Upgrading to AS3

This document will assist in replacing a previous generation Toshiba ASD with the AS3. This will cover the general control and programming differences between the AS3 and previous Toshiba products; the main parameter changes between the series, introduce the AS3 terminals, and provide dimensions for the new power AS3 power units.

PART A
Connections

Figure 1 shows the terminal strip found on the AS3 drive. Although most of the terminals retain the same default functions and naming, there have been a few changes. Table 1 covers any differences. Refer to Section 2.3.5 of the AS3 Installation and Operation Manual (E6582062) for additional information.

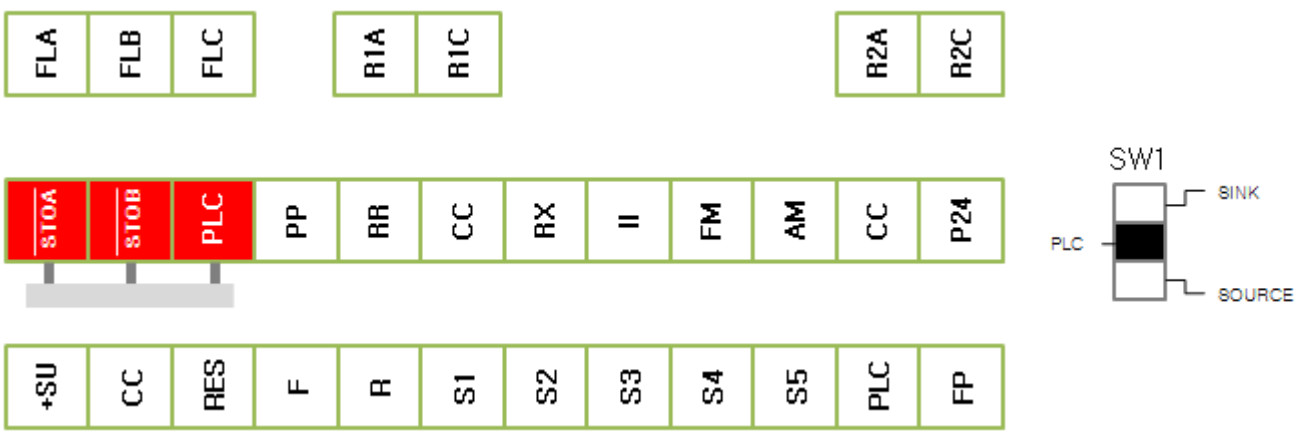

Figure 1 – Terminal Board Connections

PART A
Connections cont'd.

Terminal	Comments
FLA/FLB/FLC	No change. Form C contact programmed for fault status. This can be adjusted by parameter F132.
R1A/R1C	Replaces the OUT1 on the AS1, and the O1A/O1C on the G9/P9/H9. Programmed for run status. This can be adjusted by parameter F133.
R2A/R2C	Replaces the OUT2 on the AS1, and the O2A/O2C on the G9/P9/H9. Not programmed at default. This can be programmed using parameter F134.
STOA/STOB	New Safe Torque Off terminals. Safe Torque Off is a safety standard that removes power from the transistor firing circuit. By removing power from both terminals, the drive will coast to stop.
PP	No change. 10Vdc supply.
RR	No change. 0-10Vdc analog input. Default frequency reference.
CC	No change. Control common.
RX	No change. -10-+10Vdc analog input.
II	Replaces the V/I terminal. Previously the terminal could switch between a voltage and current input, and now the terminal is solely a 4(0)-20mA input.
FM	No change. Output signal selection done using parameter F681.
AM	No change. Output signal selection done using parameter F686.
P24	No change. 24Vdc supply.
+SU	No change. Control power backup input.
F/R/S1/S2 S3/S4/RES	No change. Digital inputs. Offer functionality of Forward or Reverse Run, Reset Fault, and preset speed selection.
S5	New terminal. Additional digital input set for Preset Speed 5 that allows for up to 32 preset speeds.
PLC	No change. Input or Output determined by SW1. Refer to section 2.3.5.
FP	No change. Digital Output or Pulse Train Output determined by parameter F669.

