

Pegasus




Actuators GmbH

PA-RR-260-9-C-24-C-315-00 - Datasheet


revision A04



Title: PA-RR-260-9-C-24-C-315-00 - Datasheet	Document: PR-DS_Datasheet-RR260-9- C-24-C-315-00_A04	revision: A04	 Pegasus Actuators GmbH
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General Description

Pegasus redundant servo actuators have been developed for applications that require extraordinary operating reliability. The actuator's two channel design allows for continuous operation even after a single point failure has occurred.

Redundancy Architecture

The actuator hardware consists of the following:

Multiple master control units allow for a majority decision, 2 independent servo controllers each controlling one brushless motor and 3 contact-less position angle sensors in order to detect and rectify an incorrect output shaft position signal. During standard mode the actuator exchanges signals through both actuator channels.

In standard mode motor no. 1 and its power stage unit are working, meaning that the motor no. 2 and its power stage unit will only be engaged after no.1 unit has failed.

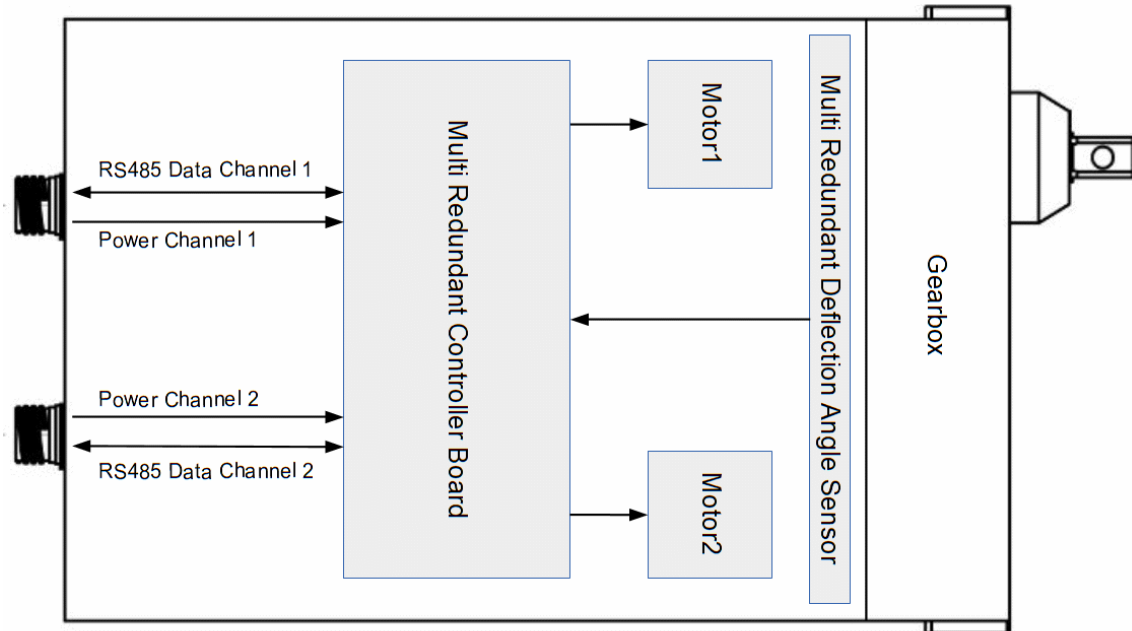
The actuator performance is not negatively affected after a motor/ power stage failure.

An example for a single point failure management: in case of a defective motor, the multiple master controllers immediately recognize that the actuator did not reach the desired position. The back up motor/ servo controller unit will be switched on without requiring the assistance of the AP(Autopilot). In principle all possible single point failures are handled accordingly.

Another example: in case of a broken signal cable, the multiple master controllers will diagnose a missing or invalid signal and switch to the other channel. In case of two different but valid signals, the master-controllers will stay with the original communication channel.

