Noritake Co. , Inc.
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SCK-Y100-24063-N14

Overview

Model: SCK-Y100-24063-N14

Base model:	CU24063-Y100
Base model Specification No:	DS-1572-0001-01
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General Description

Scope

This overview covers the operating requirements of SCK-Y100-24063-N14.

Features

- 24x6 character display.
- *Connect and send* for easy setup.
- Selective brightness for highlighting significant or interesting detail.
- Built-in international font tables and font style commands.
- UART compatible communications (Inverted logic) and RS-232 voltage level compatible.
- 5 V power supply

Specification

Download link: http://itron.tv/cu24063-y100

Code library

Code library is available for Arduino, AVR Studio 4, Atmel® Studio 6, and Linux written in C++.

Both libraries checks for busy and has settings to compensate for inverted logic when sending under UART protocol.

AVR Studio 4, Atmel® Studio 6, and Linux written in C++.

- CU-Y code library - low level programming with base functionality.
  http://itron.tv/Noritake_VFD_CUY
- Large Text Demo - Change the font size
  http://itron.tv/Noritake_VFD_CUY_MenuDemo

Arduino CU-Y code library with example files

- Arduino CU-Y code library with example files
  http://itron.tv/cuyarduino

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Pin Descriptions

Serial

Table 1. CN2: Serial pin listings (6 pins)

Pin	Name	Description	Direction	If unused…
1	VCC	Power	Input	-
2	SIN	Serial interface data	Input	-
3	GND	Ground	Input	-
4	/SBUSY	Active low, Display busy	Output	-
5	N/C	No connection	-	-
6	/RESET	Active low reset	Input	Tie to VCC

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Parallel

Table 2. CN1: Parallel pin listings (14 pins)

Pin	Name	Name (Alternative)	Description	Direction	If unused…
1	GND		Ground	Input	-
2	VCC		Power	Input	-
3	PBUSY		Display busy	PBUSY: output	-
4	/Reset		Reset	Input	-
5	/WR		Write data	Input	-
6	NC		Not connected	-	-
7	D0		Data	Input / Output	-
8	D1		Data	Input / Output	-
9	D2		Data	Input / Output	-
10	D3		Data	Input / Output	-
11	D4		Data	Input / Output	-
12	D5		Data	Input / Output	-
13	D6		Data	Input / Output	-
14	D7		Data	Input / Output	-

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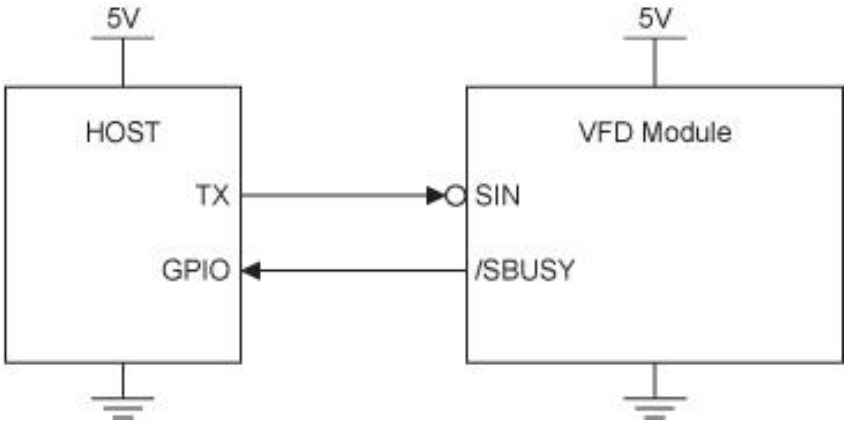
UART compatible Communications (Inverted logic)



Default Setting: 38400, 8, N, 1

Baud rate: 38,400 bps
Data bits: 8 bits
Parity: None
Stop bit: 1

Inverted Logic CMOS Signal Level Compatible

This VFD module supports CMOS signal level but the data needs to be inverted. Start bit is logic high (1) and Stop bit is logic low (0).

