WX-SR200 Series

1.9 GHz Band Digital Wireless Microphone

I/F Specification

Version A.05

Panasonic Connect Co, Ltd.

Media Entertainment Business Division

Change history

Ver	Date	No.	Contents	Reason
A.01	2018/11/27	—	Preliminary version	—
A.02	2019/01/07	5.2	Delete “(lower case alphabet)”	Fix error
		5.8	Add “Operation mode change”	
		5.9	Add “Operation mode request”	
		5.10	Add “Operation mode response”	
		5.11	Add “Volume change”	
		5.12	Add “Volume request”	
		5.13	Add “Volume response”	
A.02a	2021/3/12	-	Add “Confidential” stamp	
A.03	2021/9/6	5.14	Add “Mic Pairing request”	
		5.15	Add “Mic Pairing response”	
		6	Mod “Current data format”	
		-	Delete “Confidential” stamp	Change Information security level
A.04	2022/9/30	5.16	Add “Mic talking status change”	
		2	Add the following Supported models WX-SR204DN, WX-SR202DN	
		5.7.3	Add “Level data and microphone status distribution”	
A.05	2022/11/10	2 3 4.2 7 8	Add charger (WX-SZ600) control protocol	Request from PCONA

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1. About this document

・ This document is an interface specification for controlling the 1.9 GHz band digital wireless microphone system WX-SR200 series via the LAN.

[Notes]

We are not responsible for any damage caused by the use of this information.

There is a possibility that this information will be changed without notice due to future product version upgrade.

The usage example is just a reference example. Support for each program is not available. Knowledge of program development is necessary when you use it.

2. Applicable model

・ The control interface of this document is compatible with the following devices.

WX-SR204 wireless receiver (4 ch model)

WX-SR202 wireless receiver (2 ch model)

WX-SR204DN wireless receiver (4 ch model with Dante) <A.04>

WX-SR202DN wireless receiver (2 ch model with Dante) <A.04>

WZ-SZ600 Charger <A0.5>

3. Communication specification

・ Indicates the communication specification of the target model.

Items		Contents	Remarks
Network		100Base-TX	
Protocol		IPv4 : TCP/IP UDP/IP	
Port	TCP/IP	50003	Control command waiting port of wireless receiver and charger
	UDP/IP	50004	Destination port that delivers radio wave level and audio level data from the wireless receiver
Other: Number of simultaneous connections		Up to 2	Up to 2 terminals can be connected simultaneously

4. Command format

・ Indicates the command format used in the control command.

4.1. Basic frame

・ The basic frame is as follows.

＊Byte order is big endian.

＊Fill in all bytes 0x00 in the reserved field.

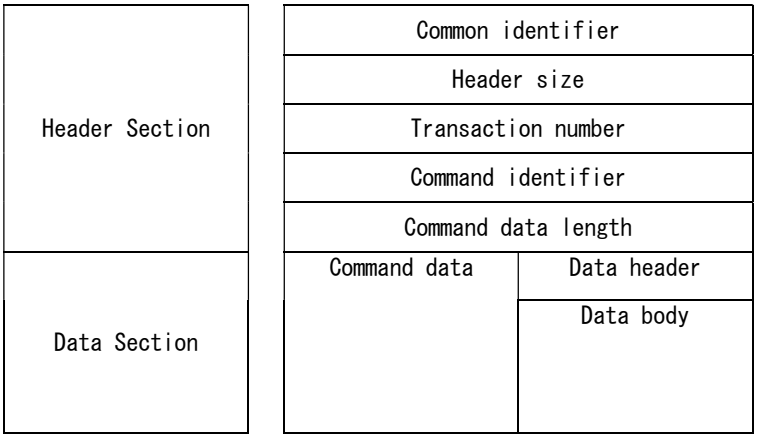


Table 4-1. Basic frame

4.2. Header Section

・ The configuration of the header section is shown below.

