ASHLY RS-232 Control Protocol for Pêma and 'ne' Series Products

Notes:

1) Unless otherwise noted all byte values in this document are hexadecimal, or binary equivalent to show bit assignments. All Data must be transmitted as Hex or equivalent Decimal values, (not ASCII characters). Some program environments only support ASCII or Hex data types, in which case you must use Hex. Tip: you can use MS Windows Calculator, set to Scientific (in View Menu), to convert between Binary, Hex, & Decimal. NOTE: in Crestron program environment use '\x' for Hex. Example: F0 is coded as \xF0
2) Hardware setup is: 1 Start Bit, 8 Data Bits, 1 Stop Bit, No Parity. Baud rate is 9600bps for all products, except the ne24.24M. The ne24.24M power-on baud rate is always 38,400bps, but it will change to 9600bps when ten $F9 bytes at 9600bps are received.
3) Message types 06, 08, and 09 (below) are only supported by the ne24.24M.
4) Message types 06 thru 1A, WR-0A, WR-0B, and WR-0C are always echoed back from the unit, to confirm reception.
5) Message types 00, 02, 04, WR-03, WR-05, and WR-07 invoke a specific response message from the unit.
6) Non-applicable or invalid messages are echoed back from the product as received. No other action is taken by the product.
7) Message type 42 is transmitted from the unit when a local preset change event occurs via contact closure, front panel buttons, etc.
8) Some DSP functions are not available in all products. Please refer to the user manual or Ashly software for available functions. All products, except for the ne24.24M, require associated DSP functions to be populated via Ashly software for each message type.

Message Types:

00 = Data Request: configuration/input/output
01 = Data Response: configuration/input/output
02 = Meter Request
03 = Meter Response
04 = Preset Names Request
05 = Preset Names Response
06 = Preset Save - (ne24.24M only)
07 = Preset Recall
08 = Channel Data Download - (ne24.24M only)
09 = Preset/Channel Name Message - (ne24.24M only)
0A = Polarity Message
0B = Preamp Message - (products with mic preamps)
0C = Gain Message
0D = Delay Message
0E = EQ Filter Message
0F = Gate Message
10 = Auto-Leveler Message
11 = Dynamic Ducker Message
12 = Mixer Message
13 = HPF/LPF Message
14 = Compressor-Limiter Message
15 = Mute Message
16 = EQ Status Message
17 = Mute/Unmute All Outputs
19 = Mixer Fader Mute/Unmute Message (Source Selection)
1A = Channel Gain Increment/Decrement Message

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Ashly WR Wall Remote Additions:

WR-03 = Preset Number & Mute Status Inquiry
WR-04 = Preset Number & Mute Status Response
WR-05 = Output Gain & Mixer Mutes Inquiry
WR-06 = Output Gain & Mixer Mutes Response
WR-07 = Channel Gain Inquiry
WR-08 = Channel Gain Response
WR-0A = Mute/Unmute with Multiple Channel Selection
WR-0B = Gain Message with Multiple Channel Selection
WR-0C = Mixer Mute/Unmute with Multiple Source Selection

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Contact Closure Port / Preset Scroll Button Update:

42 = Local Preset Recall Update

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00 - Data Request

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	00	Message type 00 = Data Request
8	*xx*	Data request type: 00 = configuration, 01 = input channel settings, 02 = output channel settings
9	*yy*	Channel number: 00-3B = Inputs/Outputs 1-60; [use Value 00 during a configuration request]
10	F7	Stop byte

01 - Type: 0 - Data Response: Configuration

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1

3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	01	Message type 01 = Data Response
8	00	Data response type 00 = Configuration
9-28	*nn*	Preset name: 20 ASCII character hex values in the range 20-7A. Byte# 9 is the first name char.
29	*x*-*x*-5-4-3-2-1-0	Expansion Card Status - Bit5 EXP1 status: 1 = present, 0 = none; Bit4 EXP1 type: 1 = input, 0 = output; Bit3 EXP2 status; Bit2 EXP2 type; Bit1 EXP3 status; Bit0 EXP3 type;
30	*x*-*x*-5-4-*x*-*x*-1-0	Expansion Card Status - Bit5 EXP4 status; Bit4 EXP4 type; Bit1 front switch status: 1 = locked, 0 = enabled; Bit0 front switch type: 1 = preset, 0 = device id
31	*pn*	Current loaded preset number, where 00 = preset 1, 01 = preset 2, 02 = preset 3, …
32	*vv*	DSP status (*xx*654321): bit value 1 = DSP valid, 0 = DSP invalid or not installed
33	F7	Stop byte

01 - Type: 1 - Data Response: Input Channel Settings

(Response to an input Data Request Message.
Refer to: "ne24.24M Input Channel Message", towards the end of this document.)

01 - Type: 2 - Data Response: Output Channel Settings

(Response to an output Data Request Message.
Refer to: "ne24.24M Output Channel Message", towards the end of this document.)

02 - Meter Request

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	02	Message type 02 = Meter Request
8	F7	Stop byte

03(a) - Meter Response (unit's reply to a meter request), Note: for ne24.24M see 03(b) below.

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	03	Message type 03 = Meter Response
8	*xx*	Input 1 level
9	*xx*	Input 2 level
10	*xx*	Input 3 level
11	*xx*	Input 4 level
12	*xx*	Input 5 level
13	*xx*	Input 6 level
14	*xx*	Input 7 level
15	*xx*	Input 8 level
16	*xx*	Output 1 level
17	*xx*	Output 2 level
18	*xx*	Output 3 level

19	*xx*	Output 4 level
20	*xx*	Output 5 level
21	*xx*	Output 6 level
22	*xx*	Output 7 level
23	*xx*	Output 8 level
24	F7	Stop byte

Meter Notes:

Level bytes for unavailable channels are undefined, and should be ignored.

xx - input and output level bytes use the following binary format: 0CLLLLLL

Bits 5-0 represent the dBu level, where 0 = <-42 dBu, 1 to 3F = -42 dBu to +20 dBu.

Bit 6 is the clip detector, where 0 = not clipped, 1 = clipped.

