



ADB3 Driver 1.4.17 for Windows Release Note

Introduction

This release note accompanies the ADB3 Driver for Windows. The latest version of this driver can be found at:

<http://ftp.alpha-data.com/pub/admxrcg3/windows>

For support, send e-mail to support@alpha-data.com

Operating systems supported

This release of the ADB3 Driver supports the following operating systems:

- Microsoft Windows XP, 32-bit and 64-bit editions
- Microsoft Windows Server 2003, 32-bit and 64-bit editions
- Microsoft Windows Vista, 32-bit and 64-bit editions
- Microsoft Windows 7, 32-bit and 64-bit editions
- Microsoft Windows 8, 32-bit and 64-bit editions
- Microsoft Windows 10, 32-bit and 64-bit editions

Hardware supported

This release of the ADB3 Driver supports the following Alpha Data hardware:

- ADM-XRC-6TL
- ADM-XRC-6T1
- ADM-XRC-6T-DA1
- ADM-XRC-6TGE and ADM-XRC-6TGEL
- ADM-XRC-6T-ADV8
- ADPE-XRC-6T and ADPE-XRC-6T-L
- ADPE-XRC-6T-ADV
- ADM-XRC-7K1
- ADM-XRC-7V1
- ADM-VPX3-7V2
- ADM-PCIE-7V3
- ADM-PCIE-KU3
- ADM-XRC-KU1
- ADM-PCIE-8V3
- ADM-PCIE-8K5

License Agreement

Please refer to the file **license.rtf** within this software package for licensing terms. Please contact Alpha Data if alternative licensing conditions are required.

Alpha Data reserves the right to use a different license agreement for future releases of this software.

Installation instructions

This release of the driver is distributed in binary form as a Windows ZIP (.zip file extension). To install it, log on as a user with Administrator privileges and follow these steps:

- 1 Unzip the ZIP file to a convenient location on a local hard disk (this is recommended to avoid User Account Control issues on Vista and later).
- 2 Open the folder into which the ZIP file was extracted, which should contain a file **adb3.inf** (among others). Then, run the appropriate installer:
 - If the operating system is a 32-bit edition of Windows, launch **install.exe**.
 - If the operating system is a 64-bit edition of Windows, launch **install64.exe**.
- 3 A dialog box should appear, showing progress. When the 'Finish' button appears, click it to finish installation.
- 4 Optionally, open Windows Device Manager and verify that the expected number of Alpha Data Reconfigurable Computing devices are present, and that none of them are in an error state (yellow exclamation mark over the corresponding icon).

In Windows Vista and later, User Account Control prompts may appear during the above steps. These prompts should be confirmed.

VPD write-protection mechanism

The VPD write-protection mechanism described in the ADM-XRC Gen 3 SDK User Guide is implemented as of release 1.1.0. To enable write-to-VPD, the following DWORD registry value must be nonzero:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\adb3\Parameters\EnableVpdWrite

This value is checked each time a call to `ADMXRC3_WriteVPD` is made with valid parameters, so changes to this registry value take effect immediately. If the registry value does not exist, the driver considers it to be zero (write-to-VPD disabled).

Security considerations

By default, only a user with administrative privileges can open a device using the `ADMXRC3` API and use the full functionality of the API. This is intentional, because the host interface in third-generation Alpha Data reconfigurable computing hardware is capable of reading and writing arbitrary addresses in host memory. As of release 1.1.0, the driver's .INF file **adb3.inf** applies the following SDDL string to kernel-mode devices:

D:P(A;;GA;;;SY)(A;;GA;;;BA)(A;;GR;;;BU)

An explanation of Windows SDDL strings is outside the scope of this document, but the above string means that, in the security descriptor applied to kernel-mode devices, the system and Administrators have full control, while normal users have read access. When a user-mode process attempts to open a device (using `ADMXRC3_Open` or `ADMXRC3_OpenEx`), the driver verifies that either (a) the user-mode process is opening the device in "passive" mode (i.e. read-only), or (b) the calling process is running "elevated" (i.e. as Administrator). If neither are true, the driver rejects the attempt to open the device. In the case of (a), the driver restricts the user-mode process to using a subset of the device's functionality so that the device cannot be used to compromise system

security.