#	Name	Number of bytes	Remarks
1	Common identifier	4	Receiver “SR2” + 00 (0x53523200) Charger “SZ6” + 00 (0x535A3600) <A.05>
2	Header size	2	Header size (20 bytes (fixed)) 0x0014
3	Transaction number	2	0x0001～0xFFFF (1～65535) On the request side, it increments for each transaction (request, update command) and wrap around. The responder returns the same value as the request command. The delivery command from the receiver is fixed to 0.
4	Command identifier	2	Command identifier(Indicated separately below.)
5	Reserve	6	0x000000000000
6	Command data length	4	Number of bytes in command data part(Indicated separately below.)

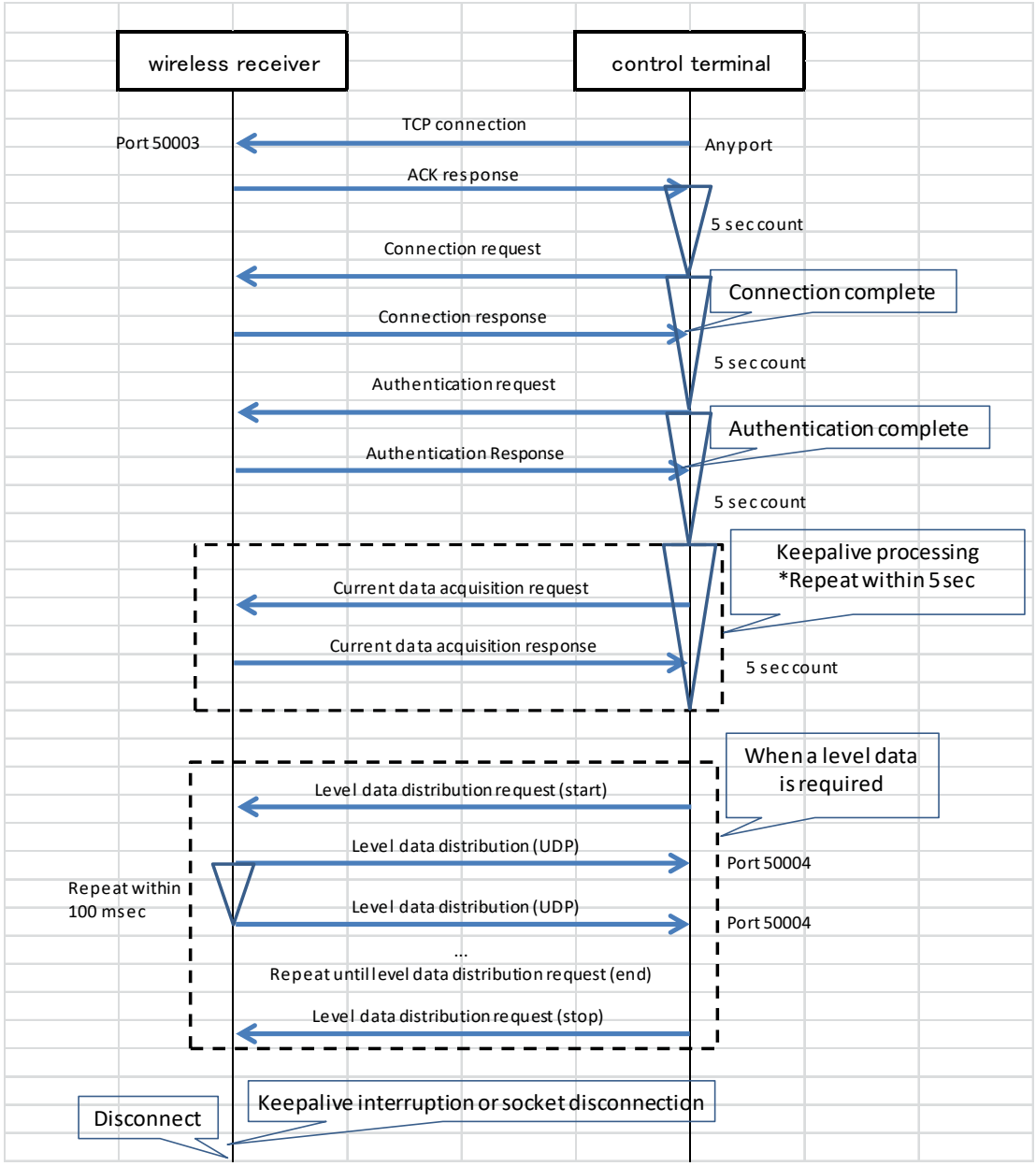
Table 4-2. Header section format

4.3. Data Section

・ The format of the data part differs for each command type. Indicated separately below.

5. Connection / Disconnection / Keep-Alive (receiver)

- Connection is started by TCP connection from the control terminal to port 50003 of the wireless receiver and sending a connection request command.
- The connection state is maintained by sending a keep-alive command (current data acquisition request) every 5 seconds after connection processing and authentication processing is completed
- By sending various control commands in this state, it is possible to control the SR 200 series.
- When the keep-alive from the control terminal is stopped or the control terminal closes the TCP socket, the connection state is disconnected. The sequence is shown below.



* Current data: Data under operation (power state, remaining battery capacity, etc.)

Figure 5. connection sequence

5.1. Connection request (control terminal -> receiver)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0xE001
6	Command data length	4	0x00000026 (38 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)
6	Current time of control terminal	14	Send the current time of the control terminal at the time of sending this command. Logged as connection time. e.g.: At 9:01:02 on October 6, 2017 "20171006090102" (In ASCII code)

5.2. Connection response (receiver -> control terminal)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0xE002
6	Command data length	4	0x00000020 (32 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Connection request result 0x00000000 : OK Other than 0x00000000: NG
