# OMRON

# NB-series Programmable Terminals HOST CONNECTION MANUAL

Cat.No. V108-E1-01

#### Notice

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

**DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Additionally, there may be severe property damage.

WARNING Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. Additionally, there may be severe property damage.

Caution Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

#### **OMRON Product References**

All OMRON products are capitalized in this manual. The word "Unit" is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product. The abbreviation "Ch," which appears in some displays and on some OMRON products, often means "word" and is abbreviated in documentation in this sense. The abbreviation "PLC" means Programmable Controller.

The abbreviation "host" means a controller, such as an IBM PC/AT or compatible computer, that controls a PT (Programmable Terminal).

#### Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

Note Indicates information of particular interest for efficient and convenient operation of the product.

Reference Indicates supplementary information on related topics that may be of interest to the users.

1, 2, 3... 1. Indicates lists of one sort or another, such as procedures, checklists, etc.

 $\label{eq:cs1G-CPU} CS1G-CPU \Box \Box -V1 \ \ \ Boxes in model numbers indicate variable characters. \ \ \ For example:$ 

"CS1G-CPU□□-EV1" indicates the following models: CS1G-CPU42-EV1, CS1G-CPU43-EV1, CS1G- CPU44-EV1 and CS1G-CPU45-EV1.

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No patent liability is assumed with respect to the use of the information contained herein. Moreover, because OMRON is constantly striving to improve its high-quality products, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this manual. Nevertheless, OMRON assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.

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## **About this Manual**

Section 1 Connecting to SIEMENS PLCs This section describes the connection to SIEMENS PLCs . Section 2 Connecting to Mitsubishi PLCs This section describes the connection to Mitsubishi PLCs. Section 3 Connecting to Schneider PLCs This section describes the connection to Schneider PLCs. Section 4 Modbus Connection This section describes the connection on Modbus protocol. Section 5 Connecting to Delta PLCs This section describes the connection to Delta PLCs. Section 6 Connecting to LG PLCs This section describes the connection to LG PLCs . Section 7 Connecting to Panasonic PLCs This section describes the connection to Panasonic PLCs. Section 8 List for All PLCs Supported by NB Series This section lists all PLCs supported by NB Units.



MARNING Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product, or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given.

## **Related Manuals**

The related manuals are as follows:

Devices and Software	Manual	Manual No.
NB series	NB series NB Designer Operation Manual	V106
	NB series Setup Manual	V107
	NB series Host Connection Manual(This manual)	V108
	NB series Startup Guide	V109
PLC	SYSMAC CP series CP1L CPU Unit Operation Manual	W462
	SYSMAC CP series CP1H/L CPU Unit Programming Manual	W451
	SYSMAC CP series CP1H CPU Unit Operation Manual	W450
	SYSMAC CP Series CP1E CPU Unit Hardware USER'S Manual	W479
	SYSMAC CP Series CP1E CPU Unit Software USER'S Manual	W480
	SYSMAC C200HX/HG/HE(-E/-ZE) Installation Guide	W302
	SYSMAC C200HX/HG/HE Operation Manual	W303
	SYSMAC C200HX/HG/HE(-ZE) Operation Manual	W322
	SYSMAC CQM1H Operation Manual	W363
	SYSMAC CPM1A Operation Manual	W317
	SYSMAC CPM2A Operation Manual	W352
	SYSMAC CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2)Programming Manual	W353
	SYSMAC CPM2C Operation Manual	W356
	SYSMAC CS1 Series CS1G/H Operation Manual	W339
	SYSMAC CS/CJ Series Serial Communications Boards and Serial Communications Units Operation Manual	W336
	SYSMAC CJ Series CJ1G/H(-H) CJ1M CJ1G Operation Manual	W393
	SYSMAC CS/CJ Series Programming Manual	W394
	SYSMAC CS/CJ Series INSTRUCTIONS Reference Manual	W340
	SYSMAC CS/CJ Series Programming Consoles Operation Manual	W341
	SYSMAC CS/CJ Series Communications Commands Reference Manual	W342
	SYSMAC CJ Series CJ2 CPU Unit Hardware USER'S Manual	W472
	SYSMAC CJ Series CJ2 CPU Unit Software USER'S Manual	W473
External Tool	CX-Programmer Ver.9. Operation Manual	W437

# Terminology

The following terminology is used in this manual.

• About the terminology

NB Unit	Indicates the main Unit of the products in the OMRON NB Series of Programmable Terminal.
NB Series	Indicates products in the OMRON NB Series of Programmable Terminal. In this manual, unless otherwise specified, NB Series is taken as the subject concerned.
PLC	Indicates a Programmable Controller in the OMRON CP, CS/CJ, or SYSMAC C Series of Programmable Controllers.
CP Series	Indicates the following products in the OMRON PLC Series of Programmable Controllers: CP1H, CP1L, CP1E
CS/CJ Series	Indicates the following products in the OMRON PLC Series of Programmable Controllers: CS1G, CS1H, CS1G-H, CS1H-H, CJ1G, CJ1M, CJ2M, CJ2H
C Series	Indicates the following products in the OMRON PLC Series of Programmable Controllers: C200HX(-Z), C200HG(-Z), C200HE(-Z), CQM1, CQM1H, CPM1A, CPM2A, CPM2C
Serial Communication Unit	Indicates a Serial Communication Unit for an OMRON SYSMAC CS/CJ-Series PLC.
Serial Communication Board	Indicates a Serial Communication Board for an OMRON SYSMAC CS/CJ-Series or CQM1H PLC.
Communication Board	Indicates a Communication Board for an OMRON C200HX/HG/HE (-Z) PLC.
CPU Unit	Indicates a CPU Unit in the OMRON CP, CS/CJ or SYSMAC C Series of Programmable Controllers.
NB-Designer	Indicates the OMRON NB-Designer.
Host	Indicates the PLC and other units functioning as the control devices for NB-Series Units.
PT	Indicates an OMRON Programmable Terminal.
НМІ	Indicates an OMRON Programmable Terminal.

## Introduction

#### • Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of introducing FA systems into production facilities.
- Personnel in charge of designing FA systems.
- Personnel in charge of installing and connecting FA facilities.
- Personnel in charge of managing FA systems and facilities.

#### • General Precautions

- The user must operate the product according to the performance specifications described in the operation manuals.
- Do not use the PT touch switch input functions for applications where danger to human life or serious property damage is possible, or for emergency switch applications.
- Before using the product under conditions which are not described in the manual or applying the
  product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion
  systems, medical equipment, amusement machines, safety equipment, and other systems,
  machines and equipment that may have a serious influence on lives and property if used improperly,
  consult your OMRON representative.
- Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.
- This manual provides information for connecting and setting up an NB-Series PT. Be sure to read this manual before attempting to use the PT and keep this manual close at hand for reference during installation and operation.

## **Safety Precautions**

• Notation Used for Safety Information

The following notation is used in this manual to provide precautions required to ensure safe usage of the product. The safety precautions that are provided are extremely important to safety. Always read and heed the information provided in all safety precautions.

The following notation is used.



#### Precautions for Safe Use

Indicates the points that should be practiced or avoided for safe usage of the products.

#### Precautions for Correct Use

Indicates the points that should be practiced or avoided in order to prevent the product from failure to function, malfunctions or negative impacts on its performance and functionality.

#### • Symbols

$\bigcirc$	<ul> <li>Prohibition</li> <li>Indicates a general prohibition.</li> </ul>
$\bigcirc$	<ul> <li>Disassembling prohibition Any attempts to disassemble the product may result in electric shock or other injuries. DO NOT DISASSEMBLE!</li> </ul>
$\triangle$	<ul> <li>Note Indicates general cautionary, warning, or danger level information.</li> </ul>

• Warning notation

Do not attempt to take the product apart and do not touch the product inside while the power is being supplied. Otherwise it may result in electric shock.	$\bigcirc$
Do not touch any internal parts while the power is being supplied. Otherwise it may result in electric shock.	$\bigcirc$
Always ensure that the personnel in charge confirm that installation, inspection, and maintenance were properly performed for the NB Unit. "Personnel in charge" refers to individuals qualified and responsible for ensuring safety during machine design, installation, operation, maintenance, and disposal.	$\bigwedge$
Ensure that installation and post-installation checks are performed by personnel in charge who possess a thorough understanding of the machinery to be installed.	$\bigwedge$
Do not use the input functions of the touch switch, etc. of the NB Unit, in applications that involve human life, in applications that may result in serious injury, or for emergency stop switches.	$\bigcirc$
Do not attempt to disassemble, repair, or modify the NB Unit. Otherwise it may cause NB Unit to lose its safety functions.	$\bigcirc$
Never press more than two points on the touch panel of the NB Unit at a time. Otherwise, it may activate a switch somewhere between the two points.	$\bigcirc$

## **Precautions for Safe Use**

- When unpacking the NB Unit, check carefully for any external scratches or other damages. Also, shake the Units gently and check for any abnormal sound.
- The NB Unit must be installed in a control panel.
- The mounting panel must be between 1.6 and 4.8 mm thick. Tighten the Mounting Brackets evenly
  to a torque of between 0.5 and 0.6 N·m to maintain water and dust resistance. If the tightening
  torque exceeds the specified value, or the tightening is not even, deformation of the front panel may
  occur. What is more, make sure the panel is not dirty or warped and that it is strong enough to hold
  the Units.
- Do not let metal particles enter the Units when preparing the panel.
- Do not connect an AC power supply to the DC power terminals.
- Use a DC power with a slight voltage fluctuation and that will provide a stable output even if the input is momentarily interrupted for 10 ms.
  - Rated Power Supply Voltage: DC 24 V (Allowable range DC 20.4~27.6 V)
- Do not perform a dielectric voltage test.
- Make the connection by using terminal screws crimping on a twisted-pair cable with a crimping range of 12~26 AWG, and only 6.5 mm of insulation peel of the cable needs to be peeled off. Tighten the terminal screws at a torque of between 0.3 and 0.5 N·m. Make sure the screws are properly tightened.
- To prevent malfunctions caused by noise, ground the Unit correctly.
- Do not touch the packaging part of the circuit board with your bare hands. Discharge any static electricity from your body before handling the board.
- When using the No. 6 pin of the serial communication port COM1 connector for a voltage of DC+5 V, make sure the supply equipment's current capacity is below 250 mA before using it. The DC+5V voltage output of the NB main unit is +5V±5%, and the maximum current is 250 mA.
- Turn OFF the power supply before connecting or disconnecting cables.
- Always keep the connector screws firmly tightened after the communication cable is connected.
- The maximum tensile load for cables is 30 N. Do not apply loads greater than this.
- Confirm the safety of the system before turning ON or OFF the power supply, or pressing the reset button.
- The whole system may stop depending on how the power supply is turned ON or OFF. Turn ON/OFF the power supply according to the specified procedure.
- Reset by pressing the reset button, or restart the power supply, once the DIP switch settings are changed.
- To ensure the system's safety, make sure to incorporate a program that can confirm the normal functionality of the NB Unit before running the system.
- Start actual system application only after sufficiently checking screen data, macros and the operation of the program at the host side.
- Don't press the touch panel with a force greater than 30 N.
- Do not use a screwdriver or any other tool to press the touch panel.
- Confirm the safety of the system before pressing the touch panel.

- Signals from the touch switches may not be input if the touch switches are pressed consecutively at high speed. Confirm that the PT has detected the input of a touch switch before pressing any other touch switch.
- Do not accidentally press the touch panel when the backlight is not lit or when the display does not appear. Make sure of the safety of the system before pressing the touch panel.
- To use numeric input functions safely, always make maximum and minimum limit set- tings.
- Before initializing screen data, confirm that existing data is backed up at the NB-Designer.
- When changing the password with the system menu, do not reset or turn OFF the power supply until writing is finished. Failure to save the password may cause the screen to fail to function.
- When using an equipment monitor, confirm the safety of the system before carrying out the following operations:
  - Changing monitor data.
  - Changing operation mode.
  - Forced setup/reset.
  - Changing the current value or the set value.
- Do not connect a USB connector to any device that is not applicable.
- Before connecting a USB connector to a device, make sure that the device is free of damage.
- Commercially available and the recommended USB HUB are different from the general specifications of the NB Unit. The unit may not function well in an environment subject to noise, static electricity. Therefore, when using a USB HUB, employ sufficient noise and static electricity insulation measures, or install it at a site free of noise or static electricity.
- While uploading or downloading screen data or system programs, do not perform the following operations that may corrupt the screen data or the system program:
  - Turning OFF the power supply of the NB Unit.
  - Pressing the PT's reset switch.
- Dispose of the Units and batteries according to local ordinances as they apply.



 When exporting products with lithium primary batteries containing perchlorate at 6ppb or above to or delivering them through California, USA, the following precautionary measures have to be publicized.

Perchlorate material – applicable through special processing. Refer to

http://www.dtsc.ca.gov/hazardouswaste/perchlorate.

NB-Series products contain lithium primary batteries. When exporting products containing this kind of batteries to or delivering them through California, USA, label all the product packages as well as the appropriate delivery packages.

- Do not use benzene, paint thinner, or other volatile solvents, and do not use chemically treated cloths.
- Do not dispose the Units together with general waste at waste yards. When disposing them, follow the related local ordinances or rules.
- Customers may not replace the backlight lamp inside the NB Unit. Please contact OMRON's customer service center.

- Deterioration over time can cause the touch points to move. Calibrate the touch panel periodically.
- Water and oil resistance will be lost if the front sheet is torn or is peeling off. Do not use the Unit, if the front sheet is torn or is peeling off.
- The rubber packing will deteriorate, shrink, or harden depending on the operating environment. Inspect and replace the rubber packing periodically.
- The communication cables of the COM1 and COM2 connectors are not interchangeable. Confirm the pins of the ports before carrying out communications.
- Periodically check the installation conditions in applications where the PT is subject to contact with oil or water.

## **Precautions for Correct Use**

• Do not install the product in any of the following locations: Locations subject to severe changes in temperature Locations subject to temperatures or humidity outside the range specified in the specifications Locations subject to condensation as the result of high humidity Locations subject to corrosive or flammable gases Locations subject to strong shock or vibration Locations outdoors subject to direct wind and rain Locations subject to strong ultraviolet light Locations subject to dust Locations subject to direct sunlight Locations subject to splashing oil or chemicals • Take appropriate and sufficient countermeasures when installing systems in the following locations: Locations subject to static electricity or other forms of noise Locations subject to strong electric field or magnetic field Locations close to power supply lines Locations subject to possible exposure to radioactivity

#### **Conformance to EC Directives**

NB-Series Programmable Terminals are EMC compliant.

#### 1 Concepts

OMRON products are electronic devices that are incorporated in machines and manufacturing installations. OMRON PTs conform to the related EMC Directives (see note) so that the devices and machines into which they are built can more easily conform to EMC Directives. The actual products have been through inspections and are completely in accordance with EMC directives. However, when they are built into customers' systems, whether the systems also comply with these Directives is up to the customers for further inspection.

