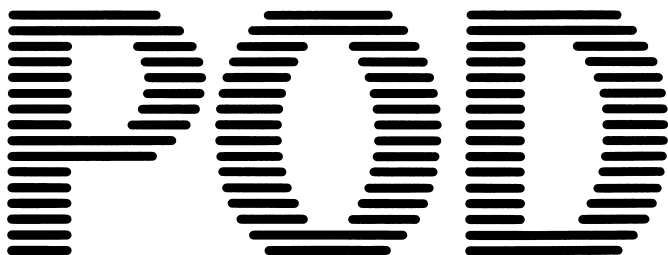
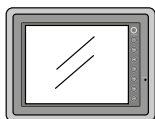


FUJI UG □ 20-SERIES PROGRAMMABLE OPERATION DISPLAY



USER'S MANUAL
<UG □ 20 SERIES Handy Type>

TYPES: UG320HD



Thank you for selecting the Fuji Programmable Operation Display, Handy Type POD UG320 Series.

This user's manual (UG Series Manual <Handy Type>) describes the system configuration, specifications, and operations of the handy POD (UG320HD). For proper setup and operation, you are requested to read through this booklet to understand more about the product.

Please check that the product delivered to you is the one you ordered. If the product has any defect, such as cracks and flaws, please contact your dealer or a nearest Fuji Electric sales office.

[Reference]

In addition to this manual, the following manuals on the UG □ 20 Series are available. Please ask your nearest dealer for the appropriate manuals and read them as required.

Name	Manual No.	Contents
UG□ 20 Series Manual <Tutorial>	FEH350	Describes how to operate screen editor (UG00S-CW) for the UG Series.
UG□ 20 Series Manual <Reference>	FEH351	Describes the functions of the UG □ 20 Series.
UG□ 20 Series Manual <Hardware>	FEH352	Describes the UG520/420/320/221/220 Series hardware.

Notes

- (1) No part of this manual may be reproduced in any form without prior permission of the publisher.
- (2) The contents of this manual, including the specifications, are subject to change for improvement without notice.
- (3) This manual was prepared with utmost care. However, if you find any ambiguity, errors, etc., please contact any of our sales offices that are listed at the end of this manual. In so doing, please tell the manual number shown on the cover of this manual.

Safety Precautions

[Matters calling for special attention]

When using the product under the following conditions or environment, you are requested not only to give proper consideration to safety measures, such as using the product with ample allowance given for its ratings and functions (performance) and fail-safe operation, but also to consult our sales representative in charge.

- 1) Storage or use under conditions or environment not specified in the instruction manual and related manuals.
 - 2) Application to nuclear power control, railway, aviation, vehicle, combustion equipment, medical equipment, amusement facilities, safety equipment, etc.
 - 3) Application to uses which are considered to have a potentially large effect on life and property and which demand a high degree of safety.
- Please read this section “Safety Precautions” carefully before using the product, and use it properly.
 - Here, the safety precautions are divided into levels “Warning” and “Caution.”

 **Warning** : Incorrect handling of the device may result in death or injury.

 **Caution** : Incorrect handling of the device may result in minor injury or physical damage.

Even some items indicated by “Caution” may also result in a serious accident.

The general safety precautions are described below. Individual precautions are given where necessary, with the above symbols.

Warning

- Do not touch the terminals or other electrically live parts while power is supplied to the product. To prevent electric shock, ensure that crimp terminals or lead wires connected to the terminal block are not touching the mounting bracket screws.
- Turn OFF the power before mounting, dismounting, wiring, maintaining or checking, otherwise, electric shock, erratic operation or troubles might occur.
- The liquid (liquid crystal) on the liquid crystal display is harmful. If it has been damaged, it must not get into the mouth. If the skin or clothes are stained with is, rinse them with soapy water.
- Design and configure an emergency stop, interlock, or other safety circuit external to the POD. Do not use the POD keypad switches in such safety circuits. Circuits configured using POD switches will not be able to protect the machine from damage or user from physical injury if the POD becomes faulty.

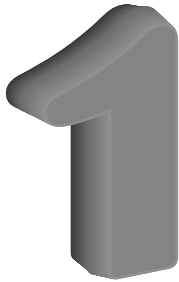
Safety Precautions

Caution

- Store the product in the environment specified in the instruction manual and related manuals. Under high temperatures in particular, the battery life is significantly reduced.
- Do not use one found damaged or deformed when unpacked, otherwise, failure or erratic operation might be caused.
- Do not shock the product by dropping or tipping it over, otherwise, it might be damaged or troubled.
- Follow the directions of the operating instructions when mounting the product. If mounting is improper, the product might drop or develop problems or erratic operations.
- No one other than authorized expert engineer may install, wire, inspect or maintain this product.
- Use the rated voltage and current mentioned in the operating instructions and manual. Use beyond the rated values might cause fire, erratic operation or failure.
- Operate (keep) in the environment specified in the operating instructions and manual. High temperature, high humidity condensation, dust, corrosive gases, organic solvents, cutting lubricant, excessive vibration or shock might cause electric shock, fire, erratic operation or failure.
- Select a cable of the appropriate length and rating for the applicable voltage and current. Tighten the terminal screws with the torque prescribed in this document and other related manuals. Incorrect wiring may result in a fire.
- Contaminants, wiring chips, iron powder or other foreign matter must not enter the device when installing it, otherwise, erratic operation or failure might occur.
- Do not use the product with machining oil sticking to it. It can cause malfunction or breakdown.
- Periodically make sure the terminal screws and mounting screws are securely tightened. Operation at a loosened status might cause fire or erratic operation.
- Although the front surface of this product is protected by a hard-coated sealing film, do not press the keypad switches with tweezers or sharp-pointed tools. To prevent damage, do not press the keys too hard.
- When transferring screen data during system operation, confirm unit safety completely. Incorrect operation can cause a machine damage or accident.
- Do not place a transceiver, etc. close to the product. It can cause the product to malfunction.
- Connect the ground terminal to the ground, otherwise, an erratic operation might occur.
- Do not remodel or disassemble the product, otherwise, a failure might occur.
- Follow the regulations of industrial wastes when the device is to be discarded.

Contents

Chapter 1	Hardware Specifications	1-1
Chapter 2	System Screen	2-1
Chapter 3	Editor Setting	3-1
Chapter 4	Handling of Peripheral Equipment	4-1



Hardware Specifications

- 1.1 Special Features
- 1.2 Notes on Usage
- 1.3 System Composition
- 1.4 Name of Each Part
- 1.5 Outside Dimensions
- 1.6 Specifications
- 1.7 Multistage Terminal Board
- 1.8 1:1 Link Communication
- 1.9 1:n Link Communication (Multi-drop)
- 1.10 n:1 Link Communication
- 1.11 Modular Jack (MJ1)
- 1.12 DIP Switch
- 1.13 Neck Strap and Cable Clamp Mounting
Method
- 1.14 Bar Code Reader Interface

1

Hardware Specifications

1.1 Special Features

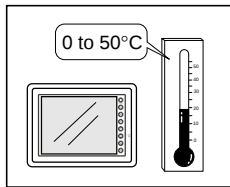
- 1) Portable handy type
Thin and space-saving design made this product highly portable and convenient. With dedicated bracket (sold separately, type: UG00P-HDFS) or dedicated stand (sold separately, type: UG00P-HDST), the product can be used as wall-mounted type or desktop type.
- 2) 128-color images on 7.7-inch display
Bright, high definition 7.7-inch STN color LCD is used to realize fine and colorful expression in 128 colors. Bitmap files can also be clearly displayed.
- 3) VGA
High resolution VGA (640×480 dots) is employed. More amount of information than before can be displayed on the screen.
- 4) Safety functions
Push-lock type emergency switch (with isolation mechanism) is installed as standard just in case. To prevent misoperation, deadman switch (adaptable to 3 positions with option) is installed. In addition, it is possible to reinforce the security function by employing a key switch (option) which allows operation only to those who have the key.
- 5) Adapted to CF (Compact Flash) card
Adapted to large capacity CF card
 - Saving screen data, system program, etc.
As multiple screen data can be saved, data can be changed easily at the site.
 - Saving Memo Pad data
Memo Pad data can be saved. It is also possible to convert the saved files into bitmap files with the CF card manager installed in the UG00S-CW screen development editor.
 - Saving patterns
As the patterns that are used on screens can be saved in CF card, the problem of the shortage in memory capacity for screen data will be solved.
 - Saving hard copy image as a file
With a macro, screen image can be saved as a file. It is also possible to convert these files into BMP files with the CF card manager installed in UG00S-CW.

- Writing and Reading of recipe data (CSV file)
CSV file prepared in advance can be read in the UG320HD main unit. It is also possible to output PLC memory data or UG320HD internal memory data as a CSV file.
- Sampling function
Sampling data can be saved in a CF card. As these data can be converted into CSV files with a macro, they can easily be edited on a personal computer.

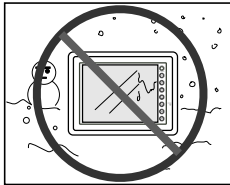
1.2 Notes on Usage

Environmental Limits

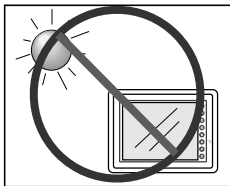
1. Use POD at an ambient temperature of 0 to 50°C, and a relative humidity of 35-85 %RH.



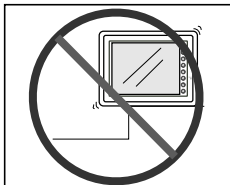
2. Avoid places where moisture may easily condense due to sudden temperature changes.



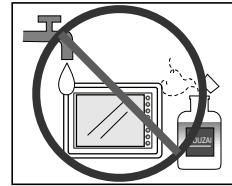
3. Avoid direct sunlight.



4. Never install POD in a place where impacts or vibrations may be transmitted.

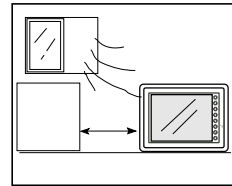


5. Avoid any place in which there is the possibility that water, corrosive gas, flammable gas, solvents or coolants, grinding oil can come in contact with the unit. Never install the unit in a place where dust, salt and metallic particles are present.



Locations

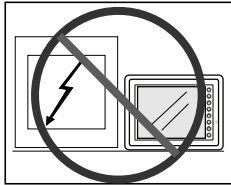
1. Secure sufficient space around POD for ventilation.



2. Never attach POD to the top of any apparatus generating high levels of heat (heater, transformer, large-capacity resistor, etc.).

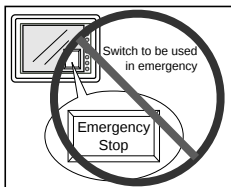


3. Never install POD in the same compartment as high-voltage equipment.
The unit should be at least 200 mm away from high-voltage lines or power cables.

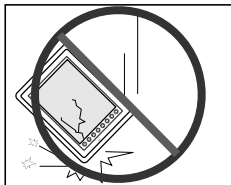


Usage

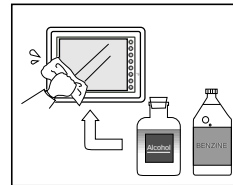
1. Emergency stop circuit must be composed of an external relay circuit with a start signal for UG320HD built in it. Avoid using switches other than emergency stop switch on the UG320HD for emergency purpose.



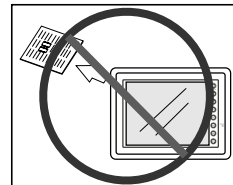
2. POD has a glass screen. Never drop or subject the unit to strong impacts.



3. In a dry environment, POD may generate a large amount of static electricity.
Therefore, before touching the unit, touch a grounded metallic section to discharge the static electricity.
4. Application of thinner may discolor POD. Use alcohol or benzine available commercially for cleaning.



5. Never remove any printed circuit board from POD. (This will harm the unit.)



6. Never operate the display by using a tool with a sharp point like a screwdriver.
Touch the display by fingers.

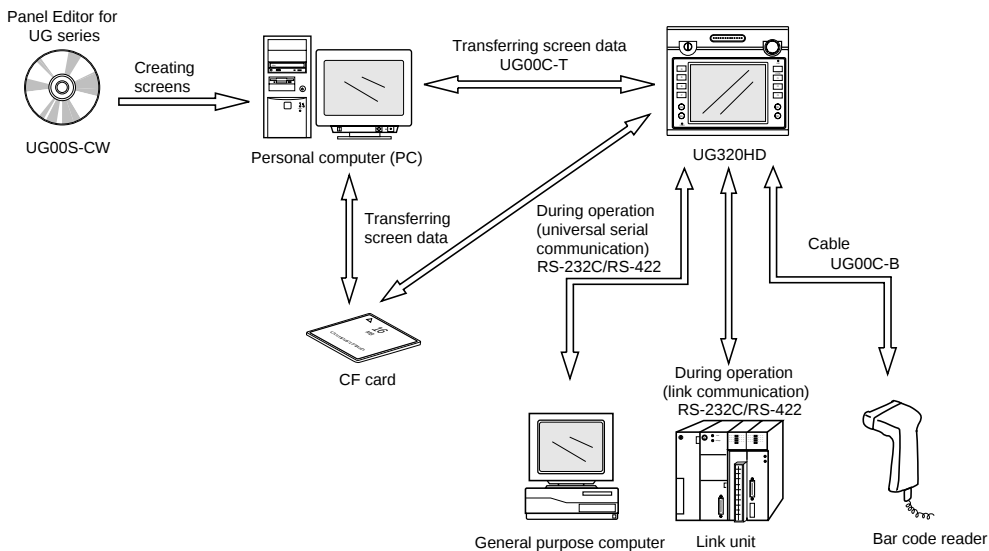


1.3 System Composition

System Composition / List of Models / Peripheral Equipment / Commendable CF Card / Commendable Connectors

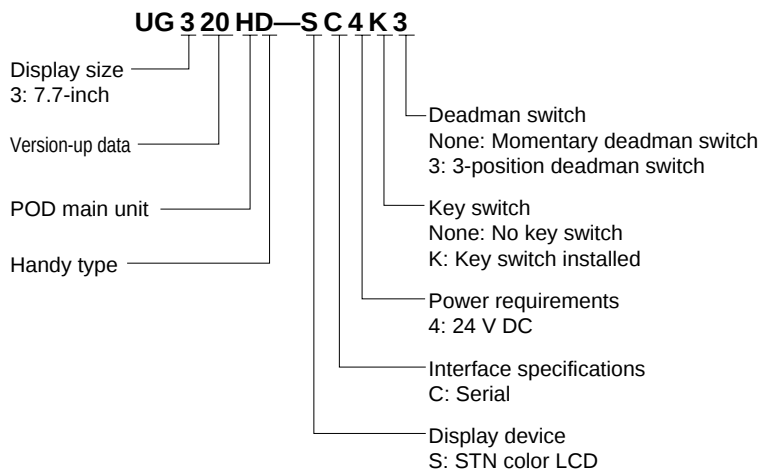
■System Composition

The following illustration shows possible system configurations using UG320HD (handy type).



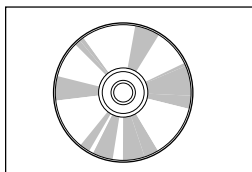
■List of Models

Individual character of model code means as follows:



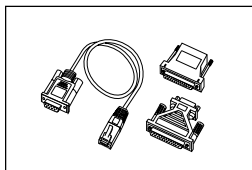
* Optional communication unit (UG0 □ I- □) cannot be used.

■ Peripheral Equipment



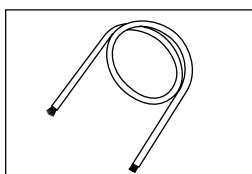
UG00C-CW

Application software for creating screen data
(Panel editor for Windows95/98/NT4.0/2000: common for Japanese and English versions)



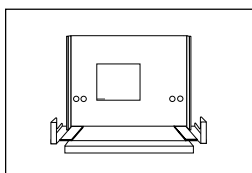
UG00C-T (Screen data transfer cable, 3 m)

Connects the POD to a personal computer.



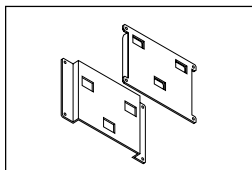
UG00C-HD□ (External connection cable, □ : 3, 5, 15, 20 (m))

Cable for communication with PLC or power supply. 30-core cable without termination



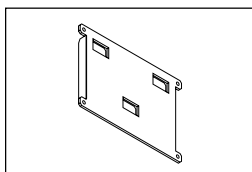
UG00P-HDST (Desktop stand)

Stand for using the POD as desktop type
Tilt angle can freely be changed.



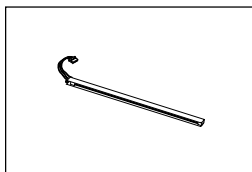
UG00P-HDFS (Wall mounting bracket)

Bracket for using the POD as wall-mounted type
POD-side and wall-side pieces make one set.



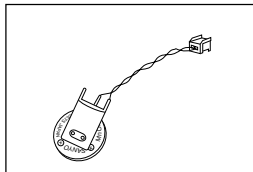
UG00P-HDF1 (Wall side piece of wall mounting bracket)

Bracket for using the POD as wall-mounted type
Wall-side piece only



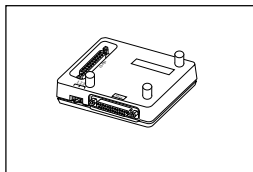
UG320P-BC (Backlight for replacement)

Replacement backlight for UG320HD



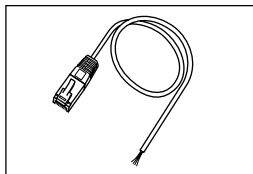
UG00P-HDRB (Lithium battery)

Backup lithium battery for the internal clock
Backup time: Approx. 5 years at 25°C



UG00P-DI (ACPU/QnACPU/FXCPU dual port interface)

Add-on connector with two ports, specifically designated for the connector on the MITSUBISHI's ACPU/QnACPU/FXCPU programmer. This can improve operability of the ACPU/QnACPU/FXCPU programmer that is directly connected.



UG00C-B (Bar code reader/UG-Link connecting cable, 2 m)

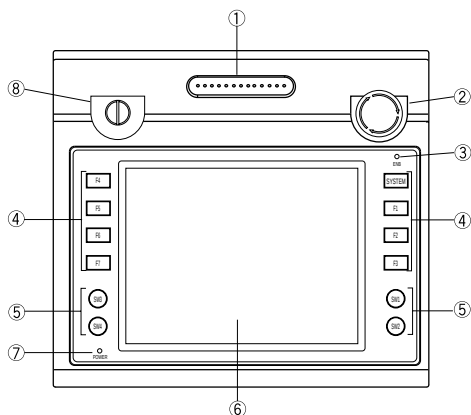
Used to connect a bar code reader or a personal computer to the POD.

■Commendable CF Card

Manufacturer	Type	Capacity
Melco	RCF-L16M	16MB
TDK	TC032HS	32MB
Kodak	KPCN-32	32MB
Sun Disk	SDCFB-64-505	64MB
I-O Data	PCCF-H128MS	128MB

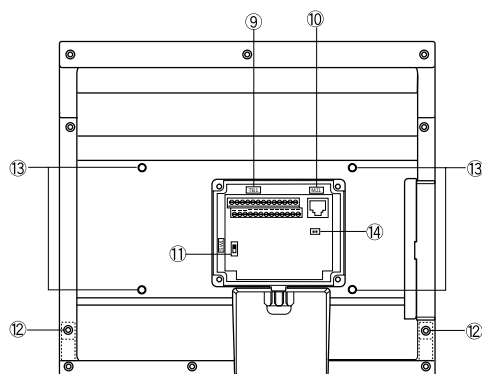
1.4 Name of Each Part

■ Front



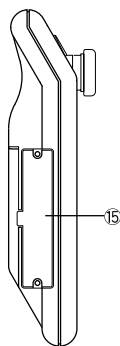
- ① Deadman switch / 3-position switch (option)
- ② Emergency stop switch
- ③ ENB lamp
- ④ Function switches (For detail operation, refer to P2-16.)
- ⑤ External output switch
- ⑥ Display
- ⑦ POWER lamp
- ⑧ Key switch (option)

■ Rear

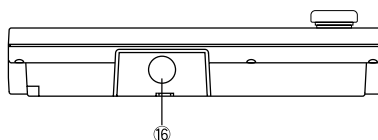


- ⑨ TB1: Terminal for PLC communication, power supply or external output
- ⑩ MJ1: Modular jack for screen data transfer
- ⑪ SW1: Terminal resistance (Upper side: ON)
- ⑫ Cable clamp or neck strap mounting hole
- ⑬ Wall mounting bracket (UG00P-HDFS) mounting hole
- ⑭ Connector for internal clock data backup battery (UG00P-HDRB)

■ Side



■ Bottom



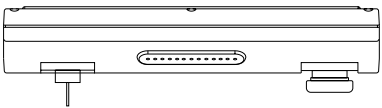
- ⑮ CF card interface
- ⑯ Communication cable mounting hole

1.5 Outside Dimensions

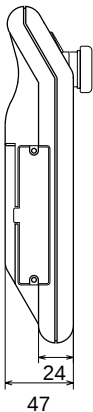
■ Outline Drawing and Outside Dimensions of UG320HD

Unit: mm

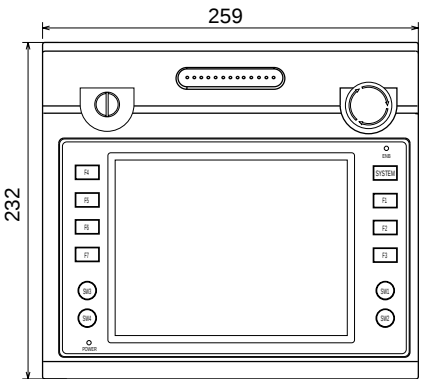
● Top



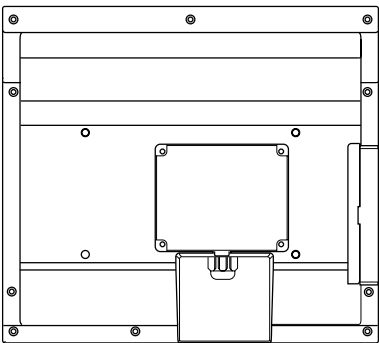
● Side



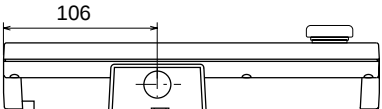
● Front



● Rear



● Bottom



1.6 Specifications

Item \ Type		UG320HD
Power Supply	Rated Voltage	24V DC
	Permissible Range of Voltage	24V $\pm$ 10% DC
	Permissible Momentary Power Failure	10ms or less (24V DC)
	Demand	20W or less
	Rushed Electric Current	13A 2ms
	With-stand voltage	DC external terminals to FG: 500V AC per min.
Physical Environment	Insulation Resistance	500V DC, 10M Ω or more
	Ambient Temperature	0°C to +50°C
	Storage Ambient Temperature	-10°C to +60°C
	Ambient Humidity	85% RH or less (without dew condensation)
	Dust	No conductive dust
	Solvent Resistance	No cutting oil or no organic solvent to cling to the unit
	Corrosive Gas	No corrosive gas
Mechanical Working Conditions	Vibration Resistance	Vibration frequency: 10 to 150Hz, Acceleration: 9.8m/s ² , 3 directions of X, Y and Z: one hour
	Shock Resistance	Pulse shape: Sine half wave, Peak acceleration: 147m/s ² , 3 directions of X, Y and Z: six times
Electrical Working Conditions	Noise Resistance	Noise voltage: 1000Vp-p, noise width: 1 μ s
	Static Electricity Discharge Resistance	Contact discharge 6 kV; Aerial discharge 8 kV
Mounting Conditions	Grounding	Type D grounding
	Structure	Protection structure: conforming to IP65 (except UG320HD-SC4□3) Form: in a body Mounting method: handy, wall mounting, desktop
	Cooling System	Cooling naturally
	Weight	Approx. 1.2kg
	Dimensions W $\times$ H $\times$ D (mm)	259 $\times$ 232 $\times$ 47 (excluding emergency stop switch)
Case Color		Munsell N-2.0 (black)
Material		PC/ABS

■ Display Specifications

Item	Specifications
Display device	STN color LCD
Resolution W × H (dots)	640 × 480
Dot pitch W × H (mm)	0.082 × 0.246
Effective display area	7.7 inches
Display color	128 colors + blinking 16 colors
Backlight	Cold cathode ray tube (can be replaced by user)
Life of backlight*	Approx. 40,000 hours
Automatic off function	Continuously lighting, arbitrarily settable
Contrast adjustment	By function switches
POWER lamp	Lights up when power is supplied.
ENB lamp	Lights up when screen operation is possible
Surface sheet	Material: PET

* When the normal temperature is 25, and the surface luminance of the display is 50% of the default.

