

TOSHIBA

TOSHIBA INTERNATIONAL CORPORATION

ADJUSTABLE SPEED DRIVES

AS3



**LOW
VOLTAGE**

HARNESSING THE POWER OF BUILT-IN COMMUNICATIONS

Toshiba's AS3 adjustable speed drive is designed with an emphasis on built-in communications, allowing end-users to access real-time data and refined controls to maximize system performance.



| | |
|--|---|
| Industry 4.0/IoT (Internet of Things) | Industry 4.0 is the evolution of manufacturing, empowering businesses to learn and adjust from data available through connected manufacturing. |
| Dual Port Ethernet IP | Enables simple connection of multiple AS3s together on one network while simplifying cable management. |
| Embedded Web Server | Allows for quick access to Ethernet IP setup, parameters and real-time monitoring for diagnostics. Accessible through standard web browsers on PC, tablets, and smart phones. |
| Built-in LCD Display & Advanced Keypad | Multi-language LCD display, remote mounting, IP65 rated, transfer/save parameters, real-time clock for fault logging, and calendar functionality. |
| QR Codes | Displayed when troubleshooting faults or alarms, providing immediate access to a dedicated web link for maintenance and support. |
| STO Terminal | Detachable terminal strip meets IEC directives for safety with full implementation of Safe Torque Off, which quickly shuts down the system in the event of an emergency stop. |
| Permanent Magnet Motor Control | For control of permanent magnet (PM) motors with higher torque and efficiency values. |
| Pump Control | Multi-PID control with sleep function and the ability to autonomously control booster pumps based on system demands or operating a secondary PID control loop. |
| ASD Pro Software | Toshiba's programming software, which allows the user to utilize logic-type programming without the expense of a micro PLC. |

COMMUNICATION OPTIONS

In addition to the built-in dual port Ethernet, the AS3 can make use of a wide array of easily installed option boards. These boards allow the user to communicate with a wide variety of systems when installed cassette style. Options include:

- Ethernet/IP (Embedded)
- Modbus TCP (Embedded)
- Modbus RTU (Embedded)
- PROFINET
- EtherCAT
- PROFIBUS-DP
- DeviceNET
- CAN open

ADDITIONAL OPTIONS

The AS3 can be supplied with additional options to expand control, allow greater flexibility, and provide better protection for a user's application. Options include:

- AC Line Reactors
- DV/DT Long-Lead Filters
- Extended Terminal Cards
- Encoder Feedback Cards
- Harmonic Filters
- Remote-Mountable Keypads
- Dynamic Braking Resistor
- Flange Kit
- Conduit Boxes
- Safety Module (SS1, SOS, SS1, SBS, SLS, SDI)

OTHER SPECIAL FEATURES

- Broad Range of Compliances
- NEC 2005 Motor Overload Retention (No External Motor Overloads Required)
- NEMA 1 Enclosure
- UL Listed & Labeled
- Optional IP55 Enclosure

INDUSTRIES SERVED

- Oil & Gas
- Mining & Minerals
- Chemical
- Water & Wastewater

APPLICATIONS

- Pumps
- Fans
- Compressors
- Centrifuges
- Conveyors
- Mixers
- Pump Jacks
- Crushers
- Cranes
- Hoists



1. Dual Port Ethernet IP
2. RS485 Communication Port
3. Up to 3 Embedded Option Card Slots
4. Safe Torque Off Terminals
5. 3 Digital Output Relays
6. 3 Analog Inputs
7. 2 Analog Outputs
8. 8 Digital Inputs



APPLICABLE MOTOR (HP)

| | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|-----|---|---|---|-----|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Heavy Duty (HD) | 0.5 | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 450 |
| Normal Duty (ND) | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 200 | 250 | 350 | 400 | 450 | 500 |

