



Document Name A500 Version Notes	System A500	Developed for General Distribution
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12/19/2007 FPGA 2.5.0 DSP 2.3 RABBIT 3.2

Problem	Module	Description
Initial release.	ALL	

01/10/2008 FPGA 2.5.2 DSP 2.5 BOOT 1.8 RABBIT 3.2

Problem	Module	Description
The upper 3 bytes of the Ethernet needs to be changeable.	DSP	The upper 3 bytes can now be set (via the diagnostic or DLL message). This data is stored in flash on the A500. When the A500 boot-loader is invoked at power-up, the 3 bytes are set from flash (if flash not set defaults to 192.168.100). Two special switch settings are provided that fix the IP address to 192.168.100.100. Setting 999 fixes this address and boots the program; setting 888 fixes this address and does not boot the program.
The watchdog timer needs to be supported.	DSP	Support for the watchdog timer has been installed. The timer is toggled each 100 microseconds by the program.
The LCD display is not complete.	DSP FPGA	The LCD display has been completed. On the bottom left, the <*> section shows the activity of the A500 (left) and the ethernet (right). When both are OK they will blink intermittingly at a 1Hz rate. The activity of each loop is also displayed with a blinking *.
The A500 needs a precise time base.	DSP FPGA	A 100 microsecond interrupt has been added to the system. A user callback function will be installed later to give application specific functionality. The ethernet interrupt has been moved to interrupt 1 with the fiber-optic uarts.

01/10/2008 FPGA 2.5.2 DSP 2.6 BOOT 1.8 RABBIT 3.2

Problem	Module	Description
The A500 crashes when a device is removed from a loop and the A500 is "re-discovered".	DSP	The loop object was not properly destroyed upon re-discovery. This problem has been fixed.

01/10/2008 FPGA 2.5.2 DSP 2.7 BOOT 1.8 RABBIT 3.2

Problem	Module	Description
Communications do not work for the I400 while using an A500.	DSP	Fixed.

01/11/2008 FPGA 2.5.2 DSP 2.8 BOOT 1.8 RABBIT 3.2

Problem	Module	Description
The default for scope samples is 0.	DSP	This has been changed to 1024. In addition, a full



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		10,000 samples are now allowed (previously limit was 9999).
The I3200 occasionally reports back a corrupted output message.	DSP	Not resolved – the polling has been removed from the A500 code, and for now the problem has disappeared. This will be investigated in a future version. The Scope feature will not be functional for the I3200 with this version.
The gate/counter boards needs support.	DSP	The gate/counter board support has been added. This is a preliminary version including counter functionality. Gate implementation is complete, counter implementation still needs trigger mode and buffered accumulation.

01/22/2008 FPGA 2.5.6 DSP 3.1 BOOT 1.8 RABBIT 3.2

Problem	Module	Description
The jumpers do not configure all possible hardware combinations.	DSP FPGA	The settings of JMPR2 have changed. Please refer to the A500 manual posted in www.ptcusa.com/downloads/firmware/a500 for full details on how to set the jumpers. This is required if V3.1+DSP code is to be used.
The A500 reports a timeout error after completing the download of a device's firmware.	DSP	This has been fixed by extending the timeout for this command.
I3200 polling needs to be restored.	DSP	The bug associated with I3200 polling has been fixed. This turned out to be caused the I3200 (and other devices) incorrectly timing out on the next message immediately after receiving a command that caused the device to go into the pending state. This has been fixed at the device level and the A500 poll code has been restored. Make sure that the latest I3200, I400, and I200 code is installed if these devices are to be used.
The S100 will not read data when using the diagnostic.	DSP	This problem has been fixed.
The FPGA, communication, and hardware versions are not properly reported.	DSP	These version numbers are now properly returned by the A500::Connect() command. The diagnostic V3.14+ will display these correctly.

01/22/2008 FPGA 2.5.6 DSP 3.2 BOOT 1.8 RABBIT 3.2

Problem	Module	Description
The D100s are not updated in the DSP poll.	DSP	The D100s now return the counts when polled by the A500.

02/06/2008 FPGA 2.5.7 DSP 3.3 BOOT 1.8 RABBIT 3.2

Problem	Module	Description
Ethernet messaging is not reliable when application-specific asynchronous messages are transmitted from the A500.	DSP	This has been fixed by insuring that messages sent to the rabbit are spaced in time by at least 2ms.



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Loop discovery and DSP code download sometimes does not work properly for custom A500 applications.	DSP	This has been fixed by turning off asynchronous messages whenever a loop discovery or a DSP code download starts.
Ethernet messages larger than 1024 bytes do not work.	FPGA	The FPGA FIFO has been increased from 1024 to 2048 bytes in both directions between the Rabbit and the DSP.

02/06/2008 FPGA 2.5.7 DSP 3.4 BOOT 1.8 RABBIT 3.3

Problem	Module	Description
More flexible memory management is need for the A500.	DSP	The heap has been moved to the external SRAM, which runs as fast as internal SRAM. The new and delete functions are used as always when allocating C++ objects. When memory is needed for data acquisition (such as the scope function), cover functions have been written that use new and delete in order to keep track of the total memory used. 128K of external SRAM is reserved for the non-data application heap objects.
Messages are occasionally lost when Asynchronous messages are being transmitted by an application program.	RABBIT DSP	The handshaking has been removed from the code. Collision is now prevented by requiring that the DSP not transmit any faster than 2ms per message. The new DSP code is backwardly compatible with Rabbit V3.2.

