

Sixnet IPm Firmware Revision History

Note: IPm firmware versions are of the form **major.minor.buildnumber**. A letter **X** will be appended in the case of unreleased experimental versions. Other letters may be added in the case of patches or other special versions. As such, releases which are not consecutive are to be expected. Anything in between two releases was an intermediate version on the way to the next release.

Jump to series:

- [4.9](#)
- [4.3](#)
- [4.2](#)

IMPORTANT: Firmware versions 4.9 and later only support the following models:

- ST-IPM-6350
- VT-mIPM-245-D
- VT-mIPM-135-D
- VT-IPM2M-113-D
- VT-IPM2M-213-D

IMPORTANT: Firmware versions 4.3.174 or 4.9.143 required on models with the new FPGA chip.

IMPORTANT: To downgrade from 4.9.152 or 4.3.179 to 4.3.174 or 4.9.143 requires installing DisableAdvancedErrorCorrection.tgz. Please see TNIA43 - Changing Sixnet RTU Firmware for more details.

4.9.152

2018-02-12

New features:

ID	Subject	Description
15285, 15320	Error Correction	Added bit-scrubbing and multi-bit error correction to file system.

Fixed issues:

ID	Subject	Description
15329	DNP3	Fix float value inaccuracies in reported event data.

4.9.143

2016-02-26

Fixed issues:

ID	Subject	Description
14045, 15171, 15212, 15246, 15253, 15211	Hardware	Fix programming of new FPGA chip on new revision of CPU.
14531	DNP3	Fix crash in DNP3 driver when the transport layer is set to serial.
14751	SNTP	Disable debug logging in the Sntp.sh script.
15255	SNTP	Fix memory leak in sntp script files.
15048, 15099	Serial	Fix serial communications not functioning after reboot when the station number is set to 19.
15251	iptables	Fix iptables.
14261	Redundancy	Fix a case where the backup RTU would become the active controller after a configuration load.

4.9.127

2014-11-05

Fixed issues:

ID	Subject	Description
11713	ISaGRAF	Fix ISaGRAF not communicating over certain ports even when the configuration is correct.

4.9.121

2014-05-07

Fixed issues:

ID	Subject	Description
13335	Ethernet	Fix Ethernet time outs on units with two Ethernet ports. This was a regression caused by changes made in 12002.

4.9.120

2014-04-11

New features:

ID	Subject	Description
13170	Hardware	Remove register limits for mini, micro and m2m units.

Fixed issues:

ID	Subject	Description
11783	AGA	Fix the output status for AGA not being reset on each run. This would lead to a previous run status being used on subsequent runs.
12756	Atomic Configuration	Fix several atomic configuration failures in specific corner cases.
13051	Atomic Configuration	Remove "phone home" to central config server; this unit is not supported by the server.
13127	ISaGRAF	Improve scan times by having ISaGRAF be started by init, and by reducing the monit scan times to once every minute, not once every 5 seconds.

4.9.114

2014-01-06

New features:

ID	Subject	Description
10349	Atomic Configuration	Add support for loading configuration packages.
10605	IPm	Implement UDR-A (authenticated UDR) in IPms.
10743	Firmware	Remove support for modules with only 16MB of RAM, as the firmware no longer fits.
10816	SNTP	Add a SNTP clock synchronization bit. This is set when the RTU has successfully synchronized its clock with the configured SNTP server.
10817	Datalogging	Add a datalogging status bit. This provides an indication as to whether or not a datalog configuration is loaded.
10837	Hardware	Add support for new rev CPU board (new FPGA part).
12010, 12213, 12224, 12265, 12601, 12442	Core	Added service monitoring with Monit. Monit will ensure all necessary programs are running at all times, restarting them if they exit for any

reason.

