

Intelligent Maglev Drive Conveying System

AIMS AGILE FACTORY AUTOMATION

Jeffrey Neoh 梁志勤
Operation Manager High speed | Flexible | User-friendly





www.zongweitech.com

Vision

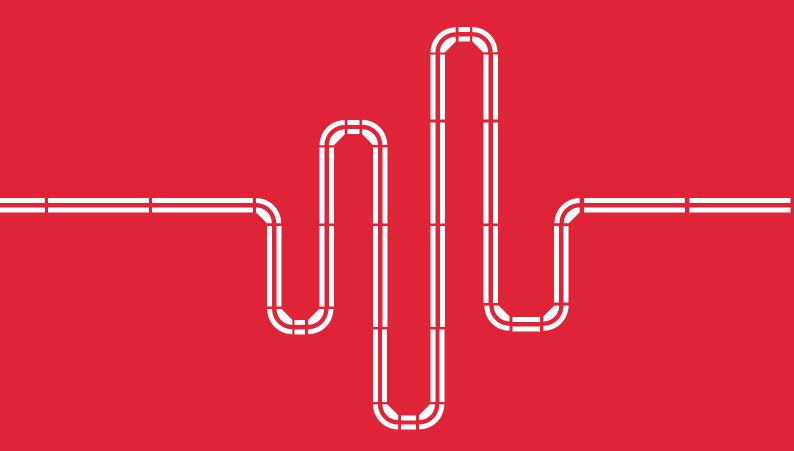
To become the global leader in industrial intelligence

Mission

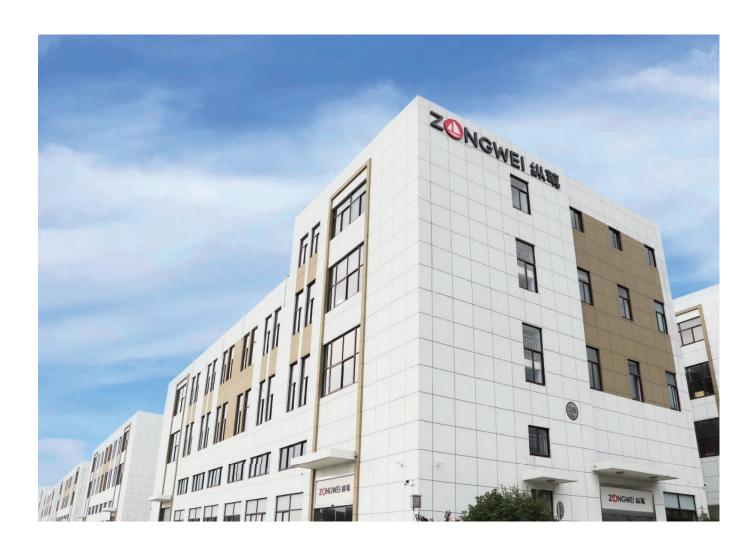
To speed up the arrival of smart manufacturing era

Values

Customer-Centric, Contributor-Focused, Committed to Open Innovation, and Continue to Pursue Excellence







Introduction



Zongwei Technology is a research and development enterprise with control technology as the core, focusing on intelligent magnetic drive and magnetic levitation conveying technology, with completely independent software development, motion control, servo drive, sensor measurement and special motor and other core technical strength.

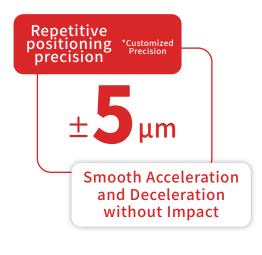
Zonwei has R&D, production and service centers in Suzhou, Shanghai and Dongguan, equipped with an annual design capacity of more than 8,000 meters, and has established a nationwide production delivery, technical support and solution service system.

With the intelligent magnetic drive conveyor system as the core, the team will break through the limitations of traditional conveying technology, promote the transformation of traditional production methods to flexible automation, help manufacturing in China, and help many industrial giants realize intelligent and flexible automated production solutions.



Intelligent Maglev Drive Conveying System

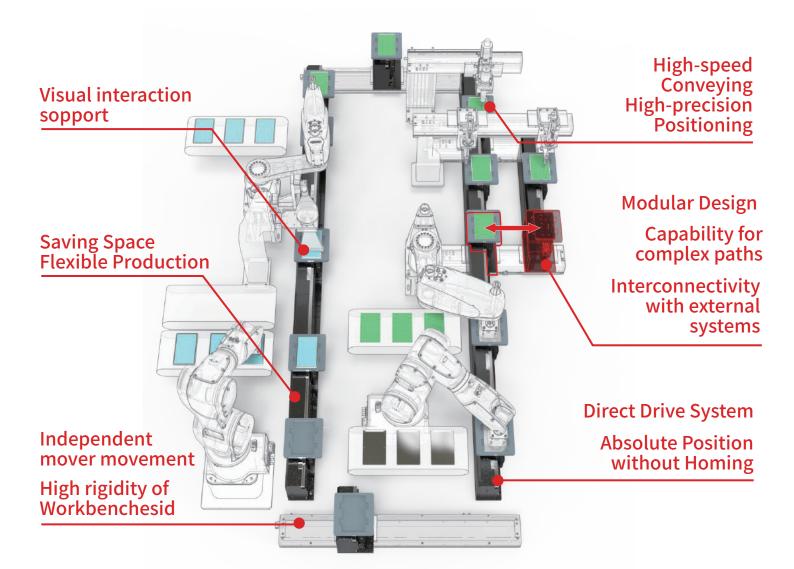
High speed | Flexible | User-friendly







- Individual movers operate independently, capable of halting and starting at any position, thus enabling streamlined intelligent and flexible production line setups.
- Seamless coordination with executing movers such as industrial robots simplifies the design of automated production lines.
- Eliminating intermediate transmission components facilitates high-speed, high-precision positioning, meeting the majority of positioning requirements for conveyor systems.
- Modular design for the conveyor system enhances interchangeability and universality of production line components, negating the need for redesigning conveyance setups for new production lines.
- Designed configurations can adopt linear, circular, square tracks, as well as 3D structures, offering exceptional flexibility to meet varying production demands.

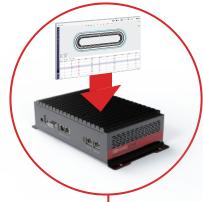


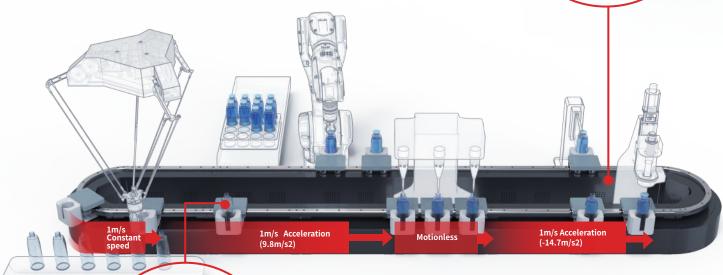
ZMNGWEI

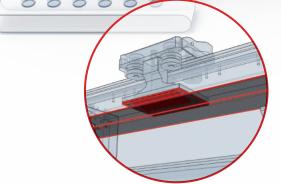
Intelligent Control, Flexible Production

Station information and motion parameters can be changed at any time, easily enabling the production of multiple products on the same production line, or real-time speed adjustment for flexible production. Almost all work can be configured via software.

