Fuji Electric

MONITOUCH

Communication Unit Specifications PROFIBUS-DP

TECHNOSHOT

V9/TS2060

Record of Revisions

Reference numbers are shown at the bottom left corner on the back cover of each manual.

Printing Date	Reference No.	Revised Contents
January, 2016	1077NE0	First edition
August, 2018	1077NE1	Second edition

Preface

Thank you for selecting MONITOUCH.
This manual describes operation procedures and errors of MONITOUCH in detail.
For correct use of MONITOUCH, you are requested to read through this manual to understand more about the product.
The manuals shown below are related manuals for MONITOUCH. Refer to them as necessary.

Manual Name	Contents	Reference No.
V9 Series Reference Manual [1]	Explains the functions and operation of the V9 series.	1065NE
V9 Series Reference Manual [2]		1066NE
V9 Series Setup Manual	Explains the installation procedure of V-SFT version 6, the creation process of simple screen programs as well as how to transfer a created screen program using V-SFT version 6.	1067NE
V9 Series Troubleshooting/ Maintenance Manual	Provides an error list and explains the operating procedures for the V9 series.	1068NE
V9 Series Training Manual Beginner's Guide	Explains the screen creation process using V-SFT version 6 with examples in detail.	1069NE
V9 Series Training Manual Practical Guide		1070NE
V9 Series Macro Reference	Provides an overview of macros of V-SFT version 6 and explains macro editor operations and macro command descriptions in detail.	1071NE
V9 Series Operation Manual	Explains the configuration of V-SFT version 6, the editing process of each part and limitations regarding operation in detail.	1072NE
V9 Series Hardware Specifications	Explains hardware specifications and precautions when handling the V9 series.	2023NE
V9 Series Connection Manual [1]	Explains the connection and communication parameters for the V9 series and controllers in detail.	2210NE
V9 Series Connection Manual [2]		2211NE
V9 Series Connection Manual [3]		2212NE
TS Reference Manual [1]	Explains the functions and operation of the TS.	1204NE
TS Reference Manual [2]		1205NE
TS2060 Hardware Specifications	Explains hardware specifications and precautions when handling the TS2060.	2207NE
TS2060 Connection Manual [1]	Explains the connection and communication parameters for the TS2060 and controllers in detail.	2204NE
TS2060 Connection Manual [2]		2205NE
TS2060 Connection Manual [3]		2206NE

For further details about controllers (PLCs, temperature controllers, etc.), refer to the manual issued by each controller manufacturer.

Notes:

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2. The information in this manual is subject to change without prior notice.
3. Windows and Excel are registered trademarks of Microsoft Corporation in the United States and other countries.
4. All other company names or product names are trademarks or registered trademarks of their respective holders.
5. This manual is intended to give accurate information about MONITOUCH hardware. If you have any questions, please contact your local distributor.

Notes on Safe Usage of MONITOUCH

In this manual, you will find various notes categorized under the following levels with the signal words “DANGER” and “CAUTION.”

⚠DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and could cause property damage.

Note that there is a possibility that the item listed with ⚠CAUTION may have serious ramifications.

⚠DANGER

- Never use the output signal of MONITOUCH for operations that may threaten human life or damage the system, such as signals used in case of emergency. Please design the system so that it can cope with a touch switch malfunction. A touch switch malfunction may result in machine accidents or damage.
- Turn off the power supply when you set up the unit, connect new cables, or perform maintenance or inspections. Otherwise, electrical shock or damage may occur.
- Never touch any terminals while the power is on. Otherwise, electrical shock may occur.
- You must cover the terminals on the unit before turning the power on and operating the unit. Otherwise, electrical shock may occur.
- The liquid crystal in the LCD panel is a hazardous substance. If the LCD panel is damaged, do not ingest the leaked liquid crystal. If leaked liquid crystal makes contact with skin or clothing, wash it away with soap and water.
- Never disassemble, recharge, deform by pressure, short-circuit, reverse the polarity of the lithium battery, nor dispose of the lithium battery in fire. Failure to follow these conditions will lead to explosion or ignition.
- Never use a lithium battery that is deformed, leaking, or shows any other signs of abnormality. Failure to follow these conditions will lead to explosion or ignition.
- Switches on the screen are operable even when the screen has become dark due to a faulty backlight or when the backlight has reached the end of its service life. If the screen is dark and hard to see, do not touch the screen. Otherwise, a malfunction may occur resulting in machine accidents or damage.

⚠CAUTION

- Check the appearance of the unit when it is unpacked. Do not use the unit if any damage or deformation is found. Failure to do so may lead to fire, damage, or malfunction.
- For use in a facility or as part of a system related to nuclear energy, aerospace, medical, traffic equipment, or mobile installations, please consult your local distributor.
- Operate (or store) MONITOUCH under the conditions indicated in this manual and related manuals. Failure to do so could cause fire, malfunction, physical damage, or deterioration.
- Observe the following environmental restrictions on use and storage of the unit. Otherwise, fire or damage to the unit may result.
  - Avoid locations where there is a possibility that water, corrosive gas, flammable gas, solvents, grinding fluids, or cutting oil can come into contact with the unit.
  - Avoid high temperatures, high humidity, and outside weather conditions, such as wind, rain, or direct sunlight.
  - Avoid locations where excessive dust, salt, and metallic particles are present.
  - Avoid installing the unit in a location where vibrations or physical shocks may be transmitted.

⚠CAUTION

- Equipment must be correctly mounted so that the main terminal of MONITOUCH will not be touched inadvertently. Otherwise, an accident or electric shock may occur.
- Tighten the mounting screws on the fixtures of MONITOUCH uniformly to the specified torque. Excessive tightening may distort the panel surface. Loose mounting screws may cause the unit to fall down, malfunction, or short-circuit.
- Check periodically that terminal screws on the power supply terminal block and fixtures are firmly tightened. Loosened screws or nuts may result in fire or malfunction.
- Tighten the terminal screws on the power supply terminal block of MONITOUCH uniformly to the specified torque. Improper tightening of screws may result in fire, malfunction, or other serious trouble.
- MONITOUCH has a glass screen. Do not drop the unit or impart physical shocks to the unit. Otherwise, the screen may be damaged.
- Correctly connect cables to the terminals of MONITOUCH in accordance with the specified voltage and wattage. Overvoltage, overwattage, or incorrect cable connection could cause fire, malfunction, or damage to the unit.
- Always ground MONITOUCH. The FG terminal must be used exclusively for MONITOUCH with the level of grounding resistance less than 100 Ω. Otherwise, you may sustain an electric shock, a fire may occur, MONITOUCH may not recognize touch operations, and malfunctions may occur.
- Prevent any conductive particles from entering MONITOUCH. Failure to do so may lead to fire, damage, or malfunction.
- After wiring is finished, remove the paper used as a dust cover before starting operation of the V9 series. Operation with the dust cover attached may result in accidents, fire, malfunction, or other trouble.
- Do not attempt to repair MONITOUCH yourself. Contact Hakko Electronics or the designated contractor for repairs.
- Do not repair, disassemble, or modify MONITOUCH. Hakko Electronics Co., Ltd. is not responsible for any damages resulting from repair, disassembly, or modification of the unit that was performed by an unauthorized person.
- Do not use sharp-pointed tools to press touch switches. Doing so may damage the display unit.
- Only experts are authorized to set up the unit, connect cables, and perform maintenance and inspection.
- Lithium batteries contain combustible material such as lithium and organic solvents. Mishandling may cause heat, explosion, or ignition resulting in fire or injury. Read the related manuals carefully and correctly handle the lithium battery as instructed.
- Take safety precautions during operations such as changing settings when the unit is running, forced output, and starting and stopping the unit. Any misoperations may cause unexpected machine movement, resulting in machine accidents or damage.
- In facilities where the failure of MONITOUCH could lead to accidents that threaten human life or other serious damage, be sure that such facilities are equipped with adequate safeguards.
- When disposing of MONITOUCH, it must be treated as industrial waste.
- Before touching MONITOUCH, discharge static electricity from your body by touching grounded metal. Excessive static electricity may cause malfunction or trouble.
- Insert an SD card into MONITOUCH in the same orientation as pictured on the unit. Failure to do so may damage the SD card or the slot on the unit.
- Never remove a storage device (SD card or USB flash drive) when the storage device is being accessed. Doing so may destroy the data on the storage device. Only remove a storage device when the Local Mode screen or Main Menu screen is displayed or after pressing the [Storage Removal] switch.
- If the case of V9 series, the SD card access LED flashes red when the SD card is being accessed. Never remove the SD card or turn off power to the unit while the LED is flashing. Doing so may destroy the data on the SD card. Check that the LED has turned off before removing the SD card or turning off the power to the unit.
- Be sure to remove the protective sheet that is attached to the touch panel surface at delivery before use. Using MONITOUCH with the protective sheet attached may result in incorrect touch switch activation.
- When using an analog resistive-film type V9 series or TS2060 unit, do not touch two positions on the screen at the same time. If two or more positions are pressed at the same time, the switch located between the pressed positions may be activated.

⚠CAUTION

- When using a V9 series unit of the capacitive type, observe the following points.
  - Use a Class 2 power supply for the 24 VDC power unit. Using MONITOUCH with an unstable power supply may result in incorrect touch switch activation.
  - Capacitive touch panel types support two-point touch operations. If a third point is touched, the touch operation will be cancelled.
  - Capacitive touch panel types are prone to the influence of conductive material. Do not place conductive material such as metals near the touch panel surface and do not use the panel if it is wet. Otherwise, malfunctions may occur.

[General Notes]

- Never bundle control cables or input/output cables with high-voltage and large-current carrying cables such as power supply cables. Keep control cables and input/output cables at least 200 mm away from high-voltage and large-current carrying cables. Otherwise, malfunction may occur due to noise.
- When using MONITOUCH in an environment where a source of high-frequency noise is present, it is recommended that the FG shielded cable (communication cable) be grounded at each end. However, when communication is unstable, select between grounding one or both ends, as permitted by the usage environment.
- Be sure to plug connectors and sockets of MONITOUCH in the correct orientation. Failure to do so may lead to damage or malfunction.
- If a LAN cable is inserted into the MJ1 or MJ2 connector, the device on the other end may be damaged. Check the connector names on the unit and insert cables into the correct connectors.
- Do not use thinners for cleaning because it may discolor MONITOUCH surface. Use commercially available alcohol.
- If a data receive error occurs when MONITOUCH unit and a counterpart unit (PLC, temperature controller, etc.) are started at the same time, read the manual of the counterpart unit to correctly resolve the error.
- Avoid discharging static electricity on the mounting panel of MONITOUCH. Static charge can damage the unit and cause malfunctions. Discharging static electricity on the mounting panel may cause malfunction to occur due to noise.
- Avoid prolonged display of any fixed pattern. Due to the characteristic of liquid crystal displays, an afterimage may occur. If prolonged display of a fixed pattern is expected, use the backlight's auto OFF function.
- MONITOUCH is identified as a class-A product in industrial environments. In the case of use in a domestic environment, the unit is likely to cause electromagnetic interference. Preventive measures should thereby be taken appropriately.
- The signal ground (SG) and frame ground (FG) are connected inside the V9150 series unit. Take care when designing systems.

[Notes on the LCD]
Note that the following conditions may occur under normal circumstances.

