DATASHEET
Variable Speed Drives



Main Features

Reference	: NACFW110012T5ON1NFZ
Product code	: 11996007
Product line	: CFW11

Basic data

Power supply	: 500-600 V
Input minimum-maximum voltage	: 425-660 V
Number of phases	
Input	: 3
Output	: 3

Supply voltage range	500-600 V	
Overload regime	Normal (ND)	Heavy (HD)
Rated current	12 A	10 A
Overload current at 60 s	13,2A	15A
Overload current at 3 s	19,8A	20A

Maximum applicable motor

Voltage/Frequency	Power (HP / kW) [1]	
	Normal Overload (ND)	Heavy Overload (HD)
525V / 50Hz	10 / 7.5	7.5 / 5.5
575V / 60Hz	10 / 7.5	7,5 / 5.5

Dynamic braking [2]	: Standard with braking
Electronic supply	: Internal
Safety Stop	: No
RFI internal filter [3]	: Without filter
External filter	: Not available
Link Inductor	: Yes
Memory card	: Included in the product
USB port	: Standard in the product
Line frequency	: 50/60Hz
Line frequency range (minimum - maximum)	: 48-62 Hz
Phase unbalance	: Less or equal to 3% of input rated line voltage
Transient voltage and overvoltage	: Category III
Rated current of single-phase input	
- Overload (ND)	:
- Overload (HD)	:
Rated current of three-phase input	
- Overload (ND)	: 12A
- Overload (HD)	: 10A
Typical input power factor	: 0.94
Displacement factor	: 0.98
Rated efficiency	: ≥ 97%
Maximum connections (power up cycles - on/off) per hour	: 60
DC power supply	: Allow
Standard switching frequency	
- Overload ND	: 5 kHz
- Overload HD	: 5 kHz
Selectable switching frequency	: 1.25; 2.5 and 5 kHz
Real-time clock	: Yes, in the HMI
Copy Function	: Yes, by HMI/MMF

Dissipated power:

Mounting type	Overload		Overload (*)	
	ND	HD	ND	HD
Surface	287 W	247 W	Not applicable	Not applicable
Flange	85 W	80 W	Not applicable	Not applicable

Source available to the user

Output voltage	: 24 Vcc
Maximum capacity	: 500 mA

Control/performance data

Power supply	: Switched-mode power supply
Control method - induction motor	: V/f, VVW, Vector and PM motor
Encoder interface	: Only with 'Slot 2' accessory
Control output frequency [5]	: 0 to 300 Hz
Frequency resolution	: Equivalent to 1 rpm

Control/performance data

V/F Control	
- Speed regulation	: 1% of rated speed
- Speed variation	: 1:20
VVW Control	
- Speed regulation	: 1% of rated speed
- Speed variation	: 1:30
Sensorless vector control	
- Speed regulation	: 0,5% of rated speed
- Speed variation	: 1:100
Vector control with encoder	
- Speed regulation	: 0,05% of rated speed
- Speed variation	: Up to 0 rpm

Analog inputs

Quantity (standard)	: 2
Levels	: 0-10V, 0/4-20mA and -10-+10V
Impedance	
- Impedance for voltage input	: 400 kΩ
- Impedance for current input	: 500 Ω
Function	: Programmable
Maximum allowed voltage	: ± 30 Vcc

Digital inputs

Quantity (standard)	: 6
Activation	: Active low and high
Maximum low level	: 3 V
Minimum high level	: 18 V
Input current	: 11 mA
Maximum input current	: 13.5 mA
Function	: Programmable
Maximum allowed voltage	: 30 Vcc

Analog outputs

Quantity (standard)	: 2
Levels	: 0 to 10V, 0 to 20mA and 4 to 20mA
RL for voltage output	: 10 kΩ
RL for current output	: 500 Ω
Function	: Programmable

Digital outputs

Quantity (standard)	: 3 NO/NC relays
Maximum voltage	: 240 Vca
Maximum current	: 1 A
Function	: Programmable

Communication

- Modbus-RTU (with accessory: RS485-01; RS485-05; CAN/RS485-01; RS232-01 or RS232-05)
- Modbus/TCP (with accessory: MODBUSTCP-05)
- Profibus DP (with accessory: PROFDP-05)
- Profibus DPV1 (with accessory: PROFIBUS DP-01)
- Profinet (with accessory: PROFINETIO-05)
- CANopen (with accessory: CAN/RS485-01 or CAN-01)
- DeviceNet (with accessory: DEVICENET-05; CAN/RS485-01 or CAN-01)
- EtherNet/IP (with accessory: ETHERNET/IP-05 or ETHERNETIP-2P-05)
- EtherCAT (with accessory: ETHERCAT-01)
- BACnet (with accessory: RS485-01 or CAN/RS485-01)

Protections available

- Output overcurrent/short circuit
- Power supply phase loss
- Under/Overvoltage in power
- Overtemperature
- Motor overload
- IGBT's modules overload
- Fault/External alarm
- Breaking resistor overload
- CPU or memory failure
- Output phase-ground short circuit

Operation interface (HMI)

