

Linear axes & linear axis systems

Bridge axes HB-L

12. Bridge axes HB-L

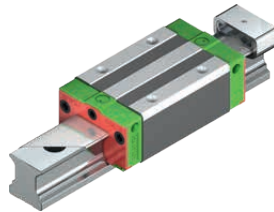
12.1 Features of the HB-L bridge axes with linear motor

The HIWIN bridge axes with linear motor drive are flexible positioning modules with an integrated HIWIN double guide in O-arrangement. They are particularly suitable for precise positioning at high speed and high dynamics.



Linear guideway

A high-quality HIWIN double guide safely transfers forces and torques from the carriage to the axis profile. Four blocks are used per carriage, which are guided on a two parallel, high-precision profile rails. The O arrangement of the balls ensures high torque load capacity and high load ratings.



Positioning measuring systems

The distance measuring system is integrated into the inside of the axis to save space and determines the repeatability. Different measuring systems are available depending on the requirements for measuring method, interface and resolution. You can find more information on [Page 156](#). Optionally also with functional safety encoder.



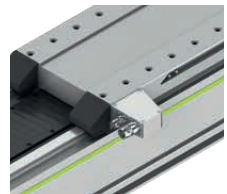
Linear motor

The integrated HIWIN linear motors ensure dynamic and precise positioning. Two motor sizes are available for each size in order to optimally meet the requirements for the required feed force.



Electric interface

The quick-release connectors allow motor and encoder cables to be connected quickly and easily to the side of the carriage without tools. Depending on the installation situation and the desired cable routing, two different orientations of the connector are available as options.



Carriage

The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on [Page 192](#). A grease nipple is provided on the carriage for each lubrication point for convenient maintenance of the linear axis.

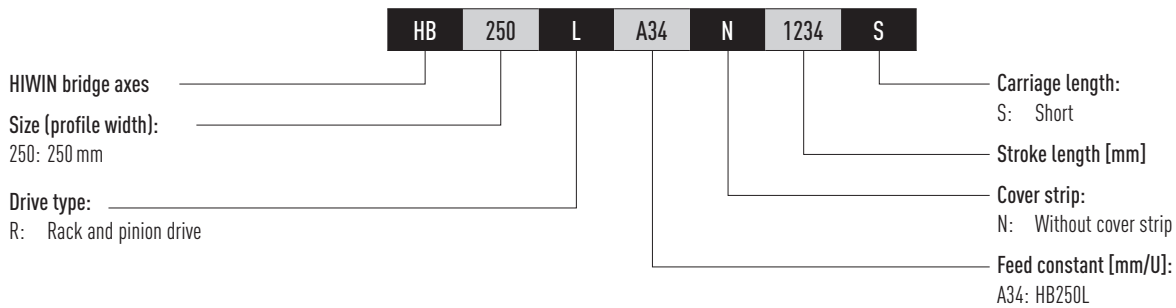


Energy chain

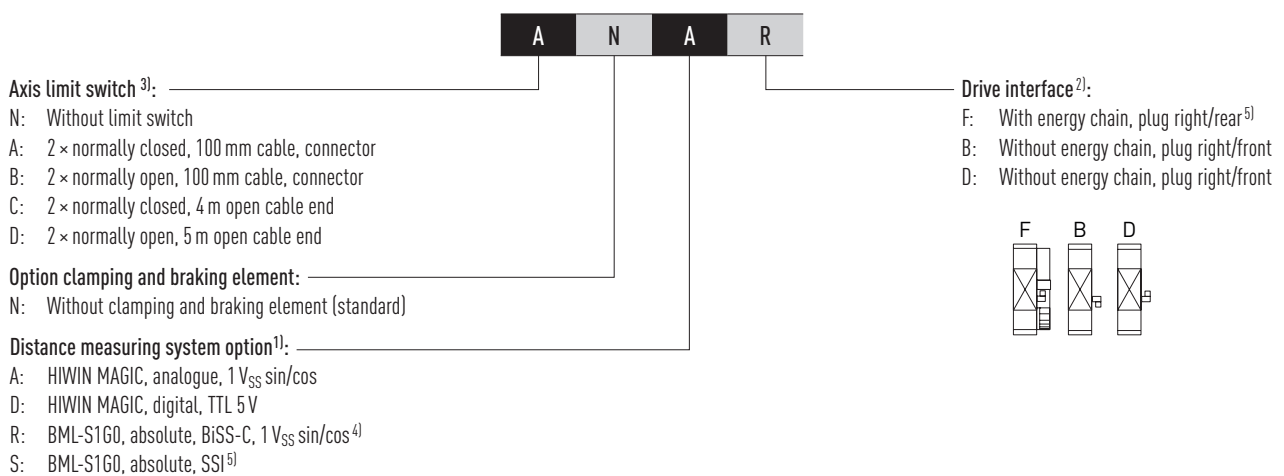
Generously dimensioned energy chains provide space for safely carrying the supply lines. They are extremely compact and save space when attached to the axis. For details on the orientation of the energy chain, see section [22.4 from page 188](#).



12.2 Order code for bridge axes HB-L



Continuation, order code for bridge axes HB-L



¹⁾ More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".

²⁾ Details on plug alignment and position of the energy chain in section 22.4 from page 188.

³⁾ Additional reference switches on request.

⁴⁾ The position measuring system has a safety-related, analogue, incremental real-time signal.

⁵⁾ Max. possible stroke: 5,000 mm.

Bridge axes HB-L

Technical drawing of a sliding door system, showing multiple views and dimensions.

