

# DENON SYSTEM control protocol

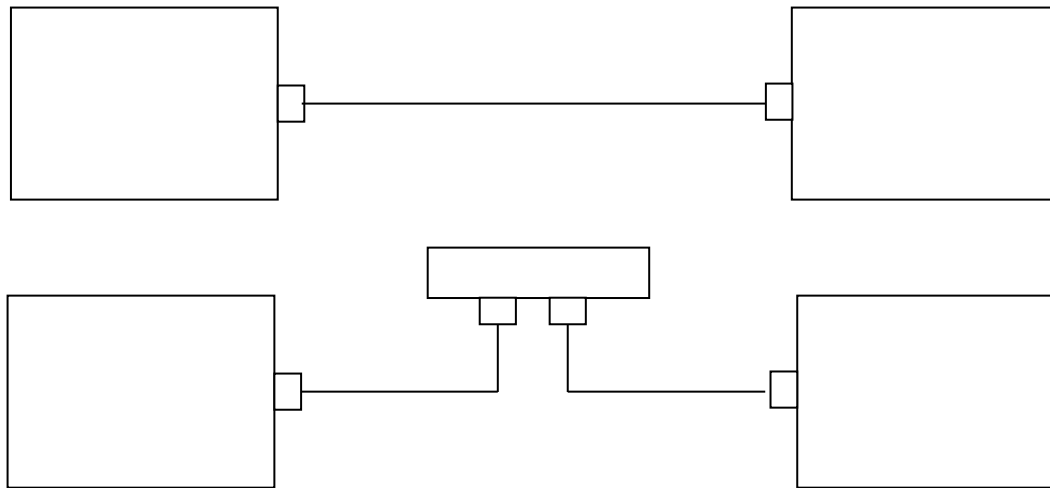
Ver. 1.0.0

Application model : DRA-100  
Application terminal: Ethernet  
Rev 13.5.0

## Connector specification

### I. Ethernet

Connector type : RJ-45 (10BASE-T/100BASE-TX)



Communication format :  
Communication system : A half duplex  
Communication speed : 10Mbps/100Mbps  
Communication port : TCP port 23 (telnet)  
Communication data length : 135bytes (maximum)

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1.0.0	2015/10/15	Original	ALL

## NETWORK SETUP of DRA-100

### >Procedure of Network Setup mode.

(1) Press **MENU** button, then Menu appears on OLED-display.

(2) Select "Network > Settings" .

(3) Set parameters described below.

<DHCP> "On"—Use this setting when DHCP server is on the local network.

"Off"—Use this setting when DHCP server is not on the local network.

<IP Address> When <DHCP> sets "Off" , please set IP address.

When <DHCP> sets "On" , you can confirm the IP address that is set by server.

<Subnet Mask> When <DHCP> sets "Off" , please set Subnet Mask.

When <DHCP> sets "On" , you can confirm the Subnet Mask that is set by server.

<Gateway> Set the address of Gateway when Gateway is on the local network.

Do not set this parameter when Gateway is not on the local network.

<Primary DNS> Do not set this parameter.

<Second DNS> Do not set this parameter.

<Proxy> Set this parameter "Off".

<Network Option: Network Standby Mode>.

(1) Press **MENU** button, then Menu appears on OLED-display.

(2) Select "Network > Network Standby" .

(3) Set parameters described below.

"On" —Use this setting when using the DRA-100 Connected in a network.

"Off" — Use this setting when not using the DRA-100 connected in a network.

This setting is reducing the power consumption in the standby mode.

## Protocol specification

The following three data forms are defined.

- COMMAND** : The message sent to a system from a controller (Touch Panel etc.)  
A command to a system is given from a controller.
- EVENT** : The message sent to a controller (Touch Panel etc.) from a system  
The result is sent, when a system is operated directly and a state changes.  
\*The form of **EVENT** presupposes that it is the same as that of **COMMAND**.  
\*\*Refer to the following table for the contents of **COMMAND** and **EVENT**.
- RESPONSE** : The message sent to a controller (Touch Panel etc.) from a system  
if the 'request command' (**COMMAND-?**CR(0x0D)) has come from a controller.  
The **RESPONSE** should be sent within 200ms of receiving the **COMMAND**.  
\*The form of **RESPONSE** presupposes that it is the same as that of **EVENT**.

