SMP I/O
For Today’s Substations

Today’s substation automation projects require RTUs that feature seamless network integration and minimized cabling. The SMP I/O helps trim down costs and save time by reducing both required wiring and configuration.

Substation Grade
- Ensures data integrity between the data point and the control center
- Installs directly in relay racks or fixed to any type of surface for distributed, cable-saving architecture
- Monitors and controls up to 34 points, including analog values
- Can operate relays directly – high load carrying capability reduces the need for interposing relays
- Meets IEEE and IEC requirements for vibration, electrical surges, fast transients, and extreme temperature ranges
- Supports 1ms transition time tagging

Seamless Networking
- Works standalone or with an SMP Gateway
- Communicates via the DNP3 protocol over RS-485 or TCP/IP
- Supports IRIG-B synchronization

Designed for Growth
- I/O cards can be added locally
- Scalable for more I/O capacity
- Minimized configuration when used with SMP Gateway
- Helps trim down costs and save time by reducing both required wiring and configuration

Reliable
- Ensures safe operation with the local/remote control switch
- Supports select-before-operate (SBO) or direct execute outputs
- Uses optically isolated inputs with built-in error detection
- Outputs are protected against single component failure

The SMP I/O, which is available in rack-mount or wall-mount format, is a scalable, distributed I/O module perfectly adapted to substation automation requirements.
Technical Specifications

**General Features**
- Designed to be used with SMP Gateway or stand-alone.
- Can simultaneously operate up to 18 relays.
- Local/Remote switch.
- Front panel status LEDs.
- Watchdog timer can be mapped to built-in output relay.
- Power supply monitoring.
- Windows-based configuration tools.

**Redundancy**
- Can connect to redundant SMP Gateways.
- No transitions lost during failover.

**Time Synchronization**
- Demodulated IRIG-B input for 1 ms accuracy.
- DNP3 protocol synchronization.

**Available Configurations**
- 2 built-in Form-C relay contacts (NC and NO).
- Configurable outputs:
  - Watchdog relay
  - Local/Remote
  - User-defined.
- Up to 4 cards in one SMP I/O.
- Up to 4 binary input cards.
- Up to 2 binary output cards.
- Up to 3 analog cards.

**Binary Input Ratings**
- Range: On (VDC) Off (VDC)
  - 24 VDC: 18.5 - 30 < 5.5
  - 48 VDC: 37.5 - 60 < 10.5
  - 110 VDC: 82.5 - 137.5 < 21.3
  - 125 VDC: 91.5 - 156 < 23.5
  - 220 VDC: 169.5 - 275 < 42.2
  - 250 VDC: 187.5 - 312.5 < 46.5
- Dielectric isolation:
  - 3000 VAC / 4000 VDC

**Binary Output Ratings**
- Make and carry:
  - 30 A as IEEE-C37.90.1989
  - 10 A continuous carry at 85°C
- 8 A @ 250 VAC resistive
- 8 A @ 30 VDC resistive
- 0.4 A @ 125 VDC resistive
- 0.2 A @ 150 VDC resistive
- ½ HP @ 125 VAC
- ¼ HP @ 250 VAC
- Dielectric isolation:
  - 2500 VAC / 3500 VDC

**Analog Input Ratings**
- Input Range: Voltage mode ± 10V
  - Current mode ± 4mA
- Input Impedance: Voltage mode: > 10 Mohms
  - Current mode: 250 kohms
- Resolution: ±0.002% of full scale @ 25°C
  - ±0.0015% per °C of full scale
- Isolation: Standard model:
  - 1500 VAC / 2100 VDC channel to ground
  - High isolation model:
  - 1500 VAC / 2100 VDC channel to ground
- CMR @ 50/60Hz: > 90 dB

**Communications**
- Serial:
  - 1 rear panel RS-485 terminal block
  - 9,600 to 115,200 bps
  - Multidrop capability
- Ethernet:
  - 1 10/100BASE-TX, or
  - 1 10/100BASE-FX optional
- Multimode fiber
- LC connector
- 1300 nm
- Up to 2 km

**Security**
- Built-in firewall, can be tied to a specific SMP Gateway or master device.

**Input Module**
- 3 isolated status inputs.
- Each input electrically isolated.
- Can be wired to a common negative.
- Can connect to redundant SMP Gateways.
- Optional error detection circuit for each input.

**Output Module**
- 3 NO form A relay outputs.
- Supported DNP3 modes:
  - Select-Before-Operate (SBO)
  - Direct Operate
- Available output functions:
  - Tripple close pair
  - Latch
  - Pulse
  - Pulse pairing
- Relay auxiliary contact integrity scan every 1 ms for error detection.
- Protection against single component failure.

**Analog Module**
- 8 isolated DC analog input.
- Factory calibrated.
- Configurable voltage or current mode.
- Min/Max values recording for each input.
- Alarm/Warning capability.

**Standards Compliance**
- Protective Relay Standards1
  - IEEE C37.90
  - IEC 61850-3

**Environmental**
- Operating and storage temperature:
  - Rack-mount: -40°C to +80°C (-40°F to +176°F)
  - Wall-Mount: -40°C to +75°C (-40°F to +167°F)
- Humidity: 5 to 95%, non-condensing.

**Protocols**
- DNP3, serial or TCP/IP.

**Power Supply Options**
- 24-48 VDC
- 100-250VDC / 100-240VAC

**Electrical**
- Consumption max. 15 Watts
- 24-48 VDC

**Mechanical**
- Rack-mount: 1.72” H x 19” W x 8” L
- 43.6 mm H 482.6 mm W x 203 mm L
- 2.3 kg (5 lbs)
- Wall-Mount: 4” H x 11.9” W x 6.85” L
- 101 mm H 302 mm W x 174 mm L
- 2.5 kg (5.5 lbs)
- Removable I/O connectors:
  - 300 V / 15 A maximum
  - 28-12 AWG solid
  - 30-12 AWG stranded

**SMP I/O Rack-Mount**
- 19 in. (482.6 mm)

**SMP I/O Wall-Mount**
- 11.86 in. (301.24 mm)
- 7.83 in. (198.88 mm)

**Warranty**
- 5-Year Limited Warranty

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