



ACTIVE SAFETY

PRODUCT PORTFOLIO

A futuristic city street scene with cars and glowing blue sensor waves, overlaid with a dark blue circle containing text. The scene is viewed from an elevated perspective, showing a multi-lane road with cars moving away from the viewer. The cars are surrounded by concentric blue circles representing sensor waves. The background shows modern buildings and trees under a bright sky. A large, dark blue circle is centered over the road, containing the text 'UPGRADE YOUR ADAS/AV TESTING' in white, bold, sans-serif font.

UPGRADE
YOUR **ADAS/AV**
TESTING

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ULTRA-FLAT OVERRUNABLE TARGET CARRIERS

The first UFO target carrier was introduced to the market in 2010 when a German OEM and Tier 1 supplier requested a low-maintenance, overrunnable target carrier for active safety testing.

The electrically-driven UFO target carriers can be controlled remotely by an operator or synchronized with vehicles as well as other test robots to execute various autonomous test maneuvers. The stability and low profile of the UFOs allows vehicle manufacturers to run fully autonomous tests on the latest collision mitigation features with maximum accuracy and repeatability, and without risking damage to the robots or test vehicles.

Efficiency and ease-of-use were core philosophies for subsequent hardware and software development. All Humanetics active safety robots are designed with hot swappable batteries allowing uninterrupted testing on the proving ground. A variety of targets can be utilized with the various UFO models, delivering tailored test conditions for each specific use case.



UFOmicro Target Carrier¹

Designed to cover realistic PTW test scenarios with a speed of up to 90 km/h while having great stability.



UFOnano Target Carrier²

Designed to cover VRU test scenarios with the smallest footprint and turn-on-the-spot function.



UFOpro Target Carrier³

Can be used with GVT or VRU target with a speed of up to 100 km/h to mimic real life traffic scenarios.

¹The UFOmicro Target Carrier hereinafter is referred to as UFOmicro. ²The UFOnano Target Carrier hereinafter is referred to as UFOmicro. ³The UFOpro Target Carrier hereinafter is referred to as UFOmicro.

DRIVING ROBOTS

Driving robots designed to test Advanced Driver Assistance Systems (ADAS) are sophisticated tools used to evaluate and validate the functionality and safety of these systems. These robots can execute various driving scenarios with high precision and repeatability, which is crucial for thorough testing and development of ADAS technologies.

Our DrivingRobot compact (DRc) is the traditional choice for passenger vehicle tests, offering unparalleled control and high repeatability to ensure the robustness of safety features. The DrivingRobot modular (DRm) extends this precision to a wider range of vehicles, including passenger cars, light vehicles, heavy goods vehicles, buses, and caravans. This flexibility makes the DRm an indispensable tool for diverse testing needs. Both models execute

various driving scenarios with high fidelity, enhancing the accuracy of ADAS testing and ensuring these systems perform reliably in real-world conditions.

Their user-friendly design simplifies integration and setup, reducing downtime between tests and increasing overall efficiency.



DrivingRobot Compact

DRc can be installed in all available passenger cars, offering precise, repeatable performance on the test track – in a compact, ergonomic design.



DrivingRobot Modular

The DRm is available in a DRm60™ version for passenger cars as well as a DRm150™ version for larger vehicles such as trucks.