**Basic specification:** The command by ASCII CODE, parameter expression

- \*ASCII CODE which can be used is from 0x20 to 0x7F: the alphabet and the number of 0-9, and space (0x20), some signs,  
AND carriage return (0x0D) — It is used only as a pause sign.

**Command structure:** COMMAND + PARAMETER + CR (0x0D)

COMMAND: ASCII CODE of 2 characters

- Ex. SI : Select Input source  
PW : system PoWer setting

PARAMETER : ASCII CODE ( up to 25 characters)

ex. IRADIO: function name

- \*Special Parameter— ? : for request command

## The example of a command

\* <CR> is the meaning of 0x0D.

SITUNER<CR> : Select Input source TUNER  
PWON<CR> : system Power ON  
PWSTANDBY<CR> : system Power STANDBY  
SI?<CR> : Request command for now playing input source >> Return **RESPONSE** 'SI\*\*\*<CR>'

## Others

- A) **COMMAND** is receivable also during transmission of **EVENT**.
- B) The **RESPONSE** should be sent as opposed to the request command by all the commands with which an **EVENT** exists , not need to the another request commands(ex. SI command).
- C) **COMMAND** is receivable also during transmission of **EVENT**.
- D) The **RESPONSE** should be sent as opposed to the request command by all the commands with which an **EVENT** exists , not need to the another request commands(ex. SI command).
- E) 1 seconds later, please transmit the next **COMMAND** after transmitting a power on **COMMAND** (PWON) .

## COMMAND and PARAMETER list

### ※SYSTEM

<i>COMMAND</i>	<i>PARAMETER</i>	<i>Function</i>	<i>example</i>
PW	ON	POWER ON/STANDBY change	PWON<CR>
	STANDBY		PWSTANDBY<CR>
	?	Return PW Status	PW?<CR>
MV	UP	MASTER VOLUME UP/DOWN , direct change to **dB	MVUP<CR>
	DOWN		MVDOWN<CR>
	**	** : 00 to 91 by ASCII (00 : 0dB、50 : -50dB、91 : -∞ (無音))	MV45<CR>
	?	Return MV Status	MV?<CR>
MU	ON	OUTPUT MUTE ON/OFF change	MUON<CR>
	OFF		MUOFF<CR>
	?	Return MU Status	MU?<CR>
SI	IRADIO	Internet Radio	SIIRADIO<CR>
	SERVER	Music Server	SISERVER<CR>
	BLUETOOTH	Bluetooth	SIBLUETOOTH<CR>
	USB	USB	SIUSB<CR>
	COAXIAL	Coaxial	SICOAXIAL<CR>
	DIGITALIN1	Optical 1	SIDIGITALIN1<CR>
	DIGITALIN2	Optical 2	SIDIGITALIN2<CR>
	ANALOGIN	Analog In1	SIANALOGIN<CR>
	ANALOGIN2	Analog In2	SIANALOGIN2<CR>
	?	Return SI Status	SI?<CR>
SLP	OFF	MAIN ZONE SLEEP TIMER setting	SLPOFF<CR>
	***	*** : 001 to 090 by ASCII , 010=10min	SLP***<CR>
	?	Return SLP Status	SLP?<CR>

### ※FAVORITE Control

<i>COMMAND</i>	<i>PARAMETER</i>	<i>Function</i>	<i>example</i>
FV	**	FAVORITE direct change to No.**	FV 25<CR>
	?	Return FAVORITE List	FV ?<CR>

