

GOLDING AUDIO LTD

DMS 2000 V2 Specification

Digital Audio Playback Card

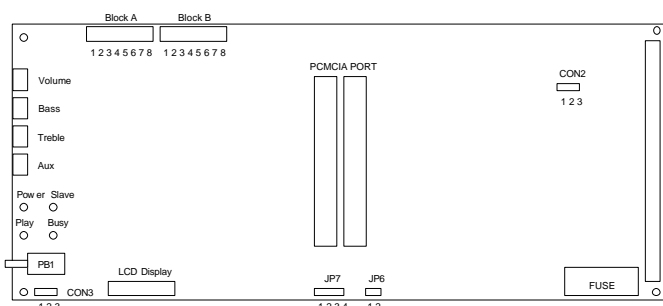
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Specification

Power Requirement	12-18v D.C. @ 200mA (300mA with LCD)
Compression Type	MPEG1 Layer 2
Sample Rates	32KHz 44.1KHz and 48KHz
Audio Outputs	2 x 600R @ 1v rms.
Signal to Noise ratio	>90dB
Gain Control	-40dB to +6dB
Bass Control	-9dB to +13dB
Bass Boost	0dB to +37dB
Treble Control	-11dB to +12dB
Bandwidth	15Hz to 22KHz (dependant on bit rate)
Memory Card type	PCMCIA Type1
Max card capacity	24MByte

Board layout

This is a general layout of the DMS2000 PCB including link blocks, connectors and control pot positions. Use this diagram to locate link blocks etc. as described in these sheets should you need to format or re-format any particular sound store board.



Running time charts

Flash Card Running Times / Sample Rate 48KHz / Joint Stereo

	Card Size >>	2	4	8	10M	12M	16	20	24
BIT	BANDWIDTH								
64kbps	20Hz-5KHz	4'00"	8'32"	17'0"	21'2"	25'4"	34'3"	43'1"	52'0"
96kbps	20Hz-6KHz	2'40"	5'30"	11'2"	14'2"	17'1"	23'0"	28'5"	34'4"
112kbps	20Hz-14.5KHz	2'10"	4'40"	9'40"	12'1"	14'4"	19'4"	24'4"	29'4"
128kbps	20Hz-15.5KHz	2'00"	4'10"	8'30"	10'4"	12'5"	17'1"	21'4"	26'0"
160kbps	20Hz-20KHz	1'30"	3'20"	6'50"	8'30"	10'2"	13'4"	17'2"	20'5"
192kbps	20Hz-20KHz	1'20"	2'40"	5'40"	7'10"	8'30"	11'3"	14'2"	17'2"
224kbps	20Hz-20KHz	1'10"	2'20"	4'50"	6'10"	7'20"	9'50"	12'2"	14'5"

Flash Card Running Times / Sample Rate 48KHz / Mono

	Card Size >>	2	4	8	10M	12M	16	20	24
BIT	BANDWIDTH								
64kbps	20Hz-11.5KHz	4'00"	8'32"	17'0"	21'2"	25'4"	34'3"	43'1"	52'0"
80kbps	20Hz-14.5KHz	3'10"	6'40"	13'4"	17'1"	20'4"	27'3"	34'4"	41'3"

Flash Card Running Times

The two charts show the maximum storage time available on any given flash memory card. Many configurations are possible however the configurations listed here are preferred and fully supported by the DMS2000.

Stereo and Mono

The DMS2000 is a two channel sound store system, both audio channels 1 and 2 operate as a pair. With stereo recordings each channel will play back it's relevant half of the stereo signal. With a mono recording both channels will carry the same audio programme.

It is not possible to select any one channel to play back on it's own. When any given message is replayed channels 1 and 2 are played together regardless of

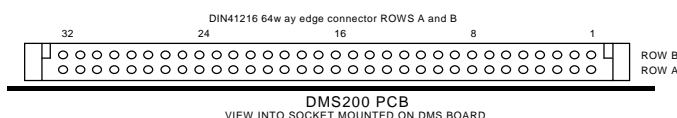
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Control and I/O pins

The control and I/O pins of the DMS2000 all appear on the 64way DIN41612 edge connector (CON1) on the rear edge of the PCB. The pin-out of this connector is listed and described in this section.



