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5V-3.3V VOLTAGE TRANSLATOR™

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
SOFTWARE AND HARDWARE SOLUTIONS FOR EMBEDDED WORLD ...making it simple

5V-3.3V VOLTAGE TRANSLATOR Additional Board

The *5V-3.3V VOLTAGE TRANSLATOR* additional board is used to adjust voltage levels between a 5V development system and a 3.3V device.

How to connect the board?

The additional board is connected to a development system via two 2x5 connectors and a flat cable with appropriate IDC10 connectors, Figure 1. A 2x5 connector CN1 is used for connection with the development system, whereas a 2x5 connector CN2 is used for connection with a device.

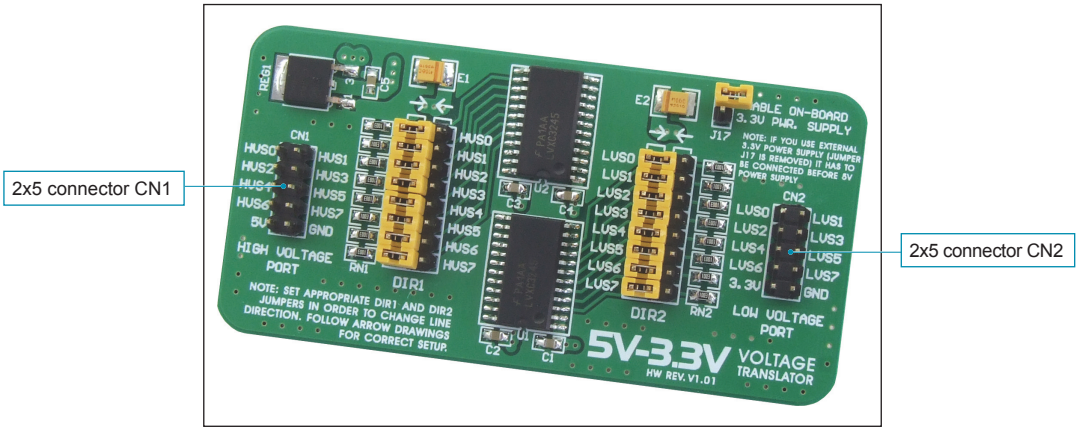

Figure 1: *5V-3.3V VOLTAGE TRANSLATOR* additional board

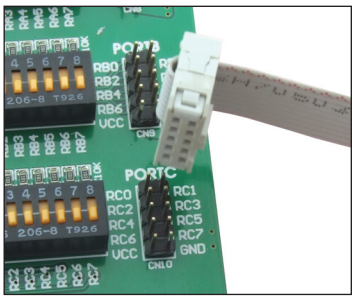

Figure 2: Plugging IDC10 connector into a development system

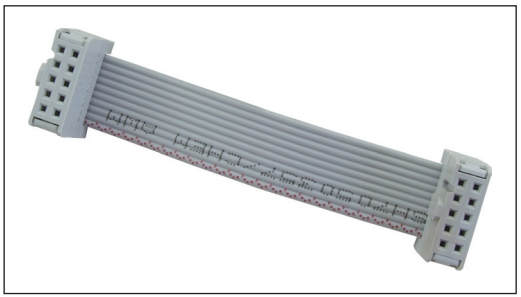

Figure 3: Flat cable with IDC10 connectors

How does the board operate?

The additional board performs voltage adjustment by using two voltage translators 74LVCC3245. The board comes with jumpers placed in the position indicating that a 5V voltage signal is adjusted to a 3.3V voltage signal. If necessary, the process of voltage adjustment may be performed in the oposite direction, i.e. a 3.3.V voltage level may be adjusted to a 5V voltage level. In order to set the voltage adjustment direction to be different from default, it is necessary to place jumpers as in Figure 5.

The additional board utilizes two power supply voltages for its operation. The 5V power supply voltage is supplied from the development system, whereas the 3.3V power supply voltage is supplied from the device connected to the development system. If this device is not capable of providing the 3.3V power supply voltage, it may be provided by reducing the 5V power supply voltage supplied from the development system. This is performed by using a voltage regulator provided on the additional board. In order to enable this voltage regulator, it is necessary to have jumper J17 placed on the board, Figure 7.

