GU256X128C-3900
GU256X128C-3900B
Comparison Chart

DOCUMENT NO. : **E-M-0044-00**
DATE OF ISSUE : **April 15, 2011**
REVISION :
PUBLISHED BY : **Noritake Co., Inc.**

Noritake Co., Inc.

2635 Clearbrook Drive
Arlington Height, IL 60005
www.noritake-elec.com
Phone: (800) 779 – 5846
Fax: (847) 593 – 2285

East Coast

New Jersey
(888) 296 – 3423

Midwest, Canada, and Mexico

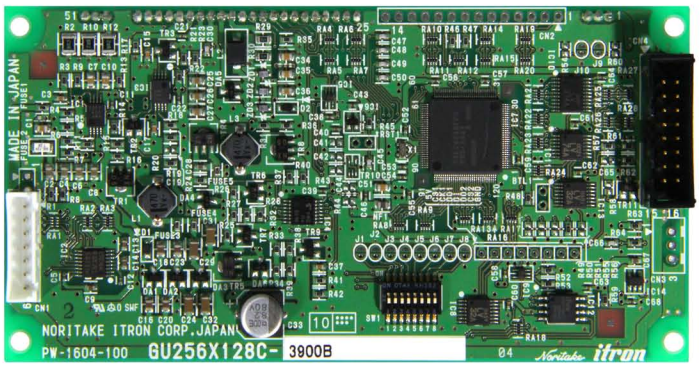
Chicago
(800) 779 – 5846

West Coast

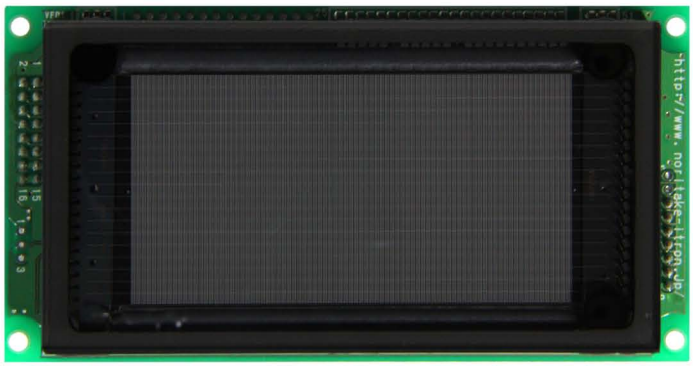
LA
(888) 795 – 3423

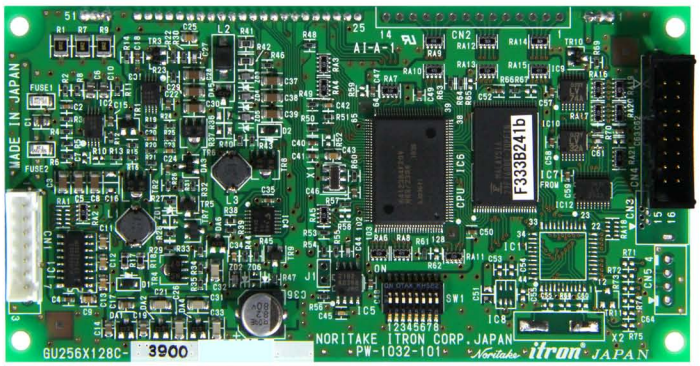
GU256X128C-3900 GU256X128C-3900B comparison chart
E-M-0044-00

Noritake Co., Inc., 2635 Clearbrook Drive, Arlington Heights, IL 60005, USA.



