

VARISPEED-616G5 OPTION CARD
RS-232C/485 INTERFACE CARD SI-K2
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".

 **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  **CAUTION** 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.

RS-232C/485 interface card, SI-K2 is mounted on the control board of the inverter to input/output various signals from external devices by the RS-485 serial interface.

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

Name	Code No.	Functions
RS-232C/485 interface card SI-K2	73600-C015X	Convert the level of RS-232C inverter standard function and offer the RS-485 interface Maximum transmission speed: 9600bps

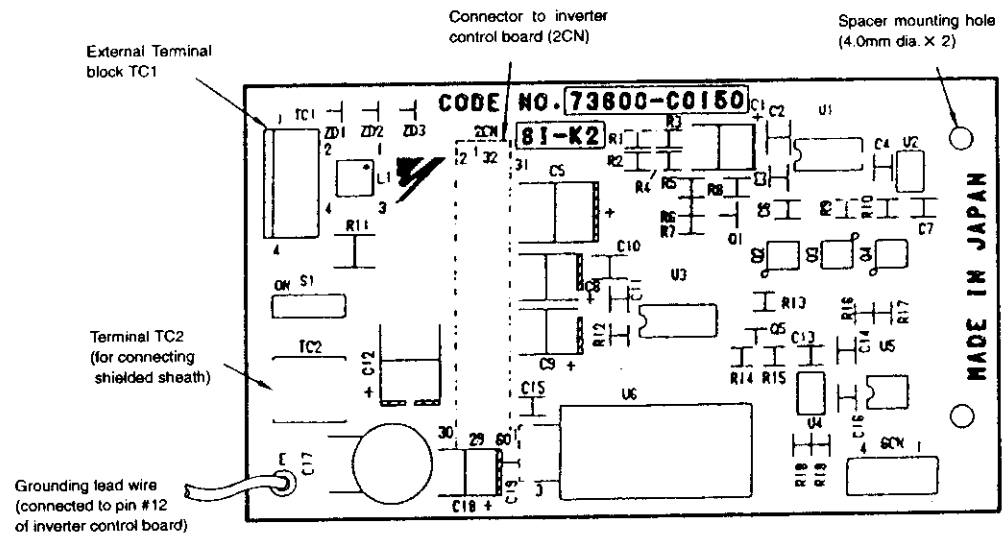


Fig. 1 RS-232C/485 interface card SI-K2



Before use,

- (1) Before using SI-K2, read this manual and the manual for the installation of the inverter.
- (2) Before connecting SI-K2 or external terminals, turn OFF main power of the inverter and verify the CHARGE indicator lamp of the inverter is OFF.
- (3) When ordering SI-K2, specify the name and code number.

1 Inspection after Delivery

 CAUTION
--

- | |
|--|
| <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 RS-232C/485 interface card SI-K2 into the 2CN connector (60 pins) on the control board of the inverter. Gently push SI-K2 until the spacer engages the two spacer holes of the option card on the control board. Fix SI-K2 tightly. (See part A of the side view.)
- ③ Plug the 6CN cable of SI-K2 into 6CN of the inverter.
- ④ After installing SI-K2, connect the inverter with peripheral devices and replace the cover of the inverter.

