

# SECTION 4

## Reading from/Writing to ID Tags


☒ When SECS Is Used	70
Online Check	72
Get Attributes	72
Set Attributes	73
Read Data	74
Write Data	75
Read ID	76
Write ID	76
Subsystem Command (ChangeState)	77
Subsystem Command (GetStatus)	78
Subsystem Command (PerformDiagnostics)	78
Subsystem Command (Reset)	79
☒ When SECS Is Not Used	81
READ	84
WRITE	85
SAME WRITE	87
BYTE WRITE	88
TEST	89
NAK	90
GET PARAMETER	90
GET LAST COMMAND	92
GET COMMUNICATIONS HISTORY	93
CLEAR COMMUNICATIONS HISTORY	94
NOISE MEASUREMENT	94
RESET	94

# When SECS Is Used



The SEMI standards are subject to revision. You must refer to the actual standards.

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

SECS Protocol Specifications  Refer to page 149.



## Message Specifications

### List of Messages Used

Classification	S	F	Direction	SECS II names	See
General purpose messages	1	1	S,H→E,reply	Are You There Request	p.72
	1	2	S,H←E	On Line Data	p.72
CIDRW system messages	18	1	S,H→E,reply	Read Attribute Request	p.72
	18	2	S,H←E	Read Attribute Data	p.72
	18	3	S,H→E,reply	Write Attribute Request	p.73
	18	4	S,H←E	Write Attribute Acknowledge	p.73
	18	5	S,H→E,reply	Read Request	p.74
	18	6	S,H←E	Read Data	p.74
	18	7	S,H→E,reply	Write Request	p.75
	18	8	S,H←E	Write Acknowledge	p.75
	18	9	S,H→E,reply	Read ID Request	p.76
	18	10	S,H←E	Read ID Data	p.76
	18	11	S,H→E,reply	Write ID Request	p.76
	18	12	S,H←E	Write ID Acknowledge	p.76
	18	13	S,H→E,reply	Subsystem Command Request	p.77
	18	14	S,H←E	Subsystem Command Acknowledge	p.77

List of Error Messages  Refer to page 96.

### Data Item Dictionary

SECS II data items	Name	Format	Value
ATTRID	Attribute ID	20	Attribute name
ATTRVAL	Attribute value	20	Attribute value
MID	Carrier ID	MID	20 <sub>16</sub> to 7E <sub>16</sub> (Visible ASCII)
DATA	Data	20	All characters 00H-0FFH
DATALENGTH	DataSize	52	Offset designation: 1 to 224 Segment designation:  Refer to ID Tag Memory Maps page 147.
DATASEG	DataSeg	20	Offset designation: "00", "01"... "0222", "0223" Segment designation:  Refer to ID Tag Memory Maps page 147.
STATUS	PM information	20	"NE": Normally executed

**Data Item Dictionary**

SECS II data items	Name	Format	Value
SSACK	Result status	20	"NO": Normal "EE": Execution error *3 "CE": Communications error "HE": Hardware error *3 "TE": Tag error *3
List of STATUS	Status	L,4 1.<PMInformation> 2.<AlarmStatus> 3.<OperationalStatus> 4.<HeadStatus> *2	The STATUS values are included in the PM information.
CPVAL	State request	20	"OP", "MT", "PS" *1
TARGETID	Target ID	20	"00"- "31" "00" indicates the CIDRW Controller itself.
SSCMD	Subsystem commands	20	"ChangeState" "GetStatus" "PerformDiagnostics" "Reset"

\*1: "PS" is an expansion command for this Unit.

\*2: When the TARGET ID is "00" (CIDRW), this is a zero length item.

\*3: "EE," "HE," and "TE" are used only with S18F6, S18F8, S18F10, and S18F12.



**S9F7 Responses**

An S9F7 response is given when a message in an illegal format is received from the host device.

"Illegal format" here means that there is a problem with the message composition, such as illegal attributes, or insufficient or too many items. If other problems relating to the item contents arise, the response is SSACK = "CE" (communications error).



**Communications with the Host Device**

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

■ Specifications for Each Stream/Function

• Online Check

S1,F1	Are You There Request	S,H→E,reply
		Header only

S1,F2	On Line Data	S,H←E
L,2		
	1.<MDLN>	
	2.<SOFTREV>	
	<ul style="list-style-type: none"> <li>• Set MDLN (model number).</li> <li>• Set SOFTREV (software revision level).</li> </ul>	

• Get Attributes

S18,F1	Read Attribute Request	S,H→E,reply
L,2		
	1.<TARGETID>	"00"-<31"
	2.L,n	
	1.<ATTRID1>	
	.	
	n.<ATTRIDn>	
	<ul style="list-style-type: none"> <li>• The setting for reading all attributes (CIDRW Controller or Heads) is n = 0.</li> </ul>	

S18,F2	Read Attribute Data	S,H←E
L,4		
	1.<TARGETID>	"00"-<31"
	2.<SSACK>	
	3.L,n	
	1.<ATTRVAL1>	
	.	
	n.<ATTRVALn>	
	4.L,s	
	1.<STATUS1>	
	.	
	s.<STATUSs>	
	<ul style="list-style-type: none"> <li>• The order of the attribute data corresponds to the attribute ID specified by S18, F1. When reading of all attributes is specified, unsupported attribute items (ATTRVAL) are omitted.</li> <li>• When the specified target is invalid:  n = 0, s = 0, SSACK = "CE" communications error</li> <li>• When one or more undefined attributes are included:  n = 0, s = 0, SSACK = "CE" communications error</li> <li>• When Head attributes are specified with TARGET = "00" or CIDRW Controller attributes are specified with TARGET &lt;&gt; "00":  n = 0, s = 0, SSACK = "CE" communications error</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>	

• Set Attributes

F18,F3	Write Attribute Request	S,H→E,reply
L,2		
	1.<TARGETID>	"00" (fixed)
	2.L,n	
	1.L,2	
	1.<ATTRID1>	
	2.<ATTRVAL1>	
	n.L,2	
	1.<ATTRIDn>	
	2,<ATTRVALn>	
<p>Since the attributes for Heads are all RO in this system, the target ID is fixed as "00".</p>		

S18,F4	Write Attribute Acknowledge	S,H←E
L,3		
	1.<TARGETID>	"00" (fixed)
	2.<SSACK>	
	3.L,s	
	1.<STATUS1>	
	.	
	s.<STATUSs>	
<ul style="list-style-type: none"> <li>• When the specified target is invalid: s = 0, SSACK = "CE" communications error</li> <li>• When one or more undefined attributes or RO attributes are included: s = 0, SSACK = "CE" communications error</li> <li>• When illegal attribute data is specified: s = 0, SSACK = "CE" communications error</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>		

• Read Data

S18,F5	Read Request	S,H→E,reply
L,3		
	1.<TARGETID>	"01"->"31"
	2.<DATASEG>	
	3.<DATALENGTH>	
<ul style="list-style-type: none"> <li>• When DATASEG is specified as "0" and a character string, the size of data determined by the DATALENGTH setting is read, starting from the address indicated by the DATASEG setting. If DATALENGTH = 0, data is read up to the end of the data area.</li> <li>• If DATASEG is specified as a character string, a size of data determined by DATALENGTH, starting from the address specified by DATASEG, is read (segment specification).</li> <li>• When the data of all segments is batch read, both DATASEG and DATALENGTH are omitted (they are zero length items).</li> <li>• When all the data for a particular segment is read, DATALENGTH is omitted (it is a zero length item).</li> <li>• In a segment specification, it is not possible to specify a DATALENGTH that exceeds the maximum length of the relevant DATASEG.</li> <li>• In a segment specification, if a DATALENGTH that is under the set length for DATASEG is specified, only the data corresponding to specified DATALENGTH is read.</li> </ul>		

ID Tag Memory Maps  Refer to page 147.

S18,F6	Read Data	S,H→E,reply
L,4		
	1.<TARGETID>	"01"->"31"
	2.<SSACK>	
	3.<DATA>	
	4.L,s	
	1.<STATUS1>	
	.	
	s.<STATUSs>	
<ul style="list-style-type: none"> <li>• When the specified target is invalid:            DATA item length = 0, s = 0, SSACK = "CE" communications error</li> <li>• In an address specification, if:  <math>(SEGMENT + DATALENGTH) \leq \text{total value for all segments}</math> then SSACK = "NO"</li> <li>• In an address specification, if:  <math>(SEGMENT + DATALENGTH) &gt; \text{total value for all segments}</math> then DATA item length = 0, s = 0, SSACK = "CE" communications error</li> <li>• In a segment specification, if an undefined DATASEG is specified, or if the DATALENGTH is illegal:            DATA item length = 0, s = 0, SSACK = "CE" communications error</li> <li>• When reading of all segment data is specified in a system where the data segment is not defined:            DATA length = 0, SSACK = "NO"</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>		

• Write Data

S18,F7	Write Request	S,H→E,reply
L,4		
	1.<TARGETID>	"01"->"31"
	2.<DATASEG>	
	3.<DATALENGTH>	
	4.<DATA>	
<ul style="list-style-type: none"> <li>• If DATASEG is specified as "0" and a character string, a size of data corresponding to the DATALENGTH setting and starting from the address within the data area indicated by the DATASEG setting is written (address specification). If DATALENGTH = 0, data is written up to the end of the data area.</li> <li>• If DATASEG is specified as a character string, a size of data determined by DATALENGTH, starting from the address specified by DATASEG, is written (segment specification).</li> <li>• When the data for all segments is batch written, both DATASEG and DATALENGTH are omitted (they are zero length items).</li> <li>• When all the data for a particular segment is written, DATALENGTH is omitted (it is a zero length item).</li> <li>• In a segment specification, it is not possible to specify a DATALENGTH that exceeds the maximum length of the relevant DATASEG.</li> <li>• In a segment specification, if a DATALENGTH that is under the set length for DATASEG is specified, only the data corresponding to the specified DATALENGTH is written, compressed into the smaller addresses.</li> <li>• The item lengths of DATASEG and DATA must be matched.</li> <li>• If DATASEG and DATALENGTH are both omitted (made zero length items), the length of DATA must match the total of the set lengths of all segments.</li> </ul>		

ID Tag Memory Maps  Refer to page 147.

S18,F8	Write Acknowledge	S,H←E
L,3		
	1.<TARGETID>	"01"->"31"
	2.<SSACK>	
	3.L,s	
	1.<STATUS1>	
	.	
	s.<STATUSs>	
<ul style="list-style-type: none"> <li>• When the specified target is invalid: s = 0, SSACK = "CE" communications error</li> <li>• In an address specification, if: (SEGMENT + DATALENGTH) ≤ total value for all segments then SSACK = "NO"</li> <li>• In an address specification, if: (SEGMENT + DATALENGTH) &gt; total value for all segments then DATA item length = 0, s = 0, SSACK = "CE" (communications error)</li> <li>• In a segment specification, if DATASEG and DATALENGTH are illegal: s = 0, SSACK = "CE" communications error</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>		

• **Read ID**

S18,F9	Read ID Request	S,H→E,reply
1.<TARGETID>		"01"->"31"

ID Tag Memory Maps  Refer to page 147.