RATED OUTPUT CURRENT (A)

| | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 200 V Class HD | 3.3 | 4.6 | 8 | 11.2 | 18.7 | 25.4 | 32.7 | 46.8 | 63.4 | 78.4 | 92.6 | 123 | 149 | 176 | 211 | - | - | - | - | - | - | - | - |
| 200 V Class ND | 4.6 | 8 | 11.2 | 18.7 | 25.4 | 32.7 | 46.8 | 63.4 | 78.4 | 92.6 | 123 | 149 | 176 | 211 | 282 | - | - | - | - | - | - | - | - |
| 400 V Class HD | 1.5 | 2.2 | 4 | 5.6 | 9.3 | 12.7 | 16.5 | 23.5 | 31.7 | 39.2 | 46.3 | 61.5 | 74.5 | 88 | 106 | 145 | 173 | 211 | 250 | 314 | 387 | 427 | 550 |
| 400 V Class ND | 2.2 | 4 | 5.6 | 9.3 | 12.7 | 16.5 | 23.5 | 31.7 | 39.2 | 46.3 | 61.5 | 74.5 | 88 | 106 | 145 | 173 | 211 | 250 | 302 | 427 | 481 | 550 | 616 |

VOLTAGE/FREQUENCY

| | |
|-------------|--|
| 200 V Class | Three-Phase 200 to 240 V, 50/60 Hz (Voltage +10%, -15%, Frequency ±5%) |
| 400 V Class | Three-Phase 380 to 480 V, 50/60 Hz (Voltage +10%, -15%, Frequency ±5%) |

OUTPUT VOLTAGE

| | |
|-------------|--|
| 200 V Class | Three-Phase 200 to 240 V (Maximum Output Voltage is Equal to the Input Supply Voltage) |
| 400 V Class | Three-Phase 380 to 480 V (Maximum Output Voltage is Equal to the Input Supply Voltage) |

OVERLOAD CURRENT RATING

| | |
|----|---|
| HD | 150% for One Minute, 180% for Two Seconds |
| ND | 120% for One Minute, 135% for Two Seconds |

OUTPUT FREQUENCY RANGE

| | |
|--|--|
| | Setting Between 0.01 to 590 Hz; Adjustable at 0.01 Hz Increments; Default Maximum Frequency is Set to 0.01 to 80 Hz; Maximum Frequency Adjustment (30 to 590 Hz) |
|--|--|

DC REACTOR

| | |
|--|--|
| | 200/400 V Class 0.5 to 200 HP (HD) Built-in; 400 V Class 250 to 450 HP (HD) Attached |
|--|--|

ENCLOSURE

| | |
|--|--|
| | 200 V Class 0.5 to 50 HP (HD) and 400 V Class 0.5 to 100 HP (HD) NEMA 1/IP20 Built-in; 200 V Class 60 to 75 HP (HD) and 400 V Class 125 to 450 HP (HD) NEMA 1/IP20 with Optional Conduit Box |
|--|--|

AMBIENT TEMPERATURE

| | |
|--|---|
| | -10° to +60° C (Remove the Upper Cover if 50° C or More; Max 60° C) |
|--|---|

TERMINAL STRIP I/O

| | |
|--|---|
| | Eight DI, Three DO (One Form C, Two Form A Relays), Three AI (0 to 10 VDC, -10 to +10 VDC, 0 to 20 mA DC), Two AO (0 to 10 VDC or 0 to 20 mA DC), STO (Safe Torque Off) |
|--|---|

200V CLASS WEIGHTS & DIMENSIONS

| | | | | | | | | | | | | | | | |
|---------------------|------------------|---|-----|------|------------------|------|------------------|----|------|-------------------|----|-----|--------------------|-----|--------------------|
| HD | 0.5 | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 |
| ND | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 |
| Frame Size | A1 | | | | A2 | | A3 | | | A4 | | | A5 | | A6 |
| Dims. (in) WxHxD | 5.7 x 13.8 x 8.0 | | | | 6.7 x 16.2 x 9.2 | | 8.3 x 21.8 x 9.2 | | | 8.9 x 27.3 x 10.7 | | | 11.5 x 36.8 x 12.7 | | 12.7 x 33.5 x 15.4 |
| Approx Weight (lbs) | 9.5 | | 9.9 | 10.1 | 16.9 | 30.4 | | | 60.1 | | | 127 | | 180 | |

