

For selection and product demonstration, please contact any of our branch offices listed below:

REGISTERED OFFICE AND HEAD OFFICE

L&T House, Ballard Estate
P. O. Box 278
Mumbai 400 001
Telephone: 022-6752 5656
Fax: 022-6752 5858
Website: www.Larsentoubro.com

ELECTRICAL STANDARD PRODUCTS (ESP)

501, Sakar Complex I
Opp. Gandhigram Rly. Station
Ashram Road,
Ahmedabad 380 009
Tel: 079-66304007-11, 55304000/1
Fax: 079-26580491
e-mail: esp-ahm@Lntebg.com

38, Cubbon Road, Post Box 5098
Bangalore 560 001
Tel: 080-25020100, 25583613
Fax: 080-25580525
e-mail: esp-blr@Lntebg.com

131/1, Zone II
Maharana Pratap Nagar
Bhopal 462 011
Tel: 0755-6454906 / 7/9
Fax: 0755-2769264
e-mail: esp-bho@Lntebg.com

Plot No.559, Annapurna Complex
Lewis Road
Bhubaneswar 751 014
Tel: 0674-6451342, 2436696
Fax: 0674-2537309
e-mail: esp-bbi@Lntebg.com

SCO 32, Sector 26-D
Madhya Marg, P. O. Box 14
Chandigarh 160 026
Tel: 0172-4646841 to 7
Fax: 0172-4646802
e-mail: esp-chd@Lntebg.com

10, Club House Road
Chennai 600 002
Tel: 044-28462072 / 4
Fax: 044-28462102
e-mail: esp-maa@Lntebg.com

67, Appuswamy Road
Post Bag 7156
Opp. Nirmala College
Coimbatore 641 045
Tel: 0422-2588120 / 1 / 3
Fax: 0422-2588148
e-mail: esp-cbe@Lntebg.com

L&T House
Group MIG - 5
Padmanabhpur
Durg 491 001
Tel: 0788-2200105, 2322809
Fax: 0788-2210161

A1/11, Astronauts Avenue
Bidhan Nagar
Durgapur 713 212
Tel: 0343-2537844
Fax: 0343-2536493 / 39
e-mail: esp-dgp@Lntebg.com

(Faridabad Switchgear Works)
12/4, Delhi-Mathura Road
Faridabad 121 003
Tel: 0129-2565147 / 8
Fax: 0129-2275405, 2565244
e-mail: esp-fbd@Lntebg.com

Milanpur Road, Bamuni Maidan
Guwahati 781 021
Tel: 0361-2550565
Fax: 0361-2551308
e-mail: esp-gau@Lntebg.com

Summit Complex
5-10-188/2, Hill Fort Road
Secunderabad
Hyderabad 500 004
Tel: 040-23296468, 66720251
Fax: 040-23242356
e-mail: esp-hyd@Lntebg.com

D-24, Prithvi Raj Road
C-Scheme
Jaipur 302 001
Tel: 0141-2377374, 2361064
Fax: 0141-2373280
e-mail: esp-jai@Lntebg.com

Akashdeep Plaza, 2nd Floor
P. O. Golmuri
Jamshedpur 831 003
Jharkhand
Tel: 0657-2340864, 2340308
Fax: 0657-2341250
e-mail: esp-jam@Lntebg.com

Skybright Bldg., M.G. Road
Ravipuram Junction, Ernakulam
Kochi 682 016
Tel: 0484-2358513, 2358761
Fax: 0484-2358982
e-mail: esp-cok@Lntebg.com

3-B, Shakespeare Sarani
Kolkata 700 071
Tel: 033-44002301 / 5
Fax: 033-22821025
e-mail: esp-ccu@Lntebg.com

A28, Indira Nagar, Faizabad Road
Lucknow 226 016, Uttar Pradesh
Tel: 0522-4040905 / 3 / 4
Fax: 0522-2311671
e-mail: esp-lko@Lntebg.com

Plot No. 518, 4th Main Road, K.K. Nagar
Madurai 625 020
Tel: 0452-2537404/303
Fax: 0452-2537552
e-mail: esp-mdu@Lntebg.com

EBG North Wing Office - 2
Powai Campus
Mumbai 400 072
Tel: 022-67052874 / 1156 / 1749
e-mail: esp-bom@Lntebg.com

8B, Farmland, Ramdaspath
Behind Hotel Radhika
Nagpur 440 010
Tel: 0712-2420641 / 24
Fax: 0712-2420619
e-mail: esp-ngp@Lntebg.com

32, Shivaji Marg, P.O. Box 6223
New Delhi 110 015
Tel: 011-51419500 / 1, 51419515
Fax: 011-51419600
e-mail: esp-del@Lntebg.com

L&T House, P.O. Box 119
191/1, Dhole Patil Road
Pune 411 001
Tel: 020-26135048, 26135611
Fax: 020-26129586, 26124910
e-mail: esp-pnq@Lntebg.com

3rd Floor, Vishwakarma Chambers
Majura Gate, Ring Road
Surat 395 002
Tel: 0261-2473726
Fax: 0261-2477078
e-mail: esp-sur@Lntebg.com

Radhadaya Complex
Old Padra Road
Near Charotar Society
Vadodara 390 015
Tel: 0265-5513610 / 11 / 12
Fax: 0265-2336184
e-mail: esp-bar@Lntebg.com

48-8-16, Dwarakanagar
Visakhapatnam 530 016
Tel: 0891-2755493, 2704928
Fax: 0891-2746075
e-mail: esp-viz@Lntebg.com

L&T SWITCHGEAR
SAFE & SURE

Electrical and Automation Solution for
Residential and Commercial Buildings

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

L&T SWITCHGEAR
SAFE & SURE

Electrical Standard Products Larsen & Toubro Limited
Powai Campus, Mumbai 400 072
Tel.: +91-22-67050505 Fax: +91-22-67051195
E-mail: ebg-esp@LNTEBG.com Website: www.LNTEBG.com

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Bringing Buildings to Life



Switchgear Factory,
Mumbai



Switchgear
Training Center,
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Switchgear
Training Center,
Lucknow



Switchgear Factory,
Ahmednagar



Switchgear
Training Center,
Pune

About Larsen & Toubro

Larsen & Toubro (L&T) is a technology-driven USD 5 billion company that infuses engineering with imagination. The Company offers a wide range of advanced solutions, in the fields of Engineering, Construction, Electrical & Electronics, Machinery and Information Technology.

L&T Switchgear, which forms part of the Electrical & Electronics business, is India's largest manufacturer of low voltage switchgear, with the scale, sophistication and range to meet global benchmarks.

With over four decades of experience in this field, the Company today enjoys a leadership position in the Indian market with growing presence in international markets.

It offers a complete range of products including; control gear, power gear, motor starters, energy meters, wires and host of other accessories. The products conform to international standards, carry CE markings and are KEMA certified.

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.

Building Automation

L&T has constructed some of the most renowned structures and buildings in the country- be it Bombay Stock Exchange, or Cyber Gateway in Hyderabad. L&T Switchgear now touches your lives with an innovative and comprehensive Building Automation approach, that encapsulates future proof architecture based on open standards. Experience the new

Building Automation product range from the house of L&T, powered by the unique L&T architecture for Building Automation - LTAB[®].

Distribution

L&T Switchgear is well networked with more than 700 authorized stockists, one of the largest distribution networks in the industry.

Indonesia, Sri Lanka, Bangladesh, UAE, Qatar, Oman, Bahrain, Saudi Arabia, Kuwait, Iran, Turkey, Egypt, Nigeria, Kenya and UK to name a few.

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,

Training & After Sales Service

L&T's Switchgear training centres 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 55,000 participants have benefited from these programs.

