EQTools Version 2.1.0 - Release - Build 830

Software Title: EQTools Version 2
Version: 2.1.0 build 830
Release date: 17th October 2007

Supported Programmers

EQTools Version 2 supports the following Equinox programmers:

- Epsilon5
- FS2000A
- FS2003
- MiniProg (new programmer)
- PPM3 MK1
- PPM3 MK2

Please note:
The PRO101 and PPM3 MK1 programmers are NOT supported by **EQTools Version 2**.
Please use **EQTools Version 1** for these programmers.

Software versions

This release of EQTools contains the following software utility versions:

- EQTools V2.1.0 build 830
- Upload Wizard V2.1.0 build 829
- ConsoleEDS 2.1.0 build 829

New Programmer Firmware V3.04 required for this EQTools release

Firmware 3.04
This version of EQTools requires that the programmer firmware is upgraded to version 3.04. This applies to the Epsilon5, FS2003 and PPM3-MK2 programmer.

You can find the instructions on upgrading your programmer firmware in **\program files\equinox\firmware.**

Firmware improvements in version 3.04 are as follows:

- Hardware SPI algorithm giving faster SPI speeds with 50:50 mark/space ratio
- New ATmega256x SPI algorithm to correct programming issues
- New ‘Skip Blank Pages’ algorithm which speeds up programming of the FLASH area of page-based devices.
- Target Sense - Connect / Disconnect now works for Chained Projects

New features / functionality in this release

EQTools

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i. Support for programming of DWORD64 8 byte integer serial numbers / MAC addresses

Support has been added to the EQTools 'Incremental Repository' to allow generation and programming up 8 byte incremental serial numbers. This feature has been added so that 64-bit MAC addresses can be generated and programmed into the FLASH or EEPROM area of a Target Device. This functionality is compatible with Script Builder, ISP-PRO and ConsoleEDS.

ii. Special Function Module selection for PPM3-MK2 programmer

It is now possible to select the following additional 'Special Function Modules' in both Project Builder and EDS:

- EQ-SFM-MAX-V1.2
- EQ-SFM-MAX-V1.3

The 'Special Function Module' can be located inside the PPM3-MK2 programmer under the keypad. The V1.2 SFM supports much faster SPI and JTAG programming. The V1.3 also supports faster SPI and JTAG programming but also has an integrated 32kHz oscillator which can be used accurate calibration of the on-chip oscillator of Atmel AVR devices.

EDS (Development Suite)

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i. **Dangerous Fuse skipping**

The Fuses screen has been changed so that when Dangerous Fuses are programmed, it is possible to cancel the entire Fuse Write operation without programming any fuses. This prevents accidental writing of the wrong values into a fuse which has been skipped.

ii. Fuse Hex values now displayed

The actual Hex values of the Fuse Bytes and Security Bytes are now displayed when performing a Fuse Read, Write or Verify operation. This allows AVR users who are porting projects from AVR Studio to EQTools to check that they have entered the correct fuse settings.

iii. Hex File Loader now detects non-standard Hex Files

A number of customers have reported that EQTools does not load certain Hex files properly. These Hex files appear to contain both a 'Firmware' and 'Boot Loader' file merged into one file, but the merge has not been performed correctly so the Hex file is then invalid. EQTools will now give a warning about this type of file.

iv. JTAG GUI now supports 'JTAG-in-a-chain' for all ATmega microcontrollers

The JTAG GUI has been updated in EDS and Project Builder so it now supports 'JTAG-in-a-chain' for all ATmega microcontrollers. A firmware upgrade will be made available soon to take advantage of this new functionality.

ConsoleEDS

There are many new features in the latest build of ConsoleEDS. These are mainly to help in version control of firmware and standalone Programming Projects. The Fuse reading / programming functionality has also been extended. Please see the latest ConsoleEDS Application Note for full details of all the new commands.

Summary of new features / commands:

Programming of 8-byte Serial Numbers / MAC addresses
It is now possible to program 8-byte Serial Numbers / MAC addresses directly from ConsoleEDS.

/READFUSES
The /READFUSES command will read the Configuration Fuses from a Target Device and display them as Hex byte values.

/POSTERASEFUSEWVR
The /POSTERASEFUSEWVR command will read the write the Configuration Fuses to a Target Device, Verify the Fuses have been programmed correctly, reset the chip and then re-enter programming mode. The fuse values to be programmed / verified are declared in the 'Post-Erase Fuse' tab of the specified Fuse Project.

/CHECKPROJECT
The /CHECKPROJECT command is used to check whether a specified project is already resident in the Programmer FLASH Memory Store.

/CHECKMINIMUMBUILD
The /CHECKMINIMUMBUILD command checks that the version of ConsoleEDS installed on the PC is greater than or equal to the version specified. This allows a controlling application to easily check the version on ConsoleEDS which is installed.

/CHECKMINIMUMFIRMWARE
The /CHECKMINIMUMFIRMWARE commands checks that the version for firmware installed in an attached programmer is equal to or greater than the version specified. This allows a controlling application to easily check the programmer firmware version.

Problem corrections in this release

i. **Special Function Module selection not always saved back to project**

Problem:
EQTools automatically defaults the ‘Special Function Module’ selection for a PPM3-MK2 to the last module which was selected. If a project had been created on one PC and then compiled on another PC with a different module selected, then the module selection would be overwritten when the project was re-compiled on the other PC.

Fix:
The module selection is now always saved into the project file. If a project is moved from PC to PC, the module selection will always revert to the setting in the project file.

ii. Upload Wizard – Application Error if null project was loaded
Problem:
If an invalid or corrupt Project Collection file was loaded, this could cause an application error.

Fix:
The problem has now been fixed.

iii. EDS Hex loader can display 1 more byte than the size of the buffer
Problem:
When certain Hex Files are loaded, it was possible for the Hex Loader to display one extra byte at the end of the buffer.

