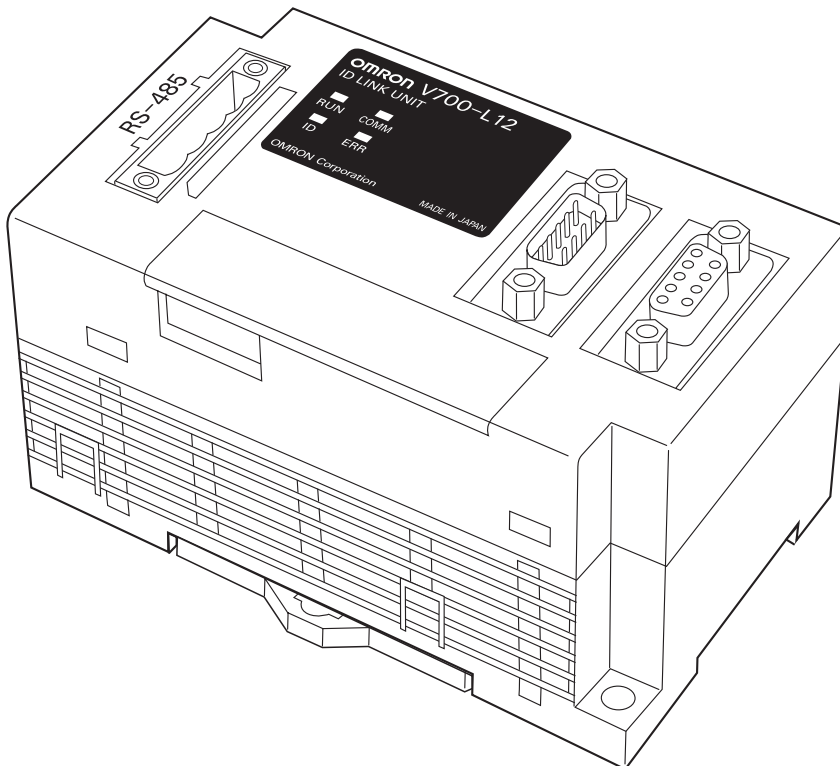# OMRON

ID Link Unit

V700-L12

User's Manual

Introduction

Thank you for purchasing the OMRON V700-L12 ID Link Unit. We hope you fully utilize this product and its performance for many years to come.

- To ensure safety, read this manual carefully before using the V700-L12. In addition, keep this manual in an easily accessible location for quick reference when needed.

ID Link Unit
User's Manual
V700-L12

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.

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

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The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:
• Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
• Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
• Systems, machines, and equipment that could present a risk to life or property.

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

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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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.

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Meanings of Signal Words

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.

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

Meanings of Alert Symbols

The following alert symbols are used in this manual.

🚫	Indicates general prohibitions for which there is no spacific symbol.
⏚	Indicates instruction for the user to always connect the ground wire.
🚫	Indicates prohibition when there is a risk of minor injury from electrical shock or other source if the product is disassembled.

Alert statements in this Manual

The following alert statements apply to the products in this manual. Each alert statement also appears at the locations needed in this manual to attract your attention.

⚠ **WARNING**	
🚫	This product is not designed to be used either directly or indirectly in applications that detect human presence for the purpose of maintaining safety. Do not use this product as a sensing device for protecting human lives.

⚠ **CAUTION**	
🚫	Do not disassemble the Unit or touch the internal parts of the Unit while the power is turned ON. Doing so may result in electric shock due to the high-voltage internal parts.
⏚	The GR (frame ground) terminal is in the multi-connection port. Always ground the multi-connection port to 100 Ω or less, regardless of whether it is used or not. Performance may deteriorate if the port is not ground.

Precautions for Safe Use

Observe the following precautions to ensure safe use of the product.

■ Operating Environment Precautions

Observe the following precautions to ensure safe use of the product.

- Do not use the product in environments with flammable or explosive gases.
- Do not install the product near high-voltage devices or power devices to ensure safety during operation and maintenance.
- Return the shock prevention cover to its original position after wiring the power supply.
- Make sure that the mounting screws are tightened securely.
- Do not allow water, wires, or any other foreign material to enter through the gaps in the case. Doing so may cause fire or electric shock.
- Do not attempt to disassemble, repair, or modify the product.
- When disposing of the product, treat it as industrial waste.

Precautions for Correct Use

Always observe the following precautions to prevent operation failures, malfunctions, and adverse effects on performance and equipment.

■ Installation Environment Precautions

Install the product in the following locations:

1. Locations not subject to direct sunlight.
2. Locations not subject to corrosive gas, dust, metallic powder, or salt.
3. Locations not subject to rapid changes in temperature and condensation outside the specified ranges.
4. Locations not subject to high humidity and condensation outside the specified ranges.
5. Locations not subject to direct vibration or shock outside the specified ranges.
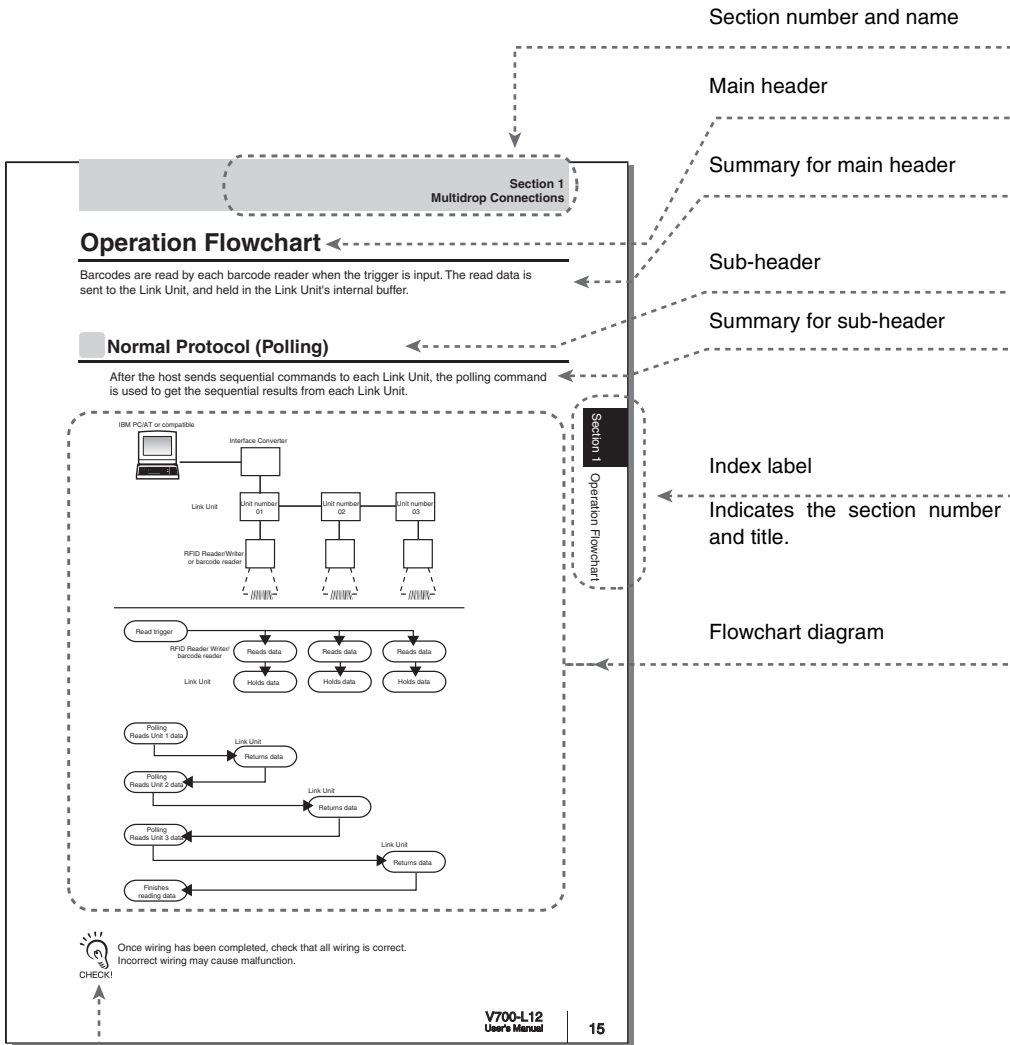6. Locations not exposed to water, oil, or chemicals.

