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User's Manual

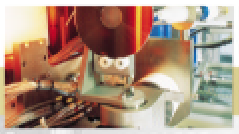
PMAC2 ACCESSORIES 8F & 8FP

Digital Interface Board

3A0-602775-10X, 3A0-602765-10X

July 1999

RETURN TO MAIN INDEX





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8F
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INTRODUCTION

Overview

The Accessory 8F digital interface board (ACC-8F) for the PMAC2 family of controllers provides pinouts for 2 channels with digital-input amplifiers. The amplifier inputs are direct PWM commands.

The ACC-8F board has one flat-cable connection to the PMAC2. The connection to each digital amplifier is through a separate Mini-D connector. Encoder inputs can be brought in either through DB15 connectors, IDC Headers, or removable modular terminal blocks. Main flag inputs are brought in through DB9 connectors or removable modular terminal blocks. Supplementary flag inputs can be interfaced via either the DB15 connectors, removable modular terminal blocks, or an IDC header.

Note:

Early prototype ACC-8F boards (Part # 602481-100) were 4-channel boards. The pinouts on some connectors were different. Pilot-run ACC-8F boards (Part # 602481-101) had DB-37 amplifier connectors instead of Mini-D 36-pin amplifier connectors.

Features

Detects a loss of any encoder quadrature signal (A+, A-, B+, B-) or if the encoder is not connected. It will bring AFLT1+ and AFLT2+ lines (JMAC1 pins 19 and 69) low in either case.

Supports Hall-effect signals for power-on phase information through its supplemental U, V, W and T inputs.

Decodes U, V, W, T and Index signals (Option 6) if they are encoded on the C+/C- channels (i.e. Yaskawa multiplexed encoders). Jumper selectable.

Accepts regular quadrature encoder feedback (A, B,C/Z) either single ended or differential. (Default).

Has built-in power delay circuit (Option 6) which will supply a power to an encoder only after a PMAC2's hardware and software circuits were determined to function properly. If this feature is selected by jumping pins 2 and 3 of E24, it is assured that a motor power-on information is read correctly by PMAC2. Delta Tau recommends to use this feature when working with encoders that send power-on information right after the encoder power is applied.(i.e. Yaskawa multiplexed encoders)

The main input flags (HOME, PLIM, MLIM and USER) are optically isolated with sinking or sourcing capability to 24 V. *AC opto* modules are used.

Amplifier Fault Detection. If the amplifier fault condition causes low on FLTx+ or FLTx- (P5, P6), ACC 8F passes amplifier FCx-A, FCx-B, FCx-C and FCx-D fault code bits to PMAC2 via CHUx+, CHVx+, CHWx+ and CHTx+ lines. If this function is not required, remove E21 and E23 jumpers.

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The ACC-8F has a 6-point terminal block (TB3) that permits a +5V supply to be brought in externally for encoders and the like. Alternatively, the +5V supply can come from the PMAC2 through the ACC-8F if the jumper E1 on ACC-8F is ON. If more than about 250 mA will be used through the ACC-8F, the +5V power should be brought in through this terminal block, and the E1 jumper should be OFF to keep this supply from fighting the +5V supply on PMAC2.

Options

Option 1: Encoder, Supplemental flags and Main flags use terminals (TB1, TB2, TB4, TB5)

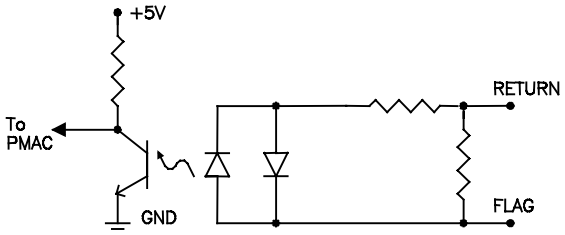
Option 2: Encoder, Supplemental flags and Main flags use DB connectors (P1, P2, P3, P4)

Option 4: Rail mount

Option 6: Mulitplexed encoder and power-on read option

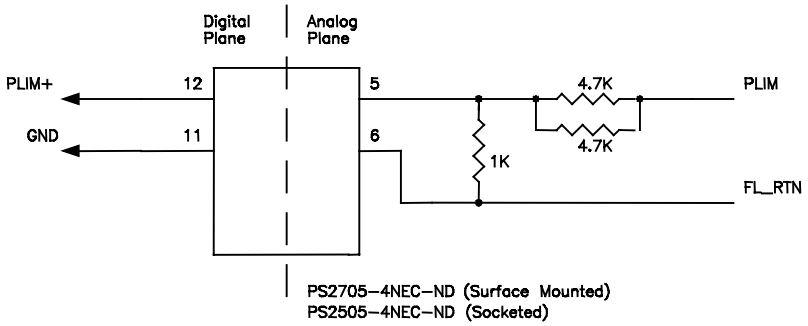
ACC-8F Limit and Flag Wiring

The ACC-8F allows the user to use sinking or sourcing position limits and flags to the PMAC2. The optoisolator IC used is a PS2705-4NEC-ND quad photo-transistor output type. This IC allows the current to flow from return to flag (sinking) or from flag to return (sourcing).



ACC-8F Circuit

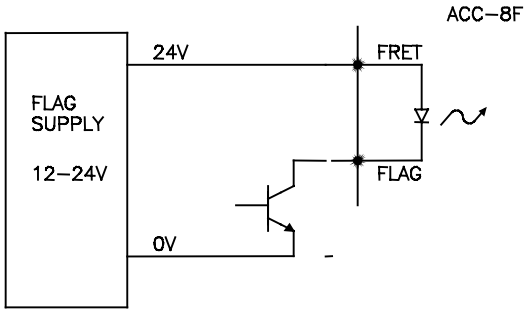
A sample of the positive limit circuit is shown below. The 4.7K resistor pack used will allow 12-24V flag inputs. If lower voltages are needed, then a lower value resistor could be used in its place (470Ω for 5V). Please call the factory if this is the case for your application.



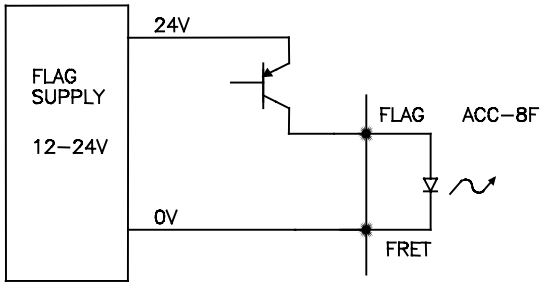
Connecting to the ACC-8F

The following diagrams illustrate the sinking and sourcing connections to an ACC-8F.

