

TECHNICAL SPECIFICATIONS

I. Top-scan Device

- **Model : GW-TS-02S**
- **Rated Power : 3 kW, 1phase 220V AC 50Hz**
- **Size : L800 W1460 H2527 (mm)**



Top - scan design drawing

No.	Equipment	Brand	Origin
1	Code-scanner Camera	HIK	China
2	HD Panoramic Camera	HIK	China

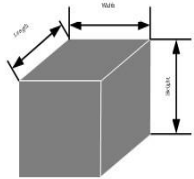
I.1. SOLUTION DESIGN



Belt Conveyor relative parameter

Belt width(W): Confirm the FOV and DOF to be covered

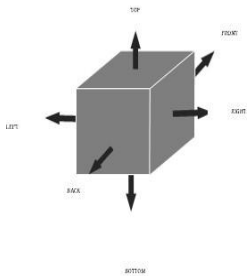
Conveyor Speed(V): Confirm the range of DOF and imaging parameters



Parcel relative parameter

Parcel size range: Confirm the DOF and FOV coverage of each surface

Parcel spacing: Determine the theoretical efficiency of the device and the FOV obstruction



Barcode relative parameter

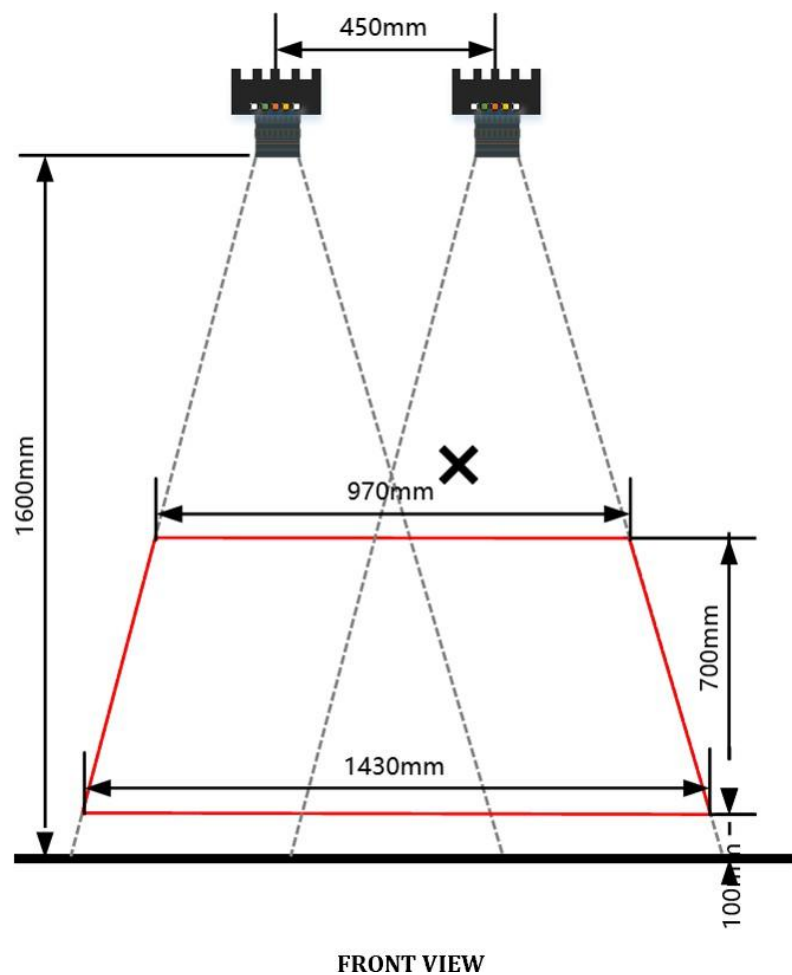
Barcode length: Determine the overlap area of multiple cameras to determine the camera spacing

Barcode minimum width: Confirm the minimum width of the barcode

Recognizeable orientation: Confirm which aspects of the design are covered

Item	Parameter
Belt width (mm)	1260
Parcel size range (mm)	L*W*H: 100*100*40~1000*1000*800
1D code length (mm)	60mm
1D code minimum height (mm)	9
1D code minimum width (mil)	9
2D code minimum width (mil)	28mil
2D code minimum readable size (mm)	20x20
Recognizeable orientation	Top scan
Code recognize format	Code 128, 39, Data Matrix, EAN 128, EAN/UPC, Codabar); 2D
Reading success rate	95% (static package)
Minimum readable package height	100 mm (from belt surface)
Maximum readable package height	1000 mm (from belt surface)

◆ TOP SCAN DESIGN




Item	Parameter
Camera	MV-ID6200M-00C-NNG
Lens	MVL-KF2056M-10MP
Light source	MV-LB-270-140-4030WL-A
Camera spacing	450 mm
Working distance	1500 mm
Upper FOV reading height	970 mm
Lower FOV reading height	1430 mm
Trigger mode	Recommend high-level trigger

