

MDOB256064GX-MWU	256 x 64	White	OLED Module
Specification			
Version: 1		Date: 13/04/2018	
Revision			
1	12/04/2018	First Release.	

Display Features			
Resolution	256 x 64		
Appearance	White on Black		
Logic Voltage	3V		
Interface	Serial UART RS232/TTL		
Module Size	98.00 x 60.00 x 9.10 mm		
Operating Temperature	-40°C ~ +85°C		
Construction	COB	Box Quantity	Weight / Display
		---	---

* - For full design functionality, please use this specification in conjunction with the SSD1322 specification.(Provided Separately)

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Display Accessories	
Part Number	Description

Optional Variants	
Appearance	Voltage



Functions and Features

- 3.12 inch 256X64 Graphic
- Built-in MCU;FLASH;OLED Driver controller;
- UART interface(TTL RX/TX OR RS232 RX/TX)
- viewing angle Free
- Wide Temperature -40℃ ~ +80℃ (Operating)
- Multi-language built-in font
- Up to save monochrome (256*64 Dots) 200 images
- FLASH (up to 1,000 PROGRAM/ERASE cycles)
- RoHS compliant

Mechanical Specification

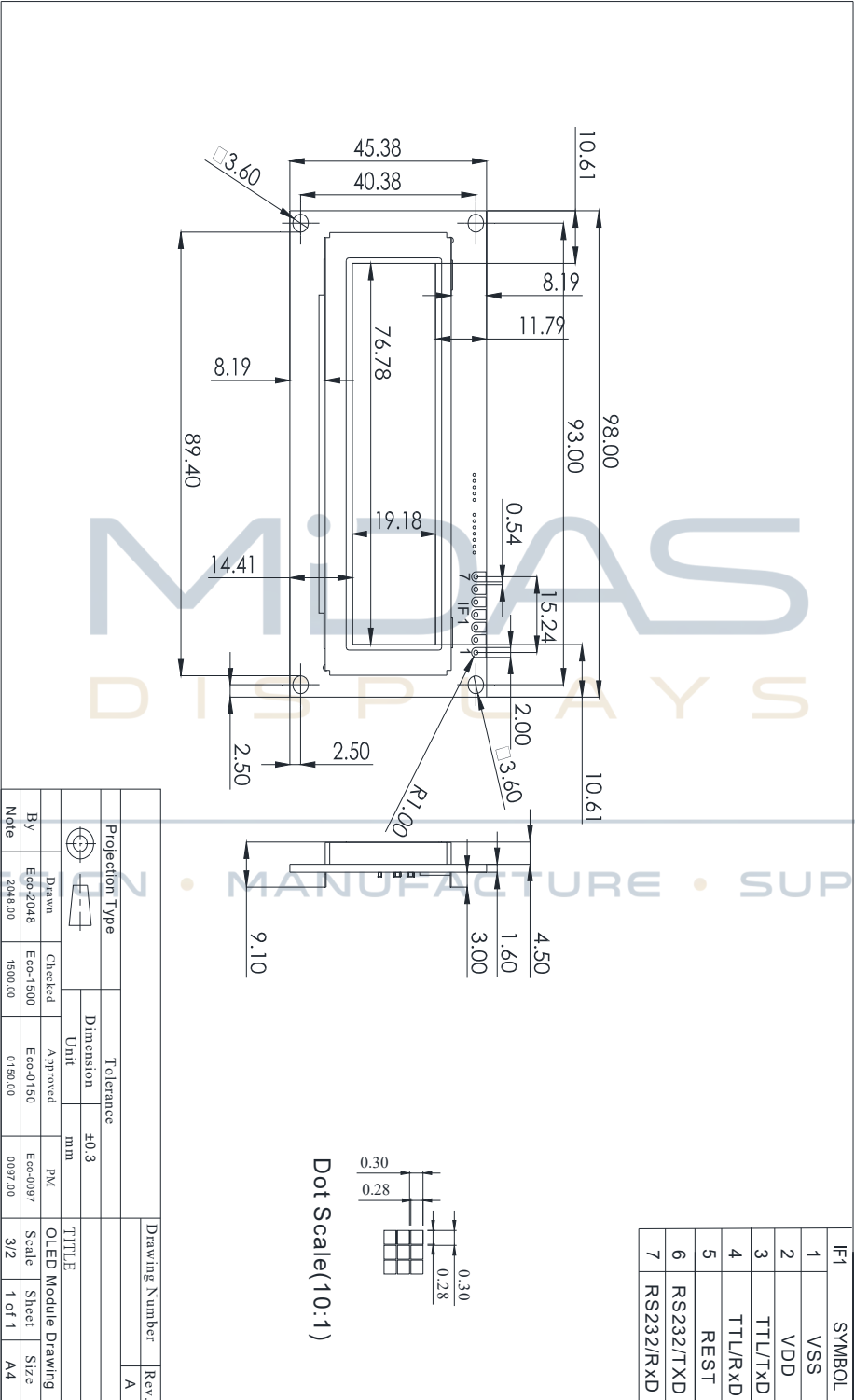
Item	Description	
Inch	3.12"	
Color	White	
Active Area	76.78(W)×19.18(H)	mm
Module Size	98.00(W)×60.00(H)	mm
Dot Size	0.28(W)×0.28(H)	mm
Dot Pitch	0.30(W)×0.30(H)	mm
Display Format	256×64	
Duty Ratio	1/64	Duty
OLED Driver Controller	SSD1322 or Equivalent	
Built-in MCU	N/A	
Built-in Flash	N/A	
Operation Temperature	-40~85	°C
Storage Temperature	-40~90	°C
Response Time	≤10	us

