


MCOB21605GX-EWP	2 x 16	Euro/Jap/Cyrillic	OLED Module
<b>Specification</b>			
Version: 1		Date: 03/03/2013	
<b>Revision</b>			
1	01/03/2013	First Issue	

Display Features			
Character Count	2 x 16		
Appearance	White on Black		
Logic Voltage	5V		
Interface	Parallel		
Font Set	English / European / Cyrillic		
Character Height	5.57 mm		
Module Size	80.00 x 36.00 x 9.10 mm		
Operating Temperature	-40°C ~ +85°C		
Construction	COB		
		Box Quantity	Weight / Display
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Display Accessories	
Part Number	Description

Optional Variants	
Appearance	Voltage



## Functions and Features

- 2 lines x 16 characters
- Built-in controller
- Parallel or serial MPU interface (Default 6800 MPU parallel)
- +2.8V ~ +5.3V Power Supply
- viewing angle "Free"
- Wide Temperature -40°C ~ +80°C (Operating)
- Sunlight Readable Technology
- RoHS compliant

## Mechanical Specification

Item	Description	
Product No.	MCOB21605GX-EWP	
Viewing Area	58.22(W)×13.52(H)	mm
Module Size	80.0(W)×36.0(H)×9.1 (D)	mm
Dot Size	0.57(W)×0.67(H)	mm
Dot Pitch	0.60(W)×0.70(H)	mm
Display Format	16 characters (W)×2 lines (H)	
Duty Ratio	1/16	Duty
Controller	SSD1311 or Equivalent	
Interface	6800 (Default) 8Bit 8080 (Option) SPI (Option) I2C (Option)	



# MiDAS

## DISPLAYS

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**Mechanical Drawing**



# Pin Description

Parallel Interface (default):

Pin No.	Symbol	External Connection	Description
1	VSS	Power Supply	Ground
2	VDD	Power Supply	Supply Voltage for OLED and logic
3	Vo	-	Contrast Adjustment
4	RS(D/C#)	MPU	Register select signal. H: DATA, L: Command
5	R/W# (WR#)	MPU	6800-interface:  Read/Write select signal, R/W=1: Read R/W: =0: Write  8080-interface:  Active LOW Write signal.
6	E or /RD	MPU	6800-interface:  Operation enable signal. Falling edge triggered.  8080-interface:  Active LOW Read signal.
7-14	DB0~DB7	MPU	8-bit Bi-directional data bus lines
15-16	NC	-	No Connect



## DC Characteristics

Item	Symbol	Condition	Min.	Type	Max.	Unit
Power Supply for Logic	VDD	(Wide Voltage I/O Application)	2.8	5.0	5.3	Volt
Input Voltage for I/O Pins	V <sub>i</sub>	(Wide Voltage I/O Application)	2.8	5.0	5.3	Volt
Input Voltage	V <sub>IL</sub>	L level	0	-	0.2 VDD	Volt
Input Voltage	V <sub>IH</sub>	H level	0.8 VDD	-	VDD	Volt
Output Voltage	V <sub>OL</sub>	L level	0	-	0.1 VDD	
Output Voltage	V <sub>OH</sub>	H level	0.9 VDD	-	VDD	
Power Supply Current for OLED	I <sub>DD</sub>	Note	-	30		mA
Sleep Mode Current for VDD	I <sub>DD,SLEEP</sub>			1	10	μA

**Note:**

VDD = 5.0V, 25% Display Area Turn on. 100 cd/m<sup>2</sup>

When random texts pattern is running , averagely , about 1/4 of pixels will be on.



## Optical Characteristics

Item	Symbol	Min.	Typ	Max.	Unit
Viewing angle range			Free		Degree
Dark Room Contrast	Cr		>10,000:1		
Brightness	Lbr		125		cd/m <sup>2</sup>
Peak Emission Wavelength	C.I.E 1931	X=0.25 Y=0.27	X=0.29 Y=0.31	X=0.33 Y=0.35	



# Electrical Absolute Ratings

Item	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply for Logic	VDD	-0.3	5.0	5.5	Volt	1,2
Input Voltage for I/O Pins	VI	-0.3	5.0	5.5	Volt	1,2
Life Time (100 cd/m <sup>2</sup> )		---	70,000	---	Hours	3

Note 1: All the above voltages are on the basis of "VSS = 0V".