- The response time, brightness, and colors of MONITOUCH may be affected by the ambient temperature.
- Tiny spots (dark or luminescent) may appear on the display due to the characteristics of liquid crystal.
- There are variations in brightness and color between units.

[Notes on Capacitive Touch Panels]

- Touch panel operability may not be optimal if used with dry fingers or skin. In such a case, use a capacitive stylus pen.
- Periodically clean the touch panel surface for optimum touch operations.
  When cleaning, take note of the following points.
  <When cleaning>
  - The panel surface is made of glass. Be sure to clean the surface gently with a cloth or sponge. Otherwise, you may scratch or damage the glass.
  - Take care not to let cleaning detergent to seep into the touch panel unit.
    Do not directly apply or spray cleaning detergent on the panel surface.

[Notes on Wireless LAN]
For details regarding supported wireless LAN standards, radio law certifications, and countries where wireless LAN can be used, refer to the "About Wireless LAN on V9 Advanced Model"/"About Wireless LAN on V9 Standard Model" manual or the "V9 Series Hardware Specifications" provided with the V9 series unit at delivery.

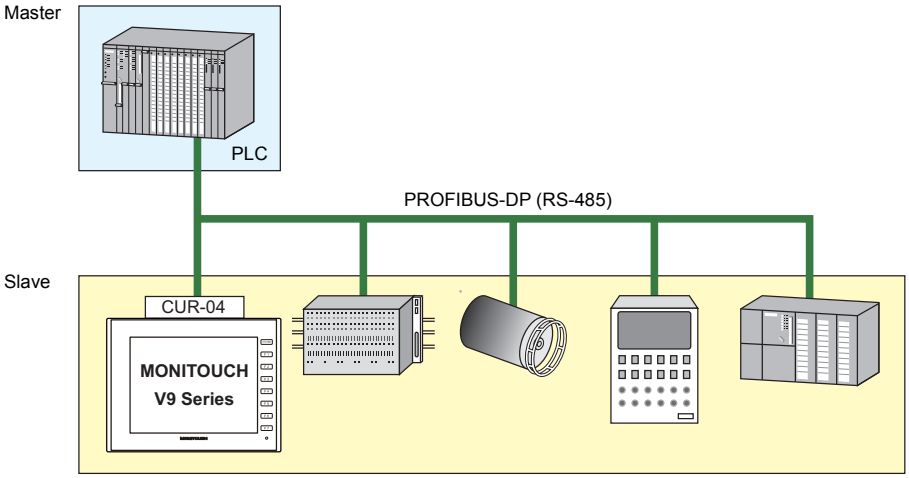
Contents

5. Universal PROFIBUS-DP

6. Error

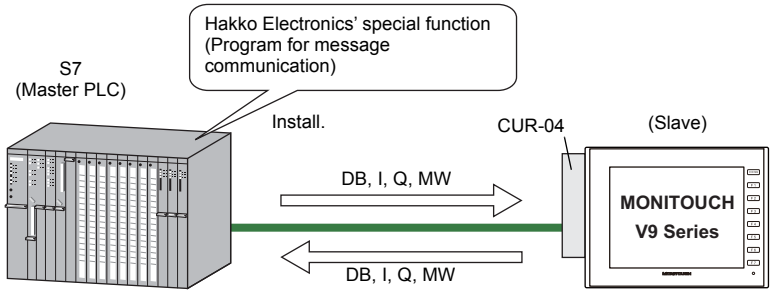
1. Overview

- "PROFIBUS" is a vendor-independent open fieldbus standard used for a wide range of applications in factory automation and process automation. It provides two types of communication protocols (communication profiles), DP and FMS, that can be used for the hierarchy in the system.
  On the V9 series or TS2060i, PROFIBUS-DP can be used.
- The V9 series or TS2060i can be connected as a slave via PROFIBUS-DP (RS-485) when the communication I/F unit "CUR-04" is mounted.
  The V9 series or TS2060i can communicate only with a master PLC.



* For more information on the communication I/F unit "CUR-04", refer to "2. Specifications".

- The maximum baud rate available between the V9 series or TS2060i and the master PLC is 12 Mbps.The baud rate for the V9 series or TS2060i is automatically set to that of the bus.
- With the V9 series or TS2060i, message communication (only with Siemens' S7) and I/O communication can be carried out.
  - S7 PROFIBUS-DP (message communication)
    The V9 series or TS2060i can directly access to the device memory, such as DB or MW, in Siemens' S7 (master).
    Message communication is carried out using Hakko Electronics' dedicated protocol. Thus, it is necessary to install our special function (program for message communication)* in the S7 to enable direct access.



*** For details on the setting procedure, refer to "4. Siemens S7 PROFIBUS-DP".**

  - Universal PROFIBUS-DP (I/O communication)
    The V9 series or TS2060i can directly access to the I/O memory that is in use in the master PLC.

Available Models

PLC (Master)

Model Setting on V-SFT	CPU	Port	Remarks
S7 PROFIBUS-DP *	S7-300 S7-300F S7-400 S7-400F/FH	DP	Message communication using Hakko Electronics' dedicated protocol Refer to page 4-1.
Universal PROFIBUS-DP	-	PROFIBUS-DP port	I/O communication Refer to page 5-1.

* Can be selected only when the S7 is used as a master PLC. S5 cannot be selected.

MONITOUCH (Slave)

MONITOUCH Models	Communication Unit Model
All V9 series models	CUR-04
TS2060i	

2. Specifications

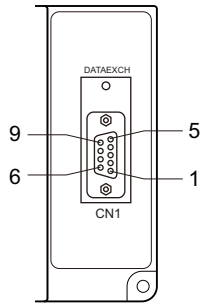
This chapter describes specifications of the slave (V9 series or TS2060i) and the communication unit "CUR-04".
Regarding the general specifications or other information on PROFIBUS-DP, refer to the relevant manuals for PROFIBUS.

General Specifications of Slave

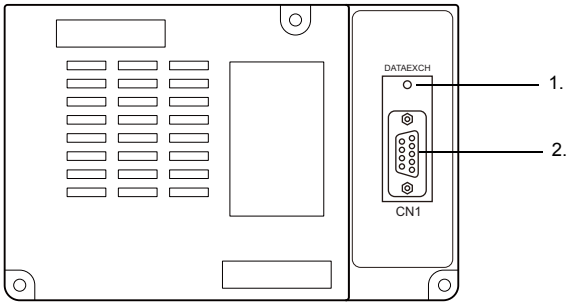
Item	Specifications						
Connectable units	Slave station: 125 units (max.)						
Port number setting range	1 to 125 (to be set on V-SFT)						
Transmission system	Bus configuration (multi-drop)						
Transmission line	Bus transmission line: Shielded twist-pair cable (The total line length varies depending on the baud rate.)						
Transmission system	Half-duplex, serial transmission, compatible with EIA RS-485						
Communication settings	Data length: 8 bits Parity: Even Stop bit: 1 bit						
Baud rate (bps)	9600	19200	93750	18750	500000	1.5M	12M
Transmission distance (m)	1200	1200	1200	1000	400	200	100
Coding system	NRZ (Non Return to Zero)						
Input/output points	S7 PROFIBUS-DP: 1 to 48 words (32, 64 or 96 bytes to be selected on V-SFT) Universal PROFIBUS-DP: 1 to 64 words (32, 64, 96 or 128 bytes to be selected on V-SFT)						

Specifications of CUR-04

Pin Arrangement

CN1 (D-Sub 9 Female)	Pin No.	Signal	Contents
	1	Not connected	Shield
	2	Not connected	-
	3	RxD/TxD-P	For receiving/sending data Line B (red)
	4	Not connected	-
	5	DGND	Data ground (Reference voltage for VP)
	6	VP	+5-V power (For bus termination)
	7	Not connected	-
	8	RxD/TxD-N	For receiving/sending data Line A (green)
	9	Not connected	

Names of Components

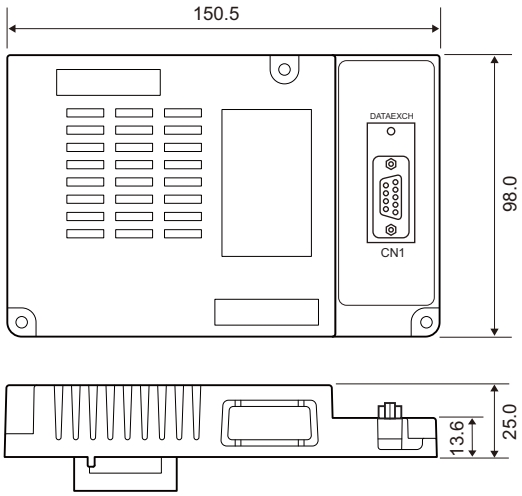


1) LED
This LED is used for identifying whether the Data Exchange mode is selected or not.
It is lit in green during communication with a PROFIBUS-DP device.

2) PROFIBUS-DP connector (CN1)
This is a D-Sub 9-pin connector used for PROFIBUS-DP communication.
For details on wiring, refer to “Wiring”.

Dimensions

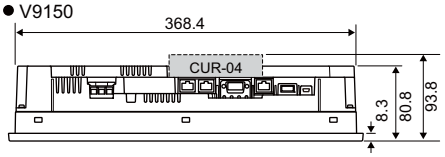
CUR-04



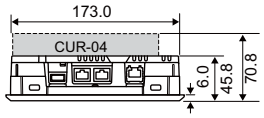
Unit: mm

MONITOUCH + CUR-04

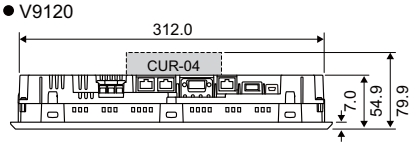
● V9150



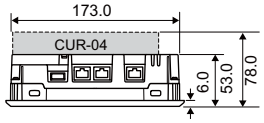
● TS2060i



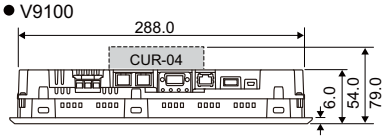
● V9120



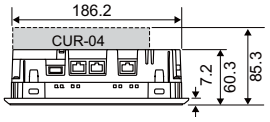
● V9060



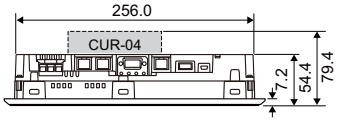
● V9100



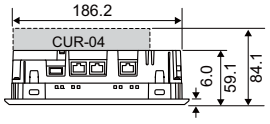
● V9071W



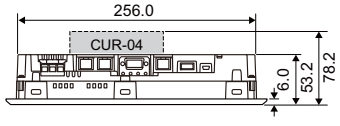
● V9101W



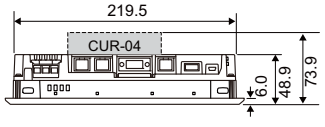
● V9070W



● V9100W

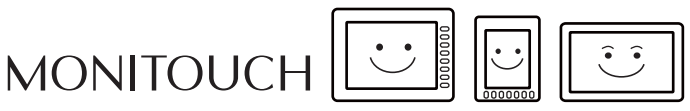


● V9080



Unit: mm

MEMO



3. Installation

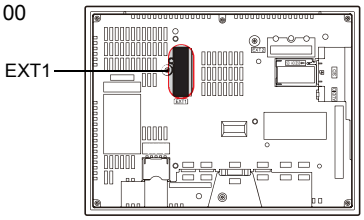
Mounting Procedure

⚠CAUTION

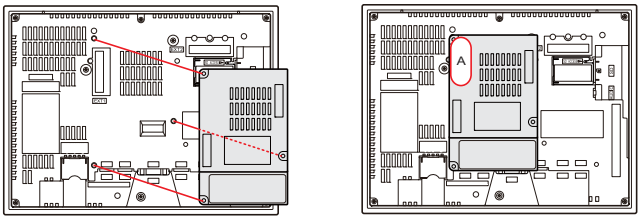
- Before mounting the communication unit “CUR-04”, be sure to turn off the power to the V9 series or TS2060i.
- Tighten mounting screws equally to a torque of 0.5 to 0.7 N•m.

