TOSVERT VF-S15

Shock monitoring function Instruction Manual

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1. Introduction

TOSVERT VF-S15 is equipped with shock monitoring function.

In case output current or torque exceeds or lowers the set level for a certain amount of time, the inverter outputs the alarm signal from output terminals or trips (inverter stops). Temporary change in current or torque can be eliminated from detecting conditions.

Shock monitoring function enables monitoring the load side and protecting the equipments in case of load abnormality including the detection of excessive loading of conveyors and breakage of conveyor belt.

2. Shock monitoring function

When output current or torque exceeds or lowers the set level for a certain amount of time, shock monitoring function outputs alarm signal from the output terminals or the inverter trips.

Over-torque trip/ alarm and small current trip/alarm have similarly functions as the shock monitoring functions. The difference is as described below;

	Shock monitoring function	Over-torque trip/ alarm	Small current trip/ alarm
Main parameters	$F590$ (Shock monitoring)	$F615$ (Over-torque trip/ alarm selection)	$F610$ (Small current trip/ alarm selection)
Subject of detection: torque/ output current	Torque detection or output current detection are selectable	Torque detection	Output current detection
Detection method	Over-current/ torque or Low-current/ torque are selectable	Over-torque	Low-current
Action at detection	Trip or alarm are selectable		
Detection level	0-250(%)	1-250 (%)	0-150 (%)
Detection time	0-10.0 (s)	0-10.0 (s)	0-255 (s)
Detecting conditions	-Detection waiting time can be set at start-up -Always detecting or during operation except acceleration/deceleration are selectable *	Always detecting	Always detecting

* Temporary change in output current or torque at start-up or acceleration/ deceleration can be eliminated from detecting conditions.

3. Setting and operation of shock monitoring function

3.1 Related parameters

Set items and conditions of detection using parameters.

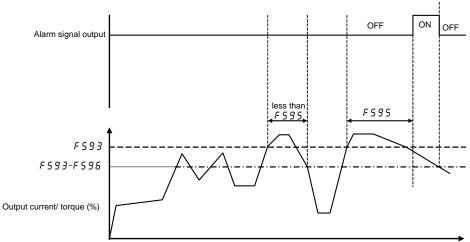| Title	Function	Adjustment range	Default setting
$F590$	Shock monitoring	0: Disabled 1: Current detection 2: Torque detection	0
$F591$	Shock monitoring trip/alarm selection	0: Alarm only 1: Tripping	0
$F592$	Shock monitoring detection direction selection	0: Over-current/ torque detection 1: Low-current/ torque detection	0
$F593$	Shock monitoring detection level	0-250 (%)	150
$F595$	Shock monitoring detection time	0.0-10.0 (s)	0.5
$F596$	Shock monitoring detection hysteresis	0-100 (%)	10
$F597$	Shock monitoring detection start waiting time	0.0-300.0 (s)	0.0
$F598$	Shock monitoring detection action selection	0: During operation 1: During operation (except acceleration/ deceleration)	0

3.2 Operation

1) Over-current/ torque detection

<Example>

　Select object of detection with $F590$: $F590 = 1$ (Current detection), 2 (Torque detection)

　$F591 = 0$ (Alarm only)

　$F592 = 0$ (Over-current/ torque detection)

　Output terminal function: 182 (SUPA) Shock monitoring pre-alarm signal

When setting $F591 = 1$ (Tripping), inverter trips after low-current/ torque is detected for the period of time set with $F595$. Then, alarm signal remains ON.

2) Low-current/ torque detection

<Example>

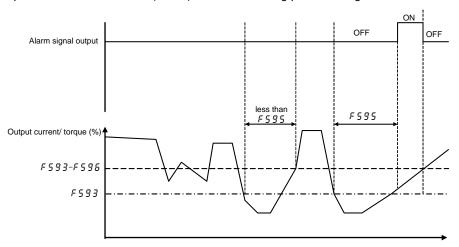Select object of detection with $F590$: $F590 = 1$ (Current detection), 2 (Torque detection)

$F591 = 0$ (Alarm only)

$F592 = 1$ (Low-current/ torque detection)

Output terminal function: 182 (SUPA) Shock monitoring pre-alarm signal

When setting $F591 = 1$ (Tripping), inverter trips after low-current/ torque is detected for the period of time set with $F595$. Then, alarm signal remains ON.
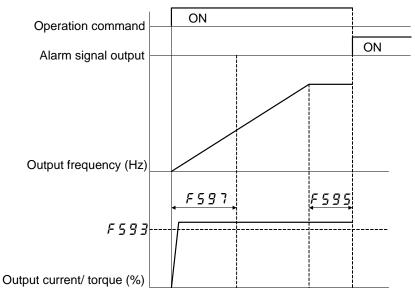
3) In case of setting $F597$ and $F598$

Waiting time until shock monitoring detection after start-up (after operation command is on) can be set by $F597$ (Shock monitoring detection start waiting time).

If eliminating the time during acceleration/ deceleration from detecting conditions, select $F598$ (Shock monitoring detection action selection) = 1.

<Example>

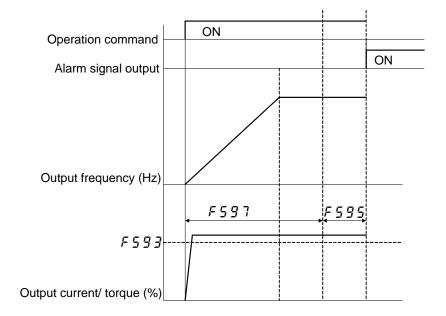$F598 = 1$, $F597 = 5$ (s), and acceleration exceeds 5 seconds.

* In case of less than $F595$, and the inverter is in acceleration/ deceleration status or over-current stall during detection activates, detection time will be reset.

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<Example>

$F598= 1$, $F597= 15$ (s), and acceleration continues for less than 15 seconds.

Operation command	ON ... ON
Alarm signal output	
Output frequency (Hz)	
$F593$	$F597$ $F595$
Output current/ torque (%)	

* In case of less than $F595$, and the inverter is in acceleration/ deceleration status or over-current stall during detection activates, detection time will be reset.