

HarmonicDrive®

Quick Connect® Servo Gearheads



Permanent Precision, Excellent Backlash Stability

- Harmonic Drive® or Harmonic Planetary® gearheads
 - Zero backlash and low backlash versions
 - Ratios: 3:1 - 160:1
 - Peak Torque: 3.9 N·m - 3940 N·m
 - Sizes: 40mm - 230mm
 - Output Configurations:
Hollow Shaft, Flange, Keyed Shaft, Smooth Shaft

Harmonic Drive® Quick Connect® Gearhead Product Line

HarmonicPlanetary®
HPGP High Torque Series
(Peak torque 12Nm to 3940Nm)



Size	Outline Dimension (mm)	Reduction ratio	Backlash		Motor power
			Standard	Reduced	
11	□40	5, 21, 37, 45	≤ 3 arc-min	n/a	10W~200W
14, 20, 32	□60, □90, □120	5, 11, 15, 21, 33, 45	≤ 3 arc-min	≤ 1 arc-min	30W~4kW
50	□170		≤ 3 arc-min	≤ 1 arc-min	500W~10kW
65	□230	4, 5, 12, 15, 20, 25	≤ 3 arc-min	≤ 1 arc-min	1.3kW~15kW

HarmonicPlanetary®
HPG Standard Series
(Peak torque 5Nm to 3200Nm)



Size	Outline Dimension (mm)	Reduction ratio	Backlash		Motor power
			Standard	Reduced	
11	□40	5, 9, 21, 37, 45	≤ 3 arc-min	n/a	10W~100W
14, 20, 32	□60, □90, □120	3, 5, 11, 15, 21, 33, 45	≤ 3 arc-min	≤ 1 arc-min	30W~3.5kW
50	□170		≤ 3 arc-min	≤ 1 arc-min	500W~10kW
65	□230	4, 5, 12, 15, 20, 25, 40, 50	≤ 3 arc-min	≤ 1 arc-min	1.3kW~15kW

HarmonicPlanetary®
HPG Helical Series
(Peak torque 5Nm to 4000Nm)



Size	Outline Dimension (mm)	Reduction ratio	Backlash		Motor power
			Standard	Reduced	
11	□40	4, 5, 6, 7, 8, 9, 10	≤ 3 arc-min	n/a	10W ~ 100W
14	□60	3, 4, 5, 6, 7, 8, 9, 10	≤ 3 arc-min	≤ 1 arc-min	30W ~ 3.5kW
20	□90		≤ 3 arc-min	≤ 1 arc-min	500W ~ 10kW
32	□120		≤ 3 arc-min	≤ 1 arc-min	1.3kW ~ 15kW

HarmonicPlanetary®
HPG Right Angle Series
(Peak torque 150Nm to 2200Nm)



Size	Outline Dimension (mm)	Reduction ratio	Backlash	Motor power
			Standard	
32, 50	□120, □170	5, 11, 15, 21, 33, 45	≤ 3 arc-min	500W~8kW
65	□230	5, 12, 15, 20, 25, 40, 50	≤ 3 arc-min	2kW~8kW

HarmonicDrive®
CSG-GH High Torque Series
(Peak torque 230Nm to 2419Nm)
Zero-Backlash



Size	Outline Dimension (mm)	Reduction ratio	Repeatability (arc sec) ^{*1}	Transmission Accuracy (arc min)	Motor power
14	□60	50, 80, 100	±10	1.5	30W~100W
20	□90	50, 80, 100, 120, 160	±8		1.0
32	□120		±6	300W~1.5kW	
45	□170		±5	450W~2kW	
65	□230		±4	850W~5kW	

HarmonicDrive®
CSF-GH Standard Series
(Peak torque 18Nm to 2630Nm)
Zero-Backlash



Size	Outline Dimension (mm)	Reduction ratio	Repeatability (arc sec) ^{*1}	Transmission Accuracy (arc min)	Motor power
14	□60	50, 80, 100	±10	1.5	30W~100W
20	□90	50, 80, 100, 120, 160	±8		1.0
32	□120		±6	300W~1kW	
45	□170		±5	450W~2kW	
65	□230		±4	850W~5kW	

HarmonicPlanetary®
HPN Standard Series
(Peak torque 9Nm to 752Nm)



Size	Outline Dimension (mm)	Reduction ratio	Backlash		Motor power
			One stage	Two stage	
11	□42	3, 4, 5, 7, 10, 15, 20, 25, 30, 35, 40, 45, 50	≤ 5 arc-min	≤ 7 arc-min	30W ~ 150W
14	□60				100W ~ 600W
20	□90				200W ~ 2kW
32	□115				400W ~ 7kW
40	□142				500W ~ 7.5kW

HarmonicPlanetary®
HPN-L Face-Mount Series
(Peak torque 9Nm to 752Nm)

NEW!



Size	Outline Dimension (mm)	Reduction ratio	Backlash		Motor power
			One stage	Two stage	
11	Ø50	3, 4, 5, 7, 10, 15, 20, 25, 30, 35, 40, 45, 50	≤ 5 arc-min	≤ 7 arc-min	30W ~ 150W
14	Ø70				100W ~ 600W
20	Ø90				200W ~ 2kW
32	Ø120				400W ~ 7kW
40	Ø155				500W ~ 7.5kW

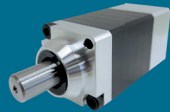
HarmonicPlanetary®
HPN Right Angle Series
(Peak torque 9Nm to 752Nm)

NEW!



