

CIDRW SYSTEM

V640 SERIES

USER'S MANUAL

AMPLIFIER UNITS

V640-HAM11-ETN

V640-HAM11-L-ETN

CIDRW HEADS

V640-HS61

V640-HS62

Introduction

Thank you for purchasing the V640-series CIDRW System.

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

- Allow the CIDRW System to be installed and operated only by qualified specialist with a sufficient knowledge of electrical systems.
- 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.

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

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

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

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

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THE PRODUCTS CONTAINED IN THIS DOCUMENT ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's safety rated products.

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.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

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

Product specifications and accessories may be changed at any time based on improvements and other reasons.

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

	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. Europe

	Amplifier Unit	CIDRW Head
(Radio and Telecommunications Terminal Equipment Directive 1999/5/EC)	V640-HAM11-ETN	V640-HS61
Radio: EN 300 330-2 EMC: EN 301 489-1 EN 301 489-3 Safety: EN 61010-1	V640-HAM11-L-ETN	V640-HS62



English	Hereby, Omron, declares that this V640-HAM11-ETN / V640-HAM11-L-ETN is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Finnish	Omron vakuuttaa täten että V640-HAM11-ETN / V640-HAM11-L-ETN tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Dutch	Hierbij verklaart Omron dat het toestel V640-HAM11-ETN / V640-HAM11-L-ETN in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
French	Par la présente Omron déclare que l'appareil V640-HAM11-ETN / V640-HAM11-L-ETN est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Swedish	Härmed intygar Omron att denna V640-HAM11-ETN / V640-HAM11-L-ETN står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Danish	Undertegnede Omron erklærer herved, at følgende udstyr V640-HAM11-ETN / V640-HAM11-L-ETN overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
German	Hiermit erklärt Omron, dass sich dieser/diese/dieses V640-HAM11-ETN / V640-HAM11-L-ETN in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet. (BMW)
Greek	ΜΕ ΤΗΝ ΠΑΡΟΤΣΑ Omron ΔΗΛΩΝΕΙ ΟΤΙ V640-HAM11-ETN / V640-HAM11-L-ETN ΣΤΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ
Italian	Con la presente Omron dichiara che questo V640-HAM11-ETN / V640-HAM11-L-ETN é conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Spanish	Por medio de la presente Omron declara que el V640-HAM11-ETN / V640-HAM11-L-ETN cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Portuguese	Omron declara que este V640-HAM11-ETN / V640-HAM11-L-ETN está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

3. Canada

	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 à la norme NMB-003 du Canada.

4. China

	Amplifier Unit	CIDRW Head
CMIIT ID: 2010DJ5964	V640-HAM11-ETN	V640-HS61
CMIIT ID: 2010DJ5965	V640-HAM11-L-ETN	V640-HS62

1. 本产品的使用方法等请参见产品说明书。本产品的技术参数如下：
 - 使用频率为：13.553-13.567MHz
 - 所发射的电场强度在距设备10米处不得超过42dB μ A/m(采用准峰值检波)；
 - 频率容限： $\leq 100 \times 10^{-6}$
 - 杂散辐射等其他技术指标请参照2005/423号文件
2. 使用者不得擅自更改发射频率、加大发射功率(包括额外加装射频功率放大器)，不得擅自外接天线或改用其它发射天线；
3. 使用时应注意不得对各种合法的无线电通信业务产生有害干扰；一旦发现有干扰现象时，应立即停止使用，并采取措施消除干扰后方可继续使用；
4. 本产品为微功率无线电设备，能够承受各种无线电业务的干扰或工业、科学及医疗应用设备的辐射干扰；
5. 本产品不得在飞机和机场附近使用。

5. Korea

	Amplifier Unit	CIDRW Head
OMR-V640-HAM11-ETN	V640-HAM11-ETN	V640-HS61
OMR-V640-HAM11-L-E	V640-HAM11-L-ETN	V640-HS62

급 기기 (가정용 정보통신기기)

이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

6. Taiwan

	Amplifier Unit	CIDRW Head
CCAB10LP461AT0	V640-HAM11-ETN	V640-HS61
CCAB10LP462AT3	V640-HAM11-L-ETN	V640-HS62

低功率電波輻射性電機管理辦法

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

7. Singapore

	Amplifier Unit	CIDRW Head
N2294-10	V640-HAM11-ETN	V640-HS61
	V640-HAM11-L-ETN	V640-HS62

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.

- Never use the product in an environment where combustible or explosive gas is present.
- Please separate from a high-pressure equipment and the power equipment to secure the safety of the operation and maintenance.
- In the installation, please tighten the screw surely. (Recommended 1.2N·m)
- Please do not insert foreign bodies such as water and the wires from the space of the case.
- Please do not dismantle, repair or modify this product.
- Please process as industrial waste when you abandon this product.
- When you work on wiring and put on and take off cables, CIDRW head, please perform it after switching off this product.
- Provide enough space around this product for ventilation.
- Please avoid installing this product near the machinery (a heater, a transformer, large-capacity resistance) that has high the calorific value. When you felt abnormality to this product, and having switched it off.

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.

■ About installation Site

Do not install this product in the locations subject to the following conditions.

- Place where direct sunshine strikes.
- Place with corroded gas, dust, metallic powder, and salinity.
- Place with condensation due to rapid temperature fluctuations.
- Place with condensation due to high humidity.
- Place where vibration and impact more than being provided by specification are transmitted directly to main body.
- Place with spray of water, oil, and chemical medicine.
- The working temperature is within the range stipulated in the specifications.

■ About depositoty Site

- Please follow the save ambient temperature / humidity, and keep this product.

■ About wiring

- Use the power supply voltage specified in this cocument.
- Ensure correct polarity when connecting to the +/- power supply terminals.
- Do not run high-voltage lines and power lines though the same conduit.
- To avoid static-induced failure, wear a wrist band or equivalent means to release a static charge before touching a terminal or a signal line within a connector.
- When you put on and take off a CIDRW head, please do not add excessive power to a connector.
- Please connect the correct CIDRW head to the amplifier unit.

■ About cleaning

- Use alcohol to clean this product.
- Never use an organic solvent such as thinner, benzene, acetone or kerosene, as it will attack resin components or case coating.

■ Power and Graound Cables

- Use an appropriate ground. An insufficient ground can affect this product operation or result in damage to this product.

■ About the communication range and time

- Do the communication test with Transponder in the installation environment because the metal, noise and ambient temperature around CIDRW head damage to the communication range and time.
- Install CIDRW head and ID tag in the appropriate distance because the communication range can change by the difference of ID tag specifications.

■ About 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 CIDRW Heads, tighten the screws tightly. (Recommended 0.6N·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 90.

■ 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.

■ 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

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

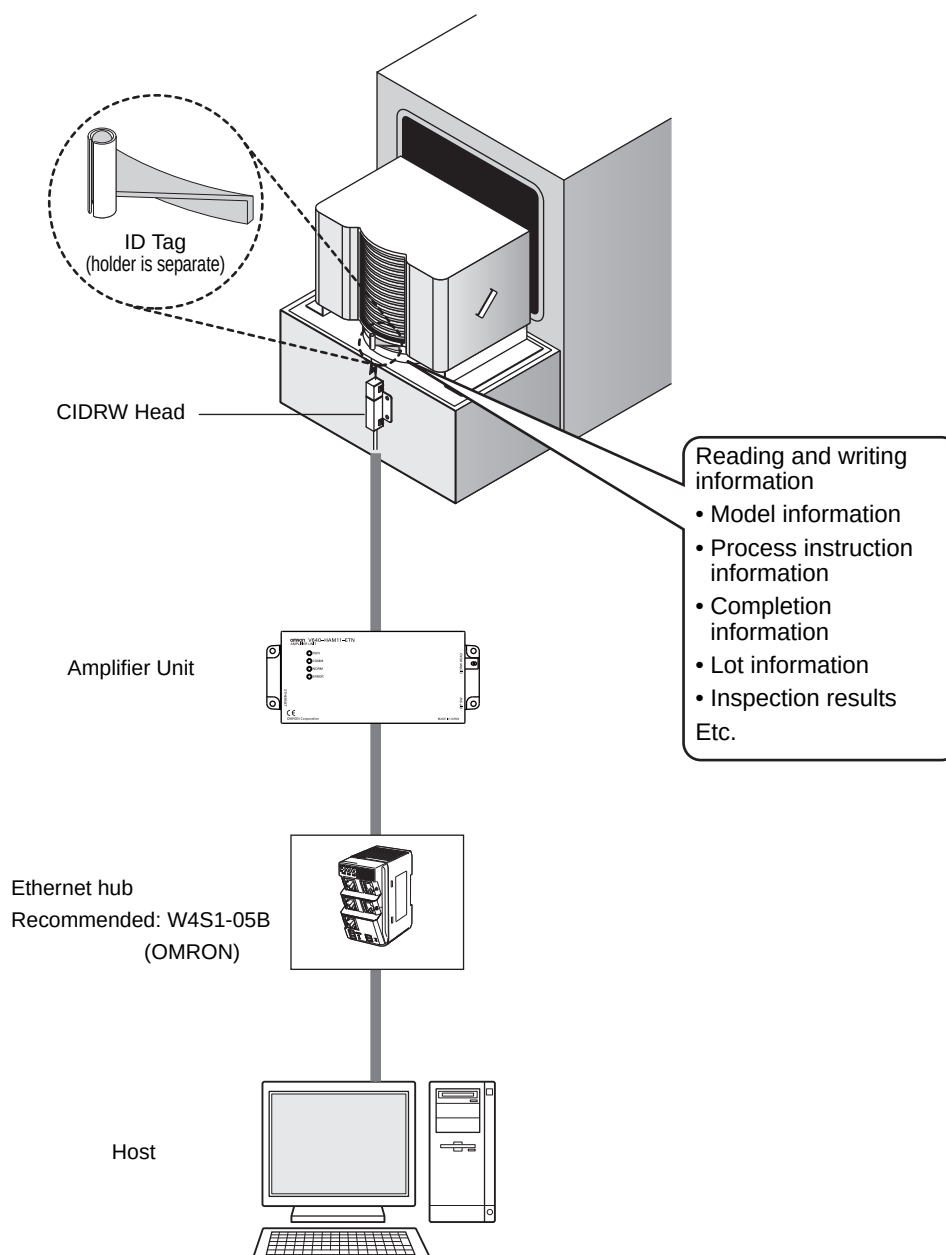
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What Is a CIDRW System

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

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

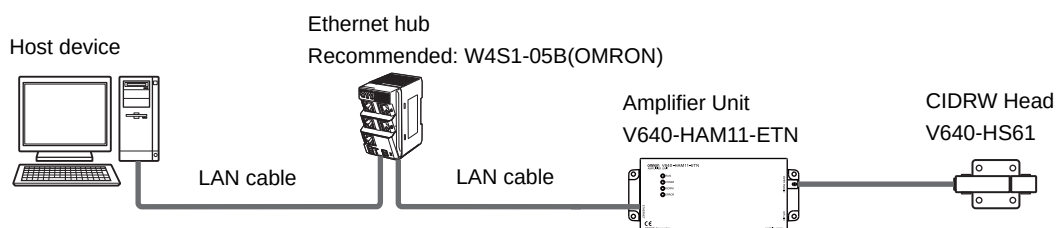
The V640-HAM11-ETN Amplifier Unit is equipped with Ethernet. The host device is connected through a LAN cable and controls the Amplifier Units using TCP/IP. The Amplifier Units provide a Web browser function that allows communications to be set and status to be managed using simple command communications.

■ V640-HAM11-L-ETN

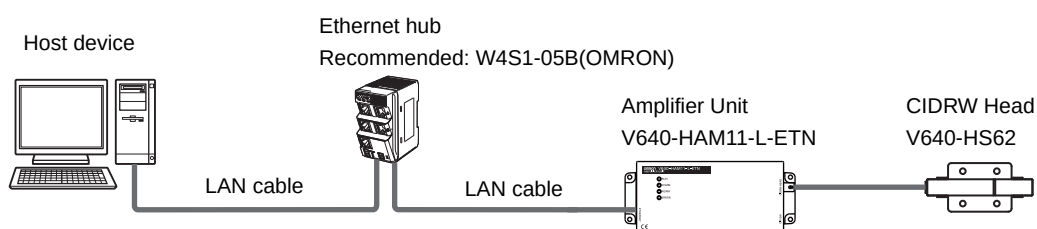
The V640-HAM11-L-ETN Amplifier Unit is equipped with Ethernet and can be connected to a V640-HS62 CIDRW Head to perform long-distance communications. The functions of the V640-HAM11-L-ETN Amplifier Unit are the same as those of the V640-HAM11-ETN Amplifier Unit.

System Configuration

V640-HAM11-ETN



V640-HAM11-L-ETN



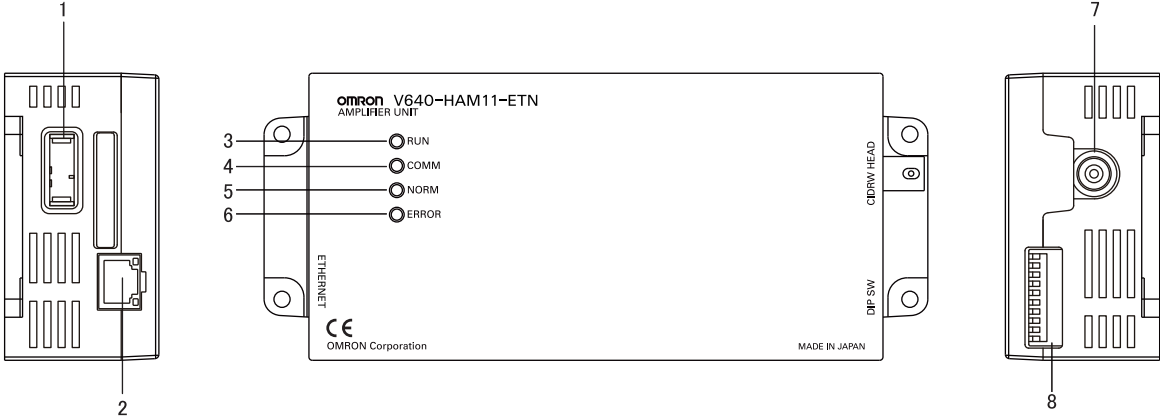
CHECK!

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

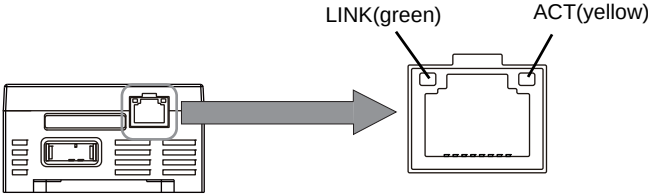
The IP address of the Amplifier Unit can be either set on this DIP switch or the desired IP address can be set in ROM. If pins 1 to 5 on the DIP switch are all turned OFF, the IP address that is set in ROM will be used.

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.



LINK---lights while linking normally.
ACT---lights when detects a carrier.

■ Functions

• 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."



Refer to page 51, page 114.

• Detecting for CIDRW Head status

You can confirm if the CIDRW Head is connected to the Amplifier Unit correctly.



Refer to page 49.

• 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 page 34.



CHECK!

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



Refer to page 19.



CHECK!

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.

• Browser Interface

You can confirm the status of the Amplifier Unit or control the Amplifier Unit by using Browser Interface. You can...

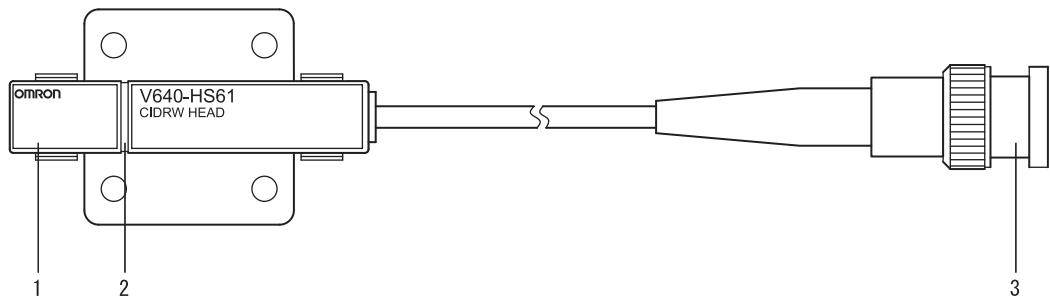
- confirm the status of the Amplifier Unit
- set the Network Settings and Web Password
- communicate with ID tags
- measure the levels of noise



Refer to page 55.

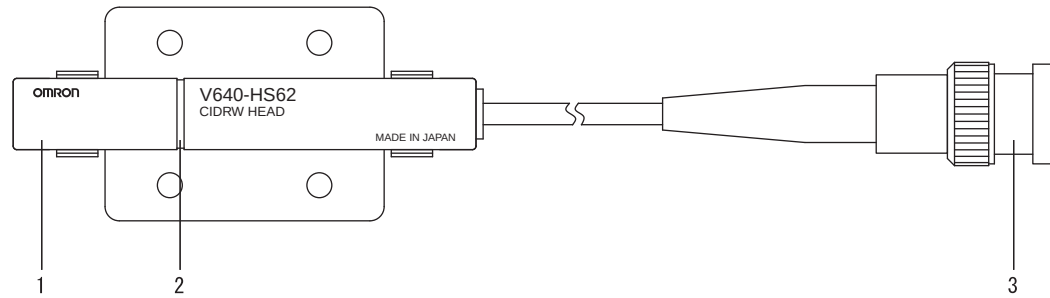
V640-HS61 and V640-HS62 CIDRW Heads

■ V640-HS61



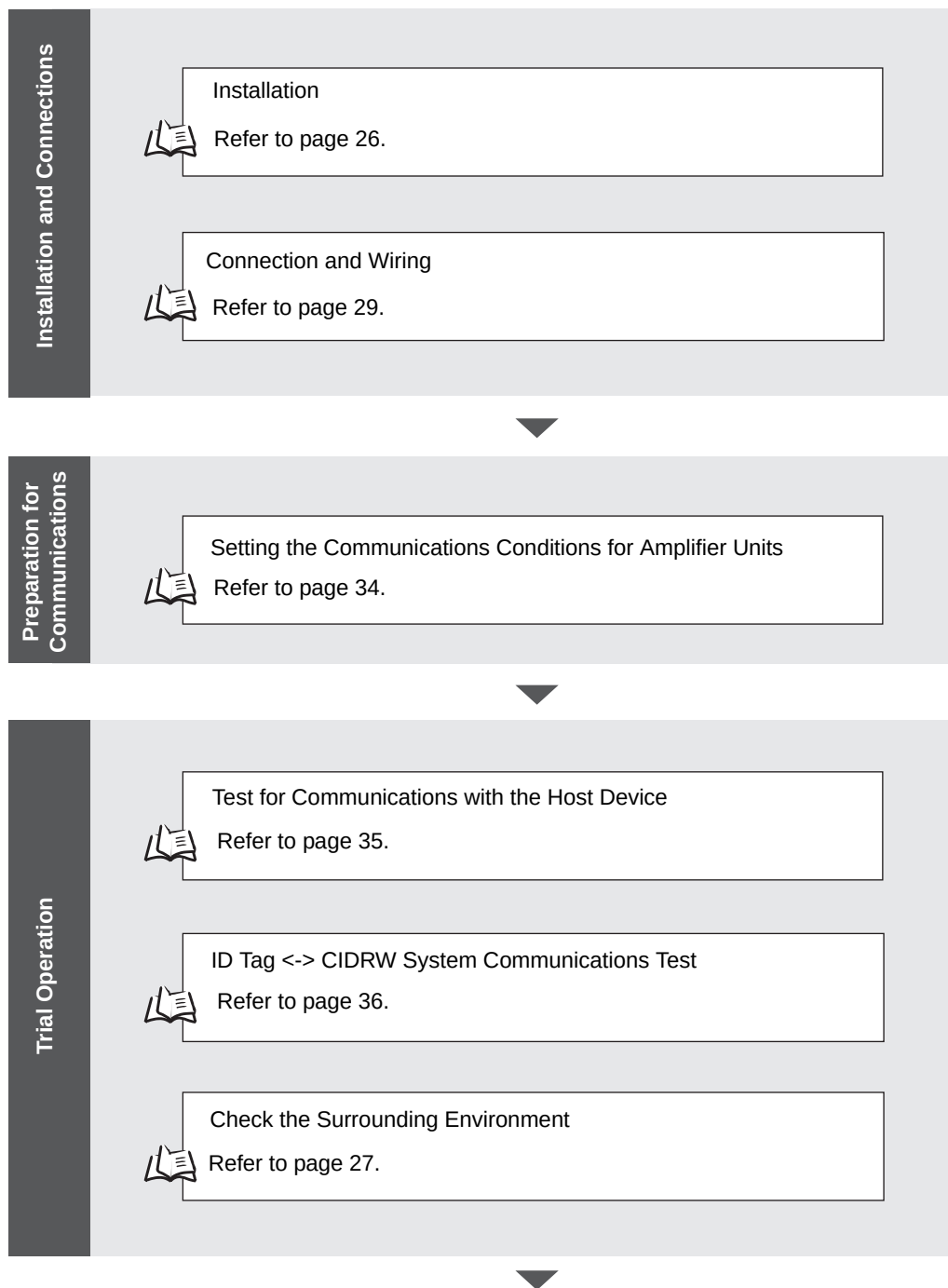
No.	Name	Function
1	Antenna	Used to communicate with ID Tags.
2	Antenna center	This is the center of the communications area.
3	Connector	Connect to an Amplifier Unit.

■ 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 Test with Actual Commands
Refer to page 38.



When you Encounter a Problem...



Troubleshooting



Refer to page 72. List of Error Messages



Refer to page 72. Amplifier Unit Indicators



Refer to page 73. Operation Check Flowchart

MEMO

SECTION 2

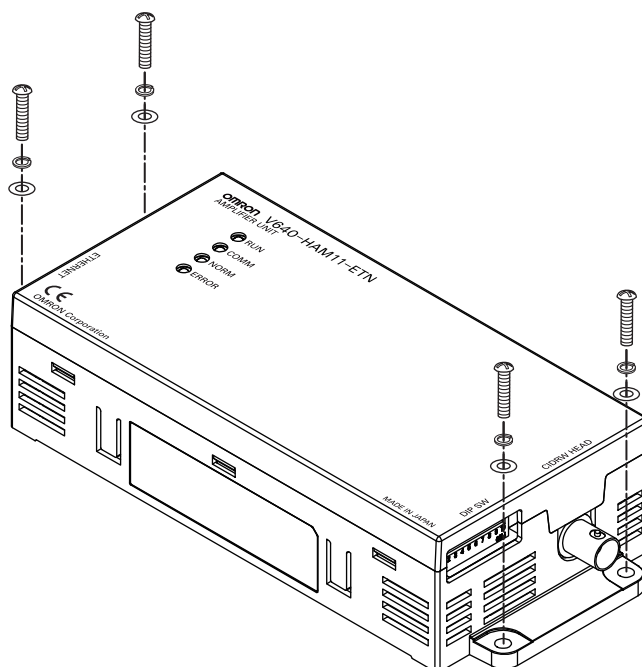
Installation and Connections/Wiring

 Installation	26
Amplifier Unit	26
CIDRW Head	27
 Connections and Wiring	29
Amplifier Unit	29

Installation

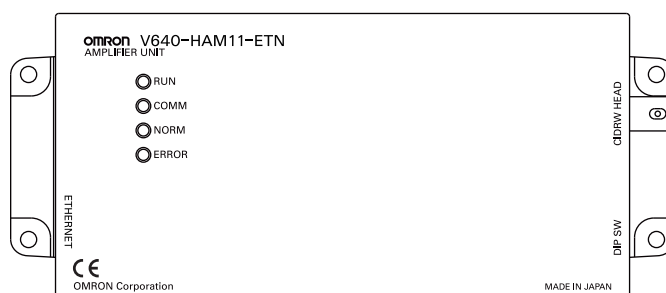
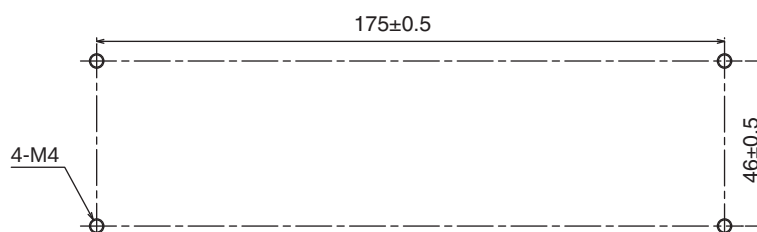
Amplifier Unit

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.

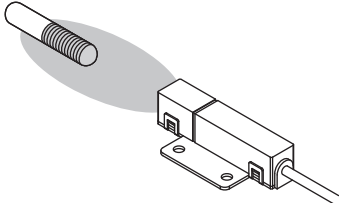
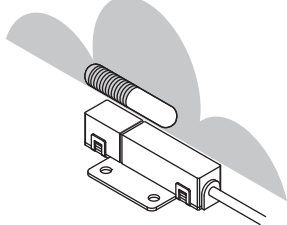
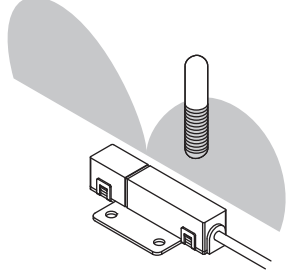
For details on actual communications distances, see *Characteristic Data depending on Conditions of Use* in *Appendix*.



Refer to page 85.

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 110.

■ 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.

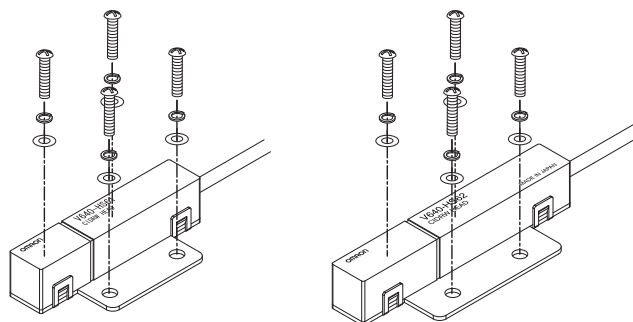


The noise levels in the vicinity of the CIDRW Head can be determined with the environmental NOISE MEASUREMENT command (applies only when SECS is not used) Refer to page 45.

