API Documentation
S-Series Amplifiers

Version 1.2

01.03.2024

SEEBURG
acoustic line

1 Content

2 Introduction

The objective of this document is to be a guide to the “third-party” user when communicating with an amplifier via an Ethernet connection.

3 Communication

TCP is the protocol used for communicating a controller device with the amplifiers on an Ethernet network. Each amplifier is assigned a unique IP address on the local network they will be installed.

All Ethernet-controllable amplifiers leave our factory configured to receive a dynamic IP through a DHCP server. If this server is not present, an auto IP will be assigned using the APIPA protocol. In any case, a manual IP can be configured.

In order to be able to communicate with any of these amplifiers, it is necessary to send the data to the IP mentioned above on the TCP port 1001. In the same way, all amplifiers will respond to the pre-selected IP control (selected by means of a command that will be later referred to).

On the other hand, the Controller must read the incoming TCP packet and extract the IP address that sends this data.

4 Data type

In the communication between an amplifier and a controller, two types of data are found: the monitoring parameters (with which we can obtain the value of parameters like the output tension, the temperature, etc) and the control commands (with which we can modify the value of certain amplifier’s parameters like the output level or its power-on state). This communication is made by means of data packets, which structure will be explained next.

5 Monitoring Parameters

In parameter monitoring, different data is obtained from the amplifier continuously.
This monitoring can be activated or deactivated at the user's request.
This is a UDP communication.

5.1.1 UDP receive header (when monitor communication is activated)

Byte	Code	Description
0	0x49	
1	0x50	
2	0x41	
3	0x44	
4	0x01	API Version
5	0x01	API Version
6	0x00	Message ID Size LSB (0x000000FF)
7	0x00	Message ID (0x0000FF00) » 8
8	0x00	Message ID (0x00FF0000) » 16
9	0x00	Message ID MSB (0xFF0000) » 24
10	0x09	Monitor
11	0x00	
12	0x73	Params Size LSB (0x000000FF)
13	0x00	Params Size MSB (0x0000FF00) » 8
14	0x00	
15	0x00	

The Data is received in the following order:

Byte	N^0 Bytes	Description
16	1	Device input channels
17	1	Device output channels
Input Vumeter		
18	2	Vumeter Correction (LSB Value: 0x00FF + MSB Value: 0xFF00)
20	2	CH1 vumeter value (LSB Value: 0x00FF + MSB Value: 0xFF00)
22	2	CH2 vumeter value (LSB Value: 0x00FF + MSB Value: 0xFF00)
24	2	CH3 vumeter value (LSB Value: 0x00FF + MSB Value: 0xFF00)
26	2	CH4 vumeter value (LSB Value: 0x00FF + MSB Value: 0xFF00)
Output Vumeter		
28	2	Vumeter Correction (LSB Value: 0x00FF + MSB Value: 0xFF00)
30	2	CH1 vumeter before dynamics value (LSB Value: 0x00FF + MSB Value: 0xFF00)
32	2	CH1 vumeter after dynamics value (LSB Value: 0x00FF + MSB Value: 0xFF00)
34	2	CH2 vumeter before dynamics value (LSB Value: 0x00FF + MSB Value: 0xFF00)
36	2	CH2 vumeter before dynamics value (LSB Value: 0x00FF + MSB Value: 0xFF00)
38	2	CH3 vumeter before dynamics value (LSB Value: 0x00FF + MSB Value: 0xFF00)
40	2	CH3 vumeter before dynamics value (LSB Value: 0x00FF + MSB Value: 0xFF00)
42	2	CH4 vumeter before dynamics value (LSB Value: 0x00FF + MSB Value: 0xFF00)
44	2	CH4 vumeter before dynamics value (LSB Value: 0x00FF + MSB Value: 0xFF00)

