NEXT GENERATION

Motors

Automation

Energy

Transmission and Distribution

Coatings

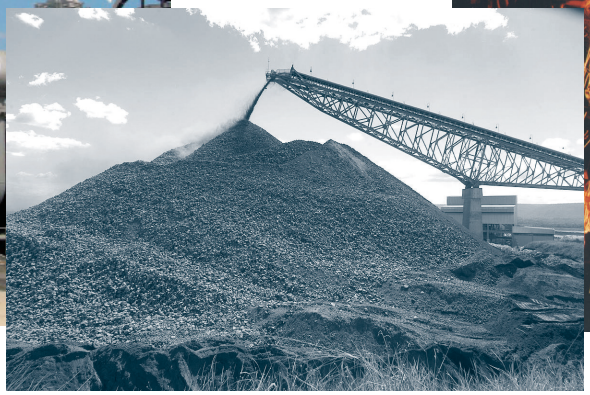
MEDIUM VOLTAGE SOLID STATE SOFT-STARTER

SSW7000

- Flexible Torque Control
- Active Motor Protection
- Soft PLC Function
- UL 347 Listed
- Assembled in the US

Driving efficiency and sustainability

US.SSW7000.2.2021



The SSW7000 uses state-of-the-art technology to provide start / stop control and protection for three-phase induction and synchronous motors. Developed to ensure excellent performance, it prevents mechanical shocks to the drivetrain, protects the motor against related burnouts or current surges in the power supply and thus offers a complete solution for various applications.

Applications

- **Blowers**
- **Compressors**
- **Conveyors**
- **Chippers**
- **Fans**
- **Exhausters**
- **Pumps**

Industries

- **Chemical, Petrochemical, Oil and Gas**
- **Cement and Mining**
- **Steel and Metallurgy**
- **Sugar and Chemical**
- **Pulp and Paper**
- **Water and Waste Water Management**

SSW7000

Standard Features:

- Motor voltage: 2.3kV, 4.16kV
- Power: up to 3000HP
- Protection Degree : NEMA 12, NEMA 3R
- Operating interface (HMI) with graphic LCD
- Real time clock
- Main and bypass vacuum contactors
- Emergency DOL start capability (ATL bypass)
- Medium voltage fuses
- Power and control insulated by fiber optics
- Soft PLC Function
- License Free programming software SuperDrive and WLP
- Motor thermal protection - PT100 (accessory), 8 Channels
- Ground Fault Protection - standard
- 5 start modes
- Network communication boards (accessories): DeviceNet, Profibus-DP, Ethernet and Modbus, RS-232 or RS-485

Advantages:

- Flexible Torque control
- Overload capacity of 400% for 20 s. (2x / hour duty cycle)
- Management of Demand restrictions by the electric company
- Bumpless starting
- Motor protection
- Mechanical wear reduction
- Handles lower inrush current limitations of power supply

Special Features:

