English

Quick Installation Guide

SSW900 Soft-Starter

14284189

1 SAFETY INSTRUCTIONS

This quick installation guide contains the basic information necessary for the SSW900 start-up. It was developed to be used by people with proper technical training or qualification to operate this kind of equipment. These people must follow the safety instructions defined by local standards. Failure to comply with the safety instructions may result in death risks and/or damages to the equipment.

2 SAFETY WARNINGS IN THIS MANUAL AND IN THE PRODUCT

DANGER!
The procedures recommended in this warning aim at protecting the user against death, serious injuries and considerable material damages.

ATTENTION!
The procedures recommended in this warning aim at preventing material damages.

NOTE!
The text aims at providing important information for the correct understanding and proper operation of the product.

High voltages present.

Components sensitive to electrostatic discharges.
Do not touch them.

Mandatory connection to the protective earth (PE).

Connection of the shield to the ground.

3 PRELIMINARY RECOMMENDATIONS

DANGER!
Always disconnect the general power supply before touching any electrical component connected to the SSW900. Wait for at least 3 minutes for the full discharge of the power capacitors and stop of the fans.
Always connect the equipment frame to the protective earth (PE) at the proper terminal.

NOTE!
The SSW900 may interfere in other electronic equipment. Follow the recommended procedures contained in the SSW900 user's manual, available for download on the website: **www.weg.net.**

NOTE!
It is not the intention of this guide to present all the possibilities for the application of the SSW900, and WEG cannot take any liabilities for the use of the SSW900 which is not based on this guide. For further information on the installation, full parameter list and recommendations, visit the website: **www.weg.net.**

Do not carry out any applied potential tests on the SSW900!
If necessary, contact WEG.

NOTE!
Read the whole user's manual before installing or operating the SSW900, which is available for download on the website: **www.weg.net**.

4 ABOUT THE SSW900

The SSW900 Soft-Starter is a high-performance product that allows controlling the start of three-phase induction motors. Thus, mechanical shocks on the load, current surges on the supply line and the burn out of the motor are prevented.

5 SMART CODE

Table 1: Smart code

SSW900	_	____	T_	E_	__	__
WEG Soft-Starter Series	Frame Size	Rated Current	Three-Phase Rated Voltage of the Power	Rated Voltage of the Electronics	Special Hardware	Special Software
SSW900	A	0010 = 10 A 0017 = 17 A 0024 = 24 A 0030 = 30 A	T5 = 220 to 575 V T6 = reserved	E2 = 110–240 V	Hx = reserved	Sx = special
	B	0045 = 45 A 0061 = 61 A 0085 = 85 A 0105 = 105 A				
	C	0130 = 130 A 0171 = 171 A 0200 = 200 A				
	D	0255 = 255 A 0312 = 312 A 0365 = 365 A 0412 = 412 A		E3 = 110–130 V E4 = 220–240 V		
	E	0480 = 480 A 0604 = 604 A 0670 = 670 A				

Figure 1: Identification label on the side of the SSW900

6 RECEIVING AND STORING

The SSW900 is supplied packed in a cardboard box.
Outside of the package there is an identification label equal to the one affixed to the SSW900.

Check if:
- The identification label of the SSW900 corresponds to the purchased model.
- There were any damages during transportation. Report any damage immediately to the carrier.
- If the SSW900 is not installed soon, keep it in the package closed, and store it in a clean and dry location with temperature between -25 °C and 65 °C (-13 °F to 149°F).

7 INSTALLATION AND CONNECTION

7.1 Environment Conditions:

Avoid:
- Direct exposure to sunlight, rain, excessive moisture or marine environment.
- Inflammable or corrosive liquids or gases.
- Excessive vibration.
- Dust, metallic particles or oil mist.