Avaliability	: Included in the product
HMI installation	: Local
Number of HMI buttons	: 9
Display	: Graphic LCD
Indication accuracy	: 5% of rated current
Speed resolution	: 1 rpm
Standard HMI degree of protection	: IP56
HMI battery type	: CR2032

Operation interface (HMI)

HMI battery life expectancy	: 10 years
Remote HMI type	: Detachable of the inverter
Remote HMI frame	: Accessory
Remote HMI degree of protection	: IP56

Ambient conditions

Enclosure	: NEMA1/IP20
Pollution degree	: 2 (EN50178 and UL508C)
Temperature	
- Minimum	: -10 °C / 14 °F
- Nominal [4]	:
Current reduction factor [5]	:
Relative humidity (non-condensing)	
- Minimum	: 5%
- Maximum	: 90%
Altitude	
- Rated conditions	: 1000 m (3281 ft)
- Maximum allowed for operation (with derating factor)	: 4000 m (13123 ft)
Current Reduction factor[6]	
- Current derating factor (for altitudes above rated)	: 1% for each 100 m above (0,3% for each 100 ft above)
- Voltage derating factor (for altitudes above 2000 m / 6562 ft)	: 1,1% for each 100 m above (0,33% for each 100 ft above)

Sustainability policies

RoHS	: Yes
Conformal Coating	: 3C2 (IEC 60721-3-3:2002)

Dimensions

Size	: B
Height	:
Width	:
Depth	:
Weight	:

Mechanical installation

Mounting position	: Surface or flange
Fixing screw	: M5
Tightening torque	: 5 N.m / 3.69 lb.ft
Allows side-by-side assembly	: Yes, without top cap
Minimum spacing around the inverter	
- Top	: 40 mm / 1.57 in
- Bottom	: 45 mm / 1.77 in
- Front	: 20 mm / 0.78 in
- Between inverters (IP20)	: 80 mm / 3.15 in

Electrical connections

Cable gauges and tightening torque:

	Recommended cable gauge to 75 °C (167 °F)	Recommended tightening torque
Power	2.5 mm² (12 AWG)	1.2 N.m / 0.89 lb.ft
Braking	6.0 mm² (8 AWG)	1.2 N.m / 0.89 lb.ft
Grounding	2.5 mm² (12 AWG)	1.7 N.m / 1.25 lb.ft
Control	0.5 to 1.5 mm² (20 to 14 AWG)	0,5 N.m / 0.37 lb.ft

Additional especifications

Maximum breaking current	: 36.4 A
Minimum resistance for the brake resistor	: 33 Ω
Recommended aR fuse [6]	: FNH00-25K-A
Recommended aR fuse [6]	: Not applicable
Recommended circuit breaker [6]	: To define
Recommended circuit breaker [6]	: Not applicable

Standards

Safety	- UL 508C - Power conversion equipment. - UL 840 - Insulation coordination including clearances and creepage distances for electrical equipment. - EN 61800-5-1 - Safety requirements electrical, thermal and energy. - EN 50178 - Electronic equipment for use in power instalations - EN 60204-1 - Safety of machinery. Electrical equipment of machines. Part 1: General requirements. Note: To have a machine in accordance with this standard, the machine manufacturer is responsible for installing an emergency stop device and supply disconnecting device. - EN 60146 (IEC 146) - Semiconductor converters. - EN 61800-2 - Adjustable speed electrical power drive systems - Part 2: General requirements - Rating especifications for low voltage adjustable frequency AC power drive systems.
Electromagnetic compatibility	EN 61800-3 - Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test methods.

	- EN 55011 - Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment. - CISPR 11 - Industrial, scientific and medical (ISM) radio-frequency equipment - Eletromagnetic disturbance characteristics - Limits and methods of measurement. - EN 61000-4-2 - Eletromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 2: Eletrostatic discharge immunity test. - EN 61000-4-3 - Eletromagnetic compatibility (EMC) - Part4: Testing and measurement techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test. - EN 61000-4-4 - Eletromagnetic compatibility (EMC) - Part4: Testing and measurement techniques - Section 4: Electrical fast transient/burst immunity test. - EN 61000-4-5 - Eletromagnetic compatibility (EMC) - Part4: Testing and measurement techniques - Section 5: Surge immunity test. - EN 61000-4-6 - Eletromagnetic compatibility (EMC) - Part4: Testing and measurement techniques - Section 6: Immunity to conducted disturbances, induced by radio-frequency fields.
Mechanical construction	- EN 60529 - Degrees of protection provided by enclosures (IP code). - UL 50 - Enclosures for electrical equipment. - EN 60529 e UL 50

Certifications
UL, CE, C-Tick, CS and IRAM

Notes
1) Orientative motor power, valid for WEG Motors standard of IV poles. The correct sizing must be done according to the nominal current of the motor used, which must be less than or equal to the rated output current of the inverter;
2) Braking resistor is not included;
3) With category for emission level conducted;
4) Without derating and with minimum spaces;
5) For temperatures above the nominal and maximum temperature (with derating of current and minimum spaces);
6) For altitude over of specified;
7) All images are merely illustrative;
8) For more information, see the users manual of the CFW-11 (size B).