GU256X128C-3900B





GU256X128C-3900

images are reference only and are not actual size

Comparison Chart of VFD module

Keynote

Changed		GU256X128C-3900	* Replacement Item GU256X128C-3900B
Absolute Maximum	Power Supply Voltage	-0.3 to +6.0 V	Same as left
	Logic Supply Voltage - Parallel	-0.3 to Vcc+0.3 V	
	Logic Supply Voltage - Serial	-25 to +25 V	
	Logic Supply Voltage - I/O Port	-0.3 to Vcc+0.3 V	
Electrical Rating	Power Supply	5V +/- 5%	Same as left
Electrical Characteristics (Parallel - CMOS level)	Input Current	IplH: Max 1.0 µA IplL: Max -200 µA	Same as left
	Input Voltage	VplH: 0.8Vcc to Vcc VplL: 0 to 0.2Vcc	
	Output Voltage	VpOH: 3.5 to Vcc (IOH=-10µA) VpOL: 0 to 0.6 V (IOL=4mA)	
Electrical Characteristics (Serial - RS232 level)	Input Voltage	VslH: 3 to 15 V VslL: -15 to -3 V	Same as left
	Output Voltage	VsOH: Min. 5 V (RL=3KΩ) VsOL: Max. -5 V	
	Input Impedence	3 to 7 KΩ	
Electrical Characteristics (General Purpose I/O Ports)	Input Current	IiIH: Max. 1 µA IiIL: Max. -200 µA	Same as left
	Input Voltage - Port 0	ViIH: 2.0 to Vcc ViIL: 0 to 0.8 V	ViIH : **4.1 to Vcc** ViIL : 0 to 0.8 V
	Input Voltage - Port 1	ViT-: Min. 1.0 V ViT+ : Max. 0.7 Vcc ViT+ - ViT-: Min. 0.4 V (Schmidt Trigger input)	**ViIH : 4.1 to Vcc** **ViIL : 0 to 0.8 V** (Same as Port 0)
	Output Voltage	ViOH: Min. Vcc-0.6 V (IOH=-200 µA) ViOL: Max. 0.5 V (IOL=1.6 mA)	Same as left
	Output Current (Per 1 terminal)	IiOH: Max. 1.5 mA IiOL: Max. 8 mA	
	Output Current (Per Sum of all I/Oterminal)	IiOH: Max. 8 mA IiOL: Max. 30 mA	
Power Supply	Power Supply Current 1 (All dots ON)	Typical: 0.85 A Max: 1.1 A	Same as left
	Power Supply Current 2 (All dots OFF)	Typical: 0.68 A Max: 0.89 A	
	Power Supply Current 3 (Display power OFF)	Typical: 80 mA Max: 120 mA	Typical: **70 mA** Max: 120 mA
	Power Consumption (All dots ON)	Typical: 4.25 W Max: 5.5 W	Same as left
Optical Specification	Number of dots	32,768 (256 X 128)	Same as left
	Display Area	83.08 mm x 41.48 mm	
	Dot size	0.225 mm x 0.225 mm	
	Dot pitch	0.325 mm x 0.325 mm	
	Color & Brightness	Blue Green, 250 cd/m2 Min (500 cd/m2 Typ.)	
Environmental Condition	Operating Temp.	-40 to + 85 Deg C	Same as left
	Storage Temp.	-40 to + 85 Deg C	
	Operating humidity	20 to 80 % RH	
	Vibration	10 ~ 55 ~ 10 Hz (Frequency) 1.0 mm (Total Amplitude) 30 min (Duration) X, Y, Z each direction	
	Shock	392 m/S^2 9 mS	
Interface	Type of interface	8 Bit Parallel (C-MOS) Serial (RS-232) General Purpose I/O Port (GPIO)	Same as left
	Serial (RS-232) Buffer Memory	Receive Buffer = 256 bytes Transmit Buffer = 128 bytes	
	RS-232 Communication Setting	Baud Rate 1: 38.4K bps (Default) Baud Rate 2: 19.2K bps Data Bit: 8 Start/Stop Bit: 1 Parity: None	Baud Rate 1: 38.4K bps (Default) Baud Rate 2: 19.2K bps **Baud Rate 3: 4,800 bps** **Baud Rate 4: 9,600 bps** **Baud Rate 5: 57.6K bps** **Baud Rate 6: 115K bps** Data Bit: 8 Start/Stop Bit: 1 Parity Setting 1: None (Default) **Parity Setting 2: Even** **Parity Setting 3: Odd**
	Timing	-	**Compatible**

