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Specifications subject to change without notice
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Series *He*

HE Series Public Transportation Escalator



Upgraded Security and Multiple Protection

- Standard 20+ safety functions build an all-round protection network
- Leaving step protection of the whole journey eliminates the abnormal lifting of steps in the operation
- Dual guide of skirt and guide rail is adopted to ensure the stable operation of the steps



Reliable Design and Limit Response

- Trusses, rollers and other important components are specially designed with rust-proof seals, which challenges the long-term and stable operation in special environment
- Printed circuit boards have received severe tests to ensure reliable and lasting operation
- The chains with higher safety factor and better wear resistance are adopted to improve the service life



Comprehensive Coverage of Smart Devices

- Identify dangerous behaviors to protect passengers' safety
- Real-time environmental perception and accurate control of equipment
- Monitor operation status to improve management efficiency



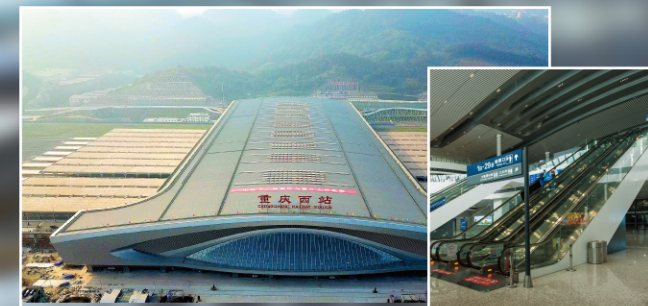
Energy Saving, Environmental Protection, Comfort and High Efficiency

- The whole series adopts LED lighting, which is green, low-carbon and environmentally friendly
- Provide a variety of standby operation modes, and optional intelligent passenger sensing device to save energy deeply
- Fully apply energy feedback technology to reduce energy consumption of the equipment

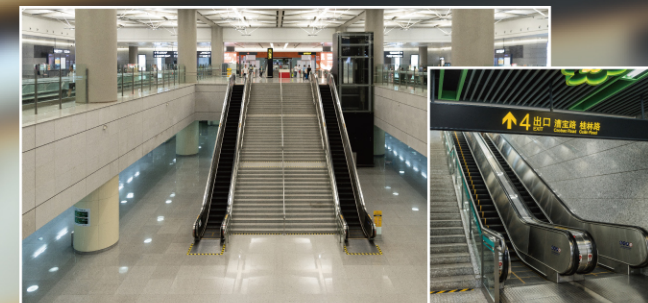
Chengdu Tianfu International Airport
There are 222 escalators



Chongqingxi Railway Station
There are 75 escalators



Shanghai Metro
There are 770 escalators (as of December 2022)



Taizhou Baiyun Mountain
There are 6 ultra-high escalators



Series He

HE Series Public Transportation Escalator

Product Advantages

Upgraded Security and Multiple Protection	P.3
Reliable Design and Limit Response	P.5
Comprehensive Coverage of Smart Devices	P.7
Energy Saving, Environmental Protection, Comfort and High Efficiency	P.9

Design

Decorative Components	P.11
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Functional Configuration

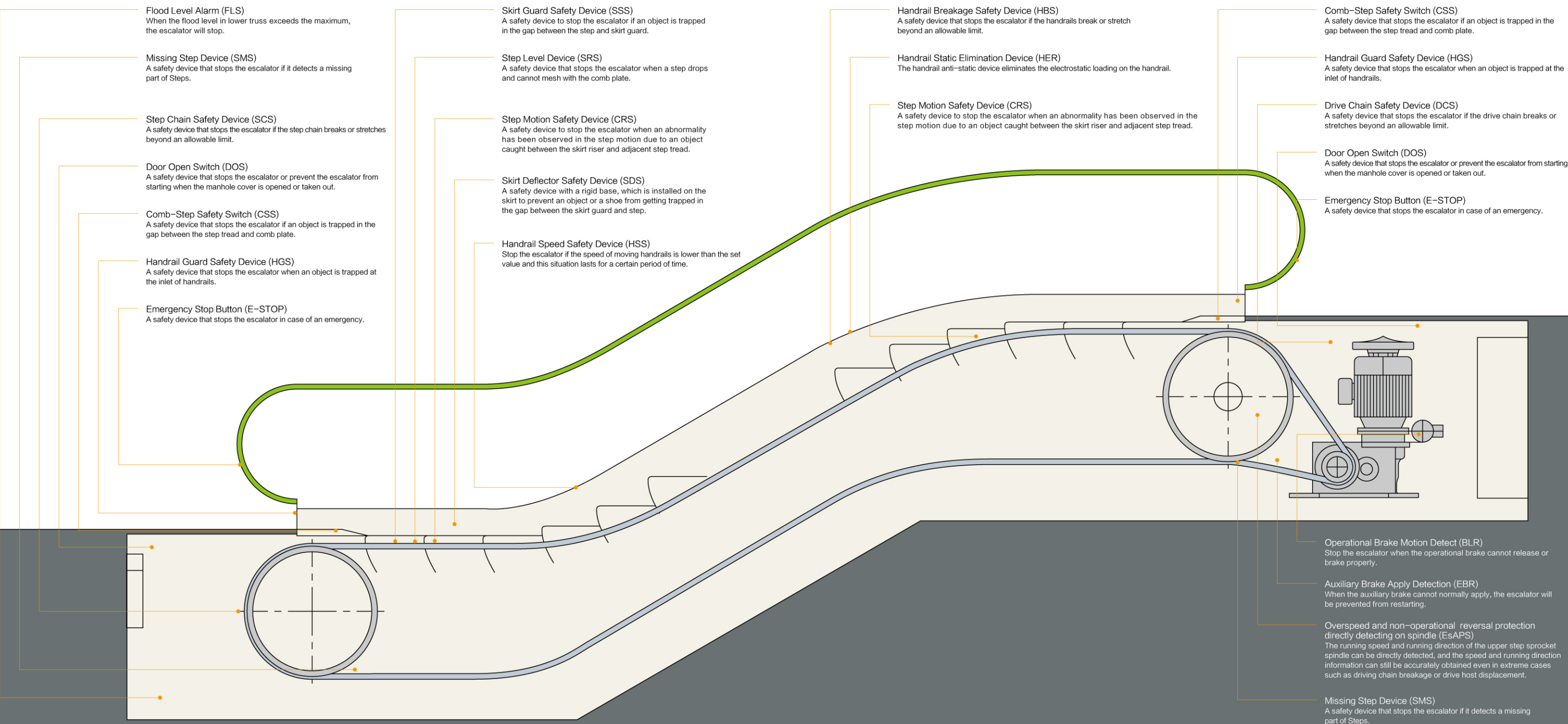
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Civil Construction Description

Civil Construction Drawing	P.19
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Project Performance

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EsAPS Escalator Absolute Position Sensing System
Directly detect the running speed and direction, and get accurate information in extreme cases.



Dual Guide of Step
The entire leaving step path adopts a dual guide structure, so that the steps operate more stably.



Leaving Step Protection of the Whole Journey
Whole-journey step rail clip + anti-jump rail helps the steps operate in a safer way.



