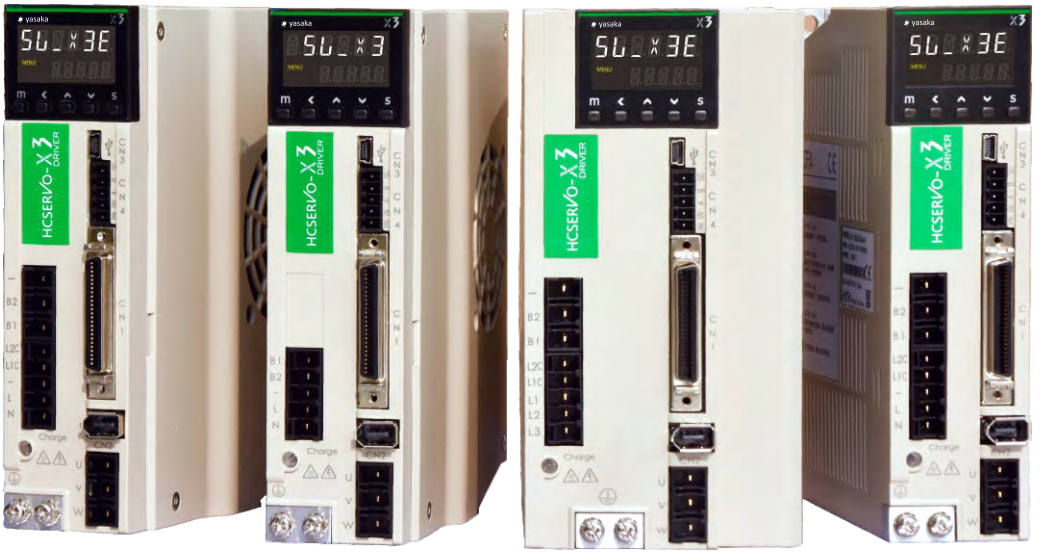
HCSV-X3 Servo Drives Amplifiers

The servo drives take up the least space.

Max. 4Mpps positioning command resolution of I/O pulse are provided.

High liquid crystal display and Single-phase/ three-phase 200VAC power input.



Model name identification

SV-X3E ① A ② 075 ③ A ④ - A ⑤ 2 ⑥ - 00 ⑦ 000 ⑧

① Product series

② Product types

Symbol	Types
A	Standard type
B	EtherCAT type
N	CANOpen type

③ Power specifications

Symbol	Types
005	50W
010	100W
020	200W
040	400W
075	750W
100	1000W
150	1500W
200	2000W
250	2500W

④ Voltage specifications

Symbol	Types
A	AC220V
T	AC380V
B	AC110V
L	DC48V
M	DC24V

⑤ Control power

Symbol	Types
A	AC power
D	24V power

⑥ Products updates no.

⑦ Hardware customized mark

Symbol	Types
00	N/A
AO	Analog output
PG	Encoder card
Q	Full-closed

⑧ Software customized mark (P21.55)

Symbol	Types
000	N/A

Examples

X3EA075A-A2	X3E series standard type
X3EB075A-A2	X3E series EtherCAT type
X3EN075A-A2	X3E series CANOpen type
X3EA075A-A2-PG005	X3E series gantry synchronization type
X3EA075A-A2-AO000	X3E series analog output type

X2EA075A-A	X2E series standard type
X2EN075A-A	X2E series CANOpen type
X2EN075A-A-5D018	X2E series CAN bus dedicated type 18

