

Where Precision and Reliability Soar!

Northwest UAV

EXCLUSIVE US DISTRIBUTOR FOR



INDUSTRIAL & REDUNDANT SERVO ACTUATORS

- Dependable Oil Bath Lubrication Improves Gear Train Service Lifetime
- Actuators are Shielded to Minimize EMI/RFI Susceptibility and Magnetic Interference
- Enhanced Vibration Tolerance
- Incorporated Aerospace Specified Connectors
- IPC-A-600 Class 3 Compliant Internal PC-board Design and Manufacturing
- Actuator Development Based on DO-254/ED-80



TOUGH TECH FOR TOUGH ENVIRONMENTS

PEGASUS Servo Actuators are electromechanical drive units of extraordinary power density, precision and reliability. Pegasus offers a wide range of affordable Servo Actuators for multiple rotary and fixed-wing UAV applications from 30 lbs up to 1000 lbs Maximum Takeoff Weight (MTOW).



German Certification
Institute TÜV SÜD
Certified according to
ISO 9001:2015



MODEL NUMBER

PA-R-135-4

This micro low-profile servo provides ultimate reliability, precision and power output in a tiny but rugged package. Currently the world's smallest professional servo in its class.



PA-R-205-4

Despite its comparatively small size, it is suitable for all kinds of industrial motion/remote control applications demanding extraordinary reliability and lifetime service.



PA-R-205-6

The PA-R-205-6, is the power version of our PA-R-205-4 type with modified software and a much more powerful motor.



PA-R-250-8

For applications with high demands on powerful torque and high speed positioning. With its BLDC technology (brushless DC motor) and PA-ME contact-less sensor it combines extraordinary reliability and precision.

INDUSTRIAL SERVO CHARACTERISTICS

Continuous Torque	30 Ncm (42.48 oz-in)*	80 Ncm (113.29 oz-in)*	180 Ncm (254.90 oz-in)*	300 Ncm (424.84 oz-in)*
Maximum Torque	> 60 Ncm (> 84.97 oz-in)	> 200 Ncm (> 283.22 oz-in)	> 350 Ncm (> 495.64 oz-in)	> 500 Ncm (> 708.06 oz-in)
Operating Voltage	6, 12 or 24 VDC	6, 12 or 24 VDC	6, 12 or 24 VDC	12 or 24 VDC
Travel Angle	±90° (Standard PA-ME/Contact-less Angle Sensor), Alternative Angles on Request			
No Load Speed	410°/sec @ 6 VDC	255°/sec @ 12 VDC	180°/sec @ 12 VDC	195°/sec @ 12 VDC
	405°/sec @ 12 & 24 VDC	245°/sec @ 24 VDC	175°/sec @ 24 VDC	210°/sec @ 24 VDC
PC-Board	Digital – Programmable – with Differential and Analog Sensor Feedback			
Signal*	PWM Signal, TTL Level (Standard Configuration); PWM Signal, Differential (RS485 Transceiver) (optional) or RS485 Data Protocol (optional)			
Motor	DC Motor	DC Motor	DC Motor	BLDC Motor
	Neodym Magnet			
Gear Train	PA-SC Overload Protection Output Shaft	6 Ball Races with Rigid or Optional with PA-SC Overload Protection Output Shaft	6 Ball Races with Rigid or Optional with PA-SC Overload Protection Output Shaft	6 Ball Races with Rigid or Optional with PA-SC Overload Protection Output Shaft
	Aluminum, Water and Dust Protected (IP67) with Solid			
Case	Horz/Vert 3-Point Fixation	Horz/Vert 4-Point Fixation	Horz/Vert 4-Point Fixation	Horz/Vert 4-Point Fixation
Weight	65 g (2.3 oz)	130 g (4.585 oz)	160 g (5.643 oz)	285 g (10.052 oz)

SERVO ACTUATORS

- Dependable Oil Bath Lubrication Improves Gear Train Service Lifetime
- Actuators are Shielded to Minimize EMI/RFI Susceptibility and Magnetic Interference
- Enhanced Vibration Tolerance
- Incorporated Aerospace Specified Connectors
- IPC-A-600 Class 3 Compliant Internal PC-Board Design and Manufacturing



PA-R-250-9

The high-output version of the PA-R-205-8. We implemented the high-output brushless DC motor technology, refined the gear train and servo case design. Its power-to-weight relation speaks for itself.



PA-R-340-7

By modifying our PA-R-340-7 servo's hardware and software, we significantly increased the power output of this well-proven servo actuator.



PA-R-340-9

The high-power version of our well-proven PA-R-340-7, providing equal characteristics with a 50% higher continuous torque rate. A real workhorse!



PA-R-440-7

The PA-R-440-7 Servo Actuator with 35 Nm maximum torque. This is the powerhouse of our product range.

