OMRON
AUTOMATION & SAFETY

Bringing Technology to Life with the Sysmac Automation Platform

Machine Interface NA Series

- Fully integrated machine control system
- Powerful Sysmac Studio software
- Customizable functions

SYSMAC
always in control

Integrated HMI within the Sysmac Platform

An HMI that is expressive, intuitive, and easy to implement makes industrial machines more attractive and competitive. The Omron Sysmac NA Series HMI enables faster, more efficient control and monitoring - and a more natural relationship between operator and machine. The design has been based on real world applications and customer requirements, a future-proofed, scalable platform that will evolve with their ever-changing needs, allowing real time reaction to events. As part of the system family, the NA Series is fully aware of the total machine.

- Beautiful graphics with wide-screen high resolution displays
- Intuitive development environment integrated within Sysmac Studio
- Future-proof and flexible architecture using VB.NET
- Improved machine troubleshooting with media and video


NX I/O
NX Safety
FH Vision System
G5 servo system
NJ Machine Automation Controller

Integrating your world

Sysmac Studio software is the centerpiece of the Sysmac Platform, bringing together all areas of automation including: logic, motion, vision, safety, robotics, enterprise, and now visualization. The NA series machine interface gives you direct access into the one integrated project.

One Tag Database

- Share NJ Controller Variables (Tags) in the machine interface application using "Intelli sense"

One Project

- Program the entire machine as one
- Save to a single file
- Complete machine revision control
- Common environment work-flow

Safe and Secure

- Configure individual users with multiple access levels

Intuitive Environment

- Floating and docking windows
- Object centric properties, animations, events and actions
- Page Editor for object hierarchy
- Rotate, resize, and align

Flexible Customization

- VB.NET scripting for advanced function
- Intelligent Application Gadget (IAG) Libraries for code reuse

Complete System Simulation

- Integrated simulation of logic, motion, and visualization
- No hardware required for development

Speed and Efficiency

- Structured programming
- Visual network configuration
- Integrated vision setup
- Online Troubleshooting

Insight & security maximized ...

The NA series machine interface is the window into the fully integrated Sysmac Platform machine control system, providing operators with critical information. To protect this information, the NA series has full security and user authentication features that keep valuable assets secure at all times.

- Multiple-access level security and authentication
- Troubleshooting tools and history log
- Tune and adjust parameters without stopping the machine
- Quick loading of new data sets into the NJ Controller
- Data sets can be saved to/from the SD card

Increased Security

The NA Series uses multi-tiered access restriction and user specific password protection to ensure authorized interaction with the machine.

Protecting Your Assets

- Password protection on the entire Sysmac Platform system project, including Controls and Safety.
- Data transfer can be selectively disabled to protect against overwrite or theft.

... downtime minimized

Multimedia Display

Present machine system data clearly and effectively using rich media, including PDF, video, and other user files like Microsoft® Word and Excel.

Movie Guidance

Assist Operators with troubleshooting and maintenance by displaying instructional or corrective procedures in video.

Digital Documentation

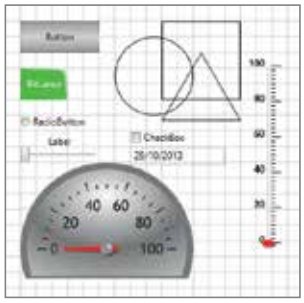
Embed PDF documents in the interface for additional user reference.

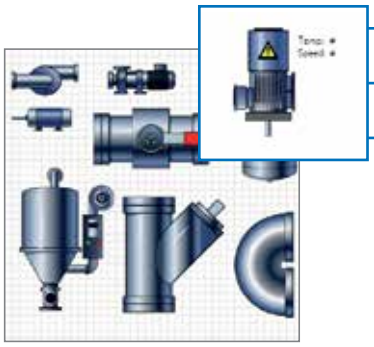
Simple, but Flexible!

The NA Series gives users the ability to design custom IAGs (Intelligent Application Gadgets which encapsulate user or machine functions.). IAGs simplify and accelerate the development process similar to control Function Blocks, enhancing reuse. From simple graphics to complex objects, users can build collections to be shared between multiple projects.

Step 1: Machine Parts and Visuals

Using standard controls, or graphics from the machine parts collection, design a custom IAG. Add interface properties and methods to bring the object to life.

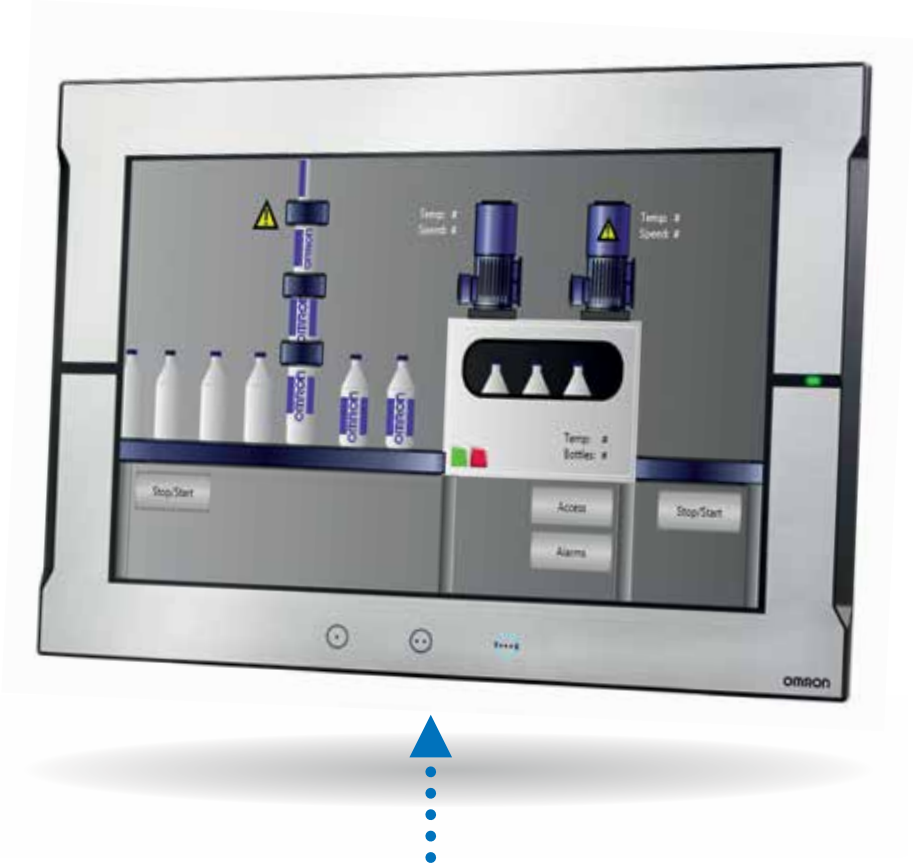





```
'IAG Code behind - Add local subroutines for the IAG.

Public Function RunMotor(bStatus As Boolean) As Double
    'start motor at default speed
    mySpeed = 50
    'return current speed
    RunMotor = 50

End Function

Public Function IncreaseSpeed(nIncrement As Integer) As Double
    ' Increase speed by increment if < 1000
    If mySpeed + nIncrement  < 1000 Then
            mySpeed = mySpeed + nIncrement
        Else
            'Otherwise set to top speed
            mySpeed = 1000
        End If
        'Return new speed
        IncreaseSpeed = mySpeed
End Function
```

