

# LCD- GRAPHIC MODULE 180x32

04.2011

## INCL. CONTROLLER PT6520 FOR 8-BIT BUS

new !



*EA DIP180B-5NLW  
Dimension 102 x 27 mm*

### FEATURES

- \* HIGH CONTRAST LCD SUPERTWIST DISPLAY
- \* BLUE-WHITE WITH BRIGHT BACKLIGHT: EA DIP180B-5NLW
- \* CONTROLLER PT6520 OR COMPATIBLE IS BUILT-IN
- \* DIRECT INTERFACE TO 8-BIT DATA BUS
- \* POWER SUPPLY +5V / -3.3V max. 800µA
- \* LED BACKLIGHTH WHITE max. 45mA@+25°C
- \* MORE MODULES MADE IN SAME TECHNOLOGY:
  - DOTMATRIX 1x8, 2x16, 4x20
  - GRAPHIC 122x32, 128x64 AND 240x128
- \* NO MOUNTING REQUIRED: JUST SOLDER INTO PCB
- \* DETACHABLE VIA SOCKET EA B200-9 (2 PCS. ARE REQUIRED)
- \* OPERATING TEMPERATURE RANGE -20..+70°C WITH
- \* BUILT-IN TEMPERATURE COMPENSATION

### ORDERING CODE

LCD GRAPHIC MODULE 180x32 WITH LED BACKLIGHT  
9-PIN SOCKET 4.3mm, pitch 2.0mm (1 PC.)

**EA DIP180B-5NLW**  
**EA B200-9**

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## PINOUT

| Pin | Symbol | Level | Funktion                   | Pin | Symbol | Level | Funktion                  |
|-----|--------|-------|----------------------------|-----|--------|-------|---------------------------|
| 1   | VSS    | L     | Stromversorgung 0V (GND)   | 10  | D3     | H / L | Display Data              |
| 2   | VDD    | H     | Stromversorgung +5V        | 11  | D4     | H / L | Display Data              |
| 3   | VEE    | -     | Kontrastspg. (ca. -3,3V)   | 12  | D5     | H / L | Display Data              |
| 4   | A0     | H / L | Umschaltung Befehl / Daten | 13  | D6     | H / L | Display Data              |
| 5   | R/W    | H / L | H=Read, L=Write            | 14  | D7     | H / L | Display Data, MSB         |
| 6   | E1     | H     | Enable Spalte 1..60        | 15  | E2     | H     | Enable Spalte 61..120     |
| 7   | D0     | H / L | Display Data, LSB          | 16  | RES    | L     | Reset                     |
| 8   | D1     | H / L | Display Data               | 17  | E3     | H     | Enable Spalte 121..180    |
| 9   | D2     | H / L | Display Data               | 18  | C      | -     | LED (ext. Vorwiderstand!) |

## CONTROLLER PT6520

The display EA DIP180-5 is featuring 3 controller PT65520 or compatible (for the left, middle and right third of display).

The PT6520 is a full graphic controller without text function. Various character set are supplied on the disc EA DISKFONT1520 which is available as an accessory.

A detailed description for the commands and the interface timing you can find in the user manual for PT6520 / SED1520\*).



Column address

0-----79

|            |        |
|------------|--------|
| D0 }<br>D7 | Page 0 |
| D0 }<br>D7 | Page 1 |
| D0 }<br>D7 | Page 2 |
| D0 }<br>D7 | Page 3 |