Frame Format:

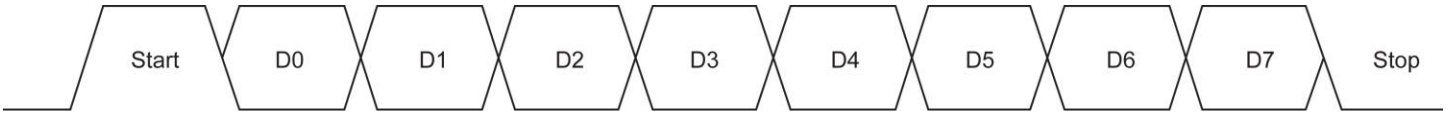


Figure 1. Start bit is logic high (1) and Stop bit is logic low (0)

To send ASCII character “A” 0x41 you would need to send 0xBE:

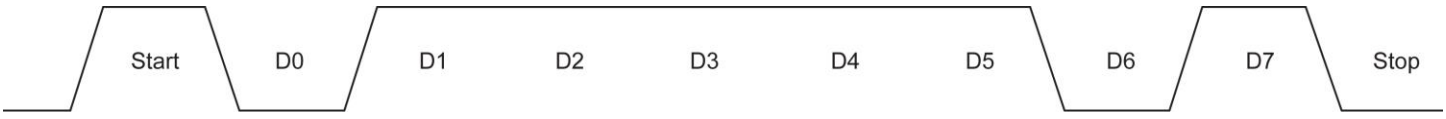


Figure 2. Invert logic. Logic high (1) becomes low (0) and logic low (0) becomes high (1)

RS-232 Voltage Level Compatible

This VFD Module supports voltage level ranging from -15 V up to +15 V.
Input data signal only and does not support RS-232 flow control. For flow control, check the SBUSY signal before sending the data.

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Supported Baud Rates

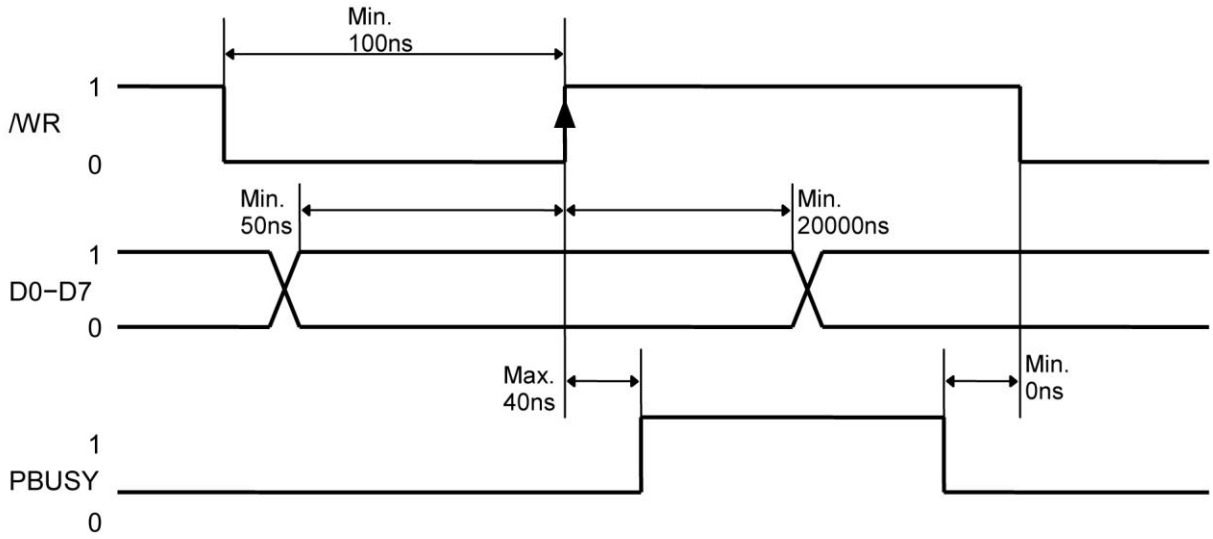
Baud rates can be change by setting the jumper. Refer to *Jumper Settings* for more information.