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

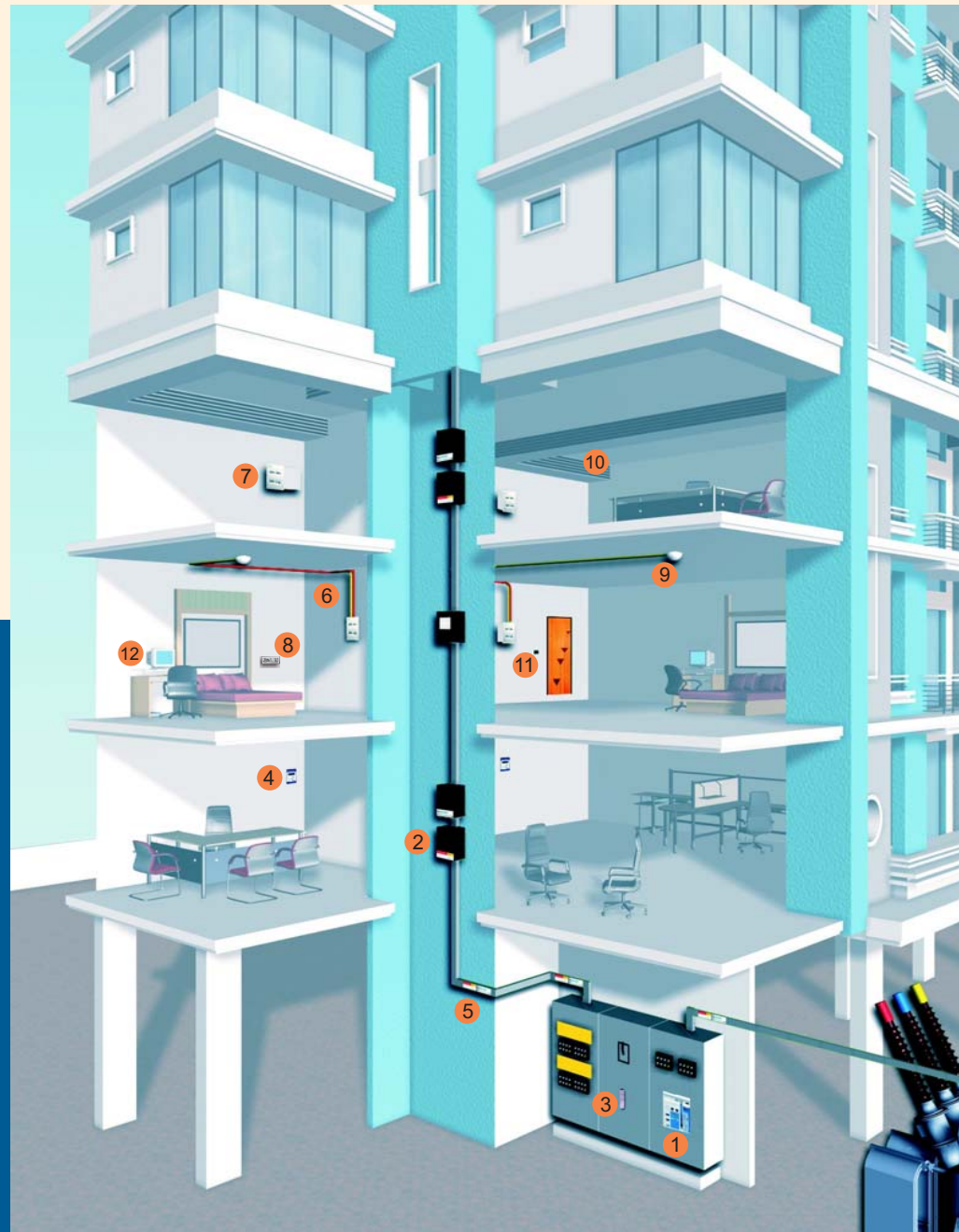
There is a range of service solution that is available to support the switchgear right from installation till the complete life cycle. They come in the form of preventive maintenance, breakdown maintenance, retrofits and upgrades.

Environment & Community

The Company has a comprehensive Quality, Environment and Safety management system. The manufacturing facilities conform to ISO 14001 (Environmental Management System) & OSHAS 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 and so on in partnership

with the stockists. Its supports schools through distribution of PCs, books and uniforms and providing teachers. L&T has also come to the rescue of common man at the time of natural calamities like flood and earthquake and has helped the community by distributing clothes, food and essential commodities.



Power Gear

- ① Air Circuit Breaker
- ② Molded Case Circuit Breaker

Final Distribution Products

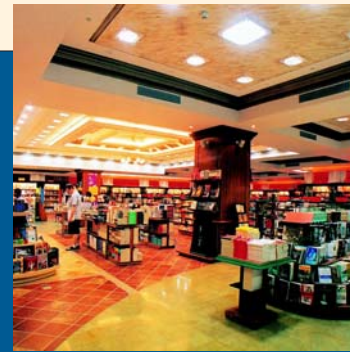
- ⑤ Busbar Trunking System
- ⑥ Wires
- ⑦ Modular Devices (MCB, ELCB, ELMCB, DB)
- ⑧ ORIS - Wiring Accessories

Energy & Metering

- ③ Capacitors
- ④ Energy Meters

Building Automation Products

- ⑨ ATMOS - HVAC control
- ⑩ POWERMAN - Energy Monitoring System
- ⑪ LOGIN - Access control
- ⑫ TEBIS - Lighting & Comfort control



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Range & Features

- Comprehensive range: 400 A to 6300 A
- $I_{cs}=I_{cu}=I_{cw}$ for complete selectivity
- Proven track record of over 30 years with 3,00,000 installations
- Elegant design and rugged construction
- Unique pole design for bounce free operation
- High mechanical and electrical life
- Optimally compact ACBs with adequate terminal capacity and low temperature rise
- Suitable for direct termination of aluminium links
- Distinct 'maintenance' position in draw-out ACB's
- Common depth and height up to 4000 A
- In-built mechanical anti-pumping feature
- CE marking for C & H range of ACBs

Protection & Control C-POWER

Comprehensive range of microprocessor based protection and control units with true-RMS sensing, self-powered protections, fault annunciation & communication capabilities

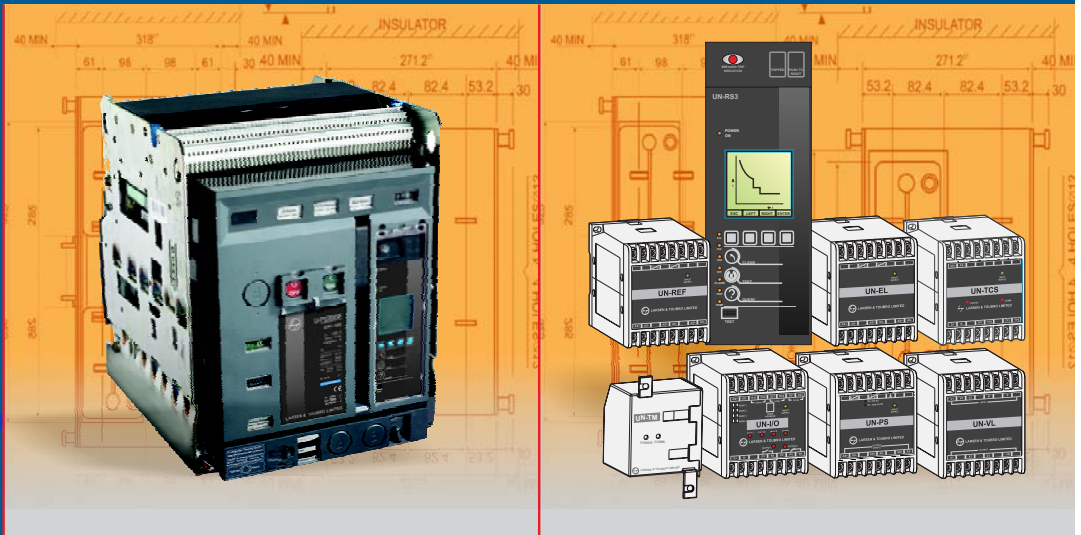
SR61C - Communication capable protection and control units with current metering, fault history and zone selective interlocking

SR21i - Over current and earth fault protection with zone selective interlocking

SR18/18G - Practical all round solution with over current and earth fault protections

Also Available

Thermo-magnetic protection and control unit Dn1



Range & Features

- 400 A to 6300 A in four optimized frame sizes
- Standard 100% neutral rating. 50% and 200% neutral ratings also available
- Unique arc chute interlock 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
- Common height and depth across the range
- Display of complete accessory information on front facia
- Tool-less fixing of voltmetric releases
- Suitable for direct termination of aluminium links
- Independent locking of ON / OFF buttons
- Optimally compact dimensions, without sacrificing termination area

Protection & Control U-POWER

- Comprehensive range of micro-controller based protection and control units
- Real-time on-line graphical representation of protection characteristics on high resolution LCD display
- Additional protection for voltage variation, frequency variation, undercurrent, reverse power, temperature rise, earth leakage and restricted earth fault
- Basic protection independent of external power supply
- Event recording and fault history
- Metering of current, voltage, power, energy, frequency and power factor
- Communication capable on MODBUS protocol
- Trip circuit supervision
- Two storable settings



MCCB: Type -

- Complete range: 16 A to 1600 A in 3 pole / 4 pole versions
- Breaking capacities upto 100 kA
- Micro-controller based intelligent and communication capable protection and control units (RC10/RC20)
- Global benchmarking-KEMA certified
- Positive isolation & user friendly features
- Ergonomic design
- Superior safety features for user and installation
- Conforms to IS: 13947-2, IEC: 60947-2, EN: 60947-2
- Wide range of internal & external accessories