5	Reserve	4	0x00000000(fixed)
6	Random number data	8	Random number data for generation of authentication data used in authentication request. 8 byte ASCII character ~~(lower case alphabet)~~<A.02> *Random number data changes for each connection response.

5.3. Authentication request (control terminal -> receiver)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0xF001
6	Command data length	4	0x00000038 (56 bytes) or 0x00000058 (88 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)
6	Authentication data	32(MD5) 64(SHA-256※)	Authentication data generated with random number data received in connection response and password of wireless receiver

※SHA-256 available on WX-SR204 and WX-SR202DN/204DN

How to generate authentication data

"Receiver password (ASCII character maximum 32 bytes)" " :(Colon 1 byte)" "Random number data (ASCII character 8 bytes) "

, converted to ASCII character 32 bytes in MD5 becomes authentication data. (Lowercase alphabet)

e.g. : In the case of receiver password:Admin12345,random number data:12345678

Admin12345:12345678 -> MD5 conversion

-> 306450847dffa315d34701baa8a5948a(Authentication data)

5.4. Authentication response (receiver -> control Terminal)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0xF002
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Authentication request result 0x00000000 : OK Other than 0x00000000: NG
5	Reserve	4	0x00000000(fixed)

5.5. Current data acquisition request (control terminal -> receiver)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0021
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

5.6. Current data acquisition response (receiver -> control terminal)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0022
6	Command data length	4	0x000000B8 (184 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Current data acquisition request result 0x00000000 : OK Other than 0x00000000: NG
5	Reserve	4	0x00000000(fixed)
6	Current data	160	Current data *Refer to 6. Current data format

5.7. Level data distribution

・ Start / stop distribution of radio wave level and audio level data. When a start request is send from the control terminal, the radio wave level and the audio level data are delivered by UDP communication from the wireless receiver until a stop request is send every about 100 msec.