9,600 bps, 19,200 bps, 38,400 bps, and 115,200 bps

Display Busy Signal - SBUSY

Always check the display SBUSY signal before sending any data. Busy state is logic low (0) and ready state is logic high (1). This VFD Module has 64 bytes of receiving buffer and becomes busy state once the first byte is in the buffer and ready state when the buffer is empty.

8-bit Parallel Interface



Note: Data must be written when PBUSY=0 to prevent data loss.

Jumper settings

Set Baud rate

Table 3. Jumper settings for baud rate

J0	J1	Baud rate
Open	**Open**	38,400 bps (default)
Short	**Open**	19,200 bps
Open	**Short**	9,600 bps
Short	**Short**	115,200 bps

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Specifications

Absolute Maximum Specifications

Symbol	Parameter	Min.	Typ.	Max.	Units
VCC	Supply voltage	+ 4.75	-	5.25	V
VIN	Input Voltage for D0-D7,/WR,/RD, and /RESET pins	-0.3	-	VCC + 0.3	V
VIN	Input Voltage for SIN pin	-20	-	+20	V

CAUTION: Stresses beyond those listed under *Absolute Maximum Specifications* may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or other conditions beyond those indicated in the operational sections of this specification are not implied. Exposure to absolute maximum specification conditions for extended periods may affect device reliability.

Recommended Operating Conditions

Symbol	Parameter	Min.	Typ.	Max.	Units
VCC	Supply voltage	+ 4.75	-	5.25	V
	Operating temperature	-40	-	+85	C
	Storage temperature	-40	-	+85	C

DC Characteristics

Table 4. VCC =5.0 V, Ambient temperature = 25º C

Symbol	Parameter	Min.	Typ.	Max.	Units
VCC	Supply voltage	+ 4.75	-	5.25	V
	Operating temperature	-40	-	+85	C
	Storage temperature	-40	-	+85	C

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Symbol	Parameter		Condition	Min.	Typ.	Max.	Units	Notes
IIL1	Input Low Current	D0-D7, /WR, /RD, and /RESET	VIN = 0 V	-	-	-0.15	mA	
IIH1	Input High Current	D0-D7	VIN = 5 V	-	-	5.0	µA	
IIH2		/WR and /RESET		-	-	0.25	µA	
RIN	Logic Input Resistance	SIN	-	3	-	-	kΩ	
VIL1	Input Low Voltage	D0-D7	-	0	-	0.2VCC	V	
VIL2		/RESET	-	0	-	0.8		
VIL3		SIN	-	-15	-	0.5		
VIH1	Input High Voltage	D0-D7, /WR, and /RESET	-	0.8VCC	-	VCC		
VIH2		SIN	-	3.0	-	+15		
VOL1	Output Low Voltage	PBUSY	-	-	-	0.1		IOH = 50µA
VOL2		/SBUSY	RL=3kΩ	0	-	0.5	V	RL = 3kΩ
VOH1	Output High Voltage	PBUSY	-	VCC-0.1	-	-	V	IOH = -50µA
VOH2		/SBUSY	RL=3kΩ	4.0	-	VCC	V	RL = 3kΩ
ICC1-1	Supply current		Brightness 100%	-	320	400	mA	All dots on
ICC2-1			Brightness 100%	-	260	330	mA	All dots off
ICC1-2			Brightness 200%	-	420	530	mA	All dots on
ICC2-2			Brightness 200%	-	310	390	mA	All dots off
ICC3			Power save mode	-	25	35	mA	
	Power consumption		Brightness 100%	-	1.6	2.0	W	All dots on
			Brightness 200%	-	2.1	2.65	W	All dots on

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CU24063-Y100 VFD Module Dimensions