※Precautions in use of OLED Modules

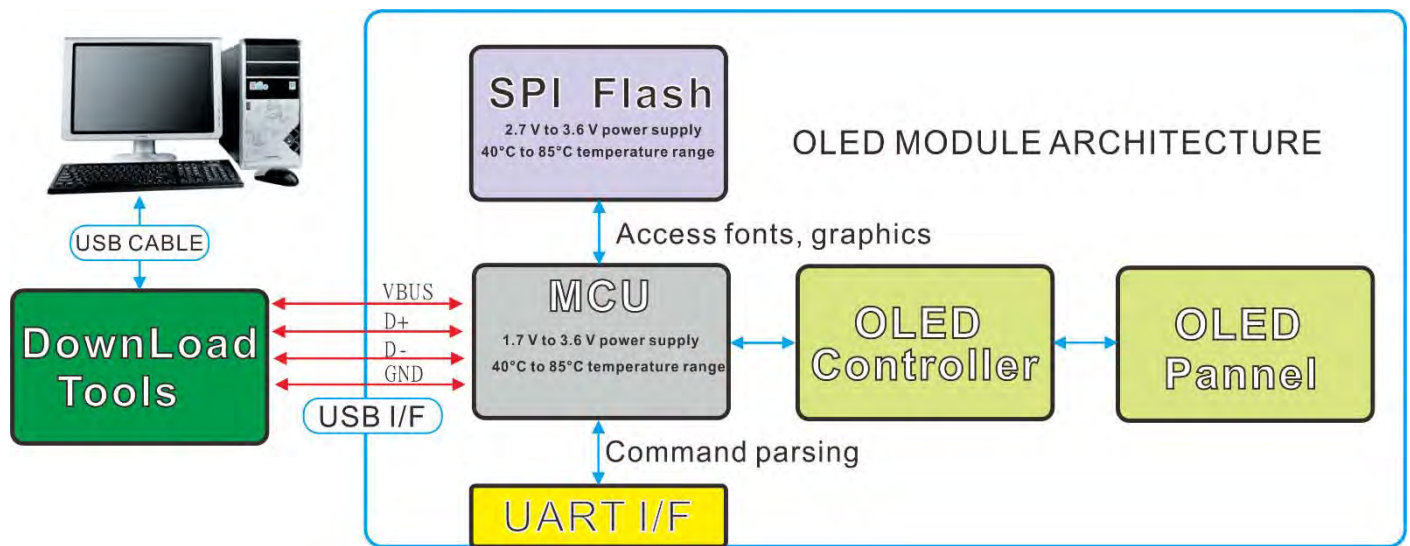
- ① Don't disassemble , drop, bend or twist the OLED Module.
- ② Don't operate it above the absolute maximum rating.
- ③ Don't modify its shape or change the components of OLED module.
- ④ Storage: please storage in anti-static electricity container and clean environment.
- ⑤ MIDAS have the right to change the passive components and PCB Rev.



