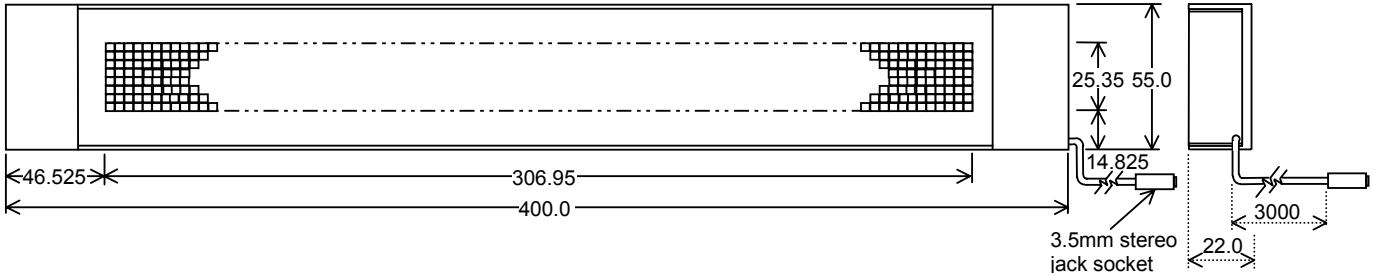


# Dot Graphic VFD Module

# EGU128X8T-K612C5

- ❑ 128 x 8 High Brightness Dot Graphic Display
- ❑ Single 12V DC Supply
- ❑ Large 5x7 ASCII & European Font
- ❑ RS232 Asynchronous Serial Interface
- ❑ 31 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.



## ELECTRICAL SPECIFICATION

| Parameter      | Symbol      | Value                 | Condition |
|----------------|-------------|-----------------------|-----------|
| Supply Voltage | VDD         | 12.0VDC +/- 10%       | GND=0V    |
| Supply Current | IDD         | 500 mA typ.           | VDD=12V   |
| RS232 Input    | VsIL / VsiH | -24V max / +24V max   | VDD=12V   |
| RS232 Output   | VsOL / VsoH | -5VDC min / +5VDC min | VDD=12V   |

## OPTICAL & ENVIRONMENTAL SPECIFICATION

| Parameter               | Value                       |
|-------------------------|-----------------------------|
| Display Area (X x Y mm) | 306.95 x 25.35              |
| Dot Size/Pitch (XxY mm) | 2.15 x 2.95 / 2.4 x 3.2     |
| Luminance               | 1000 cd/m <sup>2</sup> Typ. |
| Colour of Illumination  | Blue-Green (505nm)          |
| Operating Temperature   | -40°C to +85°C              |
| Storage Temperature     | -40°C to +85°C              |
| Operating Humidity      | 20 to 85% 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 - FFH              |
| 16 + xx                 | Relative Column Set by 00H - FFH                |
| 17 + len + data         | Graphic Data Write 1 bytes per column, D7 top   |
| 18                      | Clear Character Buffer with 21 ASCII spaces     |
| 19 + data               | Write to Character Buffer for display effect    |
| 1A + effect             | Fade, wipe, scroll, dissolve & character delay. |
| 1C + macro + len + data | Store Macro E0H - FFH in EEPROM                 |
| 1D + delay              | Halt process for up to 3 seconds                |
| 1E + 1E + 1E + FE       | Clear Macros from EEPROM                        |
| 1E + 1E + 1E + FF       | Stop Display and clear receive buffer           |
| 1E + 1E + 1E + adr      | Address Select 00H - 1FH for active module      |
| 1F                      | Loop receive buffer                             |
| 20 - DF                 | Character Write ASCII font.                     |
| E0 - FF                 | Run Macro - execute user defined macro          |
| 60 + dh + dl            | Send Hexadecimal code instead of binary         |

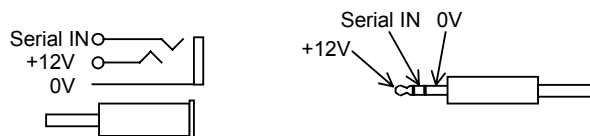
The user can send non printable command codes 10H-1FH as hexadecimal by prefixing the code using character 60H. Example: `15`3F = Position column 64. When 1FH is sent, the commands/data in the communication buffer (max 192 bytes) are executed until 'Stop Display' is issued. Example: 10H --- data --- 1FH. Macro E0 is run at power on unless cleared. Software and font set are copyright Noritake Itron Corporation 2002

## CHARACTER SET - 5X7 Font

|    | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 20 |    | !  | "  | #  | \$ | %  | &  | '  | (  | )  | *  | +  | ,  | -  | .  | /  |
| 30 | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | :  | ;  | <  | =  | >  | ?  |
| 40 | a  | b  | c  | d  | e  | f  | g  | h  | i  | j  | k  | l  | m  | n  | o  |    |
| 50 | p  | q  | r  | s  | t  | u  | v  | w  | x  | y  | z  | [  | \  | ]  | ^  | _  |
| 60 | `  | a  | b  | c  | d  | e  | f  | g  | h  | i  | j  | k  | l  | m  | n  | o  |
| 70 | p  | q  | r  | s  | t  | u  | v  | w  | x  | y  | z  | {  |    | }  | ~  | *  |
| 80 | €  | °  | ∂  | ∫  | ∞  | ∑  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  |
| 90 | ∑  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  | ∏  |
| A0 | À  | Á  | Â  | Ã  | Ä  | Å  | Æ  | Ç  | È  | É  | Ê  | Ë  | Ì  | Í  | Î  | Ï  |
| B0 | Ð  | Ñ  | Ò  | Ó  | Ô  | Õ  | Ö  | ×  | Ø  | Ù  | Ú  | Û  | Ü  | Ý  | Þ  | ß  |
| C0 | à  | á  | â  | ã  | ä  | å  | æ  | ç  | è  | é  | ê  | ë  | ì  | í  | î  | ï  |
| D0 | ð  | ñ  | ò  | ó  | ô  | õ  | ö  | ÷  | ø  | ù  | ú  | û  | ü  | ý  | þ  | ÿ  |

Character 60H is used as a hexadecimal prefix, but can be displayed with a repeat send. Column position X = 00H - 7FH. Data is shown in hexadecimal and sent in binary. e.g. FFH = 11111111 Bin Address 'adr' = 00H - 1FH. Setting 'adr' to 00H activates all modules. The communication settings and address can be set using the three switches on the rear of the module. Default communication is Addr 00 - 9600, n, 8, 1 STD. Choose between 'STD' (standard) and 'WEB' modes. In 'WEB' mode 20H and all codes below 10H are ignored. To send a SPACE, 5FH can be used. All codes are accepted when sent using hexadecimal. Select 'WEB' mode when using the display with the Noritake Message Creator software.

## JACK SOCKET CONNECTIONS



## CONTACT

Detailed specification, software commands and interface timing are available on request. Subject to change without notice. IUK Doc. No. 04045 Iss.2 8 Jan 03

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