■ Touch Panel Specifications

Item	Specifications
Switch resolution	1024 (W) × 1024 (H)
Form	Analog resistance film
Mechanical life	Min. 1,000,000 cycles

■ Function Switch Specifications

Item	Specifications
Number of switches	12 (4 for direct external output)
Type of switch	Membrane switch
Mechanical life	Min. 1,000,000 cycles

■ Emergency Switch Specifications

Item	Specifications
Number of switches	1
Form	Push-lock type (2 NC contact, common)
Mechanical life	Min. 100,000 cycles

■ Deadman Switch Specifications

Item	Specifications
Number of switches	1
Form	Momentary switch (1 NO contact)
Mechanical life	Min. 1,000,000 cycles

■3-position Switch Specifications

Item	Specifications
Number of switches	1
Form	1 NO contact (double cutout, slow action)
Mechanical life	Min. 1,000,000 cycles (for 1P → 2P → 1P action) Min. 100,000 cycles (for 1P → 2P → 3P action)
Operating pressure (reference value)	Required force to work directly on circuit operation: Min. 30N

■Key Switch Specifications (Option)

Item	Specifications
Number of switches	1
Number of contacts	1 NO contact
Mechanical life	Min. 250,000 cycles
Electrical life	Min. 100,000 cycles (Switching frequency: 1200 cycles/hour)

■Interface Specifications

Item	Specifications
Multistage terminal board (TB1)	RS-232C, RS-422/485
• PLC connection	Start-stop synchronization system
• Power supply	Data length: 7 bits, 8 bits
• External output	Parity: Even, odd, none
	Stop bits: 1 bit, 2 bits
	Baud rate: 4800, 9600, 19200, 38400, 57600, 76800, 115200 bps
Modular jack, 8-pin (MJ1)	RS-232C
• Screen data transfer	Data length: 7 bits, 8 bits
• UG-Link	Parity: Even, odd, none
• Bar code	Stop bits: 1 bit, 2 bits
	Baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps

■ Display Specifications

Item		Specifications				
Display Language		Japanese	Eng./W. Europe	Chinese	Chinese (Simplified)	Korean
Characters	1/4-size, 1-byte	ANK code	ASCII code	ASCII code	ASCII code	ASCII code
	2-byte (16-dot)	JIS 1st and 2nd	ASCII code	Chinese	Chinese (simplified)	Hangul (without Kanji)
	2-byte (32-dot)	JIS 1st	ASCII code	_____	_____	_____
Size of Characters		1/4-size : 8×8 dots 1-byte : 8×16 dots 2-byte : 16×16 dots or 32×32 dots Enlarge : W, 1 to 8 H, 1 to 8				
Number of Characters	Resolution	640 × 480				
	1/4-size	80 columns × 60 lines				
	1-byte	80 columns × 30 lines				
	2-byte	40 columns × 30 lines				
Property of Characters		Display property: normal, reverse, blinking, bold, shadow Color: 128 colors + blinking 16 colors				
Kind of Drawing		Lines: line, continuous lines, box, parallelogram, polygon Circles: circle, arc, sector, ellipse, elliptical arc, elliptical sector Others: tile patterns				
Property of Drawing		Type of lines: 6 types (fine, thick, dot, chain, broken, two-dot chain) Tile patterns: 16 types (incl. user-definable 8 types) Display property: normal, reverse, blinking Display color: 128 colors + blinking 16 colors Color specification: foreground, background, boundaries (line)				

■ Drawing Environment

Item	Specifications
Drawing Method	Exclusive drawing software
Drawing Tool	Name of exclusive drawing software: UG00S-CW (Ver.2.4.0.0 or later) Personal computer: with i486 or more (pentium or more is recommended) OS: Microsoft Windows 95/98/NT version 4.0 or 2000 Capacity of hard disk required: free area of approx. 40MB or more Display: resolution of 640×480 or more (800×600 is recommended)

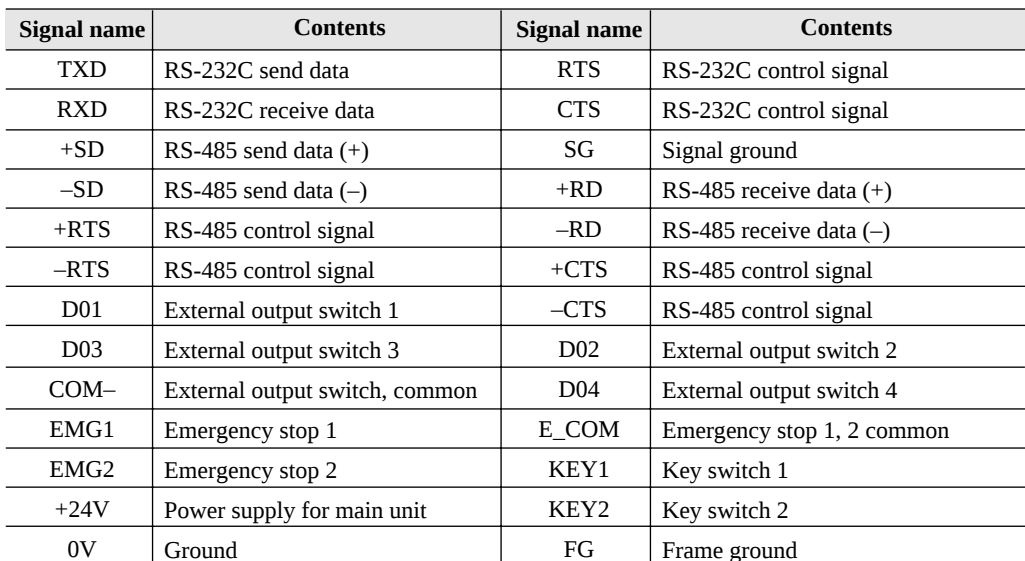
■ Function Performance Specifications

Item		Specifications
Screens		Max. 1024
Screen Memory		FP-ROM (flash memory), Approx. 2,760Kbytes (different from the language)
Switches		768 per screen*2
Actions of Switch		Set, reset, momentary, alternate, to light possible to press a function switch and a display switch at the same time
Lamps		Reverse, blinking, exchange of graphics 768 per screen*2
Graphs		Pie, bar, panel meter and closed area graph can be displayed without limit. Total capacity per screen: within 128KB Statics and trend graphs: Max. 256 per layer*1 *2
Data Setting	Numerical Data Display	No limits, total capacity per screen: within 128 KB*2
	Character Display	No limits, total capacity per screen: within 128 KB*2
	Message Display	Resolution: 640 ¥ 480, Max. 80 characters No limits, total capacity per screen: within 128 KB*2
Messages		6144 lines
Sampling		Sampling display of buffer data (constant sample, bit synchronize, bit sample, relay sample, alarm function)
Multi-Overlaps		Max. 1024
Data Blocks		Max. 1024
Graphic Libraries		Max. 2560
Patterns		Max. 1024
Macro Blocks		Max. 1024
Page Blocks		Max. 1024
Direct Blocks		Max. 1024
Screen Blocks		Max. 1024
Calendar		provided
Buzzer		provided, 2 types (intermittent short and long sounds)
Back-light Auto OFF Function		ON at all time, specified freely
Self-diagnostic Function		Self-test function switches Check function of communication parameter setting Check function of communication

*1 Layer: 4 per screen (base + 3 overlaps)

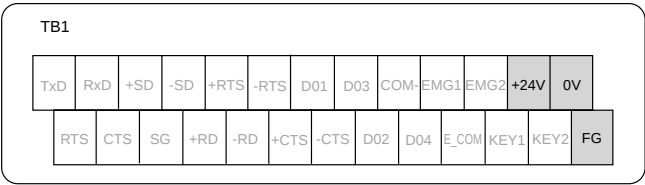
*2 For the memory setting limit, refer to the User's Manual <Reference> (FEH351).

1. Signal assignment (TB1)



2. Power Terminal

The power cable is connected to the shaded part in the following figure.

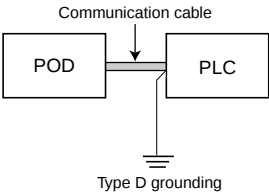


Power Cable

- Be sure to use the power supply the supply voltage variation of which is within the permissible range.
- Be sure to use the power supply that is low in the noise between lines or between line and ground.
- In order to minimize voltage drop, use as thick a power cable as possible.
- Keep the 24 V DC cable sufficiently away from high-voltage or large-current cables.

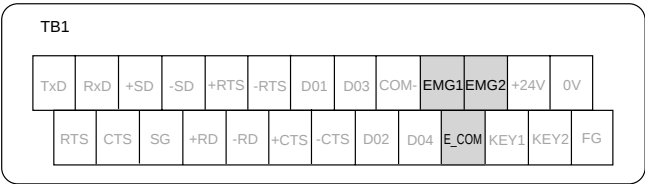
Grounding

- ⚠ This equipment must be grounded.
- For grounding this equipment, be sure to use a dedicated grounding wire. (Type D grounding with 100Ω or lower grounding resistance)
- If the equipment is grounded together with other machines or to a part of a building, it can be adversely affected.
- If grounding results in a malfunction of this equipment, isolate the FG terminal from the ground.



3. Emergency Stop Switch

Connect the cable to the shaded part in the following figure to output emergency stop switch signal

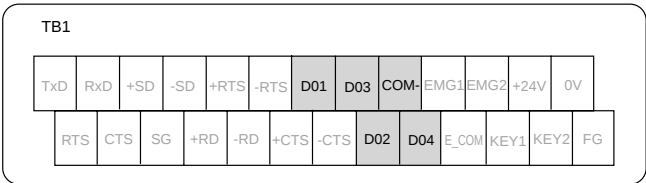


Emergency Switch Specifications

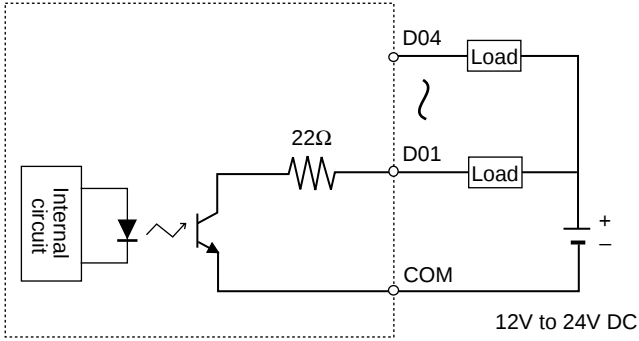
Item	Specifications
Number of switches	1
Form	Push lock type (2 NC contacts, common)
Mechanical life	Min. 100,000 cycles

4. External Output Switch

Signal is output from the external output switch to an external device. Connect the cable to the shaded part in the following figure.



External Output Switch Specifications

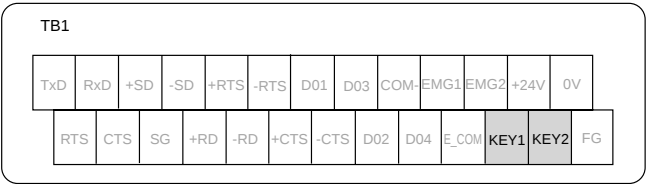
Item	Specifications
Number of output points	4
Output element	Sink
Rated voltage	12V to 24V DC
Max. drive current	50mA
Isolation method	By photocoupler
Circuit configuration	



Do not use the external output switches for emergency purposes.

5. Key Switch (Option)

To output key switch signal, connect the cable to the shaded part in the following figure.

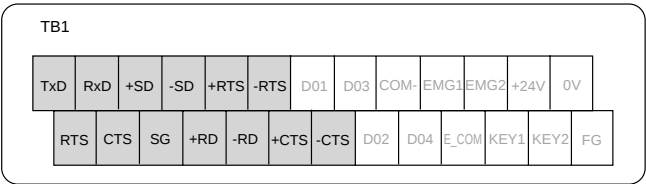


■Key Switch Specifications

Item	Specifications
Number of switches	1
Number of contacts	1 NO contact
Mechanical life	Min. 250,000 cycles
Electrical life	Min. 100,000 cycles (switching frequency: 1200 cycle/hour)

6. Serial Interface

Used for communication with PLC. Connect the cable to the shaded part in the following figure.



■Serial Interface Specifications

Item	Specifications
Signal level	RS-232C or RS-422/485
Baud rate	4800, 9600, 19200, 38400, 57600, 76800, 115200
Parity	Even, odd, none
Data length	8 bits, 7 bits
Stop bits	1 bit, 2 bits
Connecting method	Terminal board

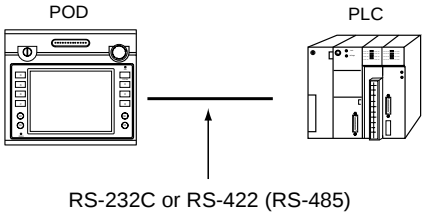
7. Connecting Method

The following 3 methods are available for connecting POD(s) to PLC(s).

■ 1:1 Link Communication

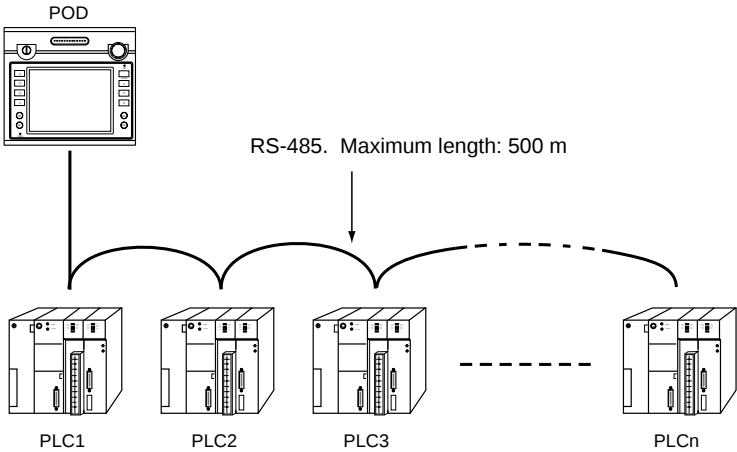
One unit of POD is connected to one unit of PLC.

For more information, refer to 1-8 (1:1 Link Communication) (on page P1-21).



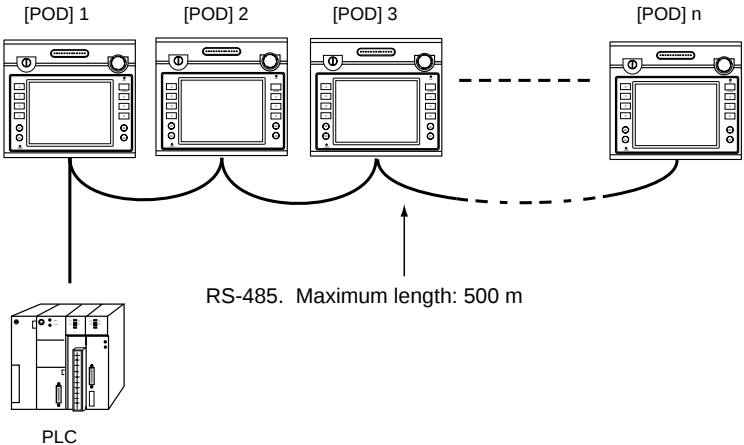
■ 1:n Link Communication (Multi-drop)

For more information, refer to 1-9 (1:n Link Communication) (on page P1-23).



■ n:1 Link Communication (Multi-link)

Fore more information, refer to 1-10 (n:1 Link Communication) (on page P1-25).



8. Cable

- Commendable cable
Use communication cable UG00C-HD□ (□: 3, 5, 15, 20 m) supplied from Fuji Electric Co., Ltd.
- For cable connection, tighten the terminal screws to the following torque:

Screw size	Tightening torque	Solid wire	Stranded wire
M2	0.22 to 0.25N•m	0.14-1.5mm ²	0.14-1.0mm ²



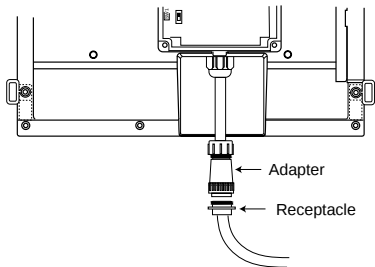
Core wires of the cable may not be soldered.

- Commendable rod terminal

Manufacturer	Type
Phoenix Contact	AI0.25-6YE AI0.34-6TQ AI0.5-8WH

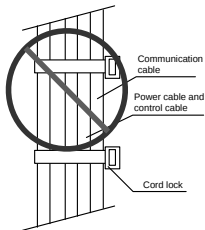
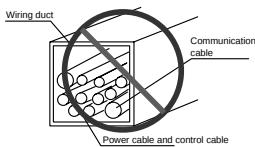
- Commendable connector

Manufacturer	Name	Type
Nanaboshi Kagaku Kenkyusho	Adapter	NJW-2831-PM
	Receptacle	NJW-2831-RF



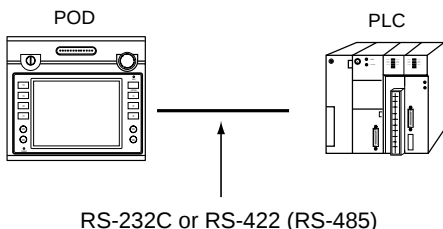
■Precautions for Wiring for Communication

- Do not wire the communication cable together with high-voltage circuit cables.
- Do not bundle the communication cable together with high-voltage circuit cables using cord lock in a duct. Although it is tempting to bundle all the cables neatly, this does not necessarily lead to a noise-resistant configuration.
- It is recommended that the communication cable be independently wired.



1.8 1:1 Link Communication

One unit of POD is connected to one unit of PLC.



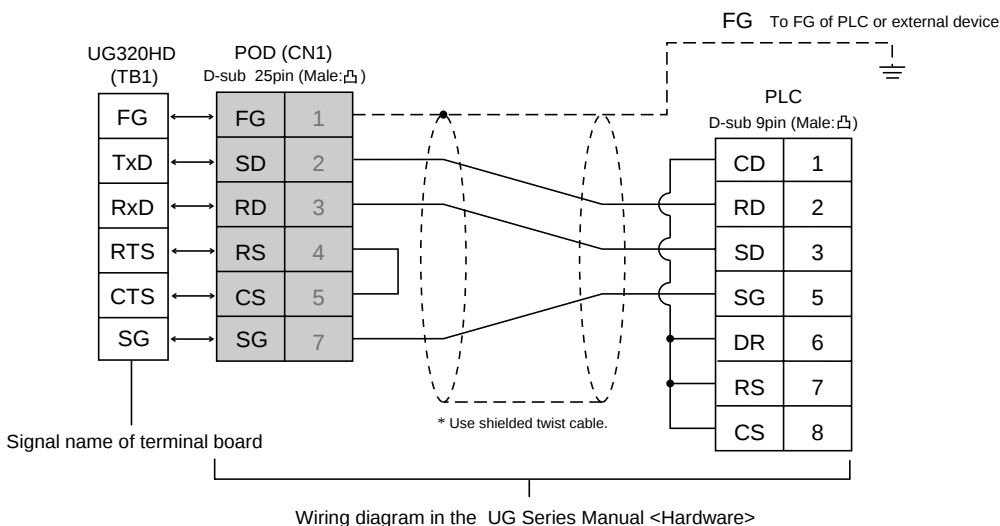
■RS-232C Communication



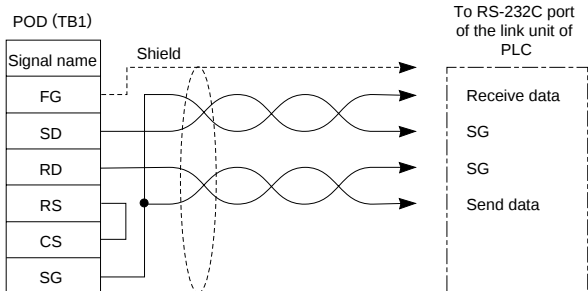
For more information about the wiring to individual PLC, refer to the “UG Series User’s Manual <Hardware>” (FEH352).

In connecting to a PLC, be sure to match the signal names of UG320HD (TB1) with those on the POD (CN1) side described in the connection diagram in the “UG Series User’s Manual <Hardware>”. Pin numbers on the POD (CN1) side shall be ignored.

Example: To connect to MITSUBISHI computer link unit A1SJ71UC24-R2,
Referring to Connection Diagram 1 on page P2-21 of the “UG Series User’s Manual <Hardware>”,



- For RS-232C, SD and SG as well as RD and SG are made into pairs.
- Shield shall be connected to the FG terminal.



