

# Complete Range of Electrical & Automation Products

### **The Company**

Larsen & Toubro infuses engineering with imagination. The Company offers a wide range of advanced solutions in the field of Engineering, Construction, Electrical & Automation, Machinery and Information Technology.

L&T Switchgear, a part of the Electrical & Automation business, is India's largest manufacturer of low voltage switchgear, with the scale, sophistication and range to meet global benchmarks. With over five decades of experience in this field, the Company today enjoys a leadership position in the Indian market with a growing international presence.

It offers a complete range of products including powergear, controlgear, industrial automation, building electricals & automation, reactive power management, Energy management services, energy meters, and protective relays. These products conform to Indian and International Standards.



Switchgear Factory, Mumbai

### **Manufacturing Facilities**

L&T's manufacturing facilities for standard switchgear products are at Mumbai, Ahmednagar and Coimbatore. These facilities follow world-class processes including Lean Manufacturing, Forced Draft Ventilation System, TQM, Value Engineering, JIT and Six Sigma. The manufacturing units have a testing facility that includes 85kA short circuit test station.

The quality management systems at L&T's factories conform to ISO 9001 & ISO 14000 Standards.

### **Distribution**

L&T Switchgear is available through a network of more than 500 authorized stockists, one of the largest distribution networks in the industry.

### **International Sales**

L&T Switchgear has found acceptance not only in India but has customers in over 40 countries like Malaysia, Singapore, Taiwan, China, Hong Kong, Indonesia, Sri Lanka, Bangladesh, UAE, Qatar, Oman, Bahrain, Saudi Arabia, Kuwait, Iran, Turkey, Egypt, Nigeria, Kenya and UK to name a few.



Switchgear Factory, Ahmednagar



### Environment & Community

The Company has a comprehensive Quality, Environment and Safety management system. The manufacturing facilities conform to ISO 14001 (Environmental Management System) & OHSAS 18001 by BVQI.

L&T has taken a number of community initiatives in rural & semi-urban areas across the country. These include health checkup camps like cancer detection, eye checkup, and general checkup in partnership with the stockists. L&T supports schools through distribution of PCs, books, and uniforms and providing teaching staff. L&T has also come to the rescue of common man at the time of natural calamities like floods and earthquakes, helping the community by distributing clothes, food and essential commodities.

### Training

L&T's Switchgear training centers at Pune, Lucknow and Coonoor have state-of-the-art training facilities with well equipped workshops and testing systems. Training programs are designed to suit the needs of electrical professionals from various areas like maintenance, projects, panel design and consultancy. Over 90,000 participants have benefitted from these programs.

### After Sales Service

The Company has over 40 branch offices across the country and a network of over 100 service centers to deliver after-sales-service to its customers.

A range of service solutions is available to support the switchgear, right from installation till the complete life cycle. They come in the form of preventive maintenance, breakdown maintenance, retrofits and upgrades.

### Segment Focus

L&T has a wide range of products & solutions to address every customer requirement. The Company has dedicated specialists for vital segments like Industry, OEM, Agriculture, Building and Utilities.



Training Centre, Pune



Training Centre, Lucknow




Training Centre, Coonoor

# A complete range of Electrical and Automation Products



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# Air Circuit Breakers

## C-POWER

- Comprehensive range: 400A to 6300A
- $I_{cs}=I_{cu}=I_{cw}$  (for 1 sec) across the complete range for total selectivity / discrimination
- Proven track record of over 350,000 installations in 40 years
- High mechanical and electrical life
- Optimally designed ACBs with low watt loss and temperature rise
- Elegant design and rugged construction
- Suitable for direct termination of aluminium links
- In-built mechanical anti-pumping feature
- Distinct 'maintenance' position in draw-out ACBs
- Common depth and height upto 4000A
- CE marking for the complete range
- Conforms to IS/IEC 60947-2 & IEC 60947-2



## C-POWER S1 Range

- 630A to 3200A in two frame sizes in draw-out version
- $I_{cs}=I_{cu}=I_{cw}$  (for 1 sec) across the complete range for total selectivity
- High mechanical and electrical life
- Optimally designed ACBs with low watt loss and temperature rise
- Elegant design and rugged construction
- Suitable for direct termination of aluminium links
- In-built mechanical anti-pumping feature
- Distinct 'maintenance' position in draw-out ACBs
- CE marked for the complete range
- Common depth & height across the range
- Conforms to IS/IEC 60947-2 & IEC 60947-2
- Common accessories with C-POWER



## Protection Release

Comprehensive range of micro-processor based protection and control units with true-RMS sensing, self-powered protections, fault annunciation & communication capabilities. Conforms to EMI / EMC standards.

**SR71** - Offers comprehensive protection for overload, Short circuit, Instantaneous, Earth fault and Neutral overload, Power metering, Communication & other advanced features along with ZSI.

**SR21i** - Overload, Short circuit, Instantaneous and Earth fault protection with zone-selective interlocking (ZSI).

**SR18/18G** - Overload, Short circuit, Instantaneous and Earth fault protection.

**DN1** - Overload, Short circuit, Earth fault (As optional).



## Air Circuit Breakers

## Energy Management System

### U-POWER OMEGA

- 400A to 6300A in three optimized frame sizes
- Standard 100% neutral rating, 50% and 200% neutral ratings available
- Common height and depth across the range
- Suitable for direct termination of aluminum links
- No derating at higher ambients
- Unique arc chute interlocking prevents breaker closing when arc chute is missing
- Smart racking shutter ensures total safety in racking operations
- Unique pole design ensures energy saving through low watt loss
- Independent locking of ON / OFF buttons
- Tool-less fixing of voltmetric releases
- Display of complete accessory information on front fascia
- Conforms to IS/IEC 60947-2 & IEC 60947-2

