

IG9190 Geared Servo Actuator

Ultra-Compact Precision Geared Servo Actuator

IG9190 Comprising ...

- Precision Dual-Stage Planetary Gear 140
- Integrated Low-Voltage DC Brushless Pancake Motor
- High Resolution Encoder Plus Halls

Actuator Options ...

- Gearbox Ratio Options: 20:1, 30:1, 60:1 & 90:1
- Motor Voltage Options: 48 VDC & 72 VDC
- Motor Rated Power Options: 1.0 kW & 1.5 kW
- Backlash Specification Options: ≤ 5 Arc Min
- IP Rating Options: IP65
- Output Bearing Configuration Options: Ball Bearing or High-Capacity Roller Bearing
- Holding Brake Option: 24VDC
- Low Temperature Grease Option



PMW Dynamics Limited

Newman Lane | Alton | Hampshire | GU34 2QW | United Kingdom

T +44 (0) 1420 594 140 | E sales@pmwdynamics.com | W pmwdynamics.com

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Part Number Nomenclature

IG9190	-	XXX	-	XXX	-	XXX	-	XXX	-	XXX	-	XXX	-	XXX
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Configuration Options

Actuator OD	140	-	Nominal Actuator Diameter (mm)
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Actuator Gear Type	ULT	-	ULT - Backlash <5 Arc Min - IP65 - Standard Ball Output Bearing - Option for Roller Bearing - Helical Gears
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Actuator Gear Configuration	CPT	-	Compact
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Actuator Output Bearing	OBB ORB	-	Output Ball Bearing Output Roller Bearing
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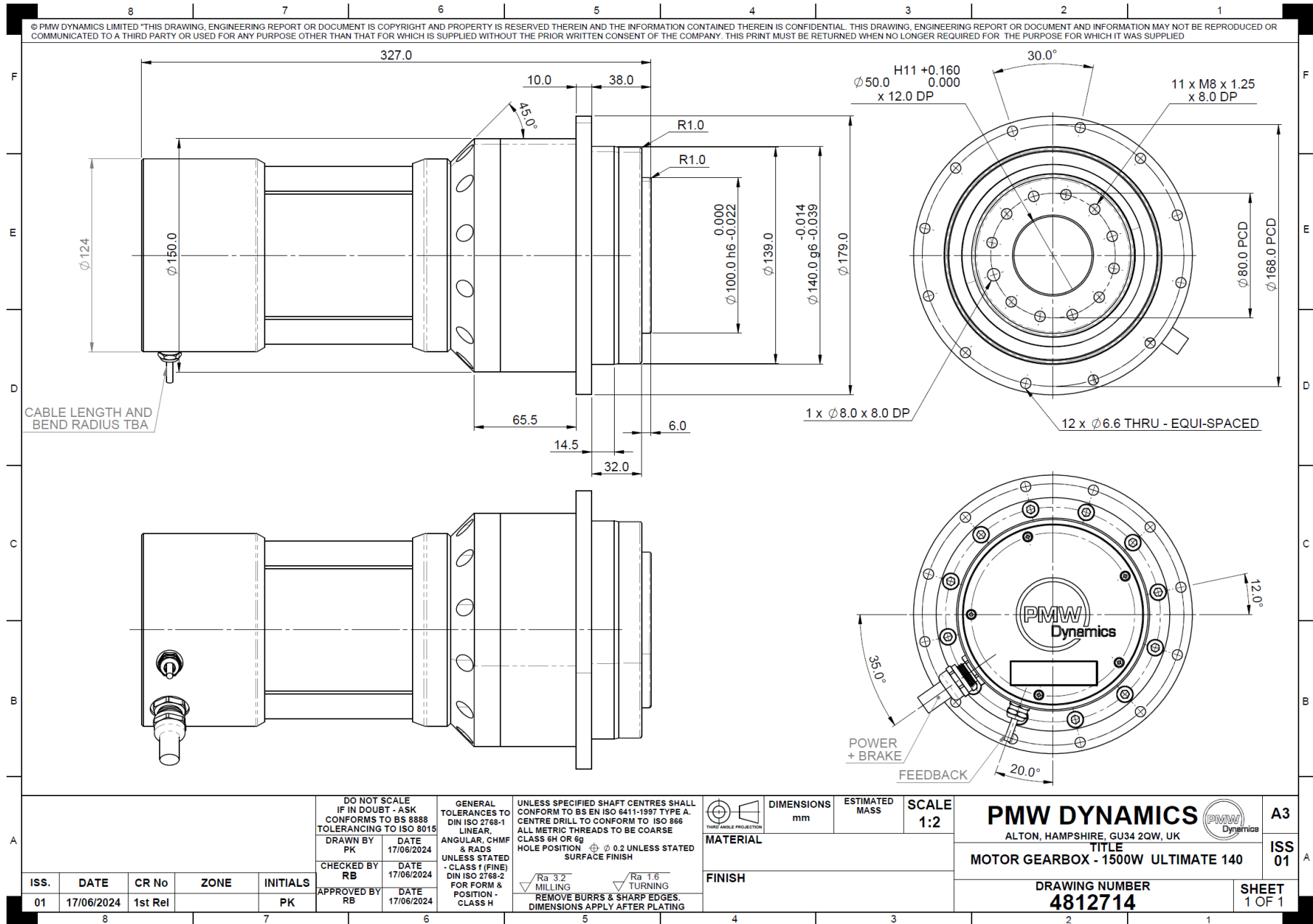
Actuator Gear Ratio	020 030 060 090	-	20:1 30:1 60:1 90:1
Additional Ratio Options Available on Request			

