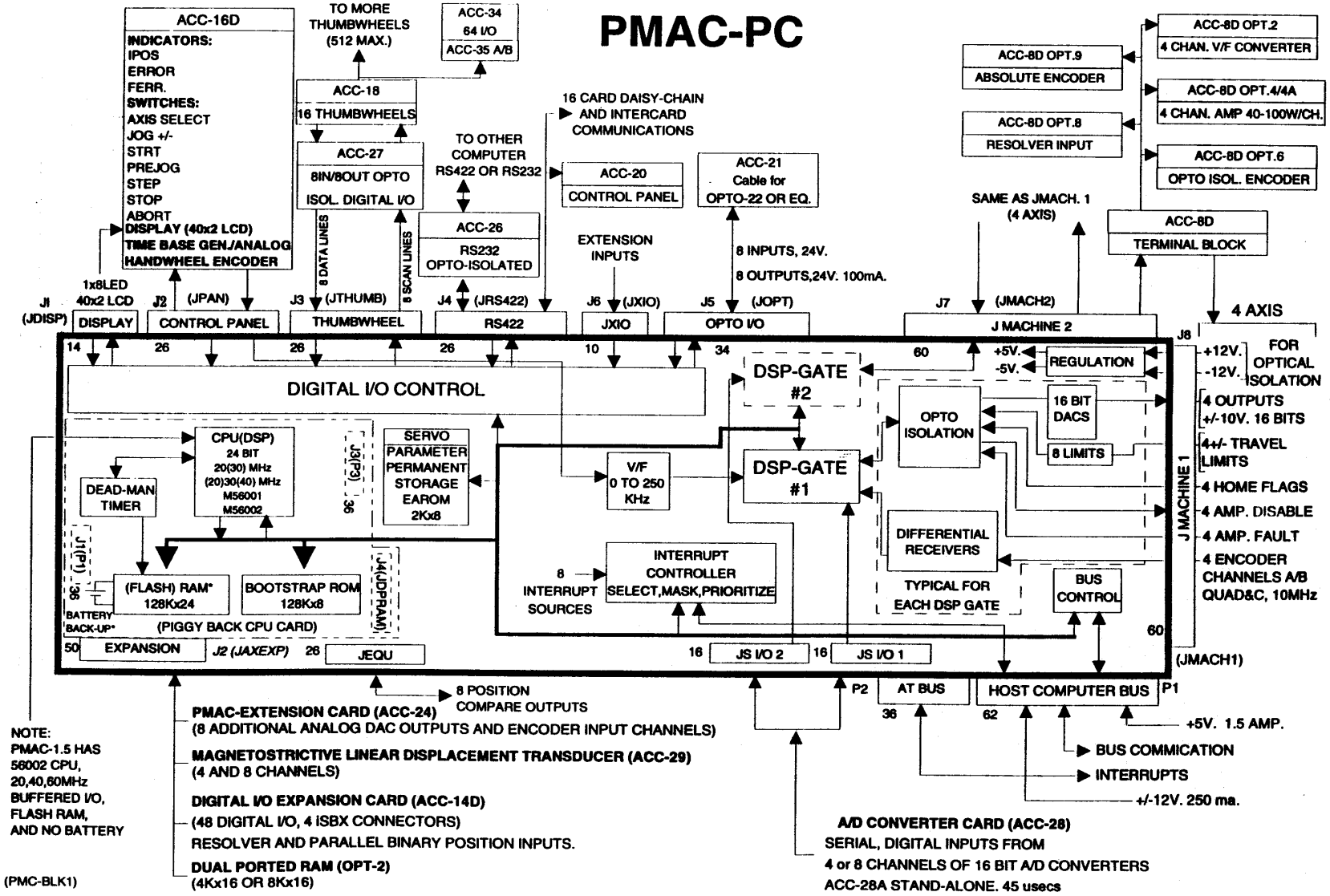
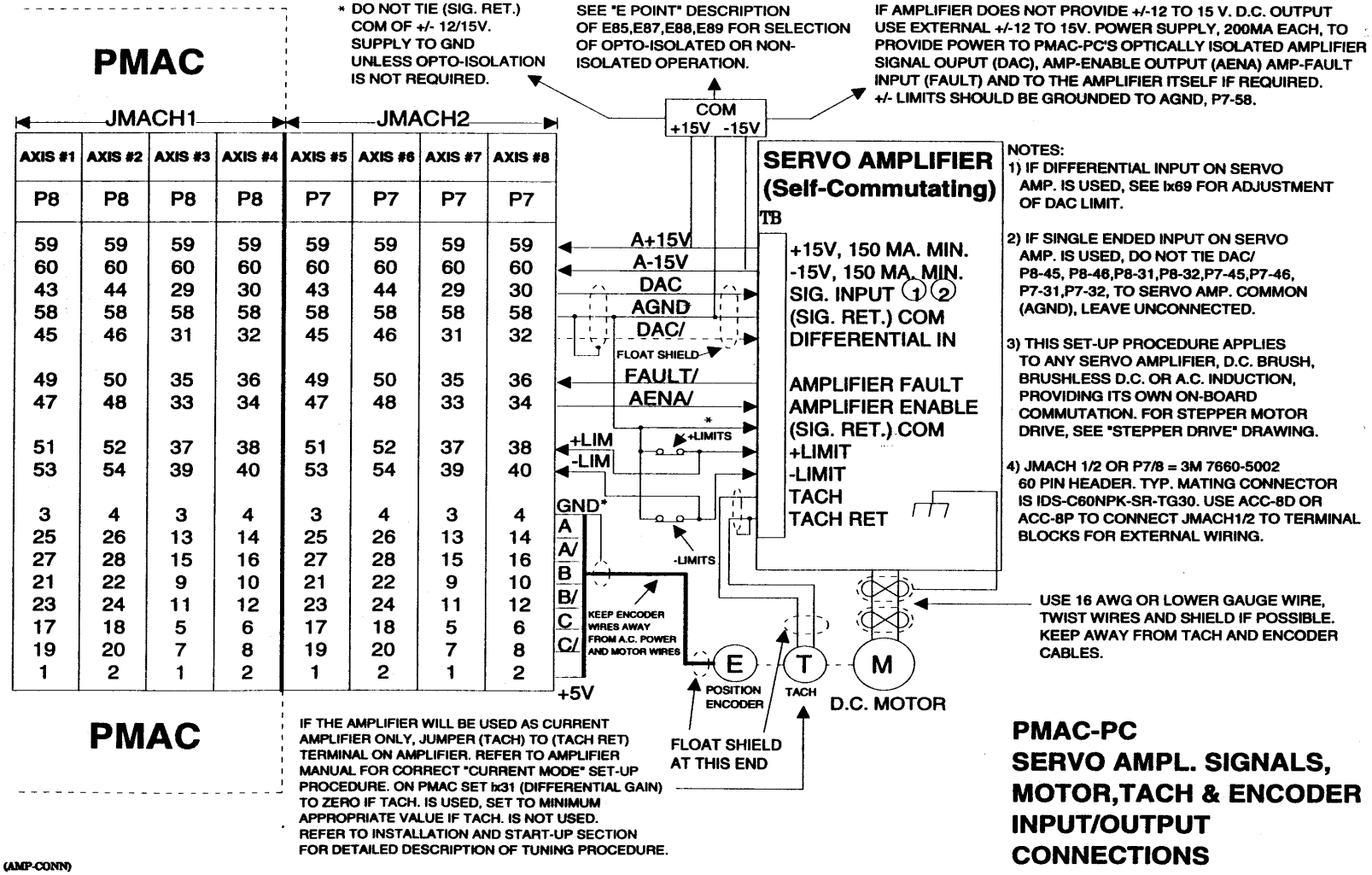
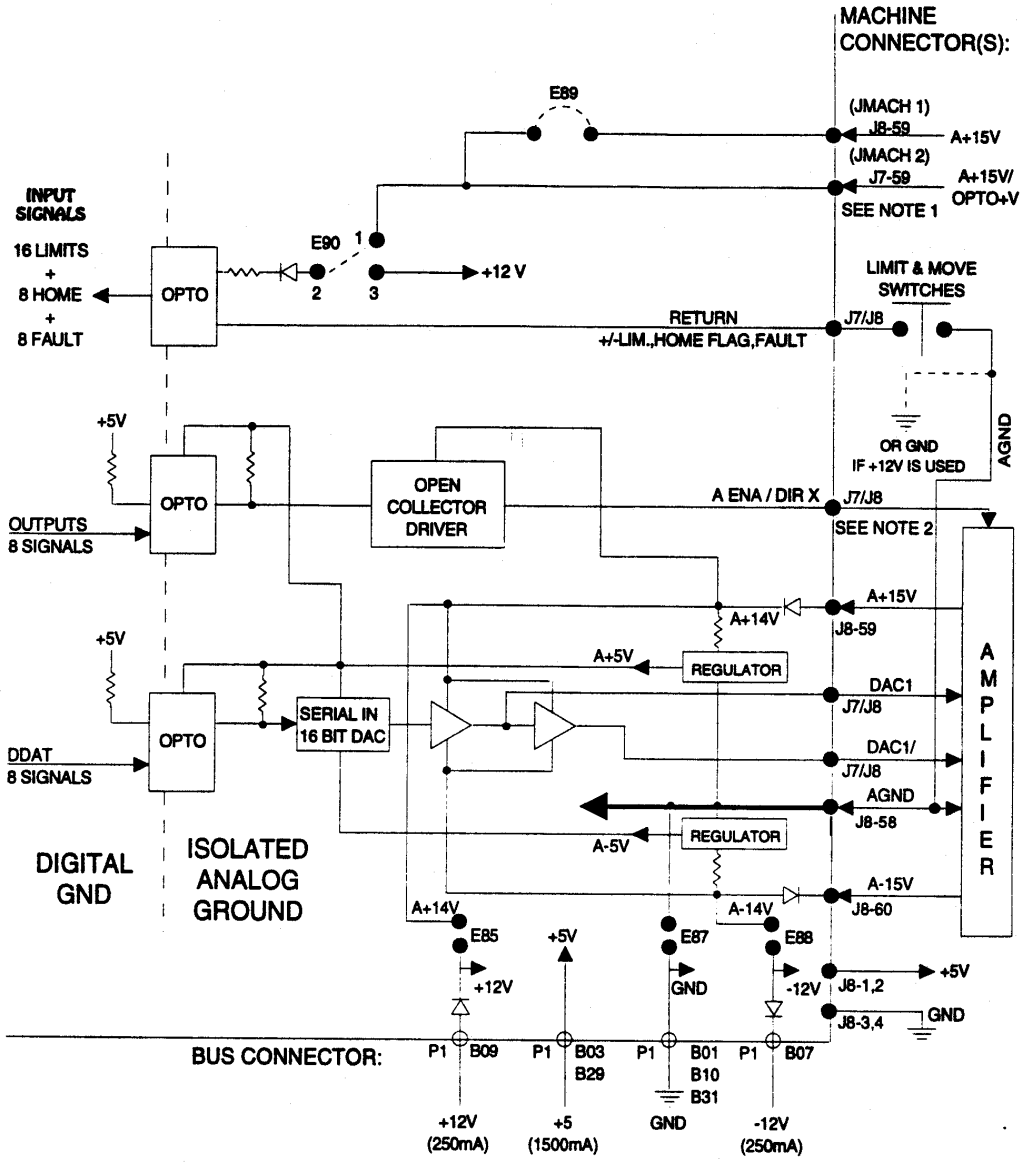
本节列出PMAC与机床的一些有用的联接图如下所示:

1. PMAC块图
2. PMAC-PC连接
3. PMAC-PC选择隔离
4. PMAC-Lie选择隔离
5. PMAC-VME电源
6. PMAC-PC(轴1&2)
7. PMAC-PC(轴3&4)
8. PMAC-PC(轴5&6)
9. PMAC-PC(轴7&8)
10. PC RS-232口与PMAC RS-422连接


PMAC-PC
ACC-16D
INDICATORS:
IPOS
ERROR
FERR.
SWITCHES:
AXIS SELECT
JOG +/-
STRT
PREJOG
STEP
STOP
ABORT
DISPLAY (40x2 LCD)
TIME BASE GEN./ANALOG
HANDWHEEL ENCODER
TO MORE THUMBWHEELS (512 MAX.)
ACC-34
64 I/O
ACC-35 A/B
ACC-18
16 THUMBWHEELS
ACC-27
8IN/8OUT OPTO
ISOL. DIGITAL I/O
8 DATA LINES
8 SCAN LINES
TO OTHER COMPUTER RS422 OR RS232
ACC-26
RS232
OPTO-ISOLATED
16 CARD DAISY-CHAIN AND INTERCARD COMMUNICATIONS
ACC-20
CONTROL PANEL
ACC-21
Cable for
OPTO-22 OR EQ.
EXTENSION INPUTS
8 INPUTS, 24V.
8 OUTPUTS,24V. 100mA.
ACC-8D OPT.9
ABSOLUTE ENCODER
ACC-8D OPT.8
RESOLVER INPUT
ACC-8D OPT.2
4 CHAN. V/F CONVERTER
ACC-8D OPT.4/4A
4 CHAN. AMP 40-100W/CH.
ACC-8D OPT.6
OPTO ISOL. ENCODER
SAME AS JMACH. 1 (4 AXIS)
ACC-8D
TERMINAL BLOCK
4 AXIS
J1 (JDISP)
1x8LED
40x2 LCD
DISPLAY
J2 (JPAN)
CONTROL PANEL
J3 (JTHUMB)
THUMBWHEEL
J4 (JRS422)
RS422
J6 (JXIO)
JXIO
J5 (JOPT)
OPTO I/O
J7 (JMACH2)
J MACHINE 2
J8
DIGITAL I/O CONTROL
CPU(DSP)
24 BIT
20(30) MHz
(20)30(40) MHz
M56001
M56002
DEAD-MAN TIMER
SERVO
PARAMETER
PERMANENT
STORAGE
EAROM
2Kx8
J3(P3)
J1(P1)
(FLASH) RAM*
128Kx24
BOOTSTRAP ROM
128Kx8
BATTERY BACK-UP*
(PIGGY BACK CPU CARD)
J4(JDPRAM)
EXPANSION
J2 (JAXEXP)
JEQU
DSP-GATE #2
DSP-GATE #1
V/F
0 TO 250 KHz
INTERRUPT CONTROLLER
SELECT,MASK,PRIORITIZE
8 INTERRUPT SOURCES
OPTO ISOLATION
16 BIT DACS
8 LIMITS
DIFFERENTIAL RECEIVERS
TYPICAL FOR EACH DSP GATE
BUS CONTROL
REGULATION
+5V.
-5V.
+12V.
-12V.
FOR OPTICAL ISOLATION
4 OUTPUTS +/-10V. 16 BITS
4+/- TRAVEL LIMITS
4 HOME FLAGS
4 AMP. DISABLE
4 AMP. FAULT
4 ENCODER CHANNELS A/B QUAD&C, 10MHz
J MACHINE 1
(JMACH1)
JS I/O 2
JS I/O 1
8 POSITION COMPARE OUTPUTS
P2
AT BUS
HOST COMPUTER BUS
P1
+5V. 1.5 AMP.
BUS COMMICATION
INTERRUPTS
+/-12V. 250 ma.
NOTE:
PMAC-1.5 HAS
56002 CPU,
20,40,60MHz
BUFFERED I/O,
FLASH RAM,
AND NO BATTERY
(PMC-BLK1)
PMAC-EXTENSION CARD (ACC-24)
(8 ADDITIONAL ANALOG DAC OUTPUTS AND ENCODER INPUT CHANNELS)
MAGNETOSTRICTIVE LINEAR DISPLACEMENT TRANSDUCER (ACC-29)
(4 AND 8 CHANNELS)
DIGITAL I/O EXPANSION CARD (ACC-14D)
(48 DIGITAL I/O, 4 iSBX CONNECTORS)
RESOLVER AND PARALLEL BINARY POSITION INPUTS.
DUAL PORTED RAM (OPT-2)
(4Kx16 OR 8Kx16)
A/D CONVERTER CARD (ACC-28)
SERIAL, DIGITAL INPUTS FROM
4 or 8 CHANNELS OF 16 BIT A/D CONVERTERS
ACC-28A STAND-ALONE. 45 usecs


