Programmable Terminal

NV Series

Compact and Simple, Extremely High Cost Performance

» The Best PT for Package PLCs
» A Lineup of 14 Models That Redefine “Compact”
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.

### 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.

**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. *

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
<td>Normal Operation</td>
</tr>
<tr>
<td>Green</td>
<td>Multi</td>
</tr>
<tr>
<td>User Controls</td>
<td>User Controls</td>
</tr>
<tr>
<td>Orange</td>
<td>Pink</td>
</tr>
<tr>
<td>Error Displays</td>
<td>Error Displays</td>
</tr>
<tr>
<td>MONITOR Line #A</td>
<td>STOP</td>
</tr>
<tr>
<td>The red backlight</td>
<td>The red backlight</td>
</tr>
<tr>
<td>makes error displays bright and easy to see.</td>
<td>makes error displays bright and easy to see.</td>
</tr>
</tbody>
</table>

---

**NV3W-V1**

- **Monochrome TFT**
- Display colors: Monochrome, 2 grayscale levels
- 240 × 96 dots
- Backlight: LEDs, 3 colors (green, orange, and red)
- A 5-V model is available that can be powered from an OMRON PLC

**NV4W**

- **Monochrome TFT**
- Display colors: Monochrome, 2 grayscale levels
- 240 × 96 dots
- Backlight: LEDs, 3 colors (green, orange, and red)

---

**Variation**

**A Lineup of 14 Models That Form a New Standard for Small**

**NEW**

<table>
<thead>
<tr>
<th>3.8 inch</th>
<th>4.6 inch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NV3W-V1</strong></td>
<td><strong>NV4W</strong></td>
</tr>
<tr>
<td>Monochrome TFT</td>
<td>Monochrome TFT</td>
</tr>
<tr>
<td>Display colors: Monochrome, 2 grayscale levels</td>
<td>Display colors: Monochrome, 2 grayscale levels</td>
</tr>
<tr>
<td>240 × 96 dots</td>
<td>240 × 96 dots</td>
</tr>
<tr>
<td>Backlight: LEDs, 3 colors (white, pink, and red)</td>
<td>Backlight: LEDs, 3 colors (green, orange, and red)</td>
</tr>
<tr>
<td>USB Slave</td>
<td>USB Slave</td>
</tr>
<tr>
<td>RS-232C</td>
<td>RS-232C</td>
</tr>
<tr>
<td>5 VDC</td>
<td>5 VDC</td>
</tr>
</tbody>
</table>
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.

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.

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.

Handle Devices from Various Manufacturers

Global Multivendor Support

PTs

The lineup includes compact and horizontal models from 3.8-inch to 4.6-inch and QVGA models. Select the size and price that are best for each system.

3.6 inch

QVGA Models

NV3Q

Monochrome TFT
Color TFT

Display colors: Monochrome, 2 grayscale levels or 8 grayscale levels
320 x 240 dots
Backlight: LEDs, 3 colors (white, pink, and red)

Display colors: Monochrome, 2 grayscale levels
320 x 240 dots
Backlight: White LED

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

Value

Easy design work and superior PLC compatibility

Visibility

Beautiful, easy-to-understand displays

Variation

A lineup of ten 3-inch models for easy selection

"V" stands for the three benefits

- Value
- Visibility
- Variation

- Easy Designing
- Beautiful, easy-to-understand displays
- A lineup of ten 3-inch models for easy selection

Display colors: Monochrome, 2 grayscale levels or 8 grayscale levels
320 x 120 dots
Backlight: LEDS, 3 colors (white, pink, and red)

Display colors: Monochrome, 2 grayscale levels or 8 grayscale levels
320 x 240 dots
Backlight: LEDs, 3 colors (white, pink, and red)

Display colors: 4096 colors
320 x 240 dots
Backlight: White LED

Safety Standards

- Japanese
- English*
- Simplified Chinese
- Traditional Chinese
- Korean

* Including European languages.

* Only the NV3W-V1 has the KC mark.

PTs

The lineup includes compact and horizontal models from 3.8-inch to 4.6-inch and QVGA models. Select the size and price that are best for each system.
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.

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

Data required for operation is backed up

Screen Conversion

The NV-Designer version 2.0 or higher provides the function to convert NV3W screens into NV3W-V1 screens.