In contrast, traditional conveyor systems require synchronized movement for each carrier, with fixed stop mechanisms in place. Changing workstation processes necessitates a complete redesign and installation of mechanical structures.







Direct drive

Generating power through magnetic fields, enabling contactless and wear-free operation. This results in an extended lifespan and reduced maintenance costs compared to conventional conveyor systems.

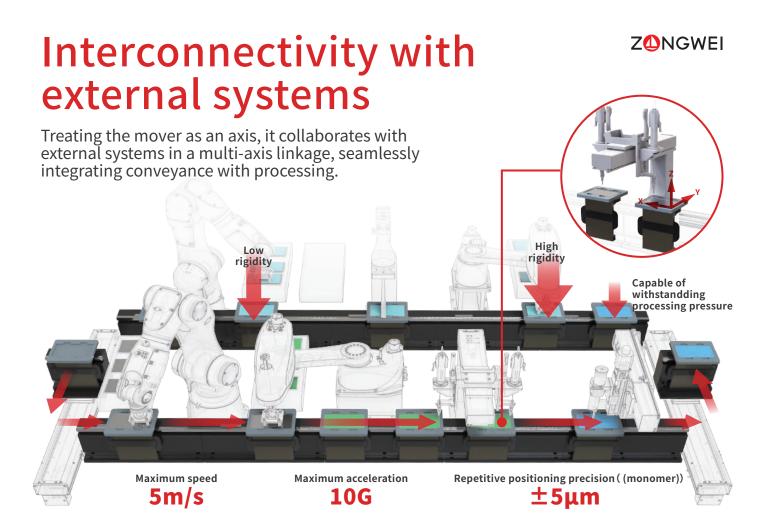
Modular Design

Creating production lines should be as straightforward as assembling building blocks, eliminating the need for intricate designs. Upgrading or reconfiguring the production line only involves rearrangement, leading to cost savings.



Independent movement of movers

At any given moment, each mover maintains an independent motion state, eliminating the necessity for synchronized waiting and allowing for a liberated and flexible performance enhancement.

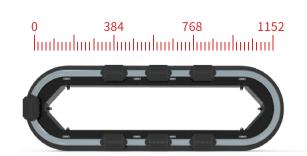


High-speed Conveying, High-Precision Positioning

The maximum speed can reach 5 m/s, the maximum acceleration can reach 10 G, and the highest repetitive positioning precision can reach ± 5 µm, effortlessly achieving high-speed material conveyance.

Absolute position without homing

Tailoring to the process requirements, different evels of rigidity can be set for each mover or area to improve production adaptability.

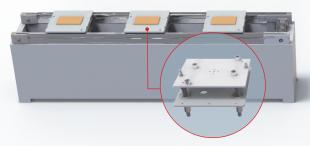


Save space

Direct operation can be carried out on the movers without the need for installing workbeches, thereby saving space.

STrak Equipment space Save space

Traditional scheme:



Direct operation can be carried out on the movers without the need for installing workbeches, thereby saving space.



Requiring the transfer of workpieces to separate carriers for processing consumes significant space and leads to low efficiency.

Z**U**NGWEI

sTrak-L Series Maglev Drive **High-Speed Logistics Line**

A hybrid logistics line combines the advantages of both maglev drive and belt segments, offering flexible configurations according to specific needs.

We provide cost-effective magnetic drive solutions to meet our customers' requirements.

Better comprehensive cost-effectiveness



Maglev drive segment

Belt segments

High Precision, High Speed, High Flexibility, High Intelligence Low Precision, Low Speed, Low Intelligence

Capable of interfacing with maglev drive lines, belt lines, roller lines, double-speed

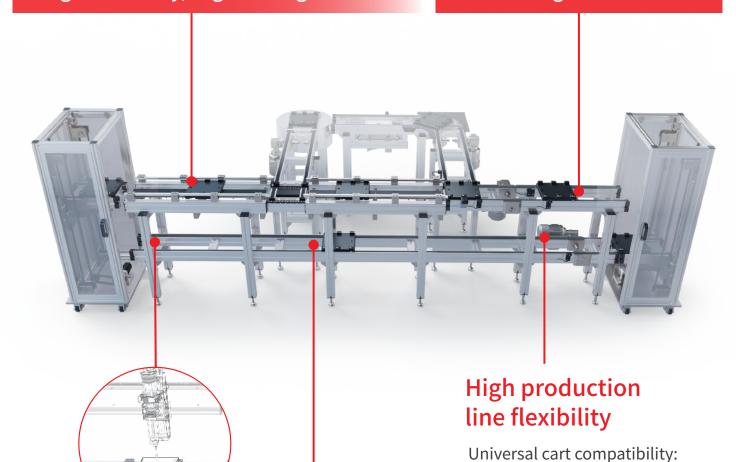
This enables versatile

and cycle times.

chains, flexible lines, and more.

production lines, cost savings,

and reduced processing steps



Integrated conveying and processing

Direct operation on the mover. Interconnectivity with external systems.

Closed-loop

Mover without wire harness constraints, recyclable.

process

sTrak-S Series circular line



Featuring arc modules, it works with both V-shaped and linear guide rails, allowing for ring type, ferry type and other types.It's well-suited for faster speeds, medium to small thrust and load capacities, and situations where spacing is limited. The built-in design enhances cleanliness standards.

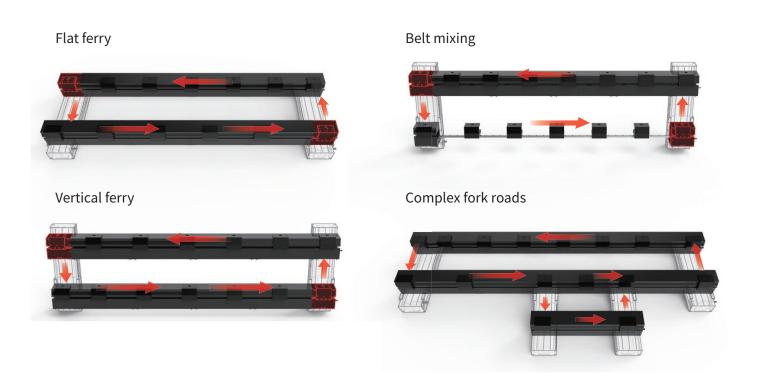


Scan to watch the video

Track configuration - Ring



Track configuration - Ferry type



sTrak-S Basic Parameters



Basic Specifications	S2	S3
Sizes	Refer to the dimension diagram for the sTrak-S2	Refer to the dimension diagram for the sTrak-S3
Stator module length	360mm/480mm/720mm/90° R234/180° R234	
Position Detection	Absolute position	
Power supply	DC36-60V	
Operation temperature	0-50°C	
Matching controller	sTrak-A2	

Movers - Model Description

**Certain groups are omitted in the model number, for more details, refer to the description of the default specifications below

Non-standard custom reserved bits, used for non-standard customization, usually STD (standard)

*If not specified, it defaults to STD (Standard)

The mover repeatability of positioning specification must be the same as the fitting stator specification.

