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# TOSVERT VF-MB1

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## Hit and stop control

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### **Toshiba Schneider Inverter Corporation**

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## 1. Introduction

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TOSVERT VF-MB1 has hit and stop control for material handling and car transfer horizontal or vertical. The control enables smooth deceleration and stopping by limit switches. And it can keep the stop condition on contact state. This instruction manual explains the hit and stop control of VF-MB1.

<Notice>

Instruction manual of VF-MB1 explains the hit and stop control.

This manual explains the control more and more include the detail of the factory specific coefficient parameters.

## 2. Hit and stop control

Hit and stop control enables smooth deceleration and stopping for material handling and car transfer horizontal or vertical.

The inverter decelerates to setting frequency by limit switch signal and stops at hit and stop torque setting or less. And it can continue the stop condition on contact state at hit and stop continuation torque setting or less.

### 2.1 Hit and stop <F382=1>

The inverter decelerates to the setting frequency (F383) and stops smoothly by limit switches.

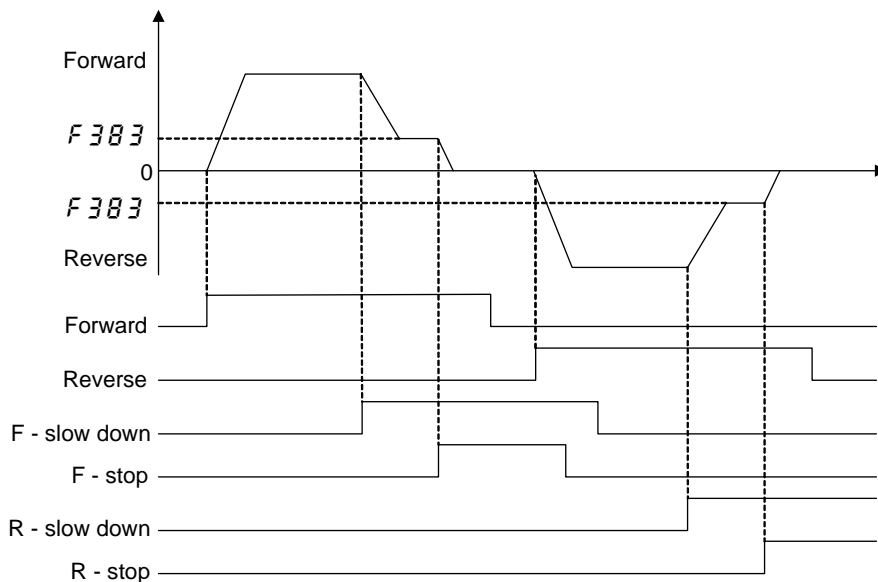
Title	Function	Adjustment range	Default setting
F382	Hit and stop control	0: Disabled, 1: Enabled, 2: -	0
F383	Hit and stop control frequency	0.1-30.0 (Hz)	5.0

1) Set the parameter  $F382=1$ .

2) Assign the following functions to the input terminals. You can operate the hit and stop control by ON/OFF of the terminals.

Input terminal function		ON	OFF
140 (141)	Forward deceleration (Inversion)	Forward operation toward F383 setting	Clear
142 (143)	Forward stop (Inversion)	Forward stop	Clear
144 (145)	Reverse deceleration (Inversion)	Reverse operation toward F383 setting	Clear
146 (147)	Reverse stop (Inversion)	Reverse stop	Clear

<Sample of sequence diagram>



## 2.2 Hit and stop continuation <F382=2>

The inverter decelerates to the setting frequency and stops smoothly by the input signal. After hit and stop time, it continues the stop conditions on contact state at hit and stop continuation torque setting or less.

<Notice>

This paragraph explains the parameters include the factory specific coefficient parameters.

### 2.2.1 Parameter setting

Title	Function	Adjustment range	Default setting
F382	Hit and stop control	0: Disabled 1: Enabled 2: Enabled (Hit and stop continuation)	0
F383	Hit and stop control frequency	0.1-30.0 (Hz)	5.0
F384 *1	Hit and stop torque	0-100 (%)	100
F385 *1	Hit and stop time	0.0-25.0 (s)	0.3
F386 *1	Hit and stop continuation torque	0-100 (%)	50

\*1: The factory specific coefficient parameters in the instruction manual of VF-MB1

#### (1) Description

The inverter decelerates to the hit and stop control frequency (F383) smoothly by the input signal. Hit and stop torque (F384) is the torque limit at the time. Then the machinery hit the stop target. After hit and stop time (F385), it continues the stop conditions on contact state at hit and stop continuation torque setting (F386) or less. The inverter outputs the signal of the stop contact state. The output signal turns off when the operation command turns off.

#### (2) Parameter setting

##### 1) Set the parameter F382=2.

Note) The setting value 2 is out of adjustment range in the instruction manual of VF-MB1.

##### 2) The inverter decelerates the hit and stop control frequency (F383) after input the inverse slow operation signal.

Set the F383 for the motor.

Note) If you set the large value to F383 for gear motor, it is possible to break the gear.

##### 3) Set the F384 to F386 for the motor.

If you set the small value to F386, it is possible that the control instability occurs.

Note) The parameters are factory specific coefficient parameters in the instruction manual of VF-MB1.

##### 4) Assign the following function to the input terminal.

You can operate the hit and stop control by ON/OFF of the terminal.

Input terminal function	
150 (151)	Inverse slow operation (Inversion)

Note) The input terminal function: 140(141) and 144(145) are valid for F382=2. The inverter operates toward the F383 setting frequency when the terminals turn on.

Set to the 150(151) for the hit and stop continuation control.

