

## ■ Additional sheet

### Compliance with Low Voltage Directive 2014/35/EU

Since 21 June 2023, EN61800-5-1 2007 / A1 (2017) / A11 (2021) has been harmonized standard listed on the Directive 2014/35/EU (Low Voltage) and Electrical Equipment (Safety) Regulations (S.I.2016/ 1101). This additional sheet is very important to use VF-nC3 inverter safely, prevent injury to yourself and other people around you as well as to prevent damage to property in the area. Thoroughly familiarize yourself with the symbols and indications shown in the VF-nC3 instruction manual (E6581595) accompanied with product and then continue to read this additional manual. See web page <https://www.toshiba-tips.co.jp/en/products/inverter/standard.html> for EU Declaration of Conformity and VF-nC3 instruction manual (E6581595)



## WARNING

 Mandatory action	<ul style="list-style-type: none"> <li>• Install proper short-circuit protective device between the power supply and the inverter (primary side). If proper short-circuit protective device is not installed, short circuit current cannot be shut down by inverter alone and it will result in fire. Integral solid state short circuit protection in the inverter does not provide branch circuit protection. Branch circuit protection must be provided in accordance with any local codes</li> <li>• Take into account the minimum required prospective short-circuit current of short-circuit protective device. If short circuit protective device does not work properly due to lower level short-circuit current, it will result in electric shock or fire.</li> <li>• Install the inverter into enclosure based on this manual, and install short-circuit protective device or power distribution devices based on the manufacturer manual. When they are installed with improper coordination, this will result in electric shock or fire.</li> </ul>
 Connect an earth to ground	<ul style="list-style-type: none"> <li>• The grounding wire must be connected securely. If the grounding wire is not securely connected, when the inverter has failure or earth leakage, this will result in electric shock or fire. This product has an increased leakage current &gt; 3.5 mA.</li> <li>• Use a protective ground conductor with at least 10 mm<sup>2</sup> (AWG 6) or two protective ground conductors with the cross section of the conductors supplying the power terminals. Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment. Otherwise, it will result in electric shock.</li> </ul>



\*PKR86020-01\*



## WARNING



- Read this manual and VF-nC3 instruction manual before installing or operating the inverter unit. Otherwise, it will result in electric shock, fire and other injuries.



Electric shock

- RISK OF ELECTRIC SHOCK -
- DANGEROUS VOLTAGE MAY EXIST FOR \_15\_MINUTES AFTER REMOVING POWER. It will result in electric shock.



## CAUTION



Mandatory action

- This product can cause a DC current in the PE conductor. Where a residual current operated protective device (RCD) is used for protection against electric shock, only an RCD of Type B is allowed on the supply side of this product. All upstream RCD, up to the supply transformer, shall be of Type B. If proper device above is not used, it can result in electric shock.

This additional manual includes the correction and additional information for [9.1.4] of E6581595 to comply with Low Voltage Directive 2014/35/EU under the condition below.

- Applicable standard: EN 61800-5-1 :2007 / A1:2017 / A11:2021 (IEC61800-5-1 Ed.2.1)
- Pollution degree: 2
- Overvoltage category: 3
- The electronic power output short-circuit protection circuitry meets the requirements of IEC 60364-4-41:2005/AMD1 — Clause 411

Electrical Equipment (Safety) Regulations S.I.2016/1101 also are covered for single phase 100V/200V class products.

When incorporating the inverter into a power drive system, take the following measures to comply with IEC61800-5-1 Ed.2.1.

- (1) Installation and upstream protection devices
  - Install the inverter into the enclosure with proper short circuit protective device (SCPD) in accordance with the table of prospective short-circuit current (Isc) rating shown in following pages.
- (2) Grounding
  - Connect a dedicated wire to the grounding terminal on inverter.
  - Ground each inverter directly when grounding multiple inverters.
  - Refer to the table in [10. 1] of E6581595 to select a grounding wire size. At least 10 mm<sup>2</sup> (AWG 6) or two protective ground conductors with the cross section of the conductors supplying the power terminals may be required to meet standards limiting leakage current.
- (3) Overload protection
  - For overload protection of inverter, refer to [3.5] of E6581595.
- (4) Motor overload protection
  - For electronic motor thermal protection, refer to [3.5] of E6581595.
  - Set the parameter F607: Motor 150% overload detection time to "300: Default setting" or less.

### Prospective short-circuit current (Isc) rating table

The rating of the short circuit protection devices in the table are maximum values. Smaller sizes can be used. Use the wire with the size described in [10.1] of E6581595.

