


MCOB21205AV-EWP	2 x 12	Euro/Jap/Cyrillic	OLED Module
<b>Specification</b>			
Version: 6		Date: 16/05/2017	
<b>Revision</b>			
0	27/09/2013	First release	
A	05/11/2013	Correct R/W Modify Idd	
B	29/04/2014	Modify Brightness	
C	16/06/2014	Update Rev. Add Low Temperature storage.	
D	08/04/2016	Modify Block Diagram.	
E	01/06/2016	Modify Static electricity test	

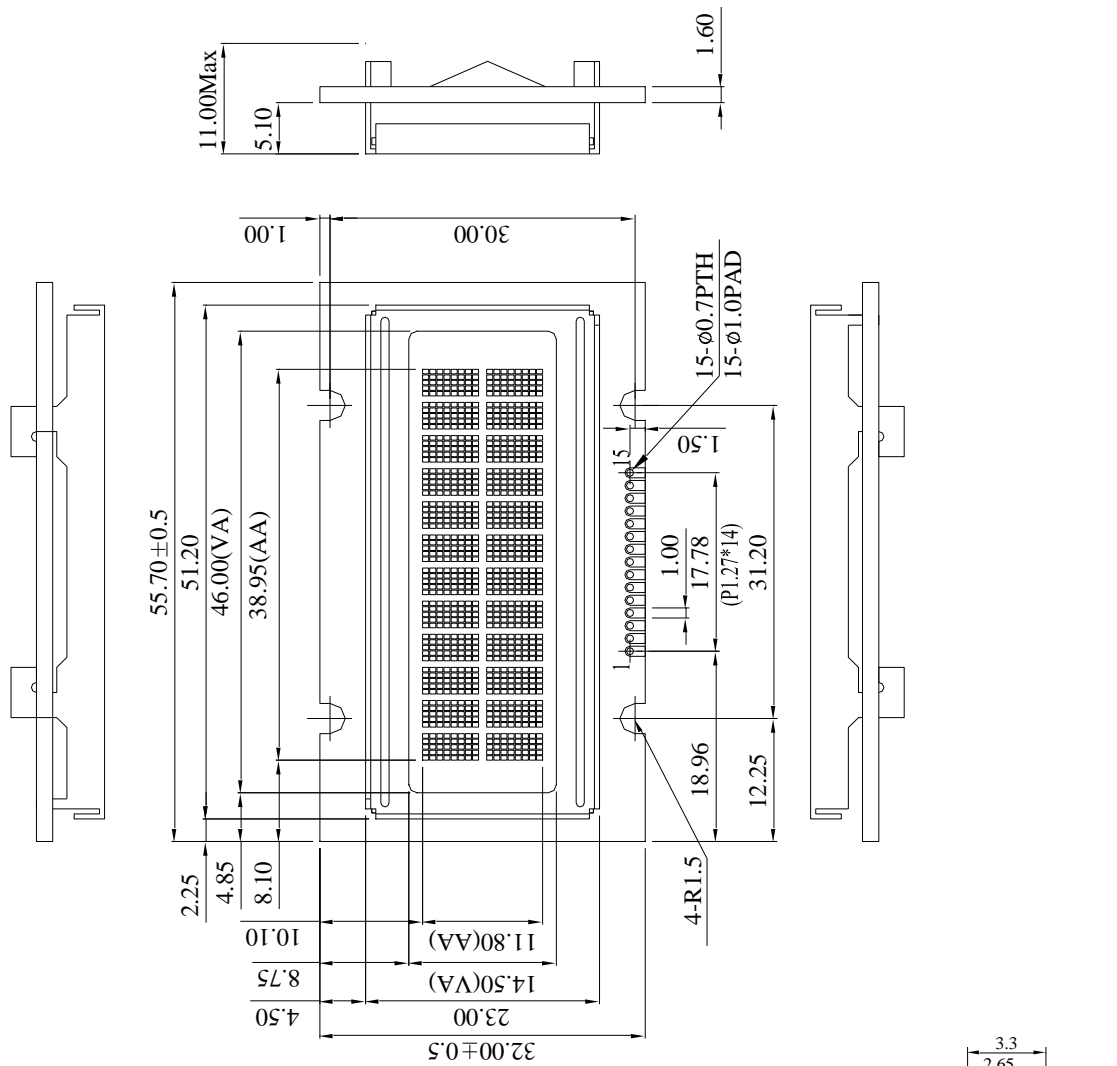
Display Features		 <b>RoHS compliant</b>	Box Quantity	Weight / Display
Character Count	2 x 12			
Appearance	White on Black			
Logic Voltage	5V			
Interface	Parallel			
Font Set	English / European / Cyrillic			
Character Height	5.50 mm			
Module Size	55.70 x 32.00 x 11.00 mm			
Operating Temperature	-40°C ~ +80°C			
Construction	COB			

Display Accessories	
Part Number	Description

Optional Variants	
Appearance	Voltage
Yellow on Black	
Blue on Black	
Green on Black	
Red on Black	

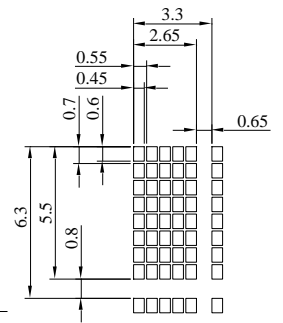
## Mechanical Specifications

Module Size	55.70 x 32.00 x 11.00 ( With Backlight)				W x H x D mm
Viewing Area	46.00 x 14.50	W x H mm	Hole-to-Hole	31.20 x 30.00	W x H mm
Character Size	2.65 x 5.50	W x H mm	Character Pitch	3.60 x 6.30	W x H mm
Dot Size	0.45 x 0.60	W x H mm	Dot Pitch	0.55 x 0.70	W x H mm



