

INTRODUCTION

This option may have been installed by the factory. However, certain steps can only be completed at the installation site. Therefore, review and then perform those steps which complete the installation process. When installed, either of these options allows the user to employ precision isolated analog signals to monitor outputs of the GPD 515 (U1-01, 02, 03, 05-09, 15-24, 26 & 27), or the GPD 503 (output frequency, output current, output voltage or DC voltage), or the **VCD 703** (Un-03, 04, 05, 21-41, 44).

CAUTION

The option card uses CMOS IC chips. If proper electrostatic discharge (ESD) protective procedures are not used when handling the card, the ICs may be damaged, and erratic drive performance may result.

INSTALLATION

1. Disconnect all electrical power to drive.
2. Remove drive front cover. Check that CHARGE indicator lamp inside drive is off.
3. Verify voltage has been disconnected by using a voltmeter to check for voltage at incoming power terminals (L1, L2, L3).

WARNING

HAZARDOUS VOLTAGE CAN CAUSE SEVERE INJURY OR DEATH. LOCK ALL POWER SOURCES FEEDING DRIVE IN "OFF" POSITION.

IMPORTANT

If this option is being installed on a GPD 515/G5 with speed feedback, the speed feedback card must be temporarily un-installed to allow access to the connector 3CN on the Drive's Control Board and TB1 on the AO-12B2 option card.

4. See Figure 1 (GPD 515) or Figure 2 (GPD 503 or **VCD 703**). Install the option on the main control board, 1PCB, and ensure 3CN is properly connected. Make sure Electrostatic procedure is followed.

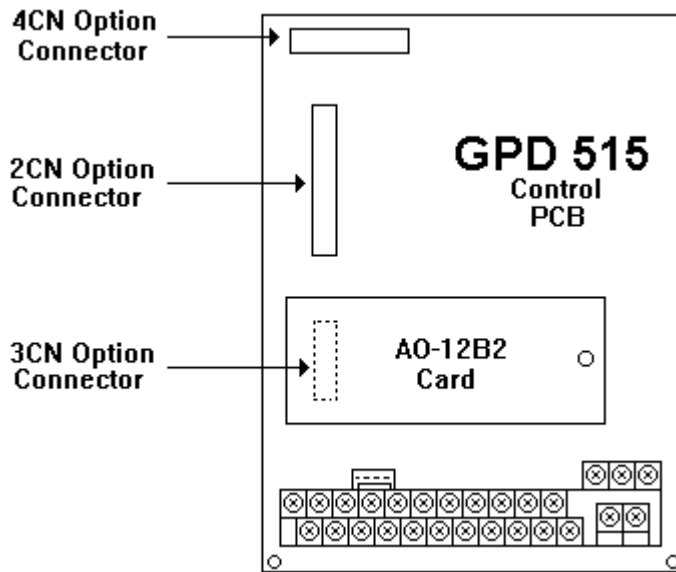


Figure 1. Installation of Isolated Analog Monitor (AO-12B2) in GPD 515

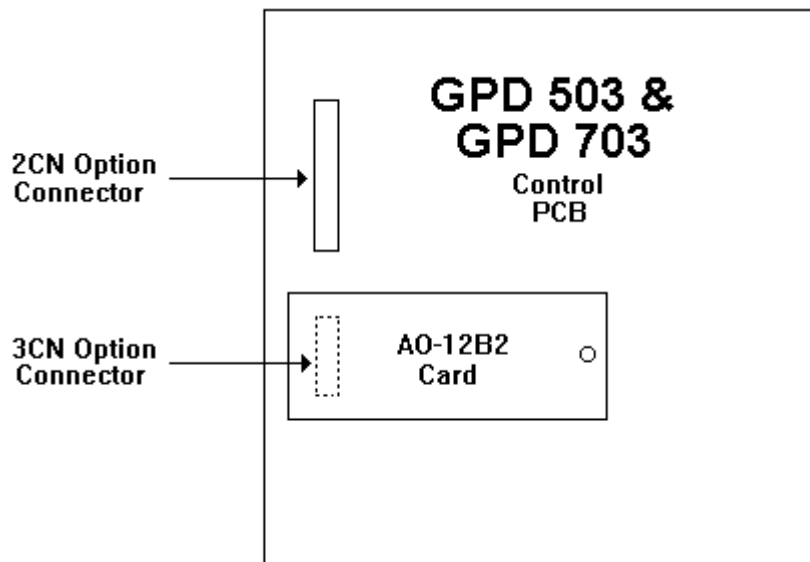


Figure 2. Installation of Isolated Analog Monitor (AO-12B2) in GPD 503 or VCD 703

