

# Smart Is In the Range



The entire solution-spectrum of Electrical Standard Products

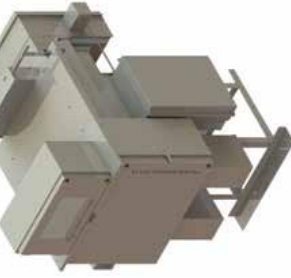
### Air Insulated Switchgear (Medium Voltage)

- Comprehensive range from 630A - 3150A, 12kV-36kV
- short circuit rating: 25kA - 50kA for 3 sec
- Internal arc classification AFLR up to 40kA for 1 sec and 50kA for 0.5 sec
- In-built anti-pumping feature
- Indoor type panel with ingress protection rating IP4X and above
- Metal clad, fully compartmentalised panel
- Horizontal isolation, horizontal draw-out and floor rolling trolley type VCB
- Panel readily extendable on both sides
- Loss of service continuity category is LSC2B
- Optional rear door/cover interlock
- True close door operation panel as per IEC 62271-200



### Design Verified Panel Assemblies

- Range up to 5000A
- Design verified assembly with Copper and Aluminum busbar system
- Compliance with global standard - IEC 61439-1 & 2
- Withstand capacity (Icw) up to 70 kA for 1 sec
- Available up to form 4B
- Internal arc compliance: 70 kA for 0.5 sec
- Certified for Seismic Zone-V
- Impact resistance compliance - IK10
- Ingress Protection up to IP54



### Ring Main Unit (RMU)

- Rating – 11kV 630A, 21kA for 3 second
- Wide range of combinations of Load Break Switch & VCB
- Both side extensions possible
- Manual or Motorised
- Optional metering cubicle
- Cable termination – rear/side
- Ingress Protection – IP54 (Enclosure), IP67 6F<sub>g</sub> Gas Tank
- Internal Arc Tested – 21kA for 1 sec

### Air Circuit Breakers

- Range: 400A to 6300A in 3P/4P (100%N), Manual/Electrical, Fix/Draw-out version, Optional 50%/200% Neutral, 50kA to 100kA, Icu=Ics=Icw for 1sec
- RoHS Compliant
- Superior Safety Features
  - Arc Chute Interlock ensures ACB closing only when all Arc Chutes are in place
  - Smart racking shutter ensures that ACB is racked-in/out only in "OFF" state
  - In-built Electrical & Mechanical Anti-Pumping prevents multiple breaker closures due to persistent closing commands
  - Releases with Password Protection ensure only authorised person changes the settings
  - Breaker terminal temperature monitoring & protection ensures health of the system
  - Double Short Circuit Protection provides two separate levels of time-based short-circuit protections
  - Variety of locks & Interlocks for versatile applications
- Quick System up-gradation
  - NRYB to RYBN configuration simplifies the bus-duct trunking with cost-effectiveness
  - Modular Plug & Play Communication and Metering Modules offer ease of flexibility, scalability and customisation of electrical systems
  - Basic to Advanced Protection Releases



### Sandwich Busbar Trunking System

- Current Rating: 400A to 6300A (Copper)
- 400A to 5000A (Aluminium)
- Rated insulation voltage: 1100V
- Maintenance-free block set joints
- Enclosure: GI or Aluminium
- Robust, safe & reliable solution
  - Class-F insulation with RoHS compliance
  - Ingress protection up to IP66
  - Certified for Seismic Zone-V
  - Tested for fire rating, flame propagation & fire resistance in building penetration



### Moulded Case Circuit Breakers

- Range : 16A to 1250A, 2P/3P/4P; 10kA to 100kA
- RoHS compliant
- No load-line bias, suitable for isolation
- Wide range of protection releases, thermal-magnetic, basic to advanced microprocessor based offering power metering, advanced protections & communication
- Plug & Play Modules:
  - Modbus Communication Module
  - Voltage Module offers lost of voltage, energy, power, frequency, power factor, maximum demand protections
  - Panel mounted display module offers comprehensive current, energy, power metering & trip history
- MCCBs for Special Applications: DC, motorized solutions for auto-transfer, motor back-up protection, SD versions for isolation, total selectivity solutions
- Wide range of common internal & external accessories



- Data communication with Power and Harmonics measurement
- High-end release with Unique Touch-Screen Navigation with Fault Waveform Oscillography
- ACBs for special applications, viz. sulphur-rich Harsh Environments (rH) and DG application
- Retrofit solution for CMC3 C-Power to Omega ACBs

### Motor Protection Circuit Breakers (MPCB)

- Range: 0.16A to 63A, up to 100 KA breaking capacity
- Short circuit and overload protection
- Positive isolation
- Phase failure sensitive
- Ambient temperature compensated
- In-built Padlock facility
- Smart links available for quick connection
- Wide range of common accessories across the range