12363	OEM	Add custom programs to additional models for an OEM.
-------	-----	------------------------------------------------------

Fixed issues:

ID	Subject	Description
9907	I/O	Fixed a race condition which could result in I/O not working if some applications took too long to start and initialized shared memory in the wrong order. All applications which consume this shared memory now wait for the it to be correctly initialized before starting.
10547	Redundancy	Allow the sysinfo output register to be writeable even when outputs are frozen.
10677	Serial	Fix regression which breaks serial communications.
10683	Shell	Fix su - just printing the help instead of opening the root shell as it should.
10829	System	Fix Perl search path for even better backwards compatibility with older programs than symlinks alone.
11280	ISaGRAF	Increased number of I/O boards supported in ISaGRAF runtime from a uint8 (255 boards) to a uint16 (65535 boards).
11372	System	Fix /proc/stat to correctly report idle time, so top now reports valid idle stats.
11532	UDR	Fix incorrect symlink creation to libudr aliases.
11641	SIVM	Fixed restart reason being set to "hard reset" in some cases when a "soft reset" was actually done.
11669	SIVM	Fixed eth0 link speed being incorrectly reported in some cases.
12002	RS-232	Fix system lockup when Ethernet cable plugged into serial port.
12060	NTP	Fix IPm system time reported by the Tool Kit not always agreeing with the system time reported on the command line.
12606	Atomic Configuration	Fix atomic configuration loading failure when loading a datalog configuration which was configured to save to NAND.
12651	Serial Ports	Fix serial port configuration changes not taking effect until after reset.
12677	Datalogging	Fix sxlogview not being able to read records from the datalog file when network/passthru mode is selected.

4.3.179

2018-02-12

New features:

ID	Subject	Description
15285, 15320	Error Correction	Added bit-scrubbing and multi-bit error correction to file system.

Fixed issues:

ID	Subject	Description
15329	DNP3	Fix float value inaccuracies in reported event data.

4.3.174

2016-02-26

Fixed issues:

ID	Subject	Description
11482, 11508, 11645, 15159, 15212, 15246, 15211	Hardware	Fix programming of new FPGA chip on new revision of CPU.
11572	System	Fix crcman application.
11641, 11682	SIVM	Correctly report a soft reset in SIVM.
15251	iptables	Fix iptables.
15255	SNTP	Fix memory leak in SNTP scripts.

15255	SNTP	Implemented log rotation for SNTP scripts to prevent the file system being filled up. Disabled debug logging in SNTP scripts.
-------	------	-------------------------------------------------------------------------------------------------------------------------------

4.3.163

2013-03-28

Fixed issues:

ID	Subject	Description
9907	I/O	Fixed a race condition which could result in I/O not working if some applications took too long to start and initialized shared memory in the wrong order. All applications which consume this shared memory now wait for the it to be correctly initialized before starting.
9992	ISaGRAF	Fix detection of newly compiled ISaGRAF programs which was resulting in an older program continuing to run even after a newer one was loaded.
9993	Datalog	Send packed discrete data to datalog server, not unpacked.
10016	Serial	Fix "unassigned" ports from being initialized by the communications, ISaGRAF and other programs - they are for user applications, and should be left alone.
10419	ISaGRAF	Fixed an issue where the ISaGRAF debugger would report "Invalid Start/Stop command" in a pop-up.
10545	Redundancy	Write the redundancy role even when outputs are frozen.
10547	Redundancy	Allow the sysinfo output register to be writeable even when outputs are frozen.
10677	Serial	Fix regression which breaks serial communications.
10686	System	Add a symlink for Perl for backwards compatibility with older programs.
11280	ISaGRAF	Increased number of I/O boards supported in ISaGRAF runtime from a uint8 (255 boards) to a uint16 (65535 boards).
11342	Kernel	Fixed idle time always being reported as 0 in /proc/stat.

4.3.144

2012-08-07

Open issues:

ID	Subject	Description
8744	SIVM	The ST-GT-1210 displays an invalid RTU type in the System Information module.
8787	SIVM	Certain Ethernet addresses are displayed as negative numbers in the System Information module.

