

DESCRIPTION

QuickEval-II™ software along with demonstration circuit DC718 provides a USB based Windows PC hosted digital data acquisition system supporting CMOS/LVTTL output ADCs up to 105Msps. The DC718 can be powered from either the USB port or from an external 6-9VDC Power supply (for lower noise operation or very high speed operation where the SRAM power requirements exceed the USB port capability). The Linear Technology supplied QuickEval-II evaluation software automatically detects the DC718 and in select cases can also detect the ADC demonstration circuit under evaluation. The QuickEval-II system provides for fast and easy perform-

ance evaluation of high speed ADCs by collecting up to 128K word samples and then performing various analyses on the data including calculating SNR, SINAD, THD, SFDR, ENOB and displaying the digitized input, an FFT of the data, the Primitive Wave of the sample set or a IFFT of modified frequency domain data to facilitate analyzing distortion products and sources. Figure 1 shows a block diagram of the DC718. The DC718 is connected to the ADC demonstration circuit via a 40 pin edge connector, to the PC by a USB A-B cable and to an optional power supply by a 5mm plug.

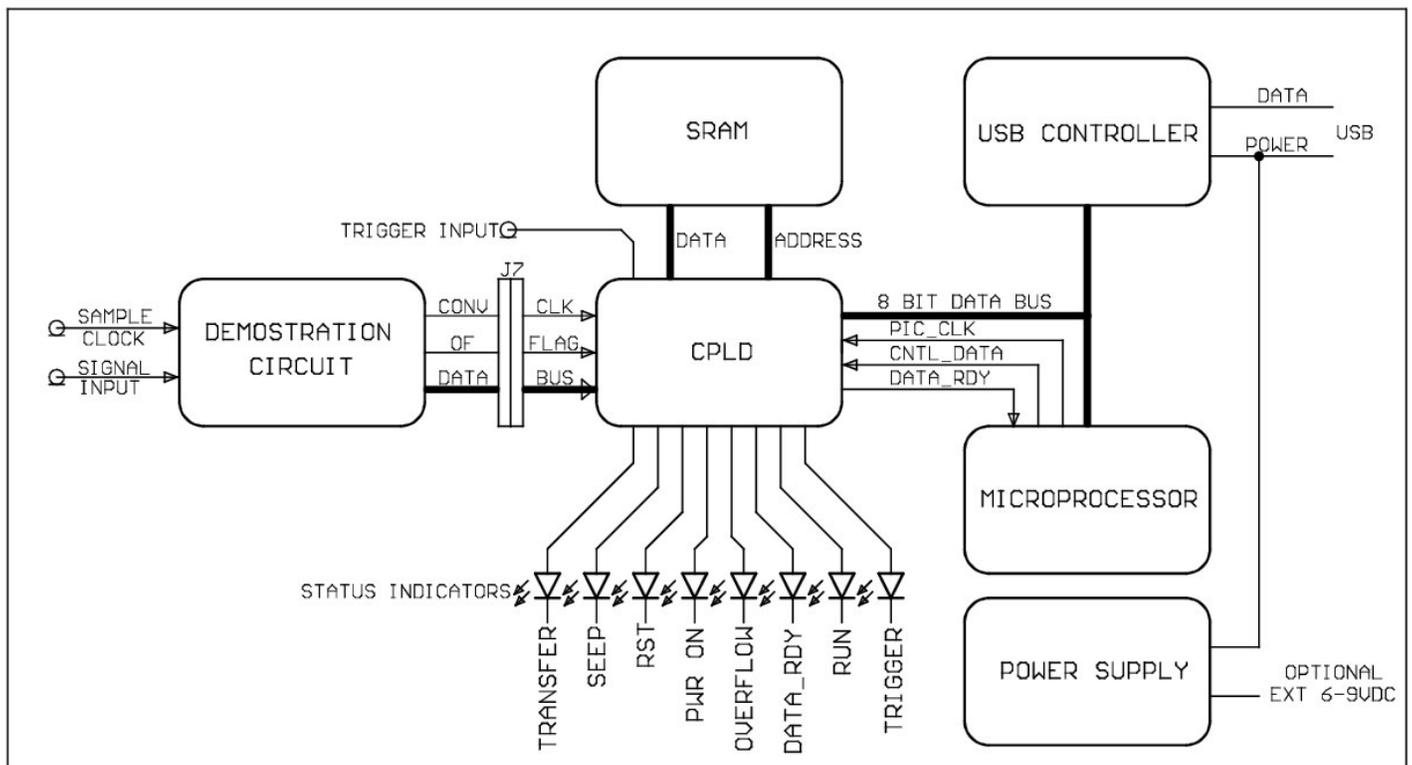


Figure 1. DC718 BLOCK DIAGRAM

OPERATING PRINCIPLES

The DC718 is capable of collecting a block of data samples from an ADC demonstration circuit initiated either by an internal generated trigger or an externally supplied trigger of user-selected polarity. The external trigger is TTL or 3.3V CMOS compatible. Refer to the QuickEval-II

Software Help for information on the various operating modes and options. The Conversion clock to the DC718 is supplied via the ADC demonstration circuit either from an optional on board oscillator or an external signal generator connected to the ADC demonstration circuit.

