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USER MANUAL

Accessory 8D

Terminal Block Board

3Ax-602205-xUxx

October 24, 2003



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INTRODUCTION

PMAC Accessory 8D (ACC-8D) (P/N 602205-100) provides a convenient means for routing PMAC's JMACH connector signals and power supply lines to a terminal block. This terminal block facilitates PMAC's connection to amplifiers and feedback signals. In addition, ACC-8D provides the user with the ability to connect several specific input/output options to PMAC conveniently. These options are:

ACC 8D Option 1	3rd-phase generator for two commutated motors
ACC 8D Option 2	V to F converter for four stepper motors (P/N 602234-100)
ACC 8D Option 3	N/A
ACC 8D Option 4	40W linear amplifiers, for four hydraulic valves or small DC motors (P/N 602235-100)
ACC 8D Option 5	Rail mount
ACC 8D Option 6	Four optically isolated encoder inputs (P/N 602238-100)
If you do not need any of these options or conveniences listed above, you may use the simpler ACC-8P terminal block board, which provides the connection terminals only.	

One of the following two options for the ACC-8D must be selected:

ACC 8D Option P	60-pin socket and flat cable to PMAC-PC or PMAC-STD
ACC 8D Option V	96-pin socket and 64 line flat cable to PMAC-VME

One ACC-8D provides all of the pinouts from a single JMACH connector on PMAC, which consists of 4 I/O channels: analog outputs, encoder feedback, and associated flags. The base version of PMAC has only one JMACH connector; therefore, it only needs one ACC-8D. A PMAC with Option 1 (additional 4 channels) has two JMACH connectors; therefore, it requires two ACC-8Ds. If a 4-channel ACC-24 (axis expansion board) is also used, there is one more JMACH connector; therefore, three ACC-8Ds are required. An 8-channel ACC-24 has two JMACH connectors; therefore, a total of four ACC-8Ds would be required.

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CONNECTORS

A Complete description of pin definitions begins on page 9 of this manual.

TB-1

This is a 64 pin screw-down terminal block intended for input/output (I/O) to PMAC via ACC-8D. The first 60 terminal pins of this block are identical to PMAC's JMACH connectors. For PMAC-PC and STD, the number of terminals matches the number of pins on the JMACH connector directly. For PMAC-VME, pins A31, C31, A32, and C32 duplicate the ground and +5V outputs of pins A2, C2, A1, and C1, respectively. As a result, the former pins are not brought out to the terminals. Terminal pins 61-64 are reserved for ACC-8D Option 1. These pins are not connected to the JPMAC connectors.

JPMAC/PC

This connector provides the link between PMAC-PC or PMAC-STDs JMACH connector and ACC-8D. Option P of ACC-8D must be selected for use with PMAC-PC or STD. A 60-pin flat cable is provided with ACC-8D Option P.

JPMAC/VME

This connector provides the link between a PMAC-VME's JMACH connector and ACC-8D. Option V of ACC-8D must be selected for use with PMAC-VME. A 64-pin flat cable is provided with ACC-8D Option V.

J1A, J2A J3A, J4A

These connectors provide a convenient means for the direct input. J1A is used for the first encoder counter attached to ACC-8D. J2A, J3A, and J4A connect to the second, third, and fourth counter, respectively. These connectors are compatible with H.P. HEDS-5000, 6000, 7500 encoders, and with direct input from ACC-8D Option 2 and ACC-8D Option 6.

J1B, J2B J3B, J4B

These connectors provide a convenient means for the direct input of encoder signals to PMAC via ACC-8D. J1B is used for the first encoder counter attached to ACC-8D. J2B, J3B, and J4B connect to the second, third and fourth encoder counters, respectively. These connectors are compatible with HP HEDs -5500 and 9000, and HRPG encoders.

J5

This connector provides the analog outputs and direction/enable bits for four channels. It is intended for the connection of ACC-8D with ACC-8D Option 2, V-to-F converter board, or ACC-8D Option 4, 40W linear amplifiers.