Mechanical Drawing



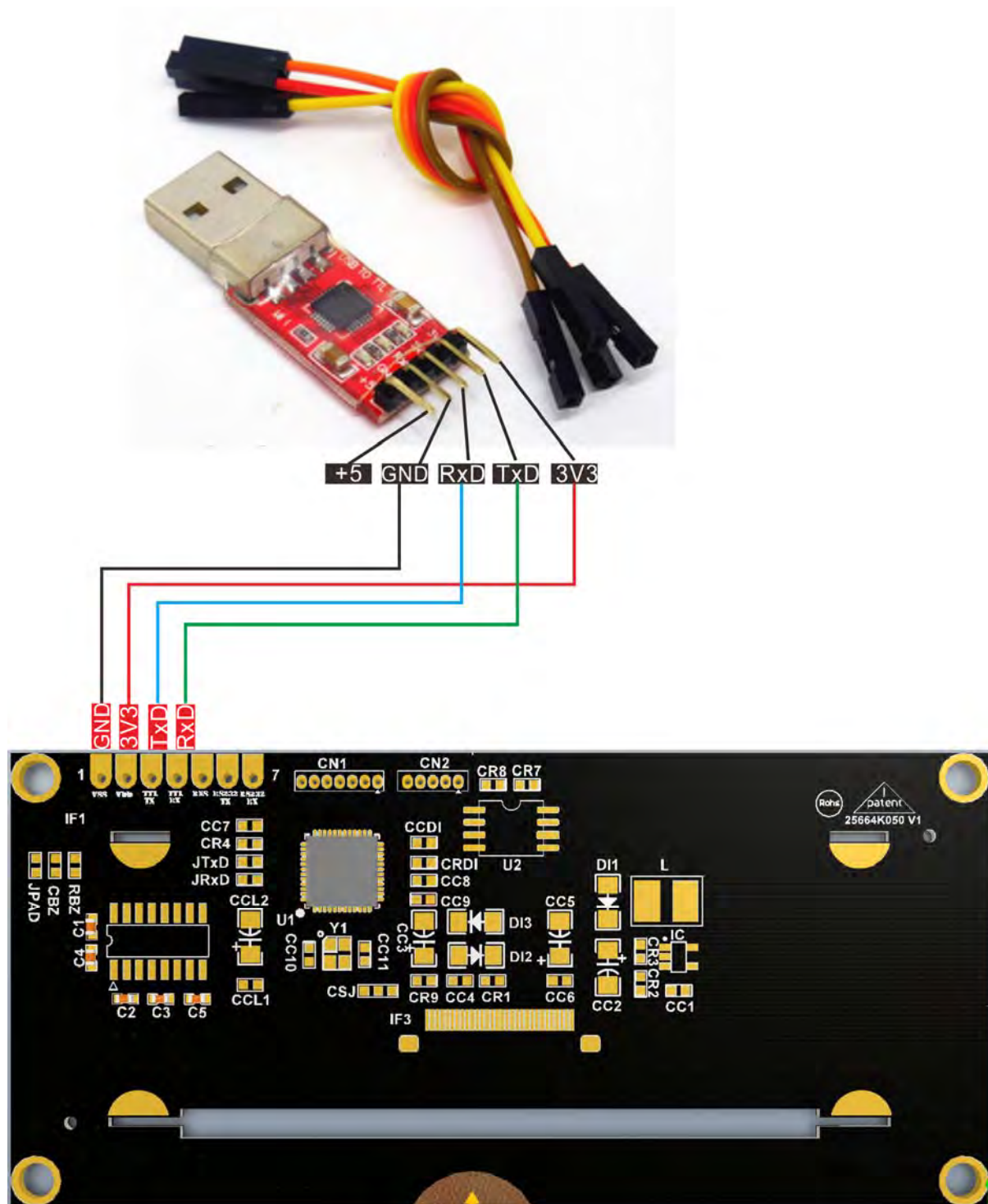
OLED Module architecture



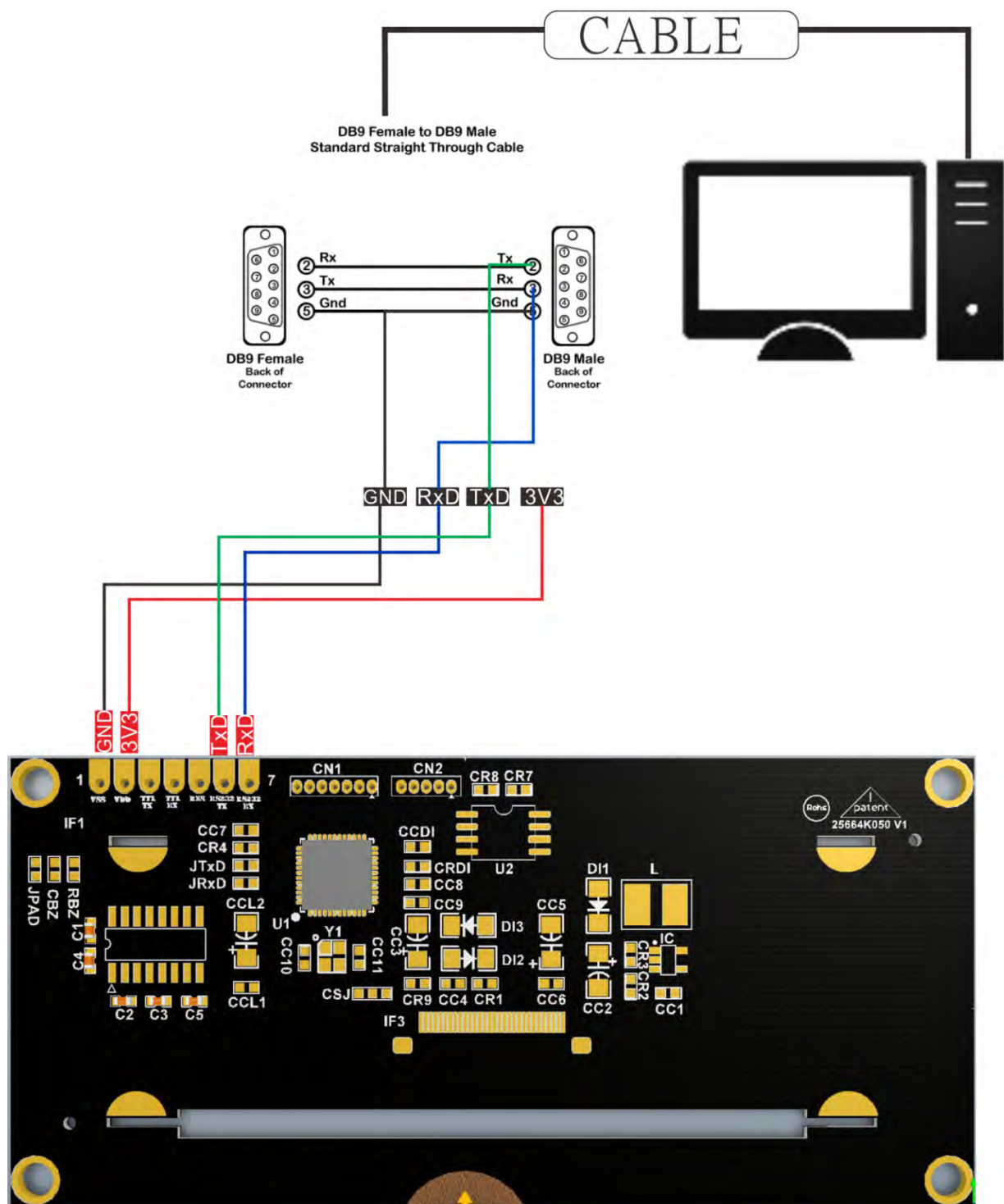
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.TTL RxD/TxD description
Ex.CP2102 Module USB to TTL



