Instruction Manual

Model 2099-100
100MHz Reference

May 2013, Rev. C

When ordering parts from Cross Technologies, Inc., be sure to include the equipment model number, equipment serial number, and a description of the part.

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INSTRUCTION MANUAL

MODEL 2099-100, 100MHz Reference

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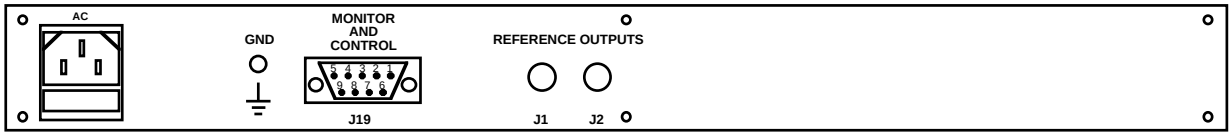
MODEL 2099-100, 100MHz Reference

1.0 General

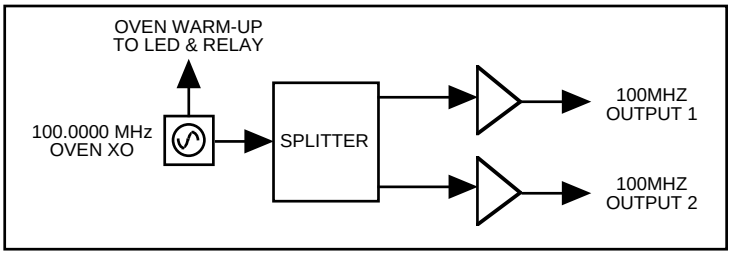
1.1 Equipment Description - The 2099-100, 100 MHz Reference provides two 100 MHz outputs from a ±0.1 ppm high stability oven controlled crystal oscillator. Front panel LEDs provide indication of DC power and oven warm-up. The level is +9 dBm and the 2099-100 works into either a 75 or 50 ohm load. Connectors are BNC female. A relay contact closure or open indicates when the oscillator oven is stabilized. The unit is powered by a 100-240 ±10% VAC power supply; and housed in a 1 3/4" X 19" X 14" rack mount chassis.

FRONT PANEL



REAR PANEL

FIGURE 1.1 Model 2099-100 Front and Rear Panels



Block Diagram

FIGURE 1.2 Model 2099-100 100MHz Reference Block Diagram

1.2 Technical Characteristics

TABLE 1.0 2099-100, 100 MHz Reference Specifications**	
Output Characteristics	
Number of Outputs	2
Impedance	50Ω or 75Ω
Return Loss	> 18 dB
Frequency	100.0000 MHz
Output Level	+9 ±1 dBm
Harmonics	< -30 dBC, < -40 dBC typical
Spurious	< -75 dBC
Oscillator Stability	
Oven Temperature	± 0.1 ppm maximum, 0˚C to +50˚C
Aging, per day	± 0.01 ppm
Aging, per year	± 0.5 ppm
Warm-Up, in 4 minutes	± 1.0 ppm
Warm-Up, in 1 hour	± 0.1 ppm
Mechanical Adjustment	± 1 ppm

Phase Noise @ Frequency	10 MHz	100 MHz	1kHz	10kHz
dBC/Hz	-90	-125	-145	-155

Controls, Indicators	
Power	Green LED
Oven Warm-up	Yellow LED, External Contact Closure
Other	
10 MHz Connector	BNC (female)
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 maximum
**+10˚C to +40˚C; Specifications subject to change without notice	

2.0 Installation

2.1 Mechanical - The 2099-100 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 2099-100 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the 2099-100 is assembled.

