# SMP

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.

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.
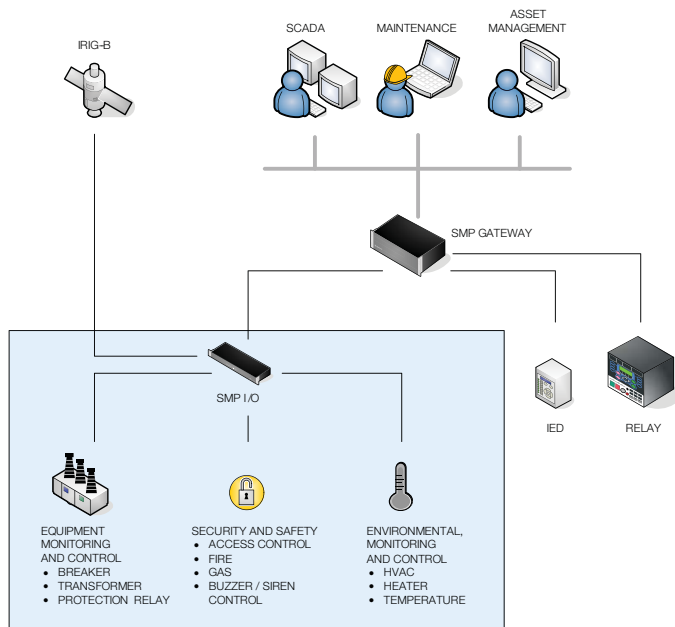
Substation Grade

- 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

IRIG-B

SCADA   MAINTENANCE   ASSET MANAGEMENT

SMP GATEWAY

SMP I/O

IED   RELAY

EQUIPMENT MONITORING AND CONTROL
- BREAKER
- TRANSFORMER
- PROTECTION RELAY

SECURITY AND SAFETY
- ACCESS CONTROL
- FIRE
- GAS
- BUZZER / SIREN CONTROL

ENVIRONMENTAL, MONITORING AND CONTROL
- HVAC
- HEATER
- TEMPERATURE
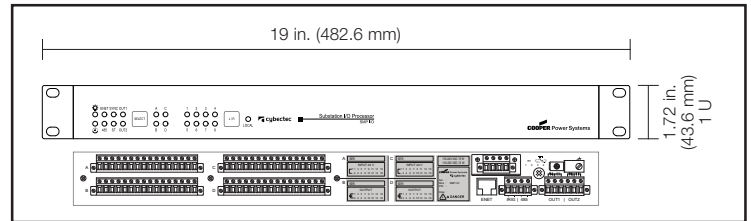
COOPER Power Systems

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 1ms 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	18.3 - 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: 2.5 kohms

Resolution:
  ±0.02% 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
  1500 VAC / 2100 VDC channel to channel

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 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

8 isolated status inputs

Each input electrically isolated

Can be wired to a common negative

Front panel LED indications

Transition time tagging with 1ms resolution

Advanced two-phase debounce filtering

Pulse and transition accumulators

Optional error detection circuit for each input

Output Module

8 NO form A relay outputs

Supported DNP3 modes
  Select-Before-Operate (SBO)
  Direct Operate
Available output functions
  Trip-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 Standards[1]
  IEEE C37.90
  IEC 60255
[1.] See datasheet for more details

EMI Immunity Type Tests & Specifications
  IEC-61850-3
  IEEE-1613

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

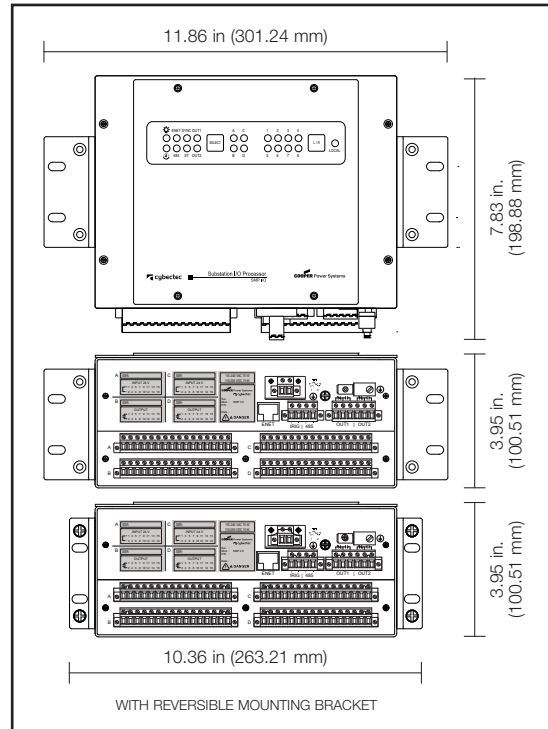DNP3, serial or TCP/IP

Electrical

Power supply options
  24-48 VDC
  100-250VDC / 100-240VAC
  Consumption max. 15 Watts
  Terminal block connector

Life-time built-in battery

Warranty

5-Year Limited Warranty

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)

1.72 in. (43.6 mm) 1 U

SMP I/O Wall-Mount

11.86 in (301.24 mm)

7.83 in. (198.88 mm)

3.95 in. (100.51 mm)

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10.36 in (263.21 mm)

WITH REVERSIBLE MOUNTING BRACKET

COOPER Power Systems