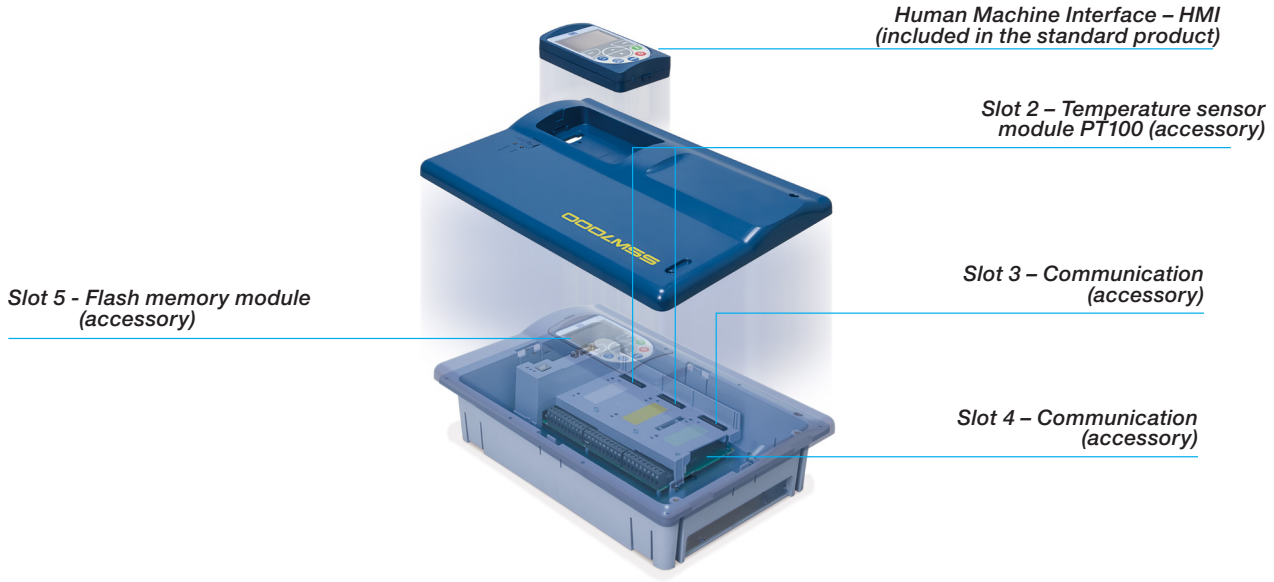
- Clean Assembly with easy accessibility to all components
- Flexible Torque Control (FTC), by employing torque estimation using vector control principle and measurement of input voltage, output voltage and output current. This provides more accurate torque set-points, compared to estimating torque values only via current measurement.
- Active Protection offers complete motor protection in DOL START and RUN mode. This eliminates need for any expensive motor protection relays for backup protection.
- Ground Fault protection is standard
- Flexible Thermal Class Curve setup & selection that eliminates need for third party expensive protection relays
- Soft PLC function with license-free software
- Nickel plated bus bars and bus-stub connections provide corrosion resistance and ensure proper electrical connection
- Power connection terminals for TOP or BOTTOM motor connection (bottom only for NEMA 3R)
- Operator Interface (keypad, parameter setup) is identical to that of WEG's low voltage starter products
- Successfully tested per International Building Code 2018 (IBC 2018) & California Building Code 2019 (CBC 2019)

Certifications

Characteristics

Plug and play philosophy

The installation of the accessories is based on the plug-and-play philosophy, that is, they are automatically configured when connected to the SSW7000, ensuring a faster and easier process.



Human Machine Interface – HMI

Navigation is similar to the logic used in cell phones, with the option of sequential access to the parameters or through the groups (Menu) by means of the function access keys on the display (soft keys).

Functions

- Power supply overvoltage and under-voltage programmable protections and voltage unbalance between phases.
- Motor overload and under-load programmable protections.
- Motor thermal protections.
- Actuation of the programmable protections between fault or alarm

- Indication of;
  – motor current per phase, motor current as % of SSW rated current and as % of motor nominal current
  – power supply input voltages per phase
  – power supply frequency
  – motor torque
  – motor active and apparent power in kW and kVA
  – value of analog inputs
  – status of digital inputs and outputs
  – status of thermal class protection
  – temperature of SCRs
  – motor winding temperature using accessory module for measuring temperature
  – hours energized, hours in operation, hours of fan use;
  – ground fault current or voltage.

•Fault and alarm indication
•Fault history;
  – saving of 10 last faults;
  – date and time of fault occurrence
  – motor current during fault event
  – power supply voltage during fault event
  – SSW operating status during fault event.

