Frequency Inverter

CFW900

User Manual



User Manual

CFW900

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SUMMARY OF REVISIONS

The table below describes all revisions made to this manual.

Version	Revision	Description
-	R00	First edition
-	R01	Update of tables, figures and identification labels and general corrections
-	R02	Update of tables
-	R03	Update of tables, addition of frame F and general corrections
-	R04	Addition of frames G and H and general corrections
-	R05	General corrections
-	R06	Addition of frames B and C of the T5 line and general corrections
-	R07	General corrections
-	R08	Addition of frames D, E, G and H of the T6 line and general corrections
-	R09	Update to Table 3.6 on page 44, Table 3.7 on page 46 and Table 8.1 on page 113

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1 SAFETY INSTRUCTIONS

This manual provides information for the proper installation and operation of the CFW900 frequency inverter.

Only trained and qualified personnel should attempt to install, start-up and troubleshoot this type of equipment.

1.1 SAFETY WARNINGS IN THIS MANUAL

The following safety warnings are used in this manual:



DANGER!
Failure to follow the recommended procedures listed in this warning may result in death, serious injury and equipment damage.



ATTENTION!
Failure to follow the recommended procedures listed in this warning may result in equipment damage.



NOTE!
This warning provides important information for the proper understanding and operation of the equipment.

1.2 SAFETY WARNINGS IN THE PRODUCT

The following symbols are attached to the product, serving as safety notices:



High voltages are present.



Components sensitive to electrostatic discharge. Do not touch them.



Mandatory connection to the protective earth (PE).



Connection of the shield to the ground.



Hot surface. Do not touch.

1.3 PRELIMINARY RECOMMENDATIONS



NOTE!
Fully read the manual before installing or operating the inverter.

DANGER!
Only duly qualified personnel should plan or perform the installation, start-up, operation and maintenance of the CFW900 and its accessories. To that end, all safety instructions contained in the manual must be followed, together with those defined by local regulations.
Failure to comply with the safety instructions may lead to material damage or risk of death.

NOTE!
For the purpose of this manual, qualified personnel are those trained and able to:
- Install, power up and operate the CFW900 in accordance with this manual and the safety legal procedures in force.
- Provide first aid.
- Use the protective equipment according to the regulations in force.

DANGER!
After disconnecting the general power to the inverter, wait at least ten minutes before touching any internal part, as some components can store electrical energy or remain in mechanical inertia even after the shutdown.
In addition, always connect the grounding point of the inverter to the protection earth (PE).

NOTE!
Frequency inverters may cause interference in other electronic devices. Follow the recommendations listed in Chapter 3 INSTALLATION AND CONNECTION on page 18 to minimize these effects.

Do not perform a withstand voltage test (hipot test) on any part of the inverter!
If it is necessary consult WEG.

ATTENTION!
The electronic boards in this product contain components sensitive to electrostatic discharges. Do not touch the components or connectors directly.

DANGER!
Crushing Hazard
In load hoisting applications, it is necessary to install auxiliary safety devices (electrical, mechanical or both) in order to avoid accidents.

DANGER!
This product was not designed to be used as a safety element. Therefore, additional measures must be taken so as to avoid material damages and personal injuries.
The product was manufactured under strict quality control, however, if installed in systems where its failure causes risks of material or personal damages, additional external safety devices must ensure a safety condition in case of a product failure, preventing accidents.

2 GENERAL INFORMATION

2.1 ABOUT THE MANUAL

This manual contains information for the proper installation and operation of the inverter, as well as start-up procedures, main technical features and how to identify the most usual problems of the different models of inverters of the line CFW900.

ATTENTION!
The operation of this device requires detailed installation and operation instructions, which are provided in the quick installation guide, user manual, programming manual and communication manuals. The guides are supplied printed together with their respective accessory, or you can download them on WEG website **www.weg.net**. A printed copy of the files available on WEG's website can be requested at your local WEG dealer.

NOTE!
It is not the intention of this manual to present all the possibilities for the application of the CFW900, as well as WEG cannot take any liability for the use of the CFW900 which is not based on this manual.

For more information about other functions, accessories and communication, refer to the following manuals:

- CFW900 programming manual.
- CFW900-ENC-01 encoder accessory.
- Analog input and output accessories - CFW900-IOAI-01.
- Digital inputs and outputs accessories - CFW900-IOD-01.
- Relay accessories - CFW900-REL-01.
- Temperature measurement accessory - CFW900-TEMP-01.
- Communication accessory - CFW900-CCAN-W.
- Communication accessory - CFW900-CECAT-N.
- Communication accessory - CFW900-CPNT-IRT-N.
- Communication accessory - CFW900-CPDP-N.

2.2 TERMS AND DEFINITIONS

°C: Celsius degree.

°F: Fahrenheit degree.

A: Ampères.

DC Link: inverter intermediate circuit that contains the DC voltage obtained by the rectification of the AC power supply line or by an external source. It supplies the output inverter bridge with IGBTs.

U, V, W Arms: set of two IGBTs of the inverter output phases U, V, and W.

AC: alternated current.

DC: direct current.

CFM: Cubic Feet per Minute; unit of flow.

Pre-charge Circuit: charges the DC link capacitors with limited current, preventing damages to the equipment at power-up.

PLC: Programmable Logic Controller.

cm: centimeter.

CV: Cavalo-Vapor (Brazilian unit of measurement of power), corresponding to 736 watts.

Heatsink: metal device designed to dissipate the heat generated by the power semiconductors.

RFI filter: Radio Frequency Interference Filter, is a filter used to reduce interference in the radio frequency range.

Switching frequency: frequency of the IGBTs switching in the inverter bridge.

ft: foot. Is a unit of measure of length.

Gate driver: circuit used to turn the IGBTs on and off in a controlled and safe way.

Start/Stop: function of the inverter that, when enabled (Run), accelerates the motor by acceleration ramp up to the reference speed and, when disabled (Stop), decelerates the motor by deceleration ramp until full stop, when the PWM pulses are then locked.

General Enable: when activated, it enables the inverter allowing the motor to accelerate via acceleration ramp provided Run/Stop = Run. When deactivated, the PWM pulses are immediately locked. It can be commanded through digital input programmed for that function, via communication networks or via SoftPLC.

HMI: Human Machine Interface; device that allows controlling the inverter parameters.

hp: Horse Power, corresponds to 746 watts.

Hz: hertz.

$\mathbf{I_{nom\text{-}HD}}$**:** inverter rated current for use with the heavy duty. Overload: $\frac{1.5 \cdot I_{nom-HD}}{1\ min}$.

$\mathbf{I_{nom\text{-}ND}}$**:** inverter rated current for use with the normal duty. Overload: $\frac{1.1 \cdot I_{nom-ND}}{1\ min}$.

Braking IGBT: works as a switch to activate the braking resistors; it is controlled by the DC Link voltage level.

IGBT: Insulated Gate Bipolar Transistor, basic component of the output inverter bridge.

in: inch.

k: kilo (10^3).

kg: kilogram = 1000 grams.

l: liters.

lb: pound.

m: if isolated, indicates meter; together with another unit of measurement, indicates milli (10^{-3}).

Frame: designation related to the dimension of the product for a certain power range.

FLASH memory: non-volatile memory that can be electronically written and erased.

min: minute.

N.m: newton meter; unit of torque.

NTC: Negative Temperature Coefficient; a component that reduces its electrical resistance when the temperature increases.

PE: Protective Earth.

PTC: Positive Temperature Coefficient; a component that increases its electrical resistance when the temperature increases.

PWM: Pulse Width Modulation.

Normal Duty (ND): refers to the inverter duty cycle with maximum values of current in continuous operation equal to Inom-ND and overload of 110 % for 1 minute. It can be configured in C3.9.3 and must be used to drive motors that, in the application, are not subject to high overload torques in relation to their rated torque when operating at constant speed, starting, accelerating or decelerating.

Heavy Duty (HD): refers to the inverter duty cycle with maximum values of current in continuous operation equal to Inom-HD and overload of 150 % for 1 minute. It can be configured in C3.9.3 and must be used to drive motors that, in the application, are subject to high overload torques in relation to their rated torque when operating at constant speed, starting, accelerating or decelerating.

Rectifier: inverter input circuit that transforms the input AC voltage into DC, formed by thyristors and/or power diodes.

rms: root mean square, effective value.

rpm: revolutions per minute.

s: second.

STO: Safe Torque Off. When the STO function is enabled, the inverter ensures that it will not generate torque on the motor shaft.

SS1-t: Safety Stop 1. When the SS1-t function is enabled, the inverter starts decelerating the motor and enables the STO function after a specified time.

TBD: value to be defined.

USB: Universal Serial Bus; is a serial bus standard that allows devices to be connected using the "Plug and Play" concept.

V: volts.

Varistor: metal oxide varistor.

Ω: ohms.

μ: micro (10^{-6}).

2.3 ABOUT THE CFW900

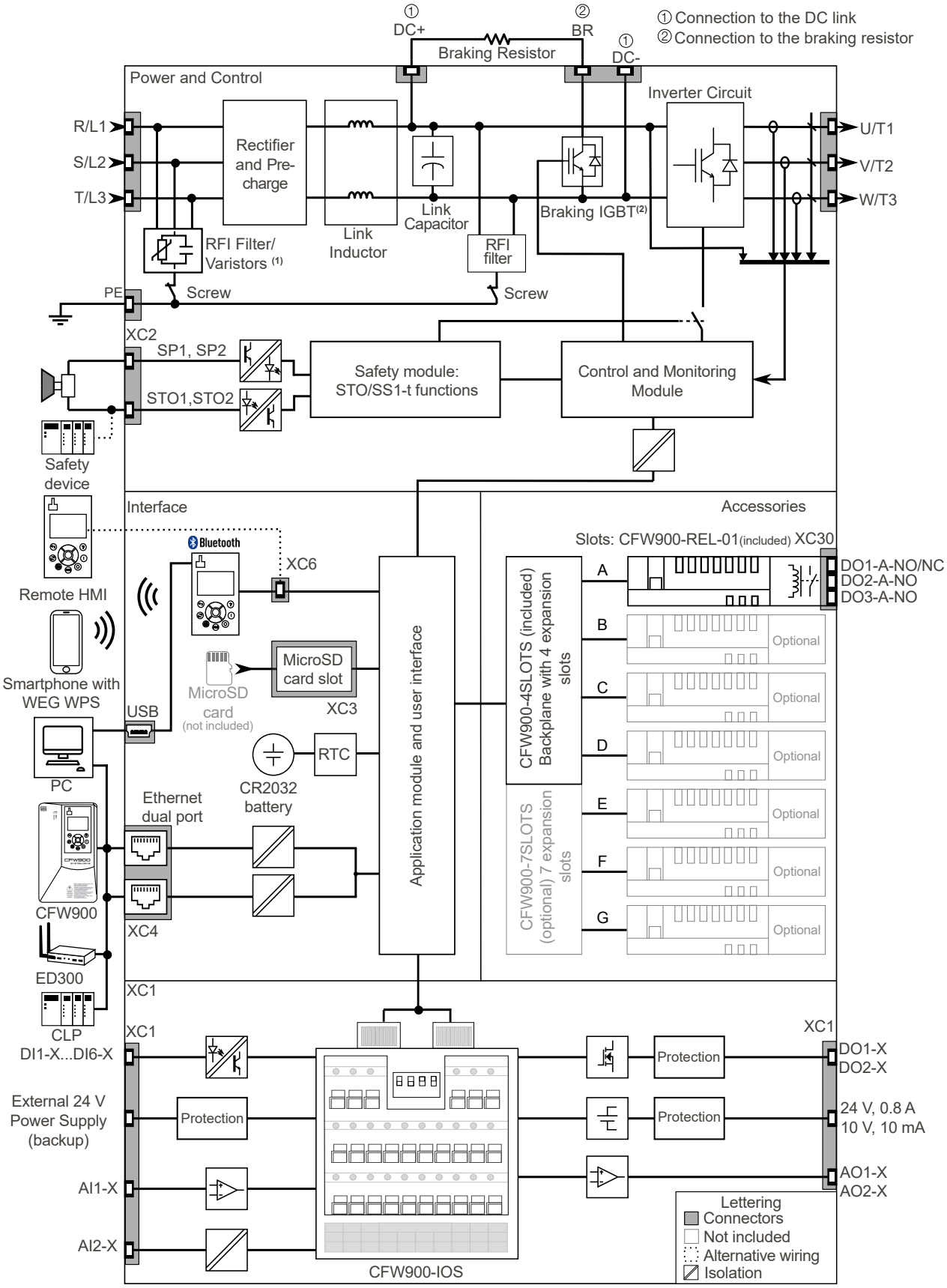
The CFW900 frequency inverter is a high-performance product that allows speed and torque control of low-voltage three-phase motors. The main features of this product are the on-board technology, which allows the flexible solution of different types of application, and its connectivity. To this end, it has the following functionalities:

- Vector control (Sensorless and Encoder) for induction motors, scalar control (V/F or VVW+) for induction motors and VVW+ scalar control for permanent magnet (PM) motors.
- Built-in Ethernet and RS485 communication interfaces. Other communication interfaces available via accessories.

GENERAL INFORMATION

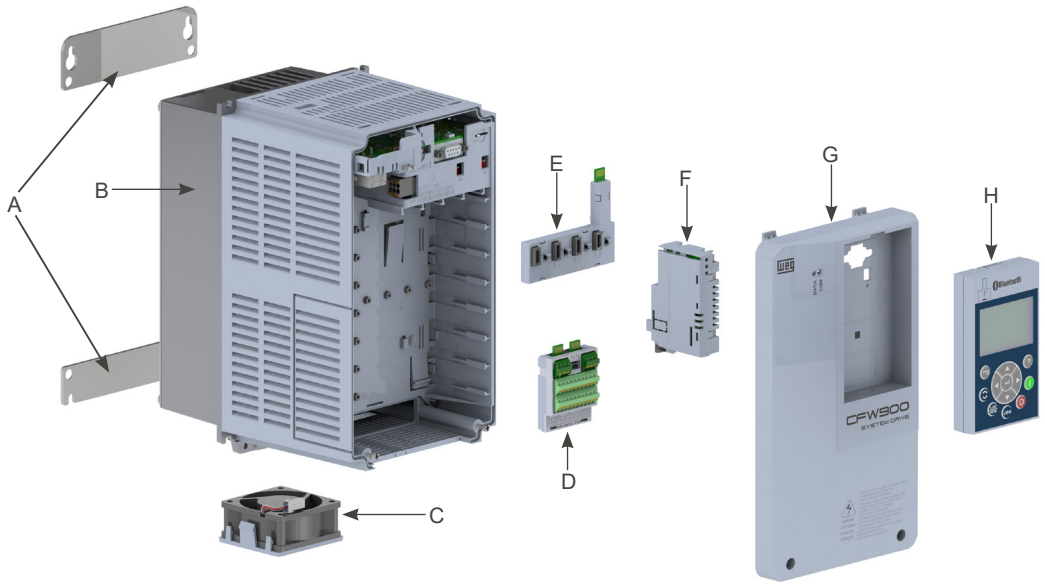
- Advanced Energy Saving Function that reduces motor losses and improves the system performance.
- Thermal Management Function that acts on the inverter to protect the equipment integrity and functionality.
- Specific PWM Modulation function for use with Long Cables at the inverter output to the motor.
- DC Braking function to optimize the inverter stop. It can also be used as a motor warm-up function in specific cases.
- Dynamic Braking function and vector control Optimal Braking. Optimal Braking enables the controlled braking of the motor, eliminating the braking resistor in some applications.
- Flying Start function that allows driving a motor on the fly, accelerating it from the speed at which it is running.
- Ride-Through function that allows recovering the inverter, without undervoltage locking, when a power failure occurs for a brief time.
- Oriented start-up (Assistant) function groups and allows the definition of the main parameters for the inverter operation.
- Self-Tuning function (Assistant) for the vector control allows the automatic setting of the regulators and control parameters, from the identification (also automatic) of the motor and load parameters.

By navigating the CFW900 HMI, it is possible to set the parameters through the navigation groups: Status, Diagnostics and Configurations. From these three groups, you can access the product identification, measurements (voltages, currents, temperatures etc.), protection and alarm diagnostics (active protection/ present, time control etc.) and inverter configurations (power supply, motor data, control used, commands and references etc.).



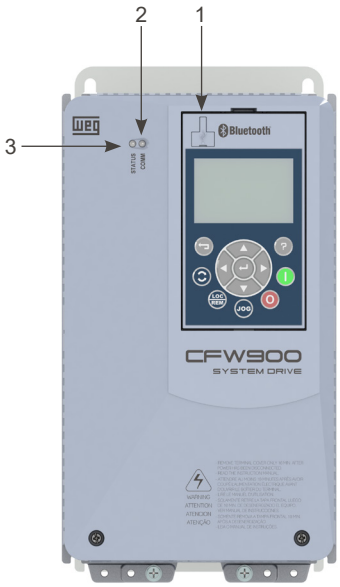
(1) All models have a built-in RFI filter.
(2) Frames F, G and H do not have braking IGBT.

Figure 2.1: *Block diagram for the CFW900*



A - Surface mount brackets
B - Heatsink/back of inverter
C - Fan with mounting bracket
D - XC1 connector (CFW900-IOS)
E - CFW900-4SLOTS backplane
F - CFW900-REL accessory board module
G - Front cover
H - HMI

Figure 2.2: *Main components*

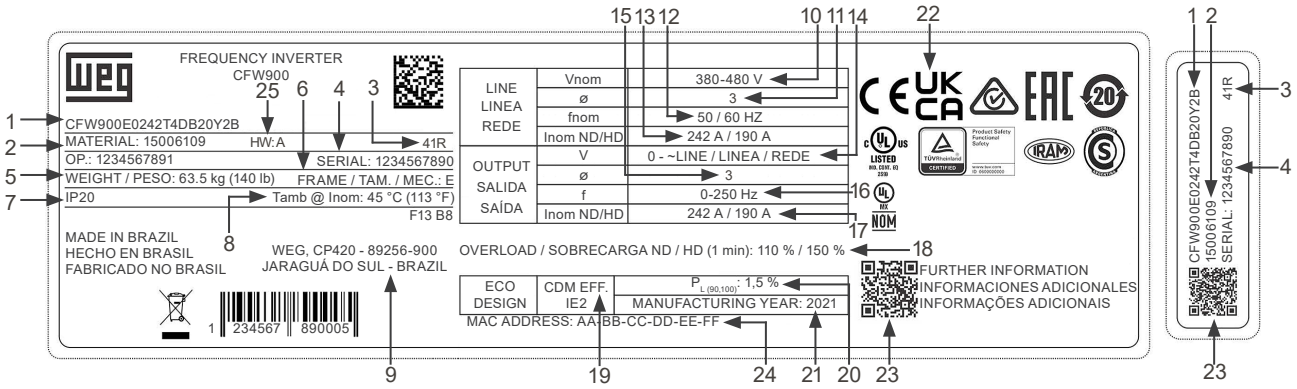


1 - USB Connector
2 - Communication LED
    Off: communication inactive
    On/flashing: communication active
3 - Status LED
    Green: normal operation
    Yellow: alarm condition
    Red: protection tripping condition

Figure 2.3: *LEDs and USB connector*

2.3.1 Identification Labels

There are two identification labels on the CFW900: a complete one, located on the side of the inverter and a condensed one, under the HMI. The label under the HMI brings the most important data even on inverters mounted side by side.



1 - Smart code of the inverter
2 - WEG stock item
3 - Week and year of product manufacture (encoded)
4 - Inverter serial number
5 - Inverter weight
6 - Frame size
7 - Degree of protection
8 - Rated operating temperature
9 - Manufacturer's address
10 - Nominal input voltage range
11 - Number of input phases
12 - Rated input frequency
13 - Inverter input current rated (ND and HD overload regime)
14 - Output voltage range
15 - Number of output phases
16 - Output frequency range (considering manufacturer's settings)
17 - Inverter output current rated (ND and HD overload regime)
18 - Inverter overload specification for ND and HD
19 - Efficiency class according to EcoDesign Directive
20 - Inverter losses at rated condition (90,100)
21 - Manufacturing year
22 - Inverter certifications
23 - Inverter QR code
24 - Inverter MAC address
25 - Hardware review

Figure 2.4: *Description of the identification label on the CFW900*

Table 2.1: Identification of the CFW900 smart code

CFW900	D	90P0	T	4	DB	20	Y2	B	_	_	_
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Item	**Description**										
I	Product series identification: CFW900										
II	Frame Size: A, B, C, D, E, F, G or H										
III	ND current rated value: 02P8 = 2.8 A 03P6 = 3.6 A . . . 0110 = 110 A 0135 = 135 A . . .										
IV	Number of power supply phases: B = Single-phase or three-phase T = Three-phase only										
V	Power supply voltage: 2 = 200 to 240 Vac (frame sizes A, B and C), 208 to 240 Vac (frame sizes D, E and F) 4 = 380 to 480 Vac 5 = 500 to 600 Vac 6 = 500 to 690 Vac										
VI	Braking: NB = Without braking IGBT (frame sizes D, E, F, G and H) DB = With braking IGBT (frame sizes A, B, C, D and E)										
VII	Degree of protection: 20 = IP20 21 = IP21 N1 = UL type 1										
VIII	Functional safety: Y2 = With STO and SS1-t safety functions										
IX	HMI: Blank = HMI without Bluetooth B = HMI with Bluetooth										
X	Product with special hardware version: Blank = Standard hardware HEC = Product with extra-coating board H1 = Change in frame size dimensions Hx, Hxx or Hxxx = Other types of special hardware										
XI	Product with special software/firmware version: Blank = Standard software/firmware Sx, Sxx or Sxxx = Special software/firmware										
XII	Factory suffix: Blank = standard -UI = inverter supplied without package (returnable packaging) -Gx = Grouper item x										

2.3.2 Receiving and Storage

The CFW900 is supplied in a cardboard box up to frame C models; the others are supplied in a wooden box.

The package bears an identification label that must be identical to the one affixed to the side of the inverter. Upon receiving the product, check if:

- The CFW900 identification label matches the purchased model.
- Any damage occurred during transportation.

Report any damage immediately to the carrier.

If the CFW900 is not installed soon, store it in a clean and dry location (temperature between -25 °C and +70 °C (-13 °F and +158 °F), with a cover to prevent dust accumulation inside it.

ATTENTION!
When the inverter is stored for a long period, it becomes necessary to perform the capacitor reforming. Refer to the procedure in the Section 6.6 PREVENTIVE MAINTENANCE on page 107 of this manual.

3 INSTALLATION AND CONNECTION

This chapter provides information on installing and wiring the CFW900. The instructions and guidelines listed in this manual shall be followed to guarantee personnel and equipment safety, as well as the proper operation of the inverter.

3.1 MECHANICAL INSTALLATION

3.1.1 Environmental Conditions

NOTE!
This product is designed for use in sheltered places only.

Avoid:

- Direct exposure to sunlight, rain, high humidity, or sea-air.
- Inflammable or corrosive gases or liquids.
- Excessive vibration.
- Dust, metallic particles, and oil mist.

Environment conditions for the operation:

- The maximum rated ambient temperature at the back of the inverter (around the heatsink) is:
  -10 °C to 45 °C (14 °F to 113 °F) for frames E, F, G and H models.
  -10 °C to 50 °C (14 °F to 122 °F) for other frames.
  Operation at temperatures above the rated one is possible; however, in these cases, the output current must be derated, as described in Section 8.2 DEFINITIONS OF DERATING FACTORS on page 124.
- The maximum rated ambient temperature on the front of the inverter is 60 °C (140 °F) for all models, except for the models indicated in Item 8.1.4 Environmental and Mechanical Data on page 115.
- Humidity: from 5 % to 95 % non-condensing.
- Maximum altitude: up to 1000 m (3.300 ft) rated conditions. Operation at an altitude of up to 4000 m is possible, however, in these cases, the rated output current and supply voltage must be derated as per Section 8.2 DEFINITIONS OF DERATING FACTORS on page 124.
- Pollution degree: 2 (according to EN50178 and UL61800-5), with non-conductive pollution. Condensation shall not originate conduction the accumulated residues.

3.1.2 Positioning and Mounting

Consult the inverter weight at the Section 8.5 MECHANICAL DATA on page 135.

Mount the inverter in the upright position on a flat and vertical surface. Frames A ...C can be installed horizontally as long as the recommendations of Figure 3.3 on page 21.

External dimensions and fixing holes position according to the Figure 3.1 on page 19. Refer to Section 8.5 MECHANICAL DATA on page 135 for further details.

First mark the mounting points and drill the installation holes. Then, position the inverter and firmly tighten the screws in all four corners to secure the inverter.

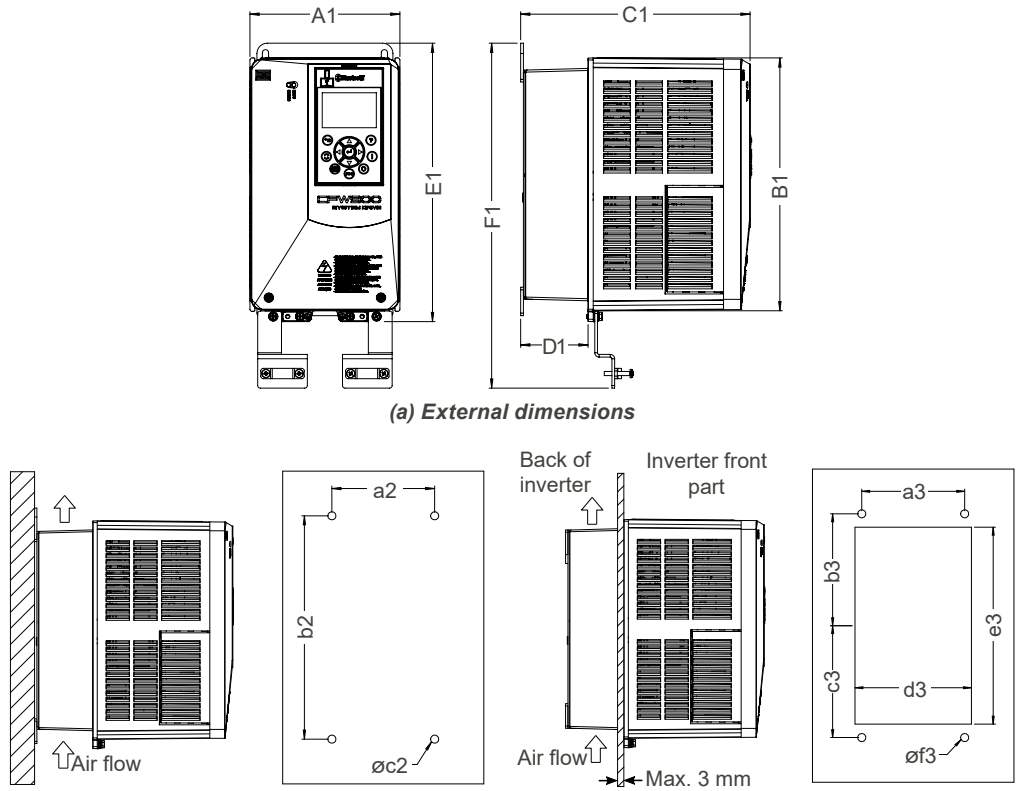
Minimum mounting clearances requirements for proper cooling air circulation are specified in Figure 3.2 on page 21 and Table 3.3 on page 21.

Inverters of frames A ... D can be arranged side-by-side with no clearance required between them. In these cases, the upper ventilation openings must be free for air circulation, that is, it is not possible to use the IP21 and UL type 1 kits.

Do not install heat sensitive components right above the inverter.

ATTENTION!

- When one inverter is installed above another, use the minimum distance A + B, as shown in Figure 3.2 on page 21, and divert the hot air blown by the lower inverter from the upper inverter.
- Provide conduit for physical separation of the signal, control, and power conductors (refer to Section 3.2 ELECTRICAL INSTALLATION on page 26).



(a) External dimensions

(b) Surface mount

(c) Flange mount

Figure 3.1: *(a) to (c) External dimensions of the inverters*

Table 3.1: *External dimensions of the inverters*

Model		A1 (1) mm [in]	B1 (1) mm [in]	C1 (1) mm [in]	D1 (1) mm [in]	E1 (1) mm [in]	F1 (1) mm [in]	a2 (1) mm [in]	b2 (1) mm [in]	a3 (1) mm [in]	b3 (1) mm [in]	c3 (1) mm [in]	d3 (2) mm [in]	e3 (2) mm [in]
Frame A	B2, T2 and T4	145 [5.7]	245 [9.65]	222 [8.74]	65 [2.56]	269 [10.59]	333.5 [13.13]	115 [4.53]	250 [9.84]	130 [5.11]	120 [4.72]	120 [4.72]	136 [5.35]	226 [8.90]
Frame B	T2, T4 and T5	165.2 [6.5]	359.3 [14.15]	228 [8.98]	70.2 [2.76]	385 [15.16]	448.9 [17.67]	125 [4.92]	370 [14.57]	150 [5.9]	177.1 [6.97]	177.1 [6.97]	158 [6.22]	342 [13.46]
Frame C	T2, T4 and T5	200 [7.87]	430 [16.92]	294 [11.57]	136.4 [5.37]	460 [18.11]	519.3 [20.45]	150 [5.9]	425 [16.73]	175 [6.89]	210 [8.27]	210 [8.27]	188 [7.4]	405 [15.95]
Frame D	T2, T4 and T6 (3)	250 [9.84]	602 [23.7]	294 [11.57]	135 [5.31]	625 [24.6]	700 [27.56]	200 [7.87]	600 [23.6]	220 [8.66]	290 [11.41]	298 [11.73]	238 [9.37]	565 [22.24]
	CFW900D80P0T6 CFW900D85P0T6			325.15 [12.8]	167 [6.57]									
Frame E	T2, T4 and T6	335 [13.19]	620 [24.4]	358 [14.09]	169 [6.65]	675 [26.57]	763.4 [29]	200 [7.87]	650 [25.6]	275 [10.83]	320 [12.6]	320 [12.6]	316 [12.44]	620 [24.41]
Frame F	T2 and T4	370 [14.57]	966 [38.03]	360.1 [14.18]	174.9 [6.89]	1074.3 [42.30]	-	125 [4.92] (4)	1000.0 [39.37]	270.0 [10.63]	497.0 [19.57]	497.0 [19.57]	331.0 [13.03]	957.0 [37.68]
Frame G	T4 and T6	430 [16.93]	1156 [45.51]	360.1 [14.18]	165.4 [6.51]	1267.8 [49.91]	-	150 [5.91] (5)	1200 [47.24]	350 [13.78]	591.8 [23.29]	591.8 [23.29]	392 [15.43]	1147.6 [45.18]
Frame H	T4 and T6	535 [21.06]	1190 [46.85]	425.9 [16.77]	197.7 [7.78]	1303.4 [51.31]	-	150 [5.91] (6)	1224.2 [48.2]	425 [16.73]	609.6 [24]	609.6 [24]	507.5 [19.98]	1183.2 [46.58]

(1) Tolerance of the dimensions: ± 1.0 mm (± 0.039 in).
(2) Tolerance of the dimensions d3 and e3: + 1.0 mm (+ 0.039 in).
(3) Except for the models CFW900D80P0T6 and CFW900D85P0T6.
(4) In Frame F there are 3 holes, so the total width between the holes is 250 mm [9.84 in].
(5) In Frame G there are 3 holes, so the total width between the holes is 300 mm [11.81 in].
(6) In Frame H there are 4 holes, so the total width between the holes is 450 mm [17.71 in].

Table 3.2: *Screws for the fixing holes*

Model	c2 M	f3 M	Torque (1) N.m [lbf.in]
Frame A	M5	M5	5 [44.2]
Frame B	M5	M5	5 [44.2]
Frame C	M6	M6	8.5 [75.2]
Frame D	M8	M8	20 [177]
Frame E	M8	M8	20 [177]
Frame F	M10	M10	35 [309.78]
Frame G	M10	M10	35 [309.78]
Frame H	M10	M10	35 [309.78]

(1) Recommended torque for inverter fixing.

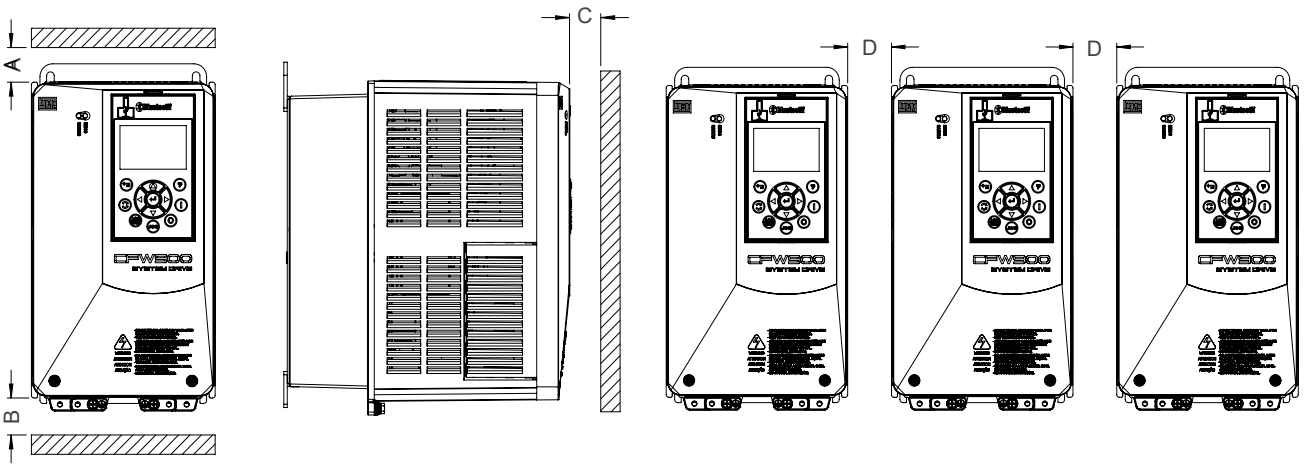


Figure 3.2: *Free clearances for ventilation*

Table 3.3: *Free clearances for ventilation*

Frame Size	Protection Rating	A mm [in]	B mm [in]	C mm [in]	D mm [in]
A	IP20	25 [0.98]	25 [0.98]	10 [0.39]	0 [0]
	IP21 / UL type 1	25 [0.98]	25 [0.98]	10 [0.39]	30 [1.18]
B	IP20	40 [1.57]	45 [1.77]	10 [0.39]	0 [0]
	IP21 / UL type 1	40 [1,57]	45 [1.77]	10 [0.39]	30 [1.18]
C	IP20	110 [4.33]	130 [5.12]	10 [0.39]	0 [0]
	IP21 / UL type 1	110 [4.33]	130 [5.12]	10 [0.39]	30 [1.18]
D	IP20	110 [4.33]	130 [5.12]	10 [0.39]	0 [0]
	IP21 / UL type 1	110 [4.33]	130 [5.12]	10 [0.39]	30 [1.18]
E	IP20	150 [5.9]	250 [9.84]	20 [0.79]	80 [3.15]
	IP21 / UL type 1	150 [5.9]	250 [9.84]	20 [0.79]	113 [4.45]
F	IP20	150 [5.9]	250 [9.84]	20 [0.79]	80 [3.15]
	IP21	150 [5.9]	250 [9.84]	20 [0.79]	113 [4.45]
G	IP20	150 [5.9]	250 [9.84]	20 [0.79]	80 [3.15]
	IP21	150 [5.9]	250 [9.84]	20 [0.79]	113 [4.45]
H	IP20	150 [5.9]	250 [9.84]	20 [0.79]	80 [3.15]
	IP21	150 [5.9]	250 [9.84]	20 [0.79]	113 [4.45]

3.1.3 Horizontal Mounting

Frames A ... C can be mounted horizontally without derating the output current. The correct mounting position is shown in Figure 3.3 on page 21.

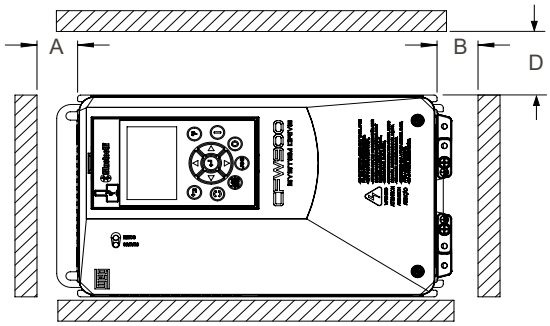


Figure 3.3: *Horizontal mounting (See Table 3.3 on page 21)*

3.1.4 Cabinet Mounting

It is possible to mount the inverters: on a surface or a flange. To that end, the following considerations must be taken into account:

3.1.4.1 Surface Mounting

- Provide adequate exhaustion so that the internal cabinet temperature is kept within the allowable operating range of the inverter.
- The power dissipated by the inverter at its rated condition and the heatsink fan flow at the operation point are specified in Chapter 8 TECHNICAL SPECIFICATIONS on page 113.
- The position and diameter of the mounting holes, according to Figure 3.1 on page 19.

ATTENTION!
UL type 1 inverters support surface mounting only.

3.1.4.2 Flange Mounting

In the flange-mounting type, the back of the inverter (which contains the heatsink and fan) is installed outside the panel. Therefore, the power module cooling air is kept outside the cabinet.

- The mounting brackets must be removed and repositioned as shown in Figure 3.4 on page 22.
- Dimensions of the opening for mounting the back of the product, position and diameter of the mounting holes, as shown in Figure 3.1 on page 19.
- The portion of the inverter that is located outside the cabinet is rated IP55 / UL type 12. To ensure that the cabinet degree of protection is maintained, adequate sealing must be provided between the panel opening and the drive flange. To do this, you can use the flange mounting kit (see Table 7.1 on page 110).

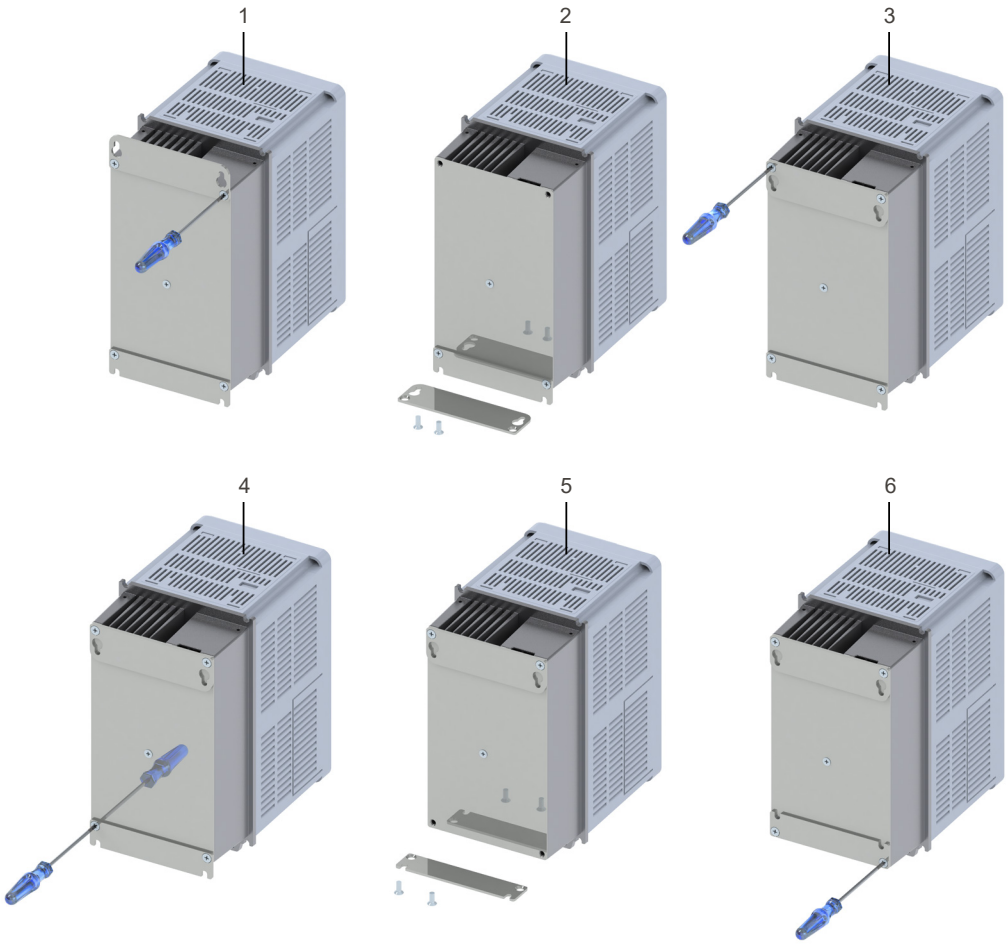


Figure 3.4: *Repositioning of the mounting brackets*

3.1.4.3 Mounting with Flexible Ducts

The inverters of frames E, F, G and H can be mounted with the flexible duct kit KDF-01 (intake kit) and KDF-02 (exhaust kit). In this way, both the inlet and outlet of the power module's cooling air are channeled and do not mix with the air inside the cabinet. The main advantages of this type of mounting are the possibility of admitting cooler air (from outside the cabinet) and reducing the ventilation of the cabinet itself, since the hot exhaust air does not mix with the air inside the cabinet.

Possible mounting alternatives are illustrated in Figure 3.5 on page 23. Dimensions of the opening for fixing to the panel as illustrated in Figure 3.6 on page 24.

The ducts are flexible and can be bent and stretched, but they must not be twisted.

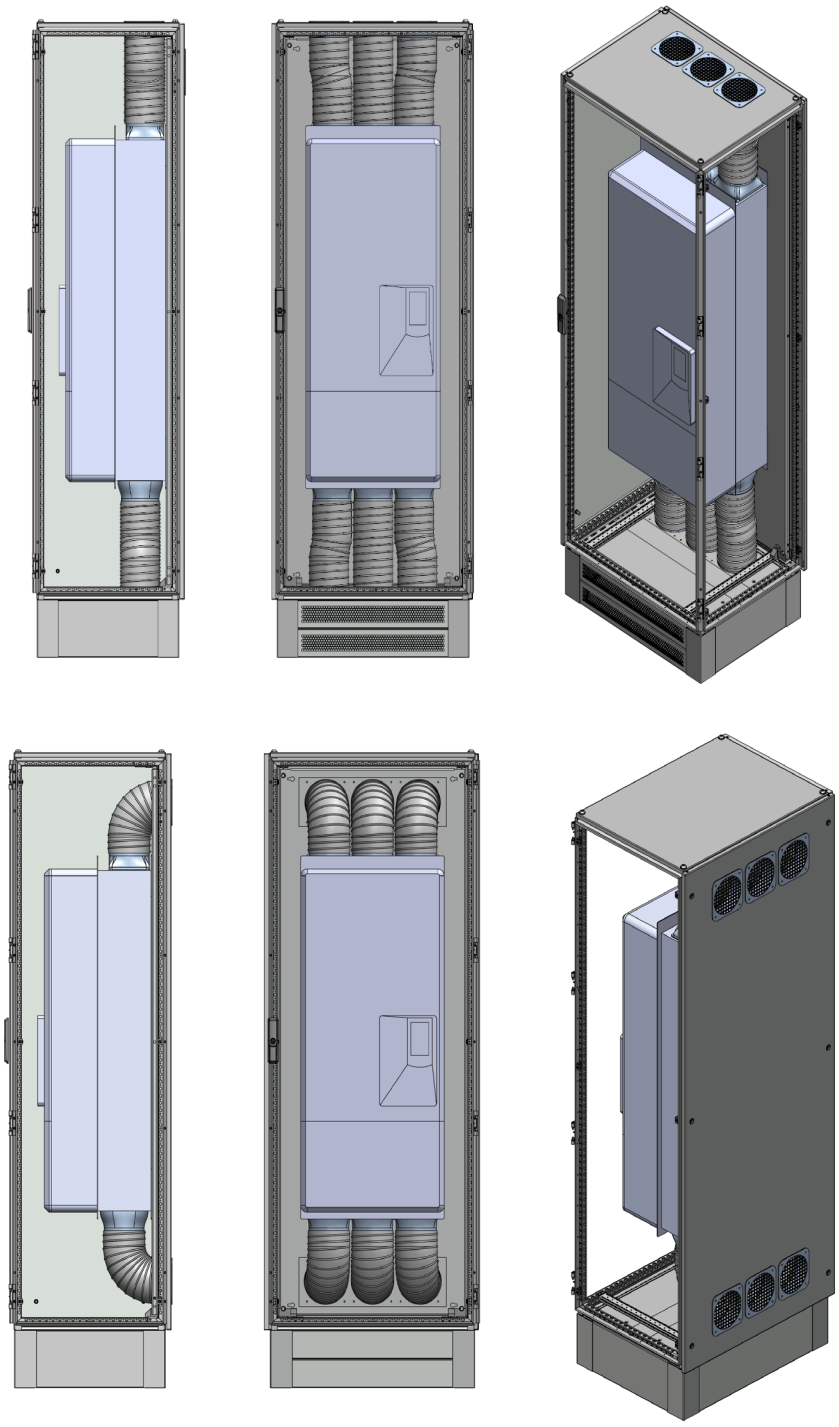


Figure 3.5: *Example of mounting with flexible ducts*

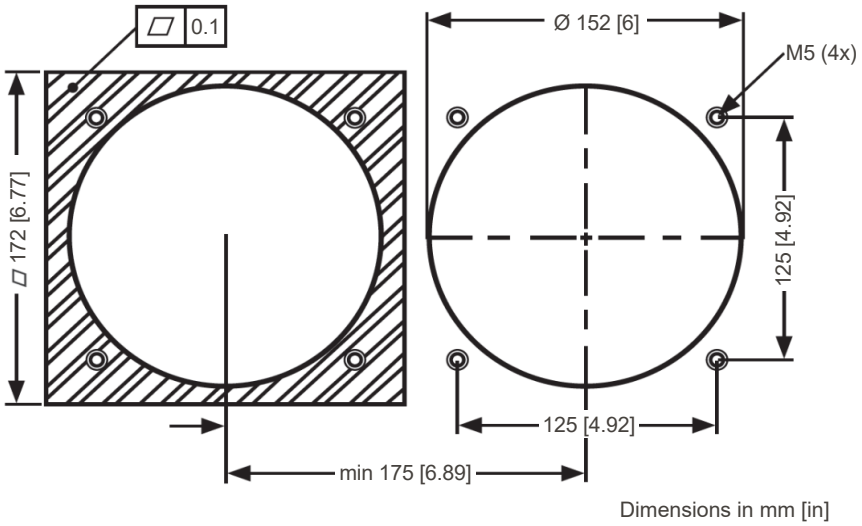


Figure 3.6: *Panel drilling for mounting with flexible ducts*

For frames F, G and H, the mounting with the flexible duct kit gives the IP55/ UL type 12 protection degree from one end to the other. In frame E, the air is ducted, but without degree of protection. Alternatively, it is possible to install only the exhaust kit, thus channeling only the hot air out of the cabinet. The air intake would still be internal to the cabinet and the degree of protection would not apply.

For more information on the installation and use of the kit, see the guides available on the WEG website: **www.weg.net**.

3.1.5 Access to Control and Power Terminals

In CFW900 inverters of frames A, B, C and D, it is necessary to remove the HMI and the front cover to access the control and power terminals, as shown in Figure 3.7 on page 24.

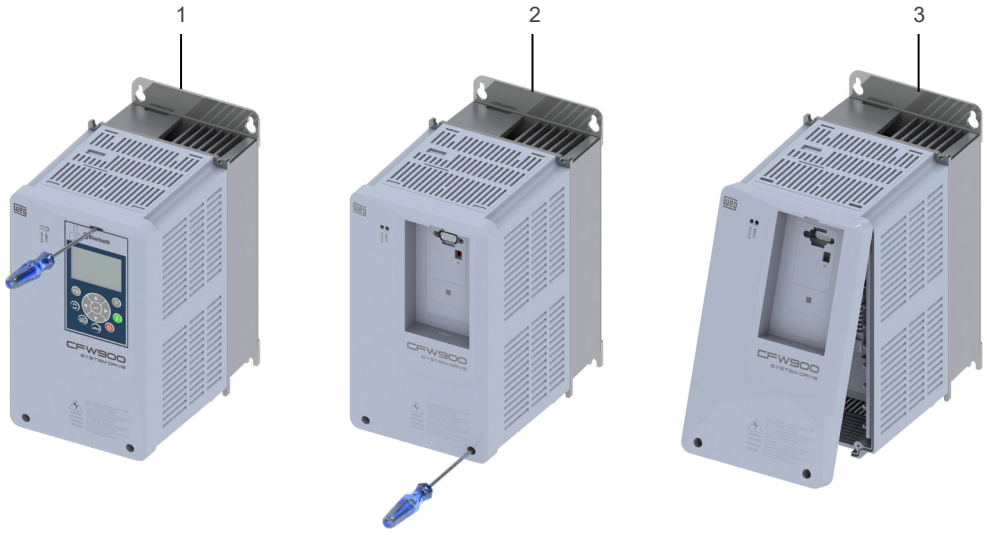


Figure 3.7: *Removal of HMI and front cover*

In case of inverters of frame sizes E, F, G and H, it is necessary to remove the HMI and control rack cover to access the control terminals (see Figure 3.8 on page 25). In order to access the power terminals, remove the lower front cover as shown in Figure 3.9 on page 25.



Figure 3.8: *HMI and control rack cover removal*



Figure 3.9: *Bottom front cover removal*

Frames F, G and H also contains power terminals at the top, and the two upper covers must be removed to access them, as shown in Figure 3.10 on page 25.

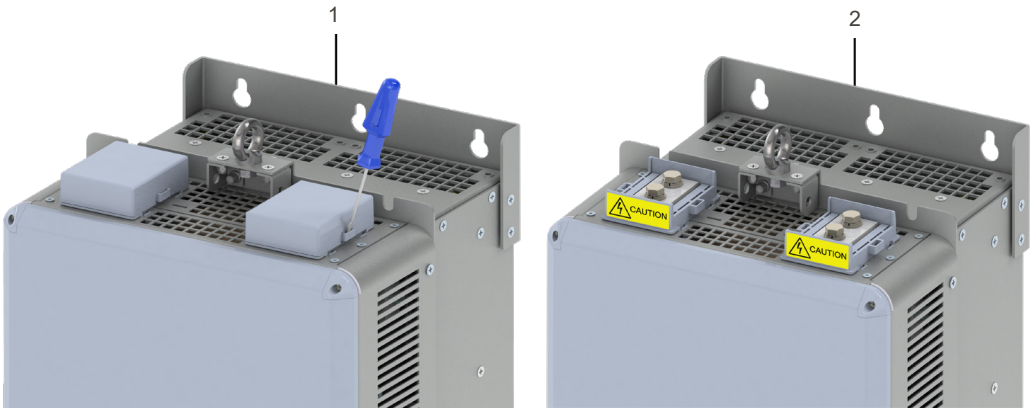


Figure 3.10: *Top covers removal*

3.1.6 HMI Installation at the Cabinet Door or Command Panel (Remote HMI)

The dimensions necessary to assemble the HMI on the panel door or control table are shown in Figure 3.11 on page 26. If you prefer, the frame accessory can also be used to fix the HMI in these places.

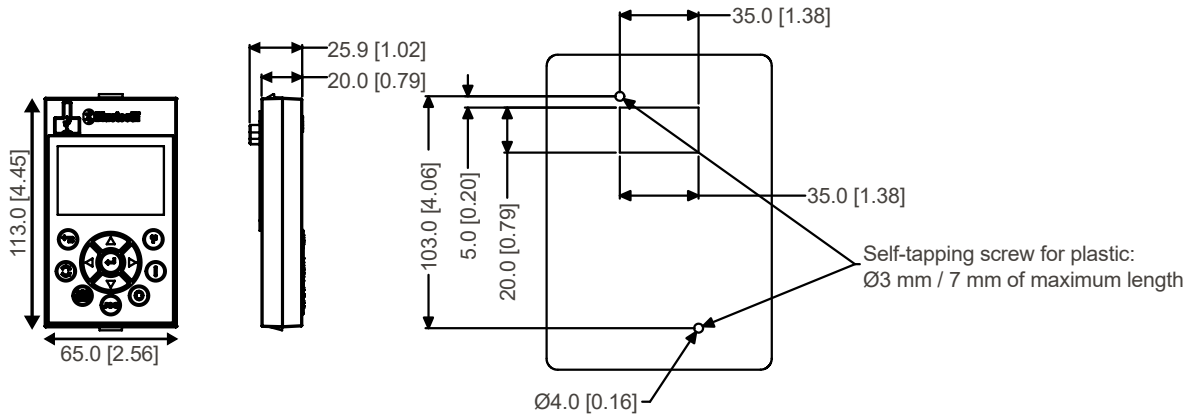


Figure 3.11: *Data for the HMI installation at the cabinet door or command panel - mm [in]*

3.2 ELECTRICAL INSTALLATION

DANGER!
- The following information is merely a guide for proper installation. Comply with applicable regulations for electrical installations.
- Make sure the AC power supply is disconnected before starting the installation.

ATTENTION!
The short-circuit protection of the inverter does not provide short-circuit protection for the feeder circuit. The short-circuit protection of the feeder circuit must be provided in accordance with applicable local regulations.

ATTENTION!
To use the DC+ and DC- terminals of the inverters of frames F, G and H, you need to remove the plastic covers from the DC+ and DC- terminals on the top of the inverter (see Figure 3.10 on page 25). Removing these plastic covers reduces the inverter's degree of protection to IP00.

DANGER!
If the inverter of frames F, G and H is energized without the protective covers on the DC+ and DC- terminals, there is a risk of electric shock. Similarly, if the inverter of frames E, F, G and H is energized without the lower front cover (see Figure 3.9 on page 25) there is a risk of electric shock.

3.2.1 Identification of the Power and Grounding Terminals

NOTE!
Models CFW900A04P5B2, CFW900A06P0B2, CFW900A07P3B2 and CFW900A10P0B2 may operate with single-phase power supply without rated output current derating. In this case, the single-phase power supply may be connected to two of any input terminals.

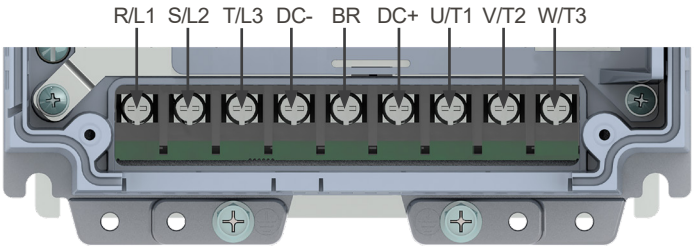
The power terminals can be of different sizes and configurations depending on the inverter model. The location of the power and grounding connections are indicated in Figure 3.12 on page 29 and Figure 3.29 on page 61.