Step 2: Extensible with Visual Basic

In addition to graphic IAGs, it is also possible to embed code within an IAG. The code can extend the functionality of the gadget such as providing special device communication. Open standard VB.NET language minimizes learning time and allows use of online or external reference material.



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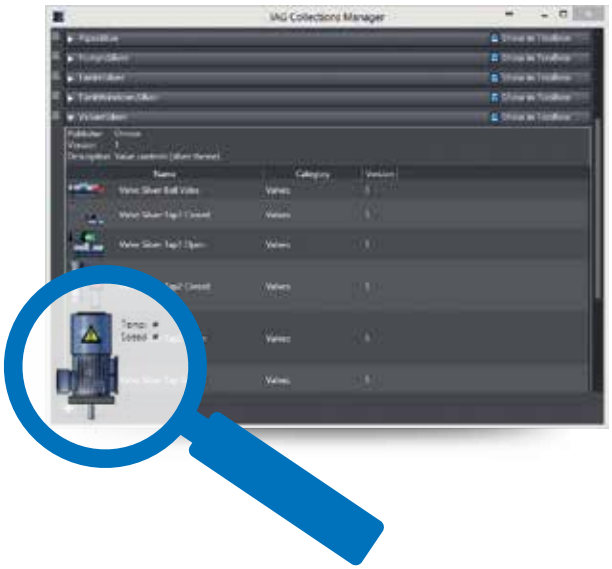
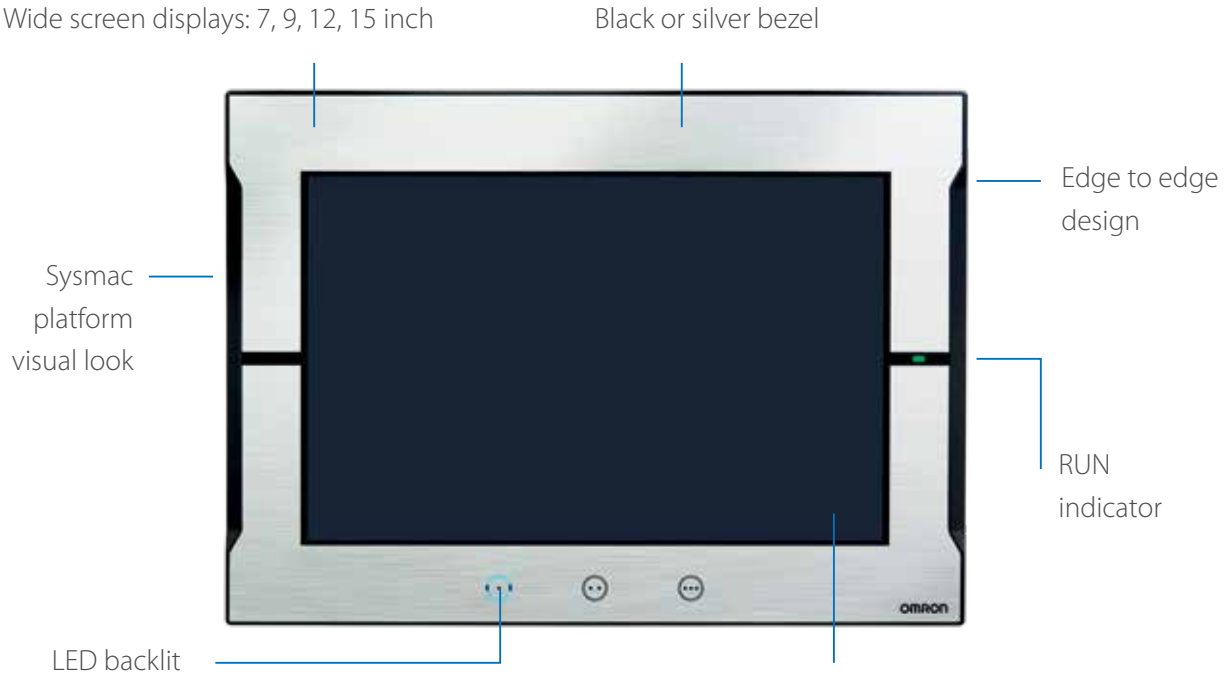


