

**GPS FREQUENCY
REFERENCE DISTRIBUTOR**

**MODEL: MG-73B
USE'R GUIDE**

Version 1.1, October 2004

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CERTIFICATION

Mercury United certifies that this instrument was thoroughly tested and inspected and found to meet its published specifications when it was shipped from the factory.

WARRANTY AND ASSISTANCE

**There are no user-serviceable parts inside the system.
Remove the cover will void the warranty.**

Products manufactured by Mercury United are warranted against defects in material and workmanship. This warranty applies for one year from the date of shipment. OEM products used in Mercury United systems are warranted as indicated by the respective manufacturer. During the warranty period, Mercury United will, at its option, either repair or replace products that prove to be defective. The repaired or replaced product will be warranted for a period of 90 days from the date of return equipment, or for the balance of the original warranty, whichever is longer.

To obtain repair under this warranty, the buyer must obtain a RMA (Return Authorization) number from Mercury United and return the equipment to a designated repair location.

In the USA, all warranted shipments by UPS ground track will be paid by Mercury United. All other shipping methods will be billed to the customer. In the case of equipment returned from a country other than the United States of America, the buyer shall pay all applicable duties or taxes required and freight charges both ways.

No other warranty is expressed or implied. In no event will Mercury United or any person involved in the creation, production, or distribution of the Mercury United products be liable for any direct, indirect, special, incidental, or consequential damages resulting from the buyer's use of this equipment or software supplied by Mercury United. It is the buyer's sole responsibility to determine the suitability of this product for the intended use prior to purchase. Some states do not allow limitations on warranties, so some or all of the above limitation may apply to you.

The software supplied is to be used by the purchasing customer only. Providing this software to other potential system users will void any warranty and assistance. Software included with this equipment is intended (but not guaranteed) to run on any Windows95[®] (or higher)-based computer, and is provided solely for the convenience of the buyer. It is supplied as-is, and is expressly excluded from any warranty.

This warranty shall not apply to defects caused by improper or inadequate maintenance, calibration, modification, repair and unauthorized alteration and unreasonable use by the user. Also, abuse, neglect, accident, damage in shipment to Mercury United for repair and operation outside the environmental specifications of the product are not applied. Mercury United shall make the evaluation of the unit and shall be the sole determiner of it eligibility for or exclusion from warranty coverage.

SAFETY SUMMARY

The following general safety precaution must be observed during all phases of operation, service, and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the instrument. Mercury United assumes no liability for the customer's failure to comply with these requirements.

GROUNDING THE INSTRUMENT

To minimize the shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. The power cable must be plugged into either an approved receptacle or adaptor with the grounding wire (green or green/yellow) firmly connected to an electrical ground (safety ground) at the power outlet.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUIT

Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with power connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SERVICE OR ADJUST ALONE

Do not attempt internal service or adjustment unless another person capable of rendering first aid and resuscitation is present.

DO NOT SUBSTITUTE PARTS OR MODIFY INSTRUMENT

Because of the danger of the introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the instrument. Return the instrument to Mercury United for service and repair to ensure that safety features are maintained.

ESD STATEMENT

Electro-static discharge can damage electronic equipment. All components, system parts, and equipment are carefully handled while at Mercury United factory. Ensure that all ESD precautions are implemented, including but not limited to: ESD stations, ESD wrist-bands, ESD mats, etc.

Do not operate or store near strong electrostatic, electromagnetic, magnetic or radioactive fields.

WARNING

This equipment is primarily designed to provide precise time and frequency reference at a fixed site. Although it has GPS position location capability, using this equipment for navigation is not recommended. The users understand that GPS receiver can be affected by numerous sources of error such as satellite geometry, selective availability, satellite condition, receiver location and electromagnetic interference. Published accuracy specifications are to be used as a guide and are not guaranteed.

All GPS receivers are subject to degradation of position and velocity accuracies under Department of Defense imposed Selective Availability (SIA)

Mercury United makes every effort to insure that the information in this document is accurate, but makes no claim to that effect and does not guarantee accuracy. This information is offered as-is, and Mercury United cannot be held responsible for any inaccuracies. Specifications, features and operational characteristics of the described product are subject to change without notice.