Environment conditions permitted for operation:
- Temperature: -10 °C to 55 °C (14 °F to 131°F) nominal conditions (measured around the SSW900).
  -10 °C to 55 °C (14 °F to 131 °F) models until 412 A;
  -10 °C to 40 °C (14 °F to 104 °F) models up 412 A;
  Current derating by 2 % for each degree Celsius above the specification of nominal conditions.
- Air relative humidity: 5 % to 90 % with no-condensing.
- Maximum altitude: up to 1000 m (3281 ft) above sea level - nominal conditions.
  From 1000 m to 4000 m (3281 ft to 13123 ft) above sea level - 1 % of current derating for each 100 m (328 ft) above 1000 m (3281 ft).
  From 2000 m to 4000 m (6562 ft to 13123 ft) above sea level - 1.1 % derating of the maximum voltage for each 100 m (328 ft) above 2000 m (6562 ft).
- Pollution degree: 2 (according to UL508), with non-conductive pollution. Condensation must not cause conduction of the accumulated residues.

7.2 Dimensions

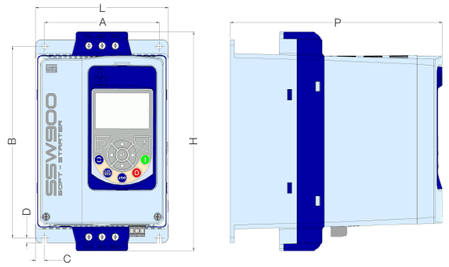


Figure 2: SSW900 Dimension

Table 2: Data for installation with dimensions in mm (in)

SSW900 Model	Height H mm (in)	Width L mm (in)	Depth P mm (in)	A mm (in)	B mm (in)	C mm (in)	D mm (in)	Mounting Screw	Weight kg (lb)	Degree of Protection
10 A 17 A 24 A 30 A	200 (7.87)	127 (5)	203 (7.99)	110 (7.33)	175 (6.88)	8,5 (0.33)	4,3 (0.16)	M4	1.930 (4.25)	IP20
45 A 61 A 85 A 105 A	208 (8.18)	144 (5.66)	260 (10.23)	132 (5.19)	148 (5.82)	6 (0.23)	3,4 (0.13)	M4	4.020 (8.86)	IP20
130 A 171 A 200 A	276 (10,86)	223 (8.77)	261 (10.27)	208 (8.18)	210 (8.26)	7,5 (0.29)	5 (0.19)	M5	6.550 (14.44)	IP00 IP20 (*)
255 A 312 A 365 A 412 A	331 (13.03)	227 (8.93)	282 (11.10)	200 (7.87)	280 (11.02)	15 (0.59)	9 (0.35)	M8	12.830 (28.28)	IP00 IP20 (*)
480 A 604 A 670 A	575 (22.63)	390 (15.35)	260 (10.23)	270 (10.62)	480 (18.89)	56 (2.20)	10 (0.40)	M8	38.000 (83.75)	IP00

(*) IP20 with optional kit.

7.3 Positioning and Mounting

Install the SSW900 in the vertical position according to the following recommendations:

1. Install it on a reasonably flat surface.
2. Do not place heat-sensitive component parts right above the SSW900.

ATTENTION!
If you install one SSW900 above another, use the minimum distance A + B, and place the upper SSW900 out of the way of the hot air coming from the lower SSW900.

ATTENTION!
Provide independent conduits or gutters for the physical separation of signal, control and power cables.

ATTENTION!
Check if the SSW900 model requires the ventilation Kit. Models from 45 A to 105 A (frames B and C) with more than 3 starts per hour require the ventilation Kit.

The minimum free space must be kept around the SSW900 for the installation.

Table 3: Recommended free spaces

SSW900 Model	A	B	C
	mm (in)	mm (in)	mm (in)
10 A 17 A 24 A 30 A	50 (2)	50 (2)	30 (1.2)
45 A 61 A 85 A 105 A	80 (3.2)	80 (3.2)	30 (1.2)
130 A 171 A 200 A	100 (4)	100 (4)	30 (1.2)
255 A 312 A 365 A 412 A	150 (6)	150 (6)	30 (1.2)
480 A 604 A 670 A	150 (6)	150 (6)	30 (1.2)

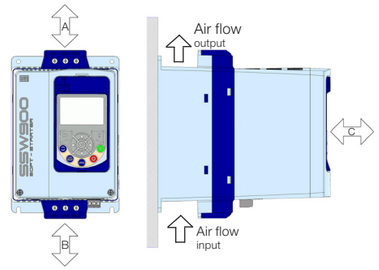


Figure 3: Free space for ventilation

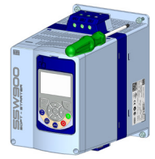


Figure 4: Surface mounting procedure for the SSW900

7.4 Panel Mounting

For the Soft-Starters installed inside panels or metallic boxes, provide proper exhaustion so that the temperature remains within the allowed range. Refer to the rated dissipated powers in the user's manual available for download on the website: **www.weg.net**.