Step 3: Publish and Share

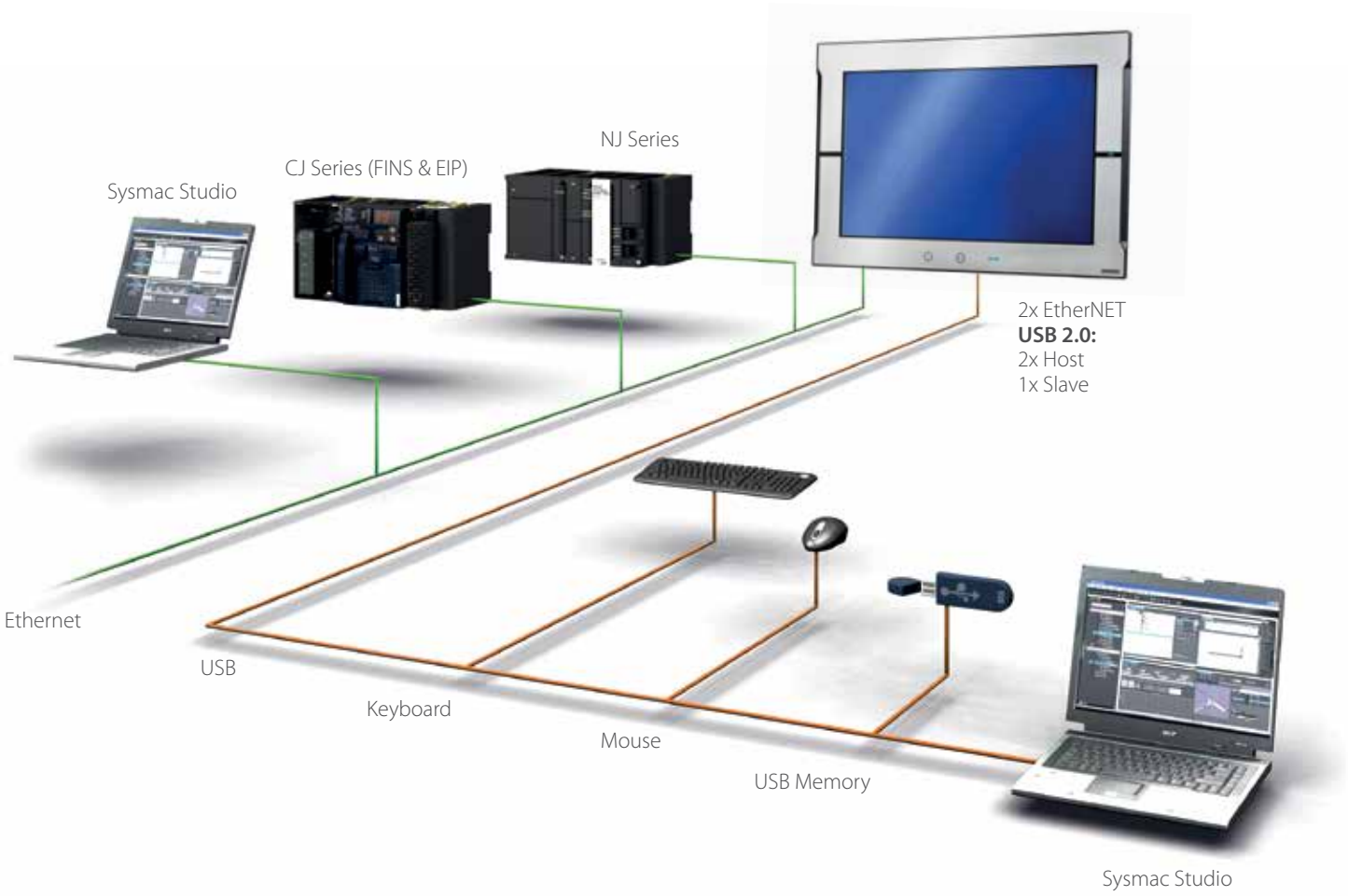
After the IAG is built and tested (using simulation) it can be published and the collection file distributed to be used again and again.

A range of options that covers every need



1. USB slave (Tool port)
2. 2x USB
3. 1 Serial*
4. 2 Ethernet ports, one for factory one for office network
5. SD Card slot
6. 24V DC

* NA system version 1.00 supports the serial port using VB.NET code.



- High speed communications network
- Broad choice of connection possibilities
- Pass-through communication to the NJ Series controller
- Direct Ethernet connectivity to Sysmac Studio

Programmable Terminal
NA Series

Bringing technology to life

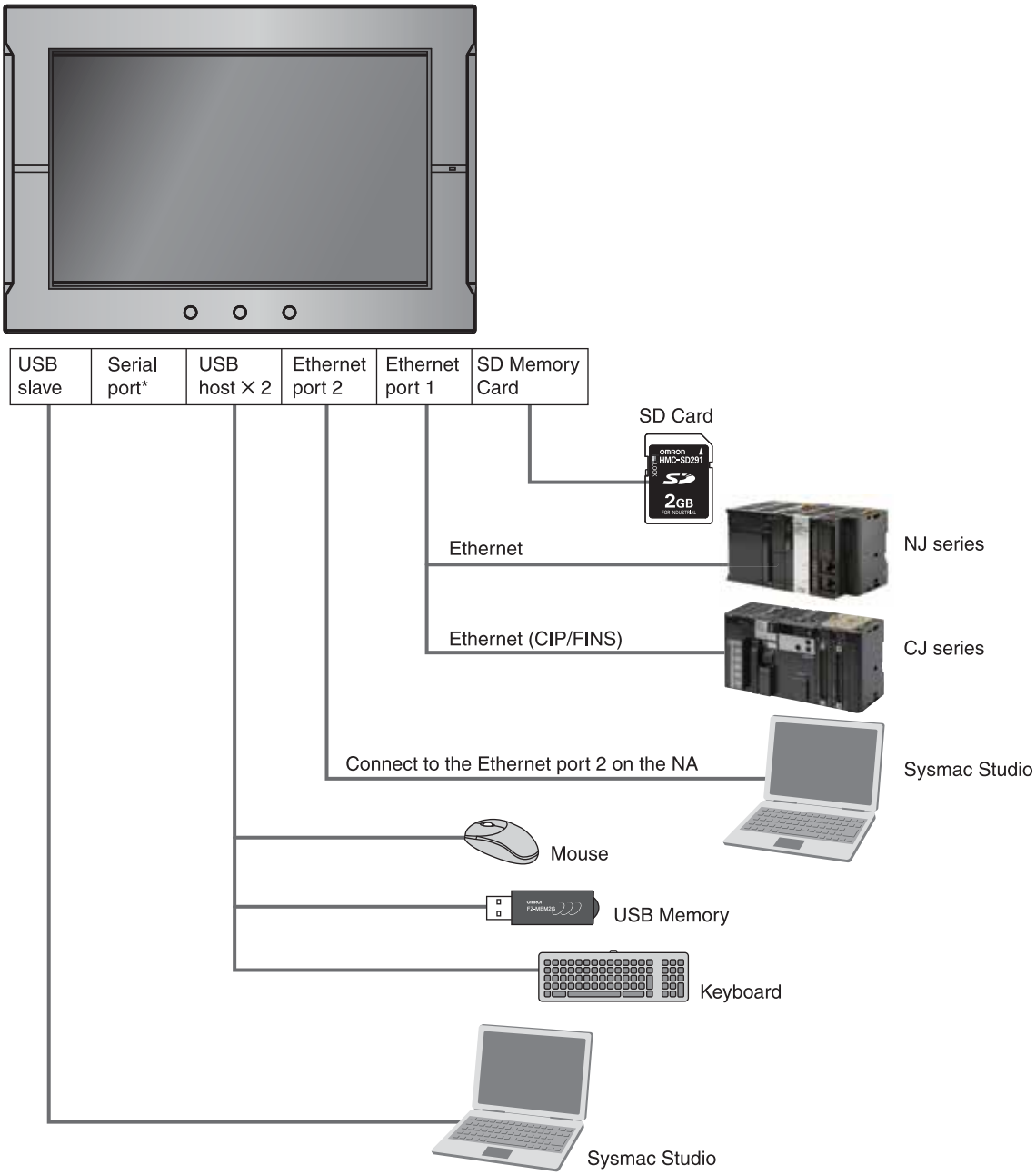
The NA-series Programmable Terminal allows vibrant visualization of machine data in industrial applications, enhancing usability with multi-media.

