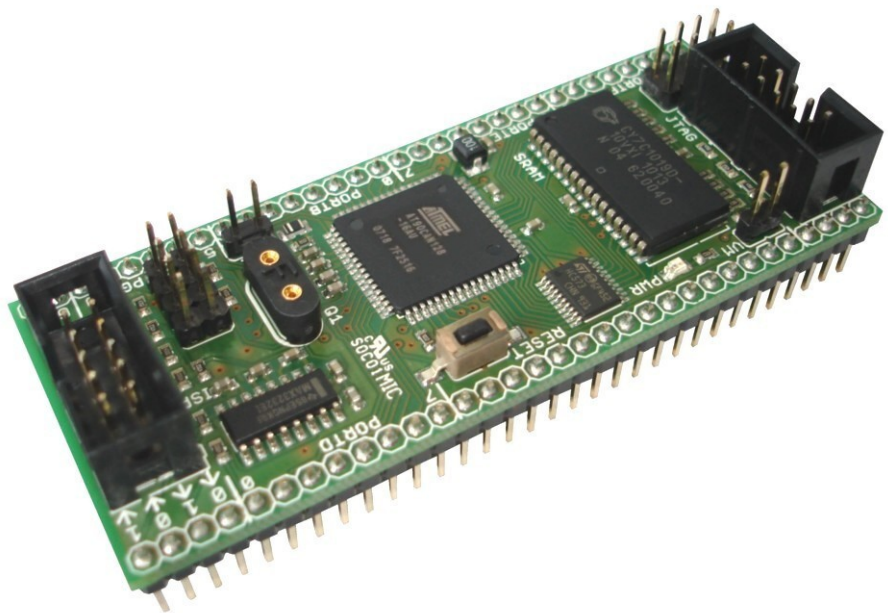


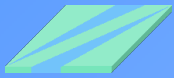
# AVR-Development Module with 128K Bytes external SRAM