Fixed issues:

ID	Subject	Description
8963 and 9475	mIPm	Fix occasional submodule EEPROM erasure on boot.
9408	ISaGRAF	Build hot restart ISaGRAF into 4.3 firmware.
9510	IPm	Improve soft reset to be tolerant of power failure during soft reset.
9549	STBus	Shorten module status response time default.
9734	STBus	Fix hang when executing soft reset if STBus is in use.
9783	JFFS2	Fix a kernel crash caused by the JFFS2 driver.

4.3.131

2012-02-23

Open issues:

ID	Subject	Description
8744	SIVM	The ST-GT-1210 displays an invalid RTU type in the System Information module.
8787	SIVM	Certain Ethernet addresses are displayed as negative numbers in the System Information module.

New Features:

ID	Subject	Description
9000, 8982	IPm	Added script (loadmon.sh) to base system to optionally log system load over time. Also replaced ps with more featureful version.

Fixed issues:

ID	Subject	Description
8768	Datalog	Changed how datalog total size is calculated to make it more accurate.
9210	IPm	Fixed second Ethernet port not working on some models.
8985	IPm	Added missing libperl.so.
8820	IPm	Fixed startup order of system services so all system applications are started and retained I/O is restored before any user applications are started.
8881	ISaGRAF	Lowered CPU utilization of running ISaGRAF applications by having it correctly yield CPU time back to the OS when idle.
8730	IPm	Lowered CPU utilization of the TCP/IP UDR/Modbus master application when communicating with devices that are all offline.

4.3.123

2012-01-20

Open issues:

ID	Subject	Description
8730, 8881	SIVM	Some system processes in the RTU act as a "system idle process" using CPU time at a low priority to monitor for communication and do other background processing. In some applications, this can lead to the System Information module reporting CPU utilization near 100%. This is not a new situation but is now visible in SIVM.
8744	SIVM	The ST-GT-1210 displays an invalid RTU type in the System Information module.
8787	SIVM	Certain Ethernet addresses are displayed as negative numbers in the System Information module.

New Features:

ID	Subject	Description
7936 / 7772	SIVM	Added SIVM
7882	Kernel	Added support for new flash part. New kernel necessitated new build number. 4.3 = new kernel. 4.2 = old kernel. All features and fixes from 4.2 exist in 4.3

Fixed issues:

ID	Subject	Description
8616	FTP	Fixed an issue where FTP would drop the connection after a few transfers
8677	SIVM	Fixed SIVM not installed on some models
8524 / 8642	ISaGRAF / SIVM	Fixed a bug where AX0 would do a heartbeat toggle even when it wasn't supposed to.
8138	AGA / DNP	Fixed a bug where the startup scripts for AGA and DNP were missing on the 5410
7911	Redundancy	Fixed bug where the IPm wouldn't always go into backup mode on link loss
7772	SIVM	Fixed SIVM bits not updating properly.

7861	SIVM	Fixed redundancy role bit not being set correctly
------	------	---------------------------------------------------

4.2.1015951

2012-06-22

Fixed issues

ID	Subject	Description
9510, 9734, 9733	Soft reset	Rework soft reset procedure to be more robust if power is interrupted while resetting
9783	JFFS2	Fix kernel crash in jffs2 under heavy disk load
9677	SIVM	Fix SIVM not reporting ISaGRAF cycle time correctly in some cases.
7774	STBus	Fix mutex which wouldn't be cleared on error condition, theoretically resulting in hang of STBus
9549	STBus	Use a faster polling rate for STBus by default, to increase responsiveness to module changes

4.2.1015939

2012-03-16

Fixed issues:

ID	Subject	Description
8963 and 9475	mIPm	Fix occasional submodule EEPROM erasure on boot

4.2.1015937

2012-02-17

Fixed issues:

ID	Subject	Description
8768	SIVM	Modify how total datalog memory is calculated to be more accurate.

4.2.1015936

2012-02-09

Fixed issues:

ID	Subject	Description
8730	IPm	Lowered CPU utilization of the TCP/IP UDR/MODBUS master application when communicating with devices that are all offline.