	MEM **	FAVORITE MEMORY to No.**	FVMEM 01<CR>
	DEL **	FAVORITE DELEAT to No.**	FVDEL 01<CR>

### ※Tone Control

COMMAND	PARAMETER	Function	example
PS	BAS UP	BASS UP/DOWN , direct change to **dB	PSBAS UP<CR>
	BAS DOWN	** : 00 to 99 by ASCII , 50=0dB	PSBAS DOWN<CR>
	BAS **	SYSTEM can be operated from -10 to +10(40 to 60)	PSBAS 50<CR>
	BAS ?	Return PSBAS Status, 2Steps(40, 42, 44, . . . , 50, . . . , 56, 58, 60)	PSBAS ?<CR>
	TRE UP	TREBLE UP/DOWN , direct change to **dB	PSTRE UP<CR>
	TRE DOWN	** : 00 to 99 by ASCII , 50=0dB	PSTRE DOWN<CR>
	TRE **	SYSTEM can be operated from -10 to +10(40 to 60)	PSTRE 50<CR>
	TRE ?	Return PSTRE Status, 2Steps(40, 42, 44, . . . , 50, . . . , 56, 58, 60)	PSTRE ?<CR>
	BAL LEFT	BALANCE LEFT/RIGHT , direct change to **	PSBAL LEFT<CR>
	BAL RIGHT	** : 00 to 99 by ASCII , 50=CENTER	PSBAL RIGHT<CR>
	BAL **	SYSTEM can be operated from L6 to R6(44 to 56)	PSBAL 50<CR>
	BAL ?	Return PSBAL Status	PSBAL ?<CR>
	SDB ON	Denon Model : SDB / Marantz Model : DBB ON/OFF	PSSDB ON<CR>
	SDB OFF		PSSDB OFF<CR>
	SDB ?	Return PSSDB Status	PSSDB ?<CR>
	SDI ON	SOURCE DIRECT ON/OFF	PSSDI ON<CR>
	SDI OFF		PSSDI OFF<CR>
SDI ?	Return PSS. DIRECT Status	PSSDI ?<CR>	

### ※Auto Standby

COMMAND	PARAMETER	Function	example
SS	STB	Auto Standby : ON	SSSTB ON<CR>
		Auto Standby : OFF	SSSTB OFF<CR>
		Auto Standby : 1min	SSSTB 01<CR>
		Auto Standby : 5min	SSSTB 05<CR>
		Auto Standby : 15min	SSSTB 15<CR>
		Auto Standby Direct (** : TIME 01~99)	SSSTB **<CR>
		?	SSSTB ? <CR>

### ※Language Setting

<i>COMMAND</i>	<i>PARAMETER</i>	Function	example
SS	LAN ENG	English	SSLAN ENG<CR>
	LAN DEU	German	SSLAN DEU<CR>
	LAN FRA	French	SSLAN FRA<CR>
	LAN ITA	Italian	SSLAN ITA<CR>
	LAN ESP	Spanish	SSLAN ESP<CR>
	LAN NER	Dutch	SSLAN NER<CR>
	LAN SVE	Swedish	SSLAN SVE<CR>
	LAN JPN	Japanese	SSLAN JPN<CR>
	LAN CHI	Chinese	SSLAN CHI<CR>
	LAN POL	Polish	SSLAN POL<CR>
	LAN RUS	Russian	SSLAN RUS<CR>
	?	Return Language Setting	SSLAN ? <CR>

### ※AUDIO Playback format

<i>COMMAND</i>	<i>PARAMETER</i>	Function	example
SS	FMT?	Request Kind of playback file	SSFMT?<CR>

### ※DIMMER Setting

<i>COMMAND</i>	<i>PARAMETER</i>	Function	example
SS	DIM00	DIMMER : 0%	SSDIM00<CR>
	DIM040	DIMMER : 40%	SSDIM040<CR>
	DIM070	DIMMER : 70%	SSDIM070<CR>
	DIM100	DIMMER : 100%	SSDIM100<CR>
	DIM?	DIMMER Request	SSDIM?<CR>

### ※Network Information

<i>COMMAND</i>	<i>PARAMETER</i>	Function	example
NS	INF?	Network Information Request <ul style="list-style-type: none"> <li>· FriendlyName</li> <li>· Wired/Wireless</li> </ul>	NSINF?



		<ul style="list-style-type: none"> <li>• SSID</li> <li>• DHCP</li> <li>• IP Address</li> <li>• MAC Address</li> </ul>	
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**※Network/USB/iPod Direct Extended Control (SS COMMAND)**

<i>COMMAND</i>	<i>PARAMETER</i>	Function	example
NS	90	“Cursor Up” Control	NS90<CR>
	91	“Cursor Down” Control	NS91<CR>
	92	“Cursor Left” Control	NS92<CR>
	93	“Cursor Right” Control	NS93<CR>
	94	“Enter (Play/Pause)” Control	NS94<CR>
	9A	“Play” Control (iRadio/mServer/USB) “Play/Pause” Control (iPod Direct)	NS9A<CR>
	9B	“Pause” Control “Play/Pause” Control (iPod Direct)	NS9B<CR>
	9C	“Stop” Control	NS9C<CR>
	9D	“Skip Plus” Control	NS9D<CR>
	9E	“Skip Minus” Control	NS9E<CR>
	9F	Start Fast Forward	NS9F<CR>
	9G	Start Fast Forward	NS9G<CR>
	9H	“Repeat One” (USB/iPod DIRECT/mServer)	NS9H<CR>
	9I	“Repeat All” (USB/iPod DIRECT/mServer)	NS9I<CR>
	9J	“Repeat Off” (USB/iPod DIRECT/mServer)	NS9J<CR>
	9K	“Random On/Repeat ALL” (USB/mServer) “Shuffle Songs” Control (iPod Direct Only)	NS9K<CR>
	9M	“Random Off” (USB/mServer) “Shuffle Off” Control (iPod Direct Only)	NS9M<CR>
	9W	Toggle Switch “Browse Mode/Remote Mode” Control (iPod Direct Only)	NS9W<CR>
	9X	Page Up	NS9X<CR>
	9Y	Page Down	NS9Y<CR>
9Z	End Fast Forward / Reverse	NS9Z<CR>	