Byte	N^0 Bytes	Description
*Analogue Levels		
46	1	CH1 Volts sensor calibration Value
47	2	CH1 Volts Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
49	1	CH2 Volts sensor calibration Value
50	2	CH2 Volts Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
52	1	CH3 Volts sensor calibration Value
53	2	CH3 Volts Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
55	1	CH4 Volts sensor calibration Value
56	2	CH4 Volts Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
58	2	CH1 Current sensor calibration Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
60	2	CH1 Current Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
62	2	CH2 Current sensor calibration Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
64	2	CH2 Current Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
66	2	CH3 Current sensor calibration Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
68	2	CH3 Current Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
70	2	CH4 Current sensor calibration Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
72	2	CH4 Current Value (LSB Value: 0x00FF + MSB Value: 0xFF00)

Byte	N^0 Bytes	Description
Temperature		
74	1	CH1 Temperature sensor calibration Value
75	2	CH1 Temperature Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
77	1	CH2 Temperature sensor calibration Value
78	2	CH2 Temperature Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
80	1	CH3 Temperature sensor calibration Value
81	2	CH3 Temperature Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
83	1	CH4 Temperature sensor calibration Value
84	2	CH4 Temperature Value (LSB Value: 0x00FF + MSB Value: 0xFF00)
Clip (1: Enabled / 0: Disabled)		
86	1	CH1 Clip
87	1	CH2 Clip
88	1	CH3 Clip
89	1	CH4 Clip
Output Level Value		
90	4	CH1 Output Level (LSB Value: 0x00FF + MSB Value: 0xFF00 + Polarity + Mute)
94	4	CH2 Output Level (LSB Value: 0x00FF + MSB Value: 0xFF00 + Polarity + Mute)
98	4	CH3 Output Level (LSB Value: 0x00FF + MSB Value: 0xFF00 + Polarity + Mute)
102	4	CH4 Output Level (LSB Value: 0x00FF + MSB Value: 0xFF00 + Polarity + Mute)

Byte	N^0 Bytes	Description
**Fault State, 1 = correct operation		
106	1	CH1 Fault State
107	1	CH2 Fault State
108	1	CH3 Fault State
109	1	CH4 Fault State
RMS Limit Threshold		
110	2	CH1 RMS Limit Threshold (LSB Value: 0x00FF + MSB Value: 0xFF00)
112	2	CH2 RMS Limit Threshold (LSB Value: 0x00FF + MSB Value: 0xFF00)
114	2	CH3 RMS Limit Threshold (LSB Value: 0x00FF + MSB Value: 0xFF00)
116	2	CH4 RMS Limit Threshold (LSB Value: 0x00FF + MSB Value: 0xFF00)
PEAK Limit Threshold		
118	2	CH1 PEAK Limit Threshold (LSB Value: 0x00FF + MSB Value: 0xFF00)
120	2	CH2 PEAK Limit Threshold (LSB Value: 0x00FF + MSB Value: 0xFF00)
122	2	CH3 PEAK Limit Threshold (LSB Value: 0x00FF + MSB Value: 0xFF00)
124	2	CH4 PEAK Limit Threshold (LSB Value: 0x00FF + MSB Value: 0xFF00)

Byte	N^0 Bytes	Description
***GPI MUTE Value		
126	1	GPI MUTE Value
Priority Active		
127	1	CH1 Priority Active
128	1	CH2 Priority Active
129	1	CH3 Priority Active
130	1	CH4 Priority Active

5.2 Monitoring live data. Message to send

Header

Byte	Code	Description
0	0x53	
1	0x43	
2	0x4f	
3	0x4c	
4	0x01	API Version
5	0x01	API Version
6	0x00	Message ID Size LSB (0x000000FF)
7	0x00	Message ID (0x0000FF00) » 8
8	0x00	Message ID (0x00FF0000) » 16
9	0x00	Message ID MSB (0xFF0000) » 24
10	0x09	**Monitor**
11	0x00	
12	0x0e	Params Size LSB (0x000000FF)
13	0x00	Params Size MSB (0x0000FF00) » 8
14	0x00	
15	0x00	

5.3 Enable / Disable Monitors

This data is 13 bytes and includes the activated monitoring selection, received Port, received IP and received MAC.