Supply Power from the PLC

With 5-V NV3W-V1 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

External power supply not required

Commercially available USB cable (Mini-B)

NRN Configuration

Base Screens

Recipes

Write Address Data

Flow Display Data

Data Backed Up without a Battery

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

Tool Port / USB1.1

Transfer Ladder Programs and PT Screens without Changing the Cable

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

Host Link connection

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

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

Same cable as for the NV-Designer

External power supply not required

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

NV4W
4.6 inch Compact Horizontal Models

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

Back up PLC memory in the PT with an optional battery.
An optional battery can be mounted in an NV4Q 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
  - Internal PT memory
  - Alarm history
  - Password

SD Memory Card

An SD memory card slot (2 GB max.) is provided as a standard feature.
Use SD memory cards to easily back up and restore screen data.

Tool Port

Transfer Ladder Programs and PT Screens without Changing the Cable

USB1.1

High-speed Screen Transfers with Commercially Available USB Cable
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 (Mini-B).

Serial Communications/Power Supply Connector
This connector supplies 24 VDC.
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 That Can Be Backed Up with a Battery
  - Up to 24 words of PLC memory
  - Internal PT memory
  - Alarm history
  - Password
  - Clock data

Optional Battery

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

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 required for operation is backed up

Serial Communications/Power Supply Connector

This connector supplies 24 VDC.

SD Memory Card

An SD memory card slot (2 GB max.)* is provided as a standard feature. Use SD memory cards to easily back up and restore screen data.

*The capacity of the SD memory card is 32 MB to 1 GB for PT system program version 1.0. 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 (TYPE-B).
Programmable Terminals
NV-series

Compact and Simple, Extremely High Cost Performance

- The lineup includes compact and horizontal models from 3.8-inch to 4.6-inch and QVGA models.
- True Type Fonts for Flexible Screen Designs.
- Space-saving Installation.
- Multi-language Support and Safety Standard Compliance.

System Configuration

NV3W-V1

![Diagram of NV3W-V1 system configuration]

NV4W/NV3Q

![Diagram of NV4W/NV3Q system configuration]

Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.
NV-series
Ordering Information

Programmable Terminals

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<thead>
<tr>
<th>Product name</th>
<th>Specifications</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>NV3W-V1</td>
<td></td>
<td>NV3W-MG20L-V1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV3W-MG20-V1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV3W-MG40-V1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV3W-MR20L-V1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV3W-MR20-V1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV3W-MR40-V1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product name</th>
<th>Specifications</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>NV4W</td>
<td></td>
<td>NV4W-MG21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV4W-MG41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV4W-MR21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV4W-MR41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product name</th>
<th>Specifications</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>NV3Q</td>
<td></td>
<td>NV3Q-SW21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NV3Q-SW41</td>
</tr>
</tbody>
</table>

Programming Devices

<table>
<thead>
<tr>
<th>Product name</th>
<th>Specifications</th>
<th>Number of licenses</th>
<th>Media</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA Integrated Tool Package CX-One Lite Ver.4.□</td>
<td>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 7 (32-bit/64-bit version) / Windows 8 (32-bit/64-bit version) / Windows 8.1 (32-bit/64-bit version) / Windows 10 (32-bit/64-bit version) CX-One Lite Ver. 4.□ includes NV-Designer Ver.1.□.</td>
<td>1 license</td>
<td>DVD</td>
<td>CXONE-LT01D-V4</td>
</tr>
<tr>
<td>FA Integrated Tool Package CX-One Ver. 4.□</td>
<td>CX-One is a comprehensive software package that integrates the Support Software for OMRON PLCs and components. *2 CX-One runs on the following OS. Windows 7 (32-bit/64-bit version) / Windows 8 (32-bit/64-bit version) / Windows 8.1 (32-bit/64-bit version) / Windows 10 (32-bit/64-bit version) CX-One Ver. 4.□ includes NV-Designer Ver.1.□.</td>
<td>1 license *3</td>
<td>DVD</td>
<td>CXONE-AL01D-V4</td>
</tr>
</tbody>
</table>

Note: 1. NV-Designer version 2.0 or higher is required to use the NV3W-V1. NV-Designer version 1.0 or higher is required to use the NV3Q. NV-Designer version 1.1 or higher is required to use the NV4W.
2. The CX-One and CX-One Lite cannot be simultaneously installed on the same computer.
*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.2.□, CX-Designer Ver.3.□, NV-Designer Ver.1.□ or higher, 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. Multi licenses (3, 10, 30, or 50 licenses) and DVD media without licenses are also available for the CX-One.
### Options (Sold separately)

