Installation Guide

CEI-x30-SW

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Installation and packaging information for CEI-x30-SW

This document is organized into the following sections:

To jump to any section, click on the section listed above. If you have not already done so, it is highly recommended you install the software prior to installing the hardware.

This document covers product content, as well as installation and removal procedures. Supplemental information on the CEI-x30-SW distribution can be found in the file:

   README.HTML - Release notes for CEI-x30-SW software.

1. CEI-x30-SW Installation Instructions

Windows-based Hosts
First, install the CEI-x30-SW software distribution. DO NOT insert the board/carrier into the PC prior to software installation.

VxWorks and Integrity-based Hosts
Follow the instructions as documented in the CEI-x30-SW Software User's Manual for installation in a VxWorks or Integrity system.

Linux-based Hosts
See the file *Linux_install.txt* for installation instructions for Linux systems.

CEI-x30-SW Software Installation
You must have administrative privileges to install the CEI-x30-SW software package. To install the software, follow these steps:

a. Exit all programs.

b. Insert the CEI-x30-SW Media into your CD drive. The installation program launches automatically when the CD is inserted into the drive. If it does not, double-click the file SETUP.EXE that is located in the SETUP subdirectory of the CEI-x30-SW CD-ROM.

   *** IMPORTANT NOTE FOR WINDOWS 10 USERS *** Certain Microsoft processes may prevent you from launching our installer for a period of time after logging in to your computer. When running our installer shortly after logging in, you may notice our installer appears briefly, then disappears completely for a period of time, after which it automatically appears again, starts up, and functions normally. At the time of this release, delays of two minutes or less have been commonly observed (although 5-7 minute delays were observed in some cases). There are currently no workarounds available to prevent this behavior, although disabling OneDrive has been shown to decrease the installer startup delay in some cases.

c. The automated installation and device configuration software will guide you through the installation process. Be sure to choose the matching board type you are installing.

d. Upon completing the software installation, power down your system and install the hardware.

Hardware Installation

Note these devices are static sensitive. Before handling the device, attach a static strap to the metal chassis of your system and assure the system is both connected to a grounded power source and powered off.

After installation of the software, insert the hardware device into any available slot and secure it in place with the appropriate fastener. Do not install the hardware until after the software installation has been performed.

Windows Driver Installation

After installing first the software then installing the hardware, restart your system. The Windows Device Manager should detect the new hardware upon startup and device driver installation should occur as described below.

Windows Server 2008R2/7/8.0/8.1/10/Server 2012 (32-bit or 64-bit)

The driver installation will occur automatically upon hardware detection.

1. A FOUND NEW HARDWARE dialog may appear after logging in. If it appears, go to step 1(a). If a FOUND NEW HARDWARE dialog has not appeared after a minute has elapsed since logging in, Windows may have silently installed the device - skip to step (2) in this case.
    a. Select 'Locate and install driver software (recommended)'.
    b. When driver installation is complete, the message 'Device driver software installed successfully' appears.
2. Press the *Windows* key and *R* at the same time to display the "Run" window.
3. Type *devmgmt.msc* in the Open box and press <Enter> to open Windows Device Manager.
4. Verify that the device you installed is present beneath the *Abaco Avionics Devices* group. If the device is not present, reboot the system (this subsequent reboot is required on some systems in order for Windows to detect the new card).

Windows XP (32-bit)

1. The FOUND NEW HARDWARE dialog should appear indicating detection of the hardware device just installed.
2. If prompted to connect to Windows Update to search for drivers, select 'No, not this time' and click NEXT.
3. Select 'Install the software automatically (Recommended)' and click NEXT.
4. Under the COMPLETING THE FOUND NEW HARDWARE dialog, click FINISH.
5. Click the START button in the bottom-left corner of the screen.
6. Select 'Run...'.
7. Type *devmgmt.msc* in the 'Open' box and press <Enter> to open Windows Device Manager.
8. Verify that the device you installed is present beneath the *Abaco Avionics Devices* group.
9. If the hardware or device drivers are not shown reboot the system again, (this subsequent reboot is required on some systems in order for Windows to detect the new card).
10. If the FOUND NEW HARDWARE dialog still does not appear after rebooting, contact Abaco Systems Technical Support for Avionics Products per section/paragraph 2-B. below.

2. Configuration Verification

<u>A. Configuration Test</u>
For Windows 7, XP and Server 2008R2, access the "Test Configuration" shortcut created in the Abaco CEI-x30-SW program group located by selecting START->PROGRAMS->Abaco CEI-x30-SW on the Task Bar. For Windows 10/8.1/8, and Server 2012, access the "Test Configuration" shortcut listed under the *Abaco CEI-x30-SW* group in Apps By Name or All Apps, or accessed via the CEI-x30-SW Shortcuts folder.