| Instructions        | Code |    |    |                  |                         |                            |                                |    |    |            |     | Function   |                                  |                               |
|---------------------|------|----|----|------------------|-------------------------|----------------------------|--------------------------------|----|----|------------|-----|--|----------------------------------|-------------------------------|
|                     | A0   | RD | WR | D7               | D6                      | D5                         | D4                             | D3 | D2 | D1         | D0  |  |                                  |                               |
| Display ON/OFF      | 0    | 1  | 0  | 1                | 0                       | 1                          | 0                              | 1  | 1  | 1          | 0/1 | Turns Display on or off. 0=OFF; 1=ON;  |                                  |                               |
| Display start line  | 0    | 1  | 0  | 1                | 1                       | 0                          | Display start address (0 - 31) |    |    |            | 0   | Specifies RAM line corresponding to top of display.  |                                  |                               |
| Set page address    | 0    | 1  | 0  | 1                | 0                       | 1                          | 1                              | 1  | 0  | Page (0-3) |     | Sets display RAM page.   |                                  |                               |
| Set Column address  | 0    | 1  | 0  | 0                | Column address (0 - 79) |                            |                                |    |    |            |     |  | Sets display RAM column address. |                               |
| Read Status         | 0    | 0  | 1  | B<br>U<br>S<br>Y | A<br>D<br>C             | O<br>N<br>/<br>O<br>F<br>F | R<br>E<br>S<br>E<br>T          | 0  | 0  | 0          | 0   | Read the following status:<br>BUSY: 1=Busy; 0=Ready;<br>ADC: 1=CW output; 0=CCW output;<br>ON/OFF: 1=Display off; 0=Display on;<br>RESET: 1=Being reset; 0=Normal; |                                  |                               |
| Write display data  | 1    | 1  | 0  | Write data       |                         |                            |                                |    |    |            |     |  |                                  | Writes data into display RAM. |
| Read display data   | 1    | 0  | 1  | Read data        |                         |                            |                                |    |    |            |     |  |                                  | Reads data from display RAM.  |
| Select ADC          | 0    | 1  | 0  | 1                | 0                       | 1                          | 0                              | 0  | 0  | 0          | 0/1 | 0=CW output; 1=CCW output;   |                                  |                               |
| Static drive ON/OFF | 0    | 1  | 0  | 1                | 0                       | 1                          | 0                              | 0  | 1  | 0          | 0/1 | Selects static driving operation.<br>0=Normal driving; 1=Static drive;   |                                  |                               |
| Select duty         | 0    | 1  | 0  | 1                | 0                       | 1                          | 0                              | 1  | 0  | 0          | 0/1 | Select duty cycle. 0=1/16; 1=1/32;   |                                  |                               |
| Read-Modify-Write   | 0    | 1  | 0  | 1                | 1                       | 1                          | 0                              | 0  | 0  | 0          | 0   | Read-modify-write ON   |                                  |                               |
| End                 | 0    | 1  | 0  | 1                | 1                       | 1                          | 0                              | 1  | 1  | 1          | 0   | Read-modify-write OFF  |                                  |                               |
| Reset               | 0    | 1  | 0  | 1                | 1                       | 1                          | 0                              | 0  | 0  | 1          | 0   | Software reset.  |                                  |                               |

\*) On internet at <http://www.lcd-module.de/eng/pdf/zubehoer/pt6520.pdf>

## CONTRAST ADJUSTMENT

Contrast voltage for EA DIP180-5 is ca. -3.3V. That means that with 5V operation the display do need an additional negative voltage.

An automatic temperature compensation is built-in. A manually realign of contrast while operation over various temperatures is no longer required. Furthermore the display is equipped with a Superfast-Liquid, which fast enough even at the very low temperature of -20°C. Response time is typ. 2.5 seconds only.

