

Part Number: DO-08.

Applicability. F7, G7, GPD515/G5, G5HHP.

Note: If used in a GPD503/G3, or VCD703/VG3, refer to Instruction Sheet 02Y00025-0350.

Introduction. The Digital Output option board is mounted on the drive's Control Board and allows the user to employ isolated type digital signals to monitor status outputs of the drive (alarm signal, zero-speed detection, etc.)

Receiving. All equipment is tested against defect at the factory. Report any damages or shortages evident when the equipment is received to the commercial carrier who transported the equipment.

Warning: Hazardous voltage can cause severe injury or death. Lock all power sources feeding the drive in the "OFF" position.

Caution: This option card uses CMOS IC chips. Use proper electrostatic discharge (ESD) protective procedures when handling the card to prevent I.C. damage or erratic drive operation.

Important:

1. If this option is being installed in a drive with an encoder (PG) feedback option card, that card will need to be temporarily removed to allow access to connector 3CN on the drive's control board and TD1 – TD11 on the DO-08 option card.
2. Before installing this option, a technically qualified individual, who is familiar with this type of equipment and the hazards involved, should read this entire installation guide.

Installation and Wiring:

1. Disconnect all electrical power to the drive.
2. Remove the drive's front cover.
3. Check that the "CHARGE" indicator lamp inside the drive is off.
4. Use a voltmeter to verify that the voltage at the incoming power terminals (L1, L2, L3) has been disconnected.
5. **Circuit Board Installation:** See Figure 1.
 - a) Position the option card above the control board's 3CN connector and gently press the card into place.
 - b) Connect the green ground wire to the grounding terminal on the main control board.
6. **Wiring:** Refer to Figure 2 and Table 2. Make wire connections between the DO-08 card and the drive, as well as all peripheral devices. Observe the following:
 - a) Keep DO-08 (i.e. control circuit) wiring separate from main circuit input/output wiring. A separate metallic grounded conduit with only the option card's wiring running through it is preferred.
 - b) To prevent erroneous operation caused by noise interference, use shielded cable for control signal wiring, and limit the distance to 50m (165 feet) or less.
 - c) Refer to the drive technical manual for additional information on the use of shielded cable.
7. **Adjustment:** There are no adjustments to be made on the Digital Output option card; however, drive parameters will have to be reprogrammed for the desired output signal content. Refer to Table 3.
8. Reinstall and secure the drive's front cover.
9. Place this instruction sheet with the drive's technical manual.

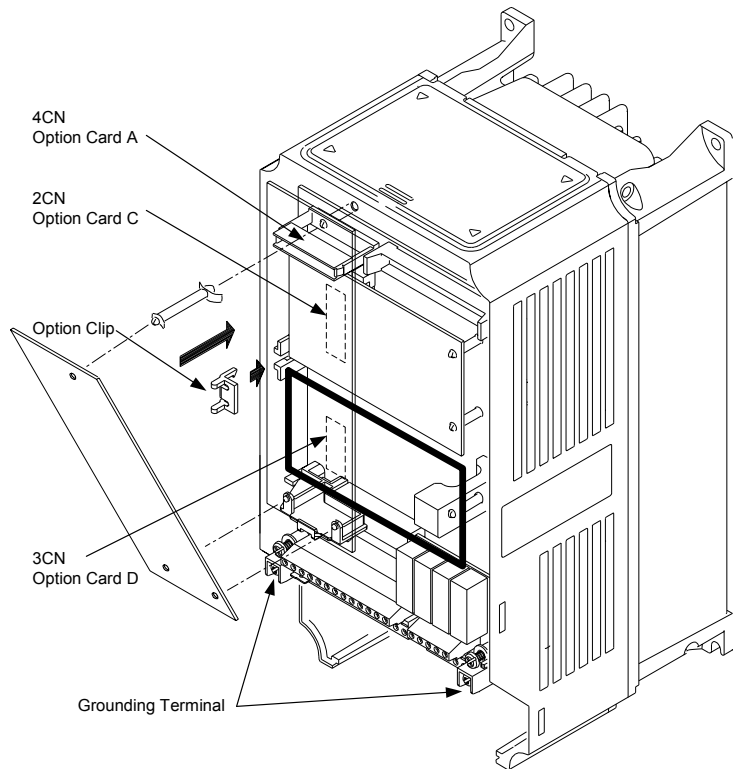


Figure 1. DO-08 Option Card installation

Table 1. Specifications	
Output Type	Quantity
Photocoupler Output	6 (common emitter)
Relay Contact Output	2 (independent)

Table 2. Terminal functions of Digital Output Card DO-08			
Terminal ⁽¹⁾	Type	Capacity	Output Signal
TD1 - TD4	Relay Contact: 2 outputs (independent)	250VAC, 1A or less 30VDC, 1A or less	See Table 4
TD5 - TD10	Photocoupler: 6 outputs (common emitter)	48VDC, 50mA or less	See Table 4
TD11	Output Common, 0V		