### Matrix System

- Unique OLED display for metering
- Metering for current, % loading voltage, power, energy, PF, frequency & THD
- Modular design provides flexibility in selection of features
- Touch screen interface for setting parameter in UW-MTX 4.5 version & bargraph display
- Event & trip history recording
- Data communications through Modbus, Profibus & Zigbee protocol
- Smart-card for quick parameterisation of protection releases
- Possible to integrate with any Energy Management System
- Protection against EF & REF
- DIN rail mountable modules for advance protections like REF, ZSI, Temp. monitoring
- Conforms to EMI/EMC standards

### POWERMAN

- Manage different types of loads like: electricity, water, gas, steam
- Comprehensive solution for protection and power management
- Customized single line diagram of power system
- Integrates all communicable L&T products viz. ACBs, meters and PLCs
- Intuitive web-based Graphical User Interface (GUI)
- Remote real-time monitoring and data acquisition
- Comprehensive reporting and alarm management
- Real-time and historical trending
- Multi-level password protection
- 'N' number of devices can be connected using existing LAN/WAN network
- Helps in saving energy



# Moulded Case Circuit Breakers

## DU MCCBs

- Range: 16A to 250A
- Available in 2P, 3P & 4P variants
- Short circuit breaking capacities upto 36kA
- Conforms to IS/IEC 60947-2, IEC 60947-2 & EN 60947-2
- Ergonomic design
- High electrical and mechanical life
- Adjustable thermal release
- Finger proof terminals
- Available in various accessories
- Available in SS enclosures
- Suitable for DB mounting



## d sine MCCBs

- Complete range: 20A to 1250A in 3 pole / 4 pole variants
- Short circuit breaking capacities upto 70kA
- Microprocessor, Thermal-Magnetic & Magnetic based protection units
- Conforms to IS/IEC 60947-2, IEC 60947-2 & EN 60947-2
- KEMA certified
- Positive isolation
- User friendly features
- Ergonomic design
- Wide range of snap accessories
  - Stored Energy Electrical Operating Mechanism
  - External Neutral CT
  - Mechanical Interlock kit
  - Direct & Extended Rotary Handles
  - Key Locks





# Moulded Case Circuit Breakers

## **d sine** Protection Releases

### Thermal Magnetic Release

- Adjustable overload settings
- Adjustable short circuit setting
- True RMS sensing



### Microprocessor based Releases

- MATRIX 1.0/2.0
  - LS/I, LS/ING protection
  - User selectable Overload curves for different applications
  - Optional door mounted current metering OLED display
- MATRIX 3.0
  - LSING protection
  - Wider protection curves with basic & advanced protections
  - Energy & power metering
  - Communication capable release
  - Wireless remote display



### Motor backup protection version

- Only magnetic with instantaneous protection upto 10 In
- Fault level protection for complete starter upto 50kA
- Type 2 charts available for DOL & Star/Delta starters

### Switch Disconnecter version

- Can be used as switching or isolator devices
- Higher withstand capacities
- Accessories available for remote operation



## Switch Disconnect Fuses

## Switch Disconnect

### SDFs: Type FNX

- Ratings: 32A to 800A in six frame sizes
- AC-23A rating for the complete range
- Available in TPN and four pole versions
- High short circuit capacity of fuses (100kA)
- Electro dynamically compensated contact system
- Versatile handle (patented)
- High clearance and creepage distances
- Suitable for copper and aluminium terminations
- CE marking and conformance to IEC 60947-3, IS/IEC 60947-3
- Easy inspection and replacement of contacts
- Fuse barriers to prevent inter phase short circuits
- DIN rail mounting up to 125A
- Suitable for horizontal and vertical installations
- Terminal shrouds for safety
- Telescopic shaft for the handle (stepless adjustment)
- Clear ON / OFF indication

#### Accessories

- Auxiliary contact kit
- Castell lock
- Fuse operation indicator
- Extended terminal shroud
- Fuse puller unit
- Mechanical interlock kit
- DIN rail mounting kit

### SDFs/SDs: Type FN

- Ratings: 32A to 800A
- Version: DP/TP/TPN
- Suitable for DIN, BS & Cylindrical type fuses
- High short circuit rating of fuses (100kA)
- Full AC-23A utilization category
- Positive isolation of fuses
- Quad break contact system
- Separate arcing and current carrying zones
- High clearance and creepage distances
- Phase barriers
- Suitable for copper and aluminium terminations
- Built-in isolable or add-on switched neutral
- Easy inspection and replacement of contacts
- Suitable for horizontal and vertical terminations
- Clear ON / OFF indications
- Available in sheet steel enclosure
- Conformance to IEC 60947-3 and IS/IEC 60947-3

\* FN/FG type SD is available

#### Accessories

- Handle assembly (Type A/B/CE)
- Switched neutral kit
- Auxiliary contact kit
- Mechanical interlock kit
- Castell interlock
- Terminal shroud kit
- Interphase barrier kit

#### Spares

- Handle assembly
- Front housing assembly

## High Rupturing Capacity Fuses

### DIN Fuses: Type HN

- Ratings: 63A to 800A
- High breaking capacity (100kA)
- Low watt loss
- Low let-through energy
- Immediate fault indication
- Size: 000 to 3

### Cylindrical Fuses: Type HF

- Ratings: 2A to 63A
- High breaking capacity (80kA)
- Low watt loss
- Immediate fault indication

### Bolted Fuses: Type HG

- Ratings: 2A to 32A
- High breaking capacity (80kA)

### Bolted Fuses: Type HQ

- Ratings: 2A to 630A
- High breaking capacity (80kA)

