SMH Technologies®

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Driver v. 5.18

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Interfacing FlashRunner 2.0 with EFx32 families

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Standard Commands

CONNECT

This command is used to connect to the device. It might print information on the status of the debug interface.

MASSERASE <memory_type>

This command is used to erase the specified memory.

SECTOR_ERASE <memory_type> <start_address> <size>

This command is used to erase a portion of the specified memory.

BLANKCHECK <memory_type> [<start_address> <size>]

This command is used to check if the specified memory or a portion of it is blank.

Start address and size are optional parameters.

PROGRAM <memory_type>

This command is used to flash the specified memory with a customer's firmware which fits into this memory.

VERIFY <memory_type> <verify_method>

This command is used to compare the content of the memory with a customer's firmware.

R – Readout method: compares the content bit by bit.

S – Checksum mehod: compares the checksum of the firmware file with the content one.

READ <memory_type> <start_address> <size>

This command is used to read the specified memory or a portion of it and print it out in the GUI terminal.

DUMP <memory_type> <start_address> <size>

This command is used to read the specified memory or a portion of it and save it into a binary file stored inside the programming system SD-CARD.

DISCONNECT

This command is used to disconnect from the device.

Additional Commands

LOCK

This command is used to lock the debug interface of the device.

AAP_LOCK

This command is used to permanently lock the debug interface of the device.

UNLOCK

This command is used to unlock the debug interface of the device when not permanently locked.

The command also erases the content from all the memories for how the native routine in the microcontroller works.

RUN <time[s]>

This command is used to start customer's application.

The option allows the customer to select the time execution.

READ_UID <48|64>

This command is used to read the UID of the device.

The option allows the customer to select the 48-bit or 64-bit version of it.

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Supported protocols

EFX32 flashing algorithm supports SWD protocol.

#TCSETPAR CMODE **<SWD>**

Additional Parameters

#TCSETPAR POR <YES|NO>

Power on Reset through VPROG0 when reset cannot be connected to FlashRunner.
Not recommended. For custom-specific applications.

#TCSETPAR RESET_HW <YES|NO>

Reset impulse during connect procedure.

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Memories and commands

Little note about families: EFM32GG and EFM32GG11/EFM32GG12 are treated differently.

EFM32G family

Memories supported:

1. [D] – DataFlash
2. [F] – Flash
3. [L] – Lockbit

Commands supported:

#TPCMD CONNECT

#TPCMD MASSERASE F | D | L

#TPCMD SECTOR_ERASE F <start_address> <size>

#TPCMD BLANKCHECK F | D | L [<start_address> <size>]

#TPCMD PROGRAM F | D | L

#TPCMD VERIFY F | D | L R | S

#TPCMD READ F | D | L [<start_address> <size>]

#TPCMD DUMP F | D | L [<start_address> <size>]

#TPCMD RUN

#TPCMD LOCK

#TPCMD UNLOCK

#TPCMD DISCONNECT

EFM23HG/EFM32T/EFM32ZG/EZR32HG family

Memories supported:

1. [D] – DataFlash
2. [F] – Flash
3. [L] – Lockbit

Commands supported:

#TPCMD CONNECT

#TPCMD MASSERASE F | D | L | B

#TPCMD SECTOR_ERASE F <start_address> <size>

#TPCMD BLANKCHECK F | D | L | B [<start_address> <size>]

#TPCMD PROGRAM F | D | L | B

#TPCMD VERIFY F | D | L | B R | S

#TPCMD READ F | D | L | B [<start_address> <size>]

#TPCMD DUMP F | D | L | B [<start_address> <size>]

#TPCMD RUN

#TPCMD DISCONNECT

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EFM32GG/EFM32LG/EFM32WG/EZR32LG/EZR32WG family

Memories supported:

1. [D] – DataFlash
2. [F] – Flash
3. [L] – Lockbit

Commands supported:

#TPCMD CONNECT

#TPCMD MASSERASE F | D | L

#TPCMD SECTOR_ERASE F <start_address> <size>

#TPCMD BLANKCHECK F | D | L [<start_address> <size>]

#TPCMD PROGRAM F | D | L

#TPCMD VERIFY F | D | L R | S

#TPCMD READ F | D | L [<start_address> <size>]

#TPCMD DUMP F | D | L [<start_address> <size>]

#TPCMD RUN

#TPCMD AAP_LOCK

#TPCMD LOCK

#TPCMD UNLOCK

#TPCMD DISCONNECT

EFM32GG11/EFM32GG12/EFM32TG11/EFR32JG1/EFR32PG1/EFR32BG1/EFR32FG1/EFR32MG1 family

Memories supported:

