Utility-band BPSK 6.0 kbps PLM PICtail™ Plus Daughter Board Information Sheet

The Utility-band BPSK 6.0 kbps PLM PICtail Plus Daughter Board provides a low-cost method for the development and testing of utility applications implementing a Powerline Communication Soft-modem (PLM), which is driven by a dsPIC33F Digital Signal Controller (DSC). The daughter board operates at a utility-band carrier frequency of 72 kHz.

Any dsPIC33F device with at least 2 Kbytes RAM, 16 Kbytes of Flash memory, four Output Compare channels, one DMA channel, and one 12-bit ADC input (at least 500 ksps), can be used with this daughter board. Please refer to the user's guide for more details regarding the resource requirements.

The evaluation kit includes a pair of daughter boards and two High Voltage (HV) AC power line adapter cables. Two Explorer 16 Development Boards (purchased separately - PN: DM240001) are required to evaluate the daughter boards. In addition, two 9V power supplies (AC002014) are also required. A Microchip programming/debugging tool, such as MPLAB® ICD 3 or REAL ICE™ is required for programming or debugging the firmware on the dsPIC33F device.

Installing MPLAB® IDE and C Compilers

The MPLAB Integrated Development Environment (IDE) should be installed prior to using a daughter board for application development. While MPLAB provides the assembler tools for development, demonstration applications are written in the C language and require a C compiler to be installed. Microchip's MPLAB C compiler seamlessly integrates into MPLAB IDE. Both the MPLAB IDE and MPLAB C compiler are available for download at www.microchip.com/MPLAB and www.microchip.com/compilers, respectively.

Microchip Demo Applications and More Information

For free demo source code and more information, please visit the related web page at www.microchip.com/powerline. From the landing page, select **Utility-band BPSK 6.0 kbps PLM PICtail Plus Daughter Board**. In the download section, select a demonstration application (such as the Ping-Pong demonstration) to download an archive file that contains the related demonstration source code files. Refer to the user's guide in the download section for additional information.

Running the Demo Applications

After downloading the Ping-Pong demonstration application code and installing the development tools, use the following procedure to run the demonstration:

1. Insert a dsPIC33FJ256GP710A PIM into the first Explorer 16 Development Board.
2. Plug a daughter board into the PICtail Plus expansion slot on the Explorer 16 Development Board and connect the RCA jack of the HV adapter cable (provided in the kit) to the daughter board.
3. Plug the AC end of the HV adapter cable into a 110V/220V power outlet.
4. Connect a Microchip programming/debugging tool to the Explorer 16 Development Board and power up the Explorer 16 Development Board from the 9V power supply.
5. In MPLAB IDE, double-click `pingpong.mcp` to load the Ping-Pong demonstration project.
6. Choose your programming tool by selecting *Programmer > Select Programmer*, and then choosing the tool to program the dsPIC33F device.
7. Build the project by selecting *Project > Build All*.
8. Download your code into the dsPIC33F device by selecting *Programmer > Program*.
9. Repeat steps 1 through 8 for the second daughter board.
10. The demonstration code previously downloaded pings frames of data back and forth between the two evaluation kits. Initiate the demonstration by pressing the S5 button on either of the Explorer 16 Development Boards. The transmit frame count (TX) and the receive frame count (RX) displayed on the Explorer 16 Development Board LCD screen should increment for both of the daughter boards.

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