HDMI Distribution Amplifier

VAC-S Series

VAC-S12U/VAC-S14U/VAC-S16U/VAC-S18U

<Command Reference Guide>

Ver.2.0.0

- Thank you for choosing our product.
- To ensure the best performance of this product, please read this user guide fully and carefully before using it and keep this manual together with the product for future reference as needed.

IDK Corporation

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Before reading this manual

- Some information contained in this command guide such as exact product appearance, communication commands, and so on may differ depending on the product version.
- This command guide is subject to change without notice. You can download the latest version from IDK's website at: www.idkav.com

The reference manual consists of the following two volumes:

- User guide: Please download the user guide from the website above.
- Command guide (this document)

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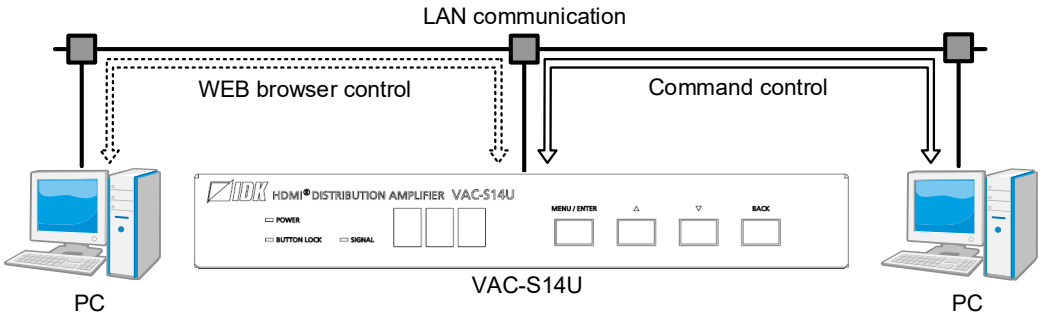
1 About this Guide

This guide contains the procedure for controlling the VAC-S series (hereafter referred to as “VAC-S) using commands via LAN communication.



[Fig. 1.1] Controlling VAC-S

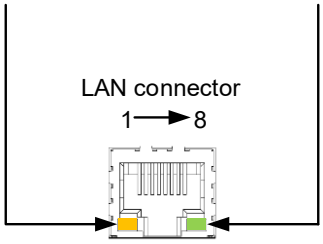
2 Communication configuration and Specifications

2.1 LAN connector specification

Pin assignment of the LAN connector is as follows.
Auto MDI/MDI-X that detecting and switching straight cable/cross cable is supported.

Light in orange if the send/receive rate is 100 Mbps.
Goes off if it is 10 Mbps.

Light in green while link is established.
Blinks in green while data is being sent/received.



8-pin RJ-45 connector
(Rear panel)

Pin#	Signal Name	
	MDI	MDI-X
1	TX+ (Transmitted Data +)	RX+(Received Data +)
2	TX- (Transmitted Data -)	RX- (Received Data -)
3	RX+(Received Data +)	TX+ (Transmitted Data +)
4	N.C.(Not Connected)*	N.C.(Not Connected)*
5	N.C.(Not Connected)*	N.C.(Not Connected)*
6	RX- (Received Data -)	TX- (Transmitted Data -)
7	N.C.(Not Connected)*	N.C.(Not Connected)*
8	N.C.(Not Connected)*	N.C.(Not Connected)*

*Not used

[Fig. 2.1] LAN connector

2.2 LAN communication specification

[Table 2.1] Specification of LAN communication

Physical layer	10Base-T (IEEE802.3i)/100Base-TX (IEEE802.3u)
Network layer	ARP, IP, ICMP
Transport layer	TCP Port used for command control : 1100, 6000 to 6999 Port used for WEB browser control (HTTP) : 80

Note:

Up to 8 connections can be used simultaneously. (4 connections for WEB browser)

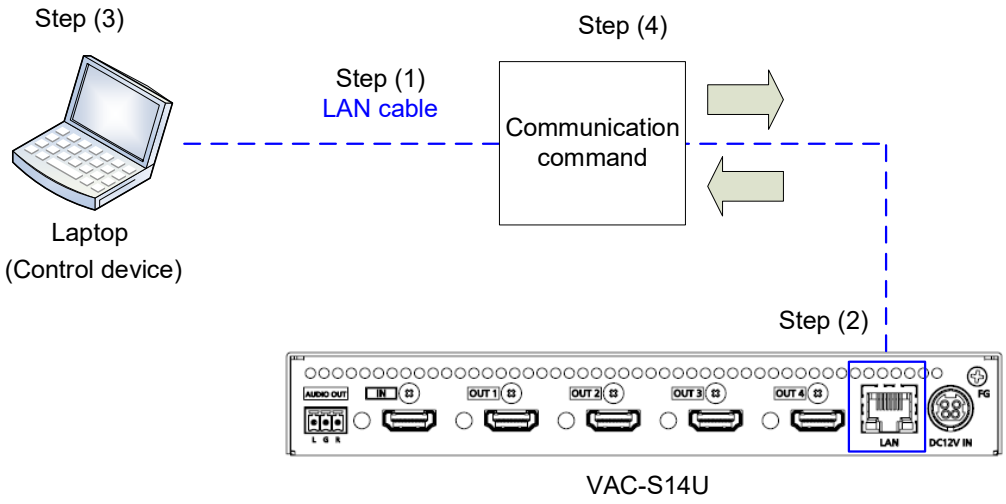
【See: 2.4 The number of TCP-IP connections】

2.3 Setting up LAN communication

(1) Connect the VAC-S and the control device via a LAN cable.
(2) Set up LAN communication as follows:
- Set IP address and subnet mask
- TCP pot number: 1100 (Default), 6000 to 6999

【Reference: User guide】

(3) Establish the connection from the control device to the IP address and TCP port that are set to the VAC-S in step (2) above.
(4) Send a communication command from the control device to the VAC-S in order to check the control status of the VAC-S.



[Fig. 2.2] Setting LAN communication

2.4 The number of TCP-IP connections

The VAC-S supports up to eight simultaneous TCP-IP connections (eight logical ports).
To maintain optimal system accessibility, it is advisable to issue “port-open” and “port-close” commands before and after command or query strings are issued. This approach enables eight or more control devices to be effectively interfaced simultaneously and without concern for communication errors.

[Table 2.2] Increasing connections

Your PC software		VAC-S
Connecting TCP-IP	→	(Occupying 1 port)
Sending command (@xxx)	→	
	←	Replying command (@xxx)
Closing TCP-IP	→	(Releasing 1 port)

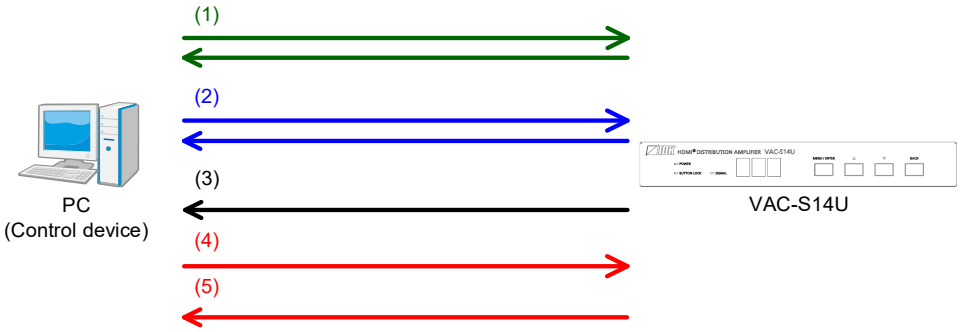
Note:
As a safeguard, the VAC-S incorporates a 30-second timeout window for each port. If any port is inactive for more than 30 seconds, it will be closed automatically.

2.5 Unsolicited status notification

The VAC-S can notify status changes and problems in a system through LAN communication. This function is set to be disabled after the VAC-S is powered on. Use the @SPH command to enable the unsolicited status notification function.

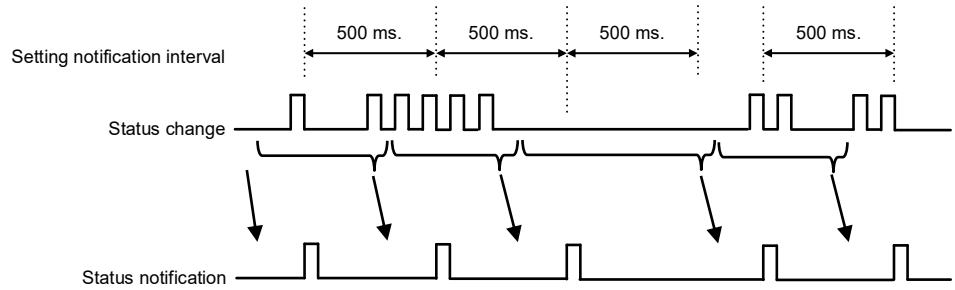
Unsolicited status notification:

(1) The unsolicited status notification feature is enabled using @SPH command.
(2) The control device periodically sends @GIV command (30 seconds or shorter) to keep the connection.
(3) The VAC-S notifies control device of changes in VAC-S.
(4) The control device sends @AIN command that is for getting input status.
(5) The VAC-S sends the control device current status.



[Fig. 2.3] Notifying status

Interval between a notification and the next notification.
If no change is detected during the interval, status is sent immediately after detecting a change.