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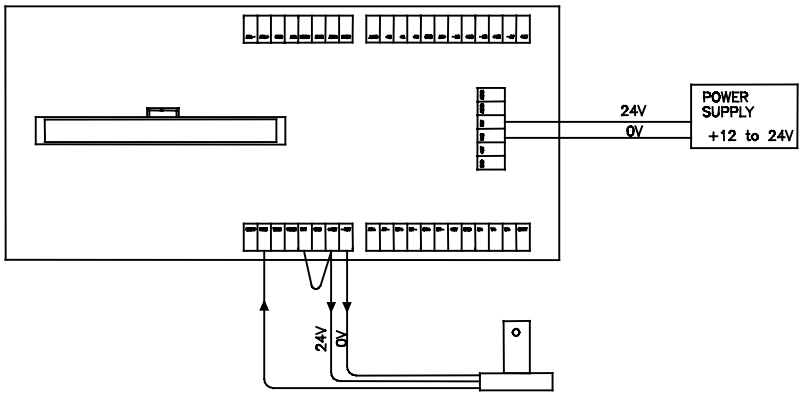


Sinking, Separate Supply



Sourcing, Separate Supply

The actual connection to the ACC-8F can be accomplished several ways. The connection shown in below is a photo-transistor device which is open collector or sinking. This device will have 0V output when not activated and 12-24V output when activated.



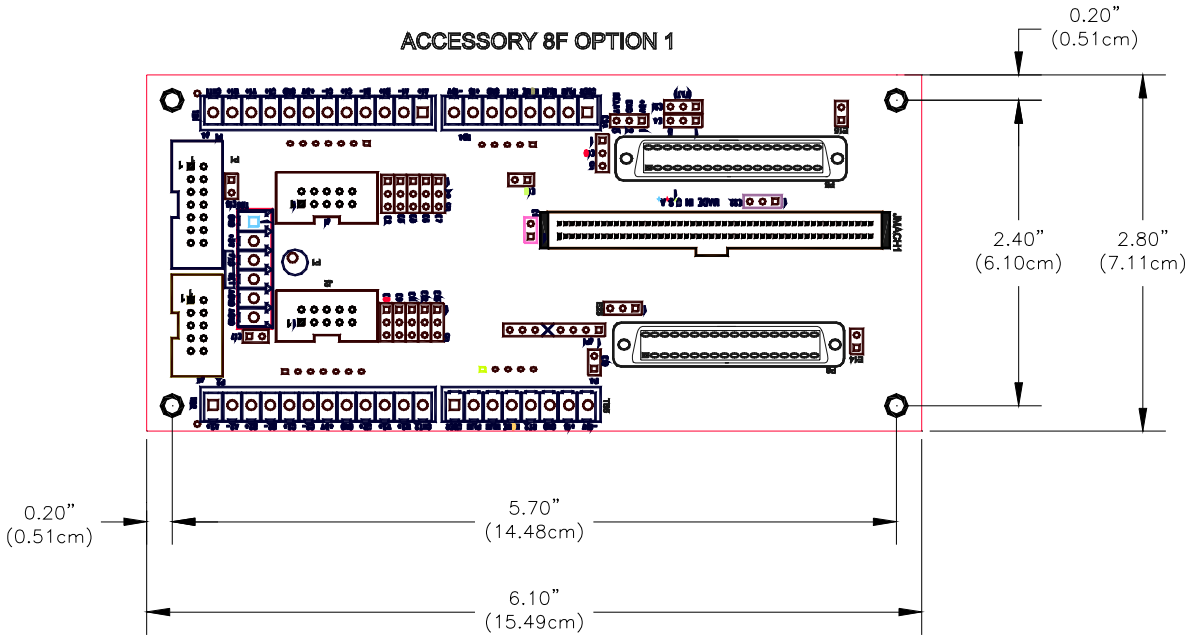
Depending on the output of the flag, the return line (RETn) to the ACC-8F could be wired to the flag power or ground.

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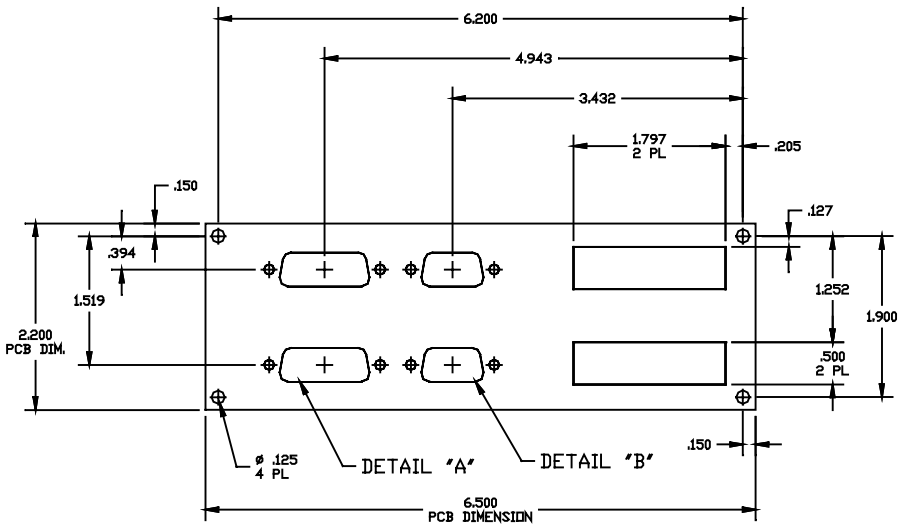
BOARD LAYOUT

ACC-8F Layout



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ACC-8FP Layout

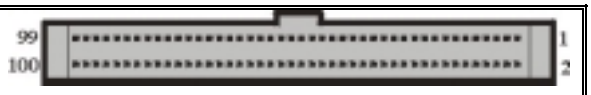


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CONNECTORS AND JUMPERS

Connector Summary

JMACH1



Top View

JMACH1 is a 100-pin high-density header that provides the connection to the matching 100-pin header on the PMAC2. It contains all of the input and output signals for the 2 axes between the ACC-8F board and the PMAC2.