◆ HD PANORAMIC CAMERA



Item	Parameter
Camera	MV-PD010003-12C-8C
Lens	MVL-HF828M-10MP
Light source	Built-in
Color temperature	6500K
Focal length	8mm
FOV (mm)	730 x 550
DOF (mm)	400
Trigger mode	Recommend high-level trigger

I.2. GENERAL PARAMETER

<p><i>Main technical characteristics:</i></p> <ol style="list-style-type: none"> 1. High processing efficiency 2. High popularity 	<p>Equipment picture</p> 
Item	Description
Number of cameras	2+1 panoramic camera (4024*3036 Pixels) . Total 3 pcs
Code reading Direction	Top scan

Conveyor max speed	2 m/s
Barcode reading rate	When testing 99.8%; When in actual operation 98%
Parcel size compatible use	Maximum Size: 1000mm(L)*1000mm(W)*800mm(H) Minimum size: 100mm (L) * 100mm (W) * 40mm (H)
Barcode Format	1D /2D
Barcode	Code 128, 39, Data Matrix, EAN 128, EAN/UPC, Codabar
Network Protocol	TCP / IP
Scanning and identification distance between 2 parcels	≥50 cm
Processing performance	Maximum nominal power required 4,000pph Actual operating capacity 3,000pph
Main parameter	It does not take more than 300ms from the end of the scan to the top system receiving the data
Device frame	Carbon Steel/Aluminum Alloy
MTBF	≥ 10,000h
Operating environments of system	0-50°C, 10% ÷ 95%(No dew)
Protective level of control Device	IP45

CM-21B2



IPC

Item	Description
Brand (Model)	ADVANTECH CM-21B2
CPU	Core I5-12700

Ram	16GB DDR4, 2666 Mhz
Hard drive	SSD 512GB + 1TB HDD
Monitor	23.8", 1920 * 1080
Operating system	Win 10, 64bit
Lan	≥100 Mbps,
Internal connector	Ethernet : 2 ports USB : 6 ports
Other	Support Install external software



UPS

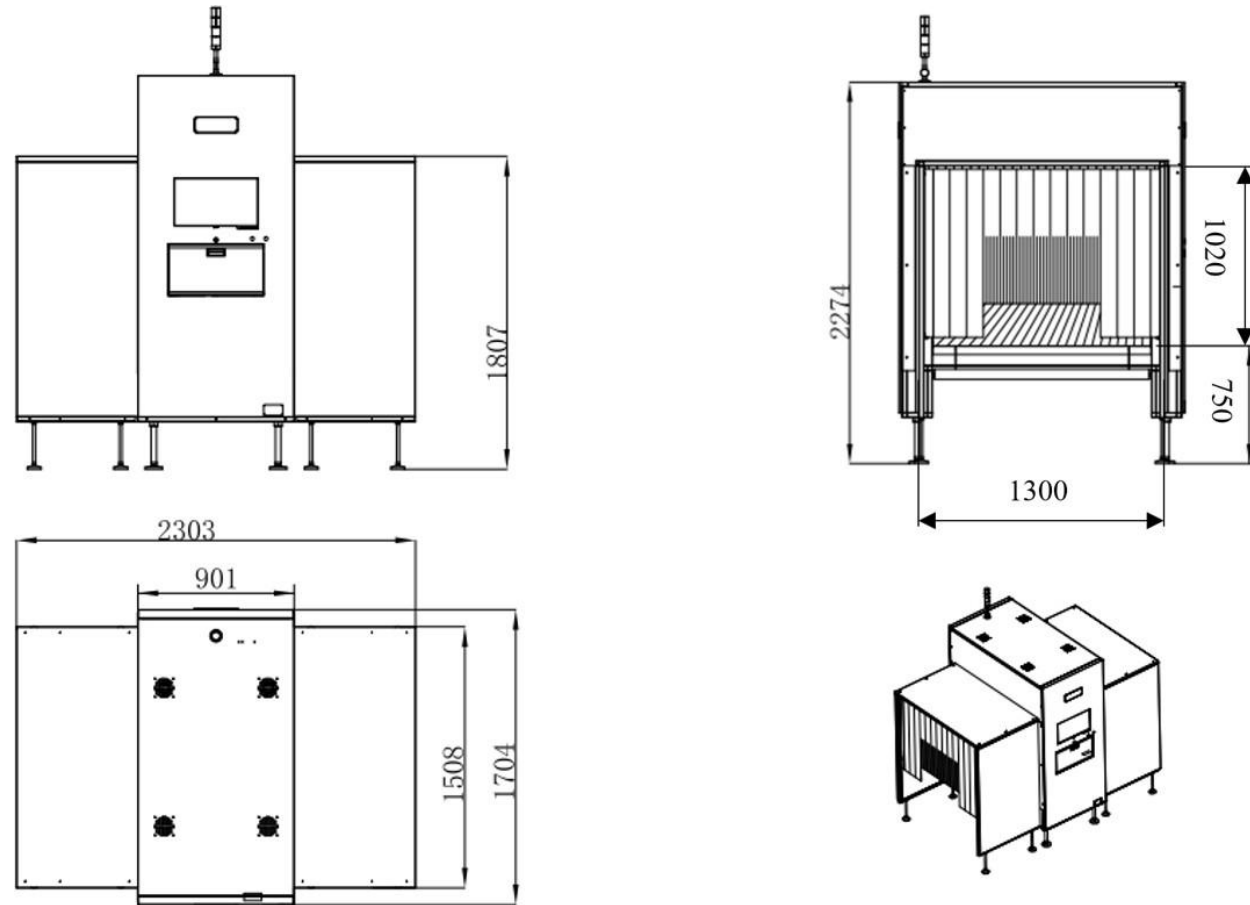
Item	Description
Brand (Model)	SANTAK C1K
Rating	1000VA/900W
Input Voltage Range	Single phase, 100 ~ 300 VAC
Output Voltage	220 VAC
Efficiency	Inverter Mode >89% ECO Mode > 97%
Battery	12V / 9Ah x 2pcs
Operating temperature	0~40°C
Interface	RS232

