# **Perkin Elmer IOC Creation**

This document describes Perkin Elmer IOC creation in both Windows 10 and Linux. IOCs for other detectors based on areaDetector can be built similarly.

## **Get source code.**

Perkin Elmer IOC is built based on EPICS base, synApps (areaDetector).

### EPICS base

EPICS base source code can be downloaded from:

<https://epics.anl.gov/download/base/index.php>

### synApps

synApps source code can be downloaded from:

<https://www.aps.anl.gov/BCDA/synApps/Where-to-find-it>

### areaDetector

areaDetector is included in synApps. However, if you want to build on a newer version of areaDetector which in not in the synApps package, follow the instruction on

<https://github.com/areaDetector/areaDetector/blob/master/INSTALL_GUIDE.md>

to download the source code. Basically, you can always download the latest version of the source code by running command:

git clone --recursive <https://github.com/areaDetector/areaDetector.git>

Separate modules should be downloaded by cloning them from the repository. Be sure to update the driver. For Perkin Elmer, replace the following files:

* perkinElmerSupport/Acq.h
* perkinElmerSupport/os/windows-x64/XISL.lib,
* gbif64.dll
* libxml2\_x64.dll
* XISL.dll

## **Install tools/libraries for the compilation**

Building Perkin Elmer IOC requires tools like make, Perl, re2c, and Visual Studio (Windows).

* Perl

<http://strawberryperl.com/>

* re2c

<http://re2c.org/install/install.html> Linux (source code)

<https://sourceforge.net/projects/re2c/> Windows (binary)

* Visual Studio for Windows

<https://visualstudio.microsoft.com/vs/community/>

* libusb-xxx-dev (e.g., libusb-1.0-0-dev) for Linux

Compilation of synApps without this library will cause error of can’t find libusb.h.

## **Compilation environment setup**

To compile EPICS base and packages/IOCs, EPICS\_HOST\_ARCH must be set. In Windows 10:

|  |
| --- |
| set EPICS\_HOST\_ARCH=windows-x64-static |

Paths to make/Perl/EPICS bin must be set. In Windows 10:

|  |
| --- |
| PATH=C:\Software\make;C:\Software\Strawberry\perl\bin;C:\epics\base-7.0.0.1\bin\windows-x64-static;%PATH% |

Execute the Visual Studio batch file for 64-bit builds in Windows:

|  |
| --- |
| "C:\Software\VS2017Community\VC\Auxiliary\Build\vcvarsall.bat" x86\_amd64 |

## Building the programs

### Building EPICS base

### Building synApps

### First, run **make release** in *synApps/support/* to pass the definition of **EPICS\_BASE** and **SUPPORT** across synApps modules.

### Define **RE2C** in *seq-x-x/configure/CONFIG\_SITE*.

### If areaDetector source code is downloaded separately:

### In *areaDetector/configure/*, run commands:

|  |
| --- |
| cp EXAMPLE\_RELEASE.local RELEASE.local  cp EXAMPLE\_RELEASE\_SUPPORT.local RELEASE\_SUPPORT.local  cp EXAMPLE\_RELEASE\_LIBS.local RELEASE\_LIBS.local  cp EXAMPLE\_RELEASE\_PRODS.local RELEASE\_PRODS.local  cp EXAMPLE\_CONFIG\_SITE.local CONFIG\_SITE.local |

### Define **SUPPORT** in *RELEASE\_SUPPORT.local*

### Define **ASYN**, **AREA\_DETECTOR** and **EPICS\_BASE** in *RELEASE\_LIBS.local*. Set

### Define **AUTOSAVE**, **BUSY**, **CALC**, and **SSCAN** in *RELEASE\_PRODS.local*. **SSEQ**, **DEVIOCSTATS** and **ALIVE** are optional.

### Set **WITH\_BOOST**=YES or NO in *CONFIG\_SITE.local*. **WITH\_PVA**=YES for EPICS base R7 or later version, otherwise set WITH\_PVA=NO.

## Trouble shooting during compilation