GRAPHIC OPERATION TERMINAL GOT1000

Performance with flexibility
A consistent concept to data visualisation

| 3.7-inch | 5.7-inch | 8.4-inch to 15-inch |

GT11
An entry-level HMI range that provides an array of easy-to-use functions for stand alone use

NEW

GT1020-LBD 24V DC
GT1020-LBD2 24V DC
GT1020-LBL 5V DC
160x64 Black and White 2 tones
3-color backlight

GT1155-QSBD 24V DC — QVGA 320x240 — 256 Colors
GT1155HS-QSBD 24V DC — QVGA 320x240 — 256 Colors
GT1150-QLBD 24V DC — QVGA 320x240 — Black and White 16 tones
GT1150HS-QLBD 24V DC — QVGA 320x240 — Black and White 16 tones
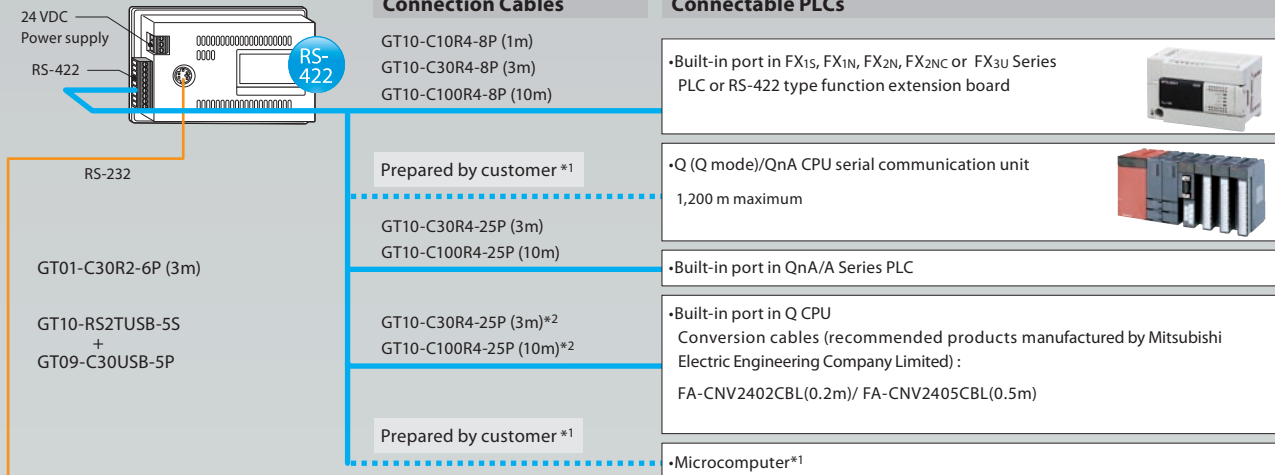
5.7-inch / 8.4-inch / 10.4-inch / 12.1-inch / 15-inch

GT15
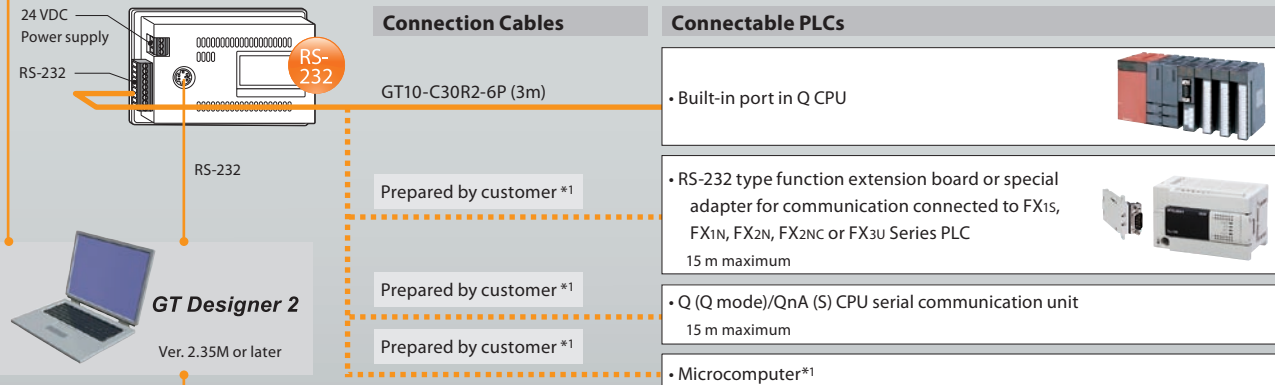**A progressive HMI range for a wide range of stand alone and network applications**
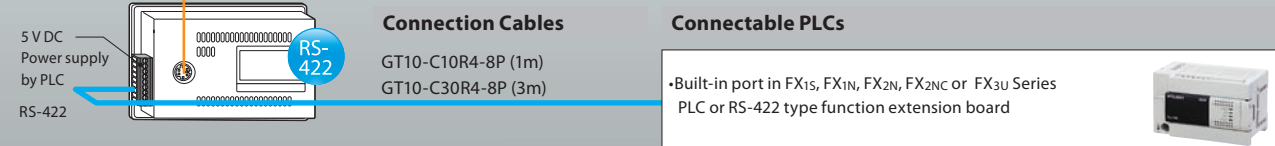
Panel size