[Fig.2.4] Notification interval

3 Command

3.1 Summary

A command consists of “@” (“40” in hexadecimal), 3 one-byte alphabetical characters (upper and lower cases), and parameters (one-byte numbers). For some commands, multiple parameter values can be specified or parameters are not necessary.

“,”(a comma, “2C” in hex) is indicated between a command and parameter and between two parameters.
“↵” is indicated as a delimiter CR LF (return+line feed, “0D” and “0A” in hex).
Processing is executed by sending a delimiter at the end of the command.

Example: @SED,1,4↵

■ If there is an error:
An error command is returned if an undefined command or wrong parameter is included.

Example: @SDM,0↵
@ERR,1↵

■ Using as HELP
If only delimiter is sent, command list as the help command is returned.

3.2 Command list

■ **Error status**

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■ **EDID**

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■ **Configuring VAC-S**

■ **Status indication**

■ **Status notification**

3.3 Details of commands

This section describes commands for the VAC-S18U. Note that the numbers of outputs for other models are different from those of the VAC-S18U.

3.3.1 Error status

@ERR		**Error status**
Description		Response in case the command is not executed
Response		@ERR, error ↵
Parameter		error: Error status 1 = Erroneous parameter format or value 2 = Undefined command or wrong format 3 = Currently cannot be used 4 = Reading EDID from the sink device failed
Getting example	Command	@VAC ↵
	Response	@ERR,2 ↵
	Description	@VAC is sent. Command format error
Remarks		―

3.3.2 EDID

@GED / @SED		**Resolution**
Getting	Command	@GED ↵
	Response	@GED, format ↵
Setting	Command	@SED, in, format ↵
	Response	@SED, in, format ↵
Parameter		format: EDID resolution 1 = External EDID, 2 = Copied EDID, 3 = 1080p, 4 = 720p, 5 = 1080i, 6 = SVGA (800x600), 7 = XGA (1024x768), 8 = VESA720 (1280x720), 9 = WXGA (1280x768), 10 = WXGA (1280x800), 11 = Quad-VGA (1280x960), 12 = SXGA (1280x1024), 13 = WXGA (1360x768), 14 = WXGA (1366x768), 15 = SXGA+ (1400x1050), 16 = WXGA+ (1440x900), 17 = WXGA++ (1600x900), 18 = UXGA (1600x1200), 19 = WSXGA+ (1680x1050), 20 = VESA1080 (1920x1080), 21 = WUXGA (1920x1200), 22 = QWXGA (2048x1152), 23 = WQHD (2560x1440), 24 = WQXGA (2560x1600), 41 = 2160p (24/25/30), 42 = 2160p (50/59.94/60, 4:2:0), 43 = 2160p (50/59.94/60, 4:4:4) [Default], 44 = 4096x2160 (24/25/30), 45 = 4096x2160 (50/59.94/60, 4:2:0), 46 = 4096x2160 (50/59.94/60, 4:4:4)
		in: Input channel "1" (fixed)
Getting example	Command Response	@GED ↵ @GED,3 ↵
	Description	Getting the EDID resolution 1080p
Setting example	Command Response	@SED,1,1 ↵ @SED,1,1 ↵
	Description	Setting the EDID resolution to External EDID Completed
Remarks		If selecting "1" (External EDID) or "2" (Copied EDID), execute "**@SEC External EDID**" or "**@RME Copying EDID**" beforehand, respectively.

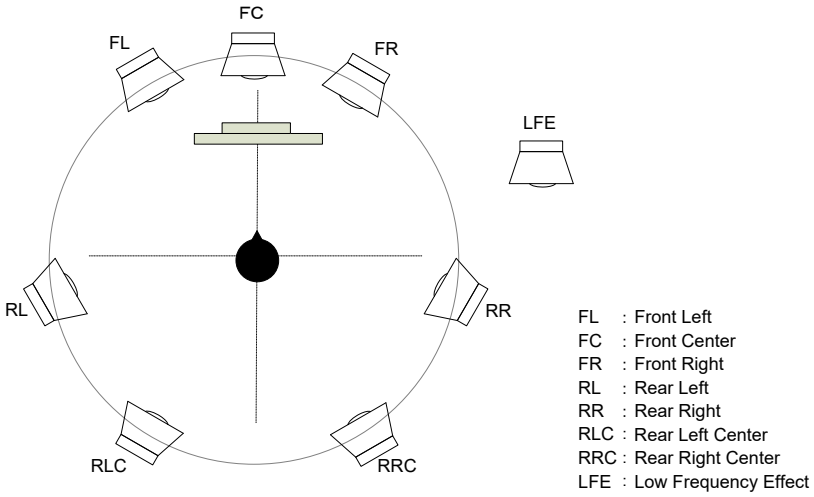
@GEC / @SEC		**External EDID**
Getting	Command	@GEC ↵
	Response	@GEC, out ↵
Setting	Command	@SEC, in, out ↵
	Response	@SEC, in, out ↵
Parameter		out: External EDID channel 1 to 8 = OUT1 to OUT8
		in: Input channel “1” (fixed)
Getting example	Command Response	@GEC ↵ @GEC,1 ↵
	Description	Getting the external EDID channels EDID from OUT1
Setting example	Command Response	@SEC,1,2 ↵ @SEC,1,2 ↵
	Description	Setting external EDID reading channel to OUT2 Completed
Remarks		—

@RME		**Copying EDID**
Setting	Command	@RME, out, number ↵
	Response	@RME, out, number ↵
Parameter		out: Copied EDID channel 1 to 8 = OUT1 to OUT8
		number: Destination for saving copied EDID 1 to 3 = Destination 1 to Destination 3
Setting example	Command Response	@RME,1,1 ↵ @RME,1,1 ↵
	Description	Copying EDID of sink device that is connected to OUT1 to IN1 Completed
Remarks		—

@GDI / @SDI		**Deep Color**
Getting	Command	@GDI ↵
	Response	@GDI, color ↵
Setting	Command	@SDI, in, color ↵
	Response	@SDI, in, color ↵
Parameter		color: Color depth 0 = 24 bit/pixel (8 bit/component) [Default], 1 = 30 bit/pixel (10 bit/component), 2 = 36 bit/pixel (12 bit/component)
		in: Input channel "1" (fixed)
Getting example	Command Response	@GDI ↵ @GDI,0 ↵
	Description	Getting the color depth 24 bit/pixel (8 bit/component)
Setting example	Command Response	@SDI,1,1 ↵ @SDI,1,1 ↵
	Description	Setting the color depth to 30 bit/pixel (10 bit/component) Completed
Remarks		This command is valid only if "**@GED / @SED Resolution**" is set to "3" to "46" (Built-in EDID).

<table>
<tr><td colspan="2">@GAF / @SAF</td><td>Audio format</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GAF, in ↵</td></tr>
<tr><td>Response</td><td>@GAF, in, format_1, frequency_1, ･･･ format_7, frequency_7 ↵</td></tr>
<tr><td rowspan="2">Setting</td><td>Command</td><td>@SAF, in, format_1, frequency_1 (, format_2, frequency_2･･･) ↵</td></tr>
<tr><td>Response</td><td>@SAF, in, format_1, frequency_1 (, format_2, frequency_2･･･) ↵</td></tr>
<tr><td colspan="2" rowspan="3">Parameter</td><td>in: Input channel
“1” (fixed)</td></tr>
<tr><td>format_1-7: Audio format
0 = LPCM, 1 = AC-3/Dolby Digital, 2 = AAC,
3 = Dolby Digital+, 4 = DTS, 5 = DTS-HD,
6 = Dolby TrueHD</td></tr>
<tr><td>frequency_1-7: Maximum sampling frequency
0 = OFF (Not output), 1 = 32 kHz, 2 = 44.1 kHz,
3 = 48 kHz, 4 = 88.2 kHz, 5 = 96 kHz,
6 = 176.4 kHz, 7 = 192 kHz

<table>
<tr><th>Audio format</th><th>Maximum sampling frequency (kHz)</th><th>Default</th></tr>
<tr><td>LPCM</td><td>32/44.1/48/88.2/96/176.4/192</td><td>48</td></tr>
<tr><td>AC-3/Dolby Digital</td><td>OFF/32/44.1/48</td><td>OFF</td></tr>
<tr><td>AAC</td><td>OFF/32/44.1/48/88.2/96</td><td>OFF</td></tr>
<tr><td>Dolby Digital +</td><td>OFF/32/44.1/48</td><td>OFF</td></tr>
<tr><td>DTS</td><td>OFF/32/44.1/48/96</td><td>OFF</td></tr>
<tr><td>DTS-HD</td><td>OFF/44.1/48/88.2/96/176.4/192</td><td>OFF</td></tr>
<tr><td>Dolby TrueHD</td><td>OFF/44.1/48/88.2/96/176.4/192</td><td>OFF</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">Getting example</td><td>Command
Response</td><td>@GAF,1 ↵
@GAF,1,0,3,1,0,2,0,3,0,4,0,5,0,6,0 ↵</td></tr>
<tr><td>Description</td><td>Getting the audio format
Maximum sampling frequency of LPCM: 48 kHz; other audio format: OFF</td></tr>
<tr><td rowspan="2">Setting example</td><td>Command
Response</td><td>@SAF,1,0,7 ↵
@SAF,1,0,7 ↵</td></tr>
<tr><td>Description</td><td>Setting the audio format and maximum sampling frequency to LPCM and 192 kH
Completed</td></tr>
<tr><td colspan="2">Remarks</td><td>・ Maximum settable sampling frequency depends on the audio format.
・ LPCM output cannot be turned OFF.
・ This command is valid only if “@GED / @SED Resolution” is set to “3” to “46” (Built-in EDID).</td></tr>
</table>

