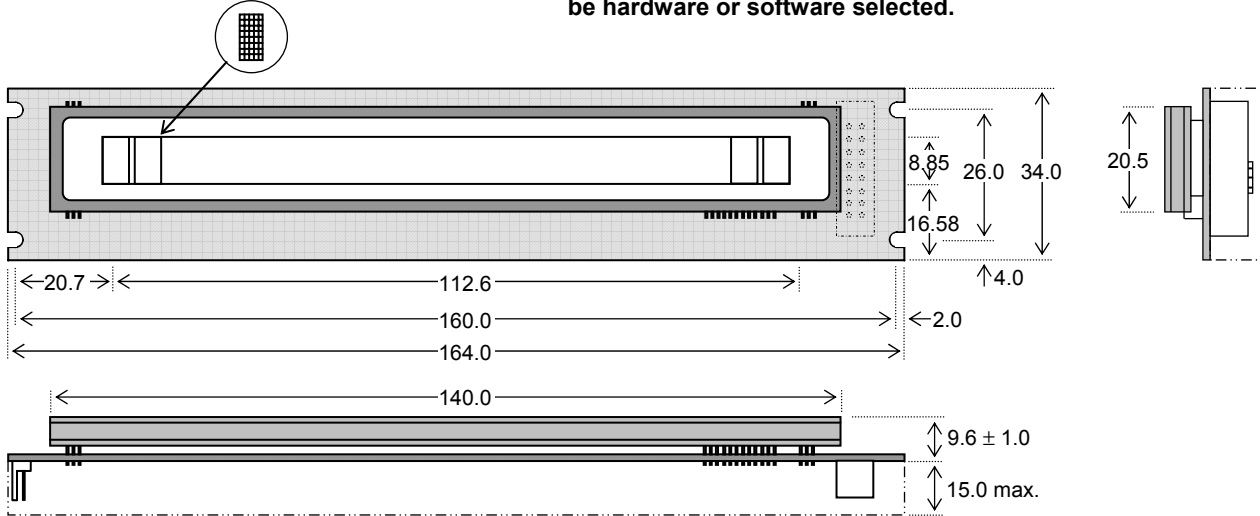


# 5X7 Dot Character VFD Module

# CU209-TW202A

- ❑ 1 Lines of 20 Characters 9mm High
- ❑ High Speed Parallel/Serial Interface
- ❑ Wide Operating Temp -40°C to +85°C
- ❑ Single 5V Supply
- ❑ High Brightness Blue Green Display
- ❑ ASCII, Katakana & Extended Character Font
- ❑ 16 User Definable Characters

The module includes the Vacuum Fluorescent Display glass, driver and micro-controller ICs with refresh RAM, character generator and interface logic. The high speed 8 bit parallel interface is 5V CMOS compatible suitable for connection to a host CPU bus. The asynchronous serial interface accepts baud rates up to 19,200 with or without parity (Default - 19200BPS, Even Parity, International Font). Two character font tables can be hardware or software selected.



Dimensions in mm & subject to tolerances. Mounting slots 3.5mm dia.

## ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Condition
Power Supply Voltage	Vcc	5.0VDC +/- 5%	GND=0V
Power Supply Current	Icc	240mADC typ.	Vcc=5V
Logic High Input	Vih	2.0VDC min.	Vcc=5V
Logic Low Input	Vil	0.8VDC max.	Vcc=5V
Logic High Output	VoH	4.4VDC min.	Ioh = -2.0mA
Logic Low Output	Vol	0.5VDC max.	Ioh = 2.0mA

The power on rise time should be less than 100ms. The inrush current at power on can be 2 x Icc. The Icc current is 10mA maximum while in power down mode.

## OPTICAL and ENVIRONMENTAL SPECIFICATIONS

Parameter	Value
Character Size/Pitch (XxY mm)	4.3 x 8.85/5.7
Dot Size/Pitch (XxY mm)	0.66 x 1.05/0.91 x 1.3
Luminance	350 cd/m <sup>2</sup> (102 fL) min.
Colour of Illumination	Blue-Green (Filter for more colours)
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Operating Humidity (non condensing)	20 to 80% RH @ 25°C

## SOFTWARE COMMANDS

Instruction	D0-D7	Instruction	D0-D7
Back Space	08H	Cursor is invisible	16H
Horizontal Tab	09H	Cursor is invisible	17H
Line Feed	0AH	International Font	18H
Form Feed	0CH	Katakana Font	19H
Carriage Return	0DH	Euro Currency Mark	1AH
Clear Display	0EH	Escape	1BH
Cancel	0FH	> Send User Font	+43H
Auto Carriage Return Mode	11H	> Position cursor	+48H
Over-Write Mode	12H	> Software Reset	+49H
Horizontal Scroll Mode	13H	> Luminance	+4CH
Cursor is invisible	14H	> Flickerless Write	+53H
Cursor is blinking character	15H	> Cursor Blink Speed	+54H

## TIMING PARAMETERS (min)

Data Set Up To Write	100ns	Subject to change without notice.
Write Pulse Width	160ns	Detailed specification on request.
Hold After Write	10ns	IUK Doc Ref:04403 Iss.1 12 Aug 03

## CHARACTER FONTS

	International Font										Additional Katakana									
	00	10	20	30	40	50	60	70	80	90	00	10	20	30	40	50	60	70	80	90
00																				
01	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	:	;	<	=	>	?
02	"	2	B	R	b	r	4	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç
03	#	3	C	S	c	s	1	x	°	0	1	t	á	n	á	n	ñ	ç	3	7
04	\$	4	D	T	d	t	L	÷	0	1	t	á	n	á	n	ñ	ç	3	7	ç
05	%	5	E	U	e	u	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç
06	&	6	F	V	f	v	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç
07	'	7	G	W	w	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç	ç
08	(	8	H	X	x	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç	ç
09	)	9	I	V	v	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç	ç
0A	*	10	J	Z	j	z	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç
0B	+	11	K	K	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç	ç	ç
0C	,	12	L	l	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç	ç	ç
0D	-	13	M	m	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç	ç	ç
0E	.	14	N	n	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç	ç	ç
0F	?	15	O	o	°	0	1	t	á	n	á	n	ñ	ç	3	7	ç	ç	ç	ç

## PCB JUMPERS (O)PEN (L)INK

Baud	J2	J1	J0
19200	O	O	O
9600	O	O	L
4800	O	L	O
2400	O	L	L
1200	L	O	O
<b>Parity</b>	<b>J4</b>	<b>J3</b>	
EVEN	O	O	
ODD	O	L	
NONE	L	L/O	
<b>Font</b>	<b>JA</b>		
International		L	
Katakana		O	

## IDC DATA CONNECTOR

Pin	Sig	Pin	Sig
1	D7	9	/WR
2	D6	10	/CS
3	D5	11	SIN/TEST
4	D4	12	BUSY
5	D3	13	GND (0V)
6	D2	14	GND (0V)
7	D1	15	Vcc (5V)
8	D0	16	Vcc (5V)

## CONTACT

**Noritake Sales Office Tel Nos**  
 Nagoya Japan: +81 (0)52-561-9867  
 Canada: +1-416-291-2946  
 Chicago USA: +1-847-439-9020  
 Munchen (D): +49 (0)89-3214-290  
 Itron UK: +44 (0)1493 601144  
 Rest Europe: +49 (0)61-0520-9220  
[www.noritake-itron.com](http://www.noritake-itron.com)

## 3 PIN POWER CONNECTOR

Pin	Sig
1	Vcc (5V)
2	SIN/TEST
3	GND (0V)