Table 1. Specifications

Parameter	Isolated Analog Monitor (AO-12B2)
Output Resolution	11 bits + sign (1/2048)
Output Current	4 to 20 mA (Isolated) 0 to 20 mA (Isolated)
Output Voltage	-10V to +10V (Isolated)

Control voltage input (from GPD 515, GPD 503 or VCD 703): 24V (isolated)

5. Connect the isolated Analog Monitor's grounding (green) wire to terminal 12 of the drive.
6. Wiring. See Figure 3 for Isolated Analog Monitor connections. See Table 2 for terminal functions.

Table 2. Terminal Functions of AO-12B2

Terminal	Function	Signal Level		
		GPD 515	GPD 503	VCD 703
TB1-1	Analog signal output channel 1	4 - 20 mA, 0 - 20 mA,	4-20 mA, 0-20 mA or	4 - 20 mA, 0 - 20 mA,
TB1-2	Analog signal output channel 2	0 - 10 V, or +/- 10V ⁽¹⁾	0 - 10V ⁽¹⁾	0 - 10 V, or +/- 10V ⁽¹⁾
TB1-3	Output Common	0V		

⁽¹⁾ See Step 7 for instructions on changing signal type.

CAUTION

ANALOG MONITOR CONTROL CIRCUIT WIRING MUST REMAIN SEPARATE FROM MAIN CIRCUIT INPUT/OUTPUT WIRING.

CAUTION

TO PREVENT ERRONEOUS OPERATION CAUSED BY NOISE INTERFERENCE, USE SHIELDED CABLE FOR CONTROL SIGNAL WIRING, AND LIMIT DISTANCE TO 50m (156 FEET) OR LESS.