#### Accessories

- Fuse base
- Fuse pulling handle



# Changeover Switches

## Type C-line

- Ratings: 63A to 1000A
- Available in 5 frame sizes
- AC 23A rating for complete range
- Available in open execution & in SS enclosure versions
- Spacious SS enclosure doesn't need separate cable gland box
- Electro-dynamically compensated contact system
- Higher withstand capacity
- Higher electrical & mechanical life
- Suitable for aluminum termination
- Staggered terminals for ease in termination
- Unique flippable handle above 400A
- Dual operating position (Center/side)
- No load line bias
- Excellent aesthetics
- Complete safety: Terminal shroud, phase barriers & source separator provided as standard
- Site mountable fuse conversion kit

### Accessories & spares

- Handle
- Auxiliary contacts
- Fuse conversion kit
- Castel lock
- EOM version



## Type FG

- Excellent aesthetics
- Ratings: 1250A & 1600A
- High making and breaking capacities
- Highly reliable
- Convenient single handle operation
- Suitable for tropical conditions
- Quick make and quick break mechanism
- Reduced operating torque
- Conformance to IEC 60947 - 3 and IS/IEC 60947 - 3

### Accessories

- Safety key lock
- Auxiliary contacts
- Clutch handle





# Auto Source Transfer Controller

## AuXC - 1000L

- Rated supply 12-48VDC
- Measurement inputs of three-phase with neutral voltages
- Display to view main and secondary line measurements
- 15 status LED indicators
- 6 digital inputs programmable
- 3 relay outputs programmable
- 3 operating modes: OFF-MAN-AUT
- Viewing of phase and phase to phase line voltage
- Status display of contactors or circuit breakers
- Configuration programming of line and control parameters
- Emergency demand supervision parameter programming for standby generating sets
- Microprocessor supervision of functions
- RS 232 communication interface
- Modbus – RTU and Modbus-ASCII communication protocols
- Functions
  - Line-Line Function
  - Line-Generator Function
  - Event Logging
  - Alarm code and description display

### Compatible switching device

- Contactors Type MCX
- C-Power / U-Power
- Moulded Case Circuit Breakers, Type D sine / DNX
- C-line changeover switches



## AuXC - 1000

- Dual supply input, AC or DC supply
- Measurement inputs of three-phase with neutral voltages
- Two displays to view main and secondary line measurements
- 22 status LED indicators
- 8 digital inputs, 6 of which programmable
- 7 relay outputs, 5 of which programmable
- 4 operating modes: OFF-MAN-AUT-TEST
- Viewing of phase and phase to phase line voltage
- Status display of contactors or circuit breakers
- Configuration programming of line and control parameters
- Emergency demand supervision parameter programming for standby generating sets
- Microprocessor supervision of functions
- RS 232 communication interface
- Modbus – RTU and Modbus-ASCII communication protocols
- Functions
  - Line-Line Function
  - Line-Generator Function
  - Generator-Generator Function
  - Event Logging
  - Statistical data recording

### Compatible switching device

- Contactors Type MCX
- C-Power / U-Power
- Moulded Case Circuit Breakers, Type D sine / DNX
- C-line changeover switches



# Contactor and Thermal Overload Relays

**M-line**

## Power Contactors Type MNX

- Ratings : 9A to 650A AC-3
- Available in six frame sizes
- Easy inspection and replacement of coils and contacts
- Alpha-numeric terminal markings
- Front ON / OFF indication
- Entire range UL certified
- Operating band from 65% to 120% upto 32A
- Conforms to IEC 60947-4-1 and IS/IEC 60947-4-1

### Special features of 9A - 40A Contactors

- Snap fit construction
- Finger-proof terminals
- Common coil for entire range

### Accessories

- Add-on auxiliary contact block
- Surge suppressor
- Mechanical interlock kit



## Mini Contactors Type MX

- Suitable for both control & power applications
- AC/DC versions available
- Front ON / OFF mechanical indication
- Base and DIN rail mounting facility
- Finger proof terminals
- Built-in surge suppressor for DC contactors
- Direct mounting of overload relays
- Wide range of accessories
- Conforms to IEC 60947-4-1, IS/IEC 60947-4-1 standards



## Thermal Overload Relays Type RTX & MN

- Ratings: RTX Relay 0.23A-41A  
MN Relay 0.2A-570A
- Inbuilt single phasing protection
- Suitable for direct/separate mounting
- Built-in 'START' and 'OFF / RESET' push buttons
- Auto and manual reset modes
- Ambient temperature compensation: -5°C to +55°C
- Electrically separate NO contact
- Conformance to IEC 60947-4-1 and IS/IEC 60947-4-1

### Accessories

- Push button unit
- Relay mounting kit
- Mechanical reset cord



#



## Contactors and Thermal Overload Relays

## Definite Purpose Contactors

### 4 Pole Contactors Type MCX

- Ratings: 16A to 800A (AC1 duty)
- Suitable for Genset applications
- Available in five frame sizes and nineteen current ratings
- Alpha-numeric terminal marking
- Conforms to IEC 60947-4-1, IS /IEC 60947-4-1 standards
- Wide operating band upto 100A AC1



### Capacitor Duty Contactors Type MO C

- Ratings : 8.5 to 80 kVAr
- Available in three frame sizes
- De-latching auxiliary contacts improves switching performance
- Dual contact gap for auxiliary contacts
- Encapsulated Resistor Assembly ensures safety
- Separate terminations of damping resistors for enhanced operational reliability
- Wide and chatter free operation band
- Low VA Consumption
- Standardized accessories
- Conforms to IEC 60947-4-1 & IS/IEC 60947-4-1



### Single-Pole Contactors Type MR

- Available in ratings 25A & 40A
- The ultimate solution for heating, ventilation and air-conditioning applications
- Available with screw and fasten type terminations