PMAC
JMACH1
JMACH2
AXIS #1 AXIS #2 AXIS #3 AXIS #4 AXIS #5 AXIS #6 AXIS #7 AXIS #8
P8 P8 P8 P8 P7 P7 P7 P7
59 59 59 59 59 59 59 59
60 60 60 60 60 60 60 60
43 44 29 30 43 44 29 30
58 58 58 58 58 58 58 58
45 46 31 32 45 46 31 32
49 50 35 36 49 50 35 36
47 48 33 34 47 48 33 34
51 52 37 38 51 52 37 38
53 54 39 40 53 54 39 40
3 4 3 4 3 4 3 4
25 26 13 14 25 26 13 14
27 28 15 16 27 28 15 16
21 22 9 10 21 22 9 10
23 24 11 12 23 24 11 12
17 18 5 6 17 18 5 6
19 20 7 8 19 20 7 8
1 2 1 2 1 2 1 2
PMAC
* DO NOT TIE (SIG. RET.) COM OF +/- 12/15V. SUPPLY TO GND UNLESS OPTO-ISOLATION IS NOT REQUIRED.
SEE "E POINT" DESCRIPTION OF E85,E87,E88,E89 FOR SELECTION OF OPTO-ISOLATED OR NON-ISOLATED OPERATION.
IF AMPLIFIER DOES NOT PROVIDE +/-12 TO 15 V. D.C. OUTPUT USE EXTERNAL +/-12 TO 15V. POWER SUPPLY, 200MA EACH, TO PROVIDE POWER TO PMAC-PC'S OPTICALLY ISOLATED AMPLIFIER SIGNAL OUPUT (DAC), AMP-ENABLE OUTPUT (AENA) AMP-FAULT INPUT (FAULT) AND TO THE AMPLIFIER ITSELF IF REQUIRED. +/- LIMITS SHOULD BE GROUNDED TO AGND, P7-58.
COM
+15V -15V
SERVO AMPLIFIER
(Self-Commutating)
TB
A+15V
A-15V
DAC
AGND
DAC/
FLOAT SHIELD
FAULT/
AENA/
+LIM
-LIM
GND*
A
A/
B
B/
C
C/
+5V
+LIMITS
-LIMITS
KEEP ENCODER WIRES AWAY FROM A.C. POWER AND MOTOR WIRES
+15V, 150 MA. MIN.
-15V, 150 MA. MIN.
SIG. INPUT (1)(2)
(SIG. RET.) COM
DIFFERENTIAL IN
AMPLIFIER FAULT
AMPLIFIER ENABLE
(SIG. RET.) COM
+LIMIT
-LIMIT
TACH
TACH RET
E
T
M
POSITION ENCODER
TACH
D.C. MOTOR
FLOAT SHIELD AT THIS END
NOTES:
1) IF DIFFERENTIAL INPUT ON SERVO AMP. IS USED, SEE Ix69 FOR ADJUSTMENT OF DAC LIMIT.
2) IF SINGLE ENDED INPUT ON SERVO AMP. IS USED, DO NOT TIE DAC/ P8-45, P8-46,P8-31,P8-32,P7-45,P7-46, P7-31,P7-32, TO SERVO AMP. COMMON (AGND), LEAVE UNCONNECTED.
3) THIS SET-UP PROCEDURE APPLIES TO ANY SERVO AMPLIFIER, D.C. BRUSH, BRUSHLESS D.C. OR A.C. INDUCTION, PROVIDING ITS OWN ON-BOARD COMMUTATION. FOR STEPPER MOTOR DRIVE, SEE "STEPPER DRIVE" DRAWING.
4) JMACH 1/2 OR P7/8 = 3M 7660-5002 60 PIN HEADER. TYP. MATING CONNECTOR IS IDS-C60NPK-SR-TG30. USE ACC-8D OR ACC-8P TO CONNECT JMACH1/2 TO TERMINAL BLOCKS FOR EXTERNAL WIRING.
USE 16 AWG OR LOWER GAUGE WIRE, TWIST WIRES AND SHIELD IF POSSIBLE. KEEP AWAY FROM TACH AND ENCODER CABLES.
IF THE AMPLIFIER WILL BE USED AS CURRENT AMPLIFIER ONLY, JUMPER (TACH) TO (TACH RET) TERMINAL ON AMPLIFIER. REFER TO AMPLIFIER MANUAL FOR CORRECT "CURRENT MODE" SET-UP PROCEDURE. ON PMAC SET Ix31 (DIFFERENTIAL GAIN) TO ZERO IF TACH. IS USED, SET TO MINIMUM APPROPRIATE VALUE IF TACH. IS NOT USED. REFER TO INSTALLATION AND START-UP SECTION FOR DETAILED DESCRIPTION OF TUNING PROCEDURE.
PMAC-PC
SERVO AMPL. SIGNALS,
MOTOR,TACH & ENCODER
INPUT/OUTPUT
CONNECTIONS
(AMP-CONN)