Comparison Chart of VFD module

Keynote

Changed

* Replacement Item

		GU256X128C-3900	GU256X128C-3900B
External Setting	Dip Switch	1 - 4: Display address select 5: Baud rate select 6: Command mode select 7: Operating mode select 8: Protocol select	1 - 4: Display address select **5: RS-232 interface setting** 6: Command mode select 7: Operating mode select 8: Protocol select
Memory	Display Memory	8,192 bytes (512X128 dots)	Same as left
	Bit Image Memory - RAM	1,028 bytes	**4,096 bytes**
	Bit Image Memory - FROM	32,768 bytes	Same as left
	Bit Image Memory - FROM Extension	262,144 bytes	
	Macro Memory - RAM	256 bytes	**16K bytes**
	Macro Memory - FROM	16K bytes (4K X 4 Channels)	Same as left
	General Purpose Memory - RAM	N/A	**1,024 bytes**
	General Purpose Memory - FROM	N/A	**64K bytes (4K X 16 Channels)**
Character	Available Caharacter Codes (Font Size)	ASCII + International (6x8, 8x16, 16x32) Japanese Kanji (16x16) Simplified Chinese (16x16) Traditional Chinese (16x16) Korean (16x16)	ASCII + International (6x8, 8x16, **12x24,** 16x32) Japanese Kanji (16x16, **32x32**) Simplified Chinese (16x16) Traditional Chinese (16x16) Korean (16x16)
	User Definable Font - RAM	Up to 16 Words Available Font Size 1 byte code: 6x8, 8x16 2 bytes code: 16x16	Up to 16 Words Available Font Size 1 byte code: 6x8, 8x16,**12x24,** 16x32 2 bytes code: 16x16, **32x32**
	User Definable Font - FROM	Up to 128 Words for 1 byte characters Available Font Size: 6x8, 8x16, 16x32 Up to 16 Words for 2 bytes characters Available Font Size: 16x16	Up to 128 Words for 1 byte characters Available Font Size: 6x8, 8x16,**12x24,** 16x32 Up to 16 Words for 2 bytes characters Available Font Size: 16x16, **32x32**
Function	Commands	**See Command Comparison Chart**	
Mechanical Dimension	Outline	131.0 mm +/- 0.4 mm x 66.0 mm +/-0.7 mm	Same as left
	Mounting Holes	Horizontally : 125.0 mm +/- 0.35 mm Vertically : 58.0 mm +/- 0.30 mm	
	VFD Height	12.9 mm +/- 1.0 mm (from the surface of PCB)	
	Parts (components) Height	Max. 10 mm (from the surface of PCB)	

Document Referenced:

GU256X128C-3xxx hardware spec. Rev.00 (Date: 10/1/10)
GU256X128dot-39xx software spec. Rev.03 (Date: 1/16/09)
GU256X128C-3900b hardware spec. Rev. 02 (Date: 03/03/11)
GU-3900B series "General Function" Software Specification (Date: 10/27/10)

Command Comparison Chart

Key note

Changed Parameter
Added Command(s)

