

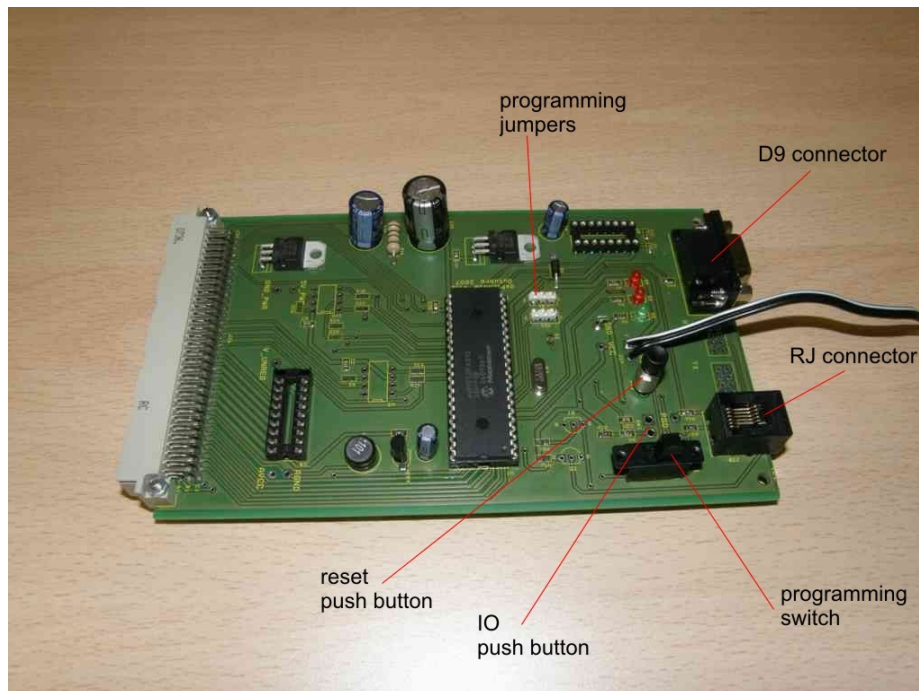
## CFN PICNODE board specs

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CFN/IST

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This document describes the dspicnode control and data acquisition board.



This board is a generic controller based on a dsPIC for simple general purposes applications, allowing fast development times as it is C programmable and equipped with a fast optical link (1 Mbaud) suitable for harsh environments. It is also suitable for real-time control or data acquisition.

The board includes power open collector outputs, analog inputs, optical and electrical serial communication ports, digital IO pins and a 29 MIPS micro processor.

### ***Micro controller***

- dsPIC30F4013
- program memory: 24K instructions
- ram memory: 2048 bytes (addressed in 16 bit words)
- EEPROM memory: 1024 bytes

### ***Board format***

- eurocard 100x160mm

### ***Interfaces***

Some interfaces are pin multiplexed

- Optical serial interface (Rx and Tx)
- CAN
- RS485 (Half Duplex)
- RS232 (true RS232 from MAX232 or equivalent)
- I2C
- SPI
- RJ11 (for ICD2, microchip programmer)

### ***IO***

Some IO features are pin multiplexed

- up to 8 power pull-down outputs (0.5A per output)
- up to 6 analog inputs (one ADC)
- up to 31 general purpose digital IO
- up to 3 external interrupt sources

### ***Peripherals on board***

- one push button for reset (SW2)
- one push button connected to general I/O pin (SW1)
- two monitoring led connected to I/O pins

## **Clocking**

- 7,3728MHZ crystal for microprocessor clock (0% error in usual baud rates generation)
- 32,768KHz crystal (example applications: 1s real time clock (unix time format) or 1s period timer)
- frequency of instruction execution =  $F_{\text{crystal}} * \text{PLL} / 4$
- available PLL factors: 4x, 8x and 16x

## **Communication speed**

- optical: up to 1,8Mbaud (limited by pic clock)
- RS232 port: min 120kbps for HIN232CPZ (depends on RS232 converter)
- RS232 standard baud rates: 9600, 19200, 38400, 115200, 460800, 921600 (with appropriate RS232 converter)

## **Programming**

### *- 1st option:*

- . use microchip ICD2 connected to RJ connector
- . work with MPLAB IDE
- . programming jumpers must be in position 1
- . programming switch must connect pins 1 and 2

### *- 2nd option:*

- . use serial straight through cable from PC serial port to picnode board D9 connector
- . compile your code in MPLAB IDE
- . use "WinPic - A PIC Programmer for Windows" to program the pic
- . programming jumpers must be in position 3
- . programming switch must connect pins 2 and 3 when programming
- . programming switch must connect pins 1 and 2 when using the rs232 port

## **Power**

Input supply:

DC 5 to 35 V

Output:

DC 5V regulated, maximum 1A

DC 5V regulated (used as reference for ADC) maximum 100mA

## ***DIN 96 pins outputs and inputs***

- **Avcc**: 5v used as reference for pic ADC. Maximum current out of these pins: 100mA
- **Vcc\_unreg**: vcc voltage not regulated. Maximum current: 1A
- **Vcc\_5**: 5v voltage supply to the pic. Maximum current: 0.8A
- **5V\_pwr**: regulated 5v output (7805). Maximum current: 1A
  
- **Agnd**: ground (0V) used as reference to the pic ADC
- **GND**: general ground
  
- **an0, an1, ...**: inputs to the several ADC channels
- **PwrDrv0** to **PwrDrv7**: power pulldown outputs
- **canrx** and **cantx**: can output and input directly from the pic
- **can\_h** and **can\_l**: differential can line from the can transceiver
- **rx2** and **tx2**: uart output and input directly from the pic
- **sdo**: pic output to be used in rs485
- **rs485\_a** and **rs485\_b**: differential rs485 line from the rs485 transceiver
- **int0, int1** and **int2**: pic external interrupt pins
- **rc13** and **rc14**: pic general purpose IO