



Avionics Databus  
Solutions

# Arinc 664

# Windows BSP

## Release Notes

Version 19.2.1  
May, 2019



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**AIM – Gesellschaft für angewandte Informatik und Mikroelektronik mbH**

**AIM GmbH**

Sasbacher Str. 2  
D-79111 Freiburg / Germany  
Phone +49 (0)761 4 52 29-0  
Fax +49 (0)761 4 52 29-33  
[sales@aim-online.com](mailto:sales@aim-online.com)

**AIM GmbH – Munich Sales Office**

Terofalstr. 23a  
D-80689 München / Germany  
Phone +49 (0)89 70 92 92-92  
Fax +49 (0)89 70 92 92-94  
[salesgermany@aim-online.com](mailto:salesgermany@aim-online.com)

**AIM UK Office**

Cressex Enterprise Centre, Lincoln Rd.  
High Wycombe, Bucks. HP12 3RB / UK  
Phone +44 (0)1494-446844  
Fax +44 (0)1494-449324  
[salesuk@aim-online.com](mailto:salesuk@aim-online.com)

**AIM USA LLC**

Seven Neshaminy Interplex  
Suite 211 Trevose, PA 19053  
Phone 267-982-2600  
Fax 215-645-1580  
[salesusa@aim-online.com](mailto:salesusa@aim-online.com)

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## 1 Important Notes

- Install the Software-Package with the file "setup.exe" which can be found on the DVD. The DLL (Microsoft compatible), samples, documentation, etc. will be installed.
- Refer to the Reference Manual for a history of changes relating to the function set.
- This Board Software Package ([BSP](#)) is incompatible with previous versions (<19.0.0). Be sure to update the on-board firmware and the device driver. To do this have a look at the Getting Started Manual which is located in the "Doc" directory after installing the [BSP](#) and follow instructions.
- Please make sure to run the BSP installer as administrator e.g. by right clicking *Setup.exe* and then selecting 'Run as Administrator'.
- The package does not include a separate Reference Manual for LabView. However there exists a LabView VI for each Application Programming Interface ([API](#)) function that provides the analogue functionality. Hence you can use the Reference Manual to look for the description of the VI parameters. Functions having parameters bundled into structures must be flattened, hence VIs are using converted, so called *CVI*, functions. Here is an example for the fictive function *FdxFunc*:

---

```
void FdxFunc( TY_FDX_XY var )
```

where TY\_FDX\_XY is declared as:

```
struct TY_FDX_XY {  
    char var1 ;  
    char var2 ;  
    char var3 ;  
};
```

---

in LabView converted to:

---

```
void FdxFuncCvi( char var1 , char var2 , char var3 )
```

---

## 2 Known Issues

- Continuous Capture does not work with Trigger Setup. This is defined by definition.
- Auto negotiation may not work correctly if partner don't support Auto negotiation.
- APE-GNET-2/4 is still not supported with this BSP
- 4MB CCSE buffers do not work with the 64bit Windows driver for API/AMC-FDX-2 based Modules. Buffers will be limited internally.

### 2.1 Limitations of APE-based boards

APE-based means boards of the family of APE-FDX-2 boards which are APE- AXC-, AMCX-, ACE, ACXX- boards.

- UDP Simulation on APE-FDX-2: Stability of sampling rates must be further improved
- Also UDP receiver can cause problems on very high load.
- Replay function is still not available
- REROS function is still not available
- AMCX-FDX-2 can cause problems in detection of the board due to the architecture with a PCI to PCIe bridge. This can also cause a problem at disabling and re-enabling of Windows System driver.
- In generic transmit mode configured as single port the attribut ul\_NetSelect can cause a problem by setting to send on only one port. So is best to set to FDX\_TX\_FRAME\_BOTH. In redundant mode all works as expected for this parameter.



### 3 Changes With This BSP

This is BSP was designed to support demands a special AIM System. All other functionality is unchanged. The BSP is explicitly only tested for Customer System.

