

NV Series

Operator Interface Terminals



» Compact and Simple

» High Performance Features

» Easy to Use with Micro PLCs



The NV, Your Best Choice for Use with Micro PLCs

The NV Series of compact Operator Interface 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.

Visibility Beautiful, Easy-to-understand Displays

Instantly know the system status

Make it obvious in three color LED backlight

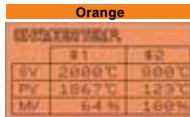
The monochrome models provide three, backlight colors to perform status displays. For example, use green for normal operation, orange for user controls, and red for errors so that the operating status can be seen at a glance.

■ NV3W-MG

Normal Operation



User Controls



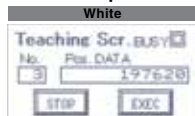
Error Displays



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

■ NV3-MR

Normal Operation



User Controls



Error Displays



Easy Visual Recognition

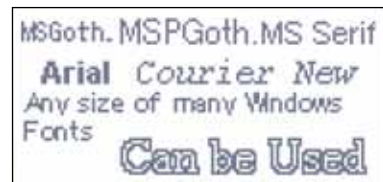
True Type Fonts for Flexible Screen Designs

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.



Variation

A Lineup of Ten Models That Form a New Standard for Compact HMIs

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-MG Monochrome STN



- RS-232C
- RS-422A/485
- Vertical installation
- 5 VDC
- 24 VDC

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

NV3W-MR Monochrome STN



- RS-232C
- RS-422A/485
- Vertical installation
- 5 VDC
- 24 VDC

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



"V" stands for the three benefits

- Value** Easy design work and superior PLC compatibility
- Visibility** Beautiful, easy-to-understand displays
- Variation** A lineup of ten models providing easy selection

Value Easy Designing

The slim design of NV-series HMIs requires very little installation space.

Vertical Installation

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



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.



* Including European languages.

■ Safety Standards



Handle Devices from Various Manufacturers

Global Multivendor Support

You can connect the HMI to OMRON PLCs or to PLCs from many other global manufacturers. This lets you connect the NV-series HMIs to your existing PLC. You can easily use a different PLC manufacturer for each project.



OMRON, Allen-Bradley, Modbus, Siemens, Mitsubishi, Panasonic, Keyence, Hitachi, LG, and others.

NV3Q Monochrome STN



- USB Slave
- RS-232C
- RS-422A/485
- SD memory card
- 24 VDC

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

NV3Q Color STN



- USB Slave
- RS-232C
- RS-422A/485
- SD Memory card
- 24 VDC

- Display colors : 4096 colors
- 320 x 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