8 ELECTRICAL INSTALLATION

DANGER!
- The following information is merely a guide for proper installation.
- Comply with applicable local regulations for electrical installations.
- Make sure the power supply is disconnected before starting the installation.
- The SSW900 must not be used as an emergency stop device. Provide other devices for that purpose.

DANGER!
On the first energization, if a contactor or circuit breaker for power isolation with minimum voltage coil is not used, energize the electronics first, set the minimum parameters required for the start-up of the SSW900, and only then energize the power.

The SSW900 has a separate power supply for the electronics; see items 8.1 and 8.10. For more details on the electronics and power terminals in each frame and recommended set-ups, refer to the user's manual available for download on the website **www.weg.net**.

8.1 Power Terminals

The power connection terminals may have different sizes and configurations, depending on the SSW900 model, as in the example of frame B. For further details on the other models, refer to the user's manual available for download on the website: **www.weg.net.**

Connection to the power supply line: R / 1L1, S / 3L2 and T / 5L3.
Motor connection: U / 2T1, V / 4T2 and W / 6T3.

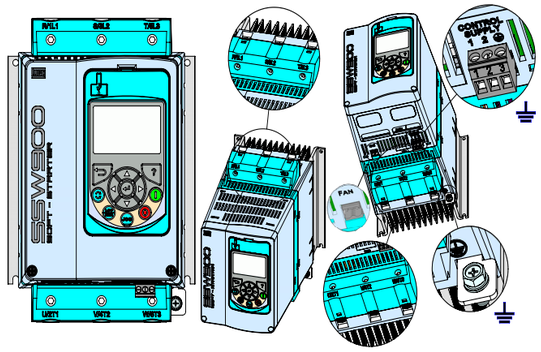


Figure 5: Power and grounding terminals, frame B

Table 4: Maximum torque on the power connection terminals

SSW900 Model	Frame	Supply Line / Motor		Electronics Grounding		Heatsink Grounding	
		Screw / Terminal	Torque Nm (in lb)	Terminal	Torque Nm (in lb)	Screw	Torque Nm (in lb)
10 A 17 A 24 A 30 A	A	Terminal	3 (27)	Terminal	0.5 (4.5)	-	-
45 A 61 A 85 A 105 A	B	Terminal	5.5 (49)	Terminal	0.5 (4.5)	M5 (3/16")	6 (53)
130 A 171 A 200 A	C	M8 (5/16")	19 (168)	Terminal	0.5 (4.5)	M6 (1/4")	8.3 (73)
255 A 312 A 365 A 412 A	D	M10 (3/8")	37 (328)	Terminal	0.5 (4.5)	-	-
480 A 604 A 670 A	E	M10 (3/8")	37 (328)	Terminal	0.5 (4.5)	M8 (5/16")	15 (132)

8.2 Recommended Power and Grounding Cables

NOTE!
For the correct cable sizing, take into account the installation conditions, the maximum line voltage drop accepted, and follow the electrical instructions defined by local regulations.

ATTENTION!
The cables or busbars connected to the power terminals must not exceed the temperature of 90 °C (194 °F), already considering the maximum permissible ambient temperature.

For details on recommended cables according to IEC or UL, refer to the user's manual available for download on the website **www.weg.net**.

8.3 Connection of the Supply Line to the

DANGER!
The supply line voltage must be compatible with the voltage range of the SSW900.

DANGER!
Provide a device to disconnect the power supply to the SSW900. This device must cut off the supply line to the SSW900 whenever necessary (during maintenance jobs, for instance).
If a switch-disconnector or contactor is inserted in the motor power supply, never operate them with the motor spinning or with the SSW900 enabled.

