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矿山轨道运输智能装备专家

Mining Track Transportation Intelligent Equipment Expert

湖南·湘潭恒欣实业股份有限公司·韶山
Hunan · Xiangtan Hengxin Industrial Co., Ltd · Shaoshan

Product Introduction

Xiangtan Hengxin Industrial Co., Ltd. was established in 1999 and is located in the High-tech Industrial Development Zone of Shaoshan City, Hunan Province. With over 400 employees, it is a member of the National Expert Group for the Revision of the "Coal Mine Safety Regulations," Vice President of the Provincial Machinery Industry Association, Executive Vice President of the Provincial Small and Medium Enterprises Association, and Vice President of the Provincial Quality Association.

The company's main products include mining monorail cranes, mining "monkey cars," mining endless rope systems, mining general rail clamp cars, mining rack rail clamp cars, industrial internet control platforms for underground mining transportation equipment, and related explosion-proof electrical products. After more than 20 years of development, it has evolved from a niche market in the "car" field to become an expert in intelligent mining rail transportation equipment, with products exported to Southeast Asia and Africa.

The company has received numerous awards, including the National Science and Technology Progress Excellence Award, the National Invention Entrepreneurship Award, the Silver Award at the National Invention Expo, the First Prize in China Coal Industry Science and Technology, and the Second Prize in Provincial Science and Technology Progress. It has also won the Gold Award for Green Mining Equipment Quality, and has been selected as one of the first batch of nationally specialized and new "Little Giant" key support enterprises. In 2021, it was recognized as a "National Market User Satisfaction Benchmark Enterprise" alongside FAW-Volkswagen and Gree Electric Appliances, and as a "China Single Champion Product" alongside CRRC Zhuzhou Electric Locomotive and Zoomlion. The company has also won the Sixth Provincial Governor's Quality Award, been recognized as a National Contract-abiding and Credit-worthy Unit, a National Intellectual Property Advantage Enterprise, a National Green Factory, a Provincial Digital New Infrastructure Demonstration Unit, and a Hunan Province Enterprise Standard "Leader."



Six Pillars of Our Competitive Edge

1. Industry-First Dual Independent Braking System:

Addressing the inherent risks of single braking systems commonly used in the industry, we have pioneered a dual independent braking system. This system features a working brake for standard operation and emergency stops, and a safety brake specifically designed for emergency braking, downhill runaway prevention, uphill rollback prevention, and safe operation on slopes. This dual system eliminates the single point of failure present in traditional systems, significantly enhancing safety and preventing accidents like the one that occurred on September 14, 2023, where a runaway monorail hoist tragically resulted in worker fatalities.

2. Industry-First Onboard Track Condition Detection Robot:

Our innovative track condition sensing system uses an intelligent robot to collect real-time track data. This data is transmitted to a central processing center for analysis. Based on this analysis, the hoist's intelligent control system automatically adjusts operation to ensure safe navigation across various track conditions.

3. Industry-First "Three-Barrier" Runaway Prevention System for Slopes:

We introduce a pioneering safety measure for inclined tracks: a minimum of three runaway prevention devices strategically placed along the slope. This "Three-Barrier" system is designed to automatically engage in the event of a runaway situation caused by speeding or brake failure, preventing further uncontrolled movement and ensuring both equipment and personnel safety.

4. Industry-Exclusive Free Access to Industrial Internet Intelligent Management Platform:

Our customers benefit from complimentary access to our provincial-level Industrial Internet intelligent management platform. This platform enables real-time remote monitoring, online maintenance requests, fault diagnosis, spare parts ordering, record access, and comprehensive data-driven management throughout the product lifecycle.

5. Industry-Only Manufacturer with Complete In-House Component Production:

From raw material processing to final assembly, we maintain complete control over all production stages of our monorail hoist components. This ensures superior quality, timely delivery, and cost optimization, allowing us to offer customers the highest value proposition and achieve mutually beneficial partnerships.

