

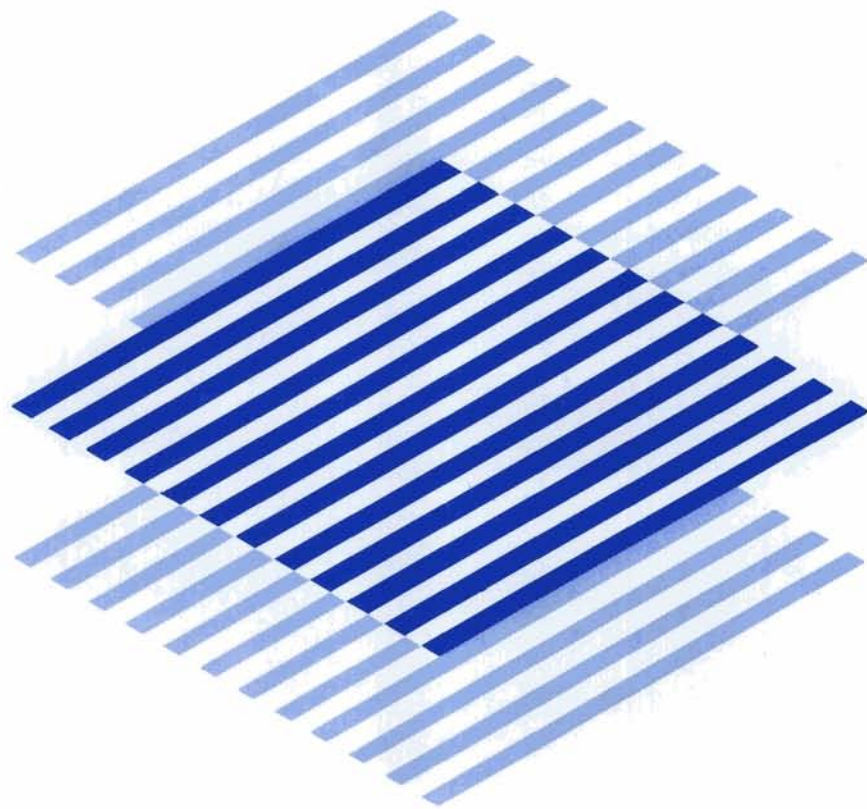
mitsubishi
TRANSISTORIZED
INVERTER

FREQROL-Z

DIGITAL INPUT UNIT

TYPE FR-ZDA

Instruction Manual



 **MITSUBISHI**
ELECTRIC

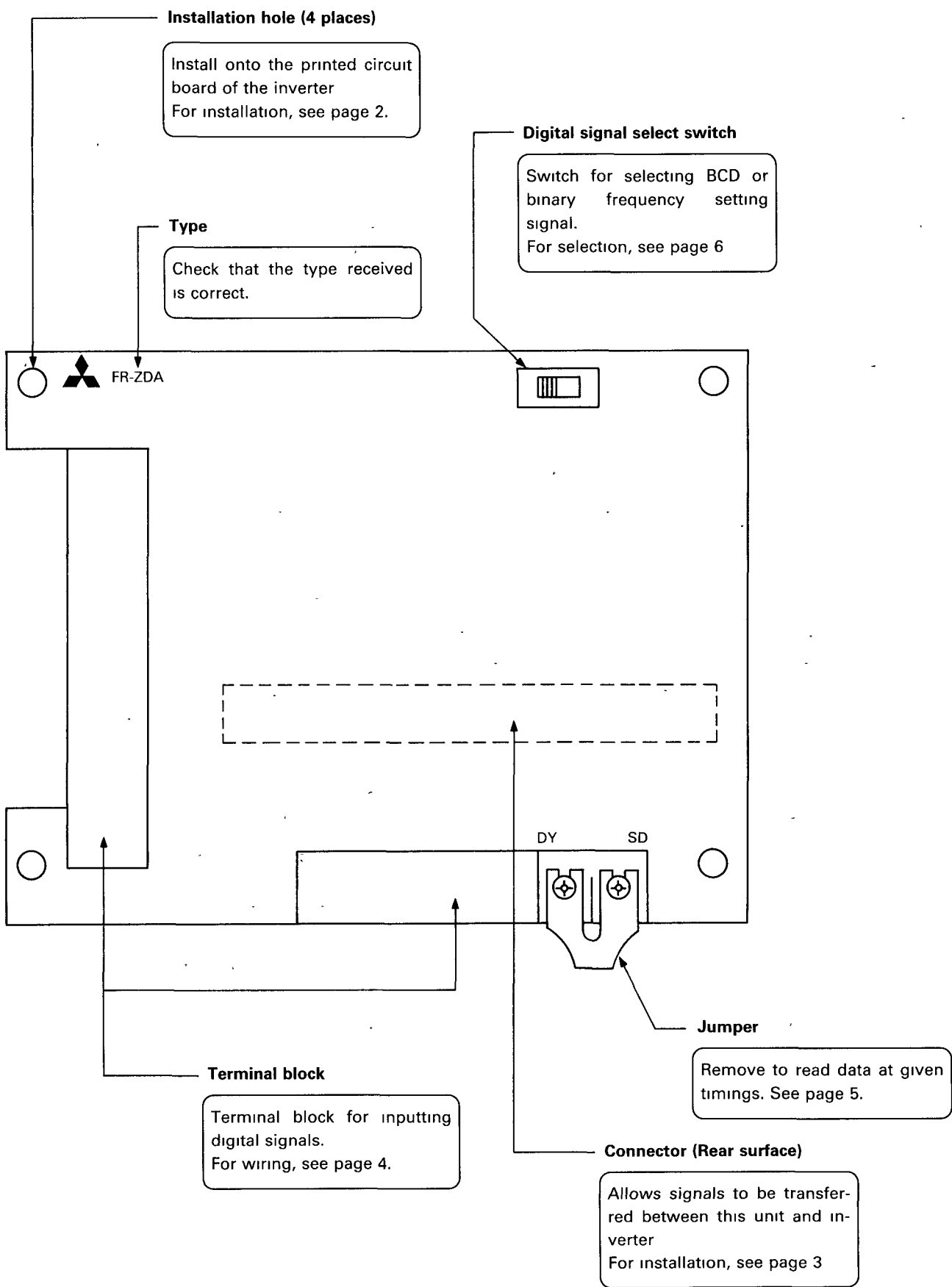
Thank you for choosing the option unit for the Mitsubishi FREQROL-Z200 series transistorized frequency inverter.
Please read this manual carefully to use the equipment to its optimum

The FR-ZDA digital input unit is used as an interface to set a frequency using BCD or binary digital input signals

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1. STRUCTURE



Accessories. Check that eight installation pins are supplied with the unit.

2. INSTALLATION

Remove the inverter cover and install the option unit in the following procedure:

2.1 Pre-Installation Checks

- (1) Check the inverter type.