Pin #	Symbol	Function	Description	Notes
1	+5V	Output/ Input	+5V Power	For external circuit or from ext. supply
2	+5V	Output/Input	+5V Power	For external circuit or from ext. supply
3	GND	Common	Reference Voltage	
4	GND	Common	Reference Voltage	
5	CHA1+	Output	Enc 1 Pos. A Chan.	Also pulse input
6	CHA1-	Output	Enc 1 Neg. A Chan.	Also pulse input
7	CHB1+	Output	Enc 1 Pos. B Chan.	Also direction input
8	CHB1-	Output	Enc 1 Neg. B Chan.	Also direction input
9	CHC1+	Output	Enc 1 Pos. C Chan.	Index channel
10	CHC1-	Output	Enc 1 Neg. C Chan.	Index channel
11	CHU1	Output	Chan 1 U Flag	Hall Effect, fault code, or sub-count
12	CHV1	Output	Chan 1 V Flag	Hall Effect, fault code, or sub-count
13	CHW1	Output	CHAN 1 W FLAG	Hall Effect, fault code, or sub-count
14	CHT1	Output	Chan 1 T Flag	Fault code, or sub-count
15	USER1	Output	General Purpose User Flag	Hardware capture flag, or sub-count
16	PLIM1	Output	Positive Overtravel Limit	Hardware capture flag
17	MLIM1	Output	Negative Overtravel Limit	Hardware capture flag
18	HOME1	Output	Home Switch Input	Hardware capture flag
19	ACCFLT1	Output	Accessory Fault Flag	For loss of acc supply voltage

JMACH1 (Continued)

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Pin #	Symbol	Function	Description	Notes
20	WD0/	Input	Watchdog Output	Low Is PMAC watchdog fault
21	SCLK12+	Input/Output	Encoder Sample Clock	Direction Controlled By Pmac2 Jumper
22	SCLK12-	Input/Output	Encoder Sample Clock	Direction Controlled By Pmac2 Jumper
23	ADC_CLK1+	Input	A/D Converter Clock	Programmable frequency
24	ADC_CLK1-	Input	A/D Converter Clock	Programmable frequency
25	ADC_STB1+	Input	A/D Converter Strobe	Programmable sequence
26	ADC_STB1-	Input	A/D Converter Strobe	Programmable sequence
27	ADC_DAA1+	Output	Chan A ADC Serial Data	MSB first
28	ADC_DAA1-	Output	Chan A ADC Serial Data	MSB first
29	ADC_DAB1+	Output	Chan B ADC Serial Data	MSB first
30	ADC_DAB1-	Output	Chan B ADC Serial Data	MSB first
31	AENA1+	Input	Amplifier Enable	High Is enable
32	AENA1-	Input	Amplifier Enable	Low Is enable
33	FAULT1+	Output	Amplifier Fault	Programmable polarity
34	FAULT1-	Output	Amplifier Fault	Programmable polarity
35	PWMATOP1+ DAC_CLK1+	Input	Phase A Top Cmd. Or Dac Clock	Programmable function control
36	PWMATOP1- DAC_CLK1-	Input	Phase A Top Cmd. Or Dac Clock	Programmable function control
37	PWMABOT1+ DAC1A+	Input	Phase A Bottom Cmd. Or Dac A Serial Data	Programmable function control
38	PWMABOT1- DAC1A-	Input	Phase A Bottom Cmd. Or Dac A Serial Data	Programmable function control
39	PWMBTOP1+ DAC_STB1+	Input	Phase B Top Cmd. Or Dac Strobe	Programmable function control
40	PWMBTOP1- DAC_STB1-	Input	Phase B Top Cmd. Or Dac Strobe	Programmable function control

JMACH1 (Continued)

Pin #	Symbol	Function	Description	Notes

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41	PWMBBOT1+ DAC1B+	Input	Phase B Bottom Cmd. Or Dac B Serial Data	Programmable function control
42	PWMBBOT1- DAC1B-	Input	Phase B Bottom Cmd. Or Dac B Serial Data	Programmable function control
43	PWMCTOP1+ DIR1+	Input	Phase B Top Cmd. Or Pfm Direction	Programmable function control
44	PWMCTOP1- DIR1-	Input	Phase B Top Cmd. Or Pfm Direction	Programmable function control
45	PWMCBOT1+ PULSE1+	Input	Phase B Bottom Cmd. Or Pfm Pulse	Programmable function control
46	PWMCBOT1- PULSE1-	Input	Phase B Bottom Cmd. Or Pfm Pulse	Programmable function control
47	GND	Common	Reference Voltage	
48	GND	Common	Reference Voltage	
49	+5V	Output / Input	+5V Power	For external circuit or from ext. supply
50	+5V	Output / Input	+5V Power	For external circuit or from ext. supply
51	+5V	Output / Input	+5V Power	For external circuit or from ext. supply
52	+5V	Output / Input	+5V Power	For external circuit or from ext. supply
53	GND	Common	Reference Voltage	
54	GND	Common	Reference Voltage	
55	CHA2+	Output	Enc 2 Pos. A Chan.	Also pulse input
56	CHA2-	Output	Enc 2 Neg. A Chan.	Also pulse input
57	CHB2+	Output	Enc 2 Pos. B Chan.	Also direction input
58	CHB2-	Output	Enc 2 Neg. B Chan.	Also direction input
59	CHC2+	Output	Enc 2 Pos. C Chan.	Index channel
60	CHC2-	Output	Enc 2 Neg. C Chan.	Index channel
61	CHU2	Output	Chan 2 U Flag	Hall Effect, fault code, or sub-count
62	CHV2	Output	Chan 2 V Flag	Hall Effect, fault code, or sub-count
63	CHW2	Output	Chan 2 W Flag	Hall Effect, fault code, or sub-count

JMACH1 (Continued)

Pin #	Symbol	Function	Description	Notes

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64	CHT2	Output	Chan 2 T Flag	Fault code, or sub-count
65	USER2	Output	General Purpose User Flag	Hardware capture flag, or sub-count
66	PLIM2	Output	Positive Overtravel Limit	Hardware capture flag
67	MLIM2	Output	Negative Overtravel Limit	Hardware capture flag
68	HOME2	Output	Home Switch Input	Hardware capture flag
69	ACCFLT2	Input	Accessory Fault Flag	For loss of acc. supply voltage
70	WD0/	Output	Watchdog Output	Low Is PMAC Watchdog Fault
71	SCLK12+	Input/Output	Encoder Sample Clock	Direction Controlled By PMAC2 Jumper
72	SCLK12-	Input/Output	Encoder Sample Clock	Direction Controlled By PMAC2 Jumper
73	ADC_CLK2+	Input	A/D Converter Clock	Programmable frequency
74	ADC_CLK2-	Input	A/D Converter Clock	Programmable frequency
75	ADC_STB2+	Input	A/D Converter Strobe	Programmable sequence
76	ADC_STB2-	Input	A/D Converter Strobe	Programmable sequence
77	ADC_DAA2+	Output	Chan A ADC Serial Data	MSB first
78	ADC_DAA2-	Output	Chan A ADC Serial Data	MSB first
79	ADC_DAB2+	Output	Chan B ADC Serial Data	MSB first
80	ADC_DAB2-	Output	Chan B ADC Serial Data	MSB first
81	AENA2+	Input	Amplifier Enable	High Is enable
82	AENA2-	Input	Amplifier Enable	Low Is enable
83	FAULT2+	Output	Amplifier Fault	Programmable polarity
84	FAULT2-	Output	Amplifier Fault	Programmable polarity
85	PWMATOP2+ DAC_CLK2+	Input	Phase A Top Cmd. Or Dac Clock	Programmable function control
86	PWMATOP2- DAC_CLK2-	Input	Phase A Top Cmd. Or Dac Clock	Programmable function control

