

# AS1 ASD

## Specifications

The AS1 adjustable speed drive builds on Toshiba's history of supplying powerful, reliable, and versatile drives. Designed with the end-user in mind, the AS1 combines a rugged, proven power platform with the latest technologies to provide users with a smarter, stronger, more reliable drive with flexible application control.

### Product Scope

200 to 230 V at 1 to 100 HP  
380 to 460 V at 1 to 700 HP  
500 to 690 V at 2 to 700 HP

### Highlights

- 100% Continuous Overload Rating, 150% for 60 Seconds
- Eight Programmable Discrete Inputs with Selectable Sync or Source Logic
- Three Programmable Discrete Outputs: One Form-C Contact & Two Open Collector Outputs
- Three Programmable Analog Inputs: One 4 to 20 mA, One 0 to 10 VDC Input, & One  $\pm 10$  VDC Input
- Two Programmable Analog Outputs: One 4 to 20 mA or 0 to 10 VDC & One 0 to 1 mA Output or 0 to 7.5 VDC
- Two-Wire/Four-Wire RS485
- Auto-Restart Operation/Catch a Spinning Motor
- Improved PID Algorithms
- Built-In EMC Filter (Complies with the European EMC Directive)<sup>1</sup>

### Standard Features

- NEMA 1 Enclosure with Additional Conduit Adapter
- Built-In Dynamic Breaking Drive Circuit up to 250 HP<sup>2</sup>
- Past Trip Monitoring: Stores the Last Four Faults in Succession, Along with Cumulative At-Trip Times
- EOI: Integral Seven-Segment LED Keypad
- Save, Restore, & Clone Multiple Drive Settings
- Ambient Temperature: 14° to 122°F (-10° to 50°C)
- Altitude: Up to 1000 Meters without Derate
- Humidity: 95% Non-Condensing
- Standards/Compliance: IEEE, UL Listed in US & Canada, CSA, NEMA, NEC, CE, NOM-117, C-TICK, & GOST

<sup>1</sup> Optional on 200 V Above 15 HP

<sup>2</sup> Up to 150 HP on 600 V Units



## AS1 ASD

230 V Power Unit  
Pricing & Dimensions

VAC	HP	FLA	Model Number	Frame	H	W	D	Shipping Weight (lbs.)
					Dimensions (in.)			
230	1	4.8	VFAS1-2007PL-HN	2	10.0	5.5	6.0	10.0
230	2	8.0	VFAS1-2015PL-HN	2	10.0	5.5	6.0	10.0
230	3	11.0	VFAS1-2022PL-HN	3	11.1	6.1	6.5	14.3
230	5	17.5	VFAS1-2037PL-HN	3	11.1	6.1	6.5	14.3
230	7.5	27.5	VFAS1-2055PL-HN	4	12.6	6.9	6.5	18.0
230	10	33.0	VFAS1-2075PL-HN	5A	12.6	8.3	7.5	26.5
230	15	54.0	VFAS1-2110PM-HN	5B	15.7	9.1	7.5	53.0
230	20	66.0	VFAS1-2150PM-HN	5B	15.7	9.1	7.5	53.0
230	25	75.0	VFAS1-2185PM-HN	6	16.5	9.4	8.3	66.0
230	30	88.0	VFAS1-2220PM-HN	6	16.5	9.4	8.3	66.0
230	40	120	VFAS1-2300PM-HN	7B	21.7	12.6	9.5	126
230	50	144	VFAS1-2370PM-HN	7B	21.7	12.6	9.5	126
230	60	176	VFAS1-2450PM-HN	7B	21.7	12.6	9.5	126
230	75	221	VFAS1-2550P-HN	9	36.2	12.2	14.6	220
230	100	285	VFAS1-2750P-HN	10	40.2	13.8	14.6	269

VAC	HP	FLA	Model Number	Frame	H	W	D	Shipping Weight (lbs.)
					Dimensions (in.)			
230	75	221	VFAS1-2550P-H1	9	26.8	12.2	14.6	167
230	100	285	VFAS1-2750P-H1	10	30.8	13.8	14.6	200

## Notes:

- Units with H1 at the end of the model number will require an AC line reactor. DC link reactor not included.