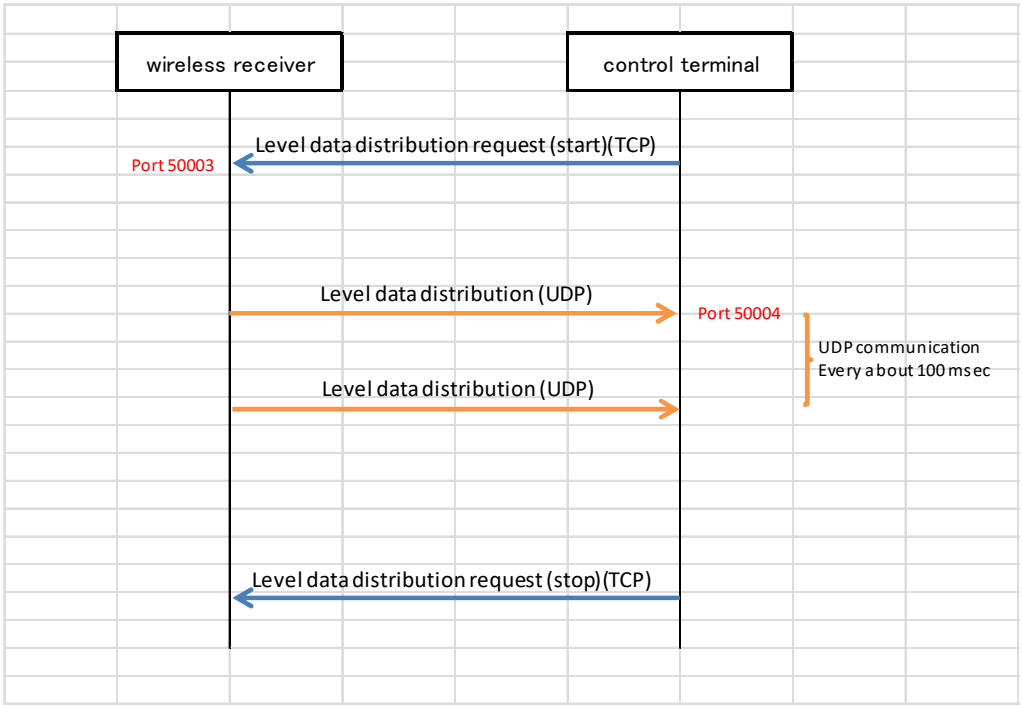


Figure 5-7. Sequence of level data distribution

5.7.1. Level data distribution request (control terminal -> receiver)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0031
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	Level data distribution request type 0x0000：Delivery start 0x0001：Stop delivery
2	Option parameter 1	2	~~0x0000(fixed)~~ 0x0000 ： Receiver send “Level data distribution”. See 5.7.2 for “Level data distribution”. 0x0001 ： Receiver send “Level data and microphone status distribution”. See 5.7.3 for “Level data and microphone status distribution”.<A.04>
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

5.7.2. Level data distribution (receiver -> control terminal)

Header section: Command identifier

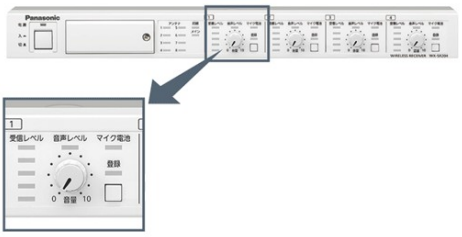
#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0032
6	Command data length	4	0x00000034 (52 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Number of channels	1	0x10(fixed)
2	Reserve	1	0x00(fixed)
Data body			
1	Radio wave level(Mic1)	1	Radio wave level of microphone 1 (0x00-0x3F) *MSB indicates the presence or absence of error (0: none, 1 present)
2	Audio level(Mic1)	2	Audio level of microphone 1 (0x0000-0xFFFF)
	:	42	
33	Radio wave level(Mic16)	1	Radio wave level of microphone 16 (0x00-0x3F) *MSB indicates the presence or absence of error (0: none, 1 present)
34	Audio level(Mic16)	2	Audio level of microphone 16 (0x0000-0xFFFF)
35	Reserve	2	Reserve

