

AMB99-32

October 4, 1999

Update on Uninterruptible Power Systems

Dear Alpha Microsystems VAR:

This bulletin announces price changes and model changes in our line of Toshiba uninterruptible power systems. Updated guidelines, on page 3, give recommended UPS models for various Alpha Micro computer configurations. Product highlights are as follows:

Why Our UPSs Are Better

- **Fluctuation tolerance** — Slight voltage or frequency variations will force most UPSs to drop into battery power mode. Frequent deep-cycle battery discharge shortens the life of the battery and jeopardizes the functional integrity of the UPS. Toshiba's Wide Input Voltage Window ensures that output power remains continuous, saving the battery except during extreme brownouts and blackouts.
- **Intelligent charger** — Low-tech, rapid on/off chargers in some UPSs tend to cause battery oxidation and overcharging, which shortens battery life. Toshiba's Intelligent Charger monitors the rising voltage and decreases the charge current to suit the characteristics of the battery.
- **Overload capacity** — Computer power loads tend to fluctuate through the day. This results in high momentary current demands. A UPS without high overload capacity will transfer to bypass mode during the slightest overload, leaving the computer vulnerable to brownouts and blackouts. Toshiba employs IGBT (Insulated Gate Bipolar Transistor) technology to provide optimum overload capacity.
- **Automatic bypass** — In the real world, occasional overload of the UPS is unavoidable. When that happens, a UPS without bypass capability is unable to support the load. Data loss and hardware damage may follow. All of our Toshiba UPSs are equipped for Automatic Bypass. During extreme overload the UPS will automatically bypass around its battery subsystem and give full AC power to the load. The UPS reverts to normal operating mode when the overload condition is corrected.
- **Total isolation** — Electrical noise can cause parity errors, system hangs, and even damage to components. Toshiba eliminates this noise by providing a low impedance isolation transformer at the output of all UPSs in our price list. Total Isolation yields a zero volt reference ground for proper computer operation. This is the ultimate in power conditioning.
- **Battery versatility** — Hot swappable batteries, available on selected models, provide extra insurance for nonstop operation. Added battery packs, available as a plug-in option on some models, allow extended runtime when commercial power fails. These are request-for-quote options and are not shown in the price list.

UPS Monitoring

All Toshiba UPSs in our price list are equipped for monitoring by the AMOS host system. A connector on the UPS presents an RS-232 serial interface and a set of dry contacts. Through these circuits, cable-connected to the host, the Alpha Micro computer can monitor the status of the UPS and alert the user when power is other than normal.

Monitoring is performed by the Alpha Micro UPS Monitor Software, which is furnished with AMOS and distributed on the AlphaCD. The software provides these services:

- **On-line status display** — A terminal on the host system displays status information about the UPS. You can choose either detailed displays or a summary display. Detailed displays show information such as battery voltage, shutdown voltage, output loading, and output current. The summary display shows percentage of usable battery power remaining, voltage to shutdown, output loading, and battery and UPS status.
- **Power-fail broadcast** — Optionally, the system can broadcast a message notifying all users that a power failure has occurred. Users can then suspend or complete their activity while power is still available in the UPS battery.

For details see the *UPS Monitor Software User's Guide*, document DSS-10394-00. The document is available at no charge on our documentation Web site, <http://www.amos-online.com/AMDocs/>.

Choosing UPS Capacity

Table 1, "UPS Usage Recommendations," gives guidelines for selecting the appropriate UPS model for various Alpha Micro configurations. Table 2 lists the corresponding model numbers.

Product Specifications

Table 3 (pages 5 through 9) gives detailed specifications for our Toshiba UPS product line. Most units are new Toshiba models, not offered in earlier Alpha Micro price lists. Examples include the new Toshiba 1500 Plus Series, which now provides our 600VA, 800VA, and 1000VA models.

New Toshiba 1500 Plus UPS (*right*) provides online UPS features and power conditioning in one enclosure. Available in 600VA, 800VA, and 1000VA capacity.

