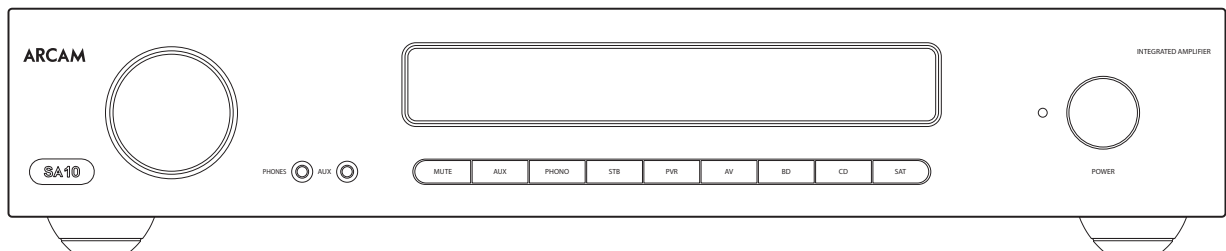


ARCAM

Custom Installation Notes

IP/Serial programming interface and
IR remote control commands for the
SA10/SA20 integrated amplifier



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Applicability

This document applies to the Arcam SA10/SA20 integrated amplifiers.

Revision history

Issue A.0:	Initial revision
Issue B.0:	Correction to 0x58

Controlling via RS232/NET

Introduction

This document describes the remote control protocol for controlling via the RS232/NET interface.

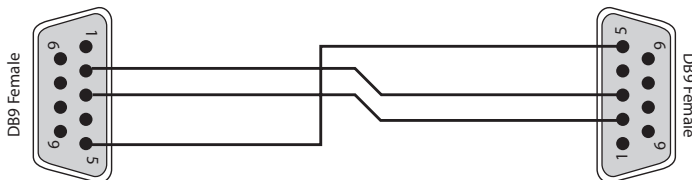
Set-up

IP control is via port 50000 of the IP address of the unit.

Conventions

- All hexadecimal numbers begin 0x.
- Any character in single quotes gives the ASCII equivalent of a hex value.
- <n> represents an unknown or variable number.

Serial cable specification



The cable is wired as a null modem:

Connector 1 pin	Connector 2 pin	Function
2	3	Rx ← Tx
3	2	Tx → Rx
5	5	RS232 Ground

Data transfer format

- Transfer rate: 38,400bps
- Data format: 8 data bits, 1 stop bit, no parity, no flow control.

Command and response formats

Communication between the remote controller (RC) and the SA10/SA20 takes the form of sequences of bytes, with all commands and responses having the same basic format. The SA10/SA20 shall always respond to a received command, but may also send messages at other times.

Each transmission by the RC has the following format:

- <St> <Zn> <Cc> <DI> <Data> <Et>
- St (Start transmission): 0x21 '!'
 - Zn (Zone number): see below
 - Cc (Command code): the code for the command
 - DI (Data length): the number of data items following this item, excluding the Et
 - Data: the parameters for the command
 - Et (End transmission): 0x0D

Each response by the SA10/SA20 has the following format:

- <St> <Zn> <Cc> <Ac> <DI> <Data> <Et>
- St (Start transmission): 0x21 '!'
 - Zn (Zone number): see "Zone numbers", below
 - Cc (Command code): the code for the command
 - Ac (Answer code): see "Answer codes", below
 - DI (Data Length): the number of data items following this item, excluding the Et
 - Data: the parameters for the response of length n (note that n is limited to 255)
 - Et (End transmission): 0x0D

The SA10/SA20 responds to each command from the RC within three seconds. The RC may send further commands before a previous command response has been received.

Zone numbers

The following zone numbers are defined:

- 0x01 – Zone number 1. (Zone 1 is the master zone. Commands that appear zone-less refer to the master zone)
- 0x02 – Zone number 2

Answer codes

The following answer codes are defined:

- 0x00 – Status update.
- 0x82 – Zone Invalid.
- 0x83 – Command not recognised.
- 0x84 – Parameter not recognised.
- 0x85 – Command invalid at this time (see **NOTE** below)
- 0x86 – Invalid data length.