Note 2: When this module is used beyond the above absolute maximum ratings, permanent breakage of the module may occur.

Note 3: Ta = 25°C, 25% Checkerboard.

Software configuration follows Section ACTUAL APPLICATION EXAMPLE Initialization.

End of lifetime is specified as 50% of initial brightness reached. The average operating lifetime at room temperature is estimated by the accelerated operation at high temperature conditions.



## POWER SUPPLY

Adjust Brightness by Software & Hardware(VR)

Adjust Brightness by Software(Only)

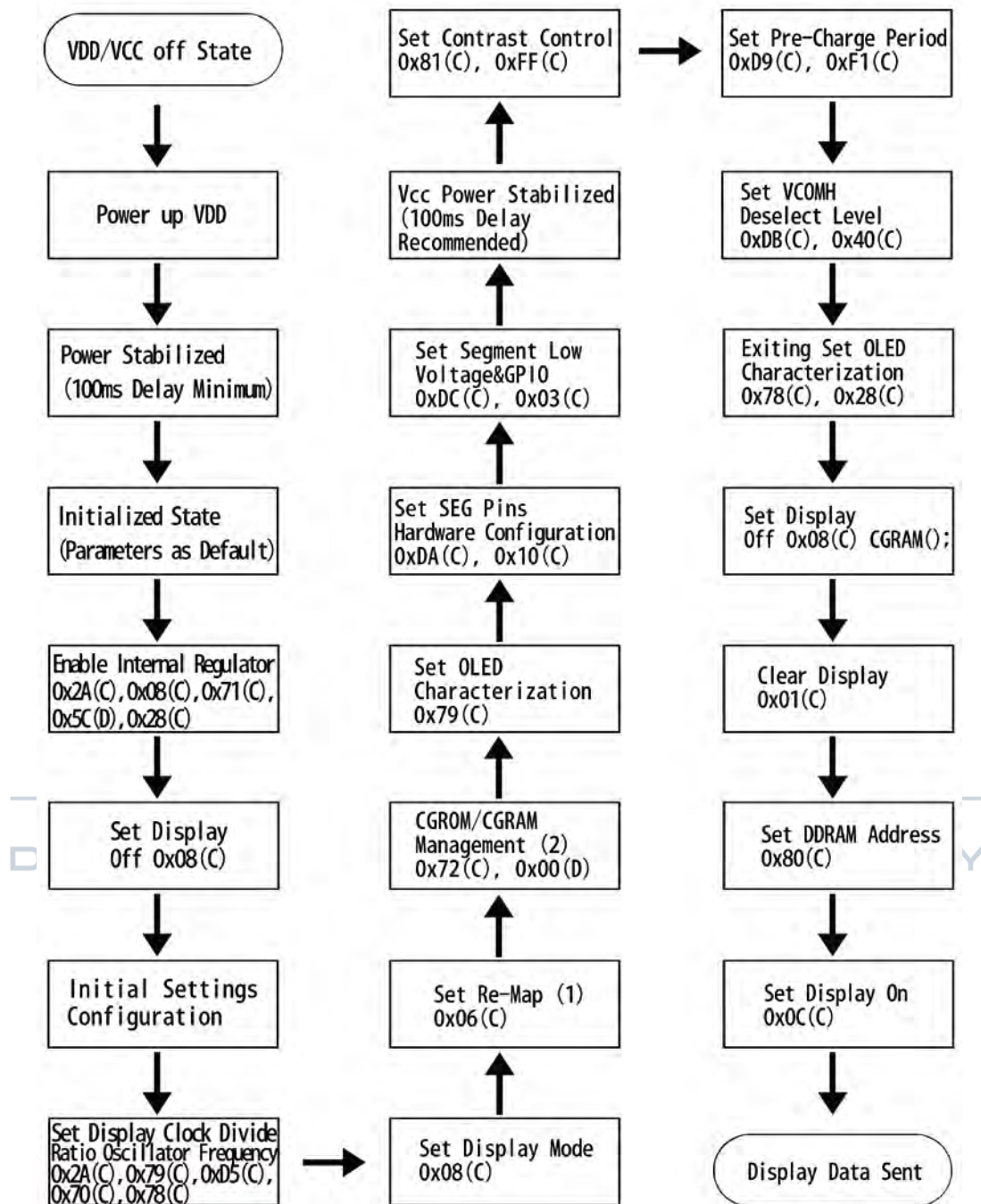
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# Application