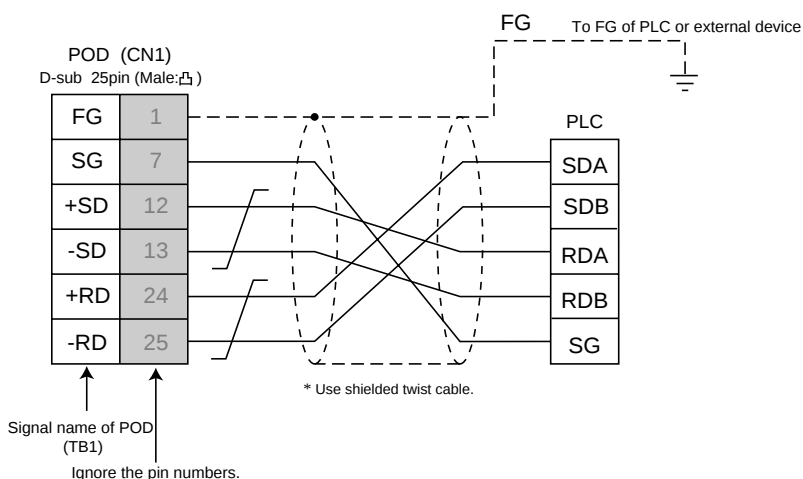
■ RS-422 Communication



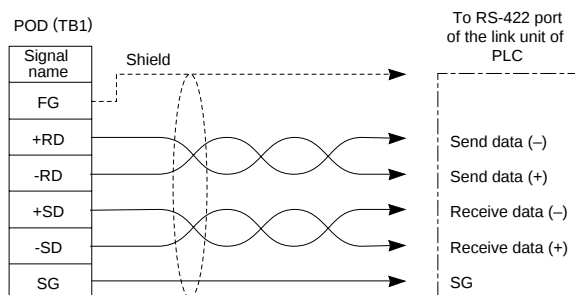
For more information about the wiring to individual PLC, refer to the “UG Series User’s Manual <Hardware>” (FEH352).

In connecting to a PLC, be sure to match the signal names of UG320HD (TB1) with those on the POD (CN1) side described in the connection diagram in the “UG Series User’s Manual <Hardware>”. Pin numbers on the POD (CN1) side shall be ignored.

Example: To connect to MITSUBISHI computer link unit A1SJ71UC24-R4,
Referring to Connection Diagram 3 on page P2-22 of the “UG Series User’s Manual <Hardware>”,

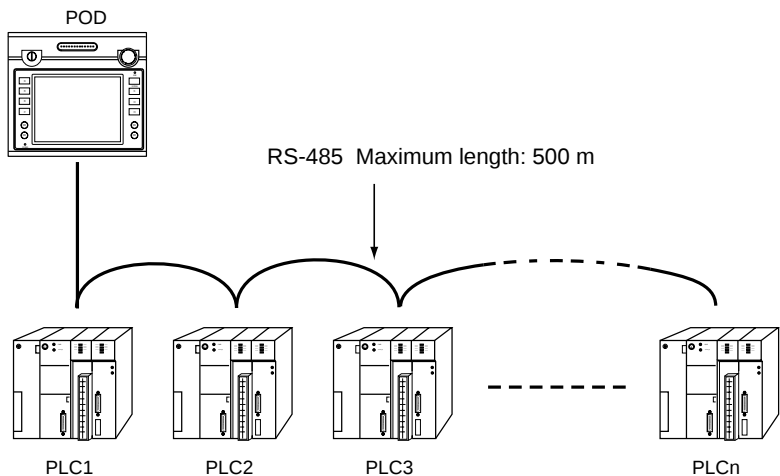


- For RS-422, +SD and –SD as well as +RD and –RD are made into pairs.
- Connect between SGs when exist.
- Shield shall be connected to the FG terminal.
- Set terminal resistance with the DIP switch (refer to 1-12 (DIP Switch) (on page P1-31)).



1.9 1:n Link Communication (Multi-drop)

One unit of POD is connected to multiple units of PLC. (n: 1 to 32)



Available PLC for Multi-drop Communication

Manufacturer	Models
FUJI	MICREX-X series, FLEX-PC series, NJ computer link
MITSUBISHI	AnA/N/U series, QnA series, QnH (Q) series, Net10, FX series (A protocol)
OMRON	SYSMAC C series, CV series, CQM1 series, CS1 DNA
SHARP	JW series, JW100/70H COM port, JW20/30 COM port
HITACHI	HIDIC-H
MATSUSHITA	MEWNET
YOKOGAWA	FA500, FA-M3, FA-M3R
YASUKAWA	Memobus, CP9200SH/MP900
TOYOPUC	TOYOPUC
Koyo	SU/SG, SR-T
Allen-Bradley	PLC-5, SLC500, Micro Logix 1000
GE Fanuc	90 series
TOSHIBA	T series
SIEMENS	S7-200 PPI
SHINKO	SELMART
SAMSUNG	SPC series
KEYENCE	KZ series, KV series
LG	MASTER-K500/K1000
FATEK	FACON FB series
IDEC	MICRO3
MODICON	Modbus RTU
TAIAN	TP02
	Universal Serial*

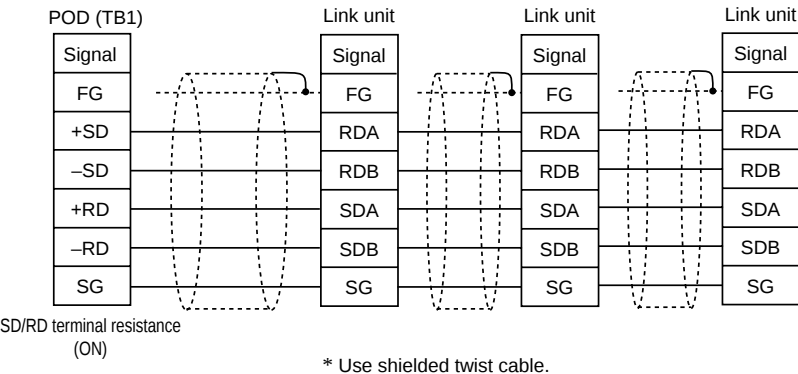
* Because POD serves as a host while PLC as a slave, n (multiple) units of POD are connected to one unit of PLC.

■Multi-drop Connection (RS-422)

For details regarding connection, refer to the manual for the corresponding PLC.

Example: The wiring for connecting the POD (one unit) with MITSUBISHI PLCs (3 units) is as follows.

For details regarding the setting, refer to the user’s manual for the MITSUBISHI PLC.



1.10 n:1 Link Communication

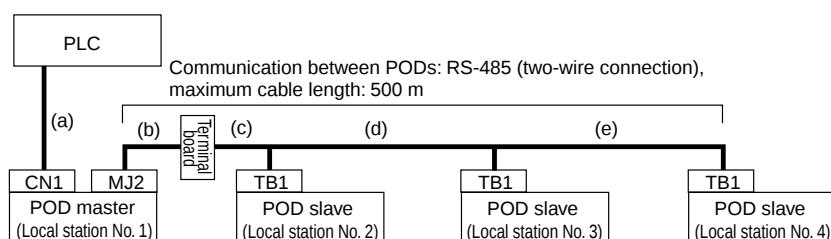
Multi-link2

Maximum 4 units of POD can be connected to one unit of PLC for high-speed communication.

* Connection between PLC and POD master is the same as 1:1 connection with PLC.



UG320HD can be used only as slave.



When UG320HD is used as slave, only the PODs the interface driver version of which is Ver 1.100 or later (screen development editor: Ver 2.1.4.0 or later) and the POD hardware version of which is not older than those shown below can be used as the POD master. UG220 and UG221 can be used as the POD master, independent of the hardware version. For hardware version, check the value of the third digit from the left of “Ser. No.” marked on the rear of the main unit.

UG520H-V → 4, UG520H-S → 3, UG420H-V → 5, UG420H-T → 5,

UG420H-S → 4, UG320H → 7

* Multi-link 2 cannot be used when the master POD uses a communication interface unit (UG03I-T, J, E, C, S, P, UG02I-T, J, S).

* Multi-link 2 cannot be used when the master POD uses a temperature control network.

■ Available PLC models for Multi-link 2

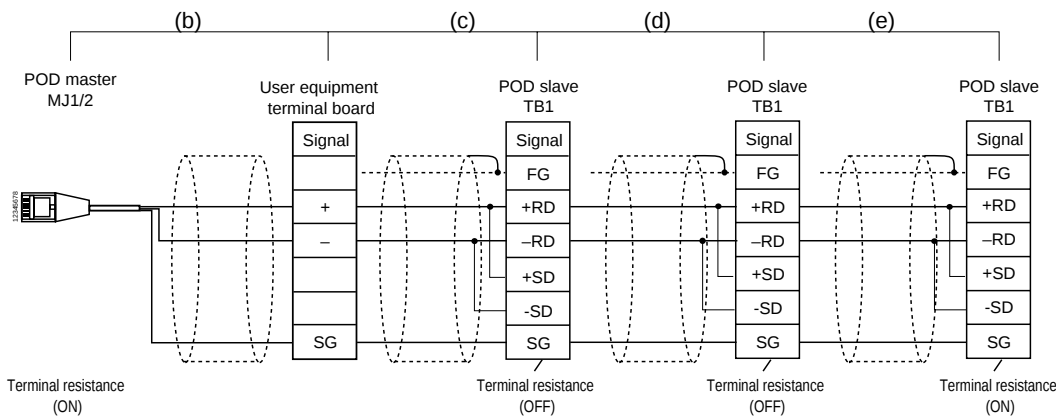
Fuji Electric is planning to support all the PLC models that can be 1:1 connected with POD, presently (as of October 1, 2000) the following models are supported:

<Model>	<Calendar>	<Model>	<Calendar>
FUJI: MICREX-SX series	Provided	KOYO: SU/SG	Depends on model
FUJI: MICREX-SX CPU	Provided	KOYO: SR-T	Provided
FUJI: MICREX-F series	Provided	KOYO: SR-T (K protocol)	Not provided
FUJI: FLEX-PC series	Provided	A.B.: PLC-5	Not provided
FUJI: FLEX-PC CPU	Provided	A.B.: SLC500	Provided
FUJI: FLEX-PC COM	Provided	A.B.: Micro Logix 1000	Not provided
FUJI: FLEX-PC (T)	Provided	GE Fanuc: 90 series	Not provided
FUJI: FLEX-PC CPU (T)	Provided	GE Fanuc: 90 series (SNP-X)	Not provided
MITSUBISHI: AnA/N/U series	Provided	TOSHIBA: T series	Provided
MITSUBISHI: QnA series	Provided	SIEMENS: S5	Not provided
MITSUBISHI: QnH (Q) series	Provided	SIEMENS: S7	Not provided
MITSUBISHI: ACPU port	Provided	SIEMENS: S5 (UG400 compatible)	Not provided
MITSUBISHI: FX series	Depends on model	SIEMENS: TI500/505	Provided
MITSUBISHI: QnACPU port	Provided	SIEMENS: TI500/505 (UG400 compatible)	Provided
MITSUBISHI: QnHCPU port (A)	Provided	SIEMENS: S5 PG port	Not provided
MITSUBISHI: QnHCPU port (Q)	Provided	SIEMENS: S7-300MPI (HMI ADP)	Provided
MITSUBISHI: FX series (A protocol)	Provided	SIEMENS: S7-300MPI (PC ADP)	Provided
MITSUBISHI: FX2N series	Depends on model	SAMSUNG: SPC series	Not provided
MITSUBISHI: FX1S series	Provided	KEYENCE: KZ series	Not provided
OMRON: SYSMAC C	Depends on model	KEYENCE: KZ-A500 CPU port	Provided
OMRON: SYSMAC CV	Provided	KEYENCE: KV series	Not provided
OMRON: SYSMAC CS1	Provided	KEYENCE: KZ24/300 series CPU	Not provided
SHARP: JW series	Provided	KEYENCE: KV10/24 series CPU	Not provided
SHARP: JW100/70H COM port	Provided	LG: MASTER-K10/60/200	Not provided
SHARP: JW20 COM port	Provided	LG: MASTER-K500/1000	Not provided
HITACHI: HIDIC-H	Provided	LG: LGMKX00S	Not provided
HITACHI: HIDIC-S10/2 α	Not provided	FANUC: Power Mate	Not provided
HITACHI: HIDIC-S10/ABS	Not provided	FATEK: FACON NB series	Provided
MATSUSHITA: MEWNET	Depends on model	IZUMI IDEC: MICRO3	Provided
YOKOGAWA: FA500	Provided	MODICON: Modbus RTU	Depends on model
YOKOGAWA: FA-M3	Provided	YAMATAKE: MX series	Provided
YOKOGAWA: FA-M3R	Provided	TAIAN: TP02	Provided
YASUKAWA: Memobus	Depends on model		
YASUKAWA: CP9200SH/MP900	Not provided		
TOYOPUC:	Provided		

■ Sample Wiring between PODs

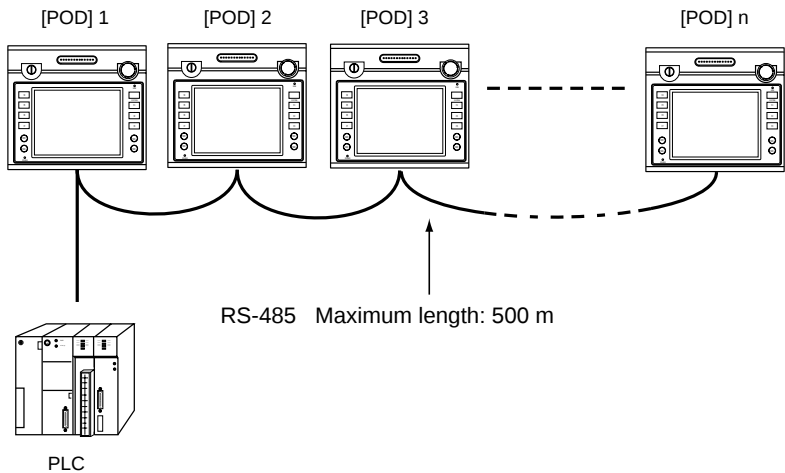
For details, refer to the “UG Series User’s Manual <Multi-link2 Communications>” (FEH364).

* To prevent noise, the shielding FG of individual cable needs to be connected only at one end between PODs so that it does not become continuous.

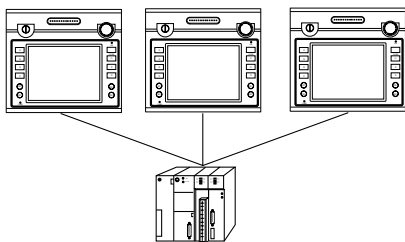


Multi-link

Multiple units of POD are connected to one unit of PLC. (n: 1 to 32)



* The connection as shown below is not recommended.

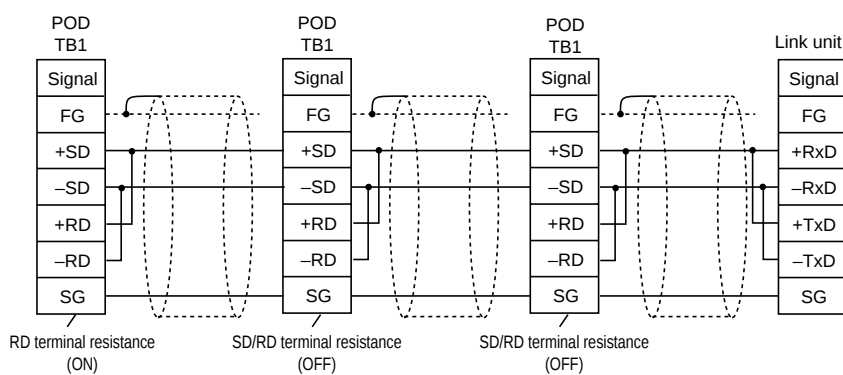


Available PLCs for multi-link

Manufacturer	Models
FUJI	MICREX-F series
mitsubishi	AnA/N/U series, A link+Net10, FX series (A prt)
MITSUBISHI	QnA CPU port (with UG00P-MR)
OMRON	SYSMAC C series, CV series
SHARP	JW series, JW100/70H COM Port, JW20/30 COM Port
HITACHI	HIDIC-H
MATSUSHITA	MEWNET
YOKOGAWA	FA500, FA-M3, FA-M3R
YASKAWA	Memobus, CP9200SH/MP900
TOYOPUC	TOYOPUC
TOSHIBA	T series
SIEMENS	S7-200 PPI
SHINKO	SELMART
SAMSUNG	SPC series
LG	MASTER-K500 / K1000

When multiple units of POD are connected to a link unit of PLC

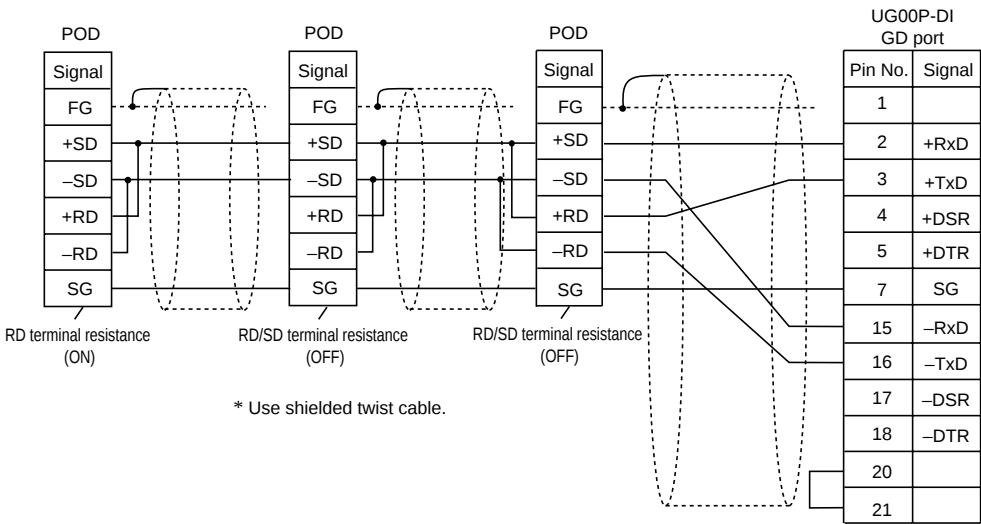
2-wire connection by RS-485



* Use shielded twist cable.

**■When multiple units of POD are connected directly to
MITSUBISHI QnA series CPU**

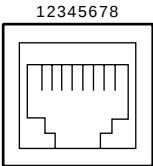
Be sure to use the GD port of optional FUJI UG00P-DI.



1.1.1 Modular Jack (MJ1)

■Modular Jack (MJ1)

The table below shows the pin arrangement and the corresponding signal name of Modular Jack 1.

MJ1	Pin No.	Signal name	Function
	1	–	NC
	2	–	NC
	3	+5V	Power supply for peripheral device (max. 150 mA)
	4	+5V	
	5	0V	GND
	6	0V	GND
	7	RxD	RS-232C receive data
	8	TxD	RS-232C send data

■Setting the Modular Jack (MJ1)

- The use of modular jack 1 is set with the editor.
- On the editor, select [Others...] from the [System Setting] menu under [Item], and set the following items in the [Modular Jack 1] box on the [P2] tab window:
 - Modular Jack 1
 - [Editor port]
 - [Bar code]
 - [UG-link] *1

*1 For more information about UG-link, refer to the “UG Series User’s Manual <UG-link>” (FEH369).

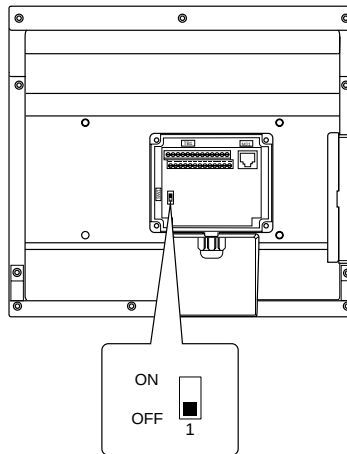
■Screen Data Transfer

- For screen data transfer, modular jack 1 is used.
- When [Editor Port] is selected for [Modular Jack 1] from the editor, screen data can be transferred even during RUN because RUN/Main Menu mode is changed over automatically.
In addition, simulation or online editing is also possible.
- When an item other than [Editor Port] is selected for [Modular Jack 1], be sure to activate Main Menu mode for transferring screen data. Simulation or online editing is not available in this case.
- To transfer screen data, be sure to use the dedicated screen data transfer cable (UG00C-T, 3 m) supplied from Fuji Electric for connection between the personal computer and the POD.

1.12 DIP Switch

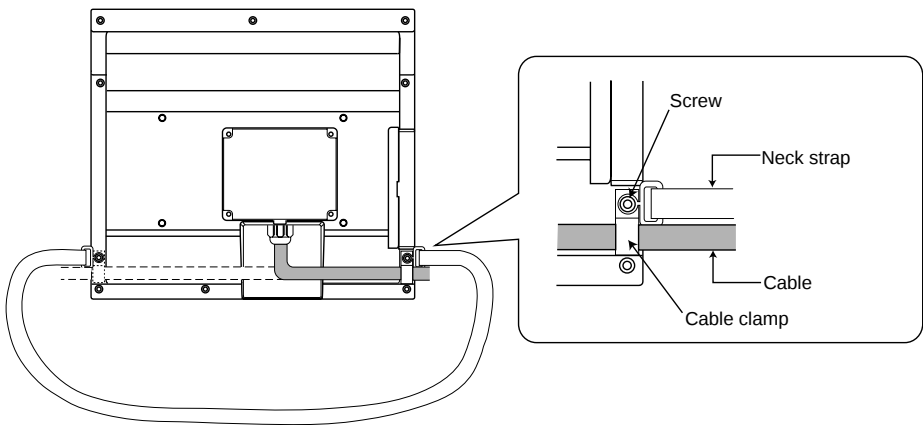
■ DIP Switch (SW1) Setting

- Setting the terminal resistance
 - When two-wire connection of RS-422/485 is used to connect between the POD and the PLC, SW1 needs to be set to ON.



1.13 Neck Strap and Cable Clamp Mounting Method

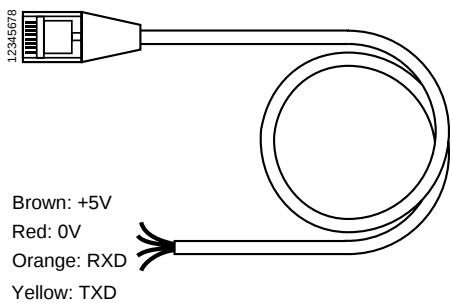
Neck strap and cable clamp are supplied as accessories of UG320HD. The former is used to prevent UG320HD from dropping; the latter, to fix the communication cable. Using the screws (M3×10) supplied with the UG320HD main unit, mount them according to the figure shown below.