# AC Induction Motors

## SUPERNOVA™

### LTI Series: 3Phase Inverter Duty Motors

- Range - 0.37kW to 630kW
- Ideal for constant torque application
- Suitable for longer cable distances between VFD & Motor
- VPI, special inverter grade wires and external cooling arrangement as standard features



## SUPERNOVA™

### LTS Series: 3Phase TEFC Cage Motors

- Range - 0.12kW to 630kW
- Suitable for inverter application in pumps, blowers & fans
- VPI and dual coat wires as standard feature



## SUPERNOVA™

### LTL Series: 3Phase Laminated Yoke Motors

- Range - 3kW to 81kW
- Extremely compact motors with radial cooling arrangement
- Precise speed control
- Ideal replacement for DC machines



## Starters

## Motor Protection Circuit Breakers

## Soft Starters

### Type MN

- Excellent aesthetics
- Flush mounted push buttons
- Built in single phase protection relay
- Suitable for rural and industrial motor application
- Enclosures with IP54 degree of protection
- Lockable push button
- Terminal block for ease of termination
- Copper and aluminum terminations possible
- Conforms to IEC 60947-4-1 and IS/IEC 60947-4-1 standards



### Direct-On-Line Starters

- Suitable for motors upto 45 hp
- Wide band of operating voltage
- Wide range of relay settings and coil voltages

### Star-Delta Starters

- Suitable for 10 hp to 400 hp motors
- Base plate mounting with rubber gasket makes the starter assembly vibration proof
- Available in fully automatic version
- Electronic timers in fully automatic starters for high repeat accuracy

### Type MOG

- Wide range from 0.16A to 63A with adjustable overload
- Compact in size
- High short circuit breaking capacity (100kA upto 10A, 50kA for higher rating)
- Door coupling handle for clear ON / OFF / TRIP indication
- TRIP indication for every range
- Conforms to IEC 60947-2 & 3, IEC 60947-4-1 standards
- DIN-rail mounting for the entire range
- Differential trip indication facility for trip alarm contact
-  

### Accessories

- Standard auxiliary & alarm contacts (front and side mounting)
- Shunt release
- Under voltage release
- Door coupling rotary handle
- Busbar

### SUPERNOVA™

### Soft starters

- Total motor starting solution
- Range: 7.5kW to 800kW (23A - 1600A @ 400V)
- Wide control voltage range (110 - 440V AC)
- XLR8 adaptive acceleration control
- Timed voltage ramp, constant current, torque control, kick start
- Soft stopping
- Soft braking
- Phase sequence protection
- Auto start
- Fault history
- Communication on RS 485
- Forward / Reverse jog functions
- Simulator function allows soft starter functionality to be checked without connecting motor to soft starter





# AC Inverter Drives

## AC Inverter Drives

Range: A1000 : 0.4 kW - 630 kW  
V1000 : 0.4 kW - 18.5 kW  
J1000 : 0.4 kW - 5.5 kW

- New range with latest technological advancements
- Suitable for induction & PM motor
- Designed to suit tropical conditions
- Adjustable S-curves for acceleration and deceleration
- DC injection braking at start or stop
- Power loss ride-through for protection against momentary power loss / under voltage
- Volts / Frequency ratio: fully adjustable
- Drive efficiency: 96 to 98%
- 200% rated torque @ 0 rpm
- Designed for 10 years of performance life
- Rated for 50°C without deration
- Unique maintenance monitor functions
- Records last 10 faults
- Intelligent detachable control terminals
- Application presets for general applications
- Multi speed settings with jog settings
- Swing PWM to decrease noise at low carrier frequency
- Many protective features like torque limit, heat-sink overheat, current limiting DC bus fuse, motor overload protection, single phasing protection etc.
- Faster communication on MODBUS with Baud Rate 115 kbps



# A1000 Crane Control Drive

## A1000 Crane Control Drive

- Range: 0.4 kW - 315 kW
- Built-in CRANE software
- Uses most advanced drive technology to run induction and synchronous motors
- Can work exceptionally well in default parameters
- Rated for 50°C without deration
- Built-in Braking Chopper upto 30kW Drives
- Positioning accuracy without use of external sensors
- Excellent torque characteristics
- Pulse output for continuous watt-hour monitoring
- Open to all Serial Network Protocols
- Performance Life Monitors
- Safety by improved and better brake sequence
- Terminal block with parameter backup



# L1000A Elevator Drive

## L1000A Elevator Drive

- Range: 1.5 kW to 110 kW
- Runs induction and synchronous motors
- Compatible with a wide range of encoders
- V/f, open loop & closed loop vector for induction and PM motor
- Reduced Operation Time and More Powerful Braking
- Advanced Anti-Rollback
- Overshoot and Anti - Vibration Control
- Built-in ARD function for Rescue operation with DC battery or UPS
- Built-in braking transistor upto 30 kW
- Upto 6000 seconds with 4 selectable combinations
- Terminal block with parameter backup
- Unique maintenance monitor functions



## AC Servo System

### AC Servo System

#### Sigma-II Series Servo Drives -30W to 90 kW

- Choice of Low inertia, Middle inertia and High inertia motors
- Very good peak torque performance (approx 300%) for longer period of time to help in quick acceleration
- 17 bit incremental encoder (resolution-131072 PPR) as standard with Serial Interface to Servo pack

#### Sigma-V Series Servo Drives -50W to 15 kW

- Very High Performance Servo with outstanding frequency response of 1600 Hz (best in the industry)
- Choice of Low inertia, Middle inertia and High inertia motors
- Very good peak torque performance (approx 350%) for longer period of time to help in quick acceleration
- 20 bit incremental encoder (resolution-1,048,576 PPR) as standard with Serial Interface to the Servopack
- Max speed upto 6000 rpm
- Motor with brake