EMC-related performance of OMRON PTs will vary depending on the configuration, wiring, and other conditions of the OMRON equipment or control panel. The customer must, therefore, perform final checks to confirm that the overall machine or device conforms to EMC standards.

Note The applicable EMC (Electromagnetic Compatibility) standards are as follows: EMS (Electromagnetic sensitivity): EN61131-2: 2007 EMI (Electromagnetic Interference): EN61131-2: 2007

#### 2 Conformance to EC Directives

NB-Series Programmable Terminals are EC compliant. Heed the following precautions in order to ensure that the customer's overall machine and device conform to EC Directives.

- 1. The PT is intended to be installed in a control panel.
- 2. You must use reinforced insulation or double insulation for the DC power supply and the DC power supply must have minimal voltage fluctuations and provide a stable output even if the power supply input is interrupted for 10 ms.
- The PTs conform to the standard EN 61131-2, but radiated emission characteristics (10m regulations) may vary depending on the configuration of the control panel used, other devices connected to the control panel, wiring, and other conditions. You must therefore confirm that the overall machine or equipment complies with EC Directives.
- 4. This is a class A product (Product for industry purpose). It may cause radio interference in residential areas, in which case the user may be required to take adequate measures to reduce interference.

## **Read and Understand this Manual**

Please read and understand this manual before using the product. Please consult your OMRON representative if you have any questions or comments.

## Warranty and Limitations of Liability

#### WARRANTY

OMRON'S EXCLUSIVE WARRANTY IS THAT THE PRODUCTS ARE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR (OR OTHER PERIOD IF SPECIFIED) FROM DATE OF SALE BY OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

### LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

IN NO EVENT SHALL THE RESPONSIBILITY OF OMRON FOR ANY ACT EXCEED THE INDIVIDUAL PRICE OF THE PRODUCT ON WHICH LIABILITY IS ASSERTED.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

# **Application Consideration**

#### SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

#### PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

# Disclaimers

## CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

## PERFORMANCE DATA

Performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

### ERRORS AND OMISSIONS

The information in this manual has been carefully checked and is believed to be accurate. however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

# Section 1 Connecting to SIEMENS PLCs

This section describes the connection to SIEMENS PLCs.	
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# **1-1 Serial Port Communication**

Series	CPU	Link Module	Driver	
S7-200	CPU212 CPU214 CPU215 CPU216 CPU221 CPU222 CPU224 CPU226 CPU224 XP CN CPU226 XP CN	RS485 on the CPU unit	SIEMENS S7-200	
S7-300	CPU312IFM CPU313 CPU313C CPU314 CPU314IFM CPU315 CPU315-2 DP CPU316 CPU316-2 DP CPU318-2	MPI port on the CPU unit		
S7-400	CPU412-1 CPU412-2 DP CPU413-1 CPU413-2 DP CPU414-1 CPU414-2 DP CPU414-3 DP CPU416-1 CPU416-2 DP CPU416-3 DP CPU416-3 DP CPU417-4	MPI port on the CPU unit	<ul> <li>SIEMENS S7-300/400 (PC Adapter Direct)</li> </ul>	

## **1-2 Serial Port Communication Parameters and Cable Fabrication**

Series	CPU	Link Module	СОММ Туре	Parameter	Cable
	CPU222 CPU224		RS232	Refer to Section 1-3	Self-made cable required
S7-200	CPU226 CPU224 XP CN CPU226 XP CN	RS485 on the CPU unit	RS485	Refer to Section 1-3	Self-made cable required
S7-300	CPU312IFM CPU313 CPU313C CPU314 CPU314IFM CPU315 CPU315-2 DP CPU316 CPU316-2 DP CPU318-2	MPI port on the CPU unit	RS232 S7-300/400 (PC Adapter Direct) protocol	Refer to Section 1-3	Self-made cable required
S7-400	CPU412-1 CPU412-2 DP CPU412-3H CPU413-1 CPU413-2 DP CPU414-1 CPU414-2 DP CPU414-3 DP CPU416-1 CPU416-2 DP CPU416-3 DP CPU416-3 DP CPU417-4	MPI port on the CPU unit	RS232 S7-300/400 (PC Adapter Direct) protocol	Refer to section 1-3	Self-made cable required

## **1-3 Serial Port Communication Parameter Setting**

## 1-3-1 When Using SIEMENS S7-200 Communication Protocol

#### **HMI Settings**

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), 1(Stop Bit), even(Parity Check) and 0 (PLC Station No.)

Note: The maximum communication baud rate is 187.5K that is not supported by the direct online. RS485 Communication

HMI Attrib	ıte			X
Secur HMI   T Historical	ity Level ask Bar Events St	ls Setti HMI Ex orage	ng User Permissions stended Attributes   HMI System In   Print Setting   COM1 Setting	Setting formation Text COM2 Setting
Туре	RS485	•	PLC Communication Time Out	3
Baud Rate	9600	-	Protocol Time Out 1(ms)	50
Data Bit	8	-	Protocol Time Out 2(ms)	0
Parity Check	even	-	Max interval of word block pack	4
Stop Bit	1	-	Max interval of bit block pack	8
F Broadcast	65535		Max word block package size	16
			Max bit block package size	64
Use Default Setting				

#### **RS232** Communication

HWI Attri	oute				
Security Levels Setting User Permissions Setting HMI Task Bar HMI Extended Attributes HMI System Information Text Historical Events Storage Print Setting COM1 Setting COM2 Setting					
Туре	RS232	-	PLC Communication Time Out	3	
Baud Rate	9600	-	Protocol Time Out 1(ms)	50	
Data Bit	8	-	Protocol Time Out 2(ms)	0	
Parity Check	even	-	Max interval of word block pack	4	
Stop Bit	1	•	Maxinterval of bit block pack	8	
E Broadoao	65535		Max word block package size	16	
, broadcas	. 00000		Max bit block package size	64	
Use Default Setting					

#### PLC Settings System Block **Communication Ports** Communication Port settings allow you to adjust the communication parameters that STEP 7-Micro/WIN will use to communicate to a given PLC. Ę Communication Ports 💼 System Block 💶 Communication Ports 🕞 Retentive Ranges Defaults Password Ports 💷 Output Tables 💶 Input Filters Port O Port 1 💶 Pulse Catch Bits PLC Address: 2 (range 1 .. 126) 🕞 Background Time 💷 EM Configurations Highest Address: 31 <u>.</u> 💶 Configure LED (range 1 .. 126) 🕞 Increase Memory Baud Rate: 9.6 kbps 💌 $\nabla$ ÷ Retry Count: 3 - -(range 0 .. 8) Gap Update Factor: 10 ÷ (range 1 .. 100) . Configuration parameters must be downloaded before they take effect. Default All 🕜 Click for Help and Support OK Cancel

## 1-3-2 When Using SIEMENS S7-300/400 (PC Adapter Direct)

## **Communication Protocol**

#### **HMI Settings**

HMI default communication parameters: 19200bps(Baud Rate), 8(Data Bit), 2(Stop Bit), odd (Parity Check) and 2 (PLC Station No.) (Multiple Station No. is not supported.)

**RS232** Communication

HEI Attribute 🔀					
Security Levels Setting User Permissions Setting HMI Task Bar HMI Extended Attributes HMI System Information Text Historical Events Storage Print Setting COM1 Setting COM2 Setting					
Type Baud Rate	RS232 19200	•	PLC Communication Time Out Protocol Time Out 1(ms)	1	
Data Bit	8	•	Protocol Time Out 2(ms) Max interval of word block pack	3	
Parity Check Stop Bit	odd 2	•	Max interval of bit block pack	32	
F Broadcast	65535		Max bit block package size	64	
Use Default Setting					

- Note: 1. The PLC Station No. is not needed if the PC adapter is used, which realize one for one communication.
  - 2. The PLC baud rate and HMI baud rate are set to 187.5Kbps and 19200bps respectively when 6ES7972-0CA1□-0XA0 adapter is used to perform communications.
  - DB blocks should be established in PLC program configuration, otherwise the relevant registers (DB.DBX, DB.DBW, DB.DBD)can not be written. The even parity should be used on the initial addresses of DBm.DBW and DBm.DBD.

#### PLC Settings

1. The PLC baud rate at MPI port is set to 187.5Kbps when 6ES7972-0CA1□-0XA0 adapter(HMI Adapter)is used to perform communications.

Properties - <b>I</b> PI				
General Network Settings				
<u>H</u> ighest MPI address:	31 Change			
<u>T</u> ransmission rate:	10.2 Kbps 187.5 Kbps	Ŷ		
	1.5 Mbps 3 Mbps 6 Mbps 12 Mbps	~		
	,12 moos			
OK			Cancel	Help

2. The MPI address must be 2.

Properties - <b>I</b> PI interface	CPU 315-2 DP (R0/S2)	
General Parameters <u>A</u> ddress: Highest address: 31 Transmission rate: 187.5 Kbps	If a subnet is sel the next available	.ected, : address is
Subnet: not networked MPI(1)	187.5 Kbps	<u>N</u> ew P <u>r</u> operties De <u>l</u> ete
OK	Can	cel Help

3. Download the set parameters to PLC after the setting is completed. Then open [SIMATIC Manager] menu-[Option]-[PG/PC Interface Setting], select PC Adapter (MPI) and modify the transmission rate of MPI port to be 187.5K, as shown below:

Set PG/PC Interface	×
Access Path	
Access Point of the Application:	
STONLINE (STEP 7)> PC Adapter (MPI)	
(Standard for SiEr ()	
PC Adapter (MPI)	
ISO Ind. Ethernet -> Real to A	
PC Adapter (Auto)	
Copy	
C III Delete	
(Parameter assignment of your PC adapter for an MPI network)	
Interfaces	
Add/Remove: Sele <u>c</u> t	
Cancel Help	
Properties - PC Adapter(IPI)	
MPI Local Connection	
Station Parameters	
FG/PC is the only master on the bus	
Address: 0	
Timeout: 30 s	
Network Parameters	
Transmission <u>R</u> ate: 187.5 Kbps 💌	
Highest Station Address: 31	
,	
OV Defendet Centrel Val-	

# **1-4 Supported Registers**

## 1-4-1 SIEMENS S7-200

Device	Bit Address	Word Address	Format	Notes
SCR Nodes	S.B 0.0-31.7		DD.O	
Special Memory Bit	SM.B 0.0-549.7		DDD.O	
Counter Bit	Cnt 0-255		DDD.O	
Counter Bit	Tim 0-255		DDD.O	
Variable Memory Nodes	V.B 0.0-10238.7		DDDDD.O	
Internal Memory Bit	M.B 0.0-31.7		DD.O	
Discrete Output and Map Register Nodes	Q.B 0.0-15.7		DD.O	
Discrete Input and Map Register Nodes	I.B 0.0-15.7		DD.O	
Analog Output		AQW 0-62	DD	
Analog Input:		AIW 0-62	DD	
SCR (32-bit)		SD 0-28	DD	
SCR		SW 0-30	DD	
Special Memory Registers (32-bit)		SMD 0-546	DDD	
Special Memory Registers		SMW 0-548	DDD	
Internal Memory Bit (32-bit)		MD 0-28	DD	
Internal Memory		MW 0-30	DD	
Discrete Output and Map Registers (32-bit)		QD 0-12	DD	
Discrete Output and Map Registers		QW 0-14	DD	
Discrete Input and Map Registers (32-bit)		ID 0-12	DD	
Discrete Input and Map Registers		IW 0-14	DD	
Counter PV		Cnt 0-255	DDD	
Timer PV		Tim 0-255	DDD	
Variable Memory (32-bit)		VD 0-10236	DDDDD	
Variable Memory		VW 0-10238	DDDDD	

Note: The initial addresses of VW and VD must be even.

Address format description: D: decimal, O: octonary, H: hexadecimal.

# 1-4-2 SIEMENS S7-300/400 (PC Adapter Direct)

Device	Bit Address	Word Address	Format	Notes
External Input Nodes	l 0.0~511.7		DDDD.O	
External Output Nodes	Q 0.0~511.7		DDDD.O	
Internal Auxiliary Nodes	M 0.0~4095.7		DDDD.O	
Data Register Nodes	DBm.DBX 0~65535.7		DDDDD.O	m:10~60
Data Registers		DBm.DBW 0-65534	DDDDD	m:10~60
Data Registers (32-bit)		DBm.DBD 0-65532	DDDDD	m:10~60
Internal Registers		MW 0~2046	DDDD	
Internal Registers (32-bit)		MD 0~2044	DDDD	
External Output Registers		QW 0~126	DDD	
External Output Registers (32-bit)		QD 0~124	DDD	
External Input Registers		IW 0~126	DDD	
External Input Registers (32-bit)		ID 0~124	DDD	

Note: The initial addresses of DBm.DBW and DBm.DBD must be even.

Address format description: D: decimal, O: octonary, H: hexadecimal.

## **1-5 Cable Fabrication**

## 1-5-1 When Using SIEMENS S7-200 Communication Protocol

#### RS232 Communication Cable

Use serial port programming cable manufactured by SIEMENS to communicate with HMI. RS485 Communication Cable



# 1-5-2 When Using SIEMENS S7-300/400 (PC Adapter Direct) Communication Protocol

RS232 Communication Cable

Use 6ES7972-0CA1 -0XA0 communication cables for HMI Adapter to perform communications.



# Section 2 Connecting to Mitsubishi PLCs

This section describes the connection to Mitsubishi PLCs.	
2-1 Serial Port Communication	
2-2 Serial Port Communication Parameters and Cable Fabrication	31
2-3 Serial Port Communication Parameter Setting	
2-4 Supported Registers	
2-5 Cable Fabrication	

# 2-1 Serial Port Communication

Series	CPU	Link Module	Driver		
		RS232 on the CPU unit			
	FX1S	RS485 on the CPU unit FX□□-422-BD *3	Mitsubishi FX1S *2		
		FX□□-485-BD *3 FX□□-485-ADP *3	Mitsubishi FX1S *2 Mitsubishi FX-485ADP/485BD/232BD (Multi-station) *1		
		RS232 on the CPU unit			
	FX0N FX1N	RS485 on the CPU unit FX□□-422-BD *3	Mitsubishi FX0N/1N/2N/3G *2		
	FX1NC FX2N FX2NC	FX□□-485-BD *3 FX□□-485-ADP *3	Mitsubishi FX0N/1N/2N/3G *2 Mitsubishi FX-485ADP/485BD/232BD		
FXCPU		FX□□-232-BD *3	(Multi-station) *1		
	FX2N-10GM	RS232 on the CPU unit	Mitouhishi FY2NL 400N//200N		
	FX2N-20GM	RS485 on the CPU unit			
	FX3U FX3UC	RS232 on the CPU unit			
		RS485 on the CPU unit FX□□-422-BD *3	Mitsubishi FX3U *2		
		FX□□-485-BD *3 FX□□-485-ADP *3	Mitsubishi FX3U *2 Mitsubishi FX-485ADP/485BD/232BD		
	FX□□-232-BD *3		(Multi-station) *1		
	FX3G	RS232 on the CPU unit	Mitsubishi FX0N/1N/2N/3G *2		
ļ	17.00	RS485 on the CPU unit			
	1	RS232 on the CPU unit	Mitsubishi Q00J (CPU Port)		
	Q00JCPU	QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	Mitsubishi Q_QnA (Link Port)		
QCPU	Q00CPU Q01CPU	RS232 on the CPU unit QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	Mitsubishi Q_QnA (Link Port)		
		RS232 on the CPU unit	Mitsubishi Q Series (CPU Port)		
	Q02CPU Q02HCPU Q12HCPU Q25HCPU	QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	Mitsubishi Q_QnA (Link Port)		
	Q06HCPU	RS232 on the CPU unit	Mitsubishi Q06H		

Note: 1. \*1 This protocol supports Multiple Station No..