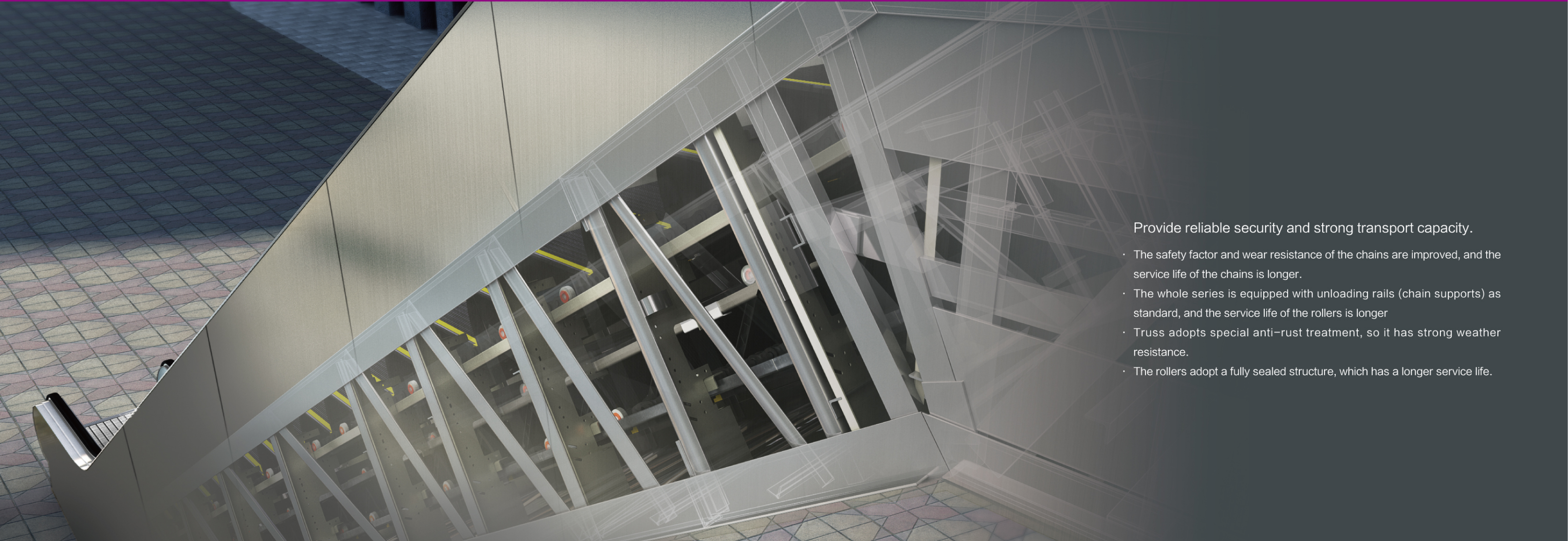
Standard External Rollers + Unloading Rail
Extend the service life of rollers.



Auxiliary Brake
The whole series is equipped with auxiliary brake.



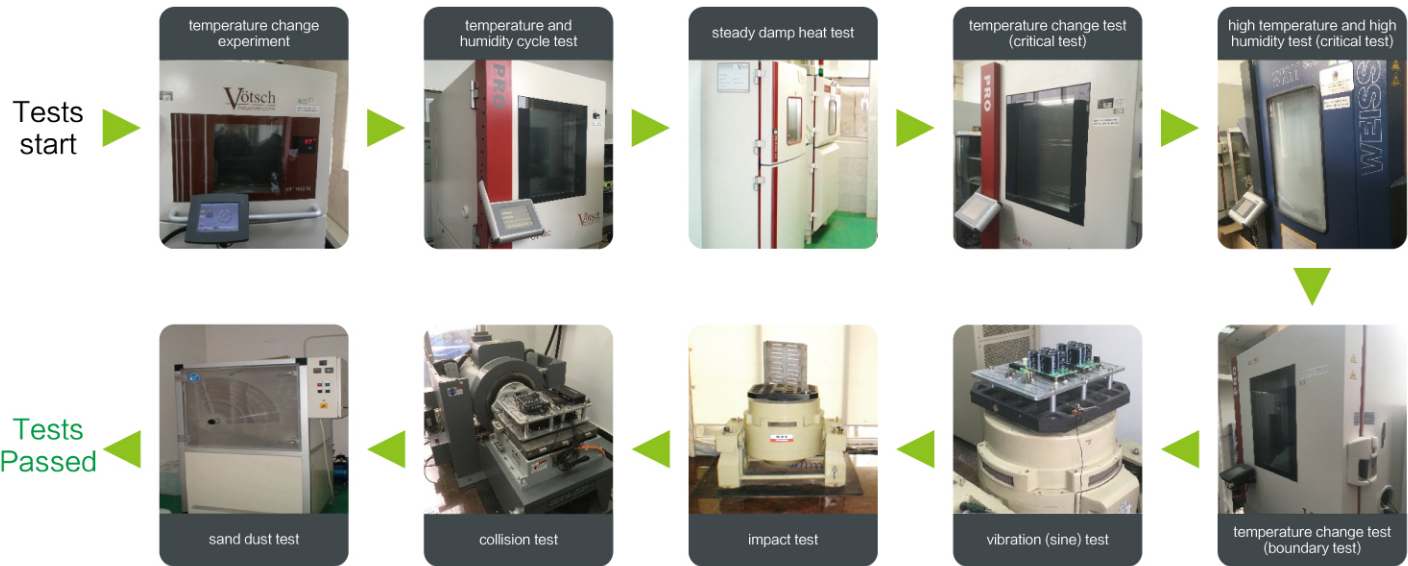
8X Safety Factor of Chains
Strengthen the step chains to provide a safe and comfortable guarantee for the heavy load of the escalator.



Provide reliable security and strong transport capacity.

- The safety factor and wear resistance of the chains are improved, and the service life of the chains is longer.
- The whole series is equipped with unloading rails (chain supports) as standard, and the service life of the rollers is longer
- Truss adopts special anti-rust treatment, so it has strong weather resistance.
- The rollers adopt a fully sealed structure, which has a longer service life.

Testing of printed circuit board components
(high temperature, high humidity, impact, dust deposition, etc.)



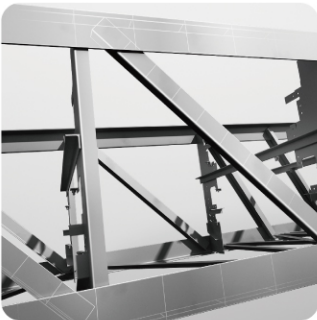
10 consecutive harsh environmental tests in turn

Industry practice: one printed board deals with one test;
SMEC standard: a printed board is continuously tested from beginning to end, and it keeps normal operation during the whole process and after the test.

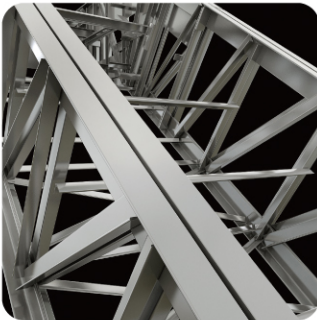
Challenge the Special Environment



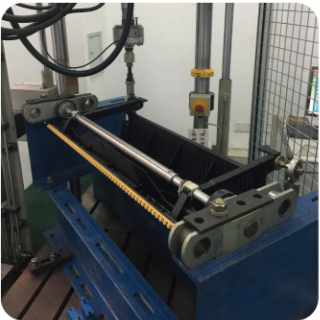
5000-hour Durability Test of Roller
In special working environments such as high temperature, wind and sand, moisture, etc., fully sealed step roller design can be selected to reduce dust intrusion into bearings and improve roller life.



Reliable Anti-rust Treatment of Truss
As the humid environment of external conditions is inevitable, HE series escalators adopt high-strength angle steel truss profiles, which are resistant to bending and corrosion.



Double-deck Truss
When the escalator reaches a certain span, Mitsubishi double-deck truss is selected to meet the requirements of deflection and strength, and it is stable and firm, thus adding security to safety.



1 × 107 Dynamic Load Torsion Tests of Steps
It is much higher than the requirement of 5 × 106 tests required by GB standard, so the steps have a longer service life and higher safety.