400 Ncm (566.45 oz-in)*	850 Ncm (1203.70 oz-in)*	1200 Ncm (1699.34 oz-in)*	2000 Ncm (2832.24 oz-in)*
> 700 Ncm (> 991.28 oz-in)	> 1800 Ncm (> 2549.02 oz-in)	> 2100 Ncm (> 2973.85 oz-in)	> 3500 Ncm (> 4956.42 oz-in)
24 VDC	12 VDC or 24 VDC	24 VDC	24 VDC
±90° (Standard PA-ME/Contactless Angle Sensor), Alternative Angles on Request			
185°/sec @ 24 VDC	210°/sec @ 12 & 24 VDC	205°/sec @ 24 VDC	95°/sec @ 24 VDC
Digital – Programmable – with Differential and Analog Sensor Feedback			
PWM Signal, TTL Level (Standard Configuration); PWM Signal, Differential (RS485 Transceiver) (optional) or RS485 Data Protocol (optional)			
BLDC Motor	BLDC Motor	BLDC Motor	BLDC Motor
Neodym Magnet			
Hardened Steel, Spur Gear Type with			
6 Ball Races with PA-SC Overload Protection Output Shaft	8 Ball Races or Roller Bearings with PA-SC Overload Protection Output Shaft	8 Ball Races or Roller Bearings with PA-SC Overload Protection Output Shaft	10 Roller Bearings with PA-SC Overload Protection Output Shaft
Aluminum, Water & Dust Protected (IP67) with Solid			
Horz/Vert 4-Point Fixation	Horz/Vert 4-Point Fixation	Horz/Vert 4-Point Fixation	Fixation
335 g (11.815 oz)	780 g (27.511 oz)	930 g (32.801 oz)	1500 g (52.905 oz)

*According to Pegasus Actuators GmbH Specification Test (results available by request).

REDUNDANT

Pegasus Redundant Servo Actuators are a Stand-Alone solution. All redundancy related process cycles are performed internally by the actuator. The advantages are that no additional engineering for modified autopilot systems, and no redundancy related decisions to be proceeded by the A.P.



MODEL NUMBER

PA-RR-260-8

The world's first redundant UAV Servo Actuator for small and medium sized UAV systems, enhancing servo actuator reliability to an unparalleled level.

PA-RR-260-9

For applications where the PA-RR-260-8 type actuator seems to be just not powerful enough, the Pegasus PA-RR-260-9 type will generate the missing force to support your demand.

PA-RR-340-7

Based on the well proven PA-R-340-7 and is a stand-alone solution. This means that all redundancy related process cycles are performed internally by the actuator.

PA-RR-340-9

The PA-R-440-7 Servo Actuator with 35 Nm maximum torque. This is the powerhouse of our product range.

REDUNDANT SERVO CHARACTERISTICS

Continuous Torque	300 Ncm (424.84 oz-in)*	400 Ncm (566.45 oz-in)*	850 Ncm (1203.70 oz-in)*	1200 Ncm (1699.34 oz-in)*
Maximum Torque	> 500 Ncm (> 708.06 oz-in)	> 700 Ncm (> 991.28 oz-in)	> 1800 Ncm (> 2549.02 oz-in)	> 2100 Ncm (> 2973.85 oz-in)
Operating Voltage	24 VDC	24 VDC	24 VDC	24 VDC
Travel Angle	315° (PA-ME ³ /Redundant Contact-less Angle Sensor)			
No Load Speed	210°/sec @ 24 VDC	170°/sec @ 24 VDC	200°/sec @ 24 VDC	200°/sec @ 24 VDC
PC-Board	Dual Servo Controller with Digital Position Feedback			
Signal	Redundant RS485 Data Protocol			
Motor	Dual BLDC Motor	Dual BLDC Motor	Dual BLDC Motor	Dual DC Motor
Gear Train	Hardened Steel, Spur Gear Type with			
	8 Ball Races with PA-SC Overload Protection Output Shaft	8 Ball Races with PA-SC Overload Protection Output Shaft	10 Ball Races or Roller Bearings with PA-SC Overload Protection Output Shaft	10 Ball Races or Roller Bearings with PA-SC Overload Protection Output Shaft
Case	Aluminum, Water and Dust Protected (IP67) with Solid			
	Horz/Vert 4-Point Fixation	Horz/Vert 4-Point Fixation	Horz/Vert 4-Point Fixation	Horz/Vert 4-Point Fixation
Weight	480 g (16.930 oz)	580 g (20.457 oz)	1100 g (38.797 oz)	1350 g (47.615 oz)

*According to Pegasus Actuators GmbH Specification Test (results available by request).

