System Specifications Networking

Operation Code

Summary:

This Chapter specifies the HDL Buspro Operation Code and Type for Interworking. This Chapter describes the general usable and Functional specific for integration Operation Codes/Types that are to be used as commands for transmission of data on the bus. Authorized integrator can use this document to integrate HDL Bus Pro products with third system like Security system, Central control system, VRV system, Heating system etc..

Document updates

Version	Data	Description
V1.100	2014.02.11	Create new documents based on old documents
V1.101	2014.02.20	Add New command to system date and time
V1.102	2014.04.10	Add New command for floor heating settings
V1.103	2014.04.18	Add New command for Z-audio Control
V1.104	2014.05.07	Add New curtain control mode
V1.105	2014.09.04	Add commands for power meter
V1.106	2014.09.09	Add Sensors in One auto broadcast command
V1.107	2014.09.23	Modify Dry Contact commands
V1.108	2014.10.21	Modify Security commands, Add scene commands
V1.109	2015.05.05	Add Universal control commands
V1.110	2015.06.24	Add UV Control Lists
V1.111	2015.07.13	Add Commands to Read Analog Value
V1.112	2015.12.23	Modify Command 193A
V1.113	2017.03.30	1,Verify Temperature Braodcast commands 2, Panel Control add ac number and floorheating number

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1. Introduction

HDL Bus Pro system developed from 2002, It has been improved and updated every day.

HDL Bus Pro system designed for two way communications, No master and slaver or centre control in system, All of devices in system interwork by messages, So this system are very stable and flexible also has high expansibility, until now, the system already used for many different applications like building for energy saving, lighting control, AC control, blind and shutter control etc.. Home for lighting control, curtain control, background music control, VRV control, Heating control, AV control, security control etc… Hotel room for energy saving, lighting control, curtain control, door lock control, services control etc…

HDL Bus Pro system use two byte for addressing devices in system, it named SubNet ID and Device ID, it allow more than 60000 devices working in one system, Message can be interworked by point to point and broadcast.

HDL Bus Pro system can communicate over three media, Twisted pair for RS485, Ethernet and Wireless.

This document provide protocol and interworking commands of HDL Bus Pro in detail for integrator to develop application to control and monitor HDL Bus Pro system like Iridium mobile, Tron and other developer. Also third party factory can use this protocol to integrate their system to HDL system like for Lighting, HVAC, Music, Curtain, Heating system, Security etc…

2. Protocol

2.1 Over RS485

Data Package Over RS485				
Baud Rate:9600bps; Start bit:1; Data bits:8; Parity bit: Even; Stop bit:1, Total bits: 11				
Index	Remark	Bits	Scope	Description
1	Leader Code	16	0xAAAA	Leader code is starting symbol of data package, it fixed to 0xAAAA for each data package.
2	Size of Data Package	8	11 – 78	This byte indicate the size of data package, calculation of size is include itself and CRC. the minimum size are 11(content=0), the maximum size are 78
3	Original SubNet ID	8	0 - 254	The SubNet ID of sender, from 0 to 254(0xFE)
4	Original Device ID	8	0 - 254	The Device ID of sender, from 0 to 254(0xFE)
5	Original Device Type	16	0 - 65535	The Device type of sender, the two bytes define different TYPE of devices in system. Please contact HDL R&D if need this information in detail.
6	Command	16	0 - 65535	Define interworking commands for communication between two or more devices, Normal use hexadecimal to express
7	Target SubNet ID	8	0 - 255	The SubNet ID of receiver, 0 to 254(0xFE) for point to point and 255(0xFF) for broadcast.
8	Target Device ID	8	0 - 255	The Device ID of receiver, 0 to 254(0xFE) for point to point and 255(0xFF) for broadcast.
9	Contents	N		Additional contents in package, this field can be changed by different commands, minimum is 0,

				maximum is 67 bytes
10	CRC	16	0 - 65535	The results of check sum for the package, using ITU-IEEE 16bit standard CRC, calculations from “Size of Data Package” to “Contents”

Notice: HDL Bus system designed for two way communication, there are no master and slave device on network, so if third part system want connect to HDL Bus system over RS485, it must support carrier sense(sender need check RS485 Bus busy or idle before sending data package to Bus) and collision detection(sender must receive it’s package from Bus check if there are conflict or not) for RS485 Bus. it must support resend mechanism in case the receiver not receive data package correctly, Maximum 3 times for resending if receiver not reply to sender within 500ms each time .

2.2 Over Ethernet

Data package over RS485 can be extend into Ethernet by adding special head package in UDP data package, rest of data package same with RS485

Data Package Over Ethernet				
UDP port: 6000				
LAN: Broadcast in network segment				
Internet: point to point				
Index	Remark	Bits	Scope	Description
1	IP address1	8	0-255	IP address of sender, “IP address1” is highest byte, “IP address4” is lowest byte. For example IP 192.168.10.250 , the “IP address1” field is 192, “IP address4” field is 250.
2	IP address2	8	0-255	
3	IP address3	8	0-255	
4	IP address4	8	0-255	
5	Constant character1	8	0x48	Those fields fixed by constant ASCII characters “HDLMIRACLE”, The receiver need check those field to filter package if receiver data package from port 6000, The sender must fill those field with ASCII characters “HDLMIRACLE”
6	Constant character2	8	0x44	
7	Constant character3	8	0x4C	
8	Constant character4	8	0x4D	
9	Constant character5	8	0x49	
10	Constant character6	8	0x52	
11	Constant character7	8	0x41	
12	Constant character8	8	0x43	
13	Constant character9	8	0x4C	
14	Constant character10	8	0x45	
Below data format same with Over RS485				
15	Leader Code	16	0xAAAA	Leader code is starting symbol of data package, it fixed to 0xAAAA for each data package.
16	Size of Data Package	8	11 – 78	This byte indicate the size of data package, calculation of size is include itself and CRC. the minimum size are 11(content=0), the maximum size are 78
17	Original SubNet ID	8	0 - 254	The SubNet ID of sender, from 0 to 254(0xFE)
18	Original Device ID	8	0 - 254	The Device ID of sender, from 0 to 254(0xFE)
19	Original Device Type	16	0 - 65535	The Device type of sender, the two bytes define different TYPE of devices in system. Please contact HDL R&D if need this information in detail.
20	Command	16	0 - 65535	Define interworking commands for communication between two or more devices, Normal use hexadecimal to express
21	Target SubNet ID	8	0 - 255	The SubNet ID of receiver, 0 to 254(0xFE) for point to point and 255(0xFF) for broadcast.
22	Target Device ID	8	0 - 255	The Device ID of receiver, 0 to 254(0xFE) for point

				to point and 255(0xFF) for broadcast.
23	Contents	N		Additional contents in package, this field can be changed by different commands, minimum is 0, maximum is 67 bytes
24	CRC	16	0 - 65535	The results of check sum for the package, using ITU-IEEE 16bit standard CRC, calculations from “Size of Data Package” to “Contents”

3. Device Type

4. Lighting Control

4.1 Scene

4.1.1 Scene Control

Command Code: 0x0002		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-255
2	Scene No.	0-255

4.1.2 Response Scene Control

Command Code: 0x0003			
Communication Mode: Broadcast			
Scope of SubNet ID: 255(0xFF)	Scope of Device ID: 255(0xFF)		
Additional Contents			
Size of Additional Contents: 3+n			
Index	Remark	Value Scope	
1	Area No.	1-255	
2	Scene No.	0-255	
3	Total Channel No.	1-255	
4	Channel Status in Bit	Encode	Bit Value
		Bit 0 = Channel 1	0 = Channel OFF, 1 = Channel ON
		Bit 1 = Channel 2	
		Bit 2 = Channel 3	
		Bit 3 = Channel 4	
		Bit 4 = Channel 5	
		Bit 5 = Channel 6	
		Bit 6 = Channel 7	
		Bit 7 = Channel 8	
5	Channel Status in Bit	Bit 0 = Channel 9	
		Bit 1 = Channel 10	
		Bit 2 = Channel 11	
		Bit 3 = Channel 12	
		Bit 4 = Channel 13	
		Bit 5 = Channel 14	
		Bit 6 = Channel 15	
		Bit 7 = Channel 16	
……			

n	Channel Status in Bit	Bit 0 = Channel m-7	
		Bit 1 = Channel m-6	
		Bit 2 = Channel m-5	
		Bit 3 = Channel m-4	
		Bit 4 = Channel m-3	
		Bit 5 = Channel m-2	
		Bit 6 = Channel m-1	
		Bit 7 = Channel m	

Notice: 16< m <257 , n= (Channel No.) % 8

4.1.3 Read Status of Scene

Command Code: 0x000C		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Area No.	1-255

4.1.4 Response Read Status of Scene

Command Code: 0x000D		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-255
2	Running of Scene No.	0-254

4.1.5 Broadcast Status of Scene

Command Code: 0xEFFF		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: 2 + 2N		
Index	Remark	Value Scope
1	Total Area No.	1-N
2	Area 1 Running Scene No	0-254
3	Area 2 Running Scene No	0-254
4	Area 3 Running Scene No	0-254
……		
N + 1	Area N Running Scene No	0-254
N + 2	Total Channel No.	1-255
N + 3	Channel 1 Level	0-100
N + 4	Channel 2 Level	0-100
……		
2N +2	Channel N Level	0-100

Notice: N= Channel No.

4.1.6 Read Area Information

Command Code: 0x0004		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope

4.1.7 Response Read Area Information

Command Code: 0x0005		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 5 + N		
Index	Remark	Value Scope
1	DeviceType High byte	DeviceType / 256
2	DeviceType Low byte	DeviceType % 256
3	SubNet ID	1-255
4	Device ID	1-255
5	Chn 1 in which area	1-N
6	Chn 2 in which area	1-N
…		
N + 4	Chn N in which area	1-255

4.1.8 Read Scene Information

Command Code: 0x0000		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:2		
Index	Remark	Value Scope
1	Area No.	1-N
2	Scene No.	1-2N

4.1.9 Response Read Scene Information

Command Code: 0x0001		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 5 + N		
Index	Remark	Value Scope
1	Area No.	1-N
2	Scene No.	1-2N
3	Running Time High byte	Running Time / 256
4	Running Time Low byte	Running Time% 256
5	Chn 1 Level	1-100
6	Chn 2 Level	1-100
…		
N + 4	Chn N Level	1-100

4.1.10 Modify Scene Information

Command Code: 0x0008		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 5 + N		
Index	Remark	Value Scope
1	Area No.	1-N
2	Scene No.	1-2N
3	Running Time High byte	Running Time / 256
4	Running Time Low byte	Running Time% 256
5	Chn 1 Level	1-100
6	Chn 2 Level	1-100
…		
N + 4	Chn N Level	1-100

4.1.11 Response Modify Scene Information

Command Code: 0x0009		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:1		
Index	Remark	Value Scope
1	Success or Fail	F8 = success; F5 = fail

4.2 Sequence

4.2.1 Sequence Control

Command Code: 0x001A		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-255
2	Sequence No.	0-255

4.2.2 Response Sequence Control

Command Code: 0x001B		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-255
2	Sequence No.	0-255

4.2.3 Read Status of Sequence

Command Code: 0xE014		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Area No.	1-255

4.2.4 Response Read Status of Sequence

Command Code: 0xE015		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-255
2	Running of Sequence No.	0-254

4.2.5 Broadcast Status of Sequence

Command Code: 0xF036		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: N		
Index	Remark	Value Scope
1	Running of Sequence No. in Area 1	1-255
2	Running of Sequence No. in Area 2	1-255
……		
N	Running of Sequence No. in Area N	1-255

Notice: N= Channel No.

