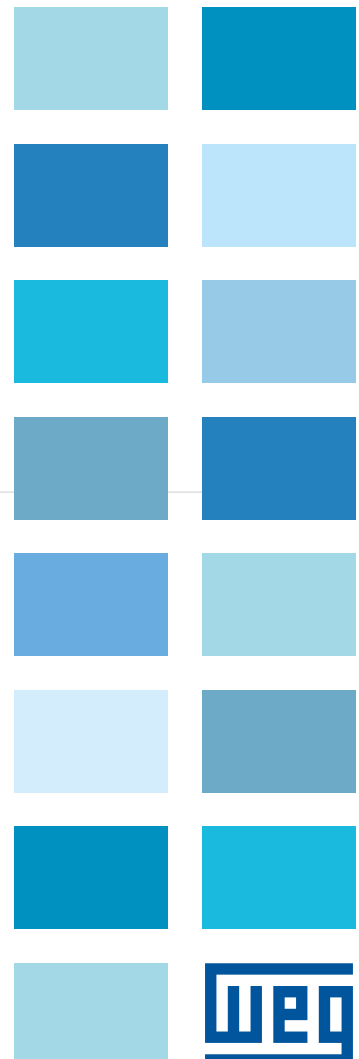
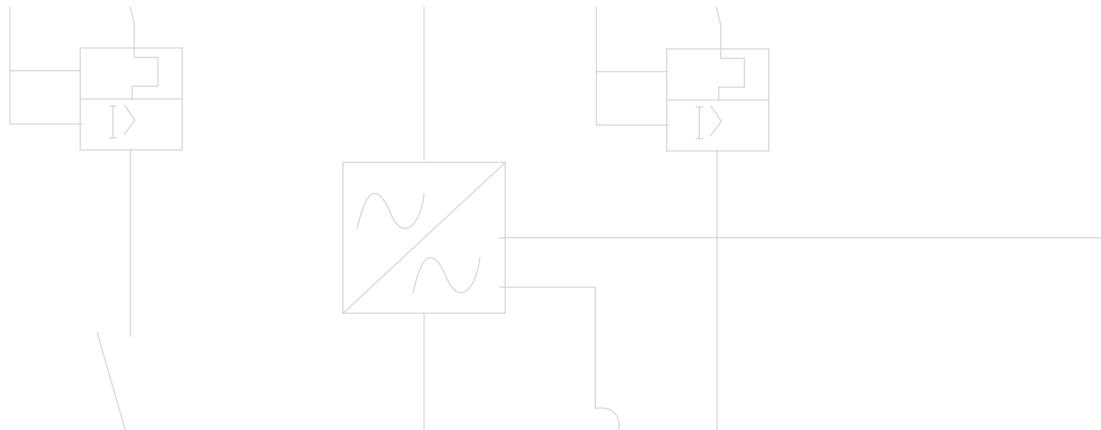


Automation Soft-Starters



Soft-Starters

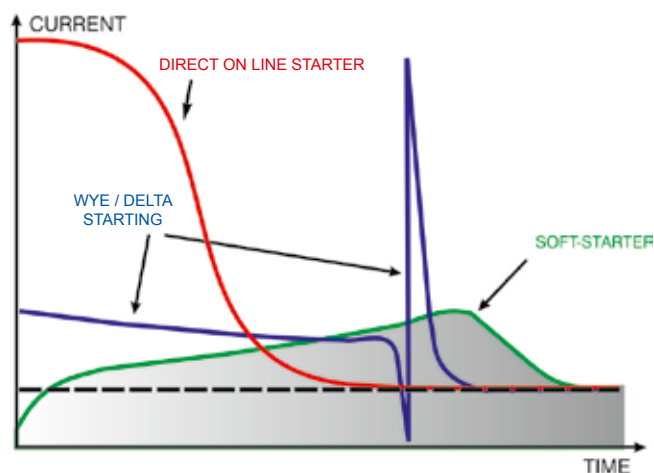


Soft-Starters are static starters that accelerate, decelerate and protect three-phase induction motors. The control of the voltage applied to the motor by means of adjustments to the firing angle of thyristors allows the soft-starter to start and stop an electric motor smoothly. With adequate adjustments of the variables, the torque produced is adjusted to the needs of the load, so that the required current is going to be the lowest possible for the starting procedure.

WEG Soft-Starters are micro processed, fully digital, state-of-the-art technology products designed to ensure the best starting and stopping performance of induction motors, presenting itself as a complete and low-cost solution. The human-machine interface allows easy adjustment of the parameters which helps set up and operation. The soft-starter line is top-notch in motor starting and stopping with features that allow the starting, stopping and protection of electric motors in an easy and efficient manner.



Comparison of electric motor start-up methods



SSW-05



The SSW-05 Plus Micro Soft-Starters, with DSP control (Digital Signal Processor) have been designed to supply excellent performance during starting and stopping of electric motors with an excellent cost/benefit ratio. The Operator Interface allows easy parameter setting, simplifying the start-up and operation activities. The SSW-05 Plus Micro Soft-Starters are compact, optimizing the space in electrical panels. The SSW-05 Plus already incorporates protection for the driven motor.

Benefits

- Reduction of stress on couplings and other transmission devices during starting (gear boxes, sheaves).
- Extended lifetime of motor and mechanical components due to reduced mechanical stress.
- Easy operation, programming and maintenance.
- Simple electrical wiring.
- Built-in bypass providing size reduction and energy saving.
- Operation in ambient up to 55°C (122°F).

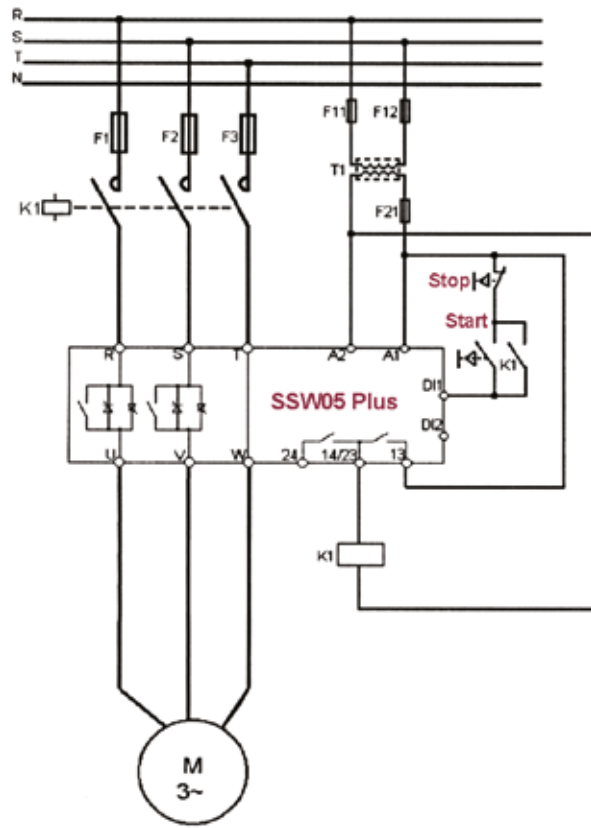
Applications

- Bladed Vacuum Pumps
- Centrifugal Pumps
- Screw Compressor (Relief Start)
- Axial Fans (Low Inertia and Low Load)

Certifications



SSW-05 Wiring Diagram



Settings and Indications

Dip-switch to enable/disable the motor protections

LEDs to indicate fault trips

LEDs to indicate the starter status

Potentiometers for pedestal voltage, acceleration/deceleration time and motor current settings.

Output to motor

Three phase power supply

Electronic power supply and digital inputs






Serial or remote HMI connector

Relay outputs



SSW-05 - Keypad

Remote Human-Machine Interface for remote operation on panel door or machine console. The HMI has a copy function incorporated, allowing copying of parameters from a soft-starter to others, allowing fast reliable setting of identical starters.

-  Start the soft-starter
-  Stop the soft-starter. Resets the soft-starter after a fault trip has occurred
-  Scroll up parameters or parameter value
-  Scroll down parameters or parameter value
-  Parameter content access/escape/enter



| Model | Model |
|--------------|--------------------------------------|
| CAB-RS-1 | 1m Cable for serial remote HMI |
| CAB-RS-2 | 2m Cable for serial remote HMI |
| CAB-RS-3 | 3m Cable for serial remote HMI |
| HMI-SSW05-RS | Remote HMI for CAB-RS cable up to 3m |

SUPERDRIVE Software

Windows-based software for setting parameters, control and monitoring SSW-05 Soft-Starters.

It allows setting parameters on-line directly to the Soft-Starters and/or setting of parameters off-line into a file. Possibility to store user parameters from existent SSW-05 Soft-Starters. The communication between the Soft-Starter and the computer is provided through RS-232 serial interface.



SSW-05 - Models



3 to 30 A

45 to 85 A

SSW-05 - Drive ratings

The tables below present the expected motor power for each soft-starter model under light load application (e.g.: centrifugal pump). However, for the proper selection of soft-starters, please use the SDW software.

Use the motor power ratings below only as a guidance. Motor rated currents may vary with speed and manufacturer. IEC motor powers are based on WEG 4-pole motors; NEMA motor powers are based on NEC table 430-150.

Motor voltages between 220V and 460V

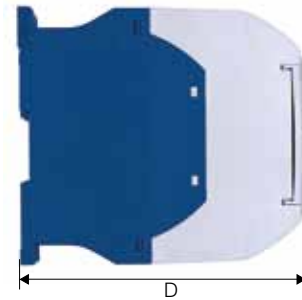
| Model | Output Current | IEC - 50Hz | | IEC - 60Hz | | NEMA - 60Hz | |
|----------------|----------------|--------------|--------------|--------------|--------------|-------------|------|
| | | 220V 230V | 380V 415V | 220V 230V | 440V 460V | 230V | 460V |
| | | A | kW | kW | HP | HP | HP |
| SSW050003T2246 | 3 | 0.55 | 1.1 | 1 | 1.5 | 0.5 | 1.5 |
| SSW050010T2246 | 10 | 2.2 | 4 | 3 | 7.5 | 3 | 5 |
| SSW050016T2246 | 16 | 4 | 7.5 | 5 | 10 | 5 | 10 |
| SSW050023T2246 | 23 | 5.5 | 11 | 7.5 | 15 | 7.5 | 15 |
| SSW050030T2246 | 30 | 7.5 | 15 | 10 | 20 | 10 | 20 |
| SSW050045T2246 | 45 | 11 | 22 | 15 | 30 | 15 | 30 |
| SSW050060T2246 | 60 | 15 | 30 | 20 | 40 | 20 | 40 |
| SSW050085T2246 | 85 | 22 | 45 | 30 | 60 | 30 | 60 |

Motor voltages between 525V and 575V

| Model | Output Current | IEC | NEMA |
|----------------|----------------|--------------|--------------|
| | | 50Hz 525V | 60Hz 575V |
| | | A | kW |
| SSW050003T4657 | 3 | 1.5 | 2 |
| SSW050010T4657 | 10 | 5.5 | 7.5 |
| SSW050016T4657 | 16 | 9.2 | 10 |
| SSW050023T4657 | 23 | 15 | 20 |
| SSW050030T4657 | 30 | 18.5 | 25 |
| SSW050045T4657 | 45 | 30 | 40 |
| SSW050060T4657 | 60 | 37 | 50 |
| SSW050085T4657 | 85 | 55 | 75 |

SSW-05 - Dimensions and Weight

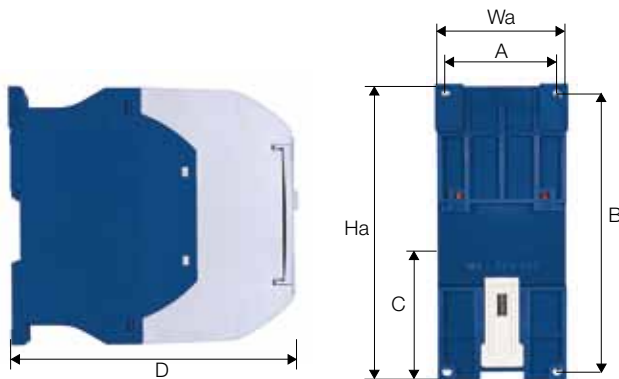
| Model | Frame Size | Dimensions mm (in) | | | Weight kg (lb) | Degree of Protection | Inside Delta (6 cables) Connection | Internal Bypass |
|----------------|------------|--------------------|--------------|---------------|----------------|----------------------|------------------------------------|-----------------|
| | | H | W | D | | | | |
| SSW050003T2246 | 1 | 130 (5.12) | 59 (2.32) | 145 (5.71) | 0.74 (1.63) | IP00 | No | Yes |
| SSW050010T2246 | | | | | | | | |
| SSW050016T2246 | | | | | | | | |
| SSW050023T2246 | | | | | | | | |
| SSW050030T2246 | | | | | | | | |
| SSW050045T2246 | 2 | 185 (7.28) | 79 (3.11) | 172 (2.79) | 1.67 (3.68) | IP00 | No | Yes |
| SSW050060T2246 | | | | | | | | |
| SSW050085T2246 | | | | | | | | |
| SSW050003T4657 | 1 | 130 (5.12) | 59 (2.32) | 145 (5.71) | 0.74 (1.63) | IP00 | No | Yes |
| SSW050010T4657 | | | | | | | | |
| SSW050016T4657 | | | | | | | | |
| SSW050023T4657 | | | | | | | | |
| SSW050030T4657 | | | | | | | | |
| SSW050045T4657 | 2 | 185 (7.28) | 79 (3.11) | 172 (2.79) | 1.67 (3.68) | IP00 | No | Yes |
| SSW050060T4657 | | | | | | | | |
| SSW050085T4657 | | | | | | | | |



