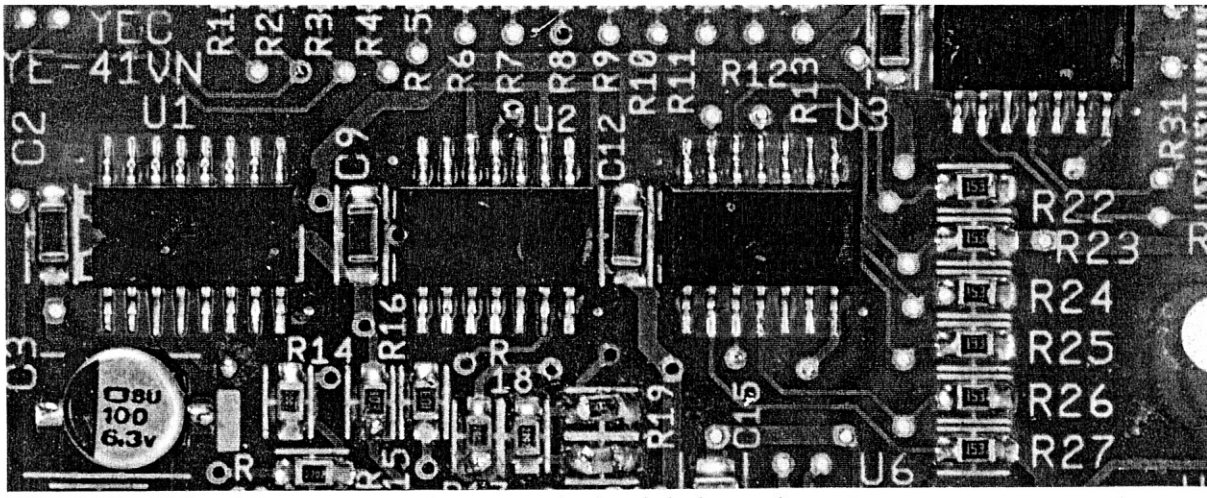
YASKAWA

Varispeed SERIES INVERTER OPTION CARD

ANALOG MONITOR CARD
INSTRUCTIONS

MODEL AO-08



Before initial operation, read these instructions thoroughly, and retain for future reference.

YASKAWA

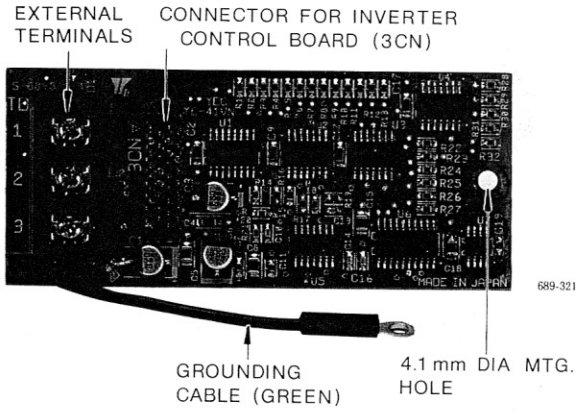
TOE-C736-30.21C

The analog monitor card (hereinafter called AO-08), an on-board type option card, is mounted on the inverter control board to output analog signals for monitoring the inverter outputs (output frequency, output current, etc.)

This AO-08 is applicable to the following four inverter series :

- VS-616G3
- VS-616H3
- VS-676VG3
- VS-676VH3

Name	Code No.	Output Method
Analog Output Monitor Card AO-08	73600-D001X	Output resolution : 8 bits (1/256) Output voltage : 0 to + 10 V (non-insulated) Output channel : 2 channels



ANALOG MONITOR CARD AO-08

PRECAUTIONS

(1) Before using AO-08, read the instruction manual of the applicable inverters (VS-616G3, VS-616H3, VS-676VG3 or VS-676VH3).

(2) Before connection of AO-08 connector or external terminals, turn off the inverter AC main circuit power supply and check that the inverter CHARGE indicator lamp is out.

INSTALLATION TO INVERTER (Fig. 1)

(1) Turn off AC main circuit power supply and remove the inverter face plate. Check that the inverter CHARGE indicator lamp is out.