Starting with release 1.4.17 of the ADB3 Driver, the installation program (**install.exe** or **install64.exe**) permits the security descriptor to be changed to permit non-Administrator users to have full control (as opposed to read access). This can be done either by invoking the installation program with the **-lowsec** option, or by manipulating the checkbox labeled "Allow non-Administrator accounts to have full access to devices". If this option is passed on the command line, or the checkbox is checked, the following SDDL string is applied instead:

```
D:P(A;;GA;;;SY)(A;;GA;;;BA)(A;;GA;;;BU)
```

This string gives the system, Administrators and normal users full control. In that case, normal users can open a device without running elevated or specifying passive mode, such that all of the device's functionality is available.

WARNING

Allowing normal users to have full control over a device is a security vulnerability that could be used to bypass system security and take over the system. THIS OPTION MUST THEREFORE NOT BE USED IN A SYSTEM WHERE UNTRUSTED USERS CAN LOG ON.

Common buffer support

Beginning with release 1.4.4, the driver can create one or more "common buffers" at startup. The main purpose of this feature is supporting applications that use Direct Master data transfer, such as an ethernet-style I/O interface where the sizes and arrival times of packets of data are not known in advance by software running on the host. These buffers have the following characteristics:

- Persist until the driver is stopped.
- Guaranteed aligned to a specified power-of-2 address boundary.
- Allocated from the appropriate pool of memory in order to be contiguous and visible to bus-master devices.
- Can be mapped into the virtual address space of a user-mode process; see "ADMXRC3 API Specification 1.5.0" or later for details of the new ADMXRC3 API functions relating to common buffers.

The driver parameter **PrimaryCommonBufferCount** determines the number of common buffers allocated; the default is zero, meaning that no common buffers are allocated by default. The parameter **PrimaryCommonBufferSizeLow** determines the size in bytes of each common buffer; the default is 64 kiB (0x10000). The parameter **PrimaryCommonBufferAlignment** determines the address boundary size to which each common buffer is guaranteed to be aligned; the default is 32 bytes (0x20).

Known issues

Downgrading to an earlier version

Due to Windows driver versioning rules, if the running driver is downgraded to an earlier version and new hardware is plugged in, Windows will prefer to reinstall the highest-numbered signed driver in the system, and may even do so without presenting any prompts to users. When this occurs, it is necessary to install the downgraded driver again using the installer program from the driver package (**install.exe** or **install64.exe**).

A permanent solution available in Windows Vista and later is to uninstall the later driver along with devices via the Device Manager, and then install the earlier driver using the installer program.

In versions of Windows before Vista, Windows generally prompts the user when new hardware is detected (unless a WHQL-signed driver exists), so the choice exists at that point to select the downgraded driver instead of accepting the driver preferred by Windows.

Fixed-local addressing DMA transfers

The flag `ADMXRC3_DMA_FIXEDLOCAL` when used with the DMA functions in the `ADMXRC3` currently has no effect for Gen 3 hardware.

Release history

Release 1.4.17

This release implements `ADMXRC3` API Specification version 1.8.2.