Mechanical Mounting

| Size | Width W (mm) | | Height H | | Depth P (mm) | Mounting A (mm) | Mounting B (mm) | Mounting C (mm) | Mounting |
|------|--------------|------|----------|-------|--------------|-----------------|-----------------|-----------------|--------------|
| | W | Wa | H | Ha | | | | | |
| 1 | 59 | 60,4 | 130 | 130,7 | 145 | 51 | 122 | 61 | Bold M4/Rail |
| 2 | 79 | 80,4 | 185 | 185,7 | 172 | 71 | 177 | 99 | Bold M4/Rail |

Wa, Ha, Mounting (Only for setting with srew)



SSW-05 - Technical Data

| MODEL | | SSW-05 Plus |
|---------------------------|---|---|
| Power Supply | Voltage | 220 - 460 Vac (+10%, -15%) 460 - 575 Vac (+10%, -15%) |
| | Frequency | 50 / 60 Hz |
| | Electronic Supply | Switched mode power supply (90 – 250 Vac) |
| Enclosure | Degree of Protection | IP00 |
| Control | Method | Motor Voltage Variation |
| | CPU | DSP Microcontroller |
| Starting Duty Cycle | Standard | 300% (3 x Inom.) during 10 s, 4 starts per hour |
| Inputs | Digital | 01 input for starting and stopping |
| | | 01 input for error reset |
| Outputs | Digital | 01 relay output for full voltage indication (By-Pass) |
| | | 01 relay output for operation indication |
| Communication | Serial Interface | RS-232C |
| Safety | Protections | Motor overload |
| | | Phase sequency |
| | | Phase loss |
| | | Locked rotor |
| | | SCRs overload |
| | | Overcurrent |
| Internal fault (watchdog) | | |
| Functions | Starting Voltage | 30 - 80% of the rated voltage |
| Resources | Programmable Acceleration Ramp | 1 – 20 s |
| | Programmable Deceleration Ramp | Off – 20 s |
| | Motor Rated Current and Soft-Starter Rated Current Ration | 30 - 100% |
| Ambient | Temperature | 0 ... 55 °C - standard operation at rated current |
| | Humidity | 5 ... 90% non condensing |
| | Altitude | 0 ... 1000 m (3,300 ft) - standard operation at rated current 1000...4000m - with current derating (1%/ 100 m (328 ft) above 1000m (13.300ft)) |
| Finishing | Colour | Frost gray (cover) and blue (base) |
| Installation | Fastening | Fastening by bolts or assembling on DIN 35 mm rail |
| Conformities / Standards | Safety | UL 508 Standard – Industrial Control Equipment / IRAM |
| | Low Voltage | IEC 60947-4-2 |
| | EMC | EMC Directive 89 / 336 / EEC - Industrial Environment |



SSW-05 - Coding

| | | | | | | | | |
|-------|------|---|------|---|---|----|----|---|
| SSW05 | 0010 | T | 2246 | P | P | -- | -- | Z |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

1 - Soft-Starter line SSW-05

2 - Rated output current:

0003 = 3 A
 0010 = 10 A
 0016 = 16 A
 0023 = 23 A
 0030 = 30 A
 0045 = 45 A
 0060 = 60 A
 0085 = 85 A

3 - Input power supply voltage:

T= Three-phase

4 - Power supply voltage:

2246 = 220 ... 460 V
 4657 = 460 ... 575 V

5 - Product manual language:

P = Portuguese
 E = English
 S = Spanish
 G = German

6 - Product version

P = Plus

7 - Special hardware

Blank = Standard (not available)
 Hx = Optional version x (H1 ... Hn)

8 - Special software

Blank = Standard (not available)
 Sx = Optional version x (S1 ... Sn)

9 - Code end

Z = End of coding

Ex.: SSW050060T4657PPZ



SSW-06

WEG SSW-06 series soft-starters are micro-processor controlled, fully digital and designed with state-of-the-art technology.

Excellent acceleration and deceleration control is achieved with an optimized cost to benefit ratio.

The HMI allows easy programming during commissioning and operation. The built-in “Pump Control” function gives optimized pre-set pump application parameters, avoiding “Water Hammer”.



Benefits

- 32 Bits RISC high performance microcontroller;
- Electronic motor protection;
- Removable Human Machine interface with double display (LED/LCD);
- Fully programmable control methods;
- Totally flexible torque control;
- “Kick-start” function for high break-away torque
- “Pump control” function for intelligent control of pumping systems;
- Avoids “water hammer” in pumps;
- Current peaks limits on the power supply;
- Voltage drop limits during starting;
- Voltage Range (220 to 575Vac and 575 to 690Vac);
- The control board power supply has EMC filter (94 to 253 Vac);
- Built-in bypass up 820A, providing size reduction and energy saving;
- Back-up memory of motor protection I²t thermal image;
- Voltage and current unbalance protection;
- Over/under voltage and current protection;
- Input for motor PTC;
- Reduction of mechanical stress;
- Reduction of stress over couplings and transmission devices (gearboxes, sheaves, belts, etc...);
- Increases the lifetime of the motor and mechanical equipment of the driven machine;
- Easy operation, programming and maintenance via Keypad;
- Simplified electrical installation;
- Oriented start-up;
- Possibility for standard three leads or inside delta size cable connection;
- All protections and function available for both types of connection;
- Serial or fieldbus communication errors protection;
- Operational environment up to 55° C (without current reduction) for model range 10A to 820A and up to 40° C (without current reduction) for model range 950A to 1400A.
- International certifications such as IRAM, C-Tick, UL, cUL, Gost and CE.

SSW-06 - Applications

Chemical and Petrochemical

- Fans / Exhaust fans
- Centrifugal pumps
- Dosing / Process pumps
- Centrifugal pumps
- Agitators / mixers
- Compressors
- Soap extruders

Plastic and Rubber

- Extruding machines
- Blow Molding
- Mixers
- Calenders
- Grinders

Pulp and Paper

- Dosing pumps
- Process pumps
- Fans / Exhaust fans
- Agitators / Mixers
- Rotatory filters
- Rotatory kilns
- Scrap conveyor
- Papers refiners

Sugar and Alcohol

- Fans / Exhaust fans
- Process pumps
- Conveyor belts

Juice and Beverages

- Centrifugal pumps
- Agitators / Mixers
- Roller tables
- Conveyor belts
- Bottling lines

Cement and Mining

- Dosing / Process pumps
- Sifting Machines / Rotating tables
- Dynamic graders
- Conveyor belts

Food and Ration

- Dosing / Process pumps
- Fans / Exhaust fans
- Agitators / Mixers
- Dryers / Furnaces
- Pellet mills
- Hoist / Monorails

Textile

- Agitators / Mixers
- Dryers / washing machines

Metal Industry

- Fans / Exhaust fans
- Conveyor belt
- Drilling & Grinding machines
- Pumps

Ceramic

- Fans / Exhaust fans
- Dryers / Furnaces
- Ball mills
- Roller tables
- Converyor belts

Glasses

- Fans / Exhaust fans
- Bottle manufacturing machine
- Roller tables
- Converyor belts

Cooling Systems

- Process pumps
- Fans / Exhaust fans
- Compressors

Wood

- Slicing Machine
- Polishing Machine
- Cutting machines
- Wood chippers
- Saw and plains

Waste water treatment

- Axial flow pumps
- Impulsion systems

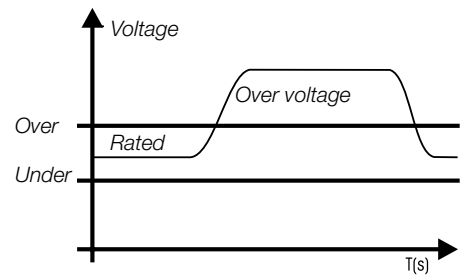
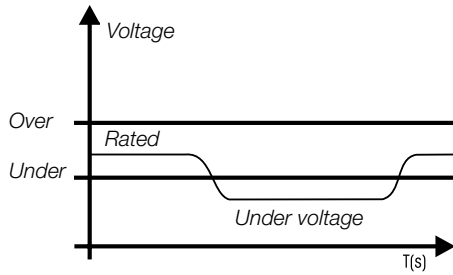
Material Handling

- Conveyors / Belts / Chains
- Roller tables
- Monorails / Hoist
- Escalators
- Baggage conveyors (airports)

Voltage and Current Protections

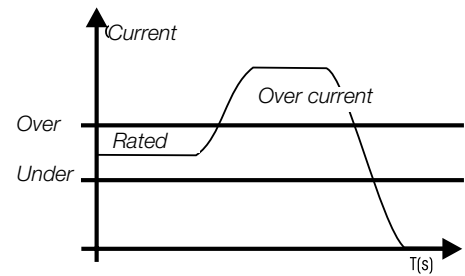
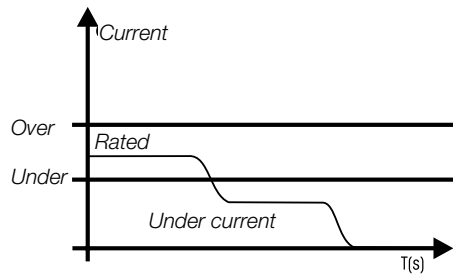
Under and Over Voltage

It allows adjustment of the limits for under and over voltage protection. It is available in both types of connections to the motor.



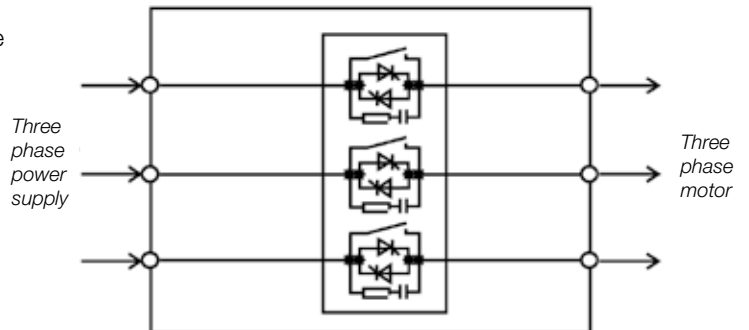
Under and Over Current

It allows adjustment of the limits for under and over current protection.



BY-PASS Built-in

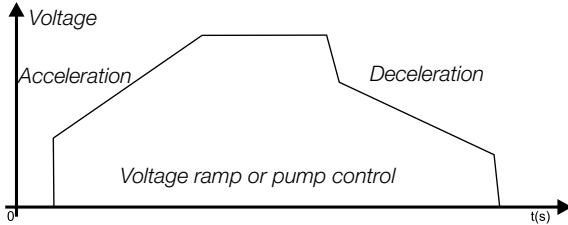
Built-in by-pass reduces power and heating losses in the thyristors, providing size reduction and energy saving. It is available in the models from 10A up to 820A.



SSW-06 - Main Functions

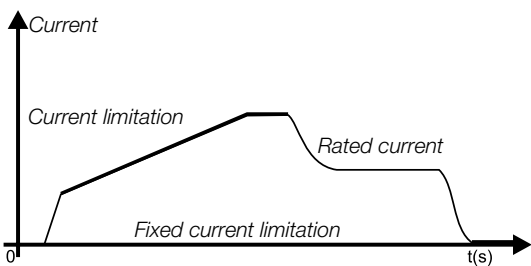
Voltage Ramp

It provides smooth acceleration and / or deceleration by using voltage ramps.



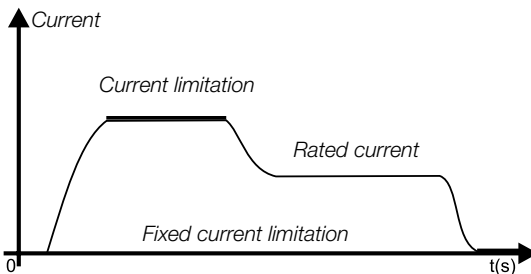
Pump Control

Pump control provides a smooth deceleration avoiding "overshoots".



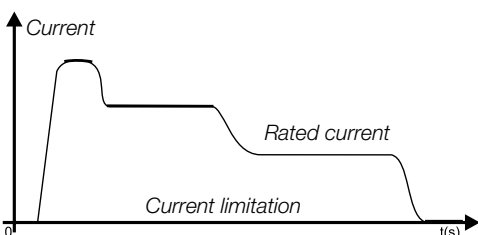
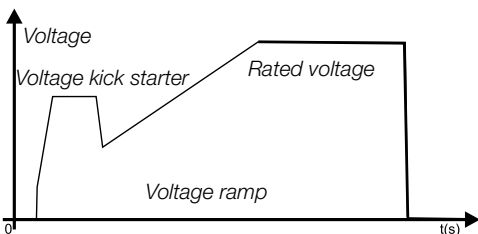
Current Limitation

It allows the torque limitation adjustment during the starting procedure based on application requirements.



