TOSHIBA

TOSVERT VF-S11

Braking setting functions

Toshiba Schneider Inverter Corporation

1. Braking setting functions

$\boxed{F\,3\,4\,2}$: **Braking mode selection**

$\boxed{F\,3\,4\,3}$: **Release frequency**

$\boxed{F\,3\,4\,4}$: **Release time**

$\boxed{F\,3\,4\,5}$: **Creeping frequency**

$\boxed{F\,3\,4\,6}$: **Creeping time**

-Function
  Setting functions to control braking timing.

- Parameter setting for braking setting function

Title	Function	Setting range	Default setting
$F\,3\,4\,2$	Braking mode selection	0: Disabled 1: Enabled (forward run) 2: Enabled (reverse run) 3: Enabled (operating direction)	0
$F\,3\,4\,3$	Release frequency	$F\,2\,4\,0$ ~ 20.0 [Hz]	3.0
$F\,3\,4\,4$	Release time	0.00 ~ 2.50 [s]	0.05
$F\,3\,4\,5$	Creeping frequency	$F\,2\,4\,0$ ~ 20.0 [Hz]	3.0
$F\,3\,4\,6$	Creeping time	0.00 ~ 2.50 [s]	0.10

- Parameter setting of contact output signal for braking (ex. To use RY-RC output)

Title	Function	Setting range	Setting value
$F\,1\,3\,0$	Output terminal selection 1A (RY-RC)	0 ~ 255	46: BR (Braking sequence output) or 47: BRN (Inversion of braking sequence output)

Note) In case of others output terminal, it is deferent from parameter title.

  RY-RC: $F\,1\,3\,1$

  FLA-FLB-FLC: $F.\,1\,3\,2$

- Explanation of braking setting function

At starting the motor:

When the operation signal is 'ON', the brake release signal is 'ON' after getting the flux of magnetic induction before brake releasing.

The output torque of inverter is generated before the brake is released by outputting 'the frequency of the $F343$ setting' to 'the direction of the $F342$ setting'.

The motor is able to accelerate smoothly at the same time as releasing the brake because $F344$ function provides 'the delay of acceleration beginning '.

At stop the motor:

When the operation signal is 'OFF', the brake close signal is 'ON' after reaching the creeping frequency of $F345$ setting.   After that, the VF-S11 outputs creeping frequency while setting time of $F346$, and stops after delayed time of mechanical brake.

$F\,3\,4\,2$ **Braking mode selection**

0: Disabled

1: Enabled (forward run)

The rise operation is forward rotation of motor at RISE/DESCENT action.

The direction of inverter output frequency ($F\,3\,4\,3$) is forward direction regardless of FORWARD/REVERSE drive.

2: Enabled (reverse run)

The rise operation is reverse rotation of motor at RISE/DESCENT action.

The direction of inverter output frequency ($F\,3\,4\,3$) is reverse direction regardless of FORWARD/REVERSE drive.

3: Enabled (operating direction)

This value is for the horizontal operation.

The direction of inverter output frequency ($F\,3\,4\,3$) is same as direction of drive.

$F\,3\,4\,3$ **Release frequency**

The inverter outputs $F\,3\,4\,3$'s frequency to $F\,3\,4\,2$'s direction.   This function is for generating motor torque by slipping of the restrained motor.   By this, the motor starts smoothly when the brake is released.

The $F\,3\,4\,3$ setting value depends on load condition.   The standard setting is 'the slipping frequency' at rated output of applied motor.

$F\,3\,4\,4$ **Release time**

The release time is time to maintain frequency of $F\,3\,4\,4$ setting at start.

The standard setting is delayed time of mechanical brake.

$F\,3\,4\,5$ **Creeping frequency**

The 'close brake signal' outputs $F\,3\,4\,5$'s frequency while $F\,3\,4\,6$'s setting time at stop.

The f345 setting value depends on load condition.   The standard setting is

The $F\,3\,4\,5$ setting value depends on load condition.   The standard setting is 'the slipping frequency' at rated output of applied motor.

$F\,3\,4\,6$ **Creeping time**

The creeping time is time to maintain frequency of $F\,3\,4\,5$.

The standard setting is a little more than delayed time of mechanical brake.

Timing chart of brake setting function

Operation Signal

Output for brake

Between terminals RY-RC

$F\,346$ Creeping time

Brake

OFF

ON

$F\,344$ Release time

Output frequency

Start of drive

Stop instruction
And,
Driving frequency $\leqq$ start frequency

Area of brake open
$F\,343$ Release frequency
$F\,345$ Creeping frequency

Exciting current

Preliminary excitation

Stop

Preliminary excitation current
Regular exciting current

Torque current of brake

Beginning to use inverter torque instead of brake torque