# **LCD-GRAPHIC MODULE 128x64 DOTS**



with pins

EA DIP128J-6N5LA 75.0 x 45.8 x 10.8 mm

## **FEATURES**

- \* REAL BRIGHT AND CONTRASTY GRAPHIC DISPLAYS
- \* EA DIP128-6N5LW: WHITE DOTS, BLUE BACKGROUND
- \* EA DIP128J-6N5LW: BLACK DOTS, WHITE BACKGROUND
- \* WITH AMBER BACKLIGHT (LONGLIFE)
- \* GREEN VERSION FOR HIGHEST CONTRAST
- \* LOW-POWER LED BACKLIGHT min. 15mA. max. 90mA@+25°C
- \* INTEGRATED CONTROLLER KS0107/108 OR PT6607/08
- \* TEMPERATURE COMPENSATION BUILT-IN
- \* 8-BIT BUS INTERFACE
- \* NO MOUNTING REQUIRED: JUST SOLDER INTO PCB
- \* POWER SUPPLY +5V
- \* OPERATING TEMPERATURE RANGE -20°C..+70°C

### **ACCESSORIES**

- \* MATRIX TOUCH PANEL 5x3, ANTIGLARE AND SCRATCH-PROOF
- \* HIGH-LEVEL-GRAPHICS-CONTROLLER FOR RS-232: EA IC202-PGH

#### ORDERING INFORMATION

LCD GRAPHIC MODULE 128x64 DOTS BLUE-WHITE SAME BUT IN BLACK/WHITE OPTIC WITH AMBER BACKLIGHT WITH GREEN BACKLIGHT ALL WITH TOUCH PANEL, 5x3 FIELDS SOCKET 4.5mm HEIGHT, 12 PINS (1 pc.) ZIFF CONNECTOR (SMD) FOR TOUCH PANEL

**EA DIP128-6N5LW EA DIP128J-6N5LW** 

EA DIP128J-6N5LA EA DIP128J-6N5LE

EA DIP128x-xxxxxTP

**EA B254-12** 

**EA WF100-10S** 



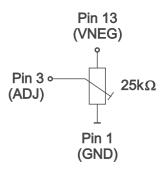
ASSEMBLY & LOCHHAMER SCHLAG 17·D-82166 GRAEFELFING Phone +49-89-8541991·Fax +49-89-8541721·http://www.lcd-module.de

## **ELECTRONIC ASSEMBLY**

### **PINOUT**

Pin	Symbol	Function
1	VSS	Power Supply 0V (GND)
2	VDD	Power Supply +5V
3	ADJ	Contrast adjustment
4	RES	L: Reset
5	D/I	H=Data; L=Command
6	R/W	H=Read, L=Write
7	E1	Enable left half of display
8	E2	Enable right half of display
9	CS1L	L: Chipselect left, low active
10	CS1H	H: Chipselect left, high active
11	CS2L	L: Chipselect right, low active
12	CS2H	H: Chipselect right, high active

Pin	Symbol	Function
13	VNEG	neg. voltage output f. contrast
14	NC	not connected
15	D0	Display Data, LSB
16	D1	Display Data
17	D2	Display Data
18	D3	Display Data
19	D4	Display Data
20	D5	Display Data
21	D6	Display Data
22	D7	Display Data, MSB
23	Α	LED + (ext. series resistor !)
24	С	LED -



#### CONTRAST

is already adjusted for 5V when shipped out. Once contrast is set to an optimum, internal temperature compensation circuit provides best contrast allover the whole temperature range of -20..+70°C. An external contrast adjustment is normally not necessary, but can be done via external potentiometer.

## **APPLICATION EXAMPLES**

On the right hand you can see some application examples.

## **BACKLIGHT**

Graphic displays EA DIP128-6 are featured with a low-power LED-backlight. Brightness can be switched off and adjusted infinitely.

Driving the LED backlight requires a current source or an external series resistor for current limiting. Forward voltage is between 2.2..2.6V (amber), 3.9..3.6V (white), 3.7..4.1V (green). Maximum supply current is  $90mA@+25^{\circ}C$ . Please take care of derating when used at  $t_a >+25^{\circ}C$ .