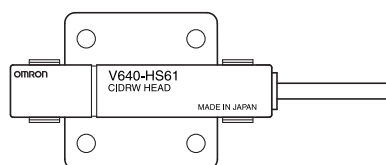
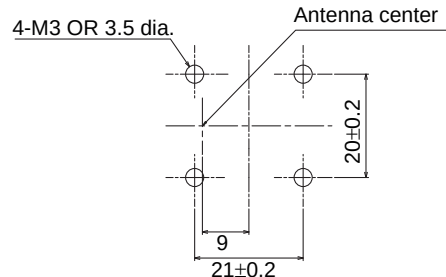
For details on the relationship between noise and communications distance, see *Appendix* Refer to page 114.

■ Mounting

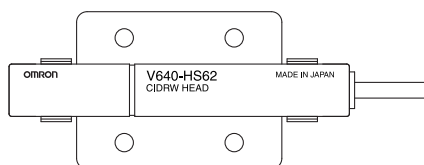
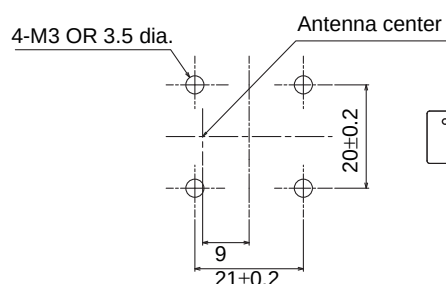
Use spring washers and flat washers with the four M3 screws when mounting a CIDRW Head.



Mounting dimensions



(Unit: mm)



*The mounting dimensions are same between V640-HS61 and V640-HS62.



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

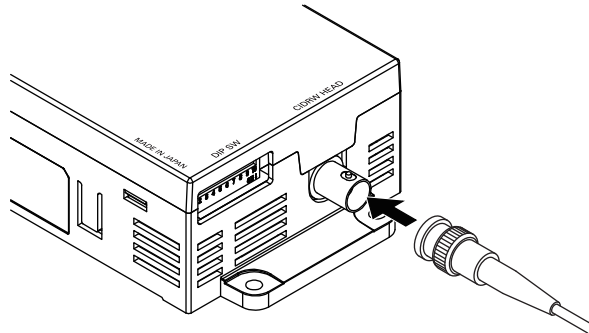
Connections and Wiring

Amplifier Unit

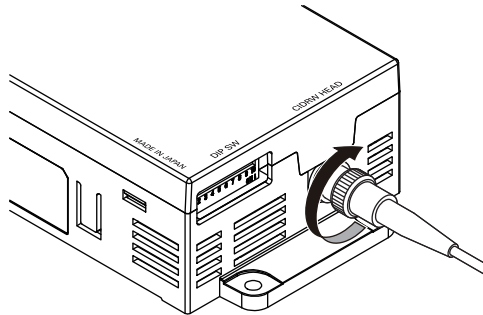
■ Connector for Connecting a CIDRW Head

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.



CHECK!

Disconnecting the CIDRW head.

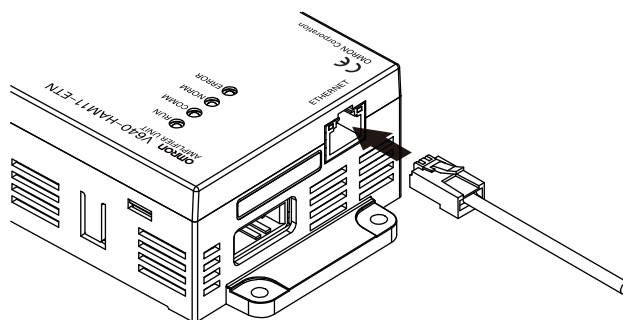
Please pull it straight out after turn a connector counterclockwise and removing a lock.

If it is difficult to pull the connector out , press down on the Amplifier Unit while pulling on the connector.

Please do not pull a cable forcibly.

■ Ethernet Connector

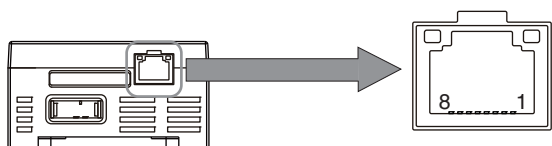
1. Hold the connector on the cable and insert it into the Ethernet connector on the Amplifier Unit.



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

• 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	-	-	-

Recommended Ethernet HUB

Manufacturer	Model	Type	Port
OMRON	W4S1-05B	switching hub	5



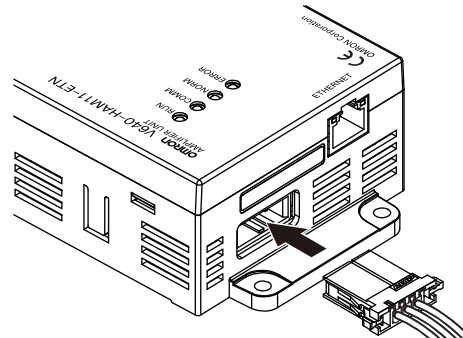
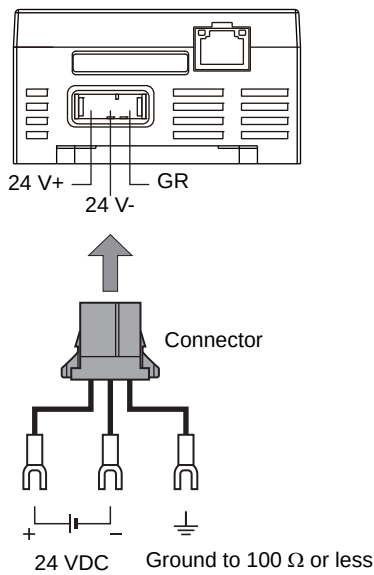
The shape and dimensions of plugs and jacks for Ethernet connectors are specified in ISO/IEC 8877:1992 (JIS X 5110:1996). To prevent faulty connections for connectors, the jack on the Amplifier Unit is designed so that non-standard plugs cannot be connected. If a commercially available plug cannot be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



If you use a Hub in your network, please choose a Switching-type Hub (Recommended: W4S1-05B(OMRON)).

■ 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.

• Dedicated Power Supply Connector

Prepare a V640-A90 (can be purchased as an accessory).

Contents of the V640-A90 set (accessory)

Name	Quantity	When procured individually	
		Manufacturer	Model
Power supply connector	One	Tyco Electronics	1-178288-3
Pins for power supply connector	Three		175217-3
Connector for RS-485 port	One	Phoenix Contact	MSTB2.5/2-STF-5.08

* "Connector for RS-485 port" is not able to use for the Amplifier Unit.

• 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.

Recommended Product

Manufacturer	Model	Output current	Input voltage
OMRON	S8VS-01524	24 VDC, 650 mA	100 to 240 VAC

*The maximum power consumption of the Amplifier Unit is 150 mA at 24 VDC(V640-HAM11-V3), 400 mA at 24 VDC(V640-HAM11-L). The inrush current, however, must be considered when selecting the power supply capacity. A power supply with an output of 650 mA min. at 24 VDC is recommended.

MEMO

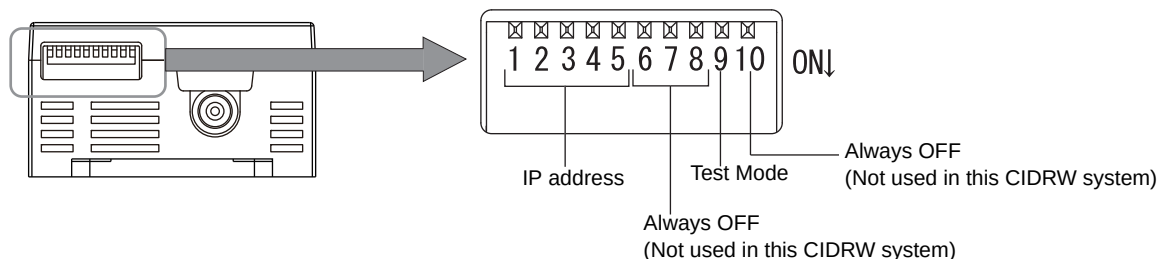
SECTION 3

Preparing for Communications

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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.



■ Default network settings(IP Address and Subnet mask)

IP Address: 192.168.1.200

Subnet mask: 255.255.255.0 (Port: 7090)

- 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.

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

Test Mode

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



Refer to page 20.

Communications Test

Communications Test with the Host Device

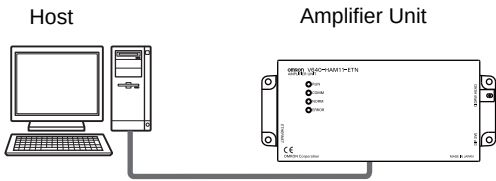
A communications test is performed to confirm that the host device and Amplifier Unit are connected correctly.



Refer to *Host Communications Specifications*.



Refer to page 81.



A test is preformed 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

The data is read from pages 1 and 3 of the Amplifier Unit.

Page 1	12h	34h	56h	78h	90h	12h	34h	56h
Page 2								
Page 3	11h	22h	33h	44h	55h	66h	77h	88h
Page 4								

Command code				Page designation								CR
0	1	0	0	0	0	0	0	0	0	1	4	0Dh

[illegible]

Response code		Page 1																Page 3																CR
0	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	0Dh

The data is written to pages 8 and 10 of the Amplifier Unit.

Command code				Page designation				Data of page 8																Data of page 10																CR			
0	2	0	0	0	0	0	0	A	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	0Dh

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Response code		CR
0	0	0Dh

Page 8	11h	22h	33h	44h	55h	66h	77h	88h
Page 9								
Page 10	01h	23h	45h	67h	89h	ABh	CDh	EFh

SECTION 4

Reading from/Writing to ID Tags

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CLEAR COMMUNICATIONS HISTORY	51
NOISE MEASUREMENT	51
RESET	52
SET WEB PASSWORD	52
SET NETWORK	53

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.39
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.40
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.42
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.43
TEST	10	Sends received data to the host device.	p.44
NAK	12	Sends the response made immediately before again.	p.45
GET PARAMETER	14	Gets the model number, MAC address, or another parameter.	p.45
GET LAST COMMAND	15	Gets the command code of the last command that was executed.	p.50
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.50
CLEAR COMMUNICATIONS HISTORY	17	Clears the communications history.	p.51
NOISE MEASUREMENT	40	Measures the noise in the vicinity of the CIDRW Head.	p.51
RESET	7F	Resets the Amplifier Unit.	p.52
SET WEB PASSWORD	A2	Sets the Web password.	p.52
SET NETWORK	A3	Sets the network.	p.53

Response Code List

Type	Response code	Name	Description
Normal end	00	Normal end	Command execution is completed normally.
Host communications error	14	Format error	There is a mistake in the command format. (For example, the command code is undefined, or the page or address specification is inappropriate.)
Communications error	70	Communications error	Noise or another hindrance occurs during communications with an ID Tag, and communications cannot be completed normally.
	71	Verification error	Correct data cannot be written to an ID Tag.
	72	No Tag error	Either there is no ID Tag in front of the CIDRW Head, or the CIDRW Head is unable to detect the ID Tag due to environmental factors (e.g., noise).
	7B	Outside write area error	A write operation was not completed normally because the ID Tag was in an area in which the ID Tag could be read but not written.
	7E	ID system error (1)	The ID Tag is in a status where it cannot execute command processing.
	7F	ID system error (2)	An inapplicable ID Tag has been used.
CPU hardware error	9A	Hardware error in CPU	An error occurred when writing to EEPROM.

■ READ

Reads any pages of data from the ID Tag. The maximum number of pages that can be read at one time is 16.

Command

Command code				Page designation (8 characters)								CR	
0	1	0	0									0Dh	

Bit	7	-	0	7	-	3	2	1	0	7	6	-	1	0	7	6	-	2	1	0
Page	Sys	-	Sys	Sys	-	Sys	17	16	15	14	13	-	8	7	6	5	-	1	Sys	Sys
Designation	0*	0*		0*	0*	0*	0/1	0/1	0/1	0/1	0/1	...	0/1	0/1	0/1	0/1	...	0/1	0*	0*
Value	00			00 to 07						00 to FF					00 to FC					

* Always specify 0. If you specify 1 an error (Response code: 14) will occur.

Parameter Description

Parameter	Description
Page designation	Pages are specified by setting the bits corresponding to pages that are to be read to 1 and setting the other bits to 0, then converting the result to a hexadecimal character string.

ID Tag Memory Maps



Refer to page 115.

The response code (when normal: 00) and the data in the specified pages are returned in ascending order of page numbers.

Response

Response code		Read data												CR	
		Page n						...	Page m (n<m)						
		Data 1	...	Data 8	Data 1	...	Data 8								
0	0													0Dh	

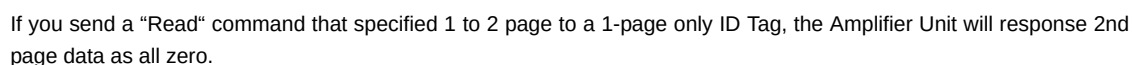
Data Content of the ID Tag

Page 1	12h	34h	56h	78h	90h	12h	34h	56h
Page 2								
Page 3	11h	22h	33h	44h	55h	66h	77h	88h
Page 4								

Command code				Page designation								CR
0	1	0	0	0	0	0	0	0	0	1	4	0Dh

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Response code		Page 1																Page 3																CR
0	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	0Dh



Data is written in page units to the ID Tag. Any page(s) can be specified. It is possible to write to a maximum of 16 pages at one time.

[illegible]

Bit	7	-	0	7	-	3	2	1	0	7	6	-	1	0	7	6	-	2	1	0
Page	Sys	-	Sys	Sys	-	Sys	17	16	15	14	13	-	8	7	6	5	-	1	Sys	Sys
Designation	0*	0*		0*	0*	0*	0/1	0/1	0/1	0/1	0/1	...	0/1	0/1	0/1	0/1	...	0/1	0*	0*
Value	00		00 to 07							00 to FF					00 to FC					

40

Parameter	Description
Page designation	Pages are specified by setting the bits corresponding to pages that are to be read to 1 and setting the other bits to 0, then converting the result to a hexadecimal character string.
Write data	The data to be written to the specified pages is specified in ascending order of page numbers.



Refer to page 115.

Response code		CR
0	0	0Dh

[illegible]

Response code		CR
0	0	0Dh

Page 8	11h	22h	33h	44h	55h	66h	77h	88h
Page 9								
Page 10	01h	23h	45h	67h	89h	ABh	CDh	EFh

■ SAME WRITE

This command writes the same data to multiple pages of an ID Tag. Any page(s) can be specified.

Command

Command code				Page designation (8 characters)								Write data								CR
												Data 1		...		Data 8				
0	3	0	0																	0DH

Bit	7	-	0	7	-	3	2	1	0	7	6	-	1	0	7	6	-	2	1	0
Page	Sys	-	Sys	Sys	-	Sys	17	16	15	14	13	-	8	7	6	5	-	1	Sys	Sys
Designation	0*	0*		0*	0*	0*	0/1	0/1	0/1	0/1	0/1	...	0/1	0/1	0/1	0/1	...	0/1	0*	0*
Value	00			00 to 07						00 to FF						00 to FC				

* Always specify 0. If you specify 1 an error (Response code: 14) will occur.

Parameter Description

Parameter	Description
Page designation	Pages are specified by setting the bits corresponding to pages that are to be read to 1 and setting the other bits to 0, then converting the result to a hexadecimal character string.
Write data	Specify the write data.

ID Tag Memory Maps



Refer to page 115.

Response

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

Response code		CR
0	0	0Dh

Example: Clearing All Data on Pages 1 and 17 of the Amplifier Unit to 0

Command

Command code				Page designation								Write data																CR
0	3	0	0	0	0	0	7	F	F	F	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0Dh

Binary notation

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Response

Response code		CR
0	0	0Dh

■ 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 115.

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	-	E	T	N	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		IP address 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		Memory status		CR
0	0	0	1	0Dh

* "Memory status" will be if the memory is normal:"01", and is error:"00".

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		Antenna connection status		CR
0	0			0Dh

* "Antenna connectionstatus" will be if the antenna is connected correctly:"01", and is not correctly:"00".

■ 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 114.

■ RESET

All Amplifier Unit processing is stopped, and the initial status is re-established.

Command

Command code		CR
7	F	0Dh

Response

There is no response to this command.

■ SET WEB PASSWORD

This command sets the Web password.

If you set a password, a Password entry window will be displayed when you start the browser window.

Command

When the Password Is Not Set

Command code		Password (1 to 16 characters)														CR
A	2															0Dh

* Only the following characters can be used in passwords: 0 to 9, a to z, and A to Z. If any other characters are used, error 14 will occur.

* If the password is not between 1 and 16 characters long, error 14 will occur.

When the Password Is Set

Command code		CR
A	2	0Dh

Response

Response code		CR
0	0	0Dh



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.



CHECK!

The values are enabled when the Amplifier Unit is restarted.

■ 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

- 
CHECK!

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


CHECK!

The values are enabled when the Amplifier Unit is restarted.
- 
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

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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 from the following URL: <http://www.java.com/ja/>.

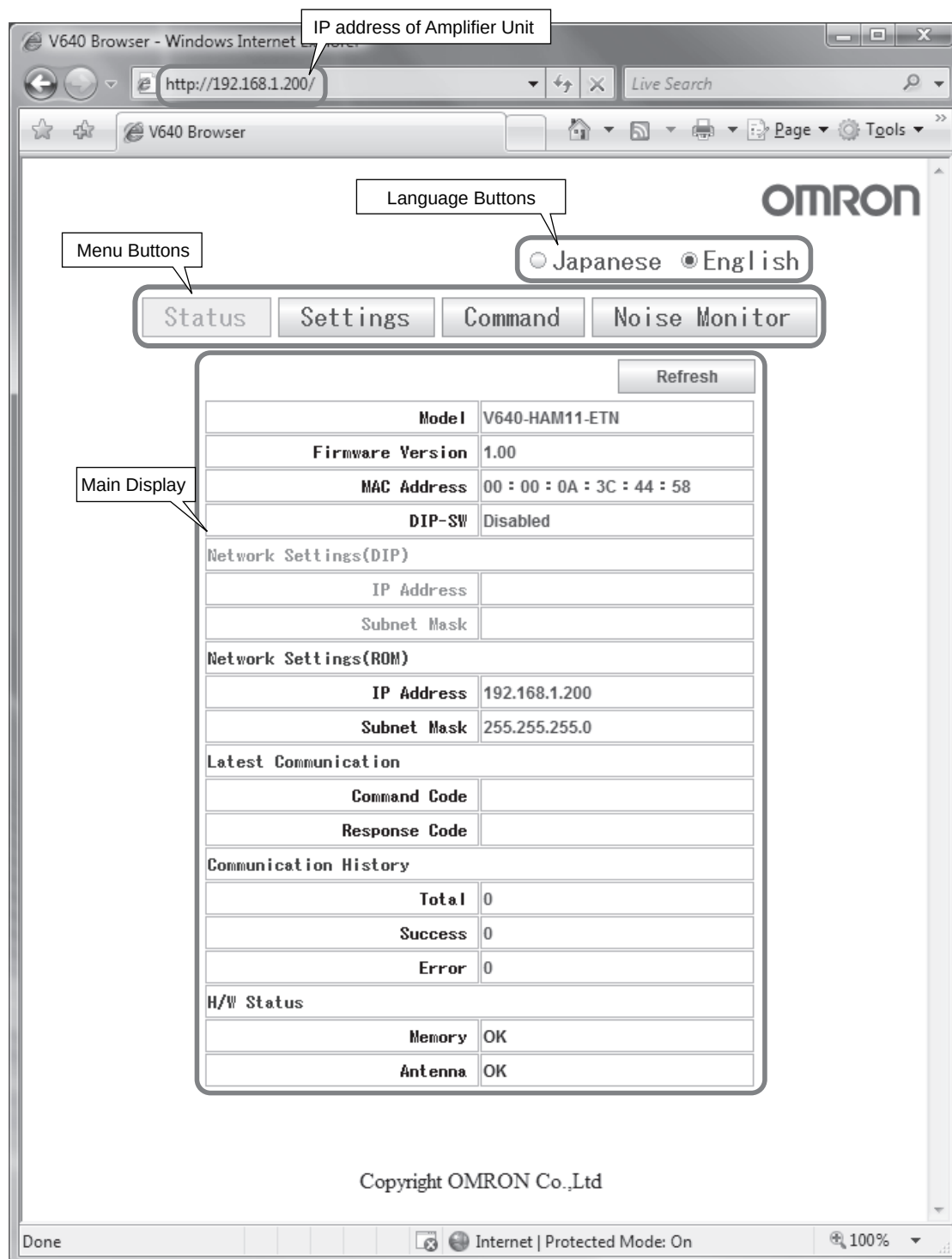
(Java and all trademarks and logos related to Java are trademarks or registered trademarks of Sun Microsystems, Inc., in the USA and other countries.)

- 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.

Before you begin the Browser Interface

1. Connect the PC to the Amplifier Unit through the LAN cable.
2. Turn on of the Amplifier Unit.
3. Start the browser (ex.Internet Explorer).
4. Input the IP Address of the Amplifier Unit in the URL column.
5. The Amplifier Unit browser screen will be displayed.

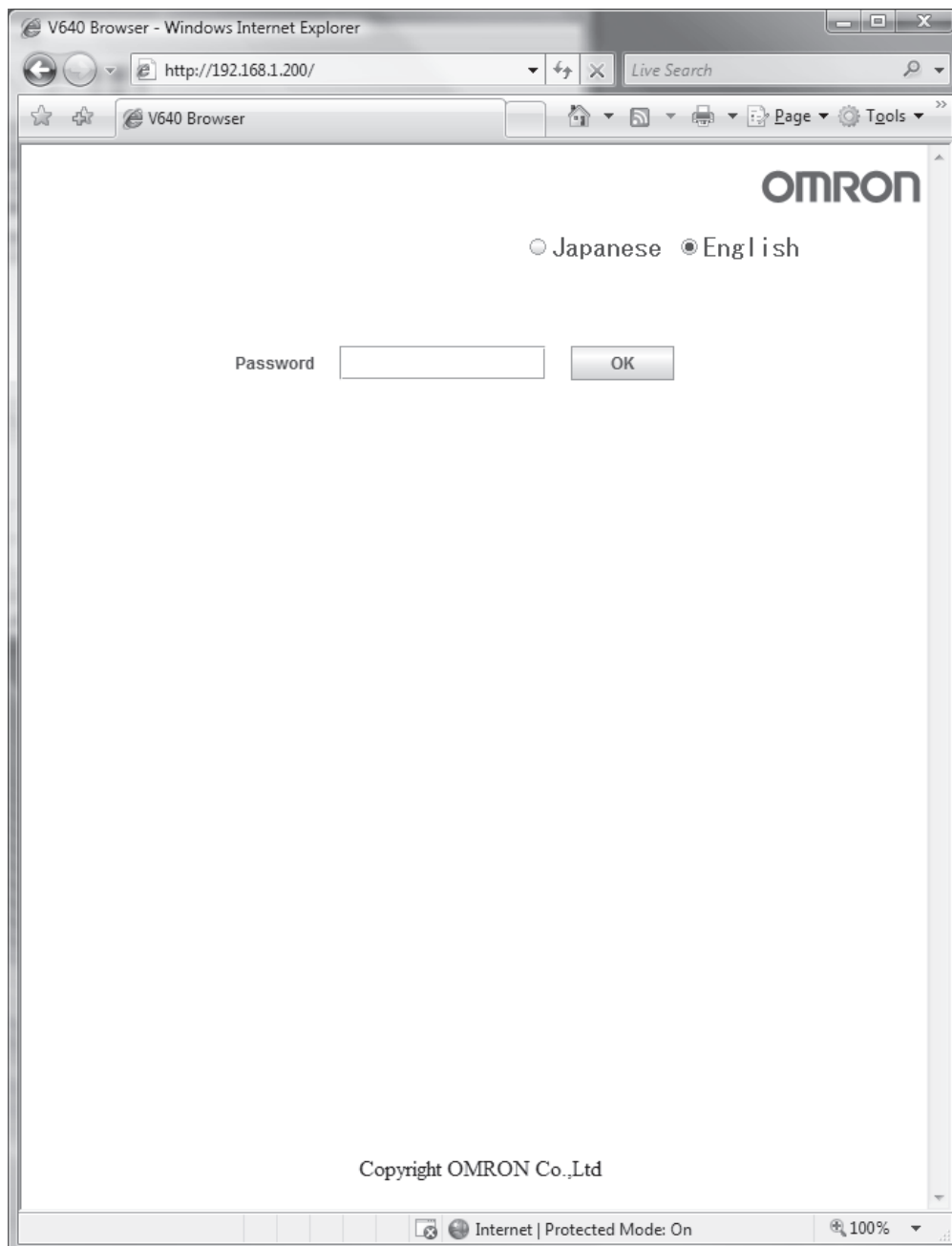
Window Configuration



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).

V640 Browser - Windows Internet Explorer

http://192.168.1.200/

OMRON

○ Japanese ● English

Status Settings Command Noise

Refresh Button

Refresh

①

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

②

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

③

Latest Communication	
Command Code	
Response Code	

④

Communication History	
Total	0
Success	0
Error	0

⑤

H/W Status	
Memory	OK
Antenna	OK

Copyright OMRON Co.,Ltd

Done Internet | Protected Mode: On 100%

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.