### Sub-Main Distribution Boards (SMDBs)

- Ready-to-use solution with MCCB as in-circuit and multiple MCCBs as outgoing devices
- In-circuit MCCB ratings - 250A, 400A & 630A
- Outgoing MCCB ratings - 100A & 250A
- Compliance with IEC 61439-2
- DEKRA, ASTA Certified
- Addresses all power distribution requirements up to 630A in 4, 8, 12 & 16 ways
- Short time withstand current (Icw) of 36kA for 1 sec
- Optimum solution for commercial buildings including hotels, hospitals and educational establishments and infra segment



### Switch-Disconnector-Fuse Units

- Range: 32A to 800A, AC-23A in 2P/ 3P/ TPN and 4P versions
- Suitable for Cylindrical / DIN/Bolted fuse-link
- Available for 220V DC, 400V DC, 415V AC and 690V AC applications
- Door interlock and padlock facility
- High ground clearance provides safety to personnel
- Spacious SS enclosure version with inbuilt cable gland plate requires no separate cable end box
- SDFs & Fuses for special applications: sulphur-rich Harsh Environment (HE)
- Wide range of accessories

### Fuses

- Range:
  - Cylindrical fuse ranges from 2A to 63A
  - DIN fuse in the range of 63A to 800A in different sizes
  - Bolted fuse links from 2A to 630A – Also suitable for Harsh Environment (HE)
- High breaking capacity: 100KA for DIN type and 80KA for cylindrical and bolted fuse
- Low watt loss leading to Energy Saving
- Range of fuse bases



### Protection Relays

- Comprehensive range of motor, feeder, transformer and generator protection relays
- Motor protection relays for conventional MCCs and Smart/ IMCC applications
- Standalone relays for voltage monitoring, over current/earth fault protection and trip circuit supervision
- Flexibility of IDMT curves and time delay settings
- Test feature – helps in better maintenance
- Self-diagnostic feature – ensures complete reliability
- Trip history – helps in fault analysis
- Communication capability – Modbus RTU, Modbus TCP/IP, Profibus



### Automatic Source Transfer Solutions

- Automatic source transfer controller for changeover of power supply on interruption
- Source changeover on power failure, phase sequence change, frequency change, phase loss, asymmetry or low/high voltage
- Can be used for utility-utility, utility-genset or genset-genset changeovers
- With LCD display for monitoring of parameters
- Programmable inputs and outputs
- Range of automatic source transfer solutions with ACBs, Motorised MCCBs, Motorised Changeover, Contactors



### 3-Pole Power Contactors

- Range: 6A to 820A AC-3 duty with coils suitable for AC 50/60 Hz and DC
- Vacuum Contactors with high electrical life
- RoHS compliant
- In-built surge suppressor - prevent voltage surges in control supply
- Terminal shrouds for power terminals are finger-proof
- Compact dimensions: Saves precious panel space
- Low VA consumption - reduces cost of control transformer
- DIN rail mounting up to 110A for faster installation
- Box clamps - enable lugless termination for faster installation
- Four terminal coil - for ease of control wiring and faster installation
- Smart links for quick connection and faster installation
- Accessories - mechanical latch, Add-on blocks, MIL Kit, Connecting Links
- Spares for entire range



### Changeover Switches

- Range: 63A to 2000A, AC-23A, 4P in manual/auto-manual motorised/SD versions
- High mechanical & electrical life
- Site convertible fuse version for open execution
- Site convertible dual-shaft position (centre & side)
- Phase barrier & terminal shrouds as standard, enhancing safety
- Staggered terminals for ease of termination
- Flippable handle for ease of operation
- Spacious SS enclosure version requires no separate cable gland box
- Padlocking to avoid unauthorised access

### Overload Relays

- Range: 0.23A - 650A
- Single Phasing protection
- Visual status indication
- Sealable transparent cover to avoid tampering
- Built-in 'START' and 'OFF/RESET' push buttons
- Auto and manual reset modes
- Ambient temperature compensation: -5°C to +55°C
- Start, Trip and Alarm contacts
- Accessories like Mechanical Reset Cord, Separate mounting kit



### Four-pole contactors

- Range: 16A to 800A AC-1 duty
- Coils suitable for 50 Hz as well as 60 Hz, AC/DC coil options available
- Suitable for auto transfer solutions
- Wide operating band to sustain supply fluctuations
- Compact mechanical interlock arrangement up to 80A
- Suitable for DG's up to 575 kVA



