
LO/JACK[®]

**Remote Transmitter Unit 5
(RTU5)
Operations Manual**

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PRELIMINARY

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PRELIMINARY

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PRELIMINARY

Section 1 About this Document

1.1 Purpose

This document is intended to be used as a reference for users of the RTU5 software application.

Note:

This product is not intended to be sold in the consumer market. It has been intended for use by only authorized personnel and as such should be in a secure location to protect unauthorized access.

1.2 Scope

The scope of this document is restricted to the operation of the software interface of the RTU5. Except for example purposes the actual hardware implementation of the system is beyond the scope of this document.

PRELIMINARY

Section 2 Maintenance User Interface (with PC connected via Serial Port)

In standard operation, the remote mode RTU5 software is not intended to be operated with a display screen permanently connected. However, a relatively simple display format has been included.

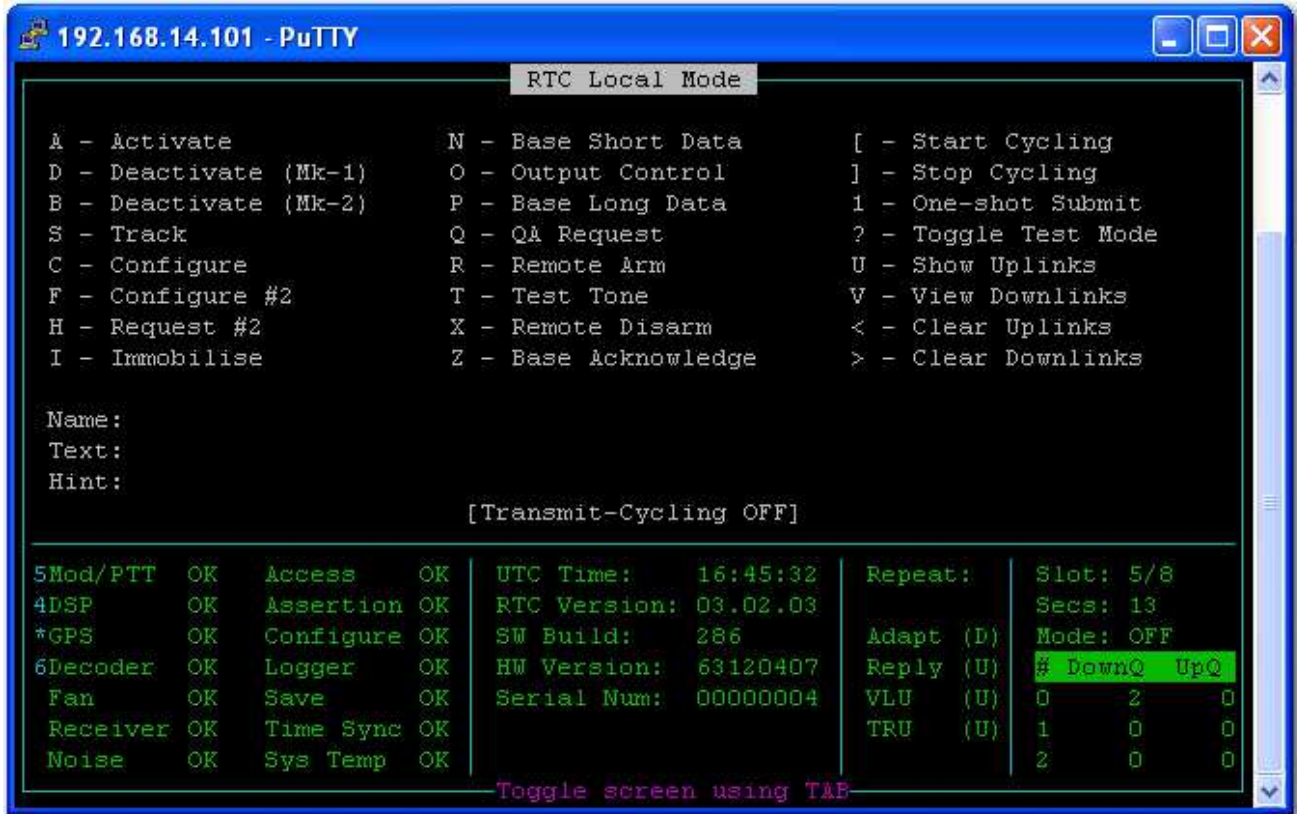


Figure 1 Local Interface, using SSH

PREVIEW

2.1 Main Screen components

2.1.1 Status Frame

The status frame reports the status of the various aspects of the RTU5.