SERVO ACTUATORS

- Control Surfaces Requiring Servo Actuation
- Hi-Value Target Drones - Surface Control and Speed Brakes
- Utility Actuation - Throttle Control, Doors, and Spoilers
- Helicopters - Manned or Unmanned
- Swash Plate or Flap Control
- PA-ME3 Magnetic Deflection Angle Sensor



PA-RR-720-7

The latest development in our actuator range features the well-known stand-alone redundancy ability combined with an extremely high output force of 20Nm. The choice for everyone who needs maximum torque at highest reliability!

Optionally Piloted Vehicles (OPV) Servo Actuator Systems

Electromechanical OPV Servos with rotary output and magnetic clutch – for safety critical (un)manned systems

For optionally piloted vehicles (OPV) Pegasus offers a variety of actuators with additional (PA-RA-3 and PA-RA-4 type) electromagnetic clutch assemblies. The actuator output shaft moves freely with the electromagnetic clutch disengaged allowing the pilot to control the vehicle. In the event of a system failure, the clutch can be disengaged, giving the pilot full control of the vehicle. The clutch output is directly coupled to the internal deflection angle sensor of the actuator, meaning that the OPV servos will not lose position if the clutch is disengaged. The clutch can also engage or disengage in any position.

Industrial

PA-R-250-8-OPV
PA-R-250-9-OPV
PA-R-340-7-OPV
PA-R-340-9-OPV
PA-R-440-7-OPV

Redundant

PA-RR-260-8-OPV
PA-RR-260-9-OPV
PA-RR-340-7-OPV
PA-RR-340-9-OPV
PA-RR-720-7-OPV

Included in the System:

- Unique PC-board arrangement
- Two magnetic clutches



Special Developments & Products

In case the standard Pegasus Servo Actuator product line does not meet your requirements, we offer OEM (COTS) made versions of the actuators. We will work with you to develop an actuator solution that meets or exceeds your system's requirements.



HALE Redundant Servo Actuators with an integrated (redundant) heating system. The case is designed to keep all internal components to environmental/temperature specifications.

PA-R-340-7 Simplex Duplex The PA-R-340-7 with PA-RA-7 magnetic clutch assembly, a simple way to add security. Fully redundant, simple duplex configuration.



2000 Ncm (2832.24 oz-in)*

> 3500 Ncm (> 4956.24 oz-in)

24 VDC

90°/sec @ 24-VDC

Dual BLDC Motor

10 Ball Bearings
with PA-SC Overload
Protection Output Shaft

Fixation

2300 g (81.121 oz)

For questions on Pegasus product prices, capabilities, custom integration, training & support contact David Jackson, David.Jackson@nwuav.com | 503.434.6845 x185



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SERVO PRODUCTS/PARTS LIST

Industrial Servo Actuators

PA-R-135-4-C-06-A-180-30*2	PA-R-250-8-R-24-A-180-60*1
PA-R-135-6-C-06-A-180-00*2	PA-R-250-9-C-24-A-180-60*3
PA-R-205-4-R-24-A-180-30*1	PA-R-340-7-C-24-A-180-70*3
PA-R-205-6-R-24-A-180-30*1	PA-R-340-9-C-24-A-180-70*3
PA-R-250-4-R-24-A-180-60*1	PA-R-440-7-C-24-A-180-00*3
PA-R-250-5-C-24-A-180-60*1	

Redundant Servo Actuators

PA-RR-260-8-C-24-C-315-00
PA-RR-260-9-C-24-C-315-00
PA-RR-340-7-C-24-C-315-00
PA-RR-340-9-C-24-C-315-00
PA-RR-720-7-C-24-C-315-00



*1 Standard version = operating voltage 18-32V, ± 45° deflection angle, PWM-TTL level signal, rigid output shaft, PA-ME contactless sensor, D-9 sub connector, differential position feedback
 *2 Standard version = operating voltage 6-9V, ± 45° deflection angle, PWM-TTL level signal, PA-SC gear train protection, PA-ME contactless sensor, differential position feedback
 *3 Standard version = operating voltage 18-32V, ± 45° deflection angle, PWM-TTL level signal, PA-SC gear train protection, PA-ME contactless sensor, D-9 sub connector, differential position feedback

Options/Upgrades

Description

- PA-SC Additional Slip Clutch
(Ordering code example: PA-R-205-4-C-24-A-180-30)
- Alternative Voltage
(Ordering code example (6-Volt version): PA-R-205-4-R-06-A-180-30)
- Differential PWM/RS485 Signal
(ordering code example: PA-R-205-4-C-24-B-180-30)
- RS485 Data Protocol
(Ordering code example: PA-R-205-4-C-24-C-180-30)
- Glenair Mighty Mouse Connector
(Ordering code example: PA-R-250-8-C-24-A-180-63)
- IP67 Water and Dust Protected Cable Pigtail, No Connector, 1m Cable Length
(Ordering code example: PA-R-205-4-R-24-A-180-37)
(Available for all actuator types; standard pigtail on PA-R-135-4 type actuator)

Programming Adapters

Item#	Device	Description
14850006	Adapter	MTA100-DE9 For Actuators without connector. Actuators ordered with pig tail but without connector will be manufactured with a Tyco MTA100 connector, to connect those units to the PA-Control 2 the MAT100-DE9 adapter is required.
14850013	Isolator	RS485 This device electrically isolates the data lines between the control system/ PA-Control and the actuator data bus to help with problems caused by electrical interference.