NOTE: Certain commands cannot be processed when the Setup Menu is being displayed. An answer code of 0x85 will be returned in these circumstances. Also, commands for tuner control cannot be processed when the tuner input is not selected, etc.

State changes as a result of other inputs

It is possible that the state of the SA10/SA20 may be changed as a result of user input via front panel or remote. Any change resulting from these inputs is relayed to the RC using the appropriate message type.

Reserved Commands

Commands 0xF0 to 0xFF (inclusive) are reserved for test functions and should never be used.

Example command and response sequence

As an example, the command to simulate the RC5 command “16-16” (increase volume):

St	Zn	Cc	DI	Data 1	Data 2	Et
0x21	0x01	0x08	0x02	0x10	0x10	0x0D

Assuming that the command was accepted by the SA10/SA20 and is being processed, the SA10/SA20 responds to this command with the following sequence:

St	Zn	Cc	Ac	DI	Data 1	Data 2	Et
0x21	0x01	0x08	0x00	0x02	0x10	0x10	0x0D

AMX Duet™ support

The SA10/SA20 shall be fully compatible with AMX Duet™ Dynamic Device Discovery Protocol (DDDP). The following description of Dynamic Device Discovery comes from the AMX website (www.amx.com). Dynamic Device Discovery is part of AMX's Duet™ platform, which combines the proven reliability and power of NetLinX® with the extensive capabilities of the Java 2 Micro Edition (J2ME) platform. When integrating a serial or IP device from a manufacturer embedding the Dynamic Device Discovery Protocol (DDDP), Duet recognizes the device and loads the appropriate Duet module, which automatically installs the new device. AMX's NetLinX Master can then find and install the Duet device module either from a library on the master, from AMX's web site, or from the manufacturer's web site. Duet also allows for device swapping so that programming changes are not required when devices with DDDP are removed or replaced – a huge benefit for end users. The Duet platform is an extension AMX's InConcert® manufacturer partner program, which was developed to ensure seamless communication between partners' devices and the AMX control system.

Data is specified in the ASCII format. All ASCII characters between the quotes "" should be recognised/transmitted. "\r" is a carriage return (0x0D).

Command: "AMX\r"

Response: "AMXB<Device-SDKClass=Amplifier><Device-Make=ARCAM><Device-Model=SA10><Device-Revision=x.y.z>\r"

Response: "AMXB<Device-SDKClass=Amplifier><Device-Make=ARCAM><Device-Model=SA20><Device-Revision=x.y.z>\r"

Where,

x.y.z = RS232 protocol version number.

System Command Specifications

Power (0x00)

Set/request the stand-by state of a zone.

Example

Command/response sequence to request the power state of the unit where the unit has power on:

Command: 0x21 0x01 0x00 0x01 0xF0 0x0D
 Response: 0x21 0x01 0x00 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x00
DI	0x01
Data	0x00 – Power off 0x01 – Power on 0x02 – Power toggle 0xF0 – Request power state
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x00
Ac	Answer code
DI	0x01
Data	0x00 – Zone is in standby 0x01 – Zone is powered on
Et	0x0D

Display brightness (0x01)

Set/request the brightness of the front panel display.

Example

Command/response sequence for requesting the brightness of the display where the display is off:

Command: 0x21 0x01 0x01 0x01 0xF0 0x0D
 Response: 0x21 0x01 0x01 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x01
DI	0x01
Data	0x00 – Set brightness to off 0x01 – Set brightness to dim 0x02 – Set brightness to full 0xF0 – Request display brightness
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x01
Ac	Answer code
DI	0x01
Data	0x00 – Display brightness is off 0x01 – Display brightness is dim 0x02 – Display brightness is full
Et	0x0D

Headphones (0x02)

Determine whether headphones are connected.

