Accelerate your grid modernization with smart RMUs

Ring main units with smart grid-ready feeder automation

schneider-electric.com/smart-rmu
> Take charge of your grid evolution

> Smart RMUs: Simple, flexible, and digital

> One solution, comprehensive capabilities

> Technical specifications

For deployment in the following sectors:

- Utilities
- Wind
- Solar
- Airports
- Railway
- Marine
- Buildings
- Data centers
Take charge of your grid evolution
The smart path to future-ready grids

With electricity generation growing more decentralized by the day, network management is becoming increasingly complex. Operators need to ensure safe, reliable energy at optimal costs while tackling the grid-evolution challenge.

Schneider Electric offers future-ready grid management solutions, helping you bring innovation to every level of your business. Whether your electrical distribution network runs overhead or underground, our simple, flexible, and digital solutions allow you to easily manage distributed energy resources and control loads as well as optimize CapEx and OpEx.

The outcome? A smoother transition to a future-ready grid.
Smart RMUs: Seamless integration of RMU and RTU

The smart ring main unit (smart RMU) is an innovative solution that makes it easier for you to answer the evolving challenges of secondary electrical distribution.

Building on our proven RMUs – the RM6, FBX, and Ringmaster, Schneider Electric’s smart RMUs are seamlessly integrated with the smart grid-ready Easergy T300 remote terminal unit (RTU).

Customizable to your needs, the smart RMU offers a wide range of basic and advanced capabilities.
Smart RMUs: Simple, flexible, and digital
Smarter together, throughout the asset life cycle

With a smart RMU, you have a comprehensive, all-in-one solution that saves you time and costs – from design and implementation through to operation and maintenance.

Simple

- The all-in-one package:
  - Simplifies specification and ordering
  - Offers comprehensive functional capabilities, including voltage loss detection
- Seamless integration of the RMU, RTU, and various sensors reduces installation, maintenance, and operational costs

Flexible

- A customizable solution, providing numerous upgrade or retrofit options to optimize the Total Cost of Ownership (TCO)
- Modularity and a compact footprint allow configurations tailored to your substations
- Ideal for practically any application, from integrating distributed generation to managing energy growth

Digital

- Native smart grid-ready communication tools:
  - Enable remote monitoring of transformers and substations
  - Enable remote asset management including firmware update
- Remote control and wireless communication brings greater safety to personnel

Grid evolution made easier  Smarter together  Comprehensive capabilities  Technical specs
Best-in-class technologies in one solution

Built on decades of electrical distribution experience, the smart RMU is robustly engineered to provide superior safety and reliability – even in the harshest environment.

Easy to install and operate, a fully SF6-insulated smart RMU is:

• Embedded with safety features, such as rotating arc technology* and visible earthing contact

• Protected by standard or custom metal enclosure for indoor or outdoor* installation

• Enriched with smart interfaces for self-powered relays, fault passage indicators (FPIs), and sensors

• Compliant with the latest IEC standards for connectivity, automation schemes, and cybersecurity

*Available for Ringmaster and RM6

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Comprehensive capabilities

Technical specs
Proven RMUs with advanced communication tools

RM6
1,800,000+ Modules installed

FBX
350,000+ Modules installed

Ringmaster RMU
100,000+ Modules installed

Easergy T300

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Comprehensive capabilities
Technical specs
One solution, comprehensive capabilities
Comprehensive capabilities to address your challenges

Simple, flexible, and digital, the smart RMU provides extensive capabilities of a secure, connected RMU while reducing the deployment time and costs of your distribution network operation. Smart RMUs from Schneider Electric help you:

- **Improve**
  - energy availability

- **Maintain**
  - energy quality

- **Deliver**
  - efficiency

- **Manage**
  - costs

- **Optimize**
  - assets

- **Boost**
  - cybersecurity
Improve availability and maintain energy quality

Improve availability indices (SAIDI, SAIFI)
• Detect directional MV faults by current and voltage measurements
• Reconfigure the network automatically after a fault (in centralized, semicentralized or decentralized architectures)
• Detect broken MV phase/line and bridge
• Anticipate and detect neutral LV cutout

Reduce MV and LV outage time

Maintain quality: deliver MV and LV grid stability
• Measure MV and LV voltage accurately in real time for Volt/VAR optimization
• Optimize loads by reconfiguring network
• Optimize power flow on networks with or without distributed generation
• Monitor MV and LV power quality for intermittent distributed generation, in compliance with EN 50160

Integrate distributed and intermittent generation

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Technical specs
Deliver efficiency while managing costs

