

# 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 BACKLIGH 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  
SAME, BUT WITH TOUCHPANELK, ANALOG 4-WIRE  
9-PIN SOCKET 4.3mm, pitch 2.0mm (1 PC.)  
ZIF-STECKER 1.0MM TO CONNECT TOUCHPANEL

EA DIP180B-5NLW  
EA DIP180B-5NLWTP  
EA B200-9  
EA WF100-04T

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## PINOUT

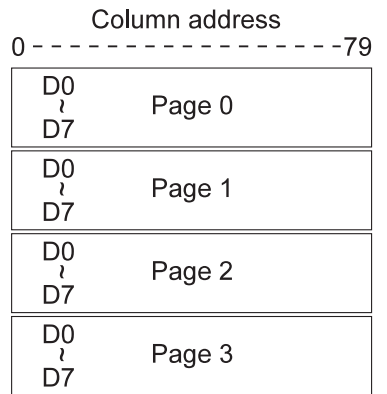
Pin	Symbol	Level	Funktion	Pin	Symbol	Level	Funktion
1	VSS	L	Stromversorgung 0V (GND)	10	D3	H / L	Display Data
2	VDD	H	Stromversorgung +5V	11	D4	H / L	Display Data
3	VEE	-	Kontrastspg. (ca. -3,3V)	12	D5	H / L	Display Data
4	A0	H / L	Umschaltung Befehl / Daten	13	D6	H / L	Display Data
5	R/W	H / L	H=Read, 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\*).



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)					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 U S Y	A D C	O N / O F F	R E S E T	0	0	0	0	Read the following status: BUSY: 1=Busy; 0=Ready; ADC: 1=CW output; 0=CCW output; ON/OFF: 1=Display off; 0=Display on; 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. 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 !

## CHARACTER SETS AND FONT EDITOR (ACCESSORY)

With the ordering code EA USBSTICK-FONT a memory stick comes with various character sets. An import function additionally allows to use Windows fonts. With the FontEditor it is easy to generate for example Cyrillic, Greek and Arabic fonts.

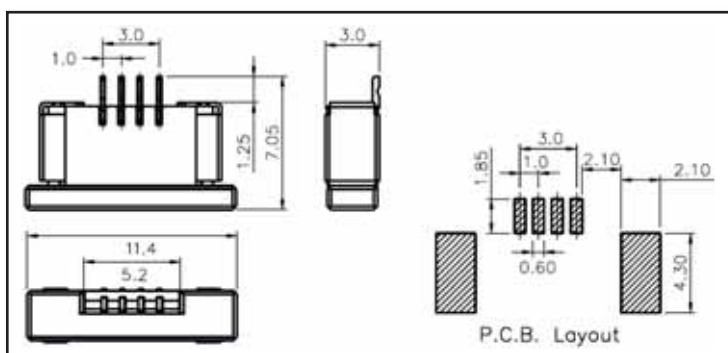
## TOUCH PANEL DISPLAY EA DIP180-5LWTP

An analog touch panel is available as an accessory. It has a self-adhesive material on its rear surface and is simply stuck onto the display. The connection is made by means of a 4-pin flexible cable for a ZIF connector (e.g. EA WF100-04T) with a grid of 1.0 mm. Bending radius is defined with min. 5mm.

Interfacing to a processor can be either done by an external touch panel controller or with a controller that is featured with analogue input. The touch panel is similar to a potentiometer: connecting a voltage of e.g. 5V to the pins *Top-Bottom* makes it possible to read out a voltage on pin *Left* or *Right* which is linear to the Y-coordinate of the pressed point. The X-coordinate will result when the voltage will be supplied to *Left-Right* and measurement is done at *Top* or *Bottom*.

The pinout of the connecting cable is shown in the drawing.