RT Header (16 Bytes)	Data (13 Bytes)

Byte	Code	Description
0	0x00 0x01	Monitor Disabled Monitor Enabled
1	0x03	Monitor Port (MSB: 0xFF00)
2	0xea	Monitor Port (LSB: 0x00FF)
3	0xa9	Monitor Target IP
4	0xfe	Monitor Target IP
5	0x17	Monitor Target IP
6	0x0b	Monitor Target IP
7	0x00	Monitor Target MAC
8	0x01	Monitor Target MAC
9	0x02	Monitor Target MAC
10	0x03	Monitor Target MAC
11	0x04	Monitor Target MAC
12	0x05	Monitor Target MAC
13	0x00	

Example:

To active receive monitors in Port: 1002 in device with IP: 192.168.23.11, MAC: 00:01:02:03:04:05

53 43 4f 4c 01 01 28 00 00 00 09 00 0d 00 00 00 01 03 ea a9 fe 17 0b 00 01 02 03 04 05 00

6 Control Commands

6.1 General structure of data packets

The data packets consist of a series of bytes and their length will vary according to each case. In this manual, the bytes are represented in different ways, either in hexadecimal or decimal format.

6.1.1 Real-Time control message header

Byte	Code	Description
0	0x53	
1	0x43	
2	0x4f	
3	0x4c	
4	0x01	API Version
5	0x00	API Version
6	0x00	Message ID Size LSB (0x000000FF)
7	0x00	Message ID (0x0000FF00) » 8
8	0x00	Message ID (0x00FF0000) » 16
9	0x00	Message ID MSB (0xFF0000) » 24
10	0xXX	**Command**
11	0x00	
12	0x0a	Params Size LSB (0x000000FF)
13	0x00	Params Size MSB (0x0000FF00) » 8
14	0x00	API Version
15	0x00	

Byte 10 determines the **Command** requested from the device.

The requested commands can be the following:

Command	Description
Real Time	0x08
Monitor	0x08
Set Power Status	0x10
Recall Snapshot Preset	0x20
Get Third Part Info	0xC8

6.2 Real-Time structure of data packets

6.2.1 Real-Time control message header

Byte	Code	Description
0	0x53	
1	0x43	
2	0x4f	
3	0x4c	
4	0x01	API Version
5	0x00	API Version
6	0x00	Message ID Size LSB (0x000000FF)
7	0x00	Message ID (0x0000FF00) » 8
8	0x00	Message ID (0x00FF0000) » 16
9	0x00	Message ID MSB (0xFF0000) » 24
10	0x08	**Real Time Command**
11	0x00	
12	0x0a	Params Size LSB (0x000000FF)
13	0x00	Params Size MSB (0x0000FF00) » 8
14	0x00	
15	0x00	

Within the real-time instructions, in byte 16, it is determined which device value we want to change

Byte 16 Hex Value	Value to change
0x1F	User Gain
0x27	User HP
0x28	Route Input Select

6.2.2 Route Input Select

This data is 7 bytes and includes the selection of input routing and its value.

RT Header (16 Bytes)	Data (7 Bytes)

Byte	Code	Description
0	0x28	Route Input Select
1	xx	(The same as byte 5)
2	0x00	Matrix Type (Always 0)
3	0x01	Always this value
4	0x04	Always this value
5	0x01 0x02 0x03 0x04	Route CH A Route CH B Route CH C Route CH D
6	0x00 0x01 0x02 0x03 0x04 0x05 0x06	Select Input 1 Select Input 2 Select Input 3 Select Input 4 Select Input 1+2 Select Input 3+4 Select Matrix
7	0xff	Always this value

Example:

To select input 1+2 in route C send:

53 43 4f 4c 01 01 28 00 00 00 08 00 07 00 00 00 28 **03 00 01 04 03 04 ff**

6.2.3 User input gain

This data is 6 bytes long and includes gain, mute and polarity control.

RT Header (16 Bytes)	Data (6 Bytes)

Byte	Code	Description
0	0x1f	Input user gain
1	0x01 0x02 0x03 0x04	Input Way 1 Input Way 2 Input Way 3 Input Way 4
2	xx	Gain in dB. Lower part of the word (0x00FF). +12.0 to -40.0 dB
3	xx	Gain in dB. Upper part of the word (0x00FF). +12.0 to -40.0 dB
4	0x00 0x01	Normal polarity Inverted polarity
5	0x00 0x01	Muted Unmuted

Example:

To put in channel 1 input gain of +12dB with normal polarity and unmuted, send:

53 43 4f 4c 01 00 01 00 00 00 08 00 0a 00 00 00 **1f 01 78 00 00 01**

6.2.4 User output gain

This data is 6 bytes long and includes gain, mute and polarity control.

