

DENON control protocol

Ver. 5.1.7

Application model : POA-3012CI

Application terminal: RS-232C/ Ethernet

Connector specification

I. RS-232C

Connector type: DB-9pin female type, slave straight connection (DCE type)

(1pin : GND , 2pin : TxD , 3pin : RxD , 5pin : Common(GND) , 4,6,7,8,9pin : NC)

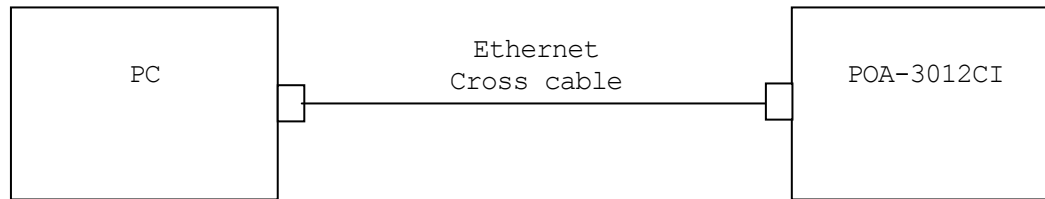
Communication format:

Synchronous system	: Tone step synchronization
Communication system	: A half duplex
Communication speed	: 9600bps
Character length	: 8 bits
Parity control	: None
Start bit	: 1 bit
Stop bit	: 1 bit
Communication procedure	: Non procedural
Communication data length	: 135 bytes (maximum)

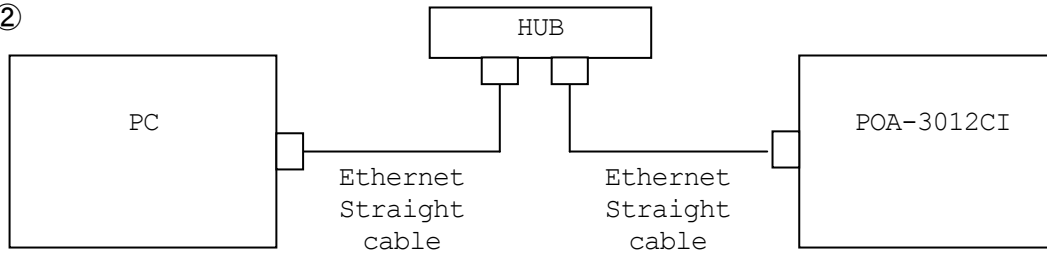
II. Ethernet

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

Example ①



Example ②



Communication format :

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

NETWORK SETUP of POA-3012CI

>Procedure of Network Setup mode.

- (1) Press MENU button and select "system set up" with rotary encoder, then System Setup Menu appears on FL-display.
- (2) Select "Network Setup > Detail" .
- (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: Standby Mode Power Saving>

- (1) Press MENU button and select "power configuration", then Menu appears on FL-display.
- (2) Set parameters described below.
 - "ON LINE"---Use this setting when using the POA-3012CI connected in a network.
 - "MASTER TRIGGER" or "POWER BUTTON"--- Use this setting when not using the POA-3012CI 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(POA-3012CI) 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 (POA-3012CI)
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 (POA-3012CI)
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 + CHANNEL + PARAMETER + CR (0x0D)

COMMAND: ASCII CODE of 2 characters

Ex. SI : Select Input source
 SV : Volume setting
 SO : Operation mode Setting
 SF : Low cut filter Mode Setting
 PW : system Power setting

CHANNEL : ASCII CODE of 2 characters (00 to 12)

Ex. 09 : channel number
 00 : for system setting

PARAMETER : ASCII CODE (up to 25 characters)

Ex. BUSL : function name
 BRIDGED: operation mode name

*Special Parameter--- ? : for request command

The example of a command

* <CR> is the meaning of 0x0D.

SI09BUSL<CR> : Select Input source "BUS L" at channel 9.

SO06BRIDGED<CR> : Set Operation Mode to bridged mode at channel 5 & 6.

SV02UP<CR> : Master Volume UP at channel 2.

