

TEXT DISPLAY

4x20 - 3.75mm

Issue 03.2023

INCL. CONTROLLER RW1073



FEATURES

- * HIGH CONTRAST LCD SUPERTWIST DISPLAY
- * CONTROLLER RW1073-0B (COMPATIBLE TO SSD1803)
- * INTERFACE FOR 4- AND 8-BIT DATA BUS
- * SERIAL SPI INTERFACE (SID, SOD, SCLK)
- * POWER SUPPLY +3.3V / 1.5mA (W./O. B/L)
- * ALTERNATIVELY +5V (NEED TO CHANGE 2 COMPONENTS)
- * LED BACKLIGHT Y/G max. 150mA@+25°C
LED BACKLIGHT BLUE-WHITE AND BLACK-WHITE max. 45mA@+25°C
- * OPERATING TEMPERATURE RANGE -20..+70°C
- * BUILT-IN TEMPERATURE COMPENSATION
- * SOME MORE MODULES WITH SAME SIZE AND SAME PINOUT:
 - DOTMATRIX 1x8, 2x16
 - GRAPHIC 122x32
- * NO SCREWS REQUIRED: SOLDER ONTO PCB ONLY
- * DETACHABLE VIA 9-PIN SOCKET EA B200-9 (2 PCS REQUIRED)

ORDERING INFORMATION

LCD MODULE 4x20 - 3.75mm WITH LED BACKLIGHT Y/G
BLUE-WHITE
BLACK-WHITE
9-PIN SOCKET, HEIGHT 4.3mm (1 PC.)

EA DIP205G-4NLED
EA DIP205B-4NLW
EA DIP205J-4NLW
EA B200-9

PINOUT

Pin	Symbo	Level	Function	Pin	Symbo	Level	Function
1	VSS	L	Power Supply 0V (GND)	10	D3	H / L	Display Data
2	VDD	H	Power Supply +3.3V	11	D4 (D0)	H / L	Display Data
3	VEE	-	Contrast adjustment, input	12	D5 (D1)	H / L	Display Data
4	RS (CS)	H / L	H=Data, L=Command	13	D6 (D2)	H / L	Display Data
5	R/W (SID)	H / L	H=Read, L=Write	14	D7 (D3)	H / L	Display Data, MSB
6	E (SCLK)	H	Enable (falling edge)	15	-	-	NC (see EA DIP122-5N)
7	D0 (SOD)	H / L	Display Data, LSB	16	RES	L	Reset (internal Pullup 10k)
8	D1	H / L	Display Data	17	A	-	LED B/L+ Resistor required
9	D2	H / L	Display Data	18	C	-	LED B/L-

BACKLIGHT

Using the LED backlight requires a current source or external current-limiting resistor. Forward voltage for yellow/green backlight is 3.9~4.2V and for white LED backlight is 3.2~3.5V. Please take care of derating for $T_a > +25^\circ\text{C}$.

Note: Do never connect backlight directly to 5V; this may destroy backlight immediately !

TABLE OF COMMAND RW1073

Instruction	RE	Instruction Code										Description	Execution Time (tocc) = 270(KHz)	
		RS	RW	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0			
Clear Display	X	0	0	0	0	0	0	0	0	0	0	1	Write "20H" to DDRAM, and set DDRAM address to "00H" from AC.	1.53ms
Return Home	0	0	0	0	0	0	0	0	0	0	1	X	Set DDRAM address "00H" from AC and return cursor to its original position if shifted. The contents of DDRAM are not changed.	1.53ms
Power Down Mode	1	0	0	0	0	0	0	0	0	0	1	PD	Set power down mode bit. PD="1": power down mode set. PD="0": power down mode disable.	39uS
Entry Mode Set	0	0	0	0	0	0	0	0	1	I/D	S	Assign cursor moving direction. I/D="1": increment. I/D="0": decrement. and display shift enable bit. S="1": make display shift of the enabled lines by the DS4-DS1 bits in the Shift Enable instruction. S="0": display shift disable.	39uS	
	1	0	0	0	0	0	0	0	1	1	BID	Segment bidirectional function. BID="1": Seg0->Seg1. BID="0": Seg1->Seg0.	39uS	
Display ON/OFF Control	0	0	0	0	0	0	0	1	D	C	B	Set display/cursor/blink on/off. D="1": display on. D="0": display off. C="1": cursor on. C="0": cursor off. B="1": blink on. B="0": blink off.	39uS	
Extended Function set	1	0	0	0	0	0	0	1	FW	BW	NW	Assign font width; black/white inverting of cursor, and 4-line display mode bit. FW="1": 6-dot font width. FW="0": 5-dot font width. BW="1": black/white inverting of cursor enable. BW="0": black/white inverting of cursor disable. NW="1": 4-line display mode. NW="0": 1-line or 2-line display mode.	39uS	

