

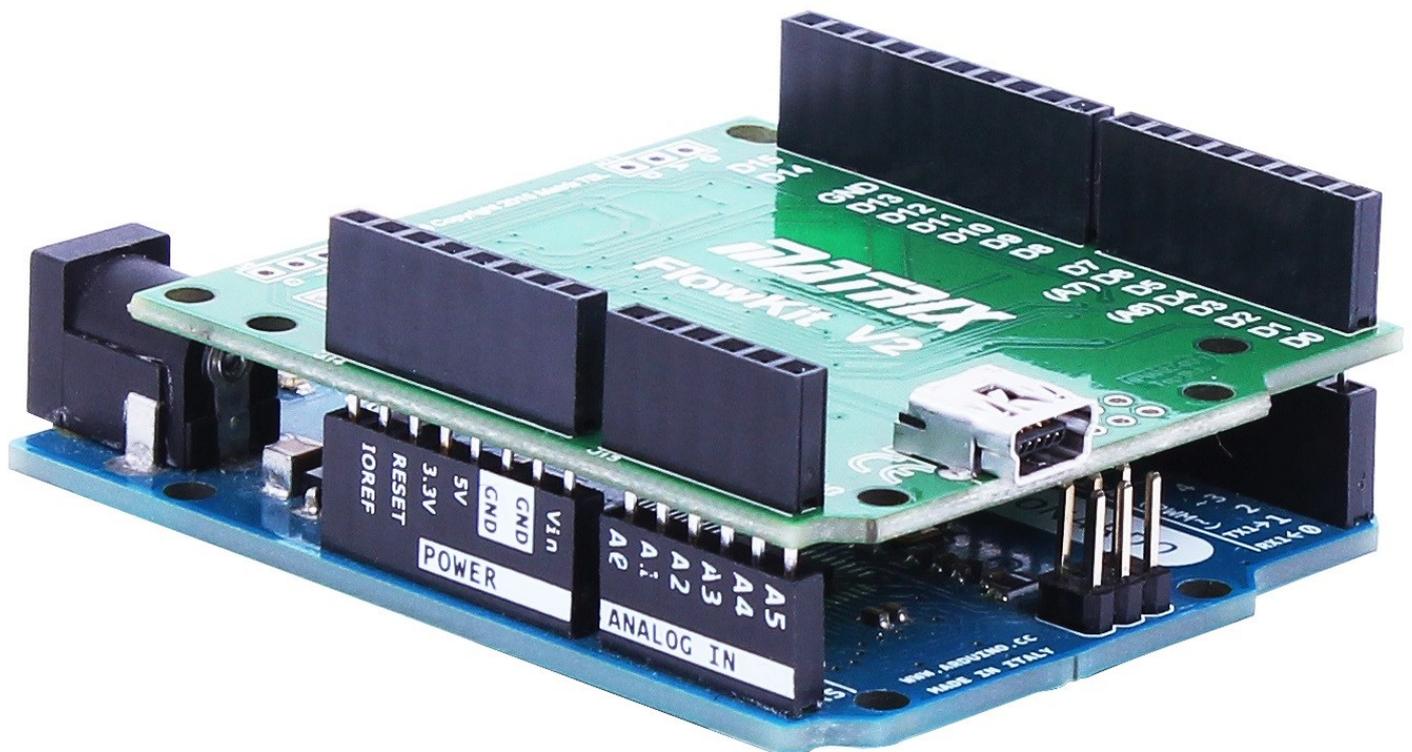


FlowKit V2



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About this document

This document concerns the FlowKit V2 in-circuit debugging tool for Flowcode. The product order code for the shield for Arduino is HP6012 and the free standing version is HP6031.

1. Trademarks and copyright

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ARM is the registered trademarks of ARM plc.

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2. Disclaimer

The information in this document is correct at the time of going to press. Matrix Technology Solutions Limited reserves the right to change specifications from time to time. This product is for development purposes only and should not be used for any life-critical application.

3. Information and technical support

The latest software updates, FAQs and other information can be found on our web site:

www.matrixtsl.com and forums at:

www.matrixtsl.com/mmforums/

General information

FlowKit V2 provides in circuit test (ICT) and in circuit debug (ICD) facilities when used in combination with Flowcode 6.2 or later versions. Up to 8 analogue channels and 16 digital channels of your project can be monitored at sample rates up to 1MHz.

The Ghost technology of Flowcode also provides signal decoding of popular protocols such as SPI, UART and I2C.

The in circuit debug (ICD) feature of FlowKit V2 and Flowcode provide a real time debug facility where it is possible to step through the Flowcode program on the PC and step through the program in the hardware at the same time.

Under user control the Flowcode software shows the location of the program in the flow chart, the value of all variables in the program, and allows users to alter the variable values when the program is paused.