#### MP series machine controllers

- Range: MP2100 & MP2500 (16/32 axes), MP2200 (256 axes), MP2300 (48 axes)
- True multi-axis machine controllers for synchronized motion and ladder sequence code
- Control multiple machine operations for PLC, motion controller and I/O operated devices
- All the motion and I/Os are synchronized
- Communication over field networks like Fieldbus, Profibus, and Ethernet
- On the fly speed change

## Human Machine Interface



### Human Machine Interface

Range:

- 4" and 7": Serial communication with RS-232 & RS-485
- 5", 8", 10", 12" and 15": Serial, Ethernet and field network communication

#### Features

- High Image quality
- Clear Screen Without Grid
- Supports various Fonts and Graphics
- Pass Through
- Communication with barcode reader and serial printer
- Various Built in Interfaces
- Multi-language
- Powerful Recipe Handling
- Extended Alarm Functions
- Data Logging and Recorder Function
- PDF file Converter
- Data Management by File List
- Effective use of CF card, USB memory
- Security enhanced with password protection
- Supports various drivers
- HMI connectivity with serial communication using RS232/422/485
- HMI connectivity with Field Network & Ethernet
- Advanced HMI programming software with valuable features

## Programmable Logic Controllers

### Programmable Logic Controller (PLC)

- Compact & modular
- Wide range: 10-1600 I/Os
- On board I/O mapping for faster setup
- 2 in-built communication ports (MODBUS / user defined protocol)
- Run / remote / programming switch - on board
- User friendly windows based programming software for entire range
- Advanced software features, offline simulator & time chart monitoring
- Ideal for OEM application & machine automation





## Rotary Switches

### Rotary Switches

- Ratings: AC : 6A - 600A  
DC : 16A - 500A
- Standard and customized switches
- Suitable for AC/DC applications
- Break before make / Make before break type switches
- Flexibility of operating positions and switching angles
- Multistep programming switches
- Versatile mounting options to suit variety of applications
- User defined marking on the script plates
- DIN rail mounting facility
- Choice of attractive colors in front knob plate
- Padlocking switches for safety

#### Types available

- AC switches (series S, TP and RT)
- AC/DC switches (series D)
- Spring return switches

#### Applications

- Isolator
- Changeover switches
- Multi-step switches
- Gang switches
- Selector switches
- Control switches
- Motor switches



## LB Switches

### Load Break Switches

- Ratings: LB : 25A-125A  
EB Gen C/O : 16A-125A
- Double break contacts
- Polycarbonate shroud for wired terminal protection is included
- Excellent switching and high short circuit capacity
- Compact and reliable
- Easy installation
- Different mounting options, i.e. front mounting, rear mounting and enclosure mounting
- Provision to fix on DIN Rail for rear mounting Switches
- Quick, simple and convenient, dia. 22.5 mm single hole mounting is offered for 16A/20A switches with padlocking option
- Open terminals for easy access
- Finger protection
- Terminal screws with fixed clamp for easy wiring
- Add-on main/neutral/auxiliary contacts can be mounted on both sides of the switch
- 4th Pole addition is possible at site

#### Applications

- Motor Start and Stop
- Manual Motor controller as Motor Disconnect Main Switch
- Emergency ON-OFF
- Control Switch
- Changeover Switch



## Cable Ducts

### Cable Ducts

- Ratings: Type A : 15 x 15 mm - 100 x 100 mm  
Type B : 25 x 30 mm - 150 x 150 mm
- Manufactured from specially impact rigid polyvinyl chloride
- Will not peel, chip or crack
- Resists oil, salt solution and fungus
- Nonflammable, warp-proof and non-brittle
- High dielectric strength and withstands temperature upto 60°C
- Unique cover locking design prevents popping up of wires while removing cover
- Elongated slots at the bottom allow flexible mounting
- Heavy & robust sections

#### Material Specification

- Material : High impact, self extinguishing, warp-proof rigid PVC
- Other materials such as chlorine free PPO is available on request

#### Colour

- Standard: Greenish grey for B type and light grey for A type
- Other colours: Black, Ivory, White, Blue and Green are available for large quantities

#### Applications

- Facilitates systematic Wiring
- Enhances aesthetics and clarity
- Permits faster connections, addition and fault tracing of wires
- Avoids bunching and tapping
- Provides complete electrical insulation





# Reactive Power Management Solution

# Control Accessories

## Power Factor Correction Capacitors

### LTXL Capacitors

- Ultra heavy duty (box type) - 5 to 100 kVAr

### MPPS Capacitors

- Standard Duty (Agri duty, Box and Cylindrical type) - 1 to 25 kVAr

### MPPH Capacitors

- Heavy duty (Box type) - 5 to 50 kVAr
- Heavy duty gas filled (Cylindrical type) - 3 to 25 kVAr

### Harmonic Mitigation Devices

- Reactors 7%, 14% and custom designed also available
- Detuned filter units in various ratings-5, 10, 15, 20, 25, 50, 100 kVAr

### Thyristor Switching Module

- Range available: for 10 kVAr, 25 kVAr and 50 kVAr

### Automatic Power Factor Correction (APFC) Solutions for variable loads

- etaSYS - Standard APFC panel with power factor correction capacitors (35-500 kVAr)
- etaSYS - Standard APFC panel with Harmonic filters & thyristor switches (35-500 kVAr)
- Custom design APFC panels are also available for other ratings

## Push Buttons / Actuators / LED indicators

- New design to meet end user requirement
- Can accommodate 1 NO block or 1 NC block or 1 bulb holder
- No screws required for assembly
- Ease in mounting and wiring
- Excellent aesthetics
- International approvals  


### Types available

- Integral actuators
- Modular remote control units
- Push button actuators, pendants and push button stations
- Selector switches & accessories
- LED indicators
- Filament indicators and spares
- Modular blocks and spares
- All purpose enclosures and spares
- Panel mounted buzzer