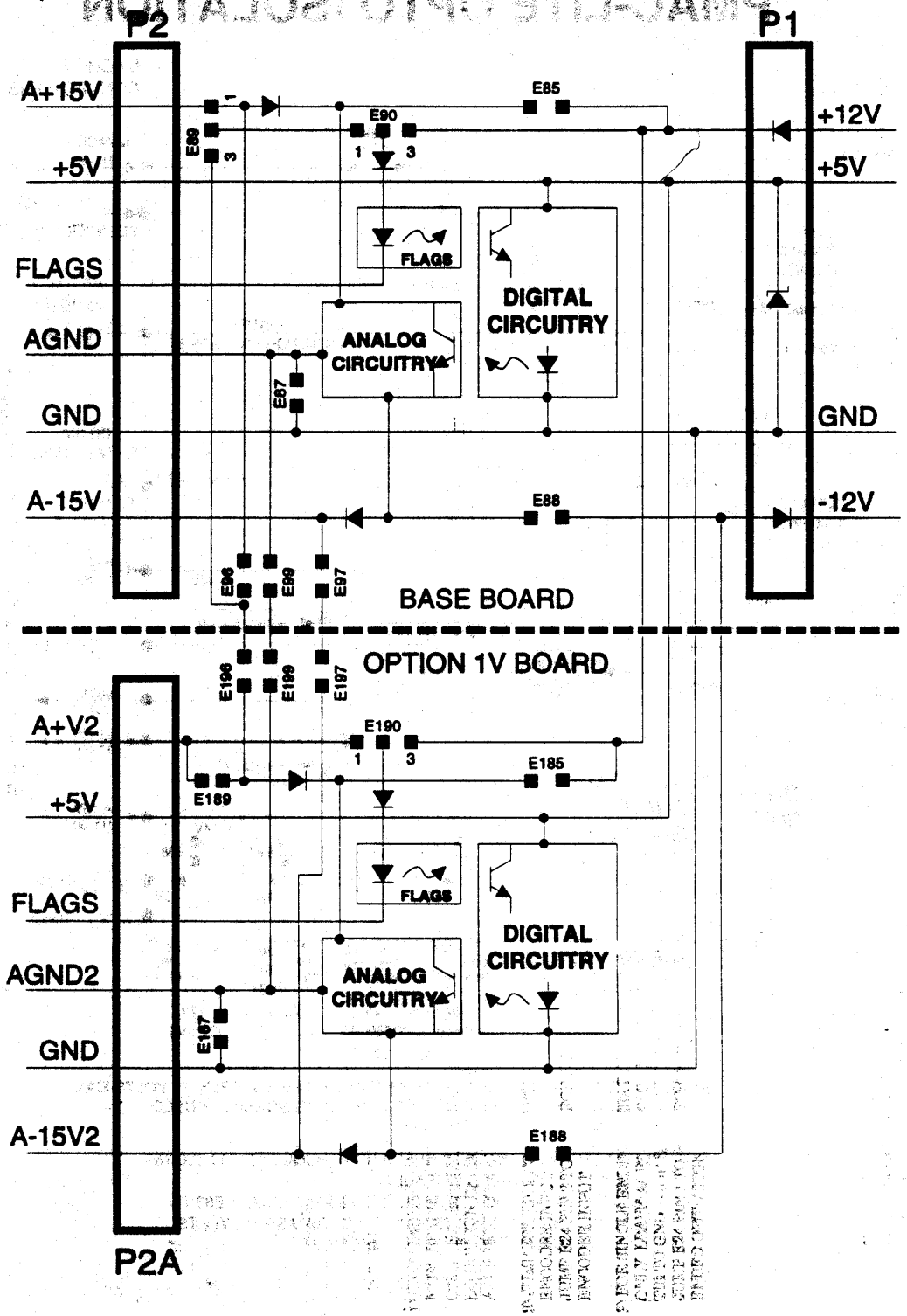
PMAC-PC OPTO ISOLATION



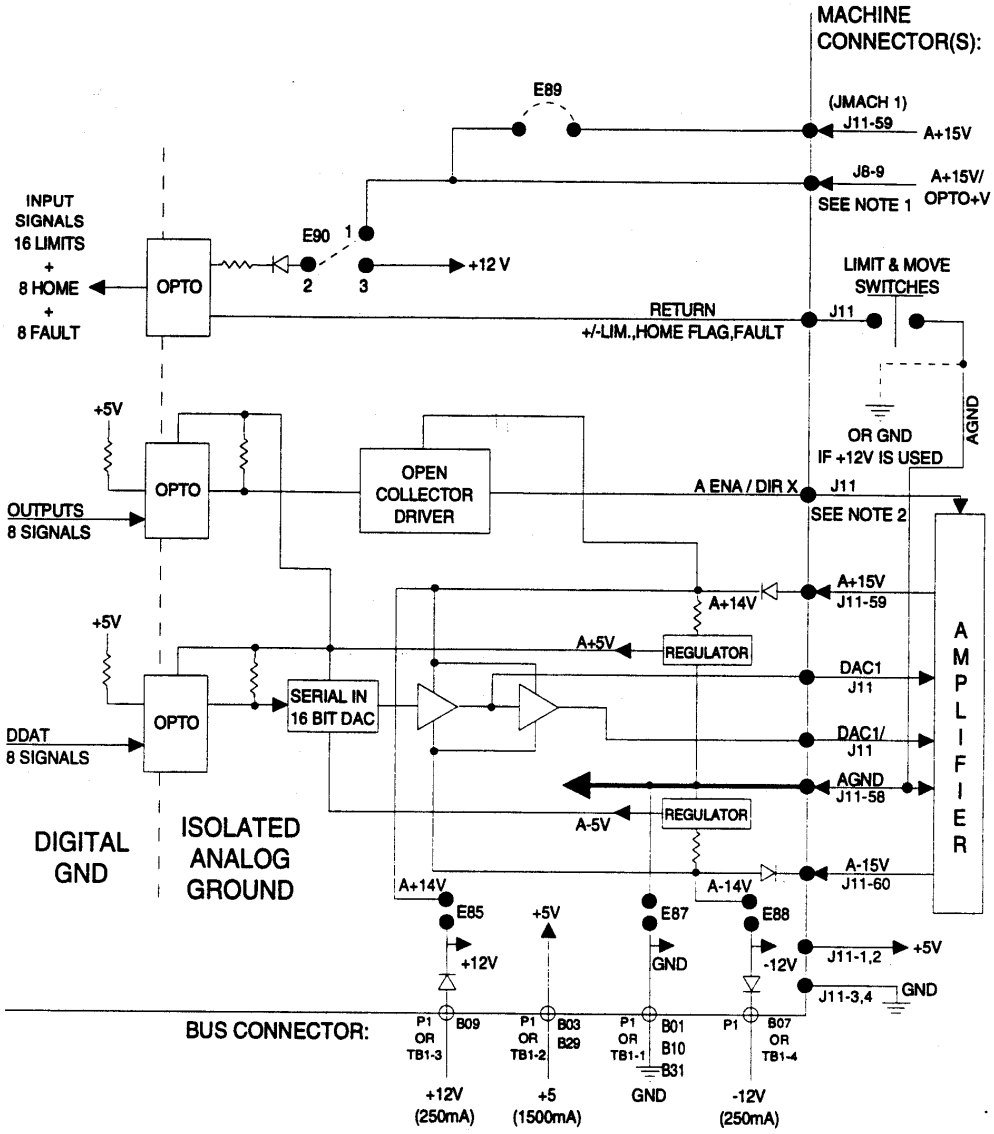
NOTE 1: USE J7-59 (JMACH2) TO PROVIDE AN OPTO POWER SUPPLY, 24 VOLTS MAX. (OPTO+V) SEPARATE THAN THE +/-15 VOLTS NORMALLY USED. REMOVE E89 WHEN DOING SO. ON A 4 AXIS PMAC, J7 (JMACH2) IS NOT PROVIDED, SO WIRES MAY HAVE TO BE SOLDERED

NOTE 2: 1) EXTERNAL +/-15 VOLTS OPERATIONS REQUIRES E89,E90-1&2 ONLY TO BE JUMPERD (DEFAULT)
2) INTERNAL +/-15 VOLTS REQUIRES E90-2&3,E85,E87,E88 TO BE JUMPERED +/-15 VOLTS MAY BE AS LOW AS +/-12 VOLTS AND IS USUALLY PROVIDED BY AMPLIFIERS.

