ALLEN&HEATH

Avantis TCP/IP Protocol

Firmware V1.10

ⓘ This protocol is for use with Avantis systems loaded with firmware version V1.10 and later.

TCP/IP control is available via the **Network** port on the Avantis mixer. Messages are sent using the MIDI format, as described in this document.

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

Clients should be configured to use TCP port 51325.

MIDI Controllable Functions and Parameters:

• Fader levels	NRPN	*Input, Mix master, FX send, FX return, DCA*
• Mutes	Note On	*Input, Mix master, FX send, FX return, DCA, Mute Groups*
• Send levels	SysEx	*Aux, FX and Matrix sends*
• DCA assign	NRPN	
• Input to Main assign	NRPN	
• Name & Colour	SysEx	
• Scene Recall	Program Change	
• MIDI transport	MIDI Machine Control (MMC)	
• MIDI Strips	Custom Messages	*DAW and remote equipment control*
• SoftKeys	Custom Messages	*Press and release messages*

MIDI Running Status

Avantis uses MIDI running status. This maximises MIDI transmission efficiency by allowing a MIDI message to be sent without its Status byte if the previous transmitted message had the same Status.

For example, turning Mute on for Inputs 1, 2 and 3 on MIDI channel 12:

Without running status – Full message string 9**B**, **00**, 7F, 9**B**, **01**, 7F, 9**B**, **02**, 7F

With running status – Shorter message string 9**B**, **00**, 7F, **01**, 7F, **02**, 7F

MIDI Channel Number

MIDI channel 1 to 16 = 0 to F

To extend the range of audio channels that can be controlled by MIDI messages the Avantis MIDI protocol uses a range of five MIDI channels to select between audio channel types.

The base MIDI channel **N** is the lowest channel of the range selected in **Utility** / **Control** / **MIDI** and cannot exceed 12 (B). The default is MIDI Channel 12 to 16.

The audio channel type is selected by offsetting the MIDI channel used in the message and the audio channel number is selected using the note number, as detailed in 'Channel Selection' below.

Scene Recall and MIDI transport use the base MIDI channel **N.**

Channel Selection

N = Base MIDI channel

CH = Channel Note number (refer to table)

Channels are selected using the MIDI channel number and Note number as follows:

Inputs 1 to 64:	**N** = **N**,	**CH** = 00 to 3F
Mono Groups 1 to 40:	**N** = **N + 1**,	**CH** = 00 to 27
Stereo Groups 1 to 20:	**N** = **N + 1**,	**CH** = 40 to 53
Mono Aux 1 to 40:	**N** = **N + 2**,	**CH** = 00 to 27
Stereo Aux 1 to 20:	**N** = **N + 2**,	**CH** = 40 to 53
Mono Matrix 1 to 40:	**N** = **N + 3**,	**CH** = 00 to 27
Stereo Matrix 1 to 20:	**N** = **N + 3**,	**CH** = 40 to 53
Mono FX Send 1 to 12:	**N** = **N + 4**,	**CH** = 00 to 0B
Stereo FX Send 1 to 12:	**N** = **N + 4**,	**CH** = 10 to 1B
FX Return 1 to 12:	**N** = **N + 4**,	**CH** = 20 to 2B
Mains 1 to 3:	**N** = **N + 4**,	**CH** = 30 to 32
DCA 1 to 16:	**N** = **N + 4**,	**CH** = 36 to 45
Mute Group 1 to 8:	**N** = **N + 4**,	**CH** = 46 to 4D

SysEx Header

SysEx Header

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

F0, 00, 00, 1A, 50, 10, 01, 00

Mute ON

NOTE ON with velocity > 40 followed by NOTE OFF

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

Mute OFF

NOTE ON with velocity < 40 followed by NOTE OFF

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

Received Mute Messages

Velocity 00 and NOTE OFF messages are ignored

Velocity 01 to 3F = Mute OFF

Velocity 40 to 7F = Mute ON

Fader Level

NRPN with parameter ID 17

Fader value LV –inf to +10dB = 00 to 7F (refer to table)