## Timers, Time Switches, Hour Meters & Supply Monitors

- Electronic timers
  - ON delay, Cyclic, OFF delay, Star Delta, Multifunction
  - Asymmetrical ON / OFF
  - Motor restart control timers
  - Brownout timers
  - Digicon
- Auto reset synchronous timers
- Time switches
  - Analog time switch- FM/1 Quartz
  - Digital time switches-Crono
  - Astronomical time switches - Astro mini, Astro - 1Ph & 3Ph
- Hour meters/ Counters
  - Electromechanical / Digital
- Supply monitors
  - Single phasing preventor UV + OV relay with time delay
  - Phase assymetry, phase sequence monitoring
  - Earth leakage relay with CBCT
  - Current monitoring relay
  - PTC thermistor relay
  - Frequency monitoring relay



## Current Transformers

### Current Transformers

#### Features

- Cost effective moulded case measuring current transformers
- Limited range include the seven most popular sizes of current transformers
- Ratio ratings from 50/5 to 4000/5
- Wide range of current ratings, busbar sizes, case widths and apertures
- Sealable terminal covers
- Base mounting and busbar mounting option

#### Applications

- Switchgear
- Distribution system
- Generator sets
- Control panels
- Overload protection
- Control devices



## Digital Protective Relays

### Digital Protective Relays

- Compact & light weight relays
- Self-diagnostic feature ensures complete reliability
- Low power burden
- Communication capable
- Offers multiple protection
- Flexibility in selection of protection curve
- Conforms to latest standards IEC 6100, IS 3231 and IS 8686

#### Product Range

- Single phase & three phase over current and earth fault relays
- Under-voltage & over-voltage
- Control supervision
- Power factor control
- Motor protection
- Generator protection
- Transformer protection



## Indicating Meters

### Indicating Meters

#### Available in

- Sizes - 72x72, 96x96 & 144x144
- Scale 90°
- Version - AC / DC

#### Types

- Voltmeter & Ammeter (Direct reading)
- Ammeter (CT operated)
- Voltmeter (PT operated)
- Power factor meter & Power meter



# Electronic Energy Meters

## Intelligent Panel Meter

### QUASAR

- Trivector bidirectional panel meter
- Class 0.5s and 1.0 accuracy as per IS and IEC standards
- LCD display with backlight
- CT/PT programming
- LT/HT models
- Current ratings of 1A and 5A
- RS485 communication (optional)
- All instantaneous and cumulative values
- Separate display for fundamental and total harmonic values for currents & voltages of all phases
- Flush mounting - 96 mm x 96 mm
- Front panel programming



## Counter Panel Meter

### ACRUX

- Class 1 accuracy
- kWh measurement
- 1A and 5A current rating
- Pulse LED output
- Terminal covers with sealing provision

## kWh Panel Meter

### NOVA

- LCD display
- Class 1 accuracy
- AC/DC auxiliary supply
- RS485 communication
- Password protected CT/PT value programming

## Dual Source Meter

### GEMiNi

- LCD display
- Class 1 accuracy
- Separate registers available for measurement of utility power and generator power
- AC/DC auxiliary supply
- RS485 communication
- Password protected CT/PT value programming



## Digital Panel Meter

### VEGA Series

#### VEGA range includes:

- Single function meters - Voltmeters, Ammeters and Frequency meters VAF meters
- Multifunction meters - Model A, Model B, Model C

#### Features

- LED display
- Class 1, 0.5 accuracy
- Auxiliary supply range of 90 to 300V
- Auto scaling of Kilo & Mega
- Password protected programming
- Current ratings of 1A and 5A
- Standard size - 96 mm x 96 mm
- For Multifunction meters only
  - RS485 communication
  - Relays for fault tripping
  - 3 line LED display
  - Total Harmonic distortion
  - CE U





# Electronic Energy Meters

## Electronic kWh Meter EM101+ & EM301

- Single and three phase versions available
- Current reversal indication
- LED indication proportional to kWh for on-spot calibration
- Six digit counter
- Reset backups and TOD facility
- High surge withstand capability
- Optical port / RS232 port (optional)
- Anti-tamper features
- Dust proof body, rugged construction, elegant polycarbonate casing
- Not affected by mounting position
- Not affected by external magnetic field
- Earth load tamper indication in single phase energy meter
- Three phase energy meters work even on neutral removal



## Trivector Meter ER300P

- Class 0.2s/0.5s/1.0 as per relevant IS and IEC standards
- Whole current/LT CT/HT CT
- 3 Phase 4 Wire/3Phase 3 Wire system
- Anti-tamper features
- Self diagnostic capability
- Multiple tariff feature
- Upto 3 Maximum Demand registers
- Load Survey features
- Upto 12 reset backups
- Optical port / RS232 / RS485 (optional)
- Backlit LCD display
- Three Display modes for easy data access
- Support of Phaser viewing on MRI
- Battery backup for data collection
- Periodic self diagnostic checks



## ABT Meter ER300P

- Class 0.2s accuracy
- 3 Phase 4 Wire
- Conforms to IEC and IS standards 15 minute block average for frequency and energy
- Frequency coding for billing
- Separate reactive energy registers linked to supply voltage
- Midnight storage of energies Load Survey
- Optical port / RS485 communication (optional)



# New EXORA Modular Devices

## EXORA

### Miniature Circuit Breaker (10kA)

MCB is a vital protection device. It is essential in every electrical installation to safeguard both your life and valuable property against short circuit & overload.