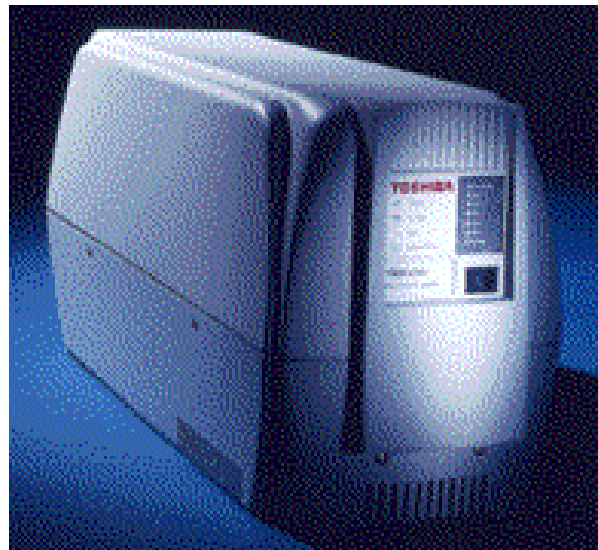


Table 1. UPS Usage Recommendations

System Model	System Configuration			
	Typical Configuration		Expanded Configuration	
	Recommended UPS Capacity	Battery * Back-up Time	Recommended UPS Capacity	Battery * Back-up Time
AlphaDIRECT PC	600 VA	12-30 min.	600 VA	12-30 min.
AM-1000	600 VA	12-30 min.	600 VA	12-30 min.
AM-1200	600 VA	12-30 min.	600 VA	12-30 min.
AM-1400	600 VA	12-30 min.	600 VA	12-30 min.
AM-1600	600 VA	12-30 min.	600 VA	12-30 min.
AM-2000M	600 VA	12-30 min.	1000 VA	7-18 min.
AM-2000-06	600 VA	12-30 min.	1000 VA	7-18 min.
AM-2000-10	1000 VA	7-18 min.	2.4 KVA	7-30 min.
AM-2000-21	3.6 KVA	7-30 min.	6 KVA	7-30 min.
AM-3000M	800 VA	8-20 min.	1.5 KVA	10-30 min.
AM-3000-06	600 VA	12-30 min.	1000 VA	7-18 min.
AM-3000-10	1000 VA	7-18 min.	2.4 KVA	7-30 min.
AM-3000-21	3.6 KVA	7-30 min.	6 KVA	7-30 min.
AM-4000M	600 VA	12-30 min.	1000 VA	7-18 min.
AM-4000-06	600 VA	12-30 min.	1000 VA	7-18 min.
AM-4000-10	1000 VA	7-18 min.	1.5 KVA	10-30 min.
Eagle 100	600 VA	12-30 min.	600 VA	12-30 min.
Eagle 200	600 VA	12-30 min.	600 VA	12-30 min.
Eagle 300/400/500	600 VA	12-30 min.	600 VA	12-30 min.
Eagle 450	600 VA	12-30 min.	600 VA	12-30 min.
Eagle 550 (Super Eagle)	600 VA	12-30 min.	600 VA	12-30 min.
AM-6000 (Eagle chassis)	1000 VA	7-18 min.	1.5 KVA	10-30 min.
AM-6000 (AM-990 / single wide)	1000 VA	7-18 min.	1.5 KVA	10-30 min.
AM-6000 (AM-990 / double wide)	1000 VA	7-18 min.	1.5 KVA	10-30 min.
AM-6060	600 VA	12-30 min.	1000 VA	7-18 min.

* **Battery Back-up Time:** First number indicates back-up time at full load; second number indicates time at half load. See Table 3 for detailed specifications of each UPS model.