1. Remove the EXT1 connector cover (enclosed area) from the rear of the V9 series or TS2060i.

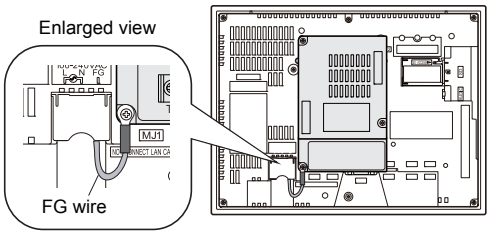
Example: V9100



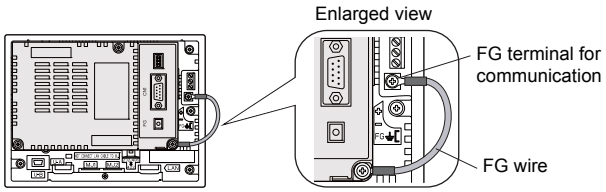
2. Align the three mounting holes on the CUR-04 with those on the V9 series or TS2060i, and lightly press on
“A” shown in the figure below. Check that the connector is securely fitted.



3. Fix the CUR-04 on the V9 series or TS2060i using the three mounting screws supplied with the CUR-04. Also, connect the CUR-04 (the metal in the lower left) and the V9 series or TS2060i frame ground (FG) using the provided FG wire.



* In the case of TS2060i, connect the provided FG wire to the FG terminal for communication on TS2060i.



4. Connect the communication cable.

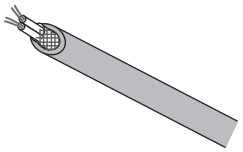
Wiring

⚠CAUTION Be sure to use the Siemens' cable dedicated to PROFIBUS-DP.

Connecting Cable

Recommended cable

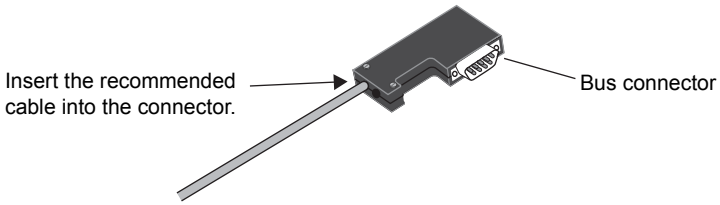
The following cable is recommended.

Maker	Model	Image
Siemens	6XV1830-0EH10	

* For more information on the specifications or connecting procedure of the cable, refer to the relevant manual issued by Siemens.

Recommended bus connector

It is recommended that you use an RS-485 connector called as "bus connector" with a PROFIBUS connection cable. By using this connector, you can easily connect cables for the PROFIBUS device.



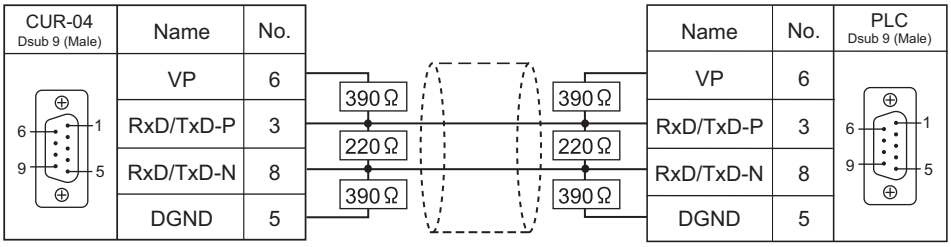
The following bus connectors are recommended.

Maker	Model	Remarks	
Siemens	6ES7 972-0BA11-0XA0	Vertical wiring With vertical cable outlet (90°)	Without PG I/F
	6ES7 972-0BB11-0XA0		With PG I/F
	6ES7 972-0BA40-0XA0	Vertical wiring With axial cable outlet (35°)	Without PG I/F
	6ES7 972-0BB40-0XA0		With PG I/F
	6ES7 972-0BA50-0XA0	Vertical wiring With vertical cable outlet (90°) FastConnect	Without PG I/F
	6ES7 972-0BB50-0XA0		With PG I/F

* For more information on the connector or its connecting procedure, refer to the relevant manual issued by Siemens.

Wiring

DANGER Electric shock hazard.
Before wiring the cable, be sure to turn off the power to the V9 series or TS2060i.



Applicable Standard

The V9 series or TS2060i complies with the following standards.

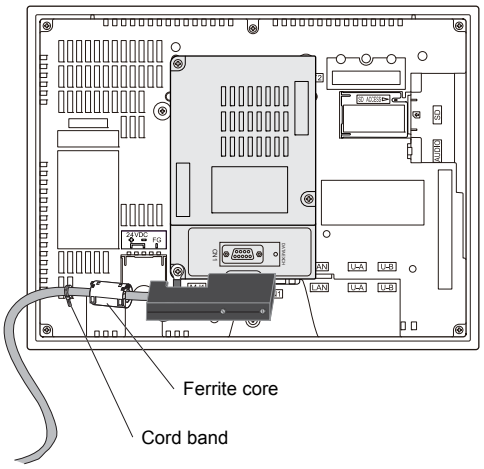
- CE(EN61000-6-2, EN61000-6-4, EN50581)
- UL508(File No. E313548)

This unit is complied with these standards when using it to the V9 model or TS2060i model complied with the CE Marking or UL/cUL.
For details, refer to the Hardware Specifications manual.

CE Marking

When using this unit as the model with CE marking, be sure to attach the ferrite core supplied with this unit onto the communication cable near to the CUR-04.

Example: V9100iSD



MEMO

4. Siemens S7 PROFIBUS-DP

The V9 series or TS2060i can directly access to the device memory, such as DB or MW, in Siemens' S7 (master). Message communication is carried out using Hakko Electronics' dedicated protocol. Thus, it is necessary to install our special function (program for message communication)* in the master S7 to enable direct access.
This chapter describes the setting procedure on the V-SFT-6 and the SIMATIC Manager (S7).

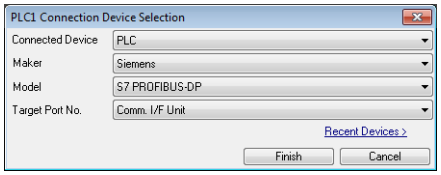
V-SFT Setting

This section describes the setting procedure on the V-SFT.
For more information on other settings, refer to the Connection Manual or the Reference Manual 1.

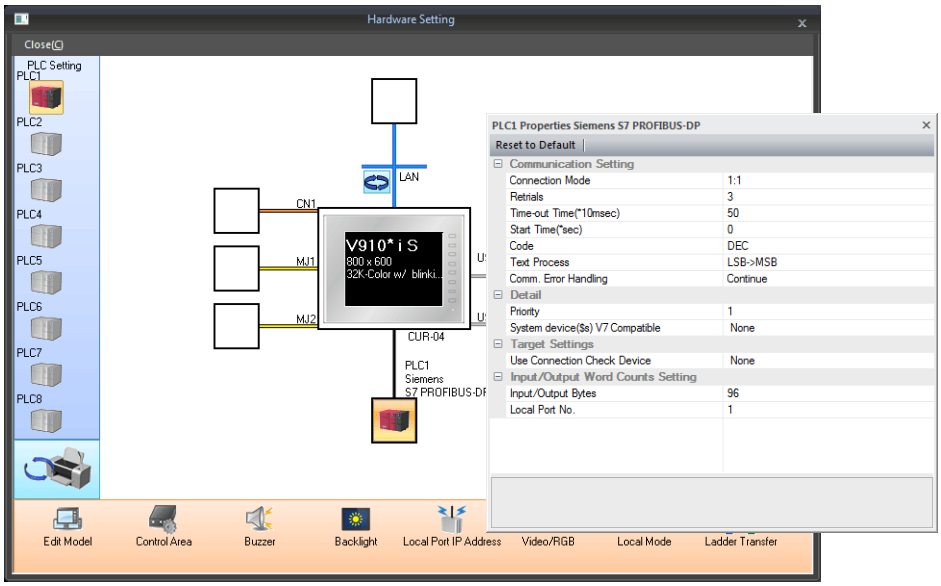
PLC1 Connection Device Selection

> **⚠CAUTION** Only Siemens' S7 can be used as a master PLC.
> S5 cannot be used. For more information on the connectable models, refer to page 1-2.

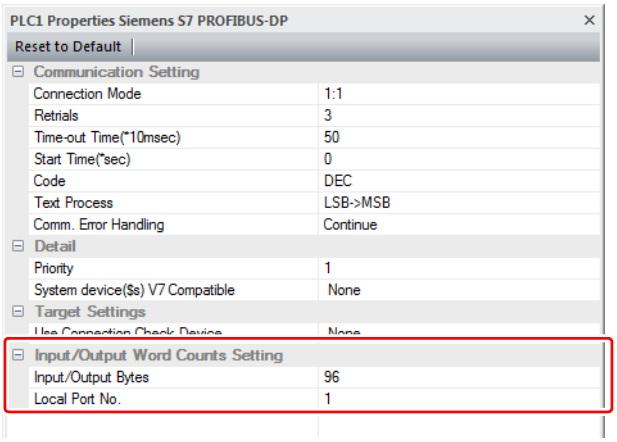
Select [Maker: Siemens] and [Series: S7 PROFIBUS-DP] for PLC1.



* This setting can be made only for PLC1.



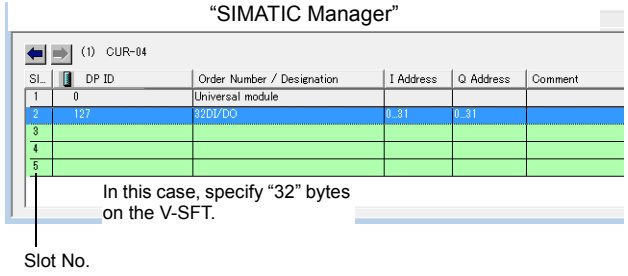
Hardware Setting (PLC1 Properties)

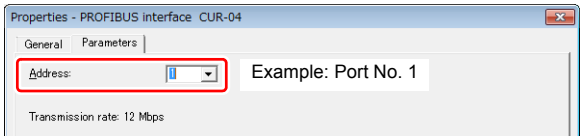
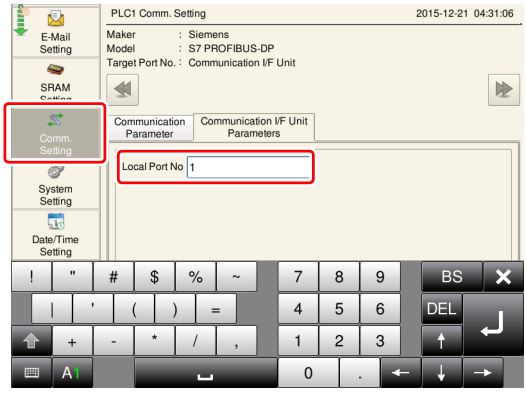


[Communication Setting / Detail / Target Settings]

No settings are necessary. Settings made on the master PLC is automatically set.

