

Instruction Manual

Model 2099-10 10MHz Reference

September 2011, Rev. D



Data, drawings, and other material contained herein are proprietary to Cross Technologies, Inc., but may be reproduced or duplicated without the prior permission of Cross Technologies, Inc. for purposes of operating the equipment.

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



6170 Shiloh Road
Alpharetta, Georgia 30005

(770) 886-8005
FAX (770) 886-7964
Toll Free 888-900-5588

WEB www.crosstechnologies.com
E-MAIL info@crosstechnologies.com

INSTRUCTION MANUAL
MODEL 2099-10, 10MHz Reference

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
Warranty	2
1.0 General	3
1.1 Equipment Description	3
1.2 Technical Characteristics	4
2.0 Installation	5
2.1 Mechanical	5
2.2 Rear Panel Outputs	6
2.3 Front Panel Indicators	6
2.4 Operation	7
3.0 Environmental Use Information	8

WARRANTY - The following warranty applies to all Cross Technologies, Inc. products.

All Cross Technologies, Inc. products are warranted against defective materials and workmanship for a period of one year after shipment to customer. Cross Technologies, Inc.'s obligation under this warranty is limited to repairing or, at Cross Technologies, Inc.'s option, replacing parts, subassemblies, or entire assemblies. Cross Technologies, Inc. shall not be liable for any special, indirect, or consequential damages. This warranty does not cover parts or equipment which have been subject to misuse, negligence, or accident by the customer during use. All shipping costs for warranty repairs will be prepaid by the customer. There are not other warranties, express or implied, except as stated herein.



6170 Shiloh Road
Alpharetta, Georgia 30005

(770) 886-8005
FAX (770) 886-7964
Toll Free 888-900-5588

WEB www.crosstechnologies.com
E-MAIL info@crosstechnologies.com

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.

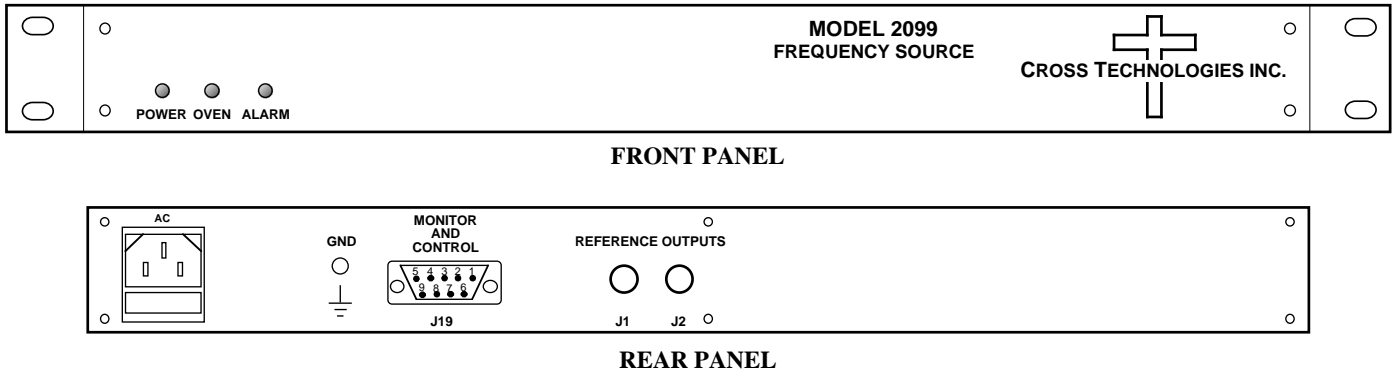


FIGURE 1.1 Model 2099-10 Front and Rear Panels

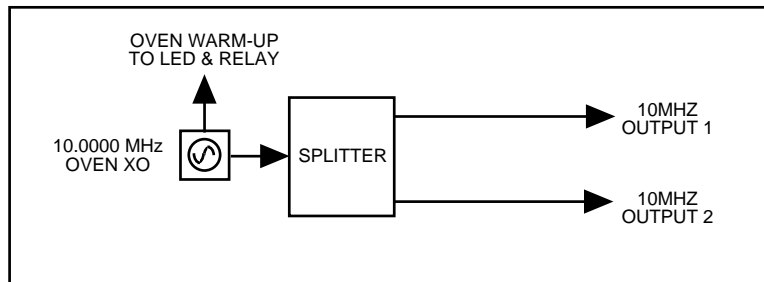


FIGURE 1.2 Model 2099-10, 10MHz Reference Block Diagram

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)
Alarm	Red LED, External contact closure (-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.