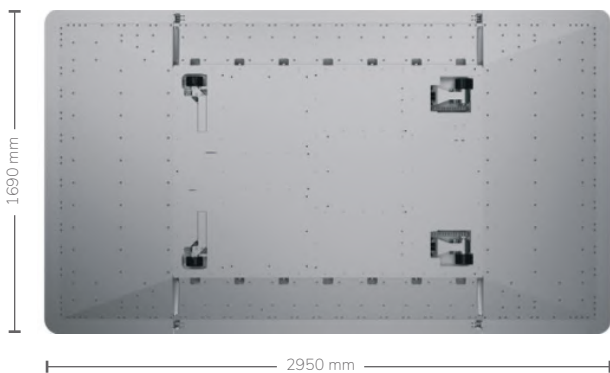
UFOpro TARGET CARRIER



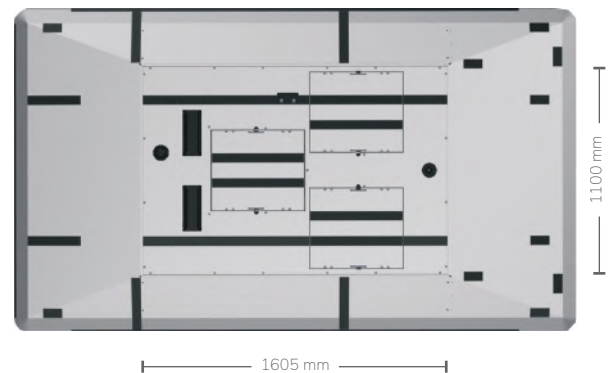
KEY FEATURES

- **Low overrun height of 98 mm** – to be overrun/over-braked by a vehicle without damaging the vehicle or the target carrier
- Quick and simple access to all internal components with a **single central cover plate** which can be easily removed with just a few screws
- **Hot swappable batteries** to continuously run high speed tests (i.e. Euro NCAP lane support system tests) with zero downtime for recharge; this feature also enables replacement batteries to be charged while other battery sets are active, allowing us to extend battery life and ease of transportation by UN38.3 certification
- **Removable ramps** simplify transportation and storage by reducing the overall size and weight of the target carrier, which can be easily transported with any standard minivan-sized vehicle
- **100% splash water protection system** allows for testing in adverse weather conditions (e.g. muddy, wet, salty) and minimizes maintenance effort and cost
- Designed to enable **fast wheel changes**
- **Screw-less, welded ramp system** for reduced Radar Cross Section (RCS)
- **Stable 4-wheel chassis** for **minimized rolling** of the target in dynamic lateral motions (e.g. wind suction/slipstream during overtaking)
- **Designated official tool by Euro NCAP laboratories** (e.g. ADAC, AstaZero, CSI, Thatcham)
- Global Vehicle Target (GVT) and UFO Target Carrier in accordance with the **Euro NCAP/NHTSA/IIHS** confirmation workshops
- Several standard safety functions ensure safety of operators; optional add-ons such as **proving ground warning lights and monitoring systems** can be integrated into the UFO product family

BOTTOM VIEW



TOP VIEW



Scan to see the UFOpro target carrier in action.



UFOpro TARGET CARRIER

UFOPRO TARGET CARRIER

The UFOpro is the default version of the UFO; with its low overrun height of 98 mm and hot swappable batteries, it is designed for Euro NCAP ADAS testing. The UFOpro is available with an optional ABS system, as well as a Heavy Duty version with reinforced ramps and batteries, allowing it to be overrun by commercial vehicles up to 40 tonnes. An additional set of batteries can be purchased separately.

UFOPRO BLACKSERIES TARGET CARRIER

With a maximum speed of 100 km/h including a GVT target, the UFOpro BlackSeries¹ is a step up from the UFOpro. It has an increased gear ratio as well as a specific control algorithm for high speeds. Like all UFOs, the UFOpro BlackSeries is available with an optional ABS system. Both the UFOpro BlackSeries and the UFOpro share a similar mechanical design, so that an UFOpro can easily be upgraded to an UFOpro BlackSeries.

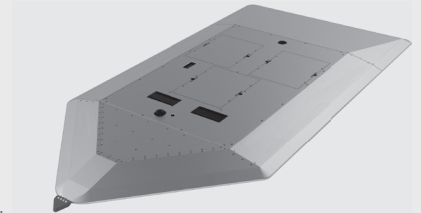
¹ The designated hereinafter referred to as UFOpro BlackSeries, is describing UFOpro BlackSeries target carrier

Arrow Ramps

Can be swapped with standard front ramp for side impact testing of cars.



See the Arrow Ramps in action.

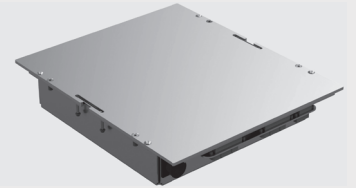


Additional Lithium Power Pack

Extra power pack allows ongoing testing without downtime for charging batteries.



See the fast and easy battery swap.