Top View: Shows the overall length $L_T = L_{ST} + 780$. Dimensions include 40, 50, 235, 213, B_1 , B_2 , and 50. Section line A-A is indicated.

Side View: Shows the height of 250 mm. Dimensions include 600, 50, 1a, L, R, 2), 1a, 3), and 13.7.

Detail View 1: Shows a section with dimensions 407, 40 ± 0.1 , 20, 1a, and M6 / 14 ¹⁾.

Detail View 2: Shows a section with dimensions 500 (L_S A34), $8 \times 60 = 480$, 60 ± 0.03 , 10, 190 ± 0.03 , 248, and $\varnothing 15H7 \times 2$ M10 / 20.

Section A-A: Shows a cross-section with dimensions [20], 150, [250], 95, 50, and [235].

Section B: Shows a cross-section with dimensions 5.3, 10.2, 10.1, 7, 7.5, 42.5, 5.3, and 10.2. Scale is 1:1.

R	Right
1a+1b	Block lubrication connectors

³⁾ Internal measuring system always on the right side of the axis. The positive direction of travel depends on the selected measuring system, see section 21.2 from page 158

Total carriage length L_c [mm]	600
Switch distance B_1 [mm]	308.5
Switch distance B_2 [mm]	308.5
Max. stroke length L_{ST} [mm]	5,160
Total length L_T [mm]	$L_T = L_{ST} + 780$

Table 12.2 Load data

	Permissible load data	Theoretical load data
Lifetime reference value	20,000 km	100 km
$F_{y\text{dynmax}}^{1)} \text{ [N]}$	11,600	133,977
$F_{z\text{dynmax}}^{1)} \text{ [N]}$	11,846	133,977
$M_{x\text{dynmax}} \text{ [Nm]}$	1,125	12,728
$M_{y\text{dynmax}} \text{ [Nm]}$	1,777	20,096
$M_{z\text{dynmax}} \text{ [Nm]}$	1,740	20,096
Load distance z [mm]	54.3	54.3

¹⁾ Force must only act free of torque

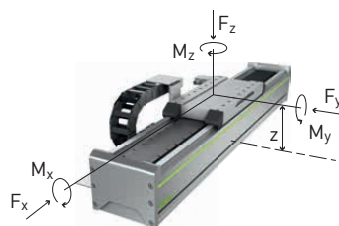


Table 12.3 General technical data

Repeatability ¹⁾ [mm]	± 0.005
Max. speed [m/s]	4.5
Typical load capacity [kg]	350
Maximum total length ^{2) 3)} [mm]	5,940
Flatness (mm/300mm) ¹⁾	±0.03
Straightness (mm/300mm) ¹⁾	±0.03
Area moment of inertia of profile cross section $I_x \text{ [mm}^4\text{]}$	34.509.373
Area moment of inertia of profile cross section $I_y \text{ [mm}^4\text{]}$	80.997.444

¹⁾ Values apply with correspondingly specified mounting surface or mounting plate

²⁾ Dependent on stroke measuring system (chapter 17) and energy chain (section 18.4)

³⁾ Longer axes on request

Table 12.4 Guide

Type of carriage	CGH25HA × 4
Static load rating $C_0 \text{ [N]}$	69,070 × 4
Dynamic load rating $C_{\text{dyn}} \text{ 50 km [N]}$	42,200 × 4

Table 12.5 Drive

Motor size	A34
Drive element	LMSA34
Continuous force [N]	1,166
Peak force [N]	3,292
Max. acceleration [m/s ²]	80

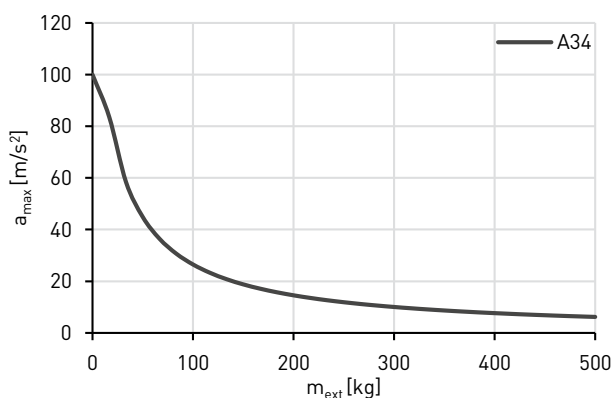


Fig. 12.1 Max. Acceleration a_{max} as a function of the external payload m_{ext}

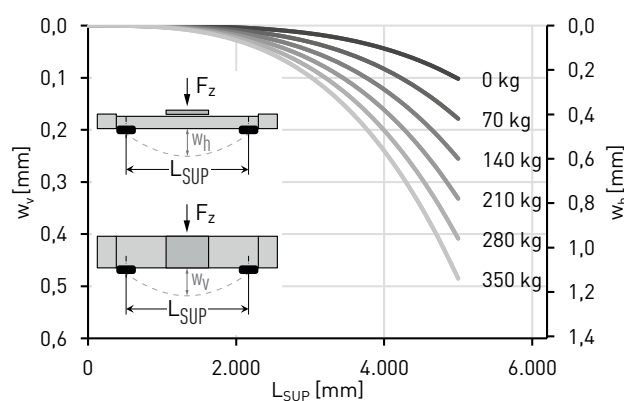


Fig. 12.2 Deflection w over unsupported axle length L_{SUP} under payload F_z

Table 12.6 Mechanical properties

Mass of the carriage [kg]	20.2
Mass at 0-stroke [kg]	59.94
Mass per 1 m stroke [kg/m]	47.66
Breakaway force $F_l \text{ [N]}$	60