OMRON

CIDRW SYSTEM

V640 SERIES

USER'S MANUAL

AMPLIFIER UNITS

V640-HAM11-V3

V640-HAM11-L

CIDRW HEADS

V640-HS61

V640-HS62

CIDRW CONTROLLER

V700-L22

LINK UNIT

V700-L11

Cat. No. Z307-E1-01

Introduction

Thank you for purchasing the V640-series CIDRW System.

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

• Please read and understand the contents of this manual before using the system.

• After reading this manual, store it in a convenient location for easy reference whenever necessary.

CIDRW System

V640-HAM11-V3	Amplifier Unit
V640-HAM11-L	Amplifier Unit
V640-HS61	CIDRW Head
V640-HS62	CIDRW Head
V700-L22	CIDRW Controller
V700-L11	Link Unit

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.

SUITABILITY FOR USE

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

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To Users of the V700-L21 CIDRW Controller

The V700-L22 CIDRW Controller complies with the 2003 edition of the SEMI E99 standard. The V700-L21 CIDRW Controller cannot simply be replaced with the V700-L22. To replace the V700-L21 with the V700-L22, the control programming for the CIDRW Controller must be updated as described in this manual.

■ Main Differences from the V700-L21

• Added Attributes

The CIDRW attributes defined as CarrierIDOffset and CarrierIDlength in the 2003 edition of the SEMI E99 standard have been added. With the V700-L22, the user can now specify as attributes the position of the MID in the ID Tag, and the data length.

Refer to Support Attributes p.152.

• Changed Message Specifications

The 2003 edition of SEMI E99 adds a format definition for the data item MID in the message specifications. The specifications of the data item MID have changed in the V700-L22.

Refer to Message Specifications p.70.

• Added Data Area Access Function

A function for specifying ID Tag data area access destinations as offset addresses has been added to the V700-L22. The V700-L21 divides the data area into 8-byte units called segments, and reads and writes data to each segment. Besides this, the V700-L22 also allows you to specify offset addresses relative to the first address in the ID Tag data area, so that data can be read and written in units of one byte.

Refer to Message Specifications p.70.

• Replacing the V700-L21 with theV700-L22

The following settings are required to replace the V700-L21 with the V700-L22.

(1) Set the CarrierIDOffset and CarrierIDlength attributes.
Set CarrierIDOffset to 0 and set CarrierIDlength to the data length of the data item MID specified by the ID write request (S18F11). If there is a mismatch between the CarrierIDlength attribute and the MID length in the ID write request (S18F11), a CE (communications error) occurs, and no data is written.

(2) Change the MID to data consisting of displayable ASCII characters only.
With the V700-L22, data that includes undisplayable ASCII characters cannot be read with an ID read request (S18F9); an EE (execution error) occurs. Data including undisplayable ASCII characters in the MID cannot be specified with an ID write request (S18F11).

CHECK! With the V700-L21, the MID to be read or written is assigned to an area fixed at 16 bytes. If the specified data length in the ID write request (S18F11) is less than 16 bytes, NUL characters are added in internal processing to make the total 16 bytes. In contrast, with the V700-L22, the accessible MID data occupies only the area specified by the CarrierIDOffset and CarrierIDlength attributes. Data can be read or written only in the area specified by the attributes.

Applicable Standards

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

1. USA

	CIDRW Amplifier Unit	CIDRW Head
FCC Part 15 Subpart C FCC ID: E4EV640HAM11	V640-HAM11-V3	V640-HS61
FCC Part 15 Subpart C FCC ID: E4EV640HAM11L	V640-HAM11-L	V640-HS62

FCC NOTICE

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

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

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
Do not remove the ferrite core (TDK-EPC Type ZCAT2749-0430C:V640-HS62) installed on the cables to suppress RF interference.

FCC Part15 subpart B

NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION

This device must be professionally installed.

2. Canada

	CIDRW Amplifier Unit	CIDRW Head
IC ID: 850J-V64HAM11	V640-HAM11-V3	V640-HS61
IC ID: 850J-V64HM11L	V640-HAM11-L	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 numerique de la classe A est conforme a la norme NMB-003 du Canada.

Applicable SEMI Standards

This CIDRW system complies with the following standards.

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

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

Safety Precautions

● Definition of Precautionary Information

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

⚠WARNING	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

⚠WARNING

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

Precautions for Safe Use

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

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

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

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

Precautions for Correct Use

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

■ Installation Site

Install the product at a location where:

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

■ Mounting

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

Refer to page 122.

■ Power and Ground Cables

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

■ Wiring Work

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

■ Screw Locking Adhesive

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

■ Cleaning

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

■ Communications with the Host Device

Communicate with the host device only after confirming that the CIDRW Controller has started. Also, unstable signals may occur at the host interface when the CIDRW Controller is started. When initializing operation, clear the reception buffer at the host device or take other suitable methods to clear unwanted signals.

■ 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.

Reading this Manual

Visual Aids

NOTICE

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.


CHECK!

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

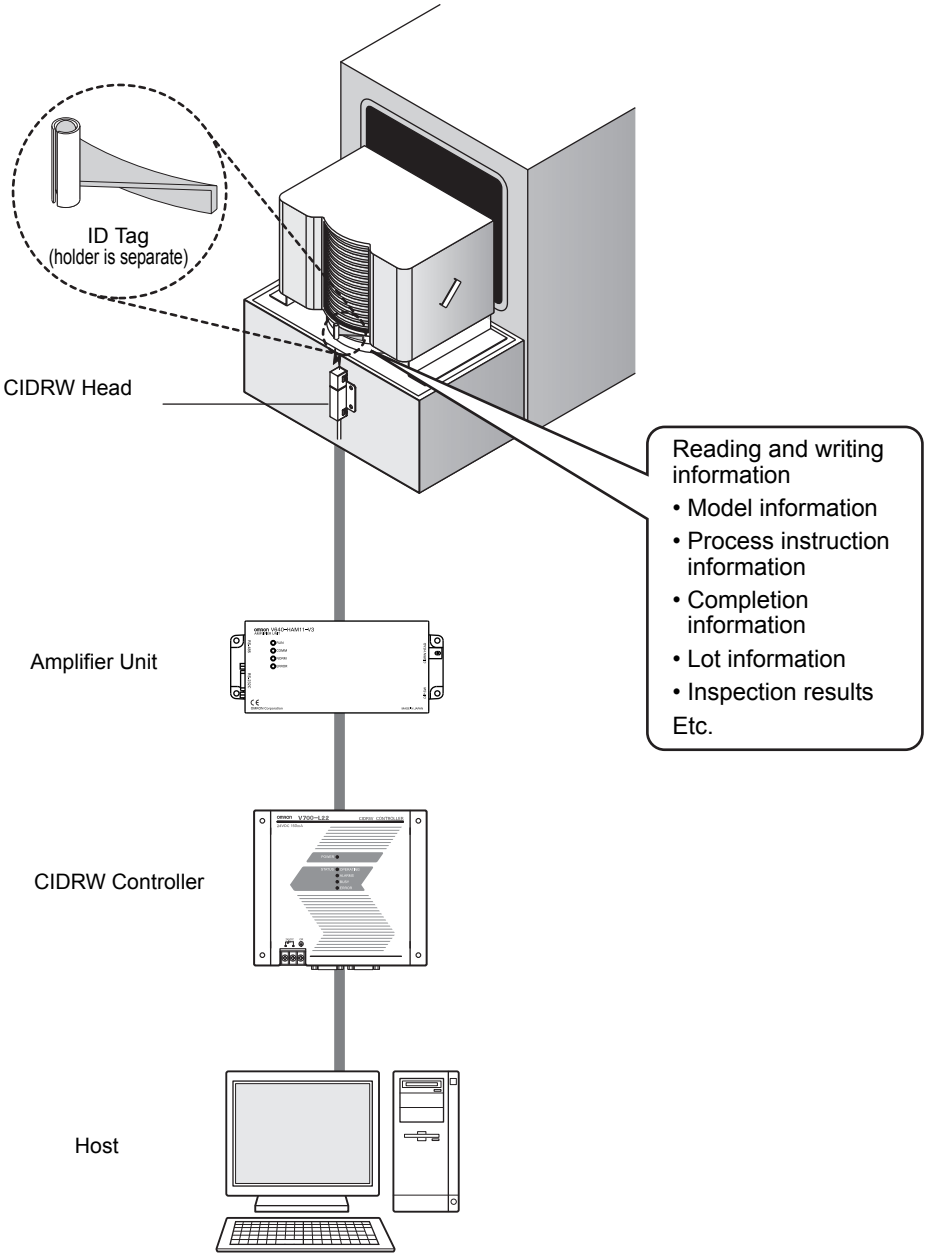
Table of Contents

SECTION 1
Product Outline

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.

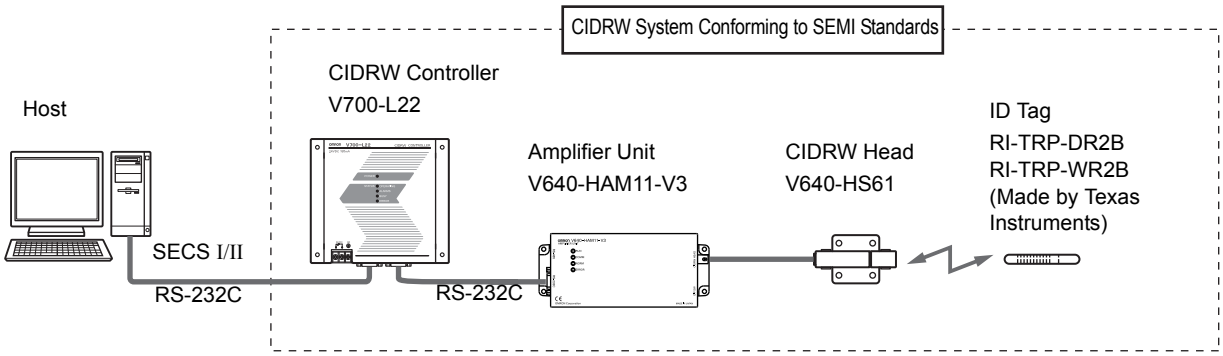
Example: Management of information in semiconductor and wafer manufacturing processes



Features

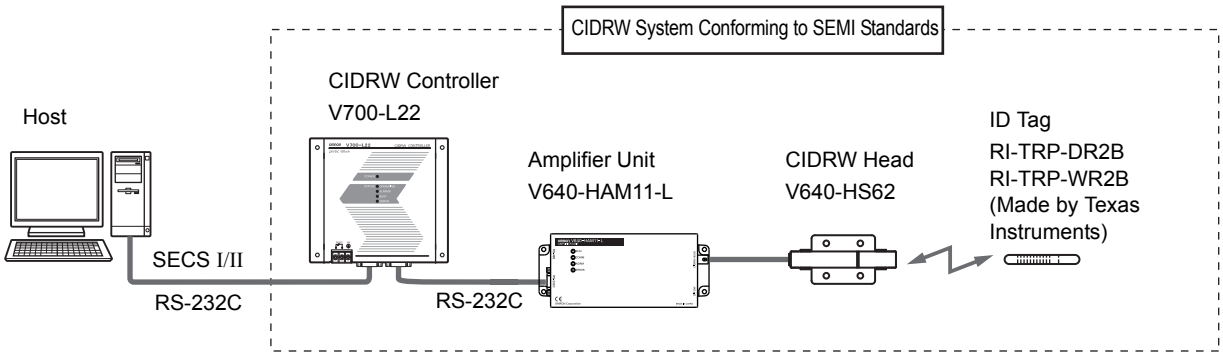
■ CIDRW Systems That Conform to SEMI Standards (SEMI E99, E5, E4)

• V640-HAM11-V3



The V640-HS61 CIDRW Head can be connected to V640-HAM11-V3 Amplifier Units to communicate with ID Tags.

• V640-HAM11-L



The V640-HS62 CIDRW Head can be connected to V640-HAM11-L Amplifier Units to communicate long-distance with ID Tags. The functions of the V640-HAM11-L Amplifier Unit are the same as the functions of the V640-HAM11-V3 Amplifier Unit.

List of Applicable Standards

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

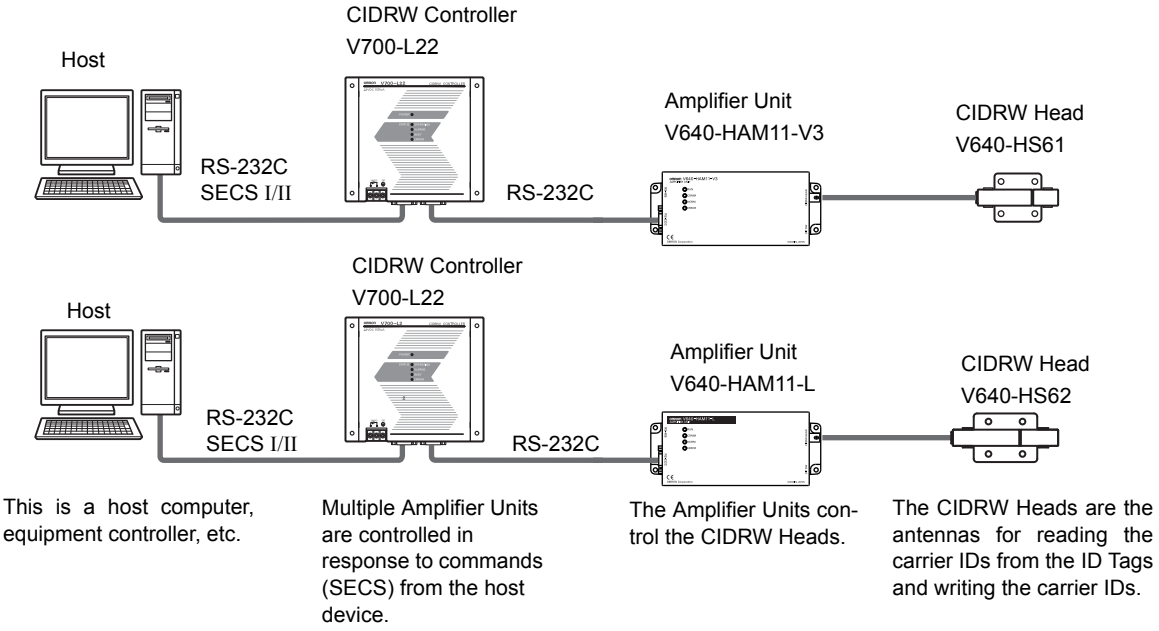
SEMI is the acronym for Semiconductor Equipment and Materials International.
SECS is the acronym for SEMI Equipment Communications Standard.

The V640-HAM11-V3 or V640-HAM11-L will automatically detect the model and read/write data for RI-TRP-DR2B and RI-TRP--WR2B ID Tags manufacturer by Texas Instruments.

System Configuration

When SECS Is Used

Communications with the host device is possible using the SECS protocol.



This is a host computer, equipment controller, etc.

Multiple Amplifier Units are controlled in response to commands (SECS) from the host device.

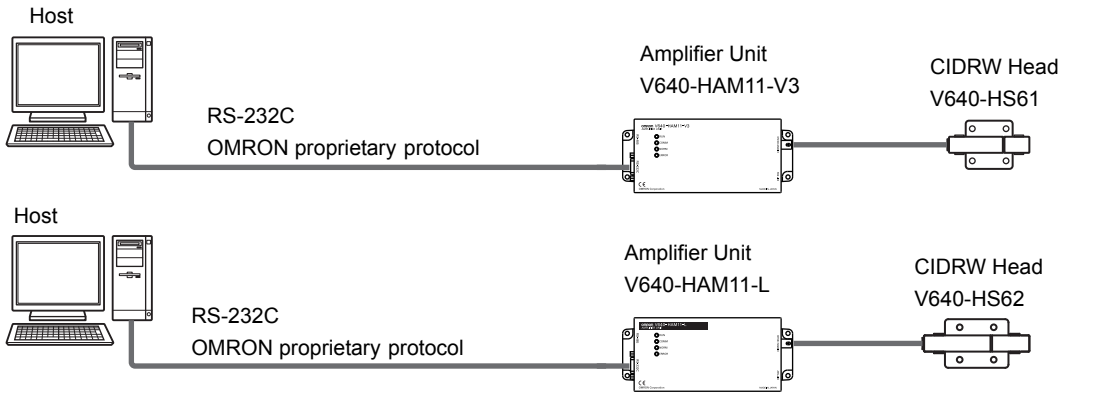
The Amplifier Units control the CIDRW Heads.

The CIDRW Heads are the antennas for reading the carrier IDs from the ID Tags and writing the carrier IDs.

When SECS Is Not Used

Communications with the host device follow the OMRON proprietary protocol.

The Amplifier Units are connected directly to the host device without using a CIDRW Controller.



This is a host computer, equipment controller, etc.

The Amplifier Units control the CIDRW Heads.

The CIDRW Heads are the antennas for reading the carrier IDs from the ID Tags and writing the carrier IDs.

CHECK!

Refer to the following page for connection examples for up to 31 Amplifier Units or for connection examples for using the V700-L11 Link Unit.

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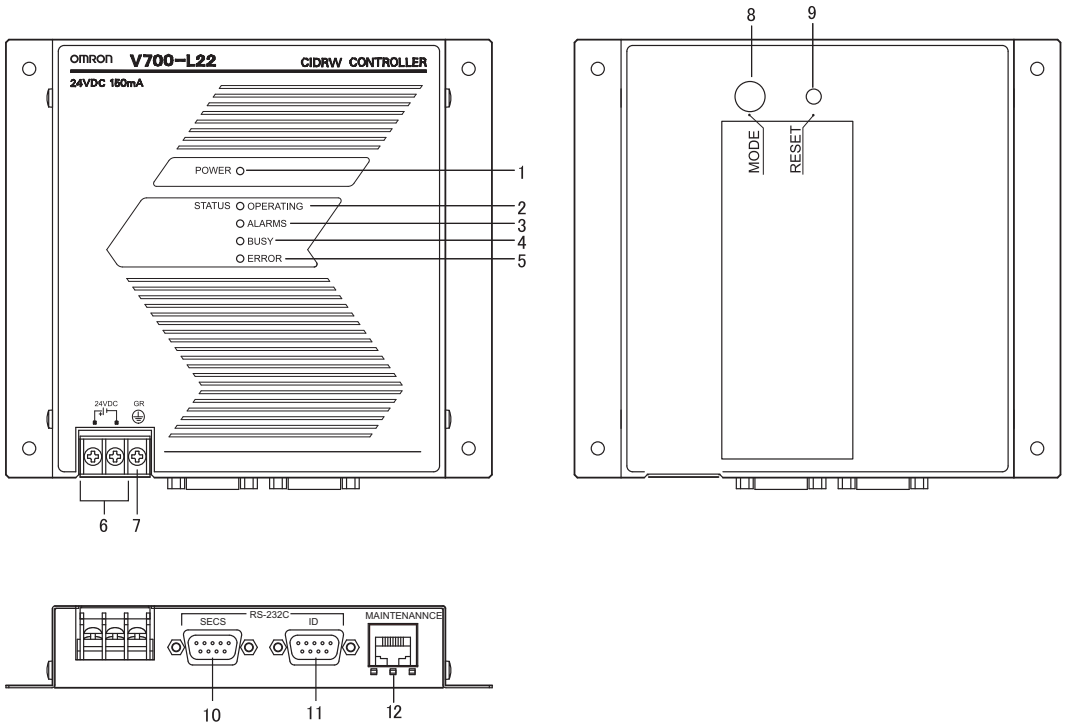
Using Link Units (V700-L11) to make connections makes it possible to remove and replace just the relevant Amplifier Unit while leaving the power to the CIDRW system on in the event of a failure or during maintenance.

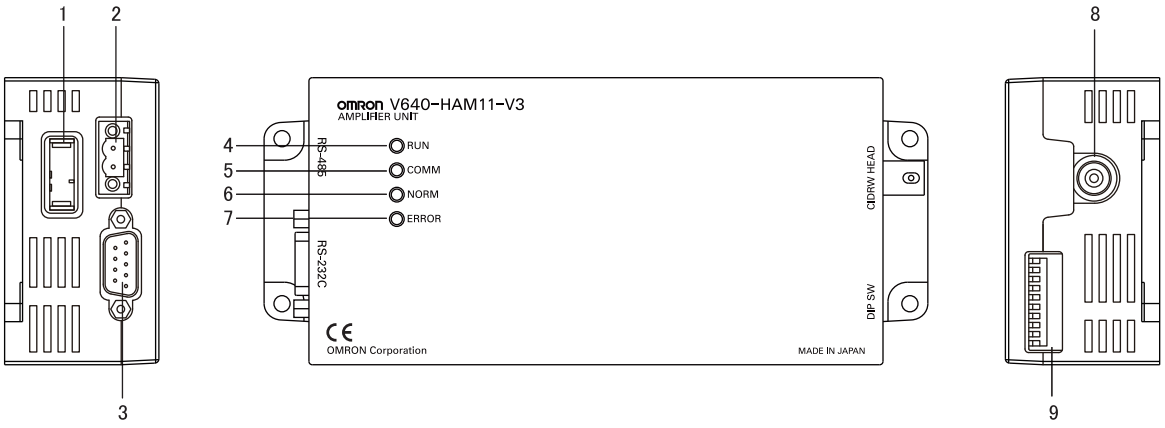
Component Names and Functions

V700-L22 CIDRW Controller



No.	Name	Function
1	Power indicator (green)	An indicator that indicates whether the power is ON or OFF. Lit while the power is ON.
2	OPERATING indicator (green)	Lit while the CIDRW system status model is operating.
3	ALARMS indicator (green)	Lit when the status in "Alarm Status" of the CIDRW system is Alarm (1).
4	BUSY indicator (green)	Lit when the status in "Operational Status" of the CIDRW system is BUSY.
5	ERROR indicator (red)	When a processing error is detected (when SSACK is other than NO), this indicator is lit for 50 ms.
6	24 VDC power supply terminals (with cover)	Connect to the 24 VDC power supply.
7	Frame ground terminal (with cover)	The grounding wire is connected here. (Ground to 100 Ω or less)
8	MODE switch	Used to select the mode of operation. Refer to page 48. 0: Normal Operation mode. When mounting the Controller, set the switch to this position. 3: Setting mode, selected to set information such as the communications conditions. When the switch on the bottom face of the Controller cannot be accessed, the operation mode can be changed from the host device while the switch is left at the 0 setting. 1 to 2, 4 to 7: Setting prohibited
9	RESET switch	Restarts the CIDRW Controller.
10	SECS port	Port for connecting the host device. Conforms to SECS I/II.
11	ID port	An Amplifier Unit or Link Unit is connected here.
12	Maintenance port (with cover)	Not used. Do not remove the cover.

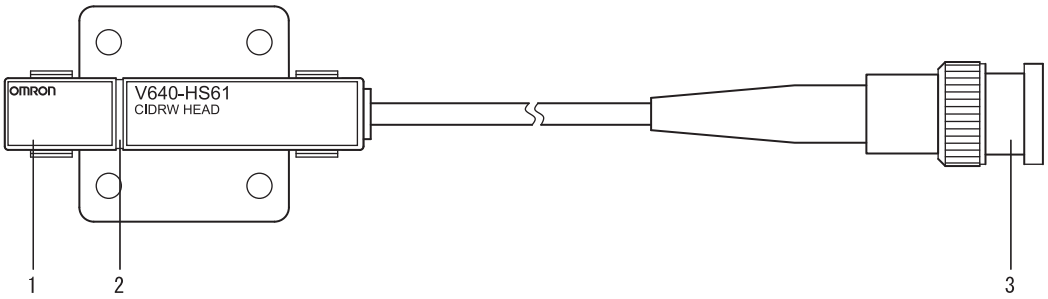
V640-HAM11-V3 and V640-HAM11-L Amplifier Units



No.	Name	Function
1	Dedicated power supply connector	Connect to the 24 VDC power supply.
2	RS-485 port	When using multiple CIDRW Heads, connect this to the RS-485 port of another Amplifier Unit or to the multi-connection port of a Link Unit.
3	RS-232C port	Connected to a CIDRW Controller or a host device. Uses the OMRON proprietary communications protocol.
4	RUN indicator (green)	Turns ON when the Amplifier Unit is in normal operation.
5	COMM indicator (yellow)	Turns ON during communications with the host device or during communications with an ID Tag.
6	NORM indicator (green)	Turns ON when the communications finish with no error.
7	ERROR indicator (red)	Turns ON when an error occurs during communications with the host device, or during communications with an ID Tag.
8	CIDRW Head connection port	A CIDRW Head is connected here.
9	Setting DIP switches	Used to set the node number, the communications conditions, and the RS-485 terminal resistance.

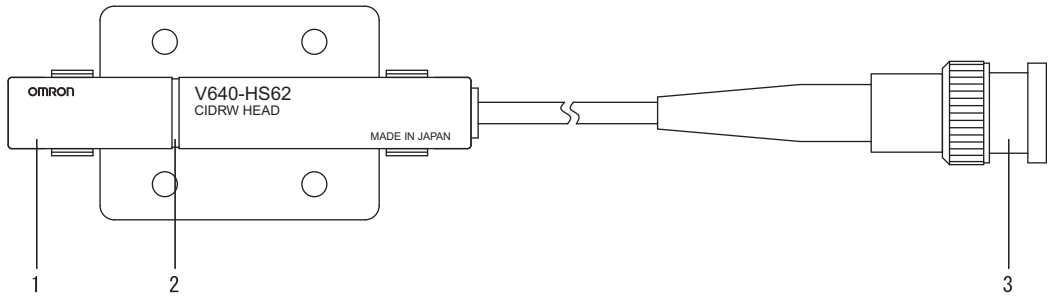
V640-HS61 and V640-HS62 CIDRW Heads

■ V640-HS61



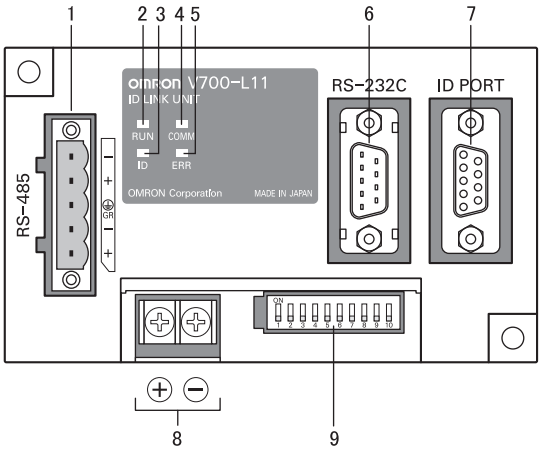
No.	Name	Function
1	Antenna	Used to communicate with ID Tags.
2	Antenna center	This is the center of the communications area.
3	Connector	Connect to an Amplifier Unit.

■ 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.

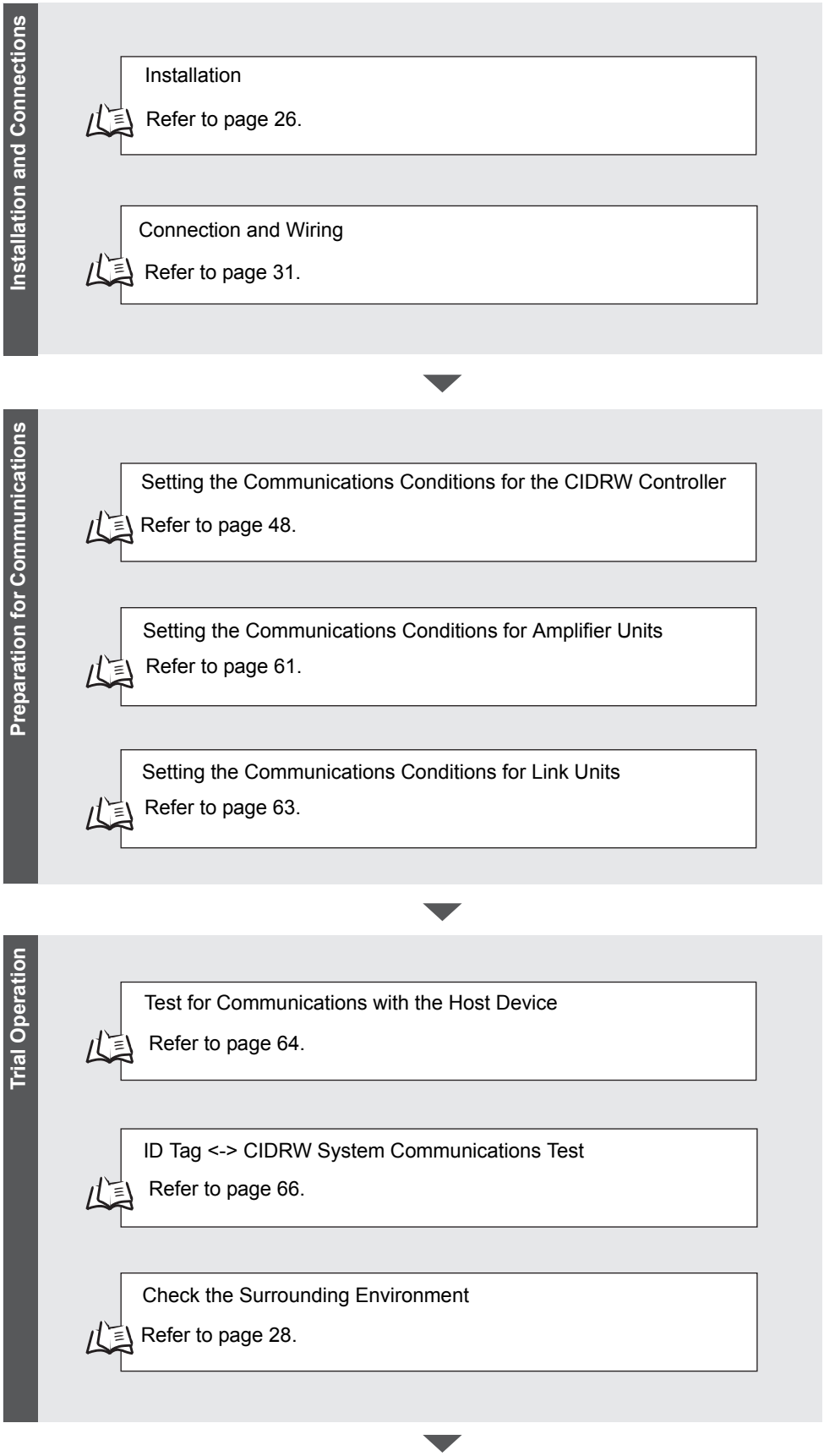
V700-L11 Link Unit



No.	Name	Function
1	Multi-connection port (RS-485)	This is the port that connects to the Amplifier Units when multiple CIDRW Heads are connected to a CIDRW Controller. The GR (frame ground) terminal is also at this port.
2	RUN indicator (green)	Turns ON while the Link Unit is in normal operation.
3	ID indicator (green)	Not used
4	COMM indicator (green)	Turns ON during data communications with the host device.
5	ERR indicator (red)	Turns ON when an error occurs during data communications with the host device or Head.
6	Host device connection port (RS-232C)	This is a port for connecting to the CIDRW Controller via an RS-232C interface. A dust cover is fitted on shipment from the factory. Remove this cover before using the port.
7	ID connection port	Not used
8	24 V power supply terminals (inside the cover)	Connect to the 24 VDC power supply.
9	Setting DIP switches (inside the cover)	Used to set the equipment number, the communications conditions, and the RS-485 terminal resistance.

Flowchart for Getting Started

When SECS Is Used



Communications

When SECS Is Used

Refer to page 70.

When you Encounter a Problem...

When SECS Is Used

Refer to page 96. List of Error Messages

Refer to page 96. Controller Indicators

Refer to page 97. Operation Check Flowchart

When SECS Is Not Used

Installation and Connections

Installation
Refer to page 26.

Connection and Wiring
Refer to page 31.

Preparation for Communications

Setting the Communications Conditions for Amplifier Units
Refer to page 61.

Setting the Communications Conditions for Link Units
Refer to page 63.

Trial Operation

Test for Communications with the Host Device
Refer to page 64.

Communications Test between ID Tags and CIDRW System
Refer to page 66.

Check the Surrounding Environment
Refer to page 28.

Communications

When SECS Is Not Used

Refer to page 81.

If you Encounter a Problem...

When SECS Is Not Used

Refer to page 102. List of Error Messages

Refer to page 102. Amplifier Unit Indicators

Refer to page 103. Operation Check Flowchart

SECTION 2
Installation and Connections/Wiring

Installation

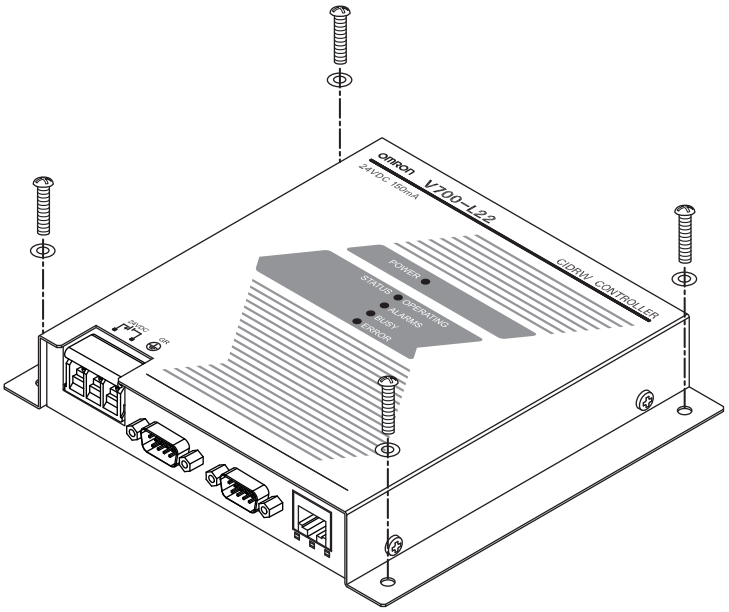
CIDRW Controller

NOTICE There is a switch for selecting the operation mode (Normal Operation mode <-> Setting mode) on the bottom face of the CIDRW Controller. Set the communications conditions in the Setting mode (switch position 3) before mounting the CIDRW Controller.

Refer to page 48.

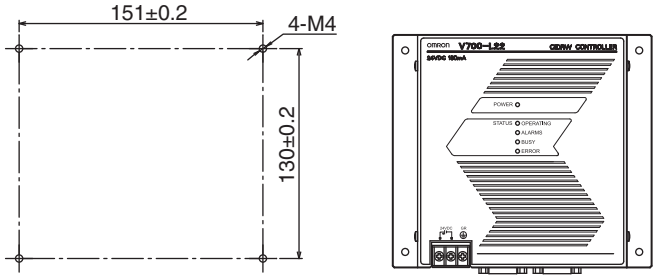
Set the Controller to the Normal Operation mode (switch position 0) when mounting it.

Mount the CIDRW Controller with the resin washers and four M4 screws provided as accessories.



Mounting dimensions

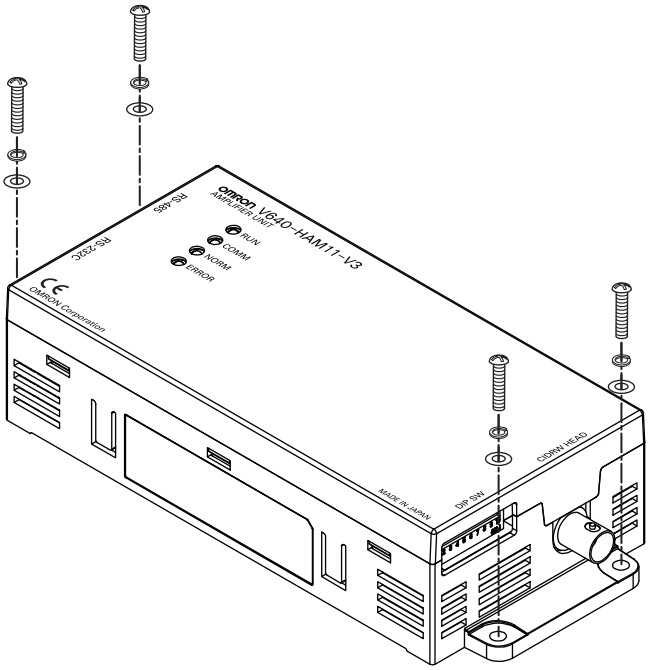
(Unit: mm)



NOTICE
- Tighten the M4 screws with a torque not exceeding 1.2 N·m.
- Do not apply organic solvents used with screw locking agents at the locations where the screws are inserted.

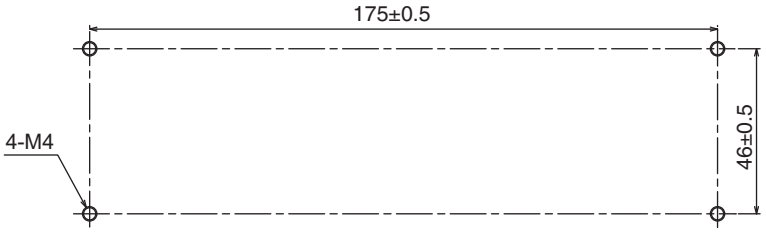
Amplifier Unit

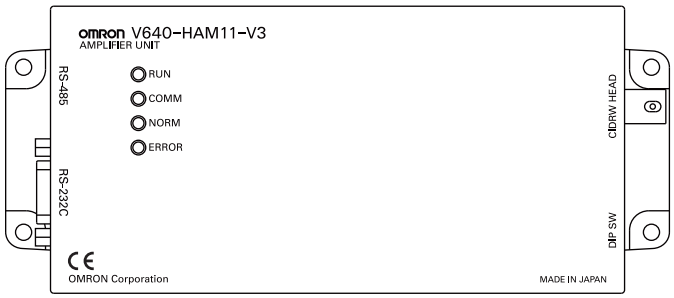
Use spring washers and flat washers with the four M4 screws when mounting the Amplifier Unit.



Mounting dimensions

(Unit: mm)





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

CIDRW Head

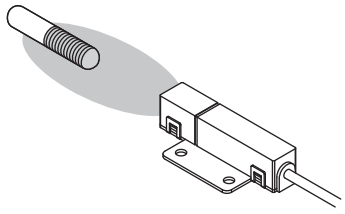
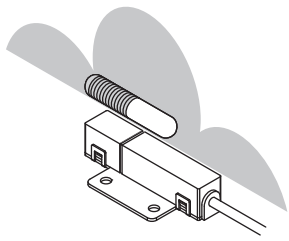
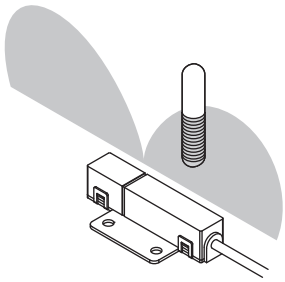
The area for communications with ID Tags varies substantially according to the installation orientations and the background conditions (metals, noise, etc.). Check the communications area before deciding the installation position.

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

Refer to page 116.

■ 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 122.

■ Influence of Noise

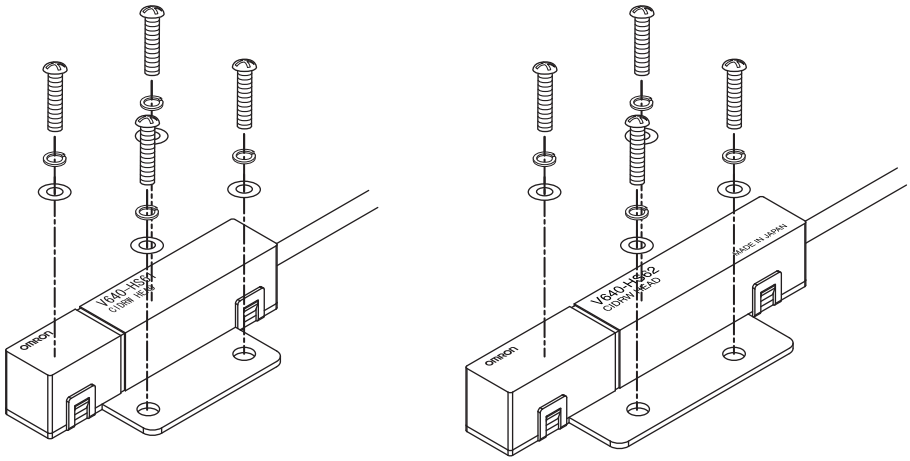
This CIDRW system uses a frequency of 134 kHz for communications with ID Tags. Equipment such as switching power supplies, inverters, servomotors, or monitors in the surrounding area will adversely affect communications, restricting the communications area.

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 90.

For details on the relationship between noise and communications distance, see *Appendix*. Refer to page 146.

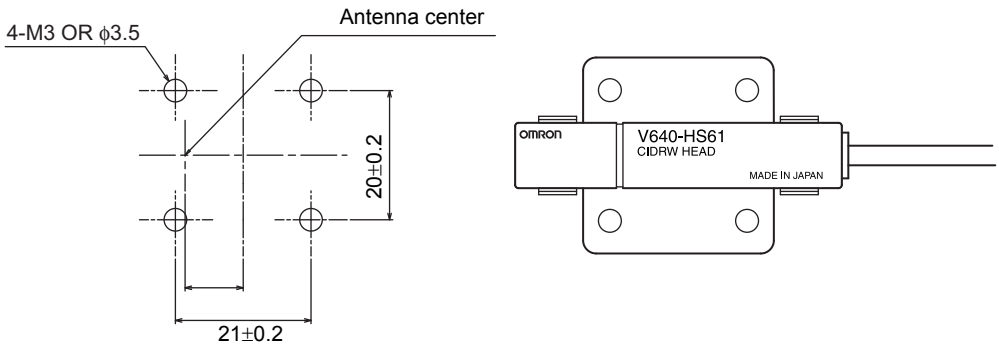
■ Mounting

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



Mounting dimensions

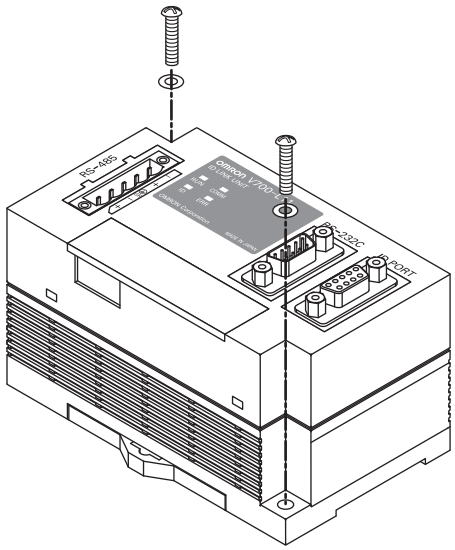
(Unit: mm)



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

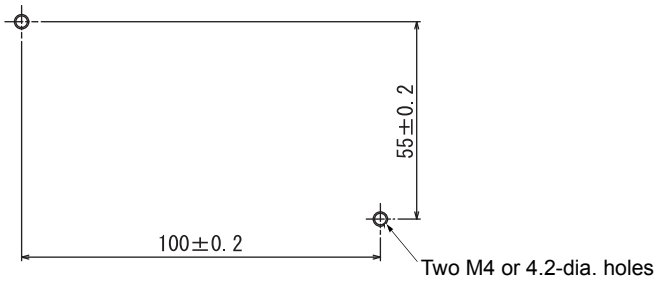
Link Unit

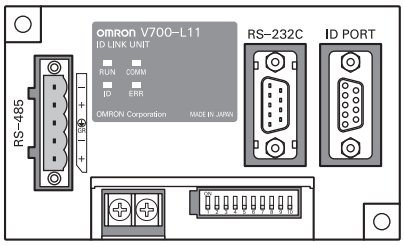
Mount Link Units with the two M4 screws and washers provided as accessories.



Mounting dimensions

(Unit: mm)





NOTICE

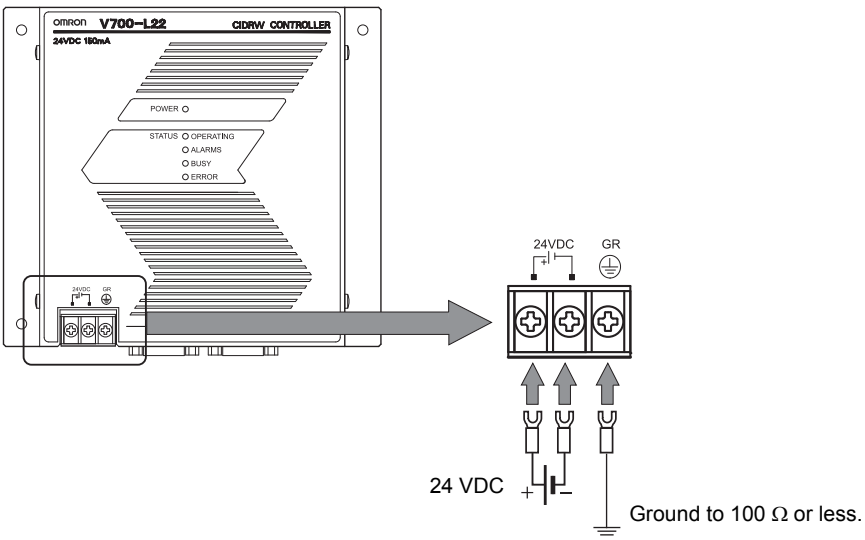
- Tighten the M4 screws with a torque not exceeding 1.2 N·m.
- Do not apply organic solvents used with screw locking agents at the locations where the screws are inserted.

Connections and Wiring

CIDRW Controller

■ Power Supply and Grounding Wires

Connect the wires to the 24 VDC power supply terminals and frame ground terminal.



- Crimp Terminals

The terminal screws on the terminal block are M3 size. Use appropriate crimp terminals for M3 screws as shown below.

Crimp Terminals

Shape	Size
Forked	6 mm max.
Round	6 mm max.

- Power Supply

Use a power supply that satisfies the following conditions.

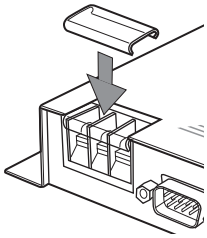
Condition

Power supply voltage	Output current	Safety standard
24 VDC +10%, -15%	500 mA DC min.	UL Class 2

Recommended model

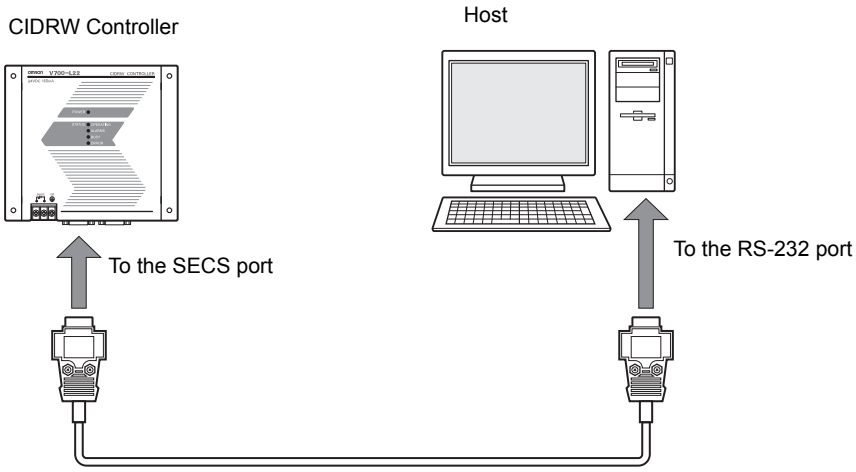
Manufacturer	Model
OMRON	S82K-01524

NOTICE Be sure to replace the cover after wiring.



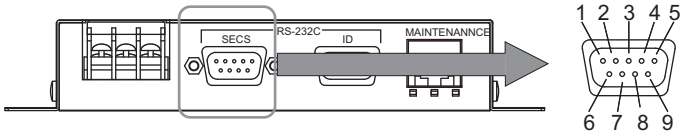
■ SECS Port

The method for wiring for communications with a host device via the SECS port is explained here.



• Connector

The SECS port on the Controller is a D-SUB 9-pin connector. The pin arrangement is shown below.



The connector rim has electrical continuity with the GR (frame ground) in the 24 VDC power supply terminals.

Pin No.	Signal name	Symbol	Signal direction	Remarks
1	—	NC	—	Not connected
2	Receive data	RD	Input	
3	Send data	SD	Output	
4	—	—	Output	Always OFF
5	Signal ground	SG	—	
6	—	—	Input	Use in the open status.
7	Request send	RS	Input	Always ON during normal operation
8	—	NC	—	Not connected
9	—	NC	—	Not connected

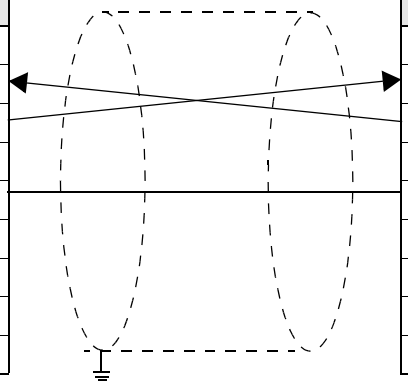
Recommended Models

		Manufacturer	Model
Cable		Hitachi Cable	CO-MA-VV-SB 5PX28AWG
Connector	Socket	OMRON	XM2D-0901
	Hood		XM2S-0913

• Wiring

The cable length should be no greater than 15 m.

CIDRW Controller V700-L22 D-SUB, 9-pin Socket type #4-40	
Name	Pin No.
NC	1
RD	2
SD	3
NC	4
SG	5
NC	6
RS	7
NC	8
NC	9



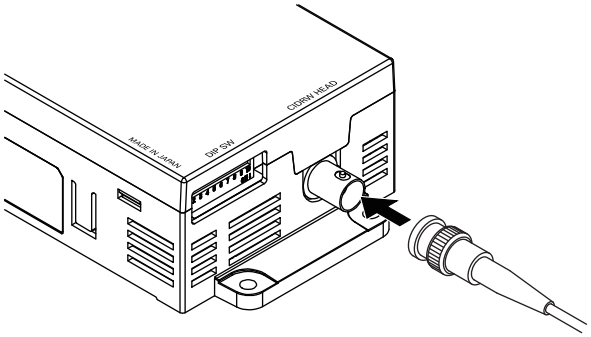
PC/AT Computer D-SUB, 9-pin Socket type #4-40	
Pin No.	Name
1	NC
2	RD
3	SD
4	NC
5	SG
6	NC
7	RS
8	CS
9	NC

Ground shielded wires either at the CIDRW Controller side or at the PC/AT side.

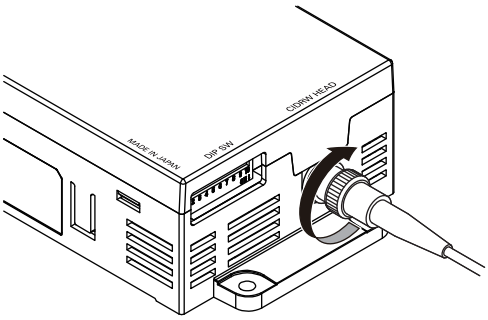
Amplifier Unit

■ 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.

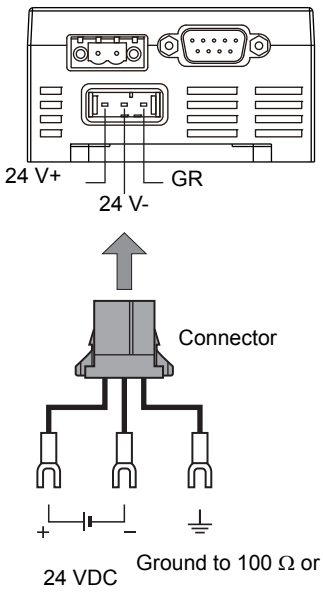


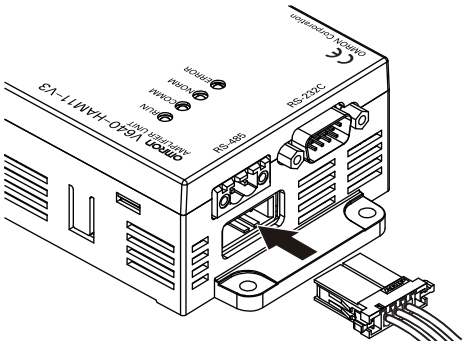
2. After inserting the connector fully home, turn the fixed part clockwise to lock it.



■ Power Supply and Grounding Wires

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





NOTICE

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

• Dedicated Power Supply Connector and RS-485 Port Connector

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

• Dedicated Power Supply Cable

Use an AWG20 to AWG24 cable.

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

Recommended Crimping Tool

Manufacturer	Model
Tyco Electronics	919601-1

• Power Supply

Use a power supply that satisfies the following conditions.

Condition

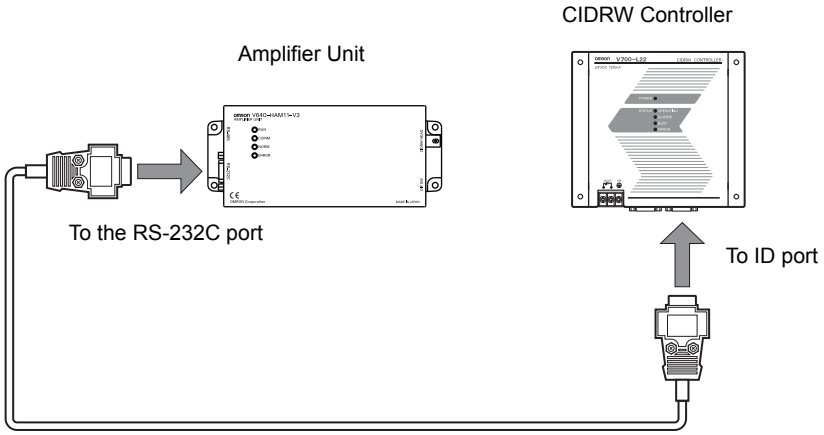
Power supply voltage	Output current	Safety standard
24 VDC +10%, -15%	V640-HAM11-ENT: 300 mA DC min. V640-HAM11-L-ENT: 600 mA DC min.	UL Class 2

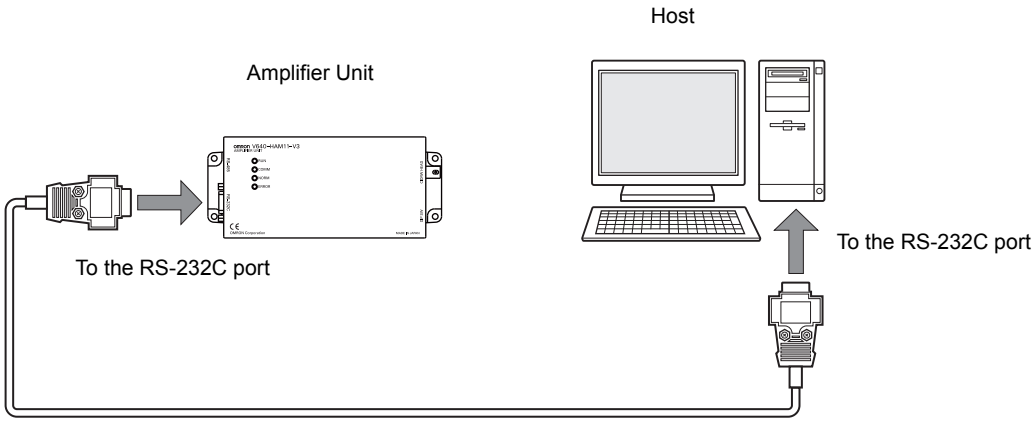
Recommended Product

Manufacturer	Model
OMRON	S82K-03024

■ RS-232C Port

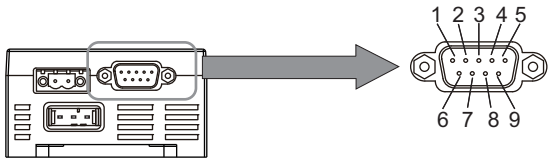
The method for connecting a CIDRW Controller or host device via the RS-232C port is explained here.





• Connector

The RS-232C port of the Amplifier Unit is a D-SUB, 9-pin connector. The pin arrangement is shown below.



The connector rim has electrical continuity with the GR (frame ground) terminal in the dedicated power supply connector.

Pin No.	Signal name	Symbol	Signal direction	Remarks
1	—	NC	—	Not connected
2	Receive data	RD	Input	
3	Send data	SD	Output	
4	—	NC	—	Not connected
5	Signal ground	SG	—	
6	—	NC	—	Not connected
7	Request send	RS	Output	Always ON during normal operation
8	Send enable	CS	Input	
9	—	NC	—	Not connected

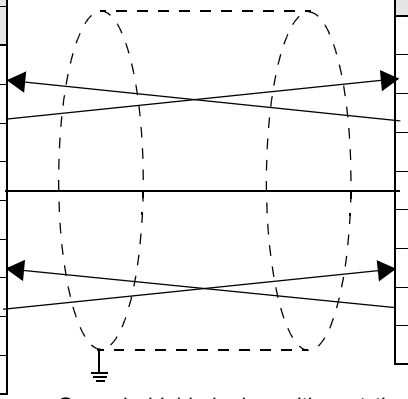
Recommended Models

			Manufacturer	Model
Cable			Hitachi Cable	CO-MA-VV-SB 5PX28AWG
Connector	Host side	Socket	OMRON	XM2D-0901
		Hood		XM2S-0913
	Amplifier Unit side	Socket		XM2D-0901
		Hood		XM2S-0911

• Wiring for Connection to a V700-L22 CIDRW Controller

The cable length should be no greater than 15 m.

Amplifier Unit V640-HAM11-V3 V640-HAM11-L D-SUB, 9-pin Socket type Metric screw, M2.6	
Name	Pin No.
NC	1
RD	2
SD	3
NC	4
SG	5
NC	6
RS	7
CS	8
NC	9



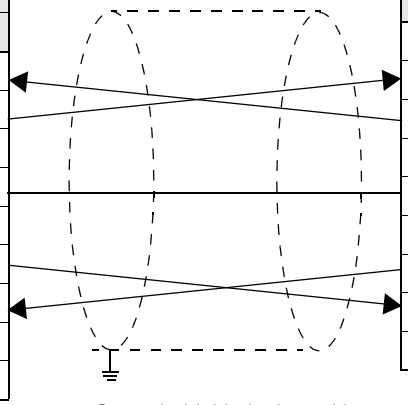
CIDRW Controller V700-L22 D-SUB, 9-pin Socket type #4-40	
Pin No.	Name
1	NC
2	RD
3	SD
4	NC
5	SG
6	NC
7	RS
8	CS
9	NC

Ground shielded wires either at the Amplifier Unit side or at the CIDRW side.

• Wiring for Connection to a PC/AT Computer (9-pin Connector)

The cable length should be no greater than 15 m.

Amplifier Unit V640-HAM11-V3 V640-HAM11-L D-SUB, 9-pin Socket type Metric screw, M2.6	
Name	Pin No.
NC	1
RD	2
SD	3
NC	4
SG	5
NC	6
RS	7
CS	8
NC	9



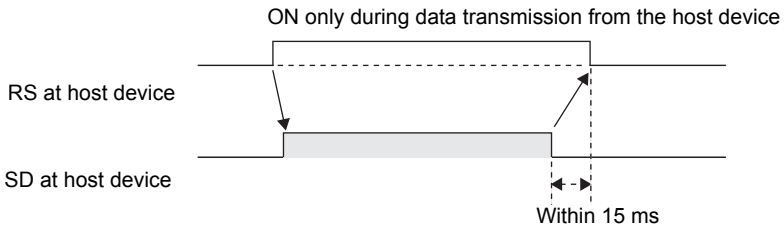
PC/AT Computer D-SUB, 9-pin Socket type #4-40	
Pin No.	Name
1	NC
2	RD
3	SD
4	NC
5	SG
6	NC
7	RS
8	CS
9	NC

Ground shielded wires either at the CIDRW Controller side or at the PC/AT side.

CHECK!

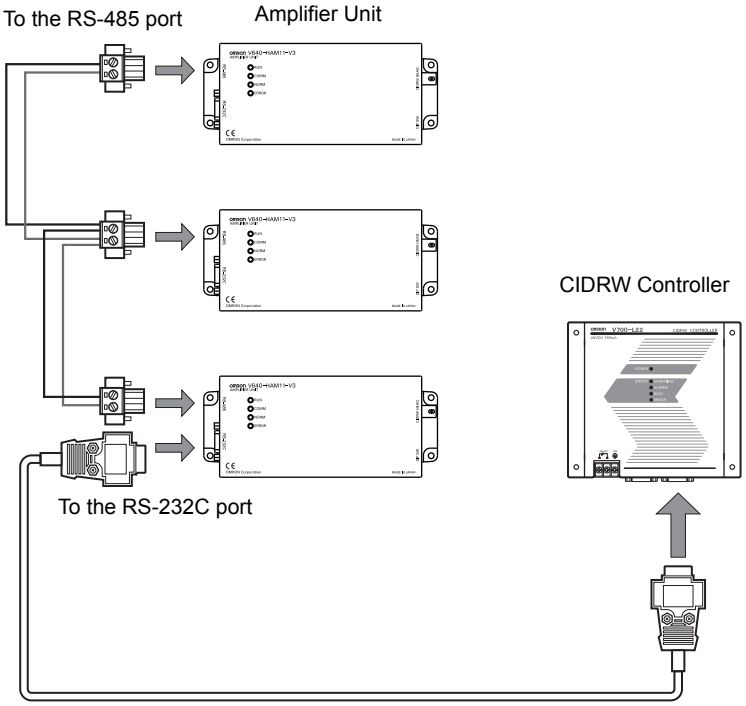
RS signal control method at the host device

In a 1:N connection, the RS signals generated from the host device by normal control must be input as CS signals. Turn the RS signals OFF within 15 ms after the completion of data transmission. Correct communications will not be possible without this control.



■ RS-485 Port

The method for connection to the RS-485 port of another Amplifier Unit when multiple CIDRW Heads are used is explained here.



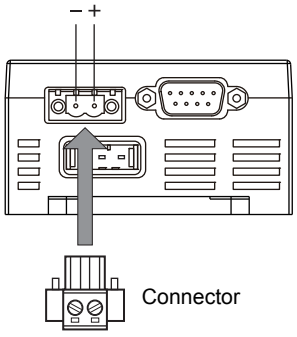
NOTICE The maximum total length of RS-485 cable is 50 m.

• Connector

Prepare a V640-A90 (can be purchased as an accessory) as the connector for the RS-485 port on the Amplifier Unit.

Refer to page 35.

The pin arrangement is shown below.



Name	Function
-	Connect to the minus line of another Amplifier Unit.
+	Connect to the plus line of another Amplifier Unit.

• Cable Information

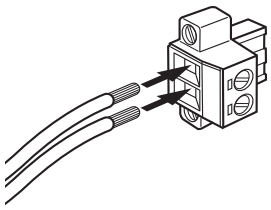
Recommended Models

		Manufacturer	Model
Cable	RS-485 signal wire	Tachii Electric Wire	MVVS 2CX0.5SQ
Crimp terminals	When one wire is connected to each terminal.	Phoenix Contact	AI0.5-8WH
	When two wires are connected to each terminal.		AI-TWIN2×0.5-8WH
Crimping tool			CRIMPFOX UD6

• Wiring Method

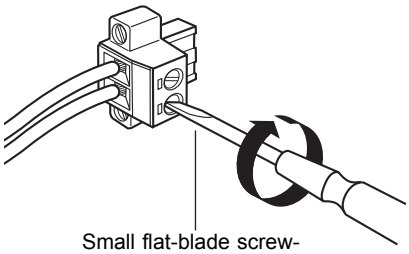
1. Attach crimp terminals to stripped portions of the cables.

2. Insert the wires into the correct holes in the connector, bearing the orientation of the connector in mind.



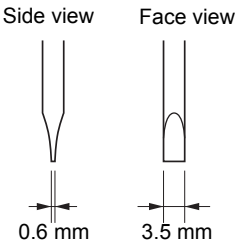
3. Tighten the set screws of the connector firmly to secure the cables.

The appropriate tightening torque is around 0.5 N·m.



Small flat-blade screwdriver with no taper

CHECK! A standard, tapered screwdriver will not enter all the way into the screw holes. Use a small gauge flat-blade screwdriver whose shaft and tip have the same thickness.

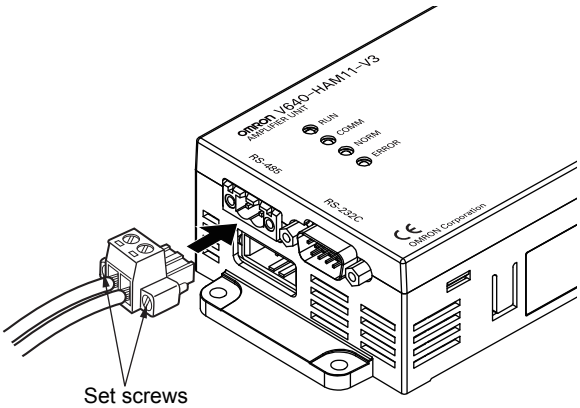


Recommended Screwdriver

Manufacturer	Model
OMRON	XW4Z-00C

4. Having fitted the connector to the cable, connect it to an Amplifier Unit.

Orient the cable connector correctly in relation to the connector on the Amplifier Unit, and fasten the cable connector by fully tightening the retaining screws.



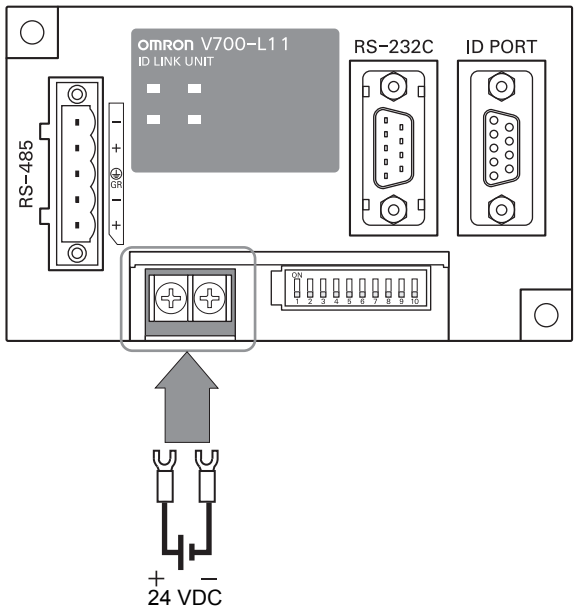
CHECK! Disconnecting the connector

Fully loosen the two screws, then grip the projections on the connector and pull it straight out. If it is difficult to pull the connector out, press down on the Amplifier Unit while pulling on the connector.

Link Unit

■ Power Supply

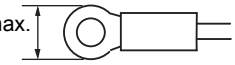
Opening the cover on the top face of the Link Unit exposes the power supply terminals.



• Crimp Terminals

The terminal screws on the terminal block are M3 size. Use appropriate crimp terminals for M3 screws as shown below.

Crimp Terminals

Shape	Size
Forked	 6 mm max.
Round	 6 mm max.

• Power Supply

Use a power supply that satisfies the following conditions.

Condition

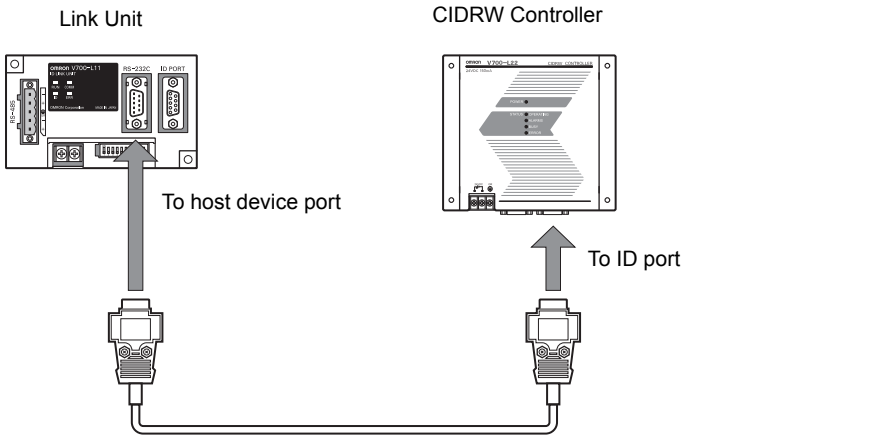
Power supply voltage	Output current	Safety standard
24 VDC +10%, -15%	500 mA DC min.	UL Class 2

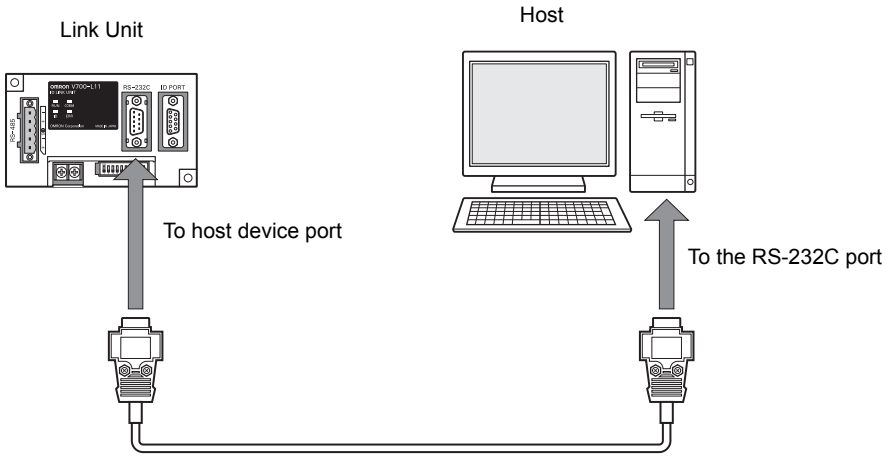
Recommended Model

Manufacturer	Model
OMRON	S82K-01524

■ Host Connection Port

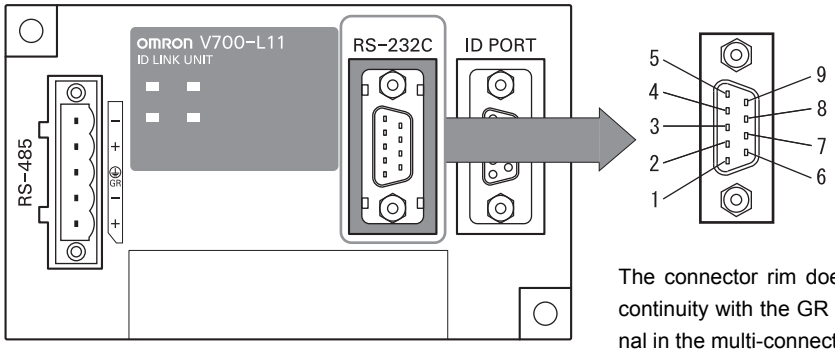
The method for connecting to a CIDRW Controller or host device via the RS-232C port is explained here.





• Connector

The host device connection port on the Link Unit is a D-SUB, 9-pin connector. The pin arrangement is shown below.



The connector rim does not have electrical continuity with the GR (frame ground) terminal in the multi-connection port.

Pin No.	Signal name	Symbol	Signal direction	Remarks
1	—	NC	—	Not connected
2	Receive data	RD	Input	
3	Send data	SD	Output	
4	—	NC	—	Not connected
5	Signal ground	SG	—	
6	—	NC	—	Not connected
7	Request send	RS	Output	Always ON during normal operation
8	Send enabled	CS	Input	
9	—	NC	—	Not connected

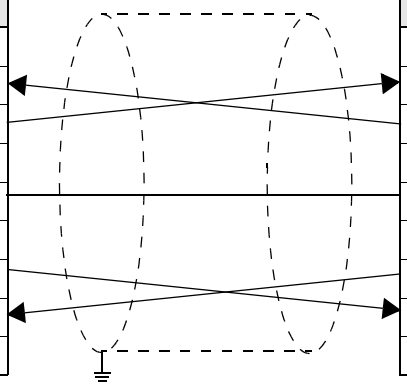
Recommended model

		Manufacturer	Model
Cable		Hitachi Cable	CO-MA-VV-SB 5PX28AWG
Connector	Socket	OMRON	XM2D-0901
	Hood		XM2S-0913

• Wiring for Connection to a CIDRW Controller

The cable length should be no greater than 15 m.

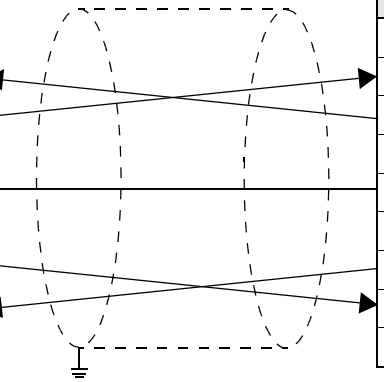
Link Unit V700-L11 D-SUB, 9-pin, female Socket type #4-40		CIDRW Controller V700-L22 D-SUB, 9-pin, female Socket type #4-40	
Name	Pin No.	Pin No.	Name
NC	1	1	NC
RD	2	2	RD
SD	3	3	SD
NC	4	4	NC
SG	5	5	SG
NC	6	6	NC
RS	7	7	RS
CS	8	8	CS
NC	9	9	NC



Ground shielded wires at the CIDRW Controller side.

• Wiring for Connection to a PC/AT Computer

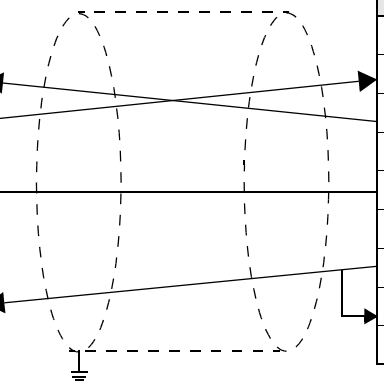
Link Unit V700-L11 D-SUB, 9-pin Socket type #4-40		PC/AT Computer D-SUB, 9-pin Socket type #4-40	
Name	Pin No.	Pin No.	Name
NC	1	1	NC
RD	2	2	RD
SD	3	3	SD
NC	4	4	NC
SG	5	5	SG
NC	6	6	NC
RS	7	7	RS
CS	8	8	CS
NC	9	9	NC



Ground shielded wires at the PC/AT computer side.

If the CS function is to be used at the PC/AT computer side, a return wire is required.

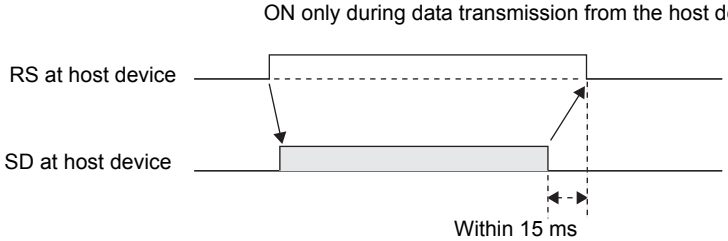
Link Unit V700-L11 D-SUB, 9-pin Socket type #4-40		PC/AT Computer D-SUB, 9-pin Socket type #4-40	
Name	Pin No.	Pin No.	Name
NC	1	1	NC
RD	2	2	RD
SD	3	3	SD
NC	4	4	NC
SG	5	5	SG
NC	6	6	NC
RS	7	7	RS
CS	8	8	CS
NC	9	9	NC



Ground shielded wires at the PC/AT computer side.

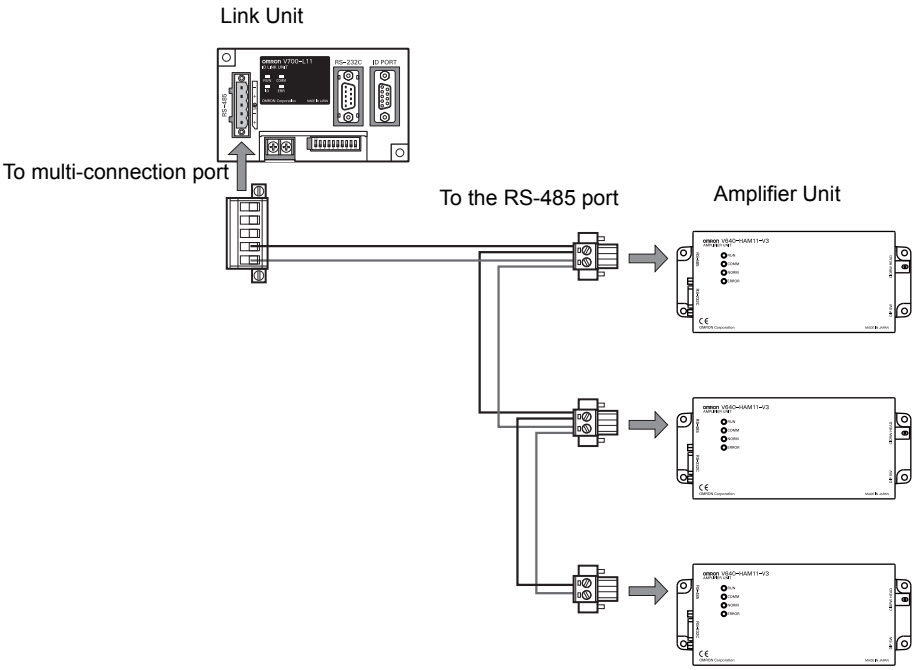
RS signal control method at the host device

In a 1:N system using Link Units, the RS signals generated from the host device by normal control must be input as CS signals. Turn the RS signals OFF within 15 ms after the completion of data transmission. Correct communications will not be possible without this control.

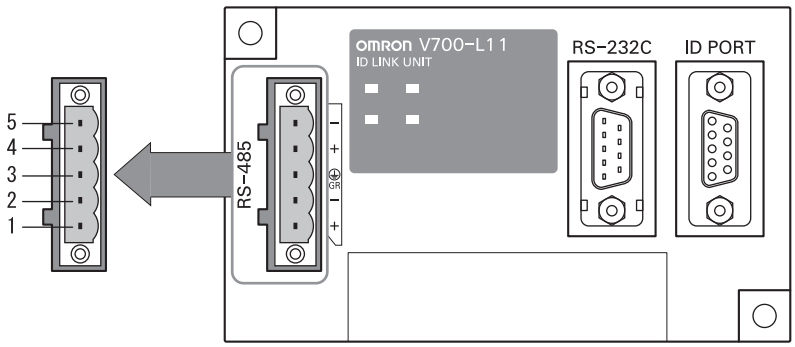


■ Multi-connection Port

The method for connecting to an Amplifier Unit is explained here.



• Connector



Pin No.	Name	Function
5	-	No wiring is required. (Short with terminal 2 within the circuit)
4	+	No wiring is required. (Short with terminal 1 within the circuit)
3	GR	Ground to 100 Ω or less.
2	-	Connect to the minus line of the Amplifier Unit.
1	+	Connect to the plus line of the Amplifier Unit.

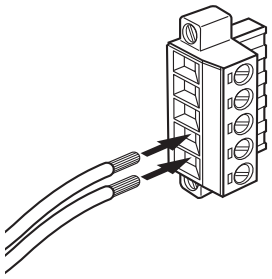
• Cable

Recommended Models

		Manufacturer	Model
Cable	RS-485 signal wire	Tachii Electric Wire	MVVS 2CX0.5SQ
	Frame ground line	AWG22 to AWG20 cable	
Crimp terminals	When one wire is connected to each terminal.	Phoenix Contact	AI0.5-8WH
	When two wires are connected to each terminal.		AI-TWIN2×0.5-8WH
Crimping tool			CRIMPFOX UD6

• Wiring Method

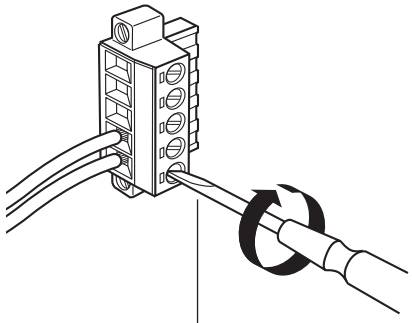
1. Attach crimp terminals to stripped portions of the cables.



2. Insert the wires into the correct holes in the connector, bearing the orientation of the connector in mind.

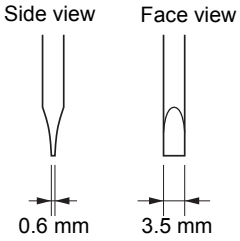
3. Tighten the set screws of the connector firmly to secure the cables.

The appropriate tightening torque is around 0.5 N·m.



Small gauge flat-blade screwdriver with no taper

CHECK! A standard, tapered screwdriver will not enter all the way into the screw holes. Use a small gauge flat-blade screwdriver whose shaft and tip have the same thickness.

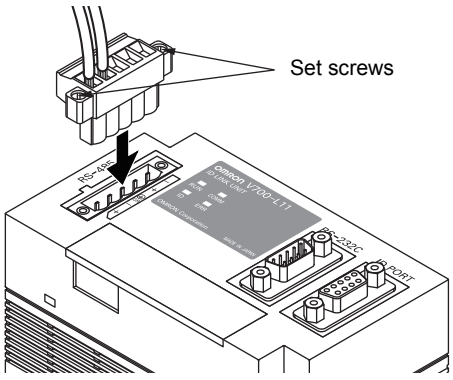


Recommended screwdriver

Manufacturer	Model
OMRON	XW4Z-00C

4. Having fitted the connector to the cable, connect it to the Link Unit.

Orient the cable connector correctly in relation to the connector on the Link Unit, and fasten the cable connector by fully tightening the retaining screws.

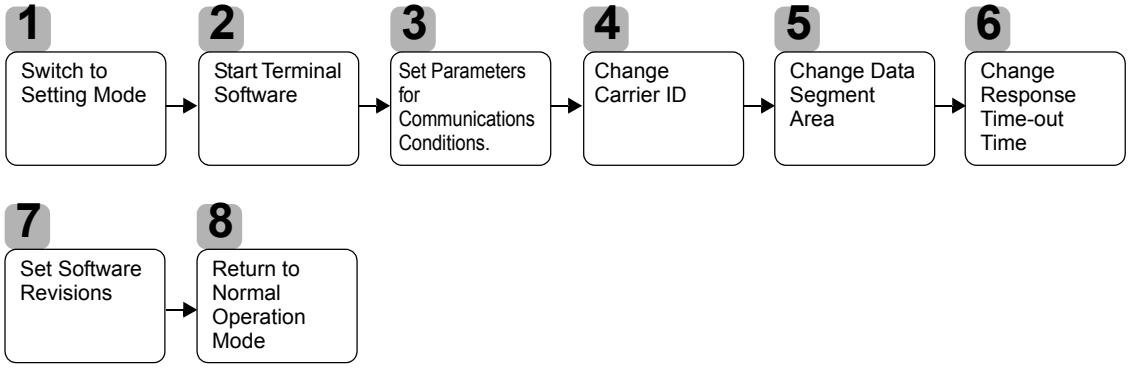


CHECK! Disconnecting the connector
Fully loosen the two screws, then grip the projections on the connector and pull it straight out. If it is difficult to pull the connector out, press down on the Link Unit while pulling on the connector.

SECTION 3
Preparing for Communications

Setting the Communications Conditions for the CIDRW Controller

Set the communications conditions of the CIDRW Controller only when SECS is used.



1 Switch to Setting Mode

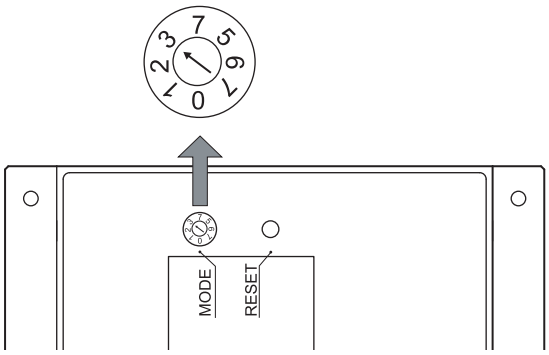
The CIDRW Controller has two operating modes, the Normal Operation mode and the Setting mode. Switch to the Setting mode to set the communications conditions.
There are two methods for switching the mode. Use the one that is appropriate for the circumstances.

■ Changing the Position of the Mode Switch on the Bottom of the Unit

This is the convenient method for setting before mounting the Unit.

1. Turn OFF the power to the CIDRW Controller.

2. Set the mode switch on the bottom of the Unit to 3.



3. When all of the devices to be used are connected, turn the power ON.

The system starts up in the Setting mode, and the indicators react as shown below.

OPERATING	ALARMS	BUSY	ERROR
			

■ Sending a Switching Command from the Host Device

This method is convenient when the Unit has already been mounted and the switch on the bottom cannot be repositioned to 3.

During operation in the Normal Operation mode, a command is sent from the host device to switch to the Setting mode.

---

1. Send a subsystem command (S18F13 ChangeState CPVAL1 = "PS") from the host device.

 Refer to page 77.


CHECK!

CPVAL1="PS" is an expansion designation unique to V700-L22 and does not conform to SEMI standards.

The system is automatically restarted and the mode switches to the Setting mode.
The operation indicators react as shown below.

OPERATING	ALARMS	BUSY	ERROR
			

2 Start Terminal Software

Use terminal software at the host device to set the CIDRW Controller.


CHECK!

The commands and communications conditions in the setting mode are unique to OMRON. They do not conform to the SEMI standards. For the terminal software, use Hyper Terminal, which is standard with Windows, or a similar program.

The communications conditions for communications between the host device and CIDRW Controller are fixed. Make the following settings using the terminal software.

Item	Setting
Baud rate	9600 bps
Data length	8 bits
Parity	EVEN
Stop bits	1
Communications control	None
Send code	At the end of a line (when [ENTER] is input), the line feed characters ([LF]) are appended.
Display	Local echo

3 Set Parameters for Communications Conditions

Specify the parameters whose settings are to be changed from the terminal software of the host device. The commands, and the parameters that can be set are indicated below.

List of Commands

Designation	Command Input	Explanation
Parameter designation	(Tag name) = (Set value) <CRLF>	Specify the parameter value corresponding to the tag name.
Parameter confirmation	::END	Checks the parameter designations that have been received so far and, if there is no error, confirms the settings.
Comment	# (Comment) <CRLF> or CRLF	This is ignored as the comment line.

Tag Name List

Classification	Parameter	Tag name	Setting range	Default setting
Protocol	Baud Rate	S_BAUD	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps	9600 bps
	Device ID	S_DEVID	0 to 32767	0
	Time-out between characters	S_T1	0.1 to 10 s	0.5 s
	Protocol time-out	S_T2	0.2 to 25 s	10 s
	Response time-out	S_T3	1 to 120 s	45 s
	Time-out between blocks	S_T4	1 to 120 s	45 s
	Retry limit	S_RTY	0 to 31	3
	Master/slave	S_MS	M: Master S: Slave	M
SECS	Double block detection yes/no	S_DB	1: The header of the block currently being received is compared with the correct block received immediately before, and double blocks are detected. 0: Double block detection is not performed.	0
	Source ID	S_SRC	0 to 32767	0
	Single block No.	S_BNO	0, 1	1
Operation	Baud rate for communications with Amplifier Unit/Link Unit	C_BAUD	9600, 19200, 38400 bps Use a consistent baud rate setting within the same system configuration.	9600 bps
	Number of Heads count processing	C_HEAD	0 to 31 0: The number of Heads is automatically detected at the start. Any increase or decrease in the number of Heads is automatically detected. 1 to 31: The number of Heads is specified. The number of Heads detected is compared with this specified number of Heads. If the number of Heads changes, for example because a Head fails, an error (with alarm) is detected. If a Head is not connected or an error is detected with a connected Head, so that the number of Heads does not match the specified number, an error (with alarm) is detected.	0


CHECK!

The setting mode commands do not conform to SEMI standards.
For the terminal software, use Hyper Terminal, which is standard with Windows, or a similar program.