Example

Command/response sequence to request the headphone status where the headphones are not connected:

Command: 0x21 0x01 0x02 0x01 0xF0 0x0D
Response: 0x21 0x01 0x02 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x02
Dl	0x01
Data	0xF0 – Request current headphone connection status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x02
Ac	Answer code
Dl	0x01 (Data length)
Data	0x00 – Headphones are not connected. 0x01 – Headphones are connected
Et	0x0D

Software version (0x04)

Request the firmware version

Example

Command/response sequence, where the response is HOST version 1.2:

Command: 0x21 0x01 0x04 0x01 0xF0 0x0D
Response: 0x21 0x01 0x04 0x00 0x02 0x01 0x02 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x04
Dl	0x01
Data	0xF0 – request software version
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x04
Ac	Answer code
Dl	0x02
Data1	0x?? – major version number
Data2	0x?? – minor version number
Et	0x0D

Factory reset (0x05)

This command resets the unit to factory defaults.

Example

Command/response sequence for resetting the unit to factory defaults:

Command: 0x21 0x01 0x05 0x02 0xAA 0xAA 0x0D

Response: 0x21 0x01 0x05 0x00 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x05
Dl	0x02
Data1	0xAA (Confirmation data pattern to avoid accidental restore)
Data2	0xAA (Confirmation data pattern to avoid accidental restore)
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x05
Ac	Answer code
Dl	0x00
Et	0x0D

Simulate RC5 IR command (0x08)

Simulate an RC5 command via the RS232 port. An additional status message will be sent in most cases as a result of the IR command.

Example

Command/response sequence to RC5 16-17 (volume down):

Command: 0x21 0x01 0x08 0x02 0x10 0x11 0x0D

Response: 0x21 0x01 0x08 0x00 0x02 0x10 0x11 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x08
Dl	0x02
Data1	RC5 System code
Data2	RC5 Command code
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x08
Ac	Answer code
Dl	0x02
Data1	RC5 System code
Data2	RC5 Command code
Et	0x0D

Volume (0x0D)

Set or request the volume of a zone.

This command returns the volume even if the zone requested is in mute. The "Request Mute status" command can be used to discover if the zone is muted.

Response data format:

e.g. for volume 45dB: Data=0x2D (45)

Example

Command/response sequence for setting the volume in Zone 1 to 45dB:

Command: 0x21 0x01 0x0D 0x01 0x2D 0x0D

Response: 0x21 0x01 0x0D 0x00 0x01 0x2D 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0D
DI	0x01
Data	0x00 (0) – 0x63 (99) – Set the volume 0xF0 – Request the current volume 0xF1 – Increment volume by 1 step 0xF2 – Decrement volume by 1 step
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0D
Ac	Answer code
DI	0x01
Data	Zone volume, integer value: 0x00 (0) – 0x63 (99)
Et	0x0D

Mute/unmute (0x0E)

Set/Request the mute status of the output.

Example

Command/response sequence for requesting the mute status of output where the result is unmuted:

Command: 0x21 0x01 0x0E 0x01 0xF0 0x0D

Response: 0x21 0x01 0x0E 0x00 0x01 0x02 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0E
DI	0x01
Data	0x00 – Mute 0x01 – Unmute 0x02 – Mute toggle 0xF0 – Request mute status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0E
Ac	Answer code
DI	0x01
Data	0x00 – Muted 0x01 – Unmuted
Et	0x0D

Current input source (0x1D)

Set/request the current input source.

Example

Command/response sequence to request the current source for Zone 1 where the source is set to 'PVR' and set to processor mode:

Command: 0x21 0x01 0x1D 0x01 0xF0 0x0D

Response: 0x21 0x01 0x1D 0x00 0x01 0x13 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1D
DI	0x01
Data	0x01 – Phono 0x02 – AUX 0x03 – PVR 0x04 – AV 0x05 – STB 0x06 – CD 0x07 – BD 0x08 – SAT 0xF0
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1D
Ac	Answer code
DI	0x02
Data	The current source in the indicated zone: 0x01 – Phono 0x(N)2 – AUX 0x(N)3 – PVR 0x(N)4 – AV 0x(N)5 – STB 0x(N)6 – CD 0x(N)7 – BD 0x(N)8 – SAT N = 0 indicates source is normal mode N = 1 indicates source is set to processor (fixed gain) mode
Et	0x0D

Headphone override (0x1F)

Activate/deactivate the mute relays (does not zero the volume).

