

Underwater Servo SER-120X



shown with Blue Trail LPC bulkhead connector

Features

- Submersible up to 100 meters
- Programmable up to 7 turns of rotation or continuous rotation
- High torque
- Brushless motor
- Magnetic encoder
- Compact size
- Low power draw
- Engineered for months of exposure in seawater or fresh water
- Corrosion-resistant titanium output shaft and fasteners, Delrin® enclosure
- Standard R/C PWM interface
- Multiple connection options

Description

Blue Trail Engineering's SER-120X is the ultimate underwater servo for small robotic applications. Unlike any other servo in its class, it can be programmed to provide up to 7 turns of rotation with position control or continuous rotation with speed control. The SER-120X features a brushless motor and magnetic encoder, eliminating the most common causes of servo failure. Ideal for Autonomous Surface Vehicles as well as Remotely Operated Vehicles, the SER-110X provides reliable, long-term actuation at depths up to 100 meters.

The SER-120X is based on the Hitec HSR-M9382TH digital servo. Blue Trail integrates a modified HSR-M9382TH into a corrosion-resistant, depth-rated Delrin® housing with a ball-bearing-supported titanium output shaft and nitrile quad-ring shaft seal.

The SER-120X is available with five connection options:

- Blue Trail Simple Penetrator with 0.25-meter stock 20 AWG servo wire
- 1-meter, unterminated 20 AWG cable with bondable polyurethane jacket
- 1-meter, 20 AWG cable terminated with Blue Trail LPC plug
- Blue Trail LPC bulkhead connector
- industry-standard SEACON MCBH-3M wet-mate bulkhead connector

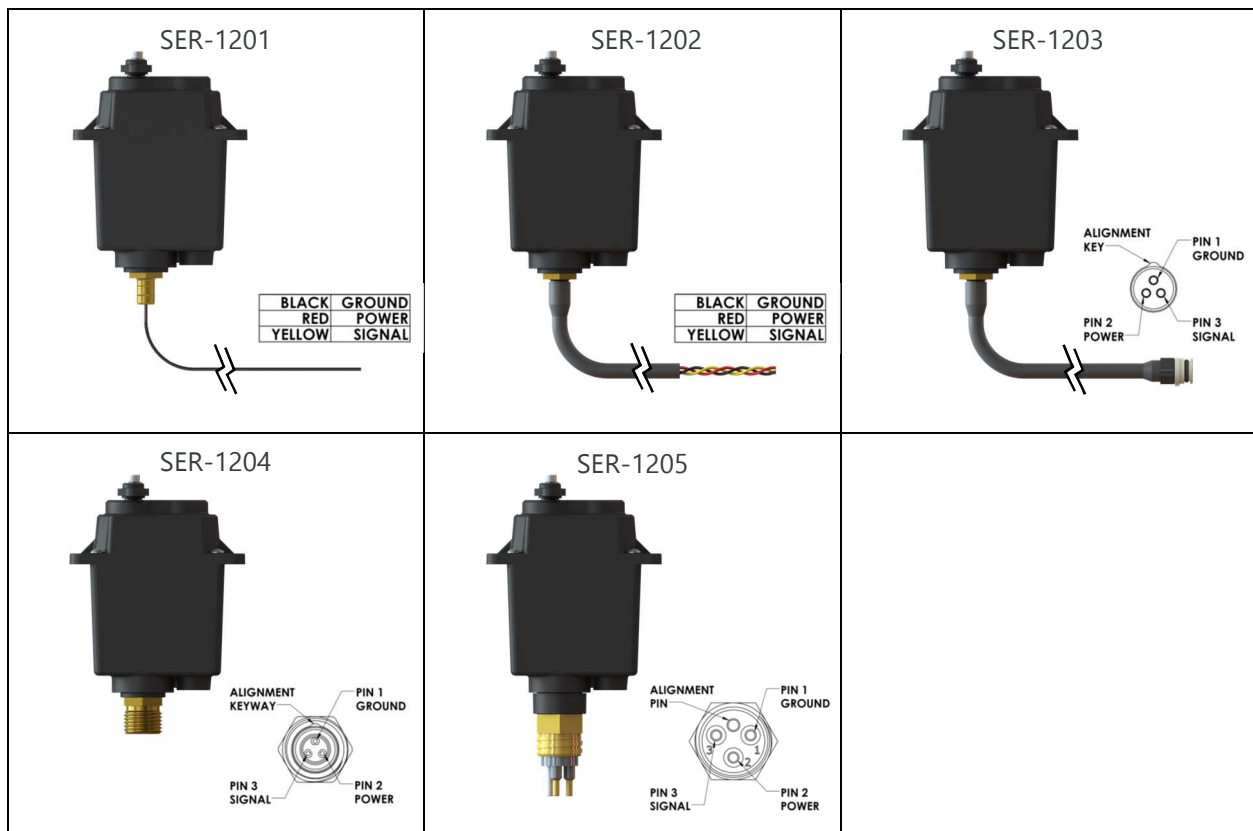
Specifications

Environmental	
Depth Rating	100 meters
Operating Temperature	-10° C to +50° C
Performance	
Torque	34.0 kg-cm / 470 oz-in
Speed	0.17 seconds/60 deg. @ 6.0 V 0.14 seconds/60 deg. @ 7.4 V
Travel Angle	up to 7 turns
Programmable Features (requires Hitec DPC-11 programmer with BLDC_HSR User interface_Ver 3.1 software)	amount of rotation (end point adjustment) direction speed fail-safe position deadband width soft start rate
Electrical	
Operating Voltage	6.0 V - 7.4 V
Idle Current	0.03 A
No-load Current	0.25 A
Stall Current	2.7 A
Motor Type	BLDC
Feedback Type	magnetic encoder
Materials	
Gears	steel/titanium
Output Shaft	titanium
Case	Delrin®
Size/Weight	
Dimensions	56 mm X 82 mm X 29 mm
Weight in Air	180 grams
Weight in Water	65 grams
Interface	
Connection Options	Blue Trail Simple Penetrator with 0.25-meter stock 20 AWG servo wire 1-meter, non-terminated 20 AWG cable with bondable polyurethane jacket 1-meter, 20 AWG cable terminated with Blue Trail LPC plug Blue Trail LPC bulkhead connector MCBH-3M wet-mate bulkhead connector
PWM Range	800µs - 2100µs
PWM Voltage Range	3 - 5 V