S18,F10	Read ID Data	S,H←E
L,4		
1.<TARGETID>		"01"->"31"
2.<SSACK>		
3.<MID>		
4.L,s		
1.<STATUS1>		
.		
s.<STATUSs>		
<ul style="list-style-type: none"> <li>• If the MID data contains Non-Visible ASCII code:  s = 0, MID item length = 0, SSACK = "EE" execution error</li> <li>• When the specified target is invalid:  s = 0, MID item length = 0, SSACK = "CE" communications error</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>		

• **Write ID**

S18,F11	Write ID Request	S,H→E,reply
L,2		
1.<TARGETID>		"01"->"31"
2.<MID>		
<ul style="list-style-type: none"> <li>• If an MID that is under the length set for the CarrierIDlength attribute is specified, an error occurs and the MID data is not written.</li> </ul>		

ID Tag Memory Maps  Refer to page 147.

S18,F12	Write ID Acknowledge	S,H←E
L,3		
1.<TARGETID>		"01"->"31"
2.<SSACK>		
3.L,s		
1.<STATUS1>		
.		
s.<STATUSs>		
<ul style="list-style-type: none"> <li>• When the specified target is invalid:  s = 0, SSACK = "CE" communications error</li> <li>• When there is an MID length error:  s = 0, SSACK = "CE" communications error</li> <li>• If the MID data contains Non-Visible ASCII code:  s = 0, SSACK = "EE" execution error</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>		



• Subsystem Command (ChangeState)

S18,F13	Subsystem Command Request (ChangeState)	S,H→E,reply
L,3		
	1.<TARGETID>	"00" (fixed)
	2.<SSCMD>	"ChangeState"
	3.L,1	
	1.<CPVAL1>	"OP", "MT" or "PS"
CPVAL = "PS" is a parameter setting unique to this CIDRW Controller for switching to the Setting mode.		

S18,F14	Subsystem Command Acknowledge (ChangeState)	S,H←E
L,3		
	1.<TARGETID>	"00"
	2.<SSACK>	
	3.L,s	
	1.<STATUS1>	
	.	
	s.<STATUSs>	
<ul style="list-style-type: none"> <li>• When the specified target is invalid: s = 0, SSACK = "CE" communications error</li> <li>• When SSCMD is invalid: s = 0, SSACK = "CE" communications error</li> <li>• When OperationalStatus is BUSY: s = 0, SSACK = "EE" execution error</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>		

• Subsystem Command (GetStatus)

S18,F13	Subsystem Command Request (GetStatus)	S,H→E,reply
L,3		
	1.<TARGETID>	"00"->"31"
	2.<SSCMD>	"GetStatus"
	3.L,0	

S18,F14	Subsystem Command Acknowledge (GetStatus)	S,H←E
L,3		
	1.<TARGETID>	"00"->"31"
	2.<SSACK>	"GetStatus"
	3.L,s	
	1.<STATUS1>	
	.	
	s.<STATUSs>	
<ul style="list-style-type: none"> <li>• When the specified target is invalid: s = 0, SSACK = "CE" communications error</li> <li>• When SSCMD is invalid: s = 0, SSACK = "CE" communications error</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>		

• Subsystem Command (PerformDiagnostics)

S18,F13	Subsystem Command Request (PerformDiagnostics)	S,H→E,reply
L,3		
	1.<TARGETID>	"00"->"31"
	2.<SSCMD>	"PerformDiagnostics"
	3.L,0	

S18,F14	Subsystem command Acknowledge (PerformDiagnostics)	S,H←E
L,3		
	1.<TARGETID>	"00"->"31"
	2.<SSACK>	
	3.L,s	
	1.<STATUS1>	
	.	
	s.<STATUSs>	
<ul style="list-style-type: none"> <li>• When the specified target is invalid: s = 0, SSACK = "CE" communications error</li> <li>• When SSCMD is invalid: s = 0, SSACK = "CE" communications error</li> <li>• If the status of SSACK is other than "NO" (normal), the List of Status will comprise zero items.</li> </ul>		

• Subsystem Command (Reset)

S18,F13	Subsystem Command Request (Reset)	S,H→E,reply
L,3		
	1.<TARGETID>	"00" (fixed)
	2.<SSCMD>	"Reset"
	3.L,0	

S18,F14	Subsystem Command Acknowledge (Reset)	S,H←E
L,3		
	1.<TARGETID>	"00"
	2.<SSACK>	
	3.L,0	
<ul style="list-style-type: none"> <li>• When the specified target is invalid: SSACK = "CE" communications error</li> <li>• When SSCMD is invalid: SSACK = "CE" communications error</li> </ul>		

■ **Operation Conditions**

The response messages and response codes (SSACK) in each state are shown below.

State		Initializing	Operating		Maintenance
Message	Function		IDLE	BUSY	
S1,F1	OnlineRequest	S1,F0	S1,F2	S1,F2	S1,F2
S18,F11	WriteID	S18,F0	S18,F0	S18,F0	NO
S18,F7	WriteData	S18,F0	NO	NO	S18,F0
S18,F3	SetAttribute	S18,F0	NO	NO	NO
S18,F13(Reset)	Reset	S18,F0	NO	NO	NO
S18,F9	ReadID	S18,F0	NO	NO	NO
S18,F5	ReadData	S18,F0	NO	NO	S18,F0
S18,F13(PerformDiagnostics)	Diagnostics	S18,F0	NO	NO	NO
S18,F13(GetStatus)	GetStatus	S18,F0	NO	NO	NO
S18,F1	GetAttribute	S18,F0	NO	NO	NO
S18,F13(ChangeState)	ChangeState(to MT)	S18,F0	NO	S18,F0	S18,F0
S18,F13(ChangeState)	ChangeState(to OP)	S18,F0	S18,F0	S18,F0	NO
S18,F13(ChangeState)	ChangeState(to PS)	S18,F0	NO	S18,F0	NO

# When SECS Is Not Used

## Command/Response Format

### 1:N Protocol

#### Command

SOH	Node No.	Command code				Parameter				FCS	CR	
						1	...	n				
01h												0Dh

#### Response

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

### 1:1 Protocol

#### Command

Command code				Parameter				CR
				1	...	n		
								0Dh

#### Response

Response code	Parameter				CR
	1	...	n		
					0Dh



Meaning of FCS (frame check sequence)

This is two ASCII code characters obtained by conversion from the 8-bit exclusive logical sum (EOR) of the characters from the character immediately after SOH to the character immediately before FCS.

Example: Reading the data of page 1 and page 2 of node No.1

Command [SOH]01010000000000C[FCS] [CR]  
└──────────────────┘  
Calculation range

```

'0' (30h) = 0011 0000 )EOR
'1' (31h) = 0011 0001 )EOR
'0' (30h) = 0011 0000 )EOR
'1' (31h) = 0011 0001 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'0' (30h) = 0011 0000 )EOR
'c' (43h) = 0100 0011 )EOR
              0111 0011
                ↓   ↓
                7   3
(ASCII conversion)↓
              '7' (37h) '3' (33h)
    
```

## Command

### Command Code List

Name	Value	Function	See
READ	0100	When this command is received, the system communicates with the ID Tag, and reads the specified page(s) of data. Any pages up to a maximum of 16 can be selected.	p.84
WRITE	0200	When this command is received, the system communicates with the ID Tag, and writes the specified page(s) of data. Any pages up to a maximum of 16 can be selected.	p.85
SAME WRITE	0300	When this command is received, the system communicates with the ID Tag, and writes the same data in page units to the specified pages. Up to 17 pages, which is the maximum number of pages for an ID Tag, can be specified.	p.87
BYTE WRITE	0400	When this command is received the system communicates with the ID Tag, and writes data to the area specified by a first address and number of bytes. A maximum of 128 bytes can be specified.	p.88
TEST	10	Sends received data to the host device.	p.89
NAK	12	Sends the response made immediately before again.	p.90
GET PARAMETER	14	Gets the model number, MAC address, or another parameter.	p.90
GET LAST COMMAND	15	Gets the command code of the last command that was executed.	p.92
GET COMMUNICATIONS HISTORY	16	Gets the history of communications from when the power was turned ON (total number of communications, total successful communications, and total number of failed communications).	p.93
CLEAR COMMUNICATIONS HISTORY	17	Clears the communications history.	p.94
NOISE MEASUREMENT	40	Measures the noise in the vicinity of the CIDRW Head.	p.94
RESET	7F	Resets the Amplifier Unit.	p.94

### Response Code List

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



#### Communications with the Host Device

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

The command and response details are given for a 1:N protocol. Just as in the previous command format, the details for a 1:1 protocol are the same if the SOH, node number, and FCS are deleted.









## ■ SAME WRITE

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

**Command**

SOH	Node No.	Command code				Page designation (8 characters)								Write data				FCS	CR							
														Data 1	...	Data 8										
01h		0	3	0	0																					0Dh

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

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

### Parameter Description

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

ID Tag Memory Maps



Refer to page 147.

**Response**

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

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

Example: Clearing pages 1 to 17 of node No.1 to 0

**Command**

SOH	Node No.	Command code				Page designation								Write data								FCS		CR									
01h	0	1	0	3	0	0	0	0	0	7	F	F	F	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0Dh

Binary notation

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

**Response**

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

**■ BYTE WRITE**

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

**Command**

SOH	Node No.		Command code				First address		Write data				FCS		CR
									Data 1	...	Data n				
01h			0	4	0	0									0Dh

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

**Parameter Description**

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

ID Tag Memory Maps  Refer to page 147.

**Response**

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

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

Example: Writing to two bytes starting from address 05h of node No.1

**Command**

SOH	Node No.		Command code				First address		Write data				FCS		CR
									Data 1	Data 2	Data 3	Data 4			
01h	0	1	0	4	0	0	0	5	1	2	3	4	0	4	0Dh

**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 1						12h	34h	
Page 2								

**■ TEST**

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

**Command**

SOH	Node No.		Command code		Test data						FCS		CR	
					Data 1		...		Data n					
01h			1	0										0Dh

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

**Parameter Description**

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

**Response**

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

SOH	Node No.		Response code		Test data						FCS		CR	
					Data 1		...		Data n					
01h			0	0										0Dh

Example: Testing by sending the data 12345678 to node No.1

**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

■ **NAK**

Sends the response made immediately before again.

Command

SOH	Node No.		Command code		FCS		CR
01h			1	2			0Dh

Response

Sends the response made immediately before again.