JMACH1 (Continued)

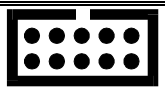
Pin #	Symbol	Function	Description	Notes

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87	PWMABOT2+ DAC2A+	Input	Phase A Bottom Cmd. Or Dac A Serial Data	Programmable function control
88	PWMABOT2- DAC2A-	Input	Phase A Bottom Cmd. Or Dac A Serial Data	Programmable function control
89	PWMBTOP2+ DAC_STB2+	Input	Phase B Top Cmd. Or Dac Strobe	Programmable function control
90	PWMBTOP2- DAC_STB2-	Input	Phase B Top Cmd. Or Dac Strobe	Programmable function control
91	PWMBBOT2+ DAC2B+	Input	Phase B Bottom Cmd. Or Dac B Serial Data	Programmable function control
92	PWMBBOT2- DAC2B-	Input	Phase B Bottom Cmd. Or Dac B Serial Data	Programmable function control
93	PWMCTOP2+ DIR2+	Input	Phase B Top Cmd. Or Pfm Direction	Programmable function control
94	PWMCTOP2- DIR2-	Input	Phase B Top Cmd. Or Pfm Direction	Programmable function control
95	PWMCBOT2+ PULSE2+	Input	Phase B Bottom Cmd. Or Pfm Pulse	Programmable function control
96	PWMCBOT2- PULSE2-	Input	Phase B Bottom Cmd. Or Pfm Pulse	Programmable function control
97	GND	Common	Reference Voltage	
98	GND	Common	Reference Voltage	
99	+5V	Output / Input	+5V Power	For external circuit or from ext. supply
100	+5V	Output / Input	+5V Power	For external circuit or from ext. supply
The cable-to-board connector is from AMP with 0.025 Centerline ribbon cable. This is the AMPMODU System 50 ribbon connector and the part number specified by AMP is 1-111196-6. The maximum length specified by Delta Tau is 18 inches.				

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J1 10-Pin IDC Header



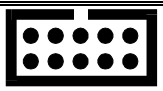
Top View

Pin#	Symbol	Function	Description	Notes
1	CHA1+	Input	Enc 1 Pos. A Chan.	Also pulse Input
2	ENCPWR	Output	Digital Supply Volt.	Power for encoder
3	GND	Common	Reference Voltage	
4	CHA1-	Input	Enc 1 Neg. A Chan.	Also pulse Input
5	CHB1-	Input	Enc 1 Neg. B Chan.	Also direction Input
6	GND	Common	Reference Voltage	
7	ENCPWR	Output	Digital Supply Volt.	Power for encoder
8	CHB1+	Input	Enc 1 Pos. B Chan.	Also direction Input
9	ENCPWR	Output	Digital Supply Volt.	Power for encoder
10	CHC1+	Input	Enc 1 Pos. C Chan.	Index channel

A 10-pin IDC header for connection to 1st encoder in HP-compatible pinout. This header provides the connection to a single quadrature encoder or the signals simulated for one from an amplifier or accessory board. The signals on this connector are also available on TB2.

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J2 10-Pin IDC Header



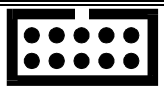
Top View

Pin#	Symbol	Function	Description	Notes
1	CHA2+	Input	Enc 2 Pos. A Chan.	Also pulse Input
2	ENCPWR	Output	Digital Supply Volt.	Power for encoder
3	GND	Common	Reference Voltage	
4	CHA2-	Input	Enc 2 Neg. A Chan.	Also pulse Input
5	CHB2-	Input	Enc 2 Neg. B Chan.	Also direction Input
6	GND	Common	Reference Voltage	
7	ENCPWR	Output	Digital Supply Volt.	Power for encoder
8	CHB2+	Input	Enc 2 Pos. B Chan.	Also direction Input
9	ENCPWR	Output	Digital Supply Volt.	Power for encoder
10	CHC2+	Input	Enc 2 Pos. C Chan.	Index channel

A 10-pin IDC header for connection to 2nd encoder in HP-compatible pinout. It provides the connection to a single quadrature encoder or simulated signals from an amplifier or accessory board. Signals on this connector are also available on TB3.

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J3 10-Pin IDC Header



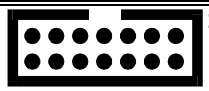
Top View

Pin#	Symbol	Function	Description	Notes
1	CHA1+	Input	Enc 1 Pos. A Chan	Single ended input
2	CHB1+	Input	Enc 1 Pos. B Chan	Single ended input
3	CHC1+	Input	Enc 1 Pos. C Chan	Single ended input
4	CHA2+	Input	Enc 2 Pos. A Chan	Single ended input
5	CHB2+	Input	Enc 2 Pos. B Chan	Single ended input
6	CHC2+	Input	Enc 2 Pos. C Chan	Single ended input
7	GND	Common	Reference Signal	
8	GND	Common	Reference Signal	
9	SCLK12+	Output	Encoder Sample Clock	
10	CLOCK	Output	DAC_CLK or ADC_CLK	E22 jumper selects

A 10-pin IDC header for connection of encoder inputs for both channels (single ended). It provides connection to single-ended quadrature encoder inputs for two axes. It also provides connection to ADC_CLK or DAC_CLK signals to accessories such as ACC-8D option 8.