<table>
<tr><td colspan="2">@GSP / @SSP</td><td>Speaker configuration</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GSP ↵</td></tr>
<tr><td>Response</td><td>@GSP, ch ↵</td></tr>
<tr><td rowspan="2">Setting</td><td>Command</td><td>@SSP, in, ch ↵</td></tr>
<tr><td>Response</td><td>@SSP, in, ch ↵</td></tr>
<tr><td colspan="2">Parameter</td><td>ch: Speaker configuration
0 = LR [Default], 1 = 2.1 channel surround sound,
2 = 5.1 channel surround sound, 3 = 7.1 channel surround sound
 

<table>
<tr><th>Sound type</th><th>FL/FR</th><th>LFE</th><th>FC</th><th>RL/RR</th><th>RLC/RRC</th></tr>
<tr><td>LR</td><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
<tr><td>2.1 channel surround sound</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
<tr><td>5.1 channel surround sound</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>7.1 channel surround sound</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td></tr>
</table>
in: Input channel
“1” (fixed)</td></tr>
<tr><td rowspan="2">Getting example</td><td>Command
Response</td><td>@GSP ↵
@GSP,0 ↵</td></tr>
<tr><td>Description</td><td>Getting the speaker configuration
LR</td></tr>
<tr><td rowspan="2">Setting example</td><td>Command
Response</td><td>@SSP,1,0 ↵
@SSP,1,0 ↵</td></tr>
<tr><td>Description</td><td>Setting the speaker configuration to LR
Completed</td></tr>
<tr><td colspan="2">Remarks</td><td>This command is valid only if “@GED / @SED Resolution” is set to “3” to “46” (Built-in EDID).</td></tr>
</table>

@GPA / @SPA		**Copying CEC physical address**
Getting	Command	@GPA ↵
	Response	@GPA, copy ↵
Setting	Command	@SPA, in, copy ↵
	Response	@SPA, in, copy ↵
Parameter		copy: Copying CEC physical address 0 = Copying CEC physical address OFF [Default], 1 = Copying CEC physical address ON
		in: Input channel "1" (fixed)
Getting example	Command Response	@GPA ↵ @GPA,0 ↵
	Description	Getting copying CEC physical address OFF
Setting example	Command Response	@SPA,1,0 ↵ @SPA,1,0 ↵
	Description	Setting copying CEC physical address to OFF Completed
Remarks		This command is valid only if "**@GED / @SED Resolution**" is set to "3" to "46" (Built-in EDID).

@GHZ / @SHZ		**Frame rate**
Getting	Command	@GHZ ↵
	Response	@GHZ, mode ↵
Setting	Command	@SHZ, in, mode ↵
	Response	@SHZ, in, mode ↵
Parameter		mode: Frame rate 0 = 60 Hz/30 Hz [Default], 1 = 50 Hz/25 Hz
		in: Input channel "1" (fixed)
Getting example	Command Response	@GHZ ↵ @GHZ,0 ↵
	Description	Getting the frame rate 60 Hz/30 Hz
Setting example	Command Response	@SHZ,1,0 ↵ @SHZ,1,0 ↵
	Description	Setting the frame rate to 60 Hz/30 Hz Completed
Remarks		This command is valid only if "**@GED / @SED Resolution**" is set to "3" to "46" (Built-in EDID).

3.3.3 Audio

@GAW / @SAW		**Stable audio input wait**
Getting	Command	@GAW ↵
	Response	@GAW, mode ↵
Setting	Command	@SAW, in, mode ↵
	Response	@SAW, in, mode ↵
Parameter		mode: Waiting time 0 = OFF, 1 = Short, 2 = Middle [Default], 3 = Long
		in: Input channel "1" (fixed)
Getting example	Command	@GAW ↵
	Response	@GAW,1 ↵
	Description	Getting the stable audio input wait time Short
Setting example	Command	@SAW,1,0 ↵
	Response	@SAW,1,0 ↵
	Description	Disabling stable audio input waiting time Completed
Remarks		—

@GUC / @SUC		**Digital audio output**
Getting	Command	@GUC ↵
	Response	@GUC, mode_1, ··· mode_8 ↵
Setting	Command	@SUC, out_1, mode_1 (, out_2, mode_2···) ↵
	Response	@SUC, out_1, mode_1 (, out_2, mode_2···) ↵
Parameter		mode_1-8: Digital audio output 0 = Not outputting audio, 1 = Audio output [Default]
		out_1-8: Output channel 0 = All outputs, 1 to 8 = OUT1 to OUT8
Getting example	Command	@GUC ↵
	Response	@GUC,1,1,1,1,1,1,1,1 ↵
	Description	Getting the digital audio output All output channels: Enabled
Setting example	Command	@SUC,0,0 ↵
	Response	@SUC,0,0 ↵
	Description	Setting all outputs' digital audio to not output audio Completed
Remarks		—

VAC-S12U only

@GAM / @SAM		Analog audio output
Getting	Command	@GAM ↵
	Response	@GAM, mode ↵
Setting	Command	@SAM, out, mode ↵
	Response	@SAM, out, mode ↵
Parameter		mode：Analog audio output 0 = Not outputting audio, 1 = Audio output [Default]
		out：Output channel 401 = AUDIO OUT
Getting example	Command	@GAM ↵
	Response	@GAM,1 ↵
	Description	Getting analog audio output setting Analog audio output is enabled.
Setting example	Command	@SAM,401,0 ↵
	Response	@SAM,401,0 ↵
	Description	Setting all outputs' analog audio to not output audio Completed
Remarks		—

VAC-S12U only

@GAS / @SAS		Setting audio
Getting	Command	@GAS ↵
	Response	@GAS, mode_1, mode_2, mode_3 ↵
Setting	Command	@SAS, out_1, mode_1 (, out_2, mode_2･･･) ↵
	Response	@SAS, out_1, mode_1 (, out_2, mode_2･･･) ↵
Parameter		mode_1-3：Input audio 0 = IN [Default], 1 = AUDIO IN
		out_1-3：Output connector 0 = All outputs, 1 = OUT1, 2 = OUT2, 401 = AUDIO OUT
Getting example	Command	@GAS ↵
	Response	@GAS,1,1,1 ↵
	Description	Getting the audio setting All output connectors: Analog input audio
Setting example	Command	@SAS,0,0 ↵
	Response	@SAS,0,0 ↵
	Description	Setting all output connectors to output digital input audio. Completed
Remarks		—

3.3.4 Input

@GHE / @SHE		**HDCP input**
Getting	Command	@GHE ↵
	Response	@GHE, hdcp ↵
Setting	Command	@SHE, in, hdcp ↵
	Response	@SHE, in, hdcp ↵
Parameter		hdcp: HDCP input enabled/disabled 0 = DISABLE (Disabled), 1 = HDCP 1.4 (Enabled), 2 = HDCP 2.2 and HDCP 1.4 (Enabled) [Default]
		in: Input channel "1" (fixed)
Getting example	Command	@GHE ↵
	Response	@GHE,1 ↵
	Description	Getting the HDCP input enabled/disabled HDCP 1.4 enabled
Setting example	Command	@SHE,1,0 ↵
	Response	@SHE,1,0 ↵
	Description	Setting the HDCP input to be disabled Completed
Remarks		—

@GDT / @SDT		**No-signal input monitoring**
Getting	Command	@GDT ↵
	Response	@GDT, time ↵
Setting	Command	@SDT, in, time ↵
	Response	@SDT, in, time ↵
Parameter		time: No-signal input monitoring time 0 = OFF, 2 to 15 = 2 sec. to 15 sec. [Default] 10sec.
		in: Input channel "1" (fixed)
Getting example	Command	@GDT ↵
	Response	@GDT,10 ↵
	Description	Getting the no-signal input monitoring time 10 seconds
Setting example	Command	@SDT,1,4 ↵
	Response	@SDT,1,4 ↵
	Description	Setting the monitoring time to 4 seconds Completed
Remarks		—

3.3.5 Output

@GMK / @SMK		**Hot plug ignoring duration**
Getting	Command	@GMK ↵
	Response	@GMK, mask_1, ･･･ mask_8 ↵
Setting	Command	@SMK, out_1, mask_1 (, out_2, mask_2･･･) ↵
	Response	@SMK, out_1, mask_1 (, out_2, mask_2･･･) ↵
Parameter		mask_1-8: Hot plug ignoring duration 1 = OFF [Default], 2 to 15 = 2 sec. to 15 sec.
		out_1-8: Output channel 0 = All outputs, 1 to 8 = OUT1 to OUT8
Getting example	Command	@GMK ↵
	Response	@GMK,1,1,1,1,1,1,1,1 ↵
	Description	Getting the hot plug ignoring duration All output channels: OFF
Setting example	Command	@SMK,0,1 ↵
	Response	@SMK,0,1 ↵
	Description	Setting the hot plug ignoring duration of all output channels to OFF Completed
Remarks		―