Multi-move repetitive positioning precision

S2

S3

P02 grade

±0.02mm

P03 grade

±0.03mm

P05 grade

*Precision can be tailored to meet customer preferences. In this context, repetitive positioning precision specifically pertains to the direction of motion. If not specified, defaults to P02 (± 0.02 mm)

 ± 0.05 mm

The type of rail that needs to be used to fit the stator is the same, usually HV (High Precision V-shaped Rail), and NN stands for non-standard rail.

*If not specified, it defaults to HV (High Precision V-Guide)

It needs to be the same as the thrust specification of the mating stator, and the specific parameters are shown in the specification table:

Thrust specifications		S2	S3
	Peak thrust	180N	
38M4	Maximum speed	5m/s	
	Maximum load	0~5kg	
	The minimum center distance of the mover	205mm	
54M4	Peak thrust	150N	
	Maximum speed	2.5m/s	
	Maximum load	5~10kg	
	The minimum center distance of the mover	165mm	
	Peak thrust	300	N
58M4	Maximum speed	2.5m/s	
	Maximum load	10~25kg	
	The minimum center distance of the mover	205mm	

^{*}The above peak thrust means that when the mover is in a straight segment, if the mover is in an arc segment, the peak thrust will be halved compared to the straight segment.Recommended payload range refers to the typically suitable range of loads for use.

MV stands for mover

It needs to be the same as the sub-series code for mating the stator



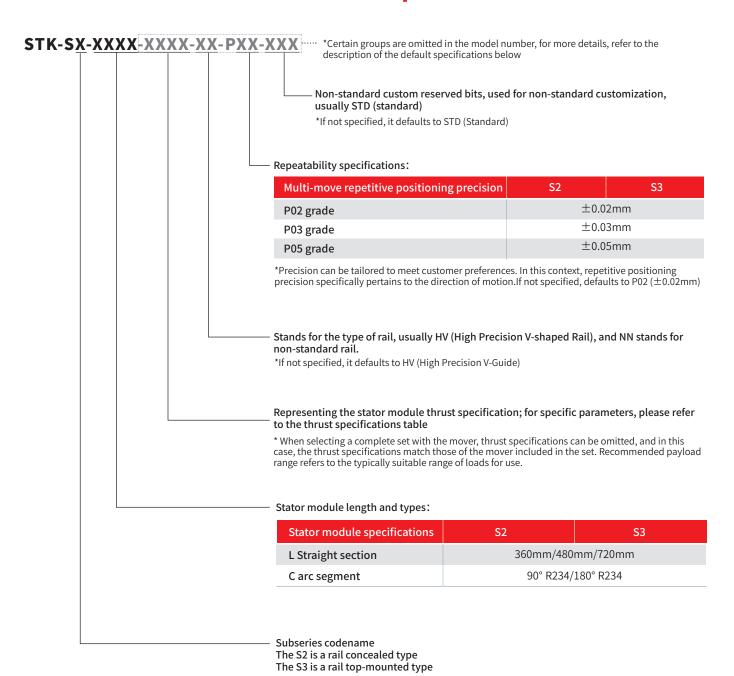
Example:

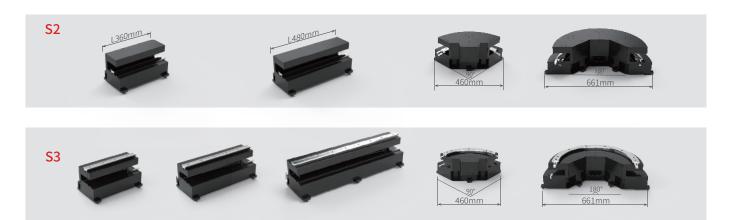
STK-S3-MV-58M4-HV-P05-STD represents a standard mover with a peak thrust of 300N mated to a high-precision V-rail. and a repetitive positioning precision of \pm 0.05mm.

STK-S3-MV-58M4 represents a standard mover with a peak thrust of 300N, defaulting to high-precision V-guide, and featuring are petitive positioning precision of ± 0.02 mm

Stator module - Model Description







Example:

STK-S3-L480-58M4-HV-P05-STD represents a standard linear stator with a length of 480mm, a peak thrust of 300N, equipped with high-precision V-guide as standard, and featuring are petitive positioning precision of ± 0.05 mm.

STK-S3-L480-58M4 represents a standard linear stator with a length of 480mm, a peak thrust of 300N, defaulting to high-precision V-guide, and featuring a repetitive positioning precision of ± 0.02 mm.

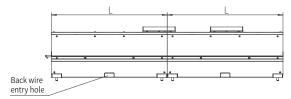
sTrak-S2 Dimensional Drawing

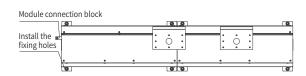


sTrak-S2 Module installation

Module Installation

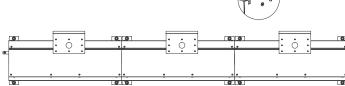
Accurac Requirements

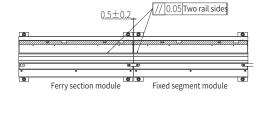


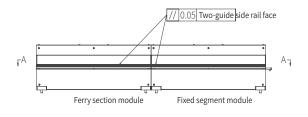


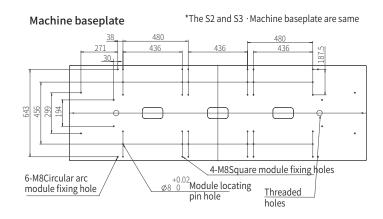
Install the dowel pin 170 Side inlet hole

Connections between modules





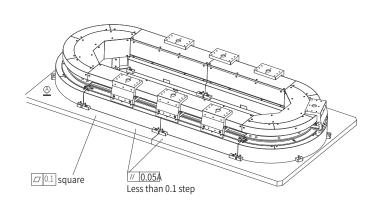




Mounting Tray

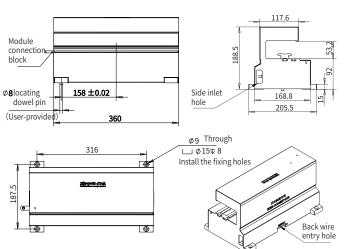
6-M6 Mounting tray 2- Ø5 Locating pin hole