Example

Command/response sequence to activate the mute relays:

Command: 0x21 0x01 0x1F 0x01 0x01 0x0D

Response: 0x21 0x01 0x1F 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1F
DI	0x01
Data	0x00 – Headphone/Over-ride Clear (speakers muted if headphones present) 0x01 – Headphone/Over-ride Set (speakers unmuted if headphones present) 0xF0 - Request Headphone/Over-ride status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1F
Ac	Answer code
DI	0x01
Data	Relay state
Et	0x0D

Heartbeat (0x25)

Heartbeat command to check unit is still connected and communicating - also resets the EuP standby timer.

Example

Command/response to sending a heartbeat command:

Command: 0x21 0x01 0x25 0x01 0xF0 0x0D
Response: 0x21 0x01 0x25 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x25
DI	0x01
Data	0xF0 – Heartbeat
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x25
Ac	Answer code
DI	0x01
Data	0x00 – Response
Et	0x0D

Reboot (0x26)

Forces a reboot of the unit.

Example

Command/response to sending a reboot command:

Command: 0x21 0x01 0x26 0x06 0x52 0x45 0x42 0x4F
0x4F 0x54 0x0D
Response: 0x21 0x01 0x26 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x26
DI	0x06
Data1	0x52
Data2	0x45
Data3	0x42
Data4	0x4F
Data5	0x4F
Data6	0x54
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x26
Ac	Answer code
DI	0x01
Data	0x00 – Response
Et	0x0D

Balance (0x3B)

Adjust the balance control.

Example

Command/response sequence to set the balance 3dB to the left:

Command: 0x21 0x01 0x3B 0x01 0x83 0x0D

Response: 0x21 0x01 0x3B 0x00 0x01 0x83 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x3B
Dl	0x01
Data	0x00 – Set the balance to the centre 0x01 – 0x0C – Set the balance to the right 1, 2, ..., 11, 12 0x81 – 0x8C – Set the balance to the left 1, 2, ..., 11, 12 0xF0 – Request current balance 0xF1 – Move the balance right by 1dB 0xF2 – Move the balance left by 1dB
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x3B
Ac	Answer code
Dl	0x01
Data	0x00 – Balance is Centred 0x00 – 0x0C – Balance is Right 1, 2, ..., 11, 12 0x81 – 0x8C – Balance is Left 1, 2, ..., 11, 12
Et	0x0D

Incoming audio sample rate (0x44)

Request the incoming audio sample rate.

Example

Command/response sequence to request the incoming audio sample rate, where the rate is 48kHz:

Command: 0x21 0x01 0x44 0x01 0xF0 0x0D

Response: 0x21 0x01 0x44 0x00 0x01 0x02 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x44
Dl	0x01
Data	0xF0 – Request incoming audio sample rate
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x44
Ac	Answer code
Dl	0x01
Data	Incoming audio sample rate: 0x00 – 32 kHz 0x01 – 44.1 kHz 0x02 – 48 kHz 0x03 – 88.2 kHz 0x04 – 96 kHz 0x05 – 176.4 kHz 0x06 – 192 kHz 0x07 – Unknown 0x08 – Undetected
Et	0x0D

DC offset (0x51)

Request the output DC offset status.

Example

Command/response sequence for requesting the DC offset status where the result is no DC offset:

Command: 0x21 0x01 0x51 0x01 0xF0 0x0D
Response: 0x21 0x01 0x51 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x51
DI	0x01
Data	0xF0 – Request DC offset status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x51
Ac	Answer code
DI	0x01
Data	0x00 - OK 0x01 - DC offset detected
Et	0x0D

Short circuit status (0x52) (SA20 only)

Request the output short circuit status.

