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Release Note

OptoVME Daughterboard

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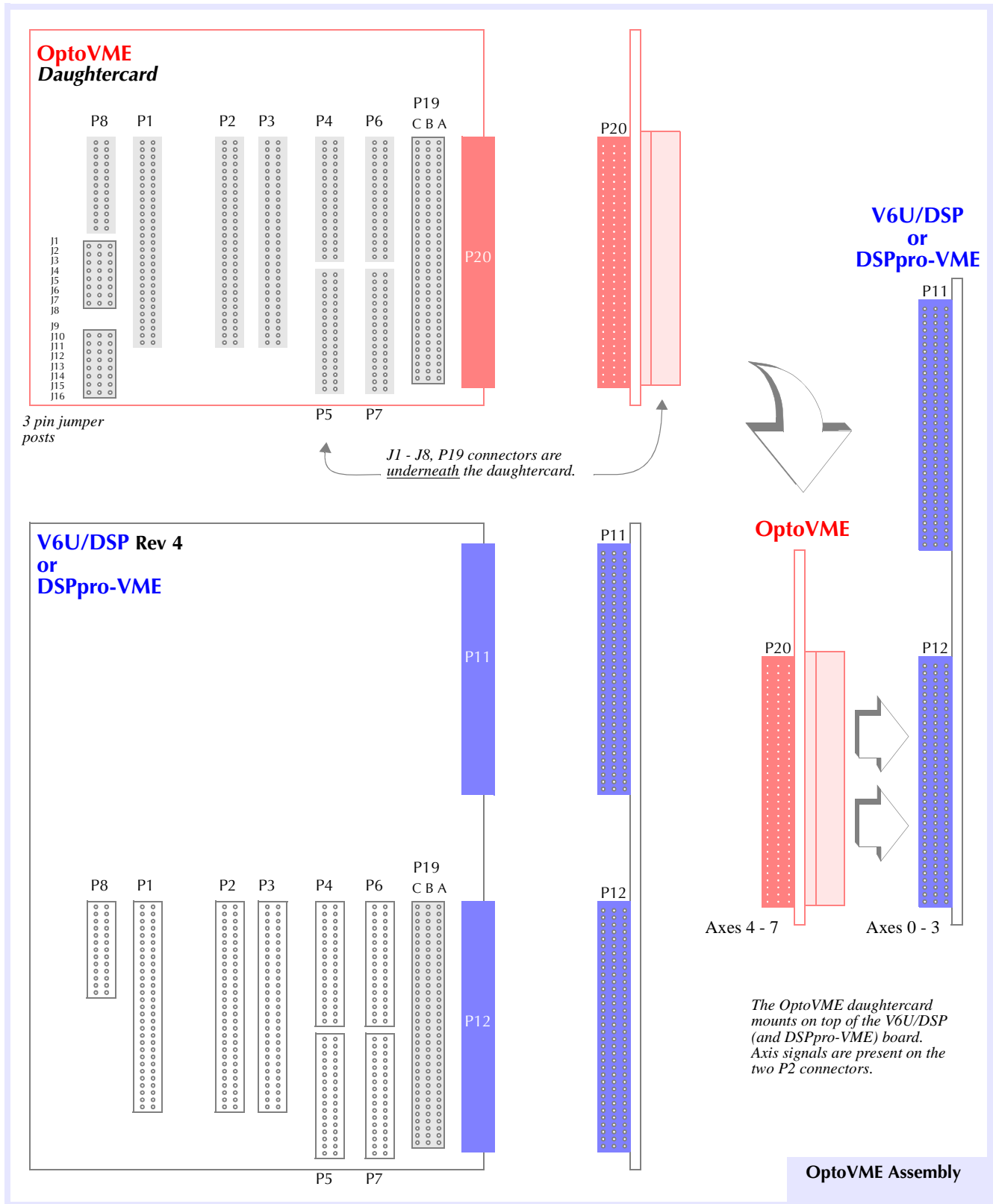
About the OptoVME

The OptoVME daughterboard provides opto-isolation for all 8 axes of the V6U/DSP and DSPpro-VME motion controllers, delivering the axis signals to the P2 connectors of the V6U/DSP (and DSPpro-VME). Note that to use the axis signals (opto-isolated or not) present on the P2 connectors, you will have to use a customized VME backplane.