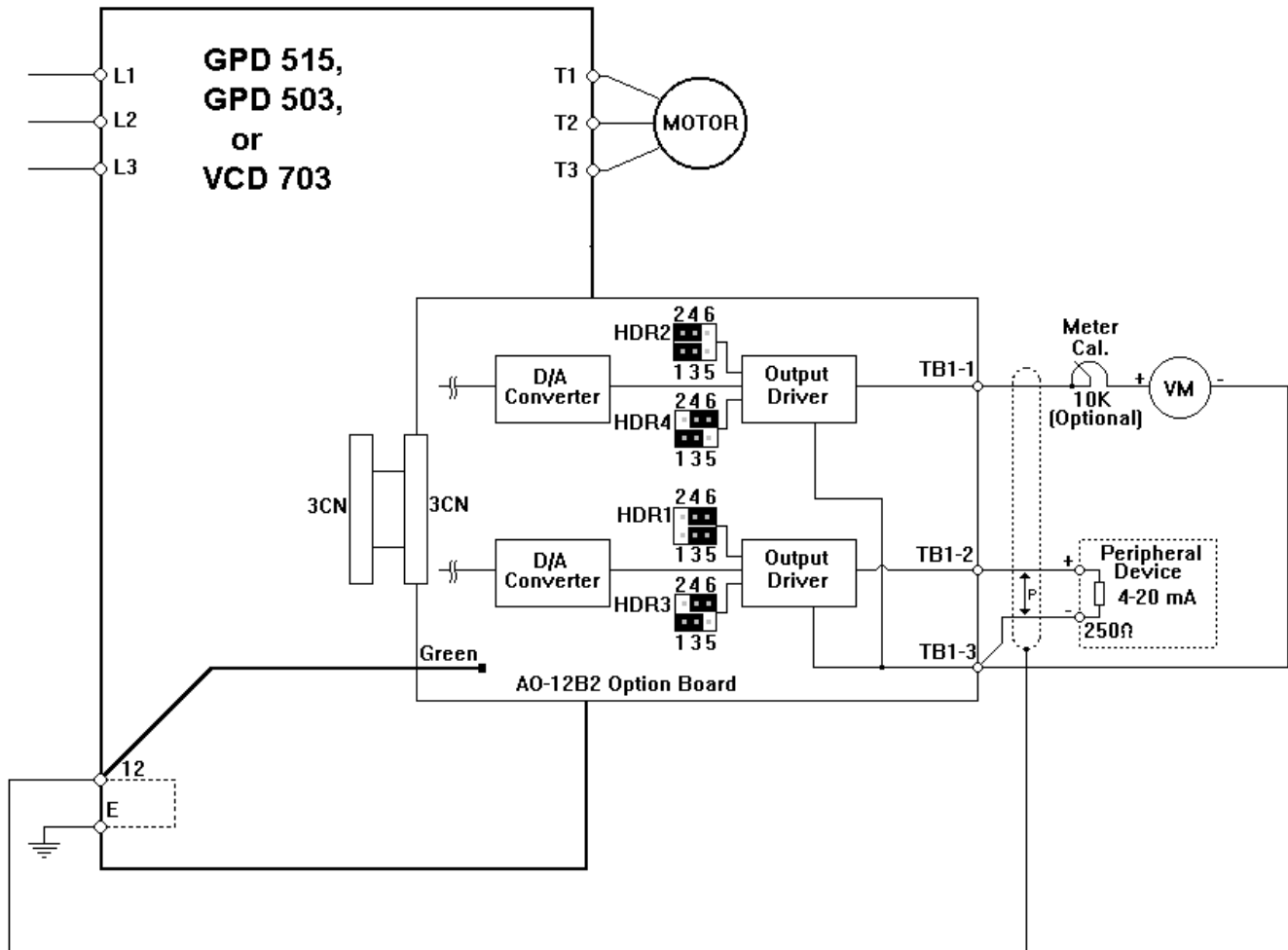


Figure 3. Interconnection for Analog Monitor (AO-12B2) Circuit

Table 3. Programming For Output Signal Scaling

Drive	Terminal	Gain ⁽²⁾ Parameter/ Constant	Setting Range	Increment	Factory Setting	Remarks
GPD 515	TB1-1	F4-02	0.00 to 2.50	0.01	1.00	20mA / 1.00 or 10V / 1.00 ⁽¹⁾
	TB1-2	F4-04	0.00 to 2.50	0.01	0.50	20mA / 1.00 or 10V / 1.00 ⁽¹⁾
GPD 503	TB1-1	bn-11	0.01 to 2.55	0.01	1.00	20mA / 1.00 or 10V / 1.00 ⁽¹⁾
	TB1-2	bn-12	0.01 to 2.55	0.01	0.50	20mA / 1.00 or 10V / 1.00 ⁽¹⁾
VCD 703	TB1-1	bn-23	0.000 to 10.000	0.001	1.000	20mA / 1.00 or 10V / 1.00 ⁽¹⁾
	TB1-2	bn-25	0.000 to 10.000	0.001	1.000	20mA / 1.00 or 10V / 1.00 ⁽¹⁾

⁽¹⁾ Output signal level can be up to 21.6 mA or +11V by setting program parameters/constants.

⁽²⁾ A gain of 0.5 will set 100% = 12 mA;
A gain of 2.0 will set 50% = 20 mA.
A gain of 0.5 will set 100% = 5V;
A gain of 2.0 will set 50% = 10V

7. Adjustments. The type of output that the AO-12B2 card will produce is selected with several different jumpers. Refer to Table 4 and Figure 4 to select the appropriate output type. NOTE: The variable resistors VR1, VR2, VR3, and VR4 are factory set and require no adjustment.

Table 4. Output Configuration

Channel	TB1 Terminals	Signal Type	Jumper	Positions
1	1 (+)	Current (4 - 20 mA) ⁽¹⁾	HDR2	3-5 & 4-6
			HDR4	1-3 & 4-6
	3 (-)	Current (0 - 20 mA)	HDR2	3-5 & 4-6
			HDR4	3-4 & 5-6
2	2 (+)	Current (4 - 20 mA) ⁽¹⁾	HDR1	3-5 & 4-6
			HDR3	1-3 & 4-6
	3 (-)	Current (0 - 20 mA)	HDR1	3-5 & 4-6
			HDR3	3-4 & 5-6
3 (-)	Voltage (0 - 10V or +/- 10V) ⁽²⁾	HDR1	1-3 & 2-4	
		HDR3	1-3 & 4-6	

⁽¹⁾ Factory Default.