Description of the power terminals:

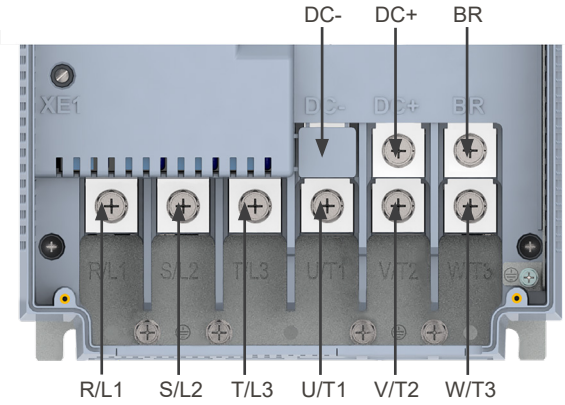
- R/L1, S/L2, T/L3: AC power supply network cable connection.
- DC-/-UD: negative pole of the DC power supply.
- BR: braking resistor connection.
- DC+/+UD: positive pole of the DC power supply.
- U, V and W: motor cable connection.

The maximum tightening torque of the power terminals and grounding points must be checked in Table 3.5 on page 34.

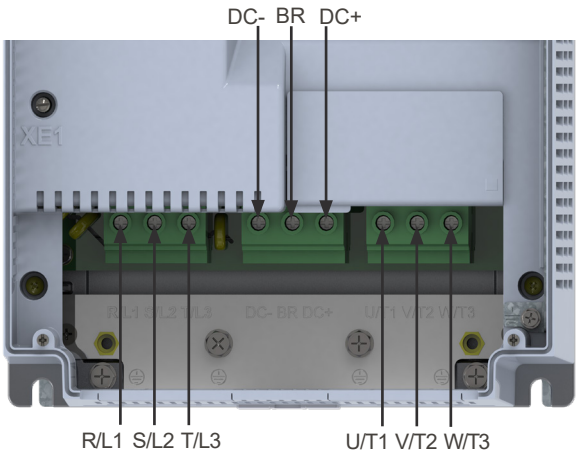
DANGER!
Observe correct DC power connection, polarity and position of the terminals.



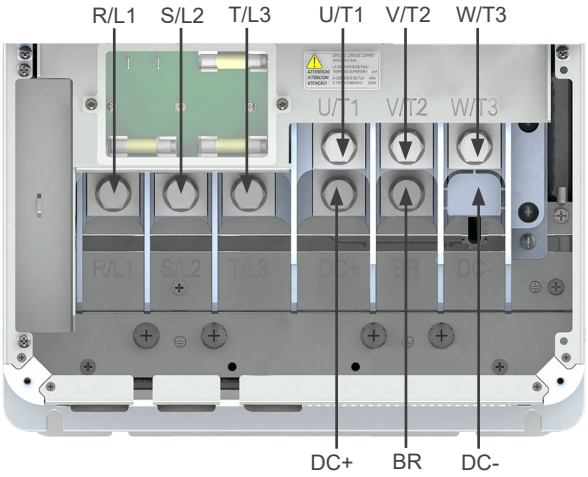
(a) Frame sizes A, B and C



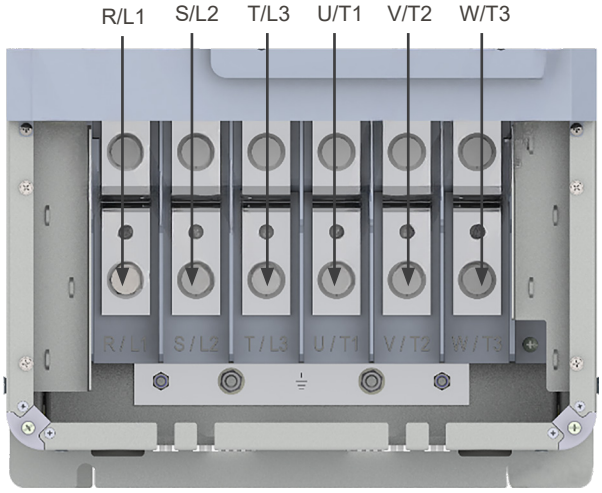
(b) Frame size D (T2 and T4)



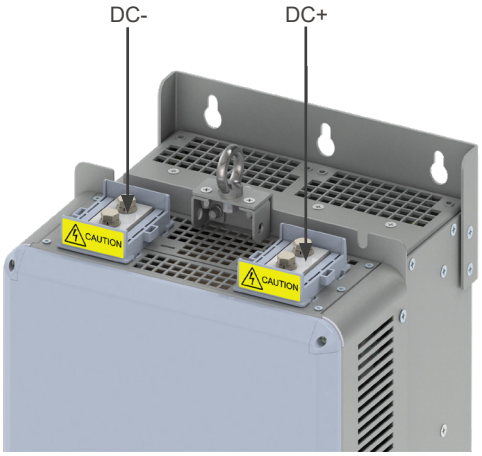
(c) Frame size D (T6)



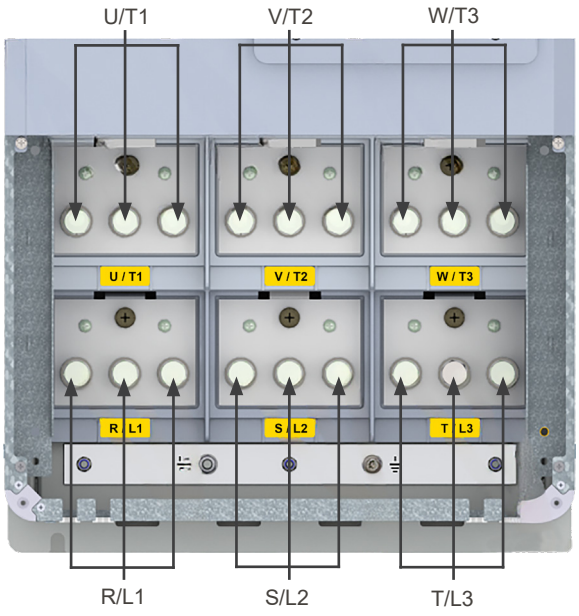
(d) Frame size E



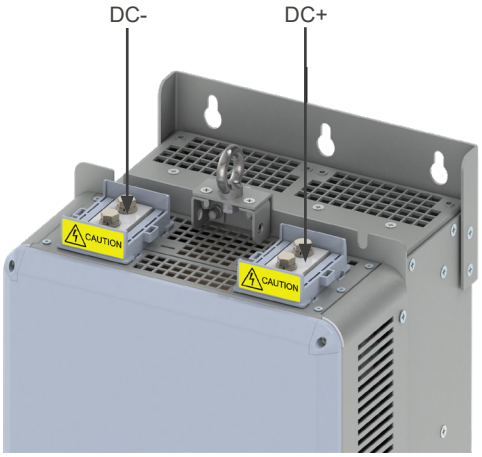
(e) Frame size F (Bottom)



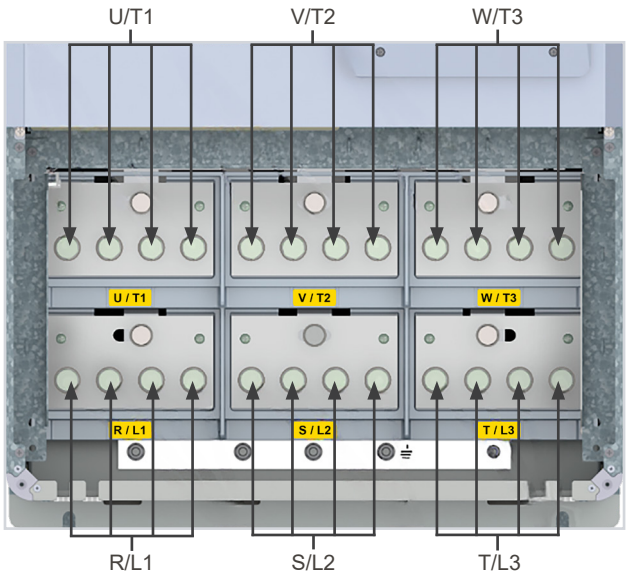
(f) Frame size F (Upper side)



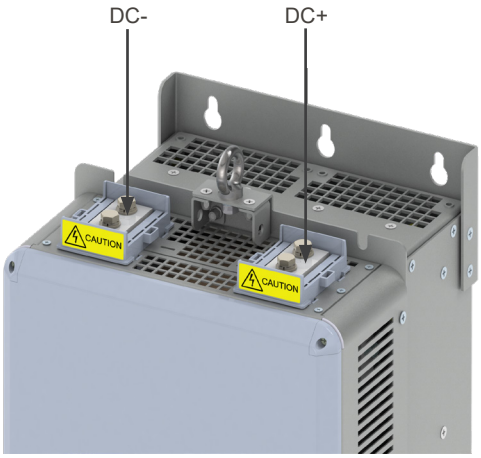
(g) Frame size G (Bottom)



(h) Frame size G (Upper side)



(i) Frame size H (Bottom)



(j) Frame size H (Upper side)

Figure 3.12: *(a) to (j) Power terminals*

To ensure the IP20 protection rating in frame C (T2, T4 and T5 lines) and frame D (T6 line) when powered by the DC link without using the braking resistor, break the flaps of the cover protecting the DC+, DC- and BR terminals and insert this new cover to seal the BR terminal, as shown in Figure 3.13 on page 29 and Figure 3.14 on page 30. In this case, the cover of terminals R/L1, S/L2 and T/L3 must be kept.

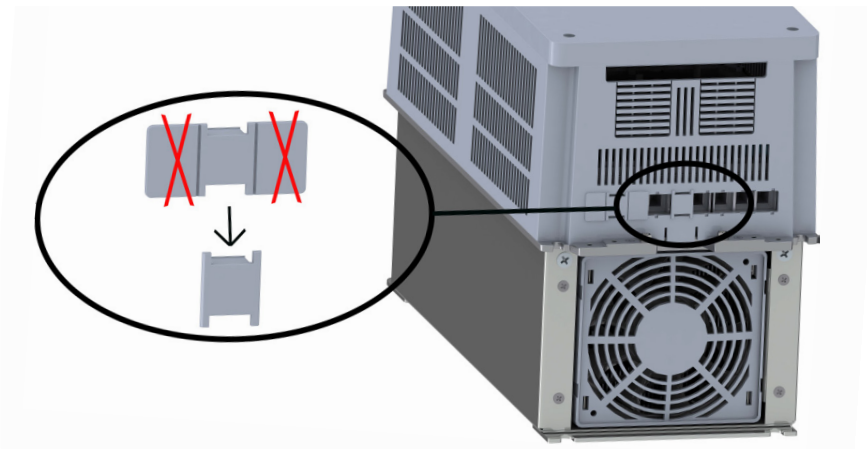
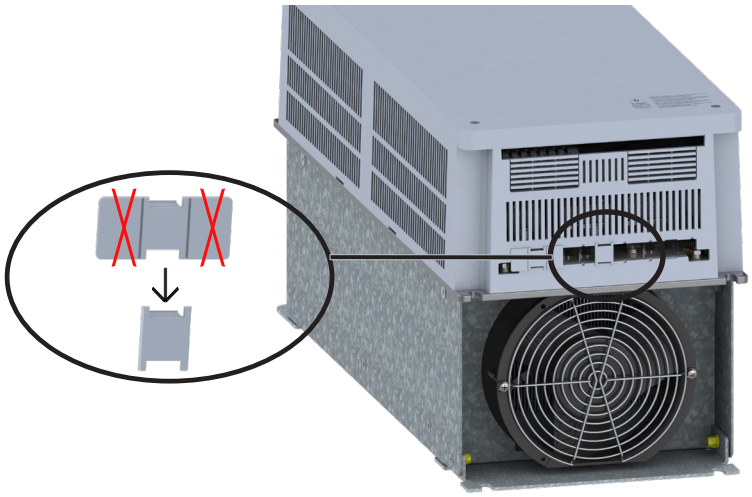
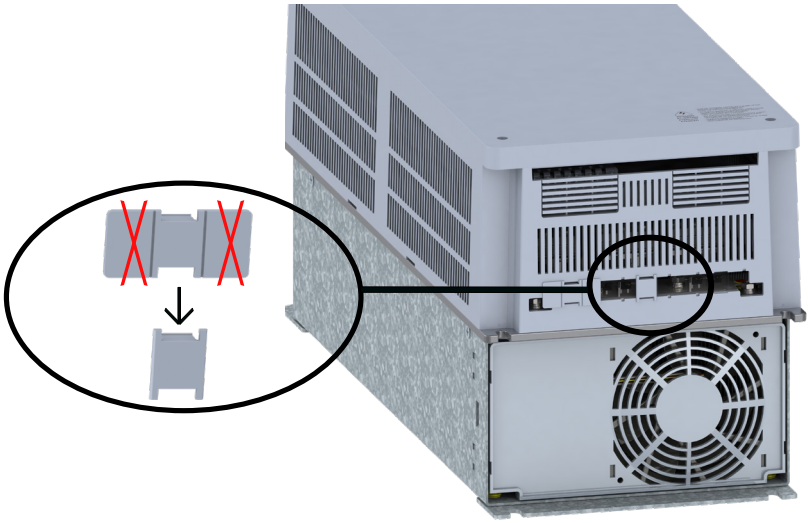


Figure 3.13: *BR terminal protection for DC link supply - frame C*



(a) Models CFW900D80P0T6 and CFW900D85P0T6



(b) Other models

Figure 3.14: *(a) and (b) BR terminal protection for DC link supply - frame D T6*

To ensure the IP20 protection rating in frame G, the following adaptations must be made to the power and ground connections, as shown in Table 3.4 on page 31 and Figure 3.16 on page 32 to Figure 3.18 on page 33.

Table 3.4: *Adaptations in frame G to ensure the IP20 protection rating*

Model	Output Current (A)		R/L1; S/L2; T/L3; U/T1; V/T2; W/T3 (1)			PE (1)			Mounting
			Number of Wires	Wire Size (AWG)	Wire Size (mm^2)	Number of Wires	Wire Size (AWG)	Wire Size (mm^2)	
CFW900G0430T4	HD	370	2	250	120	2	3	35	1 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
	ND	430	2	300	150	2	2	35	2 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
CFW900G0480T4	HD	430	2	300	150	2	2	35	3 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
	ND	480	2	350	185	2	1	50	4 - With bulkhead, break knockout (See Figure 3.17 on page 32)
CFW900G0540T4	HD	480	2	350	185	2	1	50	5 - With bulkhead, break knockout (See Figure 3.17 on page 32)
	ND	540	3	4/0	95	2	1/0	50	6 - With bulkhead, break knockout (See Figure 3.17 on page 32)
CFW900G0601T4	HD	515	3	4/0	95	2	1	50	7 - With bulkhead, break knockout (See Figure 3.17 on page 32)
	ND	601	3	250	150	2	2/0	70	8 - No bulkhead (See Figure 3.18 on page 33)
CFW900G0242T6	HD (2)	192	2	1	50	2	8	10	9 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
	ND (2)	242	2	2/0	70	2	6	16	10 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
CFW900G0289T6	HD (2)	242	2	2/0	70	2	6	16	11 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
	ND (2)	289	2	3/0	95	2	4	25	12 - With bulkhead, break knockout (See Figure 3.17 on page 32)
CFW900G0336T6	HD (2)	289	2	3/0	95	2	4	25	13 - With bulkhead, break knockout (See Figure 3.17 on page 32)
	ND (2)	336	2	4/0	120	2	4	25	14 - With bulkhead, break knockout (See Figure 3.17 on page 32)
CFW900G0242T6	HD (3)	167	2	2	35	2	8	10	15 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
	ND (3)	215	2	1/0	50	2	6	16	16 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
CFW900G0289T6	HD (3)	215	2	1/0	50	2	6	16	17 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
	ND (3)	265	2	2/0	70	2	4	25	18 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
CFW900G0336T6	HD (3)	264	2	2/0	70	2	4	25	19 - With bulkhead, keep knockout (See Figure 3.16 on page 32)
	ND (3)	326	2	4/0	120	2	4	25	20 - With bulkhead, break knockout (See Figure 3.17 on page 32)

(1) The wire gauges are orientative values. Installation conditions and the maximum permitted voltage drop must be considered for the proper wiring sizing.
(2) Current specification for power supply voltage from 500 to 600 Vac.
(3) Current specification for power supply voltage from 660 to 690 Vac.

Depending on the number of wires used, the bulkhead must be moved to seal off the power terminal, as shown in Figure 3.15 on page 32.

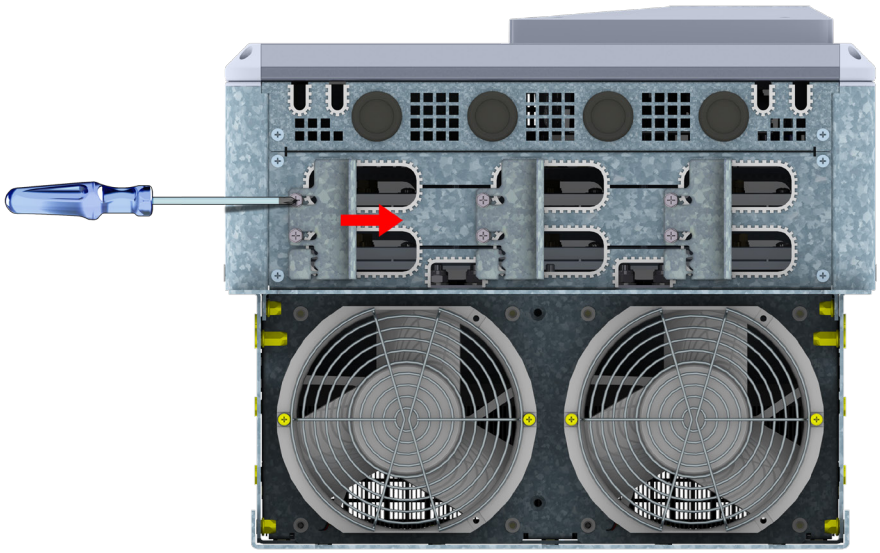


Figure 3.15: *Displacement of the bulkhead for sealing the power terminal*

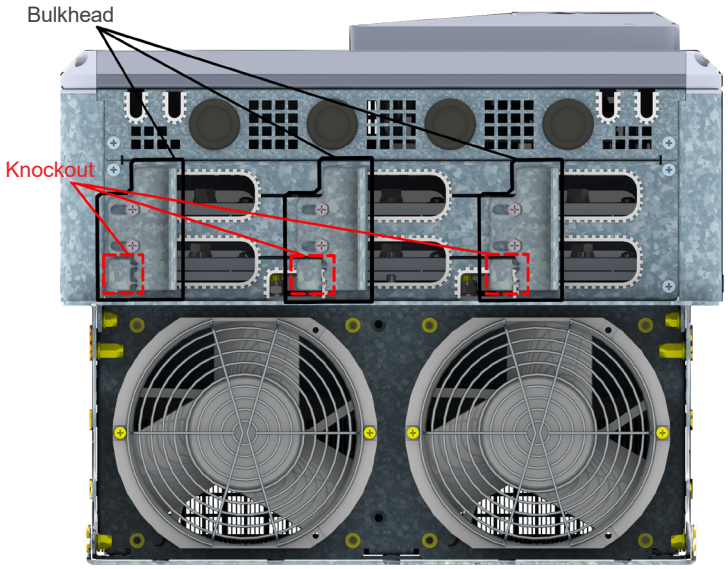


Figure 3.16: *Mounting 1, 2 and 3*

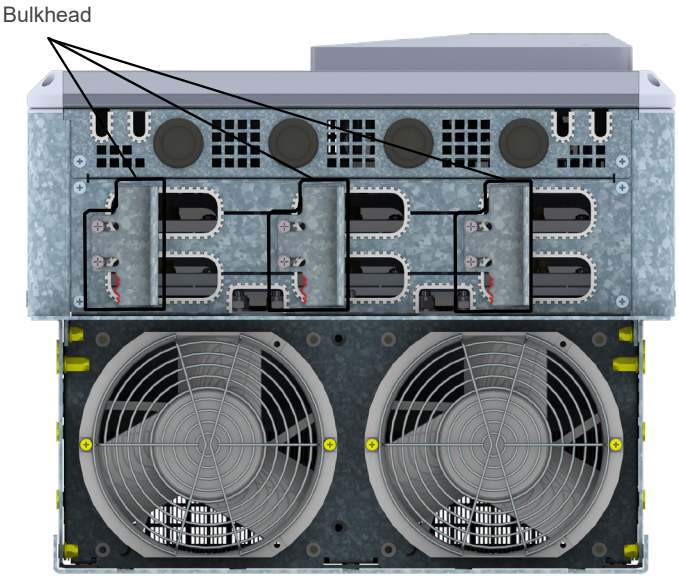


Figure 3.17: *Mounting 4, 5, 6 and 7*

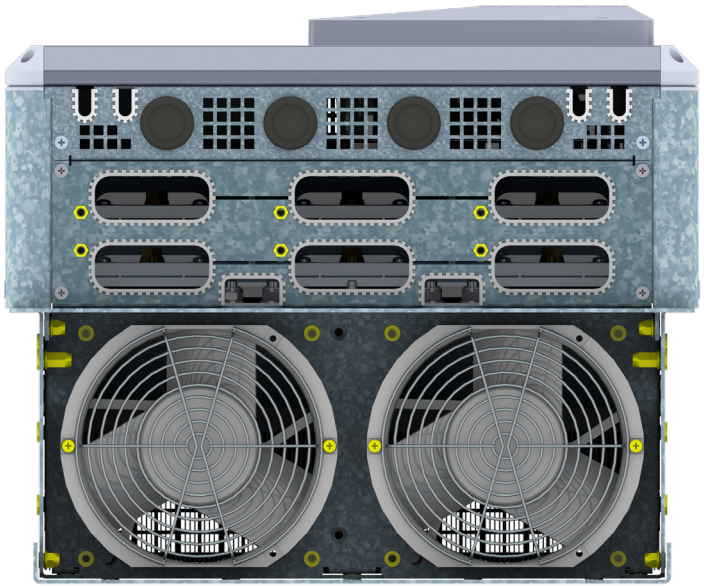


Figure 3.18: *Mounting 8*

3.2.2 Power and Grounding Wiring

ATTENTION!
When power and ground connections are made with flexible cables, it is necessary to use suitable terminals.

ATTENTION!
Sensitive equipment, such as PLCs, temperature controllers and thermocouple cables, should be at least 0.25 meters away from the frequency inverters and cables connecting the inverter to the motor.

DANGER!
Wrong cable connection:
- The inverter will be damaged in case the input power supply is connected to the output terminals (U/T1, V/T2, or W/T3).
- Check all the connections before powering up the inverter.
- In case of replacing an existing inverter by a CFW900, check if the installation and wiring is according to the instructions listed in this manual.

NOTE!
The wire gauges listed in Table 3.5 on page 34 are orientative values. Installation conditions and the maximum permitted voltage drop must be considered for the proper wiring sizing.

Table 3.5: *Recommended wire size - Use only copper wire (75 ºC (167 °F))*

Model	Power Terminals			Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	mm²	AWG	Terminal Type	
CFW900A04P6B2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A06P0B2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A07P5B2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5/4(3)	14/12(3)	Fork	
	Grounding(2)	M4 (phillips)		4.0	12	Lug	
CFW900A10P0B2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5/6(3)	14/10(3)	Fork	
	Grounding(2)	M4 (phillips)		6.0	10	Lug	
CFW900A04P6T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A06P0T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A07P5T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A10P6T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A13P0T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	4.0	12	Fork	
	Grounding(2)	M4 (phillips)				Lug	

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.
(3) The first value is for 3-phase power supply and motor connection, and the second value is for single-phase power supply.

Model	Power Terminals			Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	mm²	AWG	Terminal Type	
CFW900A19P0T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	4.0	10	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B26P0T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	6.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B34P0T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	10.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B45P0T2	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	16.0	6	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900C56P0T2	Power(1)	M4 (phillips/ slotted)	3.7 (32.8)	25.0	4	Wire ferrule	
	Grounding(2)	M4 (phillips)		16.0	4	Lug	
CFW900C70P0T2	Power(1)	M4 (phillips/ slotted)	3.7 (32.8)	25.0	4	Wire ferrule	
	Grounding(2)	M4 (phillips)		16.0	4	Lug	
CFW900C80P0T2	Power(1)	M4 (phillips/ slotted)	3.7 (32.8)	35.0	3	Wire ferrule	
	Grounding(2)	M4 (phillips)		16.0	4	Lug	
CFW900D0110T2	Power(1)	M8 (Hexagonal /Phillips/ screw)	15 (132.8)	50	1/0	Lug	
	Grounding(2)	M6 (Hexagonal/Phillips screw)	5 (44.2)	35	3		
CFW900D0135T2	Power(1)	M8 (Hexagonal /Phillips/ screw)	15 (132.8)	70	2/0	Lug	
	Grounding(2)	M6 (Hexagonal/Phillips screw)	5 (44.2)	35	3		

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.

Model	Power Terminals			Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	mm²	AWG	Terminal Type	
CFW900D0150T2	Power(1)	M8 (Hexagonal /Phillips/ screw)	15 (132.8)	95	3/0	Lug	
	Grounding(2)	M6 (Hexagonal/Phillips screw)	5 (44.2)	35	3		
CFW900E0172T2	Power(1)	M10 (Hexagonal screw)	30 (265.5)	HD: 95 or 2x25 ND: 95 or 2x35	HD: 3/0 or 2x3 ND: 4/0 or 2x2	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	50	1/0		
CFW900E0195T2	Power(1)	M10 (Hexagonal screw)	30 (265.5)	HD: 95 or 2x35 ND: 120 or 2x50	HD: 3/0 or 2x3 ND: 250 or 2x1	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	70	2/0		
CFW900E0250T2	Power(1)	M10 (Hexagonal screw)	30 (265.5)	HD: 150 or 2x50 ND: 2x70	HD: 250 or 2x1 ND: 2x2/0	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	95	3/0		
CFW900F0315T2	Power(4)	M12 (Hexagonal screw)	60 (531.0)	HD: 2x70 ND: 2x85	HD: 2x 2/0 ND: 2x 3/0	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 2x95 ND: 2x120	HD: 2x 3/0 ND: 2x 4/0		
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	95	4/0		
CFW900F0370T2	Power(4)	M12 (Hexagonal screw)	60 (531.0)	HD: 2x85 ND: 2x120	HD: 2x 3/0 ND: 2x 250	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 2x120 ND: 2x150	HD: 2x 4/0 ND: 2x 300		
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	HD: 1x95 ND: 1x120	HD: 1x4/0 ND: 1x250		
CFW900A02P8T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)					
CFW900A03P6T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)					
CFW900A04P8T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)					

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.
(4) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3.
(5) DC+ ; DC-.

Model	Power Terminals			Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	mm²	AWG	Terminal Type	
CFW900A06P5T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A09P6T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	2.5	14	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A14P0T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	4.0	12	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900A17P0T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	4.0	10	Fork	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B26P0T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	6.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B33P0T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	10.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B39P0T4	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	10.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900C50P0T4	Power(1)	M5 (pozidriv)	3.7 (32.8)	16.0	6	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900C62P0T4	Power(1)	M5 (pozidriv)	3.7 (32.8)	25.0	4	Wire ferrule	
	Grounding(2)	M4 (phillips)		16.0	4	Lug	
CFW900C74P0T4	Power(1)	M5 (pozidriv)	3.7 (32.8)	25.0	3	Wire ferrule	
	Grounding(2)	M4 (phillips)		16.0	4	Lug	

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.

Model	Power Terminals			Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	mm²	AWG	Terminal Type	
CFW900D96P0T4	Power(1)	M8 (Hexagonal/Phillips screw)	15 (132.8)	50	1/0	Lug	
	Grounding(2)	M6 (Hexagonal/Phillips screw)	5 (44.2)	35	3		
CFW900D0124T4	Power(1)	M8 (Hexagonal/Phillips screw)	15 (132.8)	70	2/0	Lug	
	Grounding(2)	M6 (Hexagonal/Phillips screw)	5 (44.2)	35	3		
CFW900D0146T4	Power(1)	M8 (Hexagonal/Phillips screw)	15 (132.8)	70	3/0	Lug	
	Grounding(2)	M6 (Hexagonal/Phillips screw)	5 (44.2)	35	3		
CFW900E0172T4	Power(1)	M10 (Hexagonal screw)	30 (265.5)	HD: 95 or 2x25 ND: 95 or 2x35	HD: 2/0 or 2x3 ND: 4/0 or 2x2	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	50	1/0		
CFW900E0203T4	Power(1)	M10 (Hexagonal screw)	30 (265.5)	HD: 95 or 2x35 ND: 120 or 2x50	HD: 3/0 or 2x3 ND: 250 or 2x1	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	70	2/0		
CFW900E0242T4	Power(1)	M10 (Hexagonal screw)	30 (265.5)	HD: 120 or 2x35 ND: 2x70	HD: 4/0 or 2x1 ND: 2x1/0	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	95	2/0		
CFW900F0315T4	Power(4)	M12 (Hexagonal screw)	60 (531.0)	HD: 2x70 ND: 2x85	HD: 2x2/0 ND: 2x3/0	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 2x95 ND: 2x120	HD: 2x3/0 ND: 2x4/0		
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	95	4/0		
CFW900F0370T4	Power(4)	M12 (Hexagonal screw)	60 (531.0)	HD: 2x85 ND: 2x120	HD: 2x3/0 ND: 2x250	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 2x120 ND: 2x150	HD: 2x4/0 ND: 2x300		
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	HD: 1x95 ND: 1x120	HD: 1x4/0 ND: 1x250		

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.
(4) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3.
(5) DC+ ; DC-.

Model	Power Terminals			Busbar	Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	Width x Thickness (in)	mm²	AWG	Terminal Type	
CFW900G0430T4	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x120 ND: 2x150	HD: 2x250 ND: 2x300	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (625.5)	HD: 2x1/4 ND: 3x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	2x 35	HD: 2x3 ND: 2x2		
CFW900G0480T4	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x150 ND: 2x185	HD: 2x300 ND: 2x350	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 3x1/4 ND: 3x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	HD: 2x35 ND: 2x50	HD: 2x2 ND: 2x1		
CFW900G0540T4	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x185 ND: 3x95	HD: 2x350 ND: 3x4/0	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 3x1/4 ND: 3x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	2x50	HD: 2x1 ND: 2x1/0		
CFW900G0601T4	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 3x95 ND: 3x150	HD: 3x4/0 ND: 3x250	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 3x1/4 ND: 3x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	HD: 2x50 ND: 2x70	HD: 2x1 ND: 2x2/0		
CFW900H0760T4	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 3x150 ND: 3x185	HD: 3x250 ND: 3x400	Lug	
	Power(5)	M12 (Hexagonal screw)	60 (531.0)	HD: 3x1/4 ND: 4x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	HD: 2x70 ND: 2x95	HD: 2x3/0 ND: 2x3/0		
CFW900B02P9T5	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	-	2.5	14	Wire ferrule	
	Grounding(2)	M4 (phillips)					Lug	
CFW900B04P2T5	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	-	2.5	14	Wire ferrule	
	Grounding(2)	M4 (phillips)					Lug	
CFW900B07P0T5	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	-	2.5	14	Wire ferrule	
	Grounding(2)	M4 (phillips)					Lug	
CFW900B10P0T5	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	-	2.5	14	Wire ferrule	
	Grounding(2)	M4 (phillips)					Lug	

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.
(4) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3.
(5) DC+ ; DC-.

Model	Power Terminals			Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	mm²	AWG	Terminal Type	
CFW900B12P0T5	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	4.0	12	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B17P0T5	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	4.0	10	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B22P0T5	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	6.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900B27P0T5	Power(1)	M4 (phillips/ slotted)	1.2 (10.6)	6.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900C32P0T5	Power(1)	M5 (pozidriv)	3.7 (32.8)	10.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900C44P0T5	Power(1)	M5 (pozidriv)	3.7 (32.8)	16.0	6	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900C54P0T5	Power(1)	M5 (pozidriv)	3.7 (32.8)	16.0	6	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900D02P9T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	2.5	14	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900D04P2T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	2.5	14	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.

Model	Power Terminals			Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	mm²	AWG	Terminal Type	
CFW900D07P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	2.5	14	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900D10P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	2.5	14	Wire ferrule	
	Grounding(2)	M4 (phillips)				Lug	
CFW900D12P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	4.0	12	Wire ferrule	
	Grounding(2)	M4 (phillips)		2.5	14	Lug	
CFW900D17P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	6.0	10	Wire ferrule	
	Grounding(2)	M4 (phillips)		2.5	14	Lug	
CFW900D22P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	10.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)		2.5	14	Lug	
CFW900D27P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	10.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)		2.5	14	Lug	
CFW900D32P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	10.0	8	Wire ferrule	
	Grounding(2)	M4 (phillips)		4.0	12	Lug	
CFW900D44P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	16.0	6	Wire ferrule	
	Grounding(2)	M4 (phillips)		6.0	10	Lug	
CFW900D54P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	25.0	4	Wire ferrule	
	Grounding(2)	M4 (phillips)		6.0	10	Lug	
CFW900D64P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	35.0	3	Wire ferrule	
	Grounding(2)	M4 (phillips)		10.0	8	Lug	

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.

Model	Power Terminals			Busbar	Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	Width x Thickness (in)	mm²	AWG	Terminal Type	
CFW900D80P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	-	35.0	2	Wire ferrule	
	Grounding(2)	M4 (phillips)			10.0	8	Lug	
CFW900D85P0T6	Power(1)	M5 (pozidriv)	3.7 (32.8)	-	35.0	2	Wire ferrule	
	Grounding(2)	M4 (phillips)			10.0	8	Lug	
CFW900E0107T6	Power(1)	M10 (Hexagonal screw)	30 (265.5)	-	HD: 1x50 ND: 1x70	HD: 1x1 ND: 1x2/0	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)		HD: 1x10 ND: 1x16	HD: 1x8 ND: 1x6		
CFW900E0130T6	Power(1)	M10 (Hexagonal screw)	30 (265.5)	-	HD: 1x50 ND: 1x95	HD: 1x1/0 ND: 1x3/0	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	-	16	16		
CFW900E0150T6	Power(1)	M10 (Hexagonal screw)	30 (265.5)	-	HD: 1x95 ND: 1x120	HD: 1x3/0 ND: 1x4/0	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	-	HD: 1x16 ND: 1x25	HD: 1x6 ND: 1x4		
CFW900E0176T6	Power(1)	M10 (Hexagonal screw)	30 (265.5)	-	HD: 1x120 ND: 1x120	HD: 1x4/0 ND: 1x250	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	-	HD: 1x25 ND: 1x35	HD: 1x4 ND: 1x3		
CFW900E0192T6	Power(1)	M10 (Hexagonal screw)	30 (265.5)	-	HD: 1x120 ND: 1x150	HD: 1x4/0 ND: 1x300	Lug	
	Grounding(2)	M5 and M8 (Hexagonal/Phillips screw)	M5: 3.5 (31.0) M8: 15 (132.8)	-	HD: 1x25 ND: 1x35	HD: 1x4 ND: 1x3		
CFW900G0242T6	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x50 ND: 2x70	HD: 2x1 ND: 2x2/0	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 2x1/4 ND: 2x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	HD: 2x10 ND: 2x16	HD: 2x8 ND: 2x6		
CFW900G0289T6	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x70 ND: 2x95	HD: 2x2/0 ND: 2x3/0	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 2x1/4 ND: 2x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	HD: 2x16 ND: 2x25	HD: 2x6 ND: 2x4		
CFW900G0336T6	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x95 ND: 2x120	HD: 2x3/0 ND: 2x4/0	Lug	
	Power(5)	M10 (Hexagonal screw)	30 (265.5)	HD: 2x1/4 ND: 2x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	2x25	2x4		

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.
(4) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3.
(5) DC+ ; DC-.

Model	Power Terminals			Busbar	Wire Size			
	Terminals	Screw (type)	Recommended Torque N.m (lbf.in)	Width x Thickness (in)	mm²	AWG	Terminal Type	
CFW900H0384T6	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x120 ND: 2x120	HD: 2x4/0 ND: 2x250	Lug	
	Power(5)	M12 (Hexagonal screw)	60 (531.0)	HD: 2x1/4 ND: 2x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	HD: 2x25 ND: 2x35	HD: 2x4 ND: 2x3		
CFW900H0435T6	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x120 ND: 2x150	HD: 2x250 ND: 2x300	Lug	
	Power(5)	M12 (Hexagonal screw)	60 (531.0)	HD: 2x1/4 ND: 3x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	HD: 2x35 ND: 2x35	HD: 2x3 ND: 2x2		
CFW900H0473T6	Power(4)	M12 (Hexagonal screw)	60 (531.0)	-	HD: 2x150 ND: 2x185	HD: 2x300 ND: 2x350	Lug	
	Power(5)	M12 (Hexagonal screw)	60 (531.0)	HD: 3x1/4 ND: 3x1/4	-	-		
	Grounding(2)	M8 (Hexagonal nut)	10 (88.5)	-	HD: 2x35 ND: 2x50	HD: 2x2 ND: 2x1		

(1) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3 ; DC+ ; DC-.
(2) PE.
(4) R/L1 ; S/L2 ; T/L3 ; U/T1 ; V/T2 ; W/T3.
(5) DC+ ; DC-.

3.2.3 Fuses, Circuit Breakers and Power Supply Capacity

- The CFW900 is suitable for use in circuits with short circuit capacity of up to 65 kA, which value varies according to the type of protection used (fuse or circuit breaker) and certification considered (UL or CE). For more details, see Table 3.6 on page 44, Table 3.7 on page 46 and Table 3.8 on page 48.

- For IEC conformity, fuses with rated current and I^2t less than or equal to the values presented in the Table 3.6 on page 44 (this table also presents suggestions for WEG fuses) or circuit breakers in the inverter power supply according to the specifications presented in Table 3.8 on page 48. When a circuit breaker is used, it is necessary to install the inverter inside a metal panel with minimum dimensions according to the values shown in Table 3.8 on page 48. Some models of fused-protected inverters also require the use of a metal panel - for more details see Table 3.6 on page 44.

- For UL conformity, fuses must be used in the inverter power supply as shown in Table 3.7 on page 46 or circuit breakers in the inverter power supply as shown in Table 3.8 on page 48. Pay attention to the use of a panel, which is required for some inverter models protected with fuses and for all inverter models protected by circuit breaker.

- For frame size models A, B and C time-delay fuses sized for 1.2 x the inverter rated input current can be used on the inverter input. In this case, the installation is protected against short-circuit, but not the inverter input rectifier.

Table 3.6: *Fuse specifications as per IEC standard*

Model	Maximum Short-Circuit Current of the Power Supply [kA]	Protection with High Speed Fuses								
		AC Power Supply						DC Power Supply		
		Installation	I²t of the Diode [A²s]	Fuse Rated Current [A]	Recommended WEG aR FNH Blade Contact Type Fuses			Installation	Fuse Rated Current [A]	Fuse Recommendation
					Size	WEG Reference	SAP Code			
CFW900A04P6B2	65	With cabinet or IP21 kit	300	20	000	FNH000-20K-A	13735555	With cabinet (1)	35	Mersen A70QS35-4
CFW900A06P0B2			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A07P5B2			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A10P0B2			685	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A04P6T2			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A06P0T2			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A07P5T2			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A10P6T2			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A13P0T2			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A19P0T2			685	35	000	FNH000-35K-A	13737105		35	Mersen A70QS35-4
CFW900B26P0T2	65	With cabinet or IP21 kit	1100	40	000	FNH000-40K-A	13737107	With cabinet (1)	80	Mersen A70QS80-4
CFW900B34P0T2			1100	50	000	FNH000-50K-A	13737128		80	Mersen A70QS80-4
CFW900B45P0T2			1100	63	000	FNH000-63K-A	13737129		80	Mersen A70QS80-4
CFW900C56P0T2	65	With cabinet or IP21 kit	1700	80	00	FNH00-80K-A	10705995	With cabinet (1)	150	Mersen A70QS150-4
CFW900C70P0T2			3850	100	00	FNH00-100K-A	10707110		150	Mersen A70QS150-4
CFW900C80P0T2			3850	125	00	FNH00-125K-A	10707231		150	Mersen A70QS150-4
CFW900D0110T2	65	With cabinet or IP21 kit	18050	200	00	FNH00-200K-A	10710732	With cabinet (1)	250	Mersen A70QS250-4
CFW900D0135T2			18050	200	00	FNH00-200K-A	10710732		250	Mersen A70QS250-4
CFW900D0150T2			18050	250	1	FNH1-250K-A	10809489		250	Mersen A70QS250-4
CFW900E0172T2	65	With cabinet or IP21 kit	101250	350	1	FNH1-350K-A	10814896	With cabinet (1)	400	Mersen A70QS400-4
CFW900E0195T2			101250	350	1	FNH1-350K-A	10814896		400	Mersen A70QS400-4
CFW900E0250T2			101250	400	2	FNH2-400K-A	10824053		400	Mersen A70QS400-4
CFW900F0315T2	65	With cabinet or IP21 kit	335000	800	3	FNH3-800K-A	10833726	With cabinet (1)	800	Mersen A70QS800-4
CFW900F0370T2			335000	800	3	FNH3-800K-A	10833726		800	Mersen A70QS800-4
CFW900A02P8T4	65	With cabinet or IP21 kit	300	20	000	FNH000-20K-A	13735555	With cabinet (1)	35	Mersen A70QS35-4
CFW900A03P6T4			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A04P8T4			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A06P5T4			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A09P6T4			300	20	000	FNH000-20K-A	13735555		35	Mersen A70QS35-4
CFW900A14P0T4			685	25	000	FNH000-25K-A	13735656		35	Mersen A70QS35-4
CFW900A17P0T4			685	35	000	FNH000-35K-A	13737105		35	Mersen A70QS35-4
CFW900B26P0T4	65	With cabinet or IP21 kit	945	40	000	FNH000-40K-A	13737107	With cabinet (1)	80	Mersen A70QS80-4
CFW900B33P0T4			945	40	00	FNH00-40K-A	10702117		80	Mersen A70QS80-4
CFW900B39P0T4			1330	50	00	FNH00-50K-A	10701718		80	Mersen A70QS80-4
CFW900C50P0T4	65	With cabinet or IP21 kit	1100	63	1	FNH1-63K-A	10806688	With cabinet (1)	150	Mersen A70QS150-4
CFW900C62P0T4			4950	80	00	FNH00-80K-A	10705995		150	Mersen A70QS150-4
CFW900C74P0T4			9800	125	00	FNH00-125K-A	10707231		150	Mersen A70QS150-4
CFW900D96P0T4	65	With cabinet or IP21 kit	18050	160	00	FNH00-160K-A	10701724	With cabinet (1)	250	Mersen A70QS250-4
CFW900D0124T4			18050	200	1	FNH1-200K-A	10809133		250	Mersen A70QS250-4
CFW900D0146T4			18050	200	1	FNH1-200K-A	10809133		250	Mersen A70QS250-4
CFW900E0172T4	65	With cabinet or IP21 kit	101250	350	1	FNH1-350K-A	10814896	With cabinet (1)	400	Mersen A70QS400-4
CFW900E0203T4			101250	350	1	FNH1-350K-A	10814896		400	Mersen A70QS400-4
CFW900E0242T4			101250	400	2	FNH2-400K-A	10824053		400	Mersen A70QS400-4
CFW900F0315T4	65	With cabinet or IP21 kit	335000	800	3	FNH3-800K-A	10833726	With cabinet (1)	800	Mersen A70QS800-4
CFW900F0370T4			335000	800	3	FNH3-800K-A	10833726		800	Mersen A70QS800-4
CFW900G0430T4	65	With cabinet or IP21 kit	1080450	1000	3	FNH3-1000K-A	11393565	With cabinet (1)	1100	Mersen A100UD73LI1100
CFW900G0480T4			1080450	450	3	FNH3-450K-A (2)	10824055		1100	Mersen A100UD73LI1100
CFW900G0540T4			1080450	630	3	FNH3-630K-A (2)	10824110		1100	Mersen A100UD73LI1100
CFW900G0601T4			1080450	630	3	FNH3-630K-A (2)	10833101		1100	Mersen A100UD73LI1100
CFW900H0760T4			1080450	710	3	FNH3-710K-A (2)	10833591		1100	Mersen A100UD73LI1100
CFW900B02P9T5	65	With cabinet or IP21 kit	945	20	000	FNH000-20K-A	13735555	With cabinet (1)	60	Mersen A150X60-4
CFW900B04P2T5			945	20	000	FNH000-20K-A	13735555		60	Mersen A150X60-4
CFW900B07P0T5			945	20	000	FNH000-20K-A	13735555		60	Mersen A150X60-4
CFW900B10P0T5			945	20	000	FNH000-20K-A	13735555		60	Mersen A150X60-4
CFW900B12P0T5			945	25	000	FNH000-25K-A	13735656		60	Mersen A150X60-4
CFW900B17P0T5			945	25	000	FNH000-25K-A	13735656		60	Mersen A150X60-4
CFW900B22P0T5			945	35	000	FNH000-35K-A	13737105		60	Mersen A150X60-4
CFW900B27P0T5			945	40	000	FNH000-40K-A	13737107		60	Mersen A150X60-4

Model	Maximum Short-Circuit Current of the Power Supply [kA]	Protection with High Speed Fuses								
		AC Power Supply						DC Power Supply		
		Installation	I^2t of the Diode [A^2s]	Fuse Rated Current [A]	Recommended WEG aR FNH Blade Contact Type Fuses			Installation	Fuse Rated Current [A]	Fuse Recommendation
					Size	WEG Reference	SAP Code			
CFW900C32P0T5	65	With cabinet or IP21 kit	1100	40	00	FNH00-40K-A	10702117	With cabinet (1)	100	Mersen A150X100-4
CFW900C44P0T5			1100	63	1	FNH1-63K-A	10806688		100	Mersen A150X100-4
CFW900C54P0T5			4950	80	00	FNH00-80K-A	10705995		100	Mersen A150X100-4
CFW900D02P9T6	65	With cabinet or IP21 kit	5110	20	000	FNH000-20K-A	13735555	With cabinet (1)	200	Mersen A150X200-4
CFW900D04P2T6			5110	20	000	FNH000-20K-A	13735555		200	Mersen A150X200-4
CFW900D07P0T6			5110	20	000	FNH000-20K-A	13735555		200	Mersen A150X200-4
CFW900D10P0T6			5110	20	000	FNH000-20K-A	13735555		200	Mersen A150X200-4
CFW900D12P0T6			5110	25	000	FNH000-25K-A	13735656		200	Mersen A150X200-4
CFW900D17P0T6			5110	35	000	FNH000-35K-A	13737105		200	Mersen A150X200-4
CFW900D22P0T6			5110	40	000	FNH000-40K-A	13737107		200	Mersen A150X200-4
CFW900D27P0T6			5110	50	000	FNH000-50K-A	13737128		200	Mersen A150X200-4
CFW900D32P0T6			5110	63	000	FNH000-63K-A	13737129		200	Mersen A150X200-4
CFW900D44P0T6			5110	80	000	FNH000-80K-A	13737130		200	Mersen A150X200-4
CFW900D54P0T6			5110	100	00	FNH00-100K-A (3)	10707110		200	Mersen A150X200-4
CFW900D64P0T6			5110	100	00	FNH00-100K-A	10707110		200	Mersen A150X200-4
CFW900D80P0T6			5110	100	00	FNH00-100K-A	10707110		200	Mersen A150X200-4
CFW900D85P0T6			5110	125	00	FNH00-125K-A (4)	10707231		200	Mersen A150X200-4
CFW900E0107T6	65	With cabinet or IP21 kit	80000	200	00	FNH00-200K-A	10710732	With cabinet (1)	400	Mersen - A150X400-4
CFW900E0130T6			80000	250	1	FNH1-250K-A	10809489		400	Mersen - A150X400-4
CFW900E0150T6			80000	315	1	FNH1-315K-A	10809575		400	Mersen - A150X400-4
CFW900E0176T6			80000	350	1	FNH1-350K-A	10814896		400	Mersen - A150X400-4
CFW900E0192T6			80000	350	1	FNH1-350K-A	10814896		400	Mersen - A150X400-4
CFW900G0242T6	65	With cabinet or IP21 kit	320000	450	2	FNH2-450K-A	10824055	With cabinet (1)	800	Mersen - A70QS800-4
CFW900G0289T6			320000	450	2	FNH2-450K-A	10824055		800	Mersen - A70QS800-4
CFW900G0336T6			884450	630	2	FNH2-630K-A (5)	10824110		800	Mersen - A70QS800-4
CFW900H0384T6	65	With cabinet or IP21 kit	884450	800	3	FNH3-800K-A	10833726	With cabinet (1)	1100	Mersen - A100UD73LI1100
CFW900H0435T6			884450	1000	3	FNH3-1000K-A (6)	11393565		1100	Mersen - A100UD73LI1100
CFW900H0473T6			884450	1000	3	FNH3-1000K-A (7)	11393565		1100	Mersen - A100UD73LI1100

(1) Minimum cabinet dimensions for a 65 kA supply network short-circuit current rating (see Table 3.8 on page 48):
Frame A: 230 x 420 x 350 mm.
Frame B: 250 x 600 x 350 mm.
Frame C: 300 x 700 x 450 mm.
Frame D: 500 x 1000 x 500 mm.
Frame E: 600 x 1000 x 600 mm.
Frame F: 600 x 1700 x 550 mm.
Frame G: 650 x 1900 x 550 mm.
Frame H: 820 x 2000 x 650 mm.
(2) Two fuses must be used in parallel for each phase.
(3) For operation with a supply voltage above 600 Vac, it is recommended to use the FNH000-80K-A fuse.
(4) For operation with a supply voltage above 600 Vac, it is recommended to use the FNH00-100K-A fuse.
(5) For operation with a supply voltage above 600 Vac, it is recommended to use the FNH2-710K-A fuse.
(6) For operation with a supply voltage above 600 Vac, it is recommended to use the FNH3-800K-A fuse.
(7) For operation with a supply voltage above 600 Vac, it is recommended to use the FNH3-900K-A fuse.

Table 3.7: *Fuse specifications as per UL standard*

Model	AC Power Supply Protection with Type J or Type L Fuses				DC Power Supply Protection with High Speed Fuses			
	Maximum Short-Circuit Current of the Power Supply [kA]	Inverter Installation	Fuse Class	Fuse Rated Current [A] Recommended	Maximum Short-Circuit Current of the Power Supply [kA]	Inverter Installation	Fuse Rated Current [A]	Fuse Recommendation
CFW900A04P6B2	5	Inverter with UL type 1 kit or inverter installed inside a cabinet (1)	J	25	5	Inverter installed inside a cabinet (1)	35	Mersen A70QS35-4
CFW900A06P0B2				25			35	Mersen A70QS35-4
CFW900A07P5B2				30			35	Mersen A70QS35-4
CFW900A10P0B2				40			35	Mersen A70QS35-4
CFW900A04P6T2				10			35	Mersen A70QS35-4
CFW900A06P0T2				10			35	Mersen A70QS35-4
CFW900A07P5T2				15			35	Mersen A70QS35-4
CFW900A10P6T2				20			35	Mersen A70QS35-4
CFW900A13P0T2				25			35	Mersen A70QS35-4
CFW900A19P0T2				35			35	Mersen A70QS35-4
CFW900B26P0T2	65			45			80	Mersen A70QS80-4
CFW900B34P0T2				60			80	Mersen A70QS80-4
CFW900B45P0T2				80			80	Mersen A70QS80-4
CFW900C56P0T2				90	10		150	Mersen A70QS150-4
CFW900C70P0T2				100			150	Mersen A70QS150-4
CFW900C80P0T2				100			150	Mersen A70QS150-4
CFW900D0110T2				175			250	Mersen A70QS250-4
CFW900D0135T2				200			250	Mersen A70QS250-4
CFW900D0150T2				200			250	Mersen A70QS250-4
CFW900E0172T2		Inverter with UL type 1 kit or inverter installed inside a cabinet (2)		300		Inverter installed inside a cabinet (2)	400	Mersen A70QS400-4
CFW900E0195T2				300			400	Mersen A70QS400-4
CFW900E0250T2				350			400	Mersen A70QS400-4
CFW900F0315T2	10	Inverter installed inside a cabinet (3)		500	10	Inverter installed inside a cabinet (3)	800	Mersen A70QS800-4
CFW900F0370T2				600			800	Mersen A70QS800-4
CFW900A02P8T4	5	Inverter with UL type 1 kit or inverter installed inside a cabinet (1)		10	5	Inverter installed inside a cabinet (1)	35	Mersen A70QS35-4
CFW900A03P6T4				10			35	Mersen A70QS35-4
CFW900A04P8T4				10			35	Mersen A70QS35-4
CFW900A06P5T4				10			35	Mersen A70QS35-4
CFW900A09P6T4				15			35	Mersen A70QS35-4
CFW900A14P0T4				20			35	Mersen A70QS35-4
CFW900A17P0T4				25			35	Mersen A70QS35-4
CFW900B26P0T4	65 (6)			40			80	Mersen A70QS80-4
CFW900B33P0T4				50			80	Mersen A70QS80-4
CFW900B39P0T4				60			80	Mersen A70QS80-4
CFW900C50P0T4		Inverter with UL type 1 kit or inverter installed inside a cabinet (1)		70	10		150	Mersen A70QS150-4
CFW900C62P0T4				90			150	Mersen A70QS150-4
CFW900C74P0T4				100			150	Mersen A70QS150-4
CFW900D96P0T4				150			250	Mersen A70QS250-4
CFW900D0124T4				175			250	Mersen A70QS250-4
CFW900D0146T4				200			250	Mersen A70QS250-4
CFW900E0172T4		Inverter with UL type 1 kit or inverter installed inside a cabinet (2)		300		Inverter installed inside a cabinet (2)	400	Mersen A70QS400-4
CFW900E0203T4				300			400	Mersen A70QS400-4
CFW900E0242T4				350			400	Mersen A70QS400-4
CFW900F0315T4	10	Inverter installed inside a cabinet (3)		500	10	Inverter installed inside a cabinet (3)	800	Mersen A70QS800-4
CFW900F0370T4				600			800	Mersen A70QS800-4
CFW900G0430T4	10	Inverter installed inside a cabinet (4)	L	600	10	Inverter installed inside a cabinet (4)	1100	Mersen A100UD73LI1100
CFW900G0480T4				800			1100	Mersen A100UD73LI1100
CFW900G0540T4				800			1100	Mersen A100UD73LI1100
CFW900G0601T4				800			1100	Mersen A100UD73LI1100
CFW900H0760T4	18	Inverter installed inside a cabinet (5)		1200	18	Inverter installed inside a cabinet (5)	1100	Mersen A100UD73LI1100

Model	AC Power Supply Protection with Type J or Type L Fuses				DC Power Supply Protection with High Speed Fuses			
	Maximum Short-Circuit Current of the Power Supply [kA]	Inverter Installation	Fuse Class	Fuse Rated Current [A] Recommended	Maximum Short-Circuit Current of the Power Supply [kA]	Inverter Installation	Fuse Rated Current [A]	Fuse Recommendation
CFW900B02P9T5	5	Inverter with UL type 1 kit or inverter installed inside a cabinet (1)	J	10	5	Inverter installed inside a cabinet (1)	60	Mersen A150X60-4
CFW900B04P2T5				10			60	Mersen A150X60-4
CFW900B07P0T5				15			60	Mersen A150X60-4
CFW900B10P0T5				20			60	Mersen A150X60-4
CFW900B12P0T5				25			60	Mersen A150X60-4
CFW900B17P0T5				30			60	Mersen A150X60-4
CFW900B22P0T5				40			60	Mersen A150X60-4
CFW900B27P0T5				40			60	Mersen A150X60-4
CFW900C32P0T5	10			50	10		100	Mersen A150X100-4
CFW900C44P0T5				70			100	Mersen A150X100-4
CFW900C54P0T5				80			100	Mersen A150X100-4
CFW900D02P9T6	10		J	10	10		200	Mersen A150X200-4
CFW900D04P2T6				10			200	Mersen A150X200-4
CFW900D07P0T6				15			200	Mersen A150X200-4
CFW900D10P0T6				20			200	Mersen A150X200-4
CFW900D12P0T6				25			200	Mersen A150X200-4
CFW900D17P0T6				30			200	Mersen A150X200-4
CFW900D22P0T6				40			200	Mersen A150X200-4
CFW900D27P0T6				50			200	Mersen A150X200-4
CFW900D32P0T6				50			200	Mersen A150X200-4
CFW900D44P0T6				70			200	Mersen A150X200-4
CFW900D54P0T6				80			200	Mersen A150X200-4
CFW900D64P0T6				100			200	Mersen A150X200-4
CFW900D80P0T6				100			200	Mersen A150X200-4
CFW900D85P0T6				100			200	Mersen A150X200-4
CFW900E0107T6	65			150	10		400	Mersen - A150X400-4
CFW900E0130T6				200			400	Mersen - A150X400-4
CFW900E0150T6				250			400	Mersen - A150X400-4
CFW900E0176T6				250			400	Mersen - A150X400-4
CFW900E0192T6				300			400	Mersen - A150X400-4
CFW900G0242T6	10	Inverter installed inside a cabinet (4)		350	10	Inverter installed inside a cabinet (4)	800	Mersen - A70QS800-4
CFW900G0289T6				450			800	Mersen - A70QS800-4
CFW900G0336T6				500			800	Mersen - A70QS800-4
CFW900H0384T6	10	Inverter installed inside a cabinet (5)	L	600	10	Inverter installed inside a cabinet (5)	1100	Mersen - A100UD73LI1100
CFW900H0435T6				800			1100	Mersen - A100UD73LI1100
CFW900H0473T6				800			1100	Mersen - A100UD73LI1100

(1) A panel with a minimum size of 1.5 times the size of the inverter is required.
(2) Minimun panel dimensions (depth x height x width): 600 x 1000 x 600 mm (23.6 x 39.3 x 23.6 in).
(3) Minimum panel dimensions (depth x height x width): 600 x 1700 x 550 mm (23.6 x 66.9 x 21.6 in).
(4) Minimum panel dimensions (depth x height x width): 650 x 1900 x 550 mm (25.6 x 74.8 x 21.6 in).
(5) Minimum panel dimensions (depth x height x width): 820 x 2000 x 650 mm (32.3 x 78.7 x 25.6 in).
(6) Products with hardware version A or later (this information is provided on the inverter identification label, as shown in Section 2.3.1 Identification Labels on page 16) can be used with a UL type 1 kit on supply networks with a short-circuit current rating of up to 65 kA. Products with an earlier hardware version (with no hardware version indicated on the identification label) can only be used on 65 kA supply networks when installed inside a cabinet. When installed outside a cabinet (with a UL type 1 kit), the short-circuit current rating of these inverters is 5 kA for frame size B models and 10 kA for frame size C, D, and E models.

