



5096 FIRMWARE ENHANCEMENTS

Document Number A100745

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Version No.: 4.4.1

Effective Date: January 30, 2006

Description of Changes:

Initial Release: September 19, 2005

1. Fixed display of logged memory date and time broken in version 4.3.
2. Allow time samples during display of logged memory.
3. Timed and event report printing do not interrupt command printing.
4. Fixed decimal display of logged memory used.
5. Align timers and change in time no longer close logging memory tables. The next report is logged as an event report which re-aligns the time.

Updated Release: 4.4.1 January 30, 2006

6. Increased rain gauge momentary pulse delay from 200 to 450 milliseconds to support the All Weather Rain Gauge.



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Version No.: 4.3.2

Effective Date: June 30, 2005

Description of Changes:

Initial Release: February 23, 2005

1. The status sensor will now transmit and log one report on the test interval when it returns to a zero state. In previous versions, the status sensor would only transmit on the test interval when the status value was not zero.
2. If no time parameters are specified for a GET-MEM command then a logged data report's date and time are not checked before printing it. This allow the printing of all logged data reports even if they are out of time order.
3. When GET-MEM reads an event data report, it adjusts the following timed data reports to keep the data report time in sync. Timed data logging starts with an event report to record the time of the first report. When data logging is stopped and restarted, new start times are recorded.
4. When GET-MEM reads an invalid logged data report, it skips the report and then continues with the logged data report display.
5. When the wind direction sensor is calibrated, the calibrated direction is used in the wind report format.
6. A new option was added to the TEST-TX command to transmit a single high or low tone.
TEST-TX 0 transmits both high and low tones
TEST-TX 1 transmits no tones
TEST-TX 2 transmits the high tone
TEST-TX 3 transmits the low tone
7. Allow use of READ-AN and SET-AN for battery sensor for all packages. This allows calibration programming of the battery sensor if desired.
8. The transmit hold off timer is reset when the SET_HOLDOFF command is executed.

Updated Release: 4.3.1 April 11, 2005

9. Limit calibrated wind direction sensor value in the wind report format to range 0 to 63.

Updated Release: 4.3.2 June 30, 2005

10. Fixed error in computing radio power on and key on wait timers longer than 100ms.



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Version No.: 4.2

Effective Date: September 10, 2004

Description of Changes:

1. Set default mode for EV-2 to mode 6 for all packages. Mode 6 uses a 200ms timer to ignore the second pulse generated by 5050P-MS momentary pulse rain gauges. This eliminates the need to set the event mode to 2. If a high speed counter is used on EV-2, reset the mode to 4 to disable the 200ms timer logic.
2. The 81 package now uses a 3 second analog warm time by default. The 82 package has been retired.
3. A new package NB was added that is similar to the N package with the battery sensor default transmit interval set to 1 day, sample interval set to 3 hours with a change to generate a transmission set to 50 (0.50 volts).
4. Fixed the error that caused a time offset in the logged rainfall data after an automatic counter reset to zero.
5. Wind sensor timed transmission are not done until the wind direction sensor reading is finished.



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Version No.: 4.1

Effective Date: May 20, 2004

Description of Changes:

1. Fixed peak wind computational error that caused erroneous large peak wind values.
2. Fixed time update and event processing during long logged memory dumps.
3. Pausing the logged data, help or showall displays no longer causes serial output buffer errors.
4. Time and event interrupts are now processed in the middle of a logged data display.
5. Morse code logic has never been used and so was removed.
6. Added command arguments to set-rfwarm to define the carrier detect on state.
7. Transmissions are no longer held until the next clock tick when the transmit holdoff timer is set to zero.
8. Fixed analog warm time drift for longer warm times (greater than 100 milliseconds).
9. Test transmission no longer transmit before a long sensor warm time is done.
10. Limit analog warm wait to 10msec for status, battery voltage, and wind direction sensor reads. Long analog warm times no longer effect these sensors. This eliminates the event wind transmission delay caused by long warm times when reading the wind direction.
11. The battery test was changed to power up the radio to put the battery under load then power down the radio before reading the battery voltage. This eliminated bad battery voltage reads caused by noise from power amps.
12. Eliminated pause in the middle of a line of serial output when a transmission occurs.
13. Fixed wind/counter display type for read-wi/read-ctr.
14. Added 5096-82 version the has a default 3 second analog warm time.
15. Changed Maxon RF Power on default to 400 milliseconds to correct key drop out when radio is cold.
16. An NB package has been added that is like the N package except that the battery sensor is enabled with an ID offset of 8 and transmit interval of 24 hours.
17. Display copyright year on program start.



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Version No.: 3.9.02

Effective Date: January 31, 2005

Description of Changes:

Initial Release: February 7, 2001

1. Fixed a problem that corrupted the data logging memory after a power down reset.
2. Added version 82 that has a 3 second analog warm default.

Updated Release: January 31, 2005

3. Fixed the error that caused a time offset in the logged rainfall data after an automatic counter reset to zero.
4. When GET-MEM reads an event data report, it adjusts the following timed data reports to keep the data report time in sync.
5. When GET-MEM reads an invalid logged data report, it skips the report and then continues with the logged data report display.



