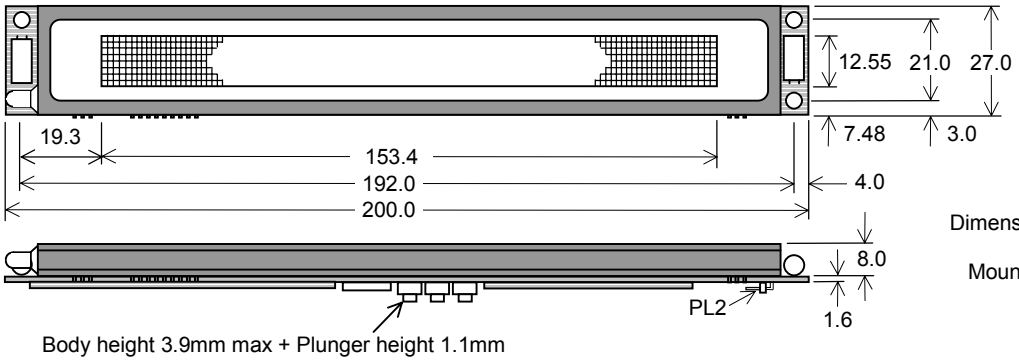
Dot Graphic VFD Module — GU96X8M-K612C5

- **96 x 8 High Brightness Dot Graphic Display**
- **Single 12V DC Supply**
- **Large 5x7 ASCII & European Font**
- **RS232 Asynchronous Serial Interface**
- **64 Selectable Multi Drop Addresses**
- **Transformerless PSU (patent pending)**
- **Low Profile Construction**

The module includes the VFD glass, VF drivers and microcontroller with refresh RAM, character generation, interface logic and patented transformerless DC/DC converter. The RS232 serial interface accepts 9600 or 19200 baud rates with optional parity bit. The module features a low profile design with numerous custom options available including special fonts and commands. Modules can be connected to a multi drop address system.



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

Body height 3.9mm max + Plunger height 1.1mm

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Condition
Supply Voltage	V_{CC}	12.0VDC +/- 10%	G_{ND}=0V
Supply Current	I_{CC}	250 mA typ.	V_{CC} =12V
RS232 Input	V_{SIL} / V_{SIH}	-24V max / +24V max	V_{CC} =12V
Reset Input	V_{IL}/V_{IH}	0.8VDC max / 2.0VDC min	V_{CC} =12V

OPTICAL & ENVIRONMENTAL SPECIFICATION

Parameter	Value
Display Area (X xYmm)	153.35 x 12.55
Dot Size/Pitch (XxY mm)	1.35 x 1.35 / 1.6 x 1.6
Luminance	800 cd/m² Min.
Colour of Illumination	Blue-Green (505nm)
Operating Temperature	-20°C to +70°C
Storage Temperature	-40°C to +85°C
Operating Humidity	20 to 80% RH @ 25°C

Optical filters can provide violet, red, yellow, blue & green output.

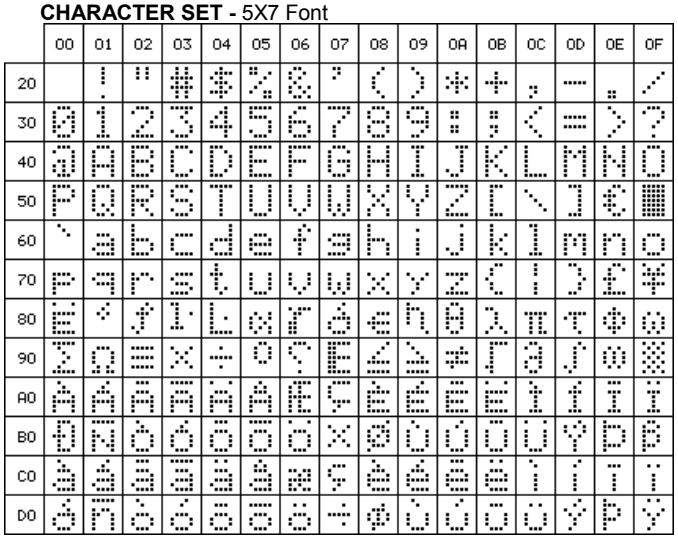
SOFTWARE COMMANDS

Hex	Command
10	Software Reset to power on state
11	Write Mode toggles overwrite / scroll
12	Write Direction toggles increment / decrement
13	Display On/Off. Data is retained
14	Display Invert. Toggle negative image
15 + xx	Absolute Column Set from 00H – 7FH
16 + xx	Relative Column Set by 00H - 7FH
17 + len + data	Graphic Data Write 1 bytes per column, D7 top
18	Clear Character Buffer with 16 ASCII spaces
19 + data	Write to Character Buffer for display effect
1A + effect	Display Effect – fade, wipe, scroll, dissolve
1C + macro + len + data	Store Macro E0H – FFH in EEPROM
1D + delay	Delay Macro – pause for up to 3 seconds
1E + 1E + 1E + FE	Clear Macros from EEPROM
1E + 1E + 1E + FF	Stop Macro if in a loop
1E + 1E + 1E + adr	Address Select 00H – 3FH for active module
20 - DF	Character Write ASCII font.
E0 - FF	Run Macro – execute user defined macro
60 + dh + dl	Send Hexadecimal code instead of binary

The user can send non printable command codes 10H-1EH as hexadecimal.
Prefix the code using character 60H. Example: `15`3F = Position column 64.

Macro E0 is run at power on.
The input impedance of the RS232 is 4K7ohms.

CHARACTER SET - 5X7 Font



Character 60H is used as a hexadecimal prefix, but can be displayed with a repeat send.
Data is shown in hexadecimal and sent in binary. e.g. FF = 11111111 Bin
Address 'adr' = 00 - 3F. Setting 'adr' to 00 activates all modules.
Column position X = 00 – 7F.
The communication settings and address can be set using the three switches on the rear of the module. Default communication is 9600,n,8,1.
The display effects command allows curtain dissolve, scroll and fade.

PL2

Pin	Signal	Description
1	VCC	12V Supply
2	RXD	RS232 received data
3	VCC	12V output loop
4	NP	No pin for polarization
5	/RST	CMOS 5V level Reset Input. Active low
6	GND	0V Supply

Detailed specification, software commands and interface timing are available on request.
Subject to change without notice.
IUK Doc. No. 03876 Iss.3
10 May 02

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