

CIDRW SYSTEM

# **V640 SERIES**

USER'S MANUAL

AMPLIFIER UNITS

V640-HAM11-ETN

V640-HAM11-L-ETN

CIDRW HEADS

V640-HS61

V640-HS62

# Introduction

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Thank you for purchasing the V640-series CIDRW System.

Please observe the following points when operating the V640-series CIDRW System:

- Please read and understand the contents of this manual before using the system.
- After reading this manual, store it in a convenient location for easy reference whenever necessary.

<b>Introduction</b>	Table of Contents/Precautions in Using the Products
<b>SECTION 1</b>	Product Outline
<b>SECTION 2</b>	Installation and Connections/Wiring
<b>SECTION 3</b>	Preparing for Communications
<b>SECTION 4</b>	Reading from/Writing to ID Tags
<b>SECTION 5</b>	Browser Interface
<b>SECTION 6</b>	Troubleshooting
<b>SECTION 7</b>	Appendix

## **CIDRW System**

V640-HAM11-ETN  
V640-HAM11-L-ETN  
V640-HS61  
V640-HS62

Amplifier Unit  
Amplifier Unit  
CIDRW Head  
CIDRW Head

## **User's Manual**

## **READ AND UNDERSTAND THIS DOCUMENT**

Please read and understand this document before using the products. Please consult your OMRON representative if you have any questions or comments.

## **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.

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In no event shall responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

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

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The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS 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.

**PERFORMANCE DATA**

Performance data given in this document 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.

**CHANGE IN SPECIFICATIONS**

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It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the product may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

**DIMENSIONS AND WEIGHTS**

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

**ERRORS AND OMISSIONS**

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

**PROGRAMMABLE PRODUCTS**

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

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# Applicable Standards

The CIDRW System complies with the following international regulations and standards.

## 1. USA

	CIDRW Amplifier Unit	CIDRW Head
FCC Part 15 Subpart C FCC ID: E4EV640HAM11	V640-HAM11-ETN	V640-HS61
FCC Part 15 Subpart C FCC ID: E4EV640HAM11L	V640-HAM11-L-ETN	V640-HS62

### FCC NOTICE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

### FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Do not remove the ferrite core (TDK-EPC Type ZCAT2749-0430C:V640-HS62) installed on the cables to suppress RF interference.

### FCC Part15 subpart B

#### NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### CAUTION

This device must be professionally installed.

## 2. Canada

	CIDRW Amplifier Unit	CIDRW Head
IC ID: 850J-V64HAM11	V640-HAM11-ETN	V640-HS61
IC ID: 850J-V64HM11L	V640-HAM11-L-ETN	V640-HS62

This device complies with RSS-Gen of IC (Industry Canada) Rules.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### ICES-003

This class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme a la norme NMB-003 du Canada.

## Applicable SEMI Standards

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This CIDRW system complies with the following standards.

- SEMI E99 THE CARRIER ID READER/WRITER FUNCTIONAL STANDARD
- SEMI E5 EQUIPMENT COMMUNICATION STANDARD 2 MESSAGE CONTENT (SECS II)
- SEMI E4 EQUIPMENT COMMUNICATION STANDARD 1 MESSAGE TRANSFER (SECS I)



SEMI is the acronym for Semiconductor Equipment and Materials International.  
SECS is the acronym for SEMI Equipment Communication Standard.

## Safety Precautions

### ● Definition of Precautionary Information

The following notation and alert symbols are used in this User's Manual to provide precautions required to ensure safe usage of a V640-series CIDRW System. The safety precautions that are provided are extremely important to safety. Always read and heed the information provided in all safety precautions.

The following signal words are used in this manual.



Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.

### ● Meanings of Alert Symbols



Prohibition  
Indicates general prohibitions for which there is no specific symbol.

### ● Alert Statements in this Manual



The product is not designed or rated for ensuring the safety of persons.  
Do not use it for such purposes.



## Precautions for Safe Use

Please observe the following precautions for safe use of the products.

- Do not allow water to enter or insert wires through gaps in the case. This could cause fire or electric shock.
- In the event of a malfunction, stop using the product immediately, turn OFF the power, and consult your OMRON dealer.
- Dispose of this product as industrial waste.
- Do not remove the CIDRW Head from the Amplifier Unit while power is being supplied.

Confirm the effects of radio waves on medical devices. The following guideline is from JAISA (Japan Automatic Identification Systems Association).

This product is a reader-writer that uses radio waves for RFID equipment. The application and location of this product may affect medical devices. The following precaution must be observed in the application of the product to minimize the effects on medical devices. Any person with an implanted medical device must keep the area where the device is implanted at least 22 cm away from the antenna of a stationary or modular RFID device.



## Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunctions, or undesirable effects on product performance.

### ■ Installation Site

Install the product at a location where:

- It is not exposed to direct sunlight.
- It is not exposed to corrosive gases, dust, metal chips, or salt.
- The working temperature is within the range stipulated in the specifications.
- There are no sudden variations in temperature (no condensation).
- The relative humidity is within the range stipulated in the specifications.
- No vibration or shock exceeding the values stipulated in the specifications is transmitted directly to the body of the product.
- It is not subject to splashing water, oil, or chemical substances.

### ■ Mounting

- This product communicates with ID Tags using the 134 kHz frequency band. Some transceivers, motors, monitoring equipment, and power supplies (power supply ICs) generate electrical waves (noise) that interfere with communications with ID Tags. If you are using the product in the vicinity of any of these devices, check the effect on communications in advance.
- In order to minimize the effects of noise, ground nearby metal bodies with a grounding resistance not exceeding 100 ohms.
- When mounting Amplifier Units, tighten the screws with a torque no greater than 1.2 N·m.
- When mounting CIDRW Heads, tighten the screws with a torque no greater than 0.6 N·m.
- When multiple CIDRW Heads are mounted next to each other, communications performance could be impaired by mutual interference. Read and follow the information in this manual on mutual interference when installing multiple Heads.



Refer to page 86.

## ■ Power and Ground Cables

- Use the power supply voltage specified in this manual.
- Ensure correct polarity when connecting to the +/- power supply terminals.
- The ground terminals must be connected to a ground with a grounding resistance not exceeding 100 ohms.
- When using the CIDRW System in Europe, the connecting cable between the CIDRW and the DC power supply must be 3 m or less.

## ■ Wiring Work

- Always turn the power OFF before starting wiring work or connecting/disconnecting cables.
- Do not run high-voltage lines and power lines through the same conduit.
- To prevent damage by static electricity, wear a wrist strap or equivalent, and take measures to prevent charging, before touching terminal components or parts inside connectors.

## ■ Screw Locking Adhesive

- Screw locking adhesive (screw lock) may cause deterioration and cracking of resin parts; do not use it for screws in resin parts or anywhere where resin washers are used.

## ■ Cleaning

- Use standard grade alcohol.
- Do not use organic solvents such as thinner or benzene.

## ■ Startup Precaution

Never turn OFF the power supply while the CIDRW Controller is starting, including when power is turned ON, when the mode is changed, or when the CIDRW Controller is being reset. Doing so may damage the CIDRW Controller.

## ■ Application Precaution

Never turn OFF the power supply while setting the IP address, subnet mask, or Web password. Doing so may damage the Amplifier Unit.

# Reading this Manual

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## Visual Aids



Indicates an explanation of a point that must be observed to ensure that the product is capable of its proper functions and performance. Read this information carefully and follow the cautions. If the product is used incorrectly, data or the equipment itself could be destroyed.



Indicates summaries of points of particular importance relating to product performance, e.g., points to note during operation and advice on how to use the product.



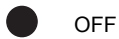
Indicates the number of a page where related information can be found.



Indicates information for reference when you encounter a problem.

## Indicator Status

The following symbols are used to show the status of the indicators on the CIDRW Controller and Amplifier Units.



OFF



Flashing



ON

MEMO

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# SECTION 1

## Product Outline

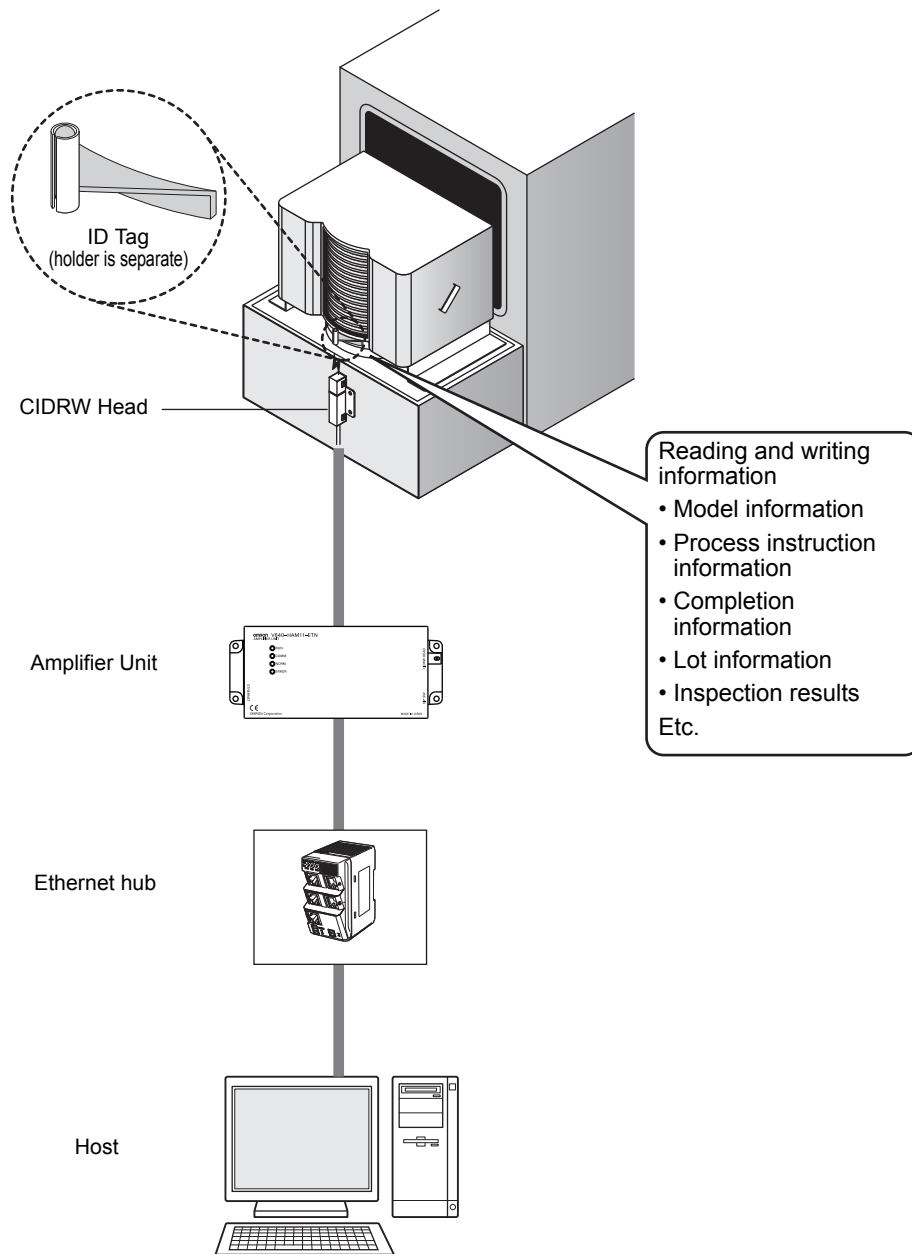
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# What Is a CIDRW System?

The CIDRW system writes data to, and reads data from, the carrier IDs (ID Tags) mounted on the carriers (FOUP) in semiconductor manufacturing processes without contacting these ID Tags. CIDRW is the abbreviation of Carrier ID Reader/Writer and this abbreviation is used throughout this manual.

Reading and writing information such as models, process instructions, lots, and inspection results to and from ID Tags makes it possible to manage work instruction information from a host device.