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## 460 V Power Unit

### Pricing & Dimensions



VAC	HP	FLA	Model Number	Frame	H	W	D	Shipping Weight (lbs.)
					Dimensions (in.)			
460	1	2.3	VFAS1-4007PL-HN	2	10.0	5.5	6.0	10.0
460	2	4.1	VFAS1-4015PL-HN	2	10.0	5.5	6.0	10.0
460	3	5.8	VFAS1-4022PL-HN	2	10.0	5.5	6.0	10.0
460	5	10.5	VFAS1-4037PL-HN	3	11.1	6.1	6.5	14.3
460	7.5	14.3	VFAS1-4055PL-HN	4	12.6	6.9	6.5	18.0
460	10	17.6	VFAS1-4075PL-HN	4	12.6	6.9	6.5	18.0
460	15	27.7	VFAS1-4110PL-HN	5A	12.6	8.3	7.5	26.5
460	20	33.0	VFAS1-4150PL-HN	5B	15.7	9.1	7.5	53.0
460	25	41.0	VFAS1-4185PL-HN	5B	15.7	9.1	7.5	53.0
460	30	48.0	VFAS1-4220PL-HN	6	16.5	9.4	8.3	66.0
460	40	66.0	VFAS1-4300PL-HN	7A	21.7	9.4	9.5	95.0
460	50	79.0	VFAS1-4370PL-HN	7A	21.7	9.4	9.5	95.0
460	60	94.0	VFAS1-4450PL-HN	8	24.8	12.6	11.4	143
460	75	116	VFAS1-4550PL-HN	8	24.8	12.6	11.4	143
460	100	160	VFAS1-4750PL-HN	8	24.8	12.6	11.4	143
460	125	179	VFAS1-4900PC-HN	9	36.2	12.2	14.6	220
460	150	215	VFAS1-4110KPC-HN	10	40.2	13.8	14.6	269
460	200	259	VFAS1-4132KPC-HN	11	46.9	13.0	14.6	296
460	250	314	VFAS1-4160KPC-HN	12	46.9	16.9	14.6	405
460	300	387	VFAS1-4200KPC-HN	13	46.9	23.0	14.6	507
460	350	427	VFAS1-4220KPC-HN	13	46.9	23.0	14.6	507
460	450	550	VFAS1-4280KPC-HN	13	46.9	23.0	14.6	507

**Notes:**

- Frame 13 and higher units do not include dynamic braking circuit. This is available as an option kit.

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## 460 V Power Unit

## Pricing &amp; Dimensions



VAC	HP	FLA	Model Number	Frame	H	W	D	Shipping Weight (lbs.)
					Dimensions (in.)			
460	125	179	VFAS1-4900PC-H1	9	26.8	12.2	14.6	167
460	150	215	VFAS1-4110KPC-H1	10	30.8	13.8	14.6	200
460	200	259	VFAS1-4132KPC-H1	11	37.4	13.0	14.6	216
460	250	314	VFAS1-4160KPC-H1	12	37.4	16.9	14.6	243
460	300	387	VFAS1-4200KPC-H1	13	37.4	23.0	14.6	360
460	350	427	VFAS1-4220KPC-H1	13	37.4	23.0	14.6	360
460	450	550	VFAS1-4280KPC-H1	13	37.4	23.0	14.6	360
460	550	671	VFAS1-4355KPC-H1	14	45.3	34.6	14.6	640
460	600	759	VFAS1-4400KPC-H1	14	45.3	34.6	14.6	640
460	700	941	VFAS1-4500KPC-H1	15	45.3	43.6	14.6	750

## Notes:

- Frame 13 and higher units do not include dynamic braking circuit. This is available as an option kit.
- Units with H1 at the end of the model number will require an AC line reactor. DC link reactor not included.

