

IG9190 Geared Servo Actuator

Ultra-Compact Precision Geared Servo Actuator

IG9190 Comprising ...

- Precision Dual-Stage Planetary Gear
- Integrated Low-Voltage DC Brushless Pancake Motor
- High Resolution Encoder
- Holding Brake Option

Actuator Options ...

- Output Ratio: 16:1, 20:1, 25:1, 50:1 & 100:1
- Motor Voltage: 24 VDC, 48 VDC & 72 VDC
- Motor Rated Power: 0.5 kW, 1.0 kW & 1.5 kW
- Backlash Specification: ≤ 3 Arc Min, ≤ 5 Arc Min & ≤ 8 Arc Min
- IP Rated: IP54 or IP65
- Output Bearing: Ball Bearing or High-Capacity Roller Bearing
- Holding Brake: 24VDC



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Part Number Nomenclature

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

Actuator OD	110	-	Nominal Actuator Diameter (mm)
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Actuator Gear Type	SPT ULT	-	SPT - Backlash <8 Arc Min - IP54 - Ball Output Bearing - Straight Gears ULT - Backlash <5 Arc Min - IP65 - Standard Ball Output Bearing - Option for Roller Bearing - Helical Gears
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Actuator Gear Configuration	STD CPT HTQ	-	Standard - Available for SPT only Compact - Future Option for ULT only - Not Currently Available High Torque - Available for ULT only
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Actuator Output Bearing	OBB ORB	-	Output Ball Bearing Output Roller Bearing - Option available for ULT only
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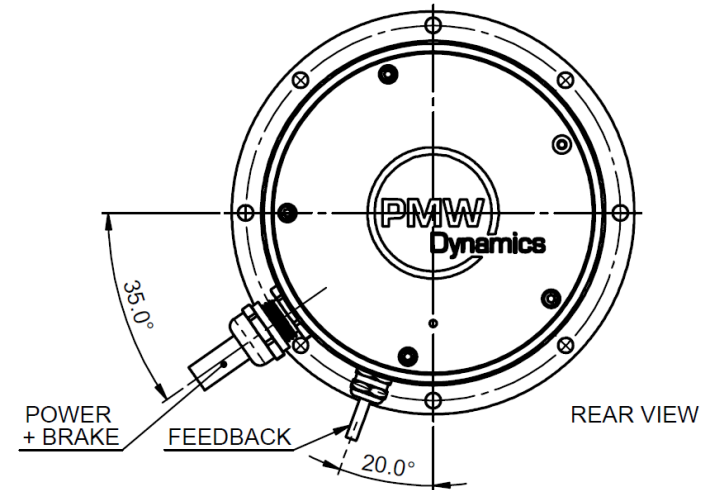
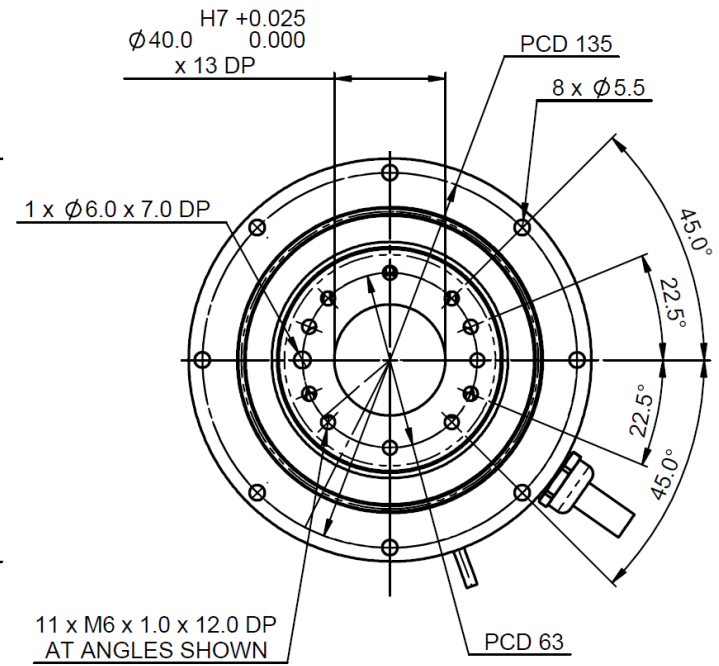
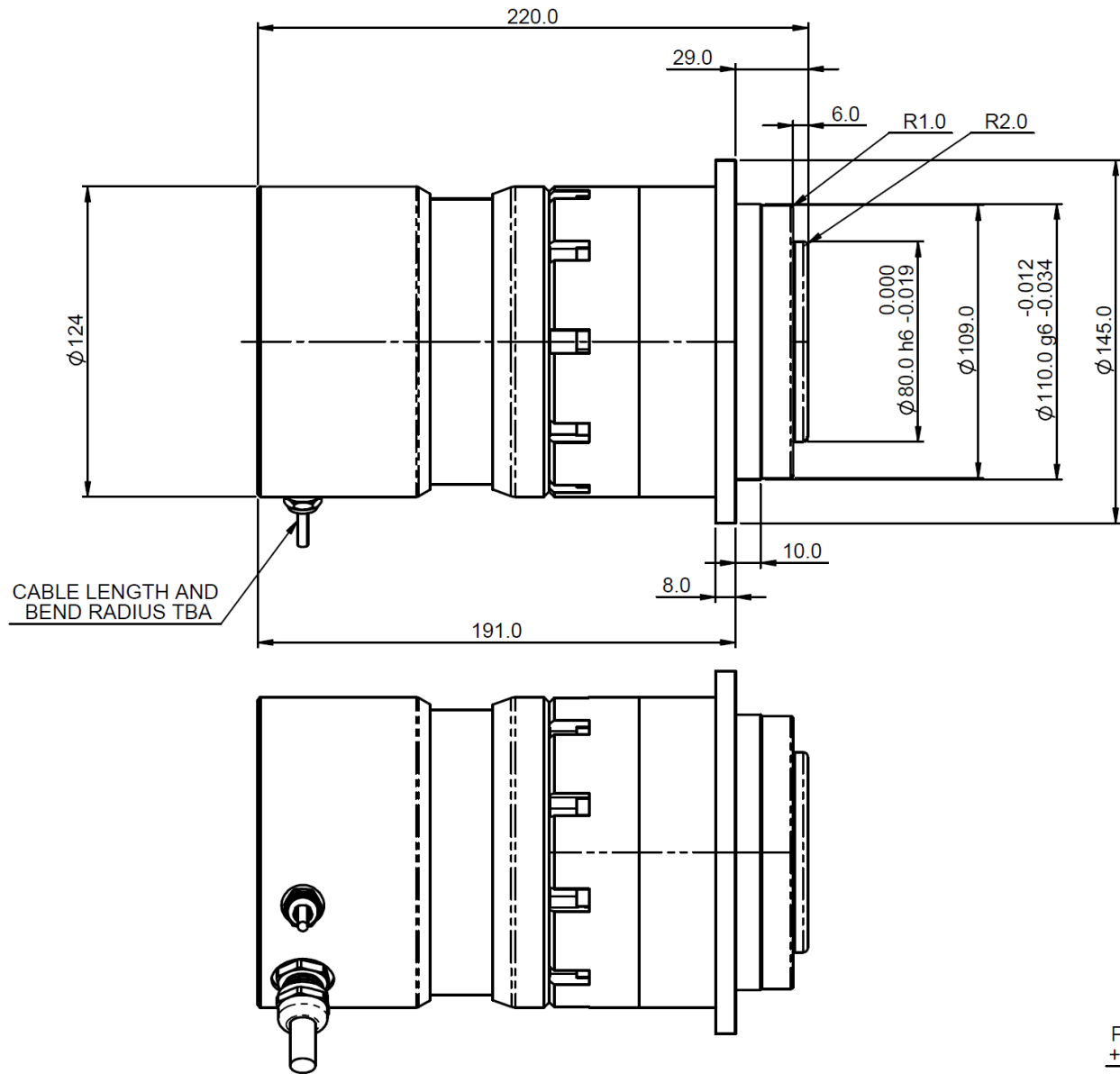
Actuator Gear Ratio	016 020 025 050 100	-	16:1 (SPT & ULT) 20:1 (SPT & ULT) 25:1 (SPT & ULT) 50:1 (SPT & ULT) 100:1 (SPT & ULT)
Additional Ratio Options Available on Request			