4.3 Single Channel

4.3.1 Single Channel Control

Command Code: 0x0031		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 4		
Index	Remark	Value Scope
1	Channel No.	1-255
2	Channel Level	0-100
3	Running Time High	3600 / 256
4	Running Time Low	3600 % 256

4.3.2 Response Single Channel Control

Command Code: 0x0032

Communication Mode: Broadcast			
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)	
Additional Contents			
Size of Additional Contents: 4 + n / 8			
Index	Remark	Value Scope	
1	Channel No.	1-255	
2	Success or fail	F8 = Success, F5 = Fail	
3	Channel Level	0-100	
4	Total Channel No.	1-255	
5	Channel Status in Bit	Encode	Bit Value
		Bit 0 = Channel 1	0 = Channel OFF, 1 = Channel ON
		Bit 1 = Channel 2	
		Bit 2 = Channel 3	
		Bit 3 = Channel 4	
		Bit 4 = Channel 5	
		Bit 5 = Channel 6	
		Bit 6 = Channel 7	
		Bit 7 = Channel 8	
6	Channel Status in Bit	Bit 0 = Channel 9	
		Bit 1 = Channel 10	
		Bit 2 = Channel 11	
		Bit 3 = Channel 12	
		Bit 4 = Channel 13	
		Bit 5 = Channel 14	
		Bit 6 = Channel 15	
		Bit 7 = Channel 16	
…...			
n	Channel Status in Bit	Bit 0 = Channel m-7	
		Bit 1 = Channel m-6	
		Bit 2 = Channel m-5	
		Bit 3 = Channel m-4	
		Bit 4 = Channel m-3	
		Bit 5 = Channel m-2	
		Bit 6 = Channel m-1	
		Bit 7 = Channel m	

Notice: 16< m <257 , n= (Channel No.) % 8

4.3.3 Read Status of Channels

Command Code: 0x0033	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254
Additional Contents	
Size of Additional Contents: 0	

4.3.4 Response Read Status of Channels

Command Code: 0x0034		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: N + 1		
Index	Remark	Value Scope
1	Total Channel No.	1-255
2	Channel 1 Level	0-100
3	Channel 2 Level	0-100

……		
N + 1	Channel N Level	0-100

Notice: n= Channel No.

4.3.5 Read Current Level of Channels

Command Code: 0x0038	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254
Additional Contents	
Size of Additional Contents: 0	

4.3.6 Response Read Current Level of Channels

Command Code: 0x0039		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: N + 1		
Index	Remark	Value Scope
1	Total Channel No.	1-255
2	Channel 1 Level	0-100
3	Channel 2 Level	0-100
……		
N + 1	Channel N Level	0-100

Notice: n= Channel No.

5. Logic Control

5.1 Logic

5.1.1 Logic Control

Command Code: 0xF116		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Logic Block No.	1-255
2	Status of Logic Block.	0 = Disable Block, 1 = Enable Block

5.1.2 Response Logic Control

Command Code: 0xF117		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Logic Block No.	1-255
2	Status of Logic Block.	0 = Disable Block, 1 = Enable Block

5.1.3 Read Status of Logic Control

Command Code: 0xF112		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Logic Block No.	1-255

5.1.4 Response Read Status of Logic Control

Command Code: 0xF113		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Logic Block No.	1-255
2	Status of Logic Block.	0 = Disable Block, 1 = Enable Block

5.1.5 Broadcast Status of Status of Logic Control

Command Code: 0xF12F		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Logic Block No.	1-255
2	Status of Logic Block.	0 = Disable Block, 1 = Enable Block

Notice: It is used only with Logic module,Enable / Disable the module fully, Logic Block No. default is 1.

5.1.6 Read System Date and Time

Command Code: 0xDA00		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		

5.1.7 Response Read System Date and Time

Command Code: 0xDA01		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Success or fail	F8 = Success, F5 = Fail
2	Year	Year - 2000

3	Month	1-12
4	Day	1-31
5	Hour	0-23
6	Minute	0-59
7	Second	0-59
8	Week day	0 – 6 , 0 = Sunday,

5.1.8 Modify Read System Date and Time

Command Code: 0xDA02		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 7		
Index	Remark	Value Scope
1	Year	Year - 2000
2	Month	1-12
3	Day	1-31
4	Hour	0-23
5	Minute	0-59
6	Second	0-59
7	Week day	0 – 6 , 0 = Sunday,

5.1.9 Response Modify Read System Date and Time

Command Code: 0xDA03		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Success or fail	F8 = Success, F5 = Fail

5.1.10 Broadcast System Date and Time(Every Minute)

Command Code: 0xDA44		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: 6		
Index	Remark	Value Scope
1	Year	Year - 2000
2	Month	1-12
3	Day	1-31
4	Hour	0-23
5	Minute	0-59
6	Second	0-59

6. Universal Switch

6.1 UV Switch

6.1.1 UV Switch Control

Command Code: 0xE01C		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	UV Switch No.	1-255
2	Switch Status	0 = OFF, 255 = ON

6.1.2 Response UV Switch Control

Command Code: 0xE01D		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	UV Switch No.	1-255
2	Switch Status	0 = OFF, 1 = ON

6.1.3 Read Status of UV Switch

Command Code: 0xE018		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	UV Switch No.	1-255

6.1.4 Response Read Status of UV Switch

Command Code: 0xE019		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	UV Switch No.	1-255
2	Switch Status	0 = OFF, 1 = ON

6.1.5 Broadcast Status of Status of UV Switches

Command Code: 0xE017		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: N + 1		
Index	Remark	Value Scope
1	Total UV Switches No.	1-32
2	Switch 1 Level	0 = OFF, 1 = ON
3	Switch 2 Level	0 = OFF, 1 = ON
……		

N + 1	Switch N Level	0 = OFF, 1 = ON

Notice: It is used only with Dry contact,whose uv switches no more than 32.

7. Curtain Switch

7.1 Curtain Switch

7.1.1 Curtain Switch Control

Command Code: 0xE3E0			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents: 2			
Index	Remark	Value Scope	
1	Curtain Switch No.	1-255	
2	Switch Status	Curtain no. <17	0 = STOP, 1 = OPEN, 2 = CLOSE
		Curtain no. = 17	0-100% percent

7.1.2 Response Curtain Switch Control

Command Code: 0xE3E1			
Communication Mode: Broadcast			
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)	
Additional Contents			
Size of Additional Contents: 2			
Index	Remark	Value Scope	
1	Curtain Switch No.	1-255	
2	Switch Status	Curtain no. <17	0 = STOP, 1 = OPEN, 2 = CLOSE
		Curtain no. = 17	0-100% percent

Notice: when curtain no. is 17, and the status is 0xEE, it means curtain controller is measuring the length of curtain.

7.1.3 Read Status of Curtain Switch

Command Code: 0xE3E2		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Curtain Switch No.	1-255

7.1.4 Response Read Status of Curtain Switch

Command Code: 0xE3E3		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope

1	Curtain Switch No.	1-255	
2	Switch Status	Curtain no. <17	0 = STOP, 1 = OPEN, 2 = CLOSE
		Curtain no. = 17	0-100% percent

7.1.5 Broadcast Status of Status of Curtain Switches

Command Code: 0xE3E4		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)	Scope of Device ID: 255(0xFF)	
Additional Contents		
Size of Additional Contents: 2N		
Index	Remark	Value Scope
1	Switch 1 Level	0 = STOP, 1 = OPEN, 2 = CLOSE
2	Switch 2 Level	0 = STOP, 1 = OPEN, 2 = CLOSE
……		
N	Switch N Level	0 = STOP, 1 = OPEN, 2 = CLOSE
N + 1	Switch 1 Current Status	0 = STOP, 1 = OPEN, 2 = CLOSE
N + 2	Switch 2 Current Status	0 = STOP, 1 = OPEN, 2 = CLOSE
……		
2N	Switch N Current Status	0 = STOP, 1 = OPEN, 2 = CLOSE

8. GPRS Control

8.1 GPRS Control

8.1.1GPRS Control

Command Code: 0xE3D4		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	GPRS Type	0 = Invalie, 1 = Message
2	Message Group No.	1-24

8.1.2 Response GPRS Control

Command Code: 0xE3D5		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	GPRS Type	0 = Invalie, 1 = Message
2	Message Group No.	1-24

9. Panel Control

9.1 Panel Control

9.1.1 Panel Control

Command Code: 0xE3D8			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents:4			
Index	Remark		
1	0 = Invalid	-	
	1 = IR Control	0 = OFF, 1 = ON	
	2 = Lock Panel	0 = OFF, 1 = ON	
	3= AC Power	Remark	Value Scope
		0 = OFF, 1 = ON	AC number 1-128
	4 = Cooling Temp	0-84	
	5 = Fan Speed7	0 = Auto, 1 = High, 2 =	
	6 = AC Mode	0 = Cooling, 1 = Heating, 2 =	
	7 = Heat Temp	0-84	
	8 = Auto Temp	0-84	
	9 =Rise Temp	0-5	
	10 = Decrease Temp	0-5	
	11 = BackLight Status	0 = OFF, 1 = ON	
	12 = Lock AC	0 = OFF, 1 = ON	
	13 = BackLIght Level	0-100	
	14 =Status Light Level	0-100	
	15 = Shield Button	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	16 = Shield Page	Remark	Value Scope
		Page No.	1-255
		Page Status	0=Invalid, 1 = Valid
	17 = Control Button LED	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	18 = Control Button	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	19 = Dry Temp	Remark	Value Scope
		0-84	AC number 1-128
	20 = Temp Status	Remark	Value Scope
		0 = OFF, 1 = ON	FH number : 1-8
	21 = Temp Mode	1 = Normal, 2 = Day , 3 =	
	22 =FH Rise Temp	0-5	
	23 = FH Decrease Temp	0-5	
	24 = Lock Setup Page	0 = OFF, 1 = ON	
	25 = Normal Temp	0-84	
	26 = Day Temp	0-84	
	27 = Night Temp	0-84	
	28 = Away Temp	0-84	

9.1.2 Response Panel Control

Command Code: 0xE3D9			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents:4			
Index	Remark		
1	0 = Invalid	-	
	1 = IR Control	0 = OFF, 1 = ON	
	2 = Lock Panel	0 = OFF, 1 = ON	
	3= AC Power	Remark	Value Scope
		0 = OFF, 1 = ON	AC number 1-128
	4 = Cooling Temp	0-84	
	5 = Fan Speed7	0 = Auto, 1 = High, 2 =	
	6 = AC Mode	0 = Cooling, 1 = Heating, 2 =	
	7 = Heat Temp	0-84	
	8 = Auto Temp	0-84	
	9 =Rise Temp	0-5	
	10 = Decrease Temp	0-5	
	11 = BackLight Status	0 = OFF, 1 = ON	
	12 = Lock AC	0 = OFF, 1 = ON	
	13 = BackLIght Level	0-100	
	14 =Status Light Level	0-100	
	15 = Shield Button	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	16 = Shield Page	Remark	Value Scope
		Page No.	1-255
		Page Status	0=Invalid, 1 = Valid
	17 = Control Button LED	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	18 = Control Button	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	19 = Dry Temp	Remark	Value Scope
		0-84	AC number 1-128
	20 = Temp Status	Remark	Value Scope
		0 = OFF, 1 = ON	FH number : 1-8
	21 = Temp Mode	1 = Normal, 2 = Day , 3 =	
	22 =FH Rise Temp	0-5	
	23 = FH Decrease Temp	0-5	
	24 = Lock Setup Page	0 = OFF, 1 = ON	
	25 = Normal Temp	0-84	