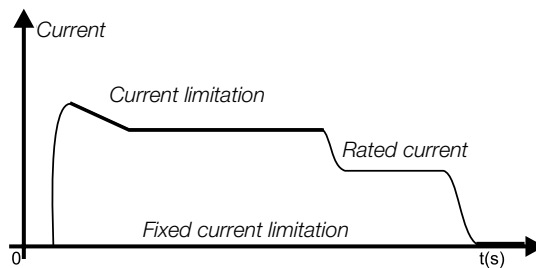
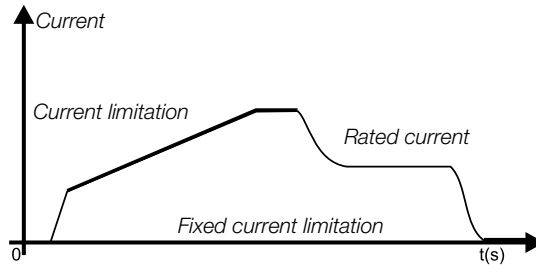
Voltage and current Kick Starter

It provides an initial pulse of voltage or current that when applied in the motor provides an additional initial torque to the start the motor. Required for loads with high initial torque.



Current Ramp

It allows to adjust the current limitation for the beginning of the start. Applicable to load with higher or lower initial torque.

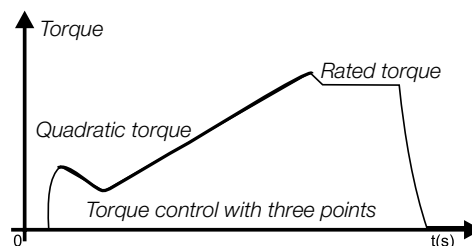
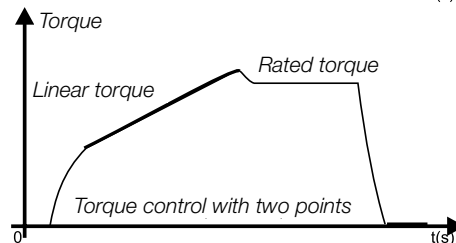
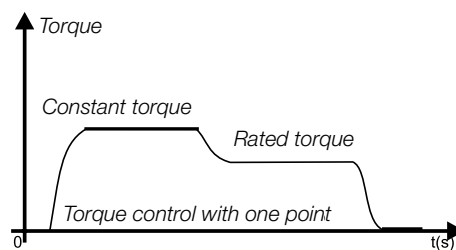


Torque Control

The SSW-06 has a torque control algorithm with high performance and total flexibility for any application requirements.

It is available in both types of connection to the motor (standard / inside-delta circuit).

- 1 adjustment point - Constant torque.
- 2 adjustment points - Linear torque ramp.
- 3 adjustment points - Quadratic torque ramp.



SSW-06 - Keypad (HMI)

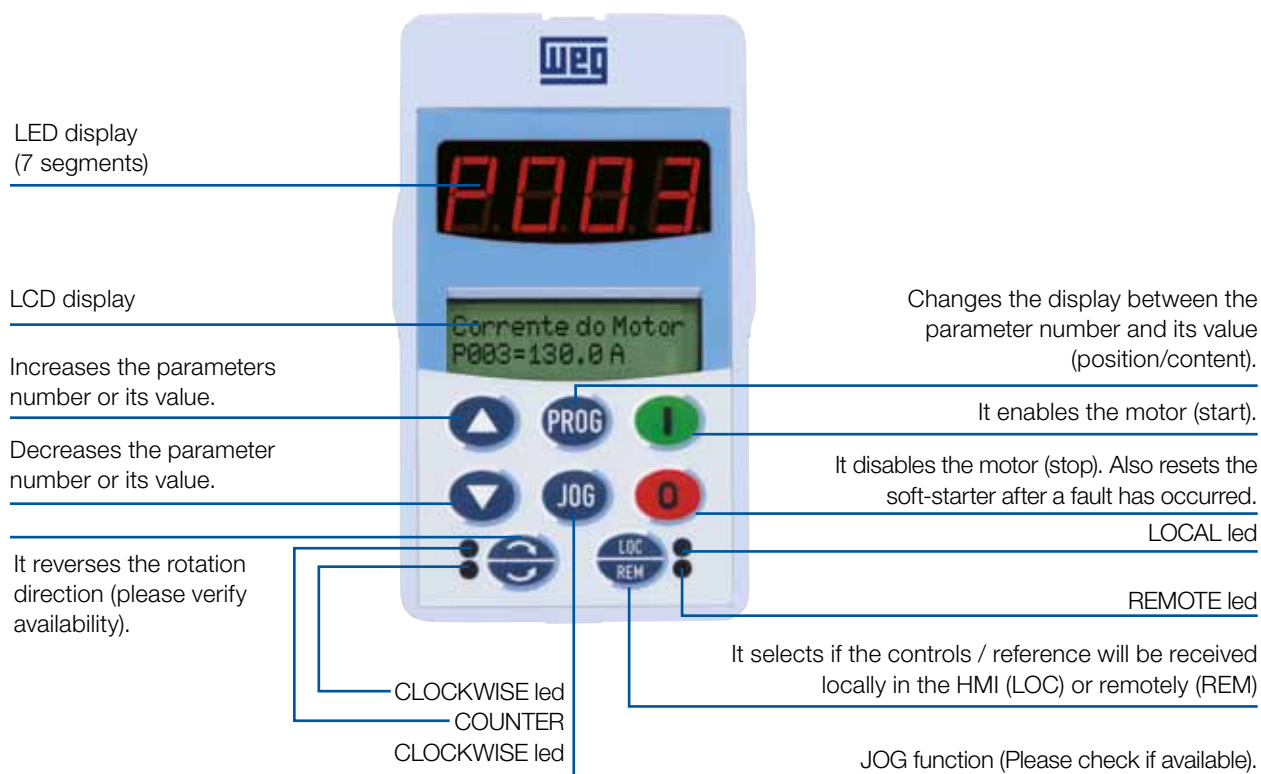
Intelligent Interface

Intelligent operation interface with double display, LED (7 segments) and LCD (2 lines of 16 characters), which allows excellent long distance visibility, with a detailed description of all parameters and messages via alphanumeric LCD display.

Selectable Language

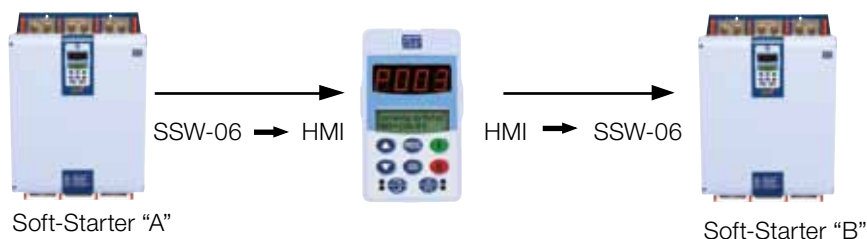
Intelligent operation interface allows the user to choose the language to be used for programming and display of parameters and messages in the LCD display.

The high level of hardware and software capacity of the product offers the user many options of language such as: Portuguese, English, German and Spanish, in order to adapt to any user in the world.



COPY Function

The intelligent interface also offers the "COPY" function that allows copying the parameters of a soft-starter to another, bringing speed, reliability and programming repetition to similar applications.



Oriented Start-Up

Soft-starters are equipment intended to start induction motors, where adaptation and response are directly related to the motor characteristics as well as the power supply.

The soft-starters from SSW-06 series have a programming option specially developed to simplify the start-up, by an oriented and automatic sequence that guides the user to the sequential programming of the minimum characteristics required for adaptation of the soft-starter to the driven motor and load.

SSW-06 - Fieldbus Communication

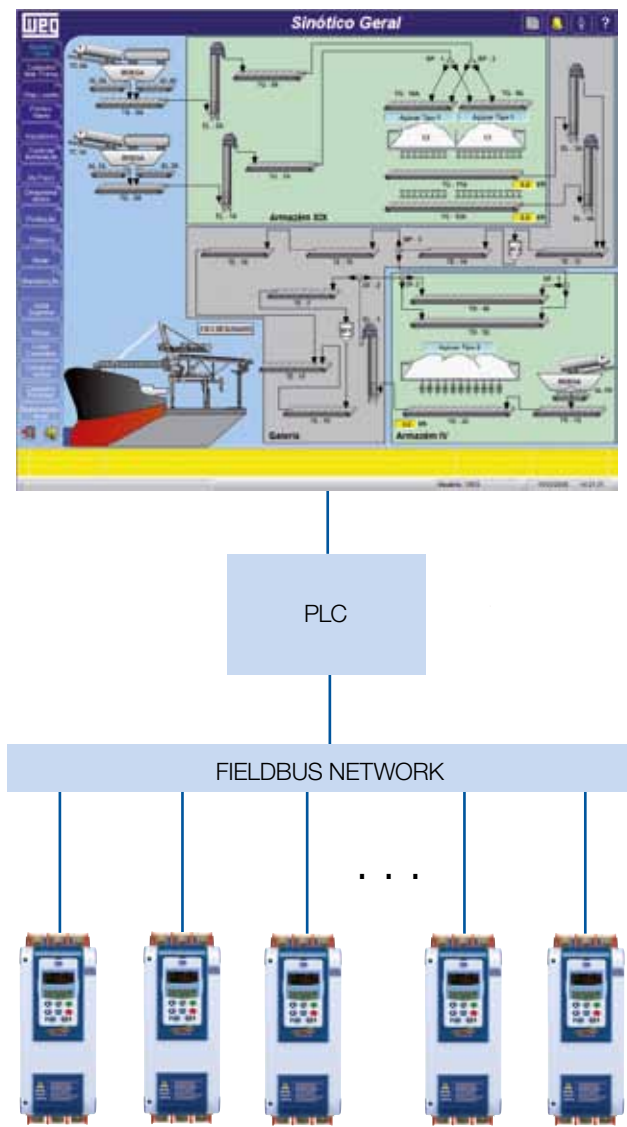
The SSW-06 soft-starters can be communicated to fieldbus communication network through the most common standard protocols in the world, as it follows:

- FIELDBUS →
- Modbus RTU
 - Profibus DP/DP-V1
 - DeviceNet
 - DeviceNet Acyclic
 - Ethernet / IP
 - Ethernet / Modbus / TCP

Mainly intended to integrate large automation plants, communication networks offer many advantages in the supervision, monitoring and on-line control of the soft-starters, providing high performance and great operational flexibility.

To be connected to communication protocols, as Profibus, DeviceNet and EtherNet, optional modules need to be fitted in the SoftStarter. For connecting the SSW-06 to Modbus RTU network the RS-232 or RS-485 adapter can be used.

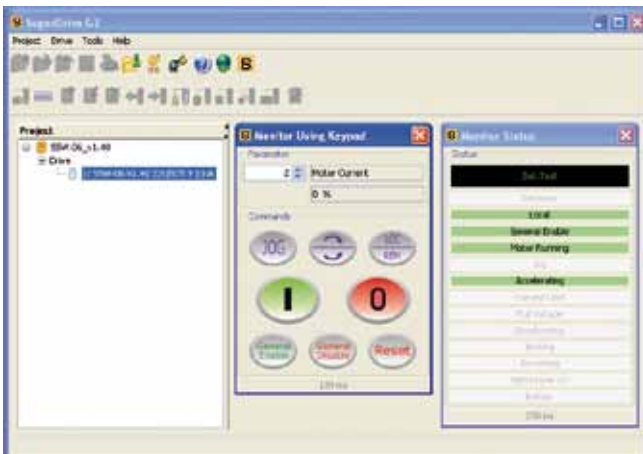
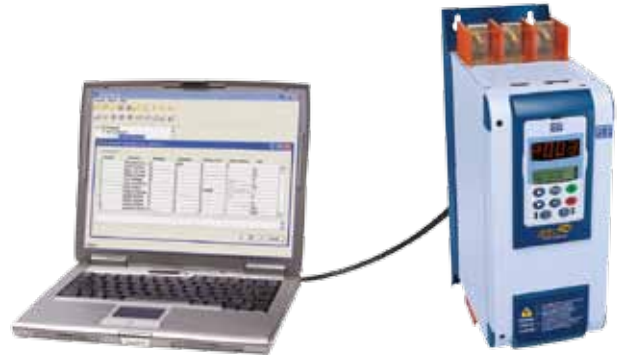
Besides providing protection, monitoring and motor control, it is allowable the use of digital and analog I/Os of the SSW-06 as a remote unit in a Profibus DP network.



SSW-06 - Superdrive G2

Windows-based Software, for SSW-06 programming, control and monitoring.