Installation table requirements

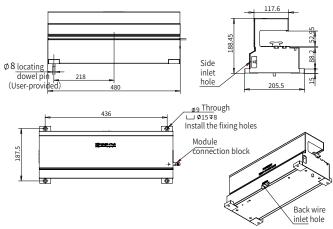




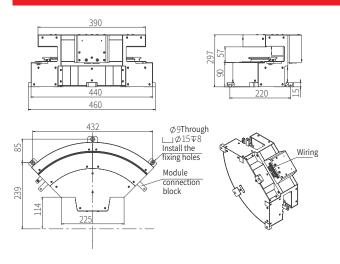
STK-S2-L360 stator module



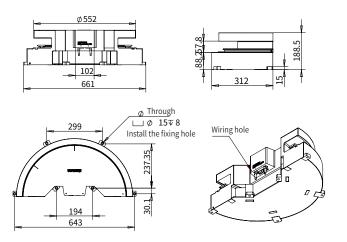
STK-S2-L480 stator module



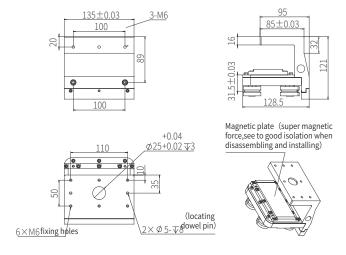
STK-S2-C90 stator module



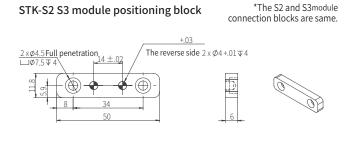
STK-S2-C180 stator module



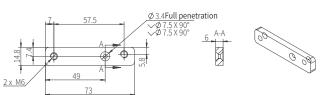
STK-S2 Mover



Module connection block



STK-S2 S3 module arc connection block

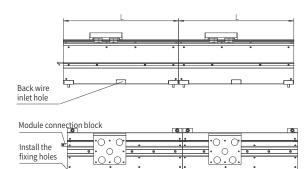


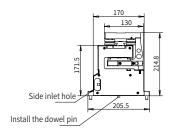
sTrak-S3 Dimensional Drawing



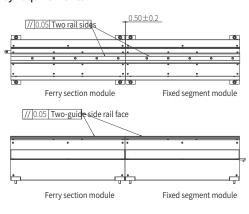
sTrak-S3 Module Installation

Module installation



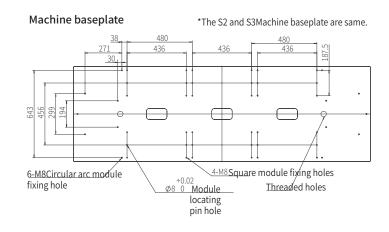


Accuracy requirements

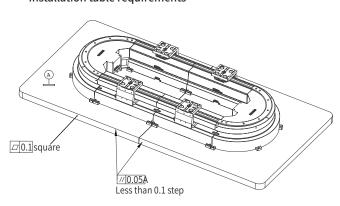


Connections between modules

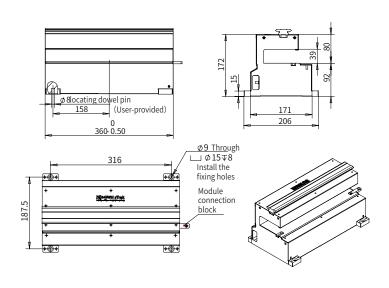
Mounting tray 6-M6 Fixed metallurgy 2- Ø5Locating pin hole



Installation table requirements



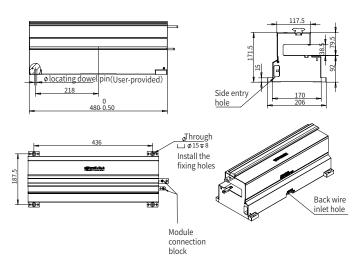
STK-S3-L360 stator module

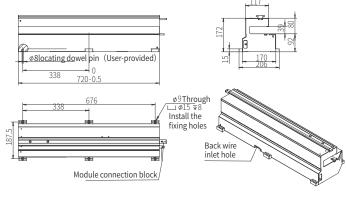




STK-S3-L480 stator module

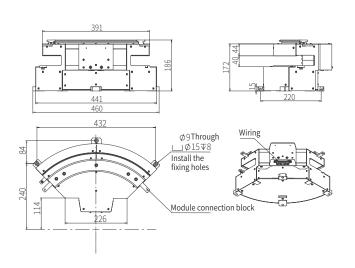
STK-S3-L720 stator module

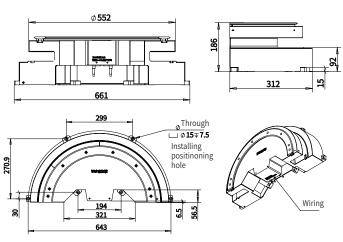




STK-S3-C90 stator module

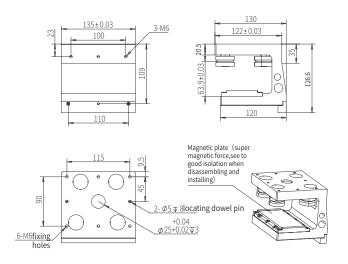
STK-S3-C180 stator module

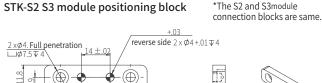


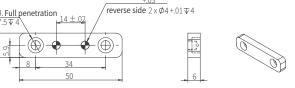


STK-S3 Mover

Module connection block

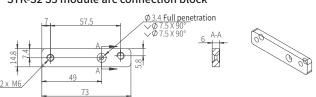






*The S2 and S3 module

STK-S2 S3 module arc connection block



sTrak-X Ferry-Type Series



Vertical linear ferry type, simple structure, suitable for moderate speed, medium and high thrust and load scenarios. Support the integration of traditional conveying methods to reduce the cost of use.

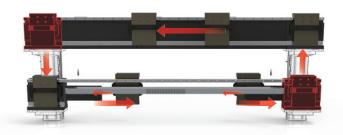


Track Configuration

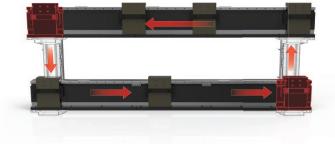
Flat ferry



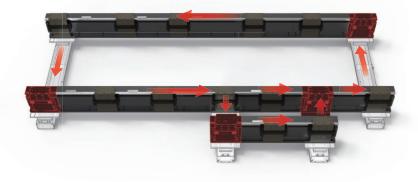
Belt mixing



Vertical ferry



Complex fork roads

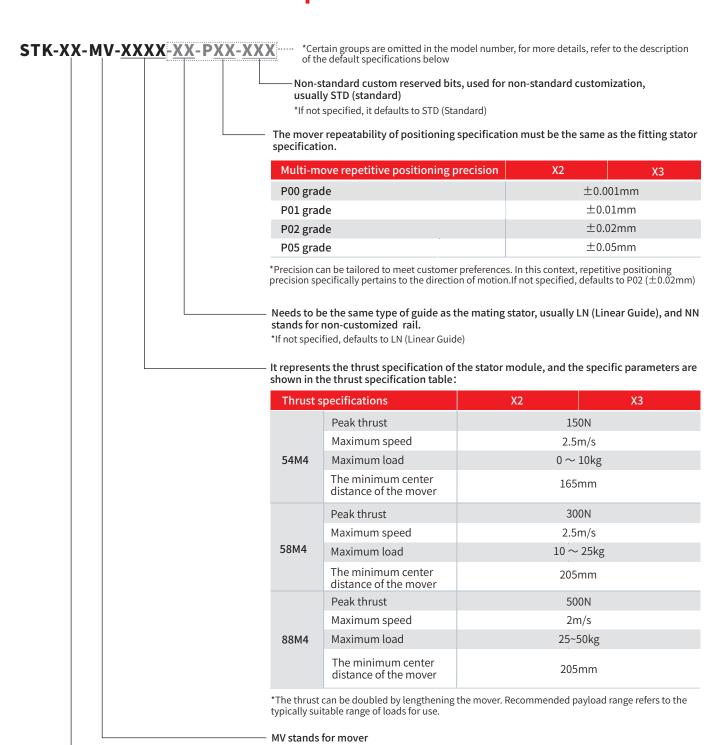


sTrak-X Basic Parameters



Basic Specifications	X2	Х3	
Sizes	SeesTrak-X2 Dimensional Drawing	SeesTrak-X3 Dimensional Drawing	
Stator module length	240mm/480mm/720mm		
Position Detection	Absolute position		
Power supply	DC36-60V		
Operation temperature	0-50°C		
Matching controller	sTrak-A2		