Product Intelligence

- Identification and warning of passengers' dangerous behaviors
 - Ride the escalator with a stroller *
 - Identify whether there is any behavior of riding the escalator with a stroller through the intelligent escalator terminal installed at the entrance of the escalator, and if yes, give an audible and visual warning.
 - Children playing in the handrail inlet area *
 - Detect the behavior of playing in the inlet area of the handrail and provide an audible and visual warning.
- Real-time environmental perception and accurate control of equipment
 - Self-lubrication adapting to ambient rainfall *
 - The fully outdoor escalator automatically adjusts the refueling strategy according to the environmental rainfall to improve the lubrication efficiency.
 - Lighting control adapting to ambient light illumination *
 - The decoration lighting is automatically controlled according to the ambient light illumination and the environment where the escalator is located.
 - Voice broadcast adapting to ambient volume *
 - The voice broadcast volume is automatically adjusted according to the ambient volume, which improves the overall comfort of users.
 - Heating strategy adapting to ambient temperature
 - According to the ambient temperature, the truss, comb plate and handrail belt heaters are controlled separately to ensure the safety of operation in low temperature environment.

Remark:
* Need to configure intelligent escalator terminal

Service Intelligence

- Automatic start/stop of preset time *1
 - According to the user's preset operation start and end time, it provides safe automatic start/stop service under the condition of ensuring no passengers, thus eliminating the trouble of manual operation one by one, and saving time and effort.
- Escalator and passenger status monitoring and active intervention *2
 - Using artificial intelligence technology, the monitoring system is upgraded from "passive tracing" to "active intervention", which can actively identify the abnormal situation or behavior of passengers on the escalator, alarm the local escalator and the monitoring room in time, remind personnel to take the initiative to intervene, and speed up the emergency response.
- Passenger spectrum and passenger flow analysis service *3
 - Statistics and analysis of the load on the escalator provide reference for the dynamic adjustment of the maintenance plan.
- Intelligent operation and maintenance report service *3
 - Collect escalator operation data in real time, and provide users with escalator group operation status reports regularly to help users understand the escalator situation more comprehensively.
- Intelligent equipment monitoring
 - Intelligently analyze and process the data collected by the sensors at the measuring points of the key components of the escalator, such as the host and the steps, extract the corresponding characteristic information, and give early warning information when a component is abnormal, so as to intervene in time before the failure of the key components of the escalator and nip in the bud.

Remark:
*1: It is recommended to separately order a SmartEye monitoring system, which can set the time uniformly for all escalators in the monitoring room, thus improving management efficiency.
*2: It is necessary to separately order a SmartEye monitoring system, which can realize identification and warning of more passenger abnormal behaviors such as falling, reverse movement and congestion.
*3: If it is necessary to configure, please consult Shanghai Mitsubishi Elevator Co., Ltd.

Efficient Drive Host

The public transport escalator must first face the challenge of continuous heavy load. High-precision reducer and the common advantages of highly integrated drive ensure the transmission of large torque in a small space, make the escalator more efficient and resist the continuous load pressure.

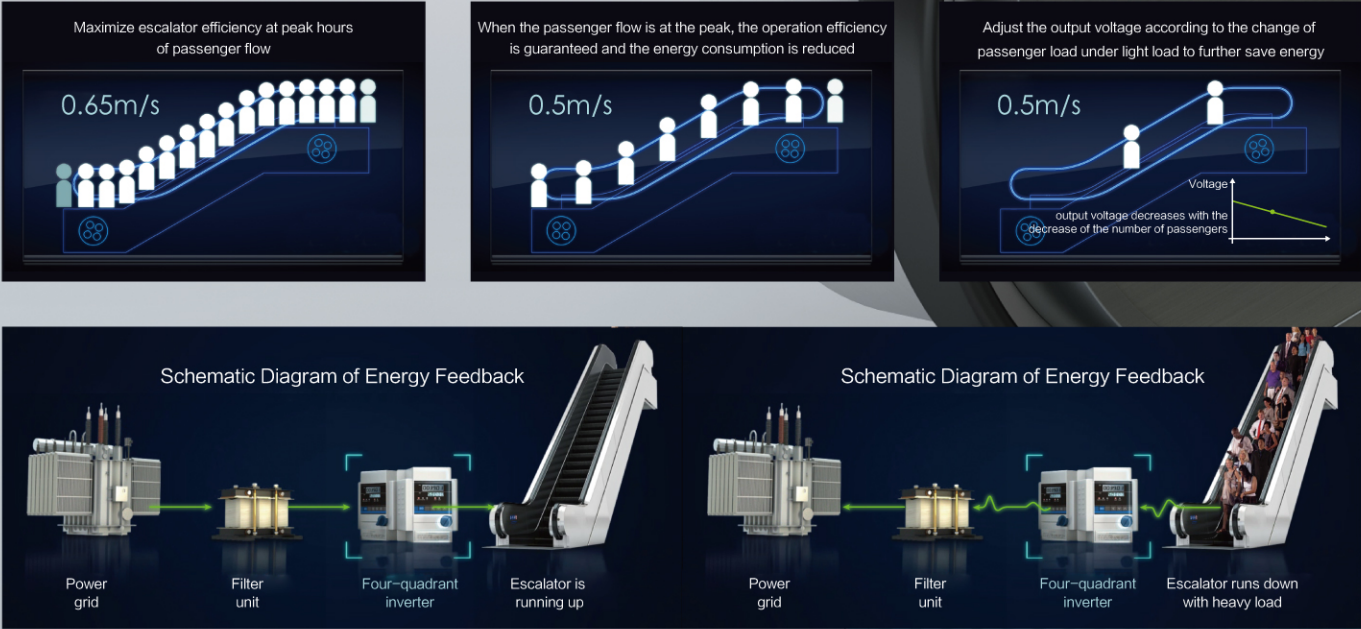
LED Lighting System

The whole series adopts LED lighting to improve environmental quality, environmental protection and energy saving.