## Power up Sequence



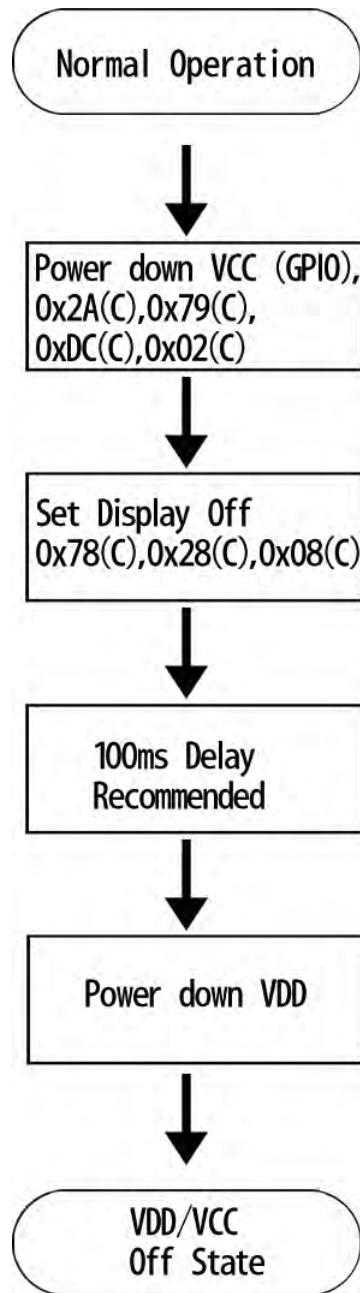
(1) This command could be programmable or defined by pin configuration.

(2) This command could be programmable or defined by pin configuration.

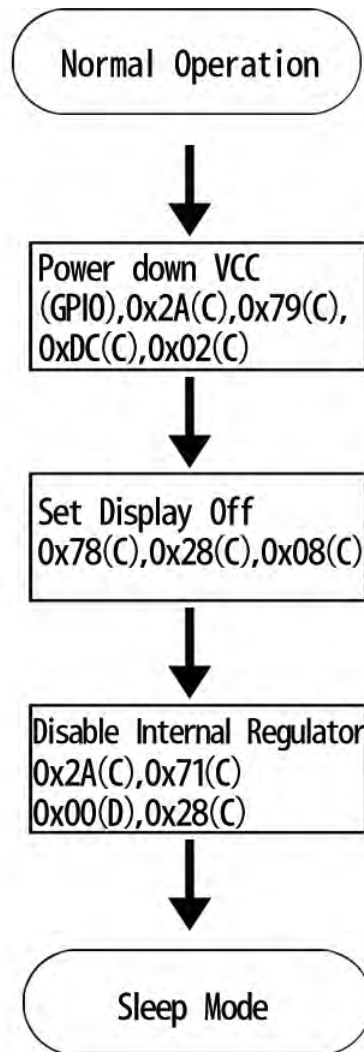
※ ( C ) : Write Command    ※ ( D ) : Write Data

If the noise is accidentally occurred at the displaying window during the operation, please reset the display in order to recover the display function.