	26 = Day Temp	0-84	
	27 = Night Temp	0-84	
	28 = Away Temp	0-84	

9.1.3 Read Status of Panel Control

Command Code: 0xE3DA	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254
Additional Contents	
Size of Additional Contents:1	
Index	Remark
1	0 = Invalid
	1 = IR Control
	2 = Lock Panel
	3= AC Power
	4 = Cooling Temp
	5 = Fan Speed
	6 = AC Mode
	7 = Heat Temp
	8 = Auto Temp
	9 =Rise Temp
	10 = Decrease Temp
	11 = BackLight Status
	12 = Lock AC
	13 = BackLIght Level
	14 =Status Light Level
	15 = Shield Button
	16 = Shield Page
	17 = Control Button LED
	18 = Control Button
	19 = Dry Temp
	20 = Temp Status
	21 = Temp Mode
	22 =FH Rise Temp
	23 = FH Decrease Temp
	24 = Lock Setup Page
	25 = Normal Temp
	26 = Day Temp
	27 = Night Temp
	28 = Away Temp

9.1.4 Response Read Status of Panel Control

Command Code: 0xE3DB		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)	Scope of Device ID: 255(0xFF)	
Additional Contents		
Size of Additional Contents:4		
Index	Remark	

1	0 = Invalid	-	
	1 = IR Control	0 = OFF, 1 = ON	
	2 = Lock Panel	0 = OFF, 1 = ON	
	3= AC Power	0 = OFF, 1 = ON	
	4 = Cooling Temp	0-84	
	5 = Fan Speed	0 = Auto, 1 = High, 2 = Medium, 3 = Low	
	6 = AC Mode	0 = Cooling, 1 = Heating, 2 = Fan , 3 = Auto, 4 = Dehumidfy	
	7 = Heat Temp	0-84	
	8 = Auto Temp	0-84	
	9 =Rise Temp	0-5	
	10 = Decrease Temp	0-5	
	11 = BackLight Status	0 = OFF, 1 = ON	
	12 = Lock AC	0 = OFF, 1 = ON	
	13 = BackLIght Level	0-100	
	14 =Status Light Level	0-100	
	15 = Shield Button	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	16 = Shield Page	Remark	Value Scope
		Page No.	1-255
		Page Status	0=Invalid, 1 = Valid
	17 = Control Button LED	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	18 = Control Button	Remark	Value Scope
		Key No.	1-255
		Key Status	0=Invalid, 1 = Valid
	19 = Dry Temp	0-84	
	20 = Temp Status	0 = OFF, 1 = ON	
	21 = Temp Mode	1 = Normal, 2 = Day , 3 = Night, 4 = Away, 5 = Timer	
	22 =FH Rise Temp	0-5	
	23 = FH Decrease Temp	0-5	
	24 = Lock Setup Page	0 = OFF, 1 = ON	
	25 = Normal Temp	0-84	
	26 = Day Temp	0-84	
	27 = Night Temp	0-84	
	28 = Away Temp	0-84	

10. AC Control

10.1 AC Control

10.1.1 Read AC Status

Command Code: 0x1938	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254

Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	AC No.	1-128

10.1.2 Response Read AC Status

Command Code: 0x1939			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents: 13			
Index	Remark	Value Scope	
1	AC No.	1-128	
2	Temperature Type	0 = C, 1 = F	
3	Current Temperature	0-99	
4	Cooling Temp Point	0-86	
5	Heating Temp Point	0-86	
6	Auto Temp Point	0-86	
7	Dry Temp Point	0-86	
8	Mode and Fan	Encode	Bit Value
		Bit 7,6,5,4	0 = Cooling, 1 = Heating, 1 = Fan, 3 = Auto, 4 = Dry
		Bit 3,2,1,0	0 =Auto, 1 = High, 1 = Medium, 3 = Low
9	AC Status	0 = OFF, 1 = ON	
10	Setup Mode	0 = Cooling, 1 = Heating, 1 = Fan, 3 = Auto, 4 = Dry	
11	Setup Speed	0 =Auto, 1 = High, 1 = Medium, 3 = Low	
12	Current Mode and Fan	Encode	Bit Value
		Bit 7,6,5,4	0 = Cooling, 1 = Heating, 1 = Fan, 3 = Auto, 4 = Dry
		Bit 3,2,1,0	0 =Auto, 1 = High, 1 = Medium, 3 = Low
13	Sweep	Encode	Bit Value
		Bit 3,2,1,0	0 = Enable, 1 = Disable
		Bit 7,6,5,4	0= No Sweep , 1 = Sweep Now

10.1.3 Control AC Status

Command Code: 0x193A			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents: 13			
Index	Remark	Value Scope	
1	AC No.	1-128	
2	Temperature Type	0 = C, 1 = F	
3	Current Temperature	0-40 (C); 32-99 (F)	
4	Cooling Temp Point	0-86	
5	Heating Temp Point	0-86	
6	Auto Temp Point	0-86	
7	Dry Temp Point	0-86	
8	Mode and Fan	Encode	Bit Value
		Bit 7,6,5,4	0 = Cooling, 1 = Heating, 1 = Fan, 3 = Auto, 4 = Dry

		Bit 3,2,1,0	0 =Auto, 1 = High, 1 = Medium, 3 = Low
9	AC Status	0 = OFF, 1 = ON	
10	Setup Mode	0 = Cooling, 1 = Heating, 1 = Fan, 3 = Auto, 4 = Dry	
11	Setup Speed	0 =Auto, 1 = High, 1 = Medium, 3 = Low	
12	Set point Temperature	0-40 (C); 32-99 (F)	
13	Sweep	Encode	Bit Value
		Bit 3,2,1,0	0 = Enable, 1 = Disable
		Bit 7,6,5,4	0= No Sweep , 1 = Sweep Now

10.1.4 Response Control AC Status

Command Code: 0x193B			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents: 13			
Index	Remark	Value Scope	
1	AC No.	1-128	
2	Temperature Type	0 = C, 1 = F	
3	Current Temperature	0-99	
4	Cooling Temp Point	0-86	
5	Heating Temp Point	0-86	
6	Auto Temp Point	0-86	
7	Dry Temp Point	0-86	
8	Mode and Fan	Encode	Bit Value
		Bit 7,6,5,4	0 = Cooling, 1 = Heating, 1 = Fan, 3 = Auto, 4 = Dry
		Bit 3,2,1,0	0 =Auto, 1 = High, 1 = Medium, 3 = Low
9	AC Status	0 = OFF, 1 = ON	
10	Setup Mode	0 = Cooling, 1 = Heating, 1 = Fan, 3 = Auto, 4 = Dry	
11	Setup Speed	0 =Auto, 1 = High, 1 = Medium, 3 = Low	
12	Current Mode and Fan	Encode	Bit Value
		Bit 7,6,5,4	0 = Cooling, 1 = Heating, 1 = Fan, 3 = Auto, 4 = Dry
		Bit 3,2,1,0	0 =Auto, 1 = High, 1 = Medium, 3 = Low
13	Sweep	Encode	Bit Value
		Bit 3,2,1,0	0 = Enable, 1 = Disable
		Bit 7,6,5,4	0= No Sweep , 1 = Sweep Now

11. Floor Heating Control

11. 1 Floor Heating Control from DLP

11.1.1 Read Floor Heating Status

Command Code: 0x1944	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254
Additional Contents	
Size of Additional Contents: 0	

11.1.2 Response Read Floor Heating Status

Command Code: 0x1945			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents: 9			
Index	Remark	Value Scope	
1	Temperature Type	0 = C, 1 = F	
2	Current Temperature	Encode	Bit Value
		Bit 7	0 = Positive, 1 = Negative
		Bit6,5,4,3,2,1,0	Temperature Value
3	Status	0 = OFF, 1 = ON	
4	Mode	1 = Normal, 2 = Day , 3 = Night, 4 = Away, 5 = Timer	
5	Normal Temperature	5-95	
6	Day Temperature	5-95	
7	Night Temperature	5-95	
8	Away Temperature	5-95	
9	Timer	0 = Day, 1 = NIght	

11.1.3 Control Floor Heating Status

Command Code: 0x1946		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 7		
Index	Remark	Value Scope
1	Temperature Type	0 = C, 1 = F
2	Status	0 = OFF, 1 = ON
3	Mode	1 = Normal, 2 = Day , 3 = Night, 4 = Away, 5 = Timer
4	Normal Temperature	5-95
5	Day Temperature	5-95
6	Night Temperature	5-95
7	Away Temperature	5-95

11.1.4 Response Control Floor Heating Status

Command Code: 0x1947		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Success or Fail	F8 = Success, F5 = Fail
2	Temperature Type	0 = C, 1 = F
3	Status	0 = OFF, 1 = ON
4	Mode	1 = Normal, 2 = Day , 3 = Night, 4 = Away, 5 = Timer
5	Normal Temperature	5-95
6	Day Temperature	5-95
7	Night Temperature	5-95
8	Away Temperature	5-95

11.2 Floor Heating Control from Floor Heating Module

11.2.1 Read Floor Heating Status

Command Code: 0x1C5E		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Channel No.	1-8

11.2.2 Response Read Floor Heating Status

Command Code: 0x1C5F			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254		
Additional Contents			
Size of Additional Contents: 13			
Index	Remark	Value Scope	
1	Channel No.	1-8	
2	Current Work Type	Encode	Bit Value
		Bit 7,6,5,4	0= Heating, 1= Cooling, 2= Heating power output , 3= Cooling power output
		Bit3,2,1,0	0 = OFF, 1 = ON
3	Temperature Type	0 = C, 1 = F	
4	Mode	1 = Normal, 2 = Day , 3 = Night, 4 = Away, 5 = Timer	
5	Normal Temperature	5-95	
6	Day Temperature	5-95	
7	Night Temperature	5-95	
8	Away Temperature	5-95	
9	Timer	0 = Day, 1 = Night	
10	Vavle Status	0 = OFF, 1 = ON	
11	PWD Value	0-100	
12	Watering Flag	Encode	Bit Value
		Bit 7,6,5,4	0= Auto Running, 1= Command from outside
		Bit3,2,1,0	0 = OFF, 1 = ON
13	Watering Time	1-30min	

11.2.3 Control Floor Heating Status

Command Code: 0x1C5C			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254		
Additional Contents			
Size of Additional Contents: 10			
Index	Remark	Value Scope	
1	Channel No.	1-8	
2	Current Work Type	Encode	Bit Value
		Bit 7,6,5,4	0= Heating, 1= Cooling, 2= Heating power output , 3= Cooling power output
		Bit3,2,1,0	0 = OFF, 1 = ON
3	Temperature Type	0 = C, 1 = F	
4	Mode	1 = Normal, 2 = Day , 3 = Night, 4 = Away, 5 = Timer	
5	Normal Temperature	5-95	

6	Day Temperature	5-95
7	Night Temperature	5-95
8	Away Temperature	5-95
9	Vavle Status	0 = OFF, 1 = ON
10	Watering Time	1-30min