The NA Series, together with the NJ Series Machine Automation Controller and the Automation Software Sysmac Studio, allows you to simply and flexibly create sophisticated user interfaces to suit your machines.

Features

- Widescreen in all models: 7, 9, 12, and 15 inches
- More than 16 million color display for all models and 1280 x 800 high resolution display for the 12 and 15-inch models
- Multimedia including video and PDF
- 2 Ethernet ports capable of simultaneous access from both the control device and maintenance segments by separating the segments
- Sysmac Studio providing an Integrated Development Environment
  NJ Global Variables are exposed to the NA without CIP publishing. Test the complete system via the integrated Simulator
- Many security features including operation authority settings and execution restrictions with IDs
- Microsoft Visual Basic for versatile, flexible and advanced programming

System configuration



* NA system version 1.00 supports the serial port using VB.NET code.

Ordering Information

NA

Product name	Specifications	Model
NA5-15W	15.4 inch wide screen, TFT LCD, 16,770,000 colors (24 bit full color), 1280 × 800 dots, Bezel color : Silver	NA5-15W101S
	15.4 inch wide screen, TFT LCD, 16,770,000 colors (24 bit full color), 1280 × 800 dots, Bezel color : Black	NA5-15W101B
NA5-12W	12.1 inch wide screen, TFT LCD, 16,770,000 colors (24 bit full color), 1280 × 800 dots, Bezel color : Silver	NA5-12W101S
	12.1 inch wide screen, TFT LCD, 16,770,000 colors (24 bit full color), 1280 × 800 dots, Bezel color : Black	NA5-12W101B
NA5-9W	9 inch wide screen, TFT LCD, 16,770,000 colors (24 bit full color), 800 × 480 dots, Bezel color : Silver	NA5-9W001S
	9 inch wide screen, TFT LCD, 16,770,000 colors (24 bit full color), 800 × 480 dots, Bezel color : Black	NA5-9W001B
NA5-7W	7 inch wide screen, TFT LCD, 16,770,000 colors (24 bit full color), 800 × 480 dots, Bezel color : Silver	NA5-7W001S
	7 inch wide screen, TFT LCD, 16,770,000 colors (24 bit full color), 800 × 480 dots, Bezel color : Black	NA5-7W001B

NEMA 4X Brackets

Product name	Specifications	Model
NEMA 4X Bracket for NA5-15W	Required accessory bracket for NEMA 4X applications	NA-15WATW01
NEMA 4X Bracket for NA5-12W	Required accessory bracket for NEMA 4X applications	NA-12WATW01
NEMA 4X Bracket for NA5-9W	Required accessory bracket for NEMA 4X applications	NA-9WATW01
NEMA 4X Bracket forNA5-7W	Required accessory bracket for NEMA 4X applications	NA-7WATW01

Options

Product name	Specifications	Model
SD memory card	2 GB	HMC-SD291
	4 GB	HMC-SD491
USB Memory	2 GB	FZ-MEM2G
	8 GB	FZ-MEM8G
Replacement Battery	Battery life: 5 years (at 25°C). This Battery is provided as an accessory.	CJ1W-BAT01
Anti-reflection Sheets	For the NA5-15W. Attach a Sheet to the screen to protect against diffused reflections and dirt. The entire Sheet is colorless and transparent. Five Sheets are provided in one set.	NA-15KBA04
	For the NA5-12W. Attach a Sheet to the screen to protect against diffused reflections and dirt. The entire Sheet is colorless and transparent. Five Sheets are provided in one set.	NA-12KBA04
	For the NA5-9W. Attach a Sheet to the screen to protect against diffused reflections and dirt. The entire Sheet is colorless and transparent. Five Sheets are provided in one set.	NA-9KBA04
	For the NA5-7W. Attach a Sheet to the screen to protect against diffused reflections and dirt. The entire Sheet is colorless and transparent. Five Sheets are provided in one set.	NA-7KBA04

Automation Software

Product name	Specifications	Number of licenses	Model (No media/ DVD, license only)	Model (combination DVD & license)
Sysmac Studio Standard Edition Ver.1. □□	The Sysmac Studio provides an integrated development environment to set up, program, debug, and maintain NJ-series Controllers and other Machine Automation Controllers, as well as EtherCAT slaves. Sysmac Studio runs on the following OS. Windows XP (Service Pack 3 or higher, 32-bit version) / Vista (32-bit version) / 7 (32-bit/64-bit version) / 8 (32-bit/64-bit version)	– (Media/DVD only)	SYSMAC-SE200D	–
		1 license	SYSMAC-SE201L	SYSMAC-STUDIO-1USER
		3 licenses	SYSMAC-SE203L	SYSMAC-STUDIO-3USER
		10 licenses	SYSMAC-SE210L	SYSMAC-STUDIO-10USER
		30 licenses	SYSMAC-SE230L	SYSMAC-STUDIO-30USER
		50 licenses	SYSMAC-SE250L	SYSMAC-STUDIO-50USER
		Site license	SYSMAC-SE2XXL	SYSMAC-STUDIO-SITE

USB Cable

Product name	Specifications
USB Cable	Use commercially available USB cable. Specifications: USB 2.0 cable (A connector - B connector), 5.0 m max.