Select channel	Parameter	Set fader value
BN, 63, CH,	BN, 62, 17,	BN, 06, LV

Channel Assignment to Main Mix ON

NRPN with parameter ID 18

ON value = 40 to 7F

Select channel	Parameter	Set ON
BN, 63, CH,	BN, 62, 18,	BN, 06, 7F

Channel Assignment to Main Mix OFF

NRPN with parameter ID 18

OFF value = 00 to 3F

Select channel	Parameter	Set OFF
BN, 63, CH,	BN, 62, 18,	BN, 06, 3F

AUX / FX / Matrix Send Level

SysEx message

Where SndN and SndCH are the MIDI channel and Note number for the Mix to be sent to.

Send value LV –inf to +10dB = 00 to 7F (refer to table)

Message:

SysEx Header, 0N, 0D, CH, SndN, SndCH, LV, F7

DCA Assignment ON

NRPN with parameter ID 40

ON value DB for DCA 1 to 16 = 40 to 4F (refer to table)

Select channel	Parameter	Set ON
BN, 63, CH,	BN, 62, 40,	BN, 06, DB

DCA Assignment OFF

NRPN with parameter ID 40

OFF value DA for DCA 1 to 16 = 00 to 0F (refer to table)

Select channel	Parameter	Set OFF
BN, 63, CH,	BN, 62, 40,	BN, 06, DA

Mute Group Assignment ON

NRPN with parameter ID 40

ON value DB for Mute Group 1 to 8 = 50 to 57 (refer to table)

Select channel	Parameter	Set ON
BN, 63, CH,	BN, 62, 40,	BN, 06, DB

Mute Group Assignment OFF

NRPN with parameter ID 40

OFF value DA for Mute Group 1 to 8 = 10 to 17 (refer to table)

Select channel	Parameter	Set OFF
BN, 63, CH,	BN, 62, 40,	BN, 06, DA

Channel Name

SysEx message

Gets or sets the Name with up to 8 characters (up to 8 can be displayed on the Avantis strip LCD)

To get Name from Avantis

Send… **SysEx Header**, 0**N**, 01, **CH**, F7

Reply… **SysEx Header**, 0**N**, 02, **CH**, **Name**, F7 where **Name** = Hex ASCII String

To set Name (refer to table)

SysEx Header, 0**N**, 03, **CH**, **Name**, F7 where **Name** = Hex ASCII String

Channel Colour

SysEx message

Gets or sets the Colour with a choice of 7 colours or no colour

To get Colour from Avantis

Send… **SysEx Header**, 0**N**, 04, **CH**, F7

Reply… **SysEx Header**, 0**N**, 05, **CH**, **Col**, F7 where **Col** = 00 to 07 (refer to table)

To set Colour

SysEx Header, 0**N**, 06, **CH**, **Col**, F7 where **Col** = 00 to 07 (refer to table)

Scene Recall

Bank and **Program Change** message

To recall one of the 500 Scenes using 4 banks

Also transmits this message when a Scene is recalled from the Avantis screen

SS = Scene number within bank = 00 to 7F (refer to table)

Bank = Bank of scenes

Bank 1 - Scene 1 to 128	**Bank** = 00
Bank 2 - Scene 129 to 256	**Bank** = 01
Bank 3 - Scene 257 to 384	**Bank** = 02
Bank 4 - Scene 385 to 500	**Bank** = 03

Select bank	**Recall Scene**
B**N**, 00, **Bank**,	C**N**, **SS**

MIDI Strips

Custom MIDI messages

Fader strips can be assigned as MIDI Strips. There are 32 MIDI Strips available.