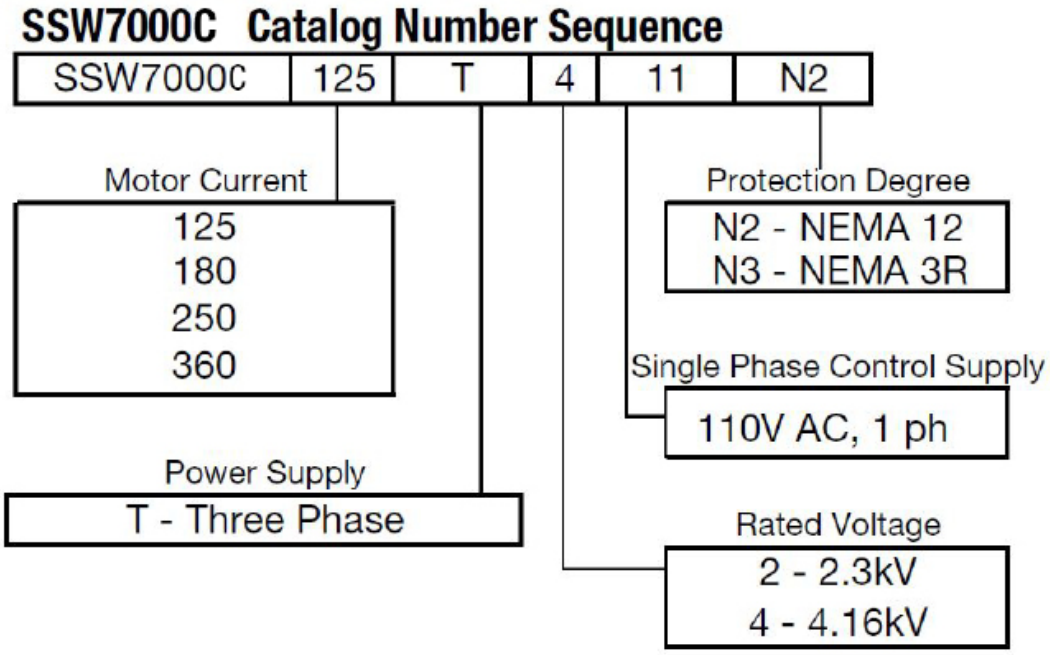
•Start and full duty diagnosis;
  – maximum starting current
  – average starting current
  – real starting time
  – maximum current at full duty
  – Power supply maximum and minimum voltage with the motor activated
  – Power supply maximum and minimum frequency with the motor activated
  – maximum number of starts per hour
  – total number of starts
  – maximum temperature of the SCRs
  – maximum temperatures of the motor (with the use of optional IOE accessory).

- Flexible selection of Start and Stop Control Modes enabled via flowchart style Oriented Start Up
  – Voltage Ramp
  – Current Limit
  – Current Ramp
  – Pump Control
  – Flexible Torque Control (FTC)

- Flexible Torque Control with high performance is very useful in applications where starting torque is likely to vary
- Possibility to monitor measurements of power supply voltages via Serial or Fieldbus communication.
- Monitoring and programming in graphical mode using SuperDriveG2 Software
- Soft PLC allows implementation of PLC software or special operating versions of SSW soft-starter.

Enables smooth starting of motors up to rated speed, by eliminating impacts of inrush current on the power supply and by eliminating impacts of mechanical shocks on the load and the coupling.This helps in reducing maintenance of bearings, couplings, gear boxes, pulleys, belts and chains, in addition to protecting the motor.

Product Code



Rating

Power Supply	Model	Rated Current	Motor Power		List Price	Multiplier
			HP*	kW		
NEMA 12						
2300V, 3PH, 60HZ	**SSW7000C125T211N2**	125A	550	410	$55,750	E3
	SSW7000C180T211N2	180A	750	560	$58,665	
	SSW7000C250T211N2	250A	1100	800	$65,195	
	SSW7000C360T211N2	360A	1500	1100	$67,430	
4160V, 3PH, 60HZ	**SSW7000C125T411N2**	125A	1000	750	$63,950	
	SSW7000C180T411N2	180A	1500	1100	$67,195	
	SSW7000C250T411N2	250A	2000	1500	$75,235	
	SSW7000C360T411N2	360A	3000	2250	$77,980	
NEMA 3R						
2300V, 3PH, 60HZ	**SSW7000C125T211N3**	125A	550	410	$60,820	E3
	SSW7000C180T211N3	180A	750	560	$63,725	
	SSW7000C250T211N3	250A	1100	800	$70,255	
	SSW7000C360T211N3	360A	1600-	1190	$73,020	
4160V, 3PH, 60HZ	**SSW7000C125T411N3**	125A	1000	750	$69,015	
	SSW7000C180T411N3	180A	1500	1100	$72,250	
	SSW7000C250T411N3	250A	2000	1500	$80,295	
	SSW7000C360T411N3	360A	3000	2250	$83,550	