Size	Outline Dimension (mm)	Reduction ratio	Backlash		Motor power
			One stage	Two stage	
11	□42	3, 4, 5, 7, 10, 15, 20, 25, 30, 35, 40, 45, 50	≤ 6 arc-min	≤ 9 arc-min	30W ~ 150W
14	□60				100W ~ 600W
20	□90				200W ~ 2kW
32	□115				400W ~ 7kW
40	□142				500W ~ 7.5kW

HarmonicPlanetary®
HP/CP 8 Series



Size	Ratio	Outline Dimension (mm)	Backlash	Motor power
8	5, 16, 25	□ 25	≤30 arc-min	5W ~ 30W

HarmonicPlanetary® Gear Units

HarmonicPlanetary®
HPF Hollow Shaft Series
(Peak torque 100Nm to 220Nm)



Size	Outline Dimension (mm)	Hollow shaft diameter	Reduction ratio	Backlash
25	Ø136	Ø25	11	≤ 3 arc-min
32	Ø167	Ø30		

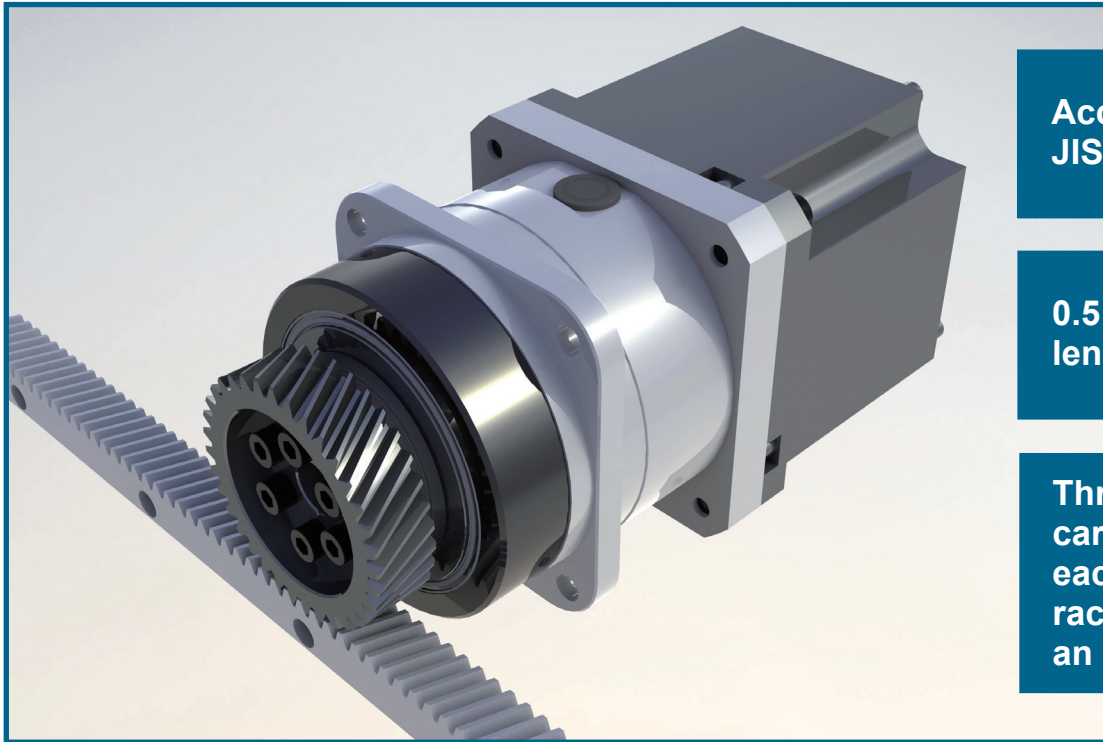
HarmonicPlanetary®
HPG Input Shaft Series
(Peak torque 3.9Nm to 220Nm)



Size	Outline Dimension (mm)	Reduction ratio	Backlash	
			Standard	Reduced
11	□40	5, 9, 21, 37, 45	≤ 3 arc-min	n/a
14, 20, 32	□60, □90, □120	3, 5, 11, 15, 21, 33, 45	≤ 3 arc-min	≤ 1 arc-min
50	□170		≤ 3 arc-min	≤ 1 arc-min
65	□230		4, 5, 12, 15, 20, 25, 40, 50	≤ 3 arc-min

HPG Series _{plus} Rack & Pinion

HarmonicPlanetary[®] HPG Series, Rack and Pinion are now available as a kit.



Accuracy Class DIN 6/
JIS Class N5

0.5 and 1.0 meter
length racks

Three choices of
carburized pinions for
each module size of
rack, pre-mounted to
an HPG gearhead

Induction Hardened Helical Gear Rack (Module 2 & 3)

Specifications

Gearhead Series	Module [mm]	Number of teeth of pinion gear	Limit for linear thrust [N]	Limit for repeated peak torque [N·m]	Limit for momentary torque [N·m]	Limit for transportation speed [m/min] *for reduction ratio = 5	Mass of pinion gear [kg]
			Induction hardening rack	Induction hardening rack			
HPG-32R HPG-32A	2	35	5400	200	400	280	1.37
		40	5500	233	450	320	1.62
		45	5600	267	500	360	1.79
HPG-50 A	3	31	9800	483	1100	279	3.14
		35	9900	551	1150	315	3.62
		40	10000	636	1150	360	4.16



42 Dunham Ridge, Beverly, MA | 800.921.3332 | www.HarmonicDriveGearhead.com

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