**Model: AL-ERAM128\_CAN**

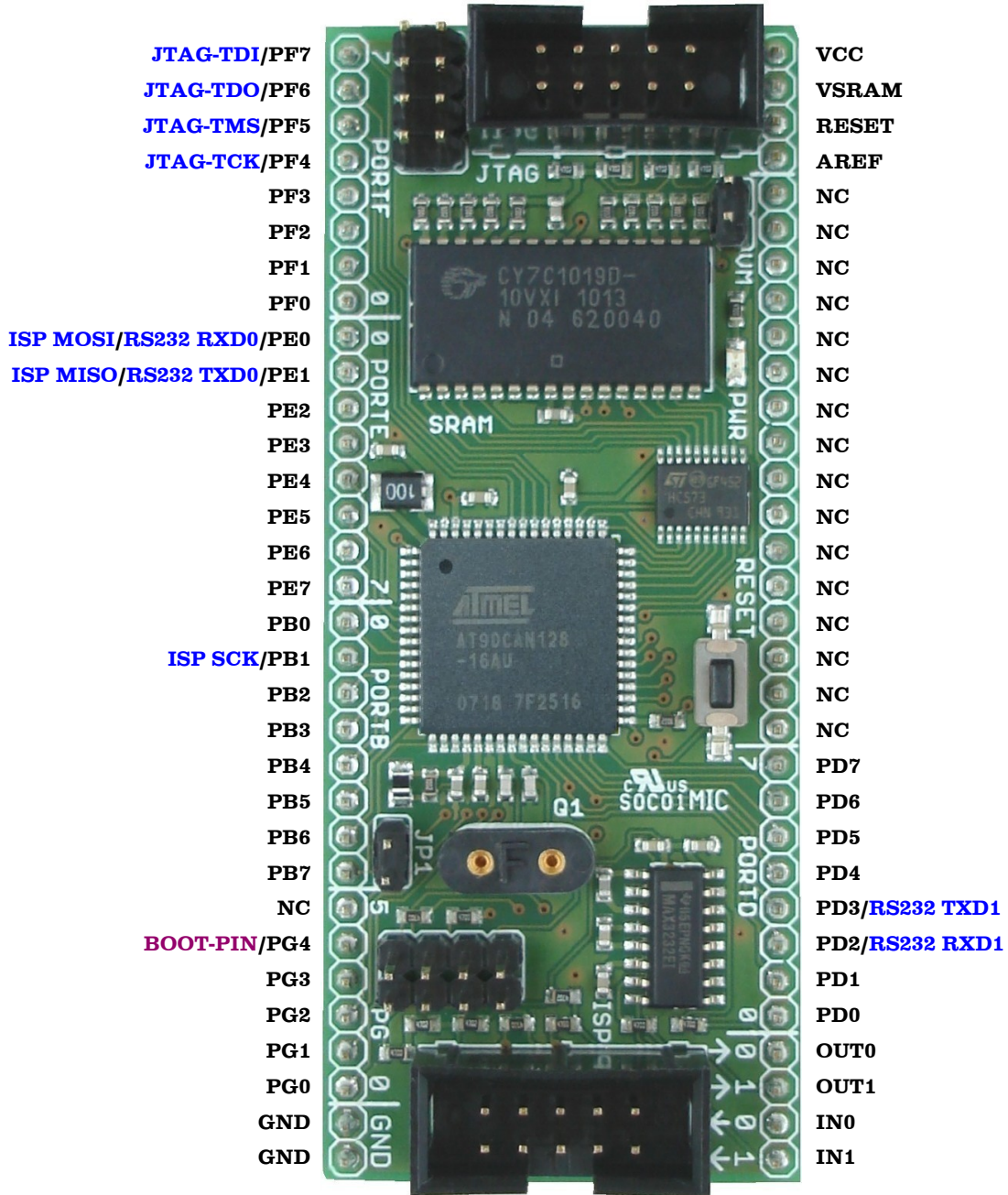
**Version 2.0**

- **Summary**
- **Measures**
- **Description**
- **Electrical Characteristics**
- **Programming**
- **Settings**



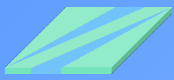


## Summary

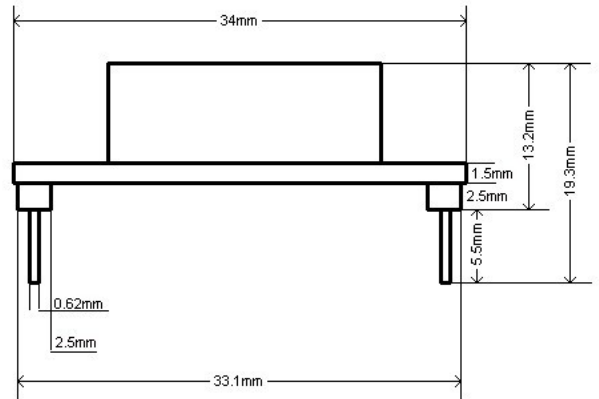
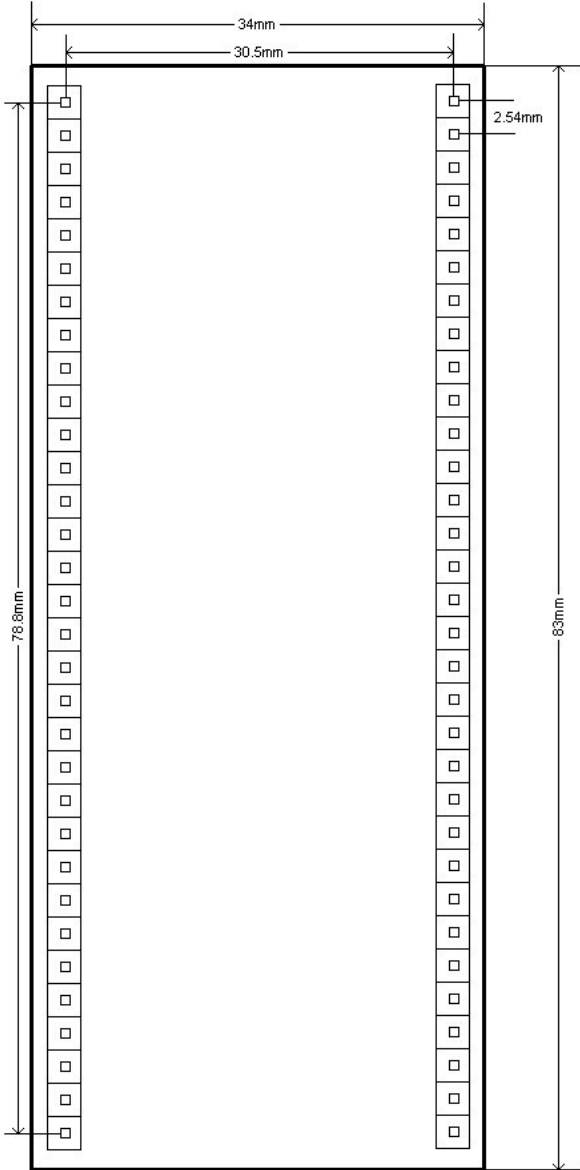