The axis signals are rerouted from the V6U/DSP (and DSPpro-VME) controller up to the OptoVME, and then routed across to the OptoVME's P2 connector, with the remainder routed back down to the V6U/DSP (and DSPpro-VME), and onward to its P2 connector. Note that OptoVME is not a motion controller, but is simply a daughtercard option for the V6U/DSP and DSPpro-VME motion controllers.

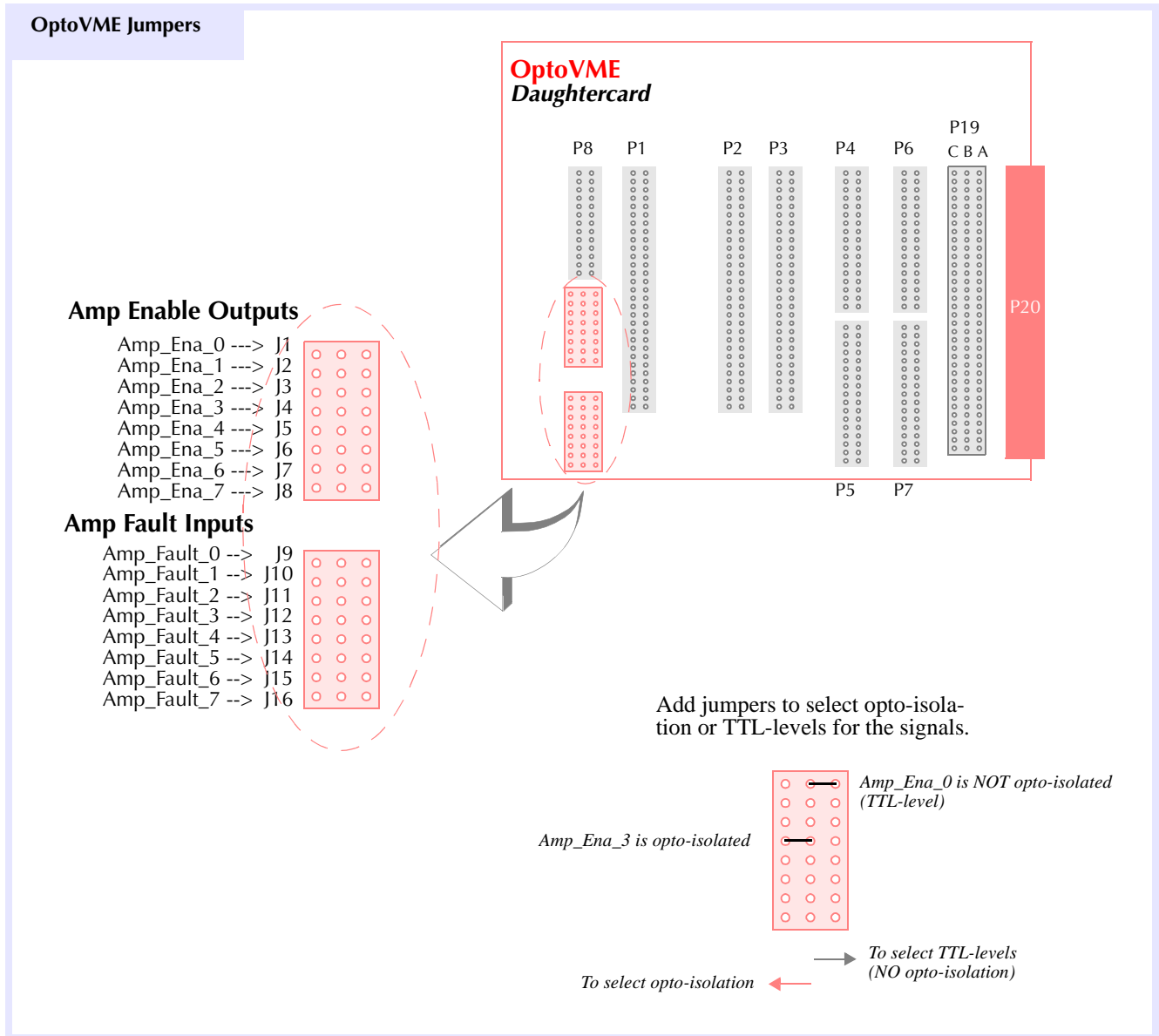
OptoVME & (V6U/DSP, DSPpro-VME) Assembly

The OptoVME mounts directly on top of the V6U/DSP (or DSPproVME) circuit board, and the 2 board configuration requires 2 VME slots.