Conversion table of radio wave level indication and radio wave level value

Radio wave level indication	Radio wave level value
Green 5 points	0x29-0x3F
Green 4 points	0x26-0x28
Green 3 points	0x23-0x25
Green 2 points	0x20-0x22
Green 1 point	0x1D-0x1F
Off	0x00-0x1C



Conversion table of audio level indication and audio level value

Audio level indication	Audio level value
Red	0x3FFF-0x7FFF
Orange	0x1449-0x3FFE
Green	0x00A4-0x1448
Off	0x0000-0x00A3

5.7.3. Level data and microphone status distribution (receiver -> control terminal) <A.04>

This command is available in the following versions and later.

Model : WX-SR204/SR202DN/SR204DN

Version : 6.00R00

Header section: Command identifier

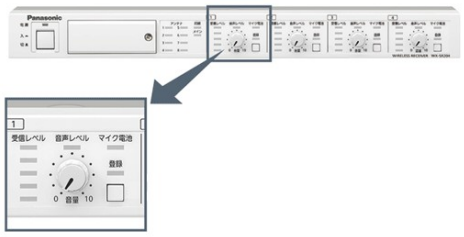
#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0172
6	Command data length	4	0x00000044 (68 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Number of channels	1	0x10(fixed)
2	Reserve	1	0x00(fixed)
Data body			
1	Radio wave level(Mic1)	1	Radio wave level of microphone 1 (0x00-0x3F) *MSB indicates the presence or absence of error (0: none, 1 present)
2	Audio level(Mic1)	2	Audio level of microphone 1 (0x0000-0xFFFF)
3	Status (Mic1)	1	0x00: Power OFF 0x01: Connected 0x0F: Connection error
4	Registration number (Mic1)	1	Microphone registration number * Microphone management number inside the wireless receiver 0x00: Microphone 1 … 0x63: Microphone 100 0xFF: Unused
	:	56	
65	Radio wave level(Mic16)	1	Radio wave level of microphone 16 (0x00-0x3F) *MSB indicates the presence or absence of error (0: none, 1 present)
66	Audio level(Mic16)	2	Audio level of microphone 16 (0x0000-0xFFFF)
67	Status (Mic16)	1	0x00: Power OFF 0x01: Connected 0x0F: Connection error
68	Registration number (Mic16)	1	Microphone registration number * Microphone management number inside the wireless receiver 0x00: Microphone 1 … 0x63: Microphone 100 0xFF: Unused
69	Reserve	2	Reserve

Conversion table of radio wave level indication and radio wave level value

Radio wave level indication	Radio wave level value
Green 5 points	0x29-0x3F
Green 4 points	0x26-0x28
Green 3 points	0x23-0x25
Green 2 points	0x20-0x22
Green 1 point	0x1D-0x1F
Off	0x00-0x1C



Conversion table of audio level indication and audio level value

Audio level indication	Audio level value
Red	0x3FFF-0x7FFF
Orange	0x1449-0x3FFE
Green	0x00A4-0x1448
Off	0x0000-0x00A3

5.8. Operation mode change (control terminal -> receiver) <A.02>

- When controlling the volume from the control terminal, it is necessary to change the operation mode to remote mode with this command.
- When this command is transmitted, “Operation mode response” command is returned.

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0140
6	Command data length	4	0x0000001A (26 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)
6	Operation mode	2	Operation mode 0x0000 : Local mode(Control the volume on the front panel of the receiver) 0x0001 : Remote mode(Control the volume from control terminal) * When 0x0001 is set, the front VOL of the receiver / expansion receiver becomes invalid. * Even after the power is turned off / on, the operation mode before power off is maintained.

5.9. Operation mode request (control terminal -> receiver) <A.02>

- This command is used to confirm the current operation mode from the control terminal.
- When this command is transmitted, “Operation mode response” command is returned.

