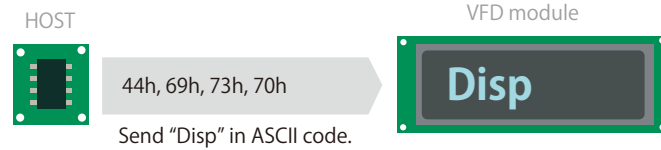# ● Basic Operations

## Direct Command Control

Indicate Characters and/or Graphical Images by receiving character code and/or command with bit mapped images.

HOST       VFD module

44h, 69h, 73h, 70h → **Disp**

Send "Disp" in ASCII code.

## Macro/ Preloaded commands

This function enables to repeat a set of display commands.
A set of preloaded commands in memory of display are initiated by a "Start Macro" command. Preloaded commands are repeated until any of next command is received.

HOST

"Start Macro" command → Execution

- " Executi
- Clear Screen
- " Touch--"
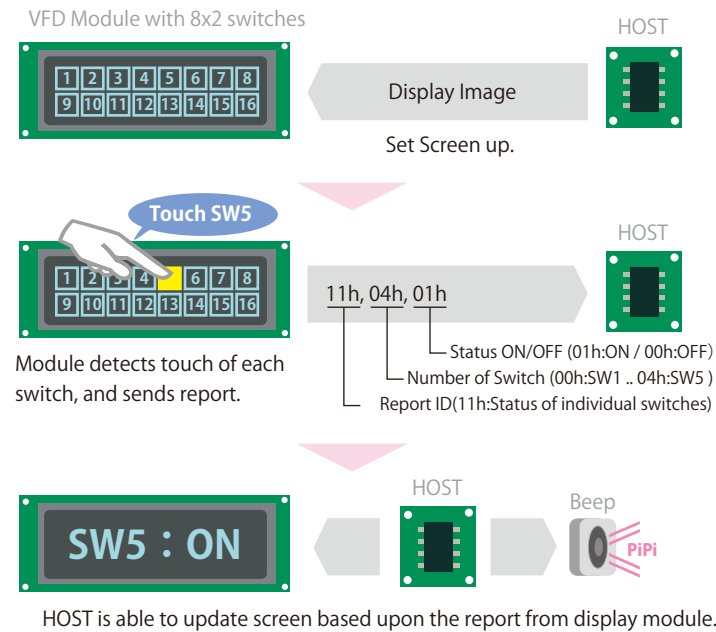- Clear Screen

**Macro Memory**

## Program Macro

Program Macro enable "Branch" and "Loop" capability to Macro execution. Combination of Program Macro and I/O port and Touch function allow display to stand alone operation.

## Capacitive Touch

Multi-Touch    Slider

Touch panel of GU-D series has predefined touch area and output Touch/No-Touch of each area. Complicated process such as scanning or coordinate calculation are not required.
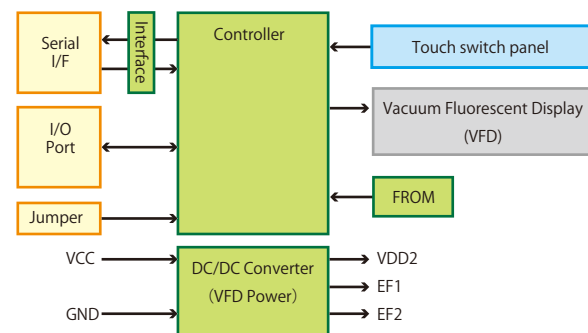
VFD Module with 8x2 switches

```
1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16
```

HOST

Display Image

Set Screen up.

Touch SW5

```
1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16
```

HOST

11h, 04h, 01h

Module detects touch of each switch, and sends report.

— Status ON/OFF (01h:ON / 00h:OFF)
— Number of Switch (00h:SW1 .. 04h:SW5 )
— Report ID(11h:Status of individual switches)

HOST     Beep

**SW5：ON** → PiPi

HOST is able to update screen based upon the report from display module.

TIPS   HOST can get report of status of all switches in one report. This report allows detecting multi-touch situation. HOST can get report status in16 steps strength. This report allows Slider capability.