System Configuration

GT1020-LBD (RS-422 Connection Type)

24 VDC Power supply
RS-422
RS-422

RS-232

GT01-C30R2-6P (3m)

GT10-RS2TUSB-5S + GT09-C30USB-5P

Connection Cables	Connectable PLCs
GT10-C10R4-8P (1m) GT10-C30R4-8P (3m) GT10-C100R4-8P (10m)	•Built-in port in FX1S, FX1N, FX2N, FX2NC or FX3U Series PLC or RS-422 type function extension board
Prepared by customer *1	•Q (Q mode)/QnA CPU serial communication unit 1,200 m maximum
GT10-C30R4-25P (3m) GT10-C100R4-25P (10m)	•Built-in port in QnA/A Series PLC
GT10-C30R4-25P (3m)*2 GT10-C100R4-25P (10m)*2	•Built-in port in Q CPU Conversion cables (recommended products manufactured by Mitsubishi Electric Engineering Company Limited) : FA-CNV2402CBL(0.2m)/ FA-CNV2405CBL(0.5m)
Prepared by customer *1	•Microcomputer*1

GT1020-LBD2 (RS-232 Connection Type)

24 VDC Power supply
RS-232
RS-232

GT Designer 2
Ver. 2.35M or later

Connection Cables	Connectable PLCs
GT10-C30R2-6P (3m)	• Built-in port in Q CPU
Prepared by customer *1	• RS-232 type function extension board or special adapter for communication connected to FX1S, FX1N, FX2N, FX2NC or FX3U Series PLC 15 m maximum
Prepared by customer *1	• Q (Q mode)/QnA (S) CPU serial communication unit 15 m maximum
Prepared by customer *1	• Microcomputer*1

GT1020-LBL (RS-422 Connection Type / 5V DC Power supply from FX series PLC)

5 V DC Power supply by PLC
RS-422
RS-422

Connection Cables	Connectable PLCs
GT10-C10R4-8P (1m) GT10-C30R4-8P (3m)	•Built-in port in FX1S, FX1N, FX2N, FX2NC or FX3U Series PLC or RS-422 type function extension board

*1 Please refer to the connection manual for the details.
*2 Used with conversion cables. See text box shown to the right.

Functionality

Features
- Screen : 1,024 base screens max + 3 types of key windows
- Font : Gothic (size: 6 x 8 dots or 16 dots), high quality, true type and Windows fonts
- Screen switching function, screen call, language switching function, password protection, system information, connected equipment setting and startup logo

Figure drawing
Straight line, continuous straight line, rectangle, polygon, chamfered rectangle, circle, ellipse, circular arc, elliptical arc, circular sector, elliptical sector, scale display, painting and image type (BMP/DXF)

Object
Comment registration (basic comment and comment group), object registration, data calculation function, offset function, security function, lamp display, touch key, numerical display and input, ASCII display, clock display (linked to PLC clock), comment display, alarm list, alarm history, object display, panel meter, trend graph, line graph, bar graph, state monitoring function, recipe function (4,000 points) and time action function

