



RTUDIAG ON MISER

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Revision:
C

Running RTUdiag on a MISER Host

Overview

RTUdiag was written to run as a stand-alone program on a Windows-based PC. Sometimes it is useful to be able to do RTUdiag type functions from the host – for this reason RTUdiag was ported over to run on MISER host systems. This has particular advantages:

- Stand-Alone RTUdiag typically requires you to physically access the RTU site. This can be inconvenient, impractical, or impossible.
- Sometimes a technician is present at an RTU site to fix a problem but does not have a laptop or the RTUdiag program. In these cases, the technician can request assistance from the central system operators via RTUdiag running on the MISER host system.
- Sometimes a technician is present at an RTU site to fix a problem but is not sufficiently qualified or trained in RTUdiag operation. In these cases, the central system operators can run RTUdiag on the MISER host system to perform the required operations on behalf of the technician.

NOTE: RTUdiag was written to run on a stand-alone PC. This is a very different environment from a MISER host system. Some adjustments were necessary.

PREREQUISITES:

- RTUdiag must be running. To start it, open a DECTerm and type `RTUDIAG` at the MISER prompt.
- MISER host system communicating with HSQ RTUs running v1.1, v1.2, v1.3, v1.4, v1.5, v1.6, and v8 RTU software. (A limited set of RTUdiag commands may even work with RTUs that are not on this list but no guarantees are made.)
- Some knowledge of stand-alone RTUdiag.

Screen Differences

While it may look the same, the video screen on a Windows PC does not work the same as a video screen on a MISER host system. To deal with this, some changes had to be made with regard to RTUdiag with respect to the video display.

Stand-Alone RTUdiag assumes it has full access to a Windows PC video screen with 80 columns and 25 lines. MISER-host RTUdiag requires a video screen session that emulates a VT100 terminal – MISER-host RTUdiag has been tested with both DECTerm and K95 sessions providing the VT100 emulation. While it is possible other VT100 emulations might work, they have not been verified.

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A DECTerm or K95 session is different in several respects:

- Instead of having 80 columns and 25 lines, a DECTerm or K95 session typically is slightly smaller because it normally has 80 columns but only 24 lines. While MISER-host RTUdiag will run in such a situation, the lowest line of the screen will be missing. Since RTUdiag will normally only puts the bottom border of the active window on this missing last line, everything will still work it will just look odd. To alleviate this, it is recommended you use a DECTerm configured for 48 lines. Alternately, when using K95 you can issue the command: `SET TERM HEIGHT 25`, to correct this limitation.
- Due to terminal session restrictions, RTUdiag on a DECTerm or K95 session will display all text as upper-case characters – stand-alone RTUdiag uses both upper-case and lower-case characters.

A sample MISER-host RTUdiag screen running on a DECTerm session is shown below:

```
DECTerm 1
File Edit Commands Options Print Help
HSQ TECHNOLOGY RTU DIAGNOSTICS VER 6.00 FOR VMS MISER HOST
RTU:142 MNET:Y 6000-16BIT

PREVIOUS COMMANDS
1 READ RTU STATUS

COMMAND MENU
REPEAT RSPNS WIN PREV...
READ AI READ DI STRING... SHOW...
START DV STOP DV READ DV CONFIG...
RAISE DV LOWER DV OTHER DV
RESET CI READ CI MEMORY WR INPT...
WRITE SP READ SP COS RPT... POINT...
WRITE AO READ AO MUX... RTU...
CBM... QUIT

RESPONSES
SET RTU CONFIGURATION: RTU ID 142
SET RTU CONFIGURATION: 6000
SET RTU CONFIGURATION: 16 BIT PROTOCOL
READ RTU STATUS - STATUS WORD: 0X8000 HEX
RECORD REPORTING RTU
RTU S/W VERSION INFORMATION: V8R03E
```

