

FlexMatrix™ Programmer Command Line Instruction

1. Overview

The FlexMatrix command line programmer can enable a production automation process. You may call it from command line from BAT file or from your application.

1.1. Execute a Command

Command Line Format:

FlexMatrixProgrammer.exe /cmd parameter1 [parameter2 [parameter3 parameter4]]

Where cmd can be any command listed in Command List section.

Examples 1: Program SK5210-105-01 MatrixData, MfrData and Code files into chip

```
>FlexMatrixProgrammer /P SK5210-105-01_MatrixData.bin SK5210-105-01_MfrData.bin SK5210-105-01_Code.bin xxxxxx
```

Examples 2: Program SK5210-105-01 MatrixData, MfrData files into chip

```
>FlexMatrixProgrammer /P SK5210-105-01_MatrixData.bin SK5210-105-01_MfrData.bin
```

Examples 3: Program SK5210-105-01 MatrixData files into chip

```
>FlexMatrixProgrammer /P SK5210-105-01_MatrixData.bin
```

The result of each execution is stored in a text file "Result_Report_File.txt". At the same time, the execution result will be appended to the log file "Results_Log_File.txt".

In the result file, the return values are listed line by line. Each line follows the format of "ValueName: Value". The key value is "ReturnValue". When the execution succeeds, the ReturnValue is 0; otherwise it's a negative value.

Notes: FlexMatrixProgrammer.exe is a Windows application, not a console application; therefore, if you want to get the exit code from promote line, you need use the following format.

```
>start /wait FlexMatrixProgrammer /p SK5215-105-01_MfrData.bin  
>echo %ErrorLevel%
```

The expected exit code is -1002.

2. Command List

2.1. Command "P" or "p" – Program Bin Files to Chip

Format:

FlexMatrixProgrammer.exe /P MatrixDataFileName [MfrDataFileName [CodeFileName CodePassword]]

This command programs the specified FlexMatrix/Mfr/Code files to the attached USB chip, and verifies the execution result.

2.2. Command “V” or “v” – Verify Bin Files with the Data in the Chip

Format:

FlexMatrixProgrammer.exe /V MatrixDataFileName [MfrDataFileName [CodeFileName
CodePassword]]

This command verifies the specified FlexMatrix/Mfr/Code file with the data in the attached USB chip.

2.3. Command “R” or “r” – Read from Chip to Bin Files

Format:

FlexMatrix CMLProgrammer.exe /R SavedMatrixDataFileName [SavedMfrDataFileName]

This command reads the data from the attached UBB chip to the specified FlexMatrix/Mfr files.

2.4. Command “L” or “l” – Get Checksum of Bin Files by Loading

Format:

FlexMatrixProgrammer.exe /L MatrixDataFileName [MfrDataFileName [CodeFileName
CodePassword]]

This command loads the specified FlexMatrix/Mfr/Code file into memory and calculates the checksum.

3. Appendices

Appendix A – CML Programmer ReturnValue List

ReturnValue	Description
0	Successful
-1001	Device is not found
-1002	ProgramMatrixData block size is not matched
-1003	VerifyMatrixData block size is not matched
-1004	File doesn't exist
-1005	File name is missing
-1006	Save to Matrix file failed
-1007	Program Write Matrix file failed
-1008	ProgramManufacturerData block size is not matched
-1009	Program Write Manufacturer file failed
-1010	ProgramCodeData block size is not matched
-1011	Program Write Code file failed
-1012	VerifyMatrixData block is not matched
-1013	VerifyManufacturerData block size is not matched
-1014	VerifyManufacturerData block is not matched
-1015	VerifyCodeData block size is not matched
-1016	VerifyCodeData block is not matched
-1017	Verify Read Matrix file failed
-1018	Read Matrix file failed
-1019	Read Manufacturer file failed
-1020	Save to Manufacturer file failed
-1021	Empty file
-1022	Wrong command
-1023	Reset to App code failed
-1024	Code password is missing
-1025	Wrong password or wrong code file

-1026	Too many parameters
-1027	Do not need code file name or password
-1028	Unexpected exception