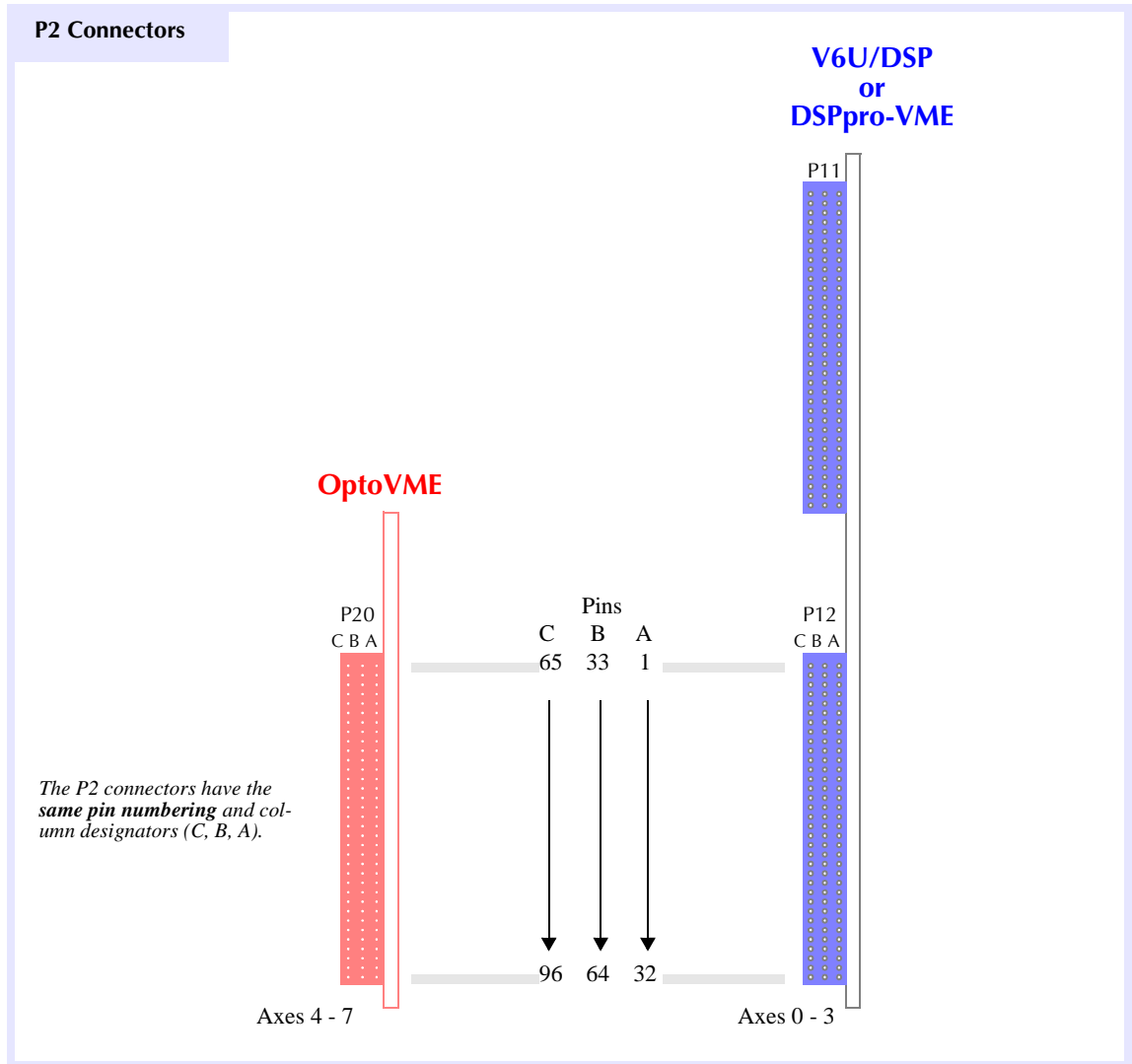
Jumper Settings for OptoVME

There are 2 groups of jumper posts (J1 - J16) on the OptoVME circuit board (component side), which you use to configure the mode (opto-isolated or TTL-level) of the 8 Amp Enable output signals and the 8 Amp Fault input signals.



Axis Connectors

The P2 connectors of the (V6U/DSP, DSPpro-VME) and the OptoVME are physically identical. The 96-pin connectors have 3 columns of pins, labeled C, B, and A.



(V6U/DSP, DSPpro-VME) P2 Connector

The (V6U/DSP, DSPpro-VME) P2 connector carries the signals for axes 0 - 3.