Enhancements:

- 1 Added support for the `ADM-XRC-KU1`, `ADM-PCIE-8V3` and `ADM-PCIE-8K5`.
- 2 Added support for the secondary PCI Express Gen3 x8 endpoint of Alpha Data's `ADM-PCIE-KU3-HI2` IP. This requires a system in which the x16 PCIe slot containing the `ADM-PCIE-KU3` resides is bifurcated into two x8 links.
- 3 The installation program included with the ADB3 Driver, `install.exe` or `install64.exe`, can now change the security descriptor on ADB3 kernel-mode devices after installation. See [Security considerations](#) above.
- 4 Added `DWORD` driver parameters `Adpexrc6tForcePcieGen` & `Adpexrc6tlForcePcieGen`, to work around the issue of PCIe Gen2 link speed not being automatically negotiated on a particular motherboard (Congatec TS77-i3-3217UE). Set these parameters to 1 or 2 to force retraining to PCIe Gen 1 or 2 (respectively) link speed when the driver starts. Default of 0 means no forced retraining is performed.

Currently, this workaround is performed only for the `ADPE-XRC-6T` (controlled by driver parameter `Adpexrc6tForcePcieGen`) or for the `ADPE-XRC-6T-L` (controlled by driver parameter `Adpexrc6tlForcePcieGen`).

Release 1.4.16

This release implements `ADMXRC3` API Specification version 1.7.3.

Enhancements:

- 1 Added clock programming support for the `ADM-PCIE-7V3`. Six reference clocks are now exposed via the `ADMXRC3` API.
- 2 Added support for `ADM-PCIE-7V3` sensors. Requires that the PCI revision of the `ADM-PCIE-7V3` ADB3 IP is 0x03 or later for the driver to expose the sensors via the `ADMXRC3` API.
- 3 Added support for the `ADM-PCIE-KU3`.
- 4 Added soft-reconfiguration functions using `IProg` to ADB3 API, for Bridgeless models (initially `ADM-PCIE-7V3` & `ADM-PCIE-KU3`): `ADB3_AbortIProg`, `ADB3_ScheduleIProg`, `ADB3_StatusIProg`
- 5 On `ADM-PCIE-7V3`, if PCIe revision is 0x06 or higher, enables 8 simultaneous packets in flight for increased DMA performance.
- 6 The installer program, `install[64].exe`, now uses `DIFxAPI.dll` for both installing and preinstalling the driver, in order to improve compatibility with Windows 8 and later versions of Windows. The progress bar in the user interface has been replaced by a text box containing a log of actions performed during driver installation.
- 7 Added `-h` option to `install[64].exe`, which displays help in a message box.
- 8 Added `-preinstall` option to `install[64].exe`, which causes the driver to be pre-installed in the system without requiring hardware to be present. This is intended to facilitate software-first installation.
- 9 Added `-noui` option to `install[64].exe`, which causes UI to be entirely hidden (also implies `-nopause`). This is intended to allow `install[64].exe` to be launched as a child process of a larger installation program.

Corrections:

- 10 Added a workaround to the installer program, install[64].exe, for an apparent Windows 8 bug where the function **UpdateDriverForPlugAndPlayDevices** returns **FALSE** and **GetLastError** is 0, causing the message "An error occurred while updating the driver" to be displayed. This happens only when all of the devices in the system whose Hardware ID matches a particular entry in the .inf file's models section are "phantom devices" (i.e. no longer present).
- 11 Fixed a regression bug in ADB3 Driver 1.4.14 & 1.4.15 that affects (only) the ADPE-XRC-6T, ADPE-XRC-6T-L & ADPE-XRC-6T-ADV. In the aforementioned two driver releases, if the system monitor generates its "alert" interrupt due to an out-of-range condition on any monitored power supply or temperature sensor, high utilization (40% - 90%) of one CPU core occurs for as long as the out-of-range condition persists, due to failure by the ADB3 Driver to properly service the alert interrupt.
- 12 Changed behavior of **ADMXRC3_GetStatusStringW** so that in the common case, where the **status** parameter represents a valid **ADMXRC3_STATUS** value, the returned string is no longer generated by converting a **char** string to a **wchar_t** string using a statically allocated buffer. This means that when an application calls **ADMXRC3_GetStatusStringW** twice, the result of the first call is no longer changed by the second call.