Movers - Model Description





It needs to be the same as the sub-series code for mating the stator

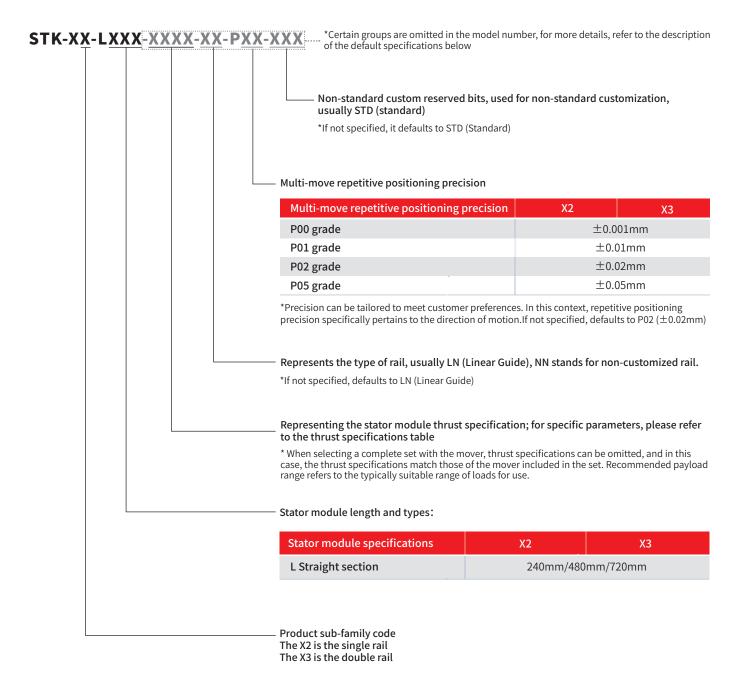
Examples:

STK-X2-MV-58M4-LN-P05-STD represents a standard rotor with a peak force of 300N, standard linear guide, and a repeated positioning accuracy of ± 0.05 mm.

STK-X2-MV-58M4 represents a standard rotor with a peak force of 300N, defaulting to the standard linear guide, and a repeated positioning accuracy of ± 0.02 mm.

Stator Module - Model Description







Examples:

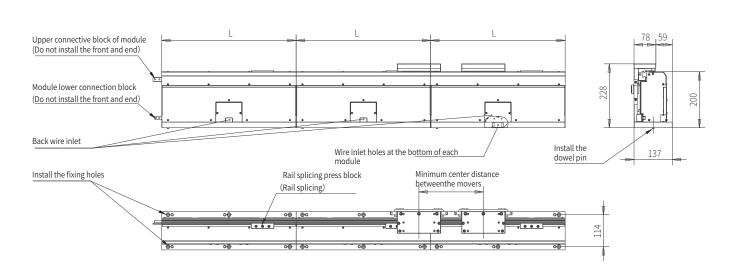
STK-X2-L480-58M4-LN-P05-STD represents a standard linear stator with a length of 480mm, a single guide rail, a peak thrust of 300N, equipped with linear guide as standard, and featuring a repetitive positioning precision of ± 0.05 mm.

STK-X2-L480-58M4 represents a standard linear stator with a length of 480mm, a single guide rail, a peak thrust of 300N, equipped with linear guide as standard, and featuring a repetitive positioning precision of ± 0.02 mm.