General specification, power specification and options

Item	GT1020-LBD / GT1020-LBD2	GT1020-LBL
Ambient operating temperature	Display area: 0 to +50ºC Excluding display area: 0 to +55ºC (horizontal layout) or 0 to +50ºC (vertical layout)	
Ambient storage temperature	-20 to +60ºC (Ambient operating/storage humidity*1 : 10 to 90% RH, no dew condensation)	

Vibration resistance		Frequency	Acceleration	Amplitude	
	Intermittent vibration	5 to 9 Hz		3.5mm	Vibration testing repeated 10-times in the X, Y and Z planes.
		9 to 150Hz	9.8m/s²		
	Continuous vibration	5 to 9Hz		1.75mm	
		9 to 150Hz	4.9m/s²		
	In conformance to JIS B3502 and IEC 61131-2				

Impact resistance	In conformance to JIS B3502 and IEC 61131-2 (147 m/s², application period: 11ms, sine half-wave pulse, 3 times in each of X, Y and Z directions)
Noise resistance	Noise voltage: 1,000 Vp-p, noise width: 1μs (Testing via a noise simulator whose noise frequency (range 30 to 150 Hz)
Maximum voltage	500 VAC, 1 min (between all power terminals and ground) —
Insulation resistance	10 MΩ or more by 500 VDC insulation resistance tester (between all power terminals and ground) —
Ambient atmosphere	Free from soot, corrosive gas, flammable gas, and high levels of conductive dusts
Protective structure against environment	Equivalent to IP67f (JEM 1030) (front face) (This structure does not provide protection against all environmental conditions in your site.)
Grounding	Class D grounding (insulation resistance: 100Ω or less - When grounding is disabled, perform grounding to the panel.)
Weight	0.2 kg (excluding metal fixtures)
Others	Operating height above sea level*2 : 2,000 m or less, Installation location: Inside control panel, Over-voltage category*3 : II or lower, Pollution level*4 : 2 or lower, Cooling Method: Self-cooling

Power supply	Supply voltage	24 VDC (+10%, -15%), ripple voltage: 200 mV or less (Voltage fuse is built in, and cannot be replaced.)	5V DC (±5%) Power supply from FX PLC
	Power consumption	1.9 W or less (80 mA, 24 VDC) or 1.2 W or less (50 mA, 24V DC - when backlight is OFF)	1.1 W or less (220 mA, 5 VDC) or 0.6 W or less (120 mA, 5V DC - when backlight is OFF)
	Rush current	13 A or less (at 26.4 VDC), 1 ms	—
	Allowable instantaneous power interruption	Within 5 ms	—

GT1020-LBD/LBL (RS-422 connection)	GT10-C10R4-8P	RS-422 cable for direct connection with FX CPU	8-pin mini DIN	1 m
	GT10-C30R4-8P			3 m
	GT10-C100R4-8P*1			10 m
	GT10-C30R4-25P*1	RS-422 cable for direct connection with QnA/A CPU	25-pin D sub	3 m
	GT10-C100R4-25P*1			10 m
GT1020-LBD2 (RS-232 connection)	GT10-C30R2-6P	RS-232 cable for direct connection with Q CPU	6-pin mini DIN	3 m
Data Transfer Cable	GT01-C30R2-6P	For connection between PC (screen creation software) (9-pin D sub, female) and GOT (6-pin mini DIN, female)		3 m
Protective Sheet	GT10-20PSGB	Anti-glare type, transparent frame		5 sheets
	GT10-20PSCB	Clear type, transparent frame		
	GT10-20PSGW	Anti-glare type, white frame, logo provided		
	GT10-20PSCW	Clear type, white frame, logo provided		
Conversion adaptor	GT10-RS2TUSB-5S	RS-232/USB conversion adaptor (applicable software: GT Designer2 and GX Developer) Connectable USB cable: GT09-C30USB-5P [3 m] (manufactured by Mitsubishi Electric System & Service)		
Manual	GT10-U-E	Users manual		

Dimensions

Unit: mm(inch)
Weight: 0.2 kg (0.44lbs) excluding metal fixtures
Outer color: Black
Accessories: Connector for communication with PLC / Metal fixtures for mounting on panel face / Packing

113(4.45) 74(2.91) 65(2.56) 271.06
Panel cut size 66.5 (2.6) 105 (4.13)