Table 3.8: *Circuit breaker specifications as per UL and IEC standards*

Model	Circuit Breaker Protection				
	Maximum Short-Circuit Current of the Power Supply [kA]	Maximum Circuit Breaker Rated Current [A]	WEG Circuit Breaker Recommendation		Minimum Panel Dimensions (Width x Height x Depth) [mm (in)]
			UL (CB type)	IEC (ACW type)	
CFW900A04P6B2	65	15	UBW225H-FTU15-3A	ACW100H-FMU20-3	230 x 420 x 350 (9 x 16.53 x 13.77)
CFW900A06P0B2		20	UBW225H-FTU20-3A	ACW100H-FMU20-3	
CFW900A07P5B2		30	UBW225H-FTU30-3A	ACW100H-FMU25-3	
CFW900A10P0B2		40	UBW225H-FTU40-3A	ACW100H-FMU40-3	
CFW900A04P6T2		15	UBW225H-FTU15-3A	ACW100H-FMU20-3	
CFW900A06P0T2		20	UBW225H-FTU20-3A	ACW100H-FMU20-3	
CFW900A07P5T2		30	UBW225H-FTU30-3A	ACW100H-FMU25-3	
CFW900A10P6T2		40	UBW225H-FTU40-3A	ACW100H-FMU40-3	
CFW900A13P0T2		50	UBW225H-FTU50-3A	ACW100H-FMU50-3	
CFW900A19P0T2		70	UBW225H-FTU70-3A	ACW100H-FMU63-3	
CFW900B26P0T2		100	UBW225H-FTU100-3A	ACW100H-FMU100-3	250 x 600 x 350 (9.84 x 23.62 x 13.77)
CFW900B34P0T2		125	UBW225H-FTU125-3A	ACW160H-FMU125-3	
CFW900B45P0T2		150	UBW225H-FTU150-3A	ACW160H-FMU160-3	
CFW900C56P0T2	65	200	UBW225H-FTU200-3A	ACW250H-ATU200-3	300 x 700 x 450 (11.8 x 27.56 x 17.71)
CFW900C70P0T2		250	UBW250H-FTU250-3A	ACW250H-ATU250-3	
CFW900C80P0T2		300	UBW400H-FTU300-3A	ACW250H-ATU250-3	
CFW900D0110T2		300	UBW400H-FTU300-3A	ACW250H-ATU250-3	500 x 1000 x 500 (19.7 x 39.3 x 19.7)
CFW900D0135T2		400	UBW400H-FTU400-3A	ACW400H-ETS400-3	
CFW900D0150T2		400	UBW400H-FTU400-3A	ACW400H-ETS400-3	
CFW900E0172T2		500	UBW600H-FTU500-3A	ACW400H-ETS400-3	600 x 1000 x 600 (23.6 x 39.3 x 23.6)
CFW900E0195T2		500	UBW600H-FTU500-3A	ACW400H-ETS400-3	
CFW900E0250T2		600	UBW600H-FTU600-3A	ACW630H-ETS630-3	
CFW900F0315T2	65	800	UBW800H-FTU800-3A	ACW800U-ETS800-3	600 x 1700 x 550 (23.6 x 66.9 x 21.6)
CFW900F0370T2		800	UBW800H-FTU800-3A	ACW800U-ETS800-3	
CFW900A02P8T4	65	15	UBW225H-FTU15-3A	ACW100H-FMU20-3	230 x 420 x 350 (9 x 16.53 x 13.77)
CFW900A03P6T4		15	UBW225H-FTU15-3A	ACW100H-FMU20-3	
CFW900A04P8T4		15	UBW225H-FTU15-3A	ACW100H-FMU20-3	
CFW900A06P5T4		20	UBW225H-FTU20-3A	ACW100H-FMU25-3	
CFW900A09P6T4		30	UBW225H-FTU30-3A	ACW100H-FMU32-3	
CFW900A14P0T4		50	UBW225H-FTU50-3A	ACW100H-FMU50-3	
CFW900A17P0T4		60	UBW225H-FTU60-3A	ACW100H-FMU63-3	
CFW900B26P0T4		100	UBW225H-FTU100-3A	ACW100H-FMU100-3	250 x 600 x 350 (9.84 x 23.62 x 13.77)
CFW900B33P0T4		125	UBW225H-FTU125-3A	ACW160H-FMU125-3	
CFW900B39P0T4		150	UBW225H-FTU150-3A	ACW160H-FMU125-3	
CFW900C50P0T4	65	200	UBW225H-FTU200-3A	ACW250H-ATU200-3	300 x 700 x 450 (11.8 x 27.56 x 17.7)
CFW900C62P0T4		225	UBW225H-FTU225-3A	ACW250H-ATU200-3	
CFW900C74P0T4		250	UBW250H-FTU250-3A	ACW250H-ATU250-3	
CFW900D96P0T4		300	UBW400H-FTU300-3A	ACW250H-ATU250-3	500 x 1000 x 500 (19.7 x 39.3 x 19.7)
CFW900D0124T4		300	UBW400H-FTU300-3A	ACW250H-ATU250-3	
CFW900D0146T4		400	UBW400H-FTU400-3A	ACW400H-ETS400-3	
CFW900E0172T4		500	UBW600H-FTU500-3A	ACW400H-ETS400-3	600 x 1000 x 600 (23.6 x 39.3 x 23.6)
CFW900E0203T4		600	UBW600H-FTU600-3A	ACW400H-ETS400-3	
CFW900E0242T4		600	UBW600H-FTU600-3A	ACW630H-ETS630-3	
CFW900F0315T4	65	800	UBW800H-FTU800-3A	ACW800U-ETS800-3	600 x 1700 x 550 (23.6 x 66.9 x 21.6)
CFW900F0370T4		800	UBW800H-FTU800-3A	ACW800U-ETS800-3	
CFW900G0430T4	65	1200	UBW1200H-ELS1200-3A	ACW1600H-AG11250-3	650 x 1900 x 550 (25.6 x 74.8 x 21.6)
CFW900G0480T4		1200	UBW1200H-ELS1200-3A	ACW1600H-AG11250-3	
CFW900G0540T4		1200	UBW1200H-ELS1200-3A	ACW1600H-AG11250-3	
CFW900G0601T4		1200	UBW1200H-ELS1200-3A	ACW1600H-AG11250-3	
CFW900H0760T4	65	2000	UBW2500H-ELS2000-3A	ABW25ES3-20	820 x 2000 x 650 (32.3 x 78.7 x 25.6)
CFW900B02P9T5	35	15	UBW225L-FTU15-3A	ACW100H-FMU20-3	250 x 600 x 350 (9.84 x 23.62 x 13.77)
CFW900B04P2T5		15	UBW225L-FTU15-3A	ACW100H-FMU20-3	
CFW900B07P0T5		20	UBW225L-FTU20-3A	ACW100H-FMU25-3	
CFW900B10P0T5		40	UBW225L-FTU40-3A	ACW100H-FMU40-3	
CFW900B12P0T5		40	UBW225L-FTU40-3A	ACW100H-FMU40-3	
CFW900B17P0T5		60	UBW225L-FTU60-3A	ACW100H-FMU63-3	
CFW900B22P0T5		80	UBW225L-FTU80-3A	ACW100H-FMU80-3	
CFW900B27P0T5		100	UBW225L-FTU100-3A	ACW100H-FMU100-3	
CFW900C32P0T5	35	125	UBW225L-FTU125-3A	ACW160H-FMU125-3	300 x 700 x 450 (11.8 x 27.56 x 17.7)
CFW900C44P0T5		150	UBW225L-FTU150-3A	ACW160H-FMU160-3	
CFW900C54P0T5		200	UBW225L-FTU200-3A	ACW250H-ATU200-3	

Model	Circuit Breaker Protection				
	Maximum Short-Circuit Current of the Power Supply [kA]	Maximum Circuit Breaker Rated Current [A]	WEG Circuit Breaker Recommendation		Minimum Panel Dimensions (Width x Height x Depth) [mm (in)]
			UL (CB type)	IEC (ACW type)	
CFW900D02P9T6	35	15	UBW225L-FTU15-3A	ACW100H-FMU20-3	500 x 1000 x 500 (19.7 x 39.3 x 19.7)
CFW900D04P2T6		15	UBW225L-FTU15-3A	ACW100H-FMU20-3	
CFW900D07P0T6		20	UBW225L-FTU20-3A	ACW100H-FMU25-3	
CFW900D10P0T6		40	UBW225L-FTU40-3A	ACW100H-FMU40-3	
CFW900D12P0T6		40	UBW225L-FTU40-3A	ACW100H-FMU40-3	
CFW900D17P0T6		60	UBW225L-FTU60-3A	ACW100H-FMU63-3	
CFW900D22P0T6		80	UBW225L-FTU80-3A	ACW100H-FMU80-3	
CFW900D27P0T6		100	UBW225L-FTU100-3A	ACW100H-FMU100-3	
CFW900D32P0T6		125	UBW225L-FTU125-3A	ACW160H-FMU125-3	
CFW900D44P0T6		150	UBW225L-FTU150-3A	ACW160H-FMU160-3	
CFW900D54P0T6		200	UBW225L-FTU200-3A	ACW250H-ATU200-3	
CFW900D64P0T6		225	UBW225L-FTU225-3A	ACW250H-ATU250-3	
CFW900D80P0T6		300	UBW400L-FTU300-3A	ACW250H-ATU250-3	
CFW900D85P0T6		300	UBW400L-FTU300-3A	ACW250H-ATU250-3	
CFW900E0107T6	35	300	UBW400L-FTU300-3A	ACW250H-ATU250-3	600 x 1000 x 600 (23.6 x 39.3 x 23.6)
CFW900E0130T6		300	UBW400L-FTU300-3A	ACW250H-ATU250-3	
CFW900E0150T6		400	UBW400L-FTU400-3A	ACW400H-ETS400-3	
CFW900E0176T6		500	UBW500L-FTU500-3A	ACW400H-ETS400-3	
CFW900E0192T6		500	UBW500L-FTU500-3A	ACW400H-ETS400-3	
CFW900G0242T6	35	600	UBW600L-FTU600-3A	ACW630H-ETS630-3	650 x 1900 x 550 (25.6 x 74.8 x 21.6)
CFW900G0289T6		800	UBW1200L-ELS800-3A	ACW800U-ETS800-3	
CFW900G0336T6		800	UBW1200L-ELS800-3A	ACW800U-ETS800-3	
CFW900H0384T6	35	800	UBW1200L-ELS800-3A	ACW800U-ETS800-3	820 x 2000 x 650 (32.3 x 78.7 x 25.6)
CFW900H0435T6		1200	UBW1200L-ELS1200-3A	ACW1600H-AG11250-3	
CFW900H0473T6		1200	UBW1200L-ELS1200-3A	ACW1600H-AG11250-3	

3.2.3.1 Pre-charge Circuit Control Fuses

Frame E contains three fuses to protect the control circuit, located on the PCF90 board, as show in Figure 3.19 on page 49.

In case replacement is required, use control fuses as specified below or equivalent:

For T2 and T4 models:
0.5 A / 600 V time-delay fuse.
Manufacturer: Cooper Bussmann.
Commercial reference: FNQ-R-1/2.
WEG Item (material number): 10411493.

For T6 models:
3 A / 1000 V fast-blow fuse.
Manufacturer: Mersen.
Commercial reference: DCT3-2.
WEG Item (material number): 11123306.

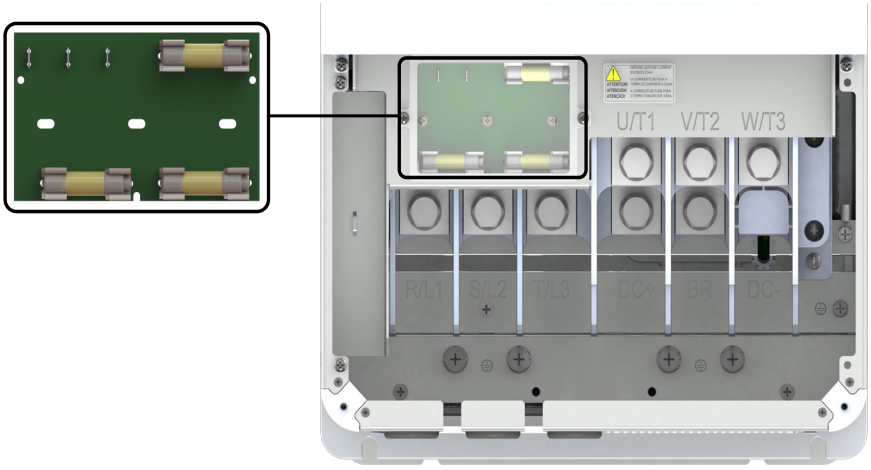


Figure 3.19: *Fuses for the control circuit of frame E*

Frames F, G and H also contains three fuses to protect the control circuit, located on the PCF90 board, as show in Figure 3.20 on page 50, Figure 3.21 on page 50 and Figure 3.22 on page 51.

In case replacement is required, use control fuses as specified below or equivalent:

For T2 and T4 models:
0.5 A / 600 V time-delay fuse.
Manufacturer: Cooper Bussmann.
Commercial reference: FNQ-R-1/2.
WEG Item (material number): 10411493.

For T6 models:
3 A / 1000 V fast-blow fuse.
Manufacturer: Mersen.
Commercial reference: DCT3-2.
WEG Item (material number): 11123306.

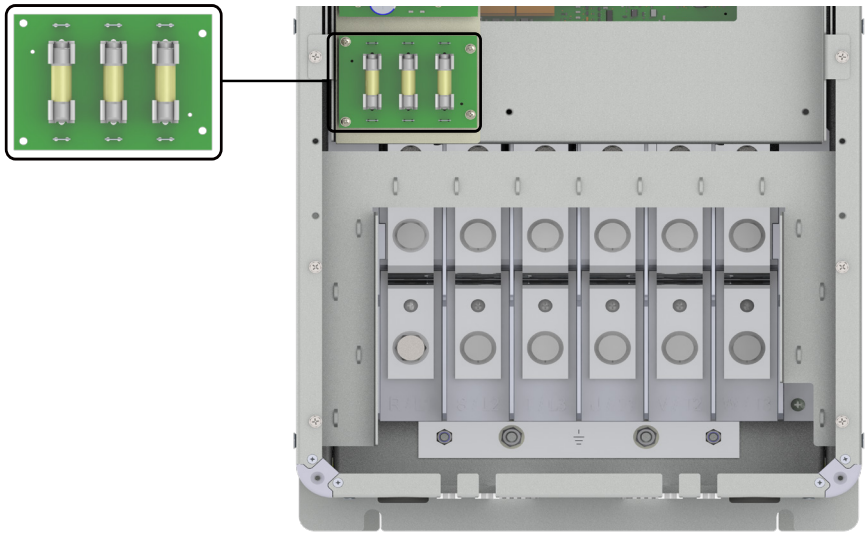


Figure 3.20: *Fuses for the control circuit of frame F*

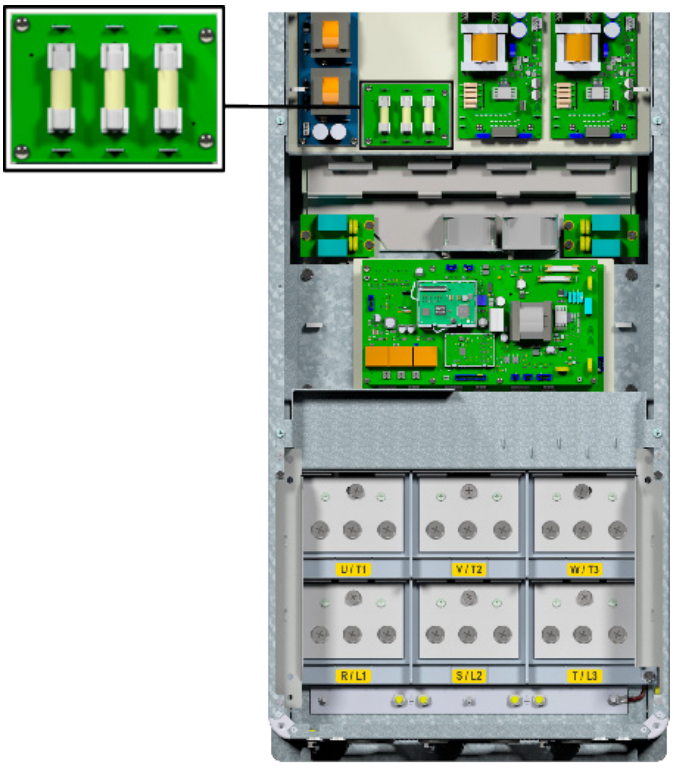


Figure 3.21: *Fuses for the control circuit of frame G*

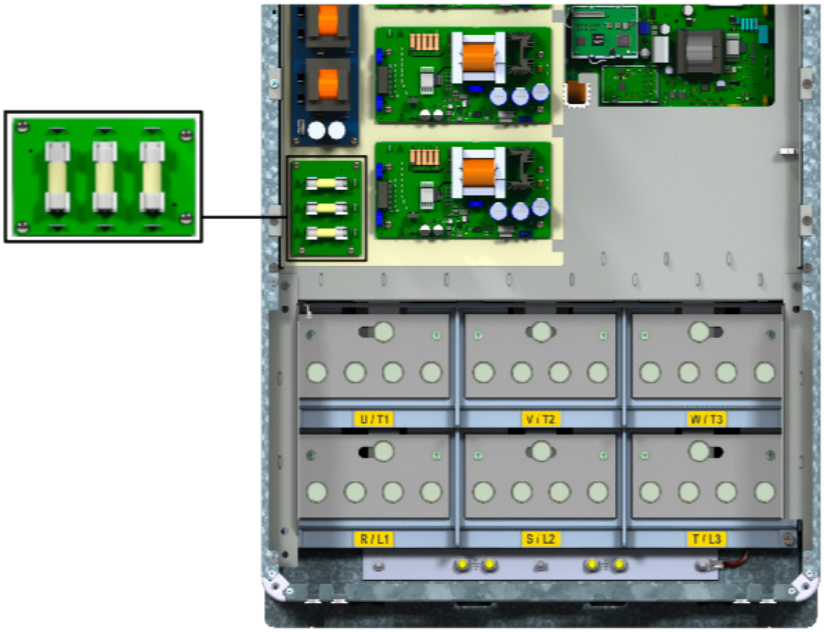


Figure 3.22: *Fuses for the control circuit of frame H*

3.2.4 Power Connections

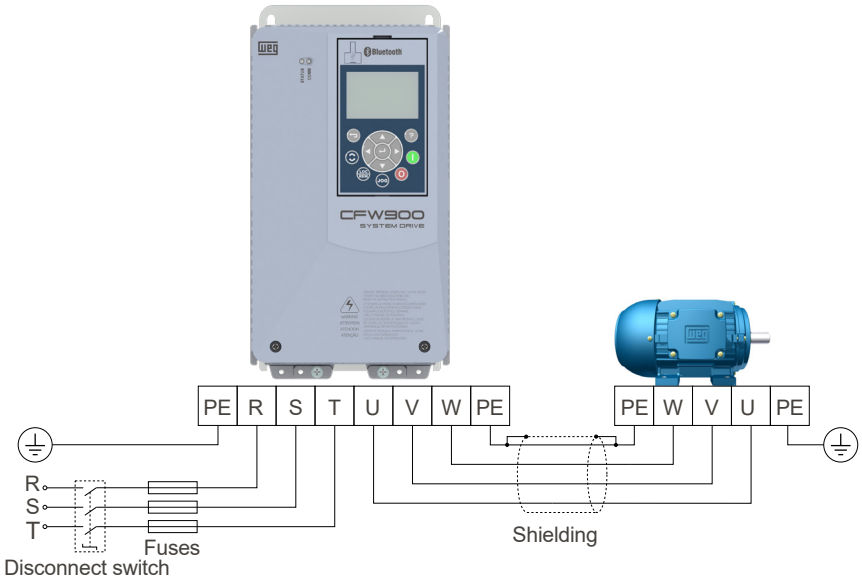


Figure 3.23: *Power and grounding connections*

DANGER!
Provide a disconnect device for the power supply of the inverter. This device must disconnect the power supply at the inverter input (at low voltage) whenever necessary (during maintenance jobs, for instance).
The disconnecting device must be operated only after the power supply has stabilized. The inverter must not be connected to the power supply while the supply transformers are being energized.

ATTENTION!
A contactor or another device that frequently disconnects and reapplies the AC supply to the inverter, in order to start and stop the motor, may cause damage to the inverter power section. Use control signals to start and stop the motor. If used, the device in the input cannot exceed one operation per minute or the inverter may be damaged.

NOTE!
- The power supply voltage shall be compatible with the inverter rated voltage.
- Power factor correction capacitors are not needed at the inverter input (R/L1, S/L2, T/L3) and shall not be installed at the output of the inverter (U, V, W).

ATTENTION!
Residual current device (RCD):
- When used in the inverter supply, it must have a pick-up current of 300 mA.
- Depending on the installation (motor cable length, cable type, multimotor configuration, etc.), the RCD protection may be activated. Contact the RCD manufacturer for selecting the most appropriate device to be used with inverters.

Consider the following items for the use of protection devices on the supply side of the inverter such as residual current devices or isolation monitors:

- The detection of a phase-to-ground short-circuit or an insulation fault shall be processed by the user, i.e., the user shall decide whether to indicate the fault and/or block the inverter operation or both.

- Contact the RCD manufacturer for selecting the most appropriate device to be used with inverters in order to avoid nuisance tripping due to the high frequency leakage currents that flow through the leakage capacitances of the inverter, cable, and motor system to the ground.

3.2.4.1 IT and Delta Corner Earthed Networks

ATTENTION!
- The inverters of the CFW900 series can operate in power supply with a solidly grounded neutral, in delta corner earthed networks and IT networks (ungrounded neutral or grounding by a high ohmic value resistor). Exception: inverters of frame A cannot operate in delta corner earthed networks and T6 line inverters (frames D, E, G and H) can only operate in delta corner earthed when powered by voltages up to 600 V.
- To operate in delta corner earthed networks and IT networks, it is necessary to disconnect the RFI filter.
- Independent of the type of power grid, the inverter must always be connected to protective ground according to the Item 3.2.5 Grounding Connections on page 60.

Inverters of the CFW900 series can be used in IT networks with grounding made by resistors. To that end, remove the grounding screws from the filter capacitors, as shown in Figure 3.24 on page 53. In frames E, F, G and H you need to loosen the cable attached to the screw indicated in Figure 3.24 on page 53 and connect it to the screw indicated in red. To access these screws on frames A, B, C and D, remove the HMI and the front cover. In frames E, F, G and H, it is necessary to remove the lower front cover.

It is also possible to operate the CFW900 in delta corner earthed networks, except for the models of frame A and models of T6 line when powered with voltages greater than 600 V. In these cases, the grounding screws of the filter capacitors must also be removed, as shown in Figure 3.24 on page 53.



Figure 3.24: *Grounding screws for filter capacitors and varistors*

3.2.4.2 Dynamic Braking

NOTE!
All models of frames A, B, C, D and E with fixed suffix DB have internal braking IGBT, which is available in the standard version of frames A, B and C and as an optional item in frames D and E. Frames F, G and H do not have internal braking IGBT, so the DBW03 braking module can be used.

The braking torque that can be obtained from the frequency inverter without braking resistors varies from 10 % to 35 % of the motor rated torque.

Braking resistors shall be used to obtain higher braking torques. In this case, the excess energy is dissipated in a resistor mounted externally to the inverter.

This type of braking is used in cases where short deceleration times are desired or when high inertia loads are driven.

The “Optimal Braking” feature may be used with the vector control mode, which eliminates in most cases the need of an external braking resistor.

3.2.4.2.1 Sizing the Braking Resistor

The following application data shall be considered for the adequate sizing of the braking resistor:

- Desired deceleration time.
- Load inertia.
- Braking duty cycle.

In any case, the effective current value and the maximum braking current value presented in Table 3.9 on page 54 shall be respected.

The maximum braking current defines the minimum braking resistor value in ohms.

The DC Link voltage level for the activation of the dynamic braking function is defined in parameter C3.6.1 (DC link level).

The power of the braking resistor is a function of the deceleration time, the load inertia, and the load torque.

For most applications, a braking resistor with the value in ohms indicated in Table 3.9 on page 54 can be used, with the power of 20 % of the rated driven motor power. Use wire type resistors in a ceramic support with adequate insulation voltage and capable of withstanding high instantaneous power with respect to rated power. For critical applications with very short deceleration times and high inertia loads (ex.: centrifuges) or short duration cycles, consult WEG for the adequate sizing of the braking resistor.

Table 3.9: *Dynamic braking specifications*

Inverter Model	Maximum Braking Current (I_{max})	Maximum Braking Power (peak value) (P_{max}) (2)	Effective Braking Current ($I_{effective}$) (1)	Power (average) Dissipated in the Braking Resistor (P_R) (2)	Recommended Resistor (3)
	[A]	[kW]	[A]	[kW]	[Ω]
CFW900A04P6B2	15	6	11	3	27
CFW900A06P0B2	15	6	11	3	27
CFW900A07P5B2	20	8	14	4	20
CFW900A10P0B2	50	20	36	10	8
CFW900A04P6T2	10	4	7	2	40
CFW900A06P0T2	10	4	7	2	40
CFW900A07P5T2	15	6	11	3	27
CFW900A10P6T2	30	12	22	6	13
CFW900A13P0T2	30	12	22	6	13
CFW900A19P0T2	50	20	36	10	8
CFW900B26P0T2	50	20	36	10	8
CFW900B34P0T2	50	20	36	10	8
CFW900B45P0T2	50	20	36	10	8
CFW900C56P0T2	50	20	36	10	8
CFW900C70P0T2	100	40	72	21	4
CFW900C80P0T2	100	40	72	21	4
CFW900D0110T2DB	243	97	174	50	2
CFW900D0135T2DB	243	97	174	50	2
CFW900D0150T2DB	243	97	174	50	2
CFW900E0172T2DB	400	160	288	83	1
CFW900E0195T2DB	400	160	288	83	1
CFW900E0250T2DB	400	160	288	83	1
CFW900A02P8T4	10	8	5	2	80
CFW900A03P6T4	10	8	5	2	80
CFW900A04P8T4	10	8	5	2	80
CFW900A06P5T4	10	8	5	2	80
CFW900A09P6T4	15	12	8	1	53
CFW900A14P0T4	25	20	13	5	32
CFW900A17P0T4	35	28	18	7	22
CFW900B26P0T4	25	20	13	5	32
CFW900B33P0T4	25	20	13	5	32

Inverter Model	Maximum Braking Current (I_{max})	Maximum Braking Power (peak value) (P_{max}) (2)	Effective Braking Current ($I_{effective}$) (1)	Power (average) Dissipated in the Braking Resistor (P_R) (2)	Recommended Resistor (3)
	[A]	[kW]	[A]	[kW]	[Ω]
CFW900B39P0T4	50	40	25	10	16
CFW900C50P0T4	50	40	25	10	16
CFW900C62P0T4	50	40	25	10	16
CFW900C74P0T4	100	80	51	21	8
CFW900D96P0T4DB	243	194	124	51	3
CFW900D0124T4DB	243	194	124	51	3
CFW900D0146T4DB	243	194	124	51	3
CFW900E0172T4DB	400	320	205	84	2
CFW900E0203T4DB	400	320	205	84	2
CFW900E0242T4DB	400	320	205	84	2
CFW900B02P9T5	25	25	13	7	40
CFW900B04P2T5	25	25	13	7	40
CFW900B07P0T5	25	25	13	7	40
CFW900B10P0T5	25	25	13	7	40
CFW900B12P0T5	25	25	13	7	40
CFW900B17P0T5	25	25	13	7	40
CFW900B22P0T5	25	25	13	7	40
CFW900B27P0T5	50	50	26	13	20
CFW900C32P0T5	50	50	26	13	20
CFW900C44P0T5	50	50	26	13	20
CFW900C54P0T5	50	50	26	13	20
CFW900D02P9T6DB	200	240	139	116	6
CFW900D04P2T6DB	200	240	139	116	6
CFW900D07P0T6DB	200	240	139	116	6
CFW900D10P0T6DB	200	240	139	116	6
CFW900D12P0T6DB	200	240	139	116	6
CFW900D17P0T6DB	200	240	139	116	6
CFW900D22P0T6DB	200	240	139	116	6
CFW900D27P0T6DB	200	240	139	116	6
CFW900D32P0T6DB	200	240	139	116	6
CFW900D44P0T6DB	200	240	139	116	6
CFW900D54P0T6DB	200	240	139	116	6
CFW900D64P0T6DB	200	240	139	116	6
CFW900D80P0T6DB	200	240	139	116	6
CFW900D85P0T6DB	200	240	139	116	6
CFW900E0107T6DB	300	360	209	174	4
CFW900E0130T6DB	300	360	209	174	4
CFW900E0150T6DB	300	360	209	174	4
CFW900E0176T6DB	300	360	209	174	4
CFW900E0192T6DB	300	360	209	174	4

(1) The effective braking current shown is just a reference value, as it depends on the braking duty cycle. The effective braking current can be determined using the formula below, where t_{br} is given in minutes and corresponds to the sum of all braking periods during the severest cycle of five (5) minutes.

$$I_{effective} = I_{max} \cdot \sqrt{\frac{t_{br}}{5}}$$

(2) The values of P_{max} and P_R (maximum and average power of the braking resistor, respectively) are valid for the recommended resistors and for the effective braking currents contained in Table 3.9 on page 54. The resistor power changes according to the braking duty cycle.
(3) For terminal specifications (screw and tightening torque) and recommended terminal types to connect the braking resistor (terminals DC+ and BR), see Table 3.5 on page 34. Inverters with frame C (T2, T4 and T5 lines) and frame D of T6 line contain plastic parts in front of the DC-, DC+ and BR terminals, which should be removed to access the terminals.

3.2.4.2.2 Installation of the Braking Resistor

To use a braking resistor, it is necessary to carry out the following procedures:

- Install the braking resistor between the power terminals DC+ and BR.
- Use twisted cable for the connection. Separate these cables from the signal and control cables.
- Size the cables according to the application, respecting the maximum and effective currents.

- If the braking resistor is installed inside the inverter cabinet, consider its additional dissipated energy when sizing the cabinet ventilation.

DANGER!
The inverter has an adjustable thermal protection for the braking resistor. The braking IGBT and resistor can be damaged if parameters C3.6.1 (Voltage Level DC Bus) and C3.6.4 (Hysteresis Level) are not set correctly or if the input voltage exceeds the maximum permissible value.

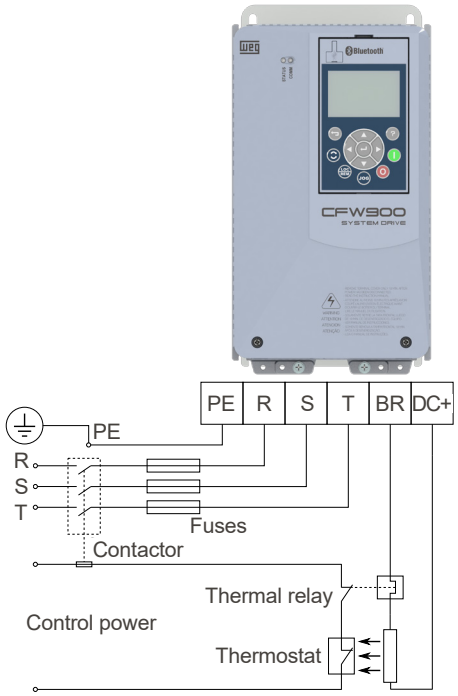


Figure 3.25: *Braking resistor connection*

NOTE!
DC current flows through the thermal relay bimetal strip during braking.

3.2.4.2.3 Use of the DBW03 External Braking Module

Frame sizes F, G, and H do not have an internal braking IGBT; therefore, the DBW03 braking module can be used. The module must be connected to the DC+ and DC- power terminals, while the braking resistor must be connected to the +UD and BR terminals of the braking module, as shown in Figure 3.26 on page 57.

Refer to the DBW03 manual available at **www.weg.net** for more information.

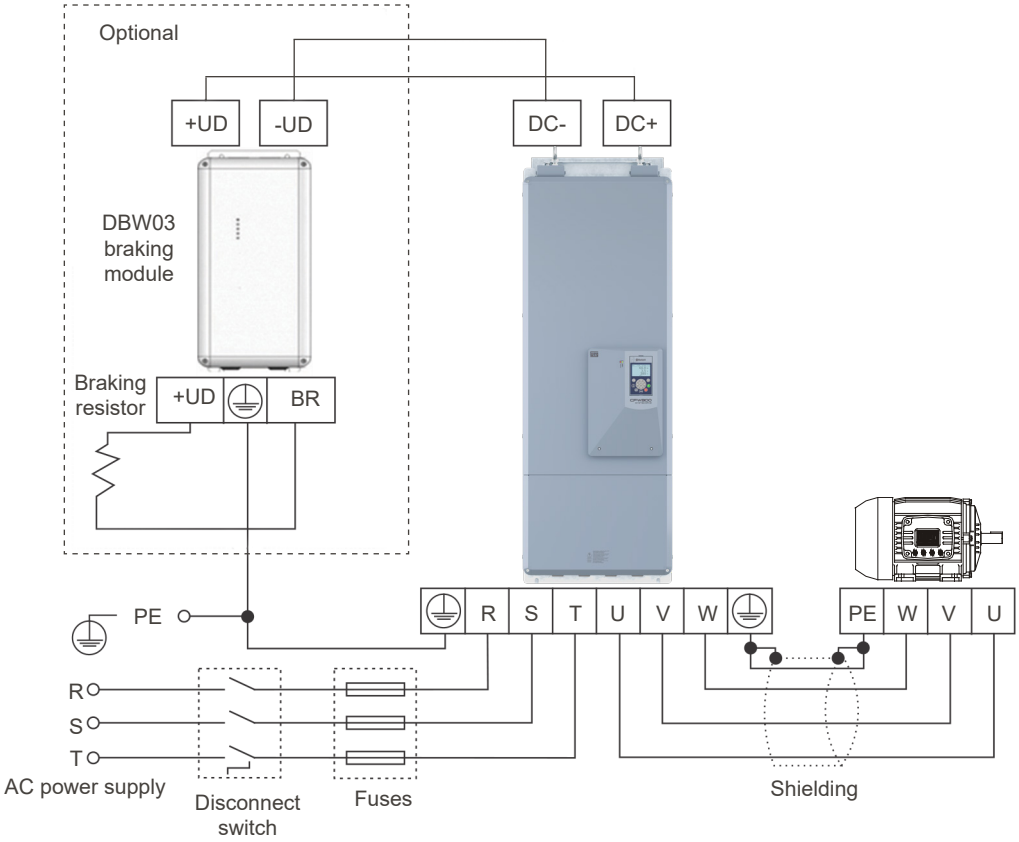


Figure 3.26: *DBW03 braking module connection*

3.2.4.3 Output Connections

ATTENTION!
The inverter has an electronic motor overload protection that shall be adjusted according to the driven motor. When several motors are connected to the same inverter, install individual overload relays for each motor.

ATTENTION!
The motor overload protection available in the CFW900 is in accordance with the IEC609047-4-2 and UL61800-5-1, standards, note the following information:

- "Trip" current equal to 1.25 times the motor rated current (C2.1.5) adjusted in the Oriented "Start- up" menu.
- The maximum value of parameter C7.4.6 (Motor Thermal Class) is 3 (class 20).
- The maximum value for C2.1.11 (Motor service factor) is 1.15.
- The maximum value of the overload current parameters C7.4.3, C7.4.4 and C7.4.5 is 100 %.

ATTENTION!
If a disconnect switch or a contactor is installed between the inverter and the motor, never operate them with a spinning motor or with voltage at the inverter output.

The characteristics of the cable used to connect the motor to the inverter, as well as its interconnection and routing, are extremely important to avoid electromagnetic interference in other equipment and not to affect the life cycle of windings and bearings of the controlled motors.

Keep motor cables away from other cables(such as signal cables, control cables, etc.), according to Table 3.10 on page 58.

Table 3.10: Cable separation distance

Cable Length	Minimum Separation Distance
≤ 30 m	≥ 10 cm
> 30 m	≥ 25 cm

3.2.4.3.1 Motor Cables

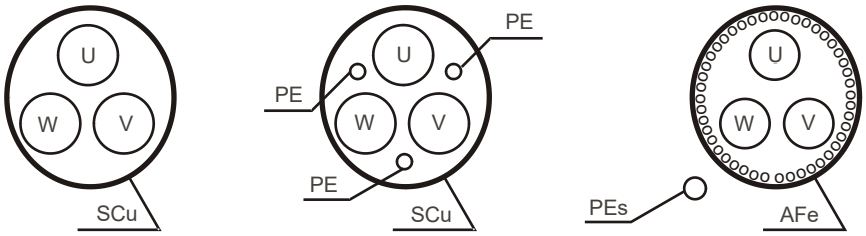
Unshielded cables:

- Can be used when it is not necessary to meet the European directive of electromagnetic compatibility (IEC 61800-3).
- The emission of the cables may be reduced by installing them inside a metal conduit, which shall be grounded at both ends.
- It is necessary to connect a fourth cable between the motor ground and the inverter ground.

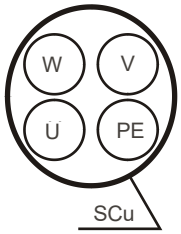
NOTE!
The magnetic field created by the current circulation in these cables may induce current in close metal pieces, heat them, and cause additional electrical losses. Therefore, keep the 3 (three) cables (U, V, W) always together.

Shielded cables:

- They are mandatory when it is necessary to comply with the electromagnetic compatibility standard, as defined by IEC 61800-3 standard “Adjustable Speed Electrical Power Drive Systems”.
- These cables act mainly by reducing the irradiated emission in the radio-frequency range.
- In reference to the type and details of installation, follow the recommendations of IEC 60034-25 “Guide For Design and Performance of Cage Induction Motors Specifically Designed For Converter Supply”, refer to a summary in Figure 3.27 on page 59. Refer to the standard for further details and eventual modifications related to new revisions.
- The grounding system shall be well interconnected among the several installation locations such as the grounding points of the motor and the inverter. Voltage difference or impedance between the several points may cause the circulation of leakage currents among the equipment connected to the ground, resulting in electromagnetic interference problems.



(a) Symmetrical shielded cables: three concentric conductors with or without a ground conductor, symmetrically manufactured, with an external shield of copper or aluminum



(b) Alternative for conductors up to 10 mm²

SCu = copper or aluminum external shielding.
AFe = steel or galvanized iron.
PE = ground conductor.
Note 1: Cable shielding shall be grounded at both ends (inverter and motor). Use 360º connections for a low impedance to high-frequencies. Refer to Figure 3.28 on page 59.
Note 2: For using the shield as a protective ground, it shall have at least 50 % of the power cables conductivity. Otherwise, add an external ground conductor and use the shield as an EMC protection.
Note 3: Shielding conductivity at high-frequencies shall be at least 10 % of the power cables conductivity.

Figure 3.27: *(a) and (b) Motor connection cables recommended by IEC 60034-25*

3.2.4.3.2 Connection of the Power Cable Shield to Ground

Inverters of the CFW900 series include clamps and grounding plates that simplify the connection of the control cables and power cable shield, enabling a low impedance connection for high frequencies. Figure 3.28 on page 59 shows an example of power cable connection (power cables and motor cables) using these materials in an inverter with IP2X protection rating. The connection on inverters with UL type 1 protection rating is similar.



Figure 3.28: *Detail of the power cable shield connection*

3.2.5 Grounding Connections

DANGER!

- The inverter must be obligatorily connected to a protective ground (PE).
- Use grounding wiring with a gauge at least equal to that indicated in Table 3.5 on page 34.
- Connect the grounding points of the inverter to a specific grounding rod, or specific grounding point, or to the general grounding point (resistance ≤ 10 Ω).
- To comply with IEC 61800-5-1 standard, connect the inverter to the ground by using a single conductor copper cable with a minimum wire gauge of 10 mm^2 or a two-conductor cable with the same wire gauge of the grounding cable specified in Table 3.5 on page 34 since the leakage current is greater than 3.5 mA AC.

DANGER!

Do not share the grounding wiring with other equipment that operate with high currents (ex.: high power motors, soldering machines, etc.). When installing several inverters, follow the procedures presented in Figure 3.30 on page 62 for the grounding connection.

ATTENTION!

The neutral conductor of the network that powers the inverter cannot be used to ground the inverter.

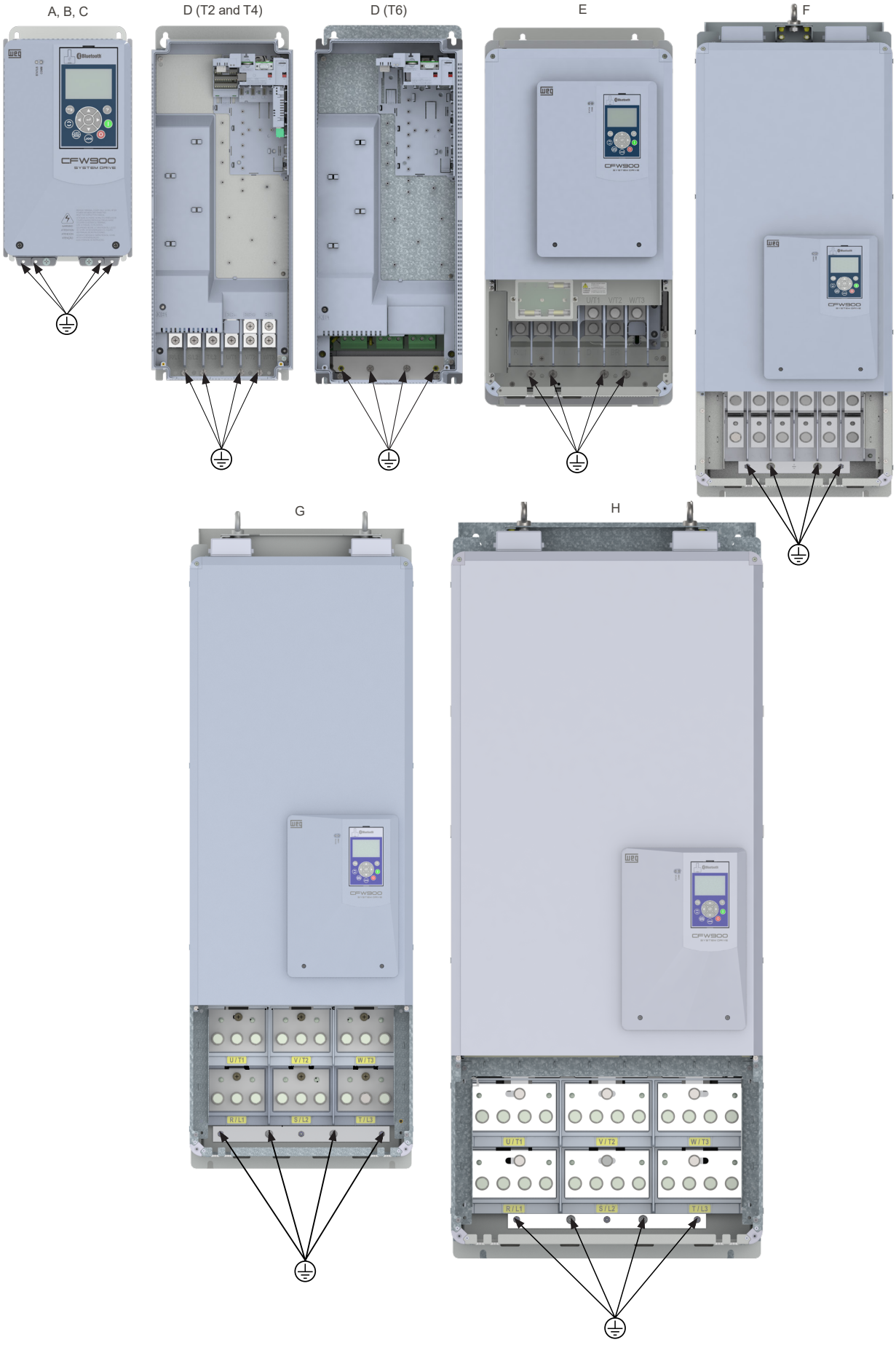


Figure 3.29: *Grounding terminals*

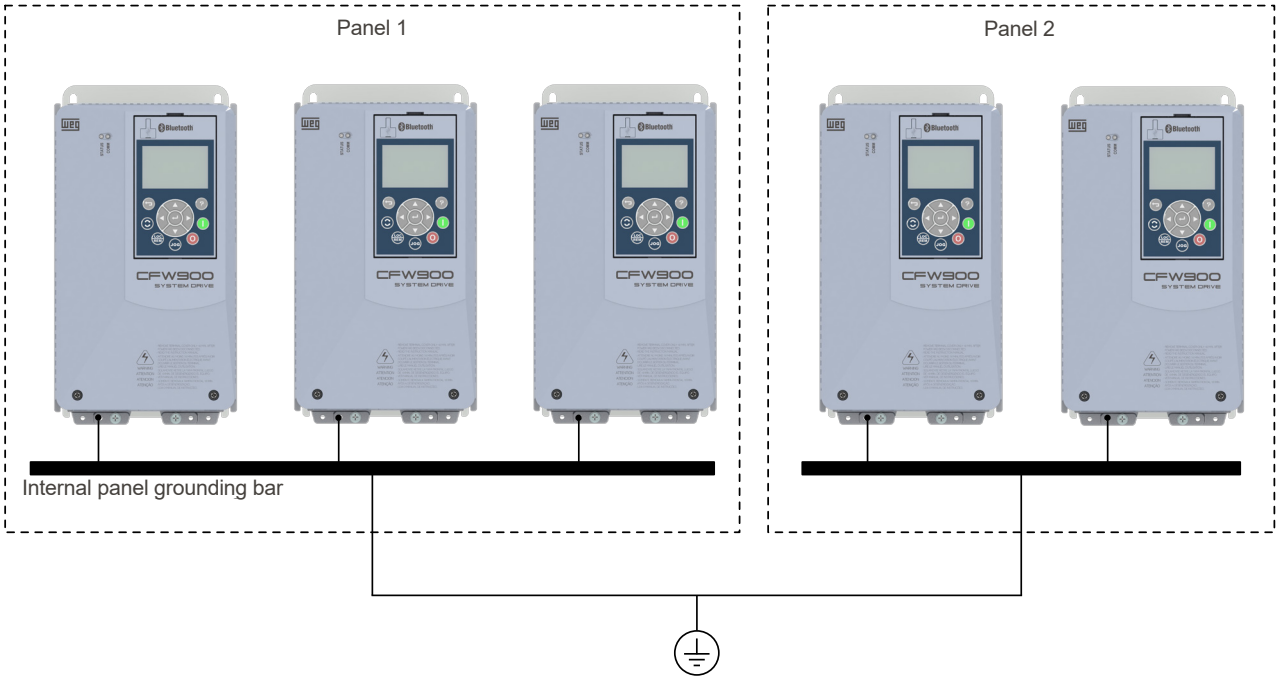


Figure 3.30: *Grounding connections with multiple inverters*

3.2.6 Control Connections

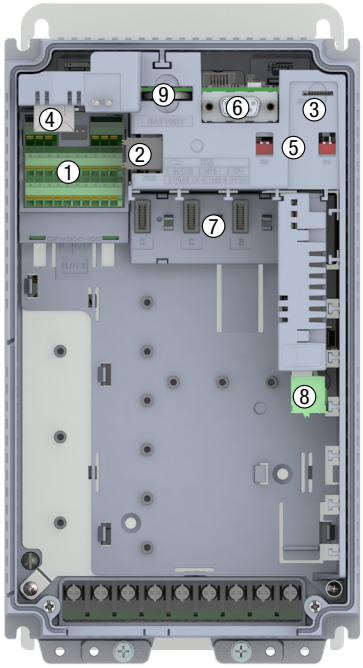
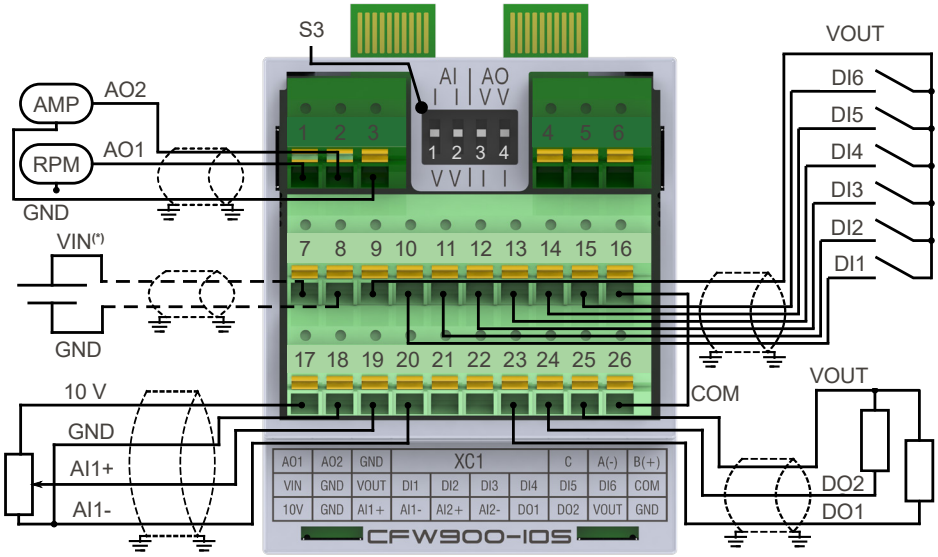


Figure 3.31: *CFW900 control connections*

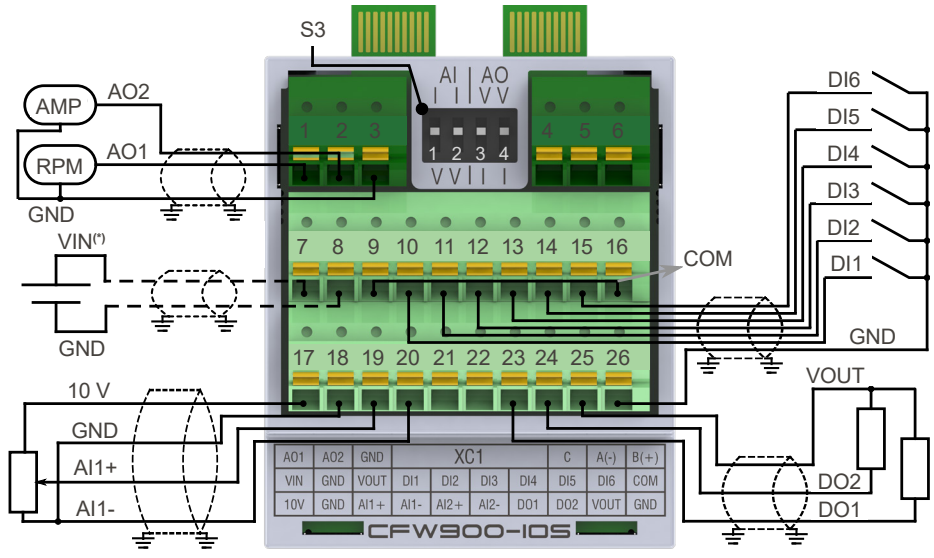
NOTE!
At the end of the battery useful life, do not dispose it in common garbage, but in a proper place for batteries.