Example

Command/response sequence for requesting the short circuit status, where the result is no short circuit:

Command: 0x21 0x01 0x52 0x01 0xF0 0x0D
Response: 0x21 0x01 0x52 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x52
DI	0x01
Data	0xF0 – Request short circuit status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x52
Ac	Answer code
DI	0x01
Data	0x00 - No short circuit detected 0x01 - One of the channels has short circuit fault
Et	0x0D

Friendly name (0x53)

This command returns the friendly name of the unit. It can also be used to set the unit name.

Example

Command/response sequence for setting the unit name to "SA20":

Command: 0x21 0x01 0x53 0x04 0x53 0x41 0x33 0x30 0x0D
Response: 0x21 0x01 0x53 0x00 0x04 0x53 0x41 0x32 0x30 0x0D

Note

Only upper case characters [A...Z], numbers [0...9] and space are allowed

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x53
Dl	0x01 (query) or <n> (limited to 10 characters) for setting name
Data	0xF0 – query <n> Name in ASCII characters
Et	0x0D

RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x53
Ac	Answer code
Dl	Data length – <n> if setting (10 characters maximum) 0x0A if requesting the name
Data1 - Data <n>	Name in ASCII characters
Et	0x0D

IP address (0x54)

This command sets or requests the IP address of the unit. This command will also set DHCP to OFF.

Example 1

Command/response sequence for setting an IP address of 192.168.1.4:

Command: 0x21 0x01 0x54 0x04 0xC0 0xA8 0x01 0x04 0x0D
Response: 0x21 0x01 0x54 0x00 0x04 0xC0 0xA8 0x01 0x04 0x0D

Example 2

Command/response for requesting the IP address of the unit, where the IP address is 192.168.1.4:

Command: 0x21 0x01 0x54 0x01 0xF0 0x0D
Response: 0x21 0x01 0x54 0x00 0x04 0xC0 0xA8 0x01 0x04 0x0D

NOTE:

To set DHCP to ON, set the unit's IP address to 0.0.0.0

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x54
Dl	0x01 (Query) or 0x04 (Set)
Data1	0xF0 (Query) or 0x?? (Set first byte of the IP address)
Data2	0x?? (Set second byte of the IP address)
Data3	0x?? (Set third byte of the IP address)
Data4	0x?? (Set fourth byte of the IP address)
Et	0x0D

RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x54
Ac	Answer code
Dl	0x04
Data1	0x?? (First byte of the IP address)
Data2	0x?? (Second byte of the IP address)
Data3	0x?? (Third byte of the IP address)
Data4	0x?? (Fourth byte of the IP address)
Et	0x0D

Timeout counter (0x55)

This command requests the time left (in minutes) until unit enters auto standby.

Example

Command/response sequence for requesting the time left until timeout:

Command: 0x21 0x01 0x55 0x01 0xF0 0x0D

Response: 0x21 0x01 0x55 0x00 0x02 0x00 0xF0 0x0D

In this example, the timeout value is 0x00B4, which translates to 180 minutes (i.e. 3 hours). The range of the value returned is from 0x0000 - 0x00F0 (0 - 240 minutes)

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x55
Dl	0x01
Data	0xF0
Et	0x0D

RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x55
Ac	Answer code
Dl	0x02
Data1	0x00 (First byte of timeout counter, value is fixed)
Data2	0x00 - 0xF0 (Second byte timeout counter)
Et	0x0D

Lifter temperature (0x56) (SA20 Only)

Request the temperature of the lifter.

Example

Command/response sequence for requesting the temperature of the lifter where the result is 75degC:

Command: 0x21 0x01 0x56 0x01 0xF0 0x0D

Response: 0x21 0x01 0x56 0x00 0x01 0x4B 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x56
Dl	0x01
Data	0xF0 - Request lifter temperature
Et	0x0D

RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x56
Ac	Answer code
Dl	0x01
Data	0x?? - Temperature in deg C in hex, e.g. 75degC = 4B
Et	0x0D

Output temperature (0x57)

Request the temperature of the output stage.