Instruction	RE	Instruction Code										Description	Execution Time (tocc) = 270(KHz)	
		RS	RW	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0			
Cursor or Display Shift	0	0	0	0	0	0	1	S/C	R/L	X	X	Cursor or display shift. S/C="1": display shift. S/C="0": cursor shift. R/L="1": shift to right. R/L="0": shift to left.	39uS	
Shift Enable	1	0	0	0	0	0	1	DS4	DS3	DS2	DS1	(When DH="1") Determine the line for display shift. DS1="1/0": 1 st line display shift enable/disable. DS2="1/0": 2 nd line display shift enable/disable. DS3="1/0": 3 rd line display shift enable/disable. DS4="1/0": 1 th line display shift enable/disable.	39uS	
Function Set	0	0	0	0	0	0	1	DL	N	RE (0)	DH	rev	Set interface data length, (DL="1": 8 bit, DL="0": 4bit). Number of display line when NW="0", (N="1": 2-line, N="0": 1-line), extension register, RE(0), shift enable, (DH="1": display enable, DH="0": display disable), and reverse bit (REV="1": reverse display, REV="0": normal display)	39uS
	1	0	0	0	0	0	1	DL	N	RE (1)	BE	0	Set DL,N,RE("1") and CGRAM/SEGRAM blink enable (BE) (BE="1": CGRAM/SEGRAM blink enable, BE="0": CGRAM/SEGRAM blink disable)	39uS
Set CGRAM Address	0	0	0	0	1	AC5	AC4	AC3	AC2	AC1	AC0	Set CGRAM address in address counter.	39uS	
Set SEGRAM Address	1	0	0	0	1	X	X	AC3	AC2	AC1	AC0	Set SEGRAM address in address counter.	39uS	
Set DDRAM Address	0	0	0	1	AC6	AC5	AC4	AC3	AC2	AC1	AC0	Set DDRAM address in address counter.	39uS	
Read Busy Flag and Address	X	0	1	BF	AC6	AC5	AC4	AC3	AC2	AC1	AC0	Can be known whether during internal operation or not by reading BF. The contents of address counter can also be read. (BF="1": busy state, BF="0": ready state)	0uS	
Write Data	X	1	0	D7	D6	D5	D4	D3	D2	D1	D0	Write data into internal RAM (DDRAM/CGRAM/SEGRAM)	43uS	
Read Data	X	1	1	D7	D6	D5	D4	D3	D2	D1	D0	Read data into internal RAM (DDRAM/CGRAM/SEGRAM)	43uS	

EA DIP205-4

5V OPERATION

The supply voltage of the display ex work is 3.3V.