11.2.4 Response Control Floor Heating Status

Command Code: 0x1C5D			
Communication Mode: Broadcast			
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)	
Additional Contents			
Size of Additional Contents: 10			
Index	Remark	Value Scope	
1	Channel No.	1-8	
2	Current Work Type	Encode	Bit Value
		Bit 7,6,5,4	0= Heating, 1= Cooling, 2= Heating power output , 3= Cooling power output
		Bit3,2,1,0	0 = OFF, 1 = ON
3	Temperature Type	0 = C, 1 = F	
4	Mode	1 = Normal, 2 = Day , 3 = Night, 4 = Away, 5 = Timer	
5	Normal Temperature	5-95	
6	Day Temperature	5-95	
7	Night Temperature	5-95	
8	Away Temperature	5-95	
9	Vavle Status	0 = OFF, 1 = ON	
10	Watering Time	1-30min	

11.3 Floor Heating Settings (DLP Works as Master)

11.3.1 Read Floor Heating Settings

Command Code: 0x1940	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254
Additional Contents	
Size of Additional Contents: 0	

11.3.2 Response Read Floor Heating Settings

Command Code: 0x1941		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 36		
Index	Remark	Value Scope
1	Working Mode	0 = Disable, 1 = Heating, 2 = Cooling
2	Temperature Source	0 = Internal, 1 = External, 3 = Average
3	Temperature Source 1	0 = Disable, 1 = Receive Broadcast, 2 = Auto Read
4	Temperature Source 1	Subnet ID 0-254
5	Temperature Source 1	Device ID 0-254
6	Temperature Source 1	Channel No. 0-254
7	Temperature Source 2	0 = Disable, 1 = Receive Broadcast, 2 = Auto Read
8	Temperature Source 2	Subnet ID 0-254
9	Temperature Source 2	Device ID 0-254

10	Temperature Source 2	Channel No. 0-254	
11	High Limit Sensor	0 = Disable, 1 = Receive Broadcast, 2 = Auto Read	
12	High Limit Sensor	Subnet ID 0-254	
13	High Limit Sensor	Device ID 0-254	
14	High Limit Sensor	Channel No. 0-254	
15	Outside Sensor	0 = Disable, 1 = Receive Broadcast, 2 = Auto Read	
16	Outside Sensor	Subnet ID 0-254	
17	Outside Sensor	Device ID 0-254	
18	Outside Sensor	Channel No. 0-254	
19	Enable PID	0 = Disable, 1 = Enable	
20	Output Mode	0 = Relay , 1 = PWM Value	
21	Min PWM	0 – 100 %	
22	Max PWM	0 – 100 %	
23	Speed	0 = Lower, 1 = Low, 2 = Mid, 3 = High, 4 = Higher	
24	Cycle	0 = 1 min, 1 = 2 min, 2 = 3 min, 3 = 5 min,4 = 7 min, 5 = 10 min, 6 = 15 min, 7 = 20 min	
25	Current Work Type	Encode	Bit Value
		Bit 7,6,5,	Unused
		Bit4	1 = Timer Mode
		Bit3	1 = Away Mode
		Bit2	1 = Night
		Bit1	1 = Day
		Bit0	1 = Normal
26	Always ON	0 = OFF, 1 = ON	
27	Day Time Begins (Hour)	0 - 23	
28	Day Time Begins (Minute)	0 - 59	
29	Night Time Begins (Hour)	0 - 23	
30	Night Time Begins (Minute)	0 - 59	
31	Protect Temperature	5-80 C, 41 – 176 F	
32	NULL	NULL	
33	Running Mode	0 = Outside command , 1 = Caculate	
34	Working Mode	0 = Heating , 1 = Cooling	
35	Send SYN	0 = Enable, 1 = Disable	
36	Receive SYN	Encode	Bit Value
		Bit2	Temperature
		Bit1	Mode
		Bit0	ON OFF status

11.3.3 Modify Floor Heating Settings

Command Code: 0x1942		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 36		
Index	Remark	Value Scope
1	Working Mode	0 = Disable, 1 = Heating, 2 = Cooling
2	Temperature Source	0 = Internal, 1 = External, 3 = Average
3	Temperature Source 1	0 = Disable, 1 = Receive Broadcast, 2 = Auto Read
4	Temperature Source 1	Subnet ID 0-254
5	Temperature Source 1	Device ID 0-254
6	Temperature Source 1	Channel No. 0-254
7	Temperature Source 2	0 = Disable, 1 = Receive Broadcast, 2 = Auto Read
8	Temperature Source 2	Subnet ID 0-254
9	Temperature Source 2	Device ID 0-254
10	Temperature Source 2	Channel No. 0-254
11	High Limit Sensor	0 = Disable, 1 = Receive Broadcast, 2 = Auto Read

12	High Limit Sensor	Subnet ID 0-254	
13	High Limit Sensor	Device ID 0-254	
14	High Limit Sensor	Channel No. 0-254	
15	Outside Sensor	0 = Disable, 1 = Receive Broadcast, 2 = Auto Read	
16	Outside Sensor	Subnet ID 0-254	
17	Outside Sensor	Device ID 0-254	
18	Outside Sensor	Channel No. 0-254	
19	Enable PID	0 = Disable, 1 = Enable	
20	Output Mode	0 = Relay , 1 = PWM Value	
21	Min PWM	0 – 100 %	
22	Max PWM	0 – 100 %	
23	Speed	0 = Lower, 1 = Low, 2 = Mid, 3 = High, 4 = Higher	
24	Cycle	0 = 1 min, 1 = 2 min, 2 = 3 min, 3 = 5 min,4 = 7 min, 5 = 10 min, 6 = 15 min, 7 = 20 min	
25	Current Work Type	Encode	Bit Value
		Bit 7,6,5,	Unused
		Bit4	1 = Timer Mode
		Bit3	1 = Away Mode
		Bit2	1 = Night
		Bit1	1 = Day
		Bit0	1 = Normal
26	Always ON	0 = OFF, 1 = ON	
27	Day Time Begins (Hour)	0 - 23	
28	Day Time Begins (Minute)	0 - 59	
29	Night Time Begins (Hour)	0 - 23	
30	Night Time Begins (Minute)	0 - 59	
31	Protect Temperature	5-80 C, 41 – 176 F	
32	NULL	NULL	
33	Running Mode	0 = Outside command , 1 = Caculate	
34	Working Mode	0 = Heating , 1 = Cooling	
35	Send SYN	0 = Enable, 1 = Disable	
36	Receive SYN	Encode	Bit Value
		Bit2	Temperature
		Bit1	Mode
		Bit0	ON OFF status

11.3.4 Response Modify Floor Heating Settings

Command Code: 0x1943		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Success or fail	F8 = Success, F5 = Fail

11.4 Floor Heating Settings (Floor Heating module Works as Master)

11.4.1 Read Floor Heating Day Night Time Setting

Command Code: 0x1D1E		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Channel No.	1 – 6

11.4.2 Response Read Floor Heating Day Night Time Setting

Command Code: 0x1D1F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 7		
Index	Remark	Value Scope
1	Channel No.	1 – 6
2	Day Time Begins (Hour)	0 - 23
3	Day Time Begins (Minute)	0 - 59
4	Night Time Begins (Hour)	0 - 23
5	Night Time Begins (Minute)	0 - 59
6	NULL	NULL
7	NULL	NULL

11.4.3 Modify Floor Heating Day Night Time Setting

Command Code: 0x1D1D		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 7		
Index	Remark	Value Scope
1	Channel No.	1 – 6
2	Day Time Begins (Hour)	0 - 23
3	Day Time Begins (Minute)	0 - 59
4	Night Time Begins (Hour)	0 - 23
5	Night Time Begins (Minute)	0 - 59
6	NULL	NULL
7	NULL	NULL

11.4.4 Response Modify Floor Heating Day Night Time Setting

Command Code: 0x1D1F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Channel No.	1 – 6

12. Sensors In One

12.1 Read Sensors Status(8in1 DeviceType315)

12.1.1 Read Sensors Status

Command Code: 0xDB00		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Logic No.	1-24

12.1.2 Response Read Sensors Status

Command Code: 0xDB01		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Dry Contact 1 Status	0 = OFF, 1 = ON
2	Dry Contact 2 Status	0 = OFF, 1 = ON
3	-	
4	Motion Snesor	0 = No movement, 1 = Movement
5	-	
6	-	
7	Delay Time High	(0-3600) div 256
8	Delay Time Low	(0-3600) mod 256

12.2 Read Sensors Status(8in1 DeviceType314)

12.2.1 Read Sensors Status

Command Code: 0x1645	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254
Additional Contents	
Size of Additional Contents: 0	

12.2.2 Response Read Sensors Status

Command Code: 0x1646		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 7		
Index	Remark	Value Scope
1	Success or Fail	F8 = Success, F5 = Fail
2	Current Temperature	0-80 (-20C – 60C)
3	Brightness High	(0-5000) div 256
4	Brightness Low	(0-5000) mod 256
5	Motion Snesor	0 = No movement, 1 = Movement
6	Dry Contact 1 Status	0 = OFF, 1 = ON
7	Dry Contact 2 Status	0 = OFF, 1 = ON

12.3 Read Sensors Status(12in1)

12.3.1 Read Sensors Status

Command Code: 0x1645	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254
Additional Contents	
Size of Additional Contents: 0	

12.3.2 Response Read Sensors Status

Command Code: 0x1646		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Success or Fail	F8 = Success, F5 = Fail
2	Current Temperature	0-80 (-20C – 60C)
3	Brightness High	(0-5000) div 256
4	Brightness Low	(0-5000) mod 256
5	Motion Sensor	0 = No movement, 1 = Movement
6	Sonic	0 = No movement, 1 = Movement
7	Dry Contact 1 Status	0 = OFF, 1 = ON
8	Dry Contact 2 Status	0 = OFF, 1 = ON

12.3.3 Broadcast Sensors Status Automatically

Command Code: 0x1647		
Communication Mode: **Broadcast**		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Current Temperature	0-80 (-20C – 60C)
2	Brightness High	(0-5000) div 256
3	Brightness Low	(0-5000) mod 256
4	Motion Sensor	0 = No movement, 1 = Movement
5	Sonic	0 = No movement, 1 = Movement
6	Dry Contact 1 Status	0 = OFF, 1 = ON
7	Dry Contact 2 Status	0 = OFF, 1 = ON

12.4 Read Sensors Status(SensorsInOne)

12.4.1 Read Sensors Status

Command Code: 0x1604	
Communication Mode: Point to Point	
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254
Additional Contents	
Size of Additional Contents: 0	

12.4.2 Response Read Sensors Status

Command Code: 0x1605		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 9		
Index	Remark	Value Scope
1	Success or Fail	F8 = Success, F5 = Fail
2	Current Temperature	0-80 (-20C – 60C)
3	Brightness High	(0-5000) div 256

4	Brightness Low	(0-5000) mod 256
5	Air	0 = Clean, 1 = Mild, 2 = moderate, 3 = Servere
6	Gas	0-100%
7	Motion Sensor	0 = No movement, 1 = Movement
8	Dry Contact 1 Status	0 = OFF, 1 = ON
9	Dry Contact 2 Status	0 = OFF, 1 = ON

12.4.3 Broadcast Sensors Status

Command Code: 0x1630		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)	Scope of Device ID: 255(0xFF)	
Additional Contents		
Size of Additional Contents: 9		
Index	Remark	Value Scope
1	Success or Fail	F8 = Success, F5 = Fail
2	Current Temperature	0-80 (-20C – 60C)
3	Brightness High	(0-5000) div 256
4	Brightness Low	(0-5000) mod 256
5	Air	0 = Clean, 1 = Mild, 2 = moderate, 3 = Servere
6	Gas	0-100%
7	Motion Sensor	0 = No movement, 1 = Movement
8	Dry Contact 1 Status	0 = OFF, 1 = ON
9	Dry Contact 2 Status	0 = OFF, 1 = ON