1. Specify the parameters to be changed.

When the first parameter is specified, the ALARMS indicator flashes.

```
S_BAUD=19200
S_DEVID=1
S_BNO=0
_
```

2. Confirm the parameter change.

The input parameter is checked and written.

```
::END
_
```

When writing is completed, a message indicating the result is displayed. The ALARMS indicator lights.

When writing is completed without error

```
SETUP_COMPLETE
_
```

If writing is completed with an error, the parameters are not updated. The figure in square brackets [ ] indicates the line number where the error was first detected. If a parity error is detected in the received characters, this figure is [0]. Check the sent data based on this information.

When writing is completed with an error

```
SETUP_FAILED [2]_
```


CHECK!

A text file is created based on the data that is keyed in, as shown below, and this data can be conveniently transmitted using the terminal's text file send function.

Example: PRM.TXT

```
#Parameter Setting File for SystemA
#Protocol
S_BAUD=19200
S_DEVID=1
#SECS
S_BNO=0
::END
```

■ Check for Correct Setting

The currently set data can be output so that you can check if it is correct.

1. Send the parameter output command "::GET_PARAM" from the host device.

```
::GET_PARAM
```

The current communications parameter settings are displayed.

```
S_BAUD=19200
S_DEVID=1
S_T1=0.5
S_T2=10.0
S_T3=45
S_T4=3
S_RTY=3
S_MS=M
S_SRC=0
S_BNO=0
C_BAUD=9600
C_HEAD=0
::END
_
```


4 Change Carrier ID

To read the carrier ID, the CID has to be specified within the area where the carrier ID can be set (CarrierIDField) within the ID Tag memory. This section explains the procedure for setting the carrier ID offset (attribute name: CarrierIDOffset) and the carrier ID size (bytes) (attribute name: CarrierIDLength) in the memory map of the ID Tag.
The commands, and the parameters that can be set, are given below.

List of Commands

Designation	Command input	Explanation
Parameter designation	(Tag name) = (Set value) <CRLF>	Specify the parameter value corresponding to the tag name.
Parameter confirmation	::END	Checks the parameter designations that have been received so far and, if there is no error, confirms the settings.
Comment	# (Comment) <CRLF> or CRLF	This is ignored as the comment line.

Tag Name List

Parameter	Tag name	Setting range	Default setting
Carrier ID offset	CIDOF	0 to 15	0
Carrier ID size (bytes)	CIDLN	01 to 16	16

CHECK!

- Settings that exceed the carrier ID area (*) cannot be made. If such a setting is made, an error occurs.
  *: (CIDOF+CIDLN) ≤ T_CIDLEN
- The Carrier ID offset and carrier ID size (bytes) can only be changed in the L22 mode. They cannot be changed in the L21 mode. When you change from the L22 mode to the L21 mode, the carrier ID offset and carrier ID size (bytes) are returned to their initial settings.

1. Specify the parameters to be changed.
When the first parameter is specified, the ALARMS indicator flashes.

```
CIDOF=0
CIDLN=16
```

2. Confirm the parameter change.
The input parameter is checked and written.

```
::END
_
```

■ Check for Correct Setting

The currently set data can be output so that you can check if it is correct.

1. Send the parameter output command "::GET_E99SYS" from the host device.

```
::GET_E99SYS
```

The carrier ID settings are displayed.

```
RT=10.0
CT=0.1
RTY=3
DINST=
MENT=
MODEL=L22
HREV=001.04
CIDOF=00
CIDLN=16
::END
_
```

NOTICE Do not change operation parameters other than RT, CIDOF, and CIDLN.
This can cause the system to stop operating correctly.

5 Change Data Segment Area

The data segment area (memory map) must be changed to communicate with ID Tags (RI-TRP-DR2B, made by Texas Instruments). The procedure for changing the data segment area is explained here.
ID Tag Memory Maps Refer to page 147.

The commands, and the parameters that can be set, are indicated below.

List of Commands

Designation	Command input	Explanation
Parameter designation	(Tag name) = (Set value) <CRLF>	Specify the parameter value corresponding to the tag name.
Parameter confirmation	::END	Checks the parameter designations that have been received so far and, if there is no error, confirms the settings.
Comment	# (Comment) <CRLF> or CRLF	This is ignored as the comment line.

Tag Name List

Parameter	Tag name	Setting range	Default setting
Number of bytes in the carrier ID	T_CIDLEN	16 (fixed) The setting must maintain the following relationship (CIDOF + CIDLN) ≤ T_CIDLEN	16
Segment name	T_SEGN	"S01" to "S99"	"S01" to "S28"
Number of bytes in a segment	T_SEGL	8 (fixed)	8

1. The form of the input from the host device is shown in the figure to the right.

When the first parameter is specified, the ALARMS indicator flashes.

```
T_CIDLEN=16
T_SEGN=S01
T_SEGL=8
T_SEGN=S02
T_SEGL=8
T_SEGN=S03
T_SEGL=8
T_SEGN=S04
T_SEGL=8
T_SEGN=S05
T_SEGL=8
T_SEGN=S06
T_SEGL=8
T_SEGN=S07
T_SEGL=8
T_SEGN=S08
T_SEGL=8
T_SEGN=S09
T_SEGL=8
T_SEGN=S10
T_SEGL=8
T_SEGN=S11
T_SEGL=8
T_SEGN=S12
T_SEGL=8
T_SEGN=S13
T_SEGL=8
T_SEGN=S14
T_SEGL=8
T_SEGN=S15
T_SEGL=8
_
```

2. Confirm the parameter change.

The input parameter is checked and written.

```
::END
_
```

When writing is completed, a message indicating the result is displayed.
The ALARMS indicator lights.

When writing is completed without error

```
SETUP_COMPLETE
_
```

If writing is completed with an error, the parameters are not updated.
The figure in square brackets [ ] indicates the line number where the error was first detected. If a parity error is detected in the received characters, this figure is [0].
Check the sent data based on this information.

When writing is completed with an error

```
SETUP_FAILED [2]_
```

■ Check for Correct Setting

The currently set data can be output so that you can check if it is correct.

1. Send the parameter output command "::GET_SEG" from the host device.

```
::GET_SEG
```

The data segment area is displayed.

```
T_CIDLEN=16
T_SEGN=S01
T_SEGL=8
T_SEGN=S02
T_SEGL=8
T_SEGN=S03
T_SEGL=8
T_SEGN=S04
T_SEGL=8
T_SEGN=S05
T_SEGL=8
T_SEGN=S06
T_SEGL=8
T_SEGN=S07
T_SEGL=8
T_SEGN=S08
T_SEGL=8
T_SEGN=S09
T_SEGL=8
T_SEGN=S10
T_SEGL=8
T_SEGN=S11
T_SEGL=8
T_SEGN=S12
T_SEGL=8
T_SEGN=S13
T_SEGL=8
T_SEGN=S14
T_SEGL=8
T_SEGN=S15
T_SEGL=8
::END
_
```

6 Change Response Time-out Time

In the initial settings of the CIDRW Controller, when ID Tag (RI-TRP-DR2B, made by Texas Instruments) data is read or written, a response time-out may occur. Be sure to set the response time-out time to 10 s.
The commands, and the parameters that can be set are indicated below.

List of Commands

Designation	Command input	Explanation
Parameter designation	(Tag name) = (Set value) <CRLF>	Specify the parameter value corresponding to the tag name.
Parameter confirmation	::END	Checks the parameter designations that have been received so far and, if there is no error, confirms the settings.
Comment	# (Comment) <CRLF> or CRLF	This is ignored as the comment line.

Tag Name List

Parameter	Tag name	Setting range	Default setting
Response time-out time	RT	10.0 (fixed)	2.5

1. Set the response time-out time to 10.0.

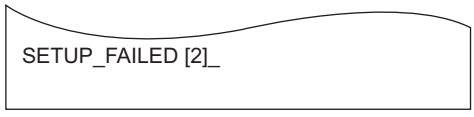
2. Confirm the parameter change.
The input parameter is checked and written.

When writing is completed, a message indicating the result is displayed.
The ALARMS indicator lights.

When writing is completed without error

If writing is completed with an error, the parameters are not updated.
The figure in square brackets [ ] indicates the line number where the error was first detected. If a parity error is detected in the received characters, this figure is [0].
Check the sent data based on this information.

When writing is completed with an error



■ Check for Correct Setting

The currently set data can be output so that you can check if it is correct.

1. Send the parameter output command "::GET_E99SYS" from the host device.

```
::GET_E99SYS
```

The current operation parameter settings are displayed.

```
RT=10.0
CT=0.1
RTY=3
DINST=
MENT=
MODEL=L22
HREV=001.04
CIDOF=00
CIDLN=16
::END
_
```

NOTICE Do not change operation parameters other than RT, CIDOF, and CIDLN.
This can cause the system to stop operating correctly.

7 Set Software Revisions

The operations of the V700-L22 can be changed to match those of the previous model, the V700-L21. The commands, and the parameters that can be set are indicated below.

List of Commands

Designation	Command input	Explanation
Parameter designation	(Tag name) = (Set value) <CRLF>	Specify the parameter value corresponding to the tag name.
Parameter confirmation	::END	Checks the parameter designations that have been received so far and, if there is no error, confirms the settings.
Comment	# (Comment) <CRLF> or CRLF	This is ignored as the comment line.

Tag Name List

Parameter	Tag name	Setting range	Default setting
Software revision	RVER	2.00: in V700-L22 mode 1.10: in V700-L21 mode	2.00

1. Specify the parameters to be changed.
When the first parameter is specified, the ALARMS indicator flashes.

```
RVER=1.10
```

2. Confirm the parameter change.
The input parameter is checked and written.

```
::END
_
```

■ Check for Correct Setting

The currently set data can be output so that you can check if it is correct.

1. Send the parameter output command "::GET_VER" from the host device.

```
::GET_VER
```

The software revision settings are displayed.

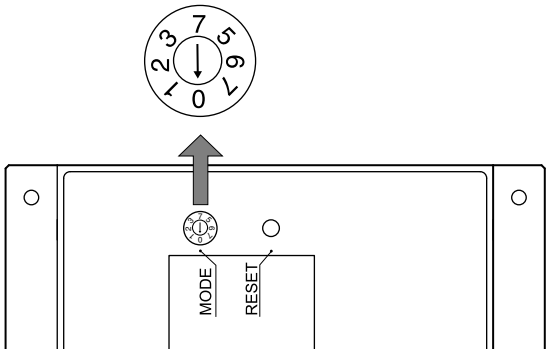
```
RVER=1.10
::END
_
```


8 Return to Normal Operation Mode

■ When the Mode is Selected with the Mode Switch on the Bottom of the Unit

1. Turn OFF the power to the CIDRW Controller.

2. Set the mode switch on the bottom of the Unit to the 0.



3. When all of the devices to be used are connected, turn the power ON.
Start up in the Normal Operation mode.

CHECK! Even if you restart with the mode switch left at the 3 position, or send a reset command "::EXIT," the Controller will start in the Setting mode. To switch to Normal Operation mode, you must set the mode switch to 0.

■ When the Mode Is Selected by a Command Sent from the Host Device

1. Either send the reset command "::EXIT" from the host device or turn the power to the CIDRW Controller OFF and then back ON.
Start up in the Normal Operation mode.

```
::EXIT
_
```

Reference:

List of Commands

Designation	Command input	Explanation
Parameter designation	(Tag name) = (Set value) <CRLF>	Specify the parameter value corresponding to the tag name.
Parameter confirmation	::END	Checks the parameter designations that have been received so far and, if there is no error, confirms the settings.
Comment	# (Comment) <CRLF> or CRLF	This is ignored as the comment line.
Parameter output	::GET_PARAM	Outputs the set parameters (protocol, SECS, operation).
	::GET_SEG	Outputs the set parameters (ID Tag memory map).
	::GET_E99SYS	Outputs the set parameters (operations).
	::GET_VER	Outputs the set parameters (software revision).
RESET	:EXIT	Restarts the CIDRW Controller.

Tag Name List

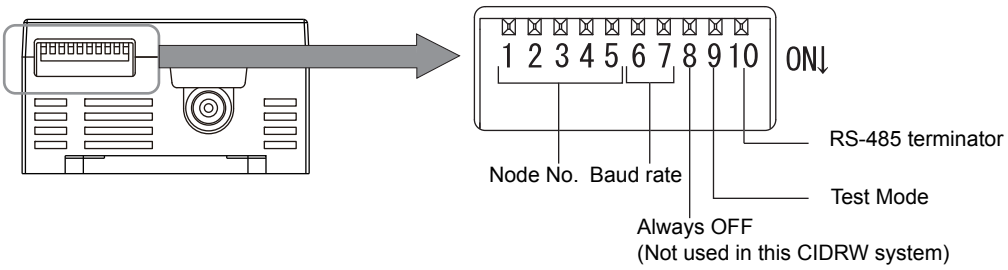
Classification	Parameter	Tag name	Setting range	Default setting
Protocol	Baud Rate	S_BAUD	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps	9600 bps
	Device ID	S_DEVID	0 to 32767	0
	Time-out between characters	S_T1	0.1 to 10 s	0.5 s
	Protocol time-out	S_T2	0.2 to 25 s	10 s
	Response time-out	S_T3	1 to 120 s	45 s
	Time-out between blocks	S_T4	1 to 120 s	45 s
	Retry limit	S_RTY	0 to 31	3
	Master/slave	S_MS	M: Master S: Slave	M
SECS	Double block detection yes/no	S_DB	1: The header of the block currently being received is compared with the correct block received immediately before, and double blocks are detected. 0: Double block detection is not performed.	0
	Source ID	S_SRC	0 to 32767	0
	Single block No.	S_BNO	0, 1	1
Operation	Baud rate for communications with Amplifier Unit/Link Unit	C_BAUD	9600, 19200, 38400 bps Use a consistent baud rate setting within the same system configuration.	9600 bps
	Number of Heads count processing	C_HEAD	0 to 31 0: The number of Heads is automatically detected at the start. Any increase or decrease in the number of Heads is automatically detected. 1 to 31: The number of Heads is specified. The number of Heads detected is compared with this specified number of Heads. If the number of Heads changes, for example because a Head fails, an error (with alarm) is detected. If a Head is not connected or an error is detected with a connected Head, so that the number of Heads does not match the specified number, an error (with alarm) is detected.	0
ID Tag	Number of bytes in the carrier ID	T_CIDLEN	16 (fixed)	16
	Segment name	T_SEGN	“S01” to “S99”	“S01” to “S28”
	Number of bytes in a segment	T_SEGL	8 (fixed)	8

Tag Name List

Classification	Parameter	Tag name	Setting range	Default setting
E99	Response timeout time	RT	10.0 s (fixed)	2.5 s
	Carrier ID offset	CIDOF	00 to 15	00
	Carrier ID length	CIDLEN	01 to 16	16

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.