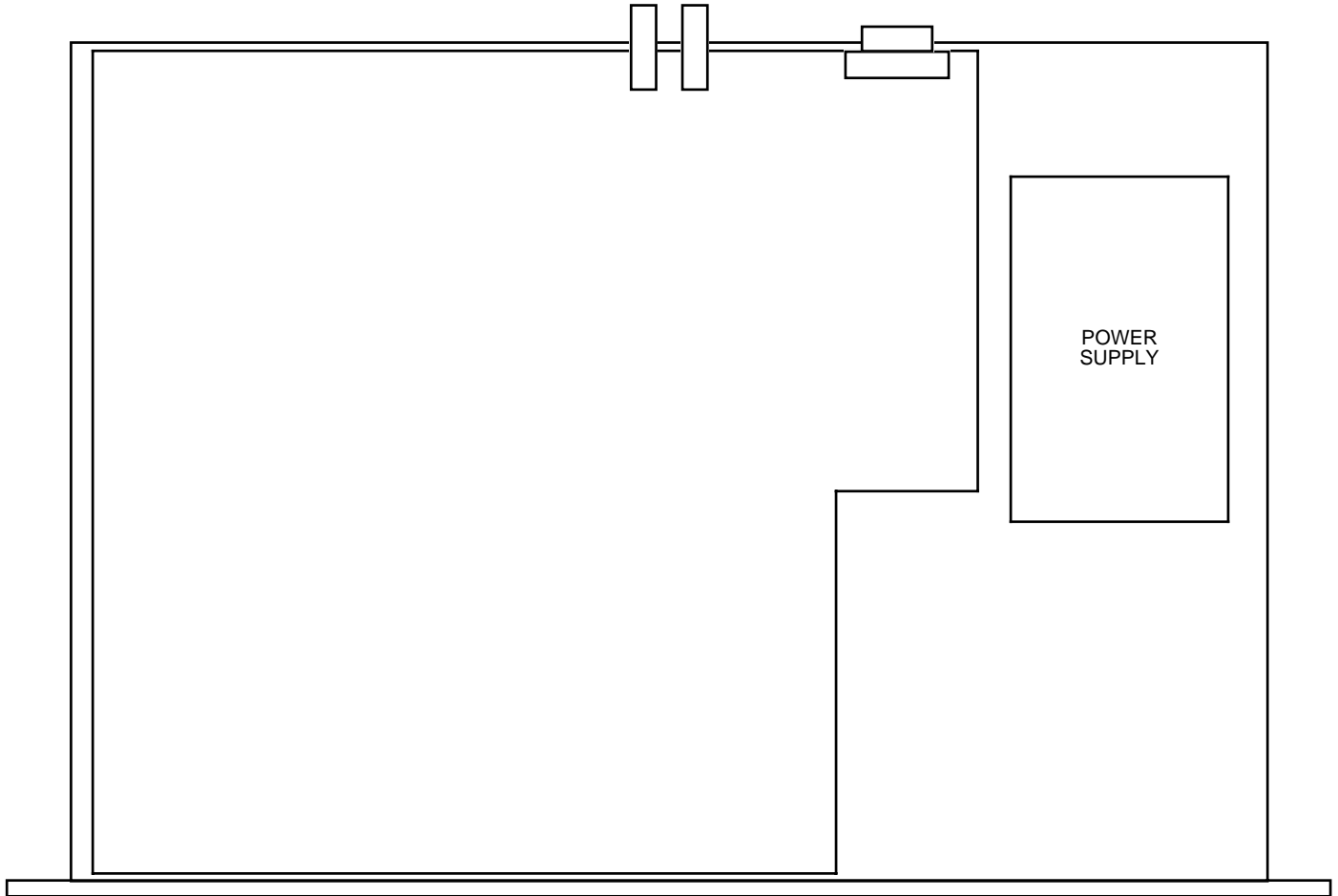


FIGURE 2.0 2099-10 Mechanical Assembly

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

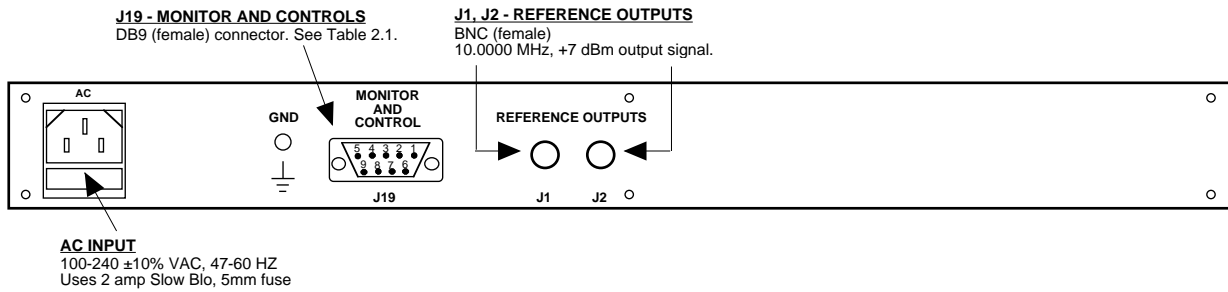


FIGURE 2.1 2099-10 Rear Panel Outputs

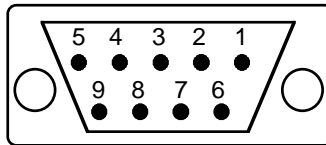


TABLE 2.1 J19 Pinouts (DB9)	
Pin	Function
1	Not Used
2	Not Used
3	Not Used
4	Not Used
5	GND
6	Alarm Relay: Common
7	Alarm Relay: Open=ALARM
8	Not Used
9	Alarm Relay: Closed=ALARM

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

