

MODEL A3-R
Quartz Oscillator Frequency Standard
USER'S HANDBOOK

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Contents

| | |
|--|---|
| Safety Considerations..... | 3 |
| Voltage, Frequency and Power Characteristics | 4 |
| Environmental Conditions | 4 |
| Replaceable Fusing Characteristics..... | 4 |
| Cleaning Instructions | 4 |
| Model A3-R Quartz Frequency Standard..... | 5 |
| Internal Switched-Mode Power Supply | 5 |
| Appendix..... | 6 |

Safety Considerations

General

This product and related documentation must be reviewed for familiarisation before operation. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the instrument may be impaired.

Before Applying Power

Verify that the product is set to match the available line voltage and the correct fuse is installed.

Before Cleaning

Disconnect the product from operating power before cleaning.

WARNING

Bodily injury or death may result from failure to heed a warning. Do not proceed beyond a warning until the indicated conditions are fully understood and met.

CAUTION

Damage to equipment, or incorrect measurement data, may result from failure to heed a caution. Do not proceed beyond a caution until the indicated conditions are fully understood and met.

This equipment must be earthed

An uninterruptible safety earth ground must be maintained from the mains power source to the product's ground circuitry.

WARNING

When measuring power line signals, be extremely careful and use a step down isolation transformer whose output is compatible with the input measurement capabilities of this product. The product's front and rear panels are typically at earth ground. Thus, never try to measure AC power line signals without an isolation transformer.

WARNING

Instructions for adjustments when covers are removed and for servicing are for use by service-trained personnel only. To avoid dangerous electrical shock, do not perform such adjustments or servicing unless qualified to do so.

WARNING

Any interruption of the protective grounding conductor (inside or outside the instrument) or disconnecting of the protective earth terminal will cause a potential shock hazard that could result in personal injury. Grounding one conductor of a two conductor out-let is not sufficient protection.

Whenever it is likely that the protection has been impaired, the instrument must be made inoperative and be secured against any unintended operation.

If the instrument is to be energised via an autotransformer (for voltage reduction) make sure the common terminal is connected to the earthed pole terminal (neutral) of the power source.

Instructions for adjustments while the covers are removed and for servicing are for use by service-trained personnel only. To avoid dangerous electrical shock, do not perform such adjustments or servicing unless qualified to do so.

For continued protections against fire, replace the line fuse(s) with fuses of the same current rating and type (for example, normal blow time delay). Do not use repaired fuses of short-circuited fuse holders.

Voltage, Frequency and Power Characteristics

Voltage 220-240V AC

Frequency 40-50Hz

Power characteristics 500mA Max

Environmental Conditions

Temperature

Operating (ambient) -10°C to +55°C (-65 to +65 op)

Storage -40°C to +85°C

Magnetic Field

Sensitivity $\leq 2 \times 10^{-11}$ / Gauss

Atmospheric Pressure -60m to 4000m

$< 1 \times 10^{-13}$ / mbar

Replaceable Fusing Characteristics

800mA time-lag HBC

Cleaning Instructions

To ensure long and trouble operation, keep the unit free from dust and use care with liquids around the unit.

Be careful not to spill liquids onto the unit. If the unit does get wet, turn the power off immediately and let the unit dry completely before turning it on again.

Clean with a damp (with water) cloth.

Never spray cleaner directly onto the unit or let liquid run into any part of it. Never use harsh or caustic products to clean the unit.

Model A3-R Quartz Frequency Standard

Introduction

The Model 3 quartz frequency standard is based upon a new design of oven – controlled crystal oscillator and will give excellent service over long time periods. The unit is fed from an internal, switched – mode power supply working at 50/60 Hz and supplied from a mains source of between 110 V and 240 V (r.m.s.).

Front Panel

The front panel is fitted with a green “power on” light – emitting diode indicator on the right – hand side.

Back Panel

R.F. Output

The back panel is fitted with a B.N.C. socket giving a 10 MHz reference output, a at level of approximately +10 dBm (50Ω). This is suitable for distributing around laboratories, workbenches etc through a distribution amplifier.

Very Long – Term Frequency Adjustments

On leaving the factory the unit will have been adjusted against a hydrogen maser frequency standard, to within one part in 10^{11} .

However, it is appreciated that quartz crystal oscillators will tend to drift (upwards) in frequency over long time periods, due to crystal ageing. Should the customer consider that the drift eventually renders the unit in need of correction, the following should be carried out:

EITHER Return the unit to Quartzlock for re – adjustment against the hydrogen maser there

OR If a high accuracy frequency standard is locally available, remove the six lid – retaining screws and locate the blue, 10 kR, 20 turn potentiometer, next to the OCXO unit. Very carefully adjust this potentiometer until the frequency is within acceptable limits. A comparison frequency standard, whose accuracy is better than one part in $10E-12$, is recommended for this adjustment.

Internal Switched-Mode Power Supply

WARNING: Risk of electrical shock or burns
 Capacitors store hazardous energy
 Do not touch the power supply until after 5 minutes after disconnecting the mains

Pin Connections

- | | | |
|----|--------|---|
| 1. | AC(L) | Input terminal live |
| 2. | AC(N) | Input terminal neutral |
| 3. | FG | Field Ground (Protective Earth) |
| 4. | + Vout | Output terminal VCC |
| 5. | - Vout | Output terminal GND |
| 6. | Vadj. | Output voltage adjustment potentiometer |

Appendix