	Command name	Available In	
		GU-3900	GU-3900B
Character Code	Character display	Yes	Yes
Control Code	Back Space	Yes	Yes
	Horizontal Tab	Yes	Yes
	Line feed	Yes	Yes
	Home Position	Yes	Yes
	Carriage Return	Yes	Yes
	Display Clear	Yes	Yes
	Line Clear	-	Yes
	Line end clear	-	Yes
General Setting Commands	Brightness level setting	Yes	Yes
	Initialize Display	Yes	Yes
	Cursor Set	Yes	Yes
	Cursor display	Yes	Yes
Character Display Setting Commands	Write screen mode select	Yes	Yes
	International font set	Yes	Yes
	Character Table type	Yes	Yes
	Over-Write mode	Yes	Yes
	Vertical Scroll mode	Yes	Yes
	Horizontal Scroll mode	Yes	Yes
	Horizontal scroll mode Scroll ON	-	Yes
	Horizontal Scroll speed	Yes	Yes
	Font size select	Yes	Yes
	2-byte Character	Yes	Yes
	2-byte character type	Yes	Yes
	Font width	-	Yes
	FROM extended font	-	Yes
	Font magnification	Yes	Yes
	Bold character	Yes	Yes
Display Action Setting Commands	Wait	Yes	Yes
	Short Wait	Yes	Yes
	Scroll display action	Yes	Yes
	Blink	Yes	Yes
	Curtain display action	Yes	Yes
	Spring display action	Yes	Yes
	Random display action	Yes	Yes
	Display Power ON/OFF	Yes	
	Display Power ON/OFF + AUTO-OFF	-	Yes
	Display power auto-OFF time	-	Yes
Bit Image Display Setting Commands	Dot drawing	Yes	Yes
	Line/Box pattern drawing	Yes	Yes
	Dot unit downloaded bit image display	-	Yes
	Dot unit real-time bit image display	-	Yes
	Dot unit character display	-	Yes
	Real-time bit image display	Yes	Yes
	RAM bit image definition	Yes	Yes
	F-ROM bit image definition	Yes	Yes
	Download bit image display	Yes	Yes
	Downloaded bit image scroll display	Yes	Yes

Command Comparison Chart

Key note

Changed Parameter
Added Command(s)

	Command name	Available In	
		GU-3900	GU-3900B
General Display Setting Commands	Horizontal scroll display quality select	Yes	Yes
	Reverse display	Yes	Yes
	Write mixture display mode	Yes	Yes
Window Display Setting Commands	Window select	Yes	Yes
	User Window definition or cancel	Yes	Yes
Download Character Setting Commands	Download character ON/OFF	Yes	Yes
	Download character definition	Yes	Yes
	Download character delete	Yes	Yes
	16x16 Downloaded character definition	Yes	Yes
	16x16 Downloaded character delete	Yes	Yes
	32x32 Download character defintion	-	Yes
	32x32 Downloaded character delete	-	Yes
	Download character save	Yes	Yes
	Download character restore	Yes	Yes
	FROM user font defintion	Yes	Yes
	FROM extension font defintion	-	Yes
User Setup Mode Setting Commands	User-Set up mode start	Yes	Yes
	User-Set up mode end	Yes	Yes
General-Purpose I/O Port Control Commands	I/O ports "input/output" setting	Yes	Yes
	I/O port Output	Yes	Yes
	I/O port Input	Yes	Yes
Macro Setting Commands	RAM macro define/delete	Yes	Yes
	FROM macro define/delete	Yes	Yes
	Macro execution	Yes	Yes
	Macro end condition	-	Yes
Other Setting Commands	Memory SW setting	Yes	Yes
	Memory SW data send	Yes	Yes
	General-purpose memory store	-	Yes
	General-purpose memory transfer	-	Yes
	General-purpose memory send	-	Yes
	Display status send	Yes	Yes
	RS-232 serial settings	-	Yes
	Memory re-write mode	Yes	Yes
DMA Mode	Bit image write	Yes	Yes
	BOX Area Bit Image Write	Yes	Yes
	Display start address	Yes	Yes
	Display synchronous	Yes	Yes
	Brightness level	Yes	Yes

Command Code Comparison Chart

Key note

Changed Parameter
Added Command(s)