03(b) – ne24.24M Meter Response (ne24.24M reply to a meter request)

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	03	Message type 03 = Meter Response
8	*xx*	Input 1 level
9	*xx*	Input 2 level
10	*xx*	Input 3 level
11	*xx*	Input 4 level
12	*xx*	Output 1 level
13	*xx*	Output 2 level
14	*xx*	Output 3 level
15	*xx*	Output 4 level
16	*xx*	Expansion: Input 5 level / Output 20 level
17	*xx*	Expansion: Input 6 level / Output 19 level
18	*xx*	Expansion: Input 7 level / Output 18 level
19	*xx*	Expansion: Input 8 level / Output 17 level
20	*xx*	Expansion: Input 9 level / Output 16 level
21	*xx*	Expansion: Input 10 level / Output 15 level
22	*xx*	Expansion: Input 11 level / Output 14 level
23	*xx*	Expansion: Input 12 level / Output 13 level
24	*xx*	Expansion: Input 13 level / Output 12 level
25	*xx*	Expansion: Input 14 level / Output 11 level
26	*xx*	Expansion: Input 15 level / Output 10 level
27	*xx*	Expansion: Input 16 level / Output 9 level
28	*xx*	Expansion: Input 17 level / Output 8 level
29	*xx*	Expansion: Input 18 level / Output 7 level
30	*xx*	Expansion: Input 19 level / Output 6 level
31	*xx*	Expansion: Input 20 level / Output 5 level
32	*yy*	Input 1 auto-level, gate status
33	*yy*	Input 2 auto-level, gate status
34	*yy*	Input 3 auto-level, gate status
35	*yy*	Input 4 auto-level, gate status
36	*zz*	Output 1 limiter gain reduction
37	*zz*	Output 2 limiter gain reduction
38	*zz*	Output 3 limiter gain reduction
39	*zz*	Output 4 limiter gain reduction
40	*yy/zz*	Expansion: Input 5 auto-level, gate status / Output 20 limiter gain reduction
41	*yy/zz*	Expansion: Input 6 auto-level, gate status / Output 19 limiter gain reduction
42	*yy/zz*	Expansion: Input 7 auto-level, gate status / Output 18 limiter gain reduction
43	*yy/zz*	Expansion: Input 8 auto-level, gate status / Output 17 limiter gain reduction
44	*yy/zz*	Expansion: Input 9 auto-level, gate status / Output 16 limiter gain reduction
45	*yy/zz*	Expansion: Input 10 auto-level, gate status / Output 15 limiter gain reduction

46	*yy/zz*	Expansion: Input 11 auto-level, gate status / Output 14 limiter gain reduction
47	*yy/zz*	Expansion: Input 12 auto-level, gate status / Output 13 limiter gain reduction
48	*yy/zz*	Expansion: Input 13 auto-level, gate status / Output 12 limiter gain reduction
49	*yy/zz*	Expansion: Input 14 auto-level, gate status / Output 11 limiter gain reduction
50	*yy/zz*	Expansion: Input 15 auto-level, gate status / Output 10 limiter gain reduction
51	*yy/zz*	Expansion: Input 16 auto-level, gate status / Output 9 limiter gain reduction
52	*yy/zz*	Expansion: Input 17 auto-level, gate status / Output 8 limiter gain reduction
53	*yy/zz*	Expansion: Input 18 auto-level, gate status / Output 7 limiter gain reduction
54	*yy/zz*	Expansion: Input 19 auto-level, gate status / Output 6 limiter gain reduction
55	*yy/zz*	Expansion: Input 20 auto-level, gate status / Output 5 limiter gain reduction
56	*0*-1-2-3-4-5-6-7	Inputs 1-7 ducker status bits: 0 = no ducking attenuation applied, 1 = input is being ducked
57	*0*-8-9-10-…14	Inputs 8-14 ducker status bits: 0 = no ducking attenuation applied, 1 = input is being ducked
58	*0*-15-16-...20-*0*	Inputs 15-20 ducker status bits: 0 = no ducking attenuation applied, 1 = input is being ducked
59	F7	Sys-Ex end of transmission byte

ne24.24M Meter Notes:

xx - input and output level bytes use the following binary format: 0CLLLLLL
Bits 5-0 represent the dBu level, where 0 = <-42 dBu, 1 to 3F = -42 dBu to +20 dBu.
Bit 6 is the clip detector, where 0 = not clipped, 1 = clipped.

yy - input auto-level & gate status bytes use the following binary format: 0GALLLLL
Bits 4-0 represent the auto-leveler gain/attenuation in decibels, where 0 to 1F = 0 to 31 dB.
Bit 5 is the auto-leveler gain/attenuation type: 0 = attenuation, 1 = gain.
Bit 6 is the gate status: 0 = open (signal passes), 1 = closed (signal muted).

zz - output limiter gain reduction bytes represent the actual decibel amount of attenuation applied, (0 = 0 dB, 1 = 1 dB, …).

04 - Preset Names Request

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	04	Message type 04 = Preset Names Request
8	F7	Stop byte

05 - Preset Names Response (unit's reply to preset names request)

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	05	Message type 05 = Preset Names Response
8-707	*yy*	700 ASCII name characters' hex values, 20 per preset starting w/preset #1, (valid range: 20 to 7A)
708	F7	Stop byte

06 - Preset Save

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5

7	06	Message type 06 = Preset Save
8	*xx*	Preset number to save to, where 00 = preset 1, 01 = preset 2, 02 = preset 3, …
9-28	*yy*	20 ASCII name characters' hex values in the range of 20 to 7A
29	F7	Stop byte

07 - Preset Recall

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	07	Message type 07 = Preset Recall
8	*xx*	Preset number to recall, where 00 = preset 1, 01 = preset 2, 02 = preset 3, …
9	*zz*	Mute status: 00 = as per preset settings, 01 = force all channels to mute
10	F7	Stop byte

08 - Type: 1 - Data Download: Input Channel

(Download new input channel data to the ne24.24M only.
Refer to: "ne24.24M Input Channel Message", towards the end of this document.)

08 - Type: 2 - Data Download: Output Channel

(Download new output channel data to the ne24.24M only.
Refer to: "ne24.24M Output Channel Message", towards the end of this document.)