⁽²⁾ Selectable by setting of GPD 515 drive parameter **H4-07** or VCD 703 constant **Sn-28** digit X X X X. GPD 503 cannot output +/- 10V.

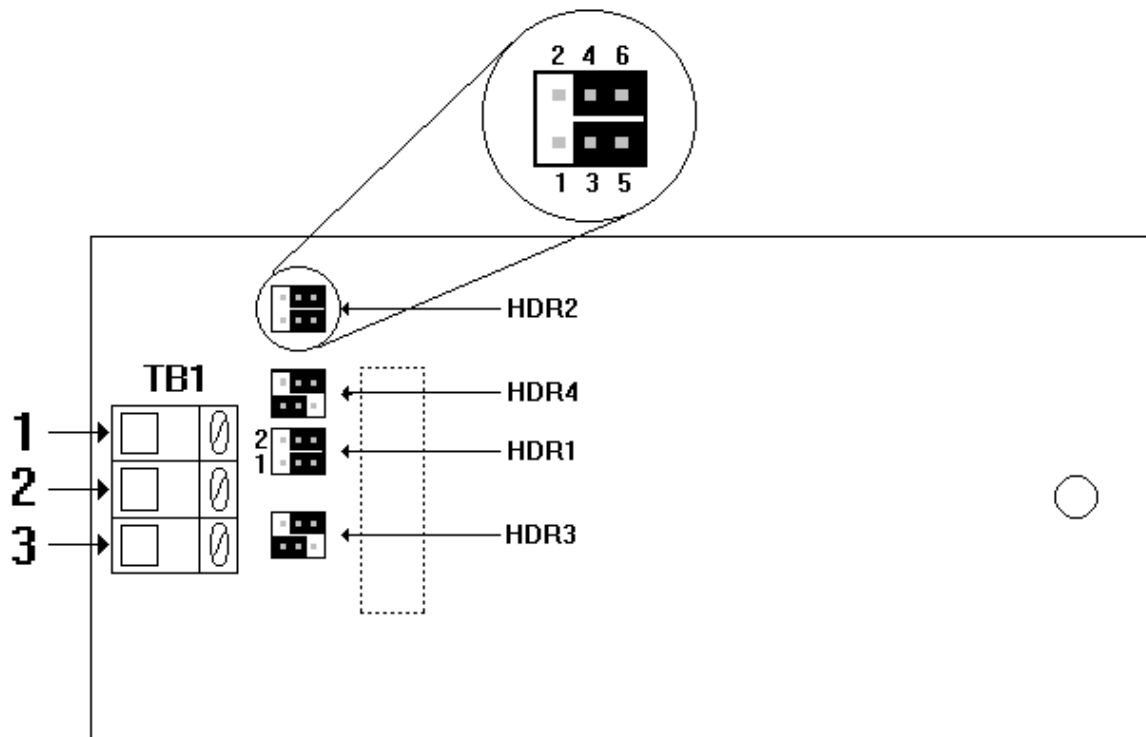


Figure 4. AO-12B2 Circuit Card Layout

8. The drive must be reprogrammed for the output requirements of the peripheral devices. See Tables 5 - 7.

Table 5. Selecting Monitored Output (GPD 515)