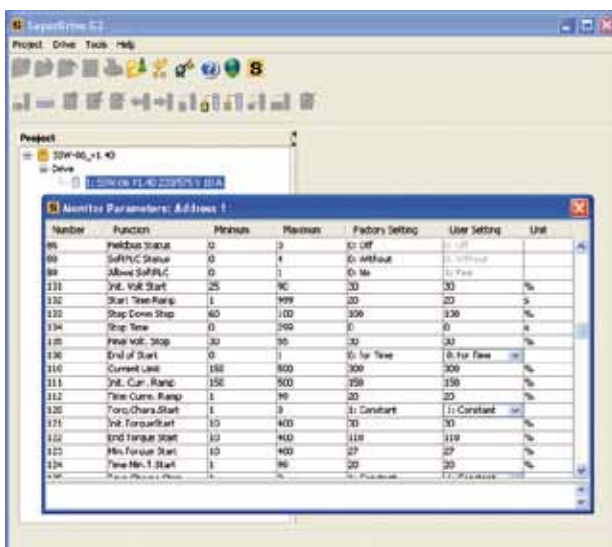
- Automatic SSW-06 identification.
- Reads SSW-06 parameters.
- Writes SSW-06 parameters.
- Online parameters settings.
- Offline parameters settings allow an user application to be created.
- Allows documentation of the application to be created.
- Easily accessible.
- The TRACE FUNCTION provided with Superdrive G2 version, through waveforms gives the user the possibility of status of the Soft Starter at normal operating conditions as well as for troubleshooting.
- A 2m shielded USB cable is provided with the product.
- Online help.
- Free software on the site www.weg.net



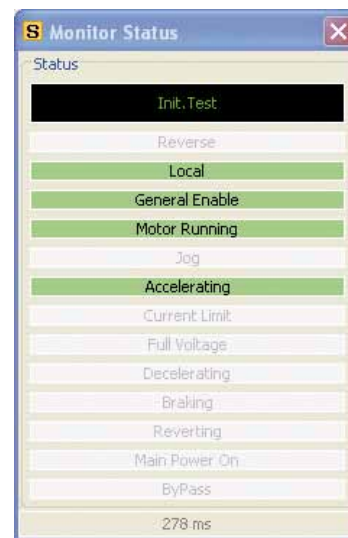
| Number | Function | Minimum | Maximum | Factory Setting | User Setting | Unit |
|--------|--------------------|---------|---------|-----------------|--------------|------|
| 85 | Fieldbus Status | 0 | 3 | 0: OFF | 0: OFF | |
| 88 | SoftPLC Status | 0 | 4 | 0: Without | 0: Without | |
| 89 | Allowe SoftPLC | 0 | 1 | 0: No | 0: Yes | |
| 101 | Init. Volt Start | 25 | 90 | 30 | 30 | % |
| 102 | Start Time Ramp | 1 | 999 | 20 | 20 | s |
| 103 | Step Down Stop | 60 | 100 | 100 | 100 | % |
| 104 | Stop Time | 0 | 299 | 0 | 0 | s |
| 105 | Final Volt. Stop | 30 | 55 | 30 | 30 | % |
| 106 | End of Start | 0 | 1 | 0: for Time | 0: for Time | ms |
| 110 | Current Limit | 150 | 500 | 300 | 300 | % |
| 111 | Init. Curr. Ramp | 150 | 500 | 150 | 150 | % |
| 112 | Time Curr. Ramp | 1 | 99 | 20 | 20 | % |
| 120 | Torq.Chara.Start | 1 | 3 | 1: Constant | 1: Constant | ms |
| 121 | Init. TorqueStart | 10 | 400 | 30 | 30 | % |
| 122 | End TorqueStart | 10 | 400 | 110 | 110 | % |
| 123 | Min. Torque Start | 10 | 400 | 27 | 27 | % |
| 124 | Time Min. T. Start | 1 | 99 | 20 | 20 | % |

Monitoring and parameterization of the list of parameters comparison to factory default easy

Integrated Environment



Trace function configuration in the G2 superdrive



Status monitoring

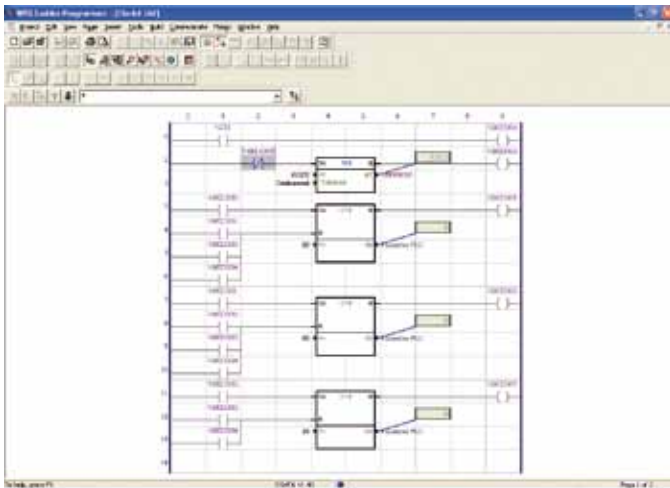
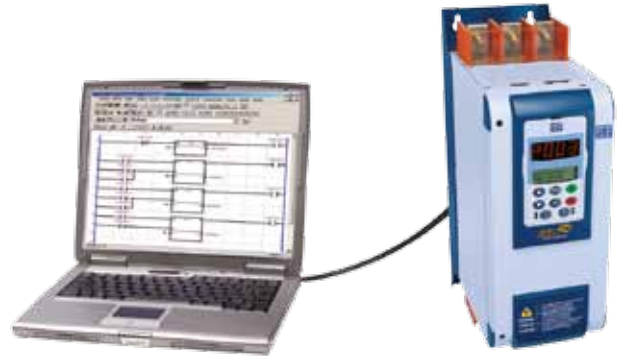


Monitoring and control window using virtual HMI

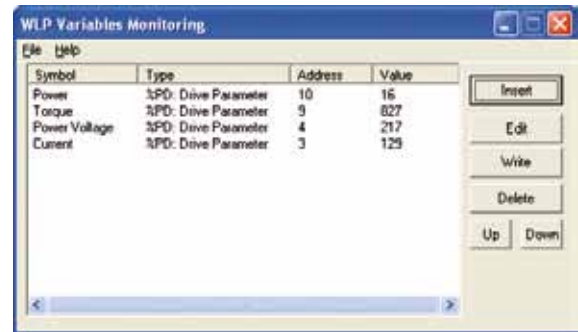
SSW-06 - SOFTPLC Function

A resource that provides PLC functions in the SSW-06 giving flexibility to the user and allowing development of customized user application programs.

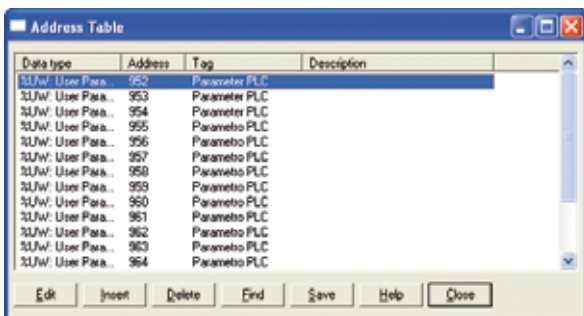
- LADDER programming language – WLP Software.
- Access to all inverter parameters and I/Os.
- PLC, mathematical and control blocks.
- Download, upload and online monitoring.
- Memory capacity of 1kbytes.
- Allows documentation of the application to be created.
- Online help.
- Free software on the site www.weg.net



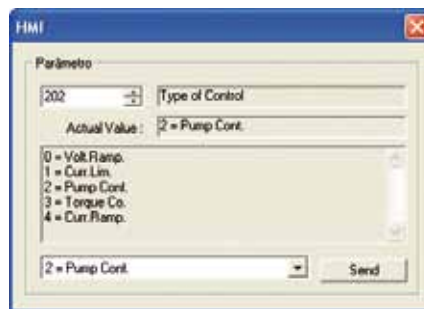
Simple and practical programming environment



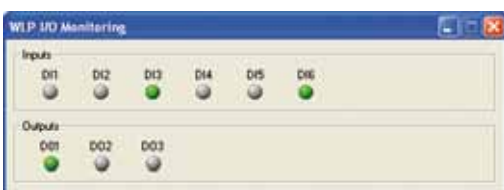
On-line monitoring



User's parameters



Virtual HMI for alteration of parameters



Digital input and output monitoring

SSW-06 - Accessories and Options

Operation interface with double display (IP22)

LED and LCD, with COPY function, for local installation (in the cover of the soft-starter) or remotely in the door of a panel. Maximum distance 5 m (without frame).



COMPLETE HUMAN-MACHINE INTERFACE (standard)

Installation frame / human-machine interface (IP22)

Remote mounting of the HMI to the door of a panel or to a machine console. Maximum distance 5 m.



REMOTE INTERFACE FRAME KIT KMR – SSW-06

Cable length for HMI and SSW-06

Cable length (X) 1, 2, 3 and 5 m.



REMOTE INTERFACE INTERCONNECTION CABLES
CAB – HMI SSW-06-X

Fieldbus Cards

These cards enable SSW06 control via fieldbus.



FIELDBUS COMMUNICATION KITS
Profibus DP → KFB-PD
DeviceNet → KFB-DN
Profibus DPV1 → KFB-PDPV1
DeviceNet Acyclic → KFB-DD
EtherNet /IP → KFB-ENIP

RS-485 communication kit

Enables the connection of the SSW06 to a Modbus-RTU fieldbus via an isolated RS485.



COMMUNICATION KIT RS-485
RS-485 → KRS-485

IP 20 Kit

Protection of the power terminal blocks



POWER CONNECTION TERMINALS PROTECTION KIT
(for models from 85A up to 820A)

KIT IP20-M2 (85A to 130A)
KIT IP20-M3 (170A to 205A)
KIT IP20-M4 (255A to 365A)
KIT IP20-M5 (412A to 604A)
KIT IP20-M6 (670A to 820A)

USB Kit

It allows communication with a PC via USB port



KUSB COMMUNICATION KIT

I/O Expansion Kit

6 Isolated Digital Inputs and Outputs to use with SOFTPLC.



DIGITAL I/OS EXPANSION

External Current Acquisition Kit

To be used when external By-Pass is required to keep protections activated.



CURRENT ACQUISITION KIT
K-ECA
(for models 255A to 1400A)

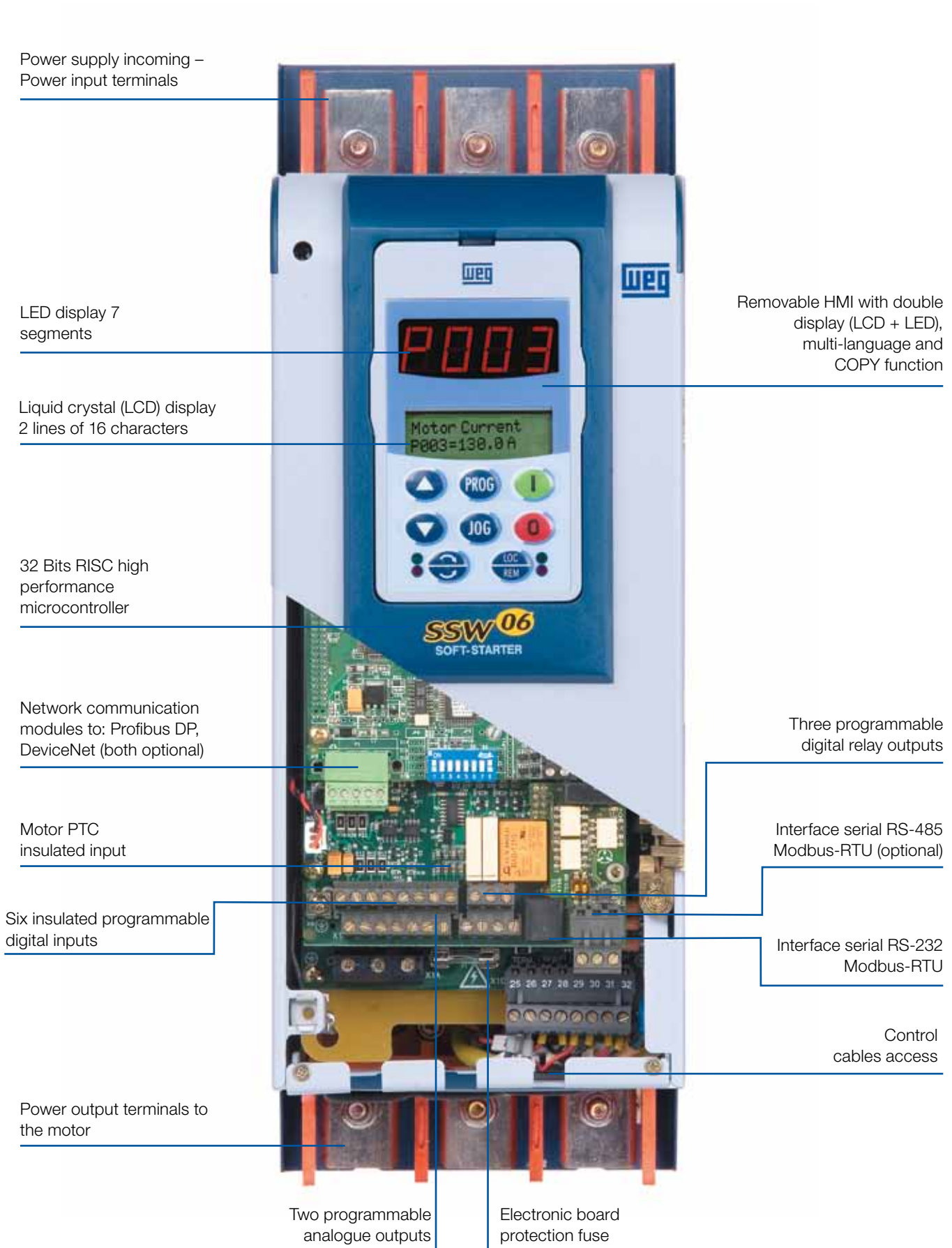
Motor PT100 Temperature Transducers

Optional module for motor PT100 connections (5 sensors)