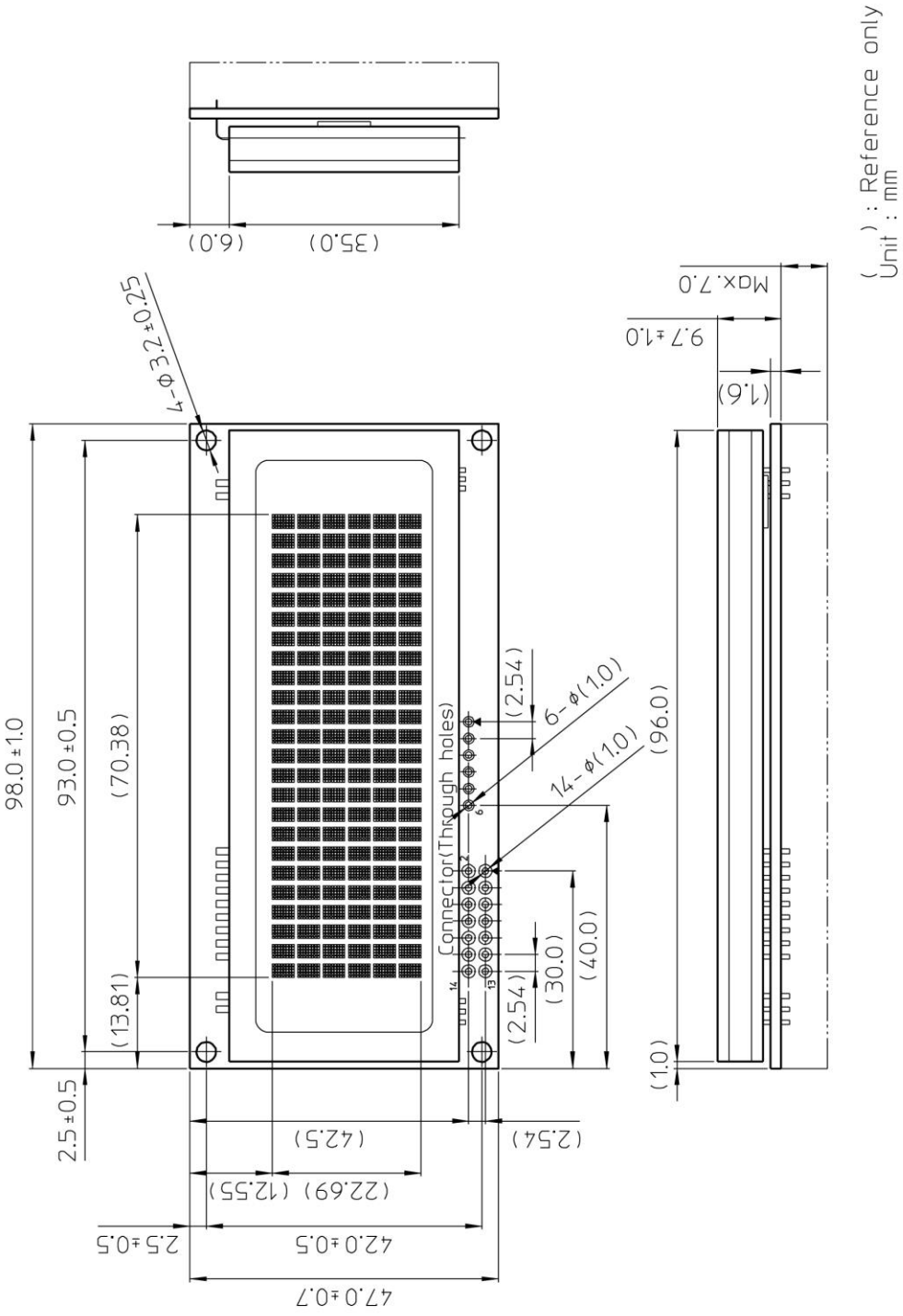

Figure 1. CU24063-Y100 Dimensions