Reference (*1)	Maximum input voltage (V)	Applicable motor (kW)	Max. Isc (kA)	SCPD rating		Minimum line reactor (mH)	Minimum enclosure volume (L)	
				Fuse gG (*2) (A)	Circuit breaker (*3)			
VFNC3-2001P	240	0.1	5	4	GV2L07	-	15.7	
VFNC3-2002P		0.2	5	4	GV2L07	-	15.7	
VFNC3-2004P		0.4	5	8	GV2L08	--	15.7	
VFNC3-2007P		0.75	5	12	GV2L14	-	15.7	
VFNC3-2015P		1.5	5	20	GV2L16	-	15.7	
VFNC3-2022P		2.2	5	25	GV2L20	-	15.7	
VFNC3-2037P		3.7	5	40	GV2L22	-	15.7	
VFNC3S-2001PL		240	0.1	5 (*4)	4	GV2L07	-	15.7
VFNC3S-2002PL	0.2		5 (*4)	8	GV2L08	-	15.7	
VFNC3S-2004PL	0.4		5 (*4)	12	GV2L10	-	15.7	
VFNC3S-2007PL	0.75		5 (*4)	20	GV2L16	-	15.7	
VFNC3S-2015PL	1.5		5 (*4)	40	GV2L20	-	15.7	
VFNC3S-2022PL	2.2		5 (*4)	40	GV2L22	-	15.7	
VFNC3S-1001P	120		0.1	5 (*4)	8	GV2L08	-	15.7
VFNC3S-1002P			0.2	5 (*4)	12	GV2L10	-	15.7
VFNC3S-1004P		0.4	5 (*4)	20	GV2L16	-	15.7	
VFNC3S-1007P		0.75	5 (*4)	40	GV2L22	-	15.7	

\*1: Reference may be followed by any characters.

\*2: Mersen is recommended supplier

\*3: Tesys GV series from Schneider Electric are recommended.

\*4: Although the Maximum Isc is 5 kA, the thermal design is for 1 kA. For applying Maximum Isc up to 5 kA, reduce the load or install the line inductance not to exceed the rated input current.

### Prospective short-circuit current (Isc) rating table with semiconductor fuse

The rating of the short circuit protection devices in the table are maximum values. Smaller sizes can be used. Use the wire with the size described in [10.1] of E6581595.

Reference (*1)	Maximum input voltage (V)	Applicable motor (kW)	Max. Isc (kA)	SCPD rating (semiconductor fuse: IEC60269-4)				Minimum line reactor (mH)	Minimum enclosure volume (L)	
				gR (*2) 690V		gS (*2) 690V				
				Rating (A)	Min. Size	Rating (A)	Min. Size			
VFNC3-2001P	240	0.1	5	4	10x38	-	-	-	15.7	
VFNC3-2002P		0.2	5	4	10x38	-	-	-	15.7	
VFNC3-2004P		0.4	5	8	10x38	-	-	--	15.7	
VFNC3-2007P		0.75	5	12.5	10x38	-	-	-	15.7	
VFNC3-2015P		1.5	5	20	10x38	-	-	-	15.7	
VFNC3-2022P		2.2	5	25	10x38	-	-	-	15.7	
VFNC3-2037P		3.7	5	40	14x51	-	-	-	15.7	
VFNC3S-2001PL		240	0.1	5 (*4)	4	10x38	-	-	-	15.7
VFNC3S-2002PL	0.2		5 (*4)	8	10x38	-	-	-	15.7	
VFNC3S-2004PL	0.4		5 (*4)	12.5	10x38	-	-	-	15.7	
VFNC3S-2007PL	0.75		5 (*4)	20	10x38	-	-	-	15.7	
VFNC3S-2015PL	1.5		5 (*4)	-	-	40	000	-	15.7	
VFNC3S-2022PL	2.2		5 (*4)	-	-	40	000	-	15.7	
VFNC3S-1001P	120		0.1	5 (*4)	8	10x38	-	-	-	15.7
VFNC3S-1002P			0.2	5 (*4)	12.5	10x38	-	-	-	15.7
VFNC3S-1004P		0.4	5 (*4)	25	10x38	-	-	-	15.7	
VFNC3S-1007P		0.75	5 (*4)	-	-	40	000	-	15.7	

\*1: Reference may be followed by any characters.

\*2: Mersen is recommended supplier

\*4: Although the Maximum Isc is 5 kA, the thermal design is for 1 kA. For applying the Maximum Isc up to 5 kA, reduce the load or install the line inductance not to exceed the rated input current