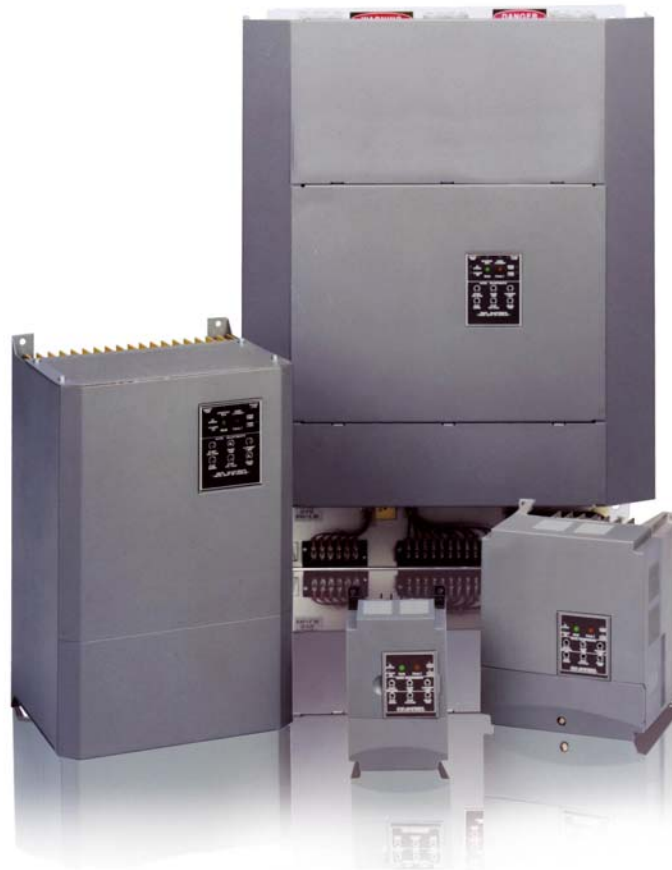


## TS/TD/TX Series Solid State Starters

Smooth Stepless  
Starting and  
Stopping

Reduces Motor  
Inrush  
Current

Eliminates Line  
Voltage Drops  
During Starting



Reduces Wear and  
Mechanical  
Shock

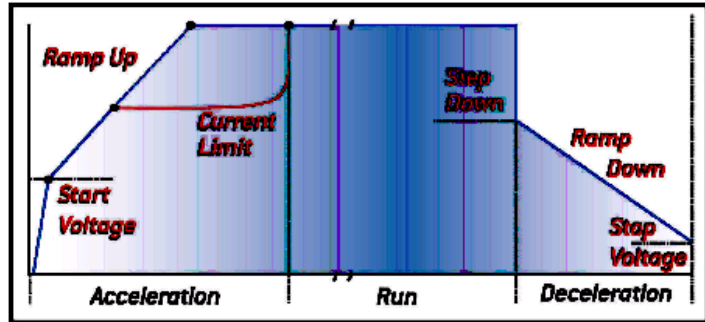
Eliminates  
Water  
Hammer

***RELIABLE AND TOUGH***

**ANALOG (TS Series) & DIGITAL (TD & TX Series) MODELS**  
**REDUCED VOLTAGE STARTERS - 1 to 1125HP**  
**HEAVY DUTY DESIGN - 500% starting current for 60 seconds.**  
**CURRENT LIMIT & VOLTAGE RAMP - Combines both**  
**to offer the best starting method for any application.**  
**DECEL/PUMP CONTROL - Controlled stopping allows check valves**  
**to close slowly, eliminating water hammer.**

## Standard Features

Soft Start - Voltage Ramp/Current Limit  
 Soft Stop - Decel/Pump Control  
 Current Ratings: 6 - 1250A  
 Voltage Ratings: 208 - 600V  
 Continuous Rating - 125%  
 Overload Capacity - 500% for 60 seconds  
 Overload Capacity - 600% for 30 seconds  
 120Vac Control Voltage (240Vac Optional)  
 UL & cUL Listed



