Brief Product Profile

Industrial Systems
Toshiba India Private Limited

For requirements & queries, please contact

Toshiba India Private Limited
(Industrial Systems)
3rd Floor, Building No. 10
Tower–B, Phase-II, DLF Cyber City
Gurgaon - 122 002, Haryana
Telephone: + 91 124 4996600
Email: indl.systems@toshiba-india.com
Website: www.toshiba-india.com
Toshiba Group Companies’ Products are committed to

- Global Standards
- Energy Efficiency and Productivity Improvement
- Safe, Reliable, Robust and High Performance Operation
- Environmental Friendliness
- Committed to the Future, Technology for Tomorrow
- Local Delivery of Global Strength
- Customer Satisfaction
AC Motors

**Hazardous Area Motors**

**IEC Standard**
- Exn, Exe, Exd, ExtD types
- 0.12 kW - 860 kW
- Zone 1, 2; Gas Group IIA/B/C
- Temperature class T1 to T6

**NEMA Standard**
- 0.75 HP - 350 HP
- 230V, 460V/ 525V, 60 Hz

**Safe Area Motors**

**Permanent Magnet PM (IE4)**
- 0.75 kW - 150 kW
- 4 pole or more

**Power Series (IE2)**
- 0.37 kW - 315 kW
- 2, 4, 6 Pole
- 380, 400, 415 VAC

**NEMA**
- 0.75 HP - 350 HP
- 2, 4, 6 Pole
- 230V, 460V/ 525V, 60Hz

**High efficiency HE series**
(equiv. to IE3)
- 0.75 kW - 150 kW
- 2, 4, 6 Pole

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**Applications**

- Industrial Pumps
- Industrial Fans & Blowers
- Packaging Machines
- Textile
- Grinding Machines
- Wire Drawing Machines
- Compressors
- Feeders
- Mixers
- Conveyors
- Shredders
- Crushers
- Palletisers
- and many more

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• Energy saving
• Customization Flexibility
• Heavy Duty Construction
• Low Noise Design
• Corrosion Resistant Finish
• Premium Efficiency Laminations
• Low Loss Windings
• Flexible Terminal Box Design
• High Torque Rotor
• Long Life Bearings
• Drive Applications
• IP56 - IP66 Degree of Protection
• Minus (-) 60 Deg.C also Available
• Extended Warranty Available
• All Cast Iron Construction
AC Variable Speed Drives

**TOSVERT VF Series**
- 200/ 400/ 500/ 575/ 600/ 690V Class
- Single, Three Phase
- 0.2 kW to 630 kW

- **nC3** Ultra compact
- **S15** Simple compact and high performance
- **AS3** High performance with most advance functions like web server
- **AS1** High performance, flexibility for high torque machinery
- **PS1** Large capacity, energy saving for fan and pump application
- **MB1** Multi-function, book/ slim type Inverter

New

- **VF-nC3** (Up to 4 kW)
- **VF-S15** (Up to 15 kW)
- **VF-AS3** (Up to 315 kW)
- **VF-AS1** (Up to 500 kW)
- **VF-PS1** (Up to 630 kW)

- Elevator
- Conveyor
- Solar water pump
- Material handling
- Hoisting, Crane
- Fan
- Pump
- Compressor
- Machine tool, …

**PM motor drive (w/, w/o sensor)**
- VF-AS3 can drive not only 3-phase induction motors but also Interior Permanent Magnetic Motor (IPM) and Surface Permanent Magnetic Motor (SPM) with / without feedback sensor.
Digital Soft Starters

- **TMC7 series:**
  - Provides current limit starting and motor protection in a low cost package
  - 7.5 – 110 KW
  - 200 – 575 VAC range

- **TMS9 series:**
  - Comprehensive & customisable motor protection
  - 7.5 – 800 KW, compact design
  - 200 – 690 VAC, 3 phase control

Ideal for starting and stopping:
- pumps
- fans and blowers
- compressors and chillers
- conveyors
- augers and screw feeders
- industrial machinery

Conveyors
Fans
Pumps
Advanced Distributed Control System (DCS)