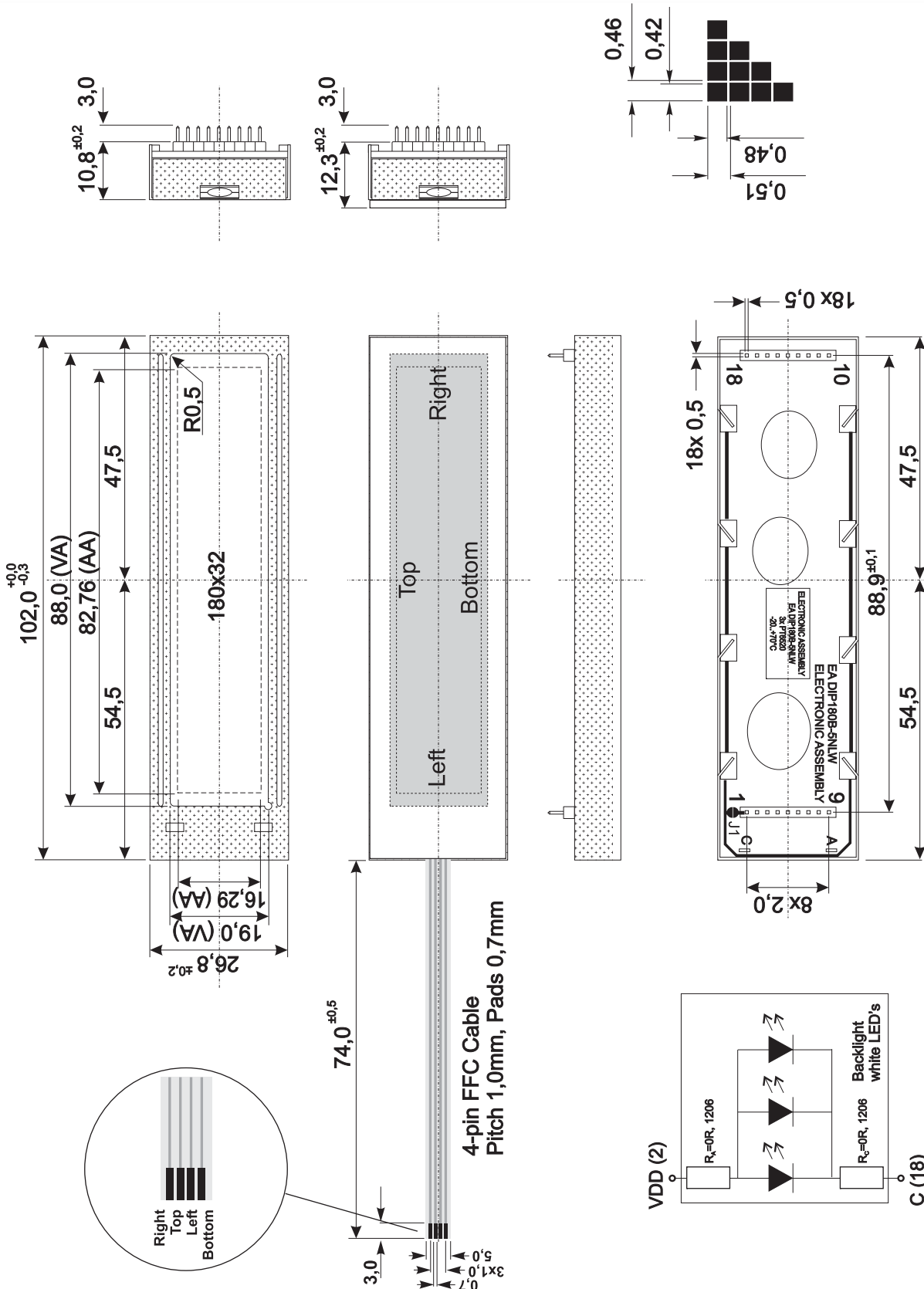
## BACKLIGHT

The built-in backlight requires a current source or an external limiting resistor. Forward voltage for backlight is between 3.0V and 3.6V. Please consider that a current derating is necessary for operating und temperatures above +25°C.

Note that display cannot be read without backlight. But even with some single mA reading is possible. When ambient brightness grows, then backlight brightness need to grow also.

Attention: do never connect the backlight direct to 5V. This will damage the display immediately !

## DIMENSION



**Note:**

- LC-displays are not suited for wave soldering or reflow soldering. Temperatures above +80°C may damage lcd-module.
- Surfaces of display is with protection foil protected against scratching. Please remove before use.

all dimensions are in mm



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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9