X2E

X3E

	X2E						X3E							
Size &Weight														
	005	010	020	040	075	100	005	010	020	040	075	100	150	200
	50W	100W	200W	400W	750W	1kW	50W	100W	200W	400W	750W	1kW	1.5kW	2kW
W	42	42	42	42	52	52	42	42	42	49	49	84	84	84
H	165	165	165	165	165	165	160	160	160	160	160	160	160	160
D	151	151	151	151	151	151	130	130	130	130	130	130	130	130
KG	1.7	1.7	1.8	1.8	2.1	2.2	0.7	0.7	0.7	0.8	0.8	1.6	1.6	1.6
Input power														
Frame A	Single-phase 200～240V±10%50/60Hz						Single-phase 200～240V±10%50/60Hz							
Frame B							Three-phase 200～240V±10% 50/60Hz							
Control circuit power							Single-phase 200～240V±10% 50/60Hz							
Control method	Three-phase PWM inverting sine-wave													
Main circuit power														
Control power														
Rated current														
Encoder feedback	Single-turn absolute 17-bit (multi-turn absolute with battery)						Single-turn absolute 17-bit (multi-turn absolute with battery)							
Temperature														
Ambient temperature for use	0～55℃ (Note 5, Note 6)						0～55℃ (Note 5, Note 6)							
Ambient temperature for storage	-20～65℃						-20～65℃							
Humidity														
Ambient humidity for use	20～85%RH or less(Without condensation)						20～85%RH or less(Without condensation)							
Ambient humidity for storage	20～85%RH or less(Without condensation)						20～85%RH or less(Without condensation)							
Atmosphere for use& storage	Indoors(Not subject to direct sunlight); free from corrosive gas, flammable gas, oil mist, or dust						Indoors(Not subject to direct sunlight); free from corrosive gas, flammable gas, oil mist, or dust							
Altitude	1000m or less above sea level						1000m or less above sea level							
Vibration	5.8m/s² (0.6G) or less, 10～60Hz (No continuous operation allowed at frequency of resonance)						5.8m/s² (0.6G) or less, 10～60Hz (No continuous operation allowed at frequency of resonance)							
Dielectric strength	1 minute at 1500 VAC across the primary and FG						1 minute at 1500 VAC across the primary and FG							
Digital signal														
Input	8 inputs (24VDC, photo-coupler insulation) Switch by control mode						9 inputs (24VDC, photo-coupler insulation) Switch by control mode							
Output	5 outputs (24VDC, photo-coupler insulation, open-collector output) Switch by control mode						9 outputs (24VDC, photo-coupler insulation, open-collector output) Switch by control mode							
Pulse signal														
Input	2 inputs (photo-coupler insulation, RS-422 differential, open-collector)						2 inputs (photo-coupler insulation, RS-422 differential, open-collector)							
Output	4 outputs (A/B/Z-phase RS-422 differential, Z-phase open collector output)						4 outputs (A/B/Z-phase RS-422 differential, Z-phase open collector output)							
Analog signal input							2 inputs (±10V) Switch by control mode							
Communication function	Connection with PC (with "Servostudio" software)						Connection with PC (with "Servostudio" software)							
	Host controller remote communication(1: n)						Host controller remote communication(1: n)							
Regeneration function	External regenerative resistor possible(Note 2)						External regenerative resistor possible(Note 2)							
Dynamic brake	Not built-in						Not built-in							
Control mode	7 control modes: Position control, speed control, torque control, position/speed control, position/torque control, speed/torque control, full-closed control (optional part needed)						7 control modes: Position control, speed control, torque control, position/speed control, position/torque control, speed/torque control, full-closed control (optional part needed)							
Position control mode														
Digital input	Servo ON, alarm reset, deviation counter clear, positive/negative direction over-travel, internal command selection, homing start etc.						Servo ON, alarm reset, deviation counter clear, positive/negative direction over-travel, internal command selection, homing start etc.							
Digital output	Alarm state, servo ready, brake release, torque in-limit output, position proximity, homing complete, position reached, motor rotation output, zero-speed output, etc.						Alarm state, servo ready, brake release, torque in-limit output, position proximity, homing complete, position reached, motor rotation output, zero-speed output, etc.							
Operation mode	Point table, communication, manual pulse input						Point table, communication, manual pulse input							
Pulse output														
Output pulse form	A-Phase, B-Phase: Differential output Z-Phase: Differential output or open collector output						A-Phase, B-Phase: Differential output Z-Phase: Differential output or open collector output							
Division ratio	Arbitrary frequency division						Arbitrary frequency division							
Output pulse	Encoder pulse or position Pulse instruction(can be set)						Encoder pulse or position Pulse instruction(can be set)							
Output pulse frequency														

