August 2011 AcquiSuite/AcquiLite Firmware changes.

Firmware updates for the A7810, A8810 and A8812 have a number of substantial changes. Users should be aware of these changes and how these may impact any custom applications that may have been developed. Although great care has been taken to maintain the previous feature set, users should test the firmware update prior to deploying this firmware on production equipment.

The firmware update will be provided at no cost.

Firmware release for A7810, A8810, A8812:   v02.11.0814
Linux kernel version: 2.6.28.10-r1.89--g39f0aec

Overview of changes:
This firmware update includes a number of minor changes as well as several new drivers.

New Drivers
- Leviton/IMS Series 2000 Meter
- SMA Inverter SB3000US, SB4000US, SB5000US, SB6000US, SB7000US, SB8000US
- AcquiLite EMB A7810 on board pulse input device.
- Added ID strings for PM870 meter (uses PM800 driver)
- Added ID strings for A89DC rev B design. (uses S89DC generic driver)

Major features
- Upload option for XML over HTTP. (XML in AcquiSuite format)
- Support for AcquiLite EMB A7810
  Note: A7810 requires Linux kernel version 2.6.28.10-r1.92b-ge055112 or later.

Other Firmware Changes:
- Added E30A meter condensed data view (link is provided in the advanced page)
- A7810 support: 'adinput' now displays in its usage message whether it is using the new 'adpulse' kernel driver or old user-space code to access ADC. Older system always did user-space access to the ADC and should be upgraded prior to the new kernel.
- Linux Kernel no longer prints kernel messages on the console serial port. (e.g., the DB9 on the A8812); doing so caused significant interrupt latency and was removed for A7810 support. All kernel messages are still available via the AcquiSuite menu: System >> System Log Files >> Kernel Boot Log page. This change should only effect developers uing the DB9 port on the A8812 when using it for AcquiSuite module debugging. Normal AcquiSuite users should see no change in system behavior.
- Add /sys dir to ramdisk.gz so we can get away from creating it in /sbin/hotplug. Minor hotplug fixes.
- If lpc21isp fails to upgrade A8812 firmware, sleep and retry as a workaround. Caused by adding a USB memory module and rebooting. Memory modules are not supported in firmware at this time.
- The system no longer attempts to program the a8812io.hex firmware image if board type is A8810 or A7810. As part of this, dmesg is scanned at the start of rc.sysinit, and the detection of the cause of the reboot (by watchdog or not) was reorganized.
- Added additional string detection for new kernel serial port strings.
- Detects the 'A7810' board, and sets BASEMODEL/FULLMODEL properly.

- Updated release for A7810 that prints AcquiLite on the LCD display and several web configuration pages depending on the base model type found.
- Modified data upload configuration page: changed AcquiSuite to basemodel name (A7810, A8810, A8812) and changed configuration option wording to clarify feature from "Allow remote modbus device configuration" to "Allow remote configuration (channel 1 only)"
- Fixed broken AcquiSuite Module help page link.
- Added working default parameter to set obvius html/csv file uploader if no uploader on ch1 is selected.
- Added code to logger process to reset alarm so the AcquiSuite does not sig-alarm when log cycle > 20 minutes and it actually takes > 20 minutes to read all the data from meters on a big modhopper network.
- Updated tidyconf save ini procedure. Now the AcquiSuite only saves loggerconfig.ini if the target file is actually dirty. Before it had also trusted the updating procedures which could have false positives if the parameter being updated was already set and present.
- Changed the text of error message for UPLOADER_AUTH_ERRORs to mention bad URL or other causes aside from bad user/password.
- xmlupload: specify XML encoding="US-ASCII" in xmlupload, devicelist.cgi and sensorlist.cgi.
- xmlupload: Fixed excessive logging if the meter's logfile contains < NUMPOINTS fields. This happened with Fronius inverters when inverter is returning error 138 (gateway path unavailable), seems to be off by 1.
- Added a feature to set host name on A7810 systems to reflect the serial number and acquilite.com domain name.
- Fixed LED spurious flash on the A7810 caused by modemmgr trying to reset the onboard modem. Modemmgr now checks the board type and will not try to hardreset on ARM boards other than A8812.
- Added a separate Modbus/TCP daemon for handling A7810 systems. When the A7810 hardware is detected, the Modbus/TCP process exits and the a7810d process is launched in place of it.
- Senddata: Improved handling of out-of-memory conditions. Introduced SenddataShutdownCleanlyAndExit() routine to handle unexpected termination: hangs up PPP, kills any child procs (uploaders), removes lockfile, etc. Cleaned up Senddata's log messages to clarify what is happening when it shuts down.
- Now restarts senddata process if out-of-memory problems were detected during last upload cycle to mitigate memory leaks. Senddata logs a message that it is restarting due to "out-of-memory problems" to syslog & wtmp ONLY, not senddata.log and terminates w/ exitcode ENOMEM (=12). Also added ProcStat() calls to display status in process list, for easier debugging.
- Senddata: Replaced time conversion procedure that used mktime() and set the timezone with setenv(TZ). The new procedure uses the timegm() function which is non-standard but included in uClibc. The old version of this procedure would change the environment with setenv which causes the application to leak 16 bytes every time it is called. This could build up over time and let a background process (senddata) consume all the free memory on the system.
- Tidylogs, loghtml, statdev, statlog, toc, log. Added openlog() call to make the name of the program show up in syslog debug files.
- Added malloc_trim() to the main loop of senddata. This is to clean up any memory that was freed by the app that is not in use. Added malloc_stats() function to debugmemoryusage() command. This will print what the uClibc heap manager thinks it is doing.
- Tyco 1530 driver: added a wrapper around a f/w version debug log message.
- Wattson driver: added a wrapper around a f/w version debug log message
- Code cleanup: A8911, R9120, A8923, A8812. Resolved configuration file differences about whether SECT_CONTACTMAXFREQ is a string (10hz,50hz...) or integer (0,1,2...) . Now, it is always an integer code that matches the value of the Modbus register. All drivers (a8911,r9120,a8812io) are updated.
- Added patch to re-init the LCD after 10 times cycling through new display elements. This should reset the LCD if the display gets messed up with an ESD discharge. Separated LCD init procedure into two sections so the LCD data init to the module can be called separately from the Arm9 hardware init.
- Fixed a typo in the lcd init program. Looks like it didn't actually break anything in the lcd init process however.
- Fixed typo in e30a, driverconfig, devlist, logersetup, template, sensorlist: Change 'recieved' to 'received' in error msgs.