Table 1 – Terminal Differences

PART B
Programming

There are many new features that were incorporated into the AS3. As a result, some of the parameter numbers have shifted. The following table, Table 2, shows a list of parameters for the AS1 and 9-series products that have new parameter numbers in the AS3. The digital input terminal functions have shifted by one parameter, and the basic parameter list was trimmed on the AS3.

AS3 Parameter	AS1 Parameter	9-Series Parameter
tHrA: Motor Overload Protection Current	tHr	F600
F113: Terminal RES function	F114	F114
F114: Terminal S1 Function	F115	F115
F115: Terminal S2 Function	F116	F116
F116: Terminal S3 Function	F117	F117
F117: Terminal S4 Function	F118	F118
F133: Terminal R1 Function	F130	F130
F134: Terminal R2 Function	F131	F131
F201-204: RR Scaling	F210-212, avf2	F210-213
F216-219: II Scaling	F201-203, a1f2	F201-F204
F300: Carrier Frequency	cf	F300
F301: Auto-Restart	uvs	F301
F302: Regenerative power ride-through	uvc	F302
F304: Dynamic Braking Selection	pb	F304
F308: Dynamic Braking Resistance	pbr	F308
F309: Dynamic Braking Resistor Capacity	pbcp	F309
F415: Motor Rated Current	F406	F406
F416: Motor No Load Current	F411	F411
F417: Motor Rated Speed	F407	F407
F670: Terminal AM Function	amsl	F670
F671: Terminal AM Adjustment	am	F671
F686: Terminal AM Switching	N/A	N/A
F687: Terminal AM Inclination Priority	F685	F685
F688: Terminal AM Bias	F686	F686
F827: RS485 Protocol	F829	F829
A900-A977: MyFunction Settings	F900-977	F900-977

Table 2 – Parameter Differences

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PART C
Power Unit Dimensions

HP	AS3 ND		H9/P9/Q9/Q9+	
0.75	VFAS3-2004P	12.84”H x 5.2”W x 8.0”D	VT130x9U2010	11.2” x 5.2”W x 6.1”D
1			VT130x9U2015	
2	VFAS3-2007P		VT130x9U2025	
3	VFAS3-2015P		VT130x9U2035	12.4” x 6.1”W x 6.6”D
5	VFAS3-2022P		VT130x9U2055	
7.5	VFAS3-2037P	15.4”H x 6.1”W x 9.2”D	VT130x9U2080	15.0”H x 6.9”W x 6.6”D
10	VFAS3-2055P	21.1”H x 7.7”W x 9.2”D	VT130x9u2110	
15	VFAS3-2075P		VT130x9U2160	19.3”H x 9.1”W x 7.6”D
20	VFAS3-2110P	26.0”H x 8.3”W x 2.6”D	VT130x9U2220	
25	VFAS3-2150P		VT130x9U2270	
30	VFAS3-2185P		VT130x9U2330	25.9”H x 11.1”W x 13.2”D
40	VFAS3-2220P	35.8”H x 14.4”W x 12.4”D	VT130x9U2400	33.1”H x 14.3”W x 15.0”D
50	VFAS3-2300P		VT130x9U2500	
60	VFAS3-2370P		VT130x9U2600	
75	VFAS3-2450P	33.5”H x 11.9”W x 15.1”D	VT130x9U2750	
100	VFAS3-2550P		VT130x9U210K	51.7”H x 14.6”W x 17.6”D
125			VT130x9U212K	53.2”H x 15.7”W x 17.6”D

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PART C
Power Unit Dimensions Cont'd.