09 - Preset / Channel Name Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	09	Message type 09 = Preset / Channel Name Message
8	*tt*	Type: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60, 127 = Working Preset
9-28	*yy*	20 ASCII name characters' hex value, (valid range: 20 to 7A)
29	F7	Stop byte

0A - Polarity Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	0A	Message type 0A = Polarity Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*yy*	Polarity: 00 = normal; 01 = inverted
10	F7	Stop byte

0B - Preamp Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	0B	Message type 0B = Preamp Message
8	*xx*	Channel: 00-3B = Inputs 1-60
9	*yy*	Preamp gain: 00 = 0 dB; 14 = 20 dB; 28 = 40 dB; 3C = 60 dB
10	*zz*	Phantom power: 00 = off; 01 = on
11	F7	Stop byte

0C - Gain Message

(Note: affects 'Gain' function on Hot-plug DSP products.)

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	0C	Message type 0C = Gain Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*yy*	Gain bits 13-7; decimal range 7692 to 8312 = -50 to +12 dB in 0.1 dB steps, (8192 = 0 dB)
10	*zz*	Gain bits 6-0; [see Sample Gain Bytes at the end of this document for more details]
11	F7	Stop byte

0D - Delay Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	0D	Message type 0D = Delay Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*yy*	Delay bits 20-14; Delay time in seconds = (21-bit Delay Word)/(48,000)
10	*yy*	Delay bits 13-7; Delay word decimal range = 0-32,760 (0-682.500 ms)
11	*yy*	Delay bits 6-0;
12	F7	Stop byte

Note: there is an additional propagation delay of 1.46 ms from any input to any output, due to the digital converters & DSP.

0E - EQ Filter Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4

6	00	Header byte 5
7	0E	Message type 0E = EQ Filter Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*yy*	Filter number: 00 = filter 1, 01 = filter 2, 02 = filter 3, etc…
10	*ff*	Frequency bit 14 (xxxxxxxE) 15-bit Frequency Word = actual frequency in Hertz
11	*ff*	Frequency bits 13-7 (xDCBA987) [see limits below]
12	*ff*	Frequency bits 6-0 (x6543210) [also, see Sample Frequency Bytes at the end of this doc]
13	*qq*	Q-index range: 0B-6B = 1/64 to 4 oct [see Bandwidth vs. Q-index Bytes at the end of this doc]
14	*gg*	Filter Gain bits 13-7 (xDCBA987) [see limits below]
15	*gg*	Filter Gain bits 6-0 (x6543210) [also, see Sample Gain Bytes at the end of this document]
16	*st*	Status & Type: bit 6 (status) - 00 = bypass, 01 = active; lower nibble (type) - Value 00-05 = PEQ, LS1, LS2, HS1, HS2, Allpass
17	F7	Stop byte

EQ Notes:
Parametric filter frequency range: 20 Hz to 20,000 Hz
Parametric filter gain range: -30dB to +15dB in 0.1dB steps; 14-bit Gain Word decimal range = 7892 to 8342 (8192 = 0dB)
Low Shelf frequency range: 20 Hz to 2,000 Hz
High Shelf frequency range: 3,890 Hz to 20,000 Hz
Shelf filter gain range: -15dB to +15dB in 0.1dB steps; 14-bit Gain Word decimal range = 8042 to 8342 (8192 = 0dB)

0F - Gate Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	0F	Message type 0F = Gate Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*tt*	Threshold: 14-78 = -80 to +20 dBu
10	*ff*	Floor: 13 = Off (-INF); 14-64 = -80 to 0 dBu
11	*ar*	Attack rate: 00-07 = 0.2, 0.5, 1, 2, 5, 10, 20, 50 ms/dB
12	*rr*	Release rate: 00-07 = 5, 10, 20, 50, 100, 200, 500, 1000 ms/dB
13	*ss*	Status: 00 = bypass; 01 = active
14	F7	Stop byte

10 - Auto-Leveler Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	10	Message type 10 = Auto-Leveler Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*tl*	Target Level: 3C-78 = -40 to +20 dBu
10	*tt*	Threshold: 46-64 = -30 to 0 dB below the target level
11	*rr*	Ratio: 00-06 = 1.2, 1.5, 2, 3, 4, 6, 10 to 1
12	*gr*	Gain change rates: Bits3-0 (lower nibble) = increase rate, Bits7-4 (upper nibble) = decrease rate value 00-07 = 5, 10, 20, 50, 100, 200, 500, 1000 ms/dB
13	*ht*	Hold time: 00-06 = 0 to 6 seconds
14	*ss*	Status: 00 = bypass; 01 = active
15	F7	Stop byte

11 - Dynamic Ducker Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	11	Message type 11 = Dynamic Ducker Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*tt*	Threshold: 14-78 = -80 to +20 dBu
10	*dd*	Depth (amount of attenuation): 45 = Off (-INF); 46-64 = -30 to 0 dBu
11	*rr*	Release rate: 00-07 = 5, 10, 20, 50, 100, 200, 500, 1000 ms/dB
12	*ss*	Status: 00 = bypass; 01 = high priority trigger; 02 = low priority trigger; 03 = ducked program
13	F7	Stop byte

12 - Mixer Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	12	Message type 12 = Mixer Message
8	*xx*	Channel: 40-7B = Outputs 1-60 (this selects the output whose mixer you wish to address)
9	*ss*	Source (mix fader): 00-3B = Inputs 1-60
10	*ll*	Level: 00 = -INF; 01-3F = -50 to +12 dB (in 1dB steps)
11	*ss*	Routing: 00 = disable; 01 = enable (choose enable to allow Source to Output Channel routing)
12	*mm*	Mute: 00 = not muted; 01 = muted (this is the mute status for the mixer fader)
13	F7	Stop byte

13 - HPF/LPF Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	13	Message type 13 = HPF/LPF Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*yy*	Filter: 00 = high-pass filter; 01 = low-pass filter
10	*ff*	Frequency bit 14 (xxxxxxxE) 15-bit Frequency Word = actual frequency in Hertz
11	*ff*	Frequency bits 13-7 (xDCBA987) [see Sample Frequency Bytes at the end of this document]
12	*ff*	Frequency bits 6-0 (x6543210)
13	*tt*	Type: 00-0A = ButterWorth2, Bessel2, LinkwitzRiley2, BW/LR3, B3, BW4, B4, LR4, BW8, B8, LR8
14	F7	Stop byte

