PIC-Ready2™

Manual

All Mikroelektronika's development systems feature a large number of peripheral modules expanding microcontroller's range of application and making the process of program testing easier. In addition to these modules, it is also possible to use numerous additional modules linked to the development system through the I/O port connectors. Some of these additional modules can operate as stand-alone devices without being connected to the microcontroller.

Additional Board

MikroElektronika

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PIC-Ready2 Additional Board

The *PIC-Ready2* additional board enables a .hex code to be quickly and easily loaded into PIC microcontrollers by using the *PICFlash* programmer or the *bootloader* software. The additional board is supplied with two sockets for microcontrollers in DIP18 package, 2x5 connectors connected to the microcontroller pins, pads, srew terminal for power supply, USB connector and reset button.

Key features:

- Programming microcontrollers with the *bootloader* software and *PICflash* programmer;
- Power supply voltage in the range between 8 and 16V AC/DC; and
- Pads (PROTO board).

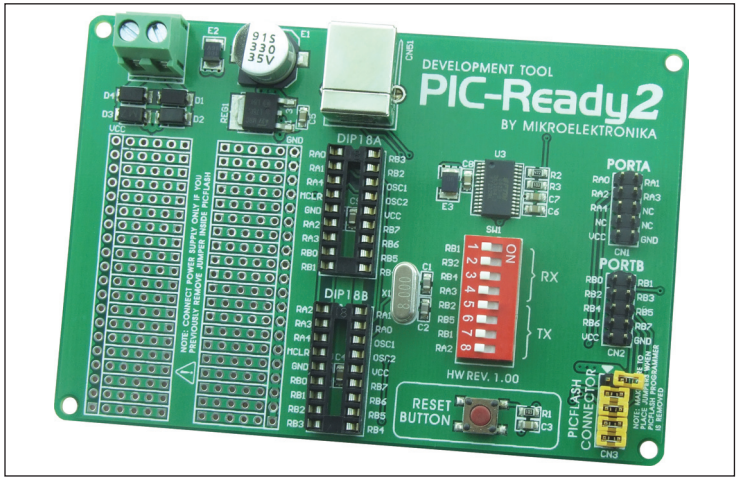

Figure 1: *PIC-Ready2* additional board

How to connect the board?

Power supply voltage from 8 to 16V AC/DC is supplied to the additional board via the screw connector CN7. This voltage is necessary when the microcontroller, to be placed in one of the socket on the additional board, is programmed with the *bootloader* software, Figure 3. This power supply voltage is also necessary when the pads are used, i.e. when additional components are placed on the board for the purpose of simulating the operation of some device. The *PICflash* programmer is connected via a 2x5 connector CN3 which is shorted with jumpers, Figure 1.

When the process of programming is performed with the *PICFlash* programmer, it is necessary to do the following:
1. remove jumpers from the 2x5 connector CN3 (*PICFlash* connector) provided on the additional board.
2. connect an IDC10 connector on the *PICFlash* programmer to a 2x5 connector on the additional board, Figure 2.
3. connect the *PICFlash* programmer to a PC using a USB cable, after which the process of loading .hex code into the microcontroller may start.

When this way of programming applies, no external power supply is needed as the board is powered by a PC through the *PICFlash* programmer.

How does the board operate?

There are two ways of loading a .hex code into the microcontroller to be placed on the additional board. These are with the *PICflash* programmer and the *bootloader* software via the microcontroller's serial UART module. In the latter case it is necessary to turn on the appropriate switches on the DIP switch SW1. The DIP switch SW1 is used to determine microcontroller pins to be used for the UART communication. The position of these switches depends on the arrangement of the microcontroller pins connected to the UART module. In order to perform programming with the bootloader software, it is necessary to use microcontroller which already has the bootloader .hex code loaded into it. You can load the bootloader .hex into the microcotroller using the PICFlash programmer. This should be done only once and after that you can program your microcontroller with the bootloader software via the USB connector. Some microcontrollers get the *bootloader* .hex file in the Example folder along with other examples for PIC compilers (for example, C:\Program Files\Mikroelektronika\mikroC PRO for PIC\Examples\Other\Bootloader). When the .hex code loading is complete, it is necessary to reset the microcontroller by pressing the Reset button.

In addition to the .hex code loading with the *bootloader* software, the USB connector supplied on the additional board can also be used to enable connection between the microcontroller and other devices that use serial UART communication. When using the USB connector for the UART communication, it is necessary to turn on the appropriate switches on the DIP switch SW1.

2x5 connectors placed on the right side of the additional board enable easy access to the microcontroller pins. Each connector is linked to one microcontroller port (PORTA and PORTB).