Motor Rated Power	100 150	-	1,000W - 48V & 72V 1,500W - 72V Only
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Motor Voltage Designation	048 072	-	48V 72V
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Holding Brake	No Holding Brake Holding Brake 24V	-	NBK BK2
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Outline Drawing High Performance ULT - CTP Gearbox Variant - 1,500W Motor



High Performance ULT - CTP Gearbox Variant

Gearbox Type	ULT - CTP					:1
	020	030	060	090		
Actuator Ratio						
Motor Rated Power			1.0			kW
Rated Output Torque ⁷	57.6	86.4	172.8	259.2		Nm
Rated Output Speed	150.0	100.0	50.0	33.3		RPM
Peak Output Torque ⁷	115.2	172.8	345.6	518.4		Nm
Speed at Peak Torque	140.0	93.3	46.7	31.1		RPM
Rated Current		23.9 (48V Motor) 14.9 (72V Motor)				A RMS
Motor Ke/Kt - 48V Rated Voltage Winding (+/- 10%)		Ke 0.1169 VS/Rad Kt 0.0997 Nm/Arms				
Motor Ke/Kt - 72V Rated Voltage Winding (+/- 10%)		Ke 0.1880 VS/Rad Kt 0.1595 Nm/Arms				
48V Motor Inductance (mH) & Resistance (+/- 10%)		0.134 mH 0.035 Ω				
72V Motor Inductance (mH) & Resistance (+/- 10%)		0.342 mH 0.089 Ω				
Motor Rated Power			1.5			kW
Rated Output Torque ⁷	86.2	129.3	258.7	353.0 ¹		Nm
Rated Output Speed	150.0	100.0	50.0	33.3		RPM
Peak Output Torque ⁷	172.4	258.7	517.3	728.0 ¹		Nm
Speed at Peak Torque	140.0	93.3	46.7	31.1		RPM
Rated Current		24.0 (72V Motor)				A RMS
Motor Ke/Kt - 72V Rated Voltage Winding (+/- 10%)		Ke 0.1720 VS/Rad Kt 0.1470 Nm/Arms				
72V Motor Inductance (mH) & Resistance (+/- 10%)		0.179 mH 0.047 Ω				
Electrical Properties						
Motor Pole Pairs			5			Pole Pairs
Encoder	Differential Output ABI Output - 1,024 Pulse Per Revolution (4,096 Counts Per Revolution)					
Thermistor			NTC			
Brake Voltage			24.0			VDC
Brake Current			0.63			A
Mechanical Properties						
Max. Backlash			≤5 (Standard) ≤3 (Option)			Arc Minutes
Torsional Stiffness			150.0			Nm/min
Tilting Moment			1,130 (Standard Output Ball Bearing) 2,150 ⁸ (Option Output Tapered Roller Bearing)			Nm
Max Axial Load			16,900 (Standard Output Ball Bearing) 19,100 ⁸ (Option Output Tapered Roller Bearing)			N
Max Radial Load			11,680 (Standard Output Ball Bearing) 23,000 ⁸ (Option Output Tapered Roller Bearing)			N
Brake Holding Torque			4.0			Nm
Operating Life			20,000 ⁴			Hours
Operating Temperature			-15 to +45			Degs C
Protection Class			IP65			
Efficiency			> 94% @ Full Rated Gearbox Torque			
Lubrication			Lifetime lubrication (Grease)			