Each fader strip control can be assigned to transmit a custom MIDI message. This is used for controlling audio within a Digital Audio Workstation (DAW), a slave mixer, or parameters on external equipment such as effects devices. MIDI Strips can be named and coloured. They are stored within Scenes and can be made Safe from Scene recall.

The Template Shows load the following factory default messages for the MIDI Strip controls. These can be edited to suit your application. If required, they can be restored to default from within Scene 1 'Reset Settings' in the Template Show.

• Fader	B1, 00, <VAR> to B1, 1F, <VAR>	*DAW track Level*
• Gain Rotary	B2, 00, <VAR> to B2, 1F, <VAR>	
• Pan Rotary	B2, 20, <VAR> to B2, 3F, <VAR>	
• Sends Rotary	B2, 40, <VAR> to B2, 5F, <VAR>	
• Rotary Custom 1	B2, 60, <VAR> to B2, 7F, <VAR>	
• Rotary Custom 2	B2, 60, <VAR> to B2, 7F, <VAR>	
• Rotary Custom 3	B2, 60, <VAR> to B2, 7F, <VAR>	
• Mute switch =	91, 00, <VAR> to 91, 1F, <VAR>	*DAW track Mute*
• Mix switch =	91, 20, <VAR> to 91, 3F, <VAR>	*DAW track Select*
• PAFL switch =	91, 40, <VAR> to 91, 5F, <VAR>	*DAW track Solo*

Where <VAR> is the value determined by the position of the control.

ⓘ **Sel** is not included as this is required to select the Processing screen for configuring the MIDI Strip.

ⓘ By default, Rotary Custom 2 and 3 use the same values as Rotary Custom 1.

MMC (Transport Control)

SysEx message F0, 7F, 7F 06, **TC**, F7

Where **TC** transport control is:

01 = Stop

02 = Play

04 = Fast Forward

05 = Rewind

06 = Record

09 = Pause

ALLEN&HEATH

Avantis MIDI TCP/IP Reference Table - V1.1

Scene Number

0	01	02	03	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

Scene Number

0	01	02	03	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

Inputs

N	
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
33	20
34	21
35	22
36	23
37	24
38	25
39	26
40	27
41	28
42	29
43	2A
44	2B
45	2C
46	2D
47	2E
48	2F
49	30
50	31
51	32
52	33
53	34
54	35
55	36
56	37
57	38
58	39
59	3A
60	3B
61	3C
62	3D
63	3E
64	3F

Mono Group

N+1	
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
33	20
34	21
35	22
36	23
37	24
38	25
39	26
40	27

Mono Aux

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
33	20
34	21
35	22
36	23
37	24
38	25
39	26
40	27

Mono Matrix

N+3	
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
33	20
34	21
35	22
36	23
37	24
38	25
39	26
40	27

FX Return

N+4	
CH	Hex
1	20
2	21
3	22
4	23
5	24
6	25
7	26
8	27
9	28
10	29
11	2A
12	2B

Mono FX Send

N+4	
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

Stereo FX Send

N+4	
CH	Hex
1	10
2	11
3	12
4	13
5	14
6	15
7	16
8	17
9	18
10	19
11	1A
12	1B

Mains

N+4	
CH	Hex
1	30
2	31
3	32

DCA

N+4	
CH	Hex
1	36
2	37
3	38
4	39
5	3A
6	3B
7	3C
8	3D
9	3E
10	3F
11	40
12	41
13	42
14	43
15	44
16	45

DCA Assign

	Off	On
	DA	DB
1	00	40
2	01	41
3	02	42
4	03	43
5	04	44
6	05	45
7	06	46
8	07	47
9	08	48
10	09	49
11	0A	4A
12	0B	4B
13	0C	4C
14	0D	4D
15	0E	4E
16	0F	4F

