



Arrow USB Programmer2 Diagnostic Program

Functional Description

The Arrow USB Programmer2 diagnostic program is a simple command line program that executes on any PC running 64-bit Windows. The program checks whether the PC is set-up properly for using the Arrow USB Programmer2 hardware. The console output of the program might look like this:

```
Administrator:
Arrow USB Programmer2 Diagnostic Program V1.2

Reading version info.
- Operating system version number is 10.0.17763.
- Quartus version is 18.0.0.614.

Searching programmer hardware.
- Arrow USB Programmer2 AR1G48Z5 found.
- Successful.

Reading registry entries for programmer DLL.
- Successful. TCK frequency is 10.000.000 Hz.

Searching programmer DLL.
- Successful. Programmer DLL installed properly.

Checking Altera JTAG server service.
- Service has been stopped successfully.
- Service has been started successfully.

Reading registry entries for FTDI driver configuration settings.
- Successful. FTDI driver configuration settings are OK.

Total errors: 0
Hit any key to exit program.

E:\>_
```

Depending on the current execution rights, the program may not be able to check all settings or to stop and re-start the JTAG server. Running the program as Admin should help in that case.

TCK frequency

The program can also be used for to set the TCK frequency for the Arrow USB Programmer2 by using the command line parameter `-f` followed by a space character and the desired TCK frequency in Hertz.

```
E:\>Arrow_USB_Programmer2_diagnostic.exe -f 2000000
```

The frequency is stored in the PC's registry just as it is given. When using the programmer hardware, the programmer DLL automatically chooses the highest possible valid TCK frequency below or equal to the desired TCK frequency. In case the frequency given is too low or too high, an appropriate TCK frequency is chosen. Both maximum and minimum frequencies depend on the USB controller device used.

USB controller	Maximum frequency	Other valid frequencies
FT2232D	6 MHz	3 MHz, 2 MHz, 1.5 MHz, 1.2 MHz ... 92 Hz
FT2232H	20 MHz	15 MHz, 10 MHz, 7.5 MHz, 6 MHz ... 460 Hz

Virtual COM Port

In rare cases the diagnostic program detects an invalid setting of the FTDI driver in the registry. In that case it reports:

```
Reading registry entries for FTDI driver configuration settings.  
- Error: ConfigData for programmer AR1G48Z5 port A is 0x16. Bit 2 must be 0.
```

If the mentioned bit is set to 1, the FTDI system driver erroneously assigns a virtual COM port to port A of the FTDI USB controller what makes this port inaccessible for the programmer DLL. To clear the bit, run the diagnostic program as Admin with the command line parameter `-c`. This should clear the bit.

Revision History

Version	Date	Remarks
1.0	2018-04-26	Initial Release.
1.1	2018-09-24	The program checks whether the FTDI driver configuration settings are correct, particularly whether port A of the USB controller is not set-up as virtual COM port.
1.2	2019-11-21	Command line parameter <code>-c</code> added. The program also accepts USB product descriptions with extension, e.g. "Arrow USB Blaster TEI0004"