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Noritake **itron** ®

Capacitive Touch VFD Module

# GU-D Series

# Compact & Highly Visible Capacitive Touch VFD Module
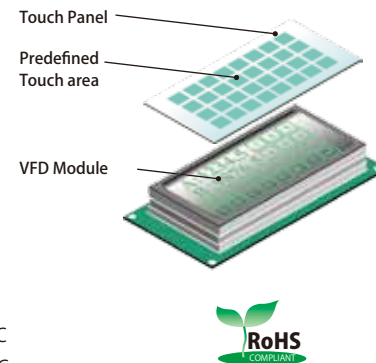
TOUCH

MODULE

VFD

---

# ● Specification

## Function

- Character・Graphic Image ・Control Command ・Display Action
- Draw ・Define Bit mapped Image ・User definable window
- Down loadable character font ・Memory Switch
- Macro/ Program Macro ・I/O Port
- Touch Panel ・Touch panel sensitivity adjustment

## Block Diagram

```
Serial I/F ─ Interface ─ Controller ─ Touch switch panel
I/O Port ─ Interface ─ Controller ─ Vacuum Fluorescent Display (VFD)
Jumper ─ Controller ─ FROM
VCC ─ DC/DC Converter (VFD Power) ─ VDD2
GND ─ DC/DC Converter (VFD Power) ─ EF1
                                    ─ EF2
```

*Products specification is subject to change without prior notice. Please refer to actual sample and individual specification for details.

## Structure

A touch panel with predefined touch area is bonded on VFD module.

Touch Panel
Predefined Touch area
VFD Module

## Characteristics

- Power Supply：5V
- Logic Signal Voltage：3.3V
- Operating Temperature：-40℃～85℃
- Storage Temperature： -40℃～85℃

**RoHS** COMPLIANT

### Do you have any questions?

**Support**

Please feel free to contact us.   **support.ele@noritake.com**

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CONTACT

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# Visible VFD with Capacitive Touch

## Capacitive Touch VFD Module has **3** Advantages

**01 Visibility**

**02 Develop**

**03 Supply**

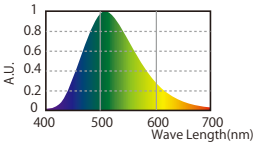### Vacuum Fluorescent Display, VFD, Overwhelming Visibility

**Self-luminous**
VFD is a self-luminous display, which offer wider viewing angles and better visibility than LCD which employs back light.

**Broad Spectrum**
Light from VFD has broad spectrum with peak of Bluish-Green color, that is gentle and gracious to human eyes.

**Wide Operating Temperature**
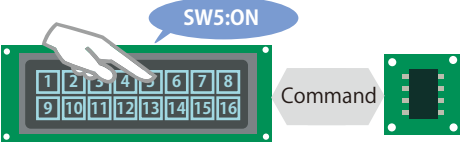Stable operation between low (-40℃) and high (+85℃) temperature.
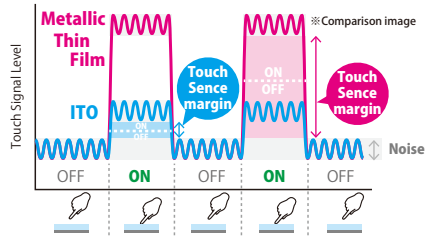
❄ **-40**℃ ~ **85**℃ ☀

### Unified command of Touch and Display

Touch and Display, they are manipulated by simple unified command set. Touch works as on/off switches and allow easy programming.

SW5:ON

Command

**Please refer to "Basic Operation"**

### High S/N Ratio Metallic thin film panel

Lower impedance than ordinary ITO touch, acheve higher S/N Ratio, wider margin and better sensitivity.

@Comparison image

Metallic Thin Film

Touch Signal Level

ITO

Touch Sence margin | ON OFF | Touch Sence margin

OFF | ON | OFF | ON | OFF

Noise

### Minimum Quantity: 1pc

We accommodate with an inquiry from 1pc for evaluation and/or small production.

1pc.