Pin	ROW A	ROW B
1	Line Out Left +	Line Out Left +
2	Audio Ground	Audio Ground
3	Line Out Left -	Line Out Left -
4	Line Out Right +	Line Out Right +
5	Audio Ground	Audio Ground
6	Line Out Right -	Line Out Right -
7	No Connection	No Connection
8	No Connection	No Connection
9	No Connection	No Connection
10	Trip Line 1	Trip Line 2
11	Trip Line 3	Trip Line 4
12	Trip Line 5	Trip Line 6
13	Trip Line 7	Trip Line 8
14	MUTE	PAUSE
15	RS232 RX	RS232 TX
16	CLK-B	CLK-A
17	SYNC-IN	RUN-IN
18	SYNC-OUT	RUN-OUT
19	No Connection	GO-OUT
20	D.C. Input	D.C. Input
21	Digital Ground	Digital Ground
22	No Connection	No Connection
23	No Connection	No Connection
24	No Connection	No Connection
25	No Connection	No Connection
26	No Connection	No Connection
27	No Connection	No Connection
28	No Connection	No Connection
29	5V OUT	5V OUT
30	Digital Ground	Digital Ground
31	Digital Ground	Digital Ground
32	D.C. Input	D.C. Input

Control and I/O pins

Control and I/O pins on the main 64 way edge connector (CON1) are used to control the DMS2000 their functions are described below.

Trip Inputs - Pins A10-A11-A12-A13-B10-B11-B12-B13)

With link A-1 not fitted these 8 pins allow direct access to messages 1to 8 by a single contact closure. With link A-1 fitted messages 1 to 255 can be accessed by entering a binary code on the 8 lines. This code must be stable for at least 100ms to be accepted. Trip inputs can be configured as active high or low depending on the setting of link A-2

Run Input - Pin B17

In (Master mode) this line stops the sound store running when pulled LOW for more than 50ms. (Slave mode) this line synchronises slave to master by resyncing at MPEG frame 2 if this line goes high for one frame period during frame 1 of master. If high for 2 or more frames, it is taken as a stop command. Must normally be low to run.

Run Output - Pin B18

(Master mode) Outputs a sync pulse to slaves at loop point. (Slave mode) Indicated to master that slave is ready to run.

Sync Input - Pin A17

Frame sync clock input for slave mode. This clock synchronises the mpeg frames together to avoid data corruption when re-syncing

Sync Output - Pin A18

Frame sync clock to slaves, and MAPS cards. (open collector output)

Go Output - Pin B19

Open collector output that is active while a message is playing. With link A8 out this line also outputs a 200ms pulse when the delay timer times out. (if timer is enabled link B6 fitted) This output can be used to switch up to 24V D.C. at 100mA such as an external relay.

Pause Input - Pin B14

Temporarily pauses playback of a message. (5V active LOW)

Mute - Pin A14

Mutes audio outputs whilst active. (5v active LOW)

Sample Clock - Pins A16 and B16 CLK-A CLK-B

(Master mode) Outputs balanced sample clock for slaves (Slave mode) Accepts balanced sample clock from master. Clock rates are 32KHz, 44.1KHz or 48KHz .

RS232 TX-RX - Pins A15 and B15

Not supported on current software.

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On-board links

There are several user options available on the DMS 2000 Board that should be set before use. These options are listed and described in this section.

Jumper Block A

	FITTED	NOT FITTED
1-	Binary Trip Inputs	8 Decimal Trip Inputs
2-	Active High Trips	Active Low Trips
3-	Interruptable Trips	Non Interruptable Trips
4-	Priority Trips	Non Priority Trips
5-	One Shot Trips	Loopable
6-	Go Line Active High	Go Line Active Low
7-	Self Interrupt On	No Self Interrupt
8-	Sequencer On	Go Line Timer Pulse On

Jumper Block B

1-	Enable Pots	Disable Pots #
2-	Tone Flat	Tone Variable
3-	LCD display On	LCD display Off
4-	Timer Sequence Once	Timer Loop
5-	60 Min Timer Range	4 Min Timer Range
6-	Timer/slave delay*	Bass Boost On
7-	NOT USED	NOT USED
8-	Normal Mode	Test Mode

Remove link whilst playing to save settings. * Slave delay adds delay at slaves to correct any phase errors.

JP6

NOT FITTED = Master Mode FITTED = Slave Mode

CON2 and CON3

Link CON 2 to position 1-2 and Link CON 3 to position 2-3 when using Active HIGH Trip Inputs. Link CON 2 to position 2-3 and Link CON 3 to position 1-2 when using Active LOW Trip Inputs. These two links have to be used in conjunction with Jumper Block A link 2

Jumper block A

JUMPER BLOCK A - link 1

FITTED = (Binary trips) You have access to 255 messages by entering an 8 bit binary code onto the 8 trip input lines. All 8 bits must be entered simultaneously and remain stable for 100 milliseconds minimum. The codes entered relate to the file extension of the message file name i.e. File extension .001message 1.
File extension .0FF = message 255

NOT FITTED = (Decimal trips) Enables you to directly access 8 messages by contact closure on any of the 8 trip input lines. Lower numbered trips have priority if more than one trip input pin is accessed. The trip must remain active for at least 100ms.