14 - Compressor-Limiter Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1

3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	14	Message type 14 = Compressor-Limiter Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*tt*	Threshold: 50-78 = -20 to +20 dBu
10	*rr*	Ratio: 00-08 = 1.2, 1.5, 2, 3, 4, 6, 10, 20, INF to 1
11	*ar*	Attack rate: 00-07 = 0.2, 0.5, 1, 2, 5, 10, 20, 50ms/dB
12	*rr*	Release rate: 00-07 = 5, 10, 20, 50, 100, 200, 500, 1000ms/dB
13	*ss*	Status: 00 = bypass; 01 = active
14	*ll*	Link: 00 = not linked; 01 = linked (linked channels track the channel with most gain reduction)
15	F7	Stop byte

15 - Channel Mute Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	15	Message type 15 = Channel Mute Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*yy*	Mute status: 00 = not muted, 01 = muted
10	F7	Stop byte

16 - EQ Status Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	16	Message type 16 = EQ Status Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*yy*	EQ Status: 00 = bypass; 01 = active
10	F7	Stop byte

17 - Mute/Unmute All Outputs Message

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	17	Message type 17 = Mute/Unmute All Outputs Message
8	*yy*	Status: 00 = unmute all outputs; 01 = mute all outputs
9	F7	Stop byte

19 - Mixer Fader Mute/Unmute Message

Byte#	*Value*	*Description*

1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	19	Message type 19 = Routing Source Enable/Disable Message
8	*xx*	Channel: 40-7B = Outputs 1-60
9	*ss*	Source (mix fader): 00-3B = Inputs 1-60
10	*yy*	New Mixer Fader Mute Status: 00 = not muted, 01 = muted
11	F7	Stop byte

1A - Gain Increment/Decrement Message

(Note: affects 'Gain' function on Hot-plug DSP products.)

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	1A	Message type 1A = Increment/Decrement Gain Message
8	*xx*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
9	*vv*	00-03 = .5dB, 1dB, 2dB, 3dB decrement; 10-13 = .5dB, 1dB, 2dB, 3dB increment
10	F7	Stop byte

WR-03 – Preset Number & Mute Status Inquiry

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	03	Message type 03 = Preset Number & Mute Status Inquiry
8	00	WR identification byte 1
9	01	WR identification byte 2
10	F7	Stop Byte

WR-04 – Preset Number & Mute Status Response

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	04	Message type 04 = Preset Number & Mute Status Response
8	00	WR identification byte 1
9	01	WR identification byte 2
10	*pn*	Preset number, where 00 = preset 1, 01 = preset 2, 02 = preset 3, …
11	0-7-6-5-4-3-2-1	Inputs 1-7 mute status, note: each bit represents an input channel, 1 = muted, 0 = not muted
12	0-14-13-12-11-10-9-8	Inputs 8-14 mute status
13	0-x-20-19-18-17-16-15	Inputs 15-20 mute status
14	*sp*	Spare byte (undefined)
15	0-7-6-5-4-3-2-1	Outputs 1-7 mute status, note: each bit represents an output channel, 1 = muted, 0 = not muted

16	0-14-13-12-11-10-9-8	Outputs 8-14 mute status
17	0-x-20-19-18-17-16-15	Outputs 15-20 mute status
18	*sp*	Spare byte (undefined)
19	F7	Stop Byte

WR-05 – Output Gain & Mixer Mutes Inquiry

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	05	Message type 05 = Output Gain & Mixer Mutes Inquiry
8	00	WR identification byte 1
9	01	WR identification byte 2
10	*nn*	Output channel: 00-3B = Outputs 1-60
11	F7	Stop Byte

WR-06 – Output Gain & Mixer Mutes Response

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	06	Message type 06 = Output Gain & Mixer Mutes Response
8	00	WR identification byte 1
9	01	WR identification byte 2
10	*nn*	Output channel: 00-3B = Outputs 1-60
11	*gg*	Output channel gain, formatted in the range of 00-3F: 00 = -INF, 01-3F = -50 to +12dB
12	0-7-6-5-4-3-2-1	Mixer faders 1-7 mute status, note: each bit represents a fader, 1 = muted, 0 = not muted
13	0-14-13-12-11-10-9-8	Mixer faders 8-14 mute status
14	0-x-20-19-18-17-16-15	Mixer faders 15-20 mute status
15	*sp*	Spare byte (undefined)
16	F7	Stop Byte

WR-07 – Channel Gain Inquiry

(Note: pertains to '(ne)WR5 Remote Gain' function on Hot-plug DSP products.)

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	07	Message type 07 = Channel Gain Inquiry
8	00	WR identification byte 1
9	01	WR identification byte 2
10	*nn*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
11	F7	Stop Byte

WR-08 – Channel Gain Response

(Note: pertains to '(ne)WR5 Remote Gain' function on Hot-plug DSP products.)

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	08	Message type 08 = Channel Gain Response
8	00	WR identification byte 1
9	01	WR identification byte 2
10	*nn*	Channel: 00-3B = Inputs 1-60, 40-7B = Outputs 1-60
11	*gg*	Channel gain, formatted in the range of 00-3F: 00 = -INF, 01-3F = -50 to +12dB
12	F7	Stop Byte

WR-0A – Mute/Unmute with Multiple Channel Selection

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	0A	Message type 0A = Mute/Unmute Message with Multiple Channel Selection
8	00	WR identification byte 1
9	01	WR identification byte 2
10	*um*	00 = unmute selected channels, 01 = mute selected channels
11	0-7-6-5-4-3-2-1	Inputs 1-7 selection, note: high bit means associated channel is selected for muting/unmuting
12	0-14-13-12-11-10-9-8	Inputs 8-14 selection
13	0-x-20-19-18-17-16-15	Inputs 15-20 selection
14	00	Spare byte
15	0-7-6-5-4-3-2-1	Outputs 1-7 selection
16	0-14-13-12-11-10-9-8	Outputs 8-14 selection
17	0-x-20-19-18-17-16-15	Outputs 15-20 selection
18	00	Spare byte
19	F7	Stop Byte

WR-0B – Gain Message with Multiple Channel Selection

(Note: affects '(ne)WR5 Remote Gain' function on Hot-plug DSP products.)