@GHM / @SHM		**Sink device EDID check**
Getting	Command	@GHM ↵
	Response	@GHM, mode_1, ･･･ mode_8 ↵
Setting	Command	@SHM, out_1, mode_1 (, out_2, mode_2･･･) ↵
	Response	@SHM, out_1, mode_1 (, out_2, mode_2･･･) ↵
Parameter		mode_1-8: Sink device EDID check method 0 = In case of EDID read error, the sink device is treated as a DVI device [Default], 1 = In case of EDID read error, the sink device is treated as a HDMI device without SCDC, 2 = Always treats sink device as a HDMI device without SCDC, 3 = In case of EDID read error, the sink device is treated as a HDMI device with SCDC, 4 = Always treats sink device as a HDMI device with SCDC
		out_1-8: Output channel 0 = All outputs, 1 to 8 = OUT1 to OUT8
Getting example	Command Response	@GHM ↵ @GHM,0,0,0,0,0,0,0,0 ↵
	Description	Getting the sink device EDID check All output channels: “0” (In case of EDID read error, the sink device is treated as a DVI device.)
Setting example	Command Response	@SHM,0,0 ↵ @SHM,0,0 ↵
	Description	Setting the sink device EDID check method of all output channels to “0” (In case of EDID read error, the sink device is treated as a DVI device.) Completed
Remarks		―

@GDM / @SDM		Output format
Getting	Command	@GDM ↵
	Response	@GDM, mode_1, ･･･ mode_8 ↵
Setting	Command	@SDM, out_1, mode_1 (, out_2, mode_2･･･) ↵
	Response	@SDM, out_1, mode_1 (, out_2, mode_2･･･) ↵
Parameter		mode_1-8: Output format 0 = FOLLOW SINK DEVICE [Default], 1 = HDMI RGB MODE, 2 = HDMI YCbCr 4:2:2 MODE, 3 = HDMI YCbCr 4:4:4 MODE, 4 = DVI MODE, 5 = HDMI YCbCr 4:2:0 MODE
		out_1-8: Output channel 0 = All outputs, 1 to 8 = OUT1 to OUT8
Getting example	Command	@GDM ↵
	Response	@GDM,0,0,0,0,0,0,0,0 ↵
	Description	Getting the output format All output channels: FOLLOW SINK DEVICE
Setting example	Command	@SDM,0,0
	Response	@SDM,0,0
	Description	Setting the output format of all output channels to FOLLOW SINK DEVICE Completed
Remarks		“HDMI YCbCr 4:2:0 MODE” is enabled when 4K@50/59.94/60 is output. When 4K@50/59.94/60 signal is input, the VAC-S outputs the signal at YCbCr 4:2:0 to the sink device supporting YCbCr 4:2:0 (not supporting YCbCr 4:4:4).

@GDN / @SDN		Downconversion output
Getting	Command	@GDN ↵
	Response	@GDN, down ↵
Setting	Command	@SDN, out, down ↵
	Response	@SDN, out, down ↵
Parameter		down: Downconversion output 0 = FOLLOW SINK DEVICE [Default], 1 = OFF, 2 = ON
		out: Output channel 1 = OUT1 [Fixed]
Getting example	Command	@GDN ↵
	Response	@GDN,0 ↵
	Description	Getting the downconversion output FOLLOW SINK DEVICE
Setting example	Command	@SDN,1,0 ↵
	Response	@SDN,1,0 ↵
	Description	Setting the downconversion output to FOLLOW SINK DEVICE Completed
Remarks		—

@GOO / @SOO		**Presence of output signal for when signal is input**
Getting	Command	@GOO ↵
	Response	@GOO, mode_1, ・・・ mode_8 ↵
Setting	Command	@SOO, out, mode ↵
	Response	@SOO, out, mode ↵
Parameter		mode_1-8, mode: Output signal 0 = Video output ON, Audio output ON [Default], 1 = Video output OFF, Audio output OFF, 2 = Black output ON, Audio output OFF, 3 = Black output ON, Audio output ON, 4 = Video output ON, Audio output OFF
		out: Output channel 0 = All outputs, 1 to 8 = OUT1 to OUT8
Getting example	Command	@GOO ↵
	Response	@GOO,1,1,1,1,1,1,1,1 ↵
	Description	Getting output signal setting All output channels: Video output OFF, Audio output OFF
Setting example	Command	@SOO,0,4 ↵
	Response	@SOO,0,4 ↵
	Description	Setting all output channels to “4” (Video output ON, Audio output OFF) Completed
Remarks		This setting can be enabled or disabled by setting “**@GOE / @SOE Applying @SOO setting**”.

@GOE / @SOE		**Applying @SOO setting**
Getting	Command	@GOE ↵
	Response	@GOE, mode ↵
Setting	Command	@SOE, mode ↵
	Response	@SOE, mode ↵
Parameter		mode: Switching output signal mode setting 0 = Disabled [Default] Video output ON, Audio output ON 1 = Enabled The “@GOO / @SOO” setting is applied
Getting example	Command	@GOE ↵
	Response	@GOE,1 ↵
	Description	Getting output signal settings Enabled
Setting example	Command	@SOE,1 ↵
	Response	@SOE,1 ↵
	Description	Enabling switching output signal settings Completed
Remarks		If “**@GOO / @SOO Presence of output signal for when signal is input**” is set to a value other than “0”, this setting is enabled automatically, and it can be switched Enabled/Disabled by using the setting command.

@GDP / @SDP		**Presence of output signal for when no signal is input**
Getting	Command	@GDP ↵
	Response	@GDP, power_1, time_1, ･･･ , power_8, time_8 ↵
Setting	Command	@SDP, out_1, power_1, time_1 (, out_2, power_2, time_2 ･･･) ↵
	Response	@SDP, out_1, power_1, time_1 (, out_2, power_2, time_2 ･･･) ↵
Parameter		power_1-8: Output signal for when no signal is input 0 = +5 V signal OFF, 1 = +5 V signal ON [Default]
		time_1-8: Time from when no signal is input to +5 V signal OFF 0 to 60 = 0 sec. to 60 sec.
		out_1-8: Output channel 0 = All outputs, 1 to 8 = OUT1 to OUT8
Getting example	Command	@GDP ↵
	Response	@GDP,0,7,0,7,0,7,0,7,0,7,0,7,0,7,0,7 ↵
	Description	Getting output signal setting for when no input video All output channels: Turn off +5 V signal after 7 seconds from when no video signal is input.
Setting example	Command	@SDP,0,1,0 ↵
	Response	@SDP,0,1,0 ↵
	Description	Setting all output channels to output +5 V signal ON for when no signal is input Completed
Remarks		If selecting “1” (+5 V signal ON), the time from when no signal is input to +5 V signal OFF is ignored.

3.3.6 LAN

@GIP / @SIP		**IP address**
Getting	Command	@GIP ↵
	Response	@GIP, unit_1, unit_2, unit_3, unit_4 ↵
Setting	Command	@SIP, unit_1, unit_2, unit_3, unit_4 ↵
	Response	@SIP, unit_1, unit_2, unit_3, unit_4 ↵
Parameter		unit_1 to unit_4: Upper bit of the IP address to Lower bit of the IP address 0 to 255 = 8 bit (Decimal notation) [Default]192.168.1.199
Getting example	Command Response	@GIP ↵ @GIP,192,168,1,200 ↵
	Description	Getting the IP address of the VAC-S 192.168.1.200
Setting example	Command Response	@SIP,192,169,1,200 ↵ @SIP,192,169,1,200 ↵
	Description	Setting the IP address to 192.168.1.200 Completed
Remarks		LAN setting is changed, the communication may be disabled. Change the environmental settings based on the VAC-S settings.

@GSB / @SSB		**Subnet mask**
Getting	Command	@GSB ↵
	Response	@GSB, unit_1, unit_2, unit_3, unit_4 ↵
Setting	Command	@SSB, unit_1, unit_2, unit_3, unit_4 ↵
	Response	@SSB, unit_1, unit_2, unit_3, unit_4 ↵
Parameter		unit_1 to unit_4: Upper bit of the subnet mask to Lower bit of the subnet mask 0 to 255 = 8 bit (Decimal notation) [Default] 255.255.255.0
Getting example	Command Response	@GSB ↵ @GSB,255,255,255,0 ↵
	Description	Getting the subnet mask of the VAC-S 255.255.255.0
Setting example	Command Response	@SSB,255,255,255,254 ↵ @SSB,255,255,255,254 ↵
	Description	Setting the subnet mask of the VAC-S to 255.255.255.254 Completed
Remarks		LAN setting is changed, the communication may be disabled. Change the environmental settings based on the VAC-S settings.

@GLP / @SLP		**TCP port number**
Getting	Command	@GLP ↵
	Response	@GLP, port, add ↵
Setting	Command	@SLP, port, add ↵
	Response	@SLP, port, add ↵
Parameter		port: Port number 1100 [Default], 6000 to 6999
		add: 8-connection setting 0 = 8-connection setting OFF [Default] (WEB browser 4 connections/communication command control 4 connections), 1 = 8-connection setting ON (Communication command control 8-connection)
Getting example	Command Response	@GLP ↵ @GLP,1100,0 ↵
	Description	Getting the TCP port number 1100; 8 connection setting disabled
Setting example	Command Response	@SLP,1100,0 ↵ @SLP,1100,0 ↵
	Description	Setting the port number and 8-connection setting to 1100 and OFF, respectively Completed
Remarks		LAN setting is changed, the communication may be disabled. Change the environmental settings based on the VAC-S settings.