HP	AS3 HD		AS1		G9	
0.5	VFAS3-2004P	12.84"H x 5.2"W x 8.0"D	VFAS1-2004PL	9.1"H x 5.2"W x 6.0"D	VT130G9U2010	11.2"H x 5.2"W x 6.1"D
1	VFAS3-2007P		VFAS1-2007PL		VT130G9U2015	
2	VFAS3-2015P		VFAS1-2015PL		VT130G9U2025	
3	VFAS3-2022P		VFAS1-2022PL	10.3"H x 6.1"W x 6.5"D	VT130G9U2035	12.4"H x 6.1"W x 6.6"D
5	VFAS3-2037P	15.4"H x 6.1"W x 9.1"D	VFAS1-2037PL		VT130G9U2055	
7.5	VFAS3-2055P	21.1"H x 7.7"W x 9.1"D	VFAS1-2055PL	11.7"H x 6.9"W x 6.5"D	VT130G9U2080	15.0"H x 6.9"W x 6.6"D
10	VFAS3-2075P		VFAS1-2075PL	11.7"H x 8.3"W x 7.6"D	VT130G9U2110	15.1"H x 8.3"W x 7.6"D
15	VFAS3-2110P	26.0"H x 8.3"W x 2.6"D	VFAS1-2110PM	15.8"H x 9.1"W x 7.6"D	VT130G9U2160	19.3"H x 9.1"W x 7.6"D
20	VFAS3-2150P		VFAS1-2150PM		VT130G9U2220	
25	VFAS3-2185P		VFAS1-2185PM	16.6"H x 9.5"W x 8.4"D	VT130G9U2270	25.9"H x 11.1"W x 13.2"D
30	VFAS3-2220P	35.8"H x 14.4"W x 12.4"D	VFAS1-2220PM		VT130G9U2330	33.1"H x 14.3"W x 15.0"D
40	VFAS3-2300P		VFAS1-2300PM	21.7"H x 12.6"W x 9.6"D	VT130G9U2400	
50	VFAS3-2370P		VFAS1-2370PM		VT130G9U2500	
60	VFAS3-2450P	33.5"H x 11.9"W x 15.1"D	VFAS1-2450PM		VT130G9U2600	
75	VFAS3-2550P		VFAS1-2550PM-HN	36.3"H x 12.3"W x 14.6"D	VT130G9U2750	51.7"H x 14.6"W x 17.6"D
100			VFAS1-2750PM-HN	40.3"H x 13.8"W x 14.6"D	VT130G9U210K	53.1"H x 14.8"H x 17.6"D

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PART C
Power Unit Dimensions Cont'd.

HP	AS3 ND		H9/P9/Q9/Q9+	
1	VFAS3-4004PC	12.8"H x 5.1"W x 8.0"D	VT130x9U4015	11.2"H x 5.2"W x 6.1"D
2	VFAS3-4007PC		VT130x9U4025	
3	VFAS3-4015PC		VT130x9U4035	
5	VFAS3-4022PC		VT130x9U4055	12.4"H x 6.1"W x 6.6"D
7.5	VFAS3-4037PC		VT130x9U4080	
10	VFAS3-4055PC	15.5"H x 6.1"W x 9.1"D	VT130x9u4110	15.0"H x 6.9"W x 6.6"D
15	VFAS3-4075PC		VT130x9U4160	15.1"H x 8.3"W x 7.6"D
20	VFAS3-4110PC	21.1"H x 7.7"W x 9.2"D	VT130x9U4220	
25	VFAS3-4150PC		VT130x9U4270	19.3"H x 9.1"W x 7.6"D
30	VFAS3-4185PC		VT130x9U4330	
40	VFAS3-4220PC	26.0"H x 8.3"W x 10.6"D	VT130x9U4400	25.9"H x 11.1"W x 13.2"D
50	VFAS3-4300PC		VT130x9U4500	30.8"H x 11.1"W x 14.3"D
60	VFAS3-4370PC		VT130x9U4600	
75	VFAS3-4450P	35.8"H x 10.5"W x 12.4"D	VT130x9U4750	36.1"H x 14.3"W x 15.3"D
100	VFAS3-4550PC		VT130x9U410K	
125	VFAS3-4750PC		VT130x9U412K	
150	VFAS3-4900PC	33.5"H x 11.9"W x 15.1"D	VT130x9U415K	51.7"H x 14.6"W x 17.6"D
200	VFAS3-4110KPC		VT130x9U420K	53.2"H x 15.7"W x 17.6"D
250	VFAS3-4132KPC		VT130x9U425K	63.1"H x 15.0"W x 17.6"D
300	VFAS3-4160KPC	46.9"H x 17.0"W x 14.9"D	VT130x9U430K	68.5"H x 18.9"W x 17.6"D
350			VT130x9U435K	
400	VFAS3-4200KPC	46.9"H x 23.1"W x 14.9"D	VT130x9U440K	70.0"Hx 25.6"W x 17.6"D
450	VFAS3-4220KPC			
500	VFAS3-4280KPC			

