

QIC Starter Guide

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This document has been designed to give a brief introduction to the QIC Development System. The tutorial will take you through a sequence of steps which should be followed when working with embedded systems. Before attempting to start programming the QIC please read through this guide once. This guide will take you through the steps of designing the serial cable, installing software and test program.

Making the QIC serial programming cable

Two approaches will be described. The first approach is to purchase all the required parts and the second is to purchase and hack a DB-9 serial cable.

Required parts:

- Ribbon Cable (6 wires) or DB-9 cable with two female connectors
- Female DB-9 solder tab connector
- 6 pin Female header Socket and pins

See Figure (1) for connections.

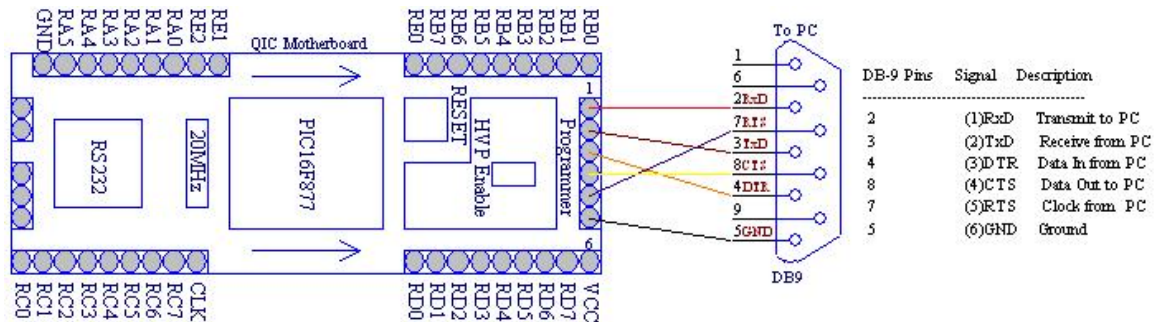


Figure 1: QIC Serial Programming Cable Connection

QIC Software Installation

This section will describe how to install the software required for development using the QIC development system. You have to install three different modules, QIC Serial Programmer, QIC Commander and the Bootloader.

QIC Serial Programmer

Insert the QIC CD-ROM into the CD-ROM drive. Open File Explorer and select the CD-ROM drive. Double click QICProg_1_00_setup9x.exe and follow the setup procedure. Select the default C:\Program Files\Quanser\QICProg installation directory when installing.

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QIC Commander

To use the QIC Commander copy the QICCommander folder from the QIC CD-ROM to C:\Program Files\Quanser\ . If QIC commander installed under a another directory then the QP.bat file located in QICCommander directory must be modified to reflect those changes.

Bootloader

Bootloader is a freeware software which can be downloaded from <http://www.workingtex.com/htpic/>. Follow the installation instruction in the bootloader documentation. Once the bootloader software is installed, the next next step is to download the bootloader program to the QIC motherboard. This is done by applying +12V to the programming pin and enabling the programming jumper. See Diagram. Download the bootloader to the QIC motherboard is a one time task, unless the bootloader is erased accidentally. Use the bootloader windows software to download your program to the QIC motherboard.

QIC Programming

This section will describe how to program the QIC using two methods. QIC can be programmed using QIC Serial Programmer in High Voltage Programming (HVP) mode or using a Bootloader. Both methods are described in detail.

QIC Serial Programmer

Note: you only need to use High voltage programming when installing the bootloader. This is a one time task.

1. Jumper JP1 on the QIC Motherboard.
2. Use a jumper wire from pin 1(square pad) of JP2 to pin labeled +12V on the QIC Daughter board.
3. Connect the Serial cable (Green wire -> Pin1(square pad) and Black wire -> Pin6 on the QIC Serial Header).
4. Execute QIC Serial Programmer.exe
5. Select the correct COM port by clicking Setup -> Serial Port -> COMx.
6. Execute QICProg and open 62019 - bootldr-16F876-77-20Mhz-19200bps.hex.
7. Apply Power to board.
8. Click Write .
9. Press the reset button on the QIC Motherboard.
10. Message comes up confirming that the bootloader program has been installed correctly.

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11. Bootloader has been installed.
12. Remove Jumper JP1 and the Jumper wire connecting Pin1 of JP2 to +12V. This is very important.
13. QIC is ready to be programmed using Bootloader.

Boot Loader

1. Compile the qlcd.c file and connect an LED as describe in qlcd.c. *Note: Make sure you have 200 - 500 ohm resistor in series with the LED.*
2. Execute Pic_downloader.exe.
3. Select the correct COM port and select 19200 baud.
4. Open qlcd.hex.
5. Click "write".
6. Press the reset button the QIC Motherboard.
7. Message verifies that the program has been written.

QIC Test

1. Compile loopback.c using CCS PICC compiler. Skip this step if you do not have the CCS PICC compiler. You can purchase a copy from CCS. <http://www.ccsinfo.com/picc.shtml>
2. Connect a loopback cables from A/D0 to D/A0 and A/D1 to D/A1. *Note: Make sure JP3 and JP4 are configured to use the D/A. See QIC Users Manual. Enable J6(Low-pass filter1) and J7(Low-pass Filter2). Enable Vref by placing a jumper on JP10.*
3. Download the loopback.hex code to QIC Motherboard via serial cable using QIC Programmer or the Bootloader. *Note: The Bootloader must reside on QIC prior to downloading user program.*
4. Execute QIC Commander by double clicking QP.bat file.
5. Click x2 so it turns blue. Press the Connect button to connect to QIC.
6. Two triangle waveform should be observed.
7. Check or re-configure the QIC software if step 6 was unsuccessful.