Recommended Network Devices

Industrial Switching Hubs

Product name	Specifications					Model
	Functions	No. of ports	Failure detection	Accessories	Current consumption (A)	
Industrial Switching Hubs	Quality of Service (QoS): EtherNet/IP control data priority Failure detection: Broadcast storm and LSI error detection 10/100BASE-TX, Auto-Negotiation	3	No	Power supply connector	0.08	W4S1-03B
		5	No	• Power supply connector • Connector for informing error	0.12	W4S1-05B
		5	Yes		0.12	W4S1-05C

Recommended Ethernet Communications Cables

Use STP (shielded twisted-pair) cable of category 6A or higher

Appearance	Type	Cable Sheath Material	Part Number	Length in inch (cm)	xx = Length	y = Color
	Category 6A Cable with Connectors on Both Ends (RJ45/RJ45)	Low Smoke Zero Halogen (LSZH)	**XS6W-6LSZH8SSxxCM-y**	7.87 (20)	20	B = Blue Y = Yellow G = Green
				11.8 (30)	30	
				19.6 (50)	50	
				39.4 (100)	100	
				59.0 (150)	150	
				78.7 (200)	200	
				118 (300)	300	
				196 (500)	500	
				295 (750)	750	
				393 (1000)	1000	
				590 (1500)	1500	
				787 (2000)	2000	

Example: XSW-6LSZH8SS100CMB = CAT6A cable with RJ45 connectors at both ends 39.4 inch (100 cm) long, Blue

NA Series
Performance Specifications

Display

Item		Specification			
		NA5-15W □□□□	NA5-12W □□□□	NA5-9W □□□□	NA5-7W □□□□
Display panel * 1	Display device	TFT LCD			
	Screen size	15.4 inches	12.1 inches	9.0 inches	7.0 inches
	Resolution	1,280 × 800 dots (horizontal × vertical)		800 × 480 dots (horizontal × vertical)	
	Colors	16,770,000 colors (24 bit full colors)			
	Effective display area inches (mm)	13.0 x 8.15 (331 x 207) (horizontal x vertical)	10.3 x 6.4 (261 x 163) (horizontal x vertical)	7.8 x 4.6 (197 x 118) (horizontal x vertical)	6.0 x 3.6 (152 x 91) (horizontal x vertical)
	View angles	Left: 60°, Right: 60°, Top: 60°, Bottom: 60°			
Backlight * 2	Life	50,000 hours min. * 3			
	Brightness adjustment	200 levels			
Front panel indicators * 4	RUN	Lit green: Normal operation Lit red: Error			

*1. There may be some defective pixels in the display. This is not a fault as long as the numbers of defective light and dark pixels fall within the following standard ranges.

Model	Standard range
NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	Number of light and dark pixels: 10 or less. (There must not be 3 consecutive light/dark pixels.)

*2. The backlight can be replaced at an OMRON maintenance base.
*3. This is the estimated time before brightness is reduced by half at room temperature and humidity. The life expectancy is drastically shortened if Programmable Terminal is used at high temperatures.
*4. The brightness of the front panel indicators is also adjustable when you adjust the brightness of the backlight.

Operation

Item	Specification			
	NA5-15W □□□□	NA5-12W □□□□	NA5-9W □□□□	NA5-7W □□□□
Touch panel	Method: Analog resistance membrane (pressure sensitive)			
	Resolution: 16,384 × 16,384			
	Life: 1,000,000 operations			
Function keys *	3 inputs (capacitance inputs)			

* Each function key has blue indicator. The brightness of the function key indicators is also adjustable when you adjust the brightness of the backlight.

Data Capacity

Item	Specification			
	NA5-15W □□□□	NA5-12W □□□□	NA5-9W □□□□	NA5-7W □□□□
User data capacity	900MB			

External Interfaces

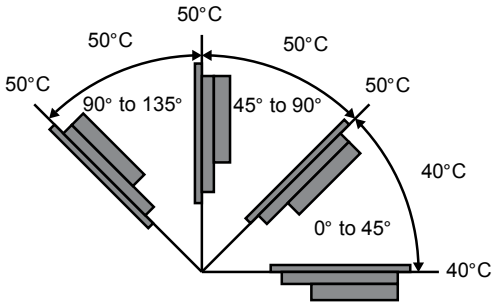
Item		Specifications (Same for all models.)
Ethernet ports	Applications	Port 1: Connecting to anything other than the Sysmac Studio, e.g., device connections and VNC clients Port 2: Connecting to the Sysmac Studio in addition to the applications of port 1.
	Number of ports	2 ports
	Compliant standards	IEEE 802.3i (10BASE-T), IEEE 802.3u (100BASE-TX), and IEEE 802.3ab (1000Base-T)
	Transmission media	Shielded twisted-pair (STP) cable: Category 5, 5e, or higher
	Transmission distance	328 ft. (100 m) max.
	Connector	RJ-45 8P8C modular connector
USB host ports	Applications	USB Memory Device, keyboard, or mouse
	Number of ports	2 ports
	Compliant standards	USB 2.0
	Transmission distance	16.5 ft. (5 m) max.
	Connector	Type-A connector
USB slave port	Applications	Sysmac Studio connection
	Number of ports	1 port
	Compliant standards	USB 2.0
	Transmission distance	16.5 ft. (5 m) max.
	Connector	Type-B connector
Serial port *	Applications	Device Connection
	Number of ports	1 port
	Compliant standards	RS-232C
	Transmission distance	49.2 ft. (15 m) max.
	Connector	D-SUB 9-pin female connector
SD Memory Card slot	Applications	To transfer or store the project or to store log data.
	Number of slots	1 slot
	Compliant standards	SD/SDHC
Expansion Unit connector *	Applications	Expansion Unit
	Quantity	1

* The serial port and Expansion Unit connector are for future expansion.

