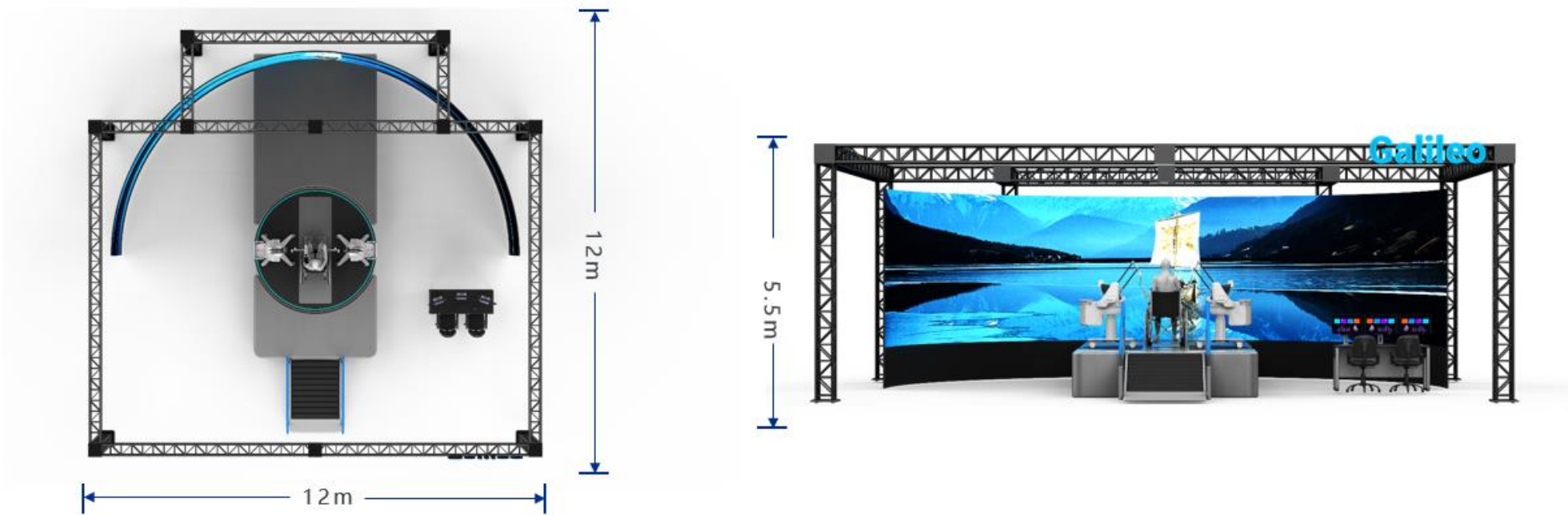# Technical Specifications

MetaMotus™ Galileo
Biomechanics Analysis and Rehabilitation Platform

General Parameters

Product Name	MetaMotus™ Galileo Biomechanics Analysis and Rehabilitation Platform
Product Footprint	Referral footprint: 15×12×5.5m (L×W×H) Exact dimensions may vary based on the the site given. Please refer to the DWG file provided.

| Site Requirements	Ceiling Height: 5.5m Floor Load Capacity: ≥10kPa for the 6-axis platform area, ≥5kPa for other areas Power Supply: 380V three-phase, 100kW (for Galileo main body only, excluding HVAC, lighting, and other basic power requirements. Total power may vary based on the specific project proposal.)

Component Specifications

1. Integrated 6-axis Stewart Platform

Platform Diameter	4m					
Max. Load	2000kg					
DoF	6 Axis. Movement: Lateral, Longtitudinal, Vertical, Rotation Roll, Pitch, Yaw.					
Parameters	Lateral	Longitudinal	Vertical	Roll	Pitch	Yaw
Displacement	±200mm	±200mm	±200mm	±10°	±10°	±10°
Speed	100mm/s	100mm/s	100mm/s	±15°/s	±15°/s	±15°/s
Acceleration	0.3g	0.3g	0.3g	/	/	/
Precision	1mm	1mm	1mm	1°	1°	1°
Operating Durations	≥8H (Normal use)					

2. Instrumented Treadmill

Overall Dimension	2600mm×1810mm×275mm （L×W×H)
Belt Dimension	2000×1500mm （L×W)
Speed	1-18km/h, step size 0.0025km/h
Max. Acceleration	5m/s^2
Max. Vertical Load	≤5000N