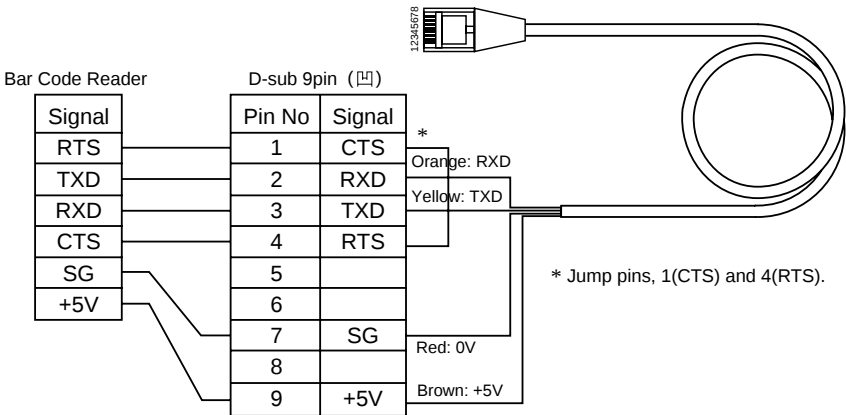
Screw size	Tightening torque N•m
M3	0.3 to 0.5

1.14 Bar Code Reader Interface

- It is possible to receive bar code signal when a bar code reader is connected to the modular jack (MJ1) of UG320HD.
- To connect a bar code reader to the modular jack (MJ1), use the optional cable (UG00C-B) supplied from Fuji Electric.
 - Length : 2m
 - Accessory : Modular Plug



- Notes on Connection
 - In case of using the bar code reader which uses the CTS and RTS control, the bar code reader may not work normally without jumping RTS and CTS.
 - The output power supply (+5V) is max. 150mA.
- To use the bar code reader that has been used for UG400, connect the 9-pin D-sub connector (female) to UG00C-B according to the following connection diagram.



MEMO



A series of horizontal dashed lines for writing, spanning the width of the page.



System Screen

2.1 Operation of UG320HD

2.2 Function Switches

2.3 Errors that may occur on UG320HD

2

System Screen

2

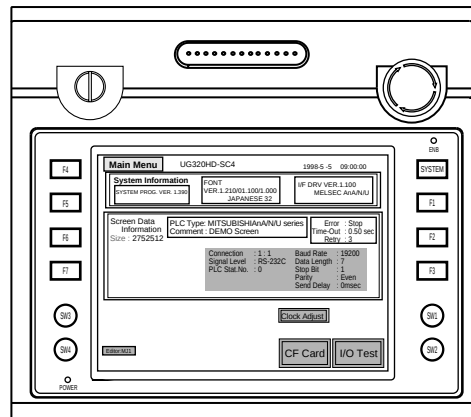
2.1 Operation of UG320HD

When the power of UG320HD is turned on and screen data is transferred to it for the first time after delivered to you, the [Main Menu] screen as shown below is displayed.

When powered on for the first time

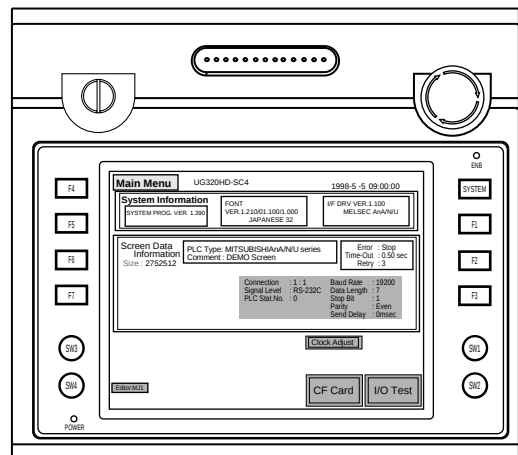
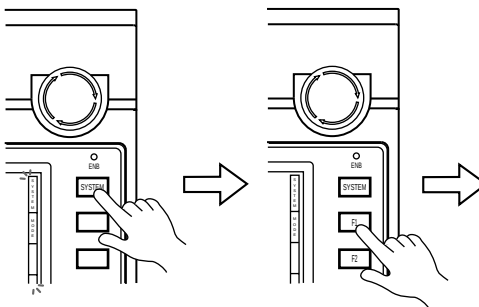


[Main Menu] screen after screen data is transferred



If the screen data has already been transferred, press the [SYSTEM] switch and then the [F1] switch to bring up the [Main Menu] screen.

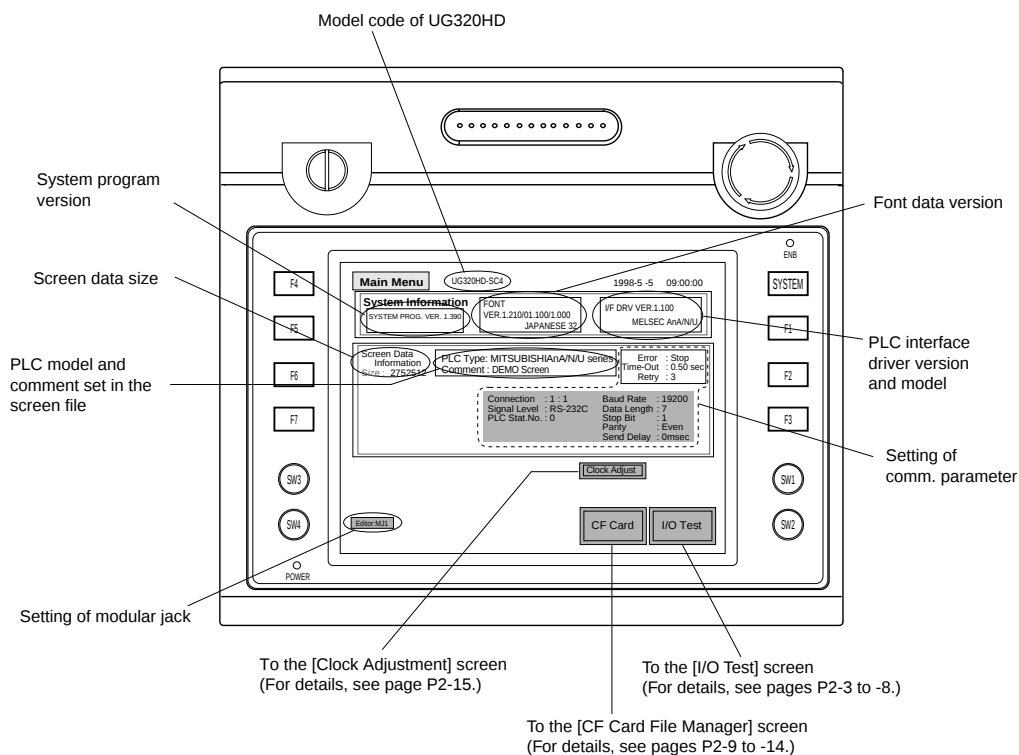
[Main Menu] screen



Main Menu

On the [Main Menu] screen, you can check system data and screen data of the UG320HD.

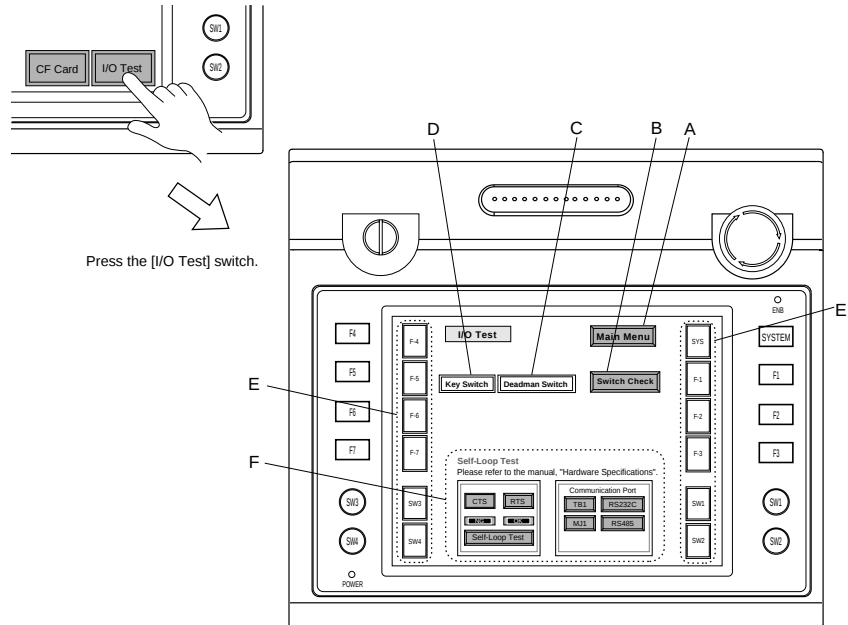
If an item other than [Editor Port] is selected for [Modular Jack 1] when developing a screen, it is necessary to bring up the [Main Menu] screen for screen data transfer.



I/O Test

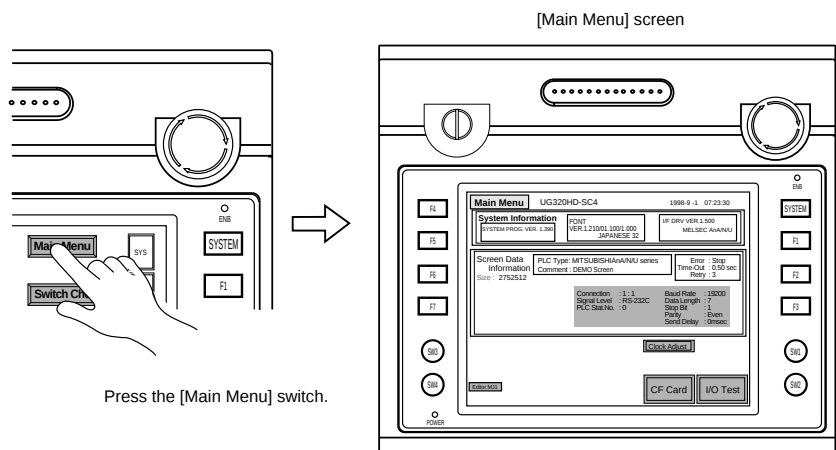
When the [I/O Test] switch is pressed on the [Main Menu] screen, the [I/O Test] screen as shown below is displayed.

This screen is prepared for checking the hardware of unit UG320HD.



A. [Main Menu] switch

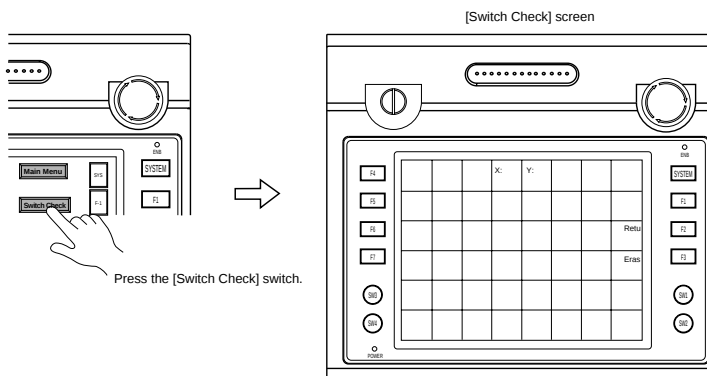
Pressing this switch returns to the [Main Menu] screen.



B. Switch Check

This switch is used to check the response of touch switches that are provided on the UG320HD panel.

When the [Switch Check] switch is pressed, the following screen that is divided into grids is displayed.

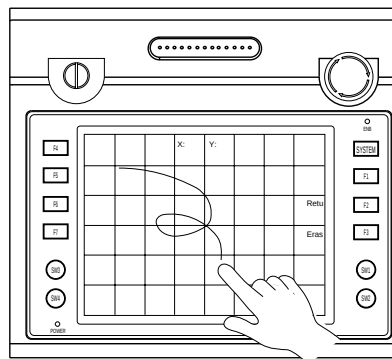


Press an arbitrary point on the panel to see that the pressed portion turns white.

When the pressed portion turns white, it means that the touch switch responded correctly.

To return to the original [I/O Test] screen, press the [F2] switch.

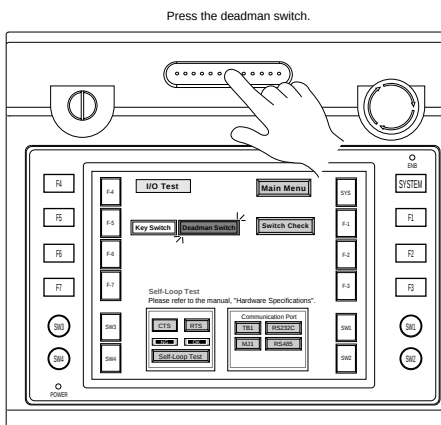
To cancel the [I/O Test] mode, press the [F3] switch.



C. Deadman Switch

This switch is used to check the deadman switch.

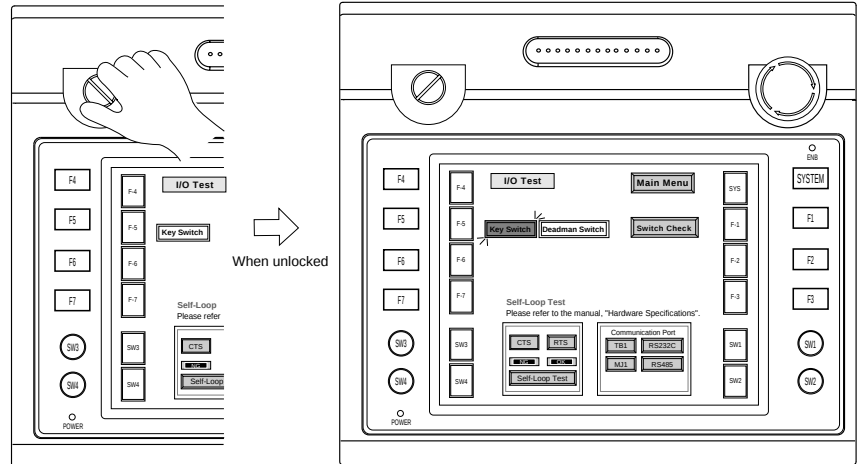
Test result is OK when the lamp lights up while the deadman switch is pressed.



D. Key Switch (Option)

This switch is used to check the key switch.

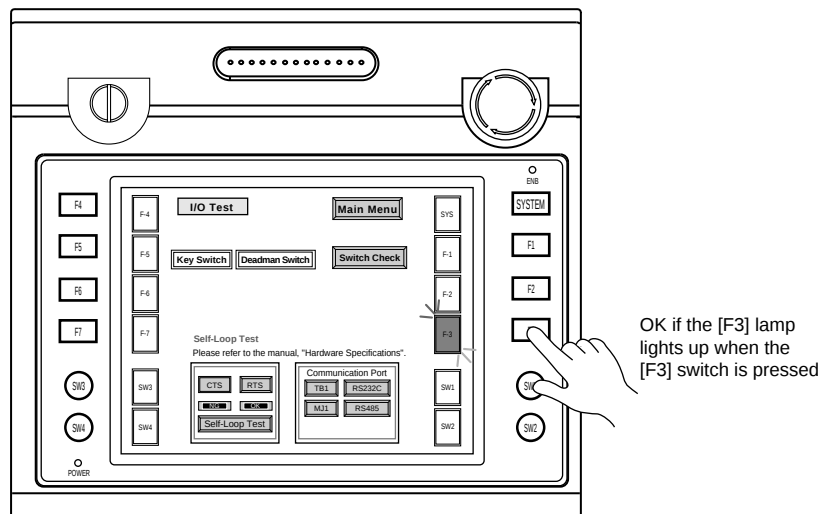
Test result is OK if the lamp lights up when unlocked.



E. SYSTEM & Function Switches

These switches are used to check the 12 switches that are arranged in a vertical row on both sides of the UG320HD main unit.

Test result is OK if the corresponding lamp lights up on the screen when a switch is pressed.

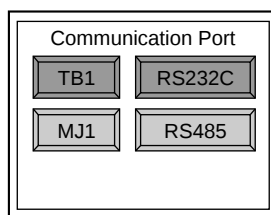


F. Self-loop Test

This screen is used to test unit UG320HD to check the signals necessary for communication.

◆TB1 RS-232C Signal Test

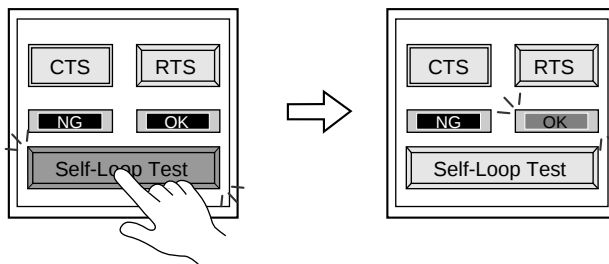
In the [Communication Port] box, turn ON the [TB1] and [RS232C] switches.



◆ Loop-back Test

This test is performed to check [SD] and [RD] signals.

- ① Set a jumper between [TXD] and [RXD] of TB1 on the rear of UG320HD.
- ② Press the [Self-Loop Test] switch. OK if the [OK] lamp lights up.

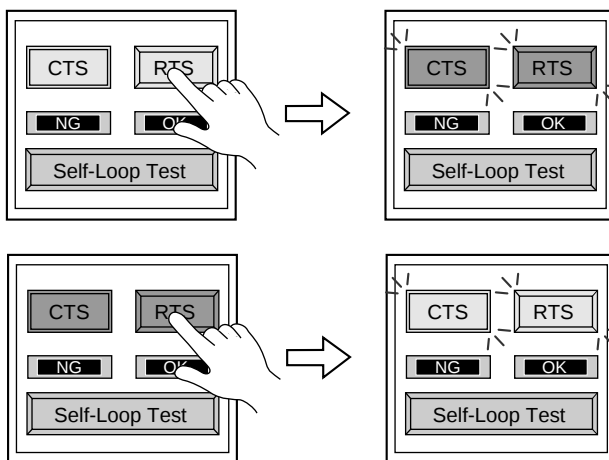


* If the [NG] lamp lights up, contact your dealer or a nearest Fuji Electric sales office.

◆ CTS/RTS Test

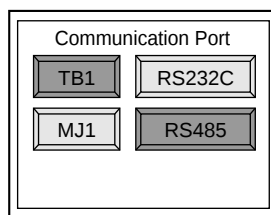
These switches are used to check [CTS] and [RTS] signals.

- ① Set a jumper between [RTS] and [CTS] of TB1 on the rear of UG320HD.
- ② Test result is OK if both [RTS] and [CTS] lamps turn on when the [RTS] switch is pressed, and if [CTS] turns off when [RTS] is turned off.



◆ TB1 RS-485 Signal Test

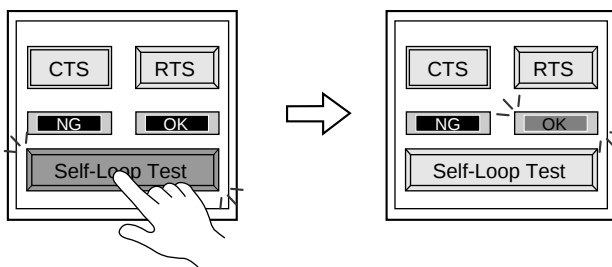
In the [Communication Port] box, turn ON the [TB1] and [RS485] switches.



◆ Loop-back Test

This test is performed to check [SD] and [RD] signals.

- ① Set a jumper between [+SD] and [+RD] and between [-SD] and [-RD] of TB1 on the rear of UG320HD.
- ② Press the [Self-Loop Test] switch. Test result is OK if the [OK] lamp lights up.

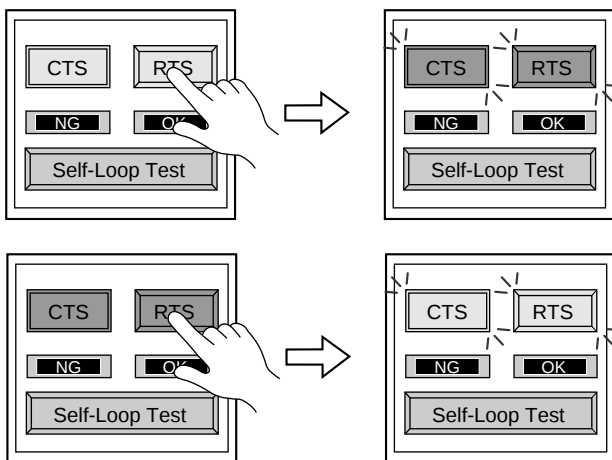


* If the [NG] lamp lights up, contact your dealer or a nearest Fuji Electric sales office.

◆ CTS/RTS Test

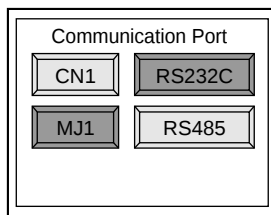
These switches are used to check [CTS] and [RTS] signals.

- ① Set a jumper between [+RTS] and [+CTS] and between [-RTS] and [-CTS] of TB1 on the rear of UG320HD.
- ② Test result is OK if both [RTS] and [CTS] lamps turn on when the [RTS] switch is pressed, and if [CTS] turns off when [RTS] is turned off.



◇MJ1 RS-232C Signal Test

In the [Communication Port] box, turn ON the [MJ1] and [RS232C] switches.

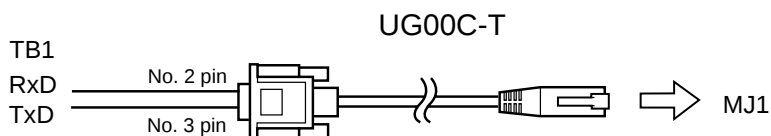


◆ RS-232C Loop-back Test

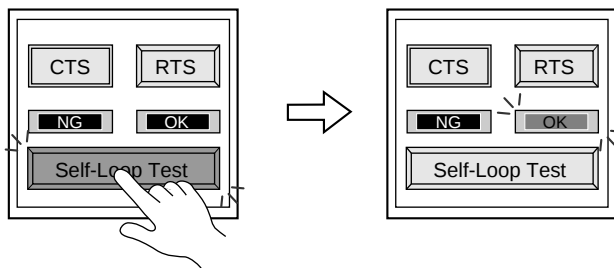
This test is performed to check [SD] and [RD] signals.

For this test, be sure to use the dedicated screen data transfer cable (UG00C-T).

