OMRON

Programmable Terminal

NV Series

Compact and Simple to Use. Low Cost, High Performance. Superior PLC Compatibility.

» The Best PT for Package PLCs

» A Lineup of Ten Models That Redefine "Compact"

realizing

The Best PT for Package PLCs —「NV」

The NV Series of compact Programmable Terminals meet the basic needs for enhanced visibility, simplicity, and cost, and they go even further to provide superior PLC compatibility, easy operation, and cost performance.

"V" stands for the three benefits

Value	Easy design work and superior PLC compatibility
Visiblity	Beautiful, easy-to-understand displays
Variation	A lineup of ten 3-inch models for easy selection

Visibility
Beautiful, Easy-to-understand Displays

Instantly know the system status
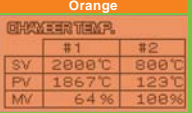### It is obvious in three color LED backlight

The monochrome models provide three backlight colors to perform status displays.For example, use green for normal operation, orange for user controls, and red for errors so that the operating status can be seen at a glance.

■ NV3W-MG
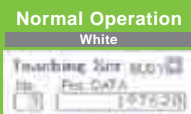
Normal Operation Green	User Controls Orange	Error Displays Red

The red backlight makes error displays bright and easy to see.

■ NV3□-MR

Normal Operation White	User Controls Pink	Error Displays Red

Easy Visual Recognition
True Type Fonts for Flexible Screen Designs

You can use True Type fonts in a wide range of sizes from 10 to 240 dots to flexibly design beautiful screens.

* The maximum font size depends on the model.

■ True Type Fonts

You can select the best Windows® fonts to create the desired screen images or emphasize screen appearance.

MSGoth. MSPGoth.MS Serif
Arial Courier New
Any size of many Windows Fonts Can be Used

Value
Easy Designing

The slim design of NV-series PTs requires very little installation space.
Vertical Installation

The PT can be installed vertically to enable more applications.This enables more flexible designs.

28mm

Vertical Installation Supported

Global Application
Multi-language Support and Safety Standard Compliance

You can switch parts labels and languages. Record up to sixteen character strings in different languages and change all labels at the same time. Switching the language during operation is also very easy. International safety standards have also been met so that you can easily export equipment or transport equipment overseas.

Switch Parts Labels

Japanese	English*	Simplified Chinese	Traditional Chinese	Korean

* Including European languages.

■ Safety Standards

CE c UL us

Handle Devices from Various Manufacturers
Global Multivendor Support

You can connect the PT to OMRON or Mitsubishi Electric PLCs or to PLCs from many other global manufacturers.This lets you connect the NV-series PTs without changing the PLC. You can easily use a different PLC manufacturer for each project.

OMRON, Mitsubishi Electric, Keyence, Hitachi, Allen-Bradley, Siemens, etc.

Variation
A Lineup of Ten Models That Form a New Standard for 3-inch PTs

The lineup includes 3.1-inch horizontal models to 3.6-inch QVGA models. Select the size and price that are best for each system.

3.1 inch
Compact Horizontal Models

NV3W
A 5-V model is available that can be powered from an OMRON PLC

NV3W Monochrome STN

| USB Slave | RS-232C | RS-422A/485 | SD memory card | Vertical installation | 5 VDC | 24 VDC |

- Display colors : 2 colors
- 128 × 64 dots
- Backlight : LEDs, 3 colors (green, orange, and red)

NV3W Monochrome STN

| USB Slave | RS-232C | RS-422A/485 | SD memory card | Vertical installation | 5 VDC | 24 VDC |

- Display colors : 2 colors
- 128 × 64 dots
- Backlight : LEDs, 3 colors (white, pink, and red)

NV3Q Monochrome STN

| USB Slave | RS-232C | RS-422A/485 | SD memory card | Vertical installation | 5 VDC | 24 VDC |

- Display colors : 2 colors
- 320 × 240 dots
- Backlight : LEDs, 3 colors (white, pink, and red)

