

A low cost, user-friendly PWM controller in compact NEMA 1 and 4x12 enclosures



Reliance® Electric's SP500 controller is a compact, low-cost AC PWM inverter that is designed and built in North America. Utilizing state-of-the-art digital microprocessing concepts and IGBT (insulated gate bi-polar) transistors, SP500 offers "trip-free" adjustable-speed performance for AC induction and synchronous motors.



The SP500 offers the advanced technology to provide high performance and flexibility without the high-cost and complex programming common to many other drive controllers. Because it's available in a water-tight, dust-tight, corrosive resistant enclosure, the SP500 is ideal for the harsh environments found in many processing applications.

Standard Features

- Quiet motor operation with selectable 4, 6 or 8 kHz carrier frequency
- "Trip-free" operation
- 208-230 VAC, 380-460 VAC and 575 VAC three-phase input (+/-10%); 115 VAC and 208-230 VAC single-phase input
- 0.5 to 240 Hz three phase voltage output
- Standard on board keypad and display:
 - Start/Stop-Reset
 - Program mode
 - Forward/Reverse (plus reverse lock-out)
 - Increment and decrement
 - Selectable display of motor RPM, % load, and output voltage.
- LED indication of:
 - Run, Forward, Reverse, Remote Control, Program Mode, Motor RPM, % Load, Output Voltage
- 3 preset speeds
- Password lockout
- Power-up start
- Frequency avoidance
- Auto restart after fault
- Remote start/stop with local or remote speed control
- Reverse disable
- Available low energy snubber braking kit
- 150% load for one minute
- 500 millisecond power dip ride-through
- Capable of starting into a rotating motor (either direction) without tripping.
- Internal terminal board for:
 - Remote Start/Stop IFT reset operation
 - Remote Forward/Reverse selection
 - External speed control via customer supplied:
 - 5K ohm speed potentiometer
 - 0-10 VDC reference
 - 0-20 milliamp reference
- 0-10 VDC output proportional to either: Output frequency, Output amps or Output voltage
- IFT or controller running form "C" contact
- Function loss
- Controller fault display for:
 - Over current, short circuit or ground fault
 - Over voltage
 - Under voltage
 - Controller high temperature
 - External function loss
 - Electronic thermal overload
- Coast-to-rest or ramp-to-rest selection
- Meets CE96 with the addition of an optional Mains Filter
- UL/CSA electronic motor overload which meets NEC/CEC requirements

Software Parameters

00	Local or Remote Control (4 choices) default = local
01	Acceleration Time (5 - 90 seconds)
02	Deceleration Time (5 - 30 seconds)
03	Minimum Speed (5 - 30 Hz)
04	Maximum Speed (30 - 340 Hz)
05	Current Limit (0 - 150%)
06	Manual Torque Boost (2 - 10%)
07	Voltage Input Type (0 - 240 Hz)
08	RFM Monitor Base Selection (0 - 999)
09	Control Output Relay
10	Sealable Control Frequency (4, 6, 8 kHz default = 4 kHz)
11	Remote Reference Gain (0 - 100%)
12	Remote Reference Offset (0 - 40%)
13	Remote Sealed Speed Reference Display Enable
14	Electronic Thermal Overload (0 - 100%)
15	Electronic Thermal Overload Enable (default = on)
16	Speed Limit Enable (default = on)
17	Reverse Disable (default = off)
18	RFM Select Enable (default = on)
19	Power Up Start Enable (default = on)
20	Password Lockout Enable (default = off)
21	Avoidance Frequency (min. to max. speed)
22	Avoidance Bandwidth (0 - 50 Hz)
23, 24 & 25	3 Preset Speeds (range = min. to max. speed)
26	Auto Restart After Fault (0 - 10 interrupts)
27	Auto Restart Retry Wait Time (0 - 30 seconds)
28	Control Mode Select (see table below)
29	Run Up Output Reference Selection
30	Software Version Number (fixed)

Service Conditions

- Elevation to 3300 ft (1000 meters)
- Ambient Temperature Range:
 - Cabinets: 0°C to 40°C (32°F to 104°F)

- Chassis: 0°C to 55°C

(32°F to 131°F)

- Atmosphere: Non-Condensing
Relative Humidity 5 to 95%
- AC Line Voltage Variation plus or minus 10%
- AC Line Frequency: 45 Hz to 62 Hz

Dimensions (in/mm)

Style	Height	Width	Depth	Weight (lb/kg)
A	12 / 305	6.7 / 146	4.8 / 122	7 / 3.2
D	11.1 / 282	6.5 / 124	6.25 / 159	12 / 5.4
E	13.3 / 338	1 / 250	6.25 / 159	15 / 6.8
D	15.3 / 388	11.4 / 283	6.2 / 159	25 / 11.3

Controller Selection

Contr. HP	Input Volt.	NEMA Brk.	Model Number	Max. Cont. Output Amps	Dim. Style
1/4-1	115	1	8-JC1001	6.5	A
1/4-1	208-230	1	8-JC1001	5.0	A
2	208-230	1	8-JC1002	7.5	A
3	208-230	1	8-JC1003	10.0	C
5	208-230	1	8-JC1005	14.0	C
1/4-1	208-230	4x12	8-JC1001	6.5	A
2	208-230	4x12	8-JC1002	7.5	C
3	208-230	4x12	8-JC1003	10.0	C
5	208-230	4x12	8-JC1005	14.0	C
1/4-1	280-480	1	8-JC1001	2	E
2	280-480	1	8-JC1002	3.4	E
3	280-480	1	8-JC1003	5.0	E
5	280-480	1	8-JC1005	8.2	E
7-1/2	280-480	1	8-JC1007	11	E
10	280-480	1	8-JC1010	14.2	C

Contr. HP	Input Volt.	NEMA Brk.	Model Number	Max. Cont. Output Amps	Dim. Style
1/5	350-480	1	15UM1015	19.2	J
20	350-480	1	15UM1020	25.5	J
1/5-1	350-480	4x2	15UM1001	21	D
2	350-480	4x2	15UM1002	3.4	R
3	350-480	4x2	15UM1003	5.0	D
5	350-480	4x2	15UM1005	8.2	R
1/5-1	350-480	4x2	15UM1007	11.1	C
10	350-480	4x2	15UM1010	14.2	C
1/5	350-480	12	15UM2015	19.2	J
20	350-480	12	15UM2020	25.5	J
1/5-1	575	1	15US1001	1.6	D
2	575	1	15US1002	2.7	R
3	575	1	15US1003	4.3	D
5	575	1	15US1005	6.9	R
7-1/2	575	1	15US1007	9.0	C
10	575	1	15US1010	12.0	C
1/5-1	575	4x2	15US1001	1.6	D
2	575	4x2	15US1002	2.7	R
3	575	4x2	15US1003	4.3	D
5	575	4x2	15US1005	6.9	R
7-1/2	575	4x2	15US1007	9.0	C
10	575	4x2	15US1010	12.0	C
DCNO	120	4x2	D1SF5101	2.0	A

Instruction Manual

- Installation and Operation Manual
D2-3356-5

CHV manual & VFA data is based on a controller programmed for normal frequency (45-60 Hz). For normal frequency settings go to 8 kHz table for the instructions. For manual and Reliance Electric Inc. Amps and KVA Data.

This document located at:
<http://www.reliance.com/sp500>

NOTE: This material is not intended to provide operational instructions. Appropriate Reliance Electric Drive instruction manuals pertaining should be studied prior to installation, operation, or maintenance of equipment.

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