MUTE Group

N+4	
CH	Hex
1	46
2	47
3	48
4	49
5	4A
6	4B
7	4C
8	4D

Assign

	Off	On
	DA	DB
1	10	50
2	11	51
3	12	52
4	13	53
5	14	54
6	15	55
7	16	56
8	17	57

MIDI Channel

Base Channel

N	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

Name

Name

Char	Hex
Space	20
0	30
1	31
2	32
3	33
4	34
5	35
6	36
7	37
8	38
9	39
A	41
B	42
C	43
D	44
E	45
F	46
G	47
H	48
I	49
J	4A
K	4B
L	4C
M	4D
N	4E
O	4F
P	50
Q	51
R	52
S	53
T	54
U	55
V	56
W	57
X	58
Y	59
Z	5A
a	61
b	62
c	63
d	64
e	65
f	66
g	67
h	68
i	69
j	6A
k	6B
l	6C
m	6D
n	6E
o	6F
p	70
q	71
r	72
s	73
t	74
u	75
v	76
w	77
x	78
y	79
z	7A
!	21
"	22
#	23
%	25
&	26
'	27
(	28
)	29
*	2A
+	2B
,	2C
-	2D
.	2E
/	2F
:	3A
;	3B
<	3C
=	3D
>	3E
?	3F
@	40
[	5B
\	5C
]	5D
^	5E
_	5F
`	60
{	7B
|	7C
}	7D
~	7E

Fader Level

[(Gain+54)/64]*7F

LV

dB	Hex	Dec
+10	7F	127
+5	74	117
0	6B	107
-5	61	97
-10	57	87
-15	4D	77
-20	43	67
-25	39	58
-30	2F	48
-35	25	38
-40	1B	28
-45	11	18
-inf	00	0

Colour

Col

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

SysEx Header F0, 00, 00, 1A, 50, 10, 01, 00

Mutes On(Off) 9**N**, **CH**, 7F(3F), 9**N**, **CH**, 00

Fader Levels B**N**, 63, **CH**, B**N**, 62, 17, B**N**, 06, **LV**

Aux/FX/Mtx Sends **SysEx Header**, 0**N**, 0D, **CH**, **SndN**, **SndCH**, **LV**, F7

Ch>Main Assign B**N**, 63, **CH**, B**N**, 62, 18, B**N**, 06, 7F(3F)

DCA Assign On(Off) B**N**, 63, **CH**, B**N**, 62, 40, B**N**, 06, **DB**(**DA**)

Mute Grp Assign B**N**, 63, **CH**, B**N**, 62, 40, B**N**, 06, **DB**(**DA**)

Ch Name Request… **SysEx Header**, 0**N**, 01, **CH**, F7

Ch Name Reply… **SysEx Header**, 0**N**, 02, **CH**, **Name**, F7

Ch Name Set **SysEx Header**, 0**N**, 03, **CH**, **Name**, F7

Ch Colour Request… **SysEx Header**, 0**N**, 04, **CH**, F7

Ch Colour Reply… **SysEx Header**, 0**N**, 05, **CH**, **Col**, F7

Ch Colour Set **SysEx Header**, 0**N**, 06, **CH**, **Col**, F7

Scene Recall B**N**, 00, **Bank**, C**N**, **SS**

Stereo Group

N+1	
CH	Hex
1	40
2	41
3	42
4	43
5	44
6	45
7	46
8	47
9	48
10	49
11	4A
12	4B
13	4C
14	4D
15	4E
16	4F
17	50
18	51
19	52
20	53

Stereo Aux

N+2	
CH	Hex
1	40
2	41
3	42
4	43
5	44
6	45
7	46
8	47
9	48
10	49
11	4A
12	4B
13	4C
14	4D
15	4E
16	4F
17	50
18	51
19	52
20	53

Stereo Matrix

N+3	
CH	Hex
1	40
2	41
3	42
4	43
5	44
6	45
7	46
8	47
9	48
10	49
11	4A
12	4B
13	4C
14	4D
15	4E
16	4F
17	50
18	51
19	52
20	53