Programming Cables

Item#	Device	Description
Cables to connect Actuators with Glenair Series 801 connector to the PA-Control 2.		
14850005	PA-Control 2 Cable	R-205, R-250 to Glenair Series 801, size 6-7
14850009	PA-Control 2 Cable	R-340, R-440 to Glenair Series 801, size 10-202
Cables to connect Actuators to the PA-Control 3.		
14950005	PA-Control 3 Cable	RR-260
14950006	PA-Control 3 Cable	RR-340, RR-720

Programming Device Tools

Item#	Device	Description
Programming tool to parameterize the Actuator.		
14850011	PA-Control 2	Industrial Pegasus Actuators Adapter cable not included.
14950001	PA-Control 3	Redundant Pegasus Actuators Y-adapter cable not included.

Magnetic OPV Clutch Assemblies

Item#	OPV Clutch	Description
12508200	PA-RA-3	R-250, R-340-7, RR-260
13407200	PA-RA-4	R-340-9, RR-340, RR-720

Quantity Discounts on 50/100/250/500/1000 pieces. Premium Service available for shortened lead time.

Extension Cables

Actuators with mating Glenair Series 801 connectors mounted and sealed on side 1 and an open end on side 2.

Item#	Device	Description
12508101	1m Ext. Cable	R-205, R-250, RR-260 with Connector Size 6-7
13407101	1m Ext. Cable	R-340, R-440, RR-340, RR-720 with Connector Size 10-202

Repair & Overhaul Available*

PA-R-205, PA-R-250, PA-R-340, PA-R-440, PA-RR-206-8, PA-RR-260-9, PA-RR-340-7, PA-RR-340-9, PA-RR-720

Complete inspection and overhaul and an Overhaul/Status Report. Includes: New motor(s), new gear train, new bearings, new upper and middle case parts, new QC process, run-in and burn-in plus miscellaneous gaskets, washers, etc.

*No quantity discounts.

Pegasus is entitled to reject any uneconomical or impossible repair!

Installation Frames

Item#	Frame#	Actuator
11354051	PA-IF-135-4-01	For R-135-4 Actuators
12054051	PA-IF-205-4-01	For R-205-4 Actuators
12056051	PA-IF-205-6-01	For R-205-6 Actuators
12508051	PA-IF-250-8-01	For R-250-8 Actuators
12509051	PA-IF-250-9-01	For R-250-9 Actuators
13407051	PA-IF-340-7-01	For R-340-7 Actuators
13407052	PA-IF-340-9-01	For R-340-9 Actuators

Mating Connectors

Actuators with Glenair 801, includes Pins.

Item#	Device	Description
72509003	Glenair 801-007-16NF6-7SA, size 6-7	Aluminum/Cadmium, Olive Drab Chromate Includes 7x Glenair 809-002 (AWG22-28) socket contacts.
74957001	Glenair 801-007-16ZNU6-7SA, size 6-7	Aluminum/Zinc-Nickel, Black Chromate Includes 7x Glenair 809-002 (AWG22-28) socket contacts.
73407002	Glenair 801-007-16ZNU10-202SA, size 10-202	Aluminum/Zinc-Nickel, Black Chromate Includes 8x Glenair 809-002 (AWG22-28) and 2x 809-111 (AWG16-20) socket contacts.

Servo Universal Levers

Item#	Description	Actuator	Size
12054025	PA-UL-001	R-205	5mm square
12054026	PA-UL-002	R-205	5mm square
12509033	PA-UL-003	R-250, RR-260	6.5mm square
11354025	PA-UL-005	R-135	5mm square
11354026	PA-UL-006	R-135	5mm square
12509034	PA-UL-007	R-250, RR-260	6.5mm square
13407421	PA-UL-008	R-340, RR-340	8mm square
14407041	PA-UL-010	R-250, RR-260	6.5mm square
12054045	PA-UL-101	R-205	5mm square
12509043	PA-UL-103	R-250, RR-260	6.5mm square
11354045	PA-UL-105	R-135	5mm square
13407045	PA-UL-108	R-340, RR-360	8mm square
14407043	PA-UL-110	R-440, R-720	10mm square

Quantity Discounts on 50/100/250/500/1000 pieces. Premium Service available for shortened lead time.

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