Example

Command/response sequence for requesting the temperature of the output where the result is 75 degC:

Command: 0x21 0x01 0x57 0x01 0xF0 0x0D
 Response: 0x21 0x01 0x57 0x00 0x01 0x4B 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x57
DI	0x01
Data	0xF0 – Request output temperature
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x57
Ac	Answer code
DI	0x01
Data	0x?? – Temperature in deg C in hex, e.g. 75degC = 4B
Et	0x0D

Auto shutdown control (0x58)

Enable or disable the signal sense auto shutdown feature

Example 1

Command/response sequence, the signal sense auto shutdown timeout has been set to 60 minutes:

Command: 0x21 0x01 0x58 0x01 0x02 0x0D
 Response: 0x21 0x01 0x58 0x00 0x01 0x02 0x0D

Example 2

Command/response sequence, the signal sense auto shutdown has been disabled:

Command: 0x21 0x01 0x58 0x01 0x00 0x0D
 Response: 0x21 0x01 0x58 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x58
DI	0x01
Data	0x00 – Disable (Default) 0x01 – 30 min 0x02 – 1 hour 0x03 – 2 hours 0x04 – 4 hours 0xF0 – Request timeout status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x58
Ac	Answer code
DI	0x01
Data	0x01 – 30 min 0x02 – 1 hour 0x03 – 2 hours 0x04 – 4 hours
Et	0x0D

Input detect (0x5A)

Request the status of the active input.

Example

Command/response sequence where audio input is present.

Command: 0x21 0x01 0x5A 0x01 0xF0 0x0D

Response: 0x21 0x01 0x5A 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5A
DI	0x01
Data	0xF0 - Request input status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5A
Ac	Answer code
DI	0x01
Data	0x00 - Input not present 0x01 - Input present
Et	0x0D

Processor mode input (0x5B)

Enable processor mode on a certain input or disable processor mode.

Example

Enable processor mode on the CD input:

Command: 0x21 0x01 0x5B 0x01 0x06 0x0D

Response: 0x21 0x01 0x5B 0x00 0x01 0x06 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5B
DI	0x01
Data	0x00 - Disable (Default) 0x02 - Aux 0x03 - PVR 0x04 - AV 0x05 - STB 0x06 - CD 0x07 - BD 0x08 - SAT 0xF0 - Query processor mode status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5B
Ac	Answer code
DI	0x01
Data	0x00 - Disabled 0x01 - Phono 0x02 - Aux 0x03 - PVR 0x04 - AV 0x05 - STB 0x06 - CD 0x07 - BD 0x08 - SAT
Et	0x0D

Processor mode volume (0x5C)

Set the processor mode volume

Example

Command/response sequence to set the processor mode volume to 45 (0x2D).

Command: 0x21 0x01 0x5C 0x01 0x2D 0x0D
Response: 0x21 0x01 0x5C 0x00 0x01 0x2D 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5C
DI	0x01
Data	0x00 (0) – 0x63 (99) – Set the volume 0xF0 – Request the current volume
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5C
Ac	Answer code
DI	0x01
Data	0x00 (0)– 0x63 (99)
Et	0x0D

System status (0x5D)

Request the system status.

Example

Command/response sequence to request the system status.

Command: 0x21 0x01 0x5D 0x01 0xF0 0x0D
Response: 0x21 0x01 0x5D 0x00 0x01 0xF0 0x0D

Note:

This command will return the following information about the system:

- Power state
- Brightness level
- Headphone status
- Software version
- Model Number
- Volume setting
- Mute status
- Current input source
- Headphone override status
- Balance setting
- Sample rate
- Network name
- IP address
- Timeout counter value
- Lifter temperature (SA20 only)
- Output temperature
- Auto shutdown status
- Input detect status
- Processor mode input
- Processor mode volume
- DC offset status
- Short circuit status (SA20 only)
- DAC Filter

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5D
DI	0x01
Data	0xF0 – Request the system
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5D
Ac	Answer code
DI	0x01
Data	0xF0 - System status sent
Et	0x0D

System model (0x5E)

Request the system model.