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J4 14-Pin IDC Header



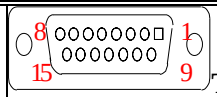
Top View

Pin#	Symbol	Function	Description	Notes
1	CHT1	Input	Supplementary Flag T	Fault code, or sub-count
2	NC		No Connect	
3	CHU1	Input	Supplementary Flag U	Hall Effect, fault code, or sub-count
4	CHV1	Input	Supplementary Flag V	Hall Effect, fault code, or sub-count
5	CHW1	Input	Supplementary Flag W	Hall Effect, fault code, or sub-count
6	USER1	Input	General Purpose User Flag	Hardware capture flag, or sub-count
7	CHT2	Input	Supplementary Flag T	Fault Code, Or Sub-Count
8	NC		No Connect	
9	CHU2	Input	Supplementary Flag U	Hall Effect, fault code, or sub-count
10	CHV2	Input	Supplementary Flag V	Hall Effect, fault code, or sub-count
11	CHW2	Input	Supplementary Flag W	Hall Effect, fault code, or sub-count
12	USER2	Input	General Purpose User Flag	Hardware capture flag, or sub-count
13	GND	Common	Reference Voltage	
14	+5V	Output	Supply Voltage	

A 14-pin IDC header for connection to supplementary input flags for both channels. This header provides the connection to supplemental input flags that can be used for sub-count interpolation, hall-effect commutation, or amplifier fault codes. The USER flags can also be input on TB4 or TB5.

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P1 DB15-pin Connector



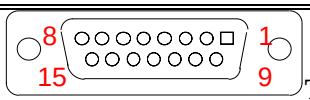
Top View

Pin #	Symbol	Function	Description	Notes
1	ENCPWR	Output	Digital Supply	Power for encoder
2	GND	Common	Digital Reference	
3	CHA1+	Input	Enc 1 Pos. A Chan.	Also pulse input
4	CHB1+	Input	Enc 1 Pos. B Chan.	Also direction input
5	CHC1+	Input	Enc 1 Pos. C Chan.	Index channel
6	CHU1+	Input	Supplemental Flag U	
7	CHW1+	Input	Supplemental Flag W	
8	GND	Common	Digital Reference	
9	ENCPWR	Output	Digital Supply	Power for encoder
10	GND	Common	Digital Reference	
11	CHA1-	Input	Enc 1neg. A Chan.	Also pulse Input
12	CHB1-	Input	Enc 1 Neg. B Chan.	Also direction input
13	CHC1-	Input	Enc 1 Neg. C Chan.	Index channel
14	CHV1+	Input	Supplemental Flag V	
15	CHT1+	Input	Supplemental Flag T	

A DB 15 connector for discrete-wired connection to the 1st encoder and Supplemental Flags. This connector alternately provides the interface to a single quadrature encoder or the signals of a simulated encoder. It additionally provides connection to the set of supplemental flags for that motor.

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P2 DB15-pin Connector



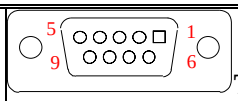
Top View

Pin #	Symbol	Function	Description	Notes
1	ENCPWR	Output	Digital Supply	Power for encoder
2	GND	Common	Digital Reference	
3	CHA2+	Input	Enc 2 Pos. A Chan.	Also pulse input
4	CHB2+	Input	Enc 2 Pos. B Chan.	Also direction input
5	CHC2+	Input	Enc 2 Pos. C Chan.	Index channel
6	CHU2+	Input	Supplemental Flag U	
7	CHW2+	Input	Supplemental Flag W	
8	GND	Common	Digital Reference	
9	ENCPWR	Output	Digital Supply	Power for encoder
10	GND	Common	Digital Reference	
11	CHA2-	Input	Enc 2 Neg. A Chan.	Also pulse input
12	CHB2-	Input	Enc 2 Neg. B Chan.	Also direction input
13	CHC2-	Input	Enc 2 Neg. C Chan.	Index channel
14	CHV2+	Input	Supplemental Flag V	
15	CHT2+	Input	Supplemental Flag T	

A DB 15 connector for discrete-wired connection to 2nd encoder and Supplemental Flags. This connector alternately provides the interface to a single quadrature encoder or the signals of a simulated encoder. It additionally provides connection to the set of supplemental flags for that motor.

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P3 DB9-pin Connector

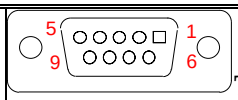


Top View

Pin #	Symbol	Function	Description	Notes
1	USER1	Input	General Capture Flag	Sinking or sourcing
2	MLIM1	Input	Negative Limit Flag	Sinking or sourcing
3	FL_RT1	Input	Return For All Flags	+V (12 To 24 V) Or 0 V
4	FLGRET	Output	Flag Return	12/25 V Rreturn from TB3
5	AGND	Ground	Analog Common	
6	PLIM1	Input	Positive Limit Flag	Sinking or sourcing
7	HOME1	Input	Home Flag	Sinking or sourcing
8	FLGPWR	Output	Flag Power	+ 12/25 V from TB3
9	AGND	Ground	Analog Common	

A DB 9 connector for connection to main flags of the 1st channel (home, limits, & user). This connector provides alternate connection for the standard machine input flags for an axis. The USER flag can also be brought in on J4 or TB4.

P4 DB9-pin Connector



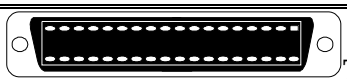
Top View

Pin #	Symbol	Function	Description	Notes
1	USER2	Input	General Capture Flag	Sinking or sourcing
2	MLIM2	Input	Negative Limit Flag	Sinking or sourcing
3	FL_RT2	Input	Return For All Flags	+V (12 to 24 V) or 0 V
4	FLGRET	Output	Flag Return	12/25 V return from TB3
5	AGND	Ground	Analog Common	
6	PLIM2	Input	Positive Limit Flag	Sinking or sourcing
7	HOME2	Input	Home Flag	Sinking or sourcing
8	FLGPWR	Output	Flag Power	+ 12/25 V From TB3
9	AGND	Ground	Analog Common	

A DB 9 connector for connection to main flags of the 2nd channel (home, limits, & user). This connector provides alternate connection for the standard machine input flags for an axis. The USER flag can also be brought in on J4 or TB5.