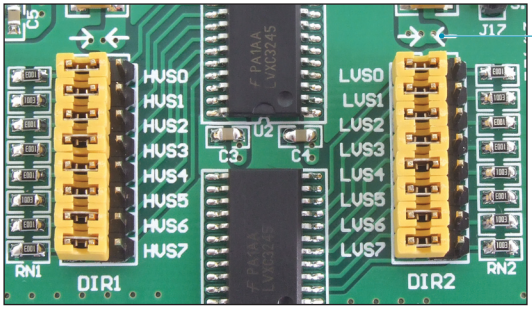

Figure 4: Jumpers DIR1 and DIR2 in the position for 5V to 3.3V voltage level adjustment

Arrows indicating voltage signal direction

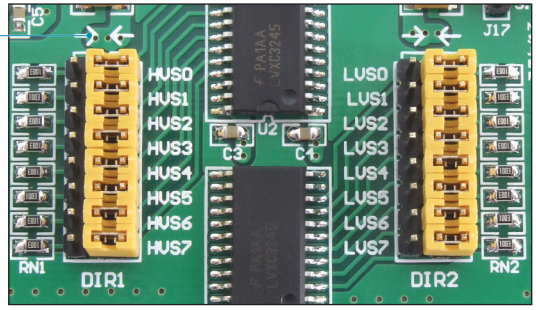

Figure 5: Jumpers DIR1 and DIR2 in the position for 3.3V to 5V voltage level adjustment

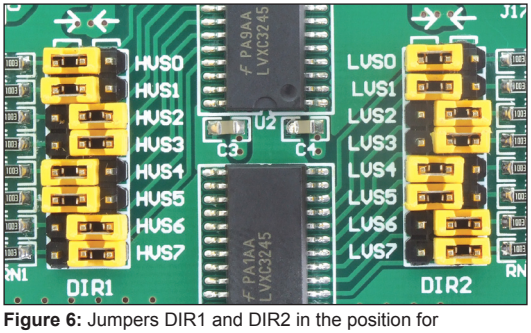

Figure 6: Jumpers DIR1 and DIR2 in the position for bidirectional transfer

In case it is necessary to send and receive different voltage signals at the same time, jumpers belonging to jumper groups DIR1 and DIR2 should be placed in the appropriate positions. Refer to Figure 6. Jumpers HVS1, HVS4 and HVS5 belonging to jumper group DIR1 as well as jumpers LVS0, LVS1, LVS4 and LVS5 belonging to jumper group DIR2 are placed so as to enable 5V to 3.3V voltage signal adjustment. Likewise, jumpers HVS2, HVS3, HVS6 and HVS7 belonging to jumper group DIR1 as well as jumpers LVS2, LVS3, LVS6 and LVS7 belonging to jumper group DIR2 are placed so as to enable 3.3V to 5V voltage signal adjustment.

