

# VS-616PC5/P5

## Option Instruction Manual

*Isolated 4-20mA Output Monitor Card CM-B2/P*

---

## DANGER

### PRECAUTIONS

1. Read this instruction manual in its entirety before installing the Isolated Monitor Card CM-B2/P or operating the inverter with this card installed.
2. DO NOT connect or disconnect wiring, or perform signal checks while the electrical power is turned ON.

*Failure to observe these and other precautions indicated in this manual will expose the user to high voltages, resulting in serious injury or death. Damage to equipment may also occur.*

## CAUTION

### NOTE

This option card uses CMOS IC chips. Therefore, the card may become damaged when physically handled if static electricity is present. The person handling the card should wear a discharge strap to eliminate the possibility of static charge (if present) affecting the card.

*Failure to observe this precaution may result in equipment damage.*

### NOTICE

Printed November 1996. The information contained within this document is the proprietary property of Yaskawa Electric America, Inc., and may not be copied, reproduced or transmitted to other parties without the expressed written authorization of Yaskawa Electric America, Inc.

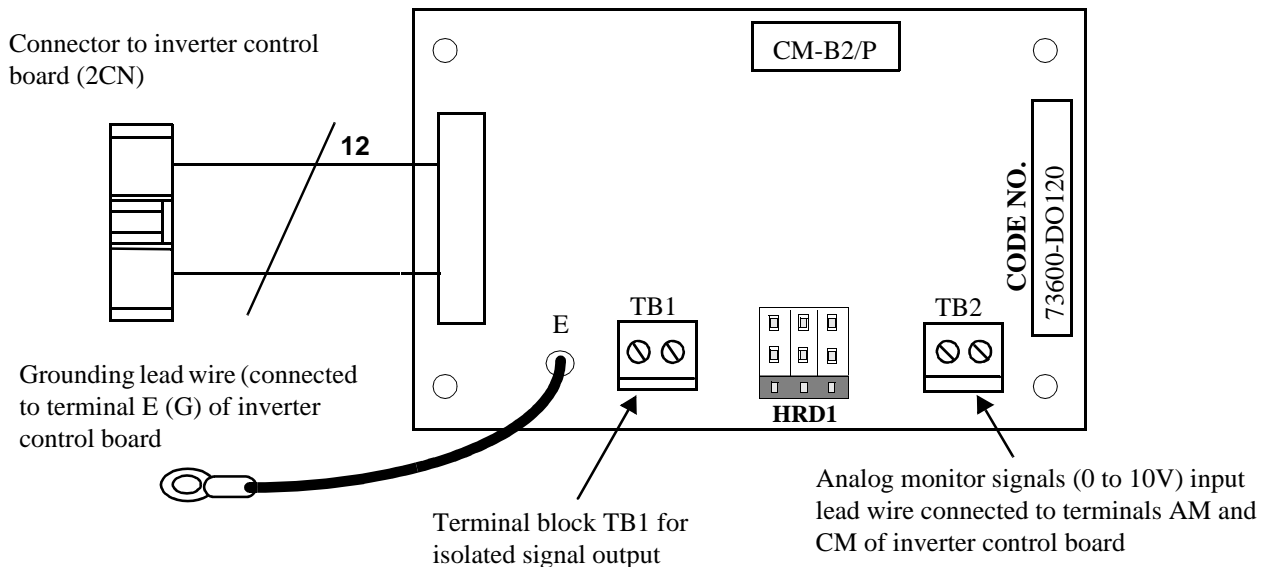
No patent liability is assumed with respect to the uses of the information contained herein. Moreover, because Yaskawa is constantly improving its high quality product, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this document. Nevertheless, Yaskawa assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.

## INTRODUCTION

The Isolated Monitor Card CM-B2/P is mounted on the control board of a VS-616PC5 or P5 inverter, and is used to convert the inverter's analog monitor signals (0 to 10V) to an isolated configurable signal. This option card can be used on any of the VS-616PC5/P5 Series inverters. When purchasing an option card, please specify the inverter model and code number.

### Description

NAME	CODE NUMBER	FUNCTIONS
Isolated Monitor Card CM-B2/P	73600-DO12X	Converts analog monitor signals (0 to 10V) to isolated signals (0 to 10V, 4 to 20mA or 0 to 20mA).