NV3Q Color STN

| USB Slave | RS-232C | RS-422A/485 | SD Memory card | Vertical installation | 5 VDC | 24 VDC |

- Display colors : 4096 colors
- 320 × 240 dots
- Backlight : White LED

3.6 inch
QVGA Models

NV3Q

Easy Connection to External Devices for Easy Maintenance

NV3W

3.1 inch Compact Horizontal Models

NV3W-MG☐0(☐) Monochrome STN
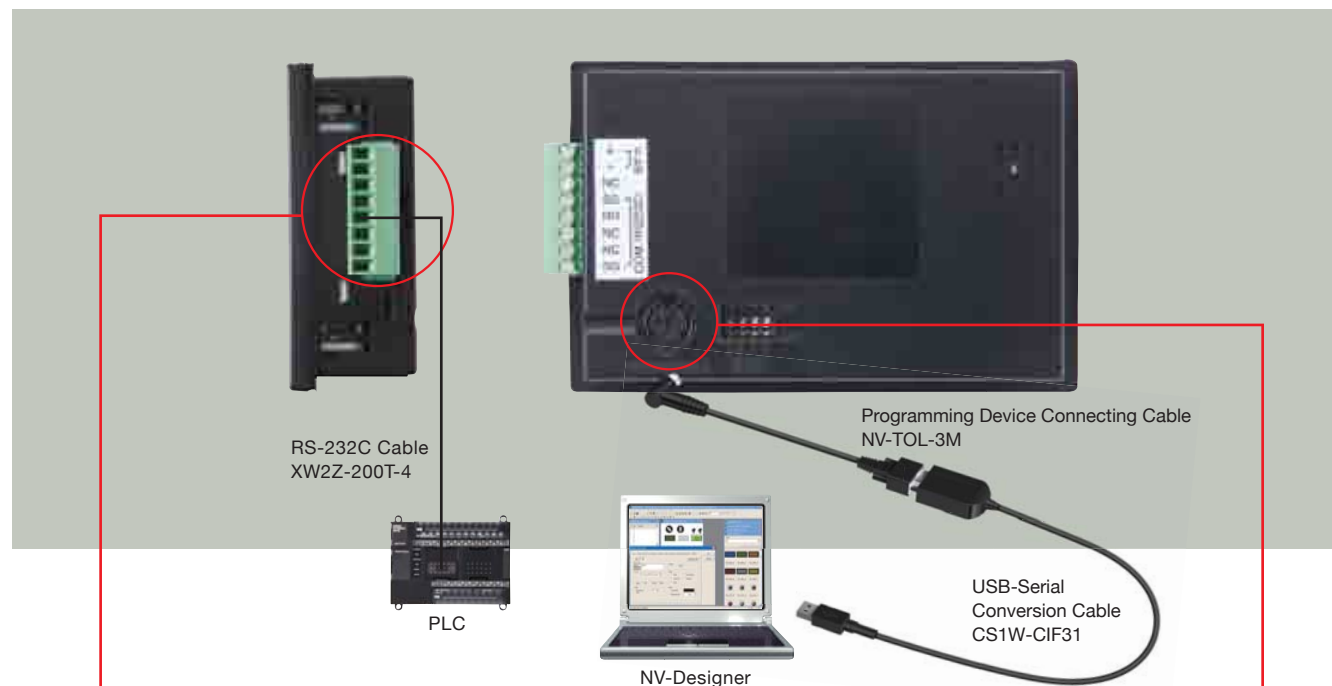NV3W-MR☐0(☐) Monochrome STN

Battery-free Operation

Internal Storage of Required Data in the PT

An NV-series PT can be operated without a battery.
No maintenance battery is required.

