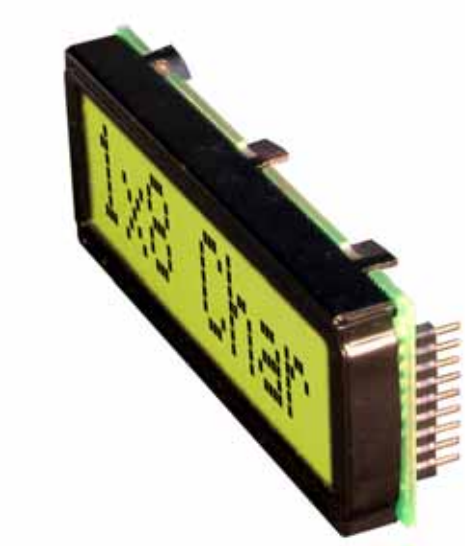
LCD MODULE 1x8 - 11.48mm

Issue 04.2011

INCL. CONTROLLER HD 44780

no more mounting required



Dimension 68 x 27 mm
11mm flat even with LED B/L

FEATURES

* HIGH CONTRAST LCD SUPERTWIST DISPLAY GRAY OR YELLOW/GREEN
* COMPATIBLE TO HD 44780 STANDARD
* INTERFACE FOR 4- AND 8-BIT DATA BUS
* POWER SUPPLY +2.7~5.5V (BACKLIGHT 4.1V)
* OPERATING TEMPERATURE RANGE 0~+50°C OR -20~+70°C
* BULIT-IN TEMP. COMP. WITH EA DIP081-CHNLED
* LED BACKLIGHT Y/G typ. 150mA@4.1V, max. 200mA
* SOME MORE MODULES WITH SAME MECHANIC AND SAME PINOUT:
  - DOTMATRIX 2x16, 4x20
  - GRAPHIC 122x32
* NO SCREWS REQUIRED: SOLDER ON IN PCB ONLY
* DETACHABLE VIA 9-PIN SOCKET EA B200-9 (2 PCS. REQUIRED)

ORDERING INFORMATION

LCD MODULE 1x8 - 11.48mm WITH BACKLIGHT Y/G	**EA DIP081-CNLED**
SAME BUT WITH $T_{OP.}$ -20~+70°C, INCL. TEMP.COMP.	**EA DIP081-CHNLED**
9-PIN SOCKET, HEIGHT 4.3mm (1 PC.)	**EA B200-9**
SUITABLE BEZEL (WINDOW 60.0x14.8 mm)	**EA 017-2UKE**
ADAPTOR PCB WITH STANDARD PINOUT PITCH 2.54mm	**EA 9907-DIP**

ELECTRONIC ASSEMBLY
making things easy

Zeppelinstr. 19 · D-82205 Gilching · Tel. 08105-778090 · Fax 08105-778099 · www.lcd-module.de · info@lcd-module.de

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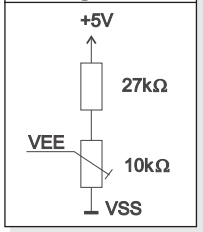
PINOUT

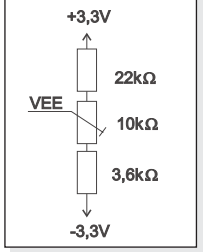
Pin	Symbol	Level	Function
1	VSS	L	Power Supply 0V (GND)
2	VDD	H	Power Supply +5V
3	VEE	-	Contrast adjust. (about 0V)
4	RS	H / L	H=Command, L=Data
5	R/W	H / L	H=Read, L=Write
6	E	H	Enable (falling edge)
7	D0	H / L	Display Data, LSB
8	D1	H / L	Display Data
9	D2	H / L	Display Data

Pin	Symbol	Level	Function
10	D3	H / L	Display Data
11	D4 (D0)	H / L	Display Data
12	D5 (D1)	H / L	Display Data
13	D6 (D2)	H / L	Display Data
14	D7 (D3)	H / L	Display Data, MSB
15	-	-	NC (see EA DIP122-5N)
16	-	-	NC (see EA DIP122-5N)
17	A	-	LED B/L+ Resistor required
18	C	-	LED B/L -

5V operation



3.3V operation



CONTRAST ADJUSTMENT

Both displays EA DIP081-CNLED and -CHNLED do have an driving voltage for contrast of typ. 4,9V. For 3.3V operation additional -3.3V is required.
Version EA DIP081-CHNLED for ext. temperature range -20..+70°C does have a built-in temperature compensation; so there's no need for contrast adjustment while operation.

BACKLIGHT

Backlight do need an external resistor limiting the current limitor. Calculation is: R=U/I, so at 5V supply:

$$R_{gelb/grün} = (5{,}0V - 4{,}1V) / 0{,}15A = 6\,Ohm$$

Caution: do never drive backlight direct with 5V; damage may come suddenly.