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	0B	Message type 0B = Target Device Gain Message
8	00	WR identification byte 1
9	01	WR identification byte 2
10	*gg*	New gain value, formatted in the range of 00-3F: 00 = -INF, 01-3F = -50 to +12dB
11	0-7-6-5-4-3-2-1	Inputs 1-7 selection, note: high bit means associated channel is selected to receive new gain value
12	0-14-13-12-11-10-9-8	Inputs 8-14 selection
13	0-x-20-19-18-17-16-15	Inputs 15-20 selection
14	00	Spare byte
15	0-7-6-5-4-3-2-1	Outputs 1-7 selection
16	0-14-13-12-11-10-9-8	Outputs 8-14 selection
17	0-x-20-19-18-17-16-15	Outputs 15-20 selection

18	00	Spare byte
19	F7	Stop Byte

WR-0C – Mixer Faders Mute/Unmute with Multiple Source Selection

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	0C	Wall Remote message class identifier
6	00	Header byte 5
7	0C	Message type 0C = Target Device Mixer Faders Mute/Unmute with Multiple Source Selection
8	00	WR identification byte 1
9	01	WR identification byte 2
10	0-7-6-5-4-3-2-1	Mixer (output channel) 1-7 selection, note: high bit means output is selected to receive
11	0-14-13-12-11-10-9-8	Mixer (output channel) 8-14 selection, mix fader mute/unmute changes
12	0-x-20-19-18-17-16-15	Mixer (output channel) 15-20 selection
13	00	Spare byte
14	0-7-6-5-4-3-2-1	Mix faders 1-7 to be Muted, note: high bit = fader will be muted, low bit (0) = fader not affected
15	0-14-13-12-11-10-9-8	Mix faders 8-14 to be Muted
16	0-x-20-19-18-17-16-15	Mix faders 15-20 to be Muted
17	00	Spare byte
18	0-7-6-5-4-3-2-1	Mix faders 1-7 to Unmute, note: high bit = fader will be unmuted, low bit (0) = fader not affected
19	0-14-13-12-11-10-9-8	Mix faders 8-14 to Unmute
20	0-x-20-19-18-17-16-15	Mix faders 15-20 to Unmute
21	00	Spare byte
22	F7	Stop Byte

42 - Local Preset Recall Update

Byte#	*Value*	*Description*
1	F0	Start byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	42	Message type 42 = Local Preset Recall Update
8	*pp*	New Preset Number Loaded: 00 = Preset 1, 01 = Preset 2, 02 = Preset 3, …
9	F7	Stop byte

Sample Gain Bytes to Transmit ($ denotes Hexadecimal)

Gain(dB)	Gain Value	**Byte1**(bits13-7)	**Byte2**(bits6-0)
+15	8342	$41	$16
+14	8332	$41	$0C
+13	8322	$41	$02
+12	8312	$40	$78
+11	8302	$40	$6E
+10	8292	$40	$64
+ 9	8282	$40	$5A
+ 8	8272	$40	$50
+ 7	8262	$40	$46
+ 6	8252	$40	$3C
+ 5	8242	$40	$32
+ 4	8232	$40	$28
+ 3	8222	$40	$1E
+ 2	8212	$40	$14
+ 1	8202	$40	$0A
0	8192	$40	$00
- 1	8182	$3F	$76
- 2	8172	$3F	$6C
- 3	8162	$3F	$62
- 4	8152	$3F	$58
- 5	8142	$3F	$4E
- 6	8132	$3F	$44
- 7	8122	$3F	$3A
- 8	8112	$3F	$30
- 9	8102	$3F	$26
-10	8092	$3F	$1C
-11	8082	$3F	$12
-12	8072	$3F	$08
-13	8062	$3E	$7E
-14	8052	$3E	$74
-15	8042	$3E	$6A
-16	8032	$3E	$60
-17	8022	$3E	$56
-18	8012	$3E	$4C
-19	8002	$3E	$42
-20	7992	$3E	$38
-21	7982	$3E	$2E
-22	7972	$3E	$24
-23	7962	$3E	$1A
-24	7952	$3E	$10
-25	7942	$3E	$06
-26	7932	$3D	$7C
-27	7922	$3D	$72
-28	7912	$3D	$68
-29	7902	$3D	$5E
-30	7892	$3D	$54
-31	7882	$3D	$4A
-32	7872	$3D	$40
-33	7862	$3D	$36
-34	7852	$3D	$2C
-35	7842	$3D	$22
-36	7832	$3D	$18
-37	7822	$3D	$0E
-38	7812	$3D	$04
-39	7802	$3C	$7A
-40	7792	$3C	$70
-41	7782	$3C	$66
-42	7772	$3C	$5C
-43	7762	$3C	$52
-44	7752	$3C	$48
-45	7742	$3C	$3E
-46	7732	$3C	$34
-47	7722	$3C	$2A
-48	7712	$3C	$20
-49	7702	$3C	$16
-50	7692	$3C	$0C
(MUTE	7691	$3C	$0B)

Sample Frequency Bytes to Transmit ($ denotes Hexadecimal)

Frequency(Hz)	**Byte1**(bit14)	**Byte2**(bits13-7)	**Byte3**(bits6-0)
(LPF-Off	$01	$1C	$41)
20,000	$01	$1C	$40
19,500	$01	$18	$2C
19,000	$01	$14	$38
18,500	$01	$10	$44
18,000	$01	$0C	$50
17,500	$01	$08	$5C
17,000	$01	$04	$68
16,500	$01	$00	$74
16,000	$00	$7D	$00
15,500	$00	$79	$0C
15,000	$00	$75	$18
14,500	$00	$71	$24
14,000	$00	$6D	$30
13,500	$00	$69	$3C
13,000	$00	$65	$48
12,500	$00	$61	$54
12,000	$00	$5D	$60
11,500	$00	$59	$6C
11,000	$00	$55	$78
10,500	$00	$52	$04
10,000	$00	$4E	$10
9,500	$00	$4A	$1C
9,000	$00	$46	$28
8,500	$00	$42	$34
8,000	$00	$3E	$40
7,500	$00	$3A	$4C
7,000	$00	$36	$58
6,500	$00	$32	$64
6,000	$00	$2E	$70
5,500	$00	$2A	$7C
5,000	$00	$27	$08
4,500	$00	$23	$14
4,000	$00	$1F	$20
3,500	$00	$1B	$2C
3,000	$00	$17	$38
2,500	$00	$13	$44
2,000	$00	$0F	$50
1,500	$00	$0B	$5C
1,000	$00	$07	$68
900	$00	$07	$04
800	$00	$06	$20
700	$00	$05	$3C
600	$00	$04	$58
500	$00	$03	$74
400	$00	$03	$10
300	$00	$02	$2C
200	$00	$01	$48
100	$00	$00	$64
90	$00	$00	$5A
80	$00	$00	$50
70	$00	$00	$46
60	$00	$00	$3C
50	$00	$00	$32
40	$00	$00	$28
30	$00	$00	$1E
20	$00	$00	$14
(HPF-Off	$00	$00	$13)