1. **Mod/PTT** – [OK|BAD] the status of the Mod/PTT channel. A BAD status indicates a problem communicating with the Mod/PTT. A BAD status here could indicate an incorrect MODPTT setting in the rtconfig.cfg file.
2. **DSP** – [OK|BAD] the status of the DSP channel. A BAD status indicates a problem communicating with the DSP. A BAD status here could indicate an incorrect DSP setting in the rtconfig.cfg file.
3. **GPS** – [OK|BAD|N/A] the status of the GPS signal. A **BAD** status indicates a problem communicating with the GPS. **N/A** will be displayed if no GPS is being used. The field will be prefixed with an "*" if the built in GPS is being used.
4. **Decoder** - [OK|BAD|N/A] the status of the Decoder signal. BAD Status indicates a problem communicating with the packet decoder. It will also indicate that a large number of garbled MSK formatted messages have been received, in this case the error will clear itself once a good packet has been received.
5. **Fan** - [OK|BAD] indicates the status of the RTU5 cooling fan. Referenced to the speed limits set in the config file.
6. **Receiver** - [OK|BAD] the status of the uplink receiver. A BAD status here could also indicate an incorrect UPLINK setting in the rtconfig.cfg file.
7. **Noise** - [OK|BAD] BAD indicates an unacceptable noise level in the uplink receiver.
8. **Access** - [OK|BAD] BAD indicates a problem with permissions accessing various system resources such as the serial ports for the DSP, Decoder and Mod/PTT channels.
9. **Assertion** - [OK|BAD] BAD indicates that an internal software error has been detected.
10. **Configure** - [OK|BAD] BAD indicates a failure processing the configuration file.
11. **Logger** - [OK|BAD] BAD indicates a failure writing data to the condition logger.
12. **Save** - [OK|BAD] BAD indicates a failure to write configuration data to the rtconfig.cfg file after a remote configuration has occurred.
13. **TimeSynch** - [OK|BAD] BAD indicates a TimeSynch (NTP) problem.

Note that when time synchronization is lost the timing of transmissions will become randomized.

14. **System Temp** – [OK|BAD] indicates the internal temperature of the RTU5 in reference to the limits set in the config file.