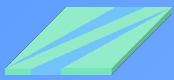
All description in **BLUE** concern the internal connection

**Attention! Polarity reversal and overvoltage may cause a destruction of the electronic components!!!**

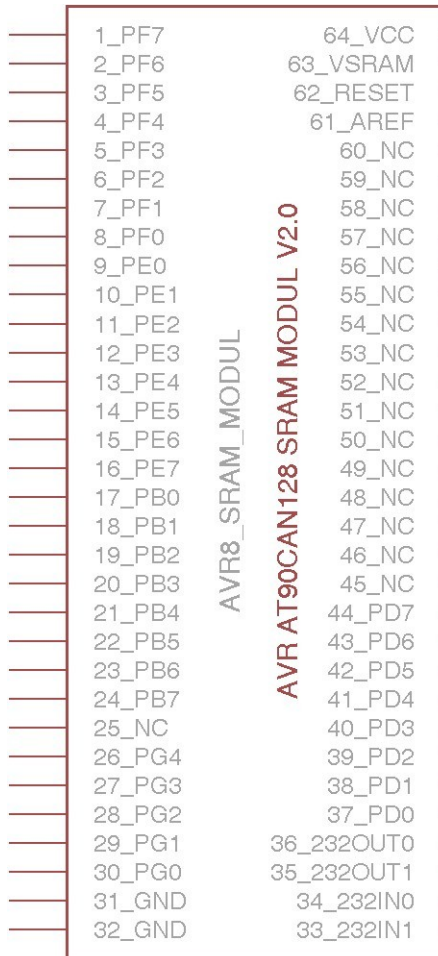


## Measures





## Description



- **Controller:** Atmel AVR AT90CAN128-16AU up to 16 MHz

- **Additional equipping:**

- external SRAM 128 KByte
- with 10 ns speed
- RS-232 Transceiver
- Reset key
- Power LED

- **External SRAM:** internal or external voltage

- **Supply voltage:** 5 V

- **Module size:** W x H x D 34 mm x 83 mm x 19.3 mm

- **Temperature:** -40°C up to +85°C

- **Quartz socket:** simple and fast quartz exchange

- **PC-Connection:** 2 x RS232, separable with jumpers

- **Compatibility:** compatible with hole matrix board (hole distance 2.54 mm)

- **Circuit:** built on the recommendation of the manufacturer

- **Programming:** ISP or JTAG connector

- **Pin configuration of AVR-Module:** shown at the left picture

- **Pin configuration ISP & JTAG connectors:** 10-pin, standard of Atmel

- **Functionality:** tested, ready for use

- **Conformity:** **RoHS Compliance**

- **Produced** in Germany

# Electrical Characteristics

	Min	Typ	Max
<b>Operating Temperature</b>			
for <b>all</b> modules with			
MAX3232EID (actual)	- 40 °C		85 °C
MAX3232IDR (actual)			
<b>Operating Voltage</b>			
• with 5 V version (actual)	4.5 V	5 V	5.5 V
• with 3.3 V version	3.0 V	3.3 V	3.6 V
<b>Operating Frequency</b>			
• with 5 V version (actual)	0 Hz		16 MHz
• with 3.3 V version	0 Hz		8 MHz
<b>Maximum DC Current per I/O Pin</b>			
• with 5 V version (actual)			20 mA
• with 3.3 V version			10 mA
<b>Maximum Access Time of SRAM</b>			
• with 5 V version (actual)			10 nS
• with 3.3 V version			10 nS

more electrical characteristics you will find on the page 365 in the data sheet [AT90CAN128.pdf](#)

