

L-force Controls *I/O system 1000*



Compact and clever



Lenze

L-force | Your future is our drive

Cost efficiency, saving time and improving quality are the challenges of the future. Lenze is meeting these challenges with L-force – the drive and automation family with wide-ranging solutions and compatible interfaces and components. L-force means faster project planning and commissioning, enhanced performance and flexibility in production.

Driven by innovation – New ideas for new possibilities

Always on the lookout: Our idea of innovation is working on even better solutions for our customers, every day.

Driven by flexibility – High degree of scalability for individual solutions

Scalability is an important aspect of the L-force philosophy. Performance, scope of functions, software, service provisions and aftersales care – Lenze will provide you with exactly the combination you require.

Driven by usability – Simple solutions, even for complex applications

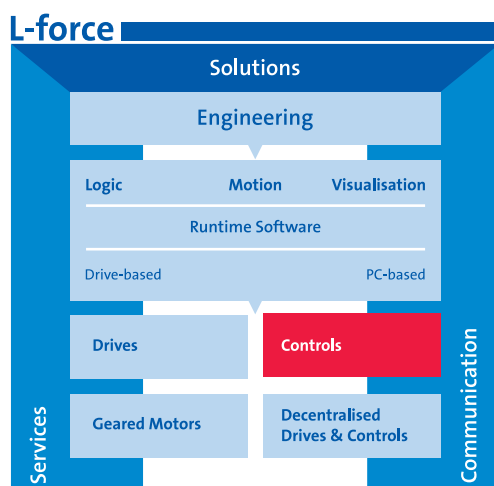
We always focus on the user. Therefore, when we developed L-force, we made sure that people with plenty of practical experience were involved, right from the start.

Driven by compatibility – Universal products and solutions

Don't waste any more time searching for suitable components and the right interfaces. With L-force, everything is compatible.

Compact and clever

Having the I/O system 1000 provides you with one of the most modern and effective decentralised I/O systems currently on the market – the basis for the economic solution of your automation task.



I/O system 1000 | an integral part of modern automation systems

The availability of Ethernet-based bus systems for mechanical and systems engineering applications is creating potential for new automation concepts, which can break through the boundaries which previously restricted the performance of established bus systems. Today's controls are not only expected to compensate for the inaccuracies associated with mechanical components – they also have to ensure that clocked production machines achieve higher output rates.

This calls for considerably higher data throughput rates on the part of bus systems than was previously the case. Indeed, demand for this is on the rise due to the increasing trend towards centralised as opposed to decentralised control technology – a requirement that becomes an absolute must as soon as co-ordinated three-dimensional movements enter into the equation.

PC-based solutions, in particular, are increasingly taking centre stage because of their dazzling ability to combine control technology, visualisation and operation in a single device and to enable

straightforward IT integration along with all the associated components such as backup, security, etc. The desire for complete integration calls for one more thing: whereas separate bus systems used to be employed for logic, motion, diagnostics and safety, the expectation now is for all these functions to be handled via a single cable. Realtime-capable Ethernet-based bus systems are absolutely ideal in terms of meeting this requirement. Of course, these developments are also placing entirely new requirements on today's I/O systems.

The L-force I/O system 1000 represents a highly deterministic method of controlling input and output modules and even encompasses the ability to read in the kinds of touch probe inputs that are required for synchronised movements within the context of cyclic production processes. The minimal internal cycle time combined with the use of a time stamp ensures that the I/O system 1000 can meet even the toughest requirements in terms of speed. As such, it is also suitable for use within realtime-based architectures.



Concept | Compact and clever



Permanent wiring

- ▶ 2-part concept:
base module and electronic module
 - ▶ Replacement of the electronics possible in the case of maintenance work without coming into contact with the wiring
 - ▶ Item designation remains on the base module
 - ▶ Codings protect against the assignment of an incorrect module type
- Wiring faults in the event of service are completely eliminated