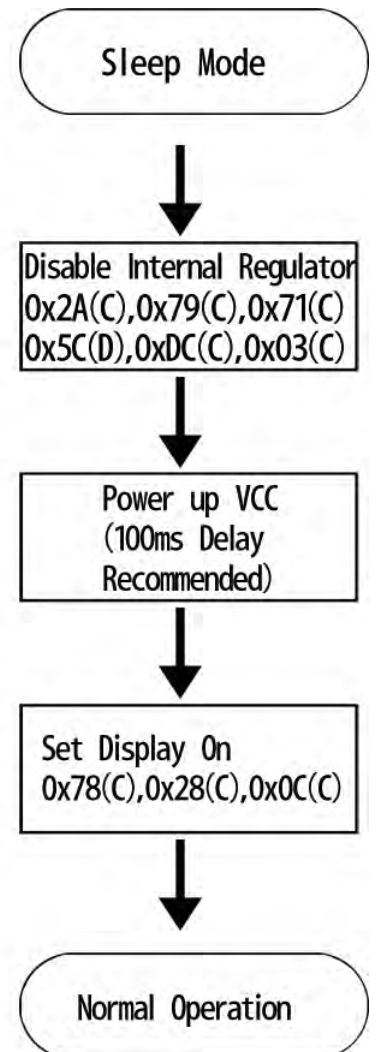
### Power down Sequence



### Entering Sleep Mode



### Exiting Sleep Mode





# SSD1311 CGROM CHARACTER CODE

ROM A

b7-4 \ b3-0	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
0001	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
0010	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
0011	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
0100	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
0101	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
0110	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
0111	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
1000	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
1001	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
1010	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
1011	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
1100	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
1101	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
1110	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]
1111	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]	[grid]

PLY





# ROM B

		b3-0				b7-4											
		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000																	
0001		⬅	⬆	⬇	⬈	↙	↘	↗	↖	↕	↔	↔	↔	↔	↔	↔	
0010		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
0011		0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	
0100		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
0101		P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	_	
0110		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
0111		p	q	r	s	t	u	v	w	x	y	z	{		}	~	
1000		Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	Ⓚ	Ⓛ	Ⓜ	Ⓝ	Ⓞ	Ⓟ	
1001		Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ	Ⓦ	Ⓧ	Ⓨ	Ⓩ	ⓐ	ⓑ	ⓓ	ⓔ	ⓕ	
1010		Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	Ⓚ	Ⓛ	Ⓜ	Ⓝ	Ⓞ	Ⓟ	
1011		Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ	Ⓦ	Ⓧ	Ⓨ	Ⓩ	ⓐ	ⓑ	ⓓ	ⓔ	ⓕ	
1100		Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	Ⓚ	Ⓛ	Ⓜ	Ⓝ	Ⓞ	Ⓟ	
1101		Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ	Ⓦ	Ⓧ	Ⓨ	Ⓩ	ⓐ	ⓑ	ⓓ	ⓔ	ⓕ	
1110		Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	Ⓚ	Ⓛ	Ⓜ	Ⓝ	Ⓞ	Ⓟ	
1111		Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ	Ⓦ	Ⓧ	Ⓨ	Ⓩ	ⓐ	ⓑ	ⓓ	ⓔ	ⓕ	





# ROM C

		b3-0				b7-4											
		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000		0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
0001		6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L
0010		.	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0011		0	1	2	3	4	5	6	7	8	9	*	+	=	>	?	
0100		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
0101		P	Q	R	S	T	U	V	W	X	Y	Z	[	]	^	_	
0110		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
0111		p	q	r	s	t	u	v	w	x	y	z	{	}	~	*	
1000		0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
1001		6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L
1010		.	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
1011		0	1	2	3	4	5	6	7	8	9	*	+	=	>	?	
1100		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
1101		P	Q	R	S	T	U	V	W	X	Y	Z	[	]	^	_	
1110		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
1111		.	!	"	#	\$	%	&	'	(	)	*	+	=	>	?	

