

[Linear stepping actuators]

- Linear Stepping Actuators produce linear movement as a series of discrete linear steps. Each increment of the excitation pulse sequence moves the actuator forward by a fixed linear displacement. The displacement can be accurately controlled by applying a measured number of steps. The basic resolution can be subdivided by driving in microstep mode in the same way as a rotary stepping motor.

Actuators provide basic (full step) resolution down to 5 microns, finer resolution where each microstep drive is used.

Standard devices comprise a stepping motor with leadscrew or leadscrew nut built into the shaft. For higher quantities, devices incorporating anti-rotation feature and/or linear guides can be developed.

Forming the nut or leadscrew as part of the motor itself reduces inertia and backlash associated with shaft couplings to ensure maximum acceleration with minimum positioning error.

Operation

The construction of the DSM4234LN unit is shown opposite.

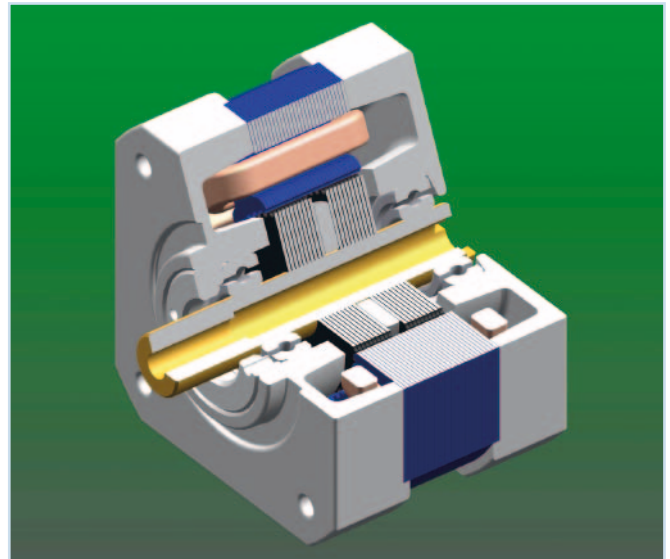
- The front bearing is supported by a threaded nut to adjust for minimum backlash. This solid support minimises backlash in either direction irrespective of loading (backlash between the leadscrew and nut will still exist in this device).
- The shaft is large in diameter compared to a standard motor, and incorporates a threaded portion in the front end. This is made of brass for good lubricity.
- In other respects the unit is similar to a standard hybrid stepping motor sharing the same inherent robustness, and simple control characteristics.

G+ offers standard devices for linear stepping actuators in three forms:

The DSM4234LN device incorporates a leadscrew nut, through which a threaded shaft of unlimited length can be fitted. This device incorporates rigidly preloaded bearings to withstand end loads in either direction.

The DSM42234H-C6230 and DSM4234H-C6231 devices incorporate a leadscrew cut directly into the shaft of the motor. The front bearing is spring preloaded to ensure zero backlash under light loading. Under heavier loading, the preload spring may compress to give backlash errors in the pulling direction.

For higher power, customer specified leadscrews can be fitted to the hollow shaft motor DSM5755H-08200, to allow larger actuators to be built.