FlowKit V2 versions

FlowKit V2 is available in two distinct versions, although both use the same USB driver and operate in the same way.

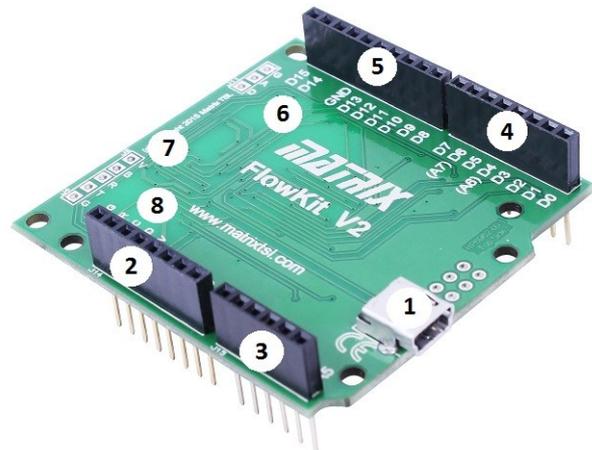
Your choice of version will depend upon your target hardware.

The free standing version (HP6031) is designed to connect to your target hardware via patch cables or probe clips (supplied) and allows for greater flexibility of use within Flowcode V6.

The FlowKit V2 for Arduino (HP6012) connects as a shield and offers the most convenient way to debug your Arduino project. Flowcode V6 target selection pre-configures the pin connection mappings for you.



Board layout



HP6031 Stand-alone FlowKit V2

1. USB mini-B socket to host PC
2. Additional GND pins
3. Analogue A0 to A5 pin header
4. Digital D0 to D7 pin header
5. Digital D8 to D15 pin header
6. Test signal pads
7. Aux pads
8. Factory programming pads

HP6012 FlowKit V2 Shield for Arduino

1. USB mini-B socket to host PC
2. Shield pass-through stacking header
3. Analogue A0 to A5 stacking header
4. Digital D0 to D7 stacking header
5. Digital D8 to D15 stacking header
6. Test signal pads
7. Aux pads
8. Factory programming pads

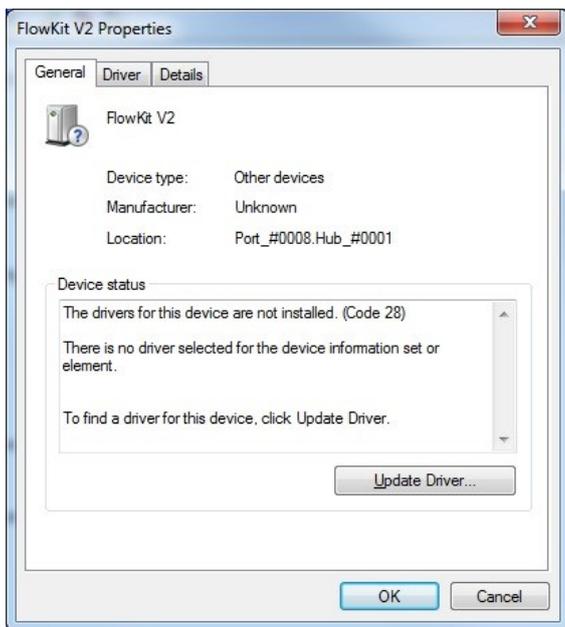
Features (6), (7) and (8) are used for factory firmware programming and test. However, the pad marked D of the Test signal pads (6) provides a 1KHz square wave output that can be used to test input monitoring channels.

Installing the drivers

Download the latest FlowKit V2 USB driver zip package from the resource section of the Matrix website at www.matrixtsl.com

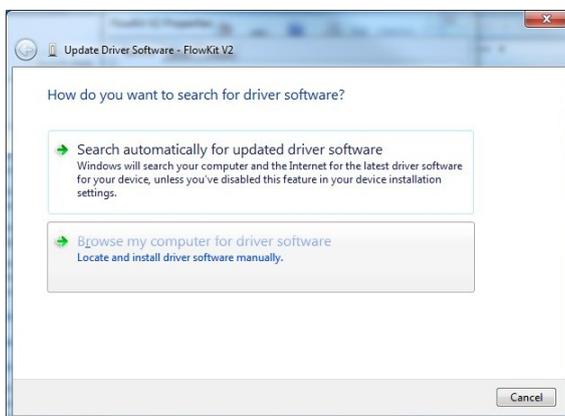
Un-zip the driver package to a temporary directory on your PC.

Attach the FlowKit V2 device to your host PC via a USB cable and the device should be detected by the Windows operating system. Cancel the Windows update search.