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A sample MISER-host RTUdiag screen running on a K95 session is shown below:

```

RTUMVA.HSQ.COM:23 - K-95
HSQ TECHNOLOGY RTU DIAGNOSTICS UER 6.00 FOR UMS MISER HOST
RTU:133 MNET:Y 25X86-16BIT

PREVIOUS COMMANDS
-----
1 RTU ID 133 Y

COMMAND MENU
-----
REPEAT  RSPNS WIN  PREU...
READ DI  READ DI  STRING... SHOW...
START DU STOP DU  READ DU  CONFIG...
RAISE DU LOWER DU OTHER DU
RESET CI  READ CI  MEMORY  WR INPT...
WRITE SP  READ SP  COS RPT... POINT...
WRITE AO  READ AO  MU...  RTU...
CBM...  QUIT

RESPONSES
-----
QUERYING RTU FOR BOARD 14 CONFIGURATION DATA -
QUERYING RTU FOR BOARD 15 CONFIGURATION DATA -
QUERYING RTU FOR BOARD 15 FIRST TABLE SPECS      TABLE SIZE: 90
  QUERYING RTU FOR CHANNEL DATA - OFFSET 0
  QUERYING RTU FOR CHANNEL DATA - OFFSET 24
  QUERYING RTU FOR CHANNEL DATA - OFFSET 48
  QUERYING RTU FOR CHANNEL DATA - OFFSET 72
SET RTU CONFIGURATION: RTU ID 133

. . . . UT320  Help: Alt-H  Command: Alt-X rtumva.hsq.com:23  TELNET

```

Keyboard Differences

While it may look the same, the keyboard on a Windows PC does not work the same as a keyboard on a MISER host system. To deal with this, some changes must be made with regard to keyboard entries.

Stand-alone RTUdiag assumes it has full access to a PC type keyboard. A VT100 terminal (or a DECterm or K95 session) does not have all the same keys available, and some of those keys, while available, don't work the same way. Use the table below for available keyboard options:

Stand-Alone RTUdiag	RTUdiag on a DECterm	RTUdiag on a K95 session	Explanation
ESC	! or `	! or `	Substitute the exclamation point (!) or the grave accent (`) instead of the ESC key when on a MISER host.
ALT	~ or @	~ or @	ALT keys are performed as a two-character sequence. Press the tilde (~) or at sign (@) followed by the desired key. For example, to enter ALT-R, type '~' followed by 'r'.

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INS	INS (Insert) on numeric keypad.	INS on numeric keypad.	
DEL	DEL (Delete) on the numeric keypad or DEL in the six-key grouping to the left of the numeric keypad.	DEL on the numeric keypad.	
Backspace	Backspace or Control-H	Backspace or Control-H	On a MISER host both Backspace and Control-H work the same way.
F1 through F4	F1 through F4	F1 through F4	F1 through F4 work the same in all cases.
F5 through F12	N/A	N/A	The F5 through F12 keys don't work correctly in a DECterm or in a K95 session.

NOTE: The tilde (~) character is typically used as a preamble to simulate the ALT keys. If you want to include a tilde character in your MISER-host RTUdiag data input, then type a double tilde (~~). The same applies for the 'at sign' (@@).

IMPORTANT! In the RTUdiag environment on MISER, the numeric keypad (on the right side of the keyboard) does NOT produce numbers. You must use the numeric keys on the top row of the keyboard for inputting numeric characters.

Command Differences

Stand-alone RTUdiag works on the principle that the program builds a frame for transmission to the RTU, and this frame can contain zero, one, or more command packets for the RTU to process. The MISER host environment does not allow any such frame-building interface. Instead all MISER host programs (MISER-host RTUdiag included) are limited to passing a single command packet to the MISER system, which gets routed via the MISER NCC programs to the proper RTU. As a result, a few RTUdiag command options are not meaningful in the MISER host environment and these command options have been removed from the MISER-host RTUdiag menus.

Since MISER-host RTUdiag needs to pass individual command packets one at a time via the NCC to the RTU, it will obviously run slower than stand-alone RTUdiag for any given operation.

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RTUdiag Settings

When running MISER-host RTUdiag you still need to set the following configurations to ensure things work properly. These are set the same as they are for stand-alone RTUdiag.

- Config... > RTU Settings... > RTU ID
- Config... > RTU Settings... > RTU Type

In particular, you still need to set the communications protocol to HSQ8 or HSQ16, as per the RTU you want to work with.

NCC Issues

MISER-host RTUdiag needs to route all command packets via the MISER NCC programs to the proper RTU. The MISER NCC programs have some limitations on the types and sizes of packets they can route. A few of the RTUdiag command options use command packets that fall outside these limitations. In those cases, the RTUdiag command times out. Some NCC programs handle this better than others, depending on the exact NCC version. Generally, MISER host system version 6.13 (or later) will work reasonably well with host RTUdiag. Prior MISER host systems would have problems doing anything beyond the most basic RTUdiag operations.