<u>B. Installation Verification Issues</u>
If initialization was not successful, the card is not properly configured in your system. First, consult the installation chapter of the CEI-x30 User's Manual and assure your installation was performed as documented. If you require further assistance, please execute the program cei_probe.exe located in the folder:

   \Program Files\Condor Engineering\CEI-x30-SW\Help

Following execution of this program, forward the file CEI Report.txt, (created on your desktop), to avionics.support@abaco.com, specifying "Abaco Avionics Support" in the subject. Please include detailed contact information.

3. CEI-x30-SW Distribution Contents

The CEI-x30-SW Distribution is generally shipped on CD-ROM, though it is available from our web-site via installation executable. All distributions contain an automated installation utility for Windows hosts.

<u>CD-ROM Contents</u>
The Linux distribution is located in the file "linux_x30_vXXX.tgz". See the file Linux_install.txt for installation instructions for most Linux systems.

The CD-ROM contains a complete image of the files that would be installed by running the setup program, located in the top-level CEI-x30-SW directory. Files to automatically start the setup program exist at the root level of the CD-ROM. If the AUTORUN mechanism is not enabled on your system, execute the file SETUP.EXE located in the DISK1 subdirectory of the SETUP directory.

For any Windows target installation, the following folders and files will be located under the *C:\Program Files\Condor Engineering\CEI-x30-SW* folder by default.

Folder and File Names	Contents and Descriptions
\Documentation	
Install.html	This file in HTML format
Install.pdf	This file in PDF format
Install.txt	This file in in text format
Readme.html	Release and build notes
Readme.txt	Release and build notes in text format
ARINC Tutorial.pdf	A tutorial on ARINC protocols
CEI-x30-SW Software User Manual.pdf	CEI-x30 Software User's Manual
CEI-x30 Product Line Hardware User Manual.pdf	CEI-x30 Hardware User's Manual

TB3-TO-CMC-LP_Users_Guide.pdf	User's Manual for Abaco's TB3-TO-CMC-LP Thunderbolt™ 3 to PMC/XMC Expansion Adapter (which includes information related to operating an RCEI-830A-TB or RAR-XMC-TB in a Thunderbolt 3 environment)
\Drivers	The CEI-x30-SW Windows Device Driver Package installed for the respective operating system
\Flash Programmer	The firmware update utility and firmware load file optionally and conditionally installed for RAR-PCIE, RAR-MPCIE and RAR-XMC products
\Help	Help files for the CEI-x30 Application Programmer's Interface
CDEV_API.HTML	HTML-based CEI-x30 API Help top-level documentation file
CEI_PROBE.EXE	Installation problem logging application
\cdev_api_files	Individual CEI-x30 API category and API function HTML help files
\Include	Contains the include files (".h" file) for the API and device driver "C/C++" constants and prototypes. This folder also contains other header files used by the API, as described below
AR_ERROR.H	Error strings for status translations
CDEV_API.H	CEI-x30 API interface definitions
CDEV_API_CFG.H	CEI-x30 API custom build definitions
CDEV_FW.H	CEI-x30 firmware array declarations
CDEV_GLB.H	CEI-x30 API global data declarations
CDEV_HW.H	CEI-x30 board-specific h/w definitions
CEI_INSTALL.H	Generic low-level interface library definitions
CEI_TYPES.H	Generic data type declarations
FPGA430.H	CEI-430 Downloadable FPGA module
FPGA530.H	CEI-530 Downloadable FPGA module
FPGA630.H	RAR-CPCI Downloadable FPGA module
FPGA830.H	CEI-830 Downloadable FPGA module
FPGA830A.H	RCEI-830A Downloadable FPGA module
FPGA830RX.H	R830RX Downloadable FPGA module
FPGA_EC.H	RAR-EC Downloadable FPGA module
FPGAA30.H	AMC-A30 Downloadable FPGA module
FPGAX30N.H	Empty FPGA program array declaration
\CEI-x20 Compatibility	Folder containing a UTILDEFS.H that only includes CDEV_API.H for assisting application migration from CEI-x20 to CEI-x30 products
\Libs	Contains all varieties of CEI-x30 API library files built for use on 32-bit and 64-bit WINDOWS operating systems
\WIN32	Contains the API library files for any 32-bit WINDOWS operating system. The files in this folder were built with Microsoft Visual C++ v6.0
CDEV_API.LIB	CEI-x30 API Library
CDEV_API.DLL	CEI-x30 API DLL
\MSVC2008	32-bit API Library files built with Microsoft Visual Studio 2008