NSA		Request Onscreen Display Information List (Ascii)	NSA<CR> (Return NSE0-NSE8)
NSE		Request Onscreen Display Information List (UTF-8 CODE Character)	NSE<CR> (Return NSE0-NSE8)

## EVENT (or RESPONSE) and PARAMETER list

### ※SYSTEM

<i>EVENT</i>	<i>PARAMETER</i>	Function	example
PW	ON	POWER ON/STANDBY change	PWON<CR>
	STANDBY		PWSTANDBY<CR>
MV	**	MASTER VOLUME change , ** : 00 to 91 by ASCII (00 : 0dB、50 : -50dB、91 : -∞ (無音))	MV80<CR>
MU	ON	OUTPUT MUTE ON/OFF change	MUON<CR>
	OFF		MUOFF<CR>
SI	IRADIO	Internet Radio	SIIRADIO<CR>
	SERVER	Music Server	SISERVER<CR>
	BLUETOOTH	Bluetooth	SIBLUETOOTH<CR>
	USB	USB	SIUSB<CR>
	COAXIAL	Coaxial	SICOAXIAL<CR>
	DIGITALIN1	Optical 1	SIDIGITALIN1<CR>
	DIGITALIN2	Optical 2	SIDIGITALIN2<CR>
	ANALOGIN	Analog In1	SIANALOGIN<CR>
SLP	ANALOGIN2	Analog In2	SIANALOGIN2<CR>
	OFF	MAIN ZONE SLEEP TIMER setting change	SLPOFF<CR>
***	SLP090<CR>		

### ※FAVORITE Control

<i>EVENT</i>	<i>PARAMETER</i>	Function	example
FV	**_XX_aaaa	“FAVORITE NAME” Request *:FAVORITE No. XX:FUNCTION 00:Internet Radio 01:Music Server 07:USB/iPod a:Character Length (MAX32byte) _:Null	FV25 01 FM-87.50MHz<CR>

	**aaaa:35byte Fixed	
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### ※Tone Control

<i>EVENT</i>	<i>PARAMETER</i>	Function	example
PS	BAS **	BASS change	PSBAS 50<CR>
	TRE **	TREBLE change	PSTRE 50<CR>
	BAL **	BALANCE change	PSBAL 50<CR>
	SDB ON	SDB ON/OFF	PSSDB ON<CR>
	SDB OFF		PSSDB OFF<CR>
	SDI ON	SOURCE DIRECT ON/OFF	PSSDI ON<CR>
	SDI OFF		PSSDI OFF<CR>

### ※Auto Standby

<i>COMMAND</i>	<i>PARAMETER</i>	Function	example
SS	STB	Auto Standby : ON	SSSTB ON
		Auto Standby : OFF	SSSTB OFF
		Auto Standby : 1min	SSSTB 01MIN
		Auto Standby : 5min	SSSTB 05MIN
		Auto Standby : 15min	SSSTB 15MIN
		Auto Standby Direct	SSSTB *** (*** : TIME)

### ※Language Setting

<i>COMMAND</i>	<i>PARAMETER</i>	Function	example
SS	LAN ENG	English	SSLAN ENG<CR>
	LAN DEU	German	SSLAN DEU<CR>
	LAN FRA	French	SSLAN FRA<CR>
	LAN ITA	Italian	SSLAN ITA<CR>
	LAN ESP	Spanish	SSLAN ESP<CR>
	LAN NER	Dutch	SSLAN NER<CR>
	LAN SVE	Swedish	SSLAN SVE<CR>
	LAN JPN	Japanese	SSLAN JPN<CR>
	LAN CHI	Chinese	SSLAN CHI<CR>