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## 600/690 V Power Unit Pricing & Dimensions



VAC	HP	FLA	Model Number	Frame	H	W	D	Shipping Weight (lbs.)
					Dimensions (in.)			
600/690	2	4.0	VFAS1-6022PL-HN	6	16.5	9.4	8.3	66.0
600/690	3	4.5	VFAS1-6030PL-HN	6	16.5	9.4	8.3	66.0
600/690	5	7.5	VFAS1-6055PL-HN	6	16.5	9.4	8.3	66.0
600/690	7.5	10.0	VFAS1-6075PL-HN	6	16.5	9.4	8.3	66.0
600/690	10	13.5	VFAS1-6110PL-HN	6	16.5	9.4	8.3	66.0
600/690	15	17.0	VFAS1-6150PL-HN	6	16.5	9.4	8.3	66.0
600/690	20	22.0	VFAS1-6185PL-HN	6	16.5	9.4	8.3	66.0
600/690	25	27.0	VFAS1-6220PL-HN	6	16.5	9.4	8.3	66.0
600/690	30	32.0	VFAS1-6300PL-HN	6	16.5	9.4	8.3	66.0
600/690	40	41.0	VFAS1-6370PL-HN	8	24.8	12.6	11.4	143
600/690	50	52.0	VFAS1-6450PL-HN	8	24.8	12.6	11.4	143
600/690	60	62.0	VFAS1-6550PL-HN	8	24.8	12.6	11.4	143
600/690	75	77.0	VFAS1-6750PL-HN	8	24.8	12.6	11.4	143
600/690	100	99.0	VFAS1-6900PL-HN	8	24.8	12.6	11.4	143

- Notes:**
- For models 6022 to 6110, HP and FLA ratings are valid only at 690 V.
  - For all others, HP and FLA ratings are valid only at 600 V.
  - For models 6150 to 6900, HP and FLA ratings at 690 V are available in the manual.

**AS1 ASD****600/690 V Power Unit  
Pricing & Dimensions**

VAC	HP	FLA	Model Number	Frame	H	W	D	Shipping Weight (lbs.)
					Dimensions (in.)			
600/690	125	125	VFAS1-6110KPC-H1	11	46.9	13.0	14.6	370
600/690	150	144	VFAS1-6132KPC-H1	11	46.9	13.0	14.6	370
600/690	200	192	VFAS1-6200KPC-H1	13	46.9	23.0	14.6	470
600/690	250	242	VFAS1-6250KPC-H1	13	46.9	23.0	14.6	470
600/690	350	336	VFAS1-6315KPC-H1	13	46.9	23.0	14.6	470
600/690	450	412	VFAS1-6400KPC-H1	15	54.7	43.6	14.6	510
600/690	550	528	VFAS1-6500KPC-H1	15	54.7	43.6	14.6	510
600/690	700	672	VFAS1-6630KPC-H1	15	54.7	43.6	14.6	510

**Notes:**

- Units with H1 at the end of the model number will require an AC line reactor. DC link reactor not included.
- Frame 13 and higher units do not include dynamic braking circuit. This is available as an option kit.
- Current and HP ratings in this table are applicable only at 600 V; HP and FLA ratings at 690 V are available in the manual.

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## Option Information & Pricing



### Conduit Adapters

Model Number	Frame		Height Increase (in.)	Stand-Alone AS1 IP Rating
NEM1101Z	2		1.2	IP20
NEM1102Z	3			
NEM1103Z	4			
NEM1104Z	5A		1.4	
NEM1105Z	5B		1.5	
NEM1106Z	6		2.4	
NEM1107Z	7A		2.0	
NEM1117Z	7B		1.9	
NEM1108Z	8		5.4	
NEM1109Z	9		9.8	
NEM1110Z	10		13.4	IP00
NEM1111Z	11			
NEM1112Z	12		15.7	
NEM1113Z	13			
NEM1115Z	14		18.6	
NEM1116Z	15			

**Notes:**

- AS1 units rated IP20 include a bottom cover, but will not accept conduit connections at the drive enclosure.
- AS1 units rated IP00 do not include a bottom cover.
- The optional conduit adapters listed above are NEMA 1 compliant. Stand-alone AS1 power units are not NEMA 1 compliant.
- No option for unit with PB7 on Frames 14 and 15.





