

# DATASHEET

## Variable Speed Drives



### Main Features

Reference	: NACFW110242T4SZ
Product code	: 11411159
Product line	: CFW11

### Basic data

Power supply	: 380-480 V
Input minimum-maximum voltage	: 323-528 V
Number of phases	
Input	: 3
Output	: 3

Supply voltage range	380-480 V	
Overload regime	Normal (ND)	Heavy (HD)
Rated current	242 A	211 A
Overload current at 60 s	266A	317A
Overload current at 3 s	363A	422A

### Maximum applicable motor

Voltage/Frequency	Power (HP / kW) [1]	
	Normal Overload (ND)	Heavy Overload (HD)
380V / 50Hz	150 / 110	150 / 110
380V / 60Hz	150 / 110	150 / 110
400V / 50Hz	175 / 132	150 / 110
400V / 60Hz	150 / 110	150 / 110
440V / 50Hz	200 / 150	150 / 110
440V / 60Hz	200 / 150	150 / 110
460V / 60Hz	200 / 150	175 / 132
480V / 60Hz	200 / 150	175 / 132

Dynamic braking [2]	: Standard without braking
Electronic supply	: Internal
Safety Stop	: No
RFI internal filter [3]	: With filter (C3 category)
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)	: 242A
- Overload (HD)	: 211A
Typical input power factor	: 0.94
Displacement factor	: 0.98
Rated efficiency	: ≥ 98%
Maximum connections (power up cycles - on/off) per hour	: 60
DC power supply	: Not allow
Standard switching frequency	
- Overload ND	: 2,5 kHz
- Overload HD	: 2,5 kHz
Selectable switching frequency	: 1.25; 2; 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	2651 W	2296 W	Not applicable	Not applicable
Flange	622 W	524 W	Not applicable	Not applicable

### Source available to the user

Output voltage	: 24 Vcc
Maximum capacity	: 500 mA

16/09/2025	The information contained are reference values. Subject to change without notice.	Page 1 / 4
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# DATASHEET

## Variable Speed Drives



### 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
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)

Availability	: Included in the product
HMI installation	: Local
Number of HMI buttons	: 9

# DATASHEET

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### Operation interface (HMI)

Display	: Graphic LCD
Indication accuracy	: 5% of rated current
Speed resolution	: 1 rpm
Standard HMI degree of protection	: IP56
HMI battery type	: CR2032
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	: IP20
Pollution degree	: 2 (EN50178 and UL508C)
Temperature	<ul style="list-style-type: none"> <li>- Minimum : -10 °C / 14 °F</li> <li>- Nominal [4] : 45 °C / 113 °F</li> </ul>
Current reduction factor [5]	: 2 % per °C of 45 (113) to 55 °C (131 °F)
Relative humidity (non-condensing)	<ul style="list-style-type: none"> <li>- Minimum : 5%</li> <li>- Maximum : 90%</li> </ul>
Altitude	<ul style="list-style-type: none"> <li>- Rated conditions : 1000 m (3281 ft)</li> <li>- Maximum allowed for operation (with derating factor) : 4000 m (13123 ft)</li> </ul>
Current Reduction factor[6]	<ul style="list-style-type: none"> <li>- Current derating factor (for altitudes above rated) : 1% for each 100 m above (0,3% for each 100 ft above)</li> <li>- Voltage derating factor (for altitudes above 2000 m / 6562 ft) : 1,1% for each 100 m above (0,33% for each 100 ft above)</li> </ul>

### Sustainability policies

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

### Dimensions

Size	: F
Height	: 1234 mm / 48.6 in
Width	: 430 mm / 16.9 in
Depth	: 360 mm / 1.18 in
Weight	: 130 kg / 286.6 lb

### Mechanical installation

Mounting position	: Surface or flange
Fixing screw	: M10
Tightening torque	: 37 N.m / 27.31 lb.ft
Allows side-by-side assembly	: No
Minimum spacing around the inverter	
- Top	: 150 mm / 5.91 in
- Bottom	: 250 mm / 9.84 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	2x 50 mm <sup>2</sup> (2x 1 AWG) HD	Power 60.0 N.m (44.28 lb.ft) and braking 10.0 N.m (7.38 lb.ft)
Braking	Not applicable	Power 60.0 N.m (44.28 lb.ft) and braking 10.0 N.m (7.38 lb.ft)
Grounding	70.0 mm <sup>2</sup> (1/0 AWG)	10 N.m / 7.38 lb.ft
Control	0.5 to 1.5 mm <sup>2</sup> (20 to 14 AWG)	0.5 N.m / 0.37 lb.ft

### Additional specifications

Maximum breaking current	: Not available
Minimum resistance for the brake resistor	: Not available
Recommended aR fuse [6]	: FNH2-450K-A
Recommended aR fuse [6]	: Not applicable
Recommended circuit breaker [6]	: To define
Recommended circuit breaker [6]	: Not applicable

### Standards

Safety	<ul style="list-style-type: none"> <li>- UL 508C - Power conversion equipment.</li> <li>- UL 840 - Insulation coordination including clearances and creepage distances for electrical equipment.</li> <li>- EN 61800-5-1 - Safety requirements electrical, thermal and energy.</li> <li>- EN 50178 - Electronic equipment for use in power installations</li> <li>- EN 60204-1 - Safety of machinery. Electrical equipment of machines. Part 1: General requirements. Note: To have a machine in accordance with this</li> </ul>
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# DATASHEET

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	<p>standard, the machine manufacturer is responsible for installing an emergency stop device and supply disconnecting device.</p> <ul style="list-style-type: none"><li>- EN 60146 (IEC 146) - Semiconductor converters.</li><li>- EN 61800-2 - Adjustable speed electrical power drive systems - Part 2: General requirements - Rating specifications for low voltage adjustable frequency AC power drive systems.</li></ul>
Electromagnetic compatibility	<p>EN 61800-3 - Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test methods.</p> <ul style="list-style-type: none"><li>- EN 55011 - Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment.</li><li>- CISPR 11 - Industrial, scientific and medical (ISM) radio-frequency equipment</li><li>- Electromagnetic disturbance characteristics - Limits and methods of measurement.</li><li>- EN 61000-4-2 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 2: Electrostatic discharge immunity test.</li><li>- EN 61000-4-3 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test.</li><li>- EN 61000-4-4 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 4: Electrical fast transient/burst immunity test.</li><li>- EN 61000-4-5 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 5: Surge immunity test.</li><li>- EN 61000-4-6 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 6: Immunity to conducted disturbances, induced by radio-frequency fields.</li></ul>
Mechanical construction	<ul style="list-style-type: none"><li>- EN 60529 - Degrees of protection provided by enclosures (IP code).</li><li>- UL 50 - Enclosures for electrical equipment.</li><li>- EN 60529 e UL 50</li></ul>

### Certifications

UL, CE, C-Tick, CS and IRAM

### Notes

- 1) Orientative motor power, valid for WEG Motors standard of 4 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 F).