Example: Management of information in semiconductor and wafer manufacturing processes





# Features

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A V640-series CIDRW Head can be connected to a V640-HAM11-ETN or V640-HAM11-L-ETN Amplifier Unit to read and write ID Tags manufactured by Texas Instruments (TI). Reading and writing is performed according to commands from the host device.

## ■ V640-HAM11-ETN

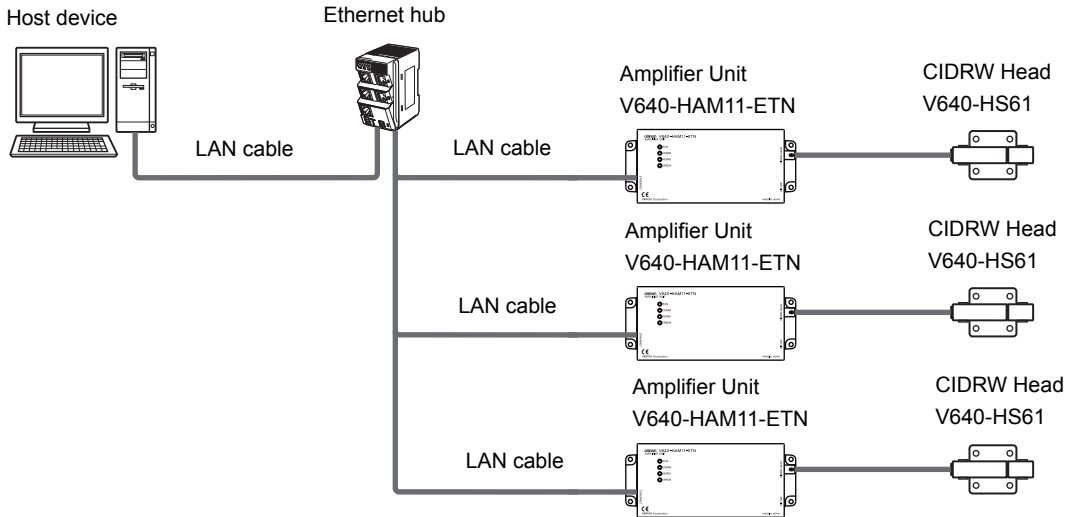
The V640-HAM11-ETN Amplifier Unit is equipped with Ethernet. The host device is connected through a LAN cable and controls the Amplifier Units using TCP/IP. The Amplifier Units provide a Web browser function that allows communications to be set and status to be managed using simple command communications.

## ■ V640-HAM11-L-ETN

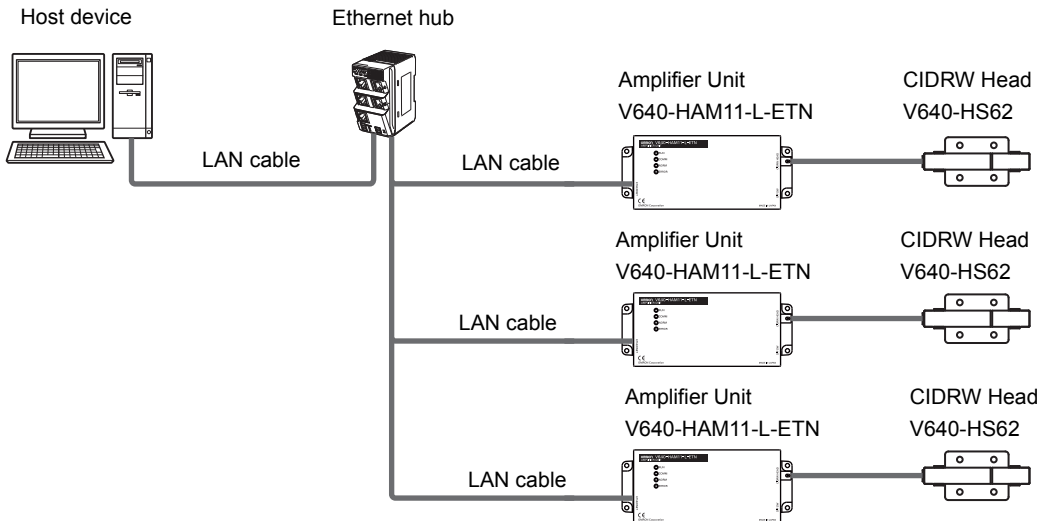
The V640-HAM11-L-ETN Amplifier Unit is equipped with Ethernet and can be connected to a V640-HS62 CIDRW Head to perform long-distance communications. The functions of the V640-HAM11-L-ETN Amplifier Unit are the same as those of the V640-HAM11-ETN Amplifier Unit.

# System Configuration

## V640-HAM11-ETN

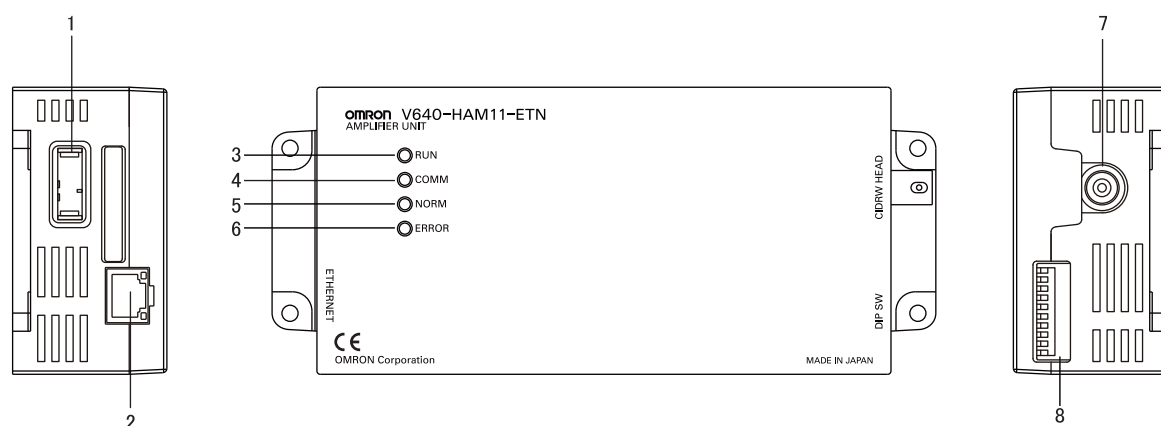


## V640-HAM11-L-ETN



## Component Names and Functions

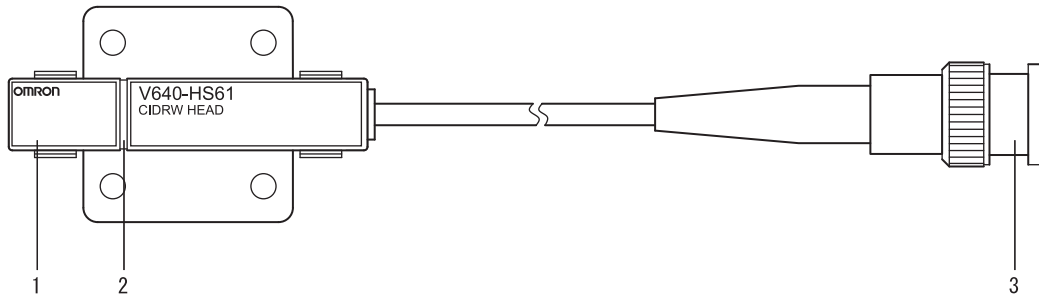
### V640-HAM11-ETN and V640-HAM11-L-ETN Amplifier Units



No.	Name	Function
1	Dedicated power supply connector	Connect to the 24 VDC power supply.
2	Ethernet port	Connect to the host device through a LAN cable.
3	RUN indicator (green)	Turns ON when the Amplifier Unit is in normal operation.
4	COMM indicator (yellow)	Turns ON during communications with the host device or during communications with an ID Tag.
5	NORM indicator (green)	Turns ON when the communications finish with no error.
6	ERROR indicator (red)	Turns ON when an error occurs during communications with the host device, or during communications with an ID Tag.
7	CIDRW Head connection port	A CIDRW Head is connected here. The V640-HS61 CIDRW Head is used with the V640-HAM11-ETN. The V640-HS62 CIDRW Head is used with the V640-HAM11-L-ETN.
8	Setting DIP switches	Set the IP address and enable/disable the Test Mode with this DIP switch.

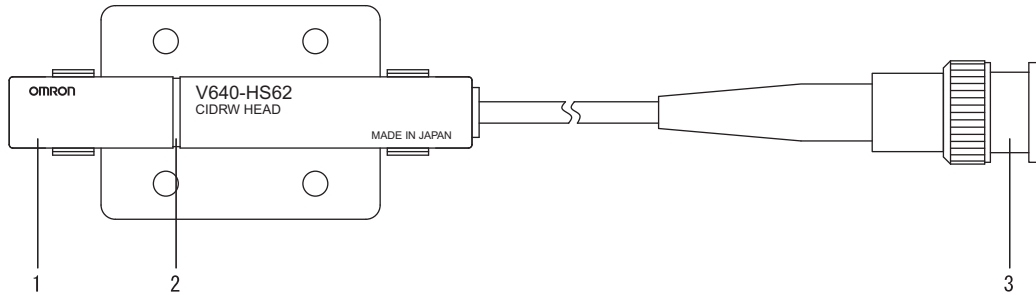
## V640-HS61 and V640-HS62 CIDRW Heads

### ■ V640-HS61



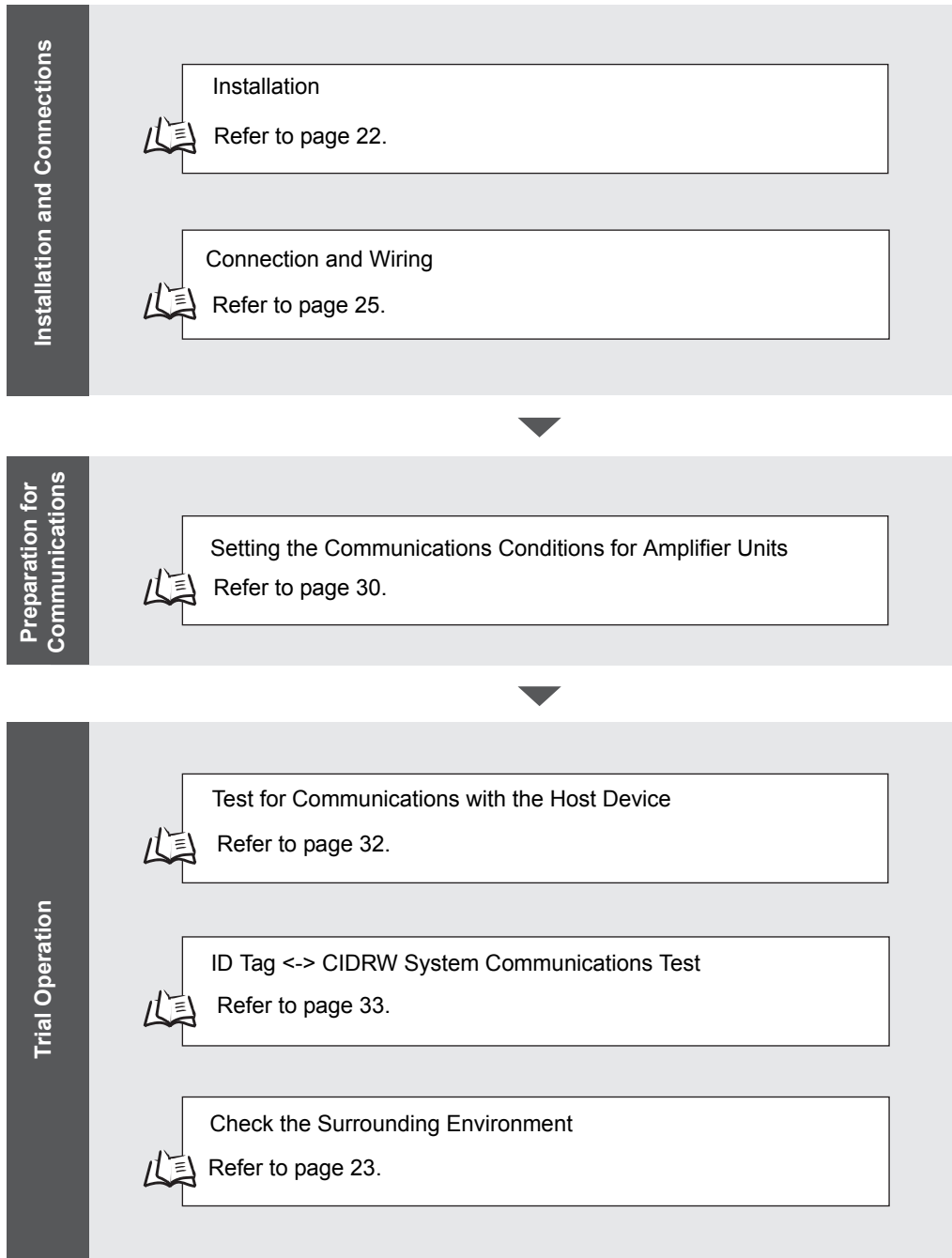
No.	Name	Function
1	Antenna	Used to communicate with ID Tags.
2	Antenna center	This is the center of the communications area.
3	Connector	Connect to an Amplifier Unit.