	LAN POL	Polish	SSLAN POL<CR>
	LAN RUS	Russian	SSLAN RUS<CR>

※AUDIO Playback format

COMMAND	PARAMETER1	PARAMETER2	Function	example
SS	FMTLPC	032	Kind of playback file (LPCM:32kHz)	Kind of playback file (LPCM:32kHz)
		044	Kind of playback file (LPCM:44.1kHz)	Kind of playback file (LPCM:44.1kHz)
		048	Kind of playback file (LPCM:48kHz)	Kind of playback file (LPCM:48kHz)
		088	Kind of playback file (LPCM:88.2kHz)	Kind of playback file (LPCM:88.2kHz)
		096	Kind of playback file (LPCM:96kHz)	Kind of playback file (LPCM:96kHz)
		176	Kind of playback file (LPCM:176.4kHz)	Kind of playback file (LPCM:176.4kHz)
		192	Kind of playback file (LPCM:192kHz)	Kind of playback file (LPCM:192kHz)
	FMTMP3	032	Kind of playback file (MP3:32kHz)	Kind of playback file (MP3:32kHz)
		044	Kind of playback file (MP3:44.1kHz)	Kind of playback file (MP3:44.1kHz)
		048	Kind of playback file (MP3:48kHz)	Kind of playback file (MP3:48kHz)
	FMTWMA	032	Kind of playback file (WMA:32kHz)	Kind of playback file (WMA:32kHz)
		044	Kind of playback file (WMA:44.1kHz)	Kind of playback file (WMA:44.1kHz)
		048	Kind of playback file (WMA:48kHz)	Kind of playback file (WMA:48kHz)
	FMTAAC	032	Kind of playback file (AAC:32kHz)	Kind of playback file (AAC:32kHz)
		044	Kind of playback file (AAC:44.1kHz)	Kind of playback file (AAC:44.1kHz)
		048	Kind of playback file (AAC:48kHz)	Kind of playback file (AAC:48kHz)
	FMTFLC	032	Kind of playback file (FLAC:32kHz)	Kind of playback file (FLAC:32kHz)
		044	Kind of playback file (FLAC:44.1kHz)	Kind of playback file (FLAC:44.1kHz)
		048	Kind of playback file (FLAC:48kHz)	Kind of playback file (FLAC:48kHz)
		088	Kind of playback file (FLAC:88.2kHz)	Kind of playback file (FLAC:88.2kHz)
		096	Kind of playback file (FLAC:96kHz)	Kind of playback file (FLAC:96kHz)
		176	Kind of playback file (FLAC:176.4kHz)	Kind of playback file (FLAC:176.4kHz)
		192	Kind of playback file (FLAC:192kHz)	Kind of playback file (FLAC:192kHz)
	FMTALC	032	Kind of playback file (ALAC:32kHz)	SSFMTALC032<CR>
		044	Kind of playback file (ALAC:44.1kHz)	SSFMTALC044<CR>
		048	Kind of playback file (ALAC:48kHz)	SSFMTALC048<CR>
		088	Kind of playback file (ALAC:88.2kHz)	SSFMTALC088<CR>
096		Kind of playback file (ALAC:96kHz)	SSFMTALC096<CR>	

	FMTAIF	032	Kind of playback file (AIFF:32kHz)	SSFMTAIF032<CR>
		044	Kind of playback file (AIFF:44.1kHz)	SSFMTAIF044<CR>
		048	Kind of playback file (AIFF:48kHz)	SSFMTAIF048<CR>
		088	Kind of playback file (AIFF:88.2kHz)	SSFMTAIF088<CR>
		096	Kind of playback file (AIFF:96kHz)	SSFMTAIF096<CR>
		176	Kind of playback file (AIFF:176.4kHz)	SSFMTAIF176<CR>
		192	Kind of playback file (AIFF:192kHz)	SSFMTAIF192<CR>
	FMTDSD	064	Kind of playback file (DSD:64MHz)	SSFMTDSD064<CR>
		128	Kind of playback file (DSD:128MHz)	SSFMTDSD128<CR>
	FMTULC	Signal Unlock		SSFMTULC<CR>
FMTUSP	Unsupported		SSFMTUSP<CR>	

### ※DIMMER Setting

COMMAND	PARAMETER	Function	example
SS	DIM00	DIMMER : 0%	SSDIM00<CR>
	DIM04	DIMMER : 40%	SSDIM04<CR>
	DIM07	DIMMER : 70%	SSDIM07<CR>
	DIM10	DIMMER : 100%	SSDIM10<CR>