■ **GET PARAMETER**

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

Command

SOH	Node No.		Command code		Parameter type		FCS		CR
01h			1	4					0Dh

**Parameter Description**

Parameter	Value	Description
Parameter type	01	Model number
	02	Firmware version
	20	Memory status
	21	Antenna connection status

Response

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

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

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

Example 1: Getting the Model Number of Node 1

Command

SOH	Node No.		Command code		Parameter type		FCS		CR
01h	0	1	1	4	0	1	0	5	0Dh

**Response**

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

SOH	Node No.		Response code		Model number											FCS		CR		
01h	0	1	0	0	V	6	4	0	-	H	A	M	1	1	-	V	3	4	4	0Dh

**Example 2: Getting the Firmware Version of Node 1**

**Command**

SOH	Node No.		Command code		Parameter type		FCS		CR
01h	0	1	1	4	0	2	0	6	0Dh

**Response**

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

SOH	Node No.		Response code		Firmware version				FCS		CR
01h	0	1	0	0	0	1	0	0	0	0	0Dh
					Major version		Minor version				

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

**Example 3: Getting the Memory Status of Node 1**

**Command**

SOH	Node No.		Command code		Parameter type		FCS		CR
01h	0	1	1	4	2	0	0	6	0Dh

**Response**

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

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

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

Example 4: Getting the Antenna Connection Status of Node 1

Command

SOH	Node No.		Command code		Parameter type		FCS		CR
01h	0	1	1	4	2	1	0	7	0Dh

Response

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

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

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

■ **GET LAST COMMAND**

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

Command

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

Response

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

**When There Is a Previously Executed Command**

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

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

**When There Is No Previously Executed Command**

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



## ■ GET COMMUNICATIONS HISTORY

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

### Command

SOH	Node No.		Command code		FCS		CR
01h			1	6			0Dh

### Response

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

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

SOH	Node No.		Response code		Total number of communications				Total number of successful communications				Total number of failed communications				FCS		CR
01h			0	0															0Dh

Example: Getting the Communications History of Node 1

### Command

SOH	Node No.		Command code		FCS		CR
01h	0	1	1	6	0	6	0Dh

### Response

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

SOH	Node No.		Response code		Total number of communications				Total number of successful communications				Total number of failed communications				FCS		CR
01h	0	1	0	0	7	D	0	0	7	5	3	0	0	7	D	0	0	0	0Dh

**■ CLEAR COMMUNICATIONS HISTORY**

This command clears the communications history.

Command

SOH	Node No.		Command code		FCS		CR
01h			1	7			0Dh

Response

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

**■ NOISE MEASUREMENT**

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

Command

SOH	Node No.		Command code		FCS		CR
01h			4	0			0Dh

Response

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

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

Influence of background noise on communications distance



Refer to page 146.

**■ RESET**

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

Command

SOH	Node No.		Command code		FCS		CR
01h			7	F			0Dh

Response

There is no response to this command.

# SECTION 5

## Troubleshooting

☒ When SECS Is Used	96
☒ When SECS Is Not Used	102

## When SECS Is Used

Errors are indicated by the contents of the CIDRW Controller response messages, and by the indicators.

### List of Error Messages

When responses are made to messages sent by the CIDRW Controller, errors are expressed by the contents of error messages and the nature of the SSACK response.

S	F	Direction	SECS II names
1	0	S,H←E	Abort Transaction
9	0	S,H→E	Abort Transaction
9	1	S,H←E	Unrecognized Device ID
9	3	S,H←E	Unrecognized Stream Type
9	5	S,H←E	Unrecognized Function Type
9	7	S,H←E	Illegal Data
9	9	S,H←E	Transaction Timer Timeout
9	11	S,H←E	Data Too Long
18	0	S,H←E	Abort Transaction

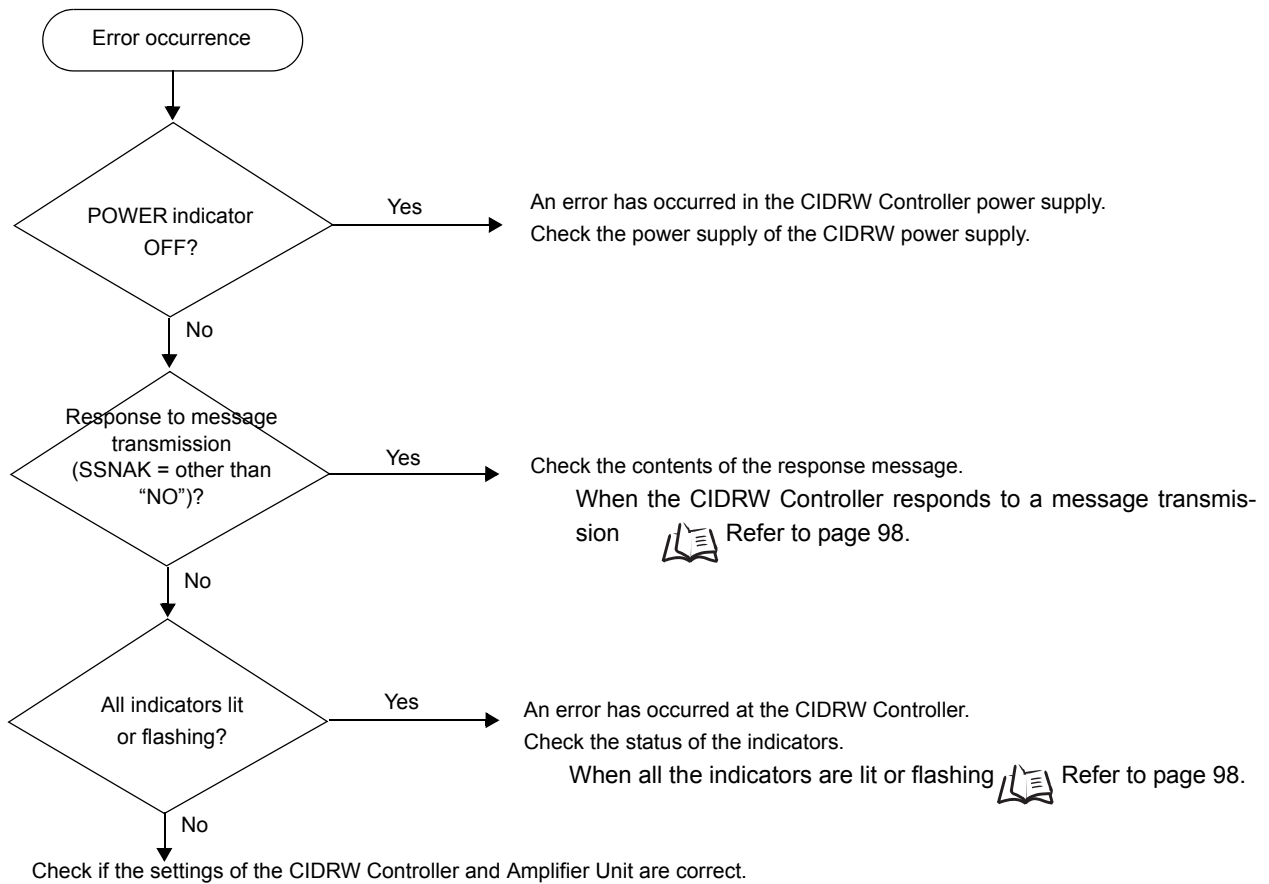
### Controller Indicators

If an error or alarm has occurred at the CIDRW Controller, the indicators on the front of the Controller light.

Name	Function
OPERATING (green)	Lit when the operation status (status model) of the CIDRW system is operating.
ALARMS (green)	Lit when the status in AlarmStatus of the CIDRW system is Alarm (1).
BUSY (green)	Lit when the status in OperationalStatus of the CIDRW system is BUSY.
ERROR (red)	When a processing error is detected (when SSACK is other than NO), this indicator is lit for 50 ms.

## Operation Check Flowchart

### Normal Operation Mode



When the CIDRW Controller Fails to Respond To Messages Sent to It Refer to page 99.

When an Error Unrelated to Message Transmission and Responses Occurs Refer to page 99.

### • Operating Normally in the Normal Operation Mode

#### Indicators


POWER	OPERATING	ALARMS	BUSY	ERROR

#### Response

Response		Function
S	F	
—	—	SSACK="NO"

• **When the CIDRW Controller Responds to a Message Transmission**





















There is a mistake in the message sent to the CIDRW Controller or the Amplifier Unit settings. After taking the appropriate corrective action, restart the Controller and the Amplifier Unit and send the message again.

Response		Main check points
S	F	
—	0	Status conditions when the message was issued (e.g., a <b>Write ID Request</b> message (S18, F11) was sent in the operating mode, or the message was sent during initial processing) Operation Conditions  Refer to page 80.
9	7	Message composition: illegal attributes, insufficient items, etc.
Other than above	Ascertain the cause from the contents of the SSACK response.	
	CE	<ul style="list-style-type: none"> <li>Mistake in the details of the items in the message (The node number of an amplifier that is not set was specified as the TARGET ID, or a segment name that is not set has been specified for DATASEG.)</li> <li>Connection of RS-485 cables between Amplifier Units (failure to detect Amplifier Units)</li> <li>Amplifier Unit baud rate settings (failure to detect Amplifier Units)</li> <li>Node numbers of the Amplifier Units (The same number is set for more than one Unit, making detection impossible)</li> <li>Cable routing between the host device and CIDRW Controller (influence of background noise)</li> <li>Noise levels of the power supply line to the CIDRW Controller</li> </ul>
	EE	<ul style="list-style-type: none"> <li>Installation distance/inclination between the ID Tag and CIDRW Head</li> <li>Background noise levels of the CIDRW Head</li> <li>Installation spacing in relation to CIDRW Heads connected in other CIDRW systems</li> <li>When the ID read command is executed, the carrier ID contains non-visible ASCII code.</li> </ul>
	HE	<ul style="list-style-type: none"> <li>Mistake in the details of the items in the message (A segment that does not match the Amplifier Unit specifications has been set; the response time-out setting is not correct.)</li> <li>Connection and wiring of cable between CIDRW Controller and Amplifier Unit</li> <li>Power supply to Amplifier Units</li> <li>Amplifier Unit terminal resistance settings</li> <li>Routing of each cable (influence of background noise)</li> <li>Node numbers of the Amplifier Units (the same number is set for more than one Unit)</li> <li>Amplifier Unit error (hardware error)</li> <li>Noise levels of the power supply line</li> </ul>
	TE	<ul style="list-style-type: none"> <li>Type/specifications of the ID Tags used</li> <li>Settings of the ID Tags used (lock, etc.)</li> <li>Environment of use of the ID Tags (ID Tag breakage due to use in unanticipated ways)</li> <li>ID Tag overwrite life</li> </ul>

• **When All the Indicators are Lit or Flashing**

An error has occurred in the CIDRW Controller.

After taking the appropriate corrective action, restart the CIDRW Controller.