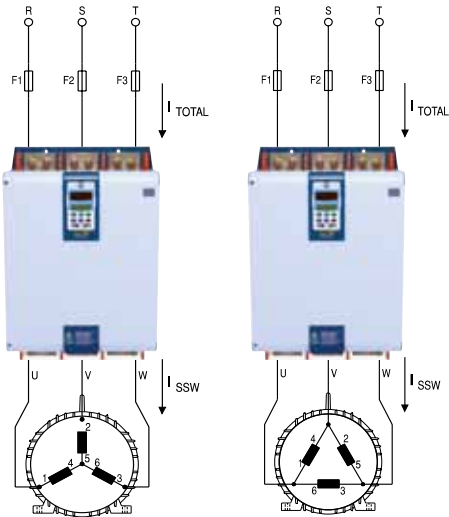
K-PT100 TEMPERATURE TRANSDUCER

SSW-06 - A Complete, Flexible and Compact Product



SSW-06 - Typical Wiring Diagrams

Standard (3 leads)



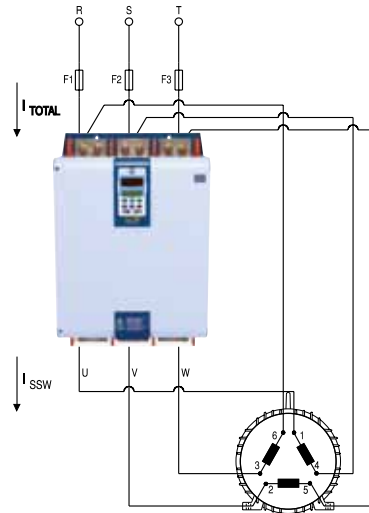
SSW-06 Standard Connection

Motor in Y

Motor in Δ

$$I_{\text{Soft-Starter}} = I_{\text{Full Current}}$$

Inside Delta Connection (6 leads)



SSW-06 Delta Connected

$$I_{\text{Soft-Starter}} = \frac{I_{\text{required}}}{\sqrt{3}} = 58\% \text{ of } I_{\text{required}} \text{ (after the start)}$$

$$I_{\text{Soft-Starter}} = \frac{I_{\text{required}}}{1,5} = 67\% \text{ of } I_{\text{required}} \text{ (during start)}$$

Notes

- At the Starting, for the same motor power, the Inside Delta connection (6 leads) allows for a reduction of 33% of the Soft Starter current if compared to the 3 leads connection. Even when the motor is up to speed a reduction of 43% of the Soft Starter current is achieved by using 6 leads connection. Basically the Inside Delta connection option offered by the SSW-06 gives the customer alternative ways of reducing cost and size when it comes to Soft Starter solutions.
- A 6 leads motor is required when Inside Delta Connection is used.

| MOTOR | 6 leads connection |
|---|-----------------------------------|
| 220V - Δ / 380V-Y | 220V - Δ |
| 380V - Δ / 660V-Y | 380V - Δ |
| 440V - Δ / 760V-Y | 440V - Δ |
| 575V - Δ | 575V - Δ |
| 220V - Δ / 380V-Y / 440V - Δ / 760V-Y | 220V - Δ / 440V - Δ |

- For the same motor power, the Inside Delta Connection (6 leads), a reduction of 42% of the soft- starter current compared to the standard connection (3 leads).
- The Inside Delta connection (6 leads) allows the soft-starter to start a motor 73% greater than the standard connection (3 leads).
- The Inside Delta connection requires 6 leads from the soft-starter to the motor.
- During the start, the motor current can be 1.5 times greater than the soft-starter one.
- After the start, the motor current can be 1.73 times greater than the soft-starter.

SSW-06 - Drive Ratings

The tables below present the expected motor power for each soft-starter model under light load application (e.g.: centrifugal pump). However, for the proper selection of soft-starters, please use the SDW software.

Use the motor power ratings below only as a guidance. Motor rated currents may vary with speed and manufacturer. IEC motor powers are based on WEG 4-pole motors; NEMA motor powers are based on NEC table 430-150 (ratings up to 500 HP) and on WEG 4-pole motors (ratings above 500 HP).

Inline Connection (3 leads)

Motor voltages between 220V and 575V

| Model | Output Current | IEC - 50Hz | | | IEC - 60Hz | | NEMA - 60Hz | | |
|----------------|----------------|------------|-----------|------|------------|-----------|-------------|------|------|
| | | 220V 230V | 380V 415V | 525V | 220V 230V | 440V 460V | 230V | 460V | 575V |
| | | A | kW | kW | HP | HP | HP | HP | HP |
| SSW060010T2257 | 10 | 2.2 | 4 | 5.5 | 3 | 7.5 | 3 | 5 | 7.5 |
| SSW060016T2257 | 16 | 4 | 7.5 | 9.2 | 5 | 10 | 5 | 10 | 10 |
| SSW060023T2257 | 23 | 5.5 | 11 | 15 | 7.5 | 15 | 7.5 | 15 | 20 |
| SSW060030T2257 | 30 | 7.5 | 15 | 18.5 | 10 | 20 | 10 | 20 | 25 |
| SSW060045T2257 | 45 | 11 | 22 | 30 | 15 | 30 | 15 | 30 | 40 |
| SSW060060T2257 | 60 | 15 | 30 | 37 | 20 | 40 | 20 | 40 | 50 |
| SSW060085T2257 | 85 | 22 | 45 | 55 | 30 | 60 | 30 | 60 | 75 |
| SSW060130T2257 | 130 | 37 | 55 | 90 | 50 | 100 | 50 | 100 | 125 |
| SSW060170T2257 | 170 | 45 | 90 | 110 | 60 | 125 | 60 | 125 | 150 |
| SSW060205T2257 | 205 | 55 | 110 | 132 | 75 | 150 | 75 | 150 | 200 |
| SSW060255T2257 | 255 | 75 | 132 | 185 | 100 | 200 | 100 | 200 | 250 |
| SSW060312T2257 | 312 | 90 | 160 | 220 | 125 | 250 | 125 | 250 | 300 |
| SSW060365T2257 | 365 | 110 | 185 | 250 | 150 | 300 | 150 | 300 | 350 |
| SSW060412T2257 | 412 | 110 | 220 | 300 | 150 | 350 | 150 | 300 | 450 |
| SSW060480T2257 | 480 | 132 | 250 | 355 | 200 | 400 | 200 | 400 | 500 |
| SSW060604T2257 | 604 | 185 | 315 | 450 | 250 | 500 | 250 | 500 | 600 |
| SSW060670T2257 | 670 | 200 | 355 | 500 | 270 | 550 | - | 600 | 700 |
| SSW060820T2257 | 820 | 250 | 450 | 560 | 350 | 700 | - | 700 | 900 |
| SSW060950T2257 | 950 | 280 | 500 | 710 | 400 | 800 | - | 800 | 1000 |
| SSW061100T2257 | 1100 | 315 | 560 | 800 | 450 | 900 | - | 900 | 1100 |
| SSW061400T2257 | 1400 | 400 | 710 | 1000 | 550 | 1250 | - | 1100 | 1500 |

Motor voltage 690V

| Model | Output Current | IEC |
|----------------|----------------|-----------|
| | | 50Hz 690V |
| | | A |
| | | kW |
| SSW060045T5769 | 45 | 37 |
| SSW060060T5769 | 60 | 55 |
| SSW060085T5769 | 85 | 75 |
| SSW060130T5769 | 130 | 110 |
| SSW060170T5769 | 170 | 160 |
| SSW060205T5769 | 205 | 185 |
| SSW060255T5769 | 255 | 250 |
| SSW060312T5769 | 312 | 300 |
| SSW060365T5769 | 365 | 355 |
| SSW060412T5769 | 412 | 400 |
| SSW060480T5769 | 480 | 450 |
| SSW060604T5769 | 604 | 560 |
| SSW060670T5769 | 670 | 630 |
| SSW060820T5769 | 820 | 800 |
| SSW060950T5769 | 950 | 900 |
| SSW061100T5769 | 1100 | 1120 |
| SSW061400T5769 | 1400 | 1400 |

NOTES:

- 1- The maximum power of the motors in the table have been calculated based on WEG 2 and 4 poles motors.
- For motors with another polarity (Ex.: 6 or 8 poles), or another voltage (Ex.: 230, 400 or 460 V) and/or another supplier, please specify the soft-starter based on the motor rated current.
- 2 - In 950 A model, the fan voltage must be specified as 110 or 220 Vac.
- 3 - In 1100A and 1400A models, the fan voltage is always 220 Vac.
- 4 - Ambient temperature (Ta) = 0... 55°C is only valid for 10A up to 820A models, for the 950A, 1100A and 1400A models, Ta= 0... 40°C

SSW-06 - Drive Ratings

Inside Delta Connection (6 loads)

Motor voltages between 220V and 575V

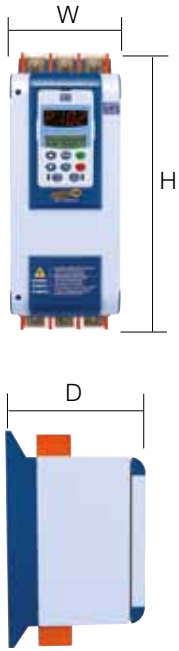
| Model | Output Current | IEC - 50Hz | | | IEC - 60Hz | | NEMA - 60Hz | | |
|----------------|----------------|--------------|--------------|------|--------------|--------------|-------------|------|------|
| | | 220V 230V | 380V 415V | 525V | 220V 230V | 440V 460V | 230V | 460V | 575V |
| | | A | kW | kW | kW | HP | HP | HP | HP |
| SSW060010T2257 | - | - | - | - | - | - | - | - | - |
| SSW060016T2257 | - | - | - | - | - | - | - | - | - |
| SSW060023T2257 | - | - | - | - | - | - | - | - | - |
| SSW060030T2257 | - | - | - | - | - | - | - | - | - |
| SSW060045T2257 | 77 | 22 | 37 | 55 | 30 | 60 | 25 | 60 | 75 |
| SSW060060T2257 | 103 | 30 | 55 | 75 | 40 | 75 | 30 | 75 | 100 |
| SSW060085T2257 | 147 | 37 | 75 | 90 | 60 | 125 | 50 | 100 | 150 |
| SSW060130T2257 | 225 | 55 | 110 | 160 | 75 | 175 | 75 | 150 | 200 |
| SSW060170T2257 | 294 | 75 | 160 | 220 | 125 | 200 | 100 | 200 | 300 |
| SSW060205T2257 | 355 | 110 | 185 | 250 | 150 | 300 | 125 | 250 | 350 |
| SSW060255T2257 | 441 | 132 | 220 | 315 | 175 | 350 | 150 | 350 | 450 |
| SSW060312T2257 | 540 | 160 | 250 | 400 | 200 | 450 | 200 | 450 | 600 |
| SSW060365T2257 | 631 | 185 | 315 | 450 | 250 | 550 | 250 | 500 | 700 |
| SSW060412T2257 | 713 | 220 | 370 | 500 | 300 | 600 | - | 600 | 800 |
| SSW060480T2257 | 831 | 250 | 450 | 630 | 350 | 700 | - | 700 | 900 |
| SSW060604T2257 | 1046 | 315 | 560 | 800 | 450 | 900 | - | 900 | 1100 |
| SSW060670T2257 | 1160 | 355 | 630 | 900 | 450 | 950 | - | 1000 | 1250 |
| SSW060820T2257 | 1420 | 400 | 800 | 1000 | 550 | 1250 | - | 1250 | 1500 |
| SSW060950T2257 | 1645 | - | 900 | 1250 | 650 | 1350 | - | 1350 | 1750 |
| SSW061100T2257 | 1905 | - | 1000 | 1400 | 800 | 1500 | - | 1500 | 2000 |
| SSW061400T2257 | 2424 | - | 1250 | 1800 | 1000 | 2000 | - | 2000 | 2500 |

NOTES:

- 1- The maximum power of the motors in the table have been calculated based on WEG 2 and 4 poles motors.
- For motors with another polarity (Ex.: 6 or 8 poles), or another voltage (Ex.: 230, 400 or 460 V) and/or another supplier, please specify the soft-starter based on the motor rated current.
- 2 - In 950 A model, the fan voltage must be specified as 110 or 220 Vac.
- 3 - In 1100A and 1400A models, the fan voltage is always 220 Vac.
- 4 - Ambient temperature (Ta) = 0... 55°C is only valid for 10A up to 820A models, for the 950A, 1100A and 1400A models, Ta= 0... 40°C