(1) Terminal Screw Size = M3

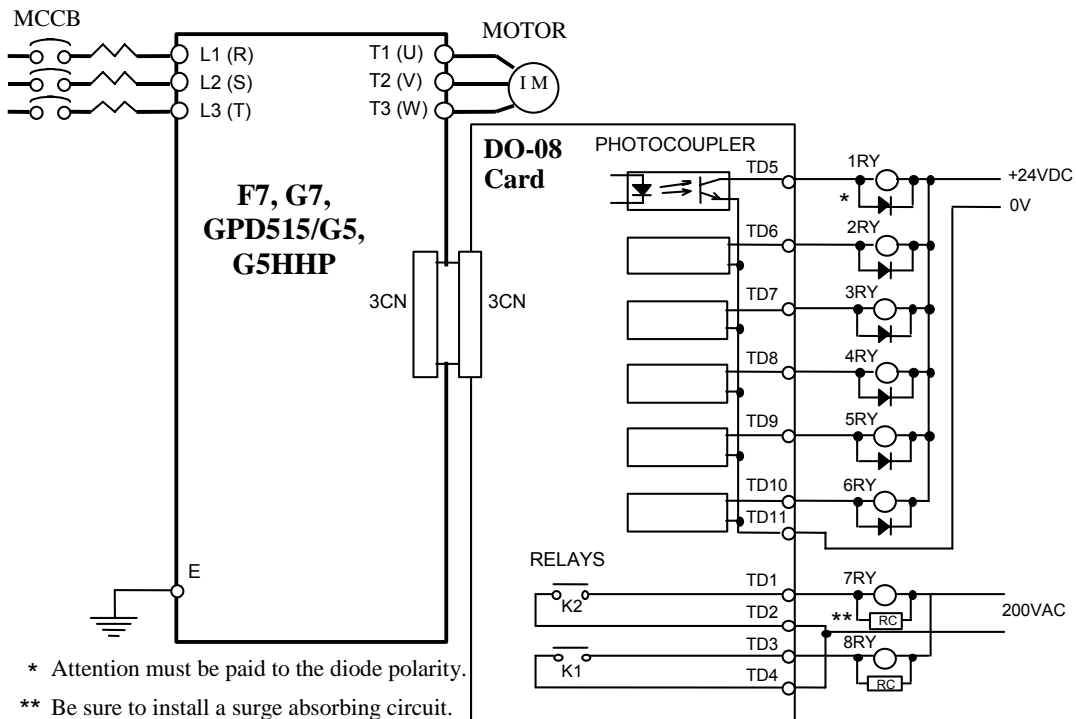


Figure 2. DO-08 Interconnection Diagram

Table 3. DO-08 Output Mode Selection					
GPD515/G5 Parameter F6-01 Setting	F7, G7 Parameter F5-09 Setting	Output Type	Terminal	Output Content	
0	0	Fixed Data	TD5-TD11	Overcurrent (SC, OC, GF)	
			TD6-TD11	Overvoltage (OV)	
			TD7-TD11	Drive Overload (OL2)	
			TD8-TD11	DC Bus Fuse Blown (FU, PUF)	
			TD9-TD11	Not Used	
			TD10-TD11	Overheat (OH)	
			TD1-TD2	Zero-Speed	
			TD3-TD4	Speed Agree	
1	1	Coded Output	TD5-TD11	Coded Output, See Table 4	Bit 0
			TD6-TD11		Bit 1
			TD7-TD11		Bit 2
			TD8-TD11		Bit 3
			TD9-TD11	Zero-Speed	
			TD10-TD11	Speed Agree	
			TD1-TD2	Running	
			TD3-TD4	Minor Fault	
-	2	Individually Selectable See Table 5	TD5-TD11	F5-01	
			TD6-TD11	F5-02	
			TD7-TD11	F5-03	
			TD8-TD11	F5-04	
			TD9-TD11	F5-05	
			TD10-TD11	F5-06	
			TD1-TD2	F5-07	
			TD3-TD4	F5-08	

Table 4. Details of DO-08 Coded Output			
Bits 3, 2, 1, 0	Output Content	Bits 3, 2, 1, 0	Output Content
0000	No Fault	1000	External Fault (EFXX)
0001	Overcurrent (SC, OC, GF)	1001	Drive Hardware Fault (CPFXX)
0010	Overvoltage (OV)	1010	Motor Overload (OL1)
0011	Drive Overload (OL2)	1011	Not Used
0100	Drive Overheat (OH2)	1100	Power Loss (UV) (Including momentary power loss)
0101	Not Used	1101	Not Used
0110	Fuse Blown (FU)	1110	Not Used
0111	Not Used	1111	Cooling Fan Fault (Fan)