.RS232 RxD/TxD description

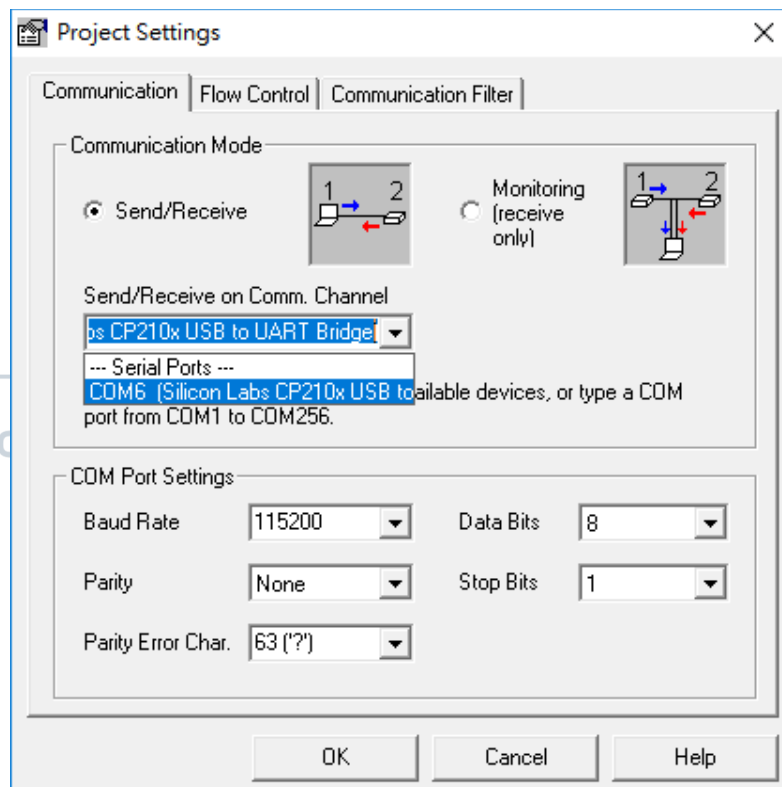
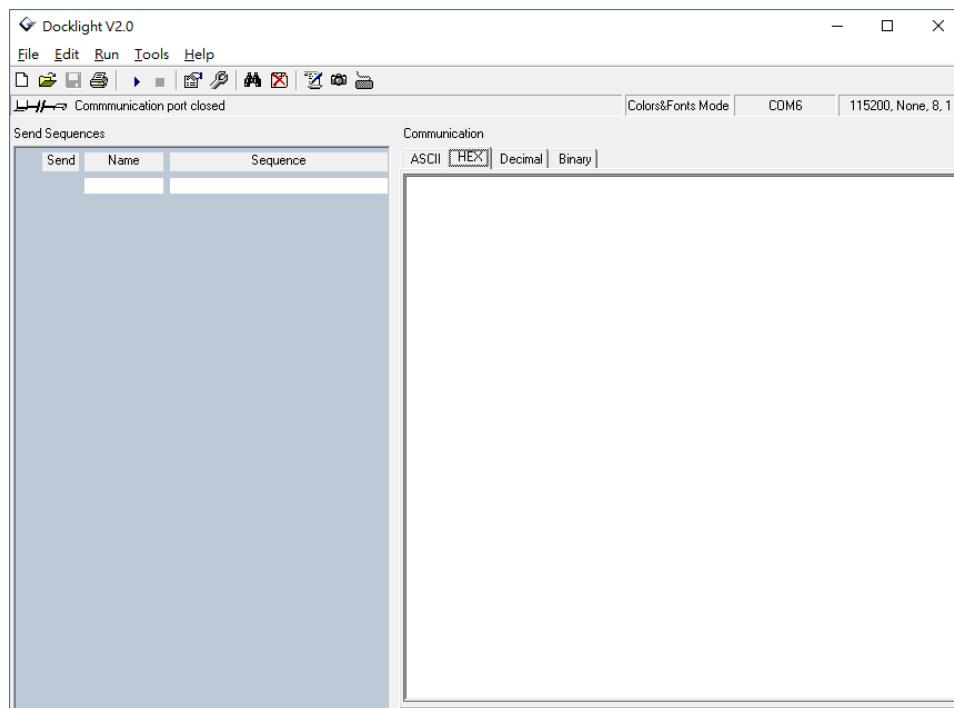


.Commissioning serial port software settings

Ex. Docklight.

(TTL UART) **Baud Rate:57600, Parity:None**

Data Bits:8 , Stop Bits:1



Pin Description

IF2 Interface

Pin No.	Symbol	External	Description
---------	--------	----------	-------------

		Connection	
1	VSS	Power Supply	Ground
2	VDD	Power Supply	Supply Voltage for OLED and logic
3	TxD	MPU	(TTL)Transmitted Data
4	RXD	MPU	(TTL)Received Data
5	Rest	MPU	Rest Signal
6	Rs232TxD	comport	RS232 Transmitted Data
7	Rs232RxD	comport	RS232 Received Data

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DC Characteristics

Item	Symbol	Condition	Min.	Type	Max.	Unit
Supply Voltage for Operation	V _{DD}		2.7	3.0	3.3	Volt
Operating Current	I _{DD}	Note *	-	TBD	-	mA
Sleep Mode Current	I _{DD,SLEEP}		-	TBD	-	μA

Note *: V_{DD} = 3.0V, 50% Display Area Turn on.