Table 2. UPS Models

Capacity	Alpha Micro Part Number	For detailed specifications see:	Remarks
600 VA	VPA-22012-30	page 5	
800 VA	VPA-22014-30	page 5	
1000 VA	VPA-22008-30	page 5	
1.5 KVA	VPA-22015-30	page 6	The -32 model includes a connector for an optional external battery pack. The two 1.5 kVA models are otherwise identical.
1.5 KVA	VPA-22015-32	page 6	
2.4 KVA	VPA-22009-31	page 7	
3.6 KVA	VPA-22010-31	page 8	
6 KVA	VPA-22011-31	page 8	
8 KVA	VPA-22019-31	page 9	

Table 3. UPS Specifications (part 1 of 5)

	Part Number →	VPA-22012-30	VPA-22014-30	VPA-22008-30
	Capacity	600 VA 420W	800 VA 560W	1000 VA 700W
Input	Input voltage	Single phase, 120 Vac, +10% to -30% ①		
	Input frequency	45 to 65 Hz		
	Input capacity	600 VA	800VA	1000VA
	Input power cord	5-15 plug		
Battery	Battery Rated Voltage	60 Vdc		
	Battery backup time when fully charged with 0.7 power factor at 77°F (25° C)	12 min. at full load ② 30 min. at half load ②	8 min. at full load ② 20 min. at half load ②	7 min. at full load ② 18 min. at half load ②
	Recharge time	Maximum 24 hours to 100% (90% recharge after 8 hrs) ③		
	Type of batteries	Sealed lead-acid		
Output	Output voltage	Single-phase, 120 volts		
	AC output connectors	Five 5-15R receptacles		
	Output voltage regulation	Within ± 3%, steady state		
	Output frequency ④	50/60 Hz ± 0.5% in free-running mode (line sync range ± 1Hz)		
	Output voltage waveform	Computer-grade sine wave with less than 3.0% total harmonic distortion with linear load		
	Common mode	Less than 0.5V peak		
	Normal mode	Less than 10V peak		
	Rated load power factor	0.7 lagging (0.6 to 1.0)		
	Voltage transient characteristic	± 8% under 100% load step change		
	Rated output current (r m s)	5.0A	6.7A	8.3A
	Maximum output current (peak)	15.0A	20.0A	25.0A
	Inverter overload capacity	150% for 30 seconds		
Environment	Operating temperature	32 to 104° (0 to 40° C), optimal at 77° F (25° C)		
	Storage temperature	-4 to 104° (-20 to 40° C)		
	Operating humidity	30 to 90%, no condensation		
	Altitude ⑤	Less than 3000 ft (1000 m) above sea level		
	External dimensions	8.00W X 30.38D X 10.00H in. (203W X 518D X 254H mm)		
	Shipping Weight	66.0 lb (30.0 kg)	66.0 lb (30.0 kg)	69.4 lb (31.5 kg)
	Acoustical noise	50 dB at max. output, measured 3.3 ft (1 m) from front panel		
	Efficiency (ac-dc-ac)	83%	83%	85%
Switches	Bypass switch	Automatic bypass is provided when the Run switch is in the stop position, if a fault occurs, or if an overload occurs (transfer time is approximately 4 milliseconds)		
Interfaces	Dry contact and RS-232 interfaces	Standard		
	External battery connector	Standard		
Options	Hot swap batteries	Optional; price available on request		
	External battery pack	Optional; price available on request		

① Output capacity reduced when input voltage is between -15% and -30% of nominal.

② Battery backup time may vary depending on operating conditions, including ambient temperature, at the installation site.

③ For proper battery performance, an initial charge time of 24 hrs. is necessary before the unit is used for battery backup.

④ Output voltage and capacity derated for 50Hz output.

⑤ Above 3000 ft (1000 m), output capacity is reduced.

Table 3. UPS Specifications (part 2 of 5)