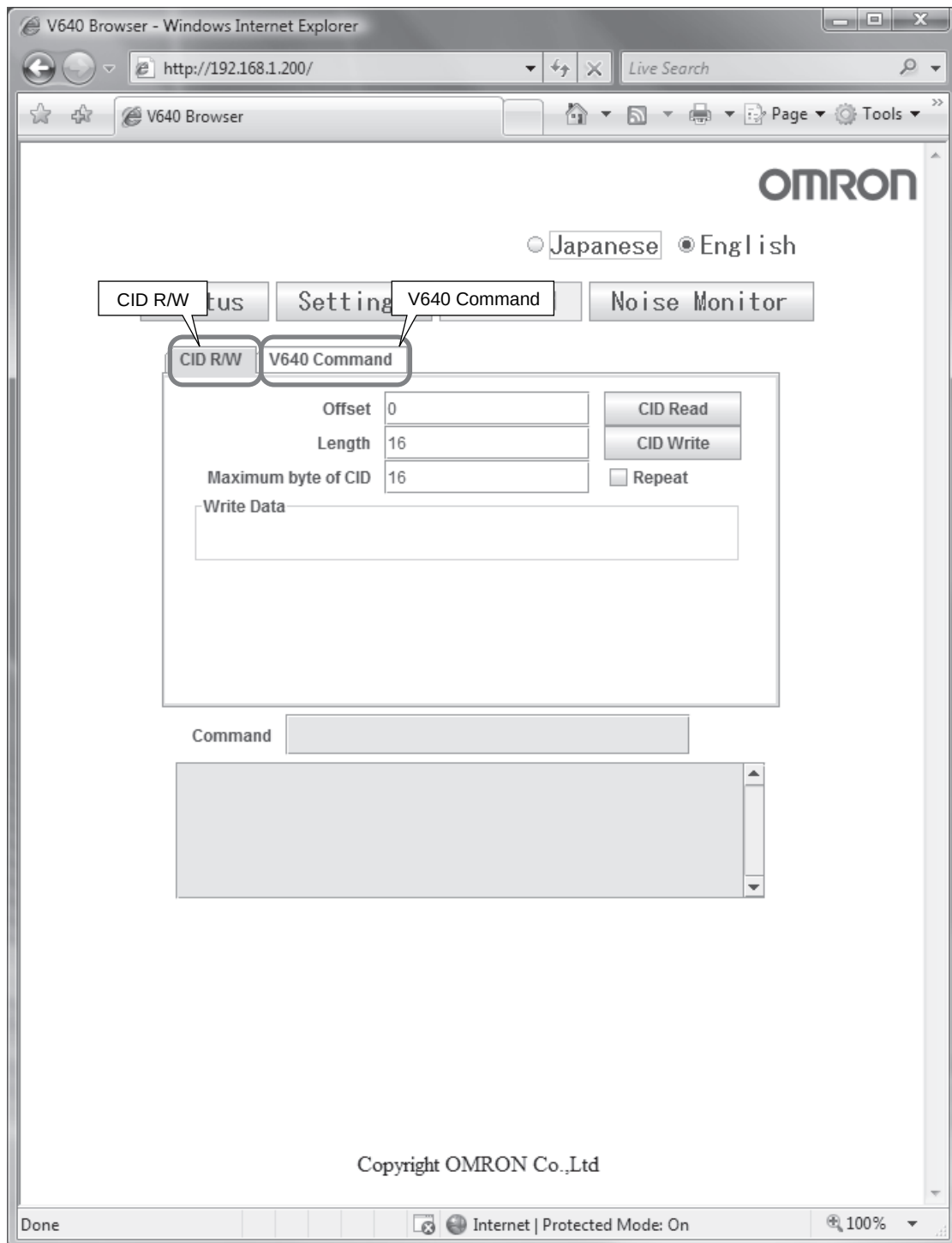
The screenshot displays the V640 Browser interface within a Windows Internet Explorer window. The browser's address bar shows the URL `http://192.168.1.200/`. The main content area features the OMRON logo at the top right, followed by language selection buttons for Japanese and English (English is selected). Below these are four tabs: Status, Settings, Command, and Noise Monitor. The Settings tab is currently selected. Within the Settings tab, there are two main sections. The first section, titled 'Network Settings', contains input fields for 'IP Address' (set to 192.168.1.200) and 'Subnet Mask' (set to 255.255.255.0), along with a 'Save' button. A note below these fields states: 'NOTE: When "DIP-SW" setting is disabled, the above settings are enabled.' The second section, titled 'Password', contains a 'New Password' input field and a 'Save' button. Two callout boxes with arrows point to specific areas: one points to the 'IP address and subnet mask setting area' and the other points to the 'Web password setting area'. The browser's status bar at the bottom indicates 'Done', 'Internet | Protected Mode: On', and a zoom level of '100%'. The footer of the browser window displays 'Copyright OMRON Co.,Ltd'.



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.

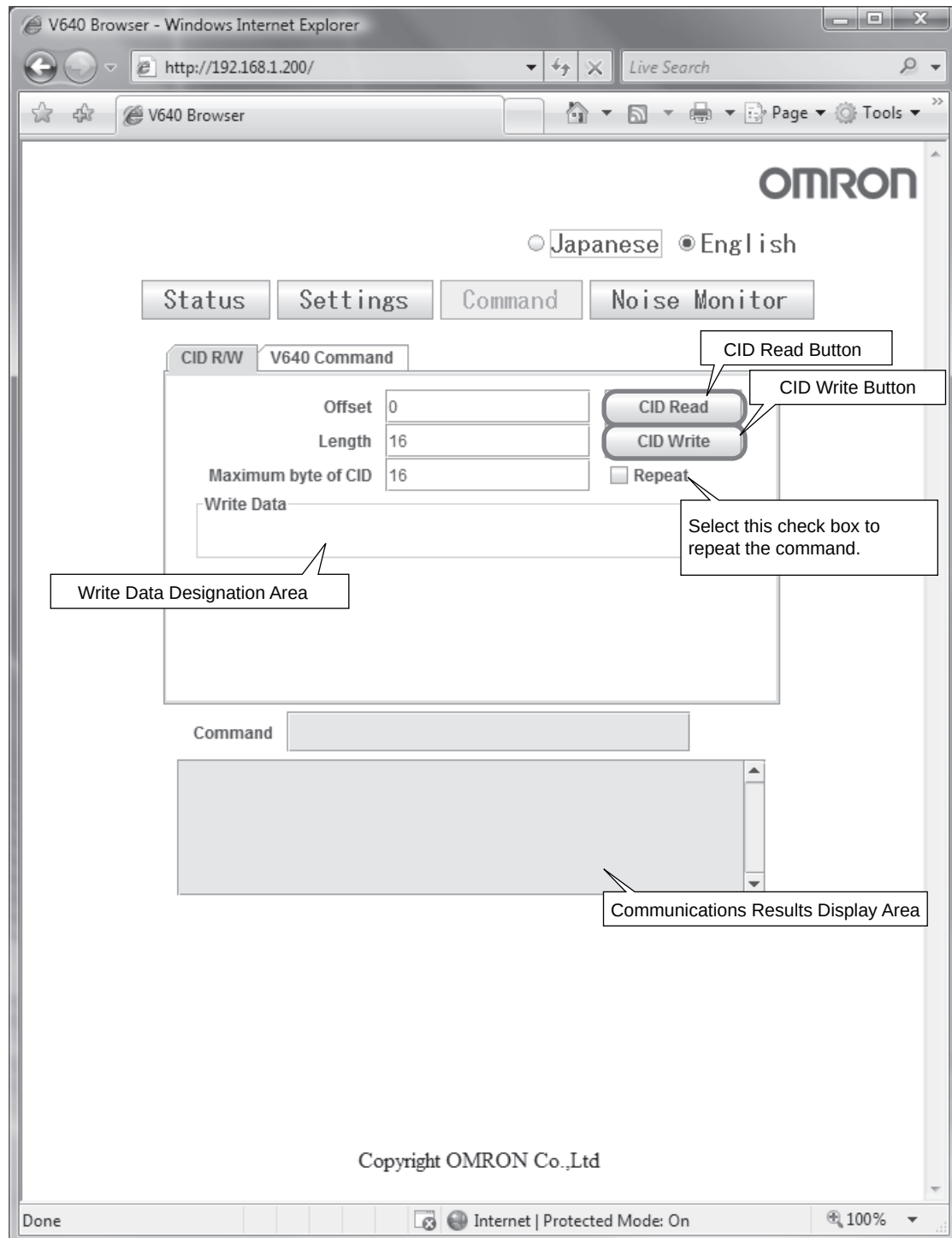
Command Window

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.

CID R/W V640 Command

Offset 0

Length 16

Maximum byte of CID 16

CID Read

CID Write

☐ Repeat

Write Data

Command 010000000000C

[TX] Read Offset=0 Length=16

[RX] (00) ABCDEFGHIJKLMNOP

Command sent to Amplifier Unit

Response code

Receive data

Send 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 (*).

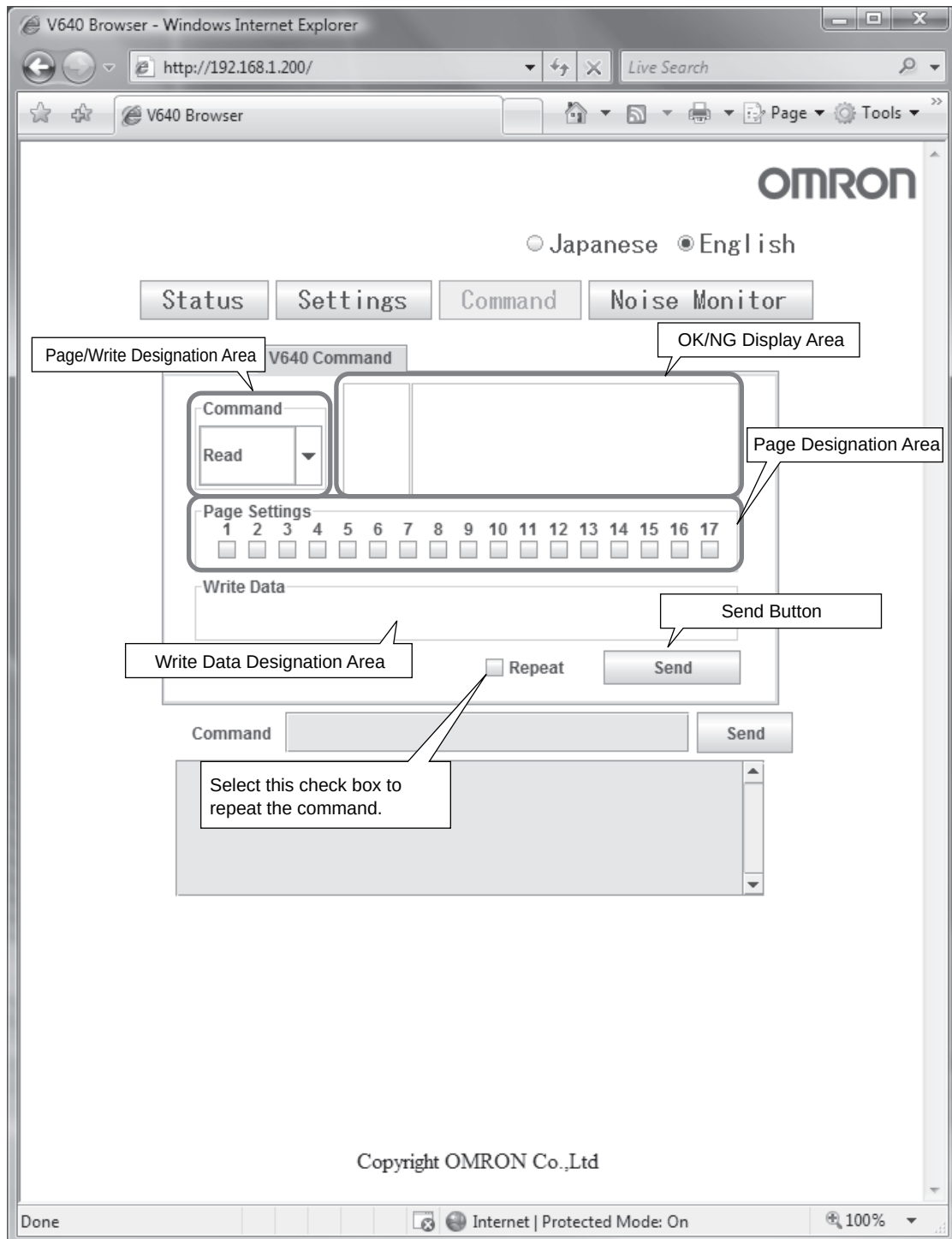
[TX] Read Offset=0 Length=16

[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

CID R/W V640 Command

Command
Read

OK

Page Settings
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Write Data

☐ Repeat

Command 010000000004

[TX] 010000000004
[RX] (00) 4142434445464748

• Failed Communications

CID R/W V640 Command

Command
Read

NG

Error Code:72
No Tag error
Either there is no ID Tag in front of the CIDRW Head, or the CIDRW Head is unable to detect the ID Tag due to environmental factors (e.g. noise).

Page Settings
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Write Data

☐ Repeat

Command 010000000004

[TX] 010000000004
[RX] (72)

■ Page Designation Area

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

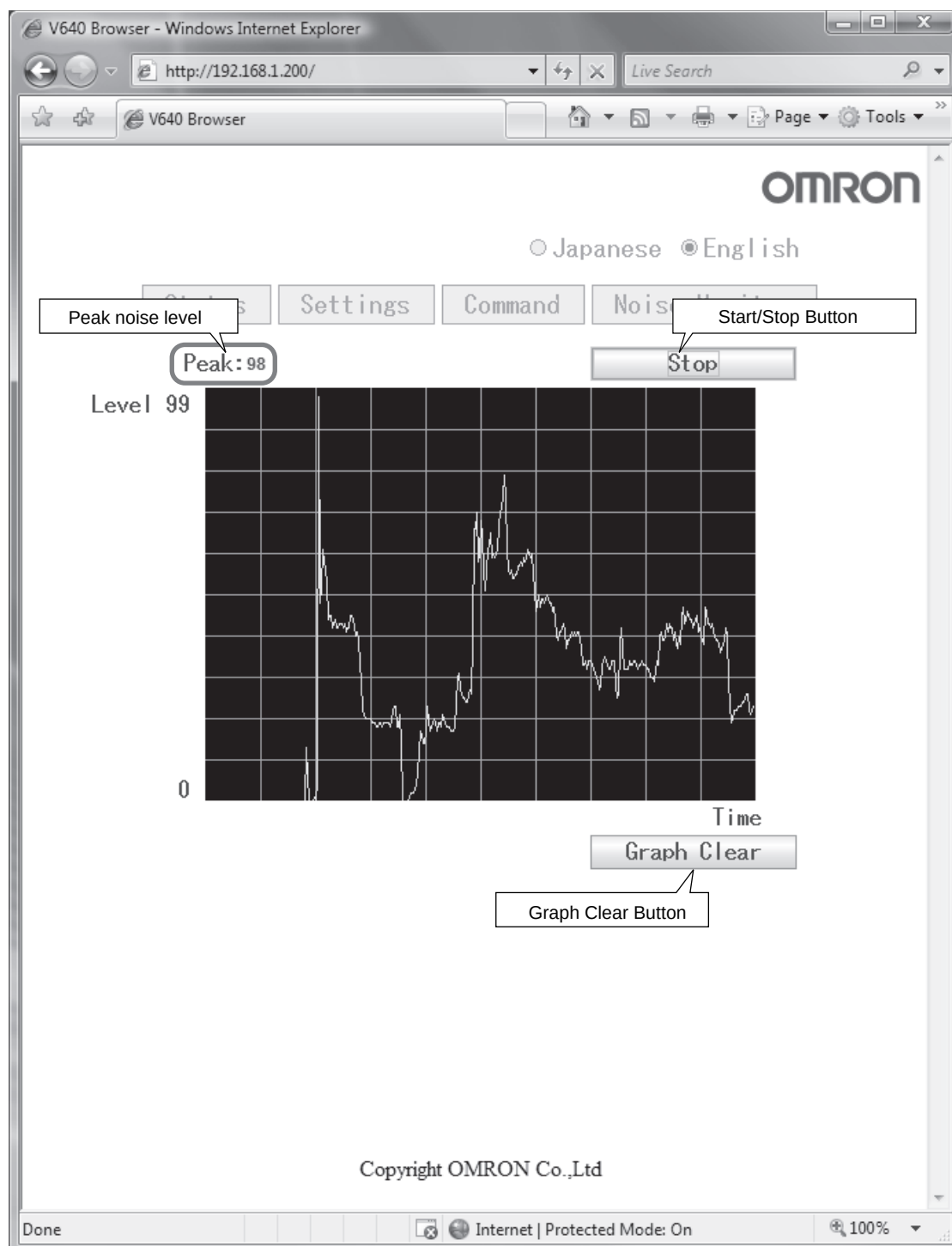
■ Write Data Designation Area

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).



MEMO

SECTION 6

Troubleshooting

 Troubleshooting

72

Troubleshooting

Errors are indicated by the presence or absence of a response to an Amplifier Unit command, and by the indicators.

List of Error Messages

Type	Response code	Name	Description
Host communications error	14	Format error	There is a mistake in the command format. (For example, the command portion is undefined, or the page or address specification is inappropriate.)
Communications error between the CIDRW Head and ID Tag	70	Communications error	Noise or another hindrance has occurred during communications with an ID Tag, and communications cannot be completed normally.
	71	Verification error	Correct data cannot be written to an ID Tag.
	72	No Tag error	Either there is no ID Tag in front of the CIDRW Head, or the CIDRW Head is unable to detect the ID Tag due to environmental factors (e.g., noise).
	7B	Outside write area error	The ID Tag is at a position where reading is possible but writing is not, so writing does not complete normally.
	7E	ID system error (1)	The ID Tag is in a status where it cannot execute the command processing.
	7F	ID system error (2)	An inapplicable ID Tag has been used.
CPU hardware error	9A	Hardware error in CPU	An error occurred when writing to EEPROM.

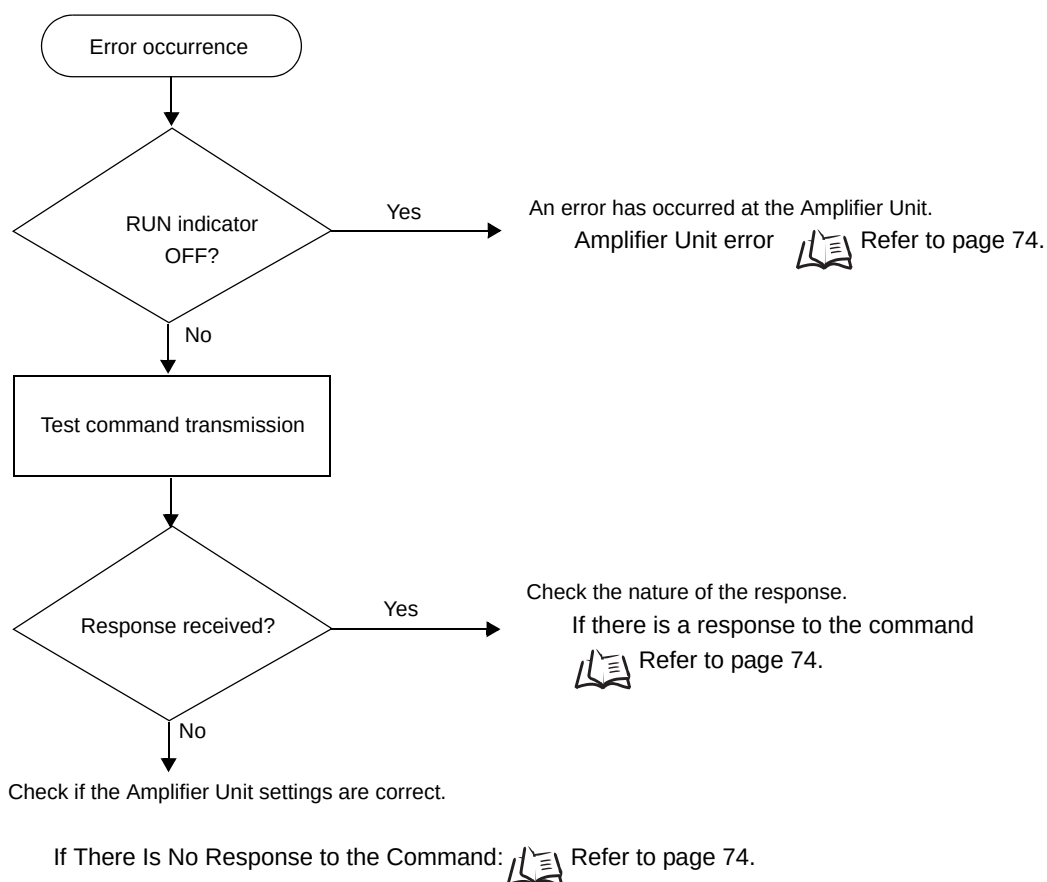
Amplifier Unit Indicators

Name	Indications
RUN (green)	Turns ON when the Amplifier Unit is in normal operation.
COMM (orange)	Turns ON during communications with the host device or during communications with an ID Tag.
NORM (green)	Turns ON when the communications finish with no error.
ERROR (red)	Turns ON when an error occurs during communications with the host device, or during communications with an ID Tag.

Operation Check Flowchart

■ From Installation to Trial Operation

Errors are indicated by whether or not a response to the test command is received and by the status of the Amplifier Unit indicators.



- If the Test Command Was Received Normally:

Indicators

RUN	COMM	NORM	ERROR
	 (Lights once)		

Response Code for the Response

Type	Response code	Function
Normal	00	The command was received normally.

• Amplifier Unit Error

Check the status of the indicators after transmission of the test command.

After taking appropriate corrective action, restart the Amplifier Unit, send the test command again and check again.

RUN	COMM	NORM	ERROR	Main check points
	—			The Amplifier Unit may be damaged.
	—			• Influence of background noise (change installation position) • Amplifier Unit power supply If the error cannot be resolved after checking, the Amplifier Unit may be damaged.

• If There Is No Response to the Command:

Check the status of the indicators after transmission of the test command.

After taking appropriate corrective action, restart the Amplifier Unit, send the test command again and check again.

RUN	COMM	NORM	ERROR	Main check points
				• Please establish the connection between the PC and the Amplifier Unit again, because the TCP/IP connection may be disconnected. • Connection and wiring of the cable between the host device and Amplifier Unit • Routing of each cable (influence of background noise) If the error cannot be resolved after checking, the Amplifier Unit may be damaged.
			 (Lights once)	• Connection and wiring of the cable between the host device and Amplifier Unit • Routing of the cables (influence of background noise) • There is a mistake in the command format (number of characters, character code, etc.)

• If There Is a Response to the Command:

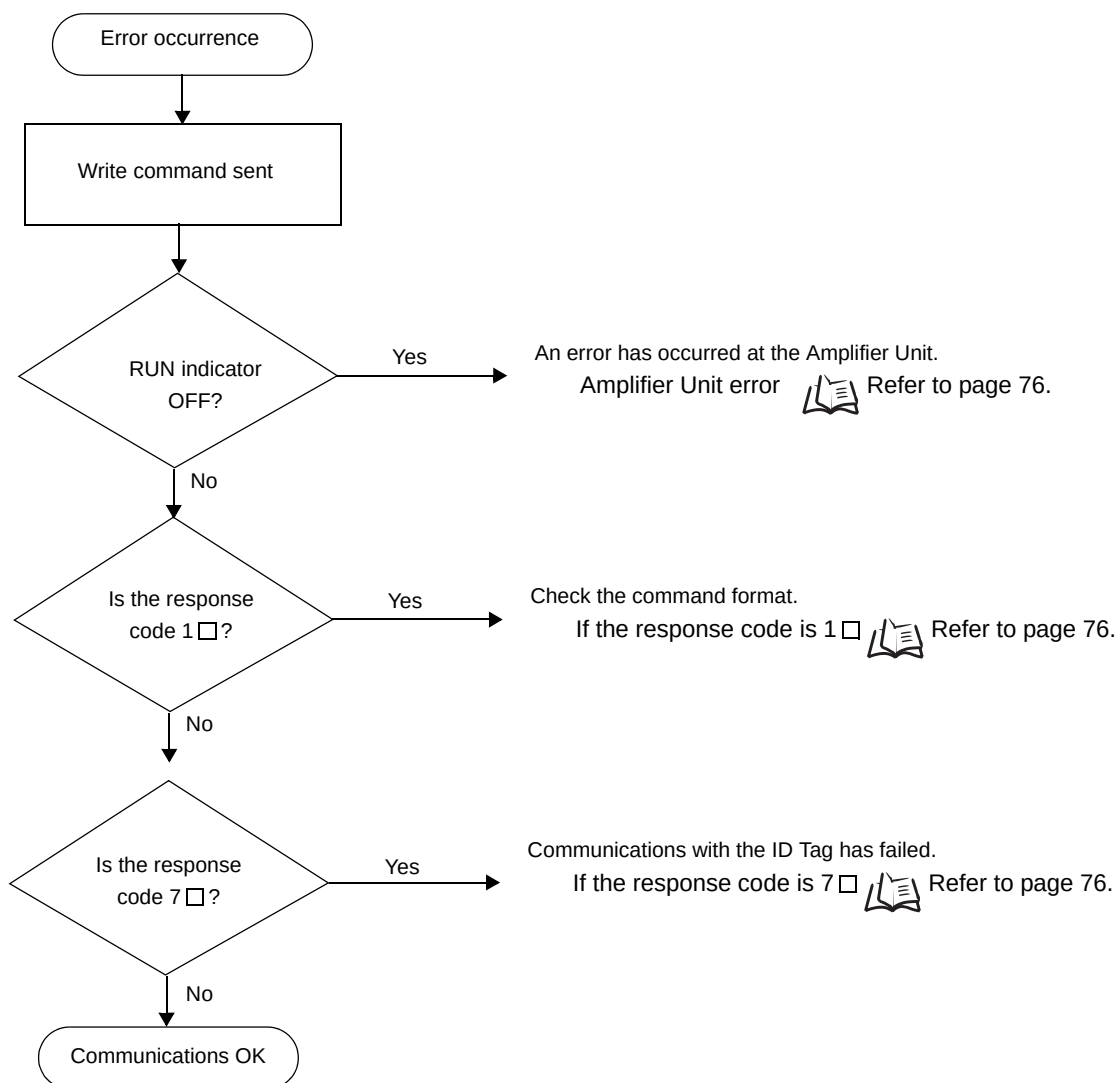
Check the status of the indicators after transmission of the test command.

After taking appropriate corrective action, restart the Amplifier Unit, send the test command again and check again.

RUN	COMM	NORM	ERROR	Main check points
			 (Lights once)	There is a mistake in the command format (number of characters, character code, etc.).
				By an interruption of the power supply, the memory may be damaged.

■ From Trial Operation to Communications

Errors are indicated by the status of the indicators after transmission of the write command, and by the response code of the response.



• If the ID Tag Was Processed Normally:

Indicators

RUN	COMM	NORM	ERROR
	 (Lights once)	 (Lights once)	

Response Code for the Response

Type	Response code	Function
Normal	00	The ID Tag was processed normally.



If there is no response to the write command, refer to the *From Installation to Trial Operation, Operation Check Flowchart*. Refer to page 73.

• Amplifier Unit Error

Check the status of the indicators after transmission of the command. After taking appropriate corrective action, send the write command again and check again.