- 2. \*2 This protocol doesn't support Multiple Station No..
- 3. \*3  $\Box\Box$  is the module type applicable to this PLC.

## 2-2 Serial Port Communication Parameters and Cable Fabrication

Series	CPU	Link Module	СОММ Туре	Parameter	Cable
		RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required
	FX1S	RS485 on the CPU unit FX□□ -422-BD	RS422	Refer to Section 2-3	Self-made cable required
		FX□□-485-BD FX□□-485-ADP	RS422	Refer to Section 2-3	Self-made cable required
		RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required
	FX0N FX1N FX1NC	RS485 on the CPU unit FX□□ -422-BD	RS422	Refer to Section 2-3	Self-made cable required
	FX1NC FX2N FX2NC	FX□□-485-BD FX□□-485-ADP	RS422	Refer to Section 2-3	Self-made cable required
FXCPU FX2N-10GM FX2N-20GM		FX□□-232-BD	RS232	Refer to Section 2-3	Self-made cable required
	FX2N-10GM	RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required
	FX2N-20GM	RS485 on the CPU unit	RS422	Refer to Section 2-3	Self-made cable required
	EX3G	RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required
	1,000	RS485 on the CPU unit	RS422	Refer to Section 2-3	Self-made cable required
		RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required
	FX3UC	RS485 on the CPU unit X3UC FX□□-422-BD		Refer to Section 2-3	Self-made cable required
	FX3U	3U FX□□-485-BD FX□□-485-ADP		Refer to Section 2-3	Self-made cable required
		FX□□-232-BD	RS232	Refer to Section 2-3	Self-made cable required
Melsec Q	Q00JCPU	RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required
	Q00CPU Q01CPU	RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required

Q00JCPU Q00CPU Q01CPU Q02CPU	QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2	RS232	Refer to Section 2-3	Self-made cable required
Q02HCPU Q12HCPU Q25HCPU	QJ71C24 QJ71C24N QJ71C24N-R4	RS422	Refer to Section 2-3	Self-made cable required
Q02CPU Q02HCPU Q12HCPU Q25HCPU	RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required
Q06HCPU	RS232 on the CPU unit	RS232	Refer to Section 2-3	Self-made cable required

## 2-3 Serial Port Communication Parameter Setting

## 2-3-1 When Using Mitsubishi FX1S, Mitsubishi FX0N/1N/2N/3G

## and Mitsubishi FX3U Communication Protocols

#### **HMI Settings**

HMI default communication parameters: 9600bps (Baud Rate), 7 (Data Bit), even (Parity Check), 1 (Stop Bit) and 0 (PLC Station No.)

The PLC Communication Time Out, Max interval of word (bit) block pack, Max word block package size on the right vary with PLC protocols. Generally the defaults are selected.

RS422 Communication

<b>HI Attrib</b>	ıte					
Security Levels Setting User Permissions Setting HMI   Task Bar   HMI Extended Attributes   HMI System Information Text Historical Events Storage   Print Setting   COM1 Setting   COM2 Setting						
Туре	RS422	•	PLC Communication Time Out	1		
Baud Rate	9600	-	Protocol Time Out 1(ms)	1		
Data Bit	7	-	Protocol Time Out 2(ms)	0		
Parity Check	even	-	Max interval of word block pack	2		
Stop Bit	1	•	Max interval of bit block pack	2		
E. Broadcast	65525		Max word block package size	32		
proadcas(	00000		Max bit block package size	128		
Use Default Setting						

#### RS232 Communication

HII Attrib	ute					
Secu	rity Level	ls Setti	ng	User Permissions	s Setting	
HMI 7	ask Bar	HMI E:	xtended Attributes	HMI System I:	nformation Text	
Historical	Events St	orage	Print Setting	COM1 Setting	COM2 Setting	
Туре	RS232	•	PLC Communication	Time Out	1	
Baud Rate	9600	-	Protocol Time Out 1(ms) 1			
Data Bit	7	-	Protocol Time Out 2(ms) 0			
Parity Check	even	-	Max interval of word block pack 2			
Stop Bit	1		Max interval of bit blo	ock pack	2	
E Brandanak	65525		Max word block package size 32			
I DIOAUCASI	00000		Max bit block packa	ge size	128	
Use Default Setting						

#### **PLC Settings**

The PLC setting is as shown below when **Mitsubishi FX1S**, **Mitsubishi FX0N/1N/2N/3G** and **Mitsubishi FX3U** communication protocols are used:

Click the [Default] button to make settings without checking the [Communication Setting]:

FX parameter	×
Memory capacity [PLC name ]1/0 assignment [PL	C system(1) PLC system(2)
_ Operate If the box is not checked, the	parameters will be cleared.
setting parameters and D8120 value	r the program to the communication board, is in the PLC must be cleard upon program transfer.)
Detroit	
	Control line
Data length	H/W type
Parity-	Control mode
	Invalid
Stop bit	
<b></b>	Sum check
Transmission speed	Transmission control procedure
	Station number setting
	H (00H0FH)
Termineter	Time out judge time
	XIUms (1266)
Default Check	Lind Lancel

- Note: 1. The communication protocols such as Mitsubishi FX1S, Mitsubishi FX0N/1N/2N/3G and Mitsubishi FX3U etc. can be selected according to PLC model if the Station No. is not used when the communication is realized through the communication function expansion board.
  - 2. Make sure the value of communication format D8120 is 0 when the communication is realized through the communication function expansion board.

## 2-3-2 When Using Mitsubishi FX-485ADP/485BD/232BD

## (Multi-station) Communication Protocols

#### **HMI Settings**

HMI default communication parameters: 19200bps (Baud Rate), 7(Data Bit), even (Parity Check), 2 (Stop Bit) and 0 (PLC Station No.)

Note: The protocols are only applicable to PLCs communicating through communication function expansion board and support Multiple Station No. and Baud Rate settings. RS422 Communication

HEI Attribu	rte			
Security Levels Setting User Permissions Setting HMI Task Bar HMI Extended Attributes HMI System Information Text Historical Events Storage Print Setting COM1 Setting COM2 Setting				
Ture	DO 400	.or age		
туре	R5422	•	PLC Communication Time Out	1
Baud Rate	19200	•	Protocol Time Out 1(ms)	1
Data Bit	7	-	Protocol Time Out 2(ms)	0
Parity Check	even	-	Max interval of word block pack	4
Stop Bit	2		Max interval of bit block pack	4
	CEEDE		Max word block package size	10
I Bloadcast	60000		Max bit block package size	8
	Use Default Setting			

#### **RS232** Communication

HEI Attrib	ıte			X
Secur HMI   T Historical	ity Level ask Bar   Events St	.s Setti HMI Ex orage	ng   User Permissions stended Attributes   HMI System I   Print Setting   COM1 Setting	s Setting nformation Text COM2 Setting
Type Baud Rate	RS232	•	PLC Communication Time Out Protocol Time Out 1(ms)	1
Data Bit	7	•	Protocol Time Out 2(ms)	0
Parity Check Stop Bit	even 2	•	Max interval of bit block pack	4
F Broadcast	65535		Max word block package size Max bit block package size	8
		Use Default Setting		

#### **PLC Settings**

The PLC setting is as shown below when **FX-485ADP/485BD/232BD (Multi-station)** communication protocols are used:

Double-click the [PLC Parameter] under [Project Data List] in GX Developer software:



#### Open the [FX Parameter] dialog box: 1. FX1S/FX1N/FX2N/3G Series PLC

FX parameter	$\overline{\mathbf{X}}$				
Memory capacity PLC name 1/0 assignment PL	C system(1) PLC system(2)				
Operate       If the box is not checked, the parameters will be cleared.         Image: communication setting       (When GX Developer transfer the program to the communication board, parameters and D8120 values in the PLC must be cleard upon program transfer.)					
Protocol Dedicated protocol	Control line				
Data length 7bit	H/W type Regular/RS-232C				
Parity Even	Control mode Invalid				
Stop bit 2bit	Sum check				
Transmission speed 19200	Transmission control procedure				
F Head	Station number setting 00 H (00H0FH)				
Terminator	Time out judge time 1 ×10ms (1255)				
Default Check	End Cancel				

Check the [Operate communication setting] option.

- Note: 1. FX0N Series PLCs do not support the [FX Parameter] operation, but the communication parameters can be set through writing values to the special data registers D8120, D8121and D8129.
  - 2. The [Dedicated Protocol] must be selected and the [Sum Check] must be checked with [Form4] selected for the Transmission Control Sequence.
  - 3. The [H/W Type] is "Regular/RS-232C" and "RS-485" when FX□□-232-BD and FX□□-485-BD/FX□□-485-ADP communication are used respectively.

#### 2. FX3U/3UC Series PLC

<b>FX parameter</b> Memory capacity   Device   PLC name   1/O assign	nment PLC system(1) PLC system(2)		
Uperate communication setting	the parameters will be cleared. sfer the program to the communication board, lues in the PLC must be cleard upon program		
Protocol Dedicated protocol	Control line		
Data length 7bit	H/W type Regular/RS-232C		
Parity Even	Control mode		
Stop bit	Sum check		
Transmission speed	Transmission control procedure Form4(with CR,LF)		
F Head	Station number setting		
Same settings with HMI	Time out judge time 1 ×10ms (1255)		
Default Check End Cancel			

Check the [Operate communication setting] option.

Note: 1. The [CH1] should be selected for FX3U/3UC Series PLC.

- 2. The [Dedicated Protocol] must be selected and the [Sum Check] must be checked with [Form4] selected for the Transmission Control Sequence.
- 3. The [H/W Type] is "Regular/RS-232C" and "RS-485" when FX□□-232-BD and FX□□-485-BD/FX□□-485-ADP communication are used respectively.

Aside from using [FX Parameter], the user can use the special data register D8120 in PLC to set the communication parameters for PLC.

Special Data Registers	Descriptions		
D8120	Communication format		
D8121	Station No. setting		
D8129	Data network out-time counting		
Applicable to FX3U/3UC and other FX Series PLCs using CH1			

#### For example:

If the PLC communication parameters are: 9600bps (Baud Rate), 7 (Data Bit), even (Parity Check), 2 (Stop Bit), 1(PLC Station No.), RS485 (Communication Method) and 1 (PLC Communication Time Out), then D8120=0xE08E,

D8121=1,

and D8129=1.

Note: The settings will be valid when the PLC is turned OFF and then back ON again after the D8120 setting is modified.
## 2-3-3 When Using FX2N-10GM/20GM Communication Protocol

### **HMI Settings**

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), even (Parity Check), 1 (Stop Bit) and 0 (PLC Station No.)

RS232 Communication

HMI Attribu	HII Attribute 🔀											
Secur HMI T: Historical	ity Level ask Bar   Events St	.s Setti HMI Ex orage	ng   stended Attributes   Print Setting	Vser Permissions HMI System Ir COM1 Setting	Setting formation Text COM2 Setting							
Туре	RS232	-	PLC Communication	1								
Baud Rate	9600	•	Protocol Time Out 1(	30								
Data Bit	8	-	Protocol Time Out 2(	Protocol Time Out 2(ms)								
Parity Check	even	-	Max interval of word	block pack	16							
Stop Bit	1	-	Max interval of bit blo	ock pack	1							
E Propidenst	65535		Max word block pac	kage size	32							
I DIOGUCAS(	00000		Max bit block packa	ge size	1							
	Use Default Setting											



HEI Attribu	rte									
Secur HMI T Historical	ity Level ask Bar   Events St	s Setti HMI Ex orage	ng   User Permissions stended Attributes   HMI System In   Print Setting   COM1 Setting	Setting nformation Text COM2 Setting						
Туре	RS422	•	PLC Communication Time Out	1						
Baud Rate	9600	•	Protocol Time Out 1(ms)	30						
Data Bit	8	•	Protocol Time Out 2(ms)	0						
Parity Check	even	•	Max interval of word block pack	16						
Stop Bit	1	•	Max interval of bit block pack	1						
	65535		Max word block package size	32						
,			Max bit block package size	1						
	Use Default Setting									

## 2-3-4 When Using Mitsubishi Q00J (CPU Port) Communication

## Protocol

### **HMI Settings**

HMI default communication parameters: 115200bps (Baud Rate), 8 (Data Bit), odd (Parity Check), 1 (Stop Bit) and 0 (PLC Station No.) (Multiple Station No. is not supported.) RS232 Communication

> HII Attribute Security Levels Setting User Permissions Setting HMI Task Bar | HMI Extended Attributes HMI System Information Text COM2 Setting Historical Events Storage Print Setting COM1 Setting Туре RS232 PLC Communication Time Out Ŧ 5 Baud Rate Protocol Time Out 1(ms) 5 115200 τ. Protocol Time Out 2(ms) 3 Data Bit 8 Ŧ 4 Max interval of word block pack. Parity Check odd ÷ 16 Max interval of bit block pack Stop Bit 1 Max word block package size 32 Broadcast Max bit block package size 64 Use Default Setting

Note: There is no need to set PLC baud rate that will automatically vary with the baud rate set by HMI.

## 2-3-5 When Using Mitsubishi Q series (CPU Port) Communication

## Protocol

### **HMI Settings**

HMI default communication parameters: 115200bps (Baud Rate), 8 (Data Bit), odd (Parity Check), 1 (Stop Bit) and 0 (PLC Station No.) (Multiple Station No. is not supported.)

TIMI Attribute	i en						
HMI System	Information	Text	Security Level	ermissions Setting			
HMI			Task Bar	H	HMI Extended Attributes		
Historical Ev	ents Storag	ge	Print Setting COM1 Setting		etting	COM2 Setting	
Туре	RS232	•	PLC Communica	tion Time Out		3	
Baud Rate	115200	•	Protocol Time Out 1(ms)			1	
Data Bit	8	-	Protocol Time O	Protocol Time Out 2(ms)			
Parity Check	odd	÷	Max interval of w	vord block pao	sk	8	
Stop Bit	4		Max interval of b	it block pack		16	
зторы	1		Max word block	package size		32	
I Broadcast	65535		Max bit block pa	ckage size		16	

Note: There is no need to set PLC baud rate that will automatically vary with the baud rate set by HMI.

