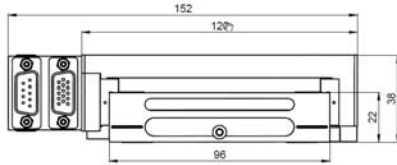


THE NEW LINAX®:
Two new series supplement the LINAX® modular system

LINAX® Lxs

S = Shuttle: As the name implies, the Lxs shuttle series are basis axes for long strokes up to 1200mm. Of particular importance is the wide body construction with recessed linear motor, through which the height is reduced to just 38mm. The widely spaced guiding rails are able to withstand high moments of force.

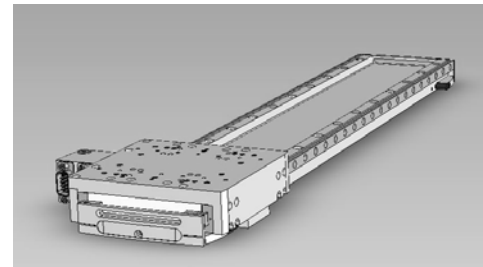


Preferred Range	Stroke [mm]	Force Fn/Fp [N]	h x b [mm]	Weight [kg]
Lxs 160F60	160	60/180	38x152	2.6
Lxs 200F60	200	60/180	38x152	2.8
Lxs 400F60	400	60/180	38x152	3.9
Lxs 600F60	600	60/180	38x152	5.0
Lxs 800F60	800	60/180	38x152	6.1
Lxs 1000F60	1000	60/180	38x152	7.2
Lxs 1200F60	1200	60/180	38x152	8.4

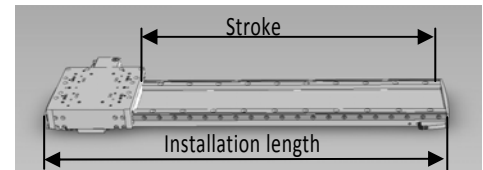
Modular:
Stroke increment of 40mm



Connector case: mountable in orientation of 90°



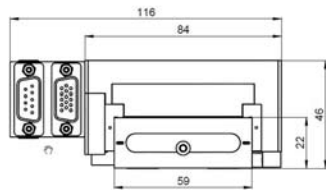
LINAX® Lxs 400F60



Minimal installation length, Lxs, Lxu:
Installation length = stroke + 130mm

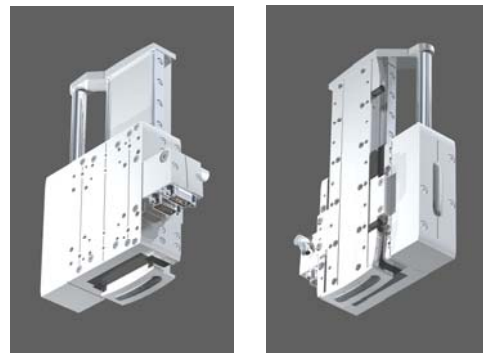
LINAX® Lxu

U = Universal: These axes are real 'all-rounders'. There are three mounting possibilities: mounting to slide, to the ground plate or on the front face. Also interesting are the four long holes right through the sliding carriage. For example, this allows the direct back to back mounting of two Lxu slides, which is ideal for X-Z handling. In a vertical orientation, an integrated weight compensation unit is available. The air pressure coupling is inside the 90° 'rotatable' connector case.



Preferred Range	Stroke [mm]	Force Fn/Fp [N]	h x b [mm]	Weight [kg]
Lxu*) 40F60	40	60/180	46x116	1.7
Lxu*) 80F60	80	60/180	46x116	1.9
Lxu*) 160F60	160	60/180	46x116	2.2
Lxu 240F60	240	60/180	46x116	2.6
Lxu 320F60	320	60/180	46x116	2.9

*) with weight compensation



LINAX® Lxu 80F60 with weight compensation



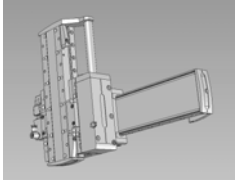
LINAX®
Cleanroom certified
ISO classes 3-5

Measurement system in three classes of accuracy

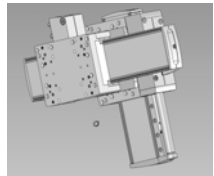
With these linear motor axes you can set-up high-precision positioning systems. There is no backlash and almost no wear. The accuracy remains constant over the whole lifetime. With the new Linax® Lxs and Lxu linear motor axes you can choose between three classes of accuracy of +/- 8µm magnetic, +/- 2µm optical and +/- 0.5µm, likewise optical.

Handling

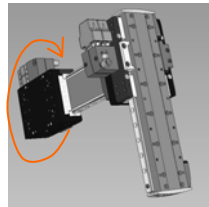
One of the benefits:
You have the choice and
mustn't accept any
compromises.