RUN	COMM	NORM	ERROR	Main check points
	— (If RUN is OFF, the status of the other indicators can be ignored.)			• Influence of background noise (Change installation position) • Amplifier Unit power supply If the error cannot be resolved by checking the two points above, the Amplifier Unit may be damaged.

• If the Response Code is 1□:

There is a host device communications error.

Check the status of the indicators and the response code of the response after transmission of the command. After taking appropriate corrective action, send the write command again and check again.

RUN	COMM	NORM	ERROR
			 (Lights once)

Response code	Main check points
14	Command format (Command code, page designation, address designation, processed data volume, etc.)

• If the Response Code is 7□:

There is a communications error in communications between the CIDRW Head and ID Tag.

Check the status of the indicators and the response code of the response after transmission of the command. After taking appropriate corrective action, send the write command again and check again.

RUN	COMM	NORM	ERROR
	 (Lights once)		 (Lights once)

Response code	Main check points
70	- Background noise levels of the CIDRW Head (Check the surroundings with the environmental noise level measurement function) - Distance to another CIDRW Head - Influence of background noise (Change installation position) - Please check the Antenna Connection Status by using "GET PARAMETER" command. Refer to page 49, page 20. If the error cannot be resolved after checking, the Amplifier Unit may be damaged.
71	- ID Tag overwrite life (Replace the ID Tag) - Environment of use of the ID Tags (ID Tag breakage due to use in unanticipated ways)
72	- Connection to the CIDRW Head - Distance between the ID Tag and CIDRW Head - CIDRW Head background noise levels (Check the surroundings with the environmental noise level measurement function) - Distance to another CIDRW Head - Please check the Antenna Connection Status by using "GET PARAMETER" command. Refer to page 49, page 20.
7B	- Distance between the ID Tag and CIDRW Head - Background noise levels of the CIDRW Head (Check the surroundings with the environmental noise level measurement function) - Distance to another CIDRW Head - Influence of background noise (Change installation position)
7E	Type/specifications of the ID Tags used
7F	- Settings of the ID Tags used (The ID Tag lock function is used.*) - Environment of use of the ID Tags (ID Tag breakage due to use in unanticipated ways)

* The ID Tag has a lock function, but the Amplifier Unit has no function for locking an ID Tag.

■ Other Troubleshooting

• Operating in Test Mode

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

RUN	COMM	NORM	ERROR	Main check points
				Please check that the CIDRW Head is connected correctly. If the error cannot be resolved after checking, the Amplifier Unit or the CIDRW Head may be damaged.

• When a browser screen is not displayed

Please confirm the following items.

- Please confirm whether the network settings is correct.
- Please confirm JRE (version 5.0 or newer) is installed in the host.
- Please confirm whether setting of Proxy does not have an error.

MEMO

SECTION 7

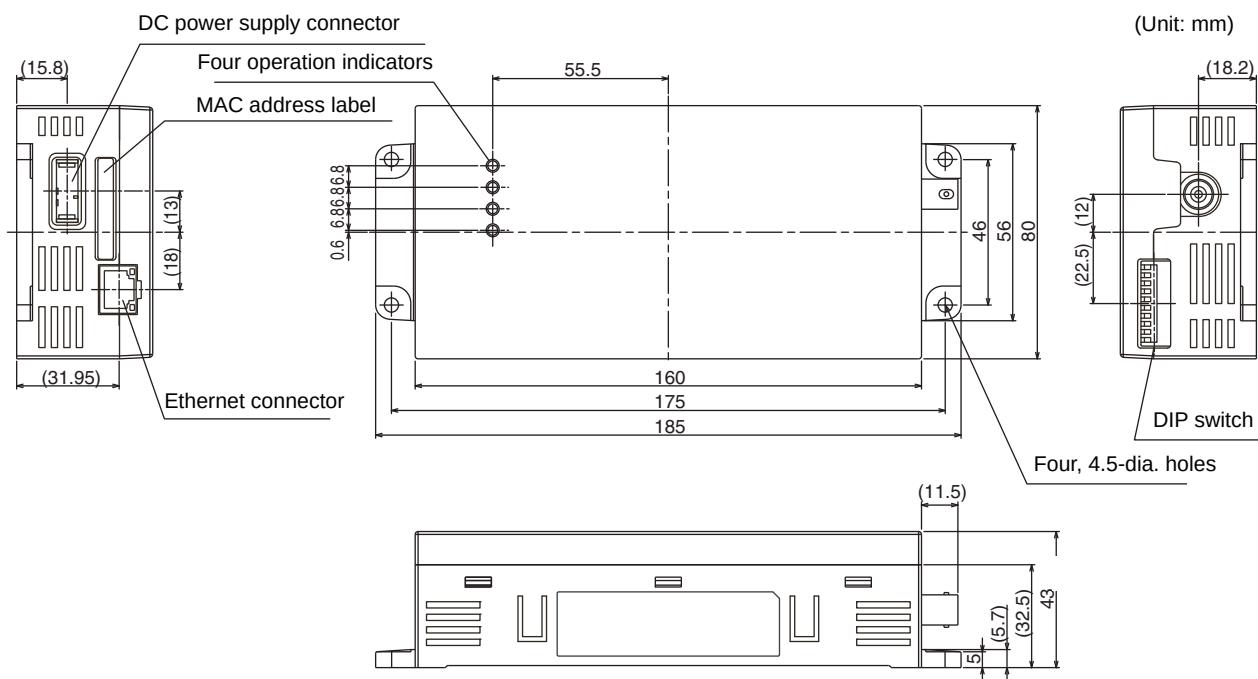
Appendix

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☒ Characteristic Data According to Conditions of Use	85
☒ ID Tag Memory Maps	115
☒ Regular Inspection	116
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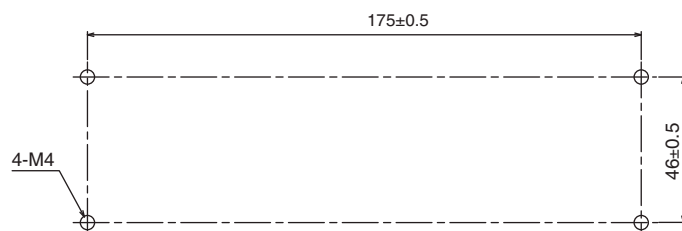
Specifications and Dimensions

Amplifier Units

V640-HAM11-ETN and V640-HAM11-L-ETN



Mounting dimensions



General Specifications

Item	Specifications	
	V640-HAM11-ETN	V640-HAM11-L-ETN
Power supply voltage	24 VDC +10% -15%	
Current consumption	150 mA max.	400 mA max.
Ambient temperature	Operating: 0 to +40°C Storage: -15 to +65°C (with no icing)	
Ambient humidity	Operating/Storage: 35% to 85% (with no condensation)	
Degree of protection	IP20 (IEC60529 standard)	
Insulation resistance	20 MΩ min. between power supply terminals and the frame ground terminal (100 VDC M)	
Dielectric strength	Leak current not to exceed 5 mA on application of 1000 VAC (50/60 Hz for 1 minute) between both power supply terminals and the frame ground terminal	
Vibration resistance	Frequency: 10 to 150 Hz; double amplitude: 0.20 mm; acceleration: 15 m/s ² for 8 minutes, 10 times each in X, Y, and Z directions	
Shock resistance	Shock of 150 m/s ² in X, Y, and Z directions, 3 times each for 18 repetitions	
Ground	Ground to 100 Ω or less.	
Case material	PC/ABS resin	
Shape	80×185×43 mm (W×D×H)	
Weight	Approx. 250 g	
CIDRW Head	V640-HS61	V640-HS62

■ Host Communications Specifications

Item	Description
Compliant standards	10Base-T and 100Base-TX
Protocol	TCP/IP
IP Address	• 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.  Refer to page 34. <u>Default network settings</u> IP Address: 192.168.1.200, Subnet mask: 255.255.255.0 (Pins 1 to 5 on the DIP switch are all turned OFF)
Applicable port	TCP/IP: port 7090
MTU	1,500 bytes



Access to an Amplifier Unit is possible from only one host device at a time. If a host device (A) is connected to an Amplifier Unit and another host device (B) connects to the Amplifier Unit, the connection between host device A and the Amplifier Unit will be automatically broken and host device B will have the control right.



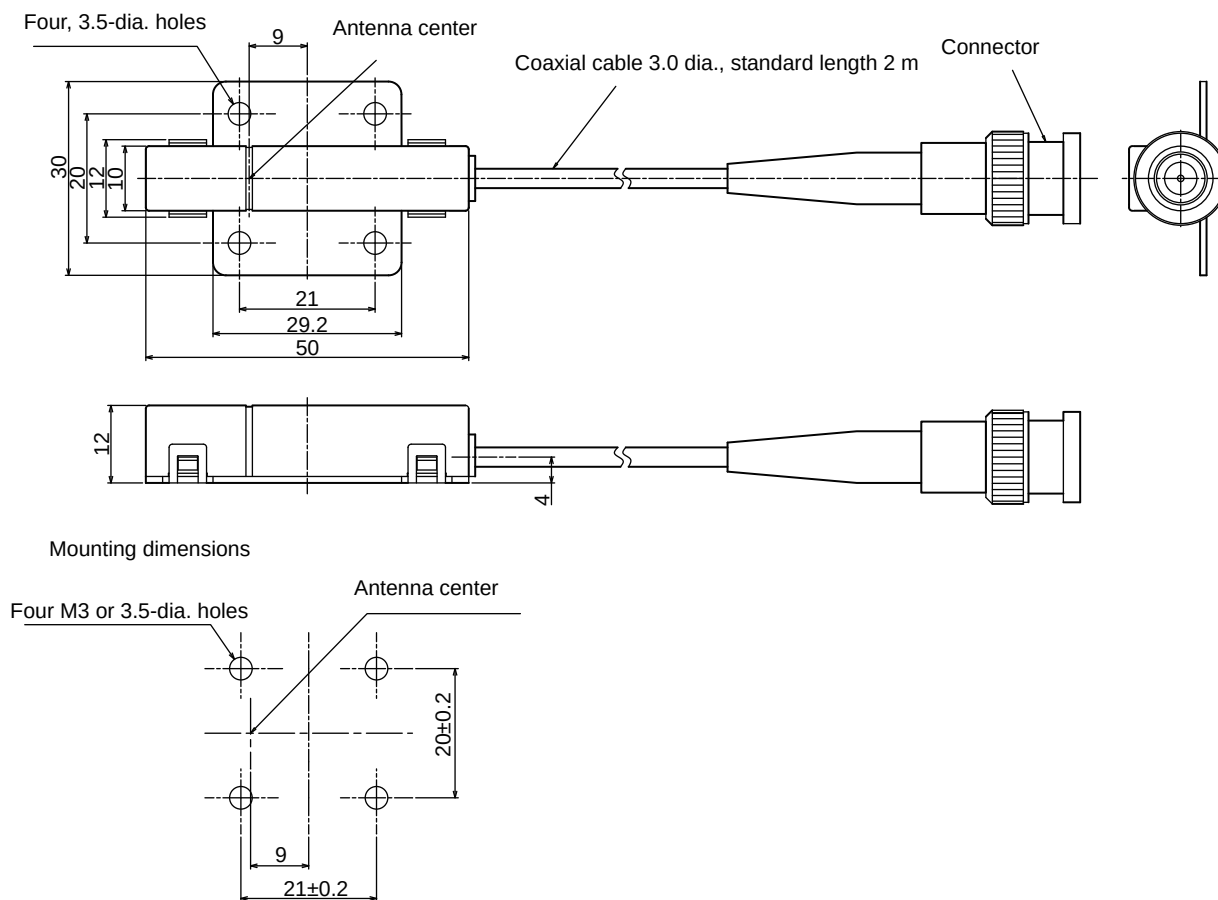
When the connection between a PC and a Amplifier Units have been disconnected, an Amplifier Unit can reopen communication from a PC again by establishing a connection.



Communications with the ID Tag will be aborted if the Ethernet cable is disconnected or the connection is broken while the Amplifier Unit is communicating with an ID Tag.

CIDRW Heads
V640-HS61

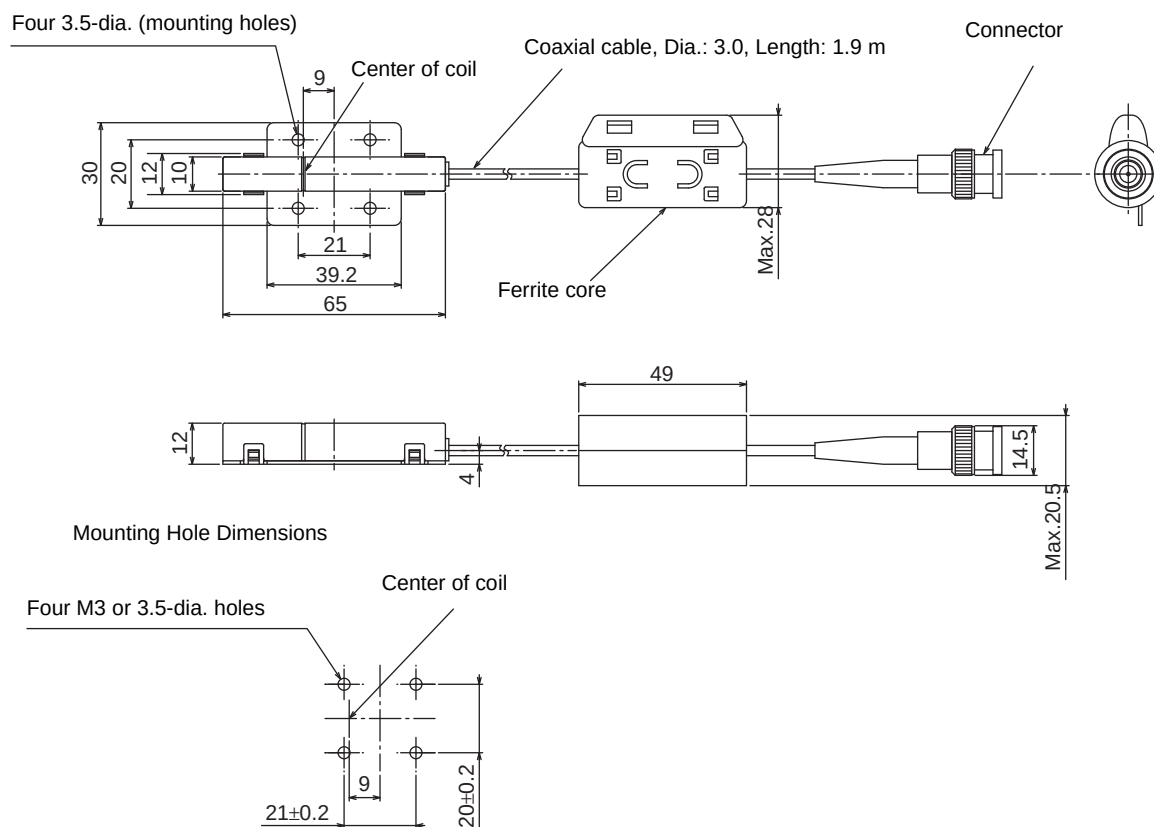
(Unit: mm)



Item	Specifications
Transmission frequency	134 kHz
Ambient temperature	Operating: 0 to +40°C Storage: -15 to +65°C (with no icing)
Ambient humidity	Operating/Storage: 35% to 85% (with no condensation)
Degree of protection	IP60 (IEC60529)
Insulation resistance	20 MΩ min. between all terminals and the case (100 VDC M)
Dielectric strength	Leak current not to exceed 5 mA on application of 1000 VAC (50/60 Hz for 1 minute) between all terminals and the case
Vibration resistance	Frequency: 10 to 150 Hz; double amplitude: 0.20 mm; acceleration: 15 m/s ² for 8 minutes, 10 times each in X, Y, and Z directions
Shock resistance	Shock of 150 m/s ² in X, Y, and Z directions, 3 times each for 18 repetitions
Casing material	ABS/epoxy resin Stainless steel mount
Weight	Approx. 70 g
Cable length	2 m
Cable specification	3-mm-dia. coaxial cable

V640-HS62

(Unit: mm)

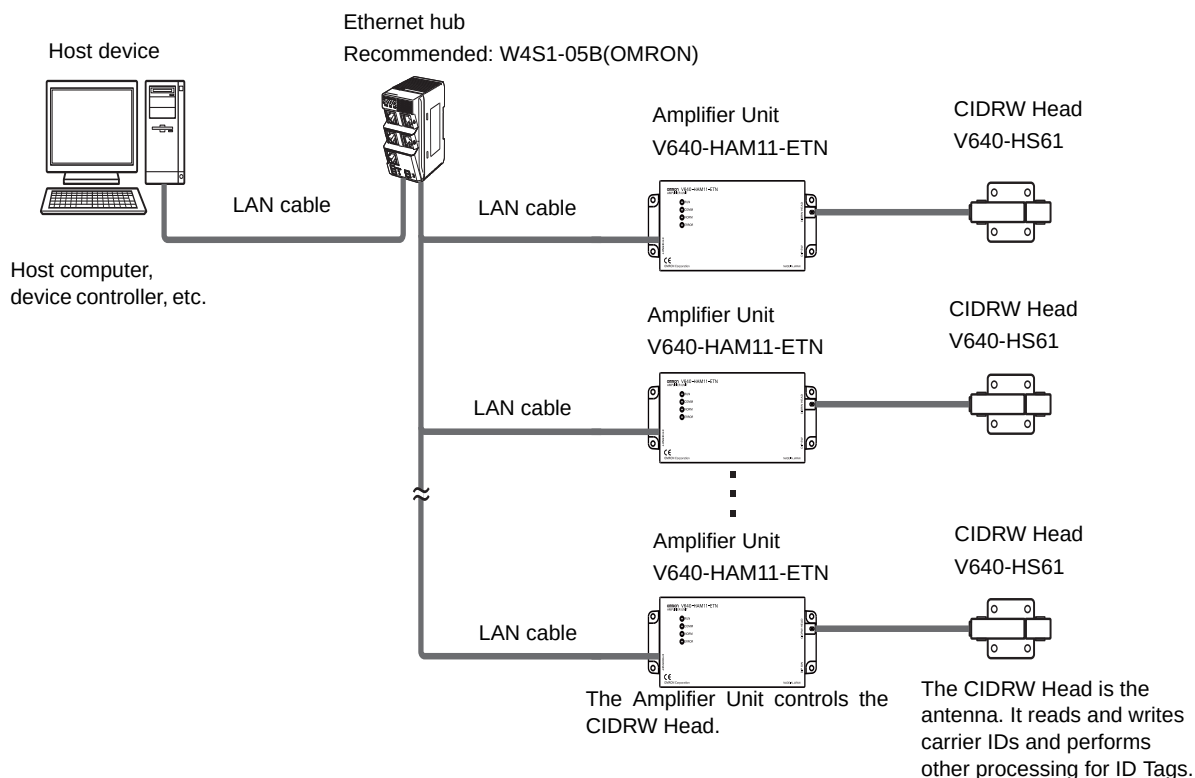


Item	Specifications
Transmission frequency	134 kHz
Ambient temperature	Operating: 0 to +40°C Storage: -15 to +65°C (with no icing)
Ambient humidity	Operating/Storage: 35% to 85% (with no condensation)
Degree of protection	IP60 (IEC60529)
Insulation resistance	20 MΩ min. between all terminals and the case (100 VDC M)
Dielectric strength	Leak current not to exceed 5 mA on application of 1000 VAC (50/60 Hz for 1 minute) between all terminals and the case
Vibration resistance	Frequency: 10 to 150 Hz; double amplitude: 0.20 mm; acceleration: 15 m/s ² for 8 minutes, 10 times each in X, Y, and Z directions
Shock resistance	Shock of 150 m/s ² in X, Y, and Z directions, 3 times each for 18 repetitions
Casing material	ABS/epoxy resin Stainless steel mount
Weight	Approx. 100 g
Cable length	1.9 m
Cable specification	3-mm-dia. coaxial cable

Connection Examples

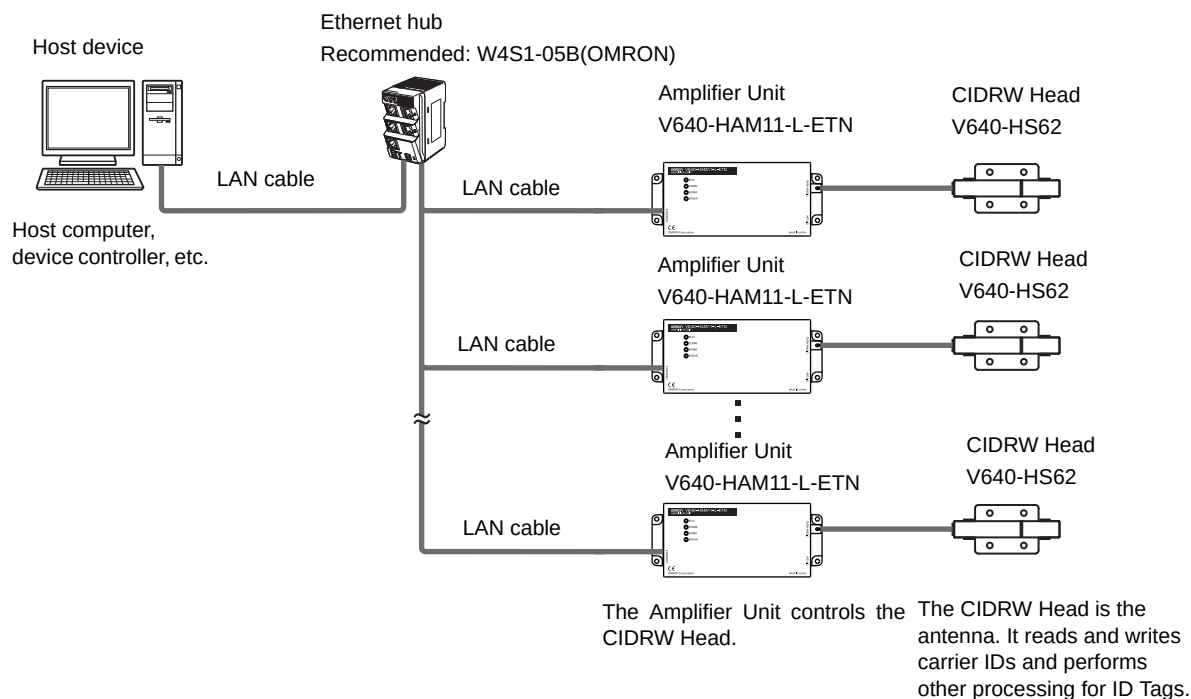
V640-HAM11-ETN

Connect the host device and Amplifier Unit using a LAN cable.



V640-HAM11-L-ETN

Connect the host device and Amplifier Unit using a LAN cable.



Characteristic Data According to Conditions of Use

Maps of Communications Areas (Reference Only)

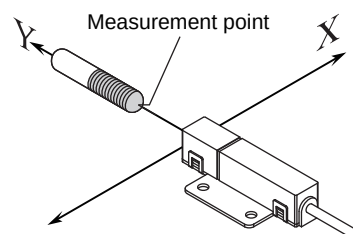
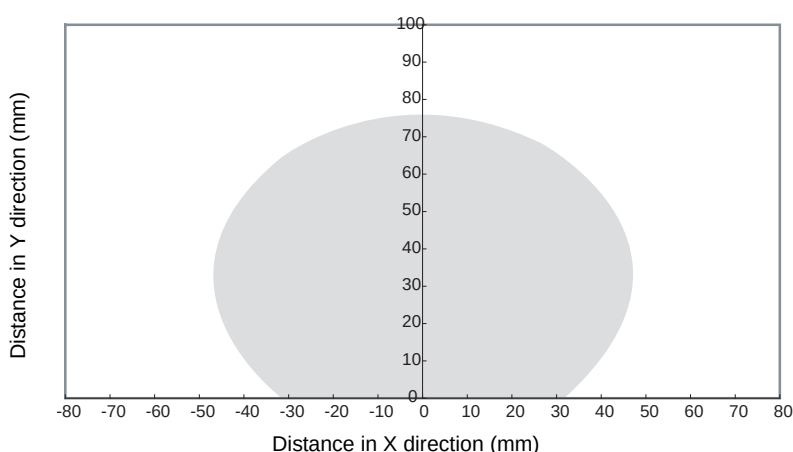
The figures given below for communications areas (communications distances) are reference values only. The maps of communications areas will vary according to the ID Tags that you use, the background metals, the ambient noise, the effects of temperature and so on, and should be thoroughly confirmed on installation. The direction of the ID Tags will affect communications performance. Check the direction of the coils in the ID Tags before using the ID Tags.

