OMRON

NB PROGRAMMABLE TERMINAL SERIES

The feature-rich, economic programmable terminal

» Quality color display with LED backlighting

» Complete HMI family

» Comprehensive features

realizing

A complete HMI family...

Omron's new NB HMI series is simply as smart and as dependable as it looks. A feature-rich HMI with Omron's high quality extending throughout the complete series, this new HMI generation offers you the utmost in reliability. The logical choice for use with Omron's popular CP1 family of compact machine controllers, the NB series has just the right model to suit your application, no matter for what branch of industry.

Available with screen sizes from 3.5 to 10 inches, the NB series is not only complete, but also has many outstanding design features that will make it easy to create attractive HMI applications.

The combination of high quality and rich features add up give outstanding value for an HMI in the economy class. The NB-Designer software to create your HMI application is free of charge and can be downloaded from our website.

with comprehensive features

Best-in-class display

The robust TFT, color touch LCD gives excellent visibility and features long-life (50,000 hours) LED backlighting. Screen sizes range from 3.5 to 10 inches.

• LED backlighted TFT LCD
• Wide viewing angle
• More than 65,000 display colors
• Stores up to 120 MBs of screen data

Smart design

When developing the NB series, we considered every aspect of the design to give you maximum flexibility. A typical example is the portrait or landscape display mode.

• Portrait or landscape display mode
• Connection to Omron and non-Omron devices, e.g. PLCs/ inverters
• Serial, USB or Ethernet connectivity
• PictBridge printer connection

Saves you time

The NB series has many useful features that will make it easy to create and maintain your projects, such as the USB memory stick support.

• USB memory stick support
• Animations and easy-to-use functions
• Multi-language support and tool
• On/off-line simulation

Turn your idea into an application...

The NB series gives you all the features and functionality to easily create intuitive operator screens really quickly. Features such as window handling give you many screen-creation possibilities, while texts can be defined in up to 32 languages. Furthermore, off-line simulation enables you to quickly test your project.

Flexible window handling

Your scope to create screens for your project using the familiar window concept was never greater than with the NB series. Three standard windows maximize your creative freedom: 1) Basic for general or pop-up screens, 2) Common for fixed or template screens and 3) Fast Selection for menu screens. Besides the standard window, you can also show 'window-in-window' using the indirect window component. And you can manage pop-up windows using the direct window component. Furthermore, the NB series also supports bottom windows and transparency for pop-up windows.

Extensive language support

Currently supporting 32 languages, you will find it easy to manage texts with the NB series. Thanks to the Text Library function, you can store the texts used many times in a project. Similarly, you can also store the text for a component supporting multiple states (ON/OFF), using a text for each state. And you can do this together with the font setting for each language.

exactly how you want it!


Easy remote access

Now NB series gives you a possibility to monitor from remote. You can use your PC or Tablet PC to see what's going on your HMI. No extra software is needed to install, just start your web browser and specify the NB device you want to see. Now you have your NB screen right in front of you where ever you are. Also you can operate your screen as required.

Support OS	Support web browser
Windows7/8	Internet Explorer8/9/10
iOS.6x	Safari6
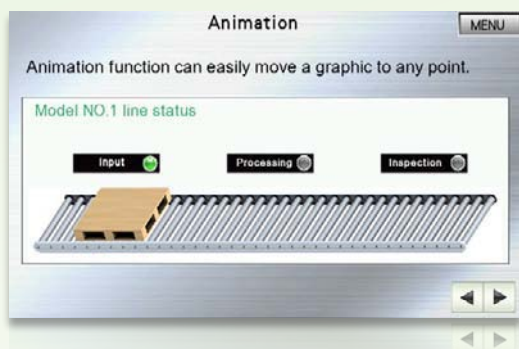
Easy animation