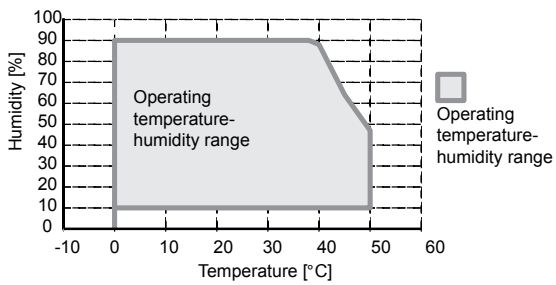
General Specifications

Item	Specification			
	NA5-15W□□□□	NA5-12W□□□□	NA5-9W□□□□	NA5-7W□□□□
Rated supply voltage	24 VDC			
Allowable power supply voltage range	19.2 to 28.8 VDC (24 VDC ±20%)			
Allowable momentary power interruption time	Operation for momentary power interruption is not specified.			
Power consumption	47 W max.	45 W max.	40 W max.	35 W max.
Ambient operating temperature	32 to 122°F (0 to 50°C) *1 *2			
Ambient storage temperature	-4 to 140°F (-20 to 60°C) *3			
Ambient operating humidity	10 to 90% * 2 Must be no condensation.			
Atmosphere	Must be free from corrosive gases.			
Pollution degree	2 or less: JIS B 3502, IEC 61131-2			
Noise immunity	2 kV on power supply line (Conforms to IEC 61000-4-4.)			
Vibration resistance (during operation)	Conforms to IEC 60068-2-6. 5 to 8.4 Hz with 3.5 mm half amplitude and 8.4 to 150 Hz with 9.8 m/s^2 for 100 minutes each in X,Y, and Z directions (Time coefficient of 10 minutes × coefficient factor of 10 = total time of 100 min.)			
Shock resistance (during operation)	Conforms to IEC 60028-2-27. 147 m/s^2 3 times each in X, Y, and Z directions			
Dimensions W x H x D in (mm)	16.5 x 11.5 x 2.7 (420 x 291 x 69)	13.4 X 9.6 X 2.7 (340 X 244 X 69)	11.4 X 7.5 X 2.7 (290 X 190 X 69)	9.3 X 6.9 X 2.7 (236 X 165 X 69)
Panel cutout dimensions (horizontal X vertical)	15.4 x 10.5 in $^{+0.04}$ (392 x 268 mm $^{+1}$) Panel thickness: .062 to .24 in (1.6 to 6.0 mm)	12.2 x 8.7 in $^{+0.04}$ (310 x 221 mm $^{+1}$) Panel thickness: .062 to .24 in (1.6 to 6.0 mm)	10.3 x 6.5 in $^{+4}$ (261 x 166 mm $^{+1}$) Panel thickness: .062 to .24 in (1.6 to 6.0 mm)	7.6 x 5.6 in $^{+0.02}$ (197 x 141 mm $^{+0.5}$) Panel thickness: .062 to .24 in (1.6 to 6.0 mm)
Weight	7.0 lb (3.2 kg) max.	5.0 lb (2.3 kg) max.	3.7 lb (1.7 kg) max.	2.9 lb (1.3 kg) max.
Degree of protection	Front-panel controls: IP65 oil-proof type, UL type 4X			
Battery life	Battery life: 5 years at 25°C The RTC will be backed up for 5 days after the battery runs low. The RTC will be backed up by a super capacitor for 5 minutes after removing the old battery. (This assumes that the power is first turned ON for at least 5 minutes and then turned OFF.)			
International standards	UL 508/CSA standard C22.2 No.142 * 4 EMC Directive (2004/108/EC) EN 61131-2:2007 Shipbuilding standards LR, DNV, and NK IP65 oil-proof, UL type 4X (front panel only) ANSI 12.12.01 Class 1 Division 2/CSA standard C22.2 RoHS Directive (2002/95/EC) KC Standards KN 61000-6-2:2012-06 for EMS and KN 61000-6-4:2012-06 for EMI RCM			

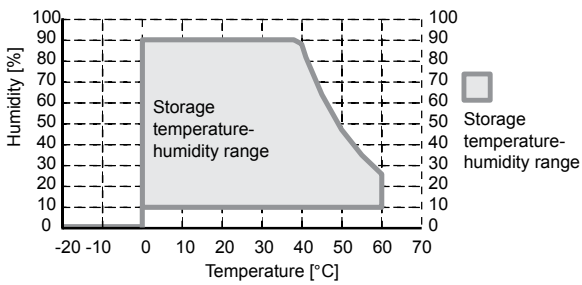
*1. The ambient operating temperature is subject to the following restrictions, depending on the mounting angle.
- The ambient operating temperature is 0° to 40°C when the mounting angle is 0° or more and less than 45° to the horizontal.
- The ambient operating temperature is 0° to 50°C when the mounting angle is 45° or more and 90° or less to the horizontal.
- The ambient operating temperature is 0° to 50°C when the mounting angle is 90° or more and 135° or less to the horizontal.



*2. Use the Programmable Terminal within the following temperature and humidity ranges.



*3. Store the Programmable Terminal within the following temperature and humidity ranges.



Conversion Chart	
°C	°F
0	32
10	50
20	68
30	86
40	104
50	122
60	140

*4. Use power supply Class 2 to conform to UL Standards.

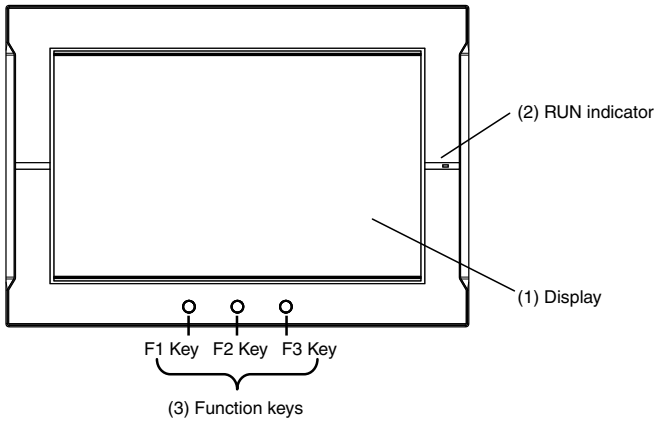
NA Series
Version Information

NA series and Programming Devices

NA series		Corresponding unit versions/version	
Model	**NA system version**	**NJ-series CPU Units NJ501-□□□□ NJ301-□□□□**	**Sysmac studio**
NA5-15W□□□□	1.00 or later	NJ501 : 1.01 or later NJ501 Database Connection : 1.05 or later NJ301 : 1.01 or later	1.10 or later
NA5-12W□□□□			
NA5-9W□□□□			
NA5-7W□□□□			