Fix:
This problem has now been fixed.

iv. Project Builder - incorrectly detects projects as EQTools version 1 and resets them to default values
Problem:
If a *.ppm project is created in EDS and then re-opened in Project Builder, the message ‘This project was created in an older version of EQtools’ would be displayed. EQTools would then reset the project to default values loosing all the original settings.

Fix:
This problem has now been fixed.
Any existing project may need to be recompiled to make sure the creation date of the project is updated correctly in the *.ppm file.

v. FS2000A does not support ‘Hardware SPI’ algorithm
Problem:
It was possible to select the ‘Hardware SPI’ algorithm for the FS2000A even though this programmer does not support ‘Hardware SPI’.

Fix:
This problem has been fixed. It is no longer possible to select the ‘Hardware SPI’ algorithm for the FS2000A.

vi. EDS is automatically enabling Erase, Post Erase Fuses and Security Fuses when launched from Project Builder or Project Manager
Problem:
If a project was launched into EDS (Development Mode) from Project Builder or Project Manager, EDS was then automatically enabling the 'Erase', 'Fuse Write' and 'Security Write' operations. This was OK as it allowed the user to program the fuses etc from EDS. However, these settings were then saved back to the project when EDS was closed so the resulting project then had the 'Erase', 'Fuse Write' and 'Security Write' operations enabled.

Fix:
This problem has now been fixed.
Please check your projects to make sure that the Erase, Post Erase Fuses and Security Fuses operations are not enabled when they should be disabled.

EQTools Version 2.1.0 - Release - Build 808

Software Title: EQTools Version 2
Version: 2.1.0 build 808
Release date: 17th August 2007

Supported Programmers

EQTools Version 2 supports the following Equinox programmers:

- Epsilon5
- FS2000A
- FS2003
- MiniProg (new programmer)
- PPM3 MK1
- PPM3 MK2

Please note:
The PRO101 and PPM3 MK1 programmers are NOT supported by **EQTools Version 2**.
Please use **EQTools Version 1** for these programmers.

Software versions

This release of EQTools contains the following software utility versions:

- EQTools V2.1.0 build 808
- Upload Wizard V2.1.0 build 805
- ConsoleEDS 2.1.0 build 809

New Programmer Firmware V3.04 required for this EQTools release

Firmware 3.04
This version of EQTools requires that the programmer firmware is upgraded to version 3.04. This applies to the Epsilon5, FS2003 and PPM3-MK2 programmer.

You can find the instructions on upgrading your programmer firmware in **\program files\equinox\firmware.**

Firmware improvements in version 3.04 are as follows:

- Hardware SPI algorithm giving faster SPI speeds with 50:50 mark/space ratio
- New ATmega256x SPI algorithm to correct programming issues
- New 'Skip Blank Pages' algorithm which speeds up programming of the FLASH area of page-based devices.
- Target Sense - Connect / Disconnect now works for Chained Projects

New Device support

The following device support has been added in this release:

AT90USB (SPI algorithm):
AT90USB1286/ AT90USB1287/ AT90USB162/ AT90USB646/ AT90USB647/ AT90USB82

AT90USB (JTAG algorithm):
AT90USB1286, AT90USB1287, AT90USB646, AT90USB647

Device support changes

The following changes have been made to existing devices:

ATtiny 25 / 45 / 85

- ATtiny45-10, ATtiny45-20, 85-20, 85V-10, 25-20, 25V-10
- SPIEN fuse now made selectable from Fuse menus and defaulted to 0 (PROGRAMMED)
- All up-issued to v1.02R

ATmega (SPI) devices:

- SPIEN fuse now made selectable from Fuse menus and defaulted to 0 (PROGRAMMED)

ATmega (JTAG) devices:
Some ATmega (JTAG) devices had a problem with the 'Write Calibration Byte' command. All devices have been checked and the command now works OK for all devices.

New features / functionality in this release

EQTools

i. Project Manager
A new button has been added called ‘Upload all Projects’. This makes it simpler to upload all projects rather than a selected project.

ii. EDS – exporting a project to make a Standalone Project
It is now possible to create a Standalone Project for uploading to a programmer directly from EDS (Development Mode). If you select the <Overview> tab and then click either <Add project to new Project Collection> or <Update project in existing Project Collection>, all the changes made in EDS such as fuse settings etc will be transferred to the standalone project file (*.prj).

iii. EDS – resets programmer / chip after every operation
When selecting any programming operation, EDS will now perform the programming operation and then immediately reset the programmer. This will exit serial programming mode and power down the Target system (if using a PPM3-MK2 programmer).

iii. SPIEN Fuse Warning
The SPIEN (SPI Enable) fuse has been added as a selectable fuse in all ATmega (SPI) algorithms. This allows the fuse to be disabled thereby stopping any further re-programming of the chip via the SPI algorithm. The default for this fuse is always ‘0’ (ENABLED) which means the chip can be programmed.

If your project reads its fuses from a Fuse File (*.prj) then this Fuse File will not contain the SPIEN fuse. EQTools will now display a warning and advise you to re-export the fuses to a new Fuse File.

ConsoleEDS

i. **Enter programming mode sequence has been streamlined**
It should now be faster for a ConsoleEDS to enter serial programming mode. The reading of the Device Signature is now performed as part of entering programming mode so it is not required to also put the /READSIG command on the command line.

ii. /AUTOPROGRAM command can now be used to enter programming mode
It is now possible to use the /AUTOPROGRAM command to power up a Target System and enter programming mode. This can be much faster and more reliable than allowing the PC to control this sequence. Please consult the ‘ConsoleEDS Application Note’ for further information.

Bug corrections

i. EDS – exporting a project to a Standalone Project

When either the <Add project to a new Project Collection> or <Update project in existing Project Collection> button is clicked, the Fuse and Security settings were not automatically compiled into the Standalone Project File (*.prj). It was therefore necessary to recompile the project before uploading it to the programmer otherwise the project would not program the fuses when executed on the programmer.