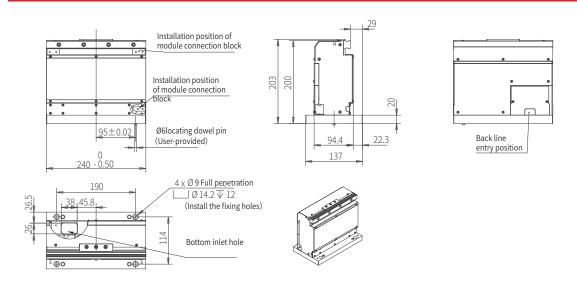
sTrak-X2 Dimensional Drawing



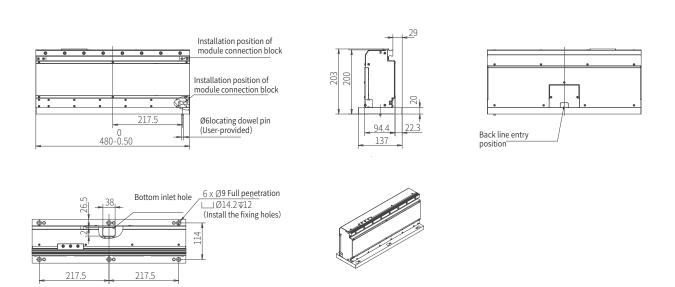
Module Installation



STK-X2-L240 Stator module

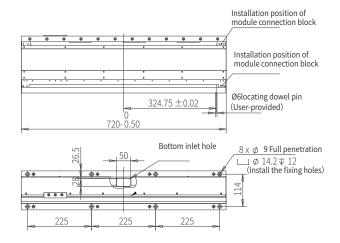


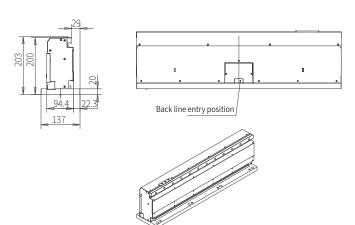
STK-X2-L480 Sator module





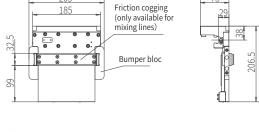
STK-X2-L720 Sator module

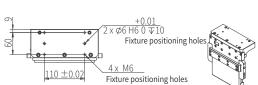




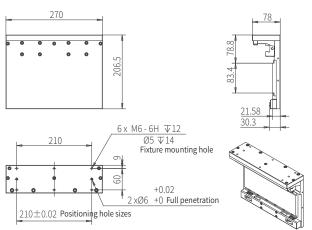
STK-X2-MV Standard mover

205

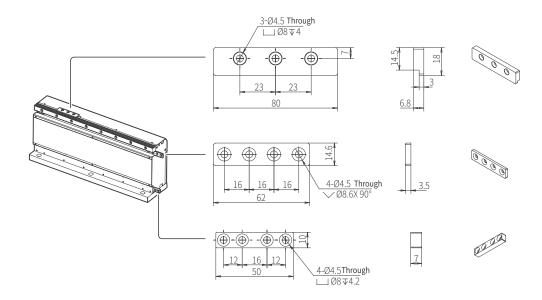




STK-X2-MV Extended mover



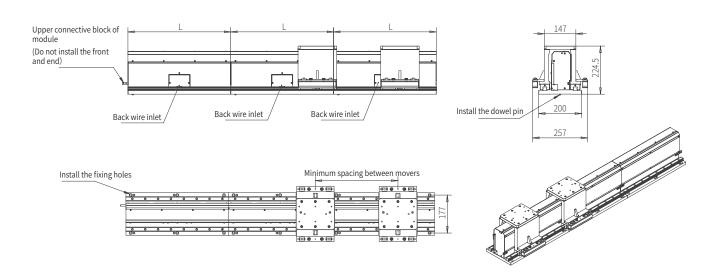
Module connection block



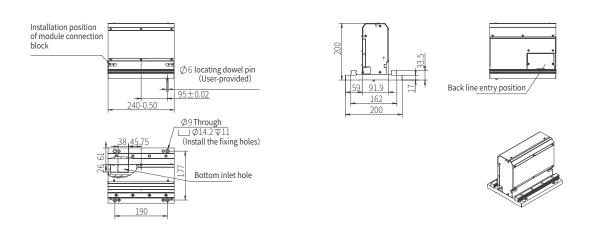
sTrak-X3 Dimensional Drawing



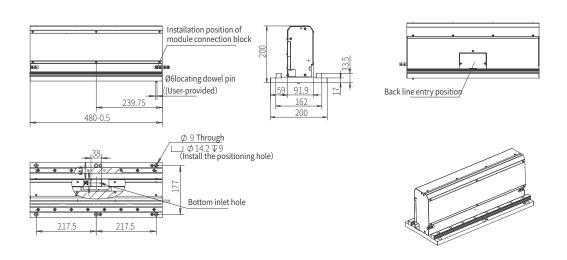
Module installation



STK-X3-L240 Stator module

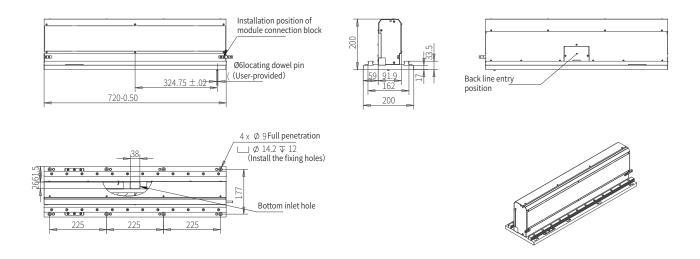


STK-X2-L480 Stator module

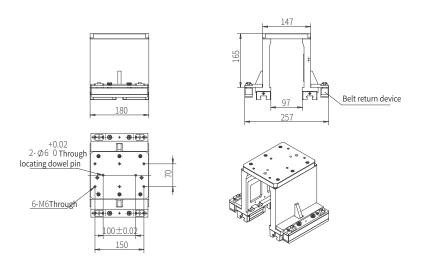




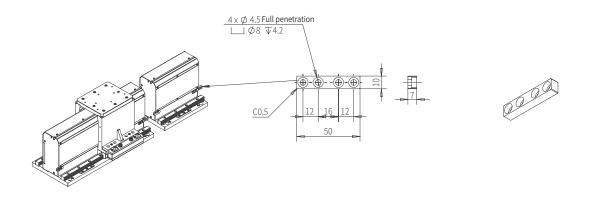
STK-X3-L720 Stator module



STK-X3 Standard mover



Module connection block



sTrak-W Heavy-Load Series



Horizontal linear ferry type, double guide rail support, high bearing capacity. Suitable for moderate speed, large thrust and load scenarios

Support the integration of traditional conveying methods to reduce the cost of use

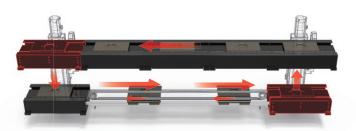


Track configuration

Flat ferry



Belt mixing



Vertical ferry



Complex fork roads



sTrak-W Basic Parameters

Basic Specifications		
Sizes	See sTrak-W1 Dimensional drawing	
Stator module length	240mm/480mm/720mm	
Position Detection	Absolute position	
Power supply	DC36-60V	
Operation temperature	0-50°C	
Matching controller	sTrak-A2	

Movers - Model Description



STK-W1-MV-XXXX-XL-XX-PXX-XXX

 $^\star\text{Certain}$ groups are omitted in the model number, for more details, refer to the description of the default specifications below

 Non-standard customized retention positions are reserved for non-standard customization, typically labeled as "STD" (standard).

If not specified, it defaults to STD (Standard)

The mover's repetitive positioning precision specification needs to match the corresponding stator specification. For specific parameters, please refer to the repetitive positioning precision guidelines.

*If not specified, defaults to P02 (±0.02mm)

Multi-move repetitive positioning precision			
P00 grade	±0.001mm	P02 grade	±0.02mm
P01grade	±0.01mm	P05 grade	±0.05mm

It's important to ensure that the guide rail type aligns with the corresponding stator, usually utilizing HV (high precision V-type guide rail). The notation "NN" indicates that guide rails are not included as standard.

Representing the mover 's magnet length, where the thrust equals X multiplied by the peak thrust of the corresponding stator. It's necessary for the actuator's thrust specifications to match those of the corresponding stator. For specific parameters, please refer to the thrust specifications table:

Thrust specifications		
58M4-1L	peak thrust	300N
	Maximum speed	2.5m/s
	Recommended payload range	10 ∼ 25kg
	The minimum center distance of the mover	205mm
	peak thrust	500N
88M4-1I	Maximum speed	2.0m/s
00M4-1F	Recommended payload range	25 ∼ 40kg
	The minimum center distance of the mover	205mm
	peak thrust	1000N
88M2-2L	Maximum speed	2.0m/s
00IVIZ-ZL	Recommended payload range	25 ∼ 40kg
	The minimum center distance of the mover	325mm
	peak thrust	1000N
88M4-2I	Maximum speed	2.0m/s
00W4-2L	Recommended payload range	40 ∼ 80kg
	The minimum center distance of the mover	325mm
	peak thrust	500N * N
88M4-NL	Maximum speed	2.5m/s
GOIVI-4-IVL	Recommended payload range	40kg * (N-1) ∼ 40kg * N
	The minimum center distance of the mover	/

MV stands for mover

 $^{^{\}star}88M2$ can only be used with 2L movers. Recommended payload range refers to the typically suitable range of loads for use.





Examples:

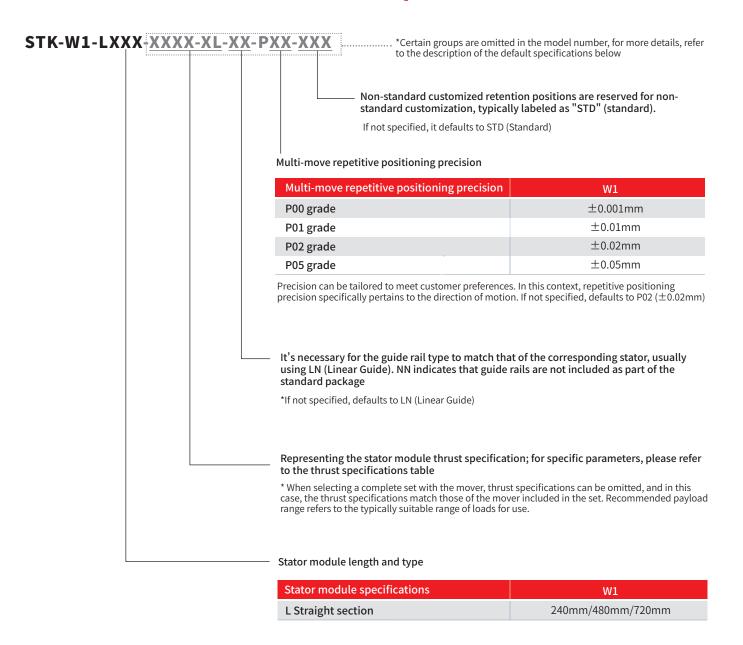
STK-W1-MV-88M4-1L-LN-P05-STD represents a standard rotor with a peak force of 500N, standard linear guide, and a repeated positioning accuracy of ± 0.05 mm.