RC10

- Micro-controller based design
- Overload protection with fixed time delay
- Short circuit protection with two time delay settings
- Instantaneous over ride protection
- Earth fault protection with two time delay settings
- Built in CTs
- Self diagnostic test possible
- Wide range of selection
- True RMS sensing
- Self-powered

RC20

- O/L with selectable, S/C Inst over ride protection, E/F with selectable time delay backlit LCD display
- Metering for current parameters
- Protection against unbalanced load / single phasing
- I²t protection, Neutral protection, Cold load protection
- Time resolution in current and time delay setting
- User friendly navigation system
- Self-powered for basic protection
- Communication using RS 485 link and MODBUS RTU protocol



MCCB: Type - DU

- Available from 20 A to 200 A
- Breaking capacity upto 30 kA
- Aesthetic and compact
- High electrical and mechanical life
- Total safety for user
- Available in SS enclosures
- High vibration and shock resistance
- Conforms to IS: 13947-2, IEC: 60947-2, EN 60947-2

MCCB: Type - DH

- Wide range: 12 A to 630 A
- Breaking capacity up to 65 kA
- Available in 3 pole and 4 pole versions
- No line load bias
- High electrical and mechanical life
- Low let through energy and low cut-off current
- Adjustable thermal releases
- Add on earth fault modules
- Special MCCBs for motor, generator and furnace protection
- Suitable for copper and aluminium terminations
- Safety to user and installation
- Conforms to IS: 13947-2, IEC: 60947-2, EN: 60947-2

MPCB: MNX Series

- Wide range from 0.16A to 63A in just 3 frame sizes
- High Breaking Capacity of atleast 50kA for the entire range
- Comprehensive O/L & S/C protection with phase failure sensitivity
- All MPCB have DIN rail mounting facility
- Sturdy Door Coupling Rotary Handle with pad lock and Door Interlock facility
- Differential trip indication facility for Trip Alarm contact
- Wide range of Accessories for control and indication. Accessories common across the range

SDFs: Type - FNX *E-line*

- Ratings : 32 A to 800 A in six frame sizes
- AC-23 A rating for the complete range
- Available in TP, TPN and four pole versions
- High fused short circuit capacity (100 kA)
- Electro dynamic compensated contact system
- Versatile handle (patented)
- High clearance and creepage distances
- Suitable for copper and aluminium terminations
- CE Marking and conformance to IS: 13947-3, IEC: 60947-3
- Easy inspection and replacement of contacts
- Fuse barriers to prevent inter-phase short circuits
- DIN rail mounting up to 100 A
- Suitable for horizontal and vertical installations
- Terminal shrouds for safety
- Telescopic shaft for the handle (Stepless adjustment)

Accessories

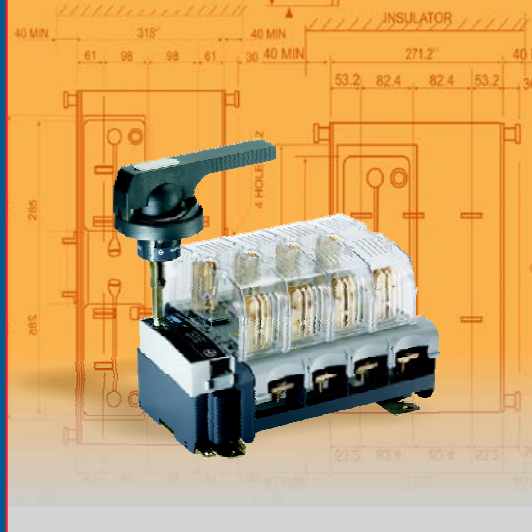
- Auxiliary contact kit
- Castell lock
- Fuse operation indicator
- Extended terminal shroud
- Fuse puller unit
- Mechanical interlock kit

SDFs: Type - FN

- Ratings: 32 A to 800 A
- High fused short circuit rating (100 kA)
- Full AC-23 A 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 aluminium terminations
- Built - in isolable or add on switched neutral
- Easy inspection and replacement of contacts
- Available in sheet steel enclosure
- Conformance to IEC 60947-3 and IS 13947-3
- Switch interiors for panel mounting type FF / FFO / FAC Ratings: 32 / 63 / 100 Version: TP / TPN

Accessories

- Handle assembly (Type A / B / C)
- Shaft extension kit
- Switched neutral kit
- Auxiliary contact kit
- Mechanical interlock kit
- Castell interlock
- Terminal shroud kit
- Interphase barrier kit Spares
- Handle assembly
- Front housing assembly
- Spare kit of contacts



AC Inverter Drives

- New generation Yaskawa AC drives with latest technological advancements in AC induction motor speed control
- Adjustable S-curves for acceleration and deceleration
- DC injection braking at start or stop
- Fully adjustable Volts / Frequency ratio
- Power loss ride-through - for protection against momentary power loss / under voltage
- Drive efficiency - 96 to 98%
- Many protective features like torque limit, heat sink over-heat, current limiting DC bus fuse, motor overload protection, single phasing protection etc.

Soft Starters

- Compact design, small footprint
- Built-in bypass contractor
- Easy installation and operation
- Complement existing motor protection
- Rating from 7.5kW to 110kW
- Timed voltage ramp (TVR)
- Soft stop
- Supply fault protection
- Shorted SCR protection
- Ready / Tripped indication
- Running / Starting-Stopping indication
- Fault code indication

Electronic kWh meter

- Single and three phase versions available
- Current reversal indication
- LED indication proportional to kWh for on-spot calibration
- Six digit counter
- 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

Pulsar

- Available in 3 wire or 4 wire configuration
- Display - LCD with backlight
- LED indication proportional to kWh for on spot calibration check
- Optically isolated pulse output for integrating with PLC or Data logger in Energy management system
- Programmable CTPT ratio with password protection
- Compact and light weight
- Panel mounting design in 96 x 96 mm size

Quasar - Intelligent Panel Meter

- All instantaneous and cumulative values
- Flush mounting - 96mm x 96mm overall size (cutout size - 92mm x 92mm)
- Class I accuracy
- Separate display of fundamental and total harmonic values for currents and voltages of all phases
- Front panel programming
- Communication interface via RS 485 port & MODBUS protocol



Acruz - Three-Phase Energy meter

- Flush mounting - 96mm X 96mm overall size (cutouts size - 92mm X 92mm)
- Compact and light weight
- LED indication proportional to kWh for on spot calibration
- Meter records connect energy (a) Irrespective of current direction (b) Balance and unbalance condition with any phase sequence



Power Capacitors & Harmonic Filters

- Metallised Polypropylene (MPP)
- Mixed Dielectric (MD)
- Mixed Dielectric Low Loss (MD-XL)
- Film Foil (FF)

APFC

- Intelligent control for 4-quadrant operation
- Self-optimizing switch sequence for fast compensation with a minimum number of switching operations and without overcompensation
- Manual & automatic operation with status and error indication for each stage
- No fixed switching sequences
- Programmable off-periods for adaptation to different capacitor discharge times
- Mixed operation of modules switched by contractor or thyristors must be possible
- Monitoring switching operations in each stage to recognize steps that do not switch ON / OFF
- Online and real time Harmonic level display using Fourier transformation

Miniature Circuit Breakers (MCBs)

- High breaking capacity of 10 kA
- Protects against overload and short circuits in domestic, commercial and industrial electrical distribution systems
- Available in SP, DP, TP & FP versions in B, C and D curve, widest range from 0.5 to 125 A ratings
- Two position DIN rail clips allows faster installation
- Suitable for DC applications
- Conforms to latest standards IEC 60898, IEC 60947, IS 8828-1996

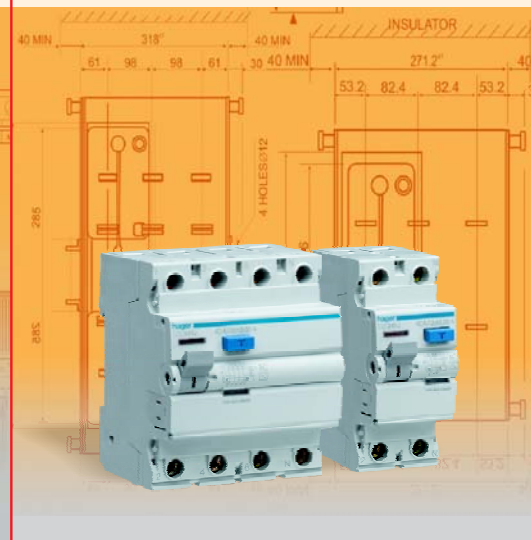
Accessories for MCBs and RCCBs

- Auxiliary contact (1NO+1NC)
- Trip alarm contact
- Shunt release
- Under-voltage release
- Locking kit
- Flush-mounting kit



