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**TOSVERT VF-AS1**

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**Traverse control Instruction Manual**

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~ For textile machines ~

**Toshiba Schneider Inverter Corporation**

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# 1 . Introduction

The VF-AS1 inverter has a traverse function useful especially for textile machines. Before using this function, please read this instruction manual carefully along with the instruction manual included with your inverter so that you can use the function properly and effectively.

# 2 . Parameters for setting the traverse function

The parameters in Table 1 are used for traverse operation shown in Figure 1.

Table 1: Traverse function setting parameters

Title	Function	Adjustment range	Default setting
<i>F980</i>	Traverse selection	0:Disabled 1:Enabled (Note)	0
<i>F981</i>	Traverse acceleration time	0.1~120 sec.	25.0 sec.
<i>F982</i>	Traverse deceleration time	0.1~120 sec.	25.0 sec.
<i>F983</i>	Traverse step	0.0~25.0%	10.0%
<i>F984</i>	Traverse jump step	0.0~50.0%	10.0%

Note: To perform traverse operation, the traverse permission signal 134 (135 [inverse]) needs to be assigned to an input terminal.

The settings of the above parameters (*F981* to *F984*) take effect once every half cycle of traverse operation.

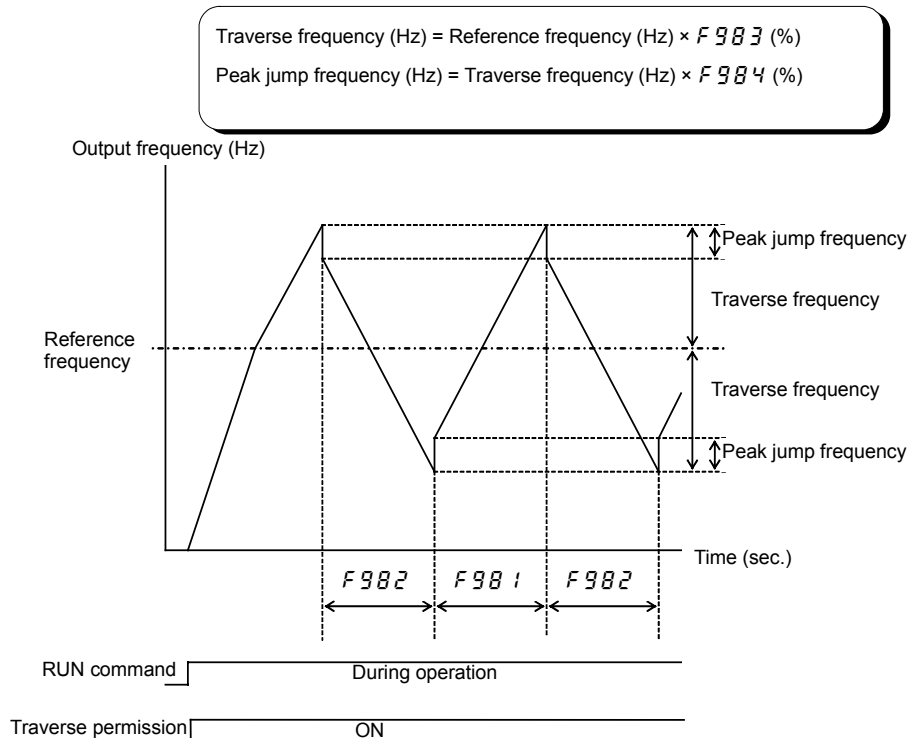


Fig. 1: Traverse operation

## 3 . Caution about the use of the traverse control

Keep the following information in mind when using the traverse function.

### Caution about the use of a potentiometer

If an external potentiometer (analog input) is used to set the reference frequency, an error of analog input may occur. If such an error becomes a problem, the operation panel or the preset speed operation function should be used instead. The reference frequency can be checked with the status monitor function (operation frequency command).

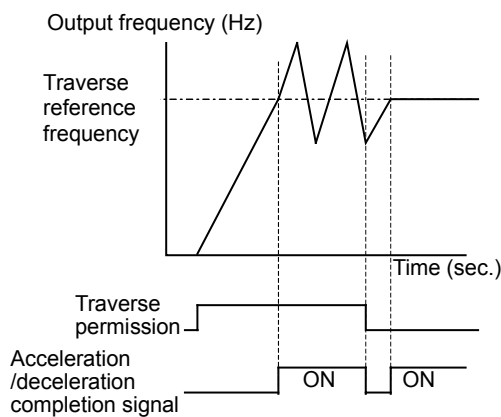
### Suspension of traverse operation

Traverse control does not work in the acceleration/deceleration period before traverse starting.