## 2-3-6 When Using Mitsubishi Q06H Communication Protocol

### **HMI Settings**

HMI default communication parameters: 115200bps (Baud Rate), 8 (Data Bit), odd (Parity Check), 1 (Stop Bit) and 0 (PLC Station No.) (Multiple Station No. is not supported.)

**RS232** Communication

HMI System	Information	Text	Security Leve	s Setting	User F	Permissions Setting
HMI			Task Bar	) н	MI Extende	ed Attributes
Historical Events Storage		je	Print Setting	COM1 S	ietting	COM2 Setting
уре	RS232	-	PLC Communica	3		
3aud Rate	115200	-	Protocol Time O	1		
Data Bit	8	•	Protocol Time O	ut 2(ms)		50
Parity Check	odd	-	Max interval of v	vord block pa	ick	8
Stop Bit	1	-	Max interval of b	it block pack		16
	CEEDE		Max word block package size			32
Broadcast	00000		Max bit block package size			16

Note: There is no need to set PLC baud rate that will automatically vary with the baud rate set by HMI.

# 2-3-7 When Using Mitsubishi Q\_QnA (Link Port) Communication

## Protocol

### **HMI Settings**

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), odd (Parity Check), 1 (Stop Bit) and 0 (PLC Station No.)

RS232 Communication

IMI Attribute						
HMI System	Information	n Text	Security Levels	Setting	User F	Permissions Setting
HMI Historical Ev	 /ents Stora;	ge	Print Setting COM1 Setting C			COM2 Setting
Туре	RS232		PLC Communicat	t	3	
Baud Rate	9600	-	Protocol Time Ou	1		
Data Bit	8	Ŧ	Protocol Time Ou	it 2(ms)		30
Parity Check	odd	-	Max interval of w	ord block pa	ick	8
Stop Bit	1		Max interval of bi	block pack		16
E Broadcast	85525		Max word block package size			32
producast.	00000		Max bit block page	:kage size		16
				Use Defau	ult Setting	

### RS422 Communication

HMI System	Information	Text	Security Levels Setting Use			Permissions Setting
HMI			Task Bar	н	MI Extend	ed Attributes
Historical Events Storage			Print Setting	COM1 S	etting	COM2 Setting
Туре	RS422	•	PLC Communical		3	
Baud Rate	9600	•	Protocol Time Ou	1		
Data Bit	8	+	Protocol Time Ou	ut 2(ms)		30
Parity Check	odd	•	Max interval of w	ord block pa	sk	8
Stop Bit	1		Max interval of bi	it block pack		16
	OFFOR		Max word block	package size		32
Broadcast	60000		Max bit block pa	ckage size		16

### **PLC Settings**

The PLC settings is as shown below when **Mitsubishi Q\_QnA (Link Port) or Mitsubishi Melsec Q** communication protocols are used:

1. Communication through CPU Port

Qn(H) Parameter					δ
PLC name PLC system SFC	PLC file PLI	C RAS   [	Device Pr Serial	ogram	Boot file
Transmission speed 9.6Kbps Sum check Transmission wait time No waiting time RUN write setting Permit Data format value is fix Start bit :1 Parity bit:0 Data bit:8 Stop bit:1	C P C C	an modify LC in the s an commu	the baud ra ame baud i nicate.	ite, HMI a rate when	nd i you
Acknowledge XY assignment	Multiple CPU setting:	Default	Check	End	Cancel

- 2. Communication through C24 Serial Port Communication Module
- a. Open [Parameter] on Project Data List and double-click [PLC parameter], and select [I/O assignment] after the [Qn (H) Parameter] dialog box is opened.

🕞 MELSOFT series GX Developer (Unset	project) - [LD(Edit m	de) MAIN 35 St		
🔄 Project Edit Find/Replace Convert View D	aline Diagnostics Tools Min	dow Help		- 8 ×
			÷	
Program 💌 💌				811 (R)
1 H H H H H H H H H H H H H H H H H H H	↓↓         ↓↓         ↓			
Qn (H) Para	leter			-fend 7
E 🔤 (Unset project)	PLC system PLC file PLI	RAS Device Program	Boot file	
HE MAIN SFC □-  Device comment -1/0 Assignment	I/D assignment	Serial		
E MAIN Slot	Type Model nam	e Points StartXY •	S	
PLC parameter 0 PLC	PLC -		Switch setting	
2 Network param 2 1(*-1)	-		Detailed setting	
Aemote pass     Jevice memory     Jevice memory	*	•		
Device init	-	-		
5 4(~4) 6 5(~5)				
7 6(*-6)	*		-	
Assigning the	e I/O address is not necessary as the setting blank will not cause an error t	CPU does it automatically.		
Base setting(*)				
Ba	se model name Power model name	Extension cable Slots	Base mode	
Main			C Detail	
Ext.Base1		<b>_</b>		
Ext.Base2			Terrore and the second second	
Ext.Base3			8 Slot Default	
CXLDdse4			12 Slot Default	
(*)Settings sh using multi	ould be set as same when Im	oort Multiple CPU Parameter	Read PLC data	
		1		
Project Acknowledge X	Y assignment Multiple CPU settings	Default Check Er	nd Cancel	
PLC parameter	QO1 Host stati	on	Ovrwrte	

b. Click the [Type] dropdown list to select the [Intelli.] option.

n(H) Pa	ramete	r								E
PLC name	PLC :	system	) F	PLC file	CRAS	Device	ls	Progra	m	Boot file
- 1/0 Assian	ment(*)			o designiment			19	Char		
170 Assign	ilot	Туре		Model nam	e	Points		StartXY	-	
0 PLC	PL	C .	-				•			Switch setting
1 O(*-0	) 🚺 Int	elli.	-			32points	4			
2 1(*-1	) En	npty	^				4			Detailed setting
3 2(*-2	) Int	put					٠			
4 3(*-3	)	. inpuc utnut	=				•			
5 4(*-4	) 170	) mix					-			
6 5(*-5	) Int	telli.	~				•			
7 6(*-6	)		•				•		-	
Base setti	ng(*)	y Diarik Wi		i cause an enor	o occur.		_		1	- Base mode -
	Base mo	del name	Po	wer model name	name Extension ca			lots		<ul> <li>Auto</li> </ul>
Main								-		C Detail
Ext.Base1								-		
Ext.Base2								-		
Ext.Base3								-		8 Slot Default
Ext.Base4								<b>•</b> •	J	12 Slot Default
(*)Setting using	ıs should b multiple CP	e set as si V.	ame	when	port Mul	tiple CPU Pa	aram	ieter	F	ead PLC data
۱cknowled	ge XY assig	gnment	Mult	tiple CPU setting:	Def	ault C	hec	k	End	Cancel

c. Click the [Switch setting] button and make settings as shown below:

			X	Qn(H) Param	eter						×			
	Unset project) Program MAIN Device comment			(Unset project) Program MAIN Device comment			PLC name SFC	PLC system	PLC fi   1/0 assi	le Pl ignment	LC RAS	Device	Program Serial	Boot file
	Svi	itch set	ting for	I/O and inte	lligent	functio	on nodu	ıle						
						Input I	format	HEX.	I.		Switch setting Detailed setting			
		Slot	Туре	Model name	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	•				
	0	PLC	PLC											
	1	0(*-0)	Intelli.											
	2	1(*-1)												
	3	2(*-2)												
	4	3(*-3)			- 1 - N			2						
	5	4(*-4)			- 19			8						
	6	5(*-5)					0	2			-Base mode			
	7	6(*-6)						2 D			Auto			
	8	7[*-7]			V						C Detail			
	9	8(*-8)   0(*-0)					<u></u>	2						
	10	9[*-9]						1						
	11	10(^-10)						2			8 Slot Default			
	12	10(*10)					<u></u>	2			12 Clas Dataul			
	13	12(*12) 12(*12)									12 Slot Derault			
	14	10(-10) 14(×14)								-				
	15	[14[-14]								-	ead PLC data			
Projec				End	Car	ncel					Cancel			

The attribute descriptions of Switch1, Switch2, Switch3, Switch4 and Switch5 are as shown below:



### Setting Example:

The Switch3, Switch4 and Switch5 can be set as shown below if the CH2 RS422 communication parameters and Station No. are set to 19200/8/Odd/1 and 0 respectively:

Setting Switch	Setting Value	Setup Description
Switch 3	07E6	19200/8/With/Odd/1
Switch 4	0005	Mode = Form 5
Switch 5	0000	Station No. = 0

Swi	itch set	ting for	I/O and intell	igent	functi	on modu	ıle					
Input format HEX.												
	Slot	Туре	Model name	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5 🔺				
0	PLC	PLC			1							
1	0(*-0)	Intelli.				07E6	0005	0000				
2	1(*-1)											
3	2(*-2)											
4	3(*-3)								1			
5	4(*-4)											
6	5(*-5)											
7	6(*-6)											
8	7(*-7)											
9	8(*-8)											
10	9(*-9)											
11	10(*-10)											
12	11(*-11)											
13	12(*-12)											
14	13(*-13)											
15	[14(*-14)							•				
			End	Car	ncel							

The Switch1, Switch2 and Switch5 can be set as shown below if the CH1 RS232 communication parameters and Station No. are set to 19200/8/Odd/1 and 0 respectively:

Setting Switch	Setting Value	Setup Description
Switch 1	07E6	19200/8/With/Odd/1
Switch 2	0005	Mode = Form 5
Switch 5	0000	Station No. = 0

The difference between Mitsubishi Q\_QnA (Link Port) protocol and Mitsubishi Melsec Q protocol:

- 1. Mitsubishi Q\_QnA (Link Port) protocol features fast communication speed while RS232 communication of module is not supported.
- 2. Mitsubishi Melsec Q protocol features support for RS232 and RS485 communications of module while the communication speed is slower.

## 2-4 Supported Registers

FX1	S				
	Device	Bit Address	Word Address	Format	Notes
	Input Relay	X 00-17		00	
	Output Relay	Y 00-15		00	
	Internal Relay	M 000-511		DDD	
	Timer Contact	T 00-63		DD	
	Counter Contact	C 00-31		DD	
	Data Contact	D 000.0-255.F		DDD.H	
	State	S 000-127		DDD	
	Timer Value		T 00-63	DD	
	Counter Value		C 00-31	DD	
	Data Register		D 000-255	DDD	
	Special Data Register		SD 8000-8255	DDDD	
	Counter Value		C_dword 235-255	DDD	32 bit device

### FX1N/FX1NC

Device	Bit Address	Word Address	Format	Notes
Input Relay	X 000-177		000	
Output Relay	Y 000-177		000	
Internal Relay	M 0000-1535		DDDD	
Timer Contact	T 000-255		DDD	
Counter Contact	C 000-199		DDD	
Special Internal Relay	SM 8000-8255		DDDD	

State	S 000-999		DDD	
Timer Value		T 000-255	DDD	
Counter Value		C 000-199	DDD	
Data Register		D 0000-7999	DDDD	
Special Data Register		SD 8000-8255	DDDD	
Counter Value		C_dword 200-255	DDD	32 bit device

### FX2N/FX2NC

Device	Bit Address	Word Address	Format	Notes
Input Relay	X 000-377		000	
Output Relay	Y 000-377		000	
Internal Relay	M 0000-3071		DDDD	
Timer Contact	T 000-255		DDD	
Counter Contact	C 000-199		DDD	
Special Internal Relay	SM 8000-8255		DDDD	
State	S 000-999		DDD	
Timer Value		T 000-255	DDD	
Counter Value		C 000-199	DDD	
Data Register		D 0000-7999	DDDD	
Special Data Register		SD 8000-8255	DDDD	
Counter Value		C_dword 200-255	DDD	32 bit device

### FX2N-10GM/20GM

Device	Bit Address	Word Address	Format	Notes
Input Relay	X 00-67		00	*1
Output Relay	Y 00-67		00	*1
Internal Relay	M 000-511		DDD	*1
Special Internal Relay	SM9000-9175		DDDD	*1
Data Register		D 000-3999	DDDD	*2
Special Data Register		SD 9000-9599	DDDD	*2
Special Data Register		FD 4000-6999	DDDD	*2

\*1 does not support batch transmission while \*2 supports batch transmission.

### FX3UC

Device	Bit Address	Word Address	Format	Notes
Input Relay	X000-377		000	
Output Relay	Y000-377		000	
Timer Contact	T_bit 000-511		DDD	
Counter Contact	C_bit 000-199		DDD	

Data Contact	D_bit0.0-7999.F		DDDD.H	
State	S0000-4095		DDDD	
Internal Relay	M0000-7679		DDDD	
Special Internal Relay	SM8000-8511		DDDD	
Timer Value		T000-511	DDD	
Counter Value		C000-199	DDD	
Data Register		D0000-7999	DDDD	
Extension Register		R0000-32767	DDDDD	
Special Data Register		SD8000-8511	DDDD	
Counter Value		C_dword200-255	DDD	32 bit device

### Q00JCPU

Device	Bit Address	Word Address	Format	Notes
Counter Coil	CC0-1023		DDDD	
Counter Contact	CS0-1023		DDDD	
Timer Coil	TC0-2047		DDDD	
Timer Contact	TS0-2047		DDDD	
Special Link Relay	SB000-7FF		ННН	
Link Relay	B0000-1FFF		НННН	
Step Relay	S0000-1FFF		НННН	
Edge Relay	V0000-2047		DDDD	
Annunciator	F0000-2047		DDDD	
Latch Relay	L0000-8191		DDDD	
Special Internal Relay	SM0000-2047		DDDD	
Internal Relay	M0000-8191		DDDD	
Output Relay	Y0000-1FFF		НННН	
Input Relay	X0000-1FFF		НННН	
File Register		R000-32767	DDDDD	
Special Link Register		SW0-3FF	ННН	
Link Register		W000-7FF	ННН	
Special Data Register		SD0-2047	DDDD	
Data Register		D0-12287	DDDDD	
Counter Value		CN0-1023	DDDD	
Retentive Timer Value		SN0-2047	DDDD	
Timer Value		TN0-2047	DDDD	

### Q00CPU/Q01CPU/Q02HCPU/Q06HCPU/Q12HCPU/Q25HCPU

Device	Bit Address	Word Address	Format	Notes
Special Link Relay	SB 00000- 7FFF		НННН	

Link Relay	B 00000- 7FFF		НННН	
Edge relay	V 00000-32767		DDDDD	
Annunciator	F 00000-32767		DDDDD	
Latch relay	L 00000-32767		DDDDD	
Special Internal Relay	SM 0000-2047		DDDD	
Internal Relay	M 00000-32767		DDDDD	
Output Relay	Y 0000-1FFF		НННН	
Input Relay	X 0000-1FFF		НННН	
Link Register		W 00000- 291F	ННННН	
Timer Value		TN 00000-23087	DDDDD	
Counter Value		CN 00000-23087	DDDDD	
File Register		R 00000-32767	DDDDD	
Retentive Timer Value		SN 0-23087	DDDDD	
Special Link Register		SW 0000- 7FF	НННН	
File Register		7P 00000 65535	חחחח	
(Block switching is not necessary)		21 00000-00000	עסססס	
Data Register		D 00000-25983	DDDDD	
Special Data Register		SD 0000-2047	DDDD	

### Q02CPU

Device	Bit Address	Word Address	Format	Notes
Special Link Relay	SB000-7FF		ННН	
Link Relay	B0000-1FFF		НННН	
Edge Relay	V0000-2047		DDDD	
Annunciator	F0000-2047		DDDD	
Latch Relay	L0000-8191		DDDD	
Special Internal Relay	SM0000-2047		DDDD	
Internal Relay	M0000-8191		DDDD	
Output Relay	Y0000-1FFF		НННН	
Input Relay	X0000-1FFF		НННН	
Link Register		W0000-1FFF	НННН	
Timer Value		TN0000-2047	DDDD	
Counter Value		CN0000-1023	DDDD	
File Register		R00000-32767	DDDDD	
Special Link Register		SW000-7FF	ННН	
Data Register		D00000-12287	DDDDD	
Special Data Register		SD0000-2047	DDDD	

Note: Address format description: D: decimal, O: octonary, H: hexadecimal.