Table 3.11: Description of control connections

Item	Description
1	XC1 Connector (CFW900-IOS): digital and analog inputs and outputs, input for external power supply and RS-485 communication
2	XC2 Connector (safety module): STO and SS1-t functions
3	XC3 connector (microSD card slot): allows copying parameters and storing SoftPLC programs (see the programming manual)
4	XC4A and XC4B connectors: dual port ethernet connection (RJ45) (see the ethernet communication manual)
5	DIP switches S1 and S2: safety module configuration
6	XC6 connector: DB9 connector for connecting the HMI/remote HMI
7	Backplane CFW900-4SLOTS: provides four slots to connect accessories. By default, slot A is taken by the CFW900-REL-01. It can be replaced by the CFW900-7SLOTS, which has seven slots for accessories
8	XC30 (CFW900-REL-01): relay output
9	CR2032 battery for real time clock. Use non-conductive pliers or tweezers to remove/replace the battery



(a) Inputs configured in PNP mode (standard version)



(b) Inputs configured in NPN mode

(*) See Item 3.2.6.2 Use of a 24 Vdc External Power Supply on page 67.

Figure 3.32: *(a) and (b) Connection examples on XC1 (CFW900-IOS)*

Table 3.12: XC1 connector (CFW900-IOS)

Connector XC1		Description (1)	Default Function (If any)
Pin	Name		
1	AO1	Analog output 1	Speed
2	AO2	Analog output 2	Motor current
3,8,18,26	GND	Control circuit reference	
4	C	RS-485 interface reference	
5	A (-)	RS-485 interface negative	
6	B (+)	RS-485 interface positive	
7	VIN	+24 Vdc external power supply input	
9,25	VOUT	+24 Vdc power supply output	
10	DI1	Digital input 1	Run/Stop (Only in remote mode 2)
11	DI2	Digital input 2	
12	DI3	Digital input 3	
13	DI4	Digital input 4	
14	DI5	Digital input 5	Input A for encoder
15	DI6	Digital input 6	Input B for encoder
16	COM	Common of the digital inputs	
17	10 V	10 V power supply for potentiometer	
19	AI1+	Differential analog input 1	Speed reference (only in remote mode 2)
20	AI1-		
21	AI2+	Differential analog input 2	
22	AI2-		
23	DO1	Digital output 1	
24	DO2	Digital output 2	

(1) For more information see the detailed specification in Table 8.18 on page 133.

NOTE!
The digital outputs of the CFW900-IOS have freewheeling diodes for the 24 Vdc power supply of the inverter control (inverter internal power supply or external power supply connected to VIN). If a separate external 24 Vdc power supply is used to power the loads of the digital outputs, the state of the outputs will remain indeterminate as long as the 24 V power supply of the inverter control is not energized. If this characteristic is unwanted, the CFW900-REL-01 or CFW900-IOD-01 outputs must be used.

Table 3.13: Configuration of DIP switches for selecting the type of signal on the CFW900-IOS analog inputs/outputs

Input/Output	DIP Switch	DIP Position: Selected Mode (1)	Factory Default
AI1	S3:1	V: -10 to 10 V; I: 4 to 20 mA / 0 to 20 mA	V
AI2	S3:2	V: -10 to 10 V; I: 4 to 20 mA / 0 to 20 mA	V
AO1	S3:3	V: 0 to 10 V; I: 4 to 20 mA / 0 to 20 mA	V
AO2	S3:4	V: 0 to 10 V; I: 4 to 20 mA / 0 to 20 mA	V

(1) The parameters referring to the inputs/outputs also need to be configured. Refer to the programming manual.

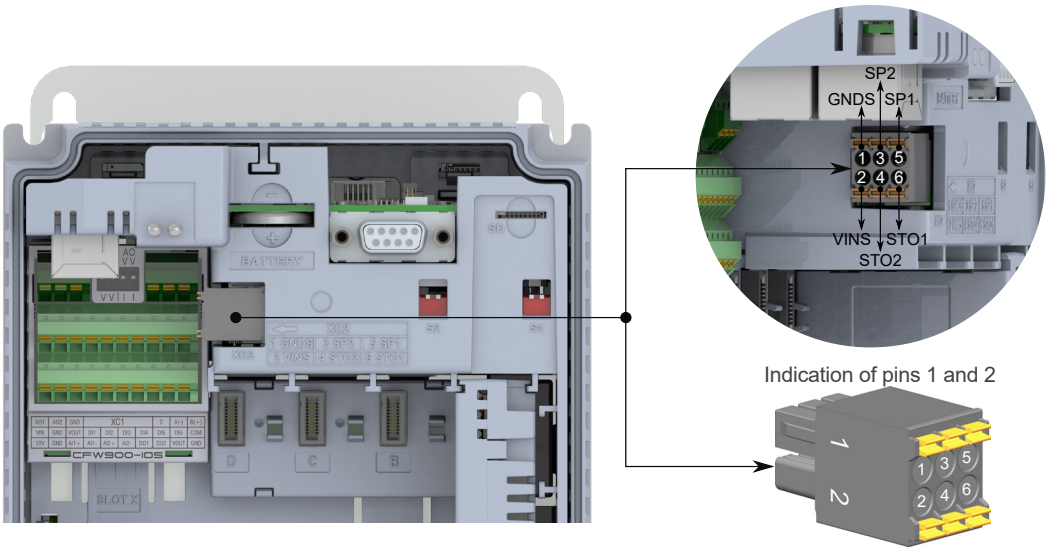


Figure 3.33: XC2 connector location and pinout

Table 3.14: XC2 connector (safety module)

XC2 Connector		Description (1)
Pin	Name	
1	GNDS	Safety module reference
2	VINS	+24 Vdc power supply for the safety module
3	SP2	Safety signal for STO2 input
4	STO2	Safety input 2
5	SP1	Safety signal for STO1 input
6	STO1	Safety input 1

(1) For more information and connection examples, refer to the CFW900 safety manual.

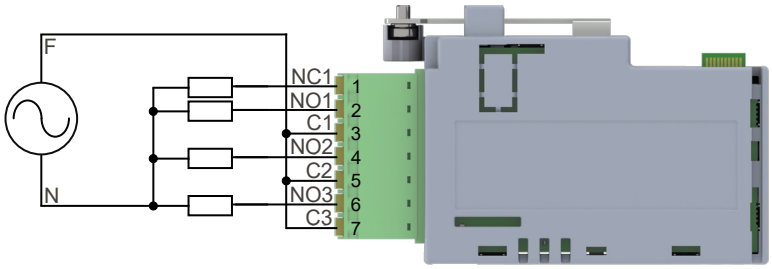


Figure 3.34: CFW900-REL-01 XC30 connector pinout with example of AC load connection

Table 3.15: XC30 connector (CFW900-REL-01 Accessory)

XC30 Connector		Description: Default Function (If Any) (1)
Pin	Name	
1	NC1	1 A digital relay output: no fault (2) NO: normally open, C: common, NC: normally closed
2	NO1	
3	C1	
4	NO2	2 A digital relay output: (2) N>Nx (S2.1.1 > C5.9.4)
5	C2	
6	NO3	3 A digital relay output (2) N*>Nx (S2.1.3 > C5.9.4)
7	C3	

(1) For more information see the detailed specification in Table 8.20 on page 133.
(2) The CFW900-REL-01 supplied with the inverter will be connected to slot A, and the corresponding outputs will be 1 A, 2 A and 3 A, with the default functions indicated. If the accessory is reconnected to another slot, the identification of the outputs will change to 1n, 2n and 3n, with 'n' being the slot where the accessory was connected.

ATTENTION!
For protection against electric shock, the CFW900-REL-01 provides reinforced isolation between the relay output contacts and other control circuits. Isolation between outputs is basic in accordance with IEC61800-5-1 and UL61800-5-1 with voltage limits of 60 Vdc/25 Vac. In order to comply with IEC and UL standards, user-accessible circuits and circuits with voltage above 60 Vdc/25 Vac must not be activated in the same CFW900-REL-01.

For the correct installation of the control wiring:

- Use cable gauge according to Table 3.16 on page 66.
- Use shielded cables for control inputs/outputs and communication networks. When the cable is longer than 30 m, ground the shield at both ends.
- Correctly ground the shield of the cables, using the shield connection in 360°, as shown in Figure 3.35 on page 66.
- Keep the control, communication and remote HMI cables separate from the other cables (input and motor cables, 110/220 Vac control etc.) according to Table 3.10 on page 58. If those cables have to cross the other cables, it must be done perpendicularly, keeping the minimum separation distance of 5 cm at the crossing point.
- Relays, contactors, solenoids or electromechanical braking coils installed close to the inverters may generate interference in the control circuit. To eliminate this effect, RC suppressors must be connected in parallel to the coils of those devices in case of AC power supply, and freewheeling diodes in case of DC power supply.

Table 3.16: Cable gauges for control connection

Connector	Conductor Gauge Without Terminal		Conductor Gauge With Wire Ferrule and Insulation		Stripping or Terminal Length (mm)
	Minimum mm² (AWG)	Maximum mm² (AWG)	Minimum mm² (AWG)	Maximum mm² (AWG)	
XC1	0.2 (24)	1.5 (16)	0.25 (23)	1.5 (16)	10 mm
XC2	0.2 (24)	1.5 (16)	0.12 (26)	0.75 (18)	10 mm
XC30	0.2 (24)	2.5 (12)	0.25 (23)	2.5 (12)	8 mm

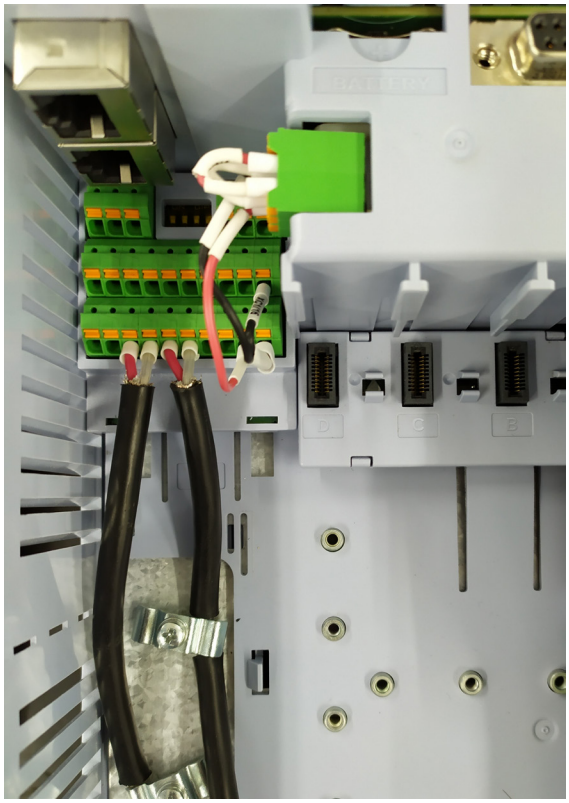


Figure 3.35: Connection example of control cable shield

Frame sizes E, F, G, and H have a metal channel for network cable routing, as indicated by the red arrows in Figure 3.36 on page 66.

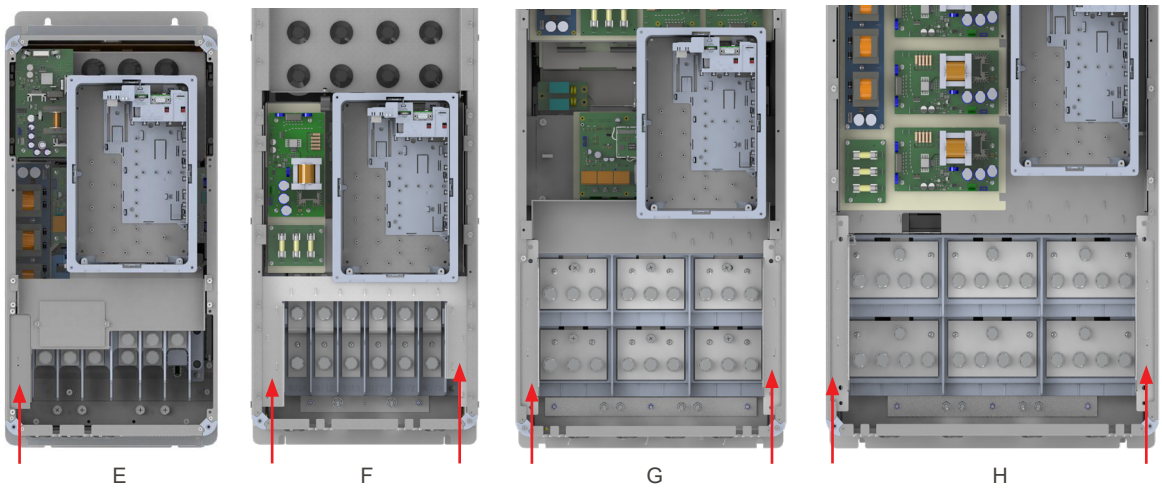


Figure 3.36: Metal channel for network cable routing

3.2.6.1 Internal 24 Vdc Power Supply Current Capacity

The inverters of the CFW900 line have an internal 24 Vdc / 0.8 A power supply used to power the accessories connected to slots A to G. The current capacity not used by the accessories can be used to power external circuits, such as sensors, digital inputs, loads on digital outputs, etc. via the VOUT output of XC1. In applications that use multiple accessories, it may be necessary to use an external 24 Vdc power supply.

Follow the next steps to evaluate the consumption of the internal power supply and calculate the current available in VOUT:

1. Check the consumption of the accessories that will be installed in each backplane slot through Table 7.2 on page 111.

2. Add the consumption of each accessory to be connected to slots A to G using the equation: $I_{ACC} = I_{ACC,A} + I_{ACC,B} + I_{ACC,C} + I_{ACC,D} + I_{ACC,E} + I_{ACC,F} + I_{ACC,G}$, to obtain the total consumption of the accessories.

3. Check the total current consumed by the accessories:

- If the current drawn by the accessories is greater than 0.8 A, (i.e., $I_{ACC} > 0.8$ A) it will be necessary to use an external power supply. Check Item 3.2.6.2 Use of a 24 Vdc External Power Supply on page 67.

- If the consumption of the accessories is less than or equal to 0.8 A (i.e., $I_{ACC} \leq 0.8$ A), the remaining current can be consumed through the VOUT outputs. Go to item 4 to check the current available in VOUT.

4. Calculate the maximum current in VOUT: $I_{OUT} = 0.8\ A - I_{ACC}$.

5. Check that the circuits to be connected to the VOUT output do not exceed the calculated maximum current I_{OUT}.

Table 3.17: *Examples of how to check the consumption of the internal power supply and current available in VOUT*

Ex.	Accessory(2)	SLOT A	SLOT B	SLOT C	SLOT D	SLOT E	SLOT F	SLOT G	I_{ACC}	I_{OUT}
1	Model	REL-01							0.05 A	0.75 A
	Consumption	0.05 A								
2	Model	REL-01	TEMP-01	CCAN-W	ENC-01				0.30 A	0.50 A
	Consumption	0.05 A	0.05 A	0.00 A	0.20 A					
3	Model	REL-01	TEMP-01	CCAN-W	ENC-01	IOAI-01	IOD-01	IOD-01	0.40 A	0.40 A
	Consumption	0.05 A	0.05 A	0.00 A	0.20 A	0.10 A	0.00 A	0.00 A		
4	Model	REL-01	TEMP-01	ENC-01	ENC-01	IOAI-01	IOAI-01	IOAI-01	0.80 A	0.00 A
	Consumption	0.05 A	0.05 A	0.20 A	0.20 A	0.10 A	0.10 A	0.10 A		
5 (1)	Model	ENC-01	ENC-01	IOAI-01	IOAI-01	IOAI-01	IOAI-01	IOAI-01	0.90 A	-0.10 A (1)
	Consumption	0.20 A	0.20 A	0.10 A	0.10 A	0.10 A	0.10 A	0.10 A		

(1) In this example, the capacity of the internal power supply was exceeded, being necessary to use an external power supply as Item 3.2.6.2 Use of a 24 Vdc External Power Supply on page 67.
(2) Prefix "CFW900" has been omitted.

NOTE!
If it is necessary to use an external power supply because the consumption of accessories and loads connected to VOUT is greater than 0.8 A, make sure that the external power supply is energized before or at the same time as the inverter, and that the inverter is de-energized before or together with the external power supply.

3.2.6.2 Use of a 24 Vdc External Power Supply

The external power supply operates redundantly with the inverter internal power supply and allows the control, communication and accessory circuits to remain active (powered and responding to commands) even with the power circuit de-energized.

The inverter indicates the "Poff" state when the control power is active and there is no voltage on the inverter DC link. The use of the external power supply is also necessary if the total current drawn by the accessories is greater than the capacity of the inverter internal power supply, as explained in Item 3.2.6.1 Internal 24 Vdc Power Supply Current Capacity on page 67.

When the external power supply is energized, the inverter control circuits, accessories and loads connected to the VOUT output of XC1 draw current from the external power supply. This way the loads in VOUT will also have redundant power.

Follow the next steps to size the external power supply:

1. Check the consumption of the accessories that will be installed in each backplane slot through Table 7.2 on page 111.

2. Add the consumption of each accessory to be connected to slots A to G using the equation: $I_{ACC} = I_{ACC,A} + I_{ACC,B} + I_{ACC,C} + I_{ACC,D} + I_{ACC,E} + I_{ACC,F} + I_{ACC,G}$, to obtain the total consumption of the accessories.

3. Calculate I_{OUT}, which is the total consumption of the circuits to be connected to VOUT. Even with an external power supply, a maximum of 0.8 A can be drawn from VOUT without tripping the internal overcurrent protection.

4. Size the minimum current capacity of the external power supply using the equation: $I_{FE} = 0.5\ A + I_{ACC} + I_{OUT}$.

5. Use an external 24 Vdc ± 10 % power supply with a current capacity of at least I_{FE}. The external power supply must be connected to the terminals VIN and GND of XC1.

6. Check if the internal power supply is also able to feed the necessary current to the accessories and loads connected to VOUT, i.e., $I_{OUT} + I_{ACC} \leq 0.8\ A$. If not, ensure that the external power supply will be energized before or together with the inverter power-up, and that the inverter will be de-energized before the external power supply.

Table 3.18: *Examples of how to check the consumption of the external power supply and current available in VOUT*

Ex.	Accessory (2)	SLOT A	SLOT B	SLOT C	SLOT D	SLOT E	SLOT F	SLOT G	I_{ACC}	I_{OUT}	I_{FE}
1	Model	REL-01							0.05 A	0.1 A	0.65 A
	Consumption	0.05 A									
2 (1)	Model	REL-01	TEMP-01	CCAN-W	ENC-01				0.30 A	0.80 A	1.60 A
	Consumption	0.05 A	0.05 A	0.00 A	0.20 A						
3	Model	REL-01	TEMP-01	CCAN-W	ENC-01	IOAI-01	IOD-01	IOD-01	0.40 A	0.40 A	1.30 A
	Consumption	0.05 A	0.05 A	0.00 A	0.20 A	0.10 A	0.00 A	0.00 A			
4 (1)	Model	REL-01	TEMP-01	ENC-01	ENC-01	IOAI-01	IOAI-01	IOAI-01	0.80 A	0.10 A	1.40 A
	Consumption	0.05 A	0.05 A	0.20 A	0.20 A	0.10 A	0.10 A	0.10 A			
5 (1)	Model	ENC-01	ENC-01	IOAI-01	IOAI-01	IOAI-01	IOAI-01	IOAI-01	0.90 A	0.50 A	1.90 A
	Consumption	0.20 A	0.20 A	0.10 A	0.10 A	0.10 A	0.10 A	0.10 A			

(1) In these examples, the capacity of the internal power supply has been exceeded, requiring the use of an external power supply as described in Item 3.2.6.2 Use of a 24 Vdc External Power Supply on page 67.
(2) Prefix “CFW900” has been omitted.

3.3 INSTALLATION ACCORDING TO THE EUROPEAN DIRECTIVE OF ELECTROMAGNETIC COMPATIBILITY

All inverters have an internal RFI filter to reduce electromagnetic interference. These inverters, when installed in accordance with the instructions contained in this manual, meet the requirements of the electromagnetic compatibility directive “EMC Directive 2014/30/EU”.

The CFW900 inverter series has been designed only for industrial applications. Therefore, the emission limits of harmonic currents defined by the standards EN 61000-3-2 and EN 61000-3-2/A 14 are not applicable.

ATTENTION!
For the CFW900 line operating in IT networks (ungrounded neutral or grounding by a high ohmic value resistor) or delta corner earthed networks, it is necessary to disconnect the grounding screws, as explained in Item 3.2.4.1 IT and Delta Corner Earthed Networks on page 52, to prevent internal damage to the inverter. In these cases, the inverter falls into category C4 according to IEC/EN 61800-3.

3.3.1 Standard Definitions

Definitions of IEC/EN 61800-3 Standard: "Adjustable Speed Electrical Power Drives Systems"

- **Environment:**

First Environment: includes domestic premises. It also includes establishments directly connected without intermediate transformer to a low-voltage power supply network which supplies buildings used for domestic purposes.

Second Environment: includes all establishments other than those directly connected to a low-voltage power supply which supplies buildings used for domestic purposes.

- **Categories:**

Category C1: inverters with a voltage rating less than 1000 V and intended for use in the First Environment.

Category C2: inverters with a voltage rating less than 1000 V, intended for use in the First Environment, not provided with a plug connector or a movable installation, and installed and commissioned by a professional.

Category C3: inverters with a voltage rating less than 1000 V and intended for use in the Second Environment only (not designed for use in the First Environment).

Category C4: inverters with a voltage rating equal to or greater than 1000 V, or with a current rating equal to or greater than 400 Amps, or intended for use in complex systems in the Second Environment.

Definitions of EN 55011 Standard: "Threshold values and measuring methods for radio interference from industrial, scientific and medical (ISM) high-frequency equipment"

Class B: equipment intended for use in the low voltage power supply (condominiums, commerce and light industry).

Class A1: equipment intended for use in the low voltage power supply. Restricted distribution.

NOTE: it must be installed and commissioned by a professional when applied in low voltage power supply.

Class A2: equipment intended for use in industrial environments.

> **NOTE!**
> A professional is a person or organization familiar with the installation and/or commissioning of inverters, including their EMC aspects.

3.3.2 Conformal Installation

For conformal installation, you must:

1. For TT/TN supply networks, keep the internal RFI filter connected.

2. Shielded output cables (motor cables) with the shield connected on both sides, motor and inverter, with low impedance connection for high frequency. Keep the separation from the other cables according to Table 3.10 on page 58. For more information see Item 3.2.4 Power Connections on page 51. Maximum motor cable length and conduced and radiated emission levels according to Table 3.19 on page 70.

3. Ground the inverter as explained in Item 3.2.5 Grounding Connections on page 60.

4. Use shielded control cables and keep the separation from the other cables according to Item 3.2.6 Control Connections on page 62.

5. Design or choose the panel considering the applicable measures to comply with the EMC standards. If an extension is made inside the panel for connecting the power, motor and ground cables (that is, if these cables are not directly connected to the inverter terminals), the panel must be designed so as to have a low impedance connection for high frequencies. In this case, it is not necessary to use a shielded cable between the inverter UVW terminals and the connection points of the motor shielded connection cable; however, it is necessary to provide a way to ground the cable shield with a 360° connection in a similar way to the one found in the inverter cable grounding kit supplied with the inverter.

3.3.3 Emission and Immunity Levels Met

Table 3.19: *Emission and immunity levels*

EMC Phenomenon	Level	Basic Standard
Emission		
Mains terminal disturbance voltage Frequency range: 150 kHz to 30 MHz	TT/TN networks: Category C3: maximum motor cable length of 200 m - exception: Frame sizes B and C (T5 line) for which the maximum motor cable length is 50 m Category C2: According to the Table 3.20 on page 71 IT or delta earthed networks: Category C4	IEC/EN 61800-3:2017
Electromagnetic radiation disturbance Frequency range: 30 MHz to 1 GHz	TT/TN networks: Category C3: Frame sizes B (T5 line), D (T2 and T4 lines), F and G (T2 and T4 lines) require a panel with minimum attenuation of 10 dB; Frame size G (T6 line) require a panel with minimum attenuation of 30 dB IT or delta earthed networks: Category C4	
Immunity		
Electrostatic discharge immunity test	4 kV for contact discharge and 8 kV for air discharge	IEC 61000-4-2
Electrical Fast Transient/Burst immunity test	2 kV/5 kHz (coupling capacitor) input cables, control cables and motor cable 1 kV/5 kHz (coupling capacitor) remote HMI cable	IEC 61000-4-4
Immunity to conducted disturbances induced by radio- frequency fields	0.15 to 80 MHz; 10 V; 80 % AM (1 kHz) Motor, control and remote HMI cables	IEC 61000-4-6
Surge immunity test	1.2/50 µs, 8/20 µs 1 kV input cables, line-to-line coupling 2 kV input cables, line-to-ground coupling 1 kV control cables, coupling to the cable shield, cable shield grounded at both ends	IEC 61000-4-5
Radiated, radio-frequency, electromagnetic field immunity test	80 to 1000 MHz; 10 V/m 1.4 to 2 GHz; 3 V/m 2 to 2.7 GHz; 1 V/m 80 % AM (1 kHz)	IEC 61000-4-3

Table 3.20: *Emission conducted specification*

Frame Size	Power Suplpy Voltage	Category	Maximum Motor cable Length	Is an External Toroid Necessary?
A	B2 and T2	C3	200 m	No
		C2	10 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60006-L2045-V101-01)
	T4	C3	200 m	No
		C2	10 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60006-L2045-V101-01)
B	T2	C3	200 m	No
		C2	10 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60006-L2045-V101-01)
	T4	C3	200 m	No
		C2	10 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60006-L2045-V101-01)
	T5	C3	50 m	No
		C2	5 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60006-L2045-V101-01)
C	T2	C3	200 m	No
	T4	C3	200 m	No
		C2	10 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60006-L2045-V101-01)
	T5	C3	50 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60006-L2045-V101-01)
		C2	10 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60006-L2045-V101-01)
D	T2	C3	200 m	No
	T4	C3	200 m	No
	T6	C3	100 m (1)	No
		C2	10 m	Yes, toroid in power supply cables and motor cables (MAGMATTEC PN CJMMT520OB205.70.30D)
E	T2	C3	200 m	No
	T4	C3	200 m	No
		C2	5 m	Yes, toroid in power supply cables (Vacuumschmelze PN T60004-L2063-W627)
	T6	C3	200 m	No
F	T2	C3	200 m	No
	T4	C3	200 m	No
G	T4	C3	200 m	No
	T6	C3	200 m	No
H	T4	C3	200 m	No
	T6	C3	200 m	Yes, toroid in power supply cables (MAGMATTEC PN CJMMT520OB205.70.30D)

(1) Or 200 m with toroid in power supply cables (MAGMATTEC PN CJMMT520OB205.70.30D).

4 HMI

The product graphic HMI allows viewing and programming the CFW900 frequency inverter. The key navigation provides access to all data by means of groups (Menus).



Figure 4.1: *HMI keys*

 USB connector for communication with PC.

 “Esc”: cancel programming or go back to menu.

 “Help”: shows help text for the marked content.

 Increment and Decrement values. Navigate the menus.

 Switch between screens. Move selection for editing values. Navigate the menus.

 Enter key: save changes. Enter the menus.

 Control the motor direction of rotation if programmed for HMI.

 Select LOCAL or REMOTE command if programmed for HMI.

 Run JOG if programmed for HMI.

 Stop motor if programmed for HMI or fault/protection reset.

 Run motor if programmed for HMI.

All the HMI operation is based on menus, which contain the reading and writing variables. The menus are divided into levels, containing menus and submenus.

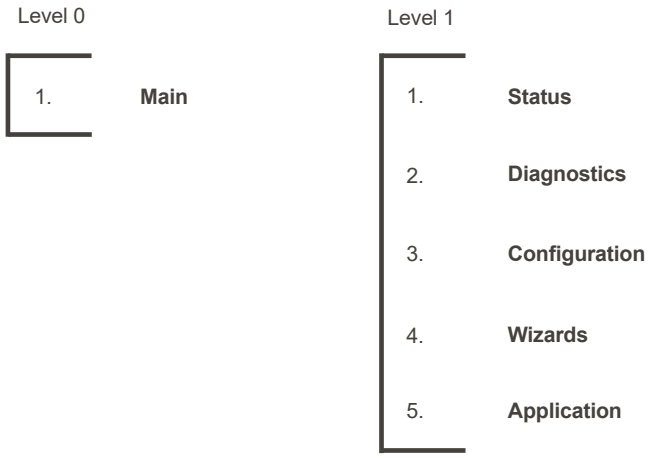


Figure 4.2: HMI Screens and Menus

Level 0:
The main screen is located, where you can select which reading variables (**Status**) you want to view.

Level 1:
The main menus to access the variables are located. These, in turn, are divided into reading variables (**Status** and **Diagnostics**), and writing or programming variables (**Configurations** and **Wizards**).

NOTE!
The **Status** parameters cannot be changed through the HMI. Some of these parameters may be a reading variable from a **Configuration** for a given communication network and thus can be changed using it.

4.1 MAIN SCREEN

After powering up the CFW900, the HMI starts up on the **Main** screen, where you can see some reading variables (**Status**).

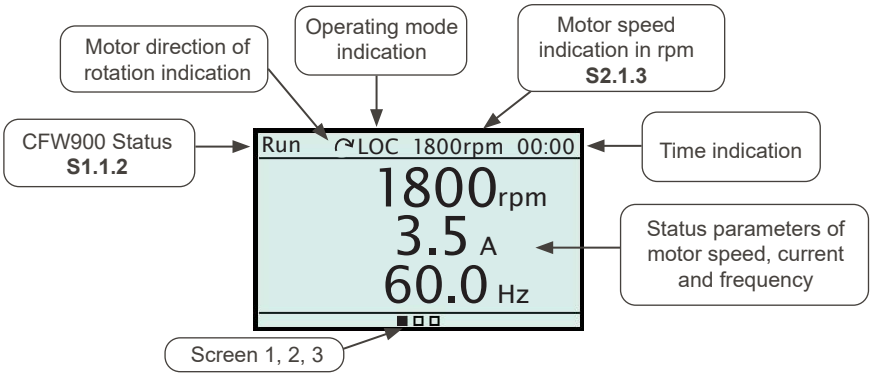


Figure 4.3: Main screen data

There are three main screens, which can be configured to display up to nine variables each. To customize these main screens, see the Section 4.5 MAIN SCREEN SETTING on page 76 of this chapter.

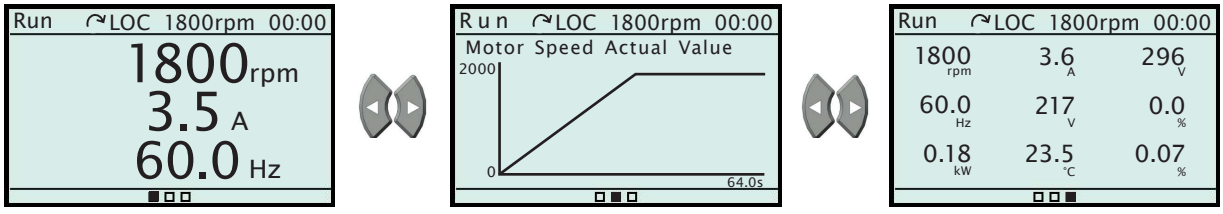


Figure 4.4: Default main screens

To access the menus, just press the "Enter" key.

4.2 MENU ACCESS MODE - MENU LEVELS

When you press the "Enter" key on a main screen, you access the menus. In the menus, it is possible to navigate the groups and subgroups to access the variables.

Each variable has its own coding, containing its location in the menu structure and its identification. Digits are separated by a period.

Example:
C2.1.4 = Motor rated voltage value
C2.1.4 = Configurations –> Motor –> Motor Data –> Rated Voltage

Level 1	**Level 2**	**Level 3**	**Level 4**	**Edition**
C	C2	C2.1	C2.1.4	
Configurations	Motor	Motor Data	Rated Voltage	440 V

4.2.1 Reading Variables - Status and Diagnostics Menus

All reading variables for the HMI are available in two main menus: **Status** and **Diagnostics**.

Status Menu: It has reading variables with updated values: current, voltage and others.

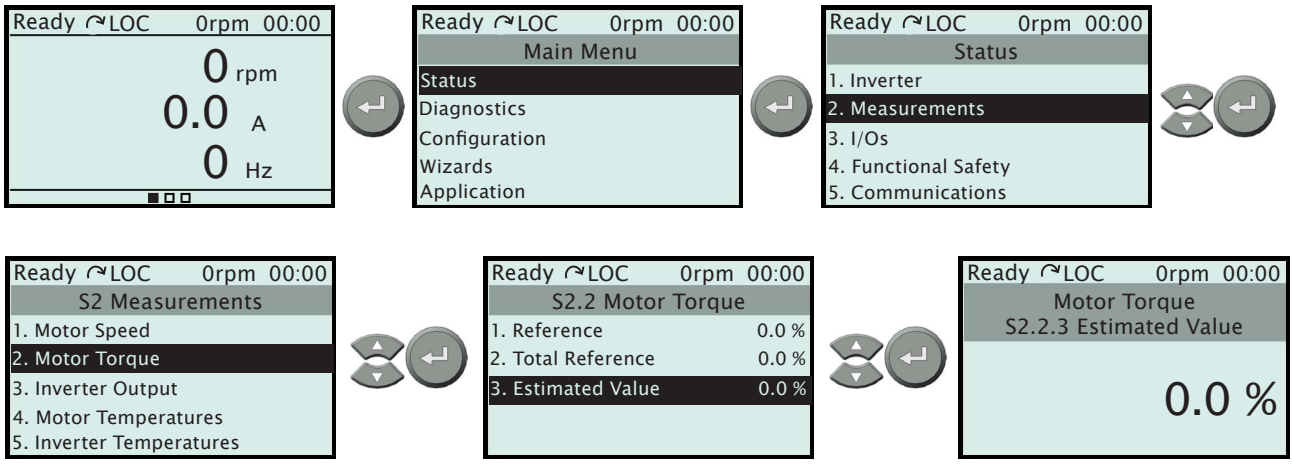


Figure 4.5: *Estimated torque reading*

Diagnostics Menu: It has reading variables with values saved as a result of events: actuation of protections, alarms, start and others.

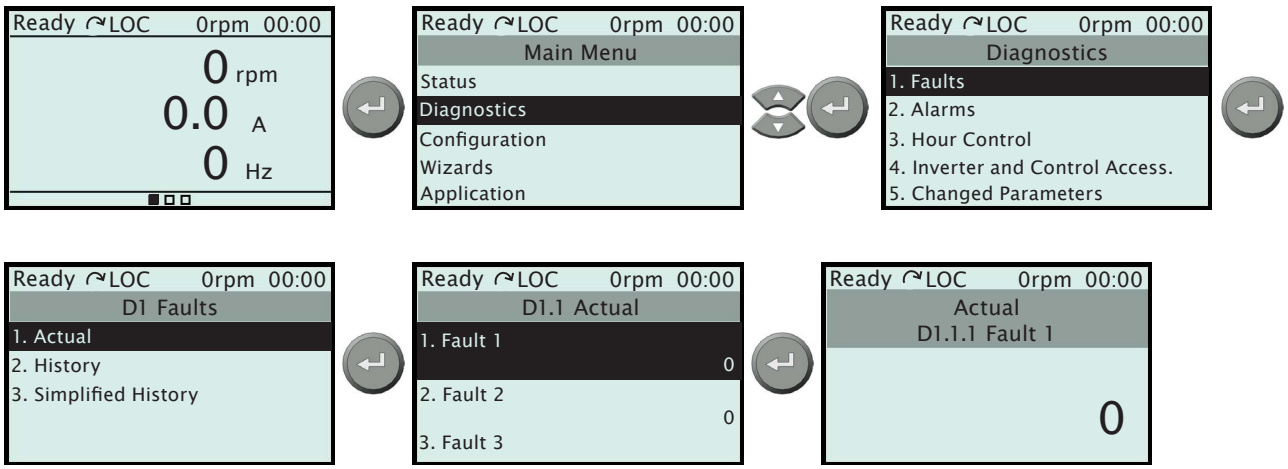


Figure 4.6: *Active protections reading*

4.2.2 Writing Variables - Configurations Menu

All programming or configuration of the CFW900 is carried out through this menu, which is divided into programming submenus, groups or subgroups.

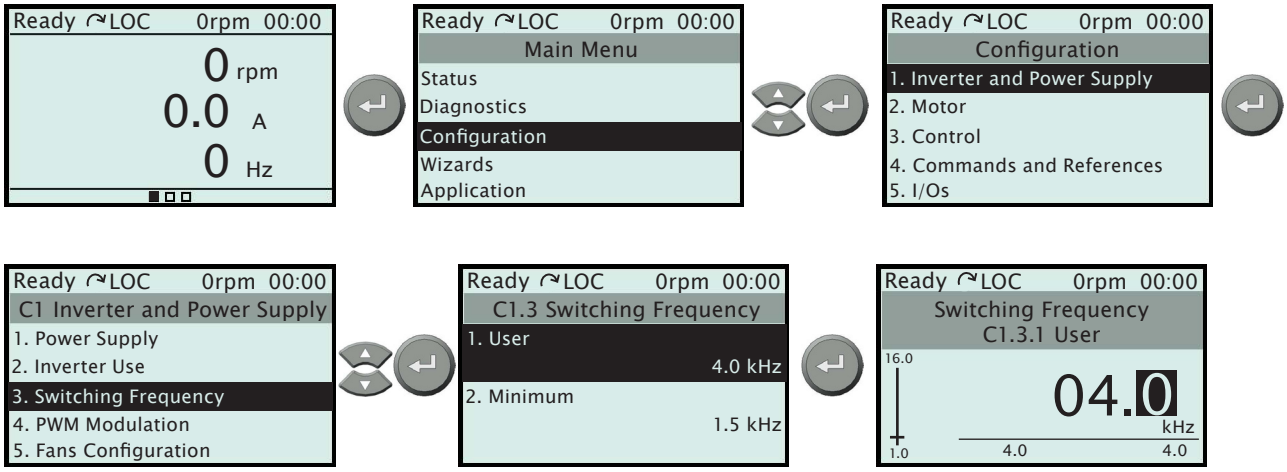


Figure 4.7: *Switching frequency configuration*

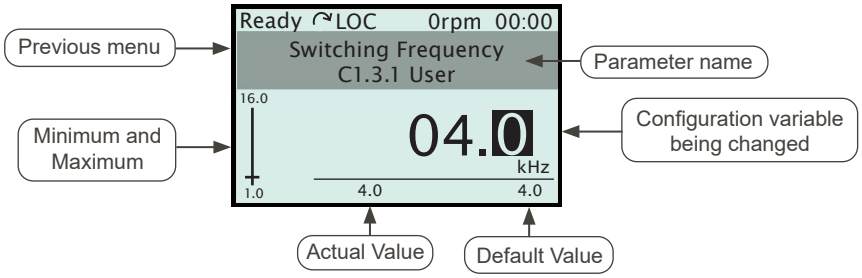


Figure 4.8: *Configuration screen data*

4.2.3 Writing Variables - Wizards Menu

The **Wizards** menu contains some of the most used settings arranged sequentially to facilitate the CFW900 start-up.

4.3 HELP KEY

Help key

The help key provides more information about the selected text. This key can be used at any time while navigating the menus, parameters or main screens. If, for example, the selected text is a parameter, when the help key is pressed, a text about this parameter will be displayed; if it is pressed on a main screen, the coding of the parameters present in this screen will be displayed.

The figures below show some examples of the use of the help key.

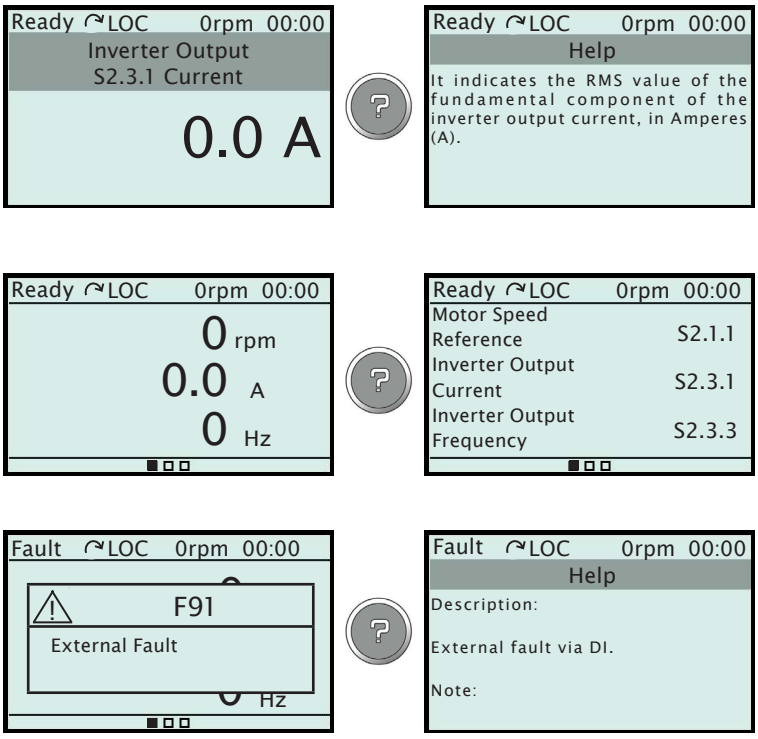


Figure 4.9: *Example of the use of the help key*

4.4 DATE AND TIME SETTING

Set the date and time in the configurations menu, as illustrated below.

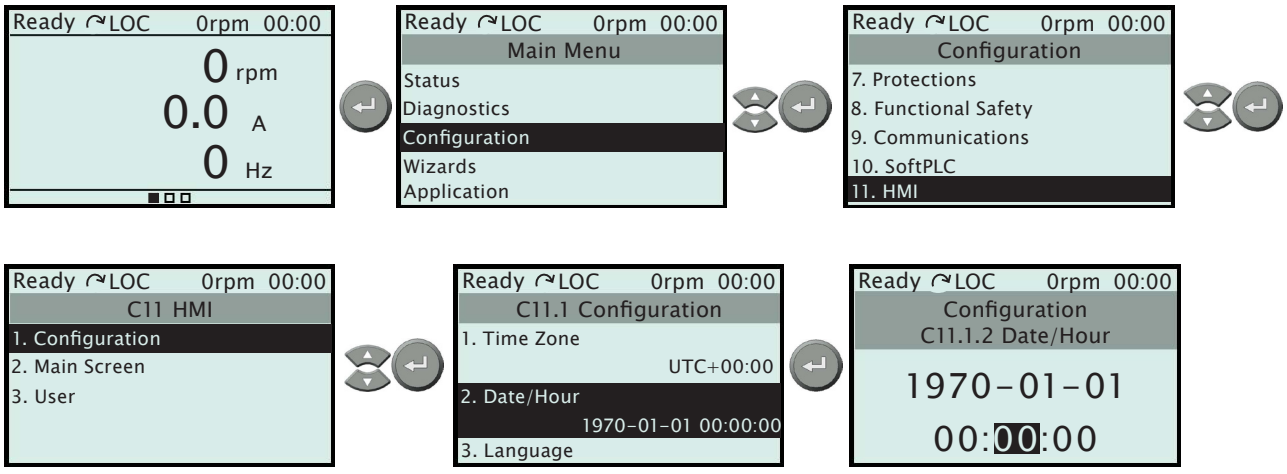


Figure 4.10: *Date and time setting*

4.5 MAIN SCREEN SETTING

Customizing the main screens allows you to define what will always be displayed when powering up the CFW900. Three easy-to-access main screens are available. Each screen can be configured among 3 view modes.

4.5.1 View Modes

- **Line:** in one line, it is possible to display a reading variable in the format **text, value or bar**. Figure 4.11 on page 77 shows an example with the three formats.

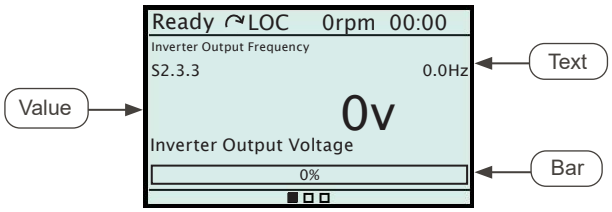


Figure 4.11: *Inline View*

- **Full screen:** it covers an entire main screen and allows viewing reading variables in the format **text, bar or graphic**. Figure 4.12 on page 77 shows an example with the three formats.

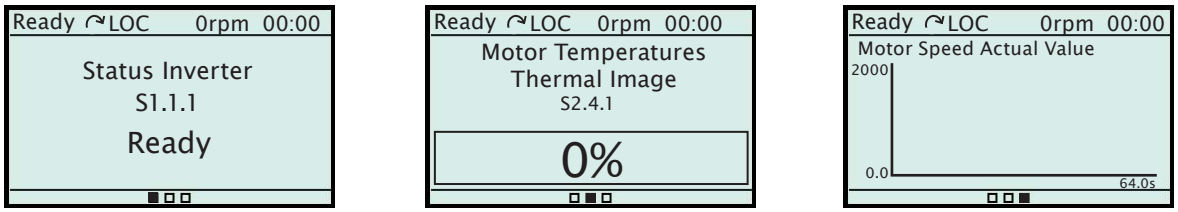


Figure 4.12: *View in (a) text, (b) bar and (c) graphic*

- **Slot:** the HMI screen is divided into nine parts called Slots and allows viewing reading variables in the format **value**. Figure 4.13 on page 77 shows a view example.

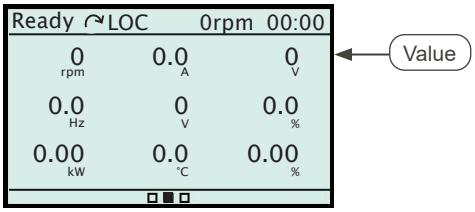


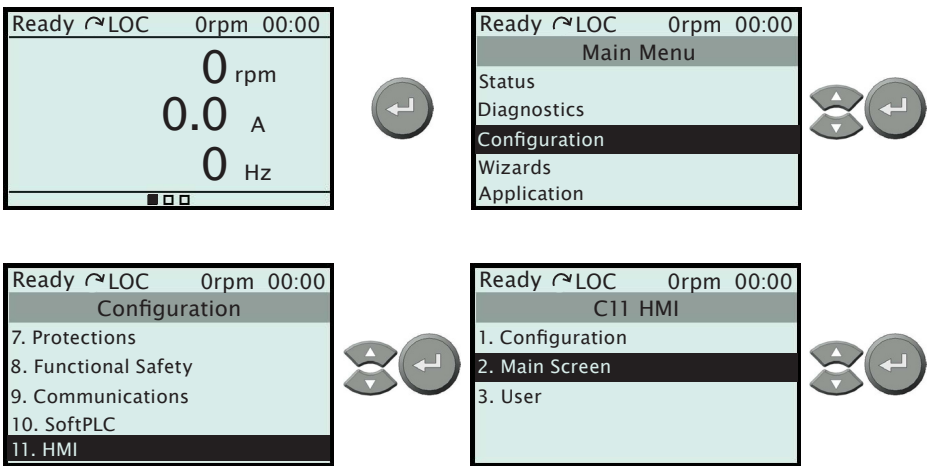
Figure 4.13: *View in Slot*

> **NOTE!**
> The **Line** and **Slot** view modes can be merged if there is space in the line.

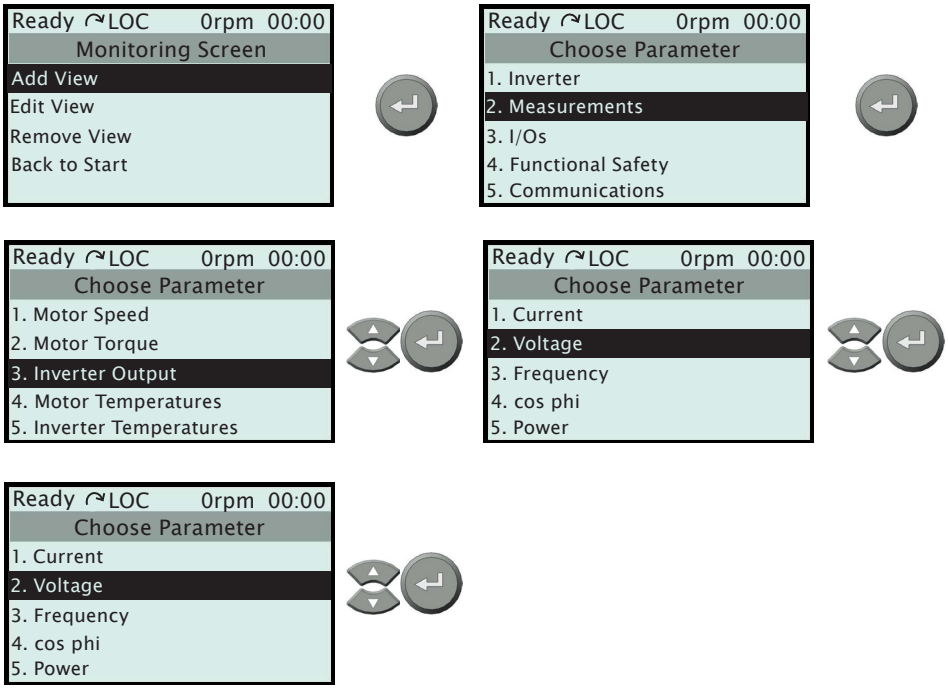
4.5.2 Modification of the Main Screen

The main screens can be modified following the following steps:

1. Go to the HMI main screen configuration menu (C11.2).



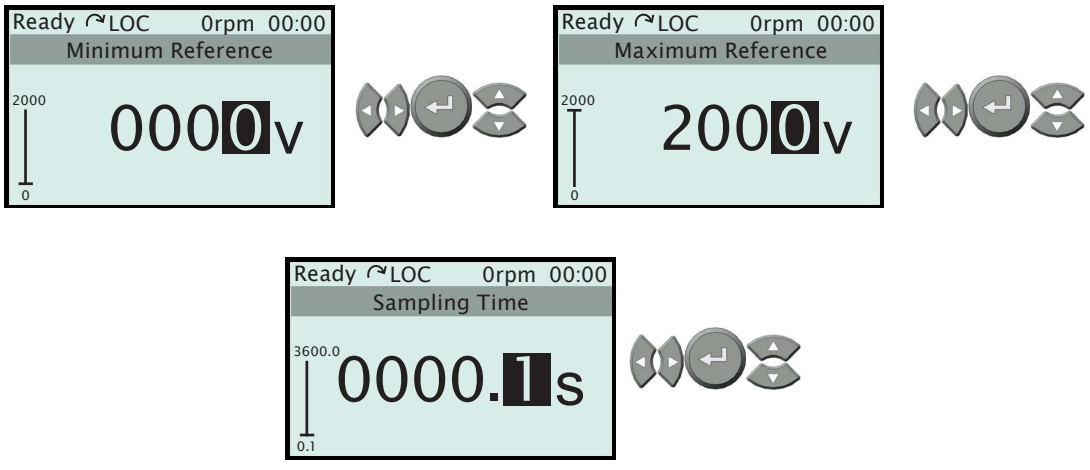
2. Select *Add* View and choose the reading variable to be added to the **Main** screen.



3. Then select the view format for the reading variable and its location on the main screens. In this example, the full screen mode in graphic format will be chosen. Use the navigation keys to switch between screens.

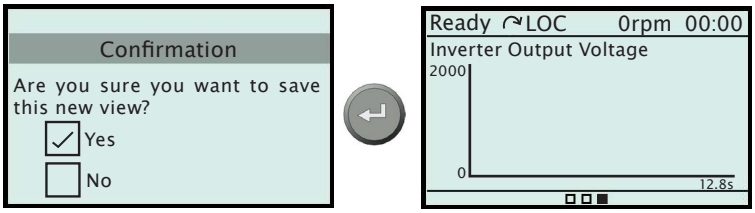


4. Configure the view format. For this example, choose the graph range and sampling rate.



NOTE!
The option *Edit* View is applied to the bar and graph mode, where you can set the minimum and maximum values for existing views.

5. Confirm the new view.



4.5.3 Screen Examples

Other screen examples are shown below:

Example 1

Figure 4.14 on page 79 is an example of a main screen with parameter readings displayed in the **Slot** and **Line** mode, showing:

- In the first line, the temperatures of the motor stator windings in the **Slot** mode, **value** format.
- In the second line, the thermal image of the motor in the **Line** mode, **text** format.
- In the third line, the power internal air temperature in the **Line** mode, **bar** format.

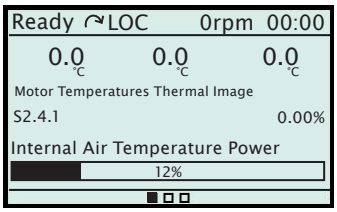


Figure 4.14: *Main screen examples*

Example 2

Figure 4.15 on page 79 is an example of a **main screen** with parameter readings displayed in the **Line** mode, showing:

- In the first line, the inverter output current in the **Line** mode, **text** format.
- In the second line, the inverter output current in the **Line** mode, **text** format.
- In the third line, the inverter output power in the **Line** mode, **bar** format.

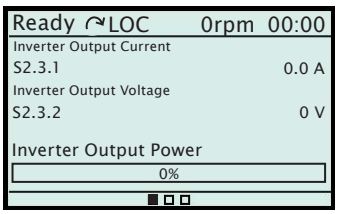


Figure 4.15: *Main screen examples*

4.6 USB MODE

The CFW900 HMI has a USB port to connect the inverter to a computer with WEG WPS software installed. This software application allows, among other things, reading variables, configuring parameters and updating the inverter firmware. For more details, see the WPS (WEG Programming Suite) manual, available at **www.weg.net**.

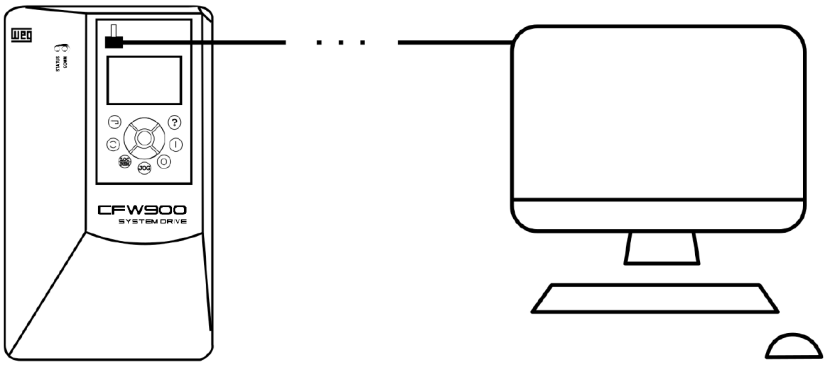


Figure 4.16: *CFW900 USB connection to a computer*

When the inverter is not powered or connected to an external 24 Vdc power supply, the control circuit is powered by the USB port, which imposes some restrictions. Only the control circuit will be enabled; other circuits, control accessories and networks will be disabled.