[Input/Output Word Counts Setting]

Input/Output Bytes (32/64/96)	Select the size of data of which the V9 series or TS2060i uses in the PROFIBUS communication. Set the same value as the one registered for [32DI/DO] on the Siemens' "SIMATIC Manager". 1 slot: 32 bytes 2 slots: 64 bytes 3 slots: 96 bytes "SIMATIC Manager" 

Local Port No.	Set the port number of the V9 series or TS2060i used for the PROFIBUS communication.Set the same number as the one specified for [Address] on the Siemens' "SIMATIC Manager". "SIMATIC Manager"  * The local port number can also be set in Local mode on the V9 series. 

Available Memory

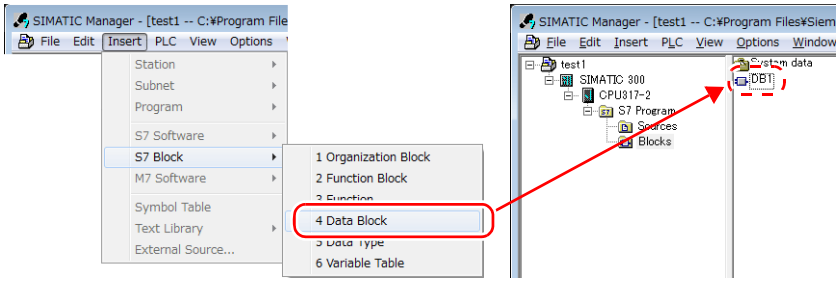
Be sure to set within the range available with the PLC to be used.
Use [TYPE] when assigning the indirect memory for macro programs.

Memory		TYPE	Remarks
DB	(Data Word)	00H	*1
I	(input)	01H	IW as word device
Q	(output)	02H	QW as word device
M	(Marker Word)	03H	MW as word device

*1 This memory must be registered on the PLC side before use.
For more information, refer to the corresponding PLC manual.
The assigned memory is indicated when editing the screen as shown on the right.
The device range that can be set on MONITOUCH is "DB0001:0000" to "DB4095:8190".

Example: DB0001 : 0000
Address
Colon
Block No.

<Registration of DB device memory>



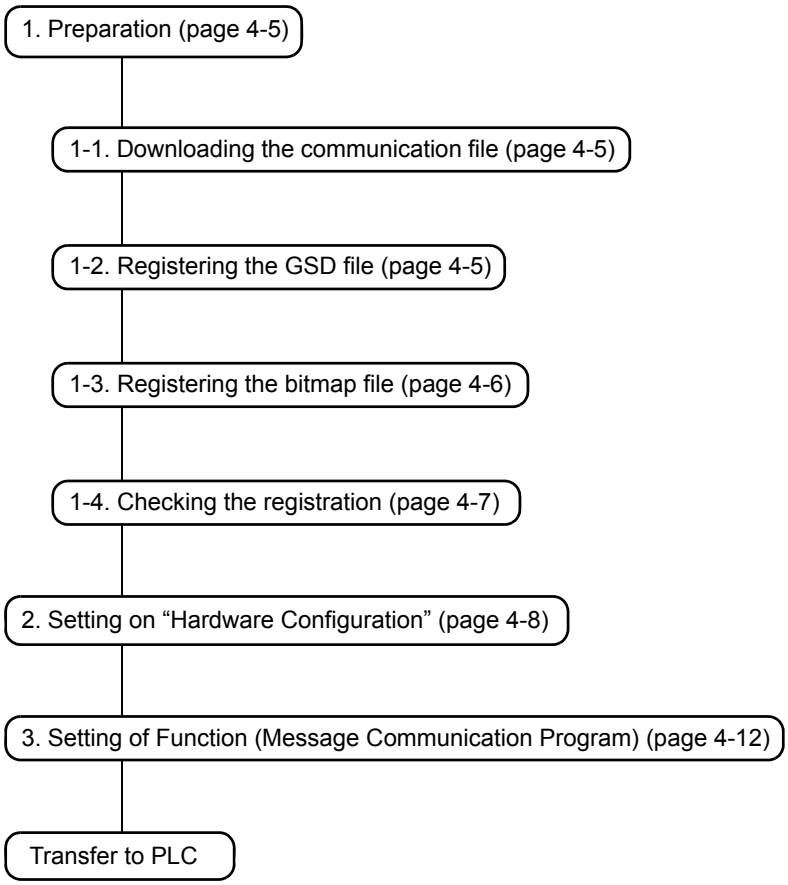
PLC (SIMATIC Manager) Setting

This section describes the procedure for making settings required for message communication between the V9 series and the master PLC.

Setting Flowchart

Settings for the SIMATIC Manager are made in the following flow.

* For more information on the operation procedure for the SIMATIC Manager, refer to the relevant manual issued by Siemens.



CAUTION When replacing a V8, V7, or V6 series unit with the V9 series or TS2060i, be sure to perform “1. Preparation”, and change the settings made at “2. Setting on “Hardware Configuration”” shown in the above flowchart.

Setting

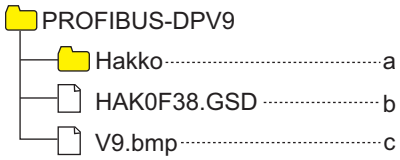
Make settings on the SIMATIC Manager by following the procedure described below.

1. Preparation

Make the following preparations in advance of making settings on the PLC.

1-1. Downloading the communication file

Download the Hakko Electronics' original program for message communication from our website (http://www.monitouch.com/).
The downloaded "PROFIBUS-DP" folder is configured as shown below.



a. Project folder
The Hakko Electronics' original function (message communication program) is contained.

b. GSD file for the V9 Series
Used for parameter settings for the slave V9 Series.

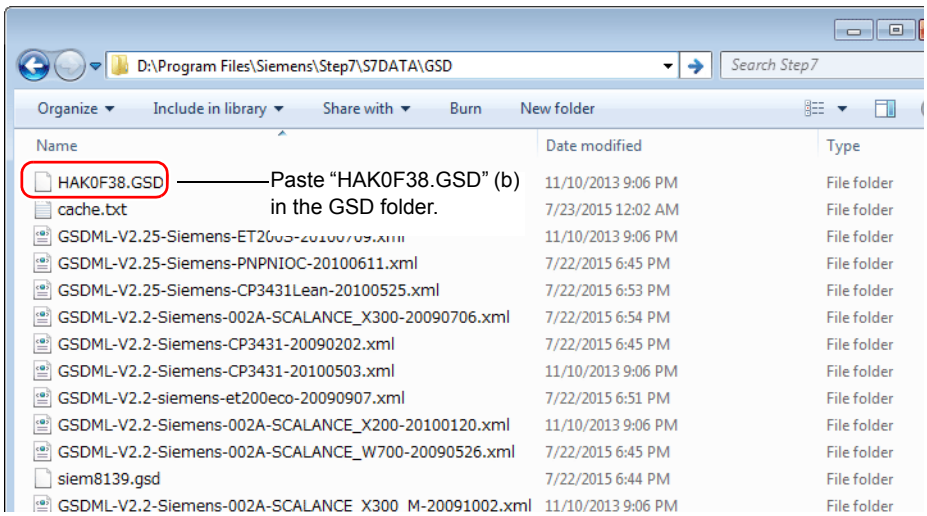
c. Bitmap file
Bitmapped image of the V9 Series used for setting the V9 Series as a slave.


V9.bmp

1-2. Registering the GSD file

Register the GSD file for the V9 Series.

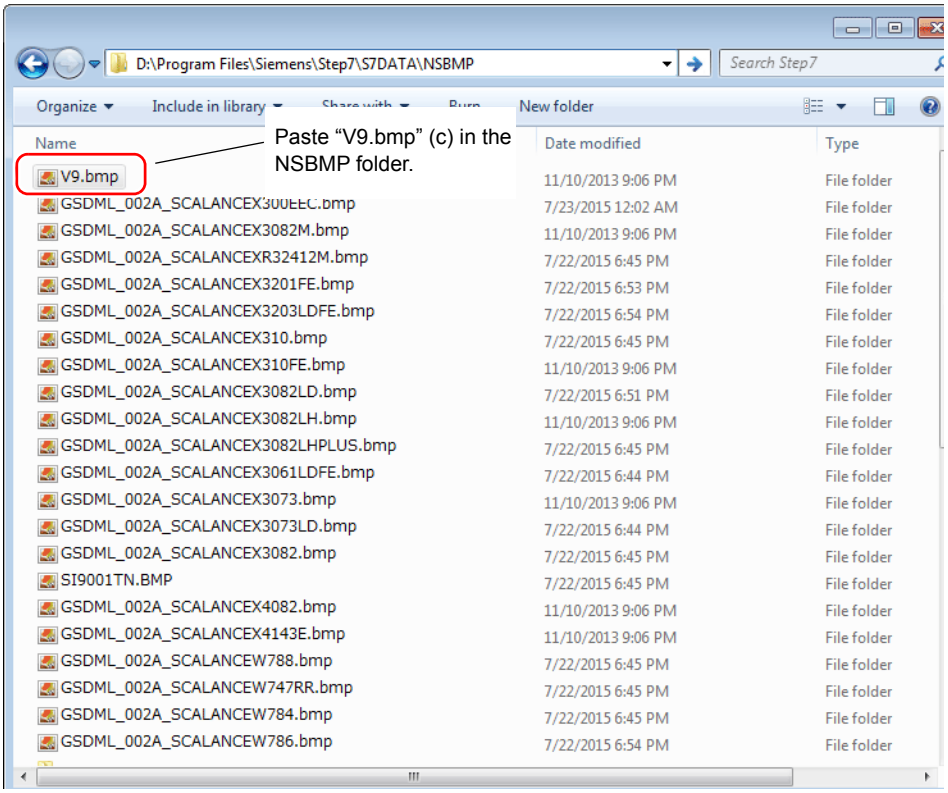
1. Copy the GSD file "HAK0F38.GSD" (b).
2. Paste it in the SIMATIC Manager installation folder shown below:
\Siemens\Step7\S7DATA\GSD folder



1-3. Registering the bitmap file

Register the bitmap file for the V9 Series.