Node No.

Node No.	DIP-SW				
	1	2	3	4	5
01	OFF	OFF	OFF	OFF	OFF
02	ON	OFF	OFF	OFF	OFF
03	OFF	ON	OFF	OFF	OFF
04	ON	ON	OFF	OFF	OFF
05	OFF	OFF	ON	OFF	OFF
06	ON	OFF	ON	OFF	OFF
07	OFF	ON	ON	OFF	OFF
08	ON	ON	ON	OFF	OFF
09	OFF	OFF	OFF	ON	OFF
10	ON	OFF	OFF	ON	OFF
11	OFF	ON	OFF	ON	OFF
12	ON	ON	OFF	ON	OFF
13	OFF	OFF	ON	ON	OFF
14	ON	OFF	ON	ON	OFF
15	OFF	ON	ON	ON	OFF
16	ON	ON	ON	ON	OFF

Node No.	DIP-SW				
	1	2	3	4	5
17	OFF	OFF	OFF	OFF	ON
18	ON	OFF	OFF	OFF	ON
19	OFF	ON	OFF	OFF	ON
20	ON	ON	OFF	OFF	ON
21	OFF	OFF	ON	OFF	ON
22	ON	OFF	ON	OFF	ON
23	OFF	ON	ON	OFF	ON
24	ON	ON	ON	OFF	ON
25	OFF	OFF	OFF	ON	ON
26	ON	OFF	OFF	ON	ON
27	OFF	ON	OFF	ON	ON
28	ON	ON	OFF	ON	ON
29	OFF	OFF	ON	ON	ON
30	ON	OFF	ON	ON	ON
31	OFF	ON	ON	ON	ON
1:1 protocol	ON	ON	ON	ON	ON

Always set node numbers that are unique within the system configuration. When SECS is used, the node number set here is "HeadID(E99)."

Baud Rate

Option	DIP-SW		Description
	6	7	
38400 bps	ON	ON	Use a consistent baud rate setting within the same system configuration.
19200 bps	OFF	ON	
9600 bps (default setting)	OFF	OFF	
4800 bps	ON	OFF	

Test Mode

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

RS-485 Terminator

Option	DIP-SW	Description
	10	
Invalid	OFF	Set ON at both of the end Units in a multidrop system, and OFF at all the other Units. If there is only one Unit, set ON. If there is a possibility that one of multiple Amplifier Units in use may be used independently, turn the terminators of all the Amplifier Units OFF and fit external terminators close to the Units at both ends.
Valid	ON	

Communications Conditions

Item		Specifications				
Standard conformed to		RS-232C				
Communications control protocol		1:N protocol exclusive to OMRON				
Synchronization method		Start-stop synchronization				
Baud rate		Set using a DIP switch				
Frame composition		Start bit	Data bits	Parity bit	Stop bit	Total
	1:N protocol	1	8	None	1	10
	1:1 protocol	1	8	Even	1	11
Error detection	1:N protocol	FCS (frame check sequence)				
	1:1 protocol	Vertical parity				

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.

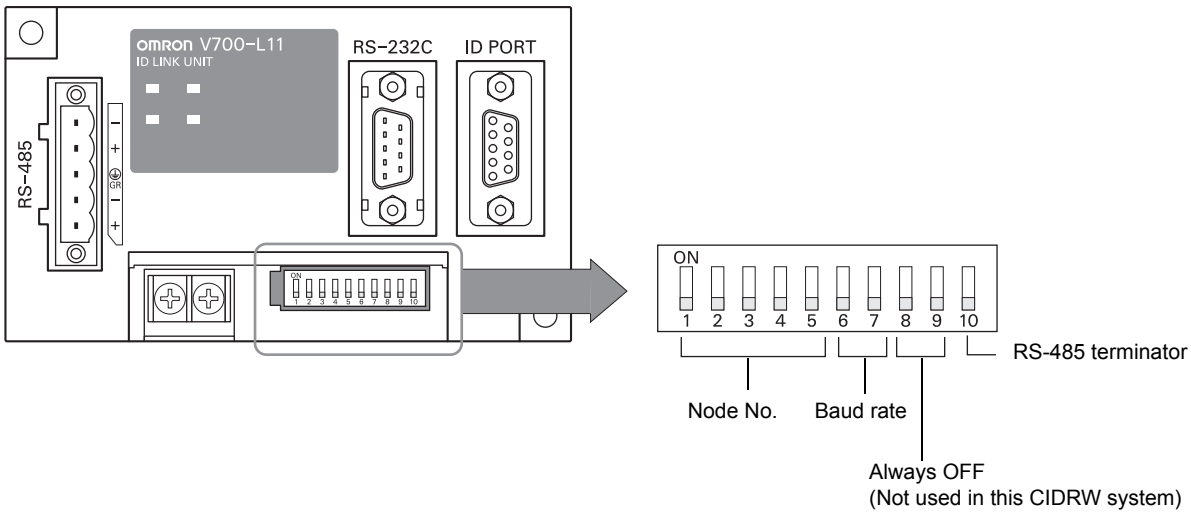
CHECK! Refer to *V640-HAM11-V3 and V640-HAM11-L Amplifier Units* for information on the OPERATING indicator for communications results.
page 18

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.

Setting the Communications Conditions for Link Units

Set the communications conditions by setting the DIP switches.



Node No. (fixed)

DIP-SW				
1	2	3	4	5
ON	ON	ON	ON	ON

CHECK! The node numbers for Link Units are fixed. Check that DIP switches 1to 5 are all ON.

Baud Rate

Option	DIP-SW		Description
	6	7	
38400 bps	ON	ON	Use a consistent baud rate setting within the same system configuration.
19200 bps	OFF	ON	
9600 bps (default setting)	OFF	OFF	
4800 bps	ON	OFF	

RS-485 Terminator

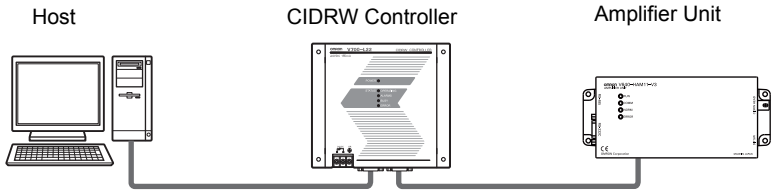
Option	DIP-SW	Description
	10	
Invalid	OFF	Set ON.
Valid	ON	

Communications Test

Communications Test with the Host Device

Check if the host device, CIDRW Controller, and Amplifier Units are correctly connected.

■ When SECS Is Used



- Connection between host device and CIDRW Controller

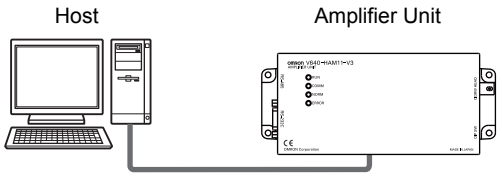
  Send **Are You There Request** message "S1, F1" from the host device.
  If it is correctly connected, **On Line Data** “S1, F2” will be sent from the CIDRW Controller.

- Connection between the CIDRW Controller and Amplifier Unit

  The connection between the CIDRW Controller and Amplifier Unit is checked automatically. If they are connected correctly, the operation indicators on the CIDRW Controller light in the manner shown below.

POWER	OPERATING	ALARMS	BUSY	ERROR
☼	☼	●	●	●

■ When SECS Is Not Used



Node No.1 is tested with the data 12345678.

• 1:1 Protocol

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

• 1:N Protocol

Command

SOH	Node No.		Command code		Test data								FCS		CR
					Data 1		Data 2		Data 3		Data 4				
01h	0	1	1	0	1	2	3	4	5	6	7	8	0	8	0Dh

Response

SOH	Node No.		Response code		Test data								FCS		CR
					Data 1		Data 2		Data 3		Data 4				
01h	0	1	0	0	1	2	3	4	5	6	7	8	0	9	0Dh

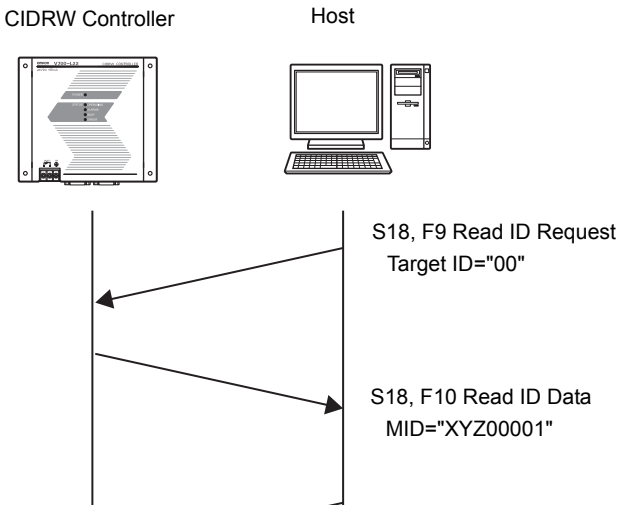
Communications Test between ID Tags and CIDRW System

Send a command from the host device and check that normal communications with the ID Tag is possible.

■ When SECS Is Used

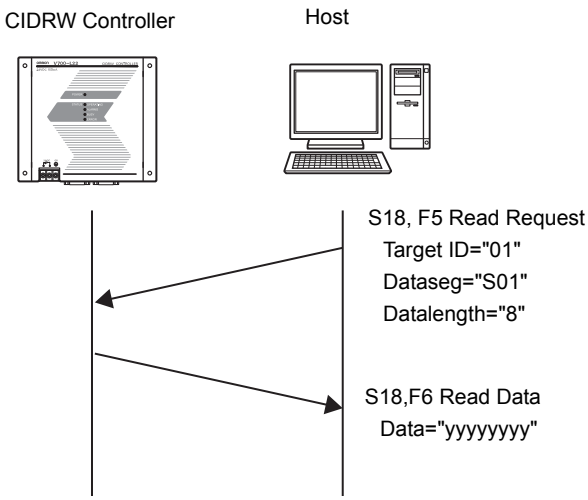
• Read ID

The host device sends a **Read ID Request** message to the CIDRW Controller for Head 1. The CIDRW Head 1 reads the ID, and the CIDRW Controller returns the ID to the host device.



• Read Data

The host device sends a **Read Data Request** message to the CIDRW Controller for Head 1, DataSeg S01 and Datalength 8. The CIDRW Head 1 reads the data, and the CIDRW Controller returns the data to the host device.

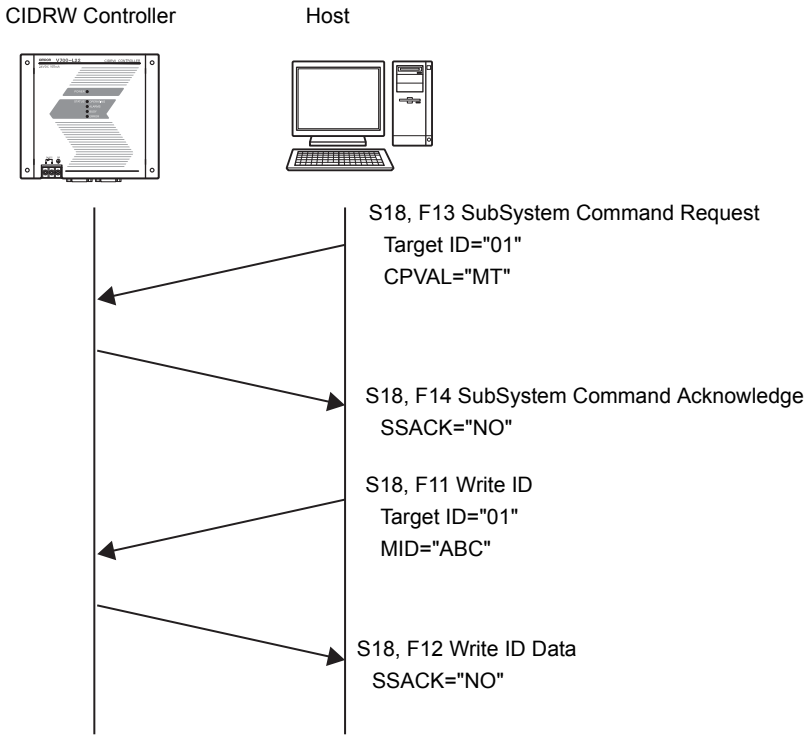


• Write ID

(1) The CIDRW Controller is in IDLE. The host device requests the CIDRW Controller change its operational status to MAINTENANCE.

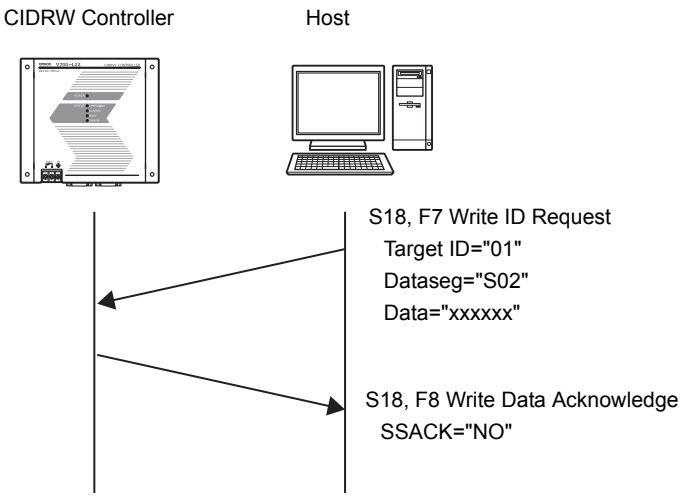
(2) The CIDRW Controller changes to MAINTENANCE and replies that it has changed state.

(3) The host device sends a **Write ID Request** message to the CIDRW Controller for Head 1. The CIDRW Head 1 writes ID, and the CIDRW Controller returns the ID to the host devices.



• Write Data

The host device sends a **Write Data Request** message to the CIDRW Controller for Head 1 and Data-Seg S02. The CIDRW Head 1 writes the data, and the CIDRW Controller returns the results to the host device.



■ When SECS Is Not Used

• Read

Reading the page 1 and page 3 data of node No.1:

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

SOH	Node No.		Command code				Page designation								FCS		CR
01h	0	1	0	1	0	0	0	0	0	0	0	0	1	4	0	5	0Dh

Binary notation

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	0	1	0	1	0	0

Response

SOH	Node No.		Response code		Page 1																Page 3																FCS		CR
01h	0	1	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	0	7	0Dh

• Write

Writing data to page 8 and page 10 of node No.1:

Command

SOH	Node No.		Command code				Page designation								Data of page 8																Data of page 10																FCS		CR
01h	0	1	0	2	0	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	7	4	0Dh

Binary notation

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	0	0

Response

SOH	Node No.		Response code		FCS		CR
01h	0	1	0	0	0	1	0Dh

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

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