■ V640-HAM11-ETN

• Coaxial Mounting (RI-TRP-DR2B)

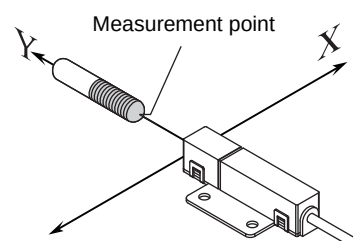
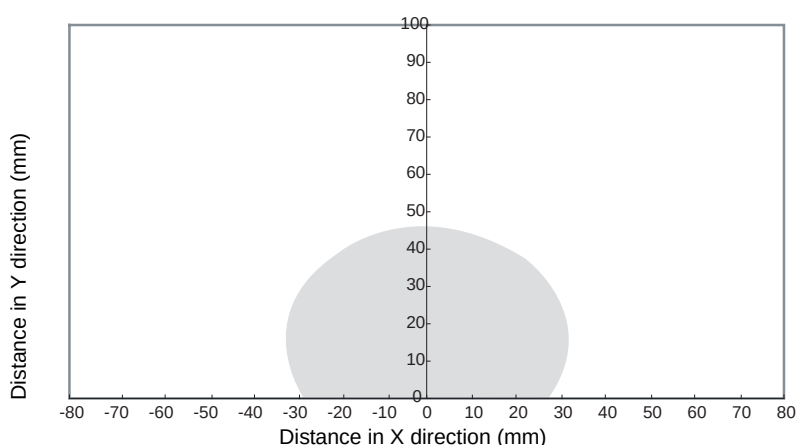
• READ

Communications Area (READ)

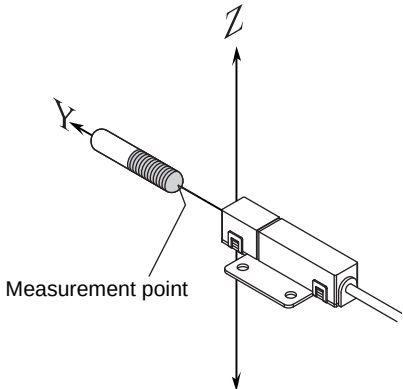
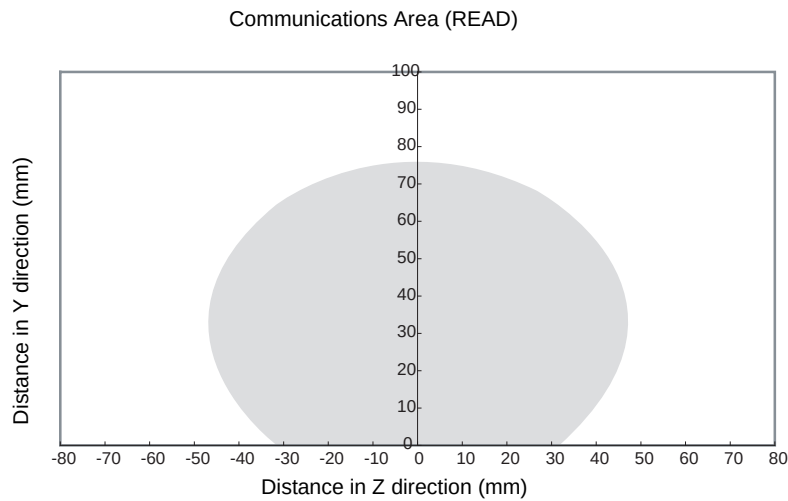


• WRITE

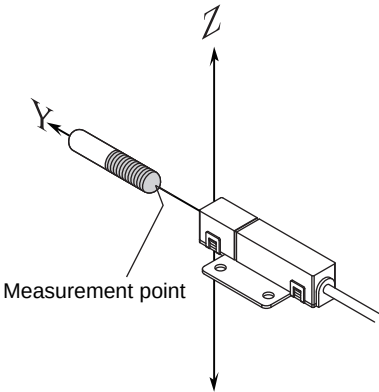
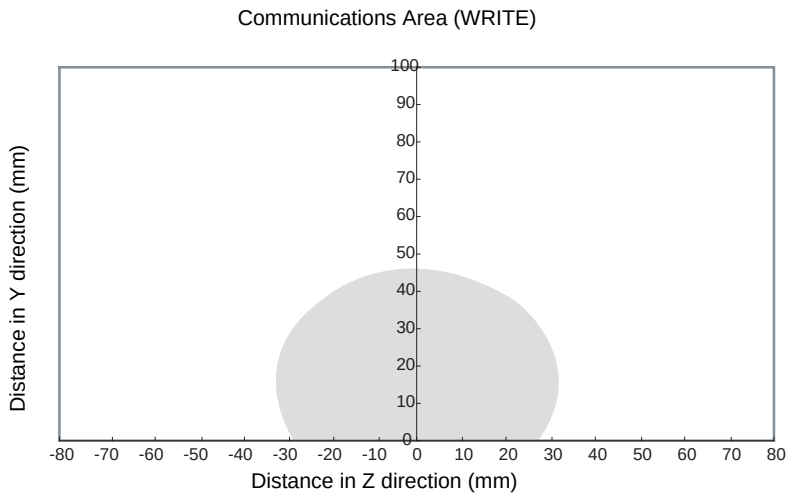
Communications Area (WRITE)



- Coaxial Mounting (RI-TRP-DR2B)
- READ

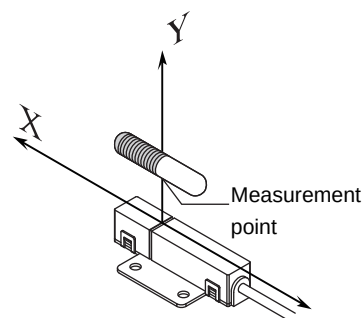
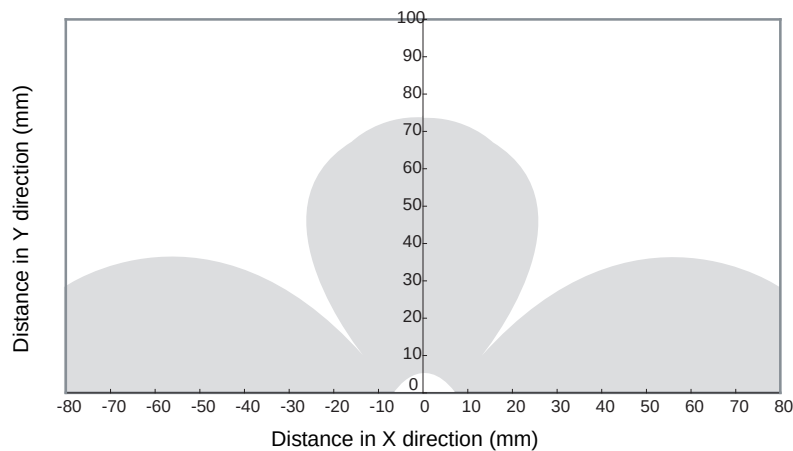


- WRITE



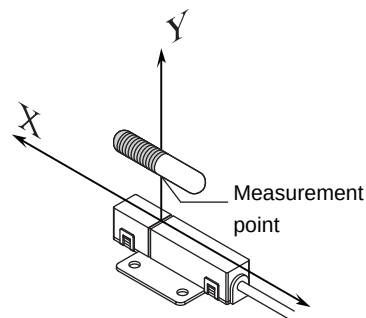
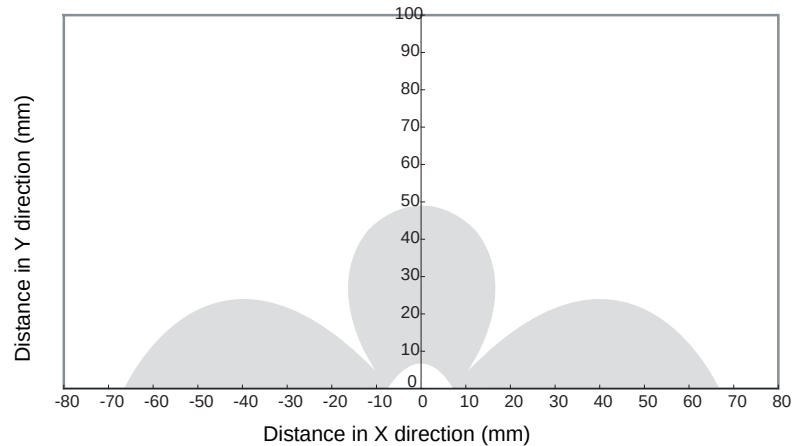
- Parallel Mounting (RI-TRP-DR2B)
- READ

Communications Area (READ)

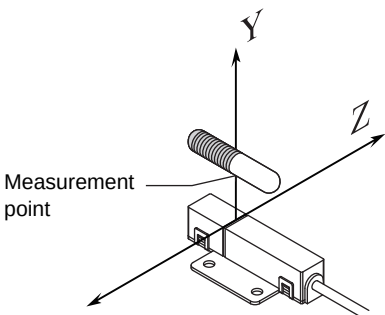
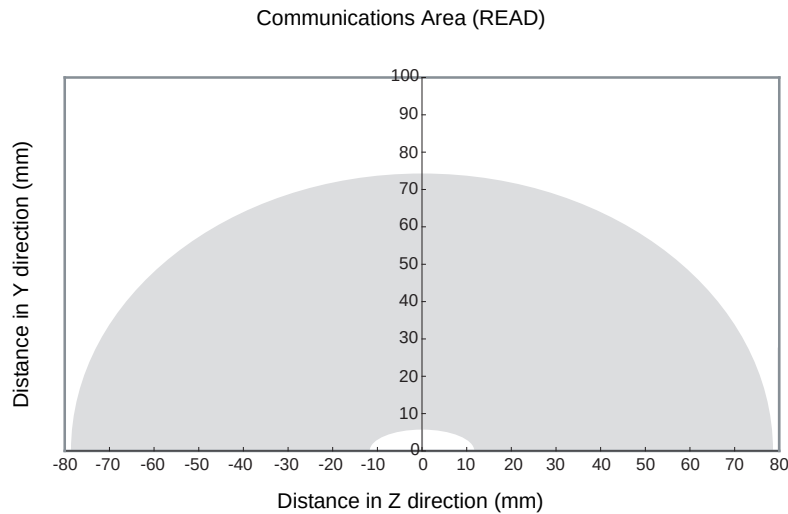


- WRITE

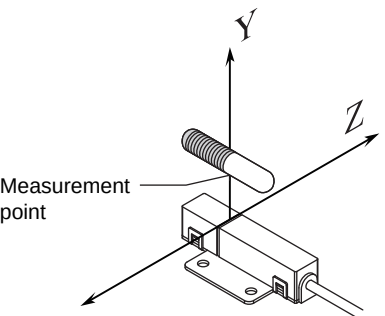
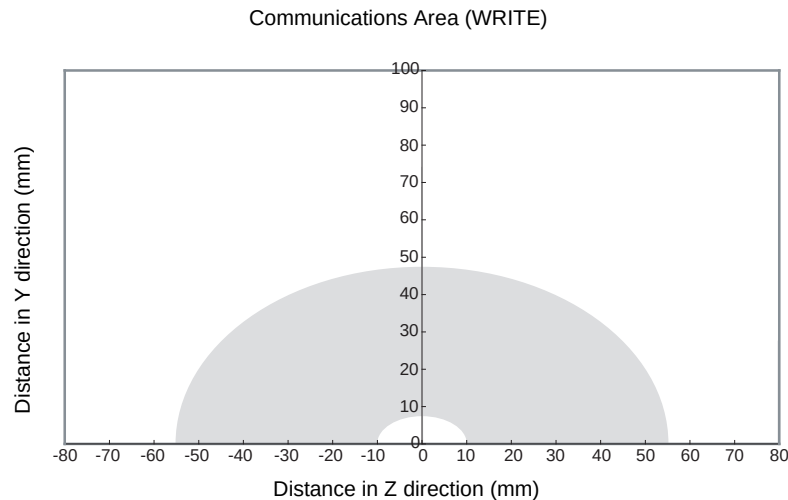
Communications Area (WRITE)



- Parallel Mounting (RI-TRP-DR2B)
 - READ



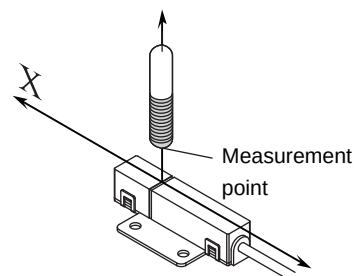
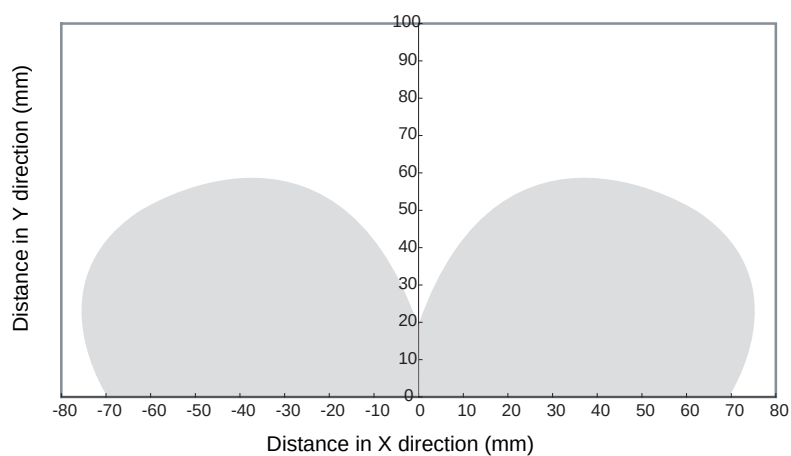
- WRITE



• Vertical Mounting (RI-TRP-DR2B)

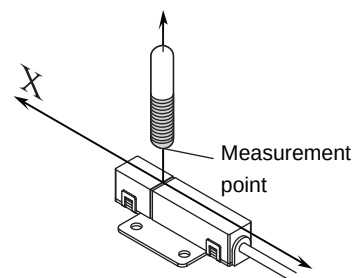
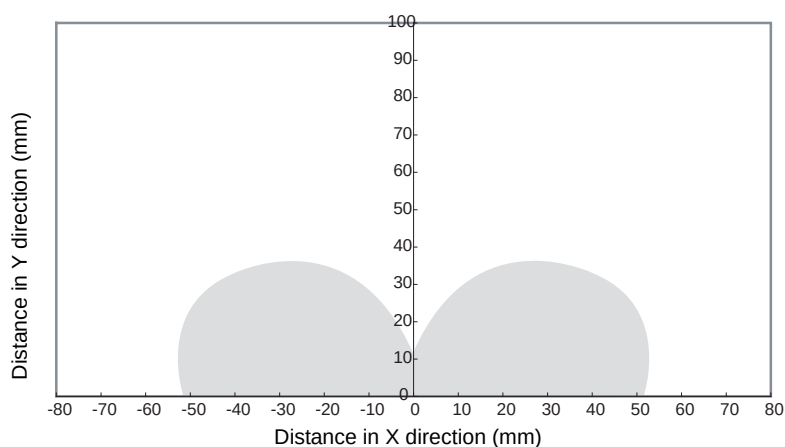
• READ

Communications Area (READ)

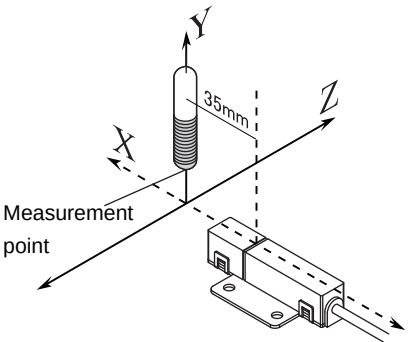
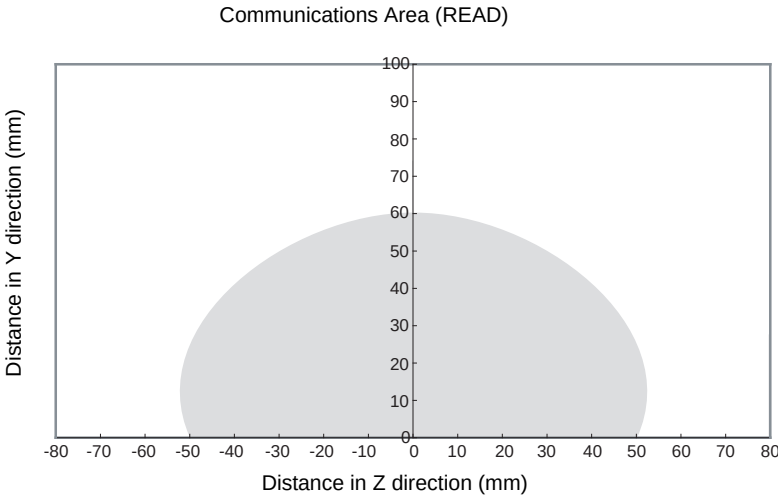


• WRITE

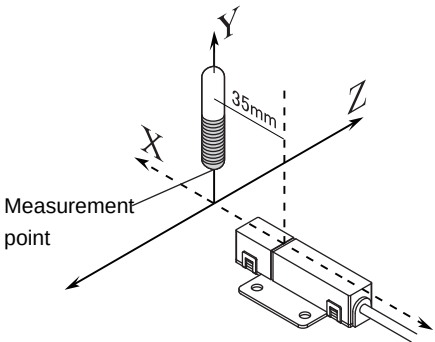
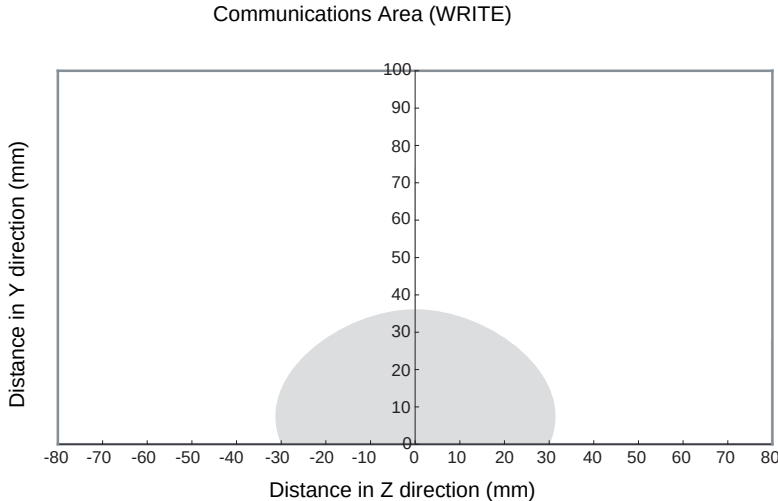
Communications Area (WRITE)



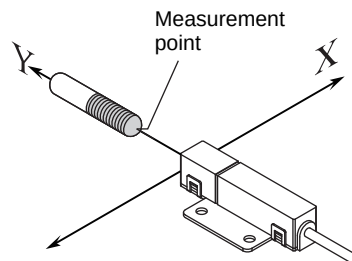
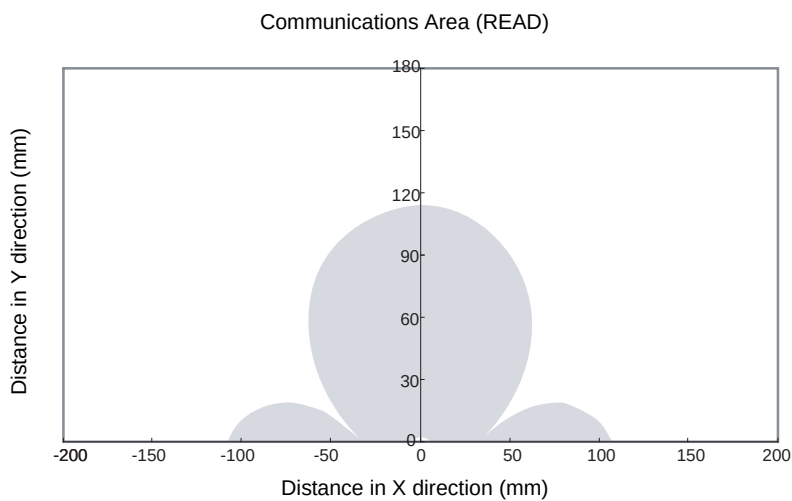
- Vertical Mounting (RI-TRP-DR2B)
 - READ



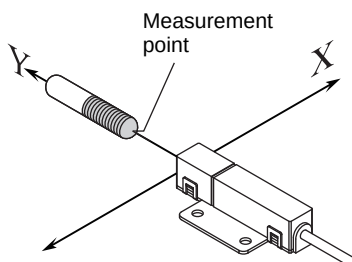
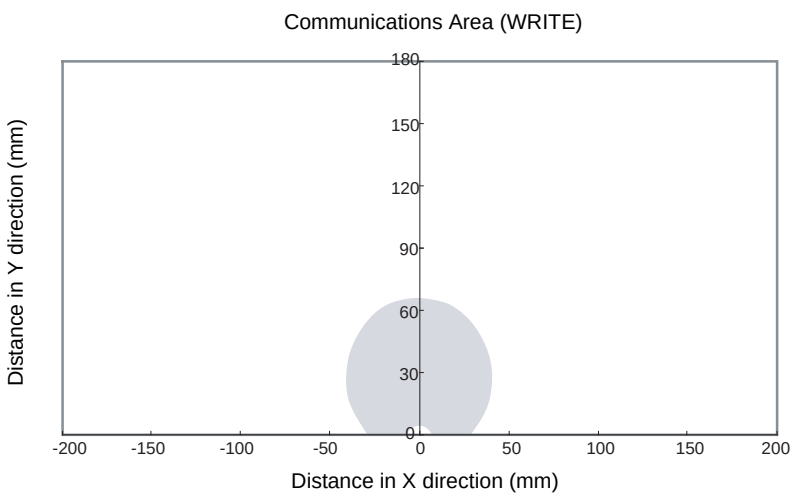
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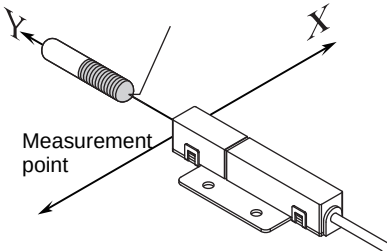
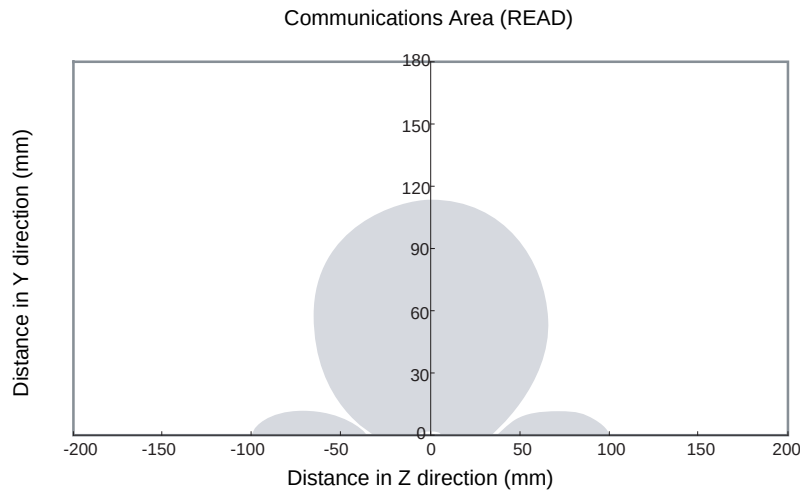
- Coaxial Mounting (RI-TRP-WR2B)
- READ



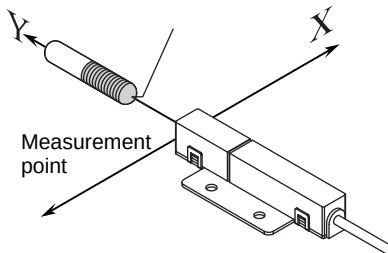
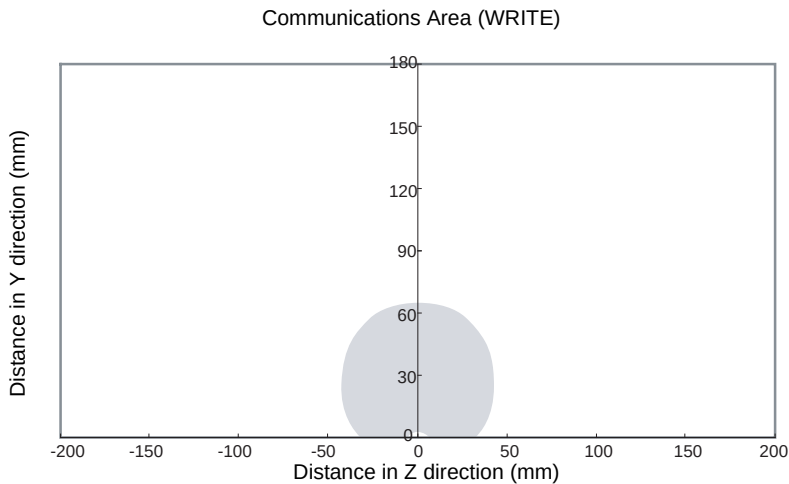
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- Coaxial Mounting (RI-TRP-WR2B)
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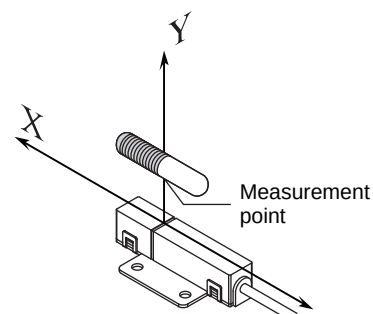
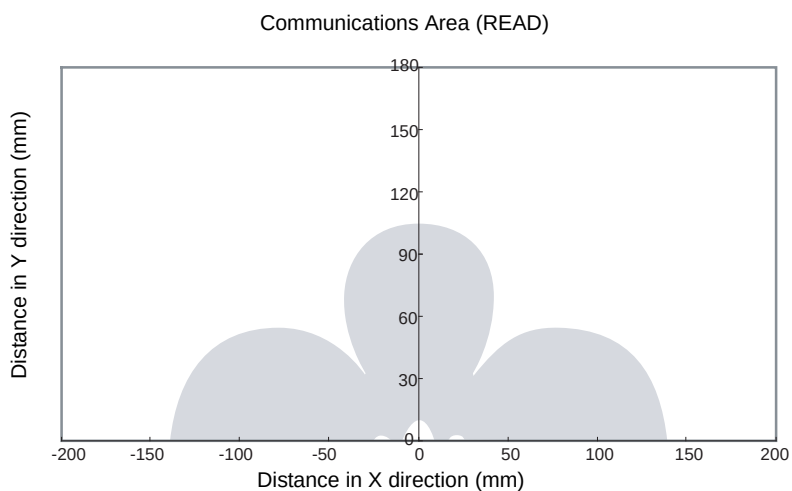


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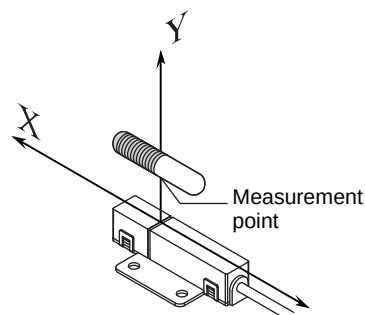
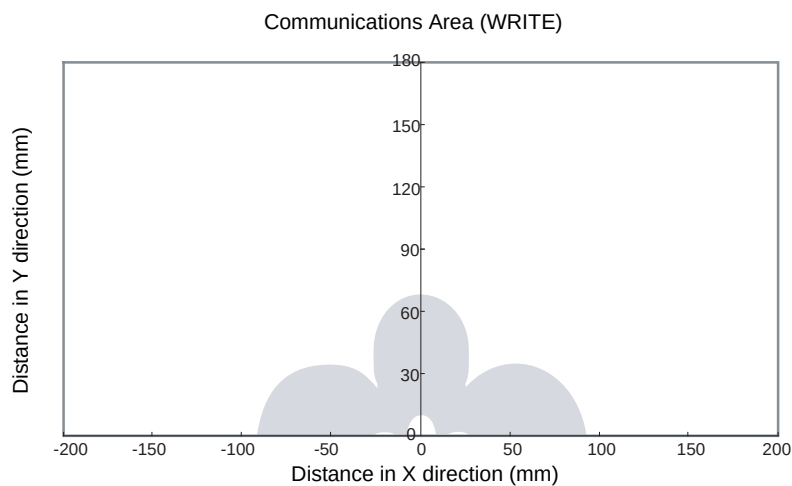