■ Wiring

1. Always turn OFF the power before performing wiring or connecting/disconnecting cables.
2. To prevent damage from static electricity, use a wrist strap or another device for preventing electrostatic charges when touching terminals or signal lines.

■ Cleaning

Do not clean the product with thinners, benzene, or other organic solvents. These will dissolve the resin parts and coating on the case.

How to Read this Manual

■ Page Format

Section number and name

Main header

Summary for main header

Sub-header

Summary for sub-header

Section 1
Multidrop Connections

Operation Flowchart

Barcodes are read by each barcode reader when the trigger is input. The read data is sent to the Link Unit, and held in the Link Unit's internal buffer.

Normal Protocol (Polling)

After the host sends sequential commands to each Link Unit, the polling command is used to get the sequential results from each Link Unit.

IBM PC/AT or compatible

Interface Converter

Link Unit — Unit number 01 — Unit number 02 — Unit number 03

RFID Reader/Writer or barcode reader

Read trigger

RFID Reader Writer/ barcode reader — Reads data | Reads data | Reads data

Link Unit — Holds data | Holds data | Holds data

Polling Reads Unit 1 data — Link Unit Returns data

Polling Reads Unit 2 data — Link Unit Returns data

Polling Reads Unit 3 data — Link Unit Returns data

Finishes reading data

CHECK! Once wiring has been completed, check that all wiring is correct. Incorrect wiring may cause malfunction.

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User's Manual 15

Section 1 Operation Flowchart

Index label

Indicates the section number and title.

Flowchart diagram

Supplementary information

The following symbols indicate useful information and reference pages.

CHECK!

* This page is an example only and does not actually exist.

■ Meanings of Symbols

CHECK!

Indicates particularly important points related to a function, including precautions and application advice.

Indicates page numbers containing relevant information.

Indicates reference to helpful information and explanations for difficult terminology.

TABLE OF CONTENTS

Section 1
Multidrop Connections

Multidrop Connection Example

The V700-L12 ID Link Unit ("Link Unit") enables communications with devices with an RS-232C output, such as barcode readers and RFID Reader Writers. The Link Unit enables up to 31 RFID Reader Writers or barcode readers to be connected to a single host using multidrop connections. The connection configuration depends on the interface used at the host (RS-485 or RS-232C). The following connection example is for ID Link Units ("Link Units") connected to the host using RS-485.

CHECK! The RFID Reader Writer or barcode reader can be supplied with 5-V power from the V700-L12.

Multidrop Connection Example   Section 1
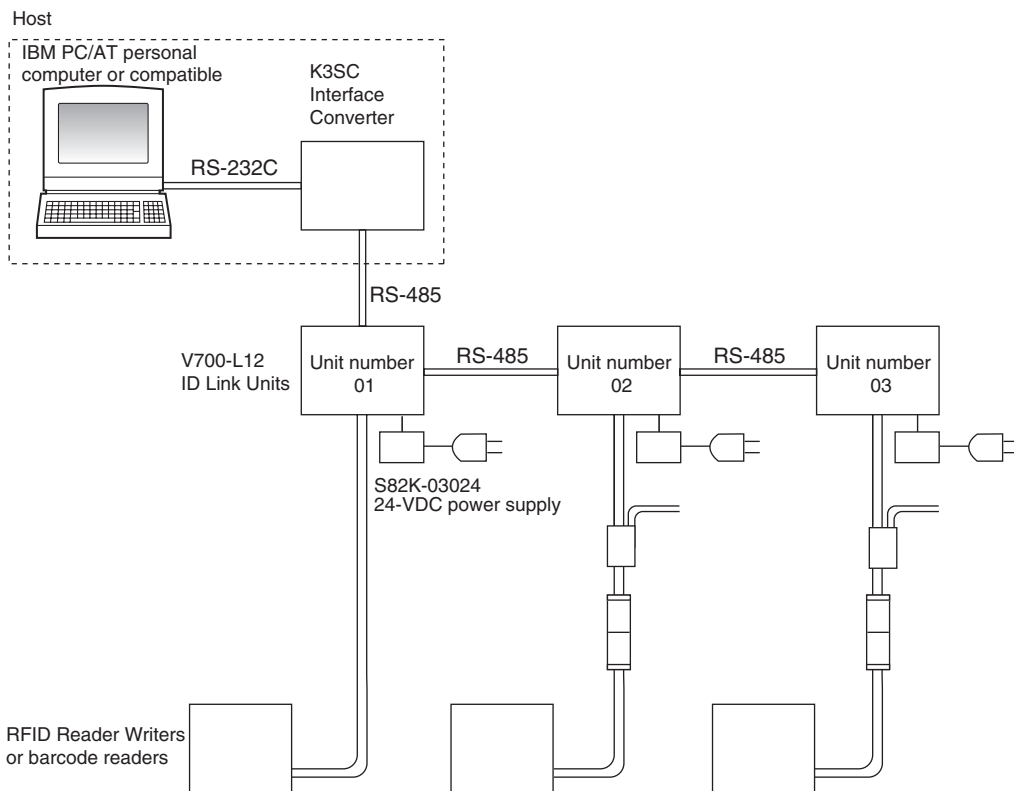
RFID System/Barcode Reader Settings

Use the UC command (Set All via Link Unit Connection) to make the following settings.

Refer to the *RFID System/barcode reader user's manual*.

Setting	Contents	Command
Baud rate	9,600 bps	(Use initial setting.)
Data length	8 bits	(Use initial setting.)
Parity	Even	L3
Stop bits	1 bit	(Use initial setting.)
Header	None	(Use initial setting.)
Footer	CR	(Use initial setting.)
RS/CS control	None	P0
Read failure processing	Sends ?[CR] or >[CR]	5H
Other settings	Use factory settings	---

Link Unit Settings

Setting	Contents	Setting Method
Unit number	Set a different unit number for each Link Unit.	Use DIP Switch pins 1 to 5.
Baud rate	9,600 bps	Turn OFF DIP switch pins 6 and 7.
Transmission protocol	Normal protocol (polling)	Turn OFF DIP switch pin 8.
Connection check	None	Turn OFF DIP switch pin 9
RS-485 terminating resistance	Turn ON at the two Units at both ends of the transmission path (see note).	ON: Turn ON DIP switch pin 10.

