

**Part Number:** DI-16H2.

**Applicability:** F7, G7, GPD515/G5, G5 HHP.

**Introduction:** The DI-16H2 digital input option card (Figure 2) is mounted on the drive's control board and allows the user to interface a 12-bit or 16-bit digital speed reference to the drive. This reference can be binary, binary coded decimal (BCD) in hertz (Hz), or BCD in percent (%). Sign (polarity) and Set (load) inputs are also included.

**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:**

- a) If this option card 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 2CN on the drive's control board and TC1-TC3 on the DI-16H2 option card.
- b) 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.

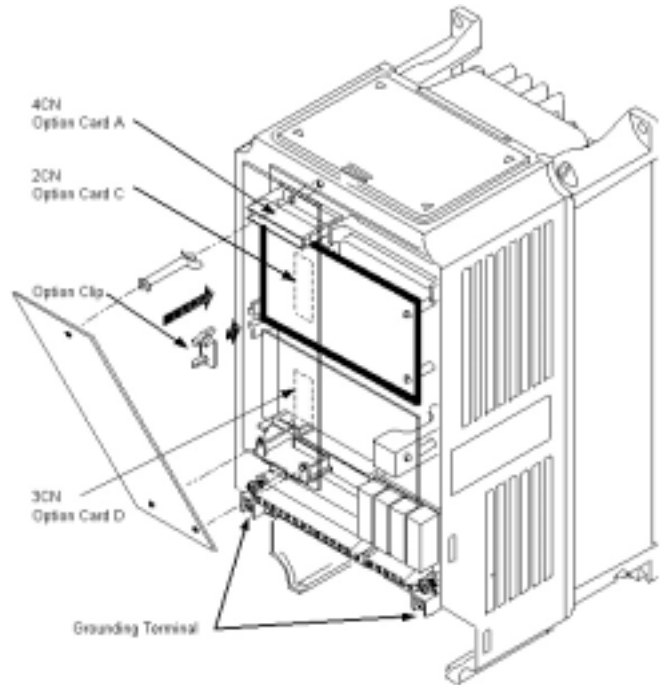


Figure 1. DI-16H2 Option Card Installation

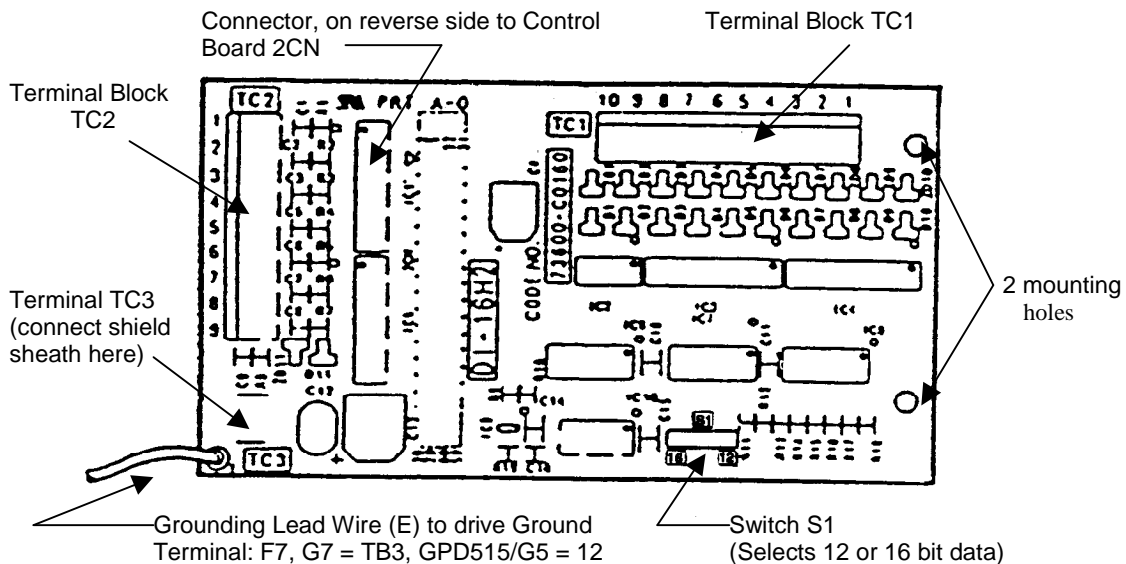


Figure 2. Digital Input Card DI-16H2

## 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. **Option Card Installation:** See Figure 1. Position the option card above the control board's 2CN connector and gently press the card into place.
6. **Wiring:** Refer to Figures 2 and 3 and Tables 2 & 3. Make wire connections between the DI-16H2 card and drive as well as all peripheral devices. Observe the following:
  - a) Connect digital input signals to Terminal Blocks TC1 and TC2.
  - b) Keep the DI-16H2 (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.
  - c) To prevent erroneous operation caused by noise interference, use shielded cable for control signal wiring. Limit the distance to 50m (164 feet) or less.
  - d) Route wires from the drive and connect to the peripheral device. Refer to the drive technical manual for further information on the use of shielded cable.
  - e) Connect the green grounding lead wire (E) from the DI-16H2 card to the grounding terminal TB3 (12 for G5) on the drive's control board.