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0141
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

5.10. Operation mode response (receiver -> control terminal) <A.02>

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0142
6	Command data length	4	0x0000001A (26 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Current data acquisition request result 0x00000000 : OK Other than 0x00000000: NG
5	Reserve	4	0x00000000(fixed)
6	Operation mode	2	Operation mode 0x0000 : Local mode(Control the volume on the front panel of the receiver) 0x0001 : Remote mode(Control the volume from control terminal)

5.11. Volume change (control terminal -> receiver) <A.02>

- This command is used to change the volume from the control terminal.
- When controlling the volume from the control terminal, it is necessary to change the operation mode to remote mode with "Operation mode change" command.
- When this command is transmitted, "Volume response" command is returned.

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0150
6	Command data length	4	0x0000002A (42 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	Volume setting method 0x0000: Absolute value 0x0001: Relative value
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)
6	Select microphone to be changed	2	Select the target microphone of this command. Bit layout LSB (Bit: 0): Mic1, Bit 1: Mic 2,..., MSB (Bit 15): Mic16 Setting value 0: Do not change the volume setting with this command 1: Change the volume with this command Example: When 0x4001, only the volume setting of mic1 and mic15 is valid
7	Mic1 - Volume setting	1	Volume setting When option parameter 1 is 0x0000 absolute value Bit 0 to Bit 6 0x00 - 0x3F: Volume setting Bit 7 0: Normal state (no mute) 1: Mute ON When option parameter 1 is 0x0001 relative value Bit 0 to Bit 6 0x00 - 0x3F: Addition value from the current volume setting *If the addition result exceeds 0x00 - 0x3F, set the volume to the maximum value 0x3F and the minimum value 0x00. Bit 7 0: Volume up 1: Volume down
	...		
22	Mic16 - Volume setting	1	

5.12. Volume request (control terminal -> receiver) <A.02>

- This command is used to confirm the current volume from the control terminal.
- When this command is transmitted, “Volume response” command is returned.

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0151
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

5.13. Volume response (receiver -> control terminal) <A.02>

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0152
6	Command data length	4	0x0000002A (42 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Current data acquisition request result 0x00000000 : OK Other than 0x00000000: NG * When the operation mode is "Local mode". When "Volume change" is received, notification code = NG, mic volume setting = front panel volume is responded. When "Volume request" is received, notification code = OK, mic volume setting = front panel volume is responded.
5	Reserve	4	0x00000000(fixed)
6	Reserve	2	0x0000(fixed)
7	Mic1 - Volume setting	1	Volume setting Bit 0 to Bit 6 0x00 - 0x3F: Volume setting Bit 7 0: Normal state (no mute) 1: Mute ON *If the microphone is not registered, 0xFF is returned.
	...		
22	Mic16 - Volume setting	1	

5.14. Mic pairing request (control terminal -> receiver / receiver -> control terminal) <A.03>

- This command is used to enter/exit the mic pairing mode from both the control terminal and wireless receiver
- When this command is transmitted, “Mic pairing response” command is returned.

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0071
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	Microphone pairing mode 0x0000 : Start pairing mode 0x0001 : Stop pairing mode
2	Option parameter 1	2	Microphone pairing channel 0x0000 : Ch1 … 0x000F : Ch16
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

5.15. Mic pairing response (control terminal -> receiver / receiver -> control terminal) <A.03>

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0072
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	Microphone pairing mode 0x0000 : Start pairing mode 0x0001 : Stop pairing mode
2	Option parameter 1	2	Microphone pairing channel 0x0000 : Ch1 … 0x000F : Ch16
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Microphone pairing request result 0x00000000 : OK Other than 0x00000000: NG
5	Reserve	4	0x00000000(fixed)

5.16. Mic talking status change (control terminal -> receiver) <A.04>

This command is available in the following versions and later.