@GMC		**MAC address**
Getting	Command	@GMC ↵
	Response	@GMC, unit_1, unit_2, unit_3, unit_4, unit_5, unit_6 ↵
Parameter		unit_1 to unit_6: Upper bit of the MAC address to Lower bit of the MAC address 00 to FF = 8 bit (in hexadecimal)
Getting example	Command Response	@GMC ↵ @GMC,00,08,E5,6A,00,01 ↵
	Description	Getting the MAC address 00-08-E5-6A-00-01
Remarks		—

3.3.7 Configuring VAC-S

@RBT		**Reboot**
Setting	Command	@RBT ↵
	Response	—
Parameter		—
Setting example	Command	@RBT ↵
	Response	—
	Description	Rebooting the VAC-S
Remarks		—

@GLS / @SLS		**Button security lockout**
Getting	Command	@GLS ↵
	Response	@GLS, lock ↵
Setting	Command	@SLS, lock ↵
	Response	@SLS, lock ↵
Parameter		lock: Front panel security lockout 0 = Unlocking [Default], 1 = Locking
Getting example	Command	@GLS ↵
	Response	@GLS,1 ↵
	Description	Getting the lock status Locked
Setting example	Command	@SLS,1 ↵
	Response	@SLS,1 ↵
	Description	Enabling the front panel security lockout Completed
Remarks		—

@GPW / @SPW		**Power saving**
Getting	Command	@GPW ↵
	Response	@GPW, mode ↵
Setting	Command	@SPW, mode ↵
	Response	@SPW, mode ↵
Parameter		mode: Power saving 0 = Disabled [Default], 1 = Enabled
Getting example	Command	@GPW ↵
	Response	@GPW,1 ↵
	Description	Getting power saving mode Enabled
Setting example	Command	@SPW,1 ↵
	Response	@SPW,1 ↵
	Description	Enabling power saving Completed
Remarks		—

VAC-S12U only

@CLR		**Initialization**
Setting	Command	@CLR, mode
	Response	-
Parameter		mode：Initialization target 0 = All settings,　1 = Settings other than communication settings
Setting example	Command	@CLR,0
	Response	-
	Description	Initializing all settings
Remarks		Reboots after initialization.

3.3.8 Status indication

<table>
<tr><td colspan="2">@GIS</td><td>Input signal status</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GIS, in, mode ↵</td></tr>
<tr><td>Response</td><td>@GIS, in, mode, status_1 (, status_2, status_3, status_4, status_5, status_6) ↵</td></tr>
<tr><td colspan="2" rowspan="4">Parameter</td><td>in: Input channel
“1” (fixed)</td></tr>
<tr><td>mode: Target status
0 = All statuses of input signals, 1 = Input mode/Input color depth,
2 = Input resolution/Vertical sync frequency, 3 = Input color space,
4 = Audio input type/Audio input sampling frequency,
5 = Presence of HDCP, 6 = Scrambling of input signal</td></tr>
<tr><td>status_1: Input mode/Input color depth

<table>
<tr><th>Input mode</th><th>Description</th></tr>
<tr><td>d</td><td>DVI signal, without HDCP</td></tr>
<tr><td>D</td><td>DVI signal, with HDCP</td></tr>
<tr><td>h</td><td>HDMI signal, without HDCP</td></tr>
<tr><td>H</td><td>HDMI signal, with HDCP</td></tr>
<tr><td>N</td><td>No signal is input.</td></tr>
</table>
<table>
<tr><th>Input color depth</th><th>Description</th></tr>
<tr><td>24</td><td>24 bit/pixel (8 bit/component)</td></tr>
<tr><td>30</td><td>30 bit/pixel (10 bit/component)</td></tr>
<tr><td>36</td><td>36 bit/pixel (12 bit/component)</td></tr>
</table>
</td></tr>
<tr><td>status_2: Input resolution/Vertical sync frequency

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>1920x1080p 59.94Hz</td><td>1080p@59.94</td></tr>
<tr><td>1600x1200p 60Hz</td><td>UXGA@60</td></tr>
<tr><td>NO SIGNAL</td><td>No signal is input.</td></tr>
</table>
</td></tr>
<tr><td>status_3: Input color space

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>RGB</td><td>RGB input</td></tr>
<tr><td>YCbCr 4:2:2</td><td>YCbCr 4:2:2 input</td></tr>
<tr><td>YCbCr 4:4:4</td><td>YCbCr 4:4:4 input</td></tr>
<tr><td>YCbCr 4:2:0</td><td>YCbCr 4:2:0 input</td></tr>
<tr><td>NO SIGNAL</td><td>No signal is input.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td>@GIS</td><td colspan="2">Input signal status (Cont’d)</td></tr>
<tr><td>Parameter</td><td colspan="2">status_4: Audio input type/Audio input sampling frequency

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>L-PCM 48kHz <SP>*</td><td>2-channel L PCM 48 kHz</td></tr>
<tr><td>L-PCM 48kHz M</td><td>Multi-channel LPCM 48 kHz</td></tr>
<tr><td>COMPRESSED AUDIO</td><td>Compressed audio</td></tr>
<tr><td>NO AUDIO</td><td>No audio is input</td></tr>
</table>
*<SP>: One-byte space</td></tr>
<tr><td></td><td colspan="2">status_5: Presence of HDCP

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>HDCP 1.4</td><td>HDCP 1.4 signal</td></tr>
<tr><td>HDCP 2.2</td><td>HDCP 2.2 no stream type or undefined signal is input</td></tr>
<tr><td>HDCP 2.2 Type0</td><td>HDCP 2.2 stream Type 0 signal</td></tr>
<tr><td>HDCP 2.2 Type1</td><td>HDCP 2.2 stream Type 1 signal</td></tr>
<tr><td>NO SIGNAL</td><td>No signal is input.</td></tr>
</table></td></tr>
<tr><td></td><td colspan="2">status_6: Scrambling of input signal

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>SCRAMBLE ON</td><td>Scrambled</td></tr>
<tr><td>SCRAMBLE OFF</td><td>Not scrambled</td></tr>
<tr><td>NO SIGNAL</td><td>No signal is input.</td></tr>
</table></td></tr>
<tr><td rowspan="2">Getting example</td><td>Command
Response</td><td>@GIS,1,0 ↵
@GIS,1,0,H24,1920x1080p 59.94Hz,YCbCr 4:4:4,L-PCM 48kHz M,HDCP 1.4,
SCRAMBLE OFF ↵</td></tr>
<tr><td>Description</td><td>Getting all input signal statuses
- Input mode : HDMI mode
- Input color depth : 24 bit/pixel (8 bit/component)
- Input resolution/Vertical sync frequency : 1080p@59.94
- Input color space : YCbCr 4:4:4
- Audio input type/Audio input sampling frequency : Multi-channel LPCM 48 kHz
- Presence of HDCP : HDCP 1.4
- Scrambling of input signal : Not scrambled</td></tr>
<tr><td>Remarks</td><td colspan="2">—</td></tr>
</table>

<table>
<tr><td colspan="2">@GOS</td><td>Output signal status (For each channel)</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GOS, out, mode ↵</td></tr>
<tr><td>Response</td><td>@GOS, out, mode, status_1 (, status_2, status_3, status_4, status_5, status_6, status_7, status_8) ↵</td></tr>
<tr><td colspan="2" rowspan="5">Parameter</td><td>out: Output channel
1 to 8 = OUT1 to OUT8</td></tr>
<tr><td>mode: Target status
0 = All statuses of sink device, 1 = HDCP of sink device,
2 = HDCP authentication between the VAC-S and sink device,
3 = HDCP output, 4 = HDMI/DVI output,
5 = Color space output, 6 = Color range output,
7 = Color depth output, 8 = Scrambling output</td></tr>
<tr><td>status_1: HDCP of sink device

<table><tr><th>Value</th><th>Description</th></tr><tr><td>HDCP 2.2 SUPPORT</td><td>Device with HDCP 2.2 is connected.</td></tr><tr><td>HDCP 1.4 SUPPORT</td><td>Device with HDCP 1.4 is connected.</td></tr><tr><td>HDCP NOT SUPPORT</td><td>Device without HDCP is connected.</td></tr><tr><td>HDCP NOT CHECK</td><td>HDCP of sink device is not checked.</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td>status_2: HDCP authentication between the VAC-S and sink device

<table><tr><th>Value</th><th>Description</th></tr><tr><td>HDCP OFF</td><td>Signal with HDCP is not input</td></tr><tr><td>HDCP OK</td><td>Authentication succeeded</td></tr><tr><td>HDCP ERROR</td><td>Authentication failed</td></tr><tr><td>HDCP CHECK NOW</td><td>Being encrypted</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td>status_3: HDCP output

<table><tr><th>Value</th><th>Description</th></tr><tr><td>HDCP NOT ENCRYPTED</td><td>No HDCP</td></tr><tr><td>HDCP 1.4</td><td>HDCP 1.4 output</td></tr><tr><td>HDCP 2.2 Type0</td><td>HDCP 2.2 Type 0 output</td></tr><tr><td>HDCP 2.2 Type1</td><td>HDCP 2.2 Type 1 output</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td>status_4: HDMI/DVI output

<table><tr><th>Value</th><th>Description</th></tr><tr><td>HDMI MODE</td><td>HDMI output</td></tr><tr><td>DVI MODE</td><td>DVI output</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
</table>

<table>
<tr><td>@GOS</td><td colspan="2">Output signal status (For each channel) (Cont’d)</td></tr>
<tr><td>Parameter</td><td colspan="2">status_5: Color space output