### ■ V640-HS62





No.	Name	Function
1	Antenna	Used to communicate with ID Tags.
2	Antenna center	This is the center of the communications area.
3	Connector	Connect to an Amplifier Unit.

# Flowchart for Getting Started





Communications


 Communications Test with Actual Commands  
Refer to page 36.

 When you Encounter a Problem...

Troubleshooting

 Refer to page 70. List of Error Messages

 Refer to page 70. Amplifier Unit Indicators

 Refer to page 71. Operation Check Flowchart

# SECTION 2

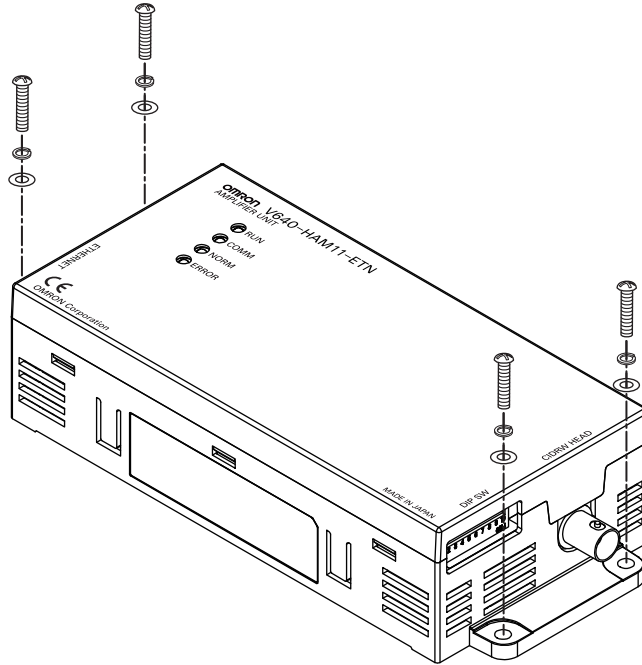
## Installation and Connections/Wiring

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# Installation

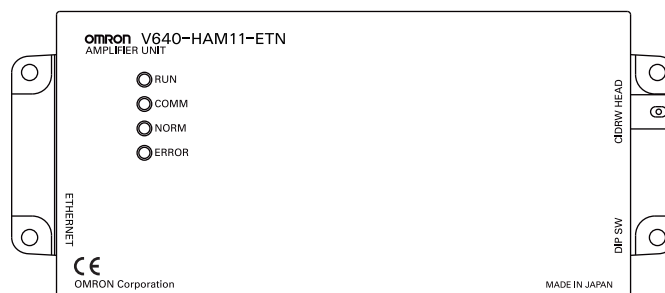
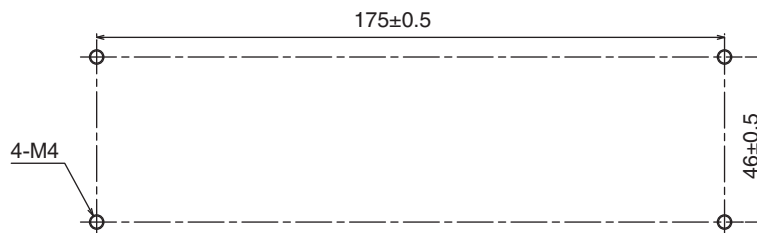
## Amplifier Unit

Use spring washers and flat washers with the four M4 screws when mounting the Amplifier Unit.



Mounting dimensions

(Unit: mm)



**NOTICE**

Tighten the M4 screws with a torque not exceeding 1.2 N·m.



## CIDRW Head

The area for communications with ID Tags varies substantially according to the installation orientations and the background conditions (metals, noise, etc.). Check the communications area before deciding the installation position.

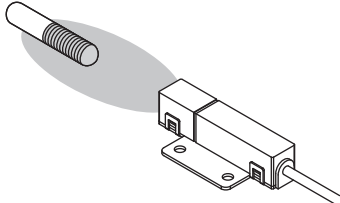
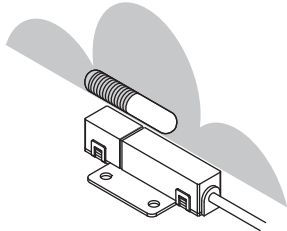
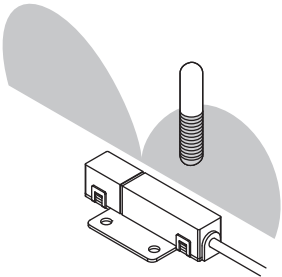
For details on actual communications distances, see *Characteristic Data depending on Conditions of Use* in *Appendix*.



Refer to page 81.

### Positional Relationship between the CIDRW Head and the ID Tag

The communications area differs according to the positional relationship during communications.


Mounting orientation	Communications area (purely illustrative)	Explanation
Coaxial		The maximum communications area is obtained when the center lines of the CIDRW Head and the ID Tag coincide.
Parallel		The maximum communications area is obtained when the center point of the antenna on the CIDRW Controller is aligned with the center line of the ID Tag.
Vertical		When the center point of the antenna on the CIDRW Head is aligned with the center line of the ID Tag, the communications area is substantially reduced.

### Data Reading and Writing

The communications distances for reading and writing are not the same; the distance is shorter for writing. Therefore, when data is to be both read and written, take the distance for writing as the reference distance when installing the CIDRW Head and the ID Tag.



■ **Influence of Background Metal on ID Tag**


Metals in the vicinity of the communications area will affect the range, making it smaller.

 Refer to page 106.

■ **Influence of Noise**

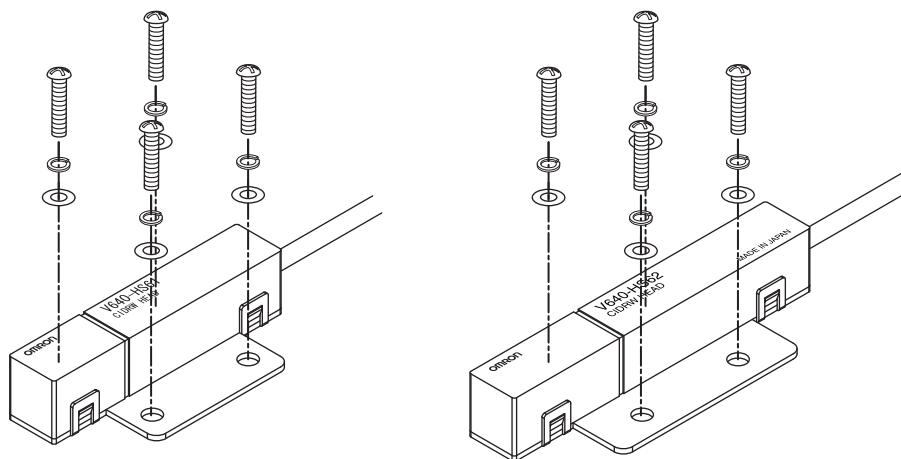
This CIDRW system uses a frequency of 134 kHz for communications with ID Tags. Equipment such as switching power supplies, inverters, servomotors, or monitors in the surrounding area will adversely affect communications, restricting the communications area.

 The noise levels in the vicinity of the CIDRW Head can be determined with the environmental NOISE MEASUREMENT command (applies only when SECS is not used) . Refer to page 43.

For details on the relationship between noise and communications distance, see *Appendix* . Refer to page 110.

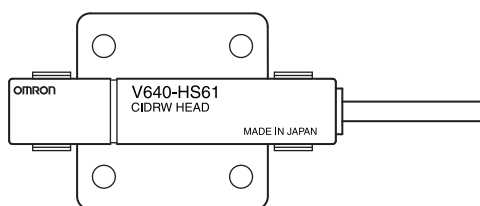
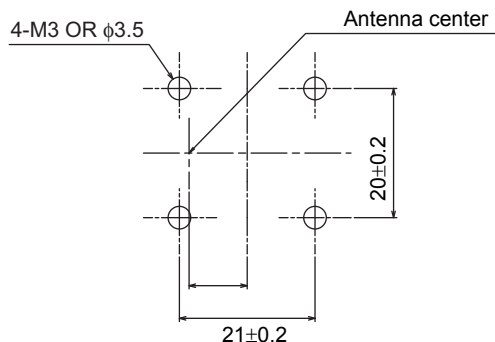
■ **Mounting**

Use spring washers and flat washers with the four M3 screws when mounting a CIDRW Head.



Mounting dimensions

(Unit: mm)



**NOTICE**

Tighten the M3 screws with a torque not exceeding 0.6 N·m.

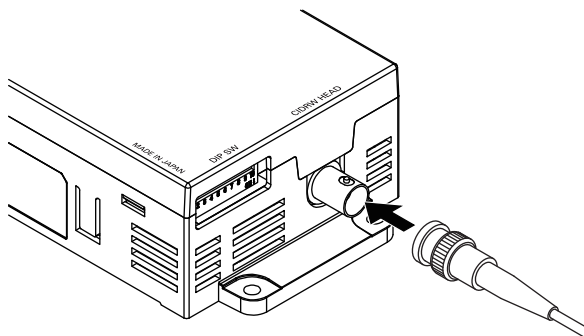
# Connections and Wiring

## Amplifier Unit

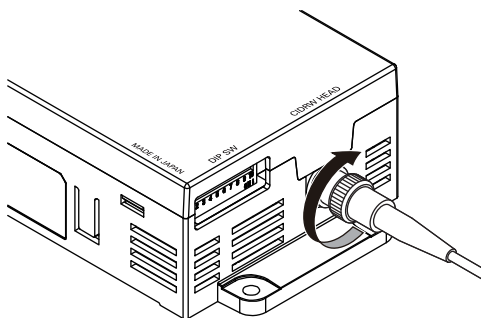
### ■ Connector for Connecting a CIDRW Head

1. Align the pin on the connector with the channel in the cable connector and insert the cable connector.

Hold the fixed part of the connector while making this insertion.

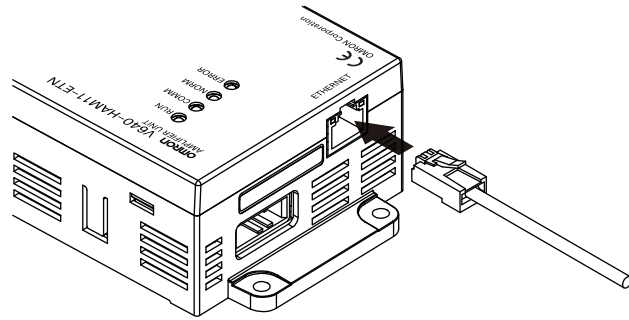


2. After inserting the connector fully home, turn the fixed part clockwise to lock it.



■ Ethernet Connector

1. Hold the connector on the cable and insert it into the Ethernet connector on the Amplifier Unit.

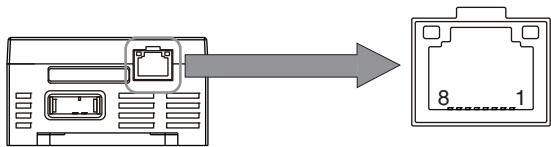


Press in the connector until it locks in place when connecting the Amplifier Unit to Ethernet, including when connecting it to a hub.