CDEV_API.LIB	CEI-x30 API Library
CDEV_API.DLL	CEI-x30 API DLL
\x64	Contains the API library files for any 64-bit WINDOWS operating system. The files in this folder were built with Microsoft Visual Studio 2008
CDEV_API64.LIB	CEI-x30 API Library
CDEV_API64.DLL	CEI-x30 API DLL
\Source	Contains source and header files for the API
CDEV_API.C	CEI-x30 API interface functions
CDEV_API_A717.C	CEI-x30 API ARINC 717 functionality
CDEV_API_CFG_FILE.C	CEI-x30 API Configuration file functionality
CDEV_API_EXP_RX.C	CEI-x30 API Expanded receive msg functionality
CDEV_API_EXP_TX.C	CEI-x30 API Expanded transmit msg functionality
CDEV_API_INTRPT.C	CEI-x30 API PCI interrupt functionality
CDEV_API_IRIG.C	CEI-x30 API IRIG timing functionality
CDEV_API_LEGACY_API.C	CEI-x30 API Legacy ARINC API routine support
CDEV_API_PLX_PGM.C	CEI-x30 API Firmware download functionality
CDEV_API_RX_FILTER.C	CEI-x30 API Receive label filtering functionality
CDEV_API_SCHED.C	CEI-x30 API Message scheduler functionality
CDEV_API_UTILITY.C	CEI-x30 API Utilities
CDEV_DLL.C	CEI-x30 DLL initialization/finalization functions
CDEV_WIN.C	Windows OS-specific utility functions
TST_CNFG.C	Source for a simple CEI-x30 internal wrap test
MULTIPROCESS_TEST.C	Source file for a simple multi-process example program
CONFIG_FROM_FILES.C	Source file for an application demonstrating simple channel configuration and scheduled message definition file usage
\Win32	Contains the 32-bit Windows library export file
CDEV_API.DEF	CEI-x30 API DLL export definitions
CDEV_WIN.OBJ	32-bit object module for VS2008 user API project
\x64	Contains the 64-bit Windows library export file
CDEV_API64.DEF	CEI-x30 API DLL export definitions
CDEV_WIN.OBJ	64-bit object module for VS2008 user API project
\VxWorks	Contains the VxWorks Driver specific source files
CDEV_VXW.C	VxWorks OS-specific API interface functions
TARGET_DEFINES.H	More Parameter type definitions
\VxBus Gen1 Driver	Contains VxWorks 6.x VxBus Gen1 Driver Interface files
AVIOVXWDRV.C	Generic VxWorks VxBus driver source file
AVIOVXWDRV.H	Generic VxWorks VxBus driver header file
\Component Installation Files	Contains the VxWorks 6.x VxBus Gen1 CDF file
40AVIOVXWDRV.cdf	Generic VxWorks VxBus 6.x Config Definition file
\VxBus Gen2 Driver	Contains the VxWorks 7 VxBus Gen2 Driver Interface files
\abaco_avio	Contains the VxWorks 7 VxBus Gen2 Driver Package
\cdf	Contains the VxWorks 7 VxBus Gen2 CDF file