Bandwidth vs. Q-index Byte to Transmit ($ denotes Hexadecimal)

BW = (1/3) * 2 ^ [(Q-index - 64)/12]

BW(oct)	Q-index	BW(oct)	Q-index	BW(oct)	Q-index
0.016	$0B	0.105	$2C	0.667	$4C
0.017	$0C	0.111	$2D	0.706	$4D
0.018	$0D	0.118	$2E	0.748	$4E
0.019	$0E	0.125	$2F	0.793	$4F
0.020	$0F	0.132	$30	0.840	$50
0.021	$10	0.140	$31	0.890	$51
0.022	$11	0.148	$32	0.943	$52
0.023	$12	0.157	$33	1.00	$53
0.025	$13	0.167	$34	1.06	$54
0.026	$14	0.177	$35	1.12	$55
0.028	$15	0.187	$36	1.19	$56
0.029	$16	0.198	$37	1.26	$57
0.031	$17	0.210	$38	1.33	$58
0.033	$18	0.222	$39	1.41	$59
0.035	$19	0.236	$3A	1.50	$5A
0.037	$1A	0.250	$3B	1.59	$5B
0.039	$1B	0.265	$3C	1.68	$5C
0.042	$1C	0.280	$3D	1.78	$5D
0.044	$1D	0.297	$3E	1.89	$5E
0.047	$1E	0.315	$3F	2.00	$5F
0.050	$1F	0.333	$40	2.12	$60
0.052	$20	0.353	$41	2.24	$61
0.056	$21	0.374	$42	2.38	$62
0.059	$22	0.396	$43	2.52	$63
0.062	$23	0.420	$44	2.67	$64
0.066	$24	0.445	$45	2.83	$65
0.070	$25	0.471	$46	2.99	$66
0.074	$26	0.499	$47	3.17	$67
0.079	$27	0.529	$48	3.36	$68
0.083	$28	0.561	$49	3.56	$69
0.088	$29	0.594	$4A	3.77	$6A
0.094	$2A	0.629	$4B	4.00	$6B
0.099	$2B				

Ashly Audio 'ne' Series : RS-232 Gain Message Details

Sample Gain Message
To set Input 7 to -50dB, transmit the following:

Byte Number:	1	2	3	4	5	6	7	8	9	10	11
Hexadecimal:	F0	00	01	2A	06	00	0C	06	3C	0C	F7
or Decimal:	240	0	1	42	6	0	12	6	60	12	247
or Crestron:	\xF0	\x00	\x01	\x2A	\x06	\x00	\x0C	\x06	\x3C	\x0C	\xF7

Byte # 1-6 are fixed header bytes.

Byte # 7 is the message type and is fixed.

Byte # 8 is the channel index for the input/output channel to receive the new gain setting.
Byte # 8 value is 0-59 (or hex 00-3B) for Inputs 1-60 respectively.
Byte # 8 value is 64-123 (or hex 40-7B) for Outputs 1-60 respectively.

Byte # 9 and Byte # 10 each contain part of the integer Gain Word value, (see examples below).
Byte # 9 = (gainWord / 128) = upper bits of Gain Word
-Or- for Crestron users Byte # 9 = chr(gainWord / 128)

Byte # 10 = (gainWord & 127) = the seven least significant bits of Gain Word
-Or- for Crestron users Byte # 10 = chr(gainWord & 127)

Gain Word has a decimal, integer range of 7692 to 8312 which represents -50dB to +12dB in 0.1dB steps.

Examples		(Hex)		(Hex)
Gain Word value 7692 =	**-50dB** :	Byte # 9 =	**3C** ,	Byte # 10 = **0C**
Gain Word value 7792 =	**-40dB** :	Byte # 9 =	**3C** ,	Byte # 10 = **70**
Gain Word value 7892 =	**-30dB** :	Byte # 9 =	**3D** ,	Byte # 10 = **54**
Gain Word value 7992 =	**-20dB** :	Byte # 9 =	**3E** ,	Byte # 10 = **38**
Gain Word value 8092 =	**-10dB** :	Byte # 9 =	**3F** ,	Byte # 10 = **1C**
Gain Word value 8192 =	**0dB** :	Byte # 9 =	**40** ,	Byte # 10 = **00**
Gain Word value 8292 =	**+10dB** :	Byte # 9 =	**40** ,	Byte # 10 = **64**
Gain Word value 8312 =	**+12dB** :	Byte # 9 =	**40** ,	Byte # 10 = **78**

Byte # 11 is the stop byte and is fixed.