X-Z Line portal
X Axis fixed,
Z Axis on the move



X-Z Line portal
X Axis on the move
Z Axis fixed



X-Z Line cantilever
X Axis fixed by side,
in a 90° pattern rotatable

**Ideal combination: The
brand-new XENAX® Xvi
75V8 servo controller
with direct Master-Slave
operation**

Area cantilever: The supreme discipline of the LINAX® Lxs / Lxu

LINAX® Lxs / Lxu space-saving cantilever

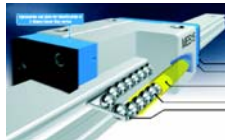
A typical design for 3D movement consists of a LINAX® Lxs (Shuttle) basis axis for the long stroke and supporting the force moment from the cantilever. On the top side of the slide, the Lxu (Universal) Y-Axis is mounted as a cantilever directly to the slide, screwed back to back. At the end of the cantilever axis is the 'Lxu front flange', mounted to the front face. To this front flange, the slide of the vertical Lxu (Universal) Z-Axis including the weight compensation is mounted.

Highest precision in a compact size with LINAX® Lxs

This illustrates another advantage of the widely spaced guiding design. The wider the guiding rails' distance the more stable and precise the construction. Therefore, the linear motor is recessed between the guiding rails. This results in low height. Also the Lxs models are directly-screwed with centring pins for a low overall height of only 76mm. The working area likewise has minimal space requirements. An X-Y cross table with a stroke of e.g. 400 x 400mm has a mounting area of only 530mm x 560mm (incl. connector case on the side).

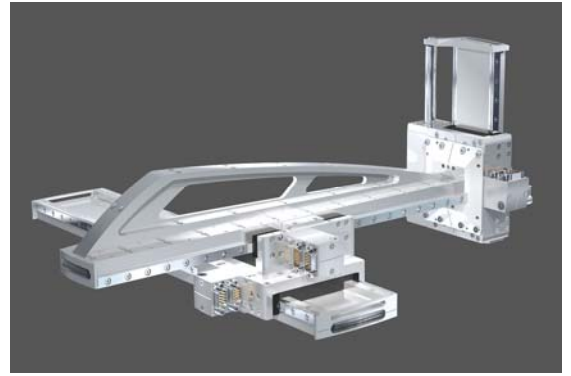
Guides with integrated self-lubrication

Reliable, long-life guides are the basis for high-quality linear motor axes. During their free return travel the balls bearings are fed through a porous, oil-impregnated synthetic resin sleeve. Capillary action ensures that oil flows continually to the inner surface of the sleeve. Thus freedom from maintenance for 20,000 km or five years is guaranteed. In addition to the long maintenance-free periods, there are two further advantages: quiet running and minimal friction.

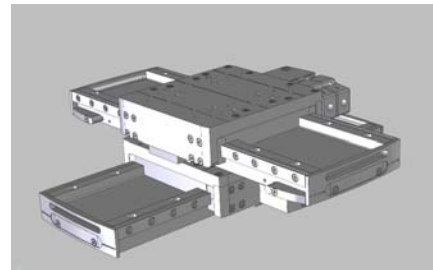


Wear-resistant synthetic wipers as standard

With the new LINAX® Lxs and Lxu linear motor axes the internal space of the motor is protected against pollution and small parts by synthetic wipers. These are flush-mounted to both ends of the slide and run directly over the flat stainless-steel magnet cover. Together with the magnetic measurement system, a high dirt resistance of IP 50 is achieved.



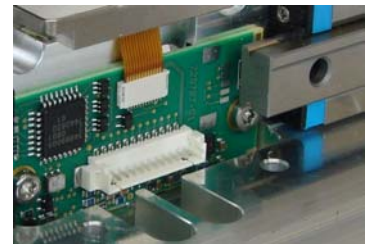
Area cantilever with reinforcement for maximum stiffness



2 LINAX® Lxs 160F60, high-precision cross table

Recording of position-force characteristics during master run

During a special master run in both directions the magnetic cogging, frictional forces and other force influences are precisely recorded.



These data are stored in the flash memory of the linear motor. The new XENAX® Xvi servo controller is able to read out the data, and activate a calculated compensation force at the current position. With this technology a force resolution of up to +/- 0.2N can be achieved.

New Servo Controller XENAX® Xvi 75V8



State controller with axis observer and motor communication

The state controller with axis observer in the new XENAX® Xvi servo controller ensures high stiffness, quiet running and maximum precision. The XENAX® Xvi servo controller communicates via I²C-bus with the connected LINAX® linear motor axis. The data are directly read from the memory of the linear motor. For this reason, the controller knows the motor parameters, like force constant, inductance, number of pole pairs, etc. Within these parameters, an automatic set-up of the state controller will be done.

Never before has the set-up of a servo controller been easier. You only have to enter the weight of the load.

Web Browser Setup: Ethernet TCP/IP and Web-server

For the first time in the compact class servo controller the TCP/IP Ethernet interface is available as standard.

Start Web browser, enter the IP address and you're already on the pulse of the movement. The integrated Web server in the XENAX® Xvi contains the Java GUI WebMotion®. With the Web browser (such as Firefox®, Internet Explorer®), the user navigates through the parameterization menu.