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P5 36-pin Mini-D Connector


Top View

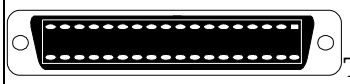
Pin #	Symbol	Function	Description	Notes
1	FC0	Feedback	1 Of 4 Fault Code Bits	Optional
2	FC2	Feedback	1 Of 4 Fault Code Bits	Optional
3	ADC_CLK1+	Command	A/D Converter Clock	
4	ADC_STB1+	Command	A/D Converter Strobe	
5	CURRENTA+	Feedback	Phase A Actual Current Data	Serial digital
6	CURRENTB+	Feedback	Phase B Actual Current Data	Serial digital
7	AENA1+	Command	Amplifier Enable	High is enable
8	FAULT1+	Feedback	Amplifier Fault	High is fault
9	PWMATOP1+	Command	Phase A Top Cmd	High is On command
10	PWMABOT1+	Command	Phase A Bottom Cmd	High is On command
11	PWMBTOP1+	Command	Phase B Top Cmd	High is On command
12	PWMBBOT1+	Command	Phase B Bottom Cmd	High is On command
13	PWMCTOP1+	Command	Phase C Top Cmd	High is On command
14	PWMCBOT1+	Command	Phase C Bottom Cmd	High is On command
15	GND	Common	Reference Voltage	
16	+5V	Power	+5v Power	From controller
17	RESERVED			
18	RESERVED			
19	FC1	Feedback	1 Of 4 Fault Code Bits	Optional
20	FC3	Feedback	1 Of 4 Fault Code Bits	Optional
21	ADC_CLK1-	Command	A/D Converter Clock	
22	ADC_STB1-	Command	A/D Converter Strobe	
23	CURRENTA-	Feedback	Phase A Actual Current Data	Serial digital
24	CURRENTB-	Feedback	Phase B Actual Current Data	Serial digital
25	AENA1-	Command	Amplifier Enable	Low is enable
26	FAULT1-	Feedback	Amplifier Fault	Low is fault
27	PWMATOP1-	Command	Phase A Top Cmd	Low is On command

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P5 (Continued)

Pin #	Symbol	Function	Description	Notes
28	PWMABOT1-	Command	Phase A Bottom Cmd	Low is On command
29	PWMBTOP1-	Command	Phase B Top Cmd	Low is On command
30	PWMBBOT1-	Command	Phase B Bottom Cmd	Low is On command
31	PWMCTOP1-	Command	Phase C Top Cmd	Low is On command
32	PWMCBOT1-	Command	Phase C Bottom Cmd	Low is On command
33	GND	Common	Reference Voltage	
34	+5V	Power	+5v Power	From controller
35	RESERVED			
36	RESERVED			
A mini-D 36-pin connector for 1st digital amplifier command outputs and current feedbacks. This connector provides the interface to a fully digital amplifier for the first channel. Note that current feedback data must be in serial digital form, already converted from analog in the amplifier.				

P6 36-pin Mini-D Connector



Top View

Pin #	Symbol	Function	Description	Notes
1	FC0	Feedback	1 Of 4 Fault Code Bits	Optional
2	FC2	Feedback	1 Of 4 Fault Code Bits	Optional
3	ADC_CLK2+	Command	A/D Converter Clock	
4	ADC_STB2+	Command	A/D Converter Strobe	
5	CURRENTA+	Feedback	Phase A Actual Current Data	Serial digital
6	CURRENTB+	Feedback	Phase B Actual Current Data	Serial digital
7	AENA2+	Command	Amplifier Enable	High is enable
8	FAULT2+	Feedback	Amplifier Fault	High is fault
9	PWMATOP2+	Command	Phase A Top Cmd	High is On command
10	PWMABOT2+	Command	Phase A Bottom Cmd	High is On command
11	PWMBTOP2+	Command	Phase B Top Cmd	High is On command
12	PWMBBOT2+	Command	Phase B Bottom Cmd	High is On command
13	PWMCTOP2+	Command	Phase C Top Cmd	High is On command
14	PWMCBOT2+	Command	Phase C Bottom Cmd	High is On command

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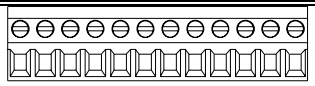
P6 (Continued)

Pin #	Symbol	Function	Description	Notes
15	GND	Common	Reference Voltage	
16	+5V	Power	+5v Power	From controller
17	RESERVED			
18	RESERVED			
19	FC1	Feedback	1 Of 4 Fault Code Bits	Optional
20	FC3	Feedback	1 Of 4 Fault Code Bits	Optional
21	ADC_CLK2-	Command	A/D Converter Clock	
22	ADC_STB2-	Command	A/D Converter Strobe	
23	CURRENTA-	Feedback	Phase A Actual Current Data	Serial digital
24	CURRENTB-	Feedback	Phase B Actual Current Data	Serial digital
25	AENA2-	Command	Amplifier Enable	Low is enable
26	FAULT2-	Feedback	Amplifier Fault	Low is fault
27	PWMATOP2-	Command	Phase A Top Cmd	Low is On command
28	PWMABOT2-	Command	Phase A Bottom Cmd	Low is On command
29	PWMBTOP2-	Command	Phase B Top Cmd	Low is On command
30	PWMBBOT2-	Command	Phase B Bottom Cmd	Low is On command
31	PWMCTOP2-	Command	Phase C Top Cmd	Low is On command
32	PWMCBOT2-	Command	Phase C Bottom Cmd	Low is On command
33	GND	Common	Reference Voltage	
34	+5V	Power	+5v Power	From controller
35	RESERVED			
36	RESERVED			

A mini-D 36-pin connector for 2nd digital amplifier command outputs and current feedbacks. This connector provides the interface to a fully digital amplifier for the second channel. Note that current feedback data must be in serial digital form, already converted from analog in the amplifier.

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TB1 12 Point Terminal Block

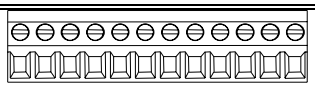


Pin #	Symbol	Function	Description	Notes
1	CHA1+	Input	Enc 1 Pos. A Chan.	Also pulse input
2	CHA1-	Input	Enc 1 Neg. A Chan.	Also pulse input
3	CHB1+	Input	Enc 1 Pos. B Chan.	Also direction input
4	CHB1-	Input	Enc 1 Neg. B Chan.	Also direction input
5	CHC1+	Input	Enc 1 Pos. C Chan.	Index channel
6	CHC1-	Input	Enc 1 Neg. C Chan.	Index channel
7	ENCPWR	Output	Digital Supply	Power for encoder
8	GND	Common	Digital Reference	
9	CHU1+	Input	Supplemental Flag U	
10	CHV1+	Input	Supplemental Flag V	
11	CHW1+	Input	Supplemental Flag W	
12	CHT1+	Input	Supplemental Flag T	

A 12-point terminal block for discrete-wired connection to 1st encoder and Supplemental Flags. This terminal block provides the interface to a single quadrature encoder or the signals of a simulated encoder. It additionally provides connection to the set of supplemental flags for that motor.