### iMCC (Intelligent Motor Control Center) Relays

- Current & voltage-based metering and protection in a single compact unit
- Enhanced motor control, interlocking and logic building
- OLED Display: 170° viewing angle, brighter pixelation
- Metering, event recording and trip recording helps in fault analysis, ensure lower down time & increase plant efficiency
- Communication capability: Modbus RTU, Modbus TCP/IP, Profibus
- 6 DI & 4 DO in base unit
- In-built analog output & RTD/PTC inputs
- Conformal coating



### Capacitor Duty Contactors

- Range : 3 to 100 kVAR
- With de-latching resistors to limit capacitor in-rush current
- Separate termination of damping resistors – avoids damping resistor becoming loose
- In-built surge suppressor – prevents voltage surges in control supply and protects APFC relay contacts
- Encapsulated resistor assembly to prevent flash over of resistors
- Terminal shrouds are finger-proof
- Common accessories and spares as power contactors



### Power Factor Correction Capacitors

- Range: Standard Duty, Heavy Duty, Super Heavy Duty and Ultra Heavy Duty Capacitors
- Available up to 50 KVAR, 440V/480V and 525V AC
- Safety Features – Over pressure disconnect, self-healing, finger-proof terminals
- Operating losses – less than 0.45 WKVAR
- Ultra-Heavy Duty Capacitors with Max ambient temperature up to 70°C
- Ultra-Heavy Duty Capacitors with operating life up to 3 lakh hours



### Thyristor Switching Module

- Range: 10, 25 and 50 kVAR ratings
- Without fan for greater reliability
- High Peak Inverse Voltage (PIV) - 2.2 kV
- Lower operating losses reduce energy consumption
- With in-built auto thermal cut-off for thermal protection

### etaSYS Standard APFC Panels

- Range : 20 to 500 kVAR covers the typical requirement of APFC panel ratings
- Offers optimal step resolution which would be suitable to all types of industries/buildings
- Pre-selected switchgear with accurate ratings offers reliable operation, protection and isolation
- Accurate combination of capacitor and reactor offers better protection against harmonics
- IP42 panels



### Detuned Reactors

- Range: 5 kVAR to 100 kVAR
- Copper and Aluminum wound reactors
- Lower operating losses – 3 to 5 W/KVAR
- High linearity - 1.8 times the rated current, 200% linearity also available
- With in-built thermal cut off



### Active Harmonic Filters

- Range: 30A to 600A in 3-Ph 3-W and up to 300A in 3-Ph 4-W versions
- Mitigates 2nd to 50th order Harmonics
- Reduces THD within IEEE limits
- Improves power factor
- Load balancing and neutral current reduction
- Any number of units can be connected in parallel
- 7 inch TFT touch screen for monitoring and diagnostics
- Modular design for easy maintenance and upgradation
- Various alarms for easy diagnostics



### Single Function Meters

- Single function meter 1-Ph/3-Ph – Voltmeter, Ammeter, Frequency meter, VAF meter
- Accuracy Class 1 and Class 0.5 in LED and LCD display
- Field programmable CT/PT ratio
- Site selectable 1A/5A
- In-built selector switch for 3-phase models
- Site selectable for 3-Ph, 4-W, 3-Ph 3-W, 1-Ph



### Dual Source Meters

- Accuracy Class 1 and Class 0.5 in LED and LCD display
- Separate registers for EB and DG energy and load hours
- Automatic switching of display based on input source as EB or DG through DG sensing input
- Site selectable for 3-Ph, 4-W, 3-Ph 3-W, 1-Ph
- RS-485 option



### Multifunction Meters

- Available with multiple parameters including Basic, Power, Energy, THD, Max Demand, Import-Export
- Four row LED and LCD versions
- Accuracy Class 1, 0.5, 0.5S, 0.2, 0.2S
- Site selectable for 3-Ph, 4-W, 3-Ph 3-W, 1-Ph
- Data logging provision
- Individual harmonics for voltage and current available up to 31st harmonics
- Analog and digital inputs and outputs available
- Time-of-day provision
- RS-485, Ethernet option
- MD controller with 4 relay outputs for proper load control



### SmartComm Energy Management Solution

- Glimpse of entire energy consumption in the plant on a dashboard
- Quick understanding of energy consumption of today compared to yesterday, this month consumption compared to last month as well as Y-o-Y energy comparison
- Easy navigation through the modules
- All parameters in the device can be monitored from the software
- Multiple combination of devices and parameters for analysis
- Various spreadsheet reports with charts
- Specific energy consumption report
- Access to features defined by user levels
- L&T meters preconfigured in the software
- Provision for auto emails and SMS