.Optical Characteristics

Item	Symbol	Conditions	Min.	Type	Max.	Unit
Brightness	Lbr	With Polarizer (Note *)	-	80(TBD)	-	cd/m ²
C.I.E.	(X)	With Polarizer	0.28	0.32	0.36	
	(Y)		0.29	0.33	0.37	
Dark Room Contrast	CR	-	-	>10000:1	-	
Viewing angle range	-	-	-	Free	-	Degree

* Optical measurement taken at V_{DD} = 3.0V,

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Absolute Maximum rating

Item	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage for Operation	VCI	-0.3	-	3.3	Volt	1,2
Life Time (50 cd/m ²)		---	60,000	---	Hour	

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. Also, for normal operations, it is desirable to use this module under the conditions according to Section "Optics". If this module is used beyond these conditions, malfunctioning of the module can occur and the reliability of the module may deteriorate.

.UART Command Description

Command

1. Clear screen: [A1]

Description:

0 1 2,3 4,5 6,7 8,9 10 11 12

[A1] [Data Length] [X] [Y] [W] [H] [Mode] [CRC16_L] [CRC16_H]

byte[0] Command code: 0xA1

byte[1] Data Length

byte[2:3] X: X coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[4:5] Y: Y coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[6:7] W: W Width => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[8:9] H: H Hight => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[10] Mode: 0x00 Clear screen

0x01 Clear X,Y,W,H Designated area



byte[11:12] CRC16: CRC16_L+CRC16_H

***Note1. CRC-16 calculation**

```
// =====
```

```
Unsigned int crc_chk(unsigned char* data, unsigned char length)
```

```
{  
int j;  
unsigned int reg_crc=0xFFFF;  
while(length--)  
{  
reg_crc ^= *data++;  
for(j=0;j<8;j++)  
{  
if(reg_crc & 0x01) /* LSB(b0)=1 */  
reg_crc=(reg_crc>>1) ^ 0xA001;  
else  
reg_crc=reg_crc >>1;  
}  
} return reg_crc;  
}
```

```
//=====
```

Mode:[0] Clear screen

Command	Data length	X	Y	Width	Hight	Mode	CRC16
A1	9	0	0	255	63	0	*Note1.

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Ex.

0xA1 0x09 0x00 0x00 0x00 0x00 0xFF 0x00 0x3F 0x00 0x00 0xF4
0x2D

Mode:[1] Clear X,Y,W,H Designated area

Command	Data length	X	Y	Width	Hight	Mode	CRC16
A1	9	0	0	255	63	0	*Note1.

Ex.

A1 09 00 00 00 00 FF 00 3F 00 01 35 ED



2. Set Contrast: [A2]

Description:

0 1 2 3 4 5 6
[A2] [Data Length] [Star brightness] [End brightness] [Intervals] [CRC16_L]
[CRC16_H]

byte[0] Command code: 0xA2

byte[1] Data Length

byte[2] Star brightness

byte[3] End brightness

byte[4] Intervals: Time interval of each stage.

When for adjusting brightness, fade (fade-out), each stage of the delay time.

byte[5:6] CRC16: CRC16_L+CRC16_H

Command	Data length	StarBright ness	EndBright ness	Intervals	CRC16
A2	3	1	255	10	*Note1.

Ex.

A2 03 01 FF 0A 4D AA

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3. Power Switch: [A3]

Description:

0 1 2 3 4
[A3] [Data Length] [Switch] [CRC16_L] [CRC16_H]

byte[0] Command code: 0xA3

byte[1] Data Length

byte[1] Switch

0x00: OFF

0x01: ON

byte[3:4] CRC16: CRC16_L+CRC16_H

Switch[0];Power OFF

Command	Data length	Switch	CRC16
---------	-------------	--------	-------

A3	1	0	*Note1.
----	---	---	----------------

Ex.

A3 01 00 80 72

Switch[1];Power ON

Command	Data length	Switch	CRC16
A3	1	1	*Note1.

Ex.

A3 01 01 41 B2

4. GRAPHIC DISPLAY: [B1]

Description:

0 1 2,3 4,5 6,7 8 9 10

[B1] [Data Length] [X] [Y] [Graphic Code Value] [Mode] [CRC16_L] [CRC16_H]

byte[0] Command code: 0xB1

byte[1] Data Length

byte[2:3] X: X coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[4:5] Y: Y coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[6:7] Graphic Code Value (Graphic store address code) =>

byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[8] Mode:

0x00: (overlapping)

0x01: (cover)

byte[9:10] CRC16: CRC16_L+CRC16_H

Mode[0]:overlapping

Graphic code value[1]:First Graphic

Command	Data length	X	Y	Graphic code value	Mode	CRC16
---------	-------------	---	---	--------------------	------	-------

B1	7	0	0	1	0	*Note1.
----	---	---	---	---	---	----------------

Ex.