POWER	OPERATING	ALARMS	BUSY	ERROR	Main check points
					• Supply of 24 VDC power
					• The CIDRW Controller may be damaged.
					• Mode switch setting (Is the setting 0?) If the error cannot be resolved after checking, the CIDRW Controller may be damaged.
					• The CIDRW Controller may be damaged.

• When the CIDRW Controller Fails to Respond To Messages Sent to It

There is a mistake in the CIDRW Controller or Amplifier Unit settings.

After taking the appropriate corrective action, restart the CIDRW Controller and Amplifier Unit.

POWER	OPERATING	ALARMS	BUSY	ERROR	Main check points
					<ul style="list-style-type: none"> <li>Mode switch setting (Is the setting 0?)</li> <li>Cable wiring between the CIDRW Controller and host device</li> </ul>
					<ul style="list-style-type: none"> <li>Communications conditions for communications between the CIDRW Controller and host device (baud rate, character composition, etc.)</li> <li>Cable wiring between the CIDRW Controller and host device</li> </ul>
					<ul style="list-style-type: none"> <li>Node numbers of the Amplifier Units (The same number is set for more than one Unit.)</li> </ul>

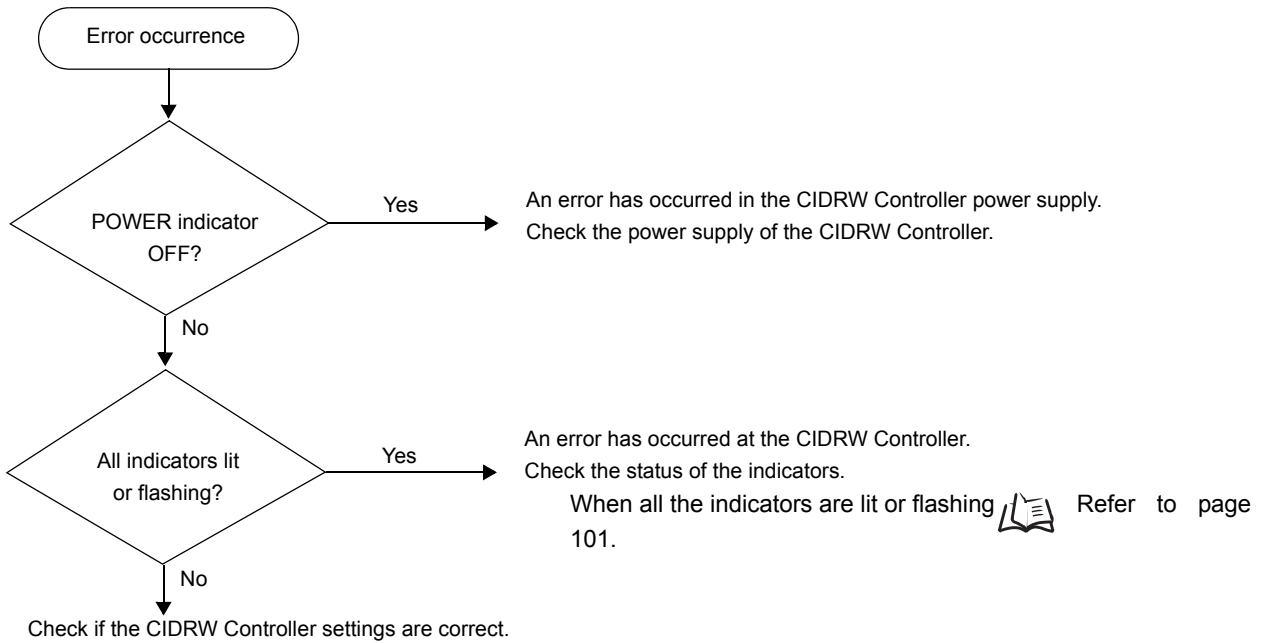
• When an Error Unrelated to Message Transmission and Responses Occurs

There is a mistake in the settings of the CIDRW Controller and Amplifier Unit.

After taking the appropriate corrective action, restart the CIDRW Controller and Amplifier Unit.

POWER	OPERATING	ALARMS	BUSY	ERROR	Main check points
					<ul style="list-style-type: none"> <li>Mode switch setting (Is the setting 0?)</li> <li>Amplifier Unit baud rate settings</li> <li>Node numbers of the Amplifier Units (The same number is set for more than one Unit.)</li> <li>Connection and wiring of cable between CIDRW Controller and Amplifier Unit</li> <li>Amplifier Unit error (hardware error)</li> <li>Routing of each cable (influence of background noise)</li> </ul>

**■ Setting Mode**



When the CIDRW Controller fails to respond to messages sent to it Refer to page 101.

When an Error Unrelated to Message Transmission and Responses Occurs Refer to page 101.

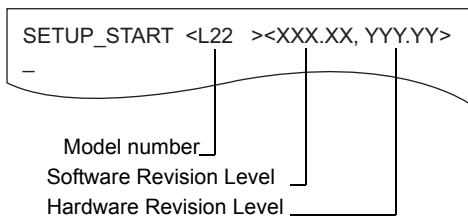
SECTION 5 When SECS is Used

• Operating Normally in the Setting mode

**Indicators**

POWER	OPERATING	ALARMS	BUSY	ERROR

**Terminal Initial Display of the Host Device after Startup in the Setting mode**



**Terminal Display When Parameter Setting Has Been Completed without Error**





• When All the Indicators Are Lit or Flashing

An error has occurred in the CIDRW Controller.

After taking appropriate corrective action, restart the CIDRW Controller and check the indicators.

POWER	OPERATING	ALARMS	BUSY	ERROR	Main check points
●	●	●	●	●	• Supply of 24 VDC power
⊗	⊗	⊗	⊗	⊗	• The CIDRW Controller may be damaged.
⊗	◐	◐	◐	◐	• Mode switch setting (Is the setting 3?) If the error cannot be resolved after checking, the CIDRW Controller may be damaged.
⊗	⊗	◐	◐	◐	• The CIDRW Controller may be damaged.

• When the CIDRW Controller Responds to a Message Transmission

There is a mistake in the CIDRW Controller settings or the sent parameters.

After taking appropriate corrective action, restart the CIDRW Controller and check the indicators.

POWER	OPERATING	ALARMS	BUSY	ERROR	Main check points
⊗	◐	⊗	⊗	⊗	• Sent parameters (Are the parameters correct?) Are the settings correct?)

Response	Contents
SETUP_FAILED [ □ ]	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].

• When the CIDRW Controller Fails to Respond To Messages Sent to It

There is a mistake in the CIDRW Controller settings or the sent parameters.

After taking appropriate corrective action, restart the CIDRW Controller and check the indicators.

POWER	OPERATING	ALARMS	BUSY	ERROR	Main check points
⊗	◐	◐	⊗	●	• Transmission parameters (Are the parameters correct?) • Communications conditions for communications between the CIDRW Controller and the host device (baud rate, character composition, etc.)
⊗	⊗	●	●	●	• Mode switch setting (Is the setting 3?)

• When an Error Unrelated to Message Transmission and Responses Occurs

There is a mistake in the settings of the CIDRW Controller or Amplifier Unit.

After taking appropriate corrective action, restart the CIDRW Controller and Amplifier Unit and check the indicators.

POWER	OPERATING	ALARMS	BUSY	ERROR	Main check points
⊗	⊗	⊗	●	●	• Mode switch setting (Is the setting 3?)

## When SECS Is Not Used

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

### List of Error Messages

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

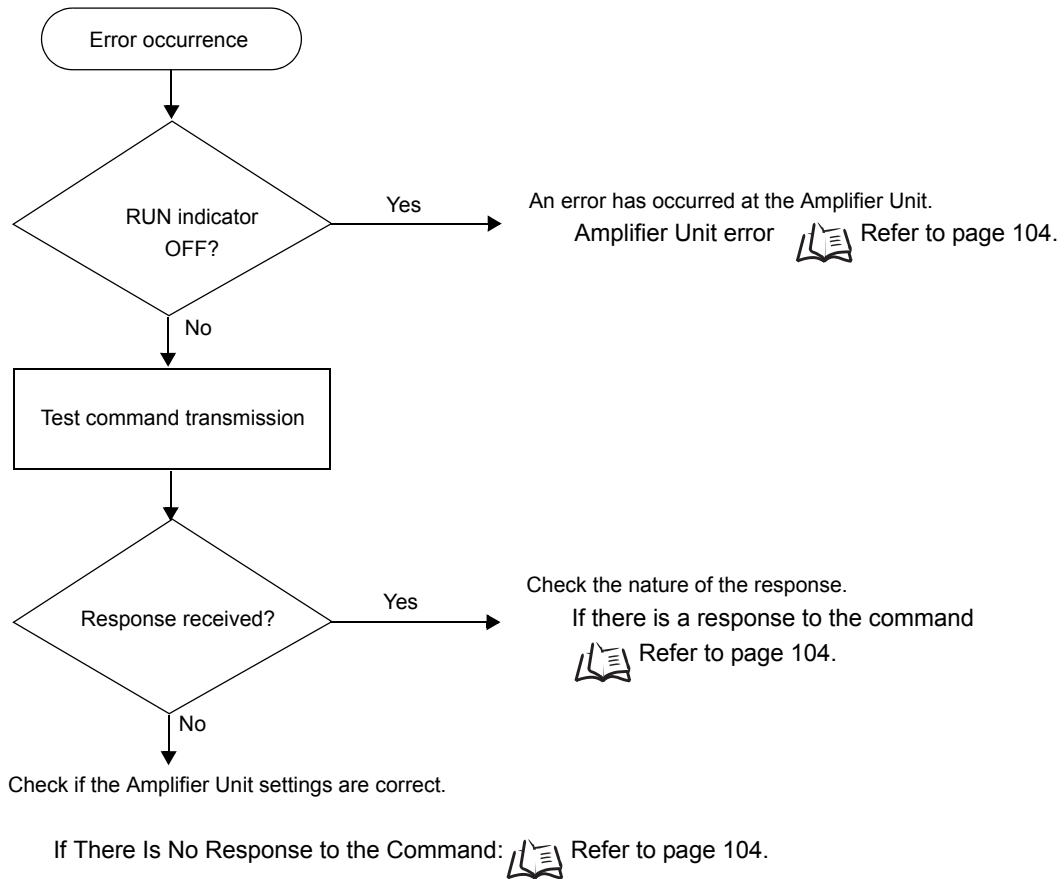
### Amplifier Unit Indicators

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

## Operation Check Flowchart

### From Installation to Trial Operation

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



- If the Test Command Was Received Normally:

#### Indicators

RUN	COMM	NORM	ERROR
	 (Lights once)		

#### Response Code for the Response

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

• **Amplifier Unit Error**

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

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

RUN	COMM	NORM	ERROR	Main check points
●		—		<ul style="list-style-type: none"> <li>• Influence of background noise (change installation position)</li> <li>• Amplifier Unit power supply</li> </ul> If the error cannot be resolved after checking, the Amplifier Unit may be damaged.
(If RUN is OFF, the status of the other indicators can be ignored.)				