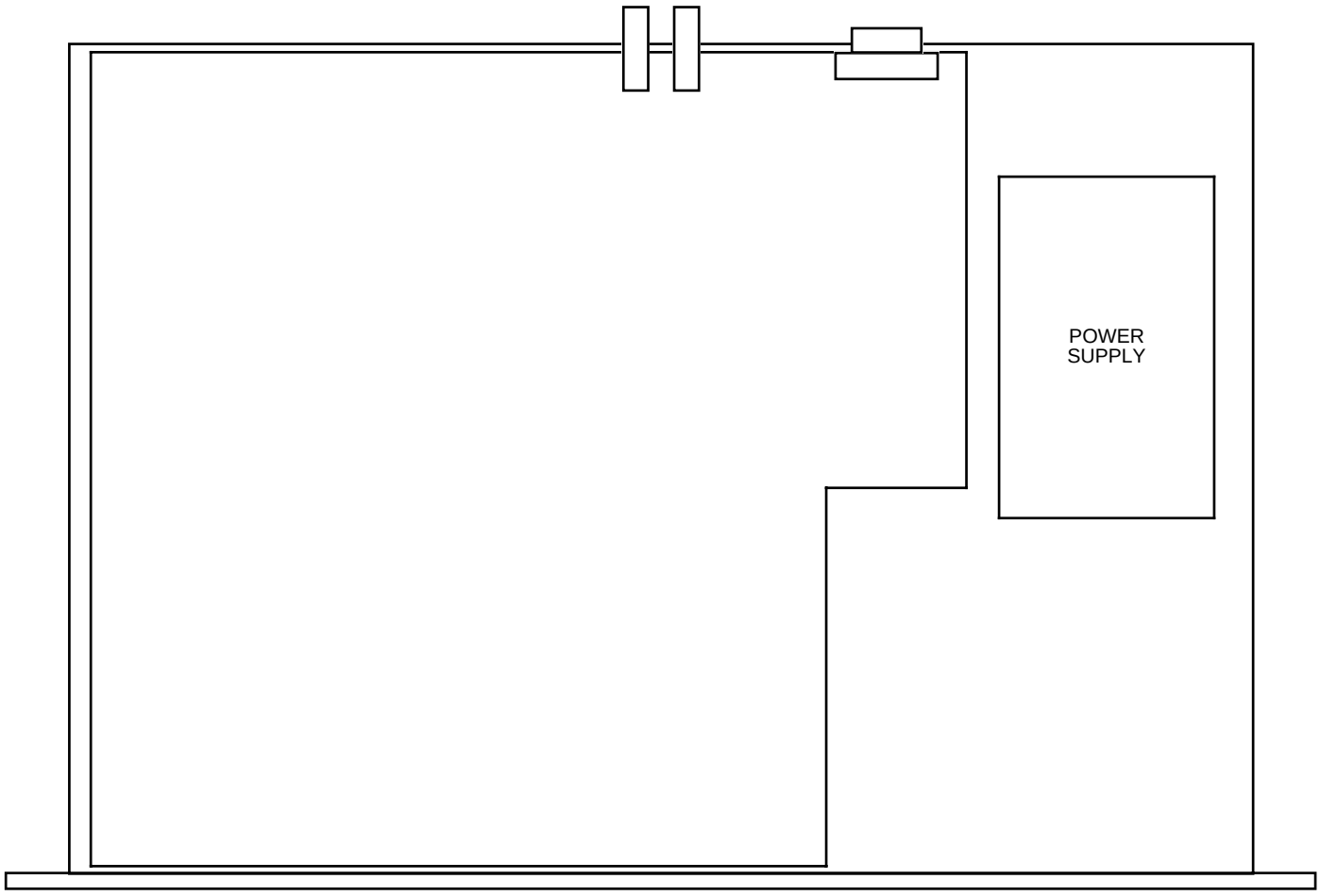


FIGURE 2.0 2099-100 Mechanical Assembly

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

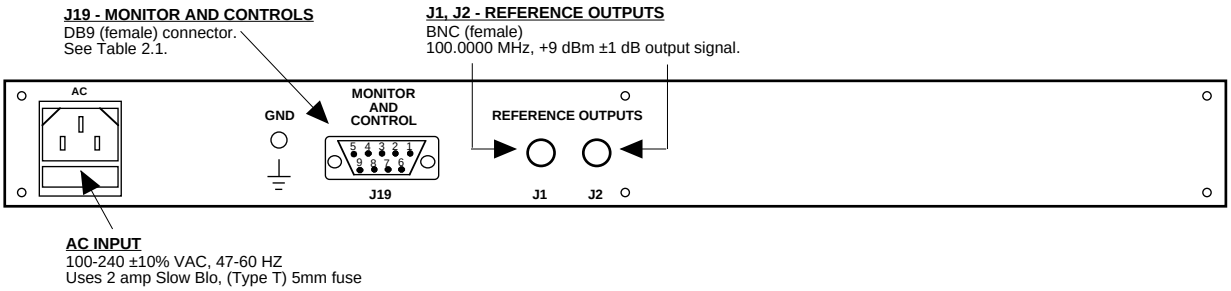


FIGURE 2.1 2099-100 Rear Panel Outputs

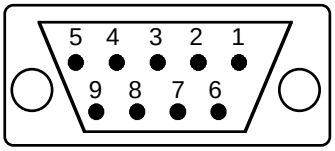


TABLE 2.1 J19 Pinouts (DB9)

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.

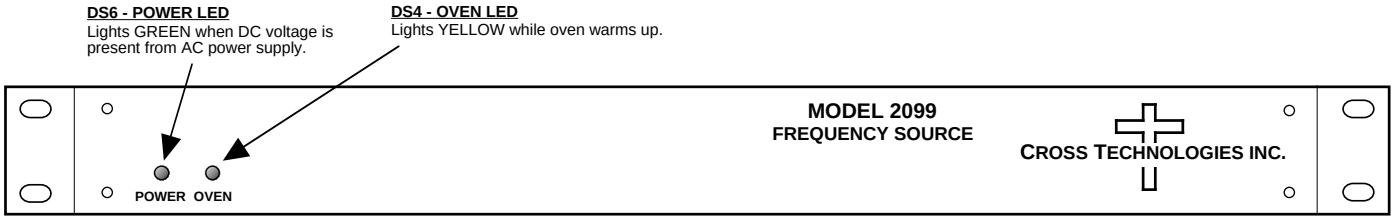


FIGURE 2.2 2099-100 Front Panel Controls and Indicators

2.4 Installation / Operation