The NB series gives you many possibilities to create animations easily and quickly. Moving components can be created easily and in many ways. For example, you may want to show a different status with text and graphics, or showing free or trajectory movement while changing the displayed graphic. All of this can be done by simply configuring the status, X/Y coordinates and corresponding address.
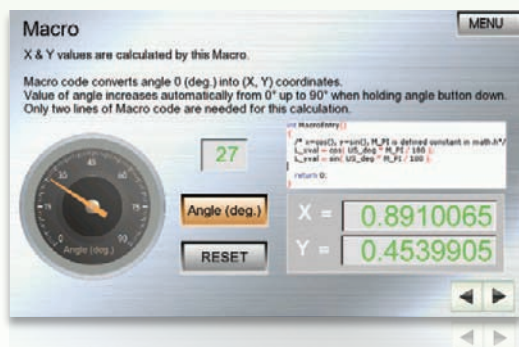
Powerful Macros

Thanks to its powerful macros, the NB series also allows you to do even more, such as perform calculations and comparisons or iterations, and mathematical functions. It also enables you to draw graphics and patterns on the NB screen, as well as writing / reading a value from or to the local memory and the memory of a connected device.

The logical choice for your machine

The feature-rich NB series has everything you will need for creating applications for a wide range machines and in many industries, for example, packaging, food, plastics and textiles. From a simple lid placing or loading/unloading machine right up to an in-line filling or sealing /labeling packaging machine. And last but not least, Omron's latest NB-Designer software can be downloaded free of charge and at any time from our website.

Always informed about alarms

Event monitoring (alarming) is both flexible and easy to use. Not only do you have the possibility to enter bit and word alarms for on/off or on-condition triggering, there is also the possibility to use different fonts and color to indicate varying degrees of status and priorities. Specific alarms are indicated with an audible buzzer sound, as well as by an accompanying text message, and you can even create pop-up alarms for situations where immediate action has to be taken.
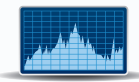
Easy data presentation

Graphical representation of real-time and historical data is easy with the NB series. As well as display of time sampling and trending data, you have the option to save sampling data (max. 16 consecutive words) of basic real-time trending data. And you can plot using x/y coordinates, in which case sampling can be done via single or multiple points and with historical data. Furthermore, data can be presented in a variety of ways, such as sampling points using x and y components.

Multiple security options

Protecting your developed project with a password using the NB series is both a simple and secure matter. Among the comprehensive security options is the possibility to define up to 16 minimum security levels on screens, buttons and inputs, and you can set up to 32 specific permission controls for each operator. There is also a register condition (bit/word) control for a check of actual condition against a predefined value, and a standard operator confirmation check to confirm that critical actions have been performed by the operator.

Direct connection with safety

The NB series can be directly connected to Omron's G9SP Safety Controller via RS-232C serial communications.
Direct connection allows you to easily monitor details of errors that occur in the G9SP series and operation status, which contributes to reduce machine downtime. Now you do not need to create the program that was previously required for data exchange between the G9SP and HMI through PLC.