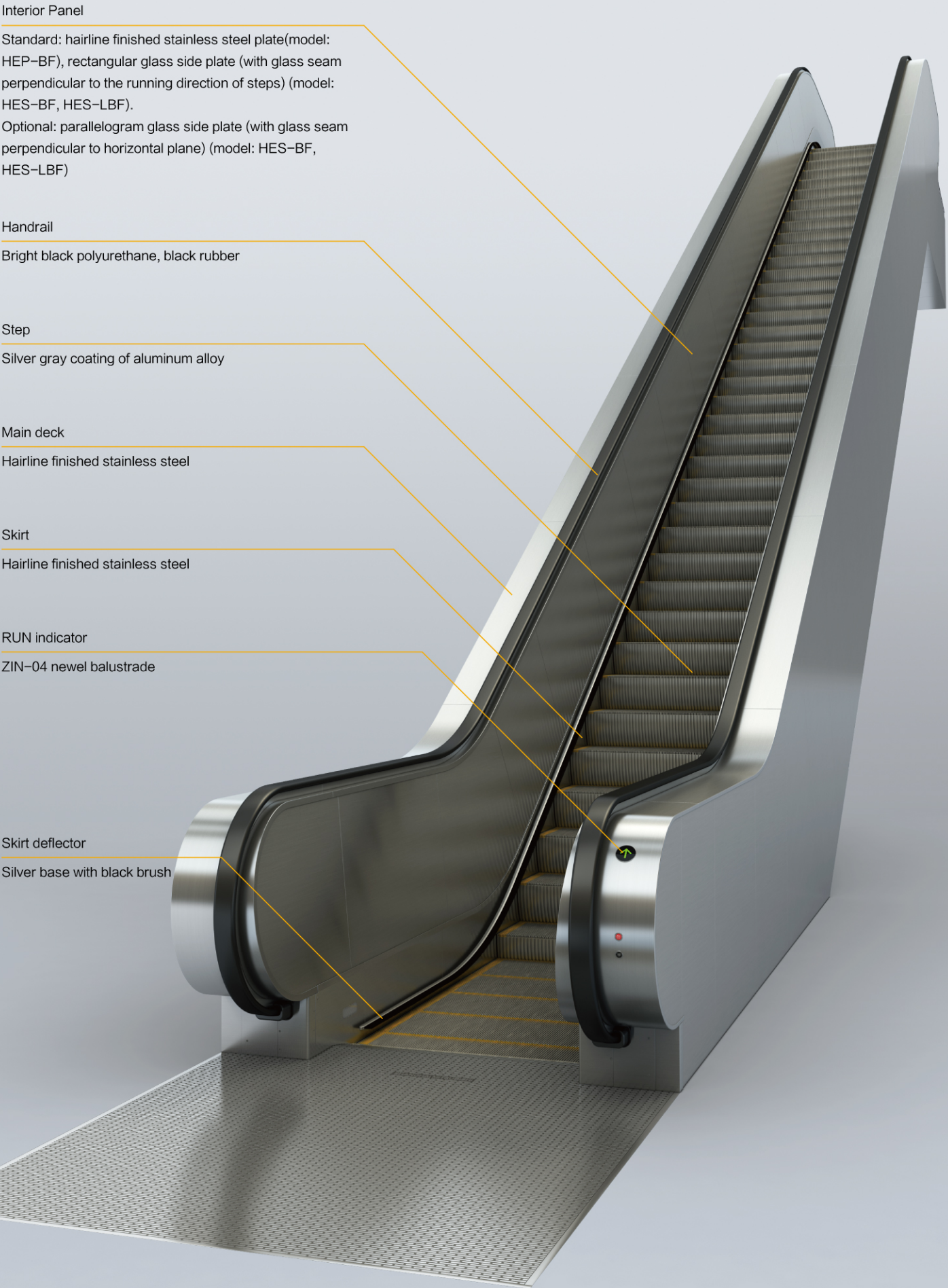
Intelligent Passenger Sensing Device

The intelligent sensor adopting innovative Time of Flight technology can judge the movement trend of passengers, thus reducing the false start of escalators caused by passengers passing laterally, increasing the accuracy of passenger sensing and optimizing the energy-saving effect.

Energy Feedback Fully Variable Frequency Control System



Taking an escalator running down at a nominal speed of 0.65m/s in a subway station with a travel rise of 7.3m as an example, it can save about 1752 kWh of electricity per year.



Handrail



Dark black (For rubber handrails only) Bright black (For polyurethane handrail only) Red (For polyurethane handrail only) Belge (For polyurethane handrail only)



Blue (For polyurethane handrail only) Gray (For polyurethane handrail only) Charcoal (For polyurethane handrail only) Brown (For polyurethane handrail only)

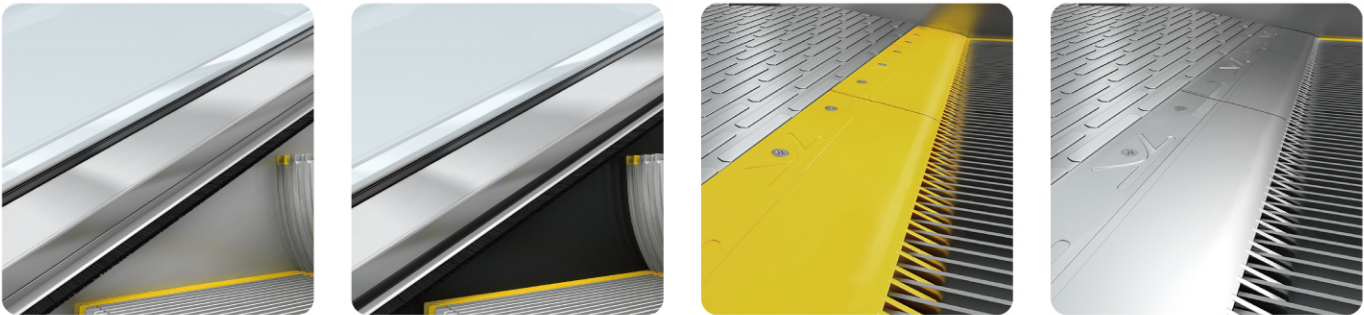
Railing Form



HES-BF Vertical handrail, large handrail profile guide rail, without railing lighting, but skirt lighting can be selected
HES-LBF Vertical handrail, large handrail profile guide rail, with railing lighting, but skirt lighting can be selected
HEP-BF Inclined handrail, stainless steel interior panel, without railing lighting, but dot matrix skirt lighting can be selected

Skirt

Comb

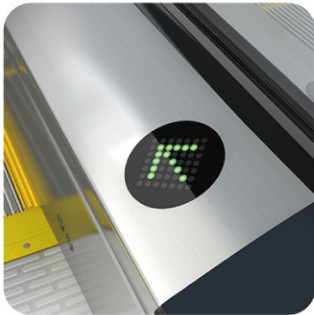


Hairline-finish SUS Fluoridized SUS (black) Yellow resin Silver aluminum alloy

Operation Indicator



ZIN-01
outer deck arch RUN indicator, for indoor models only, suitable for glass interior panels



ZIN-02
inner deck embedded RUN indicator, suitable for glass interior panels

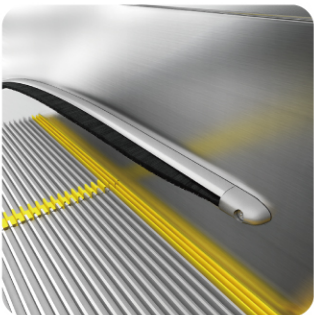


ZIN-03
outer deck slope RUN indicator, suitable for glass interior panels

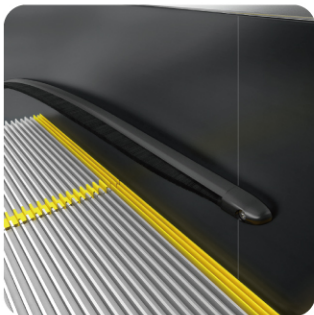


ZIN-04
newel balustrade RUN indicator, suitable for stainless steel interior panels

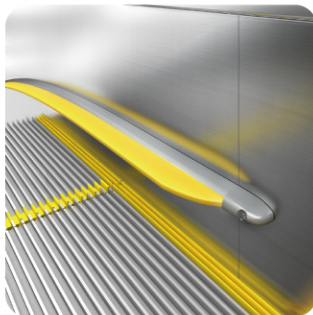
Skirt Deflector



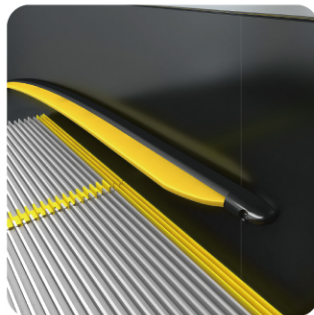
Silver base with black brush



Black base with black brush
matching with black fluorine-coated
stainless steel skirt

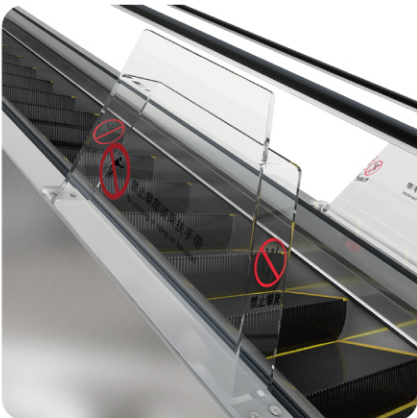


Silver base with yellow rubber strip
(for H2S3 only)