Note: In this connection example, the terminating resistance is ON for the Unit with unit number 3 and the host (Interface Converter).

Refer to page 18 and 19 for details on specifications and wiring of Link Units.

Operation Flowchart

Barcodes are read by each RFID Reader Writer or barcode reader when the trigger is input. The read data is sent to the Link Unit, and held in the Link Unit's internal buffer.
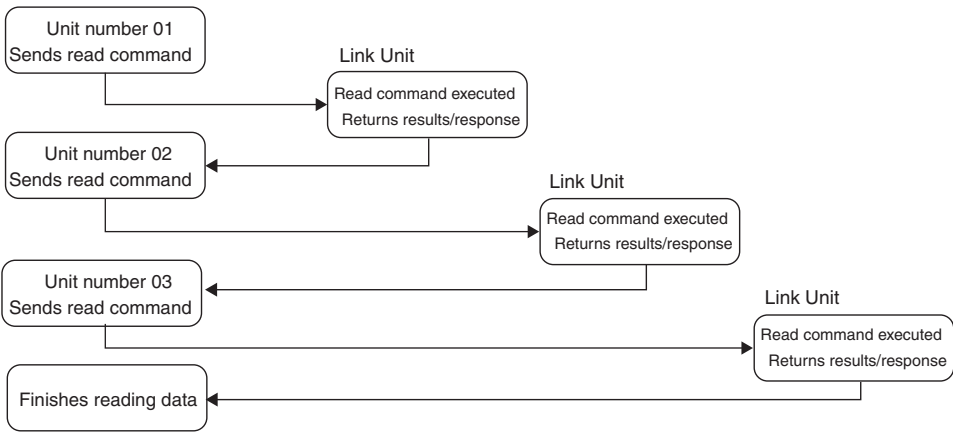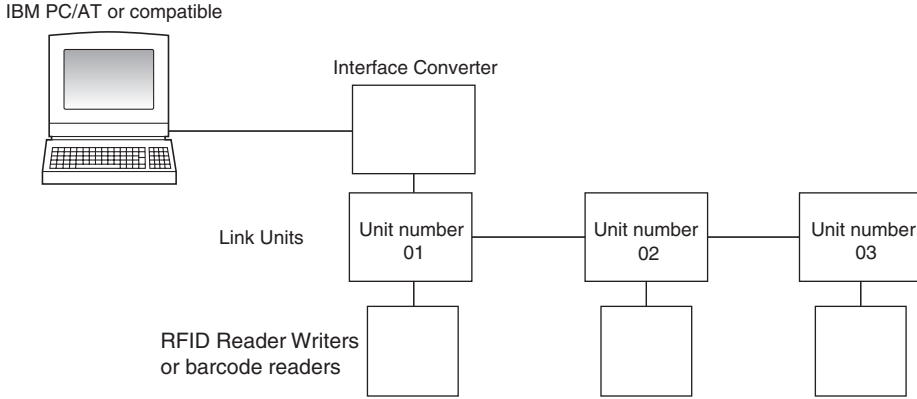
Normal Protocol (Polling)

After the host sends sequential commands to each Link Unit, the polling command is used to get the sequential results from each Link Unit.
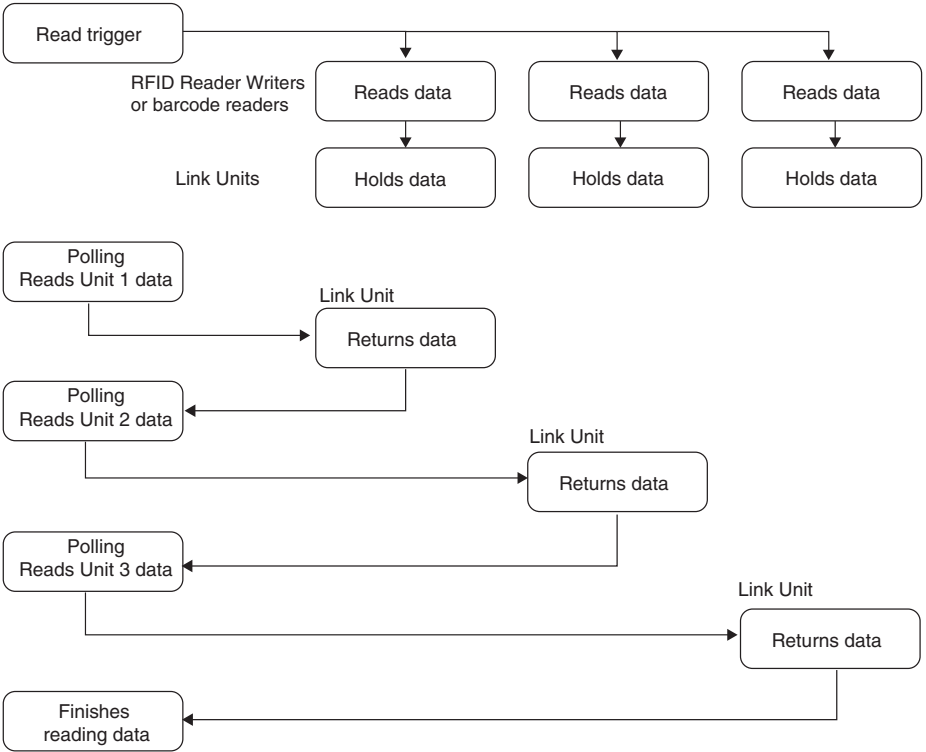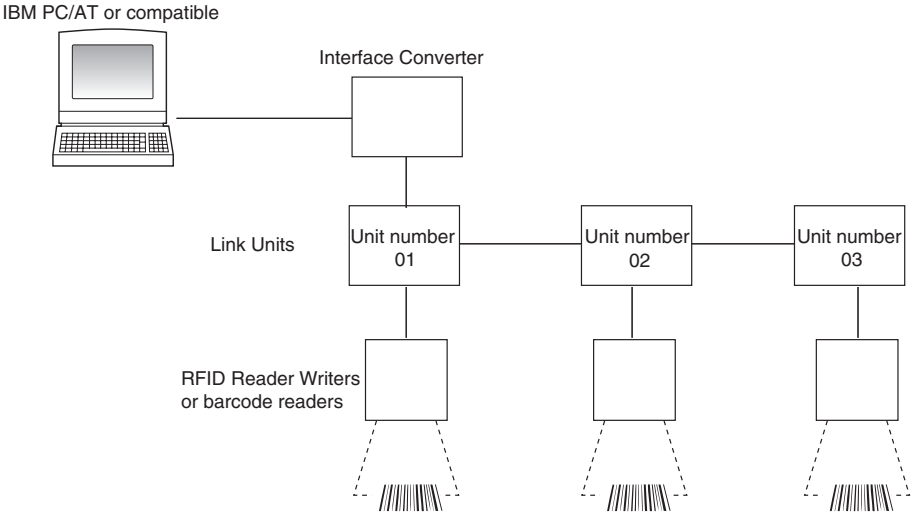
Through Protocol (Immediate Response)

The host sends a command to the Link Unit, waits for the result, and sends a command to another Link Unit.