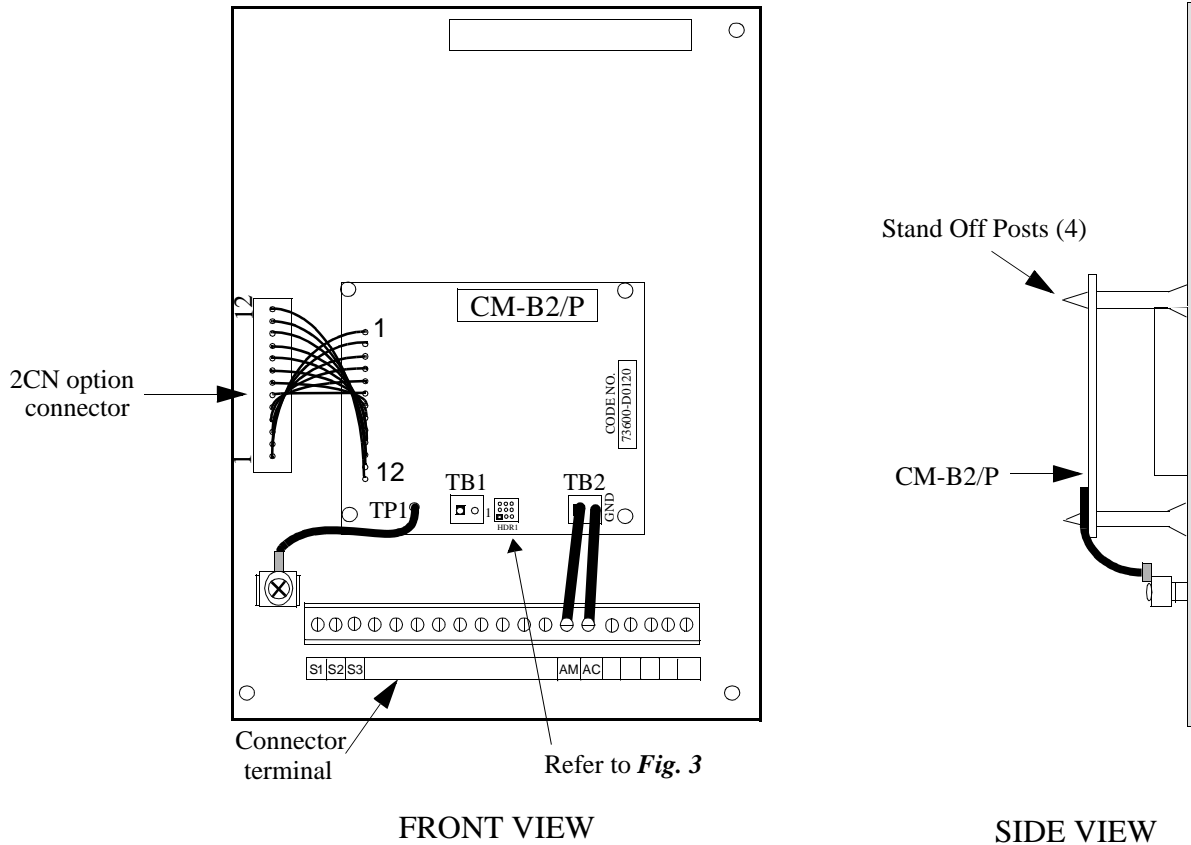


**Fig. 1 Isolated Monitor Card CM-B2/P**

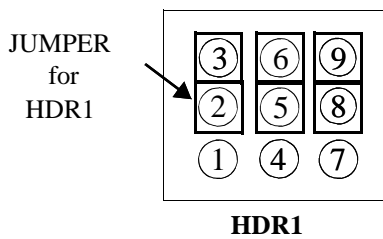
---

## INSTALLATION

1. Before attempting to install or use the Isolated Monitor Card CM-B2/P, read these instructions.
2. After unpacking the card, verify that you have received the correct code number and that no damage has occurred during shipping. Contact your YASKAWA representative if you should require any assistance.
3. Turn OFF the main electrical power to the inverter.
4. Remove the inverter's cover by first removing the digital operator. Then push inward (on the cover) at the indented area located on each side of the cover, and lift the cover upward from the rear of the cover. Refer to the VS-616PC5/P5 User's Manual (YEA-TOA-S616-12), if necessary.
5. Check that the indicator CHARGE LED is OFF (indication that power is OFF).
6. Place the Isolated Monitor Card onto the four (4) stand-off posts in the control board aligning the Isolated Monitor Card's connector with the control board's 2CN connector.
7. Gently push the Isolated Monitor Card downward onto the stand-off posts until they protrude through the card's holes, thereby engaging the card firmly to the posts.
8. Plug the Isolated Monitor Card's connector into the Control Board's 2CN connector.
9. Replace the inverter's cover. Refer to **Fig. 1** for correct wiring of the Isolated Monitor Card and the Control Board.