13. Read Temperature

13.1 Read Temperature

13.1.1 Read Temperature

Command Code: 0xE3E7		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Channel No.	1-255

13.1.2 Response Read Temperature

Command Code: 0xE3E8			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents: 2			
Index	Remark	Value Scope	
1	Channel No.	1-255	
2	Temperature	Encode	Bit Value
		Bit 7	0 = Positive, 1 = Negative
		Bit6,5,4,3,2,1,0	Temperature Value

13.1.3 Broadcast Temperature

Command Code: 0xE3E5			
Communication Mode:Broadcast			
Scope of SubNet ID: 255		Scope of Device ID: 255	
Additional Contents			
Size of Additional Contents: 6			
Index	Remark	Value Scope	
1	Channel No.	1-255	
2	Temperature	Encode	Bit Value
		Bit 7	0 = Positive, 1 = Negative
		Bit6,5,4,3,2,1,0	Temperature Value
3	Temperature Float 1	1-255	
4	Temperature Float 2	1-255	
5	Temperature Float 3	1-255	
6	Temperature Float 4	1-255	

13.2 Read Temperature New

13.2.1 Read Temperature New

Command Code: 0x1948		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 1		
Index	Remark	Value Scope
1	Channel No.	1-255

13.2.2 Response Temperature

Command Code: 0x1949		
Communication Mode:Broadcast		
Scope of SubNet ID: 255	Scope of Device ID: 255	
Additional Contents		
Size of Additional Contents: 5		
Index	Remark	Value Scope
1	Channel No.	1-255
2	Temperature Float 1	1-255
3	Temperature Float 2	1-255
4	Temperature Float 3	1-255
5	Temperature Float 4	1-255

14. Security Module

14.1 Read Security Module Status

14.1.1 Read Security Module

Command Code: 0x011E		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254	
Additional Contents		
Size of Additional Contents: 1		

Index	Remark	Value Scope
1	Area No.	1-8

14.1.2 Response Read Security Module

Command Code: 0x011F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-8
2	Arm Type	6= Disarm 5= Day Arm 4= Night with Guest Arm 3= Night Arm 2= Away Arm 1= Vacation Arm

14.1.3 Arm Security Module

Command Code: 0x0104		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-8
2	Arm Type	6= Disarm 5= Day Arm 4= Night with Guest Arm 3= Night Arm 2= Away Arm 1= Vacation Arm

14.1.4 Response Arm Security Module

Command Code: 0x0105		
Communication Mode: Broadcast		
Scope of SubNet ID: 255		Scope of Device ID: 255
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-8
2	Arm Type	5 = Disarm 4 = Day Arm 3 = Night with Guest Arm 2 = Night Arm 1 = Away Arm 0 = Vacation Arm

14.1.5 Alarm Security Module

Command Code: 0x010C		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		

Size of Additional Contents: 3		
Index	Remark	Value Scope
1	Area No.	1-8
2	Encode	Bit Value
	Bit 7	-
	Bit 6	-
	Bit 5	-
	Bit 4	0 = Normal , 1 = Current Alarm
	Bit 3	0 = Normal , 1 = Emergency Alarm
	Bit 2	0 = Normal , 1 = Panic Alarm
	Bit 1	0 = Normal , 1 = Gas Alarm
	Bit 0	0 = Normal , 1 = Fire Alarm
3	Encode	Bit Value
	Bit 7	0 = Normal , 1 = Temperature Alarm
	Bit 6	0 = Normal , 1 = Power Alarm
	Bit 5	0 = Normal , 1 = Silence Alarm
	Bit 4	-
	Bit 3	-
	Bit 2	-
	Bit 1	-
	Bit 0	-

14.1.6 Response Alarm Security Module

Command Code: 0x010D		
Communication Mode: Broadcast		
Scope of SubNet ID:255	Scope of Device ID: 255	
Additional Contents		
Size of Additional Contents: 3		
Index	Remark	Value Scope
1	Area No.	1-8
2	Encode	Bit Value
	Bit 7	-
	Bit 6	-
	Bit 5	-
	Bit 4	0 = Normal , 1 = Current Alarm
	Bit 3	0 = Normal , 1 = Emergency Alarm
	Bit 2	0 = Normal , 1 = Panic Alarm
	Bit 1	0 = Normal , 1 = Gas Alarm
	Bit 0	0 = Normal , 1 = Fire Alarm
3	Encode	Bit Value
	Bit 7	0 = Normal , 1 = Temperature Alarm
	Bit 6	0 = Normal , 1 = Power Alarm
	Bit 5	0 = Normal , 1 = Silence Alarm
	Bit 4	-
	Bit 3	-
	Bit 2	-
	Bit 1	-
	Bit 0	-

15. Music Control

15.1 Music Control

15.1.1 Music Control

Command Code: 0x0218			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents:4			
Index	1		
Remark	1 = Audio	1 = SD, 2 = External Input, 3 = FTP, 4 = Radio	
	2= Play Mode	1 = Single Play, 2 = Single Cycle, 3 = List order, 4 = List Cycle	
	3= List / Channel	Encode	Param 3
		1 = Previous List,	-
		2 = Next List,	-
		3 = List No.	1-255
		4 = Previous Chn	-
		5 = Next Chn	-
		6 = Chn Choose	1-255
	4= Play Control	1= Previous, 2 = Next, 3 = Play , 4 = Stop	0-79
	5 = Volume	0 = Auto, 1 = High, 2 = Medium, 3 = Low	-
	6 = Play	List No. 0-255, Song No.(0-999) div 256, Song No.(0-999) mod 256	
	7=special song	0 = special playlist, 1-48=Playlist number ; 1-65535=song number	
	8=Broadcast	0 = special playlist, 1-48=Playlist number ; 1-65535=song number	

15.1.2 Response Music Control

Command Code: 0x0219			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents:4			
Index	1		
Remark	2 = Audio	1 = SD, 2 = External Input, 3 = FTP, 4 = Radio	
	2= Play Mode	1 = Single Play, 2 = Single Cycle, 3 = List order, 4 = List Cycle	
	3= List / Channel	Encode	Param 3
		1 = Previous List,	-
		2 = Next List,	-
		3 = List No.	1-255
		4 = Previous Chn	-
		5 = Next Chn	-
		6 = Chn Choose	1-255
	4= Play Control	1= Previous, 2 = Next, 3 = Play , 4 = Stop	0-79
	5 = Volume	0 = Auto, 1 = High, 2 = Medium, 3 = Low	-
	6 = Play	List No. 0-255, Song No.(0-999) div 256, Song No.(0-999) mod 256	

	7=special song	0 = special playlist, 1-48=Playlist number ; 1-65535=song number
	8=Broadcast	0 = special playlist, 1-48=Playlist number ; 1-65535=song number

15.1.3 Read Read Music Control Status

Command Code: 0x021A		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:1		
Index	1	
Remark	1 = Audio	3 = SD, 2 = External Input, 3 = FTP, 4 = Radio
	2= Play Mode	1 = Single Play, 2 = Single Cycle, 3 = List order, 4 = List Cycle
	3= List / Channel	Encode
		1 = Previous List,
		2 = Next List,
		3 = List No.
		4 = Previous Chn
		5 = Next Chn
		6 = Chn Choose
	4= Play Control	1= Previous, 2 = Next, 3 = Play , 4 = Stop
	5 = Volume	0 = Auto, 1 = High, 2 = Medium, 3 = Low
	6 = Play	List No. 0-255, Song No.(0-999) div 256, Song No.(0-999) mod 256

15.1.4 Response Music Control

Command Code: 0x021B			
Communication Mode: Point to Point			
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254	
Additional Contents			
Size of Additional Contents:4			
Index	1		
Remark	1 = Audio	4 = SD, 2 = External Input, 3 = FTP, 4 = Radio	
	2= Play Mode	1 = Single Play, 2 = Single Cycle, 3 = List order, 4 = List Cycle	
	3= List / Channel	Encode	Param 3
		1 = Previous List,	-
		2 = Next List,	-
		3 = List No.	1-255
		4 = Previous Chn	-
		5 = Next Chn	-
		6 = Chn Choose	1-255
	4= Play Control	1= Previous, 2 = Next, 3 = Play , 4 = Stop	0-79
	5 = Volume	0 = Auto, 1 = High, 2 = Medium, 3 = Low	-
	6 = Play	List No. 0-255, Song No.(0-999) div 256, Song No.(0-999) mod 256	

16. Dry Contact

16.1 Dry Contact

16.1.1 Auto broadcast Dry Contact Status

Command Code: 0x15D0		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1-255
2	Switch No.	1-255

16.1.2 Response Auto broadcast Dry Contact Status

Command Code: 0x15D1		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: 3		
Index	Remark	Value Scope
1	Area No.	1-255
2	Switch No.	1-255
3	Switch Status	0 = OFF, 1 = ON

Notice:15D1,only when you have security module in the system, and the sensor in its alarm lists, would repond to it as above.

16.1.3 Read Dry Contact Status

Command Code: 0x15CE		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 2		
Index	Remark	Value Scope
1	Area No.	1
2	Switch No.	1-255

16.1.4 Response Read Dry Contact Status

Command Code: 0x15CF		
Communication Mode: Broadcast		
Scope of SubNet ID: 255(0xFF)		Scope of Device ID: 255(0xFF)
Additional Contents		
Size of Additional Contents: 3		
Index	Remark	Value Scope
1	Area No.	1
2	Switch No.	1-255
3	Switch Status	0 = OFF, 1 = ON

17. DLP Music Play Control Command

17.1 Operation code

17.1.1 Read Z-audio Current Status

Command Code: 0x192E		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 11		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Zone	Z (ASCII)
3	Zone No.	1 – 9 (ASCII)
4	Fixed Letter	S(ASCII)
5	Fixed Letter	T(ASCII)
6	Fixed Letter	A(ASCII)
7	Fixed Letter	T(ASCII)
8	Fixed Letter	U(ASCII)
9	Fixed Letter	S(ASCII)
10	Fixed Letter	?(ASCII)
11	Fixed Letter	<CR> (ASCII)

17.1.2 Response Read Z-audio Current Status (1) Play or Stop

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 12		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	P(ASCII)
5	Fixed Letter	L(ASCII)
6	Fixed Letter	A(ASCII)
7	Fixed Letter	Y(ASCII)
8	Fixed Letter	S(ASCII)
9	Fixed Letter	T(ASCII)
10	Fixed Letter	O(ASCII)
11	Fixed Letter	P(ASCII)
12	Fixed Letter	<CR> (ASCII)

17.1.3 Response Read Z-audio Current Status (2) Play or Pause

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 13		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)

4	Fixed Letter	P(ASCII)
5	Fixed Letter	L(ASCII)
6	Fixed Letter	A(ASCII)
7	Fixed Letter	Y(ASCII)
8	Fixed Letter	P(ASCII)
9	Fixed Letter	A(ASCII)
10	Fixed Letter	U(ASCII)
11	Fixed Letter	S(ASCII)
12	Fixed Letter	E (ASCII)
13	Fixed Letter	<CR> (ASCII)

17.1.4 Response Read Z-audio Current Status (3) Play

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	P(ASCII)
5	Fixed Letter	L(ASCII)
6	Fixed Letter	A(ASCII)
7	Fixed Letter	Y(ASCII)
8	Fixed Letter	<CR> (ASCII)

