External control of AHM processor over TCP/IP:

TCP/IP control is available via the **Network** socket on the rear of the unit. Messages are sent using the MIDI format, as described in this document.

All MIDI message numbers shown in this document are hexadecimal. Refer to the end of this document for a table of values for each of the parameters listed here. All variables are shown in **green**.

Clients should be configured to use either:

Without encryption - Rendezvous port TCP 51325.

With TLS/SSL encryption - Rendezvous port TCP 51327.

The following functions can be controlled:

- Input Levels — NRPN
- Input Mutes — Note On
- Input Preamps and Trim — NRPN
- Zone Levels — NRPN
- Zone Mutes — Note On
- Control Group Levels — NRPN
- Control Group Mutes — Note On
- Channel Names and Colours — SysEx
- Preset Recalls — Program Change
- Input to Zone Send Levels — SysEx
- Input to Zone Send Mutes — SysEx
- Zone to Zone Send Levels — SysEx
- Zone to Zone Send Mutes — SysEx
- Audio file playback — SysEx
- Source Selector — SysEx
- Room Levels — SysEx
- Room Dividers — SysEx

Authentication

When the TLS/SSL socket is opened, the first data sent to the AHM processor should be the following message:

UserProfile, UserPassword

Where UserProfile = 00 to 1F

If the username and password match, then the unit will respond with the six characters “AuthOK”, otherwise the connection will be dropped.

Channel selection

Channels are selected using the MIDI channel number **N** and note number **CH** as follows:

Inputs 1 to 64: **N** = **0**, **CH** = 00 to 3F

Zones 1 to 64: **N** = **1**, **CH** = 00 to 3F

Control Groups 1 to 32: **N** = **2**, **CH** = 00 to 1F

Rooms 1 to 16: **N** = **3**, **CH** = 00 to 0F

SysEx Header

SysEx Header

This applies to all **SysEx** messages described later in this specification.

F0, 00, 00, 1A, 50, 12, **MV**, **mV**

Where **MV** = 01 (Major version)

mV = 00 (Minor version)

Channel Mute on

NOTE ON with velocity > 40 followed by NOTE OFF

9**N**, **CH**, 7F, 9**N**, **CH**, 00

Channel Mute off

NOTE ON with velocity < 40 followed by NOTE OFF

9**N**, **CH**, 3F, 9**N**, **CH**, 00

Received Channel Mute messages

Velocity 00 and NOTE OFF messages are ignored.

Velocity 01 to 3F = Mute off

Velocity 40 to 7F = Mute on

Get Channel Mute

SysEx message

SysEx Header, 0**N**, 01, 09, **CH**, F7

The unit will then transmit the appropriate Channel Mute on or off message.

Channel Level

NRPN with parameter ID 17

Channel level value **LV** –Inf to +10dB = 00 to 7F (refer to table)

Select channel	Parameter	Set level
B**N**, 63, **CH**,	B**N**, 62, 17,	B**N**, 06, **LV**

Get Channel Level

SysEx message

SysEx Header, 0**N**, 01, 0B, 17, **CH**, F7

The unit will then transmit the appropriate Channel Level message.

Level Increment / Decrement

NRPN with parameter ID 20

Select channel	Parameter
B**N**, 63, **CH**,	B**N**, 62, 20

Increment:

B**N**, 06, 7F

Decrement:

B**N**, 06, 3F

Input Trim

NRPN with parameter ID 18

Level value **LV** –24 to +24dB = 00 to 7F

Select channel	Parameter	Set fader value
B**N**, 63, **CH**,	B**N**, 62, 18,	B**N**, 06, **LV**

Get Input Trim

SysEx message

SysEx Header, 0**N**, 01, 0B, 18, **CH**, F7

The unit will then transmit the appropriate Input Trim level message.

Input Preamp Gain

NRPN with parameter ID 19

Gain value **GN** 5dB to +60dB = 00 to 7F

Select channel	Parameter	Set gain value
B**N**, 63, **CH**,	B**N**, 62, 19,	B**N**, 06, **GN**

Get Input Preamp Gain

SysEx message

SysEx Header, 0**N**, 01, 0B, 19, **CH**, F7

The unit will then transmit the appropriate Input Preamp Gain message.