6. Industry-Exclusive One-Stop After-Sales Service for Multiple Products:

We provide comprehensive, brand-agnostic after-sales service for a wide range of underground mining equipment, including our own products as well as those from competitors. This includes maintenance and support for aerial personnel carriers ("man-riding cages"), endless rope systems, track-mounted vehicles, and monorail hoist systems, offering a unique and convenient one-stop service solution for our customers.

Explosion-proof lithium battery rack rail monorail crane

1. Product introduction

Explosion-proof lithium battery tooth drive monorail locomotive, is a lithium battery as a power source, using permanent magnet synchronous machine drive gear, in the I140E (with teeth) special track walking underground coal mine transport equipment, not only can be used for coal mine transport materials, equipment and personnel, but also can complete the underground equipment lifting, lifting and other work



2. Main technical parameters

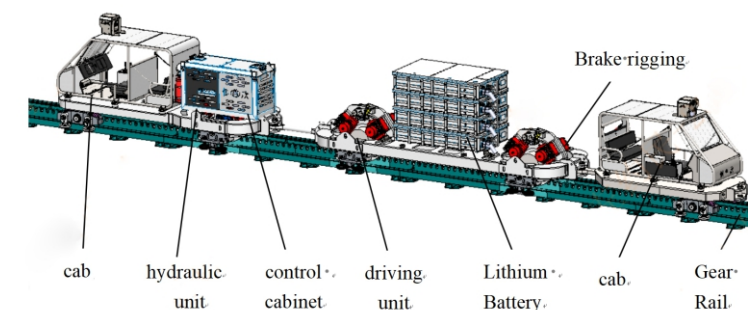
Model number	DLC360/360Y	DLC300/300Y	DLC240/240Y	DLC180/180Y	DLC120/120Y
(kN) Rated tractive effort	360	300	240	180	120
Emergency braking force kN	540~720	450~600	360~480	270~360	180~240
Maximum operating speed m/s	2m/s	2m/s	2m/s	2m/s	2m/s
Rail type	I140E (with teeth)				
Number of driving units	12	10	8	6	4
Climbing ability	30				
Locomotive Overall dimension m	34 1.25 1.3	29.8 1.25 1.3	26 1.25 1.3	22.4 1.25 1.3	18.7 1.25 1.3
Horizontal turning radius m	4	4	4	4	4
Vertical turning radius m	10	10	10	10	10
self-possessed T	15.3	14.2	13.1	12	11

3. Product Features

- (1) The locomotive has a large climbing capacity and can be used for driving in a large slope roadway of 30°;
- (2) The operation of the locomotive is energy-saving, environmental protection and pollution-free, and there is no need for air distribution in the underground roadway of the coal mine;
- (3) Stable performance, low noise and low operating cost;
- (4) The tooth drive can avoid the phenomenon of sliding of the wet driving part of the track.
- (5) Strong scalability;
- (6) High battery utilization;
- (7) Drive part can be independently controlled, intelligent drive, energy saving and consumption reduction;
- (8) The lithium battery can be combined with multiple boxes to meet the ultra-long life of the monorail crane;
- (9) Lithium batteries are smaller and lighter than lead-acid batteries.

Explosion-proof lithium battery rack rail clamp rail car

Suspended monorail crane for small-scale dispatching (also known as capsule-style suspended monorail crane for dispatching) includes a passenger cabin, drive units, a speed measuring car, and driving compartments at both ends of the passenger cabin. Power and control devices are integrated at the bottom of the passenger cabin, with the power system using explosion-proof lithium battery power units. The entire cabin is suspended from a single overhead rail by two drive units, which propel the cabin along the track. This suspended monorail crane features a compact structure, high transportation efficiency, and long transportation distance, making it suitable for round-trip dispatching transport or safety inspection work in underground coal mines.



