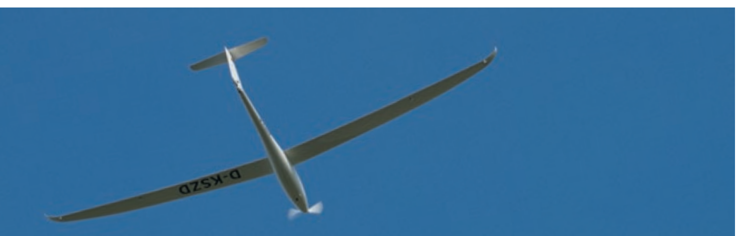
The Glider for Limitless Gliding Adventures: Performant, Straightforward and Electric

The SZD-55 is the standard class glider from Allstar PZL Glider for advanced cross-country flying. The glider is characterised by its low weight, its characteristic elliptical wing plan with high aspect ratio and its widely praised flight characteristics. The SZD-55 is a popular sailplane for ambitious club & private pilots and is also flown successfully in club class competitions.

Allstar PZL Glider revised the SZD-55-2 NEXUS. In addition to numerous improvements to the glider itself, the Allstar-e-motion electric propulsion system now offers the pilot a new dimension in gliding. The drive system gives the pilot the options for enjoyable cross-country flying with sufficient reserves even in less than ideal weather conditions or on particularly challenging tasks.
This means: totally relaxed flying in every respect!



SZD-55– Performance with Easy Operation

The high-quality standard class glider has low acquisition costs and is deliberately kept simple and robust in its design. With its wings weighing only 58 kg each, its low total weight of just 240 kg (300 kg with electric drive) and automatic connections for all control elements, the glider is quick to assemble. The simple ground handling makes everyday use easy. There is no excuse not to go flying! This philosophy continues throughout flight. The aircraft always follows the pilot's inputs directly, is agile but not instable and thus allows the pilot to maximise his concentration on tactics, strategy, weather and traffic.

The SZD-55 is a universal cross-country glider that is optimised for a wide range of weather conditions. This is reflected in its good low-speed and climb characteristics, which are indispensable for moderate weather conditions (measured sink rate of only 0.51 m/s) and a best glide of 43 at 85 km/h, which can be pushed up to 44 at 119 km/h with appropriate ballast. This is mainly due to the characteristic wing, whose front contour approximates an ellipse. The aspect ratio of 23.4 is unusually high for standard class gliders. The wing profile is robust against performance decrease caused by bugs or rain.

The SZD-55 is equipped with everything needed for efficient cross-country flying: nose and CG hook, automatic rudder connections, highly effective air brakes, retractable landing gear with large main wheel for good ground clearance. The water ballast of max. 115 kg is sensibly balanced by the rear tank of max. 9.6 kg. The cockpit is spacious and has a load capacity of 60-110 kg. The rudder pedals can be adjusted during flight, and the backrest can be adjusted in both position and angle. The backrest can be removed for taller pilots.

Optimised in Form and Function

The new SZD-55-2 Nexus-e-motion provides significant improvements over the original model, while remaining true to the original design's virtues:

- Front electric sustainer Allstar-e-motion
- Enlarged and more effective ailerons
- Newly designed curved wing tips
- High-mounted multi-probe at the tail
- Redesigned high-quality interior
- Durable acrylic paint finish of the highest quality
- Articulated instrument panel (in preparation)
- High-performance disc brake (in preparation)

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Allstar-e-motion is the New Electric Drive for Gliders

Allstar PZL Glider develops electric propulsion systems for gliders under the brand name Allstar-e-motion. The SZD-55-2 NEXUS-e-motion comes with this front electric sustainer as standard equipment. An upgrade for the existing SZD-55-1 NEXUS glider models can be carried out by local CAMOs. They are trained and authorised by Allstar PZL Glider and supplied with the kits for retrofitting.

The Propeller

The direct-drive folding propeller has a diameter of 110 cm and is optimised for cruising. With a maximum speed of 3500 rpm, it is efficient and yet powerful, even when climbing (approx. 2.0 m/s). During gliding, the folded propeller blades are aerodynamically aligned with the fuselage contour of the glider, which minimises the drag when the engine is stationary. The parking position is reached fully automatic and directly at the end of the propeller deceleration. After switching on the engine, the propeller unfolds automatically due to centrifugal forces.

The Electric Motor

The electric motor is mounted together with the folding propeller in the glider's nose. This concept, which has proven itself many times over, is particularly suitable for sustainers and convinces by its simplicity and efficiency. The air-cooled EMRAX 188 engine with 18 kW peak power has been specially adapted for the Allstar e-motion system and sets standards in terms of smooth running, efficiency and power-to-weight ratio. This makes it the ideal motor for gliders with electric propulsion.

The Batteries

The electrical energy for the propulsion system is provided by two separate, rechargeable battery modules. They are situated in a battery compartment in the fuselage behind the aircraft's centre of gravity and compensate for the weight of the engine. They can be removed through a hatch in the fuselage for the purpose of charging and maintenance. The system voltage of 60 V makes the Nexus-e-motion safe and simplifies handling and maintenance. Each battery pack has its own battery management system.

The System + Control Unit

The motor controller is based on modern, field-oriented sine wave control. The two independent pairs of controller and battery offer a redundant mode of operation. Furthermore, they increase the safety with an integrated protective circuit. A newly developed control and display unit for the system shows an overview of all key information to the pilot. This unit monitors the system and ensures safe operations. A CAN Bus connection establishes communication with the system's other components like battery and motor controller.

Technical Data Glider

Span	15.00	m
Length	6.84	m
Height	1.47	m
Wing area	9.60	m²
Aspect ratio	23.44	
empty glider mass	300	kg
max. take off mass without water ballast	410	kg
max. take off mass with water ballast	475	kg

Wing loading range	37.5-49.5	kg/m²
Manoeuvering speed	195	km/h
Never exceed speed	255	km/h
Stalling speed (calculated, MTOW 355 kg)	72	km/h
Load factors	+5.30 -2.65	g g
Maximum L/D (calculated) at	42.7 116	 km/h
Minimum sinking (calculated) at (MTOW 355 kg)	0.62 86	m/s m/h

Technical Data electric propulsion system

Maximum range	~ 130	km
Altitude gain	1800	m
Motor power	18	kW
System voltage	60	V
Max. rotational speed	3500	rpm
Climb rate	~ 2.0	m/s
Usable Capacity	5.5	kWh

SZD-55-2 **NEXUS-e-motion**

Ambitious Cross-country Flying
Electric and Simple