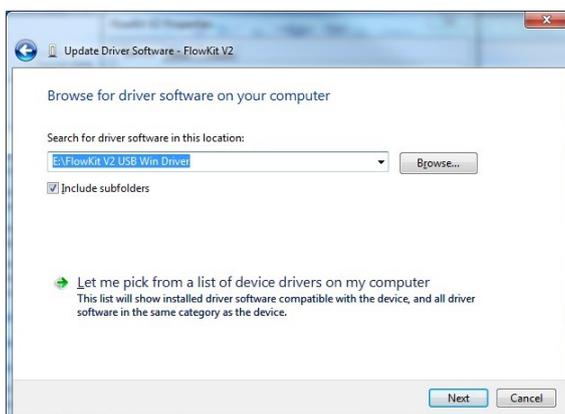


From the Control Panel, run the Device Manager and locate the FlowKit V2 device.

From the FlowKit V2 Properties dialog click the “Update Driver” button.

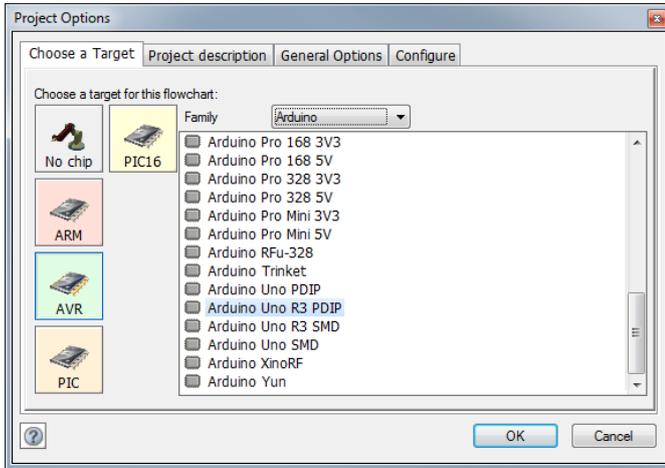


Select “Browse my computer for driver software”



Enter the location of the directory of the unzipped driver package, or use the browse button to locate it. Then click the “Next” button to proceed with the driver installation.

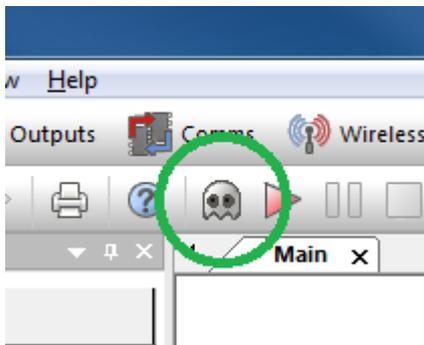
Using FlowKit V2



The Matrix FlowKit V2 is used in combination with Flowcode. So first create your Flowcode project, using the “new project” wizard, or via the menu.

For HP6012, your target hardware will be an Arduino shield compatible target. In this case the correct FlowKit channel mapping will be pre-loaded by Flowcode.

Create your project flowchart program. Enable the Data Scope window via the Flowcode menu View->Scope. For any inputs of your project that you wish to monitor, set the individual components’ Scope property to on, if it is available, or use the Scope Monitor component from the Tools group. Compile and download your program to the target device.



Attach the FlowKit V2 shield to your project and to your host PC via a USB cable.

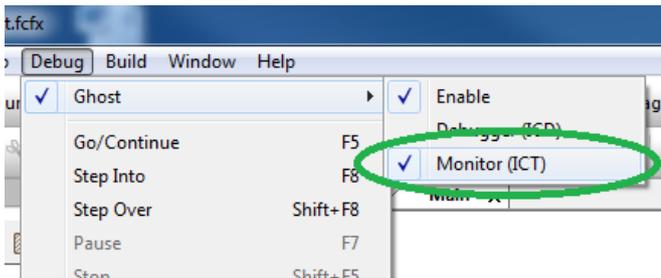
Click on the Ghost icon, as shown here.



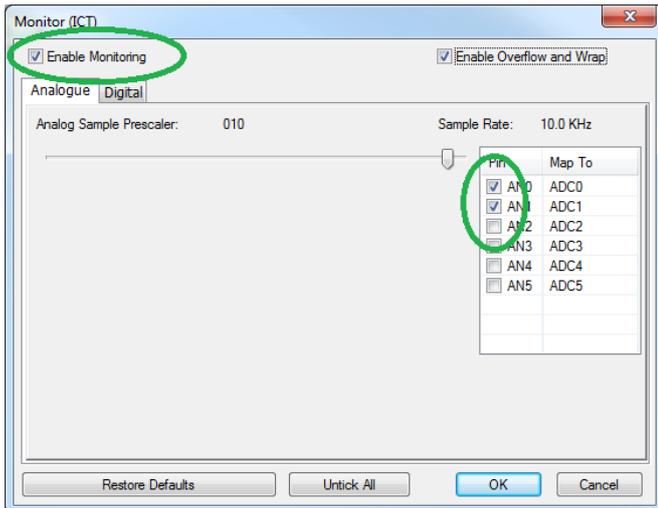
The detection confirmation dialog should appear. Click on the OK button.