RT Header (16 Bytes)	Data (6 Bytes)

Byte	Code	Description
0	0x1f	Input user gain
1	0x10 0x20 0x30 0x40	Output Way 1 Output Way 2 Output Way 3 Output Way 4
2	xx	Gain in dB. Lower part of the word (0x00FF). +12.0 to -40.0 dB
3	xx	Gain in dB. Upper part of the word (0x00FF). +12.0 to -40.0 dB
4	0x00 0x01	Normal polarity Inverted polarity
5	0x00 0x01	Muted Unmuted

Example:

To put in channel 1 output gain of +12dB with normal polarity and unmuted, type:

53 43 4f 4c 01 00 01 00 00 00 08 00 0a 00 00 00 **1f 10 78 00 00 01**

6.2.5 User HP Filter

This data is 8 bytes long and includes gain, filter type, frequency cut, order and active control.

RT Header (16 Bytes)	Data (8 Bytes)

Byte	Code	Description
0	0x27	HP user filter gain
1	0x01 0x02 0x03 0x04	Input Way 1 Input Way 2 Input Way 3 Input Way 4
2	0x00	0: High Pass
3	 0x00 0x01 0x02	X-over Type: Butterworth Linkwitz-Riley Bessel
4	xx	Frequency Cut [20..20000] LSB (0x00FF)
5	xx	Frequency Cut [20..20000] MSB (0xFF00) » 8
6	0x00...0x08	Order
7	0x00 0x01	Active Disabled Active Enabled

Example:

To active the user HP Butterworth filter on channel 1 at a cutoff frequency of 50 Hz with order 4, send:

53 43 4f 4c 01 00 01 00 00 00 08 00 0a 00 00 00 **27 01 00 00 32 00 04 01**

6.2.6 Select Snapshot Preset

Select Snapshot Preset message header

Byte	Code	Description
0	0x53	
1	0x43	
2	0x4f	
3	0x4c	
4	0x01	
5	0x00	Message ID Size LSB (0x000000FF)
6	0x00	Message ID (0x0000FF00) » 8
7	0x00	Message ID (0x00FF0000) » 16
8	0x00	Message ID MSB (0xFF0000) » 24
9	0x00	
10	0x08	**Snapshot Recall**
11	0x00	
12	0x0a	Params Size LSB (0x000000FF)
13	0x00	Params Size MSB (0x0000FF00) » 8
14	0x00	
15	0x00	

Select number of Snapshot

This data is 1 byte long and includes the number of Snapshot to select.

Snapshot Select Header (16 Bytes)	Data (1 Byte)

Byte	Code	Description
0	xx	Snapshot preset number (1…20)

Example:

To select the Snapshot number 2, send:

53 43 4f 4c 01 00 00 00 00 00 20 00 01 00 00 00 **02**

6.2.7 Select On/Off Standby

Select Standby State message header

Byte	Code	Description
0	0x53	
1	0x43	
2	0x4f	
3	0x4c	
4	0x01	
5	0x00	Message ID Size LSB (0x000000FF)
6	0x00	Message ID (0x0000FF00) » 8
7	0x00	Message ID (0x00FF0000) » 16
8	0x00	Message ID MSB (0xFF0000) » 24
9	0x00	
10	0x10	**Standby**
11	0x00	
12	0x01	Params Size LSB (0x000000FF)
13	0x00	Params Size MSB (0x0000FF00) » 8
14	0x00	
15	0x00	

Select Standby

This data is 1 byte long and includes the Standby state to be set.