■ **Data Backed Up without a Battery**

・NV Configuration
・Base Screens
・Keyboard Screens
・Recipes
・Write Address Data
・Flow Display Data

Data required for operation is backed up

RS-232C Cable
XW2Z-200T-4

PLC

NV-Designer

Programming Device Connecting Cable
NV-TOL-3M

USB-Serial
Conversion Cable
CS1W-CIF31

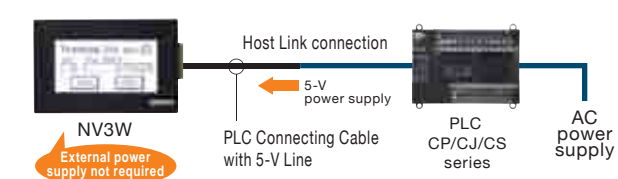### Serial Communications/Power Supply Connector

Supply Power from the PLC NV3W Only Compatibility

With 5-V NV3W models, 5-V can be supplied from the PLC via the PLC Connecting Cable.This reduces wiring work and eliminates the need for a special power supply for the PT.

■ **Supplying 5-V from the PLC**

NV3W
External power supply not required

Host Link connection
5-V power supply

PLC Connecting Cable with 5-V Line
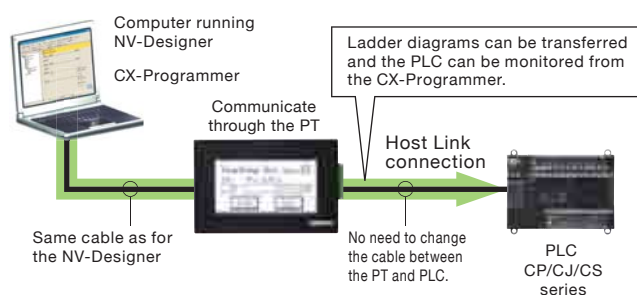
PLC CP/CJ/CS series

AC power supply

*An XW2Z-200T-4 PLC Connecting Cable is required to supply power from the PLC.
*With 24-V PTs, power must be supplied from an external power supply.

Tool Port

Transfer Ladder Programs and PT Screens without Changing the Cable Compatibility

Ladder programs can be transferred, debugged, or monitored for an OMRON PLC from the CX-Programmer running on a computer connected to the NV-series PT while communicating through the NV-series PT.

Computer running NV-Designer

CX-Programmer

Communicate through the PT

Ladder diagrams can be transferred and the PLC can be monitored from the CX-Programmer.

Host Link connection

Same cable as for the NV-Designer

No need to change the cable between the PT and PLC.

PLC CP/CJ/CS series

*Refer to Support Software on page 7 for applicable versions of the CX-One.

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NV3Q

3.6 inch QVGA Models

NV3Q-MR☐1 Monochrome STN
NV3Q-SW☐1 Color STN

Battery-free Operation

Internal Storage of Required Data in the PT

An NV-series PT can be operated without a battery.
No maintenance battery is required.

■ **Data Backed Up without a Battery**

・NV Configuration
・Base Screens
・Keyboard Screens
・Recipes
・Write Address Data
・Flow Display Data

Data required for operation is backed up

Optional Battery

NV-BAT01

Back up PLC memory in the PT with an optional battery. NV3Q Only

An optional battery can be mounted in an NV3Q PT to back up specified addresses from PLC memory. This allows you, for example, to back up memory areas that are not held in the PLC when using a CP1E PLC without a battery.

■ **Data That Can Be Backed Up with a Battery**

・Up to 24 words of PLC memory
・Clock data
・Internal PT memory
・Alarm history
・Password

Back up words from PLC memory

CP1E

PLC

24-V power supply

NV-Designer

Commercially available USB cable

Serial Communications/Power Supply Connector

This connector supplies 24 VDC.

SD Memory Card

An SD memory card slot (1 GB max.) is provided as a standard feature

NV3Q Only

Use SD memory cards to easily back up and restore screen data.

Tool Port

Transfer Ladder Programs and PT Screens without Changing the Cable Compatibility

USB1.1

High-speed Screen Transfers with Commercially Available USB Cable NV3Q Only

A USB interface is provided to effectively use computer software environments.Screens that are created on the computer can be quickly transferred to the PT using a commercially available USB cable.