- ① Connect the modular jack side of UG00C-T cable to MJ1.
- ② Set a jumper between No. 2 pin on the 9-pin D-sub connector and RXD of TB1 on the rear of UG320HD and between No. 3 pin and TXD of TB1.



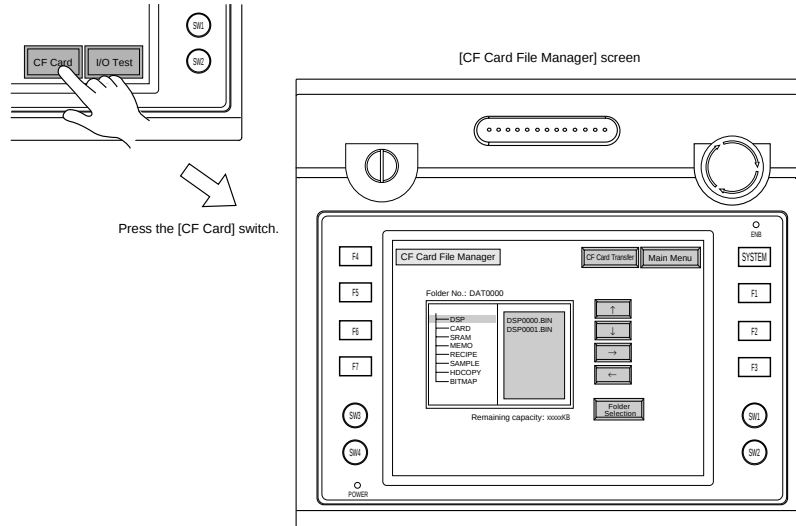
- ③ Press the [Self-Loop Test] switch. Test result is OK when the [OK] lamp lights up.



* If the [NG] lamp lights up, contact your dealer or a nearest Fuji Electric sales office.

CF Card

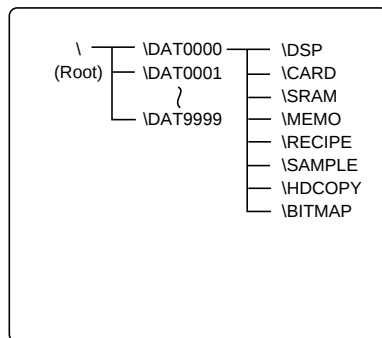
When the [CF Card] switch is pressed on the [Main Menu] screen, the [CF Card File Manager] screen as shown below is displayed.



The [CF Card File Manager] displays the folders and files which are stored in the CF card, from which you can select a folder to use. (See the following page.)

◇ Structure of folders

In a CF card, folders are structured as shown below:



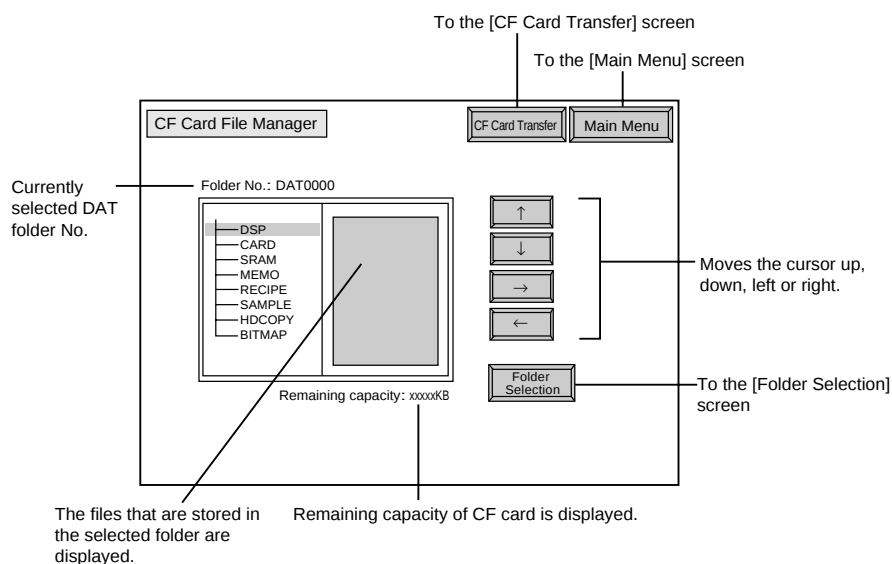
In the root folder

Folder name	File name
\DATxxxx	Access folder xxxx is the access folder name that is set from UG00S-CW.

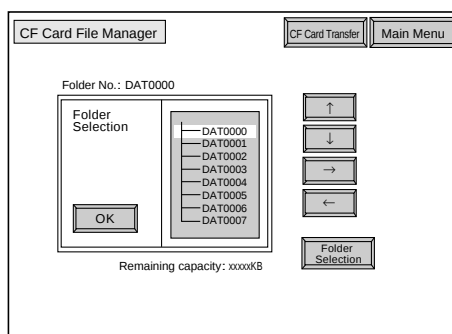
In DATxxxx folder

Folder name	File name	File type
\DSP	\DSPxxxx.BIN	Screen data, system program
\CARD	\CARD.BIN	Memory card mode file
\SRAM	- - - - -	- - - - -
\MEMO	\MEMxxxx.BIN	Memo Pad data (xxxx: 0 to 7)
\RECIPE	\RECxxxx.CSV	Recipe data
\SAMPLE	\SMPxxxx.BIN	Sampling data (xxxx: 0 to 11)
\HDCOPY	\HDxxxx.BIN	Hard copy image data
\BITMAP	\BMPxxxx.BIN	Bitmap data

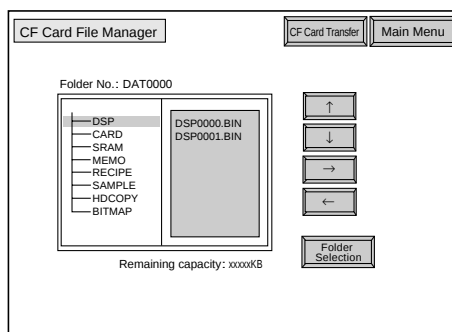
CF Card File Manager



1. Press the [Folder Selection] switch, and the screen for folder selection will be displayed. On this screen, select a desired DAT folder with [↑] or [↓] switch, and then press the [OK] switch.



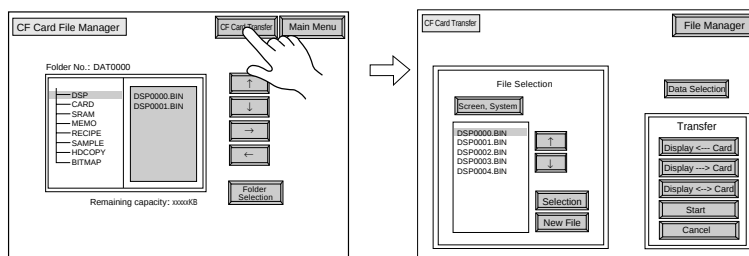
2. Screen data files (DSPxxxx.BIN) that are stored in the selected DAT folder are displayed.



Transferring Data to/from CF Card

After selecting a folder from the [CF Card File Manager] screen, press the [CF Card Transfer] switch. The [CF Card Transfer] screen is displayed.

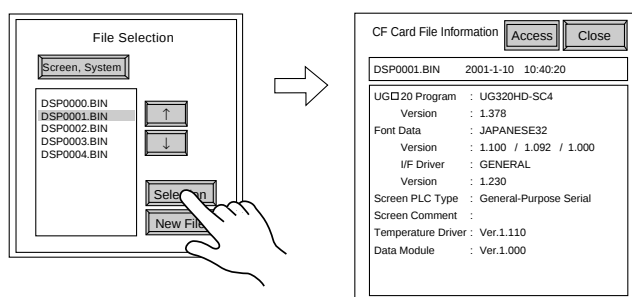
From this screen, you can transfer data from CF card to UG320HD, or vice versa.



A. CF Card → UG320HD

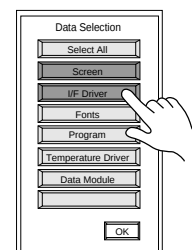
To transfer data from CF card to UG320HD, do as follows:

1. With the [↑] or [↓] switch, move the cursor on the DSPxxx.BIN file that you want to transfer.
2. Press the [Selection] switch. The data of the selected file is displayed in the [CF Card File Information] window.
3. Press the [Close] switch to close the [CF Card File Information] window. The [Selection] switch lights up.

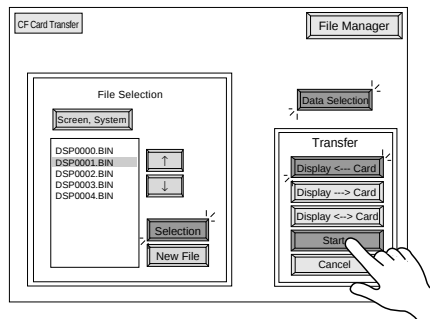


4. Press the [Data Selection] switch. The [Data Selection] window is displayed.
5. Select a data that you want to transfer to UG320HD, and press the [OK] switch to close the window.

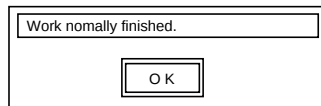
The [Data Selection] switch lights up.



6. In the [Transfer] dialog at lower right in the window, select [Display ← Card] and press the [Start] switch.



7. The [Start] switch changes to [Busy] and blinks.
When data transfer finishes successfully, the following window is displayed. Press the [OK] switch.

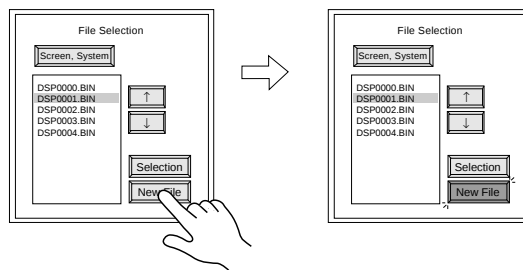


* When a system program or a different font data is transferred, the [Main Menu] screen is displayed the moment data transfer is finished.

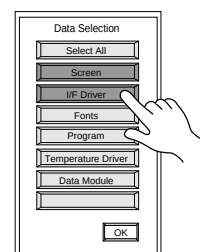
B. Display → CF Card

To save the data of UG320HD in a CF card, do as follows:

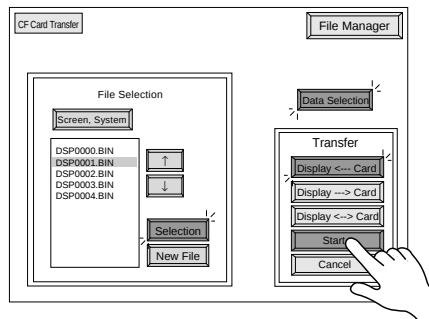
1. With the [↑] or [↓] switch, move the cursor on the DSPxxxx.BIN file that you want to transfer.
2. Press the [New File] switch.
The [New File] switch lights up.



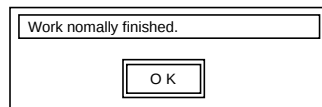
3. Press the [Data Selection] switch. The [Data Selection] window is displayed.
4. Select a data that you want to save in a CF card, and press the [OK] switch to close the window.
The [Data Selection] switch lights up.



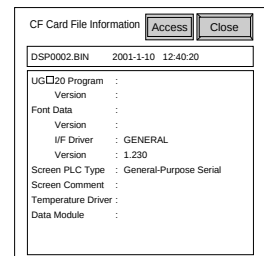
- In the [Transfer] dialog at lower right in the window, select [Display → Card] and press the [Start] switch.



- The [Start] switch changes to [Busy] and blinks.
When data transfer finishes successfully, the following message is displayed. Press the [OK] switch.
(For other messages that may be displayed in this window, refer to page P2-14.)



- The [CF Card File Information] window is displayed.
On this window, check the name (DCPxxxx.BIN), data version, etc. of the newly created file.
Press the [Close] switch to close the window.



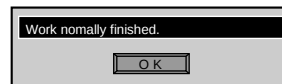
C. Display ↔ CF Card

To compare the data of UG320HD with that of CF card, do as follows:

- With the [↑] or [↓] switch, move the cursor on the DSPxxxx.BIN file the data of which you want to compare.
- Press the [Selection] switch. The [CF Card File Information] window is displayed.
- Press the [Close] switch to close the [CF Card File Information] window.
The [Selection] switch lights up.
- Press the [Data Selection] switch. The [Data Selection] window is displayed.
- Select a data that you want to compare, and press the [OK] switch to close the window.
The [Data Selection] switch lights up.
- In the [Transfer] dialog, select [Display ↔ Card] and press the [Start] switch.
- When comparison ends, a window is displayed. Follow the directions that are displayed on this window.

◆ Messages displayed during data transfer

If an error occurred during data transfer, the message window as shown at right is displayed on the UG320HD. These messages and their meaning are shown in the table below.



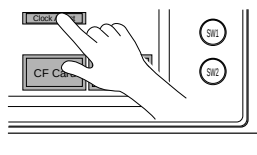
“Memory-Card” in this table should be interpreted as “CF card” for UG320HD.

Message displayed	Specified operation has been finished successfully.
Memory-Card not setting	No memory card is inserted in the socket. (Or, with a flash ROM type memory card inserted in the socket, it was attempted to write data in the card.)
Memory card capacity over	Cannot write the data in the memory card because the data size in UG□20 is larger than the capacity of the memory card.
Writing error occurred	Error occurred while data was being written in the memory card.
Selected data does not exist.	The data to be read could not be found.
UG□20 type is different.	It was attempted to write data in UG□20, but data type was different between memory card and UG□20.
Selected data cannot be read.	The data in the memory card cannot be read.
Reading error occurred.	Error occurred while data was being written in the flash ROM of UG□20.
Data discrepant	There was some discrepancy in data when comparing data between the memory card and UG□20.
Screen data in UG□20 will be broken.	This message appears to warn the user that the data existing in UG□20 will be destroyed if a font data that is greater than the present data is transferred from the memory card to UG□20. (Press the [OK] switch to continue data transfer; press the [Cancel] switch to cancel the operation.)
Undefined error occurred.	Error occurred due to some cause other than above mentioned ones.

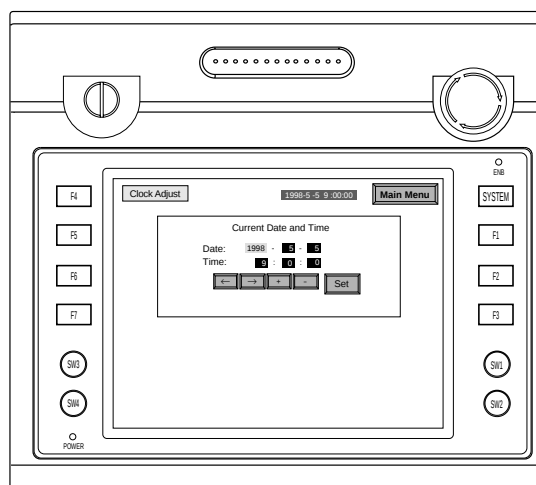
Clock Adjustment

This screen is used to adjust the built-in clock of UG320HD.

Press the [Clock Adjustment] switch on the [Main Menu], and the [Clock Adjustment] window as shown below will be displayed.



Press the
[Clock Adjustment] switch.



- ① Using the [←], [→], [+] and [-] switches displayed on the screen, set the current date and time.
- ② Press the [SET] switch, and the values for [Date] in the upper line will be changed.



To use the built-in clock of UG320HD, it is necessary to check the [☑Use Built-in Clock] box in the [Built-in Clock Setting] window with the editor.

2.2 Function Switches

■Type

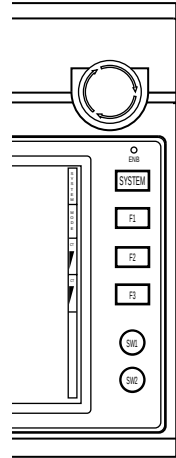
[SYSTEM], [F1], [F2], [F3], [F4], [F5], [F6], [F7]

■the [SYSTEM] switch

By pressing this switch, the functions of the switches [F1] to [F7] are defined.

The type of the [SYSTEM] switch is alternate. When this switch is pressed once, the switch menu is displayed by the side of the function switches [F1] to [F5], and each function switch corresponds to an item on the displayed switch menu.

When the [SYSTEM] switch is pressed again, the switch menu which is displayed on the screen will disappear, and the functions of switches [F1] to [F7] are defined for the purpose of the user. The data of these function switches is allocated to the memory area of PLC.



■Function of [F1] to [F5] when the switch menu is displayed

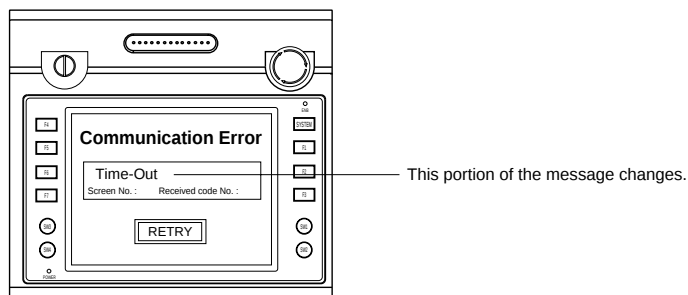
- [F1] : Mode
 - This switch changes the operation mode.
 - Main Menu Mode → RUN Mode
 - Run Mode → Main Menu Mode (possible to specify the changing time)
- [F2] : Contrast Adjustment (dark)
 - This switch adjusts the contrast of LCD. When the [F2] switch is pressed once, the LCD color becomes dark. If this switch is held down for 1 second, the LCD color changes rapidly into darkness.
- [F3] : Contrast Adjustment (intermediate)
 - This switch also adjusts the contrast of LCD. When the [F3] switch is pressed once, the LCD color becomes intermediate.
- [F4] : Contrast Adjustment (light)
 - This switch adjusts the contrast of LCD. When the [F4] switch is pressed once, the LCD color becomes light. If this switch is held down for 1 second, the LCD color changes rapidly into lightness.
- [F5] : Backlight
 - This switch turns the backlight of UG320HD on or off.
 - Backlight control items are set from the screen development editor (UG00S-CW).
 - If you want to use this function you have to set [Backlight] of the [Others] dialog in [System Setting].
 - The following list shows the backlight function specified in the editing software.

Backlight	Function Switch (F5)
ON	Ignored.
Auto 1	The following actions are added to the regular functions of these items: Even if the time does not reach the setting time, the backlight will turn off if the [F5] switch is pressed (provided that bit 11(Backlight) of Read Area n+1 is OFF level). (Refer to the Reference Manual.)
Auto 2	
Manual	In MANUAL mode, the back light can be turned ON/OFF with the the [F5] switch. In this mode, [Back Light Power ON Control] is enabled which specifies the status of back light when the power is turned ON. when you turn the power supply of UG320HG on... [ON] : the backlight is lit. [OFF] : the backlight is off.
Manual2	

2.3 Errors that may occur on UG320HD

■Communication Error

Of possible communication errors, those that frequently occur are described below:

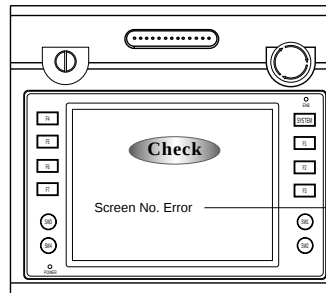


Error Message	Contents	Solution
Time-Out	Request-to-send was output to the PLC, but no answer was returned within specified time.	• Check communication parameters. • Check cabling. • Data may be corrupted due to noise. Fix noise.
Error code received	Error code that was sent to the link unit by the CPU of the PLC.	Check CPU error code.
Check I/F driver	Communication request was sent to the personal computer (simulator), but no answer was returned within specified time.	Retransmit the I/F driver for the PLC when the simulator is not to be used.



For error messages other than those mentioned above, refer to Chapter 29 (Error Indication) of the “UG Series Manual <Reference>” (FEH351).

■ Check



Error Message	Contents	Solution
Screen No. Error	There is no setting for the received screen.	The screen specified by the PLC is not registered. Check whether or not an in existent screen No. is set in read area n+2 of the memory.
Data has some error. Error: XX (XX:XXX)	The created data has some error.	For the content of the error and how to reset it, refer to the "UG Series User's Manual <Reference>" (FEH351).

- ◇ Correct after checking the values of item number and sub-item number for the location of occurred error as well as the value of error number for the content of the error.

Error : XX (XX : XXX)

(Warning)

Sub-item number

Item number

Error number

- ◇ Item number
Item number shows on which edit screen or where the error was detected.

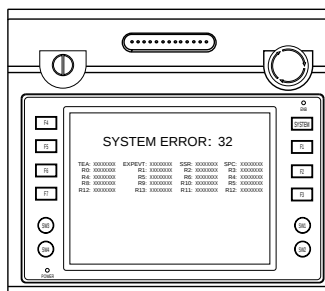
26: CF attribute table



For error numbers, item numbers or sub-item numbers other than those explained above, refer to Chapter 29 (Error Indication) of the "UG Series Manual <Reference>" (FEH351).

■System Error

If a system error is detected on UG320HD, the following error screen is displayed on the UG320HD.



SYSTEM ERROR : XX

- 1 : Watchdog timer error
- 30: Display request full error
- 31: Memory allocation system error
- 32: General exceptions/MMU address system error
- 33: RTOS system error
- 34: Memory error
(Error was detected by RAM self check.)
- 35: Invalid memory error
(It was attempted to access a memory of invalid model (PLC, internal memory, etc.))

These errors seem attributed to one of the following three problems.

Contact the Fuji Electric Technical Support Department.

- (1) Program crash due to noise
- (2) Hardware problem
- (3) Bad program

■Others

For the explanation of other error messages, including [Warning] [Touch switch is active.], refer to Chapter 29 (Error Indication) of the “UG Series User’s Manual <Reference>” (FEH351).



Editor Setting

3.1 Handy Setting

3.2 Build-in Clock Setting

3.3 CF Card Functions

3.4 System Memory

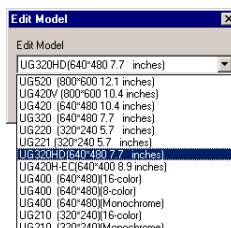
3.5 CF Card Manager

3

Editor Setting

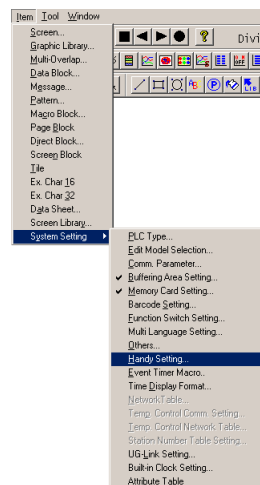
3.1 Handy Setting

To use UG320HD, it is necessary to select [UG320HD (640*480 7.7 inches)] from the [Edit Model] dialog.