STK-W1-MV-88M4-1L represents a standard rotor with a peak force of 500N, defaulting to the standard linear guide, and a repeated positioning accuracy of ± 0.02 mm.

^{*}If not specified, defaults to LN (Linear Guide)

Stator module - Model Description







Example:

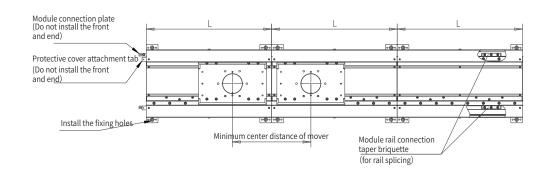
 $STK-W1-L480-88M4-LN-P05-STD\ represents\ a\ linear\ standard\ stator\ with\ a\ length\ of\ 480mm,\ peak\ thrust\ of\ 500N,\ standard\ performance\ guide\ rails,\ and\ a\ repetitive\ positioning\ precision\ of\ \pm0.05mm.$

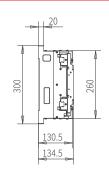
STK-W1-L480-88M4 represents a linear standard stator with a length of 480mm, peak thrust of 500N, default standard performance guide rails, and a repetitive positioning precision of ± 0.02 mm.

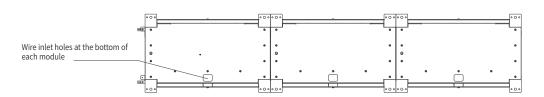
sTrak-W1 Dimensional drawing



Module installation

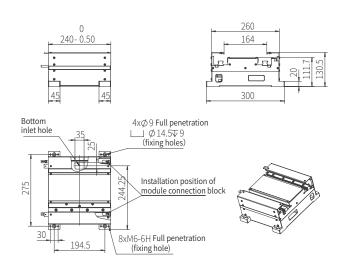


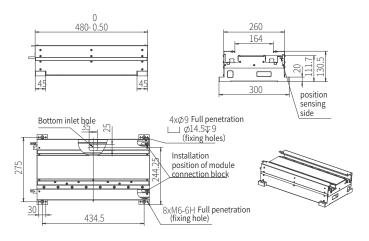




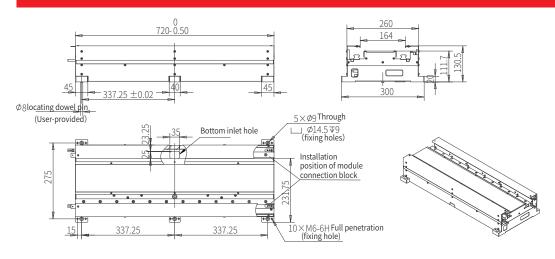
STK-W1-L240 stator module

STK-W1-L480 stator module





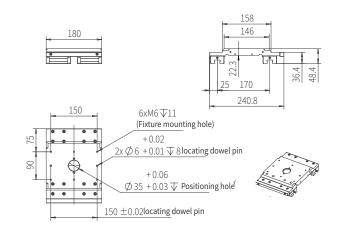
STK-W1-L720 stator module

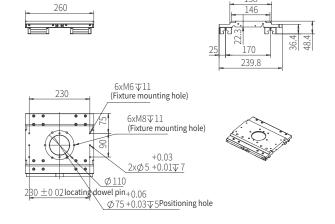




STK-W1-MV-XXXX-1L Mover

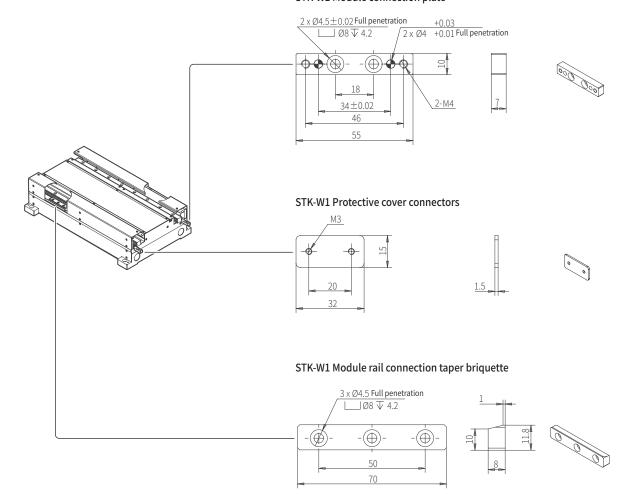
STK-W1-MV-XXXX-2L Mover





Module connection block

STK-W1 Module connection plate



sTrak-A2 Controller





Controller model: STK-A2-X

Controller performanceS:StandardH: High-performance

Example: STK-A2-S stands for A2 controller.

Basic specifications of the sTrak-A2 controller		
Hardware architecture	x86-64	
Software platform	STK-SW-V10 (sTrakIntelligent Maglev Conveying System)	
External communication protocols	EtherCAT, Modbus-TCP, Ethernet/IP	
Maximum	Standard	50m
control length	High-performance	250m
The maximum	Standard	64
number of movers	High-performance	246
Power	Standard	TDP 30W
rowei	High-performance	TDP 100W
Humidity scope	5%-95%RH non-condensing	
Temperature range	-10° C~60° C	
Vibration range	0.5G rms/5-50HZ	

sTrak-PS Power Supply



sTrak-PS power supply basic specifications		
Output voltage	48VDC/36VDC	
Rated power	1000W/2000W/3000W	
Input voltage	90 ~ 264VAC 127 ~ 320VDC	
Frequency range	47~63Hz	
Power factor	0.97/230VAC(at full load)	
Protection function	Overload/Overvoltage/Overtemperature	
Temperature range	-35 ~ +70 °C	
Humidity Scope	20 ~ 90% RH non-condensing	
Vibration range	2G rms/10-500HZ	

Power supply model: **STK-PS-XXXX-XX**

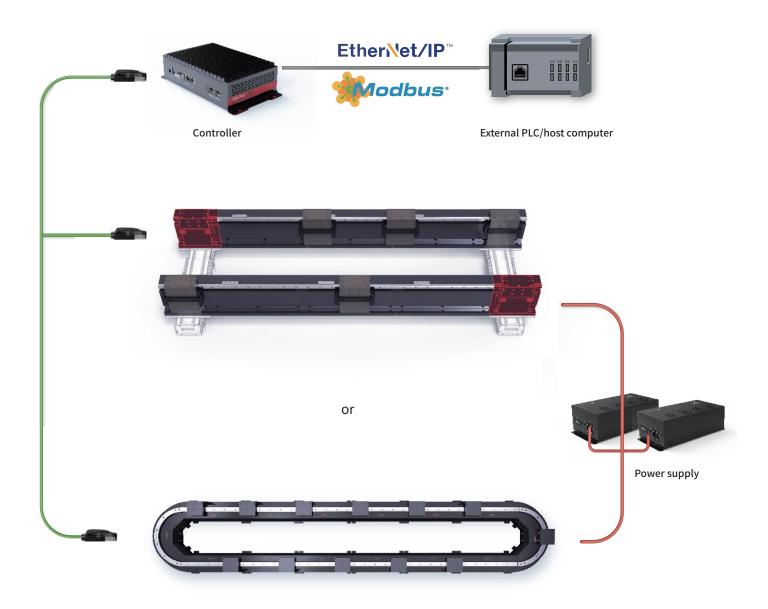
Here are two output voltages, 48 and 36, representing 48V and 36V respectively.