Model : WX-SR204/SR202DN/SR204DN

Version : 6.00R00

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x0081
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	Change microphone talking status 0x0000 : Stop to talk 0x0001 : Start to talk
2	Option parameter 1	2	Microphone pairing channel 0x0000 : Microphone 1 … 0x0063 : Microphone 100 The following parameter can be used only if “Identifier” is 0x0000 : Stop to talk 0xFFFF : All microphones
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

6. Current data format (receiver)

・ The table structure of the current data is shown below.

Data name	Current data
Contents	Data in operation (160 bytes)

Count	Item name	Number of bytes	Contents	Remarks
0	DATA VERSION	8	Data version 0x0000000000000000	
8	Wireless receiver condition	1	0x00: Power OFF 0x01: Connected 0x0F: Connection error	
9	Extended Wireless Receiver 1 State	1		
10	Extended Wireless Receiver 2 State	1		
11	Extended Wireless Receiver 3 State	1		
12	Operation mode	1	Operation mode 0x00: Wireless Receiver operation(Local mode) 0x01: Control terminal operation(Remote mode) *When set to control terminal operation, the volume operation of the wireless receiver is invalid.	
13	Reserve	3		
16	Wireless antenna 1 state	1	Bit0-Bit6 0x00: Power OFF 0x01: Connected 0x0F: Connection error Bit7 0: PHS not detected 1:P PHS detected	
–	…	–		
23	Wireless antenna 8 state	1		
24	Microphone 1 - No	1	Microphone registration number * Microphone management number inside the wireless receiver 0x00: Microphone 1 … 0x63: Microphone 100 0xFF: Unused	
25	Microphone 1 - State	1	0x00: Power OFF 0x01: Connected 0x0F: Connection error	
26	Microphone 1 - Battery level	1	0x00: Red (Battery level low) 0x01: Orange (Battery level mid) 0x02: Green (Battery level high)	
27	Microphone 1 - Radio wave level	1	Radio wave level(0x00-0x3F) *MSB indicates the presence or absence of error (0: none, 1 present)	
28	Microphone 1 - Audio level	2	Audio level(0x0000-0xFFFF)	
30	Microphone 1 - Connection antenna number	1	Connection antenna number 0x00: Wireless antenna 1 … 0x07: Wireless antenna 8	
31	Microphone 1 - Volume	1	Microphone Volume(0x00-0x3F) *MSB indicates the Mute state. (0: Normal, 1: Mute)	
–	…	–		
144	Microphone 16	8	Same as microphone 1	

153	Data Change Status <A.03>	1	Bit0-Bit5 Don't care Bit6 : Microphone pairing status 0: Normal Operation 1: During microphone pairing(See "Mic Pairing Channel" for Mic channel)	
154	Mic Pairing Channel <A.03>	1	Microphone channel during pairing 0x00 : Ch1 … 0x0F : Ch16	
155	Sync state	1	System synchronization state 0x00: Stand-alone mode operation 0x01: Main mode operation 0x02: Sub mode operation - Synchronized 0x03: Sub mode operation - Sync error	
156	Reserve	5		

Table 6. Current data

7. Connection / Disconnection / Keep-Alive (charger) <A.05>

- Connection is started by TCP connection from the control terminal to port 50003 of the charger and sending a connection request command.
- The connection state is maintained by sending a keep-alive command (Mic charge status request) every 5 seconds after connection processing and authentication processing is completed
- By sending various control commands in this state, it is possible to control the Charger
- When the keep-alive from the control terminal is stopped or the control terminal closes the TCP socket, the connection state is disconnected.