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Specifications

General Specifications

Item	Specifications			
Model	NV3W-M▢20/M▢40	NV3W-M▢20L	NV3Q-MR▢1	NV3Q-SW▢1
Rated power supply	24 VDC	5 VDC	24 VDC	
Operating voltage range	21.6 to 26.4 VDC	4.5 to 5.5 VDC	21.6 to 26.4 VDC	
Current consumption	2 W max. (80 mA max.)	1 W max. (200 mA max.)	2.4 W max. (100 mA max.)	3.6 W max. (150 mA max.)
Ambient operating temperature	0 to 50°C			
Ambient operating humidity	20% to 85% (with no condensation)			
Ambient storage temperature	−20 to 60°C			
Ambient storage humidity	10% to 85% (with no condensation)			
Dielectric strength	Between the power supply terminals and the case 500 VAC for 1 min with a cutoff current of 10 mA (at initial state)			
Insulation resistance	Between the power supply terminals and the case 100 MΩ (at 500 VDC) (at initial state)			
Vibration resistance	10 to 55 Hz with 0.75-amplitude for 10 min each in X, Y, and Z directions, 1 sweep per min			
Shock resistance	98m/s^2 4 times each in X, Y, and Z directions			
Noise immunity	1,000 Vp-p with pulse widths of 50 ns and 1 μs between power supply terminals (via simulator)			
Resistance to environment	IP65 (at initial state) Dust proof and drip proof only from the front of the panel (using Waterproof Packing at the contact surface with the panel) Replace the Waterproof Packing each time you reinstall the PT.			
Battery life expectancy	—		Battery life expectancy: 5 yr (at 25°C)*	Battery life expectancy: 3 yr (at 25°C) *
Safety standards	UL 508 and EC Directives			
Weight	160 g max.		240 g max.	

* The SRAM (internal RAM) is backed up by the battery. If backing up the data is required, purchase the NV-BAT01 Battery separately.
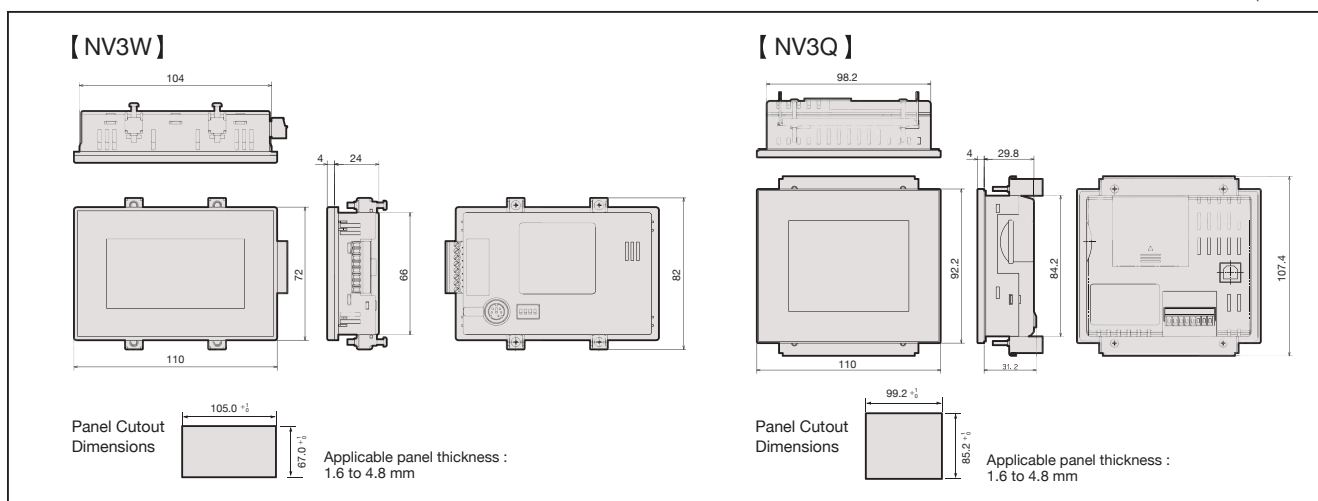
Performance Specifications