II. AI X-RAY SECURITY SCAN

- **Model : AT140100**
- **Origin : China**
- **Intelligent identification of items for packages scanned by X-ray, and smart boxes follow the movement of items**



X-RAY SECURITY SCAN design drawing



Three-view drawing

Technical Specification

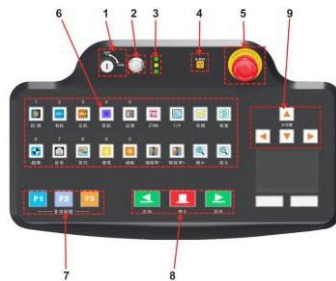
Parameter

23.8 inch, 1920 x 1080



Imaging resolution 34 AWG

Integrated keyboard



Technical Specification	Parameter
X-ray safety measure	X-ray shielding tunnel
X-ray source Over voltage/Over current Protection	Relay
Min parcel weight	300 g
Scanning speed	Compatible with conveyor speed (adjust control in X-ray software), max scan speed 1.5 m/s
Penetration Capability	Steel Plate 38mm
Diameter Resolution	Metal Wire $\Phi 0.101\text{mm}$
Penetration Resolution	Metal Wire $\Phi 0.203\text{mm}$
Spatial Resolution	Horizontal: $\Phi 1.3\text{mm}$, Vertical: $\Phi 1.3\text{mm}$
Regulation	Compatible with ASA/ISO 1600 (DIN 33)
Operating environments of system	0 – 50 °C ; 10% ÷ 95%(No dew)
MTBF	10,000 h
Radiation Safety	
Single Scan Dose	Less than $1\mu\text{Gy}$
Leakage Radiation Dose Rate	Less than $0.3\mu\text{Gy/h}$ (Measured at any point 5cm from the external surface of the equipment, meeting and exceeding domestic and international health and safety standards)
High-Efficiency Radiation Protection	Wear-resistant lead curtain, robust double-staggered arrangement, 2~5mm ultra-thick lead plate to prevent X-ray radiation leakage.
X-ray Generator	
X-ray Generator number	01

Digital X-ray Tube

Tube Voltage: 80~200 kV (adjustable), Tube Current: 0.3~1.2mA (adjustable), Emission Angle: 90 degrees

Cooling/Work Cycle

Sealed Oil Cooling / 100% (Designed for 24/7 Continuous Operation)

Equipment Functions

Image Processing Functions

Color/Mono, Local Enhancement, High Penetration, Low Penetration, Super Enhancement, Organic Material Removal, Inorganic Material Removal, Color Inversion, Brighten, Darken, Grayscale Scan, Zoom, Pseudo Color, Organic Material Enhancement, Suspicious Item Warning Marking, Edge Enhancement Processing.

System Functions

Startup Self-check, Multi-level User Management, Image Management, TIP Management, Curve Diagnosis, Keyboard Diagnosis, Device Information Query, Multi-format Image Export, OSD Control Function, Image Inversion, Stepless Zoom from 1-64 times, Magnifying Glass, Operator Training, Precise Positioning of Previously Scanned Cargo Images, Channel Cleaning Reminder, Remote Control Software, One-button Shutdown.

Insight

Identify types : guns, fireworks, pressure cans, knives, lighters, nail polish, tools, electronic products, umbrellas, cigarettes, batteries, police equipment, batteries and other prohibited items.

Level of danger : risk, warning, safety, the risk level

Event linkage : according to the danger level, sound and light alarms (alarm IO output), voice prompts, platform alarms, screen prompts, etc. Are triggered.

Picture storage : Supports the storage no less than 100k photos, including danger levels and items

Category identification information, you can view the original image and AI image

Package query : Supports querying and exporting security inspection machine package images based on time

Report query : supports generating and exporting

Structural Design:

Machine Frame

Incorporates advanced industrial design principles, rust-proof, corrosion-resistant, cable damage prevention, dignified and sturdy.