Anti-Lock Braking System (ABS)

The UFO platform's ABS extends tire life, saving time and money in addition to reducing waste

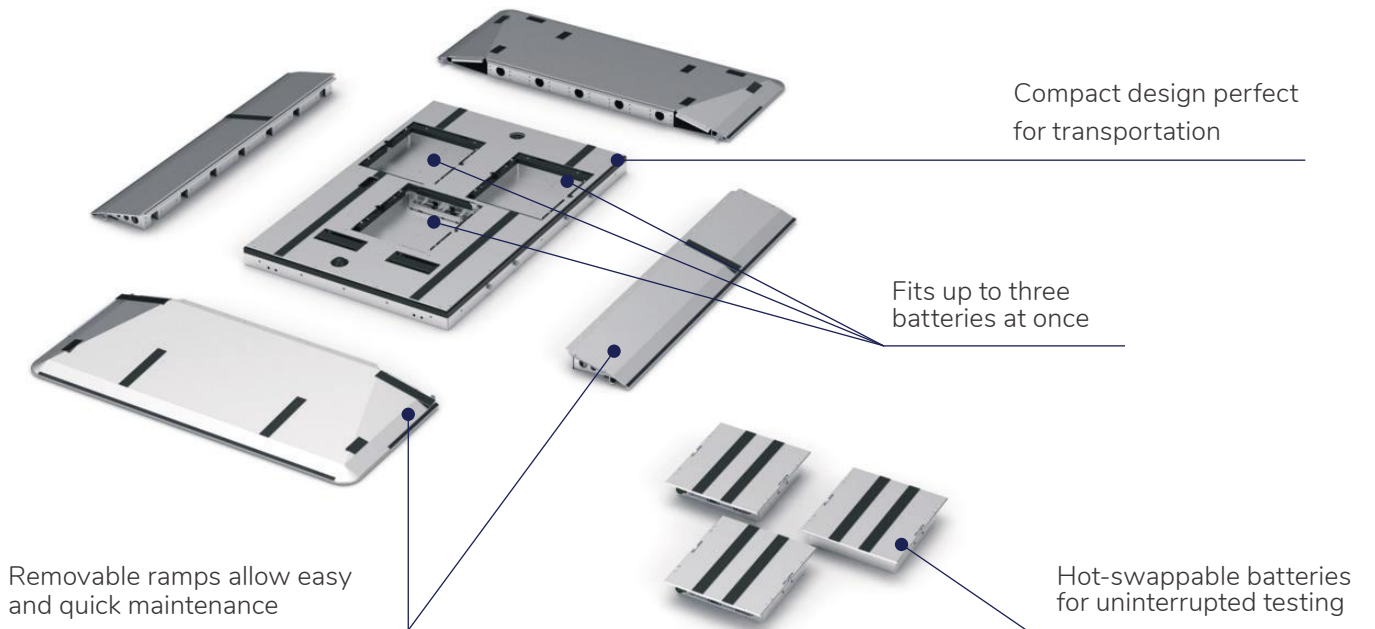


See the ABS in action.



UFOpro TARGET CARRIER

DESIGN OVERVIEW



Specifications

DIMENSIONS	Transportation Size	1605 x 1100 mm
	Test Ready Size	2950 x 1690 mm
	Chassis Height	98 mm
	Test Ready Weight	244 kg (Standard) / 264 kg (BlackSeries)
	Payload	125 kg
	Overrun Capacity (per wheel)	1500 kg (Standard) / 3600 kg (Heavy-Duty)
	Clearance	15 mm
DYNAMICS	Maximum Speed Forward	80 km/h (Standard) / 100 km/h (BlackSeries)
	Maximum Speed Backward	20 km/h
	Maximum Longitudinal Acceleration	1.8 m/s ² (Standard) / 1.4 m/s ² (BlackSeries)
	Maximum Longitudinal Deceleration	6 m/s ²
	Maximum Lateral Acceleration	1.5 m/s ²
	Minimum Turning radius	6 m

UFOpro TARGET CARRIER



SPECIFICATIONS

ENERGY	Batteries Included	2
	Batteries Included UFOpro BlackSeries	3
	Chargers Included	2 (Standard) / 3 (BlackSeries)
	Battery Technology	Lithium Ion (LiFePO4)
	Battery Capacity	2048 Wh (Standard) / 3072 Wh (BlackSeries)
	Voltage	51.2
	Battery Slots	3
	Battery Swapping Time	2 minutes (hot swappable)
	Battery Set Charging Time	90 minutes
	Battery Life Time (common NCAP Testing)	Full testing day (up to 60-80 NCAP scenarios)

ACCURACY	Speed Control Accuracy	0.2 km/h
	Speed Measurement Accuracy	0.01 km/h
	Side Control Accuracy	50 mm
	Yaw Rate	+/- 1 deg/s
	Accuracy	in line with ISO 19206-7
	GNSS Unit Oxford	OEM3000v3
	GNSS Unit SBG	-