IBM PC/AT or compatible

Interface Converter

Link Units

Unit number 01

Unit number 02

Unit number 03

RFID Reader Writers or barcode readers

Unit number 01
Sends read command

Link Unit

Read command executed
Returns results/response

Unit number 02
Sends read command

Link Unit

Read command executed
Returns results/response

Unit number 03
Sends read command

Link Unit

Read command executed
Returns results/response

Finishes reading data

Section 2
Installing and Connecting Link Units

Section 2

Installing and Connecting Link Units

Nomenclature

Multi-connection port (RS-485)
p.27

Operation indicator

Host connection port (RS-232C)
p.25

ID connection port
p.30

Mounting hole

OMRON V700-L12
ID LINK UNIT

RUN   COMM

ID   ERR

OMRON Corporation   MADE IN JAPAN

RS-232C   ID PORT

RS-485

Mounting hole

DIP switches (inside cover)
p.24

24-V power supply terminal (inside cover)
p.19
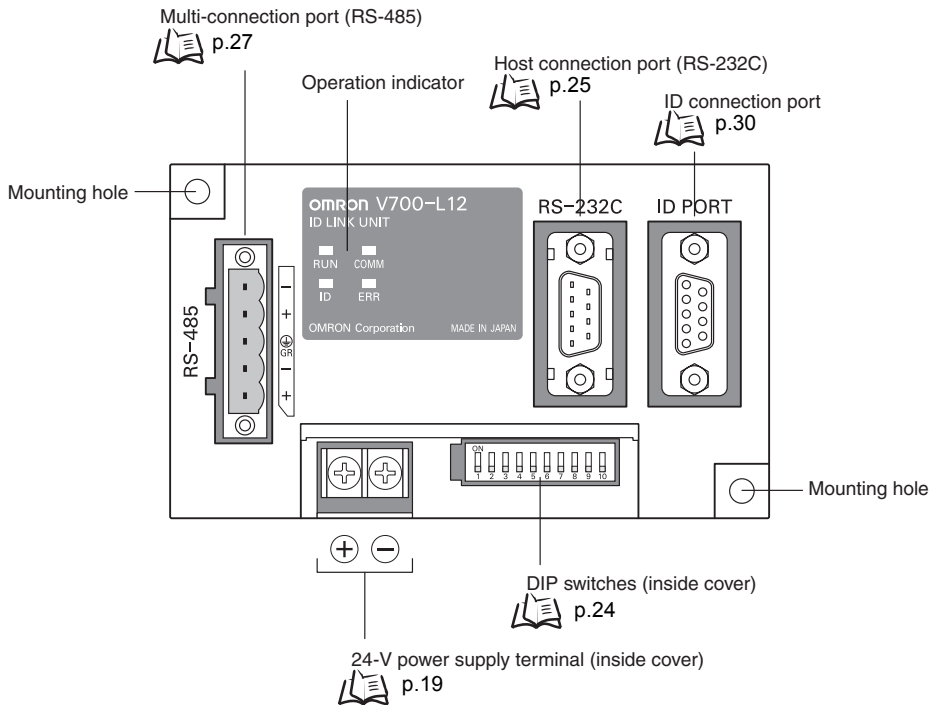
Operation Indicators

The operating status of the Link Unit is shown by four LED indicators

| LED	Meaning
RUN	The Link Unit is operating normally.
COMM	Data is being transmitted between the Link Unit and the host.
ID	Data is being transmitted between the Link Unit and barcode reader.
ERR	An error has occurred during communications between the Link Unit and the host or a barcode reader.

⚠ **CAUTION**	
	The GR (frame ground) terminal is in the multi-connection port. Always ground the multi-connection port to 100 Ω or less, regardless of whether it is used or not. Performance may deteriorate if the port is not ground.
	Do not disassemble the Unit or touch the internal parts of the Unit while the power is turned ON. Doing so may result in electric shock due to the high-voltage internal parts.

Nomenclature   Section 2

Power Supply Wiring

The power supply terminals are located inside the cover on the top of the Unit.
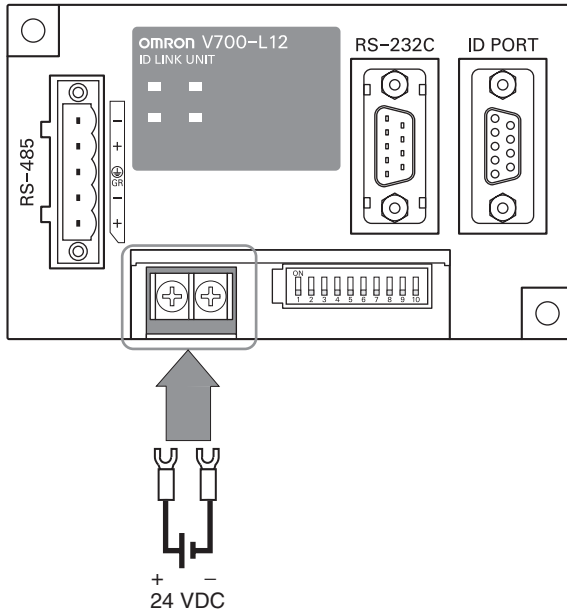
The terminal block screws are M3. Use crimp terminals suitable for M3screws.

Shape	Size
Forked	6.0 mm max.
Round	6.0 mm max.

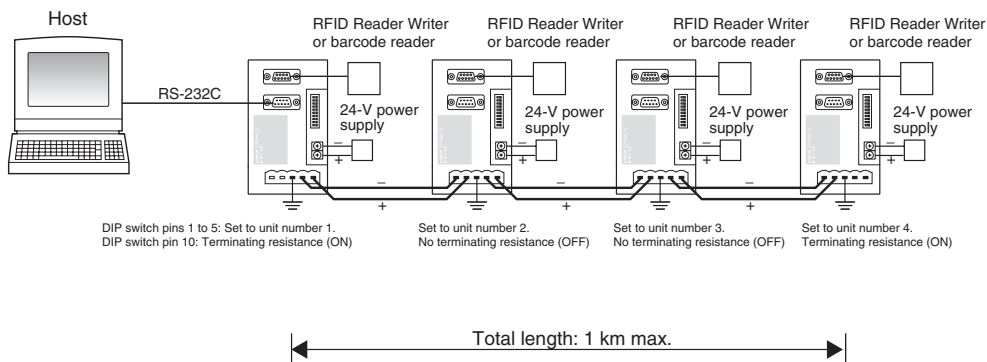Connect a 24-V power supply.