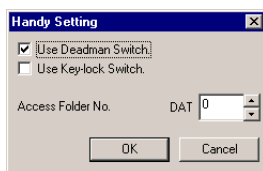
Then, on the [Handy Setting] dialog, deadman switch and key-lock switch are set.

1. Click [Handy Setting...] in the [System Setting] menu under [Item].
2. The [Handy Setting] dialog is displayed.



Note

The setting of whether or not to use the deadman switch can be changed with a macro during RUN (see explanation on the next page.) However, the setting of [Handy Setting] takes effect just after the power is turned on.



[☐Use Deadman Switch]

This item specifies whether or not to use deadman switch during operation. Uncheck this item when screen operation is to be always enabled.

[☐Use Key-lock Switch]

Check this item when the key switch is used.

Uncheck this item when screen operation is to be always enabled independent of the condition of the key switch.

[Access Folder No. DAT]

When multiple [DATxxx] folders exist in a compact flash card (CF card), this item is set to specify a desired No. (xxxx part).

Deadman Switch

For the purpose of preventing misoperation, UG320HD is equipped with a deadman switch.

- When the deadman switch is used
Screen operation is possible only while the deadman switch is turned ON (when the ENB lamp is lighting).
- When the deadman switch is not used
Screen operation is possible, whether the deadman switch is turned ON or OFF.



When the [Main Menu] screen is displayed, screen operation is possible independent of the above setting.

◆ Setting

There are two methods for enabling/disabling the deadman switch:

- (a) [Item] → [System Setting] → [Handy Setting...] of UG00S-CW
(Refer to the preceding page.)
- (b) Macro command [SET_DSW]

Available devices					
	Internal memory	PLC memory	Constant	Memory card	Indirect specification
F0	(SET_DSW)				
F1	○				○

SYS (SET_DSW) F1

F1	0: Disable	1: Enable
----	------------	-----------



Just after the power is turned ON, the setting of [Handy Setting] takes effect (initial condition).
Use a macro to change to RUN. However, the setting that is changed by a macro is reset to the initial condition when the power is turned OFF.

3.2 Build-in Clock Setting

There are two methods for displaying a calendar on UG320HD.

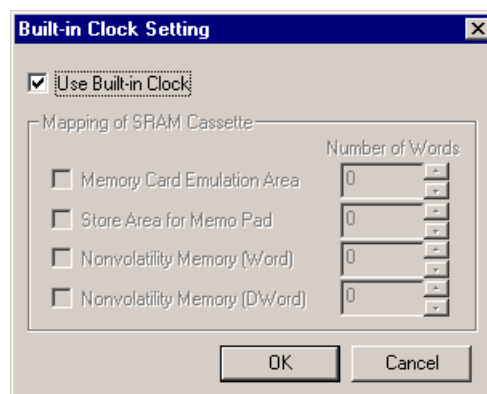
- To use the built-in clock of UG320HD
- To use the calendar of PLC

To use the built-in clock of UG320HD, it is necessary to set [Build-in Clock Setting].

◆ Setting items

⊙ [Item (I)] → [System Setting (A)] → [Built-in Clock Setting (W)]

Check the [☑Use Built-in Clock] box.



When the calendar is to be held even after the power is turned OFF, use the optional UG00P-HDRB.



The calendar can be adjusted from the [Main Menu] screen of UG320HD.

Refer to “Clock Adjustment” on page P2-15.

3.3 CF Card Functions

Functions of CF Card

- Backup of Memo Pad data (refer to page P3-6).
 - * Note that the Memo Pad data that was created with other POD cannot be read out with UG320HD.
- Saving hard copy image as a file (refer to page P3-6).

With a macro, it is possible to save print images as a file.
Images are converted into a BMP file by UG00S-CW.
- Saving patterns (bitmap file) in a CF card (refer to page P3-7).

As the patterns that are saved in a CF file can be displayed on the screen, the capacity of screen data can be saved.
- Saving sampling data (refer to pages P3-8 to -13).

Sampling log data can be saved.
As the data can be converted into a CVS file with a macro command, they can easily be edited with Excel or other application software.
The data can be saved in the same format as those of conventional memory card. As the data can be converted into an MCD file with UG00S-CW, they can be read or written with the memory card editor (separately sold, type: UG00P-MS).
- Storing and reading recipe data (refer to pages P3-14 to -23).

CSV file that has been created in advance can be read out with a macro command.
This function is useful when parameters are to be changed. PLC memory (UG320HD internal memory) data can be saved as a CSV file.
- Transfer of screen data and system program
 - Screen data can be transferred between CF card and UG320HD. (Refer to Chapter 2 of this manual.)
 - As multiple screen data can be saved, data can be changed so as to match the system.
 - As system program can be transferred, the version up of UG320HD is possible.
- With the CF card manager of UG00S-CW, data can be transferred between personal computer and CF card (refer to pages P3-26 to -33).

Precautions for Using the CF Card

Precautions for using the CF card are shown below:

1. Periodically make a backup copy of the data.
2. If disk error occurred and no data can be read or written, restore the disk by executing Scan Disk on Windows95/98.
If the disk cannot still be restored by this operation, format it.
(Windows is a registered trademark of Microsoft Corporation.)
3. The data size of the files to be used may not exceed the memory capacity of a CF card.
4. The data stored in the CF card may be destroyed if, while the CF card is being accessed,
 - The power is turned OFF or the RESET switch is pressed, or
 - The CF card is removed from and reinserted in the slot.

When you remove and reinsert the CF card during operation, be sure to check that no data is being transferred to the CF card.

However, when the [Main Menu] screen is displayed, CF card can be removed and reinserted at any time.

5. CF card has a life that is determined by the number of writing operation cycles (approx. 300,000 times).
Therefore, the life expires early if data is too frequently written in a CF card.
When saving sampling data, be careful of sampling time (refer to page P3-10 to-11).
Avoid continuously writing data in the CF card with a cycle macro.

1. Backup of Memo Pad Data

Memo Pad data is saved in the following manner:

Store Target: \MEMO folder

Format: BIN file format

File name: MEMxxxx.BIN (xxxx = 0 to 7: Memo Pad No.)

◆ Setting Items

◎Memo Pad



For more information about the setting of Memo Pad, refer to Chapter 17 of the “UG Series User’s Manual <Reference>” (FEH351).

◆ Timing to Save Data in CF Card

- When the [+ Block] or [– Block] switch is pressed
- When screen is changed or mode is changed over from RUN to [Main Menu]

2. Saving Hard Copy Image as a File

With a macro command, the current screen image can be saved in a CF card.

Store Target: \HDCOPY folder

Format: BIN file format

File name: HDxxxx.BIN (xxxx = 0 to 1023: Screen No.)

- * If a file of the same name already exists, the folder name as “HD0000~1.BIN” is used.

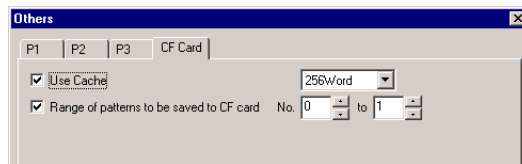
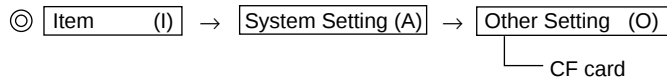
◆ Setting items

◎Macro command [HDCOPY]

3. Displaying Patterns Saved in a CF Card on the Screen

Patterns (bitmap file) that are saved in a CF card can be displayed on the screen. By saving such data in a CF file, you can save the capacity of screen data.

◆ Setting items



Check the [☒Range of patterns to be saved to CF card] box.
Set values for the range of patterns to be saved in the CF card.

◆ Saving Data in CF Card

The data is saved after being converted into a BIN file by the CF card manager.



For more information about the CF card manager, refer to page P3-26.

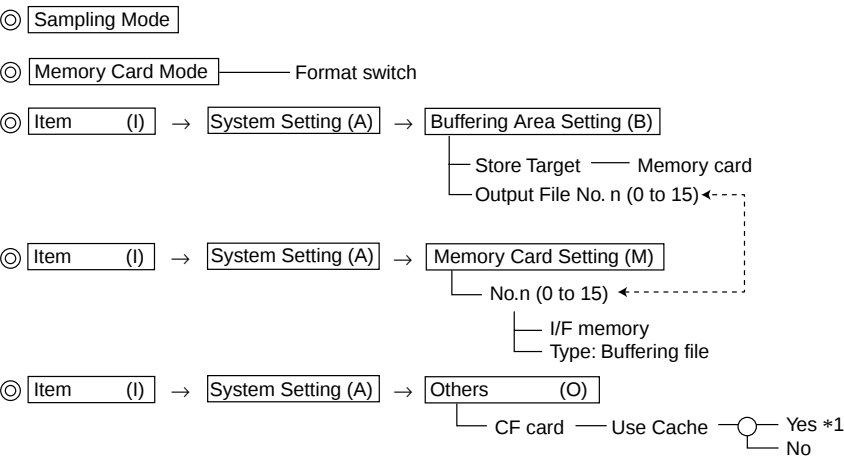
4. Saving Sampling Data in a CF Card (I)

Sampling data can be saved in a CF card in the same format as those of conventional SRAM card.

As the data can be converted into MCD file with the CF card manager of UG00S-CW, they can be referenced or edited from the memory card editor (UG00P-MS).

Store Target: \CARD folder
Format: BIN file format
File name: CARD.BIN

◆ Setting items



*1 Depending on the timing of saving data, macro command [SMPL_SAVE] needs to be set.



For more information about the setting of devices other than CF card, refer to Chapter 12 (Sampling Mode) and Chapter 13 (Memory Card) of the “UG Series User’s Manual <Reference>” (FEH351).

◇ Buffering Area Setting

Select [Memory Card] for [Store Target].

The value of [Output File No.] must be the same as the number that is specified for [Memory Card Setting].

◇ Memory Card Setting

The number that is set for this item must be the same as the value specified for [Output File No.] of [Buffering Area Setting].

Select [Buffering File] for [Type].

◇ Others

When the ☐ [Use Cache] box is checked, data is stored in the CF card each time sampling is performed.

When the ☒ [Use Cache] box is unchecked, sampling data is temporarily stored in the cache of UG320HD, and then the cumulative sampling data is stored in the CF card as a batch.

Note

Because there is a limit on the number of writing operations on a CF card, it is recommended to check the ☒ [Use Cache] box.



For more information about the cache, refer to page P3-10 to -11.

◇ Macro command [SMPL_SAVE]

This macro command is used when you want to arbitrarily output the sampling data stored in the cache to the CF card.

5. Storing Sampling Data in CF Card (II)

Sampling data can be stored in a CF card. Unlike conventional SRAM card, CF card needs not be formatted to match the screen data. What you have to do is only insert a CF card in the UG320HD.

Store target: \SAMPLE folder

* Though the data is not output to \CARD.BIN, the area is occupied.

Format: BIN file format

File name: SMP0000.BIN to SMP0011.BIN (The numeric part means buffering area No.)

◆ Setting items

① Sampling Mode

② Item (I) → System Setting (A) → Buffering Area Setting (B)

Store Target — CF Card
Output File No. n (0 to 15) ←

③ Item (I) → System Setting (A) → Memory Card Setting (M)

No.n (0 to 15) ←
I/F Memory
Type: Buffering File

④ Item (I) → System Setting (A) → Others (O)

CF Card — Use Cache — Yes *1
No

*1 Depending on the timing of data saving, macro command [SMPL_SAVE] needs to be set.



For more information about the setting of devices other than CF card, refer to Chapter 12 (Sampling Mode) and Chapter 13 (Memory Card) of the “UG Series User’s Manual <Reference>” (FEH351).

◇ Buffering Area Setting

Select [CF Card] for [Store Target].

The value of [Output File No.] must be the same as the number that is specified for [Memory Card Setting].

◇ Memory Card Setting

The number that is set for this item must be the same as the value specified for [Output File No.] of [Buffering Area Setting].

Select [Buffering File] for [Type].

Note

Because there is a limit on the number of writing operations on a CF card, it is recommended to check the ☒ Use Cache box.

◇ Others

When the ☐ Use Cache box is unchecked, data is stored in the CF card each time sampling is performed.

When the ☒ Use Cache box is checked, sampling data is temporarily stored in the cache of UG320HD, and then the cumulative sampling data is stored in the CF card as a batch.



For more information about the cache, refer to the explanation on the next page.

◇ Macro command [SMPL_SAVE]

This macro command is used when you want to arbitrarily output the sampling data stored in the cache to the CF card.



About the Cache:

1. Cache Function

CF card has a life that is determined by the number of writing operations performed on it. Therefore, you must be careful that if a CF card is frequently rewritten by sampling, its life expires early and the card can no longer be accessed.

When the ☒ Use Cache box is checked, a cache memory is prepared for each buffer number. Till the conditions for outputting to the CF card are met (refer to item 4), sampling data are temporarily stored in these memories, which effectively reduces the number of writing operations on the CF card.

The cache function is enabled when either [Memory Card] or [CF card] is selected for [Store Target].

<Caution>

Because the cache is a volatile memory, the data stored in it is lost when the power is turned off or the CF card is removed from the socket. To prevent this, be sure to execute macro command [SMPL_SAVE] to save the data in the CF card before you remove the CF card from the socket.

2. Adjustment of cache size

The size of sampling buffer is set by [Sampling Method], [Number of Words] and [Sampling Times] of the [Buffering Area Setting] window (refer to page 12-9 of the “UG Series User’s Manual <Reference>”). The interval for outputting to the CF card is set by [Sampling Time] and [Sampling Times].

Adjust cache size by these items to reduce the number of writing operations on the CF card.

Cache size can be set in the range from 256 to 2048 words.

<Note>

Life of CF card: approx. 300,000 cycles

- When written at 5-minute intervals for around-the-clock continuous operation: approximately 3 years
- When written at 3-minute intervals for around-the-clock continuous operation: approximately 1.8 years

3. Alarm information

Alarm information includes the data of operation time, occurrence frequency and occurrence time. These data are always stored in a memory other than the cache memory but are output to the CF card together with cache data when the conditions for outputting to CF card are met.

4. Conditions for outputting to CF card

- ① When the cache memory of specified size is full
- ② When the sampling cycles that is set by [Buffering Area Setting] is reached
- ③ When macro command [SMPL_SAVE] is executed
- ④ When macro command [SMPL_CSV] is executed
- ⑤ When the RESET switch on the memory card is pressed
- ⑥ When the R (reset) bit of the sampling control memory is set ON
- ⑦ When screen is changed from RUN to [Main Menu]

<Note>

- For above ③ and ⑦, the data of all buffering areas (No. 0 to 11) is saved in the CF card.
For others, the data of only the corresponding buffering area is saved in the CF card.
- For ⑤ and ⑥, after cache data is output, the data is automatically stored in a backup folder whose name includes the date (refer to page 3-12), creating a new file.

6. Backup of Sampling Data

It is possible to make a backup file of the sampling data that is stored in the SAMPLE folder of a CF card. For this, macro command [SMPL_BAK] is used.

Store Target: \SAMPLE\Date folder

<Example>

When a backup file is made on September 1, 2001, it is stored in the \SAMPLE\010901 folder.

If a file of the same name already exists, the folder name as “\SAMPLE\010901~1” is used.

Format: BIN file format

File name: SMPxxxx.BIN (xxxx = 0 to 11: Buffering area No.)

◆ Setting items

◎Macro command [SMPL_BAK]

To save the sampling data of buffering No. F0 in the CF card.

Available devices

	PLC memory	Internal memory	Constant	Memory card	Indirect specification
F0		○	○		

SMPL_BAK F0

7. Saving Sampling Data in CF Card as a CSV File

It is possible to convert a “\SAMPLE\SMPxxx.BIN” file stored in a CF card into a CSV file and save the CSV file in the CF card.

Store Target: \SAMPLE folder

Format: CSV file format

File name: SMPxxx.CSV (xxxx = 0 to 11: Buffering area No.)
(xxxx part is the same as that of the BIN file before converted.)



To convert a BIN file into a CSV file, it is necessary to set Attribute Table (a file that contains the information of display type) from UG00S-CW.

For how to set Attribute Table, refer to page 3-17.

◆ Setting items

◎Macro command [SMPL_CSV]

To convert a BIN file of the buffering file No. that is specified by F0 into a CSV file and save the converted file.

Available devices

	PLC memory	Internal memory	Constant	Memory card	Indirect specification
F0		☐	☐		

SMPL_CSV F0

8. Transferring the Recipe Data

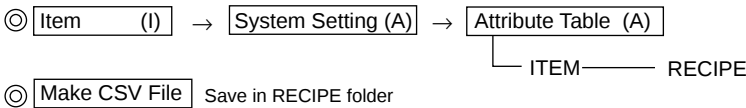
It is possible to capture the recipe data that exists in the \RECIPE folder of a CF card into the PLC or UG320HD internal memory.

On the contrary, it is also possible to save the data of PLC or UG320HD internal memory in a CF card.

a. Capturing all CSV files

To transfer the CSV files which exist in the \RECIPE folder to the PLC internal memory (UG320HD internal memory),

◆ Setting items



It is necessary to set Attribute Table (a file that contains the information of display type) from UG00S-CW.

For how to set Attribute Table, refer to page 3-17.

Create a CSV file and save it in the RECIPE folder.

⊙Macro command [LD_RECIPE]

To transfer a CSV file of file No. F1 to a memory starting from F0.

For file No., set the value of [ITEM No.] that is set by [Attribute Table].

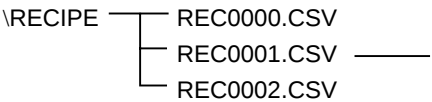
Available devices

	PLC memory	Internal memory	Constant	Memory card	Indirect specification
F0		○			○
F1		○	○		

LD_RECIPE F0 F1

<Example>

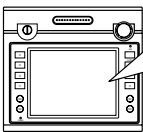
To capture the REC.0001.CSV file in the RECIPE folder of a CF card in internal memory \$u200,



	A	B	C	D	E	F
1	1	2	3	4	5	
2	10	20	30	40	50	
3						
4						
5						



Macro command [LD_RECIPE \$u200 1] is executed.

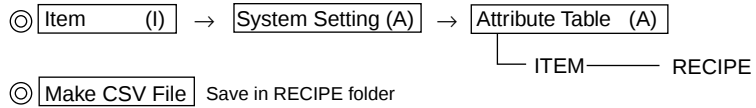


\$u200	1
\$u201	2
\$u202	5
\$u203	4
\$u204	5
\$u205	10
\$u206	20
\$u207	30
\$u208	40
\$u209	50

b. Capturing Part of a CSV File

For this, rows and columns of a CSV file in the \RECIPE folder are specified to transfer the corresponding data to the PLC internal memory (UG320HD internal memory).

◆ Setting items



It is necessary to set Attribute Table (a file that contains the information of display type) from UG00S-CW.
 For how to set Attribute Table, refer to page 3-17.
 Create a CSV file and save it in the RECIPE folder.

◎Macro command [LD_RECIPESL]

To transfer the data of a CSV file of file No. F1 that is specified by rows and columns to a memory starting from F0.

Available devices

	PLC memory	Internal memory	Constant	Memory card	Indirect specification
F0		○			○
F1		○			○

LD_RECIPESL F0 F1

F1 memory

Address	Contents
n	File No. *
n+1	Starting column No.
n+2	Starting row No.
n+3	Number of columns
n+4	Number of rows

* For file No., set the value of [ITEM No.] that is set by [Attribute Table].

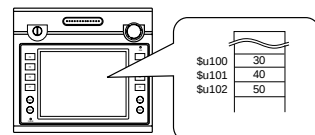
<Example>

To capture part of the REC.0001.CSV file in the RECIPE folder of a CF card in internal memory \$u100,

\RECIPE — REC0000.CSV
 — REC0001.CSV
 — REC0002.CSV

\$u0000=1 (File No. 1)
 \$u0001=2 (Starting column No. 2)
 \$u0002=3 (Starting row No. 3)
 \$u0003=1 (Number of columns = 1)
 \$u0004=3 (Number of rows = 3)

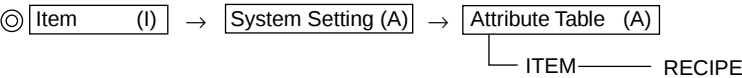
Macro command [LD_RECIPESL \$u100 \$u0000] is executed.



c. Creating a CSV File

To save the data of PLC memory (UG320HD internal memory) in the \RECIPE folder as a CSV file.

◆ Setting items





It is necessary to set Attribute Table (a file that contains the information of display type) from UG00S-CW.
For how to set Attribute Table, refer to page 3-17.

⊙Macro command [SV_RECIPE]

To save the data for F1 words starting from F0 memory in the \RECIPE folder as file No. F2.

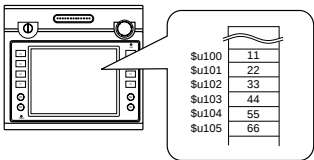
Available devices

	PLC memory	Internal memory	Constant	Memory card	Indirect specification
F0		○			○
F1		○	○		
F2		○	○		

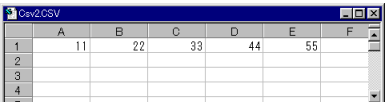
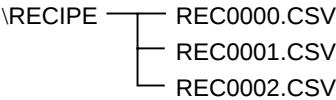
SV_RECIPE F0 F1 F2

<Example>

To save the 6-word data starting from \$u100 of PLC memory in the RECIPE folder of a CF card as REC.0002.CSV file,



Macro command [SV_RECIPE \$u100 6 2] is executed.



	A	B	C	D	E	F
1	11	22	33	44	55	
2						
3						
4						

9. Attribute Table

For converting a file of BIN file format into a file of CSV file format, the information of display type and Word/Double-Word is necessary.

Therefore, it is necessary to set this information by [Attribute Table] of UG00S-CW.

The setting of [Attribute Table] is necessary in the following cases:

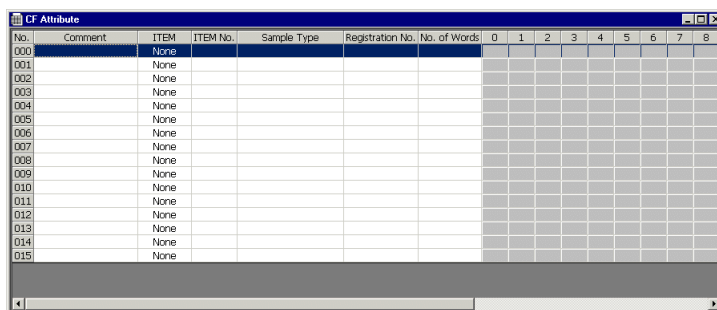
- a. When an SMPxxxx.BIN file in the SAMPLE folder is converted into a CSV file
- b. When a RECxxxx.CSV file is transferred to the PLC or UF320HD internal memory, or when the data of PLC or UG320HD internal memory is saved as a RECxxxx.CSV file.