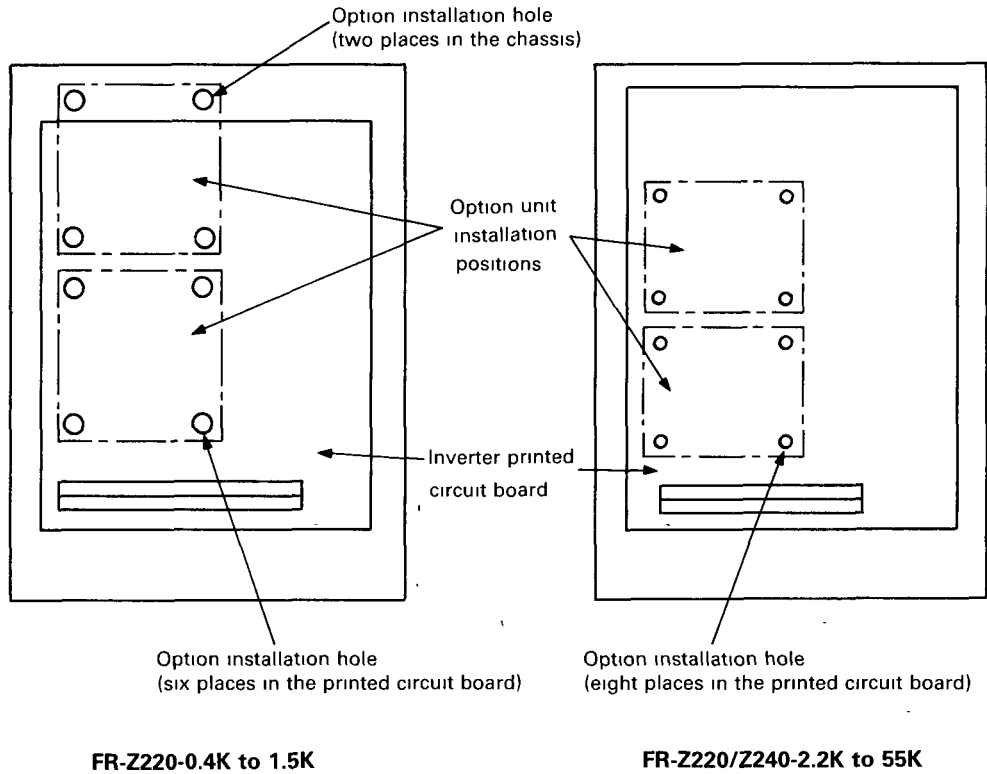
This option unit may only be used with the FREQROL-Z200 series inverters and must not be used with the other series (e.g. Z100, K400).

- (2) Check that the inverter input power is off

The inverter may become faulty if the option unit is installed with the input power on.

2.2 Installation Position

The Z200 series can accommodate up to two option units. The option unit may be installed at either of the two positions on the printed circuit board as shown below.

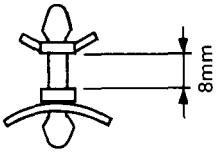
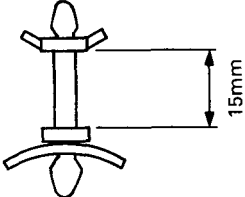


2.3 Installation Procedure

(1) Insert the supplied installation pins into the four installation holes in the inverter printed circuit board.

- Selecting the installation pin size

Two pin types (long and short) are supplied with the unit. Determine the size in accordance with the inverter model (type) used.

Inverter Model	Other Models	FR-Z220-2.2K to 11K FR-Z240-2.2K to 7.5K
Installation pin size	Short (4 pieces) 	Long (4 pieces) 

- Direction of pin installation

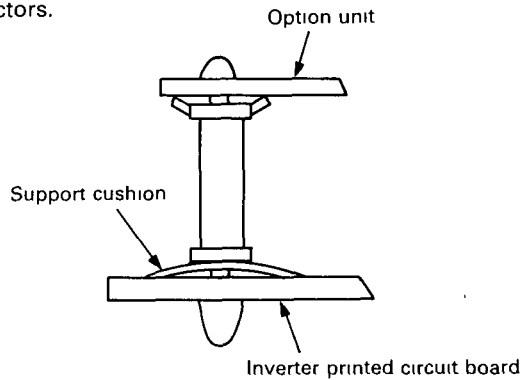
Insert the longer support cushion end of the installation pin into the installation hole in the inverter printed circuit board.

(2) Securely fit the option unit into the installation pins

At this time, the connector of the option unit is fitted into the connector pins on the inverter printed circuit board.

