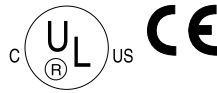


Compact, Cost-Effective 3-Phase AC Drives 1/4 - 5 HP



The Reliance Electric SP120 AC drive provides variable speed control and a wide range of features in a user-friendly package designed for panel or machine mounting. Available with either 115 VAC or 230 VAC single or three-phase input and 460 VAC three-phase input, the SP120 is a cost-effective solution for control of three-phase induction motors.



PRIMARY APPLICATIONS

SP120 AC drives are designed to be used in any low horsepower (1/4 to 5 HP) application where cost, size, and ease of use are critical considerations. Primary application examples include:

- fan control
- water pumping
- material handling
- converting
- packaging

Four different control modes built into all models make it easy to control a wide variety of processes, from those requiring simple speed pot control, to more complex PID applications in which two variables must be controlled. The SP120's easy-to-configure PID mode makes it an excellent choice in applications such as pumps with pressure control or fans with temperature control.

STANDARD FEATURES

- Comes standard with integral local keypad for programming and speed adjustment.
- 5 parameter groups help simplify programming:
 - D group - display & diagnostic parameters
 - F group - basic function parameters
 - A group - control parameters
 - B group - protection parameters
 - C group - I/O setup parameters
- Screw control terminals provide reliable connections.
- Small adjustment set makes it easy to understand.
- Diagnostic parameters to easily track faults.

DESIGNED FOR GLOBAL USE

- UL listed and cUL listed for North America.
- CE marked for Europe, except for 115 V input units.
- C-Tick, N223 (pending) for Australia.

DRIVE SPECIFICATIONS

- Input voltage:
 - 100 V -10% to 120 V +5%, 1 Φ 1/4 HP
 - 200 V -10% to 240 V +5%, 50/60 Hz \pm 5%, 1 Φ or 3 Φ 1/2 to 5 HP
 - 400 V -10% to 460 V +10%, 50/60 Hz \pm 5%, 3 Φ 460 VAC 5 HP
- Output voltage:
 - 3 Φ from 0-230 VAC
 - 3 Φ from 0-460 VAC
- Rated output power: 1/4 to 5 HP
- Output frequency: 0.5 to 360 Hz
- IP20 enclosure (finger-safe)
- Ambient temperature:
 - -10 to +40°C
 - 50°C with derating of output to 80% and reducing carrier frequency
- Digital inputs compatible with internal 24 VDC or external 24 VDC

PERFORMANCE FEATURES

- PID control loop
- 0.5 - 16 kHz switching frequency (adjustable, derating above 12 kHz)
- 150% current overload for one minute, 220% maximum for 10 seconds
- Frequency resolution:
 - Digital: 0.1 Hz
 - Analog: 0.1% of max frequency
- Accuracy of speed reference:
 - Digital: $\pm 0.01\%$ of max frequency
 - Analog: $\pm 0.2\%$ of max frequency

CONTROL MODE 1: SPEED POT CONTROL

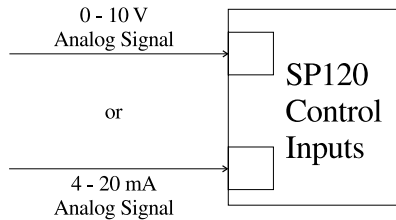
For applications where speed is adjusted by means of the integrated speed pot.

Sample applications:

- Fans, pumps, and conveyors

CONTROL MODE 2: SINGLE CHANNEL ANALOG INPUT

For applications where speed is proportional to either a 0 to +10 V or 4 to 20 mA analog input signal.



Sample applications:

- Fans and pumps
- Conveyors
- Compressors

CONTROL MODE 3: PRESET SPEEDS

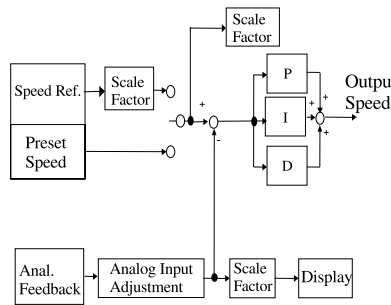
For applications needing up to 15 speeds selected by combinations of 4 digital inputs. Provides a low cost speed control method where an analog signal is unavailable or too costly to provide.

Sample applications:

- Packaging machines
- Conveyors
- Mixers

CONTROL MODE 4: PID CONTROL

For applications where speed is controlled by the result of an operation between two signals.



