

PAC EVK Quick Start: GUI Overview

00:00:07.440 --> 00:00:08.080
Welcome back.

00:00:08.080 --> 00:00:09.840
This is the Getting Started with PAC Part 5:

00:00:09.840 --> 00:00:12.840
FOC GUI Overview.

00:00:12.880 --> 00:00:16.520
The goal of this video is to show you
what the PAC FOC GUI is,

00:00:16.800 --> 00:00:20.280
how it talks to the firmware,
and where the key settings live.

00:00:20.800 --> 00:00:25.800
Previously, we powered the EVK, installed
the firmware package and tools,

00:00:26.040 --> 00:00:29.040
then we built and flashed the
FOC firmware to the board.

00:00:29.520 --> 00:00:32.080
Now we're going to open the FOC GUI,

00:00:32.080 --> 00:00:34.920
do a quick tour of the interface

00:00:34.920 --> 00:00:38.360
and then established
a UART connection to the PAC device.

00:00:38.760 --> 00:00:40.520
Okay let's open the GUI.

00:00:40.520 --> 00:00:44.640
So inside your FOC Firmwave folder,
navigate to resources.

00:00:45.360 --> 00:00:49.040
Here you'll find the pac_foc_gui.exe

00:00:49.600 --> 00:00:52.600
This will launch the PAC FOC GUI application.

00:00:56.280 --> 00:00:57.920



A quick big picture.

00:00:57.920 --> 00:01:02.160
The PAC FOC firmware includes
a UART-based GUI interface.

00:01:02.480 --> 00:01:05.360
This is basically your control panel.

00:01:05.360 --> 00:01:09.480
It lets you command the motor,
read back live variables and tune

00:01:09.480 --> 00:01:13.640
parameters in real time without constantly
having to rebuild the firmware.

00:01:14.000 --> 00:01:15.960
Think of the workflow like this.

00:01:15.960 --> 00:01:19.000
First, you will configure your motor
and system limits.

00:01:19.640 --> 00:01:22.640
Next you will write those parameters
to the target.

00:01:22.880 --> 00:01:25.920
Then, you will enable the motor
and verify motion.

00:01:26.360 --> 00:01:31.400
And lastly, you will fine tune in small
steps while watching the feedback.

00:01:31.800 --> 00:01:34.560
Across the top you'll see multiple tabs.

00:01:34.560 --> 00:01:37.320
We will keep this brief for now.

00:01:37.320 --> 00:01:41.560
The Config tab is where you enter
motor parameters and system limits.

00:01:42.240 --> 00:01:45.960
And the Tuning tab is
where you adjust the control behavior

00:01:46.320 --> 00:01:49.960
once the motor is spinning. In the features

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00:01:49.960 --> 00:01:53.360
tab is where optional functionality
is enabled.

00:01:53.520 --> 00:01:56.720
For this video we're going to stay focused
on the Config tab.

00:01:57.240 --> 00:02:00.480
Now let's walk through the main blocks
on the Config tab.

00:02:01.000 --> 00:02:03.560
First is the status display.

00:02:03.560 --> 00:02:07.600
This will indicate
whether you're in open loop or closed loop.

00:02:08.120 --> 00:02:12.240
It will also display
if the system has encountered a fault.

00:02:13.240 --> 00:02:13.680
It also

00:02:13.680 --> 00:02:17.480
shows live runtime values
like your speed reference

00:02:17.480 --> 00:02:21.480
and targeted speed,
both in electrical hertz and RPM,

00:02:22.080 --> 00:02:27.360
as well as your input DC bus voltage
and your computation mode.

00:02:27.480 --> 00:02:29.640
Next is the COMM status.

00:02:29.640 --> 00:02:33.200
This shows you your UART
communication status.

00:02:34.040 --> 00:02:38.280
You can confirm
if the target is responding based on this.

00:02:39.400 --> 00:02:42.480
Then you have your switching frequency

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and current sensing.

00:02:42.720 --> 00:02:46.160

This is where you configure your switching and control frequency settings

00:02:46.360 --> 00:02:49.200

and also confirm what current sensing

00:02:49.200 --> 00:02:52.200

configuration the firmware is using.

00:02:52.240 --> 00:02:55.240

Next is the Application Config section.

00:02:55.240 --> 00:02:58.560

This block defines your system level operating limits,

00:02:58.960 --> 00:03:01.800

it bounds operation and protects the hardware.