2.2 Verifying GPS functionality

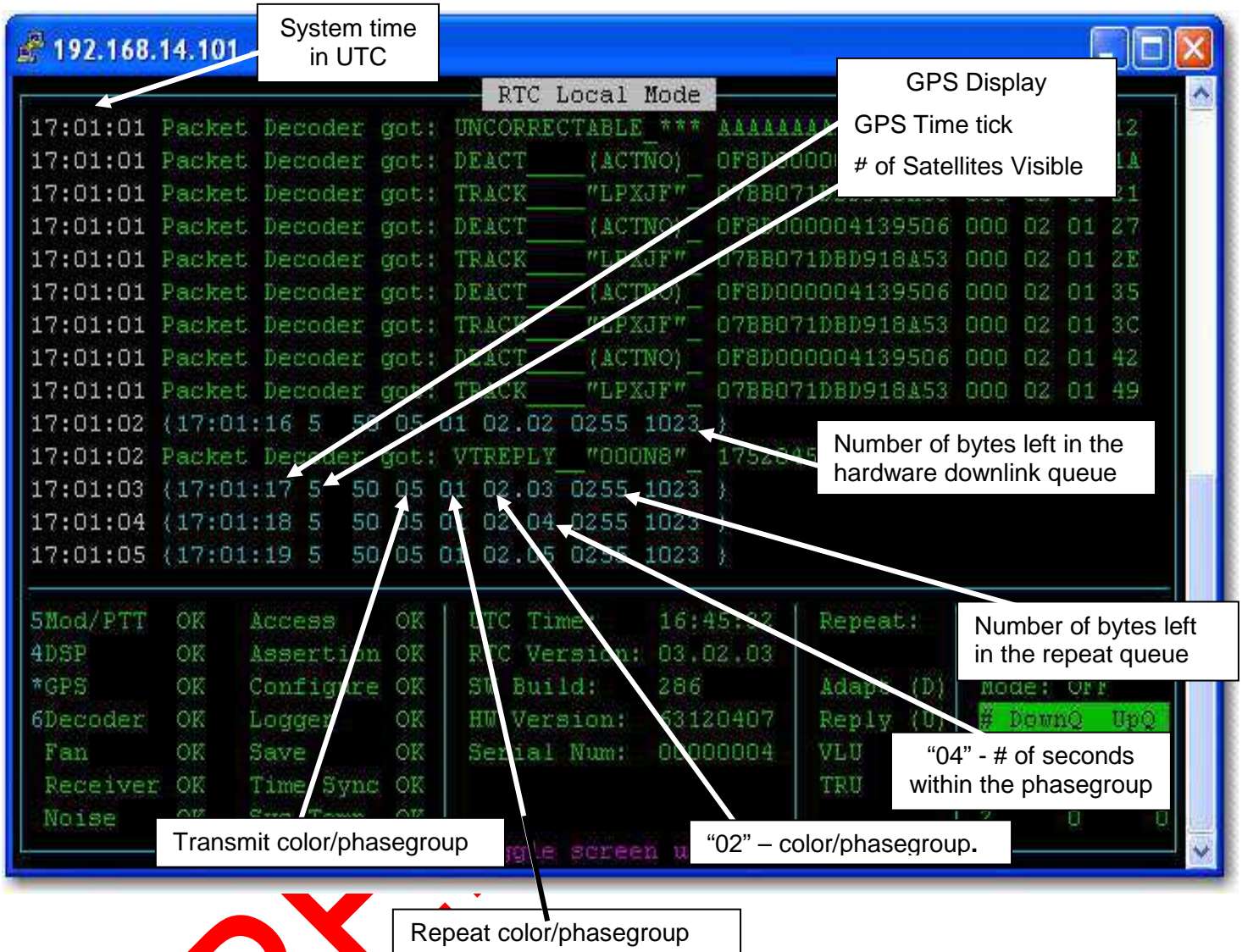


Figure 2 (GPS Time Display)

When looking at the debug screen you should see the time increment while the RTU5 is running.

There is a display entry that shows a time increment every second and next to that is an entry for the number of satellites the RTU5 sees.

For example the lines below at 17:01:03 and 17:01:04 in column 1, the text next to that {17:01:17 5 50 05 01 02.03 0255 1023} and {17:01:18 5 50 05 01 02.04 0255 1023}. The first part 17:01:17 and 17:01:18 are the GPS time ticks they should be incrementing every second. The number 5 next to the GPS time is the number of satellites that the GPS can currently locate.

The first column (17:01:17 and 17:01:18) is system time in UTC, there will be approximately 14 seconds difference between UTC and GPS time.

Section 3 Warnings and Cautions

EMC

This product as supplied meets the requirements of the European Union Directive 89/336 EC and is eligible to bear the CE marking.

It meets the requirements for an industrial environment. However, it must be noted that because the unit is user configurable, certain precautions will be required to maintain that compatibility.

The RTU5 unit must be grounded. The grounding lead should be as short as possible and connect to the incoming cabinet earth ground.

If a rack-mounted monitor is used, it is recommended that the monitor body grounding stud be connected using as short a lead as possible to the PC body grounding stud.

Failure to comply with these recommendations may invalidate the compliance with the EMC Directive.

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

WARNING: The electronic assemblies within the unit are susceptible to electrostatic discharge (ESD). Take anti-static precautions before handling, otherwise damage can occur.

Note:

Appendix "A" This product is not intended to be sold in the consumer market. It has been intended for use by only authorized personnel and as such should be in a secure location to protect unauthorized access.

RTU5 to Antenna Cabling Procedures

The recommended antenna is a *Cellwave PD-200*; all information presented in this document assumes that this is the antenna being used, check with the manufacturer for cable and connector information on any other antenna. For RF cables, we recommend 50 ohm low density foam dielectric coaxial cables such as the *HELIAX LDF* series from *Andrew Corp.* or equivalent from *Eupen* or *RFS Cellwave*.

The primary concern surrounding the selection of interconnection cable used between the RTU5 and the Antenna is the distance the antenna is located from the RTU5.

If the antenna is located *within 100ft* from the RTU5, the connection procedure shown in illustration "A" is recommended.