PMAC-VME POWER SUPPLY CONNECTIONS

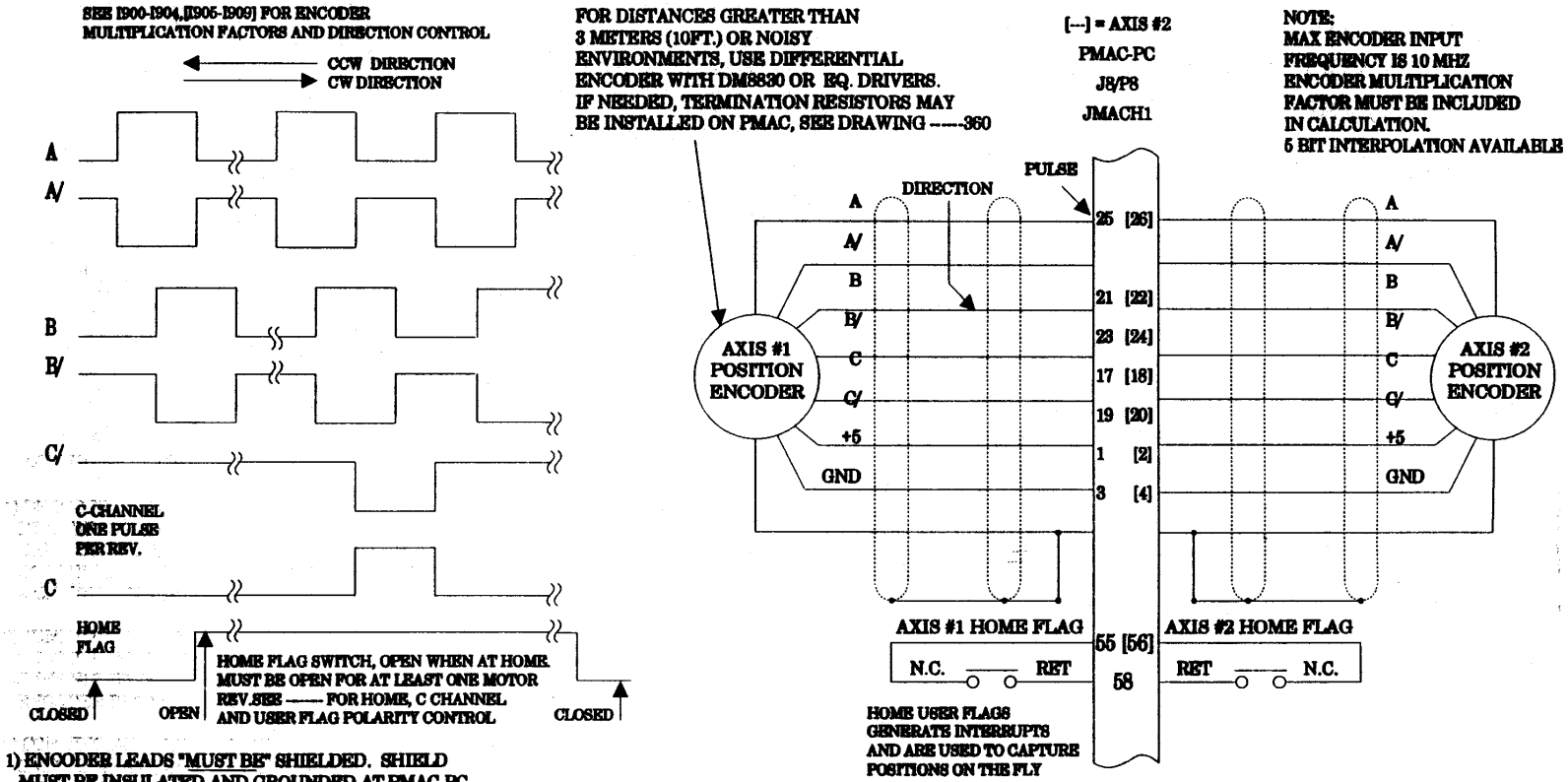


PMAC-LITE OPTO ISOLATION



NOTE 1: USE J7-9 (JEQU) TO PROVIDE AN OPTO POWER SUPPLY, 24 VOLTS MAX. (OPTO+V) SEPARATE THAN THE +/-15 VOLTS NORMALLY USED. REMOVE E89 WHEN DOING SO.

NOTE 2: 1) EXTERNAL +/-15 VOLTS OPERATIONS REQUIRES E89,E90-1&2 ONLY TO BE JUMPERD (DEFAULT)
2) INTERNAL +/-15 VOLTS REQUIRES E90-2&3,E85,E87,E88 TO BE JUMPERED +/-15 VOLTS MAY BE AS LOW AS +/-12 VOLTS AND IS USUALLY PROVIDED BY AMPLIFIERS.



1) ENCODER LEADS "MUST BE" SHIELDED. SHIELD MUST BE INSULATED AND GROUNDED AT PMAC-PC ONLY. -HAVE SHIELD AT ENCODER END UNGROUNDED. DO NOT RUN ENCODER WIRES IN SAME CONDUIT AS A.C. POWER OR AMPLIFIER OUTPUT WIRES.

2) JUMP E27 PIN 2 TO PIN 3 FOR DIFFERENTIAL AXIS #1 ENCODER INPUT
JUMP E26 PIN 2 TO PIN 3 FOR DIFFERENTIAL AXIS #2 ENCODER INPUT

3) FOR SINGLE ENDED OPERATION, USE A,B, AND C INPUTS ONLY, LEAVE A/, B/, AND C/ OPEN (UNCONNECTED), DO NOT TIE TO GND JUMP E27 PIN 1 TO PIN 2 FOR AXIS #1, AND JUMP E26 PIN 1 TO PIN 2 FOR AXIS #2 FOR SINGLE ENDED OPERATION.

