The Global Leader in
Resilient **PNT**

Epsilon Switch and Amplifier System

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

Orolia's Epsilon™ Switch and Amplifier System (SAS) model 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, and satellite ground station applications.

The Epsilon SAS-E provides a cost-effective way to extend the distribution of time and frequency signals (pulse, low phase noise frequency signal or time of day), as a signal amplifier. Thanks to analog amplification, Epsilon 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 and microwave links. Pulse regeneration is transparent to pulse duration and period: Epsilon SAS-E is also suitable for distribution of any pulse encoded signal like 1 pps, DCLS IRIG, etc.

Epsilon SAS-E can also be combined with two clocks to build a redundant, highly reliable time and frequency distribution system. In such configuration, the system constantly monitors available A and B inputs and automatically selects the appropriate source to be distributed on its outputs. The smart switching algorithm can be configured to determine which signal (among frequency, pulse, ToD and 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.

Set up, 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 Epsilon 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
Epsilon SAS-17E inputs Epsilon SAS-36E inputs	2	2	2	2
Epsilon SAS-17E outputs	8	8	2	1 urgent 1 non-urgent
Epsilon SAS-36E outputs	16	16	2	1 urgent 1 non-urgent

Specifications

Inputs A and B

Frequency

- 1 to 16 MHz (non filtered versions)
- 10 MHz (filtered version*, contact Orolia 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 Epsilon SAS-E unit (External Filter). Contact Orolia 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: Configuration, status, alarms

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

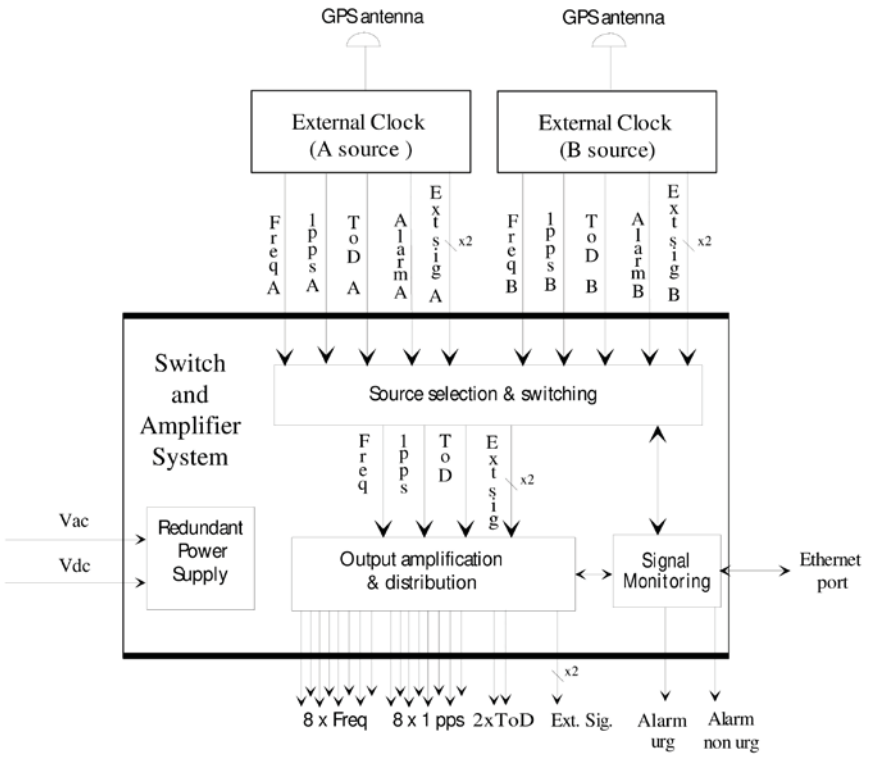
Environmental

- Operating temperature: –5° to 55°C
- Storage temperature: –40° to 85°C
- Relative humidity: 95% RH @ 40°C, non-condensing

Compliance

- CE Mark: EN 55022/EN 61000/EN 62368
- RoHS WEEE

Epsilon SAS-17E Synoptic



Ordering Information

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

For More Information:

Vicom Australia

1064 Centre Rd
Oakleigh South Vic 3167
Australia
1300 360 251
info@vicom.com.au
www.vicom.com.au

Vicom New Zealand

Grd Floor, 60 Grafton Road
Auckland 1010
New Zealand
+64 9 379 4596
info@vicom.co.nz
www.vicom.co.nz

Vicom
Leading the way in test and measurement

www.orolia.com
sales@orolia.com

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Specifications subject to change or improvement without notice