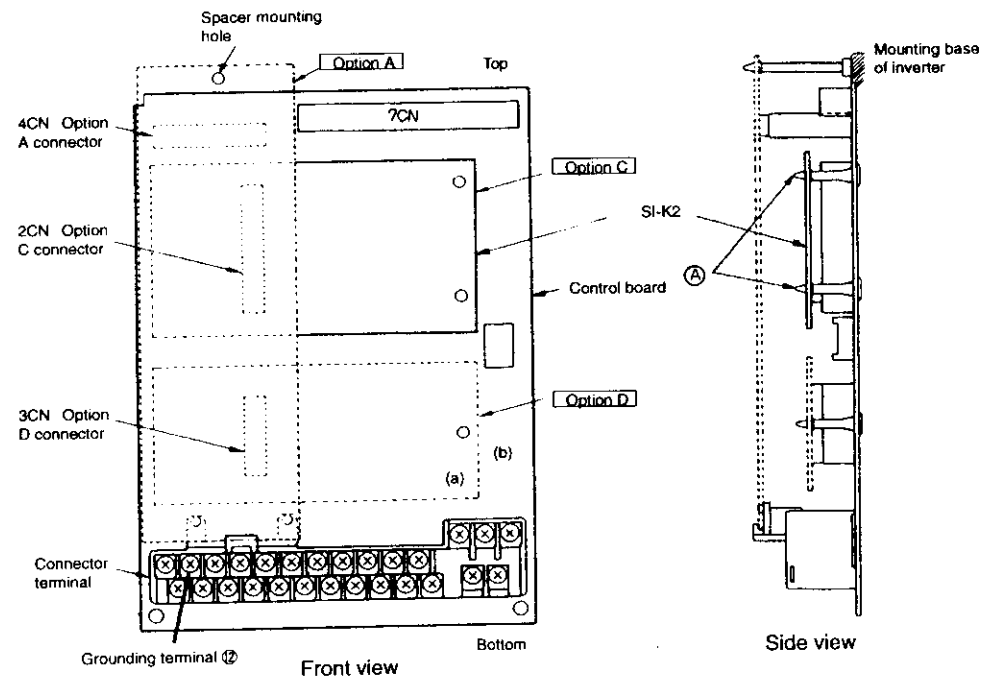


Fig. 2 Installation of RS-232C/485 interface card SI-K2

3 Interconnection

Fig. 3 shows interconnection between the inverter, SI-K2, and peripheral equipment.