4) SEE ---,--- FOR AXIS 1 AND [---][---] FOR AXIS 2 HOMING FUNCTION CONTROL

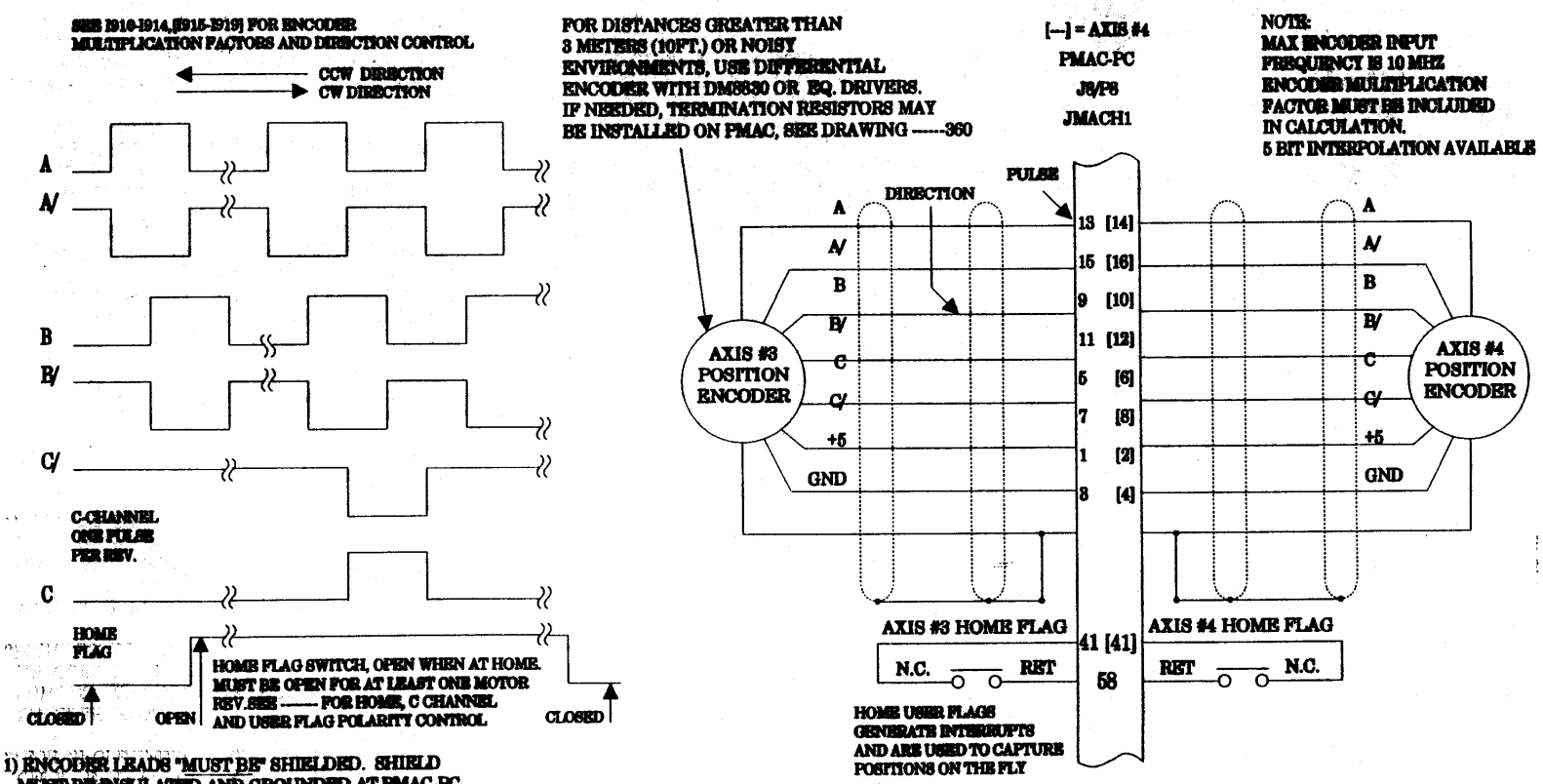
5) FOR ABSOLUTE POSITION ENCODER, OR RESOLVER, ACC 14 MUST BE INSTALLED REFER TO PMAC MANUAL FOR MORE DETAILS

6) WHEN ENCODER IS A PULSE AND DIRECTION DEVICE, P8-25/P8-26 ARE USED AS PULSE INPUT, AND P8-21/P8-22 ARE USED AS DIRECTION HI= +DIRECTION. SEE I900-I904[I905-I909] FOR MODE SELECTION OF ENCODER.

7) P8 P/N = 3M 7660-5002 60 PIN HEADER MATING CONNECTORS:

PMAC-PC (Axis 1 & 2)

TYPICAL LINEAR OR ROTARY, OPTICAL POSITION ENCODER CONNECTIONS DIFFERENTIAL DRIVER OR SINGLE ENDED OUTPUT A/B QUADRATURE



1) ENCODER LEADS "MUST BE" SHIELDED. SHIELD MUST BE INSULATED AND GROUNDED AT PMAC-PC ONLY. HAVE SHIELD AT ENCODER END UNGROUNDED. DO NOT RUN ENCODER WIRES IN SAME CONDUIT AS A.C. POWER OR AMPLIFIER OUTPUT WIRES.

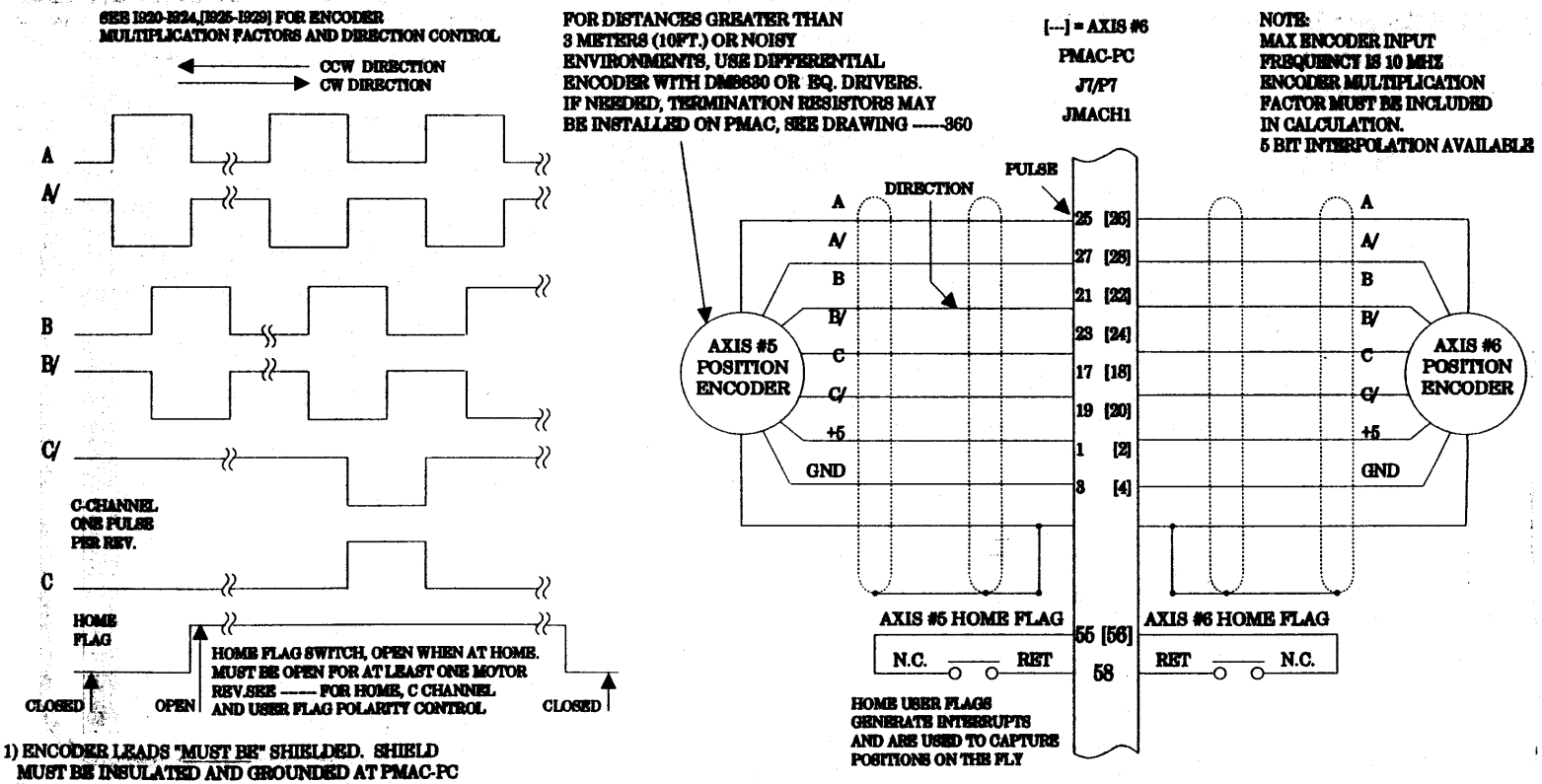
2) JUMP E25 PIN 2 TO PIN 3 FOR DIFFERENTIAL AXIS #3 ENCODER INPUT
JUMP E24 PIN 2 TO PIN 3 FOR DIFFERENTIAL AXIS #4 ENCODER INPUT

