



Łukasiewicz
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A cost-effective and easily customizable avionics system has been developed for General Aviation, aiming to enhance safety and reduce the level of pilot workload

AST-1 AUTOMATIC FLIGHT STABILIZATION SYSTEM

CHARACTERISTICS

The automatic flight stabilization system that uses trim tabs was designed and developed at Łukasiewicz – Institute of Aviation. In 2022 the system was successfully tested on the Polish military turboprop trainer aircraft PZL-130 Orlik in cooperation with Airbus Poland. The AST-1 onboard computer also passed environmental testing according to the DO-160 standard.

AST-1 allows manual trim tab control by the pilot and can stabilize flight in three channels:

- heading,
- altitude,
- slipstream compensation.



TECHNICAL DATA

Parameter	Value
Dimensions	17x13x5 cm
Weight	0,5 kg
Interfaces	ARINC 492, RS-232, Analog, Logical
Nominal input voltage	28V DC
Input voltage range	18V – 32,2V DC
Nominal current (without actuators)	0,22A @28V
Power supply safety	DO-160G cat. B
Operating temperature range	-35 ÷ 70°C
Storage temperature range	-55 ÷ 85°C
Temperature and altitude	DO-160G cat. C4

KEY FEATURES

The speed of the actuators can be set independently for automatic and manual modes for pilot convenience. The system uses internally designed three electric actuators that deflect aircraft trim tabs instead of primary control surfaces. This solution creates many benefits for the users:

- Installation does not modify aircraft primary control system – cost-effective retrofit.
- The pilot can easily overtake control whenever necessary – no need for actuator clutch mechanisms.
- Aircraft is always trimmed during the operation of the system.
- Lowers pilot workload by counteracting propeller slipstream.
- Possibility to level the aircraft in an emergency.



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