1. Product Profile

Lithium Battery Gear Rail Truck for Coal Mine is a special tractor driven by permanent magnet synchronous motor, variable frequency stepless speed regulation and four-quadrant feedback control. It is mainly used for transportation of materials, equipment and personnel in coal mines, and can realize the transportation work from the ground or the bottom of the well yard to the mining face.

2. Main technical parameters

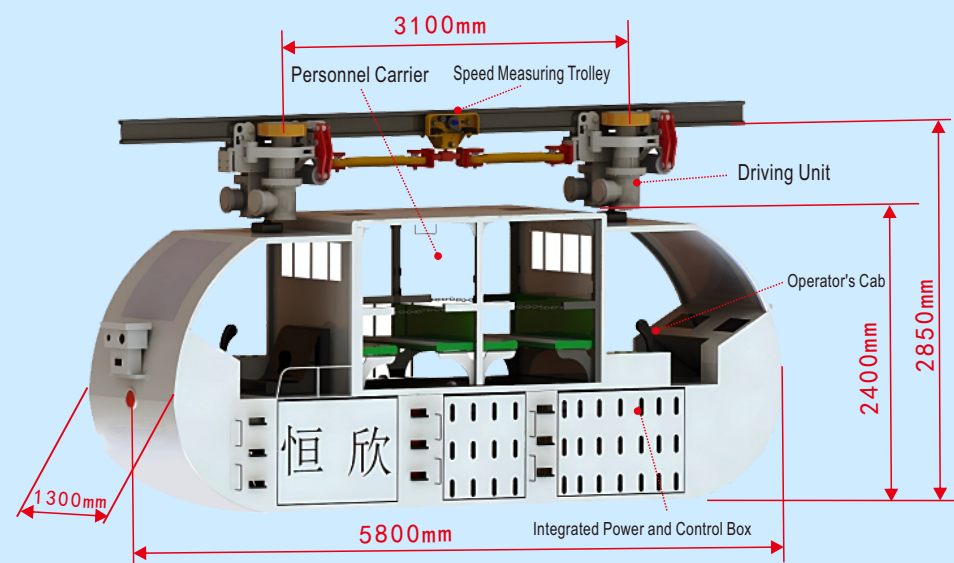
Product Model: KDC240/90D	Maximum gravitation of force (kN) : 240
Braking force: (kN) : 360	Operating speed: (m/s) 0-2
Climbing Capacity (°) : 30	Traction motor power (kW) : 2×45
Gauge and Specification (mm) : 900/600	Horizontal turning radius (m) : 5
Vertical turning radius (m) : 21	Locomotive weight (t) : 20
External dimensions (mm) : 20000×1500×1800	

3. Product Features

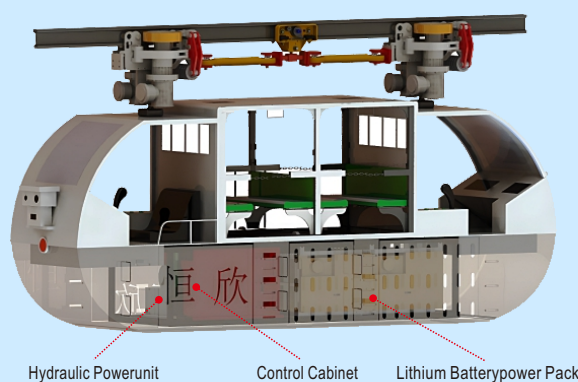
- (1) Using permanent magnet motor direct drive, low noise, no pollution, high efficiency, fast response.
- (2) Using mine flameproof Lithium Battery voltage power, can quickly change electricity, no mileage limit.
- (3) The brake adopts fail-safe brake, which is safe and reliable.
- (4) The whole machine is compact in structure, small in size and strong in adaptability in down hole; modular design is adopted in each system to facilitate the upgrading of the whole machine.
- (5) Equipped with hydraulic system, which can provide hydraulic power for traction vehicles and other equipment.
- (6) The system has perfect mechanical and electrical protection functions.
- (7) The locomotive has a large climbing capacity and can be used for driving in a large slope of 30°.
- (8) Lithium Battery long service life energy saving and environmental protection.
- (9) The locomotive has strong power, stable performance, low failure rate, simple maintenance and low operating cost.