(2) Mount AO-08 connector 3CN on connector 3CN (number of pins : 34 poles) on the inverter control board. Insert the optional card support on the control board to AO-08 support hole (1 point) to support the AO-08.

NOTE

AO-08 cannot be mounted on any connectors other than 3CN.

(3) Connect AO-08 grounding cable (green) to control terminal No. 12 on the inverter control board.

(4) After installing of AO-08, connect to peripheral equipment. When connection is completed, replace the inverter face plate.

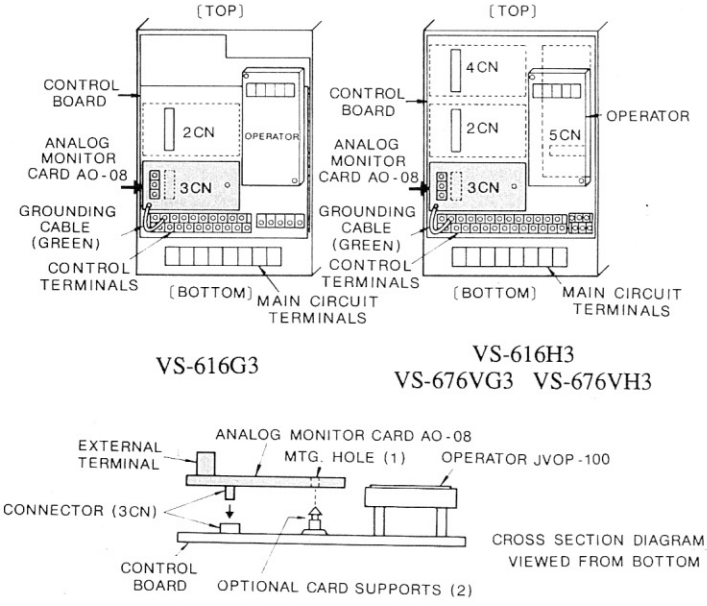
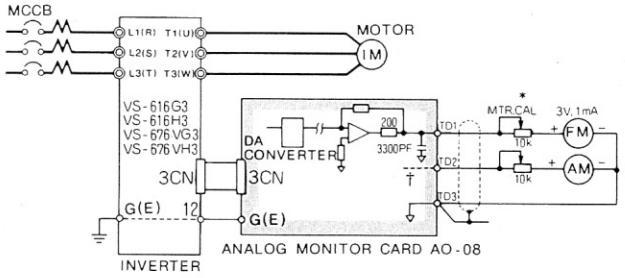


Fig. 1 Installation of Analog Monitor Card AO-08

INTERCONNECTION BETWEEN EQUIPMENT

Fig. 2 shows interconnection of inverter with AO-08 and peripheral equipment where AO-08 output is connected to a pulse counter.



* In some applications, MTR.CAL can be omitted by setting or adjusting program constants (bn-□□).

† TD2 output circuit is the same as that of TD1.

Fig. 2 Interconnection Diagram

PRECAUTIONS FOR WIRING

(1) Separate AO-08 control signal wiring (terminals TD1 to TD3) from main circuit wiring or other power lines.

(2) Use shielded cable for control signal wiring and prepare the ends as shown in Fig. 3 to prevent malfunctions caused by noise. Wiring length must be 50 m or less.

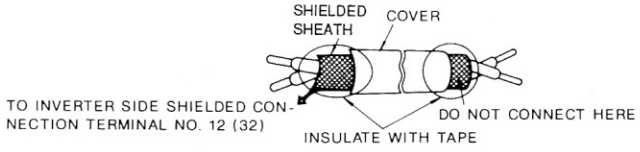


Fig. 3 Preparation of Shielded Cable Ends

EXTERNAL TERMINAL FUNCTIONS

AO-08 has 3 external terminals for connection with peripheral equipment. Table 1 shows the terminal functions.

Table 1 Terminal Functions

Terminal Symbol	Screw Size	Function	Signal Level	Output Accuracy	Remarks
TD1	M3	Analog signal output : channel 1*	0 to + 10 V (max. load current : 3 mA) †	Refer to Tables 2 to 4.	Output resolution : 8 bits (1/256)
TD2		Analog signal output : channel 2*			
TD3		Common terminal	0V		

* Output contents of TD1 or TD2 analog signal can be selected by setting the inverter program constants. For details, refer to "EXTERNAL TERMINAL OUTPUT CONTENTS AND ACCURACY".