Note: (*) The motor power ratings given above are based on WEG 4-pole motors, 4.16kV, 60-Hz, PF=0.87, Eff=0.97, SF=1.
For applications with high overloads or special starting conditions, contact WEG's sales force.
Current Rating of SSW7000C must be calculated based on the information on load type, load speed/torque curve and required number of starts per hour.
All models are available in 220V, 1Ph control voltage.

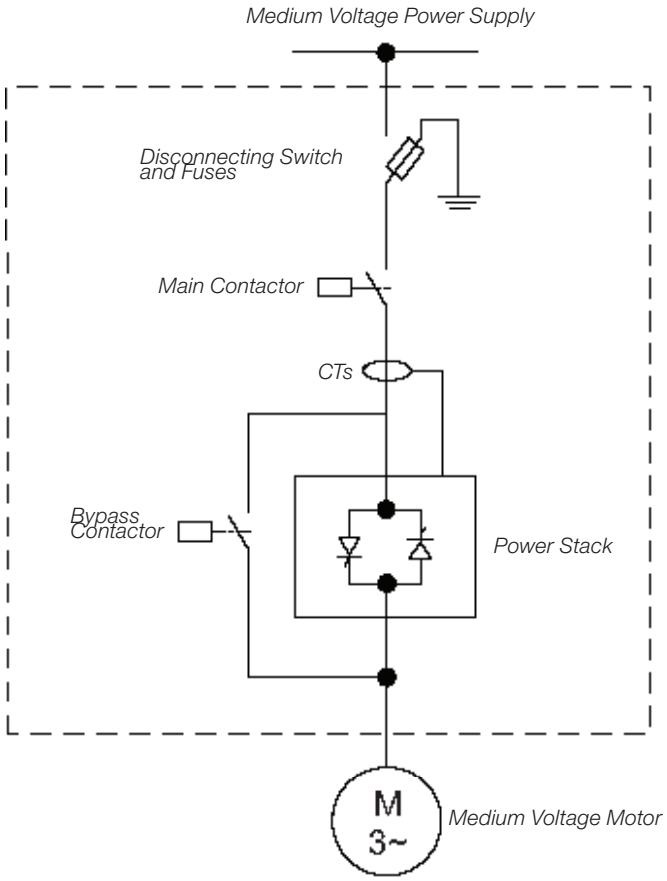
Options

Reference	Description	Slot	List Price	Multiplier
Control accessories to install in Slots 1, 2 and 3				
IOE-04	Module for 8 temperature sensors PT100	1 and 2	$2795	E3
RS485-01	RS-485 serial communication module (Modbus)	3	$240	
RS232-01	RS-232C serial communication module (Modbus)		$180	
RS232-02	RS-232C serial communication module with switch to program the microcontroller FLASH memory		$180	
Anybus-CA Accessories to install in Slots 4				
PROFDP-05	ProfibusDP interface module	4	$1100	E3
DEVICENET-05	Devicenet interface module			
ETHERNET/IP-05	EtherNet/IP interface module			
RS232-05	RS-232 interface module (passive) (Modbus)		$290	
RS485-05	RS485 interface module (passive) (Modbus)		$360	
Flash Memory Module to install in Slot 5 - Included in Standard Models				
MMF-01	FLASH memory module	5	$71	V1
Other Accessories				
HMI-01	Man Machine Interface – MMI (sold separately) (1)	-	$320	V1
RHMIF-01	Frame kit for MMI (protection rate IP56)		$69	