Residual Current Circuit Breakers (RCCBs)

- Available in DP and FP versions in 25 A, 40 A, 63 A and 100 A ratings with 30 mA, 100 mA and 300 mA sensitivity
- No nuisance tripping
- Conforms to IEC 61008
- Hi version
- Available in 2 & 4 pole from 25 to 63 A in 30 mA & 300 mA sensitivities
- Reduces unwanted tripping due to transient current & voltages
- Ensures tripping in networks with pulsated DC components



RCBOs

- Offers 3 in 1 protection against earth leakage, short circuit and overload
- Rating: 6 A to 32 A in 2 pole with 30 mA and 300 mA sensitivity
- Breaking capacity 4.5kA
- Conforms to IEC 61009. Also available: earth-leakage relays and voltage surge devices

RCD add - on blocks

- Available in 2 & 4 pole with sensitivities 30mA, 100mA & 300mA
- Designed to be fitted to the right side of 2 & 4 pole MCBs
- Combined unit provides protection against Overload, Short-circuit & Earth leakage
- Current rating 25A, 40A & 63A for use with NB, NC & ND MCBs
- Protection against nuisance tripping
- Breaking capacity of combined unit 10kA conforming to IEC 60898-1 / IEC 60947-2

Surge protection devices

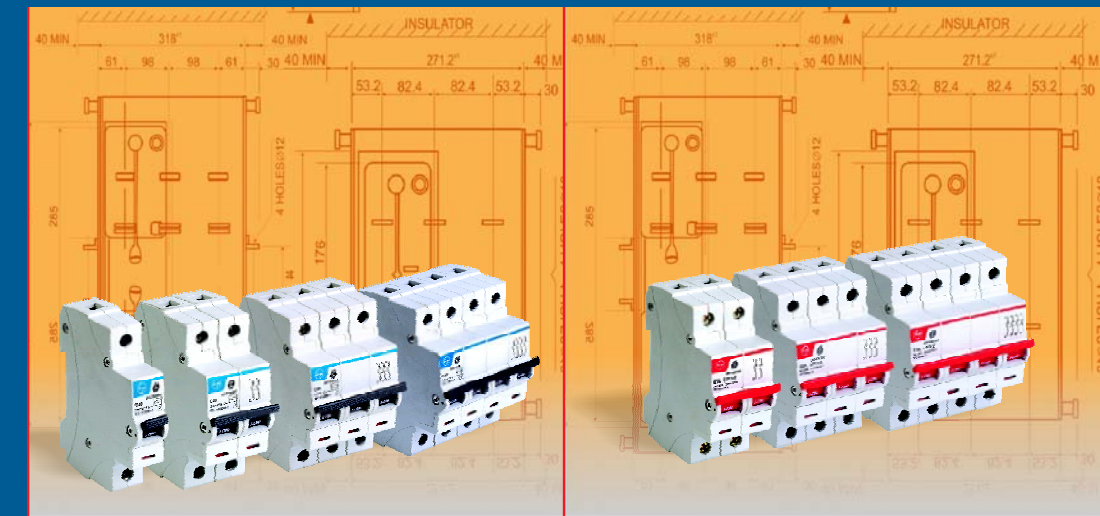
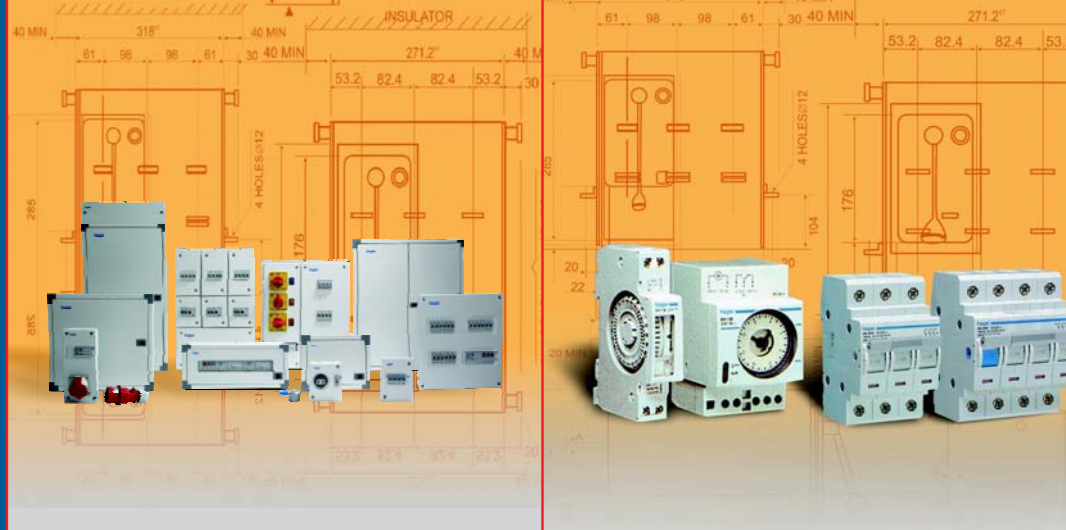
- Protect equipments against transient voltage surges
- Available in type 1 & type 2 co-ordination
- Replacement cartridges are available for type 2 devices
- Type 1 devices are used for protection against direct lightning surges & are tested for lightning current waveform of 10/350s
- Type 2 devices are used for indirect lightning effects as well as switching surges & are tested for a current waveform of 8/20s

Distribution Boards

- A comprehensive range of insulated and metal distribution board for Domestic, Commercial and Industrial applications
- All components comply with the latest standards
- Wide range of accessories for additional safety and flexibility
 - Plug and socket DBs
 - TPN and SPN DBs
 - Vertical TPN DBs
 - Phase changeover DBs
 - Phase segregated DB

Automation & Control Devices

- Isolators, two-way / centre-off changeover switches
- Modular electro-mechanical / digital time switches
- Time lag and twilight switches
- Modular bells and buzzers
- Electronic thermostats
- Dimmers and dimming systems
- Analog voltmeter and ammeters



Miniature Circuit Breaker

- Conforms to latest global standards like IS 8828, EN / IEC 60898-1-2003
- Carries CE and ISI marking and KEMA certification
- Breaking capacity of 6 kA throughout the range
- Available in B curve in SP & DP and C Curve in SP, DP, TP & FP versions from 6 A to 40 A ratings
- Unique - True contact indication shows actual status of contact
- Low power loss - almost 50% of the values prescribed by IEC
- Terminals are suitable up to 35 sq. mm wire, with provision for dual termination facility
- No line-load bias

Isolator

- Conforms to global standards like IS 13947, EN / IEC 60947-3
- Carries CE marking and KEMA certification
- Available in range of 40 and 63 A in DP, TP and FP versions
- Suitable for AC22-A utilization category
- Finger proof terminals - IP20 degree of protection
- Ergonomically designed, profiled for superior cooling and manufactured with fire retardant material

Earth Leakage + Miniature Circuit Breaker (EL+MCB)

- 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 CE and ISI marking
- Available in DP & FP versions in the range of 6 to 63A with 30mA or 100mA or 300mA sensitivity
- Truly current operated operates even at nominal 1 volt
- 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 & IP42 degree of protection
- Distribution boards are suitable for flush and surface mounting
- Ready to use DBs - provided with 100 A phase busbar, wire sets, earth & neutral bars as standard
- Provided with removable top and bottom gland plates with adequate knockout 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 incomer
- Easy installation and flexibility in usage



Wires & Cables

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

House Wires

- Conforms to IS 8130 standards
- Available in 90 & 180 meters
- Twin coating for superior insulation
- Range 0.75 sq. mm to 16 sq. mm

Flexible Wires

- Single and multi-core wires are available
- Suitable for industrial wiring applications
- Available in standard length of 100 & 500 meters coil
- Range 0.5 sq. mm to 400 sq. mm

Flat Cables

- The cables are rigid and withstand all adverse conditions
- Available in 100 meter coils and drums of 500 and 1000 meters
- Range 1.5 sq. mm to 70 sq. mm