† Output signal level of TD1 or TD2 analog signal can be adjusted by setting the inverter program constants. For details, refer to "OUTPUT SIGNAL LEVEL SETTING". Output signal level can be output up to 11 V by setting program constants.

EXTERNAL TERMINAL OUTPUT CONTENTS AND ACCURACY

Table 2 Connection with VS-616G3

External Terminal	Program Constant No.	Set Value	Output Contents	Output Accuracy
TD1 Channel 1	Sn-28 1st/2nd digit	00	Output frequency : Max. frequency/100%	2.0%
		01	Output current : Inverter rated current/100%	3.0%
TD2 Channel 2	Sn-28 3rd/4th digit	10	Output voltage ref. : Input voltage/100%	2.0%
		11	DC voltage (VPN) : 400 V/100% (200 V class) 800 V/100% (400 V class)	2.0%

Table 3 Connection with VS-616H3

External Terminal	Program Constant No.	Set Value	Output Contents	Output Accuracy
TD1 Channel 1	bn-15	1	Frequency ref. : Max. frequency/100%	2.0%
		2	Output frequency : Max. frequency/100%	
		3	Output current : Rated current/100%	3.0%
		4	Output voltage ref. : Input voltage/100%	2.0%
		5	DC voltage (VPN) : 400 V/100% (200 V class) 800 V/100% (400 V class)	
		6	Output power (± indication) : Rated power (kW)/100%	10.0%
TD2 Channel 2	bn-17	17	Speed feedback (PG, TG) : Max. frequency/100%	2.0%
		18	Compensated frequency (PG, TG) : Max. frequency/100%	
		19	Voltage feedback (AVR) : Input voltage/100%	
		20	Compensated voltage (AVR) : Input voltage/100%	
		21	Momentary reduced value : Max. frequency/100%	

Note : Refer to "OUTPUT SIGNAL LEVEL SETTING" for 100% output signal level in output contents.

Table 4 Connection with VS-676VG3 or VS-676VH3

External Terminal	Program Constant No.	Set Value	Output Contents	Output Accuracy
TD1 Channel 1	bn-22	3	Output current : Motor rated current/100%	3.0%
		4	Output voltage ref. : No-load voltage/100%	2.0%
		5	DC voltage (VPN) : 400 V/100% (200 V class), 800 V/100% (400 V class)	
		21	Speed ref. (SFS input) : Max. rotation speed/100%	2.0%
		22	Speed ref. (SFS output) : Max. rotation speed/100%	
		23	Speed feedback : Max. rotation speed/100%	
		24	Ext. torque ref. : Motor rated torque/100%	
		25	Torque compensation : Motor rated torque/100%	
		26	Torque ref. (inner) : Motor rated torque/100%	
		27	Torque feedback : Motor rated torque/100%	
TD2 Channel 2	bn-24	28	ASR input (speed deviation) : Max. rotation speed/100%	
		29	ASR output (after filter) : Motor rated secondary current/100%	
		30	Slip frequency : Rated slip frequency/100%	
		31	Primary frequency ref. : Max. synchronous frequency/100%	
		32	Motor temp : 200℃/100%	

Note : Refer to "OUTPUT SIGNAL LEVEL SETTING" for 100% output signal level in output contents.

OUTPUT SIGNAL LEVEL SETTING

Output signal level of external terminal TD1 or TD2 can be set by 10 V × □□□(setting data)/100%.

Applicable Inverter	External Terminal	Program Constant No.	Setting Range	Setting Unit	Initial Value
VS-616G3	TD1	bn-11	0.00 to 2.55	0.01	1.00
	TD2	bn-12			0.50
VS-616H3	TD1	bn-16	0.000 to 10.000	0.001	1.000
	TD2	bn-18			0.500
VS-676VG3 VS-676VH3	TD1	bn-23	0.000 to 10.000	0.001	1.000
	TD2	bn-25			