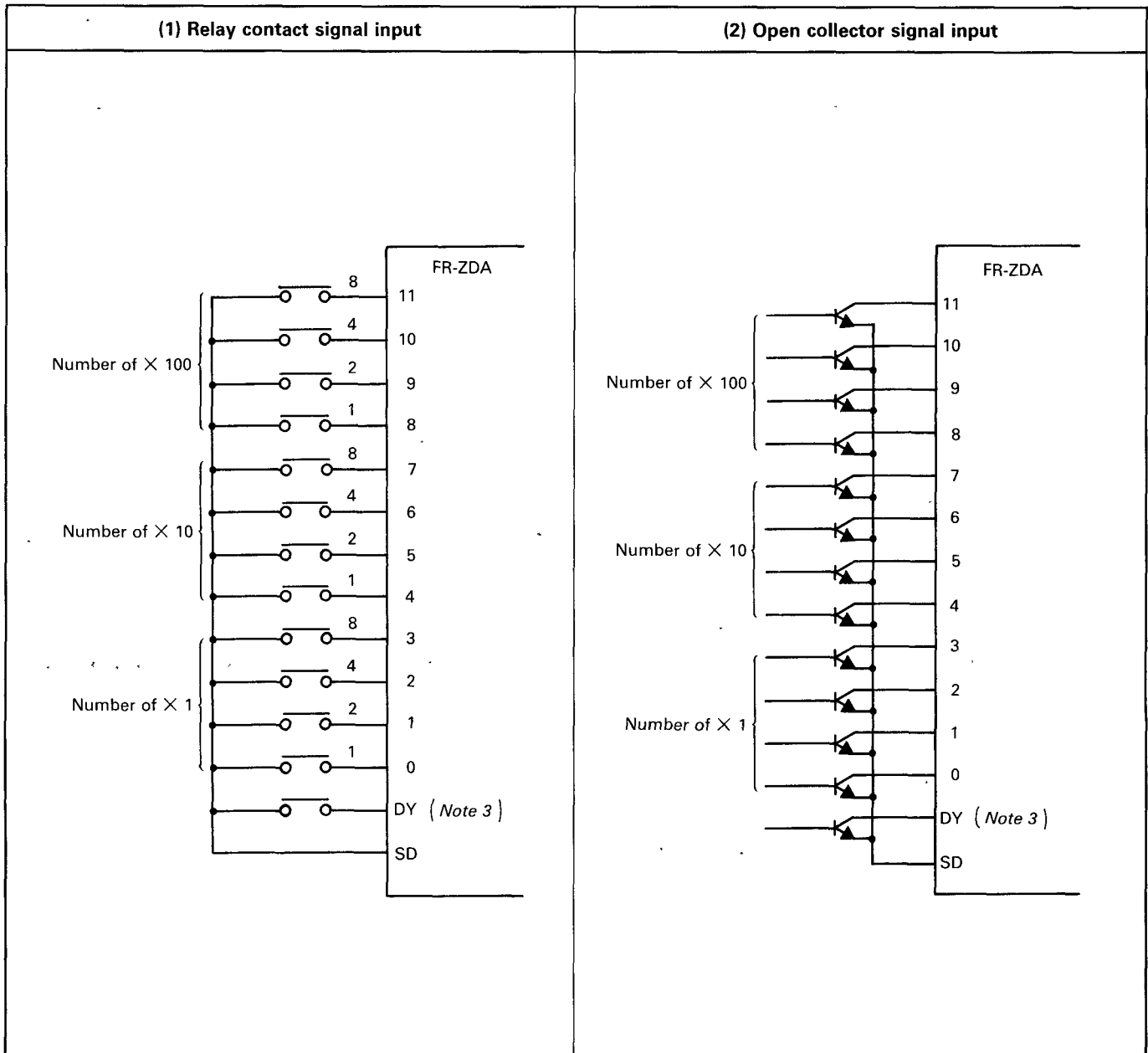
Check point

- Check that the unit connector has been fitted into the inverter connector at the correct position.
- Check that there is no clearance between the connectors.



3. WIRING

3.1 Digital Input Signals



Note: 1. A microcurrent switching contact relay should be used for the relay contact signal.

2. A transistor of the following specifications should be used for the open collector signal:

Electrical characteristics of the transistor used

- $I_c \geq 100\text{mA}$
- $V_{CE} \geq 50\text{V}$
- If $I_c = 10\text{mA}$, the base current should be specified so that V_{CE} voltage is 0.5V max.

3. The DY (data read timing) terminal is connected with the SD terminal by the jumper. Remove the jumper when using the DY terminal.