• Parallel Mounting (RI-TRP-WR2B)

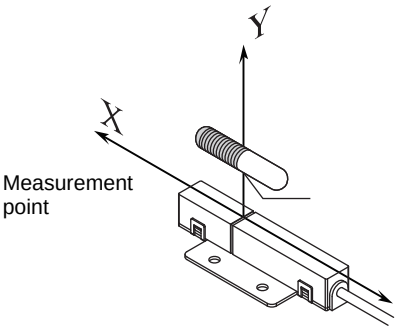
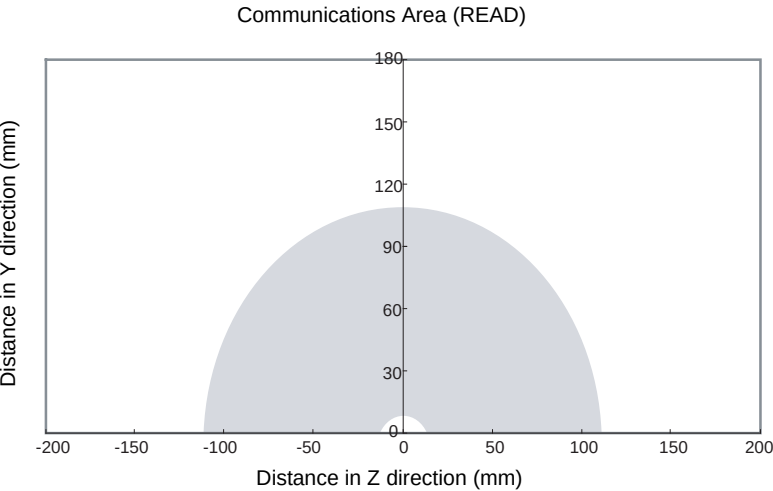
• READ



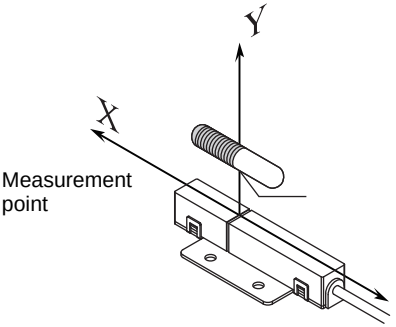
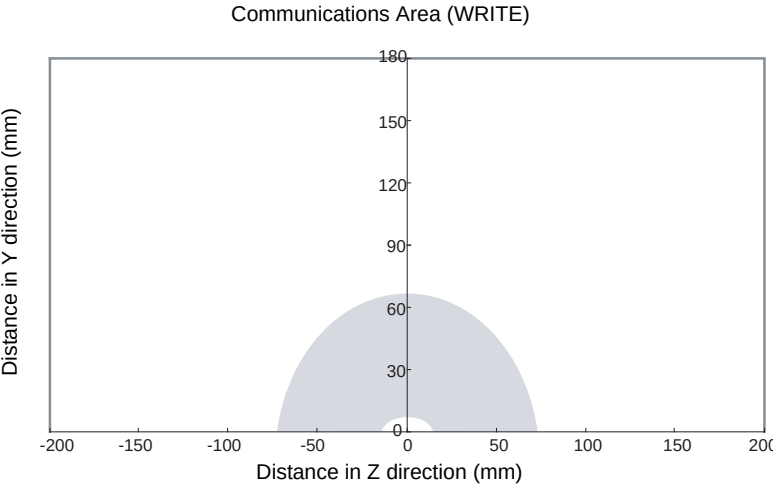
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- Parallel Mounting (RI-TRP-WR2B)
- READ

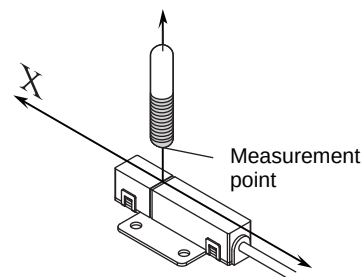
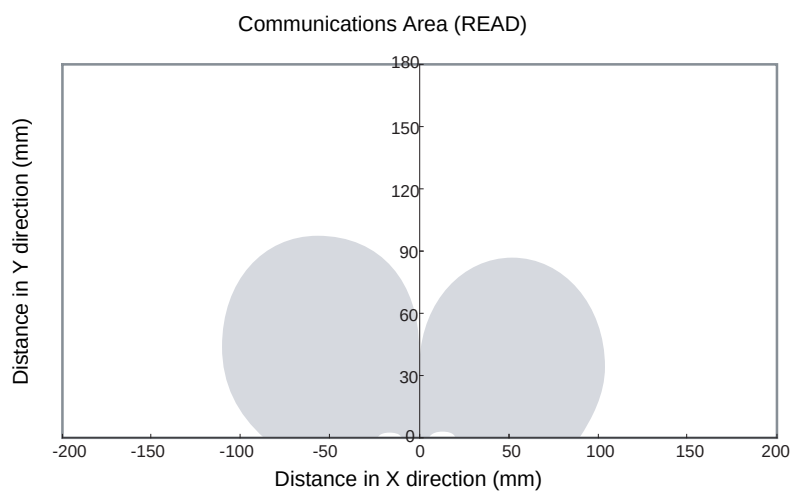


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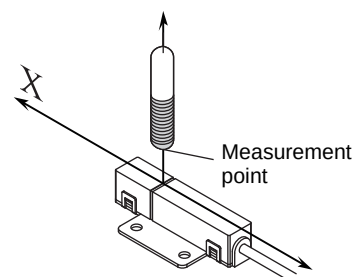
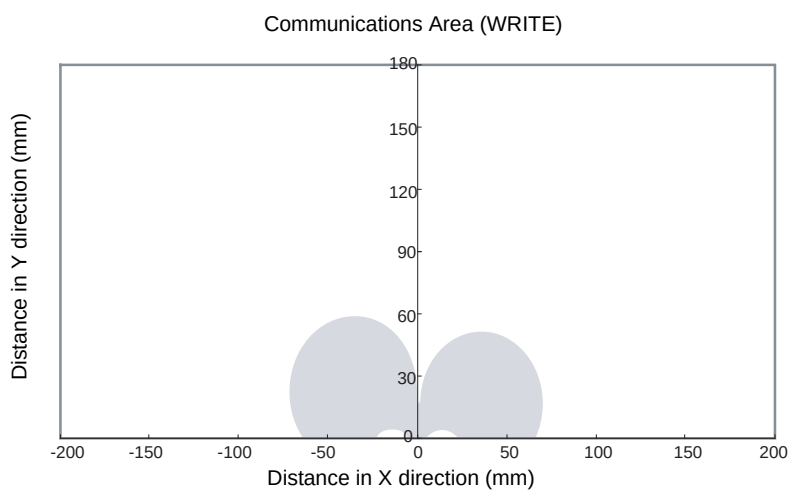


• Vertical Mounting (RI-TRP-WR2B)

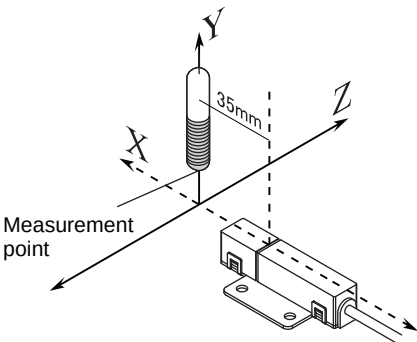
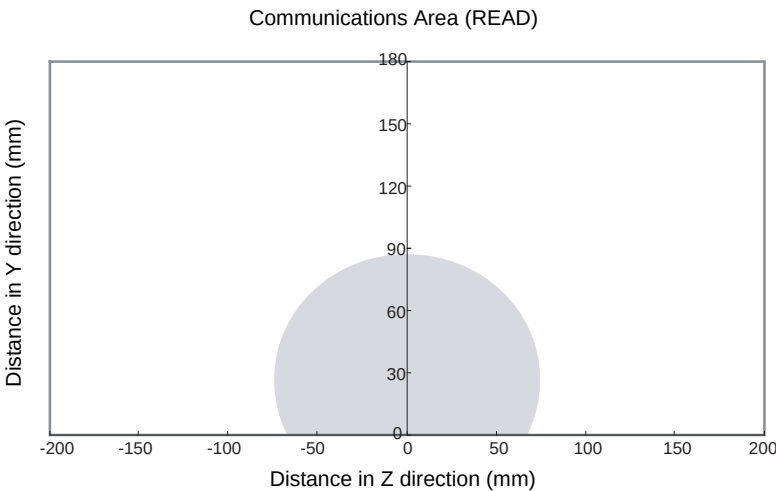
• READ



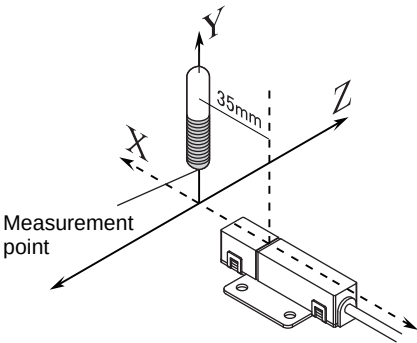
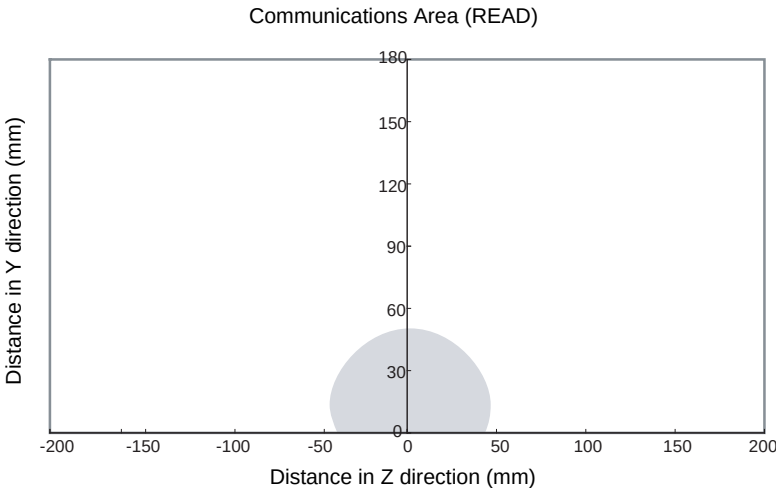
• WRITE



- Vertical Mounting (RI-TRP-WR2B)
 - READ



- WRITE

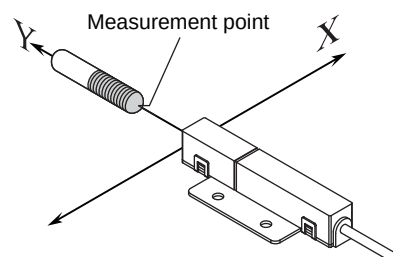
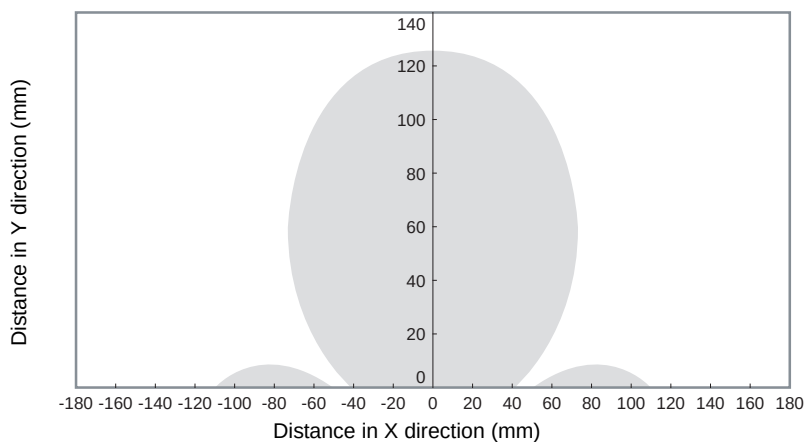


■ V640-HAM11-L-ETN

• Coaxial Mounting (RI-TRP-DR2B)

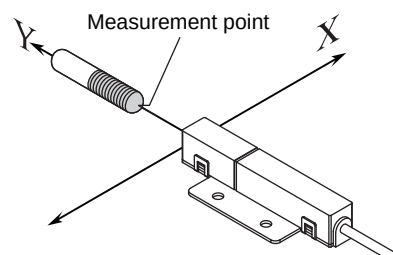
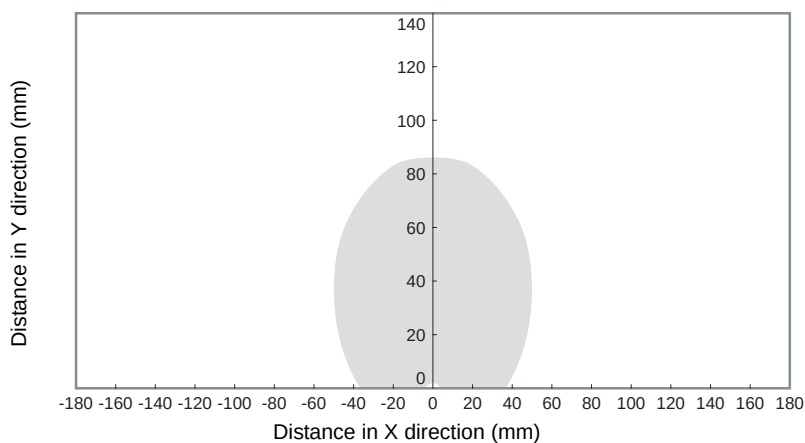
• READ

Communications Area (READ)



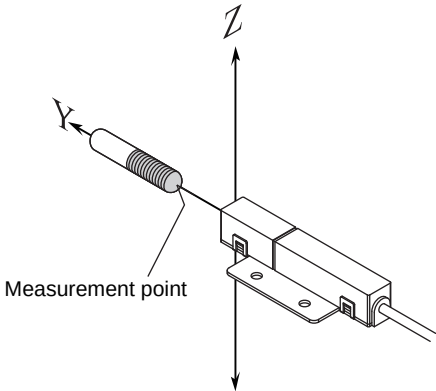
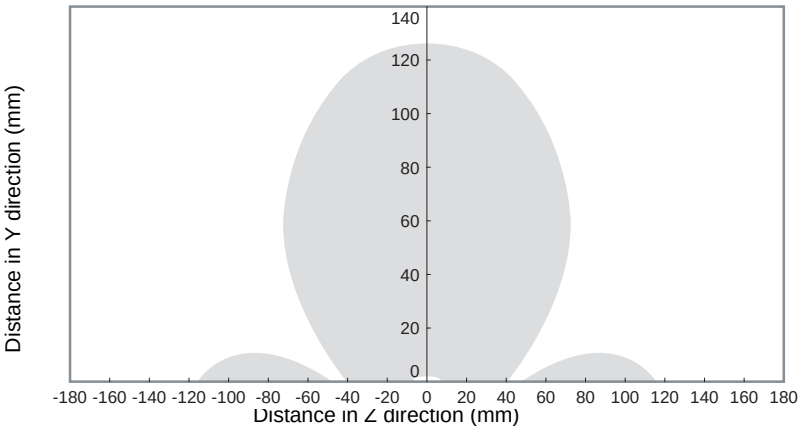
• WRITE

Communications Area (READ)



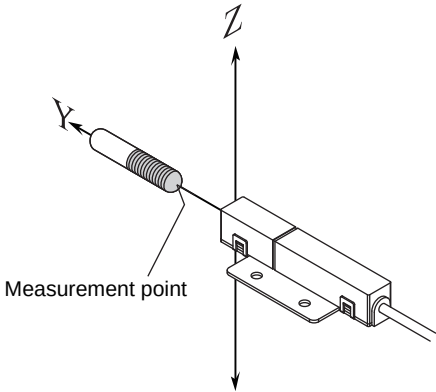
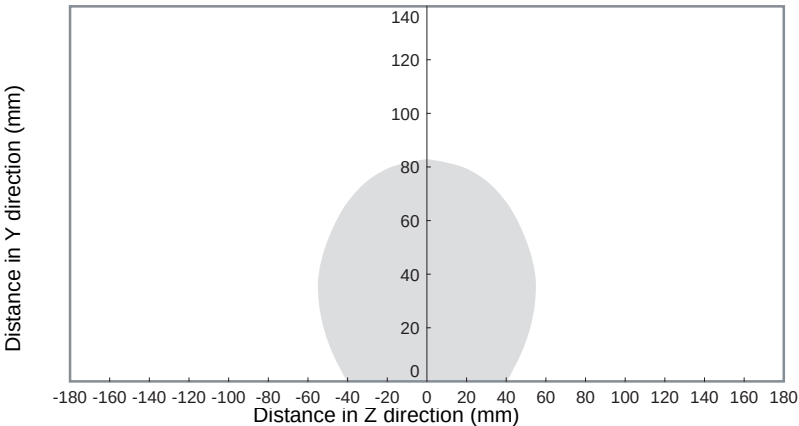
- Coaxial Mounting (RI-TRP-DR2B)
- READ

Communications Area (READ)



- WRITE

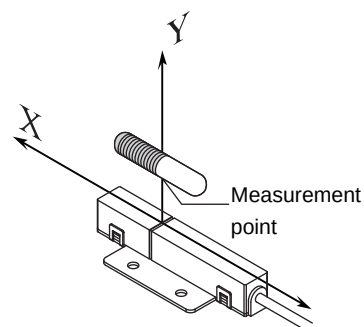
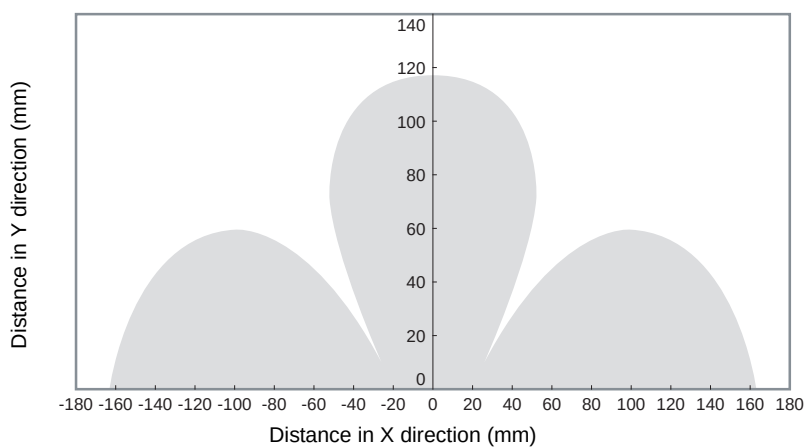
Communications Area (READ)



• Parallel Mounting (RI-TRP-DR2B)

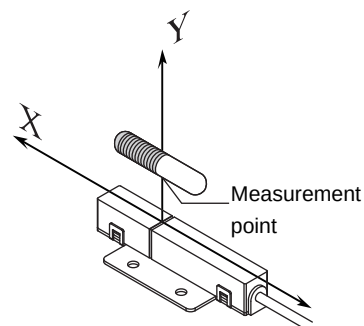
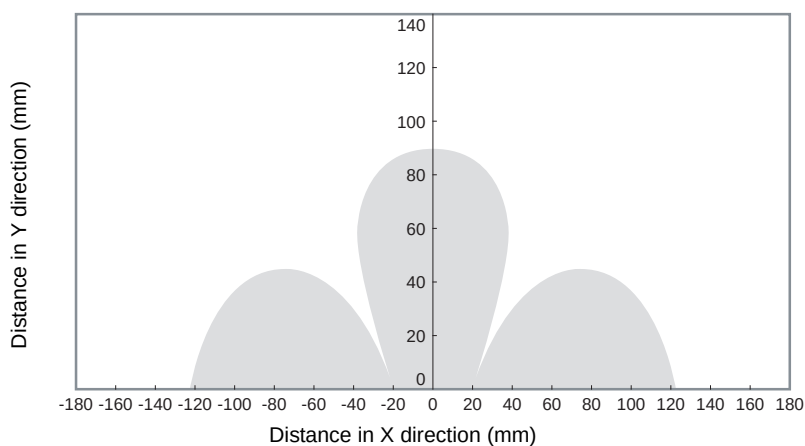
• READ

Communications Area (READ)



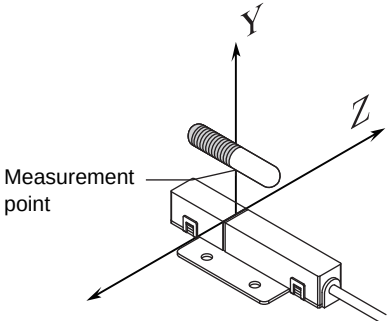
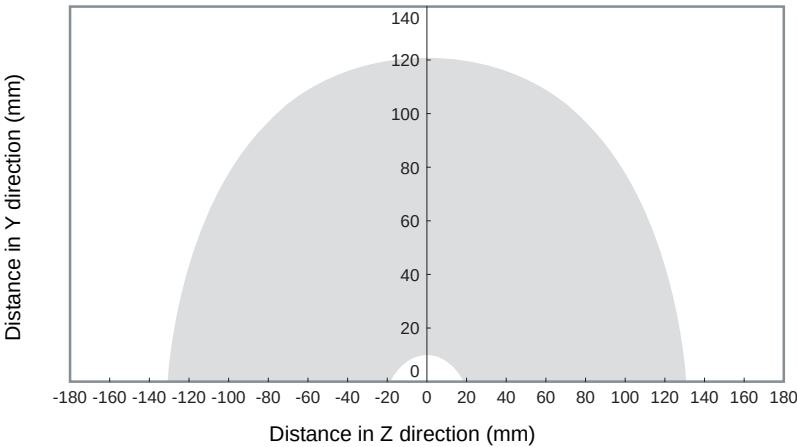
• WRITE

Communications Area (READ)



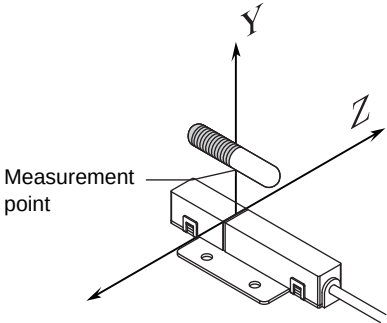
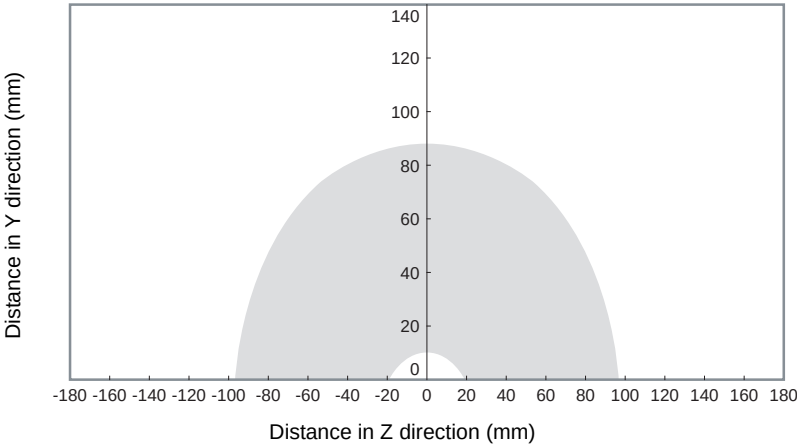
- Parallel Mounting (RI-TRP-DR2B)
 - READ

Communications Area (READ)



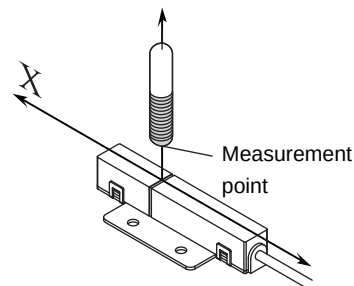
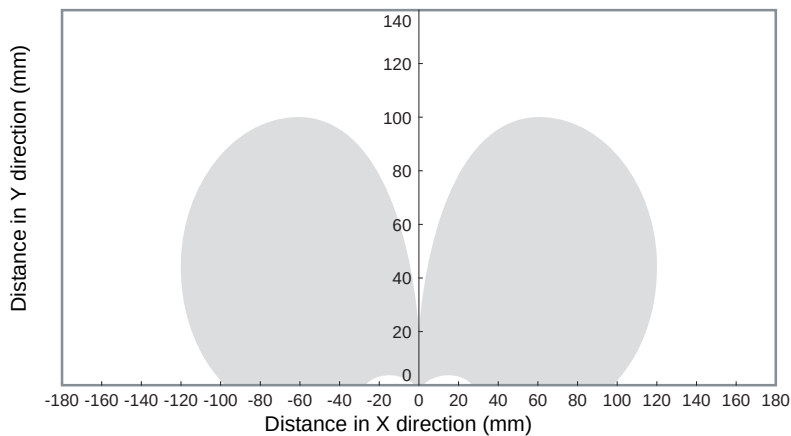
- WRITE

Communications Area (READ)



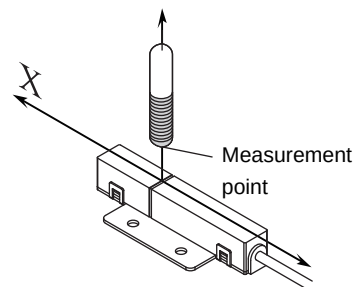
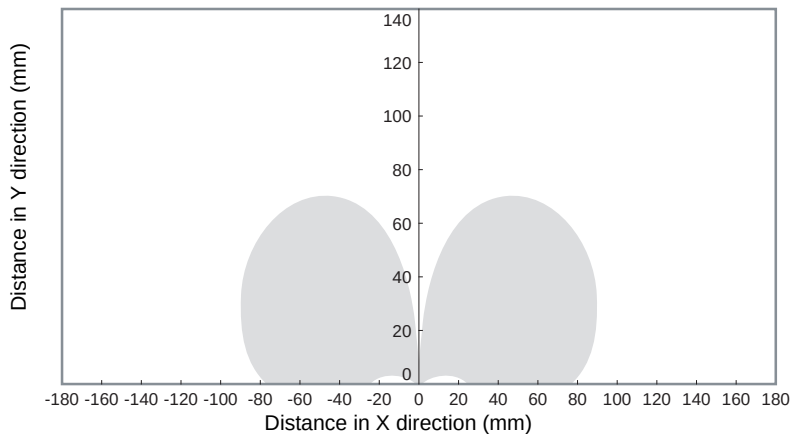
- Vertical Mounting (RI-TRP-DR2B)
- READ