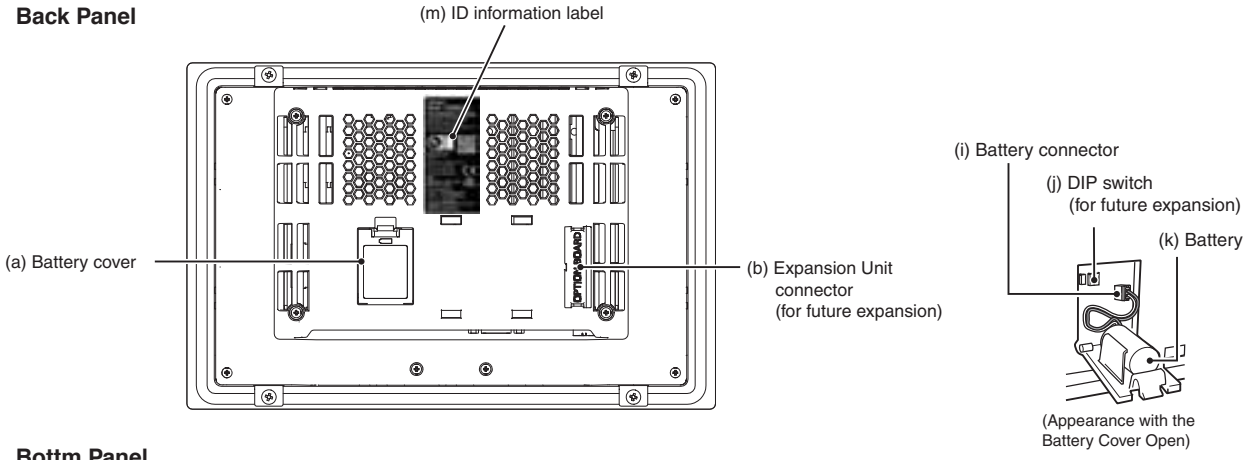
Components and Functions

Front Panel

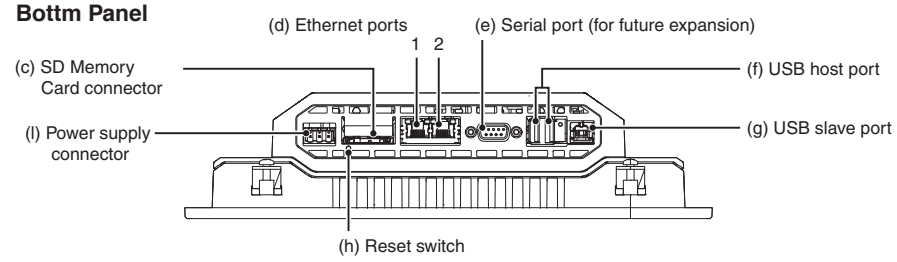


No.	Name	Description
(1)	Display	The entire display is a touch panel that also functions as an input device.
(2)	RUN indicator	The status of the indicator changes according to the status of the NA.
(3)	Function keys	There are three function keys: F1, F2, and F3.  : F1 Key,  : F2 Key,  : F3 Key You can use the function keys as execution conditions for the actions for global or page events. You can also use the function keys for interlocks (two-point touch).

Back Panel



Bottm Panel



No.	Name	Description
(a)	Battery cover	Open this cover to replace the Battery.
(b)	Expansion Unit connector *	For future expansion.
(c)	SD Memory Card connector	Insert an SD Memory Card here.
(d)	Ethernet port 1	Connect a device other than the Sysmac Studio.
	Ethernet port 2	Connect mainly the Sysmac Studio.
(e)	Serial port *	For future expansion.
(f)	USB host port	Connect this port to a USB Memory Device, mouse, etc.
(g)	USB slave port	Connect the Sysmac Studio or other devices.
(h)	Reset switch	Use this switch to reset the NA.
(i)	Battery connector	Connect the connector on the backup Battery here.
(j)	DIP switch *	For future expansion. (The DIP switch is on a PCB that is accessed by opening the Battery cover.) Do not change any of the factory settings of the pins on the DIP switch. (Default setting: OFF)
(k)	Battery	This is the battery to backup the clock information in the NA.
(l)	DC input terminals	These are the power supply terminals. Connect the accessory power supply connector and supply power.
(m)	ID information label	You can check the ID information of the NA.

* The DIP switch, Expansion Unit connector, and serial port are for future expansion.

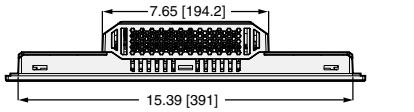
Supported Devices

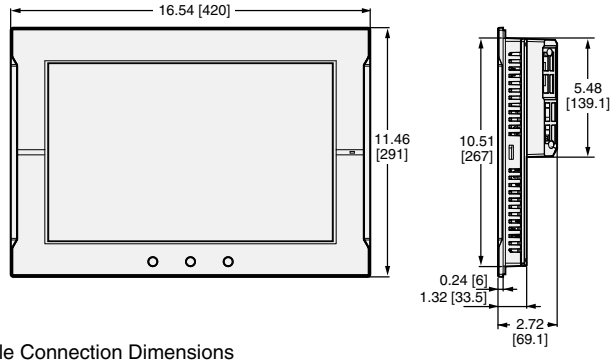
Manufacturer	Models	Connection method	Communications driver
OMRON	NJ501-□□□□ NJ301-□□□□	Built-in EtherNet/IP port	Ethernet
	CJ2H-CPU64/65/66/67/68-EIP CJ2M-CPU31/32/33/34/35	Built-in EtherNet/IP port	CIP Ethernet
	CJ2H-CPU64/65/66/67/68-EIP CJ2M-CPU31/32/33/34/35	CJ1W-EIP21	
	CJ2H-CPU64/65/66/67/68-EIP CJ2M-CPU31/32/33/34/35	Built-in EtherNet/IP port	FINS Ethernet
	CJ1H-CPU65H/66H/67H CJ1H-CPU65H/66H/67H-R CJ1G-CPU42H/43H/44H/45H CJ1M-CPU11/12/13/21/22/23 CJ2H-CPU64/65/66/67/68(-EIP) CJ2M-CPU11/12/13/14/15 CJ2M-CPU31/32/33/34/35	CJ1W-ETN21 CJ1W-EIP21	

NA Series
Dimensions

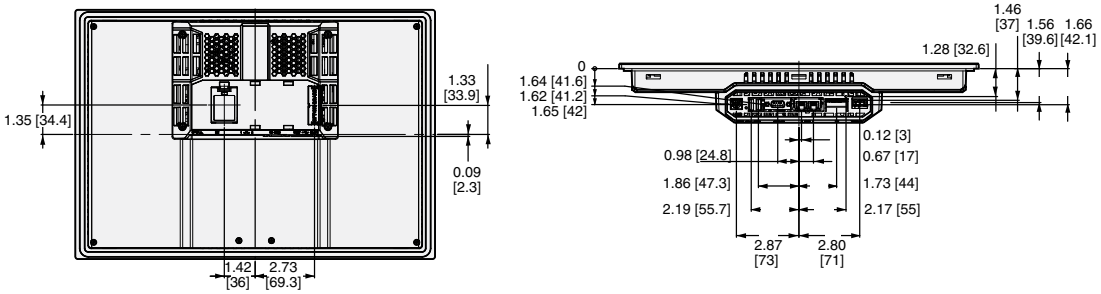
Unit: inches [mm]

