PAC EVK Quick Start: Firmware and Tools

00:00:07.480 --> 00:00:08.200
Welcome back.

00:00:08.200 --> 00:00:12.120
This is the Getting Started series
Part 2: Firmware Package

00:00:12.120 --> 00:00:13.640
and Tools Installation.

00:00:13.640 --> 00:00:14.760
By the end of the video,

00:00:14.760 --> 00:00:18.120
you'll have the PAC Motor Control
firmware package installed,

00:00:18.400 --> 00:00:22.200
and you'll have the key tools installed
so we can build flash and connect

00:00:22.200 --> 00:00:25.480
the GUI in the next videos.
Before we download anything.

00:00:25.800 --> 00:00:28.800
Here's a big picture of the PAC
development workflow.

00:00:29.120 --> 00:00:32.720
This diagram is the roadmap
we'll follow throughout the series.

00:00:33.080 --> 00:00:36.080
On the left side is the debug tools flow,

00:00:36.080 --> 00:00:37.840
installing the J-Link software,

00:00:37.840 --> 00:00:40.440
installing the device pack
for the J-Link.

00:00:40.440 --> 00:00:42.480
Then you can erase and download firmware.

00:00:42.480 --> 00:00:45.720
And later we'll use J-scope
for tuning and waveform capture.

00:00:46.080 --> 00:00:48.920
On the right side
is the firmware development flow.

00:00:48.920 --> 00:00:52.240
Installing your IDE,
installing the device pack for the IDE.

00:00:52.840 --> 00:00:54.840
Customize the FOC firmware.

00:00:54.840 --> 00:00:58.800
Optionally customize the bootloader,
then build, download, and debug.

00:00:59.080 --> 00:01:02.480
So in this video, we're covering
the first steps on both sides.

00:01:02.640 --> 00:01:07.280
Getting the FOC firmware package installed
and getting the J-LInk tools installed.

00:01:07.560 --> 00:01:12.440
Then in the next video, we'll do the build
and flash process inside the IDE.

00:01:12.880 --> 00:01:15.880
Okay, so here we are in the Qorvo website.

00:01:16.200 --> 00:01:19.200
I'm going to be opening the

00:01:19.680 --> 00:01:22.680
PAC55724product page.

00:01:23.160 --> 00:01:25.400
And just remember this workflow

00:01:25.400 --> 00:01:28.600
is essentially the same
for other PAC devices.

00:01:29.160 --> 00:01:32.000
So here we are in the product page.

00:01:32.000 --> 00:01:35.720
Here you can find under the documents

00:01:35.720 --> 00:01:38.880
tab on the core device rreferences.

00:01:39.360 --> 00:01:41.800
Here is the product datasheet.

00:01:41.800 --> 00:01:44.400
The device user guide and the

00:01:44.400 --> 00:01:47.640
PAC55XX family user guide.

00:01:48.120 --> 00:01:51.560
These are the main references
you'll use when you're validating specs,

00:01:51.920 --> 00:01:55.640
understanding peripherals,
or just designing around the device.

00:01:56.200 --> 00:01:59.320
Next, let's click on the Evaluation
Tools tab.

00:01:59.720 --> 00:02:02.960
This section goes over the EVK.

00:02:03.480 --> 00:02:07.080
Here you'll find the EVK user’s guide,

00:02:07.440 --> 00:02:11.000
the EVK’s schematics, layouts,

00:02:11.000 --> 00:02:15.000
BOMs, gerber files,
as well as the Altium project file.

00:02:15.440 --> 00:02:18.680
This is useful whether you're probing
the signals or checking components,

00:02:19.160 --> 00:02:25.080
checking component values, or planning
a custom design, based on reference.

00:02:26.520 --> 00:02:27.720
Now I'm going to scroll down

00:02:27.720 --> 00:02:31.120
to the PAC55XX software section.

00:02:32.000 --> 00:02:33.200
This is where you'll see

00:02:33.200 --> 00:02:36.520
different software packages
depending on what you're building.

00:02:37.200 --> 00:02:40.560
So first is the PAC six-step application
firmware.

00:02:40.960 --> 00:02:44.960
This is an application firmware
designed to showcase the trapezoidal

00:02:45.240 --> 00:02:48.240
or six-step model control on PAC devices.

00:02:48.960 --> 00:02:52.880
Second is the PAC FOC application
firmware package.

00:02:53.160 --> 00:02:56.520
For this learning series
will primarily be focused on this.

00:02:56.880 --> 00:03:02.320
It contains the FOC source code,
the boarding configuration files, I.D.