CHECK!

• Connector

The Amplifier Unit provides an auto-MDIX function that enables communications by connecting either a cross LAN cable or straight LAN cable.



Pin No.	Signal name	Description	I/O
1	TX_D+	Send data +	Output
2	TX_D-	Send data -	Output
3	RX_D+	Receive data +	Input
4	-	-	-
5	-	-	-
6	RX_D-	Receive data -	Input
7	-	-	-
8	-	-	-

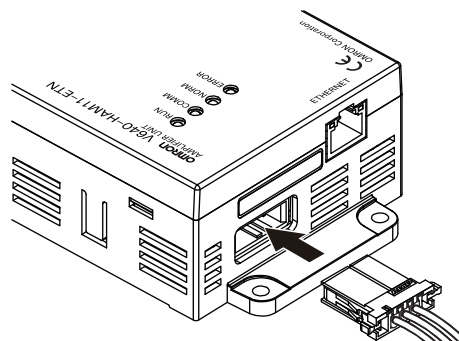
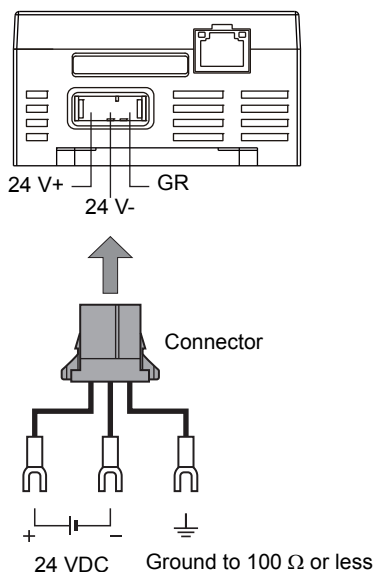


The shape and dimensions of plugs and jacks for Ethernet connectors are specified in ISO/IEC 8877:1992 (JIS X 5110:1996) To prevent faulty connections for connectors, the jack on the Amplifier Unit is designed so that non-standard plugs cannot be connected. If a commercially available plug cannot be connected, it may be non-standard.

CHECK!

## ■ Power Supply and Grounding Wires

Connect the power supply and grounding wires to the dedicated power supply connector.



**NOTICE**

- The grounding wire should be connected to a ground exclusive to the Amplifier Unit. If the grounding wire is shared with another unit, or connected to a beam in a building, there may be adverse effects.
- Make the grounding point as close as possible and the length of the grounding wire used as short as possible.
- When using the Amplifier Unit in Europe, the connecting cable between the Amplifier Unit and the DC power supply must be 3 m or less.

### • Dedicated Power Supply Connector and RS-485 Port Connector

Obtain the V640-A91 Set (accessory, sold separately).

**Contents of V640-A91 Set**

Name	Quantity	When procured individually	
		Manufacturer	Model
Power supply connector	One	Tyco Electronics	1-178288-3
Pins for power supply connector	Three		175217-3

### • Dedicated Power Supply Cable

Use an AWG20 to AWG24 cable.

Use a dedicated tool for crimping the cable to the connector pins.

**Recommended Crimping Tool**

Manufacturer	Model
Tyco Electronics	919601-1

### • Power Supply

Use a power supply that satisfies the following conditions.

**Condition**

Power supply voltage	Output current	Safety standard
24 VDC +10%, -15%	V640-HAM11-ENT: 300 mA DC min. V640-HAM11-L-ENT: 600 mA DC min.	UL Class 2

**Recommended Product**

Manufacturer	Model
OMRON	S82K-03024

MEMO

# SECTION 3

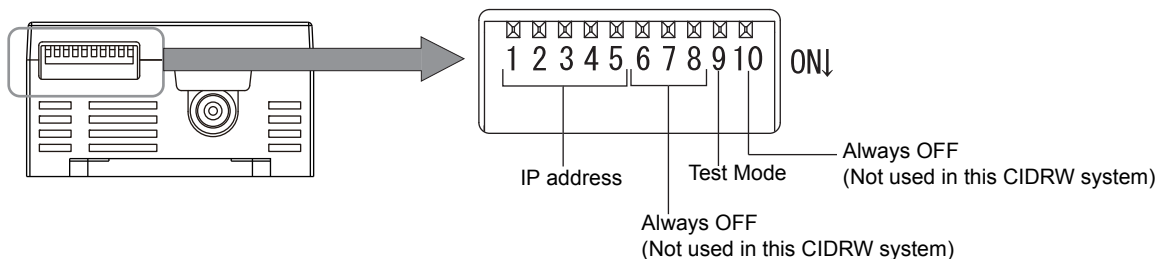
## Preparing for Communications

▣	Setting the Communications Conditions for Amplifier Units	30
▣	Communications Test	32

---

# Setting the Communications Conditions for Amplifier Units

Set the communications conditions using the DIP switches on the side face of the Amplifier Unit. After changing the DIP switch settings, restart the system. The new settings will not become effective until the system is restarted.



## IP Address

IP address	DIP switch				
	1	2	3	4	5
Setting in ROM	OFF	OFF	OFF	OFF	OFF
192.168.1.1	ON	OFF	OFF	OFF	OFF
192.168.1.2	OFF	ON	OFF	OFF	OFF
192.168.1.3	ON	ON	OFF	OFF	OFF
192.168.1.4	OFF	OFF	ON	OFF	OFF
192.168.1.5	ON	OFF	ON	OFF	OFF
192.168.1.6	OFF	ON	ON	OFF	OFF
192.168.1.7	ON	ON	ON	OFF	OFF
192.168.1.8	OFF	OFF	OFF	ON	OFF
192.168.1.9	ON	OFF	OFF	ON	OFF
192.168.1.10	OFF	ON	OFF	ON	OFF
192.168.1.11	ON	ON	OFF	ON	OFF
192.168.1.12	OFF	OFF	ON	ON	OFF
192.168.1.13	ON	OFF	ON	ON	OFF
192.168.1.14	OFF	ON	ON	ON	OFF
192.168.1.15	ON	ON	ON	ON	OFF

IP address	DIP switch				
	1	2	3	4	5
192.168.1.16	OFF	OFF	OFF	OFF	ON
192.168.1.17	ON	OFF	OFF	OFF	ON
192.168.1.18	OFF	ON	OFF	OFF	ON
192.168.1.19	ON	ON	OFF	OFF	ON
192.168.1.20	OFF	OFF	ON	OFF	ON
192.168.1.21	ON	OFF	ON	OFF	ON
192.168.1.22	OFF	ON	ON	OFF	ON
192.168.1.23	ON	ON	ON	OFF	ON
192.168.1.24	OFF	OFF	OFF	ON	ON
192.168.1.25	ON	OFF	OFF	ON	ON
192.168.1.26	OFF	ON	OFF	ON	ON
192.168.1.27	ON	ON	OFF	ON	ON
192.168.1.28	OFF	OFF	ON	ON	ON
192.168.1.29	ON	OFF	ON	ON	ON
192.168.1.30	OFF	ON	ON	ON	ON
192.168.1.31	ON	ON	ON	ON	ON

If the IP address is set on the DIP switch, it will be in the form 192.168.1.□□□. The subnet mask is always 255.255.255.0

The IP address of the Amplifier Unit can be either set on this DIP switch or the desired IP address can be set in ROM. If pins 1 to 5 on the DIP switch are all turned OFF, the IP address that is set in ROM will be used.

## Test Mode

Test Mode	DIP-SW	Description
	9	
Disabled	ON	Set the Test Mode and then restart the Amplifier Unit to make the setting effective.
Enabled	OFF	



## Test Mode

Test Mode can be used to check communications between the ID Tags and Amplifier Units without connecting a host device. Communications with ID Tags are automatically performed every second and the communications results are displayed on the OPERATING indicator.



Refer to *V640-HAM11-ETN and V640-HAM11-L-ETN Amplifier Units* for information on the OPERATING indicator for communications results.

CHECK!



Refer to page 17.



Always connect the CIDRW Head before operating the Amplifier Unit in Test Mode. If Test Mode is used without connecting a CIDRW Head, the ERROR indicator will light and Amplifier Unit operation will stop.

CHECK!



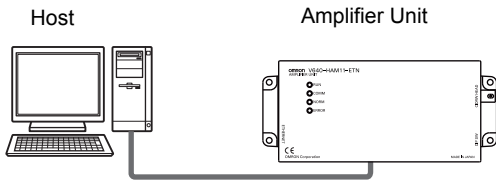
Commands from the host device are not accepted during operation in Test Mode. To end Test Mode, turn OFF the Test Mode pin on the DIP switch and restart the Amplifier Unit.

CHECK!

# Communications Test

## Communications Test with the Host Device

A communications test is performed to confirm that the host device and Amplifier Unit are connected correctly.



A test is performed for the Amplifier Unit using the data 12345678.

### Command

Command code		Test data								CR
		Data 1		Data 2		Data 3		Data 4		
1	0	1	2	3	4	5	6	7	8	0Dh

### Response

Response code		Test data								CR
		Data 1		Data 2		Data 3		Data 4		
0	0	1	2	3	4	5	6	7	8	0Dh



MEMO

# SECTION 4

## Reading from/Writing to ID Tags

▣ Command/Response Format	36
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NOISE MEASUREMENT	49
RESET	50
SET WEB PASSWORD	50
SET NETWORK	51

# Command/Response Format

## Command

Command code				Parameter						CR
				1	...			n		
										0Dh

## Response

Response code		Parameter						CR
		1	...			n		
								0Dh

## Command

### Command Code List

Name	Value	Function	See
READ	0100	When this command is received, the system communicates with the ID Tag, and reads the specified page(s) of data. Any pages up to a maximum of 16 can be selected.	p.37
WRITE	0200	When this command is received, the system communicates with the ID Tag, and writes the specified page(s) of data. Any pages up to a maximum of 16 can be selected.	p.38
SAME WRITE	0300	When this command is received, the system communicates with the ID Tag, and writes the same data in page units to the specified pages. Up to 17 pages, which is the maximum number of pages for an ID Tag, can be specified.	p.40
BYTE WRITE	0400	When this command is received the system communicates with the ID Tag, and writes data to the area specified by a first address and number of bytes. A maximum of 128 bytes can be specified.	p.41
TEST	10	Sends received data to the host device.	p.42
NAK	12	Sends the response made immediately before again.	p.43
GET PARAMETER	14	Gets the model number, MAC address, or another parameter.	p.43
GET LAST COMMAND	15	Gets the command code of the last command that was executed.	p.48
GET COMMUNICATIONS HISTORY	16	Gets the history of communications from when the power was turned ON (total number of communications, total successful communications, and total number of failed communications).	p.48
CLEAR COMMUNICATIONS HISTORY	17	Clears the communications history.	p.49
NOISE MEASUREMENT	40	Measures the noise in the vicinity of the CIDRW Head.	p.49
RESET	7F	Resets the Amplifier Unit.	p.50
SET WEB PASSWORD	A2	Sets the Web password.	p.50
SET NETWORK	A3	Sets the network.	p.51











## ■ BYTE WRITE

This command writes data to any specified number of bytes starting from the address specified in the ID Tag. The maximum number of bytes that can be written at one time is 128.

### Command

Command code				First address		Write data				CR
						Data 1	...	Data n		
0	4	0	0							0Dh

\* Data number n = number of bytes written to (2-character units)

### Parameter Description

Parameter	Description
First address	Addresses can be specified in the range 00h to 87h.
Write data	Up to 128 bytes of write data, starting from the specified address, can be specified.

ID Tag Memory Maps



Refer to page 111.

### Response

The response code (when normal: 00) is returned.

Response code		CR
0	0	0Dh

Example: Writing Two Bytes of Data to Address 05h of the Amplifier Unit

### Command

Command code				First address		Write data				CR
						Data 1	Data 2			
0	4	0	0	0	5	1	2	3	4	0Dh

### Response

Response code		CR
0	0	0Dh

The ID Tag status on normal completion is as shown below.