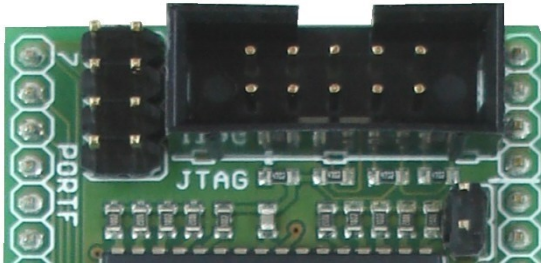
- ▶ 2-layer Leiterplatte DIN ISO 9001
- ▶ with UL-Approbation
- ▶ top-side mounted
- ▶ SRAM CY7C1019D
- ▶ Latch 74HC573

## Possible Modifications

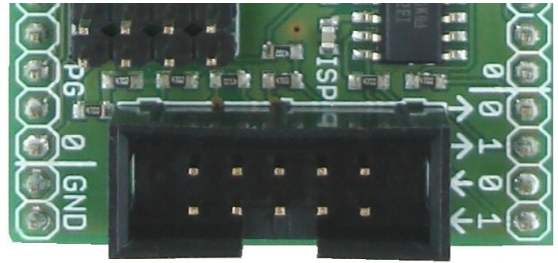
- 3.3V Version
- with mounted quartz (without quartz socket)
- without laterally pins

# Programming

## JTAG <sup>1</sup>



## ISP <sup>2</sup>



### *Pin Configuration JTAG-Connector*

(9) TDI	(7) VCC	(5) TMS	(3) TDO	(1) TCK
(10) GND	(8)	(6) Reset	(4) VCC	(2) GND

### *Pin Configuration ISP-Connector*

(2) VCC	(4) GND	(6) GND	(8) GND	(10) GND
(1) MOSI	(3) GND	(5) Reset	(7) SCK	(9) MISO

**1** When programming with JTAG the JPI-(1-4)-jumpers should be set.

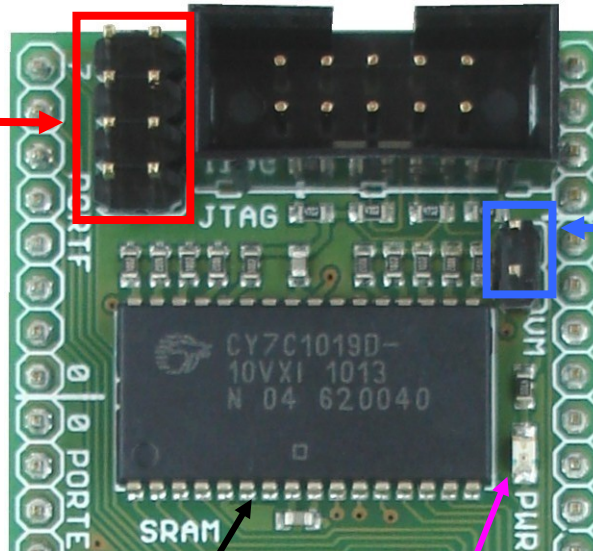
**2** When programming with ISP the UART-jumpers JP2-3 and JP2-1 should not be set.

# Settings

## JTAG-jumpers

JP2-1	Pin: PF7
JP2-2	Pin: PF6
JP2-3	Pin: PF5
JP2-4	Pin: PF4

When programming with JTAG the jumpers should be set in the red square.