Explosion-proof lithium battery dispatch monorail crane

Suspended monorail crane for small-scale dispatching (also known as capsule-style suspended monorail crane for dispatching) includes a passenger cabin, drive units, a speed measuring car, and driving compartments at both ends of the passenger cabin. Power and control devices are integrated at the bottom of the passenger cabin, with the power system using explosion-proof lithium battery power units. The entire cabin is suspended from a single overhead rail by two drive units, which propel the cabin along the track. This suspended monorail crane features a compact structure, high transportation efficiency, and long transportation distance, making it suitable for round-trip dispatching transport or safety inspection work in underground coal mines.



Specification Table for Capsule-Style Monorail Crane	
Item	参数
Weight	5t
Maximum load	10t
Maximum passenger capacity	14
Number of drive units	2
Number of speedmeasuring trolleys	1
Level trackrunning speed	2.5m/s
Maximumclimbing angle	15°
Power system	Two sets of lithiumbattery power packs
Comprehensiveoperating range	20KM



Explosion-proof lithium battery rubber-driven monorail crane

1.Product Overview

The explosion-proof lithium battery monorail hoist is a type of equipment that uses lithium iron phosphate batteries as its power source. It operates by driving an asynchronous motor or a permanent magnet synchronous motor through a frequency conversion device, which then drives the locomotive to run on a monorail in the underground coal mine. It can realize the transportation of materials and equipment directly to the working face and also complete the transportation of personnel. It has the characteristics of charging and using at any time, fast charging speed, long service life, high discharge efficiency, large battery energy density, strong climbing ability, environmental protection, and low operating cost.

2.Product Classification

Explosion-proof lithium battery monorail hoists can be divided into explosion-proof lithium battery permanent magnet integrated monorail hoists and explosion-proof lithium battery asynchronous motor monorail hoists according to the different motor types of the driving part.

Explosion-proof Lithium Battery Permanent Magnet Integrated Monorail Hoist

It has high scalability and can reach up to 14 drives; it adopts a permanent magnet integrated machine, the single drive part can reach 28KN, and the total driving force can reach up to 392KN; the battery utilization rate is high, up to 90%; the drive part can be independently controlled, intelligent swing drive, energy saving and consumption reduction; the maximum climbing ability is 25°.

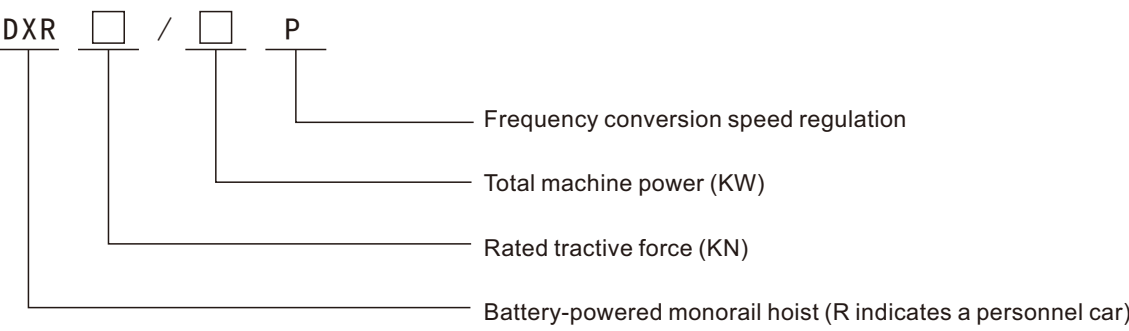


Explosion-proof Lithium Battery Asynchronous Motor Monorail Hoist

It has high scalability and can reach up to 12 drives; the battery utilization rate can be as high as 90%; the traction force is large, the single drive is 26KN, and the maximum traction force is 312KN; it can be directly transformed from the existing lithium battery monorail hoist; the maximum climbing ability is 25°. Easy to maintain, users can repair it independently.