Folder and File Names	Contents and Descriptions
40AVIOVXWDRV.cdf	Generic VxWorks VxBus 6.x Config Definition file
\h	Contains the VxWorks 7 VxBus Gen2 header files
AVIOVXBSUPPORT.H	Generic VxWorks VxBus driver 'shim' header file
AVIOVXWDRV.H	Generic VxWorks VxBus driver header file
\src	Contains the VxWorks 7 VxBus Gen2 source files
AVIOVXBSUPPORT.C	Generic VxWorks VxBus driver 'shim' source file
AVIOVXWDRV.C	Generic VxWorks VxBus driver source file
AVIOVXWDRV.MK	Generic VxWorks VxBus driver source makefile
AVIOVXWDRVMETHOD.M	Generic VxWorks VxBus driver source methods file
MAKEFILE	Generic VxWorks VxBus driver makefile
\spec_file	Contains the VxWorks 7 VxBus Gen2 Driver RPM Spec File
ABACO_AVIO.SPEC	VxBus Gen2 RPM spec file
\VxWorks Legacy PCI Driver	Contains the VxWorks Legacy PCI driver specific source files
CONDORVXWRTPDRV.C	Generic VxWorks driver source file
CONDORVXWRTPDRV.H	Generic VxWorks driver header file
AVIO_IOCTL.H	Driver IOCTL definitions header file
LOWLEVEL.H	Driver prototype definitions header file
\Component Installation Files	Contains the VxWorks Legacy PCI CDF files
\PPC	
51_AVIO_PPC_55_PCI.cdf	VxWorks 5.5 PowerPC Config Definition file
51_AVIO_PPC_RTP_6x_PCI.cdf	Generic VxWorks 6.x PowerPC Config Definition file
\x86	
51_AVIO_x86_55_PCI.cdf	VxWorks 5.5 x86 Config Definition file
51_AVIO_x86_RTP_66_PCI.cdf	Generic VxWorks 6.3-6.5 x86 Config Definition file
51_AVIO_x86_RTP_6x_PCI.cdf	Generic VxWorks 6.6-6.9 x86 Config Definition file
\Integrity	Contains Integrity-specific driver source
CDEV_INT.C	Integrity OS-specific interface functionality
LOWLEVEL.H	Driver prototype definitions header file
MEM_INTEGRITY.C	Generic Integrity user driver source file
CEI_INT_PCI_DRV.C	Generic Integrity kernel driver source file

For any target installation under Windows, the following folders and files will be located under the *C:\Program Files\Condor Engineering\CEI-x30-SW* folder (under Windows XP) or the folder *C:\Users\Public\Documents\Condor Engineering\CEI-x30-SW* (under Windows 7 or later).

Folder and File Names	Contents and Descriptions
\Examples	Example files in source, with Projects and Windows executables
\C	
\Win32	32-bit Windows operating systems files
TST_CNFG.C	Source for the CEI-x30 example application routines
TST_CFG.EXE	Executable for a simple CEI-x30 internal wrap test
TST_CFG.BAT	Batch file launching the CEI-x30 example

	application with all arguments defined to invoke execution of select subroutines
MULTIPROC.EXE	Executable for a simple multi-process example program
CONFIG_FROM_FILE.EXE	Executable for an application program demonstrating simple channel configuration and scheduled message definition file usage
2 CHAN CFG.TXT	Sample 2 channel configuration text file
2 CHAN CFG.XML	Sample 2 channel configuration XML file
8 MSG DEF.TXT	Sample 8 chan sched msg def text file
8 MSG DEF.XML	Sample 8 chan sched msg def XML file
\C Sample Project	A Visual Studio 2008 solution creating 32-bit and 64-bit versions of the Test Configuration executable
\x64	64-bit Windows operating systems files
TST_CFG.BAT	Batch file launching the CEI-x30 64-bit example application with all arguments defined to invoke execution of select subroutines
TST_CFG64.EXE	Executable for a simple CEI-x30 internal wrap test
MULTIPROC64.EXE	Executable for a simple multi-process example program
CONFIG_FROM_FILE64.EXE	Executable for an application program demonstrating simple channel config and scheduled msg definition file usage
2 CHAN CFG.TXT	Sample 2 channel configuration text file
2 CHAN CFG.XML	Sample 2 channel configuration XML file
8 CHAN MSG DEF.TXT	Sample 8 chan sched msg def text file
8 CHAN MSG DEF.XML	Sample 8 chan sched msg def XML file
\C#	Visual Studio 2008 .Net sample projects
\.Net Console Example	
\CEIx30NetClass	Solution for a CEI-x30 VB-based API Class Library (DLL wrapper)
\Arinc429Example	Solution for a C# console application using the VB Class Library
\C# Wrapper Example	Solution containing projects for a C# API wrapper Class Library and a simple C# GUI application demonstration program
\Vb	Visual Basic 6 sample project
CDEV_API_VB.TXT	Text file containing all Visual Basic constants and global declarations for porting the CEI-x30 API to VB
CDEV_API_VB_NET.TXT	Text file containing Visual Basic constants and global declarations for porting the CEI-x30 API to VB.NET
CDEV_VB.BAS	Visual Basic 6.0 example project, components, and executable
CDEV_VB.FRM	
CDEV_VB.VBP	
CDEV_VB.VBW	
CEI830_VB.EXE	