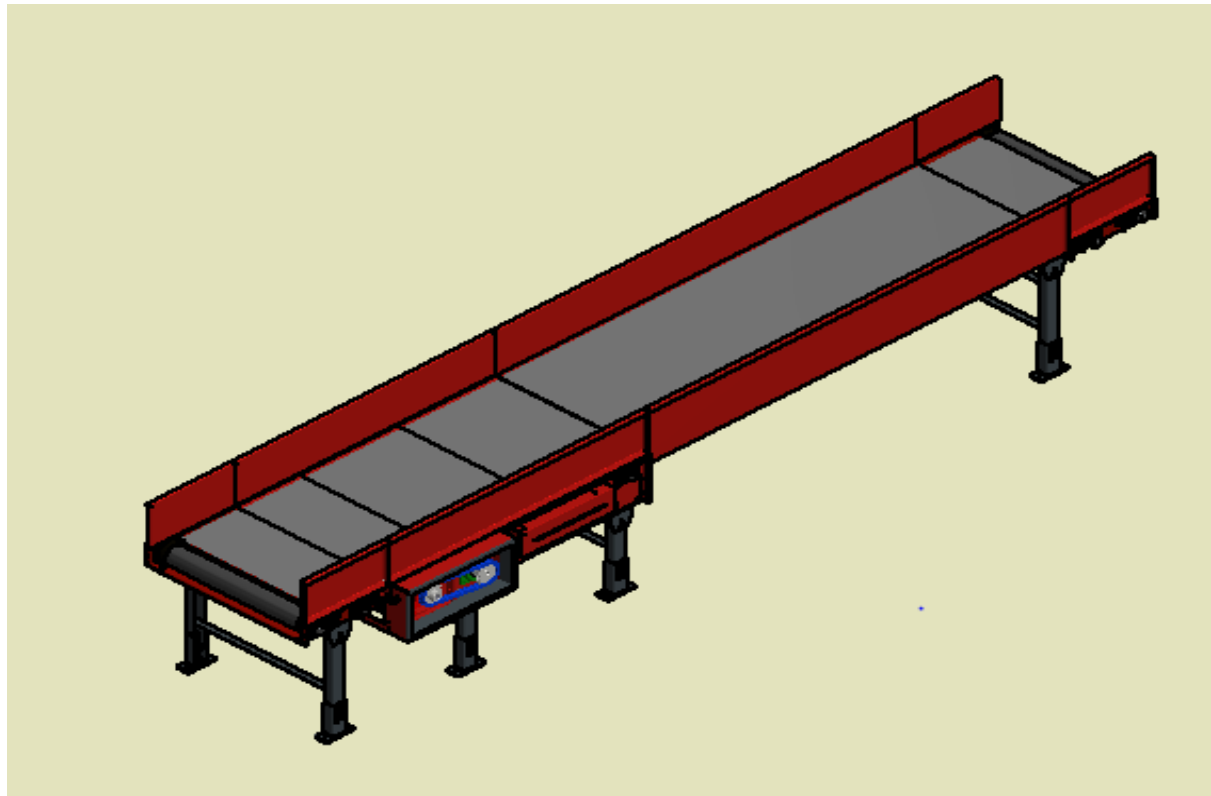
E-stop button	2 buttons on two side of machine
User-Friendly Design	Equipped with an integrated keyboard designed according to ergonomic principles, convenient and comfortable to use.
Alarm	Buzzer tower lamp and keyboard

Installation Dimensions

Overall Dimensions	3368mm (L) * 1700mm (W) * 2330mm (H)
Operating Power Supply	220VAC ($\pm 10\%$), 50 ± 3 Hz
Rated Power	0.5 kW

III. CONVEYOR BELT

No	Model	GW-PDJ-6000
1	Power	1.5 Kw
2	Size	L6200 W1260 H750 (± 50 mm)

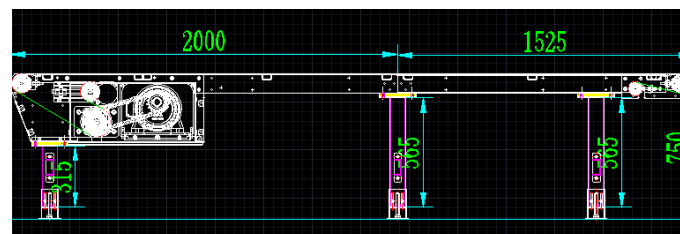


Conveyor Belt design drawing


No	Equipment	Brand	Origin
1	Motor	NORD	China
2	Belt	YONGLI	China
3	Roller	GREATWELL	China
4	Inverter	DELTA	China
5	Bearing	TR	China
6	Chain drive	CHOHO	China

Main features.