Item		Specifications	
Model		NV3W-MG▢( )/MR▢( )	NV3Q-MR▢1/SW▢1
Display device		STN monochrome LCD	·NV3Q-MR: STN monochrome LCD ·NV3Q-SW: STN color LCD
Number of dots		128×64 dots (H×V)	320×240 dots (H×V)
Effective display size		70×35 mm (H×V)	71×53 mm (H×V)
Service Life		50,000 hours min. *1	
Backlights		·NV3W-MG : LED backlights, 3 colors (green, orange, and red) ·NV3W-MR : LED backlights, 3 colors (white, pink, and red)	·NV3Q-MR: LED backlights, 3 colors (white, pink, and red) ·NV3Q-SW: LED backlight, 1 color (white)
Touch switches	Method	Analog resistance membrane	
	Operating force	0.5 N max.	0.8 N max.
	Life expectancy	100 million operations min. (at 25°C)	
External memory		—	SD memory card (32 MB to 1 GB) Manufacturers for which operation has been confirmed: Panasonic SD standard *2
Host communications	COM Port	NV3W-M▢20( ) : RS-232C (not isolated), Transmission distance: 15 m, Connector : 8-pin) NV3W-M▢40 : RS-422A/485 (not isolated), Transmission distance: 500 m, Connector : 8-pin)	NV3Q-▢21 : RS-232C (not isolated), Transmission distance: 15 m, Connector: 8-pin) NV3Q-▢41 : RS-422A/485 (not isolated), Transmission distance: 500 m, Connector: 8-pin)
Support Software communications	Tool Port	RS-232C (not isolated) via Mini DIN 5-pin connector	—
	USB port	—	USB 1.1 type B, Transmission distance: 5 m max.
Applicable Support Software		NV-Designer version 1.0 or higher (Included with CX-One version 3.2 or in CX-One Lite version 4.0.)	

*1 This is the estimated time before brightness is reduced by half at room temperature and humidity. It is not a guaranteed value.
*2 SD memory cards are shipped pre-formatted from the factory, so there is normally no need to format them. If an SD memory card is formatted with the standard formatting utility provided with a personal computer, its file system will not conform to the SD memory card standard. Always use the formatting software provided by SD memory card makers.

Dimensions

(Unit: mm)

【NV3W】

【NV3Q】

Panel Cutout Dimensions

Applicable panel thickness : 1.6 to 4.8 mm

Refer to the NV-series PT Setup Manual (Cat.No:V103) or NV-series PT Programming Manual (Cat.No:V104) for details.

Ordering Information

■ International Standards
- The standards are abbreviated as follows: U: UL, U1: UL(Class I Division 2 Products for Hazardous Locations),
  C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

■ Programmable Terminals

Product name	Specifications					Model	Standards
	Screen size	Number of dot	Communications	Power supply voltage	Backlight		
NV3W	3.1-in, STN monochrome	128 × 64 dots	RS-232C	5 VDC	LEDs, 3 colors (green, orange, and red)	NV3W-MG20L *NEW*	UC, CE
			RS-232C	24 VDC		NV3W-MG20 *NEW*	
			RS-422A/485	24 VDC		NV3W-MG40 *NEW*	
	3.1-in, STN monochrome	128 × 64 dots	RS-232C	5 VDC	LEDs, 3 colors (white, pink, and red)	NV3W-MR20L *NEW*	UC, CE
			RS-232C	24 VDC		NV3W-MR20 *NEW*	
			RS-422A/485	24 VDC		NV3W-MR40 *NEW*	
NV3Q	3.6-in, STN monochrome	320 ×240 dots (QVGA)	RS-232C	24 VDC	LEDs, 3 colors (white, pink, and red)	NV3Q-MR21 *NEW*	UC, CE
			RS-422A/485	24 VDC		NV3Q-MR41 *NEW*	
	3.6-in, STN color	320 ×240 dots (QVGA)	RS-232C	24 VDC	White LED	NV3Q-SW21 *NEW*	UC, CE
			RS-422A/485	24 VDC		NV3Q-SW41 *NEW*	