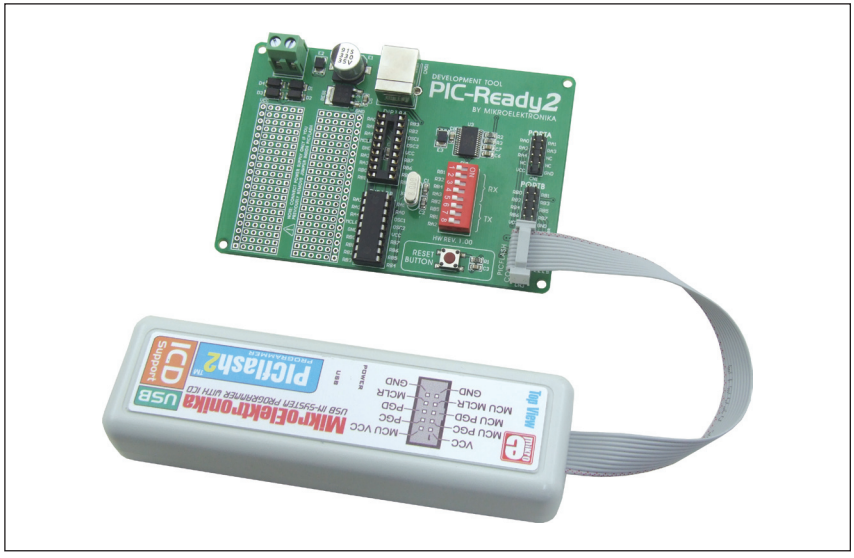

Figure 2: *PIC-Ready2* additional board connected to the PICFlash programmer

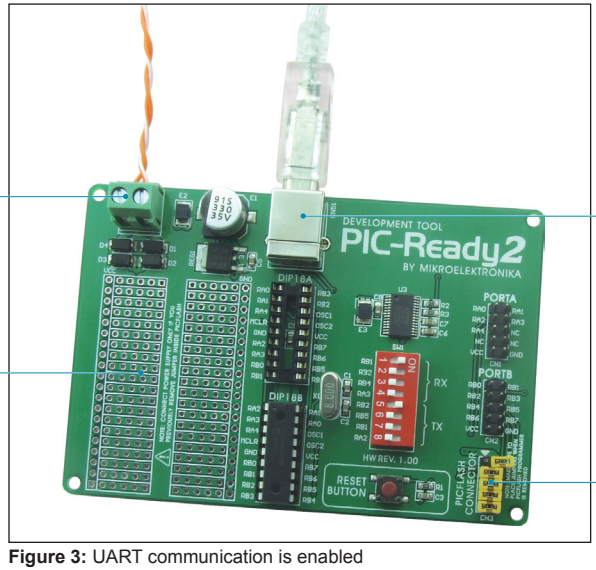

Figure 3: UART communication is enabled

NOTE: For more information on the *PICflash* programmer's operation refer to the *PICflash* manual.