Terminal	Program Parameter	Set Value	Control Method *	Output Monitored	Output	
					Current	Voltage
TB1-1 or TB1-2	F4-01 or F4-03	1	0, 1, 2, 3	Frequency Reference	20mA/100%	10V/100%
		2	0, 1, 2, 3	Output Frequency	20mA/100%	10V/100%
		3	0, 1, 2, 3	Output Current	20mA/drive rated current	10V/drive rated current
		5	1, 2, 3	Motor Speed	20mA/100%	10V/100%
		6	0, 1, 2, 3	Output Voltage	20mA/200V or 20mA/400V	10V/200V or 10V/400V
		7	0, 1, 2, 3	DC Bus Voltage	20mA/400V or 20mA/800V	10V/400V or 10V/800V
		8	0, 1, 2, 3	Output power (kW)	20mA/100%	10V/100%
		9	2, 3	Torque Reference (internal)	20mA/100%	10V/100%
		15	0, 1, 2, 3	Terminal 13 Input Voltage	20mA/10V	10V/10V
		16	0, 1, 2, 3	Terminal 14 Input Voltage or Current	20mA/20mA or 20mA/10V	10V/20mA or 10V/10V
		17	0, 1, 2, 3	Terminal 16 Input Voltage	20mA/10V	10V/10V
		18	0, 1, 2, 3	Motor Secondary Current (Iq)	20mA/motor rated current	10V/motor rated current
		19	2, 3	Motor Exciting Current (Id)	20mA/motor rated current	10V/motor rated current
		20	0, 1, 2, 3	Output Frequency After Soft-Start	20mA/100%	10V/100%
		21	1, 3	Automatic Speed Regulator Input	20mA/100%	10V/100%
		22	1, 3	Automatic Speed Regulator Output	20mA/motor rated current	10V/motor rated current
		23	1, 3	Speed Deviation / Speed Regulator Input	20mA/100%	10V/100%
24	0, 1, 2, 3	PID feedback Amount	20mA/100%	10V/100%		
26	2, 3	Output Voltage Reference Vq	20mA/230V or 20mA 460V	10V/230V or 10V/460V		
27	2, 3	Output Voltage Reference Vd	20mA/230V or 20mA 460V	10V/230V or 10V/460V		

* Output available only when using one of the listed control methods
(A1-02 setting)

- 0: V/Hz mode
- 1: V/Hz mode with pulse generator (speed feedback)
- 2: Open Loop Vector
- 3: Flux Vector

Table 6. System Constant Sn28 - Selecting Monitored Output (GPD 503)

Terminal	Sn-28 * Digits	Set Value	Output Monitored	Output Accuracy
TB1-1 Channel 1	X X <u>X</u> X	00	Output frequency (Max frequency/100%)	0.5%
		01	Output current (GPD 503 rated current/100%)	3.0%
TB1-2 Channel 2	<u>X</u> X X X	10	Output voltage ref. (Input voltage/100%)	1.5%
		11	DC voltage (Vpn) (400V/100% [230V drives]) (800V/100% [460V drives])	1.5%

* Factory setting of **Sn-28** is 0100.

Table 5. Selecting Monitored Output (VCD 703)

Terminal	Program Parameter	Set Value	Output Monitored	Output	
				Current	Voltage
TB1-1 or TB1-2	bn-22 or bn-24	3	Output current	20mA/CT rating	10V/CT rating
		4	Output voltage	20mA/dn-04	10V/dn-04
		5	DC Bus Voltage (Vpn)	20mA/200V (230V rated) 20mA/400V (460V rated)	10V/200V (230V rated) 10V/400V (460V rated)
		21	Speed reference (SFS input)	20mA/100%	10V/100%
		22	Speed reference (SFS output)	20mA/100%	10V/100%
		23	Speed feedback (Nfb)	20mA/100%	10V/100%
		24*	External torque reference	20mA/100%	10V/100%
		25	Torque compensation	20mA/100%	10V/100%
		26	Torque reference	20mA/100%	10V/100%
		27**	Torque feedback	20mA/100%	10V/100%
		28	ASR input (speed deviation)	20mA/100%	10V/100%
		29	ASR output (after filter)	20mA/100%	10V/100%
		30	Slip frequency reference	20mA/100%	10V/100%
		31	Primary frequency reference	20mA/100%	10V/100%
		32	Motor temperature	20mA/200°C	10V/200°C
		33	Zero servo moving pulse count	20mA/32767	10V/32767
		34	Auto speed reference voltage (terminal 13 or 14)	20mA/10V	10V/10V
		35	Analog input voltage (terminal 16)	20mA/10V	10V/10V
		36	AI-14B input voltage (CH1)	20mA/10V	10V/10V
		37	AI-14B input voltage (CH2)	20mA/10V	10V/10V
38	AI-14B input voltage (CH3)	20mA/10V	10V/10V		
39	Magnetek flux feedback (phase α)	20mA/100%	10V/100%		
40	Magnetic flux feedback (phase β)	20mA/100%	10V/100%		
41	ACR compensation	20mA/100%	10V/100%		
44	Output power (kW)	20mA/100%	10V/100%		

* When in Torque Control mode.

** When TRQ-A card is used.

9. Reinstall and secure drive cover.
10. Place this instruction sheet with the drive technical manual

THIS COMPLETES INSTALLATION OF THIS OPTION