#### 3.1 New Functionality

- ANS functionality introduced
- Support for UDP and SAP block read functions on APE-Board introduced

#### 3.2 Improvements

- Improved the stability of the on-board software for UDP sampling port simulation

#### 3.3 Bug Fixes

- BSP664-51 Fixed PNP detection of devices
- BSP664-55 Fixed bugged whereby UDP-Ports on APE did not deallocate onboard memory
- BSP664-32 Fixed issue where writing to UDP ports at high frequency caused target software crash
- BSP664-43 Fixed APE-Board crashing with UDP setup
- BSP664-48 Resolved bug sending of single, empty payload message breaks down queueing ports
- BSP664-22 Fixed memory deallocation bug which caused software crash when using CCSE

#### 3.4 Component releases

## 4 Changes With Previous BSPs

### 4.1 New Functionality

#### 19.1.5

#### 19.1.4

#### 19.1.3

- Support of discrete I/O Function for APE-based boards
- Implementation of on-board selftest with Channel Loop-back opportunity for APE-based boards

#### 19.1.2

- Support of discrete I/O Function for APE-based boards
- Implementation of on-board selftest with Channel Loop-back opportunity for APE-based boards
- Support for ACE-FDX-2 and ACXX-FDX-2
- Have Boeing EDE functionality on APE based boards

#### 19.1.0 / 19.1.1

- BUG00992 Re-enable UDP on APE-FDX-2
- First Release von XMC based module AXC-FDX-2
- First Release von PMC based module AMCX-FDX-2

#### 19.0.2

#### 19.0.1

#### 19.0.0

- Support APE-FDX-2 in basic modes  
This means the generic transmit mode is working and also the chronological monitoring.  
The VL / UDP Simulation modes will be available with a further BSP.
- Support fdXTap with 64Bit Windows Operating Systems
- Have Interface Library (DLL) with `_cdecl` instead of `_stdcall`
- ENH00893: Implement Tx Timestamping for Sampling Messages

- Further more a problem of updating sampling UDP messages by fast writing to the UDP ports is fixed.

### 4.2 Improvements

#### 19.1.5

#### 19.1.4

#### 19.1.3

#### 19.1.2

- Improvement of Receiver Part for APE based boards

#### 19.1.0 / 19.1.1

- SW\_ENH00743 Improve performance of function ApiCmdDataQueueOpen
- Fix of Transmit Latency for Simulation Messages on API/AMC/APU-FDX-2. On APE-FDX-2 this behaviour is still problematic.
- Improvement of stability while endurance test by modification of timer initialisation.

#### 19.0.2

With this Patch only a problem with Windows Driver signing is fixed. No functional changes were made. Also the driver directory structure has change to equalise to other new AIM BSPs.

#### 19.0.1

- ENH00995: APE-FDX-2 enable tap mode
- ENH00999: APE-FDX-2 re-enable redundancy mode
- ENH01000: Make parallel capture available for REROS

## 19.0.0

### 4.3 Bug Fixes

#### 19.1.5

#### 19.1.4

#### 19.1.3

#### 19.1.2

- Several Bug-Fixes

#### 19.1.0 / 19.1.1

- BUG00992 Re-enable UDP on APE-FDX-2
- Bugfix in Windows System driver (driver stability with DMA)
- Crash of APE-FDX-1 on TxControl (STOP) in Simulation Mode without any VL set up.

#### 19.0.2

#### 19.0.1

- BUG01001: Support BSP with missing API-Header Files
- BUG00993: APE-FDX-2 Increase OS changer heap size
- BUG00994: Installation AFDX BSP: Files are missing from the Onboard directory

#### 19.0.0

- SW\_BUG04691: Opening of VIs leads to LabView Crash with LabView 2010
- SW\_ENH04830: New IOCTL get driver info to get device information even if the TSW is not running
- SW\_ENH04861: Unify AIM driver IO controls in same file Aimloctl.h
- BUG00703: AFDX: Wrong pointer cast in TxPort initialization