Sample applications:

- Synchronizing conveyors
- Fans with temperature control
- Pumps with pressure control
- Feeders with mass flow rate control

ADJUSTABLE FEATURES

- Motor overload current to match specified motor full load amps (FLA).
- Primary acceleration and deceleration rates provide smooth, energy saving starts, and permit on the fly changes to match unique application needs.
- Minimum and maximum speed limits prevent known extremes that can damage equipment.
- 2 or 3 wire control accommodates either maintained or momentary start methods.
- Linear or S-curve acceleration and deceleration modes.
- Ramp, coast, and DC stop modes permit the choice of best stopping performance to match different application requirements.
- Automatic torque boost provides robust out of the box torque performance reducing the need for manual adjustments.
- V/Hz adjustments provide optimal matching between motors and loads.
- Carrier frequency adjustment provides optimization for low audible motor noise or low electromagnetic noise.
- 3 avoidance frequency bands prevent motor and/or machine from dwelling at unstable speeds.
- Current limit automatically adapts speed and ramp times during momentary overload conditions to prevent nuisance trips up to 150% of rated output current.
- Program lock select prevents unintentional changes to settings.
- Reverse disable prevents reverse operation where dangerous conditions may be generated if accidental reversal were to occur.

CONFIGURABLE I/O (GROUP C PARAMETERS)

- 5 configurable inputs can be programmed for many different functions:
 - Forward/reverse run
 - Preset frequencies
 - Frequency command select
 - 2nd accel/decel ramp
 - Enable
 - External fault
 - Restart lock
 - Parameter protection
 - Reset
 - Jog
 - Positive temperature coefficient (PTC) input
- 3 wire run
- 3 wire stop
- 3 wire forward/reverse
- Coast to stop
- Unintentional start protection (USP)
- 4-20 mA select
- Remote control up
- Remote control down
- Inputs can be programmed as NO or NC contacts:
 - Compatible with internal 24 VDC or external 24 VDC
 - Level triggered inputs
- 2 digital outputs (transistor) can be programmed to be a NO or NC contact and change state to indicate:
 - Running
 - At frequency
 - Above frequency
 - Motor overload/above current
 - PID error
 - Fault
- 1 Relay output provides ready/fault indication
- 1 programmable analog output
 - Output frequency or output current

Instruction Manual part number is D2-3456.

SP120 Drive Power Ratings

Model Number	HP (kW)	Input Voltage	Input Current (A) at 230 VAC single-phase	Input Current (A) at 230 VAC three-phase	Input Current (A) at 460 VAC three-phase	Input Current (A) at 115 VAC single-phase	Output Current (A)	Watts (W) Loss
S12-101P4LU	0.25 (0.2)	115 ⁽³⁾	N/A	N/A	N/A	5.5	1.4	17
S12-202P6LU	0.50 (0.4)	230 ⁽¹⁾	5.8	3.4	N/A	N/A	2.6	29
S12-203POLU	0.75 (.55)	230 ⁽¹⁾	6.7	3.9	N/A	N/A	3.0	33
S12-204POLU	1.00 (0.75)	230 ⁽¹⁾	9.0	5.2	N/A	N/A	4.0	41
S12-205POLU	1.50 (1.1)	230 ⁽¹⁾	11.2	6.5	N/A	N/A	5.0	53
S12-207P1LU	2.00 (1.5)	230 ⁽¹⁾	16.0	9.3	N/A	N/A	7.1	70
S12-20010LU	3.00 (2.2)	230 ⁽¹⁾	22.5	13.0	N/A	N/A	10.0	101
S12-20015LU	5.00 (3.7)	230 ⁽²⁾	N/A	20.0	N/A	N/A	15.0	169
S12-408P6LU	5.00 (3.7)	460	N/A	N/A	11.0	N/A	8.6	138

- (1) 230 VAC single-phase or 230 VAC three-phase input produces three-phase output from 0 to 230 VAC.
- (2) 230 VAC three-phase input only produces three-phase output from 0 to 230 VAC.
- (3) 115 VAC single-phase input only produces three-phase output from 0 to 230 VAC.

SP120 AC Drives

AC Drives

Custom Classic

For Control of Three-Phase AC Motors from 1/4 to 5 HP

Product Features

- **Input voltage:**
 - 100 V -10% to 120 V +5%, 1Φ 1/4
 - 200 V -10% to 240 V +5%, 50/60 Hz ±5%, 1Φ 1/2 to 3HP or 3Φ 1/2 to 5 HP
 - 400 V -10% to 460 V +10%, 50/60 Hz ±5%, 3Φ 460 VAC 5 HP
- **Input frequency:** 50/60 Hz ±5%, 3Φ from 0-460 VAC
- **Output voltage:** 3Φ from 0-230 V; 3Φ from 0-460 VAC
- **Output frequency:** 0.5 to 360 Hz
- **Enclosure:** IP20 (finger-safe)
- **Ambient temperature:** -10 to +40°C; 50°C with derating of output current to 80%, reducing carrier frequency, and removing top cover.
- **Digital inputs:** Compatible with 24 VDC or external 24 VDC. (5) digital inputs can be programmed for many different functions. Inputs can be programmed as NO or NC contacts. Level triggered inputs.
- **Outputs:** (2) digital outputs can be programmed to be a NO or NC contact and change state to indicate: running, at frequency, above frequency, above



current, PID error, and fault. (1) relay output provides ready/fault indication. (1) programmable analog output for output frequency or output current.