– Power supply, there are 1000, 2000, 3000, three kinds, representing 1000W, 2000W, 3000W.

Example: STK-PS-2000-48 stands for 2000W-48VDC power battery.



Basic system composition



ZMNGWEI

Efficient and user-friendly configuration and debugging tools

- Graphical configuration tools to quickly design and configure production lines of different shapes.
- The overall motion control logic is completed through the process module, reducing PLC programming.
- Integrated graphical simulation functions to obtain the system operating status in real time.
- Standardizing parameters with uniform specifications to reduce learning and service costs.





Condition monitoring

Graphical user interface The system error Information is obtained in real time



Process simulation

The mover that arrives at the process awaits the setting



System configuration

Trolley configuration Process configuration



Motion control

Increase or decrease the speed of the movers



JOG debugging

Mover JOG debugging Motor JOG debugging in the reciprocating section



Start-stop system

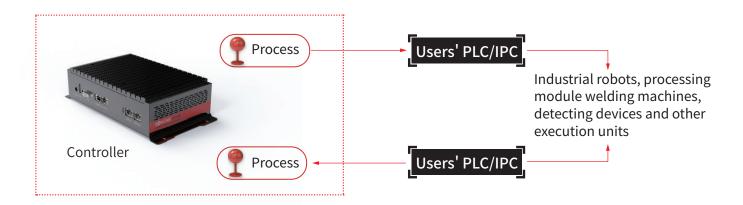
Initialization, reset, start, emergency stop and pause

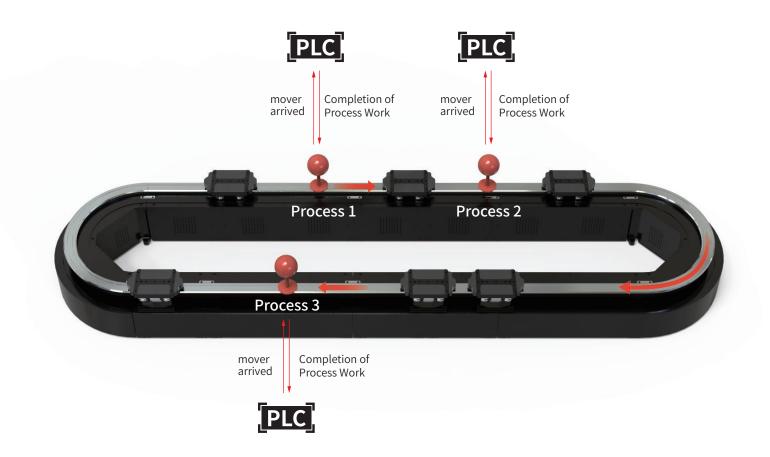
Basic Mode

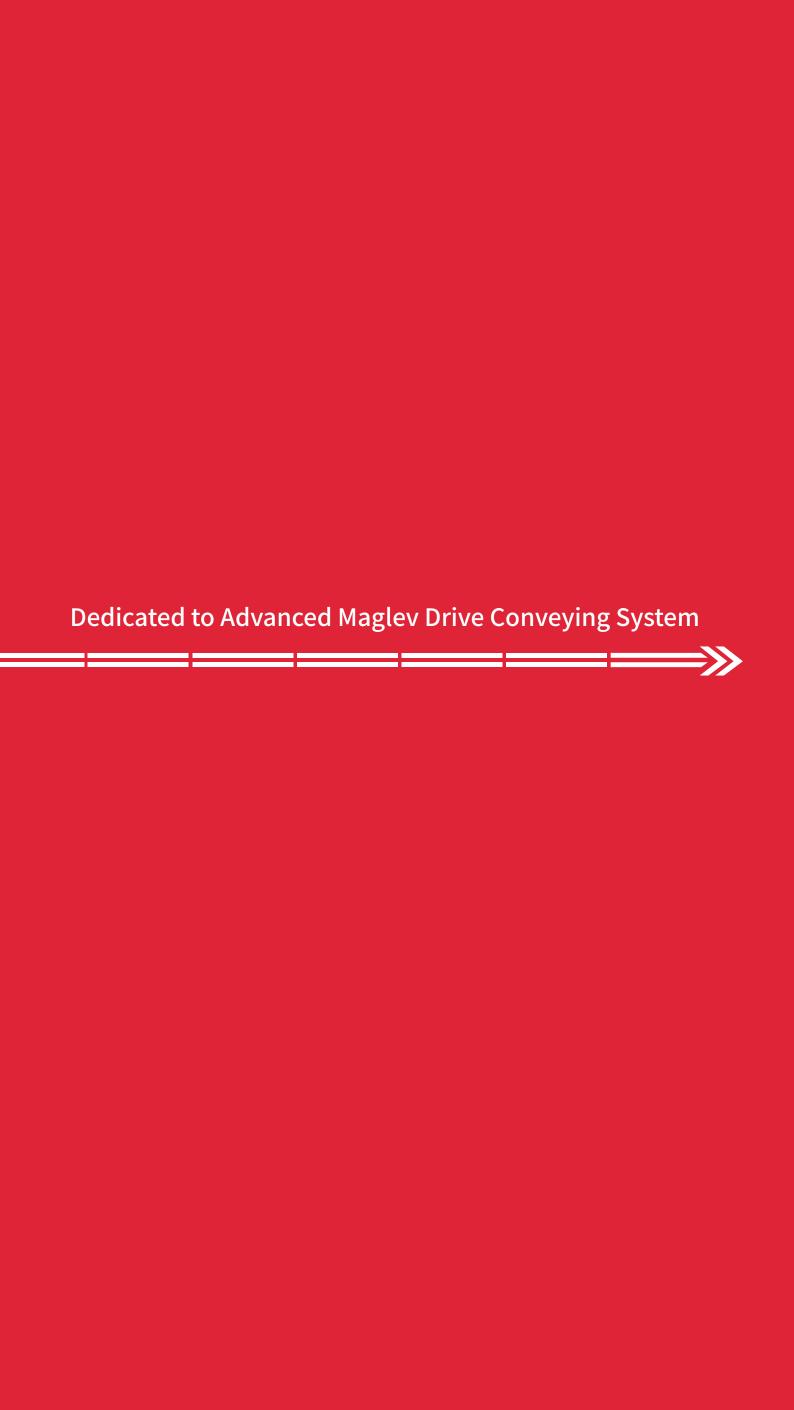


With "process" as the control object, the user can use PLC to interact with the process. As long as the station position and information are set, the sTrak controller can plan the motion of the mover.

The user doesn't need to care too much about the operation, because it is easy to use and operate.







Zongwei Technology is a research and development enterprise with control technology as the core, focusing on intelligent magnetic drive and magnetic levitation conveying technology.

Zongwei has R&D, production and service centers in Suzhou, Shanghai and Dongguan, and help many industrial giants realize intelligent, high speed, and flexible automated production solutions.

Empowering High-End Manufacturing with Intelligent Maglev Drive Conveying System

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