Release 1.4.15

This release implements ADMXRC3 API Specification version 1.7.1.

Enhancements:

- 1 Added support for the ADM-PCIE-7V3. NOTE: Sensor functionality for the ADM-PCIE-7V3 is not included in this version of the driver, but will be added in a future release; the number of sensors currently exposed by the ADMXRC3 API is 0.
- 2 Changed the default value of the driver parameter **PrimaryCommonBufferAlignment** in adb3.inf to 32 (0x20), to accommodate the ADM-PCIE-7V3, whose native AXI4 / OCP internal bus width is 32 bytes.

Release 1.4.14

This release implements ADMXRC3 API Specification version 1.7.1.

Corrections:

- 1 Fixed a bug in **admxrc3[d].dll** where **ADMXRC3_Finish*** routines returned **ADMXRC3_UNEXPECTED_ERROR** when they should have returned **ADMXRC3_PENDING** in order to indicate that the operation in question has not yet finished.
- 2 On models using the LM87 system monitor chip (ADM-XRC-6TL, ADM-XRC-6T1, ADM-XRC-6TGE, ADM-XRC-6TGEL and ADM-XRC-6TDA1), fixed temperatures for sensors 8 & 9 reading as unexpectedly large positive values when the actual temperature reading (in degrees Celsius) is negative. Values for sensors 8 & 9 now read correctly as negative values when the actual temperature is negative.
- 3 The description of the sensor whose description was "Time since manufacture" has been corrected, for all applicable models except for the ADM-XRC-6T-ADV8, to read as "Total powered on time". This sensor actually reports the total time spent powered on since manufacture, but the description in previous driver versions incorrectly indicated that it was the time since manufacture.
- 4 The description of the sensor whose description was "Time since manufacture" has been corrected, for the ADM-XRC-6T-ADV8, to read as "Total 3.3VAux on time". This sensor actually reports the total time spent with 3.3VAux powered on since manufacture, but the description in previous driver versions incorrectly indicated that it was the time since manufacture.

Note:

- 5 This and future releases do not support Windows 2000.

Release 1.4.13

Corrections:

- 1 Improved arithmetic accuracy of calculations that determine initial SI5338 output frequencies at driver startup, and fixed some anomalous frequencies that are generated when certain SI5338 output frequencies are requested via calls to `ADMXRC3_SetClockFrequency`. Affects following models: ADM-XRC-6TGE, ADM-XRC-6TGEL, ADPE-XRC-6T & ADPE-XRC-6T-L.

Release 1.4.12

This release implements ADMXRC3 API Specification version 1.7.0.

Enhancements:

- 1 Added support for ADM-VPX3-7V2 board.
- 2 Added support for ADM-XRC-6TGEL board.

Release 1.4.10

This release implements ADMXRC3 API Specification version 1.6.0.

Enhancements:

- 1 Added new ADMXRC3 API functions: `ADMXRC3_GetDeviceStatus` and `ADMXRC3_ClearDeviceErrors`.
- 2 Added support for ADM-XRC-7K1 revision 2 board.
- 3 Added support for ADM-XRC-7V1 revision 2 board.
- 4 Added support for devices implemented using generic ADB3 core in target FPGA (Vendor ID = 0x4144, Device ID = 0xADB3, Subsystem Vendor ID = 0x4144, Subsystem Device ID = 0x0000).
- 5 When a generic ADB3 device (such as an ADB3 core in a target FPGA) is found, now counts number of DMA engines by examining registers in BAR0, instead of assuming 0. This means that DMA engines are exposed by the ADMXRC3 API when available.

Corrections:

- 6 Corrected sensor names for ADM-XRC-7V1.

Release 1.4.9

This release implements ADMXRC3 API Specification version 1.5.1.

Enhancements:

- 1 Added support for the ADM-XRC-6T-DA1 and ADM-XRC-7K1.
- 2 Added preliminary support for the ADM-XRC-7V1.