	Part Number →	VPA-22015-30	VPA-22015-32	
	Capacity	1500 VA (1.5 KVA) 1050W	1500 VA (1.5 KVA) 1050W	
Input	Input voltage	Single phase, 120 Vac, +10% to -30% ①		
	Input frequency	45 to 65 Hz		
	Input capacity	1500 VA		
	Input power cord	6 ft cord, 5-20 plug		
Battery	Battery Rated Voltage	72 Vdc		
	Battery backup time when fully charged with 0.7 power factor at 77°F (25° C)	10 min. at full load ② 30 min. at half load ②		
	Recharge time	Maximum 24 hours to 100% (90% recharge after 8 hrs) ③		
	Type of batteries	Sealed lead-acid		
Output	Output voltage	Single-phase, 120 volts		
	AC output connectors	Two 5-15R Duplex receptacles		
	Output voltage regulation	Within ± 3%, steady state		
	Output frequency ④	50/60 Hz ± 0.5% in free-running mode (line sync range ± 1Hz)		
	Output voltage waveform	Computer-grade sine wave with less than 3.0% total harmonic distortion with linear load		
	Common mode	Less than 0.5V peak		
	Normal mode	Less than 10V peak		
	Rated load power factor	0.7 lagging (0.6 to 1.0)		
	Voltage transient characteristic	± 5% under 100% load step change		
	Rated output current (r m s)	12.5A		
	Maximum output current (peak)	37.5A		
	Inverter overload capacity	150% for 60 seconds		
Environment	Operating temperature	32 to 104° (0 to 40° C), optimal at 77° F (25° C)		
	Storage temperature	-4 to 104° (-20 to 40° C)		
	Operating humidity	30 to 90%, no condensation		
	Altitude ⑤	Less than 3000 ft (1000 m) above sea level		
	External dimensions	7.06W X 23.16D X 14.63H in. (179W X 588D X 371H mm)		
	Shipping Weight	117.0 lb (53.2 kg)		
	Acoustical noise	45 dB at max. output, measured 3.3 ft (1 m) from front panel		
	Efficiency (ac-dc-ac)	85%		
Switches	Bypass switch	Automatic bypass is provided when the Run switch is in the stop position, if a fault occurs, or if an overload occurs (transfer time is approximately 4 milliseconds)		
Interfaces	Dry contact and RS-232 interfaces	Standard (on two DB-9 connectors)		
	External battery connector	None	Standard	
Options	Hot swap batteries	Optional; price available on request		
	External battery pack	Not available	Optional; price available on request	

① Output capacity reduced when input voltage is between -15% and -30% of nominal.

② Battery backup time may vary depending on operating conditions, including ambient temperature, at the installation site.

③ For proper battery performance, an initial charge time of 24 hrs. is necessary before the unit is used for battery backup.

④ Output voltage and capacity derated for 50Hz output.

⑤ Above 3000 ft (1000 m), output capacity is reduced.

Table 3. UPS Specifications (part 3 of 5)

	Part Number →	VPA-22009-31		
	Capacity	2400 VA (2.4 kVA) 1680W		
Input	Input voltage	Single phase, 208/240 Vac, +10% to -30% ①		
	Input frequency	45 to 65 Hz		
	Input capacity	2400 VA		
	Input power cord	6 ft cord, L6-30P plug		
Battery	Battery Rated Voltage	96 Vdc		
	Battery backup time when fully charged with 0.7 power factor at 77°F (25° C)	7 min. at full load ② 30 min. at half load ②		
	Recharge time	Maximum 24 hours to 100% (90% recharge after 8 hrs) ③		
	Type of batteries	Sealed lead-acid		
Output	Output voltage	Single-phase, 240/208/120 volts		
	AC output connectors	Four 5-15R Duplex receptacles		
	Output voltage regulation	Within ± 3%, steady state		
	Output frequency ④	50/60 Hz ± 0.5% in free-running mode (line sync range ± 1Hz)		
	Output voltage waveform	Computer-grade sine wave with less than 3.0% total harmonic distortion with linear load		
	Rated load power factor	0.7 lagging (0.6 to 1.0)		
	Voltage transient characteristic	± 5% under 100% load step change		
	Rated output current (r m s)	10.0A		
	Maximum output current (peak)	30.0A		
	Inverter overload capacity	150% for 60 seconds		
Environment	Operating temperature	32 to 104° (0 to 40° C), optimal at 77° F (25° C)		
	Storage temperature	-4 to 104° (-20 to 40° C)		
	Operating humidity	30 to 90%, no condensation		
	Altitude ⑤	Less than 3000 ft (1000 m) above sea level		
	External dimensions	10.00W × 25.50D × 22.50H in. (254W × 648D × 572H mm)		
	Shipping Weight	180.0 lb (81.6 kg)		
	Acoustical noise	45 dB at max. output, measured 3.3 ft (1 m) from front panel		
	Efficiency (ac-dc-ac)	85%		
Switches	Bypass switch	Automatic bypass is provided when the Run switch is in the stop position, if a fault occurs, or if an overload occurs (transfer time is approximately 4 milliseconds)		
Interfaces	Dry contact and RS-232 interfaces	Standard (on two DB-9 connectors)		
	External battery connector	Optional; price available on request		
Options	Hot swap batteries	Not available		
	External battery pack	Optional; price available on request		