AREA OF APPLICATION	Radar Cross-section	in line with ISO 19206-3
	Drive-over Capacity	Passenger vehicles Commercial vehicles Heavy Duty vehicles
	Targets (main use)	Passenger Vehicle 3D Target REF. F & G

CONDITIONS	Operation Temperature Range	-10° C to 45°C
	IP Rating	IP65
	Relative Humidity Range	0%-95%, not condensing
	Recommended Storage Temperature	5° C to 25° C

The UFOpro supports the following scenarios

- Automatic Emergency Brake - Car-to-Car (AEB-C2C)
- Forward Collision Warning - Car-to-Car (FCW-C2C)
- Emergency Lane Keeping (ELK) (oncoming-overtaking)
- Automatics Emergency Steering (AES)
- Emergency Steering Support (ESS)
- Rear Automatic Braking
- Blind Spot Detection
- Blind Spot Intervention
- Intersection Safety Assist
- Opposing Traffic Safety Assist
- Traffic Jam Assist

.... and many more scenarios thanks to the flexibility of our Trajectory Generator Software.

UFOmicro TARGET CARRIER

The UFOmicro target carrier is developed specifically for PTW (Powered Two Wheeler) and VRU (Vulnerable Road User) tests.

To cover realistic road traffic conditions and behavior of road users, the UFOmicro can reach a speed of up to 90 km/h carrying a wide range of targets and can be used for heavy duty tests. With its mountable extension, it can carry bicycle and different pedestrian VRU targets with no effort.

The UFOmicro can be seamlessly integrated into any already existing Humanetics UFObase software environment. Configuring and testing complex real world scenarios with up to ten robots can be accomplished easily due to seamless synchronization.

To maximize reliability and repeatability, the **UFOmicro** was designed to maintain extremely precise accuracies in both the lateral and longitudinal directions during testing

Radar measurements have been conducted to confirm the extremely low radar signature of the stealth design.

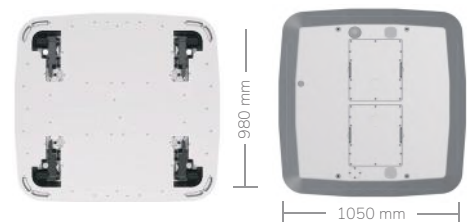
The target carrier is equipped with multiple motion data input and output interfaces and a highly accurate dual antenna DGNSS system.

As with the all other Humanetics UFO models, the UFOmicro is overrunable and has the advantage of high-capacity, swappable batteries.

The VRU Extension allows VRU targets to be mounted for testing at 25mm above the ground, in accordance with ENCAP regulations. The PTW extension is used to increase stability for high speed tests.



UFOmicro with PTW target



Dimension of UFOmicro



UFOmicro with Pedestrian Adult target



Scan to see the UFOmicro target carrier in action.

UFOmicro TARGET CARRIER



SPECIFICATIONS

DIMENSIONS	Transportation Size	1050 x 980 mm
	Test Ready Size	1050 x 980 mm
	Chassis Height	70 mm
	Test Ready Weight	85 kg
	Overrun Capacity (per wheel)	3600 kg
	Clearance	15 mm

DYNAMICS	Maximum Speed Forward	90 km/h
	Maximum Longitudinal Acceleration	4 m/s ²
	Maximum Longitudinal Deceleration	6 m/s ²
	Maximum Lateral Acceleration	3 m/s ²
	Minimum Turning Radius	8 m

ENERGY	Batteries Included	2
	Battery Technology	Lithium Ion (LiFePO4)
	Battery Slots	2
	Battery Swapping Time	2 minutes (hot swappable)
	Battery Set Charging Time	25 minutes
	Battery Life Time (common NCAP Testing)	Half testing day

ACCURACY	Accuracy	in line with ISO 19206-7
	GNSS Unit Oxford	OEM1000v2
	GNSS Unit SBG	Ellipse-D

AREA OF APPLICATION	Radar Cross-section	in line with ISO 19206-9 / 19206-5 / ISO 19206-4 / ISO 19206-2
	Drive-over Capacity	Passenger vehicles Commercial vehicles Heavy Duty vehicles
	Targets (main use)	European Motorcycle (EMT) E-Scooter CNCAP Target (PTW) Pedestrian Adult Target Articulation (EPTa) Pedestrian Child Target Articulation (EPTc) Bicyclist Adult Target (EBT) Bicyclist Child Target Playing Child Target (PCT) Standing Scooter Target (SST)