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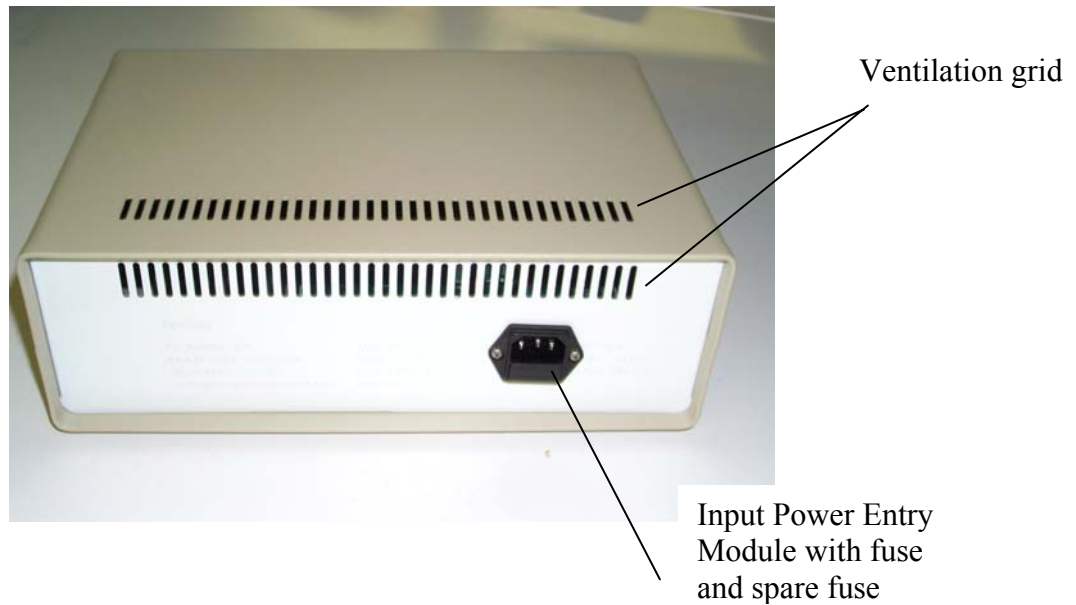
SECTION 1: PRODUCT OVERVIEW

Mercury **MG73-B GPS Frequency Reference Distributor** is primarily designed as an expansion unit for Mercury **MG73-A GPS Frequency Reference Receiver and Distributor**. MG73-A provides 6 channels of GPS disciplined 10 MHz signals only, but additional 6 channels become available when cascaded with a unit of MG73-B. All these signals have identical traceability to the original GPS disciplined 10 MHz reference. MG73-B itself can also be cascaded to obtain more reference signals.

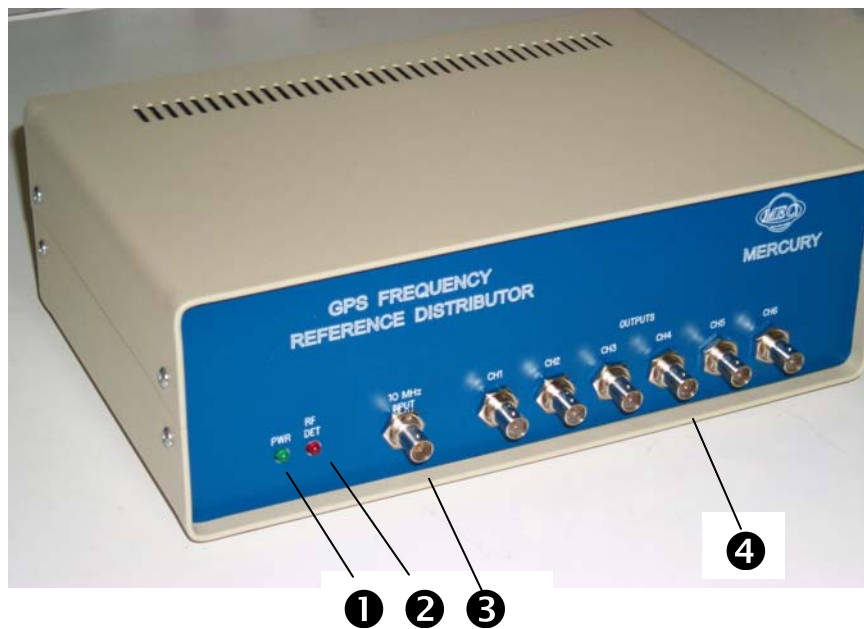
Applications

- ▶ Standards Labs;
- ▶ Frequency Calibration for counters, timers and all frequency-related instrumentation.
- ▶ Telecoms synchronization and timescale correction to UTC.