Command name	Available In		Code - Hex value																				
	GU-3900	GU-3900B	1st byte	2nd byte	3rd byte	4th byte	5th byte	6th byte	7th byte	8th byte	9th byte	10th byte	11th byte	12th byte	13th byte	14th byte	15th byte	16th byte	17th byte	18th byte	19th byte	20th byte	21th byte	22th byte	23th byte
Character display	Yes	Yes	20 to FF																						
Back Space	Yes	Yes	08																						
Horizontal Tab	Yes	Yes	09																						
Line feed	Yes	Yes	0A																						
Home Position	Yes	Yes	0B																						
Carriage Return	Yes	Yes	0D																						
Display Clear	Yes	Yes	0C																						
Line Clear		Yes	18																						
Line end clear		Yes	19																						
Brightness level setting	Yes	Yes	1F	58	n	(n=0 to 4 and 10h to 18h / 0=0%, 1=25%, 2=50%, 3=75%, 4=100%, 10h=0%, 11h=12.5%, 12h=25%,,, 18h=100%)																			
Initialize Display	Yes	Yes	1B	40																					
Cursor Set	Yes	Yes	1F	24	xL	xH	yL	yH																	
Cursor display	Yes	Yes	1F	43	n																				
Write screen mode select	Yes	Yes	1F	28	77	10	a																		
International font set	Yes	Yes	1B	52	n																				
Character Table type	Yes	Yes	1B	74	n																				
Over-Write mode	Yes	Yes	1F	01																					
Vertical Scroll mode	Yes	Yes	1F	02																					
Horizontal Scroll mode	Yes	Yes	1F	03																					
Horizontal scroll mode Scroll ON		Yes	1F	05																					
Horizontal Scroll speed	Yes	Yes	1F	73	n																				
Font size select	Yes		1F	28	67	01	m	(m=1,2,4 / 1="6X8", 2="8X16", 4="16X32")																	
		Yes	1F	28	67	01	m	(m=1,2,3,4 / 1="6X8", 2="8X16", 3="12X24", 4="16X32")																	
2-byte Character	Yes	Yes	1F	28	67	02	m	(m=0,1/ 1="Enable 2byte Char mode", 0="Disenable")																	
2-byte character type	Yes	Yes	1F	28	67	03	m	(m=0.1.2.3. / 0="Japanese", 1="Korean", 2="Simplified Chinese" , 3="Traditional Chinese")																	
Font width		Yes	1F	28	67	04	m	(m=1.2.3.4 / 1="Fixed width", 2="Proportional 1", 3="Proportional 2", 4="Proportional 3")																	
FROM extended font		Yes	1F	28	67	05	n																		
Font magnification	Yes	Yes	1F	28	67	40	x	y																	
Bold character	Yes	Yes	1F	28	67	41	b																		
Wait	Yes	Yes	1F	28	61	01	t	(t= multiples of 0.5sec.)																	
Short Wait	Yes	Yes	1F	28	61	02	t	(t= multiples of time unit. See Time Unit Chart below.)																	
Scroll display action	Yes	Yes	1F	28	61	10	wL	wH	cL	cH	s	(s= multiples of time unit. See Time Unit Chart below.)												
Blink	Yes	Yes	1F	28	61	11	p	t1	t2	c	(t1, t2 = multiples of time unit. See Time Unit Chart below.)													
Curtain display action	Yes	Yes	1F	28	61	12	v	s	p	(s= multiples of time unit. See Time Unit Chart below.)														