8.4 Short Circuit Capacity Fuses Tested at UL

Fuses or circuit breakers installed must withstand and ensure the interruption of the short circuit. For further details, refer to the user's manual, available for download on the website: **www.weg.net**.

8.5 Input Fuses and Circuit Breakers

Ultra-fast fuses class (aR), regular fuses or circuit breakers:
For Coordination Type 1, regular fuses or circuit breakers can be used, according to IEC 60947-4-2, which will protect the installation against short circuits; however, the SCRs will not be protected.
For Coordination Type 2, the fuses to be used in the input must be for protection of semiconductors, ultra-fast class aR, according to IEC 60947-4-2. They reduce the risk of the SCRs to burn out because of overcurrent transients.
Ultra-fast fuses class aR Weg, (recommended in the Table 3.11 to Table 3.13 to the user's manual) were sized considering the maximum supply voltage, 300 % of the current of the SSW900, start time of 30 seconds, 10 or 5 starts per hour according to the SSW model. For applications other than these conditions, review the design of the fuses.
The fuse rated current should preferably be equal to or higher than the motor starting current in order to prevent cyclic overloads and the tripping of the fuse in the prohibited area of the time x current curve.
The proper sizing of the fuse should take into account: the local standards for electrical installations, the starting cycle, number of starts per hour, starting current and starting time, ambient temperature and altitude. For the proper sizing of the fuses, refer to the WEG fuse catalog available on the website: **www.weg.net.**

8.6 Main Input Contactor or Circuit Breaker

In case of damages in the power circuit of the SSW900 that keep the motor driven by short circuit, the motor protection is only obtained by using the power isolation contactor (K1) or circuit breaker (Q1) with shunt trip coil.
An AC3 contactor with rated current higher than or equal to the rated current of the motor connected to the SSW900 must be used.
In order to select the correct sizing of the contactor, see WEG Contactor Catalog:
www.weg.net
Controls - Motor Start and Protection

8.7 Bypass Contactor

The SSW900 has internal bypass contactor; however, it is recommended the use of an external bypass contactor for applications where the motor may frequently present locked rotor during the full operating duty. In this case, an AC3 contactor with rated current higher than or equal to the rated current of the motor connected to the SSW900 must be used.
When the external bypass contactor is used, it is necessary to install the current transformers in the motor power supply output, so as to keep the current indications and protections
In order to select the correct sizing of the contactor, see WEG Contactor Catalog:
www.weg.net
Controls - Motor Start and Protection

8.8 SSW900 Connection to the Motor

DANGER!
Capacitors for power factor correction must never be installed in the output of the SSW900 (U / 2T1, V / 4T2 and W / 6T3).

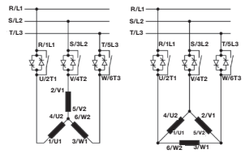
ATTENTION!
For the protections based on the reading and indication of current to work properly, like in the overload protection, the motor rated current must not be below 30 % of the SSW900 rated current. We do not recommend the use of motors that run under duty with a load below 50 % of its rated current.

NOTE!
The SSW900 has an electronic motor overload protection, which must be adjusted according to the specific motor. When several motors are connected to the same SSW900, install individual overload relays for each motor.

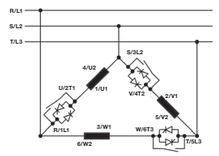
Table 5: Minimum and maximum current allowed

SSW900 Model	Standard Connection		Inside Delta Motor Connection	
	Minimum A	Maximum A	Minimum A	Maximum A
10 A	3.0	10.0	-	-
17 A	5.1	17.0	-	-
24 A	7.2	24.0	-	-
30 A	9.0	30.0	-	-
45 A	13.5	45.0	-	-
61 A	18.3	61.0	-	-
85 A	25.5	85.0	-	-
105 A	31.5	105.0	-	-
130 A	39.0	130.0	67.5	225.2
171 A	51.3	171.0	88.9	296.2
200 A	60.0	200.0	103.9	346.4
255 A	76.5	255.0	132.5	441.7
312 A	93.6	312.0	162.1	540.4
365 A	109.5	365.0	189.7	632.2
412 A	123.6	412.0	214.1	713.6
480 A	144.0	480.0	249.4	831.4
604 A	181.2	640.0	313.8	1046.2
670 A	201.0	670.0	348.1	1160.5