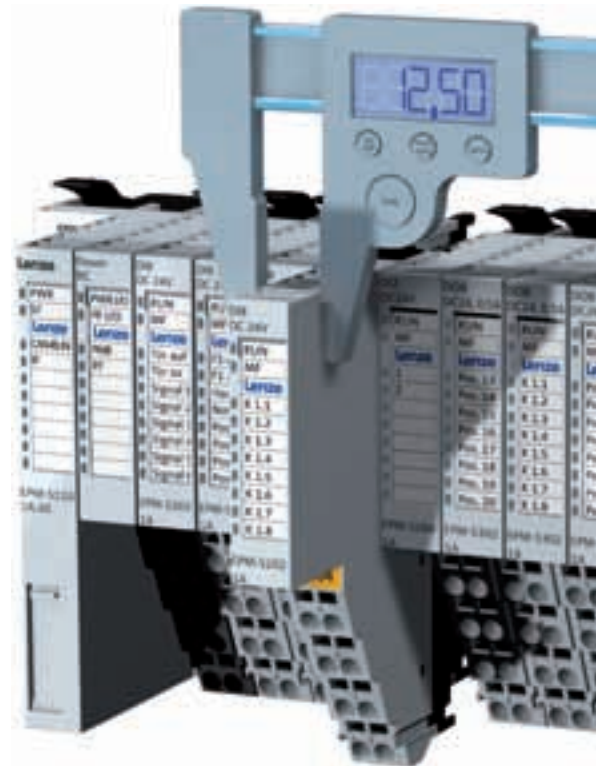
Compact design

- ▶ Slimline design
- ▶ 8 connection points at a width of just 12.5 mm
- ▶ Tried and tested tension spring technology
- ▶ Wiring levels generated in a ladder shaped space-saving manner
- ▶ Consistent separation of electronic and wiring levels
- ▶ Up to 64 modules can be mounted
- ▶ Automatic connection via the backplane bus



Fast diagnostics

- ▶ Clear labelling concept and diagnostic concept
 - ▶ Brightly lit LEDs can be easily identified even in a poorly lit control cabinet
 - ▶ An LED and a labelling field is clearly assigned to each channel
- Optimum combination of readability and labelling in the smallest of spaces



Integrated shield support

- ▶ Holders for shield buses are available as accessories
 - ▶ Direct installation of standard bus bars 10 * 3 on the I/O station
 - ▶ Shield support with standard cable fastenings and shield clamps possible
- Fully integrated shield concept, and yet no special terminals necessary

Performance and robustness

- ▶ Gilded contacts ensure safe connection between the modules
- ▶ Fault-tolerant protocols ensure maximum availability – even in the case of individual frame errors
- ▶ The high bandwidth of 48 Mbits/s allows for exceptionally speedy response times without frame overheads

Scalable supply concept

- ▶ The main supply is a fixed component of the bus coupler and supplies both electronics and the I/O level
- ▶ Optional additional I/O supply, in the event that more than 10 A output current is required
- ▶ Optional additional I/O supply and electronic supply for extremely large stations
- ▶ Each new I/O supply forms a separate potential area



Simple connection

- ▶ Circuit diagram and connection plan printed directly on the module
- ▶ side: detailed diagram
- ▶ front: outline, also visible once the module is fitted



- The manual is thus virtually redundant!

Tool-free mounting

- ▶ Direct snap-in mounting on the DIN rail
- ▶ Individual module or entire station can be mounted
- ▶ Complete blocks can subsequently be added to the DIN rail
- ▶ Release levers remain open, so that complete stations can be assembled and disassembled



- Simple insertion and locking – without tools

Benefits for you

Take advantage of the benefits in your application

Application flexibility

thanks to

- ▶ Availability of modules with 2, 4 or 8 channels
- ▶ Up to 64 modules per station
- ▶ Easy expansion of station without the need for tools
- ▶ Different potential groups within a single station configuration

Increase plant availability

thanks to

- ▶ “Permanent wiring” – makes electronics easy to replace
- ▶ Simple detection of faults due to clearer labelling / LED assignment to the signals
- ▶ Easy retrofitting of modules and shield support
- ▶ Little risk of confusion in the case of replacements through coded plug-in modules

Save time

during mounting thanks to

- ▶ The way the modules snap into place without the need for tools
- ▶ Field wiring based on the tried-and-tested tension spring technology
- ▶ Circuit diagram and connection plan directly on the module
- ▶ Easy connection of the shielding directly to the module via standard shield supports
- ▶ Prewiring without electronic modules








Save space

inside the control cabinet thanks to

- ▶ Compact design (module width 12.5 mm)
- ▶ Structure with high-channel modules
- ▶ Shield support directly on the module