### About the speed reach detection band ( $F 102$ ) (Output terminal functions 6 and 7 (completion of acceleration/deceleration))

On completion of acceleration, an acceleration/deceleration completion signal is issued in relation to the traverse reference frequency. If a traverse permission signal is OFF in the course of traverse operation, an acceleration/deceleration completion signal is OFF since the output frequency reaches to the frequency range set with  $F 102$  (speed reach detection band). Because this output signal is effective to the output frequency in the condition that a traverse permission signal is OFF. (Figure 2)

Furthermore, the setting of  $F 102$  (speed reach detection band) determines also the traverse operation start point, and therefore specifying a high frequency for  $F 102$  makes it possible to accelerate the machine, while continuing traverse operation. Note that the traverse frequency and the peak jump frequency before the output frequency reaches to the reference frequency are different from those during normal operation, and they vary with the output frequency during acceleration. (Figure 3)



\*  $F 102=0$

Fig. 2

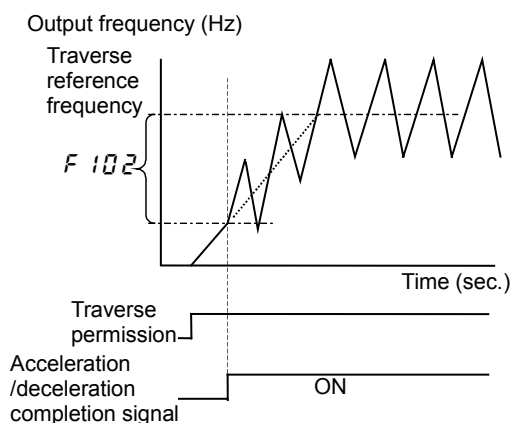


Fig. 3

### About specified speed reach signals ( $F 101$ and $F 102$ ) (output terminal functions 8 and 9 (specified speed))

The specified speed reach signal set with  $F 101$  (Speed reach setting frequency) and  $F 102$  (Speed reach detection band) operates on output frequency, including traverse operation frequency.

## Relationship between traverse reference frequency and output frequency limit

The relationship between the traverse reference frequency and the output frequency limit is described. The output signals of lower limit frequency, the upper limit frequency and the low-speed detection are effective to the traverse reference frequency during traverse operation.

Traverse reference frequency : Between  $L_L$  (lower limit frequency) and  $U_L$  (upper limit frequency) or  $F_H$  (maximum frequency), whichever is lower  
 Output frequency : Between frequency set with  $F_{243}$  (Stop frequency setting) and  $U_L$  (upper limit frequency) or  $F_H$  (maximum frequency), whichever is lower

## Setting parameters of the control terminal

To carry out traverse operation, set  $F_{980}$  to 1 (traverse operation), assign the function **134 (135 [inverse])** (traverse permission) to an unassigned input terminal for parameters  $F_{111}$  to  $F_{125}$ , and  $F_{154}$  to  $F_{157}$ , and send a traverse permission signal from an external device to the inverter. If an external input terminal is not used to turn on and off the traverse function, set  $F_{110}$  (always ON function selection 1) to **134**.

Example: To assign the traverse permission signal to the S3 terminal

Title	Function	Adjustment range	Example of setting
$F_{117}$	Input terminal function selection 7 (S3)	0~135	134 (Traverse permission)

Note: If the traverse function is turned off during traverse operation using a parameter or by the signal from the control terminal, the operation mode changes from traverse operation to constant speed operation according to the acceleration/deceleration time setting (see Figure 4).

