KAMAMI

ZL8AVR

Evaluation Board for dipAVR Mini-module

Thank you for buying ZL8AVR evaluation board. We hope that the power and quality of our tool allow you to appreciate the advantages of AVR ATmega microcontrollers.

ver. 1.0

btc

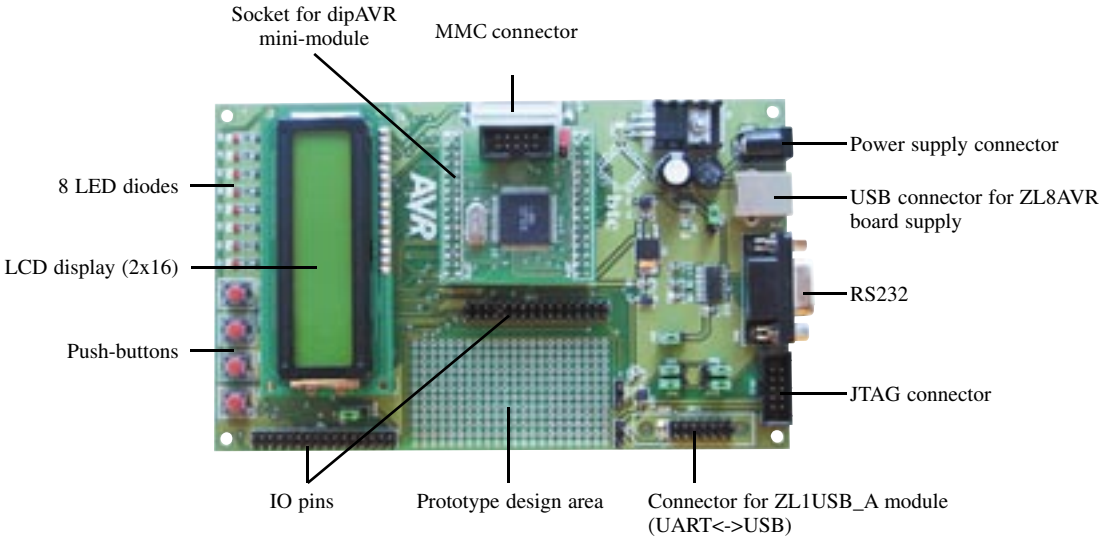
Introduction

ZL8AVR is a versatile evaluation board designed for engineers and hobbyists who want to prototype systems based on AVR ATmega microcontrollers. ZL8AVR is prepared to operate with dipAVR mini-modules (ZL7AVR, ZL12AVR). Board's configuration is complete and user can find on the board the following components: USB interface connector (for ZL1USB module), RS232 interface with DB9F connector, simple keyboard (4 buttons), 8 LEDs, JTAG connector and socket for LCD display (2x16 characters). ZL8AVR board comes with examples of Bascom programs.

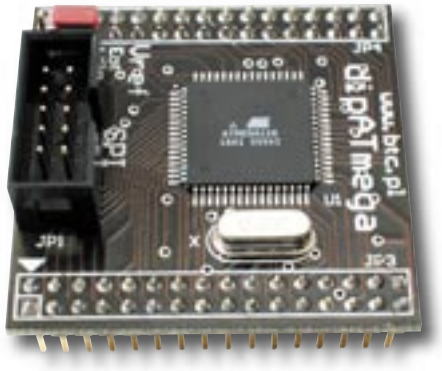
Features

- RS232 interface (with level converter and DB9F connector)
- JTAG connector
- Built-in 5 V voltage regulator
- Socket for LCD 2x16 character display (LCD1602 module)
- 8 LEDs
- MMC Flash card connector
- 4 microswitches
- Socket for USB interface (ZL1USB module)
- Prototype design area
- USB (5 V) or external (9...12 VDC) power supply

Board layout



dipAVR modules



ZL7AVR (ATmega128)

ZL12AVR (ATmega16)

Complete schematic

Circuit diagram is shown on **Fig. 1**. Recommended supply voltage is 9 VDC (9...12 VDC) connected via standard power jack or USB_PWR connector (selectable by JP8). Polarisation of input voltage is not important – bridge rectifier guarantees proper board operation in both cases.