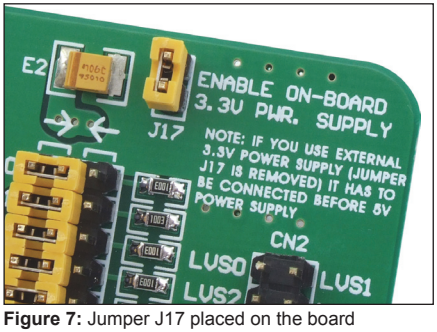

Figure 7: Jumper J17 placed on the board

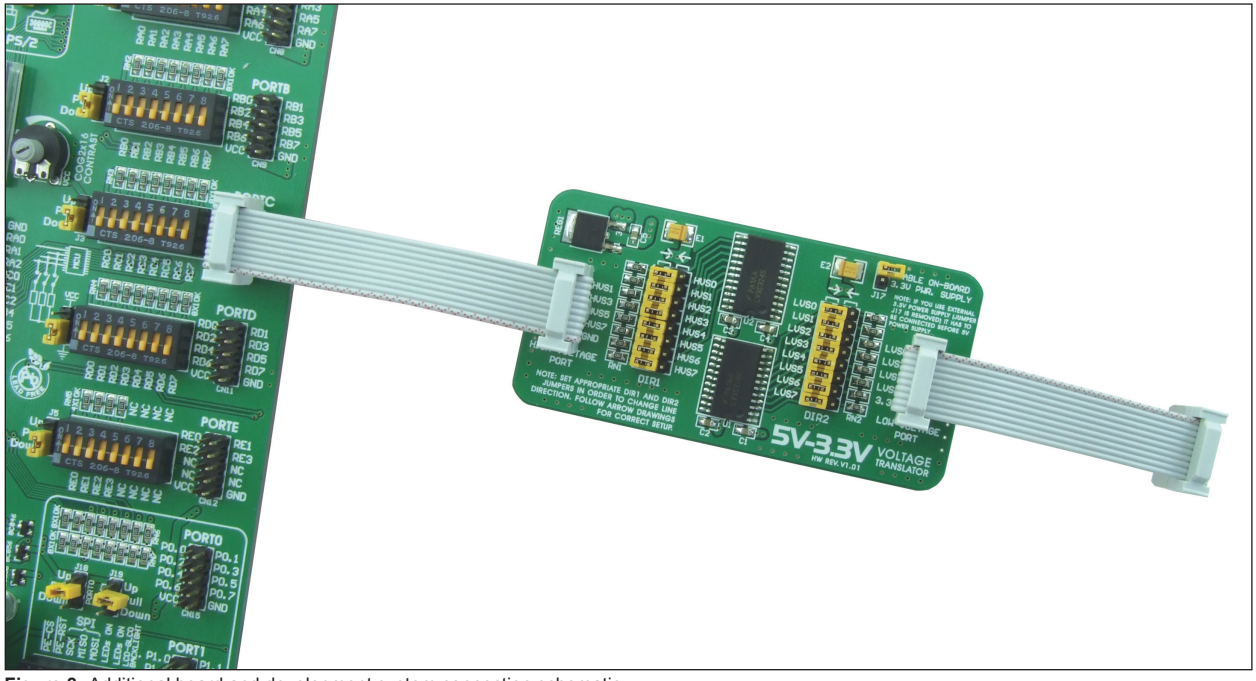

Figure 8: Additional board and development system connection schematic

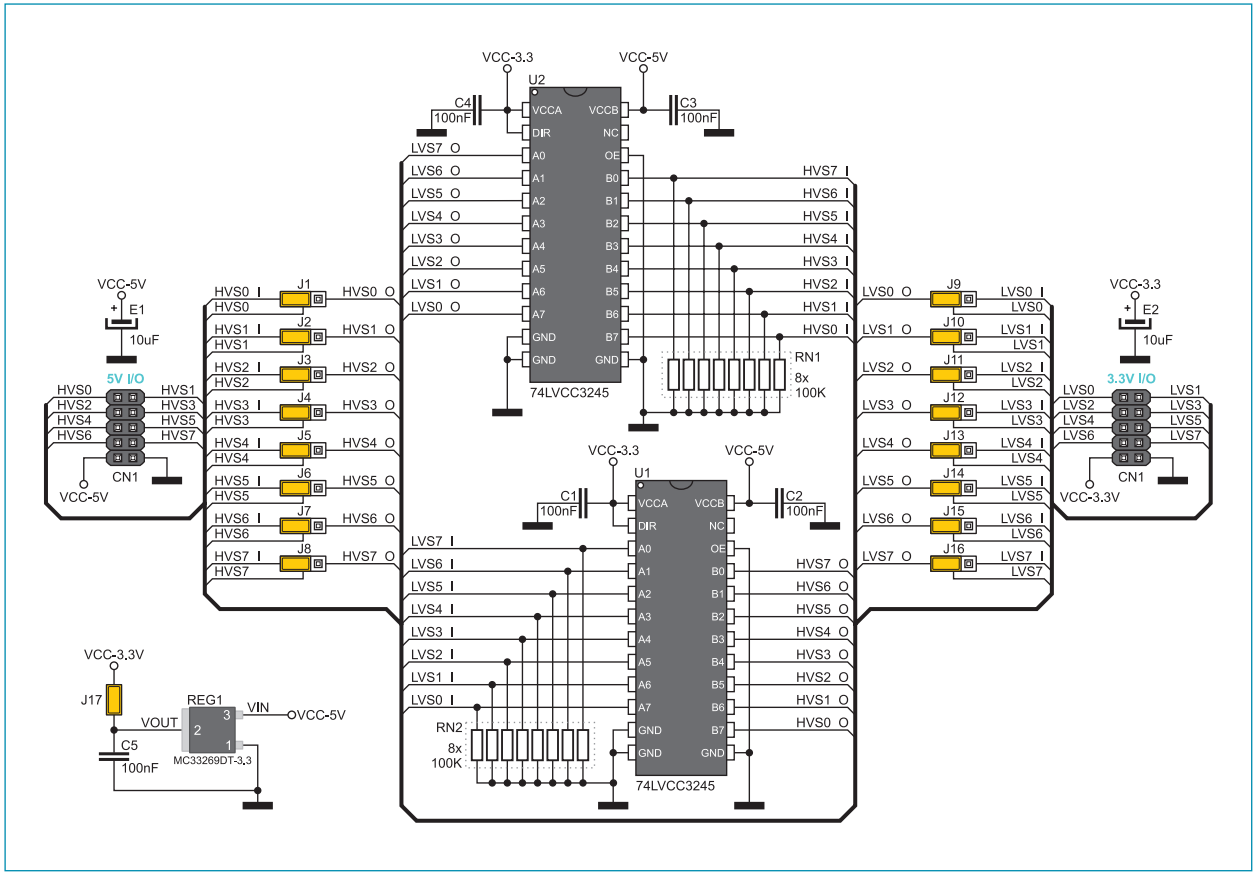

Figure 9: Additional board connection schematic

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