Manufacturer	Model
OMRON	S82K-03024

CHECK! Once wiring has been completed, check that all wiring is correct.
Incorrect wiring may cause malfunction.
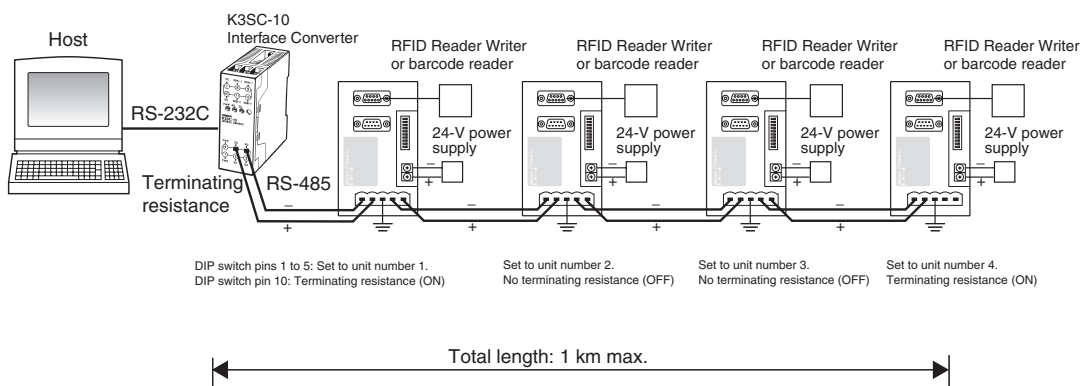
Connecting to the Host

■ Connecting to RS-232C

DIP switch pins 1 to 5: Set to unit number 1.
DIP switch pin 10: Terminating resistance (ON)

Set to unit number 2.
No terminating resistance (OFF)

Set to unit number 3.
No terminating resistance (OFF)

Set to unit number 4.
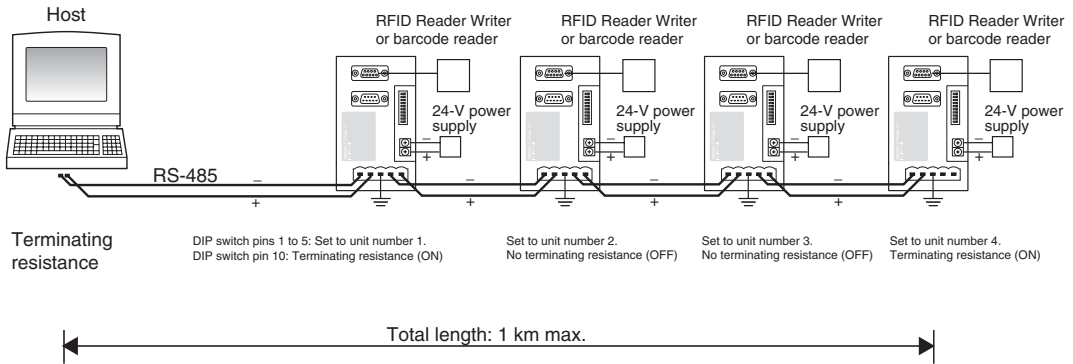Terminating resistance (ON)

Total length: 1 km max.

CHECK! When making 1:N connections using Link Units, RS signals from the host with normal control will need to be input to CS signals. Turn OFF RS signals within 15 ms of the data transmission being completed. The system will not operate correctly if this control is not performed.

■ When RS Signal Control from the Host Is Not Possible

If a K3SC-10 Converter is used and the host connected to an RS-485 communications line, RS signals are not required to perform switching control of signals sent and received.

DIP switch pins 1 to 5: Set to unit number 1.
DIP switch pin 10: Terminating resistance (ON)

Set to unit number 2.
No terminating resistance (OFF)

Set to unit number 3.
No terminating resistance (OFF)

Set to unit number 4.
Terminating resistance (ON)

Total length: 1 km max.

Connecting to the Host   Section 2

■ Connecting via RS-485

Host

RFID Reader Writer or barcode reader

RFID Reader Writer or barcode reader

RFID Reader Writer or barcode reader

RFID Reader Writer or barcode reader

24-V power supply

24-V power supply

24-V power supply

24-V power supply

RS-485

Terminating resistance

DIP switch pins 1 to 5: Set to unit number 1.
DIP switch pin 10: Terminating resistance (ON)

Set to unit number 2.
No terminating resistance (OFF)

Set to unit number 3.
No terminating resistance (OFF)

Set to unit number 4.
Terminating resistance (ON)

Total length: 1 km max.

Set the host to switch to receive data within 15 ms of data transmission. The system will not operate correctly if this control is not performed.
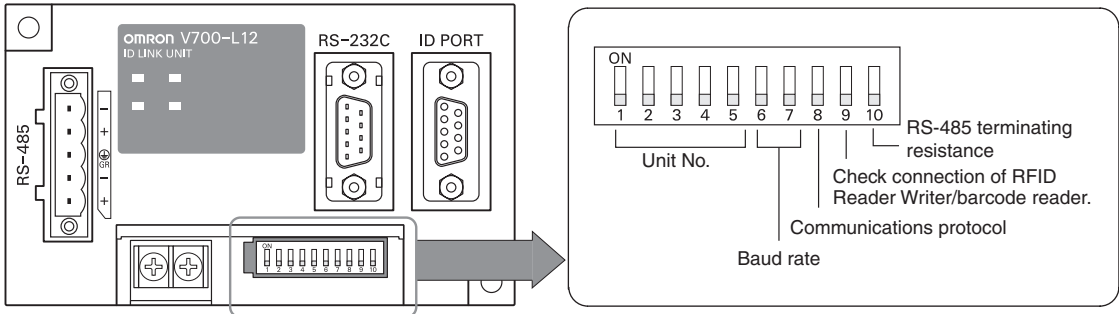
CHECK!

Section 3
Communications

DIP Switch Settings

Use the DIP switch on the Unit to set functions.

■ Unit No. Settings

Unit No.	DIP switch				
	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

Unit No.	DIP switch				
	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
Cannot be set.	ON	ON	ON	ON	ON

■ Other Settings

Setting	Default	Description
Baud rate	9,600 bps	Sets the baud rate for communications with the host. • 4,800 bps: DIP switch pin 6 set to ON, DIP switch pin 7 to OFF. • 9,600 bps: DIP switch pin 6 set to OFF, DIP switch pin 7 to OFF. • 19,200 bps: DIP switch pin 6 set to OFF, DIP switch pin 7 to ON. • 38,400 bps: DIP switch pin 6 set to ON, DIP switch pin 7 to ON.
Communications protocol	Normal	Sets the method for data transmission to the host. • Normal (polling): OFF • Through (immediate transmission): ON
RFID Read/Write Head or bar-code reader connection check	Connection not checked	Checks whether the RFID Reader Writer is connected to the Link Unit. • Connection not checked: OFF • Connection checked: ON
RS-485 terminating resistance	OFF (disabled)	Connects or disconnects the RS-485 terminating resistance. Set to ON for the Link Units at both ends of the transmission path. (Set to ON if only one Link Unit is connected.)

Communications Interface

## Host Connection Port

■ Port Specifications

The host connection port is used to connect to the host via RS-232C. The Unit is shipped with a dust cover over the port. Remove the dust cover before use.