Performance specification

Item		GT1020-LBD / GT1020-LBL	GT1020-LBD2
Display area	Type	STN type black-and-white liquid crystal	
	Screen size and resolution	3.7 inch, 160 W x 64 H dots	
	Display size (mm)	86.4 W x 34.5 H (3.7 inch) for horizontal layout	
	Number of displayed characters	At 16-dot font, 20 half-width characters x 4 lines for horizontal layout	
	View angle	30° leftward, 30° rightward, 20° upward and 30° downward for horizontal layout	
	Contrast adjustment	16 steps	
	Liquid crystal individual brightness	200 cd/m² (green)	
	Life	Approximately 50,000 hours (when ambient operating temperature is 25ºC), guarantee period: 1 year	
Backlight		3-color LED (green, red and orange) not requiring replacement Status (ON, blinking or OFF) can be controlled. Screen saver delay time can be set.	
Touch panel	Number of touch keys	50 maximum per screen	
	Key size	2 x 2 dots minimum per key	
	Simultaneous pressing	Disabled (If there is a key around the center of the pressed area when two or more keys are pressed, the key in the center may be activated.)	
	Life	1,000,000 times or more (when pressing force is 0.98 N or less)	
Buzzer output (buzzer sound issued when touch key is pressed)		Single tone ("Long", "short" or "no buzzer" can be selected.)	
Memory	User memory	Built-in flash ROM to store project data (512 kB or less), OS, alarm history and recipe data	
	Life	100,000 times (number of times of writing to flash ROM)	
Built-in interface	Communication with PLC	Conforms to serial RS-422 standard (insulated type), 1 channel Transmission speed: 115,200, 57,600, 38,400, 19,200, 9,600 and 4,800 bps Connector shape: 9-pin connector terminal block	Conforms to serial RS-232 standard (insulated type), 1 channel Transmission speed: 115,200, 57,600, 38,400, 19,200, 9,600 and 4,800 bps Connector shape: 9-pin connector terminal block
	Communication with PC	Conforms to serial RS-232 standard (insulated type), 1 channel Transmission speed: 115,200, 57,600, 38,400, 19,200, 9,600 and 4,800 bps Connector shape: 6-pin mini DIN (female)	
Applicable software package		GT Designer2 Version 2.35M or later	

*1 Wet bulb temperature: 39ºC or less
*2 Never use the GOT in an environment that is pressurized to an atmospheric pressure above the height of sea level as the GOT may malfunction.
*3 The over-voltage category indicates the equipment is connected to a power distribution area between the public power distribution network and the machine site. Category II is applied to equipment supplied by a fixed power source where the resistance voltage is 2,500 V in equipment whose rating is 300V or less.
*4 This index indicates the level of conductive substances in the environment where the equipment is used. Level 2 is applied to environments where only non-conductive pollution is generated but temporary conductive states can occur through condensation of the environment.
*5 This cable cannot be used for GT1020-LBL.

[Trademarks]
"Windows" is a registered trademark of Microsoft Corporation in the USA and other companies. Other described brand names and product names are trademarks or registered trademarks of their respective companies.
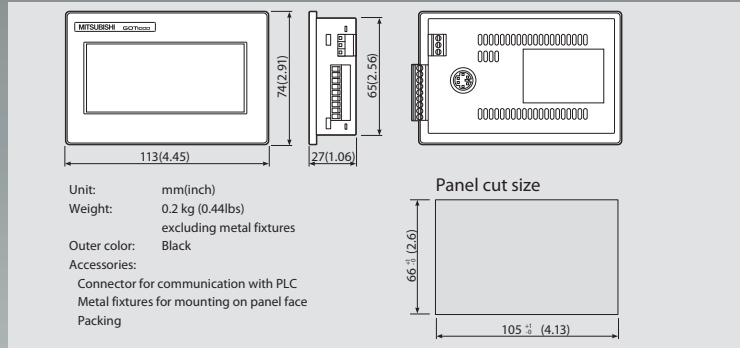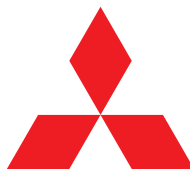
⚠ **Safety Warning**
To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
HIMEJI WORKS: 840, CHIYODA CHO, HIMEJI, JAPAN

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MITSUBISHI ELECTRIC
GRAPHIC OPERATION TERMINAL
GT1020-LBD / GT1020-LBD2 / GT1020-LBL

GRAPHIC OPERATION TERMINAL GOT1000 Series

Small, Flexible, and Easy to Use

MITSUBISHI GOT1000
Just Right!