Dimensions

same for NEMA 12 & NEMA 3R

Line Diagram



Protections

ANSI/IEEE C37.2	Function/Protection Feature	Standard	Option
19	Reduced Voltage Starting and Bypass	■	
27	Undervoltage protection	■	
37	Undercurrent protection	■	
46	Phase-Balance Current protection	■	
47	Phase Sequence	■	
48	Incomplete Sequence	■	
50	Instantaneous Overcurrent trip	■	
51	Overcurrent trip	■	
55	Power Factor check	■	
59	Overvoltage	■	
81	Frequency check	■	
86	Lockout Relay - electronic	■	
50N/51G	Ground fault detection instantaneous and fault-current	■	
49 & 38	Winding Temperature and Bearing Temperature		□

Technical specifications

Power Supply	Power Voltage (R/1 L1, S/3L2, T/5L3)	Low voltage test: 500Vac: (-60% to +10%) or (200 to 550Vca) Models: 2300Vac: (-60% to +10%) or (920 to 2530Vca) 4160Vac: (-60% to +10%) or (2760 to 4576Vca)
	Frequency	(50 to 60Hz): (±10%) or (45 to 66Hz)
Capacity	Maximum number of starts	5 starts in 2 hours (One start every 30 minutes)
	Start cycle	AC-53a; 4.5-30:50-2
Thyristors	Medium voltage SCR per power arm	2300Vac: 2 thyristors per per power stack 4160Vac: 2 coupled pairs of thyristors
	Reverse voltage peak on the arm	2300Vac: 6.5kV 4160Vac: 13kV
Protections	Protection by Hardware	dv/dt filter Active overvoltage protection on the thyristors
Control Supply	Control voltage	As per code of the SSW7000: 110Vac: (-15% to10%) or (93.5 to 121Vac) 230Vac: (-15% to 10%) or (195.6 to 253Vac)
	Frequency	(50 to 60Hz): (±10%) or (45 to 66Hz)
	Consumption	Continuous: 900 mA Peak: 9.5 A (during the closing of the vacuum contactors)
Control	Method	Voltage ramp. Current limitation. Pump control. Torque control. Current ramp.
Inputs	Digital	6 insulated digital inputs, 24 Vdc, programmable functions
	Analog	2 differential inputs insulated by differential amplifier; AI1 resolution: 12 bits, AI2 resolution: 11bits + signal, (0 to 10) V, (0 to 20) mA or (4 to 20) mA, Impedance: 400kΩ for (0 to 10V), 500Ω for (0 to 20mA) or (4 to 20mA), programmable functions
Outputs	Digital	3 NO/NC contact relays, 240 Vac, 1A, programmable functions.
	Analog	2 insulated outputs, (0 to 10V) RL ± 10kΩ (maximum load), 0 to 20mA or 4 to 20mA RL<500Ω, 11-bit resolution, programmable functions
Man Machine Interface	Standard	9 keys: Turn/Stop, Increase, Decrease, Rotation Direction, Jog, Local/Remote, right Soft key and left Soft key. Graphic LCD. It enables access to/change of all parameters.
Safety	Main protections	Under and Overcurrent and current unbalance. Under and Overvoltage and voltage unbalance. Under and Overtorque and Active overpower Phase loss. Reverse phase sequence Overtemperature in the power racks. Motor overload. Motor overtemperature (optional). External defect. Ground fault by voltage or current. Fault in the power racks. Fault in the power contactors. Faults in the control boards. Communication faults of MMI and between controls. Faults in the communication networks. Programming errors. For further details and more protections implemented, refer to the programming manual.
Enclosures	Protection Degree	NEMA 12, NEMA 3R
PC connection for programming	USB Connector	USB standard Rev. 2.0 (basic speed). USB plug type B “device”. Interconnecting Cable: standard host/device shielded USB cable
Environmental Conditions	Temperature	-10° a 40°C
	Altitude	Up to 1000 m above sea level. For higher altitudes, contact our sales force.
	Humidity	Air relative humidity of 5 % to 90 % non-condensing.
Standards	NBR IEC 62271-200	High voltage controlgear and switchgear - part 200: High voltage controlgear and switchgear in metal enclosure for voltages over 1 kV up to and including 52 kV
	IEC 62271-1	High-voltage switchgear and controlgear - Part 1: Common specifications
	IEC 60060-1	High-voltage test techniques. Part 1: General definitions and test requirements
	CISPR 11	Industrial, scientific and medical (ISM) radio-frequency equipament - electromagnetic disturbance characteristics - limits and methods of measurement
	IEC 61000-4-4	Electromagnetic compatibility (EMC) - Part 4: testing and measurement techniques - section 4: electrical fast transient/burst immunity test. Basic EMB publication
	IEC 61000-4-18	Electromagnetic compatibility (EMC) - Part 4-18: testing and measurement techniques - damped oscillatory wave immunity test
	NBR IEC 60529	Protection rates for electric equipment enclosures (ip code)
	UL 347	Medium Voltage AC Contactors, Controllers and Control Centers
	UL 347B	Medium Voltage Motor Controllers