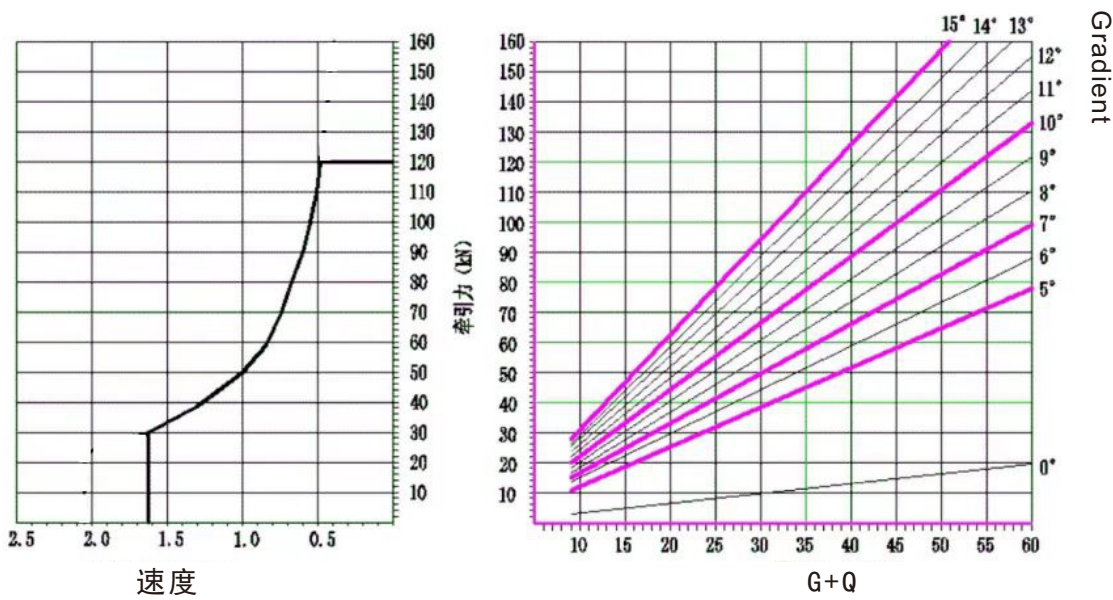


3.Model representation



Note: G - the weight of the locomotive (tons), Q - the weight of the goods + the weight of the lifting beam (tons).

4.Characteristic Curve Diagram



Note: G - the weight of the locomotive (tons), Q - the weight of the goods + the weight of the lifting beam (tons).

5. Technical Parameters of Explosion-proof Special Type Battery-powered Monorail Hoist

Parameters and Load Table of Explosion-proof Special Type Battery-powered Permanent Magnet Integrated Monorail Hoist

Table 1: Explosion-proof Special Type Battery-powered Permanent Magnet Integrated Monorail Hoist

Main Technical Specifications Table							
Item	DXR140/60Y	DXR168/72Y	DXR196/84Y	DXR224/96Y	DXR252/108Y	DXR280/120Y	DXR308/132Y
Driving Motor Power (kW)	10×6	12×6	14×6	16×6	18×6	20×6	22×6
Maximum Tractive Force (kN)	140	168	192	224	252	280	308
Maximum Operating Speed (m/s)	2.0						
Applicable Gradient (°)	±15°						
Minimum Radius of Curvature for Passage (m)	Horizontal 4 / Vertical 10						
Equipment Weight (t)	13.5	15.2	16	16.8	18.8	20.2	21
Dimensions (m)	Length	20.8	22.5	24.2	25.9	27.6	31
	Width	1.02	1.02	1.02	1.02	1.02	1.02
	Height	1.45	1.45	1.45	1.45	1.45	1.45
Number of Drive Units	5	6	7	8	9	10	11
Number of Brake Units	7	8	9	10	11	12	13
Braking Force (kN)	210~280	252~336	294~392	336~448	378~504	420~560	462~616
Track Type	I 140E / I 140V						
Battery Capacity (kW·h)	178.08						
Battery Voltage	336V						
Pump Station Motor Power (kW)	12						
Hydraulic Pump Model	KP3024						
Hydraulic System Rated Working Pressure (MPa)	16 MPa						