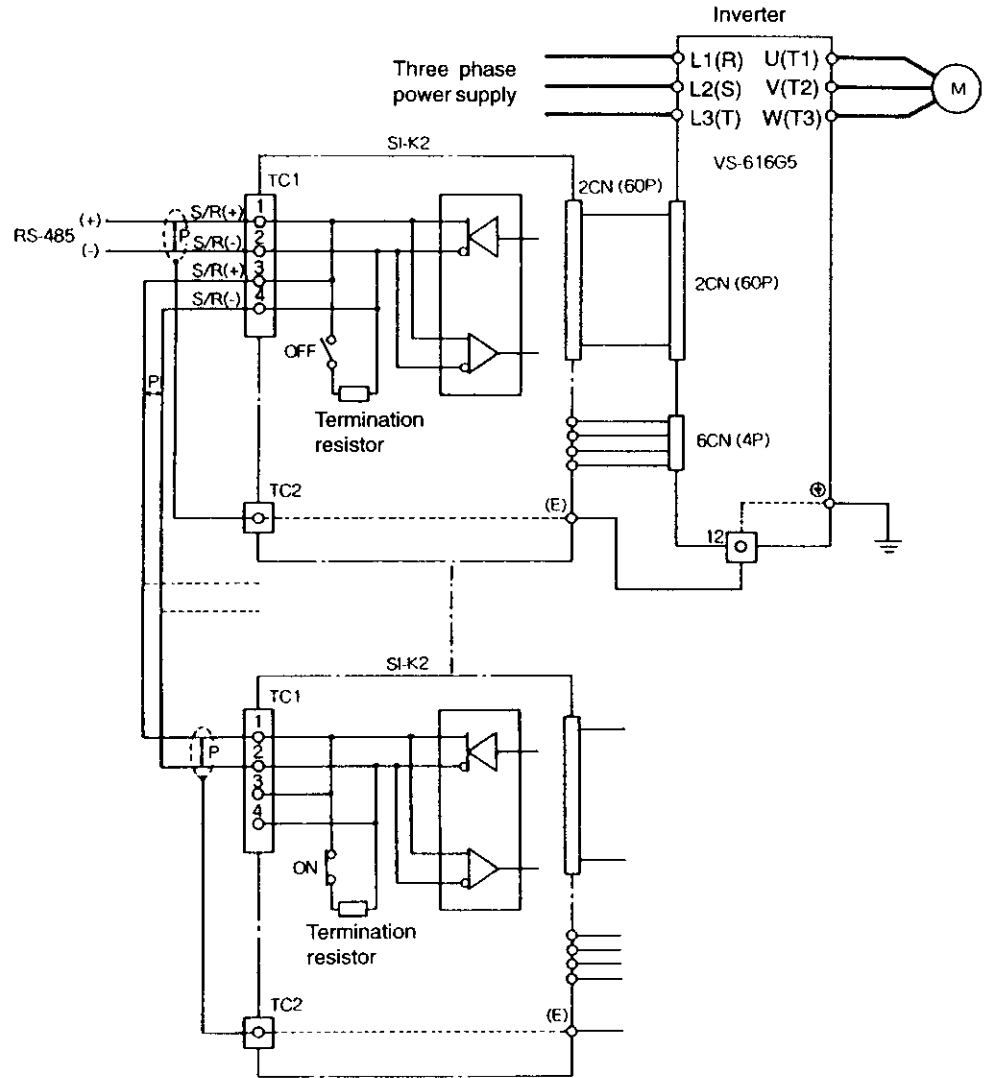


Fig. 3 Interconnection diagram



Notes on wiring

- Separate the wires for transmission (from terminal TC1) of SI-K2 from the main circuit wires and other power cables.
- Use a shielded wire to connect for transmission. Connect the wire as shown in Fig. 4 to prevent interference by noise.

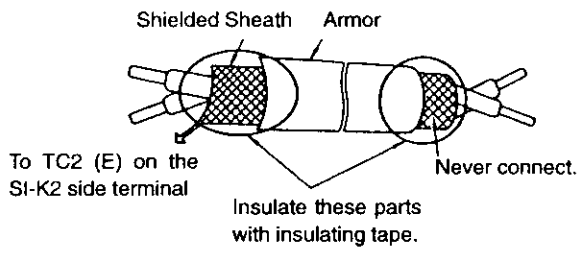


Fig. 4 Shielded wire termination

4 Wiring

See Table 1 for the functions of the external terminals.

Table 1 External terminals

Terminal block symbol	Pin No.	Functions		Remarks
TC1	1	S/R (+)	RS-485 input/output (+)	Use as input at parallel connection
	2	S/R (-)	RS-485 input/output (-)	
	3	S/R (+)	RS-485 input/output (+)	Use as output at parallel connection
	4	S/R (-)	RS-485 input/output (-)	
TC2	Shielded sheath connection terminal			-

Make sure the followings when wiring.

- To prevent noise, use shielded wire in the specified area in Fig.3 and separate from heavy current circuits (200VAC or greater) or relay drive circuits.
- Connect the grounding lead wire (E) to pin ⑫ of the control board of the inverter.
- Applicable wire sizes for terminal block TC1 is 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 side
Connecting wire end

NOTE

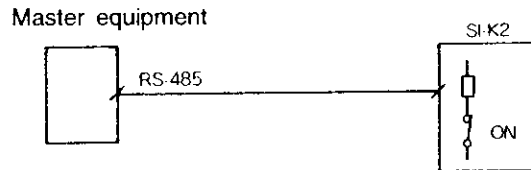
Notes on selecting cables

- 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.

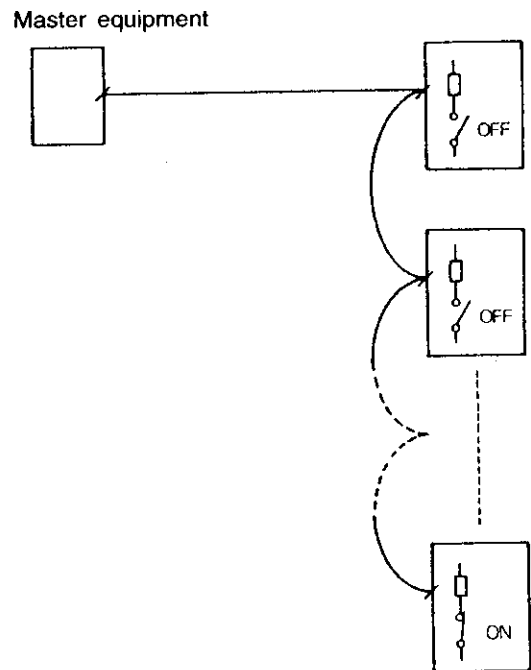
5 SW1 ON-OFF

When SW1 is ON, the termination resistor ($100\ \Omega$) in the SI-K2 is connected between S/R(+) and S/R(-).