## 2-5 Cable Fabrication

## 2-5-1 FX Series RS232 Communication Cable

### **RS232 Communication Cable for CPU Port**

Please perform communication through FX Series serial port programming cable.

### FXDD-232-BD Communication Cable

	HMI cor 9pin D-SU	nnector 18 female	Controller connector
	COM1	COM2	9pin D-SUB (male)
54321	3 RD	3 RD	3 TXD
0 1171 0	2 SD	2 SD	2 RXD 9 4 7 1 9
	9 SG	9 SG	5 GND

## 2-5-2 FX Series RS485/422 Communication Cable

1. Communication Cable for CPU Port/FX - 422-BD Communication Cable

9	HMI connector pin D-SUB female	Controller connector
	COM2	8pin Mini DIN(male)
-	8 RDA-	4Tx-
· · · · · · ·	6 RDB+	7Tx+
	9 SG	3GND (????)
	7 SDA-	1Rx-
	1 SDB+	2Rx+

2. FX - 485-BD Communication Cable

9	HMI connector pin D-SUB female	Controller	
	COM2	RS422 connec	tor
	8 RDA-	SDB	****
0 9 9 7 9 0	6 RDB+	SDA	
	9 SG	SG	FDA RD6 \$54 508 50
	7 SDA-	RDB	
	1 SDB+	RDA	

## 2-5-3 Q Series RS232 Communication Cable

### **Communication Cable for CPU Port**

	HMI connector 9pin D-SUB female	Controller connector
(1) I	COM1/COM2	6pin Mini DIN(male)
	3 RD	2 TXD
	2 SD	1 RXD
	9 SG	3 GND

### RS232 communication cable for C24 communication module



## 2-5-4 Q-Series RS485/422 Communication Cable

RS422 Communication Cable for C24 Communication Module



## Section 3 Connecting to Schneider PLCs

This section describes the connection to Schneider PLCs.	
3-1 Serial Port Communication	51
3-2 Communication Parameters and Cable Fabrication	
3-3 Communication Parameter Setting	
3-4 Supported Registers	61
3-5 Cable Fabrication	61

## **3-1 Serial Port Communication**

Series	CPU	Link Module	Driver
Micro	TSX3705001 TSX 37 05 028DR1 TSX 37 08 056DR1 TSX 37 10 128DT1 TSX 37 10 128DR1 TSX 37 10 128DTK1 TSX 37 10 128DTK1 TSX 37 10 164DTK1 TSX 37 10 028AR1 TSX 37 10 028DR1 TSX 37 21 101 TSX 37 22 101 TSX 37 21 001 TSX 37 22 001	TER port on the CPU	Schneider Modicon Uni-TelWay
Premium	TSX P57 103M TSX P57 153M TSX P57 203M TSX P57 253M TSX P57 303M TSX P57 353M TSX P57 453M	TER port on the CPU	Modbus RTU
Nano	TSX 07 3L DDD28 TSX 07 30 10DDD TSX 07 31 16DDD TSX 07 31 24DDD TSX 07 32 DDD28 TSX 07 33 DDD28	Programming port on CPU	
Twido	TWD LCAA 10DRF TWD LCAA 16DRF TWD LCAA 24DRF TWD LMDA 20DTK TWD LMDA 20DUK TWD LMDA 20DRT TWD LMDA 40DTK TWD LMDA 40DUK	RS485 on the CPU unit	Schneider Twido Modbus RTU

## **3-2 Communication Parameters and Cable Fabrication**

Series	CPU	Link Module	Driver	СОММ Туре	Parameter	Cable
	TSX3705001 TSX3705001 TSX 37 05 028DR1 TSX 37 08 056DR1 TSX 37 10 128DT1 TSX 37 10 128DR1	DS485 on	Sebasidar	RS232	Refer to Section 3-3	Self-made cable required
Modicon	TSX 37 10 128DTK1 TSX 37 10 164DTK1 TSX 37 10 028AR1 TSX 37 10 028DR1 TSX 37 21 101 TSX 37 22 101 TSX 37 21 001 TSX 37 22 001	the CPU unit	Modicon Uni-TelWay	RS485	Refer to Section 3-3	Self-made cable required
TSX	TSX3705001 TSX3705001 TSX 37 05 028DR1 TSX 37 08 056DR1 TSX 37 10 128DT1 TSX 37 10 128DR1	D0 405 cm		RS232	Refer to Section 3-3	Self-made cable required
	TSX 37 10 128DTK1 TSX 37 10 164DTK1 TSX 37 10 028AR1 TSX 37 10 028DR1 TSX 37 21 101 TSX 37 22 101 TSX 37 21 001 TSX 37 22 001	the CPU unit	Modbus RTU	RS485	Refer to Section 3-3	Self-made cable required
	TWD LCAA 10DRF TWD LCAA 16DRF TWD LCAA 24DRF			RS232	Refer to Section 3-3	Self-made cable required
Twido	TWD LMDA 20DTK TWD LMDA 20DUK TWD LMDA 20DRT TWD LMDA 40DTK TWD LMDA 40DUK	RS485 on t	he CPU unit	RS485	Refer to Section 3-3	Self-made cable required

## **3-3 Communication Parameter Setting**

### **HMI Settings**

### When Using Schneider Modicon Uni-TelWay Protocol

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), odd (Parity Check), 1 (Stop Bit) and 4 (PLC Station No.)

RS232 Communication

HMI System Information Text			Security Levels Setting User !			missions Setting
HMI			Task Bar HMI Exten		Extended.	Attributes
Historical Ev	vents Stora	ge	Print Setting	COM1 Set	ting	COM2 Setting
Туре	RS232	•	PLC Communication	n Time Out		3
Baud Rate	9600	+	Protocol Time Out 1	50		
Data Bit	8	+	Protocol Time Out 2(ms) 3 Max interval of word block pack 8 Max interval of bit block pack 8 Max word block package size 3			300
Parity Check	odd	÷				8
Stop Bit	1					8
		100				32
J Broadcast	65535		Max bit block packa	age size		16
			1	Use Default	Settina	

### RS485 Communication

HMI System	Information	n Text	Security Level	s Setting	User Per	missions Setting	
HMI			Task Bar HMI Exten		II Extended	ded Attributes	
Historical E	vents Stora	ge	Print Setting	COM1 Se	tting	COM2 Setting	
Туре	RS485	•	PLC Communica	tion Time Out		3	
Baud Rate	9600	•	Protocol Time Ou		50		
Data Bit	8	÷	Protocol Time Out 2(ms)			300	
Parity Check	odd	-	Max interval of w	8			
Ston Bit	1	-	Max interval of bit block pack 8			8	
	reene		Max word block package size 32				
Broadcast	60000		Max bit block pa	ckage size		16	

### When Using Modbus RTU Protocol

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), even (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.) RS232 Communication

HMI System	Information	n Text	Security Level	Is Setting User I	Permissions Setting	
HMI			Task Bar	Task Bar HMI Extende		
Historical Ev	ents Stora	ge	Print Setting	COM1 Setting	COM2 Setting	
Туре	RS232	-	PLC Communica	ition Time Out	3	
Baud Rate	9600	•	Protocol Time O	3		
Data Bit	8	•	Protocol Time O	3		
Parity Check	even	÷	Max interval of w	2		
Stop Bit	1	-	Max interval of bit block pack     8       Max word block package size     16			
	1					
F Broadcast 0			Max bit block package size		64	

### **RS485** Communication

HMI System Information Text			Security Levels Setting User F			<sup>D</sup> ermissions Setting	
HMI			Task Bar   HMIE		MI Extende	ed Attributes	
Historical Ev	vents Stora	ge	Print Setting	Print Setting COM1 Setting		COM2 Setting	
Туре	RS485	•	PLC Communica	ition Time Out		3	
Baud Rate	9600	•	Protocol Time Out 1(ms) 3 Protocol Time Out 2(ms) 3 Max interval of word block pack 2 Max interval of bit block pack 8			3	
Data Bit	8	÷				3	
Parity Check	even	÷				2	
Stop Bit	1					8	
	0	120	Max word block	16			
Broadcast	U		Max bit block pa	ickage size		64	
) Bloadcast	U		Max bit block pa	ickage size Use Defau	lt Setting	64	

### **PLC Settings**

PL7 Software Setting

1. Open "Programs" menu - Select [XWAY Driver Manager] from Modicon Telemecanique:



2. Select [UNITELWAY Driver]→[Configuration]→[Edit] in the popup window and modify relevant communication parameters:

XVAY Drivers management 🛛 🛛 🔀	Station Parameters
XWAY Manager UNITELWAY Driver XWAY Test	Uni-telway Line Parameters Advanced
UNITELWAY Driver V1.4 IE08 Copyright ?1999-2001 Schneider Automation State : Running Configuration	COM Port
M UNITELVAY Configuration	
Station List Target Station : (Default) StationID Port Password PhoneNumber Parity (Default) COM1 Odd	UNI-TELWAY Slave Address Base 1 Numbers 3 3 Modem Communication Use modem Hayes Phone Number Password
Add Station Edit Remove	OK Cancel
🔚 Station Parameters 🛛 🔀	🔚 Station Parameters
Uni-telway Line Parameters Advanced	Uni-telway Line Parameters Advanced
Baud Rate 9600 bps	
Self Adaptation (in sec)	C PC
Data Bits Parity Stop Bits C 7 bits C Odd C 1 bit C 8 bits C Even C 2 bits	© Unitelway
RTS/CTS Delay	T NumPLC Link Timeout
Default	HX/1X Delay  -1
OK Cancel	OK Cancel

3. The following prompt information will appear after the [OK] button is clicked:

	MAY Configuration ELUAY Reset	×
Rese	et Unitelway Driver	
•	Add Station Edit	► Remove
	OK Cancel	Apply
UNITEL	VAY Configuration	
Ŷ	Driver's Keset is UK	

4. Click [XWAY Test]→[Connect] and the Connected prompt information will appear when the connection is successful.

WAY Manager   UNITELWAY Driver	XWAY Test
Driver Name : UNITELWAY Driver instance : 1 Remote address : 0.254.0 Local address : 0.254.101	Request Request : #0 Type : MIRROR (3 octets) Timeout(ms) 3000' State : Connected
Disconnect Start	More info About

5. Open PL7 Software →New →Click [Hardware Configuration] in [STATION] →Double-click [comm] in popup window.

The settings are as shown below if Schneider Modicon Uni-TelWay Protocol is used:

🎇 TSX 3705 [POSITION 00.0]
Configuration
UNI-TELWAY LINK MAST •
Type       Master         Event.triggered data       D bytes         Number of slaves       38         Slave       30         Slave       30         Sterver address (AD0)       8         Parity       1 bit         Number of addresses       3         Current loop (PSR)       Point to point         Multidrop       Point to point

Tł	ne settings	are shown	as below	if Modbus	<b>RTU P</b>	rotocol is	used:
	0 -						

TSX 3705 [POSITION 00.0]         Configuration         Designation: PROCESSOR 3705         CHANNEL 0:         CHANNEL 0         CHANNEL 0	
MODBUSIJBUS LINK	MAST 💌
Type Slave v Number of retries 3 Response time 10 x 100 ms Slave Slave number 1	Transmission speed       9600 bits/s       Delay between characters       ✓ Default       → 4       ms       Data       C       ASCII (7 bits)       ⓒ 1 bit       ⓒ RTU (8 bits)       ○ 2 bits       Parity       ⓒ Even ⓒ Odd ⓒ None
Current loop (PSR)	RTS/CTS delay X 100 ms Cata carrier (DCD)

6. Download the project to PLC after the settings are completed.

## When Using Schneider Twido Modbus RTU Protocol

### **HMI Settings**

HMI default communication parameters: 19200bps (Baud Rate), 8 (Data Bit), none (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.)

RS485 Communication

HMI System Information Text HMI			Security Levels Setting User F			Permissions Setting
			Task Bar	Н	MI Extend	ed Attributes
Historical Events Storage			Print Setting COM1 Setting		COM2 Setting	
Туре	RS485	•	PLC Communica	1		
Baud Rate	19200	•	Protocol Time O	3		
Data Bit	8	+	Protocol Time O	3		
Parity Check	none	+	Max interval of w	2		
Stop Bit	1	-	Max interval of b	t block pack		8
E Burdhard	CEEDE		Max word block	16		
. Broadcast	00000		Max bit block pa	ckage size		64

#### **RS232** Communication **HMI Attribute** HMI System Information Text Security Levels Setting User Permissions Setting Task Bar HMI Extended Attributes HMI COM2 Setting Historical Events Storage Print Setting COM1 Setting Туре RS232 Ŧ PLC Communication Time Out 1 3 **Baud Rate** Protocol Time Out 1(ms) 19200 3 Protocol Time Out 2(ms) Data Bit 8 2 Max interval of word block pack. Parity Check none Max interval of bit block pack. 8 Stop Bit 1 Max word block package size 16 F Broadcast 65535 64 Max bit block package size Use Default Setting

### **PLC Settings**

- **Note:** The memory addresses of Twido are under dynamic management, which may lead to communication failure when address link is available. It is recommended the user to add one statement after PLC program. Only after the user has made the correct settings of the words or bits, referring to the following PLC Settings, PLC can communicate with the HMI device.
- 1. Controller Communications Setup

Controller Commun	ications Setup	
Port 1		ОК
Protocol		Cancel
<u>T</u> ype :	Modbus 💌	<u>H</u> elp
Address:	1 💌	
Parameters		
<u>B</u> audrate:	19200 💌	
<u>D</u> ata Bits:	8 (RTU) 💌	
Parity:	None	
<u>S</u> top Bits:	1 💌	
<u>R</u> esponse Timeout:	10 × 100 ms	
Inter-fra <u>m</u> e delay :	10 ms	
		Ad <u>v</u> anced

Extend the range of word memory address and change the [Auto] option in the [Assigned] column for the internal word to a larger value through the [Controller]→[Used Memory]→[Edit] and download it to the PLC. It is assumed that the "Auto" is set to 3000 as shown below, all addresses before %MW3000 can perform the data swap.