02/29/2008 FPGA 2.5.9 DSP 3.5 BOOT 1.8 RABBIT 3.3

Problem	Module	Description
The -GC option is not complete.	DSP FPGA	Full support for the -GC option is included in this version. This includes the ability to establish the integration time and to start collection using the Start and Start-stop trigger modes.
Data buffering for the I3200 is needed.	DSP FPGA	Fast messaging and data buffering have been implemented in this version, although not yet completed.

05/8/2008 FPGA 2.6.17 DSP 4.6 BOOT 1.9 RABBIT 3.3

Problem	Module	Description
The new revision A500 has a different Flash memory with a different manufacturer code.	BOOT	The boot version has been upgraded to automatically validate the manufacturer code for the Flash depending upon the hardware revision.
Support for I3200 and I200 fast messaging is needed.	FPGA DSP	Support for I3200 and I200 fast messaging has been added, supporting buffered acquisition at rates down to 20us per sample set.
A microsecond timer is needed for custom applications.	FPGA DSP	A 32 bit count-down timer has been added that can be used for custom applications.

05/15/2008 FPGA 2.6.17 DSP 4.7 BOOT 1.9 RABBIT 3.3

Problem	Module	Description
The calibration on the I3200 can be	DSP	The I3200 calibration can be corrupted for the



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corrupted under some circumstances.		small capacitor when the Calibration is requested for the large capacitor while the small capacitor is selected. When using the diagnostic, this only happens when examining the calibration gains while on the Setup page.
The A500 to A500 messages are not working properly.	DSP	This has been fixed in the engine and only affects custom applications.
The SEND FAST IO command number has been moved to the device level with ID# 0xDB.	DSP	The PTC DLL needs to reflect this change.

05/23/2008 FPGA 2.6.17 DSP 4.8 BOOT 1.9 RABBIT 3.3

Problem	Module	Description
The I200 fast message request does not send errors back when the device is disconnected.	DSP	Fixed.
The calibration on the I200 is incorrectly applied for the large capacitor.	DSP	Fixed.

05/23/2008 FPGA 2.6.17 DSP 4.10 BOOT 1.9 RABBIT 3.3

Problem	Module	Description
Certain startup-configurations may produce errors when one or more devices is in the error state (e.g. not found by the A500).	DSP	This was caused by an uninitialized variable, which was initialized properly once the device was found. The problem will thus be noticed whenever devices are not properly attached or otherwise functioning.
Error counters are needed for the fiber loops.	DSP	Message and error counters have been added for each fiber loop. This data can be uploaded to the host.

06/24/2008 FPGA 2.6.18 DSP 4.11 BOOT 1.9 RABBIT 3.3

Problem	Module	Description
The error type is needed for fiber-optic message errors.	DSP	The last error type is now recorded for each fiber loop. This data can be uploaded to the host.
Static control of fiber-optics on loops 6-10 is needed.	FPGA DSP	These loops can now be statically (level) controlled by the DSP.

08/8/2008 FPGA 2.6.18 DSP 4.15 BOOT 1.9 RABBIT 3.3

Problem	Module	Description
F3200 support is needed.	DSP	Support has been added for the F3200 device.

10/14/2008 FPGA 2.7.38 DSP 5.00 BOOT 1.11 A30 5.4

Problem	Module	Description
New data acquisition.	DSP	The data acquisition engine has been modified to implement continuous streaming to the host via asynchronous messages. This requires the A30



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		Ethernet processor board in place of the Rabbit.
Diagnostic errors	DSP	New messages have been added to record diagnostic information from the loops and Ethernet.

10/31/2008 FPGA 2.7.38 DSP 5.02 BOOT 1.11 A30 5.4

Problem	Module	Description
M10/H10 data acquisition problem when more than 1 device in a loop.	DSP	Corrections have been made to the M10/H10 data acquisition so that devices can be properly looped.
H10 digitals do not work.	DSP	Fixed.

04/25/2009 FPGA 2.7.39 DSP 5.16 BOOT 1.11 A30 6.4

Problem	Module	Description
Support is need for the revision 3 boards.	FPGA	Support has been added for the revision 3 boards as follows: <ul style="list-style-type: none"> Fixed mezzanine support.
Certain messages cannot be properly processed by the A30.	A30	Fixed. Some messages (particularly longer ones) corrupted the A30's IP address.
Scope feature	DSP	Added support back for scope feature for all devices.
S100 polling	DSP	The S100 has now been added to the device poll so that buffers can be off loaded rapidly. This will prevent buffer overflow in the S100.
Averaging support for M10, H10	DSP	Block averaging support has been added for these devices at the A500 level.
Hardware error reporting not working.	DSP	Fixed the error reporting to the host when the FPGA reset error is detected by the device.
Better enforcement of connect state.	DSP	The connect state is now better enforced. The only commands that can be executed in the non-connected state are now the Connect command and DSP program upload commands.
Connected bits not cleared after objects deleted.	DSP	The connected bits in the A500 status messages continued to report devices connected even though a device may have been deleted. This has been fixed.
Zero length messages cause system crashes.	DSP	Previously, a zero length message passed from a device (not a normal behavior) caused the DSP under some circumstances to crash. This has been fixed.
A faster data message path is needed.	DSP	A fast dump has been added that allows the entire readback and control I/O state of the A500 to be delivered to the host asynchronously. This is invoked under program control using the PTC32 DLL.