If a 5V-system is used, the display need to be modified by hand:

- remove C2
- add R6 with 0 ohms

COMPATIBILITY EA DIP203-4, DIP204-4 AND DIP205-4

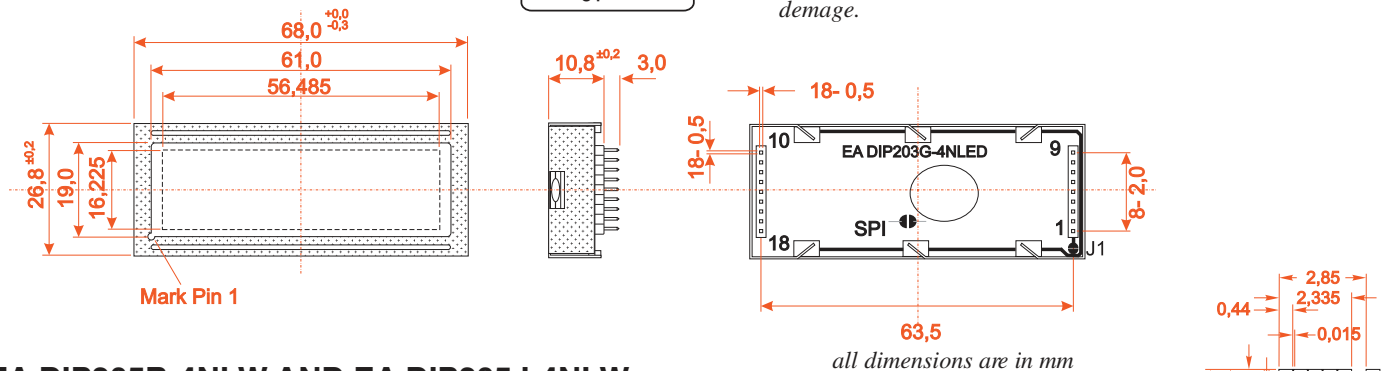
The displays of DIP203, DIP204 and DIP205 series are electrically and mechanically identical to each other running with 3.3V supply mode. Merely a 5V supply is not acceptable with the EA DIP203 series.

EA DIP205G-4NLED

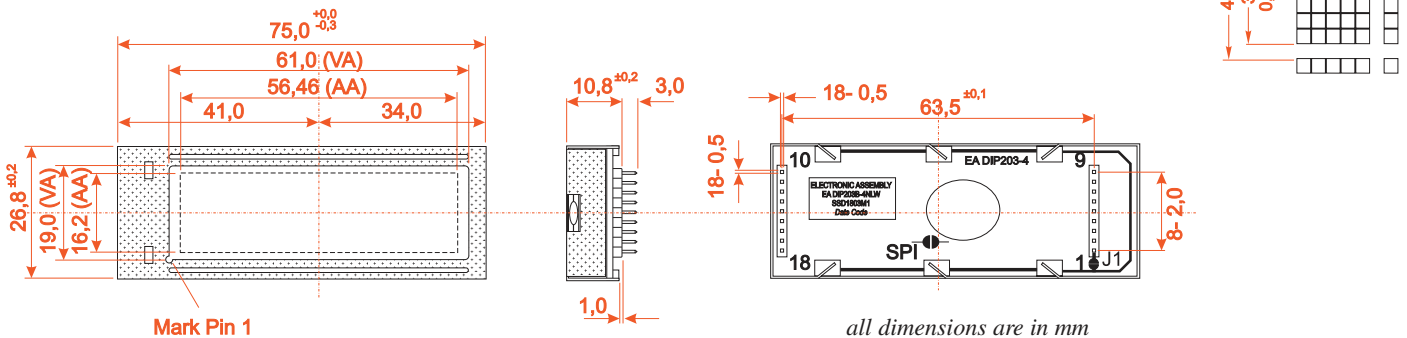


Note:

LC-Displays are generally not suited to wave or reflow soldering. Temperatures of over 80°C can cause lasting damage.

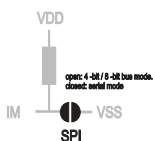


EA DIP205B-4NLW AND EA DIP205J-4NLW



SERIAL SPI MODE

Factory setting for interface is parallel with 4 bit or 8 bit data bus. Alternatively the module can be used with serial data stream. For that, solder link **SPI** has to be closed. Specification for serial operation mode is described in user manual for RW1073:



https://www.lcd-module.de/fileadmin/eng/pdf/zubehoer/RW1073-0B-002_Rev0.0-20121029.pdf

Software for initialisation and programming is same as for 8 bit.