PW00ON<CR> : system PoWer ON

PW00STANDBY<CR> : system PoWer STANDBY

SI04?<CR> : Request command for now playing input source at channel 4 >> Return **RESPONSE** `SI04****<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. SV command).
- C) The **PARAMETER** (with **COMMAND** and **RESPONSE, EVENT**) of minimum level of MASTER VOLUME defines "99".
- D) If the MASTER VOLUME & CHANNEL VOLUME set with 0.5dB step, the **PARAMETER** (with **COMMAND** and **RESPONSE, EVENT**) defines three ASCII characters as bellows.

```
Ex.  MASTER VOLUME = 0dB   :   SV90<CR>
                        -0.5dB :   SV895<CR>
                        -1.0dB :   SV89<CR>
                        |       |
                        -89.5dB :   SV005<CR>
                        -90.0dB :   SV00<CR>
                        ---.-dB :   SV99<CR>
```

* At the **.0dB step, only uses two ASCII characters as **PARAMETER**, same as usual.

- K) Four seconds later, please transmit the next **COMMAND** after transmitting a power on **COMMAND** (PW00ON) .

COMMAND and PARAMETER list

COMMAND	CHANNEL	PARAMETER	function	example
PW	00	ON	POWER ON/STANDBY change	PW00ON<CR>
		STANDBY		PW00STANDBY<CR>
		?	Return PW Status	PW00?<CR>
SV	*01-12	UP	CHANNEL VOLUME UP/DOWN , direct change to **dB	SV01UP<CR>
		DOWN		SV01DOWN<CR>
		**	** :00 to 99 by ASCII , 90=0dB, 99=--- (MIN)	SV0180<CR>
		?	Return channel volume Status	SV01?<CR>
SO	02-12 (EVEN)	NOR	Operation mode NORMAL/BRIDGED change	SO02NOR<CR>
		BRI		SO02BRI<CR>
		?	Return operation mode status	SO02?<CR>
SF	*01-12	OFF	Channel Low Cut Filter OFF/ON change	SF05OFF<CR>
		ON		SF05ON<CR>
		?	Return channel Low Cut Filter status	SF05?<CR>
SI	*01-12	BUSL	Select input "BUS L"	SI06BUSL<CR>
		BUSR	BUS R	SI06BUSR<CR>
		BUSM	BUS MONO (L+R)	SI06BUSM<CR>
		AUX	AUX	SI06AUX<CR>
		?	Return channel Input status	SI06?<CR>
ST	02-12 (EVEN)	CONT	constant	ST08CONT<CR>
		TRIG	Trigger in	ST08TRIG<CR>
		ASIG	Audio signal	ST08ASIG<CR>
		OFF	Off	ST08OFF<CR>
		?	Return Zone Turn On status	ST08?<CR>
	00	PBTN	Power button	ST00PBTN<CR>
		TRIG	MASTER TRIGGER	ST00TRIG<CR>
		ONLI	ON LINE	ST00ONLI<CR>
		?	Return Power ON status	ST00?<CR>

SV **COMMAND** : "*" parameter uses two or three ASCII characters. (see page6 D) section)

*01-12 : The ZONE that "Normal mode" was selected, odd and even **CHANNEL** selectable. If the ZONE that "BRIDGED mode" was selected, only an even number **CHANNEL** selectable.

COMMAND	CHANNEL	PARAMETER	function	example
SD	00	BRI	FL display's dimmer level change	SD00BRI<CR>
		DIM		SD00DIM<CR>
		DAR		SD00DAR<CR>
		OFF		SD00OFF<CR>
		?	Return dimmer status	SD00?<CR>
TI	02-12 (EVEN)	?	Return channel trigger input	TI12?<CR>
	00	?	Return master trigger inputs	TI00?<CR>
AI	02-12 (EVEN)	?	Return channel audio signal input	AI02?<CR>
PR	00	TR?	Return system(Main transformer) over heat data	PR00TR?<CR>
		IN?	Return system(Cabinet inside) over heat data	PR00IN?<CR>
		TM?	Return system total operation time	PR00TM?<CR>
	02-12 (EVEN)	PR?	Return channel protection data	PR10PR?<CR>
		OH?	Return channel over heat data	PR10OH?<CR>