Page 1						12h	34h	
Page 2								

**TEST**

Performs a communications test on communications between the host device and Amplifier Unit. When an Amplifier Unit receives a test command, it sends the response code and command test data to the host device as the response.

**Command**

Command code		Test data						CR
		Data 1	...		Data n			
1	0							0Dh

\* Number of data n < 136 (2-character units)

**Parameter Description**

Parameter	Description
Test data	The data to be sent in the test is specified with a hexadecimal value. (270 characters max.) However, note that odd numbers of characters cannot be used.

**Response**

The response code (when normal: 00) and the received test data are returned.

Response code		Test data						CR
		Data 1	...		Data n			
0	0							0Dh

Example: Performing a Test for the Amplifier Unit Using the Data 12345678

**Command**

Command code		Test data								CR
		Data 1	Data 2	Data 3	Data 4					
1	0	1	2	3	4	5	6	7	8	0Dh

**Response**

Response code		Test data								CR
		Data 1	Data 2	Data 3	Data 4					
0	0	1	2	3	4	5	6	7	8	0Dh

## ■ NAK

Sends the response made immediately before again.

### Command

Command code	CR
1	2 0Dh

### Response

Sends the response made immediately before again.



A response will not be returned if a NAK command is executed immediately after startup.

## ■ GET PARAMETER

This command gets the model number, firmware version, or another parameter.

### Command

Command code	Parameter type	CR
1	4	0Dh

### Parameter Description

Parameter	Value	Description
Parameter type	01	Model number
	02	Firmware version
	03	MAC address
	10	DIP switch enabled/disabled status
	11	IP address on DIP switch
	12	Subnet address on DIP switch
	13	IP address in ROM
	14	Subnet address in ROM
	20	Memory status
	21	Antenna connection status

### Response

The response code (00: normal) and received parameter value are returned.

Response code	Parameter value	CR
0	0	0Dh

\* The contents and length of the parameter value depend on the parameter type that is specified for the command.

**Example 1: Getting the Model Number of Amplifier Unit**

**Command**

Command code		Parameter type		CR
1	4	0	1	0Dh

**Response**

The product model number is returned as an ASCII text string.

Response code		Model number											CR		
0	0	V	6	4	0	-	H	A	M	1	1	-	V	3	0Dh

**Example 2: Getting the Firmware Version of Amplifier Unit**

**Command**

Command code		Parameter type		CR
1	4	0	2	0Dh

**Response**

The response code (00: normal) and firmware version are returned as a 4-digit decimal number.

Response code		Firmware version				CR
0	0	0	1	0	0	0Dh
		Major version		Minor version		

\* The above response is for a firmware version of 1.00.

**Example 3: Getting the MAC Address of Amplifier Unit**

**Command**

Command code		Parameter type		CR
1	4	0	3	0Dh

Response

The response code (00: normal) and MAC address are returned.

Response code		MAC address												CR
0	0	0	0	1	F	1	6	1	A	B	9	8	E	0Dh

\* The above response is for a MAC address of 00:1F:16:1A:B9:8E.

Example 4: Checking If Network Settings on DIP Switch on Amplifier Unit Are Enabled or Disabled

Command

Command code		Parameter type		CR
1	4	1	0	0Dh

Response

The response code (00: normal) and enabled/disabled status of the DIP switch network settings are returned.

Response code		DIP switch enabled/disabled		CR
0	0	0	1	0Dh

\* The above response is for when the DIP switch settings are enabled. The response will show 00 for disabled status.

Example 5: Checking IP Address on DIP Switch on Amplifier Unit

Command

Command code		Parameter type		CR
1	4	1	1	0Dh

Response

The response code (00: normal) and IP address on the DIP switch (decimal, four octets of 3 digits each) are returned.

Response code		IP address on DIP switch												CR
0	0	1	9	2	1	6	8	0	0	1	0	2	0	0Dh
		First octet			Second octet			Third octet			Fourth octet			

\* The above response is for when the IP address on the DIP switch is 192.168.1.20.

\* The following response will be returned if the DIP switch network settings are disabled.

Response code		IP address on DIP switch												CR
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0Dh
		First octet			Second octet			Third octet			Fourth octet			

**Example 6: Checking the Subnet Mask on the DIP Switch of Amplifier Unit**

**Command**

Command code		Parameter type		CR
1	4	1	2	0Dh

**Response**

The response code (00: normal) and subnet mask (decimal, four octets of 3 digits each) are returned.

Response code		Subnet mask on DIP switch												CR
0	0	2	5	5	2	5	5	2	5	5	0	0	0	0Dh
		First octet			Second octet			Third octet			Fourth octet			

\* The subnet mask is always 255.255.255.0 regardless of whether the DIP switch network settings are enabled or disabled.

**Example 7: Checking IP Address in ROM**

**Command**

Command code		Parameter type		CR
1	4	1	3	0Dh

**Response**

The response code (00: normal) and IP address in ROM (decimal, four octets of 3 digits each) are returned.

Response code		IP address on DIP switch												CR
0	0	1	9	2	1	6	8	0	0	1	2	0	0	0Dh
		First octet			Second octet			Third octet			Fourth octet			

\* The above response is for when the IP address in ROM is 192.168.1.200.

**Example 8: Checking the Subnet Mask in ROM**

**Command**

Command code		Parameter type		CR
1	4	1	4	0Dh

**Response**

The response code (00: normal) and subnet mask (decimal, four octets of 3 digits each) are returned.

Response code		Subnet mask on DIP switch												CR
0	0	2	5	5	2	5	5	2	5	5	0	0	0	0Dh
		First octet			Second octet			Third octet			Fourth octet			

\* The above response is for when the subnet mask in ROM is 255.255.255.0.



Example 9: Getting the Memory Status of Amplifier Unit

Command

Command code		Parameter type		CR
1	4	2	0	0Dh

Response

The response code (00: normal) and memory check results for internal EEPROM are returned.

Response code		DIP switch enabled/disabled		CR
0	0	0	1	0Dh

\* The above response is for normal memory status. The response will show 00 for error status.

Example 10: Getting the Antenna Connection Status of Amplifier Unit

Command

Command code		Parameter type		CR
1	4	2	1	0Dh

Response

The response code (00: normal) and Antenna connection status are returned.

Response code		DIP switch enabled/disabled		CR
0	0	0	1	0Dh

\* The above response is for normal Antenna connection status. The response will show 00 for error status.

**■ GET LAST COMMAND**

Gets the command code of the last command that was executed.

**Command**

Command code		CR
1	5	0Dh

**Response**

This command returns the command code of the last command that was executed.

**When There Is a Previously Executed Command**

Response code		Command code				CR
0	0					0Dh

\* The command code is given as two or four characters.

**When There Is No Previously Executed Command**

Response code		Command code		CR
0	0	0	0	0Dh

**■ GET COMMUNICATIONS HISTORY**

This command gets the history of communications from when the power was turned ON (total number of communications, total successful communications, and total number of failed communications).

**Command**

Command code		CR
1	6	0Dh

**Response**

This command returns the history of communications from when the power was turned ON. Four hexadecimal digits each are returned for the total number of communications, total number of successful communications, and total number of failed communications.

If the total number of communications exceeds 65,535, all data in the communications history will be reset to 0.

Response code		Total number of communications	Total number of successful communications	Total number of failed communications	CR
0	0				0Dh

Example 1: Getting the Communications History of Amplifier Unit

Command

Command code		CR
1	6	0Dh

Response

The following response is returned if there are 32,000 total communications, 30,000 successful communications, and 2,000 failed communications.

Response code		Total number of communications				Total number of successful communications				Total number of failed communications				CR
0	0	7	D	0	0	7	5	3	0	0	7	D	0	0Dh

■ CLEAR COMMUNICATIONS HISTORY

This command clears the communications history.

Command

Command code		CR
1	7	0Dh

Response

Response code		CR
0	0	0Dh

■ NOISE MEASUREMENT

The levels of noise in the vicinity of the CIDRW Head are measured and the noise level is expressed numerically in the range "00" to "99."

Command

Command code		CR
4	0	0Dh

Response

The response code (when normal: 00) and the noise level "00" to "99" are returned.

Response code		Noise level	CR
0	0		0Dh

Influence of background noise on communications distance  Refer to page 110.



## ■ SET NETWORK

This command sets the IP address and subnet mask in ROM.

### Command

Command code		First octet			Second octet			Third octet			Fourth octet			CR
A	3													0Dh

### Parameter Description

Parameter	Description
Type	IP address setting: 00 Subnet mask setting: 01
First to fourth octets	The address is set in decimal in four octets of three characters each.

### Response

Response code		CR
0	0	0Dh

\* If an error occurs when writing to EEPROM, error 9A will be returned.



CHECK!

Never turn OFF the power supply to the Amplifier Unit before a response is received from the Amplifier Unit for this command. Doing so may damage the Amplifier Unit.

MEMO

# SECTION 5

## Browser Interface

❏ Browser Operation Windows	54
❏ Window Configuration	55

## Browser Operation Windows

---

To operate an Amplifier Unit from a browser, connect the Ethernet cables, start a browser on the computer, and specify the IP address of the Amplifier Unit as the URL. The Browser Window will be displayed. The Status Window will be displayed first. (If a Web password is set, the Status Window will be displayed after the Password Entry Window.) Menu buttons to move to the other windows are provided at the top of the window. Click a menu button to move to another window.

### Precautions

- Before starting the Browser Window, make sure that Java Runtime Environment (JRE) 5.0 or higher is installed on the computer.

Java software can be downloaded for free from the following URL: <http://www.java.com/ja/>.

(Java and all trademarks and logos related to Java are trademarks or registered trademarks of Sun Microsystems, Inc., in the USA and other countries.)

- Before starting the Browser Window, make sure that the Amplifier Unit is not executing a command from terminal software or another source. The Amplifier Unit must be in idling status. If the Browser Window is started while the Amplifier Unit is executing a command, responses will not be returned for the commands sent from the terminal software or Browser Window.
- Access is possible from only one browser at a time. If the Amplifier Unit is accessed from another browser (B) while it is connected to a browser (A), the control right will move to browser B.



# Window Configuration

The screenshot shows a web browser window titled "V640 Browser - Windows Internet Explorer" with the address bar set to "http://192.168.1.200/". The page features the OMRON logo and a navigation menu with buttons for "Status", "Settings", "Command", and "Noise Monitor". A language selection area includes "Japanese" and "English" (selected). The main display area contains a "Refresh" button and a table of device information.