1. Rugged frame construction
2. Large load capacity
3. Stable shipping
4. Perfect technology



Item	Description
Installation Type	Support base legs
Belt Width	1200mm
Load rate	Maximum dynamic speed: 80 Kg/m

	Static 200kg/m
Speed	0,2 – 1.5 (m/s)
Power supply	AC 380V/3ph/50Hz
Drive installation	Middle drive, head drive
Driven type	Belt Drive Roller (One-way, two-way)
Interface	 <p>ON/OFF, EMERGENCY, Forward/Reverse</p>
Operation mode	Local/Remote
Belt grafting method	Steel hook link
Chassis	Carbon steel
Color	RAL3020, Powder coating, glossy surface without peeling.
Noise level	72dB
Support leg	<ul style="list-style-type: none"> '- Conveyor height adjustable - Can be fixed to the floor when removing the wheels

	<ul style="list-style-type: none"> - Conveyor frame with solid side panels, material Q235/SS400, thickness $\geq 3\text{mm}$. - Conveyor frame width error $W \pm 5\text{ mm}$ - Conveyor frame height error $H \pm 5\text{ mm}$ - Perpendicularity error Alpha of foot compared to belt surface ± 0.2 degrees
Baffle	<ul style="list-style-type: none"> ' - Barriers are required at locations where workers do not operate loading and unloading goods, the thickness of the steel used to make the barrier must be $\geq 2\text{mm}$ - Barrier height compared to the conveyor belt surface must be $\geq 200\text{ mm}$

Feature of product:

- The main conveyor is selected a special conveyor belt used for the picking line, which has the characteristics of high bearing capacity, not easy to tear and small coefficient of friction..
- Conveyor body adopts modular design, good interchangeability, easy splicing and highly flexible integration.
- The device has a conveyor deviation correction mechanism design, the conveyor deviation will automatically be calibrated and returned to the original position.
- Conveyor belt is designed with belt tension drive mechanism, convenient for maintenance and adjustment, fully consider the deviation of the conveyor belt, the conveyor belt tension is able to loosen, the stroke of the belt tensioner is larger than 200mm.
- The strength of the conveyor frame is adjusted according to the load bearing weight; for conveyors with high speed, heavy loads and long distances, the following adjustments should be made: increasing the thickness of the material, adding rollers on the conveyor floor, reinforcing the support plate.
- Conveyor belts operate with low noise and meet environmental protection requirements.

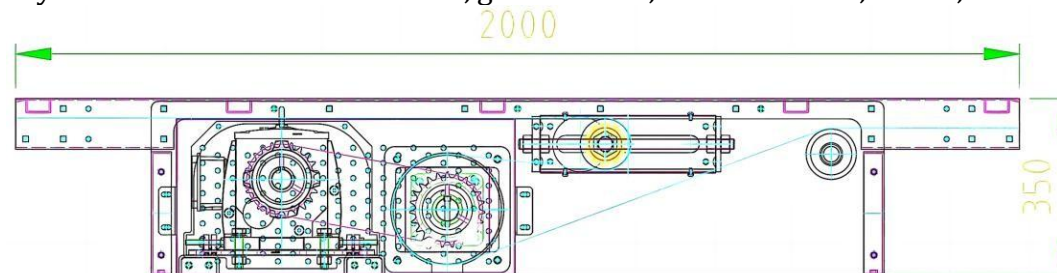
Protection against static electricity and belt friction during operation.

The control part and the motor ensure the compatibility of the power supply

- Single/Linked Operation Mode: enables the conveyor to run independently as a bypass mechanism in case of X-ray scanning function failure, ensuring normal package flow and preventing operational bottlenecks

Main drive system

The transmission part of the conveyor belt consists of drive rollers, guide rollers, tension rollers, motor, etc.



1. Drivetrain body thickness: 350mm
2. The drive system is usually more than 1 meter away from the operating position, and at the same time, leaving enough space for convenient maintenance later.
3. The drive system in the field without forward and reverse rotation can be installed at the front end of the conveyor in the same direction of motion.
4. The drive system is designed as standard in each segment, which can be changed flexibly and replaced easily.
5. The transmission parts are equipped with protective covers, the protective covers are designed with trellis or flip window design, easy to open for inspection and maintenance..

Conveyor Parts

- (1) All the constituent materials of the conveyor belt are flame retardant.
- (2) The suitable working environment of conveyor belt with temperature is: -15°C-45°C; If the temperature is -30°C-45°C, cold-resistant conveyor belt will be used.
- (3) The conveyor belt has the characteristics of strong, soft, wear-resistant, non-polluting, fire-proof, mildew-proof, anti-static, low noise, non-toxic.
- (4) Flat conveyor belt is made of second generation PVK composite material, the bottom part is made firmly with the characteristics of impact resistance, wear resistance, anti-cutting, low noise, etc., the thickness is 3mm
- (5) The connection point between the conveyor belts is usually a padlock connection, in special cases, a hot-melt joint can be applied.

(6) Angle between conveyor and drive roller $> 180^\circ$, which increases friction, and provides stronger driving force for equipment.

(7) Conveyor used for slope conveyor will be combined application according to actual needs.

Baffle Parts

(1) For all unmanned areas, side baffles are installed by default, with a baffle thickness of 2 mm and locally reinforced where cargo impact occurs.

Conveyor frame and foot parts

1) Material thickness of equipment frame/leg is 3mm, usually made of 40*80*3T rectangular tube, for conveyor section with relative foot height $> 1800\text{mm}$, reinforcement is applied to structure or material to ensure bearing strength

2) The same pair of racks on either side of the bottom of the conveyor are connected by beams or inclined bars to enhance the stability of the rack.