	X2E	X3E
Pulse input		
Max input pulse frequency	Differential input: Up to 2Mpps, pulse width larger than 0.25us; Open-collector input: Up to 200Kpps, pulse width larger than 2.5us	Differential input: Up to 2Mpps, pulse width larger than 0.25us; Open-collector input: Up to 200Kpps, pulse width larger than 2.5us
Input pulse type	Differential input; open-collector	Differential input; open-collector
Input pulse form	Pulse+ direction, orthogonal phase difference (A-Phase + B-Phase), CW+CCW	Pulse+ direction, orthogonal phase difference (A-Phase + B-Phase), CW+CCW
Electronic gear	A/B A: 1~1073741824 B: 1~1073741824, Encoder resolution/10000000 < A/B <Encoder resolution/2.5	A/B A: 1~1073741824 B: 1~1073741824, Encoder resolution/10000000 < A/B <Encoder resolution/2.5
Smoothing	Smoothing filter, FIR filter	Smoothing filter, FIR filter
Instantaneous speed observer		
Speed control	Internal position control mode	
Digital input	Servo ON, alarm reset, speed instruction negation, zero-speed clamp, internal speed control, external forward/reverse torque limit, emergency stop etc. / Servo ON, alarm reset, torque instruction negation, zero-speed clamp	Servo ON, alarm reset, speed instruction negation, zero-speed clamp, internal speed control, external forward/reverse torque limit, emergency stop etc.
Digital output	Alarm state, servo ready, brake off, speed reached, torque in-limit, speed in-limit, zero-speed output, emergency stop etc. / Alarm state, servo ready, brake off, torque in-limit, speed in-limit output, emergency stop	Alarm state, servo ready, brake off, speed reached, torque in-limit output, speed in-limit output, speed coincidence, motor rotation output, zero-speed signal output etc.
Output pulse type	Encoder position pulse released in the following manner: A-/B-phase orthogonal phase difference pulse and Z-phase index pulse released in RS-422 differential format, Z-phase index pulse released through open collector	Encoder position pulse released in the following manner: A-/B-phase orthogonal phase difference pulse and Z-phase index pulse released in RS-422 differential format, Z-phase index pulse released through open collector
Analog input		
Speed input	Input voltage -10V to +10V (Maximum speed at ±10V)	Input voltage -10V to +10V (Maximum speed at ±10V)
Smoothing	Smoothing filter, FIR filter	Smoothing filter, FIR filter
Torque limit source		1）Internal torque limit by P03.09, P03.10 2）External torque limit by P03.11, P03.12 enabled by P_CL/N_CL signals 3）TLMTP i.e. AI1 or AI2 as external forward/reverse torque limit 4）TLMTP as forward limit; TLMTN as reverse limit
Torque feedforward		1）Internal torque feedforward 2）TFFD, AI1 or AI2
Internal speed instruction	0 to 16-segment speed can be selected by DI terminal combination.	0 to 16-segment speed can be selected by DI terminal combination.
Torque control		
Digital input signals	Servo ON, alarm reset, reverse torque instruction, zero-speed clamp	Servo ON, alarm reset, speed instruction negation, zero-speed clamp
Digital output signals	Alarm status, servo ready, brake release, torque limit, speed limit output	Alarm state, servo ready, brake off, speed reached, torque in-limit, speed in-limit, zero-speed output, emergency stop etc.
Torque input	(default before shipment and the range can be set by function codes)	DC±10V/ rated torque (default before shipment and the range can be set by function codes)
Output pulse signal	Encoder position pulse released in the following manner: A-/B-phase orthogonal phase difference pulse and Z-phase index pulse released in RS-422 differential format, Z-phase index pulse released through open collector	
Speed limit	Positive/ negative speed limit P03.27, P03.28	1）Positive/ negative speed limit P03.27, P03.28 2）SPL i.e. AI input
Common		
Speed monitoring	Provided	Provided
Vibration control	Provided	Provided
Auto-tuning	Provided	Provided
Encoder output division and multiplication	Provided	Provided
Adjustment/function setting	Adjust by Servostudio software of SV-X2E	Adjust by Servostudio software of SV-X3E
Protective functions	Overvoltage, power supply error, overcurrent, overheat, overload, encoder error, overspeed, excessive position deviation, parameter error	Overvoltage, power supply error, overcurrent, overheat, overload, encoder error, overspeed, excessive position deviation, parameter error
Self-adaptive notch filter		Provided
Internal position planning function		Provided