<table><tr><th>Value</th><th>Description</th></tr><tr><td>RGB</td><td>RGB output</td></tr><tr><td>YCbCr 4:2:2</td><td>YCbCr 4:2:2 output</td></tr><tr><td>YCbCr 4:2:0</td><td>YCbCr 4:2:0 output</td></tr><tr><td>YCbCr 4:4:4</td><td>YCbCr 4:4:4 output</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td></td><td colspan="2">status_6: Color range output

<table><tr><th>Value</th><th>Description</th></tr><tr><td>FULL RANGE</td><td>Full range output</td></tr><tr><td>LIMITED RANGE</td><td>Limited range output</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td></td><td colspan="2">status_7: Color depth output

<table><tr><th>Value</th><th>Description</th></tr><tr><td>24 BIT COLOR</td><td>24 bit/pixel (8 bit/component) output</td></tr><tr><td>30 BIT COLOR</td><td>30 bit/pixel (10 bit/component) output</td></tr><tr><td>36 BIT COLOR</td><td>36 bit/pixel (12 bit/component) output</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td></td><td colspan="2">status_8: Scrambling output

<table><tr><th>Value</th><th>Description</th></tr><tr><td>SCRAMBLE ON</td><td>Scrambled</td></tr><tr><td>SCRAMBLE OFF</td><td>Not scrambled</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td rowspan="2">Getting example</td><td>Command
Response</td><td>@GOS,1,0 ↵
@GOS,1,0,HDCP 1.4 SUPPORT,HDCP OK,HDCP 1.4,HDMI MODE,RGB,
FULL RANGE,24 BIT COLOR,SCRAMBLE OFF ↵</td></tr>
<tr><td>Description</td><td>Getting all statuses of OUT1 sink device
- HDCP : Device with HDCP 1.4 is connected.
- HDCP authentication : Completed
- HDCP output : HDCP 1.4 output
- HDMI/DVI output : HDMI output
- Color space output : RGB output
- Color range output : Full range output
- Color depth output : 24bit/pixel (8bit/component) output
- Scrambling output : OFF</td></tr>
<tr><td>Remarks</td><td colspan="2">—</td></tr>
</table>

<table>
<tr><td colspan="2">@GES</td><td>Sink device EDID (For each channel)</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GES, out, mode ↵</td></tr>
<tr><td>Response</td><td>@GES, out, mode, status_1 (, status_2, status_3, status_4, status_5, status_6, status_7) ↵</td></tr>
<tr><td colspan="2" rowspan="5">Parameter</td><td>out: Output channel
1 to 8 = OUT1 to OUT8</td></tr>
<tr><td>mode: Target status
0 = All EDID information of sink device,
1 = Sink device name,
2 = Resolution/Dot clock,
3 = HDMI support status/Color space/Color depth,
4 = Audio support status/Sampling frequency/Bit length/
The number of channels/Support status of compressed audio,
5 = SCDC,
6 = HDR,
7 = 3D</td></tr>
<tr><td>status_1: Sink device name
<table><tr><th>Value</th><th>Description</th></tr><tr><td>VAC-S18U</td><td>A sink device named “VAC-S18U” is connected.</td></tr><tr><td>EDID READ ERROR</td><td>Sink device EDID recall error</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td>status_2: Resolution/Dot clock
<table><tr><th>Value</th><th>Description</th></tr><tr><td>3840x2160 594.00MHz</td><td>A sink device supporting 3840x2160 (resolution) and 594.00 MHz (dot clock) is connected.</td></tr><tr><td>EDID READ ERROR</td><td>Sink device EDID recall error</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
<tr><td>status_3: HDMI support status/Color space/Color depth
<table><tr><th>Value</th><th>Description</th></tr><tr><td>DVI-RGB-24BIT COLOR</td><td>A sink device that does not support HDMI signal is connected.</td></tr><tr><td>HDMI-RGB/YCbCr422/YCbCr444-24/30BIT COLOR</td><td>A sink device supporting HDMI signal is connected. Supported sampling structure (RGB, YCbCr 4:2:2, YCbCr 4:4:4) and color depth (24, 30, 36) are returned.</td></tr><tr><td>EDID READ ERROR</td><td>Sink device EDID recall error</td></tr><tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr></table></td></tr>
</table>

<table>
<tr><th>@GES</th><th>Sink device EDID (For each channel) (Cont’d)</th></tr>
<tr><td>Parameter</td><td>
status_4: Audio support status/Sampling frequency/Bit length/
The number of channels/Support status of compressed audio
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>AUDIO NOT SUPPORT</td><td>A sink device that does not support audio signal is connected.</td></tr>
<tr><td>LINEAR PCM
-32/44.1/48kHz
-16/20/24BIT
-8CHANNEL</td><td>A sink devices supporting audio signal is connected. Supporting sampling frequency (32, 44.1, 48, 88.2, 96, 176.4, 192), the number of bits (16, 20, 24), the number of channels (1 to 8), and compressed audio support status are returned.</td></tr>
<tr><td>EDID READ ERROR</td><td>Sink device EDID recall error</td></tr>
<tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr>
</table>
status_5: SCDC
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>SCDC SUPPORT</td><td>SCDC supported.</td></tr>
<tr><td>SCDC NOT SUPPORT</td><td>SCDC is not supported.</td></tr>
<tr><td>EDID READ ERROR</td><td>Sink device EDID recall error</td></tr>
<tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr>
</table>
status_6: HDR
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>HDR SUPPORT</td><td>HDR supported.</td></tr>
<tr><td>HDR NOT SUPPORT</td><td>HDR is not supported.</td></tr>
<tr><td>EDID READ ERROR</td><td>Sink device EDID recall error</td></tr>
<tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr>
</table>
status_7: 3D
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>3D SUPPORT</td><td>3D supported.</td></tr>
<tr><td>3D NOT SUPPORT</td><td>3D is not supported.</td></tr>
<tr><td>EDID READ ERROR</td><td>Sink device EDID recall error</td></tr>
<tr><td>UNCONNECTED</td><td>Sink device is not connected.</td></tr>
</table>
</td></tr>
</table>

@GES		**Sink device EDID (For each channel) (Cont'd)**
Getting example	Command Response	@GES,1,0 ↵ @GES,1,0, VAC-S18U,3840x2160 594.00MHz, HDMI-RGB/YCbCr422/YCbCr444/YCbCr420-24/30/36BIT COLOR, LINEAR PCM-32/44.1/48kHz-16/20/24BIT-2CHANNEL,SCDC SUPPORT, HDR NOT SUPPORT,3D NOT SUPPORT ↵
	Description	Getting all EDID information of the sink device connected to OUT1 - Sink device name : VAC-S18U - Resolution : 3840x2160 - Dot clock : 594.00 MHz - HDMI : Supported - Color space : RGB/YCbCr 4:2:2/YCbCr 4:4:4/YCbCr 4:2:0 - Color depth : 24/30/36 BIT COLOR - Audio format : LINEAR PCM - Sampling frequency : 32/44.1/48 kHz - Bit length : 16/20/24 bit - The number of channels : 2-channel - SCDC : Supported - HDR : Not supported - 3D : Not supported
Remarks		

@GHC		**System status**
Getting	Command	@GHC ↵
	Response	@GHC, voltage, temp ↵
Parameter		voltage: Power supply voltage status 0 = Normal, 1 = Abnormal
		temp: Internal temperature status 0 = Normal, 1 = Abnormal
Getting example	Command Response	@GHC ↵ @GHC,0,0 ↵
	Description	Getting the system check result Normal
Remarks		—

@GPS		**Power supply voltage status**
Getting	Command	@GPS ↵
	Response	@GPS, voltage, status ↵
Parameter		voltage: Power voltage = Power voltage level x 1000 e.g.) 12.210 V: 12210
		status: Power voltage status 0 = Normal, 1 = Abnormal
Getting example	Command Response	@GPS ↵ @GPS,12210,0 ↵
	Description	Getting the power voltage and status Voltage: 12.210 V; status: Normal
Remarks		—

@GST		**Internal temperature status**
Getting	Command	@GST ↵
	Response	@GST, temp, status ↵
Parameter		temp: Internal temperature value The value of temperature x 100 e.g.) 38.75°C: 3875
		status: Internal temperature status 0 = Normal, 1 = Abnormal
Getting example	Command Response	@GST ↵ @GST,3425,0 ↵
	Description	Getting the internal temperature and status Temperature: 34.25°C; status: Normal
Remarks		—

@GIV		**Device information**
Getting	Command	@GIV ↵
	Response	@GIV, id, version, ↵
Parameter		id : Model number
		version : Firmware version
Getting example	Command Response	@GIV ↵ @GIV,VAC-S18U,01.00.00 ↵
	Description	Getting the product information Model number: VAC-S18U; Firmware version: 01.00.00
Remarks		—

3.3.9 Status notification

<table>
<tr><td colspan="2">@GPH / @SPH</td><td>Unsolicited notification interval</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GPH ↵</td></tr>
<tr><td>Response</td><td>@GPH, time ↵</td></tr>
<tr><td rowspan="2">Setting</td><td>Command</td><td>@SPH, time ↵</td></tr>
<tr><td>Response</td><td>@SPH, time ↵</td></tr>
<tr><td colspan="2">Parameter</td><td>time: Unsolicited notification interval
0 = OFF [Default],
1 to 50 = 100 (ms.) to 5000 (ms.)