400V CLASS WEIGHTS & DIMENSIONS

| | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|------------------|---|------|------|------------------|------|------------------|------|------|-------------------|------|-----|--------------------|-----|--------------------|-----|--------------------|--------------------|-----|-----|-----|-----|-----|
| HD | 0.5 | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 450 |
| ND | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 200 | 250 | 300 | 400 | 450 | 500 |
| Frame Size | A1 | | | | A2 | | A3 | | | A4 | | | A5 | | A6 | | A7 | A8 | | | | | |
| Dims. (in) WxHxD | 5.7 x 13.8 x 8.0 | | | | 6.7 x 16.2 x 9.2 | | 8.3 x 21.8 x 9.2 | | | 8.9 x 27.3 x 10.7 | | | 11.5 x 36.8 x 12.7 | | 12.7 x 33.5 x 15.4 | | 17.3 x 47.0 x 14.8 | 23.5 x 47.0 x 14.8 | | | | | |
| Approx Weight (lbs) | 9.9 | | 10.1 | 10.3 | 16.9 | 29.9 | 31.2 | 31.5 | 61.6 | 62.0 | 63.1 | 127 | 130 | 131 | 180 | | 366 | 428 | 450 | | | | |

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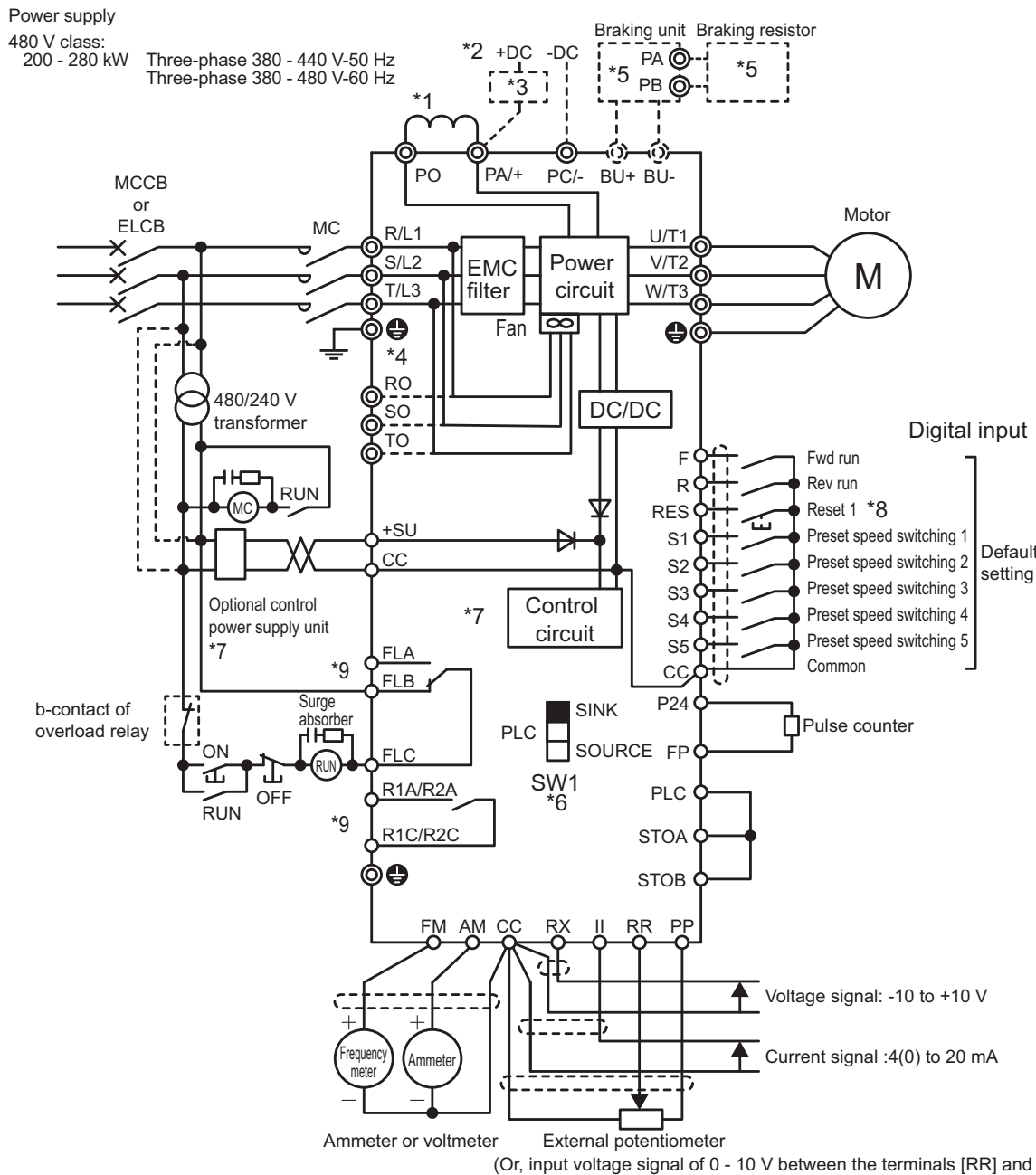


