■ 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). This additional sheet is very important to use VF-nC3M 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-nC3M instruction manual (E6581815) and then continue to read this additional manual.

See web page https://www.nissei-gtr.co.jp/ for VF-nC3M instruction manual

See web page https://www.inverter.co.jp/ for EU Declaration of Conformity

⚠ WARNING	
Mandatory action	• 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 • 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. • 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. • 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.

PKR86018-00

This additional manual includes the correction and additional information for [9.1.3] of E6581815 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

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.
- Semiconductor fuses (gR) are mandatory in case of using DC bus and/or braking ports, to comply with IEC61800-5-1 Ed.2.1.

(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 E6581815 to select a grounding wire size.

(3) Overload protection
- For overload protection of inverter, refer to [3.4] of E6581815.

(4) Motor overload protection
- For electronic motor thermal protection, refer to [3.4] of E6581815.

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 E6581815.
Semiconductor fuses (gR) are mandatory in case of using DC output and/or braking ports to comply with IEC61800-5-1 Ed.2.1, refer to “Prospective short-circuit current rating table (Isc) with semiconductor fuse” in 2nd table.

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		
VFNC3M-2001P	240	0.1	5	4	GV2L07	-	15.7
VFNC3M-2002P		0.2	5	4	GV2L07	-	15.7
VFNC3M-2004P		0.4	5	8	GV2L08	-	15.7
VFNC3M-2007P		0.75	5	12	GV2L14	--	15.7
VFNC3M-2015P		1.5	5	20	GV2L16	-	15.7
VFNC3M-2022P		2.2	5	25	GV2L20	-	15.7

*1: Reference may be followed by any characters.
*2: Mersen is recommended supplier
*3: Tesys GV series from Schneider Electric are recommended.

Prospective short-circuit current rating (Isc) 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 E6581815.

Reference *1	Maximum input voltage (V)	Applicable motor (kW)	Max. Isc (kA)	SCPD rating (semiconductor fuse: IEC60269-4) gR *2 690V		Minimum line reactor (mH)	Minimum enclosure volume (L)
				Rating (A)	Min. Size		
VFNC3M-2001P	240	0.1	5	4	10x38	-	15.7
VFNC3M-2002P		0.2	5	4	10x38	-	15.7
VFNC3M-2004P		0.4	5	8	10x38	-	15.7
VFNC3M-2007P		0.75	5	12.5	10x38	-	15.7
VFNC3M-2015P		1.5	5	20	10x38	-	15.7
VFNC3M-2022P		2.2	5	25	10x38	-	15.7

*1: Reference may be followed by any characters.
*2: Mersen is recommended supplier

Compliance with EMC Directive 2014/30/EU

This additional manual includes the additional information for [9.1.1] of E6581815 to comply with EMC Directive 2014/30/EU.

These products cannot satisfy EMI requirement alone, but they can comply with the requirement by installing with the filter option shown in the table below

Reference *1	Career frequency (kHz)	EMC Filter	Conducted noise IEC61800-3 Category C1	Conducted noise IEC61800-3 Category C2
			Length of motor cable (m)	Length of motor cable (m)
VFNC3M-2001P	4 to 12	EMFS11-2007AZ	1	5
VFNC3M-2002P	4 to 12	EMFS11-2007AZ	1	5
VFNC3M-2004P	4 to 12	EMFS11-2007AZ	1	5
VFNC3M-2007P	4 to 12	EMFS11-2007AZ	1	5
VFNC3M-2015P	4 to 12	EMFS11-4015BZ	1	5
VFNC3M-2022P	4 to 12	EMFS11-4015BZ	1	5

*1: Reference may be followed by any characters.

(1) Insert a recommended EMC filter on the input side of the inverter to reduce conducted noise and radiation noise from input cables
(2) Use shielded power cables, such as inverter output cables, and shielded control cables. Route the cables and wires so as to minimize their lengths. Keep a distance between the power cable and the control cable and between the input and output wires of the power cable. Do not route them in parallel or bind them together, instead cross at right angle.
(3) It is more effective in limiting the radiation noise to install the inverter in a sealed steel cabinet. Using wires as thick and short as possible, earth the metal plate and the control panel securely with a distance kept between the earth cable and the power cable.
(4) Route the input and output wires apart from each other.
(5) To suppress radiation noise from cables, ground all shielded cables through a noise cut plate.
It is effective to earth shielded cables in the vicinity of the inverter and cabinet (within a radius of 10cm from each of them). Inserting a ferrite core in a shielded cable is even more effective in limiting the radiation noise.
(6) To further limit the radiation noise, insert a zero-phase reactor in the inverter output line and insert ferrite cores in the earth cables of the metal plate and cabinet.