INGRESS** and/or **EGRESS** emission problems.



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