Spring display action	Yes	Yes	1F	28	61	13	v	s	pL	pH	(s= multiples of time unit. See Time Unit Chart below.)													
Random display action	Yes	Yes	1F	28	61	14	s	pL	pH	(s= multiples of time unit. See Time Unit Chart below.)														
Display Power ON/OFF	Yes		1F	28	61	40	p	(p=0,1 / 0="Power_OFF", 1="Power_ON")																	
Display Power ON/OFF/auto-off		Yes	1F	28	61	40	p	(p=0,1,10 / 0="Power_OFF", 1="Power_ON", 10="Power_AUTO_OFF")																	
Display power auto-OFF time		Yes	1F	28	61	40	11	t																	
Dot drawing	Yes	Yes	1F	28	64	10	pen	xL	xH	yL	yH														
Line/Box pattern drawing	Yes	Yes	1F	28	64	11	mode	pen	x1L	x1H	y1L	y1H	x2L	x2H	y2L	y2H									
Dot unit downloaded bit image display		Yes	1F	28	64	20	xPL	xPH	yPL	yPH	m	aL	aH	aE	ySL	ySH	xOL	xOH	yOL	yOH	xL	xH	yL	yH	01
Dot unit real-time bit image display		Yes	1F	28	64	21	xPL	xPH	yPL	yPH	xL	xH	yL	yH	01	d(n)									
Dot unit character display		Yes	1F	28	64	30	xPL	xPH	yPL	yPH	m	bLen	d(n)												
Real-time bit image display	Yes	Yes	1F	28	66	11	xL	xH	yL	yH	01	d(n)													
RAM bit image definition	Yes	Yes	1F	28	66	01	aL	aH	aE	sL	sH	sE	d(n)												
F-ROM bit image definition	Yes	Yes	1F	28	65	10	aL	aH	aE	sL	sH	sE	d(n)												
Download bit image display	Yes	Yes	1F	28	66	10	m	aL	aH	aE	ySL	ySH	xL	xH	yL	yH	01								
Downloaded bit image scroll display	Yes		1F	28	66	90	m	aL	aH	aE	ySL	ySH	xL	xH	yL	yH	01	s	(s= multiples of time unit. See Time Unit Chart below.)						
		Yes	1F	28	66	90	m	aL	aH	aE	ySL	ySH	xL	xH	yL	yH	01	s	(s= multiples of time unit. See Time Unit Chart below.)						
Horizontal scroll display quality select	Yes	Yes	1F	6D	n																				
Reverse display	Yes	Yes	1F	72	n																				
Write mixture display mode	Yes	Yes	1F	77	n																				
Window select	Yes	Yes	1F	28	77	01	a																		
User Window definition or cancel	Yes	Yes	1F	28	77	02	a	b	xPL	xPH	yPL	yPH	xSL	xSH	ySL	ySH									
Download character ON/OFF	Yes	Yes	1B	25	n																				
Download character definition	Yes		1B	26	a	c1	c2	x[n]	(a=1,2, / 1="6X8", 2="8X16")																
		Yes	1B	26	a	c1	c2	x[n]	(a=1,2,3,4 / 1="6X8", 2="8X16", 3="12X24", 4="16X32")																
Download character delete	Yes		1B	3F	a	c	(a=1,2, / 1="6X8", 2="8X16")																		
		Yes	1B	3F	a	c	(a=1,2,3,4 / 1="6X8", 2="8X16", 3="12X24", 4="16X32")																		
16x16 Downloaded character definition	Yes	Yes	1F	28	67	10	c1	c2	d(n)																
16x16 Downloaded character delete	Yes	Yes	1F	28	67	11	c1	c2																	
32x32 Download character defintion		Yes	1F	28	67	14	c1	c2	d(n)																
32x32 Downloaded character delete		Yes	1F	28	67	15	c1	c2																	
Download character save	Yes		1F	28	65	11	a	(a=1,2,3 / 1="6X8", 2="8X16", 3="16X16")																	