Motor Rated Power	050 100 150	-	500W - 24V, 48V & 72V 1,000W - 48V & 72V Only 1,500W - 72V Only
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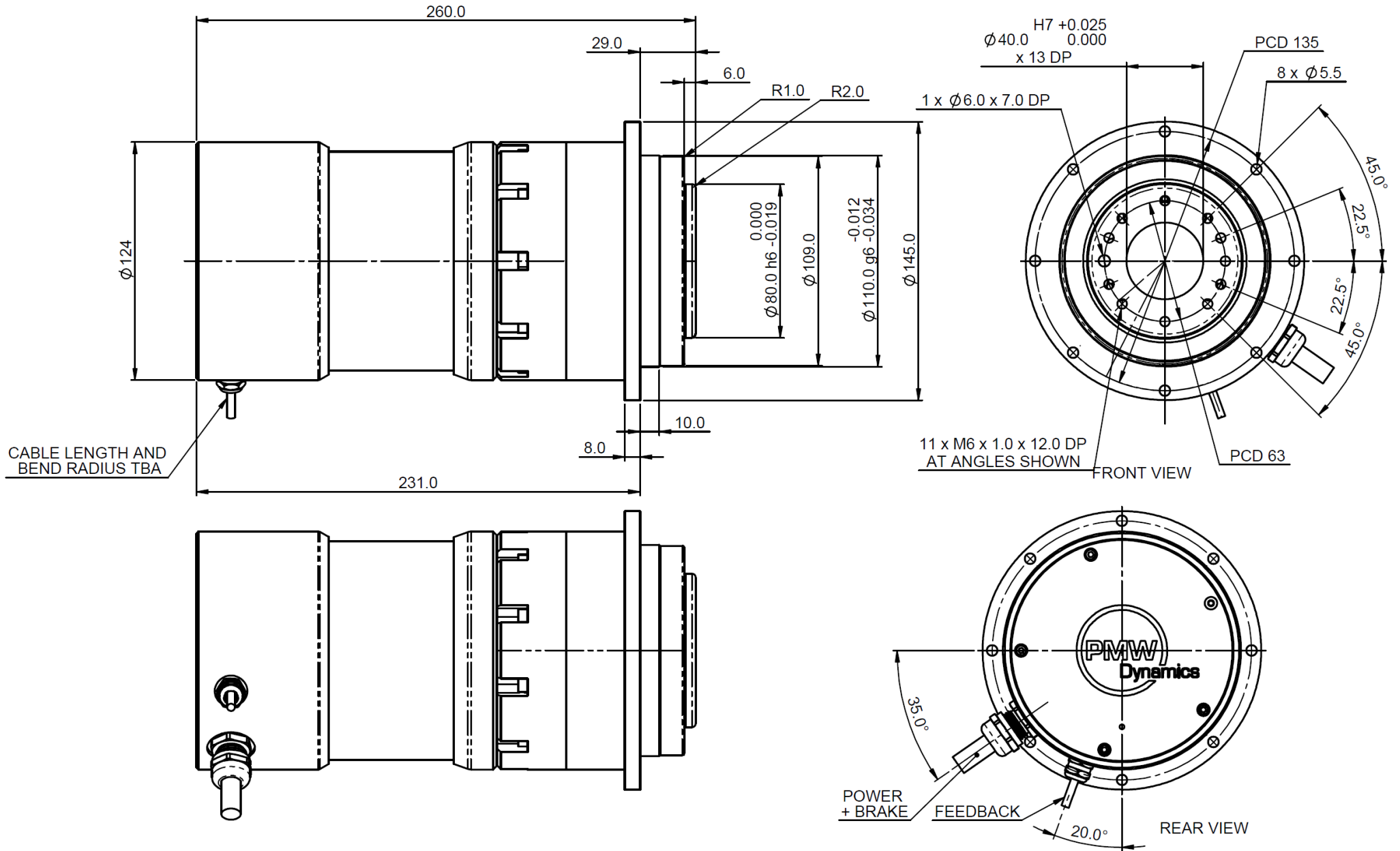
Motor Nominal Voltage	024 048 072	-	24V 48V 72V