## Protective Features

**TS Series (6 - 32A):** Overtemperature & Overload  
**TD Series (48 - 1250A):** Overtemperature, Electronic Overload (Class 5 - 30), Undercurrent (10 - 90% of motor FLA), Shorted Load, Shorted SCR (Shunt trip - separate trip relay), Overcurrent (50 - 300% of motor FLA), Phase Loss/Imbalance (5 - 30%), Repetitive Starting  
**TX Series (48 - 1250A):** Overtemperature, Electronic Overload (Class 5 - 30), Undercurrent (10 - 90% of motor FLA), Shorted Load, Shorted SCR (Shunt trip - separate trip relay), Overcurrent (50 - 300% of motor FLA), Line Frequency, Phase Loss, Current Imbalance (5 - 30%), Phase Reversal, Repetitive Starting, Ground Fault, Overvoltage, Undervoltage, and optional Stator & Bearing RTD inputs

## Adjustments

**TS Series:**  
 Voltage Ramp Start (0 - 60 seconds)  
 Initial Voltage Adjustment (0 - 80%)  
 Current Limit Start (200 - 500%)  
 Soft Stop - Adjustable Deceleration (0 - 30 sec.)  
 Stop Voltage Adjustment (0 - 100%)

**TD & TX Series:**  
 Voltage Ramp Start (1 - 120 seconds)  
 Initial Voltage Adjustment (0 - 100%)  
 Current Limit Start (200 - 600%)  
 Soft Stop - Adjustable Deceleration (1 - 60 sec.)  
 Stop Voltage Adjustment (0 - 100%)  
 Beginning Decel Voltage Level (0 - 100%)  
 Voltage Jog (5-100% Voltage, 1 - 20 sec.)  
 Current Jog (100 - 500%)  
 Kick Start (10 - 100% Voltage, 0.1 - 2 sec.)  
 Starts per Hour (1 - 10 Starts/hr, 1 - 60 min. between start attempts)  
 Coast Down Lockout Timer (1 - 60 min.)  
 Overload Reset (Manual or Automatic)

## Metering/Communications

**TD Series:**  
 Phase Currents, Remaining Thermal Capacity, Elapsed Time (ETM), Run Counter, Fault Codes, Fault History, Lockout Time Remaining, Real Time Clock.  
 Communications: Modbus RTU, RS485

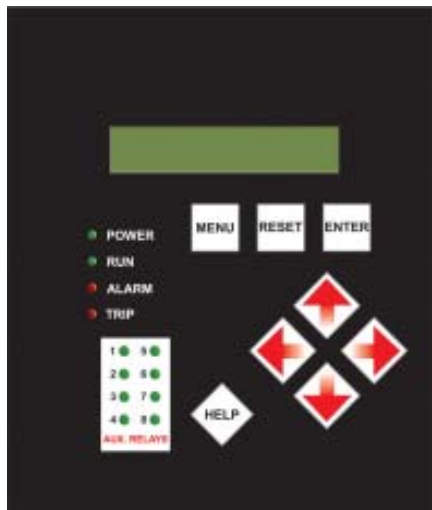
**TX Series:**  
 Phase Currents (A, B, C), Ground Current, Avg. Current, Unbalance %, RPM, Line Freq., Power Factor, kVAR, kW, kVA, kW Demand, kVAR Demand, kWh, Remaining Thermal Capacity, Required Thermal Capacity to Start, RTD Data (12 RTDs), Elapsed Time (ETM), Run Counter, Fault History, Lockout Time Remaining, Real Time Clock, plus more.  
 Communications: Modbus RTU, RS485 or RS422



## Status Indicators

Control "Power On"  
 Full Voltage "At Speed"  
 Shunt Trip  
 Shorted SCR  
 Over Current  
 Phase Loss  
 Over Temperature  
 Overload

**Digital TD Series Operator Interface Panel with 4 Digit Display & 8 Function Keys**



**TX Series Operator Interface Panel with LCD Display (2 Lines x 20 characters), 8 Function Keys, 12 LED Status Indicators**

## Available Options

**Construction** - Open chassis type or enclosed (Type 1, 12, 3R, 4 & 4X).

**Non-combination or Combination** (with circuit breaker, fusible or non-fusible disconnect switch).

**Bypass** - Air and Vacuum bypass contactors are available.

**Electronic DC Injection Braking**

# TOSHIBA

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