J6

This connector is intended for parallel sub-count interpolation encoders which "borrow" the flag lines for the next higher encoder channels. See the Sub-Count Interpolation Section of the PMAC manual for the details of this PMAC feature.

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ACC-8D MAIN BOARD

The basic terminal block function of the main ACC-8D board requires a connection of the JMACH pins through a flat cable to a block of screw-down terminals (TB-1). The terminals follow the same order of signals as the pins on the JMACH connectors. For the PMAC-PC and PMAC-STD, the numbers of the terminals match the numbers of the pins on the JMACH connector directly (pins 1-60) in both the even row and the odd row.

For the PMAC-VME, the odd row of the terminal block matches the C-row of the JMACH connector (pins C01-C30 match odd terminals 1-59), and the even row of the terminal block matches the A-row of the JMACH connector (pins A01-A30 match even terminals 2-60). Pins A31, C31, A32, and C32 on the JMACH connector merely duplicate the digital ground and +5V outputs of pins A2, C2, A1, and C1, and so are not brought out to terminals. (Terminals 61-64 are reserved for ACC-8D Option 1, as explained below.) The B-row of the JMACH connector is not brought out to the ACC-8D. On the base PMAC-VME board, the B-row of this connector provides extended VME-bus signals; on the Option 1V board and the ACC-24 boards, there are no signals on the B-row.

Connectors J1A through J4A (10 pins each) provide the ability to connect easily to Hewlett-Packard HEDS-5000 and HEDS-6000 series (and compatible) encoders, or to the H.P. HEDS-7500 series (and compatible) rotary pulse generators (a.k.a. handwheels). Complementary signals for the A and B channels are available on pins unused by the H.P. standard (C/ is unavailable on these connectors). Connectors J1B to J4B provide the ability to connect easily to the new Hewlett-Packard HEDS-5500 and HEDS-9000 series (and compatible) encoders, or to the H.P. HRPG series rotary pulse generators. Connectors JxA and JxB for each encoder are hard-wired together, and to the appropriate lines on the terminal block; use only one of the three methods (terminal block, JxA connector, JxB connector) of wiring a particular encoder.

Jumpers E1 to E12 allow the connection of the complementary encoder lines (CHA1/, CHB1/, ... CHC4/) to a fixed 2.1 volts. If a particular jumper is ON, that line is tied to 2.1V; if the jumper is OFF, that line is not tied to 2.1V. Jumpers may be ON for a single-ended encoder. They must be OFF for a differential encoder. These jumpers are particularly helpful for systems where there is a hardware line in the cabling for the complementary line, but no signal on it. Tying the hardware line to a hard voltage level reduces the tendency of that line to act as an antenna picking up noise.

Note:

The lines for the DACs, encoders, and flags on ACC-8D and its options are always numbered 1 to 4. They may be connected to lines on the PMAC with higher numbers (5 to 8, 9 to 12, or 13 to 16) if the particular ACC-8D is not connected to the first machine connector of PMAC. The lines will always connect to a corresponding line on PMAC, whose number has the same modulo 4 (remainder when divided by four). For instance, line one the ACC-8D can only be connected to PMAC lines numbered 1, 5, 9, or 13.

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ACC-8D OPTIONS

Option 1 -- Third Phase Generators

This option is for those PMAC users driving three-phase PMAC-commutated motors (permanent magnet brushless or induction) that are not generating the third-phase command signal in the amplifier. It can generate this third (balance) phase command signal for two PMAC-commutated motors. PMAC itself generates two analog current-command signals for phases of motors for which it is doing the commutation. The current command for the third phase of a three-phase motor must be generated separately. Many applications utilize actual current information in the amplifier to generate the third phase command inside the amplifier.

The ACC-8D Option 1 generates the third-phase command simply as the negative sum of the first two phase commands -- no actual current information is used. Each of the three command phase currents can then be used to control the current in one of the half-bridges of the amplifier. The third-phase command signals and their complements are provided on pins 61 to 64 of TB-1.

