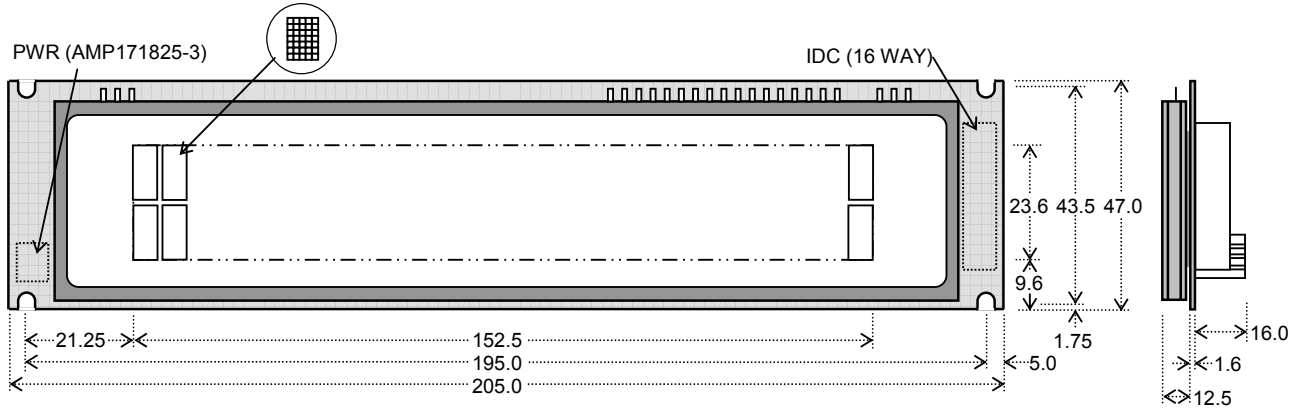


Dot Graphic VFD Module

CU20029-KTW220A

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

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. Two character font tables can be hardware or software selected. User defined characters and many control commands are available.



ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Condition
Power Supply Voltage	VCC	5.0VDC +/- 5%	GND=0V
Absolute Max Vcc	VCC (max)	7.0VDC	GND=0V
Power Supply Current	ICC	600mADC typ.	Vcc=5V
Logic High Input	VIH	2.0VDC min.	Vcc=5V
Logic Low Input	VIL	0.8VDC max.	Vcc=5V
Absolute Max Logic I/P	VI	0.3V to Vcc+0.3V	-
Logic High Output	VOH	2.4VDC min.	IOH = -2.0mA
Logic Low Output	VOL	0.5VDC max.	IOL = 2.0mA

The power on rise time should be less than 100ms. The inrush current at power on can be 2 x Icc.

OPTICAL and ENVIRONMENTAL SPECIFICATIONS

Parameter	Value
Character Size/Pitch (XxY mm)	6.2 x 9.5 / 7.7 x 14.1
Dot Size/Pitch (XxY mm)	1.0 x 1.1 / 1.3 x 1.4
Luminance	350 cd/m ² Min. 900 cd/m ² Typ.
Colour of Illumination	Blue-Green (Filter for colours)
Operating Temperature	-40°C to +85°C
Storage Temperature	-50°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	International Font	18H
Horizontal Tab	09H	Katakana Font	19H
Line Feed	0AH	Euro Currency Mark	1AH
Form Feed	0CH	Escape	1BH
Carriage Return	0DH	> Send User Font	+43H
Clear Display	0EH	> Position cursor	+48H
Increment Write Mode	11H	> Software Reset	+49H
Over-Write Mode	12H	> Luminance	+4CH
Horizontal Scroll Mode	13H	> Flickerless Write	+53H
Cursor Off	14H	> Cursor Blink Speed	+54H
Blinking Block Cursor On	15H	Character Data	20H-FFH
Cursor Off	16H	User Character Data	00H-FFH
Cursor Off	17H		

TIMING PARAMETERS (min)

Data Set Up To Write	100ns	Subject to change without notice. IUK Doc Ref:10805 Iss:2 6 Feb 08
Write Pulse Width	160ns	
Hold After Write	10ns	

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

CHARACTER FONTS

		International Font																Additional Katakana Font															
00	10	20	30	40	50	60	70	80	90	00	10	20	30	40	50	60	70	80	90	00	10	20	30	40	50	60	70	80	90				
01		!	1	A	Q	a	q	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
02		"	2	B	R	b	r	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
03		#	3	C	S	c	s	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
04		\$	4	D	T	d	t	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
05		%	5	E	V	e	v	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
06		&	6	F	V	f	v	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
07		'	7	G	O	u	s	u	s	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
08		(8	H	X	h	x	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
09)	9	I	V	i	v	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
0A		*	1	J	Z	j	z	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
0B		+	1	K	L	k	l	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
0C		,	1	L	\	l	\	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
0D		-	1	M	m			°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
0E		>	1	N	n			°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
0F		/	?	0	_	o	#	o	°	DI	H	A	N	Q	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				

International font location ADH (when Euro currency mark is enabled)

PCB JUMPERS (OPEN (L)INK)

Baud	J3	J2	J1
19200	O	O	O
9600	O	O	L
4800	O	L	O
2400	O	L	L
1200	L	O	O
Parity	J5	J4	
EVEN	O	O	
ODD	O	L	
NONE	L	L / O	
Font	J6		
International	O		
Katakana	L		

3 PIN POWER CONNECTOR

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

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)

Defaults: 19200, Even parity, International Font.

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-iron.com

Mouser Electronics

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