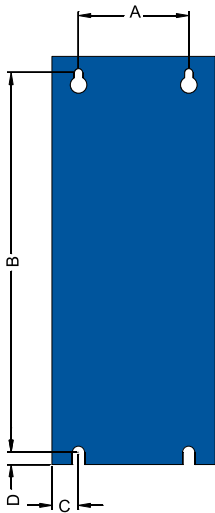


SSW-06 - Dimensions and Weight



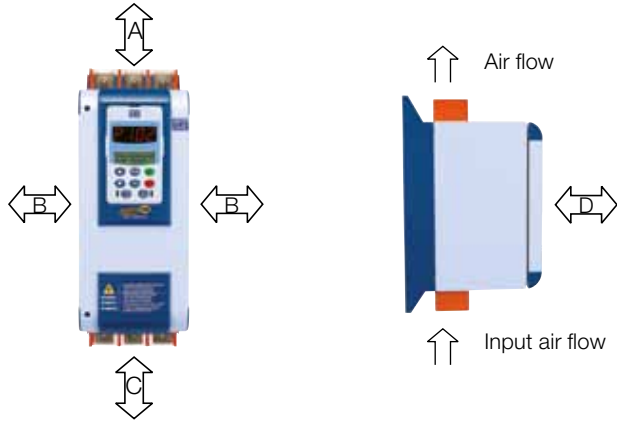
| Model | Frame Size | Dimensions mm (in) | | | Weight kg (lb) | Degree of Protection | Inside Delta (6 cables) Connection | Internal Bypass |
|----------------|------------|--------------------|----------------|----------------|------------------|----------------------------|------------------------------------|-----------------|
| | | H | W | D | | | | |
| SSW060010T2257 | 1 | 256 (10.08) | 132 (5.20) | 182 (7.16) | 3.3 (7.3) | IP20 | No | Yes |
| SSW060016T2257 | | | | | | | | |
| SSW060023T2257 | | | | | | | | |
| SSW060030T2257 | | | | | | | | |
| SSW060045T2257 | 2 | 370 (14.57) | 132 (5.20) | 244 (9.61) | 8.5 (18.7) | IP00 (IP20 as optional) | Yes | |
| SSW060060T2257 | | | | | | | | |
| SSW060085T2257 | | | | | | | | |
| SSW060130T2257 | | | | | | | | |
| SSW060170T2257 | 3 | 440 (17.32) | 223 (8.78) | 278 (10.94) | 18.5 (40.8) | IP00 (IP20 as optional) | Yes | |
| SSW060205T2257 | | | | | | | | |
| SSW060255T2257 | 4 | 550 (21.65) | 370 (14.57) | 311 (12.24) | 41.5 (91.5) | IP00 (IP20 as optional) | Yes | |
| SSW060312T2257 | | | | | | | | |
| SSW060365T2257 | 5 | 650 (25.59) | 370 (14.57) | 347 (13.66) | 55 (121.3) | IP00 (IP20 as optional) | Yes | |
| SSW060412T2257 | | | | | | | | |
| SSW060480T2257 | 6 | 795 (31.30) | 540 (21.26) | 357 (14.05) | 120 (264.6) | IP00 (IP20 as optional) | Yes | |
| SSW060604T2257 | | | | | | | | |
| SSW060670T2257 | 7 | 845 (33.27) | 570 (22.44) | 347 (13.66) | 107 (235.9) | IP00 | Yes | No |
| SSW060820T2257 | | | | | | | | |
| SSW061100T2257 | 8 | 1147 (45.16) | 685 (26.97) | 432 (17.01) | 217.5 (479.5) | IP00 | Yes | No |
| SSW061400T2257 | | | | | | | | |
| SSW060045T5769 | 2 | 370 (14.57) | 132 (5.20) | 244 (9.61) | 8.5 (18.7) | IP00 (IP20 as optional) | No | Yes |
| SSW060060T5769 | | | | | | | | |
| SSW060085T5769 | 3 | 440 (17.32) | 223 (8.78) | 278 (10.94) | 18.5 (40.8) | | | |
| SSW060130T5769 | | | | | | | | |
| SSW060170T5769 | 4 | 550 (21.65) | 370 (14.57) | 311 (12.24) | 41.5 (91.5) | | | |
| SSW060205T5769 | | | | | | | | |
| SSW060255T5769 | 5 | 650 (25.59) | 370 (14.57) | 377 (13.66) | 55 (121.3) | | | |
| SSW060312T5769 | | | | | | | | |
| SSW060365T5769 | 6 | 795 (31.30) | 540 (21.26) | 357 (14.05) | 120 (264.6) | | | |
| SSW060412T5769 | | | | | | | | |
| SSW060480T5769 | 7 | 845 (33.27) | 570 (22.44) | 347 (13.66) | 107 (235.9) | IP00 | No | No |
| SSW060604T5769 | | | | | | | | |
| SSW060670T5769 | 8 | 1147 (45.16) | 685 (26.97) | 432 (17.01) | 217.5 (479.5) | | | |
| SSW060820T5769 | | | | | | | | |
| SSW060950T5769 | 7 | 845 (33.27) | 570 (22.44) | 347 (13.66) | 107 (235.9) | IP00 | No | No |
| SSW061100T5769 | | | | | | | | |
| SSW061400T5769 | 8 | 1147 (45.16) | 685 (26.97) | 432 (17.01) | 217.5 (479.5) | | | |
| SSW061400T5769 | | | | | | | | |

Mechanical Mounting



| Model | A mm (in) | B mm (in) | C mm (in) | D mm (in) | Fixation Bolt | Size |
|-----------|----------------|------------------|----------------|---------------|---------------|------|
| SSW060010 | 75 (2.95) | 239 (9.40) | 28 (1.10) | 8.5 (0.33) | M5 | 1 |
| SSW060016 | | | | | | |
| SSW060023 | | | | | | |
| SSW060030 | | | | | | |
| SSW060045 | 75 (2.95) | 350 (13.78) | 28.5 (1.12) | 8.5 (0.33) | M5 | 2 |
| SSW060060 | | | | | | |
| SSW060085 | | | | | | |
| SSW060130 | | | | | | |
| SSW060170 | 150 (5.91) | 425 (16.73) | 36.5 (1.44) | 5.9 (0.23) | M6 | 3 |
| SSW060205 | | | | | | |
| SSW060255 | 200 (7.87) | 527.5 (20.77) | 85 (3.35) | 10 (0.39) | M6 | 4 |
| SSW060312 | | | | | | |
| SSW060365 | | | | | | |
| SSW060412 | | | | | | |
| SSW060480 | 200 (7.87) | 627.5 (24.70) | 85 (3.35) | 10 (0.39) | M6 | 5 |
| SSW060604 | | | | | | |
| SSW060670 | 350 (13.78) | 775 (30.51) | 95 (3.74) | 7.5 (0.29) | M8 | 6 |
| SSW060820 | | | | | | |
| SSW060950 | 400 (15.75) | 810 (31.89) | 84 (3.31) | 10 (0.39) | M8 | 7 |
| SSW061100 | | | | | | |
| SSW061400 | 500 (19.68) | 1110 (43.70) | 93 (3.66) | 15 (0.59) | M8 | 8 |
| SSW061400 | | | | | | |

SSW-06 - Mounting Clearance



| MODEL | A mm (in) | B mm (in) | C mm (in) | D mm (in) | Size |
|-----------|---------------|---------------|---------------|---------------|------|
| SSW060010 | 150 (5.90) | 30 (1.18) | 150 (5.90) | 50 (1.96) | 1 |
| SSW060016 | | | | | |
| SSW060023 | | | | | |
| SSW060030 | | | | | |
| SSW060045 | 150 (5.90) | 30 (1.18) | 150 (5.90) | 50 (1.96) | 2 |
| SSW060060 | | | | | |
| SSW060085 | | | | | |
| SSW060130 | 150 (5.90) | 30 (1.18) | 150 (5.90) | 50 (1.96) | 3 |
| SSW060170 | | | | | |
| SSW060205 | 150 (5.90) | 30 (1.18) | 150 (5.90) | 50 (1.96) | 4 |
| SSW060255 | | | | | |
| SSW060312 | | | | | |
| SSW060365 | 150 (5.90) | 30 (1.18) | 150 (5.90) | 150 (1.96) | 5 |
| SSW060412 | | | | | |
| SSW060480 | | | | | |
| SSW060604 | 150 (5.90) | 30 (1.18) | 150 (5.90) | 50 (1.96) | 6 |
| SSW060670 | | | | | |
| SSW060820 | 150 (5.90) | 30 (1.18) | 150 (5.90) | 50 (1.96) | 7 |
| SSW060950 | | | | | |
| SSW061100 | 150 (5.90) | 100 (1.18) | 150 (5.90) | 50 (1.96) | 8 |
| SSW061400 | | | | | |



SSW-06 - Technical Data

| | | | |
|--|------------------|--|---------------------------------------|
| Power Supply | Power | (220 to 575) or (575 to 690) Vac (-15% to +10%) | |
| | Control | (110 to 230) Vac (-15% to +10%), or (94 to 253) Vac | |
| | Fan | Models from 255 to 820 A: 115 Vac (104 to 127) Vac / 230 vac (207 to 253) Vac | |
| | | Model 950 A: 115 Vac (103,5 to 122) Vac / 230 vac (207 to 243,8) Vac Models from 1100 to 1400 A: 230 vac (207 to 243,8) Vac | |
| | Frequency | (50 to 60) Hz (+/- 10%), or (45 to 66) Hz | |
| Degree of Protection | Metallic cabinet | IP20 from 10A up to 30A / IP 00 for 45A and above | |
| Control | Control method | Motor voltage variation (Three phase induction motor) | |
| | CPU | 32 Bits RISC microcontroller | |
| | Types of control | Voltage ramp | |
| | | Current limitation | |
| | | Current limitation ramp | |
| Pump control | | | |
| | | Torque control 1,2 or 3 points | |
| Starting Duty Cycles | Rated | 300% (3 x I nom.) during 30 s for 3 cables connection and during 25 s for 6 cables connection | |
| | Starts per hour | 10 starts per hour for models from 10A to 820A; 5 starts per hour for models from 950A to 1400A | |
| Inputs | Digital | 5 x 24 Vdc insulated programmable inputs 1 x 24 Vdc insulated programmable input for motor PTC | |
| | Relay | 3 programmable outputs 250 V / 2 A: (2 x NA) + (1 x NO + NC – Fault) | |
| Outputs | Analog | 1 Programmable output (11 bits) 0...10 Vdc 1 programmable output (11 bits) 0...20 mA or 4...20 mA | |
| | | | |
| Safety | Protections | Over voltage | Power supply phase loss |
| | | Under voltage | Output phase loss (motor) |
| | | Voltage unbalance | Thyristor failure |
| | | Under current | CPU failure (watch dog) |
| | | Over current | Programming error |
| | | Current unbalance | Serial communication error |
| | | Overload (motor) – i ² t | Self-check error |
| | | Thyristors over temperature | HMI-SSW06 communication error |
| | | Motor over temperature / PTC | Starting time expired |
| | | Phase sequence failure | Fieldbus communication error |
| | | External fault | Serial communication error |
| | | Open by-pass contact failure (1) | Under voltage in the electronic board |
| | | Closed by-pass contact failure (1) | Frequency out of range |
| | | Over current in the by-pass (1) | |
| Under current before by-pass closing (1) | | | |
| Functions/Resources | Standard | Removable Human-Machine Interface with double display LED + LCD | |
| | | Programming access password | |
| | | HMI language selection: Portuguese, English, Spanish and German | |
| | | Control type selection: Voltage ramp, current limitation, current limitation ramp, pump control and torque control | |
| | | Local/ Remote operation selection | |
| | | Self-checking and fault auto-reset | |
| | | Oriented start-up according to the control type | |
| | | Standard connection or Inside delta connection (not available for 690V) | |
| | | All protections and functions available in both types of connection to the motor | |
| | | PUMP CONTROL function (protection against “water hammer” in pumps) | |
| | | COPY function (Soft-starter -> HMI or HMI -> soft-starter) | |
| | | Built-in by-pass for the models 10A to 820 A | |
| | | Serial interface RS-232 with Modbus RTU protocol. RS-485 optional | |
| | | Insulated input for motor PTC | |
| | | Standard or user parameters reset (Brings back the standard or user values) | |
| | | Special features: Running hours | |
| | | Programmable over and undervoltage and voltage unbalance between phases | |
| | | Programmable over and undercurrent and current unbalance between phases | |
| | | Under and over current before by-pass | |
| | | Programmable immediate over current | |
| | | Programmable time for immediate over current | |
| | | Programmable immediate under current | |
| | | Programmable time for immediate under current | |
| | | Programmable line nominal voltage | |
| | | Fully programmable voltage ramp | |
| | | Programmable current limitation | |
| | | Programmable current ramp | |
| | | Programmable pump control | |
| Fully flexible torque control | | | |
| Auto reset of the programmable thermal memory | | | |
| Thermal class protection (motor overload) programmable from class 5 to 45. | | | |