- Unique "Patented Design" gives both Label Holder and True Contact Indication facility for individual poles
- Conforms to IS/IEC 60898
- Breaking capacity of 10kA throughout the range
- Available in B, C & D curve in SP, DP, TP & FP SP, DP, TP & FP from 0.5A to 63A rating
- Low watt loss - almost 50% of the values prescribed by IS/IEC 60898
- Trip free mechanism
- Design based on advanced current limiting hammer trip mechanism
- No Line-Load bias
- Suitable for accessory fitment



## EXORA

### Residual Current Circuit Breaker

RCCB provides protection against electrical shocks and earth leakage.

- Conforms to IS 12640 / IEC 61008
- RCCBs are available in DP and FP versions from 25 to 100A ratings with 30 mA, 100 mA and 300 mA sensitivity
- Truly current operated - operation even at nominal voltage
- Operates on Core Balance Current Transformer (CBCT) principle
- Operation even in case of neutral failure
- Neutral advance mechanism
- Short circuit withstand capacity 10kA with backup fuse



# New EXORA Modular Devices

## EXORA

### Isolators

Isolators are used in electrical installation to MAKE, CARRY and BREAK circuit current. The isolator ensure that there will be no current at the load side even if impulse voltage appears when the Isolator is OFF.

- Conforms to IEC 60947-3
- Suitable for AC22-A utilization category
- Available in DP, TP and FP versions in 40A, 63A, 80A & 100A ratings



## EXORA

### Distribution Boards

Distribution boards provide safe & efficient distribution of electrical power.

- As per IS 8623
- Aesthetically superior to suit the interiors of buildings
- Distribution boards are suitable for flush and surface mounting
- Ready to use DBs - provided with 100A phase Bus-bar, Neutral bar, Earth bar and inter connecting wires as standard
- Provided with removable top and bottom gland plates with adequate knockout for easy wiring
- DBs made up of thick CRCA sheet steel & powder coated with RAL 9003 shade





# Modular Devices

**Trip**per®

## Miniature Circuit Breakers

- Specially designed & developed for residential & commercial installations
- Conforms to latest global standards like IS/IEC 60898
- Carries **CE** and **ISI** marking and **KEMA** certification
- Breaking capacity of 6kA throughout the range
- Available in C curve in SP, DP, TP & FP versions from 6A to 63A ratings
- Unique - **True contact indication** to show actual status of contact
- Low power loss - almost 50% of the values prescribed by IEC
- Terminals are suitable upto 35 sq.mm wire, with provision for dual termination facility
- No line-load bias

**Trip**per®

## Isolators


- Conforms to global standards like IS 13947, EN/IEC 60947-3
- Carries **CE** marking and **KEMA** certification
- Available in range of 40A, 63A, 80A & 100 A in DP, TP and FP versions
- Suitable for AC 22 - A utilization category
- Finger proof terminals-IP20 degree of protection
- Ergonomically designed, profiled for superior cooling and manufactured with fire retardant material



## Modular Devices



### EarthLeakage + Miniature Circuit Breakers EL+MCBs

- Provides 3 in 1 protection against earth leakage, short circuit and overload, it also avoids excessive metering due to leakage
- Conforms to global standards like IS 12640, EN/IEC 61009-1
- Carries  marking
- Available in DP & FP versions in the range of 6 to 63A with 30 mA, 100 mA & 300 mA sensitivity
- Truly current operated, operates even at nominal voltage
- Featured with Neutral advance mechanism
- Operation even in case of neutral failure



### Distribution Boards- Tripbox

- Available in aesthetically superior ivory colour to suit the interiors of buildings and can be supplied in different colour for bulk requirements
- Readily available in IP30 & IP43 degree of protection
- Distribution boards are suitable for flush and surface mounting
- Ready to use DBs provided with 100A phase busbar, wire sets, earth & neutral bars as standard
- Provided with removable top and bottom gland plates with adequate knock out for easy wiring
- For bottom entry, neutral bar can be shifted to bottom for comfortable wiring
- TPN DBs will have provision to accommodate 6 MOD in-comer
- Easy installation and flexibility in usage



## Busbar Trunking System

### Busbar Trunking System

- Sandwich Busbar Trunking System:
  - 400A to 6300A Current Capacity
  - Epoxy Insulated
- Conventional Busbar Trunking System:
  - 100A to 400A Current Capacity
  - Air-insulated
- Medium Voltage Busbar Trunking System:
  - 100A to 6300A Current Capacity
  - Air-insulated
- Conductor Material : High conductivity Cu/Al
- Ingress Protection : IP54, IP55, IP65, IP67, IP68
- Configuration of 3P3W/3P4W/3P5W with or without integral earth
- Halogen free, fire retardant Epoxy insulation for Sandwich busducts. Flame Propagation Test certified by ASTA
- High temperature withstand capability of 55°C over 50°C as normal operating temperature, One Bolt joint system incorporates 3 mm thermal expansion provision
- Tap - off units are provided for MCCBs or SDFs or MCBs
- Available as feeder for power transmission and plug-in for power distribution
- Standard lengths of 3m/2m/1m upto 0.5m
- Excellent short circuit ratings (upto 150kA)
- System primarily consists of components such as Straight Length, End Flange, End Feed Unit, Tap off Units, Bends, Fixing clips, etc



## Wiring Accessories



### Intelli-i

- Grey insert identifies the switching position during assembly
- Smart indicator LEDs for Power ON indication using red LED
- LED night locator switch uses blue LED for easy location of switches in the dark
- Always ON indicator uses red LED in bell switch

### Longer life


- 3.5 mm silver cadmium contacts for longer life; our 10A switch has survived 1.5 lakh switching cycles at full load under test conditions
- Swing rocker mechanism ensures no contact bounce
- Phosphor bronze conductors ensure better contact pressure, lower heating and hence longer life as compared to copper conductors
- RoHS complaint, Weld free, GI wall boxes for better corrosion resistance and longer life
- Silver coated brass terminals minimizes contact losses and improves terminal life