3) Conveyor foot height adjustable $\pm 50\text{mm}$

Roller parts

Roller parameters refer to the table below:

Roller	Drive roller	Terminal roller	Tension roller	Changing direction roller	Platen
Diameter (mm)	216	118	118	87	50
Thickkness (mm)	6	4	4	4	1.5

(1) The driving roller, the terminal roller, the tension roller, the direction roller are all made of solid steel tube to ensure firmness.

(2) The driving roller and the terminal roller are treated with conical chamfers and the center of the cone is symmetrical, thereby minimizing the floating load.

(3) The sides of the roller are all anti-oxidation treatment/galvanized

Bearing and chain parts

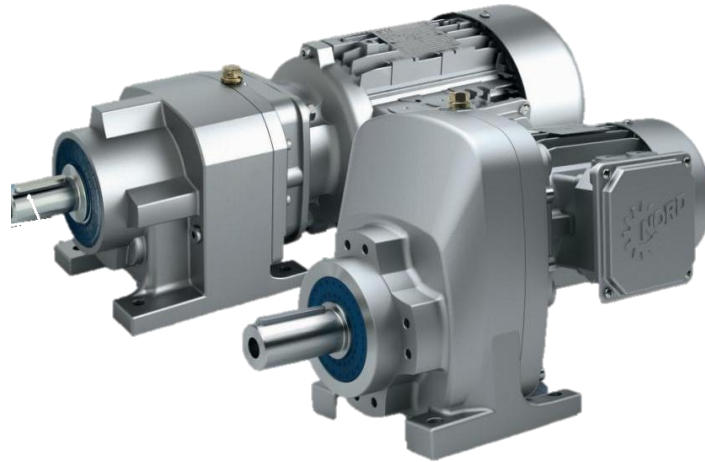
- (1) Permanently lubricated bearings, under standard operating conditions, the service life is over 50,000 hours
- (2) The chain and the bearing are all using reputable international or domestic Chinese brands.

Motors

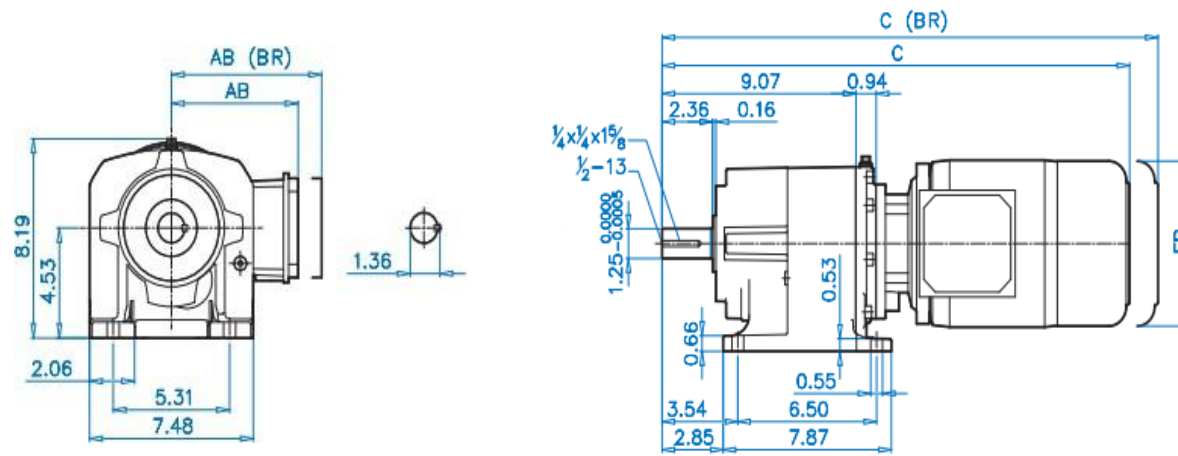
Technical Table

Item	Specifications
Brand	NORD
Model	SK572.1-100AH/4/1.5KW i=21.85 M1/1/I (φ35,67RPM)
Capacity	1.5kw
Load rate	80 kg/m ²
Engine	1 phase 220VAC 50Hz
Starting current	<26.7A
No-load current	No-load current < 2A
Torque with maximum load	5,98 LB-FT
Service factor	150%
Certificate	CE, IE2, IEC 6034-30:2008 (TCVN 6627-30:2011)

- Control part and motor ensure compatibility of power supply
- Parallel shaft and right angle actuator
- No segregated joints in the housing, no tensile sealing surfaces
- All bearing points and sealing surfaces are machined in one run



- Rugged UNICASE® case
- High quality, hard gearbox
- Modular design with flexible mounting options
- High capacity output bearings
- AUTOVENT™ pressure regulation keeps contaminants out
- High performance inverter/vector duty motor & brake motor
- Protection features and options for harsh environments



Inverter



Delta VFD EL-W Inverter

VFD-EL-W is a new generation compact vector control inverter.

This inverter has various essential built-in functions, including: multi-step operation, torque compensation, PID control, multi-pump control and leakage detection function.

Its compact size can accommodate all installations and its complete built-in protection mechanism also makes it suitable for various applications, such as: conveyor lines, material handling.