Corrections:

- 3 The implementation of `ADMXRC3_MapWindow` and `ADMXRC3_UnmapWindow` has been revised, in order to behave sensibly for the case where some parent process creates a mapping, then spawns a child process that inherits a device handle, and then terminates before the child process terminates.
- 4 On the ADPE-XRC-6T(-L), the debug message about an AVR timeout (visible when kernel debugger is running) has been eliminated. The driver now correctly gets the AVR uC firmware version from the AVR uC instead of timing out.
- 5 On the ADPE-XRC-6T(-L), if a board has a value of 0 (which is always invalid) in VPD for the SI5338 reference clock frequency, works around it by changing it in the in-memory copy of the data to 25000000.
- 6 On the ADM-XRC-6T-ADV, the second bank of Flash memory (dedicated to target FPGA 1) can now be accessed successfully.
- 7 Fixed an unkillable thread hang that can occur when calling `ADMXRC3_ReadVPD` with a VPD addresses of 0x100 or above on the ADPE-XRC-6T(-L), ADM-XRC-6T-ADV8 and ADPE-XRC-6T-ADV.

Release 1.4.6

This release implements ADMXRC3 API Specification version 1.5.0.

Enhancements:

- 1 Added preliminary support for ADPE-XRC-6T-ADV.

Corrections:

- 2 Added support for FMCs fitted to ADPE-XRC-6T(-L). Now reports FMC information via `ADMXRC3_GetModuleInfo` for ADPE-XRC-6T(-L) as expected when an FMC is fitted.
- 3 `ADMXRC3_ReadSensor` now correctly reports the values of sensors whose values are negative (e.g. a temperature sensor whose reading is less than 0 deg. C) instead of a large positive value.
- 4 Corrected name of sensor 1 on ADM-XRC-6T-ADV8; was "12V supply rail", now "5V/12V XMC VPWR rail"; setting driver parameter "Admxrc6tadv8CompatSensor1Name" to 1 overrides this and causes the old name to be returned by the driver.
- 5 On the ADPE-XRC-6T(-L), fixed clock generator 1 being incorrectly mapped to SI5338 multisynth 0; now mapped to multisynth 1.

Release 1.4.5

This release implements ADMXRC3 API Specification version 1.5.0.

Corrections:

- 6 Fixed a crash that can occur when `ADMXRC3_Unlock` is called with an invalid value for the `ADMXRC3_BUFFER_HANDLE` parameter.
- 7 Fixed a crash when multiple queued DMA transfers are cancelled, by `ADMXRC3_Cancel` or by killing threads, within a small window of vulnerability around to the point at which the DMA transfer would complete normally were it not cancelled.

Release 1.4.4

This release implements ADMXRC3 API Specification version 1.5.0.

Enhancements:

- 1 Added common buffer functionality with the following ADMXRC3 API functions:
 - `ADMXRC3_GetCommonBuffer`
 - `ADMXRC3_GetCommonBufferCount`
 - `ADMXRC3_MapCommonBuffer`
 - `ADMXRC3_UnmapCommonBuffer`

Corrections:

- 2 Fixed a race condition that could cause a crash every few hours of constant large DMA transfers (of size 64 physical pages or more) in a typical SMP machine.
- 3 Corrected the scaling factors for sensors 1 to 10 for the models ADPE-XRC-6T and ADPE-XRC-6T-L.

Release 1.4.3

This release implements ADMXRC3 API Specification version 1.4.0.

Corrections:

- 1 Fixed a crash that can occur when attempting to do two or more DMA transfers on the same DMA channel.
- 2 Fixed a crash that can occur if the driver is somehow called by an `admxrc3*.dll` from a different driver version, due to the handlers for `ADMXRC3_GetSensorInfo` and `ADMXRC3_ReadSensor` failing to properly validate arguments.