Table 1 (V6U/DSP, DSPpro-VME) P2 Connector

A	Signal	B	Signal	C	Signal
1	+5V	33	Step0	65	+5V
2	Encoder0_A	34	$\overline{\text{Step0}}$	66	Encoder2_A
3	$\overline{\text{Encoder0_A}}$	35	Dir0	67	$\overline{\text{Encoder2_A}}$
4	Encoder0_B	36	$\overline{\text{Dir0}}$	68	Encoder2_B
5	$\overline{\text{Encoder0_B}}$	37	Step1	69	$\overline{\text{Encoder2_B}}$
6	Index0	38	$\overline{\text{Step1}}$	70	Index2
7	$\overline{\text{Index0}}$	39	Dir1	71	$\overline{\text{Index2}}$
8	Gnd	40	$\overline{\text{Dir1}}$	72	Gnd
9	Analog_Out_0	41	Step2	73	Analog_Out_2
10	Limit0_Pos_I	42	$\overline{\text{Step2}}$	74	Limit2_Pos_I
11	Limit0_Neg_I	43	Dir2	75	Limit2_Neg_I
12	Home0_Pin_I	44	$\overline{\text{Dir2}}$	76	Home2_Pin_I
13	Fault0_I	45	Step3	77	Fault2_I
14	Amp_Ena0_O	46	$\overline{\text{Step3}}$	78	Amp_Ena2_O
15	In_Pos0_O	47	Dir3	79	In_Pos2_O
16	+5V	48	$\overline{\text{Dir3}}$	80	+5V
17	Encoder1_A	49	PC7_I	81	Encoder3_A
18	$\overline{\text{Encoder1_A}}$	50	PC6_I	82	$\overline{\text{Encoder3_A}}$
19	Encoder1_B	51	PC5_I	83	Encoder3_B
20	$\overline{\text{Encoder1_B}}$	52	PC4_I	84	$\overline{\text{Encoder3_B}}$
21	Index1	53	PC3_I	85	Index3
22	$\overline{\text{Index1}}$	54	PC2_I	86	$\overline{\text{Index3}}$
23	Gnd	55	PC1_I	87	Gnd
24	Analog_Out_1	56	PC0_I	88	Analog_Out_3
25	Limit1_Pos_I	57	PB7_O	89	Limit3_Pos_I
26	Limit1_Neg_I	58	PB6_O	90	Limit3_Neg_I
27	Home1_Pin_I	59	PB5_O	91	Home3_Pin_I
28	Fault1_I	60	PB4_O	92	Fault3_I
29	Amp_Ena1_O	61	Analog_In0	93	Amp_Ena3_O
30	In_Pos1_O	62	Analog_In1	94	In_Pos3_O
31	Gnd_U	63	Analog_In2	95	Gnd_U
32	+VUser	64	Analog_In3	96	+VUser

Signals that are in **bold** are opto-isolated. The Amp Enable outputs and Amp Fault inputs can be selected to be either TTL-level or opto-isolated, using the jumpers on the OptoVME board.

OptoVME P2 Connector

The OptoVME P2 connector carries the signals for axes 4 - 7.