### 4.4 Component releases

#### 19.1.3

- APE/AXC/AMCX-FDX-2 LCA Design V01.03.3

- APE-FDX-2 Firmware V1.4.3 Release

### 19.1.2

- HW\_REL06457 APE/AXC/AMCX-FDX-2 LCA Design V01.03.0
- HW\_REL06456 APE-FDX-2 Firmware V1.4.0 Release

### 19.1.0 / 19.1.1

- HW\_REL06100 AXC/AMCX-ETH Board Design V01.00
- HW\_REL06345 APE-FDX-2 Firmware V1.3.4 Release
- HW\_REL06346 APE/AXC/AMCX-FDX-2 LCA Design V01.02.79

### 19.0.2

### 19.0.1

### 19.0.0

- HW\_REL05987: APE-FDX-2 Firmware V01.00 Release
- HW\_REL05988: APE-FDX-2 LCA Design V01.00
- HW\_REL05993: 64bit PCI LCA V12R6 Release
- HW\_REL06014: AMC\_APM Monitor V02.30 Release
- HW\_REL06016: AMC-FDX I/O LCA V16R4\_400E Release
- HW\_REL06017: AMC-FDX I/O LCA V16R4\_300E Release
- HW\_REL06192: AFDX- Firmware V09.08 Release for XScale

## 4.5 Information from Version Control tool

### 19.1.2

#### Commits of On-board Target-Software

- 66507e7 Modify suspension for reading EDE Counter (API) to get no error
- ee2eb61 Fix IRIG format problems and ede Zero Time
- ba6d974 Bugfix, Additional check for NULL Pointer
- b1202ad Changed EDE counter retrieval to read directly from LCA register

- ef61b2d Bump Version to 13.3.0
- 481152f Modify calling and locations of Memory alloc/dealloc functions
- da8787b Eliminate warning partially.
- ee99ed5 Add function to Header
- 093243c Eliminate warning
- 2eaa1c1 Fix Memory Problem in Sampling Header Area.
- 1c53ddc Modify handling for EDE SN in case of Sampling ports.
- 8145268 Bugfix for accidentally checked in Error.
- 0060983 Get code for Subscriber and Time Manager to the latest revision and to compile for APE.
- 59087ec Add Board Names for ACE- and ACXX-FDX.
- 55e45a0 Have EDE also in simulation mode.
- 05aef8f Fix Buffer Type and Pointers to CRC Page.
- b47ff3d Fix bugs with com structures.
- 34d56ff Implementation of generic EDE for APE
- c1d9c99 Extend Header for EDE Possibility on APE
- 336b1c2 Move buffer update implementation from API to APE
- 4734f3a Merge transmit functions/ modifications from API to APE
- cd1c683 Suppress wrong mode settings for single- and generic-function board
- 3861a24 Remove timely output in case of not receive data.
- d4ad557 Add some fixes and remove some debug print
- ce84364 Bumped version to 13.2.4
- f93b9ae Modify evaluation of NOVRAM Values.
- 6798e95 Remove .cproject from repository
- f415fc7 Modify Position of sending buffer to deallocation Enhance some printouts.
- 60f8cf5 Pack Send buffer for Deallocation in a function.
- 35f11b3 Adds some modification to have software compilable after merge with maintenance Branch. But it is still necessary to merge some other parts manually to APE-Software.
- 84cc640 Fix old TSW version output to be equal to new also for API.
- b3c988d Fix old TSW version output to be equal to new. Build No is now Patch version.
- 793bc7e Fix some problems of merge to have all modifications from maintenance branch.
- c3bcec3 Bumped version to 13.2.3
- ba71b8f fix handling of nex pointer in case of last entry. Add a lot of debug output