Technical Table

Item	Specifications
Brand	DELTA
Model	VFD EL-W
Power	1phase 220VAC 50Hz ($\pm 5\%$)
Capacity	1.5 kW, matching with conveyor motor
Current	2.5 – 40A
Starting torque	170%-200%
Overload protection capability	Include : - Potentiometer supply: 5V ($\pm 5\%$)DC 10mA, overload and short circuit protection

	- Logic supply: 24V(\pm 20%) 100mA, overload and short circuit protection
Protection function	<ul style="list-style-type: none"> - Prevents three-phase input phase loss - Thermal motor protection - Over-voltage current supply - Under-voltage current supply - Over-current between output phases and ground - Overheating protection - Short-circuit protection between motor phases
Certificate	CE UL61800-5-1, EMC
Protection grade	IP20
Service factor	200% in 1 minute
Communication	Mobus RTU-RS485 1 port
Warranty	2 years

Belt



Characteristics

- Adjacent to 2 conveyors: Flat POM plastic conveyor belt, copper rough (slip, limited jam).
- Gudong-adjustable conveyor belt, fixed the conveyor to the background

The roughness of the belt surface ensures splash-free and efficient acceleration with a slippery nylon surface.

- The durability of the belt ensures that it does not expand according to the working environment temperature

Technical Table

Item	Specifications
Thickness	3.2 mm
Tensile strength	≥200 (N/mm)
Color	Black

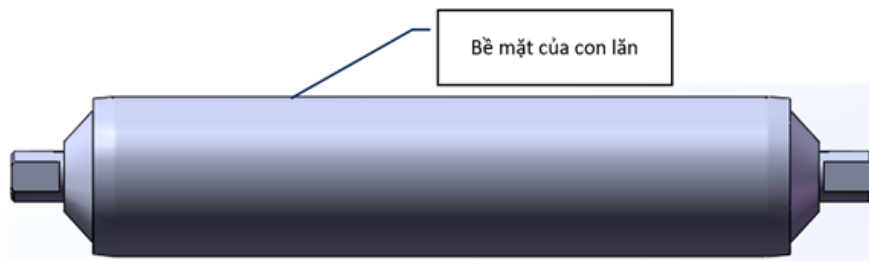
Operating temperature	-10°C to 80°C
Material	PVK
Belt brand	YONGLI
Model	P24-37LDZA
Certificate	ISO 340

Bearing



- Meet ISO 9001 standards
- Durability: 8000 working hours
- Warranty: 1 year

Roller



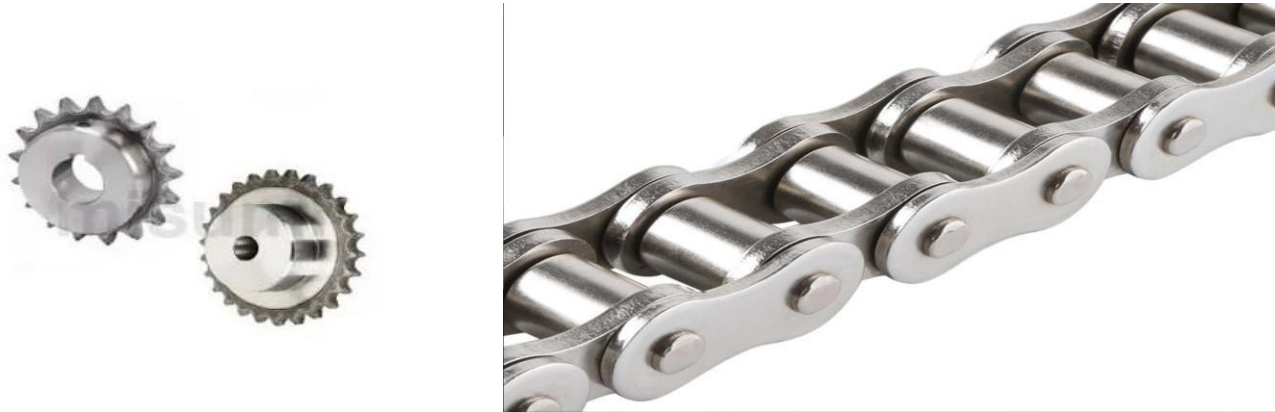
Technical Table

Item	Specifications
Surface treatment	Hot dip galvanized
Driving roller diameter	216mm, knurling and taper turning treatment
Driven roller diameter	150mm, knurling and taper turning treatment
Upper idler roller diameter	50 mm, roller pitch < 1500mm
Lower idler roller diameter	50mm, ptich < 2000 mm