Product features

- Stand alone redundancy architecture with inbuilt decision logic
- Redundant PA-ME³ magnetic deflection angle sensor
- Dual brushless motors
- Dual servo controller PCB
- Dual Glenair Mighty Mouse Series 801, 7-pin connector
- Single Point Failure redundancy architecture
- Oil lubricated gear-box
- Anti flutter circuit
- Enhanced positioning resolution
- Inbuilt (switchable) termination resistor
- Inbuilt safeguarding against Motor overcurrent
- Inbuilt power supply filter
- Enhanced feedback signal resolution



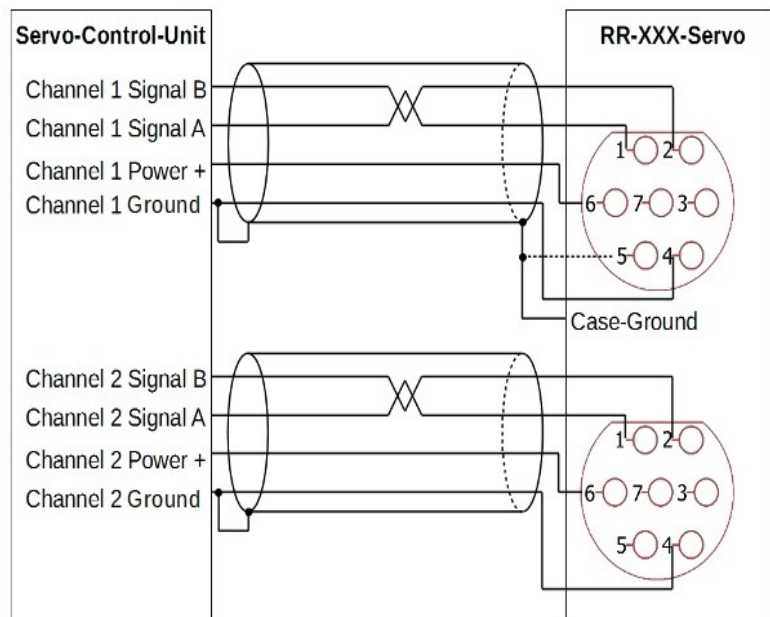
Connector


Glenair Series 801 MightyMouse: 801-011-07NF6-7PA

Mating connector: Glenair Series 801-007 or 801-008 with shell size 6-7 and Key position A

Pin Assignment

1	Signal A
2	Signal B
3	
4	Power Ground
5	
6	Power +
7	



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Operating Data

Absolute Maximum Ratings


Supply Voltage: -0.3V to 34V
 Operating temperature: -40°C - +70°C
 Storage temperature: -40°C - +85°C
 Axial load on output shaft: < 100N
 Lateral load on output shaft: .. < 300N

The following voltage differences must not exceed 15V:
 Channel 1 Power + to Channel 2 Power +
 Channel 1 Power Ground to Channel 2 Power Ground

The following voltage differences must not exceed 34V:
 Channel 1 Power + to Channel 1 Power Ground
 Channel 1 Power + to Channel 2 Power Ground
 Channel 2 Power + to Channel 1 Power Ground
 Channel 2 Power + to Channel 2 Power Ground

Electrical Characteristics

PARAMETER	MIN	TYP	MAX	UNITS
Supply Voltage	18	24	32	V
Standby current: @18V	123	165	205	mA
Standby current: @24V	97	130	162	mA
Standby current: @28V	82	110	138	mA
Standby current: @18V only one channel connected	82	110	138	mA
Standby current: @24V only one channel connected	67	90	115	mA
Standby current: @28V only one channel connected	56	75	95	mA

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RS485 Interface Characteristics

PARAMETER	MIN	TYP	MAX	UNITS
Input Voltage low	-7		-0,2	V
Input Voltage high	0,2		12	V
Receiver Input Resistance	48	125		kOhm
Receiver Termination Resistance	108	120	156	Ohm
Differential Driver Output Voltage	2,1		5	V
Maximum Driver Short-Circuit Current			±250	mA
Baud-Rate	9600	115200	230400	bit/sec.

Further information on the RS485 interface (including the servo commands) can be found in our RS485 data protocol.

Product Characteristics


PARAMETER	MIN	TYP	MAX	UNITS
Weight	550 / 19,4	580 / 20,5	610 / 21,5	g / oz
Travel angle	± 0,022 * ¹		± 157,5	°
Rated torque * ²		400 / 566		Ncm / oz-in
Stall torque	700 / 991			Ncm / oz-in
Slip clutch release momentum	700 / 991		840 / 1189	Ncm / oz-in
Speed at rated torque: @24V	115	130		°/sec
No load speed: @24V	150	170		°/sec
Gear train backlash * ³			0,5	°
Feedback resolution * ⁴	0,06		0,022	°

*¹ The smallest control command corresponds to an angle of 0.022 °. The smallest, actually driven angle is however larger and depends - amongst others - on the load of the servo and its parameter settings.

*² According to specifications of Pegasus Actuators GmbH.
(please inquire the test-specifications)

*³ Will increase during its lifetime.