CF Attribute (Attribute Table)

◆ Activation

Click [Attribute Table] in the [System Setting] menu under [Item].

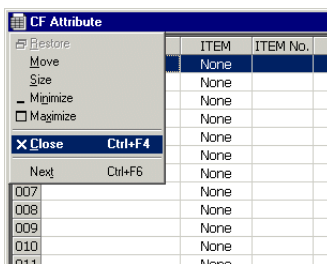
The [CF Attribute] window is brought up.



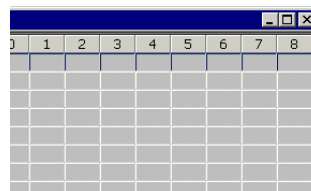
◆ Close

Click a point at upper left corner on the screen, and select [Close].

Or click [X] at upper right on the screen.

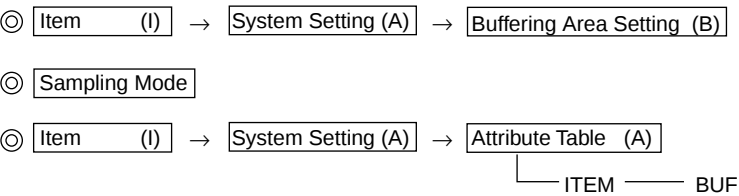


or



a. When an SMPxxxx.BIN file is converted into a CVS file

◆ Setting items



◆ CF Attribute (Attribute Table)

CF Attribute																			
No.	Comment	ITEM	ITEM No.	Sample Type	Registration No.	No. of Words	0	1	2	3	4	5	6	7	8	9	1		
000	trend	BUF	0	Bit Synchronize	1	1	%d												
001	trend(memo-card)	BUF	1	Bit Synchronize	1	1	%d												
002		BUF	2	Bit Sample															
003		BUF	3	Alarm Function															
004	LD	RECIPE	0		9	9	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d		
005	SV	RECIPE	1		10	10	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d		
006		None																	
007		None																	
008		None																	
009		None																	
010		None																	
011		None																	
012		None																	
013		None																	
014		None																	
015		None																	

- ① Comment: Set a comment for individual line.
- ② ITEM: Select “BUF”.
- ③ ITEM No.: Set buffering area number.
- ④ Sample Type: This item is automatically set when ITEM No. is set.
- ⑤ Registration No.: Set the number of data. This item needs to be set when bit synchronization, fixed cycle sampling, or temperature network is selected.
- ⑥ No. of Words: This item is automatically set when [Attribute Setting...] (refer to the following page) is set.
- ⑦ 0 to 4096: Set from the [Attribute Setting] dialog (refer to the following page).

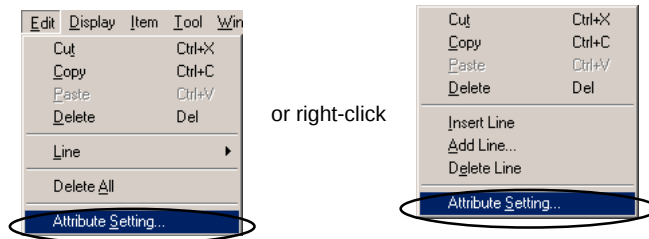
◆ Attribute Setting

1. Select a line for which attribute is to be set.

Double-clicking here also displays the [Attribute Setting] dialog.

No.	Comment	ITEM	ITEM No.	Sample Type	Registration No.	No. of Words	0	1	2	3	4	5	6	7	8	9	1
001	end	BUF	0	Bit Synchronize	1	1	%d										
002	end(memo-card)	BUF	1	Bit Synchronize	1	1	%d										
003		BUF	2	Bit Sample													
004		BUF	3	Alarm Function													
005	LD	RECIPE	0		9	9	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d
006	SV	RECIPE	1		10	10	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d
007		None															
008		None															
009		None															
010		None															
011		None															
012		None															
013		None															
014		None															
015		None															

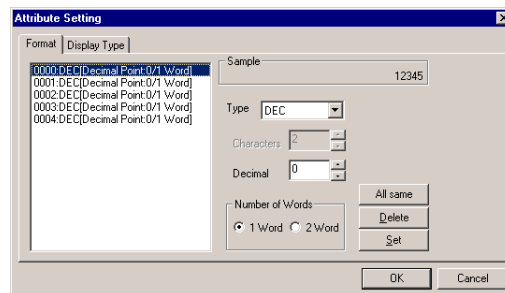
2. Click [Attribute Setting...] in the [Edit] menu.
Or click [Attribute Setting...] in the right-clicking menu.
The [Attribute Setting] dialog is displayed.



- ◇ When fixed cycle sampling, bit synchronization, or temperature network is selected.

[Format] tab window

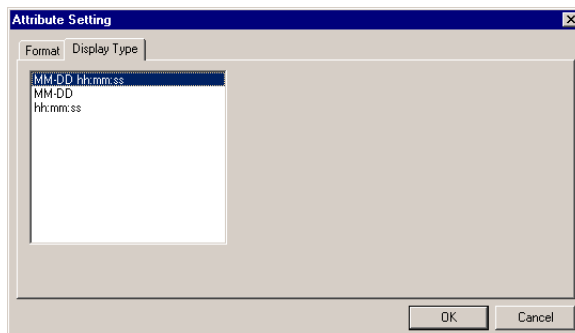
The set content is displayed for the value of [Registration No.] Set [Type], [Decimal] and [Number of Words] for each.



- [All same]
Sets to the currently selected values as a batch.
- [Delete]
Sets the currently selected part to default values (Unsigned DEC, Decimal 0, 1 Word).
- [Set]
Defines the setting that is made on the currently selected part.

[Display Type]

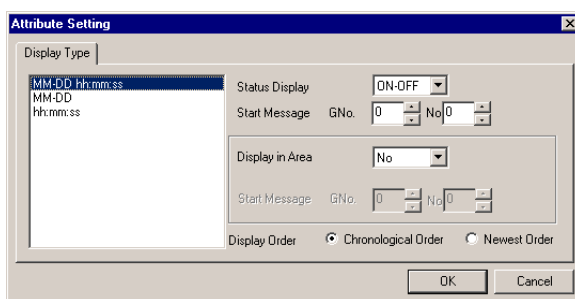
This tab window is used to set the display type of date and time.



- ◇ For bit sample

[Display Type]

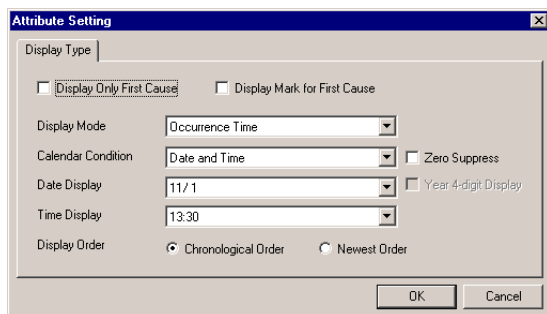
The display type of date and time and sampling mode are set.



- ◇ For alarm function

[Display Type]

Display mode, date, time, etc. are set.





Example of CSV File

Example of CSV files that are created with macro command [SMPL_CSV] are shown below:

◇ Bit synchronization

Buffer No. →

	A	B	C	D	E
1	No.000				
2	2001/5/5	0			
3	2001/5/5	100			
4	2001/5/5	50			
5	2001/5/5	65			
6	2001/5/5	200			
7					
8					
9					

◇ Bit sampling

Buffer No. →

	A	B	C	D	E
1	No.002				
2	2001.5.5 9:12	Alarm5			
3	2001.5.5 9:12	Alarm2			
4	2001.5.5 9:12	Alarm7			
5	2001.5.5 9:12	Alarm4			
6	2001.5.5 9:12	Alarm5			
7	2001.5.5 9:12	Alarm7			
8	2001.5.5 9:12	Alarm2			
9	2001.5.5 9:12	Alarm4			
10	2001.5.5 9:12	Alarm9			
11					
12					
13					

◇ Alarm

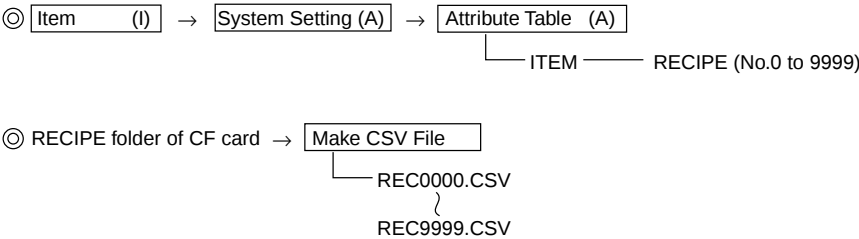
Buffer No. →

Primary cause →

	A	B	C	D	E	F
1	No.003					
2	*	Error5	2001.5.5 9:10:33	2001.5.5 9:10:52		
3		Error4	2001.5.5 9:10:34	2001.5.5 9:11:02		
4		Error3	2001.5.5 9:10:39	2001.5.5 9:10:59		
5		Error2	2001.5.5 9:10:46	2001.5.5 9:11:04		
6	*	Error8	2001.5.5 9:11:09	2001.5.5 9:11:18		
7		Error2	2001.5.5 9:11:10	2001.5.5 9:11:21		
8		Error6	2001.5.5 9:11:13	2001.5.5 9:11:24		
9		Error3	2001.5.5 9:11:16	*****		
10						
11						
12						
13						
14						

b. When a RECxxx.CSV file is transferred to UG320HD/PLC internal memory or when the data of UG320HD/PLC internal memory is saved as a RECxxxx.CSV file

◆ Setting items



◆ CF Attribute (Attribute Table)

CF Attribute																	
No.	Comment	ITEM	ITEM No.	Sample Type	Registration No.	No. of Words	0	1	2	3	4	5	6	7	8	9	1
000	trend	BUF	0	Bit Synchronize	1	1	%d										
001	trend(memo-card)	BUF	1	Bit Synchronize	1	1	%d										
002		BUF	2	Bit Sample													
003		BUF	3	Alarm Function													
004	LD	RECIPE	0		9	9	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d
005	SV	RECIPE	1		10	10	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d	%d
006		None															
007		None															
008		None															
009		None															
010		None															
011		None															
012		None															
013		None															
014		None															
015		None															

- ① Comment: Set a comment for individual line.
- ② ITEM: Select “RECIPE”.
- ③ ITEM No.: Set CSV file No. (0 to 9999).
- ④ Sample Type: (Empty)
- ⑤ Registration No.: Set the number of data. This must match the number of rows of the CSV file that is to be captured.
- ⑥ No. of Words: This item is automatically set when [Attribute Setting...] (refer to the following page) is set.
- ⑦ 0 to 4096: Set from the [Attribute Setting] dialog (refer to the following page).



◇ Importing from CSV file

It is possible to create in advance a CSV file for [CF Attribute] with Excel or other application software and read it.

For this, click [Import from CSV File] in the [File] menu, and select a CSV file.

◇ Exporting to CSV file

It is also possible to save the attribute table created from the [CF Attribute] window as a CSV file.

For this, click [Export to CSV File] in the [File] menu, and specify a file.

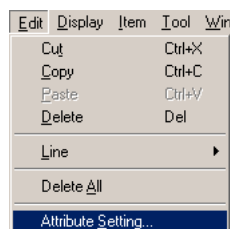
◆ Attribute Setting

1. Select a line for which attribute is to be set.

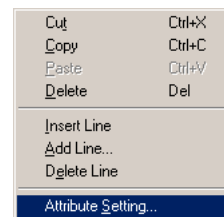
Double-clicking here also displays the [Attribute Setting] dialog.

CF Attribute										
Item No.	Comment	ITEM	ITEM No.	Sample Type	Registration No.	No. of Words	0	1	2	3
000	Stand	BUF	0	Bit Synchronize	1	1	%d			
001	End(memo-card)	BUF	1	Bit Synchronize	1	1	%d			
002		BUF	2	Bit Sample						
003		BUF	3	Alarm Function						
004	LC	RECPE	0		9	9	%d	%d	%d	%d
005	SV	RECPE	1		10	10	%d	%d	%d	%d
006		None								
007		None								
008		None								
009		None								
010		None								
011		None								
012		None								
013		None								
014		None								
015		None								

2. Click [Attribute Setting...] in the [Edit] menu.
Or click [Attribute Setting...] in the right-clicking menu.
The [Attribute Setting] dialog is displayed.

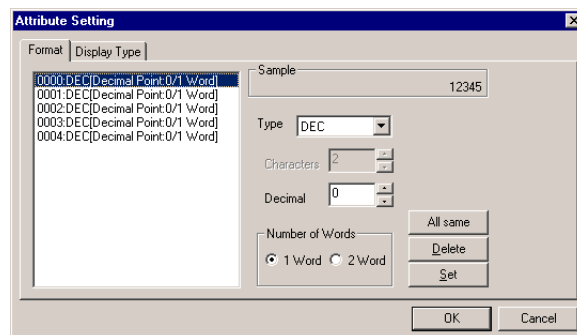


or right-click



◆ [Format] tab window

The set content is displayed for the value of [Registration No.] Set [Type], [Decimal] and [Number of Words] for each.



- [All same]
Sets to the currently selected values as a batch.
- [Delete]
Sets the currently selected part to default values (Unsigned DEC, Decimal 0, 1 Word).
- [Set]
Defines the setting that is made on the currently selected part.

3.4 System Memory

The status of deadman switch, key switch, external output switch and CF card is output to the system memory (\$s).

This section explains the content of memory areas \$s490 to 499.

For the explanation of other system memory areas, refer to Chapter 15 of the “UG Series User’s Manual <Reference>” (FEH351).

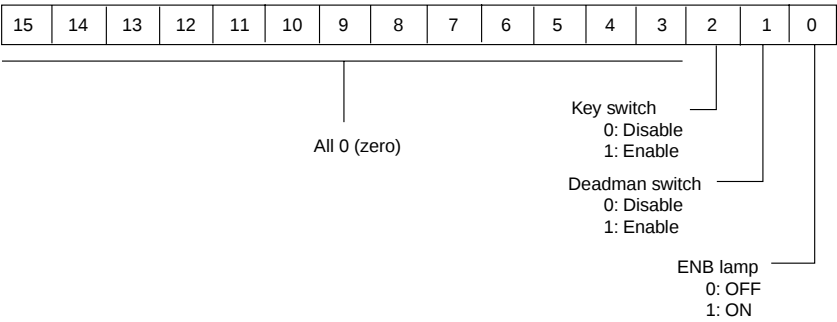
■List

Address	Contents	Memory type
\$s490	Setting of individual switch	← UG
\$s491	Answer back of individual switch	
\$s492	Status of backup battery (UG00P-HDRB)	
\$s493		
\$s494		
\$s495		
\$s496		
\$s497	CF card error status	← UG
\$s498	Remaining capacity of CF card (Kbytes)	
\$s499		

■Detail address

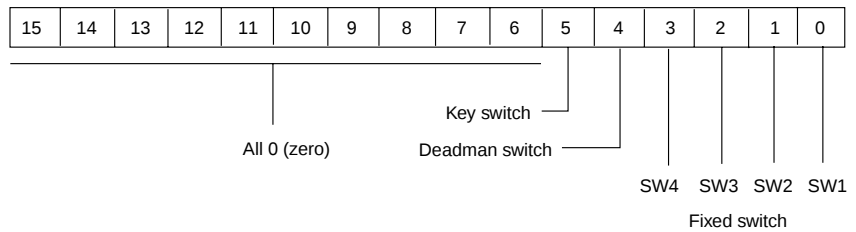
◎ \$s490

Whether fixed switches, deadman switch, and key switch are enabled or disabled is output to this area.



◎ \$s491

Answer back of fixed switches, deadman switch and key switch is output to this area.



◎ \$s492

The status of built-in clock data backup battery (UG00P-HDRB) is output to this area.

0: Normal

1: Battery voltage too low (Replace the battery.)

◎ \$s497

The result of accessing the CF card is output to this area.

4	No CF card is inserted in the socket.
6	Inserted CF card is too small in size.
7	Different type of card is inserted.
12	Card writing error
15	Disk error (failed to open)
16	Card reading error

◎ \$s498 to 499

The information of the remaining memory capacity of CF card is stored in these areas in units of kbyte.

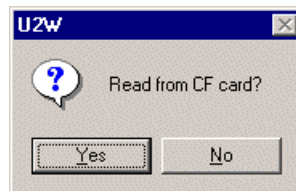
3.5 CF Card Manager

The CF card manager transfers data between UG00S-CW and CF card.

- A. Activating the CF card manager (page 3-26)
- B. Writing data in a CF card (page 3-28)
- C. Copying data in a CF card (page 3-29)
- D. Converting a file into a BIN file (page 3-30)
- E. Restoring a BIN file (page 3-32)
- F. Others (property) (page 3-33)

A. Activating the CF card manager

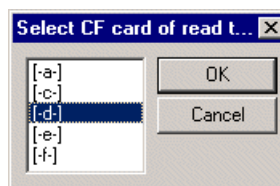
1. Click [CF Card Manager] in the [File] menu.
2. The dialog as shown below is displayed.



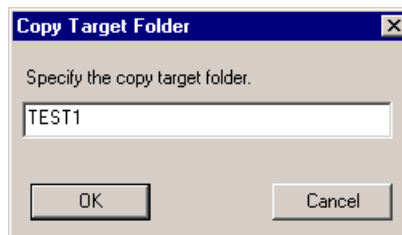
To read data from the CF card, click [Yes].

When data is to be read not from the CF card but from the \UGW\CF folder of UG00S-CW, click [No] (and proceed to 6 on page 3-27).

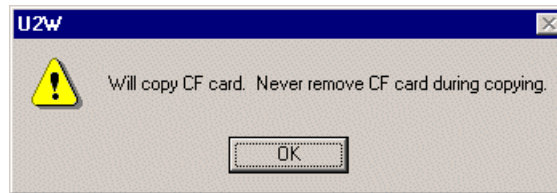
3. Select the drive for CF card, and click the [OK] switch.



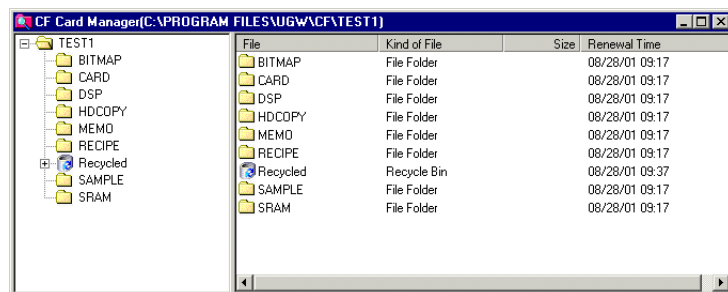
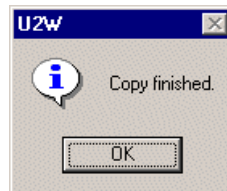
4. Select the destination folder in which the data read from the CF card is to be stored. This folder is created under the \UGW\CF folder.



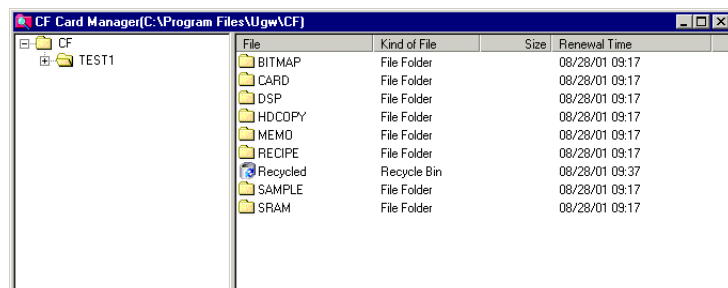
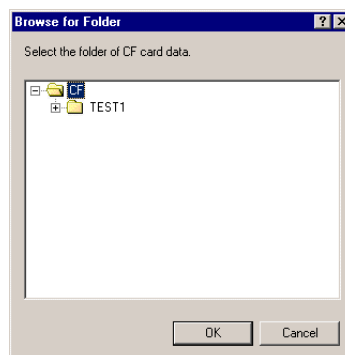
5. Clicking the [OK] switch starts reading.



When reading is completed, the CF card manager is activated.

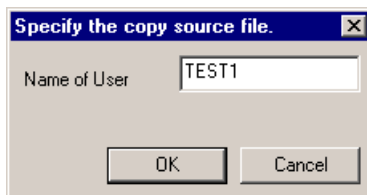


6. The \UGW\CF folder of UG00S-CW is selected.
Click the [OK] switch. The CF card manager is activated.

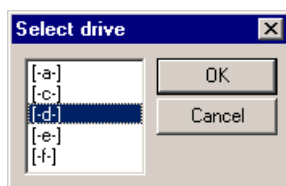


B. Writing data in a CF card

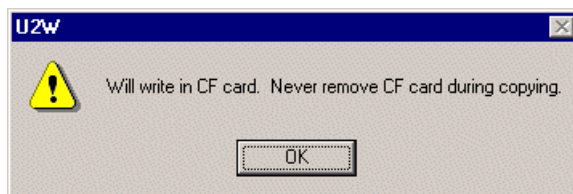
1. Click [Write to CF Card] in the [File] menu.
2. The dialog as shown below is displayed.
Input the folder name in which the data to be written in the CF card is stored.



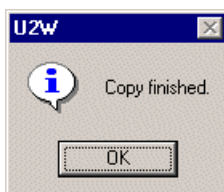
3. Select the drive for CF card, and click the [OK] switch.



4. The data is written in the CF card. Clicking the [OK] switch starts writing.

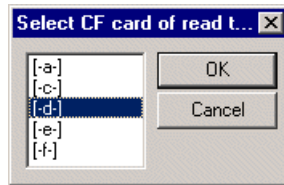


5. When writing is completed, the following dialog is displayed.

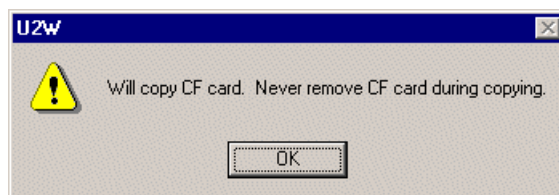


C. Copying data in a CF card

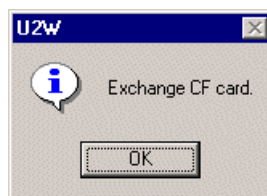
1. Click [CF Card Copy] in the [File] menu.