This problem has now been fixed so it is possible to go directly from an EDS project to a Standalone Project without using Project Builder.

ii. Project Builder – Blank Check – Application Error

If the Blank Check address range is set to 0x00000 to 0x0000 in Project Builder, this will product an application error when the project is compiled. This problem has now been fixed.

iii. Upload Wizard – Exception Error

When uploading large Project Collections to a programmer, the Upload Wizard would occasionally give an exception error. This has now been fixed.

EQTools Version 2.1.0 - Release - Build 762

Software Title: EQTools Version 2
Version: 2.1.0 build 762
Release date: 6th June 2007

Supported Programmers

EQTools Version 2 supports the following Equinox programmers:

- Epsilon5
- FS2000A
- FS2003
- MiniProg (new programmer)
- PPM3 MK1
- PPM3 MK2

Please note:
The PRO101 and PPM3 MK1 programmers are NOT supported by **EQTools Version 2**.
Please use **EQTools Version 1** for these programmers.

Software versions

This release of EQTools contains the following software utility versions:

- EQTools V2.1.0 build 762

- Upload Wizard V2.1.0 build 759
- ConsoleEDS 2.1.0 build 761

New Programmer Firmware V3.04 required for this EQTools release

Firmware 3.04
This version of EQTools requires that the programmer firmware is upgraded to version 3.04. This applies to the Epsilon5, FS2003 and PPM3-MK2 programmer.

You can find the instructions on upgrading your programmer firmware in **\program files\equinox\firmware.**

Firmware improvements in version 3.04 are as follows:

- Hardware SPI algorithm giving faster SPI speeds with 50:50 mark/space ratio
- New ATmega256x SPI algorithm to correct programming issues
- New 'Skip Blank Pages' algorithm which speeds up programming of the FLASH area of page-based devices.
- Target Sense - Connect / Disconnect now works for Chained Projects

New Device support

The following device support has been added in this release:

1. **ATmega325**
   - Updated device: ATmega325-16 (added SPIEN Fuse)
   - New devices added: ATmega325V-8, ATmega3250V-8, ATmega3250-16

2. **ATmega645**
   - New devices added: ATmega645V-8, ATmega645-16, ATmega6450V-8, ATmega6450-16

New features / functionality in this release

EQTools

i. Extended EDS Verify Functionality
The Device Verify in EDS mode has been extended so that if the verify operation fails, it is now possible to continue to verify the rest of the device. The locations which do not verify correctly are displayed in a different colour in the buffer.

ConsoleEDS

i. New /NORESET command added.

This command stops ConsoleEDS from resetting the programmer at the end of a session.

EQTools Version 2.1.0 - Release - Build 751

New features / functionality in this release

1. EQTools

i. Hardware SPI algorithm for faster programming

A new 'Hardware SPI' algorithm has been implemented which allows any SPI programmable device to use a faster SPI frequency which should speed up the programming cycle. The algorithm also produces a better mark / space ratio for the Serial Clock(SCK) signal which should make programming of many devices more reliable at higher SPI speeds.

To take advantage of the Hardware SPI algorithm:

- Open your existing project
- Go to the <SPI Settings> tab
- Select 'Hardware SPI'
- Set the 'Fast SPI' frequency to the maximum frequency supported by your programmer.
- The new algorithm requires that the programmer firmware is upgraded to version 3.04 or above.

ii. New ATmega256 SPI algorithm

The existing ATmega256 SPI algorithm has been re-written to correct a problem when programming above the 128kb address range in EDS. It also corrects a problem when Chained Projects are used and the second project in the chain programs an area of the FLASH above the first 128kb.

iii. Skip Blank FLASH pages in Standalone Mode

If the data to be programmed into the FLASH area of a Target Device has large sections which are blank ie contain 0xFF, the programmer will now skip programming of these blank pages. This can reduce the programming time dramatically.

2. ConsoleEDS

- Upgraded to build 750
- New /READPROJECTTO command reads the Project List from an attached programmer and places it into either the Database or a Text File. This can be used to cache the Project List which can dramatically improve the cycle time of ConsoleEDS when programming Standalone Projects.

New Device support

The following device support has been added in this release:

2. **ATmega256x**
– corrected algorithm, please recompile any existing projects using the new library and make sure firmware 3.04 is installed in the programmer.

3. **AT90PWM2**
This device has been copied from the AT90PW3 device as they are identical for programming purposes.

4. **Zensys ZW0301**
This is a new device from Zensys. The library is a beta release and should be used for beta testing only.

Bug Fixes / Known issues

i. New ATmega256 SPI algorithm
The existing ATmega256 SPI algorithm has been re-written to correct a problem when programming above the 128kb address range in EDS. It also corrects a problem when Chained Projects are used and the second project in the chain programs an area of the FLASH above the first 128kb .

ii. Chained Projects bug
A problem with Project Manager not saving the updated changes to Chained Projects back to the Project Collection has been corrected.

EQTools Version 2.1.0 - Release - Build 731-2

Software Title: EQTools Version 2
Version: 2.1.0 build 731-2i
Release date: 28th Feb 2007

Supported Programmers

EQTools Version 2 supports the following Equinox programmers:

- Epsilon5
- FS2000A
- FS2003
- MiniProg (new programmer)
- PPM3 MK1
- PPM3 MK2

Please note:
The PRO101 and PPM3 MK1 programmers are NOT supported by **EQTools Version 2**.
Please use **EQTools Version 1** for these programmers.