• **If There Is No Response to the Command:**

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

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

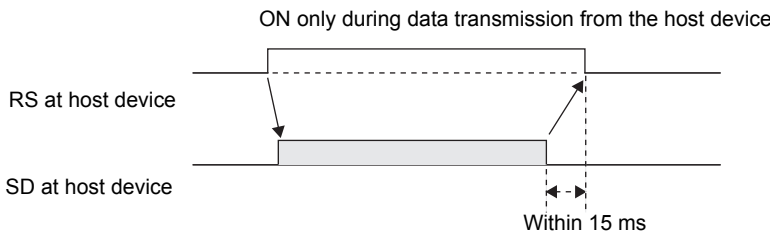
RUN	COMM	NORM	ERROR	Main check points
☉	●	●	●	<ul style="list-style-type: none"> <li>• Amplifier Unit baud rate settings</li> <li>• Node numbers of the Amplifier Units (do not match the node number in the test command)</li> <li>• Connection and wiring of the cable between the host device and Amplifier Unit</li> <li>• OFF timing of the RS signals between the host device and Amplifier Unit</li> <li>• Routing of each cable (influence of background noise)</li> </ul> If the error cannot be resolved after checking, the Amplifier Unit may be damaged.
☉	●	●	☉ (Lights once)	<ul style="list-style-type: none"> <li>• Amplifier Unit baud rate settings</li> <li>• Amplifier Unit node number setting (More than one Amplifier Unit may be set to the same node number.)</li> <li>• Connection and wiring of the cable between the host device and Amplifier Unit</li> <li>• Routing of the cables (influence of background noise)</li> <li>• OFF timing of the RS signals between the host device and Amplifier Unit</li> <li>• FCS (frame check sequence) calculation method</li> </ul>

**SECTION 5** When SECS Is Not Used



**Using RS Signal Control 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. When using a USB-serial adapter, direct control of the RS signal may not be possible. Test operation in advance to make sure direct control of the RS signal is correct.







• **If There Is a Response to the Command:**

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

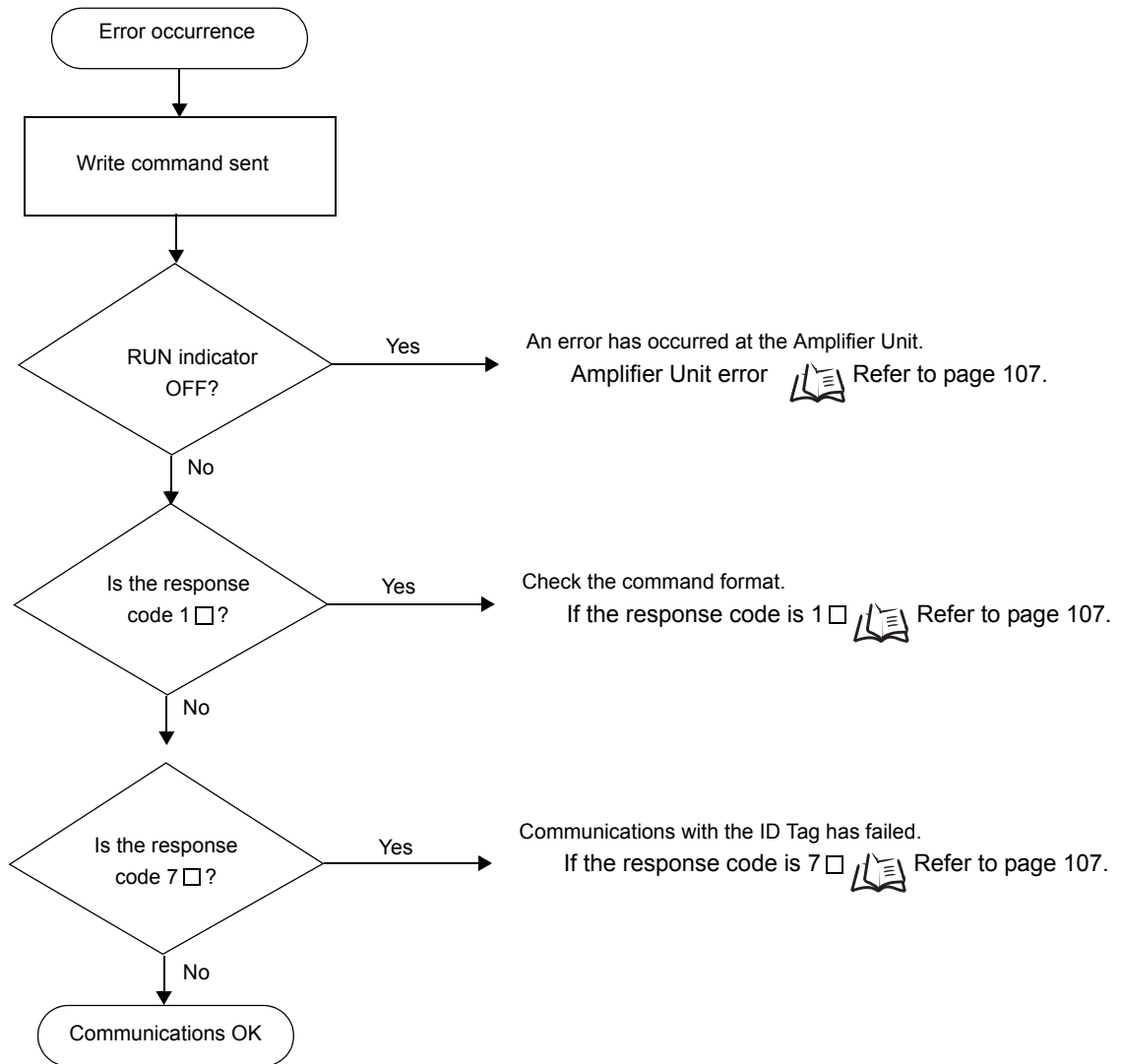
After taking appropriate corrective action, restart the Amplifier Unit, send the test command again and check again.

RUN	COMM	NORM	ERROR	Main check points
☉	☉	●	☉	<ul style="list-style-type: none"> <li>• Node numbers of the Amplifier Units (The same number is set for more than one Unit)</li> </ul> If the error cannot be resolved after checking, the Amplifier Unit may be damaged.

RUN	COMM	NORM	ERROR	Main check points
			 (Lights once)	There is a mistake in the command format (number of characters, character code, etc.).

**■ From Trial Operation to Communications**

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



SECTION 5 When SECS Is Not Used

- If the ID Tag Was Processed Normally:

**Indicators**

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

**Response Code for the Response**

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



If there is no response to the write command, refer to the *From Installation to Trial Operation, Operation Check Flowchart.* Refer to page 103.

• Amplifier Unit Error

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

RUN	COMM	NORM	ERROR	Main check points
●		—		<ul style="list-style-type: none"> <li>• Influence of background noise (Change installation position)</li> <li>• Amplifier Unit power supply</li> </ul> <p>If the error cannot be resolved by checking the two points above, the Amplifier Unit may be damaged.</p>
	(If RUN is OFF, the status of the other indicators can be ignored.)			

• If the Response Code is 1□:

There is a host device communications error.

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

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

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

• If the Response Code is 7□:

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

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

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

Response code	Main check points
70	<ul style="list-style-type: none"> <li>• Background noise levels of the CIDRW Head (Check the surroundings with the environmental noise level measurement function)</li> <li>• Distance to another CIDRW Head</li> <li>• Influence of background noise (Change installation position)</li> </ul> <p>If the error cannot be resolved after checking, the Amplifier Unit may be damaged.</p>
71	<ul style="list-style-type: none"> <li>• ID Tag overwrite life (Replace the ID Tag)</li> <li>• Environment of use of the ID Tags (ID Tag breakage due to use in unanticipated ways)</li> </ul>
72	<ul style="list-style-type: none"> <li>• Connection to the CIDRW Head</li> <li>• Distance between the ID Tag and CIDRW Head</li> <li>• CIDRW Head background noise levels (Check the surroundings with the environmental noise level measurement function)</li> <li>• Distance to another CIDRW Head</li> </ul>
7B	<ul style="list-style-type: none"> <li>• Distance between the ID Tag and CIDRW Head</li> <li>• Background noise levels of the CIDRW Head (Check the surroundings with the environmental noise level measurement function)</li> <li>• Distance to another CIDRW Head</li> <li>• Influence of background noise (Change installation position)</li> </ul>
7E	<ul style="list-style-type: none"> <li>• Type/specifications of the ID Tags used</li> </ul>
7F	<ul style="list-style-type: none"> <li>• Settings of the ID Tags used (The ID Tag lock function is used.*)</li> <li>• Environment of use of the ID Tags (ID Tag breakage due to use in unanticipated ways)</li> </ul>

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

MEMO



# SECTION 6

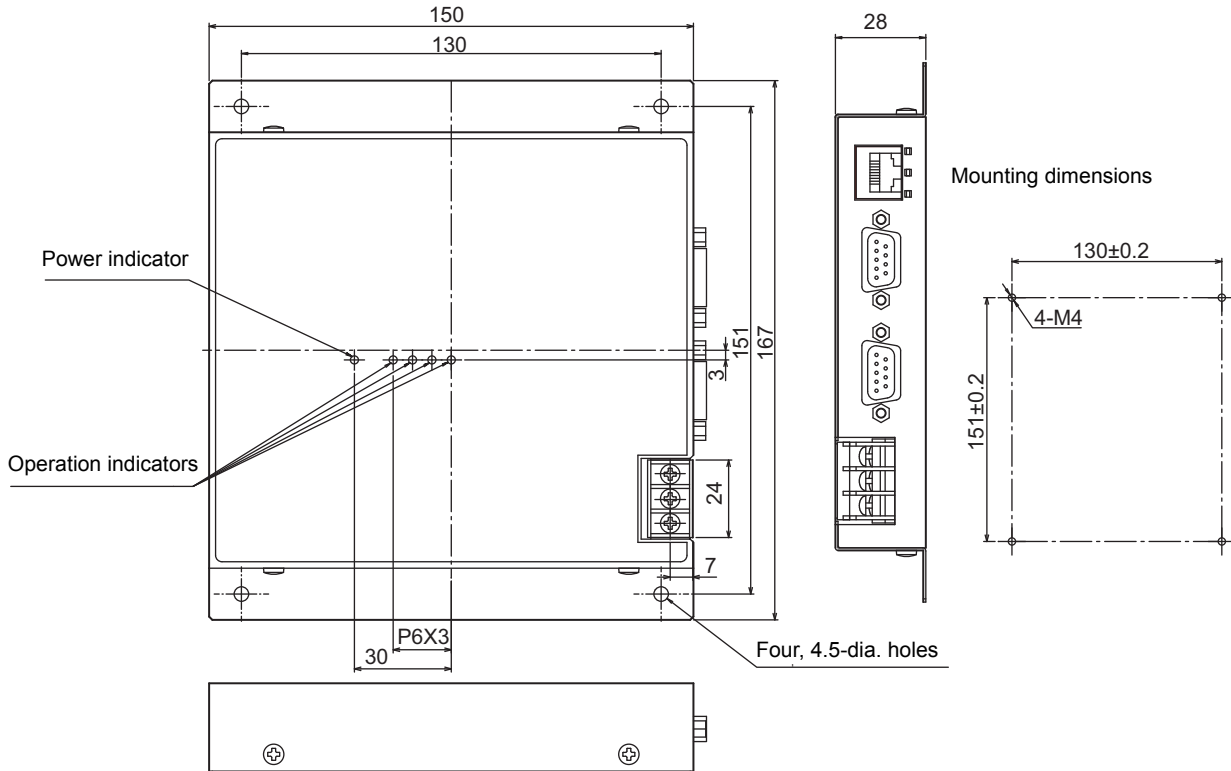
## Appendix

☒ Specifications and Dimensions	110
☒ System Configuration Examples	115
☒ When SECS Is Not Used	116
☒ Characteristic Data According to Conditions of Use	117
☒ ID Tag Memory Maps	147
☒ Regular Inspection	148
☒ SECS Protocol Specifications	149
☒ ASCII Code Table	154
☒ Protective Construction	155

# Specifications and Dimensions

Controller  
V700-L22

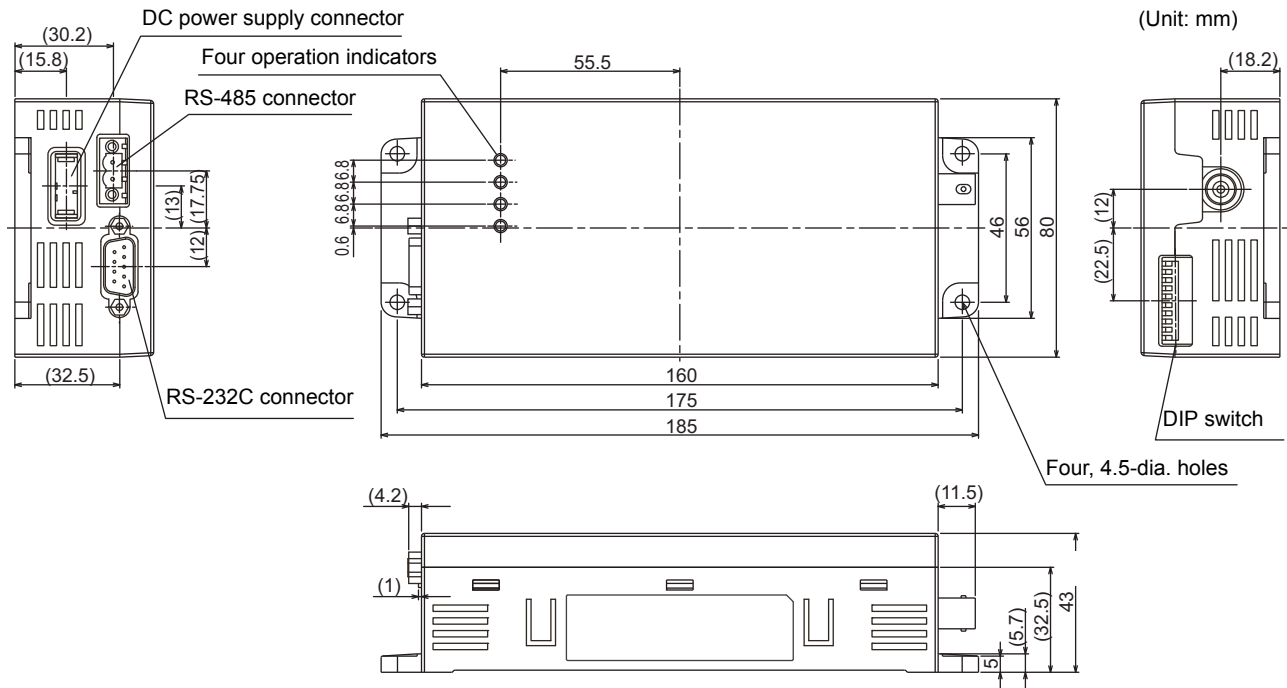
(Unit: mm)



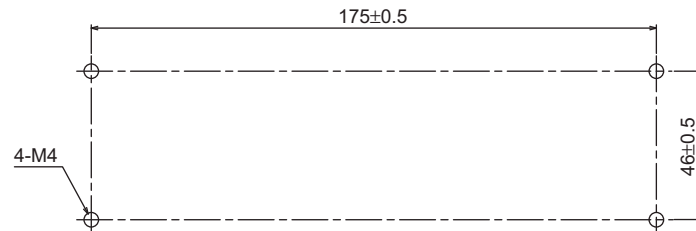
Item	Specifications
Power supply voltage	24 VDC +10% -15%
Current consumption	150 mA max. (inrush current: approx. 10 A max.)
Ambient temperature	Operating: 0 to +40°C Storage: -15 to +65°C (with no icing)
Ambient humidity	Operating: 10% to 85% Storage: 10% to 95% (with no condensation)
Degree of protection	IP20 (IEC60529)
Insulation resistance	50 MΩ min. between power supply terminals and the frame ground terminal (500 VDC M)
Dielectric strength	Leak current not to exceed 3.5 mA on application of 500 VAC (50/60 Hz for 1 minute) between both power supply terminals and the frame ground terminal
Vibration resistance	Frequency: 10 to 150 Hz; double amplitude: 0.20 mm; acceleration: 15 m/s <sup>2</sup> for 8 minutes, 10 times each in X, Y, and Z directions
Shock resistance	Shock of 150 m/s <sup>2</sup> in X, Y, and Z directions, 3 times each for 18 repetitions
Ground	Ground to 100 Ω or less.
Case material	SECC (coating)
Weight	Approx. 580 g

Amplifier Units

V640-HAM11-V3 and V640-HAM11-L



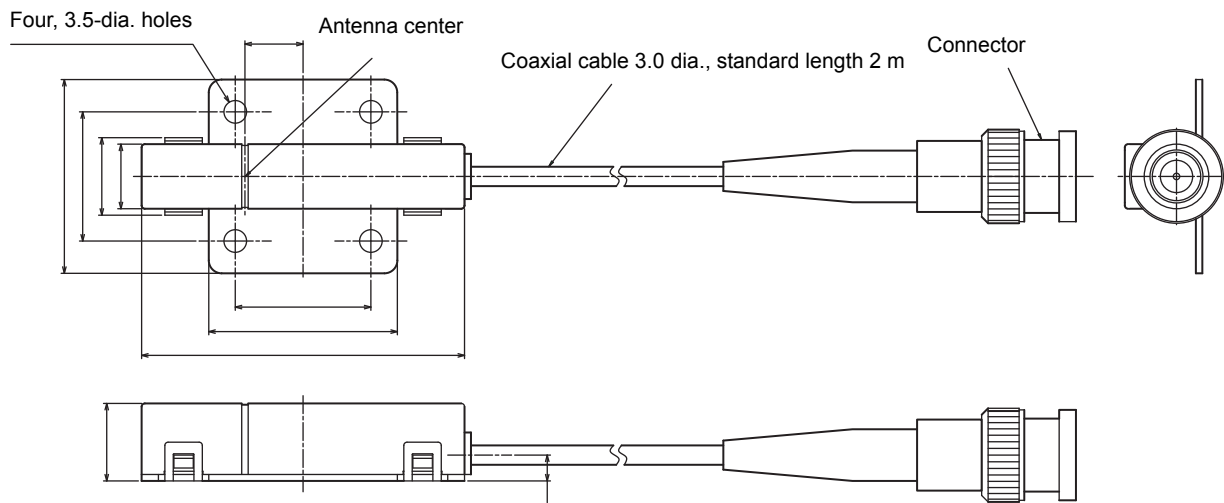
Mounting dimensions



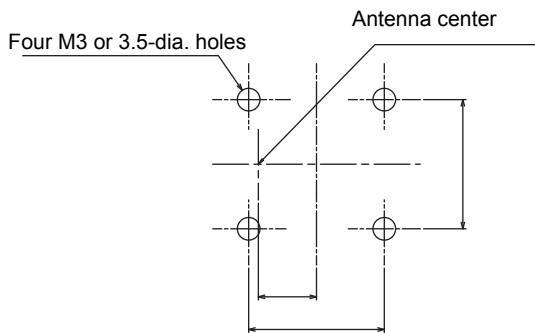
Item	Specifications	
	V640-HAM11-V3	V640-HAM11-L
Power supply voltage	24 VDC +10% -15%	
Current consumption	150 mA max.	400 mA max.
Ambient temperature	Operating: 0 to +40°C Storage: -15 to +65°C (with no icing)	
Ambient humidity	Operating/Storage: 35% to 85% (with no condensation)	
Degree of protection	IP20 (IEC60529 standard)	
Insulation resistance	20 MΩ min. between power supply terminals and the frame ground terminal (100 VDC M)	
Dielectric strength	Leak current not to exceed 5 mA on application of 1000 VAC (50/60 Hz for 1 minute) between both power supply terminals and the frame ground terminal	
Vibration resistance	Frequency: 10 to 150 Hz; double amplitude: 0.20 mm; acceleration: 15 m/s <sup>2</sup> for 8 minutes, 10 times each in X, Y, and Z directions	
Shock resistance	Shock of 150 m/s <sup>2</sup> in X, Y, and Z directions, 3 times each for 18 repetitions	
Ground	Ground to 100 Ω or less.	
Case material	PC/ABS resin	
Shape	80×185×43 mm (W×D×H)	
Weight	Approx. 250 g	
CIDRW Head	V640-HS61	V640-HS62

CIDRW Heads  
V640-HS61

(Unit: mm)