- Wattnode driver: Fixed a bug in the frequency setup dropdown menu. Old menu set value but did not display the current value properly.
- Added missing menu option to manually add the Badger 380 device.
- Fixed a bug in device 250 that causes the logger to terminate if the device 250 has a blank name. This was introduced in the 0411 firmware and is now resolved. The workaround for this issue is to select the rename-all-devices in the device list and assign the onboard io 250 a name.
- Updated content type for data export to match BMO. Should fix export problems with MSIE and Firefox when exporting csv log data directly in a browser.
- Removed Fronius IG inverters from the supported device list because these devices do not have an RS485 interface that we can support. Kept support for the IG-Plus, CL and TL inverters.
- Fronius: Added two catch-all ID strings to match unsupported/unrecognized Fronius inverter models (such as SunPower branded units), and so avoid class-mismatch errors. These catchalls allow data to be logged so we can evaluate the new inverter to decide what is required for it to be supported. Include Fronius inverter (type 0xCA) to allow further evaluation.
- AcquiSuite library: include strsplit.h to catch inconsistencies in strsplit.c
- Watchdog.c: Added flush and pause to output message so that the kernel warning on the console doesn't clobber output text when the AcquiSuite closes the watchdog port.
- Now invokes dmesg with a 32K buffer instead of default, to capture all boot msgs. With the default buffer and with one or more USB devices, early boot messages were lost. This brings setup/log.cgi into sync w/ rc.sysinit, which also uses a 32k buffer with dmesg. This did *not* require a kernel change, but just tells dmesg to use a larger buffer.
- Added default parameters for all the uploader channels. This update does not change the default behavior, however the defaults will now be present in the INI file.
- Updated modem getty process to monitor either serial or USB modems.
- Updated linux kernel to detect Multitech, Radicom V92HU and USR 5637 via ACM interface. Updated USB device list page to show these devices. This is part of the preliminary to support these devices but is not supported yet.
- Fixed modbus-serial communications in nvsetup when reading time from RTC at boot.
- Now loads Linux time from RTC *before* upgradeonboot, so that linux time is set if upgradeonboot wants to reboot system.
- nvsetup --systohc performs a sanity check on the linux time and skips saving to the RTC if the linux time appears unset.
- USB Devices page: now searches in 3 places under /sys to locate a USB devices details, and is called by the USB devices page to get all the details of a USB device. It is also used by IOPortOpen() to allow opening a device by its USB ID's or a match against its USB name string. In the future, it _may_ be used by modemmgr to help in accurately probing USB modems by their USB details. Modem Setup page displays '... connected via USB' for ttyACM-class devices, as well as ttyUSB-class.
- Updated kernel r1.89 addresses an FTDI serial port issue that caused the port to lock up if bytes were received but not read out of the buffer. This update is required for Fronius and SMA modules.