OMRON

CIDRW SYSTEM

V640 SERIES

USER'S MANUAL

AMPLIFIER UNIT

V640-HAM11

CIDRW HEAD

V640-HS61

CIDRW CONTROLLER

V700-L21

LINK UNIT

V700-L11

Cat. No. Z167-E1-01

Special or Critical Applications

When the CIDRW System will be used in one of the conditions or applications listed below, allow extra safety margins in ratings and functions, add extra safety feature such as fail-safe systems, and consult your OMRON representative.

- Operating conditions or environments which are not described in the manual.
- Nuclear power control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement equipment, or safety equipment.
- Other systems, machines, and equipment that may have a serious influence on lives and property and require extra safety features.

Product Availability

Some of the products listed may not be available in some countries. Please contact your nearest OMRON sales office by referring to the addresses provided at the back of this manual.

CIDRW System

V640-HAM11 Amplifire Unit
V640-HS61 CIDRW Head
V700-L21 CIDRW Controller
V700-L11 Link Unit

User's Manual

Table of Contents

General Safety Precautions

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.
The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

⚠ **DANGER**
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING**
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **Caution**
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury, or property damage.

⚠ **WARNING**
Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product, or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given.

⚠ Caution

To ensure safety, observe the following points.

⚠ **Caution** • Do not insert water or wires through gaps in the case. This could cause fire or electric shock.
⚠ **Caution** • In the event of a malfunction, stop using the product immediately, turn off the power, and consult your OMRON dealer.
⚠ **Caution** • Dispose of this product as industrial waste.

Notice

The CIDRW System is highly reliable and resistant to most environmental factors. The following guidelines, however, must be followed to ensure reliability and optimum use of the CIDRW System.

■ 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. Note that 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. Note the information in this manual on mutual interference when installing multiple heads.

Refer to page 105.

■ 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.

■ 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

- Do not use organic solvents such as thinner or benzene.

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 Communications Standard.

Applicable Standards

1. FCC Rules (Federal Communications Commission)

This device complies with Part 15 Subpart C of the FCC Rules.
FCC ID: E4E6CYCID6400202
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.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
Properly shielded and grounded cables and connectors must be used for connection to host computer and/or peripherals in order to meet FCC emission limits.

CAUTION

This device must be professionally installed.
This CIDRW Head [Model: V640-HS61 (-X)] is dedicated to Amplifier Unit [Model: V640-HAM11 (-X)].

2. EC Declaration of Conformity

Hereby, Omron, declares that this V640(-X) is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC, and satisfy tests for the appropriate requirements of the following relevant standards.

Radio: EN300 330 V1.2.1 (May 1999)

EMC: EN301 489-3 (EN301 489-1)

Safety: EN61010-1: 1993+A2

Countries of intended use:

Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom

English	Hereby, Omron, declares that this V640(-X) is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Finnish	*Omron* vakuuttaa täten että V640(-X) tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Dutch	Hierbij verklaart Omron dat het toestel V640(-X) 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(-X) est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE
Swedish	Härmed intygar Omron att denna V640(-X) 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(-X) overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF
German	Hiermit erklärt Omron, dass sich *dieser/diese/dieses* V640(-X) in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi)
Italian	Con la presente Omron dichiara che questo V640(-X) è 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(-X) cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE
Portuguese	Omron declara que este V640(-X) está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

Editor's Note

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 Statuses

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

OFF

Flashing

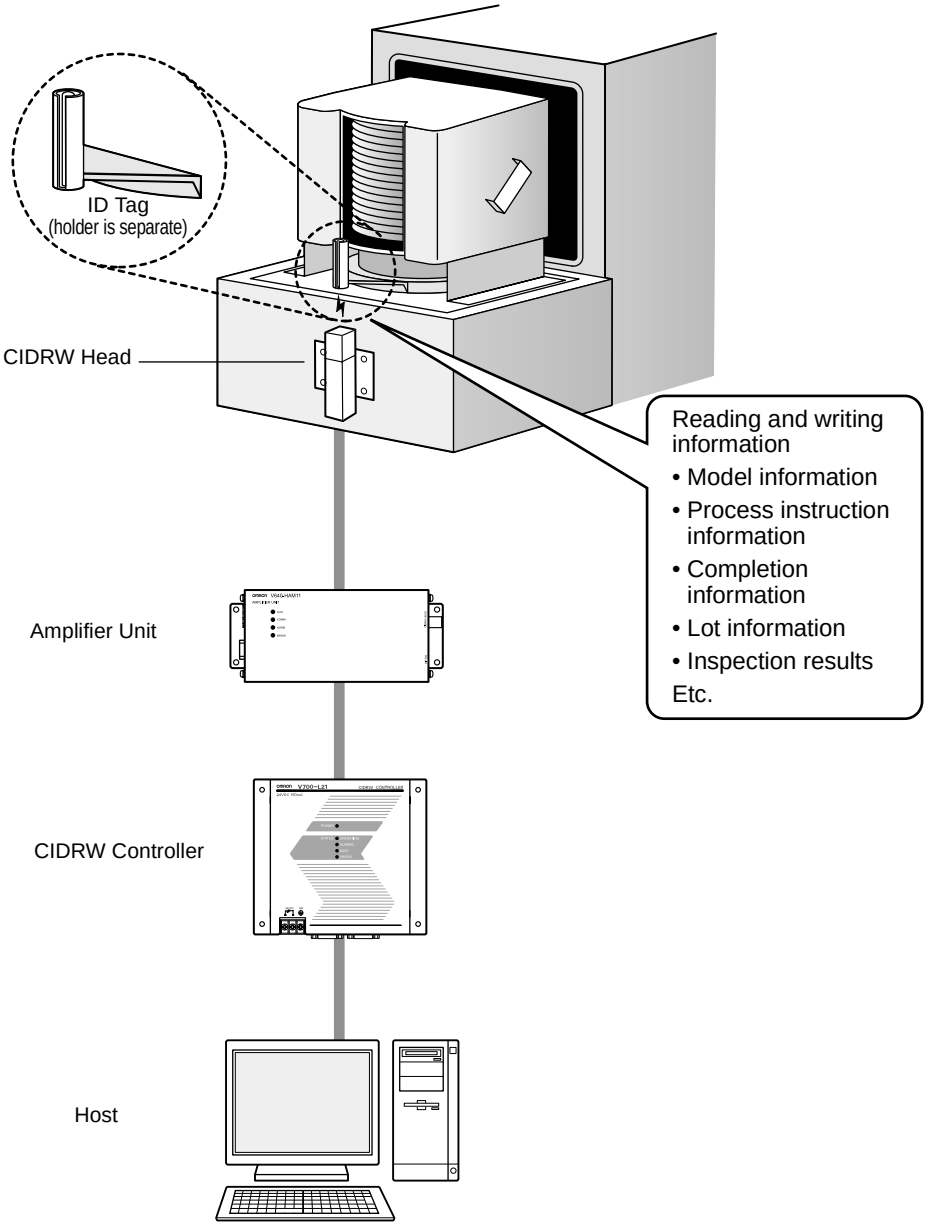
ON

SECTION 1
Product Outline

What is a CIDRW System?

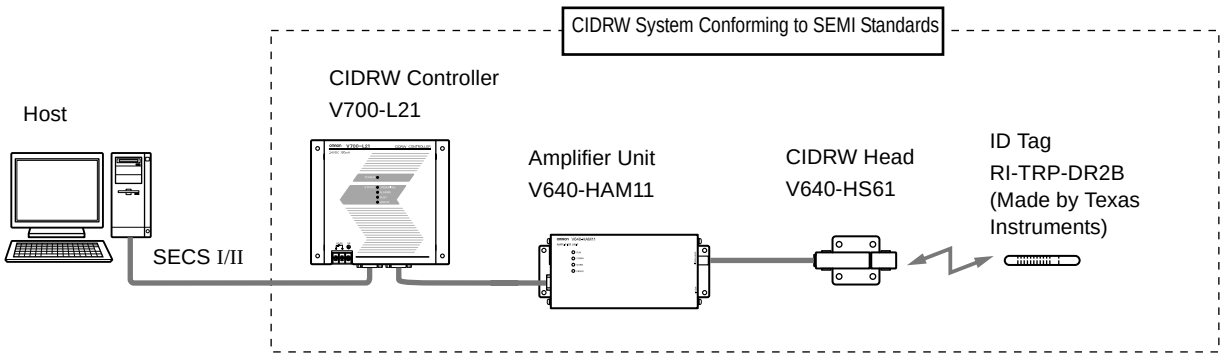
The CIDRW system writes data to, and reads data from, the carrier IDs (ID Tags) mounted on the carriers (FOUP) in semiconductor manufacturing processes without contacting these ID Tags. CIDRW is the abbreviation of "Carrier ID Reader/Writer" and this abbreviation is used throughout this manual.
Reading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



List of Applicable Standards

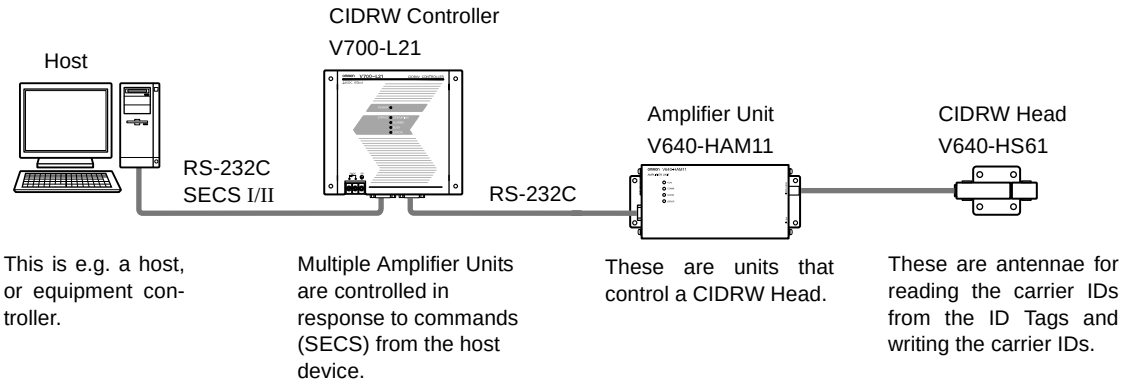
- SEMI E99 THE CARRIER ID READER/WRITER FUNCTIONAL STANDARD
- SEMI E5 EQUIPMENT COMMUNICATION STANDARD 2 MESSAGE CONTENT (SECS II)
- SEMI E4 EQUIPMENT COMMUNICATION STANDARD 1 MESSAGE TRANSFER (SECS I)

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

System Configuration

When SECS is Used

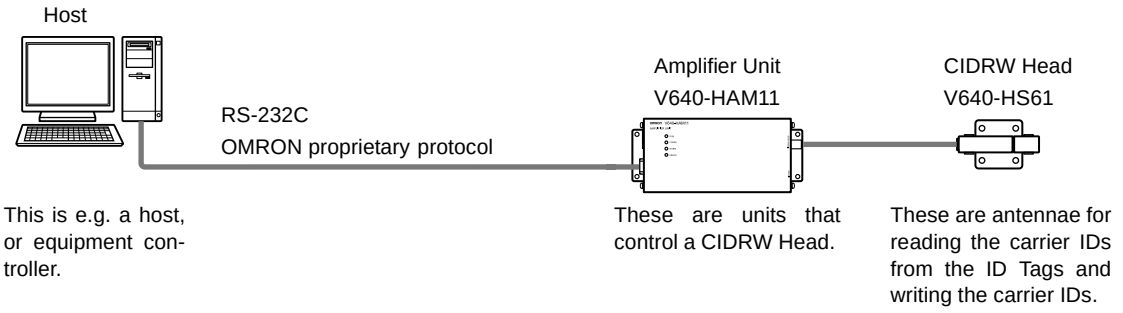
Communication with the host device is possible using the SECS protocol.



When SECS is Not Used

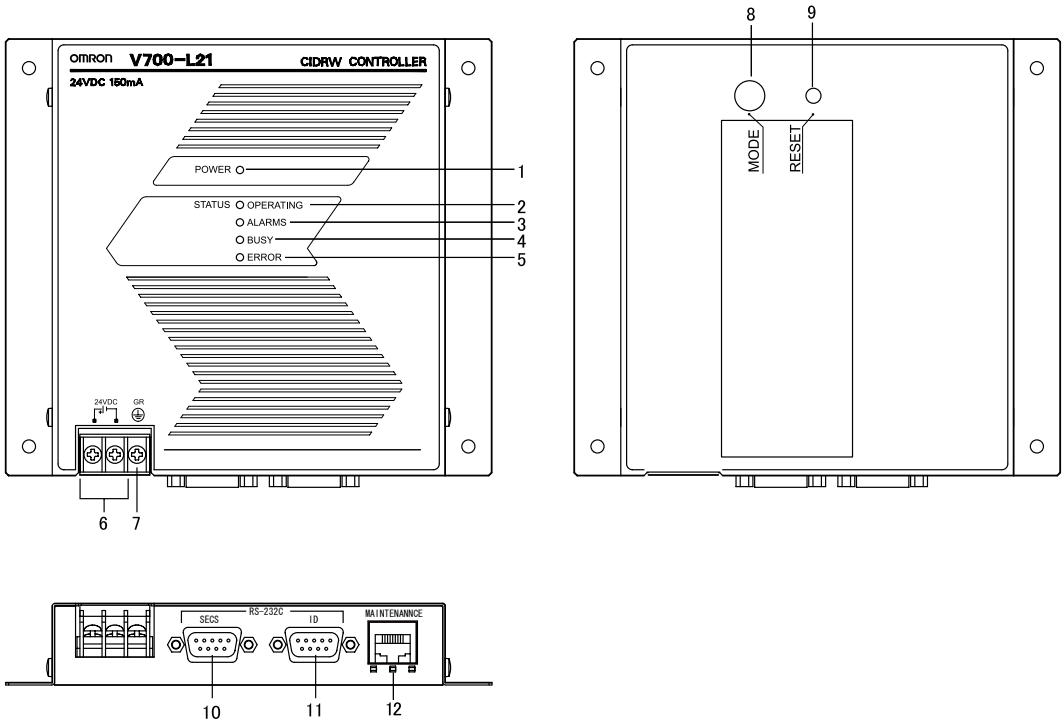
Communications with the host device follow the OMRON proprietary protocol.

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



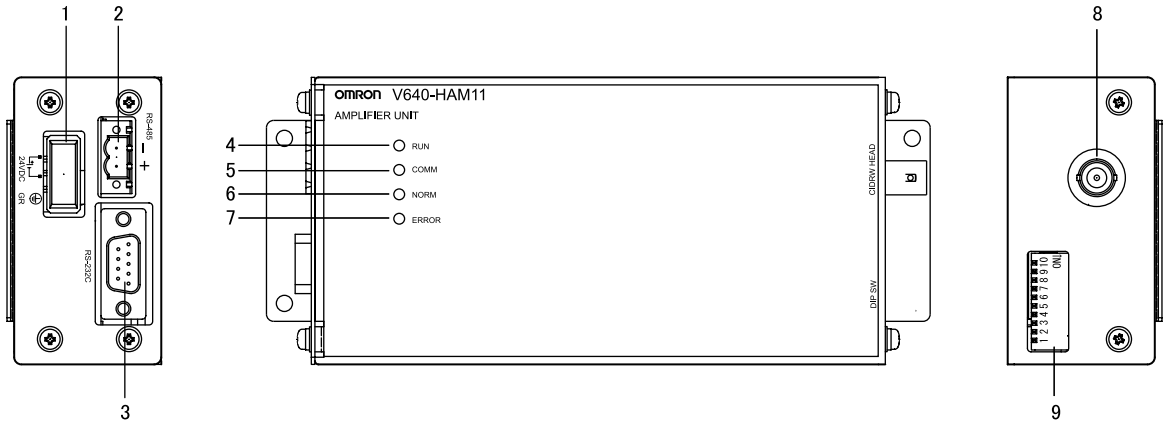
Component Names and Functions

CIDRW Controller V700-L21



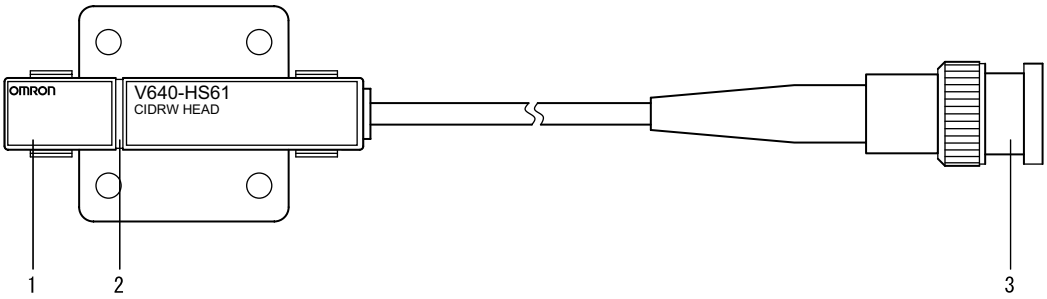
No.	Name	Function
1	Power indicator (green)	An LED that indicates whether the power is ON or OFF. Lit while the power is ON.
2	OPERATING indicator (green)	Lit while the CIDRW system status model is operating.
3	ALARMS indicator (green)	Lit when the status of "AlamStatus" of the CIDRW system is "Alarm (1)."
4	BUSY indicator (green)	Lit when the status of "OparationalStatus" 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 44. 0 : Normal Operation mode. When mounting the Controller, set the switch to this position. 3 : Setting mode, selected to set information such as the communication 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 - 2, 4 - 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.

Amplifier Unit V640-HAM11



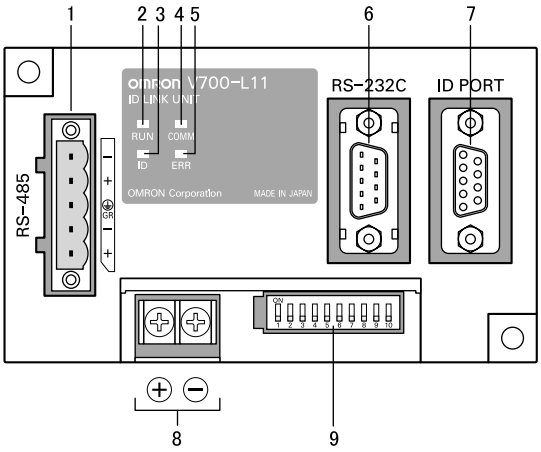
No.	Name	Function
1	Dedicated power supply connector	Connect to the 24 VDC power supply.
2	RS-485 port	When using multiple CIDRW Heads, connect this to the RS-485 port of another Amplifier Unit or to the multi-connection port of a Link Unit.
3	RS-232C port	Connected to a CIDRW Controller or a host device. 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 communication with the host device, or during communication 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.

CIDRW Head V640-HS61



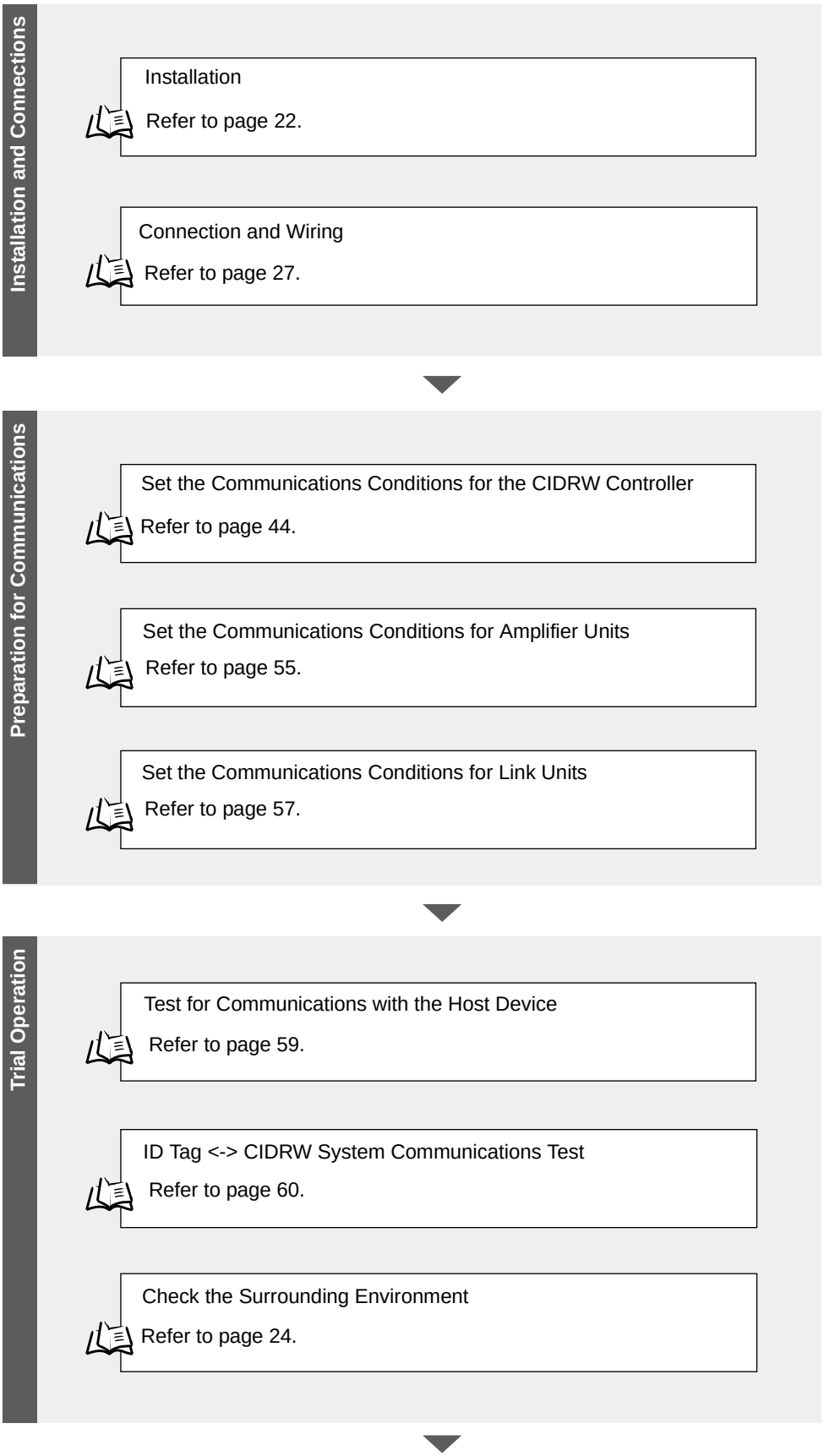
No.	Name	Function
1	Antenna	Used to communicate with ID Tags.
2	Antenna center	This is the center of the communications area.
3	Connector	Connect to an Amplifier Unit.

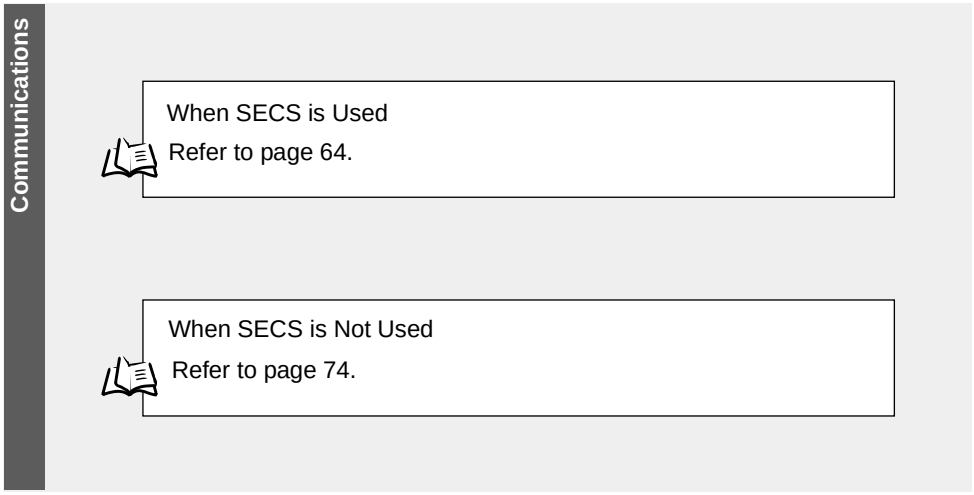
Link unit V700-L11



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)	Turns ON during data communications with a V700 series IDRW Head.
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	This is a dedicated port for connecting a V700 series IDRW Head. Connect either a V700-HMD13□ or V700-HMD11-1 IDRW Head.
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 you Encounter a Problem...

When SECS is Used

Refer to page 84. List of Error Messages
Refer to page 84. Controller Indicators
Refer to page 85. Operation Check Flowchart

When SECS is Not Used

Refer to page 90. List of Error Messages
Refer to page 90. Amplifier Unit Indicators
Refer to page 91. Operation Check Flowchart

SECTION 2
Installation and Connections/Wiring

Installation

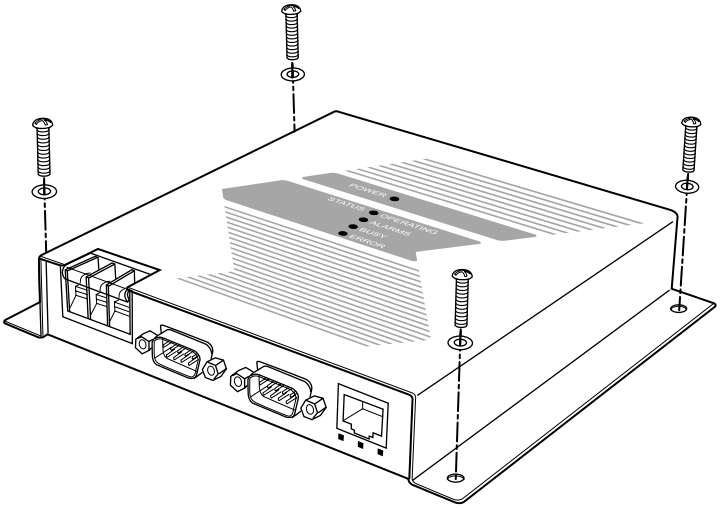
CIDRW Controller

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 44.

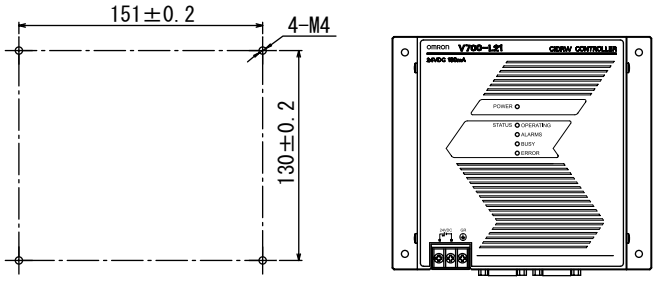
Set the Controller to the Normal Operation mode (switch position 0) when mounting it.

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



Mounting dimensions

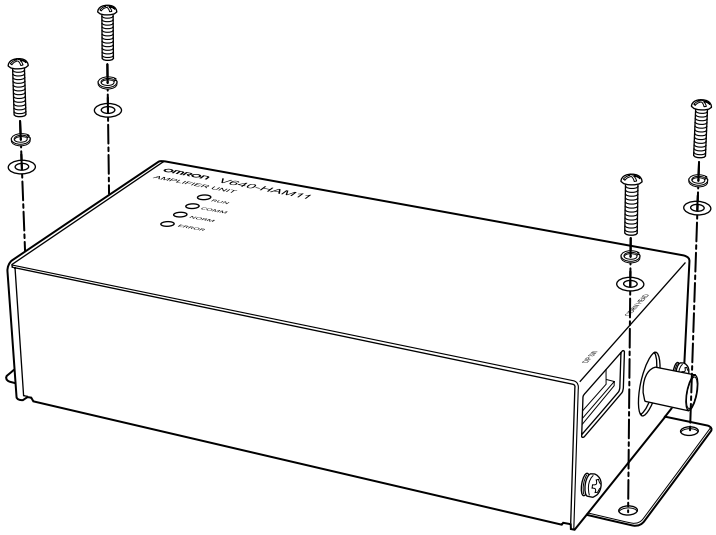
(Unit: mm)



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.

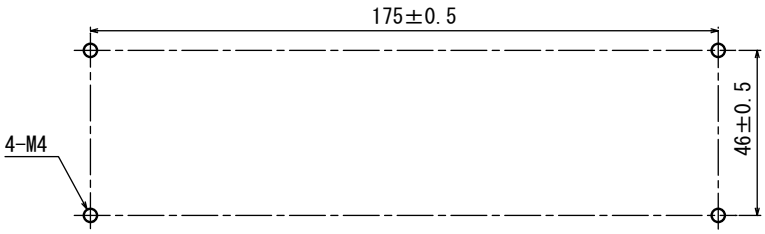
Amplifier Unit

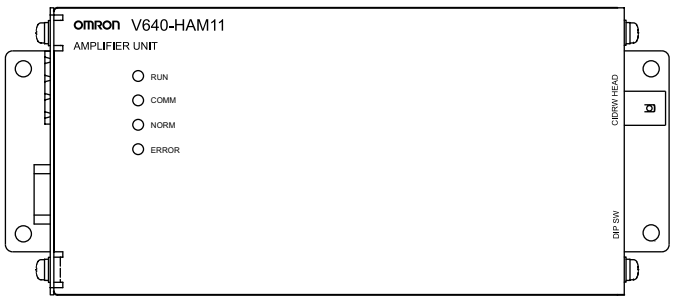
Use spring washers and flat washers with the four M4 screws when mounting the Amplifier Unit.



Mounting dimensions

(Unit: mm)





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

CIDRW Head

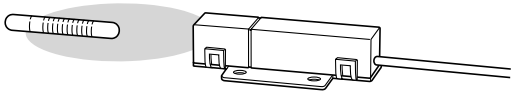
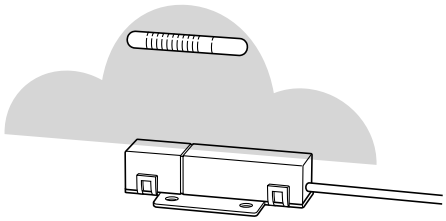
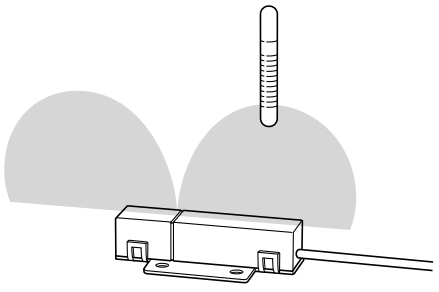
The area for communications with ID Tags varies substantially according to the installation orientations and the background conditions (metals, noise, etc.). Check the communications area before deciding the installation position.

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

Refer to page 101.

■ 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 centerlines 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 centerline of the ID Tag.
Vertical		When the center point of the antenna on the CIDRW Head is aligned with the centerline 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 105.

■ Influence of Noise

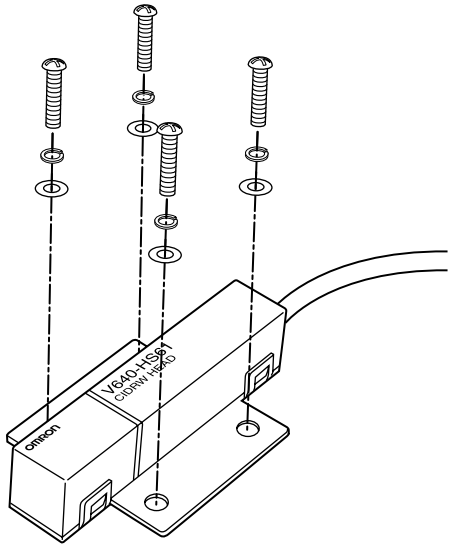
This CIDRW system uses a frequency of 134 kHz for communications with ID Tags. Equipment such as switching power supplies, inverters, servomotors, or monitors in the surrounding area will adversely affect communications, restricting the communications area.

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 82.

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

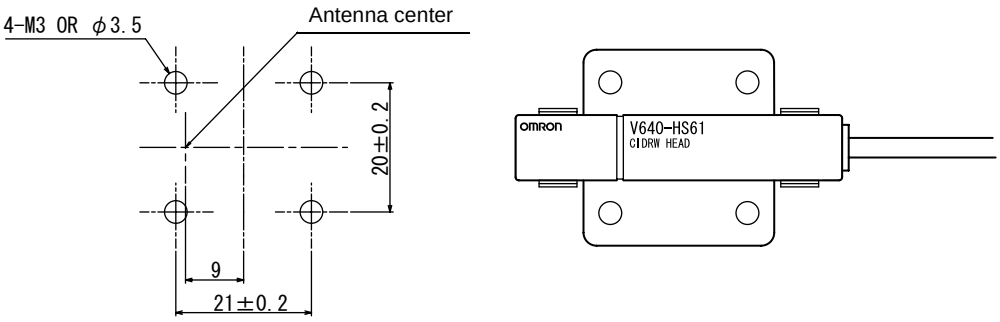
■ Mounting

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



Mounting dimensions

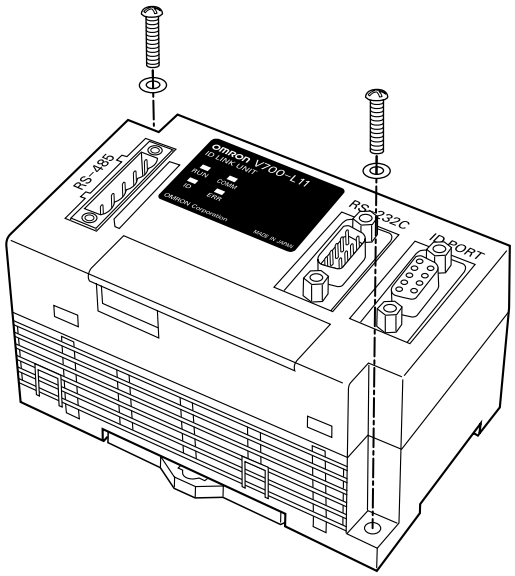
(Unit: mm)



NOTICE Tighten the M3 screws with a torque not exceeding 0.6 N·m.
Be sure to install the Amplifier Unit in a panel or metal-shielded equipment.

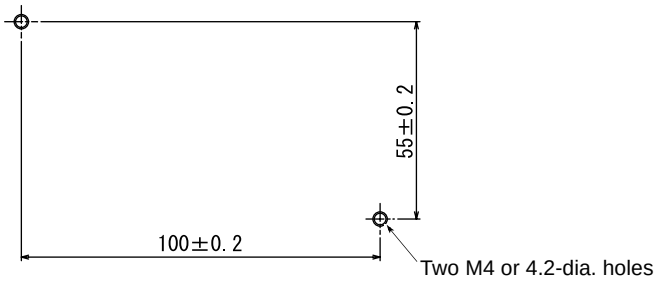
Link Unit

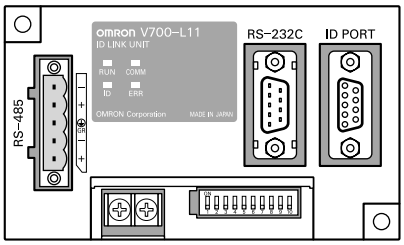
Mount Link Units with the two M4 screws and washers provided as accessories.



Mounting dimensions

(Unit: mm)





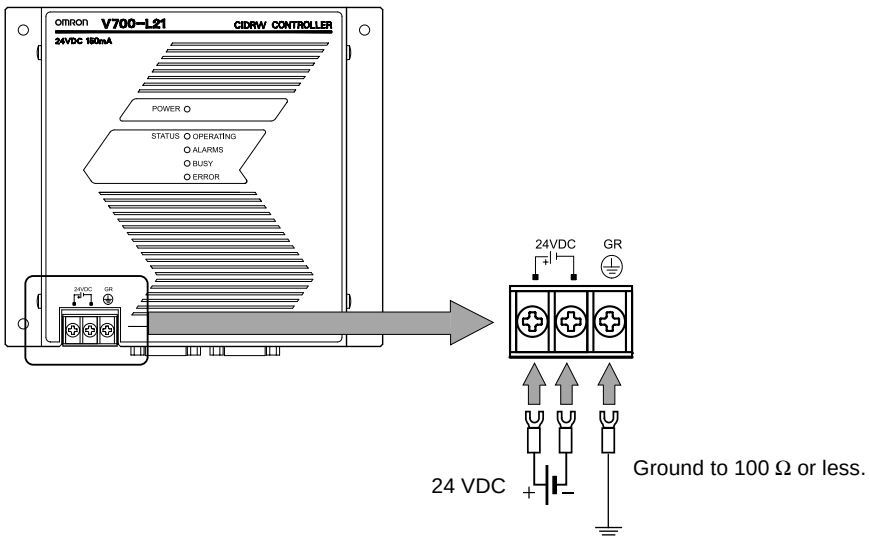
NOTICE
- Tighten the M4 screws with a torque not exceeding 1.2 N·m.
- Do not apply organic solvents used with screw locking agents at the locations where the screws are inserted.

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 unit that satisfies the following conditions.

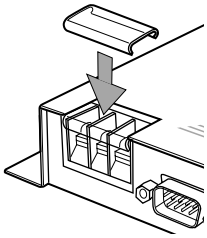
Condition

Power supply voltage	Output current
24 VDC +10%, -15%	500 mA DC min.

Recommended model

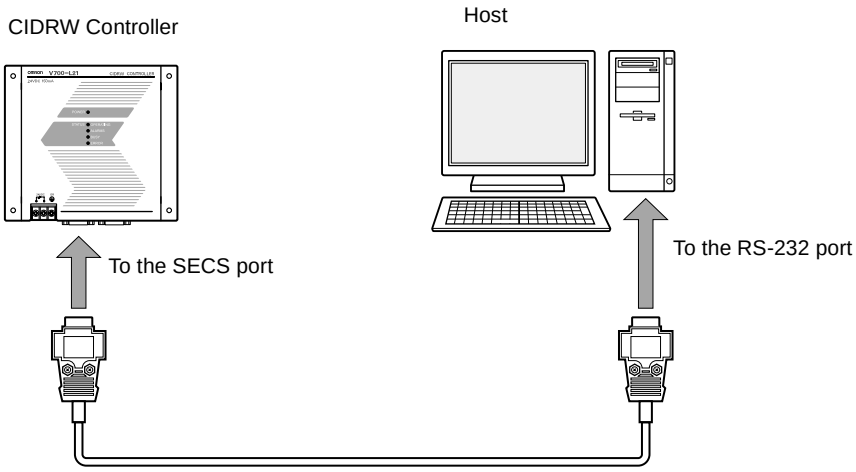
Manufacturer	Model
OMRON	S82K-01524

NOTICE Be sure to replace the cover after wiring.



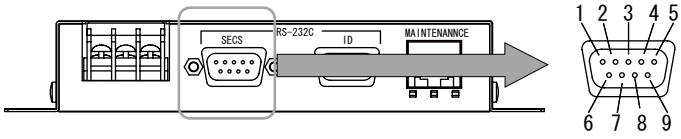
■ SECS port

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

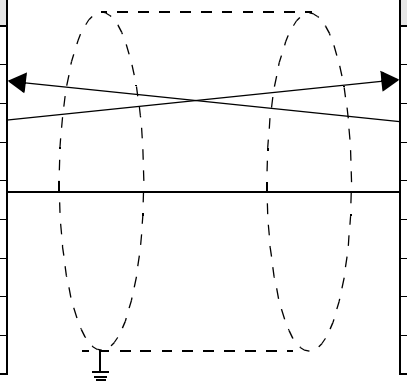
Recommended model

		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-L21 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



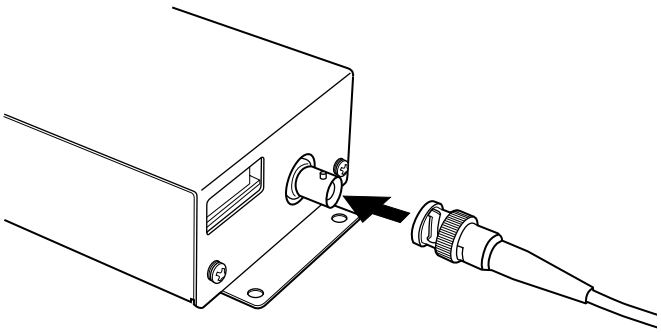
PC/AT Computer D-SUB, 9-pin Socket type #4-40	
Pin No.	Name
1	NC
2	RD
3	SD
4	NC
5	SG
6	NC
7	RS
8	CS
9	NC

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

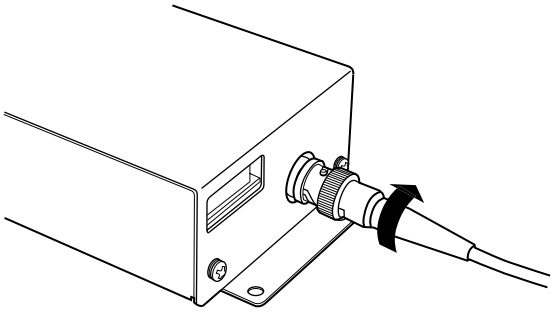
Amplifier Unit

■ 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.

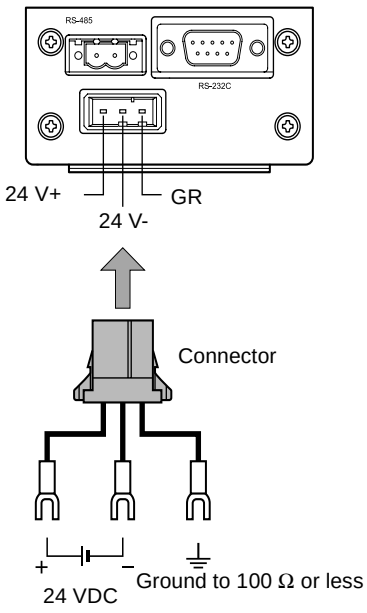


2. After inserting the connector fully home, turn the fixed part clockwise to lock it.



■ 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.

• 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 Amp	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 - 24 cable.

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

Recommended crimping tool

Manufacturer	Model
Tyco Electronics Amp	919601-1

• Power supply unit

Use a power supply unit that satisfies the following conditions.

Condition

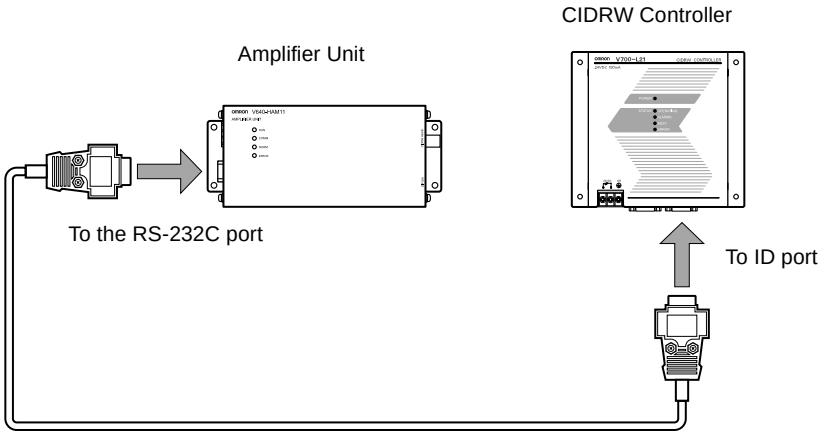
Power supply voltage	Output current
24 VDC +10%, -15%	300 mA DC min.

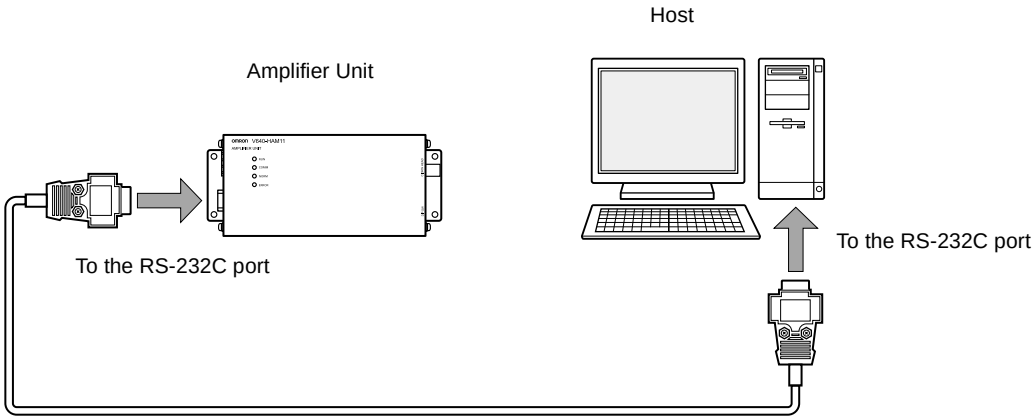
Recommended product

Manufacturer	Model
OMRON	S82K-01524

■ RS-232C Port

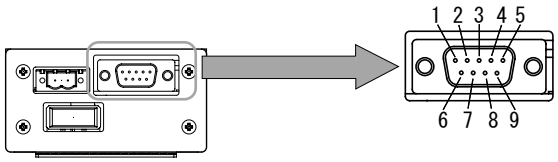
The method for connecting a CIDRW Controller or host device via the RS-232C port is explained here.





• 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

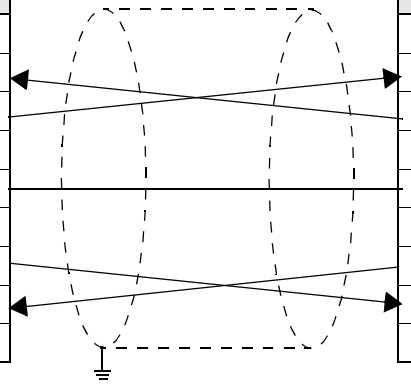
Recommended model

			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-L21 CIDRW Controller

The cable length should be no greater than 15 m.

Amplifier unit V640-HAM11 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-L21 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

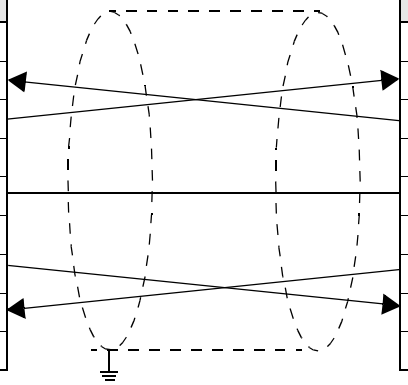
Ground shielded wires either at the amplifier unit side or at the CIDRW side.

• Wiring for connection to a PC/AT computer (9-pin connector specification)

The cable length should be no greater than 15 m.

Amplifier unit V640-HAM11 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

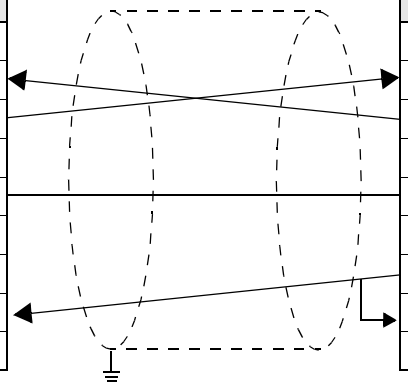


Ground shielded wires either at the CIDRW Controller side or at the PC/AT side.

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

Amplifier unit V640-HAM11 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

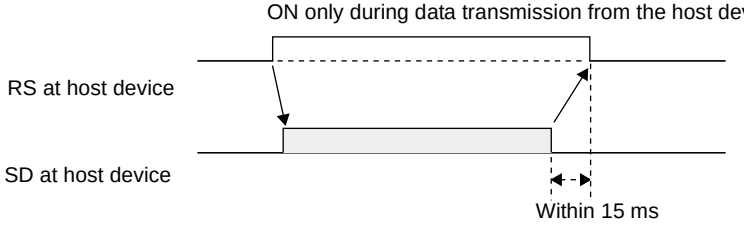


Ground shielded wires either at the CIDRW Controller side or at the PC/AT side.

CHECK!

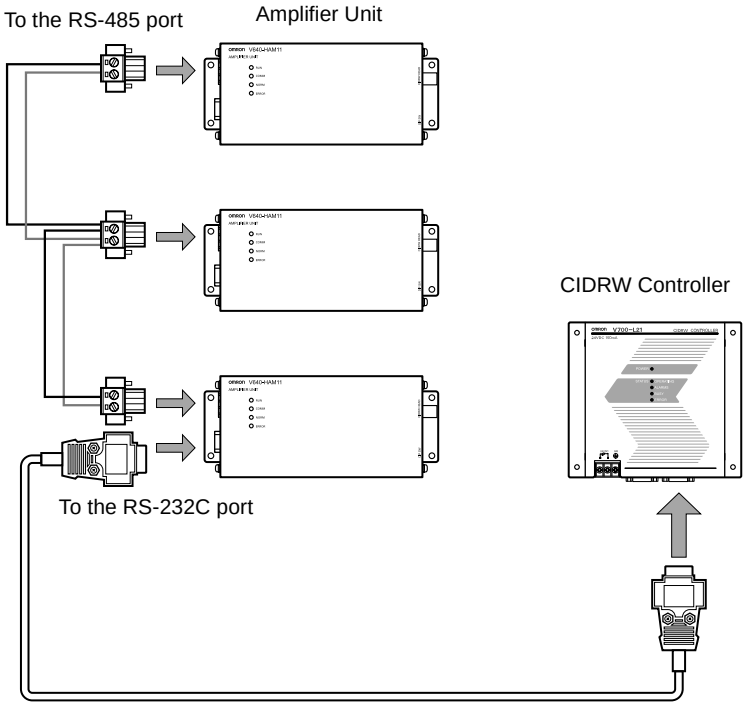
RS signal control method at the host device

In a 1:N connection 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.



■ 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.



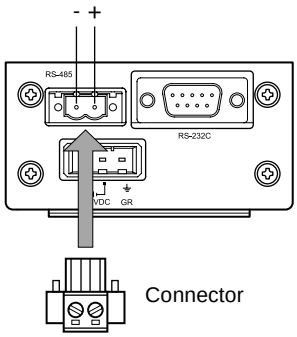
NOTICE The maximum total length of RS-485 cable is 50 m.

• 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 31.

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.

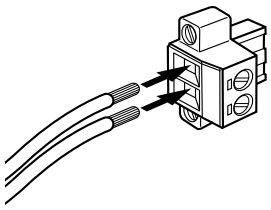
• Notes on cables

Recommended model

		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

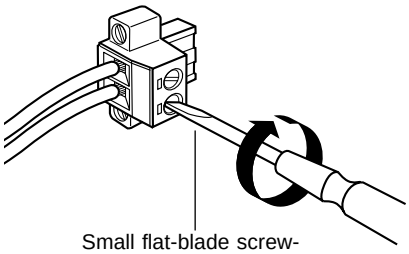
1. Attach crimp terminals to stripped portions of the cables.



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

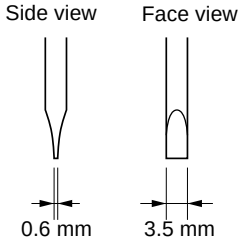
3. Tighten the set screws of the connector firmly to secure the cables.

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.

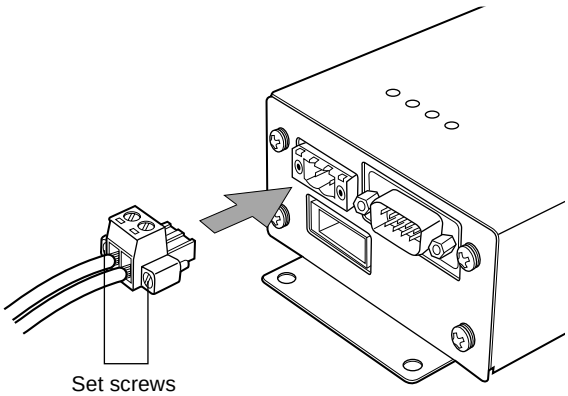


Recommended screwdriver

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.



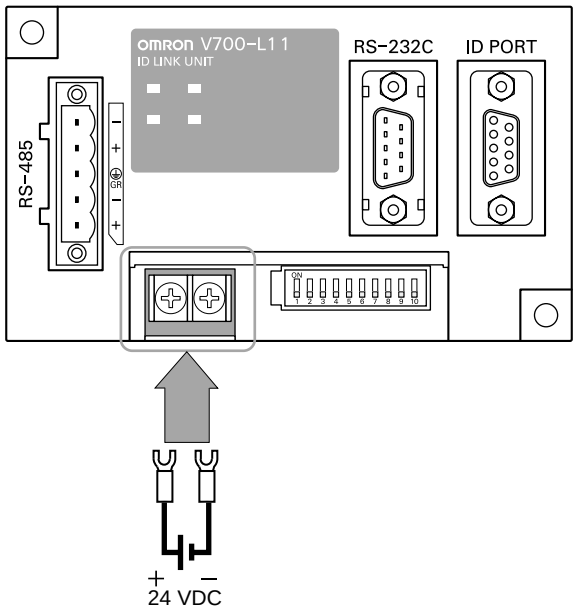
CHECK! Disconnecting the connector

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

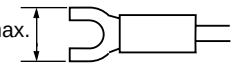
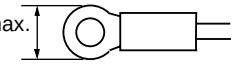
Opening the cover on the top face of the Link Unit exposes the power supply terminals.



• 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 unit that satisfies the following conditions.

Condition

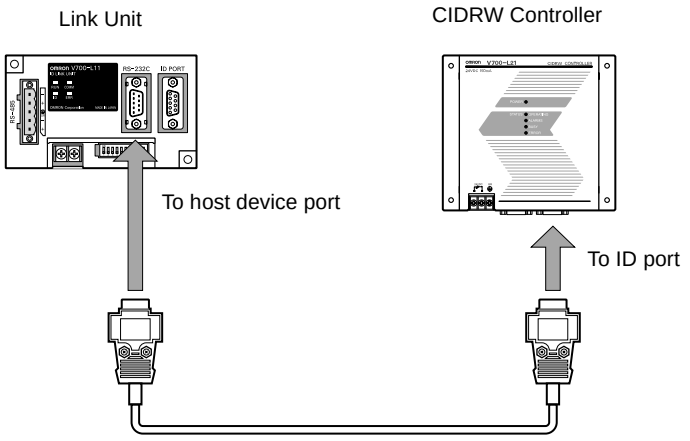
Power supply voltage	Output current
24 VDC +10%, -15%	500 mA DC min.

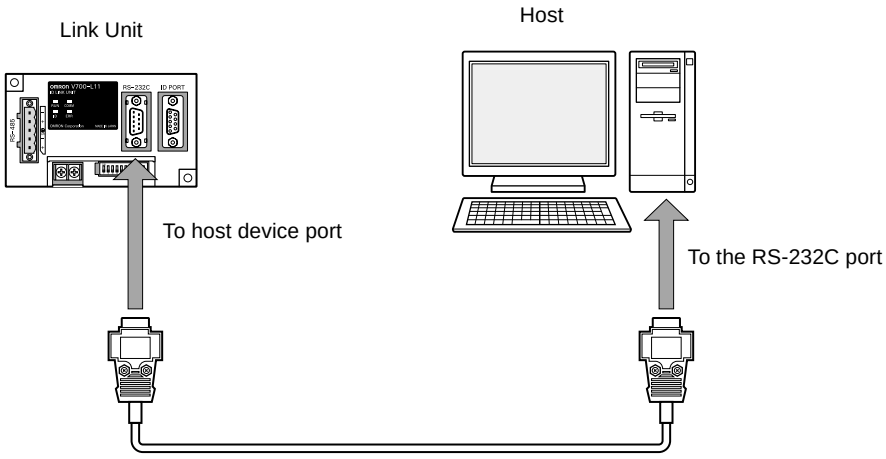
Recommended model

Manufacturer	Model
OMRON	S82K-01524

■ Host Connection Port

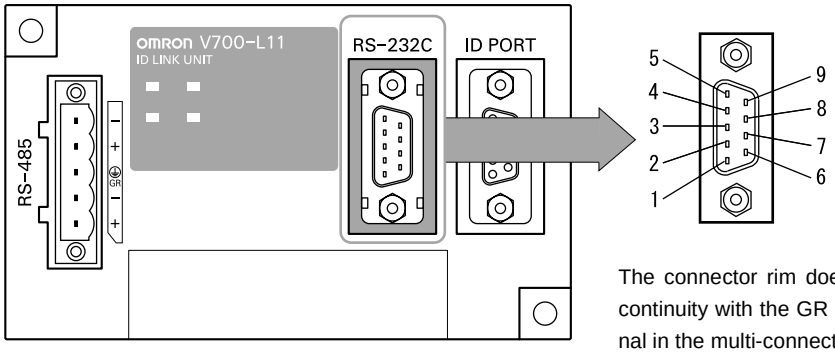
The method for connecting to a CIDRW Controller or host device via the RS-232C port is explained here.





• 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

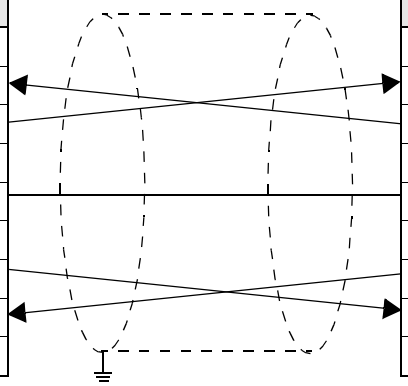
Recommended model

		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.

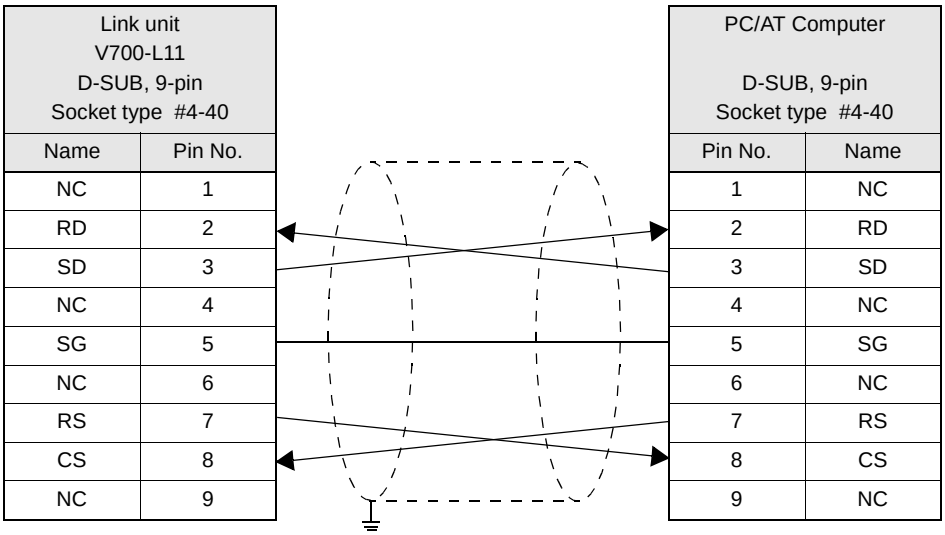
Link unit V700-L11 D-SUB, 9-pin, female Socket type #4-40	
Name	Pin No.
NC	1
RD	2
SD	3
NC	4
SG	5
NC	6
RS	7
CS	8
NC	9



CIDRW Controller V700-L21 D-SUB, 9-pin, female 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

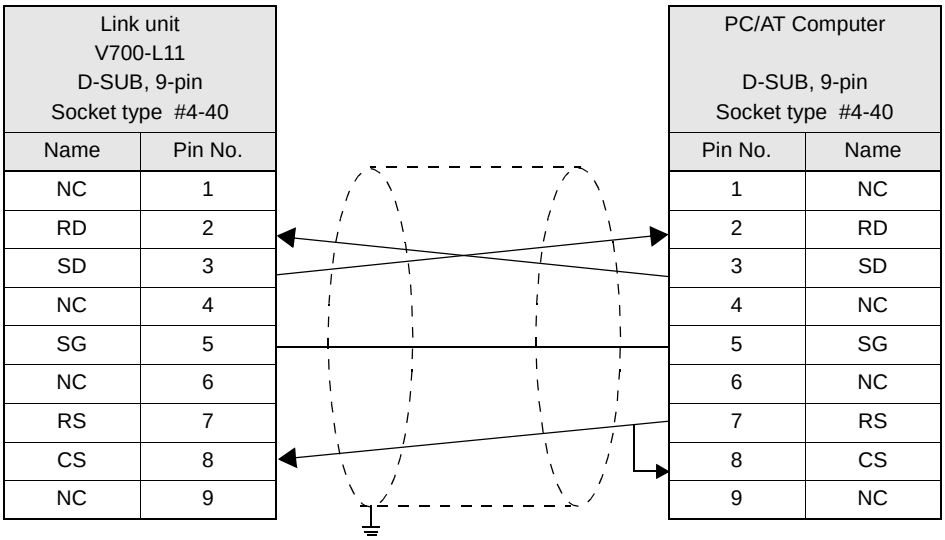
Ground shielded wires at the CIDRW Controller side.

• Wiring for connection to a PC/AT computer



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.

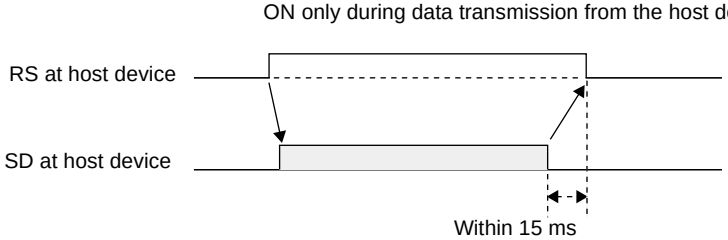


Ground shielded wires at the PC/AT computer side.

CHECK!

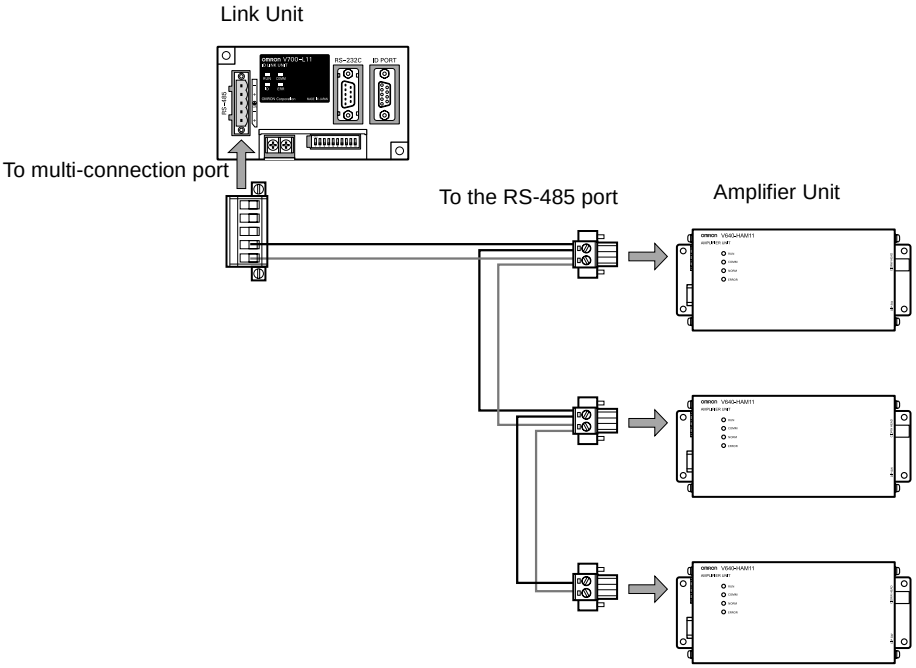
RS signal control method at the host device

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.

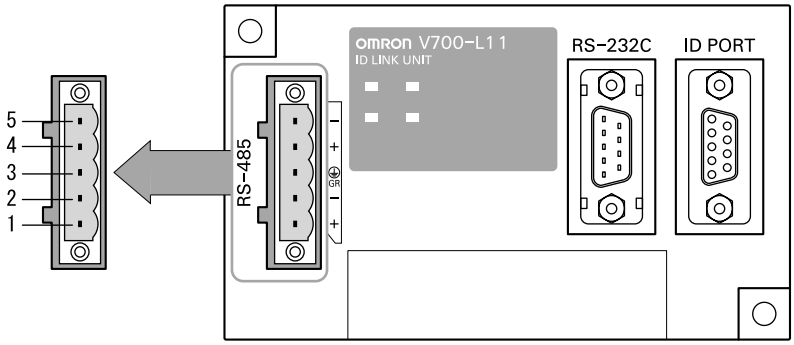


■ Multi-connection port

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

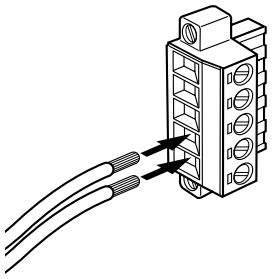
Recommended Product

		Manufacturer	Model
Cable	RS-485 signal wire	Tachii Electric Wire	MVVS 2CX0.5SQ
	Frame ground line	AWG22 - 20 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.

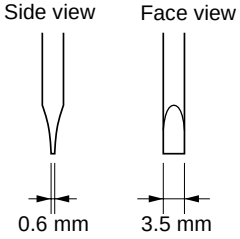
2. Insert the wires into the correct holes in the connector, bearing the orientation of the connector in mind.



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

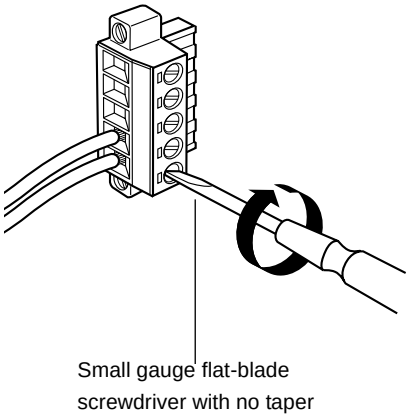
The appropriate tightening torque is around 0.5 N·m.

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.



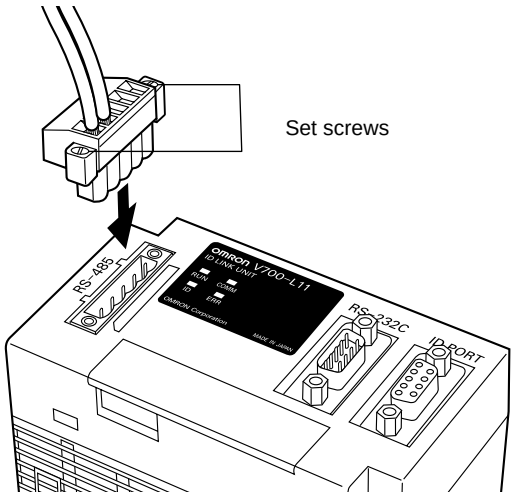
Recommended screwdriver

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.



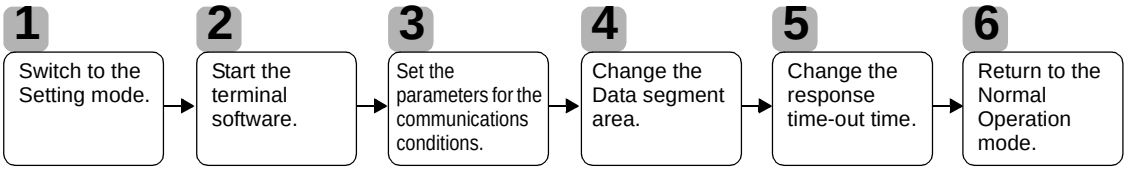
CHECK! Disconnecting the connector

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

Set the Communications Conditions for the CIDRW Controller

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



1 Switch to the Setting mode

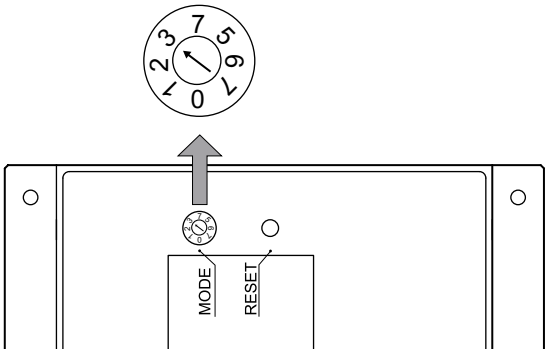
The CIDRW Controller has two operating modes, the "Normal Operation mode" and the "Setting mode."
Switch to the "Setting mode" to set the communications conditions.
There are two methods for switching the mode. Use the one that is appropriate for the circumstances.

■ 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 page 70.

CHECK!

CPVAL1="PS" is an expansion designation unique to V700-L21 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 the terminal software

Use the host device's terminal software for the setting.

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 communication 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 bit	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 the parameters for the 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.	1
	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 communication 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 the 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.

Data Segment Area Refer to page 111.

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)	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
_
```

5 Change the 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

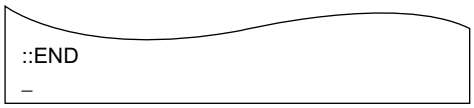
Designation	Command input	Explanation
Parameter designation	(Tag name) = (Set value) <CRLF>	Specify the parameter value corresponding to the tag name.
Parameter confirmation	::END	Checks the parameter designations that have been received so far and, if there is no error, confirms the settings.
Comment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

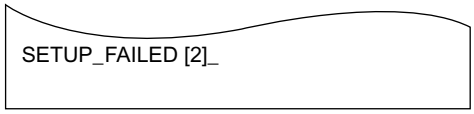


When writing is completed, a message indicating the result is displayed.
The ALARMS indicator lights.

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=L21
HREV=001.04
::END
_
```

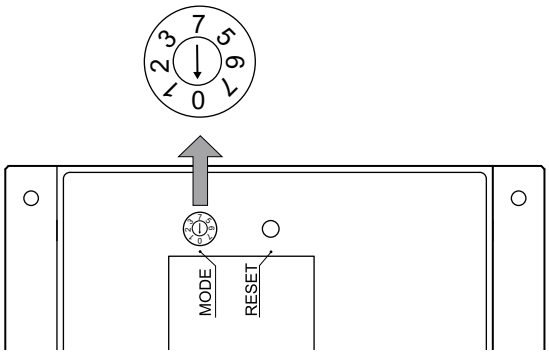
NOTICE Do not change any of the operation parameters apart from RT. This can cause the system to stop operating correctly.