Introducing the Micro-GOT
GT1020

Mitsubishi Electric Corporation Himeji Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001(standards for quality assurance management systems)

ISO 14001 / Certified ISO 9001 by BVQi / UKAS
MELSOFT

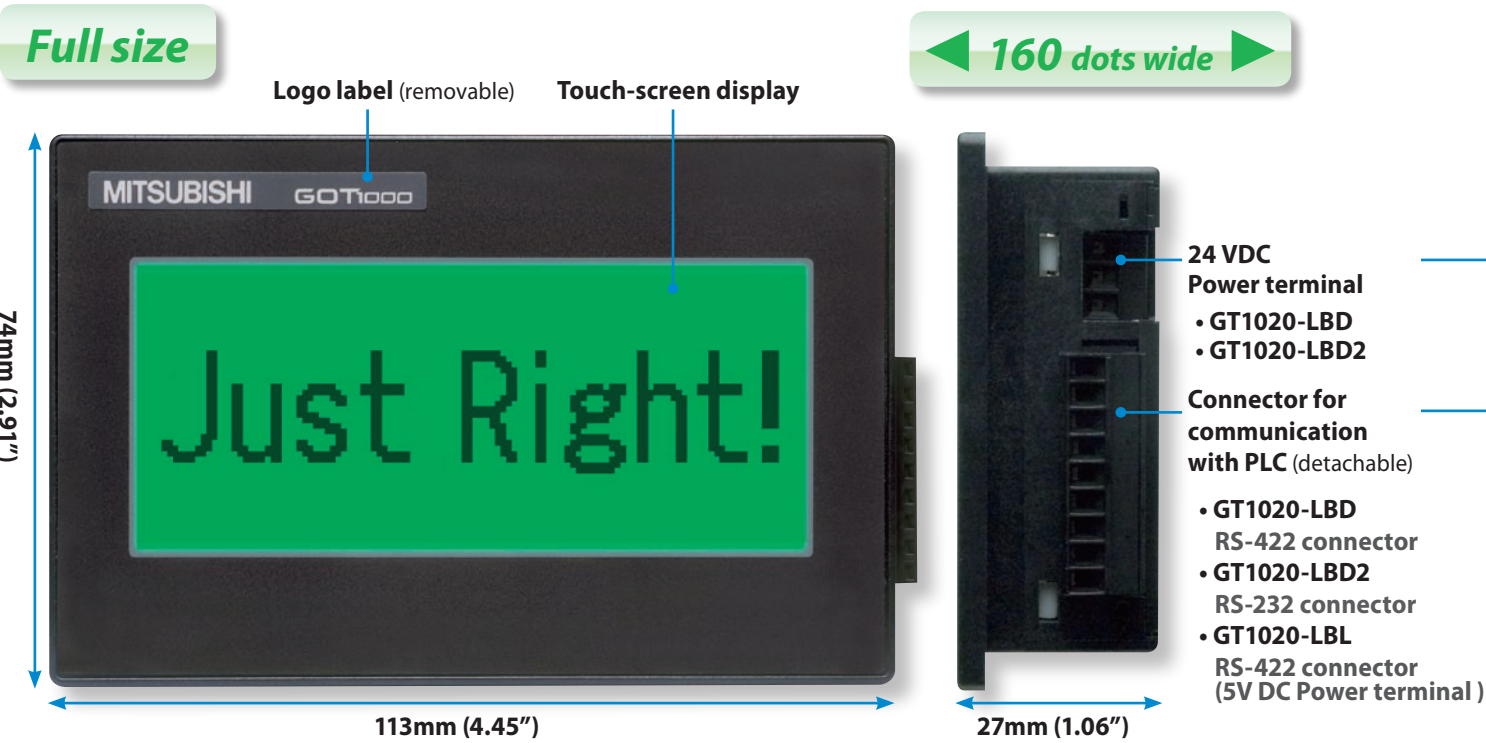# Creative Visual Solutions from a Super-Small Display

The Micro-GOT - Easy to use for all!