- 3 Fixed an issue specific to the ADM-XRC-6T-ADV8 where the driver emitted the debug message "**** avrlint: failed to get AVR uC firmware version".
- 4 Added preliminary support for the models ADPE-XRC-6T and ADPE-XRC-6T-L.

Release 1.4.1

This release implements ADMXRC3 API Specification version 1.4.0.

Corrections:

- 1 Fixed a bug in the Si5338 clock synthesizer code for the ADM-XRC-6TGE that could corrupt memory when programming clock index 4. This clock generator is only available when the Si5338ExposeAllClocks driver parameter is nonzero; by default it is not available.
- 2 Support for ADM-XRC-6T-ADV8 is now feature-complete; added support for programming VPD and reading system monitor sensors via ADMXRC3 API.

Release 1.4.0

This release implements ADMXRC3 API Specification version 1.4.0.

Enhancements:

- 1 Added new API functions for performing DMA transfer to arbitrary PCI-E addresses: ADMXRC3_ReadDMABus, ADMXRC3_StartReadDMABus, ADMXRC3_StartWriteDMABus, ADMXRC3_WriteDMABus.
- 2 Added caching mechanism for Flash memory; reduces delays in execution of Flash API functions when performing many small write and/or erase operations.

Release 1.3.1

This release implements ADMXRC3 API Specification version 1.3.0.

New behavior:

- 1 Added support for the ADM-XRC-6TGE.
- 2 Added preliminary support for the ADM-XRC-6T-ADV8.
- 3 For the ADM-XRC-6TL, now recognizes "Extended" temperature range value (2) in VPD at offset 0x3E.
- 4 For the ADM-XRC-6T1, now recognizes "Extended" temperature range value (2) in VPD at offset 0x42.

Enhancements:

- 5 Now exposes (via the ADMXRC3 API) a programmable clock generator with index 0 on the ADM-XRC-6T1 when it has firmware 1.6 (PCI revision 0x06) or later.

Corrections:

- 6 ADMXRC3_GetClockFrequency now correctly returns the current clock frequency for a given clock generator. The driver now interrogates the hardware at startup to determine the current frequencies generated by each clock generator, so that ADMXRC3_GetClockFrequency can return the correct frequency even before any call to ADMXRC3_SetClockFrequency.
- 7 ADMXRC3_GetClockFrequency now correctly validates the pointer argument (3rd argument) passed to it, and returns ADMXRC3_NULL_POINTER if it is NULL.
- 8 Corrected the maximum frequency allowed for the clock generator with index 0 on the ADM-XRC-6TL. Previously, the driver incorrectly permitted frequencies up to 210 MHz to be requested, whereas 140 MHz is the correct maximum frequency.
- 9 Fixed ADMXRC3_EraseFlash failing to correctly validate the region specified to ensure that it is wholly within the unprotected region of a Flash memory bank.

Release 1.2.0

This release implements ADMXRC3 API Specification version 1.2.0.

Corrections:

- 1 Fixed a problem in `admxrc3.dll` and `admxrc3d.dll` that could result in an application crash when a thread terminates.

Enhancements:

- 2 Added new API functions for performing DMA transfers with 64-bit local addresses:
 - [ADMXRC3_ReadDMAEx](#)
 - [ADMXRC3_ReadDMALockedEx](#)
 - [ADMXRC3_StartReadDMAEx](#)
 - [ADMXRC3_StartReadDMALockedEx](#)
 - [ADMXRC3_StartWriteDMAEx](#)
 - [ADMXRC3_StartWriteDMALockedEx](#)
 - [ADMXRC3_WriteDMAEx](#)
 - [ADMXRC3_WriteDMALockedEx](#)
- 3 Added support for new sensors in ADM-XRC-6TL and ADM-XRC-6T1 with firmware 1.4 or later. This provides additional sensors that show internal temperature and voltages in the PCI Express to OCP Bridge.