Battery-free Operation

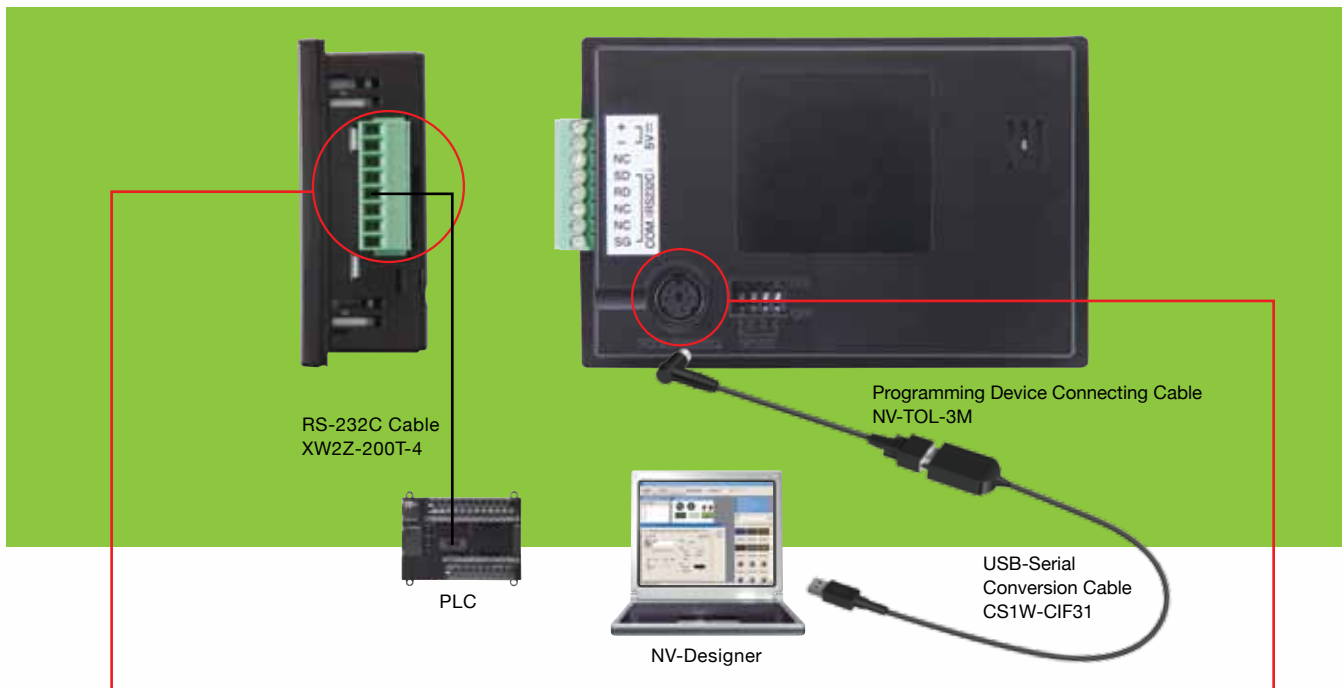
Internal Storage of Required Data in the HMI

An NV-series HMI 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

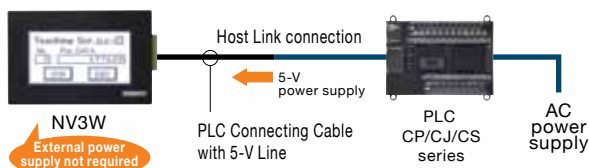


Serial Communications/Power Supply Connector

Supply Power from the PLC **NV3W Only** **Compatibility**

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

Supplying 5-V from the PLC

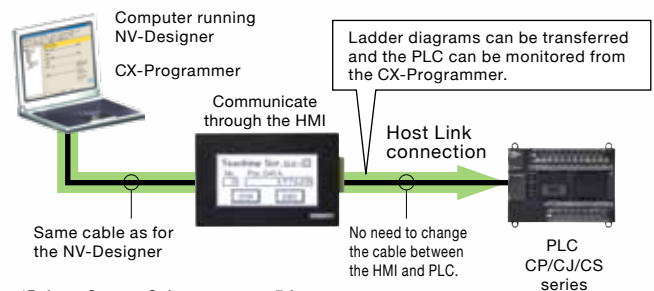


*An XW2Z-200T-4 PLC Connecting Cable is required to supply power from the PLC.
*With 24-V HMIs, power must be supplied from an external power supply.

Tool Port

Single Point, Multiple Access makes transferring programs Easy **Compatibility**

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



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

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 HMI

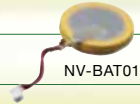
An NV-series HMI can be operated without a battery. No maintenance battery is required.