The USB power supply allows reading and writing parameters via HMI and connection to the WPS, but the parameters of connected accessories will not be available, as well as parameters linked to regulation functions (which depend on the operation of other parts of the inverter). Functions that use the MicroSD card will not be available either.

ATTENTION!
In the USB mode, the HMI cannot be used remotely. It must be directly connected to the inverter.

NOTE!
Once powered by the USB port, when making changes to the inverter parameters via HMI, wait for the confirmation screen to ensure the saving of the parameter.

NOTE!
If the inverter control circuit is powered by the USB, and another power supply is connected, the drive will reset.

4.7 INSTALLING THE HMI

- The HMI can be installed or removed with the inverter powered up or not.
- The HMI supplied with the product can also be used for remote command of the inverter. In this case, use a cable with D-Sub9 (DB-9) male and female connectors with pin-to-pin connections. It is recommended to use the M3 x 5.8 spacers supplied with the product. Recommended torque: 0.5 N.m (4.50 lbf.in).
- The HMI cables can be supplied as accessories, and the list of available items is in Table 7.1 on page 110.
- The maximum length of the HMI cables is specified in Table 8.17 on page 132.

5 FIRST TIME POWER-UP AND START-UP

This chapter explains:

- Check and prepare the inverter before power-up.
- Power-up the inverter and check the result.
- Set the inverter for the operation in the V/f mode based on the power supply and motor information by using the Oriented Start-Up routine.

NOTE!
For instructions to use the inverter in the VVW+ and Vector mode or other existing functions, refer to the programming manual of the CFW900.

5.1 PREPARE FOR START-UP

Before power-up, the inverter must have already been installed according to the instructions of Chapter 3 INSTALLATION AND CONNECTION on page 18.

DANGER!
Always disconnect the main power supply before performing any inverter connection.

1. Check if power, grounding, and control connections are correct and firmly secured.
2. Remove from the inside of the inverter all installation material left behind.
3. Check that the motor connections, voltage and current are according to the inverter.
4. Mechanically uncouple the motor from the load. If the motor cannot be uncoupled, make sure that the chosen direction of rotation (forward or reverse) will not result in personnel injury and/or equipment damage.
5. Return the inverter covers.
6. Measure the power supply and verify if it is within the allowed range, according to Chapter 8 TECHNICAL SPECIFICATIONS on page 113.
7. Apply power to the input: close the input disconnect switch.
8. Check the result of the first time power-up: The keypad should display the standard monitoring mode Figure 4.3 on page 73 and the status LED should be steady green.

5.2 START-UP

1. Execution of the **Oriented Start-Up** routine via parameter W1.
2. Follow the menu steps.

5.3 INSTRUCTIONS FOR COMPUTER CONNECTION

NOTE!

- Always use shielded USB interconnect cable, “standard host/device shielded USB cable”. Unshielded cables may lead to communication errors.
- Recommended cables Samtec:
  - USBC-AM-MB-B-B-S-1 (1 meter).
  - USBC-AM-MB-B-B-S-2 (2 meters).
  - USBC-AM-MB-B-B-S-3 (3 meters).
- The USB connection is galvanically isolated from the mains power supply and from other high voltages internal to the inverter. However, the USB connection is not isolated from the protective ground (PE). Use an isolated notebook for the USB connection or a desktop connected to the same protective ground (PE) of the inverter.

To control the motor speed and to view and program the inverter through a PC, it is necessary to install the WEG WPS software, available at: **www.weg.net**.

Basic procedure to transfer data from the PC to the inverter:

1. Install the WEG WPS software on your computer.

2. Connect the PC to the inverter via USB cable.

3. Start the WEG WPS.

4. Select “File → New Configuration” and follow the steps on the screen to make the connection.

For more details and other functions related to WEG WPS, including connection via RS-485 and Ethernet interfaces, refer to the WEG WPS manual.

6 TROUBLESHOOTING AND MAINTENANCE

This chapter explains:

- Check and prepare the inverter before power-up.
- Power-up the inverter and check the result.

6.1 OPERATION OF PROTECTIONS, FAULTS AND ALARMS

When a protection or fault actuates, the result is:

- The PWM pulses are blocked.
- Indication on the display of the fault/protection description and code.
- The STATUS “LED” starts flashing red.
- Deactivation of the digital outputs set for the function “without fault”.
- Activation of the digital outputs set for the function “with fault”.
- Writing of essential data to the inverter internal memory:
  - Speed references via HMI and Electronic Potentiometer if the “Speed backup” function is enabled.
  - Code of the protection, fault or alarm occurred.
  - Status of the motor overload function integrator.
  - Status of the hours enabled (D3.2) and energized (D3.1) counter.

For the inverter to return to normal operation right after the actuation of a protection or fault, it is necessary to reset it, which can be done as follows:

- Pressing the HMI red key (manual reset).
- Automatically by setting C7.9.1 (auto-reset).
- Via digital input set for reset.
- Switching off the power supply and switching it back on (power-on reset).

When an alarm actuates, the result is:

- Indication on the display of the alarm description and code.
- The STATUS “LED” changes to yellow.
- The PWM pulses are not blocked (the inverter is still operating).

6.2 PROTECTIONS, FAULTS, ALARMS, AND PROBABLE CAUSES

The **Protections, Faults and Alarms** are a functionality of the CFW900 that allows viewing events, helping to troubleshoot and identifying improvements in the inverter parameter settings.

- Protections and faults disable the motor PWM pulses. The reason for their actuation is indicated on the HMI, in the CFW900 status word (S1.1.1) and in the current protection diagnosis (D1.1). This information is only cleared with a reset or by switching off the inverter.
- The alarms are indicated on the HMI, in the CFW900 status word (S1.1.1) and in the current alarm diagnosis (D2.1). They are automatically cleared after the alarm condition ceases.

The **Protections, Faults and Alarms** are presented to the user through codes preceded by the letters F for protection and failure and A for alarm, as shown in the Section 6.3 PROTECTION, FAULT AND ALARM TABLE on page 84. In this section you also find more details about the causes and possible solutions.

NOTE!
Most protections and alarms can be solved by following the instructions contained in this chapter; otherwise, contact WEG's representative or technical support.

6.3 PROTECTION, FAULT AND ALARM TABLE

Table 6.1: *Fault and alarm*

Fault/Alarm	Description	Possible Causes
F006 Grid Unbal./Phase Loss	Unbalance or phase loss in the power supply. **Note:** - In case the motor has no load on the shaft or the load is low, this fault may not take effect. - Actuation time set in C7.1.1. When C7.1.1 = 0, the fault is disabled.	■ Phase loss at the inverter input. ■ Input voltage imbalance >5 %. ■ Loss of one phase in the power supply.
A018 Low Battery Voltage	Low battery voltage.	■ Replace the battery.
A019 24 Vdc Power Supply Overvoltage	24 Vdc Power Supply Overvoltage.	■ Voltage of the 24 Vdc power supply that feeds the control above the maximum value of 26.4 Vdc.
A020 24 Vdc Power Supply Undervoltage	24 Vdc power supply undervoltage.	■ Voltage of the 24 Vdc power supply that feeds the control below the minimum value of 21.6 Vdc.
F021 DC Link Undervoltage	Undervoltage on the DC link.	■ Supply voltage too low, producing voltage on the DC link (S2.7.1) below the minimum value: -Ud < 203 V - Supply voltage 200 V. -Ud < 210 V - Supply voltage 208-240 V. -Ud < 385 V - Supply voltage 380 V. -Ud < 405 V - Supply voltage 400-415 V. -Ud < 446 V - Supply voltage 440-460 V. -Ud < 487 V - Supply voltage 480 V. -Ud < 507 V - Supply voltage 500-525 V. -Ud < 557 V - Supply voltage 550-600 V. -Ud < 669 V - Supply voltage 660-690 V. ■ Input phase loss. ■ Fault on the pre-charge circuit. ■ Parameter C1.1.2 with a value above the rated grid voltage.
F022 DC Link Overvoltage	Overvoltage on the DC link.	■ Supply voltage too high, producing voltage on the DC link (S2.7.1) above the maximum value: -Ud > 400 V - Models 200-240 V. -Ud > 800 V - Models 380-480 V. -Ud > 1000 V - Models 500-600 V. -Ud > 1200 V - Models 660-690 V. ■ Driven load inertia too high or deceleration ramp too fast. ■ Setting of C3.5.2.1 or C3.5.3.2 or C3.6.1 too high.
F025 PWM Signal Fault	Failure to compare the PWM pulses generated by the control and the output voltages measured by the inverter. **Note:** - Reset inverter and try again.	■ Motor is disconnected or the rated current of the motor connected to the output is less than 1/3 of the inverter rated current. ■ Possible defect on the inverter internal circuits. ■ Problems in the circuit of the STO safety inputs (XC2).
F030 IGBT U Desat.	Desaturation on the IGBTs of U leg.	■ Short circuit between the motor phases U and V or U and W.
F034 IGBT V Desat.	Desaturation on the IGBTs of V leg.	■ Short circuit between the motor phases V and U or V and W.
F038 IGBT W Desat.	Desaturation on the IGBTs of W leg.	■ Short circuit between the motor phases W and U or W and V.
F042 Braking IGBT Desat.	Desaturation on the Dynamic Braking IGBT.	■ Short circuit of the connecting cables of the Dynamic Braking.
A046 High Load on the Motor	Motor overload. **Note:** - It can be disabled by setting C7.4.1 = 0 or 2.	■ Setting of C7.4.3, C7.4.4 and C7.4.5 low for the motor used. ■ Overload on the motor shaft.

Fault/Alarm	Description	Possible Causes
A047 High Load on the IGBTs	IGBT overload.	■ High current at the inverter output. For low output frequency (fo < 5Hz): ■ Heatsink temperature too high during motor acceleration/deceleration. ■ Setting of C3.2.1.1 too low. ■ Driven load inertia too high or acceleration ramp too slow.
F048 Overload on the IGBTs	IGBT overload.	■ High current at the inverter output. For low output frequency (fo < 5Hz): ■ Heatsink temperature too high during motor acceleration/deceleration. ■ Setting of C3.2.1.1 too low. ■ Driven load inertia too high or acceleration ramp too slow.
A050 IGBT1 U Overtemp.	High temperature measured in the sensors (NTC) of the IGBTs. **Note:** - It can be disabled by C7.5.1.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heat sink dirt.
A051 IGBT1 V Overtemp.	High temperature measured in the sensors (NTC) of the IGBTs. **Note:** - It can be disabled by C7.5.1.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heat sink dirt.
A052 IGBT1 W Overtemp.	High temperature measured in the sensors (NTC) of the IGBTs. **Note:** - It can be disabled by C7.5.1.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heat sink dirt.
F053 IGBT1 U Overtemp.	Overtemperature measured in sensors (NTC) of the IGBTs.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heatsink too dirt.
F054 IGBT1 V Overtemp.	Overtemperature measured in sensors (NTC) of the IGBTs.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heatsink too dirt.
F055 IGBT1 W Overtemp.	Overtemperature measured in sensors (NTC) of the IGBTs.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heatsink too dirt.
A060 IGBT/DRL Junction Overtemp.	High temperature at the junction of the IGBTs or diodes.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heatsink too dirt.
F061 IGBT/DRL Junction Overtemp.	Overtemperature at the junction of the IGBTs or diodes.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heatsink too dirt.
F070 DC Link Short Circuit	Short circuit at the output, DC link or braking resistor.	■ Short circuit between two motor phases. ■ Short circuit of the connecting cables of the Dynamic Braking. ■ Short-circuited IGBT modules.
F071 Overcur. at the Output	Output overcurrent.	■ Load inertia too high or acceleration ramp too fast. ■ Setting of C3.4.1 or C3.3.5.1.1 too high.
F072 Motor Overload	Motor overload. **Note:** - The fault can be disabled by setting C7.4.1 = 0 or 3.	■ Setting of C7.4.3, C7.4.4 and C7.4.5 too low for the motor. ■ Load on the motor shaft is too high.
F074 Ground Fault	Ground overcurrent. **Note:** - The fault can be disabled by setting C7.2.1 = 0 or 3.	■ Short circuit to the ground in one or more output phases. ■ Motor cable capacitance too high, causing current peaks at the output.
F078 Motor Overtemp.	Overtemperature related to the PTC-type sensor installed on the motor. **Note:** - The fault can be disabled by setting C7.5.2. - It is necessary to program the analog input and output for PTC function.	■ Load on the motor shaft is too high. ■ Load cycle is too short (high number of starts and stops per minute). ■ High ambient temperature around the motor. ■ Poor contact or short circuit (resistance < 60 Ω) in the wiring connected to the motor thermistor. ■ Motor thermistor not installed. ■ Motor shaft locked.
F084 Self-diagnosis Fault	Self-diagnosis fault.	■ Defect on the inverter internal circuits.

Fault/Alarm	Description	Possible Causes
A090 External Alarm	External alarm via DI. **Note:** - Necessary to set the DI in C7.10.1.	■ DI input wiring (set in C7.10.1 to generate external alarm) open.
F091 External Fault	External fault via DI. **Note:** - Necessary to set the DI in C7.10.2.	■ DI input wiring (set in C7.10.2 to actuate external fault) open.
F099 Invalid Curr. Offset	Current measurement circuit has a non-standard value for zero current.	■ Defect on the inverter internal circuits.
F104 A/D Converter Fault	Fault in the A/D converter reading that measures the inverter currents and voltages.	■ Defect on the inverter internal circuits. ■ Electromagnetic interference above the level the inverter withstands.
A110 High Motor Temperature	Alarm related to PTC temperature sensor installed on the motor. **Note:** - The alarm can be disabled by setting C7.5.2. - It is necessary to program the analog input and output for PTC function.	■ Load on the motor shaft is too high. ■ Load cycle is too short (high number of starts and stops per minute). ■ High ambient temperature around the motor. ■ Poor contact or short circuit (resistance < 60 Ω) in the wiring connected to the motor thermistor. ■ Motor thermistor not installed. ■ Motor shaft locked.
A128 Serial Communication Timeout	It indicates that the CFW900 stopped receiving telegrams on the serial interface for a period longer than the setting programmed in C9.3.5. **Note:** - Ensure that the master always sends telegrams to the equipment in a shorter time than that set in C9.3.5. - It can be disabled by setting C9.3.5 = 0.0 s.	■ Check network installation, broken cable or failed/ poor contact on the connections with the network and grounding.
A129 Anybus Module Off-line	Alarm that indicates interruption in the Anybus communication.	■ PLC went to the idle state. ■ Programming error. Number of I/O words set on the slave differs from the setting on the master. ■ Loss of communication with the master (broken cable, connector disconnected etc.).
A130 Anybus Module access error	Alarm that indicates error of access to the Anybus communication module.	■ Anybus module defective, not recognized or incorrectly installed.
A133 No Power Supply on the CAN Interface	It actuates when the CAN interface is powered and lack of power supply to the interface is detected. **Note:** - Measure if there is voltage within the allowed range between pins 1 and 5 of the CAN interface connector.	■ CAN interface without power supply between pins 1 and 5 of the connector. ■ Power cables mixed up or reversed. ■ Poor contact on the CAN interface cable or connector.
A134 Bus Off	Bus off error detection on the CAN interface. If the number of reception or transmission errors detected by the CAN interface is too high, the CAN controller can be taken to the bus off state, where it interrupts the communication and disables the CAN interface. In order to restore communication, it is necessary to turn the product off and on again, or to remove and reconnect the power to the CAN interface, so that communication can be restarted.	■ Short circuit in the CAN circuit transmission cables. ■ Changed or reversed cables. ■ Network devices with different baud rates. ■ Termination resistors with incorrect values. ■ Termination resistors installed at one end of the main bus only. ■ CAN network installation done improperly.
A135 CANopen Off-line	It occurs if the state of the CANopen node changes from operational to pre-operational. **Note:** - Check the operation of the error control mechanisms (Heartbeat/Node Guarding).	■ The master is not sending the guarding/heartbeat telegrams at the programmed time. ■ Communication problems caused by lost telegrams or transmission delays.
A136 Master in Idle	It actuates when communicating with the network master in Run mode, and transition to Idle mode is detected.	■ Set the switch that controls the master operation mode to Run or the corresponding bit on the configuration word of the master software. For further explanations, see the documentation of the master in use.
A137 DeviceNet connection timeout	It indicates that one or more DeviceNet I/O connections has expired. It occurs when the cyclic communication between the master and the product is interrupted.	■ Check the status of the network master. ■ Check network installation, broken cable or poor contact on the connections with the network.
A145 SNTP Connection Timeout	It indicates that the inverter tried to connect to the NTP server and got no response. It occurs after starting connection with the NTP server and the server has not returned the response requested by the inverter.	■ Check the configuration and IP address. ■ Check if the NTP server is active.

Fault/Alarm	Description	Possible Causes
A147 EtherNet/IP Communication Offline	It indicates communication error with EtherNet/IP master. It occurs when, for any reason, after the cyclic communication of the master with the product is started, this communication is interrupted. This is detected if the I/O Exclusive Owner connection times out.	■ Check the status of the network master. ■ Check network installation, broken cable or failed/ poor contact on the network connections.
A149 Modbus TCP Timeout	It indicates that the equipment stopped receiving valid telegrams for a period longer than the setting in C9.6.3. The time counting starts after the first valid telegram is received.	■ Check the network installation, broken cable or poor contact on the connections with the network, grounding. ■ Ensure that the Modbus TCP client always sends telegrams to the equipment in a shorter time than the set in C9.6.3. ■ Disable the Timeout function in C9.6.3.
F150 Motor Overspeed	Overspeed. **Note:** - Activated when the actual speed exceeds the value of C4.3.1.1.2 x (100 % + C7.7.1) for more than 20 ms.	■ Incorrect setting of C3.3.2.1.2 and/or C3.3.2.1.3. ■ Crane-type load trips.
A152 Pow.Int. Air Overtemp.	High temperature in the power circuits. **Note:** - The alarm can be disabled by setting C7.5.1.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Defective internal fan (when applicable).
F153 Pow.Int. Air Overtemp.	Overtemperature in the power circuits.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Defective internal fan (when applicable).
A154 Cont. Int. Air Overtemp.	High temperature in the control circuits. **Note:** - The alarm can be disabled by setting C7.5.1.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heat sink dirt.
F155 Cont. Int. Air Overtemp.	Overtemperature in the control circuits.	■ High ambient temperature around the inverter (> 50 °C (122 °F)) and high output current. ■ Locked or defective fan. ■ Inverter heat sink too dirt.
A156 Inverter Undertemperature	Temperature measured in one of the inverter sensors below -30 °C (-22 °F). **Note:** - The alarm can be disabled by setting C7.5.1.	■ Ambient temperature around the inverter ≤ - 30 °C (-22 °F).
F157 Inverter Undertemperature	Temperature measured in two or more inverter sensors below -30 °C (-22 °F).	■ Ambient temperature around the inverter ≤ - 30 °C (-22 °F).
F158 Corrupted Settings	Inverter settings are invalid. **Note:** - Restore the factory default in parameter C12.1. If the problem persists, contact WEG's technical support or representative.	■ Parameter settings file cannot be restored correctly.
F160 STO90 Fault	It indicates to the user that STO90 is in a fault state.	■ Incorrect installation of the safety inputs circuit (STO1 and STO2). ■ Actuation time between the safety inputs (STO1 and STO2) greater than 1 s. ■ Incorrect setting of the safety input type (dry contact or OSSD) on DIP switches S1. ■ DIP switches S2 activated in a state other than the STO state. ■ Incorrect programming of the safety function or programming timeout (2 min). ■ Damage in the electronic circuit of STO90.
F161 STO90 Offline	It indicates to the user that CFW900 central control has lost communication with STO90.	■ Poor contact between STO90 and CFW900 central control. ■ Damage in the electronic circuit of STO90 or CFW900 central control.
F171 Pow. Fan 1 Speed	Speed reading fault for fan 1 of the heat sink (measured value outside the expected value).	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
F172 Pow. Fan 2 Speed	Speed reading fault for fan 2 of the heat sink (measured value outside the expected value).	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
F173 Pow. Fan 3 Speed	Speed reading fault for fan 3 of the heat sink (measured value outside the expected value).	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
F174 Pow. Fan 4 Speed	Speed reading fault for fan 4 of the heat sink (measured value outside the expected value).	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.

Fault/Alarm	Description	Possible Causes
F175 Int. Fan 1 Speed	Speed reading fault for internal fan 1 (measured value outside the expected value).	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
F176 Int. Fan 2 Speed	Speed reading fault for internal fan 2 (measured value outside the expected value).	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
F185 Pre-charge Fault	Pre-charge circuitfault.	■ Defective pre-charge contactor. ■ Command fuse open. ■ Phase loss at input L1/R or L2/S.
A186 Pow. Fan 1 Speed	Heat sink fan low speed.	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
A187 Pow. Fan 2 Speed	Heat sink fan low speed.	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
A188 Pow. Fan 3 Speed	Heat sink fan low speed.	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
A189 Pow. Fan 4 Speed	Heat sink fan low speed.	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
A190 Int. Fan 1 Speed	Internal fan low speed.	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
A191 Int. Fan 2 Speed	Internal fan low speed.	■ Dirt on the fan blades and bearings. ■ Defective fan. ■ Defective fan power supply connection.
F228 Serial Communication Timeout	It indicates that the CFW900 stopped receiving telegrams on the serial interface for a period longer than the setting programmed in C9.3.5. **Note:** - Ensure that the master always sends telegrams to the equipment in a shorter time than that set in C9.3.5. - It can be disabled by setting C9.3.5 = 0.0 s.	■ Check network installation, broken cable or failed/ poor contact on the connections with the network and grounding.
F229 Anybus Module Off-line	Fault that indicates interruption in the Anybus communication.	■ PLC went to the idle state. ■ Programming error. Number of I/O words set on the slave differs from the setting on the master. ■ Loss of communication with the master (broken cable, connector disconnected etc.).
F230 Anybus Module access error	Fault that indicates error of access to the Anybus communication module.	■ Anybus module defective, not recognized or incorrectly installed.
F233 No Power Supply on the CAN Interface	It actuates when the CAN interface is powered and lack of power supply to the interface is detected. **Note:** - Measure if there is voltage within the allowed range between pins 1 and 5 of the CAN interface connector.	■ CAN interface without power supply between pins 1 and 5 of the connector. ■ Power cables mixed up or reversed. ■ Poor contact on the CAN interface cable or connector.
F234 Bus Off	Bus off error detection on the CAN interface. If the number of reception or transmission errors detected by the CAN interface is too high, the CAN controller can be taken to the bus off state, where it interrupts the communication and disables the CAN interface. In order to restore communication, it is necessary to turn the product off and on again, or to remove and reconnect the power to the CAN interface, so that communication can be restarted.	■ Short circuit in the CAN circuit transmission cables. ■ Changed or reversed cables. ■ Network devices with different baud rates. ■ Termination resistors with incorrect values. ■ Termination resistors installed at one end of the main bus only. ■ CAN network installation done improperly.
F235 CANopen Off-line	It occurs if the state of the CANopen node changes from operational to pre-operational. **Note:** - Check the operation of the error control mechanisms (Heartbeat/Node Guarding).	■ The master is not sending the guarding/heartbeat telegrams at the programmed time. ■ Communication problems caused by lost telegrams or transmission delays.
F236 Master in Idle	It actuates when communicating with the network master in Run mode, and transition to Idle mode is detected.	■ Set the switch that controls the master operation mode to Run or the corresponding bit on the configuration word of the master software. For further explanations, see the documentation of the master in use.

Fault/Alarm	Description	Possible Causes
F237 DeviceNet Connection Timed Out	It indicates that one or more DeviceNet I/O connections has expired. It occurs when the cyclic communication between the master and the product is interrupted.	■ Check the status of the network master. ■ Check network installation, broken cable or poor contact on the connections with the network.
F247 EtherNet/IP Communication Offline	It indicates communication error with EtherNet/IP master. It occurs when, for any reason, after the cyclic communication of the master with the product is started, this communication is interrupted. This is detected if the I/O Exclusive Owner connection times out.	■ Check the status of the network master. ■ Check network installation, broken cable or failed/ poor contact on the network connections.
F249 Modbus TCP Timeout	It indicates that the equipment stopped receiving valid telegrams for a period longer than the setting in C9.6.3. The time counting starts after the first valid telegram is received.	■ Check the network installation, broken cable or poor contact on the connections with the network, grounding. ■ Ensure that the Modbus TCP client always sends telegrams to the equipment in a shorter time than the set in C9.6.3. ■ Disable the Timeout function in C9.6.3.
A430 PID PV Low Level	It indicates that the control process variable (A2.1.3) is at a low level.	■ Control process variable (A2.1.3) remained for 150 ms with the value lower than the value set in A2.3.6.2.
F431 PID PV Low Level	It indicates the motor was switched off due to the low level of the control process variable.	■ Control process variable (A2.1.3) remained for a certain amount of time (A2.3.6.3) with the value lower than the value set in A2.3.6.2.
A432 PID PV High Level	It indicates that the control process variable (A2.1.3) is at a high level.	■ Control process variable (A2.1.3) remained for 150 ms with the value higher than the value set in A2.3.6.5.
F433 PID PV High Level	It indicates the motor was switched off due to the high level of the control process variable.	■ Control process variable (A2.1.3) remained for a certain amount of time (A2.3.6.6) with the value higher than the value set in A2.3.6.5.
F600 Pulse Update Fault	Update of PWM pulses failed.	■ Defect on the inverter internal circuits.
F605 Power Circuit Off	Communication with the power module was interrupted while the output was enabled.	■ Power board turned off while the output was enabled. ■ Defect on the inverter internal circuits.
F606 Power Monitor Comm Lost	Interface module is unable to exchange information with the power monitoring module.	■ Defect on the inverter internal circuits. ■ Electromagnetic interference above the level the inverter withstands. ■ Power board turned off.
F607 SMM Comm Lost	Interface module is unable to exchange information with the safety module.	■ Defect on the inverter internal circuits. ■ Electromagnetic interference above the level the inverter withstands. ■ Safety interface board turned off.
F608 Code Flow Failure	Internal fault during inverter operation. **Note:** - Reset the inverter. - Load the factory default.	■ If the problem persists, please contact technical support.
F609 Model Version Incompatible	Inverter model data is incompatible with actual firmware. **Note:** - Contact the technical support to obtain the model update.	■ Model data incompatible with firmware version.
A702 Inverter Disabled	It indicates that the General Enable command is Inactive.	■ Run/Stop command of the SoftPLC application equal to Run, or the movement block was enabled with the “General Enable” command disabled.
A706 SPLC Refer. Not Progr.	It indicates that the SoftPLC reference has not been programmed.	■ It occurs when a movement block is enabled and the speed reference is not set for SoftPLC (check C4.3.1.2.1 or C4.3.1.2.2).
A708 SoftPLC Not Running	It indicates that the SoftPLC application is not running.	■ Check the SoftPLC status in S6.1.1 and the action configuration for application not running in C10.1.3.
F709 SoftPLC Not Running	It indicates that the SoftPLC application is not running.	■ Check the SoftPLC status in S6.1.1 and the action configuration for application not running in C10.1.3.
F1000 Error During Accessory Update	Error during accessory firmware update.	■ Firmware version of the inverter does not support the accessory. ■ Accessory disconnected or loss of communication during firmware update.

Fault/Alarm	Description	Possible Causes
A1012 Slot X AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1013 Slot X AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1014 Slot X AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1015 Slot X AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1100 Slot A Incompatible Accessory	Error during accessory firmware update.	■ Firmware version of the inverter does not support the accessory. ■ Accessory disconnected or loss of communication during firmware update.
F1101 Slot A Initialization Error	A resource required for the operation of the accessory could not be initialized.	■ Resource already in use by another accessory. Only one communication network accessory can be used at a time.
F1103 Slot A Accessory Connection	Loss of communication with the accessory.	■ Electromagnetic noise above the limit. ■ Vibration above supported limits causing connector problems. ■ Corrupted accessory firmware.
A1104 Slot A High Temperature	High temperature in the accessory.	■ Temperature around the inverter close to 60 °C (140 °F).
F1105 Slot A Overtemperature	Accessory overtemperature.	■ Temperature around the inverter above to 60 °C (140 °F).
A1106 Slot A Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1107 Slot A Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1108 Slot A Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1109 Slot A Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1110 Slot A Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1111 Slot A Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1112 Slot A AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1113 Slot A AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.

Fault/Alarm	Description	Possible Causes
A1114 Slot A AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1115 Slot A AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1116 Slot A AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1117 Slot A AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1125 Slot A Temp. Sensor Wrong HW Config.	Sensor type selected by the accessory DIP switches other than the sensor type configured by the parameters.	■ DIP switch configured incorrectly. Check the CFW900-TEMP-01 accessory guide. ■ “Sensor Type” parameter incorrectly configured. Check the description in C5.2.6.1.
A1126 Slot A Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1127 Slot A Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1128 High Temperature on Slot A Sensor 1	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1129 Slot A Sensor 1 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1130 Slot A Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1131 Slot A Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1132 High Temperature on Slot A Sensor 2	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1133 Slot A Sensor 2 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1134 Slot A Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1135 Slot A Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1136 High Temperature on Slot A Sensor 3	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1137 Slot A Sensor 3 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1138 Slot A Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1139 Slot A Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.

Fault/Alarm	Description	Possible Causes
A1140 High Temperature on Slot A Sensor 4	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1141 Slot A Sensor 4 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1142 Slot A Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1143 Slot A Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1144 High Temperature on Slot A Sensor 5	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1145 Slot A Sensor 5 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1146 Slot A Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1147 Slot A Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1148 High Temperature on Slot A Sensor 6	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1149 Slot A Sensor 6 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
F1200 Slot B Incompatible Accessory	Error during accessory firmware update.	■ Firmware version of the inverter does not support the accessory. ■ Accessory disconnected or loss of communication during firmware update.
F1201 Slot B Initialization Error	A resource required for the operation of the accessory could not be initialized.	■ Resource already in use by another accessory. Only one communication network accessory can be used at a time.
F1203 Slot B Accessory Connection	Loss of communication with the accessory.	■ Electromagnetic noise above the limit. ■ Vibration above supported limits causing connector problems. ■ Corrupted accessory firmware.
A1204 Slot B High Temperature	High temperature in the accessory.	■ Temperature around the inverter close to 60 °C (140 °F).
F1205 Slot B Overtemperature	Accessory overtemperature.	■ Temperature around the inverter above to 60 °C (140 °F).
A1206 Slot B Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1207 Slot B Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1208 Slot B Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1209 Slot B Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.

Fault/Alarm	Description	Possible Causes
A1210 Slot B Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1211 Slot B Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1212 Slot B AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1213 Slot B AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1214 Slot B AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1215 Slot B AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1216 Slot B AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1217 Slot B AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1225 Slot B Temp. Sensor Wrong HW Config.	Sensor type selected by the accessory DIP switches other than the sensor type configured by the parameters.	■ DIP switch configured incorrectly. Check the CFW900-TEMP-01 accessory guide. ■ “Sensor Type” parameter incorrectly configured. Check the description in C5.2.6.1.
A1226 Slot B Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1227 Slot B Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1228 High Temperature on Slot B Sensor	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1229 Slot B Sensor 1 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1230 Slot B Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1231 Slot B Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1232 High Temperature on Slot B Sensor 2	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1233 Slot B Sensor 2 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1234 Slot B Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.

Fault/Alarm	Description	Possible Causes
F1235 Slot B Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1236 High Temperature on Slot B Sensor 3	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1237 Slot B Sensor 3 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1238 Slot B Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1239 Slot B Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1240 High Temperature on Slot B Sensor 4	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1241 Slot B Sensor 4 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1242 Slot B Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1243 Slot B Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1244 High Temperature on Slot B Sensor 5	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1245 Slot B Sensor 5 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1246 Slot B Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1247 Slot B Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1248 High Temperature on Slot B Sensor 6	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1249 Slot B Sensor 6 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
F1300 Slot C Incompatible Accessory	Error during accessory firmware update.	■ Firmware version of the inverter does not support the accessory. ■ Accessory disconnected or loss of communication during firmware update.
F1301 Slot C Initialization Error	A resource required for the operation of the accessory could not be initialized.	■ Resource already in use by another accessory. Only one communication network accessory can be used at a time.
F1303 Slot C Accessory Connection	Loss of communication with the accessory.	■ Electromagnetic noise above the limit. ■ Vibration above supported limits causing connector problems. ■ Corrupted accessory firmware.
A1304 Slot C High Temperature	High temperature in the accessory.	■ Temperature around the inverter close to 60 °C (140 °F).
F1305 Slot C Overtemperature	Accessory overtemperature.	■ Temperature around the inverter above to 60 °C (140 °F).

Fault/Alarm	Description	Possible Causes
A1306 Slot C Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1307 Slot C Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1308 Slot C Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1309 Slot C Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1310 Slot C Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1311 Slot C Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1312 Slot C AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1313 Slot C AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1314 Slot C AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1315 Slot C AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1316 Slot C AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1317 Slot C AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1325 Slot C Temp. Sensor Wrong HW Config.	Sensor type selected by the accessory DIP switches other than the sensor type configured by the parameters.	■ DIP switch configured incorrectly. Check the CFW900-TEMP-01 accessory guide. ■ “Sensor Type” parameter incorrectly configured. Check the description in C5.2.6.1.
A1326 Slot C Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1327 Slot C Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1328 High Temperature on Slot C Sensor 1	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.

Fault/Alarm	Description	Possible Causes
F1329 Slot C Sensor 1 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1330 Slot C Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1331 Slot C Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1332 High Temperature on Slot C Sensor 2	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1333 Slot C Sensor 2 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1334 Slot C Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1335 Slot C Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1336 High Temperature on Slot C Sensor 3	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1337 Slot C Sensor 3 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1338 Slot C Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1339 Slot C Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1340 High Temperature on Slot C Sensor 4	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1341 Slot C Sensor 4 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1342 Slot C Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1343 Slot C Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1344 High Temperature on Slot C Sensor 5	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1345 Slot C Sensor 5 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1346 Slot C Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1347 Slot C Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1348 High Temperature on Slot C Sensor 6	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.

Fault/Alarm	Description	Possible Causes
F1349 Slot C Sensor 6 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
F1400 Slot D Incompatible Accessory	Error during accessory firmware update.	■ Firmware version of the inverter does not support the accessory. ■ Accessory disconnected or loss of communication during firmware update.
F1401 Slot D Initialization Error	A resource required for the operation of the accessory could not be initialized.	■ Resource already in use by another accessory. Only one communication network accessory can be used at a time.
F1403 Slot D Accessory Connection	Loss of communication with the accessory.	■ Electromagnetic noise above the limit. ■ Vibration above supported limits causing connector problems. ■ Corrupted accessory firmware.
A1404 Slot D High Temperature	High temperature in the accessory.	■ Temperature around the inverter close to 60 °C (140 °F).
F1405 Slot D Overtemperature	Accessory overtemperature.	■ Temperature around the inverter above to 60 °C (140 °F).
A1406 Slot D Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1407 Slot D Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1408 Slot D Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1409 Slot D Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1410 Slot D Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1411 Slot D Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1412 Slot D AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1413 Slot D AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1414 Slot D AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1415 Slot D AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1416 Slot D AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.

Fault/Alarm	Description	Possible Causes
F1417 Slot D AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1425 Slot D Temp. Sensor Wrong HW Config.	Sensor type selected by the accessory DIP switches other than the sensor type configured by the parameters.	■ DIP switch configured incorrectly. Check the CFW900-TEMP-01 accessory guide. ■ “Sensor Type” parameter incorrectly configured. Check the description in C5.2.6.1.
A1426 Slot D Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1427 Slot D Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1428 High Temperature on Slot D Sensor 1	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1429 Slot D Sensor 1 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1430 Slot D Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1431 Slot D Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1432 High Temperature on Slot D Sensor 2	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1433 Slot D Sensor 2 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1434 Slot D Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1435 Slot D Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1436 High Temperature on Slot D Sensor 3	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1437 Slot D Sensor 3 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1438 Slot D Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1439 Slot D Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1440 High Temperature on Slot D Sensor 4	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1441 Slot D Sensor 4 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1442 Slot D Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.

Fault/Alarm	Description	Possible Causes
F1443 Slot D Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1444 High Temperature on Slot D Sensor 5	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1445 Slot D Sensor 5 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1446 Slot D Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1447 Slot D Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1448 High Temperature on Slot D Sensor 6	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1449 Slot D Sensor 6 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
F1500 Slot E Incompatible Accessory	Error during accessory firmware update.	■ Firmware version of the inverter does not support the accessory. ■ Accessory disconnected or loss of communication during firmware update.
F1501 Slot E Initialization Error	A resource required for the operation of the accessory could not be initialized.	■ Resource already in use by another accessory. Only one communication network accessory can be used at a time.
F1503 Slot E Accessory Connection	Loss of communication with the accessory.	■ Electromagnetic noise above the limit. ■ Vibration above supported limits causing connector problems. ■ Corrupted accessory firmware.
A1504 Slot E High Temperature	High temperature in the accessory.	■ Temperature around the inverter close to 60 °C (140 °F).
F1505 Slot E Overtemperature	Accessory overtemperature.	■ Temperature around the inverter above to 60 °C (140 °F).
A1506 Slot E Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1507 Slot E Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1508 Slot E Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1509 Slot E Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1510 Slot E Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1511 Slot E Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.

Fault/Alarm	Description	Possible Causes
A1512 Slot E AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1513 Slot E AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1514 Slot E AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1515 Slot E AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1516 Slot E AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1517 Slot E AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1525 Slot E Temp. Sensor Wrong HW Config.	Sensor type selected by the accessory DIP switches other than the sensor type configured by the parameters.	■ DIP switch configured incorrectly. Check the CFW900-TEMP-01 accessory guide. ■ “Sensor Type” parameter incorrectly configured. Check the description in C5.2.6.1.
A1526 Slot E Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1527 Slot E Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1528 High Temperature on Slot E Sensor 1	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1529 Slot E Sensor 1 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1530 Slot E Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1531 Slot E Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1532 High Temperature on Slot E Sensor 2	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1533 Slot E Sensor 2 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1534 Slot E Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1535 Slot E Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1536 High Temperature on Slot E Sensor 3	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.

Fault/Alarm	Description	Possible Causes
F1537 Slot E Sensor 3 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1538 Slot E Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1539 Slot E Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1540 High Temperature on Slot E Sensor 4	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1541 Slot E Sensor 4 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1542 Slot E Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1543 Slot E Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1544 High Temperature on Slot E Sensor 5	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1545 Slot E Sensor 5 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1546 Slot E Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1547 Slot E Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1548 High Temperature on Slot E Sensor 6	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1549 Slot E Sensor 6 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
F1600 Slot F Incompatible Accessory	Error during accessory firmware update.	■ Firmware version of the inverter does not support the accessory. ■ Accessory disconnected or loss of communication during firmware update.
F1601 Slot F Initialization Error	A resource required for the operation of the accessory could not be initialized.	■ Resource already in use by another accessory. Only one communication network accessory can be used at a time.
F1603 Slot F Accessory Connection	Loss of communication with the accessory.	■ Electromagnetic noise above the limit. ■ Vibration above supported limits causing connector problems. ■ Corrupted accessory firmware.
A1604 Slot F High Temperature	High temperature in the accessory.	■ Temperature around the inverter close to 60 °C (140 °F).
F1605 Slot F Overtemperature	Accessory overtemperature.	■ Temperature around the inverter above to 60 °C (140 °F).
A1606 Slot F Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1607 Slot F Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.

Fault/Alarm	Description	Possible Causes
A1608 Slot F Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1609 Slot F Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1610 Slot F Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1611 Slot F Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1612 Slot F AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1613 Slot F AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1614 Slot F AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1615 Slot F AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1616 Slot F AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1617 Slot F AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1625 Slot F Temp. Sensor Wrong HW Config.	Sensor type selected by the accessory DIP switches other than the sensor type configured by the parameters.	■ DIP switch configured incorrectly. Check the CFW900-TEMP-01 accessory guide. ■ “Sensor Type” parameter incorrectly configured. Check the description in C5.2.6.1.
A1626 Slot F Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1627 Slot F Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1628 High Temperature on Slot F Sensor 1	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1629 Slot F Sensor 1 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1630 Slot F Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1631 Slot F Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.

Fault/Alarm	Description	Possible Causes
A1632 High Temperature on Slot F Sensor 2	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1633 Slot F Sensor 2 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1634 Slot F Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1635 Slot F Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1636 High Temperature on Slot F Sensor 3	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1637 Slot F Sensor 3 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1638 Slot F Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1639 Slot F Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1640 High Temperature on Slot F Sensor 4	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1641 Slot F Sensor 4 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1642 Slot F Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1643 Slot F Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1644 High Temperature on Slot F Sensor 5	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1645 Slot F Sensor 5 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1646 Slot F Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1647 Slot F Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1648 High Temperature on Slot F Sensor 6	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1649 Slot F Sensor 6 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
F1700 Slot G Incompatible Accessory	Error during accessory firmware update.	■ Firmware version of the inverter does not support the accessory. ■ Accessory disconnected or loss of communication during firmware update.

Fault/Alarm	Description	Possible Causes
F1701 Slot G Initialization Error	A resource required for the operation of the accessory could not be initialized.	■ Resource already in use by another accessory. Only one communication network accessory can be used at a time.
F1703 Slot G Accessory Connection	Loss of communication with the accessory.	■ Electromagnetic noise above the limit. ■ Vibration above supported limits causing connector problems. ■ Corrupted accessory firmware.
A1704 Slot G High Temperature	High temperature in the accessory.	■ Temperature around the inverter close to 60 °C (140 °F).
F1705 Slot G Overtemperature	Accessory overtemperature.	■ Temperature around the inverter above to 60 °C (140 °F).
A1706 Slot G Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1707 Slot G Enc. A Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1708 Slot G Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1709 Slot G Enc. B Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
A1710 Slot G Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply.
F1711 Slot G Enc. Z Cable Disconnection	Encoder signal not detected. **Note:** It can be disabled by setting C5.n.5.2, where “n” is the number of the slot where the accessory is installed.	■ Broken or disconnected signal cable. ■ Encoder connection error. ■ Encoder without power supply
A1712 Slot G AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1713 Slot G AI1 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1714 Slot G AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1715 Slot G AI2 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
A1716 Slot G AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1717 Slot G AI3 Cable Disconnection	Analog input signal configured in current mode is outside the 4 to 20 mA range.	■ AI cable broken (the read value was less than 2 mA for 5 seconds). ■ Poor contact in the connection of the signal to the terminals.
F1725 Slot G Temp. Sensor Wrong HW Config.	Sensor type selected by the accessory DIP switches other than the sensor type configured by the parameters.	■ DIP switch configured incorrectly. Check the CFW900-TEMP-01 accessory guide. ■ “Sensor Type” parameter incorrectly configured. Check the description in C5.2.6.1.

Fault/Alarm	Description	Possible Causes
A1726 Slot G Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1727 Slot G Temperature Sensor 1 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1728 High Temperature on Slot G Sensor 1	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1729 Slot G Sensor 1 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1730 Slot G Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1731 Slot G Temperature Sensor 2 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1732 High Temperature on Slot G Sensor 2	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1733 Slot G Sensor 2 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1734 Slot G Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1735 Slot G Temperature Sensor 3 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1736 High Temperature on Slot G Sensor	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1737 Slot G Sensor 3 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1738 Slot G Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1739 Slot G Temperature Sensor 4 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1740 High Temperature on Slot G Sensor 4	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1741 Slot G Sensor 4 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1742 Slot G Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1743 Slot G Temperature Sensor 5 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1744 High Temperature on Slot G Sensor 5	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.

Fault/Alarm	Description	Possible Causes
F1745 Slot G Sensor 5 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.
A1746 Slot G Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
F1747 Slot G Temperature Sensor 6 Error	The value measured by the temperature sensor is out of the expected range.	■ Sensor cable is broken. ■ Short-circuited sensor. ■ Sensor located in an extremely low temperature environment.
A1748 High Temperature on Slot G Sensor 6	The temperature measured by the sensor is close to the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the alarm actuation level.
F1749 Slot G Sensor 6 Overtemperature	The temperature measured by the sensor is above the threshold level.	■ Monitored equipment with high temperature. ■ Configuration error of the fault actuation level.

6.4 SOLUTIONS FOR THE MOST FREQUENT PROBLEMS

Table 6.2: *Solutions for the most frequent problems*

Problem	Point to be verified	Corrective Action
Motor does not start	Incorrect wiring connection	1. Check all power and control connections. For instance, the digital inputs set to Start/Stop, General Enable, or no external error shall be activated
	Analog reference (if used)	1. Check if the external signal is properly connected 2. Check the status of the control potentiometer (if used)
	Incorrect settings	1. Check if parameters are properly set for the application
	Fault	1. Check if the inverter is not blocked due to a fault condition 2. Check if there is a short circuit between the terminals of the 24 Vdc power supply
	Motor stall	1. Decrease motor overload 2. Increase C3.2.1.1 (V/F) or C3.3.5.1.2, C3.3.5.1.3, C3.3.5.1.4 and C3.3.5.1.5 (vector control)
Motor speed fluctuates (oscillates)	Loose connection	1. Stop the inverter, turn off the power supply, and check and tighten all power connections 2. Check all internal connections of the inverter
	Defective reference potentiometer	1. Replace potentiometer
	Oscillation of the external analog reference	1. Identify the cause of the oscillation. If it is caused by electrical noise, use shielded cables or separate from the power and control wiring
	Incorrect settings (vector control)	1. Check parameters C2.2.2 and C2.2.4 2. Refer to the programming manual
Motor speed too high or too low	Incorrect settings (reference limits)	1. Check if the content of C4.3.1.1.1 (minimum speed) and C4.3.1.1.2 (maximum speed) are according to the motor and application
	Control signal from the analog reference (if used)	1. Check the level of the reference control signal 2. Check the programming gains and offset
	Motor nameplate	1. Check if the motor has been properly sized for the application
Motor does not operate in the field weakening region (Vector Control)	Settings	1. Check C2.2.2 and C3.3.7.1
Off display	Keypad connections	1. Check the inverter keypad connection
	Power supply voltage	1. Rated values shall be within the limits specified below: 200-240 Vac power supply: - Min: 187 Vac - Max: 253 Vac 380-480 Vac power supply: - Min: 323 Vac - Max: 528 Vac 500-600 Vac power supply: - Min: 425 Vac - Max: 660 Vac 660-690 Vac power supply: - Min: 561 Vac - Max: 759 Vac
	Blown fuses	1. Replace fuses
Low motor speed and S1.1.4 = C3.3.5.1.2 or C3.3.5.1.3 or C3.3.5.1.4 or C3.3.5.1.5 (motor in torque limitation), for C3.1.1 = 2 (vector with encoder)	Encoder signals are inverted or power connection is inverted	1. Check if the signals *A, $\bar{A}$, B, $\bar{B}$* are correctly connected to the CFW900-IOS (Item 3.2.6 Control Connections on page 62) or to the accessory of inputs for incremental encoder (see the CFW900-ENC-01 manual). If signals are properly installed, exchange two of the output phases. For instance U and V

6.5 INFORMATION FOR CONTACTING TECHNICAL SUPPORT

For technical support and servicing, it is important to have the following information in hand:

- Inverter model.
- Product serial number and manufacturing date contained in the identification label (see Item 2.3.1 Identification Labels on page 16).
- Installed software version (see parameter S1.2.1).
- Application data and inverter settings.

6.6 PREVENTIVE MAINTENANCE



DANGER!
- Always turn off the mains power supply before touching any electrical component associated to the inverter.
- High voltage may still be present even after disconnecting the power supply. Therefore, wait at least 10 minutes for the complete discharge of the power capacitors.
- Always connect the equipment frame to the protection earth (PE) at the suitable connection point.



ATTENTION!
The electronic boards have electrostatic discharge sensitive components. Do not touch the components or connectors directly. If needed, first touch the grounded metallic frame or wear a ground strap.
Do not perform any withstand voltage test: if needed, consult WEG.

The inverters require low maintenance when properly installed and operated. Table 6.3 on page 107 presents main procedures and time intervals for preventive maintenance. Table 6.4 on page 108 provides recommended periodic inspections to be performed every 6 months after inverter start-up.

Table 6.3: *Preventive maintenance*

Maintenance		Interval	Instructions
Fan replacement		After 50.000 operating hours (1)	Replacement procedure according to Figure 6.1 on page 108, Figure 6.2 on page 109, Figure 6.3 on page 109 and Figure 6.4 on page 109
Replacement of the AUI board battery		Every 10 years	Refer to Chapter 3 INSTALLATION AND CONNECTION on page 18
Electrolytic Capacitors	If the inverter is stored (not in use): “reforming”	Every year, counted from the manufacturing date stated on the inverter identification label. Section 2.3.1 Identification Labels on page 16)	Power the inverter with the rated voltage (as shown in Table 8.1 on page 113) for at least 1 hour. Then, de-energize and wait at least 24 hours before using the inverter (re-energize)
	Inverter is being used: replace	Every 10 years	Contact WEG technical support

(1) The inverters are programmed at the factory for automatic control of the fans (C1.5.1 = 2), so they only start when the temperature of the heatsink increases. Therefore, the number of operating hours of the fans will depend on the operating conditions (motor current, output frequency, temperature of the cooling air etc.). The inverter records in parameter D3.3 the number of hours that the fan remained ON.

Table 6.4: Recommended periodic inspections - every 6 months

Component	Problem	Corrective Action
Terminals, connectors	Loose screws	Tighten
	Loose connectors	
Fans/cooling system	Dirty fans	Cleaning
	Abnormal noise	Replace fan. Refer to Figure 6.1 on page 108 to Figure 6.4 on page 109 Proceed in reverse order to assemble a new fan Check the fan connection
	Blocked fan	
	Abnormal vibration	
	Dust in the cabinet air filter	
Printed circuit boards	Accumulation of dust, oil, humidity, etc	Cleaning
	Odor	Replacement
Power module/powe connections	Accumulation of dust, oil, humidity, etc	Cleaning
	Loose connection screws	Tighten
DC Link capacitors (Intermediate Circuit)	Discoloration/ odor / electrolyte leakage	Replacement
	Expanded or broken safety valve	
	Frame expansion	
Power resistors	Discoloration	Replacement
	Odor	
Heatsink	Dust accumulation	Cleaning
	Dirty	

6.7 CLEANING INSTRUCTIONS

When necessary to clean the inverter, follow the instructions:

Ventilation system:

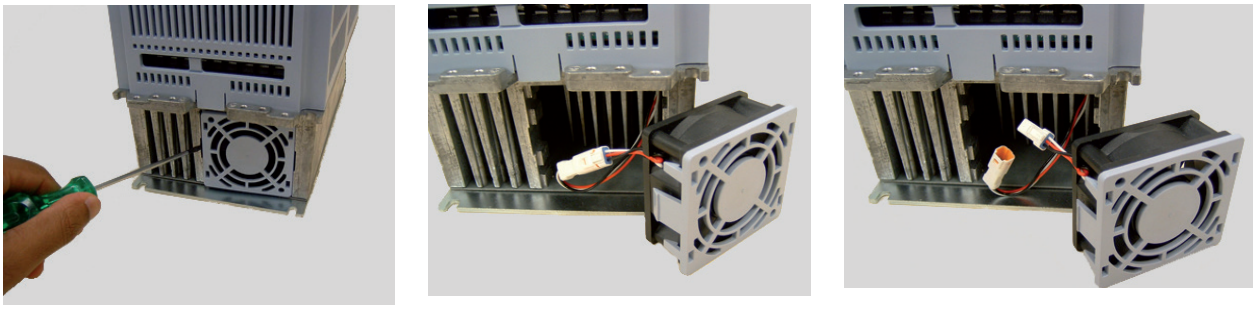
- Disconnect the inverter power supply and wait at least 10 minutes.
- Remove de dust accumulated in the ventilation opening using a plastic brush or a flannel.
- Remove the dust accumulated on the fan blades using compressed air.

Electronic boards:

- Disconnect the inverter power supply and wait at least 10 minutes.
- Remove the plastic cover, as shown in Chapter 3 INSTALLATION AND CONNECTION on page 18.
- Remove the dust from the electronic board by using an anti-static brush or an ion air gun.
- Always wear a ground strap.

To remove and reinstall the fan from frames A, B, C and D follow the steps shown in Figure 6.1 on page 108 and Figure 6.2 on page 109.

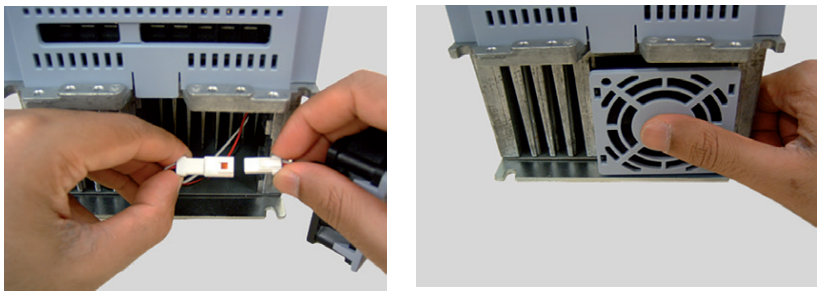
1 2 3



(a) Releasing the latches ***(b) Removal of the fan*** ***(c) Cable disconnection***

Figure 6.1: *(a) to (c) Removing the heatsink fan (Frames A, B, C and D)*

1 2



(a) Connecting the cable ***(b) Fitting the fan***

Figure 6.2: *(a) and (b) Installing the fan (Frames A, B, C and D)*

To remove and reinstall the fan from models CFW900D80P0T6, CFW900D85P0T6 and all models of frames E, F, G and H follow the steps shown in Figure 6.3 on page 109 and Figure 6.4 on page 109.



(a) Releasing the fan ***(b) Removal of the fan*** ***(c) Cable disconnection***

Figure 6.3: *(a) to (c) Removing the heatsink fan (Frames E, F, G and H)*



(a) Connecting the cable ***(b) Fitting the fan***

Figure 6.4: *(a) and (b) Installing the fan (Frames E, F, G and H)*

7 ACCESSORIES

7.1 LIST OF ACCESSORIES

Accessories is hardware that can be added to the inverter to expand the product application possibilities. Thus, all models of the CFW900 line can be equipped with the accessories listed in Table 7.1 on page 110 and are interchangeable between all frames, except for the protection rating kits (UL type 1 and IP21) and for flange mounting. For more information on the installation and use of accessories, see the guides available on the WEG website: **www.weg.net**.