① Output capacity reduced when input voltage is between -15% and -30% of nominal.

② Battery backup time may vary depending on operating conditions, including ambient temperature, at the installation site.

③ For proper battery performance, an initial charge time of 24 hrs. is necessary before the unit is used for battery backup.

④ Output voltage and capacity derated for 50Hz output.

⑤ Above 3000 ft (1000 m), output capacity is reduced.

Table 3. UPS Specifications (part 4 of 5)

	Part Number →	VPA-22010-31	VPA-22011-31
	Capacity	3.6 KVA 2520W	6 KVA 4200W
Input	Input voltage	Single phase, 208/240 Vac, +10% to -30% ①	
	Input frequency	45 to 65 Hz	
	Input capacity	3.6 KVA	6 KVA
	Input power cord	6 ft cord, L6-30P plug	6 ft cord, 6-50 plug
Battery	Battery Rated Voltage	144 Vdc	216 Vdc
	Battery backup time when fully charged with 0.7 power factor at 77°F (25° C)	7 min. at full load ② 30 min. at half load ②	7 min. at full load ② 30 min. at half load ②
	Recharge time	Maximum 24 hours to 100% (90% recharge in 10 hrs) ③	
	Type of batteries	Sealed lead-acid	
Output	Output voltage	Single-phase, 240/208/120 volts	
	AC output connectors	Four 5-15R Duplex receptacles	Five 5-15R Duplex receptacles
	Output voltage regulation	Within ± 3%, steady state (during normal or battery backup operation)	
	Output frequency	50/60 Hz ± 0.1% in free-running mode (line sync range ± 1Hz)	
	Output voltage waveform	Computer-grade sine wave with less than 3.0% total harmonic distortion with linear load	
	Rated load power factor	0.7 lagging	
	Voltage transient characteristic	± 8% under 100% load step change	
	Rated output current (r m s)	15.0A	25.0A
	Maximum output current (peak)	45.0A	75.0A
	Inverter overload capacity	125% for 1 minute; 150% for 30 seconds	
	Bypass overload capacity	125% for 10 minutes; 1000% for 1 cycle	
Environment	Temperature	<i>Operating:</i> 32 to 104° (0 to 40° C) <i>Storage:</i> -4 to 104° (-20 to 40° C)	
	Operating humidity	30 to 90%, no condensation	
	Altitude ④	Less than 3000 ft (1000 m) above sea level	
	External dimensions	9.9W × 27.2D × 22.2H in. (250W × 690D × 564H mm)	9.9W × 31.6D × 28.0H in. (250W × 790D × 700H mm)
	Shipping Weight	263 lb (120 kg)	360 lb (164 kg)
	Acoustical noise	50 dB at max. output, measured 3.3 ft (1 m) from front panel	
	Heat generation	450W (1550 Btu/hr)	750W (2580 Btu/hr)
	Efficiency (ac-dc-ac)	Greater than 85%	
Switches	Bypass switch	Manual bypass provided	
	Bypass transfer switch	Static switch standard (transfer time: less than 4 mS)	
	Automatic retransfer switch	Provided (this function can be disabled)	
Interfaces	Dry contact and RS-232 interfaces	Standard	
	External battery connector	Optional; price available on request	
Options	Hot swap batteries	Not available	
	External battery pack	Optional; price available on request	

① Input/output figures rated for 240 volts. Output capacity will be reduced when input voltage is below 204 volts.