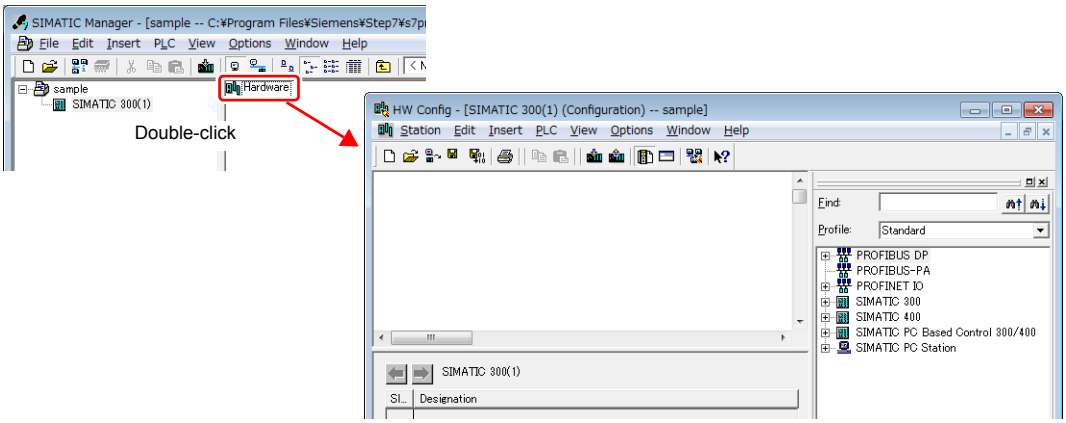
1. Copy the bitmap file “V9.bmp” (c).
2. Paste it in the SIMATIC Manager installation folder shown below:
   \Siemens\Step7\S7DATA\NSBMP



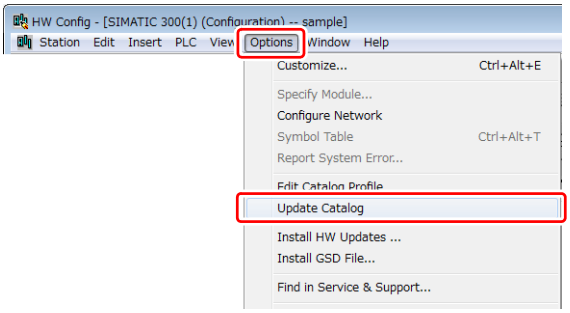
1-4. Checking the registration

Check that the GSD file and the bitmap file are correctly registered.

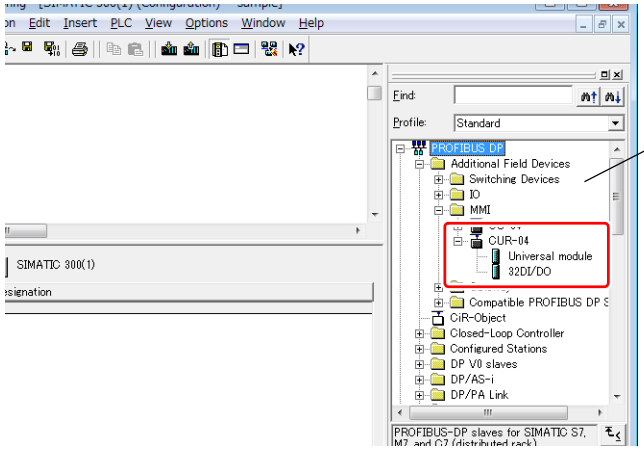
1. Launch the SIMATIC Manager and open a project.
2. Start [HW Config].



3. Click [Options] → [Update Catalog]. The contents are updated to those registered for the V9 Series.



4. The “CUR-04” folder is created under [PROFIBUS-DP] → [Additional Field Devices] → [MMI] in the [Hardware Catalog] tree view.

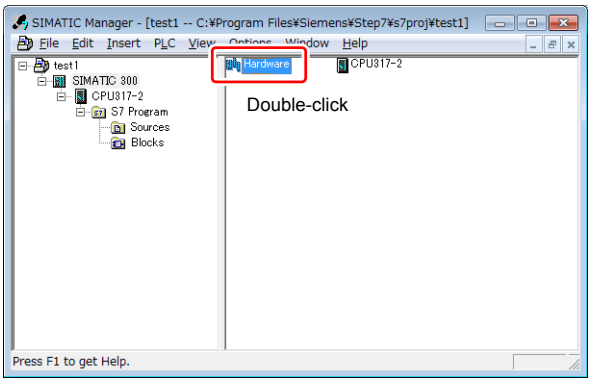


* If the [Hardware Catalog] tree view is not displayed, click [View] → [Catalog].

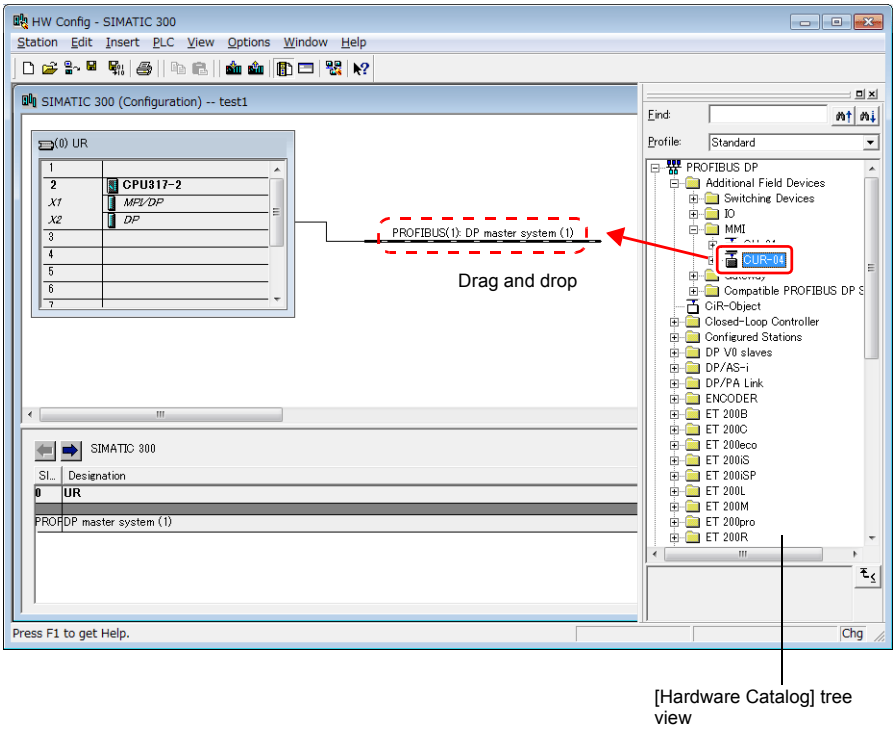
2. Setting on “Hardware Configuration”

Set the V9 Series as a slave in the PROFIBUS-DP project.

1. Launch the SIMATIC Manager and open the user’s project for PROFIBUS-DP.
2. Double-click the [Hardware] and start [HW Config].

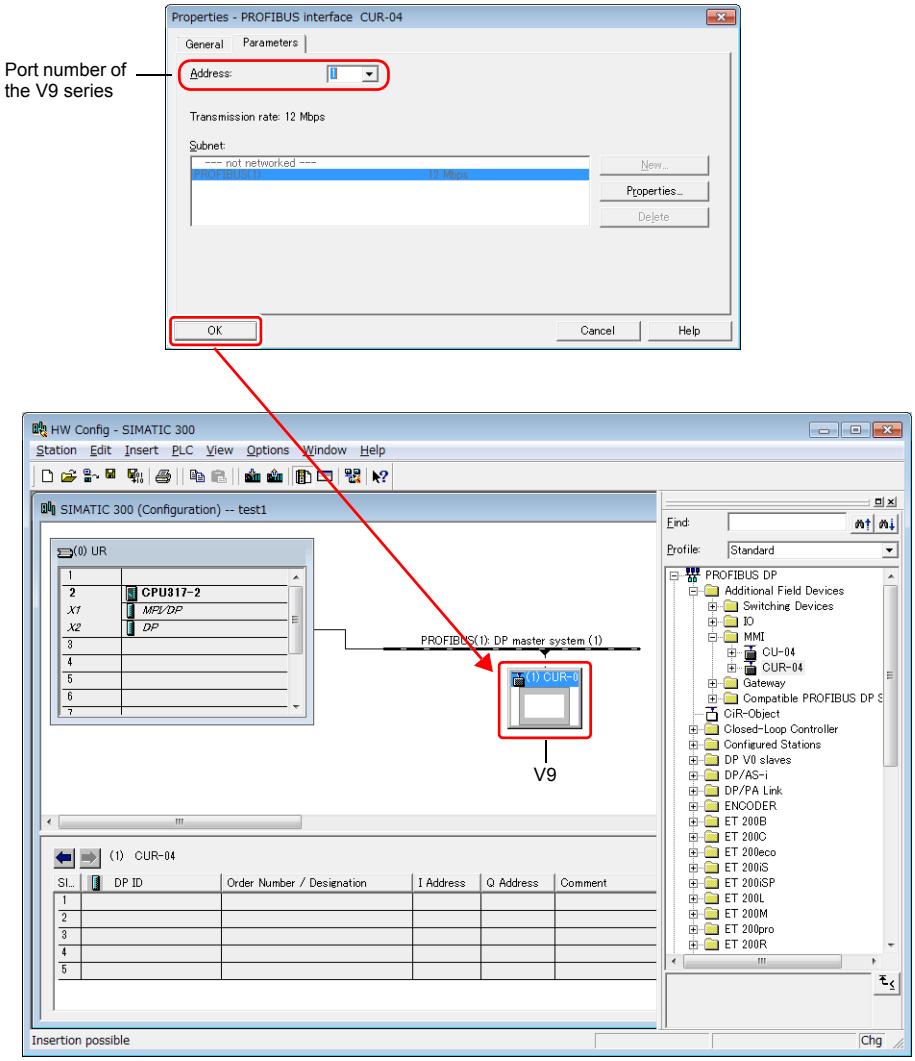


3. Drag the “CUR-04” folder in the [Hardware Catalog] tree view and drop it on [PROFIBUS-DP].

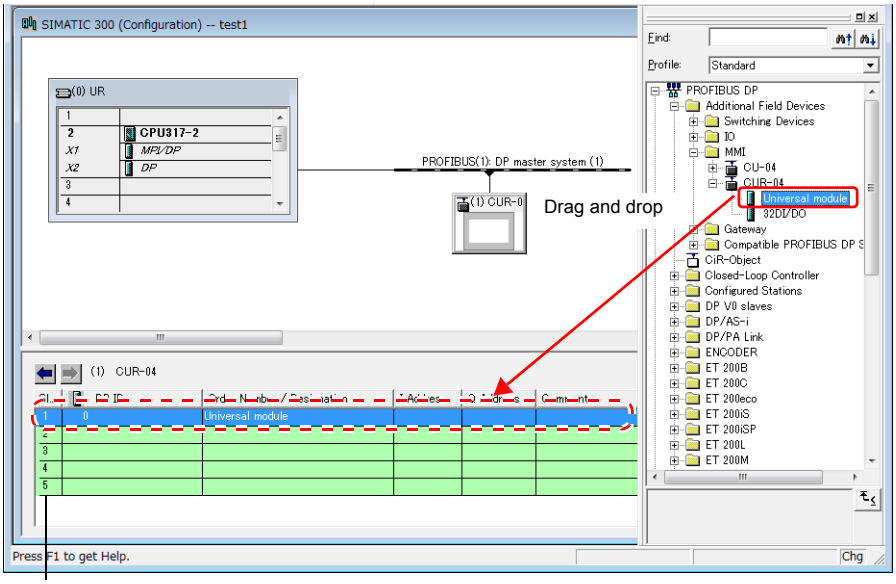


* If the [Hardware Catalog] tree view is not displayed, click [View] → [Catalog].