ACC-8D Option 1 consists of added components on the main ACC-8D board. This option cannot be added later to an existing ACC-8D board.

Option 2 -- Voltage-to-Frequency Converters

ACC-8D Option 2 is a separate board that provides four voltage-to-frequency converters that allow PMAC to drive standard stepper motor drives. The output of Option 2 is four sets of pulse and direction signals at TTL levels. The input is four sets of analog magnitude commands coupled with digital direction bits.

Refer to the ACC-8D Option 2 Board Manual for details.

Option 3 - N/A

Option 4 -- Linear Amplifiers

ACC-8D Option 4 is a separate board that provides four linear amplifiers, each 40W continuous, 60W intermittent, for small DC motors or proportional hydraulic valves. These take the analog command signals from PMAC and provide either a voltage output or a current output proportional to the input command voltage. They work off common +/- 6 to 18 volt power supplies (+/- 12 to 15V if the same supply as PMAC's analog output stage is used). Each amplifier can be individually enabled and disabled.

Refer to the ACC-8D Option 4 Board manual for details.

Option 5 -- Rail Mount

This option provides a plastic casing for the ACC-8D or any of its option boards, so the board can be ruggedly installed on a DIN rail mount. One Option 5 should be ordered for each board you wish to mount in this fashion.

Option 6 -- Encoder Opto-Isolation Board

ACC-8D Option 6 is a separate board that provides the capability to optically isolate four incremental encoders from PMAC's digital circuitry. This can be important for signal integrity in noisy environments. (Usually, differential signals and cable shielding are tried first.) Since the encoders are isolated from PMAC, a separate 5V-power supply is required for the encoders.

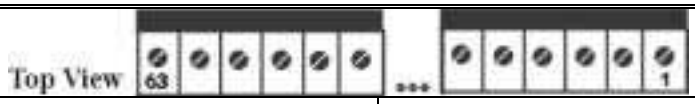
Refer to the ACC-8D Option 6 Board manual for details.

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CONNECTOR PINOUTS

TB1 (64-Pin Terminal Block)



Term No.	PMAC-VME Pin	Symbol	Function	Description	Notes
1	C01	+5V	Output*	+5V Power	For Encoders
3	C02	GND	Common	PMAC Common	
5	C03	CHC3	Input	Encoder C Channel Positive	Axis #3
7	C04	CHC3/	Input	Encoder C Channel Negative	Axis #3 (Do not GND if not used)
9	C05	CHB3	Input	Encoder B Channel Positive	Axis #3
11	C06	CHB3/	Input	Encoder B Channel Negative	Axis #3 (Do not GND if not used)
13	C07	CHA3	Input	Encoder A Channel Positive	Axis #3
15	C08	CHA3/	Input	Encoder A Channel Negative	Axis #3 (Do not GND if not used)
17	C09	CHC1	Input	Encoder C Channel Positive	Axis #1
19	C10	CHC1/	Input	Encoder C Channel Negative	Axis #1 (Do not GND if not used)
21	C11	CHB1	Input	Encoder B Channel Positive	Axis #1
23	C12	CHB1/	Input	Encoder B Channel Negative	Axis #1 (Do not GND if not used)
25	C13	CHA1	Input	Encoder A Channel Positive	Axis #1
27	C14	CHA1/	Input	Encoder A Channel Negative	Axis #1 (Do not GND if not used)
29	C15	DAC3	Output	Analog Out Positive 3	+/-10V to AGND
31	C16	DAC3/	Output	Analog Out Negative 3	+/-10V to AGND
33	C17	AENA3/DIR3	Output	Amplifier-ENA/Dir. 3	Jumperable Polarity
35	C18	FAULT3	Input	Amplifier-Fault 3	High True
37	C19	+LIM3	Input	Positive Limit 3	Failsafe High True
39	C20	-LIM3	Input	Negative Limit 3	Failsafe High True
41	C21	HMFL3	Input	Home-Flag 3	Programmable Polarity
43	C22	DAC1	Output	Analog Out Positive 1	+/-10V to AGND
45	C23	DAC1/	Output	Analog Out Negative 1	+/-10V to AGND
47	C24	AENA1/DIR1	Output	Amplifier -ENA/Dir. 1	Programmable Polarity
49	C25	FAULT1	Input	Amplifier -Fault 1	High True
51	C26	+LIM1	Input	Positive Limit 1	Failsafe High True
53	C27	-LIM1	Input	Negative Limit 1	Failsafe High True
55	C28	HMFL1	Input	Home-Flag 1	Programmable Polarity
57	C29	FEFCO/	Output		Following Err. Out.
59	C30	A+15V	Input		Ana. +15V Supply
61	--	PHA-BAL1	Output	3rd Phase Analog Out. (w/DAC 1&2)	Requires Option 1
63	--	PHA-BAL1/	Output	3rd Phase Analog Out. (w/DAC 1&2)	Requires Option 1 Out