Communications Area (READ)

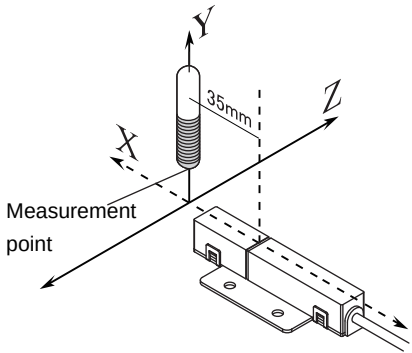
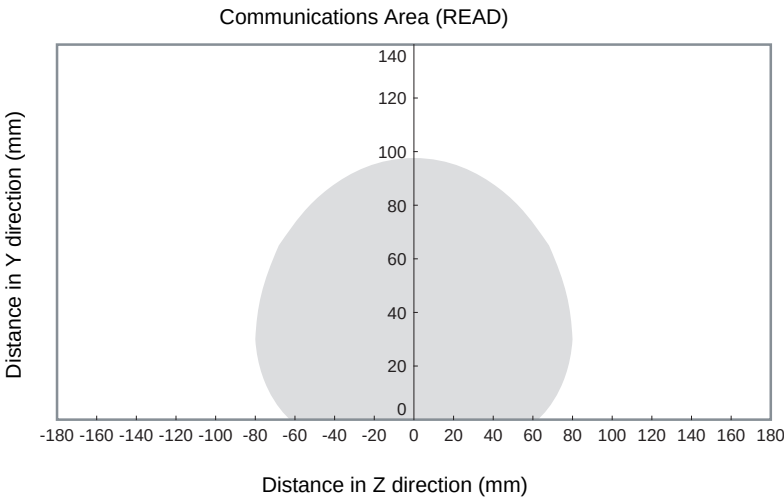


- WRITE

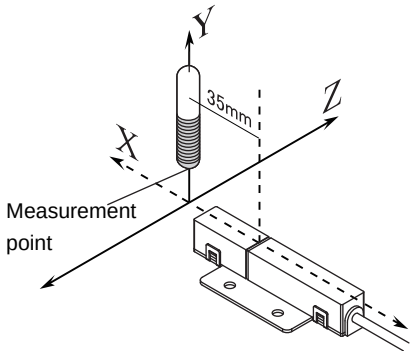
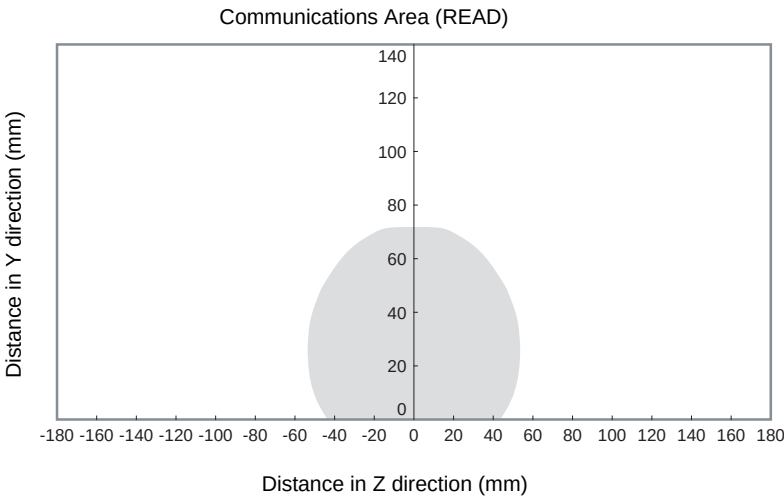
Communications Area (READ)



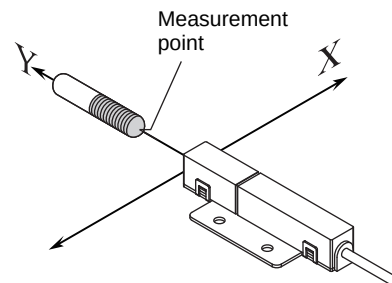
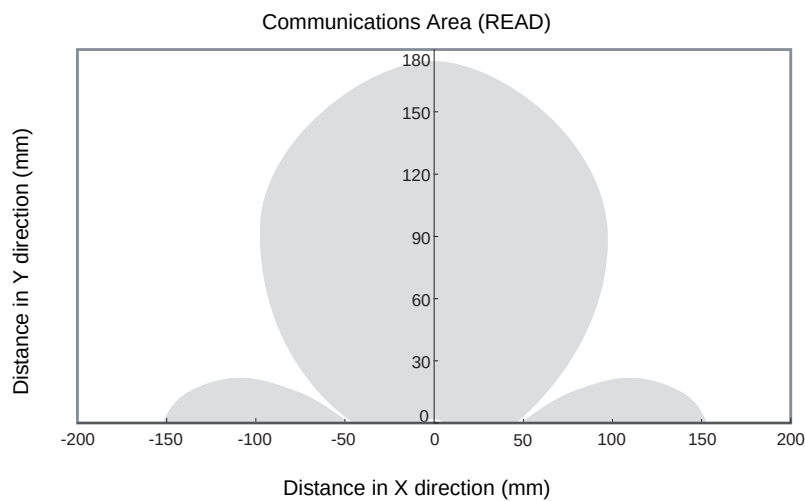
- Vertical Mounting (RI-TRP-DR2B)
 - READ



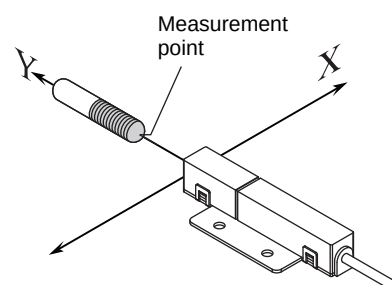
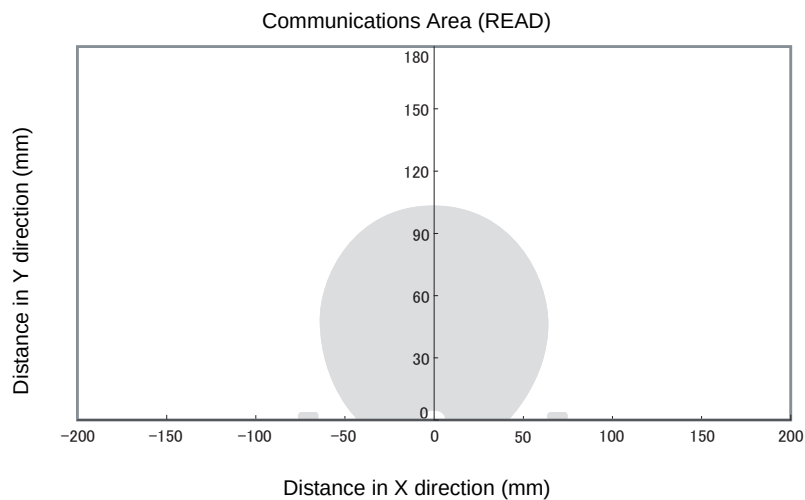
- WRITE



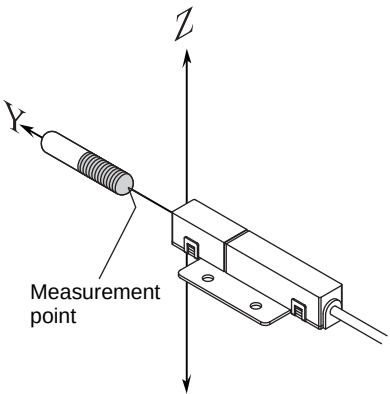
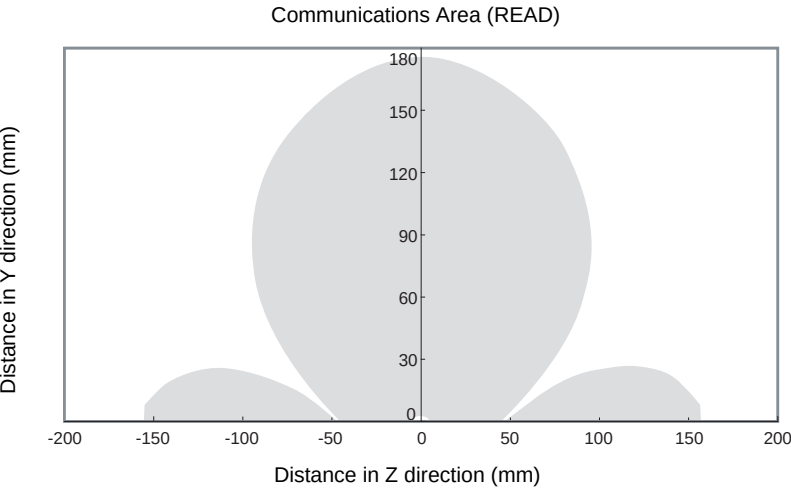
- Coaxial Mounting (RI-TRP-WR2B)
- READ



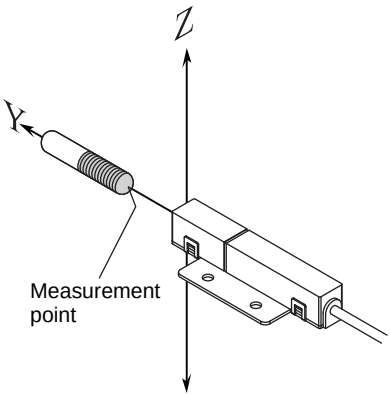
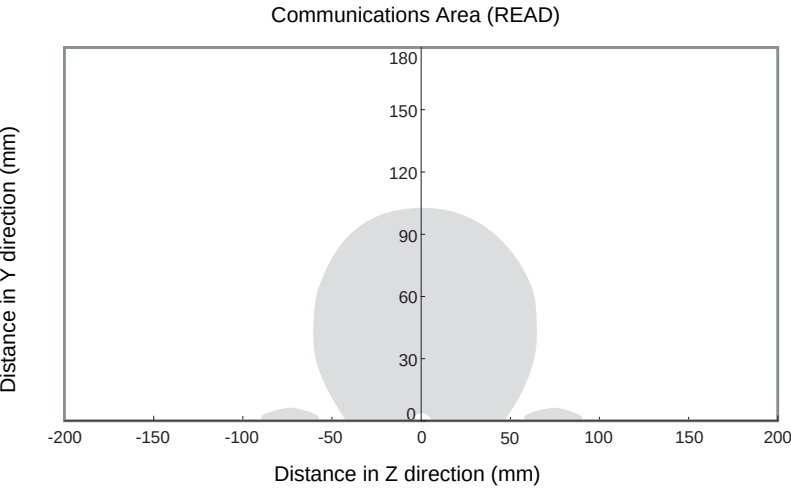
- WRITE



- Coaxial Mounting (RI-TRP-WR2B)
- READ

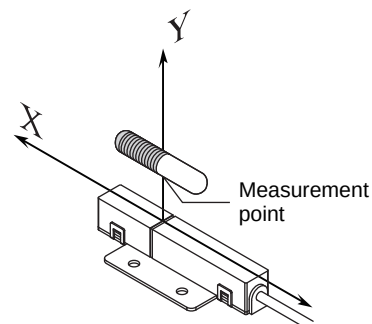
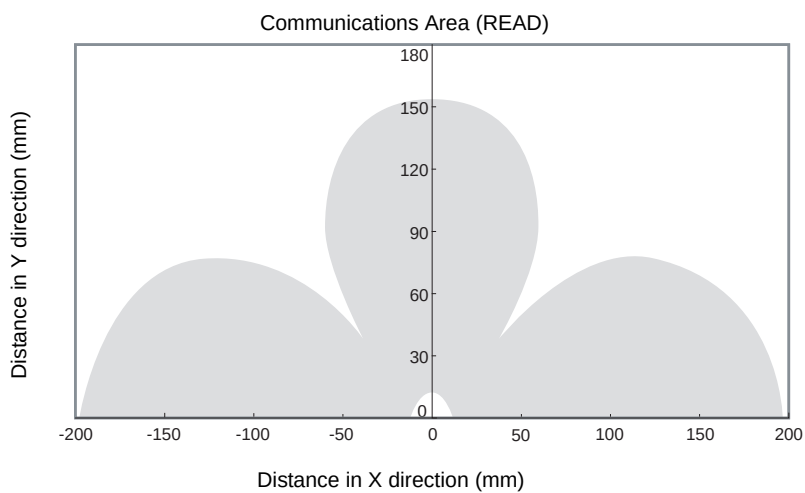


- WRITE

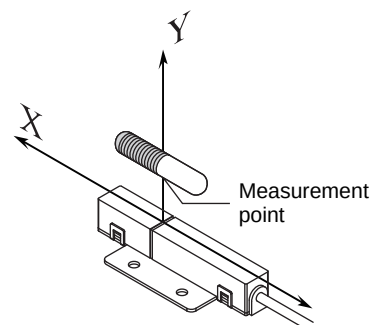
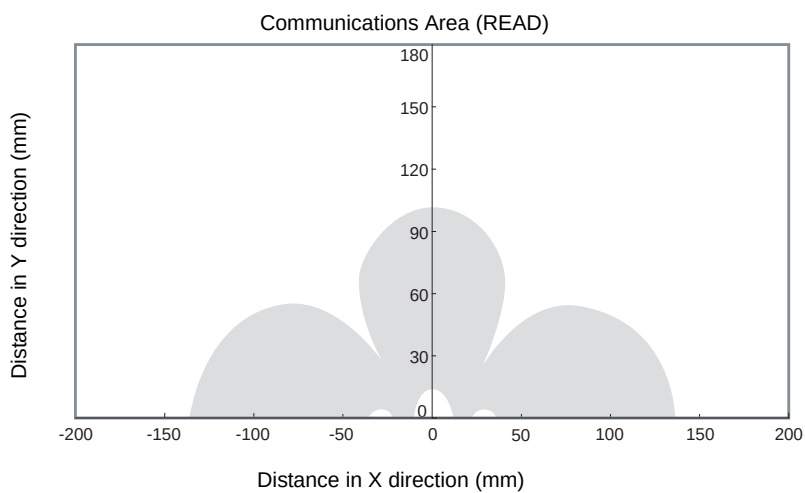


• Parallel Mounting (RI-TRP-WR2B)

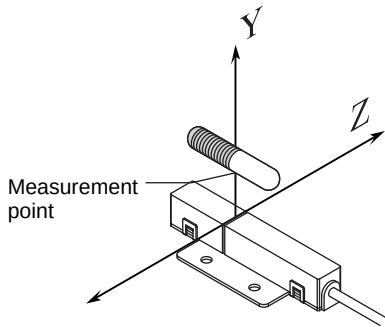
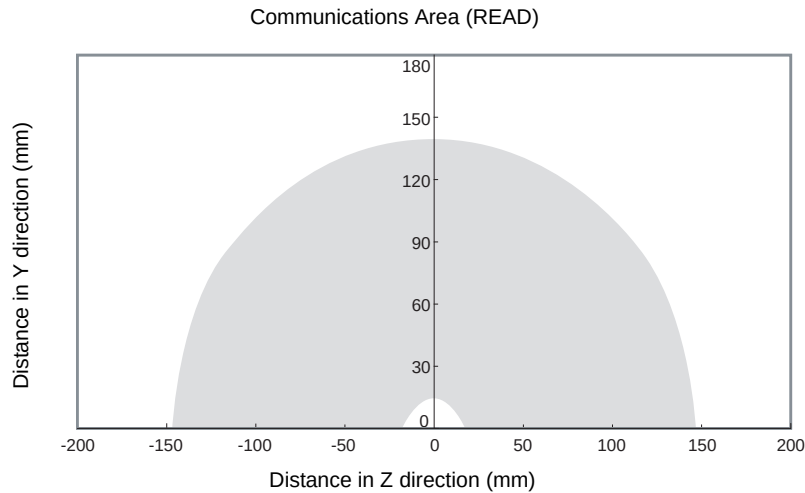
• READ



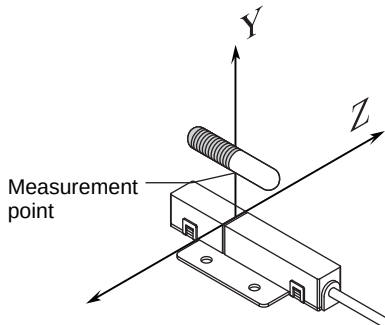
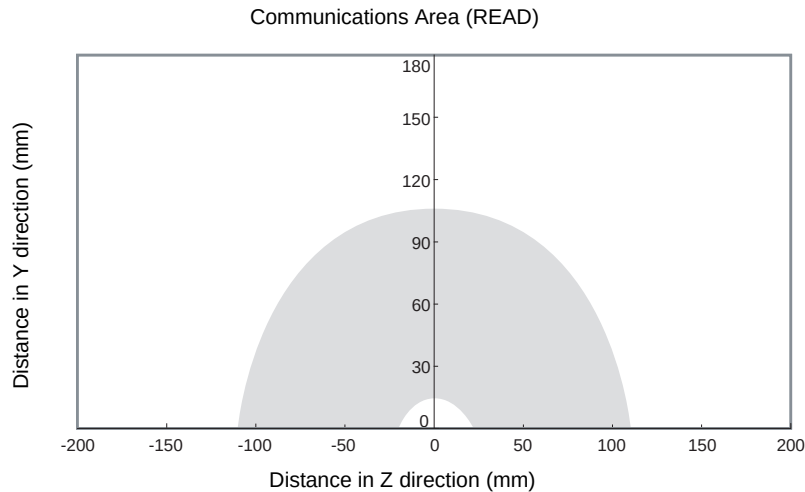
• WRITE



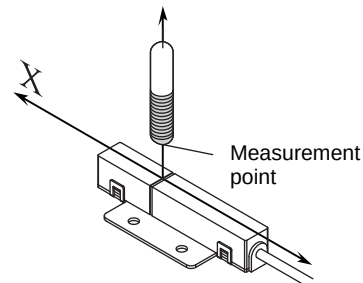
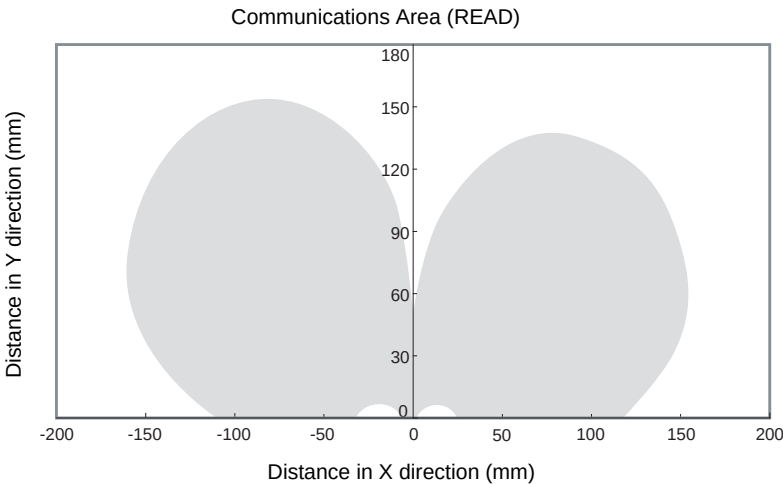
- Parallel Mounting (RI-TRP-WR2B)
- READ



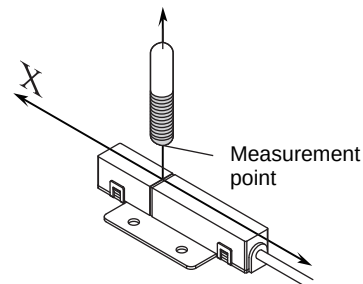
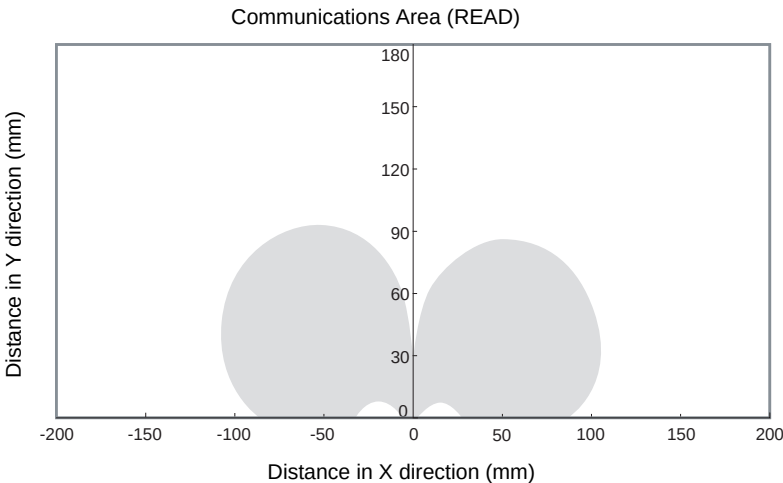
- WRITE



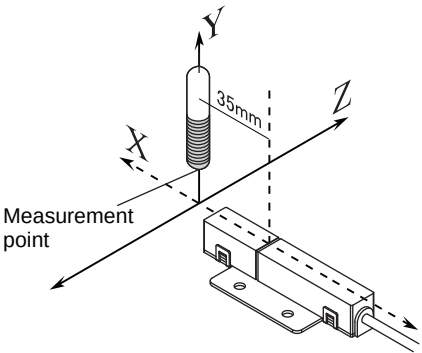
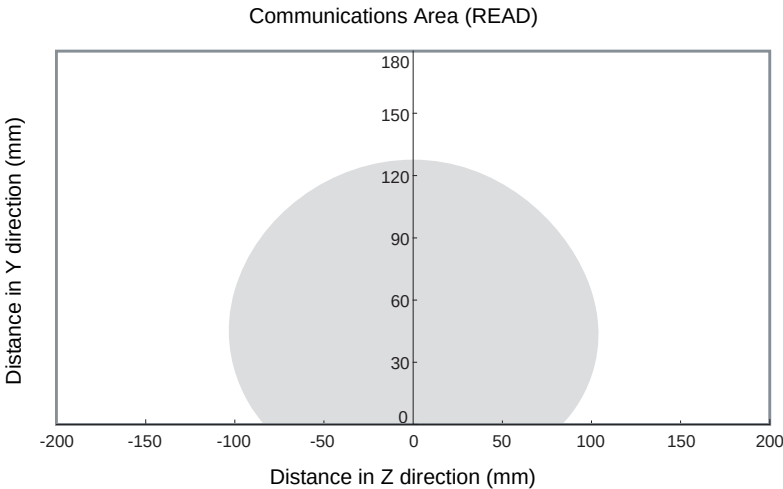
- Vertical Mounting (RI-TRP-WR2B)
- READ



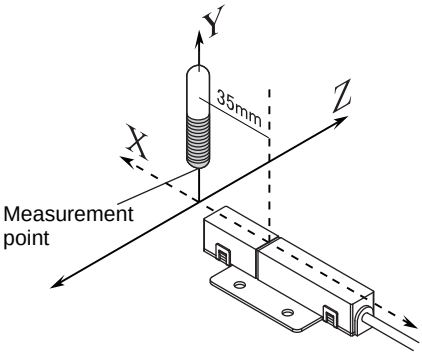
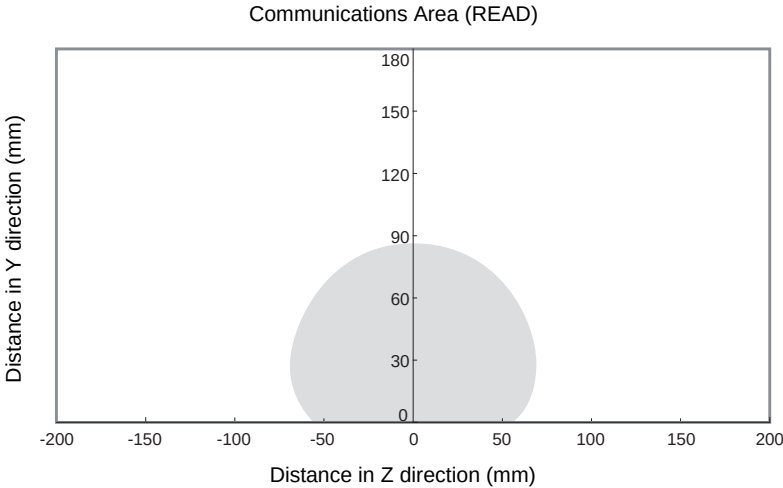
- WRITE



- Vertical Mounting (RI-TRP-WR2B)
 - READ



- WRITE



Mutual Interference Distances (Reference Only)

If Amplifier Units are connected using multidrop connections and multiple CIDRW Heads are used, the CIDRW Heads will not process commands simultaneously. In this case, install the CIDRW Heads at least 0.1 m apart from each other.

Distance between Antennas and Changes in Communications Distances (Reference Only)

• V640-HS61

Distance between Antennas	Change in communications distance
1,000 mm	100%
900 mm	100%
800 mm	100%
700 mm	99%
600 mm	90%
500 mm	74%
400 mm	55%
300 mm	40%
200 mm	15%

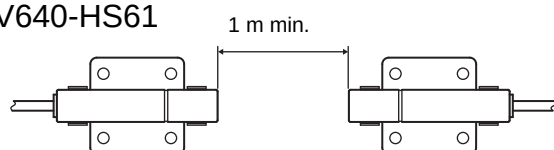
• V640-HS62

Distance between Antennas	Change in communications distance
2,000 mm	99%
1,600 mm	99%
1,400 mm	95%
1,200 mm	84%
1,000 mm	68%
800 mm	53%
600 mm	34%
400 mm	15%
200 mm	0%

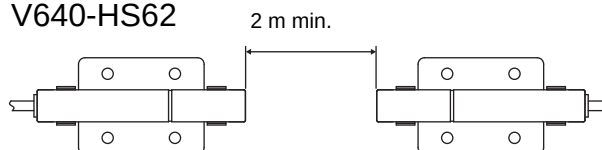
If CIDRW Heads in separate CIDRW systems process commands simultaneously when the CIDRW Systems are installed close to each other, mutual interference between the Heads can result in malfunctions. If this is a problem, install the CIDRW Heads separated at least by the distances shown in the following illustrations.