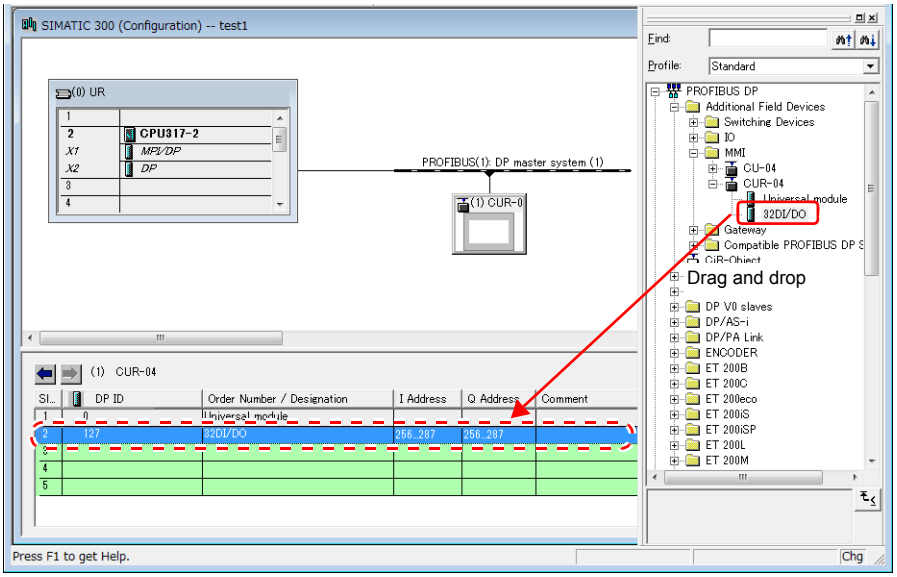
4. The [Properties] window is displayed. Set the port number of the V9 series on the [Parameters] tab window. Click [OK] and the V9 series is registered. (Example: Port No. 1)



5. Drag “Universal module” under the “CUR-04” folder in the [Hardware Catalog] tree view and drop it onto [Slot 1] of [CUR-04].

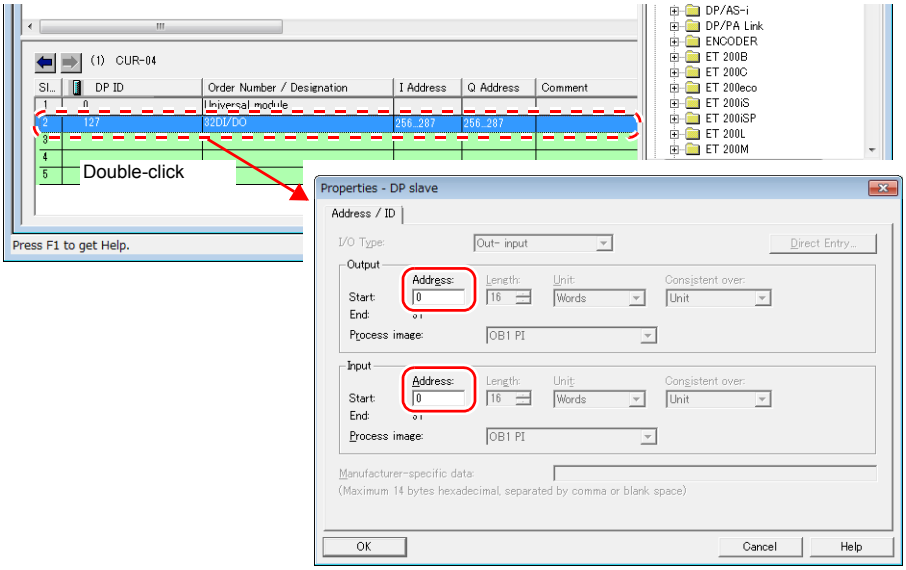


6. Drag [32DI/DO] to [Slot 2] and later.



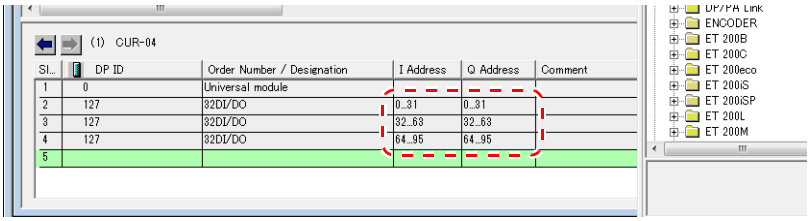
* When one point of “32DI/DO” is registered, 32-byte data can be read and written per one transmission. When two or three points of “32DI/DO” are registered, 64-byte or 96-byte data can be transmitted, respectively. A maximum of three slots can be registered.

7. Double-click each slot and specify the start address for [Start: Address] in [Output] and [Input], respectively.

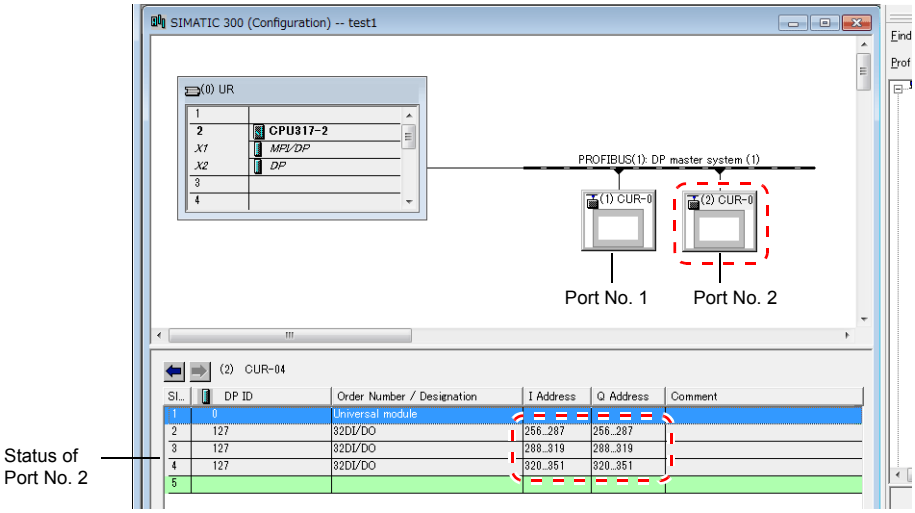


⚠CAUTION

When multiple points of “32DI/DO” are used, consecutive numbers must be specified for [Address].



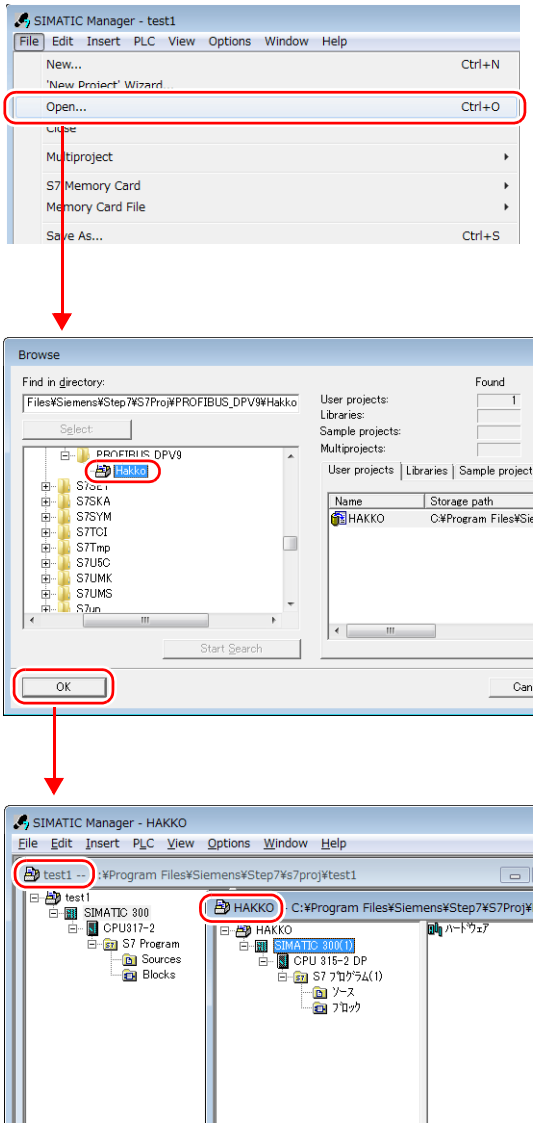
8. The [HW Config] setting is finished.
When connecting multiple V9 series units, repeat steps 3 to 7 for each unit. Make sure to set a unique port number for each unit.



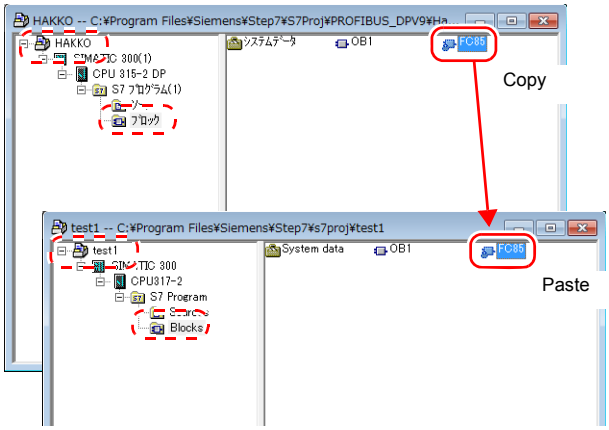
3. Setting of Function (Message Communication Program)

Install the function (message communication program) provided from Hakko Electronics in the user's project so that message communication can be performed.

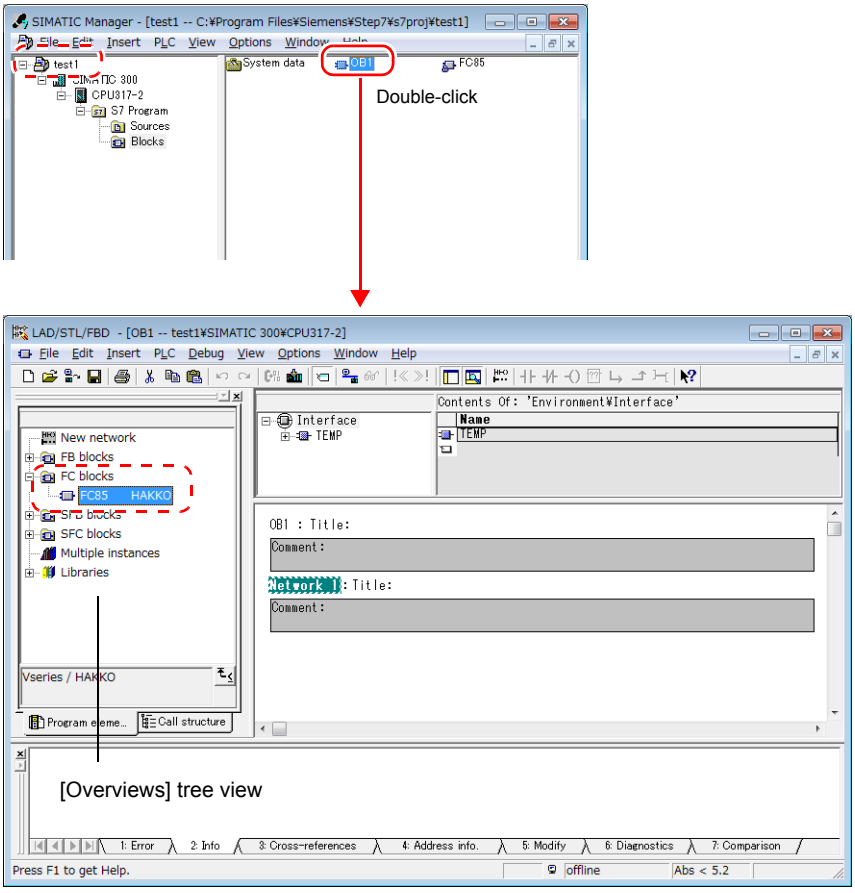
1. On the SIMATIC Manager, open the user's project as well as the downloaded project "HAKKO" in the "PROFIBUS-DPV9" folder.
   (Example: User's project "test1")



