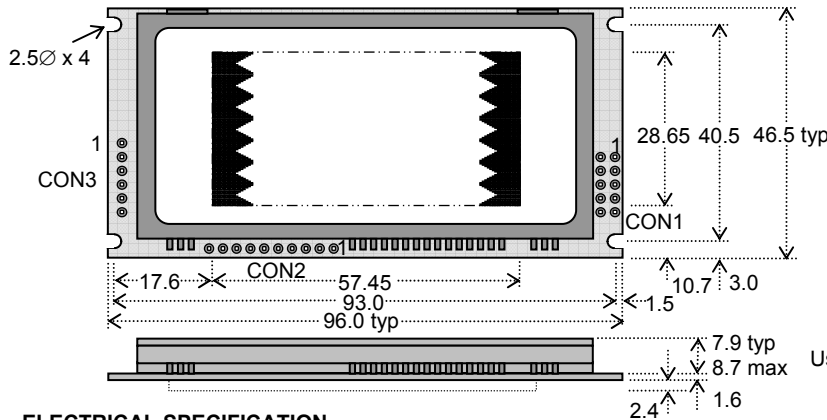# Dot Graphic VFD Module GU128x64D-K612A8

- ❑ **128 x 64 High Brightness Dot Graphic Display**
- ❑ **Single 5V DC Supply**
- ❑ **4 ASCII Fonts (5x5, 5x7, 10x14, 7x15)**
- ❑ **RS232 Asynchronous & Parallel Interfaces**
- ❑ **8 User I/O Pins with Key Scanning Capability**

The module includes the VFD glass, VF drivers and micro-controller, character generation, interface logic and transformer-less DC/DC converter. The interface type is selected by a push button on the back of the module. Auto key scanning and general I/O are available on port PA0 – PA7 for user control.

2.5∅ x 4

1
CON3

28.65 40.5 46.5 typ

CON1

17.6 CON2 57.45
93.0
96.0 typ

10.7 3.0
1.5

7.9 typ
8.7 max
2.4 1.6

CON1

Pin	Signal
1	5V
2	NC
3	NC
4	NC
5	0V
6	NC
7	NC
8	/RES
9	MB
10	NC

CON2

Pin	Signal
1	0V
2	ENABLE
3	PA0
4	PA1
5	PA2
6	PA3
7	PA4
8	PA5
9	PA6
10	PA7

CON3

Pin	Signal
1	Vcc
2	RXD
3	0V
4	TXD
5	MB
6	HB

NC = Do Not Connect

Dimensions in mm. & subject to tolerances.
Uses patent applied PSU which has no inductive components.
Brown out detector active when RES is not connected.

ELECTRICAL SPECIFICATION

Parameter	Sym	Value	Condition
Power Supply Voltage	Vcc	$5.0VDC \pm 5\%$	Vss=0V
Power Supply Current	Icc	410mA typ.	Vcc=5VDC
RS232 Input	V_{SIL} / V_{SIH}	-24V max / +24V max	Vcc=5VDC
RS232 Output	V_{SOL} / V_{SOH}	-5VDC min / +5VDC min	Vcc=5VDC
Logic Input	V_{IL} / V_{IH}	0.5VDC max / 3.0VDC min	Vcc=5VDC
Logic Output	V_{OL} / V_{OH}	0.6VDC max / 4.2VDC min	I_{OH} = -2.0mA

ENVIRONMENTAL and OPTICAL SPECIFICATION

Parameter	Value
Display Area (XxY mm)	57.45 x 28.65
Dot Size/Pitch (XxY mm)	0.3 x 0.3/0.45 x 0.45
Luminance	800 cd/m^2 Typ
Colour of Illumination	Blue-Green (Filter for colours)
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Operating Humidity (non condensing)	10 to 90% @ 25°C

SOFTWARE COMMAND SUMMARY

Command Type	Description
Cursor Move	ASCII commands for Back Space, Horizontal Tab, Line Feed, Home, Vertical Tab, Carriage Return and Cursor Position
Character Write	Display a character from the selected font and increments the cursor according to the write mode.
Graphic Write	Write graphical data directly to a display area in either orientation. It is important to disable Hex receive mode. Set or clear individual pixels.
Macro Write	Store combinations of commands and data in up to 8 macros to reduce host communication time. Macro 0 operates at power on.
Area Control	Set, clear, invert and outline an area of the display for easy creation of highlights and menu screens.
Window Control	Pre-define 2 areas of the display as windows in which commands and data for scroll, flash, wipe and pattern are active.
Scroll	Vertically or horizontally scroll data in either direction within an area defined by window 1. Space padding, speed and repeat options.
Flash / Wipe	Flash selected window's contents. / Perform a wipe action on the selected window with predefined user patterns / wallpaper.
Font Select	Select proportional mini font, fixed spaced 5x7 font, fixed spaced 10x14 font. Use the extended font command for 7x15 font or advanced settings.
Key Scan	Set I/O port to key scanning. The I/O ports are continuously scanned for any key press and the connectivity data output to the serial port.
I/O Port	Set I/O port direction. A '1' indicates an input, a '0' indicates an output. All output lines are immediately set low.
Brightness	Set the display brightness. Level = F8H - FFH. F8H = display off. F9H = minimum, FFH = maximum (default). Auto-fade to a defined level.
Power On/Off	Turn on VFD power supply (default)/Turn off VFD power supply (display's contents will be preserved). Current consumption is about 25mA.
Set Up Display	Set the serial communication interface. Clear or reset the display. Lock or unlock the EEPROM for macros and setup configuration.

CHARACTER SETS

MINI FONT

5x7 & 10x14 FONTS

The module defaults to an 8 line of 21 character display using the 5x7 font with single pixel spacing. The cursor position auto increments after each character write. The bottom left of a character is placed at the cursor x,y. The M(odule) Busy line indicates the module is busy when high. Connect the H(ost) Busy input to the MBusy to disable handshaking. Use the rear SMT button to select the configuration which is then stored in EEPROM. To send commands as hexadecimal, prefix the 2 bytes using character 60H.

Example: `10`3F`01 = Position dot x=64 y=1. To send character 60H to the display, send 60H twice.
Please note that the module defaults to HEX Receive Mode.

NORITAKE ITRON VFD MODULES GU128x64D-K612A8