3. 6-Component Force Plate and Pressure Distribution

Dimension	600×400×80mm（L×W×H）
Number of Axis	6 axis（X/Y/Z Force, X/Y/Z Torque）
Measurement Range (Force)	Fx/Fy 2000N, Fz 5000N
Measure range (Torque)	Mx/My1500Nm, Mz 600Nm
Overall Accuracy	≤1% F.S
Coupling	interference between dimensions ≤2%F.S
Allowable Overload	≤150%F.S
Sensor Type	strain-based
Sampling Frequency	100-3000Hz adjustable
No. Channel	6-channel voltage acquisition
Sensitivity	≥0.95mV/V（full-scale output）
Output Interface	Ethernet standard network port
Force Plate Quantity	6
Pressure Distribution Sensor	Yes

4. Wireless Surface Electromyography (sEMG) Measurement System

No. Of Channel	32
Main Electrode Size	35×22×12mm（L×W×H）
Auxiliary Electrode Size	Φ16.5×10.5mm
Motor Weight	13g
Sampling Frequency	100-4000Hz
Sampling Resolution	16bits
Sensitivity	10μV
Noise	10uV
Communication Protocol	WIFI
Battery	150mAh
Battery Life	4-8h（Depending on the working situation）
Wireless Transmission Distance	15m
Workstation Material	Aluminum alloy
Workstation Dimensions	550×400×200mm（L×W×H）
Workstation Weight	7.5kg
Workstation Signal Transmission	Internet port/WIFI
Error	50μs
Charging Plugs	32

5.1 Display Screen
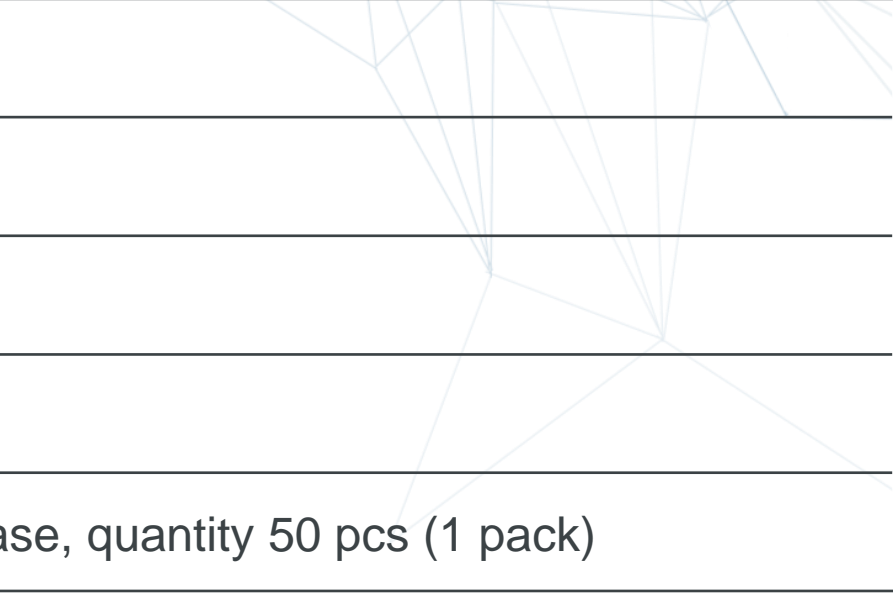
Material	LED flexible screen PCB：FR4
Dimensions	Screen length: 12.48m, 180° semi-surround screen Diameter: 7m Height: 4.48m
Resolution	5871(W)×2108(H)
WB Brightness	≥800cd/m²
Pixel	Pixel pitch: ≤1.86mm Pixel density: ≥288906 dots/m²
Refresh Rate	3840Hz
Frame Change Rate	120Hz