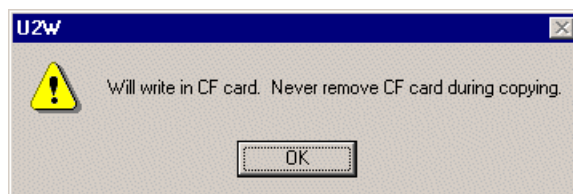
2. Select the drive for CF card, and click the [OK] switch.



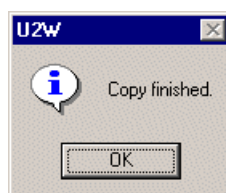
3. Follow the directions displayed in the dialog, and click the [OK] switch. The dialog as shown below is displayed.



4. Take the CF card out of the personal computer, and inset a CF card in which the data is to be copied. Click the [OK] switch.



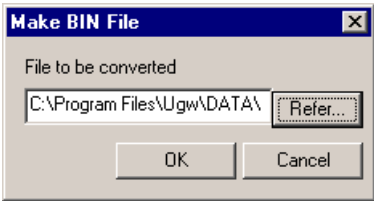
5. Follow the directions displayed in the dialog, and click the [OK] switch. The dialog as shown below is displayed when copying is completed.



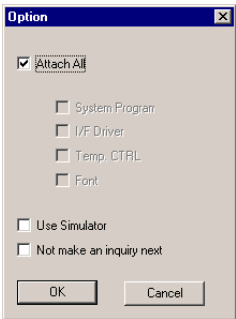
D. Converting a file into a BIN file

A file with the extension of “.U2” needs to be converted into a BIN file when it is saved in a CF card.

- 1. Click [Make BIN File] in the [File] menu.
- 2. The [Make BIN File] dialog is displayed. In this dialog, select a file (“.U2” file) that is to be converted.



- 3. The [Option] dialog is displayed. Select data for creating a BIN file.

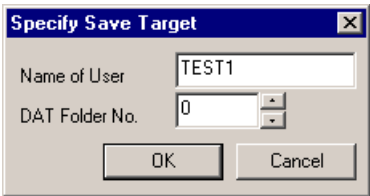


BIN conversion file		Check item	Attach All	None	System Program	I/F Driver	Temp. CTRL	Font
Screen data		.U2	☐	☐	☐	☐	☐	☐
System program		.prg	☐		☐			
I/F driver		.tpb	☐			☐		
Temperature control network program		.tem	☐ *				☐	
Font		.ftd	☐					☐

* Only when temperature control network is set

When the [☒Use Simulator] box is checked, UNIPLC is transferred as IF driver.

- 4. The [Specify Save Target] dialog is displayed. Specify a location in which the converted BIN file is to be saved.
Name of User: Input a folder name that exists in the \UGW\CF folder.
DAT Folder No.: Set the “DAT Folder No.” that exists in the folder that is input in the [Name of User] entry box.



5. Click the [OK] switch. The [Saved File] dialog is displayed.

Set a name for the BIN file and a comment for the file.

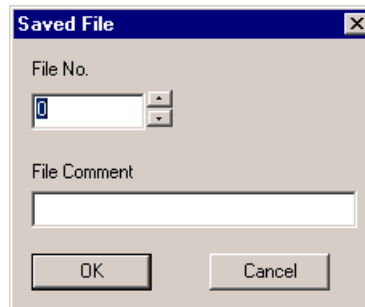
- File No.: n (= 0 to 9999)

Set BIN file number.

Then, "DSPn.BIN" is created in the \UGW\CF\DATxxxx\DSP folder.

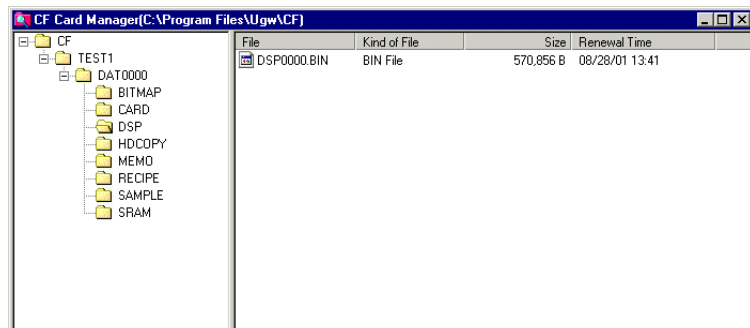
- File Comment

Input a comment for the file.



6. Click the [OK] switch.

The created BIN file is displayed in the [CF Card Manager] window.



E. Restoring a BIN file

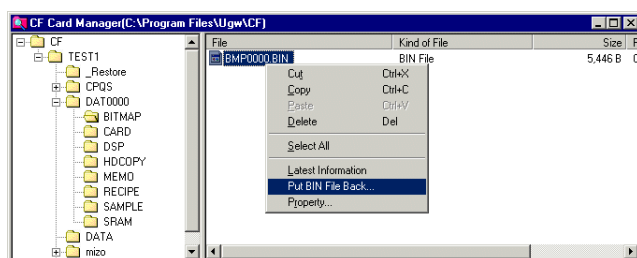
BIN file can be converted into a file of the original format.

This conversion is available only for the files that exist in the following folders.

(Folder)	(File name after conversion)
\BITMAP	BMPxxxx.bmp
\CARD	xxx.mcd (can be used with UG000P-MS)
\DSP	DSPxxxx.U2
\HDCOPY	HDxxxx.bmp
\MEMO	MEMxxxx.bmp

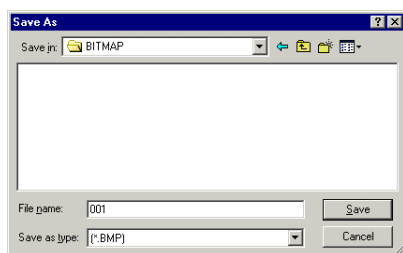
◆ Procedure

1. Select a file that is to be converted.
2. Click [Put BIN File Back] in the [File] menu.
Or click [Put BIN File Back] in the right-clicking menu.

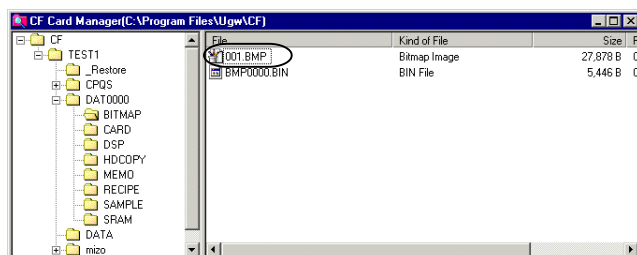


3. The [Save as] dialog is displayed.

Set the location in which the data is to be saved as well as the file name, and click the [Save] switch.



4. A file with the extension of “.BMP” is created.



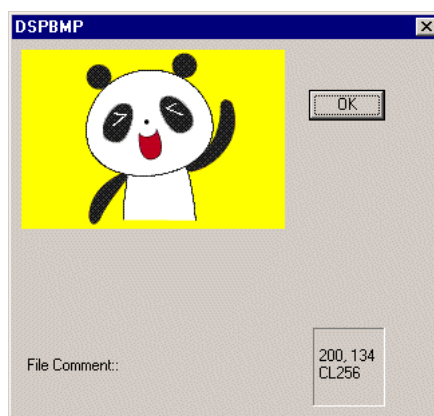
F. Others

◆ Property of BIN file

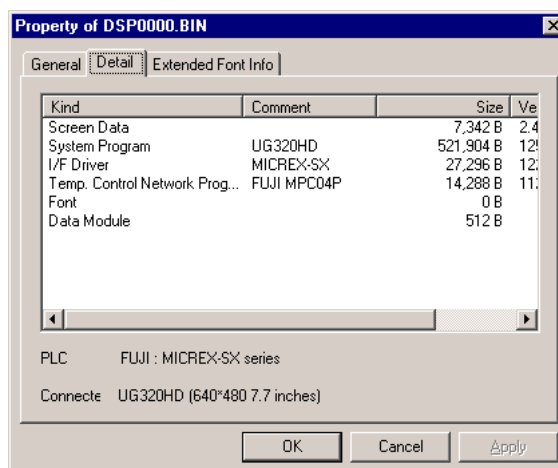
When a BIN file is selected and [Property...] in the right-clicking menu is clicked, the information of individual file is displayed.

<Example>

- For BMPxxxx.BIN, HDxxxx.BIN or MEMxxxx.BIN file
Bitmap image is displayed.



- For DSPxxxx.BIN file
On the [Detail] tag window, you can check file type, version, etc.



MEMO



A series of horizontal dashed lines for writing.



Handling of Peripheral Equipment

- 4.1 Communication Cable
- 4.2 Desktop Stand
- 4.3 Bracket for Wall Mounting
- 4.4 Battery

4

Handling of Peripheral Equipment

4.1 Communication Cable

UG00C-HD□ (communication cable) is used to connect the handy type POD (UG320HD) to a PLC.

Various cable lengths of UG00C-HD□ are prepared: 3, 5, 15 and 20 m.

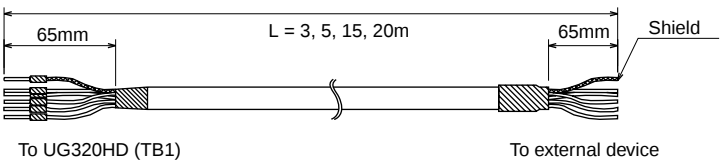
Warning

- Turn OFF the power before mounting, dismantling, wiring, maintaining or checking, otherwise, electric shock, erratic operation or troubles might occur.

Caution

- Properly treat unused cables, for example, by cutting and taping the end.

Outside Dimensions



Specifications

Item	Specifications
Nominal cross-sectional area	0.2mm ²
Finished outer diameter	10mm
Conductor	Tinned annealed copper
Pair	Twisted pair
Insulator	105°C heat resistant vinyl
Sheath	Oil resistant, heat resistant, soft vinyl (black)
Termination	POD side: Rod terminal, PLC side: no treatment

Wiring

Be sure to connect the side on which a rod terminal is crimped to TB1 of UG320HD.
Terminal screws shall be tightened to the torque of 0.22 to 0.25 N•m.

Identification by Mark Tube

Color	Signal name	Color	Signal name
Yellow	TXD	Yellow & black	EMG1
Yellow & white	RXD	Yellow & red	EMG2
Brown	+SD	White	E_COM
Brown & white	–SD	Green & black	KEY1
Gray	+RD	Green & red	KEY2
Gray & white	–RD	Green	SG
Orange	+RTS	Red	+24V
Orange & white	–RTS	Blue	
Purple	+CTS	Red & white	0V
Purple & white	–CTS	Blue & white	
Light green	DO1	Shield	FG
Light green & white	DO2		
Pink	DO3		
Pink & white	DO4		
Sky blue	COM(–)		

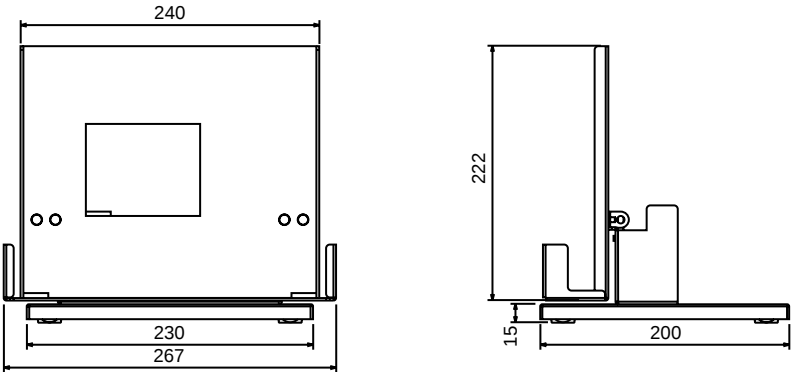
4.2 Desktop Stand

UG00P-HDST is the desktop stand dedicated to the handy type POD (UG320HD).

Caution

- Follow the directions of the operating instructions and the manual when mounting the product. If mounting is improper, the product might drop or develop problems or erratic operations.

Outside Dimensions

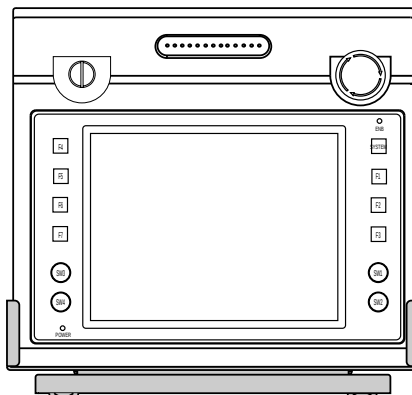


Specifications

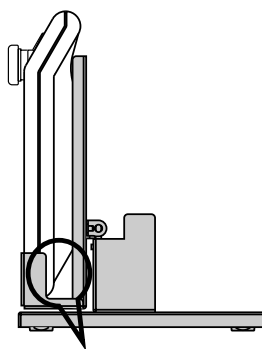
Angle: 0 to 90 deg.
 Mass: 2.2 kg

How to Use the Product

- Properly set UG320HD on the stand when using it (Fig. 1).
- Take the communication cable out of the cable lead-out opening provided on the side of the stand (Fig. 2).
- When the I/F cover on the rear of UG320HD is removed, the screen data transfer cable (UG00C-T) can be connected even when the stand is used (Fig. 3). In this case, however, IP65 cannot be kept.

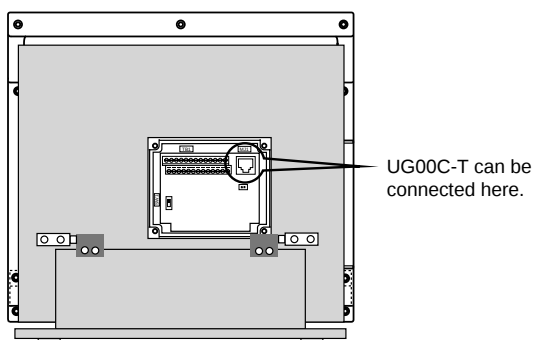


(Fig. 1)



Communication cable lead-out opening

(Fig. 2)



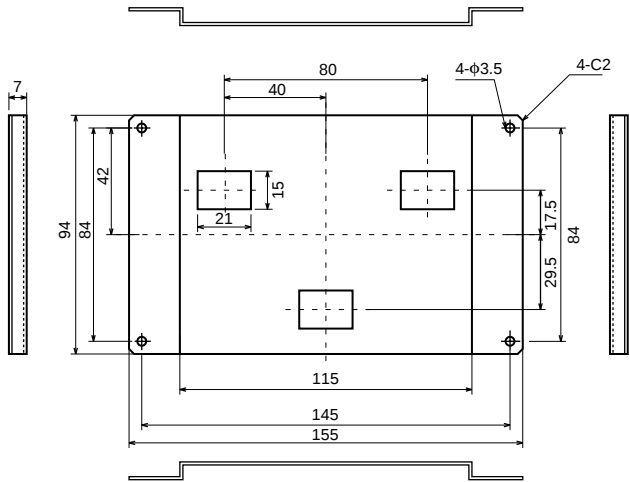
(Fig. 3)

4.3 Bracket for Wall Mounting

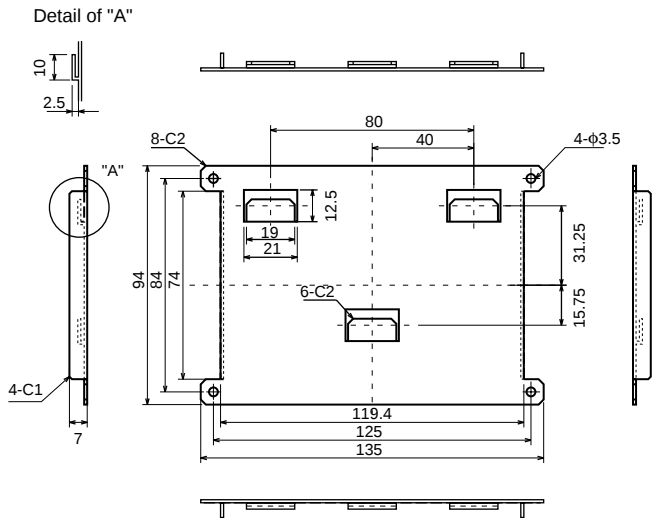
UG00P-HDFS is the bracket for wall mounting which is provided as a two-piece set, which includes UG320HD side piece and control panel side piece.
UG00P-HDF1 is control panel side piece.

Outside Dimensions

- UG320HD side

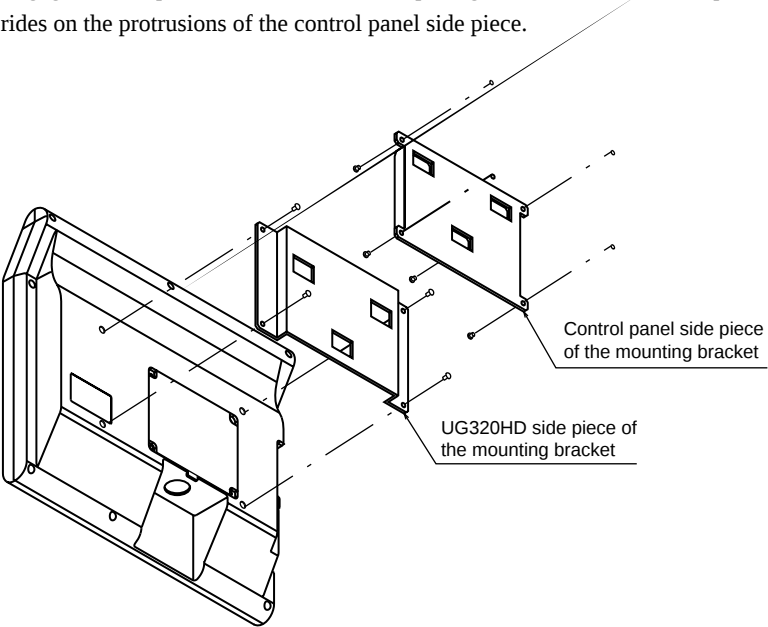


- Control panel side



How to Use the Bracket

1. Mount the bracket for the UG320HD on the rear of UG320HD, using the screws (M3×8) supplied with the bracket.
2. Mount the bracket for the control panel on the panel on which UG320HD is to be mounted, using the screws (M3×10) supplied.
3. Engage the two pieces such that the three openings of the UG320HD side piece rides on the protrusions of the control panel side piece.



Screw size	Tightening torque N•m
M3	0.3 to 0.5

4.4 Battery

UG00P-HDRB is the battery for retaining the clock data when the built-in block of UG320HD is used.

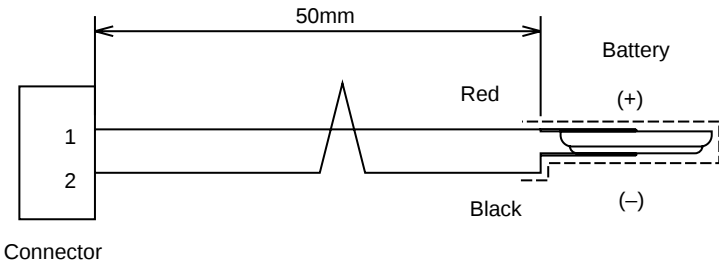
Warning

- Turn OFF the power before mounting, dismounting, wiring, maintaining or checking, otherwise, electric shock, erratic operation or troubles might occur.
- Do not connect in reverse polarity, charge (except rechargeable ones), disassemble, heat, throw in fire, or short-circuit the batteries, otherwise, they might burst or take fire.
- If batteries have any deformation, spilled fluids, or other abnormality, do not use them. The use of such batteries might cause explosion or firing.

Caution

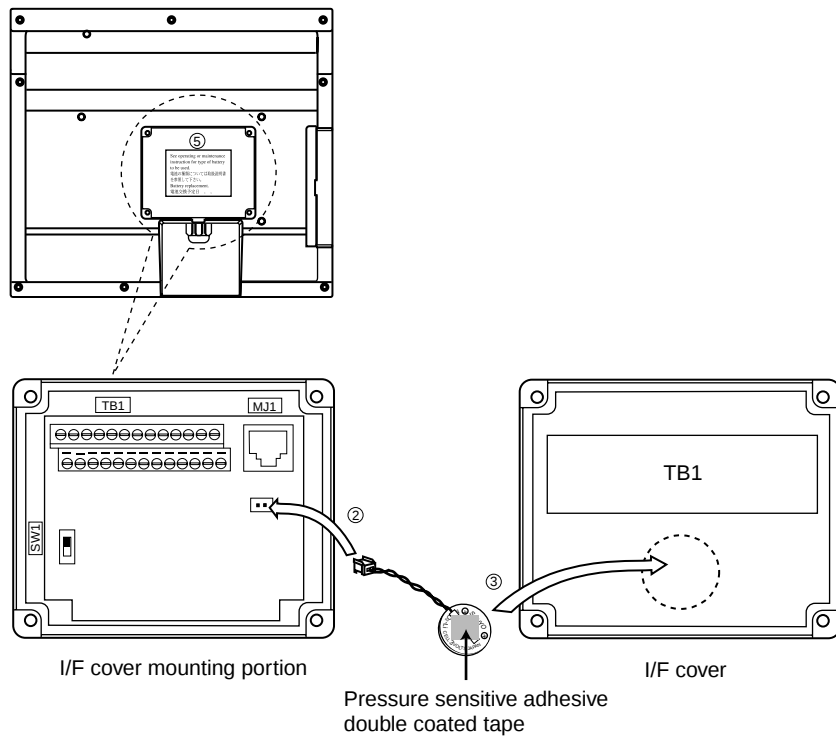
- Follow the directions of the operating instructions and the manual when mounting the product. If mounting is improper, the product might drop or develop problems or erratic operations.

Outside Dimensions



How to Mount the Battery

1. Remove the I/F cover on the rear of UG320HD.
2. Connect the connector of the battery to the connector provided on the rear of UG320HD.
3. Remove the paper from the pressure sensitive adhesive double coated tape that is stuck to the battery, and bond the battery onto the inner surface the I/F cover.
4. Mount the I/F cover on UG320HD.
5. Write the date of battery replacement in the seal supplied with the battery, and stick it on the I/F cover.



Timing of Battery Replacement

The status of the battery is stored in the system memory (\$s492) of UG320HD.

0: Normal

1: Battery voltage too low

When the status of \$s492 becomes 1, immediately replace the battery.

Effective life of the battery is approximately 5 years at the ambient temperature of 25°C. Even within this period, replace the battery when the status of \$s492 becomes 1.

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Information in this manual is subject to change without notice.