6 Return to the 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

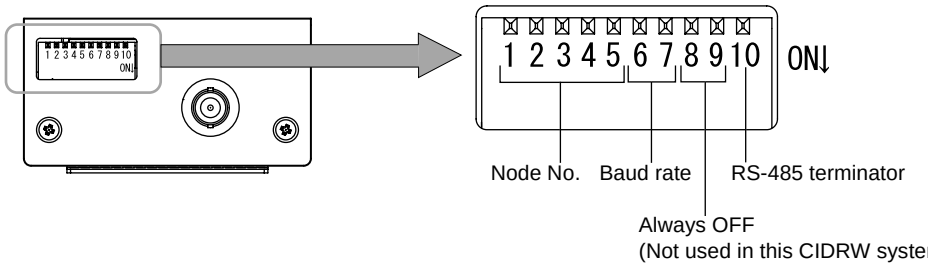
Designation	Command input	Explanation
Parameter designation	(Tag name) = (Set value) <CRLF>	Specify the parameter value corresponding to the tag name.
Parameter confirmation	::END	Checks the parameter designations that have been received so far and, if there is no error, confirms the settings.
Comment	# (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).
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.	1
	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" - "S99"	"S01" - "S28"
	Number of bytes in a segment	T_SEGL	8 (fixed)	8
Response time-out time		RT	10.0 s (fixed)	2.5 s

Set 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
Setting not possible	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	

RS-485 terminator

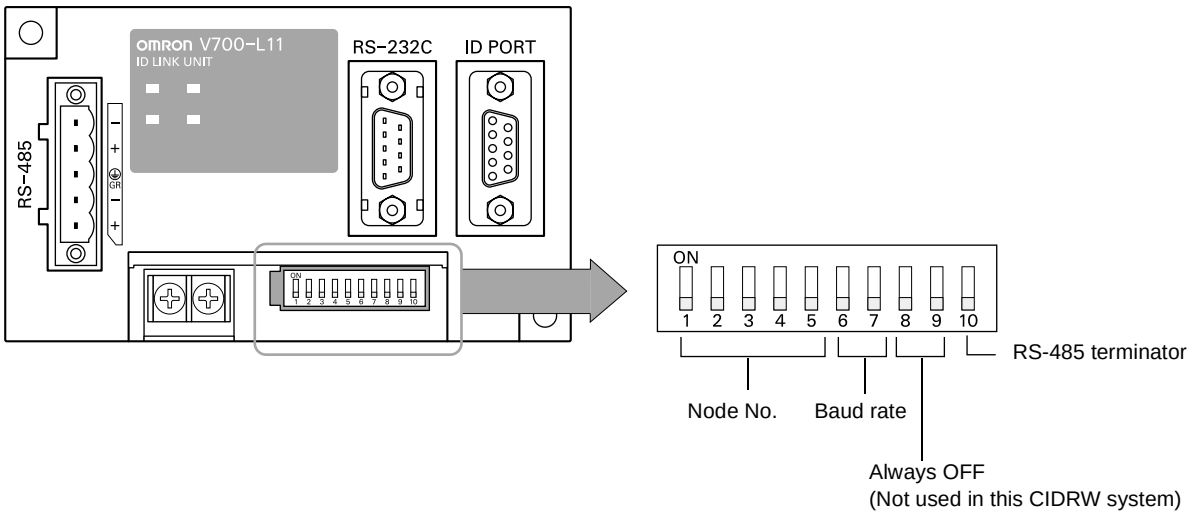
Option	DIP-SW	Description
	10	
Invalid	OFF	Set "ON" at both of the end units in a multidrop system, and "OFF" at all the other units. If there is only one unit, set "ON." If there is a possibility that one of multiple Amplifier Units in use may be used independently, turn the terminators of all the Amplifier 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	8	None	1	10
Error detection	FCS (frame check sequence)				

Set 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 conditions

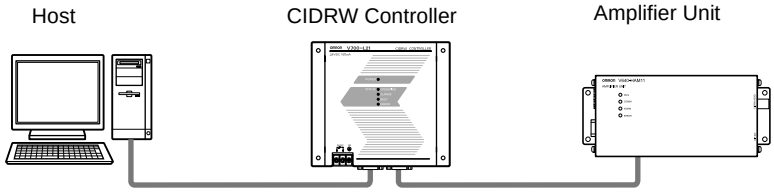
Item	Specifications				
Standard conformed to	RS-232C				
Communications control protocol	1:N protocol exclusive to OMRON				
Synchronization method	Start-stop synchronization				
Baud rate	Set using a DIP switch				
Frame composition	Start bit	Data bits	Parity bit	Stop bit	Total
	1	8	None	1	10
Error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

Communications Test

Test for Communications 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

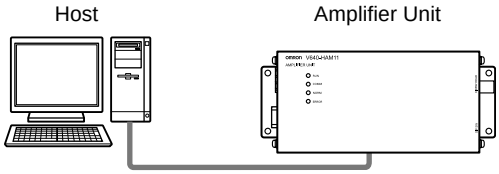
  Send **Are You There Request** message "S1, F1" from the host device.
  If it is correctly connected, **On Line Data** "S1, F2" will be sent from the CIDRW Controller.

- 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."

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

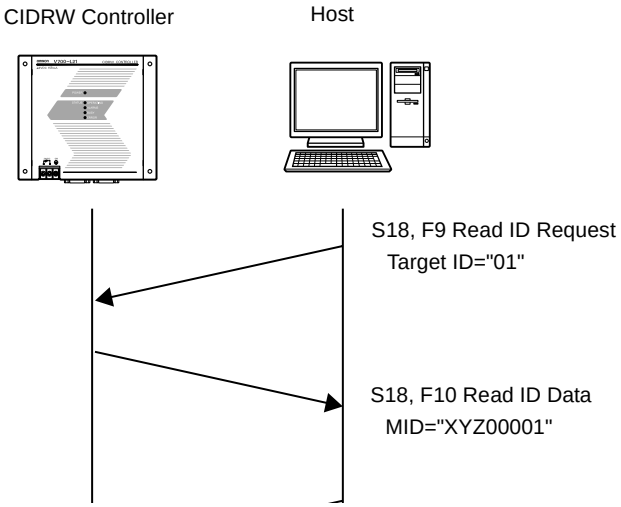
ID Tag ↔ CIDRW System Communications Test

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

■ When SECS is Used

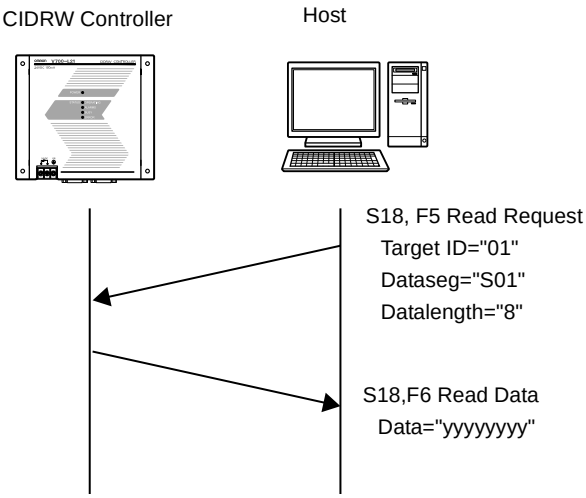
• Read ID

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.

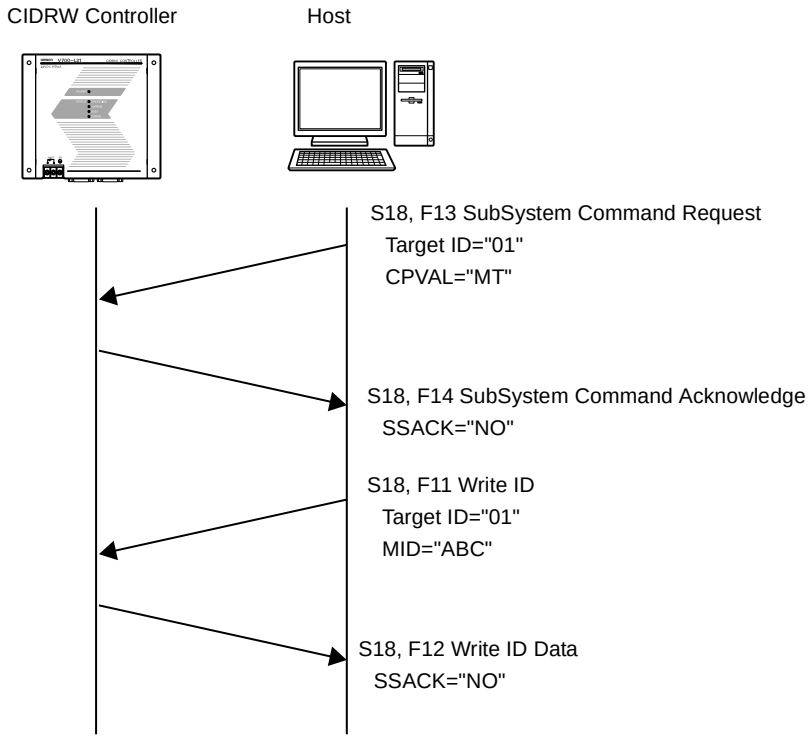


• Write ID

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

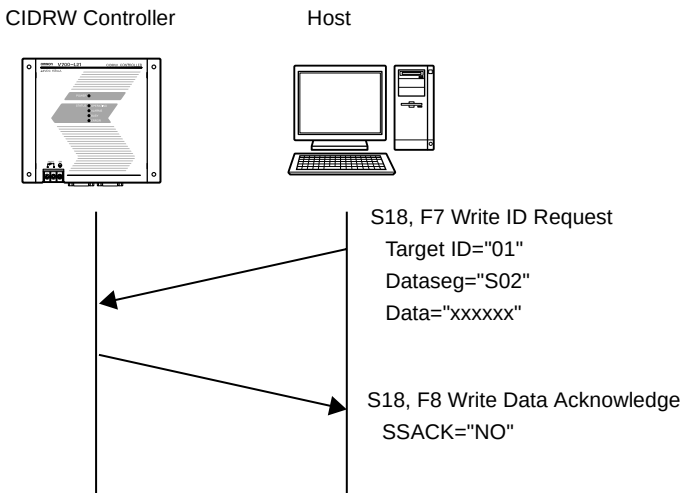
(2) The CIDRW Controller changes to MAINTENANCE and replies that it has changed state.

(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