

Technical Specifications

Electrical

Maximum Voltage Injection ⁽¹⁾ ±2830 V RMS @ 60 Hz or @ 50 Hz

Maximum Voltage (Corona-free) 550 kV RMS line-to-line

Minimum Current for Monitoring ⁽²⁾ 50 A RMS

Power Powered by line current

Minimum Current for Injection ⁽²⁾ 100 A RMS

Physical

Mass 16000 lbs (7257 kg)

Environmental

Operating Ambient Temperature Range -40°F to 122°F (-40°C to 50°C)

Dimensions See Figure Above

Storage Temperature Range -40°F to 122°F (-40°C to 50°C)

Conductor Size Capacity Agnostic

Condensing Operating Humidity Range 5% to 100%

Mounting ⁽³⁾ Deployed in a bank or suspended from structure via insulators

Maximum Sustained Rain 4.0 in/hr (102 mm/hr)

Cooling Liquid-cooling interface between power semiconductors and redundant-fan-equipped liquid-to-air heat exchangers using redundant pumps all at line potential

Communication

Communication Architecture EMS integration via PowerLine Gateway™ located at substation

Standards

Software and Firmware IEC 61508 SIL-2 compliant

Mesh Communication Security Features Multilevel ISM band wireless protocol optimized for fast telemetry. Protocol uses SHA-256 to ensure cryptographic integrity of all messages while supporting full observability by utility firewalls

Electrical Connections ANSI C119.4

Sensor Accuracy

AC Line Current ± 3 %

Intrusion Protection IEC 60529, IP 54

SmartValve Current Ratings

Model	Injection Mode Continuous Current Rating (A RMS)	Monitoring Mode Continuous Current Rating (A RMS)	Maximum 2-Hour Emergency Current (A RMS)	Fault Current Rating (kA RMS for 1 s) ⁽⁴⁾	Peak Fault Current (kA) ⁽⁵⁾	
					60 Hz	50 Hz
<i>SmartValve 10-3600i-63</i>	3600	4000	4320	63.0	164.0	158.0
<i>SmartValve 10-3600i-50</i>	3600	4000	4320	50.4	131.0	126.0
<i>SmartValve 10-3600i-38</i>	3600	4000	4320	38.0	98.8	95.0
<i>SmartValve 10-3600i-25</i>	3600	4000	4320	25.2	65.0	63.0
<i>SmartValve 10-3600i-12</i>	3600	4000	4320	12.6	32.0	31.5

Notes:

- Maximum of the fundamental of the output voltage for an individual unit. Total voltage injection determined by the number of units per phase.
- In Monitoring Mode, the SmartValve is bypassed and does not inject voltage, while telemetry data is still transmitted. In Injection Mode, the SmartValve injects voltage in series with the line and telemetry data is transmitted.
- SmartValves are deployed with a variety of methods, including individually mounted on dedicated transmission towers or mounted on top of insulators in banks or deployed as part of the Mobile SmartValve Unit.
- Fault current ratings for other durations can be provided upon request.
- Per IEC 62271-1 and IEEE C37.32, a DC time constant of 45 ms covers the majority of cases and corresponds to a rated peak withstand current equal to 2.5 times the rated short-time withstand current for a rated frequency of 50 Hz and for a rated frequency of 60 Hz it is equal to 2.6 times the rated short-time withstand current.

About Smart Wires

Based in the San Francisco Bay Area, with offices in the United Kingdom, Ireland, and Australia, Smart Wires is the leader in grid optimization solutions that leverage its patented modular power flow control technology. Driven by a world-class leadership team with extensive experience delivering innovative solutions, Smart Wires partners with utilities around the globe to address the unique challenges of the rapidly evolving electric system.

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