The perfect partner for CP1

With its large range of screen sizes, ample specifications, rich functionality and proven Omron high quality, the new NB series has everything you need in a compact HMI to accompany Omron's popular CP1 Compact Machine Controller range. The CP1 offers increasing degrees of sophistication to perfectly match your specific automation requirement and connection to the NB series is possible via Serial or Ethernet. Similarly, data transfer of recipes between HMI and PLC (with data back-up to external memory if required) is easy and the recipe screen format is freely selectable, or can be a standard table if preferred.
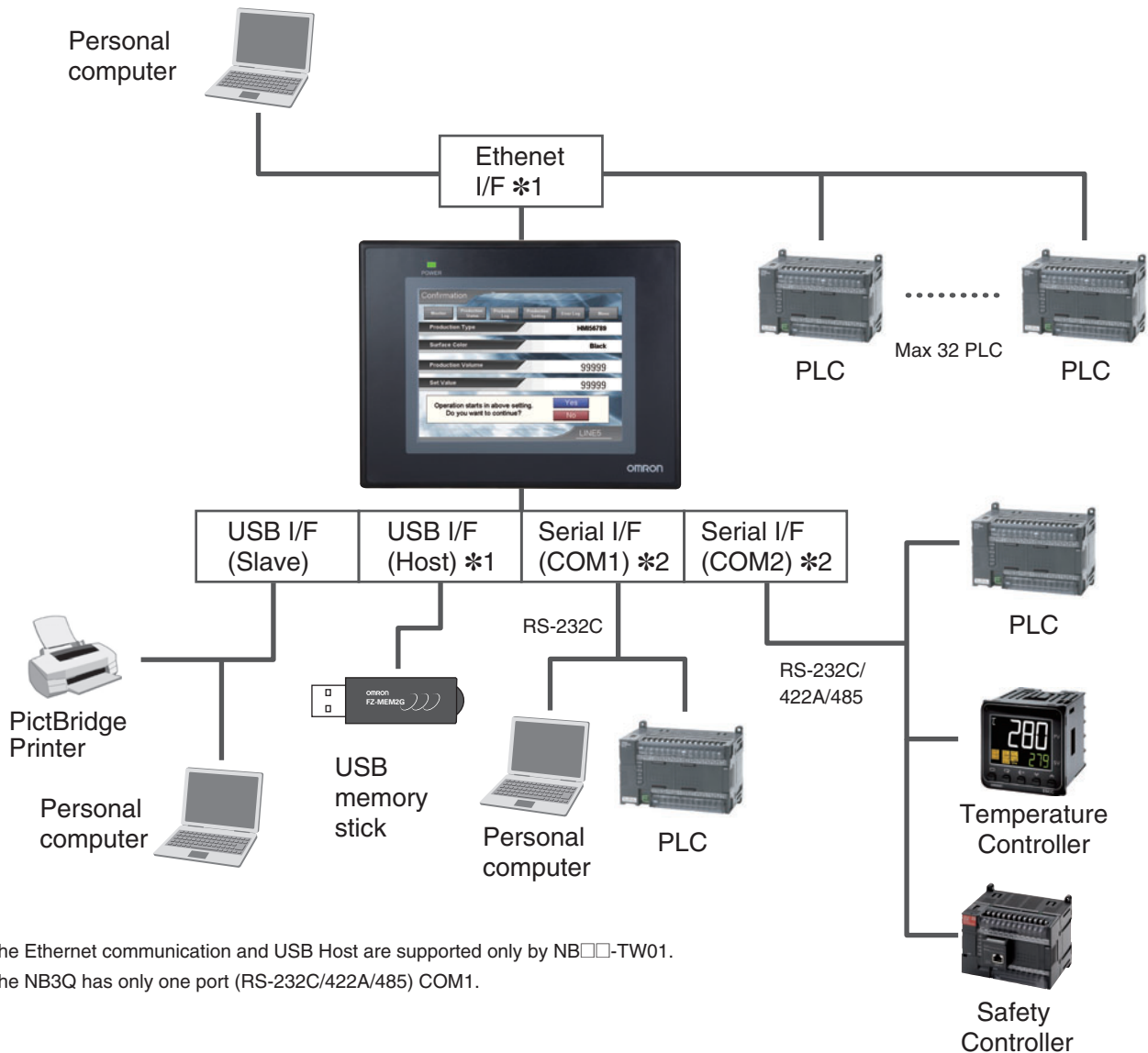
NB series

The feature-rich, economic programmable terminal

- More than 65,000 display colors TFT, color touch-screen for all models
- Available in sizes ranging from 3 to 10 inches
- Long-life LED backlight
- Serial, USB or Ethernet communication
- USB memory stick support

System Configuration

Personal computer

Ethenet I/F ∗1

PLC

Max 32 PLC

PLC

USB I/F (Slave)	USB I/F (Host) ∗1	Serial I/F (COM1) ∗2	Serial I/F (COM2) ∗2

RS-232C

RS-232C/ 422A/485

PLC

PictBridge Printer

USB memory stick

Personal computer

PLC

Personal computer

Temperature Controller

Safety Controller

∗1. The Ethernet communication and USB Host are supported only by NB□□-TW01.
∗2. The NB3Q has only one port (RS-232C/422A/485) COM1.

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The product photographs and figures that are used in this catalog may vary somewhat from the actual products.