Folder and File Names	Contents and Descriptions
\Utilities	Software Utilities
\AutoConfig	Contains the AutoConfig ARINC 429 application program, User's Manual, and several sample channel configuration and message scheduler definition files
AUTOCONFIG ARINC USER'S MANUAL.PDF	AutoConfig ARINC User's Manual
n CHAN CFG.TXT	Three example channel configuration text files
n CHAN CFG.XML	Three example channel configuration XML files
n CHAN MSG DEF.TXT	Three example msg scheduler def. text files
n CHAN MSG DEF.XML	Three example msg scheduler def. XML files
AUTOCONFIG.EXE	AutoConfig ARINC Windows application program
AUTOCONFIG.ICO	AutoConfig ARINC Windows application icon file
CDEVLVRT.DLL	AutoConfig ARINC support library
\Start Offset Assistant	Windows 32-bit Utility files to assist in generating Start Offset values for use in complex transmit channel scheduled message scenarios
START_OFFSET_ASSISTANT.PDF	Start Offset Assistant User's Manual
GEN_12.5K_OFFSETS.BAT	Batch file to generate start offset definition for a slow bus
GEN_100K_OFFSETS.BAT	Batch file to generate start offset definition for a fast bus
GEN_MIXED_OFFSETS.BAT	Batch file to generate start offset definition for multiple channels
MSG_12.5K_NO_OFFSETS.TXT	Input file to demonstrate start offset definition for a slow bus
MSG_100K_NO_OFFSETS.TXT	Input file to demonstrate start offset definition for a fast bus
MSG_MIXED_NO_OFFSETS.TXT	Input file to demo start offset definition for multiple channels
MSG_SETUP.TXT	The output from a batch file invocation including defined start offsets
GEN_OFFSETS.EXE	32-bit Windows application program that generates start offsets
VALIDATE_OFFSETS.EXE	32-bit Windows application program that validates a msg scenario

32-bit Windows Operating System Specific Files

The following files are installed beneath the given system folders under 32-bit versions of Windows.

Folder and File Names	Contents and Descriptions
\Windows\System32	
CDEV_API.DLL	32-bit CEI-x30 API DLL for WINDOWS O/S, built with Visual C++ v6.0
CEI_INSTALL.DLL	32-bit Generic Abaco Avionics Device Driver Interface Library
CEI_UNINSTALL.DLL	32-bit Generic Abaco Avionics Distribution Uninstaller Library
CEI_REMOVE.EXE	32-bit Generic Abaco Avionics Distribution Uninstaller Executable

```
\Windows\System32\drivers
    CEIWDX30.SYS                              Device driver for CEI-x30 devices
    CEIKPX30.SYS                              Device driver support module for CEI-x30
                                              devices
```

64-bit Windows Operating System Specific Files

The following files are installed beneath the given system folders under 64-bit versions of Windows.

Folder and File Names	Contents and Descriptions
\Windows\SysWow64	
CDEV_API.DLL	32-bit CEI-x30 API DLL for WINDOWS O/S, built with Visual C++ v6.0
CEI_INSTALL.DLL	32-bit Generic Abaco Avionics Device Driver Interface Library
CEI_UNINSTALL.DLL	32-bit Generic Abaco Avionics Distribution Uninstaller Library
CEI_REMOVE.EXE	32-bit Generic Abaco Avionics Distribution Uninstaller Executable
\Windows\System32	
CDEV_API64.DLL	64-bit CEI-x30 API DLL for WINDOWS O/S, built with Visual Studio 2008
CEI_INSTALL_64.DLL	64-bit Generic Abaco Avionics Device Driver Interface Library
\Windows\System32\drivers	
CEIWDX30.SYS	Device driver for CEI-x30 devices
CEIKPX30.SYS	Device driver support module for CEI-x30 devices

4. Removing CEI-x30-SW software or hardware components

For Windows 7, XP and Server 2008R2, access the Uninstall shortcut created in the CEI-x30-SW program group located by selecting START->PROGRAMS->Abaco CEI-x30-SW from the Task Bar. For Windows 10/8.1/8, and Server 2012, access the Uninstall "*Boardname"* shortcut listed under the *Abaco CEI-x30-SW* group in Apps By Name or All Apps, or accessed via the CEI-x30-SW Shortcuts folder.

A shortcut will have been created in the program group corresponding to the device you installed, appended with an iteration/device number. This number corresponds to the number of devices installed. For instance, DEV_0 is the first device and DEV_2 is the third device. This allows you to delete any device on a per-device basis; however, the first device installed must be the last device removed. The drivers for the individual device you specify will be removed but all other devices will be left unaffected.

If the device you are removing is the first device in the CEI-x30 product family, the remaining distribution software file set will be removed as well. Thus, if you have only installed a single device, selecting it in the Add/Remove Programs applet and clicking Add/Remove will cause all software and device drivers to be removed from your system.