1.1 The Rear Panel at a Glance



1.2 The Front Panel at a Glance



1: Power LED



3: 10 MHz Input

2: R F Detect

4: 10 MHz outputs from the frequency distributor

SECTION 2: UNPACKING

Every system includes a packing list showing the contents of the shipment. Upon receiving the system, the packing list should be checked to make sure that all the items listed are present and undamaged.

Packing List for Model MG-73A					
Item	Description	Quantity	Mercury Part Number		✓
1	GPS Frequency Reference Distribution unit	1	MG73-B		
2	3 plug power cord	1	625005		
3	MG73-B user's guide	1	625106		

SECTION 3: INSTALLATION

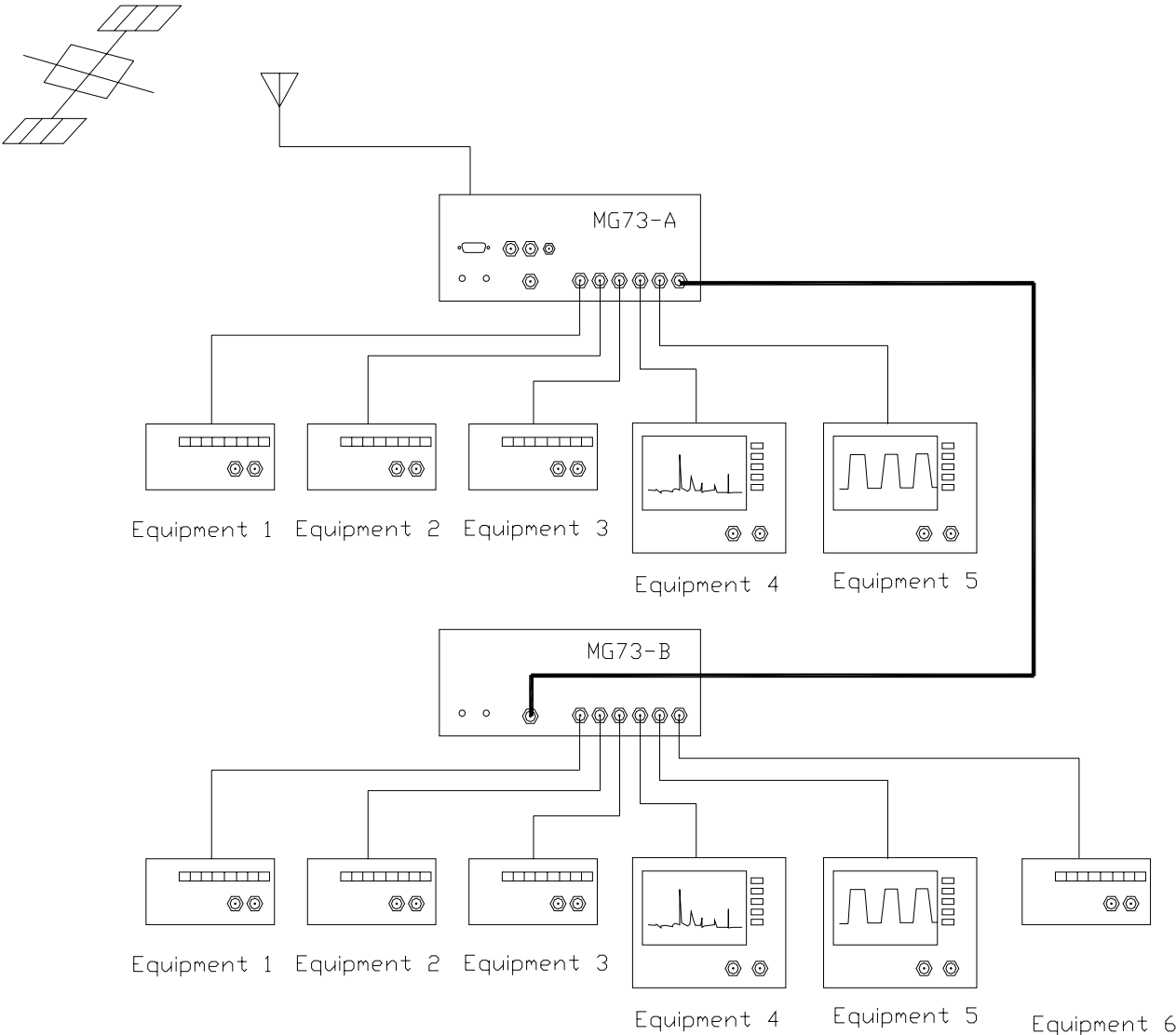
3.1 Input Signal Connection

Connect a reference signal to the input of the MG73-B is all it takes. The input frequency is not limited to 10 MHz.