Ordering Information

Programmable Terminals

Product name	Specifications	Model
NB3Q	3.5 inch, TFT LCD, Color, 320 × 240 dots	**NB3Q-TW00B**
	3.5 inch, TFT LCD, Color, 320 × 240 dots, USB Host, Ethernet	**NB3Q-TW01B**
NB5Q	5.6 inch, TFT LCD, Color, 320 × 234 dots	**NB5Q-TW00B**
	5.6 inch, TFT LCD, Color, 320 × 234 dots, USB Host, Ethernet	**NB5Q-TW01B**
NB7W	7 inch, TFT LCD, Color, 800 × 480 dots	**NB7W-TW00B**
	7 inch, TFT LCD, Color, 800 × 480 dots , USB Host, Ethernet	**NB7W-TW01B**
NB10W	10.1 inch, TFT LCD, Color, 800 × 480 dots , USB Host, Ethernet	**NB10W-TW01B**

Options

Product name	Specifications	Model
Software	Supported Operating Systems: Windows 8, Windows 7, Windows Vista®, Windows XP (SP3 or higher). **Note:** Except for Windows XP 64-bit version Download from Omron's regional websites.	**NB-Designer ✱**
NB-to-PLC Connecting cable	For NB to PLC via RS-232C (CP/CJ/CS), 2m	**XW2Z-200T**
	For NB to PLC via RS-232C (CP/CJ/CS), 5m	**XW2Z-500T**
	For NB to PLC via RS-422A/485, 2m	**NB-RSEXT-2M**
Display protective sheets	For the NB3Q contains 5 sheets	**NB3Q-KBA04**
	For the NB5Q contains 5 sheets	**NB5Q-KBA04**
	For the NB7W contains 5 sheets	**NB7W-KBA04**
	For the NB10W contains 5 sheets	**NB10W-KBA04**
Attachment	Mounting bracket for NT31/NT31C series to NB5Q series	**NB5Q-ATT01**

Note: Use a standard USB cable (Type A male to Type B male) or standard Ethernet cable (10 BASE-T/100 BASE-TX twisted-pair cable) to connect the NB series to software (personal computer).
Use a standard Ethernet cable (10 BASE-T/100 BASE-TX twisted-pair cable) to connect the NB series to a PLC. For detail, refer to the NB Series Setup Manual (Cat. No. V107).

✱ The NB5Q-TW01B and NB7W-TW01B are supported by NB-Designer version 1.10 or higher.
✱ The NB3Q-TW0☐B and NB10W-TW01B are supported by NB-Designer version 1.20 or higher.

System Configuration

Items	Minimum Configurations
Operating System (OS)	Microsoft Windows XP (SP3 or higher) Microsoft Windows Vista (32-bit or 64-bit edition) Microsoft Windows 7 (32-bit or 64-bit edition) Microsoft Windows 8 (32-bit or 64-bit edition)
CPU	Windows computers with CPU recommended for OS
Memory	512 MB or more
Hard Disk	2.5 GB or more, with the disk space more than 800 MB at least
Display	Supports the display with resolution of 800x600 and 16-bit high color (1024x768 and 32-bit true color are recommended.) .
Communication ports	RS-232C Port, USB Port, Ethernet Port

Recommended USB Memory

Product name	Specifications	Model
USB memory stick	Capacity: 2 GB	**FZ-MEM2G**
	Capacity: 8 GB	**FZ-MEM8G**

NB Series

Specifications

HMI

Specifications	NB3Q		NB5Q		NB7W		NB10W
	TW00B	TW01B	TW00B	TW01B	TW00B	TW01B	TW01B
Display type	3.5" TFT LCD		5.6" TFT LCD		7" TFT LCD		10.1" TFT LCD
Display resolution (H x V)	320 × 240		320 × 234		800 × 480		800 × 480
Number of colors	65,536						
Backlight	LED						
Backlight lifetime	50,000 hours of operating time at the normal temperature (25 °C)✽						
Touch panel	Analog resistance membrane, resolution 1024 × 1024, life: 1 million touch operations						
Dimensions in mm (H × W × D)	103.8 × 129.8 × 52.8		142 × 184 × 46		148 × 202 × 46		210.8 × 268.8 × 54.0
Weight	300 g max.	305 g max.	620 g max.	627 g max.	710 g max.	715 g max.	1525 g max.

✽ This is the estimated time when the luminous intensity is decreased by 50% per LED at room temperature and humidity. It is a typical value.

