

## PRODUCT DATASHEET

# ES-HG-S10-F32-R50

## Precision Transmission Component

Hat Harmonic Gearboxes | High-Torque Shaft-Input Gear Unit

### Product Overview

Precision Transmission Component with rated Torque 99 N·m, instantaneous Maximum Torque 497 N·m and start/Stop Peak Torque 281 N·m.

### Key Specifications

| PARAMETER                    | VALUE | UNIT    |
|------------------------------|-------|---------|
| Rated Torque                 | 99    | N·m     |
| Instantaneous Maximum Torque | 497   | N·m     |
| Start/Stop Peak Torque       | 281   | N·m     |
| Reduction Ratio              | 50    |         |
| Maximum Input Speed          | 4800  | r/min   |
| Allowable Average Torque     | 140   | N·m     |
| Backlash                     | ≤20   | arc sec |
| Frame Size                   | 32    |         |
| Weight                       | 4     | kg      |

## Technical Specifications

| PARAMETER                     | SPECIFICATION | UNIT    | NOTES                                                                                         |
|-------------------------------|---------------|---------|-----------------------------------------------------------------------------------------------|
| <b>PERFORMANCE</b>            |               |         |                                                                                               |
| Rated Torque                  | 99            | Nm      | Frame Size: 32; Reduction Ratio: 50; Size: 32                                                 |
| Instantaneous Maximum Torque  | 497           | Nm      | Frame Size: 32; Reduction Ratio: 50; Size: 32                                                 |
| Start/Stop Peak Torque        | 281           | Nm      | Frame Size: 32; Reduction Ratio: 50; Size: 32                                                 |
| Backlash                      | ≤20           | arc sec | Reduction Ratio: 50; Size: 32; Frame Size: 32                                                 |
| Allowable Average Torque      | 140           | Nm      | Frame Size: 32; Reduction Ratio: 50; Size: 32                                                 |
| Starting Torque               | 41 / 0.41     | Nm      | Frame Size: 32; Reduction Ratio: 50; Size: 32 / Reduction Ratio: 50; Size: 32; Frame Size: 32 |
| Angular Transmission Accuracy | 1             | arcmin  | Frame Size: 32; Reduction Ratio: 50; Size: 32                                                 |
| Hysteresis Loss               | 2             | arcmin  | Frame Size: 32; Reduction Ratio: 50; Size: 32                                                 |
| <b>MECHANICAL</b>             |               |         |                                                                                               |
| Frame Size                    | 32            |         | Frame Size: 32; Reduction Ratio: 50; Size: 32                                                 |
| Weight                        | 4             | kg      | Frame Size: 32; Reduction Ratio: 50; Size: 32                                                 |

## Technical Specifications

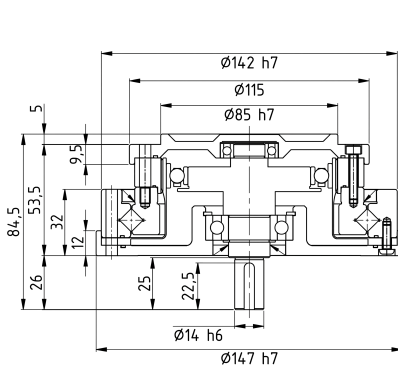
| PARAMETER                        | SPECIFICATION | UNIT                    | NOTES                                                                               |
|----------------------------------|---------------|-------------------------|-------------------------------------------------------------------------------------|
| <b>RELIABILITY</b>               |               |                         |                                                                                     |
| Design Life                      | 15000 / 10000 | h                       | Frame Size: 32; Reduction Ratio: 50 / Frame Size: 32; Reduction Ratio: 50; Size: 32 |
| <b>ADDITIONAL SPECIFICATIONS</b> |               |                         |                                                                                     |
| Reduction Ratio                  | 50            |                         | Frame Size: 32; Reduction Ratio: 50; Size: 32                                       |
| Maximum Input Speed              | 4800          | r/min                   | Frame Size: 32; Reduction Ratio: 50; Size: 32                                       |
| Average Input Speed              | 3500          | r/min                   | Frame Size: 32; Reduction Ratio: 50; Size: 32                                       |
| Torsional Rigidity K2            | 7.8           | $\times 10^4$<br>Nm/rad | Frame Size: 32; Reduction Ratio: 50; Size: 32                                       |
| Torsional Rigidity K1            | 5.4           | $\times 10^4$<br>Nm/rad | Frame Size: 32; Reduction Ratio: 50; Size: 32                                       |
| Torsional Rigidity K3            | 9.8           | $\times 10^4$<br>Nm/rad | Frame Size: 32; Reduction Ratio: 50; Size: 32                                       |
| Torsional Rigidity T2            | 108           | Nm                      | Frame Size: 32; Reduction Ratio: 50; Size: 32                                       |
| Torsional Rigidity T1            | 29            | Nm                      | Frame Size: 32; Reduction Ratio: 50; Size: 32                                       |