Featuring a bright 3.7-inch STN black-and-white liquid crystal display.

- The 3-color LED backlight offers users a variety of display backgrounds.
- The 3.7-inch LCD optimizes screen space with a resolution of 160 x 64 pixels.
  The LCD's brightness (200 cd/m²)*¹ offers clear imaging even under external lighting conditions.
- Equipped with a super slim design of 27 mm in depth the GT1020 also conforms to standard IP67.
- 5V DC version can be powered directly from the FX series PLC.

■ Straight-Forward Connectivity

Full size

Logo label (removable)   Touch-screen display

74mm (2.91")

MITSUBISHI GOT1000
Just Right!

113mm (4.45")   27mm (1.06")

160 dots wide

24 VDC Power terminal
- GT1020-LBD
- GT1020-LBD2

Connector for communication with PLC (detachable)
- GT1020-LBD
  RS-422 connector
- GT1020-LBD2
  RS-232 connector
- GT1020-LBL
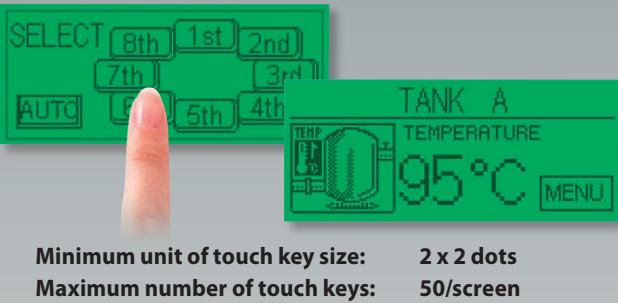 RS-422 connector
  (5V DC Power terminal)

Note: The screens shown in this brochure are for presentation purposes only. Actual backlight colors may differ slightly from those shown in the brochure.

*¹ Liquid crystal with green backlight brightness
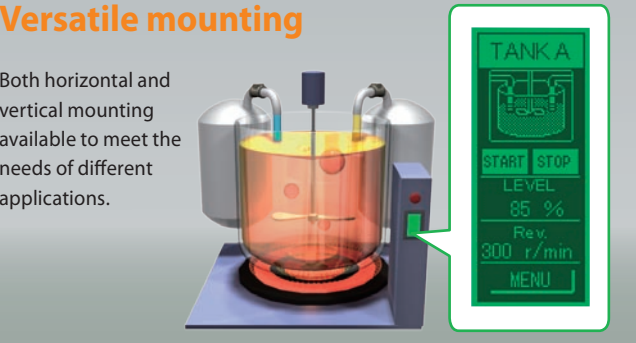

■ Intelligent Functionality

Flexible screen layout

Thanks to the analog touch panels, touch keys can be quickly created and placed in a desired position. Due to the high screen resolution, touch keys can be placed with up to 1 pixel accuracy.

Minimum unit of touch key size: 2 x 2 dots
Maximum number of touch keys: 50/screen

Versatile mounting

Both horizontal and vertical mounting available to meet the needs of different applications.

3-Color backlight screen for enhanced data visualization

Both flashing screens and different screen colors can be created based on the type of information being displayed. As the connected PLC is also able to switch screen colors and turn the backlight ON and OFF the GT1020 can be used to visualize a variety of system statuses.

For example:

[Green]:
Normal operation, automatic operation, etc.

[Orange]:
Manual operation, setup change, etc.