Appendix B – CML Programmer Result File and Log File Examples

The Result_Report_File.txt will be the content between two separation lines.

```
//-----
```

```
DateTime: 7/25/2021 9:15:42 PM
Operation: Program and Verify
MatrixDataFileName: SK5215-105-01_MatrixData.bin
MfrDataFileName: SK5215-105-01_MfrData.bin
CodeFileName: SK5215-105-01_Code.bin
CodeFilePassword: 02041121
```

```
/*
```

```
Set Code File: SK5215-105-01_Code.bin
Set Manufacturer Data File: SK5215-105-01_MfrData.bin
Set Matrix Data File: SK5215-105-01_MatrixData.bin
Load Files:
Code File: SK5215-105-01_Code.bin
Load code file successfully: Size = 13824 Checksum = 0xD9822
Manufacturer File: SK5215-105-01_MfrData.bin
Load Mfr data file successfully: Size = 128 Checksum = 0x0
Matrix Data File: SK5215-105-01_MatrixData.bin
Load matrix data file successfully: Size = 2560 Checksum = 0x193E1
Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
Reset the Device to Boot Mode..
Device is found. PartNo = 5292, Version = 1.00, Revision = 1, AppType = BootCode
Write..... Done
..... Done
Code file was programmed successfully.
Write... Done
Mfr Data file was programmed successfully.
Write..... Done
Matrix Data file was programmed successfully.
Read..... Done
..... Done
Read code file: Size = 13824, Checksum = 0xD9822
Read matrix data file: Size = 2560, Checksum = 0x193E1
Read... Done
Read mfr data file: Size = 128, Checksum = 0x0
Verification passed.
Reset the Device...
Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
*/
```

```
DeviceInfo: PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
LoadedMatrixDataChecksum: 0x193E1
ReadMatrixDataChecksum: 0x193E1
LoadedMatrixDataSize: 2560
ReadMatrixDataSize: 2560
LoadedMfrDataChecksum: 0x0
ReadMfrDataChecksum: 0x0
LoadedMfrDataSize: 128
ReadMfrDataSize: 128
LoadedCodeChecksum: 0xD9822
ReadCodeChecksum: 0xD9822
LoadedCodeSize: 13824
```

ReadCodeSize: 13824

ReturnValue: 0 (Successful)

//-----

DateTime: 7/25/2021 9:28:35 PM

Operation: Program and Verify

MatrixDataFileName: SK5215-105-01_MatrixData.bin

MfrDataFileName: SK5215-105-01_MfrData.bin

CodeFileName: SK5215-105-01_Code.bin

CodeFilePassword: 02041121

/*

Set Code File: SK5215-105-01_Code.bin

Set Manufacturer Data File: SK5215-105-01_MfrData.bin

Set Matrix Data File: SK5215-105-01_MatrixData.bin

Load Files:

Code File: SK5215-105-01_Code.bin

Load code file successfully: Size = 13824 Checksum = 0xD9822

Manufacturer File: SK5215-105-01_MfrData.bin

Load Mfr data file successfully: Size = 128 Checksum = 0x0

Matrix Data File: SK5215-105-01_MatrixData.bin

Load matrix data file successfully: Size = 2560 Checksum = 0x193E1

Device is not found.

*/

DeviceInfo: PartNo = 0, Version = 0.00, Revision = 0, AppType = AppCode

LoadedMatrixDataChecksum: 0x193E1

ReadMatrixDataChecksum: 0x0

LoadedMatrixDataSize: 2560

ReadMatrixDataSize: 0

LoadedMfrDataChecksum: 0x0

ReadMfrDataChecksum: 0x0

LoadedMfrDataSize: 128

ReadMfrDataSize: 0

LoadedCodeChecksum: 0xD9822

ReadCodeChecksum: 0x0

LoadedCodeSize: 13824

ReadCodeSize: 0

ReturnValue: -1001 (Device is not found)

//-----

DateTime: 7/26/2021 12:09:01 PM

Operation: Verify

MatrixDataFileName: a.bin

MfrDataFileName:

CodeFileName:

CodeFilePassword:

/*

Load File: a.bin

Load matrix data file successfully: Size = 7 Checksum = 0x2E0

Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode

Reset the Device to Boot Mode..

Device is found. PartNo = 5292, Version = 1.00, Revision = 1, AppType = BootCode

Read..... Done

Reset the Device...

Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode

Matrix Data File: Size is not matched. LoadedBufferSize = 7 vs TargetBufferSize = 1

*/

DeviceInfo: PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
LoadedBufferChecksum: 0x2E0
VerifyChecksum: 0x193E1
LoadedBufferSize: 7
VerifyBufferSize: 2560

ReturnValue: -1003 (Verify Matrix Data block size is not matched)

//-----
DateTime: 7/26/2021 11:59:10 AM
Operation: Verify
MatrixDataFileName: SK5215-105_MatrixData.bin
MfrDataFileName: SK5215-105-01_MfrData.bin
CodeFileName: SK5215-105-01_Code.bin
CodeFilePassword: 02041121

/*
*/

DeviceInfo: PartNo = 0, Version = 0.00, Revision = 0, AppType = AppCode
LoadedMatrixDataChecksum: 0x0
ReadMatrixDataChecksum: 0x0
LoadedMatrixDataSize: 0
ReadMatrixDataSize: 0
LoadedMfrDataChecksum: 0x0
ReadMfrDataChecksum: 0x0
LoadedMfrDataSize: 0
ReadMfrDataSize: 0
LoadedCodeChecksum: 0x0
ReadCodeChecksum: 0x0
LoadedCodeSize: 0
ReadCodeSize: 0

ReturnValue: -1004 (This file doesn't exist)

//-----
DateTime: 7/26/2021 12:02:22 PM
Operation: Verify
MatrixDataFileName:
MfrDataFileName:
CodeFileName:
CodeFilePassword:

/*
*/

DeviceInfo: PartNo = 0, Version = 0.00, Revision = 0, AppType = AppCode
LoadedBufferChecksum: 0x0
VerifyChecksum: 0x0
LoadedBufferSize: 0
VerifyBufferSize: 0

ReturnValue: -1005 (File name is missing)

//-----
DateTime: 7/26/2021 12:11:37 PM
Operation: Verify
MatrixDataFileName: SK5126_Test.bin
MfrDataFileName:
CodeFileName:
CodeFilePassword:

/*

```
Load File: SK5126_Test.bin
Load matrix data file successfully: Size = 2560 Checksum = 0x1E02C
Device is found. PartNo = 5126, Version = 1.16, Revision = 1, AppType = AppCode
Read..... Done
Matrix Data File: not matched at address 0x60 and LoadedBufferChecksum = 0x1E02C vs TargetBufferChecksum =
0x1DFF0
*/
```

```
DeviceInfo: PartNo = 5126, Version = 1.16, Revision = 1, AppType = AppCode
LoadedBufferChecksum: 0x1E02C
VerifyChecksum: 0x1DFF0
LoadedBufferSize: 2560
VerifyBufferSize: 2560
```

```
ReturnValue: -1012 (Verify Matrix Data block is not matched)
```

```
//-----
DateTime: 7/26/2021 12:19:31 PM
Operation: Verify
MatrixDataFileName: SK5126_Test.bin
MfrDataFileName: SK5215-105-01_MfrData.bin
CodeFileName: SK5215-105-01_Code.bin
CodeFilePassword: 02041121
```

```
/*
Set Code File: SK5215-105-01_Code.bin
Set Manufacturer Data File: SK5215-105-01_MfrData.bin
Set Matrix Data File: SK5126_Test.bin
Load Files:
Code File: SK5215-105-01_Code.bin
Load code file successfully: Size = 13824 Checksum = 0xD9822
Manufacturer File: SK5215-105-01_MfrData.bin
Load Mfr data file successfully: Size = 128 Checksum = 0x0
Matrix Data File: SK5126_Test.bin
Load matrix data file successfully: Size = 2560 Checksum = 0x1E02C
Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
Reset the Device to Boot Mode..
Device is found. PartNo = 5292, Version = 1.00, Revision = 1, AppType = BootCode
Read.....
..... Done
Read code file: Size = 13824, Checksum = 0xD9822
Read matrix data file: Size = 2560, Checksum = 0x193E1
Read... Done
Read mfr data file: Size = 128, Checksum = 0x0
Reset the Device...
Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
Matrix Data File: not matched at address 0x0 and LoadedBufferChecksum = 0x1E02C vs TargetBufferChecksum =
0x193E1
*/
```

```
DeviceInfo: PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
LoadedMatrixDataChecksum: 0x1E02C
ReadMatrixDataChecksum: 0x193E1
LoadedMatrixDataSize: 2560
ReadMatrixDataSize: 2560
LoadedMfrDataChecksum: 0x0
ReadMfrDataChecksum: 0x0
LoadedMfrDataSize: 128
ReadMfrDataSize: 128
LoadedCodeChecksum: 0xD9822
ReadCodeChecksum: 0xD9822
```