QUICK START PROCEDURE

To prevent damage to the DC718, it is important to follow the equipment setup procedure outlined below:

1. Do not plug the DC718 into the PC USB port before running the installation program
 2. Download the QuickEval-II installation program from <http://www.linear.com/software/>.
 3. Run the QuickEval-II installation program and follow the on-screen instructions.
- NOTE:** The QuickEval-II evaluation software requires a PC running Windows98, 2000, or XP with an available USB port.
4. Connect the DC718 to the USB port and supply external power to the DC718, if required.
 5. Connect only 3.3V output ADC demonstration circuits directly to the DC718 via the 40 pin edge connector. Higher output (5V logic) voltage ADC

demonstration circuits require adaptor board DCxxx between the ADC demonstration board and the DC718 to prevent damage to the CPLD.

6. Apply power to the ADC demonstration circuit.
7. Apply an appropriate conversion clock and analog input signal to the ADC demonstration board.
8. Select device from menu in QuickEval-II.
9. Enter the sample rate and sample size in the provided fields in QuickEval-II.
10. Initiate a data collection cycle via the evaluation software. See online help for specific guidance on using the QuickEval-II Software.
11. Each demonstration board also comes with a Quick Start guide similar to this one and should be referred to for specific usage details relevant to the demonstration circuit being evaluated.

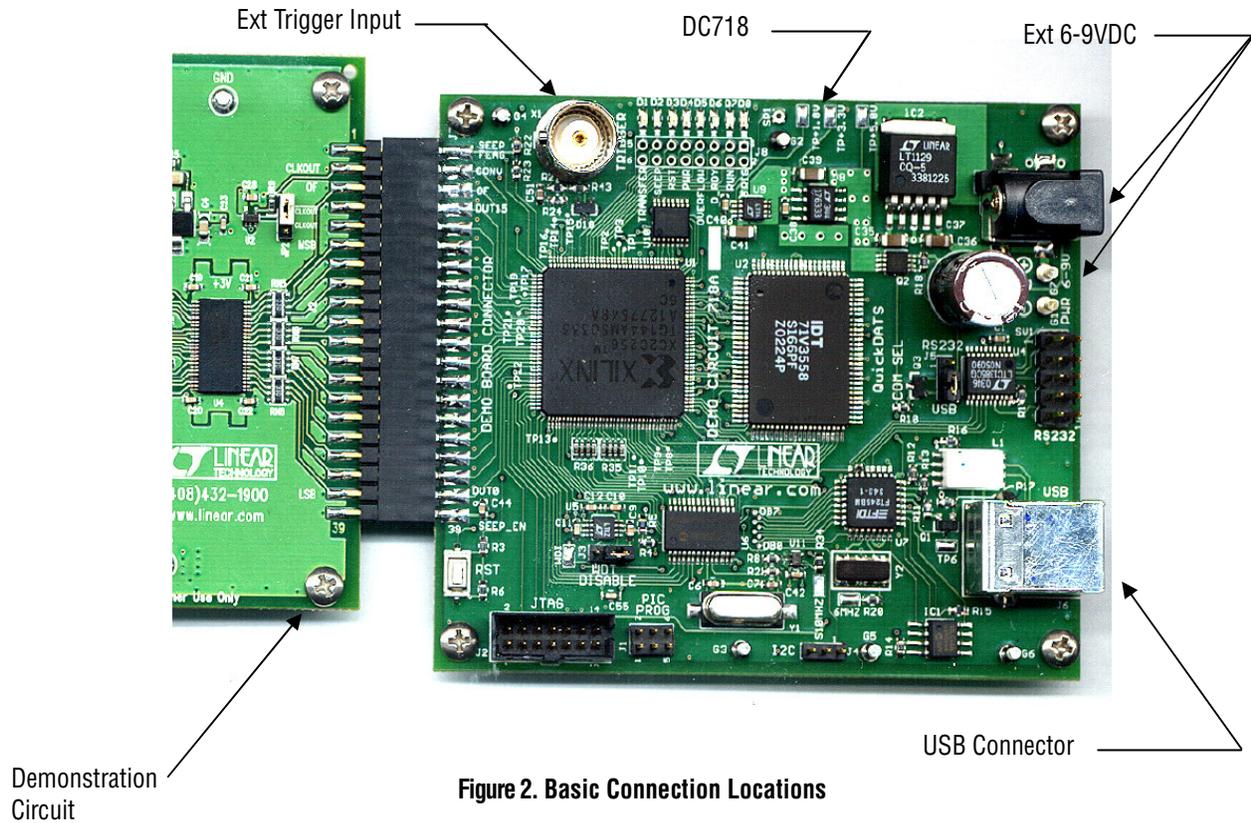


Figure 2. Basic Connection Locations

USEFUL SOFTWARE TOOLS

The QuickEval-II software includes tools for automatic software updates and for quickly retrieving documentation from the World Wide Web.