Table 2: Load and Gradient of Explosion-proof Special Type Battery-powered Permanent Magnet Integrated Monorail Hoist (Unit: Tons)

Maximum Load and Transport Gradient Comparison Table					
Gradient (°)		0	5	10	15
DXR140/60Y	Payload (T)	60	48	33	13
DXR168/72Y		60	50	41	16
DXR196/84Y		60	50	44	19
DXR224/96Y		60	60	50	22
DXR252/108Y		60	60	50	25
DXR280/120Y		60	60	53	28
DXR308/132Y		60	60	56	31

Note: 1. The load weight in the table = weight of goods + weight of the lifting beam;
 2. The load weight in the table is a theoretical reference value. The actual maximum safe load weight of the locomotive needs to be calculated specifically based on the gradient, slope length, and locomotive arrangement.

Parameters and Load Table of Explosion-proof Special Type Battery-powered Asynchronous Motor Monorail Hoist

Table 1: Explosion-proof Special Type Battery-powered Asynchronous Motor Monorail Hoist

Main Technical Specifications Table					
Model	DX40/24P	DX60/36P	DX80/48P	DX100/60P	DX120/72P
Rated Tractive Force (kN)	40	60	80	100	120
Braking Force (kN)	60~80	90~120	120~160	150~200	180~240
Number of Drive Units (sets)	2	3	4	5	6
Maximum Climbing Angle (°)	15				
Maximum Operating Speed (m/s)	2.0				
Minimum Turning Radius (m)	Horizontal/Vertical 4/8				
Battery Range (km)	32	28	24	20	16
Locomotive Weight (T)	10.2	11.4	12.7	13.5	14.3
Locomotive Length (m)	14.3	15.7	17	18.5	19.8
Width x Height (m)	1.05×1.45				

Table 2: Load and Gradient of Explosion-proof Special Type Battery-powered Asynchronous Motor Monorail Hoist (Unit: Tons)

Maximum Load and Transport Gradient Comparison Table											
Model/Gradient (≤°)	5	6	7	8	9	10	11	12	13	14	15
DX40/24P	Maximum Load (T)	22	18	15	12	10	9	7	6	5	4
DX60/36P		36	31	26	22	19	17	15	13	11	10
DX80/48P		51	44	38	33	29	25	22	20	18	16
DX100/60P		67	57	49	43	38	34	31	28	25	23
DX120/72P		82	70	61	54	48	43	39	35	32	29

Note: 1. The load weight in the table = weight of goods + weight of the lifting beam;
 2. The load weight in the table is a theoretical reference value. The actual maximum safe load weight of the locomotive needs to be calculated specifically based on the gradient, slope length, and locomotive arrangement.

6. Product Advantages

The braking system is designed with fail-safe features, and an independently controlled safety braking device is also equipped.

Dual overspeed protection is provided by using both a mechanical centrifugal governor and an encoder.

The use of explosion-proof lead-acid batteries as a power source ensures low noise, no pollution, stable tractive force, and environmental efficiency.

Both permanent magnet integrated motor drive and asynchronous motor drive can be selected to meet the requirements of different working conditions.

By replacing the drive unit of the existing small tractive force lead-acid battery monorail hoist, the hoist can be improved to increase its tractive force, with a maximum of up to 308 kN.

The explosion-proof special type battery has stable performance and is safe to use in coal mine environments.