■ 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



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

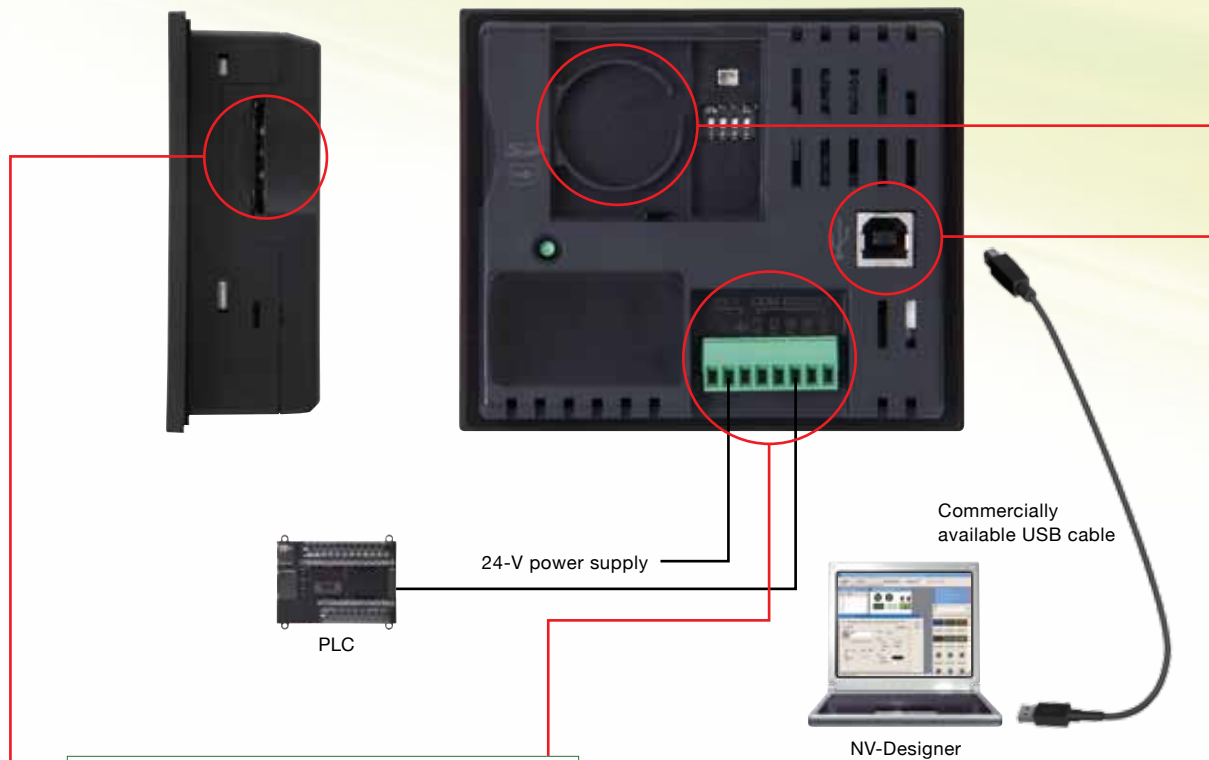
An optional battery can be mounted in an NV3Q HMI to back up specified addresses from PLC memory. This allows you, for example, to back up memory areas from controllers that do not contain a battery.

■ Data That Can Be Backed Up with a Battery

- Up to 24 words of PLC memory
- Clock data
- Internal HMI memory
- Alarm history
- Password




Back up words from PLC memory



Serial Communications/Power Supply Connector

This connector supplies 24 VDC.

Tool Port

Transfer Ladder Programs and HMI Screens without Changing the Cable 

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.



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.