**Language Buttons:** Japanese, English

**Menu Buttons:** Status, Settings, Command, Noise Monitor

**Main Display:**

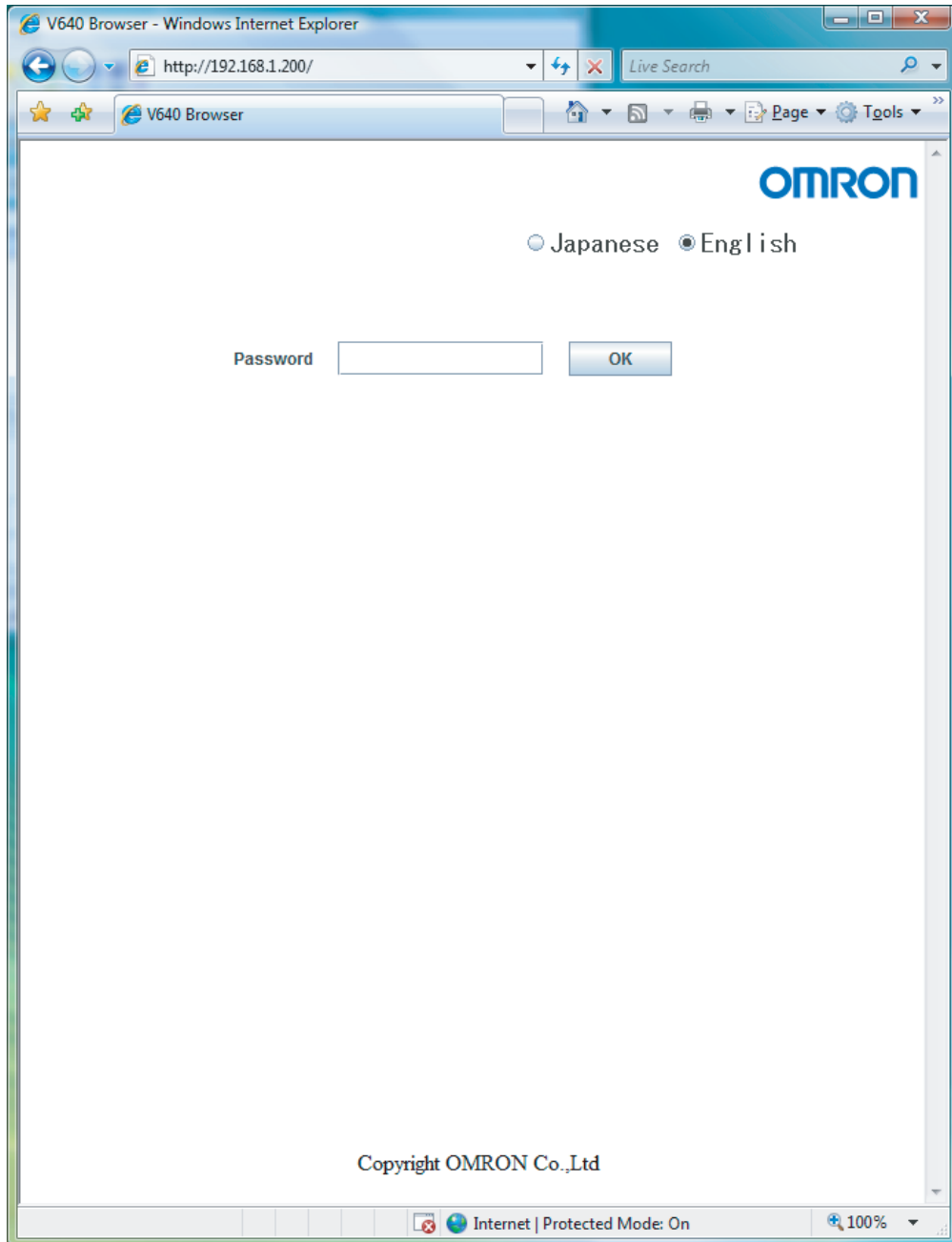
Model	V640-HAM11-ETN
Firmware Version	1.00
MAC Address	00 : 00 : 0A : 3C : 44 : 58
DIP-SW	Disabled
<b>Network Settings(DIP)</b>	
IP Address	
Subnet Mask	
<b>Network Settings(ROM)</b>	
IP Address	192.168.1.200
Subnet Mask	255.255.255.0
<b>Latest Communication</b>	
Command Code	
Response Code	
<b>Communication History</b>	
Total	0
Success	0
Error	0
<b>H/W Status</b>	
Memory	OK
Antenna	OK

Copyright OMRON Co.,Ltd

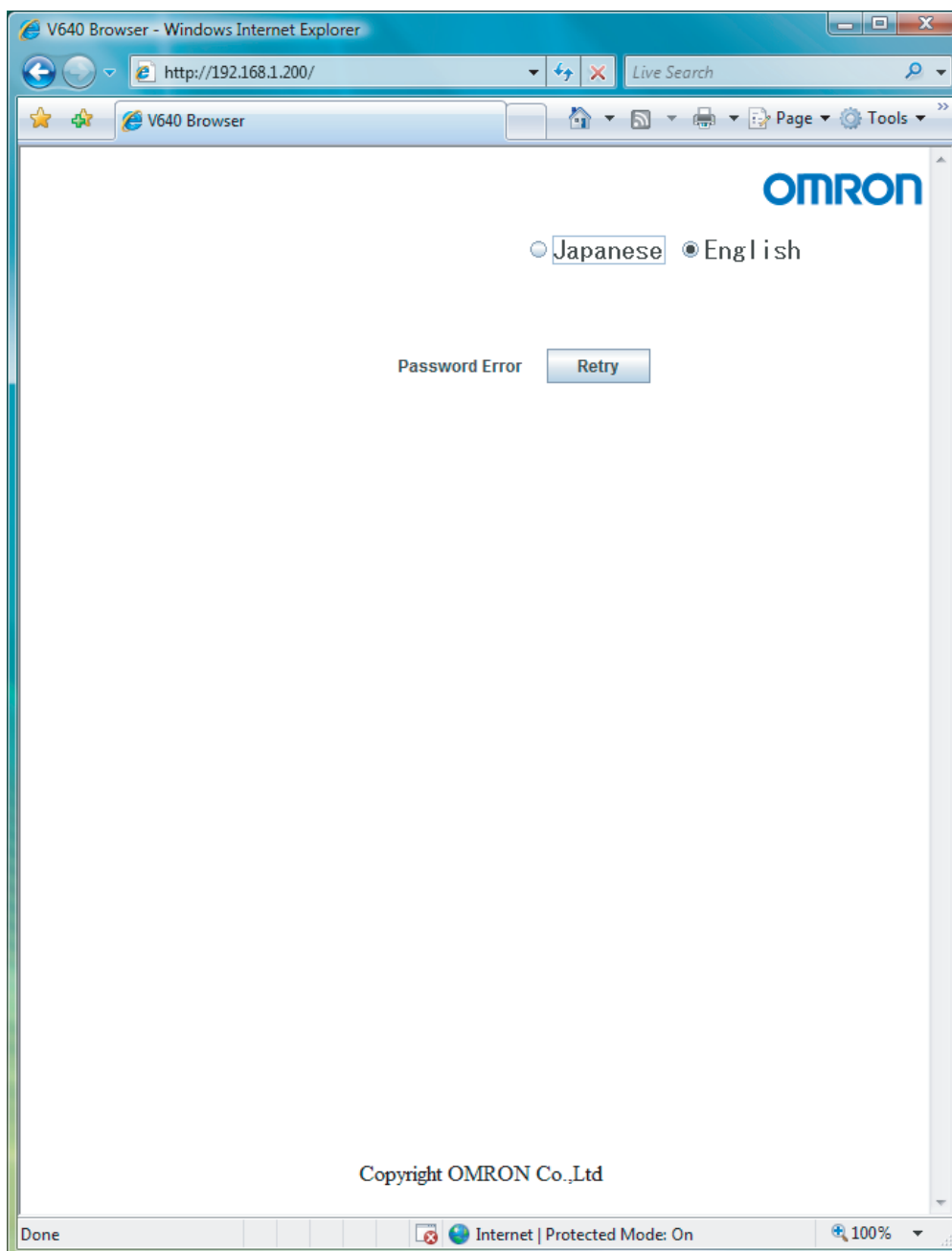
## Password Entry Window

If a Web password is set in the Amplifier Unit, the Password Entry Window will be displayed before the Browser Window is displayed. Enter the password and click the **OK** Button in this window. If the password is correct, the Status Window will be displayed.

The following characters can be used for the password: 0 to 9, a to z, and A to Z.



If the password is not correct, the following window will be displayed.  
Click the **Retry** Button. The Password Entry Window will be displayed again.



## Status Window

The Status Window displays the model number, firmware version, MAC address, and other information on the Amplifier Unit so that you can check it. Click the **Refresh** Button at the top of the window to update the displayed information (latest communication, communication history, and H/W status).

The screenshot shows the V640 Browser interface in Internet Explorer. The browser address bar shows <http://192.168.1.200/>. The page title is "V640 Browser". The OMRON logo is visible in the top right corner. Below the logo, there are language selection options:  Japanese and  English. A navigation bar contains four tabs: "Status", "Settings", "Command", and "Noise". A "Refresh" button is located below the "Noise" tab. A callout box points to this button with the text "Refresh Button".

The main content area displays the following information:

Model	V640-HAM11-ETN
Firmware Version	1.00
MAC Address	00 : 00 : 0A : 3C : 44 : 58
DIP-SW	Disabled

① points to the first table.

Network Settings(DIP)	
IP Address	
Subnet Mask	
Network Settings(ROM)	
IP Address	192.168.1.200
Subnet Mask	255.255.255.0

② points to the Network Settings(ROM) section.

Latest Communication	
Command Code	
Response Code	

③ points to the Latest Communication section.

Communication History	
Total	0
Success	0
Error	0

④ points to the Communication History section.

H/W Status	
Memory	OK
Antenna	OK

⑤ points to the H/W Status section.

At the bottom of the page, it says "Copyright OMRON Co.,Ltd". The browser status bar at the bottom shows "Done", "Internet | Protected Mode: On", and "100%" zoom level.

### ① Amplifier Unit Information

Item	Description	Comments
Model	The product model number is displayed.	
Firmware Version	The firmware version is displayed.	
MAC Address	The MAC address is displayed.	
DIP-SW	"Enabled" is displayed if the Amplifier Unit is set to use the IP address that is set on the DIP switch. "Disabled" is displayed if the Amplifier Unit is set to use the IP address that is set in ROM.	

### ② Network Setting Information

Item	Description	Comments
Network Settings(DIP) IP Address Subnet Mask	If the Amplifier Unit is set to use the IP address that is set on the DIP switch, this item is displayed in blue, and the IP address and subnet mask of the Amplifier Unit are displayed.	If the Amplifier Unit is set to use the IP address that is set on the DIP switch, this item is grayed out.
Network Settings(ROM) IP Address Subnet Mask	If the Amplifier Unit is set to use the IP address that is set in ROM, this item is displayed in blue, and the IP address and subnet mask of the Amplifier Unit are displayed.	If the Amplifier Unit is set to use the IP address that is set in ROM, this item is grayed out.

### ③ Last Command Information

Item	Description	Comments
Latest Communication Command Code Response Code	The last command code that was executed and the last response code that was returned by the Amplifier Unit are displayed.	Nothing is displayed if a command has not been executed since the Amplifier Unit was started.

### ④ Communications History Information

Item	Description	Comments
Communication History Total Success Error	History information on communications with the ID Tags is displayed. Total number of communications Total number of successful communications Total number of failed communications	