Note: The Terminal Numbers 1-60 match exactly the pin numbers of the PMAC-PC and PMAC-STD JMACH Connectors.

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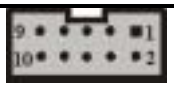
TB1 (64-Pin Terminal Block) –Continued

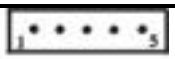
Top View 

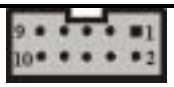
Term No.	PMAC-VME Pin	Symbol	Function	Description	Notes
2	A01	+5V	Output*	+5V Power	For Encoders
4	A02	GND	Common	PMAC Common	
6	A03	CHC4	Input	Encoder C Channel Positive	Axis #4
8	A04	CHC4/	Input	Encoder C Channel Negative	Axis #4 (Do not GND if not used)
10	A05	CHB4	Input	Encoder B Channel Positive	Axis #4
12	A06	CHB4/	Input	Encoder B Channel Negative	Axis #4 (Do not GND if not used)
14	A07	CHA4	Input	Encoder A Channel Positive	Axis #4
16	A08	CHA4/	Input	Encoder A Channel Negative	Axis #4 (Do not GND if not used)
18	A09	CHC2	Input	Encoder C Channel Positive	Axis #2
20	A10	CHC2/	Input	Encoder C Channel Negative	Axis #2 (Do not GND if not used)
22	A11	CHB2	Input	Encoder B Channel Positive	Axis #2
24	A12	CHB2/	Input	Encoder B Channel Negative	Axis #2 (Do not GND if not used)
26	A13	CHA2	Input	Encoder A Channel Positive	Axis #2
28	A14	CHA2/	Input	Encoder A Channel Negative	Axis #2 (Do not GND if not used)
30	A15	DAC4	Output	Analog Out Positive 4	+/-10V to AGND
32	A16	DAC4/	Output	Analog Out Negative 4	+/-10V to AGND
34	A17	AENA4/DIR4	Output	Amplifier-ENA/Dir. 4	Jumperable Polarity
36	A18	FAULT4	Input	Amplifier -Fault 4	High True
38	A19	+LIM4	Input	Positive Limit 4	Failsafe High True
40	A20	-LIM4	Input	Negative Limit 4	Failsafe High True
42	A21	HMFL4	Input	Home-Flag 4	Programmable Polarity
44	A22	DAC2	Output	Analog Out Positive 2	+/-10V To AGND
46	A23	DAC2/	Output	Analog Out Negative 2	+/-10V To AGND
48	A24	AENA2/DIR2	Output	Amplifier-ENA/Dir. 2	Programmable Polarity
50	A25	FAULT2	Input	Amplifier-Fault 2	High True
52	A26	+LIM2	Input	Positive Limit 2	Failsafe High True
54	A27	-LIM2	Input	Negative Limit 2	Failsafe High True
56	A28	HMFL2	Input	Home-Flag 2	Programmable Polarity
58	A29	AGND	Input		Analog Common
60	A30	A-15V	Input		Ana. -15V Supply
62	--	PHA-BAL2	Output	3rd Phase Analog Out. (w/DAC 3&4)	Requires Option 1
64	--	PHA-BAL2/	Output	3rd Phase Analog Out. (w/DAC 3&4)	Requires Option 1 Out/