5.2 Multi-channel Surround Sound System

Sound Effect	Panoramic 7.1.2-channel audio system with Dolby Atmos, IMAX Enhanced, DTS:X, three three-dimensional sound effects, 9-channel power amplification.
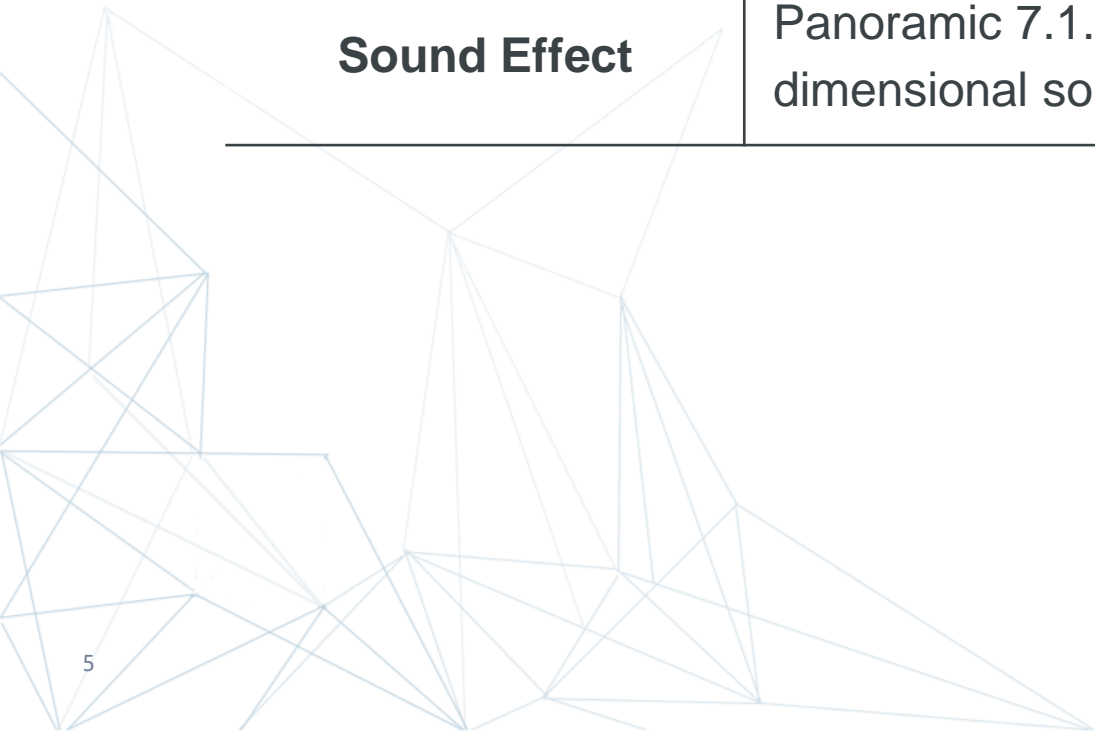
6. HD Motion Capture System - 3D IMU Wearable Sensors for Gait Analysis And Training System

No of Channel	15
Communication	Wireless
Precision	1°
Number Of Charging Bases	15
Sensor Size	58×48×20mm （L×W×H)
Battery Life	8h

6.2 HD Motion Capture System - Optical Motion Capture System

No. Of Camera	8
Resolution	2048×1088
Frame Rate	380Hz
Tracking Distance	20m
FOV	89°× 49°
Position Tracking Accuracy	0.1mm
Angle Tracking Accuracy	0.1°
Reflective Markers	16mm soft ball

- Supports VRPN, TrackD, Dtrack, OpenVR, Livestream, PSN, etcFreeD and other data protocols, support android, Unity3D, Unreal, etc., support with commonly used data analysis software.
- Provide SDK to support secondary development and custom development;
- Support 2D/3D visual display;
- Support data recording and playback function;

Camera Specifications	1-inch, 12mm F1.4-F8 optical lens
Field of View	51°×51°
3D Accuracy	±0.1mm
Max. View Distance	32m
Reflective Point	Diameter 15mm/12mm/10mm optional, including base, quantity 50 pcs (1 pack)

7.1 Upper Limb Intelligent Rehabilitation Robot – ArmMotus EMU

Linkage	There is ArmMotus EMU on the left and right, and the Galileo system is customized and linked
Single Unit Size	1310×770×1260mm（L×W×H），±50mm
Weight	135kg
Training Mode	Passive, assistive, active, resistive
Training Parameter Range	Speed range of passive training: 2.5-12.5cm/s, error ±0.5cm/s, 1-5 levels continuously adjustable; The assistance of assistive training is ≤30N, and the 1-5 levels are continuously adjustable; Friction of active training is≤ 10N, 1-5 levels continuously adjustable; The resistance of resistance training ≤ 30N, 1-5 levels continuously adjustable.
Height Adjustment Range	The 500mm continuously adjustable, and the error ± 10mm
Gravity Compensation	0-2kg, grid value 0.1kg
Working Range	≥(215~975)×(-740~740)×(-140~745)mm，±50mm
Mechanical Interactions	Combined with a variety of mechanical environments, it can provide mechanical effects such as simulated damping, elasticity, viscosity, and obstacles
Safety	Force protection, emergency stop, mechanical limit protection, power interruption and recovery, safety wall protection, etc
Quantity	2 unit

7.2 Lower Limb Intelligent Rehabilitation Robot - ExoMotus M4

Dimension	850mm×1200mm×1750mm（±50mm）
Frame Width	850mm
Lifting Range	450mm~1025mm，±5%
Knee ROM	0°~110°，±5%
Hip ROM	Hip flexion 0°~90°, hip extension 0°~40°, ±5%
Ankle ROM	Back extension 0°~30°, ±10%
Calf Length	455mm~550mm adjustable，±5%
Thigh Length	365mm~460mm adjustable，±5%
Pelvic Width	330mm~420mm adjustable，±5%
Training Mode	Passive, assisted training mode, guidance force ≤ 60Nm, can be adjusted gradually
Gait Training	1) Walking on ground: simulate the walking curve. Hip range of motion: hip extension 10°~15°, hip flexion 20°~30°; Knee flexion 50°~55°. 2) Walking on spot: hip and knee flexion and extension training. Hip range of motion: hip flexion 45°~60°; Knee flexion 60°~70°.
Walking Speed	Walking on ground: 2.45~5.25s/step, 6 levels adjustable; Walking on spot: 14.5s/step
Indication	Height 150~190cm，Weight≤100kg
Quantity	1 unit

Leg Length Adjustment	Electric
Battery Capacity	21Ah, there is a light strip at the backpack to display the power level in real time
Battery Life	≥8h
Voice Prompts	The equipment has a real-time voice reminder function and has a bilingual training system in Chinese and English, which can be switched between each other.
Integrated Seat	The device is equipped with an integrated reversible seat attached to a balance bracket that converts to a horizontal position for patient transfer and can be flipped into an upright position after training for easy storage
Soft Rubber Plantar	Equipped with soft rubber plantar and plantar movement that fits the full support phase, it can assist patients in toe extension exercises
Safety	position protection, speed protection, overload protection, emergency stop

8. Weight Hoist System for Fall Prevention System

Dimension	26.6 x 15.1 x 15.6 cm (L×W×H)
Track Length	2m
Safe working load	205 kg
Material, Chassis	Aluminium
Material, Cover	Non flammable ABS Plastic
Weight	7.3kg
Transfer in Rail	Transfer Motor
Transfer speed w/o load	14cm per sec
Transfer speed w/ load	12cm per sec
Hand control	Electrical, 6 buttons
Lifting Range	240cm
Lifting speed, w/o load	5cm per sec
Lifting speed, w/ load	3.9cm per sec
Sound level, w/ load	55 db(A)
Efficient strap control	Standard
Emergency lowering	Electrical and Manual
Emergency Stop	Manual

Night light	Standard
Battery	NiMH 24V 3.2Ah/768Wh
Hand control charging	Standard
In-rail charging	Yes
Protection class, lift unit	IP20
Protection class, hand control	IPX4

9. Centralised Control Workstation

CPU	i9 and above CPU
Graphics	NVIDIA GeForce RTX 4090
RAM	≥64GB
Hardisk	SSDs ≥ 1TB, HDDs ≥ 2TB
Number of Monitors	2
Optimal Resolution	3840×2160@120Hz（4K，120Hz）
Size	40 inch
Panel Type	OLED
Colour Gamut	134%sRGB；104%DCI-P3；113%NTSC
Brightness	450cd/m^2
Speed Of Response	0.1ms native grayscale

Working Conditions

Operating

Temperature	+5℃ ~ +40℃
Humidity	≤80%
Pressure	700hPa ~ 1060hPa

Transport and Storage

Temperature	-40℃ ~ +55℃
Humidity	≤93%
Pressure	700hPa ~ 1060hPa

Warranty and Technical Support

Warranty and Technical Support	
Warranty	2 Years for System modules (non-consumable) 2 years
Construction	Scope: Provide installation of all the components of Galileo, infrastructure and renovation services Other infrastructure and renovation including: 1. Conceal plaster ceiling at the platform area of Galileo 2. Drywall and Glass structure to close up the Galileo area 3. Wheelchair ramp with a total length of 20m, gradient 4.5. 4. Staircase to go up to 1.6m platform 5. Table for workstation 6. Electrical box and room for high-voltage and low-voltage electricity 7. Electric flap barrier and ramp from platform to treadmill 8. Preparation room 9. Platform for viewing with a height of 1.6m
Technical support	Provide a variety of SDKs for secondary development

Value-added Services

- Academic research support from the Global Rehabilitation & Assistive Technology Network (GReAT Network).

- MotusAcademy Global Rehabilitation Technology Expert Network

- EXOPS scientific research and technical support for 1 year