### ⑤ Hardware Information

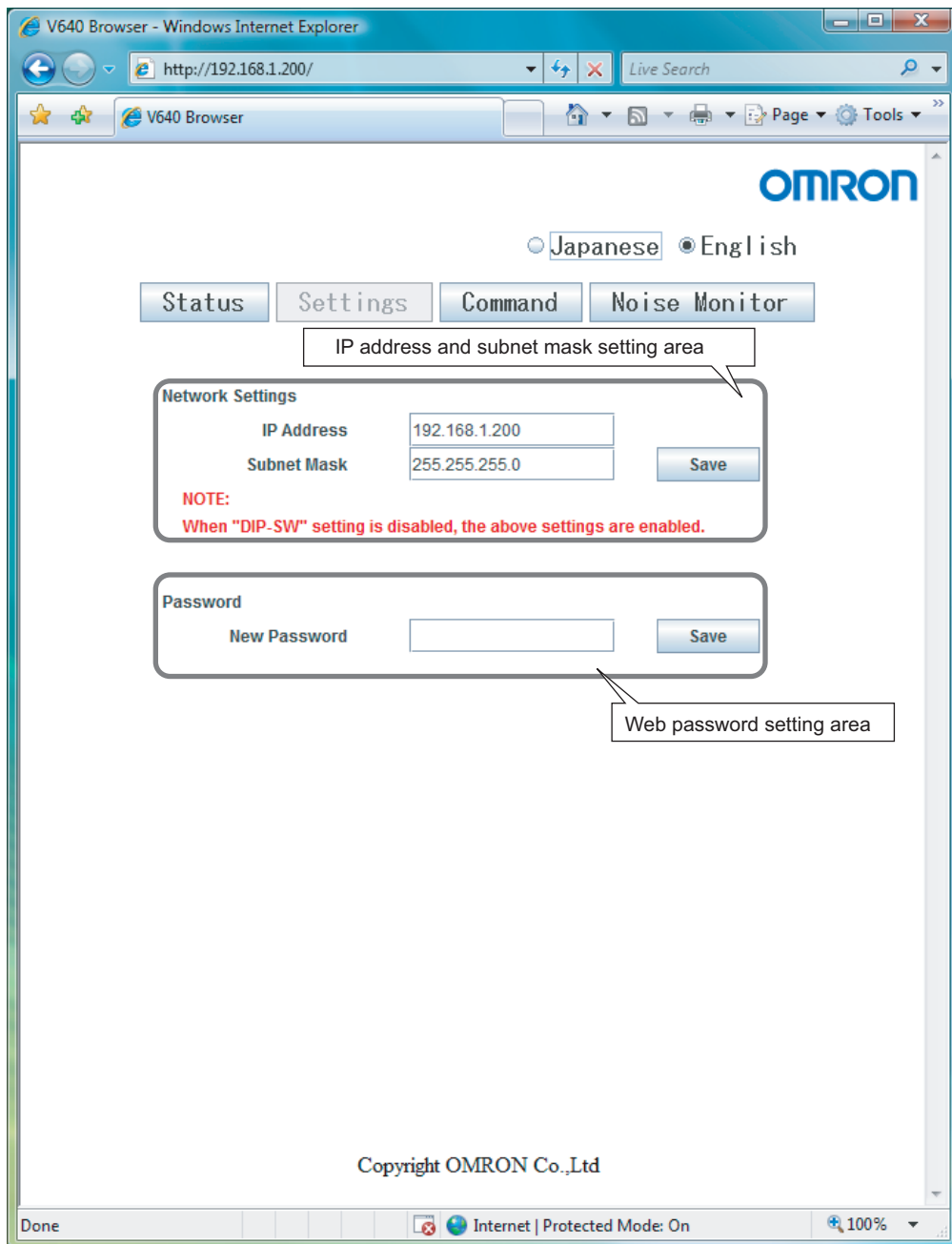
Item	Description	Comments
H/W Status Memory Antenna	Hardware information is displayed. "Error" is displayed if a memory error was detected during the memory check at startup. "Error" is displayed if an error is detected in the CID Head that is connected to the Amplifier Unit (or if a CID Head is not connected).	"OK" is displayed for normal status.

## Setting Window

The network settings (IP address and subnet mask) of the Amplifier Unit and the Web password can be set in the Setting Window. The values that are set are enabled when the Amplifier Unit is restarted.

If the **Save** Button is clicked when the password box is empty, the Web password will be cleared. In this state, the browser interface can be used without entering the Web password.

The following characters can be used for the Web password: 0 to 9, a to z, and A to Z.

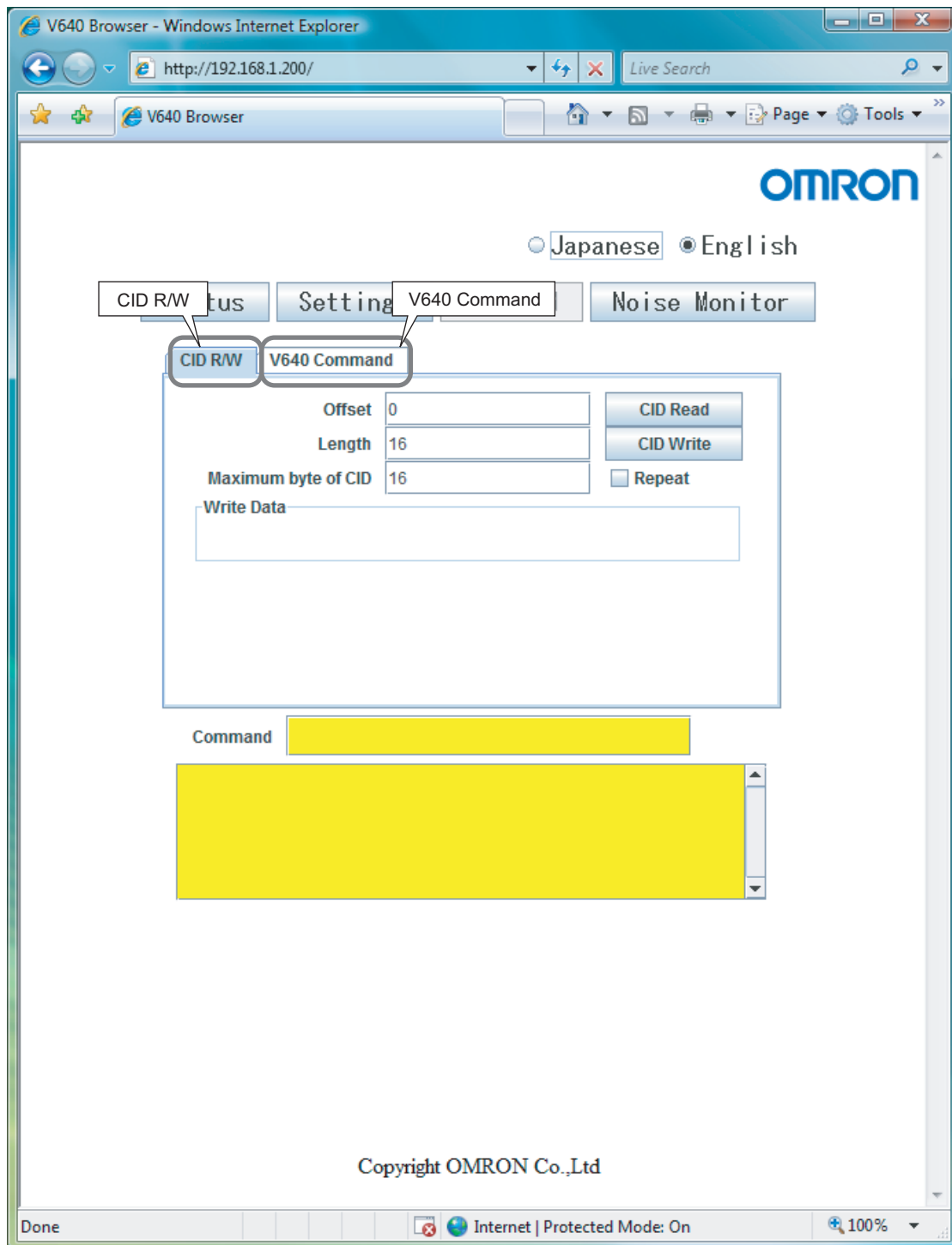


Never turn OFF the power supply to the Amplifier Unit before a response is received after clicking the **Save** Button. Doing so may damage the Amplifier Unit.

CHECK!

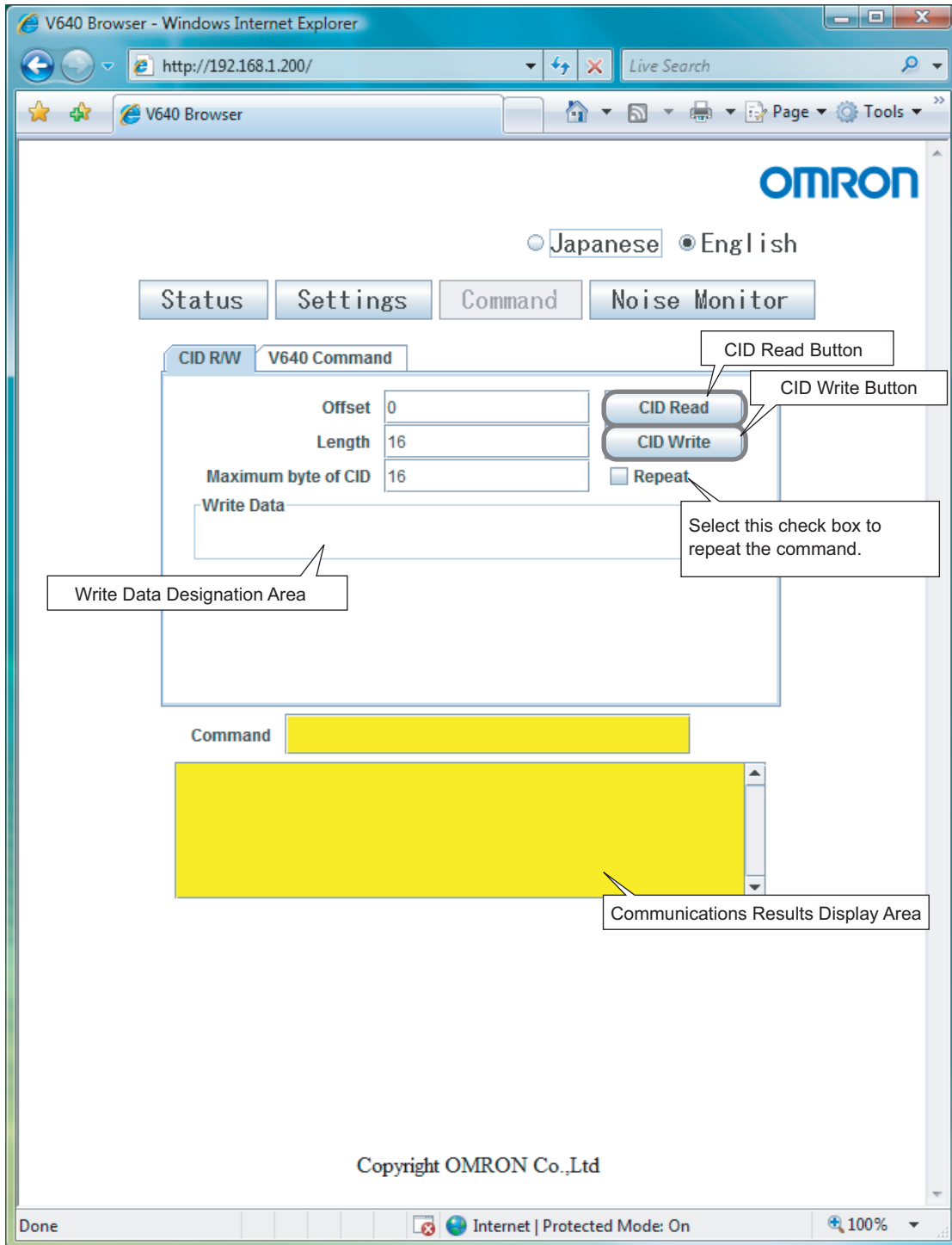
## Command Window

The Command Window can be used to communicate with ID Tags. The Command Window has two tab pages: "CID R/W" and "V640 Command."



## CID R/W Tab Page

The CID R/W Tab Page allows you to read or write ID Tag data by specifying the offset, length, and maximum bytes of CID. If writing is executed, you must also specify the write data.





Item	Description	Comments
Offset	Specify the CID offset between 0 and 15 bytes.	
Length	Specify the CID length between 1 and 16 bytes.	
Maximum byte of CID	Specify the maximum CID length between 1 and 16 bytes.	
Write Data	For the write data, specify only the number of bytes for the specified length.	Specify only visible ASCII characters.

For example, the results display would be as shown below if a CID read was executed with an offset of 0, a length of 16, and a maximum bytes of CID of 16.

Command sent to Amplifier Unit

Command 010000000000C

[TX] Read Offset=0 Length=16

[RX] (00) ABCDEFGHIJKLMNOP

Send data

Response code

Receive data

Only visible ASCII characters can be used to read and write data on the CID R/W Tab Page. If characters that are not visible ASCII characters are detected for a CID read, they will be converted to asterisks (\*).