Table 7.1: *Accessories available*

WEG Item	Name	Description	
Control accessories for installation in slots A through G (1)			**Slots taken**
15691379	CFW900-CCAN-W (2)	CAN interface module (CANopen / DeviceNet)	1
15691256	CFW900-ENC-01	Module for connecting an incremental encoder with a signal of up to 310 kHz	1
15691117	CFW900-IOAI-01	Module with 3 analog inputs and 2 isolated analog outputs	1
15691249	CFW900-IOD-01	Module with 8 isolated digital inputs and 8 isolated digital outputs	1
15691251	CFW900-REL-01	Module with 3 digital relay outputs (1 unit supplied as standard)	1
15691253	CFW900-TEMP-01	Module with 6 isolated inputs for PTC/PT100/PT1000 sensors	1
17143201	CFW900-CECAT-N (3)	EtherCAT interface module	3
17143199	CFW900-CPNT-IRT-N (3)	Profinet interface module	3
17143198	CFW900-CPDP-N (3)	Profibus interface module	3
Individual HMI, frame and cables for external HMI			
15691113	CFW900-HMI-BLT	HMI with Bluetooth interface (Individual item) (standard for option B) (4)	
15690771	CFW900-HMI	HMI (Individual) (4)	
15756246	CFW900-RHMIF	Frame kit for remote HMI (IP65 / UL Type 12 protection rating)	
15692985	CFW900-CCHMIR01M	Serial cable for remote HMI 1 m	
15693038	CFW900-CCHMIR02M	Serial cable for remote HMI 2 m	
15693040	CFW900-CCHMIR03M	Serial cable for remote HMI 3 m	
15693042	CFW900-CCHMIR05M	Serial cable for remote HMI 5 m	
15693044	CFW900-CCHMIR07M	Serial cable for remote HMI 7.5 m	
15693045	CFW900-CCHMIR10M	Serial cable for remote HMI 10 m	
Miscellaneous			
15692737	CFW900-4SLOTS	Backplane with 4 slots (A through D) to connect accessories (supplied as standard)	
15692736	CFW900-7SLOTS	Backplane with 7 slots (A through G) to connect accessories	
15756311	CFW900-KN1A	Nema1 kit for frame A (5)	
15757498	CFW900-KN1B	Nema1 kit for frame B (5)	
15757502	CFW900-KN1C	Nema1 kit for frame C (5)	
15757538	CFW900-KN1D	Nema1 kit for frame D (5)	
15757540	CFW900-KN1E	Nema1 kit for frame E (5)	
16240897	CFW900-IP21A	IP21 kit for frame A (6)	
16241128	CFW900-IP21B	IP21 kit for frame B (6)	
16241129	CFW900-IP21C	IP21 kit for frame C (6)	
16241130	CFW900-IP21D	IP21 kit for frame D (6)	
15757541	CFW900-IP21E	IP21 kit for frame E (6)	
16500977	CFW900-IP21F	IP21 kit for frame F (6)	
16773112	CFW900-IP21G	IP21 kit for frame G (6)	
16773114	CFW900-IP21H	IP21 kit for frame H (6)	
16451365	CFW900-KMFA	Flange mounting kit for frame A	
16451438	CFW900-KMFB	Flange mounting kit for frame B	
16451440	CFW900-KMFC	Flange mounting kit for frame C	
16451445	CFW900-KMFD	Flange mounting kit for frame D	
16451447	CFW900-KMFE	Flange mounting kit for frame E	
16852713	CFW900-KMFF	Flange mounting kit for frame F	
16852714	CFW900-KMFG	Flange mounting kit for frame G	
16852715	CFW900-KMFH	Flange mounting kit for frame H	
17634599	CFW900-KDF-01	Flexible ducting kit (intake kit) for frames E, F, G and H	
17634601	CFW900-KDF-02	Flexible ducting kit (exhaust kit) for frames E, F, G and H	
16888205	CFW900-KME-01	Extractable mounting kit for frame E	
16888207	CFW900-KMF-01	Extractable mounting kit for frame F	
16888308	CFW900-KMG-01	Extractable mounting kit for frame G	
16888309	CFW900-KMH-01	Extractable mounting kit for frame H	
16352814	SDC-8GB	8 GB industrial temperature microSD card	

(1) Control accessories can be installed in any available slot. Except for explicitly listed cases, up to 7 accessories of the same type can be used.
(2) It is only possible to use one CFW900-CCAN-W communication module per inverter.
(3) It is only possible to use one Anybus accessory per inverter, regardless of the type of communication network.
(4) For remote HMI connection, use a D-Sub9 (DB-9) male and female cable with pin-to-pin connections. Maximum length according to Table 8.17 on page 132.
(5) For more details see Item 8.5.13 Frames A, B and C with UL Type 1 Kit on page 148 and Item 8.5.14 Frames D and E with UL Type 1 Kit on page 149.
(6) For more details see Item 8.5.10 Frames A, B and C with IP21 Kit on page 144 and Item 8.5.12 Frames G and H with IP21 Kit on page 147.

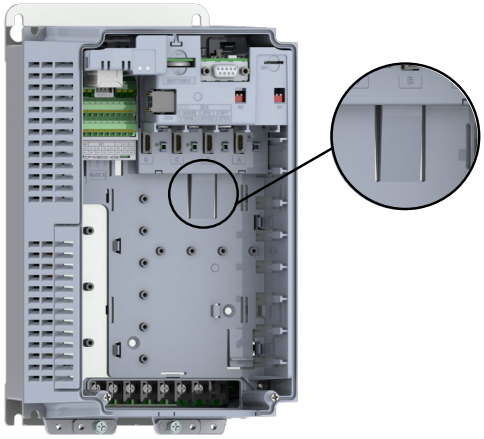
Table 7.2: Consumption of the accessories

Model	Consumption ($I_{ACC,n}$)(1)
CFW900-CCAN-W	0.00 A
CFW900-ENC-01	0.20 A
CFW900-IOAI-01	0.10 A
CFW900-IOD-01	0.00 A
CFW900-REL-01	0.05 A
CFW900-TEMP-01	0.05 A
CFW900-CECAT-N	0.05 A
CFW900-CPNT-IRT-N	0.05 A
CFW900-CPDP-N	0.05 A

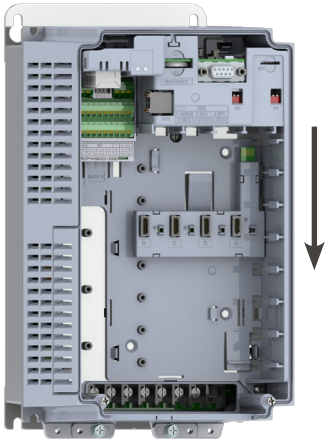
(1) "n" indicates the slot to which the accessory will be connected.

7.2 BACKPLANE REPLACEMENT

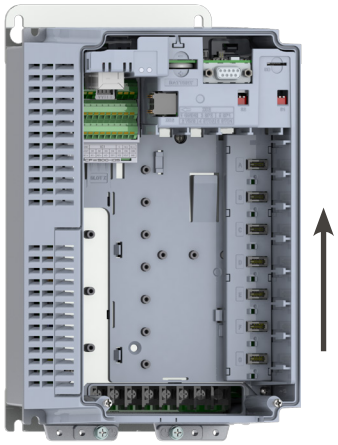
The control accessories are mounted in the backplane slots. The slots are interchangeable, and any accessory can be mounted in any slot in any quantity (except for communication network accessories, which are limited to one of each type per drive). By default, the CFW900 is supplied with the ***backplane*** CFW900-4SLOTS, which allows the installation of up to 4 accessories (slots A to D). It is possible to replace the CFW900-4SLOTS with the CFW900-7SLOTS, which expands the connection up to 7 accessories, following the steps in Figure 7.1 on page 111.



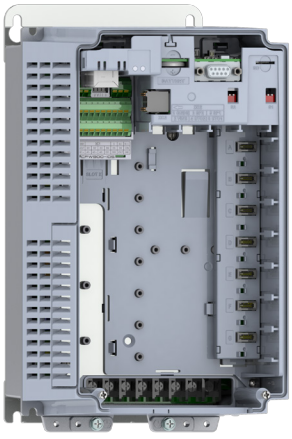
(a) Press the latch that holds the CFW900-4SLOTS



(b) Pull the CFW900-4SLOTS as indicated and remove it from the product



(c) Position the CFW900-7SLOTS as shown in the figure and push it in the indicated direction



(d) Make sure that the CFW900-7SLOTS locked in place

Figure 7.1: *(a) to (d) Replacing the CFW900-4SLOTS with the CFW900-7SLOTS*

7.3 INSTALLING THE CONTROL ACCESSORY

The control accessories are easy and quickly installed on the inverters using the plug-and-play concept. They may be ordered separately and will be shipped in individual packages containing the components and the manuals with detailed instructions for the product operation and programming. When an accessory is connected to the inverter, the control circuitry identifies the model and informs the code of the connected accessory. They should only be installed or changed with the inverter turned off, following the steps presented below and exemplified in Figure 7.2 on page 112.

1. Remove the HMI from the inverter front.

2. Remove the two screws and detach the front cover.

3. Insert the accessory into one of the available slots on the backplane. (A)

4. Fasten the grounding screw. (B)

5. Make the connections to the plug-in connector and plug it into the accessory. (C)

6. Connect the cable shield to the grounding plate using metal clamps. (D)

7. Attach the identification labels (supplied with the backplane) to the accessory and to the plug-in connector. (E)

8. Put the front cover and HMI back in place.

9. Power up the CFW900 and check that the accessory has been correctly identified in parameter S1.4.n.1, where ‘n’ indicates the slot to which the accessory has been connected.

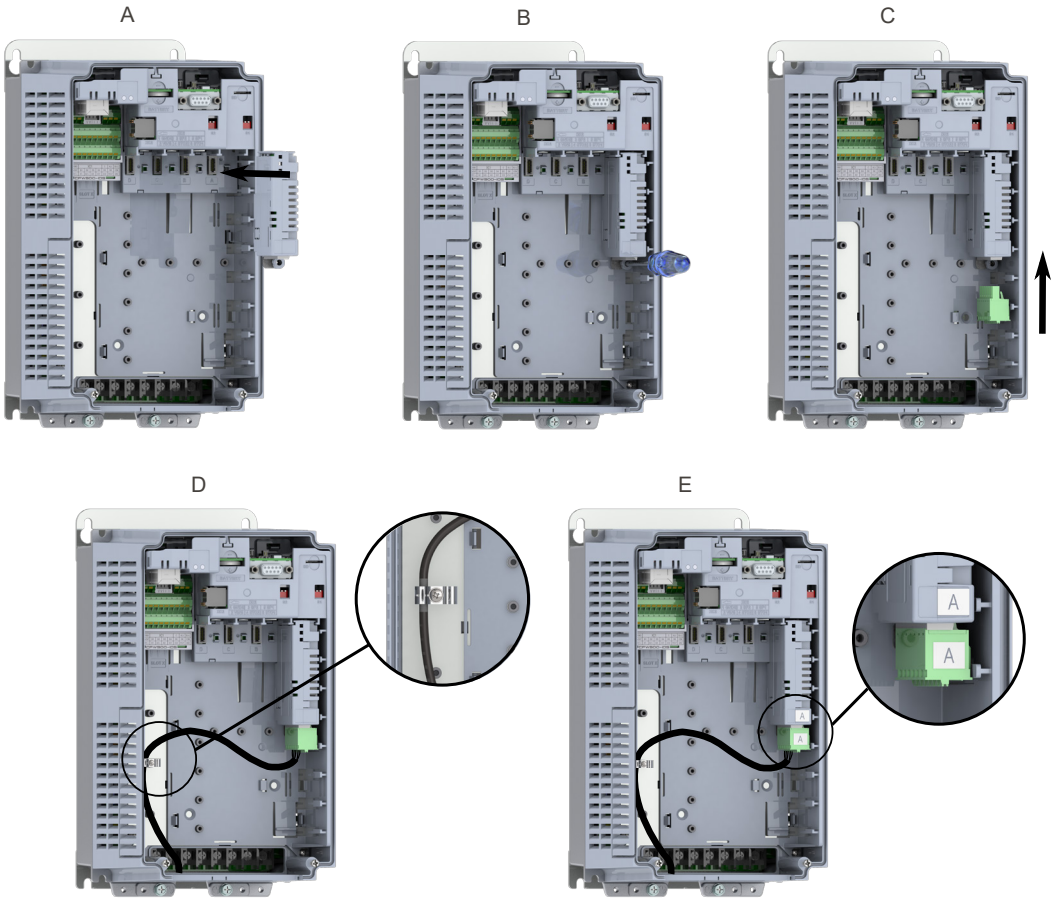


Figure 7.2: *Installing the accessory*

8 TECHNICAL SPECIFICATIONS

8.1 INVERTER POWER DATA

8.1.1 Input

Table 8.1: *Inverter input data*

Inverter Smart Code - Items "IV" and "V" Suffix Number of Phases and Rated Voltage	B2	T2	T4	T5	T6
AC Power Supply					
Number of phases (input)	1 or 3	3	3	3	3
Rated input voltage	200 ... 240 Vrms	Frames A, B and C: 200...240 Vrms Frames D, E and F: 208...240 Vrms	380...480 Vrms	500...600 Vrms	500...690 Vrms
Input voltage tolerance	-15 % +10 %	Frames A, B and C: -15 % +10 % Frames D, E and F: -15 % +10 % (1)	-15 % +10 %	-15 % +10 %	-15 % +10 %
Input frequency	50/60 Hz (range: 48 ... 63 Hz)				
Phase unbalance	≤ 3 % between line voltages				
Overvoltages / transients	Category III (EN 61010 / IEC61800-5-1 / UL61800-5-1)				
Input rated current					
■ Three-phase power supply	1.1 x Io,nom	Io,nom	Io,nom	Io,nom	Io,nom
■ Single-phase power supply	2.06 x Io,nom	-	-	-	-
Typical inverter power factor value (2)					
■ Three-phase power supply	0.77	0.93			
■ Single-phase power supply	0.70	-	-	-	-
Inverter displacement factor (cos phi)	≥ 0.98				
Typical value of input current harmonic distortion (THDi) (2)					
■ Three-phase power supply	≤ 80 %	≤ 40 %			
■ Single-phase power supply	≤ 100 %	-	-	-	-
Maximum number of powerups (network connections)	Maximum 1 per minute				
Types of power supply (3)	Frame Size A: TT / TN / IT (7) - (Except grounded by resistor) - slash voltage rating Frame Sizes B, C, D, E, F, G and H: TT / TN / IT / Delta earthed - straight voltage rating (Exception: T6 models when supplied at voltages above 600 V: TT / TN / IT - slash voltage rating)				
DC Power Supply (5) (6)					
Input voltage range	229...400 Vdc	Frames A, B and C: 229...400 Vdc Frames D, E and F: 252...400 Vdc	436...800 Vdc	573...1000 Vdc	573...1200 Vdc
Input rated current	1.15 x Io,nom				
Efficiency (Efficiency class) (4)	IE2 (IEC61800-9-2 / EN50598-2)				

(1) For input voltage in the range 208 ≤ Vin < 220 Vrms the negative tolerance is -10 %.
(2) In nominal condition, only valid for balanced power supply.
(3) For operation on IT networks or networks grounded by high impedance, follow the grounding guidelines of Item 3.2.4.1 IT and Delta Corner Earthed Networks on page 52.
(4) Efficiency levels by model can be found in the “WEG Ecodrive” app available for Android and iOS devices.
(5) For DC power supply, an external pre-charge circuit must be used. Exception: in CFW900 inverters with frames A (B2, T2 and T4 lines), B (T2, T4 and T5 lines), C (T2, T4 and T5 lines) and D (T6 line) it is possible to connect the “+” terminal of the DC power supply to the DC+ terminal and the “-” terminal to the R/L1/L and S/L2/N terminals. In this case, it is not necessary to use an external pre-charge.
(6) For applications with common DC link, please consult WEG.
(7) It includes the power supplies grounded via a high impedance resistor (to limit short-circuit current against ground).

8.1.2 Output

Table 8.2: *Inverter output data*

Inverter Smart Code - Items "IV" and "V" Suffix Number of Phases And Rated Voltage	B2	T2	T4	T5	T6
Output voltage					
■ Three-phase AC power supply	0 ... Vin -2 %				
■ Single-phase AC power supply	0 ... Vin -5 %				
■ Power Supply DC	0 ... Vdc / 1.38				
Rated output current	Io,nom (according to Table 8.5 on page 116, Table 8.6 on page 117, Table 8.7 on page 118, Table 8.8 on page 119, Table 8.9 on page 120, Table 8.10 on page 121, Table 8.11 on page 122 and Table 8.12 on page 123)				
Output frequency (1)	599 Hz for all frame sizes (if an output frequency higher than 599 Hz is required please contact WEG - it is possible to create a special inverter to this case)				
Switching frequency					
Rated (fsw,nom) (2)	4 kHz	Frames A...D: 4 kHz (except for the models CFW900D54P0T6, CFW900D64P0T6, CFW900D80P0T6 and CFW900D85P0T6 which have fsw, nom = 2 kHz) Frames E, F, G and H: 2 kHz			
Adjustment range (3)(4)	1.5...16 kHz	Frames A...D: 1.5...16 kHz (except for the frame D of the T6 line which has an adjustment range of 1...8 kHz) Frame E: 1...8 kHz Frame F: 1...6 kHz Frames G and H: 1...7 kHz			
Maximum motor cable length					
■ Without output reactor	200 m (over 100 m it is necessary to use PWM modulation for long cables) (5)				
■ With output reactor	500 m				
■ With sinusoidal filter on the inverter output	5000 m				
Motor cable length to meet IEC61800-3:2017 standard	0 ... 200 m (shielded according to IEC60034-25)				

(1) Considering the factory settings (e.g. nominal switching frequency), the maximum output frequency for frame sizes A...D is 500 Hz and for frame sizes E...H is 250 Hz. To operate at a higher output frequency, the switching frequency must be increased.
(2) The switching frequency can be automatically reduced due to inverter output overload, high ambient temperature, obstruction of air circulation around the heatsink and/or operation with low output frequency.
(3) For operation with a switching frequency above the rated switching frequency (fsw,nom) it is necessary to reduce the output current according to Table 8.13 on page 126, Table 8.14 on page 127 , Table 8.15 on page 128 and Table 8.16 on page 129.
(4) Adjustable in 0.1 kHz steps.
(5) The modulation type can be changed in parameter C1.4.1.

8.1.3 General Data

Table 8.3: *Inverter general data*

Inverter Smart Code - Items "IV" and "V" Suffix Number of Phases And Rated Voltage	B2	T2	T4	T5	T6
Dynamic Braking					
Braking IGBT (1)	Yes, included in the standard version	Frames A, B and C: yes, included in the standard version Frames D and E: optional, models with DB suffix Frames F, G and H: not included			
RFI filter	Category C3, included in the standard version				

(1) The specifications for maximum braking current and minimum resistor resistance are indicated in Table 3.9 on page 54.

8.1.4 Environmental and Mechanical Data

Table 8.4: *Inverter environmental and mechanical data*

Inverter Smart Code - Item "II" (Inverter Cabinet Size) and items "IV" and "V" (Power Supply Voltage)	A	B	C	D			E	F	G	H
	B2, T2 and T4	T2, T4 and T5	T2, T4 and T5	T2 and T4	T6 (1)	CFW900D80P0T6 and CFW900D85P0T6	T2, T4 and T6	T2 and T4	T4 and T6	T4 and T6
Storage temperature	-25 °C ... +70 °C (-13 °F ... +158 °F)									
Maximum operating ambient temperature without output current derating										
■ Back (2) (3)	50 °C (122 °F)	50 °C (122 °F)	50 °C (122 °F)	50 °C (122 °F)			45 °C (113 °F)	45 °C (113 °F)	45 °C (113°F)	45 °C (113 °F)
■ Front (4)	60 °C (140 °F)	60 °C (140 °F)	60 °C (140 °F) (5)	60 °C (140 °F) (5)			60 °C (140 °F)	55 °C (131 °F)	55 °C (131 °F)	55 °C (131 °F)
Maximum operating temperature with output current derating										
■ Back (2) (3)	60 °C (140 °F) (5)									
■ Front (4)	60 °C (140 °F) (7)									
Minimum operating ambient temperature	-10 °C (14 °F)									
Humidity	5 ... 95 % non-condensing									
Pollution degree	2 (EN 50178 / IEC 61800-5-1 / UL 61800-5-1)									
Degree of protection										
Back	IP55 / UL type 12									
Front: (8)										
■ Inverters with suffix "20"	IP20 / open chassis									
■ Inverters with suffix "21" or inverters with suffix "20" with IP21 kit	IP21 / open chassis									
■ Inverters with suffix "N1" or inverters with suffix "20" with UL type 1 kit	UL type 1									
HMI installed on metal panel using the CFW900-RHMIF kit	IP65 / UL type 12									
Altitude	Rated: 1000 m Maximum: 4000 m with derating factor									
Heatsink fan air flow at the operation point										
■ CFM	20	40	130	190	190	220	270	390	700	1020
■ l/s	9	19	61	90	90	104	127	184	330	481
■ m^3/min	0.6	1.1	3.7	5.4	5.4	6.2	7.6	11.0	19.8	28.9
Wiring supported on the power terminals										
■ min (mm^2/AWG)	0.5/20	0.5/20	0.5/20	Cable with M8 terminal maximum 24 mm wide	0.5/20	0.5/20	Cable with M10 terminal maximum 30 mm wide	Cable with M10 terminal maximum 30 mm wide	Cable with M12 terminal maximum 33 mm wide	Cable with M12 terminal maximum 33 mm wide
■ max (mm^2/AWG)	6/10	16/6	35/2		35/2	35/2				
Weight (kg / lb)	4.5 / 9.9	10.0 / 22.0	20.5 / 45.2	33.5 / 73.8	33.5 / 73.8	33.5 / 73.8	63.5 / 140.0	101 / 222.6	140 / 308.6	192 / 423.3
RoHS	Yes									
Conformal coating										
■ Inverter in standard configuration	3C2 (IEC 60721-3-3:2002)									
■ Inverter with suffix "HEC"	3C3 (IEC 60721-3-3:2002)									

(1) Except for the models CFW900D80P0T6 and CFW900D85P0T6.
(2) Heatsink air inlet temperature.
(3) If the 2 parts of the inverter are in the same environment, this is the maximum temperature around the inverter.
(4) If the 2 parts of the inverter are installed in different compartments (flange mounting), this is the maximum temperature around the front of the inverter.
(5) Exception: models CFW900C74P0T4, CFW900C54P0T5 and CFW900D0146P0T4 that have specification of 55 °C (131 °F). For operation above 55 °C (131 °F) it is necessary to apply derating of 2 %/°C.
(6) Consider the current specification for each model (frame), see Figure 8.2 on page 125.
(7) Apply derating of 2 %/°C in models CFW900C74P0T4, CFW900C54P0T5, CFW900D0146P0T4 and all models of frames F, G and H for operation above 55 °C (131 °F).
(8) If the inverter of frames F, G and H is energized via the DC+ and DC- terminals, the degree of protection is reduced to IP00.

8.1.5 Current, Motor and Loss Data

Table 8.5: *Current, power and loss data for B2 and T2 lines and "ND" overload class*

Inverter Model	ND Overload Class: 110 % for 60 Seconds with a 5-Minute Interval 150 % for 3 Seconds with a 5-Minute Interval					Dissipated Power for Sizing the Panel		Inverter Loss Data as per IEC61800-9-2 (1)	
	Rated Output Current	Typical Motor (2)						Rated Apparent Power	Losses at Rated Condition / Apparent Power
		220 V/ 50-60 Hz	230 V/ 50-60 Hz	NEC Table 208 V	NEC Table 230 V	Inverter Complete	Front Part	230 V	
	Io,nom (ND)	P,nom	P,nom	P,nom	P,nom	PL (inv)	PL (inv2)	So	pL (90,100)
	[Arms]	[hp/kW]	[hp/kW]	[hp]	[hp]	[W]	[W]	[kVA]	[%]
CFW900A04P6B2	4.6	1.5/1.1	1.5/1.1	1	1	81	34	1.8	4.4 %
CFW900A06P0B2	6	2/1.5	2/1.5	1	1.5	96	39	2.4	4.1 %
CFW900A07P5B2	7.5	2/1.5	2/1.5	2	2	109	41	3.0	3.7 %
CFW900A10P0B2	10	3/2.2	3/2.2	2	3	127	46	4.0	3.2 %
CFW900A04P6T2	4.6	1.5/1.1	1.5/1.1	1	1	70	30	1.8	3.9 %
CFW900A06P0T2	6	2/1.5	2/1.5	1	1.5	84	32	2.4	3.5 %
CFW900A07P5T2	7.5	2/1.5	2/1.5	2	2	92	34	3.0	3.1 %
CFW900A10P6T2	10.6	3/2.2	3/2.2	3	3	111	36	4.2	2.7 %
CFW900A13P0T2	13	4/3	4/3	3	3	130	39	5.2	2.5 %
CFW900A19P0T2	19	6/4.5	7.5/5.5	5	5	168	45	7.6	2.3 %
CFW900B26P0T2	26	10/7.5	10/7.5	7.5	7.5	251	64	10.4	2.5 %
CFW900B34P0T2	34	12.5/9.2	12.5/9.2	10	10	315	75	13.5	2.4 %
CFW900B45P0T2	45	15/11	15/11	10	15	420	90	17.9	2.4 %
CFW900C56P0T2	56	20/15	20/15	15	20	538	114	22.3	2.5 %
CFW900C70P0T2	70	25/18.5	25/18.5	20	25	627	128	27.9	2.3 %
CFW900C80P0T2	80	30/22	30/22	25	30	710	142	31.9	2.3 %
CFW900D0110T2	110	40/30	40/30	30	40	956	172	43.8	2.2 %
CFW900D0135T2	135	50/37	50/37	40	50	1192	208	53.8	2.3 %
CFW900D0150T2	150	60/45	60/45	50	50	1363	233	59.8	2.3 %
CFW900E0172T2	172	60/45	75/55	60	60	1629	300	68.5	2.4 %
CFW900E0195T2	195	75/55	75/55	60	75	1897	337	77.7	2.5 %
CFW900E0250T2	250	100/75	100/75	75	100	2375	402	99.6	2.4 %
CFW900F0315T2	315	125/90	125/90	100	125	2631	554	125.5	2.1 %
CFW900F0370T2	370	150/110	150/110	125	150	3134	624	147.4	2.2 %

(1) Inverter efficiency rating: see Item 8.1.1 Input on page 113. Inverter losses at the other seven operating points specified by IEC61800-9-2 standard: see specific document on Ecodesign Directive. To determine losses for different motors, use the WEG Ecodrive app.
(2) Rated power values defined based on the rated current of WEG motors at the indicated voltages. Item 8.1.4 Environmental and Mechanical Data on page 115 indicates the maximum inverter ambient temperature considered for choosing the motor.

Table 8.6: *Current, power and loss data for B2 and T2 lines and "HD" overload class*

Inverter Model	HD Overload Class: 150 % for 60 Seconds with a 5-Minute Interval 200 % for 3 Seconds with a 5-Minute Interval					Dissipated Power for Sizing the Panel		Inverter Loss Data as Per IEC61800-9-2 (1)	
	Rated Output Current	Typical Motor (2)						Rated Apparent Power	Losses at Rated Condition / Apparent Power
		220 V/ 50-60 Hz	230 V/ 50-60 Hz	NEC Table 208 V	NEC Table 230 V	Inverter Complete	Front Part	230 V	
	Io,nom (HD)	P,nom	P,nom	P,nom	P,nom	PL (inv)	PL (inv2)	So	pL (90,100)
	[Arms]	[hp/kW]	[hp/kW]	[hp]	[hp]	[W]	[W]	[kVA]	[%]
CFW900A04P6B2	4.6	1.5/1.1	1.5/1.1	1	1	81	34	1.8	4.4 %
CFW900A06P0B2	6	2/1.5	2/1.5	1	1.5	96	39	2.4	4.1 %
CFW900A07P5B2	7.5	2/1.5	2/1.5	2	2	109	41	3.0	3.7 %
CFW900A10P0B2	10	3/2.2	3/2.2	2	3	127	46	4.0	3.2 %
CFW900A04P6T2	4.6	1.5/1.1	1.5/1.1	1	1	70	30	1.8	3.9 %
CFW900A06P0T2	5	1.5/1.1	1.5/1.1	1	1	73	31	2.0	3.7 %
CFW900A07P5T2	6.8	2/1.5	2/1.5	1.5	2	85	33	2.7	3.2 %
CFW900A10P6T2	9.6	3/2.2	3/2.2	2	3	102	35	3.8	2.7 %
CFW900A13P0T2	11	3/2.2	4/3	3	3	111	37	4.4	2.6 %
CFW900A19P0T2	16	5/3.7	4/3	3	5	143	42	6.3	2.3 %
CFW900B26P0T2	22	7.5/5.5	7.5/5.5	5	7.5	212	59	8.7	2.5 %
CFW900B34P0T2	28	10/7.5	10/7.5	7.5	10	260	67	11.1	2.4 %
CFW900B45P0T2	35	12.5/9.2	12.5/9.2	10	10	320	76	13.9	2.3 %
CFW900C56P0T2	47	15/11	15/11	15	15	447	103	18.7	2.4 %
CFW900C70P0T2	59	20/15	20/15	15	20	523	115	23.5	2.3 %
CFW900C80P0T2	70	25/18.5	25/18.5	20	25	614	129	27.9	2.2 %
CFW900D0110T2	92	30/22	30/22	30	30	784	148	36.6	2.2 %
CFW900D0135T2	110	40/30	40/30	30	40	942	172	43.8	2.2 %
CFW900D0150T2	124	50/37	50/37	40	40	1081	192	49.4	2.2 %
CFW900E0172T2	150	60/45	60/45	50	50	1391	267	59.7	2.4 %
CFW900E0195T2	160	60/45	60/45	50	60	1497	281	63.7	2.4 %
CFW900E0250T2	211	75/55	75/55	75	75	1934	342	84.0	2.4 %
CFW900F0315T2	263	100/75	100/75	75	100	2159	461	104.8	2.1 %
CFW900F0370T2	315	125/90	125/90	100	125	2603	525	125.5	2.2 %

(1) The dissipated power for sizing the panel must be considered the same specified for the ND overload class according to Table 8.5 on page 116.
(2) Rated power values defined based on the rated current of WEG motors at the indicated voltages. Item 8.1.4 Environmental and Mechanical Data on page 115 indicates the maximum inverter ambient temperature considered for choosing the motor.

Table 8.7: Current, power and loss data for T4 line and "ND" overload class

Inverter Model	ND Overload Class: 110 % for 60 Seconds with a 5-Minute Interval 150 % for 3 Seconds with a 5-Minute Interval						Dissipated Power for Sizing the Panel		Inverter Loss Data as per IEC61800-9-2 (1)	
	Rated Output Current	Typical Motor (2)							Rated Apparent Power	Losses at Rated Condition / Apparent Power
		380 V/ 50-60 Hz	400 V/ 50-60 Hz	440 V/ 50-60 Hz	460 V/ 50-60 Hz	NEC Table 460 V	Inverter Complete	Front Part	400 V	
	Io,nom (ND)	P,nom	P,nom	P,nom	P,nom	P,nom	PL (inv)	PL (inv2)	So	pL (90,100)
	[Arms]	[hp/kW]	[hp/kW]	[hp/kW]	[hp/kW]	[hp]	[W]	[W]	[kVA]	[%]
CFW900A02P8T4	2.8	1.5/1.1	1.5/1.1	2/1.5	2/1.5	1	66	30	1.9	3.5 %
CFW900A03P6T4	3.6	2/1.5	2/1.5	2/1.5	2/1.5	2	72	31	2.5	2.9 %
CFW900A04P8T4	4.8	3/2.2	3/2.2	3/2.2	3/2.2	3	90	33	3.3	2.7 %
CFW900A06P5T4	6.5	3/2.2	4/3	4/3	5/3.7	3	110	36	4.5	2.5 %
CFW900A09P6T4	9.6	6/4.5	5.5/4	6/4.5	7.5/5.5	5	145	42	6.7	2.2 %
CFW900A14P0T4	14	7.5/5.5	7.5/5.5	10/7.5	10/7.5	10	201	48	9.7	2.1 %
CFW900A17P0T4	17	10/7.5	10/7.5	12.5/9.2	10/7.5	10	236	54	11.8	2.0 %
CFW900B26P0T4	26	15/11	15/11	20/15	20/15	15	366	82	18.0	2.1 %
CFW900B33P0T4	33	20/15	20/15	25/18.5	25/18.5	20	409	87	22.9	1.8 %
CFW900B39P0T4	39	25/18.5	25/18.5	30/22	30/22	25	473	97	27.0	1.8 %
CFW900C50P0T4	50	30/22	30/22	40/30	40/30	30	671	133	34.6	2.0 %
CFW900C62P0T4	62	40/30	40/30	50/37	50/37	40	727	143	43.0	1.7 %
CFW900C74P0T4	74	50/37	50/37	60/45	60/45	50	844	161	51.3	1.7 %
CFW900D96P0T4	96	60/45	60/45	75/55	75/55	75	1132	195	66.5	1.8 %
CFW900D0124T4	124	75/55	75/55	100/75	100/75	100	1408	233	85.9	1.7 %
CFW900D0146T4	146	100/75	100/75	125/90	125/90	100	1656	271	101.2	1.7 %
CFW900E0172T4	172	125/90	125/90	125/90	150/110	125	1789	333	119.2	1.6 %
CFW900E0203T4	203	150/110	150/110	150/110	150/110	150	2170	384	140.6	1.6 %
CFW900E0242T4	242	175/132	175/132	200/150	200/150	200	2504	428	167.7	1.5 %
CFW900F0315T4	315	200/150	220/160	250/185	250/185	250	2895	608	218.2	1.4 %
CFW900F0370T4	370	250/185	270/200	300/220	300/220	300	3432	682	256.3	1.4 %
CFW900G0430T4	430	300/220	300/220	350/260	350/260	350	3945	850	297.9	1.3 %
CFW900G0480T4	480	350/260	350/260	400/300	400/300	400	4415	895	332.6	1.3 %
CFW900G0540T4	540	350/260	400/300	450/330	450/330	450	4954	953	374.1	1.3 %
CFW900G0601T4	601	400/300	450/330	500/370	500/370	500	5605	1063	416.4	1.3 %
CFW900H0760T4	760	550/400	550/400	550/400	650/480	600	7778	1413	526.5	1.5 %

(1) Inverter efficiency rating: see Item 8.1.1 Input on page 113. Inverter losses at the other seven operating points specified by IEC61800-9-2 standard: see specific document on Ecodesign Directive. To determine losses for different motors, use the WEG Ecodrive app.
(2) Rated power values defined based on the rated current of WEG motors at the indicated voltages. Item 8.1.4 Environmental and Mechanical Data on page 115 indicates the maximum inverter ambient temperature considered for choosing the motor.

Table 8.8: *Current, power and loss data for T4 line and "HD" overload class*

Inverter Model	HD Overload Class: 150 % for 60 Seconds with a 5-Minute Interval 200 % for 3 Seconds with a 5-Minute Interval						Dissipated Power for Sizing the Panel		Inverter Loss Data as per IEC61800-9-2 (1)	
	Rated Output Current	Typical Motor (2)							Rated Apparent Power	Losses at Rated Condition / Apparent Power
		380 V/ 50-60 Hz	400 V/ 50-60 Hz	440 V/ 50-60 Hz	460 V/ 50-60 Hz	NEC Table 460 V	Inverter Complete	Front Part	400 V	
	Io,nom (HD)	P,nom	P,nom	P,nom	P,nom	P,nom	PL (inv)	PL (inv2)	So	pL (90,100)
	[Arms]	[hp/kW]	[hp/kW]	[hp/kW]	[hp/kW]	[hp]	[W]	[W]	[kVA]	[%]
CFW900A02P8T4	2.4	1/0.75	1.5/1.1	1.5/1.1	1.5/1.1	1	60	29	1.6	3.6 %
CFW900A03P6T4	2.8	1.5/1.1	1.5/1.1	1.5/1.1	2/1.5	1	61	30	1.9	3.2 %
CFW900A04P8T4	3.9	2/1.5	2/1.5	2/1.5	3/2.2	2	76	31	2.7	2.8 %
CFW900A06P5T4	5.3	3/2.2	3/2.2	3/2.2	3/2.2	3	92	34	3.7	2.5 %
CFW900A09P6T4	8	4/3	4/3	5/3.7	5/3.7	5	122	39	5.5	2.2 %
CFW900A14P0T4	12	7.5/5.5	7.5/5.5	7.5/5.5	7.5/5.5	7.5	172	45	8.3	2.1 %
CFW900A17P0T4	15	10/7.5	10/7.5	10/7.5	10/7.5	10	236	54	11.8	2.0 %
CFW900B26P0T4	21	12.5/9.5	15/11	15/11	15/11	15	307	74	15.2	2.1 %
CFW900B33P0T4	28	15/11	15/11	20/15	20/15	20	342	79	19.4	1.8 %
CFW900B39P0T4	33	20/15	20/15	25/18.5	25/18.5	20	397	87	22.8	1.8 %
CFW900C50P0T4	40	25/18.5	25/18.5	30/22	30/22	30	540	118	28.4	2.0 %
CFW900C62P0T4	50	30/22	30/22	40/30	40/30	30	580	124	34.6	1.7 %
CFW900C74P0T4	62	40/30	40/30	50/37	50/37	40	708	146	42.9	1.7 %
CFW900D96P0T4	75	50/37	50/37	60/45	60/45	50	862	158	51.9	1.7 %
CFW900D0124T4	103	75/55	75/55	75/55	75/55	75	1152	198	71.4	1.7 %
CFW900D0146T4	124	75/55	75/55	100/75	100/75	100	1379	232	85.9	1.7 %
CFW900E0172T4	146	100/75	100/75	125/90	125/90	100	1500	297	101.2	1.5 %
CFW900E0203T4	156	100/75	100/75	125/90	125/90	125	1609	311	108.1	1.5 %
CFW900E0242T4	190	125/90	125/90	150/110	150/110	150	1908	350	131.6	1.5 %
CFW900F0315T4	263	175/132	175/132	200/150	200/150	200	2389	510	182.2	1.4 %
CFW900F0370T4	315	200/150	220/160	250/185	250/185	250	2869	580	218.2	1.4 %
CFW900G0430T4	370	250/185	270/200	300/220	300/220	300	3399	794	256.3	1.3 %
CFW900G0480T4	430	300/220	300/220	350/260	350/260	350	3945	850	297.9	1.3 %
CFW900G0540T4	480	350/260	350/260	350/260	400/300	400	4402	897	332.6	1.3 %
CFW900G0601T4	515	350/260	380/280	400/300	450/330	450	4781	972	356.8	1.3 %
CFW900H0760T4	601	400/300	450/330	500/370	500/370	500	6093	1241	416.4	1.5 %

(1) The dissipated power for sizing the panel must be considered the same specified for the ND overload class according to Table 8.7 on page 118.
(2) Rated power values defined based on the rated current of WEG motors at the indicated voltages. Item 8.1.4 Environmental and Mechanical Data on page 115 indicates the maximum inverter ambient temperature considered for choosing the motor.

Table 8.9: Current, power and loss data for T5 and T6 lines with 500...600 V power supply and "ND" overload class

Inverter Model	ND Overload Class: 110 % for 60 Seconds with a 5-Minute Interval 150 % for 3 Seconds with a 5-Minute Interval					Dissipated Power for Sizing the Panel		Inverter Loss Data as per IEC61800-9-2 (1)	
	Rated Output Current	Typical Motor (2)						Rated Apparent Power	Losses at Rated Condition / Apparent Power
		525 V/ 50-60 Hz	575 V/ 50-60 Hz	600 V/ 50-60 Hz	NEC Table 575 V	Inverter Complete	Front Part	575 V	
	Io,nom (ND)	P,nom	P,nom	P,nom	P,nom	PL (inv)	PL (inv2)	So	pL (90,100)
	[Arms]	[hp/kW]	[hp/kW]	[hp/kW]	[hp]	[W]	[W]	[kVA]	[%]
CFW900B02P9T5	2.9	2/1.5	2/1.5	2/1.5	2	89	38	2.6	3.4 %
CFW900B04P2T5	4.2	3/2.2	3/2.2	4/3	3	111	40	3.8	3.0 %
CFW900B07P0T5	7	5.5/4	5/3.7	6/4.5	5	141	45	6.4	2.3 %
CFW900B10P0T5	10	7.5/5.5	10/7.5	10/7.5	7.5	197	51	9.1	2.2 %
CFW900B12P0T5	12	10/7.5	10/7.5	12.5/9.2	10	216	55	10.9	2.0 %
CFW900B17P0T5	17	15/11	15/11	15.11	15	269	59	15.5	1.8 %
CFW900B22P0T5	22	20/15	20/15	20/15	20	333	68	20.0	1.7 %
CFW900B27P0T5	27	25/18.5	25/18.5	25/18.5	25	401	79	24.5	1.7 %
CFW900C32P0T5	32	30/22	30/22	30/22	30	589	98	29.1	2.2 %
CFW900C44P0T5	44	40/30	40/30	40/30	40	838	119	40.0	2.1 %
CFW900C54P0T5	54	50/37	50/37	60/45	50	946	138	49.1	2.0 %
CFW900D02P9T6	2.9	2/1.5	2/1.5	2/1.5	2	208	66	2.6	7.9 %
CFW900D04P2T6	4.2	3/2.2	3/2.2	4/3	3	224	69	3.8	5.8 %
CFW900D07P0T6	7	5.5/4	5/3.7	6/4.5	5	266	75	6.4	4.2 %
CFW900D10P0T6	10	7.5/5.5	10/7.5	10/7.5	7.5	307	81	9.1	3.4 %
CFW900D12P0T6	12	10/7.5	10/7.5	12.5/9.2	10	338	86	10.9	3.1 %
CFW900D17P0T6	17	15/11	15/11	15.11	15	419	97	15.5	2.7 %
CFW900D22P0T6	22	20/15	20/15	20/15	20	505	109	20.0	2.5 %
CFW900D27P0T6	27	25/18.5	25/18.5	25/18.5	25	582	121	24.6	2.4 %
CFW900D32P0T6	32	30/22	30/22	30/22	30	598	123	29.1	2.1 %
CFW900D44P0T6	44	40/30	40/30	40/30	40	769	149	40.0	1.9 %
CFW900D54P0T6	54	50/37	50/37	60/45	50	719	141	49.1	1.5 %
CFW900D64P0T6	64	60/45	60/45	60/45	60	850	159	58.2	1.5 %
CFW900D80P0T6	80	75/55	75/55	75/55	75	1089	191	72.7	1.5 %
CFW900D85P0T6	85	75/55	75/55	75/55	100	1172	207	77.3	1.5 %
CFW900E0107T6	107	100/75	100/75	125/90	100	1348	217	97.3	1.4 %
CFW900E0130T6	130	125/90	125/90	150/110	125	1621	251	118.2	1.4 %
CFW900E0150T6	150	150/110	150/110	150/110	150	1852	289	136.4	1.4 %
CFW900E0176T6	176	175/132	150/110	200/150	150	2116	320	160.0	1.4 %
CFW900E0192T6	192	175/132	200/150	200/150	200	2291	348	174.6	1.4 %
CFW900G0242T6	242	220/160	250/185	250/185	250	3002	602	220.1	1.4 %
CFW900G0289T6	289	270/200	300/220	300/220	300	3498	678	262.8	1.4 %
CFW900G0336T6	336	340/250	350/260	350/260	350	3968	762	305.5	1.3 %
CFW900H0384T6	384	380/280	400/300	450/330	400	5575	1049	349.2	1.6 %
CFW900H0435T6	435	430/315	450/330	500/370	450	6515	1208	395.6	1.7 %
CFW900H0473T6	473	480/355	500/370	550/400	500	7035	1304	430.1	1.7 %

(1) Inverter efficiency rating: see Item 8.1.1 Input on page 113. Inverter losses at the other seven operating points specified by IEC61800-9-2 standard: see specific document on Ecodesign Directive. To determine losses for different motors, use the WEG Ecodrive app.
(2) Rated power values defined based on the rated current of WEG motors at the indicated voltages. Item 8.1.4 Environmental and Mechanical Data on page 115 indicates the maximum inverter ambient temperature considered for choosing the motor.

Table 8.10: *Current, power and loss data for T5 and T6 lines with 500...600 V power supply and "HD" overload class*

Inverter Model	HD Overload Class: 150 % for 60 Seconds with a 5-Minute Interval 200 % for 3 Seconds with a 5-Minute Interval					Dissipated Power for Sizing the Panel		Inverter Loss Data as per IEC61800-9-2 (1)	
	Rated Output Current	Typical Motor (2)						Rated Apparent Power	Losses at Rated Condition / Apparent Power
		525 V/ 50-60 Hz	575 V/ 50-60 Hz	600 V/ 50-60 Hz	NEC Table 575 V	Inverter Complete	Front Part	575 V	
	Io,nom (HD)	P,nom	P,nom	P,nom	P,nom	PL (inv)	PL (inv2)	So	pL (90,100)
	[Arms]	[hp/kW]	[hp/kW]	[hp/kW]	[hp]	[W]	[W]	[kVA]	[%]
CFW900B02P9T5	2.7	2/1.5	2/1.5	2/1.5	2	86	38	2.5	3.3 %
CFW900B04P2T5	2.9	2/1.5	2/1.5	2/1.5	2	89	38	2.6	2.4 %
CFW900B07P0T5	4.2	3/2.2	3/2.2	4/3	3	101	41	3.8	1.6 %
CFW900B10P0T5	7	5.5/4	5/3.7	6/4.5	5	141	45	6.4	1.5 %
CFW900B12P0T5	10	7.5/5.5	10/7.5	10/7.5	7.5	184	52	9.1	1.7 %
CFW900B17P0T5	12	10/7.5	10/7.5	12.5/9.2	10	189	50	10.9	1.2 %
CFW900B22P0T5	17	15/11	15/11	15.11	15	253	59	15.5	1.3 %
CFW900B27P0T5	22	20/15	20/15	20/15	20	328	71	20	1.4 %
CFW900C32P0T5	27	25/18.5	25/18.5	25/18.5	25	483	88	24.6	1.7 %
CFW900C44P0T5	32	30/22	30/22	30/22	30	566	95	29.1	1.4 %
CFW900C54P0T5	44	40/30	40/30	40/30	40	734	119	40	1.5 %
CFW900D02P9T6	2.7	2/1.5	2/1.5	2/1.5	2	207	66	2.5	7.7 %
CFW900D04P2T6	2.9	2/1.5	2/1.5	2/1.5	2	205	66	2.6	5.4 %
CFW900D07P0T6	4.2	3/2.2	3/2.2	4/3	3	223	69	3.8	3.5 %
CFW900D10P0T6	7	5.5/4	5/3.7	6/4.5	5	261	75	6.4	2.9 %
CFW900D12P0T6	10	7.5/5.5	10/7.5	10/7.5	7.5	307	81	9.1	2.8 %
CFW900D17P0T6	12	10/7.5	10/7.5	12.5/9.2	10	338	86	10.9	2.2 %
CFW900D22P0T6	17	15/11	15/11	15.11	15	419	97	15.5	2.1 %
CFW900D27P0T6	22	20/15	20/15	20/15	20	497	110	20	2.0 %
CFW900D32P0T6	27	25/18.5	25/18.5	25/18.5	25	522	113	24.6	1.8 %
CFW900D44P0T6	32	30/22	30/22	30/22	30	586	125	29.1	1.5 %
CFW900D54P0T6	44	40/30	40/30	40/30	40	586	123	40	1.2 %
CFW900D64P0T6	54	50/37	50/37	60/45	50	720	143	49.1	1.2 %
CFW900D80P0T6	64	60/45	60/45	60/45	60	862	162	58.2	1.2 %
CFW900D85P0T6	80	75/55	75/55	75/55	75	1099	199	72.7	1.4 %
CFW900E0107T6	89	75/55	100/75	100/75	75	1147	191	80.9	1.2 %
CFW900E0130T6	107	100/75	100/75	125/90	100	1300	209	93.7	1.1 %
CFW900E0150T6	130	125/90	125/90	150/110	125	1609	259	118.2	1.2 %
CFW900E0176T6	154	150/110	150/110	175/132	150	1850	285	140	1.2 %
CFW900E0192T6	154	150/110	150/110	175/132	150	1841	293	140	1.1 %
CFW900G0242T6	192	175/132	200/150	200/150	200	2483	503	174.6	1.1 %
CFW900G0289T6	242	220/160	250/185	250/185	250	3080	605	227.3	1.2 %
CFW900G0336T6	289	270/200	300/220	300/220	300	3453	669	262.8	1.1 %
CFW900H0384T6	336	340/250	350/260	350/260	350	4933	936	305.5	1.4 %
CFW900H0435T6	384	380/280	400/300	450/330	400	5813	1082	347.4	1.5 %
CFW900H0473T6	435	430/315	450/330	500/370	450	6515	1207	695.6	1.5 %

(1) The dissipated power for sizing the panel must be considered the same specified for the ND overload class according to Table 8.9 on page 120.
(2) Rated power values defined based on the rated current of WEG motors at the indicated voltages. Item 8.1.4 Environmental and Mechanical Data on page 115 indicates the maximum inverter ambient temperature considered for choosing the motor.

Table 8.11: Current, power and loss data for T6 line with 660...690 V power supply and "ND" overload class

Inverter Model	ND Overload Class: 110 % for 60 Seconds With a 5-Minute Interval 150 % for 3 Seconds with a 5-Minute Interval		Dissipated Power for Sizing the Panel		Inverter Loss Data as per IEC61800-9-2 (1)	
	Rated Output Current	Typical Motor (2)			Rated Apparent Power	Losses at Rated Condition / Apparent Power
		690 V / 50-60 Hz	Inverter Complete	Front Part	690 V	
	Io,nom (ND)	P,nom	PL (inv)	PL (inv2)	So	pL (90,100)
	[Arms]	[hp/kW]	[W]	[W]	[kVA]	[%]
CFW900D02P9T6	2.9	3/2.2	243	72	3.5	7.0 %
CFW900D04P2T6	3.9	4/3	258	74	4.7	5.5 %
CFW900D07P0T6	5.1	5.5/4	279	77	6.1	4.6 %
CFW900D10P0T6	7	7.5/5.5	310	83	8.4	3.7 %
CFW900D12P0T6	9	10/7.5	344	87	10.8	3.2 %
CFW900D17P0T6	13	15/11	419	99	15.5	2.7 %
CFW900D22P0T6	18	20/15	513	111	21.5	2.4 %
CFW900D27P0T6	21	25/18.5	568	124	25.1	2.3 %
CFW900D32P0T6	26	30/22	591	126	31.1	1.9 %
CFW900D44P0T6	34	40/30	717	149	40.6	1.8 %
CFW900D54P0T6	41	50/37	611	133	49	1.2 %
CFW900D64P0T6	49	60/45	744	153	58.6	1.3 %
CFW900D80P0T6	59	75/55	895	178	70.5	1.3 %
CFW900D85P0T6	81	100/75	1248	238	96.8	1.3 %
CFW900E0107T6	81	100/75	1175	205	96.8	1.2 %
CFW900E0130T6	100	125/90	1393	229	119.5	1.2 %
CFW900E0150T6	120	150/110	1641	276	143.4	1.1 %
CFW900E0176T6	140	175/132	1876	302	167.3	1.1 %
CFW900E0192T6	170	220/160	2245	361	203.2	1.1 %
CFW900G0242T6	215	270/200	3015	600	256.9	1.2 %
CFW900G0289T6	265	350/260	3600	708	316.7	1.1 %
CFW900G0336T6	326	430/315	4263	819	389.6	1.1 %
CFW900H0384T6	326	430/315	5426	1032	389.6	1.4 %
CFW900H0435T6	360	480/355	6370	1174	429	1.5 %
CFW900H0473T6	427	550/400	7376	1352	510.3	1.4 %

(1) Inverter efficiency rating: see Item 8.1.1 Input on page 113. Inverter losses at the other seven operating points specified by IEC61800-9-2 standard: see specific document on Ecodesign Directive. To determine losses for different motors, use the WEG Ecodrive app.
(2) Rated power values defined based on the rated current of WEG motors at the indicated voltages. Item 8.1.4 Environmental and Mechanical Data on page 115 indicates the maximum inverter ambient temperature considered for choosing the motor.

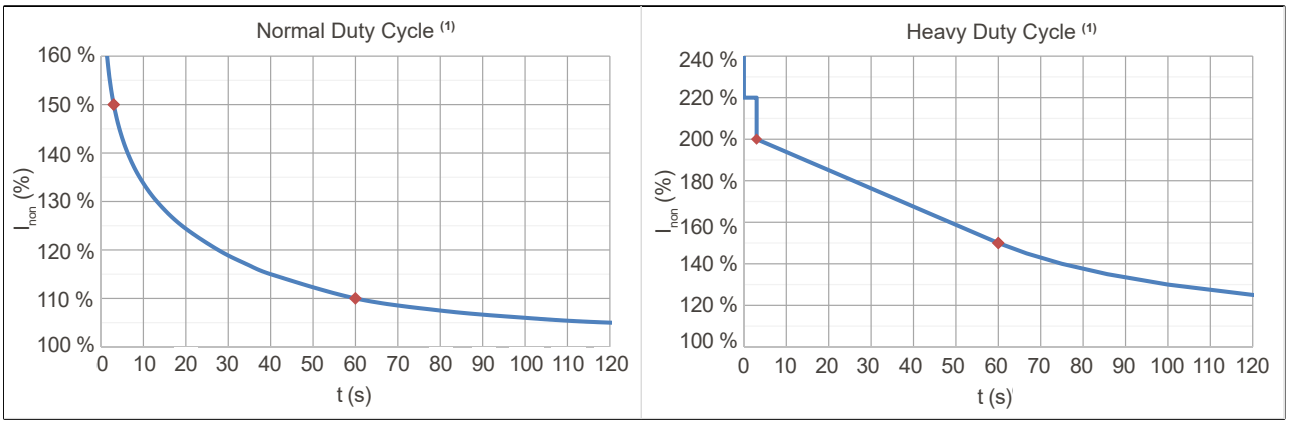
Table 8.12: Current, power and loss data for T6 line with 660...690 V power supply and "HD" overload class

Inverter Model	HD Overload Class: 150 % for 60 Seconds With a 5-Minute Interval 200 % for 3 Seconds with a 5-Minute Interval		Dissipated Power for Sizing the Panel		Inverter Loss Data as per IEC61800-9-2 (1)	
	Rated Output Current	Typical Motor (2)			Rated Apparent Power	Losses at Rated Condition / Apparent Power
		690 V / 50-60 Hz	Inverter Complete	Front Part	690 V	
	Io,nom (HD)	P,nom	PL (inv)	PL (inv2)	So	pL (90,100)
	[Arms]	[hp/kW]	[W]	[W]	[kVA]	[%]
CFW900D02P9T6	2.7	3/2.2	240	71	3.2	6.9 %
CFW900D04P2T6	2.9	3/2.2	241	72	3.5	5.2 %
CFW900D07P0T6	3.9	4/3	258	74	4.7	4.2 %
CFW900D10P0T6	5.1	5.5/4	277	78	6.1	3.3 %
CFW900D12P0T6	7	7.5/5.5	309	82	8.4	2.9 %
CFW900D17P0T6	9	10/7.5	346	89	10.8	2.2 %
CFW900D22P0T6	13	15/11	419	99	15.5	1.9 %
CFW900D27P0T6	18	20/15	511	116	21.5	2.0 %
CFW900D32P0T6	21	25/18.5	509	116	25.1	1.6 %
CFW900D44P0T6	26	30/22	587	132	31.1	1.4 %
CFW900D54P0T6	34	40/30	519	120	40.6	1.1 %
CFW900D64P0T6	41	50/37	643	142	49	1.1 %
CFW900D80P0T6	49	60/45	757	159	58.6	1.1 %
CFW900D85P0T6	59	75/55	919	198	70.5	0.9 %
CFW900E0107T6	65	75/55	1175	205	77.7	1.2 %
CFW900E0130T6	81	100/75	1393	229	94.4	1.2 %
CFW900E0150T6	100	125/90	1641	276	119.5	1.1 %
CFW900E0176T6	120	150/110	1877	302	143.4	1.1 %
CFW900E0192T6	140	175/132	2245	361	167.3	1.1 %
CFW900G0242T6	167	220/160	3015	600	199.6	1.2 %
CFW900G0289T6	215	270/200	3600	708	256.9	1.1 %
CFW900G0336T6	264	350/260	4263	819	315.5	1.1 %
CFW900H0384T6	304	400/300	5426	1032	395.6	1.4 %
CFW900H0435T6	326	430/315	6370	1174	363.3	1.5 %
CFW900H0473T6	360	480/355	7376	1352	389.6	1.4 %

(1) Inverter efficiency rating: see Item 8.1.1 Input on page 113. Inverter losses at the other seven operating points specified by IEC61800-9-2 standard: see specific document on Ecodesign Directive. To determine losses for different motors, use the WEG Ecodrive app.
(2) Rated power values defined based on the rated current of WEG motors at the indicated voltages. Item 8.1.4 Environmental and Mechanical Data on page 115 indicates the maximum inverter ambient temperature considered for choosing the motor.