The Download Datasheets feature is particularly useful to laptop users, who can use this feature to download the data sheets and Quick Start guides in one step, thus making them available even when the laptop is not connected to the Internet.

NOTE: Adobe Acrobat reader is required to view the documents and is available at <http://www.adobe.com>.

To update the QuickEval-II software (requires an internet connection):

Chose “Update Program” from the Tools menu.

This automatically updates the main program and drivers for individual demo circuits.

To view the Quick Start Guide for the DC718 demonstration board:

Choose “View Controller QS Guide” from the View menu.

To View the Quick Start Guide for the Device:

Choose “View Device QS Guide” from the View menu.

To download data sheets (requires an internet connection):

Choose “Download Data Sheets” from the Tools menu.

All datasheets and Quick Start guides for all products in the QuickEval-II family are downloaded to the QuickEval-II program folder and placed in the dsheets folder.

OPTIONAL CONNECTIONS TO THE DC718

In most cases the DC718 can operate from the USB power except where very high speed operation exceeds the power limits of the USB port or extremely noise sensitive measurements require laboratory grade power. Adding a ferrite common mode filter to the USB Cable may reduce noise in these cases. The DC718 provides a connector for a 5mm power plug at 6-9V. Inserting this connector into the 5mm power jack automatically disconnects USB power from the board.

The DC718 has provisions for an external trigger input, polarity selectable by software. This permits initiating data block capture by an external event.

Do not connect anything to J1, J2, J3 or SV1. J5 should have a jumper from Pin 2 to Pin 3. These connectors are used for programming and testing the DC718.

J4 is an I2C port for future expansion. J8 is a test port for CPLD software development and is not populated.

LED INDICATORS

The DC718 provides system status via 8 LEDs:

LED-1. TRANSFER – Indicates a data transfer from the QuickEval-II to the PC.

LED-2. SEEP – Indicates presence/access of the optional demonstration circuit Serial Electrically Erasable PROM on select demonstration boards permitting QuickEval-II software to automatically identify the device being evaluated.

LED-3. RST – Indicates assertion of either a hard or soft reset.

LED-4. POWER – Power on indicator.

LED-5. OVERFLOW – Indicates an overflow occurred during the last block acquisition.

LED-6. D_RDY – Indicates completion of data block acquisition.

LED-7. RUN – Indicates the board is ARMED to collect a block of data.

LED-8. TRIG – indicates that a trigger was received and data collection has started.

CIRCUIT DETAILS

A schematic is attached to the end of this Quick Start Guide for reference only.

TROUBLE SHOOTING GUIDE

Problem: DC718 is plugged in, but QuickEval-II software still does not recognize DC718 board.

Solution: Assuming that the USB hardware in your computer is operational (Try verifying an operational USB port with another USB device such as a USB Memory stick, printer or scanner if available.), the likely cause is improper installation of the USB drivers, which results in Windows recognizing the DC718 as an “Unknown Device”. If this is the case, the problem can be corrected by the following procedure:

- 1) Unplug the DC718 board from the USB port.
- 2) Re-install the QuickEval-II Software. **CAREFULLY** following the on-screen instructions. This **MAY** require a reboot of your computer. The in-screen instructions will inform you if that is the case.
- 3) If the problem persists, please choose “Contact Software Support” from the Tools Menu for assistance from the LTC staff.

Problem: Demonstration circuit software loads properly, but will not run or gives "Device Not Accessible" errors.

Solution: Verify that the demonstration circuit is properly powered up and that a correct (signal level and frequency) conversion clock is applied. (The DC718 is powered from the USB port. If an external USB port expansion unit which does not provide power is used to connect the DC718 to the PC, an external 6-9V must be provided to the DC718.) Set the

sample rate for the applied conversion clock as QuickEval-II software uses the sample size and rate to determine the time out period for resetting the DC718 if the USB should hang. Refer to the appropriate demonstration circuit Quick Start Guide for details.

Problem: Collected data samples look like noise or appear corrupted.

Solution: Make sure the proper device has been selected in the QuickEval-II software otherwise the captured data will not be properly interpreted.