<table>
<tr><th>time</th><th>ON/OFF</th><th>Interval</th><th></th><th>time</th><th>ON/OFF</th><th>Interval</th></tr>
<tr><td>0:</td><td>OFF</td><td>—</td><td></td><td>40:</td><td>ON</td><td>4000 (ms.)</td></tr>
<tr><td>1:</td><td>ON</td><td>100 (ms.)</td><td></td><td>41:</td><td>ON</td><td>4100 (ms.)</td></tr>
<tr><td>2:</td><td>ON</td><td>200 (ms.)</td><td></td><td>42:</td><td>ON</td><td>4200 (ms.)</td></tr>
<tr><td>3:</td><td>ON</td><td>300 (ms.)</td><td></td><td>43:</td><td>ON</td><td>4300 (ms.)</td></tr>
<tr><td>4:</td><td>ON</td><td>400 (ms.)</td><td></td><td>44:</td><td>ON</td><td>4400 (ms.)</td></tr>
<tr><td>5:</td><td>ON</td><td>500 (ms.)</td><td>to</td><td>45:</td><td>ON</td><td>4500 (ms.)</td></tr>
<tr><td>6:</td><td>ON</td><td>600 (ms.)</td><td></td><td>46:</td><td>ON</td><td>4600 (ms.)</td></tr>
<tr><td>7:</td><td>ON</td><td>700 (ms.)</td><td></td><td>47:</td><td>ON</td><td>4700 (ms.)</td></tr>
<tr><td>8:</td><td>ON</td><td>800 (ms.)</td><td></td><td>48:</td><td>ON</td><td>4800 (ms.)</td></tr>
<tr><td>9:</td><td>ON</td><td>900 (ms.)</td><td></td><td>49:</td><td>ON</td><td>4900 (ms.)</td></tr>
<tr><td>10:</td><td>ON</td><td>1000 (ms.)</td><td></td><td>50:</td><td>ON</td><td>5000 (ms.)</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">Getting example</td><td>Command
Response</td><td>@GPH ↵
@GPH,5 ↵</td></tr>
<tr><td>Description</td><td>Getting the unsolicited notification interval
500 (ms.)</td></tr>
<tr><td rowspan="2">Setting example</td><td>Command
Response</td><td>@SPH,5 ↵
@SPH,5 ↵</td></tr>
<tr><td>Description</td><td>Setting the unsolicited notification interval to 500 (ms.)
Completed</td></tr>
<tr><td colspan="2">Remarks</td><td>It is set no “0” (OFF) after powering off the VAC-S.</td></tr>
</table>

<table>
<tr><td colspan="2">@PSH</td><td>Unsolicited status notification</td></tr>
<tr><td>Getting</td><td>Response</td><td>@PSH, in,out, system ↵</td></tr>
<tr><td rowspan="3">Parameter</td><td colspan="2">in: Checking if input status changes
0 = Not change, 1 = Changes
<table>
<tr><td>Bit</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr>
<tr><td>In</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>IN</td></tr>
</table>
“1” appears for detected channel, the value is displayed in hex.</td></tr>
<tr><td colspan="2">out: Checking if output status changes
0 = Not change, 1 to FF = Changes
<table>
<tr><td>Bit</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr>
<tr><td>out</td><td>OUT8</td><td>OUT7</td><td>OUT6</td><td>OUT5</td><td>OUT4</td><td>OUT3</td><td>OUT2</td><td>OUT1</td></tr>
</table>
“1” appears for detected channel, the value is displayed in hex.</td></tr>
<tr><td colspan="2">system: Checking if system status changes
0 = Not change, 1 = Changes</td></tr>
<tr><td rowspan="2">Getting example</td><td>Response</td><td>@PSH,1,0,0 ↵</td></tr>
<tr><td>Description</td><td>Receiving status change information
- Input status : Changes
- Output status : No changes
- System status: No changes</td></tr>
<tr><td colspan="2">Remarks</td><td>Only if “@GPH / @SPH Unsolicited notification interval” is set, the VAC-S sends unsolicited command.</td></tr>
</table>

<table>
<tr><td colspan="2">@AIN</td><td>Input signal status (For each channel)</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@AIN, in ↵</td></tr>
<tr><td>Response</td><td>@AIN, status_1, status_2, status_3, status_4, status_5, status_6, status_7, status_8, status_9, status_10, status_11, status_12, status_13, status_14, status_15, status_16, status_17, status_18, status_19 ↵</td></tr>
<tr><td colspan="2" rowspan="8">Parameter</td><td>in: Input channel
“1” (fixed)</td></tr>
<tr><td>status_1: Input channel

<table><tr><th>Value</th><th>Description</th></tr><tr><td>1</td><td>“1” (fixed)</td></tr></table></td></tr>
<tr><td>status_2: Model number

<table><tr><th>Example</th><th>Description</th></tr><tr><td>VAC-S18U</td><td>Model number</td></tr></table></td></tr>
<tr><td>status_3: Version

<table><tr><th>Example</th><th>Description</th></tr><tr><td>01.00.00</td><td>Version</td></tr></table></td></tr>
<tr><td>status_4: The number of valid data

<table><tr><th>Value</th><th>Description</th></tr><tr><td>15</td><td>“15” (fixed)</td></tr></table></td></tr>
<tr><td>status_5: Reservation

<table><tr><th>Value</th><th>Description</th></tr><tr><td>1</td><td>“1” (fixed)</td></tr></table></td></tr>
<tr><td>status_6: Horizontal pixels of input video

<table><tr><th>Example</th><th>Description</th></tr><tr><td>0</td><td>No signal is input.</td></tr><tr><td>3840</td><td>3840 pixels</td></tr></table></td></tr>
<tr><td>status_7: Vertical pixels of input video

<table><tr><th>Example</th><th>Description</th></tr><tr><td>0</td><td>No signal is input.</td></tr><tr><td>2160</td><td>2160 lines</td></tr></table></td></tr>
</table>

@AIN	Input signal status (For each channel) (Cont'd)
Parameter	status_8: Vertical sync frequency of input video

Example	Description
0	No signal is input.
59.94	59.94 Hz

status_9: Progressive or interlace scan

Example	Description
1	0: No signal is input. 1: Progressive 2: Interlace

status_10: HDMI/DVI mode of input video

Example	Description
2	0: No signal is input. 1: DVI signal input 2: HDMI signal input

status_11: Color space of input video

Example	Description
3	0: No signal is input. 1: RGB input 2: YCbCr 4:2:2 input 3: YCbCr 4:4:4 input 4: YCbCr 4:2:0 input 255: Unknown

status_12: Color range of input video

Example	Description
1	0: No signal is input. 1: Limited range input 2: Full range input

status_13: Color depth of input video

Example	Description
1	0: No signal is input. 1: 24 bit/pixel (8 bit/component) 2: 30 bit/pixel (10 bit/component) 3: 36 bit/pixel (12 bit/component)

@AIN — **Input signal status (For each channel) (Cont'd)**

Parameter

status_14: Presence of +5 V

Example	Description
1	0: No +5 V signal is input. 1: +5 V signal is input.

status_15: Input signal encryption

Example	Description
3	0: No signal is input. 1: Without HDCP 2: HDCP 1.4 3: HDCP 2.2 Type 0 4: HDCP 2.2 Type 1

status_16: Audio input type

Example	Description
1	0: No signal is input. 1: LPCM 2: Compressed audio

status_17: Audio input sampling frequency

Example	Description
5	0: No signal is input. 1: 22.05 kHz 2: 24.0 kHz 3: 32 kHz 4: 44.1 kHz 5: 48 kHz 6: 88.2 kHz 7: 96 kHz 8: 176.4 kHz 9: 192 kHz 10: 768.0 kHz 255: Unknown

status_18: Audio input bit length

Example	Description
9	0: No signal is input. 1: 16 bit 2: 17 bit 3: 18 bit 4: 19 bit 5: 20 bit 6: 21 bit 7: 22 bit 8: 23 bit 9: 24 bit 255: Unknown

<table>
<tr><td colspan="2">@AIN</td><td>Input signal status (For each channel) (Cont’d)</td></tr>
<tr><td colspan="2">Parameter</td><td>status_19: Audio input HBR mode

<table><tr><th>Example</th><th>Description</th></tr><tr><td>1</td><td>0: No signal is input.
1: Non HBR mode
2: HBR mode</td></tr></table></td></tr>
<tr><td rowspan="2">Getting example</td><td>Command
Response</td><td>@AIN,1 ↵
@AIN,1,VAC-S18U,01.00.00,15,1,3840,2160,59.94,1,2,3,1,1,1,3,1,5,9,1 ↵</td></tr>
<tr><td>Description</td><td>Getting all statuses of IN input signal
- Input channel : 1
- Model number : VAC-S18U
- Version : 01.00.00
- The number of valid data : 15
- Reservation : 1
- Horizontal pixels of input video : 3840 pixels
- Vertical pixels of input video : 2160 lines
- Vertical sync frequency of input video : 59.94 Hz
- Progressive or interlace scan : Progressive
- HDMI/DVI mode of input video : HDMI signal input
- Color space of input video : YCbCr 4:4:4 input
- Color range of input video : Limited range input
- Color depth of input video : 24 bit/pixel (8 bit/component)
- Presence of +5 V : +5 V signal is input.
- Input signal encryption : HDCP 2.2 Type 0
- Audio input type : LPCM
- Audio input sampling frequency : 48 kHz
- Audio input bit length : 24 bit
- Audio input HBR mode : Non HBR mode</td></tr>
<tr><td colspan="2">Remarks</td><td>—</td></tr>
</table>