2. Copy “FC85” in the “HAKKO” project and paste it to the same location in the “test1” user’s project.

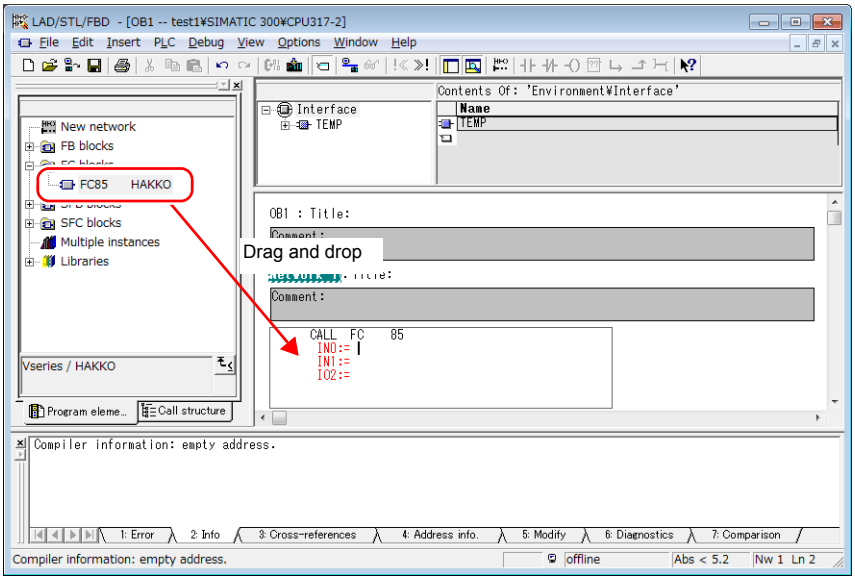


3. Double-click “OB1” in the “test1” user’s project to display the following OB1 window. Check that “FC85 HAKKO” is located under “FC blocks” in the [Overviews] tree view.



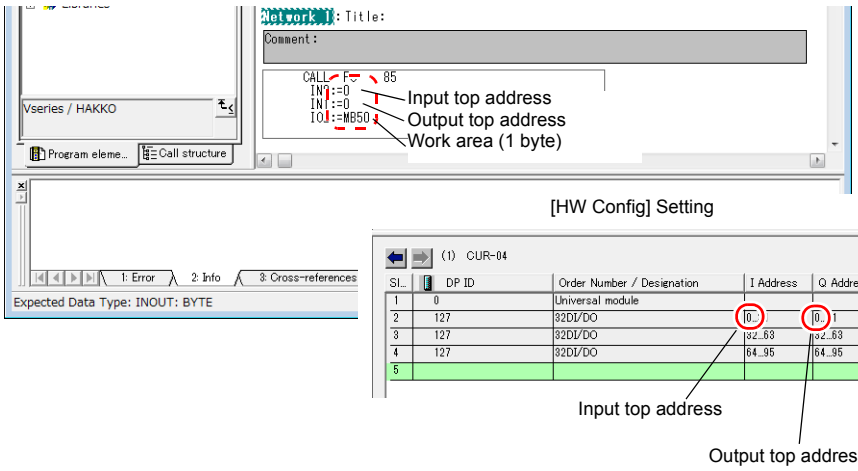
* If the [Overviews] tree view is not displayed, click [View] → [Overviews].

4. Drag and drop “FC85 HAKKO” in the OB1 project window.



CAUTION Be sure to insert the program at the top of “OB1”.

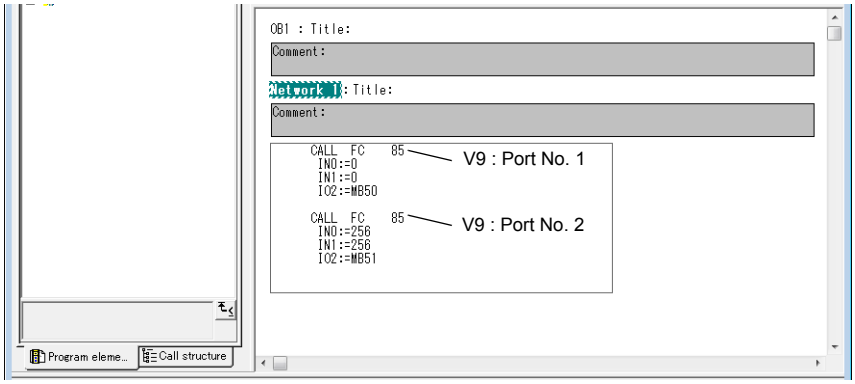
5. Input the top addresses for input and output set in the [HW Config] window. Also, secure a work area of 1 byte. (Be sure to secure 1 byte for each V9 series unit.)



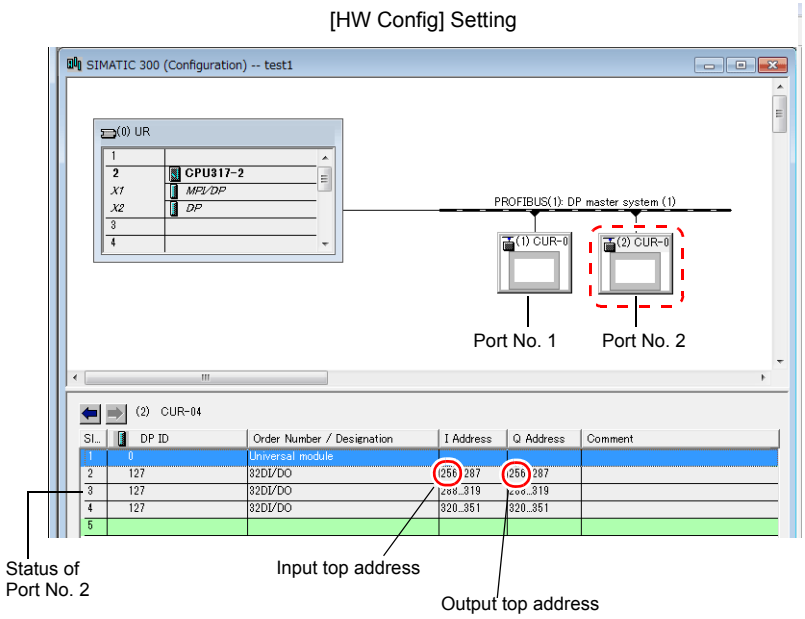
CAUTION

- Input/output top address
  When multiple points of “32DI/DO” are registered, set the top address only for the first one.
- Work area
  When multiple units of V9 Series are connected, be sure to secure an independent work area for each V9 Series. When the “DB” memory is used for the work area, specify the DB No. in addition to the address.

* When multiple units of V9 Series are connected, repeat steps 4. and 5. for the number of connected units.

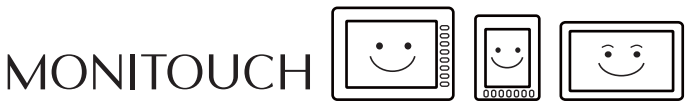


[HW Config] Setting



6. The setting is finished.
   Transfer the program to the PLC.

MEMO



5. Universal PROFIBUS-DP

The V9 series or TS2060i can directly access to the I/O memory that is in use in the master PLC.
This chapter describes the setting procedure.

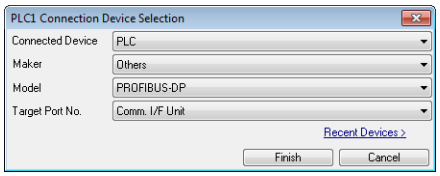
V-SFT Setting

This section describes the setting procedure on the V-SFT.
For more information on other settings, refer to the Connection Manual or the Reference Manual 1.

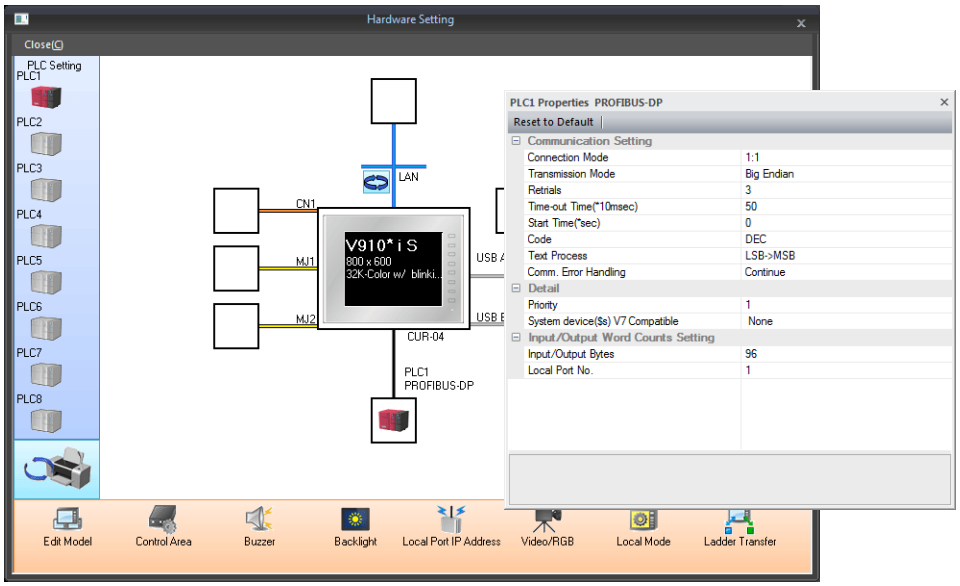
PLC1 Connection Device Selection

CAUTION Access is allowed only to the I/O memory in the master PLC.

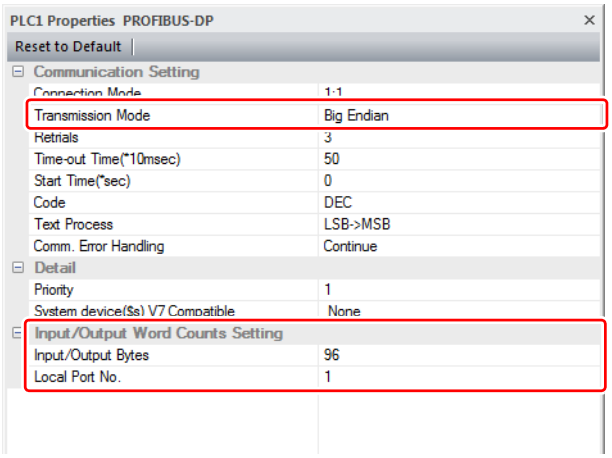
Select [Maker: Others] and [Series: PROFIBUS-DP] for PLC1.



* This setting can be made only for PLC1.