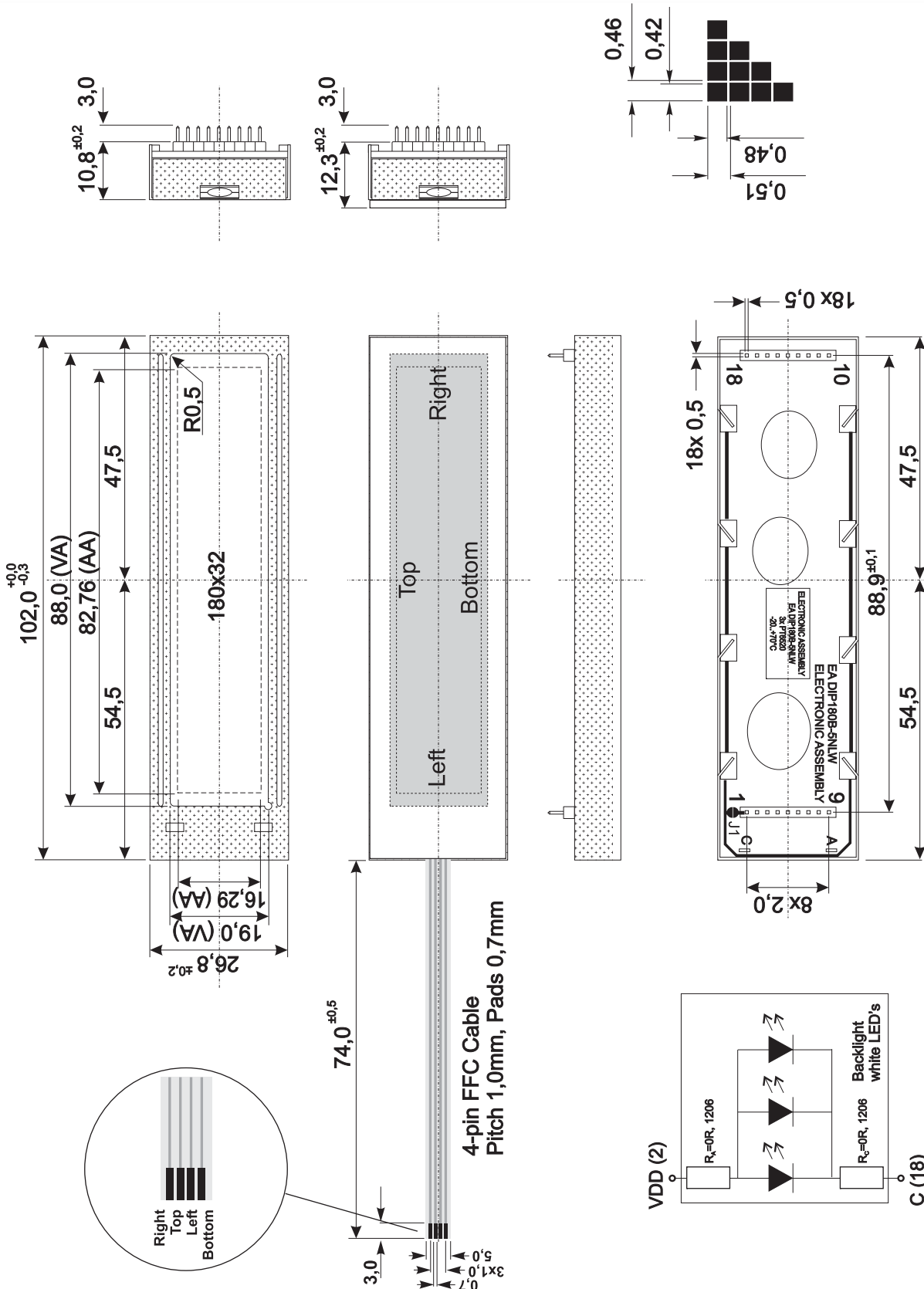
Specification			
Specification	min	max	Unit
Top-Bottom	50	200	Ω
Left-Right	250	1000	Ω
Voltage	3	12	V
Current	5	25	mA
Linearity		1,5	%
Force	45	65	g
Contact Bounce	5	10	ms
Op. Temperatur	-20	+60	°C
Stor. Temperatur	-20	+70	°C
Transmission	75	85	%
Life Time	100000		Cycles



## ZIF CONNECTOR EA WF100-04S

As an accessory for the touch panel we do provide a ZIF connector (4 pins) with pitch 1.0mm (SMD type). This connector „bottom side contact“ type.

## 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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