S15 ASD
LOW VOLTAGE DRIVE
Toshiba’s heavy duty S15 adjustable speed drive is a compact and high performance drive designed for controlling a wide range of variable and constant torque applications for multiple industries. This micro-drive is capable of working with permanent magnet (PM) motors, which allows a much greater flexibility in selecting a motor for an application. In addition, expanded PID control allows a greater level of precise control and operation of difficult level control applications. No other micro-drive delivers such reliable performance and extensive capabilities at such a competitive cost.

- **Compact Design** separates the S15 from the competition, as one of the smallest drives offered in the industry. The compact design allows the unit to be installed in areas with limited space, allowing users more real estate when running applications.

- **Easy Installation and Programming** allows the user to install and program the S15 drive with minimal downtime. Din Rail kits allow users the option of easily mounting the drive onto a pre-existing DIN inside of a cabinet or on a panel. The addition of the +SU terminal to the S15 allows for the end user to power the drive control section using a simple 24 VDC power supply. This allows startup technicians to program the drive without having to have 230 V or 460 V three-phase power available.

- **Tough Environment** conditions are no problem for the S15. Designed to withstand extreme temperatures, the S15 can operate in temperatures up to 122°F (50°C) without derating and can also be configured for use in temperatures above 122°F (50°C) with a de-rate.

- **Superior Control** allows the user ultimate application flexibility. Toshiba’s advanced vector-control algorithm offers speed regulation of 0.1% sensor-less. Energy saving, user selectable V/Hz patterns make the S15 a smart choice for any application.

- **Heavy Duty Performance** separates the S15 from the competition. Offering one of the toughest micro-drive overload ratings in the industry, the S15 is rated for 110% of its full-load amp rating for continuous operation and 150% for up to one minute.

### ADVANCED FEATURES FOR MAXIMUM DRIVE PERFORMANCE

- **Built-In LED Interface** allows for quick, user-friendly programming and easy modification of the S15’s expanded parameter set. Additional remote-mount keypads are also available. The parameter write and simple fault tracking functionality of these optional keypads make setup and troubleshooting quick and simple.

- **My Function**, Toshiba’s Proprietary Programming Feature, allows the user to utilize logic-type programming without the expense of a micro PLC. The user is able to read all analog and digital inputs and outputs as well as monitor and compare data. When programmed in a user-defined logic sequence, the use of this data will allow for a higher level of process control not normally seen in an adjustable speed drive. These functions, along with timers, counters, and comparators, allow the S15 to not only meet but exceed performance expectations. (Premium Model Only)

- **S15’s Easy Key** is a configurable key that simplifies startup and operation. The easy key quickly accesses commonly changed parameters. In addition, the easy key can also function as a simple local/remote key for easy operation switching.
Improved Proportional/Integral/Derivative (PID) Control Algorithm provides regulation of critical processes. High and low speed limits, deviation limits, online switching, and a built-in sleep function are included to enhance the flexibility and reliability of PID process control. Improved control is possible with the S15’s enhanced PID algorithm, making it easier than ever to dial in your process control application.

Toshiba’s Proprietary Windows®-Based ASD Pro Software is available at no additional cost. This easy-to-use software is designed to provide a full range of programming and monitoring tools for all Toshiba low voltage drives, including the S15. ASD Pro offers parameter reading, trending, and logging features that allow the user to save and transfer parameters and export data and graphs to an electronic file. Parameter groups and trending data can be easily converted into spreadsheets or graphs for field and validation reports.

COMMUNICATION OPTIONS

The S15 drive offers a wide array of easily installed option boards. These boards allow the user to communicate with a wide variety of systems. Options include:

- CANopen
- DeviceNet
- EtherCAT
- Ethernet/IP
- Modbus TCP
- Profinet

OTHER SPECIAL FEATURES

- Safe Torque Off (STO) Compliant (Premium Model)
- Ten Year Long-Life Design
- Rotary Encoder
- Reduced Energy Consumption
- UL Listed & Labeled

ADDITIONAL OPTIONS

The S15 can be supplied with additional options to expand control, allow greater flexibility, and provide better protection for a user’s application. These options include:

- Parameter Writer
- IP54 Packaged Unit (Consult Factory)
- Input Reactor
- DV/dt Long Lead Filter
- NetPac™ Wireless Connection
- Remote-Mountable Keypads

APPLICABLE APPLICATIONS:

- Conveyors
- Fans
- Food Processors
- Lifts
- Machine Tools
- Mixers
- Pumps

APPLICABLE INDUSTRIES:

- Food Processing
- HVAC
- Mining & Mineral
- Oil & Gas
S15 ASD

MODEL RANGE

<table>
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<tr>
<th>Voltage Rating</th>
<th>1/4 HP to 3 HP</th>
<th>1/2 HP to 20 HP</th>
<th>1/2 HP to 20 HP</th>
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</thead>
<tbody>
<tr>
<td>Single-Phase 230 VAC</td>
<td></td>
<td>Three-Phase 230 VAC</td>
<td>Three-Phase 460 VAC</td>
</tr>
</tbody>
</table>

POWER REQUIREMENTS

Input Tolerance
- Voltage: ±10%
- Frequency: ±5%

Output Frequency
- 0.1 to 500 Hz

CONTROL SPECIFICATIONS

Control Method
- Sinusoidal Pulse Width Modulation (PWM)
- Flux-Field Current Vector Control
- Set Point Control (PID)

Voltage Regulation
- Main Circuit Voltage Feedback Control: Automatic, Fixed, & Off

V/f Control
- V/f Constant, Variable Torque, Automatic Torque Boost, Vector Control, PM Motor Control, 5-point V/f Custom Setting, & Auto-Tuning

PWM Carrier Frequency
- Adjustable 2 to 16 kHz (For Drive Specific Information Consult Factory)

Frequency Setting
- Rotary Encoder Integrated into EOI, 0 to 10 VDC, ±10 VDC, 4 to 20 mA, Digital Input, Binary Input, & Motorized Potentiometer Input

Frequency Precision
- Analog Input: ±0.5% of Maximum Output Frequency
- Discrete/Communications Input: ±0.01% of Maximum Output Frequency

Speed Regulation
- Open Loop: Up to 0.1%, 60:1 Speed Range

Main Protective Functions
- Stall Prevention, Current Limit, Over-Current, Output Short Circuit, Over-Voltage, Over-Voltage Limit, Undervoltage, Ground Fault Detection, Input Phase Failure, Output Phase Failure, Overload Protection by Electronic Thermal Function, Armature Over-Current at Start-Up, Load Side Over-Current at Start-Up, Over-Torque, Undervoltage, Overheating, Cumulative Operation Time, Life Alarm, Emergency Stop, & Various Pre-alarms

Retry
- User-Set Number of Retries for Automatic System Restart After Trip

Restart
- Able to Smoothly Catch Freewheeling Motor (Bidirectional)

Overload Current Rating
- 110% Continuous; 150% for 1 Minute

CONTROL INTERFACE

Digital Input
- 6 Discrete Input Terminals Programmable to 110 Functions (May Be Increased Using Optional Hardware)

Digital Output
- 3 Discrete Output Terminals Programmable to 150 Functions; 1 Form-A Contact, 1 Form-C Contact, & 1 Open Collector Output

Analog Input
- 3 Programmable: One 4 to 20 mA Input, One 0 to 10 VDC Input, & One ±10 VDC Input

Analog Output
- 1 Programmable: 4 to 20 mA or 0 to 10 VDC

Communication Ports
- RS485 Port (TSB or MODBUS RTU Protocol)

ELECTRONIC OPERATOR INTERFACE (EOI)

Display
- 4x20 Graphical Full-English LCD Back-Lit Display for Programming, Monitoring, & Diagnostics

LED Indicators
- Run (Red)/Stop (Green), Hand (Green), & DC Bus Charge Indicator (Red)

Keys
- Run, Prg, Mon, Status, %, Hz, Stop, Mode, & Easy Key; Rotary Encoder for Parameter Navigation, Settings, & Control

Monitoring
- Frequency Command Screen; Multiple Parameters Displayed: Output Frequency, Forward/Reverse Run, Output Current, Input Voltage (DC Detection), Output Voltage, Torque, Inverter Load Factor, Motor Load Factor, Braking Resistor Load Factor, Input Power, Output Power, Input Terminal status, Output Terminal Status, Overload/Regional Setting, PID Feedback Value, Stator Frequency, Parts Replacement Alarm, Cumulative Operation Time, & Past Trips

CONSTRUCTION

Enclosure
- RAL 7016 (Anthracite Gray); IP20; Wall-Mount; Front-Access Only

Power Cables
- Bottom Access for Input/Motor Cables

Cooling
- Self-Cooling/ Forced Air-Cooled

Standards & Compliances
- UL Listed in US & Canada, CSA, & CE

AMBIENT CONDITIONS

Ambient Temperature
- 0 to 60°C (Note: See Manual for Details, Ambient Temperatures Above 50°C May Require a De-Rate)

Altitude
- 3300 ft. Above Sea Level (Up to 10,000 ft. with Derate)

Humidity
- 95% Maximum (Non-Condensing)

Installation
- Indoors; No Direct Sunlight; Protects from Corrosive Gas/Explosive Gas/Flammable Gas/Oil Mist/Dust; Vibration of Less Than 5.9 m/s² (10 to 55 Hz)