3) FOR SINGLE ENDED OPERATION, USE A,B, AND C INPUTS ONLY, LEAVE A/, B/, AND C/ OPEN (UNCONNECTED), DO NOT TIE TO GND. JUMP E25 PIN 1 TO PIN 2 FOR AXIS #3, AND JUMP E24 PIN 1 TO PIN 2 FOR AXIS #4 FOR SINGLE ENDED OPERATION.

4) SEE ---,--- FOR AXIS 3 AND [---][---] FOR AXIS 4 HOMING FUNCTION CONTROL
5) FOR ABSOLUTE POSITION ENCODER, OR RESOLVER, ACC 14 MUST BE INSTALLED REFER TO PMAC MANUAL FOR MORE DETAILS
6) WHEN ENCODER IS A PULSE AND DIRECTION DEVICE, P8-13/P8-14 ARE USED AS PULSE INPUT, AND P8-9/P8-10 ARE USED AS DIRECTION HI= +DIRECTION, SEE I910-I914 [I915-I919] FOR MODE SELECTION OF ENCODER.
7) P8 P/N = 3M 7660-5002 60 PIN HEADER MATING CONNECTORS:

PMAC-PC (Axis 3 & 4)

TYPICAL LINEAR OR ROTARY, OPTICAL POSITION ENCODER CONNECTIONS DIFFERENTIAL DRIVER OR SINGLE ENDED OUTPUT A/B QUADRATURE



1) ENCODER LEADS "MUST BE" SHIELDED. SHIELD MUST BE INSULATED AND GROUNDED AT PMAC-PC ONLY. HAVE SHIELD AT ENCODER END UNGROUNDED. DO NOT RUN ENCODER WIRES IN SAME CONDUIT AS A.C. POWER OR AMPLIFIER OUTPUT WIRES.

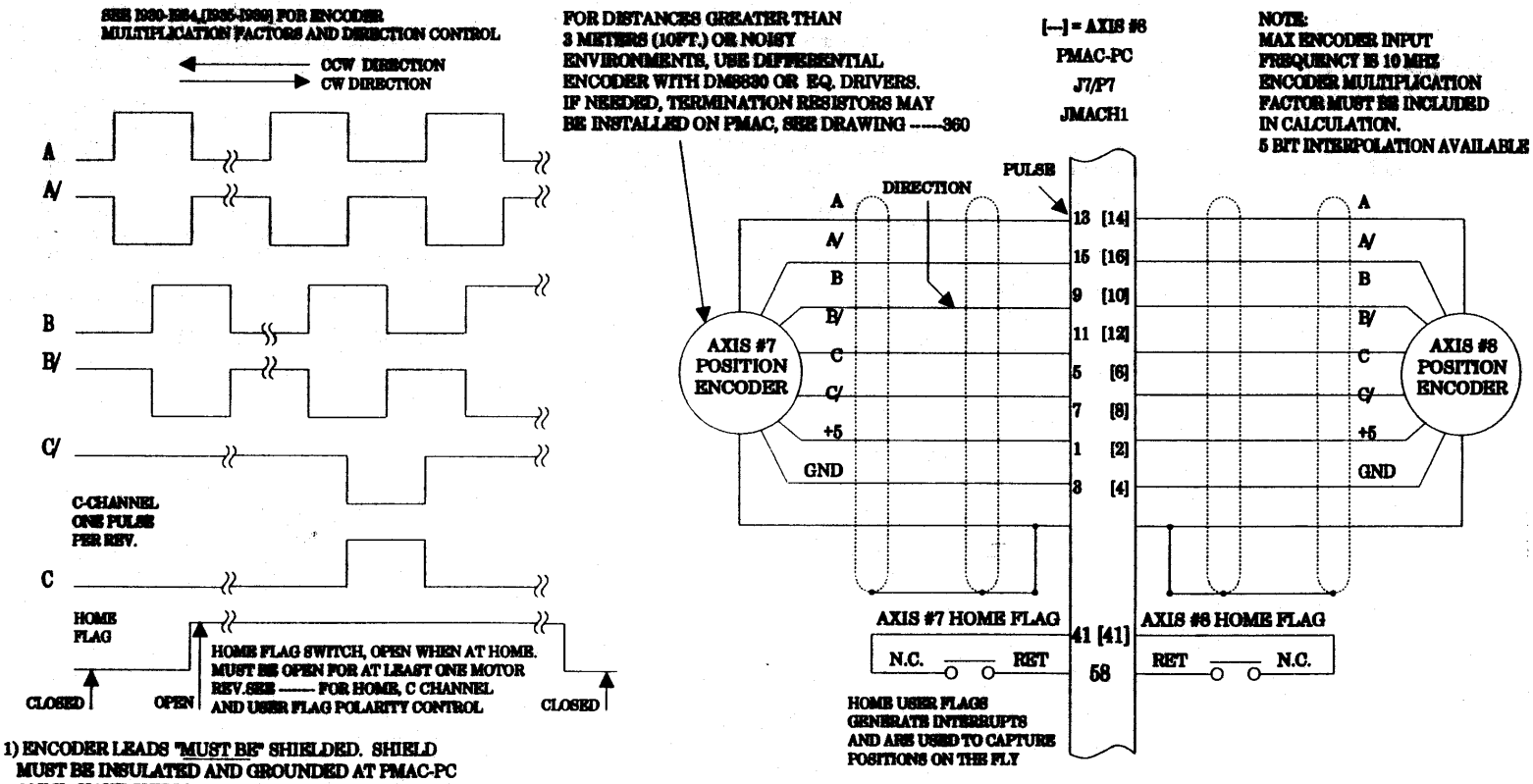
2) JUMP E18 PIN 2 TO PIN 3 FOR DIFFERENTIAL AXIS #5 ENCODER INPUT
JUMP E19 PIN 2 TO PIN 3 FOR DIFFERENTIAL AXIS #6 ENCODER INPUT

3) FOR SINGLE ENDED OPERATION, USE A,B, AND C INPUTS ONLY, LEAVE A/, B/, AND C/ OPEN (UNCONNECTED), DO NOT TIE TO GND JUMP E18 PIN 1 TO PIN 2 FOR AXIS #5, AND JUMP E19 PIN 1 TO PIN 2 FOR AXIS #6 FOR SINGLE ENDED OPERATION.