00:03:02.440 --> 00:03:05.800
and project files
for Kyle, IAR and Eclipse,

00:03:06.000 --> 00:03:10.880
as well as the PAC FOC GUI, which
we'll use later for bring-up and tuning.

00:03:11.400 --> 00:03:14.280
So let's go ahead and click on the FOC

00:03:14.280 --> 00:03:17.280
application firmware link.

00:03:17.640 --> 00:03:19.480
You'll be taken to a software

00:03:19.480 --> 00:03:22.480
download form.

00:03:22.560 --> 00:03:23.880
Go ahead and fill out this form.

00:03:23.880 --> 00:03:26.880
Make sure to use your corporate email

address.

00:03:27.160 --> 00:03:29.000
Check these boxes.

00:03:29.000 --> 00:03:30.800
Go over the license agreement.

00:03:30.800 --> 00:03:32.400
Make sure to scroll all the way down.

00:03:32.400 --> 00:03:35.040
Once all the way down,
you should be able to click accept.

00:03:36.160 --> 00:03:38.880
You should now receive a one time
download link.

00:03:38.880 --> 00:03:42.560
Once the download completes,
you should see this folder here.

00:03:42.760 --> 00:03:46.480
Go ahead and extract
and run this installer.

00:03:47.200 --> 00:03:50.200
Here I am running the installer.

00:03:50.520 --> 00:03:52.400
Go ahead and click finish.

00:03:52.400 --> 00:03:55.400
You should now see this folder.

00:03:55.680 --> 00:03:58.920
In this PAC FOC folder,
you'll find the source code

00:03:59.320 --> 00:04:02.280
as well as the board configuration files.

00:04:02.280 --> 00:04:05.560
Each of these files
depending on the family device.

00:04:05.840 --> 00:04:08.280
For example PAC55 family device.

00:04:08.280 --> 00:04:11.280
You can see that

we have project files from Keil,

00:04:11.680 --> 00:04:14.680
IAR and Eclipse.

00:04:14.800 --> 00:04:17.640
And if you go back to the resources
folder,

00:04:17.640 --> 00:04:21.120
this is where you'll find the PAC FOC GUI, which we'll use later,

00:04:21.680 --> 00:04:24.600
for tuning and bringing up a motor.

00:04:24.600 --> 00:04:27.960
I'd like to also mention
you can find several guides.

00:04:28.280 --> 00:04:31.720
I highly recommend
reading over the getting started first.

00:04:32.080 --> 00:04:37.120
Second is the format overview
and lastly the FOC tuning.

00:04:37.480 --> 00:04:41.440
Additionally, there's features, guides
and how they work,

00:04:41.840 --> 00:04:45.360
as well as motor position methods
such as the estimator

00:04:45.360 --> 00:04:48.360
HALL, MES and QEP

00:04:48.840 --> 00:04:51.600
Next we'll install the SEGGER J-Link tools,

00:04:51.600 --> 00:04:55.400
which are required for programing
and debugging over SWD.

00:04:56.960 --> 00:04:58.240
This is the SEGGER website.

00:04:58.240 --> 00:05:00.360
Go ahead and go to the download section.

00:05:00.360 --> 00:05:02.880

Go to J-Link/J-Trace

00:05:02.880 --> 00:05:06.320
Scroll down to the J-Link Software
and Documentation pack.

00:05:06.720 --> 00:05:08.160
Select your version.

00:05:08.160 --> 00:05:11.280
You can use the latest install using

00:05:11.680 --> 00:05:14.400
based on your operating system.

00:05:14.400 --> 00:05:17.200
After installation, SEGGER does recommend

00:05:17.200 --> 00:05:21.000
running the J-Link DLLUpdater.exe..

00:05:21.520 --> 00:05:24.520
This is to make sure you're
using the newest DLL version,

00:05:24.680 --> 00:05:28.480
which helps avoid connection issues
when flashing the PAC device,

00:05:28.920 --> 00:05:31.920
which can be found under the SEGGER folder.

00:05:32.280 --> 00:05:34.560
Usually it's in your C-drive.

00:05:34.560 --> 00:05:36.840
Go to your J-link version

00:05:36.840 --> 00:05:41.080
and then go to the J-Link DLL
Updater as shown.

00:05:42.120 --> 00:05:43.360
Go ahead and run.

00:05:43.360 --> 00:05:45.600
This will open a new window.

00:05:45.600 --> 00:05:49.200
It will show you
all the IDEs installed on your PC.

00:05:49.960 --> 00:05:52.960
Go ahead and check on the checkboxes
and click Ok.

00:05:53.600 --> 00:05:57.760
So now we downloaded the FC from a package
as well as the jailing tools.

00:05:58.000 --> 00:05:59.600
Now we're ready to move on.