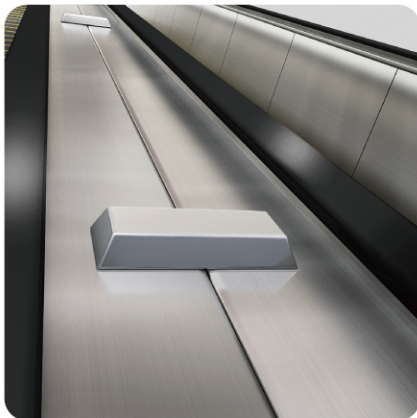


Black base with yellow rubber strip
(for H2S3 only)
matching with black fluorine-coated stainless steel skirt

Safety and Protection Devices



Anti-climbing Device
Device for preventing people from climbing
or crossing handrails (optional)



Anti-slide Device
Prevent people from sliding and playing between two
escalators installed in parallel (provided by customers)



Vertical protective apron
Prevent people from being caught at the included angle,
causing personal injury (provided by customers)

Front Edge Plate



ZCY-F21P
aluminum alloy front edge plate
with anti-slip groove



ZCY-F02P
stainless steel front edge plate
with anti-slip groove

Floor Number



Optional

Inner/outer Deck



Hairline finished stainless steel

Step



Aluminum alloy step
with yellow resin strips on three sides,
black gray (optional)



Aluminum alloy step
with yellow resin strips on three sides,
silver gray (optional)

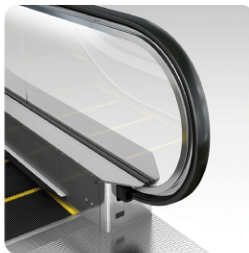


All-sided aluminum alloy step
black gray



All-sided aluminum alloy step
silver gray

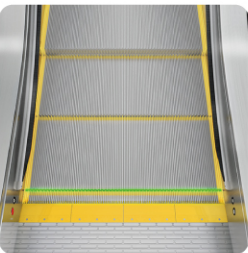
Fully LED Lighting System



Handrail lighting
multiple lighting colors are available
for choice, configured only for HES-LBF



Comb lighting
multiple lighting colors are
available for choice



Step bottom lighting
green (by default)

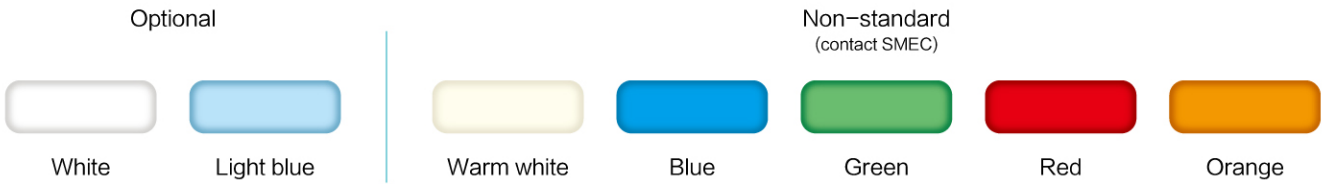


Continuous comb lighting
multiple lighting colors are
available for choice



Dot matrix comb lighting
multiple lighting colors are
available for choice

Optional Lighting Colors



Note:
1. The lighting system is optional.
2. Comb lighting/under-step lighting uses linkage control (which is switched on/off with the escalator); handrail lighting/skirt lighting uses manual control (which is switched on/off with the key switch of the escalator or manually through the multi-functional operating panel).
3. Handrail lighting/skirt lighting is controlled manually (with the key switch or multifunctional operation panel on the escalator equipment)

Control and Safety Features

●: Standard; ○: Optional

Function	Description	Code	Variable frequency
Phase Reversal and Open Phase Protection	Switch off the main circuit and control circuit to stop the escalator if phase reversal or open phase is detected in the input power supply.	3E	●
Anti-Reversal Protection	Switch off the power supply to the drive machine and brakes in case of accidental reversal.	ARP	●
Auxiliary Brake	An auxiliary brake stops the escalator before the speed exceeds 1.4 times of the rated speed, or if the traveling direction changes.	AUX-BK	●
Operational Brake Motion Detect	Stop the escalator when the operational brake cannot release or brake properly.	BLR	●
Operational Brake Wear Detection	When the operational brake wears out, the escalator will be prevented from restarting.	BLS	○
Operational Brake	The operational brake works to stop the escalator and keeps it at a standstill.	BRK	●
Step Motion Safety Device	Stop the escalator when an abnormality has been observed in the step motion due to an object caught between the skirt riser and adjacent step tread.	CRS	●
Comb-Step Safety Device	Stop the escalator if an object is trapped in the gap between the step tread and comb plate.	CSS	●
Contactor Motion Detect	Stop the escalator when an abnormality has been observed in the contactor motion.	CTD	●
Drive Chain Safety Device	Stop the escalator if the drive chain breaks or stretches beyond an allowable limit.	DCS	●
Door Open Switch	Stop the escalator or prevent the escalator from starting when the manhole cover is opened or taken out.	DOS	●
Emergency Stop Button	Stop the escalator in case of an emergency when the button is activated.	E-STOP	●
Auxiliary Brake Motion Detect	Stop the escalator when the auxiliary brake cannot release or brake properly.	EBR	●
Electrical Safety Circuit Protection	Stop the escalator once the electrical safety devices in series work.	ESC	●
Braking Distance Monitoring	Prevent the escalator from restarting when the braking distance is more than 1.2 times of the maximum value.	ESD	●
Overspeed and non-operational reversal protection directly detecting on spindle	The running speed and running direction of the upper step sprocket spindle can be directly detected, and the speed and running direction information can still be accurately obtained even in extreme cases such as driving chain breakage or drive host displacement.	EsAPS	●
Flood Level Alarm	Stop the escalator if there is too much water in the lower truss.	FLS *1	○
Handrail Breakage Safety Device	Stop the escalator if the handrails break or stretch beyond an allowable limit.	HBS	○
Handrail Static Electricity Remover	Prevent handrails from generating static electricity.	HER	●
Overspeed Protection (1.2x)	Stop the escalator before the travel speed exceeds 1.2 times of the rated speed.	HGD1	●
Overspeed Protection (1.4x)	Stop the escalator before the travel speed exceeds 1.4 times of the rated speed.	HGD2	●
Handrail Guard Safety Device	Stop the escalator when an object is trapped at the inlet of handrails.	HGS	●
Handrail Speed Safety Device	Stop the escalator if the speed of moving handrails is lower than the set value and this situation lasts for a certain period of time.	HSS	●
Low-Voltage Protection	Stop the escalator when the voltage of the inverter is too low.	LVP	●
Overcurrent Protection	Stop the escalator when the inverter has an overcurrent.	OCP	●
Motor Overload Protection	Stop the escalator when the motor is overloaded.	OCR	●
Oil Level Alarm	Prevent the escalator from restarting when the level of the oiler is too low.	OILF	●
Over-Temperature Protection	Stop the escalator when over temperature of the motor is detected.	OTP	●
Overvoltage Protection	Stop the escalator when the voltage of the inverter is too high.	OVP	●
Power Phase Detect	Automatically monitor the phases and frequency of the power supply and bypass variable frequency to realize impact-free switch.	PLL	●
Passenger Sensor Fault	Diagnose the faults of passenger sensors and enable the escalator to cancel the standby mode in case of a fault.	PSD	○
Step Chain safety Device	Stop the escalator if the step chain breaks or stretches beyond an allowable limit.	SCS	●
Skirt Deflector Safety Device	A safety device with a rigid base, which is installed on the skirt to prevent an object or a foot from getting trapped in the gap between the skirt guard and step.	SDS	●
Step Static Electricity Remover	Prevent steps from generating static electricity.	SER	●
Missing Step Device	Stop the escalator if a missing part of Steps is detected.	SMS	●
Step Level Device	Stop the escalator when a step drops and cannot mesh with the comb plate.	SRS	●
Skirt Guard Safety Device	Stop the escalator if an object is trapped in the gap between the step and skirt guard.	SSS	●
Start Switch Bonding Detect	Prevent the escalator from restarting when the start switch is bonded.	SWD	●
Thermo-Detection in Invertor	Stop the escalator when the temperature of the inverter is too high.	THMF	●
Under Speed Protection	Stop the escalator when the travel speed of the escalator is lower than the set value.	USP	●

Notes: *1 Standard for outdoor or semi-outdoor escalators.