1. [D] – DataFlash
2. [F] – Flash
3. [L] – Lockbit
4. [B] – Bootloader

Commands supported:

#TPCMD CONNECT

#TPCMD MASSERASE F | D | L | B

#TPCMD SECTOR_ERASE F <start_address> <size>

#TPCMD BLANKCHECK F | D | L | B [<start_address> <size>]

#TPCMD PROGRAM F | D | L | B

#TPCMD VERIFY F | D | L | B R | S

#TPCMD READ F | D | L | B [<start_address> <size>]

#TPCMD DUMP F | D | L | B [<start_address> <size>]

#TPCMD RUN

#TPCMD AAP_LOCK

#TPCMD LOCK

#TPCMD UNLOCK

#TPCMD DISCONNECT

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Here begins the list of EFx32 2nd series:

These devices integrate different versions of the Debug Challenge Interface (DCI) peripheral.

Upon request, for any 2nd series family this additional commands can be developed, if not present already.

DCI Commands

INITILIZE_OTP <value>

This command allows the user to enable MCU OTP flags base on the value given as parameter.

LOCK

This command is used to lock the debug interface of the device.

UNLOCK

This command is used to unlock the debug interface of the device if the possibility has been left available.

WRITE_AES_KEY <key> or <key_dynamic_memory_addr>

This command is used to set AES key.

The parameter is the dynamic memory address where FlashRunner can retrieve the key from (WRITE_AES_KEY 0x10000000): in this way a customer can give to FlashRunner the key through encrypted dynamic memory so that it does not appear in clear. The parameter is one in this case.

The parameters can directly indicate the 16 bytes key in clear (TPCMD WRITE_AES_KEY 0x12345678 0x12345678 0x12345678 0x12345678). The parameters are four in this case.

SE_FW_CHECK <FW_version>

This command allows the user to check what Secure Element (SE) FW version is installed inside their devices and compare it with the given one as parameter: if the version to compare is 2.1.7 the parameter should be given as 217.

READ_PUBLIC_KEY <key_type> <key> or <key_dynamic_memory_addr>

This command allows the user to read sign/command key from the device and check it with the given one.

The first parameter is 1 for sign key and 2 for command key.

The second parameter is the dynamic memory address where FlashRunner can retrieve the key from. In this case the parameter are two.

The parameters can indicate the 64 bytes key in clear.

WRITE_PUBLIC_KEY <key_type> <key> or <key_dynamic_memory_addr>

This command allows the user to write sign/command key into the device.

The first parameter is 1 for sign key and 2 for command key.

The second parameter is the dynamic memory address where FlashRunner can retrieve the key from. In this case the parameter are two.

The parameters can indicate the 64 bytes key in clear.

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EFM32PG22/EFR32BG21/EFR32BG22/EFR32FG23/EFR32FG28/EFR32ZG23 family

Memories supported:

1. [D] – DataFlash
2. [F] – Flash

Commands supported:

#TPCMD CONNECT

#TPCMD MASSERASE F | D

#TPCMD SECTOR_ERASE F <start_address> <size>

#TPCMD BLANKCHECK F | D [<start_address> <size>]

#TPCMD PROGRAM F | D

#TPCMD VERIFY F | D R | S

#TPCMD READ F | D <start_address> <size>]

#TPCMD DUMP F | D <start_address> <size>]

#TPCMD RUN

#TPCMD LOCK (DCI command)

#TPCMD UNLOCK (DCI command)

#TPCMD DISCONNECT

EFM32PG23/EFR32BG24/EFR32MG21/EFR32MG24 family

Memories supported:

1. [D] – DataFlash
2. [F] – Flash

Commands supported:

#TPCMD CONNECT

#TPCMD MASSERASE F | D

#TPCMD SECTOR_ERASE F <start_address> <size>

#TPCMD BLANKCHECK F | D [<start_address> <size>]

#TPCMD PROGRAM F | D

#TPCMD VERIFY F | D R | S

#TPCMD READ F | D <start_address> <size>]

#TPCMD DUMP F | D <start_address> <size>]

#TPCMD RUN

#TPCMD LOCK (DCI command)

#TPCMD UNLOCK (DCI command)

#TPCMD INITIALIZE_OTP (DCI command)

#TPCMD WRITE_AES_KEY (DCI command)

#TPCMD WRITE_PUBLIC_KEY (DCI command)

#TPCMD READ_PUBLIC_KEY (DCI command)

#TPCMD SE_FW_CHECK (DCI command)

#TPCMD DISCONNECT

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