■ Programming Devices

Product name	Specifications			Model	Standards
		Number of licenses	Media		
FA Integrated Tool Package CX-One Lite Ver.4.	CX-One Lite is a subset of the complete CX-One package that provides only the Support Software required for micro PLC applications. *1 CX-One Lite runs on the following OS. Windows 2000 (Service Pack 3 or higher), XP, or Vista CX-One Lite Ver. 4.　includes NV-Designer Ver.1.　.	1 license	CD	CXONE-LT01C-V4 *NEW*	—
FA Integrated Tool Package CX-One Ver. 3.	CX-One is a package that integrates the Support Software for OMRON PLCs and components. *2 CX-One runs on the following OS. OS: Windows 2000 (Service Pack 3 or higher), XP, or Vista CX-One Ver. 3.　includes NV-Designer Ver.1.　. *3	1 license *4	CD	CXONE-AL01C-V3	—
			DVD *5	CXONE-AL01D-V3	

Note: NV-Designer version 1.0 or higher is required to use the NV Series.

*1 CX-One Lite Ver.4.　provides the following Support Software : Micro PLC Edition CX-Programmer Ver.9.　, CX-Integrator Ver.2.　,
   Switch Box Utility Ver.1.　, CX-Simulator Ver.1.　, CX-Drive Ver.1.　, CX-Designer Ver.3.　, NV-Designer Ver.1.　,
   CX-Thermo Ver.4.　, CX-ConfiguratorFDT Ver.1.　, Network Configurator Ver.3.　, and CX-Server Ver.4.
*2 For details, refer to the CX-One Catalog (Cat. No : R134).
*3 NV-Designer is included with CX-One version 3.2 or later. Users who purchase CX-One version 3.　can use the auto-update to update the version.
*4 Site licenses are available for the CX-One (3, 10, 30 or 50 licenses).
*5 When purchasing the DVD format, verify the computer model and DVD drive specifications before purchasing.

■ Options (Sold separately)

Product name	Specifications		Model	Standards
PT-to-PLC Connecting Cable	For the NV3W with 5-V power (NV3W-MG20L/MR20L only)	Length: 2m	XW2Z-200T-4 *NEW* *1	—
	For the NV3W and NV3Q	Length: 2m	XW2Z-200T-3 *NEW*	
	For the NV3W and NV3Q	Length: 5m	XW2Z-500T-3 *NEW*	
Programming Device Connecting Cable *2	For the NV3W	Length: 3m	NV-TOL-3M *NEW*	—
	USB-Serial Conversion Cable	For the NV3W Use this Cable together with the NV-TOL-3M to connect to a USB connector on the computer. Note : The enclosed USB driver must be installed.	Length: 0.5m	CS1W-CIF31	N
Waterproof Packings	For the NV3W, contains 10 packings. One Packing is provided on the PT as a standard feature.		NV3W-RP001 *NEW*	—
	For the NV3W, contains 10 packings. One Packing is provided on the PT as a standard feature.		NV3Q-RP001 *NEW*	
Battery *3	For the NV3Q		NV-BAT01 *NEW*	—
Display Protective Sheets	For the NV3W, contains 10 sheets		NV3W-KBA04 *NEW*	—
	For the NV3Q, contains 10 sheets		NV3Q-KBA04 *NEW*	
Attachment	NP3 Series to NV3Q Series		NV3Q-ATT02 *NEW*	—

*1 If the XW2Z-200T-4 Cable is used with the NV3W, 5 V can be supplied from the CS/CJ/CP-series PLCs instead of from an external power supply.
   Refer to the NV-series PT Setup Manual (Cat.No:V103) for details.
*2 For NV3Q, use commercially available USB cable.
*3 Cannot be used for the NV3W.

Read and Understand this Catalog

Please read and understand this catalog before purchasing 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 Considerations

SUITABILITY FOR USE

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

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCT 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 PRODUCT IS 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. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

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 catalog 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.

Note: Do not use this document to operate the Unit.

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