Functionality

Specifications	NB3Q		NB5Q		NB7W		NB10W
	TW00B	TW01B	TW00B	TW01B	TW00B	TW01B	TW01B
Internal memory	128MB (including system area)						
Memory interface	---	USB Memory	---	USB Memory	---	USB Memory	USB Memory
Serial (COM1)	RS-232C/422A/485 (not isolated), Transmission distance: 15m Max. (RS-232C), 500m Max. (RS-422A/485), Connector: D-Sub 9-pin		RS-232C, Transmission distance: 15 m Max., Connector: D-Sub 9-pin				
Serial (COM2)	---		RS-232C/422A/485 (not isolated), Transmission distance: 15m Max. (RS-232C), 500m Max. (RS-422A/485), Connector: D-Sub 9-pin				
USB Host	Equivalent to USB 2.0 full speed, type A, Output power 5V, 150mA						
USB Slave	Equivalent to USB 2.0 full speed, type B, Transmission distance: 5m						
Printer connection	PictBridge support						
Ethernet	---	10/100 base-T	---	10/100 base-T	---	10/100 base-T	10/100 base-T

General

| Specifications	NB3Q		NB5Q		NB7W		NB10W
	TW00B	TW01B	TW00B	TW01B	TW00B	TW01B	TW01B
Line voltage	20.4 to 27.6 VDC (24 VDC −15 to 15%)						
Power consumption	5 W	9 W	6 W	10 W	7 W	11 W	14 W
Battery lifetime	5 years (at 25 °C) ✽						
Enclosure rating (front side)	Front operation part: IP65 (Dust proof and drip proof only from the front of the panel)						
Obtained standards	EC Directives, KC, cUL508						
Operating environment	No corrosive gases.						
Noise immunity	Compliant with IEC61000-4-4, 2KV (Power cable)						
Ambient operating temperature	0 to 50 °C						
Ambient operating humidity	10% to 90% RH (without condensation)						

Note: Flash memory can be written to up 100,000 times.
✽ OMRON accepts NB unit including the display device for repair and analysis within five years of the manufacture date.
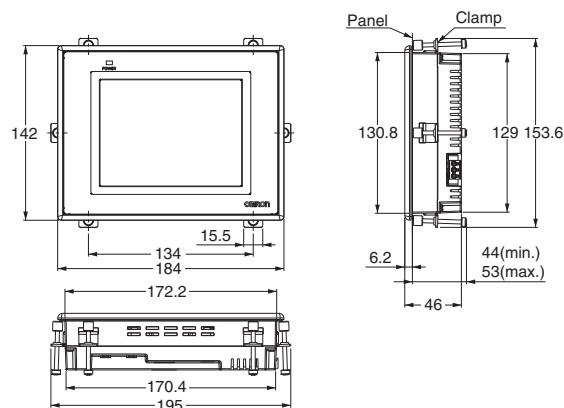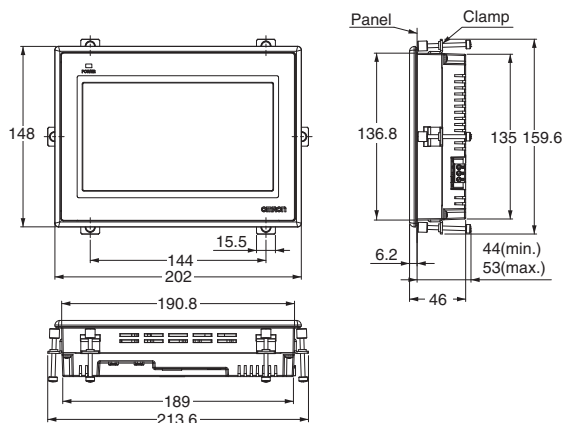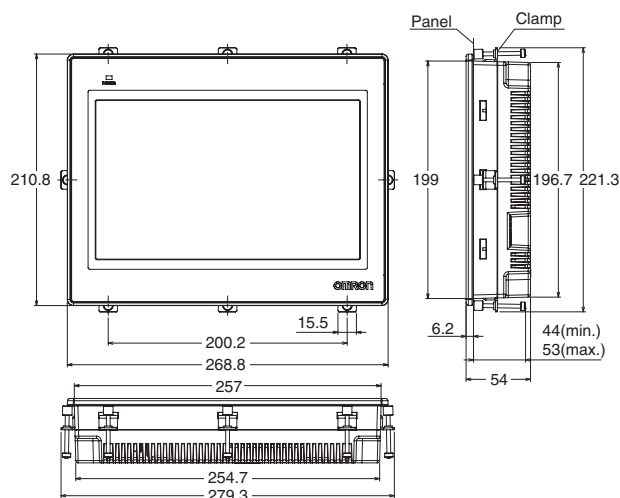
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Dimensions