Software versions

This release of EQTools contains the following software utility versions:

- EQTools V2.1.0 build 731 (same as last build)
- Upload Wizard V2.1.0 build 732
- ConsoleEDS 2.1.0 build 737

New features / functionality in this release

1. ConsoleEDS

- Upgraded to build 737
- New /TIME command supports time-stamping ConsoleEDS command.
- New /VERBOSE command supports time-stamping of every ConsoleEDS programming operation. This command must be used in conjunction with the /TIME command,
- New /GETPROJECTSFROM command speeds up the retrieval of Project Names from an attached programmer. This makes it much quicker to execute a Standalone Project from ConsoleEDS.
- The /UPLOAD command now supports uploading to multiple PPM3-MK2 programmers which are daisychained on the RS485 network. Previously it was only possible to upload to a single programmer.
- New /DB command allows ConsoleEDS to be used without accessing the Interface Database.

Bug Fixes / Known issues

1. Upload Wizard
A problem was introduced into Upload Wizard in build 730 where an Exception Error could occur if the 'Programmer FLASH Erase' command had been used and non 0xFF data had been placed in the programmer FAT table. This problem has been corrected in Upload Wizard build 732.

EQTools Version 2.1.0 - Release - Build 731

Software Title: EQTools Version 2
Version: 2.1.0 build 731i
Release date: 10th Feb 2007

Supported Programmers

EQTools Version 2 supports the following Equinox programmers:

- Epsilon5
- FS2000A
- FS2003
- MiniProg (new programmer)
- PPM3 MK1
- PPM3 MK2

Please note:
The PRO101 and PPM3 MK1 programmers are NOT supported by **EQTools Version 2**.
Please use **EQTools Version 1** for these programmers.

Software versions

This release of EQTools contains the following software utility versions:

- EQTools V2.1.0 build 731
- Upload Wizard V2.1.0 build 730
- ConsoleEDS 2.1.0 build 730

New Programmer Firmware V3.02 required for this EQTools release

Firmware 3.02
The Zensys ZW0102 and ZW0201 devices had a bug in the 'FLASH Verify' routine in Standalone Mode operation only. It was possible for the programmer to report that a 'Verify Pass' had passed when in fact it had

failed. **This bug has been fixed in firmware version 3.02 for all programmers.**

Firmware 3.01
Support for the Atmel ATmega256x family has been added for the Epsilon5, FS2003 and PPM3-MK2 in this release. **This requires that the programmer firmware of these programmers is upgraded to version 3.01.**
The firmware upgrade can be achieved by loading a special 'Firmware Upgrade Project' if the programmer firmware version is already 3.00.

EQTools version 731 – Install notes

New / ammended Device Support in this release

1. Atmel ATtiny12 Microcontroller Family
New devices:

- **LV SPI**: ATtiny12V-1, ATtiny12-8
- **HV ICP**: ATtiny12V-1, ATtiny12-8

Device Library Corrections:

- ATtiny12L-4
- The default Calibration Byte programming address has also be changed to be 0x3FE in the FLASH area.
- The default fuse values have been corrected to be the same as the default factory values.

2. Atmel ATmega 164P / 324P / 644P
SPI: ATmega164PV-10, ATmega164P-20
JTAG: ATmega164PV-10, ATmega164P-20

3. Atmel ATmega644
JTAG: ATmega644-10, ATmega644-20

4. ATtiny26
Device library corrections: ATtiny26-8 and ATtiny26-16

It has been found that the EEPROM of the ATtiny26 does not always program correctly with certain CKSEL Fuse values. The read-back polling algorithm has now been disabled as default in both the ATtiny26-8 and ATtiny26-16 devices. The programmer will now wait the full 10-11ms per EEPROM byte before attempting to verify the byte.

New features / functionality in this release

1. ConsoleEDS

- Upgraded to build 730
- /SETUP command now correctly supports COM port greater than COM9
- /SETINC command now works correctly. It allows an Incremental Source to be set up without using EQTools.
- New /READINC command displays the current value of the Incremental Repository.

2. EDS

- When a new EDS project is created, the project no longer enables a 'Fuse Programming' by default. This helps to prevent accidental programming of the fuses in EDS mode. To enable 'Fuse Programming', select the <Fuses> tab and then check the box 'Program Fuses'.
- When a new EDS project is created, the project no longer enables 'Security Fuse Programming' by default. This helps to prevent accidental programming of the Security fuses in EDS mode. To enable 'Security Fuse Programming', select the <Security> tab and then check the box 'Program Device Security Fuses'.
- The Fuse tab has been enhanced so it is no longer possible to click the <Default> button if fuses are being loaded from a Fuse File.
- Device Search utility has been enhanced to make it easier to find a specified device in the list.

2. Upload Wizard

- Upgraded to build 730
- Upload Wizard now supports the ability to erase the programmer FLASH memory. This can be used for testing the on-chip programmer FLASH memory.

3. ADO Database Explorer

- The ADO Database Explorer utility has been upgraded to support regular polling of the Interface Database.

Bug Fixes / Known issues

1. EDS – Atmel AT89S – Exception Error

A bug was introduced into EDS in build 720 where if any AT89S device was selected, the EDS project would then give an Exception Error. This bug has been fixed in build 730.

EQTools version 718 – Install notes

New features / functionality in this release

1. CALCON Module support

A new 'Pre-programming Statemachine' has now been added to support the CALCON Module. If the CALCON module is to be used, select the Target Chip and then click the <Statemachine> button to select the CALCON statemachines.

2. JTAG Statemachine now locks the JTAG lines low

The JTAG Statemachine has been changed so that it permanently drives the JTAG output pins LOW from power up. This helps to guarantee that the Target AVR Microcontroller will enter JTAG Programming Mode correctly. Any existing projects will need to be recompiled with the new statemachine in order for the changes to take effect.

EQTools version 718 – Install notes

New Device Support in this release

1. Atmel ATmega169PV Microcontroller Family

JTAG: ATmega169PV-8

New features / functionality in this release

1. JTAG Daisy-chain support

The JTAG GUI has now been extended to support programming of Atmel ATmega micrcontrollers in a JTAG chain. This functionality requires firmware 3.02 and above plus the 'JTAG Upgrade License'. It is currently only BETA support. Please contact Equinox if you wish to evaluate this new functionality.