SSW-06 - Technical Data

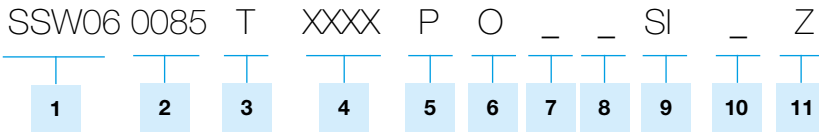
| | | | | |
|---|-------------------------------------|--|-------------|--|
| Functions/Resources | Optional | Frame for remote HMI | | |
| | | Cable to interconnect the soft-starter with the remote HMI 1, 2, 3 and 5 m | | |
| | | Rs-485 communication kit | | |
| | | PROFIBUS-DP communication kit | | |
| | | Device Net communication kit | | |
| Human-Machine Interface (HMI-SSW06-LCD) | Controls | IP20 protection for the models from 45A up to 820 A Start, stop, reset and parameterization (main functions programming) Increase and decrease parameters and their values | | |
| | Supervision (read) | Motor current (% Soft-starter I _n) | | |
| | | Motor current (% Motor I _n) | | |
| | | Motor current (A) | | |
| | | Line frequency (0...99.9 Hz) | | |
| | | Line voltage (0...999 V) | | |
| | | Output voltage (0...999 V) | | |
| | | Motor torque (% motor I _n) | | |
| | | Load active power – (kW) | | |
| | | Load apparent power – (kVA) | | |
| | | Soft-starter status | | |
| | | Digital and analogue inputs and outputs status | | |
| | | Load Cos (φ) – (0.00 – 0.99) | | |
| | | Powered-up Time hours | | |
| | | Enabled hours Operating Time | | |
| | | Last four error codes memory | | |
| | | Soft-starter software version | | |
| | | kWh hours Monitoring | | |
| | | Analog output Monitoring | | |
| | | SoftPLC status | | |
| | | Storage of the 6 most recent faults and fault diagnostics | | |
| | | Motor thermal memory monitoring | | |
| | | Fieldbus Communication status | | |
| | | Operating status | | |
| | | Environment Conditions | Temperature | 0 to 55°C (Models from 10 to 820 A) standard operation at rated current 0 to 40°C (Models from 950 to 1400 A) standard operation at rated current |
| | | | Humidity | 5...90 %, non condensation |
| | | | Altitude | 0... 1000 m: standard operation at rated current 1000... 4000 m; with output current reduction of 1%/100 m, over 1000 m |
| | | Finishing Painting | Color | Cover: opaque gray |
| Cabinet: opaque blue | | | | |
| Standards | Safety | UL 508 Standard – Industrial control equipment (2) | | |
| | Low voltage | EN 60947-4-2 Standard; LVD 73/23/EEC – Low voltage directive | | |
| | EMC | EMC directive 89 / 336 / EEC – Industrial environment | | |
| | UL (USA) / cUL (Canadá) | Underwriters Laboratories Inc. – USA (2) | | |
| | CE (Europe) | Certified by EPCOS | | |
| | IRAM (Argentina) | Instituto Argentino de Normalización (2) | | |
| C-Tick (Australia) | Australian Communications Authority | | | |

Notes: (1) Models from 85A up to 820A

(2) Models from 85A up to 1400A approved, models from 10A up to 60A pending



SSW-06 - Coding



1 - WEG soft-starter SSW-06 series

2 - Soft-starter rated output current

| | | | |
|------------|--------------|-------------|--------------|
| 0010 = 10A | 0085 = 85A | 0365 = 365A | 0950 = 950A |
| 0016 = 16A | 00130 = 130A | 0412 = 412A | 1100 = 1100A |
| 0023 = 23A | 00170 = 170A | 0480 = 480A | 1400 = 1400A |
| 0030 = 30A | 0205 = 205A | 0604 = 604A | |
| 0045 = 45A | 0255 = 255A | 0670 = 670A | |
| 0060 = 60A | 0312 = 312A | 0820 = 820A | |

3 - Power supply:

T= three-phase

4 - Power supply voltage:

2257 = 220... 575 V
5769 = 575... 690V

5 - Manual language:

P = Portuguese
E = English
S = Spanish

6 - Product version:

S = standard
O = With options

7 - Degree of protection (IP):

Blank = Standard (see technical data table)

8 - Human-Machine Interface (HMI):

Blank = Standard (with LED + LCD HMI)
SI = Without HMI

9 - Special hardware:

Blank = Standard
H1 = Fan 115V (950A model)
H2 = Fan 220V (950A up to 1400A model)

10 - Special software:

Blank = Standard
S1 = optional with special software version

11 - Code end:

Z = End of coding

NOTE:

- 1 - Communication kits are optional
- 2 - From 950A up to 1400A models the ventilation voltage must be defined (H1 or H2)

SSW-07 and SSW-08

The SSW-07 and SSW-08, with DSP (Digital Signal Processor) control were designed for high performance on motor starts and stops with an excellent cost-benefit ratio. Easy to set up, it simplifies start-up activities and daily operation.

The SSW-07 and SSW-08 are compact optimizing space in electric panels.

It already incorporates electric motor protection. It adapts to customer needs through its easy-to-install optional accessories. Thus, a keypad and a communication interface or a motor PTC input can be added to the product.

The Soft Starter SSW-07 and SSW-08 series has been developed on the matter of achieving the best cost-benefit ratio. The by-pass built-in allows energy saving as well as increased Soft Starter lifetime.

The SSW-07 and SSW-08 are equipped with the same functionalities, being the SSW07 applied for heavy load starts and the SSW-08 for light and moderate load starts.



Benefits

- Reduction of mechanical stresses over the coupling and transmission devices (gearboxes, pulleys, gears, conveyors, etc) during the start;
- Increases motor and machine mechanical equipment lifetime due to the reduction of mechanical stress;
- Easy operation, setup and maintenance;
- Simple electrical installation;
- Operates in environments up to 55 °C (without current reduction for all models);
- Integral, electronic motor protection;
- “Kick-Start” function for starting high breakaway torque loads;
- Reduces “Water Hammer” in pump applications;
- Limitation of voltage drop during start;
- Voltage Range (220 to 575Vac);
- Switched mode power supply with EMC filter for the control of electronics (110 to 240 Vac);
- Built-in by-pass providing size reduction and energy saving;
- Voltage monitoring of the electronics allows to back-up I x t values (thermal image).

Applications

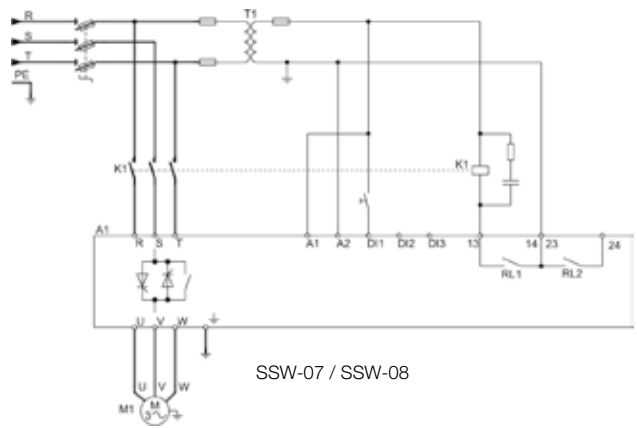
TYPICAL EXAMPLE OF LIGHT AND MODERATE LOADS

- Centrifugal Pump
- Immersed Centrifugal Pump
- Blade Vacuum Pump
- Screw Compressor
- Paper Refiner
- Sieving Machine
- Misturer

TYPICAL EXAMPLE OF HEAVY LOADS

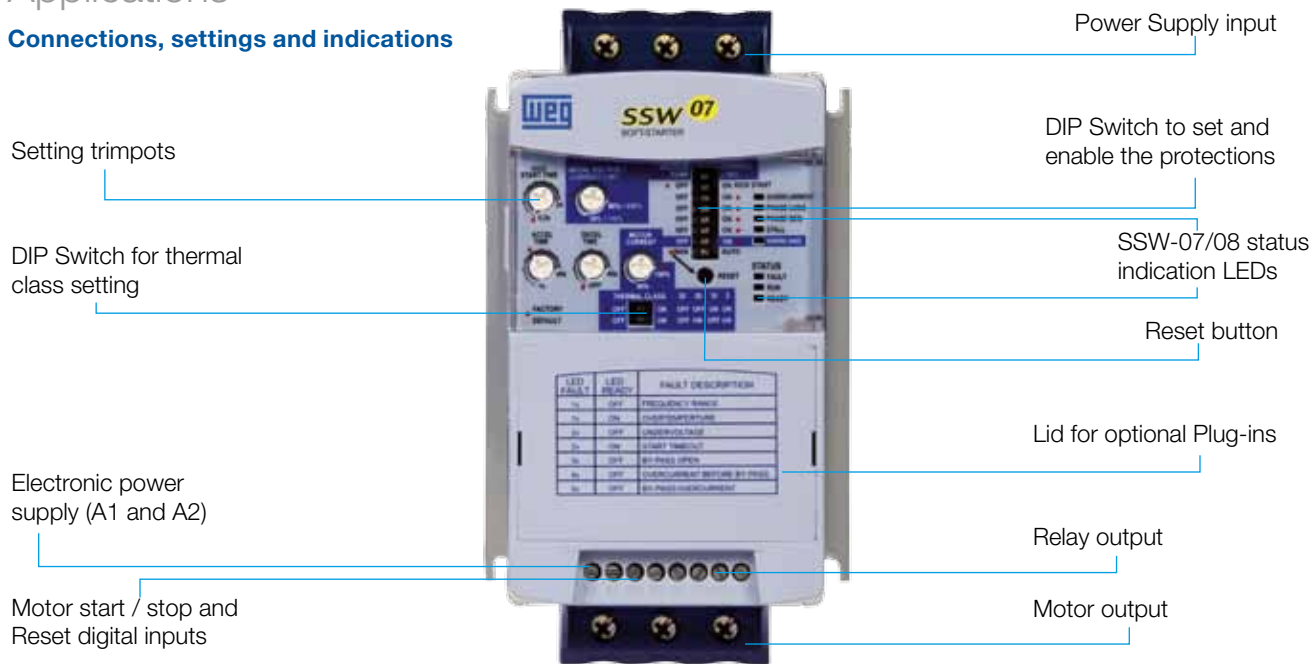
- Stone Crusher
- Centrifuge
- Wood Chipper
- Wood Slicing machine
- Conveyor
- Axial and Centrifugal Fan
- Ball Mill (Ceramic)
- Hammer Mill

SSW-07 and SSW-08 Wiring Diagram



Applications

Connections, settings and indications



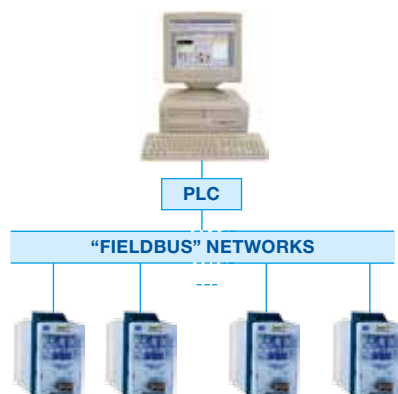
SSW-07 and SSW-08 - Accessories and Options

The SSW-07 and SSW-08 soft-starters can be communicated to fieldbus communication network through the most common standard protocols in the world, as follows:

- FIELDBUS →
- PROFIBUS DP (with MFW01)
 - DeviceNet (optional)
 - Modbus RTU RS-232 (optional)
 - Modbus RTU RS-485 (optional)

Mainly intended to integrate large automation plants, communication networks offer many advantages in the supervision, monitoring and on-line control of the soft-starters, providing high performance and great operational flexibility.

To be connected to communication protocols, as Profibus DP and DeviceNet, the SSW-07 and SSW-08 Series offer plug-in accessories to install according to the desired protocol. For the Modbus RTU protocol, the connection can be done via RS-232 or RS-485 (optional) interface.



SSW-07 and SSW-08 - Keypad

Operation interface with display, LED (7 segments), which allows excellent long distance visibility. The HMI with “copy function” built-in allows copy of certain user configuration from an existent Soft Starter to others. It gives reliability for applications where the same parameters settings is desired for more than one Soft Starter.

Local
Plug-in type HMI.



SSW-07 and SSW-08 local HMI

Remote
Remote HMI for placing at the panel door or machinery console.



SSW-07 and SSW-08 remote HMI
Cable for connecting HMI to SSW-07 and SSW-08.
Cable length: 1,2,3,5,7.5 and 10m.

SUPERDRIVE G2



Windows-based Software, for SSW-07 and SSW-08 parameter setting, control and monitoring. The following functionalities are provided with the Superdrive G2:

- SSW-07 and SSW-08 automatic identification.
- SSW-07 and SSW-08 reading parameters
- Online parameters settings for SSW-07 and SSW-08
- Offline parameters settings to create a user application
- Easily accessible.
- Supplied with a 3m RS-232 serial cable when the Superdrive G2 software is acquired.
- Free version available at WEG's website www.weg.net

SSW-07 and SSW-08 - Accessories and options



Modbus RTU - RS - 232
Optional Plug-in type module for Modbus RTU communication in RS-232



Modbus RTU - RS - 485
Optional Plug-in type module for Modbus RTU communication in RS-485



DeviceNet
Optional Plug-in type module for DeviceNet communication.



Profibus-DP
Via MFW-01/PD



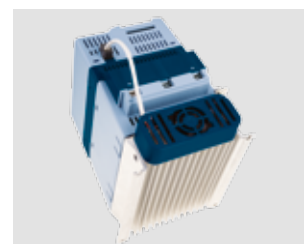
IP20 Kit
For models from 130 A to 412 A, this kit guarantees protection against contact with energized parts.



Cable for connecting RS-232. Cable length in 3 and 10m



Motor PTC
Optional module for motor PTC connection.



Ventilation kit
For models from 45 A to 200 A. A ventilation kit is necessary for heavy duty starting cycle.

SSW-07 and SSW-08 Modes of Operation

All settings necessary for starting any type of load is available through trimpots and dip-switches.

Voltage ramp

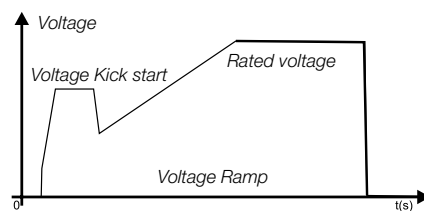
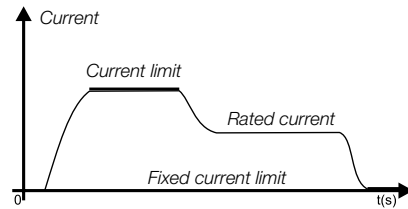
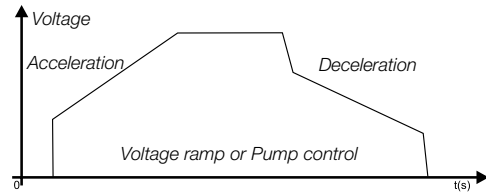
Allows smooth acceleration and/or deceleration, through voltage ramps.