NA5-15W101S/-15W101B





Cable Connection Dimensions



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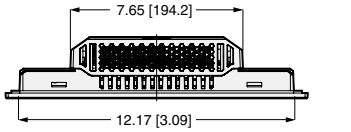
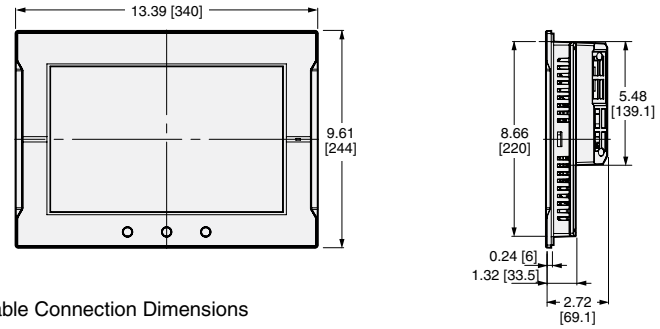
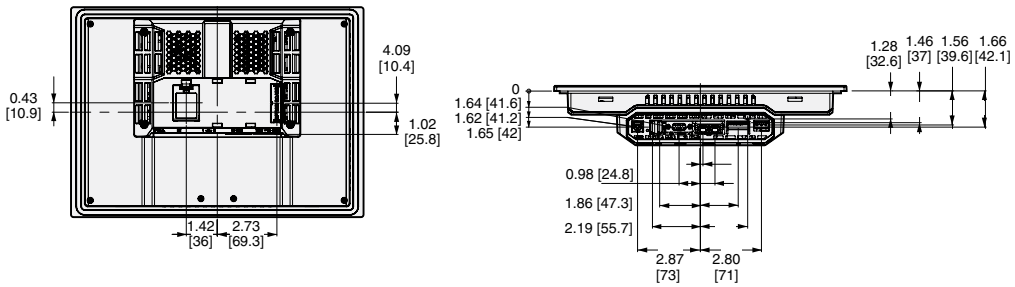
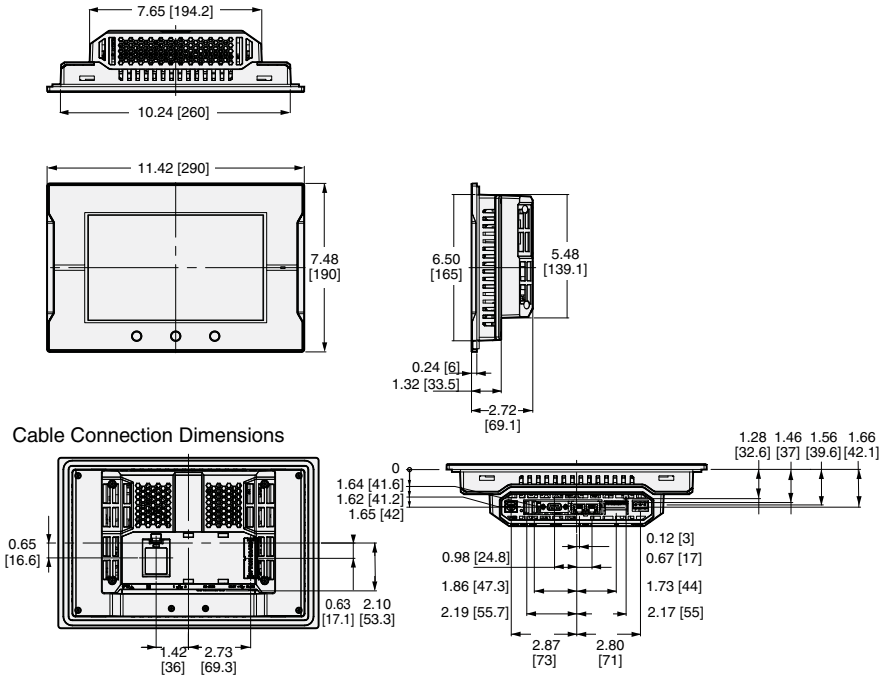




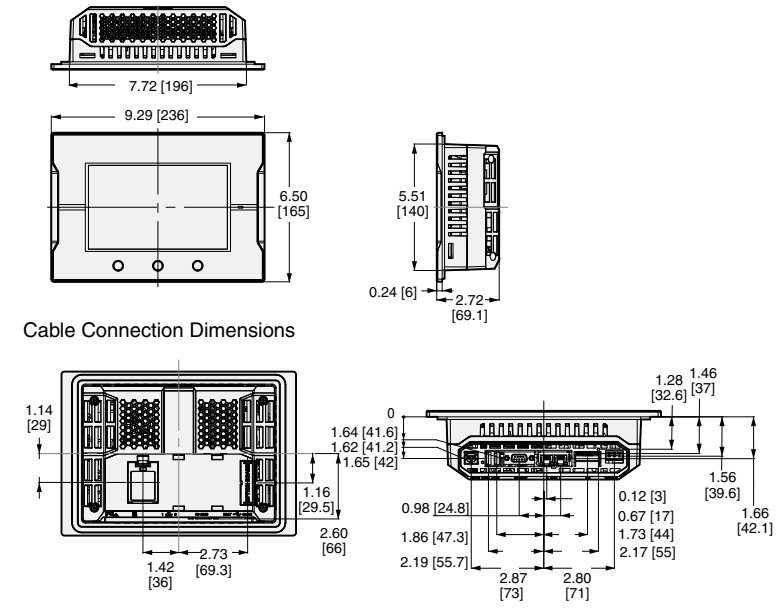
Cable Connection Dimensions



NA5-9W001S/-9W001B



NA5-7W001S/-7W001B



NA Series
Related Manuals

Cat. No.	Model number	Manual
V117	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	NA-series Programmable Terminal Hardware User's Manual
V118	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	NA-series Programmable Terminal Software User's Manual
V119	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	NA-series Programmable Terminal Device Connection User's Manual
V120	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	NA-series Programmable Terminal Startup Guide

Notes

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