Scan here to learn more about the AS3

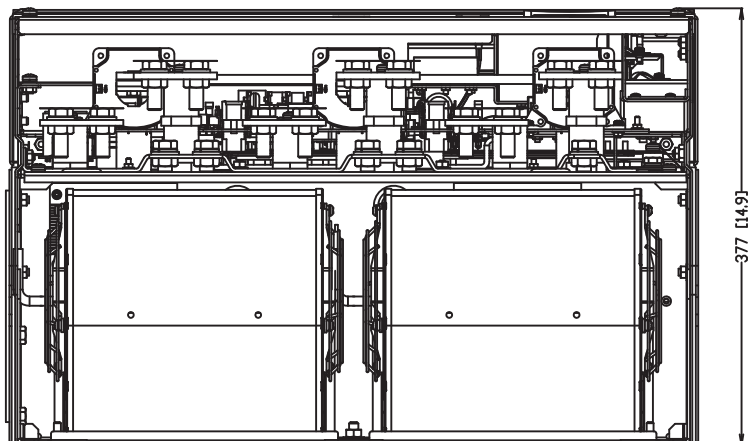
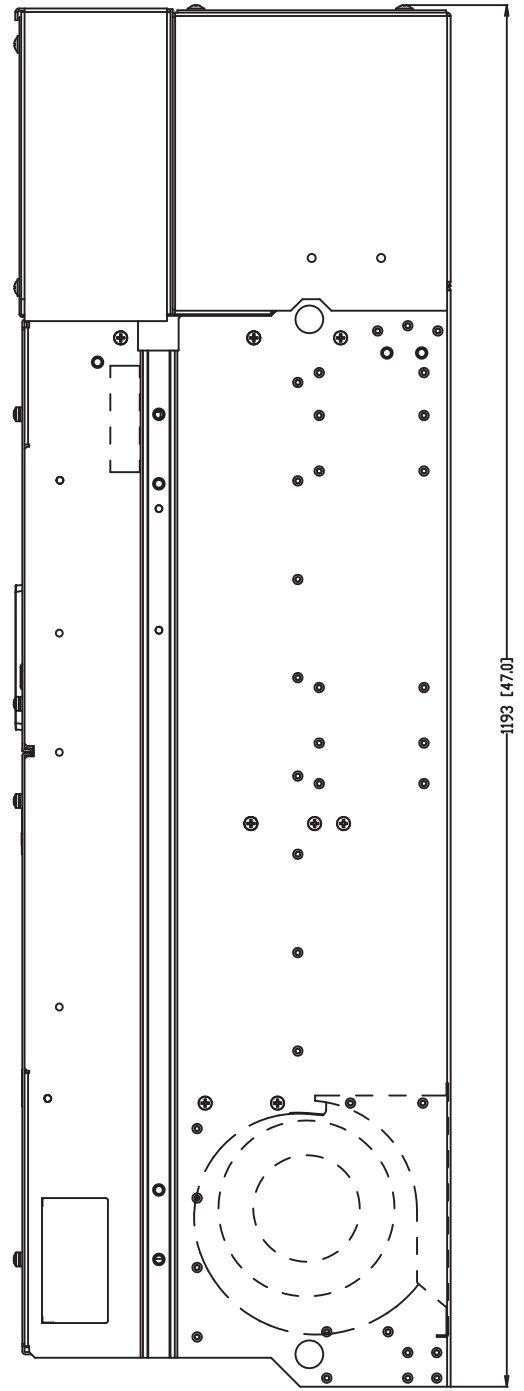
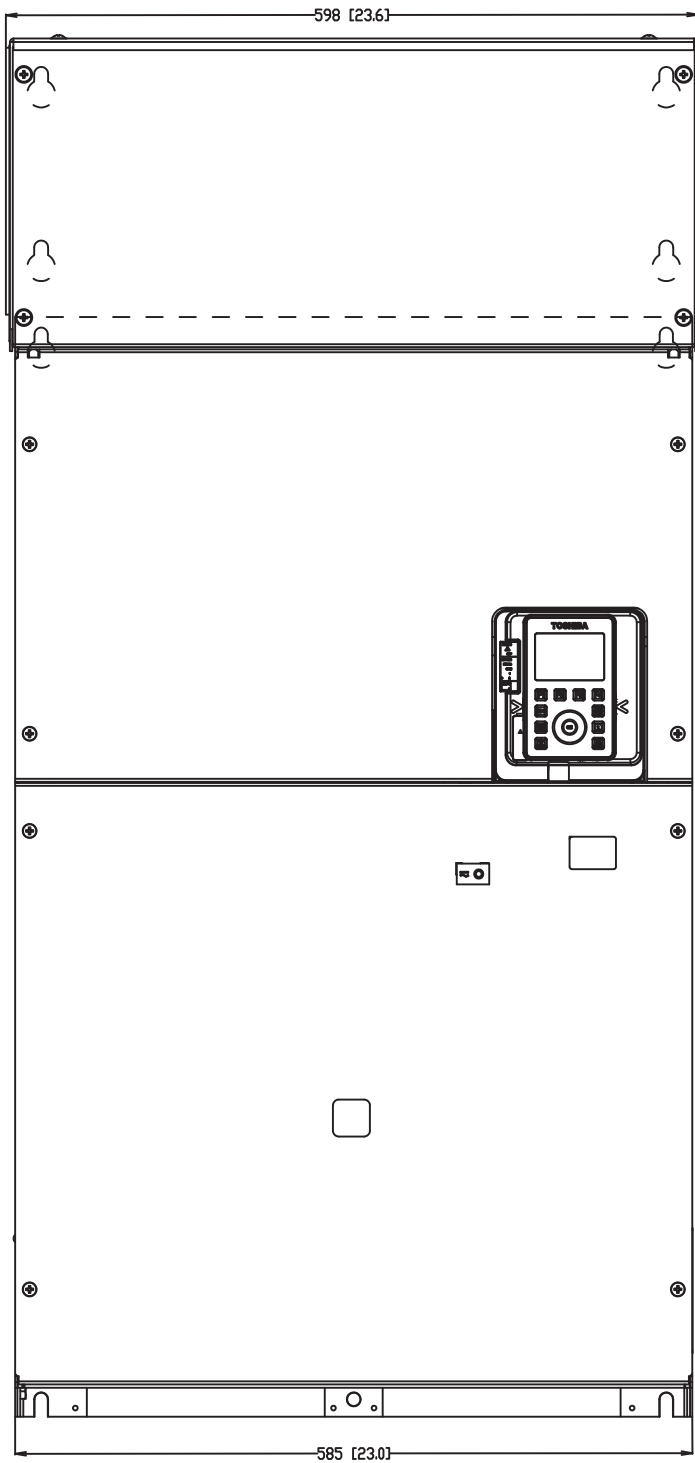
[Standard connection diagram - Sink]