<table>
<thead>
<tr>
<th>Product name</th>
<th>Specifications</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PT-to-PLC Connecting Cable</strong></td>
<td>For the NV3W with 5-V power (NV3W-MG20L-V1/MR28L-V1 only) Length: 2m</td>
<td>XW2Z-200T-4 *1</td>
</tr>
<tr>
<td></td>
<td>For the NV3W-V1, NV4W, and NV3Q Length: 2m</td>
<td>XW2Z-200T-3</td>
</tr>
<tr>
<td></td>
<td>For the NV3W-V1, NV4W, and NV3Q Length: 5m</td>
<td>XW2Z-500T-3</td>
</tr>
<tr>
<td><strong>Programming Device Connecting Cable</strong></td>
<td>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</td>
<td>CS1W-CIF31</td>
</tr>
<tr>
<td>*<em>Battery <em>2</em></em></td>
<td>For the NV4W and NV3Q</td>
<td>NV-BAT01</td>
</tr>
<tr>
<td><strong>Display Protective Sheets</strong></td>
<td>For the NV3W-V1, contains 10 sheets</td>
<td>NV3W-KBA04-V1</td>
</tr>
<tr>
<td></td>
<td>For the NV4W, contains 10 sheets</td>
<td>NV4W-KBA04</td>
</tr>
<tr>
<td></td>
<td>For the NV3Q, contains 10 sheets</td>
<td>NV3Q-KBA04</td>
</tr>
<tr>
<td><strong>Attachment</strong></td>
<td>NP3 Series to NV3Q Series</td>
<td>NV3Q-ATT02</td>
</tr>
</tbody>
</table>

Note: For NV3W-V1 and NV4W, use commercially available USB cable (Mini B).

For NV3Q, use commercially available USB cable (TYPE-B).

*1. If the XW2Z-200T-4 Cable is used with the NV3W-V1, 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. Cannot be used for the NV3W-V1.
NV-series
Specifications

General Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>NV3W-M-.20-V1/M-.40-V1</td>
</tr>
<tr>
<td>Rated power supply</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Operating voltage range</td>
<td>21.6 to 26.4 VDC</td>
</tr>
<tr>
<td>Current consumption</td>
<td>1.9 W max. (80 mA max.)</td>
</tr>
<tr>
<td>Ambient operating</td>
<td>0 to 50 °C</td>
</tr>
<tr>
<td>temperature</td>
<td></td>
</tr>
<tr>
<td>Ambient operating</td>
<td>20% to 85% (with no condensation)</td>
</tr>
<tr>
<td>humidity</td>
<td></td>
</tr>
<tr>
<td>Ambient storage</td>
<td>-20 to 60 °C</td>
</tr>
<tr>
<td>temperature</td>
<td></td>
</tr>
<tr>
<td>Ambient storage</td>
<td>10% (with no condensation)</td>
</tr>
<tr>
<td>humidity</td>
<td></td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>Between the power supply terminals and the case. 500 VAC for 1 min with a cutoff current of 10 mA (at initial state)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>Between the power supply terminals and the case. 100 MΩ (at 500 VDC) (at initial state)</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>5 to 8.4 Hz, 3.5-mm single amplitude, 8.4 to 150 Hz, 9.8 m/s², 10 times each in X, Y, and Z directions (1 octave/min)</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>147 m/s² 3 times each in X, Y, and Z directions</td>
</tr>
<tr>
<td>Noise immunity</td>
<td>1,000 Vp-p with pulse widths of 50 ns and 1 μs between power supply terminals (via simulator)</td>
</tr>
<tr>
<td>Resistance to environment</td>
<td>For NV3Q-IP65 (at initial state), For NV3W-V1, NV4W-IP67 (at initial state)</td>
</tr>
<tr>
<td>Battery life expectancy</td>
<td>–</td>
</tr>
<tr>
<td>Safety standards</td>
<td>UL 508, EC Directives and KC</td>
</tr>
<tr>
<td>Weight</td>
<td>170 g max.</td>
</tr>
</tbody>
</table>