JUMPER BLOCK A - link 2

FITTED = (Active high) Trip inputs are active when 5v or logic 1 is applied. Useful if connecting directly to a computer output port or interface electronics.

NOT FITTED = (Active low) Trip inputs are activated when 0V or logic 0 is applied. This is the standard method of activation when interfacing to switched, relays or open collector outputs.

CON 2 and 3 LINK BLOCKS MUST BE SET IN CONJUNCTION WITH THIS LINK

JUMPER BLOCK A - link 3

FITTED = (Interruptable trips) If a message is playing and a different trip code is applied to the trip inputs the current message will cancel and the new message will be played.

NOT FITTED = (Non Interruptable trip) If a message is playing and a different trip code is applied to the trip inputs it is ignored.

JUMPER BLOCK A - link 4 (link 3 A must also be fitted)

FITTED = (Priority interrupt) A code being applied to the trip inputs whilst a message is already playing must be of a lower number to interrupt the currently playing message.

NOT FITTED = (NO Priority interrupt) Allows any trip code, other than the one currently playing to interrupt.

JUMPER BLOCK A - link 5

FITTED = (One shot trip enable) Any message currently playing will not loop if the trip code remains active at the end of the message. The active trip lines must be removed for at least 100ms before any other message can be accessed.

NOT FITTED = (One shot trip disabled) Any message will loop continuously as long as the trip code remains on the trip inputs.

JUMPER BLOCK A - link 6

FITTED = (Go line active during standby) Whilst a message is playing, this open collector output will be INACTIVE or high. With no message playing it will be ACTIVE or low. This output can be used to switch up to 24v D.C. at 100mA such as an external relay.

NOT FITTED = (Go line active during playback) Whilst a message is playing, this open collector output will be ACTIVE or low. With no message playing it will be INACTIVE or high.

JUMPER BLOCK A - link 7 (used in conjunction / link 5)

FITTED = (Self interrupt Enable) This function allows the currently playing message to be re-started by removing and re-applying the same trip code. The one shot link 5 - A must also be fitted for this function to operate.

NOT FITTED = (Self interrupt disable) The currently playing message can not be re-started by the same code until the message has finished playing.

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JUMPER BLOCK A - link 8

FITTED = (Sequencer) Any message from 192 (0C0 HEX) up to and including message 239 (0EF HEX) will be played in a sequence, advanced either by entering the trip code for message 001, or by the delay timer if enabled (link B-6 fitted).

NOTE As trip code 001 is used to advance the sequencer do not use it as a message number when using the sequencer function.

NOT FITTED = (Go line pulse at timer time out) The GO line output will give a 200ms pulse when the delay timer times out. When the onboard sequencer is not being used this pulse can be used to clock external control equipment.

Jumper block B

JUMPER BLOCK B - link 1

FITTED = (Enable pots) The preset pots on the front of the DMS2000 board are enabled and can be adjusted according to their function.

NOT FITTED = (Disable pots) This link must be removed while a message is playing to save the current settings in memory. With the link removed the preset controls are disabled from further use.

JUMPER BLOCK B - link 2

FITTED = (Tone flat) the bass and treble settings are preset to a flat response. The bass and treble preset controls have no effect in this mode.

NOT FITTED = (Tone control enable) Bass and Treble controls are enabled in this mode and operate normally.

JUMPER BLOCK B - link 3

FITTED = (LCD enable) this link enables the off board LCD display unit

NOT FITTED = (LCD disable) this mode disables the LCD display unit if fitted. When no LCD display is to be fitted to a DMS such as a nest unit system this link must be left out.

JUMPER BLOCK B - link 4

Links 8-A and 6-B must be fitted for this mode and there must be messages recorded in the sequence location between 192 and 239.

FITTED = (Play timed sequence once) messages in the sequencer will be played once only and will not play again until the sequence is re-started by entering code 001.

NOT FITTED = (Continuous timed sequence) messages in the sequence locations 192 to 239 will be played back in a continuous loop sequence.

JUMPER BLOCK B - link 5

FITTED = (Timer range) Delay timer range set from 30 sec to 60 min in 30 sec increments.