② Battery backup time may vary depending on operating conditions, including ambient temperature, at the installation site.

③ For proper battery performance, an initial charge time of 24 hrs. is necessary before the unit is used for battery backup.

④ At 6000 ft (2000 m) above sea level, output capacity should be derated by 3%.

Table 3. UPS Specifications (part 5 of 5)

	Part Number →	VPA-22019-31	
	Capacity	8 KVA 5600W	
Input	Input voltage	Single phase, 208/240 Vac, +10% to -30% ①	
	Input frequency	45 to 65 Hz	
	Input capacity	8.0 KVA	
	Input power cord	6 ft cord, 6-50P plug	
Battery	Battery Rated Voltage	252 Vdc	
	Battery backup time when fully charged with 0.7 power factor at 77°F (25° C)	7 min. at full load ② 30 min. at half load ②	
	Recharge time	Maximum 24 hours to 100% (90% recharge in 10 hrs) ③	
	Type of batteries	Sealed lead-acid	
Output	Output voltage	Single-phase, 240/208/120 volts	
	AC output connectors	Five 5-15R Duplex receptacles	
	Output voltage regulation	Within ± 3%, steady state (during normal or battery backup operation)	
	Output frequency	50/60 Hz ± 0.1% in free-running mode (line sync range ± 1Hz)	
	Output voltage waveform	Computer-grade sine wave with less than 3.0% total harmonic distortion with linear load	
	Rated load power factor	0.7 lagging	
	Voltage transient characteristic	± 8% under 100% load step change	
	Rated output current (r m s)	33.3A	
	Maximum output current (peak)	100.0A	
	Inverter overload capacity	125% for 1 minute; 150% for 30 seconds	
	Bypass overload capacity	125% for 10 minutes; 1000% for 1 cycle	
Environment	Temperature	<i>Operating:</i> 32 to 104° (0 to 40° C) <i>Storage:</i> -4 to 104° (-20 to 40° C)	
	Operating humidity	30 to 90%, no condensation	
	Altitude ④	Less than 3000 ft (1000 m) above sea level	
	External dimensions	9.9W × 35.2D × 28.0H in. (250W × 890D × 700H mm)	
	Shipping Weight	490 lb (223 kg)	
	Acoustical noise	50 dB at max. output, measured 3.3 ft (1 m) from front panel	
	Heat generation	1000W (3444 Btu/hr)	
	Efficiency (ac-dc-ac)	Greater than 85%	
Switches	Bypass switch	Manual bypass provided	
	Bypass transfer switch	Static switch standard (transfer time: less than 4 mS)	
	Automatic retransfer switch	Provided (this function can be disabled)	
Interfaces	Dry contact and RS-232 interfaces	Standard	
	External battery connector	Optional; price available on request	
Options	Hot swap batteries	Not available	
	External battery pack	Optional; price available on request	

① Input/output figures rated for 240 volts. Output capacity will be reduced when input voltage is below 204 volts.

② Battery backup time may vary depending on operating conditions, including ambient temperature, at the installation site.

③ For proper battery performance, an initial charge time of 24 hrs. is necessary before the unit is used for battery backup.

④ At 6000 ft (2000 m) above sea level, output capacity should be derated by 3%.

Warranty

Our Toshiba UPSs carry Toshiba's three year warranty against defects in materials and workmanship. The warranty period expires 36 months from the date of shipment from the Toshiba facility in Houston, Texas. The warranty covers parts, labor, travel, and batteries (battery warranty is subject to operating environment). Toshiba undertakes to provide on-site repair service, or to replace the entire UPS, at its option. On-site repair service is provided within 24 hours.

The warranty is valid within the 48 contiguous states of the United States, in Canada, and in Mexico, and is subject to laws or regulations in the country of purchase.

Service

Toshiba and Alpha Micro have worked together in the UPS marketplace for many years. In addition to acting as a product reseller, Alpha Micro is an authorized service provide for Toshiba uninterruptible power systems.

Best regards,

John F.G. Leighton
VAR Marketing Manager