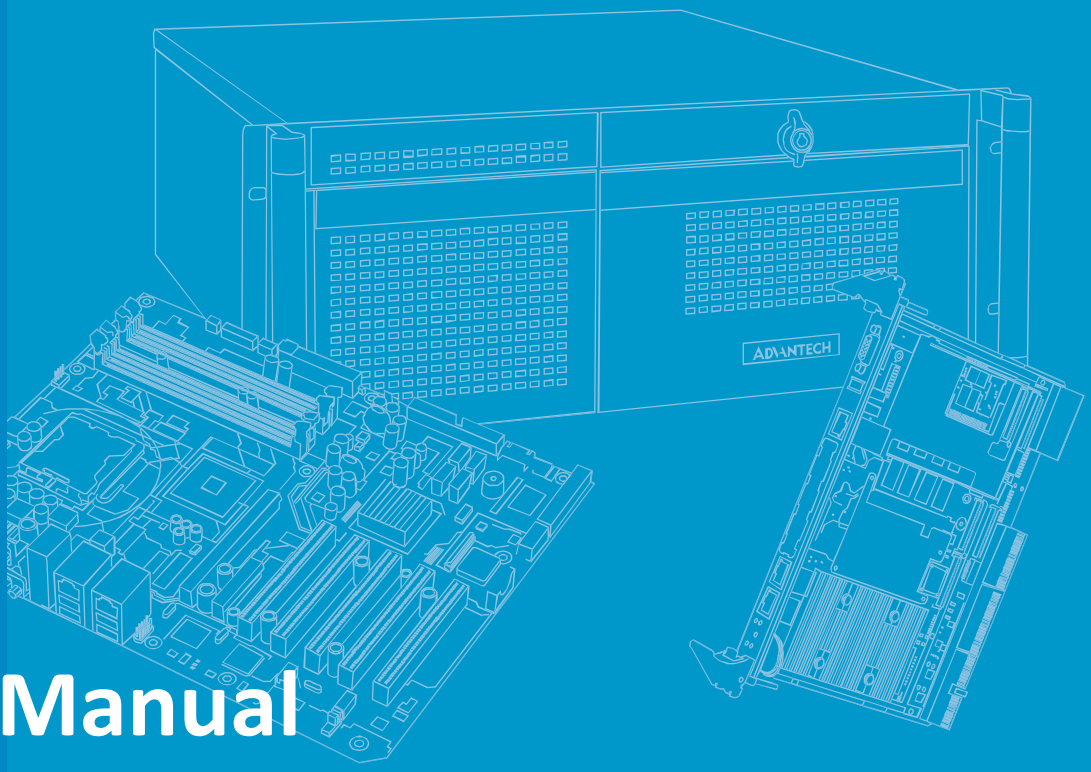

User Manual

ADVANTECH

FRU UTILITY

Revision 3.0

Revision History

Date [mm/dd/yyyy]	Revision	Modifications
03/13/2024	3.0	Ed 3.0 Official Release
02/09/2022	2.1	- Add –SW op.
28/01/2019	2.0	Official release
11/08/2018	1.2	- Add NS, MDF and MD support.
03/16/2016	1.1	- Highlighted BIOS and i2c driver issues for the FWA-1330 platform
03/11/2016	1.0	- Added *Chassis Type* field reading - MultiRecord data read in MultiRecord area - Split as separate afru version doc from former rev 0.2 document
01/25/2016	0.2	- Added afru usage section
01/15/2016	0.1	Initial version

We Appreciate Your Input

Please let us know of any aspect of this product, including the manual, which could benefit from improvements or corrections. We appreciate your valuable input in helping make our products better.

Please send all such - in writing to: tse.ncg@advantech.com

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1. INTRODUCTION

1.1 Overview

This document describes the functionalities and the usage of the Advantech afru utility. The afru utility is used to read FRU information stored in an EEPROM on platforms without a BMC, as well as to access FRU on NMC cards if they are available on the platforms.

The afru utility has been integrated into the Advantech Quick Start Image as a pre-installed tool for platform evaluation. Please contact your Advantech representative for more details.

1.2 Tested Platform Configuration

The following table provides information of the software and platform used as of writing this document:

Configuration	Description
FWA-3260	FWA-3260 without BMC
Linux	Ubuntu 20.04.1 LTS (5.11.0-46-generic)
BIOS	T119
afru	v2.46
dmidecode	3.2

Table 1: Tested Platform Configuration

Note:

To use the afru utility on the FWA-1330 platform:

1. *Requires updating BIOS to the latest v1.10 version to resolve IO resource conflict issue between SMBus and ACPI.*
2. *The default i2c driver (i2c-i801.ko, for our quick start image under the /lib/modules/3.10.0-123.20.1.el7.x86_64/kernel/drivers/i2c/busses directory) needs to be patched and manually loaded for the afru to access FRU EEPROM via PCH SMBus. Please contact your local Advantech representative for more details.*

2. COMMAND LINE PARAMETERS OF AFRU

2.1 Print Usage

Print usage of **afru**:

#afru

 # ./afru

Usage: ./afru {op}

{op}: The operation you want to do.

-V: Display the version.

-R: Read FRU information from EEPROM.

-nR: Read NMC card FRU information from EEPROM.

-r: Read FRU information from MB FRU file.

-nr: Read FRU information from NMC card FRU file.

-pr: Read FRU information from PMM card FRU file.

Choose one op and press "Enter" for more information

After these parameters. You can add -P to use specific platform

-P Support platforms:

FWA-1330

FWA-2330

FWA-3210-1NMC

FWA-3210-2NMC

FWA-3230

FWA-3231

FWA-3232

FWA-1330

Except -P option, you can add -SW <channel> <channel> <channel> to select specific I2C switch channel

Example:

Set first switch to channel 0, second switch not needed, third switch to channel 1

./afru -nR -SW 0 255 1

2.2 Print Version

Print software version of the **afru**:

```
#afru –V
```

```
# ./afru -V
Version: 02.46
```

2.3 Retrieve System FRU

To retrieve FRU information of the mainboard, chassis and system:

```
#afru –R
```

```
# ./afru -R
Found device on bus 0
FRU Information
===============
Chassis Part Number: FWA3260A04E-ES
Chassis Type: Main Server Chassis
Chassis Serial Number: KSE0056367
advantech_mac: 01 01 02 06 0f 00
Board Mfg: Advantech
Board Mfg Date: CST Thu Jul 14 17:23:00 2016
Board Product: FWA-3260
Board Serial: KSE0056367
Board Part Number: NAMB-3260
Product Manufacturer: Advantech
Product Name: FWA-3260
Product Part Number: FWA3260A04E-ES
Product Version: A103-1
Product Serial: KSE0056367
```

2.4 Retrieve NMC FRU

***Please note that the NMC FRU follows Advantech's defined format rather than the IPMI defined format**

WARNING: NMC FRU ID sequence is different between products. Please contact your local Advantech representative for more details.

To retrieve FRU information of the NMC module:

```
#afru –nR <NMC FRU ID>
```

For example, to retrieve FRU information of the NMC 1 (the example taken is NMC-0116):

```
./afru -nR 1
Found device on bus 0
MV:     Major version (binary) [4]: 0x1
MIV:    Minor version (binary) [4]: 0x0
ACLBPN: ACL Board Part Number (ASCII) [20]: NMC-0116
ACLBR:  ACL Board Revision (ASCII) [3]: A1
ACLBSN: ACL Board serial number (ASCII) [12]:
OEMOFF: OEM offset (binary) [2]: 0x80
NMCT:   NMC Type (binary) [2]: 0x1
BYPASS: Bypass function (binary) [1]: 0x0
PC:     Port Count (binary) [2]: 0x2
MLS:    Max Link Speed (binary) [2]: 0x4
BM:     Board Manufacturer (binary) [2]: 0x1
MACB:   Mac Address Base (button) (binary) [6]: 00 00 00 00 00 00
MACC:   Mac Address Count (button) (binary) [1]: 0x2
TMACB:  Top board Mac Address Base (binary) [6]: 00 00 00 00 00 00
TMACC:  Top board Mac Address Count (binary) [1]: 0x0
NS:     NMC size (binary) [1]: 0xff
MDF:    MFG date filter (binary) [1]: 0xff

OEM part:
ACN:    ACL Customer Name (ASCII) [20]:
OMV:    OEM Major Version (binary) [4]: 0x0
OMIV:   OEM Minor Version (binary) [4]: 0x0
OSN:    OEM Serial Number (ASCII) [30]:
OPN:    OEM Product Number (ASCII) [10]:
```

OP1M: Port 1 mac addr (binary) [6]: 00 00 00 00 00 00

OP2M: Port 2 mac addr (binary) [6]: 00 00 00 00 00 00

OP3M: Port 3 mac addr (binary) [6]: 00 00 00 00 00 00

OP4M: Port 4 mac addr (binary) [6]: 00 00 00 00 00 00

OP5M: Port 5 mac addr (binary) [6]: 00 00 00 00 00 00

OP6M: Port 6 mac addr (binary) [6]: 00 00 00 00 00 00

OP7M: Port 7 mac addr (binary) [6]: 00 00 00 00 00 00

OP8M: Port 8 mac addr (binary) [6]: 00 00 00 00 00 00

GEN: Generation[1]: 0xff

2.5 Read System FRU Image File

Read image file of the system FRU:

```
#afru –r <FRU Image>
```

For example, to dump system FRU image file:

```
# ./afru -r mb_fru.img
FRU Information
===============
Chassis Part Number: FWA3260A04E-ES
Chassis Type: Main Server Chassis
Chassis Serial Number: KSE0056367
advantech_mac: 01 01 02 06 0f 00
Board Mfg: Advantech
Board Mfg Date: CST Thu Jul 14 17:23:00 2016
Board Product: FWA-3260
Board Serial: KSE0056367
Board Part Number: NAMB-3260
Product Manufacturer: Advantech
Product Name: FWA-3260
Product Part Number: FWA3260A04E-ES
Product Version: A103-1
Product Serial: KSE0056367
```

2.6 Read NMC FRU Image File

***Please note that the NMC FRU follows Advantech's defined format rather than the IPMI defined format.**

Read image file of the NMC FRU:

```
#afru –nr <NMC FRU Image>
```

For example, dump NMC FRU image file:

```
# ./afru -nr nmc_fru.img
MV:     Major version (binary) [4]: 0x1
MIV:    Minor version (binary) [4]: 0x0
ACLBPN: ACL Board Part Number (ASCII) [20]: NMC-1011
ACLBR:  ACL Board Revision (ASCII) [3]: A10
ACLBSN: ACL Board serial number (ASCII) [12]: AKA1234567
OEMOFF: OEM offset (binary) [2]: 0x80
NMCT:   NMC Type (binary) [2]: 0x1
BYPASS: Bypass function (binary) [1]: 0x0
PC:     Port Count (binary) [2]: 0x8
MLS:    Max Link Speed (binary) [2]: 0x8
BM:     Board Manufacturer (binary) [2]: 0x1
MACB:   Mac Address Base (button) (binary) [6]: 00 00 00 00 00 00
MACC:   Mac Address Count (button) (binary) [1]: 0x8
TMACB:  Top board Mac Address Base (binary) [6]: 00 00 00 00 00 00
TMACC:  Top board Mac Address Count (binary) [1]: 0x0
NS:     NMC size (binary) [1]: 0xff
MDF:    MFG date filter (binary) [1]: 0x1
MD:     MFG date follow IPMI FRU format [3]: 00 00 00
MFG date: CST Mon Jan  1 08:00:00 1996

OEM part:
ACN:    ACL Customer Name (ASCII) [20]:
OMV:    OEM Major Version (binary) [4]: 0x0
OMIV:   OEM Minor Version (binary) [4]: 0x0
OSN:    OEM Serial Number (ASCII) [30]:
OPN:    OEM Product Number (ASCII) [10]:
```