Item	Specification				
Connector specification	D-sub 9-pin connector plug, lock screw: UNC #4-40				
Cable length	15 m max.				
Communications method	Conforms to RS-232C				
Sync	Start-stop synchronization				
Communications control method	OMRON 1:N				
Baud rate (fixed)	4800, 9600, 19200, or 38400 bps (set using DIP switch)				
Character format (fixed)	Start bits	Data bits	Parity bit	Stop bits	Total
	1	8	No parity	1	10
Check code (error detection method)	FCS (Frame Check Sequence)/vertical parity method				

■ Pin Arrangement

The connector face is not electrically connected to GR (frame ground).
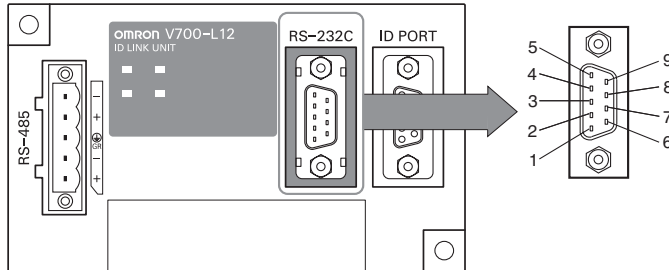
Pin No.	Signal name	Function	Signal direction
1	---	Not connected	---
2	RD	Receive data	Input
3	SD	Send data	Output
4	---	Not connected	---
5	SG	Signal ground	---
6	---	Not connected	---
7	RS	Request to send (Always ON during operation)	Output
8	CS	Clear to send	Input
9	---	Not connected	---

CHECK!

Control of RS Signal from Host
When using 1:N connections through an RS-232C interface on the host, the RS signal from the host must be input to the Link Unit's CS signal. Turn OFF the RS signal within 15 ms of completing the data transmission. The communications will not operate normally if this control is not performed.

ON only during data transmission from host.

Host RS

Host SD

15 ms max.

Section 3 Communications Interface
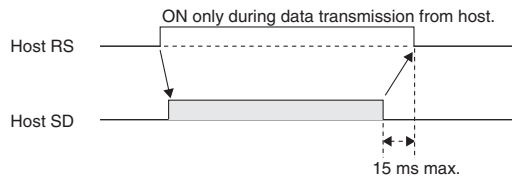
Wiring

This section describes wiring for connecting an ID Link Unit to an IBM PC/AT or compatible personal computer.

The maximum cable length is 15 m.

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

Wiring Method 1

IBM PC/AT or compatible personal computer
D-sub 9-pin

Link Unit
D-sub 9-pin

Signal name	Pin No.
	1
RD	2
SD	3
	4
SG	5
	6
RS	7
CS	8
	9

Pin No.	Signal name
1	
2	RD
3	SD
4	
5	SG
6	
7	RS
8	CS
9	

*1

Wiring Method 2

IBM PC/AT or compatible personal computer
D-sub 9-pin

Link Unit
D-sub 9-pin

Signal name	Pin No.
	1
RD	2
SD	3
	4
SG	5
	6
RS	7
CS	8
	9

Pin No.	Signal name
1	
2	RD
3	SD
4	
5	SG
6	
7	RS
8	CS
9	

*2

*1

*1 Ground the shield either at the IBM PC/AT or compatible personal computer or at the Link Unit.

*2 A loopback line is required if the CS function is to be used on the personal computer.

*3 With wiring method 2, make sure that the cable is connected in the correct direction.

# Multi-connection Port

■ Port Specifications

The multi-connection port is used to connect the Link Unit to multi-connection ports on other Link Units when multiple RFID Reader Writers or barcode readers are connected to a single RS-232C port on a host.

If the host has an RS-485 port, the multi-connection port can function as the host connection port. If the multi-connection port is used as the host connection port, however, the Link Unit RS-232C host connection port can no longer be used. The GR (frame ground) terminal is also located in the multi-connection port.

Item	Specification				
Connector specification	5-pin connector (provided with Link Unit)				
Cable length	Total cable length: 1 km max.				
Communications method	Conforms to RS-485				
Sync	Start-stop synchronization				
Communications control method	OMRON 1:N				
Baud rate (fixed)	4800, 9600, 19200, or 38400 bps (set using DIP switch)				
Character format (fixed)	Start bits	Data bits	Parity bit	Stop bits	Total
	1	8	No parity	1	10
Error detection method	FCS (Frame Check Sequence)				

■ Pin Arrangement

The connector face is not electrically connected to GR (frame ground).
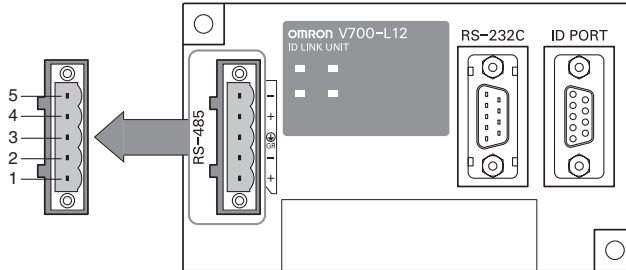
Pin No.	Signal name	Function
5	–	Internally shorted to terminal 2.
4	+	Internally shorted to terminal 1.
3	GR	Frame ground
2	–	Internally shorted to terminal 5.
1	+	Internally shorted to terminal 4.

Switching Between Host Send and Receive

When connecting using an RS-485 interface on the host, enable receiving data within 15 ms after data has been sent from the host. The Link Unit will not operate correctly if this control is not performed.

| ⚠ **CAUTION**	
⏚	The GR (frame ground) terminal is in the multi-connection port. Always ground the multi-connection port to 100 Ω or less, regardless of whether it is used or not. Performance may deteriorate if the port is not ground.
🚫	Do not disassemble the Unit or touch the internal parts of the Unit while the power is turned ON. Doing so may result in electric shock due to the high-voltage internal parts.

■ Cables

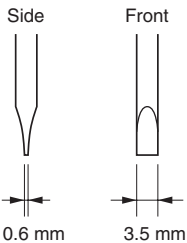|		Model	Manufacturer
Cable	RS-485 signal line	MVVS 2CX0.5SQ	Tachii Electric Wire Co., Ltd
	Frame ground line	(AWG22 to AWG20 cable)	
Crimp terminals	Connecting one wire to one terminal	AI0.5-8WH	Phoenix Contact
	When connecting two wires to one terminal	AI-TWIN2×0.5-8WH	
Crimping tool		CRIMPFOX UD6	

■ Wiring Method

1. Attach the crimp terminal to the section of the cable where the sheath has been stripped.

2. Make sure the connector is facing the right direction and insert each wire into the correct connector hole.
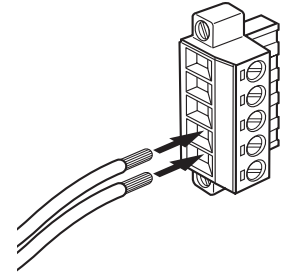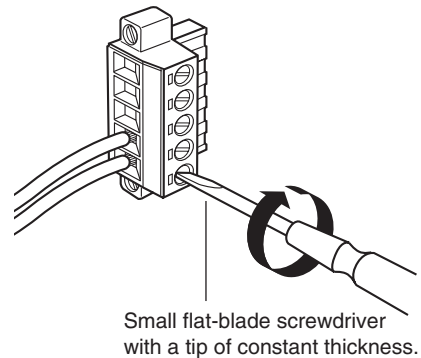
3. Tighten the connector lock screws.

The correct tightening torque is approximately 0.3 N·m.