2. New SFM-MAX Module support for PPM3-MK2 Programmer

This version support the new EQ-SFM-MAX 'Special Function Module'. This module offers much faster JTAG and SPI speeds plus better output drive and ESD protection.

3. FAST SPI and JTAG speeds available for PPM3-MK2 programmer

- This version supports the selection of 'FAST' SPI and JTAG speeds.
- The new EQ-SFM-MAX Module must be fitted to the programmer and this 'Special Function Module' must also be selected on the 'Programmer and Project Type' tab in any project which wishes to use it.
- The 'FAST MODE' is only supported by the PPM3-MK2 programmer.

4. Lock Programmer Keypad support

There is a new option on the ‘Programmer and Project Type> tab to allow the programmer keypad (Up and Down keys) to be locked in Standalone Mode if there is more than one project in the programmer. This helps to prevent the accidental selection of an incorrect project.

5. ConsoleEDS

- Upgraded to build 715
- ConsoleEDS now supports a new command to read the factory Oscillator Calibration Byte back from an Atmel ATmega microcontroller and then program it into either the Target Chip FLASH or EEPROM.

EQTools version 711 – Install notes

The Release Notes below are for an older EQTools install – build 711.

New Device Support in this release

1. Atmel ATmega2560 / 2561 Microcontroller Family

SPI: ATmega2560-16, ATmega2560V-8, ATmega2561-16, ATmega2561V-8
JTAG: ATmega2560-16, ATmega2560V-8, ATmega2561-16, ATmega2561V-8

The ATmega256x devices requires new programmer firmware – **Version 3.01**.
Only the PPM3-MK2, FS2003 and Epsilon5 programmers currently support these devices.

2. Atmel ATmega1280 / 1281 Microcontroller Family

SPI: ATmega1280-16, ATmega1280V-8, ATmega1281-16, ATmega1281V-8
JTAG: ATmega1280-16, ATmega1280V-8, ATmega1281-16, ATmega1281V-8

3. Atmel ATmega640 Microcontroller Family

SPI: ATmega640-16, ATmega640V-8
JTAG: ATmega640-16, ATmega640V-8

4. ATmega329x Microcontroller Family

SPI: ATmega329V-8, ATmega3290-16, ATmega3290V-8, ATmega3291-16, ATmega3291V-8
JTAG: ATmega329V-8, ATmega3290-16, ATmega3290V-8, ATmega3291-16, ATmega3291V-8

5. ATmega649x Microcontroller Family

SPI: ATmega649-16, ATmega649-8, ATmega6490-16, ATmega6490V-8
JTAG: ATmega649-16, ATmega649-8, ATmega6490-16, ATmega6490V-8

6. AT90CANxxx Microcontroller Family

SPI: AT90CAN64-16, AT90CAN32-16
JTAG: AT90CAN64-16, AT90CAN32-16

7. ATtiny25x Microcontroller Family
SPI: ATtiny25-20, ATtiny25V-10

8. ATtiny85x Microcontroller Family
SPI: ATtiny85-20, ATtiny85V-10

New features / functionality in this release

1. EQTools – Welcome Screen
A new Welcome Screen now offers easy access to the following functions:

- EDS – Development Mode
- Project Builder
- Detect Programmer
- Upload Wizard

To get back to the Welcome Screen at any time, simply select
<File><Welcome Screen>

2. EDS (Development Mode) Wizard simplified

- Project type removed
- Instructions improved

3. EDS – now easier to go from EDS to Standalone Project
In this version, it is now much simpler to go from an EDS (Development Project) to a Standalone Project (*.prj) suitable for uploading to a programmer and executing in Standalone Mode.

Two new buttons added on EDS <Overview> tab:

- **<Add project to new Project Collection>** → takes the EDS project and adds it to a new Project Collection ready to upload as a 'Standalone Project' to a programmer.
- **<Add project to an existing Project Collection>** → takes the EDS project and adds it to an existing Project Collection ready to upload as a 'Standalone Project' to a programmer.

4. EDS – Target Voltage measurement
A few changes have been made to the Target Voltage settings in EDS mode as follows:

i. The Target Voltage measurement is now defaulted to 'OFF' rather than 'ON' in previous versions. This means that the programmer will NOT measure the Target Voltage in Standalone Mode unless this option is manually enabled in the project.

ii. The Target Voltage measurement is now performed without resetting the programmer. This allows the actual Target Voltage to be measured without disturbing the current state of the programmer and Target System.

iii. Two new buttons have been added to the EDS – Power Supply settings tab as follows:

- **<RESET Programmer>** → resets the programmer
- **<Power UP>** → power will be applied to the Target System.

5. Upload Wizard – now accessible at all times in EQTools

An <Upload> icon has been added to the main EQTools Icon Bar so it is possible to launch Upload Wizard from anywhere within EQTools.

6. Project Manager – major improvements

The Project Manager window has been revamped to make it easier to edit, launch or test a Programming Project in a Project Collection. A summary of these improvements is listed below:

i. **Changing the order of Programming Projects in a Collection**
It is now possible to change the order of Programming Projects within a Project Collection. This can be achieved by highlighting the project to be moved and then clicking either the <Up> or <Down> arrow until the project reaches the desired location in the Project Collection.

ii. **New <Upload Project(s)> button**
This button allows you to upload 1 or more projects from a Project Collection by simply selecting the project(s) and then clicking **the <Upload Project(s)>** button

iii. **New <Test in EDS> button**
This button allows you to test any project within the Project Collection in Development Mode using the EDS Utility.

iv. **New <Edit Project> button**
This button allows you to view and edit a Programming Project in Project Builder view. This lets you fine-tune the project settings.

build 662

New in this release

1. ConsoleEDS build 662 * BETA TEST VERSION*****
ConsoleEDS has been updated to support staying in Programming Mode between ConsoleEDS sessions. This allows multiple ConsoleEDS operations to be performed one after the other without the Target Chip leaving programming mode. This functionality can speed up the overall programming time of a device significantly if multiple programming operations are being carried out eg. Read EEPROM, Target AutoProgram, Write EEPROM.