<u>Attention:</u> Do never drive backlight direct to 5V; this may cause immediately defect!

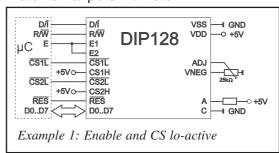
<u>Note:</u> Blue-white version provide no contrast when backlight is switched off. Reading the display requires a minimum of backlight with about 15mA.

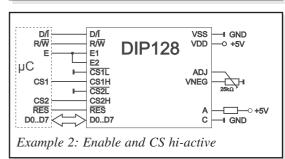
## BLACK&WHITE, BLUE, AMBER, GREEN

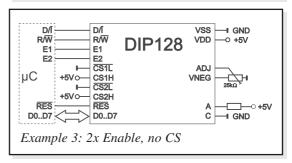
The blue-white display EA DIP128-6N5LW is best for indoor use with and without ambient light. Reading the display requires a minimum of backlight with about 15mA.

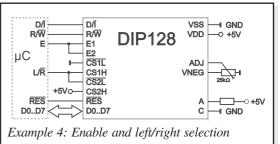
Black and white version EA DIP128J-6N5LW and green version are especially designed for outdoor applications. These displays do provide best contrast for all ambient illuminations, even with direct sunlight. No need to say that display can be read in darkness when LED backlight is switched on.

This is same for the amber backlighted version EA DIP128J-6N5LA. The greatest advantage here is the long life backlight.



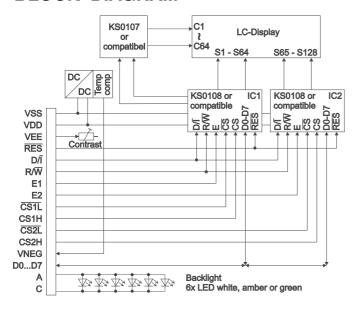






## **ELECTRONIC ASSEMBLY**

## **BLOCK DIAGRAM**

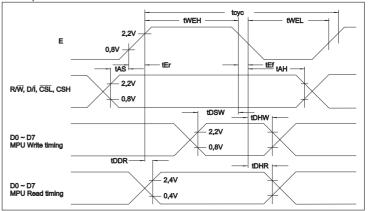


## **ABSOLUTE MAXIMUM RATING**

Parameter	Symbol	Min	Max	Unit
Power supply for logic	VDD-VSS	0	7,0	٧
Input voltage	VI	VSS	VDD	٧
Operating temperature	Та	-20	+70	°C
Storage temperature	Tstg	-30	+80	°C

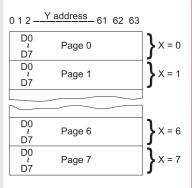
TIMING CHARACTERISTICS (T\_=-20..+70°C)

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Symbol	Min	Тур	Max	Unit			
tcyc	1000	1	-	ns			
tWEH	450	1	-	ns			
tWEL	450	1	-	ns			
tEr		1	25	ns			
tEf	-	-	25	ns			
tAS	140	-	-	ns			
tDSW	200	-	-	ns			
tDDR	-	-	320	ns			
tAH	10	-	-	ns			
tDHW	10	-	-	ns			
tDHR	20	-	-	ns			
	tcyc tWEH tWEL tEr tEf tAS tDSW tDDR tAH tDHW	Symbol         Min           tcyc         1000           tWEH         450           tWEL         450           tEr         -           tEf         -           tAS         140           tDSW         200           tDDR         -           tAH         10           tDHW         10	Symbol         Min         Typ           tcyc         1000         -           tWEH         450         -           tWEL         450         -           tEr         -         -           tEf         -         -           tAS         140         -           tDDR         -         -           tAH         10         -           tDHW         10         -	Symbol         Min         Typ         Max           tcyc         1000         -         -           tWEH         450         -         -           tWEL         450         -         -           tEr         -         -         25           tEf         -         -         25           tAS         140         -         -           tDSW         200         -         -           tDDR         -         -         320           tAH         10         -         -           tDHW         10         -         -			