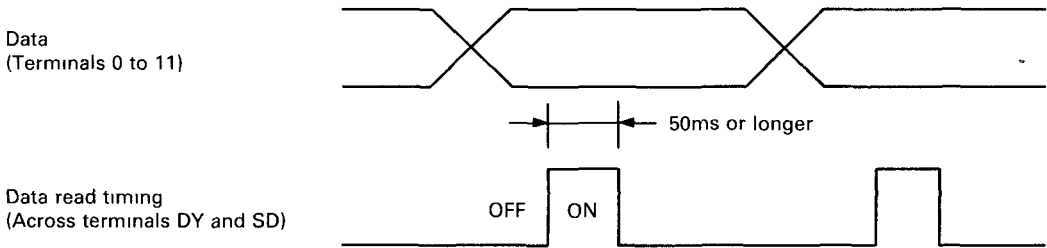
3.2 Terminals

Terminal Symbol	Description
0 to 11	Digital signal input terminals (frequency reference signal terminals) To input 3-digit BCD (999 max) or 12-bit binary (FFF H max.) signals using relay contact or open connector.
DY	Data read timing input signal Use when a digital signal read timing signal is required Data is only read while the DY and SD terminals are connected
SD	Common terminal Used for data input signals and data read timing signal.

Note: Terminal screw size = M3

3.3 "DY" Terminal

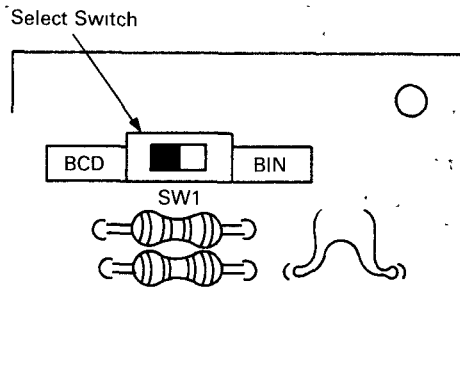
To read the output signal from the FR-ZDA to the inverter at given timings, remove the jumper from the DY and SD terminals
To continuously read the output signal, connect the DY and SD terminals by the jumper



4. ADJUSTMENTS

(1) Selection of Digital Input-Signal Type

Select either of the BCD (3-digit) or binary signal input. Set the select switch (SW1) to BCD to input BCD signals and to BIN to input binary signals. SW1 is set to BCD before shipment.



(2) Maximum output frequency

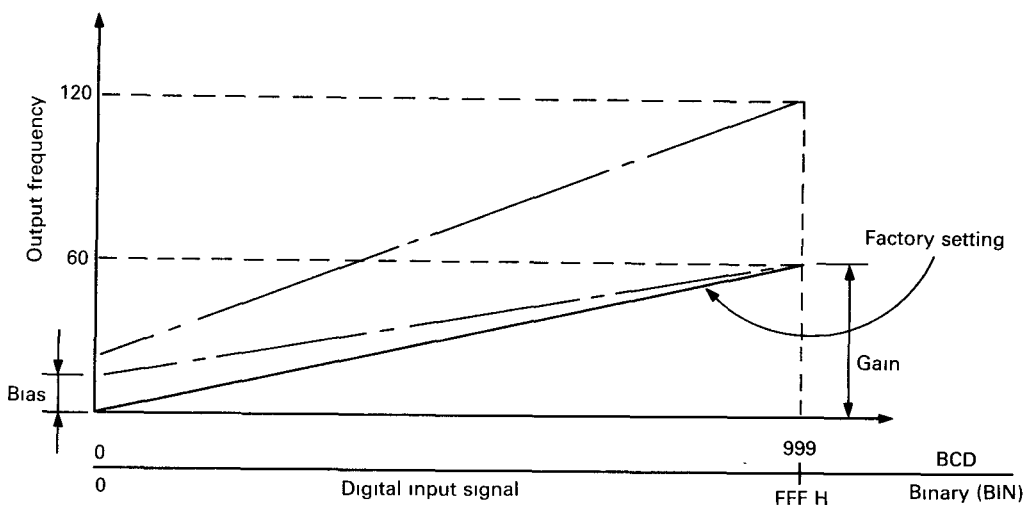
The maximum output frequency is the "gain" set value (see paragraph (3)) when the inverter is operated by digital input signals.

To set the maximum output frequency beyond 60Hz, change the "gain" by the parameter unit.

(3) Bias and gain adjustments

Bias and gain are adjustable with respect to the digital input signal

Table 1 shows the factory-set values of bias and gain. These values may be changed by the parameter unit (FR-PU01).