The new ConsoleEDS arguments are:
/FASTMODE – Does not RESET the Target Chip at startup
/GOIMMEDIATEPROG - Executes a Standalone AutoProgram project without first performing a RESET / power cycle. Ie assumes Target chip is already in programming mode
/RESET – Resets the programmer.

2. EQTools build 660
A new option has been added to the Script Builder GUI to allow an AutoProgram1 or 2 project to be executed without first resetting the programmer, Target Chip and performing a RESET cycle. This can speed up the overall programming time of a Script by taking out a power / RESET cycle from the sequence.

New Device Support

Build 648
The following **JTAG** libraries have been updated to allow the **'JTAGEN'** fuse to be programmed / unprogrammed:

- ATmega128L, ATmega128, ATmega64, ATmega32

Build 640

The following SPI algorithms have been added:

1. Atmel ATmega640-16xx – new algorithm ***BETA Test Version***
2. Atmel ATmega640V-8xx – new algorithm ***BETA Test Version***
3. Atmel ATmega1280V-8xx – new algorithm ***BETA Test Version***
4. Atmel ATmega1280-16xx – new algorithm ***BETA Test Version***
5. Atmel ATmega1281V-8xx – new algorithm ***BETA Test Version***
6. Atmel ATmega1281-16xx – new algorithm ***BETA Test Version***
7. Atmel ATmega2560V-8xx – new algorithm ***BETA Test Version***
8. Atmel ATmega2560-16xx – new algorithm ***BETA Test Version***
9. Atmel ATmega2561V-8xx – new algorithm ***BETA Test Version***
10. Atmel ATmega2561-16xx – new algorithm ***BETA Test Version***

These algorithms require new programmer firmware version 2.51 or above for the FS2000A / FS2003 / Epsilon5 and firmware 2.52 or above for the PPM3-MK2.

Build 585

11. Atmel AT89S8253 – new algorithm ***BETA Test Version***
12. Atmel AT89S2051 – new algorithm ***BETA Test Version***
13. Atmel AT89S2051 – new algorithm ***BETA Test Version***

These algorithms all require new firmware – **version 2.50** – to be installed into your programmer. This can be done using the latest version of Configit – Firmware Update Utility.

Build 576

1. Zensys ZW0201 – new algorithm
This is a brand new algorithm for the new Zensys ZW0201 device.
The signature is currently unlocked to allow changing of the 'Revision Byte'.

2. Zensys ZW0102 – amended algorithm
The algorithm for this device has been updated to accommodate the new ZW0201 algorithm. Any projects created with the old algorithm must be recompiled with the new algorithm.

Build 519

1. ATmega48/V, ATmega88/V, ATmega168/V

2. ATtiny11 – High Voltage Serial Programming Algorithm
The 'ATtiny11 HV' algorithm was found to incorrectly program the ATtiny11 Fuse Bits. This problem has now been fixed with the latest version of the library.

3. ATtiny13 – Low Voltage SPI Algorithm only

4. ATtiny2313
- This is the replacement device for the existing AT90S2313 microcontroller.
- The ATtiny2313 has the same pinout as the AT90S2313, but has an internal 4/8MHz oscillator, oneWireDebug and Self-programming capability.
- The current silicon revision (rev B) does not support 'parallel programming' so it is imperative not to disable 'Serial Programming' otherwise the device can no longer be programmed.

5. ATmega329 / 3290 / 649 / 6490
- Both SPI and JTAG algorithms now supported.
- The ATmega329 algorithms have been tested using rev B silicon.

- All other devices are currently in the ‘alpha release stage’ as they have not been tested on real silicon.

Build 466

1. **AT89C51RD2 – Beta Test Library**
   This is a test library for use with the ‘AT’ version of the AT89C51RD2 microcontroller.

- Please see Device Support List for an up-date list of all supported devices.

Device related issues / bugs

1. **AT89C51Rx2 ISP Programming Issues**
   This version of EQTools currently only supports the ‘T89C51Rx2’ Microcontroller family. The newer ‘AT89C51Rx2’ family is not supported at this point in time as the new devices fail to enter Serial Programming Mode reliably with Equinox ISP Programmers. It appears that a difference in the internal resistance of the RESET pin between the ‘T89C51Rx2’ and ‘AT89C51Rx2’ devices causes the ‘AT’ devices not to enter programming mode. Equinox are investigating this problem and hope to release a fix to support the ‘AT89C51Rx2’ family in the next version of EQTools.

Bug Fixes / Known issues

Build 648

1. EDS Security Tab
The <Set Default> button on the EDS Security tab now works as expected. In previous versions it did not set the 'PC Fuses' to the library default values.

2. Project Builder – Task Tab – selecting Fuse Tabs
There was a problem on the Task Tab of Project Builder where if you selected (ticked) the <Pre-erase> or <Post Erase> Fuse tabs, these tabs would not be displayed until the project had been saved and re-opened. This problem has now been fixed.

3. Epsilon5 FLASH Memory Size
The Epsilon5 FLASH Memory Size was incorrect. It has now be correct to 256kb of FLASH. Any Project Collection which is larger than 256kb will now produce an error if an attempt is made to upload it to the programmer.

4. Project Collection Upload / Verify problems
A few customers have reported unreliable Project Uploading to some programmers. We have now replaced the existing Project Upload Wizard with a new standalone 'Upload Wizard' utility. This utility has been beta tested with many customers and appears to be a lot more reliable than the exisiting integrated utility.