## **INSTRUCTION SET KS0108/PT6608**

	Code												
Instructions	R/W	D/I	<b>D7</b>	D6	D5	D4	D4 D3 D2 D1 D0			D0	Function		
Display ON/OFF	0	0	0	0	1	1	1	1	1		Controls the ON/OFF of display.  RAM data and internal status are		
Display start line	0	0	1	1	disp	display start line (0 - 63) Specifies a RA			(0 -	not affected. 1:ON, 0:OFF  Specifies a RAM line displayed at the top of screen			
Set page(X address)	0	0	1	0	1	1				- 7)	Sets the page (x address) of RAM at the page of (x address) register.		
Set address	0	0	0	1	,	Y address (0 - 63)			- 63	)	Sets the Y address at the Y address counter		
Status Read	1	0	B U S Y	0	ON / OF	R E S E T	0	0	0	0	Read the status.  RESET 1:reset 0:normal 0N/OFF 1:display 2:display OFF ON  BUSY 1:on the internal operation		
Write display data	0	1		Write data							Writes data D0 to D7 on the data bus into display RAM.  After access, Y address is		
Read display data	1	1		Read data				a			Reads data D0 to D7 from the display RAM to the data bus.		



Address Configuration of Display Data RAM

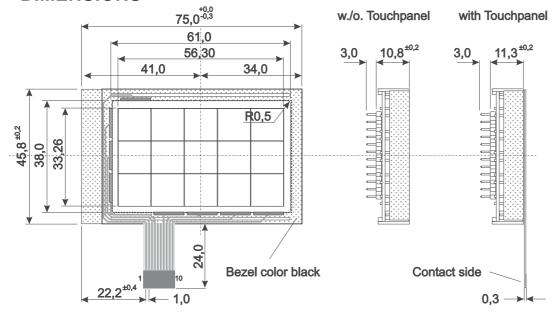
A complete user manual for these on-board controller you'll find at our web site at "user manual" or direct accessed via: <a href="http://www.lcd-module.de/eng/pdf/zubehoer/ks0108b.pdf">http://www.lcd-module.de/eng/pdf/zubehoer/ks0108b.pdf</a> and <a href="http://www.lcd-module.de/eng/pdf/zubehoer/ks0108b.pdf">../pt6608.pdf</a>

ΑT

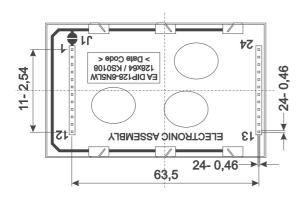
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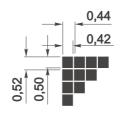
# **EA DIP128-6**

## **DIMENSIONS**

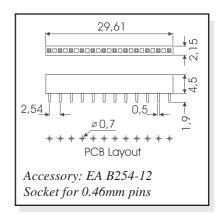


Hint: LC-Displays are generally not suggested for wave soldering or reflow soldering. Temperatures above 90°C may damage the display immediately.





all dimension are in mm



## **TOUCH PANEL**

Surface of touch panel is anti-glare and scratchproof.

Technology: resitive Matrix Touch with 5x3 fixed fields. Readout will be done like for membrane keyswitches: scan for columns and rows.

Electrical Characteristics							
Specification min typ max Unit							
On-Resistance	300		10,000	Ω			
Voltage	0.5		5	V			
Current	10u		10m	А			
Contact Force	150		200	g			
Contact Bounce		10		ms			
Temperature range	-30		+75	°C			
Lifetime	1,000,000			cycles			

Tou	Touch Panel					
Pin	Function					
1	Column 1					
2	Row 1					
3	Row 2					
4	Row 3					
5	N.C.					
6	N.C.					
7	Column 2					
8	Column 3					
9	Column 4					
10	Column 5					

## **EA WF100-10S**

ZIF connector for the touch panel as an accessory.

