

# Epsilon Switch and Amplifier System IP Manageable

## Models SAS-17E & SAS-36E



- Large signal distribution
  - Frequency signal (1 to 16 MHz range)
  - 1PPS/DCLS IRIG
  - Serial time code message (ToD) (RS-232 serial line)
  - Customization available
- Very low additional phase noise
- Redundant source monitoring
- Fast switching
- External clock status (relay contact)
- Remote management by SNMP/HTTP through Ethernet port

### SAS-E is a high performance, highly manageable and reliable solution for distributing time and frequency signals for satcom, digital TV or audio broadcast, microwave links, satellite ground stations applications

The Epsilon™ Switch and Amplifier System (SAS-E) provides a cost effective way to extend distribution of time and frequency signals (pulse, low phase noise frequency signal, Time of Day), as a signal amplifier. Thanks to analog amplification, SAS-E adds very little phase noise to the input frequency and ensures high RF isolation. It is therefore suitable for reference frequency distribution towards transmitters, up-converters, micro-wave links. Pulse regeneration is transparent to pulse duration and period: SAS-E is therefore suitable for distribution of any pulse encoded signal like 1 pps, DCLS IRIG, etc.

SAS-E can also be combined with two clocks in order to build a redundant, highly reliable time and frequency distribution system. In such configuration, SAS-E constantly monitors available A and B inputs and automatically selects the appropriate source to be distributed on its outputs. Smart switching algorithm can be configured to determine which signal (amongst frequency, pulse, ToD, external alarm) should be monitored and trigger a switch. The automatic selection may also be bypassed by the user (on front panel or through network management) to allow maintenance or single-clock operation.

Setup, status, and alarms are accessible through network management, using any web browser and/or through SNMP protocol. Monitoring (voltage level checking and minimal period detection) is reported through dedicated LEDs.

The SAS-E is available in two versions to handle the output capacity of the application. The 1U high SAS-17E distributes 8 frequency and 8 pulse signals. The 2U high SAS-36E distributes 16 frequency and 16 pulse signals.

#### Number of inputs/outputs:

Model	Frequency 1 to 16 MHz	Pulse 1 PPS, IRIG DCLS	Time Of Day RS232	Alarm Relay Contact
SAS-17E inputs SAS-36E inputs	2	2	2	2
SAS-17E outputs	8	8	2	1 urgent 1 non urgent
SAS-36E outputs	16	16	2	1 urgent 1 non urgent

**Specifications**

**Inputs A and B**

**Frequency**

- 1 to 16 MHz (non filtered versions)
- or 10 MHz (filtered version\*, contact factory for other frequencies)
- Sine wave, 0 to +17 dBm level, BNC 50 Ω

**Pulse**

- TTL level pulsed signal:
  - Frequency up to 10 kHz,
  - Pulse width between 1 μs and 500 ms
  - BNC 50 Ω
- 1 Pulse Per Second (1 PPS)
- Unmodulated IRIG B

**Time of Day**

RS-232C, transparent at frame level, DIN connector

**Alarm**

Relay contact, Jack connector

\*Filtered version: specific qualified BNC coaxial low pass filters to be added on each Frequency output port of the SAS-E unit (External Filter). Contact factory for detail.

**Outputs**

**Frequency**

- Copy of input, with 0 dB gain
- Sine wave, BNC 50 Ω
- Added phase noise on input, at 10 MHz:

1 Hz	-105 dBc/Hz
10 Hz	-130 dBc/Hz
100 Hz	-150 dBc/Hz
1 kHz	-155 dBc/Hz
10 kHz	-160 dBc/Hz

- Added harmonic distortion:

Input level up to	Harmonics level (non filtered version)	Harmonics level (filtered version)
+ 13 dBm	-25 dBc	-35 dBc
+ 17 dBm	-21 dBc	-30 dBc

**Pulse**

- Regenerated pulse with same pulse width / period as input
- TTL level, BNC 50 Ω
- Pulse delay between input and output : 35 ns ± 0.5 ns

**Time of Day**

Copy of input, RS232-C, DIN connector

**Alarm**

- 2 relay contacts (urgent, non urgent)
- USB type connector

**Network Management**

- Web server: configurations, status, log event, software update
  - Switching conditions can be configured
  - Switching can be manual or automatic
- SNMP v1, v2 : configuration, status, alarms (traps - v2 only) MIB v1, v2

**Local management (front panel)**

- Status with leds
- Keyboard for manual source setting

**Power**

**Power Supply**

- AC Supply: 100 to 240 V / 48 to 63 Hz
- DC Supply: 24 to 48 V / -24 to -48 V

**Power Consumption**

15 W nominal, 25 W maximum

**Physical**

**Size and Weight**

- SAS-17E: 19" 1 U unit (483 x 340 x 44 mm), 5 Kg
- SAS-36E: 19" 2 U unit (483 x 340 x 88 mm), 7 Kg

**Environmental**

- Operating Temperature: -5° to 60°C
- Storage Temperature: -40° to 85°C
- Relative Humidity: 95% RH @ 40°C, non-condensing
- CE Compliance: EN 55022/EN 50082/EN 61000
- RoHS Compliant

**Ordering Information**

SAS-17E: 8 x 1 PPS/DCLS, 8 x frequency outputs  
 SAS-36E: 16 x 1 PPS/DCLS, 16 x frequency outputs