The permissible overload class curve for the inverters of the CFW900 line are shown in Figure 8.1 on page 123.

ATTENTION!
Apply one overload every five minutes at most.



(1) During operation at low output frequencies (fo < 5Hz), the overload fault actuation time can be reduced. If this occurs, refer to Section 6.3 PROTECTION, FAULT AND ALARM TABLE on page 84 of this manual for possible causes.

***Figure 8.1:** Permissible overload*

8.2 DEFINITIONS OF DERATING FACTORS

8.2.1 Introduction

This item of the manual deals with the derating that should be considered when sizing the inverter. In cases where more than one condition require the output current derating, the factors must be multiplied according to the equation below:

$$FD = FDta * FDfsw * FDal * FDothers$$

Where:

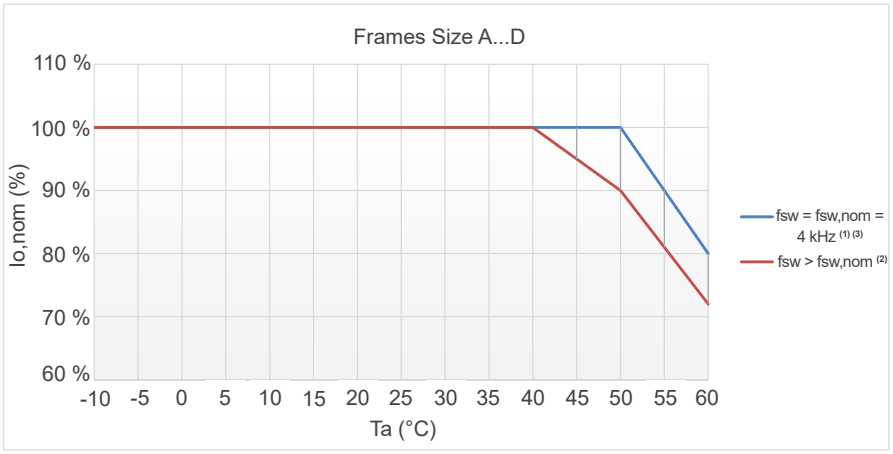
- FD is the total derating factor.
- FDta is the derating factor due to the inverter ambient temperature.
- FDfsw is the derating factor due to the user-set switching frequency.
- FDal is the derating factor due to installation altitude.
- FDothers is the derating factor due to other factors.

8.2.2 Derating Factor According to the Ambient Temperature (FDta)

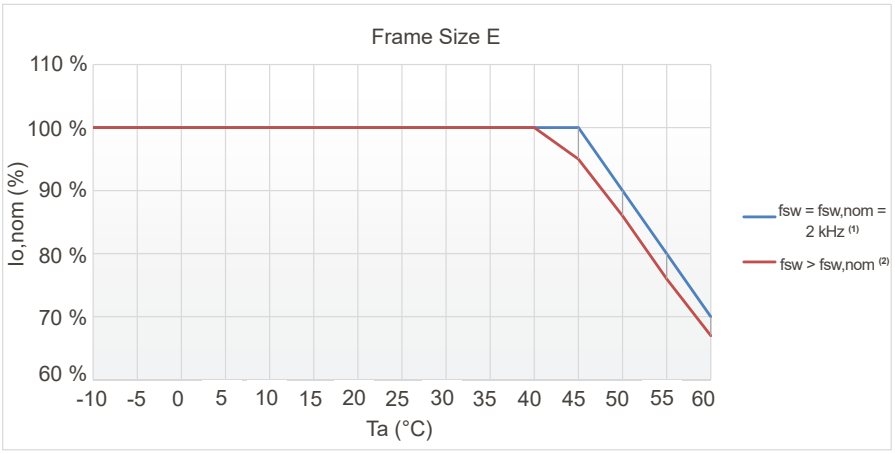
The nominal operating temperature range of the CFW900 is -10 °C to 50 °C (14 °F to 122 °F) for frames A ... D and -10 °C to 45 °C (14 °F to 113 °F) for frames E ... H, without the need to reduce the output current. This is valid considering the inverter factory settings (rated switching frequency and thermal management function enabled) (1) (2) (3). Otherwise, the maximum nominal ambient temperature is 40 °C (104 °F) (2).

(1) The thermal management function protects the inverter in overload situations through an smart control that limits the maximum temperature of the IGBTs. However, if it is not possible to operate with a switching frequency below the nominal one during overloads, the thermal management function must be disabled.
(2) If the thermal management function is disabled and the user switching frequency is set to a maximum of 2 kHz for frames A ... D (B2, T2, T4 and T5 lines), 1.5 kHz for frame D (T6 line) and frames E ... H, it is not necessary to apply current reduction for ambient temperatures up to 50 °C (122 °F) for frames A ... D and up to 45 °C (113 °F) for frames E ... H.
(3) If the thermal management function is disabled and the user switching frequency is greater than 2 kHz for frames A ... D (B2, T2, T4 and T5 lines), greater than 1.5 kHz for frame D (T6 line) and frames E ... H, it is necessary to apply current reduction for ambient temperatures above 40 °C (104 °F).

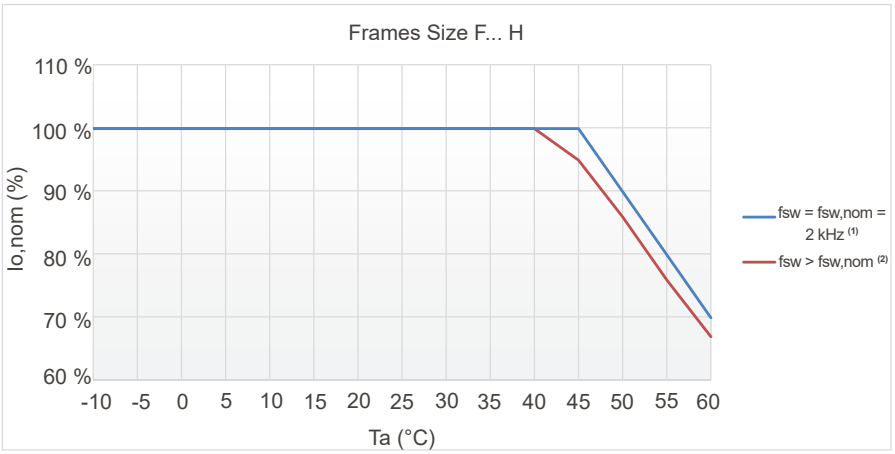
It is possible to operate CFW900 with an ambient temperature (Ta) above the rated one by applying current derating, as shown in Figure 8.2 on page 125. The maximum operating ambient temperature is specified in Item 8.1.4 Environmental and Mechanical Data on page 115 of this manual.



Ta (°C)	Frames A...D	
	fsw = fsw,nom = 4 kHz (1) (3)	fsw > fsw, nom (2)
-10	100 %	100 %
-5	100 %	100 %
0	100 %	100 %
5	100 %	100 %
10	100 %	100 %
15	100 %	100 %
20	100 %	100 %
25	100 %	100 %
30	100 %	100 %
35	100 %	100 %
40	100 %	100 %
45	100 %	95 %
50	100 %	90 %
55	90 %	81 %
60	80 %	72 %



Ta (°C)	Frame E	
	fsw = fsw,nom = 2 kHz (1)	fsw > fsw, nom (2)
-10	100 %	100 %
-5	100 %	100 %
0	100 %	100 %
5	100 %	100 %
10	100 %	100 %
15	100 %	100 %
20	100 %	100 %
25	100 %	100 %
30	100 %	100 %
35	100 %	100 %
40	100 %	100 %
45	100 %	95 %
50	90 %	86 %
55	80 %	76 %
60	70 %	67 %



Ta (°C)	Frames F...H	
	fsw = fsw,nom = 2 kHz (1)	fsw > fsw, nom (2)
-10	100 %	100 %
-5	100 %	100 %
0	100 %	100 %
5	100 %	100 %
10	100 %	100 %
15	100 %	100 %
20	100 %	100 %
25	100 %	100 %
30	100 %	100 %
35	100 %	100 %
40	100 %	100 %
45	100 %	95 %
50	90 %	86 %
55	80 %	76 %
60	70 %	67 %

(1) With the inverter thermal management function enabled (if disabled see note (2) below) or fsw ≤ 2 kHz to frame sizes A...D (lines B2, T2, T4, and T5) and fsw ≤ 1.5 kHz, to frame size D line T6 and to frame sizes E ... H (in this case regardless of the inverter thermal management function).
(2) This curve must also be used when fsw = fsw,nom and the inverter thermal management function is disabled.
(3) The nominal switching frequency for models CFW900D54P0T6, CFW900D64P0T6, CFW900D80P0T6 and CFW900D85P0T6 is equal to 2 kHz.

Figure 8.2: *Current derating according to the ambient temperature (note that the current derating also depends on the switching frequency (fsw) set in parameter C1.3.1 (User Switching Frequency))*

8.2.3 Derating Factor According to the Switching Frequency (FDfsw)

The nominal and maximum switching frequencies of the CFW900 are defined in Item 8.1.2 Output on page 114. It is possible to operate at a frequency above the nominal, while respecting the maximum frequency limit. However, in these cases, it is necessary to apply a reduction in the output current, as indicated in Table 8.13 on page 126, Table 8.14 on page 127, Table 8.15 on page 128 and Table 8.16 on page 129.

Table 8.13: Reduction in output current as a function of switching frequency for B2 and T2 lines

Inverter Model	Rated Output Current		Reduction Factor According to Switching Frequency												
	Io,nom (ND) [Arms]	Io,nom (HD) [Arms]	1 kHz	1.5 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	7 kHz	8 kHz	10 kHz	12 kHz	14 kHz	16 kHz
CFW900A04P6B2	4.6	4.6	-	100 %	100 %	100 %	100 %	94 %	88 %	81 %	75 %	68 %	61 %	54 %	47 %
CFW900A04P6T2	4.6	4.6	-	100 %	100 %	100 %	100 %	98 %	95 %	93 %	90 %	86 %	83 %	79 %	75 %
CFW900A06P0B2	6	6	-	100 %	100 %	100 %	100 %	97 %	94 %	90 %	87 %	82 %	76 %	71 %	65 %
CFW900A06P0T2	6	5	-	100 %	100 %	100 %	100 %	98 %	95 %	93 %	90 %	86 %	83 %	79 %	75 %
CFW900A07P5B2	7.5	7.5	-	100 %	100 %	100 %	100 %	98 %	95 %	93 %	90 %	84 %	77 %	71 %	64 %
CFW900A07P5T2	7.5	6.8	-	100 %	100 %	100 %	100 %	97 %	93 %	90 %	87 %	81 %	76 %	71 %	65 %
CFW900A10P0B2	10	10	-	100 %	100 %	100 %	100 %	94 %	88 %	82 %	76 %	68 %	61 %	53 %	45 %
CFW900A10P6T2	10.6	9.6	-	100 %	100 %	100 %	100 %	96 %	92 %	87 %	83 %	78 %	73 %	67 %	62 %
CFW900A13P0T2	13	11	-	100 %	100 %	100 %	100 %	96 %	92 %	87 %	83 %	78 %	72 %	67 %	62 %
CFW900A19P0T2	19	16	-	100 %	100 %	100 %	100 %	96 %	92 %	88 %	84 %	77 %	70 %	63 %	55 %
CFW900B26P0T2	26	22	-	100 %	100 %	100 %	100 %	96 %	92 %	88 %	85 %	80 %	75 %	70 %	65 %
CFW900B34P0T2	34	28	-	100 %	100 %	100 %	100 %	95 %	90 %	85 %	79 %	73 %	67 %	61 %	54 %
CFW900B45P0T2	45	35	-	100 %	100 %	100 %	100 %	96 %	92 %	88 %	84 %	77 %	71 %	65 %	59 %
CFW900C56P0T2	56	47	-	100 %	100 %	100 %	100 %	96 %	93 %	89 %	86 %	80 %	75 %	70 %	64 %
CFW900C70P0T2	70	59	-	100 %	100 %	100 %	100 % (96 %) (1)	96 % (93 %) (1)	92 % (90 %) (1)	88 % (87 %) (1)	84 %	79 %	74 %	69 %	64 %
CFW900C80P0T2	80	70	-	100 %	100 %	100 %	100 % (98 %) (1)	96 % (94 %) (1)	91 % (90 %) (1)	87 % (86 %) (1)	83 %	76 %	70 %	64 %	58 %
CFW900D0110T2	110	92	-	100 %	100 %	100 %	100 %	96 %	93 %	89 %	85 %	78 %	70 %	62 %	55 %
CFW900D0135T2	135	110	-	100 %	100 %	100 %	100 %	96 %	92 %	88 %	84 %	78 %	72 %	66 %	59 %
CFW900D0150T2	150	124	-	100 %	100 %	100 %	100 %	97 %	93 %	90%	86 %	80 %	73 %	67 %	60 %
CFW900E0172T2	172	150	100 %	100 %	100 %	94 %	87 %	82 %	78 %	73 %	68 %	-	-	-	-
CFW900E0195T2	195	160	100 %	100 %	100 %	95 %	90 %	85 %	80 %	75 %	70 %	-	-	-	-
CFW900E0250T2	250	211	100 %	100 %	100 %	94 %	88 %	83 %	77 %	72 %	66 %	-	-	-	-
CFW900F0315T2	315	263	100 %	100 %	100 %	100 %	100 %	97 %	93 %	-	-	-	-	-	-
CFW900F0370T2	370	315	100 %	100 %	100 %	95 %	90 %	84 %	78 %	-	-	-	-	-	-

(1) With thermal management disabled, the factor in parentheses is taken into account.

Table 8.14: *Reduction in output current as a function of switching frequency for T4 line*

Inverter Model	Rated Output Current		Reduction Factor According to Switching Frequency												
	Io,nom (ND)	Io,nom (HD)	1 kHz	1.5 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	7 kHz	8 kHz	10 kHz	12 kHz	14 kHz	16 kHz
	[Arms]	[Arms]													
CFW900A02P8T4	2.8	2.4	-	100 %	100 %	100 %	100 %	95 %	90 %	85 %	80 %	73 %	65 %	58 %	50 %
CFW900A03P6T4	3.6	2.8	-	100 %	100 %	100 %	100 %	95 %	90 %	85 %	80 %	73 %	65 %	58 %	50 %
CFW900A04P8T4	4.8	3.9	-	100 %	100 %	100 %	100 %	95 %	90 %	85 %	80 %	73 %	65 %	58 %	50 %
CFW900A06P5T4	6.5	5.3	-	100 %	100 %	100 %	100 %	95 %	90 %	85 %	80 %	72 %	63 %	55 %	46 %
CFW900A09P6T4	9.6	8	-	100 %	100 %	100 %	100 %	95 %	90 %	84 %	79 %	72 %	65 %	58 %	51 %
CFW900A14P0T4	14	12	-	100 %	100 %	100 %	100 %	93 %	87 %	80 %	74 %	65 %	57 %	48 %	40 %
CFW900A17P0T4	17	15	-	100 %	100 %	100 %	100 %	93 %	85 %	78 %	70 %	63 %	55 %	48 %	40 %
CFW900B26P0T4	26	21	-	100 %	100 %	100 %	100 %	94 %	87 %	81 %	74 %	67 %	59 %	52 %	44 %
CFW900B33P0T4	33	28	-	100 %	100 %	100 %	100 %	93 %	86 %	80 %	73 %	65 %	57 %	50 %	42 %
CFW900B39P0T4	39	33	-	100 %	100 %	100 %	100 %	92 %	85 %	77 %	69 %	61 %	53 %	45 %	37 %
CFW900C50P0T4	50	40	-	100 %	100 %	100 %	100 % (89 %) (1)	92 % (84 %) (1)	84 % (78 %) (1)	75 % (73 %) (1)	67 %	61 %	56 %	50 %	44 %
CFW900C62P0T4	62	50	-	100 %	100 %	100 %	100 % (95 %) (1)	92 % (88 %) (1)	83 % (81 %) (1)	75 % (74 %) (1)	67 %	59 %	52 %	44 %	37 %
CFW900C74P0T4	74	62	-	100 %	100 %	100 %	100 % (93 %) (1)	91 % (86 %) (1)	81 % (78 %) (1)	72 % (70 %) (1)	63 %	56 %	48 %	41 %	34 %
CFW900D0096T4	96	75	-	100 %	100 %	100 %	100 %	93 %	85 %	78 %	71 %	64 %	56 %	49 %	42 %
CFW900D0124T4	124	103	-	100 %	100 %	100 %	100 %	92 %	85 %	77 %	69 %	61 %	54 %	46 %	38 %
CFW900D0146T4	146	124	-	100 %	100 %	100 %	100 % (94 %) (1)	92 % (87 %) (1)	84 % (80 %) (1)	75 % (74 %) (1)	67 %	60 %	54 %	47 %	40 %
CFW900E0172T4	172	146	100 %	100 %	100 %	89 %	78 %	72 %	65 %	58 %	51 %	-	-	-	-
CFW900E0203T4	203	156	100 %	100 %	100 % (98 %) (1)	91 % (90 %) (1)	81 %	74 %	67 %	61 %	54 %	-	-	-	-
CFW900E0242T4	242	190	100 %	100 %	100 % (96 %) (1)	89 % (87 %) (1)	77 %	70 %	63 %	57 %	50 %	-	-	-	-
CFW900F0315T4	315	263	100 %	100 %	100 %	91 %	82 %	74 %	65 %	-	-	-	-	-	-
CFW900F0370T4	370	315	100 %	100 %	100 % (96 %) (1)	87 % (85 %) (1)	74 %	67 %	59 %	-	-	-	-	-	-
CFW900G0430T4	430	370	100 %	100 %	100 %	98 %	96 %	88 %	80 %	72 %	-	-	-	-	-
CFW900G0480T4	480	430	100 %	100 %	100 %	90 %	80 %	73 %	66 %	59 %	-	-	-	-	-
CFW900G0540T4	540	480	100 %	100 %	100 %	88 %	76 %	67 %	58 %	49 %	-	-	-	-	-
CFW900G0601T4	601	515	100 %	100 %	100 % (96 %) (1)	85 % (83 %) (1)	70 %	61 %	53 %	44 %	-	-	-	-	-
CFW900H0760T4	760	601	100 %	100 %	100 % (96 %) (1)	85 % (83 %) (1)	69 %	61 %	54 %	46 %	-	-	-	-	-

(1) With thermal management disabled, the factor in parentheses is taken into account.

Table 8.15: Reduction in output current as a function of switching frequency for T5 line

Inverter Model	Rated Output Current		Reduction Factor According to Switching Frequency												
	Io,nom (ND) [Arms]	Io,nom (HD) [Arms]	1 kHz	1.5 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	7 kHz	8 kHz	10 kHz	12 kHz	14 kHz	16 kHz
CFW900B02P9T5	2.9	2.7	-	100 %	100 %	100 %	100 %	95 %	90 %	84 %	79 %	72 %	66 %	59 %	52 %
CFW900B04P2T5	4.2	2.9	-	100 %	100 %	100 %	100 %	91 %	82 %	73 %	64 %	57 %	50 %	43 %	36 %
CFW900B07P0T5	7	4.2	-	100 %	100 %	100 %	100 %	92 %	84 %	75 %	67 %	59 %	52 %	44 %	36 %
CFW900B10P0T5	10	7	-	100 %	100 %	100 %	100 %	95 %	90 %	85 %	80 %	71 %	63 %	54 %	45 %
CFW900B12P0T5	12	10	-	100 %	100 %	100 %	100 %	96 %	92 %	87 %	83 %	77 %	72 %	66 %	60 %
CFW900B17P0T5	17	12	-	100 %	100 %	100 %	100 %	90 %	81 %	71 %	61 %	53 %	45 %	37 %	29 %
CFW900B22P0T5	22	17	-	100 %	100 %	100 %	100 %	90 %	80 %	69 %	59 %	52 %	45 %	37 %	30 %
CFW900B27P0T5	27	22	-	100 %	100 %	100 %	100 %	94 %	87 %	81 %	74 %	63 %	53 %	42 %	31 %
CFW900C32P0T5	32	27	-	100 %	100 %	100 %	100 %	93 %	86 %	79 %	72 %	65 %	58 %	51 %	44 %
CFW900C44P0T5	44	32	-	100 %	100 %	100 %	100 % (99 %) (1)	92 %	85 % (84 %) (1)	77 %	69 %	63 %	57 %	51 %	45 %
CFW900C54P0T5	54	44	-	100 %	100 %	100 %	100 % (96 %) (1)	90 % (87 %) (1)	81 % (79 %) (1)	71 % (70 %) (1)	61 %	53 %	46 %	38 %	30 %

(1) With thermal management disabled, the factor in parentheses is taken into account.

Table 8.16: *Reduction in output current as a function of switching frequency for T6 line*

Inverter Model	Rated Output Current for 500...600 Vac		Rated Output Current for 660...690 Vac		Reduction Factor According to Switching Frequency								
	Io,nom (ND)	Io,nom (HD)	Io,nom (ND)	Io,nom (HD)	1 kHz	1.5 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	7 kHz	8 kHz
	[Arms]	[Arms]	[Arms]	[Arms]									
CFW900D02P9T6	2.9	2.7	2.9	2.7	100 %	100 %	100 %	100 %	100 %	94 %	89 %	83 %	77 %
CFW900D04P2T6	4.2	2.9	3.9	2.9	100 %	100 %	100 %	100 %	100 %	94 %	89 %	83 %	77 %
CFW900D07P0T6	7	4.2	5.1	3.9	100 %	100 %	100 %	100 %	100 %	94 %	89 %	83 %	77 %
CFW900D10P0T6	10	7	7	5.1	100 %	100 %	100 %	100 %	100 %	94 %	89 %	83 %	77 %
CFW900D12P0T6	12	10	9	7	100 %	100 %	100 %	100 %	100 %	94 %	89 %	83 %	77 %
CFW900D17P0T6	17	12	13	9	100 %	100 %	100 %	100 %	100 %	94 %	89 %	83 %	77 %
CFW900D22P0T6	22	17	18	13	100 %	100 %	100 %	100 %	100 %	94 %	89 %	83 %	77 %
CFW900D27P0T6	27	22	21	18	100 %	100 %	100 %	100 %	100 %	94 %	89 %	83 %	77 %
CFW900D32P0T6	32	27	26	21	100 %	100 %	100 %	100 %	100 %	89 %	77 %	66 %	54 %
CFW900D44P0T6	44	32	34	26	100 %	100 %	100 %	100 %	100 %	89 %	77 %	66 %	54 %
CFW900D54P0T6	54	44	41	34	100 %	100 %	100 %	94 %	87 %	79 %	71 %	62 %	54 %
CFW900D64P0T6	64	54	49	41	100 %	100 %	100 %	84 %	67 %	61 %	54 %	48 %	41 %
CFW900D80P0T6	80	64	59	49	100 %	100 %	100 %	84 %	67 %	61 %	54 %	48 %	41 %
CFW900D85P0T6	85	80	81	59	100 %	100 %	100 %	84 %	67 %	61 %	54 %	48 %	41 %
CFW900E0107T6	107	89	81	65	100 %	100 %	100 %	87 %	73 %	63 %	54 %	44 %	34 %
CFW900E0130T6	130	107	100	81	100 %	100 %	100 %	88 %	75 %	66 %	57 %	47 %	38 %
CFW900E0150T6	150	130	120	100	100 %	100 %	100 %	89 %	78 %	69 %	59 %	50 %	40 %
CFW900E0176T6	176	154	140	120	100 %	100 %	100 %	87 %	74 %	64 %	55 %	45 %	35 %
CFW900E0192T6	192	154	170	140	100 %	100 %	100 %	85 %	70 %	61 %	52 %	43 %	34 %
CFW900G0242T6	242	192	215	167	100 %	100 %	100 %	82 %	64 %	57 %	49 %	34 %	-
CFW900G0289T6	289	242	265	215	100 %	100 %	100 %	83 %	66 %	58 %	50 %	34 %	-
CFW900G0336T6	336	289	326	264	100 %	100 %	100 % (97 %) (1)	82 %	63 %	56 %	49 %	34 %	-
CFW900H0384T6	384	336	326	264	100 %	100 %	100 %	82 %	63 %	57 %	50 %	37 %	-
CFW900H0435T6	435	384	360	326	100 %	100 %	100 %	80 %	60 %	53 %	45 %	30 %	-
CFW900H0473T6	473	435	427	360	100 %	100 %	100 % (95 %) (1)	98 %	95 %	78 %	62 %	28 %	-

(1) With thermal management disabled, the factor in parentheses is taken into account.

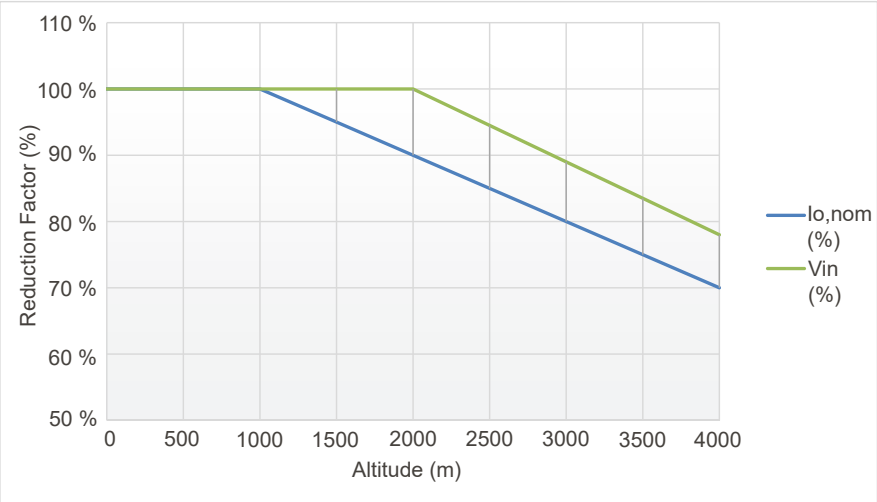
8.2.4 Derating Factor According to the Altitude of the Installation Site (FDal)

The maximum operating altitude is 1000 meters under rated conditions.

From 1000 m to 4000 m: derate the current by 1 % for each increment of 100 m (this is the FDal factor).

From 2000 m to 4000 m: in addition to applying the current derating factor as mentioned above, it is necessary to reduce the maximum rms supply voltage of the inverter (240 V for 220...240 V models, 480 V for 380...480 V models, 600 V for 500...600 V models and 690 V for 500...690 V models) by 1.1 % for each 100 m above 2000 m.

Figure 8.3 on page 130 graphically illustrates the output current and supply voltage derating specifications according to the altitude.



Altitude (m)	Io,nom (%)	Vin (%)
0	100 %	100 %
500	100 %	100 %
1000	100 %	100 %
1500	95 %	100 %
2000	90 %	100 %
2500	85 %	95 %
3000	80 %	89 %
3500	75 %	84 %
4000	70 %	78 %

Figure 8.3: *Current derating as a function of the installation altitude*

8.2.5 Other Derating Factors

There are factors related to the inverter application that require rated current derating. In these cases, WEG must be consulted.

- Prolonged inverter operation at low output frequencies (<5 Hz).
- Repetitive cycle applications with high motor current at low speeds (e.g., accelerations and decelerations).

The current derating factor must be set in the C1.6.4 parameter (Manual Reduction Inom).

8.2.6 Example of Using Current Reduction Factors

Consider a normal duty (ND) application for an inverter with the following specifications:

- Input voltage: Vin = 400 Vac.
- Maximum output current: Io = 100 A.
- Switching frequency: fsw = 6 kHz.
- Installation altitude: 1500 m.

The purpose is to determine which inverter model is suitable for this application. Firstly, by analyzing the Table 8.7 on page 118, it can be seen that the CFW900D0124T4 model has a rated current for normal use of Io,nom (ND) = 124 A. The reduction factors for the specified conditions are:

- FDta: For ambient temperature of 50 °C (122 °F) and switching frequency higher than nominal (fsw > fsw,nom), the reduction factor is FDta = 90 % (see Figure 8.2 on page 125).

- FDfsw: For a switching frequency of 6 kHz, the reduction factor is FDfsw = 85 % (see Table 8.14 on page 127).
- FDal: For installation altitude of 1500 m, the reduction factor is FDal = 95 % (see Figure 8.3 on page 130).
- FDothers: No other adverse conditions, FDothers = 100 %.

Thus, the total reduction factor is:

$$FD = FDta * FDfsw * FDal * FDothers$$

$$FD = 90\ \% * 85\ \% * 95\ \% * 100\ \% = 72.7\ \%$$

The rated current of this model under the specified conditions is:

$$Io,nom = Io,nom\ (ND) * FD$$

$$Io,nom = 124\ A * 72.7\ \% = 90.1\ A$$

Therefore, model CFW900D0124T4 does not satisfy the specification because after applying the correction factors, the rated current is less than 100 A. To satisfy this demand, we turned to the CFW900D0146T4 model, which has a rated current of Io,nom (ND) = 146 A. The reduction factors for this model are:

- FDta: For ambient temperature of 50 °C (122 °F) and fsw > fsw,nom, the reduction factor is FDta = 90 % (see Figure 8.2 on page 125).
- FDfsw: For a switching frequency of 6 kHz, the reduction factor is FDfsw = 84 % (see Table 8.14 on page 127).
- FDal: For installation altitude of 1500 m, the reduction factor is FDal = 95 % (see Figure 8.3 on page 130).
- FDothers: No other adverse conditions, FDothers = 100 %.

The total reduction factor is:

$$FD = FDta * FDfsw * FDal * FDothers$$

$$FD = 90\ \% * 84\ \% * 95\ \% * 100\ \% = 71.8\ \%$$

Therefore, the rated current of model CFW900D0146T4 under the specified conditions is:

$$Io,nom = Io,nom\ (ND) * FD$$

$$Io,nom = 146\ A * 71.8\ \% = 104.9\ A$$

Therefore, the CFW900D0146T4 model satisfies the application requirements with the reduction factors applied.

8.3 INVERTER CONTROL DATA

8.3.1 General Control Specifications

Table 8.17: *Control circuit data*

Motor control	Method	■ Type of control: - V/f (Scalar) - VVW+: Voltage vector control - Vector control with encoder - Sensorless vector control (without encoder)
	Supported motors	■ Induction motor ■ Permanent magnet motor
	Modulation	■ SVPWM space vector PWM standard ■ PWM optimized for long output cables ■ Discontinuous PWM
	Measurements and indications	■ Current measurement accuracy: 5 % of the rated current ■ Speed resolution: 1 rpm ■ Built-in real-time clock
Safety	Inverter Protection	■ Output overcurrent/short-circuit ■ Under/overvoltage ■ Phase loss Overtemperature ■ Overload on the motor, braking resistor and IGBTs ■ External Fault/Alarm ■ Output phase-ground short-circuit
	Functions	■ Built-in STO and SS1-t functions: See the safety manual
Integral Keypad (HMI)		■ 12 operator keys: Run/Stop, Direction of Rotation, Jog, Local/ Remote and browsing buttons: Left, Right, Up, Down, Enter, Back and Help ■ Graphical LCD display ■ View/edition of all parameters ■ Option of external mounting, using: - Unshielded pin-to-pin DB9 cable up to 20 m - Shielded pin-to-pin DB9 cable up to 100 m ■ Communication with smartphone using Bluetooth (for models equipped with CFW900-HMI-BLT) ■ USB communication with PC using WEG WPS ■ Allows powering the HMI and the control board through the USB port for inverter parameterization without powering up the network or DC link
MicroSD card slot		■ One microSD card slot ■ Card requirements: - Maximum size of 32 GB - Industrial Temperature (-40 °C (-104 °F) to 85 °C (185 °F)) - FAT32 file system ■ Miscellaneous functions: see programming manual ■ MicroSD card not included

8.3.2 Input and Output Specifications

Table 8.18: *Characteristics of analog and digital inputs and outputs (XC1)*

Digital input DI1 to DI4	■ 4 isolated digital inputs ■ Low level: Vdc -3 V to 5 V, I < 1.5 mA ■ High level: Vdc > 11 V, I > 2 mA ■ Current 8 mA@24 V (Typical) ■ Maximum voltage: 30 Vdc ■ Maximum current: 11 mA@30 Vdc
Digital input DI5 and DI6	■ 2 isolated digital inputs ■ Low level: Vdc -3 V to 5 V, I < 0.5 mA ■ High level: Vdc > 15 V, I > 2 mA ■ Current 10 mA@24 V (Typical) ■ Maximum voltage: 30 Vdc ■ Maximum current: 13 mA@30 Vdc ■ Maximum frequency: 32 kHz ■ Input for encoder signals (maximum cable length of 3 m)
Analog inputs	■ 2 differential analog inputs ■ Isolated from power circuits ■ Levels: -10/0 to 10 V (11 bits + sign), 0/4 to 20 mA (10 bits) ■ Maximum voltage: 30 V ■ Maximum current: 25 mA ■ Impedance: 400 kΩ (voltage mode), 250 Ω (current mode) ■ Maximum common mode voltage: 10 V
Digital outputs	■ 2 transistor digital outputs (NPN) ■ Isolated from power circuits ■ Maximum current: 40 mA ■ Protected against short circuit to the GND ■ Maximum voltage: 24 Vdc ■ With freewheeling diode for 24 Vdc power supply ■ Maximum frequency: 32 kHz
Analog outputs	■ 2 analog outputs ■ Isolated from power circuits ■ Levels: 0 to 10 V (12 bits), 0/4 to 20 mA (12 bits) ■ Load: R_L ≥ 1 k Ω (voltage mode), R_L ≤ 600 Ω (current mode)

Table 8.19: *Characteristics of the inputs and outputs of the internal safety module (XC2)*

STO1 and STO2 digital inputs	■ Redundant inputs for OSSD signals or dry contact signals
SP1 and SP2 test digital outputs	■ Outputs to power dry contact
24 VS power supply input	■ Input for 24 V power supply ± 15 % to the internal safety module

(*) For more details, see the safety manual.

Table 8.20: *Characteristics of the CFW900-REL-01 (XC30)*

Relay outputs	■ 2 relay outputs with NO contact ■ 1 relay output with NO/NC contact ■ Maximum voltage: 30 Vdc, 250 Vac, overvoltage category (OVC) III ■ Maximum current: 2 A ■ Minimum current: 10 mA@5 Vdc ■ 400 V Transient Voltage Supressor (TVS) between contacts

8.3.3 Specifications of the Communication Networks

Table 8.21: *Communication network data*

RS-485	■ Isolated RS-485 Interface ■ Modbus RTU Protocol ■ Can be used to program the inverter via WEG WPS software application
Dual port Ethernet network	■ Two RJ-45 Ethernet connectors ■ 10/100 Mbps data rate with built-in dual port switch ■ Protocols: MQTT, Modbus TCP and EtherNet/IP ■ Can be used to program the inverter via WEG WPS software application

8.4 STANDARDS AND CERTIFICATIONS

Table 8.22: *Specification of standards and certifications met*

Safety Standards	UL61800-5-1 - "Adjustable Speed Electrical Power Drive Systems - Part 5-1: Safety Requirements - Electrical, Thermal and Energy" **Note:** "Suitable for Installation in a compartment handling conditioned air"
	EN 61800-5-1 - "Safety requirements electrical, thermal and energy"
	EN 50178 - "Electronic equipment for use in power installations"
Specification Standards	EN 60146 (IEC 146) - "Semiconductor converters"
	EN 61800-2 - "Adjustable speed electrical power drive systems - Part 2: general requirements - Rating specifications for low voltage adjustable frequency AC power drive systems"
Electromagnetic Compatibility Standards (EMC)	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
	EN 61000-4-2 - "Electromagnetic compatibility (EMC) - Part 4: testing and measurement techniques - Sec. 2: electrostatic discharge immunity test"
	EN 61000-4-3 - "Electromagnetic compatibility (EMC) - Part 4: testing and measurement techniques - Sec. 3: radiated, radio-frequency, electromagnetic field immunity test"
	EN 61000-4-4 - "Electromagnetic compatibility (EMC) - Part 4: testing and measurement techniques - Sec. 4: electrical fast transient/burst immunity test"
	EN 61000-4-5 - "Electromagnetic compatibility (EMC) - Part 4: testing and measurement techniques - Sec. 5: surge immunity test"
	EN 61000-4-6 - "Electromagnetic compatibility (EMC) - Part 4: testing and measurement techniques - Sec. 6: immunity to conducted disturbances, induced by radio-frequency fields"
	EN 61000-4-11 - "Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests"
Frame Standards	EN 60529 - "Degrees of protection provided by enclosures (IP code)"
	UL 50 - "Enclosures for electrical equipment"
	IEC 60068-2-6 - "Vibration profile settings: Acceleration range: 10 Hz to 57 Hz: 0.075 mm of constant displacement; 57 Hz to 150 Hz: 1.0 g of constant acceleration Uncertainty: ± 2.5 % Sweep rate of 1 octave/min (± 10 %) Test duration: Ten sweeps cycles on each perpendicular axis (3 in total)"
	IEC 60068-2-27 - "Shock profile settings: Acceleration peak: 50 m/s^2 (5g); Pulse duration: 30 ms Type of Shock: Half-Sine Application: Three shocks in each direction per axis, on three mutually perpendicular axes (total of 18 shocks)"
Ecodesign Standards	IEC 61800-9-2 Parts 1 & 2 - "Adjustable speed electrical power drive systems - Ecodesign for power drive systems, motor starters, power electronics and their driven applications"
Functional Safety Standards	EN 61800-5-2 - Adjustable speed electrical power drive systems - Part 5-2: Safety requirements - Functional
	EN ISO 13849-1 - Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design
	EN 62061 - Safety of machinery - Functional safety of safety-related control systems
	IEC 61508 Parts 1-7 - Functional safety of electrical/electronic/programmable electronic safety-related systems
	EN 60204-1 - Safety of machinery - Electrical equipment of machines - Part 1: General requirements
Directives	
Low-Voltage	2014/35/EU
EMC	2014/30/EU
RoHS	2011/65/EU 2015/863/EU
Ecodesign	2009/125/EC
Machinery	2006/42/EC
Certifications	
UL and cUL	E184430
CE	
Functional Safety	TÜV Rheinland Certificate Reg.-Nº.: 01/205/5867

8.5 MECHANICAL DATA

8.5.1 Frame Size A

Model	Weight (Mass) kg/lb
CFW900A	4.5 / 9.9

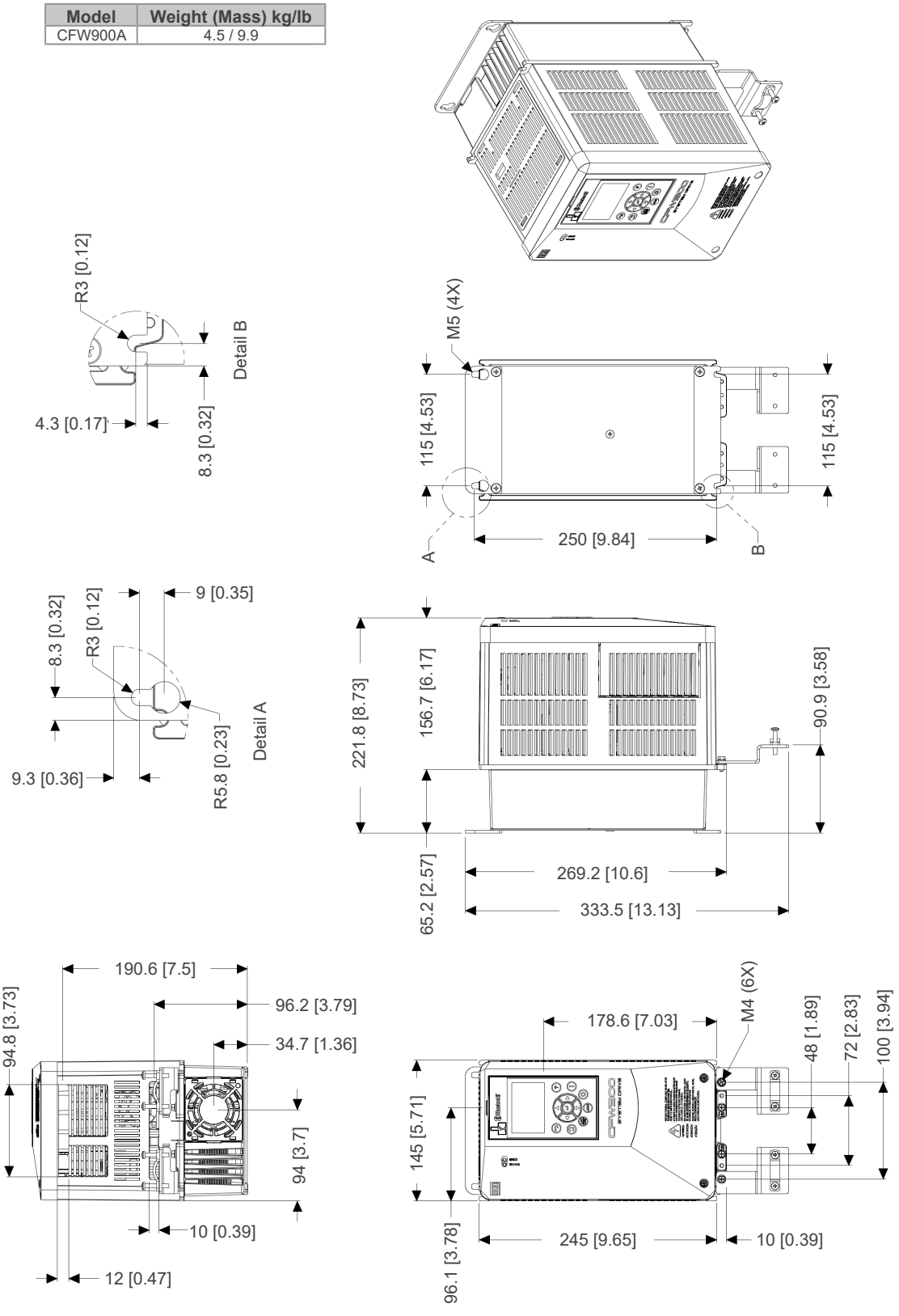


Figure 8.4: *Dimensions for frame A - mm [in]*

8.5.2 Frame Size B

Model	Weight (Mass) kg/lb
CFW900B	10.0 / 22.0

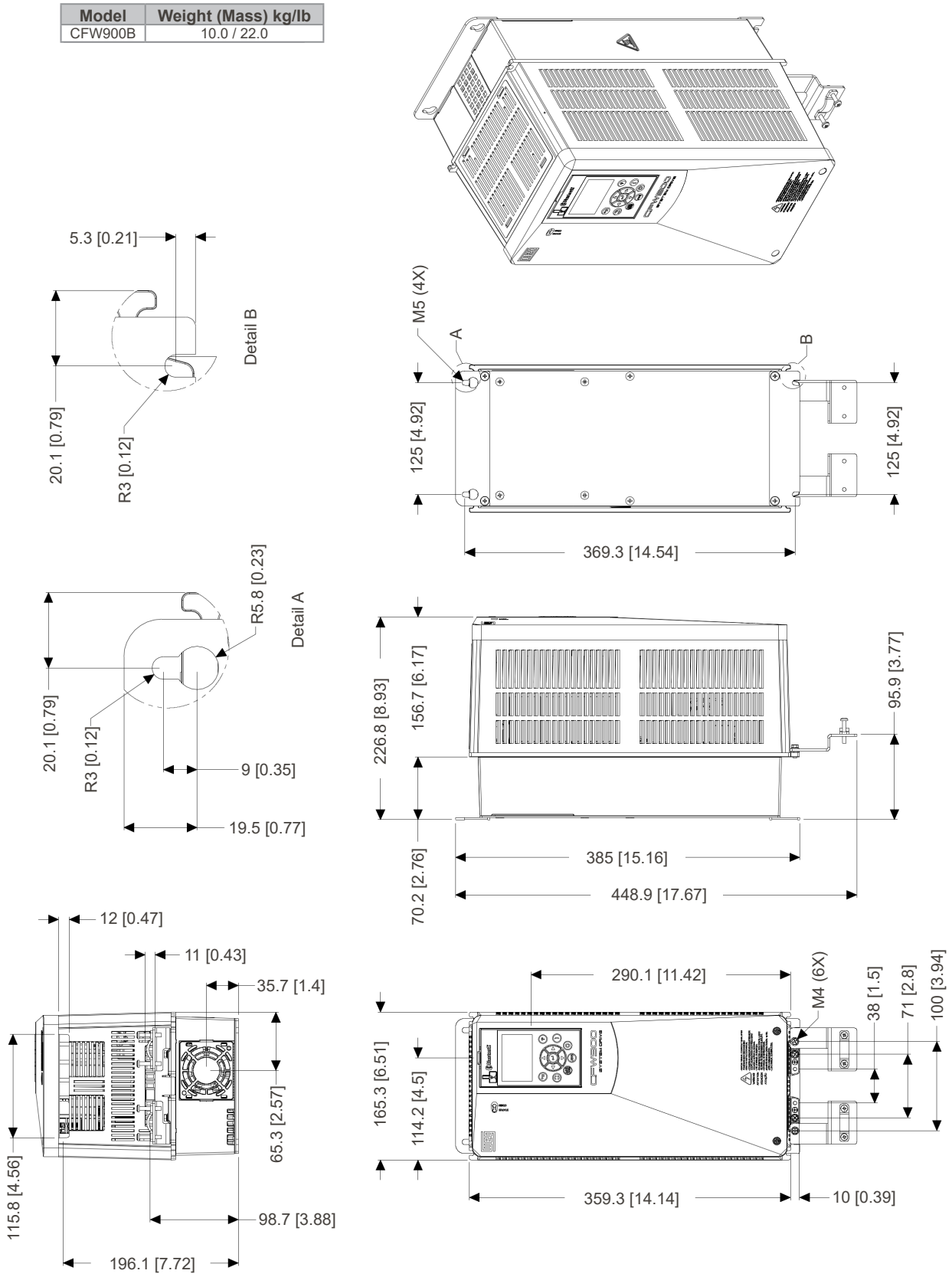


Figure 8.5: *Dimensions for frame B - mm [in]*

8.5.3 Frame Size C

Model	Weight (Mass) kg/lb
CFW900C	20.5 / 45.2

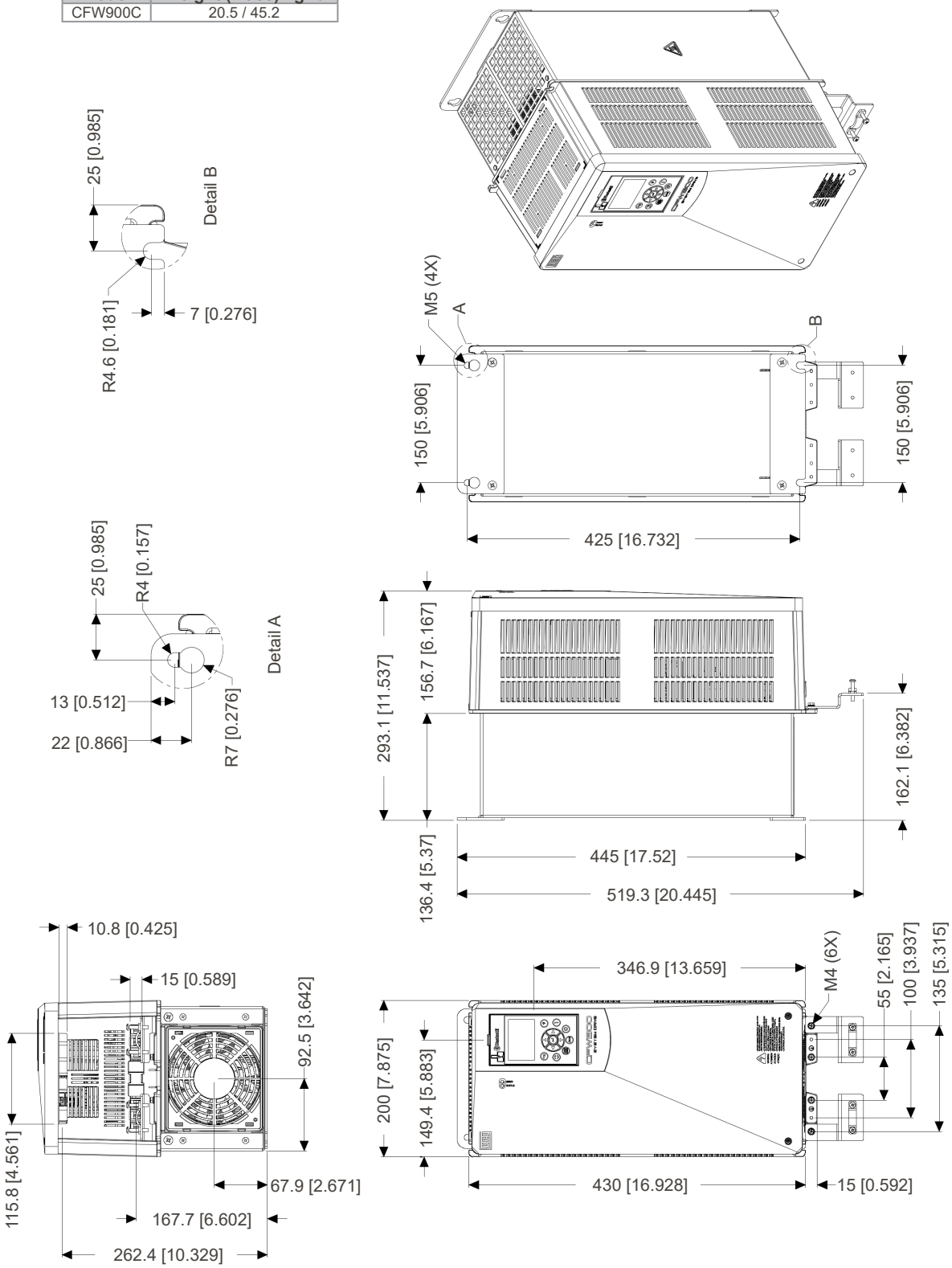
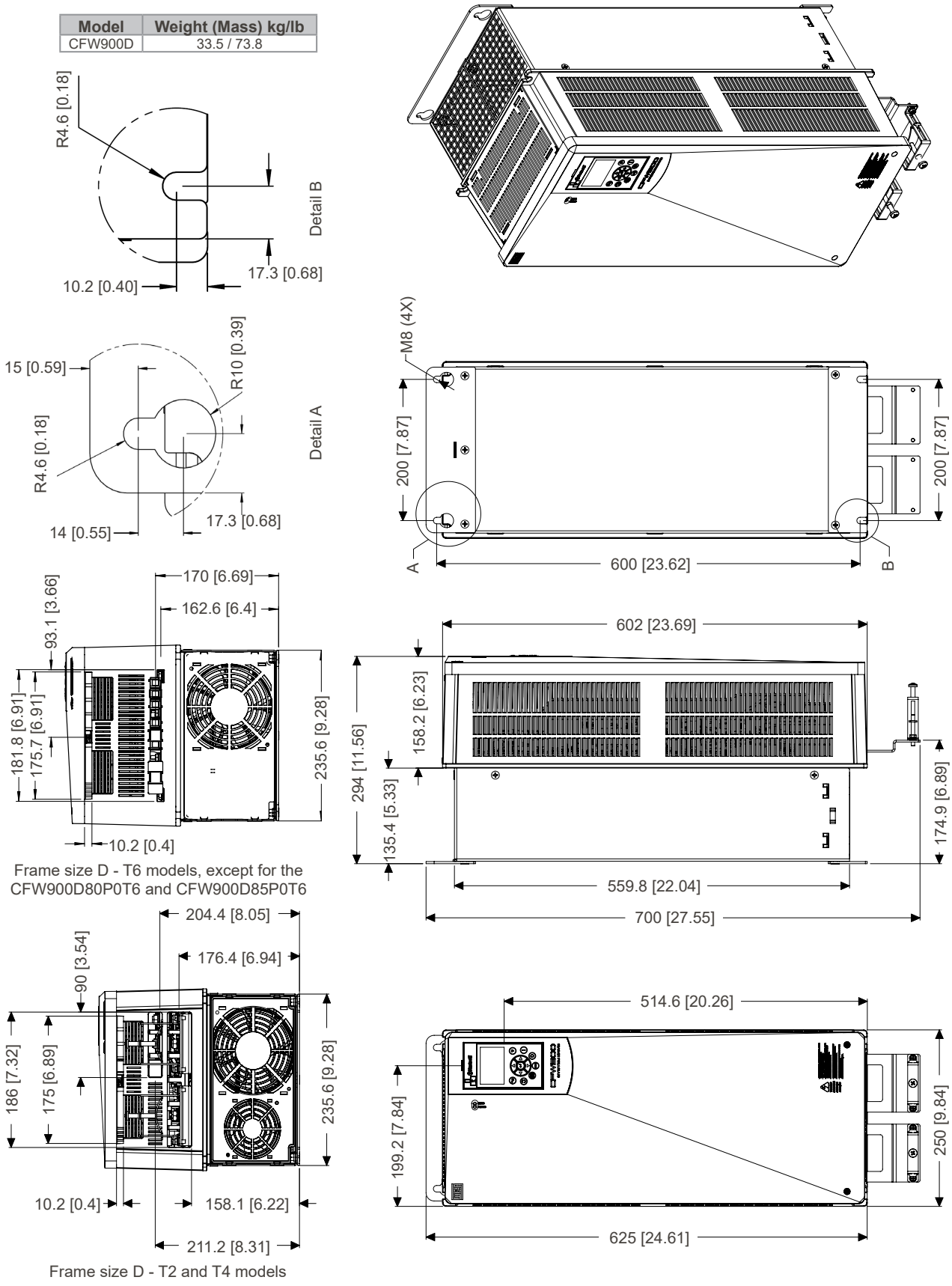