Command Code Comparison Chart

Key note

Changed Parameter
Added Command(s)

Command name	Available In		Code - Hex value																				
	GU-3900	GU-3900B	1st byte	2nd byte	3rd byte	4th byte	5th byte	6th byte	7th byte	8th byte	9th byte	10th byte	11th byte	12th byte	13th byte	14th byte	15th byte	16th byte	17th byte	18th byte	19th byte	20th byte	21th byte	22th byte	23th byte
		Yes	1F	28	65	11	a	(a=1,2,3,4,5,6 / 1="6X8", 2="8X16", 3="16X16", **4="16X32", 5="32X32", 6="12X24"**)																	
Download character restore	Yes		1F	28	65	21	a	(a=1,2,3 / 1="6X8", 2="8X16", 3="16X16")																	
		Yes	1F	28	65	21	a	(a=1,2,3,4,5,6 / 1="6X8", 2="8X16", 3="16X16", **4="16X32", 5="32X32", 6="12X24"**)																
FROM user font defintion	Yes		1F	28	65	13	m	P(80-1)	P(80-2)	-P(ff-n)	(m=1,2,4 / 1="6X8", 2="8X16", 4="16X32" - 256x32, 256x64, 256x128, 320x32)														
		Yes	1F	28	65	13	m	P(80-1)	P(80-2)	-P(ff-n)	(m=1,2,3,4 / 1="6X8", 2="8X16", **3="12X24"**, 4="16X32")														
FROM extension font defintion		Yes	1F	28	65	15	a	b	p(n)																
User-Set up mode start	Yes	Yes	1F	28	65	01	49	4E																	
User-Set up mode end	Yes	Yes	1F	28	65	02	4F	55	54																
I/O ports "input/output" setting	Yes	Yes	1F	28	70	01	n	a																	
I/O port Output	Yes	Yes	1F	28	70	10	n	a																	
I/O port Input	Yes	Yes	1F	28	70	20	n																		
RAM macro define/delete	Yes	Yes	1F	3A	pL	pH	d(n)																		
FROM macro define/delete	Yes	Yes	1F	28	65	12	a	pL	pH	t1	t2	d(n)	(t1, t2 = multiples of time unit. **See Time Unit Chart below.**)												
Macro execution	Yes	Yes	1F	5E	a	t1	t2	(t1, t2 = multiples of time unit. **See Time Unit Chart below.**)																	
Macro end condition		Yes	1F	28	69	20	a	b	c																
Memory SW setting	Yes	Yes	1F	28	65	03	a	b																	
Memory SW data send	Yes	Yes	1F	28	65	04	a																		
General-purpose memory store		Yes	1F	28	65	18	sL	sH	sE	m1	a1L	a1H	a1E	d(n)											
General-purpose memory transfer		Yes	1F	28	65	19	sL	sH	sE	m1	a1L	a1H	a1E	m2	a2L	a2H	a2E							
General-purpose memory send		Yes	1F	28	65	28	sL	sH	sE	m1	a1L	a1H	a1E												
Display status send	Yes	Yes	1F	28	65	40	a	b	c																
RS-232 serial settings		Yes	1F	28	69	10	a	b		(a=0,1,2,3,4,5,6 \ 4800bps-115200bps b=0,1,2 \ 0: None parity, 1: Even, 2: Odd)															
Memory re-write mode	Yes	Yes	1C	7C	4D	D0	4D	4F	44	45	49	4E													
DMA mode																									
Bit image write	Yes	Yes	02	44	DAD	46	aL	aH	sL	sH	d(n)														
BOX Area Bit Image Write	Yes	Yes	02	44	DAD	42	aL	aH	sXL	sXH	sYL	sYH	d(n)												
Display start address	Yes	Yes	02	44	DAD	53	aL	aH																	
Display synchronous	Yes	Yes	02	44	DAD	57	01																		
Brightness level	Yes	Yes	02	44	DAD	58	n	(n=0 to 4 and 10h to 18h / 0=0%, 1=25%, 2=50%, 3=75%, 4=100%, 10h=0%, 11h=12.5%, 12h=25%,,, 18h=100%)																	

Time Unit Chart	Timing unit +/5%	
Display Screen Resolution	3900	3900B
128x128	N/A	14 ms
256x16	14 ms	14 ms
256x32	14 ms	14 ms
256x64	14 ms	14 ms
256x128	16 ms	15 ms
320x32	14 ms	14 ms
384x32	13 ms	13 ms
512x32	14 ms	14 ms

<- 128x128 is available in 3900B only.

Note: 256x16 does only have 6x8 and 8x16 character mode for 1 byte mode.

Document referenced: GU-3900B series "General Function" Software Specification (Date: 10/27/10)

GU256x128dot-39xx software spec. Rev.03 GU256x32dot-39xx software spec. Rev.02 GU320x32dot-39xx software spec. Rev.02 GU512x32dot-39xx software spec. Rev.02

GU256x16dot-39xx software spec. Rev.02 GU256x64dot-39xx software spec. Rev.02 GU384x32dot-39xx software spec. Rev.02

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Noritake:

GU256X128C-3900 GU256X128C-3900B