17.1.5 Response Read Z-audio Current Status (4) Stop

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	S(ASCII)
5	Fixed Letter	T(ASCII)
6	Fixed Letter	O(ASCII)
7	Fixed Letter	P(ASCII)
8	Fixed Letter	<CR> (ASCII)

17.1.6 Response Read Z-audio Current Status (5) further information

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	# (ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	D(ASCII)
5	Fixed Letter	I(ASCII)

6	Fixed Letter	S(ASCII)
7	Fixed Letter	P(ASCII)
8	Fixed Letter	I(ASCII)
9	Fixed Letter	N(ASCII)
10	Fixed Letter	F(ASCII)
11	Fixed Letter	O(ASCII)
12	Fixed Letter	,(ASCII)
13	Fixed Letter	D(ASCII)
14	Fixed Letter	U(ASCII)
15	Fixed Letter	R(ASCII)
16 + N	Fixed Letter	0000- 999.9s (ASCII)
17 + N	Fixed Letter	,(ASCII)
18 + N	Fixed Letter	P(ASCII)
19 + N	Fixed Letter	O(ASCII)
20 + N	Fixed Letter	S(ASCII)
21 + N	Fixed Letter	0000- 999.9s (ASCII)
22 + N	Fixed Letter	,(ASCII)
23 + N	Fixed Letter	S(ASCII)
24 + N	Fixed Letter	T(ASCII)
25 + N	Fixed Letter	A(ASCII)
26 + N	Fixed Letter	T(ASCII)
27 + N	Fixed Letter	U(ASCII)
28 + N	Fixed Letter	S(ASCII)
29 + N	Status	1 = STOP, 2 = PLAY, 3 = PAUSE
30+ N	Fixed Letter	<CR> (ASCII)

17.1.7 Change Source(1) Normal way

Command Code: 0x192E		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Zone	Z (ASCII)
3	Zone No.	1 – 9 (ASCII)
4	Fixed Letter	S(ASCII)
5	Fixed Letter	R(ASCII)
6	Fixed Letter	C(ASCII)
7	Source No.	1 – 9 (ASCII)
8	Fixed Letter	<CR> (ASCII)

17.1.8 Change Source(1) Next Source

Command Code: 0x192E		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Zone	Z (ASCII)
3	Zone No.	1 – 9 (ASCII)
4	Fixed Letter	S(ASCII)
5	Fixed Letter	R(ASCII)
6	Fixed Letter	C(ASCII)
7	Next Source	+ (ASCII)
8	Fixed Letter	<CR> (ASCII)

17.1.9 Response Change Source

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	#(ASCII)
2	Zone	Z (ASCII)
3	Zone No.	1 – 9 (ASCII)
4	Fixed Letter	,(ASCII)
5	Fixed Letter	O(ASCII)
6	Fixed Letter	N(ASCII)
7	Fixed Letter	,(ASCII)
8	Fixed Letter	S(ASCII)
9	Fixed Letter	R(ASCII)
10	Fixed Letter	C(ASCII)
11	Source No.	1 – 9 (ASCII)
12	Fixed Letter	,(ASCII)
13	Fixed Letter	V(ASCII)
14	Fixed Letter	O(ASCII)
15	Fixed Letter	L(ASCII)
16	Volume	Value(ASCII)
17	Fixed Letter	<CR> (ASCII)
18	Fixed Letter	<LF> (ASCII)

17.1.10 Previous List

Command Code: 0x192E		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Fixed Letter	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	P(ASCII)
5	Fixed Letter	R(ASCII)
6	Fixed Letter	E(ASCII)
7	Next Source	L (ASCII)
8	Fixed Letter	I(ASCII)
9	Fixed Letter	S(ASCII)
10	Next Source	T (ASCII)
11	Fixed Letter	<CR> (ASCII)

17.1.11 Next List

Command Code: 0x192E		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	* (ASCII)
2	Fixed Letter	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	N(ASCII)

5	Fixed Letter	E(ASCII)
6	Fixed Letter	X(ASCII)
7	Next Source	T (ASCII)
8	Next Source	L (ASCII)
9	Fixed Letter	I(ASCII)
10	Fixed Letter	S(ASCII)
11	Next Source	T (ASCII)
12	Fixed Letter	<CR> (ASCII)

17.1.12 Response Total Play Lists

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	#(ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	D(ASCII)
5	Fixed Letter	I(ASCII)
6	Fixed Letter	S(ASCII)
7	Fixed Letter	P(ASCII)
8	Fixed Letter	L(ASCII)
9	Fixed Letter	I(ASCII)
10	Fixed Letter	N(ASCII)
11	Fixed Letter	E (ASCII)
12	Fixed Letter	1 (ASCII)
12	Fixed Letter	,(ASCII)
13	Fixed Letter	<STX>(ASCII)
14	Fixed Letter	L(ASCII)
15	Fixed Letter	:(ASCII)
16 + N	Play Lists Sum	000- 48 (ASCII)
17	Fixed Letter	/(ASCII)
18 + N	Play Lists Sum	000- 48 (ASCII)
19 + N	Play Lists Sum	<ETX>(ASCII)
20 + N	Fixed Letter	<CR> (ASCII)
21 + N	Fixed Letter	<LF> (ASCII)

17.1.13 Response the Name of Play List

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	#(ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	D(ASCII)
5	Fixed Letter	I(ASCII)
6	Fixed Letter	S(ASCII)
7	Fixed Letter	P(ASCII)
8	Fixed Letter	L(ASCII)
9	Fixed Letter	I(ASCII)
10	Fixed Letter	N(ASCII)
11	Fixed Letter	E (ASCII)

12	Fixed Letter	2 (ASCII)
12	Fixed Letter	,(ASCII)
13	Fixed Letter	<STX>(ASCII)
14 + N	Play list name	….
15 + N	Fixed Letter	<CR> (ASCII)
16 + N	Fixed Letter	<LF> (ASCII)

17.1.14 Response Total Songs

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	#(ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	D(ASCII)
5	Fixed Letter	I(ASCII)
6	Fixed Letter	S(ASCII)
7	Fixed Letter	P(ASCII)
8	Fixed Letter	L(ASCII)
9	Fixed Letter	I(ASCII)
10	Fixed Letter	N(ASCII)
11	Fixed Letter	E (ASCII)
12	Fixed Letter	3 (ASCII)
12	Fixed Letter	,(ASCII)
13	Fixed Letter	<STX>(ASCII)
14	Fixed Letter	S(ASCII)
15	Fixed Letter	:(ASCII)
16 + N	Play Lists Sum	000- 48 (ASCII)
17	Fixed Letter	/(ASCII)
18 + N	Play Lists Sum	000- 48 (ASCII)
19 + N	Play Lists Sum	<ETX>(ASCII)
20 + N	Fixed Letter	<CR> (ASCII)
21 + N	Fixed Letter	<LF> (ASCII)

17.1.15 Response the Name of Song

Command Code: 0x192F		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 8		
Index	Remark	Value Scope
1	Fixed flag when reading	#(ASCII)
2	Source	S (ASCII)
3	Source No.	1 – 9 (ASCII)
4	Fixed Letter	D(ASCII)
5	Fixed Letter	I(ASCII)
6	Fixed Letter	S(ASCII)
7	Fixed Letter	P(ASCII)
8	Fixed Letter	L(ASCII)
9	Fixed Letter	I(ASCII)
10	Fixed Letter	N(ASCII)
11	Fixed Letter	E (ASCII)
12	Fixed Letter	4 (ASCII)
12	Fixed Letter	,(ASCII)

13	Fixed Letter	<STX>(ASCII)
14 + N	Song name	….
15 + N	Fixed Letter	<CR> (ASCII)
16 + N	Fixed Letter	<LF> (ASCII)

18. Z-audio Command

18.1 Read Play Lists

18.1.1 Read Play Lists

Command Code: 0x1364		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 9		
Index	Remark	Value Scope
1	Data Length High byte	0
2	Data Length Low byte	7
3	Read Play lists	13
4	Play lists Source	0 = SD , 1 = FTP
5	Type	0 = Folders , 1 = Play lists , 2 = Songs
6	Folder No.	1 - 48 (Only works when reading folders)
7	Play lists No	1 - 48(Only works when reading Play lists)
8	Songs No, High byte	(1 - 999) / 256
9	Songs No, Low byte	(1 - 999) % 256

18.1.2 Response Read Play Lists

Command Code: 0x1365		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 13 + N		
Index	Remark	Value Scope
1	Data Length High byte	Packet size / 256
2	Data Length Low byte	Packet size % 256
3	Read Play lists	13
4	Play lists Source	0 = SD , 1 = FTP
5	Type	0 = Folders , 1 = Play lists , 2 = Songs
6	Folder No.	1 - 48 (Only works when reading folders)
7	Play lists No	1 - 48(Only works when reading Play lists)
8	Songs No, High byte	(1 - 999) / 256
9	Songs No, Low byte	(1 - 999) % 256
10	Total Number	(1 - 999) % 256
11	Amount A in this packet	1-48
….	First name (Unicode)	Begins with number like “001_”, and end with 0x0D, 0x0A
….	Second name (Unicode)	Begins with number like “002_”, and end with 0x0D, 0x0A
	….	
….	Ath name (Unicode)	Begins with number like “048_”, and end with 0x0D, 0x0A

19. Power meter Command

19.1 Read Voltage

19.1.1 Read Voltage

Command Code: 0xD902		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope

19.1.2 Response Read Voltage

Command Code: 0xD903		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:12		
Index	Remark	Value Scope
1	Chn 1 voltage	value / 256 integer part
2		value % 256 integer part
3		Decimal part(0-9)
4		Decimal part(0-9)
5	Chn 2 voltage	value / 256 integer part
6		value % 256 integer part
7		Decimal part(0-9)
8		Decimal part(0-9)
9	Chn 3 voltage	value / 256 integer part
10		value % 256 integer part
11		Decimal part(0-9)
12		Decimal part(0-9)

For example, if you get data like this:00 01 02 03 04 05 06 07 08 09 01 02, the channel 1 voltage should be : 01.23v; channel 2 voltage should be (4*256 + 5).67v; channel 3 voltage should be (8*256 + 9).12v.

19.2 Read Current

19.2.1 Read Current

Command Code: 0xD908		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope

19.2.2 Response Read Current

Command Code: 0xD909		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:12		
Index	Remark	Value Scope
1	Chn 1 current	value integer part(0-256)
2		Decimal part(0-9)
3		Decimal part(0-9)
4		Decimal part(0-9)
5	Chn 2 current	value integer part(0-256)

6		Decimal part(0-9)
7		Decimal part(0-9)
8		Decimal part(0-9)
9	Chn 3 current	value integer part(0-256)
10		Decimal part(0-9)
11		Decimal part(0-9)
12		Decimal part(0-9)

For example, if you get data like this:00 01 02 03 04 05 06 07 08 09 01 02, the channel 1 current should be : 0.123A; channel 2 current should be 4.567A; channel 3 voltage should be 8.912A.