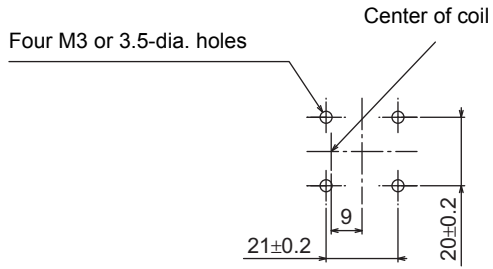
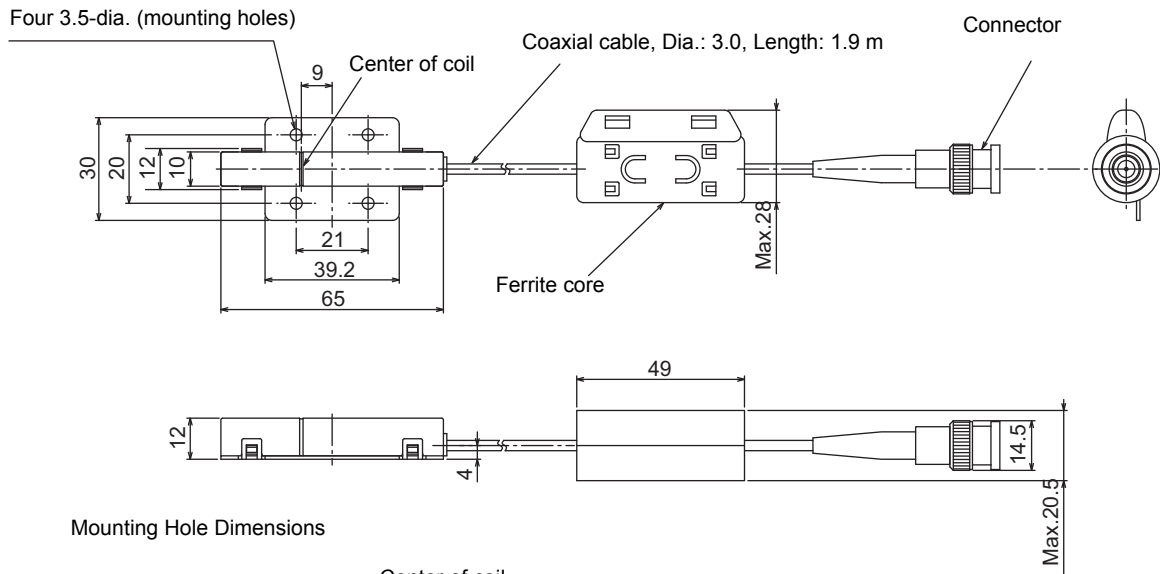
Mounting dimensions



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

V640-HS62

(Unit: mm)

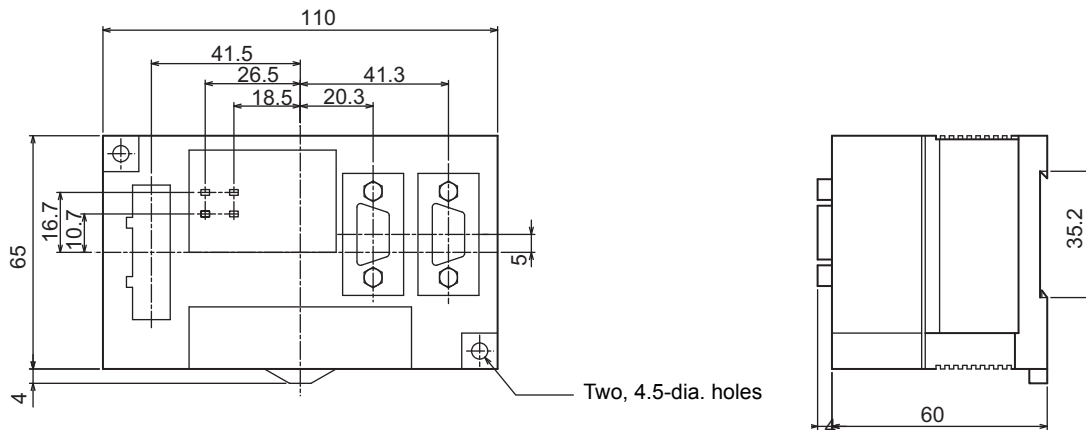


Item	Specifications
Transmission frequency	134 kHz
Ambient temperature	Operating: 0 to +40°C    Storage: -15 to +65°C (with no icing)
Ambient humidity	Operating/Storage: 35% to 85% (with no condensation)
Degree of protection	IP60 (IEC60529)
Insulation resistance	20 MΩ min. between all terminals and the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

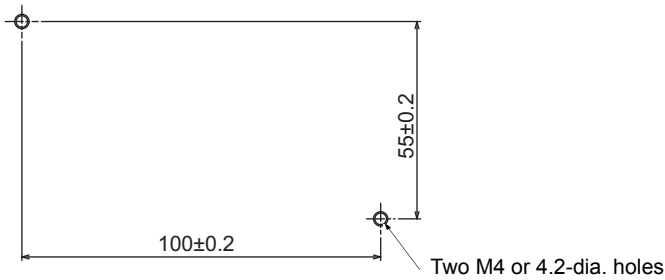
SECTION 6 Specifications and Dimensions

Link Unit  
V700-L11

(Unit: mm)



Mounting dimensions

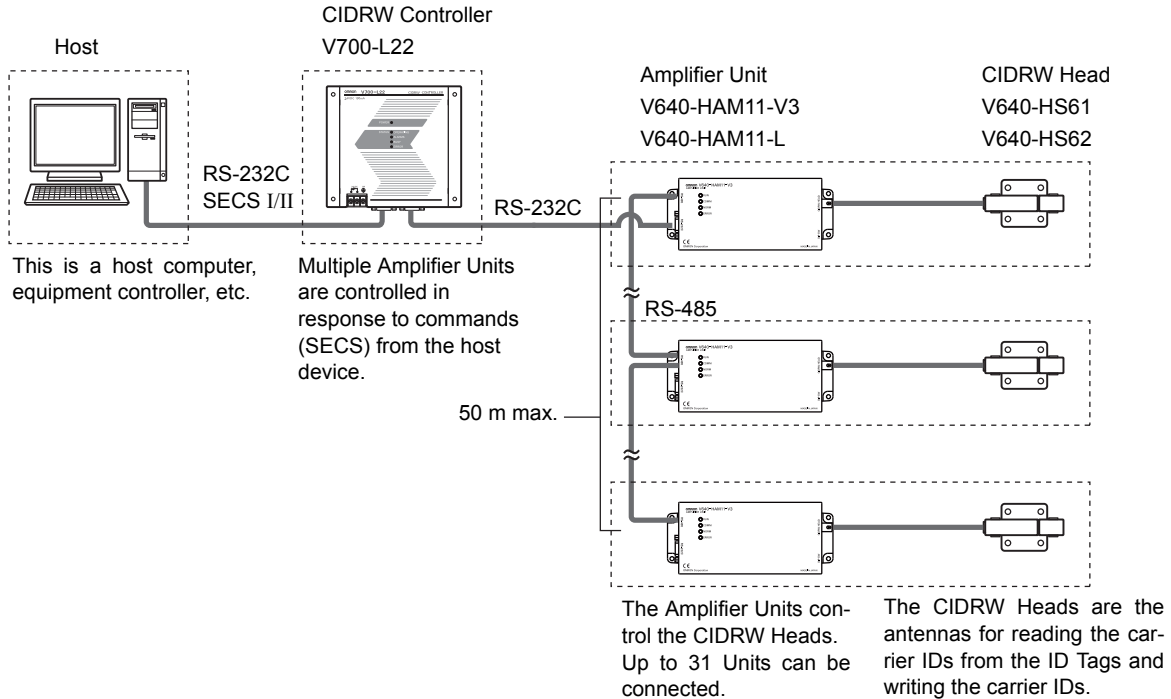


Item	Specifications
Power supply voltage	24 VDC +10% -15%
Current consumption	250 mA max. (inrush current: approx. 10 A)
Ambient temperature	Operating: 0 to +40°C Storage: -15 to +50°C (with no icing)
Ambient humidity	Operating/Storage: 35% to 85% (with no condensation)
Degree of protection	IP20 (IEC60529)
Insulation resistance	50 MΩ min. between power supply terminals and the frame ground terminal (500 VDC M)
Dielectric strength	Leak current not to exceed 5 mA on application of 1000 VAC (50/60 Hz for 1 minute) between power supply terminals and the frame ground terminal
Vibration resistance	Frequency: 10 to 150 Hz; double amplitude: 0.20 mm; acceleration: 15 m/s <sup>2</sup> for 8 minutes, 10 times each in X, Y, and Z directions
Shock resistance	Shock of 150 m/s <sup>2</sup> in X, Y, and Z directions, 3 times each for 18 repetitions
Ground	Ground to 100 Ω or less.
Case material	PC/ABS resin
Weight	Approx. 200 g