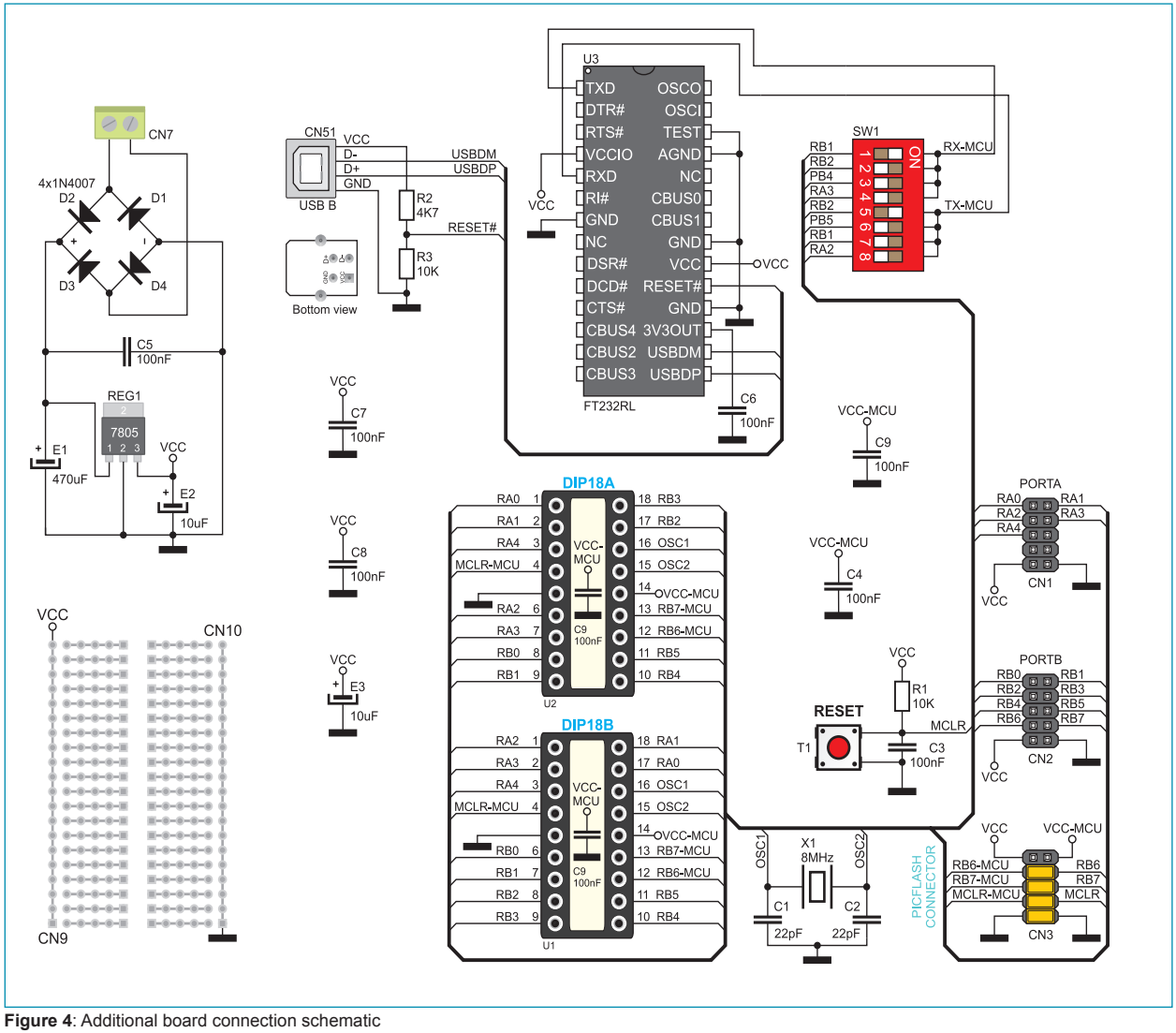

Figure 4: Additional board connection schematic

The *Bootloader* software is integrated in all Mikroelektronika's compilers. It is used to load a .hex code into the microcontroller that already has the Bootloader .hex code loaded. In order to open the *mikroBootloader* window, it is necessary to select the *mikroBootloader* option from the *Tools* menu within the compiler's main window. The first thing you should do after that is to select the port to be used for connecting the additional board to a PC. One click on the *Setup Port* button causes a window with options such as port selection, baud rate selection etc. to be open, Figure 6. Close the *Setup Port* window and click on the *Connect* button within the *mikroBootloader* window in order to establish connection between the Bootloader software and the *PIC-Ready2* additional board. To break this connection, click on the *Disconnect* button. Use the *Open HEX file* button in order to select a .hex file to be loaded into the microcontroller provided on the additional board. One click on the *Start bootloader* button will start up the process of .hex file loading. This process can be ceased at any time by clicking on the *Stop bootloader* button.

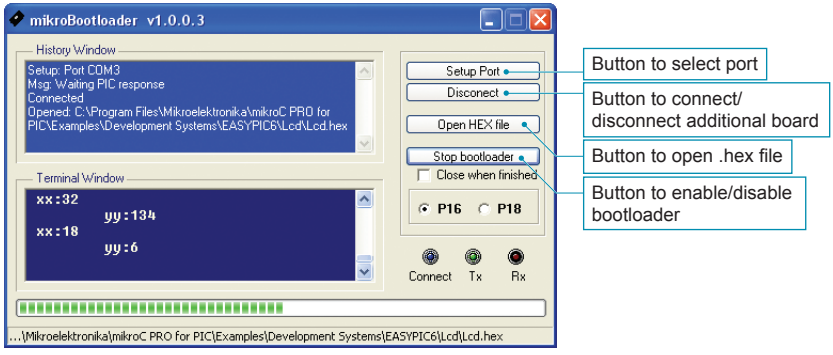

Figure 5: MikroBootloader

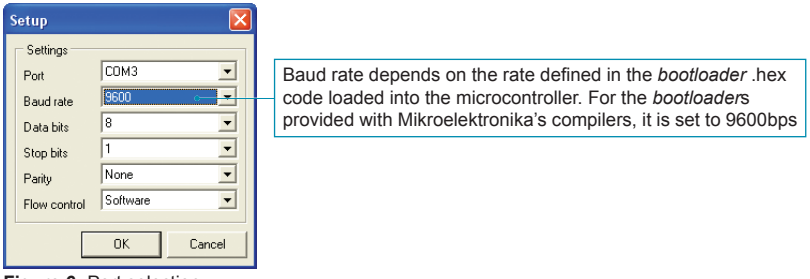

Figure 6: Port selection

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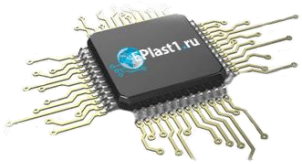

Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)
Факс: 8 (812) 320-02-42
Электронная почта: org@eplast1.ru
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.