[Red]:
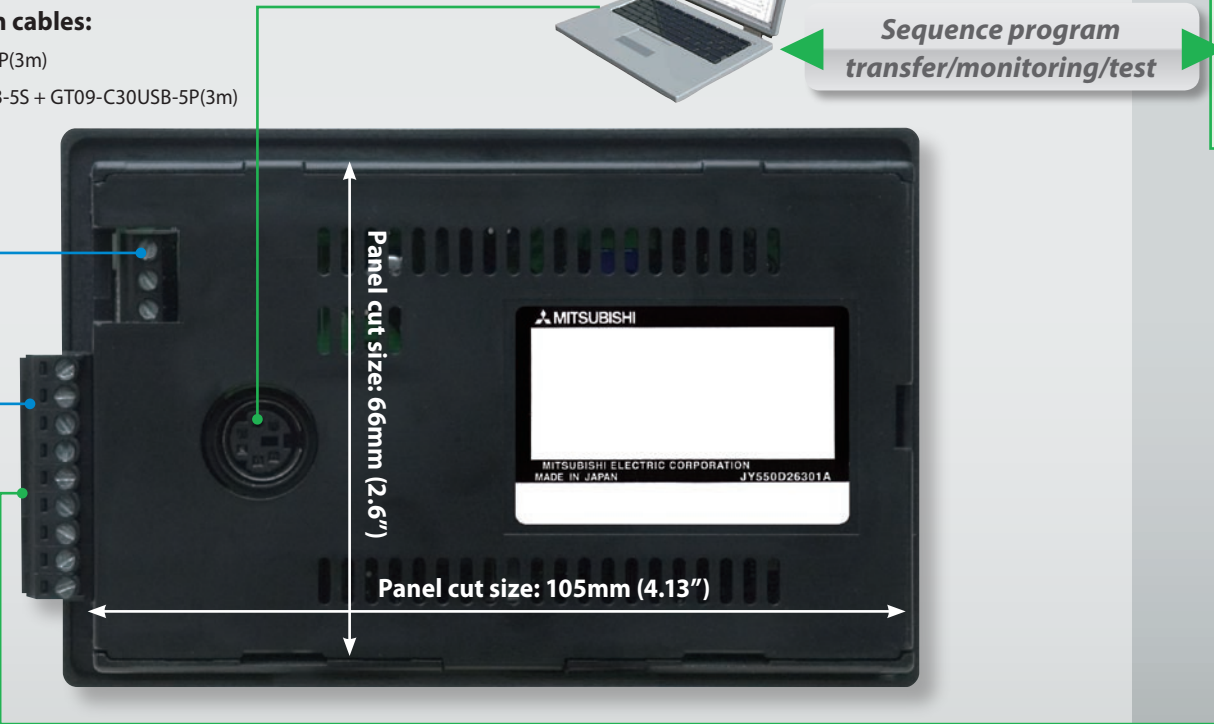Abnormality, material shortage, etc.

Connection to personal computers

MELSOFT   **GT Designer 2**   **GX Developer**

Connection cables:
GT01-C30R2-6P(3m)
GT10-RS2TUSB-5S + GT09-C30USB-5P(3m)

Sequence program transfer/monitoring/test

■ Effortless operation and maintenance

Alternative start-up screen

Users can set-up alternative images to be displayed when the GOT starts up.

* Bit-map images can be used.

Choose your font!

A variety of fonts are available including the standard type set and the windows type set

When windows fonts are selected, italic, underlined and underlined italic are also available.

*Standard fonts cannot be changed.
**For windows fonts restrictions apply please check manual for details.

GT1020-LBD/-LBD2
Variety of Fonts Available!

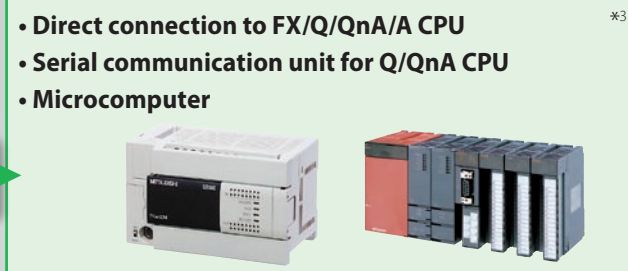| Font type	Size	Font name
Standard	6 x 8 dots	Gothic/Mincho
	16 dots	
High quality	12 dots	Gothic/Mincho
	16 dots	
True type		Gothic/Mincho
Windows type		All**

Characters from all over the world for people all over the world

Compatible with Unicode 2.1

The GT1020 can display a number of languages for a variety of countries and areas.

Transparent mode

Through the personal computer communication connector*² at the rear of the GOT, users can debug, start and adjust sequence programs.