Example

Command/response sequence to request the system model, where the model is SA10.

Command: 0x21 0x01 0x5E 0x01 0xF0 0x0D
 Response: 0x21 0x01 0x5E 0x00 0x04 0x53 0x41 0x31 0x30 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5E
DI	0x01
Data	0xF0 – Request the system model
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x5E
Ac	Answer code
DI	0x04
Data	System model in ASCII characters
Et	0x0D

DAC Filter (0x61)

Sets or requests the DAC filter

Example

Command/response sequence to request the DAC filter where response is Linear Phase Fast Roll Off

Command: 0x21 0x01 0x61 0x01 0xF0 0x0D
 Response: 0x21 0x01 0x61 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x61
DI	0x01
Data	0x00 - Linear Phase Fast Roll Off 0x01 - Linear Phase Slow Roll Off 0x02 - Minimum Phase Fast Roll Off 0x03 - Minimum Phase Slow Roll Off (SA20 only) 0x04 - Brick Wall (SA20 only) 0x05 - Corrected Phase Fast Roll Off (SA20 only) 0x06 - Apodizing (SA20 only) 0xF0 - Request the current filter
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x61
Ac	Answer code
DI	0x01
Data	0x00 - Linear Phase Fast Roll Off 0x01 - Linear Phase Slow Roll Off 0x02 - Minimum Phase Fast Roll Off 0x03 - Minimum Phase Slow Roll Off (SA20 only) 0x04 - Brick Wall (SA20 only) 0x05 - Corrected Phase Fast Roll Off (SA20 only) 0x06 - Apodizing (SA20 only)
Et	0x0D

RC5 Command Codes

These codes are recognised as infra-red signals received by the front panel and as control data using the “Simulate RC5 IR command (0x08)” on page 7.

Basic Functions

These RC5 codes are present on the supplied IR remote control and provide control over basic amplifier functions.

Function	RC5 code [system-command]	RC5 code (Data1 - Data2)
	Decimal	Hexadecimal
Standby	16-12	0x10 - 0x0C
Disp	16-59	0x10 - 0x3B
Mute	16-13	0x10 - 0x0D
Increase volume (+)	16-16	0x10 - 0x10
Decrease volume (-)	16-17	0x10 - 0x11
Balance left	16-38	0x10 - 0x26
Balance right	16-40	0x10 - 0x28
PHONO	16-117	0x10 - 0x75
CD	16-118	0x10 - 0x76
BD	16-98	0x10 - 0x62
SAT	16-27	0x10 - 0x1B
PVR	16-96	0x10 - 0x60
AV	16-94	0x10 - 0x5E
AUX	16-99	0x10 - 0x63
STB	16-100	0x10 - 0x64

Advanced Functions

These RC5 codes are not present on the supplied remote control but have been created for custom install use. In order for the amp to respond to these codes they must be transmitted from a programmable IR remote control or over the control link using the ‘Simulate RC5 IR Command’ (0x08).

Function	RC5 Code [system-command]	RC5 Code (Data1 - Data2)
	Decimal	Hexadecimal
Power On	16-123	0x10 - 0x7B
Power Off	16-124	0x10 - 0x7C
Mute On	16-26	0x10 - 0x1A
Mute Off	16-120	0x10 - 0x78
Display Off	16-31	0x10 - 0x1F
Display L1	16-34	0x10 - 0x22
Display L2	16-35	0x10 - 0x23
Back (return)	16-51	0x10 - 0x33
Home	16-43	0x10 - 0x2B
Menu (Enter system menu)	16-82	0x10 - 0x52
Navigate Up	16-86	0x10 - 0x56
Navigate Left	16-81	0x10 - 0x51
OK	16-87	0x10 - 0x57
Navigate Right	16-80	0x10 - 0x50
Navigate Down	16-85	0x10 - 0x55

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