

VARISPEED-616G5 OPTION CARD
DIGITAL REFERENCE CARD DI-16H2
INSTRUCTIONS

Upon receipt of the product and prior to initial operation, read these instructions thoroughly, and retain for future reference.




NOTES FOR SAFE OPERATION


Read this instruction manual thoroughly before installation, operation, maintenance or inspection. In this manual, the NOTES FOR SAFE OPERATION is classified as “CAUTION”.



Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to personnel and damage to equipment.

It may also be used to alert against unsafe practices.

Even items described in  may result in a vital accident in some situations. In either case, follow these important items.

 : These are steps to be taken to insure proper operation and to avoid malfunctions, etc.

CAUTION

- The option card uses C MOS IC chips. It may break if touched by bare fingers because of static electricity. Be careful when handling.
- When removing the option card from the inverter for transportation or storage, put the card into the anti-static package it was in when delivered.
- Never change wiring or connect or disconnect connectors while the power is ON.

Failure to observe this caution may injure you.

The digital reference card, DI-16H2 is mounted on the control board of the inverter to set up digital speed references. To set up references using DI-16H2, set the B1-01 operation mode selection constant to 3 (option). For the values of other constants, refer to 'descriptive manual for constants' (manual No. TOEZ-S616-10.11) .

This option card is applicable to the following inverter series:
 VS-616G5: Entire series

Name	Code No.	Functions
Digital reference card DI-16H2	73600-C016	Input signal: Binary 16 bits/BCD 4 digits Binary 12 bits/BCD 3 digits Switch by S1 SIGN and SET signal input voltage: +24V (Power supply built in . Electrically isolated from internal circuit)

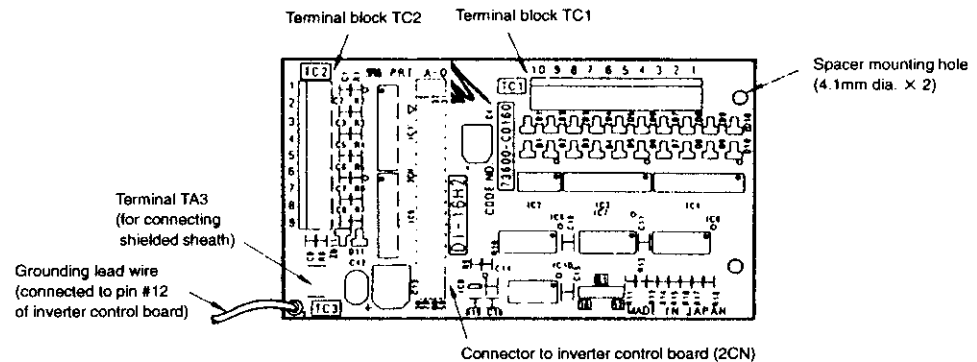


Fig. 1 Digital reference card DI-16H2



Before use,

- (1) Before using DI-16H2, read this manual and the manual for the installation of the inverter.
- (2) Before connecting DI-16H2 or external terminals, turn OFF main power of the inverter and verify the CHARGE indicator lamp of the inverter is OFF.
- (3) When ordering DI-16H2, specify the name and code number.

1 Inspection after Delivery

 CAUTION
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| <ul style="list-style-type: none">• Verify that ordered products have been delivered.
Installation of a wrong device may lead to injury or damage. |
|--|

Though the products have undergone rigorous inspection before shipping, check the following for safety.

- Check the name written on the product to verify that ordered products have been delivered.
- Check for damage caused during transportation.

If there is anything uncertain on the structure, contact your YASKAWA representative.

2 Installing to Inverter (See Fig. 2)

2.1 Installation Procedure

- ① Turn OFF the main power and wait for the time specified on the cover of the inverter. Remove the cover and verify that the CHARGE indicator lamp is OFF.
- ② Plug the 2CN connector of the digital reference card DI-16H2 into the 2CN connector (60 pins) on the control board of the inverter. Gently push DI-16H2 until the spacer engages the spacer hole of the option card on the control board. Fix DI-16H2 tightly. (See part A of the side view.)
- ③ After installing DI-16H2, connect the inverter with peripheral devices and replace the cover of the inverter.