Hardware Setting (PLC1 Properties)



[Communication Setting]

Transmission mode	Big Endian / Little Endian

[Input/Output Word Counts Setting]

Input/Output Bytes (32/64/96/128)	Select the size of data of which the V9 series or TS2060i uses in the PROFIBUS communication. Set the same value as the one specified on the configuration software* of the master PLC. 1 slot: 32 bytes 2 slots: 64 bytes 3 slots: 96 bytes 4 slots: 128 bytes * For more information on the setting, refer to the manual of the configuration software.
Local Port No.	Set the port number of the V9 series or TS2060i used for the PROFIBUS communication. Set the same number as the one specified on the configuration software* of the master PLC. * For more information on the setting, refer to the manual of the configuration software.

Available Memory

Be sure to set within the range available with the PLC to be used.
Use [TYPE] when assigning the indirect memory for macro programs.

Memory		TYPE	Remarks
PI	(input)	00H	
PQ	(output)	01H	

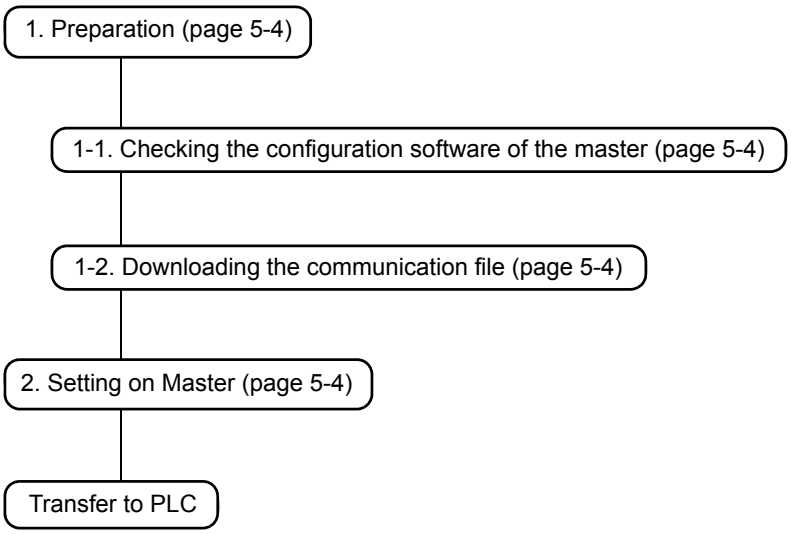
Setting on PLC

This section describes the procedure for making settings required for I/O communication between the V9 series and the master PLC.

Setting Flowchart

Settings for communication with the master PLC are made in the following flow.

* For more information on the setting, refer to the relevant manual of the PLC.



⚠CAUTION When replacing a V8, V7, or V6 series unit with the V9 series or TS2060i, be sure to perform “1. Preparation”, and change the settings made at “2. Setting on Master” shown in the above flowchart.

Setting

Make settings for a master station (PLC) by following the procedure described below.

1. Preparation

Make the following preparations in advance of making settings on the master station.

* For more information, refer to the relevant manual of the configuration software.

1-1. Checking the configuration software of the master

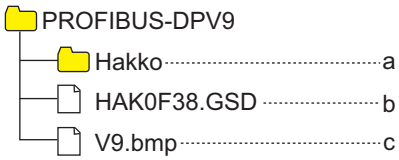
Configuration software used for registering a slave in the master varies depending on the manufacturer of the master.
For more information, refer to the relevant manual.

Configuration software example

Maker	Master	Configuration Software
MITSUBISHI ELECTRIC	QJ71PB92D	MITSUBISHI ELECTRIC'S "GX Configurator"
Yokogawa Electric	F3LB01-0N	HMS INDUSTRIAL NETWORKS' PROFIBUS-DP configuration software "KONF-PDP"
Fuji Electric	NP1L-PD1	

1-2. Downloading the communication file

Download the Hakko Electronics' communication program from our website (http://www.monitouch.com/).
The downloaded "PROFIBUS-DPV9" folder is configured as shown below.



a. Project folder
The Hakko Electronics' original function (message communication program) is contained. This folder is used for message communication with Siemens' S7 using Hakko Electronics' dedicated protocol.
It is not used for universal PROFIBUS-DP.

b. GSD file for the V9 Series
Used for parameter settings for the slave V9 Series.

c. Bitmap file
Bitmapped image of the V9 Series used for setting the V9 Series as a slave.*


V9.bmp

* The bitmap file may not be used depending on the configuration software of the master. For more information, refer to the relevant manual.

2. Setting on Master

Set the V9 Series as a slave in the PROFIBUS-DP project.
For more information on the procedure for registering a slave or GSD file, refer to the relevant instruction manual.

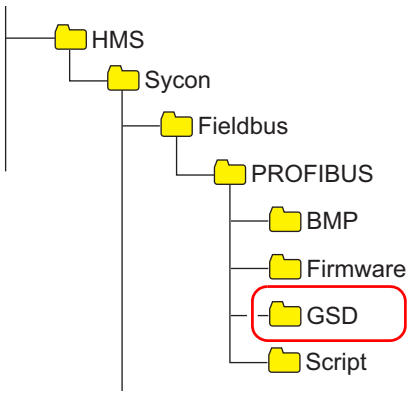
Setting Example

This section describes the setting procedure assuming that Yokogawa Electric's "F3LB01-0N" is used as a master.
Configuration software: HMS INDUSTRIAL NETWORKS' "Sycon"

* For more information on installation or operation procedure of the configuration software, refer to the instruction manual of "Sycon".

Registering the GSD file

1. Launch "Sycon".
2. Click [File] → [Copy GSD], and copy the GSD file "HAK0F38.GSD" (b).
3. The GSD file is stored in the "GSD" folder under the installation folder "HMS".
   \HMS\Sycon\Fieldbus\PROFIBUS\GSD folder

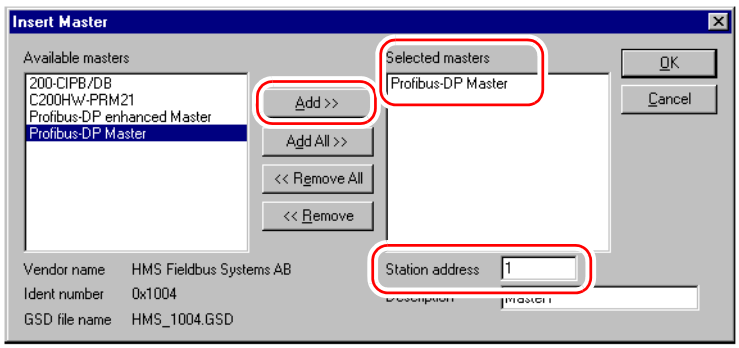


Registration is finished.

Registering the master and the slave

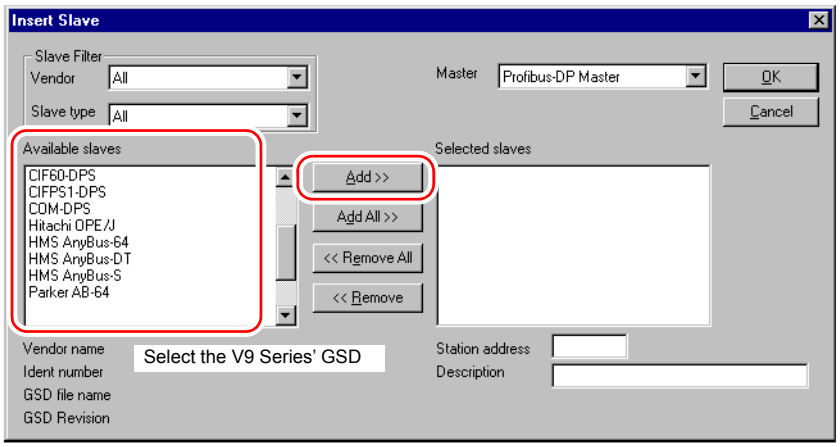
Open the user's project file and register the master and the slave (V9 Series) in it.

- Inserting the master
  Click [Insert] → [Master]. The [Insert Master] dialog is displayed.
  Select "Profibus-DP Master".



* The station address is automatically assigned. (Example: 1)

- Inserting the slave ([Insert] → [Slave])
  Click [Insert] → [Slave]. The [Insert Slave] dialog is displayed.
  Select the V9 Series' GSD file from [Available slaves].
  (It is necessary to register the GSD file in advance. For more information, refer to "Registering the GSD file" (P 5-5).)



* The station address is automatically assigned.

- Setting on "Slave Configuration"
  Click [Settings] → [DP Slave Configuration]. The [Slave Configuration] dialog is displayed.
  Specify the I/O addresses.

6. Error

This chapter describes errors displayed on the V9 series or TS2060i during PROFIBUS-DP communication.

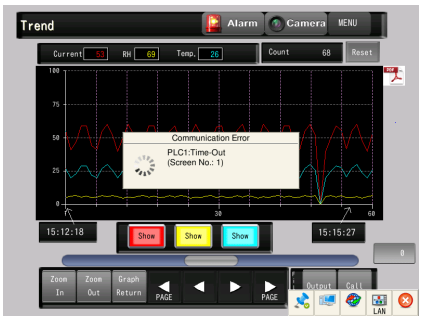
Error Messages	Contents	Solution
Communication Error Time-Out	When communication is started, the splash screen is displayed and after 2 to 3 seconds, “Time-Out” is displayed.	• Check that the cable is connected. • The [Local Port No.] set on the V9 series or TS2060i unit and the [Address] set for [CUR-04] on the SIMATIC Manager may be different. Check the settings and modify as necessary. • The PLC is in a stopped state. Set it to the run state.
	When communication is started, the RUN screen is displayed (i.e., communication is established) but “Time-Out” is immediately displayed instead.	The [DB] device memory set on the V9 series or TS2060i screen program may not exist on the PLC (insufficient memory). Check the [DB] address setting on the PLC and V-SFT.
Setup Error (V9 series only, CUR-04 not connected etc.)	After power-on, the splash screen is displayed and then an error is displayed.	• The CUR-04 unit is not connected or the V9 series or TS2060i is not recognizing it. Turn off the V9 series or TS2060i unit power, and reconnect the CUR-04 unit. • The interface driver of the CUR-04 unit and V9 series or TS2060i do not match. Check and change the PLC model set on the V-SFT and transfer the screen program again.
I/F Board Error	The “IF Board Error” message is displayed.	The CUR-04 unit is faulty. Turn off the V9 series or TS2060i unit power, and reconnect or replace the CUR-04 unit. If the problem persists, contact your local distributor.

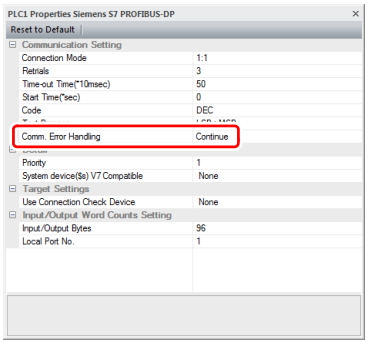
⚠CAUTION

About [Comm. Error Handling]
Communication error handling of the V9 series or TS2060i
When communication between the V9 series or TS2060i and the PROFIBUS-DP network stops, the master PLC cannot recover automatically and other equipment linked to the PROFIBUS-DP network may also result in error.
We recommend setting [Comm. Error Handling] to [Continue] (default setting).

<Setting>
V9 : [System Setting] → [Hardware Setting] → [PLC1 Properties]

When [Comm. Error Handling: Continue] is selected





The communication error message will be displayed at the center of the screen. When communication is reestablished, the message disappears and operation is enabled.

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