UK MICROWAVE GROUP

UKuG 24GHz Loan Equipment MKII

Basic Description and Operating Instructions

SYSTEM DESCRIPTION

The transverter is built around the MKU 24 G3, 144 MHz to 24 GHz Kuhne transverter. It is lightweight and intended for tripod mounting along with a suitable antenna. As well as the transverter itself the “kit” includes a GPS clock antenna, an I0JXX horn feed for an offset parabolic dish and a suitable 60cm offset dish. The transverter RF output is connected to the antenna by a short length of semi rigid cable that exits through a small hole in the enclosure.

Around 2.5W maximum drive is needed at 144 MHz for 2W output at 24GHz.

A 2m IF of 144.100 MHz corresponds to 24048.100 MHz.

It has been used successfully with a Yaesu FT290 MkII. It is straightforward to use any 2m transceiver subject to the following guidance:

PLEASE ENSURE YOU SET THE TRANSMIT POWER ON THE 144MHz RIG TO A **MAXIMUM OF 2.5W** AND/OR USE A SUITABLE RF ATTENUATOR ON THE 2m INPUT.

FRONT PANEL CONTROL and CONNECTIONS
The transverter has the following connectors and controls:

- 13.8v two pin supply input (cable included)
- 144 MHz In/Out BNC Socket
- PTT 3.5mm Jack Socket
- SMA GPS Antenna Socket
- GPS Power Switch – STBY
- Operate Switch
- Tx Switch
- PTT 3.5mm Jack Socket

The following indications are provided on the front panel:

- A green LED above the power input indicates correct DC power polarity.
- A red LED observed through the “GPS Lock” spy-hole indicates GPS frequency lock status. Flashing = searching; continuously on = locked.
- Green “Operate” LED indicates power on to the transverter circuitry.
- Blue “Tx” LED indicates the transmit state.
- The front panel meter shows output power and will indicate a maximum of about “6” for 2W in at 144MHz.

IN USE

During commissioning in 2021 the gear was used to successfully to complete several two-way QSO’s of up to 120km from clear locations.

As with any microwave operation it is useful to have an accurate idea of the correct heading (the beam width is narrow) and to be able to operate in a CW beacon mode for dish alignment. The frequency accuracy of this transverter is excellent and predictable.

Although supplied with a 60cm offset dish, other antennas may be used and the SMA RF output cable location can be altered to for example, to connect to a rear connecting dish antenna. The offset antenna requires a few degrees of down tilt (about 8degrees).

IN THE FIELD

Please treat this expensive equipment with care and avoid rough handling.

Do NOT's:

1) Do not apply power in the wrong polarity

2) Do not drive with more than 2.5W of RF power at 144MHz

3) Do not operate the transmitter into an open circuit

4) Please switch to transmit via the PTT jack (take low to transmit) or preferably the front panel switch *

OPERATING INSTRUCTIONS

1) Connect the antenna to the SMA RF connector

2) Connect a 2m transceiver (2.5W max RF power) to the BNC 144MHz In/Out connector

3) Connect PTT control through the 3.5mm mono jack socket (take low to transmit) *

4) Switch on the 2m transceiver

5) Attach the GPS receiver antenna to the SMA port and place in an appropriate position

6) Apply +12 to 13.8V (5A max) using the power cable supplied

7) Check the Green LED above the fuse is illuminated (this indicates correct power polarity)

8) Switch GPS On

9) Look for GPS lock through the “GPS Spyhole” – a red LED will eventually be on constantly

10) Switch the unit on using “Operate” – the noise level in the 2m transceiver will increase.

11) Switch to transmit in SSB mode and “whistle-up”. An indication of about 6 should be seen on the front panel meter for 2.5W drive at 144MHz.

12) Make QSO’s!

* The internal transverter unit does have RF detect T/R switching which has not been disabled. However to be gentle with this expensive equipment it is strongly recommended to use the PTT control line which will override the RF switch or even better use the front panel “Tx” switch which is simply wired across the jack socket connections.