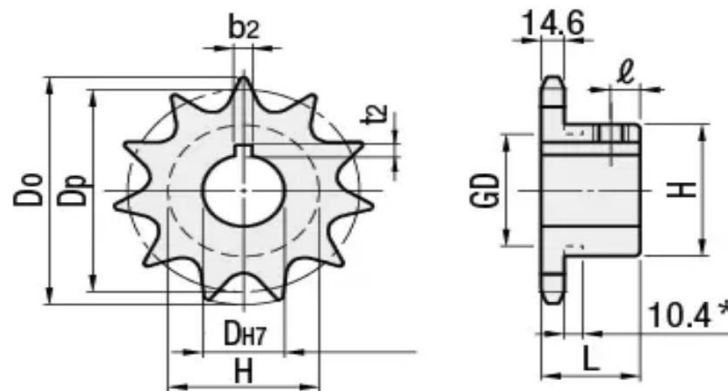
Tension roller diameter

70mm, both end rubber lagging

Sprocket chain



CHOHO Sprocket chain



Item	Specifications
Certificate	IATF 16949:2016
Sprocket type	80B

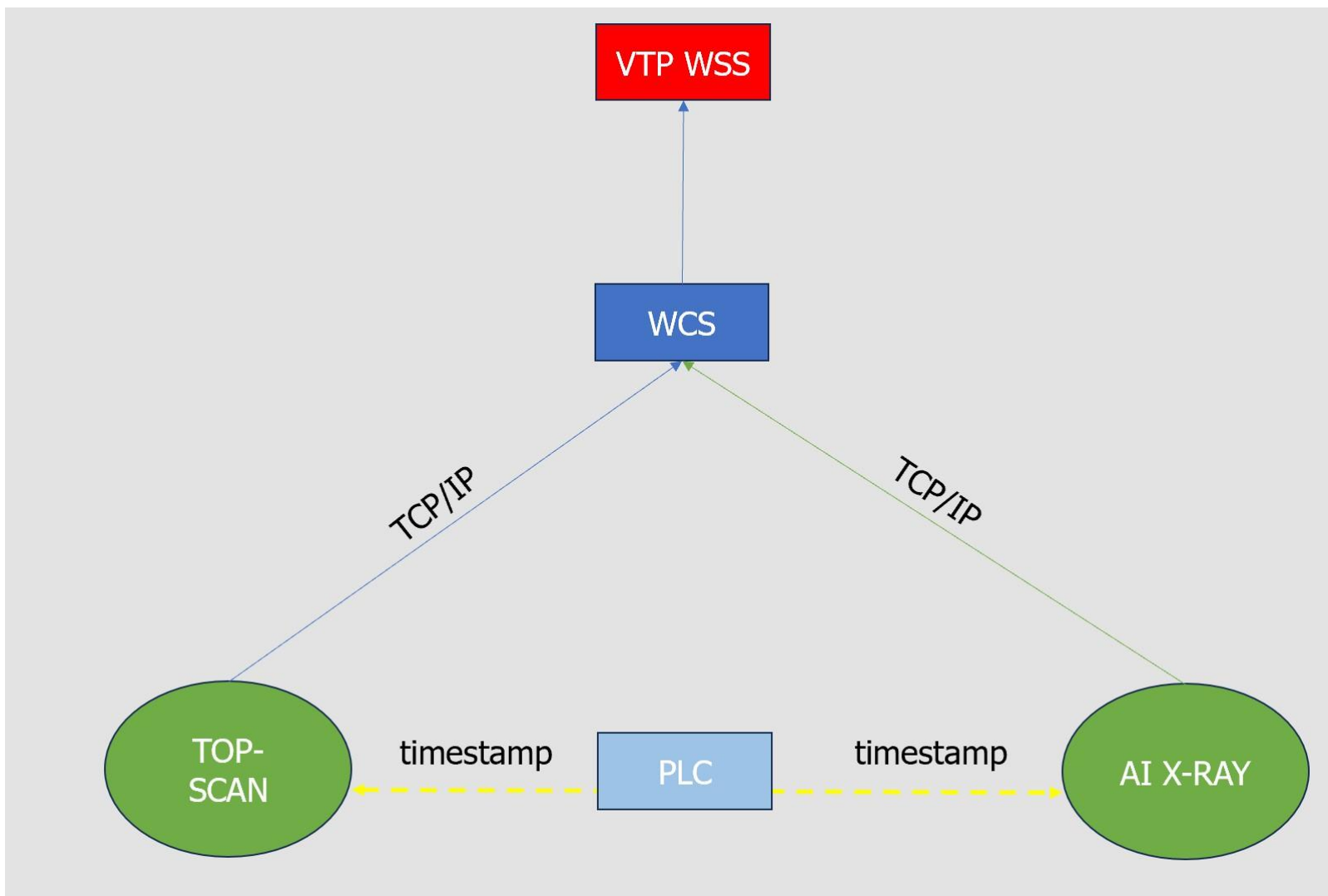
Safety



Item	Specifications
Material	Steel plate Q235B
Steel thickness	1.5 mm
Colour	RAL7035
Protection grade	IP45
Electrical safety measures	Cabinet has ground wire, base is distance 20cm from floor A hardcopy of electrical diagram is included with the cabinet. All electrical wires are labeled.
Operation safety measures	There are covers covering the locations of moving assemblies and bearings. Cover material : Powder coated steel All parts are free of sharp edges that could cause danger during operation
Anti-noise safety	75 dBA at conveyor belt surface

IV. CONTROL & SOFTWARE

◆ System Integrated Structure Diagram



◆ System language Interface : English

◆ TOP-SCAN Software