WEG Soft Starter Selection Guide

Medium Voltage Motors

HP	kW	RPM	NEMA Frame	Catalog Number	FL Amps		FL Eff (%)		Voltage (V)	MV Soft Starter Catalog Number for 2300V Operation	MV Soft Starter Catalog Number for 4160V Operation
					2300V	4160V	2300V	4160V			
150	110	3600	L447/9TS	20036ET3XL449-W22MV-R	36.1	20.5	93.20	93.00	2300/4160	SSW7000C125T211N2	SSW7000C070T411N2
150	110	1800	L447/9T	20018ET3XL449-W22MV-R	37.9	21.3	93.30	93.30	2300/4160	SSW7000C125T211N2	SSW7000C070T411N2
150	110	1200	L447/9T	20012ET3XL449-W22MV-R	40.4	23.3	93.60	93.60	2300/4160	SSW7000C125T211N2	SSW7000C070T411N2
200	150	3600	L447/9TS	20036ET3XL449-W22MV	47.1	26.4	94.10	94.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
200	150	1800	L447/9T	20018ET3XL449-W22MV	48.4	27.4	93.80	93.80	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
200	150	1200	L447/9T	20012ET3XL449-W22MV	51.6	29.3	93.60	93.60	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
250	185	3600	5009/10	25036ET3X5009-W50MV	55.5	30.7	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
250	185	1800	5009/10	25018ET3X5009-W50MV	58.2	32.2	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
250	185	1200	5009/10	25012ET3X5009-W50MV	61.9	34.6	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
300	220	3600	5009/10	30036ET3X5009-W50MV	65.3	36.1	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
300	220	1800	5009/10	30018ET3X5009-W50MV	68.4	38.3	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
300	220	1200	5009/10	30012ET3X5009-W50MV	73.6	41.2	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
350	260	3600	5009/10	40036ET3X5009-W50MV-R	78.1	43.2	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
350	260	1800	5009/10	40018ET3X5009-W50MV-R	83.8	47.5	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
350	260	1200	5009/10	35012ET3X5009-W50MV	87.0	48.7	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
400	300	3600	5009/10	40036ET3X5009-W50MV	89.1	49.2	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
400	300	1800	5009/10	40018ET3X5009-W50MV	94.4	52.8	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
400	300	1200	5809/10	40012ET3X5809-W50MV	100	56.2	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
450	330	3600	5809/10	50036ET3X5809-W50MV-R	98.9	54.7	95.20	95.20	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
450	330	1800	5009/10	50018ET3X5009-W50MV-R	105	58.8	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
450	330	1200	5809/10	50012ET3X5809-W50MV-R	113	64.3	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
500	370	3600	5809/10	50036ET3X5809-W50MV	109	60.5	95.40	95.40	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
500	370	1800	5009/10	50018ET3X5009-W50MV	116	65.1	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
500	370	1200	5809/10	50012ET3X5809-W50MV	124	70.2	95.00	95.00	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
550	400	3600	5809/10	60036ET3X5809-W50MV-R	121	68.5	95.40	95.40	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
550	400	1800	5809/10	60018ET3X5809-W50MV-R	125	70.1	95.40	95.40	2300/4160	SSW7000C125T211N2	SSW7000C125T411N2
550	400	1200	5809/10	60012ET3X5809-W50MV-R	137	77.9	95.00	95.00	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
600	440	3600	5809/10	60036ET3X5809-W50MV	132	74.4	95.40	95.40	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
600	440	1800	5809/10	60018ET3X5809-W50MV	136	76.2	95.40	95.40	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
600	440	1200	5809/10	60012ET3X5809-W50MV	147	83.5	95.00	95.00	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
650	480	1800	6806/07	70018ET3X6806-W50MV-R	152	85.2	95.40	95.40	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
650	480	1200	6808/09	70012ET3X6808-W50MV-R	149	83.1	95.40	95.40	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
700	515	1800	6806/07	70018ET3X6806-W50MV	161	90.3	95.40	95.40	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
700	515	1200	6808/09	70012ET3X6808-W50MV	158	88.1	95.40	95.40	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
750	560	1800	6808/09	80018ET3X6808-W50MV-R	180	101	95.40	95.40	2300/4160	SSW7000C180T211N2	SSW7000C125T411N2
800	590	1800	6808/09	80018ET3X6808-W50MV	187	105	95.40	95.40	2300/4160	SSW7000C250T211N2	SSW7000C125T411N2