*1 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

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
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</thead>
<tbody>
<tr>
<td>Display device</td>
<td>TFT monochrome LCD *8</td>
</tr>
<tr>
<td>Number of dots</td>
<td>240 × 96 dots (H × V)</td>
</tr>
<tr>
<td>Effective display size</td>
<td>88.5 × 35.4 mm (H × V)</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>5 to 8.4 Hz, 3.5-mm single amplitude, 8.4 to 150 Hz, 9.8 m/s², 10 times each in X, Y, and Z directions (1 octave/min)</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>98 m/s² 4 times each in X, Y, and Z directions</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>100 million operations min. (at 25 °C)</td>
</tr>
<tr>
<td>Host communications</td>
<td>COM Port</td>
</tr>
<tr>
<td>Host communications</td>
<td>USB port</td>
</tr>
<tr>
<td>Support Software</td>
<td>NV-Designer version 2.0 or higher (NV-Designer can be upgraded to version 2.0 by using the CX-One Auto-update.)</td>
</tr>
<tr>
<td>Support Software</td>
<td>NV-Designer version 1.0 or higher (Included with CX-One version 3.2 or in CX-One Lite version 4.0.)</td>
</tr>
</tbody>
</table>

*1 This is the estimated time before brightness is reduced by half at room temperature and humidity. It is not a guaranteed value.
*2 The estimate applies to operation when only custom switches are placed on the screen.
*3 This value does not include 1-dot box of frame line.
*4 The capacity of the SD memory card is 32 MB to 1 GB for PT system program version 1.0.*1.
*5 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.
*6 The display device of NV3Q-MR-.1 of the Lot No. 160430 or earlier is STN, and the Lot No. 160501 or later is TFT.
*7 The display device of NV3Q-SW-.1 of the Lot No. 110999 or earlier is STN, and the Lot No. 111000 or later is TFT.
*8 The display device of NV3W-MG-.1 (L)-V1/MR-.1 (L)-V1 of the Lot No. 161231 or earlier is STN, and the Lot No. 170101 or later is TFT.
*9 The display device of NV4W-M-.21/.M-.41 of the Lot No. 170221 or earlier is STN, and the Lot No. 170222 or later is TFT.
Applicable PLCs

<table>
<thead>
<tr>
<th>Company</th>
<th>Series</th>
<th>Company</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMRON</td>
<td>CP Series</td>
<td>Mitsubishi Electric</td>
<td>FX Series</td>
</tr>
<tr>
<td>OMRON</td>
<td>CJ Series</td>
<td>Mitsubishi Electric</td>
<td>Q Series</td>
</tr>
<tr>
<td>OMRON</td>
<td>CS Series</td>
<td>Mitsubishi Electric</td>
<td>A Series</td>
</tr>
<tr>
<td>OMRON</td>
<td>C Series</td>
<td>Panasonic Electric Works</td>
<td>FP Series</td>
</tr>
<tr>
<td>OMRON</td>
<td>CVM1/CV Series</td>
<td>Toshiba Machine</td>
<td>TC mini Series</td>
</tr>
<tr>
<td>OMRON</td>
<td>Temperature Controllers EJ1 Series</td>
<td>Keyence</td>
<td>KV Series, KV Nano Series</td>
</tr>
<tr>
<td>Yokogawa Electric</td>
<td>FA-M3 Series</td>
<td>Allen-Bradley Models that support DF protocol</td>
<td>MicroLogix</td>
</tr>
<tr>
<td>Hitachi</td>
<td>E150EHV Series</td>
<td>Allen-Bradley Models that support DF protocol</td>
<td>SLC-500 Series</td>
</tr>
<tr>
<td>Hitachi</td>
<td>EH150 Series</td>
<td>Siemens</td>
<td>S7-200 Series</td>
</tr>
<tr>
<td>Hitachi</td>
<td>MICRO-EH Series</td>
<td>LG</td>
<td>MASTER-K Series</td>
</tr>
<tr>
<td>Hitachi</td>
<td>Web Controller</td>
<td>Modbus</td>
<td>Models that support RTU protocol</td>
</tr>
</tbody>
</table>

**Note:** Refer to “NV Series Programmable Terminals Host Connection Manual (Cat.No V105)” which is included in NV-Designer for information on combination use with each PLC Series.

### Dimensions

#### NV3W-V1

![Panel Cutout Dimentions](image1)

Applicable panel thickness: 1.6 mm to 4.8 mm

#### NV4W

![Panel Cutout Dimentions](image2)

Applicable panel thickness: 1.6 mm to 4.8 mm

#### NV3Q

![Panel Cutout Dimentions](image3)

Applicable panel thickness: 1.6 mm to 4.8 mm

### Related Manuals

<table>
<thead>
<tr>
<th>Cat. No</th>
<th>Model</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>V105</td>
<td>NV3W-V1, NV4W, NV3Q</td>
<td>NV Series Programmable Terminals Host Connection Manual</td>
</tr>
</tbody>
</table>
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C5M_7-10
Cat. No. V410-E1-05
0820(0609)