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Holding Brake	No Holding Brake Holding Brake 24V	-	NBK BK2
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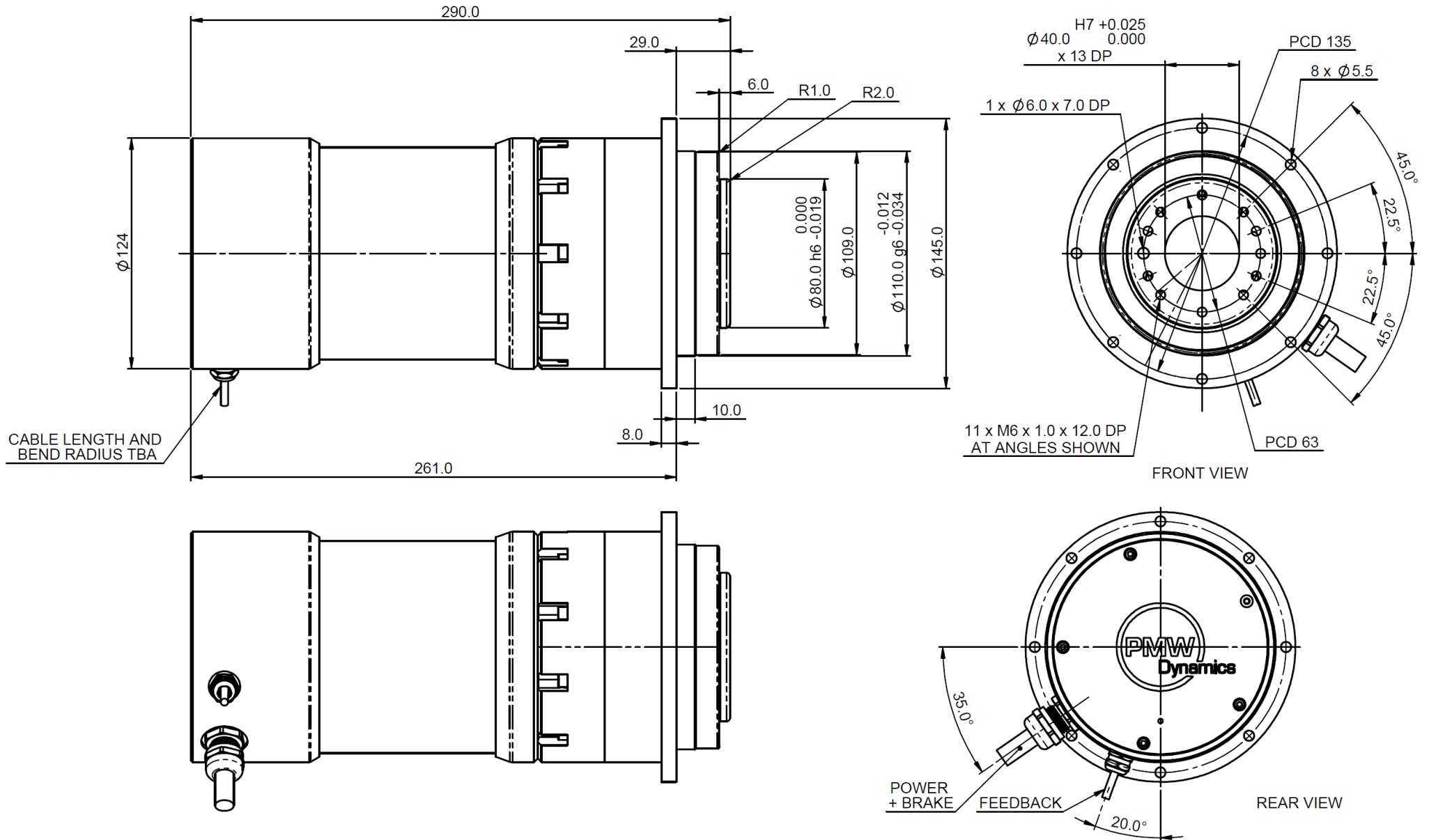
Outline Drawing High Performance ULT - HTQ Gearbox Variant - 500W Motor