Release 1.1.2

Corrections:

- 1 The `EnableVpdWrite` driver parameter is now written to the registry (with the value 0) when the driver is installed or reinstalled, to ensure that it has the correct default value.
- 2 Fixed a user-mode memory leak that can occur when the API functions [ADMXRC3_LoadBitstreamA](#) and [ADMXRC3_LoadBitstreamW](#) return a failure status code.
- 3 Fixed a bug in [ADMXRC3_SetClockFrequency](#) where on failure, the wrong status code was returned.

Release 1.1.0

Corrections:

- 1 Fixed a potential memory corruption issue on some architectures due to incorrect byte size calculation in device context structure.
- 2 Fixed a memory leak related to CFI Flash functionality when stopping and restarting the driver.
- 3 Fixed user VPD area (VPD space address range 0x100000-0x1FFFFFF) not being accessible on ADM-XRC-6TL and ADM-XRC-6T1.
- 4 Corrected error codes returned by several ADMXRC3 API functions when invalid parameters are passed:
 - 1 Non-Locked DMA functions now return 'ADMXRC3_INVALID_BUFFER' if the 'pBuffer' and/or 'length' parameters are invalid.
 - 2 Locked DMA functions now return 'ADMXRC3_INVALID_BUFFER_HANDLE' if the 'hBuffer' parameter is invalid.
 - 3 `ADMXRC3_Unlock` now returns 'ADMXRC3_INVALID_BUFFER_HANDLE' if the 'hBuffer' parameter is invalid.
- 5 Fixed 'ADMXRC3_UnregisterWin32Event' always failing with 'ADMXRC3_UNKNOWN_ERROR' when called from 32-bit process running on a 64-bit edition of Windows.
- 6 Fixed 'ADMXRC3_Unconfigure' failing with 'ADMXRC3_NOT_OWNER' even when the target FPGA has

no owner.

- 7 Fixed the ADMXRC3 DMA functions not properly co-validating the 'local' and 'length' parameters.
- 8 Fixed the ADMXRC3 nonblocking DMA functions incorrectly returning 'ADMXRC3_PENDING' instead of an error code when bad parameters are passed.
- 9 Fixed the ADMXRC3 nonblocking DMA functions incorrectly returning 'ADMXRC3_SUCCESS' instead of 'ADMXRC3_PENDING' when 'length' is zero and all other parameters are OK.
- 10 Fixed the ADMXRC3 Locked DMA functions not properly co-validating the 'offset' and 'length' parameters.
- 11 Fixed certain ADMXRC3 API functions not trapping NULL pointers being passed, typically resulting in an application crash.
- 12 Implemented VPD write-protection mechanism (now protected by default).
- 13 Added workaround for 4k crossing issue in ADB3 Bridge rev 0x01 and earlier. Workaround is not applied for rev 0x02 or later.

Enhancements:

- 14 Added support for ADM-XRC-6T1.
- 15 Added API function ADMXRC3_OpenEx, which allows an unprivileged process to open a device in "read only" mode and call a subset of the ADMXRC3 API functions.
- 16 Added API functions ADMXRC3_StartNotificationWait and ADMXRC3_FinishNotificationWait, which allow Linux applications to wait for events (since there is no Linux equivalent of ADMXRC3_RegisterWin32Event).
- 17 Added API function ADMXRC3_GetCardInfoEx (with structure ADMXRC3_CARD_INFOEX), which returns a superset of data supplied by ADMXRC3_GetCardInfoEx.
- 18 Added diagnostic API functions ADMXRC3_GetSensorInfo and ADMXRC3_ReadSensor, with associated types and structures. These functions allow applications to monitor the health of a Gen 3 reconfigurable computing card.

Release 1.0.1

Corrections:

- 1 The correct default security attributes are now applied to devices, preventing non-privileged users from opening a device using the ADMXRC3 API. In release 1.0.0, a non-privileged user could open a device.

Release 1.0.0

This is the first release of the ADB3 Driver for Windows.