*In stand-alone applications, these can be used as +5V power supply inputs to power PMAC's digital circuitry

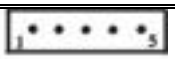
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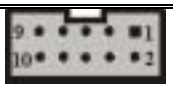
J1A (10-Pin Header)			Top View 	
Pin #	**Symbol**	**Function**	**Description**	**Notes**
1	CHA1	Input	A Channel Positive	H.P. Standard
2	+5V	Output	Power Supply	H.P. Standard
3	GND	Common	Digital Ground	H.P. Standard
4	CHA1/	Input	A Channel Negative	Added
5	CHB1/	Input	B Channel Negative	Added
6	GND	Common	Digital Ground	H.P. Standard
7	+5V	Output	Power Supply	H.P. Standard
8	CHB1	Input	B Channel Positive	H.P. Standard
9	+5V	Output	Power Supply	H.P. Standard
10	CHC1	Input	C Channel Positive	H.P. Standard
This connector allows the input of encoder signals to the 1st encoder counter attached to this ACC-8D. It is compatible with H.P. HEDS-5000, 6000, and 7500 encoders, and with Option 2 and Option 6.				

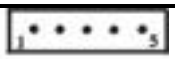
J1B (5-Pin Header)			Top View 	
Pin #	**Symbol**	**Function**	**Description**	**Notes**
1	GND	Common	Digital Ground	H.P. Standard
2	N.C.		No Connect*	H.P. Standard
3	CHA1	Input	A Channel Positive	H.P. Standard
4	+5V	Output	Power Supply	H.P. Standard
5	CHB1	Input	B Channel Positive	H.P. Standard
This connector allows the input of encoder signals to the 1st encoder counter attached to this ACC-8D. It is compatible with H.P. HEDS-5500 and 9000, and HRPG encoders. * A jumper wire from this pin to J1A pin 10 allows third channel input on this pin, as for the H.P. HEDS-5540 and 9040 encoders				

J2A (10-Pin Header)			Top View 	
Pin #	**Symbol**	**Function**	**Description**	**Notes**
1	CHA2	Input	A Channel Positive	H.P. Standard
2	+5V	Output	Power Supply	H.P. Standard
3	GND	Common	Digital Ground	H.P. Standard
4	CHA2/	Input	A Channel Negative	Added
5	CHB2/	Input	B Channel Negative	Added
6	GND	Common	Digital Ground	H.P. Standard
7	+5V	Output	Power Supply	H.P. Standard
8	CHB2	Input	B Channel Positive	H.P. Standard
9	+5V	Output	Power Supply	H.P. Standard
10	CHC2	Input	C Channel Positive	H.P. Standard
This connector allows the input of encoder signals to the 2nd encoder counter attached to this ACC-8D. It is compatible with H.P. HEDS-5000, 6000, and 7500 encoders, and with Option 2 and Option 6.				

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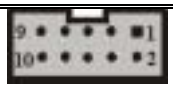
J2B (5-Pin Header)			Top View 	
Pin #	**Symbol**	**Function**	**Description**	**Notes**
1	GND	Common	Digital Ground	H.P. Standard
2	N.C.	None	No Connect*	H.P. Standard
3	CHA2	Input	A Channel Positive	H.P. Standard
4	+5V	Output	Power Supply	H.P. Standard
5	CHB2	Input	B Channel Positive	H.P. Standard
This connector allows the input of encoder signals to the 2nd encoder counter attached to this ACC-8D. It is compatible with H.P. HEDS-5500 and 9000, and HRPG encoders. *A jumper wire from this pin to J2A pin 10 allows third channel input on this pin, as for the H.P. HEDS-5540 and 9040 encoders.				