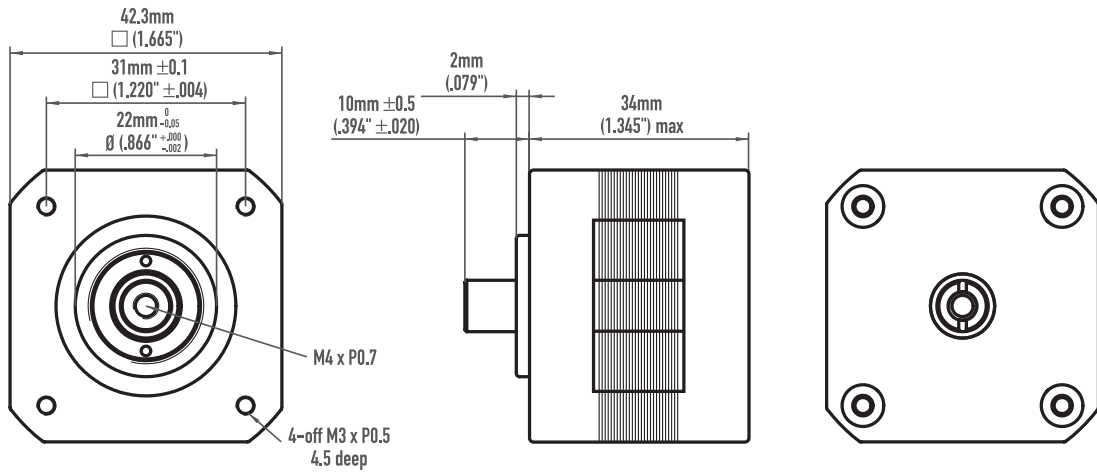


DSMH Series Motor Specifications

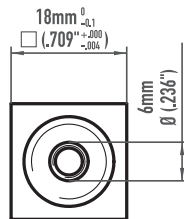
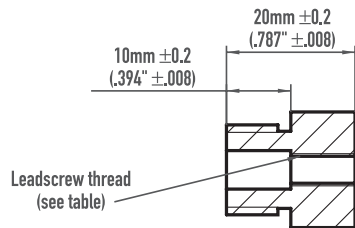
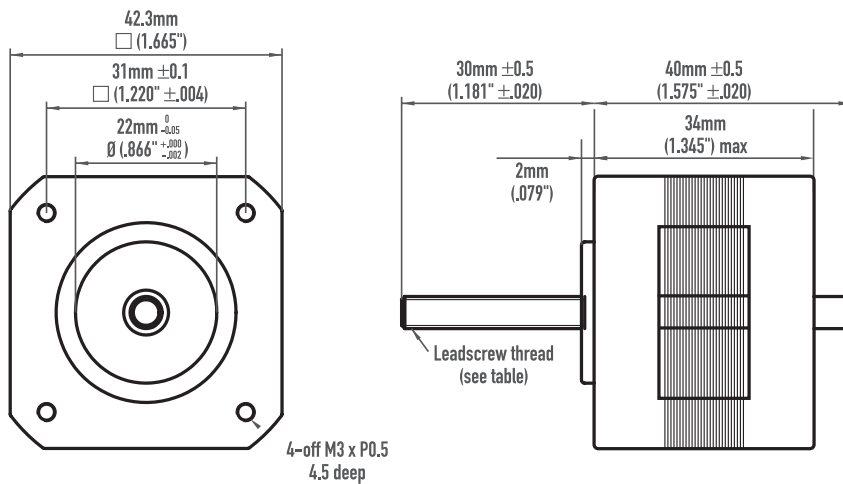
Part Number	Motor Specification	Leadscrew Specification	Step Size	Load Capacity	Bearing Type
DSM4234LN-04150	DSM4234H-14150	M4 x P0.7 Nut	3.5µm	150N	
DSM4234H-C6230	DSM4234H-14150	M5 x 1.0 Lead, g6	5µm	20N/120N	Koyo 625ZZ
DSM4234H-C6231	DSM4234H-14150	M5 x 2.0 Lead, twin start, g6	10µm	20N/60N	Koyo 625ZZ

Where 2 figures are given for load capacity, the first figure relates to the force exerted by the preload spring, and the second figure to the drive capacity of the system (the load which can be driven based on motor torque and leadscrew specification).

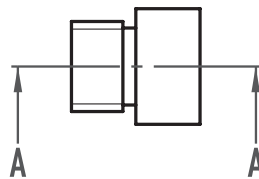
DSM4234LN-04150



DSM4234H-C6230
DSM4234H-C6231



SECTION A-A



DSM42-LN-1mm	M5, 1mm Lead, g6
DSM42-LN-2mm	Twinstart, M5, 2mm Lead, g6