4.2.1015935

2012-02-09

Fixed issues:

ID	Subject	Description
8820	IPm	Fixed startup order of system services so all system applications are started and retained I/O is restored before any user applications are started.

4.2.1015934

2012-02-02

Fixed issues:

ID	Subject	Description
8881	ISaGRAF	Lowered CPU utilization of running ISaGRAF applications by having it correctly yield CPU time back to the OS when idle.

4.2.1015933

2011-11-17

Fixed Issues:

ID	Subject	Description
8524	ISaGRAF	Fixed AX0 toggling on loading of a basic ISaGRAF heartbeat function. This was due to an incorrect initialization of ISaGRAF when the system information module wasn't present.

4.2.1015932

2011-11-14

Fixed Issues:

ID	Subject	Description
8408	OEM/DNP3	Updated custom DNP3 driver for an OEM (again)

4.2.1015931

2011-11-08

Fixed Issues:

ID	Subject	Description
8408	OEM/DNP3	Updated custom DNP3 driver for an OEM

4.2.1015930

2011-10-10

Fixed Issues:

ID	Subject	Description
8294	SIVM	Fixed restart reason for a soft reset or restart of the SIVM daemon.

4.2.1015929

2011-10-05

Fixed Issues:

ID	Subject	Description
----	---------	-------------

7772	SIVM	Fixed SIVM bits not updating properly.
7911	redundancy	Fixed RTU not always going into backup on link loss

4.2.1015925

2011-08-30

Fixed Issues:

ID	Subject	Description
7861	SIVM	Fixed redundancy role bit not being set correctly
7772	SIVM	Fixed SIVM bits not updating properly.

4.2.1015924

2011-08-09

New Features:

ID	Subject	Description
6162		VT-IPm2m-113, Increase register limits from 256 to either 8192 or 1024, depending on type of unit.
7332, 6924, 7340, 7376, 7339, 7520, 7392, 7333, 7368, 7459, 7460, 7544, 7487, 7772, 7792	SIVM	Addition and refinement of SIVM daemon. This is currently only in some OEM builds.
7468, 7465, 7888	OEM	Added custom daemon to a build for an OEM.
6663, 7375	ISaGRAF/SIVM	Added status registers to ISaGRAF to be read by SIVM.
6661	redundancy	Added role bits to redundancy module
6957	jffs2	Improved JFFS2 performance by backporting improvements from later kernels

Fixed Issues:

ID	Subject	Description
7911	redundancy	Improved link detection responsiveness in redundancy code.

4.2.1014

2011-05-27

New Features:

ID	Subject	Description
7051	IPm2m-213	0-20 mA output support

4.2.1013

2011-04-29

New Features:

ID	Subject	Description
----	---------	-------------

6441	ISaGRAF	sxmonitor added to monitor ISaGRAF process
6440	ISaGRAF	Add ISaGRAF hot restart event counter register

Fixed Issues:

ID	Subject	Description
6385	sxlogview	Fix for reading back large numbers of datalog records
6480	ISaGRAF	ISaGRAF type (Online modification or hot restart)
6443	hotrestart	Modified hotrestart.cvs file format to have excel compatible timestamp.
6348	sxspefeat	Fix sxspefeat to correctly restore I/O points when the heartbeat/commloss watchdog feature is used

4.2.1012

2011-04-18

Fixed Issues:

ID	Subject	Description
6552, 6493	IPm 6350	Added ability to set duplex on internal link between CPU and switch
6537, 6529	IPm 6350	Added script to detect correct duplex setting
6474	IPm 6350	Fixed communications issue with IPm 6350's due to duplex mismatch

4.2.1011

2011-02-07

New Features:

ID	Subject	Description
6162	I/O registers	Remove 256 register limitation in mini, micro, and m2ms
6170	sxhbtwdg (heartbeat watchdog)	Freezing outputs and manual discrete outputs are no longer mutually exclusive, added second register which is normally high and cleared on comm loss or heartbeat watchdog

Fixed Issues:

ID	Subject	Description
5990	NTP	Change the NTP polling interval to 5 minutes
6200	sxdatalog	Fix sxdatalog crash when the datalog server pauses
6211	client transfers	Fix bug where client transfers don't work after reloading.
6225	client transfers	Fix bug where client transfers don't work out serial ports

4.2.1010

2011-01-06

New Features:

ID	Subject	Description
5741	redundancy	Added second common IP for redundancy so either interface can be used on dual-NIC IPms

Fixed Issues:

ID	Subject	Description
----	---------	-------------

5391	stbus	Reduce CPU usage by lengthening stbus polling interval unless system is booting or new modules are being added.
5691	sxdatalog / client transfers	Make sure client transfers and datalog events using the same trigger don't interfere
5725	client transfers	Improve client transfer robustness and reliability
5480	client transfers	Stop currently pending client transfers while changing config, remove files from "active" list when they are deleted from the IPm.

4.2.1009

2010-06-21

Fixed Issues:

ID	Subject	Description
5089	DNP3	Fixed parsing of sxdnpdrv.ini file

4.2.1008

This build number was skipped

4.2.1007

2010-03-12

New Features:

Subject	Description
triggers	Increase supported triggers to 512

Fixed Issues:

Subject	Description
serial	Fix resetting of the system communications port.
sxdatalog	Fix Datalogging log rate to nvram.
stbus	Fix range checking in stbus for floats and longs.
isagraf	Fix ISaGRAF trigger function block.
dnp3	DNP3 Event Recording/Backfill issue
dnp3	DNP3 Configuration added for Initial Unsolicited Message

4.2.1006

2010-03-12

New Features:

ID	Subject	Description
	redundancy	Added support for built-in redundancy
	isagraf	Implemented ISaGRAF hot restart feature
	sxdatalog	Add support for ftp and sftp transfers
	sxdatalog	Optimized code to make faster and more responsive
3008	sxfwupdate	Changed firmware updater to handle OEM filenames.

Fixed Issues:

ID	Subject	Description
245	modbus	Fixed ring switch monitoring not always reporting the correct port state

4.2.1005

2009-06-26

New Features:

Subject	Description
alarming	Alarming can now monitor I/O points
alarming	Can now set a discrete output when an alarm condition occurs
alarming	Can now send a trigger when an alarm condition occurs
new product	Add support for IPm2m 113 with 32MB NAND/32MB SDRAM, 12 DI, 4 DO, and 8 AI
new product	Add support for the IPm2m 213 with 32MB NAND/32MB SDRAM, 12 DI, 4 DO, 8 AI, and 2 AO
special features	Cycle time for special features is now configurable, values from 20ms - 5 seconds are allowed

Fixed Issues:

Subject	Description
tcp	Now honors TCP timeout set by the toolkit
io transfer	Improved performance when using both Sixnet and Modbus protocols
heartbeat	Fix commloss/heartbeat detection when using TCP/IP threads
sxdatalog	Fixed logging to multiple datalog files based on the same trigger
ethertrak2 communications	Fixed PUTD/GETD commands when talking to EtherTRAK-2
sxether_client, sxmbeth_client	Fix TCP reconnect after soft reset

4.2.1002

2008-02-12

Fixed Issues:

Subject	Description
shutdown	shutdown -h now correctly halts instead of rebooting
io transfer	Fix slow recovery for TCP I/O transfers
modbus	Fix word order for Modbus TCP floating point transfers when in wait for reply mode

4.2.1001

2007-08-25

Fixed Issues:

Subject	Description
system	Fix for file copy issue

4.2.1000

2007-08-18

New Features:

Subject	Description
modbus	Enhanced Modbus communication over radio modems

Fixed Issues:

Subject	Description
sxiodb	Fixed tag database initialization bug
stbus counter module	Fixed resetting of 32bit counter module (ST-DI-CNT-08U)

4.2

2007-08-24

New Features:

Subject	Description
modbus	Added support for commands 5 and 6

Fixed Issues:

Subject	Description
io transfer	For for communications taking place after 28 days