Current limit

Allows the setting of current limit during acceleration.

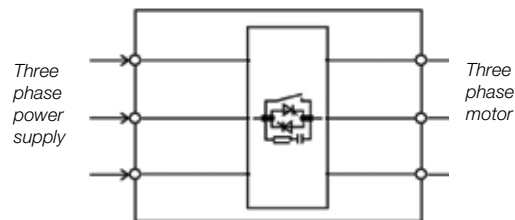
Voltage Kick Start

It enables an initial voltage pulse which provides on initial starting torque increase. This is required for starting high breakway torque loads.



Built-in by pass

Both SSW-07 and SSW-08 Series have built-in bypass to minimize power losses and heat dissipation in the thyristors, providing size reduction and contributing to energy saving. This is available in all models.



SSW-07 and SSW-08 - Drive Ratings

The tables below present the expected motor power for each soft-starter model under light load application (e.g.: centrifugal pump). However, for the proper selection of soft-starters, please use the SDW software.

Use the motor power ratings below only as a guidance. Motor rated currents may vary with speed and manufacturer. IEC motor powers are based on WEG 4-pole motors; NEMA motor powers are based on NEC table 430-150.

Motor voltages between 220V and 575V

| SSW Model | | Rated Current | IEC - 50Hz | | | IEC - 60Hz | | NEMA - 60Hz | | |
|-----------|--------|---------------|--------------|--------------|------|--------------|--------------|-------------|------|------|
| | | | 220V 230V | 380V 415V | 525V | 220V 230V | 440V 460V | 230V | 460V | 575V |
| | | | A | kW | kW | kW | HP | HP | HP | HP |
| SSW07/08 | 0017T5 | 17 | 4 | 7.5 | 11 | 6 | 12.5 | 5 | 10 | 15 |
| SSW07/08 | 0024T5 | 24 | 5.5 | 11 | 15 | 7.5 | 15 | 7.5 | 15 | 20 |
| SSW07/08 | 0030T5 | 30 | 7.5 | 15 | 18.5 | 10 | 20 | 10 | 20 | 25 |
| SSW07/08 | 0045T5 | 45 | 11 | 22 | 30 | 15 | 30 | 15 | 30 | 40 |
| SSW07/08 | 0061T5 | 61 | 15 | 30 | 37 | 20 | 40 | 20 | 40 | 50 |
| SSW07/08 | 0085T5 | 85 | 22 | 45 | 55 | 30 | 60 | 30 | 60 | 75 |
| SSW07/08 | 0130T5 | 130 | 37 | 55 | 90 | 37 | 100 | 50 | 100 | 125 |
| SSW07/08 | 0171T5 | 171 | 45 | 90 | 110 | 60 | 125 | 60 | 125 | 150 |
| SSW07/08 | 0200T5 | 200 | 55 | 110 | 132 | 75 | 150 | 75 | 150 | 200 |
| SSW07/08 | 0255T5 | 255 | 75 | 132 | 185 | 100 | 200 | 100 | 200 | 250 |
| SSW07/08 | 0312T5 | 312 | 90 | 160 | 220 | 125 | 250 | 125 | 250 | 300 |
| SSW07/08 | 0365T5 | 365 | 110 | 185 | 250 | 150 | 300 | 150 | 300 | 350 |
| SSW07/08 | 0412T5 | 412 | 110 | 220 | 300 | 150 | 350 | 150 | 350 | 450 |

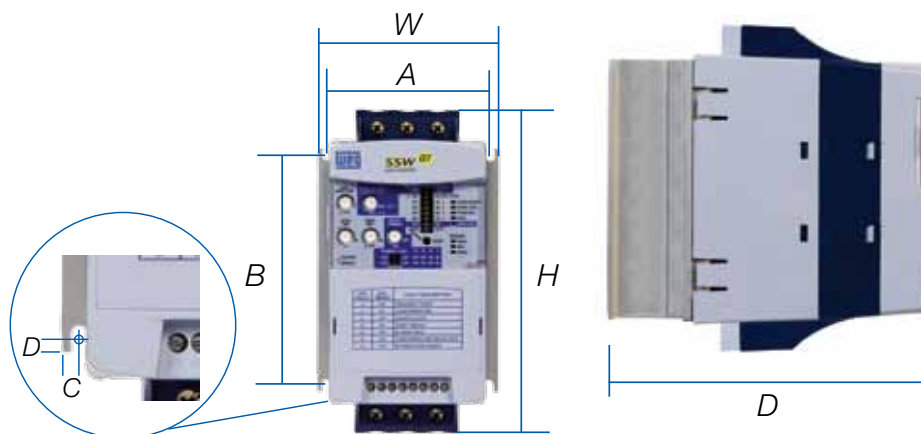
NOTES: The above maximum motor power ratings were calculated based on WEG models, 4 poles, IP55, standard, 55°C ambient temperature.

SSW-07 and SSW-08 - Dimensions and Weight

| SSW Model | | Frame Size | Dimensions mm (in) | | | Weight kg (lb) | Degree of Protection | Inside Delta Connection | Internal Bypass |
|-----------|--------|------------|--------------------|---------------|---------------|----------------|-----------------------|-------------------------|-----------------|
| | | | H | W | D | | | | |
| SSW07/08 | 0017T5 | 1 | 162 (6.38) | 95 (3.74) | 157 (6.18) | 1.3 (2.9) | IP20 | No | Yes |
| SSW07/08 | 0024T5 | | | | | | | | |
| SSW07/08 | 0030T5 | | | | | | | | |
| SSW07/08 | 0045T5 | 2 | 208 (8.19) | 144 (5.67) | 203 (7.99) | 3.3 (7.28) | | | |
| SSW07/08 | 0061T5 | | | | | | | | |
| SSW07/08 | 0085T5 | | | | | | | | |
| SSW07/08 | 0130T5 | 3 | 276 (10.9) | 223 (8.78) | 220 (8.66) | 7.6 (16.8) | IP00 (standard) | | |
| SSW07/08 | 0171T5 | | | | | | | | |
| SSW07/08 | 0200T5 | | | | | | | | |
| SSW07/08 | 0255T5 | 4 | 331 (13.0) | 227 (8.94) | 242 (9.53) | 9.2 (20.32) | IP20 (as optional) | | |
| SSW07/08 | 0312T5 | | | | | | | | |
| SSW07/08 | 0365T5 | | | | | | | | |
| SSW07/08 | 0412T5 | | | | | | | | |

Mechanical Mounting

| SSW Model | | Frame Size | A mm (in) | B mm (in) | C mm (in) | D mm (in) | Mounting Bolt |
|-----------|--------|------------|---------------|---------------|--------------|---------------|---------------|
| SSW07/08 | 0017T5 | 1 | 85 (3.35) | 120 (4.72) | 5 (0.20) | 4 (0.16) | M4 |
| SSW07/08 | 0024T5 | | | | | | |
| SSW07/08 | 0030T5 | | | | | | |
| SSW07/08 | 0045T5 | 2 | 132 (5.2) | 148 (5.83) | 6 (0.24) | 3.4 (0.13) | M4 |
| SSW07/08 | 0061T5 | | | | | | |
| SSW07/08 | 0085T5 | | | | | | |
| SSW07/08 | 0130T5 | 3 | 208 (8.19) | 210 (8.27) | 7.5 (0.3) | 5 (0.2) | M5 |
| SSW07/08 | 0171T5 | | | | | | |
| SSW07/08 | 0200T5 | | | | | | |
| SSW07/08 | 0255T5 | 4 | 200 (7.87) | 280 (11.0) | 15 (0.59) | 9 (0.35) | M8 |
| SSW07/08 | 0312T5 | | | | | | |
| SSW07/08 | 0365T5 | | | | | | |
| SSW07/08 | 0412T5 | | | | | | |



SSW-07 and SSW-08 - Technical Data

| | | | |
|--|----------------------------------|---|--------------------------------|
| Power Supply | Power | 220 to 575 Vac | |
| | Control | 110 to 240 Vac (-15% to +10%) | |
| | Frequency | 50 to 60 Hz (+/- 10%) | |
| Degree of Protection | Injected molded plastic case | IP20 in models from 17 to 85 A | |
| | | IP00 in models from 130 to 200 A (IP20 an option) | |
| Control | Control Method | Motor Voltage Variation | |
| | CPU | DSP type microprocessor (Digital Signal Processor) | |
| | Types of Control | Voltage ramp Current limit | |
| Starting Duty Cycle | Frame Size 1 and 4 | SSW-07 with 3 x In during 30s, 10 starts per hour SSW-08 with 3 x In during 20s, 10 starts per hour | |
| | Frame Size 2 and 3 | SSW-07 with 3 x In during 30s, 3 starts per hour SSW-08 with 3 x In during 20s, 3 starts per hour (availability of ventilation kit for applications where 10 starts per hour is demanded) | |
| Inputs | Digital | 3 isolated programmable inputs | |
| Outputs | Relay | 02 relays with NO contacts, 240Vac, 1A, programmable functions | |
| Safety | Protections (Standard) | Overcurrent | Locked rotor |
| | | Overcurrent before By-pass | Excess starting time |
| | | Phase loss | Frequency outside tolerance |
| | | Inverted phase sequence | By-pass contact open |
| | | Overtemperature in power heatsink | Undervoltage in control supply |
| | | Motor Overload (class 5 to 30) | |
| | Protections (with Accessory) | Undercurrent | Programming error |
| | | Current imbalance | Serial communication error |
| | | Undercurrent before By-pass | HMI communication error |
| | | External fault | Overtemperature in motor PTC |
| Functions / Resources | Standard | Voltage ramp (Initial voltage: 30% to 90%) | |
| | | Current limitation (150% to 450% of rated current) | |
| | | Starting time (1 to 40s) | |
| | | Kick Start (Off - 0.2 to 2s) | |
| | | Deceleration ramp (0 to 40s) | |
| | | Motor and SSW-07 current relation (50% to 100%) | |
| | | Faults auto-reset | |
| | | Thermal memory auto-reset | |
| | | Factory standard reset | |
| | | Soft-starter built-in By-pass | |
| Programming Accessory (HMI or Serial communication) | Command | On, Off / Reset and Parameterization (function programming) | |
| | Additional Functions / Resources | Starting time up to 999s | |
| | | Deceleration time up to 240s | |
| | | Program enabling password | |
| | | Selection for Local / Remote operation | |
| | | COPY function (SSW-07/08 >>> HMI and HMI >>> SSW-07/08) | |
| | | | |
| | Supervision (Reading) | Programmable rated voltage | |
| | | Motor current (%Soft-Starter In) | |
| | | Motor current (%motor In) | |
| | | Motor current (A) | |
| | | Current indication in each phase R-S-T | |
| | | Supply network frequency | |
| | | Apparent power supplied to load (kVA) | |
| | | Soft-Starter status | |
| | | Digital input and output status | |
| | | Last 4 faults | |
| | | Soft-Starter Software Version | |
| Heatsink temperature | | | |
| Accessories and Options | Options | Motor thermal protection status | |
| | | Plug-in type local HMI | |
| | | HMI remote Kit | |
| | | 1,2,3,5,7.5 and 10m cable for remote HMI interconnection | |
| | | RS-232 communication kit | |
| | | SSW-07/08 interconnection cables>>> PC Serial (RS-232) 3 and 10m | |
| | | RS-485 communication kit | |
| | | Motor PTC kit | |
| | | Ventilation kit for size 2 (45 to 85 A) | |
| | | Ventilation kit for size 3 (130 to 200 A) | |
| Finishing | Color | Lid: Gray Ultra Mat | |
| | | Cabinet: Blue Ultra Mat | |
| Conformities / Standards | Safety | UL 508 Standard- Industrial Control Equipment | |
| | Low voltage | EN60947-4-2;LVD 2006/95/EC Standard – Low voltage Directive | |
| | EMC | EMC 89/336/EEC Directive – Industrial Environment | |
| | UL (USA) / cUL (Canada) | Underwriters Laboratories Inc. – USA | |
| | CE (Europe) | Conformity test conducted by EPCOS | |
| | C-Tick (Australia) | Australian Communication Authority | |

SSW-07 and SSW-08 - Coding

EX SSW0X 0017 T 5 S -- -- -- Z

1 2 3 4 5 6 7 8 9 10

1 - Market / Manual:

EX= Export/English,
Spanish and Portuguese

2 - WEG SSW Series Soft-Starters

07 = SSW-07 series
08 = SSW-08 series

4 - Soft-Starter input power supply:

T = Three-phase

5 – Power supply voltage:

5 = 220 to 575 V range

6 – Product version:

S = Standard
O = with Options

7 – Enclosure:

Blank = Standard
IP = IP20 for models from
130 A to 412 A

8 - Special Hardware:

Blank = Standard
H1= Electronic supply 110 to 130Vac
H2= Electronic supply 208 to 240Vac
(the both codes for frame size 4)

9 - Special Software:

Blank = Standard

10 - End of code:

Z = End of coding



SSW -07



SSW - 08



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