J3A (10-Pin Header)			Top View 	
Pin #	**Symbol**	**Function**	**Description**	**Notes**
1	CHA3	Input	A Channel Positive	H.P. Standard
2	+5V	Output	Power Supply	H.P. Standard
3	GND	Common	Digital Ground	H.P. Standard
4	CHA3/	Input	A Channel Negative	Added
5	CHB3/	Input	B Channel Negative	Added
6	GND	Common	Digital Ground	H.P. Standard
7	+5V	Output	Power Supply	H.P. Standard
8	CHB3	Input	B Channel Positive	H.P. Standard
9	+5V	Output	Power Supply	H.P. Standard
10	CHC3	Input	C Channel Positive	H.P. Standard
This connector allows the input of encoder signals to the third encoder counter attached to this ACC-8D. It is compatible with H.P. HEDS-5000, 6000, and 7500 encoders, and with Option 2 and Option 6.				

J3B (5-Pin Header)			Top View 	
Pin #	**Symbol**	**Function**	**Description**	**Notes**
1	GND	Common	Digital Ground	H.P. Standard
2	N.C.		No Connect*	H.P. Standard
3	CHA3	Input	A Channel Positive	H.P. Standard
4	+5V	Output	Power Supply	H.P. Standard
5	CHB3	Input	B Channel Positive	H.P. Standard
This connector allows the input of encoder signals to the third encoder counter attached to this ACC-8D. It is compatible with H.P. HEDS-5500 and 9000, and HRPG encoders. *A jumper wire from this pin to J1A pin 10 allows third channel input on this pin, as for the H.P. HEDS-5540 and 9040 encoders.				

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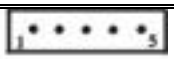
J4A (10-Pin Header)

Top View 

Pin #	Symbol	Function	Description	Notes
1	CHA4	Input	A Channel Positive	H.P. Standard
2	+5V	Output	Power Supply	H.P. Standard
3	GND	Common	Digital Ground	H.P. Standard
4	CHA4/	Input	A Channel Negative	Added
5	CHB4/	Input	B Channel Negative	Added
6	GND	Common	Digital Ground	H.P. Standard
7	+5V	Output	Power Supply	H.P. Standard
8	CHB4	Input	B Channel Positive	H.P. Standard
9	+5V	Output	Power Supply	H.P. Standard
10	CHC4	Input	C Channel Positive	H.P. Standard

This connector allows the input of encoder signals to the fourth encoder counter attached to this ACC-8D. It is compatible with H.P. HEDS-5000, 6000, and 7500 encoders, and with Option 2 and 6.

J4B (5-Pin Header)

Top View 

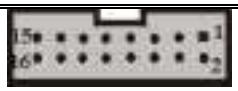
Pin #	Symbol	Function	Description	Notes
1	GND	Common	Digital Ground	H.P. Standard
2	N.C.		No Connect*	H.P. Standard
3	CHA4	Input	A Channel Positive	H.P. Standard
4	+5V	Output	Power Supply	H.P. Standard
5	CHB4	Input	B Channel Positive	H.P. Standard

This connector allows the input of encoder signals to the 4th encoder counter attached to this ACC-8D. It is compatible with H.P. HEDS-5500 and 9000, and HRPG encoders.

*A jumper wire from this pin to J4A pin 10 allows third channel input on this pin, as for the H.P. HEDS-5540 and 9040 encoders.

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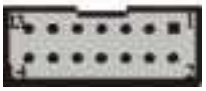
J5 (16-Pin Header)