19.3 Read Power

19.3.1 Read Power

Command Code: 0xD90A		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope

19.3.2 Response Read Power

Command Code: 0xD90B		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:24		
Index	Remark	Value Scope
1	Active Power Chn 1	Value (0-65535) / 256
2		Value (0-65535)% 256
3	Active Power Chn 2	Value (0-65535) / 256
4		Value (0-65535)% 256
5	Active Power Chn 3	Value (0-65535) / 256
6		Value (0-65535)% 256
7	Active Power Total 3	Value (0-65535) / 256
8		Value (0-65535)% 256
9	Reactive Power Chn 1	Value (0-65535) / 256
10		Value (0-65535)% 256
11	Reactive Power Chn 2	Value (0-65535) / 256
12		Value (0-65535)% 256
13	Reactive Power Chn 3	Value (0-65535) / 256
14		Value (0-65535)% 256
15	Reactive Power Total 3	Value (0-65535) / 256
16		Value (0-65535)% 256
17	Apparent Power Chn 1	Value (0-65535) / 256
18		Value (0-65535)% 256
19	Apparent Power Chn 2	Value (0-65535) / 256
20		Value (0-65535)% 256
21	Apparent Power Chn 3	Value (0-65535) / 256
22		Value (0-65535)% 256
23	Apparent Power Total 3	Value (0-65535) / 256
24		Value (0-65535)% 256

19.4 Read Power Factor

19.4.1 Read Power Factor

Command Code: 0xD904		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope

19.4.2 Response Read Power Factor

Command Code: 0xD905		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:12		
Index	Remark	Value Scope
1	Chn 1 Power Factor	value integer part(0-256)
2		Decimal part(0-9)
3		Decimal part(0-9)
4		Decimal part(0-9)
5	Chn 2 Power Factor	value integer part(0-256)
6		Decimal part(0-9)
7		Decimal part(0-9)
8		Decimal part(0-9)
9	Chn 3 Power Factor	value integer part(0-256)
10		Decimal part(0-9)
11		Decimal part(0-9)
12		Decimal part(0-9)

19.5 Read Electricity

19.5.1 Read Electricity

Command Code: 0xD91A		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope

19.5.2 Response Read Electricity

Command Code: 0xD91B		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:24		
Index	Remark	Value Scope
1	Electricity Chn 1	Value (0-65535) / 256
2		Value (0-65535)% 256
3	Electricity Chn 2	Value (0-65535) / 256
4		Value (0-65535)% 256
5	Electricity Chn 3	Value (0-65535) / 256
6		Value (0-65535)% 256
7	Electricity Total 3	Value (0-65535) / 256
8		Value (0-65535)% 256

9	Electricity Chn 1	Value (0-65535) / 256
10		Value (0-65535)% 256
11	Electricity Chn 2	Value (0-65535) / 256
12		Value (0-65535)% 256
13	Electricity Chn 3	Value (0-65535) / 256
14		Value (0-65535)% 256
15	Electricity Total 3	Value (0-65535) / 256
16		Value (0-65535)% 256
17	Electricity Chn 1	Value (0-65535) / 256
18		Value (0-65535)% 256
19	Electricity Chn 2	Value (0-65535) / 256
20		Value (0-65535)% 256
21	Electricity Chn 3	Value (0-65535) / 256
22		Value (0-65535)% 256
23	Electricity Total 3	Value (0-65535) / 256
24		Value (0-65535)% 256

19.5.3 Read Electricity in a period

Command Code: 0x1C18		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope
1	Channel ID	1-3
2	Mode	0&1:minute; 2 & 3: day ; 4:hour; 5:month
3	Year	Year - 2000
4	Month	1-12
5	Day	1-31
6	Hour	0-23
7	Minute	0-59

19.5.4 Response Read Electricity in a period

Command Code: 0x1C19		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents:24 + N		
Index	Remark	Value Scope
1	Channel ID	1-3
2	Mode	0&1:minute; 2 & 3: day ; 4:hour; 5:month
3	Year	Year - 2000
4	Month	1-12
5	Day	1-31
6	Hour	0-23
7	Minute	0-59
8	Energy	Value (0-65535) / 256/256/256
9		Value (0-65535)/256/256
10		Value (0-65535) / 256
11		Value (0-65535)% 256

20. Hint: please try to use the energy is KWH/3200,that should be the final energy value.

20 . Universal Control

20.1 Read universal control

20.1.1 Read UV Control Setup

Command Code: 0x16A4		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope

20.1.2 Response Read UV Control Setup

Command Code: 0x16A5		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 4		
Index	Remark	Value Scope
1	Function ID High byte	0-255
2	Function ID Low byte	0-255
3	Paramter High byte	0-255
4	Paramter Low byte	0-255

20.2 Universal control

20.2.1 **Universal control**

Command Code: 0x16A6		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 0		
Index	Remark	Value Scope
1	Function ID High byte	0-255
2	Function ID Low byte	0-255
3	Paramter High byte	0-255
4	Paramter Low byte	0-255

20.2.2 Response **Universal Cotrol**

Command Code: 0x16A7		
Communication Mode: Point to Point		
Scope of SubNet ID: 0-254		Scope of Device ID: 0-254
Additional Contents		
Size of Additional Contents: 4		
Index	Remark	Value Scope
1	Function ID High byte	0-255
2	Function ID Low byte	0-255
3	Paramter High byte	0-255
4	Paramter Low byte	0-255

21 . Analog Value

21.1 Read Analog Value

21.1.1 Read Analog Value

Command Code: 0xE440				
Communication Mode: Point to Point				
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254			
Additional Contents				
Size of Additional Contents: 2				
Index	Remark	Value		
1	Type	Encode	Value	Remark
		6,7bit	0.3	0=2bytes;1=1 byte ;2=4bytes;3=float
		0.5bit	Lux	0
			Temperature	1
			Power	2
			current	3
			pressure	4
2	channel no.	0-255		

21.1.2 Response Read Analog Value

Command Code: 0xE441				
Communication Mode: Point to Point				
Scope of SubNet ID: 0-254	Scope of Device ID: 0-254			
Additional Contents				
Size of Additional Contents: N				
Index	Remark	Value		
1	Type	Encode	Value	Remark
		6,7bit	0.3	0=2bytes;1=1 byte ;2=4bytes;3=float
		0.5bit	Lux	0
			Temperature	1
			Power	2
			current	3
			pressure	4
2	channel no.	0-255		
3	Analog Value 1	0-255		
4	Analog Value 2	0-255		
5	Analog Value 3	0-255		
…	…	…		
N	Analog Value N - 3	0-255		

22. Additional code explain

1. Additional code explain

Data : <STX>????<ETX> and <ETX> is Unicode Double-byte data, the other for the ASC single-byte data.

<STX>: 0x02 (ASC) , <ETX>: 0x0003 (unicode)

<CR>: 0x0D (ASC) <LF>: 0x0A (ASC)

- ***ZzSTATUS?<CR>** z is area No(from 1-24) //reading status after panel on

Return to present working status

- ***SsPLAYSTOP<CR>** //play/stop s is source No

Return #SsDISPINFO,DUR1945,POS0,STATUS2 <CR><LF> s is source No

DUR After numerical : total playing time (Second×10 , 10 times of real time)

POS After numerical : total played time (Second×10 , 10 times of real time)

STATUS After numerical : 1 stop, 2 play, 3 pause

- ***SsPLAY<CR>** //play //s is source No //

Return #SsDISPINFO,DUR1945,POS0,STATUS2 <CR><LF> s is source No

DUR After numerical : total playing time (Second×10 , 10 times of real time)

POS After numerical : total played time (Second×10 , 10 times of real time)

STATUS After numerical : 1 stop, 2 play, 3 pause

- ***SsSTOP<CR>** //stop // s is source No

Return #SsDISPINFO,DUR1945,POS0,STATUS2 <CR><LF> s is source No

DUR After numerical : total playing time (Second×10 , 10 times of real time)

POS After numerical : total playing time (Second×10 , 10 times of real time)

STATUS After numerical : 1 stop, 2 play, 3 pause

- ***ZzSRCs<CR>** //Source z is area No(From1-24) , s is area No(from1-7) , do not use panel
- ***ZzSRC+<CR>** //Source z is area No(From1-24)

Return #Zz,ON,SRC1,VOL38<CR><LF> (ON)

Returns the current audio source other information.

Source explain :

1----------SD-CARD

2----------NAS-HDD

3----------SERVER

4----------WEB-RADIO

5----------RADIO

6----------AUDIO-IN

7----------INTERCOM

- ***SsPREVLIST<CR>** //pre list s is sourse No
  ***SsNEXTLIST<CR>** //next list s is sourse No

Return #SsDISPLINE1, <STX>L:??? / ???<ETX> <CR><LF> // list N/ List the total number //<STX><ETX> maximum 20bytes //s is source No

Return#SsDISPLINE2, <STX> ? ? ? ….<ETX> <CR><LF> //list name //<STX><ETX> maximum 50bytes , if over 50 <ETX> <CR><LF>, panel deal with maximum 52bytes // s is sourse No

Return #SsDISPLINE3, <STX>S:001 / ???<ETX> <CR><LF> //Song no/total song //<STX><ETX> s is sourse No //s is source No

Or //FM Radio No C : ??? / total chan //<STX><ETX> maximum 20bytes // s is source No

Return #SsDISPLINE4, <STX> ? ? ? ….<ETX> <CR><LF> // song name //<STX><ETX> maximum 50bytes , if over 50 <ETX> <CR><LF> panel deal with maximum 52bytes // s is sourse No\

Return #SsDISPINFO,DUR1945,POS0,STATUS2<CR><LF>

- ***SsPREV<CR>** Previous s is sourse No
  ***SsNEXT<CR>** Next s is sourse No

Return #SsDISPLINE3, <STX>S:??? / ???<ETX> <CR><LF> //song No/total songs //<STX><ETX> maximum 20bytes // s is sourse No

Return #SsDISPLINE4, <STX> ? ? ? ….<ETX> <CR><LF> // song name //<STX><ETX> maximum 50bytes , if over 50 <ETX> <CR><LF> panel deal with maximum 52bytes // s is sourse No\

Return #SsDISPINFO,DUR1945,POS0,STATUS2<CR><LF>

- ***ZzVOLx <CR>** //volume adjust z is area No(from1-24) x value of volume(79 small-----0 big)

Return #Zz,ON,SRC1,VOL38<CR><LF>

Adjust the volume using the following: changes in unit value of continuous adjustment panel 1, to adjust the volume changes slowly did not adopt, while the use of the above assignment

//ZzVOL+

//ZzVOL-

- ***ZzMUTEON<CR>** //Mute z is area No(From1-24)

Return # Zz,ON,SRC1,MUTE<CR><LF>

- ***SsPREVCHADJ<CR>** // Adjusted upwards channel s is sourse No
  ***SsNEXTCHADJ<CR>** // Down-regulation channel s is sourse No

***SsPREVCHANNELSCAN<CR>** // Search forward channel s is sourse No

***SsNEXTCHANNELSCAN<CR>** // Search backward channel s is sourse No

Return #SsDISPLINE1, <STX> FM<ETX> <CR><LF> //FM//<STX><ETX> maximum 20bytese// s is sourse No

Return #SsDISPLINE2, <STX> ????<ETX><CR><LF> //channel Value , //<STX><ETX> maximum 50bytese if over 50 <ETX> <CR><LF> panel deal with maximum 52bytes // s is sourse No\

***SsPREVCHANNEL<CR>** // choose previous channel s is sourse No

***SsNEXTCHANNEL<CR>** //choose next channel s is sourse No

Return #SsDISPLINE1, <STX> FM?<ETX> <CR><LF> // FM //<STX><ETX> maximum 20bytese // s is sourse No

Return #SsDISPLINE2, <STX> ???<ETX><CR><LF> // chanel value //<STX><ETX> maximum 50bytese if over 50 <ETX> <CR><LF> panel deal with maximum 52bytes // s is sourse No\

