

TOSVERT VF-AS3

Rescue operation Instruction Manual

- Contents -

1. Introduction 1

2. Rescue operation function 2

3. Setting and operation 3

1. Introduction

VF-AS3 is equipped with rescue operation function which activates for back up operation using power supply from battery. This instruction manual explains rescue operation function of VF-AS3.

Memo

- Parameters of the rescue operation are parameters for manufacturer in the instruction manual.

2. Rescue operation function

Even the case of a power failure, the rescue operation enables the inverter to continue operation by switching its power supply to the battery. It is used for the purpose of evacuation etc. after the power failure.

When a power failure occurs during run, the undervoltage protection activates and the inverter stops. [MOFF] is displayed.

In case of a momentary power failure, the inverter continues to run or restarts smoothly by the setting parameters of [F301: Auto-restart] and [F302: Regenerative power ride-through].

If you cannot use Auto-restart and Regenerative power ride-through or if a power failure continues for a longer period of time, the rescue operation enables the inverter to continue minimum range of operation by supplying power from the battery.

During the undervoltage protection action (during [MOFF] display), switch the power supply to the battery and input the rescue operation signal to the input terminal. After the necessary operation, turn off the rescue operation signal and turn off the power supply from the battery. Then, the inverter returns to normal operation by commercial power supply at power recovery.

When this function is activated, input phase loss detection is disabled regardless of the setting of [F608: Input phase loss trip].

Memo

- Parameters of the rescue operation are parameters for manufacturer in the instruction manual.

3. Setting and operation

■ Parameter setting

Title	Parameter name	Adjustment range	Unit	Default setting
F297	Rescue operation upper-limit frequency Note 1)	0.0: Disabled 0.1-30.0	Hz	0.0
F298	Rescue operation DC voltage Note 1)	*1	V	*1

Note 1) These are parameters for manufacturer in the instruction manual.

Note 2) Set [F640: DC supply input]="1: Enabled" when you use the following type-form and the inverter CPU version is before 102.

3-phase 240V class: VFAS3-2110P to 2550P

3-phase 480V class: VFAS3-4220PC to 4132KPC

*1

Voltage class	Inverter type-form		Adjustment range	Unit	Default setting
3-phase 240V	VFAS3-	2004P to 2075P	120-168	V	120
		2110P to 2550P	96-168		120
3-phase 480V	VFAS3-	4004PC to 4185PC	168-336	V	240
		4220PC to 4750PC	264-336		264
		4900PC to 4280KPC	168-336		240

The rescue operation is enabled when the input terminal assigned "136: Rescue operation" is ON during the undervoltage protection action (during [MOFF] display).

■ [F297: Rescue operation upper-limit frequency] setting

Set the upper-limit frequency during the rescue operation to [F297].

Even though [F297] is set the value under [LL: Lower limit frequency], [F297] is the upper-limit frequency during the rescue operation.

As battery voltage lowers by the operation, leave the margin for the value of [F297]. In addition, if the voltage to the motor is lower than the V/f value, the current increases. Set [F297] using the formula below to avoid such current increase.

$$[F297] < ([vL]/[vLv]) \times (\text{Battery voltage} / \sqrt{2})$$

Example

When [vL]="60(Hz)", [vLv]="200(V)", and battery voltage =120Vdc

[F297] < 25Hz: Set to approximately 20Hz.

Set [F297]="0.0: Disabled" when you don't use the rescue operation.

■ [F298: Rescue operation DC voltage] setting

This is the lowest voltage for the rescue operation. The rescue operation is enabled when the undervoltage protection ([MOFF] display) is cleared for the voltage higher than [F298].

Set the lower value comparing to the battery voltage actually used with margin.

$$[F298] < \text{battery voltage (Vdc)}$$

Example

When 3-phase 240V class inverter and battery voltage = 120Vdc

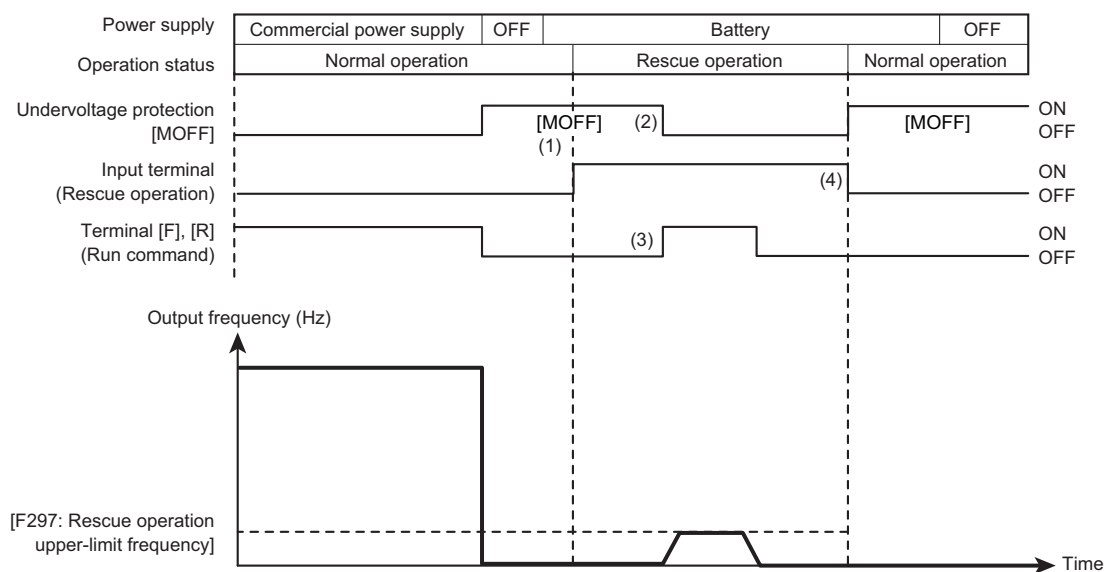
[F298] < 120V: Set to approximately 100V.

■ Rescue operation signal

The rescue operation is enabled when the rescue operation signal is ON during the undervoltage protection action (during [MOFF] display). Assign “136: Rescue operation” to an unused input terminal.

- The rescue operation signal is enabled only during the undervoltage protection action. When this signal is input during run, the inverter does not recognize the rescue operation signal.
- The output frequency during the rescue operation is limited by [F297: Rescue operation upper-limit frequency].
- Input phase loss detection during rescue operation is disabled regardless of the setting of [F608: Input phase loss trip].

■ Example



1. Switch to the battery
 - Undervoltage protection activates after power failure and [MOFF] is displayed.
 - Be sure to turn off the commercial power supply so that the voltage is not applied to the battery when the commercial power supply will be recovered.
 - Switch to the battery. [MOFF] is still displayed.
 - Display of [MOFF] may disappear by power interruption after the power failure and during switching to the battery.
2. Input of the rescue operation signal
 - The rescue operation is enabled when the input terminal assigned “136: Rescue operation” is ON during the undervoltage protection action (during [MOFF] display).
 - Undervoltage protection ([MOFF] display) is cleared for the voltage higher than [F298: Rescue operation DC voltage].
3. Rescue operation
 - Rescue operation starts by the run command ON.
 - The output frequency is limited by [F297: Rescue operation upper- limit frequency] when the frequency command value is [F297] setting or more.
4. Rescue operation OFF
 - After necessary operation is completed, turn off the run command. The rescue operation is disabled by turning off the rescue operation signal.
 - Undervoltage protection activates and [MOFF] is displayed.
 - Turn off the battery.
 - Normal operation is enabled by turning on the commercial power after power supply recovery.