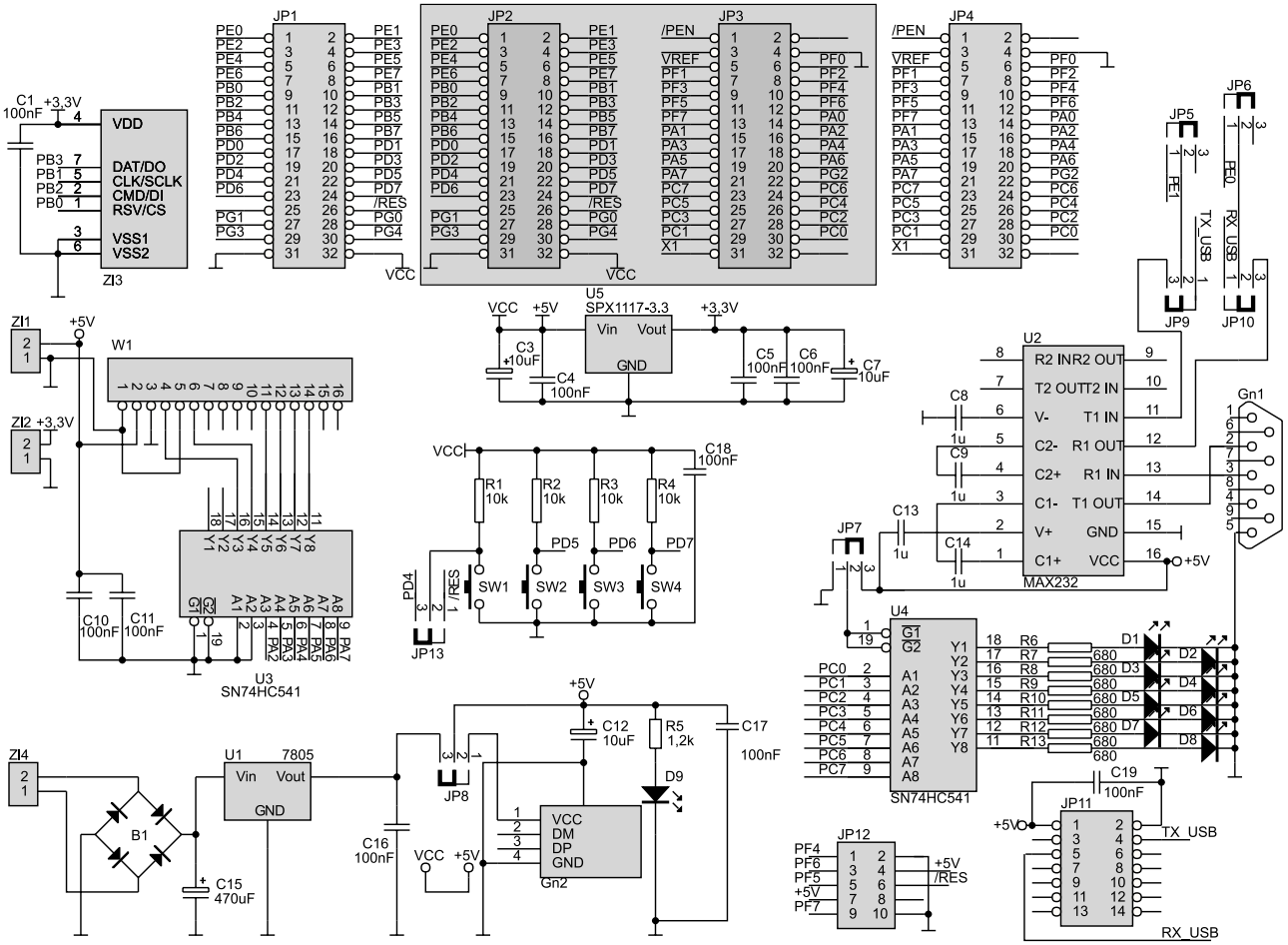


Fig. 1. Complete electric schematic of ZL8AVR board

RS232 and USB interfaces

ZL8AVR has two serial communication interfaces:

- Built-in RS232 interface (voltage converter U2),
- USB interface (eg. ZL1USB), optionally connected to JP11 header.

Depending on selected communication interface, lines PE0 and PE1 have to be configured by jumpers as shown in **Tab. 1**.