### Made in Japan for long term supply

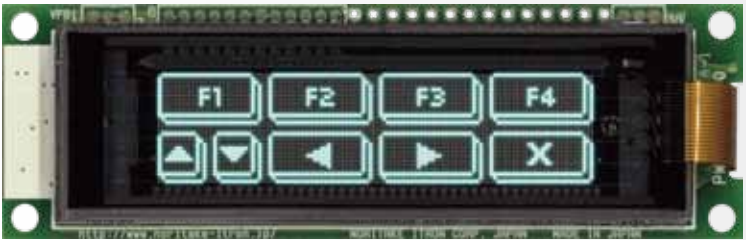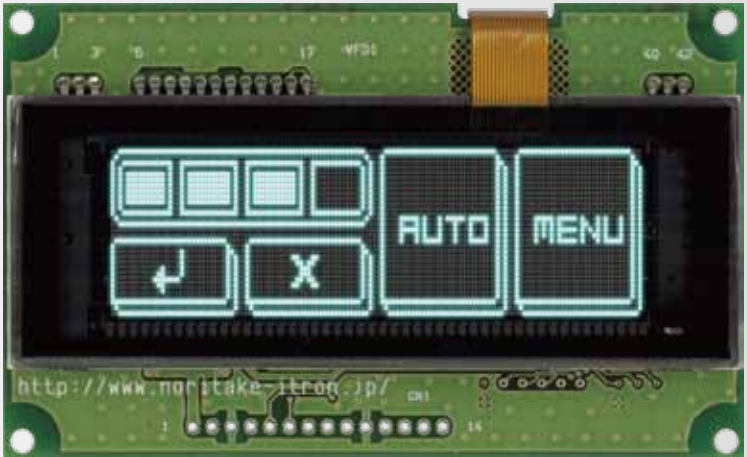Key components of VFD and Touch panel are produced at our facility in Japan to achieve long term stable supply.

## ⦿ ACTUAL SIZE PHOTOS

### Self Capacitive Type

**GU140X32F-D903S**

| No. of Pixels | 140 x 32 | Outline | 98.0 x 60.0 mm |
|---|---|---|---|
| No. of Switches | 8 x 2 | Display Area | 69.85 x 21.61 mm |
| Power | 5V | Pixel Pitch | 0.50 x 0.68 mm |
| Interface | Async. Serial | SPI | I²C |
| Char. Fonts | ANK | JIS | Chinese | Hangul |

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AUTO MENU

**GU128X32D-D903S**

| No. of Pixels | 128 x 32 | Outline | 98.0 x 31.0 mm |
|---|---|---|---|
| No. of Switches | 8 x 2 | Display Area | 57.45 x 13.93 mm |
| Power | 5V | Pixel Pitch | 0.45 x 0.44 mm |
| Interface | Async. Serial | SPI | I²C |
| Char. Fonts | ANK | JIS | Chinese | Hangul |

F1 F2 F3 F4

### Mutual Capacitive Type

## Supports Glove use and Wet applications

**GU256X128C-D903M**

| No. of Pixels | 256x 128 | Outline | 131.0 x 66.0 mm |
|---|---|---|---|
| No. of Switches | 8 x 4 | Display Area | 83.08 x 41.48 mm |
| Power | 5V | Pixel Pitch | 0.325 x 0.325 mm |
| Interface | Async. Serial | SPI | I²C |
| Char. Fonts | ANK | JIS | Chinese | Hangul |

A:1234.5  7 8 9
B:9876.5  4 5 6
△ ▽ ✕  1 2 3
A B C D E CLR 0 ENT

**GU256X64C-D903M**

| No. of Pixels | 256 x 64 | Outline | 125.0 x 37.0 mm |
|---|---|---|---|
| No. of Switches | 8 x 2 | Display Area | 83.08 x 20.68 mm |
| Power | 5V | Pixel Pitch | 0.325 x 0.325 mm |
| Interface | Async. Serial | SPI | I²C |
| Char. Fonts | ANK | JIS | Chinese | Hangul |

10:53
OUT 8℃ 13%
IN 21℃ 56%