2.4.1 Installing and Operating the 2099-100 100MHz Reference

1.) Connect REFERENCE OUTPUTS, J1 and/or J2, to the external equipment (Figure 2.1).

2.) Connect 100-240 ±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 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.

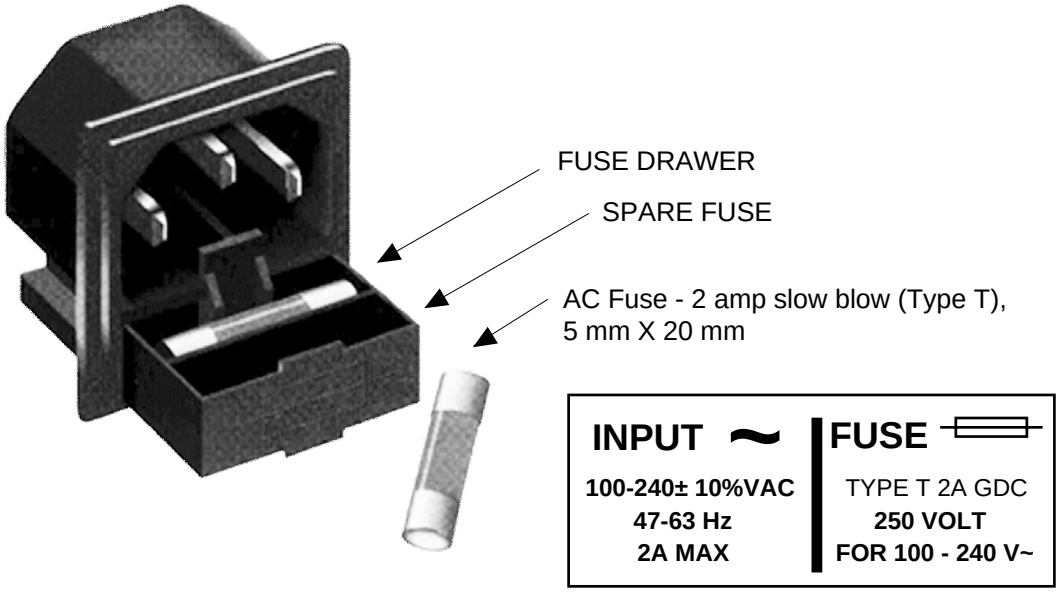


FIGURE 2.3 Fuse Location and Spare Fuse

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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