Tab. 1. Communication interface selectors (other jumpers configurations are not allowed)

Active port	JP5	JP6	JP9	JP10
USB	On	On	USB	USB
RS232	On	On	MAX	MAX
None	Off	Off	–	–

Alphanumeric LCD display

Standard LCD display with HD44780 controller (LCD1602 module) can be mounted in W1 socket. Connections between microcontroller and display module lines are show in **Tab. 2**.

Tab. 2. Connections between microcontroller and display module

AVR I/O line	PA2	PA3	PA4	PA5	PA6	PA7
LCD module signal name	RS	E	D4	D5	D6	D7
LCD module pin	4	6	11	12	13	14

MMC card connector

ZL8AVR is equipped with MMC card connector. You can use cards with I/O interfaces that operate with at least 3.3 V voltage. Connections between microcontroller and MMC card (transmission in SPI mode) is shown in **Tab. 3**.

Tab. 3. Connections between microcontroller and MMC card

AVR I/O line	PB0	PB1	PB2	PB3
AVR signal name	$\overline{SS}$	SCK	MOSI	MISO
MMC card line	$\overline{CS}$	CLK	DataIn	DataOut

LEDs

ZL8AVR is equipped with 8 LEDs, that show states of port PC lines (**Tab. 4**). Jumper JP7 lets you turn on/off LEDs (**Tab. 5**).

Tab. 4. Connections between port PC lines and LEDs

AVR I/O line	PC7	PC6	PC5	PC4	PC3	PC2	PC1	PC0
LED	D8	D7	D6	D5	D4	D3	D2	D1

Tab. 5. JP7 (LED) settings

Position	Description
On (1-2)	LEDs D1…D8 show PC0…7 states
Off (2-3)	LEDs D1…D8 disconnected

Keyboard

ZL8AVR has 4 switches. SW2...4 are connected to microcontroller port lines as shown in **Tab. 6**. SW1 can be used as universal button or reset button (you can set its function by setting JP13 jumper – **Tab. 7**).

Tab. 6. Buttons to microcontroller line assingment

Switch	SW4	SW3	SW2	SW1	SW1
AVR I/O line	PD7	PD6	PD5	PD4	RES
				Set by JP13 (Tab. 7)	

Tab. 7. SW1 function

JP13 position	PD4 (2-3)	RES (1-2)
AVR I/O line	PD4	RES

JTAG connector

ZL8AVR is equipped with JP12 connector, that allows you to connect JTAG interface. Pin layout is compatible with Atmel JTAG standard (**Fig. 2**).

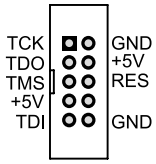


Fig. 2. JTAG connector pin layout

Power supply

ZL8AVR can be supplied from:

- power supply adaptor (9...12 VDC/VAC, 250 mA),
- USB port.

Tab. 8. Power supply source selection (jumper JP8 – PWR_SEL)

JP8 position	EXT (2-3)	USB (1-2)
Power supply source	…EXT_PWR (ZL4)	…USB_PWR (Gn2)

I/O headers

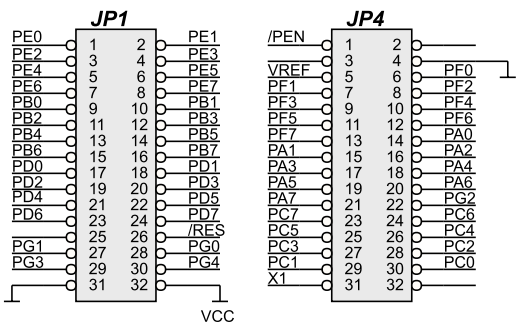


Fig. 3. Headers JP1 and JP4

Prototype design area

ZL8AVR has prototype design area, that can be used to extend board capabilities. There are two connectors Zl1 and Zl2 to provide +5 V, GND and +3.3 V, GND voltages for prototype design area.

Contents of the package

Code	Description
ZL8AVR	▶ ZL8AVR board (without microcontrollers and LCD display) 1 pcs.

Technical assistance

For technical assistance, please contact support@kamami.com.
Please provide the following data:

- Version of the operating system
- Microcontroller type used in your system and its oscillator frequency
- Detailed description of the problem

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