**AS1 ASD****Option Information & Pricing****Flange-Mount Kits**

Model Number	Frame
FOT001Z	2
FOT002Z	3
FOT003Z	4
FOT004Z	5A
FOT005Z	5B
FOT006Z	6
FOT007Z	7A
FOT008Z	7B
FOT009Z	8
FOT010Z	9
FOT011Z	10
FOT012Z	11
FOT013Z	12
FOT014Z	13
FOT015Z	13 + PB7

**Notes:**

- Flange-mount kits are only available for Frame 13 and below.
- The flange-mount kit allows the AS1 to be mounted in an enclosure with the heat sink out-the-back to reduce cooling needs and enclosure dimensions.




### Communication Cards, Closed-Loop Cards, Keypads, Cables, & Cooling

Model Number	Description
RKP002Z	<p>Remote-mountable LED Keypad has 20 mm LEDs, the Largest in its Class, to Ensure Outstanding Visibility                      Designed to Fit into Panels for Use as an Extension Panel or Display                      Can Be Used as a Parameter Copy, Capable of Storing Parameters for Up to Three Models                      One CAB001x-0A Cable is Necessary                      Remote-mounting Kit Not Necessary for Door-mounting                      Hardware Included</p> 
RKP004Z	<p>Remote-mountable LCD Keypad Contains 23-character, Eight-line Display                      Can be Used for Simple Setup Monitoring Using Jog Dial                      Snaps to Front of Drive or can be Remote-mounted                      Display Language Selectable Between English &amp; Japanese                      (German, Italian, Spanish, &amp; Chinese will be Available Soon)                      Remote-mounting Requires SBP006Z Remote-mounting Kit, CNT001Z Adapter (Hand-held Only), &amp; CAB001x-0A Cable</p> 
CNT001Z	<p>RJ45 Female/RJ45 Adaptor                      Connects RKP004Z Keypad to AS1 Front Port via CAB001x-0A Cables</p>
CAB0011-0A	One-meter Cable for Remote-mounting RKP00xZ Keypads
CAB0012-0A	Two-meter Cable for Remote-mounting RKP00xZ Keypads
CAB0015-0A	Five-meter Cable for Remote-mounting RKP00xZ Keypads
SBP006Z	<p>Mounting Kit for RKP004Z LCD Keypad Maintains IP54 Rating for IP54 LCD Remote Keypad                      Can Be Used with SBP007Z for IP65 Installations</p> 
SBP007Z	<p>IP65 Door Attaches to SBP006Z Mounting Kit for RKP004Z Keypad</p> 
FAN003Z	Control Fan Kit Allows for 60°C Operation with Derate for Frame 6
FAN004Z	Control Fan Kit Allows for 60°C operation with Derate for Frame 7A
FAN005Z	Control Fan Kit Allows for 60°C operation with Derate for Frame 7B
FAN006Z	Control Fan Kit Allows for 60°C operation with Derate for Frame 8

## AS1 ASD

## Option Information &amp; Pricing

## Dynamic Braking Transistor

Model Number	Description	
PB7-4200K	Braking Unit for VFAS1-4200KPC-Hx, VFAS1-4220KPC-Hx, VFAS1-4280KPC-Hx	
PB7-4400K	Braking Unit for VFAS1-4355KPC-Hx, VFAS1-4400KPC-Hx, VFAS1-4500KPC-Hx Not Compatible with Conduit Box	
PB7-6300K	Braking Unit for VFAS1-6200KPC-Hx, VFAS1-6250KPC-Hx, VFAS1-6315KPC-Hx	
PB7-6400K	Braking Unit for VFAS1-6400KPC-Hx, VFAS1-6500KPC-Hx, VFAS1-6630KPC-Hx Not Compatible with Conduit Box	