	Туре	Maximum	Allocated	Configured		
Constants	%KW	256	0	Auto 🚍		
Counters	%С	128	0	Auto		
Drums	%DR	4	0	Auto		
Fast counters	%FC	3	0	Auto		
LIFO/FIFO Registers	%R	4	0	Auto		
Memory Words	%MV	3000	0	3000		
PLS/PVVM	%PLS/%PV/M	0	0	Auto		
Shift Bit Registers	%SBR	8	0	Auto		
Schedule Blocks		16	0	Auto		
Step Counters	%SC	8	0	Auto		
Timers	%TM	64	0	Auto		
Very Fast Counters	%VFC	1	0	Auto		
KW also includes %KD and %KF, and %MW also includes %MD and %M.						

3. Extend the range of open bit address and drive the coil with a maximum address through the programming. It is assumed that a %M127 coil is driven as shown below, all addresses before %M127 can perform the data swap.

										22
0	1000									20205
	×M0									×M127
8	VI	<i>V</i> .	1	1	<i>k</i> .	. *	10.	<i>v</i> .	1	

## **3-4 Supported Registers**

Modicon TSX

Device	Bit Address	Word Address	Format	Notes
System Internal Nodes	S00000-32767		DDDDD	
Internal Auxiliary Nodes	M00000-32767		DDDDD	
Data Register Bit Nodes	MW.B0000-9999.F		DDDD.H	
Data Registers		MW0000-7999	DDDD	
Data Registers (32-bit)		MD0000-7999	DDDD	

Twido

Device	Bit Address	Word Address	Format	Notes
Internal Auxiliary Nodes	0X 1-9999		DDDD	
	1X 1-9999		DDDD	
		3X 1-9999	DDDD	
Data Registers		4X 1-9999	DDDD	

Note: The registers M and MW in TWIDO software correspond to 0X and 4X of HMI respectively. The address offset of HMI and PLC is 1.

Do not use 1X and 3X of HMI for there are no registers in TWIDO software corresponding to them. The HMI address must be "PLC address + 1". For example: The M0 in PLC corresponds to 0X1 of HMI. Address format description: D: decimal, O: octonary, H: hexadecimal.

## 3-5 Cable Fabrication

### When Using Schneider Modicon Uni-TelWay Protocol

### **RS232 Communication Cable**

Use serial port programming cable manufactured by Schneider directly to communicate with HMI. Note: Direct the middle cable knob to position 2 and add a RS232 cable directly between the HMI and programming cable.

### **RS485 Communication Cable**

	HMI connector 9pin D-SUB female	Controller connector
	COM2	8pin Mini DIN(male)
	8 RDA-	2D
- Control -	6 RDB+	1 D+
	9 SG	7 GND

## When Using Modicon modbus Protocol

### **RS232 Communication Cable**

Use serial port programming cable manufactured by Schneider directly to communicate with HMI.

Note: Direct the middle cable knob to position 3.

### **RS485 Communication Cable**



### When Using Schneider Twido Modbus RTU Protocol

### **RS232 Communication Cable**

Use serial port communication cable manufactured by Schneider directly to communicate with HMI.

### **RS485 Communication Cable**



## **Section 4 Modbus Connection**

This section describes the connection on Modbus protocol.	
4-1 Serial Port Communication	64
4-2 Communication Parameters and Cable Fabrication	64
4-3 Communication Parameter Setting	65
4-4 Supported Registers	67
4-5 Cable Fabrication	68
4-6 Example of NB as Modbus Slave	68

## **4-1 Serial Port Communication**

Series	CPU	Link Module	Driver
Modbus PTU		RS232 on the CPU unit	Modbue PTU
Moubus RTO		RS485 on the CPU unit	
		RS232 on the CPU unit	Madhua DTU Extend
Modbus RIU Extend	Modbus	RS485 on the CPU unit	Modbus RTO Exteria
Modbus RTU Slave	External Device	RS232 on the CPU unit	Modbus RTU Slave
		RS485 on the CPU unit	
		RS232 on the CPU unit	
		RS485 on the CPU unit	

## **4-2 Communication Parameters and Cable Fabrication**

Series	CPU	Link Module	СОММ Туре	Parameter	Cable
		RS232 on the	RS232	Refer to	Self-made cable
Modbus RTU		RS485 on the CPU unit	.85 on the J unit RS422		Self-made cable required
Modbus RTU		RS232 on the CPU unit	RS232	Refer to Section 4-3	Self-made cable required
Extend	Modbus Compatible	RS485 on the CPU unit	RS422	Refer to Section 4-3	Self-made cable required
Modbus RTU	External Device	RS232 on the CPU unit	RS232	Refer to Section 4-3	Self-made cable required
Slave		RS485 on the CPU unit	RS422	Refer to Section 4-3	Self-made cable required
		RS232 on the CPU unit	RS232	Refer to Section 4-3	Self-made cable required
		RS485 on the CPU unit	RS422	Refer to Section 4-3	Self-made cable required

## 4-3 Communication Parameter Setting

### **HMI Settings**

### When Using Modbus RTU Protocol

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), even (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.)

HMI		1	Task Bar	Task Bar HMI Extende		ded Attributes	
Historical E	vents Stora	age	Print Setting	COM1 Se	etting	COM2 Setting	
Туре	RS232	•	PLC Communica	ation Time Out		3	
Baud Rate	9600	•	Protocol Time O	ut 1(ms)		3	
Data Bit	8	÷	Protocol Time O	ut 2(ms)		3	
Parity Check	even	÷	Max interval of v	word block pac	:k	2	
Stop Bit	1		Max interval of b	bit block pack		8	
	0		Max word block	package size		16	
			Max bit block pa	ackage size		64	
				Use Defau	lt Setting		

- 2. The broadcast function has two usage methods:
  - A. For the components with write-only attribute (Bit State Setting component and "Toggle" excluded) and the Multiple State Setting components("Add value", "Sub value", "JOG++" and "JOG--" excluded)
  - B. Use Macro instruction in the Macro programming to perform the write operation for the address of the Broadcast Station No..

### When Using Modbus RTU Extend Protocol

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), even (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.)

HMI System	n Information	n Text	Security Level	ls Setting	Userl	Permissions Setting
HMI			Task Bar	Н	MI Extend	ed Attributes
Historical E	vents Stora	ge	Print Setting	COM1 S	etting	COM2 Setting
Туре	RS232	•	PLC Communica	tion Time Ou	t	3
Baud Rate	9600	•	Protocol Time Out 1(ms) Protocol Time Out 2(ms)			3
Data Bit	8	+				3
Parity Check	even	•	Max interval of w	vord block pa	ck	2
Stop Bit	1		Max interval of b	it block pack		8
	CEEDE		Max word block	package size	9	16
Broadcast	60000		Max bit block pa	ickage size		64

### When Using Modbus RTU Slave Protocol

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), even (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.)

- NB7W-	тиоов		о <mark>м2 1</mark> ом1	PLC0:1	RTÜ <b>S</b> lave	
MI Attribute						
HMI System	Information	n Text	Security Levels	Setting User F	Permissions Setting	
HMI		1	Task Bar	HMI Extende	ed Attributes	
Historical EV	vents Stora	ge	Print Setting	CUM I Setting	COM2 Setting	
Туре	RS232	- )	PLC Communicatio	on Time Out	1	
Baud Rate	9600	-	Protocol Time Out	1(ms)	200	
Data Bit	8	-	Protocol Time Out	2(ms)	3	
Parity Check	even	-	Max interval of wo	rd block pack	2	
Stop Bit	1		Max interval of bit	block pack	2	
	1		Max word block pa	ackage size	122	
Device No.			Max bit block pack	kage size	1952	
(It takes effect slave unit)	when HMI	as		Use Default Setting		

### When Using MODBUS ASCII Protocol

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), even (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.)

HMI System	Information Text Security Levels Setting User			User F	Permissions Setting	
HMI			Task Bar	Н	MI Extend	ed Attributes
Historical Ev	vents Stora	ge	Print Setting COM1 Setting			COM2 Setting
Туре	RS232	•	PLC Communica	tion Time Ou	t	1
Baud Rate	9600	•	Protocol Time Out 1(ms)			3
Data Bit	8	+	Protocol Time Out 2(ms) Max interval of word block pack			3
Parity Check	even	-				16
Stop Bit	1	-	Max interval of b	it block pack		32
C Dundant	05525		Max word block package size			64
Dingnease	00000		Max bit block pa	ckage size		256

## **4-4 Supported Registers**

Modbus RTU

Device	Bit Address	Word Address	Format	Notes
System Internal/External Output Nodes	0X 1-65535		DDDDD	
System Internal/External Input Nodes	1X 1-65535		DDDDD	
Analog Input Data Registers		3X 1-65535	DDDDD	
Data Registers		4X 1-65535	DDDDD	

### Modbus RTU Extend

Device	Bit Address	Word Address	Format	Notes
System Internal/External Output Nodes	0X 1-65535		DDDDD	
System Internal/External Input Nodes	1X 1-65535		DDDDD	
Analog Input Data Nodes	3X_bit 1.00-65535.15		DDDDD.DD	
Data Nodes	4X_bit 1.00-65535.15		DDDDD.DD	
4X Single Write Data Nodes	6X_bit 1.00-65535.15		DDDDD.DD	
Analog Input Data Registers		3X 1-65535	DDDDD	
Data Registers		4X 1-65535	DDDDD	
Data Registers		5X 1-65535	DDDDD	
4X Single Write		6X 1-65535	DDDDD	

Note: The bytes in 5X are displayed in reverse order.

### Modbus RTU Slave

Device	Bit Address	Word Address	Format	Notes
System Internal/External Output Nodes	LB 0-9999		DDDDD	Mapping to 0x 1~9999
Data Registers		LW 0-65535	DDDDD	Mapping to 4x 1~9999

### Modbus ASCII

Device	Bit Address	Word Address	Format	Notes
System Internal/External Output Nodes	0X 1-65535		DDDDD	
System Internal/External Input Nodes	1X 1-65535		DDDDD	
Analog Input Data Registers		3X 1-65535	DDDDD	
Data Registers		4X 1-65535	DDDDD	

Note: Address format description: D: decimal, O: octonary, H: hexadecimal.

## **4-5 Cable Fabrication**

### **RS232** Communication Cable

	HMI cor 9pin D-SU	nnector 18 female	Controller connector		
	COM1	COM2	9pin D-SUB (male)		
GICIERO	3 RD	3 RD	3 TXD		
0 1176 0	2 SD	2 SD	2 RXD		
	9 SG	9 SG	5 GND		

## 4-6 Example of NB as Modbus Slave

System description: Use CP1E-N30D []-[] (30-point I/O type) as Modbus master and 2 NB Units as Modbus slave to perform the communication.

### PLC Setting

CP1E-N30D□-□ should connect to CP1W-CIF11 module functioning as RS485 communication port. Use CX-Programmer to configure the peripheral port.

Make the communication settings as follows: 9600, 8, 1, Even and Modbus-RTU simple master.

🐨 PLC Settings - NewPLC1	
File Options Help	
Startup/CPU Settings   Timings   Input constant   Built-in RS232C Port Se	rial Option Port
Communications Settings C Standard (9600 : 1,7,2, C Custom Baud Formai Mode	Link Words
9600 (defaul 🗾  8, 1, E 🔄  Modbus-RTU simple maste 💌	10 (defaul -
Start Code C Disable C Set 0x0000 C CR, LP C Set End Code 0x0000 C Set End Code 0x0000 C Set End Code 0x0000 C Set Set End Code 0x0000 C Set	-PC Link Mode- C ALL C Master
Response Timeout NT/PC Link NT/PC Link (default	Max PC Link Unit No.
	CP1E-N30 Offline

### ♦ NB Unit Setting

We take one NB7W-TW00B and NB5Q-TW00B respectively as example with the system configuration as shown below:



NB7W-TW00B communication settings: 9600 (Baud Rate), 8 (Data Bit), 1 (Stop Bit), Even (Parity Check) and 1 (Slave No.), as shown below:

NB5Q-TW00B communication settings: 9600 (Baud Rate), 8 (Data Bit), 1 (Stop Bit), Even (Parity Check) and 2 (Slave No.)

HMI Attribute			
HMI System HMI Historical Ev	Information Text	Security Levels Setting User Task Bar HMI Extend Print Setting COM1 Setting	Permissions Setting   ed Attributes   COM2 Setting
Historical Ex Type Baud Rate Data Bit Parity Check Stop Bit Device No. (It takes effect slave unit)	Vents Storage	Print Setting     CDM1 Setting       PLC Communication Time Out     Protocol Time Out 1(ms)       Protocol Time Out 2(ms)     Max interval of word block pack       Max interval of bit block pack     Max word block package size       Max bit block package size     Use Default Setting	COM2 Setting
		10	Cancel

• Cable Fabrication



## Section 5 Connecting to Delta PLCs

This section describes the connection to Delta PLCs.	
5-1 Serial Port Communication	72
5-2 Communication Parameters and Cable Fabrication	72
5-3 Communication Parameter Setting	72
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5-5 Cable Fabrication	74

## **5-1 Serial Port Communication**

Series	CPU	Link Module	Driver
DVP	DVP-XXES/EX/SS DVP-XXSA/SX/SC	RS232 on the CPU unit	Delta DVP
	DVP-XXEH/EH2/SV	RS485 on port	

## **5-2 Communication Parameters and Cable Fabrication**

Series	CPU	Link Module	СОММ Туре	Parameter	Cable
DVP	DVP-XXES/EX/SS DVP-XXSA/SX/SC	RS232 on the CPU unit	RS232	Refer to Section 5-3	Self-made cable required
	DVP-XXEH/EH2/SV	RS485 on port	RS485	Refer to Section 5-3	Self-made cable required

## **5-3 Communication Parameter Setting**

### **HMI Settings**

HMI default communication parameters: 9600bps (Baud Rate), 7 (Data Bit), even (Parity Check), 1 (Stop Bit) and 1(PLC Station No.)

### **RS232** Communication

Secuu HMI   T	rity Level ask Bar	ls Setti HMI E:	ng   xtended Attributes	User Permissions   HMI System I:	: Setting nformation Text
Historical	Events St	orage	Print Setting	COM1 Setting	COM2 Setting
Гуре	RS232	÷	PLC Communication	Time Out	3
Baud Rate	9600	-	Protocol Time Out 1(ms) Protocol Time Out 2(ms) Max interval of word block pack Max interval of bit block pack		30
) ata Bit	7	-			3
Parity Check	even	-			5
Stop Bit	E				16
	OFFOR		Max word block pack	age size	16
bioadcast	00000		Max bit block packag	je size	64
### **RS485** Communication



Note: The communication parameters should be set through modification of D1120 value when RS485 communication is used.