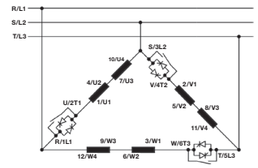
For the detailed description of the motor standard connection with three cables and the motor inside delta connection with six cables, see item 3.2.10 and 3.2.11 in the user's manual, available for download on the website: **www.weg.net**.



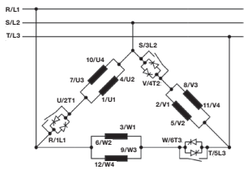
(a) SSW900 with standard connection



(b) SSW900 motor inside delta connection with the motor in delta



(c) SSW900 motor inside delta connection with double delta motor in series



(d) SSW900 motor inside delta connection with double delta motor in parallel

The minimum and maximum current at full load depends on the SSW900 model, current or frame.

ATTENTION!
Models below 130 A do not allow the motor inside delta connection; therefore, check the model of your SSW900.

ATTENTION!
For motor inside delta connection, the motor must have delta connection in the desired voltage.
The motor inside delta connection cannot be used in 690 V.

NOTE!
1. In the motor inside delta connection, the SSW900 connecting cables, supply line, fuses and/or contactor for power line isolation must withstand the motor rated current. The cables that connect the motor to the SSW900 and/or connect the external bypass contactor must withstand 58 % of the motor rated current.
2. For this type of connection, it is also suggested the use of copper busbars in the connection of the SSW900 to the supply line due to the high currents involved and cable gauges.
3. During the motor start, the motor current ratio to the SSW900 is 1.50. However, at full voltage (after the motor start) the current ratio is 1.73.

ATTENTION!
Pay careful attention to the motor connection to the SSW900! Follow the wiring diagrams, as described in the user's manual, available for download on the website: **www.weg.net.**
In case it is necessary to invert the motor speed direction, just invert the SSW900 connections to the supply line.
Keep the electronics off during the connection changes.

ATTENTION!
Do not start the motor with the content of parameter C9.2.1 incorrectly set.
If this parameter is set wrongly, the SSW900 may be damaged.

C9.2.1	Action
0 (Inactive)	SSW900 with standard connection to the motor
1 (Active)	SSW900 inside delta motor connection

8.9 Grounding Connections

DANGER!
- The SSWs must be connected to a protection earth (PE).
- The grounding connection must observe the local standards. Connect it to a specific grounding rod, to the specific grounding point or to the general grounding point (resistance ≤ 10 ohms).
- Frames A and D – Control supply pin 3.
- Frames B and C – Control supply pin 3 and heatsink terminal must be grounded.
- Frame E - Control power supply pin 3 and terminal on the metal frame must be grounded.
- The line that supplies the SSW900 must be grounded.
- Do not use the neutral for grounding, but a specific conductor.

ATTENTION!
Do not share the grounding wiring with other equipment that operate with high currents (e.g., high power motors, welding machines, etc.). When several SSW900 are used, observe the connections in Figure 6.

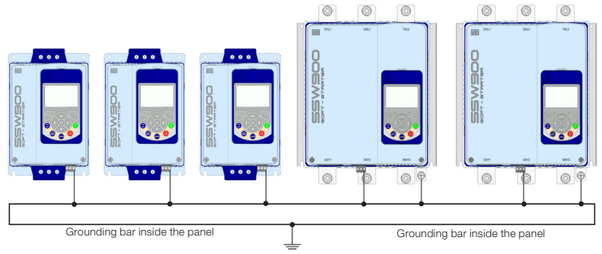


Figure 6: Grounding connections for more than one SSW900

EMI – Electromagnetic interference

The SSW900 is developed to be used in industrial systems (Class A), according to standard EN60947-4-2.
It is necessary to keep sensitive wiring and equipment 0.25 m (10 in) away from the SSW900 and the motor.