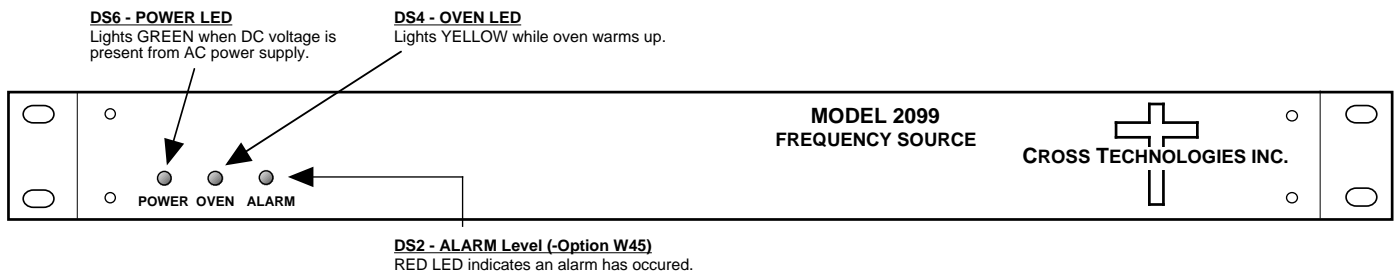


FIGURE 2.2 2099-10 Front Panel Controls and Indicators

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.

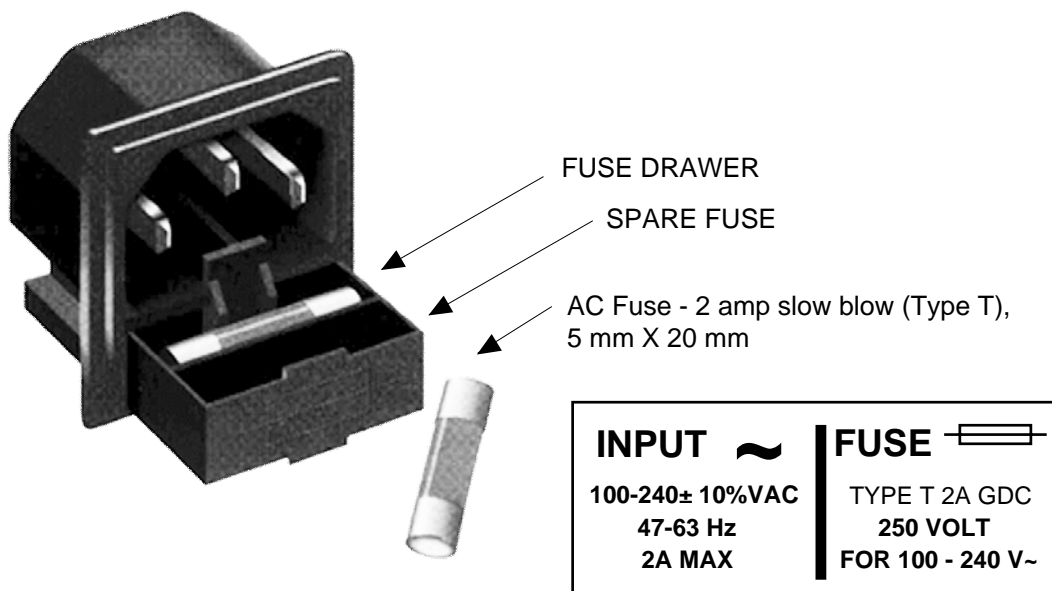


FIGURE 2.3 Fuse Location and Spare Fuse

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.



6170 Shiloh Road
Alpharetta, Georgia 30005

(770) 886-8005
FAX (770) 886-7964
Toll Free 888-900-5588

WEB www.crosstechnologies.com
E-MAIL info@crosstechnologies.com

Printed in USA