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

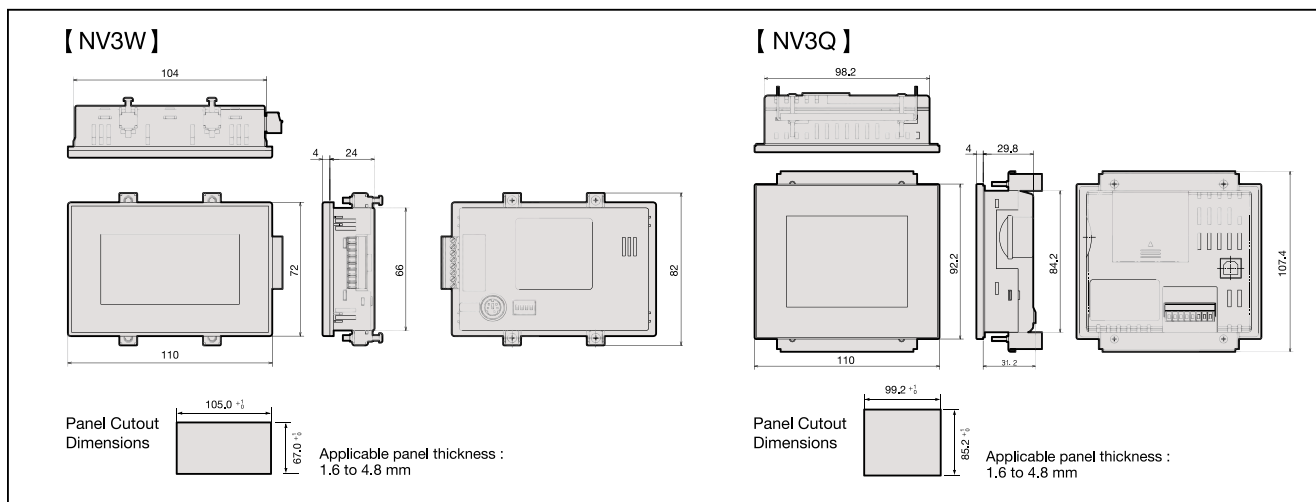
Item	Specifications	
Model	NV3W-MG□□□□/MR□□□□	NV3Q-MR□1/SW□1
Display device	STN monochrome LCD	· NV3Q-MR: STN monochrome LCD · NV3Q-SW: STN color LCD
Number of dots	128 x 64 dots (H x V)	320 x 240 dots (H x V)
Effective display size	70 x 35 mm (H x V)	71 x 53 mm (H x V)
Service Life	50,000 hours min. *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.
	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	—
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)



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: UC: cULus, N: NK, 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 x 64 dots	RS-232C	5 VDC	LEDs, 3 colors (green, orange, and red)	NV3W-MG20L	UC, CE
			RS-232C	24 VDC		NV3W-MG20	
			RS-422A/485	24 VDC		NV3W-MG40	
	3.1-in, STN monochrome	128 x 64 dots	RS-232C	5 VDC	LEDs, 3 colors (white, pink, and red)	NV3W-MR20L	UC, CE
			RS-232C	24 VDC		NV3W-MR20	
			RS-422A/485	24 VDC		NV3W-MR40	
NV3Q	3.6-in, STN monochrome	320 x 240 dots (QVGA)	RS-232C	24 VDC	LEDs, 3 colors (white, pink, and red)	NV3Q-MR21	UC, CE
			RS-422A/485	24 VDC		NV3Q-MR41	
	3.6-in, STN color	320 x 240 dots (QVGA)	RS-232C	24 VDC	White LED	NV3Q-SW21	UC, CE
			RS-422A/485	24 VDC		NV3Q-SW41	

Programming Devices

Product name	Specifications	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	—
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	
HMI-to-PLC Connecting Cable	For the NV3W with 5-V power (NV3W-MG20L/MR20L only)	Length: 2m	XW2Z-200T-4 *1	—	
	For the NV3W and NV3Q	Length: 2m	XW2Z-200T-3		
	For the NV3W and NV3Q	Length: 5m	XW2Z-500T-3		
Programming Device Connecting Cable *2	USB-Serial Conversion Cable	For the NV3W	Length: 3m	NV-TOL-3M	—
		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 Gaskets	For the NV3W, contains 10 gaskets. One gasket is provided on the HMI as a standard feature.		NV3W-RP001	—	
	For the NV3Q, contains 10 gaskets. One gasket is provided on the HMI as a standard feature.		NV3Q-RP001		
Battery *3	For the NV3Q		NV-BAT01	—	
Display Protective Sheets	For the NV3W, contains 10 sheets		NV3W-KBA04	—	
	For the NV3Q, contains 10 sheets		NV3Q-KBA04		
Mounting Adapter	NP3 series to NV3Q series mounting adapter plate		NV3Q-ATT02	—	

*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.

OMRON INDUSTRIAL AUTOMATION • THE AMERICAS HEADQUARTERS • Schaumburg, IL USA • 847.843.7900 • 800.556.6766 • www.omron247.com

OMRON CANADA, INC. • HEAD OFFICE

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OMRON ELECTRONICS DE MEXICO • HEAD OFFICE

México DF • 52.55.59.01.43.00 • 001.800.556.6766 • mela@omron.com

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