

## **TOSVERT VF-nC3**

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### **Explanation of Load reduction**

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**Load reduction at use condition  
and ambient temperature, and installation method**

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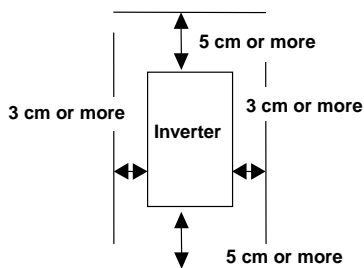
## 1. About VF-nC3's temperature environment and load reduction

VF-nC3 has the maximum applied load (load reduction ratio to rated current) under each condition for the use in various kinds of environments, but please note that load reduction can be required other than standard condition of use, ambient temperature, and mounting environment conditions.

### Normal installation

Select an indoor location with good ventilation, and then install it upright on a flat metal plate.

When installing multiple inverters, leave at least 5 cm of space between each inverter and install them aligned horizontally. When using the inverter in locations with temperatures above 40°C, remove the protective label on the top of the inverter. And the output current reduction is necessary in locations with temperatures above 50°C,



## 2. VF-nC3's rated current

VF-nC3's rated current conditions are as follows;

PWM carrier frequency : 4 kHz or less,

Ambient temperature : 40°C or less,

and as described in the tables 1.1 and 1.2.

Load reduction is necessary depending on the conditions of use, mounting environment, and PWM carrier frequency settings.

Note: Display standard of inverter current (monitor display and parameter set value) is 100%=rated current (PWM carrier frequency: 4 kHz or less, ambient temperature: 40°C or less).

Table 1.1 Load reduction by PWM carrier frequency [Three phase/single phase 200V class]

VFNC3- VFNC3S-	Ambient Temperature	PWM carrier frequency		
		2k to 4kHz	5k to 12kHz	13k to 16kHz
2001P/PL	50°C or less	0.7A	0.7A	0.7A
2002P/PL	50°C or less	1.4A	1.4A	1.4A
2004P/PL	50°C or less	2.4A	2.4A	2.4A
2007P	40°C or less	4.2A	3.6A	3.0A
	Above 40 to 50°C	4.2A	3.2A	2.8A
2007PL	40°C or less	4.2A	3.2A	2.8A
	Above 40 to 50°C	4.2A	3.2A	2.8A
2015P/PL	40°C or less	7.5A	7.5A	7.1A
	Above 40 to 50°C	7.5A	7.1A	7.1A
2022P	40°C or less	10.0A	8.5A	7.5A
	Above 40 to 50°C	10.0A	7.5A	7.5A
2022PL	40°C or less	10.0A	9.1A	8.0A
	Above 40 to 50°C	10.0A	7.5A	7.5A
2037P	50°C or less	16.7A	14.0A	14.0A

Table 1.2 Load reduction by PWM carrier frequency [Single phase 100V class]

VFNC3S-	Ambient Temperature	PWM carrier frequency		
		2k to 4kHz	5k to 12kHz	13k to 16kHz
1001P	50°C or less	0.7A	0.7A	0.7A
1002P	50°C or less	1.4A	1.4A	1.4A
1004P	50°C or less	2.4A	2.4A	2.4A
1007P	50°C or less	4.2A	4.0A	4.0A

 : Rated current, and range available with rated current

Note: When using the inverter in locations with temperatures above 40°C, remove the protective label on the top of the inverter.

Each current value of the table is in condition of the normal installation and the following.

40°C or less: with the protective label on the top of the inverter

above 40°C : without the protective label on the top of the inverter

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### **3. VF-nC3's ambient temperature environment**

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VF-nC3's ambient temperature environment is -10 to +60°C, but load reduction ratio differs according to the following conditions;

#### Condition 1: Installation

1. Individual mounting with top protective label
2. Individual mounting without top protective label
3. Side by side mounting without top protective label
4. Horizontal mounting without top protective label
5. DIN rail mounting without top protective label
6. DIN rail and Side by side mounting without top protective label
7. Individual with EMC filter and top protective label
8. Individual with EMC filter without top protective label
9. Horizontal mounting with EMC filter without top protective label

#### Condition 2: Ambient temperature

40°C or less, above 40 to 50°C, above 50 to 60°C

#### Condition 3: PWM carrier frequency setting

2k to 4kHz, 5k to 12kHz

#### Condition 4: Cooling model

Self cooling model:

Single phase 100V class 0.4kW or less

Single phase 200V class 0.75kW or less

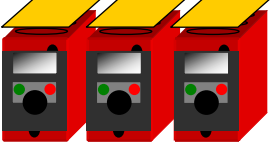
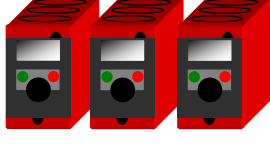
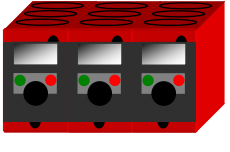
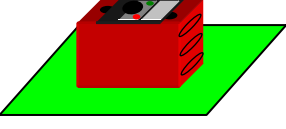
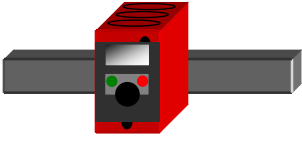
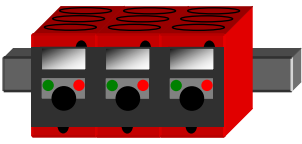
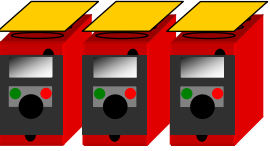
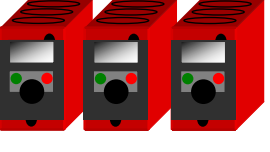
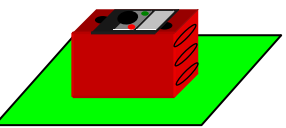
Three phase 200V class 0.75kW or less


Forced air-cooled model

Models except above

Note: For a side-by-side installation, remove the protective on top

Table 2.1 Load reduction by mounting conditions

No.	Mounting Conditions	Top protective Label	Figure	Ambient temperature (°C)	Self cooling model		Forced air-cooled model	
					2k to 4kHz	5k to 12kHz	2k to 4kHz	5k to 12kHz
1	Individual mounting	With		40 or less	Refer to Table 1.1 and 1.2			
				Above 40 to 50	85%	85% (95%)	90%	90% (100%)
				Above 50 to 60	75%	75%	75%	75% (90%)
2	Individual mounting	Without		40 or less	Refer to Table 1.1 and 1.2			
				Above 40 to 50	Refer to Table 1.1 and 1.2			
				Above 50 to 60	85%	75%	75 %	75% (95%)
3	Side by side mounting	Without		40 or less	100%	100%	100%	100%
				Above 40 to 50	80%	80% (90%)	90%	90% (100%)
				Above 50 to 60	60%	60% (65%)	70%	70% (90%)
4	Horizontal Mounting	Without		40 or less	75%	75%	100%	100%
				Above 40 to 50	50%	45%	90%	90% (100%)
				Above 50 to 60	—	—	75%	75%
5	DIN rail mounting	Without		40 or less	100%	100%	100%	100%
				Above 40 to 50	80%	80% (90%)	100%	100%
				Above 50 to 60	60%	60% (65%)	70%	70% (95%)
6	DIN rail and Side by side Mounting	Without		40 or less	80%	80%	100%	100%
				Above 40 to 50	65%	60%	90%	90% (100%)
				Above 50 to 60	—	—	70%	70% (90%)
7	Individual with EMC filter	With		40 or less	100%	100%	100%	100%
				Above 40 to 50	95%	90%	90%	90% (100%)
				Above 50 to 60	65%	65% (75%)	75%	75% (90%)
8	Individual with EMC filter	Without		40 or less	100%	100%	100%	100%
				Above 40 to 50	95%	90%	100%	100%
				Above 50 to 60	65%	65% (75%)	75%	75% (95%)
9	Horizontal Mounting with EMC filter	Without		40 or less	75%	75%	100%	100%
				Above 40 to 50	50%	45%	90%	90% (100%)
				Above 50 to 60	—	—	75%	75%

Note 1: Load reduction ratio (%) regards the value of Table 1.1 and 1.2 (ambient temperature: 40°C or less, PWM carrier frequency: 2k to 4kHz or 5k to 12kHz) as 100%.  means the range available with 100%.

Note 1: In case a side-by-side installation, remove the top protective label.

Note 3: The value in the ( ) are for single phase 200V -0.75, 2.2kW and three phase 200V -0.75, 2.2, 3.7kW.