EVENT (or RESPONSE) and PARAMETER list

EVENT	CHANNEL	PARAMETER	function	example
PW	00	ON	POWER ON/STANDBY change	PWON<CR>
		STANDBY		PWSTANDBY<CR>
SV	*01-12	**	CHANNEL VOLUME change , **:00 to 99 by ASCII 90 = 0dB (MAX) 00 = -90dB 99 = --- (MIN)	SV80<CR>
SO	02-12 (EVEN)	NOR	OPERATION MODE change	SO02NOR<CR>
		BRI		SO02BRI<CR>
SF	*01-12	OFF	Channel Low Cut Filter OFF/ON change	SF04OFF<CR>
		ON		SF04ON<CR>
SI	*01-12	BUSL	Channel INPUT source change	SI03BUSL<CR>
		BUSR		SI03BUSR<CR>
		BUSM		SI03BUSM<CR>
		AUX		SI03AUX<CR>
ST	02-12 (EVEN)	CONT	Zone turn on mode change	ST06CONT<CR>
		TRIG		ST06TRIG<CR>
		ASIG		ST06ASIG<CR>
		OFF		ST06OFF<CR>
	00	PBTN	Power configuration change	ST00PBTN<CR>
		TRIG		ST00TRIG<CR>
		ONLI		ST00ONLI<CR>
SD	00	BRI	Dimmer level change	SD00BRI<CR>
	00	DIM		SD00DIM<CR>
	00	DAR		SD00DAR<CR>
	00	OFF		SD00OFF<CR>
TI	02-12 (EVEN)	YES	Zone trigger input YES/NO change	TI12YES<CR>
		NO		TI12NO<CR>
	00	YES	Master trigger input YES/NO change	TI00YES<CR>
		NO		TI00NO<CR>
AI	02-12 (EVEN)	YES	channel audio signal input YES/NO change	AI02YES<CR>
		NO		AI02NO<CR>

EVENT	CHANNEL	PARAMETER	function	example	
PR	00	TROHWARN	MAIN TRANSFORMER OVER HEAT WARNING	PR00TROHWARN<CR>	
		TROHNONE	MAIN TRANSFORMER OVER HEAT NONE	PR00TROHNONE<CR>	
		INOHWARN	CABINET INSIDE OVER HEAT WARNING	PR00INOHWARN<CR>	
		INOHNONE	CABINET INSIDE OVER HEAT NONE	PR00INOHNONE<CR>	
		TMOHTR01***** TMOHTR02***** TMOHTR20*****	MAIN TRANSFORMER Over heat operation time (latest) Over heat operation time (latest 1 st ago) Over heat operation time (latest 19 th ago) *****:000000 to 999999 by ASCII , 000230 = 2hour30min	PR00TMOHTR01000130<CR> PR00TMOHTR02000140<CR> PR00TMOHTR20000230<CR>	
		TMOHIN01***** TMOHIN02***** TMOHIN20*****	CABINET INSIDE Over heat operation time (latest) Over heat operation time (latest 1 st ago) Over heat operation time (latest 19 th ago) *****:000000 to 999999 by ASCII , 000230 = 2hour30min	PR00TMOHIN01000130<CR> PR00TMOHIN02000140<CR> PR00TMOHIN20000230<CR>	
		TM*****	Total operation time *****:000000 to 999999 by ASCII , 001120 = 11hour20min	PR00TM001120<CR>	
		02-12 (EVEN)	PRWARN	ZONE POWER MODULE PROTECTION WARNING	PR08PRWARN<CR>
			PRNONE	ZONE POWER MODULE PROTECTION NONE	PR08PRNONE<CR>
			OHWARN	ZONE POWER MODULE OVER HEAT WARNING	PR08OHWARN<CR>
	OHNONE		ZONE POWER MODULE OVER HEAT NONE	PR08OHNONE<CR>	
	PR*****		Protection operation time *****:000000 to 999999 by ASCII , 000230 = 2hour30min	PR04PR000130<CR>	
	OH01***** OH02***** OH20*****	Over heat operation time (latest) Over heat operation time (latest 1 st ago) Over heat operation time (latest 19 th ago) *****:000000 to 999999 by ASCII , 000230 = 2hour30min	PR04OH01000130<CR> PR04OH02000140<CR> PR04OH20000230<CR>		