Co-axial Cables

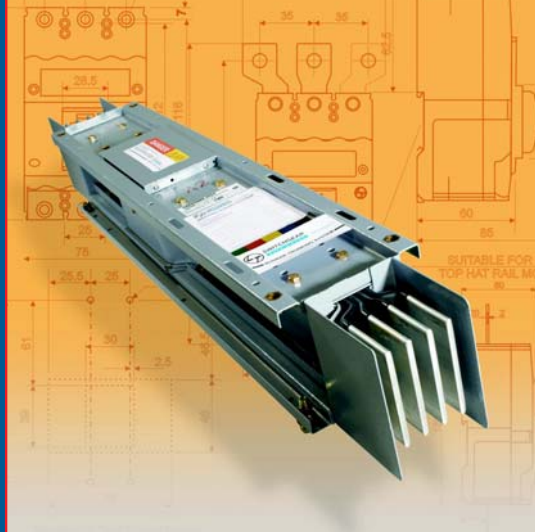
- RG6 & RG11 for cable TV

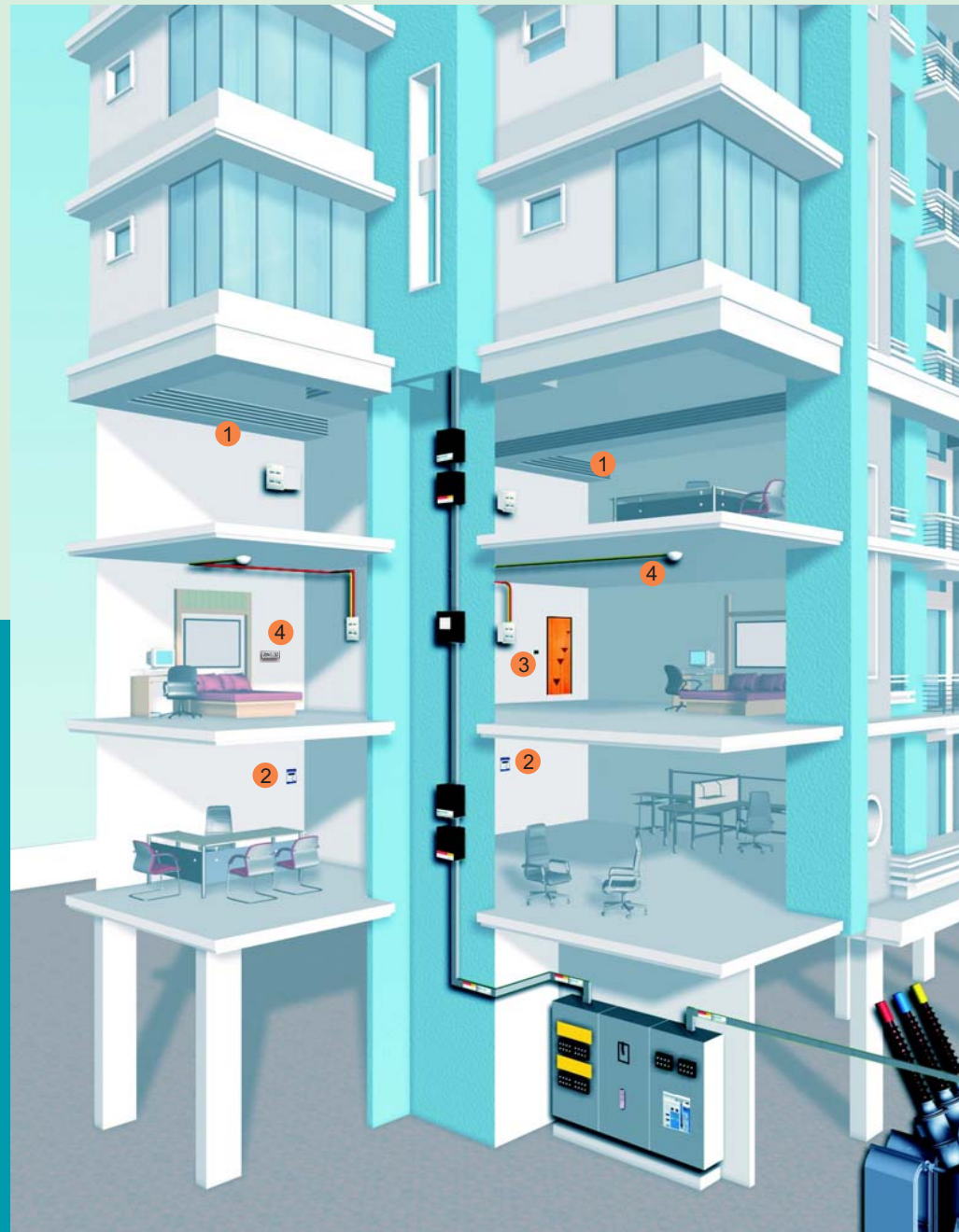
Telephone Cables

- 0.5 mm upto 5 pair

Busbar Trunking System

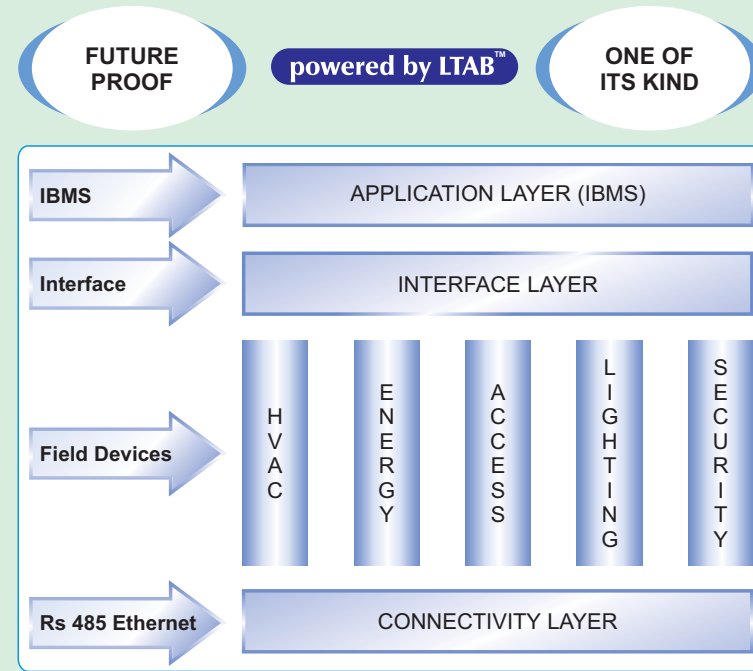
- Range 100 A to 6300 A
- IP Protection IP42 to IP68
- Conductor Material Copper / Aluminum
- Hot dip Epoxy insulation coating (class H)
- Construction Sandwich / Cast Resin
- Compact and Lightweight
- Available in 3-Phase 3-Wire, 3-Phase 4-Wire, 3-Phase 5-Wire with or without integral Earth
- Provision for Tap-Off at every one meter
- Protection device (MCB / MCCB / SDF) in Tap-off box
- Components Straight Length, End Flange / End-feed Box, End Cap, Tap-off box, Elbows, Fixing clips





Building Automation Products

- ① ATMOS - HVAC control
- ② POWERMAN - Energy Monitoring System
- ③ LOGIN - Access control
- ④ TEBIS - Lighting & Comfort control



ATMOS

Introduction

L&T offers the latest technology pertaining to controlling heating, ventilation and air conditioning (HVAC) system. ATMOS is a state of the art building automation system that reliably controls installations of all categories and complexities. ATMOS range of HVAC controls is scalable and future proof.

Demand of superior control with help of Direct Digital Control components is constantly increasing. Hence, a building automation system needs to be developed to handle today's stringent requirements. L&T ATMOS Control System has been specially developed to efficiently perform these operations. A 32 bit microprocessor based control system which measures, coordinates, evaluates and monitors thousands of digital and analogue input/output signals in the building has been incorporated in the L&T ATMOS HVAC Control System.

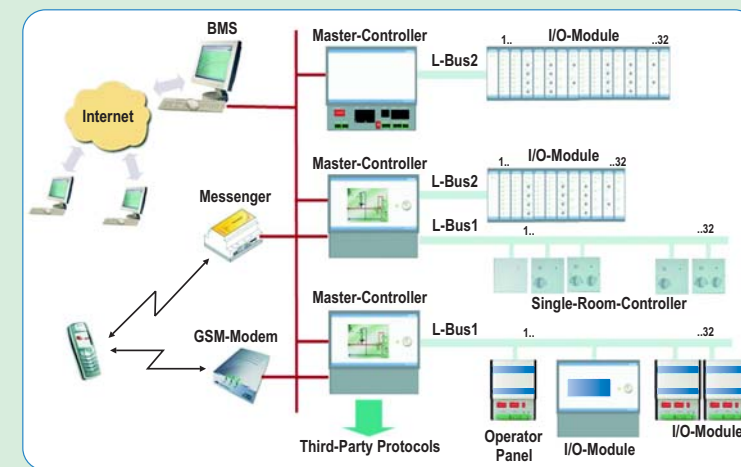
Building Automation Product Portfolio

Residential

- Lighting & Comfort Control
- Energy Management System
- Security System
- Visitor Management / Access Control System

Commercial

- HVAC Control System
- Access Control System
- Energy Management System
- Lighting & Comfort Solution
- Security System

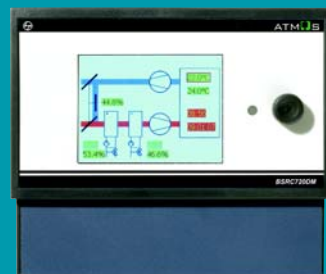


ATMOS Master Controller

The ATMOS Master Controller is setting new dimensions in BMS. It has the following

Features:

- Variety of integration and communication abilities
- 32 Bit microprocessor
- Large memory capacity
- 3.5" colour graphical display
- Proven control comfort "The trick with the click"



ATMOS I/O - Module range

The fine modular input/output devices with its individual modules offers an optimal coverage of the demanded input and output configurations.