NOT FITTED = (Timer range) Delay timer range set from 2 sec to 4 min in 2 sec increments.

JUMPER BLOCK B - link 6

FITTED = (Timer enable) Enables delay timer, AUX preset is used to set delay time.

NOT FITTED = (Bass boost) Enables bass boost function, AUX preset sets amount of bass boost.

JUMPER BLOCK B - link 7

NOT USED / NOT FITTED

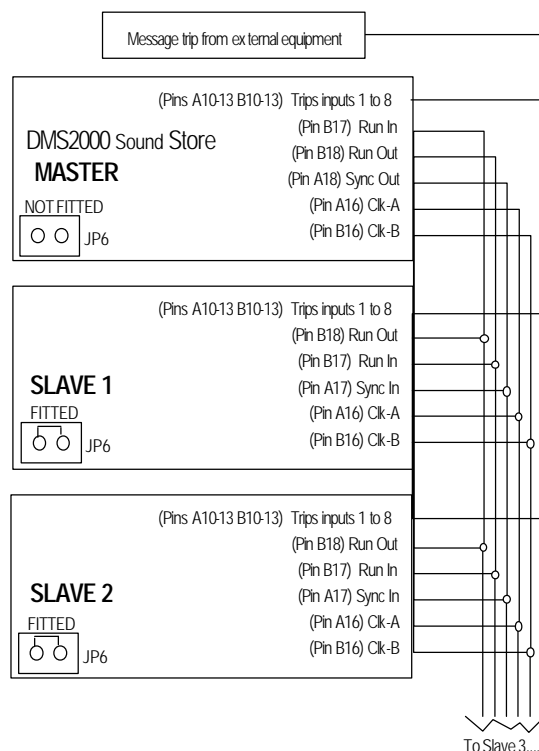
JUMPER BLOCK B - link 8

FITTED = The DMS will operate in it's normal mode.

NOT FITTED = The DMS will enter TEST mode (FACTORY USE ONLY)

DMS2000 Synchronisation of boards

The example below shows how a number of sound stores can be run in synchronisation controlled by one sound store configured as a master and all other sound stores configured as slaves.



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Trip code conversion

This table shows the relationship between any given message number, it's file extension "HEX"(required when saving the messages to flash card) and the binary code required by the sound stores trip inputs to access the message.

Normal operation all 255 message locations are available for message storage, and direct access for playback.

Sequencer operation with the DMS2000 sequencer enabled (link A-8 fitted) message locations 192 to 239 are reserved for messages included in the message sequence.

No:	HEX	Binary	No:	HEX	Binary	No:	HEX	Binary
1	.001	00000001	52	.034	00110100	103	.067	01100111
2	.002	00000010	53	.035	00110101	104	.068	01101000
3	.003	00000011	54	.036	00110110	105	.069	01101001
4	.004	00000100	55	.037	00110111	106	.06A	01101010
5	.005	00000101	56	.038	00111000	107	.06B	01101011
6	.006	00000110	57	.039	00111001	108	.06C	01101100
7	.007	00000111	58	.03A	00111010	109	.06D	01101101
8	.008	00001000	59	.03B	00111011	110	.06E	01101110
9	.009	00001001	60	.03C	00111100	111	.06F	01101111
10	.00A	00001010	61	.03D	00111101	112	.070	01110000
11	.00B	00001011	62	.03E	00111110	113	.071	01110001
12	.00C	00001100	63	.03F	00111111	114	.072	01110010
13	.00D	00001101	64	.040	01000000	115	.073	01110011
14	.00E	00001110	65	.041	01000001	116	.074	01110100
15	.00F	00001111	66	.042	01000010	117	.075	01110101
16	.010	00010000	67	.043	01000011	118	.076	01110110
17	.011	00010001	68	.044	01000100	119	.077	01110111
18	.012	00010010	69	.045	01000101	120	.078	01111000
19	.013	00010011	70	.046	01000110	121	.079	01111001
20	.014	00010100	71	.047	01000111	122	.07A	01111010
21	.015	00010101	72	.048	01001000	123	.07B	01111011
22	.016	00010110	73	.049	01001001	124	.07C	01111100
23	.017	00010111	74	.04A	01001010	125	.07D	01111101
24	.018	00011000	75	.04B	01001011	126	.07E	01111110
25	.019	00011001	76	.04C	01001100	127	.07F	01111111
26	.01A	00011010	77	.04D	01001101	128	.080	01000000
27	.01B	00011011	78	.04E	01001110	129	.081	10000001
28	.01C	00011100	79	.04F	01001111	130	.082	10000010
29	.01D	00011101	80	.050	01010000	131	.083	10000011
30	.01E	00011110	81	.051	01010001	132	.084	10000100
31	.01F	00011111	82	.052	01010010	133	.085	10000101
32	.020	00100000	83	.053	01010011	134	.086	10000110
33	.021	00100001	84	.054	01010100	135	.087	10000111
34	.022	00100010	85	.055	01010101	136	.088	10001000
35	.023	00100011	86	.056	01010110	137	.089	10001001
36	.024	00100100	87	.057	01010111	138	.08A	10001010
37	.025	00100101	88	.058	01011000	139	.08B	10001011
38	.026	00100110	89	.059	01011001	140	.08C	10001100
39	.027	00100111	90	.05A	01011010	141	.08D	10001101
40	.028	00101000	91	.05B	01011011	142	.08E	10001110
41	.029	00101001	92	.05C	01011100	143	.08F	10001111
42	.02A	00101010	93	.05D	01011101	144	.090	10010000
43	.02B	00101011	94	.05E	01011110	145	.091	10010001
44	.02C	00101100	95	.05F	01011111	146	.092	10010010
45	.02D	00101101	96	.060	01100000	147	.093	10010011
46	.02E	00101110	97	.061	01100001	148	.094	10010100
47	.02F	00101111	98	.062	01100010	149	.095	10010101
48	.030	00110000	99	.063	01100011	150	.096	10010110
49	.031	00110001	100	.064	01100100	151	.097	10010111
50	.032	00110010	101	.065	01100101	152	.098	10011000
51	.033	00110011	102	.066	01100110	153	.099	10011001