LoadedCodeSize: 13824

ReadCodeSize: 13824

ReturnValue: -1012 (Verify Matrix Data block is not matched)

//-----

DateTime: 7/26/2021 12:17:52 PM

Operation: Verify

MatrixDataFileName: SK5215-105-01_MatrixData.bin

MfrDataFileName: SK5126_Test.bin

CodeFileName: SK5215-105-01_Code.bin

CodeFilePassword: 02041121

/*

Set Code File: SK5215-105-01_Code.bin

Set Manufacturer Data File: SK5126_Test.bin

Set Matrix Data File: SK5215-105-01_MatrixData.bin

Load Files:

Code File: SK5215-105-01_Code.bin

Load code file successfully: Size = 13824 Checksum = 0xD9822

Manufacturer File: SK5126_Test.bin

Load Mfr data file successfully: Size = 2560 Checksum = 0x1E02C

Matrix Data File: SK5215-105-01_MatrixData.bin

Load matrix data file successfully: Size = 2560 Checksum = 0x193E1

Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode

Reset the Device to Boot Mode..

Device is found. PartNo = 5292, Version = 1.00, Revision = 1, AppType = BootCode

Read.....

..... Done

Read code file: Size = 13824, Checksum = 0xD9822

Read matrix data file: Size = 2560, Checksum = 0x193E1

Read... Done

Read mfr data file: Size = 128, Checksum = 0x0

Reset the Device...

Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode

Mfr Data File: Size is not matched. LoadedBufferSize = 2560 vs TargetBufferSize = 128

*/

DeviceInfo: PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode

LoadedMatrixDataChecksum: 0x193E1

ReadMatrixDataChecksum: 0x193E1

LoadedMatrixDataSize: 2560

ReadMatrixDataSize: 2560

LoadedMfrDataChecksum: 0x1E02C

ReadMfrDataChecksum: 0x0

LoadedMfrDataSize: 2560

ReadMfrDataSize: 128

LoadedCodeChecksum: 0xD9822

ReadCodeChecksum: 0xD9822

LoadedCodeSize: 13824

ReadCodeSize: 13824

ReturnValue: -1013 (Verify Manufacturer Data block size is not matched)

//-----

DateTime: 7/26/2021 12:05:46 PM

Operation: Verify

MatrixDataFileName: empty.bin

MfrDataFileName:

CodeFileName:

CodeFilePassword:

```
/*
Load File: empty.bin
Load matrix data file failed: empty file
Device is found. PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
Loaded buffer is empty, so cannot proceed verify action.
*/
```

```
DeviceInfo: PartNo = 5215, Version = 1.05, Revision = 1, AppType = AppCode
LoadedBufferChecksum: 0x0
VerifyChecksum: 0x0
LoadedBufferSize: 0
VerifyBufferSize: 0
```

```
ReturnValue: -1021 (Empty file)
```

```
//-----
```

```
DateTime: 7/26/2021 1:27:54 AM
MatrixDataFileName: sdfsdf
MfrDataFileName: sfsdfsdf
CodeFileName:
CodeFilePassword:
```

```
/*
*/
```

```
DeviceInfo: PartNo = 0, Version = 0.00, Revision = 0, AppType = AppCode
LoadedMatrixDataChecksum: 0x0
ReadMatrixDataChecksum: 0x0
LoadedMatrixDataSize: 0
ReadMatrixDataSize: 0
LoadedMfrDataChecksum: 0x0
ReadMfrDataChecksum: 0x0
LoadedMfrDataSize: 0
ReadMfrDataSize: 0
LoadedCodeChecksum: 0x0
ReadCodeChecksum: 0x0
LoadedCodeSize: 0
ReadCodeSize: 0
```

```
ReturnValue: -1022 (Wrong command)
```

```
//-----
```

```
DateTime: 7/25/2021 9:43:59 PM
Operation: Program and Verify
MatrixDataFileName: SK5215-105-01_MatrixData.bin
MfrDataFileName: SK5215-105-01_MfrData.bin
CodeFileName: SK5215-105-01_Code.bin
CodeFilePassword:
```

```
/*
*/
```

```
DeviceInfo: PartNo = 0, Version = 0.00, Revision = 0, AppType = AppCode
LoadedMatrixDataChecksum: 0x0
ReadMatrixDataChecksum: 0x0
LoadedMatrixDataSize: 0
ReadMatrixDataSize: 0
LoadedMfrDataChecksum: 0x0
ReadMfrDataChecksum: 0x0
LoadedMfrDataSize: 0
ReadMfrDataSize: 0
LoadedCodeChecksum: 0x0
```