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Version No.: 3.8

Effective Date: September 14, 2000

Description of Changes:

1. Divided the 5096 test into two levels. Test level one transmits all active sensors. Test level two transmits all active sensors and extends the tone signal for 5 seconds. Then it tests the ROM, RAM, battery and clock. Finally it transmits without tone for 5 seconds.
2. Added command arguments to the test command. The first argument sets the test level: 1 or 2. The second argument sets the default test level: 1 or 2. If no arguments are used the default test level is performed.
3. The TEST switch performs the default test level set by the TEST command.
4. The SHOWALL command displays the default test level.



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Version No.: 3.7

Effective Date: February 23, 2000

Description of Changes:

1. Added a delay at startup to let power supply come up before starting program. This prevents reset looping at power up caused by reading ID switches before power supply voltage is up to operational level.
2. Fixed version 3.6 error in CHK-MEM command display of percent of logging memory used.
3. Fixed version 3.6 error in READ-CTR command display of COUNTER parameters as WIND parameters when the wind enable flag was not set.



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Version No.: 3.6

Effective Date: December 7, 1999

Description of Changes:

1. A 5096-S version of the firmware was added to support serial sensors and dial-in modems. New commands were added to program serial sensors for wireless sensor links: read-serial, set_serial, write-serial. Serial sensors take over an analog sensor number when at least one parameter is set by the set-serial #,... command, where # is the analog sensor number. Use the set-an #,... command programming at least one parameter to restore the sensor to the analog number. The default console baud rate was set to 9600 baud.
2. A new command, READ-IDSW, was added to read and display ID switches.
3. An 'M' radio version for the firmware was added to support Maxon radio parameters: 100ms radio power on delay and radio power is on while waiting for carrier detect to drop.
4. The transmitter tone and battery voltage test was fixed for radios with longer power on times. The test now waits the radio power on delay after turning on the radio power and before keying the radio. The battery voltage is read under load after the transmitter tone test.
5. The 5096-90 version now allows programming of Analog sensor 5.
6. The allowed radio preamble time was increased from 100ms to 2000ms.



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Version No.: 3.5

Effective Date: June 6, 1997

Description of Changes:

1. Log memory and showall displays would hang at 9600 baud. The serial output task had a memory request imbedded in its FIFO request. A standoff would occur between the serial output task and the command task when memory was loaded with many lines of output. The memory request was taken out from within the FIFO request to solve this problem.
2. CTRL-C did not terminate serial output for showall and did not work reliably for get-mem commands. Now CTRL-C terminates output for all commands.

Firmware upgrade costs:

\$100.00 for the firmware upgrade license.

The upgraded firmware is provided on one EPROM chip.

Duplication by copying the EPROM is authorized within the same agency or company.

Additional firmware upgrades on EPROM chips can be ordered at \$50.00 each.

Firmware costs do not include tax or shipping.



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Version No.: 4.0

Effective Date: October 1, 1996

Description of Changes:

1. The 5096 console port communications now use half duplex mode.
2. Serial sensor support has been added to version type 4.0A. The first serial sensor supported is the absolute encoder. A sample interval parameter, *s_int*, was added to the SET-EV command. Serial port switch control was added to switch the 5096 RS232 port between the console and the absolute encoder.

Firmware versions:

- 4.0 - Use with crystal radios.
- 4.0R - Use with synthesized frequency radios.
- 4.0I - Use Enhanced IFLOWS format with crystal radios.
- 4.0RI - Use Enhanced IFLOWS format with synthesized frequency radios.
- 4.0A - Absolute encoder with crystal radios.
- 4.0AR - Absolute encoder with synthesized frequency radios.
- 4.0AI - Absolute encoder, Enhanced IFLOWS format with crystal radios.
- 4.0ARI - Absolute encoder, Enhanced IFLOWS format with synthesized frequency radios.

Firmware upgrade costs:

\$100.00 for the firmware upgrade license.

The upgraded firmware is provided on one EPROM chip.

Duplication by copying the EPROM is authorized within the same agency or company.

Additional firmware upgrades on EPROM chips can be ordered at \$50.00 each.

Firmware costs do not include tax or shipping.



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Version No.: 3.4

Effective Date: October 1, 1996

Description of Changes:

1. The Enhanced IFLOWS transmission format was added to the radio data formats. Transmission formats are now defined as Standard ALERT, Enhanced ALERT, and Enhanced IFLOWS. Firmware version type 3.4RI has the Enhanced IFLOWS transmission format selected by default. Other firmware version types, 3.4 and 3.4R, have the Standard ALERT format selected by default.
2. Two new parameters were added to the SET-RFWARM command to control the "listen before talk" radio power and to allow programming of the radio power on wait time.

The radio power is turned off by default for crystal radios (version 3.4) while waiting for no radio carrier. The radio is turned on and allowed to warm-up before testing for carrier again. Since synthesized radios have such a long warm-up timer (800 milliseconds), the radio power is not turned off by default (version 3.4R) while waiting for no radio carrier. Override the carrier detect wait power state with the *cdp* parameter in the SET-RFWARM command.