■ For Coaxial Installation

• V640-HS61

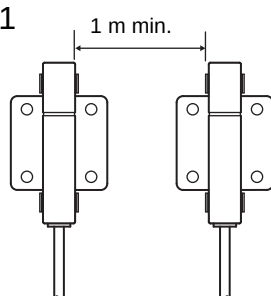


• V640-HS62

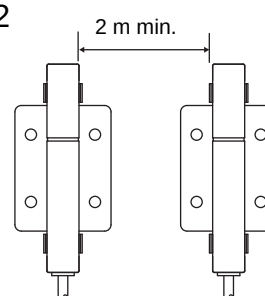


■ For Parallel Installation

• V640-HS61

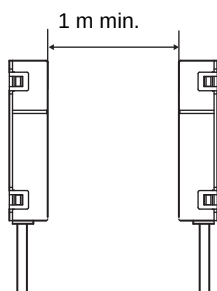


• V640-HS62

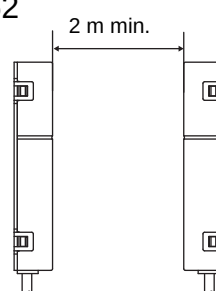


■ For Face-to-Face Installation

• V640-HS61

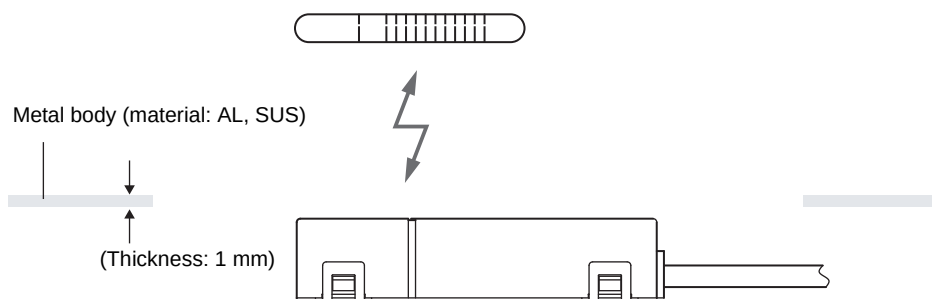


• V640-HS62



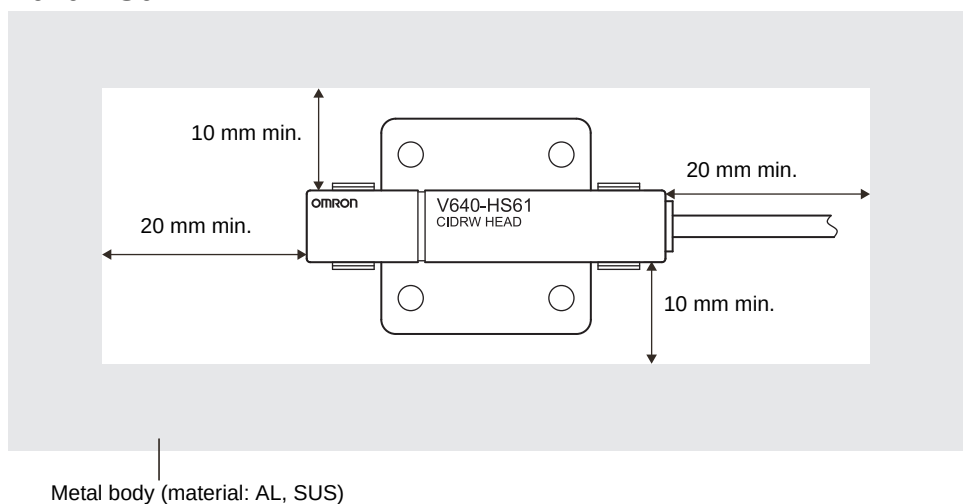
Influence of Background Metals (Reference Only)

The CIDRW Head can also communicate from an opening in a ceiling panel (metal body).

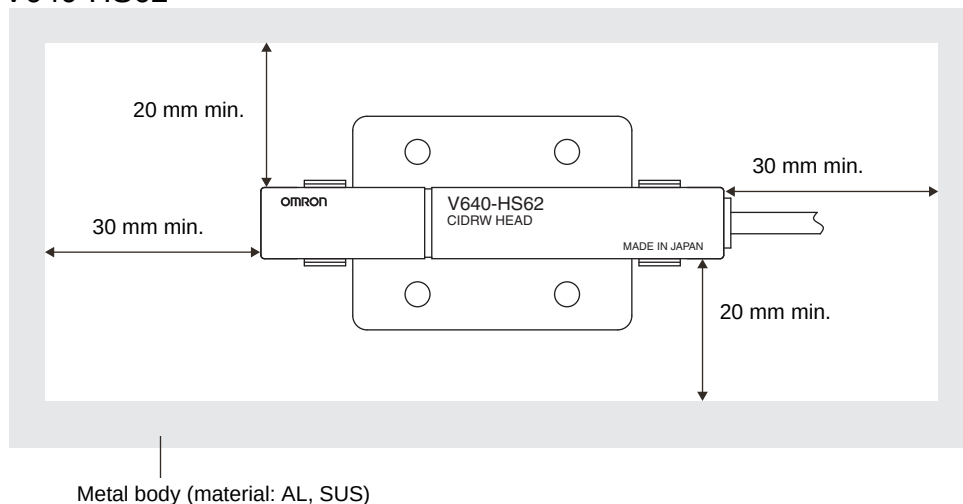


However, ensure the distances indicated below between the CIDRW Head and the metal body. If you do not ensure these distances the communications distance will be substantially shortened.

- V640-HS61

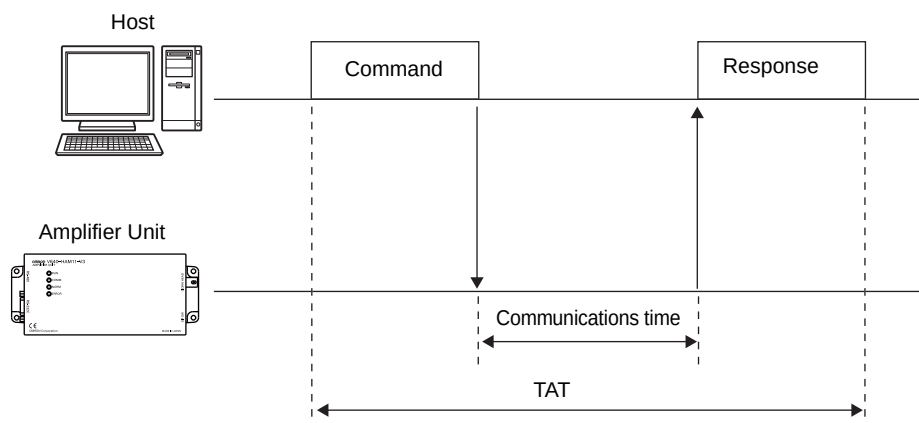


- V640-HS62



Communications Time

Regardless of whether SECS is used or not, take the time required for processing between the host device and Amplifier Units into account when designing the system.



Time	Description
Communications time	This is the time required for communications between an ID Tag and the CIDRW Head.
TAT	This is the time required for processing at the Amplifier Unit, seen from the host device.

Communications time calculation formula (unit: ms)

READ: $156.3 \times (\text{number of pages}) + 3.8$

WRITE, SAME WRITE: $381.9 \times (\text{number of pages}) + 160.1$

BYTE WRITE: $385.4 \times (\text{number of pages}/8) + 277.2$

└──────────┘
Rounding up

TAT calculation formula (units: ms)

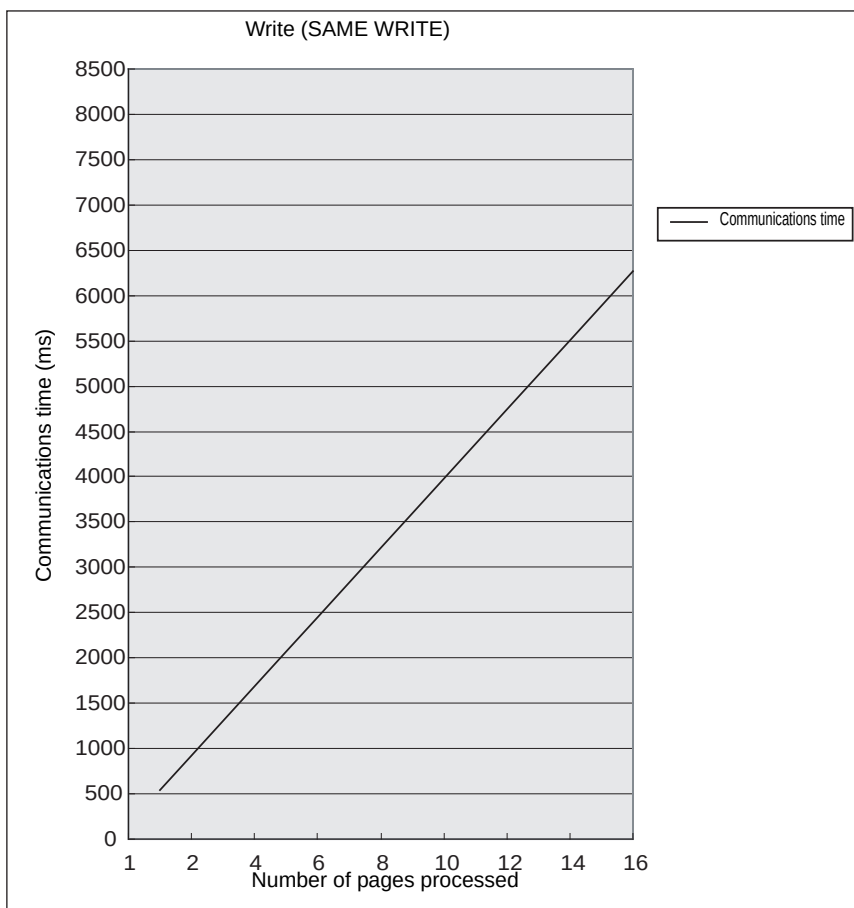
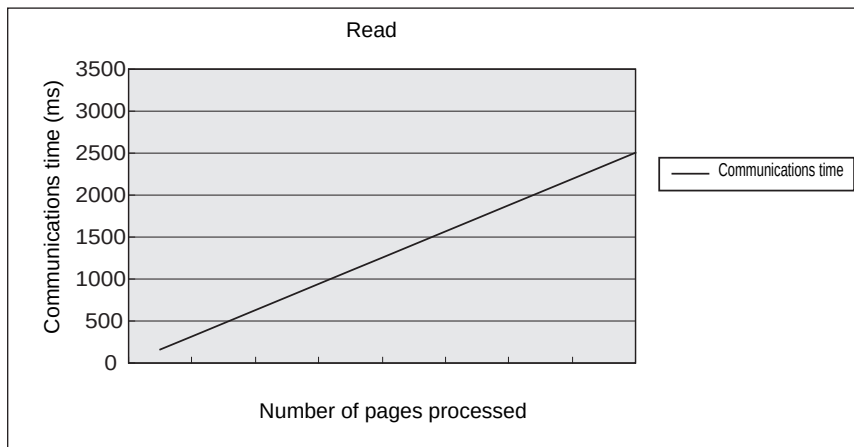
TAT = command and response transmission time + communications time

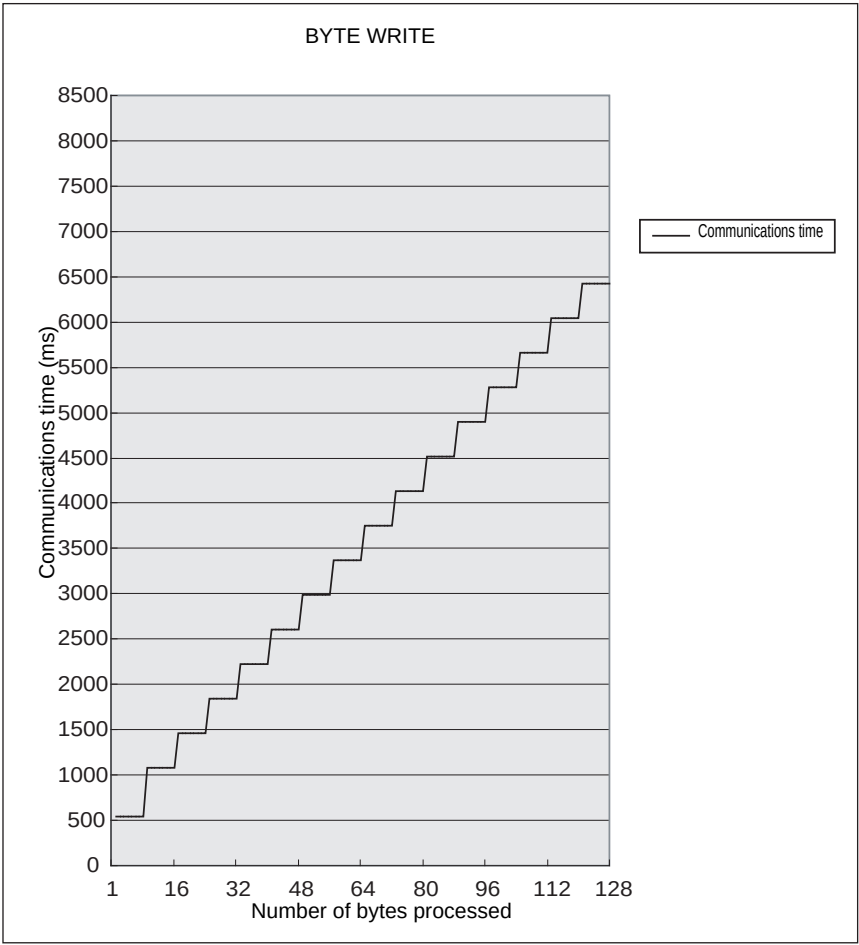
*The command and response transmission time differs depending on the network environment.

For example: Command and response transmission time is about from 10 to 40msec, when connect between PC and the Amplifier Unit directly by the lan cable(100M).

The graph for communications time for communications between the ID Tag and CIDRW Head, and TAT (when the baud rate is 9600 bps), is shown below.

The communications time and TAT, however, may increase substantially according to the conditions of use.





Please confirm beforehand, there is a difference in comparison with V640-HAM11-V2 and V640-HAM12 in communication time.

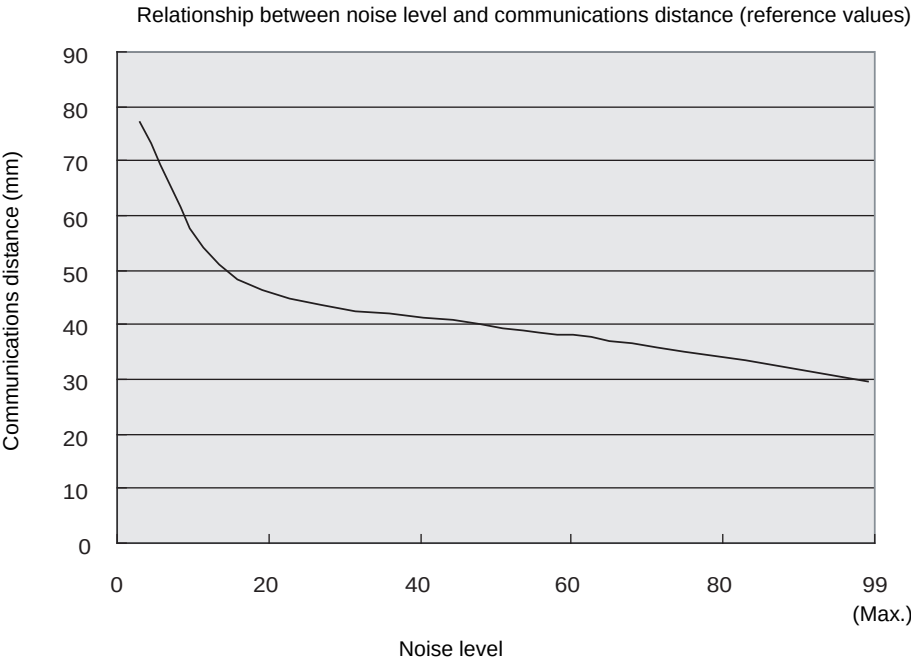
Communications Distance Characteristics vs. Ambient Noise

The graph below compares the results of measurement using the noise measurement function with communications distances.

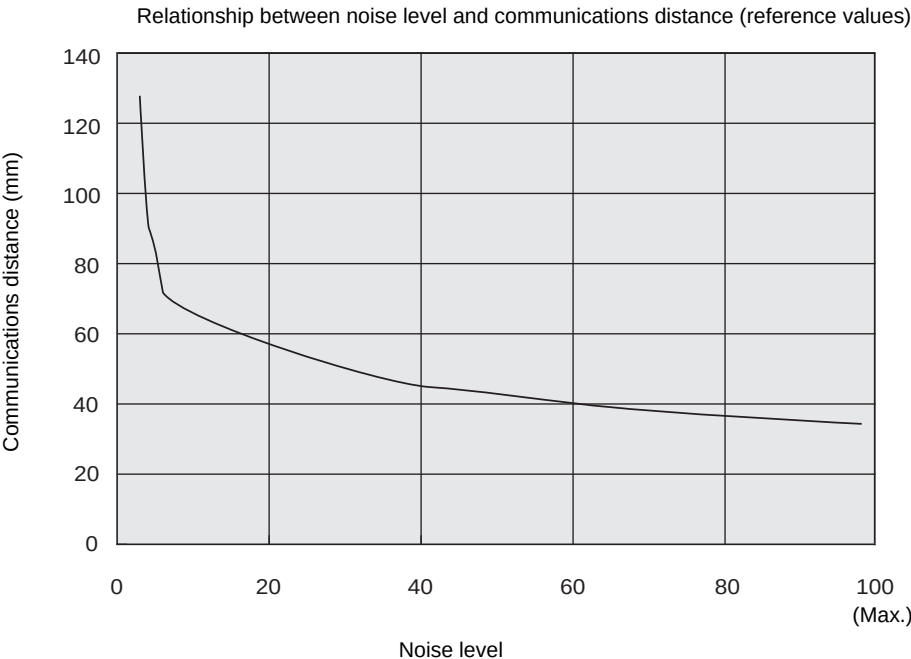
At installation implement measures in regard to metal in the vicinity of the CIDRW Head, power supply noise, and atmospheric noise, to ensure that the noise level does not exceed 10.

NOISE MEASUREMENT command (applies only when SECS is not used)  Refer to page 51.

■ V640-HAM11-ETN



■ V640-HAM11-L-ETN



ID Tag Memory Maps

The memory maps of the RI-TRP-DR2B(-30) and RI-TRP-WR2B(-30) ID Tags are given below.

■ RI-TRP-DR2B(-30)

ID Tag Memory Map

Page	8 bytes/1 page								Example of data segment settings	
									DATASEG	LENGTH
1	00h	01h	02h	03h	04h	05h	06h	07h	Carrier ID	16
2	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh	Carrier ID	
3	10h	11h	12h	13h	14h	15h	16h	17h	"S01"	8
4	18h	19h	1Ah	1Bh	1Ch	1Dh	1Eh	1Fh	"S02"	8
5	20h	21h		...	...			27h	"S03"	8
6	28h	29h		...	...			2Fh	"S04"	8
7	30h	31h		...	...			37h	"S05"	8
8									"S06"	8
9								:	"S07"	8
10	:							:	"S08"	8
11	:								"S09"	8
12									"S10"	8
13									"S11"	8
14	68h	69h		...	...			6Fh	"S12"	8
15	70h	71h		...	...			77h	"S13"	8
16	78h	79h		...	...			7Fh	"S14"	8
17	80h	81h		...	...			87h	"S15"	8

Carrier ID
(16 byte)

Data area
(Total of 120
bytes)



CHECK!

- The carrier ID memory area starts from page 1 (fixed).
- 00h to 87h in the table are addresses.
- The RI-TRP-WR2B(-30) has a memory capacity of 136 bytes.

■ RI-TRP-WR2B(-30)

ID Tag Memory Map

Page	8 bytes/1 page								Example of data segment settings	
									DATASEG	LENGTH
1	00h	01h	02h	03h	04h	05h	06h	07h	Carrier ID	8

Carrier ID
(8 byte)



CHECK!

- The RI-TRP-WR2B(-30) has a memory capacity of 8 bytes.

Regular Inspection

In order to maintain optimum performance of the functions of the CIDRW system, daily and periodic inspections are necessary.

Inspection item		Detail	Criteria	Tools required
Supply voltage fluctuation		Check that the supply voltage fluctuation at the power supply terminal block is within the permissible range.	To be within supply voltage rating.	Multimeter
		Check that there are no frequent instantaneous power failures or radical voltage drops.	To be within permissible voltage fluctuation range.	Power supply analyzer
Environment	Ambient temperature	Check that the ambient temperature and humidity are within specified range.	To be within the specified range.	Maximum and minimum thermometer Hygrometer
	Ambient humidity			
	Vibration and shock	Check that no vibration or shock is transmitted from any machines.	To be none.	
	Dust	Check that the system is free of dust accumulation.		
	Corrosive gas	Check that no metal part of the system is discolored or corroded.		
I/O power supply	Voltage fluctuation	Check on the I/O terminal block that the voltage fluctuation and ripple are within the permissible ranges.	To be within the specified range.	Multimeter Oscilloscope
	Ripple			
Mounting condition		Check that each device is securely mounted.	There must be no loose screws.	—
		Check that each connector is securely connected.	Each connector must be locked or securely tightened with screws.	
		Check that no wire is broken or nearly broken.	There must be no wire that is broken or nearly broken.	
		Check if grounding to 100 Ω or less has been done.	To be grounded to 100 Ω or less.	

ASCII Code Table

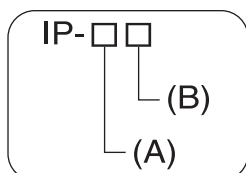
Leftmost bits Rightmost bits	b8 to b5	0000	1001	0010	0011	0100	0101	0110	0111	1000	1101	1010	1011	1100	1101	1110	1111
	Row b4 to b1 Line	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0000	0	NUL	TC7(DLE)	(SP)	0	@	P	`	p	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
0001	1	TC1(SOH)	DC ₁	!	1	A	Q	a	q								
0010	2	TC2(STX)	DC ₂	"	2	B	R	b	r								
0011	3	TC3(ETX)	DC ₃	#	3	C	S	c	s								
0100	4	TC4(EOT)	DC ₄	\$	4	D	T	d	t								
0101	5	TC5(NEQ)	TC ₈ (NAK)	%	5	E	U	e	u								
0110	6	TC6(ACK)	TC ₉ (SYN)	&	6	F	V	f	v								
0111	7	BEL	TC ₁₀ (ETB)	'	7	G	W	g	w								
1000	8	FE0(BS)	CAN	(	8	H	X	h	x								
1001	9	FE1(HT)	EM	)	9	I	Y	i	y								
1010	10	FE2(LF)	SUB	*	:	J	Z	j	z								
1011	11	FE3(VT)	ESC	+	;	K	[	k	{								
1100	12	FE4(FF)	IS ₄ (FS)	,	<	L	\	l									
1101	13	FE5(CR)	IS ₃ (GS)	-	=	M	]	m	}								
1110	14	S0	IS ₂ (RS)	.	>	N	^	n	ÄP								
1111	15	S1	IS ₁ (US)	/	?	O	_	o	DEL								

Protective Construction

IP-□□ is governed by the test methods described below. Check in advance the seal characteristics under the actual environment and conditions of use.

IP is the abbreviation of International Protection.

■ IEC (International Electrotechnical Commission) Standard (IEC60529: 1989-11)

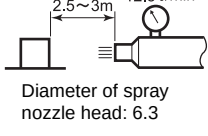
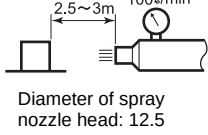
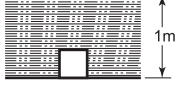


(A) First numeral in code: Class of protection against entry of solid foreign material

Class	Degree of protection	
0		No protection
1		Protected against access by solid objects with a diameter of 50 mm or greater (e.g., human hands).
2		Protected against access by solid objects with a diameter of 12.5 mm or greater (e.g., fingers).
3		Protected against access by wires and solid bodies with a diameter of 2.5 mm or greater.
4		Protected against access by wires and solid bodies with a diameter of 1 mm or greater.
5		Entry of volumes of dust that would cause difficulties in normal operation of devices or compromise safety is prevented.
6		Entry of dust is prevented.

(B) Second numeral of code: Class of protection against the entry of water

Class	Degree of protection		Outline of test methods (tests using water)
0	No special protection	No protection against the entry of water.	No test
1	Protection against droplets of water 	The product suffers no ill effects from droplets of water falling vertically onto it.	Water droplets are sprayed onto the product from directly above for 10 minutes by water droplet exposure test apparatus.
2	Protection against droplets of water 	The product suffers no ill effects from droplets of water directed at it at an angle of up to 15° to vertical.	The water droplet exposure test apparatus is set to 15° from vertical and water droplets sprayed onto the product for 10 minutes (total of 25 minutes in each direction).

Class	Degree of protection		Outline of test methods (tests using water)
3	Protection against spraying water 	The product suffers no ill effects from a water spray directed at it at up to 60° from vertical.	Using the test apparatus shown in the figure to the right, water is sprayed from both directions, onto both sides of the product, at angles up to 60° from vertical for 10 minutes.  0.07 L/min. per hole in the spray nozzle
4	Protection against splashing water 	The product suffers no ill effects from water splashed on it from all directions.	Using the test apparatus shown in the figure to the right, water is splashed onto the product from all directions for 10 minutes.  0.07 L/min. per hole in the spray nozzle
5	Protection against water jets 	The product suffers no ill effects from a water jet aimed directly at it from all directions.	Using the test apparatus shown in the figure to the right, a water jet is directed at the product from all directions for 1 minute per square meter of outer casing, with a minimum total exposure of 3 minutes.  2.5~3m 12.5 L/min Diameter of spray nozzle head: 6.3
6	Protection against powerful jets of water 	Water does not enter the product when a powerful jet of water is directed at it from all directions.	Using the test apparatus shown in the figure to the right, a water jet is directed at the product from all directions for 1 minute per square meter of outer casing, with a minimum total exposure of 3 minutes.  2.5~3m 100 L/min Diameter of spray nozzle head: 12.5
7	Protection against immersion in water 	No entry of water on immersion in water at the stipulated pressure for the stipulated time.	Immerse in water for 30 minutes at a depth of 1 meter (when the height of the apparatus is less than 850 mm).  1m
8	Protection against immersion in water 	The product can be used while continually immersed in water.	Depends on arrangements made between the manufacturer and the user of the product.

Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.

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The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

Revision code	Date	Revised content
01	September 2010	Original production
02	January 2011	Added item for the overseas regulations and standards, and made other minor corrections

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