Example: Wiring of PLCs, temperature controllers, thermocouple cables, etc.

Motor Frame Grounding

Always ground the motor frame. The SSW900 output wiring to the motor must be installed separately from the line input wiring, as well as from the control and signal wiring.

8.10 Electronics Power Supply Terminals

Table 6: Electronics power supply connections

Control Supply		Description	Specification
1	Phase	Electronics power supply	Models from 10 to 200 A: 110 to 240 V (-15 % to +10 %), or 93.5 a 264 Vac Models from 255 to 670 A: 110 to 130 V (-15 % to +10 %), or 93.5 to 143 Vac, or 220 to 240 V (-15 % to +10 %), or 176.8 to 264 Vac
2	Neutral		
3	Ground		

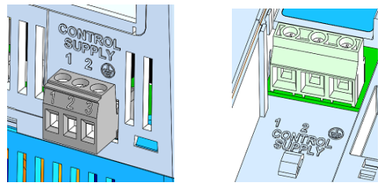


Figure 7: Power supply connector of the electronics

8.11 User's Signal and Control Connections

Table 7: Signal (analog outputs) and control (digital inputs and outputs) connections

Control		Factory Default Function	Specification
1	AO	Analog output Not used	Voltage or current output configurable by software Resolution: 10 bits Voltage: 0 to 10 V, RL = 10 kΩ (Maximum load) Current: 0 to 20 mA RL = 500 Ω (Minimum load)
2	AGND		
3	Ground		
4	PTCB	Input for the motor PTC Not used	Actuation: 3k9Ω Release: 1k6Ω Minimum resistance: 100 Ω
5	PTCA		
6	DI1	Run/Stop the motor	5 isolated digital inputs Minimum high level: 18 V Maximum low level: 3 V Maximum voltage: 30 V Input current: 11 mA @24 Vdc
7	DI2	Fault reset	
8	DI3	Not used	
9	DI4	Not used	
10	DI5	Not used	
11	0 V	Reference 0 V – DIs	Use the digital inputs only
12	COM	Common reference – DIs	
13	24 V	Reference 24 V - DIs	
14	RL1C	In operation	3 relay outputs Capacity of the contacts: 1 A / 240 Vac
15	RL1NO		
16	RL2C	Bypass	
17	RL2NO		
18	RL3NO	With fault	
19	RL3C		
20	RL3NC		

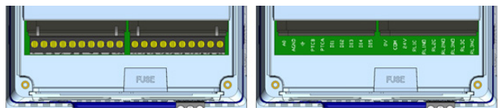


Figure 8: Position of the connections on the control board

9 INSTALLATION IN COMPLIANCE WITH STANDARD EN60947-4-2

In order to install the SSW900 in compliance with standard EN60947-4-2, it is necessary to meet the following requirements:

1. The cables used for the control (inputs and outputs) and signal wiring must be shielded or run in metallic conduits or channels with equivalent attenuation.

2. It is essential to follow the grounding recommendations contained in this manual.

3. The SSW900 is classified for use in "Class A", individual use and without requiring external filters or shielded power cables.

Description of the conducted emission class according to Standard EN60947-4-2 (2000) + A1 (2002):

Class B: residential environment (first environment), unrestricted distribution.
Class A: industrial environment (second environment), unrestricted distribution.

10 ENERGIZATION

- For additional information regarding the installation of the SSW900 when installed according to the typical drives, see chapter 3 in the user's manual available for download on the website: **www.weg.net**.

10.1 Energization Preparation

After installing the SSW900 according to the instructions contained in the user's manual, follow the steps below:

DANGER!
Always disconnect the general power supply before making any connections.

1. Check if all the power, grounding and control connections are correct and firm.

2. Remove all the materials left inside the SSW900 or drive.

3. In the models from 255 A to 670 A, check if the voltage selection for the electronics power supply matches the power line.

4. Check if the motor connections, current and voltage are according to the SSW900.

5. Check if the installation type of the SSW900 to the motor (standard or inside delta) is according to the information of parameter C9.2.1. Further details in Section 3.2 of the user's manual available for download on the website: **www.weg.net**.