- Electronic 4 step power saving fan regulator improves life of fan
- Go Green - Power saving SMD LED is used in indicator has a life of 80,000 burning hrs. = 9 years

### Esyclean Design

- Stylish rounded contours - minimizes dust collection on surface, easy to clean
- Slim design - only 8.5 mm protrusion from the wall
- Ribless design - leaves only a hairline gap between switches
- Glossy surface finish reduces dust deposition

### Safe & secure

-  mark on switches & sockets
- Safety shutters over live contacts in all power sockets and data sockets
- Fire retardant UL V0 polycarbonate body
- Flash guard in all switches

## Wires & Cables

### Wires

- Wires for industrial, commercial and domestic applications
- Voltage grade up to 1100V
- Conforms to IS 694-1990 standards
- Complete safety ensured
- Insulation types available for all wires are:- Flame Retardant (FR), Flame Retardant Low Smoke (FRLS), Zero Halogen Flame Retardant (ZHFR) and Heat Resistant (HR)

### Flexible Wires

- Range 0.5 sq.mm to 240 sq.mm
- Single and multi-core wires are available
- Suitable for industrial wiring applications
- Available in standard length of 100 meters coil

### House Wires

- Range 0.75 sq.mm to 16 sq.mm
- Made of annealed copper conductor
- Conforms to IS 8130-1984 standards
- The insulation used is FR PVC compound for additional safety
- Twin coating for superior insulation

### Flat Cables

- Range 1 sq. mm to 35 sq. mm
- These cables are rigid and withstand all adverse conditions
- Made of bright plain multi-stand annealed copper conductors
- Available in 100 meter coils and drums of 500 and 1000 meters





**Lighting & Comfort Solution**

**Building Management System**

## TELETASK

### Domotics System

DOMOTICS is the latest trend in home automation which is not just lighting control but is the integration of **Comfort, Safety, & security Communication & Energy Management** for your home.

You can control all the functions of the home using a wide range of aesthetically designed Touch Windows, Touch Panels and Touch Screens .

You can also control the applications using a remote control, portable touch screen, windows enabled mobile phone, I Phone, iPad, standard PC, the Internet (LAN/WAN/WiFi applications), & so on. A house equipped with a domotics system and a minimal integration of lighting, power, heating or cooling control, saves energy cost from 10-15% .



## ATMOS

- DDC controller with graphical display and easy navigation
- Program backup on SD Card (upto 2GB)
- Freely programmable controllers
- Self detecting control bus with upto 999 controllers in a single network
- Self powered by DIN rail using T-Bus connectors
- All modules are plug in and plug out types
- Supports various third party protocols
- Scalable and future proof
- With ATMOS, 200 Input/Output points can be connected to a single DDC controller
- ATMOS DDCs have ready availability of in-built multi-communication ports



## Security & Surveillance System

## Fire Detection & Alarm System

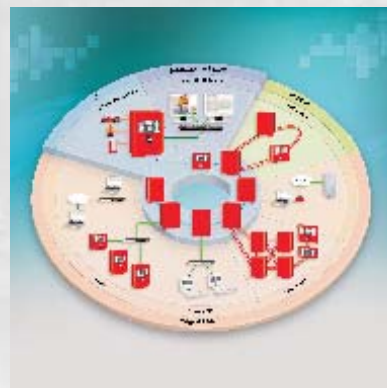
### PERITO

- Sophisticated range of Cameras like Perito's Vandal Dome, Explosion Proof Camera, IR, Weatherproof high speed, PTZ camera & the Integrated PTZ Control Camera with multiprotocol capabilities
- Perito provides with the widest choice of DVRs, ranging from Basic Series, Real-time hybrid DVR, Net DVR (H.264 DVR)
- Intelligent Video Analysis
- CCTV high resolution LCD monitors are available in 7", 17" & 19", Perito offers widest choice of transmission methods like standard analogue over coaxial and up-the-coax



### Fire Detection & Alarm System

- 100 % Hot redundancy
- Two Panels in single cabinet, always operational
- 250 addressable devices per loop, upto 4000 devices per panel
- 3.5 Km loop length
- Short circuit isolator in every Device
- TCP/IP networked - on board
- Factory fitted Vds approved batteries - 72 hrs back up
- Multi sensor detector for all applications



## Energy Efficiency Solutions

**EC CARE**

### Energy Efficiency Solutions

Comprehensive Energy Audits for industries, designated consumers, large IT/ITES/BT campuses, Star Hotels, Hospitals and Universities.

#### Our energy efficiency service includes

- Identifying the energy saving measures and solutions
- Harmonic study and its mitigation
- Supporting the implementation of energy saving solution
- Offer best in class products from L&T
- Review after implementation



## Medium Voltage Products

### Air Insulated Switchgear (Medium Voltage)

- Available for voltage of 12 kV, 24 kV & 36 kV
- Current rating from 630A to 3150A for 11 kV, 630A to 2000A for 24 kV and 1250A & 2000A for 36 kV
- Breaking capacities of 25 kA & 40 kA
- Compliance with IEC 62271-100 and 62271-200
- Metal clad, fully compartmentalized
- Horizontal isolation, horizontal draw-out & floor mounted VCB
- Earthing switch with full making capacity
- Interlocks for safety
- Readily extendable
- Cubicles are designed to meet temperature rise limits without forced cooling upto 3150A
- Classification AFLR with Fully type tested at renowned laboratories

#### Unique Features

- Inbuilt anti-pumping feature
- Withdrawal operation of PT which is top mounted & independent of VCB position (For 12 kV, 25 kA)
- Naturally cooled till 3150A
- Internal arc classification AFLR with 40kA for 1 second
- Compact yet safe





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Product improvement is a continuous process. For the latest information and special applications, please contact any of our offices listed here.



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