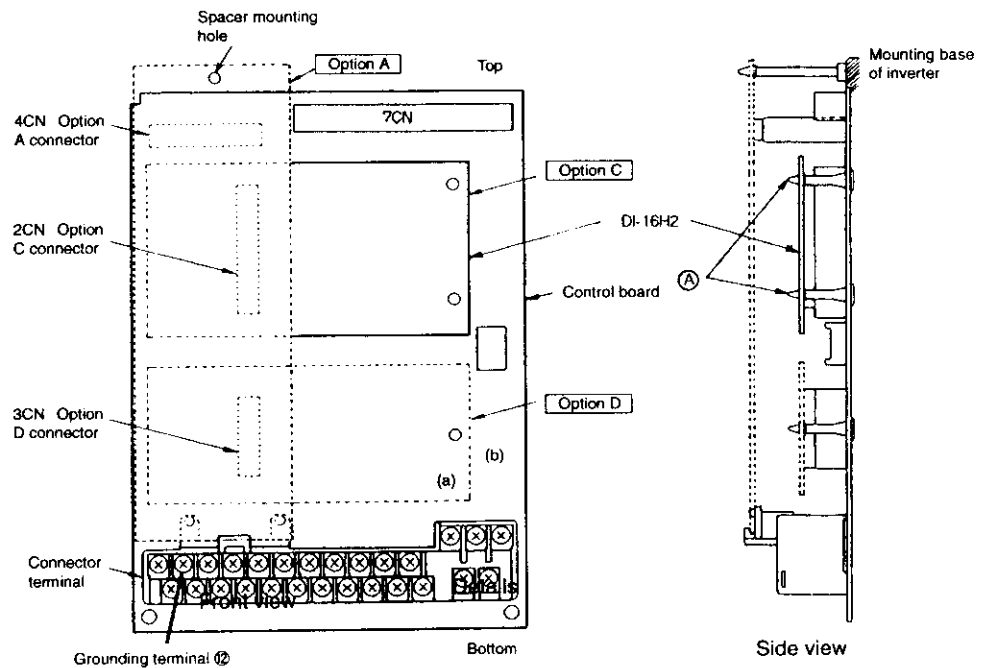
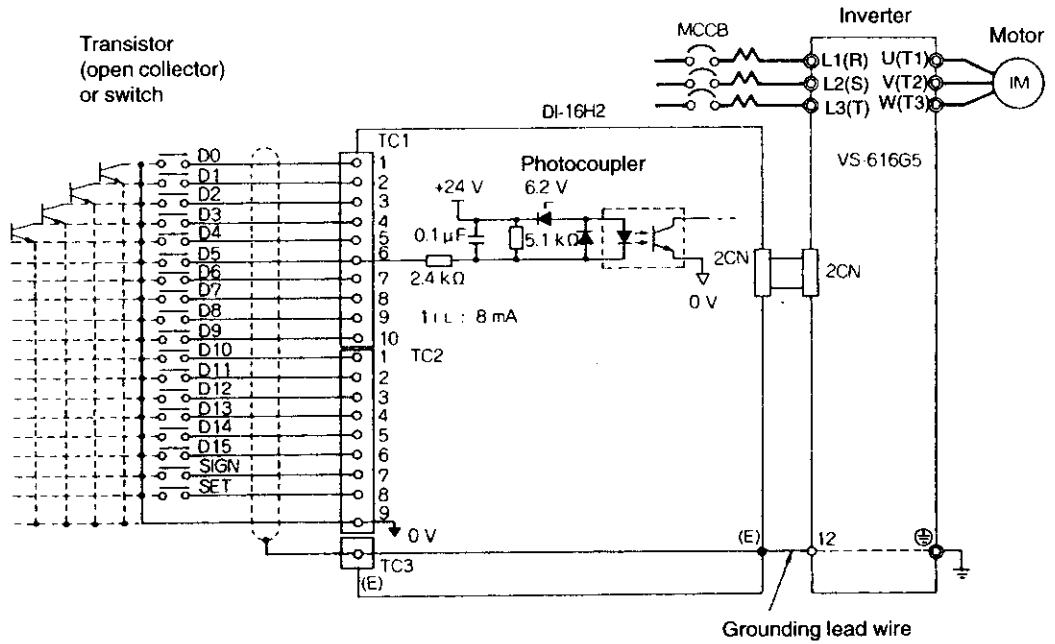


Fig. 2 Installation of digital reference card DI-16H2

3 Interconnection

Fig. 3 shows interconnection between the inverter, DI-16H2, and peripheral equipment.



- Note:
- Connect the grounding lead wire with the control terminal ⑫ on the control board of the inverter.
 - All the input circuits, TC1-1 to -10 and TC2-1 to -9 are identical. (The TC1-6 input circuit is represented in the diagram.)