Outline Drawing High Performance ULT - HTQ Gearbox Variant - 1,000W Motor



Outline Drawing High Performance ULT - HTQ Gearbox Variant - 1,500W Motor



Standard SPT Gearbox Variant

Gearbox Type	SPT						
Actuator Ratio	016	020	025	050	100	:1	
Motor Rated Power	0.5						kW
Rated Output Torque ⁷	23.0	28.8	36.0	72.0	85.0 ¹	Nm ²	
Rated Output Speed	187.5	150.0	120.0	60.0	30.0	RPM	
Peak Output Torque ⁷	46.1	57.6	72.0	144.0	207.0 ¹	Nm	
Speed at Peak Torque	175.0	140.0	112.0	56.0	28.0	RPM	
Motor Ke/Kt - 24V Rated Voltage Winding (+/- 10%)	Ke 0.0610 VS/Rad Kt 0.0520 Nm/Arms						
Motor Ke/Kt - 48V Rated Voltage Winding (+/- 10%)	Ke 0.1220 VS/Rad Kt 0.1040 Nm/Arms						
Motor Ke/Kt - 72V Rated Voltage Winding (+/- 10%)	Ke 0.1830 VS/Rad Kt 0.1560 Nm/Arms						
Motor Rated Power	1.0						kW
Rated Output Torque ⁷	46.1	57.6	72.0	144.0	85.0 ¹	Nm ²	
Rated Output Speed	187.5	150.0	120.0	60.0	30.0	RPM	
Peak Output Torque ⁷	92.2	115.2	144.0	241.0 ¹	207.0 ¹	Nm	
Speed at Peak Torque	175.0	140.0	112.0	56.0	28.0	RPM	
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						
Motor Rated Power	1.5						kW
Rated Output Torque ⁷	69.0	86.2	107.8	160.0 ¹	85.0 ¹	Nm ²	
Rated Output Speed	187.5	150.0	120.0	60.0	30.0	RPM	
Peak Output Torque ⁷	138.0	172.4	215.6	241.0 ¹	207.0 ¹	Nm	
Speed at Peak Torque	175.0	140.0	112.0	56.0	28.0	RPM	
Motor Ke/Kt - 72V Rated Voltage Winding (+/- 10%)	Ke 0.1720 VS/Rad Kt 0.1470 Nm/Arms						
Electrical Properties							
Motor Pole Pairs	5						
Encoder	1,024 PPR - Differential Output						PPR
Thermistor	PT 1000						
Brake Voltage	24.0						VDC
Brake Current	6.5						A
Mechanical Properties							
Max. Backlash	≤8 (Standard)						Arc Minutes
Torsional Stiffness	75.0						Nm/m
Tilting Moment	110 ³						Nm
Max Axial Load	2,880						N
Max Radial Load	Consult Factory						N
Brake Holding Torque	4.0						Nm
Operating Life	20,000 ⁴						Hours
Operating Temperature	-10 to +50						Degs C
Protection Class	IP54						
Efficiency	> 94% @ Full Rated Gearbox Torque						
Lubrication	Lifetime lubrication (Grease)						

Notes:

- 1 - Torque limited by gearbox capacity. Drive electronics should be de-rated accordingly
- 2 - Rated output torque calculated at 90% gearbox efficiency
- 3 - Applied to middle of output shaft at 100 RPM
- 4 - Life calculated at nominal rated gearbox torque & speed

- 5 - Rating based upon minimum continuous heatsinking capacity of 22W for 0.5kW, 44W for 1.0kW & 66W 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