5. Problems with PC's which have Hyperthreading enabled
Equinox have had a few reports of unreliable operation of EQTools – EDS and Project Uploader when using a PC with 'Hyperthreading' enabled. The main failure appears to happen when uploading large Project Collections to a programmer. After further investigation, a problem was found with EQTools when running on a Hyperthreading PC. The EQTools application has now been recompiled so that it can support Hyperthreading from build 640 upwards.

Build 519:

1. EDS – now supports 2 EDS sessions at the same time
It is now possible to open 2 EDS sessions at the same time and switch between them simply by selecting the relevant EDS window. In all previous versions of EQTools, selecting the second EDS session would appear to switch to the other session, but in fact the previous session was still in operation.

2. EDS settings not always saved back to *.ppm Base Project
In previous versions of EQTools, it was possible to open both the EDS Development Project and the underlying Base Project at the same time. If you then made changes to the EDS project, these changes were not saves back to the Base Project as this project was already open. This shortcoming has

been fixed by only allowing either the EDS or *.ppm project to be open, but never both at the same time.

3. EDS Wizard – Fuse tab now hidden
The Fuse Tab is now hidden during the EDS Wizard in order to simplify the wizard. These Fuses must now be set within EDS on the EDS – Fuses tab.

Build 505:

1. Slow database interaction in EQTools / ISP-PRO

Some customers have observed that EQTools and ISP-PRO could take up to 5 seconds to respond to a change in value in the 'ProgStatus' field when executing programming scripts. This problem was only evident when controlling EQTools / ISP-PRO from a Remote Application.

It appears that the 'ADO Layer' sometimes takes longer to recognise a change made by the Remote Application than it should do. To rectify the problem, EQTools and ISP-PRO now closes the connection to the database after every database interaction. This appears to have cured the problem, but only exhaustive testing with real Remote Applications will be able to prove that the problem is now completely fixed. If you have any feedback please e-mail support@equinox-tech.com.

Build 502:

1. **Virtual COM port detection error**
   The last build of EQTools V2.1.0.501 introduced a new feature to scan the installed COM ports on a PC and then offer the COM port founds for selection. Unfortunately, this feature also introduced a bug which could cause an exception error when swapping between COM ports. This bug has been fixed in build 502.

2. **Windows XP COM port issues**
   A number of customers using Windows XP have reported that their programmer cannot be detected by EQTools. The fix for this was to enable 'Windows 98 Compatibility Mode' in the XP Control Panel settings and then the programmer could be detected.

   A new Communications Library has been included in this latest build of EQTools. Early trials with XP users would indicate that this has fixed the problem of non-detection of the programmer. Equinox would welcome any further feedback from XP customers who experience this problem.

3. Script Builder – EEPROM Read
The 'Script Builder – EEPROM Read' operation was returning an invalid string to the database. This problem has been corrected and the new implementation fully tested.

4. ASCII Text Communications – returning to Binary Mode

Once 'ASCII Text Communications' is enabled from EQTools, it was then not possible to return back to 'Binary Communications' from EQTools. This problem has been fixed so selecting <Programmer><Options><ASCII Text Communications Protocol><Enable> will enable 'ASCII' mode and <Disable> will return the programmer back to 'Binary Mode' so EQTools can communicate with the programmer again.

New Features

1. ConsoleEDS

This is a new DOS based Console Application which allows the attached programmer to be controlled from a Command Window. The utility is designed to allow the programming function to be integrated into a third party 'Make' utility. ConsoleEDS is driven from the command line and supports programming of a specified FLASH and EEPROM file. Please see separate documentation about this utility for further details.

2. Upload Wizard

This utility supports uploading of a Project Collection to any Equinox programmer. It replaces the existing integrated Upload Wizard. It is a separate utility which EQTools and ISP-PRO can now shell to in order to upload projects to an attached programmer.

3. Terminal Emulator

A Terminal Emulator utility is now included within EQTools. This can be used to communicate with the attached programmer in 'ASCII Text Communications Mode' without the need to use an external Terminal Emulator.

To launch the Terminal Emulator utility:
Select <Programmer><Terminal Emulator>

4. Script Builder – Device ID now written to the database

Script Builder now includes an option to read the Device ID (signature) from the Target Device and then write it to a field in the database. This allows a Remote Application to read the Target Device ID and then make a decision based on the ID which is read back.

5. Script Builder – Fuse Program → RESET cycle → Verify

It is now possible for a script to perform a RESET cycle between the operations of programming and verifying the fuses. This functionality is required for some Atmel ATmega devices which only latch the programmed fuse bits after the device has exited programming mode. In earlier versions of EQTools, the option to RESET Cycle was only available if the programmer was controlling power. This option is now available whether the programmer is controlling power or not.

6. Process Interval parameter

EQTools / ISP-PRO poll the communications with the programmer and update the 'Programmer Status' field in database at a regular interval known as the 'Process Interval'. The default value for this parameter is 333ms which means that the Programmer Status should be updated every 1/3 of a second. The same paramater is also used to control how often a Programming Script polls the database when it is waiting for a Remote Application to make an entry or to change the 'Programmer Status' field. If this time is reduced then the delay between a Remote Application changing the status in the database and EQTools / ISP-PRO recognising this change of state will be reduced. However, the PC will dedicate more CPU time to the constant polling of the database which may cause any other processes on the PC to slow down.

The Process Interval parameter can be altered in the <Setup Options> tab:
- Select <Programmer><Communications and Scripting Setup>
- Change the value of the 'Process Interval' parameter
- Click <Close> to save the changes

6. Target connection and disconnection voltages only read for Auto Connect and Disconnect

A Programming Script reads the Target Voltage and writes this voltage the database for all Connection Methods.
This has now been changed so the Target Voltage is only recorded if the 'PPM Auto-detect --> PPM Auto-di6.sconnect is selected for the 'Target Connection and Disconnection' method. This will speed up some scripts where the voltage was being measured at numerous stages during the script.