4) SEE ---,--- FOR AXIS 5 AND [---][---] FOR AXIS 6 HOMING FUNCTION CONTROL
5) FOR ABSOLUTE POSITION ENCODER, OR RESOLVER, ACC 14 MUST BE INSTALLED REFER TO PMAC MANUAL FOR MORE DETAILS
6) WHEN ENCODER IS A PULSE AND DIRECTION DEVICE, P7-25/P7-26 ARE USED AS PULSE INPUT, AND P7-21/P8-21 ARE USED AS DIRECTION HI= +DIRECTION. SEE I920-I924[I925-I919] FOR MODE SELECTION OF ENCODER.
7) P7 P/N = 3M 7660-5002 60 PIN HEADER MATING CONNECTORS:

PMAC-PC (Axis 5 & 6)

TYPICAL LINEAR OR ROTARY, OPTICAL POSITION ENCODER CONNECTIONS DIFFERENTIAL DRIVER OR SINGLE ENDED OUTPUT A/B QUADRATURE



1) ENCODER LEADS "MUST BE" SHIELDED. SHIELD MUST BE INSULATED AND GROUNDED AT PMAC-PC ONLY. HAVE SHIELD AT ENCODER END UNGROUNDED. DO NOT RUN ENCODER WIRES IN SAME CONDUIT AS A.C. POWER OR AMPLIFIER OUTPUT WIRES.

2) JUMP E20 PIN 1 TO PIN 2 FOR DIFFERENTIAL AXIS #7 ENCODER INPUT
JUMP E21 PIN 1 TO PIN 2 FOR DIFFERENTIAL AXIS #8 ENCODER INPUT

3) FOR SINGLE ENDED OPERATION, USE A,B, AND C INPUTS ONLY, LEAVE A/, B/, AND C/ OPEN (UNCONNECTED), DO NOT TIE TO GND JUMP E20 PIN 2 TO PIN 3 FOR AXIS #7, AND JUMP E21 PIN 2 TO PIN 3 FOR AXIS #8 FOR SINGLE ENDED OPERATION.

4) SEE ---,--- FOR AXIS 7 AND [---][---] FOR AXIS 8 HOMING FUNCTION CONTROL

5) FOR ABSOLUTE POSITION ENCODER, OR RESOLVER, ACC 14 MUST BE INSTALLED REFER TO PMAC MANUAL FOR MORE DETAILS

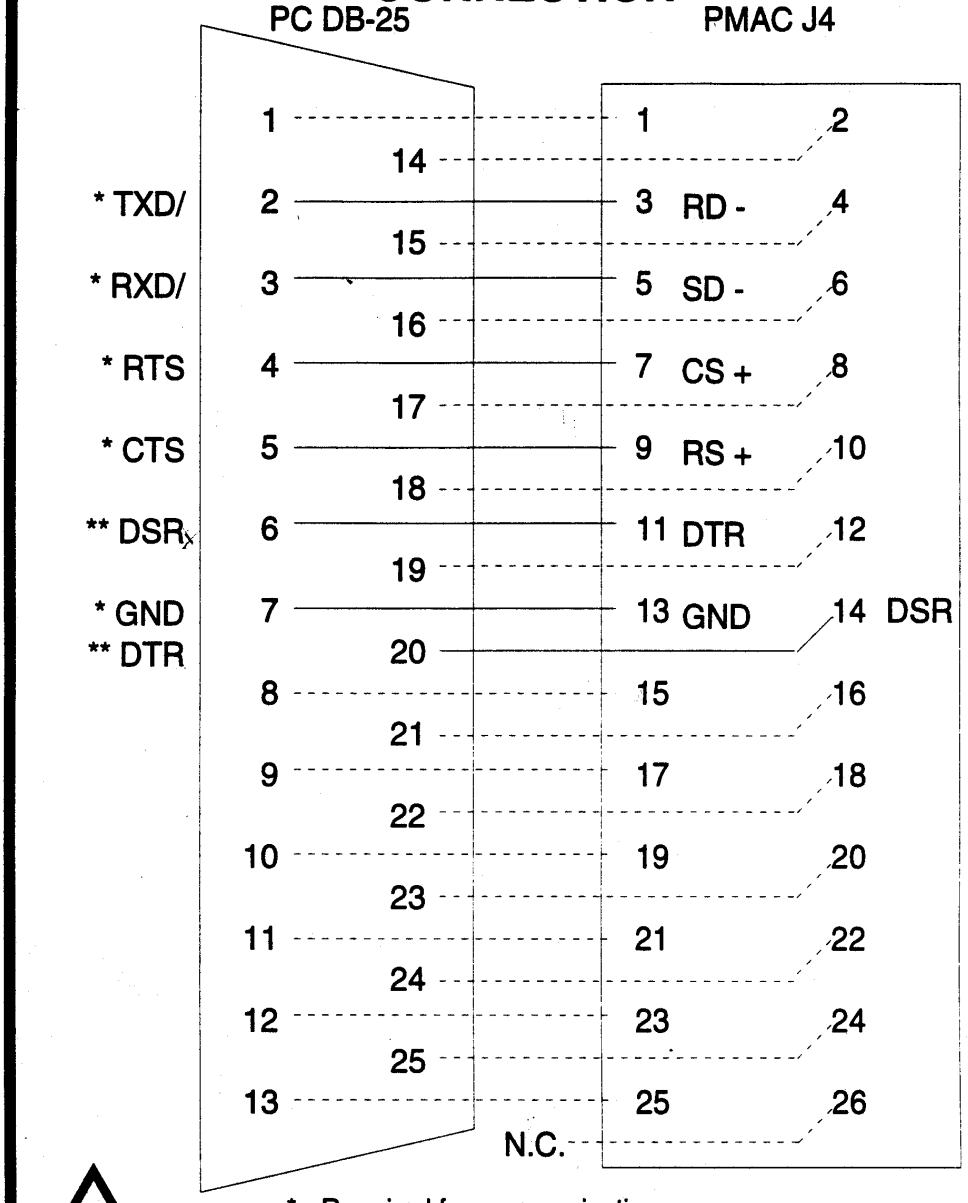
6) WHEN ENCODER IS A PULSE AND DIRECTION DEVICE, P7-12/P7-14 ARE USED AS PULSE INPUT, AND P7-9/P7-10 ARE USED AS DIRECTION HI= +DIRECTION. SEE I930-I934[I935-I939] FOR MODE SELECTION OF ENCODER.

7) P7 P/N = 3M 7660-5002 60 PIN HEADER MATING CONNECTORS:

PMAC-PC (Axis 7 & 8)

TYPICAL LINEAR OR ROTARY, OPTICAL POSITION ENCODER CONNECTIONS DIFFERENTIAL DRIVER OR SINGLE ENDED OUTPUT A/B QUADRATURE

PC RS-232 TO PMAC RS-422 CONNECTION



* - Required for communications

** - Optional; DSR and DTR hard-wired together on PMAC

NEW IDEAS IN MOTION . . .

(RS422CON)