### **PLC Settings**

1. You can check the different values of D1120 corresponding to the different baud rates in the "RS-485 Protocol Setting (D1120)" dialog box through selecting the "RS-485 Protocol Setting (D1120)" from the "Auxiliary Editing" menu in the "Help" menu in the Wpl207 software.

Ielp	
About WPLSoft	
Auxiliary Editing	RS-485 Protocol Setting (D1120)
PLC Instruction and Special Registers Reference	LRC/CRC Generator
WPLSoft User Index	PLC Copy Wizard
	Save Picture

Data Lengt	17		Close
Parity	None	•	
Stop Bits	1 bit	•	
Baud Rate	110 bps	•	
<u> </u>			-

2. Monitor and modify the value of D1120 after PLC is connected to Wpl207.

For example: If the communication parameters are 110bps (Baud Rate), 7 (Data Length), None (Parity) and 1 bit (Stop Bits), then D1120=H0010 (Protocol Setting).

## **5-4 Supported Registers**

Device	Bit Address	Word Address	Format	Notes
External Input Nodes	X0-23417		00000	
External Output Nodes	Y0-23417		00000	
Internal Auxiliary Nodes	M0-9999		DDDD	
Sequence Control Nodes	S0-9999		DDDD	
Timer Nodes	T0-9999		DDDD	
Counter Nodes	C0-9999		DDDD	
Timer Buffers		TV0-9999	DDDD	
Counter Buffers		CV0-127	DDD	

Counter Buffers (double-word, 32-bit)	 CV2 232-255	DDD	
Data Registers	 D0-9999	DDDD	

Note: Address format description: D: decimal, O: octonary, H: hexadecimal.

# **5-5 Cable Fabrication**

RS232 Communication Cable

	HMI co 9pin D-S	onnector UB female	Controller connector
	COM1	COM2	8 pin Mini Din (male)
	2 SD	2 SD	4 RXD 4 RXD
0	3 RD	3 SD	5 TXD
	9 SG	9 SG	8 GND

RS485 Communication Cable

HMI connector Doin D-SUB female



COM2	Controller RS-485 connecto
8 RDA-	
6 RDB+	+



# Section 6 Connecting to LG PLCs

This section describes the connection to LG PLCs	
6-1 Serial Port Communication	
6-2 Communication Parameters and Cable Fabrication	
6-3 Communication Parameter Setting	77
6-4 Supported Registers	
6-5 Cable Fabrication	

# 6-1 Serial Port Communication

Series	Туре	CPU	Link Module	Driver
Master-K	K120S	K7M-DR10UE K7M-DR20U K7M-DT30U K7M-DT40U K7M-DT60U	Port1 on CPU unit Port2 on CPU unit	LS Master-K CPU Direct LS Master-K Cnet LS Master-K Modbus RTU
	K200S	K3P-07AS	RS232 on the CPU unit	
YCT	YCB	XBC-DN64H	RS232 on the CPU unit	LS XGT CPU Direct
7.91	AGD	XBC-DR32H	Built-in RS-232C/RS-485	LS XGT Cnet

The differences between LS Master-K CPU Direct, LS Master-K Cnet and LS Master-K Modbus RTU protocols are as shown below:

Communication Protocol	PLC Settings	Supported Communication Methods	Multiple Station No.	Supported Baud Rate (bps)
LS Master-K Cnet	Tweak the pin 2 (up) of DIP switch to ON and pin 1 (low) of DIP switch to OFF	RS-232/RS-485	Supported	9600/19200/38400
LS Master-K MODBUS RTU	Tweak the pin 2 (up) of DIP switch to ON and pin 1 (low) of DIP switch to OFF	RS-232/RS-485	Supported	9600/19200/38400
LS Master-K CPU Direct	Pin 1 and pin 2 remain OFF	RS-232	Not supported	38400

## 6-2 Communication Parameters and Cable Fabrication

Series	CPU	Link Module	COMM Type	Parameter	Cable
		Port1 on CPU unit	RS232	Refer to Section 6-3	Self-made cable required
K120S	R/M-DR100E	Port2 on CPU unit	RS485	Refer to Section 6-3	Self-made cable required
K7M-DR20U	Port1 on CPU unit	RS232	Refer to Section 6-3	Self-made cable required	
	Port2 on CPU unit	RS485	Refer to Section 6-3	Self-made cable required	
K200S	K3P-07AS	RS232 on the CPU unit	RS232	Refer to Section 6-3	Self-made cable required
		RS232 on the CPU unit	RS232	Refer to Section 6-3	Self-made cable required
XGB	XBC-DN64H XBC-DR32H	Built-in RS-232C	RS232	Refer to Section 6-3	Self-made cable required
		Built-in RS-485	RS485	Refer to Section 6-3	Self-made cable required

# 6-3 Communication Parameter Setting

### **HMI Settings**

### When Using LS Master-K Cnet Protocol

HMI default communication parameters: 38400bps (Baud Rate), 8 (Data Bit), none (Parity Check), 1 (Stop Bit) and 1(PLC Station No.)

**RS232** Communication



### **RS485** Communication

Secu	rity Level	ls Setti	ng   U	ser Permissions	Setting
HMI 1	fask Bar	HMI E:	xtended Attributes	HMI System I:	nformation Tex
Historical	Events St	torage	Print Setting	COM1 Setting	COM2 Setting
јуре	RS485	•	PLC Communication Ti	me Out	1
aud Rate	38400	•	Protocol Time Out 1(ms)		30
) ata Bit	8	•	Protocol Time Out 2(ms)		3
arity Check	none	-	Max interval of word blo	ock pack	2
ton Bit	1		Max interval of bit block	k pack	2
	in the second		Max word block package size 16		16
Broadcast	65535		May bit block package	0170	16

### When Using LS Master-K CPU Direct Protocol

HMI default communication parameters: 38400bps (Baud Rate), 8 (Data Bit), none (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.)

**RS232** Communication

Secur	ity Level	ls Setti	ng	User Permissions	Setting
HMI   I Historical	ask Bar Events Si	I AMI E: torage	Print Setting	COM1 Setting	COM2 Setting
Туре	RS232	÷	PLC Communication 1	lime Out	3
Baud Rate	38400	•	Protocol Time Out 1(ms)		50
Data Bit	8	-	Protocol Time Out 2(ms) Max interval of word block pack Max interval of bit block pack Max word block package size		1
Parity Check	none	-			8
Ston Bit	1				16
- Prondonal	65525				32
Dioducast			Max bit block packag	e size	64

Note: LS Master-K CPU Direct protocol only supports communication speed of 38400bps.

### When Using LS Master-K Modbus RTU Protocol

HMI default communication parameters: 38400bps (Baud Rate), 8 (Data Bit), none (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.)

### **RS232** Communication

Secur HMI   T	ity Leve ask Bar Events St	ls Setti   HMI E	ng   User Permission: xtended Attributes   HMI System I   Print Setting   COMI Setting	: Setting nformation Tex COM2 Settins
historical	Events 5	torage	Frint Setting   Comi Setting	COME Detting
Туре	RS232	+	PLC Communication Time Out	1
Baud Rate	38400	-	Protocol Time Out 1(ms)	3
Data Bit	8	-	Protocol Time Out 2(ms)	3
Parity Check	none		Max interval of word block pack	2
Stop Bit	1		Max interval of bit block pack	8
			Max word block package size	16
Broadcast	60030		Max bit block package size	64

## When Using LS XGT CPU Direct Protocol

HMI default communication parameters: 115200bps (Baud Rate), 8 (Data Bit), none (Parity Check), 1 (Stop Bit) and 0 (PLC Station No.)

### **RS232** Communication

Secur	ity Level	s Setti	ng User	r Permissions	Setting
HMI T:	ask Bar	HMI E	xtended Attributes	HMI System In	formation Tex
Historical	Events St	orage	Print Setting   CO	M1 Setting	COM2 Setting
Туре	RS232	Ŧ	PLC Communication Time	Out	5
Baud Rate	115200	•	Protocol Time Out 1(ms)		50
Data Bit	8	-	Protocol Time Out 2(ms)		3
Parity Check	none	-	Max interval of word block	. pack	2
Stop Bit	1	-	Max interval of bit block pa	ack	2
	PERPE		Max word block package	size	16
Bioadcast	60000		May bit block package siz	e	16

Note: LS XGT CPU Direct protocol only supports communication speed of 115200bps and the Multiple Station No. is not supported.

### When Using LS XGT Cnet Protocol

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), none (Parity Check), 1 (Stop Bit) and 0 (PLC Station No.)

#### **RS232** Communication

Secu	rity Level	ls Setti	ng User Permission	s Setting		
HMI 1	fask Bar	HMI E	xtended Attributes   HMI System 3	ites   HMI System Information Text		
Historical	Events St	torage	Print Setting   COM1 Setting	COM2 Setting		
Туре	RS232	÷	PLC Communication Time Out	5		
Baud Rate	9600	•	Protocol Time Out 1(ms)	50		
Data Bit	8	-	Protocol Time Out 2(ms)	3		
Parity Check	none		Max interval of word block pack	2		
Stop Bit	1	i i	Max interval of bit block pack	2		
	PERPE		Max word block package size	16		
Bioadcast	00000		Max bit block package size	16		

#### **RS485** Communication

Secu	rity Level	ls Setti	ng 🔰 User Permis	sions Setting
HMI T	ask Bar	HMI E:	xtended Attributes   HMI Sys	tem Information Tex
Historical	Events St	orage	Print Setting   COM1 Sett	ing COM2 Setting
Туре	RS485	+	PLC Communication Time Out	5
Baud Rate	9600	-	Protocol Time Out 1(ms)	50
Data Bit	8	-	Protocol Time Out 2(ms)	3
Parity Check	none	-	Max interval of word block pack	2
Stop Bit	1	-	Max interval of bit block pack	2
	OCEOC		Max word block package size	16
bioadcast	00000		Max bit block package size	16

### **PLC Settings**

### When Using LS Master-K Cnet Protocol

The software settings are as shown below (Please pay attention to the settings on the right selection area.):

Basic Interrupt CommCh0 CommCh1 PID(	TUN) PID(CAL)	Position	Analog	HSC ChO	HSC
Communication Enable Communication Method Station 1 Baud Rate : 38400 Parity Bit : None Communication Channel (• RS485	-Protocol and Mod Tin Dedicated © <u>Slave</u> © LG INV Modbus © Master © Slave User © Master © Slave No Pro	le meout in Mas Read Str ERTER Tran	ter Mode:	500 ms /e List RTU(Hex) List	×

#### When Using LS Master-K Modbus RTU Protocol

The software settings are as shown below (Please pay attention to the settings on the right selection area.):

暮Parameter [Auto-Saved Project]				-	
Basic Interrupt CommCh0 CommCh1 PID(	TUN) PID(CAL)	Position	Analog	HSC ChO	HSCC
Communication Method Station 1 Baud Rate : 38400 Parity Bit : None Communication Channel (* KS485)	Protocol and Mod Ti Dedicated Master Slave LG IN Modbus Master Slave User Slave C Master Slave No Pro	le meout in Mas Read State ERTER Tran	tter Mode:   atus of Slav	500 ms e List RTU(Hex) List	

The "Cannot Change PLC Mode" will appear when [Connect+Write+Run+Monitor Start] is clicked, then manual control is needed and download operation is available only when the RUN light is OFF. After the download operation is completed, the RUN light should maintain ON.

### When Using LS XGT Cnet Protocol

1. Set the communication parameters through the [Tools]—[Network Manager] menu option.

	🗐 💷 🕮 🔏 🗳 St	andard Sett	ings - Cnet			
	-хвсн)	Communication s	settings			
D Bas	seOO: Default		Channel		Channel	
	00: Embedded Cnet	Type:	RS232C	~	RS485	~
	02: Empty slot	Speed:	9600	~	9600	~
	04: Empty slot	Data bit:	8	~	8	~
	05: Empty slot 06: Empty slot	Stop	1	~	1	~
	07: Empty slot 08: Empty slot	Parity	NONE	~	NONE	~
	09: Empty slot	Modem type:	Null Modem	~	Null Modem	~
	TO. Empty SIDE	Modem Triticliza:				
		Station	0		0	
		Time settings- Time out:	1		1	
		(0-50) (*100ms	*		*	
		Delay time:	0		0	-
		(U-255)(*10ms) Waiting time:	1			
		(0-255) (*10ms)	1		1	
Debug Tools Mindow Help	🔟 High   🔟 P2P	Active mode				
2 Setwork Manager		Channel	XGT server		Modbus Sett	ings
E A		Channel	XGT server		Modbus Sett	ings
<u>Customize</u>						
SF5 SF6 Ontions					OK Ca	ncel
D CONTRACTOR OF CONTRACTOR OFO						

2. PLC must operate in [OPR] mode, which can be set on PLC.

## 6-4 Supported Registers

1205 K/M-DR100E				
Device	Bit Address	Word Address	Format	Notes
I/O Relay	P 0.0-63.f		DD.H	
Auxiliary Relay	M 0.0-191.f		DDD.H	
Link Relay	L 0.0-63.f		DD.H	
Keep Relay	K 0.0-31.f		DD.H	
Special Relay	F 0.0-31.f		DD.H	
Timer		T 0-255	DDD	
Counter		C 0-255	DDD	
Data Register		D 0-4999	DDDD	

#### K120S K7M-DR10UE

Note: For bit registers, if the address in PLC is F01, then the address in HMI should be set to F0.1; and if the address in PLC is F2A, then the address in HMI should be set to F2.A, and the others can be deduced according to this rule.

LS XGT Cnet			
Device	Bit Address	Word Address	Format
File Relay	R_bit 0.0-10239.F		DDDDD.H
Data Relay	D_bit 0.0-10239.F		DDDDD.H
Communication Relay	N_bit 0.0-5119.F		DDDD.H
Link Relay	L_bit 0.0-2047.F		DDDD.H
Index Relay	Z_bit 0.0-127.F		DDD.H
Counter Contact Relay	C_bit 0-1023		DDDD
Timer Contact Relay	T_bit 0-1023		DDDD
Special Relay	F_bit 0.0-1023.F		DDDD.H
Keep Relay	K_bit 0.0-4095.F		DDDD.H
Auxiliary Relay	M_bit 0.0-1023.F		DDDD.H
I/O Relay	P_bit 0.0-1023.F		DDDD.H
File Register		R_word 0-10239	DDDDD
Data Register		D_ word 0-10239	DDDDD
Communication Register		N_ word 0-5119	DDDD
Link Register		L_ word 0-2047	DDDD
Step Control Register		S_ word 0-127	DDD
Index Register		Z_ word 0-127	DDD
Counter		C_ word 0-1023	DDDD
Timer		T_ word 0-1023	DDDD
Special Register		F_ word 0-1023	DDDD
Keep Register		K_ word 0-4095	DDDD
Auxiliary Register		M_ word 0-1023	DDDD
I/O Register		P_ word 0-1023	DDDD

Note: T\_bit and C\_bit registers do not support batch transmission.