500 Watt Motor - Rated Torque 1.6Nm - Rated Speed 3,000RPM - Peak Torque 3.2Nm - Speed at Peak Torque 2,800 RPM - 24W Heatsinking
 1,000 Watt Motor - Rated Torque 3.2Nm - Rated Speed 3,000RPM - Peak Torque 6.4Nm - Speed at Peak Torque 2,800 RPM - 46W Heatsinking
 1,500 Watt Motor - Rated Torque 4.79Nm - Rated Speed 3,000RPM - Peak Torque 9.58Nm - Speed at Peak Torque 2,800 RPM - 71W Heatsinking

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High Performance ULT - HTQ Gearbox Variant

Gearbox Type	ULT							
Actuator Ratio	016	020	025	050	100		:1	
Motor Rated Power	0.5							kW
Rated Output Torque ⁷	23.0	28.8	36.0	72.0	144.0		Nm ²	
Rated Output Speed	187.5	150.0	120.0	60.0	30.0		RPM	
Peak Output Torque ⁷	46.1	57.6	72.0	144.0	288.0		Nm	
Speed at Peak Torque	175.0	140.0	112.0	56.0	28.0		RPM	
Motor Ke/Kt - 24V Rated Voltage Winding (+/- 10%)	Ke 0.0610 VS/Rad Kt 0.0520 Nm/Arms							
Motor Ke/Kt - 48V Rated Voltage Winding (+/- 10%)	Ke 0.1220 VS/Rad Kt 0.1040 Nm/Arms							
Motor Ke/Kt - 72V Rated Voltage Winding (+/- 10%)	Ke 0.1830 VS/Rad Kt 0.1560 Nm/Arms							
Motor Rated Power	1.0							kW
Rated Output Torque ⁷	46.1	57.6	72.0	144.0	147.0 ¹		Nm	
Rated Output Speed	187.5	150.0	120.0	60.0	30.0		RPM	
Peak Output Torque ⁷	92.2	115.0	144.0	288.0	353.0 ¹		Nm	
Speed at Peak Torque	175.0	140.0	112.0	56.0	28.0		RPM	
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							
Motor Rated Power	1.5							kW
Rated Output Torque ⁷	69.0	86.2	107.8	190.0 ¹	147.0 ¹		Nm	
Rated Output Speed	187.5	150.0	120.0	60.0	30.0		RPM	
Peak Output Torque ⁷	138.0	172.4	215.6	380.0 ¹	353.0 ¹		Nm	
Speed at Peak Torque	175.0	140.0	112.0	56.0	28.0		RPM	
Motor Ke/Kt - 72V Rated Voltage Winding (+/- 10%)	Ke 0.1720 VS/Rad Kt 0.1470 Nm/Arms							
Electrical Properties								
Motor Pole Pairs	5							
Encoder	1,024 PPR - Differential Output							PPR
Thermistor	PT 1000							
Brake Voltage	24.0							VDC
Brake Current	TBA							mA
Mechanical Properties								
Max. Backlash	≤5 (Standard) ≤3 (Option)							Arc Minutes
Torsional Stiffness	82.0							Nm/m
Tilting Moment	335 (Standard Output Ball Bearing) 675 (Option Output Tapered Roller Bearing)							Nm
Max Axial Load	5,700 (Standard Output Ball Bearing) 6,210 (Option Output Tapered Roller Bearing)							N
Max Radial Load	3,960 (Standard Output Ball Bearing) 7,850 (Option Output Tapered Roller Bearing)							N
Brake Holding Torque	4.0							Nm
Operating Life	20,000 ⁴							Hours
Operating Temperature	-10 to +50							Degs C
Protection Class	IP65							
Efficiency	> 94% @ Full Rated Gearbox Torque							
Lubrication	Lifetime lubrication (Grease)							

Notes:

- 1 - Torque limited by gearbox capacity. Drive electronics should be de-rated accordingly
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1,000 Watt Motor - Rated Torque 3.2Nm - Rated Speed 3,000RPM - Peak Torque 6.4Nm - Speed at Peak Torque 2,800 RPM - 44W Heatsinking

1,500 Watt Motor - Rated Torque 4.79Nm - Rated Speed 3,000RPM - Peak Torque 9.58Nm - Speed at Peak Torque 2,800 RPM - 71W Heatsinking

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