Select Standby Header (16 Bytes)	Data (1 Byte)

Byte	Code	Description
0	0x00 0x01	Standby Enabled Standby Disabled

Example:

To put the device in Standby, send:

53 43 4f 4c 01 00 00 00 00 00 10 00 01 00 00 00 **00**

6.2.8 Select Get Third Part Info

Select Get Device Data message header

Byte	Code	Description
0	0x53	
1	0x43	
2	0x4f	
3	0x4c	
4	0x01	
5	0x00	Message ID Size LSB (0x000000FF)
6	0x00	Message ID (0x0000FF00) » 8
7	0x00	Message ID (0x00FF0000) » 16
8	0x00	Message ID MSB (0xFF0000) » 24
9	0x00	
10	0xC8	**Get Third Part Info**
11	0x00	
12	0x0a	Params Size LSB (0x000000FF)
13	0x00	Params Size MSB (0x0000FF00) » 8
14	0x00	
15	0x00	

Select Data

This data is 2 bytes long and includes the select data and the channel to get information.

Get Device Data Header (16 Bytes)	Data (1 Byte)

Byte	Code	Description
16	0x00 0x01 0x02 0x03 0x04 0x05 0x06	Preset Name Use Name Way Name Snapshot Name Device Name User Input Gain User Output Gain
17	0x01 0x02 0x03 0x04	Channel 1 Channel 2 Channel 3 Channel 4

Example:

To get the input data gain from channel 2, send:

53 43 4f 4c 01 00 00 00 00 00 **C8** 00 01 00 00 00 **05 01**

6.2.9 Received message header when send "Get Third Part Info"

Byte	Code	Description
0	0x49	
1	0x50	
2	0x41	
3	0x44	
4	0x01	
5	0x00	Message ID Size LSB (0x000000FF)
6	0x00	Message ID (0x0000FF00) » 8
7	0x00	Message ID (0x00FF0000) » 16
8	0x00	Message ID MSB (0xFF0000) » 24
9	0x00	
10	0xC8	**Get Third Part Info**
11	0x00	
12	0x0a	Params Size LSB (0x000000FF)
13	0x00	Params Size MSB (0x0000FF00) » 8
14	0x00	
15	0x00	

If the communications header received by the amplifier is not correct, the amplifier will return a response header with byte 11 with value 0x01

Data Recieved

This data is 1 byte long and includes the Standby state to be set.

Received message Header (16 Bytes)	Data (variable length)

6.2.9.1 Preset Name

Byte	Code	Description
16…27	xx	Character in Hex ASCII code

6.2.9.2 Use Name

Byte	Code	Description
16…27	xx	Character in Hex ASCII code

6.2.9.3 Way Name

Byte	Code	Description
16…21	xx	Character in Hex ASCII code

6.2.9.4 Snapshot Name

Byte	Code	Description
16…37	xx	Character in Hex ASCII code

6.2.9.5 Device Name

Byte	Code	Description
16…23	xx	Character in Hex ASCII code

6.2.9.6 User Input Gain Data

Byte	Code	Description
16	xx	Gain in dB. Lower part of the word (0x00FF). +120 to -400 (Real value +12.0 to -40.0 dB)
17	xx	Gain in dB. Upper part of the word (0xFF00). +120 to -400 (Real value +12.0 to -40.0 dB)
18	0x00 0x01	Normal polarity Inverted polarity
19	0x00 0x01	Muted Unmuted

6.2.9.7 User Output Gain Data

Byte	Code	Description
16	xx	Gain in dB. Lower part of the word (0x00FF). +120 to -400 (Real value +12.0 to -40.0 dB)
17	xx	Gain in dB. Upper part of the word (0xFF00). +120 to -400 (Real value +12.0 to -40.0 dB)
18	0x00 0x01	Normal polarity Inverted polarity
19	0x00 0x01	Muted Unmuted

Example:

If you send to get the input data gain from channel 2:

53 43 4f 4c 01 00 00 00 00 00 **C8** 00 01 00 00 00 **05 01**

You receive, if Gain = +7 dB, Normal polarity and Unmuted:

49 50 41 44 01 00 00 00 00 00 **C8** 00 **04** 00 00 00 **46 00 01 01**

API Documentation

Irrtum bei Beschreibung
sowie technische
Änderungen vorbehalten.

Alle SEEBURG acoustic line
Produkte sind nur für den
gewerblichen Einsatz bestimmt.

All specifications are
current at the time of publishing
but are subject to change.

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