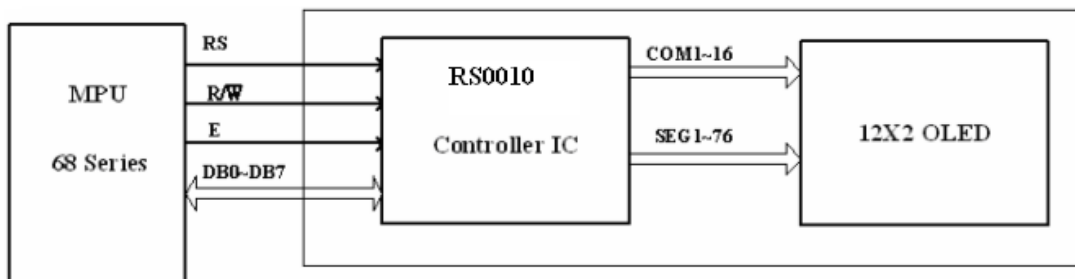
The non-specified tolerance of dimension is ;  $\pm 0.3$  mm .

DOT SIZE  
SCALE 5/1



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Pin layout			
Pin	Symbol	Description	Remarks
1	VSS	Ground	
2	VDD	Supply Voltage for Logic	5V
3	NC	No Connection	
4	RS	H: Data L: Instruction Code	H/L
5	R/W	H: Read(MPU-->Module) L: Write(MPU-->Module)	H/L
6	E	Chip Enable Signal	H, H -->L
7	DB0	Data Bus Line	H/L
8	DB1	Data Bus Line	H/L
9	DB2	Data Bus Line	H/L
10	DB3	Data Bus Line	H/L
11	DB4	Data Bus Line	H/L
12	DB5	Data Bus Line	H/L
13	DB6	Data Bus Line	H/L
14	DB7	Data Bus Line	H/L
15	NC	No Connection	



Address Format	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
CA (Character Address)	1	ADD6	ADD5	ADD4	ADD3	ADD2	ADD1	ADD0

1	2	3	4	.....	.....	9	10	11	12
CA=10000000b	CA=10000001b	CA=10000010b	CA=10000011b	.....	.....	CA=10001000b	CA=10001001b	CA=10001010b	CA=10001011b
CA=11000000b	CA=11000001b	CA=11000010b	CA=11000011b	.....	.....	CA=11001000b	CA=11001001b	CA=11001010b	CA=11001011b

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# Font Map

Upper 4bit Lower 4bit	LLLL	LLLH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HHLL	HHLH	HHHL	HHHH
LLLL	CG RAM (1)															
LLLH	(2)															
LLHL	(3)															
LLHH	(4)															
LHLL	(5)															
LHLH	(6)															
LHHL	(7)															
LHHH	(8)															
HLLL	(1)															
HLLH	(2)															
HLHL	(3)															
HLHH	(4)															
HHLL	(5)															
HHLH	(6)															
HHHL	(7)															
HHHH	(8)															

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Upper 4bit Lower 4bit	LLLL	LLLH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HHLL	HHLH	HHHL	HHHH
	CG RAM (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LLLL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LLLH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LLHL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LLHH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LHLL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LHLH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LHHL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LHHH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HLLL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HLLH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HLHL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HLHH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HHLL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HHLH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HHHL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HHHH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

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Upper 4bit Lower 4bit	LLLL	LLLH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HHLL	HHLH	HHHL	HHHH
	LLLL	CG RAM (1)														

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<b>Absolute Maximums Ratings</b>					
Item	Symbol	Minimum	Typical	Maximum	Unit
Supply Voltage for Logic	V0	-0.30	---	5.30	V
Operating Temperature	Vopr	-40	---	80	°C
Storage Temperature	Vstg	-40	---	80	°C

<b>Electronic Characteristics</b>						
Item	Symbol	Condition	Minimum	Typical	Maximum	Unit
Input High Voltage	VIH	---	0.80	---	VDD	V
Input Low Voltage	VIL	---	GND	---	0.20	V
Output High Voltage	VOH	IOH=-0.5mA	0.80	---	VDD	V
Output Low Voltage	VOL	IOL=0.5mA	GND	---	0.20	V
Supply Voltage for Logic	VDD~VSS	---	4.80	5.00	5.30	V
50% Checkboard Operating Current.	IDD	VDD=5V	28	30	38	mA

<b>OLED Characteristics</b>						
Item	Symbol	Condition	Minimum	Typical	Maximum	Unit
Viewing Angle	(V)θ	---	160	---	---	Deg
	(H)φ	---	160	---	---	Deg
Contrast Ratio	CR	Dark	2000:1	---	---	---
Response Time	T Rise	---	---	10	---	µs
	T Fall	---	---	10	---	µs
Display with 50% Checkboard Brightness			60	70	---	cd/m <sup>2</sup>
CIEx(White)		(CIE1931)	0.26	0.28	0.30	---
CIEy(White)		(CIE1931)	0.30	0.32	0.34	---

<b>OLED Life Time</b>			
Item	Conditions	Typical	Remark
Operating Life Time	Ta=25°C. Initial checkboard brightness, 50%.	50,000 Hours	---

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