PIC-Ready1[™]

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.

Manual

Additional Board

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PIC-Ready1 Additional Board

The *PIC-Ready1* 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 PIC microcontrollers in DIP40 and DIP28 package, 2x5 male connectors connected to the microcontroller pins, pads, srew terminal for power supply, USB connector and reset button.



Figure 1: PIC-Ready1 additional board

The microcontroller placed on the additional board may be programmed with the PICFlash programmer or the bootloader software.

When the process of programming is performed with the PICFlash programmer, it is necessary to:

- 1. remove jumpers from the 2x5 male connector CN6 (*PICFlash* connector) provided on the development board;
- 2. link a 2x5 male connector on the PICFlash programmer with a 2x5 female connector on the development board, Figure 2; and
- 3. connect the PICFlash programmer to a PC, after which the process of loading .hex code into the microcontroller may start.

When this way of programming applies, it is not necessary to provide an external power supply as the board is powered by a PC through the *PICFlash* programmer.

The *Bootloader* software enables the .hex code to be loaded into the microcontroller that has the *bootloader* .hex code loaded. Before the programming process starts, it is necessary to:

- 1. provide the additional board with the power supply (8-16V AC/DC) via the CN8 connector;
- 2. connect the additional board to a PC via a USB cable; and
- 3. place jumpers on the 2x5 male connector CN6 pins; place jumpers J1 and J2.

The *Bootloader* software is integrated in all Mikroelektronika's compilers. It communicates with the microcontroller via serial UART communication. The *Bootloader* .hex code is loaded into the microcontroller by using the *PICFlash* programmer and is necessary for loading .hex code into the microcontroller by using the *bootloader* software. 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 by 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. Jumpers J1 and J2 should be placed when using the USB connector for UART communication. The additional board may also serve as a proto board as it features pads used to connect components to be employed for making a prototype device. The 2x5 male connector placed next to the DIP sockets enables easy access to the microcontroller pins. Each connector is linked to one microcontroller port (PORTA, PORTB, PORTC, PORTE and PORTD).

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Figure 2: PIC-Ready1 additional board connected to the PICFlash programmer



Figure 3: *PIC-Ready1* additional board connected to a USB cable



Figure 4: Additional board connection schematics

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-Ready1* 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 in 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

Setup	\mathbf{X}
Settings	
Port	COM3 💌
Baud rate	9600
Data bits	8
Stop bits	1
Parity	None
Flow control	Software 💌
	OK Cancel

Baud rate depends on the rate defined in the *bootloader*.hex code loaded into the microcontroller. For the *bootloaders* provided with Mikroelektronika's compilers, it is set to 9600bps

Figure 6: Port selection



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