Input Preamp Pad

NRPN with parameter ID 1A

Select channel	Parameter	Set pad value
B**N**, 63, **CH**,	B**N**, 62, 1A,	B**N**, 06, **VL**

VL 00 to 3F = Pad off

VL 40 to 7F = Pad on

Get Input Preamp Pad

SysEx message

SysEx Header, 0**N**, 01, 0B, 1A, **CH**, F7

The unit will then transmit the appropriate Input Preamp Pad message.

Input Preamp Phantom Power

NRPN with parameter ID 1B

Select channel	Parameter	Set pad value
B**N**, 63, **CH**,	B**N**, 62, 1B,	B**N**, 06, **VL**

VL 00 to 3F = Phantom Power off

VL 40 to 7F = Phantom Power on

Get Input Preamp Phantom Power

SysEx message

SysEx Header, 0**N**, 01, 0B, 1B, **CH**, F7

The unit will then transmit the appropriate Input Phantom Power message.

Input to Zone, and Zone to Zone Send Level

SysEx message

Where **SndN** and **SndCH** are the MIDI channel and note number for the channel to be sent to.

Send value **LV** –inf to +10dB = 00 to 7F

Message:

SysEx Header, 0**N**, 02, **CH**, **SndN**, **SndCH**, **LV**, F7

Get:

SysEx Header, 0**N**, 01, 0F, 02, **CH**, **SndN**, **SndCH**, F7

Input to Zone, and Zone to Zone Send Mutes

SysEx message

Where **SndN** and **SndCH** are the MIDI channel and note number for the channel to be sent to.

Mute On Message:

SysEx Header, 0**N**, 03, **CH**, **SndN**, **SndCH**, 7F, F7

Mute Off Message:

SysEx Header, 0**N**, 03, **CH**, **SndN**, **SndCH**, 3F, F7

Get:

SysEx Header, 0**N**, 01, 0F, 03, **CH**, **SndN**, **SndCH**, F7

Input to Zone, and Zone to Zone Send Level Increment Decrement

SysEx message

Where **SndN** and **SndCH** are the MIDI channel and note number for the channel to be sent to.

Increment Message:

SysEx Header, 0**N**, 04, **CH**, **SndN**, **SndCH**, 7F, F7

Decrement Message:

SysEx Header, 0**N**, 04, **CH**, **SndN**, **SndCH**, 3F, F7

Preset Recall

Bank and **Program Change** message to recall one of the 500 Presets (4 banks).

The unit also transmits this message when a Preset is recalled.

For Preset 1 to 128

Preset **SS** 1 to 128 = 00 to 7F

Select bank	Recall Preset
B0, 00, 00,	C0, **SS**

For Preset 257 to 384

Preset **SS** 257 to 384 = 00 to 7F

Select bank	Recall Preset
B0, 00, 02,	C0, **SS**

For Preset 129 to 256

Preset **SS** 129 to 256 = 00 to 7F

Select bank	Recall Preset
B0, 00, 01,	C0, **SS**

For Preset 385 to 500

Preset **SS** 385 to 500 = 00 to 73

Select bank	Recall Preset
B0, 00, 03,	C0, **SS**

Audio Playback

SysEx message

Where **PlaybackChannel** = 00 for Mono 1, 01 for Mono 2, and is ignored for stereo playback.

TrackID = 00 to 7F

Message:

SysEx Header, 00, 06, **PlaybackChannel**, **TrackID**, F7

Source Selector

SysEx message

Where **CH** is the Zone channel number.

SourceNumber = 00 to 13

Message:

SysEx Header, 00, 08, **CH**, **SourceNumber**, F7

The unit also transmits the following message when a source is selected:

SysEx Header, 00, 08, **CH**, **SourceNumber**, **SourceColour**, **SourceName**, F7

Get Source Selector

SysEx message

SysEx Header, 0**N**, 01, 0F, 08, **CH**, F7

The unit will then transmit the following message:

SysEx Header, 00, 08, **CH**, **Number of Sources**, **SourceNumber** (currently selected), **<SourceColours>**, **<SourceNames>**, F7

Where <SourceColours> lists colours for each source, and <SourceNames> lists NULL terminated names for each source.

Room Source Selector

SysEx message

Where **CH** is the Room channel number.

