

Common Specifications of Driver

Basic Specifications	Input power	100V	Main circuit		Single phase, 100-115V	+10% -15%	50/60Hz																											
			Control circuit		Single phase, 100-115V	+10% -15%	50/60Hz																											
		200V	Main circuit	Frame A, B	Single phase, 200-240V	+10% -15%	50/60Hz																											
				Frame C, D	Single/3-phase, 200-240V	+10% -15%	50/60Hz																											
				Frame E to G	3-phase, 200-230V	+10% -15%	50/60Hz																											
			Control circuit	Frame A to D	Single phase, 200-240V	+10% -15%	50/60Hz																											
	Frame E to G			Single phase, 200-230V	+10% -15%	50/60Hz																												
	Environment	Temperature		Operating : 0 to 55°C, Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <Nomal temperature>)																														
		Humidity		Both operating and storage : 90%RH or less (free from condensation)																														
		Altitude		1000m or lower																														
		Vibration		5.88m/s ² or less, 10 to 60Hz (No continuous use at resonance frequency)																														
	Withstand voltage			Should be 1500VAC (Sensed current: 20mA) or higher for 1 minute between Primary and Ground.																														
	Control method			IGBT PWM Sinusoidal wave drive																														
	Encoder feedback			17-bit (131072 resolution) absolute/incremental encoder, 2500P/r (10000 resolution) incremental encoder																														
	Feedback scale (full-closed control only)			<div>Made by Mitsutoyo</div> <table><tr><th></th><th>Resolution(μm)</th><th>Max. Speed*(m/s)</th></tr><tr><td>ABS AT573A Series</td><td>0.05</td><td>2</td></tr><tr><td>ABS ST771A Series</td><td>0.5</td><td>5</td></tr><tr><td>ABS ST773A Series</td><td>0.1</td><td>4</td></tr><tr><td>ABS ST771AL Series</td><td>0.5</td><td>5</td></tr><tr><td>ABS ST773AL Series</td><td>0.1</td><td>4</td></tr></table> <div>Made by Sony Manufacturing System</div> <table><tr><th></th><th>Resolution(μm)</th><th>Max. Speed*(m/s)</th></tr><tr><td>SR77 Series</td><td>0.05</td><td>2</td></tr><tr><td>SR87 Series</td><td>0.05</td><td>2</td></tr></table> <div>High resolution laser scales are also available.</div> <div>*The maximum speed depends on the driver performance. It is limited by the machine configuration and system configuration.</div>					Resolution(μm)	Max. Speed*(m/s)	ABS AT573A Series	0.05	2	ABS ST771A Series	0.5	5	ABS ST773A Series	0.1	4	ABS ST771AL Series	0.5	5	ABS ST773AL Series	0.1	4		Resolution(μm)	Max. Speed*(m/s)	SR77 Series	0.05	2	SR87 Series	0.05	2
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	Control signal	Input	10 inputs (1) Servo-ON, (2) Control mode switching, (3) Gain switching/Torque limit switching, (4) Alarm clear Other inputs vary depending on the control mode.																															
Output		6 outputs (1) Servo alarm, (2) Servo ready, (3) Release signal of external brake (4) Zero speed detection, (5) Torque in-limit. Other outputs vary depending on the control mode.																																
Analog signal	Input	3 inputs (16Bit A/D : 1 input, 10Bit A/D : 2 inputs)																																
	Output	2 outputs (for monitoring) (1) Speed monitor (Monitoring of actual motor speed or command speed is enabled. Select the content and scale with parameter.), (2) Torque monitor (Monitoring of torque command, [approx. 3V/rated torque]), deviation counter or full-closed deviation is enabled. Select the content or scale with parameter.)																																
Pulse signal	Input	2 inputs Select the exclusive input for line driver or photo-coupler input with parameter.																																
	Output	4 outputs Feed out the encoder pulse (A, B and Z-phase) or feedback scale pulse (EXA, EXB and EXZ-phase) in line driver. Z-phase and EXZ-phase pulse is also fed out in open collector.																																
Communication function	RS232	1 : 1 communication to a host with RS232 interface is enabled.																																
	RS485	1 : n communication up to 15 axes to a host with RS485 interface is enabled.																																
Front panel			(1) 5 keys (MODE, SET, UP, DOWN, SHIFT), (2) LED (6-digit)																															
Regeneration			Frame A, B, G : no built-in regenerative resistor (external resistor only) Frame C to F : Built-in regenerative resistor (external resistor is also enabled.)																															
Dynamic brake			Setup of action sequence at Power-OFF, Servo-OFF, at protective function activation and over-travel inhibit input is enabled. * For G is no function.																															
Control mode			Switching among the following 7 mode is enabled, (1) Position control, (2) Velocity control, (3) Toque control, (4) Position/Velocity control, (5) Position/Torque control, (6) Velocity/Torque control and (7) Full-closed control.																															