- **New-Generation Navigator Unified Controller **nv** series/ nvlight series**
- True high-speed robust control, true location-free configuration, reliable networking
- The nv series consists of powerful processors suited for high speed machine control and dual redundant process control. It also includes features such as high speed serial I/O, a high speed control network and a common hardware platform.
- Scope of applications extends beyond sequence control (PLC) and process control (DCS)
- **nv** series is able to provide 1 Gbps Ethernet and 100 Mbps TC-net 100 control network to ensure that all information is available in real time.
- 1\textsuperscript{st} time for an Industrial Controller – **100 Mbps** speed I/O system
- Connect with **OIS-DS HMI package** to get complete Control System Solution
PLC (nv series type1 light)

Type1 light S
Standard sequence control module
- Program capacity: 32K steps
- No. of I/O connections: upto 32
- External interface:
  - Ethernet
  - RS485 (graphic panel)
  - USB (for connecting tools)

Type1 light H
High performance sequence control module
- Program capacity: 64K steps
- TC-net I/O Loop: 1 loop
- No. of TC-net I/O connections: upto 64
- External interface:
  - Ethernet
  - USB (for connecting tools)

Type1 light D
Redundant sequence control module
- Program capacity: 128K steps
- TC-net I/O Loop: 1 loop
- No. of TC-net I/O connections: upto 192
- External interface:
  - Ethernet
  - USB (for connecting tools)

- Water & Wastewater
- Oil & Gas
- Transportation Infrastructure
- Aviation Systems
- Power Generation
- Material Handling
- And many more

Wide-area network

HIS ............ Human interface station
HIS(IW) ....... Human interface station for wide-area surveillance
SVS ............ Server station
RCS ........... Real-time control station
NOS ........... Call device
TM ............. Telemeter
PCS ............ Existing controller
Smart Loop Controllers

- The **Single Loop Controller LC531** is a controller of the **Unified Controller nv Series** for instrument control for ultra small scale.
- The LC531 alone can **achieve PID control and digital control of up to 8 loops**.
- It has **built-in I/O's** and does not basically require any external I/O.
- The LC531 has the **RS485 communication port** and **Ethernet communication** port that allow connection of other LC531s, other controllers, and monitoring devices. It allows you to configure a monitoring and control system that consists of multiple controllers and monitoring devices. Also, it can be **connected to** and used with the **existing model EC300 series**.
- The LC531 supports **IEC 61131-3 compliant programming**. It supports **fully-graphical programming** as well as generic programming using **LD (ladder diagram)** and **FBD (function block diagram)** realizing highly effective development of application programs.

**LC531 offers the following characteristics.**
- Loop display
- PID control
- Build-in I/O's
- Watchdog timer output
- Compact implementation
- Side keyboard
- Removing/installing units while power is applied
- Network installation
MD-PID

**Controller**: LC531
**Controller**: PU821

**Function block**: MD-PID

**Optimizer**: nv-ADCOP

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**LC531**: Loop controller of nv-series
**PU821**: DCS controller of nv-series

Each has MD-PID function block and the IEC61131-3 programming is available.

**MD-PID**: A function block which executes excellent performance especially for long dead time and various dynamic processes.

**nv-ADCOP**: An optimizer which realizes System Identification, Control Optimization and Performance Evaluation for target process and real controller.

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**MD-PID (Model Driven PID)**

**Filters for 2DOF**

\[
\frac{1}{1+T_d s} \exp(-T_c s)
\]

**Controller**

**Process**

- **Merit-1**: Optimal Control for Long Dead Time
- **Merit-2**: Optimal for Disturbance & Set Point Change
- **Merit-3**: Optimal for Various Process Dynamics
Electromagnetic Flow Meters are instruments for measuring flow of conductive fluids, using Faraday’s principle of electromagnetic induction.

**Electromagnetic Flow Meters**

- LF620 (Integral type)
- LF622 (Remote type)
- LF430 Series

**High Accuracy**
- Functional Magnetic Field

**High Stability**
- Square Wave Exciting Method
- Noise Suppressor
- Multi-sampling system

**High Endurance & Long Life**
- Welding Construction, Lining (or tube) (Ceramic, TEFLON PFA, EPDM-Rubber)

**Easy Operation & Maintenance**
- HART, Self Diagnosis, LCD with backlight

**Multi-sampling system**

- S2 is rejected, S1 and S3 are accepted