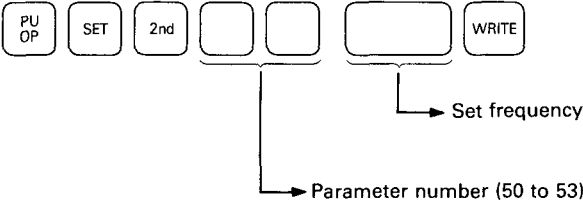


- Bias Define the output frequency for input 0.
- Gain Define the output frequency for input 999 (BCD) or FFF H (binary).

Input Signal	Function	Parameter Number	Setting Range	Factory Setting
BCD	Bias	50	0 to 360Hz	0Hz
	Gain	51	0 to 360Hz	60Hz
Binary	Bias	52	0 to 360Hz	0Hz
	Gain	53	0 to 360Hz	60Hz

Table 1 Bias and Gain Adjustment Ranges

Memo: Bias and gain setting by using the parameter unit



(4) Compensation input (analog signal) with respect to digital signals

Set parameter 54 to "compensation enable" by the parameter unit to operate the inverter by switching the input signal between the digital and analog (across terminals 1E or 1K and 5) signals or to compensate for digital input signals in reference to analog signals (across terminals 1E or 1K and 5) .

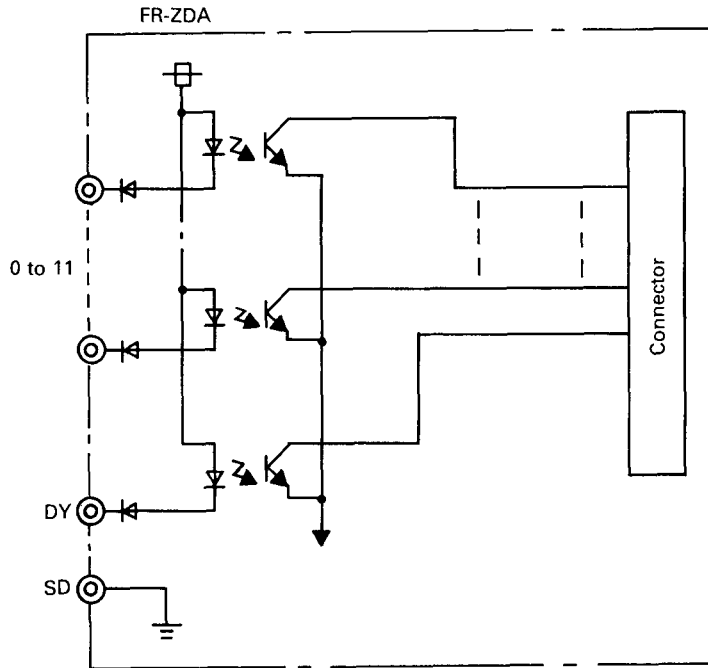
Parameter Number	Set Value	Analog Compensation Input Setting
54	0	Compensation disable (factory setting)
	1	Compensation enable

Note: Analog signals cannot be used when the set value of parameter "54" is 0 (factory setting).

(5) Acceleration/deceleration time

The acceleration/deceleration time is the period required to reach the "frequency at 5V input" set in parameter 20.

5. BLOCK DIAGRAM



6. INSTRUCTIONS

(1) Digital input signals are restricted as follows:

- When BCD input is selected, 0A H to 0F H entered are invalid (ignored) and operation is performed with previous inputs.

(2) This option unit is designed for use in the FR-Z200 series inverters. It cannot be used with the other series of inverters.

(3) The option unit must not be used outside the inverter.

(4) The ALARM lamp is lit and the parameter unit display shows *E.OPT* (E.OPT) to indicate that the inverter has stopped due to a connection fault (e.g. the connector has loosened) during run. At this time, check the connector.

7. SPECIFICATIONS

- Digital input signal types 3-digit BCD or 12-bit binary
- Digital input signal selection By the digital signal select switch.
- Input form Contact signal or open collector input
- Adjustment functions (1) Bias and gain
(2) Analog compensation input



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