Emergency Operation Features

●: Standard; ○: Optional

Function	Description	Code	Variable frequency
Fireman's Service Stop	Stop the escalator when fireman's service signal is received.	FSS	○

Operational and Service Features

●: Standard; ○: Optional

Function	Description	Code	Variable frequency
Heater	Monitor the temperature of the escalator through the temperature sensor in real time: When the temperature is lower than the set value, this device will prevent the escalator from starting and automatically start or turn off the heater according to the temperature.	HEAT *4	○
Intelligent handrail sterilization (UV light)	Automatically sterilize the handrails by way of UV light according to the actual operation state of the escalator.	IHS	○
Inspection Operation	nspection Operation mode is convenient for installation and commissioning.	INSP	●
Light Load and Energy Saving	Running with light load reduces the input voltage of the motor to make the motor current reach the optimal value, thus reducing the running loss.	LLS	●
Light Shut Off – Manual	Turn on or off the lighting manually.	LO-M *1	●
Auto Operation	The escalator runs at rated speed when passengers are detected by passenger sensors, and switches over to standby mode when no passenger is detected.	MDA	●
Automatic oiling	Automatically oil the chains of the escalator at preset time.	OIL	●
Passenger Sensor (EsPDS)	Passenger sensors are intelligent passenger sensors EsPDS (in standby mode, neglect passengers passing by to reduce false start).	EsPDS *2	○
Passenger Sensor-Through-beam Type	Passenger sensors are through-beam sensors.	PSB *2	○
Passenger Sensor –Microwave Non-column Type	Passenger sensors are microwave sensors. (The detection distance can be up to 1.5 m, but the feature of false start prevention is not available.)	PSM *2	○
Passenger Sensor-Column Type	Passenger sensors are photoelectric columns.	PSP *2	○
Backup Start	The escalator can manually switch to be directly driven by the mains electricity if the inverter fails.	SBK	●
Low-Speed Standby	The escalator travels at a speed lower than the rated speed under no load.	SBLS *3	○
Stop and Standby	The escalator stops under no load.	SBSP *3	○
Travel Direction Alternative	The travel direction of the escalator can be selected.	UDA	●
Bypass Variable Frequency	The escalator is powered by an inverter during startup, stop and low-speed standby, and directly driven by mains electricity when it is running at rated speed.	VFBF *4	●
Energy feedback full frequency conversion	Startup, stop and low-speed standby operation is powered by variable frequency device, and running at nominal speed is directly powered by mains power.	VVFB *4	○

Notes:

*1 When handrail lighting or skirt lighting is available.

*2 Select PSB, PSM, PSP or EsPDS (PSP is non-standard).

*3 Select SBLS or SBSP.

*4 Select VFBF or VVFB.

Information and Display Features

●: Standard; ○: Optional

Function	Description	Code	Variable frequency
Voice Announcer (CN)	The voice announcer informs passengers of safety tips in Chinese.	AAN-S01*1	○
Voice Announcer (CN/EN)	The voice announcer informs passengers of safety tips in Chinese and English.	AAN-S02*1	○
Voice Announcer (EN)	The voice announcer informs passengers of safety tips in English.	AAN-S03*1	○
Safety Device Code Display	Detect the safety device one by one and display the error code accordingly.	ASD	●
BA interface	Output the signals of basic operation state of the escalator through passive dry contacts.	BA	○
Door Open Alarm	Remind the passengers of the start, fault, reversal or other information of the escalator.	BUZ	●
Buzzer	The buzzer rings when the manhole cover is opened.	DOA	○
Direction Indication	Remind passengers of the travel direction, out-of-service or no-entry or other information of the escalator.	DI	●
Fireman's Emergency Operation –Complete	A signal is sent when the fireman's emergency operation is completed.	FE-CP	○
Balustrade Lighting	Lighting at the lower ends of the balustrade.	L-BAL *2	●
Under-Step Lighting	Lighting at the position where the steps come in and out to show the edge of steps.	L-STP	○
Skirt Lighting	Lighting on the skirt at both sides of the step band.	L-SKT	●
Comb Lighting	Lighting on the comb plate at the position where the steps come in and out.	L-COMB	○
LED Lighting	Use LED for lighting source.	LED *3	○
Multi-functional Operating Panel	An operating panel installed at the landing areas of the escalator, which is used to operate the escalator, set parameters, check the operation state and error code, etc.	MFP	○
Intelligent Escalator Monitoring System	Use computers to monitor the operation state of escalators and give start and stop instructions when necessary.	SmartEye *4	○

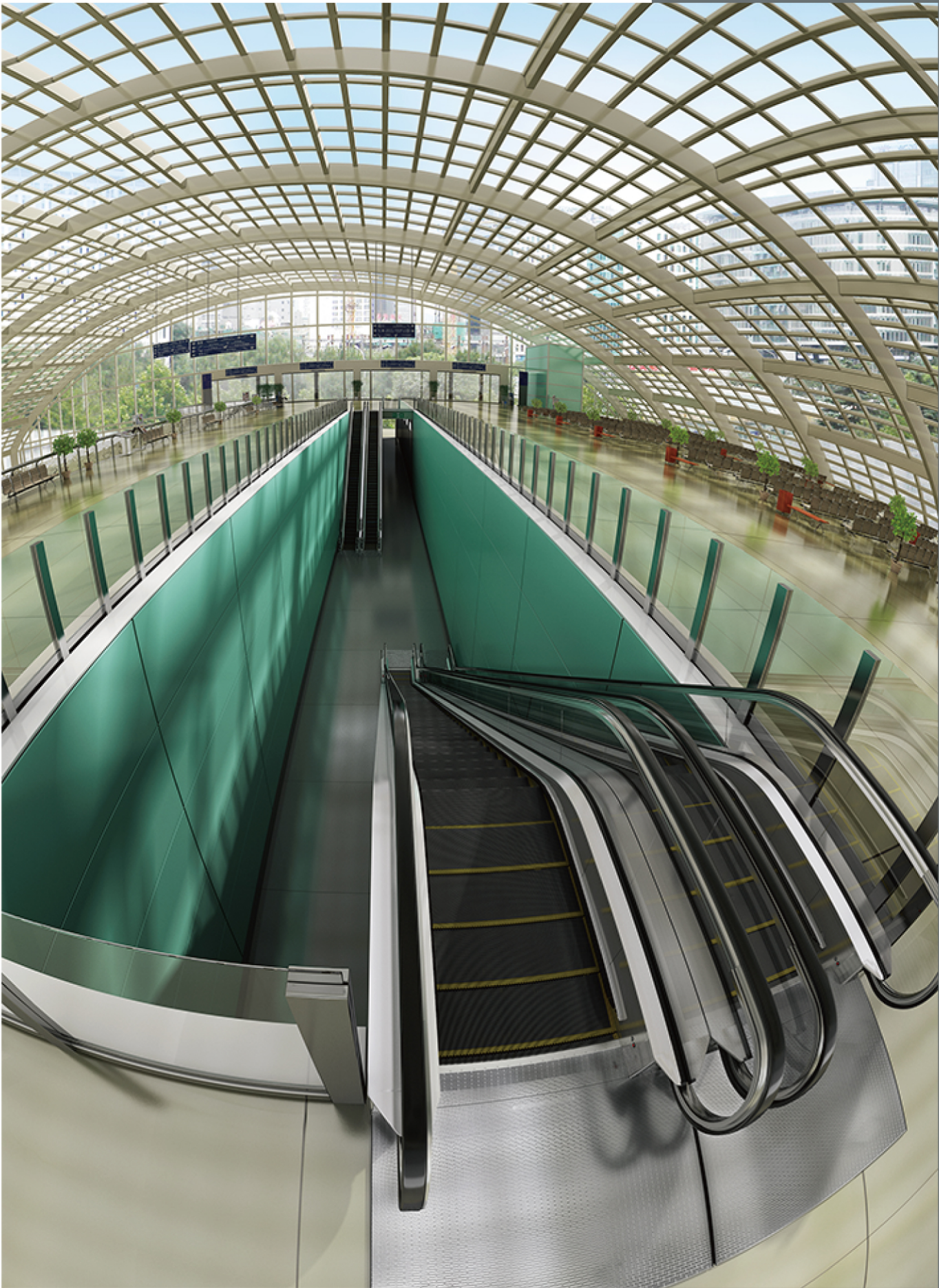
Notes:

*1 Select AAN-S01, AAN-S02 or AAN-S03

*2 Standard for HES-LBF

*3 Standard when lighting is provided

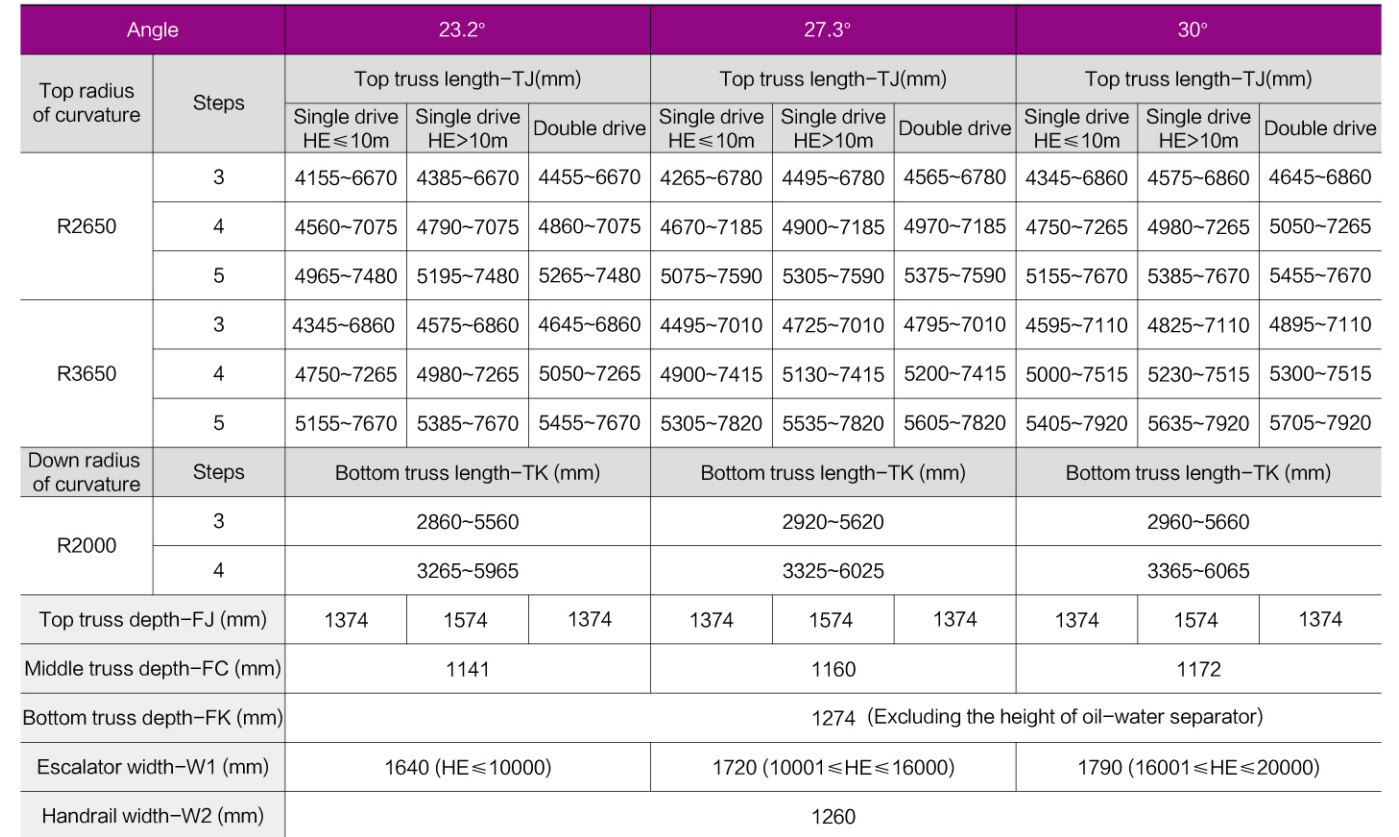
*4 Adding this function only means that escalator equipment needs to be provided with SmartEye function, which should be described in detail and confirmed in the SmartEye contract specification.