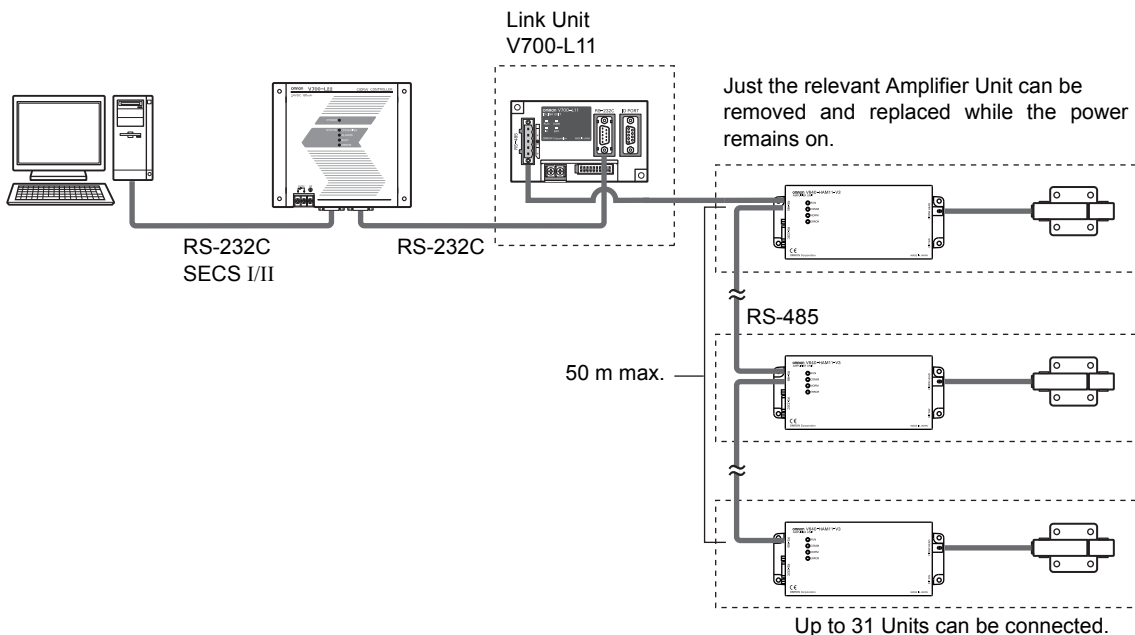
# System Configuration Examples

## When SECS Is Used

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

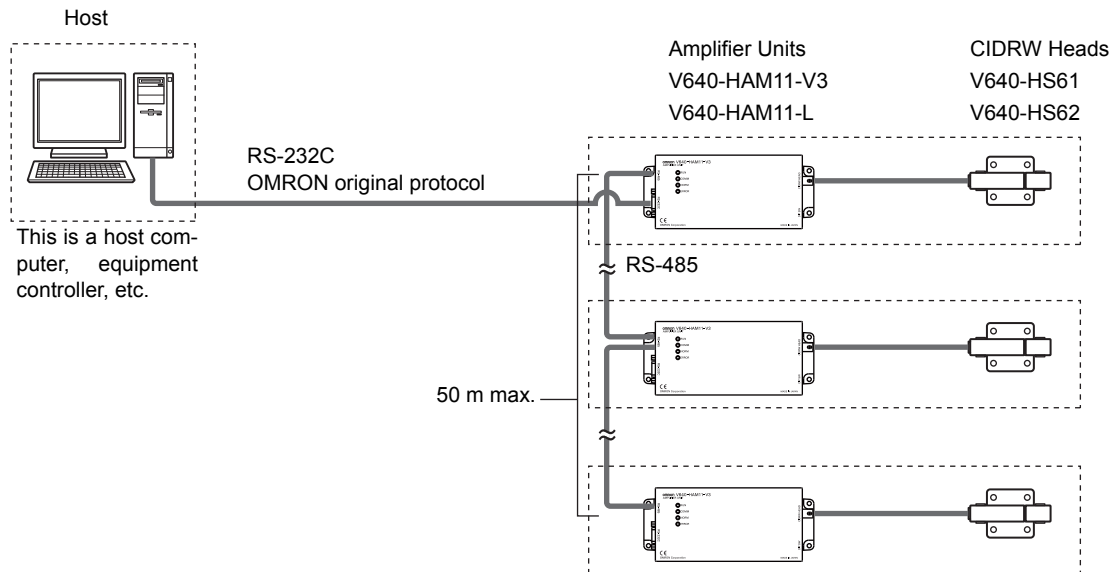


With the above system configuration, the Amplifier Unit connected directly to the CIDRW Controller converts signals from RS-232C to RS-485. If this Amplifier Unit is removed, communications will not be possible with the other Amplifier Units. If the Amplifier Unit connected directly to the CIDRW Controller must be removed while the system is operating, insert a Link Unit (V700-L11) between the CIDRW Controller and the first Amplifier Unit. If an Amplifier Unit on the end of the network is removed, be sure to turn ON the terminating resistance on the Amplifier Unit that will end up on the end of the network while the Amplifier Unit is removed.



## When SECS Is Not Used

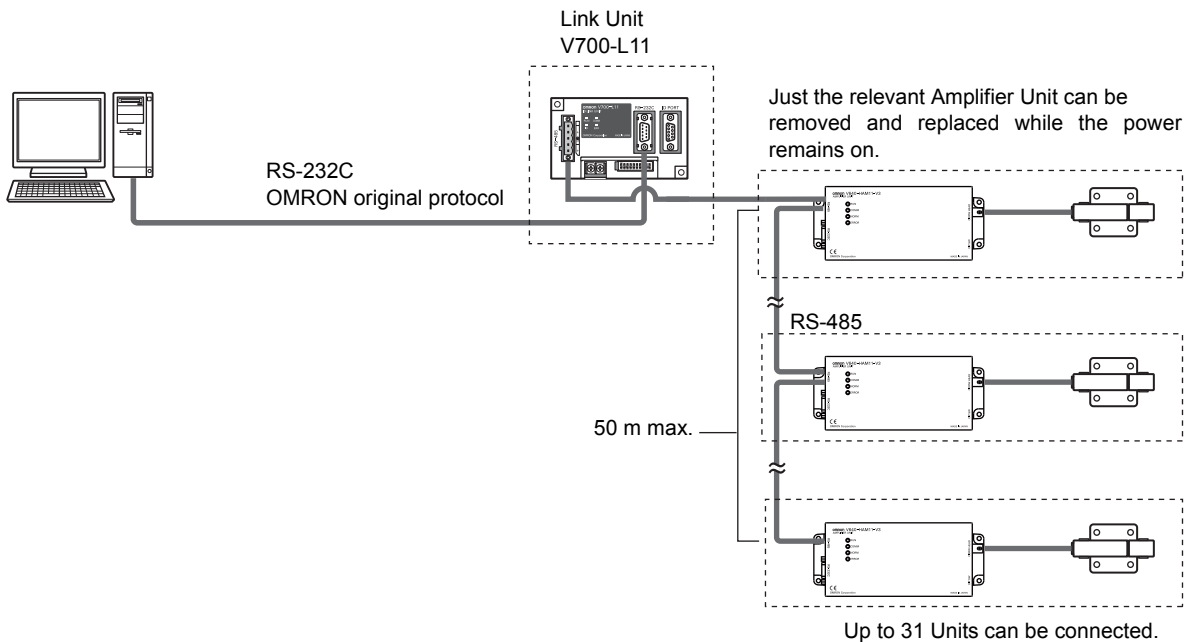
Communications with the host device follow the OMRON proprietary protocol.  
The Amplifier Units are connected directly to the host device without using a CIDRW Controller.



The Amplifier Units control the CIDRW Heads. Up to 31 Units can be connected.

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

With the above system configuration, the Amplifier Unit connected directly to the CIDRW Controller converts signals from RS-232C to RS-485. If this Amplifier Unit is removed, communications will not be possible with the other Amplifier Units. If the Amplifier Unit connected directly to the CIDRW Controller must be removed while the system is operating, insert a Link Unit (V700-L11) between the CIDRW Controller and the first Amplifier Unit. If an Amplifier Unit on the end of the network is removed, be sure to turn ON the terminating resistance on the Amplifier Unit that will end up on the end of the network while the Amplifier Unit is removed.





# Characteristic Data According to Conditions of Use

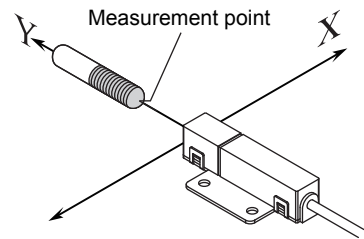
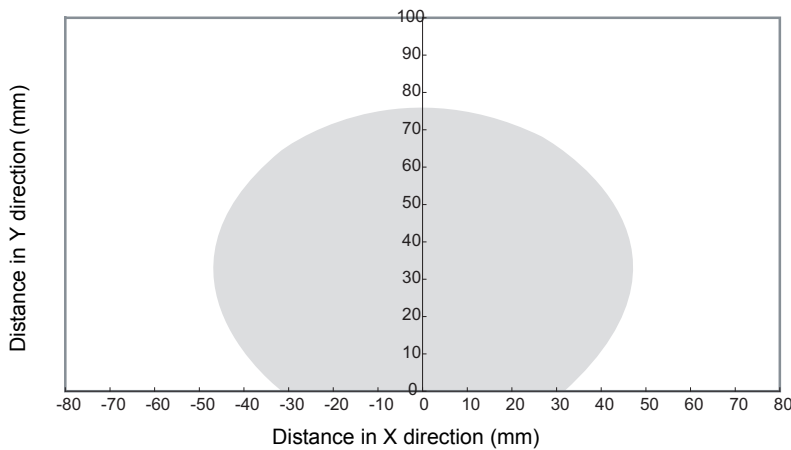
## Maps of Communications Areas (Reference Only)

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

### ■ V640-HAM11-V3

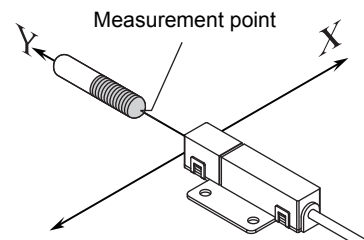
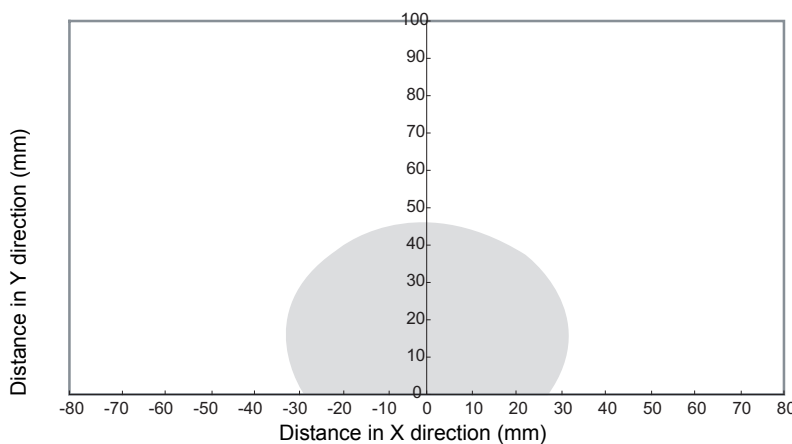
- Coaxial Mounting (RI-TRP-DR2B)
  - READ

Communications Area (READ)



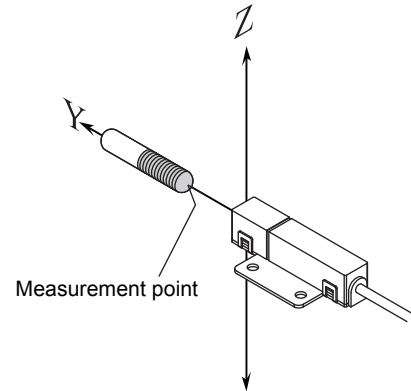
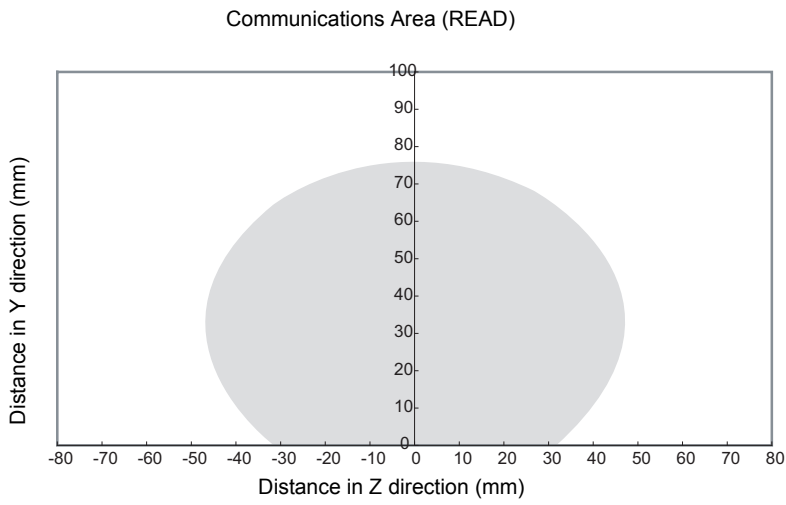
- WRITE

Communications Area (WRITE)



SECTION 6 Characteristic Data According to Conditions of Use

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



- WRITE