**Important:** The DI-16H2 input circuits can receive the output of relay contacts and transistors (open collector).

  - a) Use relays with highly reliable contacts (for very small current) with a rated voltage of 30VDC or more and a rated current of 100mA or higher.
  - b) Use transistors (open collector) with a rated voltage of 35VDC or more and a rated current of 30mA or higher.
7. **Adjustment:** Switch S1 (12 or 16 bit selection) must be set properly. See Tables 1 and 3. The drive will have to be programmed for the input requirements of the peripheral device. See Table 4 and Figure 2.
 

**Important:** For the digital reference to function properly, the drive needs to be programmed to use the digital reference. This can be done in one of two ways:

  - a) **If drive always uses the DI-08 speed reference:**  
Program b1-01 = "3" (Option PCB)
  - b) **If the drive is using multi-function digital inputs to select multiple speed references:**
    1. Program b1-01 = "0", "1", or "2" (depends on required speed reference source).
    2. H1-03 (or other input) = "2" (Option / Inverter Select).
    3. Close terminal S5 (5 on the G5) on the drive's control board to select the DI-08 digital reference.
8. Reinstall and secure the drive's front cover.
9. Place this instruction sheet with the drive's technical manual.

Table 1. DI-16H2 Specifications		
Parameter	Value	
Input Data Signal	Binary 16 bit / BCD 4 digits Binary 12 bits / BCD 3 digits	Selected by Switch S1
Signal Voltage	+24VDC Internally Supplied	

Table 2. Terminal and Wire Specification			
Terminal Symbol	Terminal Screw	Clamping Torque Lb-in (N-m)	Wire Range AWG (mm <sup>2</sup> )
TC1, TC2	M3	4.2 to 5.3 (0.5 to 0.6)	26 to 16 (Stranded: 0.14 to 1.5) (Solid: 0.14 to 1.5)

Table 4. F3-01 Setting Unit and Range			
F3-01 Set value	Setting Unit		Setting Range
0	BCD	1%	0 – 159%
1	BCD	0.1%	0 – 15.9%
2	BCD	0.01%	0 – 1.59%
3	BCD	1Hz	0 – 159Hz
4	BCD	0.1Hz	0 – 15.9Hz
5 or 6	BCD	0.01Hz	0 – 1.59Hz
7	Binary	65535 / 100%	0 – Maximum Output Frequency

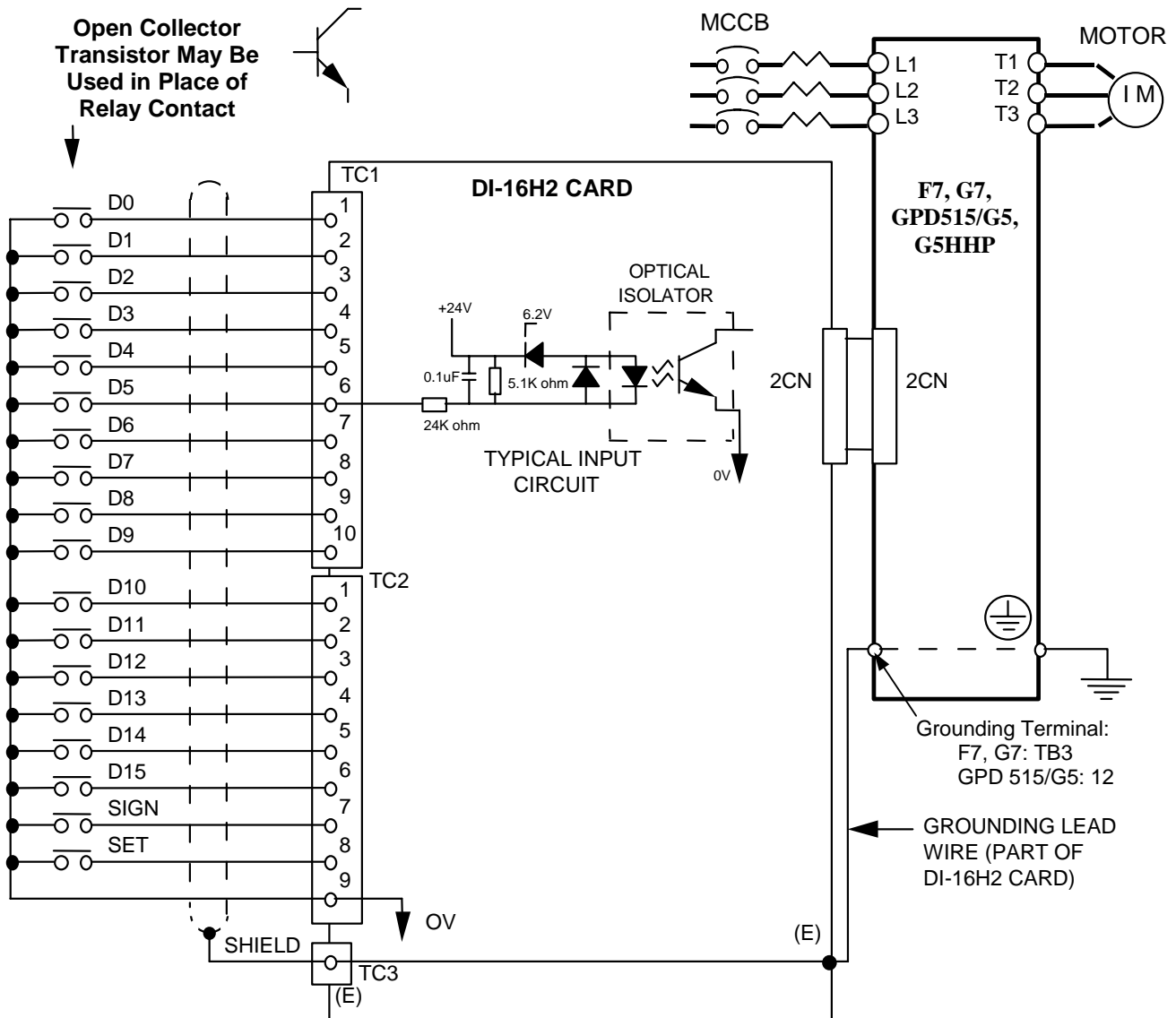
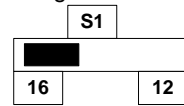