The integration of manual override into the output module leads to a reduction of the equipment variety and the wiring efforts.

Input modules

- Analog-In (8x Analog inputs)
- Digital-In (8x digital inputs)
- Universal-In (8 inputs)

Output modules

- Analog-Out (4x analog outputs)
- Digital-Out (4x digital outputs)

Tristate

-All modules with or without manual override

Expandable I/O Modules are also available to cater additional requirements of the building.



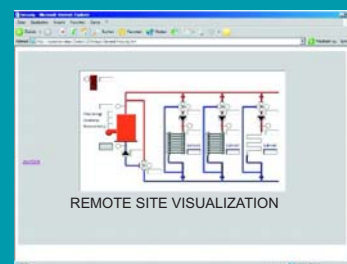
CONNECTOR AND DIN RAIL MOUNTING OF I/O MODULES

ATMOS BSRC-NET

ATMOS BSRC-NET is a web-based BMS software, that interacts with ATMOS building automation systems. All information of decentralized plants of a building can be collected, viewed and controlled efficiently using ATMOS BSRC-NET. The software provides an interface between the user and the installation. Additional program like "History-viewer" allows the authorized operator to evaluate trend curves and historical data in order to optimize the efficiency of the plant.

Some of the features of ATMOS BSRC-NET are:

- Accessing the ATMOS system using password protected remote monitoring system via internet technology
- It is a flexible and expandable system
- Simple programming can help set alarms, histories, get time schedules over PC/Operator panel
- Use of latest intranet/internet network technology
- Uses standard communication technology (GSM, fax, phone, e-mail, etc)



ATMOS BSRC 640 D-S Operator Panel

This is a text oriented Operator Panel for ATMOS building management system. The Operator Panel can be connected via the Lbus to Master controller BSRC 720D-M or 700D-M, with the menu structure programmed within the Master controller.

Features

- Single knob operation
- Backlight
- Alarm indication
- Simple handling
- Plug-in terminals
- Compact size



ATMOS Single Room Controllers

The room controllers with integrated remote control can be used in a stand alone mode or as network component of the ATMOS product family. The stand alone single room controller can also be used as programmable slave module that can be controlled over a master controller extending its flexibility of use. While interacting with a master controller, all variable parameters such as the PID loop, heating and cooling function with dead zone are adjustable. Further, additional features such as time schedules for individual rooms are also programmable.

Additional models are available with remote cable.

Sensors have the option of sensing return air temperature for example in fan coil units.

- Three different execution variants
- Applicable in the network or stand alone

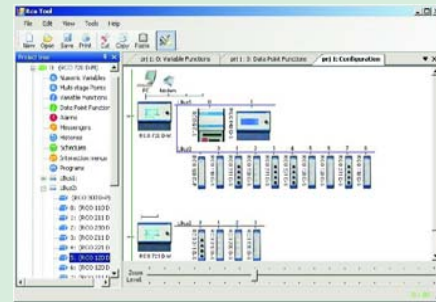


ATMOS Expander I/O Modules

Quick-Connector to BSRC-16CS with universal digital & analog I/O Ports integrated in one module

- DIN-rail mounting

ATMOS BSRC- Tool



-  Engineering
-  Commissioning
-  Documentation

The programming of the BSRC-tool is based on high performance and established Microsoft .NET-Framework technology. This ensures full operability of the tool both on Windows XP and Windows Vista computers. By using the BSRC-tool, efficient and economic programming of the ATMOS BSRC - system is achieved.

Product advantages

Master Controller

Master Controller with integrated graphical display for door mounting

– Extremely competitive combination - Master with graphical display

Communication and Integration

– 2*Ethernet (In/Out with hub functionality), 2*RS232, 2*RS485 (No converter), USB, L-Bus1, L-Bus2

– Already implemented protocols: ASCII, MODBUS RTU, Master/Slave, M-Bus, Wilo-Bus, Grundfos, BSRC-C Protocol

Program and Data storage on SD-Memory-Card

– New dimensions and flexibility for up-dates of installations, histories, project documentation

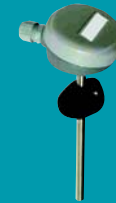
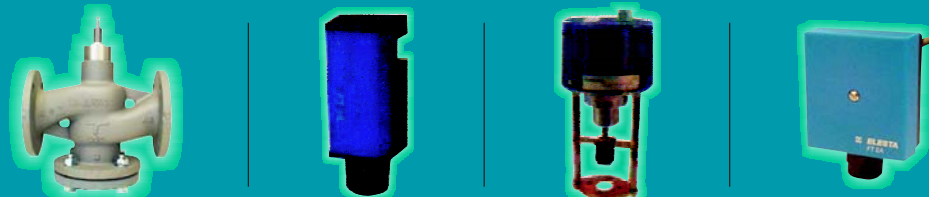
Identical hardware for different executions

– DIN-rail, panel door mounting

Extremely small in size

– Reduction of the panel space

- HVAC Accessories
- Sensors
 - Actuators and valves
 - Set-point adjusters
 - Switches & Relay



POWERMAN



Introduction

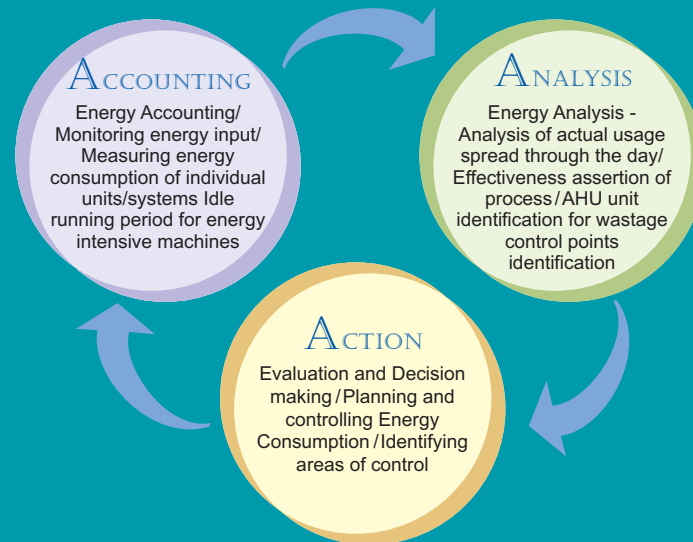
L&T PowerMan is a sophisticated system for monitoring and managing the energy consumption of different types such as electricity, water, gas and many more.

PowerMan system supports analysis of the energy consumption and allows the user to optimize their energy consumption.

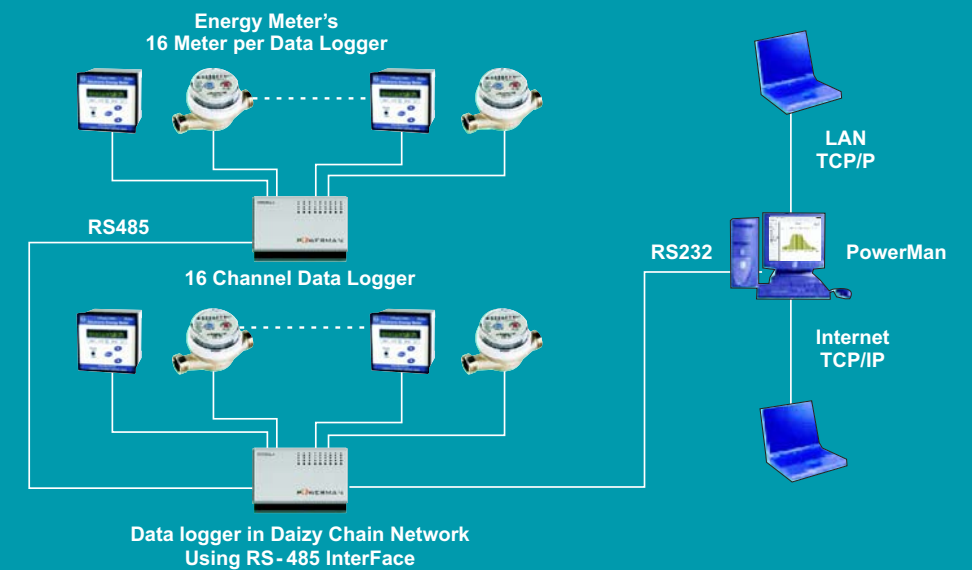
Data from the meter (e.g. electricity meters, water meters) is intermediately stored in data loggers. PowerMan reads these devices independently and stores the data for analysis and provides the results in a web based interface.