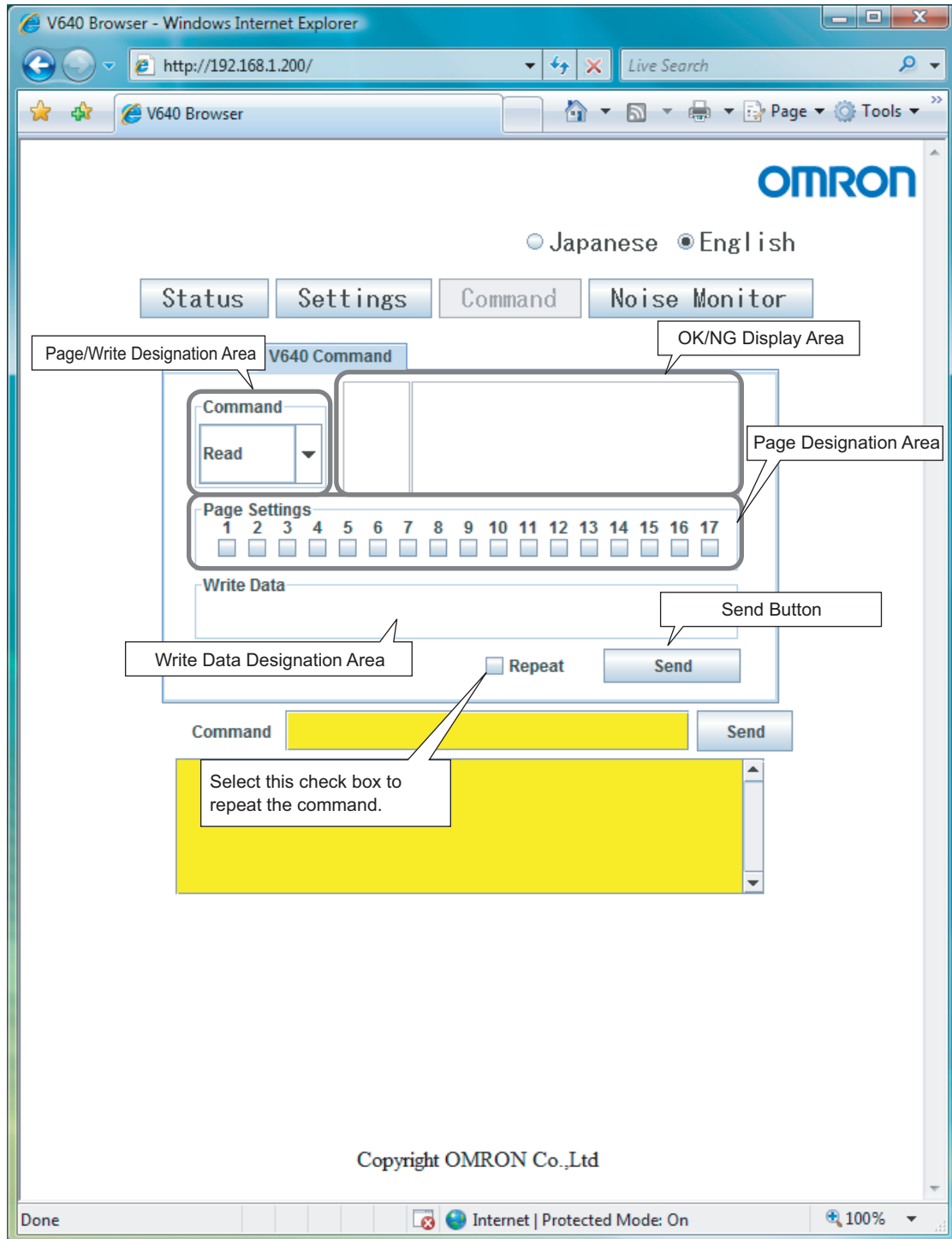
[TX] Read Offset=0 Length=16

[RX] (00) ABC\*\*\*\*\*NOP

Characters that are not visible ASCII characters are converted to "\*".

## V640 Command Tab Page

The V640 Command Tab Page allows you to read and write data according to the command format of the Amplifier Unit



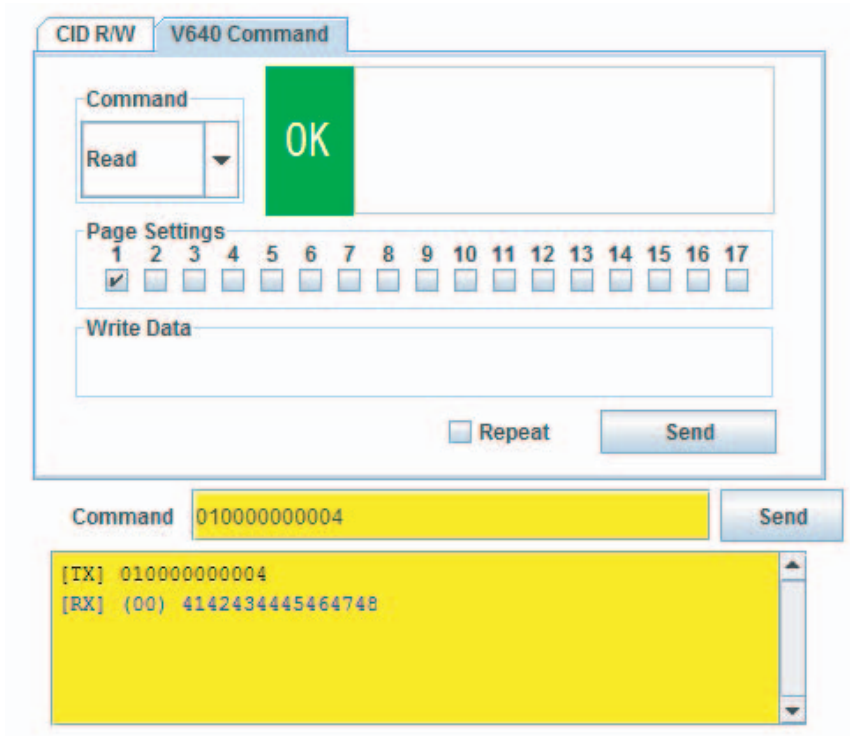
■ Page/Write Designation Area

Select *Read* or *Write* in the Page/Write Designation Area.

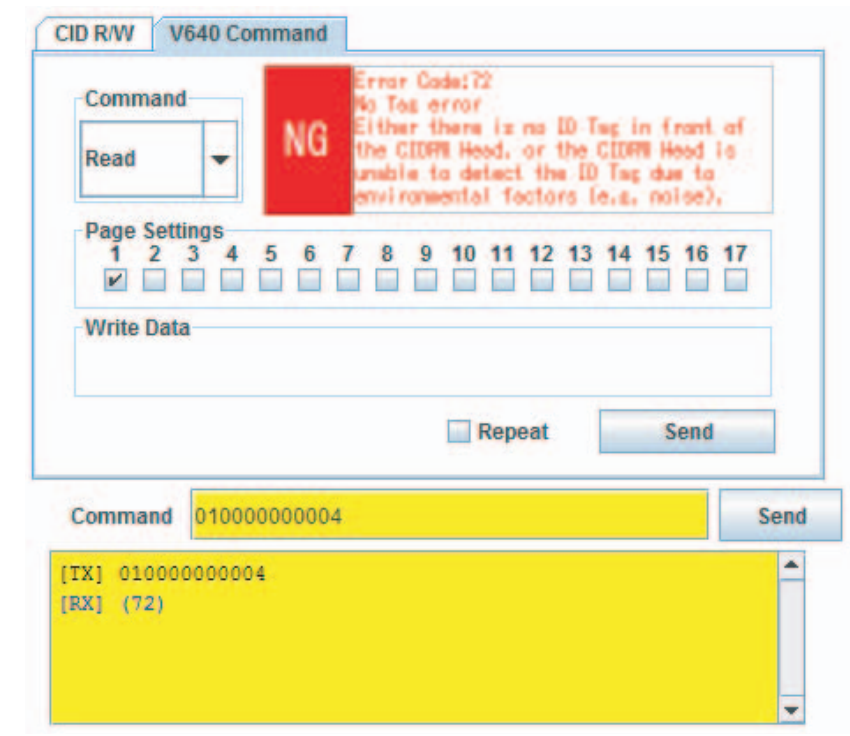
■ OK/NG Display Area

The command execution results will be displayed as "OK" or "NG" in the OK/NG Display Area. If "NG" is displayed, information on the error will be displayed.

• Successful Communications



• Failed Communications



■ **Page Designation Area**

Select the check boxes to specify the pages to be read or written.

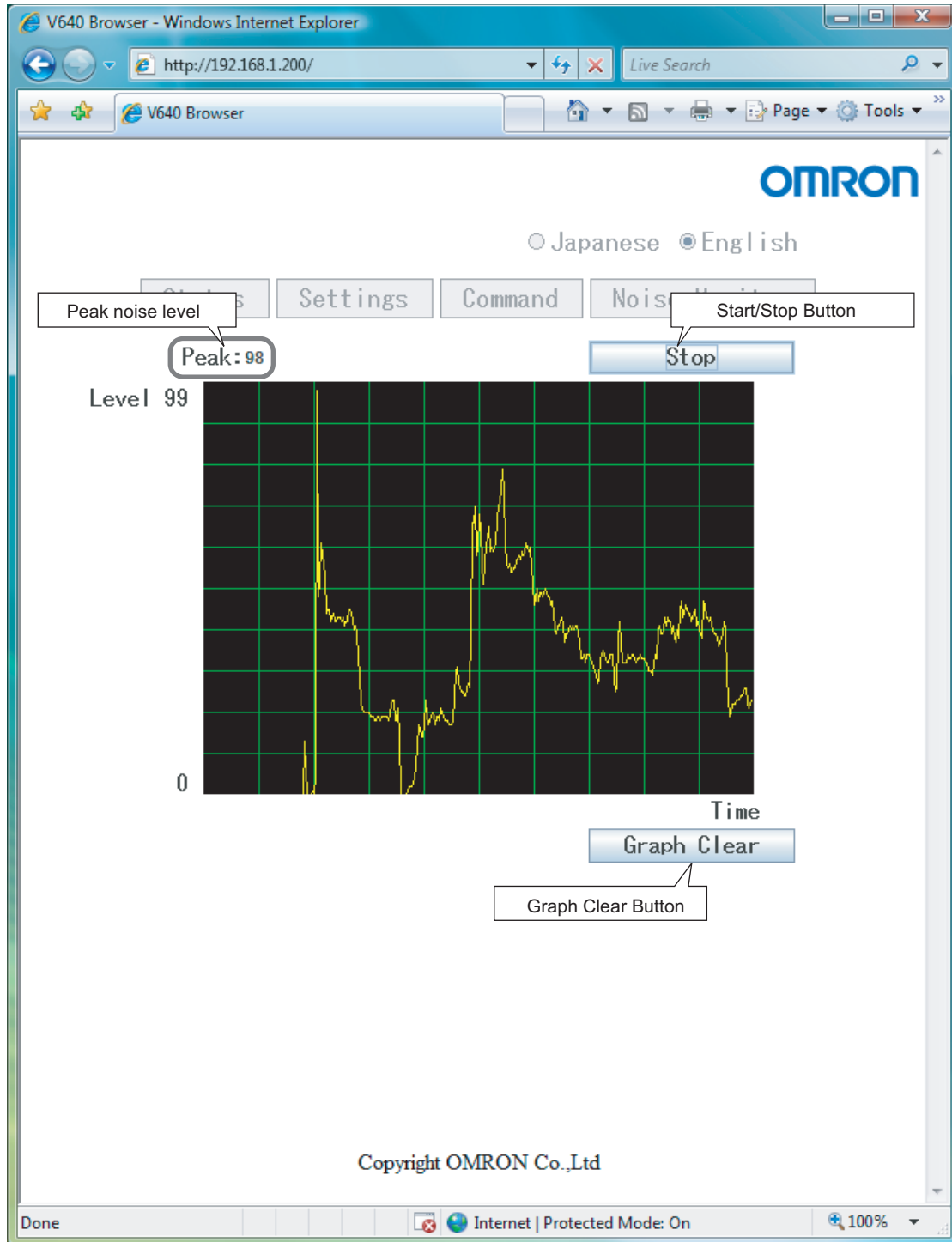
■ **Write Data Designation Area**

When writing data, specify the data to write to the ID Tag as a hexadecimal string. Specify 16 characters for each page that you specify in the Page Designation Area.

## Noise Measurement Window

The Noise Measurement Window allows you to continuously send the NOISE MEASUREMENT command to the Amplifier Unit and display the results in realtime.

The horizontal axis gives the time and the vertical axis gives the noise level (0 to 99).



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