

RDA-8.10.3 Release Notes (13 Apr 2006)

These release notes cover changes made to the SIGMET Radar Data Acquisition platform. The last public release was RDA-8.10.2 dated 29 March 2006. If you are upgrading from an earlier version please also read the release notes that have been published since then.



Note: This was an internal release for inhouse production only.

New Features

1. The RVP8 can now operate with a different intermediate frequency for each pulsewidth. Previously a single IF selection was applied system-wide. Use the **Mt<n>** menus to set the IF separately for each pulsewidth, or you may continue to choose a common IF via the **Mb** menu, e.g.,

```
RVP8> mb
Burst Pulse and AFC
```

```
-----
Tx/Rx Intermediate Frequency: Various (58.0000 to 62.0000 MHz) 60
Tx/Rx Intermediate Frequency: 60.0000 MHz
```

2. The dual-frequency receiver option has been removed from the RVP8. This mode was inherited from the RVP7 wherein frequency multiplexing was the only way the hardware could handle more than one receive channel. Dual-IF systems require two STALOs, two different IF filters, etc., and are expensive and fussy to setup and maintain. The RVP8 offers much better solutions either by using two IFDs or a single IFD with two IF inputs.

Bug Repairs

1. A sample timing error has been repaired on the Rev.E/F/G RVP8/IFD that would cause occasional bad samples from the secondary IF-Input channel. The primary IF-Input and Burst-Input channels were not affected, hence this bug is only of concern to customers running dual-Pol or wide-dynamic-range IFD modes.
2. An intermittent problem has been repaired on the RVP8/Rx Rev.C card in which the board would sometimes lose its serial and revision numbers following a reset. This was discovered during production burn-in tests, and should not affect any operational sites.

RDA-8.10.2 Release Notes (29 Mar 2006)

These release notes cover changes made to the SIGMET Radar Data Acquisition platform. The last public release was RDA-8.10.1 dated 19 January 2006. If you are upgrading from an earlier version please also read the release notes that have been published since then.

New Features

1. The four RS-422 I/O lines on the RVP8/Rx card can now optionally be inverted. The **Mc** menu now chooses not only the type of signal present on each line, but also its polarity.
2. The RVP8 now accepts a 1-pulse-per-second RS-422 signal from a GPS time source. It serves to indicate the precise instant that a given fractional seconds offset (usually zero) occurs. Use the **Mc** menu to enable this feature on Pin-3 of the RVP8/Rx 9-pin "D" connector, and also to choose the rising/falling edge and optional nonzero fractional seconds offset. A new bit was added to the GPARM Immediate Status #4 word telling when the GPS 1pps clock input is missing or out of tolerance.
3. The RVP8 timeseries pulse headers hold the UTC time of each pulse with nanosecond resolution (previously only millisecond resolution was available). When combined with the GPS 1pps feature, the absolute time of every transmitted pulse is now recorded to within approximately 50ns. Even without the GPS input, the Linux-only time keeping has been improved so that pulses are tagged with UTC times that are within 0.05ms of the Linux clock. This gives much better out-of-the-box time tags whose accuracy is largely determined by NTP time syncing.
4. When the RVP8 is configured to use the GPS 1pps clock you also have the option to generate radar triggers that are synchronous with 1-second intervals of absolute time. This allows two RVP8s that are located anywhere on Earth to fire their triggers in sync with each other. One constraint when using this feature is that the PRF in Hertz must be an integer that divides half the 72MHz IFD reference clock. The table below shows the valid PRFs that can be synthesized using absolute time.

50	60	64	72	75	80	90	96	100	120	125	<i>128</i>	144	150	160	180	192	200
225	240	250	<i>256</i>	288	300	320	360	375	<i>384</i>	400	450	480	500	576	600		
625	<i>640</i>	720	750	<i>768</i>	800	900	960	1000	1125	<i>1152</i>	1200	1250	<i>1280</i>	1440			
1500	1600	1800	1875	<i>1920</i>	2000	2250	<i>2304</i>	2400	2500	2880	3000	3125					
<i>3200</i>	3600	3750	<i>3840</i>	4000	4500	4800	5000	5625	<i>5760</i>	6000	6250	<i>6400</i>					
7200	7500	8000	9000	9375	<i>9600</i>	10000	11250	<i>11520</i>	12000	12500	14400						
15000	15625	<i>16000</i>	18000	18750	<i>19200</i>	20000											

The PRFs in italics are not available when your system includes a RVP8/Tx card that is synthesizing a pulsed transmit waveform (because of additional timing constraints with the Tx card). Absolute time sync'd triggers are enabled from the **Mc** menu, following the questions that setup the GPS 1pps electrical signal.

5. An external H/V (Horizontal/Vertical) polarization status flag can now be input to the RVP8/Rx card. Use the **Mc** menu to configure RS-422 differential input pins 2&7 to receive this signal (logic high corresponds to vertical polarization). The H/V flag will appear in Bit-0 of the `iPolarBits` element of each pulse of timeseries data.

6. Bit #4 of the GPARM latched status word will now be set whenever there is an error in polarization control and/or polarization status input. The flag is also signaled in **ascope** and **iris**. When the transmit polarization is fixed H or V, then this GLS_POLERROR bit will be set if the H/V input flag does not match. During alternating polarization the error is set if the H/V flag is not alternating from pulse to pulse. No errors are flagged during simultaneous H+V mode.
7. The DSP Driver `dspw_prf()` routine will now set the PRF much more accurately than before. Previously the period was quantized to 166ns based on the traditional SETPWF opcode, but the 1ns extended form is now used whenever the DSP hardware supports it.

Bug Repairs

1. Repaired the **tsimport** utility to recover from a missing UDP packet. It will now drop the entire pulse which has a missing packet. The logging on the terminal is significantly improved. It now includes the time of each message. It now will correctly if the last packet of a ray is missing. It will also now log an entire missing ray with debug turned off. The double newlines are removed from the log.
2. The diagnostics for the IO62CP backpanel did not work properly when 220K resistors were installed in the S1/S2 slots.
3. Recursive calls to the RVP8 opcode interpreter from within a free-running PROC cmd would see a spurious XARG still dangling from the original PROC.
4. The RVP8 minimum prototype Rx filter bandwidth has been reduced from 50KHz to 5KHz to accommodate very long conventional (not compressed) pulses.
5. The three ORDA output control lines `PULSE_RATE_INT[2 . . 0]` are set according to the nominal PRF from the most recent SETPWF command. Previously these lines were not being controlled by the RVP8.

RDA-8.10.1 Release Notes (19 Jan 2006)

New Features

1. The `sig_microSleep()` function now gives much more unified behavior across different platforms and different versions of operating systems. Also, the new function `sig_periodicSleep()` is available for non-drifting wakeup applications.

RDA-8.10 Release Notes (11 Dec 2005)

No significant changes since 8.09.12.