Engineering Notes

1. Torque limited by gearbox capacity. Drive current should be de-rated accordingly
2. Rated output torque calculated at 90% gearbox efficiency
3. Applied to front face of output flange at 100 RPM
4. Life calculated at nominal rated gearbox torque & speed
5. Rating based upon minimum continuous heatsinking capacity of 44W for 1.0kW & 71W for 1.5kW
6. Output flange is precision steel hub for accurate alignment. Flange should be protected to avoid corrosion
7. Torque ratings valid if less than 10% of the radial load is applied to output flange – Please discuss with our Application Team
8. Actual values can change with design modification

Motor Performance

1,000 Watt Motor | Rated Torque 3.2 Nm | Rated Speed 3,000 RPM | Peak Torque 6.4 Nm | Speed at Peak Torque 2,800 RPM

1,500 Watt Motor | Rated Torque 4.79 Nm | Rated Speed 3,000 RPM | Peak Torque 9.58 Nm | Speed at Peak Torque 2,800 RPM

Please note that motor voltage designations are maximum charge voltages for battery packs. Nominal operating DC BUS voltage are as follows ...

48V Motor – 42V DC (i.e. published motor rated performance achieved @ 42V DC BUS)

72V Motor – 63V DC (i.e. published motor rated performance achieved @ 63V DC BUS)

Motors are available without gearhead and as frameless component sets. Please ask our Application Team for further details

Important Notice

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IG9190 Electrical Connections

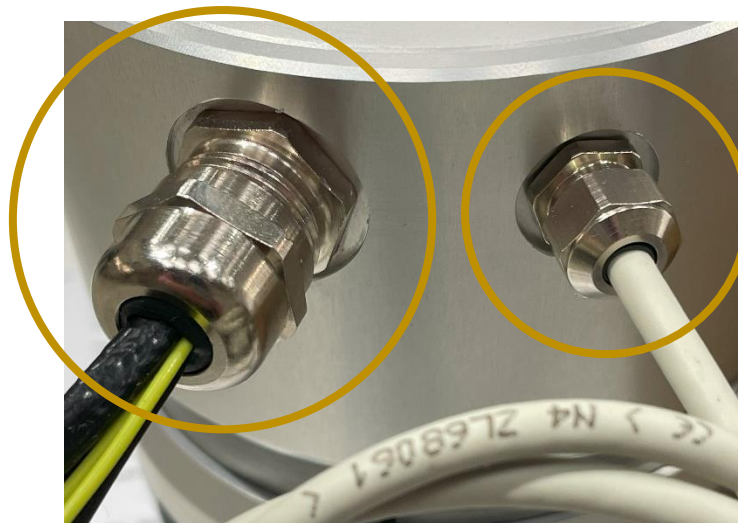
Encoder	
+5V	RED
Gnd	BLUE
A	PINK
\overline{A}	GREY
B	GREEN
\overline{B}	YELLOW
Z	WHITE
\overline{Z}	BROWN
HALL U	BLACK
HALL V	PURPLE
HALL W	PINK & GREY
SCREEN	BRAID

Motor Phase Wire IDENTs	
Phase U	U or 1
Phase V	V or 2
Phase W	W or 3
SCREEN	BRAID

Thermistor	
NTC +	YELLOW
NTC -	YELLOW

Brake	
+24V	WHITE
Gnd	WHITE

Motor Power
Thermistor
Brake



Encoder