- **Frequency resolution:** Digital: 0.1 Hz; Analog: 0.1% of maximum frequency
- **Accuracy of speed reference:** Digital: ±0.01% of maximum frequency; Analog: ±0.2% of maximum frequency
- **Overload:** 150% current overload for one minute, 220% maximum for 10 seconds

1/4 HP @ 115 VAC, 1-Ph Input; 230 VAC, 3-Ph Output

1/2 - 5.0 HP @ 230 VAC, 1-Ph or 3-Ph Input; 230 VAC, 3-Ph Output

5.0 HP @ 460 VAC, 3-Ph Input; 460 VAC, 3-Ph Output

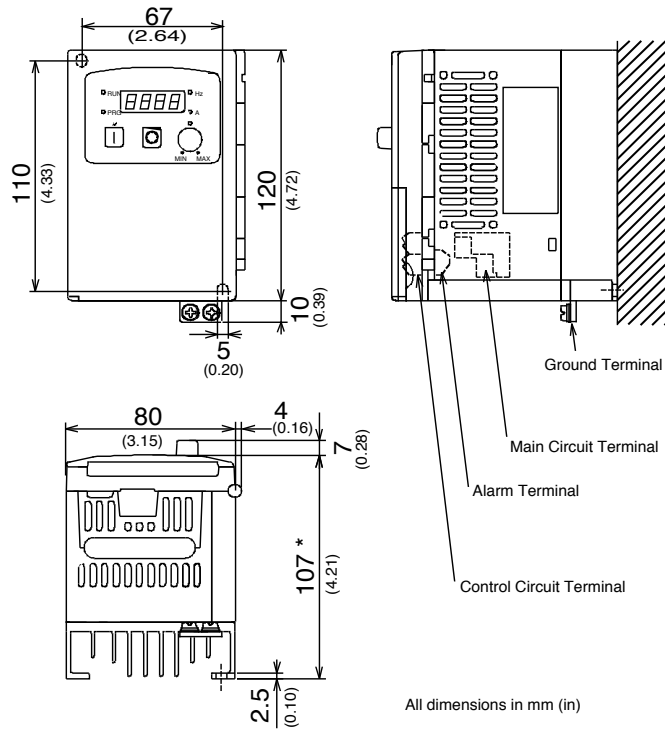
Model Number	HP (kW)	Input Voltage	Output Current (A)	Watts (W) Loss
S12-101P4LU	0.25 (0.2)	115 ⁽³⁾	1.4	17
S12-202P6LU	0.50 (0.4)	230 ⁽¹⁾	2.6	29
S12-203P0LU	0.75 (.55)	230 ⁽¹⁾	3.0	33
S12-204P0LU	1.00 (.75)	230 ⁽¹⁾	4.0	41
S12-205P0LU	1.50 (1.1)	230 ⁽¹⁾	5.0	53
S12-207P1LU	2.00 (1.5)	230 ⁽¹⁾	7.1	70
S12-20010LU	3.00 (2.2)	230 ⁽¹⁾	10.0	101
S12-20015LU	5.00 (3.7)	230 ⁽²⁾	15.0	169
S12-408P6LU	5.00 (3.7)	460	8.6	138

(1) 230 VAC single-phase or 230 VAC three-phase input produces three-phase output from 0 to 230 VAC.

(2) 230 VAC three-phase input only produces three-phase output from 0 to 230 VAC.

(3) 115 VAC single-phase input only produces three-phase output from 0 to 230 VAC.

Dimensions



*93 mm (3.66) for S12-201P4 only

Model Number	Height	Width	Depth
S12-202P6	4.72 (120)	3.15 (80)	4.59 (114)
S12-203P0	4.72 (120)	3.15 (80)	4.59 (114)
S12-204P0	5.12 (130)	4.33 (110)	5.37 (136)
S12-205P0	5.12 (130)	4.33 (110)	5.37 (136)
S12-207P1	7.09 (180)	5.51 (140)	6.30 (160)
S12-20010	7.09 (180)	5.51 (140)	6.74 (171)
S12-20015	7.09 (180)	5.51 (140)	6.74 (171)
S12-408P6	7.09 (180)	5.51 (140)	6.74 (171)
S12-101P4	5.12 (130)	5.04 (128)	4.61 (117)

Dimensions are in inches (mm)

Notes