Figure 3. DI-16H2 Interconnection Diagram

Table 3. Terminal Functions of the DI-16H2

Terminal Block	Pin No.	Function		Notes
		Binary Input	BCD Input	
TC1	1	$2^0$	1	X 10 <sup>0</sup> --- "On" when closed (shorted to 0VDC at TC2-9). "Off" when open.
	2	$2^1$	2	
	3	$2^2$	4	
	4	$2^3$	8	
	5	$2^4$	1	X 10 <sup>1</sup> --- Binary / BCD selection and input unit is set by drive parameter F3-01; see Table 4. --- Terminal screws are metric M3.
	6	$2^5$	2	
	7	$2^6$	4	
	8	$2^7$	8	
	9	$2^8$	1	X 10 <sup>2</sup> --- Set selection switch S1 according to the input signal configuration being used.
	10	$2^9$	2	
TC2	1	$2^{10}$	4	X 10 <sup>2</sup>
	2	$2^{11}$	8	
	3	$2^{12}$	1	
	4	$2^{13}$	2	X 10 <sup>3</sup>
	5	$2^{14}$	4	
	6	$2^{15}$	8	
	7	SIGN Signal		--- SIGN signal: "Off" = Forward direction command "On" = Reverse direction command
	8	SET (load) Signal*		
	9	Common (0VDC)		
TC3	Shield Sheath Connection			



Binary 16 bits/BCD 4 digits      Binary 12 bits/BCD 3 digits

\* SET (load) signal is used to tell the drive to read the data. To set, close between TC2-8 and TC2-9 by the timing shown in Figure 4.

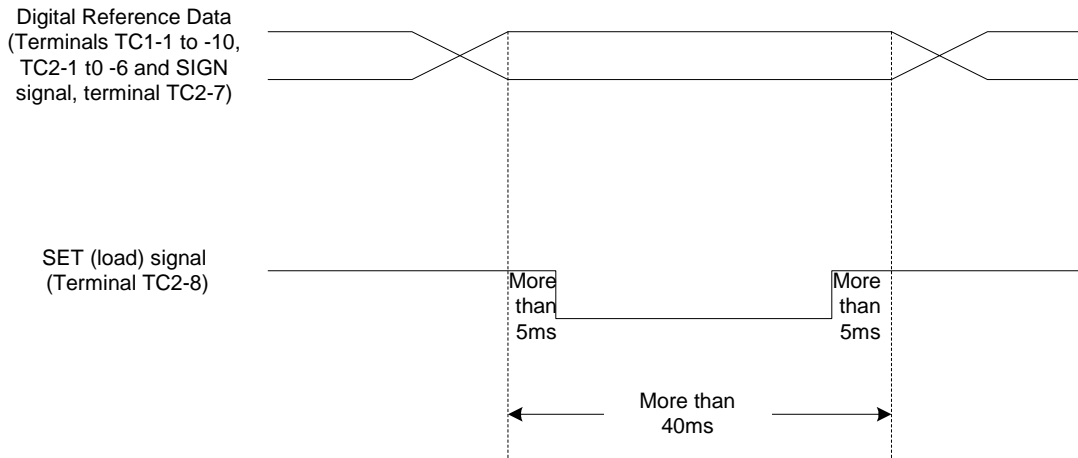


Figure 4. Timing of Set (load) Input