Table 2 OptoVME P2 Connector

A	Signal	B	Signal	C	Signal
1	+5V	33	Step4	65	+5V
2	Encoder4_A	34	$\overline{\text{Step4}}$	66	Encoder6_A
3	$\overline{\text{Encoder4_A}}$	35	Dir4	67	$\overline{\text{Encoder6_A}}$
4	Encoder4_B	36	$\overline{\text{Dir4}}$	68	Encoder6_B
5	$\overline{\text{Encoder4_B}}$	37	Step5	69	$\overline{\text{Encoder6_B}}$
6	Index4	38	$\overline{\text{Step5}}$	70	Index6
7	$\overline{\text{Index4}}$	39	Dir5	71	$\overline{\text{Index6}}$
8	Gnd	40	$\overline{\text{Dir5}}$	72	Gnd
9	Analog_Out_4	41	Step6	73	Analog_Out_6
10	Limit4_Pos_I	42	$\overline{\text{Step6}}$	74	Limit6_Pos_I
11	Limit4_Neg_I	43	Dir6	75	Limit6_Neg_I
12	Home4_Pin_I	44	$\overline{\text{Dir6}}$	76	Home6_Pin_I
13	Fault4_I	45	Step7	77	Fault6_I
14	Amp_Ena4_O	46	$\overline{\text{Step7}}$	78	Amp_Ena6_O
15	In_Pos4_O	47	Dir7	79	In_Pos6_O
16	+5V	48	$\overline{\text{Dir7}}$	80	+5V
17	Encoder5_A	49	PA7_I	81	Encoder7_A
18	$\overline{\text{Encoder5_A}}$	50	PA6_I	82	$\overline{\text{Encoder7_A}}$
19	Encoder5_B	51	PA5_I	83	Encoder7_B
20	$\overline{\text{Encoder5_B}}$	52	PA4_I	84	$\overline{\text{Encoder7_B}}$
21	Index5	53	PA3_I	85	Index7
22	$\overline{\text{Index5}}$	54	PA2_I	86	$\overline{\text{Index7}}$
23	Gnd	55	PA1_I	87	Gnd
24	Analog_Out_5	56	PA0_I	88	Analog_Out_7
25	Limit5_Pos_I	57	PB3_O	89	Limit7_Pos_I
26	Limit5_Neg_I	58	PB2_O	90	Limit7_Neg_I
27	Home5_Pin_I	59	PB1_O	91	Home7_Pin_I
28	Fault5_I	60	PB0_O	92	Fault7_I
29	Amp_Ena5_O	61	Analog_In4	93	Amp_Ena7_O
30	In_Pos5_O	62	Analog_In5	94	In_Pos7_O
31	Gnd_U	63	Analog_In6	95	Gnd_U
32	+VUser	64	Analog_In7	96	+VUser

Signals that are in **bold** are opto-isolated. The Amp Enable outputs and Amp Fault inputs can be selected to be either TTL-level or opto-isolated, using the jumpers on the OptoVME board.

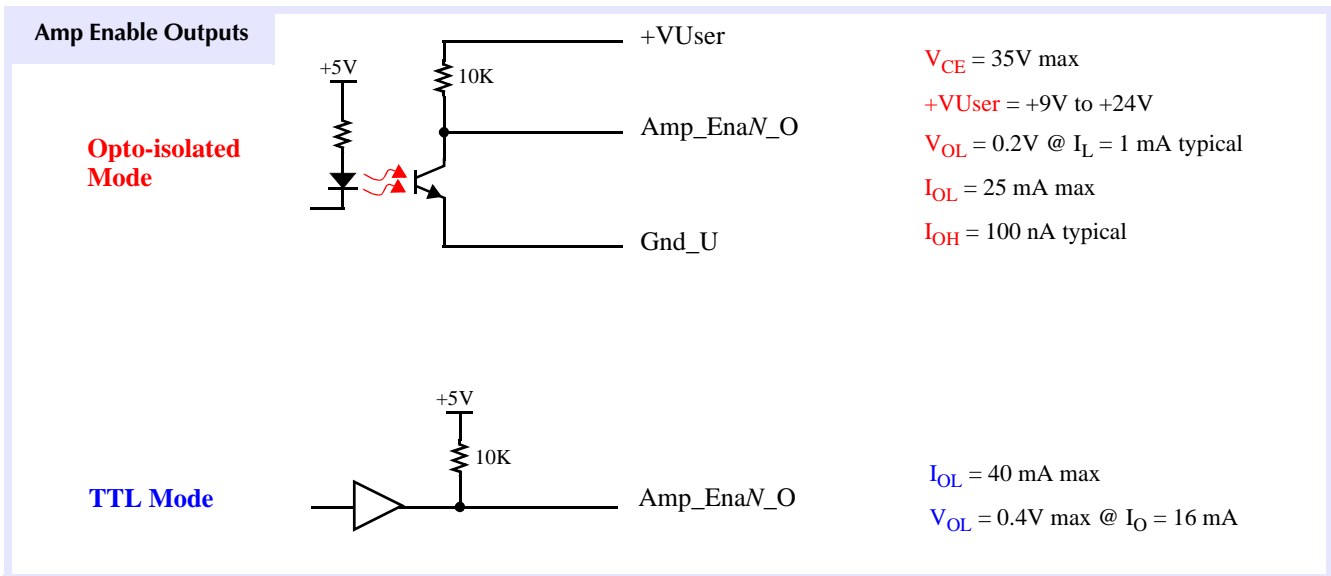
Signal Descriptions

The OptoVME option provides optical isolation for the Amp Enable, Amp Fault, In Position, Positive Limit, Negative limit, Home and User I/O signals from the VME/DSP motion controller. You must connect a power supply to the +VUser and Gnd_U inputs. This supply will power all of the opto-isolation circuits on the user side of the isolation barrier.