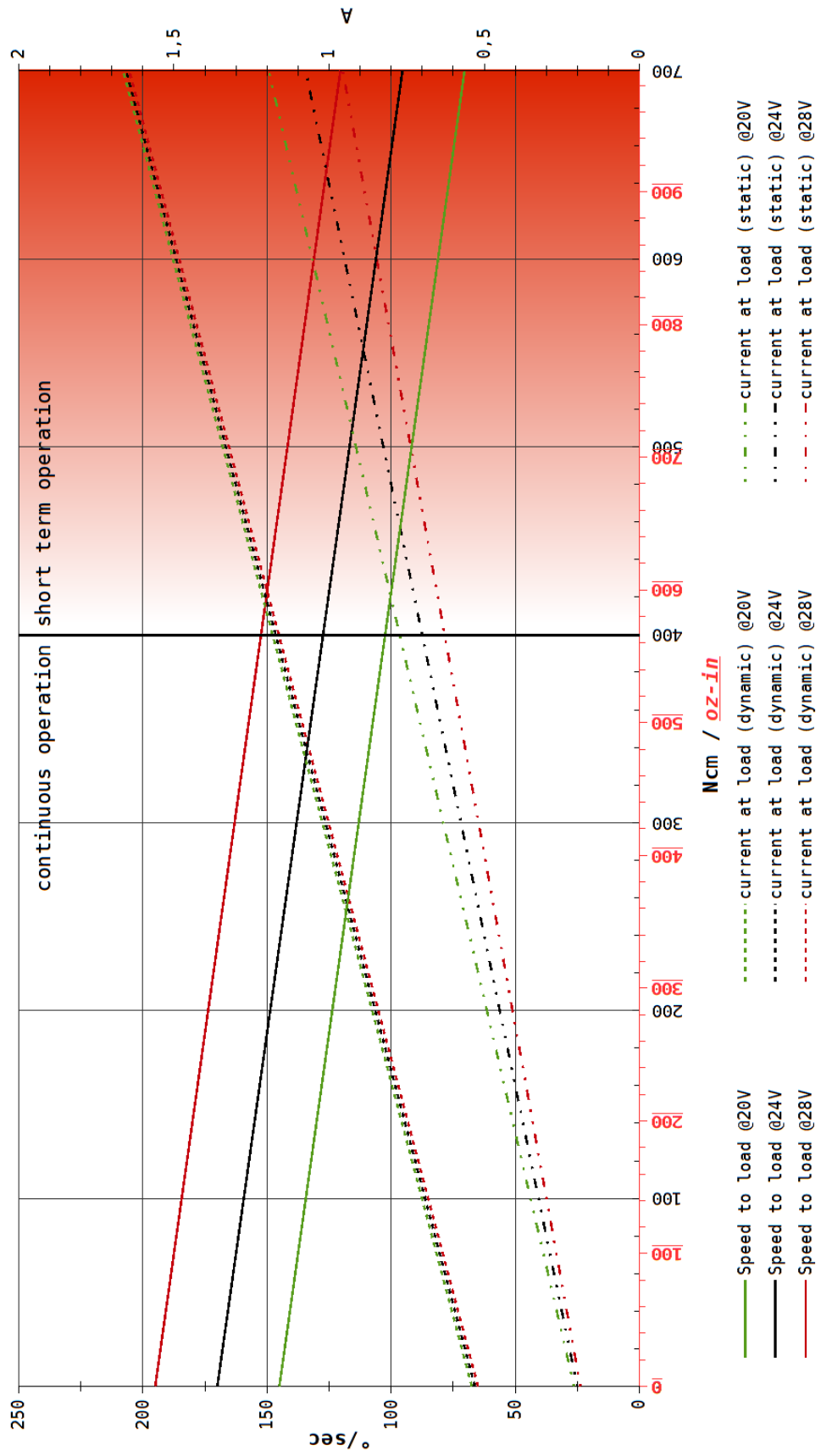
*⁴ Due to signal noise the resolution may be reduced.