AAA management of energy



Connection of Data Loggers in Daisy Chain Network



Data Logger

The Data Logger is a stand alone device for storing pulse information from various energy meters.

It is possible to program data logger to use it in stand alone system or in network with the help of commands.

The stand alone data logger can take input in the form of potential free pulses from **16 various Energy meters** (Electricity, Water, Gas, & Heat).

Data logger gives complete solution for reading energy meters & storing data, avoids manual errors and saves time.



Pulsar Meter

- LCD display with backlight
- LED indication proportional to KWh for on spot calibration
- Programmable CTPT ratio with password protection
- Compact and light weight
- Panel mounting design in 96 x 96 mm size



e-Manage

Next generation energy management

Introduction

L&T e-Manage is a dedicated system for monitoring and managing energy consumption of different types of intelligent TVM such as Quasar, ER300P.

e-Manage system provides parameters monitoring in such a way that user can optimize the requirement of energy.

Data from field devices are collected by Node SCM and stored at Central SCM at a predefined interval for analysis of field devices.

We offer various modules :

Node SCM

- Node SCM is a 32-bit processor based industrial controller, designed to integrate high-speed field devices over long distance on RS 485 network
- It provides 3KV DC isolation on RS 485 side
- 2U, 19" sub rack enclosure
- WinCE5.0 based
- It has got an industrial power supply, which can take AC as well as DC input
- Two RS 485 port, per port 16 field devices
- Support random combination of devices

Central SCM

- Central SCM is 32-bit processor based industrial controller, designed to act as server for field devices. It has got an industrial power supply, which can take AC as well as DC input.
- 2U, 19" sub rack enclosure
- WinCE5.0 based
- PS/2 mouse & keyboard, VGA port
- SQLCE database

System configurator

- PC based configurator
- Configure both Node SCM as well as Central SCM
- Create pages, report format
- Configure alarm parameters

Field devices

QUASAR

- 96x96mm, flush mounted, multi screen digital panel meter
- LCD display with backlight
- kWh pulse output LED
- Programmable CT/PT ratio with password protection
- Compact and light weight

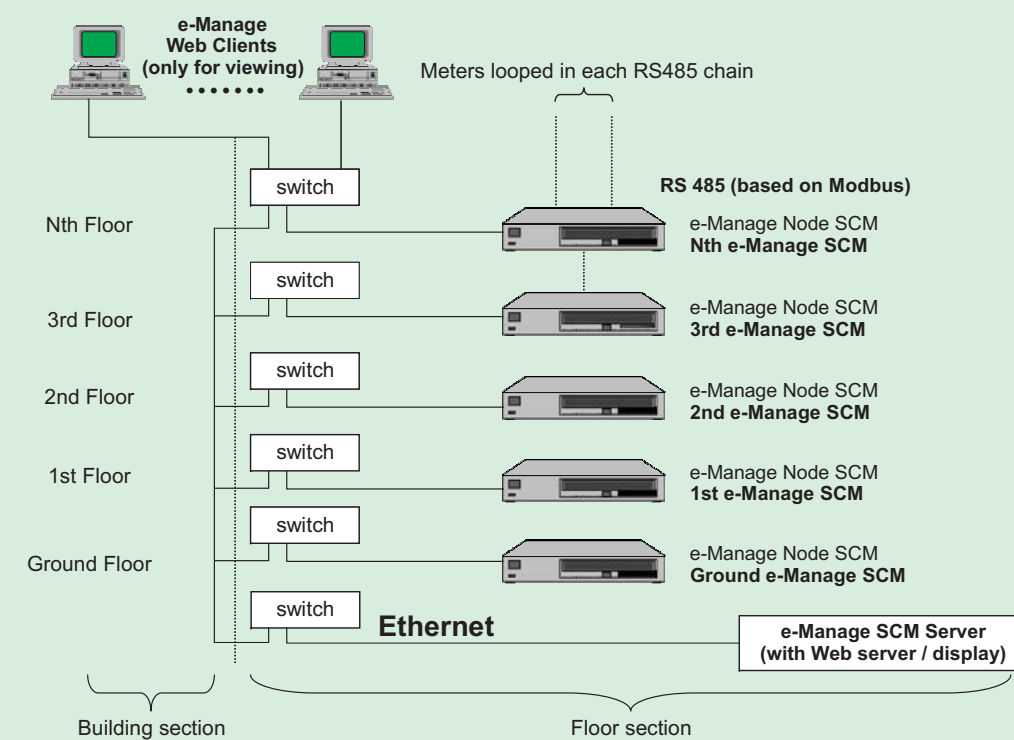


ER300P

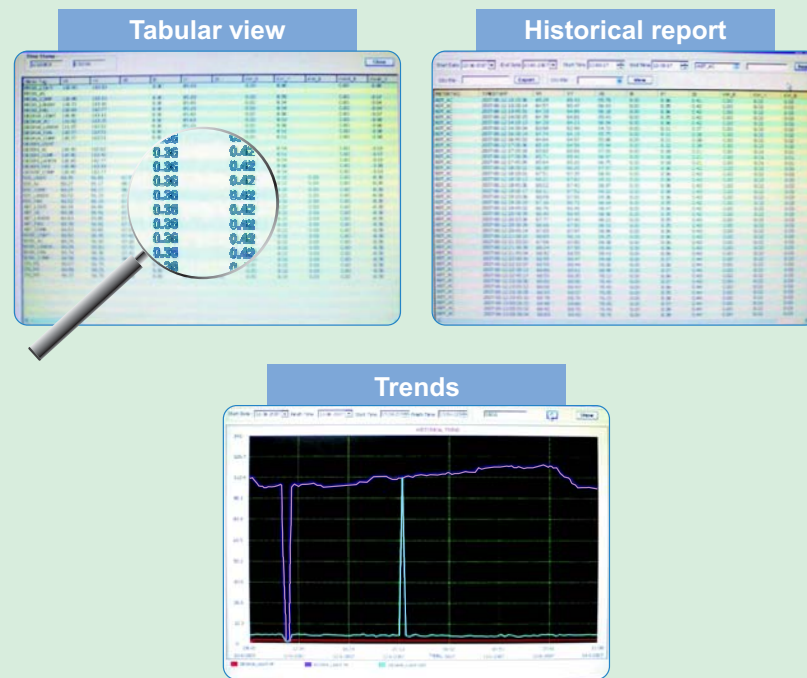
- LCD display with backlight
- kWh & kVArh pulse output LED
- Programmable CT/PT ratio (using optical interface)
- Measure instantaneous parameters - voltage, current, frequency, rising demand



Field Connection



Functionality & Customer Benefits



Benefits

- Configurable pages for field device look alike display
- Tabular view of parameter
- Configurable alarms parameter
- Can connect up to 40 Node SCM with a single Central SCM
- Configurable trend pages
- Number of pens per trend pages is five
- Real time trends for online monitoring
- Historical trends for offline analysis
- Remote daily report viewing through web server
- Remote tabular view of parameter through web server
- Windows XP look
- Data storage up to 75 days