Each individual Amp Fault and Amp Enable signal can be individually configured to be optically isolated or TTL-compatible (no isolation) via board jumpers.

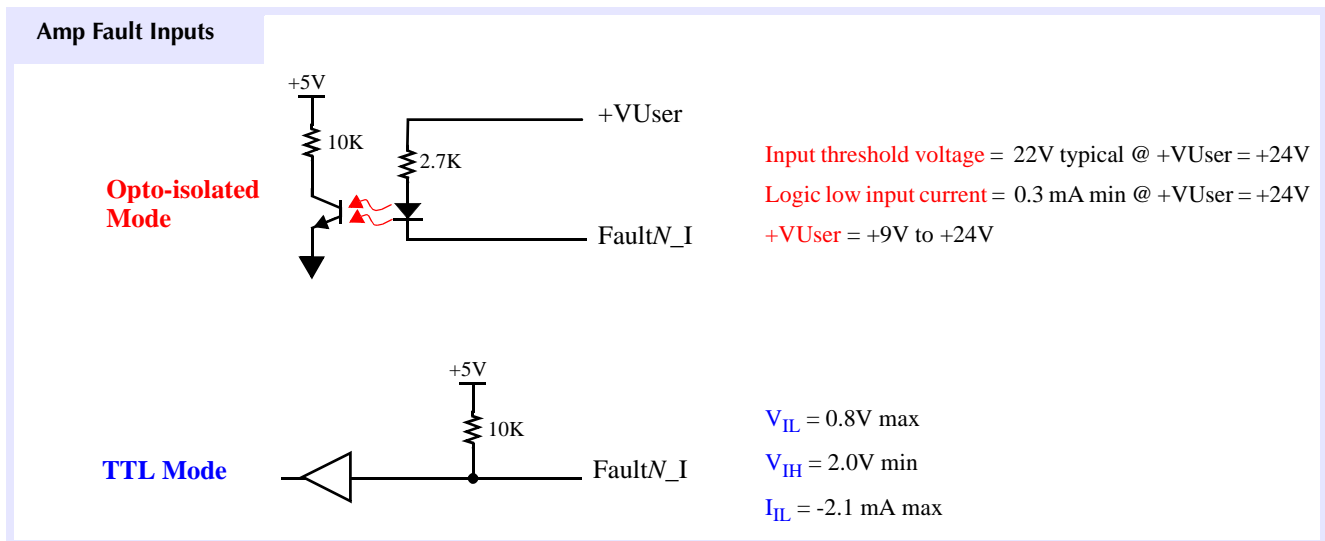
Amp Enable Outputs: Amp_EnaN_O (N= 0 - 7)

You use jumpers J1 - J8 to configure the Amp Enable outputs for either optical isolation or un-isolated TTL-level operation.



Amp Fault Inputs: FaultN_I (N= 0 - 7)

You use jumpers J9 - J16 to configure the Amp Fault inputs for either optical isolation or un-isolated TTL-level operation.



Limit Inputs:
User Inputs:

LimitN_Pos_I, LimitN_Neg_I (N= 0 - 7)
PCN_I (N= 0 - 7)

Limit & User Inputs

Opto-isolated Mode

Input threshold voltage = 22V typical @ +VUser = +24V
 Logic low input current = 0.3 mA min @ +VUser = +24V
 +VUser = +9V to +24V

Home Inputs: HomeN_Pin_I (N= 0 - 7)

Home inputs use a blocking diode (6.5V Zener) to allow the use of Hall sensors as Home detectors. The blocking diode prevents Hall sensor leakage current from activating the Home input.

Home Inputs

Opto-isolated Mode

Input threshold voltage = 16V typical @ +VUser = +24V
 Logic low input current = 1.5 mA min @ +VUser = +24V
 +VUser = +9V to +24V

In Position Outputs:
User Outputs:

In_PosN_O (N= 0 - 7)
PAN_O (N= 0 - 7)
PAN_O (N= 0 - 7)

In Position & User Outputs

Opto-isolated Mode

$V_{CE} = 35V$ max
 +VUser = +9V to +24V
 $V_{OL} = 0.2V$ @ $I_L = 1$ mA typical
 $I_{OL} = 25$ mA max
 $I_{OH} = 100$ nA typical