7. Virtual COM ports now supported

EQTools now supports any virtual COM ports present on a PC. This version will detect which COM ports are available and display these as COM1…COM8. This should allow EQTools to work with most COM Port expanders including USB COM Port expanders.

8. EDS – Saving of Fuse / Security Settings to EDS file

The Fuse settings on the <Fuse> and <Security Settings> tabs were not remembered by EDS if you closed down an EDS Window.

These settings are now saved to the EDS project file when you save a EDS file or quit an EDS project and will therefore still be there when the same EDS project is re-opened.

9. EDS – Fuse Settings exported to Base Project File (*.ppm)

If you set up the Fuse settings in an EDS project on the <Fuses> tab and then open up the ‘Base Project’, the Fuse Settings will now be automatically imported into the <Pre-erase Fuse> tab. If you then make

any changes to the Fuses in the Base Project, these changes will be automatically updated into the Base Project.

Device Support

Atmel Corporation

AT89S Microcontroller Family

- AT89(L)51, AT89(L)S53
- AT89(L)S8252, AT89(L)S53

AT90S Microcontroller Family

- AT90S1200(A), AT90(L)S2313, AT90(L)S4414, AT90(L)8515, AT90S2333, AT90S4433, AT90(L)S4434, AT90(L)S8535

ATmega Family

- ATmega8(L), ATmega16(L), ATmega32(L), ATmega64(L), ATmega128(L), ATmega161(L), ATmega162, ATmega169(L & V), ATmega323, ATmega8515(L), ATmega8535(L)

ATtiny Family

- LV ISP: ATtiny12, ATtiny15
- HV ISP: ATtiny11, ATtiny12

T89C51Rx2 Family

- T89C51RB2, T89C51C2, T89C51RD2
- T89CIC2, T89CID2
- T89C51AC2
- T8951CC01

Philips Semiconductor

- P89C51RB2, P89C51RC2, P89C51RD2
- P89C660, P89C662, P89C664, P89C668

New Programming Project Types

EQTools now supports the following Project Types:

- Standalone – Keypad
- Auto-start with Target Connect/Disconnect (PPM3 only)
- Run Target – wait for target pin change
- End in Programming Mode (ISP-PRO)

Powerful ‘Run Target – wait for target pin change’ Programming Mode:

- Detect Target Connection
- Program #Project1
- Run Target firmware
- Wait for state change on MISO pin
- Program #Project2

- Detect Target Disconnection

Enhanced support for Atmel ATmega microcontrollers

The support for Atmel ATmega (AVR) microcontrollers has been enhanced to support faster programming and more features.

A summary of the new features is listed below:

Faster SPI programming speeds

- SLOW SPI – for all low speed operations eg. Fuse / Lock Writes
- A new 'Medium' SPI speed setting allows for fastest possible SPI speed when 'Fast' SPI speed it too fast for the target device or programmer.
- Medium or High SPI speeds are used for fast data transfer during FLASH / EEPROM programming

ATmega - Internal RC Oscillator Calibration

- Now supports automatic calibration of 1 / 2 / 4 / 8 Mhz Internal RC Oscillators
- Calibration Byte may be written to FLASH or EEPROM

Typical 'Fast' programming ATmega programming scenario:

- Enter Programming Mode
- Check Device Signature
- Electronic Erase
- Change Oscillator from Slow Internal RC to Fast External Oscillator
- Write/Verify FLASH @ FAST SPI Speed
- Write/Verify EEPROM @ FAST SPI Speed
- Write Calibration Byte to FLASH or EEPROM
- Write/Verify Security Fuses

Upgrading from EQTools Version 1

********** Important Notes **********

1. EQTools Version 2 is NOT backwards compatible with Version 1

- Any exisiting projects compiled under Version 1 will NOT compile under Version 2.
- Please back up any project files compiled under Version 1 before installing Version 2.

2. EQTools Version 1 and 2 can be installed on the same PC

It is possible to run both versions of EQTools on the same but not at the same time.
This is possible by installing each version in a different directory.
eg.
EQTools Version 1 – c:\program files\Toolsuite
EQTools Version 2 – c:\program files\eqtools

Please note:

- The EQTools entry in the registry will always point to the last installed version i.e. Version 2.
- To run Version 1, browse to c:\program files\Toolsuite and double-click the <EQTools> icon.

3. EQTools Version 2 requires firmware version 2.xx

EQTools V1 will NOT work with Epsilon5 firmware V2.xx so if you wish to run both versions of EQTools you would really need to have two programmers, one with V1.xx firmware and one with V2.xx firmware.

Software Installation Instructions

1. Backup any projects etc. from your previous version of EQTools

2. Uninstall the previous version of EQTools

3. Back up your ac_isppro.mdb file

EQTools now installs a new database into the \program files\equinox\db directory. If you wish to retain the information in your previous database, please make sure that you make a back up of the database file before running the EQTools installation.

3. Unzip the EQTools installation program and then double-click on it to run the install.

- Follow all on-screen instructions

- Once the installation is complete, select <Start><Programs><Equinox><EQTools> --> EQTools will launch
- Select <Help About> and check that you are running the correct version.

Upgrading your Programmer Firmware

EQTools Version 2 requires that your programmer is running **version 2.xx firmware** where .xx is the current build within version 2 of the firmware. The current versions of programmer firmware are detailed below:

Programmer Firmware

- Epsilon5 2.41
- FS2000A 2.42
- FS2003 2.41
- PPM3 MK1 Not supported
- PPM3 MK2 2.35

To upgrade your programmer firmware:

- Download the latest version of 'Configit - Firmware Update Utility' from the Equinox web site.
- Unzip the Configit utility to your hard disk
- Follow the relevant instructions for your programmer to update your programmer firmware.

Contacting Equinox

If you have any questions and require technical support for this product, please e-mail the Equinox Technical Support Department at: support@equinox-tech.com