Message Numbers / File Extensions / Trip Codes

No:	HEX	Binary	No:	HEX	Binary
154	.09A	10011010	205	.0CD	11001101
155	.09B	10011011	206	.0CE	11001110
156	.09C	10011100	207	.0CF	11001111
157	.09D	10011101	208	.0D0	11010000
158	.09E	10011110	209	.0D1	11010001
159	.09F	10011111	210	.0D2	11010010
160	.0A0	10100000	211	.0D3	11010011
161	.0A1	10100001	212	.0D4	11010100
162	.0A2	10100010	213	.0D5	11010101
163	.0A3	10100011	214	.0D6	11010110
164	.0A4	10100100	215	.0D7	11010111
165	.0A5	10100101	216	.0D8	11011000
166	.0A6	10100110	217	.0D9	11011001
167	.0A7	10100111	218	.0DA	11011010
168	.0A8	10101000	219	.0DB	11011011
169	.0A9	10101001	220	.0DC	11011100
170	.0AA	10101010	221	.0DD	11011101
171	.0AB	10101011	222	.0DE	11011110
172	.0AC	10101100	223	.0DF	11011111
173	.0AD	10101101	224	.0E0	11100000
174	.0AE	10101110	225	.0E1	11100001
175	.0AF	10101111	226	.0E2	11100010
176	.0B0	10110000	227	.0E3	11100011
177	.0B1	10110001	228	.0E4	11100100
178	.0B2	10110010	229	.0E5	11100101
179	.0B3	10110011	230	.0E6	11100110
180	.0B4	10110100	231	.0E7	11100111
181	.0B5	10110101	232	.0E8	11101000
182	.0B6	10110110	233	.0E9	11101001
183	.0B7	10110111	234	.0EA	11101010
184	.0B8	10111000	235	.0EB	11101011
185	.0B9	10111001	236	.0EC	11101100
186	.0BA	10111010	237	.0ED	11101101
187	.0BB	10111011	238	.0EE	11101110
188	.0BC	10111100	239	.0EF	11101111
189	.0BD	10111101	240	.0F0	11110000
190	.0BE	10111110	241	.0F1	11110001
191	.0BF	10111111	242	.0F2	11110010
192	.0C0	11000000	243	.0F3	11110011
193	.0C1	11000001	244	.0F4	11110100
194	.0C2	11000010	245	.0F5	11110101
195	.0C3	11000011	246	.0F6	11110110
196	.0C4	11000100	247	.0F7	11110111
197	.0C5	11000101	248	.0F8	11111000
198	.0C6	11000110	249	.0F9	11111001
199	.0C7	11000111	250	.0FA	11111010
200	.0C8	11001000	251	.0FB	11111011
201	.0C9	11001001	252	.0FC	11111100
202	.0CA	11001010	253	.0FD	11111101
203	.0CB	11001011	254	.0FE	11111110
204	.0CC	11001100	255	.0FF	11111111