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PART C
Power Unit Dimensions Cont'd.

HP	AS3 HD		AS1		G9	
0.5	VFAS3-4004PC	12.8"H x 5.1"W x 8.0"D				
1	VFAS3-4007PC		VFAS1-4007PL	9.1"H x 5.2"W x 6.0"D	VT130G9U4015	11.2"H x 5.2"W x 6.1"D
2	VFAS3-4015PC		VFAS1-4015PL		VT130G9U4025	
3	VFAS3-4022PC		VFAS1-4022PL		VT130G9U4035	
5	VFAS3-4037PC		VFAS3-4037PL	10.3"H x 6.1"W x 6.5"D	VT130G9U4055	12.4"H x 6.1"W x 6.6"D
7.5	VFAS3-4055PC	15.5"H x 6.1"W x 9.1"D	VFAS3-4055PL	11.7"H x 6.9"W x 6.5"D	VT130G9U4080	15.0"H x 6.9"W x 6.6"D
10	VFAS3-4075PC		VFAS3-4075PL		VT130G9U4110	
15	VFAS3-4110PC	21.1"H x 7.7"W x 9.2"D	VFAS3-4110PL	11.7"H x 8.3"W x 7.6" D	VT130G9U4160	15.1"H x 8.3"W x 7.6"D
20	VFAS3-4150PC		VFAS-4150PL	15.8"H x 9.1"W x 7.6"D	VT130G9U4220	19.3"H x 9.1"W x 7.6"D
25	VFAS3-4185PC		VFAS1-4185PL		VT130G9U4270	
30	VFAS3-4220PC	26.0"H x 8.3"W x 10.6"D	VFAS1-4220PL	16.6"H x 9.5"W x 8.4"D	VT130G9U4330	25.9"H x 11.1"W x 13.2"D
40	VFAS3-4300PC		VFAS1-4300PL	21.7"H x 9.5"W x 9.6"D	VT130G9U4400	30.8"H x 11.1"W x 14.3"D
50	VFAS3-4370PC		VFAS1-4370PL		VT130G9U4500	
60	VFAS3-4450PC	35.8"H x 10.5"W x 12.4"D	VFAS1-4450PL	24.9"H x 12.6"W x 11.5"D	VT130G9U4600	36.1"H x 14.3"W x 15.3"D
75	VFAS3-4550PC		VFAS1-4550PL		VT130G9U4750	
100	VFAS3-4750PC		VFAS1-4750PL		VT130G9U410K	
125	VFAS3-4900PC	33.5"H x 11.9"W x 15.1"D	VFAS1-4900PC	26.8"H (36.3") x 12.2"W x 14.6"D	VT130G9U412K	51.7"H x 14.6"W x 17.6"D
150	VFAS3-4110KPC		VFAS1-4110KPC	30.8"H (40.3") x 13.8"W x 14.6"D	VT130G9U415K	53.2"H x 15.7"W x 17.6"D
200	VFAS3-4132KPC		VFAS1-4132KPC	37.4"H (46.9") x 13.0"W x 14.6"D	VT130G9U420K	63.1"H x 15.0"W x 17.6"D
250	VFAS3-4160KPC	46.9"H x 17.0"W x 14.9"D	VFAS1-4160KPC	37.4"H (40.3") x 17.0"W x 14.6"D	VT130G9U425K	68.5"H x 18.9"W x 17.6"D
300	VFAS3-4200KPC	46.9"H x 23.1"W x 14.9"D	VFAS1-4200KPC	37.4"H (46.9") x 23.0"W x 14.6"D	VT130G9U430K	70.0"H x 25.6"W x 17.6"D
350	VFAS3-4220KPC		VFAS1-4220KPC		VT130G9U435K	
400			VFAS1-4280KPC			
450	VFAS3-4280KPC					