NB3Q

NB5Q

NB7W

NB10W

Applicable panel thickness: 1.6 to 4.8 mm
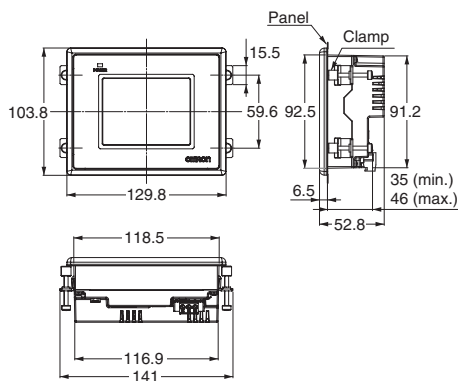
Model	Panel cutout (H × V mm)
NB3Q	119.0 (+0.5/−0) × 93.0 (+0.5/−0)
NB5Q	172.4 (+0.5/−0) × 131.0 (+0.5/−0)
NB7W	191.0 (+0.5/−0) × 137.0 (+0.5/−0)
NB10W	258.0 (+0.5/−0) × 200.0 (+0.5/−0)

Related Manuals

Cat. No	Model	Name
V106	NB-Designer	NB Series NB-Designer Operation Manual
V107	NB3Q, NB5Q, NB7W, NB10W	NB Series Setup Manual
V108	NB3Q, NB5Q, NB7W, NB10W	NB Series Host Connection Manual
V109	NB3Q, NB5Q, NB7W, NB10W	NB Series Startup Guide

NB Series

NB3Q/NB5Q/NB7W/NB10W

Ethernet I/F	Serial I/F (COM1) RS-232C ✶	Serial I/F (COM2) RS-232C/422A/485 ✶
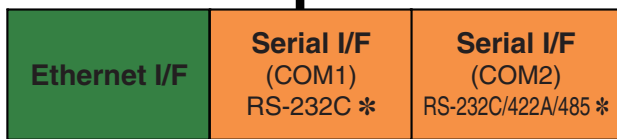
✶ The NB3Q has one serial port COM1 (RS-232C/422A/485) only.

[Ethernet Communications]

OMRON
- CP Series
- CJ/CJ2/CS/NJ Series

Mitsubishi
- L Series (CPU Ethernet port)
- QnU Series (CPU Ethernet port)
- QnUDV Series (CPU Ethernet port)
- Q Series/L Series
  (Ethernet Communication Unit)
- FX Series (Communication expansion board)

KEYENCE
- KV Series (KV-5000)

Siemens
- S7-200 (Smart) Series
- S7-300 Series
- S7-1200 Series

Allen-Bradley (Rockwell)
- MicroLogix Series

Modbus
- Modbus TCP Slave

[Serial Communications]

OMRON
- CP Series
- CJ/CJ2/CS Series
- C Series
- G9SP Series

Mitsubishi
- FX Series (CPU)
- FX Series (Communication expansion board)
- Q Series (CPU)
- QnU Series (CPU)
- Q Series/L Series (Serial Communication Unit)

KEYENCE
- KV Series (KV-3000)

Panasonic
- FP Series

Siemens
- S7-200 Series
- S7-300/400 Series

Allen-Bradley (Rockwell)
- SLC500/MicroLogix Series
- CompactLogix/ControlLogix Series

Schneider
- TSX-Micro/Premium/Nano Series
- Twido Series

GE Fanuc
- Series 90-30
- VersaMax/VersaMax Micro & Nano Series

Delta
- DVP Series

LG (LS)
- Master-K Series
- XGT Series

Modbus
- Modbus ASCII
- Modbus RTU
- Modbus RTU Slave
- Modbus RTU Extend
  --- OMRON: Temperature Controller E5CC/E5EC,
       Inverter 3G3MX2-V1 or later