B1 07 00 00 00 01 00 00 22 81

Mode[1]:cover

Graphic code value[1]:First Graphic

Command	Data length	X	Y	Graphic code value	Mode	CRC16
B1	7	0	0	1	1	*Note1.

Ex.

B1 07 00 00 00 01 00 01 E3 41

5. Character Display: [C1]

Description:

0 1 2,3 4,5 6,7 8 ...N N+1 N+2

[C1] [Data Length] [X] [Y] [Font] {[chr0], [chr1], [chr2]...[chrN]} [CRC16_L]

[CRC16_H]

byte[0] Command code: 0xC1

byte[1] Data Length

byte[2:3] X: X coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[4:5] Y: Y coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[6:7] Font: Font size index (*Font Table)

byte[8...] {[chr0], [chr1], [chr2]...[chrN], [00]}: Text content, 0x00: String end code

byte[N+1:N+2] CRC16: CRC16_L+CRC16_H

Command	Data length	X	Y	Font	Text content	CRC16
C1	1F	0	0	25	"MIDAS"	*Note1.

Ex. C1 0B 00 00 00 00 19 00 50 49 54 45 4B 88 56

6. Character scroll display: [C2]

Description:

0 1 2 3,4 5,6 7,8 9 10 11...N N+1
N+2 N+2

[C1] [Data Length][Windows ID] [X] [Y] [Font] [Move][Speed]{[chr0], [chr1],

[chr2]...[chrN]} [CRC16_L] [CRC16_H]

byte[0] Command code: 0xC2

byte[1] Data Length

byte[2] Windows ID: Can set (0~3) a total of four mobile text blocks

byte[3:4] X: X coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[5:6] Y: Y coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[7:8] Font: Font size index (*Font Table1&2,Page20-21.)

byte[9] Move: Right to left

byte[10] Speed: Text movement speed; 0~100 steps

byte[11...] {[chr0], [chr1], [chr2]...[chrN], [00]}: Text content, 0x00: String end code

byte[N+1:N+2] CRC16: CRC16_L+CRC16_H

Command	Data length	X	Y	Font	Move	Speed	Text content	CRC16
C2	0F	0	0	25	0	0	"MIDAS"	*Note1 .

Ex. C2 0F 00 00 00 00 00 19 00 00 00 50 49 54 45 4B FF B3 A9

(Text removal)

Ex. : C2 0A 00 00 00 00 00 00 00 00 00 00 BF 5C

7. Blinking character: [C3]

Description:

0 1 2 3,4 5,6 7,8 9 10 11...N N+1

N+2 N+2

[C1] [Data Length][Windows ID] [X] [Y] [Font] [Type][Time]{[chr0], [chr1],

[chr2]...[chrN]} [CRC16_L] [CRC16_H]

byte[0] Command code: 0xC2

byte[1] Data Length

byte[2] Windows ID: Can set (0~3) a total of four mobile text blocks

byte[3:4] X: X coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[5:6] Y: Y coordinate => byte[LowByte:HiByte] => (uint16_t)(Little Endian)

byte[7:8] Font: Font size index (*Font Table1&2,Page20-21.)

byte[9] Type: Blinking Type Set;

0x00 Flashes foreground and background

0x01 Flashing foreground and background (black)

0x02 Flashing foreground and background (white)

byte[10] Time: Flashing interval;0~2000 steps

byte[11...] {[chr0], [chr1], [chr2]...[chrN], [00]}: Text content, 0x00: String end code

byte[N+1:N+2] CRC16: CRC16_L+CRC16_H

Comma nd	Data length	X	Y	Font	Type	Time	Text content	CRC16
C3	09	0	0	25	0	0	"MIDAS"	*Note1

Ex. C3 09 00 00 00 00 00 00 00 01 2C 25 C1

(Unblink)

Ex. C3 0B 00 00 00 00 00 00 00 00 00 00 00 E2 F2

8. Check Busy: [55]

0 1 2 3
[55] [Data Length] [CRC16_L] [CRC16_H]

Comma	Data	CRC16
-------	------	-------

nd	length	
55	0	*Note1 .

Ex.55 00 3E E0

Response data packet

Command	Data length	Respond	Panel size	CRC16
55	3	0	03 12	*Note1.

Ex.55 03 00 03 12 A8 B5

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FONT TABE 1.