OP1M: Port 1 mac addr (binary) [6]: 00 00 00 00 00 00

OP2M: Port 2 mac addr (binary) [6]: 00 00 00 00 00 00

OP3M: Port 3 mac addr (binary) [6]: 00 00 00 00 00 00

OP4M: Port 4 mac addr (binary) [6]: 00 00 00 00 00 00

OP5M: Port 5 mac addr (binary) [6]: 00 00 00 00 00 00

OP6M: Port 6 mac addr (binary) [6]: 00 00 00 00 00 00

OP7M: Port 7 mac addr (binary) [6]: 00 00 00 00 00 00

OP8M: Port 8 mac addr (binary) [6]: 00 00 00 00 00 00

GEN: Generation[1]: 0xff

2.7 Read PMM FRU Image File

***Please note that the NMC FRU follows Advantech's defined format rather than the IPMI defined format.**

To read the image file of the PMM FRU.:

```
#afru –pr <PMM FRU Image>
```

For example, dump PMM FRU image file

```
./afru -pr PMM4101000200E-ES_FRU_V01_01.bin
MV:     Major version (binary) [4]: 0x1
MIV:    Minor version (binary) [4]: 0x0
ACLBPN: ACL Board Part Number (ASCII) [20]: PMM-4101-000200E-ES
ACLBR:  ACL Board Revision (ASCII) [3]: A1
ACLBSN: ACL Board serial number (ASCII) [12]:
OEMOFF: OEM offset (binary) [2]: 0x80
PMMT:   PMM Type (binary) [2]: 0x1
FEATURE:PMM features (binary) [1]: 0x2
PC:     Port Count (binary) [2]: 0x1
MLS:    Max Link Speed (binary) [2]: 0x20
BM:     Board Manufacturer (binary) [2]: 0x1

OEM part:
ACN:    ACL Customer Name (ASCII) [20]:
OMV:    OEM Major Version (binary) [4]: 0x0
OMIV:   OEM Minor Version (binary) [4]: 0x0
OSN:    OEM Serial Number (ASCII) [30]:
OPN:    OEM Product Number (ASCII) [10]:
```

2.8 Use –SW op for –nR.

User can use –SW to control the I2C switch channel.

WARNING:

- **Third I2C switch channel is not ready, please always use 255.**
- **The I2C switch channel design is different between products. Please contact your local Advantech representative for more details.**

To retrieve FRU information of the NMC module:

#afru –nR –SW <first I2C switch channel> <second I2C switch channel> <third I2C switch channel>

For example, to retrieve FRU information of the NMC 1 which the first I2C switch channel is 4, and second I2C switch channel is 0. (the example taken is NMC-0116):

 # ./afru -nR -SW 4 0 255

Found device on bus 0

MV: Major version (binary) [4]: 0x1

MIV: Minor version (binary) [4]: 0x0

ACLBPN: ACL Board Part Number (ASCII) [20]: NMC-0116

ACLBR: ACL Board Revision (ASCII) [3]: A1

ACLBSN: ACL Board serial number (ASCII) [12]:

OEMOFF: OEM offset (binary) [2]: 0x80

NMCT: NMC Type (binary) [2]: 0x1

BYPASS: Bypass function (binary) [1]: 0x0

PC: Port Count (binary) [2]: 0x2

MLS: Max Link Speed (binary) [2]: 0x4

BM: Board Manufacturer (binary) [2]: 0x1

MACB: Mac Address Base (button) (binary) [6]: 00 00 00 00 00 00

MACC: Mac Address Count (button) (binary) [1]: 0x2

TMACB: Top board Mac Address Base (binary) [6]: 00 00 00 00 00 00

TMACC: Top board Mac Address Count (binary) [1]: 0x0

NS: NMC size (binary) [1]: 0xff

MDF: MFG date filter (binary) [1]: 0xff

OEM part:

ACN: ACL Customer Name (ASCII) [20]:

OMV: OEM Major Version (binary) [4]: 0x0

OMIV: OEM Minor Version (binary) [4]: 0x0

OSN: OEM Serial Number (ASCII) [30]:

OPN: OEM Product Number (ASCII) [10]:

OP1M: Port 1 mac addr (binary) [6]: 00 00 00 00 00 00

OP2M: Port 2 mac addr (binary) [6]: 00 00 00 00 00 00

OP3M: Port 3 mac addr (binary) [6]: 00 00 00 00 00 00

OP4M: Port 4 mac addr (binary) [6]: 00 00 00 00 00 00

OP5M: Port 5 mac addr (binary) [6]: 00 00 00 00 00 00

OP6M: Port 6 mac addr (binary) [6]: 00 00 00 00 00 00

OP7M: Port 7 mac addr (binary) [6]: 00 00 00 00 00 00

OP8M: Port 8 mac addr (binary) [6]: 00 00 00 00 00 00

GEN: Generation[1]: 0xff