The radio power on wait time for crystal radios is 25 milliseconds by default (version 3.4). It is 800 milliseconds for synthesized frequency radios by default (version 3.4R). Override the power on wait time default with the *pwr on* parameter in the SET-RFWARM command.

3. Eliminated repeat transmission of 2 wire rain gage reports after the hold-off timer. This program fix also eliminated repeat transmission of 5050P rain gages that would occur occasionally.
4. The test transmission time on (with tone and no tone) is adjusted to match the radio power on time to prevent radio shutdown by the hardware timer because of longer power on wait times required by synthesized frequency radios.

Firmware versions:

- 3.4 - Use with crystal radios.
- 3.4R - Use with synthesized frequency radios.
- 3.4I - Use Enhanced IFLOWS format with crystal radios.
- 3.4RI - Use Enhanced IFLOWS format with synthesized frequency radios.

Firmware upgrade costs:

\$100.00 for the firmware upgrade license.

The upgraded firmware is provided on one EPROM chip.

Duplication by copying the EPROM is authorized within the same agency or company.

Additional firmware upgrades on EPROM chips can be ordered at \$50.00 each.

Firmware costs do not include tax or shipping.



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Version No.: 3.3

Effective Date: June 30, 1995

Description of Changes:

1. Holding down the TEST button and then resetting the 5096 by pressing the RESET button or by powering off and then on executes a parameter reset. This replaces the double RESET feature in version 3.2. The double reset feature caused problems on some transmitters whose power up voltage fluctuated and creating multiple resets thus inadvertently causing a parameter reset.
2. EVENT and COUNTER sensor accumulators can be reset to 0 at a programmed day of year. A report is transmitted when the accumulator is reset.
3. A "listen before talk" feature was added to the 5096 firmware. The 5096 can test for radio carrier detection before transmitting. This helps prevent radio "collisions" that would occur if two or more 5096 units transmitted at the same time. This feature requires a board modification and only works with the certain radios (consult factory).
4. The 5096 and certain radios have hardware timers that shutdown the radio if it is left on too long. This is done to prevent the radio from overheating. It also prevents a radio from getting stuck on and interfering with all other transmitters near it. To avoid the radio hardware shutdown the 5096 firmware turns the radio power on to test for carrier and then turns off power while it is waiting for its next test (100 milliseconds).
5. Special version 3.3R added to support the Ritron synthesized frequency radio. This radio requires an 800 millisecond warm-up for frequency lock before transmitting.

Note: Do not use the carrier detect feature in version 3.3 with the Ritron radio. The radio hardware timer will shutdown the radio before a lack of carrier is detected after the 5096 first detects a carrier.

6. Firmware versions:
 - 3.3 - Use with crystal radios.
 - 3.3R - Use with synthesized frequency radios.



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Version No.: 3.2

Effective Date: August 19, 1994

Description of Changes:

1. Pressing the RESET button twice quickly will initialize parameters with the station ID set in the switches. This feature can be disabled or enabled.
2. Added new commands TEST and RESET that mimic the TEST and RESET button functions.
3. Added a new command SHOWALL to display all active sensor parameter sets, current raw and calibrated readings and all station setup parameters.
4. Resets are counted and can be displayed as a maintenance check. The reset count is reset on inits or by command.
5. Resets no longer align (restart) sample and transmit timers.
6. The TEST-TX command transmits for 5 seconds. A command parameter can be used to do a test transmission without tone for a frequency check. The TEST-TX command is now subject to the transmit hold-off timer.
7. Sample intervals on event and wind(counter) sensors were changed to transmit intervals. Reports are transmitted on transmit intervals without having to satisfy a change requirement. Event transmissions are still subject to the change requirement.
8. Added a transmit interval to the status sensor.
9. Sample readings are no longer logged to memory unless they meet the change requirement for transmission.
10. Analog sensor calibrated readings can no longer go negative, they are limited to 0.
11. The transmit 0 parameter for analog sensors was changed to an event threshold. The sensor reading must be greater or equal to this threshold before an event change report is transmitted. This allows a narrow change to transmit to be set on PTs to track water level rises but eliminates useless reports from a dry PT due to temperature fluctuations.
12. Sensor ID setup no longer is effected by default sensor ID numbers assigned to inactive sensors.
13. The HELP command now shows the command list alphabetically.
14. The parameter displays are now organized into columns for easy reading.



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Version No.: 3.1

Effective Date: May 6, 1994

Description of Changes:

1. 5096-54,88,90,81,N versions available with Plug and Play parameter sets.



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Version No.: 3.0

Effective Date: January 5, 1994

Description of Changes:

1. Firmware copyright changed to NovaLynx Systems Inc.
2. Default parameters changed:
 - Rfwarm: 200, 100
 - Enhanced transmit mode: Off
3. Both RFWarm parameters displayed for SET-RFWARM command.
4. Status sensor transmission shows correct value.
5. Peak wind sample interval is displayed correctly.
Peak wind computation and transmission works.
6. Memory logging will continue when old data overwriting enabled.
7. No sensor ID numbers are excluded from transmitting.