Character set	Font Table	Character Size	ASCII characters Full width characters	Typeface	FONT Index Index coding
CODE PAGE	Japanese characters Shift-JIS CODE PAGE 932	8x16	190	明體	0
		16x16	7109		
	Traditional characters BIG-5 CODE PAGE 950	24x24	190	明體	1
		24x24	7109		
	Simplified characters Gb2312 CODE PAGE 936	8x16	128	細明體	2
		16x16	13054		
ASCII character set		12x24	128	細明體	3
		24x24	13054		
		8x16	96	standard	4
		16x16	8178		
		12x24	96	standard	5
		24x24	8178		
	ASCII	4x6	256	1bpp standard	8
	ASCII	5x8	256	1bpp standard	9
	ASCII	5x12	256	1bpp standard	10
	ASCII	6x8	256	1bpp standard	11
	ASCII	6x10	256	1bpp standard	12
	ASCII	7x12	256	1bpp standard	13
	ASCII	8x8	256	1bpp standard	14
	ASCII	8x12	256	cyrillic	15
	ASCII	8x12	256	1bpp standard	16
	ASCII	8x14	256	1bpp standard	17
	ASCII	8x15	256	1bpp standard	18
	ASCII	10x16	256	1bpp standard	19
	ASCII	12x16	256	1bpp standard	20
	ASCII	12x20	256	1bpp standard	21
	ASCII	16x26	256	1bpp standard	22
	ASCII	22x36	256	1bpp standard	23
	ASCII	24x40	256	1bpp standard	24
	ASCII	32x53	256	1bpp standard	25



FONT TABE 2.

ASCII characters	ASCII	Unequal width Height12	96	4bpp Gray font Arial	26
	ASCII	Unequal width Height14	96	4bpp Gray font Arial	27
	ASCII	Unequal width Height16	96	4bpp Gray font Arial	28
	ASCII	Unequal width Height20	96	4bpp Gray font Arial	29
	ASCII	Unequal width Height24	96	4bpp Gray font Arial	30
	ASCII	Unequal width Height32	96	4bpp Gray font Arial	31
	ASCII	Unequal width Height40	96	4bpp Gray font Arial	32
	ASCII	Unequal width Height48	96	4bpp Gray font Arial	33
ASCII characters	ASCII	Width20 Height20	96	4bpp Gray font LED	34
	ASCII	Width35 Height32	96	4bpp Gray font LED	35
	ASCII	Width35 Height48	96	4bpp Gray font LED	36
ASCII characters	ASCII	Unequal width Height16	96	4bpp Gray font Square	37
	ASCII	Unequal width Height20	96	4bpp Gray font Square	38
	ASCII	Unequal width Height24	96	4bpp Gray font Square	39
	ASCII	Unequal width Height32	96	4bpp Gray font Square	40
	ASCII	Unequal width Height40	96	4bpp Gray font Square	41
	ASCII	Unequal width Height52	96	4bpp Gray font Square	42
ASCII characters	ASCII	Unequal width Height12	224	2bppGray font Droid Sans	43
	ASCII	Unequal width Height16	224	2bppGray font Droid Sans	44
	ASCII	Unequal width Height20	224	2bppGray font Droid Sans	45
	ASCII	Unequal width Height24	224	2bppGray font Droid Sans	46
	ASCII	Unequal width Height32	224	2bppGray font Droid Sans	47
	ASCII	Unequal width Height48	224	2bppGray font Droid Sans	48
	ASCII	Unequal width Height64	224	2bppGray font Droid Sans	49



Font style sheet

Arial font 96 words

0000																
0010																
0020		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0030	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0040	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0050	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
0060	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0070	p	q	r	s	t	u	v	w	x	y	z	{		}	~	

LED font 96 words

0000																
0010																
0020		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0030	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0040	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0050	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
0060	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0070	p	q	r	s	t	u	v	w	x	y	z	{		}	~	

Square font 96 words

0000																
0010																
0020		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0030	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0040	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0050	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
0060	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0070	p	q	r	s	t	u	v	w	x	y	z	{		}	~	

Droid Sans font 224 words

0000																
0010																
0020		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0030	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0040	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0050	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
0060	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0070	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
0080	À	á	Â	ã	Ä	å	Č	ć	Č	č	Č	č	Č	č	Đ	đ
0090	Ð	đ	Ē	ē	Ē	ē	Ē	ē	Ē	ē	Ē	ē	Ē	ē	Ē	ē
00A0		ı	ç	£	¤	¥	ı	š	ı	©	ª	«	¬	-	®	
00B0	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
00C0	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
00D0	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
00E0	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï