

01

LATENT SERIES

潛伏系列

TLR-D

潛伏頂升式機器人
Lifting LMR



TLR-DB

潛伏帶式輸送機器人
Belt Conveyor LMR



TLR-DR

潛伏滾筒式輸送機器人
Roller Conveyor LMR



TLR-DH

潛伏複合式機器人
Hybrid LMR



TLR-D

潛伏頂升式機器人

Lifting LMR



產品特性 / PRODUCT CHARACTERISTICS

該系列產品依據差速原理作為驅動形式，使用絲杆作為頂升機構的一種車型，頂升回轉式LMR標準底盤機動性高，可靈活穿越狹窄空間，最窄通道1050mm，導航精度 $\pm 10\text{mm}$ ， $\pm 1^\circ$ ；末端定位 $\pm 2\text{mm}$ ；應用適配度，支持頂升、回轉，頂升量程65mm，適應不同高度對接；多感測器融合定位，支持反光柱、反光板等特徵添加，場景適應性強；模組化設計、一鍵恢復，維護方便。

This series of products is based on the differential principle as the driving form and uses a screw as the lifting mechanism. The top lifting rotary LMR standard chassis has high maneuverability and can flexibly pass through narrow spaces. The narrowest aisle is 1,050mm, and the navigation accuracy is $\pm 10\text{mm}$, $\pm 1^\circ$; Terminal positioning $\pm 2\text{mm}$; application adaptability, supporting lifting and rotation, lifting range 65mm, suitable for docking at different heights; Multi sensor fusion positioning, supporting the addition of features such as reflective columns and reflective plates, with strong scene adaptability; Modular design, one click recovery, easy maintenance.

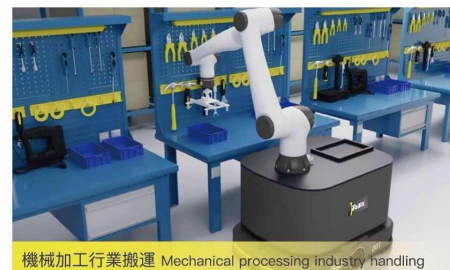
應用場景 / APPLICATION SCENARIOS



汽車裝配行業搬運 Automotive assembly industry handling



電商行業搬運 E-commerce industry handling



機械加工行業搬運 Mechanical processing industry handling



3C電子行業搬運 3C electronics industry handling

潛伏頂升式系列

LATENT LIFTING SERIES

產品 Product					
產品型號 Product model	TLR-D05	TLR-D10	TLR-D15	TLR-M30S	TLR-M50S
產品名稱 Product name	潛伏頂升式機器人 Lifting LMR	潛伏頂升式機器人 Lifting LMR	潛伏頂升式機器人 Lifting LMR	潛伏頂升式機器人 Lifting LMR	潛伏頂升式機器人 Lifting LMR
產品效果圖 Product rendering					
基本參數 Basic Parameters					
車體尺寸(長×寬×高) (mm) Vehicle dimensions (length x width x height) (mm)	950*650*275	980*680*275	1080*720*275	2200*1200*500	2600*1500*600
額定負載 (kg) Rated load (kg)	500	1000	1500	3000	5000
舉升高度 (mm) Lifting height (mm)	60±5	60±5	60±5	70±5	70±5
車體自重 (kg) Vehicle weight (kg)	160±5%	180±5%	200±5%	980±5%	1300±5%
導航方式 Navigation method	雷射SLAM/二維碼 Laser SLAM/QR code	雷射SLAM/二維碼 Laser SLAM/QR code	雷射SLAM/二維碼 Laser SLAM/QR code	雷射SLAM/二維碼 Laser SLAM/QR code	雷射SLAM/二維碼 Laser SLAM/QR code
驅動形式 Drive mode	差速 Differential	差速 Differential	差速 Differential	雙舵輪 Twin rudder wheels	雙舵輪 Twin rudder wheels
行走方式 Movement type	前進+後退+原地自轉 Forward+backward+ spin in place	前進+後退+原地自轉 Forward+backward+ spin in place	前進+後退+原地自轉 Forward+backward+ spin in place	前進+後退+原地自轉+橫移 Forward+backward+spin in place+lateral movement	前進+後退+原地自轉+橫移 Forward+backward+spin in place+lateral movement
旋轉直徑(空載) (mm) Rotating diameter(unloaded) (mm)	1151	1192	1298	2372	2937

性能參數 Performance Parameters					
爬坡能力 (%) Climbing ability (%)	5	5	5	10	10
越障能力 (mm) Obstacle crossing ability (mm)	5	5	5	10	10
通過間隙 (mm) Clearance (mm)	30	30	30	50	50
最小通行寬度 (mm) Minimum passage width (mm)	1050	1080	1120	1600	1900
運行空間(空載、單/雙通道) (mm) Operating space (unloaded, single/double channel) (mm)	1150/2050	1180/2110	1220/2190	1700/3150	2000/3750
導航位置精度 (mm) Navigation position accuracy (mm)	±10	±10	±10	±10	±10
角度精度 (°) Angle accuracy (°)	±1	±1	±1	±1	±1
運行速度 (m/s) Operating speed (m/s)	1.5	1.5	1.5	1	1

電池性能 Battery Performance					
電池容量 (V/Ah) Battery capacity (V/Ah)	48/25	48/30	48/40	48/70	48/100
電池壽命 Battery life	1500 recycle	1500 recycle	1500 recycle	1500 recycle	1500 recycle
待機時間 (h) Standby time (h)	24	24	24	24	24
空載運行時間 (h) Unloaded operation time (h)	8~10	8~10	8~10	8~10	8~10
滿載運行時間 (h) Loaded operation time (h)	6~8	6~8	6~8	6~8	6~8
充電時間 (h) Charging time (h)	2	2	2	2	2
充電方式 Charging method	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging

潛伏帶式輸送系列

LATENT BELT CONVEYOR SERIES

產品 Product		
產品型號 Product model	TLR-D005B	TLR-D01B
產品名稱 Product name	潛伏帶式輸送機器人 Belt Conveyor LMR	潛伏帶式輸送機器人 Belt Conveyor LMR
產品效果圖 Product rendering		
基本參數 Basic Parameters		
車體尺寸(長×寬×高) (mm) Vehicle dimensions (length x width x height) (mm)	950*650*(310~1000)	950*650*(310~1000)
額定負載 (kg) Rated load (kg)	50	100
車體自重 (kg) Vehicle weight (kg)	220±5%	260±5%
導航方式 Navigation method	雷射SLAM/二維碼 Laser SLAM/QR code	雷射SLAM/二維碼 Laser SLAM/QR code
驅動形式 Drive mode	差速 Differential	差速 Differential
行走方式 Movement type	前進+後退+原地自轉 Forward+backward+ spin in place	前進+後退+原地自轉 Forward+backward+ spin in place
旋轉直徑(空載) (mm) Rotating diameter(unloaded) (mm)	1151	1151

性能參數 Performance Parameters		
爬坡能力 (%) Climbing ability (%)	5	5
越障能力 (mm) Obstacle crossing ability (mm)	5	5
透過間隙 (mm) Through gap (mm)	30	30
最小通行寬度 (mm) Minimum passage width (mm)	1050	1050
運轉空間(空載、單/雙通道) (mm) Operating space (unloaded, single/double channel) (mm)	1150/2050	1150/2050
導航位置精度 (mm) Navigation position accuracy (mm)	±10	±10
角度精度 (°) Angle accuracy (°)	±1	±1
運行速度 (m/s) Operating speed (m/s)	1.5	1.5

電池效能 Battery Performance		
電池容量 (V/Ah) Battery capacity (V/Ah)	48/30	48/40
電池壽命 Battery life	1500 recycle	1500 recycle
待機時間 (h) Standby time (h)	24	24
空載運行時間 (h) Unloaded operation time (h)	8~10	8~10
滿載運行時間 (h) Loaded operation time (h)	6~8	6~8
充電時間 (h) Charging time (h)	2	2
充電方式 Charging method	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging

潛伏滾筒式輸送系列

LATENT ROLLER CONVEYOR SERIES

產品 Product			
產品型號 Product model	TLR-D005R	TLR-D03R	TLR-D15R
產品名稱 Product name	潛伏滾筒式輸送機器人 Roller Conveyor LMR	潛伏滾筒式輸送機器人 Roller Conveyor LMR	潛伏滾筒式輸送機器人 Roller Conveyor LMR
產品效果圖 Product rendering			
基本參數 Basic Parameters			
基本參數 (mm) Vehicle dimensions (length x width x height) (mm)	950*650*(300~1000)	950*650*(300~1000)	1700*1200*(300~1000)
額定負載 (kg) Rated load (kg)	50	300	1500
車體自重 (kg) Vehicle weight (kg)	230±5%	310±5%	780±5%
導航方式 Navigation method	雷射SLAM/二維碼 Laser SLAM/QR code	雷射SLAM/二維碼 Laser SLAM/QR code	雷射SLAM/二維碼 Laser SLAM/QR code
驅動形式 Drive mode	差速 Differential	差速 Differential	差速 Differential
行走方式 Movement type	前進+後退+原地自轉 Forward+backward+spin in place	前進+後退+原地自轉 Forward+backward+spin in place	前進+後退+原地自轉 Forward+backward+spin in place
旋轉直徑(空載) (mm) Rotating diameter(unloaded) (mm)	1151	1151	2081
性能參數 Performance Parameters			
爬坡能力 (%) Climbing ability (%)	5	5	5
越障能力 (mm) Obstacle crossing ability (mm)	5	5	5
通過間隙 (mm) Through gap (mm)	30	30	30
最小通行寬度 (mm) Minimum passage width (mm)	1050	1050	1600
運行空間(空載、單/雙通道) (mm) Operating space (unloaded, single/double channel) (mm)	1150/2050	1150/2050	1700/3650
導航位置精度 (mm) Navigation position accuracy (mm)	±10	±10	±10
角度精度 (°) Angle accuracy (°)	±1	±1	±1
運行速度 (m/s) Operating speed (m/s)	1.5	1.5	1.5
電池性能 Battery Performance			
電池容量 (V/Ah) Battery capacity (V/Ah)	48/30	48/40	48/70
電池壽命 Battery life	1500 recycle	1500 recycle	1500 recycle
待機時間 (h) Standby time (h)	24	24	24
空載運行時間 (h) Unloaded operation time (h)	8~10	8~10	8~10
滿載運行時間 (h) Loaded operation time (h)	6~8	6~8	6~8
充電時間 (h) Charging time (h)	2	2	2
充電方式 Charging method	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging

複合式機器人系列

HYBRID AUTONOMOUS MOBILE ROBOT SERIES

產品 Product		
產品型號 Product model	TLR-D001H	TLR-D002H
產品名稱 Product name	潛伏複合式機器人 Hybrid LMR	潛伏複合式機器人 Hybrid LMR
產品效果圖 Product rendering		
基本參數 Basic Parameters		
車體尺寸(長×寬×高) (mm) Vehicle dimensions (length x width x height) (mm)	950*650* (500~1000)	950*650* (500~1000)
額定負載 (kg) Rated load (kg)	10	20
車體自重(kg) Vehicle weight (kg)	250±5%	270±5%
導航方式 Navigation method	雷射SLAM/二維碼 Laser SLAM/QR code	雷射SLAM/二維碼 Laser SLAM/QR code
驅動形式 Drive mode	差速 Differential	差速 Differential
行走方式 Movement type	前進+後退+原地自轉 Forward+backward+spin in place	前進+後退+原地自轉 Forward+backward+spin in place
旋轉直徑(空載) (mm) Rotating diameter(unloaded) (mm)	1151	1151
適配機械手臂 Adapting robotic arm	大族/遨博/節卡/庫卡/愛普生等 Han's/AUBO/JAKA/KUKA/Epson,etc.	大族/遨博/節卡/庫卡/愛普生等 Han's/AUBO/JAKA/KUKA/Epson,etc.
性能參數 Performance Parameters		
爬坡能力 (%) Climbing ability (%)	5	5
越障能力 (mm) Obstacle crossing ability (mm)	5	5
通過間隙 (mm) Clearance (mm)	30	30
最小通行寬度 (mm) Minimum passage width (mm)	1050	1050
運轉空間(空載、單/雙通道) (mm) Operating space (unloaded, single/double channel) (mm)	1150/2050	1150/2050
導航位置精度 (mm) Navigation position accuracy (mm)	±10	±10
機械手臂末端對接精度 (mm) Robotic arm end docking accuracy (mm)	±0.5	±0.5
角度精度 (°) Angle accuracy (°)	±1	±1
運行速度 (m/s) Operating speed (m/s)	1.5	1.5
電池性能 Battery Performance		
電池容量 (V/Ah) Battery capacity (V/Ah)	48/30	48/40
電池壽命 Battery life	1500 recycle	1500 recycle
待機時間 (h) Standby time (h)	24	24
空載運行時間 (h) Unloaded operation time (h)	8~10	8~10
滿載運行時間 (h) Loaded operation time (h)	6~8	6~8
充電時間 (h) Charging time (h)	2	2
充電方式 Charging method	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging



TRANSPORT & STACKING SERIES

堆垛運搬系列

TFR-XP

堆垛運搬叉取式機器人
Transport Stacker FMR



TFR-FP

堆垛運搬叉取式機器人
Transport Stacker FMR



TFR-14SL

堆垛運搬叉取式機器人
Transport Stacker FMR



TFR-SQ

全向堆垛叉取式機器人
Omni-Stacker FMR



|| 核心參數 / CORE PARAMETERS

1.2m/s

運行速度
Operating speed

1500kg

額定載重
Rated load

24v/60Ah

電池電壓/標稱容量 (鋰電池)
Battery voltage / Nominal capacity (Lithium battery)

1375mm

轉彎半徑
Turning radius



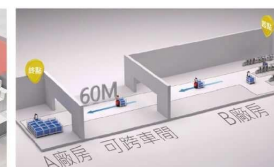
|| 產品特性 / PRODUCT CHARACTERISTICS



多重防撞保護
Multiple anti-collision protection



天花板視覺導航示意圖
Schematic diagram of ceiling visual navigation



電池換電示意圖
Battery replacement diagram

|| 更多特性 / MORE CHARACTERISTICS

- 完全代替人工實現長距離自動搬運
Completely replace manual labor to achieve long-distance automatic transportation

Before ▶

長距離人工搬運
Long-Distance Manual Handling



起點
start

運行
run

終點
end

Now ▶

長距離自動搬運
Long-Distance Automated Handling



- 一車兩用，打造搬運新體驗，把手下壓，快速切換電動模式
One vehicle with two uses, creating a new transport experience, press the handle down to quickly switch to electric mode.

電動搬運車
Electric Pallet Truck

電子轉向，搬運更有效率更輕鬆
Electronic steering, more efficient
And effortless handling



自動搬運車15XP
Automated Guided Vehicle 15XP

自動搬運，長距離不費人力
Automated long-distance material
handling without human intervention

NR

TRANSPORT & LIFTING SERIES

堆高運搬系列

TFR-15V

堆高運搬叉取式機器人
Lifting & Transport FMR



TFR-20V

堆高運搬叉取式機器人
Lifting & Transport FMR



TFR-B

堆高運搬叉取式機器人
Lifting & Transport FMR



TFR-16SL

堆高運搬叉取式機器人
Lifting & Transport FMR



TFR-V

堆高運搬叉取式機器人

Lifting & Transport FMR



產品特性 / PRODUCT CHARACTERISTICS

該系列使用全實心橡膠胎，適用於室內外各類複雜路況，最大負載可達2000kg，貨物舉升高度達到4500mm；24V系統，300Ah鋰電，配備手自充電機，充電效率高，續航能力強；三支點、低重心設計，保證車輛行駛，堆垛穩定性；高精度桅桿，在高位負載時能力同樣出色；整車支援各類通訊協定，對接快速方便；平衡重式叉車，便於加裝側移器，抱夾等屬具，適用於單雙面託盤，配置貨叉前傾後仰功能，支援各類屬具選配，可以輕鬆面對各種工況；較傳統的平衡重叉車具有更小的通道、轉彎半徑，整車尺寸參數業內領先。

This series uses fully solid rubber tires, suitable for various complex road conditions indoors and outdoors, with a maximum load of 2,000kg and a cargo lifting height of 4,500mm. It has a 24V system, 300Ah lithium battery, and is equipped with a manual self-charging motor, which has high charging efficiency and strong endurance; Three pivot points and low center of gravity design ensure vehicle driving and stacking stability; High precision gantry, equally capable at high loads; The entire vehicle supports various communication protocols, making integration fast and convenient; Balanced forklift, easy to install sideshifters, clamps and other attachments, suitable for single and double-sided pallets, equipped with fork forward and backward tilting functions, supports various attachments selection, can easily face various working conditions; Compared to traditional balance weight forklifts, it has smaller channels, turning radii, and industry-leading vehicle size parameters.

應用場景 / APPLICATION SCENARIOS



零售業和大型超市
Retail industry and large supermarkets

適用於各類平倉的貨物轉運。

Applicable to the transshipment of all types of closed warehouse goods.



新能源產業
New energy industry

新能源（光伏及鋰電）行業，倉儲貨物的搬運

New energy (photovoltaic and lithium battery) industry, handling of warehouse goods.



機械加工業
Mechanical processing industry

用於機械加工廠的物料搬運，生產線上的物料供應等。

Used for material handling in machining plants, material supply on production lines, etc.



汽車製造業
Automobile manufacturing industry

用於汽車製造行業，汽車零部件行業的半成品及成品的搬運，以及裝配線上的物流等。

Used in the transportation of semi-finished and finished products in the automobile manufacturing industry and automobile parts industry, as well as logistics on assembly lines, etc.

堆高運搬系列

TRANSPORT & LIFTING SERIES

產品 Product				
產品型號 Product model	TFR-1530V	TFR-1535V	TFR-2040V	TFR-2045V
產品名稱 Product name	堆高運搬叉取式機器人 Lifting & Transport FMR	堆高運搬叉取式機器人 Lifting & Transport FMR	堆高運搬叉取式機器人 Lifting & Transport FMR	堆高運搬叉取式機器人 Lifting & Transport FMR
產品效果圖 Product rendering				
基本參數 Basic Parameters				
車體尺寸(長×寬×高) Vehicle dimensions (length x width x height) (mm)	2490*1090*2020	2490*1090*2270	2921*1209*2655	2921*1209*2905
額定載重 Rated load (kg)	1500	1500	2000	2000
導航方式 Navigation method	2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM
驅動形式 Drive mode	單舵輪驅動 Single steering wheel drive	單舵輪驅動 Single steering wheel drive	單舵輪驅動 Single steering wheel drive	單舵輪驅動 Single steering wheel drive
托盤類型 Pallet type	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet
駕駛方式 Driving mode	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual
載重中心距 Load center distance (mm)	500	500	500	500
軸距 Wheel base (mm)	1000	1000	1500	1500
整車重量(含電池) Vehicle weight (including battery) (kg)	2700	2750	2900	3000
滿載時的橋負荷，驅動側/承載側 Bridge load at full load, drive side/load bearing side (kg)	3640/560	3640/560	4067/833	4067/833
空載時的橋負荷，驅動側/承載側 Bridge load at no load, drive side/load bearing side (kg)	1150/1550	1150/1550	1263/1637	1263/1637
輪胎類型，驅動側/承重側 Tyre type, drive side/load bearing side	實心橡膠/聚氨酯PU Solid rubber/Polyurethane PU	實心橡膠/聚氨酯PU Solid rubber/Polyurethane PU	實心橡膠/聚氨酯PU Solid rubber/Polyurethane PU	實心橡膠/聚氨酯PU Solid rubber/Polyurethane PU
輪胎尺寸，承重側 Tyre size, load-bearing side	Φ210*55	Φ210*55	Φ210*55	Φ210*55
輪胎尺寸，驅動側 Tyre size, driving side	Φ254*102	Φ254*102	Φ254*102	Φ254*102
輪距：承重側輪 Wheelbase: load-bearing side wheels (mm)	906	906	906	906
桅桿閉合高度 Mast closed height (mm)	2020	2270	2655	2905
起升高度 Lifting height (mm)	3000	3500	4000	4500
起升時桅桿最大高度 Maximum mast height when lifted (mm)	3935	4435	5050	5550
貨叉尺寸L/E/S Fork dimensions(L*E*S) (mm)	1070/100/40	1070/100/40	1070/100/40	1070/100/40
桅桿離地間隙 Mast ground clearance (mm)	84	84	100	100
直角堆垛通道寬度，托盤1200x1000(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x1000 (1200 along fork) (mm)	2855	2855	3450	3450
直角堆垛通道寬度，托盤1200x800(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x800 (1200 along fork) (mm)	2745	2745	3300	3300
轉彎半徑 Turning radius (mm)	1350	1350	1780	1780
性能參數 Performance Parameters				
起升速度，滿載/空載 Lifting speed, fully loaded/unloaded (mm/s)	100/150	100/150	80/150	80/150
下降速度，滿載/空載 Lowering speed, fully loaded/unloaded (mm/s)	150~250/100	150~250/100	150~250/100	150~250/100
最大爬坡能力，滿載/空載 Maximum gradeability, fully loaded/unloaded (%)	5/5	5/5	5/5	5/5
越障能力 Obstacle passing ability (mm)	10	10	10	10
通過間隙 Passage clearance (mm)	30	30	30	30
導航位置精度 Navigation position accuracy (mm)	±10	±10	±10	±10
角度精度 Angular accuracy (°)	±1	±1	±1	±1
運行速度 Operating speed (m/s)	1.5	1.5	1.5	1.5
制動方式 Braking method	電磁制動 Electromagnetic braking	電磁制動 Electromagnetic braking	電磁制動 Electromagnetic braking	電磁制動 Electromagnetic braking
電池性能 Battery Performance				
驅動馬達功率(60分钟) Driving motor power (60 minutes) (kW)	2.5	2.5	2.5	2.5
起升馬達功率(60分钟) Lifting motor power (60 minutes) (kW)	3	3	3	3
鋰電池，電壓/額定容量 Lithium battery, voltage/rated capacity (V/Ah)	24/230	24/230	24/300	24/300
電池重量 Battery weight (kg)	95	95	120	120
電池壽命 Battery life	1500 recycle	1500 recycle	1500 recycle	1500 recycle
待機時間 Standby time (h)	24	24	24	24
空載運轉時間 No-load operating time (h)	8~10	8~10	8~10	8~10
滿載運轉時間 Full-load operating time (h)	6~8	6~8	6~8	6~8
充電時間 Charging time (h)	2	2	2	2
充電方式 Charging method	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging
電池更換方式 Battery replacement method	側拉式/內建電池 Side pull/built-in battery	側拉式/內建電池 Side pull/built-in battery	側拉式/內建電池 Side pull/built-in battery	側拉式/內建電池 Side pull/built-in battery

堆高運搬系列

TRANSPORT & LIFTING SERIES

產品 Product

產品型號 Product model	TFR-1530B		TFR-1535B		TFR-2040B		TFR-2045B		TFR-1635SL		TFR-1635SL	
產品名稱 Product name	堆高運搬叉取式機器人 Lifting & Transport FMR		堆高運搬叉取式機器人 Lifting & Transport FMR		堆高運搬叉取式機器人 Lifting & Transport FMR		堆高運搬叉取式機器人 Lifting & Transport FMR		堆高運搬叉取式機器人 Lifting & Transport FMR		堆高運搬叉取式機器人 Lifting & Transport FMR	
產品效果圖 Product rendering												
基本參數 Basic Parameters												
車體尺寸(長×寬×高) Vehicle dimensions (length x width x height) (mm)	2100*1105*2025		2100*1105*2275		2100*1105*2575		2100*1105*2825		1791*960*2080		1791*960*2330	
額定載重 Rated load (kg)	1500		1500		2000		2000		1600		1600	
導航方式 Navigation method	2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM		2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM		2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM		2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM		2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM		2D雷射SLAM / 3D雷射SLAM 2D laser SLAM/3D laser SLAM	
驅動形式 Drive mode	單舵輪驅動 Single steering wheel drive		單舵輪驅動 Single steering wheel drive		單舵輪驅動 Single steering wheel drive		單舵輪驅動 Single steering wheel drive		單舵輪驅動 Single steering wheel drive		單舵輪驅動 Single steering wheel drive	
托盤類型 Pallet type	川字 Three-runner pallet		川字 Three-runner pallet		川字 Three-runner pallet		川字 Three-runner pallet		川字 Three-runner pallet		川字 Three-runner pallet	
駕駛方式 Driving mode	自動 / 人工 Automatic/Manual		自動 / 人工 Automatic/Manual		自動 / 人工 Automatic/Manual		自動 / 人工 Automatic/Manual		自動 / 人工 Automatic/Manual		自動 / 人工 Automatic/Manual	
載重中心距 Load center distance (mm)	600		600		600		600		600		600	
軸距 Wheel base (mm)	1390		1390		1390		1390		991		991	
整車重量(含電池) Vehicle weight (including battery) (kg)	1100		1270		1300		1450		1150		1220	
滿載時的橋負荷，驅動側/承載側 Bridge load at full load, drive side/load bearing side (kg)	1052/1548		1052/1548		1266/2034		1266/2034		/		/	
空載時的橋負荷，驅動側/承載側 Bridge load at no load, drive side/load bearing side (kg)	795/305		795/305		974/353		974/353		/		/	
輪胎類型，驅動側/承重側 Tyre type, drive side/load bearing side	聚氨酯PU Polyurethane PU		聚氨酯PU Polyurethane PU		聚氨酯PU Polyurethane PU		聚氨酯PU Polyurethane PU		聚氨酯PU Polyurethane PU		聚氨酯PU Polyurethane PU	
輪胎尺寸，承重側 Tyre size, load-bearing side	Φ80*70		Φ80*70		Φ80*70		Φ80*70		Φ80*56		Φ80*56	
輪胎尺寸，驅動側 Tyre size, driving side	Φ230*75		Φ230*75		Φ230*75		Φ230*75		Φ230*75		Φ230*75	
輪距：承重側輪 Wheelbase: load-bearing side wheels (mm)	490		490		490		490		510		510	
桅桿閉合高度 Mast closed height (mm)	2025		2275		2575		2825		2080		2330	
起升高度 Lifting height (mm)	3000		3500		4000		4500		3000		3500	
起升時桅桿最大高度 Maximum mast height when lifted (mm)	3506		4006		4556		5070		3575		4035	
貨叉尺寸L/E/S Fork dimensions(L*E*S) (mm)	1150/190/56		1150/190/56		1150/190/56		1150/190/56		1150/180/60		1150/180/60	
桅桿離地間隙 Mast ground clearance (mm)	30		30		30		30		24±1		24±1	
直角堆垛通道寬度，托盤1200x1000(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x1000 (1200 along fork) (mm)	2820		2820		2820		2820		2300		2300	
直角堆垛通道寬度，托盤1200x800(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x800 (1200 along fork) (mm)	2754		2754		2754		2754		2300		2300	
轉彎半徑 Turning radius (mm)	1655		1655		1655		1655		1274		1274	
性能參數 Performance Parameters												
起升速度，滿載/空載 Lifting speed, fully loaded/unloaded (mm/s)	90/130		90/130		65/100		65/100		105/175		105/175	
下降速度，滿載/空載 Lowering speed, fully loaded/unloaded (mm/s)	110/130		110/130		95/100		95/100		145/145		145/145	
最大爬坡能力，滿載/空載 Maximum gradeability, fully loaded/unloaded	8/10		8/10		6/8		6/8		5/5		5/5	
越障能力 Obstacle passing ability (mm)	10		10		10		10		10		10	
通過間隙 Passage clearance (mm)	30		30		30		30		30		30	
導航位置精度 Navigation position accuracy (mm)	±10		±10		±10		±10		±10		±10	
角度精度 Angular accuracy (°)	±1		±1		±1		±1		±1		±1	
運行速度 Operating speed (m/s)	1.5		1.5		1.5		1.5		1.5		1.5	
制動方式 Braking method	電磁制動 Electromagnetic braking		電磁制動 Electromagnetic braking		電磁制動 Electromagnetic braking		電磁制動 Electromagnetic braking		電磁制動 Electromagnetic braking		電磁制動 Electromagnetic braking	
電池性能 Battery Performance												
驅動馬達功率(60分鐘) Driving motor power (60 minutes) (kW)	1.5		1.5		1.5		1.5		1.5		1.5	
起升馬達功率(60分鐘) Lifting motor power (60 minutes) (kW)	2		2		2		2		3.2		3.2	
鋰電池，電壓/額定容量 Lithium battery, voltage/rated capacity (V/Ah)	24/200		24/200		24/200		24/200		24/210		24/210	
電池重量 Battery weight (kg)	55		55		55		55		65		65	
電池壽命 Battery life	1500 recycle		1500 recycle		1500 recycle		1500 recycle		1500 recycle		1500 recycle	
待機時間 Standby time (h)	24		24		24		24		24		24	
空載運轉時間 No-load operating time (h)	8~10		8~10		8~10		8~10		8~10		8~10	
滿載運轉時間 Full-load operating time (h)	6~8		6~8		6~8		6~8		6~8		6~8	
充電時間 Charging time (h)	2		2		2		2		2		2	
充電方式 Charging method	手/自動充電 Manual/Automatic charging		手/自動充電 Manual/Automatic charging		手/自動充電 Manual/Automatic charging		手/自動充電 Manual/Automatic charging		手/自動充電 Manual/Automatic charging		手/自動充電 Manual/Automatic charging	
電池更換方式 Battery replacement method	內建電池 Built-in battery		內建電池 Built-in battery		內建電池 Built-in battery		內建電池 Built-in battery		內建電池 Built-in battery		內建電池 Built-in battery	

N4

REACH-TYPE LIFTING SERIES

前移式堆高系列

TFR-FA

前移堆高叉取式機器人
Reach-Type Lifting FMR



TFR-ZS

前移堆高叉取式機器人
Reach-Type Lifting FMR



TFR-ZS

前移堆高叉取式機器人

Reach-Type Lifting FMR



產品特性 / PRODUCT CHARACTERISTICS

該系列產品起升最高可達6500mm，負載最大不超過1600kg；可適用於雙面和川字託盤貨物在不同貨位間的自動化轉運；該系列產品桅桿可以整體前移或縮回，擁有較小的車身、轉彎半徑；能夠提供更高的工作效率。該系列配備智慧防滑驅動控制系統，持續檢測路面附着力並自動調整牽引力輸出，無需手動調節油門即可輕鬆實現突然加速、急轉彎或濕滑道路上的安全作業；配備電子轉向，使轉向更省力，降低疲勞強度，提升效率；可緊急制動也可停車制動，安全性能有保障；配備驅動和平衡輪彈性連杆懸掛系統，能夠精準校準鎖定位點。

This series of products can lift up to 6,500mm and have a maximum load of no more than 1,600kg. Suitable for automated transfer of double-sided pallets and three-runner pallets goods between different locations; The door frame of this series of products can be moved forward or retracted as a whole, with a smaller body and turning radius; Can provide higher work efficiency. This series is equipped with an intelligent anti-skid drive control system that continuously detects road adhesion and automatically adjusts traction output. It can easily achieve safe operations on sudden acceleration, sharp turns, or slippery roads without manually adjusting the throttle; Equipped with electronic steering, making steering more effortless, reducing fatigue intensity, and improving efficiency; It can be used for emergency braking or parking braking, ensuring safety performance; Equipped with a drive and balance wheel elastic linkage suspension system, it can accurately calibrate the locking point.

應用場景 / APPLICATION SCENARIOS



倉儲物流業
Warehousing and logistics industry

用於電商物流的貨物搬運，倉內運輸流轉搬運等。

Used for cargo handling in e-commerce logistics, in-warehouse transportation and transfer, etc.



零售業
Retail industry

在平庫中進行貨物的搬運和庫存管理，特別是在需要有效率利用的空間場合。

Carry out cargo handling and inventory management in flat warehouses, especially where efficient use of space is required.



食品和飲料業
Food and beverage industry

用於搬運和堆垛包裝好的食品和飲料。

Used for transporting and stacking packaged food and beverages.



3C電子產業
3C electronics industry

用於電子原料、電子零件或成品的運輸和搬運。

Used for the transportation and handling of electronic raw materials, electronic components or finished products.

前移式堆高系列

REACH-TYPE LIFTING SERIES

產品 Product

產品型號 Product model

產品名稱 Product name

產品效果圖 Product rendering

基本參數 Basic Parameters

車體尺寸(長×寬×高) Vehicle dimensions (length x width x height) (mm)

額定載重 Rated load (kg)

導航方式 Navigation method

驅動形式 Drive mode

托盤類型 Pallet type

駕駛方式 Driving mode

載重中心距 Load center distance (mm)

軸距 Wheel base (mm)

整車重量(含電池) Vehicle weight (including battery) (kg)

輪胎類型，驅動側/承重側 Tyre type, drive side/load bearing side

輪胎尺寸，承重側 Tyre size, load-bearing side

輪胎尺寸，驅動側 Tyre size, driving side

輪距：驅動側輪 Wheelbase: drive side wheel (mm)

輪距：承重側輪 Wheelbase: load-bearing side wheels (mm)

桅桿閉合高度 Mast closed height (mm)

起升高度 Lifting height (mm)

起升時桅桿最大高度 Maximum mast height when lifted (mm)

貨叉尺寸L/E/S Fork dimensions(L*E*S) (mm)

桅桿離地間隙 Mast ground clearance (mm)

直角堆垛通道寬度，托盤1200x1000(1200沿貨叉方式) (mm)

Right-angle stacking channel width, pallet 1200x1000 (1200 along fork) (mm)

直角堆垛通道寬度，托盤1200x800(1200沿貨叉方式) (mm)

Right-angle stacking channel width, pallet 1200x800 (1200 along fork) (mm)

轉彎半徑 Turning radius (mm)

性能參數 Performance Parameters

起升速度，滿載/空載 Lifting speed, fully loaded/unloaded (mm/s)

下降速度，滿載/空載 Lowering speed, fully loaded/unloaded (mm/s)

最大爬坡能力，滿載/空載 Maximum gradeability, fully loaded/unloaded (%)

越障能力 Obstacle passing ability (mm)

通過間隙 Passage clearance (mm)

導航位置精度 Navigation position accuracy (mm)

角度精度 Angular accuracy (°)

運行速度 Operating speed (m/s)

制動方式 Braking method

電池性能 Battery Performance

驅動馬達功率(60分钟) Driving motor power (60 minutes) (kW)

起升馬達功率(60分钟) Lifting motor power (60 minutes) (kW)

鋰電池，電壓/額定容量 Lithium battery, voltage/rated capacity (V/Ah)

電池重量 Battery weight (kg)

電池壽命 Battery life

待機時間 Standby time (h)

空載運轉時間 No-load operating time (h)

滿載運轉時間 Full-load operating time (h)

充電時間 Charging time (h)

充電方式 Charging method

電池更換方式 Battery replacement method



2D雷射SLAM /3D雷射SLAM
2D laser SLAM/3D laser SLAM

單舵輪驅動 Single steering wheel drive

川字/雙面 Three-runner/Double-sided pallet

自動/人工 Automatic/Manual

500

1430

2100

聚氨酯PU Polyurethane PU

Φ210*85

Φ230*75

678

878

2080

3000

3960

1070/100/35

50

3100

3100

1760

2D雷射SLAM /3D雷射SLAM
2D laser SLAM/3D laser SLAM

單舵輪驅動 Single steering wheel drive

川字/雙面 Three-runner/Double-sided pallet

自動/人工 Automatic/Manual

500

1430

2100

聚氨酯PU Polyurethane PU

Φ210*85

Φ230*75

678

878

2330

3500

4460

1070/100/35

50

3100

3100

1760

2D雷射SLAM /3D雷射SLAM
2D laser SLAM/3D laser SLAM

單舵輪驅動 Single steering wheel drive

川字/雙面 Three-runner/Double-sided pallet

自動/人工 Automatic/Manual

500

1430

2100

聚氨酯PU Polyurethane PU

Φ210*85

Φ230*75

678

878

2476

4000

6495

1070/100/35

50

3100

3100

1760

2D雷射SLAM /3D雷射SLAM
2D laser SLAM/3D laser SLAM

單舵輪驅動 Single steering wheel drive

川字/雙面 Three-runner/Double-sided pallet

自動/人工 Automatic/Manual

600

1275

2940

聚氨酯PU Polyurethane PU

Φ285*100

Φ343*135

/

1150

2476

4500

6495

1150/100/45

75

3300

3300

1540

120/150

200/180

6/8

10

30

±10

±1

1.5

電磁制動 Electromagnetic braking

1.5

3

24/200

175

1500 recycle

24

8~10

6~8

2

手/自動充電 Manual/Automatic charging

側拉式 Side pull type

120/150

200/180

6/8

10

30

±10

±1

1.5

電磁制動 Electromagnetic braking

1.5

3

24/200

175

1500 recycle

24

8~10

6~8

2

手/自動充電 Manual/Automatic charging

側拉式 Side pull type

電池更換方式 Battery replacement method

側拉式 Side pull type

側拉式 Side pull type

側拉式 Side pull type

前移式堆高系列

REACH-TYPE LIFTING SERIES

產品 Product

產品型號 Product model	TFR-1450ZS		TFR-1455ZS		TFR-1460ZS		TFR-1465ZS
產品名稱 Product name	前移堆高叉取式機器人 Reach-Type Lifting FMR		前移堆高叉取式機器人 Reach-Type Lifting FMR		前移堆高叉取式機器人 Reach-Type Lifting FMR		前移堆高叉取式機器人 Reach-Type Lifting FMR
產品效果圖 Product rendering							
基本參數 Basic Parameters							
車體尺寸(長×寬×高) Vehicle dimensions (length x width x height) (mm)	2470*1390*2476		2470*1390*2476		2470*1390*2476		2470*1390*2476
額定載重 Rated load (kg)	1400		1400		1400		1400
導航方式 Navigation method	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM		2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM		2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM		2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM
驅動形式 Drive mode	單舵輪驅動 Single steering wheel drive		單舵輪驅動 Single steering wheel drive		單舵輪驅動 Single steering wheel drive		單舵輪驅動 Single steering wheel drive
托盤類型 Pallet type	川字/雙面 Three-runner/Double-sided pallet		川字/雙面 Three-runner/Double-sided pallet		川字/雙面 Three-runner/Double-sided pallet		川字/雙面 Three-runner/Double-sided pallet
駕駛方式 Driving mode	自動/人工 Automatic/Manual		自動/人工 Automatic/Manual		自動/人工 Automatic/Manual		自動/人工 Automatic/Manual
載重中心距 Load center distance (mm)	600		600		600		600
軸距 Wheel base (mm)	1275		1385		1385		1385
整車重量(含電池) Vehicle weight (including battery) (kg)	2940		2990		2990		2990
輪胎類型、驅動側/承重側 Tyre type, drive side/load bearing side	聚氨酯PU Polyurethane PU		聚氨酯PU Polyurethane PU		聚氨酯PU Polyurethane PU		聚氨酯PU Polyurethane PU
輪胎尺寸，承重側 Tyre size, load-bearing side	Φ285*100		Φ285*100		Φ285*100		Φ285*100
輪胎尺寸，驅動側 Tyre size, driving side	Φ343*135		Φ343*135		Φ343*135		Φ343*135
輪距：驅動側輪 Wheelbase: drive side wheel (mm)	/		/		/		/
輪距：承重側輪 Wheelbase: load-bearing side wheels (mm)	1150		1150		1150		1150
桅桿閉合高度 Mast closed height (mm)	2476		2476		2476		2910
起升高度 Lifting height (mm)	5000		5500		6000		6500
起升時桅桿最大高度 Maximum mast height when lifted (mm)	6495		6500		6500		6500
貨叉尺寸L/E/S Fork dimensions(L*E*S) (mm)	1150/100/45		1150/100/45		1150/100/45		1150/100/45
桅桿離地間隙 Mast ground clearance (mm)	75		75		75		75
直角堆垛通道寬度，托盤1200x1000(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x1000 (1200 along fork) (mm)	3300		3500		3500		3500
直角堆垛通道寬度，托盤1200x800(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x800 (1200 along fork) (mm)	3300		3500		3500		3500
轉彎半徑 Turning radius (mm)	1540		1540		1540		1540
轉彎半徑 Performance Parameters							
起升速度，滿載/空載 Lifting speed, fully loaded/unloaded (mm/s)	420/660		400/660		400/660		400/660
下降速度，滿載/空載 Lowering speed, fully loaded/unloaded (mm/s)	550/450		550/450		550/450		550/450
最大爬坡能力，滿載/空載 Maximum gradeability, fully loaded/unloaded (%)	4.5/8.2		4.7/8.2		4.7/8.2		4.7/8.2
越障能力 Obstacle passing ability (mm)	10		10		10		10
通過間隙 Passage clearance (mm)	30		30		30		30
導航位置精度 Navigation position accuracy (mm)	±10		±10		±10		±10
角度精度 Angular accuracy (°)	±1		±1		±1		±1
運行速度 Operating speed (m/s)	2		2		2		2
制動方式 Braking method	電磁制動 Electromagnetic braking		電磁制動 Electromagnetic braking		電磁制動 Electromagnetic braking		電磁制動 Electromagnetic braking
電池性能 Battery Performance							
驅動馬達功率(60分鐘) Driving motor power (60 minutes) (kW)	6.5		6.5		6.5		6.5
起升馬達功率(60分鐘) Lifting motor power (60 minutes) (kW)	14		14		14		14
鋰電池，電壓/額定容量 Lithium battery, voltage/rated capacity (V/Ah)	48/380		48/400		48/400		48/400
電池重量 Battery weight (kg)	190		200		200		200
電池壽命 Battery life	1500 recycle		1500 recycle		1500 recycle		1500 recycle
待機時間 Standby time (h)	24		24		24		24
空載運轉時間 No-load operating time (h)	8~10		8~10		8~10		8~10
滿載運轉時間 Full-load operating time (h)	6~8		6~8		6~8		6~8
充電時間 Charging time (h)	2		2		2		2
充電方式 Charging method	手/自動充電 Manual/Automatic charging		手/自動充電 Manual/Automatic charging		手/自動充電 Manual/Automatic charging		手/自動充電 Manual/Automatic charging
電池更換方式 Battery replacement method	側拉式 Side pull type		側拉式 Side pull type		側拉式 Side pull type		側拉式 Side pull type

N5

VERY NARROW AISLE LIFTING SERIES

窄巷道堆高系列

TFR-CA

窄巷道三向叉取式機器人
VNA Tri-Directional FMR



TFR-QV

窄巷道全向叉取式機器人
VNA Omnidirectional FMR



TFR-CA

窄巷道三向叉取式機器人

VNA Tri-Directional FMR



產品特性 / PRODUCT CHARACTERISTICS

該系列產品分為三向和全向兩大類，其中三向負載最高可做到1600kg，舉升達到7500mm，全向負載可做到1500kg，舉升達到4500mm；該系列最大特點就是車身無需轉向，通過貨叉180°和360°旋轉以及左右側移，來實現巷道兩側的貨物堆垛和裝卸；整車最小堆垛淨通道僅需1600mm，可以大幅度提高倉庫容量；桅桿採用高強度H型槽形鋼、中央導軌及框架式設計，搭配高清攝像系統，在改善視野的同時，保證了車輛結構強度和剛性，顯著提高高位操作穩定性。可依據不同工況可提供多種選配功能及專用車型，像磁導航模式、雙深位元伸縮叉、電動調距叉等功能，極大程度的提高了倉儲庫容率及叉車安全性。

This series of products is divided into two categories: three-way and omnidirectional. The three-way load can reach up to 1,600kg, with a lifting capacity of 7,500mm, and the omnidirectional load can reach 1,500kg, with a lifting capacity of 4,500mm. The biggest feature of this series is that the vehicle body does not need to turn, and the goods can be stacked and loaded and unloaded on both sides of the aisle by rotating the forks 180° and 360° and moving them left and right; The minimum stack clearance for the entire vehicle is only 1,600mm, which can significantly increase warehouse capacity; The gantry adopts high-strength H-shaped groove steel, central guide rail and frame design, and is equipped with high-definition camera system, which improves the field of view while ensuring the structural strength and rigidity of the vehicle, significantly improving the stability of high-level operation. Multiple optional functions and specialized vehicle models can be provided according to different working conditions, such as magnetic navigation mode, dual depth telescopic fork, electric distance adjustment fork, etc., greatly improving the storage capacity and forklift safety.

應用場景 / APPLICATION SCENARIOS



倉儲物流業
Warehousing and logistics industry

用於搬運、堆垛和存儲貨物，特別是在狹窄的通道中進行高效作業。

For handling, stacking and storing goods, especially in narrow aisles for efficient operation.



汽車製造業
Automobile manufacturing industry

用於汽車製造行業，汽車零部件行業的半成品及成品的搬運，以及裝配線上的物流等。

Used in the transportation of semi-finished and finished products in the automobile manufacturing industry and automobile parts industry, as well as logistics on assembly lines, etc.



高位密集倉庫
High density warehouse

可廣泛應用各行各業的窄巷道密集倉的物料搬運。

It can be widely used in material handling in narrow aisle dense warehouses in various industries.



零售業
Retail industry

在平庫中進行貨物的搬運和庫存管理，特別是在需要高效利用的空間場合。

Carry out cargo handling and inventory management in flat warehouses, especially where efficient use of space is required.






窄巷道堆高系列

VERY NARROW AISLE LIFTING SERIES

產品 Product					
產品型號 Product model	TFR-1255C	TFR-1660CA	TFR-1665CA	TFR-1670CA	TFR-1675CA
產品名稱 Product name	窄巷道三向叉取式機器人 VNA Tri-Directional FMR	窄巷道三向叉取式機器人 VNA Tri-Directional FMR	窄巷道三向叉取式機器人 VNA Tri-Directional FMR	窄巷道三向叉取式機器人 VNA Tri-Directional FMR	窄巷道三向叉取式機器人 VNA Tri-Directional FMR
產品效果圖 Product rendering					
基本參數 Basic Parameters					
車體尺寸(長×寬×高) Vehicle dimensions (length x width x height) (mm)	2960*1475*3685	3000*1575*4065	3000*1575*3435	3000*1575*3600	3000*1575*3765
額定載重 Rated load (kg)	1200	1600	1600	1600	1600
導航方式 Navigation method	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM
驅動形式 Drive mode	單舵輪驅動 Single steering wheel drive	單舵輪驅動 Single steering wheel drive	單舵輪驅動 Single steering wheel drive	單舵輪驅動 Single steering wheel drive	單舵輪驅動 Single steering wheel drive
托盤類型 Pallet type	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet
駕駛方式 Driving mode	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual
載重中心距 Load center distance (mm)	550	600	600	600	600
軸距 Wheel base (mm)	1640	1700	1700	1700	1700
整車重量(含電池) Vehicle weight (including battery) (kg)	5160	6000	6000	6000	6000
輪胎類型，驅動側/承重側 Tyre type, drive side/load bearing side	聚氨酯PU Polyurethane PU	聚氨酯PU Polyurethane PU	聚氨酯PU Polyurethane PU	聚氨酯PU Polyurethane PU	聚氨酯PU Polyurethane PU
前輪尺寸 Front wheel size	Φ140*100	Φ140*127	Φ140*127	Φ140*127	Φ140*127
後輪尺寸 Rear wheel size	Φ380*165	Φ380*165	Φ380*165	Φ380*165	Φ380*165
前輪距 Front wheelbase (mm)	1210	1280	1280	1280	1280
後輪距 Rear wheelbase (mm)	726	726	726	726	726
桅桿閉合高度 Mast closed height (mm)	3685	4065	3435	3600	3765
起升高度 Lifting height (mm)	5500	6000	6500	7000	7500
起升时门架最大高度 Maximum mast height when lifted (mm)	6435	7065	7570	8070	8570
貨叉尺寸L/E/S Fork dimensions(L*E*S) (mm)	1200/125/50	1200/125/50	1200/125/50	1200/125/50	1200/125/50
護頂架高度 Overhead guard height (mm)	2260/2300	2260/2300	2260/2300	2260/2300	2260/2300
站板高度 Station board height (mm)	355	355	355	355	355
桅桿離地間隙 Mast ground clearance (mm)	60	60	60	60	60
直角堆垛通道寬度，托盤1200x1000(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x1000 (1200 along fork) (mm)	1600	1600	1600	1600	1600
直角堆垛通道寬度，托盤1200x800(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x800 (1200 along fork) (mm)	1500	1600	1600	1600	1600
轉彎半徑 Turning radius (mm)	1910	1980	1980	1980	1980
性能參數 Performance Parameters					
起升速度，滿載/空載 Lifting speed, fully loaded/unloaded (mm/s)	300/300	300/300	300/300	300/300	300/300
下降速度，滿載/空載 Lowering speed, fully loaded/unloaded (mm/s)	340/340	340/340	340/340	340/340	340/340
最大爬坡能力，滿載/空載 Maximum gradeability, fully loaded/unloaded (%)	5/8	5/8	5/8	5/8	5/8
越障能力 Obstacle passing ability (mm)	10	10	10	10	10
通過間隙 Passage clearance (mm)	30	30	30	30	30
導航位置精度 Navigation position accuracy (mm)	±10	±10	±10	±10	±10
角度精度 Angular accuracy (°)	±1	±1	±1	±1	±1
運行速度 Operating speed (m/s)	1.5	1.5	1.5	1.5	1.5
制動方式 Braking method	再生/電磁制動 Regenerative/Electromagnetic braking	再生/電磁制動 Regenerative/Electromagnetic braking	再生/電磁制動 Regenerative/Electromagnetic braking	再生/電磁制動 Regenerative/Electromagnetic braking	再生/電磁制動 Regenerative/Electromagnetic braking
電池性能 Battery Performance					
驅動馬達功率(60分鐘) Driving motor power (60 minutes) (kW)	5.5	5.5	5.5	5.5	5.5
起升馬達功率(60分鐘) Lifting motor power (60 minutes) (kW)	15	15	15	15	15
鋰電池，電壓/額定容量 Lithium battery, voltage/rated capacity (V/Ah)	48/400	48/400	48/400	48/400	48/400
電池重量 Battery weight (kg)	200	200	200	200	200
電池壽命 Battery life	1500 recycle	1500 recycle	1500 recycle	1500 recycle	1500 recycle
待機時間 Standby time (h)	24	24	24	24	24
空載運轉時間 No-load operating time (h)	8~10	8~10	8~10	8~10	8~10
滿載運轉時間 Full-load operating time (h)	6~8	6~8	6~8	6~8	6~8
充電時間 Charging time (h)	2	2	2	2	2
充電方式 Charging method	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging
電池更換方式 Battery replacement method	側拉式 Side pull type	側拉式 Side pull type	側拉式 Side pull type	側拉式 Side pull type	側拉式 Side pull type

窄巷道堆高系列

VERY NARROW AISLE LIFTING SERIES

產品 Product					
產品型號 Product model	TFR-1525QV	TFR-1530QV	TFR-1535QV	TFR-1540QV	TFR-1545QV
產品名稱 Product name	窄巷道全向叉取式機器人 VNA Omnidirectional FMR	窄巷道全向叉取式機器人 VNA Omnidirectional FMR	窄巷道全向叉取式機器人 VNA Omnidirectional FMR	窄巷道全向叉取式機器人 VNA Omnidirectional FMR	窄巷道全向叉取式機器人 VNA Omnidirectional FMR
產品效果圖 Product rendering					
基本參數 Basic Parameters					
車體尺寸(長×寬×高) Vehicle dimensions (length x width x height) (mm)	1590*1360*1980	1590*1360*2230	1590*1360*2480	1590*1360*2730	1590*1360*2980
額定載重 Rated load (kg)	1500	1500	1500	1500	1500
導航方式 Navigation method	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM	2D雷射SLAM /3D雷射SLAM 2D laser SLAM/3D laser SLAM
驅動形式 Drive mode	雙舵輪驅動 Double steering wheel drive	雙舵輪驅動 Double steering wheel drive	雙舵輪驅動 Double steering wheel drive	雙舵輪驅動 Double steering wheel drive	雙舵輪驅動 Double steering wheel drive
托盤類型 Pallet type	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet	川字/雙面 Three-runner/Double-sided pallet
駕駛方式 Driving mode	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual	自動/人工 Automatic/Manual
載重中心距 Load center distance (mm)	500	500	500	500	500
軸距 Wheel base (mm)	1150	1150	1150	1150	1150
整車重量(含電池) Vehicle weight (including battery) (kg)	2300	2300	2300	2300	2300
輪胎類型，驅動側/承重側 Tyre type, drive side/load bearing side	聚氨酯PU Polyurethane PU	聚氨酯PU Polyurethane PU	聚氨酯PU Polyurethane PU	聚氨酯PU Polyurethane PU	聚氨酯PU Polyurethane PU
前輪尺寸 Front wheel size	Φ180*50	Φ180*50	Φ180*50	Φ180*50	Φ180*50
後輪尺寸 Rear wheel size	Φ230*75	Φ230*75	Φ230*75	Φ230*75	Φ230*75
前輪距 Front wheelbase (mm)	310	310	310	310	310
後輪距 Rear wheelbase (mm)	1110	1110	1110	1110	1110
桅桿閉合高度 Mast closed height (mm)	1980	2230	2480	2730	2980
起升高度 Lifting height (mm)	2500	3000	3500	4000	4500
起升時桅桿最大高度 Maximum mast height when lifted (mm)	3427	3927	4427	4927	5427
貨叉尺寸L/E/S Fork dimensions(L*E*S) (mm)	920/122/40	920/122/40	920/122/40	920/122/40	920/122/40
桅桿離地間隙 Mast ground clearance (mm)	50	50	50	50	50
直角堆垛通道寬度，托盤1200x1000(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x1000 (1200 along fork) (mm)	2200	2200	2200	2200	2200
直角堆垛通道寬度，托盤1200x800(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x800 (1200 along fork) (mm)	2100	2100	2100	2100	2100
轉彎半徑 Turning radius (mm)	1000	1000	1000	1000	1000
性能參數 Performance Parameters					
起升速度，滿載/空載 Lifting speed, fully loaded/unloaded (mm/s)	100/140	100/140	100/140	100/140	100/140
下降速度，滿載/空載 Lowering speed, fully loaded/unloaded (mm/s)	100/95	100/95	100/95	100/95	100/95
最大爬坡能力，滿載/空載 Maximum gradeability, fully loaded/unloaded (%)	5/5	5/5	5/5	5/5	5/5
越障能力 Obstacle passing ability (mm)	10	10	10	10	10
通過間隙 Passage clearance (mm)	30	30	30	30	30
導航位置精度 Navigation position accuracy (mm)	±10	±10	±10	±10	±10
角度精度 Angular accuracy (°)	±1	±1	±1	±1	±1
運行速度 Operating speed (m/s)	1~1.5	1~1.5	1~1.5	1~1.5	1~1.5
制動方式 Braking method	電磁制動 Electromagnetic braking	電磁制動 Electromagnetic braking	電磁制動 Electromagnetic braking	電磁制動 Electromagnetic braking	電磁制動 Electromagnetic braking
電池性能 Battery Performance					
驅動馬達功率(60分鐘) Driving motor power (60 minutes) (kW)	2*1.5	2*1.5	2*1.5	2*1.5	2*1.5
起升馬達功率(60分鐘) Lifting motor power (60 minutes) (kW)	3	3	3	3	3
鋰電池，電壓/額定容量 Lithium battery, voltage/rated capacity (V/Ah)	24/202	24/202	24/202	24/202	24/202
電池重量 Battery weight (kg)	80	80	80	80	80
電池壽命 Battery life	1500 recycle	1500 recycle	1500 recycle	1500 recycle	1500 recycle
待機時間 Standby time (h)	24	24	24	24	24
空載運轉時間 No-load operating time (h)	8~10	8~10	8~10	8~10	8~10
滿載運轉時間 Full-load operating time (h)	6~8	6~8	6~8	6~8	6~8
充電時間 Charging time (h)	2	2	2	2	2
充電方式 Charging method	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging	手/自動充電 Manual/Automatic charging
電池更換方式 Battery replacement method	內置電池 Built-in battery	內置電池 Built-in battery	內置電池 Built-in battery	內置電池 Built-in battery	內置電池 Built-in battery

N6

OUTDOOR TRANSPORT SERIES

室外運搬系列

TFR-KC

室外搬運叉取式機器人
Outdoor Transport FMR

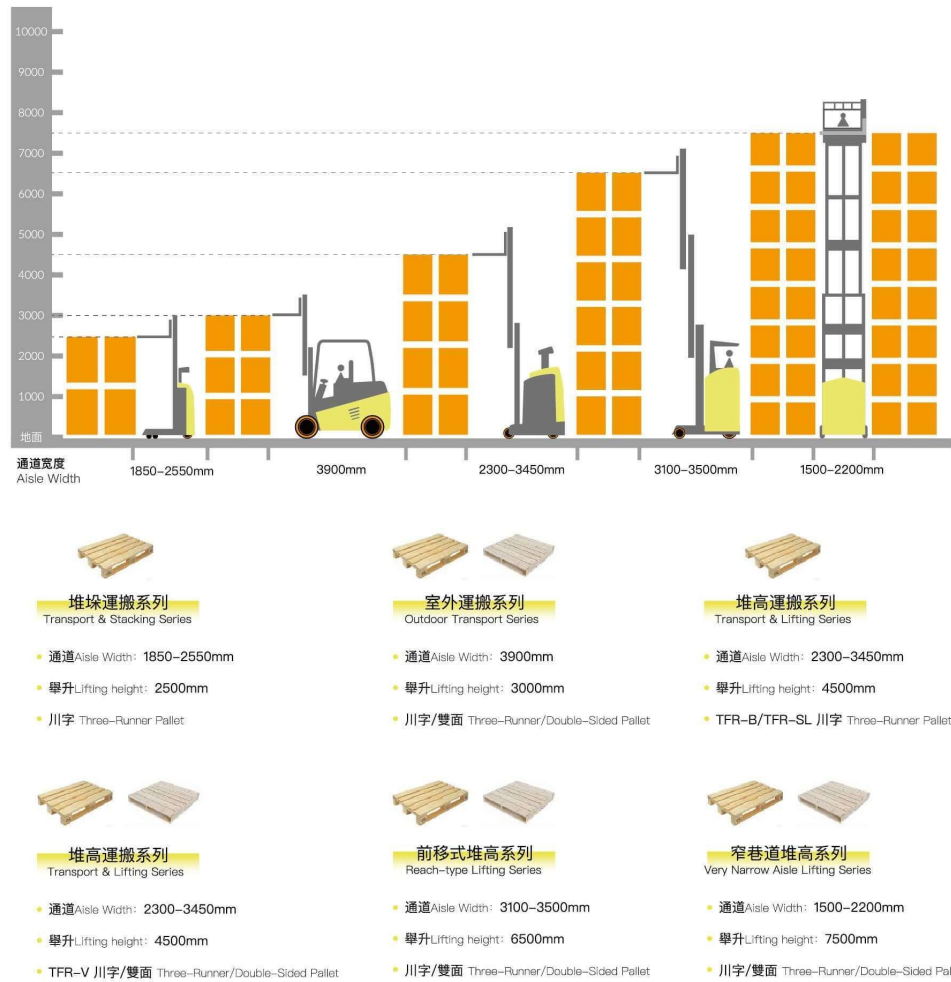


室外搬運系列 OUTDOOR TRANSPORT SERIES

產品 Product	TFR-2030KC
產品型号 Product model	室外搬運叉取式機器人 Outdoor Transport FMR
產品名称 Product name	
產品效果图 Product rendering	
基本參數 Basic Parameters	
車體尺寸(長×寬×高) Vehicle dimensions (length x width x height) (mm)	3210*1275*2360
額定載重 Rated load (kg)	2000
導航方式 Navigation method	2D雷射SLAM /3D雷射SLAM/GPS 2D laser SLAM/3D laser SLAM/GPS
驅動形式 Drive mode	差速驅動+舵輪轉向 Differential drive + Steering wheel steering
托盤類型 Pallet type	川字/雙面 Three-runner/Double-sided pallet
駕駛方式 Driving mode	自動/人工 Automatic/Manual
載重中心距 Load center distance (mm)	500
軸距 Wheel base (mm)	1400
整車重量(含電池) Vehicle weight (including battery) (kg)	3420
輪胎類型，驅動側/承重側 Tyre type, drive side/load bearing side	實心橡膠 Solid rubber
前輪尺寸 Front wheel size	Φ457*178*308
後輪尺寸 Rear wheel size	Φ381*127*286
軸距：驅動側輪 Wheelbase: drive side wheel (mm)	1050
軸距：承重側輪 Wheelbase: load-bearing side wheels (mm)	180
桅桿閉合高度Mast closed height (mm)	1995
起升高度 Lifting height (mm)	3000
起升時桅桿最大高度 Maximum mast height when lifted (mm)	4030
護頂架高度 Overhead guard height (mm)	2000
貨叉尺寸L/E/S Fork dimensions(L*E*S) (mm)	1070*122*40
桅桿離地間隙 Mast ground clearance (mm)	90
直角堆垛通道寬度，托盤1200x1000(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x1000 (1200 along fork) (mm)	3900
直角堆垛通道寬度，托盤1200x800(1200沿貨叉方式) (mm) Right-angle stacking channel width, pallet 1200x800 (1200 along fork) (mm)	3900
轉彎半徑 Turning radius (mm)	1660
性能參數 Performance Parameters	
行駛速度，滿載/空載 Driving speed, fully loaded/unloaded (km/h)	12/13
桅桿起升速度，滿載/空載 Door lifting speed, full load/empty load (mm/s)	260/340
桅桿下降速度，滿載/空載 (m/s) Gate frame descent speed, full load/empty load (mm/s)	500/550
最大爬坡能力，滿載/空載 Maximum gradeability, fully loaded/unloaded (%)	15/15
越障能力 Obstacle passing ability (mm)	50
通過間隙 Passage clearance (mm)	200
導航位置精度 Navigation position accuracy (mm)	±10
角度精度 Angular accuracy (°)	±1
運行速度 Operating speed (m/s)	2
制動方式 Braking method	液壓式制動 Hydraulic braking
電池性能 Battery Performance	
驅動馬達功率(60分鐘) Driving motor power (60 minutes) (kW)	4.8x2
起升馬達功率(60分鐘) Lifting motor power (60 minutes) (kW)	12
鋰電池，電壓/額定容量 Lithium battery, voltage/rated capacity (V/Ah)	48/410
電池重量 Battery weight (kg)	155
電池壽命 Battery life	1500 recycle
待機時間 Standby time (h)	24
空載運轉時間 No-load operating time (h)	8~10
滿載運轉時間 Full-load operating time (h)	6~8
充電時間 Charging time (h)	2
充電方式 Charging method	手/自動充電 Manual/Automatic charging
電池更換方式 Battery replacement method	側拉式 Side pull type

AISLE LIFT HEIGHT PARAMETER SPECIFICATIONS

通道舉升參數規格



APPLICATION SCENARIOS OF FORKLIFT MOBILE ROBOT

叉取式機器人應用場景

	應用場景 Application scenarios	平面搬運 Horizontal Transport	平面搬運 低位堆垛 Horizontal Transport Low-Level Stacking	平面搬運 中低位堆垛 Horizontal Transport Mid-/Low-Level Stacking	窄巷道倉儲 中高位堆垛 Narrow Aisle Storage Mid-/High-Level Stacking	超窄巷道密集倉儲 高位堆垛 Very Narrow Aisle Dense Storage High-Level Stacking	長物料搬運 低/中/高位堆垛 Long Material Handling Low-/Mid-/High-Level Stacking	貨車裝卸作業 室內/室外 Truck Loading/Unloading Indoor/Outdoor
	室外運搬系列 TFR-2030KC	●	●	●				●
	堆垛運搬系列 TFR-15XP/15FP/ 1420SL/1016SQ/ 1020SQ	●	●					
	堆高運搬系列 TFR-1530V/1535V/ 2040V/2045V/ 1530B/1535B/ 2040B/2045B/ 1630SL/1635SL	●	●	●				○ 室內/Indoor
	前移式堆高系列 TFR-1530FA/1535FA/ 1440ZS/1445ZS/ 1450ZS/1655ZS/ 1660ZS/1665ZS	●	●	●	●			○ 室內/Indoor
	窄巷道全向叉取式 機器人 TFR-1525QV/1530QV/ 1535QV/1540QV/ 1545QV	●	●	●	●		●	○ 室內/Indoor
	窄巷道三向叉取式 機器人 TFR-1255CA/1660CA/ 1665CA/1670CA/ 1675CA	●	●	●	●	●	●	●

備註Remarks: ● 適配Adaptation ○ 部分適配Limited Adaptation