CHECK!
Normal screwdrivers with a tapering tip will jam partway in and not reach the bottom. Use a small, flat-blade screwdriver with a tip of constant thickness.

Small flat-blade screwdriver with a tip of constant thickness.

Side   Front

0.6 mm   3.5 mm

Manufacturer	Model
OMRON	XW4Z-00C

4. Connect the connector to the Link Unit.

Line up the Link Unit and cable connectors and push them together firmly. Tighten the lock screws.

CHECK!
To disconnect connectors, completely unscrew the two lock screws, hold the protruding part of the connector and pull the connector out straight. If the connector is difficult to disconnect, hold down the Link Unit and pull the connector. Incorrect disconnection may result in damage to the Unit.

Lock screws
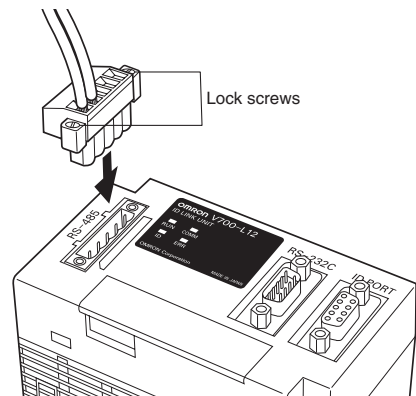
ID Connection Port

■ Port Specifications

The ID connection port is for connecting RFID Reader Writers or barcode readers.

Item		Specification				
Connector specifications		D-sub 9-pin connector socket, M2.6				
Power supply section	Supplied power	5 V ±5%				
Communications section	Communications method	Conforms to RS-232C				
	Sync	Start-stop synchronization				
	Communications control method	OMRON 1:1				
	Baud rate (fixed)	9,600 bps				
	Character format (fixed)	Start bits	Data bits	Parity bit	Stop bits	Total
		1	8	Even	1	11
	Error detection method	Even parity				

■ Pin Arrangement
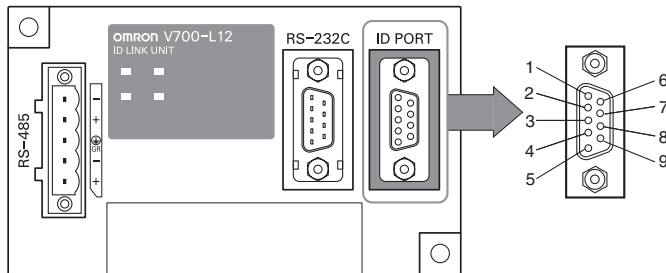
Pin No.	Signal name	Function	Signal direction
1	---	Not connected.	---
2	SD	Send data	Output
3	RD	Receive data	Input
4	RS	Request to send	Output
5	CS	Clear to send (ON during normal operation)	Input
6	5 V	+ 5 V (5 VDC ±5%) supply	Output
7	0 V	0 V supply (Connected internally to SG.)	Output
8	---	Not connected	---
9	SG	Signal ground (Connected internally to 0V.)	---

Communications Format

This section describes the commands used for controlling Link Units (for OMRON 1:N protocol.)

The interval between each command character must be less than 200 ms during communications. Longer intervals will be detected as command delineators.

Input Command

SOH	Unit No.	Communications data for RFID Reader Writer/barcode reader	Check code	CR
$01				$0D

Link Unit processing (DLE) command specification

Item	Explanation
SOH (Start Of Header)	The control code that indicates the start of the command frame ($01)
Unit No.	The unit number that is set using the DIP switch (1 to 32 or 99) If the Unit number is set to 99, all Units are considered local nodes.
Communications data for RFID Reader Writer/barcode reader	Host to Link Unit The communications data will be the command data set to the RFID Reader Writer/barcode reader. However, if the first character is DEL (10h), the communications data will be handled as a Link Unit processing command, which is defined by the next character. P (50h): Polling Note: Disabled for through protocol. R (52h): Retry request C (43h): Buffer clear
	Link Unit to host The communications data is the response data from the RFID Reader Writer/barcode.
Check code	The 8 bits resulting from an exclusive OR (XOR) taken for each of the characters from the character immediately after SOH to the character immediately preceding the check code is converted to two ASCII characters. Example: For [SOH]01020000000600(check code)[CR] Check code = "05" 30h (XOR) 31h (XOR) 30h (XOR) 32h (XOR) 30h (XOR) 30h (XOR) 30h (XOR) 30h (XOR) 30h (XOR) 30h (XOR) 30h (XOR) 36h (XOR) 30h (XOR) 30h = 05h (Converted to ASCII.) →0 (30h) 5 (35h)
CR (Carriage Return)	The control code indicating the end of the frame ($0D).

Response

$01	(Unit No.)	0	0	(Check code)	$0D

With normal protocol (polling) only, when data is received from the host, the response is returned to the host from the Link Unit.

$01	(Unit No.)	9	A	(Check code)	$0D

If an RFID Reader Writer is not connected to the ID port, the response is returned to the host from the Link Unit. The response will only be returned if the setting to check ID port connection is enabled.

With through protocol (continuous output), the above responses will not be output.

■ Polling (P)

When the communications protocol is set to "normal" (polling), the oldest data in the buffer is sent as the response.

(Input Command)

\$01	(Unit No.)	\$10	P	(Check code)	\$0D

(Response)

Data in the buffer

\$01	(Unit No.)	Communications data for RFID Reader Writer/barcode reader	(Check code)	\$0D

No data in the buffer

\$01	(Unit No.)	7	4	(Check code)	\$0D

Code to indicate no data.

For "through" protocol (continuous output), the above responses are not output even if a command is input.

■ Retry Request (R)

Resends the response sent in the last transmission.

(Input Command)

\$01	(Unit No.)	\$10	R	(Check code)	\$0D

(Response)

\$01	(Unit No.)	Communications data for RFID Reader Writer/barcode reader (same as immediately preceding data)	(Check code)	\$0D

■ Buffer Clear (C)

Clears all Link Unit buffers.

(Input Command)

\$01	(Unit No.)	\$10	C	(Check code)	\$0D

(Response)

\$01	(Unit No.)	0	0	(Check code)	\$0D

Refer to page 38 when a code other than 00 is returned.

Communications Frame Change for RFID Reader Writer/Barcode Reader

■ Change to CR (X)

(Input Command)

\$01	(Unit No.)	\$10	X	(Check code)	\$0D

(Response)

\$01	(Unit No.)	0	0	(Check code)	\$0D

Refer to page 38 when a code other than 00 is returned.

The communications frame for the RFID Reader Writer/barcode reader is as follows: Communications data for RFID Reader Writer/barcode reader

Communications data for RFID Reader Writer/barcode reader	CR
	\$0D

Control code indicating end of frame

■ Change to STX/ETX (Y)

(Input Command)

\$01	(Unit No.)	\$10	Y	(Check code)	\$0D

(Response)

\$01	(Unit No.)	0	0	(Check code)	\$0D

Refer to page 38 when a code other than 00 is returned.

The communications frame for the RFID Reader Writer/barcode reader is as follows:

STX	Communications data for RFID Reader Writer/barcode reader	ETX
\$02		\$03

Control code indicating start of frame

Control code indicating end of frame

When the power is cycled, the default setting (CR mode) will be used.