SECTION 4: SYSTEM EXPANSION

4.1 If More than 6 Frequency References Are Required

You can obtain more frequency references by cascading MG73-A with a MG73-B. MG73-B is just like a MG73-A without the GPS receiver capability. 10 MHz signal from any output channel of MG73-A (channel 1 thru channel 6) can be fed into the “10 MHz IN” of the MG73-B. Additional 6 channels become available. Furthermore, any output of MG73-B (channel 1 thru channel 6) can also serve the same purpose to keep expanding. Lab tests have shown that no signal degradation noticed even up to 10 cascading. This means the whole facility requires only one unit of MG73-A but you can have as many of MG73-B units as you need. All these signals have identical traceability to the original GPS disciplined 10 MHz reference.



SECTION 5: MAINTENANCE

Mercury MG73-B GPS Frequency Reference Distributor provides years of maintenance-free operation. Should the system experience a problem, the monitor program and the LEDs on the front panel provide visual warning. Contact Mercury United for technical support to remove the problem.

There are no user-serviceable parts inside the system. Remove the cover will void the warranty. It is extremely unusual that the user needs to open the cover to service the unit.

SECTION 6 – IN CASE OF DIFFICULTY

Should you have difficulty with the installation or operation of your MG73-B, please take a few minutes to look through this manual. You will find the answers to most of your questions here. If you are still having difficulty after reviewing the manual, please contact us for technical support and assistance.

6.1 CONTACTING MERCURY UNITED

If you need to contact Mercury United, please telephone, fax or write to us at
Mercury United Electronics, Inc.
10823 Edison Court
Rancho Cucamonga, California 91730 U.S.A.
Tel: (909) 466-0427
FAX: (909) 466-0762
E-mail: sales-us@mercury-crystal.com

Before you call, please have the following information available so that we may better assist you in trying to resolve the problem immediately:

1. Model number and serial number of the unit
2. Purchase date
3. The company or store name where is the equipment was purchased from.
4. An accurate description of the problem.

6.2 RETURNING EQUIPMENT FOR REPAIR

Should it become necessary for you to return equipment for repair, please take the following steps:

1. Contact us to obtain a Return Authorization (RMA) number. We can accept repair returns that have an RMA assigned.
2. Carefully pack the equipment and clearly mark the RMA number on the outside of the package.
3. Ship the package freight or postage prepaid to the above address. Be sure to include any items or accessories that we have asked to have included and any information that may be helpful in resolving the problem. Also be sure to include your name and information on how to contact you so that we can get additional information from you if needed and let you know when the equipment has been repaired.

APPENDIX A: SPECIFICATIONS

The specifications and characteristics of the MG73-B GPS Frequency Reference Distributor are provided in this appendix.

10.0 MHz Outputs (Output Channel 1 ~ 6). If the reference signal is from MG73-A.

Output Wave Form: Sinusoidal

Output Level: 12.5 dBm \pm 2.5 dBm. into 50 Ω .

6 channels. BNC connectors.

Output Wave Form: Sine wave

SSB Phase Noise: -120 dBc/Hz at 10 Hz offset
-135 dBc/Hz at 1 KHz offset
-145 dBc/Hz at 100 KHz offset

-135 dBc/Hz at 100 Hz offset
-145 dBc/Hz at 10 KHz offset

Harmonic Level: -40 dBc max.

Spurious: -70 dBc max.

Short Term Stability: $\leq 5E-12$

Aging: None. Corrected by GPS

Temperature Effect: None. Corrected by GPS

Frequency Accuracy: 1E-11 or better (one-day average)

Environmental Specifications

Power Supply: 115 / 125V \pm 10% AC

Operating Temperature: 0°C ~ +60°C

Storage Temperature: -40°C ~ +85°C

Operating Humidity: 95% non-condensing

Maximum Altitude: 18,000 m

Weight: approx. 3.2 Kgs (7 lb)

Physical Dimensions: 12" (W) x 8" (L) x 4 -1/4" (H); 305 mm (W) x 203 mm (L) x 108 mm (H)

Power Consumption: 7 watts.