Table 5. DO-08 Output Selection (F7, G7 only and F5-09 = 2)

F5-01 to F5-08 Setting	Function	Control Mode (A1-02)				
		0: V/F	1: V/F PG	2: OLV	3: FV	4: OLV2 ⁽¹⁾
0	During Run 1 (ON: Run command with voltage output. Includes Decel and DC injection)	X	X	X	X	X
1	Zero Speed (ON: Fout < E1-09)	X	X	X	X	X
2	Fref/Fout Agree 1 (ON: Fref = Fout, detection width L4-02)	X	X	X	X	X
3	Fref/L4-01 Agree 1 (ON: Fref = Fout = ±L4-01, detection width L4-02)	X	X	X	X	X
4	Frequency Detection 1 (ON: +L4-01 ≥ Fout ≥ -L4-01, detection width L4-02)	X	X	X	X	X
5	Frequency Detection 2 (ON: Fout ≥ +L4-01 or Fout ≤ -L4-01, detection width L4-02)	X	X	X	X	X
6	Inverter Ready (ON: No fault and not in programming mode)	X	X	X	X	X
7	DC Bus Undervoltage (UV1, UV2) (ON: DC bus below L2-05 or loss of pre-charge contactor answerback)	X	X	X	X	X
8	Baseblock 1 N.O. (ON: Baseblock function is active)	X	X	X	X	X
9	Operator Reference (ON: Frequency reference source is from operator)	X	X	X	X	X
A	Local/Remote Operation (ON: Start/stop source is from operator)	X	X	X	X	X
B	Torque Detection 1 N.O. (ON: Current is greater/lower than L6-02 for L6-03 time)	X	X	X	X	X
C	Loss of Frequency Reference (Function enabled when L4-05 = 1)	X	X	X	X	X
D	Braking Resistor Fault (ON: Resistor overheat or braking transistor fault)	X	X	X	X	X
E	Fault (ON: Fault occurred other than CPF00 and CPF01)	X	X	X	X	X
F	Not Used (Set for use as remote I/O when drive has network communication link)	X	X	X	X	X
10	Alarm (ON: Alarm occurring)	X	X	X	X	X
11	Fault Reset Command Active (keypad, terminal, network)	X	X	X	X	X
12	Timer Function Output (See parameter group B4)	X	X	X	X	X
13	Fref/Fout Agree 2 (detection width L4-04)	X	X	X	X	X
14	Fref/Fout Agree 2 (ON: Fref = Fout = L4-03, detection width L4-04)	X	X	X	X	X
15	Frequency Detection 3 (ON: Fout ≤ L4-03, detection width L4-04)	X	X	X	X	X
16	Frequency Detection 4 (ON: Fout ≥ L4-03, detection width L4-04)	X	X	X	X	X
17	Torque Detection 1 N.C. (OFF: Current is greater/lower than L6-02 for L6-03 time)	X	X	X	X	X
18	Torque Detection 2 N.O. (OFF: Current is greater/lower than L6-05 for L6-06 time)	X	X	X	X	X
19	Torque Detection 2 N.C. (OFF: Current is greater/lower than L6-05 for L6-06 time)	X	X	X	X	X
1A	Reverse Direction (ON: Motor rotation is in reverse due to run command or Fref)	X	X	X	X	X
1B	Baseblock 2 N.C. (OFF: Baseblock function is active)	X	X	X	X	X
1C	Motor 2 Selection (ON: Motor 2 selected using a digital input (H1-XX) programmed for "16")	X	X	X	X	X
1D	Regenerative operation (ON: During regenerative operation.)	-	-	-	X	X
1E	Automatic Fault Restart (ON: Automatic fault restart function is active. See L5-01)	X	X	X	X	X
1F	Motor Overload OL1 Alarm (ON: 90% or greater OL1 detection level)	X	X	X	X	X
20	OH Alarm (ON: Heatsink temperature is greater than L8-02)	X	X	X	X	X
30	Torque Limit (ON: Torque limit function active)	-	-	X	X	X
31	Speed Limit During Speed Control (ON: Speed limit function active)	-	-	-	X	X
32 ⁽²⁾	Speed Limit During Torque Control (ON: Speed limit function active)	-	-	-	X	X
33	Zero Servo Complete (ON: Zero servo function is within the b9-02 detection width)	-	-	-	X	-
37	During Run 2 (ON: Run command with voltage output. Does not include baseblock, DC injection, or initial excitation)	X	X	X	X	X
38 ⁽²⁾	Drive Enable (ON: Drive Enable selected using a digital input (H1-XX) programmed for "6A")	X	X	X	X	X

(1) Available in the G7 only.

(2) Not available in the GPD515/G5.