**Fig. 2 Installation of Isolated Monitor Card CM-B2/P**



HDR 1  
Configures Output Signal at TB1

Note: The three jumpers on the HDR1 are used to configure the output signal at TB1. Refer to Table 2 for additional data.

**Fig. 3 Output Signal Configuration**

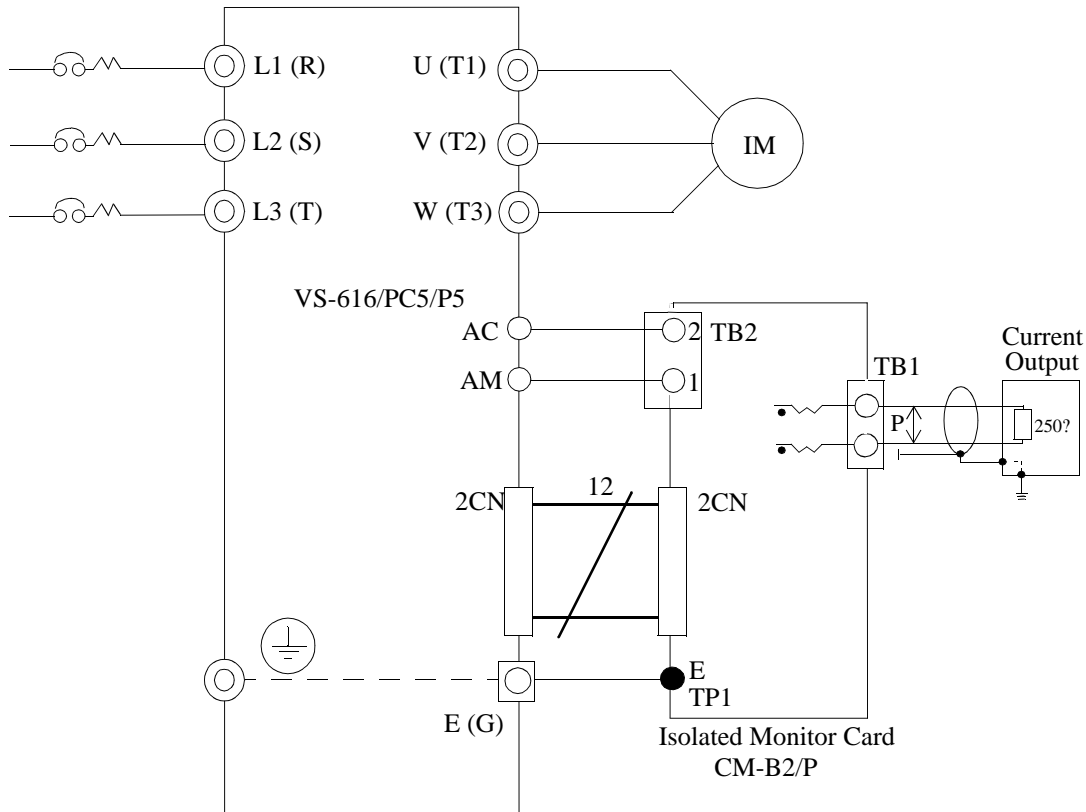
**HDR1 Jumper Positions**

HDR1 JUMPER POSITIONS			OUTPUT TB1
1-2	4-5	7-8	0 to 10 VDC
2-3	5-6	8-9	4 to 20 MA
1-2	4-5	8-9	0 to 20 MA

Note: Default 4 to 20mA

## INTERCONNECTION DIAGRAM

*Fig. 4* shows the mounting and interconnection between the inverter and the Isolated Monitor Card CM-B2/P.