## Dimensional & Integration Overview

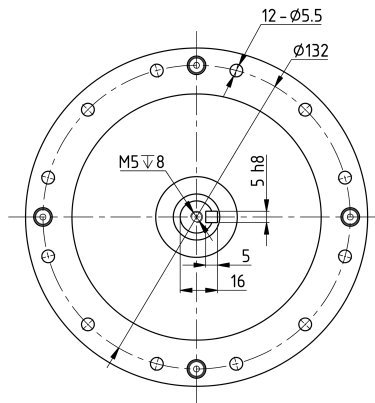
### Mechanical Overview

| PARAMETER  | VALUE | UNIT |
|------------|-------|------|
| Frame Size | 32    |      |
| Weight     | 4     | kg   |

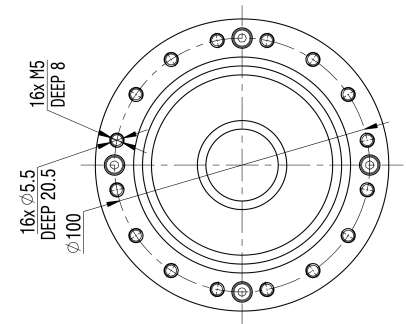
### Dimensional Drawings



Mechanical View 1



Mechanical View 2



Mechanical View 3

## 2D Drawing Dimensions & Callouts

| VIEW              | FIELD                                        | VALUE                           |
|-------------------|----------------------------------------------|---------------------------------|
| Mechanical View 1 | Mounting flange outer diameter               | Φ142 h7                         |
|                   | Mounting flange intermediate circle diameter | Φ115                            |
|                   | Shaft diameter                               | Φ85 h7                          |
|                   | Top boss height                              | 5                               |
|                   | Upper step height                            | 9.5                             |
|                   | Main body middle section height              | 53.5                            |
|                   | Middle step height                           | 32                              |
|                   | Total height                                 | 84.5                            |
|                   | Lower step height                            | 12                              |
|                   | Bottom flange height                         | 26                              |
|                   | Bottom flange outer diameter                 | Φ147 h7                         |
|                   |                                              |                                 |
| Mechanical View 2 | Mounting holes - diameter and quantity       | 12 holes, Φ5.5 mm               |
|                   | Bolt circle diameter (PCD)                   | Φ132 mm                         |
|                   | Center hole - thread and countersink         | M5 thread with 8 mm countersink |
|                   | Center shaft bore diameter and tolerance     | Φ5 h8                           |
|                   | Internal dimension (longitudinal)            | 5 mm                            |
|                   | Internal dimension (transverse)              | 16 mm                           |

## 2D Drawing Dimensions & Callouts

| VIEW              | FIELD                                | VALUE                           |
|-------------------|--------------------------------------|---------------------------------|
| Mechanical View 3 | Mounting threaded hole specification | 16 holes × M5 thread            |
|                   | M5 threaded hole depth               | 8 mm depth                      |
|                   | Through hole diameter                | 16 holes × $\varnothing$ 5.5 mm |
|                   | Hole depth                           | 20.5 mm depth                   |
|                   | Bolt circle diameter (PCD)           | $\varnothing$ 100 mm            |

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**01** Specifications are subject to change without notice. Verify the current product configuration before final design release.

**02** 2D drawings, CAD files and integration documentation are controlled documents and are supplied separately on request.