Optimize networks to respond to increasing energy demand

• Monitor transformers and substations to optimize asset management
• Manage load shedding and peak shaving
• Reduce both technical and nontechnical losses
• Optimize energy efficiency with load/flow analytics

Accommodate energy growth

Reduce installation, operation, and maintenance expenditures

• Optimize investment with flexible, modular, and interoperable solutions tailored to your needs
• Reduce setup time with smart wireless sensors and pre-installed wiring
• Reduce out-of-hours site visits with condition-based maintenance
• Save costs on IT management (firmware, database, and cybersecurity) by using a single platform for multiple applications

Reduce installation and operational costs
Optimize assets and boost cybersecurity

Extend equipment life through analytics and robust design

- Reduce transformer faults with aging analysis based on temperature and load
- Reduce equipment wear and tear with condition-based maintenance
- Get a longer service life in harsh environments thanks to robust design

Defend against malicious software and unauthorized access

- Compliance with IEC 62351 and IEEE 1686 role-based access control (RBAC)
- Help secure SCADA, local access (LAN and Wi-Fi)
- Secure access point supporting customer in NERC CIP compliance
- Adherence to Achilles Practices for equipment security

Extend equipment life

Protect data, equipment, and processes
Technical specifications
## RM6 ring main unit

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated system voltage</td>
<td>12 – 24 kV</td>
</tr>
<tr>
<td>Highest system voltage</td>
<td>12 – 24 kV</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Rated short-time withstand (main and earth)</td>
<td>20 kA 3 seconds</td>
</tr>
<tr>
<td>Peak withstand current</td>
<td>2.5 × 20 kA IEC</td>
</tr>
<tr>
<td>Circuit breaker rated load current</td>
<td>200/630 A</td>
</tr>
<tr>
<td>Installation</td>
<td>Indoor/outdoor (please consult us)</td>
</tr>
<tr>
<td>Operation</td>
<td>Manual/motorized</td>
</tr>
<tr>
<td>Switch rated load current</td>
<td>630 A</td>
</tr>
<tr>
<td>Rated busbar current</td>
<td>400/630 A</td>
</tr>
<tr>
<td>Lightning impulse withstand voltage</td>
<td>12 kV – 75 kVp</td>
</tr>
<tr>
<td></td>
<td>17.5 kV – 95 kVp</td>
</tr>
<tr>
<td></td>
<td>24 kV – 125 kVp</td>
</tr>
<tr>
<td>Power frequency withstand voltage</td>
<td>12 – 28 kV 1 minute</td>
</tr>
<tr>
<td></td>
<td>17.5 – 38 kV 1 minute</td>
</tr>
<tr>
<td></td>
<td>24 – 50 kV 1 minute</td>
</tr>
<tr>
<td>Internal arc</td>
<td>20 kA AFL (Bottom exhaust)</td>
</tr>
<tr>
<td></td>
<td>16 kA AFL (Rear exhaust)</td>
</tr>
<tr>
<td>Protection</td>
<td>Fuse/CB/relay (Integral self-powered)</td>
</tr>
<tr>
<td>Key</td>
<td>CB: Circuit breaker</td>
</tr>
<tr>
<td></td>
<td>SW: Switch mechanism</td>
</tr>
<tr>
<td></td>
<td>ES: Earth switch</td>
</tr>
<tr>
<td>Rated short-time withstand (main and earth)</td>
<td>20 kA 3 seconds</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
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<td>Rated busbar current</td>
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<tr>
<td></td>
<td>24 – 50 kV 1 minute</td>
</tr>
<tr>
<td>CB operating duties/cycle</td>
<td>3 min-CO-3 min-CO</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>SW: M1 = 1000 ops</td>
</tr>
<tr>
<td></td>
<td>ES: M0 = 1000 ops</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>SW: E2 for switch</td>
</tr>
<tr>
<td>Earth switches</td>
<td>E2</td>
</tr>
</tbody>
</table>
### FBX ring main unit