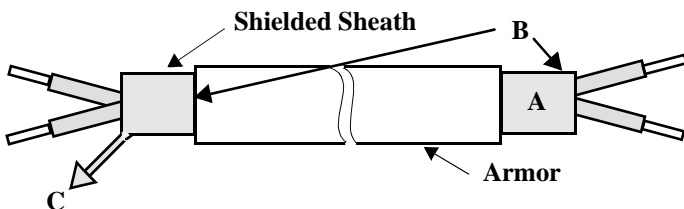


*Fig. 4 Interconnection Diagram*

## CAUTION

### WIRING NOTES

1. Separate the wires for output signals (from the Isolated Monitor Card's terminal block TB1) from the main circuit wires and other power cables.
2. Use a shielded wire to connect output signals. Connect the wire as shown in *Fig. 5* to prevent noise interference.



- A. **NEVER** connect the wire's shielded sheath when connecting wires.
- B. **WRAP** insulating tape around shielded areas and wires where termination occurs.
- C. **CONNECT** the shielded wire end to the Grounding Terminal (E) on the inverter's Terminal E (G).

*Fig.5 Shielded Wire*

*Failure to observe these precautions may result in equipment malfunctions.*

## WIRING

Refer to the following table for the external function terminals:

**External Function Terminals**

TERMINAL BLOCK SYMBOL	PIN NUMBER	FUNCTIONS
TB1	1	Isolated Monitor Output (+)
	2	Isolated Monitor Output (-)

Wiring Connection Notes:

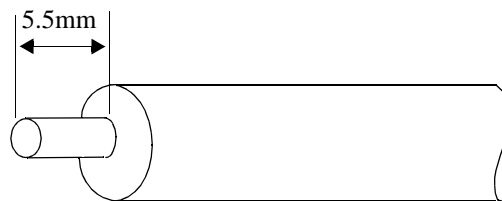
1. To prevent noise, use shielded wire as specified in **Fig. 5**. Separate the power circuits (200VAC or greater) and the relay drive circuits from the control wires.
2. Wire lengths must be 164ft (50m) or less.
3. Connect the grounding lead wire (E) to the inverter control board grounding terminal E (G).
4. Applicable wire sizes for terminal block TB1 and TB2 are as listed in the following table:

**Wire Sizes**

TYPE	[mm <sup>2</sup> ]	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

Stripping TB1 and TB2 Wires for Connection

The following figure shows the correct length of insulation to be stripped in order to connect the wire to terminal blocks TB1 and TB2.



**Fig. 6 Terminal Block TB1 and TB2 Side for Connecting Wire End**

Cable Selection:

1. Cable that is too heavy exerts pressure on the option card and may cause failure.
2. Cable too thin may cause a poor connection or may prematurely break.



**YASKAWA ELECTRIC AMERICA, INC.**

**Chicago-Corporate Headquarters** 2942 MacArthur Blvd. Northbrook, IL 60062-2028, U.S.A.  
Phone: (847) 291-2340 Fax: (847) 291-4203 Internet: <http://www.yaskawa.com>

**Chicago-Technical Center** 3160 MacArthur Blvd. Northbrook, IL 60062-1917, U.S.A.  
Phone: (847) 291-0411 Fax: (847) 291-1018

**MOTOMAN INC.**

805 Liberty Lane West Carrollton, OH 45449, U.S.A.  
Phone: (513) 847-6200 Fax: (513) 847-6277

**YASKAWA ELETRICO DO BRASIL COMERCIO LTDA.**

Avenida Brigadeiro Faria Lima, 1664-5° Andar, CJS 504/511 CEP 01452-001 - Sao Paulo-SP, Brasil  
Phone: (011) 815-7723 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 130 S-38500. Torsas, Sweden  
Phone: 0486-10575 Fax: 0486-11410

**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 0106, SINGAPORE  
Phone: 221-7530 Telex: (87) 24890 YASKAWA RS Fax: 224-5854

**Service Center:** 221 Henderson Road, #07-20 Henderson Building Singapore 0315, 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. 8B 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

**TOKYO OFFICE** 8th Floor, New Pier Takeshiba South Tower, 1-16-1, Kaigan, Minato-ku, Tokyo, 105, Japan

Phone: (03) 5402-4542 Fax: (03) 5402-4588 Internet: <http://www.yaskawa.co.jp>