ReadCodeChecksum: 0x0
LoadedCodeSize: 0
ReadCodeSize: 0

ReturnValue: -1024 (Code password is missing)

//-----

DateTime: 7/26/2021 11:57:06 AM

Operation: Verify

MatrixDataFileName: SK5215-105-01_MatrixData.bin

MfrDataFileName: SK5215-105-01_MfrData.bin

CodeFileName: SK5215-105-01_Code.bin

CodeFilePassword: 00000

/*

Set Code File: SK5215-105-01_Code.bin

Set Manufacturer Data File: SK5215-105-01_MfrData.bin

Set Matrix Data File: SK5215-105-01_MatrixData.bin

Load Files:

Code File: SK5215-105-01_Code.bin

Load code file failed: wrong password or wrong code file.

*/

DeviceInfo: PartNo = 0, Version = 0.00, Revision = 0, AppType = AppCode

LoadedMatrixDataChecksum: 0x0

ReadMatrixDataChecksum: 0x0

LoadedMatrixDataSize: 0

ReadMatrixDataSize: 0

LoadedMfrDataChecksum: 0x0

ReadMfrDataChecksum: 0x0

LoadedMfrDataSize: 0

ReadMfrDataSize: 0

LoadedCodeChecksum: 0x0

ReadCodeChecksum: 0x0

LoadedCodeSize: 0

ReadCodeSize: 0

ReturnValue: -1025 (Wrong password or wrong code file)

//-----

DateTime: 7/26/2021 12:14:42 PM

Operation: Verify

MatrixDataFileName: SK5215-105-01_MatrixData.bin

MfrDataFileName: SK5215-105-01_MfrData.bin

CodeFileName: SK5215-105-01_Code.bin

CodeFilePassword: 02041121

/*

*/

DeviceInfo: PartNo = 0, Version = 0.00, Revision = 0, AppType = AppCode

LoadedMatrixDataChecksum: 0x0

ReadMatrixDataChecksum: 0x0

LoadedMatrixDataSize: 0

ReadMatrixDataSize: 0

LoadedMfrDataChecksum: 0x0

ReadMfrDataChecksum: 0x0

LoadedMfrDataSize: 0

ReadMfrDataSize: 0

LoadedCodeChecksum: 0x0

ReadCodeChecksum: 0x0

LoadedCodeSize: 0

ReadCodeSize: 0

ReturnValue: -1026 (There are too many parameters)

//-----

DateTime: 7/26/2021 12:15:51 PM

Operation: Read

MatrixDataFileName: SK5215-105-01_MatrixData.bin

MfrDataFileName: SK5215-105-01_MfrData.bin

CodeFileName: SK5215-105-01_Code.bin

CodeFilePassword:

/*

*/

DeviceInfo: PartNo = 0, Version = 0.00, Revision = 0, AppType = AppCode

LoadedMatrixDataChecksum: 0x0

ReadMatrixDataChecksum: 0x0

LoadedMatrixDataSize: 0

ReadMatrixDataSize: 0

LoadedMfrDataChecksum: 0x0

ReadMfrDataChecksum: 0x0

LoadedMfrDataSize: 0

ReadMfrDataSize: 0

LoadedCodeChecksum: 0x0

ReadCodeChecksum: 0x0

LoadedCodeSize: 0

ReadCodeSize: 0

ReturnValue: -1027 (Do not need code file name or password)