Use a 1/2 inch cable (*HELIAX LDF4 - 50A*) with a Male "N" connector (*HELIAX L4PNM*) on the RTU5 end and a *PL 259* connector on the antenna end.

If the antenna is located *between 100ft and 500ft* from the RTU5, the connection procedure shown in illustration "B" is recommended.

- Use a 7/8 inch cable (*HELIAX LDF5 - 50A*), with a Female "N" connector (*HELIAX L5NPF*) on both ends, as the main run from the RTU5 to the Antenna.
- Because cable larger than 1/2 inch is very hard to bend into a tight radius an interconnecting 1/2 inch cable is used on both ends of the main run.
 - On the RTU5 end a 1/2 inch cable between 3ft and 6ft long (*HELIAX FSJ4 - 50B*) with Male "N" connectors (*HELIAX F4PNM-C*) on each end is required to connect the RTU5 to the 7/8 inch cable of the main run.
 - On the Antenna end a 1/2 inch cable (*HELIAX FSJ4 - 50B*) about 18 inches long with a Male "N" connector (*HELIAX F4PNM-C*) to attach to the main run cable and a PL 259 connector to attach to the antenna. (Where required this cable is supplied with the Cellwave PD-200 antenna.)

If the antenna is located *greater than 500ft* from the RTU5, the connection procedure shown in illustration "C" is recommended.

- Use a 1 1/4 inch cable (*HELIAX LDF6 - 50*), with a Female "N" connector (*HELIAX L6PNF*) on both ends, as the main run from the RTU5 to the Antenna.
- Because cable larger than 1/2 inch is very hard to bend into a tight radius an interconnecting 1/2 inch cable is used on both ends of the main run.
 - On the RTU5 end a 1/2 inch cable (*HELIAX FSJ4 - 50B*) between 3ft and 6ft long with Male "N" connectors (*HELIAX F4PNM-C*) on each end is required to connect the RTU5 to the 1 1/4 inch cable of the main run.
 - On the Antenna end a 1/2 inch cable (*HELIAX FSJ4 - 50B*) about 18 inches long with a Male "N" connector (*HELIAX F4PNM-C*) to attach to the main run cable and a PL 259 connector to attach to the antenna. (Where required this cable is supplied with the Cellwave PD-200 antenna.)

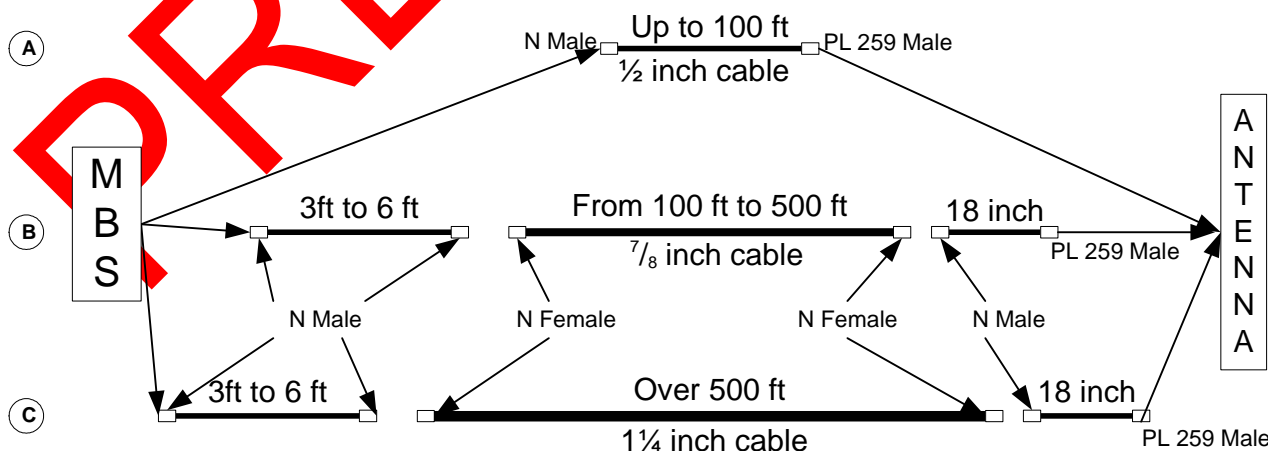


Figure 3 RTU5 to Antenna Cable Options

DRELMINARY

RTU5 Operations Manual

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