Fig. 3 Interconnection diagram



Notes on wiring

- Separate the control signal wires (from terminals TC1, TC2, and TC3) of the DI-16H2 from the main circuit wires and other power cables.
- Use a shielded wire to connect to TC1 and TC2. Connect the wire as shown in Fig. 4 to prevent interference by noise. The wire must be 50m or shorter.

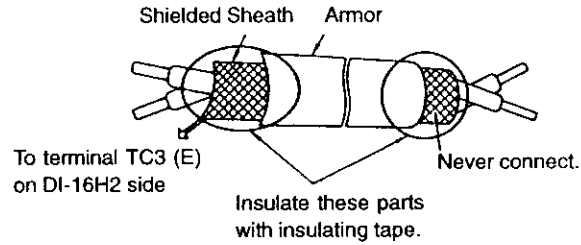


Fig. 4 Shielded wire termination

4 Wiring

See Table 1 for the functions of the external terminals.

Table 1 External terminals

Terminal block symbol	Pin No.	Functions		Remarks
		Binary	BCD input	
TC1	1	2^0	1	<ul style="list-style-type: none"> Input signals 0: Open 1: Closed (Shorted with the terminal TC2-9) Set F3-01 system constant to select binary input/BCD input. Set as follows by the selection switch (S1). <div style="text-align: center;"> <p>The diagram shows a switch labeled S1 with two positions: 16 and 12. Position 16 is currently selected.</p> </div>
	2	2^1	2	
	3	2^2	4	
	4	2^3	8	
	5	2^4	1	
	6	2^5	2	
	7	2^6	4	
	8	2^7	8	
	9	2^8	1	
	10	2^9	2	
TC2	1	2^{10}	4	<ul style="list-style-type: none"> 12 side: binary 12 bits/BCD 3 digits 16 side: binary 16 bits/BCD 4 digits SIGN 0: Forward direction command 1: Reverse direction command
	2	2^{11}	8	
	3	2^{12}	1	
	4	2^{13}	2	
	5	2^{14}	4	
	6	2^{15}	8	
	7	SIGN signal		
	8	SET (read) signal*		
	9	Frequency reference common (0V)		
TC3	Ground connection terminal			

* SET (read) signal is the signal to read digital is speed reference data. When reading, close between terminals TC2-8 and TC2-9 by the timing shown in Fig.5.

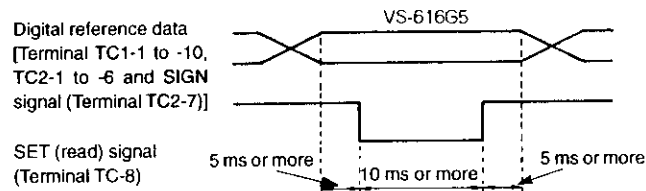


Fig. 5 Timing of digital instruction read signal

Make sure the followings when wiring.

- To prevent noise, use shielded wire and separate from heavy current circuits (200VAC or greater) or relay drive circuits. (Wire length must be 50m or shorter.)
- Connect both ends of the unused wire of the shielded wire to the 0V terminal.
- Connect the grounding lead wire (E) to pin ⑫ of the control board of the inverter.
- Applicable wire sizes for terminal block TC1 and TC2 are shown below.
[Terminal: MKDS1 series manufactured by Phoenix Contact GmbH & Co.]

	[mm ²]	AWG	I [A]	VAC [V]
Thin twisted wire	1	16	12	125
Solid wire	1.5	16	12	125
UL	—	22-16	10	300
CSA	—	28-16	10	300
CSA	—	28-16	10	150



Terminal block TC1, TC2 side
Connecting wire end



Notes on selecting cables

Too thick a cable applies pressure to the option card and may lead to failure.
Too thin a cable may lead to imperfect contact or a break in the wire.

5 Notes on Use of Input Signals

The input circuit of DI-16H2 receives outputs from relay contacts or (open collector) transistors. Note the points below:

- When using relay contacts for digital instruction signals, select highly reliable relay contacts (for weak current) of a contact capacity of 30VDC or greater and 100mA or lower.
- When using (open collector) transistors, select ones of a dielectric strength of 35VDC or greater, rated current of 30mA or greater.

For setting and selecting constants, refer to the constants list in 'descriptive manual for constants' (Manual No. TOEZ-S616-10.11).

NOTE

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