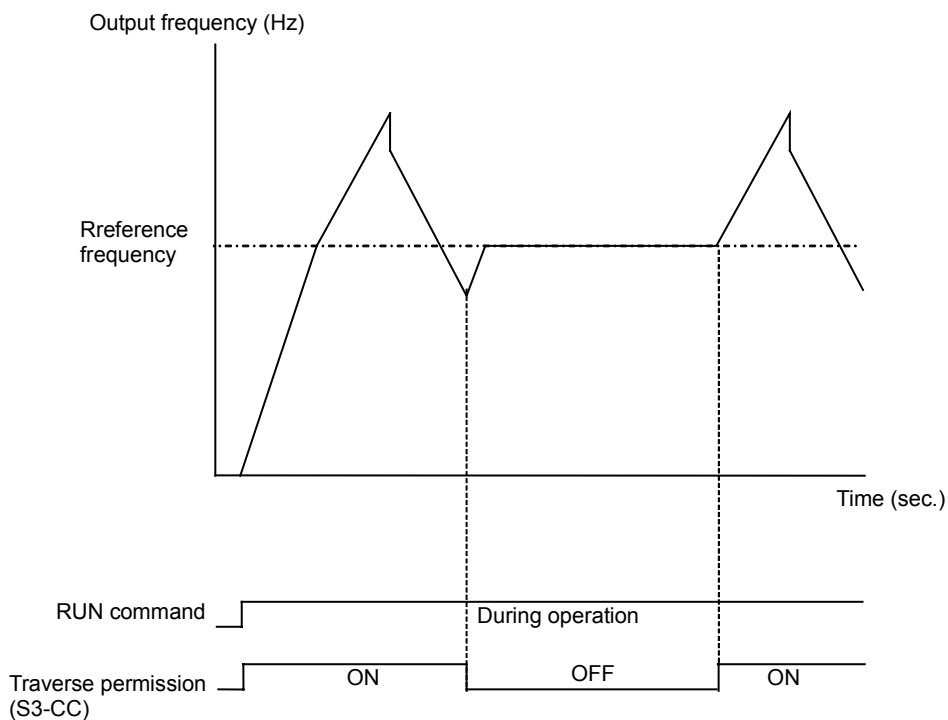


Fig. 4 Timing when the traverse function is off

The traverse operation signal can be sent from inverter to external devices. To do so, assign the functions **124 (125 [inverse])** (Traverse operation) and **126 (127 [inverse])** (During traverse deceleration) to unassigned output terminals for parameters *F 130* to *F 138*, *F 168* and *F 169*.

Example: To send traverse operation signal from the output terminal OUT1 and traverse deceleration signal from the output terminal OUT2

Title	Function	Adjustment range	Example of setting
<i>F 130</i>	Output terminal function selection 1 (OUT1)	0~255	124 (Traverse operation)
<i>F 131</i>	Output terminal function selection 2 (OUT2)	0~255	126 (During traverse deceleration)

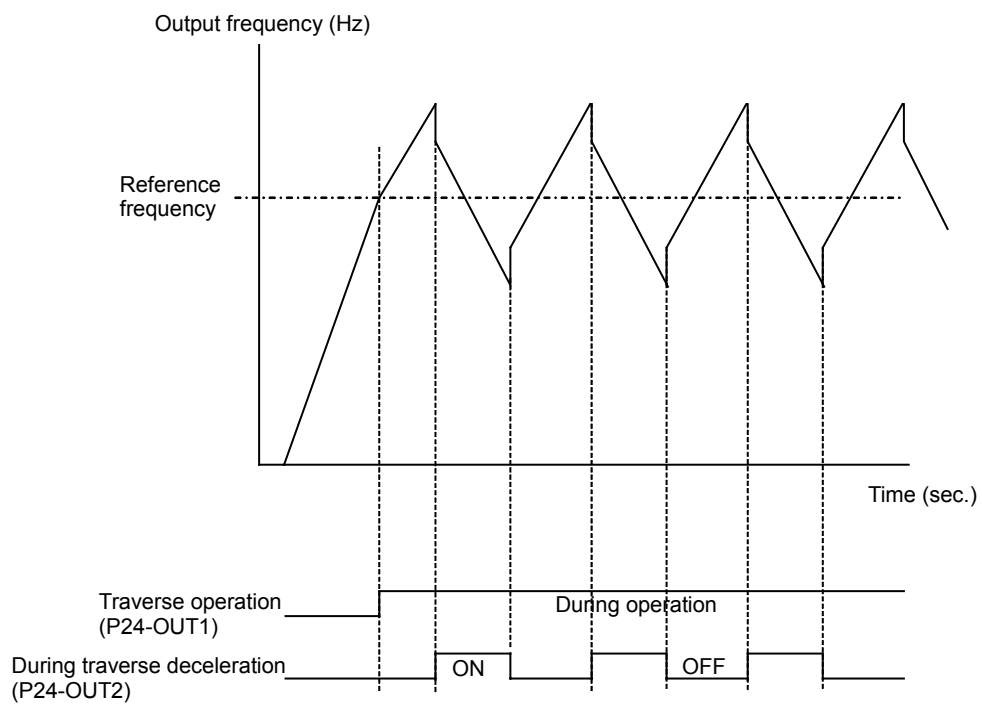


Fig. 5 Traverse output signals