7.1. Connection request (control terminal -> charger)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x4011
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

7.2. Connection response (charger -> control terminal)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x4012
6	Command data length	4	0x00000020 (32 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	Mode notification of the unit 0x0000: Normal boot 0x0001: Maintenance mode
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Connection request result 0x00000000 : OK 0xFFFFFFFF : Initial password not set Other than above : NG
5	Reserve	4	0x00000000(fixed)
6	Random number data	8	Random number data for generation of authentication data used in authentication request is 8-byte ASCII character *Random number data changes for each connection response

7.3. Authentication request (control terminal -> charger)

SHA-256 hash is used for authentication of connection to the charger

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x4031
6	Command data length	4	0x00000058 (88 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)
6	Authentication data	64 (SHA-256)	Authentication data generated with random number data received in connection response and password of charger

7.4. Authentication Response (charger -> control terminal)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x4032
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Authentication request result 0x00000000 : OK Other than 0x00000000: NG
5	Reserve	4	0x00000000(fixed)

7.5. Mic charge status request (control terminal -> charger)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x2071
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

7.6. Mic charge status response (charger -> control terminal)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x2072
6	Command data length	4	0x00000040 (64 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Charger version	8	*.**R*** For V1.00R00, store the ASCII string “1.00R000”
2	Charge port1 status	2	0x0000 : No mic 0x0001 : charging 0x0002 : charging complete 0x0003 : charging abnormal
3	Charge port1 charge elapsed time	2	0x0000～0x05A0 Unit : minutes
4	Charge port1 reserve1	2	0x0000(fixed)
5	Charge port1 reserve2	2	0x0000(fixed)
6	Charge port2 status	2	0x0000 : No mic 0x0001 : charging 0x0002 : charging complete 0x0003 : charging abnormal
7	Charge port2 charge elapsed time	2	0x0000～0x05A0 Unit : minutes
8	Charge port2 reserve1	2	0x0000(fixed)
9	Charge port2 reserve2	2	0x0000(fixed)
10	Charge port3 status	2	0x0000 : No mic 0x0001 : charging 0x0002 : charging complete 0x0003 : charging abnormal
11	Charge port3 charge elapsed time	2	0x0000～0x05A0 Unit : minutes
12	Charge port3 coil state	2	0x0000 : Laying down 0x0001 : standing(default)
13	Charge port3 reserve2	2	0x0000(fixed)
14	Charge port4 status	2	0x0000 : No mic 0x0001 : charging 0x0002 : charging complete 0x0003 : charging abnormal
15	Charge port4 charge elapsed time	2	0x0000～0x05A0 Unit : minutes
16	Charge port4 coil state	2	0x0000 : Laying down 0x0001 : standing(default)
17	Charge port4 reserve2	2	0x0000(fixed)
18	Reserve	16	

7.7. Charger data request (control terminal -> charger)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x2041
6	Command data length	4	0x00000018 (24 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	0x00000000(fixed)
5	Reserve	4	0x00000000(fixed)

7.8. Charger data response (charger -> control terminal)

Header section: Command identifier

#	Name	Number of bytes	Remarks
4	Command identifier	2	0x2042
6	Command data length	4	0x00000058 (88 bytes)

Data Section: Command data

#	Name	Number of bytes	Remarks
Data header			
1	Reserve	8	0x0000000000000000(fixed)
Data body			
1	Identifier	2	0x0000(fixed)
2	Option parameter 1	2	0x0000(fixed)
3	Option parameter 2	4	0x00000000(fixed)
4	Notification code	4	Charger data request result 0x00000000 : OK Other than 0x00000000: NG
5	Reserve	4	0x00000000(fixed)
6	Charger data	64	Refer to charger data format(Table. 8)

8. Charger data format <A.05>

・ The table structure of the charger data is shown below.

データ名	Charger data			
内容	Data in operation (64 bytes)			
Count	Item name	Number of bytes	Contents	Remarks
0	DATA VERSION	8	Data version 0x0000000000000000	
8	Unit name	32	Set with less than 10 characters (UTF-8 format)	
40	Version information	8	*.**R*** For V1.00R00, store the ASCII string “1.00R000”	
48	IP address	4	Stores the IP address of the charger	
52	Subnet mask	4	Stores the IP subnet mask of the charger	
56	Gateway	4	Stores the IP default gateway of the charger	
60	Port number	2	Stores the IP port number of the charger	
62	Reserve	2		

Table 8. charger data format