SSB™ – Smart Switch Board

Remote protection, isolation, and faster fault handling

SSB™ (Smart Switch Board) is a pole-mounted intelligent secondary distribution cabinet that enables switching and supervision of 400 V distribution network sections both locally and via remote control (SMA/SCADA). With its built-in measurement and event-logging functions, it supports grid reliability, loss reduction, and proactive grid operation.

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SSB – Technical Specifications

Key Advantages

- Remote manual switching (open/close) via SMA/SCADA, with full support for local operation as well.
- Continuous measurement of current, voltage, and power-quality parameters (e.g., THD, power factor), including direction-correct energy management.
- Time-stamps, storage of events, and alarms stored in non-volatile memory (minimum 30 days).
- Rugged design capable of handling critical network conditions such as short circuits, earth faults, and overvoltage events.
- Expandable I/O, self-test functions, and on-site LED status indicators for rapid fault diagnostics.
- Integrated lightning and surge protection (T1 + T2).

Switching and Control

- Local manual and remote (SMA / SCADA) ON/OFF switching capability
- Two-position main switch (“0” – service/de-energized, “1” – operation) with clear and unambiguous labeling
- Phase-by-phase motor-operated circuit breakers for individual switching
- Two-bit switching commands and status indications locally and remotely

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Protection and Operational Safety

- Design compliant with MSZ EN 60947 and MSZ EN IEC 61439 standards
- Overcurrent and short-circuit protection with discrimination and two-stage protection logic
- Monitoring of neutral and PEN conductor current (air-core current transformer + current monitoring relay)
- Maximum disconnection time of 5 seconds, independent of settings
- Adjustable rated current (min. 0.8–1.25×, preferably 0.8–1.6× range)
- Protection against nuisance tripping caused by high inrush current loads and leakage currents

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Automated Reclosing (Slow Automatic Reclosing – LVA)

- Automatic reclosing configurable per phase, per outgoing feeder, and per cycle
- Adjustable delay between 1 second and 30 minutes, with 1-second resolution
- Automatic reclosing disabled in case of short circuit
- Local and remote enabling / blocking of LVA
- Automatic LVA blocking linked to protection events
- “LVA blocked” local LED indication and SMA/SCADA remote signalling

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Status Indication and Logging

- Mechanical local position indication of switching status
- Detailed event and fault logging with timestamp in non-volatile memory (≥30 days)
- Logged signals: circuit breaker positions, protection operations, LVA status, communication faults, supply loss, and restoration
- Built-in, synchronizable internal clock for high-precision timestamping

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Measurement Functions

- Three-phase comprehensive power measurement (e.g., power factor, THD)
- Voltage and current measurement on all phases and the neutral conductor
- ≥10 ms sampling rate, 1-minute averaging and data transmission
- Directional energy data (consumption / generation) per phase

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Communication and Integration

- 4G/LTE mobile communication
- Modbus RTU / TCP (SMA) and IEC 60870-5-104 (SCADA), optional TLS encryption
- Support for SmartBox 1.0 or equivalent communication module
- Remote data access and firmware update without a dedicated on-site computer
- Automatic reconnection after network interruption, with event logging

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Construction and Environmental Resistance

- Aluminum distribution cabinet, IP44 (closed) / IP2X (open) protection rating
- Operating temperature range: -30 °C to +70 °C
- Modular design for fast maintenance and easy replacement

Power Interruption and Commissioning

- Retention of all settings and data in case of power supply loss
- Minimum 3.5 minutes of uninterrupted operation without battery
- Logging of outage and restoration events
- Local and remote commissioning without a dedicated on-site computer

Parameter	Value / Description
Rated current (In)	max. 400 A
Control power supply	200–260 V AC; power consumption ≤ 30 W
Communication	4G/LTE modem (SIM slot), Ethernet, USB; Modbus RTU/TCP; IEC 60870-5-104; SNTP
Switching functions	Remote manual switching from SMA/SCADA; local control; LVA (Slow Automatic Reclosing) enable/disable; automatic reclosing support
Measurement functions	3 phases + N full power measurement (PF, THD, etc.); sampling ≥ 10 ms; 1-minute averaging; data transmission every 1 minute; directional energy measurement
Voltage measurement range	Uf = 70–270 V RMS
Event logging	Timestamp resolution 0.1 s; storage of signals/events in non-volatile memory ≥ 30 days
Backup operation	Min. 3.5 minutes for full controller; battery use to be avoided (no electrochemical energy storage)
Protection rating & mechanical resistance	IP44 (closed); IP2X (open); IK10
Surge protection (SPD)	T1+T2; 12.5 kA (10/350 µs, L-PEN); 3P; Up ≤ 1.5 kV