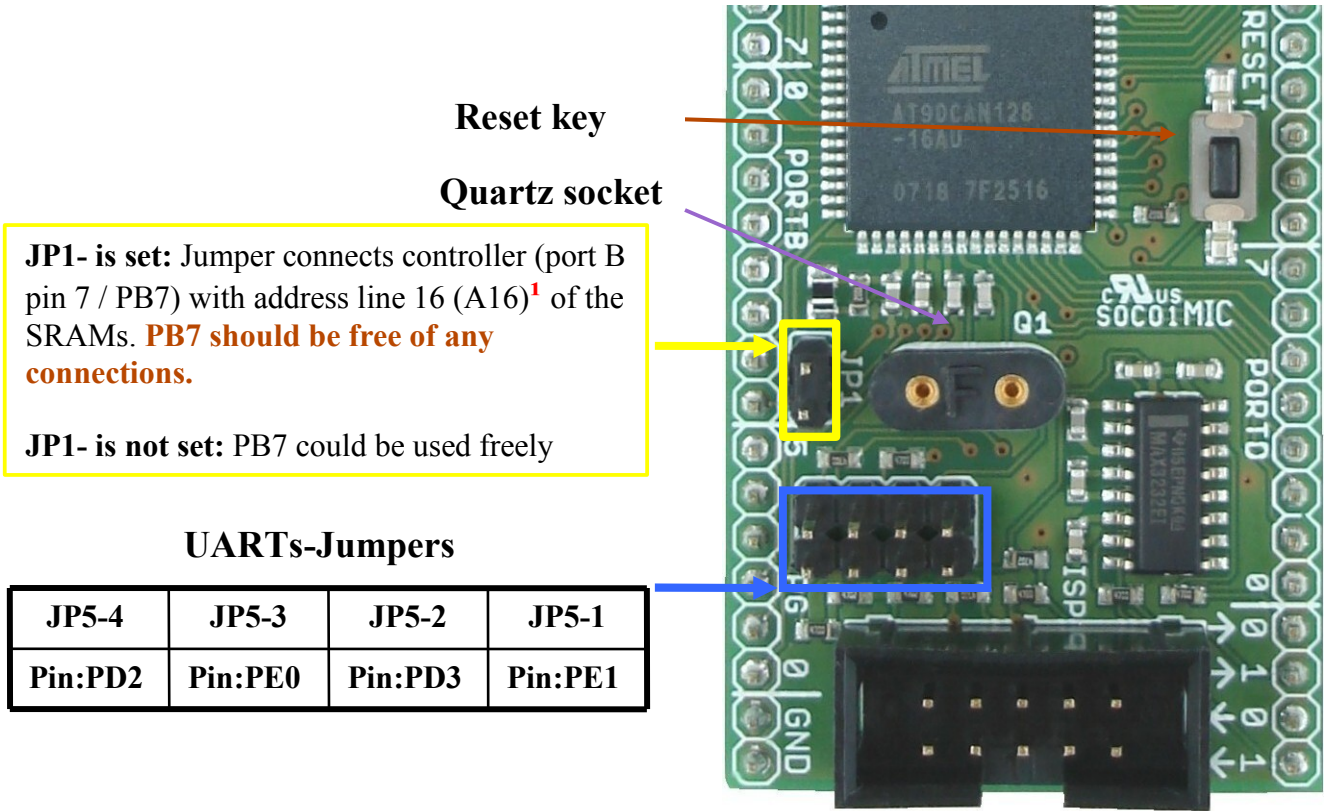
128 KByte external  
SRAM

Power LED

## VSRAM-jumper

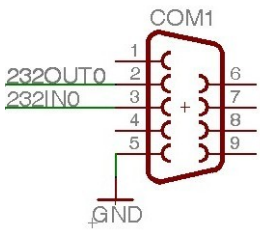
If **JP3 is set**: internal SRAM power supply. On pin: VSRAM is a supply voltage applied

If **JP3 is not set**: only external SRAM power supply. Therewith the data buffering is possible, but only when the uninterruptible supply is guaranteed.



The UARTs-pins can be parted from RS232 transceivers with these jumpers.  
**When programming with ISP the UART-jumpers JP5-3 (PE0) and JP5-1 (PE1) should not be set.**

### Connection of D-SUB 9-pin female connector (serial port/COM1)



	D-SUB 9-p.	AL-ERAM128_CAN
CH 0 example in the left picture	Pin 2	36_232OUT0
	Pin 3	34_232IN0
	GND	32_GND
CH 1	Pin 2	35_232OUT 1
	Pin 3	33_232IN1
	GND	32_GND

<sup>1</sup> AT90CAN128 could operate only up to 64 KByte external SRAM. If you need 128 KByte, you should operate manually. JP1(address line 16-A16) should be set.