5) Assign the following function to the output terminal if necessary.

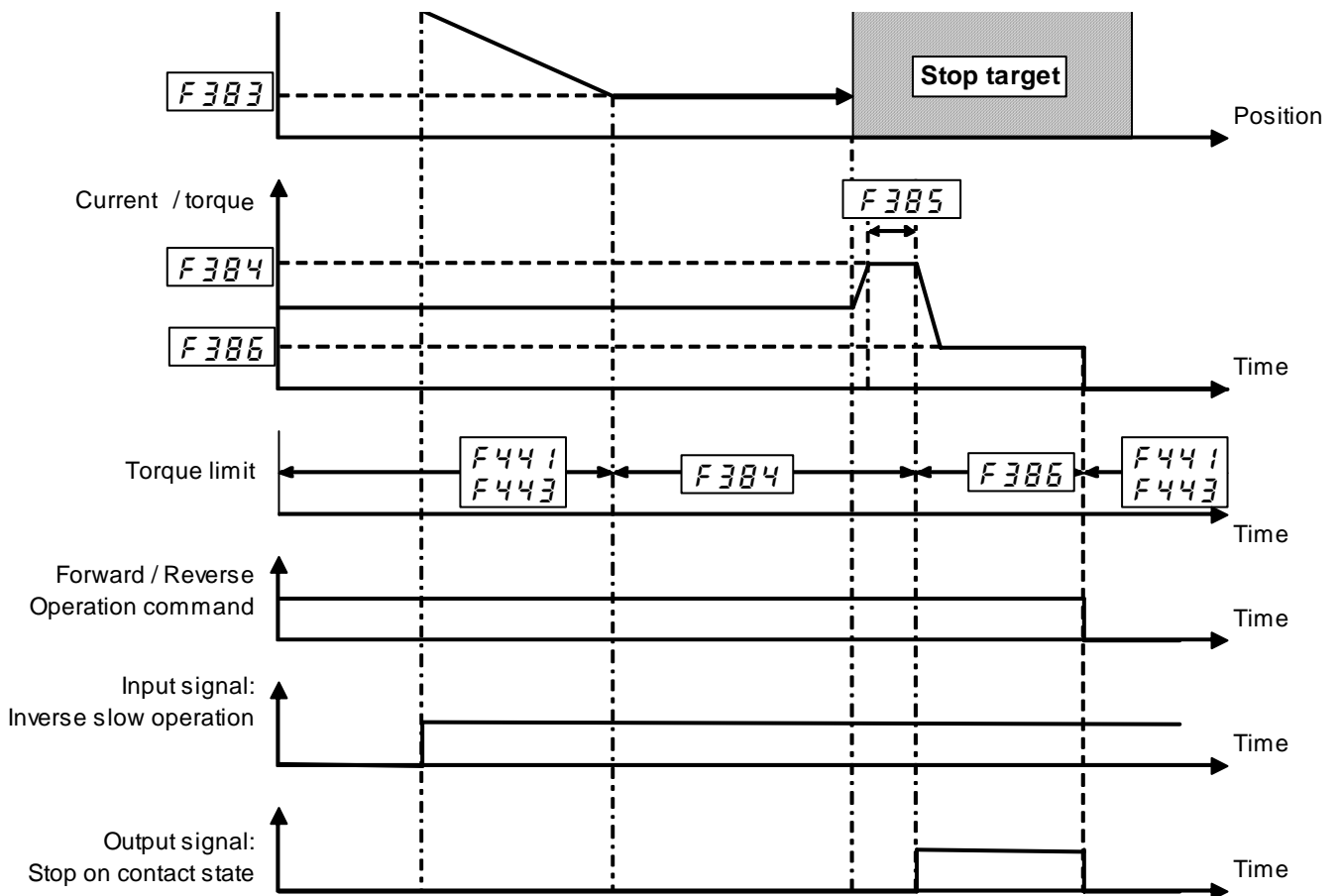
Input terminal function	
174 (175)	Stop on contact state (Inversion)

Note) The output conditions depend on *F 384* and *F 385* setting.

The signal is output in case that the load torque is *F 384* or more with *F 385* setting time even though the motor does not hit the stop target.

## 2.2.2 Sequence diagram

Sequence diagram of the hit and stop control is following.



Title	Function	Adjustment range	Default setting
<i>F 383</i>	Hit and stop control frequency	0.1-30.0 (Hz)	5.0
<i>F 384</i>	Hit and stop torque	0-100 (%)	100
<i>F 385</i>	Hit and stop time	0.0-25.0 (s)	0.3
<i>F 386</i>	Hit and stop continuation torque	0-100 (%)	50
<i>F 441</i>	Power running torque limit 1 level	0-249(%), 250:Disabled	250
<i>F 443</i>	Regenerative braking torque limit level 1	0-249(%), 250:Disabled	250

Note1) If you input the inverse operation signal after the output signal of stop on contact state turned on, the output signal becomes OFF. The inverter operates the following though the output signal is OFF.

\*The inverter starts the inverse operation at the frequency of  $F383$  and the torque of  $F384$ . And it continues the operation until it has passed through the receiving point of the inverse slow operation signal.

\*The inverter accelerates to the frequency reference after passing the receiving point. The torque limit levels change to  $F441$  (Power running torque limit 1 level) and  $F443$  (Regenerative braking torque limit level 1).

Note2) If you input the inverse operation signal between the receiving point of the inverse slow operation signal and the stop target, the inverter operates the following.

\*The inverter decelerates to 0Hz. And it starts to the inverse operation at the frequency of  $F383$  and the torque of  $F384$ .

\*After starting of the inverse operation, the operation is same as Note1).