SourceNumber = 00 to 13

Message:

SysEx Header, 00, 0D, **CH**, **SourceNumber**, F7

The unit also transmits the following message when a source is selected:

SysEx Header, 00, 0D, **CH**, **SourceNumber**, **SourceColour**, **SourceName**, F7

Room Combiners

SysEx message

VL 00 to 3F = Rooms Combined

VL 40 to 7F = Rooms Divided

Message:

SysEx Header, 00, 0E, **RoomNumber1**, **RoomNumber2**, **VL**, F7

The unit also transmits the following message when a source is selected:

SysEx Header, 00, 0E, **RoomNumber1**, **RoomNumber2**, **VL**, F7

Get Channel Name

SysEx message

SysEx Header, 0**N**, 09, **CH**, F7

The unit will then transmit the following message:

SysEx Header, 0**N**, 0A, **CH**, **Name**, F7 where **Name** = Hex ASCII String up to 8 characters

Get Channel Colour

SysEx message

SysEx Header, 0**N**, 0B, **CH**, F7

The unit will then transmit the following message:

SysEx Header, 0**N**, 0C, **CH**, **Colour**, F7

ALLEN&HEATH

AHM TCP/IP control Reference Table - v1.10

Preset Number
SS

Bank 1	Bank 2	Bank 3	Bank 4	Hex
1	129	257	385	00
2	130	258	386	01
3	131	259	387	02
4	132	260	388	03
5	133	261	389	04
6	134	262	390	05
7	135	263	391	06
8	136	264	392	07
9	137	265	393	08
10	138	266	394	09
11	139	267	395	0A
12	140	268	396	0B
13	141	269	397	0C
14	142	270	398	0D
15	143	271	399	0E
16	144	272	400	0F
17	145	273	401	10
18	146	274	402	11
19	147	275	403	12
20	148	276	404	13
21	149	277	405	14
22	150	278	406	15
23	151	279	407	16
24	152	280	408	17
25	153	281	409	18
26	154	282	410	19
27	155	283	411	1A
28	156	284	412	1B
29	157	285	413	1C
30	158	286	414	1D
31	159	287	415	1E
32	160	288	416	1F
33	161	289	417	20
34	162	290	418	21
35	163	291	419	22
36	164	292	420	23
37	165	293	421	24
38	166	294	422	25
39	167	295	423	26
40	168	296	424	27
41	169	297	425	28
42	170	298	426	29
43	171	299	427	2A
44	172	300	428	2B
45	173	301	429	2C
46	174	302	430	2D
47	175	303	431	2E
48	176	304	432	2F
49	177	305	433	30
50	178	306	434	31
51	179	307	435	32
52	180	308	436	33
53	181	309	437	34
54	182	310	438	35
55	183	311	439	36
56	184	312	440	37
57	185	313	441	38
58	186	314	442	39
59	187	315	443	3A
60	188	316	444	3B
61	189	317	445	3C
62	190	318	446	3D
63	191	319	447	3E
64	192	320	448	3F

Preset Number
SS

Bank 1	Bank 2	Bank 3	Bank 4	Hex
65	193	321	449	40
66	194	322	450	41
67	195	323	451	42
68	196	324	452	43
69	197	325	453	44
70	198	326	454	45
71	199	327	455	46
72	200	328	456	47
73	201	329	457	48
74	202	330	458	49
75	203	331	459	4A
76	204	332	460	4B
77	205	333	461	4C
78	206	334	462	4D
79	207	335	463	4E
80	208	336	464	4F
81	209	337	465	50
82	210	338	466	51
83	211	339	467	52
84	212	340	468	53
85	213	341	469	54
86	214	342	470	55
87	215	343	471	56
88	216	344	472	57
89	217	345	473	58
90	218	346	474	59
91	219	347	475	5A
92	220	348	476	5B
93	221	349	477	5C
94	222	350	478	5D
95	223	351	479	5E
96	224	352	480	5F
97	225	353	481	60
98	226	354	482	61
99	227	355	483	62
100	228	356	484	63
101	229	357	485	64
102	230	358	486	65
103	231	359	487	66
104	232	360	488	67
105	233	361	489	68
106	234	362	490	69
107	235	363	491	6A
108	236	364	492	6B
109	237	365	493	6C
110	238	366	494	6D
111	239	367	495	6E
112	240	368	496	6F
113	241	369	497	70
114	242	370	498	71
115	243	371	499	72
116	244	372	500	73
117	245	373		74
118	246	374		75
119	247	375		76
120	248	376		77
121	249	377		78
122	250	378		79
123	251	379		7A
124	252	380		7B
125	253	381		7C
126	254	382		7D
127	255	383		7E
128	256	384		7F