CHARACTER SET

Character set shown below is already built in. In addition to that you are able to define up to 8 characters by yourself.

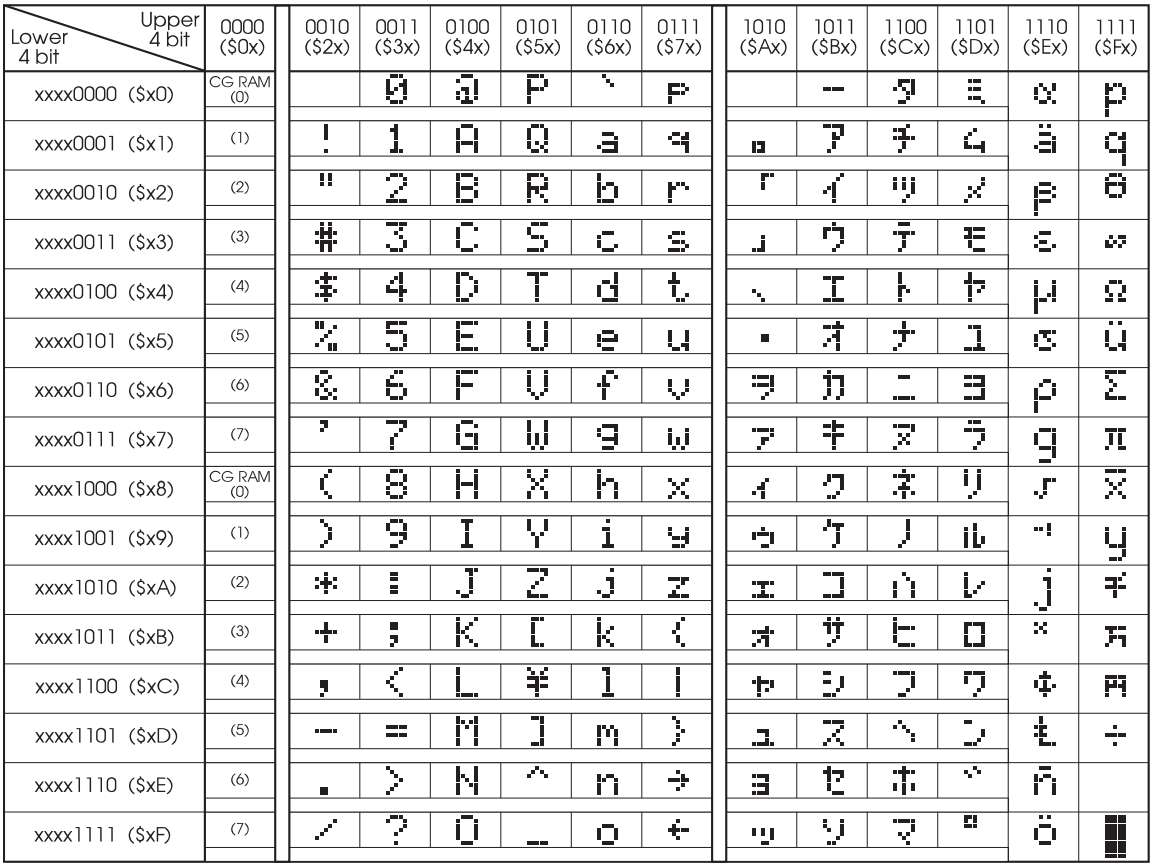


TABLE OF COMMAND

Instruction	Code										Description	Execute Time (max.)
	RS	R/W	DB 7	DB 6	DB 5	DB 4	DB 3	DB 2	DB 1	DB 0		
Clear Display	0	0	0	0	0	0	0	0	0	1	Clears all display and returns the cursor to the home position (Address 0).	1.64ms
Cursor At Home	0	0	0	0	0	0	0	0	1	*	Returns the Cursor to the home position (Address 0). Also returns the display being shifted to the original position. DD RAM contents remain unchanged.	1.64ms
Entry Mode Set	0	0	0	0	0	0	0	1	I/D	S	Sets the Cursor move direction and specifies or not to shift the display. These operation are performed during data write and read.	40µs
Display On/Off Control	0	0	0	0	0	0	1	D	C	B	Sets ON/OFF of all display (D) cursor ON/OFF (C), and blink of cursor position character (B).	40µs
Cursor / Display Shift	0	0	0	0	0	1	S/C	R/L	*	*	Moves the Cursor and shifts the display without changing DD RAM contents.	40µs
Function Set	0	0	0	0	1	DL	N	F	*	*	Sets interface data length (DL) number of display lines (L) and character font (F).	40µs
CG RAM Address Set	0	0	0	1	ACG						Sets the CG RAM address. CG RAM data is sent and received after this setting.	40µs
DD RAM Address Set	0	0	1	ADD							Sets the DD RAM address. DD RAM data is sent and received after this setting.	40µs
Busy Flag / Address Read	0	1	BF	AC							Reads Busy flag (BF) indicating internal operation is being performed and reads address counter contents.	-
CG RAM / DD RAM Data write	1	0	Write Data								Writes data into DD RAM or CG RAM	40µs
CG RAM / DD RAM Data Read	1	1	Read Data								Reads data from DD RAM or CG RAM	40µs