00:03:01.800 --> 00:03:06.960

For example, you set a maximum motor speed, a maximum current

00:03:07.200 --> 00:03:12.840

and things like an overcurrent limit that act as a hardware fault threshold.

00:03:13.440 --> 00:03:18.120

Quick note on units in this environment, speed values are shown

00:03:18.120 --> 00:03:21.920

in electrical hertz, and when you see current limits in the GUI,

00:03:22.200 --> 00:03:26.880

those are typically peak current values, not RMS.

00:03:27.720 --> 00:03:29.640

Next is the Motor Parameters.

00:03:29.640 --> 00:03:33.520

This is where you enter your motor electrical constants,

00:03:34.120 --> 00:03:38.000

things like your winding inductance



per phase values

00:03:38.760 --> 00:03:42.000
and your winding resistance per phase,

00:03:43.000 --> 00:03:45.120
as well as the number of pole pairs

00:03:45.120 --> 00:03:49.200
and the nominal speed, again
shown in electrical hertz.

00:03:49.440 --> 00:03:51.720
Finally, your Operation Selection.

00:03:51.720 --> 00:03:54.480
This is your runtime control panel.

00:03:54.480 --> 00:03:58.160
You can start and stop the motor
by clicking on this motor enable,

00:03:58.160 --> 00:04:02.320
as well as change directions
using this checkbox.

00:04:02.760 --> 00:04:06.640
You can also enter your closed loop speed
and your closed

00:04:06.640 --> 00:04:10.320
loop current targets,
depending on what mode you're using.

00:04:11.520 --> 00:04:15.320
Okay, so these are the key blocks
I want you to recognize for now.

00:04:15.600 --> 00:04:16.800
Later in the series,

00:04:16.800 --> 00:04:20.640
we'll come back and go deeper
into the Tuning Tab in Features Tab.

00:04:20.840 --> 00:04:25.240
But for now, the next step is connecting
GUI to the PAC device.

00:04:25.920 --> 00:04:30.680
Now let's establish the UART
communication. In the FOC GUI,



00:04:30.720 --> 00:04:33.720
go to the Config Tab on the top left.

00:04:34.120 --> 00:04:37.120
Click on COM Port Config.

00:04:37.200 --> 00:04:40.200
This will open the UART configuration window.

00:04:40.400 --> 00:04:42.280
Here you're going to click Detect,

00:04:42.280 --> 00:04:45.280
but before that
make sure your EVK is powered.

00:04:45.520 --> 00:04:49.200
The GUI will then scan for the available COM ports.

00:04:49.680 --> 00:04:53.160
Go ahead and select the COM port that corresponds to your board.

00:04:54.120 --> 00:04:57.120
For me I'm using COM6.

00:04:57.400 --> 00:05:00.440
You should see the COM status and target status.

00:05:01.080 --> 00:05:03.920
The target status will show you the detected

00:05:03.920 --> 00:05:06.920
firmware version
running on the PAC device.

00:05:07.080 --> 00:05:09.840
After you see that,
go ahead and click right.

00:05:09.840 --> 00:05:13.960
If you're having detection issues, confirm that the EVK is powered

00:05:14.640 --> 00:05:17.680
and that it's actually flashed with the FOC firmware.



00:05:18.600 --> 00:05:22.120
You can also check
if you selected the correct COM port.

00:05:22.480 --> 00:05:25.520
It is common to have multiple
COM ports on a PC,

00:05:26.320 --> 00:05:29.320
and one specific note on Windows
11 systems,

00:05:29.560 --> 00:05:33.840
you may need the FT232R or USB UART

00:05:33.840 --> 00:05:37.640
driver for UART communication
to work properly.

00:05:38.880 --> 00:05:43.440
But once you see the COM status
and the firmware version at the bottom

00:05:43.440 --> 00:05:47.800
here, as well as this polling enabled,
and write on change enabled.

00:05:48.280 --> 00:05:51.280
If you don't see these two
you can go to the top,

00:05:51.760 --> 00:05:55.200
click on tools and make sure that
these are always checked.

00:05:56.600 --> 00:05:56.920
Okay.

00:05:56.920 --> 00:06:01.320
So in the next video we'll use the GUI
to start interacting

00:06:01.320 --> 00:06:05.800
with the FOC firmware
and prepare you for your first motor

00:06:05.800 --> 00:06:06.200
bring up.