Figure 8.6: *Dimensions for frame C - mm [in]*

8.5.4 Frame Size D (Except for the models CFW900D80P0T6 and CFW900D85P0T6)

Model	Weight (Mass) kg/lb
CFW900D	33.5 / 73.8



Frame size D - T6 models, except for the CFW900D80P0T6 and CFW900D85P0T6

Frame size D - T2 and T4 models

Figure 8.7: *Dimensions for frame D - mm [in]*

8.5.5 Frame Size D - Models CFW900D80P0T6 and CFW900D85P0T6

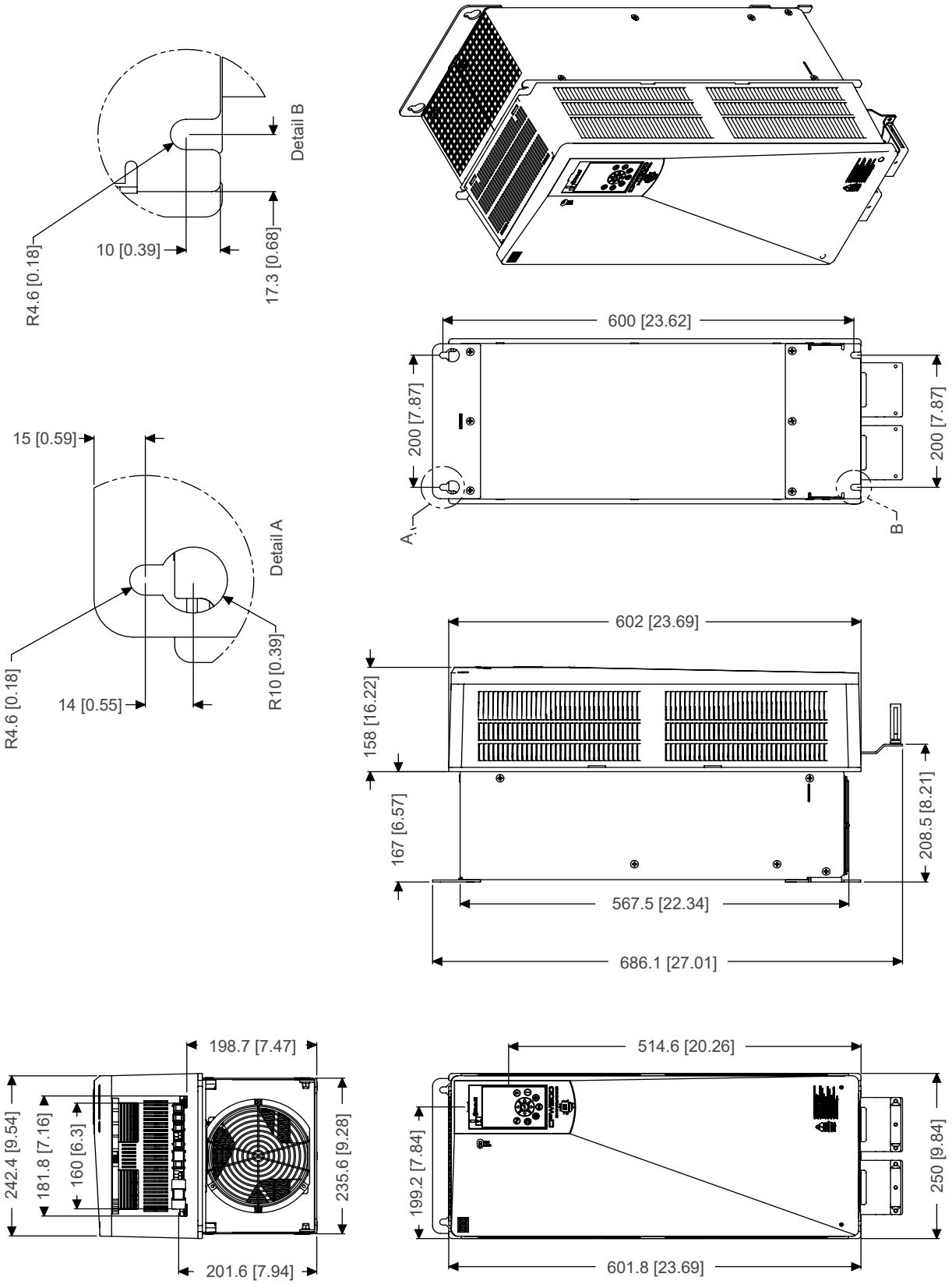


Figure 8.8: *Dimensions for frame D models CFW900D80P0T6 and CFW900D85P0T6 - mm [in]*

8.5.6 Frame Size E

Model	Weight (Mass) kg/lb
CFW900E	63.5 / 140.0

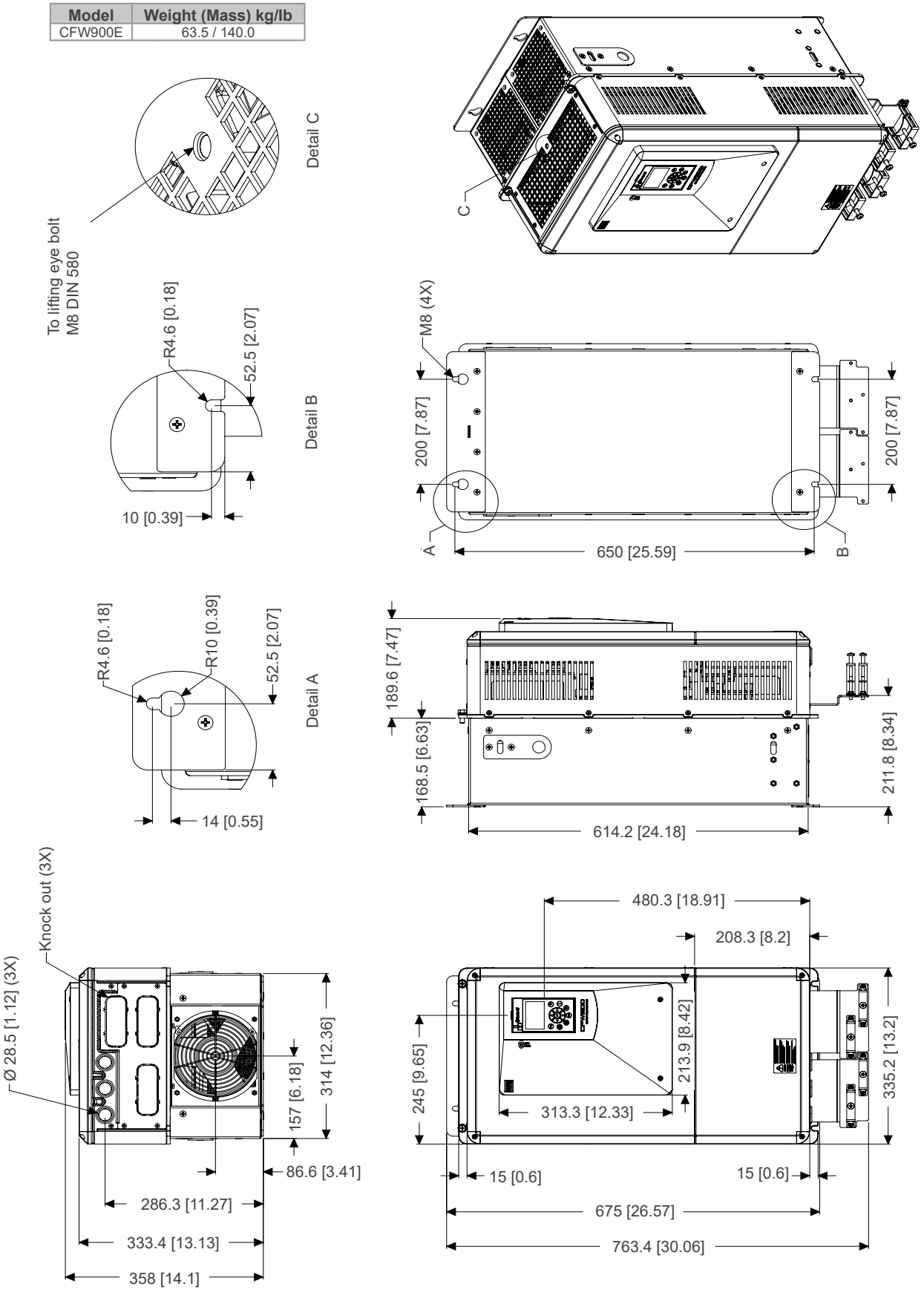


Figure 8.9: *Dimensions for frame E - mm [in]*

8.5.7 Frame Size F

Model	Weight (Mass) kg/lb
CFW900F	101.0 / 222.6

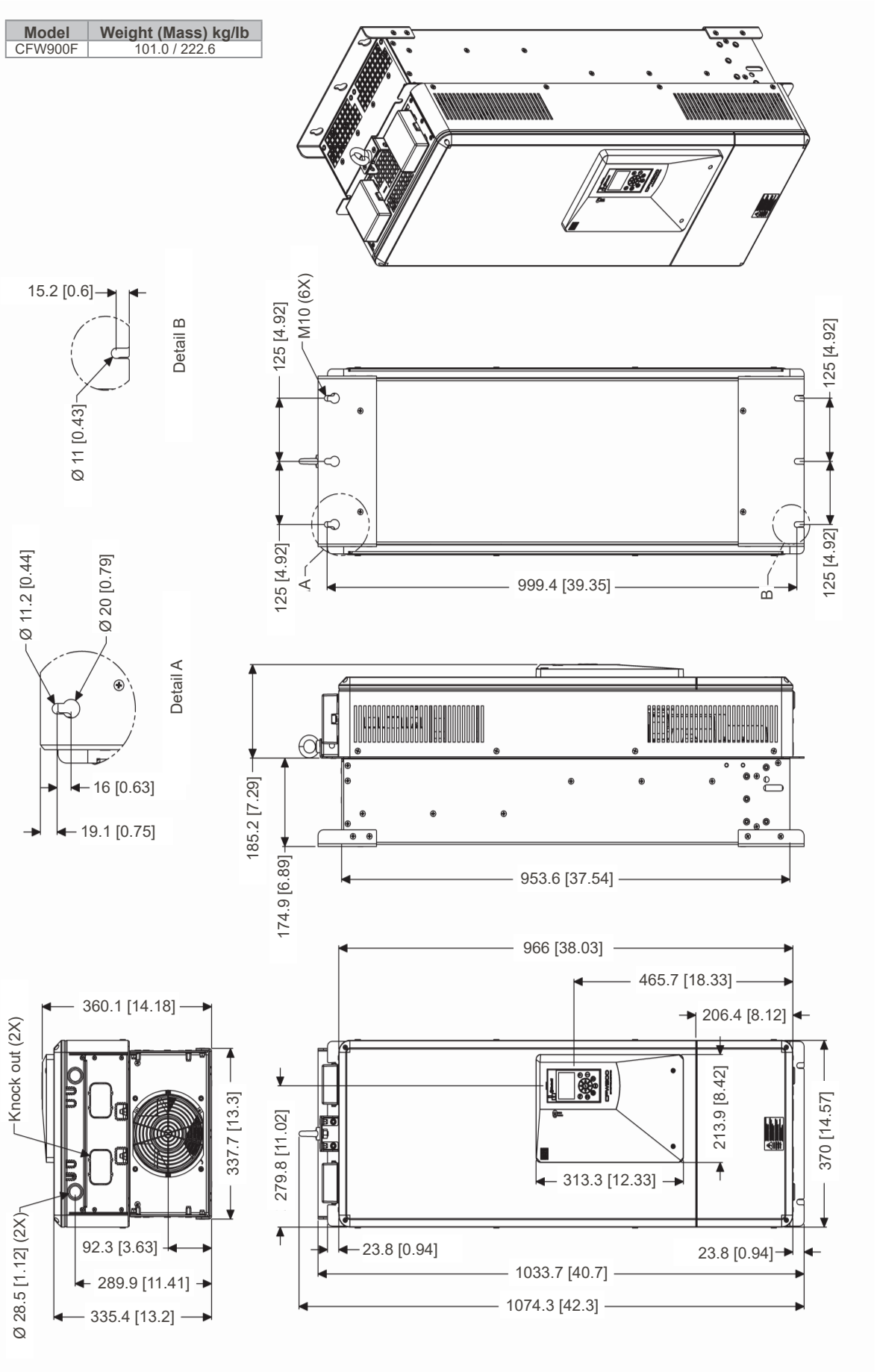


Figure 8.10: *Dimensions for frame F - mm [in]*

8.5.8 Frame Size G

Model	Weight (Mass) kg/lb
CFW900G	185.0 / 407.8

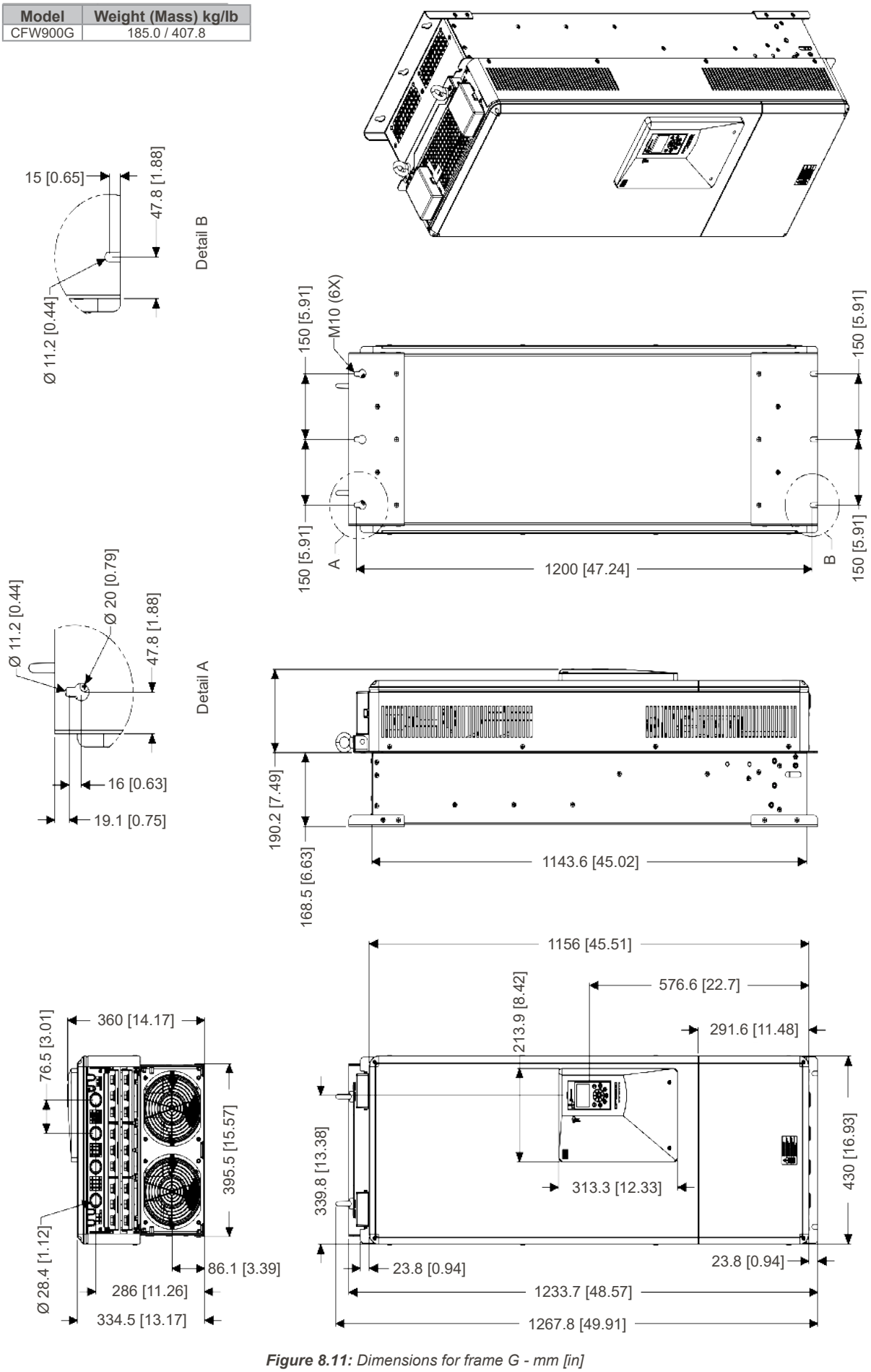


Figure 8.11: *Dimensions for frame G - mm [in]*

8.5.9 Frame Size H

Model	Weight (Mass) kg/lb
CFW900H	242.0 / 533.8

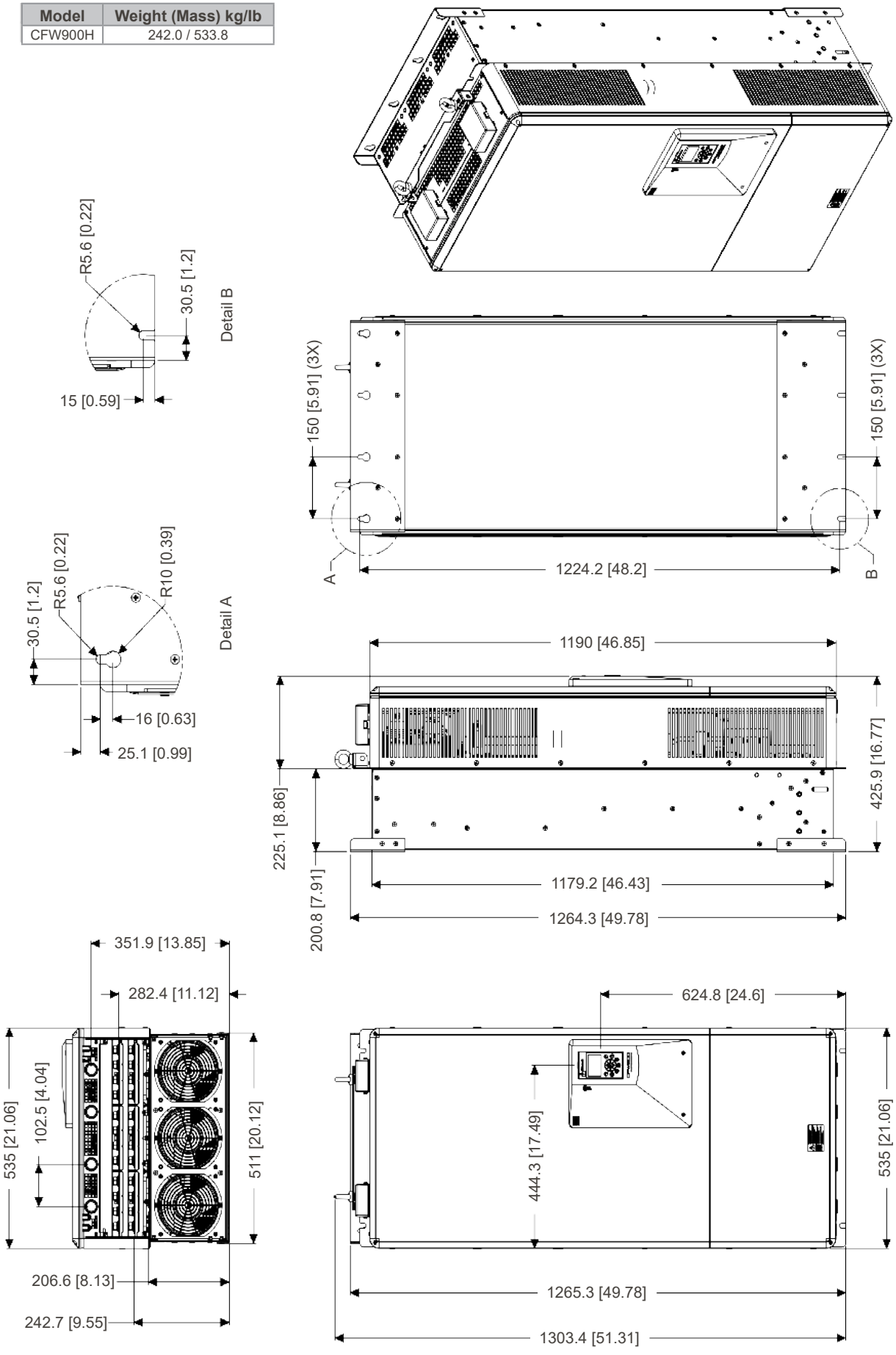
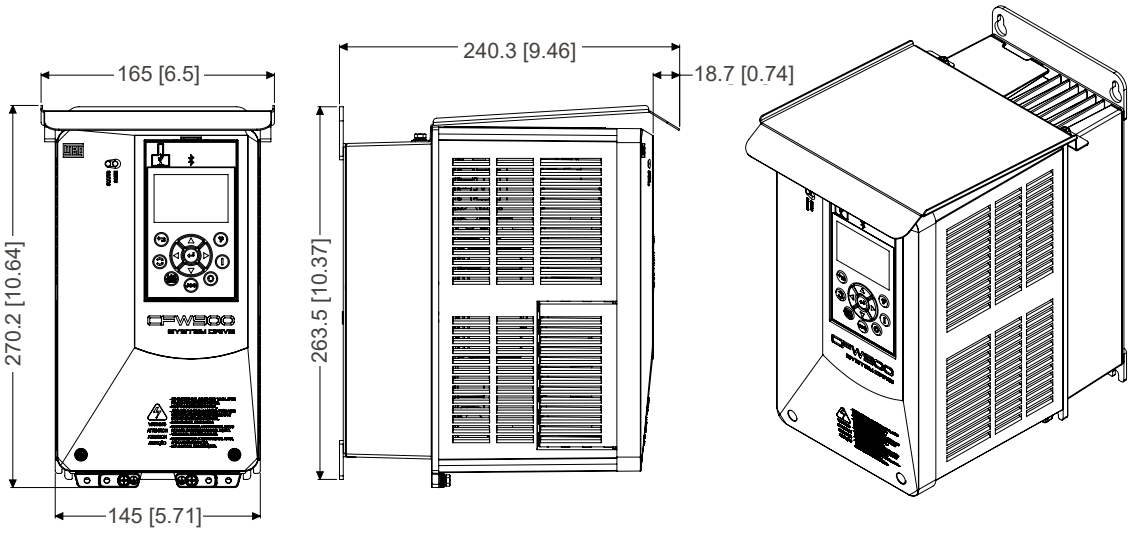
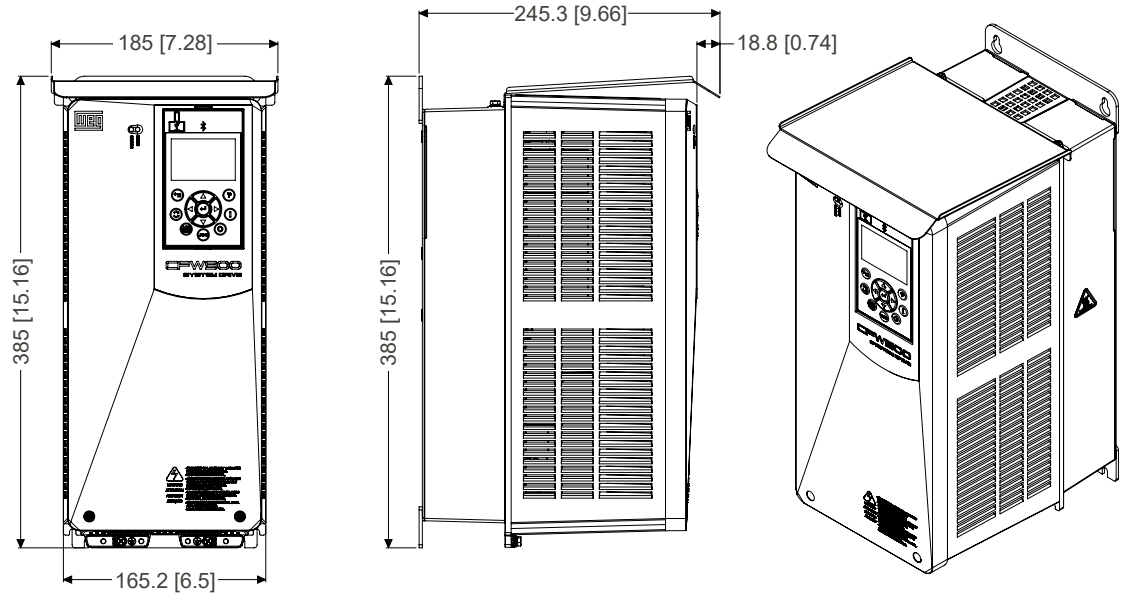


Figure 8.12: *Dimensions for frame H - mm [in]*

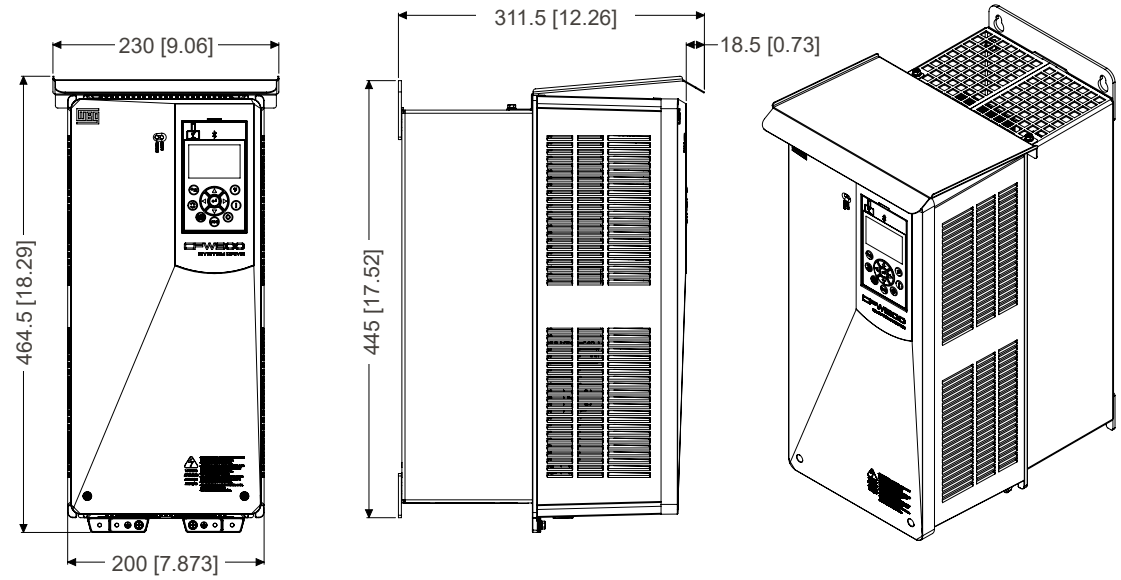
8.5.10 Frames A, B and C with IP21 Kit



(a) Frame A with IP21 kit - "CFW900-IP21A" accessory



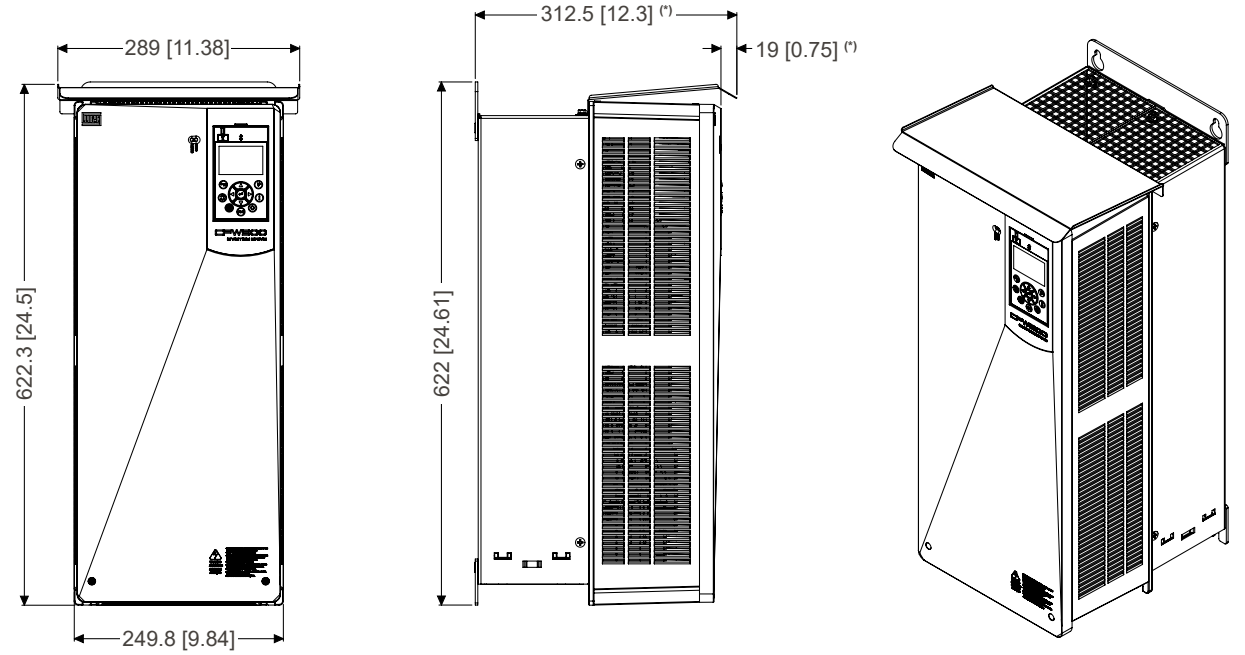
(b) Frame B with IP21 kit - "CFW900-IP21B" accessory



(c) Frame C with IP21 kit - "CFW900-IP21C" accessory

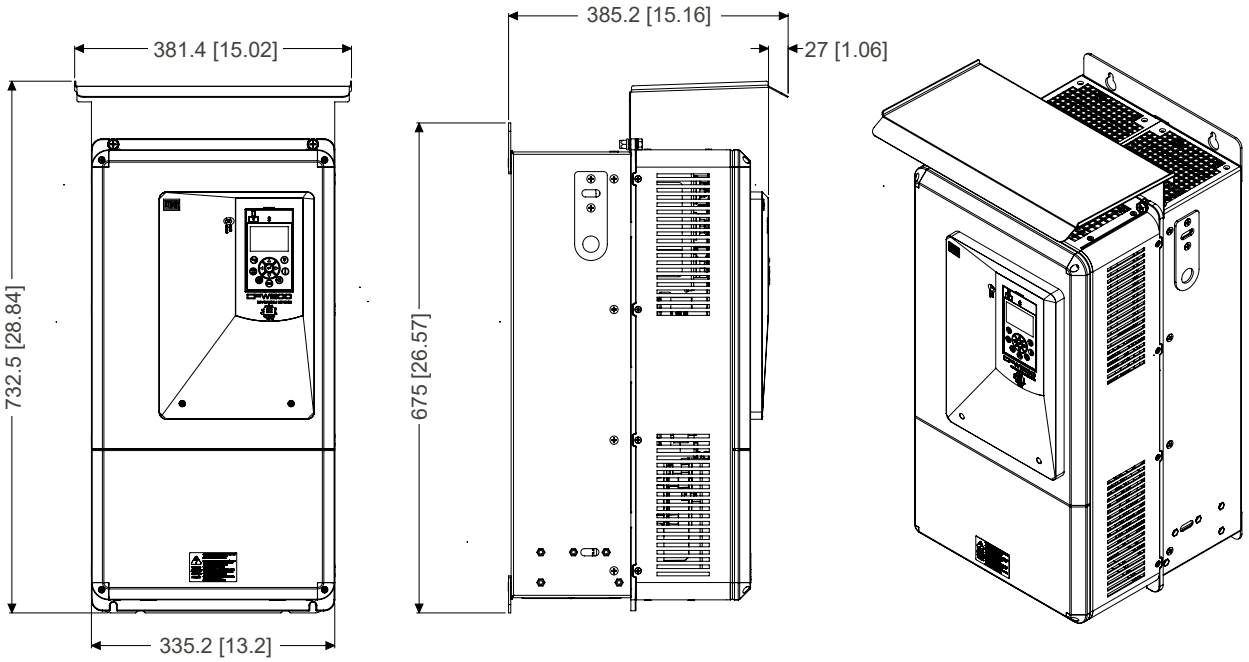
Figure 8.13: *(a) to (c) Inverter height with IP21 kit - mm [in]*

8.5.11 Frames D, E and F with IP21 Kit

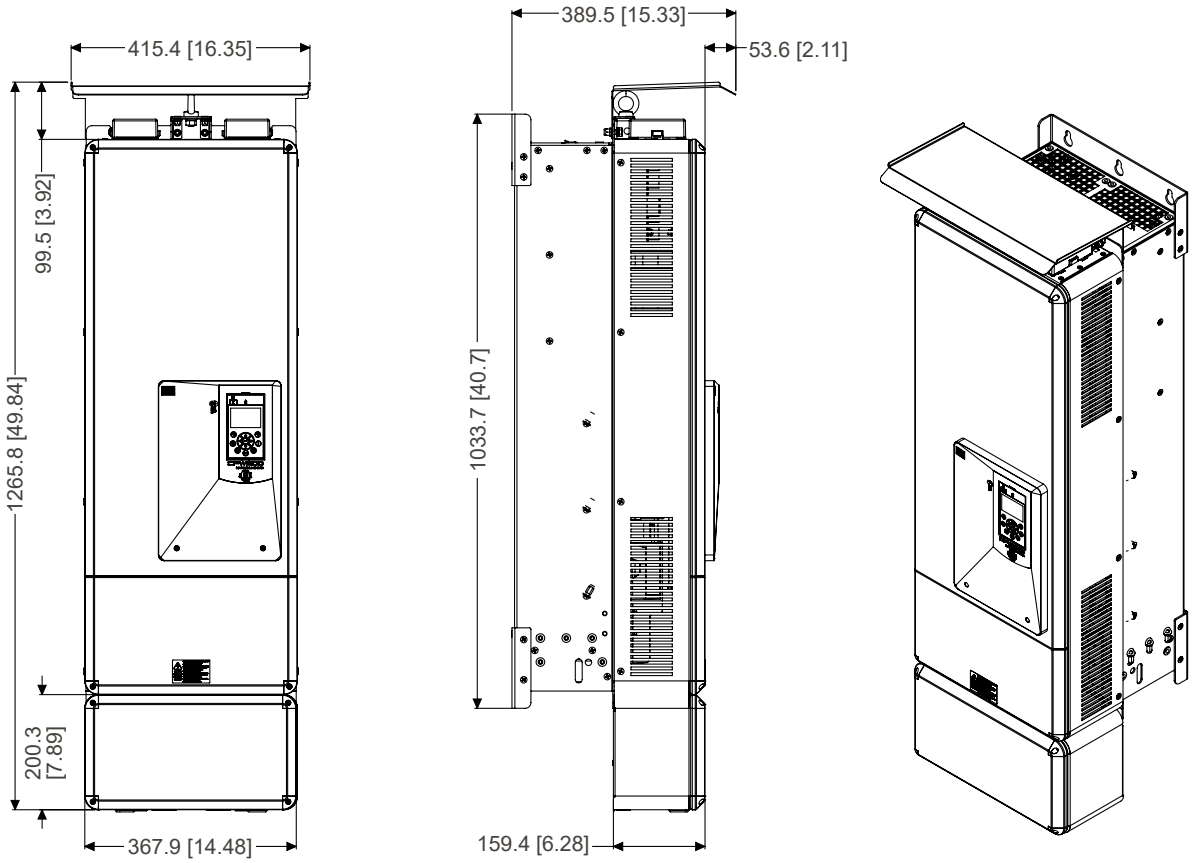


(*) For models CFW900D80P0T6 and CFW900D85P0T6 this dimension is 344.1 [13.54]

(a) Frame D with IP21 kit - "CFW900-IP21D" accessory



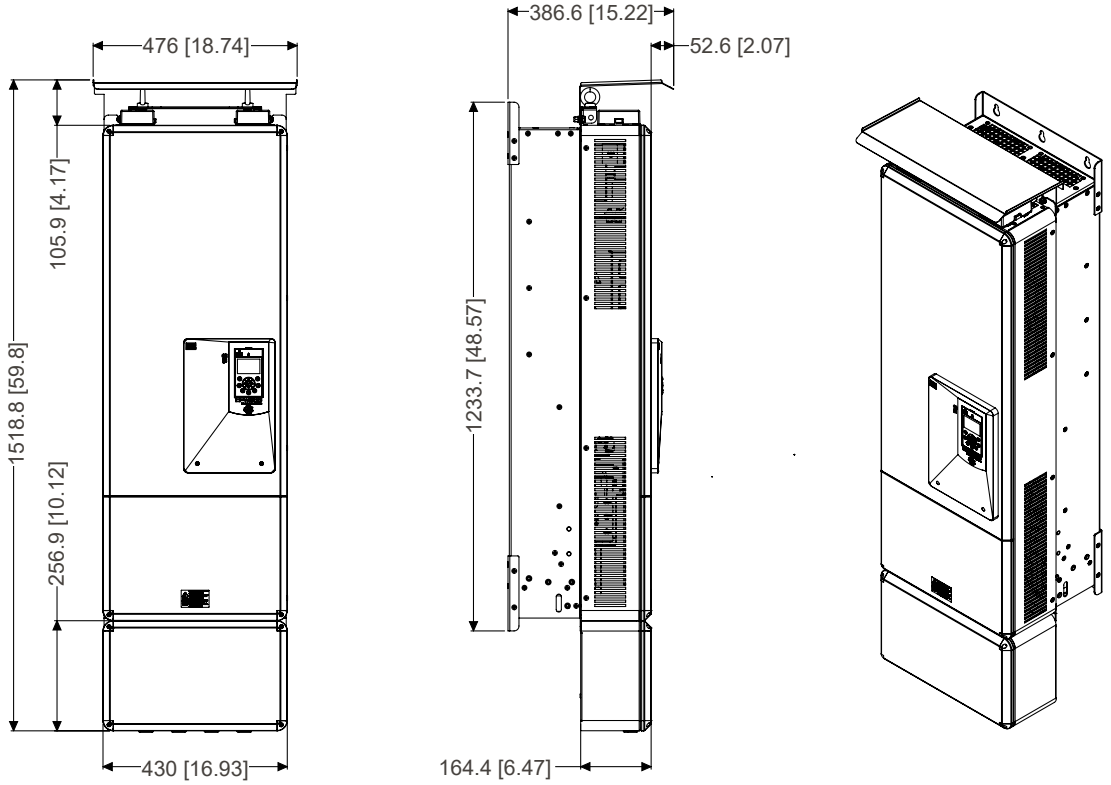
(b) Frame E with IP21 kit - "CFW900-IP21E" accessory



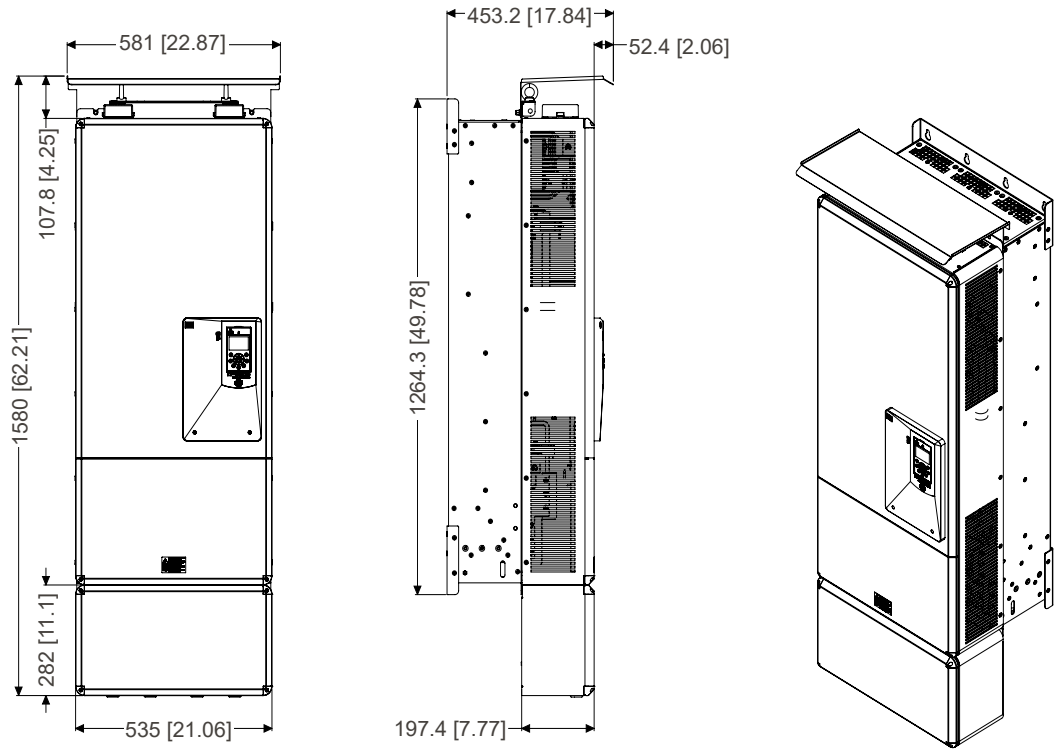
(c) Frame F with IP21 kit - "CFW900-IP21F" accessory

Figure 8.14: *(a) to (c) Inverter height with IP21 kit - mm [in]*

8.5.12 Frames G and H with IP21 Kit



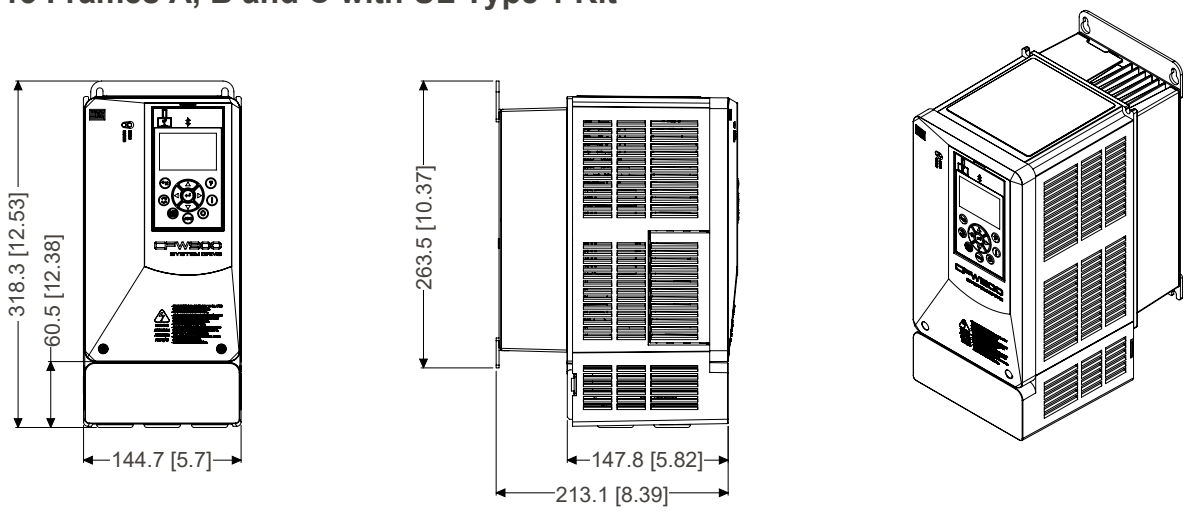
(a) Frame G with IP21 kit - "CFW900-IP21G" accessory



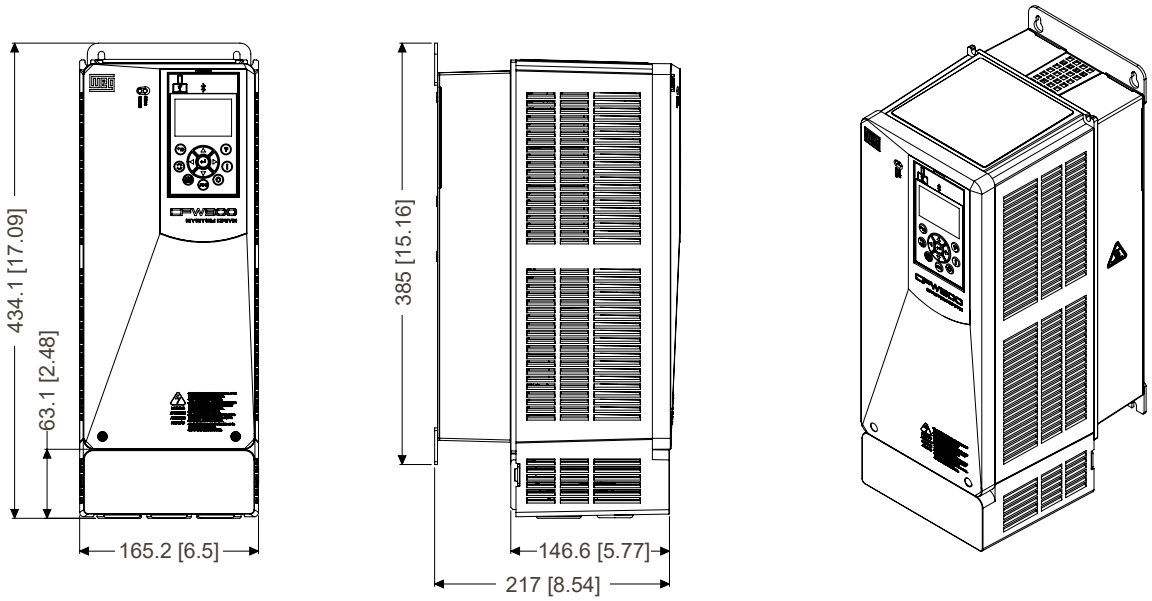
(b) Frame H with IP21 kit - "CFW900-IP21H" accessory

Figure 8.15: *(a) and (b) Inverter height with IP21 kit - mm [in]*

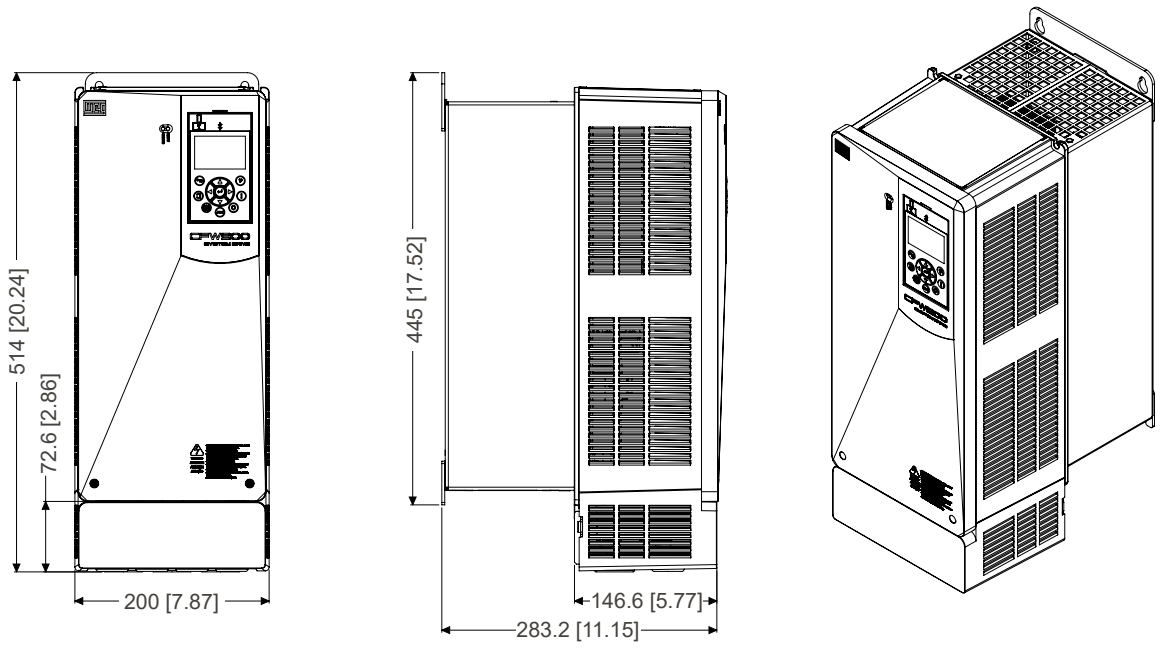
8.5.13 Frames A, B and C with UL Type 1 Kit



(a) Frame A with UL Type 1 kit - "CFW900-KN1A" accessory



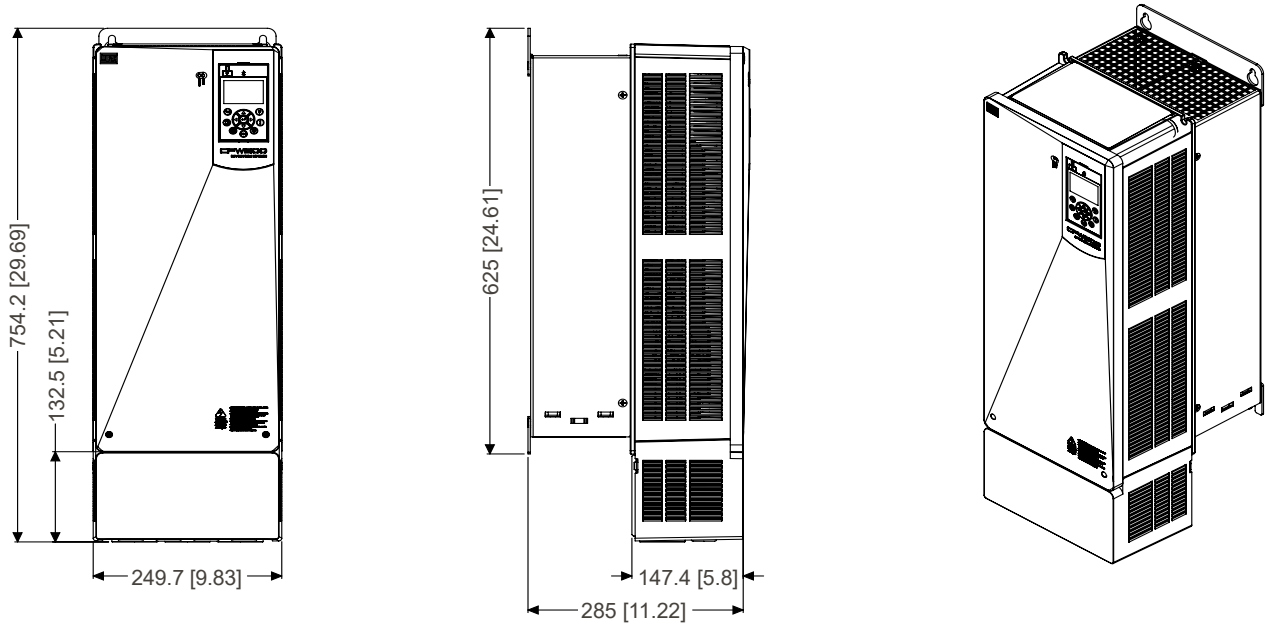
(b) Frame B with UL Type 1 kit - "CFW900-KN1B" accessory



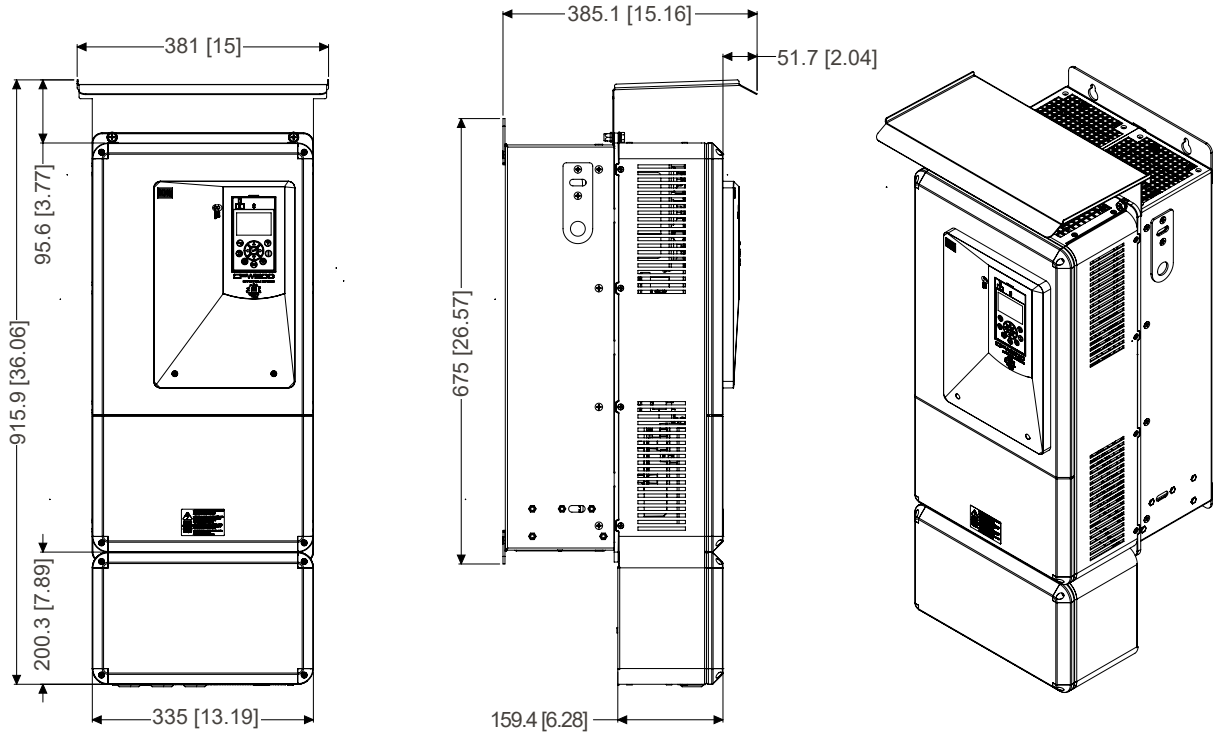
(c) Frame C with UL Type 1 kit - "CFW900-KN1C" accessory

Figure 8.16: *(a) to (c) Inverter height with UL Type 1 kit - mm [in]*

8.5.14 Frames D and E with UL Type 1 Kit



(a) Frame D with UL Type 1 kit - "CFW900-KN1D" accessory



(b) Frame E with UL Type 1 kit - "CFW900-KN1E" accessory

Figure 8.17: *(a) and (b) Inverter height with UL Type 1 kit - mm [in]*