Top View 

Pin #	Symbol	Function	Description	Notes
1	DAC1	Output	Analog Out Positive 1	Reference to Analog Ground
2	DAC1/	Output	Analog Out Negative 1	Reference to Analog Ground
3	DAC2	Output	Analog Out Positive 2	Reference to Analog Ground
4	DAC2/	Output	Analog Out Negative 2	Reference to Analog Ground
5	DAC3	Output	Analog Out Positive 3	Reference to Analog Ground
6	DAC3/	Output	Analog Out Negative 3	Reference to Analog Ground
7	DAC4	Output	Analog Out Positive 4	Reference to Analog Ground
8	DAC4/	Output	Analog Out Negative 4	Reference to Analog Ground
9	AENA/DIR1	Output	Amplifier Enable/ Direction Bits - Function & Polarity Set on PMAC*	Reference to Analog Ground
10	AENA/DIR2	Output		Reference to Analog Ground
11	AENA/DIR3	Output		Reference to Analog Ground
12	AENA/DIR4	Output		Reference to Analog Ground
13	AGND	Common	Analog Ground	These supply power to the option board circuits
14	A+15V	Output	Analog Positive Supply	
15	AGND	Common	Analog Ground	
16	A-15V	Output	Analog Negative Supply	

This connector provides the analog outputs and direction/enable bits for four channels. It is intended to connect to the Option 2 V-to-F converter board, or the Option 4 power stage.
*The settings of Ix02 and Ix25 determine whether these lines are amplifier-enable signals or direction bit signals. Jumper E17 on PMAC determines the polarity of these signals.
*Do not attempt to supply power to the ACC-8D Option 4 amplifier board through these pins of the terminal block board -- the cable cannot carry the required current. If Jumper E9 and E10 on the Opt 4 board are ON, so that the power supply for the amplifier and for PMAC's analog output stage is shared, the power supply should be connected directly to the Opt 4 board.

J6 (14-Pin Header)

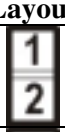
Top View 

Pin #	Symbol	Function	Description	Notes
1	CHC2	Input	C Channel 2 Positive	Reference to Digital Ground
2	CHC2/	Input	C Channel 2 Negative	Reference to Digital Ground
3	HMFL2	Input	Home Flag 2	Reference to Analog Ground
4	-LIM2	Input	Negative Limit 2	Reference to Analog Ground
5	+LIM2	Input	Positive Limit 2	Reference to Analog Ground
6	FAULT2	Input	Amp. Fault 2	Reference to Analog Ground
7	CHC4	Input	C Chan. 4 Positive	Reference to Digital Ground
8	CHC4/	Input	C Chan. 4 Negative	Reference to Digital Ground
9	HMFL4	Input	Home Flag 4	Reference to Analog Ground
10	-LIM4	Input	Negative Limit 4	Reference to Analog Ground
11	+LIM4	Input	Positive Limit 4	Reference to Analog Ground
12	FAULT4	Input	Amplifier Fault 4	Reference to Analog Ground
13	GND	Common	Digital Ground	
14	+5V	Output	Digital Power	Reference to Digital Ground

This connector is used to bring in the signals for parallel sub-count interpolation, which "borrow" the flag lines for the next higher encoder. (See PMAC's main User Manual for details of parallel sub-count interpolation of encoders.

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MAIN BOARD JUMPERS

E-Point	Physical Layout	Description	Default
E1		On Ties Channel A1/ to 2.1V Off Leaves Channel1/ Free	Off
E2		On Ties Channel B1/ to 2.1V Off Leaves Channel B1/ Free	Off
E3		On Ties Channel C1/ to 2.1V Off Leaves Channel C1/ Free	Off
E4		On Ties Channel A2/ to 2.1V Off Leaves Channel A2/ Free	Off
E5		On Ties Channel B2/ to 2.1V Off Leaves Channel B2/ Free	Off
E6		On Ties Channel C2/ to 2.1V Off Leaves Channel C2/ Free	Off
E7		On Ties Channel A3/ to 2.1V Off Leaves Channel A3/ Free	Off
E8		On Ties ChannelB3/ to 2.1V Off Leaves Channel B2/ Free	Off
E9		On Ties Channel C3/ to 2.1V Off Leaves Channel C3/ Free	Off
E10		On Ties Channel A4/ to 2.1V Off Leaves Channel A4/ Free	Off
E11		On Ties Channel B4/ to 2.1V Off Leaves Channel B4/ Free	Off
E12		On Ties Channel C4/ to 2.1V Off Leaves Channel C4/ Free	Off

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