



Epsilon Switch and Amplifier System

Model SAS



- **Large signal distribution**
 - Frequency signal (1 to 20 MHz range)
 - 1PPS TTL
 - Time of Day message (RS-232 serial line)
- **Very low additional phase noise**
- **Redundant source monitoring**
- **Limited phase jump when switching**
- **External clock status (relay contact)**
- **RoHS Compliant**

The Epsilon Switch and Amplifier System (SAS) provides a cost-effective way to build a redundant clock system with very high operational availability using the Epsilon Clock series. The SAS achieves redundant time and frequency source monitoring through intelligent and automatic switching. This 19" wide rack-mount device amplifies signals from the selected source and offers a large quantity of output channels.

The SAS receives and continuously monitors signals from one or two external clocks. Monitoring (voltage level checking and minimal period detection) is reported through dedicated LEDs.

When two external clocks are connected, the SAS offers a powerful redundant function by automatically selecting the best functioning source. The selection may also be bypassed by the user to allow maintenance or single-clock operation. In all cases, the distributed signals (Frequency, 1PPS, TOD, and Status) are used from the same source clock. When in automatic mode, if the selected source is detected as faulty, the SAS switches all the distributed signals to the other available source. The signals are amplified using analog electronics to ensure the lowest frequency phase noise and high RF isolation.

The SAS exists in two versions to handle the output capacity of the application. The SAS-17 is 1 U high. The SAS-36 is 2 U high.

Model	Frequency	1PPS	ToD	Status
SAS-17	8	8	1	1
SAS-36	16	16	4	1



SPECIFICATIONS

INPUTS:

(signals from source clock A and B)

Frequency: 10 MHz sine wave
10 dBm / 50 Ω (nominal)
BNC Connector

1 Pulse Per Second: TTL / 50 Ω , BNC connector

Message Time of Day: RS-232C, DIN connector

Clock Alarm: relay contact, BR2 connector

1 Differential Spare Signal DIN connector

Additional Phase Noise (typical):

100 Hz < -145 dBc/Hz

1 kHz < -155 dBc/Hz

10 kHz < -160 dBc/Hz

OUTPUTS:

8 Channel Version:

8 x Frequencies:

1 MHz up to 20 MHz sine wave, according to selected source

Gain 1 (10 dBm / 50 Ω nominal)

BNC connector

8 x 1 Pulse Per Second: TTL / 50 Ω , BNC connector

1 Message Time of Day: RS-232C, DIN connector

Selected Clock Status: Relay contact, BR2 connector

1 Differential spare signal, DIN connector

16 Channel Version:

16 x Frequencies:

1 MHz up to 20 MHz sinewave, according to selected source

Gain 1 (10 dBm / 50 Ω nominal)

BNC connector

16 x 1 Pulse Per Second: TTL / 50 Ω , BNC connector

4 Message Time of Day: RS-232C, DIN connector

Selected Clock Status: relay contact, BR2 connector

1 Differential spare signal, DIN connector (4 non isolated outputs)

POWER:

Power Supply

AC Supply: 90 to 265 V / 48 to 63 Hz

DC Supply: 18 to 32 V

Typical Power Consumption (without options): 15 W

Typical Power Consumption (with options): 2 x – 48 Vdc inputs instead of

AC and 24 Vdc inputs

CONFIGURATION VERSIONS:

SAS-17 - Switch and Amplifier 8 channel version:

Connected to 2 sources, one of them is selected, amplified and distributed (8 x Freq., 8 x 1PPS, 1 x ToD)

SAS-36 - Switch and Amplifier 16 channel version:

Connected to 2 sources, one of them is selected, amplified and distributed (16 x Freq., 16 x 1PPS, 4 x ToD)

FRONT PANEL LEDs:

4 status green LEDs per source clock to display input signal detection

(Alarm, Freq., 1PPS, ToD)

1 alarm red LED to display absence of one or more output amplified signals

(Freq., 1PPS, ToD)

3 position switch and 3 orange LEDs to select and display the source clock

PHYSICAL

Size: 19" 1U unit (483 x 340 x 44 mm) (8 Channel)

19" 2U unit (483 x 340 x 88 mm) (16 Channel)

Weight: < 5 kg (8 Channel)

< 7 kg (16 Channel)

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