### ※Network Information

COMMAND	PARAMETER	Function	example
NS	INFFRN *****	Friendly Name Information ***** (MAX 32 Characters)	NSINFFRN *****<CR>
NS	INFAFF WIRD	Wired	NSINFAFF WIRD<CR>
	INFAFF WILS	Wireless	NSINFAFF WILS<CR>
NSINFSID	*****	SSID Information ***** (MAX 32 Characters)	NSINFSID *****<CR>
NSINFDHC	ON	DHCP On	NSINFDHC ON<CR>
	OFF	DHCP Off	NSINFDHC OFF<CR>
NSINFIPA	XXX.XXX.XXX.XXX	XXXXXXXXXXXX : IP Address (Example :192.168.100.100。Max15 Characters)	NSINFIPA XXX.XXX.XXX.XXX<CR>
NSINFMAC		MAC Address ***** (12 Characters)	NSINFMAC:*****<CR>

※Network/USB/iPod Direct Extended Control

EVENT	PARAMETER	function	example
NSA		Onscreen Display Information (mServer/iRadio) is Answered By the NSA Command.	
	0	Display Line1 Information (Ascii)	NSA0*****_????<CR>
	1	Display Line2 Information (Ascii)	NSA1※*****_????<CR>
	2	Display Line3 Information (Ascii)	NSA2※*****_????<CR>
	3	Display Line4 Information (Ascii)	NSA3※*****_????<CR>
	4	Display Line5 Information (Ascii)	NSA4※*****_????<CR>
	5	Display Line6 Information (Ascii)	NSA5※*****_????<CR>
	6	Display Line7 Information (Ascii)	NSA6※*****_????<CR>
	7	Display Line8 Information (Ascii)	NSA7*****_????<CR>
	8	Display Line9 Information (Ascii)	NSA8*****_????<CR>
			*: Ascii CODE Character (MAX95byte) _:Null ?: Don't Care (The character after Null should be disregarded) ※:Cursor&Playable Music Information Data(1Byte) Bit1:Playable Music =1 Bit2,3:Don't Care Bit4:CURSOR SELECT=1 Bit5,6,7,8:Don't Care *****_????:96byte Fixed
		<example>	NSA0Now Playing USB_????<CR> NSA1※Come Away With Me_??<CR> NSA2※Norah Jones_????????<CR> NSA3※_????????????????<CR> NSA4※_????????????????<CR> NSA5※00:11 100%_????<CR> NSA6※_????????????????<CR> NSA7_????????????????<CR> NSA8_????????????????<CR>

<p>NSE</p>	<p>0 1 2 3 4 5 6 7 8</p>	<p>Onscreen Display Information (mServer/iRadio) is Answered By the NSE Command.</p> <p>Display Line1 Information Display Line2 Information Display Line3 Information Display Line4 Information Display Line5 Information Display Line6 Information Display Line7 Information Display Line8 Information Display Line9 Information</p> <p>&lt;example&gt;</p>	<pre> NSE0*****_????&lt;CR&gt; NSE1※*****_????&lt;CR&gt; NSE2※*****_????&lt;CR&gt; NSE3※*****_????&lt;CR&gt; NSE4※*****_????&lt;CR&gt; NSE5※*****_????&lt;CR&gt; NSE6※*****_????&lt;CR&gt; NSE7*****_????&lt;CR&gt; NSE8*****_????&lt;CR&gt; *:UTF-8 CODE Character (MAX95byte) _:Null ?: Don't Care (The character after Null should be disregarded) ※:Cursor &amp; Playable Music Information Data (1Byte) Bit1: Playable Music =1 Bit2, 3: Don't Care Bit4: CURSOR SELECT=1 Bit5, 6, 7, 8: Don't Care *****_????: 96byte Fixed NSE0Now Playing USB_????&lt;CR&gt; NSE1※Come Away With Me_??&lt;CR&gt; NSE2※Norah Jones_????????&lt;CR&gt; NSE3※_????????????????&lt;CR&gt; NSE4※_????????????????&lt;CR&gt; NSE5※00:11 100%_????&lt;CR&gt; NSE6※_????????????????&lt;CR&gt; NSE7_????????????????&lt;CR&gt; NSE8_????????????????&lt;CR&gt; </pre>
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