**Up to 5 functional units per cubicle: 630 A CB OCO**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated system voltage</strong></td>
<td>12 – 24 kV</td>
</tr>
<tr>
<td><strong>Highest system voltage</strong></td>
<td>12 – 24 kV</td>
</tr>
<tr>
<td><strong>Rated frequency</strong></td>
<td>50/60 Hz</td>
</tr>
<tr>
<td><strong>Rated short time withstand</strong></td>
<td>(main and earth)</td>
</tr>
<tr>
<td>(16/20 kA 3 seconds)</td>
<td></td>
</tr>
<tr>
<td><strong>Peak make factor</strong></td>
<td>2.5 x 20 kA IEC</td>
</tr>
<tr>
<td><strong>Rated busbar current</strong></td>
<td>630/1,250 A</td>
</tr>
<tr>
<td><strong>Lightning impulse withstand voltage</strong></td>
<td>12 kV – 75 kVp</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td><strong>Power frequency withstand voltage</strong></td>
<td>12 – 28 kV 1 minute</td>
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<tr>
<td></td>
<td>17.5 – 38 kV 1 minute</td>
</tr>
<tr>
<td></td>
<td>24 – 50 kV 1 minute</td>
</tr>
<tr>
<td><strong>CB operating duties/cycle</strong></td>
<td>0-3 min-CO-3 min-CO</td>
</tr>
<tr>
<td></td>
<td>0-0.3 sec-CO-15 sec-CO</td>
</tr>
<tr>
<td><strong>Mechanical endurance</strong></td>
<td>CB: M2 – 2,000/10,000 ops</td>
</tr>
<tr>
<td></td>
<td>SW: M1 – 1,000 ops</td>
</tr>
<tr>
<td></td>
<td>ES: M0 – 1,000 ops</td>
</tr>
<tr>
<td><strong>Electrical endurance</strong></td>
<td>CB: E2</td>
</tr>
<tr>
<td></td>
<td>SW: E3</td>
</tr>
<tr>
<td><strong>Earth switches</strong></td>
<td>E2</td>
</tr>
<tr>
<td><strong>Internal arc</strong></td>
<td>AFL: 25 kA 1 second</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>Fuse/CB/relay (Integral self-powered)</td>
</tr>
<tr>
<td><strong>Key</strong></td>
<td>CB: Circuit breaker</td>
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</table>

- CB: Circuit breaker
- SW: Switch mechanism
- ES: Earth switch
# Ringmaster ring main unit

**Rated system voltage**
- 13.8 kV

**Highest system voltage**
- 13.8 kV

**Rated frequency**
- 50/60 Hz

**Rated short time withstand (main and earth)**
- 21 kA 3 seconds

**Peak withstand current**
- $2.5 \times 21$ kA IEC

**Circuit breaker rated load current**
- 200/630 A

**Installation**
- Indoor/outdoor (IP54), extensible/non-extensible, freestanding/transformer mounted

**Operation**
- Manual/motorized

**Switch rated load current**
- 630 A

**Rated busbar current**
- 630 A

**Lightning impulse withstand voltage**
- 95 kVp

**Power frequency withstand voltage**
- 38 kVrms for 1 minute

**CB operating duties/cycle**
- 0-3 min-CO-3 min-CO

**Mechanical endurance**
- CB: M1 = 2,000 ops
- SW: M2 = 5,000 ops
- ES: M0 = 1,000 ops

**Electrical endurance**
- CB: E2 for non-auto reclose duty
- SW: E3

**Earth switches**
- E2

**Internal arc (patented rotating arc technology)**
- Gas enclosure: AFLR, 21 kA 1 second
- Cable box: AF, 13.1 kA 1 second

**Protection**
- Fuse (TLF)/relay (Integral self-powered)

**Dimensions**
- H × W × D: 1320 × 590 × 771 mm

**Weight**
- 592 kg (freestanding)

**Key**
- CB: Circuit breaker
- SW: Switch mechanism
- ES: Earth switch
Easergy T300

Easergy HU250
- Head unit communication gateway
- Local and remote communication
- Cybersecurity management
- Configuration management

Easergy SC150
- MV switchgear controller
- MV monitoring
- Advanced MV fault detection

Easergy LV150
- LV incoming and transformer monitoring and power measurement

Easergy PS50
- Backup power supply with battery management

Switch control unit
LV monitoring unit
Power supply

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Sensors for the smart RMU

The smart ring main unit includes a set of fully integrated sensors for voltage, power, current, and temperature monitoring. For faster and simpler on-site assembly, the sensors are pre-installed where possible (due to application some sensors are supplied in kit form).
Sensors overview

**LPVT**
- Voltage and power measurement
- Power quality
- Fault passage indicator (FPI)
- CI0, 5, compliant with IEC 60044-7

**VPIS VO/VDS VO**
- Voltage indication for FPI or automation

**CT**
- Current measurement
- Fault passage indicator (FPI)
- Power measurement
- CI3 and CI1

**TH110 thermal sensors**
- Battery-free
- Wireless communication
- High performance
- In-contact measuring point
- Remote monitoring and alarming
- Easy installation
- Compact footprint

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**Comprehensive capabilities**

**Technical specs**
To learn more about our smart RMUs, visit

schneider-electric.com/smart-rmu