Input Channel
CH (N=0)

CH	Hex	CH	Hex
1	00	33	20
2	01	34	21
3	02	35	22
4	03	36	23
5	04	37	24
6	05	38	25
7	06	39	26
8	07	40	27
9	08	41	28
10	09	42	29
11	0A	43	2A
12	0B	44	2B
13	0C	45	2C
14	0D	46	2D
15	0E	47	2E
16	0F	48	2F
17	10	49	30
18	11	50	31
19	12	51	32
20	13	52	33
21	14	53	34
22	15	54	35
23	16	55	36
24	17	56	37
25	18	57	38
26	19	58	39
27	1A	59	3A
28	1B	60	3B
29	1C	61	3C
30	1D	62	3D
31	1E	63	3E
32	1F	64	3F

Zone channel
CH (N=1)

CH	Hex	CH	Hex
1	00	33	20
2	01	34	21
3	02	35	22
4	03	36	23
5	04	37	24
6	05	38	25
7	06	39	26
8	07	40	27
9	08	41	28
10	09	42	29
11	0A	43	2A
12	0B	44	2B
13	0C	45	2C
14	0D	46	2D
15	0E	47	2E
16	0F	48	2F
17	10	49	30
18	11	50	31
19	12	51	32
20	13	52	33
21	14	53	34
22	15	54	35
23	16	55	36
24	17	56	37
25	18	57	38
26	19	58	39
27	1A	59	3A
28	1B	60	3B
29	1C	61	3C
30	1D	62	3D
31	1E	63	3E
32	1F	64	3F

Control Group
CH (N=2)

CH	Hex
1	00
2	01
3	02
4	03
5	04
6	05
7	06
8	07
9	08
10	09
11	0A
12	0B
13	0C
14	0D
15	0E
16	0F
17	10
18	11
19	12
20	13
21	14
22	15
23	16
24	17
25	18
26	19
27	1A
28	1B
29	1C
30	1D
31	1E
32	1F

User Profile
UserProfile

Dec	Hex
1	00
2	01
3	02
4	03
5	04
6	05
7	06
8	07
9	08
10	09
11	0A
12	0B
13	0C
14	0D
15	0E
16	0F
17	10
18	11
19	12
20	13
21	14
22	15
23	16
24	17
25	18
26	19
27	1A
28	1B
29	1C
30	1D
31	1E
32	1F

Name
SourceName

Char	Hex	Char	Hex	Char	Hex	Char	Hex
A	41	a	61	!	21	Space	20
B	42	b	62	"	22	0	30
C	43	c	63	#	23	1	31
D	44	d	64	%	25	2	32
E	45	e	65	&	26	3	33
F	46	f	66	'	27	4	34
G	47	g	67	(	28	5	35
H	48	h	68	)	29	6	36
I	49	i	69	*	2A	7	37
J	4A	j	6A	+	2B	8	38
K	4B	k	6B	,	2C	9	39
L	4C	l	6C	-	2D		
M	4D	m	6D	.	2E		
N	4E	n	6E	/	2F		
O	4F	o	6F	<	3C		
P	50	p	70	=	3D		
Q	51	q	71	>	3E		
R	52	r	72	?	3F		
S	53	s	73	@	40		
T	54	t	74	[	5B		
U	55	u	75	\	5C		
V	56	v	76	]	5D		
W	57	w	77	_	5F		
X	58	x	78	{	7B		
Y	59	y	79	}	7D		
Z	5A	z	7A	~	7E		

Colour
SourceColour

Colour	Hex
Off	00
Red	01
Green	02
Yellow	03
Blue	04
Magenta	05
Cyan	06
White	07

Channel Level
LV

dBu	Hex	Dec
+10	7F	127
+5	74	116
0	69	105
-5	5E	94
-10	53	83
-15	48	72
-20	3D	61
-25	32	50
-30	27	39
-35	1C	28
-40	11	17
-45	06	6
-48	01	1
-inf	00	0

[(Gain+48)/58]*127

Number
SourceNumber

Dec	Hex
1	00
2	01
3	02
4	03
5	04
6	05
7	06
8	07
9	08
10	09
11	0A
12	0B
13	0C
14	0D
15	0E
16	0F
17	10
18	11
19	12
20	13