Set-up with Web browser

With an Ethernet switch, you can instantly combine several axes for multi-axes operation very easily.

Bus module for real-time Ethernet and field buses

The bus module is directly connected via a fast parallel data and address bus to the XENAX® Xvi controller.

Currently, the following bus protocols are supported:

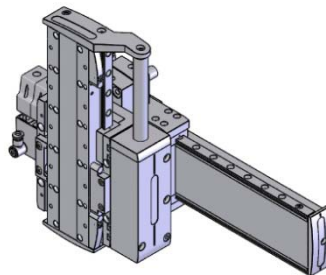


Development by Jenny Science: FPGA bus module

Safety: Scalable with the new Safety Motion Unit SMU

Separate power connectors for motor power and logic power are available. The Safety Motion Unit contains an independent processor system with its own firmware, which detects and monitors the safety parameters. Through programming, the SMU can scale the security level from Safe Torque Off (STO) over Safe Operating Stop (SOS) up to Safely-Limited Speed (SLS).

Master-Slave operation up to four axes



An excellent feature is this software-based Master-Slave operation via I²C Bus. Typical applications are handling modules. With a total of four axes, you can control, e.g. 'X,Y,Z' and a rotation axis from the master. The Master with its Slaves, operates autonomously in stand-alone mode and can be controlled directly from a superior PLC via simple I/O signals.

I/O Interface with Sink/Source Output driver

Direct connection to a PLC is possible without additional pull-up resistors. For this purpose, a fully shielded D-Sub I/O connector is supplied with the XENAX® Xvi 75V8 servo controller.

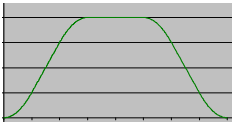


Win 7 EtherCAT Master for C/C++ or Delphi



Mobile phone controls LINAX® linearmotor-axis via WiFi

Smooth motion with S-profile



S-curve speed profile

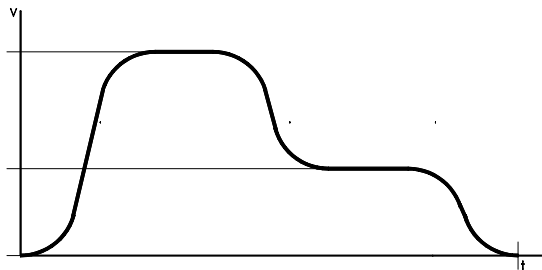
With internal XENAX®Xvi, the driving profile will be calculated with linear increasing/decreasing acceleration/deceleration. The output is the advantageous S-curve as a speed profile. In comparison to the common trapezoidal profile, there are no current peaks. The axes run smoothly over the turning points. The couple moving parts are relieved of strain, the system runs quieter which also increases the operational life. Thanks to 'softened arrival' at the target position, 'potential overshoot' will be prevented.

Result: Improved positional accuracy.

Complex motion profiles with linked basic profiles

A challenge in complex moving profiles is entering the data of a desired profile geometry. We wanted a modular solution by 'linking' of a few basic profiles.

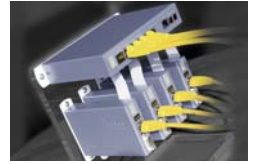
Your benefit: Complex profiles are easily programmable.



Interpolation of multiple axes

UNAX® compact axes interpolator

It can directly interpolate up to four axes. Programming is done with MOTION PERFECT, a simple and powerful programming language with a BASIC analogical syntax. A circular motion on the X-Y plane is, for example, run with the single command 'MOVE CIRCLE' and the parameters centre coordinates and radius.



Interesting EtherCAT master solutions

EtherCAT is currently the fastest Ethernet Bus and therefore ideal for multi-axis interpolation. The trajectory can be run directly with continuous transfer of position parameters and an update rate of a few 100µs. It typically runs the data transfer via CAN open over EtherCAT protocol standard with PDOs, SDOs and XML definition file. In the meantime there are also economically priced EtherCAT master solutions available on the market.

E.g. the MC464 of TRIO (www.triomotion.com)

which can interpolate via EtherCAT Interface up to 64 axes.



The PC as EtherCAT master

Kithara Software (www.kithara.de) provides a multi-task EtherCAT master software for Windows.



Compact and all-in-one:
Web server, real-time
Ethernet, Master-Slave,
Safety

XENAX® Xvi 75V8

	Data
Motor types	Rotat. AC,DC,EC,Linear
Bus voltage power	15-75V
Strom Nominal-/Peak	8/18A
Bus voltage logic	24V
Web browser programmable	TCP/IP Web server
RS232	up to 115200 Baud
Ethernet TCP/IP	10/100 BASE-T
Bus module (optional)	EtherCat, P-Link, CAN
Master-slave operation	4 axes in total
Binary-coded program selection	15 programs
Moving profile	50
Digital Input	12
Digital Output	8 Sink / Source
Safety Motion Unit (optional)	SMU
Start-up Key (optional)	Incl. address decoder
Dimensions L x B x H	182 x 109 x 30 mm

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