INITIALISISATION FOR A 1 LINE DISPLAY / 8-BIT MODE

Command	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	Remark
Function Set	0	0	0	0	1	1	0	0	0	0	8 bit data length, 1 line display, 5x7 font
Display ON/OFF	0	0	0	0	0	0	1	1	1	1	display on, cursor on, cursor blink
Clear Display	0	0	0	0	0	0	0	0	0	1	clear display, cursor 1st. row, 1st. column
Entry Mode Set	0	0	0	0	0	0	0	1	1	0	cursor increments automatically

CREATING YOUR OWN CHARACTERS

All these character display modules got the feature to create 8 own characters (ASCII Codes 0..7) in addition to the 192 ROM fixed codes.

1.) The command "CG RAM Address Set" defines the ASCII code (Bit 3,4,5) and the dot line (Bit 0,1,2) of the new character. Example demonstrates creating ASCII code $00.

2.) Doing 8 times the write command "Data Write" defines line by line the new character. 8th. byte stands for the cursor line.

3.) The new defined character can be used as a "normal" ASCII code (0..7); use with "DD RAM Address Set" and "Data Write".

Set CG RAM Address					Data									
Adresse				Hex				Bit						Hex
					7	6	5	4	3	2	1	0	
0	1	0	0	0 0 0	X	X	X	0	0	1	0	0	$04
				0 0 1				0	0	1	0	0	$04
				0 1 0				0	0	1	0	0	$04
				0 1 1				0	0	1	0	0	$04
				1 0 0				1	0	1	0	1	$15
				1 0 1				0	1	1	1	0	$0E
				1 1 0				0	0	1	0	0	$04
				1 1 1				0	0	0	0	0	$00

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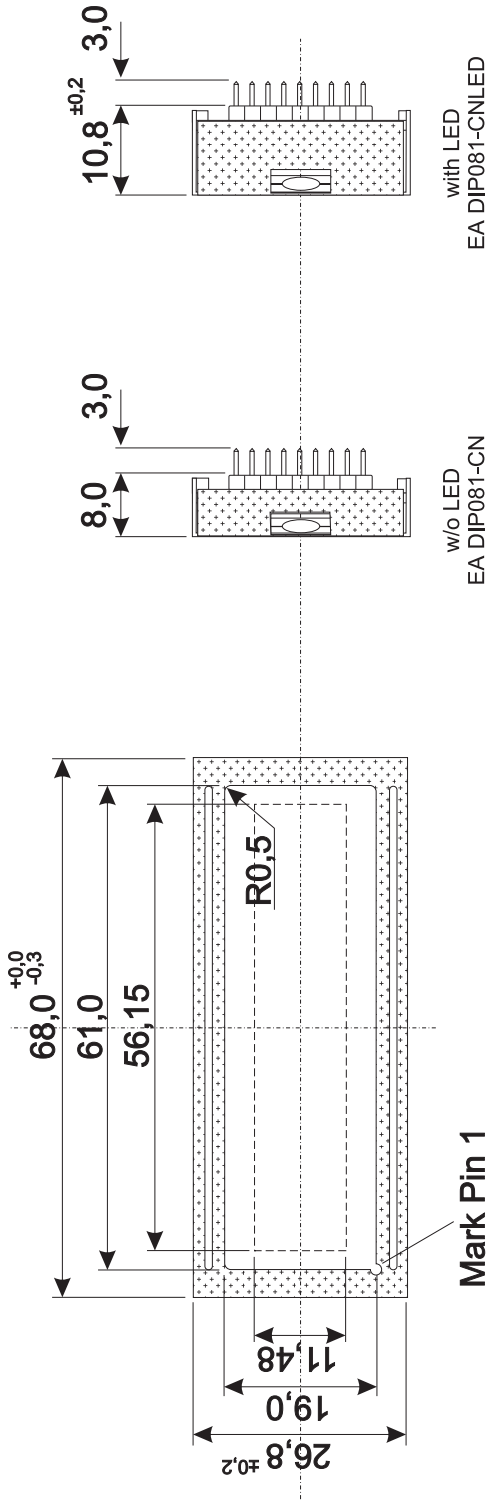
DIMENSIONS



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ELECTRONIC ASSEMBLY:

EA DIP081-CNLED EA B200-9 EA DIP081-CHNLED