Overview | Product portfolio overview

Product	Function	I/O			Order designation	
Bus coupler	CANopen PROFIBUS EtherCAT PROFINET DeviceNet Modbus TCP/IP			incl. main supply	EPM-S110 EPM-S120 EPM-S130 EPM-S140 EPM-S150 EPM-S160	
Digital I/O	Inputs	2 digital inputs	2/-	DC 24 V	PNP / NPN	EPM-S200 / EPM-S204
		4 digital inputs	4/-	DC 24 V	PNP / NPN	EPM-S201 / EPM-S205
		8 digital inputs	8/-	DC 24 V	PNP / NPN	EPM-S202 / EPM-S206
		4 digital inputs, three-wire conductor connection system	4/-	DC 24 V	PNP	EPM-S203
	2 fast digital inputs with time stamp	2/-	DC 24 V	2µs, PNP	EPM-S207	
	Outputs	2 digital outputs	-/2	DC 24 V, 0.5 A	PNP / NPN	EPM-S300 / EPM-S303
	4 digital outputs	-/4	DC 24 V, 0.5 A	PNP / NPN	EPM-S301 / EPM-S304	
	8 digital outputs	-/8	DC 24 V, 0.5 A	PNP / NPN	EPM-S302 / EPM-S305	
	2 digital outputs, 2 A	-/2	DC 24 V, 2 A	PNP	EPM-S306	
	4 digital outputs, 2 A	-/4	DC 24 V, 2 A ²⁾	PNP	EPM-S309	
	2 fast digital outputs with time stamp	-/2	DC 24 V, 0.5 A	1µs, PNP	EPM-S310	
	Relay	2 relay outputs, 230 V	-/2	DC 30 V, 3 A / AC 230 V, 3 A		EPM-S308
Analog I/O	Inputs	2 analog inputs, voltage measurement	2/-	DC 0 ... 10 V	12 Bit	EPM-S400
		4 analog inputs, voltage measurement	4/-	DC 0 ... 10 V	12 Bit	EPM-S401
		2 analog inputs, current measurement	2/-	0/4 ... 20 mA	12 Bit	EPM-S402
		4 analog inputs, current measurement	4/-	0/4 ... 20 mA	12 Bit	EPM-S403
		2 analog inputs, voltage measurement, bipolar	2/-	-10 V ... 10 V	16 Bit	EPM-S406 ¹⁾
		2 analog inputs, current measurement	2/-	0/4 ... 20 mA	16 Bit	EPM-S408 ¹⁾
	Outputs	2 analog outputs, voltage	-/2	DC 0 ... 10 V	12 Bit	EPM-S500
	4 analog outputs, voltage	-/4	DC 0 ... 10 V	12 Bit	EPM-S501	
	2 analog outputs, current	-/2	0/4 ... 20 mA	12 Bit	EPM-S502	
	4 analog outputs, current	-/4	0/4 ... 20 mA	12 Bit	EPM-S503	
Temperature measurement	2 or 4 analog inputs, temperature measurement based on resistance measurement	4(2)/- ³⁾	PT 100, PT 1000, NI 100, NI 1000	16 Bit	EPM-S404	
	2 analog inputs, temperature measurement with thermocouples, cold junction compensation by internal temperature measurement	2/-	J, K, N, R, S, T, B, C, E, L	16 Bit	EPM-S405	
Counter	1-slot counter, 1 fast digital output	1/1	DC 24 V / 24 V, 0.5 A	32 Bit	EPM-S600	
	2-slot counter	2/-	DC 24 V		EPM-S601	
	1-slot counter	1/-	DC 5 V		EPM-S602	
	2-slot counter	2/-	DC 24 V		EPM-S603	
Feedback evaluation	SSI interface for evaluation of encoder signals	1/-	RS422		EPM-S604	
Technology modules	Output of pulse width modulated signals	-/2	DC 24 V, 0.5 A	PWM	EPM-S620	
	Activation of devices with RS232 interface		RS232		EPM-S640	
Power supply modules	Main supply (bus coupler) as a spare part		DC 24 V, 10 A / DC 24 V, 3 A		EPM-S700 ⁴⁾	
	I/O supply		DC 24 V, 10 A		EPM-S701	
	I/O supply and electronic supply		DC 24 V, 4 A / DC 24 V, 2 A		EPM-S702	
Power distributor modules	Power distributor, Supply 8 x DC 24 V Power distributor, Supply 8 x DC 0 V Power distributor, Supply 4 x DC 24 V / 0 V		8 x DC 24 V 8 x DC 0 V 4 x DC 24 V / 0 V		EPM-S910 EPM-S911 EPM-S912	

¹⁾ in preparation

²⁾ Total current in continuous operation 4 A, short-time overload capacity

³⁾ 4 inputs in 2-wire technology, 2 inputs in 3/4-wire technology

⁴⁾ Component of the bus coupler; only to be ordered separately as a spare part

→ The complete portfolio
can be found at
www.controls.lenze.com

It's good to know | why we are there for you



"Our customers come first. Customer satisfaction is what motivates us. By thinking in terms of how we can add value for our customers we can increase productivity through reliability."



"We will provide you with exactly what you need – perfectly co-ordinated products and solutions with the right functions for your machines and installations. That is what we mean by 'quality'."



"Take advantage of our wealth of expertise. For more than 60 years now we have been gathering experience in various fields and implementing it consistently and rigorously in our products, motion functions and pre-configured solutions for industry."



"The world is our marketplace. Wherever you are in the world, we are nearby, providing you with our drive and automation solutions."

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You can rely on our service. Expert advice is available 24 hours a day, 365 days a year, in more than 30 countries via our international helpline: 008000 24 Hours (008000 2446877).

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