### Energy Meters

- Accuracy Class 1 and Class 0.5 in LED and LCD display
- True RMS measurement
- Positive energy accumulation even with CT polarity reversal, reverse lock programmable
- User programmable password protection
- CT/PT ratio can be site programmable
- Old register to store the previously cleared energy value and its corresponding load hours
- Site selectable 1A/5A
- Sealing arrangement provision
- RS-485 option



### SmartComm Integrated Solution

- Real-time communication for Monitoring, Control & Diagnostics generates immediate reports
- Single platform integrating entire range of L&T communicable products with option of integrating third party products
- Supports multiple protocols and drivers like Modbus, TCP/IP, Modbus RTU, BACnet, IEC 61850, DeviceNet, Profibus & Profinet
- Customised SID Creation by user based on IEC 617-2-8 symbol library
- Graphical or mimic view for enabling operator level users to understand reports easily
- Real-time & historical trends for user-selectable parameters
- Fully customized reports with user-created templates
- System provides various alarms & events – alerts & acknowledgement
- Email/SMS facility for predetermined events/schedules/alerts user management





### Distribution Boards

- Perfect blend of superior aesthetics, contemporary feel and subtle presence that gels harmoniously with a décor
- Wide range with standard and customised offering
  - SPN ITPN • Per Phase Isolation (PPI) • VTPN- MICB, MCCB
  - Incomer • Phase Segregated • Phase Selector • Flexi
  - Enclosures • Plug & Sockets • Cable End Boxes
- Specially designed 'user interface points' offer:
  - Total safety: Shrouded N-bars, insulated bus bars, star washers for effective earthing
  - Installation convenience: Separately packed door-frame-shield, removable chassis, anti-insertion marking to achieve perfect fit for flush-mounted DBs, door reversibility
  - Ease of operation and maintenance: Cement spill protector to avoid cement splashes, retainer screws for shield, holding knobs on shield for easy removal
- RoHS compliant
- Compliance with IEC 61439-2, IS 8623



### Wiring accessories – Oris and Entice

- Two ranges – Oris and Entice
- High grade polycarbonate material for higher durability and safety
- Ribless design – No dust collection between switches
- Stylish rounded contours and glossy finish – Easy to clean
- Vertical mounting option – flexibility to mount in narrow spaces
- "Intelli - I" Night locator – helps to locate switches in the dark
- Long life – Up to 3 lakh switching operations assured
- 360° fan regulator knob – prevent knob breakage
- Multimedia smart connectors range – HDMI, USB, VGA and RCA connectors
- Modular USB chargers – charge your mobiles in smarter and convenient way
- Range includes – switches, sockets, fan regulators, bell pushes, motor starter, data sockets, modular plates, USB charger, multimedia connectors, plug tops, spike guards, door bells, lamp holders and hotel range



### Wires & Flexible Cables

- House wires available in Flame Retardant (FR), Flame Retardant Low Smoke (FRLS), Zero Halogen Flame Retardant (ZHFR) insulations from 0.5 sq mm to 16 sq mm
- Flexible cables range from 0.5 sq mm to 400 sq mm, single-core to four-core



## Agricultural Electrical Products



### Starters

- Direct-On-Line Starter range 0.5 HP to 20 HP
- Star-Delta starter ranges 6 HP to 35 HP
- 1-Phase starter ranges 0.125 HP to 3 HP
- Semi-Automatic Star-Delta and Fully-Automatic Star-Delta configurations available
- Wide band coil for low voltage operation range of 180V to 440V
- Wide range of spares



### Flat Cables

- For submersible pump applications
- Thin and thick - insulation options
- Range from 1 sq mm to 35 sq mm, 3 core



### Controllers

- 3-phase Controller ranges from 3 HP to 75 HP
- Auto re-start feature on power restoration
- Adjustable ON delay time up to 5 minutes for starting the pump after restoration of the power
- Quick protection against single-phasing condition
- Unique Dual Meter – voltage and ampere readings in one meter
- 1-Phase controllers ranges from 0.5 HP to 7.5 HP with start and run MFD Capacitors
- Wide range of spares



### Power factor Correction Capacitor

- Range: 1KVAR to 20KVAR
- Available as box capacitor, cylinder capacitor and cylinder capacitor with clamps
- With pressure switch disconnecter for protection against over current or overvoltage



### GSM Based Starter Solution

- GSM based module for operation of starters and controllers from remote location
- Communication with IVRS in regional languages
- 3 users can control the starter and controller through their mobiles
- Power fail and feedback SMS in regional languages
- 4 different 'times of day' can be set in a day for pump operation
- Controls daily operations of pump for pre-defined periods avoiding wastage of water & electricity
- Ease of operation through M-POWER+ mobile app