This diagram shows an example of a standard connection for 480 V class, 200 to 280 kW (frame size A8).

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- *1 Be sure to mount the attached DC reactor between the terminals [P0] and [PA/+].
- *2 To supply DC power, connect it to the terminals [PA/+] and [PC/-]. In this case, DC reactor is not required.
- *3 When the inverter is used with a DC power supply, a circuit to suppress an inrush current is required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).
- *4 When the inverter is used with a DC power supply, three-phase power input for cooling fan driving is required separately. For details, refer to application manual "DC power supply connect to inverter" (E6582156).
- *5 When a braking resistor (optional) is mounted, a braking unit (optional) is also required.
- *6 For the switch function, refer to [2. 3. 5].
- *7 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply. Set <F647: Control power option failure detection> to back up the control power supply. For details, refer to [6. 30. 20].
- *8 The reset signal is activated by ON→OFF trigger input.
- *9 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).



| AS3 Frame A8 | | | |
|---------------|--------------|--------------|-------------------------|
| Model Number | HP Rating HD | HP Rating ND | Estimated Weight (lbs.) |
| VFAS3-4200KPC | 300 | 400 | 428 |
| VFAS3-4220KPC | 350 | 450 | 450 |
| VFAS3-4280KPC | 450 | 500 | 450 |