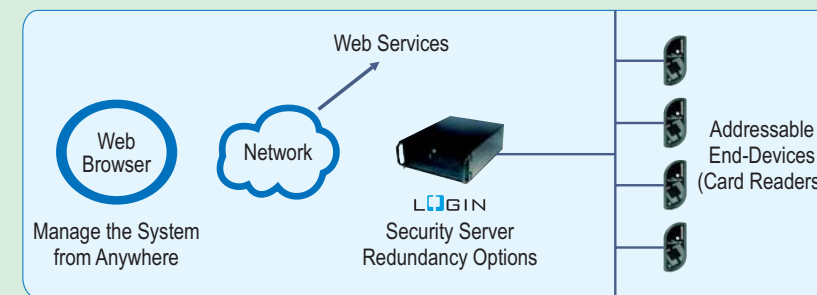


LOGIN

Introduction

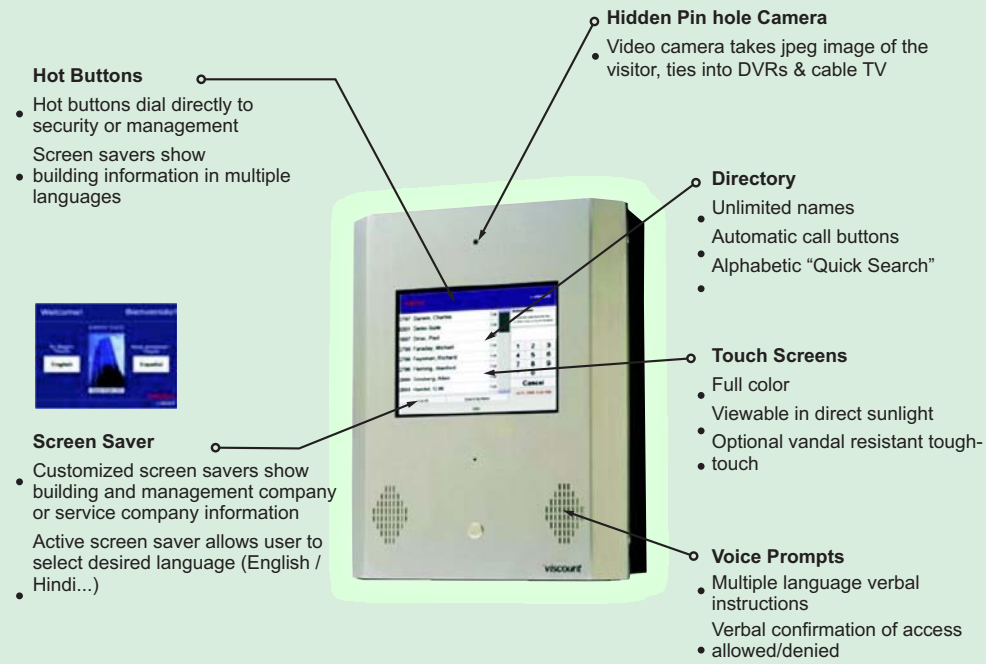
The increased flow of investments in India has triggered the need for world-class technological Building solutions which has encouraged Larsen & Toubro to provide an intelligent/advanced IP based Access Control System which is a new initiative to rationalize building security and control system.

L&T LOGIN, the latest IP based access control system works on a convergent platform which provides functionality with cost benefits and guarantees to be future-proof. The system is a web-based application provides security for individual building or group of buildings. Each tenant or manager can control their own spaces, in their own language from anywhere via internet.



Access Control Server

- Expand Login to control unlimited doors and elevators
- Used to program Login readers and panels
- Single server can control upto 170 readers
- Continuously check health of all readers



Proximity Readers

- Intelligent multi-drop proximity readers run using standard CAT5 cable
- Readers have 1 output, 2 inputs built-in to control door strikes
- On board power for magnetic lock
- Takes direct input from fire alarm panel to disable reader
- Polling instantly identifies reader problems, can email alarm conditions

Interface for Biometric Devices

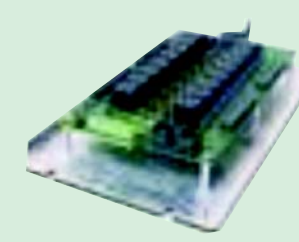
- Add any biometric device for higher security doors or entrances
- Prevents card duplication and theft
- Not recommended for unsupervised, external doors

Elevator Control

- 16 floors per module
- Limit card holders to certain floors
- Limit visitors to floor visited

Alarm Module

- 16 zones per module
- Burglar alarm shunt/override
- Monitor door openings / ajar / forced entry
- Attach exit devices, PIR's, glassbreak detectors



Benefits

A New Generation of Access Control

- Software based access control system
- Less hardware intensive - no control panel required
- Infinite number of doors per server (depending on the cable length for RS485 communication)
- Convergence instead of integration – one solution for access control, visitor management, elevator control and building communication
- Reduces cost of ownership
- Attach exit devices, PIR's, glassbreak detectors

L&T LOGIN Pedestals

- Full color touch screen or keypad use for telephone entry
- Built-in cameras store video images time/date visitor usage
- Used for gates, building lobbies etc
- Integrated kiosk applications

L&T LOGIN Proximity Readers

- 50 readers connect via ethernet to each Login server port
- Built-in system redundancy
- Self monitor problems
- Built-in I/O controls for door strikes & exit devices

L&T LOGIN Servers

- Eliminate requirement of control panel
- Server redundancy enhances system integrity
- Processes intercom, access control/alarm & video
- Direct LAN/Wan connections

L&T LOGIN Software

- Free web based programming
- UNLIMITED users
- Unique user programming
- Tracks calls, card access, video usage
- Full data backup/restore
- Flexible call, access video log search

L&T LOGIN Guard Stations

- Dial primary/secondary contact numbers
- Manage Login panels/card readers
- Takes Jpeg images of visitors in the building
- Remote activation of doors

TEBIS™ Live Life Freely

Introduction

With change in lifestyle, the desire for electrical devices at home such as lights, air conditioners, heaters and window shutters to be automated has increased. L&T has a solution in the form of Tebis for your home automation requirements. Tebis Lighting and Comfort solution amalgamates the above applications making home living more comfortable.

The choice of the future

By preferring Tebis for your home, you have chosen state of the art technology. The revolutionary system for home automation not only offers the latest and best technology but also has the advantage of continuously adapting to your changing needs. This flexibility helps minimize disturbance when adapting the installation to your changing lifestyle and also adds value to your property.

Control the Scenario Generation

You control everything around you so that you enjoy every moment of your life. Tebis memorizes scenarios combining all electric functions in your home (traveling time, lighting, cooling, shutters, warning systems, home cinema, watering of the lawn & so on). The desired functions start as you want from the place you choose. You are in full control of your surroundings.



Room Controller

Room controller is a device that groups 4 push buttons and a LCD display for information.

It includes :

- Central part will display date, time & local temperature
- 4 external zones corresponding to the four keys to identify the control associated with each key
- On / off scenario generation



Configuration tool

- A tool used for programming the entire Tebis installation
- Testing of the links and simulation
- Measurement of signal and noise level
- Copying data of an installation to Smart media card for later use while upgrading the project with additional software.



Time Switch

2-channel time switch with communication feature.

Control commands transmitted directly onto the EIB bus without the need for output controls.

- 7 days, 56 steps of program, minimum setting step of 1 minute
- Possible to program impulses (1 sec to 30 min)
- Automatic change of schedule for summer / winter



Output Modules - Dimmers

Universal dimmer with automatic load recognition.





Min/Max level local setting manual mode that allows dimming even when bus is disconnected.

Power rating specified at 45°C .

Available upto 1000 W in a channel.

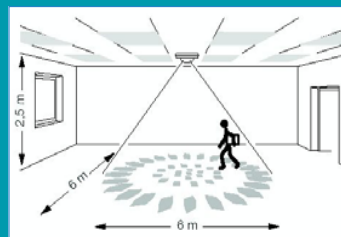


Presence / Movement Detectors

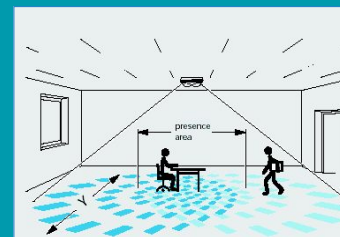
<p>EE 804</p>  <p>1 Channel 1 lens surface mounting type movement detector</p>	<p>EE 805</p>  <p>1 Channel 1 lens flush mounting type movement detector</p>
<p>EE 810</p>  <p>1 Channel 2 lens type Presence Detector</p>	<p>EE 811</p>  <p>2 Channel 2 lens type Presence Detector</p>

L&T offers you a complete range of building electricals and building automation solutions for your offices, commercial & residential requirements with the largest reach in the country. We offer end to end solutions, right from product to installation commissioning through a network of System Integrators. Down stream of transformer, we address all aspects of the electricals ranging from Power gear, Energy & Power Quality, Final distribution and Building Automation products for buildings with expert assistance in product selection and specification. Each product in our range carries the L&T insignia of reliability & assurance and is backed by prompt after-sales service through a wide network of service centres across the country. Therefore an ideal choice for Electricals and Automation for your Buildings.

There is difference between Movement detection & Presence detection



Movement detector is a single lens detector that detects relatively large movements. It is particularly intended for use in indoor applications with high traffic (movements) e.g. Corridors, Entrance halls, Shops or living room in house.



Presence detector is double lens detector detects minute movement (e.g. movement of hand while writing). It is particularly intended for use in indoor applications such as cabins, cubicles and small offices.