

RVP7 V18 Release Notes

These notes cover changes made to the RVP7 code since release V17 of 24 February 2000. If you are upgrading from an earlier release, please read those notes also. The V18 release is mainly focused on improvements to the RVP7 boot procedure. Since nothing can be more fundamental than booting, lots of new options have suddenly become available.

Bug Repairs

1. The “Dig” bit of the RESET opcode now performs a reboot sequence that skips the one-second blinking of the LEDs, thereby running slightly faster. Previously (since Rev.1) the blinking would always take place.
2. A bug was repaired that caused the Interference Rejection Filter (introduced in Rev.17) to work incorrectly when the RVP7 was configured for dual simultaneous receivers.

New Features

1. The RVP7 is now capable of rebooting from a ROM image that is supplied by the host computer via a new opcode called “BOOT” (See *RVP7 User’s Manual*, Section 6.24). This makes it possible to install and run new versions of code without having to replace the boot ROM (U62) on the RVP7/Main board. Unattended remote sites can be upgraded in this manner via a network.

When the RVP7 is first powered up, it will always boot from the on-board ROM (nothing else would be possible). but the ROM is also considered the most trusted source of code, and therefore will also be used for all “hard” resets:

- External hardware $\overline{\text{RESET}}$ line (parallel interface reset)
- SCSI Bus reset sequence
- RVP7 “RESET” command with “Pwr” option selected

When the BOOT command has been used to install a new version of code, that new code will persist across all of the following types of “soft” resets:

- Autoreset performed by the internal Watchdog
- Any type of reset invoked using the “*” local TTY command
- The power sequencing reboot that occurs when the RVP7/IFD is turned on after the RVP7/Main board has already powered up.
- RVP7 “RESET” command with “Rst” or “Dig” options selected



Note: IRIS versions 7.16 and higher support automatic upgrading of RVP7 code whenever an application is started that uses the signal processor. New DSP code is loaded as needed from the IRIS_CONFIG file “dsp.rom”, which typically will be a symbolic link to a particular named RVP7 ROM distribution file in the “config_template” directory. No upgrade is done, and no errors are generated, if “dsp.rom” does not exist, or if it exists but has already been loaded into the RVP7.



Note: SIGMET has support for third party RVP7 software developers who would like to incorporate the BOOT command into their RVP7 driver. Please contact alan@sigmet.com for details.

2. A 32-bit CRC check has been added to the RVP7's boot ROM. This allows the entire ROM image to be checked for internal consistency during the startup diagnostics, and during a reboot from the host computer. A new error bit has been allocated in GPARM Output Word #12 to indicate a checksum failure.

The CRC check is designed to accept ROMs that are programmed from either a 0x00 or 0xFF blank state. If you are making your own ROMs from Intel Hex data files, you may use either 0x00 or 0xFF as the default value for ROM locations that are not explicitly defined by the file.

3. The RESET opcode has been reorganized slightly to be more consistent with the RVP7's new booting options. The "Pwr" (power-up reset) bit that used to be in Bit #5 is replaced with a "Rst" (restart existing code) function; and "Pwr" has been moved to Bit #9, which was previously unused. Requesting "Rst" Bit #5 will cause the RVP7 to reboot using whatever version of code is currently running; whereas "Pwr" Bit #9 will always reboot from on-board ROM.
4. The minor version number of the currently running code has been added to GPARM Output Word #52, bits 4–7. The host computer can now ascertain both the major and minor code version numbers from the GPARM structure.
5. A change was made to the conditions that are necessary to bring about the power sequencing reboot when the RVP7/IFD is turned on after the RVP7/Main board has already powered up. This special reboot will now occur whenever a) the fiber signal was not present at boot time, b) the last boot was not a power sequencing reboot, and c) the fiber signal is detected for five continuous seconds. Previously, the "b" condition required that the last boot was an actual power-up.
6. The Interference Rejection Filter Alg.2 and Alg.3 algorithms now include the receiver noise level(s) as part of their decision criteria. Whenever power levels are intercompared in the algorithms, any power that is less than the noise level is first set equal to that noise level. This makes the filters much more robust and properly tunable, so that interference is more successfully rejected on top of blank receiver noise.

Setup Changes

1. The TTY "*" (reset) command now takes an optional numeric argument to specify the maximum number of slave DSPs that are initially scanned for inclusion in the processing chain. The default value is 23, i.e., two RVP7/AUX boards having ten DSPs apiece, and three DSPs on the RVP7/Main board. This optional argument is not so much a field operational feature, but rather, is intended to help with production debugging.
2. The "Reset by:" field of the TTY "V" (View) command now lists much more detail about the cause of the most recent boot. There are eleven possibilities:

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|--------------------------------|--------------------------------|
| 1) Power-Up | 2) External RESET line |
| 3) SCSI Bus Reset | 4) RESET OpCode with “Pwr” bit |
| 5) RESET OpCode with “Rst” bit | 6) RESET OpCode with “Dig” bit |
| 7) BOOT OpCode | 8) Internal Watchdog |
| 9) TTY “*” command | 10) IFD Power Sequencing |
| 11) Burn-In Self Tests | |