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Environmental specifications

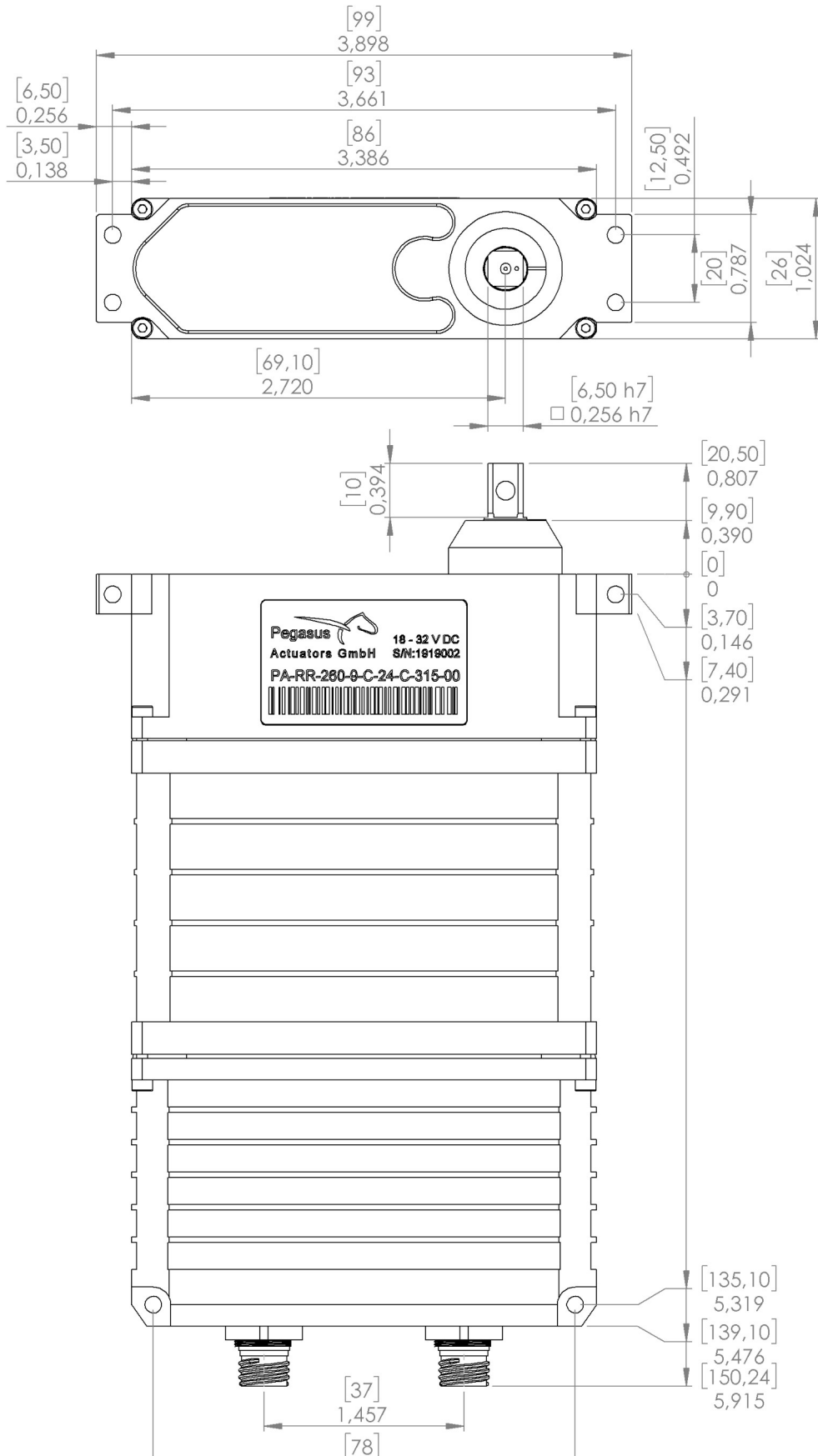
Vibration test:	Please inquire test documentation
Shock test:	Please inquire test documentation
Protection class:	IP67
Environmental Conditions:	Designed to comply with D0-160 F (RTCA), Mil STD 810


Performance Graph



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Dimension - Drawing



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Order Code

PA - RR - 260 - 9 - C - 24 - C - 315 - 00

Actuator type:

RR-260 redundant/rotary/26,0mm wide

torque index:

9

output-shaft:

C Slip clutch

operating Voltage:

24 18 to 32 VDC operating range

Signal type:

C Redundant RS485 data protocol

Travel angle:

315 315° travel angle

Revision index:

00 Glenair series 801 connector

This document is intended to be used by Pegasus Actuators GmbH customers and personnel as an aid to understand the Pegasus Actuators data protocol interface.

The interface data contained herein have been compiled from design specifications, simulation results and testing.

Due to the ongoing nature of the program, data contained herein are subject to change without notice.

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