The dialog indicates that both in circuit debugging (ICD) and port monitoring (ICT) are available with this device.

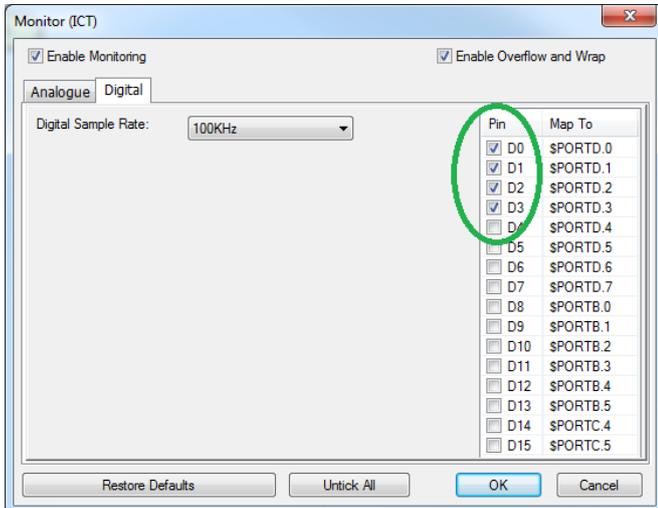
Using ICT



Enable and select the Monitor (ICT) dialog from the Flowcode Debug->Ghost menu.

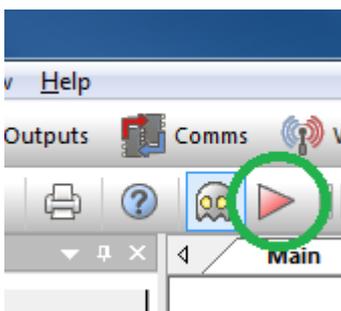


Tick the selection boxes for any analogue channels you wish to monitor on the target device.



Click on the Digital tab, and tick the selection boxes for any digital channels you wish to monitor on the target device.

Click on the OK button to activate your selections.



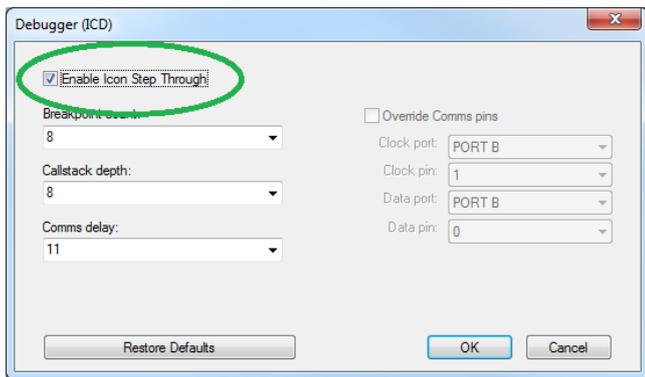
Click on the Run icon to initiate FlowKit V2 channel monitoring onto the Scope view.

Click on the Stop icon to stop the data transfer to the Scope view.

Using ICD



To enable in circuit debug (ICD) mode, select the Debugger (ICD) dialog from the Flowcode Debug->Ghost menu.

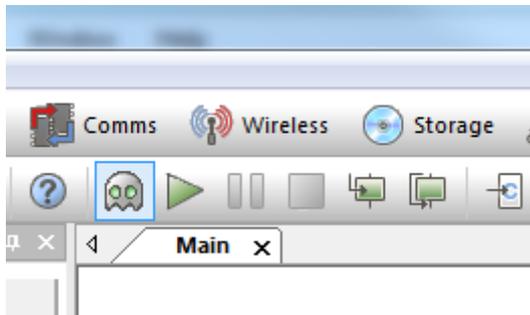


Tick the Enable Icon Step Through.

Digital Pin D9 is used for the ICD clock, and D8 for data. These will be set by Flowcode to device port and pin values depending upon your target.

Click the OK button.

Re-compile your program and download to the target project device.



You can now add breakpoints to your program and use the Debugger control icons to Run, Pause, Stop or Step through your Flowcode flowchart program and hardware at the same time.

Further information can be obtained from the online help sections of the Matrix TSL website:

www.matrixtsl.com/ghost

www.matrixtsl.com/wiki

www.matrixtsl.com/lc_index.php

www.matrixtsl.com/mmforums



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