Connection Options

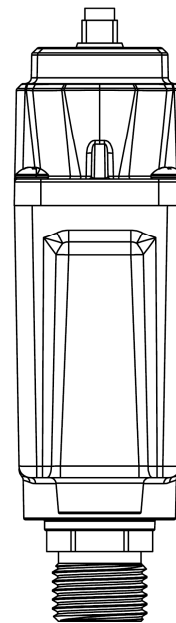
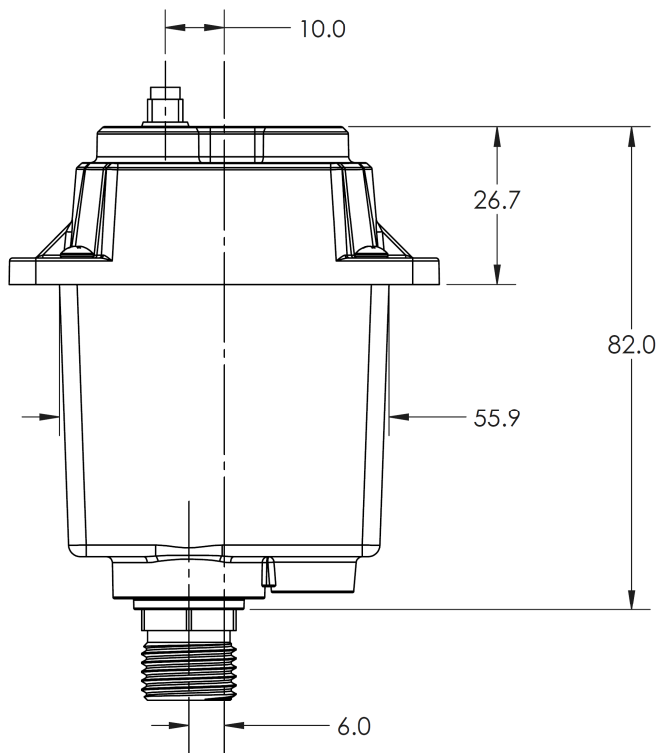
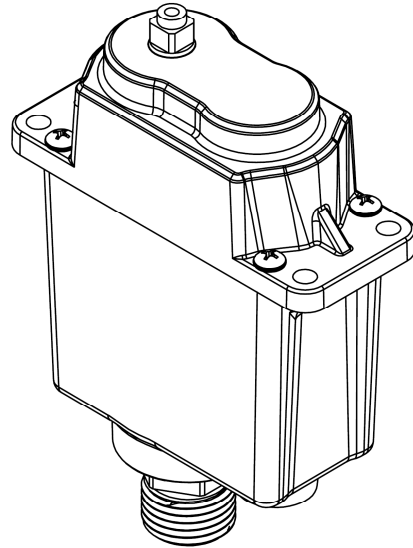
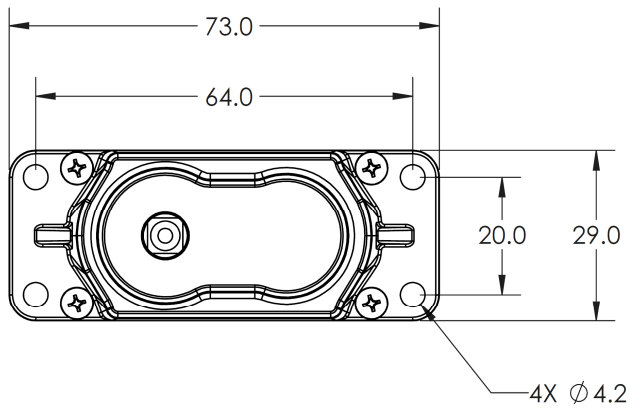
Available connection options are tabulated below. Note that the last digit in the part number indicates the connection type (i.e. SER-1201, SER-1202, etc.). All connection options are rated to 100 m depth.

Part Number	Connection Type	Description
SER-1201	Simple Penetrator with stock servo wire	0.25-meter stock servo wire exiting through Simple Penetrator. Use 8 mm polyurethane tubing (sold separately) to connect to your system.
SER-1202	Unterminated cable	1-meter cable with a bondable polyurethane cable jacket.
SER-1203	Blue Trail LPC plug	1-meter cable terminated with LPC plug, compatible with LPC bulkhead connector. Allows easy connection/disconnection at the servo cable end.
SER-1204	Blue Trail LPC bulkhead connector	Compatible with LPC underwater cables. Allows easy connection/disconnection at the servo.
SER-1205	MCBH-3M bulkhead connector	Compatible with industry-standard MCIL 3-position cables. Allows easy connection/disconnection at the servo, even underwater.



Dimensions

All dimensions are in mm. Shown with Blue Trail LPC bulkhead connector.



Output Shaft Detail