ASHLY AUDIO ne24.24M : RS-232 Input Channel Message

BYTE #	VALUE OR TYPE	DESCRIPTION OR RANGE
1	F0	Start Byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	message type	01 for **Data Response**, 08 for **Data Download**
8	01	sub type: input channel data
9	channel number	00 to 13 = input channels 1 to 20 (as available)
10	input name character 1	ASCII characters "(blank space)" through "z", hexadecimal values 20-7A
11	input name character 2	
12	input name character 3	
13	input name character 4	
14	input name character 5	
15	input name character 6	
16	input name character 7	
17	input name character 8	
18	input name character 9	
19	input name character 10	
20	input name character 11	
21	input name character 12	
22	input name character 13	
23	input name character 14	
24	input name character 15	
25	input name character 16	
26	input name character 17	
27	input name character 18	
28	input name character 19	
29	input name character 20	
30	mute status	00 = not muted; 01 = muted
31	eq status	00 = bypassed; 01 = active
32	preamp gain	00 = 0dB (line); 14 = 20dB; 28 = 40dB; 3C = 60dB
33	phantom power status	00 = off; 01 = on
34	gain	bits 13-7; decimal range 7692 to 8312 = -50dB to +12dB (in 0.1dB steps), [8192 = 0dB]
35	gain	bits 6-0; refer to 'Sample Gain Bytes' page
36	polarity	00 = normal; 01 = inverted
37	delay byte 1	bits 20-14; (x-20-19-18-17-16-15-14) Delay in seconds = [21-bit value]/48,000
38	delay byte 2	bits 13-7; (x-13-12-11-10-9-8-7) Most significant bit of each byte must be zero
39	delay byte 3	bits 6-0; (x-6-5-4-3-2-1-0)
40	gate threshold	14-78 = -80 to +20 dBu (in 1dB steps)
41	gate floor	13 = Off (-INF); 14-64 = -80 to 0 dBu (in 1dB steps)
42	gate attack rate	00-07 = 0.2, 0.5, 1, 2, 5, 10, 20, 50 ms/dB
43	gate release rate	00-07 = 5, 10, 20, 50, 100, 200, 500, 1000 ms/dB
44	gate status	00 = bypassed; 01 = active
45	autoleveler target level	3C-78 = -40 to +20 dBu (in 1dB steps)
46	autoleveler threshold below target	46-64 = -30 to 0 dB (in 1dB steps)
47	autoleveler ratio	00-06 = 1.2:1, 1.5:1, 2:1, 3:1, 4:1, 6:1, 10:1
48	autoleveler gain change rate	00-07 = 5,10,20,50,100,200,500,1000ms/dB; bits3-0 = increase rate, bits7-4 = decr rate
49	autoleveler hold time	00-06 = 0-6 seconds
50	autoleveler status	00 = bypassed; 01 = active
51	frequency	**EQ Filter 1** frequency bit 14 (x-x-x-x-x-x-x-14)
52	frequency	bits 13-7; (x-13-12-11-10-9-8-7) Frequency(Hz) = 15-bit value, PEQ range: 20-20K
53	frequency	bits 6-0; (x-6-5-4-3-2-1-0); refer to 'Sample Frequency Bytes' page
54	Q	filter Q: refer to 'Bandwidth vs. Q-index Byte' page
55	level	bits 13-7; decimal range 7792 to 8312 = -40dB to +12dB (0.1dB steps) [8192 = 0dB]
56	level	bits 6-0; refer to 'Sample Gain Bytes' page
57	status & type	bit 6: 0 = bypass, 1 = active; lower nibble value: 0-5 = PEQ, LS1, LS2, HS1, HS2, Allpass
58	frequency	**EQ Filter 2**
59	frequency	
60	frequency	
61	Q	
62	level	
63	level	
64	status & type	
65	frequency	**EQ Filter 3**

66	frequency	
67	frequency	
68	Q	
69	level	
70	level	
71	status & type	
72	frequency	**EQ Filter 4**
73	frequency	
74	frequency	
75	Q	
76	level	
77	level	
78	status & type	
79	frequency	**EQ Filter 5**
80	frequency	
81	frequency	
82	Q	
83	level	
84	level	
85	status & type	
86	frequency	**EQ Filter 6**
87	frequency	
88	frequency	
89	Q	
90	level	
91	level	
92	status & type	
93	frequency	**EQ Filter 7**
94	frequency	
95	frequency	
96	Q	
97	level	
98	level	
99	status & type	
100	frequency	**EQ Filter 8**
101	frequency	
102	frequency	
103	Q	
104	level	
105	level	
106	status & type	
107	frequency	**EQ Filter 9**
108	frequency	
109	frequency	
110	Q	
111	level	
112	level	
113	status & type	
114	frequency	**EQ Filter 10**
115	frequency	
116	frequency	
117	Q	
118	level	
119	level	
120	status & type	
121	frequency	**EQ Filter 11**
122	frequency	
123	frequency	
124	Q	
125	level	
126	level	
127	status & type	
128	frequency	**EQ Filter 12**
129	frequency	
130	frequency	
131	Q	

132	level	
133	level	
134	status & type	
135	frequency	**EQ Filter 13**
136	frequency	
137	frequency	
138	Q	
139	level	
140	level	
141	status & type	
142	frequency	**EQ Filter 14**
143	frequency	
144	frequency	
145	Q	
146	level	
147	level	
148	status & type	
149	frequency	**EQ Filter 15**
150	frequency	
151	frequency	
152	Q	
153	level	
154	level	
155	status & type	
156	ducker threshold	14-78 = -80 to +20 dBu (in 1dB steps)
157	ducker depth	45 = Off (-INF); 46-64 = -30 to 0 dBu (in 1dB steps)
158	ducker release	00-07 = 5, 10, 20, 50, 100, 200, 500, 1000 ms/dB
159	ducker status	00 = bypass; 01 = high priority trigger; 02 = low priority trigger; 03 = ducked program
160	$F7	Stop Byte