Address format description: D: decimal, O: octonary, H: hexadecimal.

## LS XGT CPU Direct

Device	Bit Address	Word Address	Format
File Relay	R_bit 0.0-10239.F		DDDDD.H
Data Relay	D_bit 0.0-10239.F		DDDDD.H
Communication Relay	N_bit 0.0-5119.F		DDDD.H
Link Relay	L_bit 0.0-2047.F		DDDD.H
Index Relay	Z_bit 0.0-127.F		DDD.H

	ZR_bit 0.0-10239.F		DDDDD.H
Counter Contact Relay	C_bit 0-1023		DDDD
Timer Contact Relay	T_bit 0-1023		DDDD
Special Relay	F_bit 0.0-1023.F		DDDD.H
Keep Relay	K_bit 0.0-4095.F		DDDD.H
Auxiliary Relay	M_bit 0.0-1023.F		DDDD.H
I/O Relay	P_bit 0.0-1023.F		DDDD.H
File Register		R 0-10239	DDDDD
Data Register		D 0-10239	DDDDD
Communication Register		N 0-5119	DDDD
Link Register		L 0-2047	DDDD
Step Control Register		S 0-127	DDD
Index Register		Z 0-127	DDD
		ZR 0-10239	DDDDD
Counter Set Value		C_SV 0-1023	DDDD
Timer Set Value		T_ SV 0-1023	DDDD
Counter Current Value		C_CV 0-1023	DDDD
Timer Current Value		T_ CV 0-1023	DDDD
Special Register		F 0-1023	DDDD
Keep Register		K 0-4095	DDDD
Auxiliary Register		M 0-1023	DDDD
I/O Register		P 0-1023	DDDD

Note: Address format description: D: decimal, O: octonary, H: hexadecimal.

# 6-5 Cable Fabrication

## When Using LS Master-K Cnet/LS Master-K Modbus RTU Protocol

HMI connector

HMI connector

RS232 Communication Cable

-			-	
0	5 4 3	2.1	0	
-			-	Ļ
				Г

9pin D-SUI	B female	Controller cont	Lootox
COM1	COM2	9 pin D-SUB (I	nale)
2 SD	2 SD	4 RX	(TENTO)
3 RD	3 RD	7 TX	9 1711 9
9 SG	9 SG	5 GND	

RS485 Communication Cable



COM2	Controller RS485 connector
8 RDA-	-
6 RDB+	+

# When Using LS Master-K CPU Direct Protocol

RS232 Communication Cable

	HMI con 9pin D-SUI	nector B female	Controllor compositor
_	COM1	COM2	9 pin D-SUB (male)
54321	3 RD	3 RD	4 RX
9 8 7 6 0	2 SD	2 SD	7 TX 9 9 7 8 8
	9 SG	9 SG	5 GND

## When Using LS XGT CPU Direct Protocol

RS232 Communication Cable

HMI connector





6 TX

2 RX



### When Using LS XGT Cnet Protocol

RS232 Programming Cable

PC connector 9nin D-SUB female

0	54321	
0		
		H

COM2	6 pin Mini Din (n	
3 RD	6 TX	
2 SD	2 RX	
9 SG	3 GND	

ctor ale)



**RS232** Communication Cable

HMI connector

9pin D-SUB female

Controller connector	and the second	0.74842.0492.328
	COM2	COM1
TX	3 RD	3 RD
RX	2 SD	2 SD
SG	9 SG	9 SG

RS485 Communication Cable

HMI connector **9pin D-SUB female** 



COM2	Controller connector		
8 RDA -	485-		
6 RDB +	485+		
9 SG	SD		

# Section 7 Connecting to Panasonic PLCs

This section describes the connection to Panasonic PLCs.	
7-1 Serial Port Communication	
7-2 Communication Parameters and Cable Fabrication	
7-3 Communication Parameter Setting	
7-4 Supported Registers	
7-5 Cable Fabrication	

# 7-1 Serial Port Communication

Series	CPU	Link Module	Driver	
		Tool port on the Control unit		
	FP	AFPG801		
		AFPG802		
		AFPG803		
		AFPG806		
	FP0	Tool port on the Control unit		
	FP1 FP-M	RS232C port on the Control unit		
		Tool port on the Control unit		
	FP2	RS232C port on the Control unit		
	FP2SH	AFP2462		
		AFP2465+(AFP2803,AFP2804, FP2805)		
FΡ	FP3	Tool port on the Control unit	Panasonic FP	
		AFP3462		
		Tool port on the Control unit		
		AFPE224300		
		AFPE224302		
	FF-6	AFPE224305		
		AFPE214322		
		AFPE214325		
		Tool port on the Control unit		
	FP10SH FP10S	RS232C port on the Control unit		
		AFP3462		
	FP-X	RS232C port on the Control unit		

# 7-2 Communication Parameters and Cable Fabrication

Series	CPU	Link Module	СОММ Туре	Parameter	Cable
FP	FP	Tool port on the Control unit		Defeate	Self-made cable required
		AFPG801	RS232C	Refer to	Solf made cable
		AFPG802		Section 7-5	
		AFPG806			required
		AFPG803	RS485	Refer to	Self-made cable

	AFPG806			Section 7-3	required	
	Tool port on the	Control unit			Self-made cable	
FP0			RS232C	Refer to	required	
110	RS232C port of	n the Control unit	102020	Section 7-3	Self-made cable	
					required	
	Tool port on the Control unit M RS232C port on the Control unit				Self-made cable	
FP1 ED M			RS232C	Refer to		
				Section 7-3	Self-made cable	
					Self-made cable	
	Tool port on the	e Control unit			required	
	RS232C port of	n the Control unit	RS232C	Refer to		
	AFP2462		1	Section 7-3	Self-made cable	
FP2		AFP2803			required	
FP2SH			D0 400	Refer to	Self-made cable	
	AFP2465	AFP2804	RS422	Section 7-3	required	
	Γ		RS485	Refer to	Self-made cable	
		AFF2005		Section 7-3	required	
	Tool port on the Control unit				Self-made cable	
			RS232C	Refer to	required	
FP3	AFP3462			Section 7-3	Self-made cable	
	AFP3463		RS422	Defer to	required	
				Relef to	Sell-Made cable	
				36010117-3	Self-made cable	
	Tool port on the Control unit		RS232C		required	
	AFPE224300			Refer to		
FP-e	AFPE214325		RS232C	Section 7-3	Self-made cable	
	AFPE224305				required	
	AFPE224302		D0.405	Refer to	Self-made cable	
	AFPE214322		K3400	Section 7-3	required	
	Tool port on the	Control unit			Self-made cable	
FP10SH			RS232C	Refer to	required	
FP10S	RS232C port on the Control unit		102020	Section 7-3	Self-made cable	
	AFP3462				required	
FP-X	RS232C port of	n the Control unit	RS232C	Refer to	Self-made cable	
				Section 7-3	required	

Note: 1. Only FP0 (C10CRM/C10CRS/C14CRM/C14CRS/C16T/C16CP/C32CT/C32CP) has RS232C communication port.

2. Only FP1 (C24/C40/C56/C72) has RS232C communication port.

3. Only FP1 (C20R/C20T/C32T) has RS232C communication port.

4. AFP245 is the combination of multi-communication of FP2/FP2SH. AFP2803, AFP2084 and AFP2085 are the communication modules connecting to AFP2465.

# 7-3 Communication Parameter Setting

### HMI Settings

HMI default communication parameters: 9600bps (Baud Rate), 8 (Data Bit), odd (Parity Check), 1 (Stop Bit) and 1 (PLC Station No.)

RS232 Communication



#### RS485 Communication

Secu	rity Level	ls Setti	ng User Permissions	s Setting
HMI 1	fask Bar	HMI E	xtended Attributes   HMI System I	nformation Tex
Historical	Events St	torage	Print Setting   COM1 Setting	COM2 Setting
Гуре	RS485	•	PLC Communication Time Out	3
Baud Rate	9600	•	Protocol Time Out 1(ms)	50
) ata Bit	8	•	Protocol Time Out 2(ms)	0
Parity Check	odd	-	Max interval of word block pack	8
iton Bit	1	-	Max interval of bit block pack	128
	PEEDE		Max word block package size	16
Broadcast	60000		May bit block package size	256

### RS422 Communication



#### PLC Settings

Please refer to relevant instruction manual of communication device on parameter settings.

# 7-4 Supported Registers

FP0-C16

Device	Bit Address	Word Address	Format	Notes
External Output Nodes	Y0.0-12.F		DD.H	
External Input Nodes	X0.0-12.F		DD.H	
Timer Nodes	T0-99		DD	
Counter Nodes	C100-143		DDD	
Internal Auxiliary Nodes	R0.0-62.F R900.0-903.F		DD.H DDD.H	
Setting Value Registers for Timer/Counter		SV0-143	DDD	
Actual Value Registers for Timer/Counter		EV0-143	DDD	
Data Registers		DT0-1659	DDDD	

### FPX

Device	Bit Address	Word Address	Format	Notes
External Input Nodes	X0.0~109.F		DDD.H	
External Output Nodes	Y0.0~109.F		DDD.H	
Timers	T0~1007		DDDD	
Counters	C1008~1023		DDDD	
Link Nodes	L0.0~127.F		DDD.H	
Internal Nodes	R0.0~255.F R900.0~911.F		DDD.H	
Actual Value Registers for Timer/Counter		EV0~1023	DDDD	
Setting Value Register for Timer/Counter		SV0~1023	DDDD	
Data Registers		DT0~32764	DDDDD	

Note: 1. For X registers, if the address in PLC is X01,then the address in HMI should be set to X0.1; and if the address in PLC is X1F, then the address in HMI should be set to X1.F and Y, R registers can be deduced according to this rule.

2. The address range of EV register in HMI can be set to 32767 (max.), while the protocol only supports 9999 (max.).

3. Address format description: D: decimal, O: octonary, H: hexadecimal.

# 7-5 Cable Fabrication

### **RS232** Communication Cable

Tool port:



HMI	conn	ector
9pin D.	SUB	femal

9pin D-SUB femaleController connectorCOM1COM25 pin Mini Din (male)2 SD2 SD3 RXD3 RD3 RD2 TXD9 SG9 SG1 GND

CPU port:

HMI connector



COM1 COM2		Controller connector FP0 CPU RS232	
3 RD	3 RD	S	
9 SG	9 SG	G	

Module port:



 COM1
 COM2

 2 SD
 2 SD

 3 RD
 3 RD

 9 SG
 9 SG

HMI connector

#### Controller connector CPU RS232 9pin male

3 RXD

2 TXD

7 GND

4 RTS 5 CTS 8 CD 9 ER



**RS485** Communication Cable



oin D-SUB female	Controller connector	
COM2	RS485	
8 RDA-		
6 RDB+	+	

### **RS422** Communication Cable

FP3 RS422 programming port:



#### RS422 communication port for other modules:

HMI connecotr 9pin D-SUB female



	COM2	Controller connector RS422 9 pin D-SUB male
	8 RDA-	4 SD-
0	6 RDB+	2 SD+
	7 SDA-	5 RD-
	1 SDB+	3 RD+

# Section 8 List for All PLCs Supported by NB Series

This section lists all PLCs supported by NB Units.	
8-1 Lists for Supported PLC	93

# 8-1 Lists for Supported PLC

Names Displayed in NB-Designer	PLC Models	PLC Manufacturers
Delta DVP	DVP-xxES/EX/SS	Delta
	DVP-xxSA/SX/SC	
	DVP-xxEH/EH2/SV	
LS Master-K Cnet	K120s	LG
	K200s	
LS Master-K CPU Direct	K120s	
	K200s	
LS Master-K Modbus RTU	K120s	
	K200s	
LS XGT CPU Direct	XGT	
	XGB	
LS XGT Cnet	XBC-DN64H	
	XBC-DR32H	
Mitsubishi FX0N/1N/2N/3G	FX0N	Mitsubishi
	FX1N	
	FX2N	
	FX3G	
	FX1NC	
	FX2NC	
Mitsubishi FX1S	FX1S	
Mitsubishi FX2N-10GM/20GM	FX2N_10GM	
	FX2N_20GM	
Mitsubishi FX3U	FX3U	
	FX3UC	
Mitsubishi FX-485ADP/485BD/232BD		
(Multi-station)	FX-403ADF/403BD/232BD	
Mitsubishi Q Series (CPU Port)	Q02 CPU	
	Q02H CPU	
	Q12H CPU	
	Q25H CPU	

Names Displayed in NB-Designer	PLC Models	PLC Manufacturers
Mitsubishi Q_QnA (Link Port)	Q00 CPU	Mitsubishi
	Q01 CPU	
	QJ71C24 module	
	QJ71C24-R2 module	
	QJ71C24N module	
	QJ71C24N-R2 module	
	QJ71C24N-R4 module	
Mitsubishi Q00J (CPU Port)	Q00J	
Mitsubishi Q06H	Q06H CPU	Mitsubishi
Modbus ASCII	Modbus Compatible External Device	Modbus
Modbus RTU	Modbus Compatible External Device	
Modbus RTU Extend	Modbus Compatible External Device	
Modbus RTU Slave	Modbus Compatible External Device	
Omron C Series	С200Нα	Omron
	CQM1H	
	CPM1*/2*	
Omron CJ_CS Series	CS1*/CJ1*/CJ2*	
Omron CP1H/L/E	CP1H/L/E	
Panasonic FP	FP0/FP1/FP2/FP3	Panasonic
	FP2SH	
	FP10SH/FP10S	
	FP-M	
	FP-e	
	FP-X	
Schneider Modicon Uni-TelWay	Micro Series	Schneider
	Premium Series	
	Nano Series	

Names Displayed in NB-Designer	PLC Models	PLC Manufacturers
Schneider Twido Modbus RTU	TWD LCAA 10DRF	Schneider
	TWD LCAA 16DRF	
	TWD LCAA 24DRF	
	TWD LMDA 20DTK	
	TWD LMDA 20DUK	
	TWD LMDA 20DRT	
	TWD LMDA 40DTK	
	TWD LMDA 40DUK	
Siemens S7-200	CPU212/214/215/216	Siemens
	CPU221/222/224/226	
	CPU224 XP CN	
	CPU226 XP CN	
SIEMENS S7-300/400 (PC Adapter	CPU312IFM/CPU313/CPU313C	
Direct)	CPU314IFM/CPU314	
	CPU315/CPU315-2 DP	
	CPU316/CPU316-2 DP	
	CPU318-2	
	CPU412-1/CPU412-2 DP	
	CPU413-1/CPU413-2 DP	
	CPU414-1/CPU414-2 DP/CPU414-3 DP	
	CPU416-1/CPU416-2 DP/CPU416-3 DP	
	CPU417-4	