- **Direct connection to FX/Q/QnA/A CPU**
- **Serial communication unit for Q/QnA CPU**
- **Microcomputer**   *³

Trouble free

- The GT1020 uses a LED backlight for high reliability that does not require replacement.
- The GT1020 is equipped with a flash ROM, therefore it does not require a battery.
- Optional protective cover available

Simple set-up of language switching windows

Language switching windows can be easily created allowing one language to be switched to another, for example English to Japanese.

Up to 10 languages can be switched per comment group. Window switching can take place not only for languages but also for different applications.

English   Japanese

Functionality of GOT1000 Series embodied in a compact design

Recipe function included as standard
The GOT has a built-in memory for up to 4,000 points (corresponding to 16-bit word devices). Using this memory the GOT can transfer a range of values to the PLC.

Communication driver
- Pre-installed OS
  The OS of the GOT is installed before shipment from the factory.
- Communication driver
  The communication driver mounted before shipment is provided for an FX Series PLC.
  To connect a Q/QnA/A Series PLC or microcomputer board, you have to install the required communication driver available from GT Designer2.

Other
- Screen saving function and alarm function

Multi-unit connection for high cost performance

You can connect two GT1020 units using a cable only.

Direct connection to FX/Q/QnA/A CPU   1st unit GT1020-LBD/LBD2   2nd unit GT1020-LBD2

[RS-422 or RS-232 connection] Connection cable: Cable shown in system configuration

[RS-232 connection] Cable: GT10-C30R2-6P (3 m)

* When two GT1020 units are connected, transparent functionality is disabled.

Panel cut size:66mm (2.6")
MITSUBISHI
MITSUBISHI ELECTRIC CORPORATION MADE IN JAPAN
Panel cut size: 105mm (4.13")

Options

Cables

GT1020-*** (RS-422 connection)	LBL	GT10-C10R4-8P	RS-422 cable for direct connection with FX CPU	8-pin mini DIN	1 m
		GT10-C30R4-8P			3 m
	LBD	GT10-C100R4-8P			10 m
		GT10-C30R4-25P	RS-422 cable for direct connection with QnA/A CPU	25-pin D sub	3 m
		GT10-C100R4-25P			10 m
GT1020-LBD2 (RS-232 connection)		GT10-C30R2-6P	RS-232 cable for direct connection with Q CPU	6-pin mini DIN	3 m
Data Transfer Cable		GT01-C30R2-6P	For connection between PC (screen creation software) (9-pin D sub, female) and GOT (6-pin mini DIN, female)		3 m

Protective sheet

GT10-20PSGB	Anti-glare type, transparent frame, 5 sheets
GT10-20PSCB	Clear type, transparent frame, 5 sheets
GT10-20PSGW	Anti-glare type, white frame, logo provided, 5 sheets
GT10-20PSCW	Clear type, white frame, logo provided, 5 sheets

Converter

GT10-RS2TUSB-5S
RS-232/USB conversion adaptor
(applicable software: GT Designer2 and GX Developer)
Connectable USB cable: GT09-C30USB-5P (3 m)
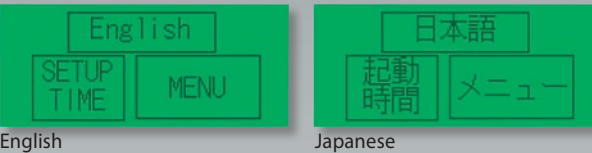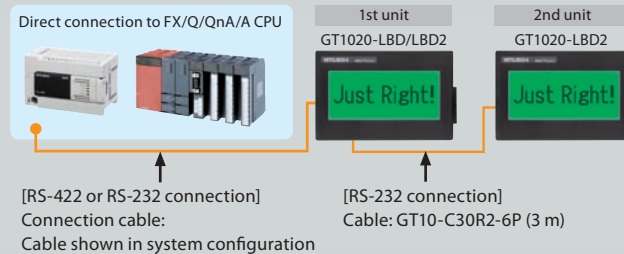(manufactured by Mitsubishi Electric System & Service)

Manual

GT10-U-E (Users manual)

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*² When two GT1020 units are connected, this connector is available to communicate with the second GT1020 unit.

*³ Drivers available at time of brochure printing. For latest driver updates contact your local Mitsubishi Electric representative.