ASHLY AUDIO ne24.24M : RS-232 Output Channel Message

BYTE #	VALUE OR TYPE	DESCRIPTION OR RANGE
1	F0	Start Byte
2	00	Header byte 1
3	01	Header byte 2
4	2A	Header byte 3
5	06	Header byte 4
6	00	Header byte 5
7	message type	01 for **Data Response**, 08 for **Data Download**
8	02	sub type: output channel data
9	channel number	00-13 = output channels 1 to 20 (as available)
10	output name character 1	ascii characters "(blank space)" through "z", hexadecimal values 20-7A
11	output name character 2	
12	output name character 3	
13	output name character 4	
14	output name character 5	
15	output name character 6	
16	output name character 7	
17	output name character 8	
18	output name character 9	
19	output name character 10	
20	output name character 11	
21	output name character 12	
22	output name character 13	
23	output name character 14	
24	output name character 15	
25	output name character 16	
26	output name character 17	
27	output name character 18	
28	output name character 19	
29	output name character 20	
30	mute status	00 = not muted; 01 = muted
31	eq status	00 = bypassed; 01 = active
32	mix status (routing enable) 1-7	x-7-6-5-4-3-2-1, input source routing status, where 0 = not routed, 1 = routed to this output
33	mix status (routing enable) 8-14	x-14-13-12-11-10-9-8, (source routing status for inputs 8 through 14 to this output)
34	mix status (routing enable) 15-20	x-x-20-19-18-17-16-15, (source routing status for inputs 15 through 20 to this output)
35	mix 1 (source: input 1)	bits 5-0 = Mixer Fader Level: 00 = -INF, 01-3F = -50 to +12 dB (in 1dB steps)
36	mix 2 (source: input 2)	bit 6 = mute status (1=muted)
37	mix 3 (source: input 3)	
38	mix 4 (source: input 4)	
39	mix 5 (source: input 5)	
40	mix 6 (source: input 6)	
41	mix 7 (source: input 7)	
42	mix 8 (source: input 8)	
43	mix 9 (source: input 9)	
44	mix 10 (source: input 10)	
45	mix 11 (source: input 11)	
46	mix 12 (source: input 12)	
47	mix 13 (source: input 13)	
48	mix 14 (source: input 14)	
49	mix 15 (source: input 15)	
50	mix 16 (source: input 16)	
51	mix 17 (source: input 17)	
52	mix 18 (source: input 18)	
53	mix 19 (source: input 19)	
54	mix 20 (source: input 20)	
55	hpf frequency	bit 14; (x-x-x-x-x-x-x-14); Frequency(Hz) = 15-bit value, range:20-20K
56	hpf frequency	bits 13-7; (x-13-12-11-10-9-8-7); Most significant bit of each byte must be zero
57	hpf frequency	bits 6-0; (x-6-5-4-3-2-1-0); refer to 'Sample Frequency Bytes' page
58	type	00-07 = Butterworth2, Bessel2, Linkwitz-Riley2, Bwrth/Lnk3, Bes3, Bwrth4, Bes4, Lnk4
59	lpf frequency	
60	lpf frequency	
61	lpf frequency	
62	type	
63	delay byte 1	bits 20-14; (x-20-19-18-17-16-15-14) Delay in seconds = [21-bit value]/48,000
64	delay byte 2	bits 13-7; (x-13-12-11-10-9-8-7) Most significant bit of each byte must be zero

65	delay byte 3	bits 6-0; (x-6-5-4-3-2-1-0)
66	frequency	**EQ Filter 1** frequency bit 14; (x-x-x-x-x-x-x-14)
67	frequency	frequency bits 13-7; (x-13-12-11-10-9-8-7) refer to 'Sample Frequency Bytes' page
68	frequency	bits 6-0; (x-6-5-4-3-2-1-0); Frequency(Hz) = 15-bit value, PEQ range: 20-20K
69	Q	filter Q: refer to 'Bandwidth vs. Q-index Byte' page
70	level	bits 13-7; decimal range 7792 to 8312 = -40dB to +12dB (0.1dB steps) [8192 = 0dB]
71	level	bits 6-0; refer to 'Sample Gain Bytes' page
72	status & type	bit 6: 0 = bypass, 1 = active; lower nibble value: 0-5 = PEQ, LS1, LS2, HS1, HS2, Allpass
73	frequency	**EQ Filter 2**
74	frequency	
75	frequency	
76	Q	
77	level	
78	level	
79	status & type	
80	frequency	**EQ Filter 3**
81	frequency	
82	frequency	
83	Q	
84	level	
85	level	
86	status & type	
87	frequency	**EQ Filter 4**
88	frequency	
89	frequency	
90	Q	
91	level	
92	level	
93	status & type	
94	frequency	**EQ Filter 5**
95	frequency	
96	frequency	
97	Q	
98	level	
99	level	
100	status & type	
101	frequency	**EQ Filter 6**
102	frequency	
103	frequency	
104	Q	
105	level	
106	level	
107	status & type	
108	frequency	**EQ Filter 7**
109	frequency	
110	frequency	
111	Q	
112	level	
113	level	
114	status & type	
115	frequency	**EQ Filter 8**
116	frequency	
117	frequency	
118	Q	
119	level	
120	level	
121	status & type	
122	frequency	**EQ Filter 9**
123	frequency	
124	frequency	
125	Q	
126	level	
127	level	
128	status & type	
129	frequency	**EQ Filter 10**
130	frequency	

131	frequency	
132	Q	
133	level	
134	level	
135	status & type	
136	frequency	**EQ Filter 11**
137	frequency	
138	frequency	
139	Q	
140	level	
141	level	
142	status & type	
143	frequency	**EQ Filter 12**
144	frequency	
145	frequency	
146	Q	
147	level	
148	level	
149	status & type	
150	frequency	**EQ Filter 13**
151	frequency	
152	frequency	
153	Q	
154	level	
155	level	
156	status & type	
157	frequency	**EQ Filter 14**
158	frequency	
159	frequency	
160	Q	
161	level	
162	level	
163	status & type	
164	frequency	**EQ Filter 15**
165	frequency	
166	frequency	
167	Q	
168	level	
169	level	
170	status & type	
171	gain	bits 13-7; decimal range 7692 to 8312 = -50dB to +12dB (in 0.1dB steps), [8192 = 0dB]
172	gain	bits 6-0; refer to 'Sample Gain Bytes' page
173	polarity	00 = normal; 01 = inverted
174	limiter threshold	50-78 = -20 to +20 dBu (in 1dB steps)
175	limiter ratio	00-07 = 1.2:1, 1.5:1, 2:1, 3:1, 4:1, 6:1, 10:1, 20:1, INF:1
176	limiter attack rate	00-07 = 0.2, 0.5, 1, 2, 5, 10, 20, 50 ms/dB
177	limiter release rate	00-07 = 5, 10, 20, 50, 100, 200, 500, 1000 ms/dB
178	limiter status	00 = bypassed; 01 = active
179	limiter link status	00 = not linked; 01 = linked (to limit bus of channels on same euroblock connector)
180	$F7	Stop Byte