- (1) For one-to-one connection of the RS-232C/485 interface card SI-K2 and the instruction master equipment, set SW1 of the SI-K2 to ON.



- (2) If more than one SI-K2 is connected to the instruction master equipment, set SW1 of only the last SI-K2 to ON.



If all the SI-K2s have their SW1s ON, drive capacity of RS-485 may become insufficient to maintain proper communication.

RS-232C/485 INTERFACE CARD SI-K2 INSTRUCTIONS

TOKYO OFFICE Ohtemachi Bldg, 1-6-1 Ohtemachi, Chiyoda-ku, Tokyo, 100 Japan
Phone (03)3284-9111 Telex YASKAWA J33530 Fax (03)3284-9034

YASKAWA ELECTRIC AMERICA, INC.

Chicago-Corporate Headquarters 2942 MacArthur Blvd. Northbrook, IL 60062-2028, U.S.A.

Phone (708)291-2340 Fax (708)498-2430

Chicago-Technical Center 3160 MacArthur Blvd. Northbrook, IL 60062-1917, U.S.A.

Phone (708)291-0411 Fax (708)291-1018

MOTOMAN INC.

805 Liberty Lane West Carrollton, OH 45449, U.S.A.

Phone (513)847-6200 Fax (513)847-6277

YASKAWA ELÉTRICO DO BRASIL COMÉRCIO LTDA.

Avenida Brigadeiro Faria Lima 1664-5' CJ 504/511, São Paulo, Brazil

Phone (011)825-7723 Fax (011)210-9781

YASKAWA ELECTRIC EUROPE GmbH

Am Kronberger Hang 2, 65824 Schwalbach, Germany

Phone (49)6196-569-300 Fax (49)6196-888-301

Motoman Robotics AB

Box 504 S38525 Torsås, Sweden

Phone 0486-10575 Fax 0486-41410

Motoman Robotec GmbH

Kammerfeldstraße 1, 85391 Allershausen, Germany

Phone 08166-900 Fax 08166-9039

YASKAWA ELECTRIC UK LTD.

3 Drum Mains Park Orchardton Woods Cumbernauld, Scotland, G68 9LD U.K.

Phone (1236)735000 Fax (1236)458182

YASKAWA ELECTRIC KOREA CORPORATION

Paik Nam Bldg. 901 188-3, 1-Ga Euljiro, Joong-Gu Seoul, Korea

Phone (02)776-7844 Fax (02)753-2639

YASKAWA ELECTRIC (SINGAPORE) PTE. LTD.

Head Office : CPF Bldg, 79 Robinson Road # 13-05, Singapore 068897, SINGAPORE

Phone 221-7530 Telex (87)24890 YASKAWA RS Fax 224-5854

Service Center : 221 Henderson Road, # 07-20 Henderson Building Singapore 159557, SINGAPORE

Phone 276-7407 Fax 276-7406

YATEC ENGINEERING CORPORATION

Shen Hsiang Tang Sung Chiang Building 10F 146 Sung Chiang Road, Taipei, Taiwan

Phone (02)563-0010 Fax (02)567-4677

SHANGHAI OFFICE Room No.88 Wan Zhong Building 1303 Yan An Road (West), Shanghai 200050, CHINA

Phone (86)212-1015 Fax (86)212-1015

TAIPEI OFFICE Shen Hsiang Tang Sung Chiang Building 10F 146 Sung Chiang Road, Taipei, Taiwan

Phone (02)563-0010 Fax (02)567-4677



YASKAWA ELECTRIC CORPORATION