6. Disconnect the motor mechanically from the load; in case that is not possible, make sure the motor spinning will not damage the machine or produce personal risks.

7. Close the covers of the SSW900 or driver.

10.2 Energization

1. Check if the power line rated voltage is between -15 % and 10 %.

2. Energize the electronics supply.

ATTENTION!
Always energize the electronics supply before energizing the power, and make all the related adjustments contained in the user's manual.

3. Check the result of the energization:

4. Execute the oriented start-up according to Chapter 12 of the SSW900 programming manual available for download on the website: **www.weg.net**.
The parameter to run the Oriented Start-up is in the assistant menu. Set parameter A1 (Oriented Start-up) to 1 = Yes.

NOTE!
For further details on the operation and programming of the HMI, see the SSW900 programming manual available for download on the website: **www.weg.net**.

ATTENTION!
It is essential to have the catalog or motor plate data of the motor to be used at hand. Those data are necessary to properly set the motor data and protection parameters.

ATTENTION!
The motor protection thermal class must be set so as to protect the motor against overloads during the start and full operating duty. For details about the setting of the thermal class, see the programming manual.

10.3 Start-up

Verification sequence for testing with no load on the motor:

1. Initially you can use the voltage ramp control plus current limit to start the motor, with long starting times (C1.3 ≈ 20 s) and low initial voltages (C1.2 ≈ 30 %), so as to minimize the starting currents. For details on the control method to be used, see the programming manual.

2. Before coupling the motor to the load, check the direction of rotation of the motor shaft. Program the protections according to the application requirements. For further details, refer to the programming manual.

3. Use a thermal protection method for the motor.

4. Couple the motor shaft to the load, energize the power and start the motor.

5. The data of this start can be checked by using the diagnosis parameters, such as maximum starting current, average starting current, real starting time. Refer to the chapter Diagnosis in the programming manual.

6. Based on the diagnosis data, it is possible to adjust the best programming to be used in the next starts under full operating duty.

ATTENTION!
Special attention to the starting limits of the SSW900:
- Maximum starting times.
- Maximum starting currents.
- Time interval between the starts.

The noncompliance with those limits may lead to the burn out of the SSW900.

11 ACCESSORIES

The accessories may be ordered separately, and they will be shipped in individual packages containing the components and guides with detailed instructions for the installation, operation and programming.
The code and models available of each accessory are indicated in Table 6.1. of the user's manual available for download on the website: **www.weg.net**.

NOTE!
The accessory installed in SLOT 1 must be different from the one installed in SLOT 2.
It is not possible to use simultaneously two accessories of the same type in SLOTS 1 and 2.
It is not possible to use two Anybus modules simultaneously, even if they are two different protocols.

12 TECHNICAL DATA

According to IEC EN60947-4-2; for the detailed description, see the user's manual available for download on the website: **www.weg.net**.

Table 8: Standardized operation conditions

Standard Connection with Three Cables		
Models from 10 A to 30 A and 255 A to 412 A. Models from 45 A to 200 A (with ventilation accessory).	AC-53b 3-30:330	3 x FLC for 30 s 10 starts per hour 100 % of the time with FLC with integrated bypass from -10 to 55 °C (14 °F to 131 °F) without current derating
Models from 45 A to 200 A (without ventilation accessory).	AC-53b 3-30:1170	3 x FLC for 30 s 3 starts per hour 100 % of the time with FLC with integrated bypass from -10 to 55 °C (14 °F to 131 °F) without current derating
Models from 480 A to 670 A	AC-53b 3-30:690	3 x FLC for 30 s 5 starts per hour 100 % of the time with FLC with integrated bypass from -10 to 40 °C (14 °F to 104 °F) without current derating
Inside Delta Motor Connection with Six Cables		
Models from 10 A to 30 A and 255 A to 412 A. Models from 45 A to 200 A (with ventilation accessory).	AC-53b 3-25:335	3 x FLC for 25 s 10 starts per hour 100 % of the time with FLC with integrated bypass from -10 to 55 °C (14 °F to 131 °F) without current derating
Models from 45 A to 200 A (without ventilation accessory).	AC-53b 3-25:1175	3 x FLC for 25 s 3 starts per hour 100 % of the time with FLC with integrated bypass from -10 to 55 °C (14 °F to 131 °F) without current derating
Models from 480 A to 670 A	AC-53b 3-25:695	3 x FLC for 25 s 5 starts per hour 100 % of the time with FLC with integrated bypass from -10 to 40 °C (14 °F to 104 °F) without current derating