Company	Series	Model	
		Ethernet communication	**Serial communication**
OMRON	CP Series	CP1L-EM/-EL (Built-in Ethernet port) CP1H, CP1L, CP1E (CP1W-CIF41 Option Board required)	CP1H, CP1L, CP1E
	CJ/CJ2/CS/NJ Series	CJ1W-ETN21/EIP21 CS1W-ETN21/EIP21 CJ2H-☐☐☐-EIP, CJ2M-CPU3☐ NJ☐01	CJ1☐, CJ2☐, CS1☐
	C Series	---	C200HX/HG/HE(-Z) CQM1H CPM1☐/2☐
	G9SP Series	---	G9SP-N☐☐☐ (CP1W-CIF01 Option Board required)
	✽ For connectable OMRON PLC models, refer to the *Appendices* in the *NB Series NB-Designer Operation Manual* (Cat. No. V106).		
Mitsubishi	FX Series (Port built into CPU)	---	FX1N/1NC/2N/2NC/3G/3GC FX1S FX3U/3UC/3S
	FX Series (Communication expansion board)	FX3U-ENET-L	FX-485ADP/485BD/232BD
	Q Series (Port built into CPU)	---	Q00, Q00J, Q01, Q02, Q02H, Q06H, Q12H, Q25H
	QnU Series (Port built into CPU)	Q03UDE, Q04UDEH, Q06UDEH, Q10UDEH, Q13UDEH, Q20UDEH, Q26UDEH, Q50UDEH, Q100UDEH	Q00UCPU, Q01UCPU, Q02UCPU, Q03UD, Q04UDH, Q06UDH
	QnUDV Series (Port built into CPU)	Q03UDV, Q04UDV, Q06UDV, Q13UDV, Q26UDV	---
	Q Series (Communication Unit)	QJ71E71-100	QJ71C24/-R2 QJ71C24N/-R2/-R4
	L Series (Port built into CPU)	L02CPU/-P, L06CPU/-P, L26CPU/-P/-BT/-PBT	---
	L Series (Communication Unit)	LJ71E71-100	LJ71C24/-R2
KEYENCE	KV Series (Port built into CPU)	KV-5000	KV-3000
Panasonic	FP Series	---	FP, FP0, FP1, FP2, FP3, FP2SH, FP10S/SH, FP-M, FP-e, FP-X
Siemens	S7-200 Series	CP243-1, CP243-1 IT, SMART CPU CR40, SMART CPU SR20	CPU212/214/215/216 CPU221/222/224/226
	S7-300/400 Series	CP343-1, CP343-1 IT, CPU315-2 PN/DP, CPU317-2 PN/DP, CPU319-3 PN/DP	CPU312/313/314/315/316/318 CPU412/413/414/416/417
	S7-1200 Series	CPU1211C, CPU1214C	---
Allen-Bradley (Rockwell)	SLC500/MicroLogix Series	MicroLogix 1100/1400 (Built-in Ethernet port), MicroLogix 1000/1200/1400/1500 (1761-NET-ENI Unit)	MicroLogix1000/1200/1400/1500 SLC 5
	CompactLogix/ControlLogix Series	---	1756-L61/63 1769-L20/30/31/32E/35E
Schneider	TSX-Micro/Premium/Nano Series	---	TSX 37/P57/07
	Twido Series	---	TWD LCAA/LMDA
GE Fanuc	Series 90-30	---	IC693CPU/CSE
	VersaMax/ VersaMax Micro & Nano Series	---	CPU001/002/005/E05 IC200UAL/UDD/UDR/UAA/UAR
Delta	DVP Series	---	DVP-☐☐ES/EX/SS DVP-☐☐SA/SX/SC DVP-☐☐EH/EH2/SV
LG (LS)	Master-K Series	---	K120s, K200s
	XGT Series	---	XGB
Modbus	Modbus	Modbus TCP Slave	Modbus ASCII Modbus RTU Modbus RTU Slave Modbus RTU Extend --- OMRON:Temperature Controller etc.

Note: OMRON does not guarantee the normal operation of all PLCs in each series. The NB series can be connected to temperature controllers, inverters, and other devices. For details, refer to the *NB Series Host Connection Manual* (Cat.No V108).

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