Return #SsDISPLINE3, <STX> CHANNEL6<ETX> <CR><LF> //channel no //<STX><ETX> maximum 20bytese // s is sourse No

Return #SsDISPLINE4, <STX> ???????????<ETX> <CR><LF> // channel value //<STX><ETX> maximum 50bytese if over 50 <ETX> <CR><LF> panel deal with maximum 52bytes // s is sourse No\

***SsSAVE<CR>** // This channel value stored in the current channel number s is sourse No

Return #SsDISPLINE3, <STX> CHANNEL6<ETX> <CR><LF> // chan No //<STX><ETX> maximum 20bytese // s is sourse No

Return #SsDISPLINE4, <STX> ???????????<ETX> <CR><LF> //Chan No //<STX><ETX> maximum 50bytese if over 50 50 <ETX> <CR><LF> panel deal with maximum 52bytes // s is sourse No\

***SsTALK<CR>** //talk status s is sourse No

***SsMONITOR<CR>** //monitor status s is sourse No

Return #SsDISPTALK,MODE1, KEY1<CR><LF> // s is sourse No

MODE ? Talk mode : 1 (MONITOR) , 2 (TALK)

KEY ? Speech key state : 0 (stop) , 1 (press the key to talk) , 2 (click the key to talk)

- ***SsPREVOBJECT<CR>** //pre target s is sourse No
  ***SsNEXTOBJECT<CR>** //next target s is sourse No

Return #SsDISPLINE3, <STX>OBJECT<ETX><CR><LF> // title // <STX><ETX> maximum 20bytese , and now fix OBJECT // s is sourse No //previous cannot be returned

Return #SsDISPLINE4, <STX> ALL<ETX><CR><LF> // Call target name //<STX><ETX> maximum 50bytese // s is sourse No

- ***SsLATCH<CR>** // lock switch to talk (on- talk , off-disable to talk) s is sourse No
  ***SsPRESS<CR>** //press to talk s is sourse No

***SsUnPRESS<CR>** //press to release s is sourse No

//*SsPRESS 和*SsUnPRESS is a combined code

//*SsLATCH 和*SsPRESS (*SsUnPRESS)

Return #SsDISPTALK,MODE1, KEY1<CR><LF> // s is sourse No

MODE ? Talk mode : 1 (MONITOR) , 2 (TALK)

KEY ? Speech key state : 0 (stop) , 1 (press the key to talk) , 2 (click the key to talk)

***ZzTONE?<CR>** //read volume z is area no(from1-24)

***ZzBASS+<CR>** // bass+ z is area no(from1-24)

***ZzBASS-<CR>** //bass - z is area no(from1-24)

***ZzTREBLE+<CR>** // treble + z is area no(from1-24)

*** ZzTREBLE-<CR>** // treble - z is area no(from1-24)

Return #Ss DISPTONE,BASS-1,TREB+1<CR><LF> // s is sourse No //

BASS ? : bass value (0 +0, from -9~-9)

TREB ? : treble value (0 +0, 高音升-9~-9)

- ***SsUPDATESTATUS?<CR>** //reading update // s is sourse No
  ***SsUPDATELIST<CR>** //renew list // s is sourse No

Return 1 #SsDISPUPDATE, STATUS1<CR><LF>

STATUS ? : 0 NULL,1updating ,2finish

Return 2 #SsDISPLINE1, <STX> updating <ETX> <CR><LF> //<STX><ETX>maximum 20bytes // s is sourse No

After finished

Return 3 #SsDISPLINE1, <STX>finished ! <ETX> <CR><LF> //<STX><ETX> maximum 20bytes // s is sourse No

And then recovery

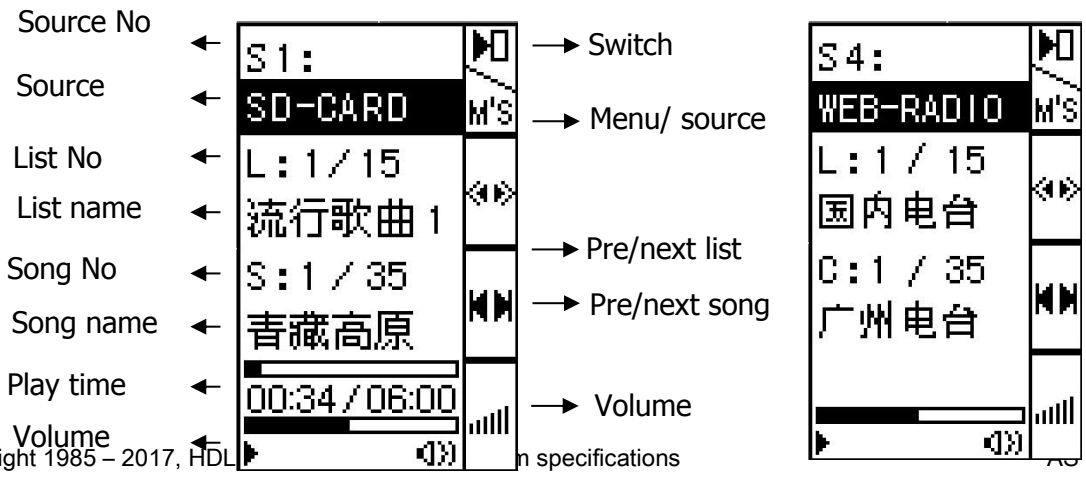
- ***SsPLAYMODE?<CR>** //read play mode //s is sourse No
  ***SsMODE+<CR>** //mode + // s is sourse No

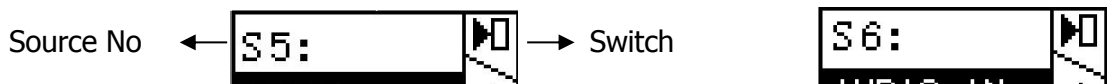
***SsMODE-<CR>** // mode- // s is sourse No

Return #SsDISPMODE, STATUS1<CR><LF>

STATUS ? : 0NULL,1single play,2single cycle,3order ,4cycle

Refer to panel





2. UV Control Lists

12in1 UV Control lists; It also works with sensors in one.		
Size of Additional Contents: 4		
1st & 2nd Value	1st & 2nd Remark	3rd & 4th Value
1	PIR Sensitivity	1-100
2	Ultrasonic Sensitivity	1-100
3	Enable Temperature Sensor	0 disable / 1 enable
4	Enable Lux Sensor	0 disable / 1 enable
5	Enable Humidity Sensor	0 disable / 1 enable
6	Enable Air detect Sensor	0 disable / 1 enable
7	Enable PIR Sensor	0 disable / 1 enable
8	Enable Ultrasonic	0 disable / 1 enable

9	Enable Dry Contact 1	0 disable / 1 enable
10	Enable Dry Contact 2	0 disable / 1 enable
11	Enable UV Switch 1 in logic	0 disable / 1 enable
12	Enable UV Switch 2 in logic	0 disable / 1 enable
13	Enable Logic Function in logic	0 disable / 1 enable
14	Enable Constant Lux	0 disable / 1 enable
... no used		
31	Modify Logic 1 Relation	0 OR / 1 AND
32	Modify Logic 2 Relation	0 OR / 1 AND
33	Modify Logic 3 Relation	0 OR / 1 AND
34	Modify Logic 4 Relation	0 OR / 1 AND
35	Modify Logic 5 Relation	0 OR / 1 AND
36	Modify Logic 6 Relation	0 OR / 1 AND
37	Modify Logic 7 Relation	0 OR / 1 AND
38	Modify Logic 8 Relation	0 OR / 1 AND
39	Modify Logic 9 Relation	0 OR / 1 AND
40	Modify Logic 10 Relation	0 OR / 1 AND
41	Modify Logic 11 Relation	0 OR / 1 AND
42	Modify Logic 12 Relation	0 OR / 1 AND
43	Modify Logic 13 Relation	0 OR / 1 AND
44	Modify Logic 14 Relation	0 OR / 1 AND
45	Modify Logic 15 Relation	0 OR / 1 AND
46	Modify Logic 16 Relation	0 OR / 1 AND
47	Modify Logic 17 Relation	0 OR / 1 AND
48	Modify Logic 18 Relation	0 OR / 1 AND
49	Modify Logic 19 Relation	0 OR / 1 AND
50	Modify Logic 20 Relation	0 OR / 1 AND
51	Modify Logic 21 Relation	0 OR / 1 AND
52	Modify Logic 22 Relation	0 OR / 1 AND
53	Modify Logic 23 Relation	0 OR / 1 AND
54	Modify Logic 24 Relation	0 OR / 1 AND
55	Logic 1 False Delay	0-36000s
56	Logic 2 False Delay	0-36000s
57	Logic 3 False Delay	0-36000s
58	Logic 4 False Delay	0-36000s
59	Logic 5 False Delay	0-36000s
60	Logic 6 False Delay	0-36000s
61	Logic 7 False Delay	0-36000s
62	Logic 8 False Delay	0-36000s
63	Logic 9 False Delay	0-36000s
64	Logic 10 False Delay	0-36000s
65	Logic 11 False Delay	0-36000s
66	Logic 12 False Delay	0-36000s
67	Logic 13 False Delay	0-36000s
68	Logic 14 False Delay	0-36000s
69	Logic 15 False Delay	0-36000s
70	Logic 16 False Delay	0-36000s

71	Logic 17 False Delay	0-36000s
72	Logic 18 False Delay	0-36000s
73	Logic 19 False Delay	0-36000s
74	Logic 20 False Delay	0-36000s
75	Logic 21 False Delay	0-36000s
76	Logic 22 False Delay	0-36000s
77	Logic 23 False Delay	0-36000s
78	Logic 24 False Delay	0-36000s
79	Modify Logic 1 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
80	Modify Logic 2 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
81	Modify Logic 3 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
82	Modify Logic 4 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
83	Modify Logic 5 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
84	Modify Logic 6 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
85	Modify Logic 7 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
86	Modify Logic 8 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
87	Modify Logic 9 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
88	Modify Logic 10 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
89	Modify Logic 11 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
90	Modify Logic 12 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
91	Modify Logic 13 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
92	Modify Logic 14 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
93	Modify Logic 15 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
94	Modify Logic 16 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
95	Modify Logic 17 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
96	Modify Logic 18 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
97	Modify Logic 19 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
98	Modify Logic 20 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
99	Modify Logic 21 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
100	Modify Logic 22 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
101	Modify Logic 23 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
102	Modify Logic 24 Temperature Range	3rd : 0-80 ; 4th : 0-80 (-20 to degree to 60 degree)
103	Modify Logic 1 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
104	Modify Logic 2 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
105	Modify Logic 3 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
106	Modify Logic 4 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
107	Modify Logic 5 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
108	Modify Logic 6 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
109	Modify Logic 7 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
110	Modify Logic 8 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)

111	Modify Logic 9 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
112	Modify Logic 10 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
113	Modify Logic 11 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
114	Modify Logic 12 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
115	Modify Logic 13 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
116	Modify Logic 14 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
117	Modify Logic 15 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
118	Modify Logic 16 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
119	Modify Logic 17 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
120	Modify Logic 18 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
121	Modify Logic 19 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
122	Modify Logic 20 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
123	Modify Logic 21 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
124	Modify Logic 22 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
125	Modify Logic 23 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
126	Modify Logic 24 Lux Range	3rd : 0-X; 4th : 0- X (the lux value is X * 20, X no more than 250)
127	Modify Constant Lux Value	0-5000