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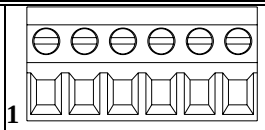
TB2 12 Point Terminal Block



Pin #	Symbol	Function	Description	Notes
1	CHA2+	Input	Enc 2 Pos. A Chan.	Also pulse input
2	CHA2-	Input	Enc 2 Neg. A Chan.	Also pulse input
3	CHB2+	Input	Enc 2 Pos. B Chan.	Also direction input
4	CHB2-	Input	Enc 2 Neg. B Chan.	Also direction input
5	CHC2+	Input	Enc 2 Pos. C Chan.	Index channel
6	CHC2-	Input	Enc 2 Neg. C Chan.	Index channel
7	ENCPWR	Output	Digital Supply	Power for encoder
8	GND	Common	Digital Reference	
9	CHU2+	Input	Supplemental Flag U	
10	CHV2+	Input	Supplemental Flag V	
11	CHW2+	Input	Supplemental Flag W	
12	CHT2+	Input	Supplemental Flag T	

A 12-point terminal block for discrete-wired connection to 2nd encoder and Supplemental Flags. This terminal block provides the interface to a single quadrature encoder or the signals of a simulated encoder. It additionally provides connection to the set of supplemental flags for that motor.

TB3 6 Point Terminal Block

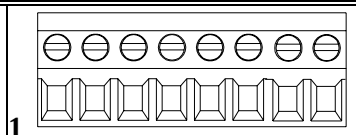


Pin #	Symbol	Function	Description	Notes
1	GND	Common	Reference Voltage	Tied to PMAC2 ground
2	+5V	Input	Positive Supply Voltage	See Above
3	+12/25V	Input	Flag Power	For Optical Isolation
4	12/25V Rtrn	Input	Flag Return	For Optical Isolation
5	AGND	Input	Analog Ground	
6	AGND	Input	Analog Ground	

A 6-point terminal block for optional +5V power supply connection for accessory board. This terminal block provides the input for the power supply for the circuits on the board. If jumper E1is ON, the +5V supply for the board will come from the PMAC2 and a separate +5V supply should not be brought in here.

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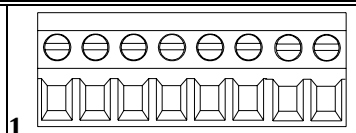
TB4 8 Point Terminal Block



Pin #	Symbol	Function	Description	Notes
1	USER1	Input	General Capture Flag	Sinking or sourcing
2	PLIM1	Input	Positive Limit Flag	Sinking or sourcing
3	MLIM1	Input	Negative Limit Flag	Sinking or sourcing
4	HOME1	Input	Home Flag	Sinking or sourcing
5	FLG_1_RET	Input	Return For All Flags	+V (12 To 24v) or 0v
6	AGND	Ground	Analog Common	
7	FLGPWR	Output	Flag Power	+12/25 V from TB6
8	FLGRTN	Output	Flag Return	12/25 V return from TB3

An 8-point terminal block for connection to main flags of the 1st channel (home, limits, & user). This terminal block provides the connection for the standard machine input flags for an axis. The USER flag can also be brought in on J4 or P3.

TB5 8 Point Terminal Block



Pin #	Symbol	Function	Description	Notes
1	USER2	Input	General Capture Flag	Sinking or sourcing
2	PLIM2	Input	Positive Limit Flag	Sinking or sourcing
3	MLIM2	Input	Negative Limit Flag	Sinking or sourcing
4	HOME2	Input	Home Flag	Sinking or sourcing
5	FLG_2_RET	Common	Return For All Flags	+V (12 To 24v) or 0v
6	AGND	Ground	Analog Common	
7	FLGPWR	Output	Flag Power	+12/25 V from TB6
8	FLGRTN	Output	Flag Return	12/25 V return from TB3

An 8-point terminal block for connection to main flags of the 2nd channel (home, limits, & user). This terminal block provides the connection for the standard machine input flags for an axis. The USER flag can also be brought in on J4 or P4.

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Jumper Summary

Refer to the ACC-8F layout diagram for jumper locations.

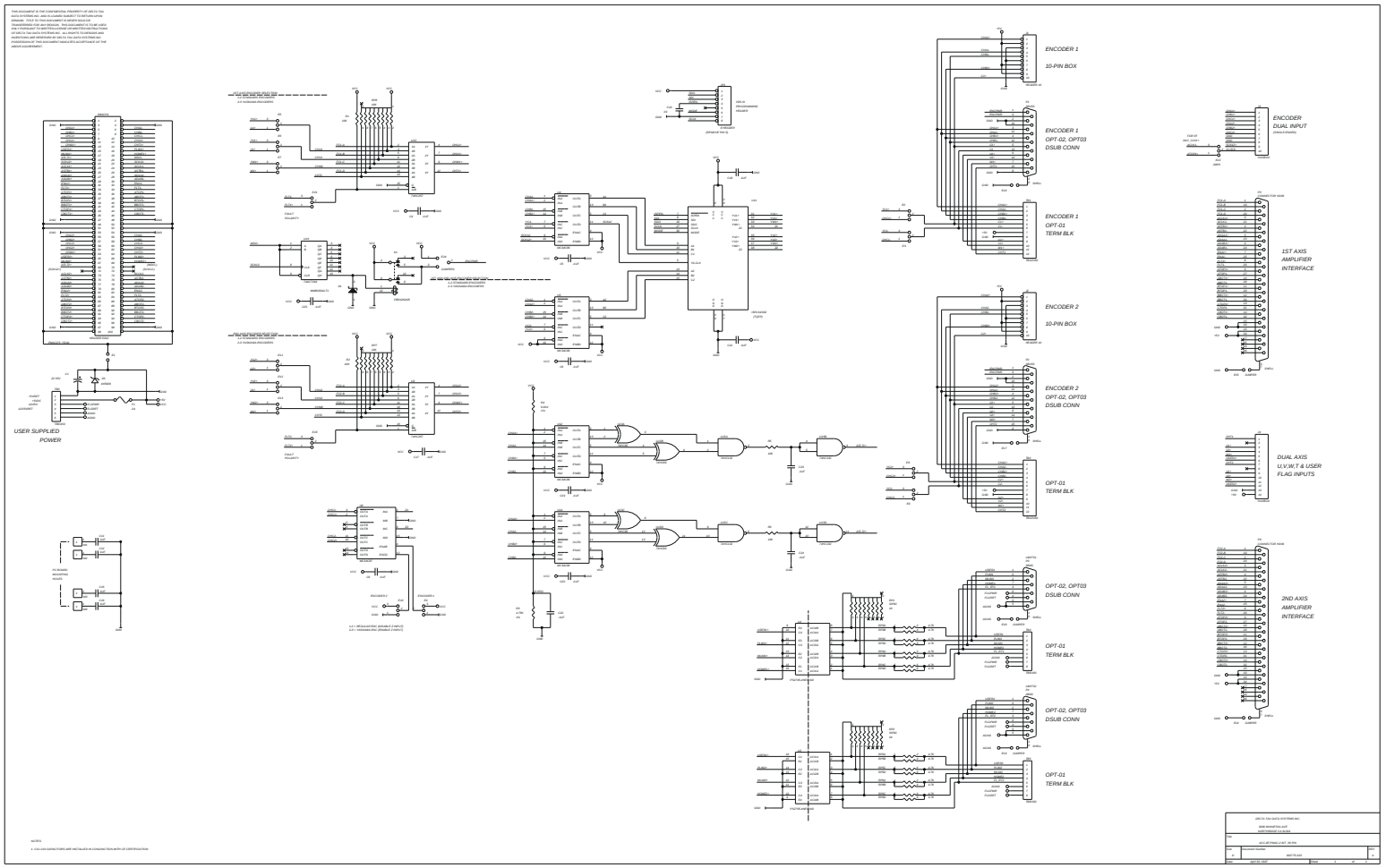
Jumper	Configuration	Description	Default
E1 If more than 250mA isused through the ACC-8F, the +5V power must be brought in via TB3 and E1 must be removed.		Jump 1 to 2 to use +5V input from PMAC2 to power encoders.	1 to 2
E2 - E13		Jump 1 to 2 when an encoder with a single index pulse on the channel C or Z is used. Jump 2 to 3 when using an encoder with U, V, W, T and Index signals encoded on the C channel (i.e. Yaskawa multiplexed encoder).	1 to 2
E14 - E19		Jump 1 to 2 to connect the shell of connectors P1, P2, P3, P4, P5 and P6 to Analog ground.	1 to 2
E21		Jump 1 to 2 if amplifier FLT1+ line (P5-8) is normally high (No fault) Jump 2 to 3 if amplifier FLT1- line (P5-26)is normally high.(No fault) If the amplifier fault condition code is not required at PMAC2, remove E21.	1 to 2
E22		Jump 1 to 2 to provide ATOP1+/DAC_CLK to pin 10 on J3 Jump 2 to 3 to provide ADC_CLK to pin 10 on J3.	1 to 2