- f830f9d Add printout of memory information
- cffaf77 Fix Total Free Size of Memory Pool, fix possible memory leak and add some Sanity Checks
- 9b3b743 Bufgix in Total Memory Counter of Memory Pool
- a7cea11 Possibility to have variable length of Subscriber Messages (TM Response)
- e65423a Bump Version to 12.11.221
- f9865e2 Re-modify Stop of Task. Bug Fix Memory initialization without choking.
- 0560b77 Modify Stop of Subscriber Tasks
- 7ed05e9 Modify Suspension of function
- f92a240 Bumped version to 13.2.2
- a35c17d Modification of Buffer List evaluation - Use more Flags from Firmware - correct handling for discarded buffers - correct handling of last entry flag for discarded frames.
- 0ec87d5 exclude some commands in interrupt processing for ContCap HISR
- 29b60c4 Implement some Linux based functions for time measurement.
- 226179a Fixed memory leak around VL descriptor deletion
- 3ce57ce Fixed more memory leaks around UDP port deletion
- f9d921f Added return value check in st\_MonContCapForceDateTransfer
- 3fdb906 Fixed memory leak around sampling port frame header creation
- a3c0440 Fixed memory leaks around UDO port entry deletion
- 8f7dd3e Fixed segmentation fault in dynamic task deletion
- 1d54e38 Modify passing of continuous capture data to host
- dcb2e04 switch back to unenhanced passing function
- 7ca2758 eliminate pass data block warning in PBA.pro and enhance pass\_DateToHost
- 0786438 Take missing changes for Boeing Rev.E modification.

### Commits of API-Library

- eb4b419 Fix Bit Positions of EDE Tx-Header
- 5a111cb Correceted parsing of GNET frame header in CCSE test
- c9b3c5c Fix SamplingTxRx for APE-FDX
- ff2292d Fix Test for EDE sampling
- 57252c1 Some Fixes in new EDE functions.
- 1e053db Fix setup of fram header word 1 in EDE extended header.
- 9f3f590 Added AMCX-FDX-2, ACE-FDX-2 and ACXX-FDX-2 to module type "APEAXC"

- baa92a9 Added EDE transmit and receive test
- 2196123 Added new EDE API tests
- b98a4b7 Excluded all boards with 'V2' as part of their board name from using as a resource and added the boards 'API-FDX-B2' and 'APE-FDX-B2'
- f4aec23 Corrected input parameter check for EDE receiver port creation
- 1fda973 Adapted calling convention for continuous capture callback function
- 81d728b Adding API bindings for EDE
- 48a8ac6 Take Reference Manual from maintenance branch
- c244ed5 Get modifications for Sample to cover Rev.E of Boeing specification.
- 22888cc Get Changes for DLL made with maintenance/17.x
- c9787bf Add new functions to configure Subscriber



## 5 System Requirements

- Personal Computer (PC) with running Windows Operating System (OS). Following the support state for different version at the time of this BSP release:

Windows Xp	Windows 7	Windows 8.x	Windows 10
------------	-----------	-------------	------------

- AIM Arinc 664 (AFDX) hardware device installed in local PC or in remote PC connected by Internet Protocol (IP) based network. Following devices are supported with this BSP:
  - API-FDX-2 (AIM PCI Architecture)
  - AMC-FDX-2 (AIM PCI Architecture)
  - fdXTap<sup>TM</sup> (AIM USB Architecture)
  - APE-FDX-2 (AIM PCIe Architecture)
  - AXC-FDX-2 (AIM PCIe Architecture)
  - AMCX-FDX-2 (AIM PCIe Architecture)
  - APU-FDX-2 (AIM USB Architecture)
  - ACC-FDX-2 (AMC-FDX on ACC-3U carrier)
  - ACC-FDX-2/4 (AMC-FDX on ACC-6U carrier)
- Supported LabView Versions: All delivered VIs are constructed and tested under National Instrument LabView Version 2013

**Note:**

**Green** means Software was successfully tested on the OS

**Yellow** means the Software should work, but was not explicitly tested

**Red** means Software will not work on the OS



## List of Abbreviations

**API** Application Programming Interface

**BSP** Board Software Package

**IP** Internet Protocol

**OS** Operating System

**PC** Personal Computer