1. Power Factor Capacitors or Surge Arrestors CAN NOT be connected to motor during starting

2. Starting via soft starter reduces motor starting torque

3. Number of Starts are 2 starts per hour (30 minute pause between starts). For higher number of starts/hour, please contact WEG.

4. Motor cable length is limited to 330 feet. For longer cable length please contact WEG.

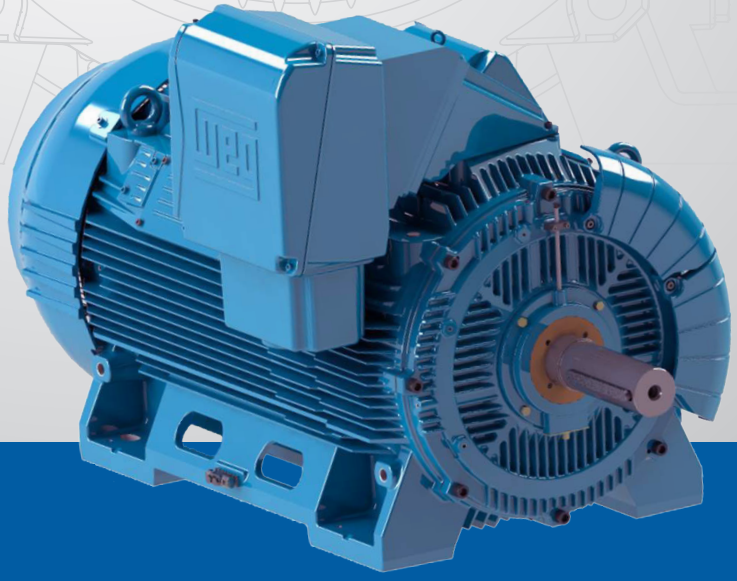
5. Temperature Measurement via RTD (8 channel) is available as Option

6. Soft-Starter typical delivery: Stock to 2 weeks.

Motors | **Automation** | Energy | Transmission & Distribution | Coatings

WEG HAS *MEDIUM VOLTAGE MOTORS AND SOFT STARTS* IN STOCK

LATEST TECHNOLOGY IN STOCK!



SSW7000

- Motor voltage: 2.3kV, 4.16kV
- Power: up to 3000 HP
- Protection Degree : NEMA12, NEMA 3R
- Operating interface (HMI) with graphic LCD

MEDIUM VOLTAGE MOTORS

- Meets most relevant features of IEEE841
- Certified Class I, Div 2
- Modifications available from Stock
- Inverter Rated without derate

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