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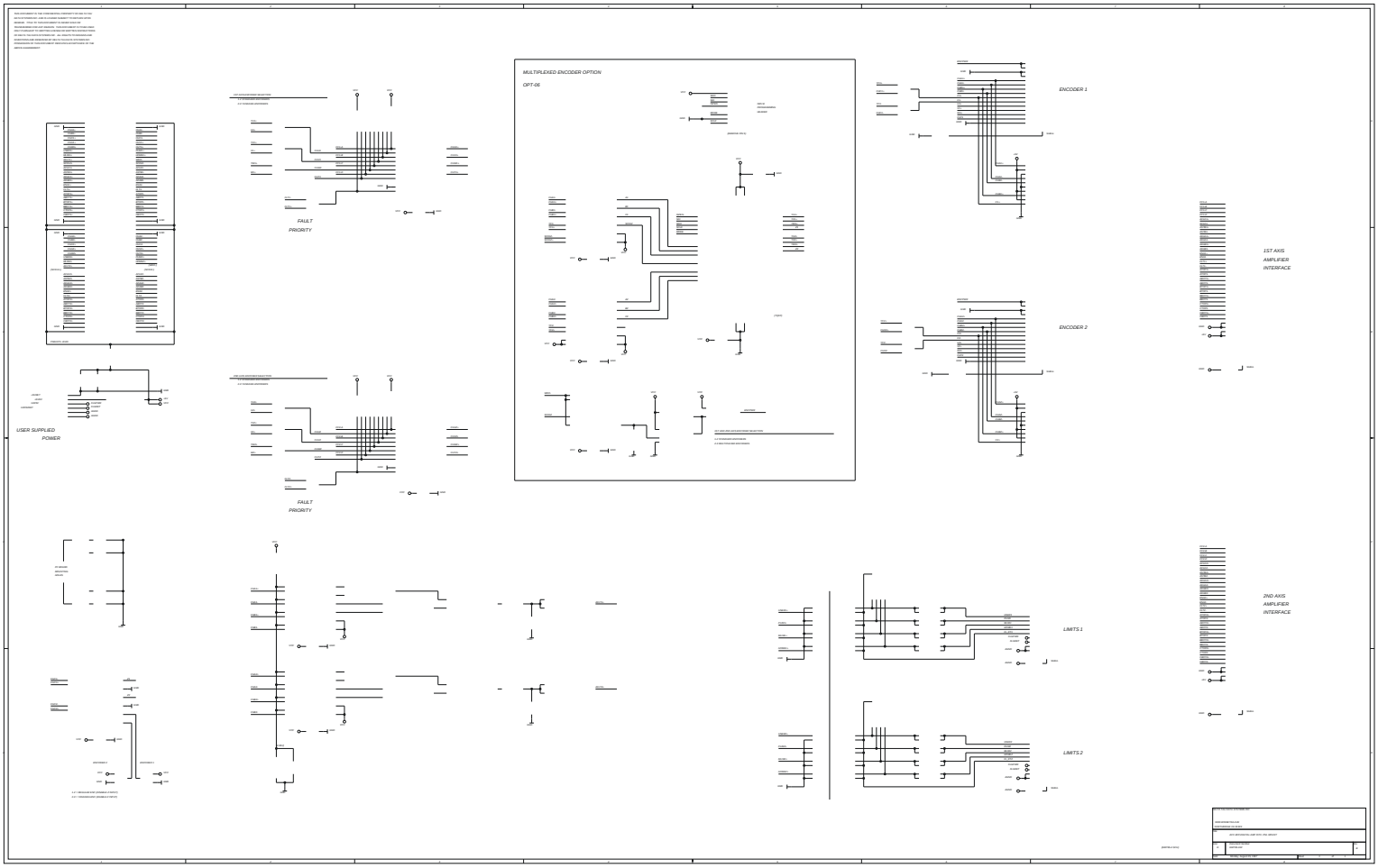
Jumper Summary (Continued)

Jumper	Configuration	Description	Default
E23		Jump 1 to 2 if amplifier FLT2+ line (P6-8) is normally high (No fault) Jump 2 to 3 if amplifier FLT2- line (P6-26) is normally high.(No fault) If the amplifier fault condition code is not required at PMAC2, remove E21.	1 to 2
E24 The E24 jumper is used on 602775-103 revision and newer.		Jump 1 to 2 when an encoder with a single index pulse on the channel C or Z is used. Jump 2 to 3 when connecting an encoder with power-on information (i.e. Yaskawa multiplexed encoder).	1 to 2

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