13 POWER DATA

Table 9: Power data

Power Supply	Power Voltage (R/1L1, S/3L2, T/5L3)	220 to 575 V (-15 % to +10 %), or 187 to 632 Vac (standard and delta connection)
	Frequency	50 to 60 Hz (±10 %), or 45 to 66 Hz
Capacity	Maximum number of starts per hour, starting duty	According to Table 7.1 and Table 7.2 of the user's manual available for download at: **www.weg.net**
Thyristor (SCRs)		Maximum peak reverse voltage 1600 V

14 ELECTRONICS DATA

Table 10: Eletronic data

Power Supply	Control voltage	Models from 10 A to 200 A: 110 to 240 V (-15 % to +10 %), or 93.5 to 264 Vac Model range 255 to 670 A: 110 to 130 V (-15 % to +10 %), or 93.5 to 143 Vac, or 220 to 240 V (-15 % to +10 %), or 176.8 to 264 Vac
	Frequency	50 to 60 Hz (±10 %), or (45 to 66 Hz)
	Consumption	Models from 10 A to 200 A: 18 VA Model range 255 to 412 A: 70 VA continuous, 800 VA additional during the closing of the internal bypass Models from 480 to 670 A: 140 VA continuous, 800 VA additional during the closing of the internal bypass.
Inputs	Digital	5 isolated digital inputs Minimum high level: 18 Vdc Maximum low level: 3 Vdc Maximum voltage: 30 Vdc Input current: 11 mA @ 24 Vdc Programmable functions
	Inputs for motor thermistor	1 input for thermistor; Actuation: 3.9kΩ, Release: 1.6 kΩ Minimum resistance 100 Ω
Outputs	Digital	2 relays with NO contacts, 240 Vac, 1 A, programmable functions 2 relay with NO/NC contact, 240 Vac, 1 A, programmable functions
	Analog	1 analog output 0 to 10 V or 0 / 4 to 20 mA configurable by software
HMI Human Machine Interface	Standard HMI	12 keys: Run/Stop, Forward/Reverse, Jog, Local/Remote and browsing buttons: Left, Right, Up, Down, Enter, Back and Help Graphic LCD display Allows monitoring/changing all the SSW900 parameters Possibility of external mounting, panel door USB for firmware updates or communication with the product
Connection to PC for programming	USB connector by means of the HMI	USB standard Rev. 2.0 (basic speed) USB plug type mini B "device" Interconnecting cable: standard host/device shielded USB cable

15 CONSIDERED STANDARDS

Table 11: Considered standards

Safety standards	■ UL508 - Industrial control equipment. ■ EN60947-4-2, LVD 2014/35/EU - Low-voltage.
Electromagnetic compatibility standards	■ CISPR 11 - Industrial, scientific and medical (ISM) radio-frequency equipment - electromagnetic disturbance characteristics - limits and methods of measurement ■ EN 61000-4-2 - Electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 2: Electrostatic discharge immunity test ■ EN 61000-4-3 - Electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 3: radiated, radio-frequency, electromagnetic field immunity test. ■ EN 61000-4-4 - Electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 4: electrical fast transient/burst immunity test. ■ EN 61000-4-5 - Electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 5: surge immunity test. ■ EN 61000-4-6 - Electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 6: immunity to conducted disturbances, induced by radio-frequency fields. ■ EN 61000-4-11 – Electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 11: voltage dips, short interruptions and voltage variations immunity tests.
Mechanical construction standards	■ EN 60529 - degrees of protection provided by enclosures (IP code). ■ UL 50 - enclosures for electrical equipment. ■ IEC 60721-3-3 - classification of environmental conditions.

Document: 10005474810/01