Section 3 Communications Format

Section 4
Appendix

Section 4

Appendix

Troubleshooting

No Response (Cannot Receive) or Corruption

The error status can be checked by observing which operation indicators are lit.

RUN	COMM	ID	ERR	Points to check
Lit	Not lit	Not lit	Not lit	• RS-232C cable connection (incorrect hard wiring) • Command format ([SOH] included or not)
Lit	Not lit	Not lit	Lit	• Host communications settings (e.g., baud rate) and Link Unit communications settings do not match. • RS-232C cable wiring (effect of ambient noise)
Lit	Lit	Not lit	Not lit	• Unit numbers specified in the command do not match the Unit number settings in the Link Unit.
Lit	Lit	Not lit	Lit	• Command format ([CR], check code calculation, command character interval, etc.) • RS-232C cable wiring (effect of ambient noise) • The same unit number has been set for two or more Link Units on the same system*
Lit	Lit	Lit	Not lit	• RS-232C cable connection (incorrect hard wiring) • Host send and receive switching timing, when connected to host using RS-485. (Time)
Not lit	Not lit	Not lit	Not lit	• Check 24 VDC power supply line

* The operation indicators turn repeatedly ON and OFF even when commands are not being sent.

Troubleshooting   Section 4

Communications Error for Specific Link Unit Only

The error status can be checked by observing which operation indicators are lit.

RUN	COMM	ID	ERR	Points to check
Lit	Not lit	Not lit	Not lit	• RS-485 cable connection (incorrect hard wiring) • RS-232C cable connection (incorrect hard wiring) • Host RS signal control (RS signal always OFF, or turns ON after a delay after command has been sent.)*
Lit	Not lit	Not lit	Lit	• Host communications settings (e.g., baud rate) and Link Unit communications settings do not match. • RS-485 cable wiring (effect of ambient noise)
Lit	Lit	Not lit	Not lit	• Host communications settings (e.g., baud rate) and Link Unit communications settings do not match.
Lit	Lit	Not lit	Lit	• Host RS signal control (OFF before command transmission has been completed)*
Lit	Lit	Lit	Not lit	• Host RS signal control (RS signal is always ON).*
Not lit	Not lit	Not lit	Not lit	• Check 24-VDC power supply line.

* Refer to page 25 for information on host connection ports.

Error Codes

An error has occurred if a code listed below is returned in the response data.
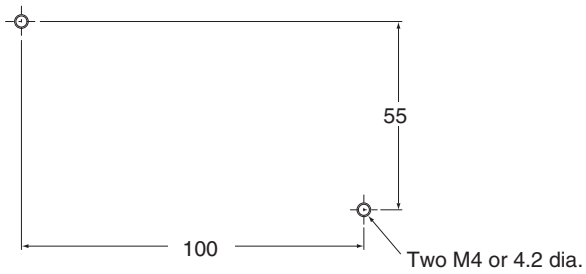
Refer to the following table and check the response code.

Completion code	Cause of error	Points to check
93	RFID Reader Writer/barcode reader communications error	• RFID Reader Writer/barcode reader cable wiring (effect of ambient noise)
9A	RFID Reader Writer/barcode reader error	• RFID Reader Writer/barcode reader interface connector connection • RFID Reader Writer/barcode reader cable disconnection

Specifications and External Dimensions

■ V700-L12 ID Link Unit

(Unit: mm)

```
110
41.5        41.3
       20.3
65

4                              Two, 4.5 dia.
```

```
35.2

4    60
```
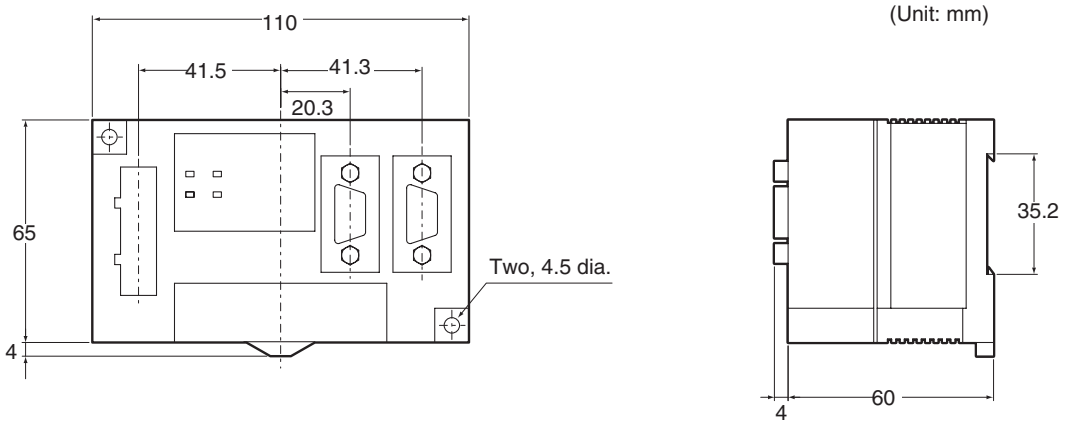
Mounting Hole Dimensions

```
55

100              Two M4 or 4.2 dia.
```

General Specifications

| Item	Specification
No. of connectable Antennas	1
Power supply voltage	24 VDC +10%/−15%
Power consumption	10 W max.
Insulation resistance	50 MΩ min. (at 500 VDC) between power supply terminals and ground terminal.
Dielectric strength	100 VAC, 50/60 Hz for 1 min between power supply terminals and ground terminal, leakage current: 5 mA max.
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude at 15 m/s^2 for 10 sweeps for 8 minutes each in X, Y, and Z directions with no errors
Shock resistance	Shock from acceleration of 150 m/ s^2 3 times each in X, Y, and Z directions (18 times in total) with no errors
Ambient temperature	Operating: 0 to 45°C, storage: −15 to 50°C (with no icing or condensation)
Ambient humidity	Operating:/storage: 35% to 85% (with no condensation)
Degree of protection	IP20 (IEC60529 standard)
Ground	Must be grounded to a resistance of 100 Ω or less.
Weight	Approx. 185 g

Communications Functions

Item	Specification
Unit No.	Set a unit number between 01 and 31.
Baud rate for host communications	Set a baud rate of 4800, 9600, 19200, or 38400 bps.
Protocol for data transmission to host	Normal (Polling) • When data is input from a host, the data is output immediately to the ID port and a response is sent to the host to indicate that the data was received. • When data is input from the ID port, the Unit waits for an inquiry command before sending the data. • This protocol is recommended when using 1:N connections.
	Through (Immediate Transmission) • Data input from the host is output immediately to the ID port. No response is sent to the host to indicate the data was received. • When data is input from the ID port, it is sent immediately to the host.
RS-485 terminating resistance	Set to either OFF (disconnected) or ON (connected).

Use the DIP switch to set or select functions.

Revision History

A manual revision code appears as a suffix to the catalog number at the bottom of the front and rear pages.

Cat. No. Z217-E1-01
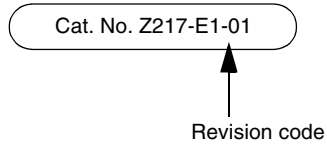
Revision code

Revision code	Date	Revised contents
01	January 2005	Original production