<table>
<tr><td colspan="2">@AOT</td><td>Output signal status (For each channel)</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@AOT,out ↵</td></tr>
<tr><td>Response</td><td>@AOT, status_1, status_2, status_3, status_4, status_5, status_6, status_7, status_8, status_9, status_10, status_11, status_12, status_13, status_14, status_15, status_16, status_17, status_18, status_19, status_20, status_21, status_22, status_23, status_24, status_25 ↵</td></tr>
<tr><td colspan="2" rowspan="6">Parameter</td><td>out: Output channel
1 to 8 = OUT1 to OUT8</td></tr>
<tr><td>status_1: Output channel
<table><tr><th>Example</th><th>Description</th></tr><tr><td>1</td><td>1: OUT1
2: OUT2
3: OUT3
4: OUT4
5: OUT5
6: OUT6
7: OUT7
8: OUT8</td></tr></table></td></tr>
<tr><td>status_2: Model number
<table><tr><th>Example</th><th>Description</th></tr><tr><td>VAC-S18U</td><td>Model number</td></tr></table></td></tr>
<tr><td>status_3: Version
<table><tr><th>Example</th><th>Description</th></tr><tr><td>01.00.00</td><td>Version</td></tr></table></td></tr>
<tr><td>status_4: The number of valid data
<table><tr><th>Value</th><th>Description</th></tr><tr><td>21</td><td>“21” (fixed)</td></tr></table></td></tr>
<tr><td>status_5: Reservation
<table><tr><th>Value</th><th>Description</th></tr><tr><td>1</td><td>“1” (fixed)</td></tr></table></td></tr>
<tr><td>status_6: Selected input
<table><tr><th>Value</th><th>Description</th></tr><tr><td>1</td><td>“1” (fixed)</td></tr></table></td></tr>
</table>

<table>
<tr><th>@AOT</th><th>Output signal status (For each channel) (Cont’d)</th></tr>
<tr><td>Parameter</td><td>
status_7: Horizontal pixels of output video
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>0</td><td>0: No signal is output.</td></tr>
<tr><td>3840</td><td>3840 pixels</td></tr>
</table>
status_8: Vertical pixels of output video
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>0</td><td>0: No signal is output.</td></tr>
<tr><td>2160</td><td>2160 lines</td></tr>
</table>
status_9: Vertical sync frequency of output video
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>0</td><td>0: No signal is output.</td></tr>
<tr><td>59.94</td><td>59.94 Hz</td></tr>
</table>
status_10: Progressive or interlace scan
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>1</td><td>0: No signal is output.
1: Progressive
2: Interlace</td></tr>
</table>
status_11: HDMI/DVI mode of output video
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>2</td><td>0: No signal is output.
1: DVI signal output
2: HDMI signal output</td></tr>
</table>
status_12: Color space of output video
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>3</td><td>0: No signal is output.
1: RGB output
2: YCbCr 4:2:2 output
3: YCbCr 4:4:4 output
4: YCbCr 4:2:0 output</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>@AOT</th><th>Output signal status (For each channel) (Cont’d)</th></tr>
<tr><td>Parameter</td><td>
status_13: Color range of output video
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>1</td><td>0: No signal is output.
1: Limited range output
2: Full range output</td></tr>
</table>
status_14: Color depth of output video
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>1</td><td>0: No signal is output.
1: 24 bit/pixel (8 bit/component)
2: 30 bit/pixel (10 bit/component)
3: 36 bit/pixel (12 bit/component)</td></tr>
</table>
status_15: Hot plug detection
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>1</td><td>0: Hot plug is detected.
1: No hot plug is detected.</td></tr>
</table>
status_16: HDCP authentication
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>4</td><td>0: No HDCP authentication
1: HDCP authentication starts
2: HDCP authentication starts
3: HDCP authentication starts
4: HDCP authentication completed
5: HDCP authentication failed</td></tr>
</table>
status_17: HDCP encryption
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>2</td><td>0: Without HDCP
1: HDCP 1.4
2: HDCP 2.2 Type 0
3: HDCP 2.2 Type 1</td></tr>
</table>
</td></tr>
</table>

@AOT — **Output signal status (For each channel) (Cont'd)**

Parameter

status_18: Audio output type

Example	Description
1	0: No signal is output. 1: LPCM 2: Compressed audio

status_19: Reading EDID

Example	Description
2	0: Not connected 1: Failed 2: Completed

status_20: HDMI/DVI mode (sink)

Example	Description
2	0: Not connected 1: DVI mode 2: HDMI mode (LPCM supported) 3: HDMI mode (Compressed audio supported)

status_21: Color space (sink)

Example	Description
15	0: Not connected 1 to 15: Color space supported

bit	7	6	5	4	3	2	1	0
Color	-	-	-	-	YCbCr 4:2:0	YCbCr 4:4:4	YCbCr 4:2:2	RGB

"1" appears for supported color space, the value is displayed in hex.

status_22: Color depth (sink)

Example	Description
1	0: Not connected 1: 24 bit/pixel (8 bit/component) 2: 30 bit/pixel (10 bit/component) 3: 36 bit/pixel (12 bit/component)

<table>
<tr><th>@AOT</th><th>Output signal status (For each channel) (Cont’d)</th></tr>
<tr><td>Parameter</td><td>status_23: HDCP (sink)

<table><tr><th>Example</th><th>Description</th></tr><tr><td>3</td><td>0: Not connected
1: HDCP is not supported.
2: HDCP 1.4 supported
3: HDCP 2.2 supported</td></tr></table>
status_24: SCDC (sink)

<table><tr><th>Example</th><th>Description</th></tr><tr><td>2</td><td>0: Not connected
1: SCDC is not supported.
2: SCDC supported</td></tr></table>
status_25: HDR (sink)

<table><tr><th>Example</th><th>Description</th></tr><tr><td>1</td><td>0: Not connected
1: HDR is not supported.
2: HDR supported</td></tr></table></td></tr>
</table>

@AOT		**Output signal status (For each channel) (Cont'd)**
Getting example	Command Response	@AOT,1 ↵ @AOT,1,VAC-S18U,01.00.00,21,1,1,3840,2160,59.94,1,2,3,1,1,1,4,2,1,2,2,15,1,3,2,1 ↵
	Description	Getting all statuses of OUT1 output signal - Output channel : OUT1 - Model number : VAC-S18U - Version : 01.00.00 - The number of valid data : 21 - Reservation : 1 - Selected input : 1 - Horizontal pixels of output video : 3840 pixels - Vertical pixels of output video : 2160 lines - Vertical sync frequency of output video : 59.94 Hz - Progressive or interlace scan : Progressive - HDMI/DVI mode of output video : HDMI signal output - Color space of output video : YCbCr 4:4:4 output - Color range of output video : Limited range output - Color depth of output video : 24 bit/pixel (8 bit/component) - Hot plug detection : Hot plug is detected. - HDCP authentication : HDCP authentication completed - HDCP encryption : HDCP 2.2 Type 0 - Audio output type : LPCM - Reading EDID : Completed - HDMI/DVI mode (sink) : HDMI mode (LPCM supported) - Color space (sink) : RGB, YCbCr 4:2:2, YCbCr 4:4:4, and YCbCr 4:2:0 supported - Color depth (sink) : 24 bit/pixel (8 bit/component) - HDCP (sink) : HDCP 2.2 supported - SCDC (sink) : SCDC supported - HDR (sink) : HDR is not supported.
Remarks		—

<table>
<tr><td colspan="2">@GAA</td><td>Alarm status</td></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GAA ↵</td></tr>
<tr><td>Response</td><td>@GAA, status_1, status_2, status_3, status_4, status_5 ↵</td></tr>
<tr><td colspan="2">Parameter</td><td>status_1: Model number

<table><tr><th>Example</th><th>Description</th></tr><tr><td>VAC-S18U</td><td>Model number</td></tr></table></td></tr>
<tr><td colspan="2"></td><td>status_2: Version

<table><tr><th>Example</th><th>Description</th></tr><tr><td>01.00.00</td><td>Version</td></tr></table></td></tr>
<tr><td colspan="2"></td><td>status_3: The number of valid data

<table><tr><th>Value</th><th>Description</th></tr><tr><td>2</td><td>“2” (fixed)</td></tr></table></td></tr>
<tr><td colspan="2"></td><td>status_4: Power voltage status

<table><tr><th>Example</th><th>Description</th></tr><tr><td>0</td><td>0: Normal
1: Abnormal</td></tr></table></td></tr>
<tr><td colspan="2"></td><td>status_5: Internal temperature status

<table><tr><th>Example</th><th>Description</th></tr><tr><td>0</td><td>0: Normal
1: Abnormal</td></tr></table></td></tr>
<tr><td rowspan="2">Getting example</td><td>Command
Response</td><td>@GAA ↵
@GAA,VAC-S18U,01.00.00,2,0,0 ↵</td></tr>
<tr><td>Description</td><td>Getting alarm status of the VAC-S
- Model number : VAC-S18U
- Version : 01.00.00
- The number of valid data : 2
- Power voltage status : Normal
- Internal temperature status: Normal</td></tr>
<tr><td colspan="2">Remarks</td><td>—</td></tr>
</table>

User Guide (Command Guide) of VAC-S Series

Ver.2.0.0

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