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Functions	Position control	Control input		(1) Deviation counter clear (2) Command pulse inhibition (3) Electronic gear switching (4) Damping control switching
		Control output		(1) Positioning complete (In-position)
		Pulse input	Max. command pulse frequency	Exclusive interface for line driver : 2Mpps, Line driver : 500kpps, Open collector : 200kpps
			Input pulse signal format	Support (1) RS422 line drive signal and (2) Open collector signal from controller.
			Type of input pulse	Differential input. Selectable with parameter, ((1) CW/CCW (2) A and B-phase (3) Command and Direction)
			Electronic gear (Division/Multiplication of command pulse)	Process the command pulse frequency $\times \frac{(1 \text{ to } 10000) \times 2^{(0-17)}}{1 \text{ to } 10000}$ as a position command input
			Smoothing filter	Primary delay filter or FIR type filter is selectable to the command input.
		Analog input	Torque limit command input	Individual torque limit for both CW and CCW direction is enabled. (3V/rated torque)
		Instantaneous speed observer		Usable
		Damping control		Usable
	Velocity control	Control input		(1) Speed zero clamp (2) Selection of internal speed setup (3) Gain switching or Torque limit switching input
		Control output		(1) Speed arrival (at-speed)
		Analog input	Velocity command input	Setup of scale and rotational direction of the motor against the command voltage is enabled with parameter, with the permissible max. voltage input = $\pm 10V$ and 6V/rated speed (default setup).
			Torque limit command input	Individual torque limit for both CW and CCW direction is enabled. (3V/rated torque)
		Speed control range		1 : 5000
		Internal speed command		8-speed with parameter setup
		Soft-start/down function		Individual setup of acceleration and deceleration is enabled, with 0 to 10s/1000r/min. S-shaped acceleration/deceleration is also enabled.
		Zero-speed clamp		0-clamp of internal speed command with speed zero clamp input is enabled.
		Instantaneous speed observer		Usable
		Speed command filter		Usable
	Torque control	Control input		(1) Speed zero clamp
		Control output		(1) Speed arrival (at-speed)
		Analog input	Speed command input	Setup of scale and CW/CCW torque generating direction of the motor against the command voltage is enabled with parameter, with the permissible max. voltage input = $\pm 10V$ and 3V/rated speed (default setup).
			Speed limit input	Speed limit input by analog voltage is enabled. Scale setup with parameter.
		Speed limit function		Speed limit value with parameter or analog input is enabled.
	Full-closed control	Control input		(1) Deviation counter clear (2) Command pulse input inhibition (3) Electronic gear switching (4) Damping control switching
		Control output		(1) Full-closed positioning complete (in-position)
		Pulse input	Max. command pulse frequency	Exclusive interface for line driver : 2Mpps, Line driver : 500kpps, Open collector : 200kpps
			Input pulse signal format	Differential input. Selectable with parameter ((1) CCW/CW (2) A and B-phase (3) Command and direction)
			Electronic gear (Division/Multiplication of command pulse)	Process the command pulse frequency $\times \frac{(1 \text{ to } 10000) \times 2^{(0-17)}}{1 \text{ to } 10000}$ as a position command input
			Smoothing filter	Primary delay filter is adaptable to the command input.
		Analog input	Torque limit command input	Individual torque limit for both CW and CCW direction is enabled. (3V/rated torque)
		Setup range of division / multiplication of feedback scale		Setting of ratio between encoder pulse (denominator) and feedback scale pulse (numerator) is enabled within a range of $(1 \text{ to } 10000) \times 2^{(0-17)} / (1 \text{ to } 10000)$.
		Auto-gain tuning	Real-time	Corresponds to load inertia fluctuation, possible to automatically set up parameters related to notch filter.
			Normal mode	Estimates load inertia and sets up an appropriate servo gain.
			Fit-gain function	Automatically searches and sets up the value which makes the fastest settling time with external command input.
	Common	Masking of unnecessary input		Masking of the following input signal is enabled. (1) Over-travel inhibition (2) Torque limit (3) Command pulse inhibition (4) Speed-zero clamp (5) Counter clear
		Division of encoder feedback pulse		Set up of any value is enabled (encoder pulses count is the max.).
		Protective function	Soft error	Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current and encoder error etc.
			Hard error	Excess position deviation, command pulse division error, and EEPROM error etc.
		Traceability of alarm data		Traceable up to past 14 alarms including the present one.
		Damping control function		Manual setup with parameter
		Setup	Manual	5push switches on front panel MODE SET ▲ ▼ ◀
			Setup support software	PANATERM (Supporting OS : Windows98, Windows ME, Windows2000, and WindowsXP)