

ENHANCED SITUATIONAL AWARENESS INSTRUMENT DISPLAY (ESAID®)

FEATURES

General

- Rugged: DO-160G Compliant
- Lightweight: 0.51 lbs.
- All Functions Automatic or Touchscreen
- Full-Sun Readable (TFT LCD) with Auto or Manual Dimming Display
- Low Power Requirement

Alerts and Warnings

- Rotor Overspeed
- Engine Overspeed
- OGE & IGE Hover Limits
- Max Density Altitude
- V_{NE} Power ON/OFF
- MCP, 5MP Exceeded
- Clutch Belt Slippage
- Low G
- Freezing (Advisory Only)

Exceedances Displayed

- Rotor Overspeed
- Engine Overspeed
- Excessive Power
- Clutch Slippage

APPLICATIONS

- Maintenance Activities
- Operational History
 - Fleet
 - Rental
 - Leasing
 - Insurance
 - Personal/Owner
- Flight School/ Instructional Performance
- Safety Enhancement Programs
- Incident Investigation
- Accident Recreation

DESCRIPTION

EIT® Avionics Enhanced Situational Awareness Instrument Display (ESAID®) is a cockpit mounted instrument designed for light helicopters to provide visual and aural Alerts and Warnings to the pilot when operations approach or exceed practical safe limits. The instrument uses measurements from inside and outside the aircraft, together with operational information and limits from the Pilot Operators Handbook (POH), to generate these Alerts and Warnings. It requires minimal input from the pilot and supports excellent situational awareness.¹

The ESAID® operates using data from EIT® Avionics Flight Data/ Operations Recorder (FODR®).

The ESAID® is mounted in the instrument panel, bow rib or instrument enclosure as determined by the pilot. It enables the pilot to receive automatic notification of a situation that may require immediate attention by providing POH information. The ESAID® display features include full sun readability, automatic or manual dimming, and bright, sharp TFT LCD display that significantly improve the visibility of operational data in the cockpit.



Figure 1: Surface mounted ESAID®.

¹The supplemental information provided by ESAID® or any component of the FODR® system is not a substitute for mission risk analysis, nor is it intended to be used as a guarantee of performance or safety.

OPERATION

At start-up the ESAID® screen activates automatically and allows the pilot to enter gross weight (GWT). Configurations such as Door(s) Off and Fixed Floats may be entered manually. After aircraft configurations are entered, the information screen gives the pilot a general idea of flying conditions at that moment. Critical values such as OGE and IGE limits, Density Altitude (DA), Hover Limits and Max Power values also are displayed. See screen depiction at right.

When the engine and rotor speed are increased, the ESAID® screen automatically shifts to FLIGHT Mode and remains there unless the pilot manually selects another screen. Current flight and operational data are displayed in real time. Exceedances are displayed by calling the information on the right side of the display. The Flight Screen displays DA with the present value indicated by pointer position and numeric value relative to color coded OGE, IGE and MAX ALTITUDE limitations.

Similarly, if IAS is exceeded, the pointer position and numeric display will indicate that an exceedance has occurred. The pointer will enter the Alert Zone of the display and remain on as long as the exceedance continues. An aural warning, “V_{NE} Exceeded” is sounded.

When power limits are exceeded, ESAID® will generate Alerts and Warnings and indicate an exceedance. All exceedances are displayed with a time designation until they are acknowledged by the pilot on the ESAID®. Data will remain permanently recorded in the FODR® at the end of the flight for detailed analysis.



SPECIFICATIONS

- **Power:** 0.21A nominal; 0.85A peak @28VDC
- **Dimensions:** 3.28”L x 3.32”H x 1.41”W
- **Weight:** 0.51 lbs.
- **Material:** Mount & Bezel-anodized Aluminum Display-Treated glass
- **Temp. Range:**
 - Operating: -40°C to 70°C
 - Storage: -55°C to 85°C
- **Display Screen:** Anti-glare glass display with pressure sensitive buttons
- **Acceleration/Vibration:** DO-160G

EXCEEDANCES

Type	Displayed Info	Conditions (R44 II)
Rotor Overspeed	“RTR”+Date+Time	RTR_RPM>107%
Engine Overspeed	“ENG”+Date+Time	ENG_RPM>105%
Excessive Power	“5MP”+Date+Time	MAP>5MP
Excessive Power	“MCP”+Date+Time	5 mins. in MCP
Clutch belt slippage	“SLIP”+Date+Time	≥ 5% slippage

ALERT	AUDIBLE COMPONENT	CONDITION
OGE	Attention Tone	Operation above OGE Hover Limit
	Attention Tone + “Warning: OGE Hover Exceeded”	OGE hover attempt above OGE Hover DA
IGE	Attention Tone	Operation above IGE Hover Limit
	Attention Tone + “Warning: IGE Hover Exceeded”	IGE hover attempt above IGE Hover DA
FRZ	No audible	Freezing conditions possible
LO-G	Attention tone + “Warning: Low G”	Aircraft is/has experienced a “Low G” event
EHI	Attention Tone + “Warning: Engine Overspeed”	Engine RPM’s are too high
RHI	Attention Tone + “Warning: Rotor Overspeed”	Rotor Overspeed
SLIP	Attention Tone + “Warning: Clutch Detected Belt Slippage”	Clutch belt slippage detected
CLCH	Attention Tone + “Warning: Clutch Overtension”	Clutch motor operation exceeds 10 secs. in flight
FUEL	Attention Tone + “Warning: Low Fuel”	Low fuel detected
EXC	No audible component	Exceedance detected
GWT	Attention tone	Gross weight is unconfirmed/out of range
SINK	Attention Tone + “Warning: Sink Rate, Sink Rate”	Excessive descent rate (>2,000 FPM)

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DESIGNED AND MANUFACTURED IN THE USA