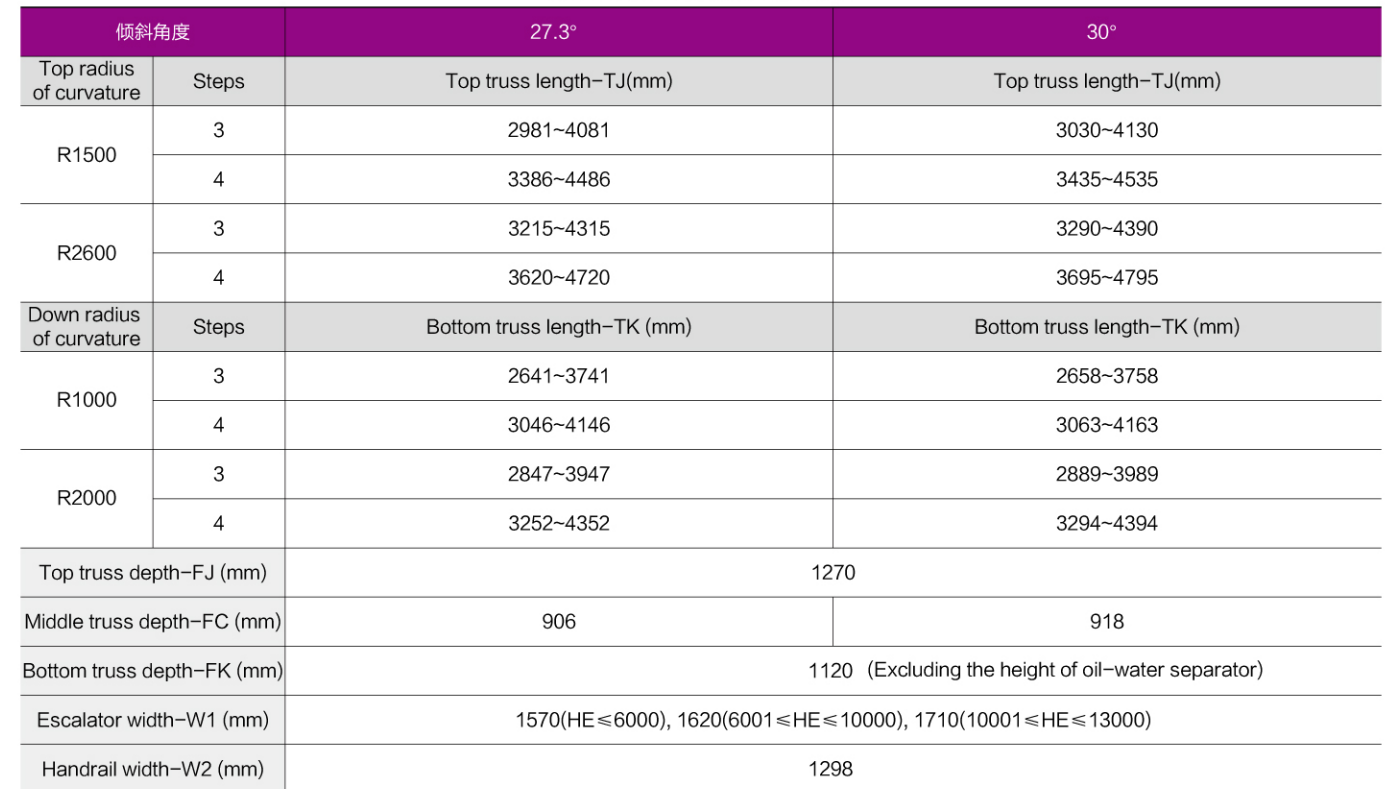
Item	规格内容	说明
Models	HES-BF / HES-LBF / HEP-BF	H2S2/H2S3
Environment	Indoor	
	Outdoor, semi-outdoor	A roof must be provided
Application	public transportation	Suitable for public transportation occasions such as subway, high-speed rail, light rail and urban transportation hub
Nominal width between handrails(mm)	800 / 1000	Non-standard confirmation, only for H2S3
	1200	
Nominal width of steps(mm)	600 / 800	Non-standard confirmation, only for H2S3
	1000	
Rated Speed(m/s)	0.5 / 0.65 / 0.75	Non-standard when 0.75m/s, only for H2S3
Maximum load (person/hour)	6000	Nominal width of steps 1000mm, rated speed 0.5m/s
	7300	Nominal width of steps 1000mm, rated speed 0.65m/s
	8200	Nominal width of steps 1000mm, rated speed 0.75m/s
Inclination	30° / 27.3° / 23.2°	H2S2
	30° / 27.3°	H2S3
Rise(mm)*1	2001~20000	H2S2, nclination 30°
	2001~19000	H2S2, nclination 27.3° / 23.2°
	1400~13000	H2S3, nclination 30°
	1285~13000	H2S3, nclination 27.3°
Radius of Curvature of Curved Guide Rail (Upper)(mm)	R1500	only for H2S3
	R2650	
	R3600	only for H2S2
Radius of Curvature of Curved Guide Rail (Lower)(mm)	R1000	only for H2S3
	R2000	
Horizontal Movement (Upper) (mm)	1200	3 horizontal steps
	1600	4 horizontal steps
	2000	5 horizontal steps, only for H2S2
Horizontal Movement (Lower) (mm)	1200	3 horizontal steps
	1600	4 horizontal steps
Handrail Height(mm)	≥ 1000	
Drive System	Bypass variable frequency	only for H2S3
	Energy feedback fully variable frequency system	
Control Mode	ZECM-C(ZECM-BF-CM/ZECM-FB-CM) or ZECM-B(ZECM-BF-BM/ZECM-FB-BM)	
Power Supply	380V 50Hz 三相五线制	
Light Power Supply	220V 50HZ 单相	
Complied Norms	GB 16899-2011/ GB/T 16899-2023/EN 115-1: 2017/ T/CEA 301-2023	only for H2S2, Meet T/CEA 301-2023
Load Type	Ordinary / Public transportation type	

Note: When the travel rise exceeds the specification, the civil size may change greatly. Please contact Shanghai Mitsubishi Elevator Co., Ltd.

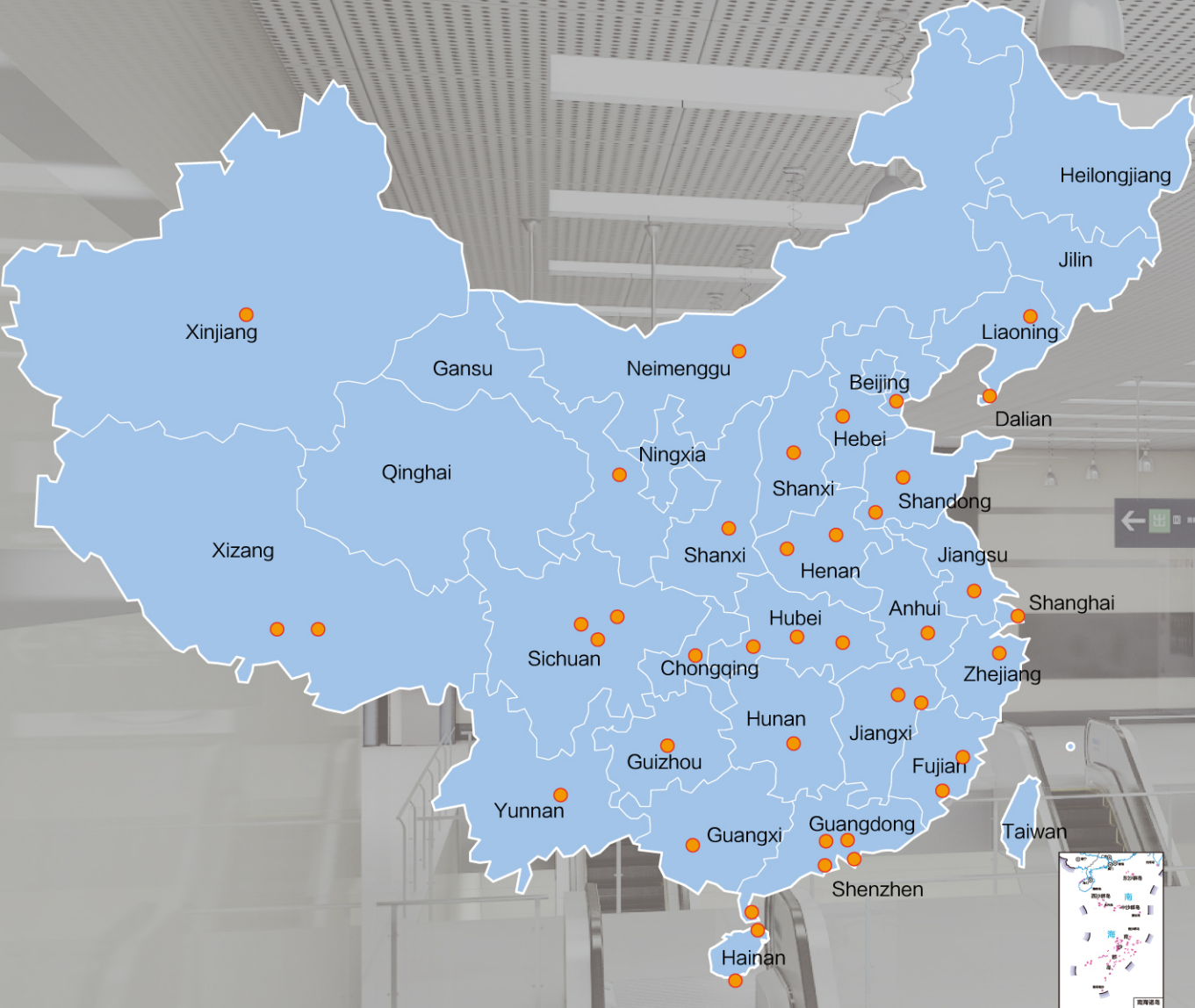
H2S2 Civil Construction Table



H2S3 Civil Construction Table



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HE series escalator public transport projects
have involved **13,000+** escalators accumulatively

Obtained **120+** national public transport projects
Including **20+** airport projects
80+ rail transport projects