* AS1 heights in parenthesis refer to HN unit with included DC link reactor.

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PART C
Power Unit Dimensions Cont'd.

HP	AS3 HD		AS1	
2	VFAS3-6022PC	16.6"H (21.8") x 9.5"W x 9.6"D	VFAS1-6022PL-HN	16.5"H x 9.4"W x 8.3"D
3	VFAS3-6030PC		VFAS1-6030PL-HN	
4	VFAS3-6040PC			
5	VFAS3-6055PC		VFAS1-6055PL-HN	
7.5	VFAS3-6075PC		VFAS1-6075PL-HN	
10	VFAS3-6110PC		VFAS1-6110PL-HN	
15	VFAS3-6150PC		VFAS1-6150PL-HN	
20	VFAS3-6185PC		VFAS1-6185PL-HN	
25	VFAS3-6220PC		VFAS1-6220PL-HN	
30	VFAS3-6300PC	24.8"H (31.9") x 12.6"W x 11.7"D	VFAS1-6300PL-HN	
40	VFAS3-6370PC		VFAS1-6370PL-HN	24.8"H x 12.6"W x 11.4"D
50	VFAS3-6450PC		VFAS1-6450PL-HN	
60	VFAS3-6550PC		VFAS1-6550PL-HN	
75	VFAS3-6750PC		VFAS1-6750PL-HN	
100			VFAS1-6900PL-HN	
125			VFAS1-6110KPC-H1	46.9"H x 13.0"W x 14.6"D
150			VFAS1-6132KPC-H1	
200			VFAS1-6200KPC-H1	46.9"H x 23.0"W x 14.6"D
250			VFAS1-6250KPC-H1	
350			VFAS1-6315KPC-H1	
450			VFAS1-6400KPC-H1	54.7"H x 43.6"W x 14.6"D
550			VFAS1-6500KPC-H1	
700			VFAS1-6630KPC-H1	

* AS3 heights in parenthesis refer to units with included NEMA Type 1 kit.

PART D
Notes

Notes:

ST Terminal – The ST terminal has been replaced by the STO function on the AS3. The STO terminals cannot be reprogrammed and must be closed to allow for operation of the drive. Any of the discrete inputs can be set to the Standby function, mimicking the past implementation of the ST terminal. If you are wanting to remap a terminal to Standby, set F118: Terminal S5 function to 6: Standby.

The AS3 has several options for downloading and uploading parameters:

- Many Toshiba drives have a “Changed From Default” search function that will display all parameters that have been changed from default settings. On the AS1 this can be done by accessing GrU, and using the up/down arrows to search. Parameters can be manually recorded and entered into the AS3.
- Toshiba’s ASD Pro software, can be used to connect to the drive with a computer. Because there are parameter differences, use the ASD Pro Table Window to show the list of parameters changed from default. Once the list is compiled, manually enter these parameters into the AS3 because of the aforementioned differences. Do NOT upload a csv parameter file from an old drive into the AS3.
- In some cases the parameter settings may not be retrieved. If this is the case, please reference the AS3 Fast Start Guide App Note for assistance in programming.

Note on the SW1 switch: AS3 units are shipped from the factory with a default setting of SW1 as PLC, most applications will need to be configured for SINK logic. Ensure that the correct logic setting is selected on switch SW1.