CONDITIONS	Operation Temperature Range	-10° C to 45° C
	IP Rating	IP65
	Recommended Storage Temperature	5° C to 25° C

KEY FEATURES

- Hot swappable batteries
- Speeds up to 90 km/h
- Weather resistance due to waterproof design
- Special stealth shell design for optimized radar signature
- Highly accurate dual antenna RTK DGNSS system
- Compatible for a large variety of targets with multiple extension options
- Milled from a solid aluminum block for efficient cooling and high-temperature operation

UFOmicro TARGET CARRIER

UFOmicro – TARGET OPTIONS



European Motorcycle
Target & Stands¹

(UFO-1-5140)



E-Scooter CNCAP
Target¹

(UFO-1-5150)



European Motorcycle
Target & Stands¹

(UFO-1-5140)



E-Scooter CNCAP
Target¹

(UFO-1-5150)



Playing Child
Target (PCT)²

(UFO-1-5180)



Standing Scooter
Target (SST)²

(UFO-1-5190)



Bicyclist Child
Target¹

(UFO-1-5035)



Pedestrian Child Target
Articulation (EPTc)¹

(UFO-1-5070)



Pedestrian Adult Target
Articulation (EPTa)¹

(UFO-1-5050)



Bicyclist Adult
Target (EBT)¹

(UFO-1-5030)





CHUMAR

UFO nano TARGET CARRIER

The UFO nano target carrier was developed specifically for pedestrian and bicycle testing. Its unique 2+2-wheeler design enables highly agile movements of pedestrian and bicycle targets, enabling it to simulate complex and realistic scenarios for VRU active safety system tests.

The split design enables the placement of the target with a height of only 25mm. Despite the reduced size of the **UFO nano**, it retains the same robustness as the other UFO target carrier models for added stability, especially in windy conditions.

This versatile new device features the same familiar design as the Humanetics UFOpro target carrier, however its compact size and steering setup allows it to drive curves of every radius and even turn on the spot.

It can easily accommodate a pedestrian test target with a shoulder width footprint barely larger than that of a real person, allowing multiple dummies to 'swarm' together with closest shoulder-to-shoulder distances while mimicking individualized behavior.

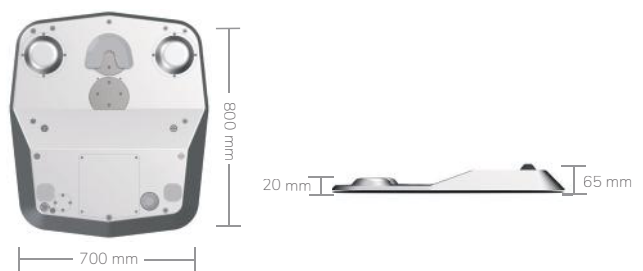
Its modern stealth design featuring a sleek, robust metal surface making the **UFO nano** invisible to the test vehicle's radar – a necessity for maintaining realistic test conditions.



UFO nano with Pedestrian Adult target



UFO nano with Playing Child target



Dimension of UFO nano



See the UFO nano target carrier in action.

UFO nano TARGET CARRIER



SPECIFICATIONS

DIMENSIONS	Transportation Size	700 x 800 mm
	Test Ready Size	700 x 800 mm
	Chassis Height	15 - 65 mm
	Test Ready Weight	25 kg
	Overrun Capacity (per wheel)	3600 kg
	Clearance	10 mm
DYNAMICS	Maximum Speed Forward	20 km/h
	Maximum Longitudinal Acceleration	2 m/s ²
	Maximum Longitudinal Deceleration	3 m/s ²
	Maximum Lateral Acceleration	1.5 m/s ²
	Minimum Turning radius	0 m (turn on spot)
ENERGY	Batteries Included	4
	Battery Technology	Lithium Ion
	Battery Slots	2
	Battery Swapping Time	2 minutes (hot swappable)
	Battery Set Charging Time	90 minutes
	Battery Life Time (common NCAP Testing)	Half testing day (up to 30 NCAP scenarios)
ACCURACY	Accuracy	in line with ISO 19206-7
	GNSS Unit Oxford	OEM1000v2
	GNSS Unit SBG	Ellipse-D
AREA OF APPLICATION	Radar Cross-section	in line with ISO 19206-9 / 19206-5 / ISO 19206-4 / ISO 19206-2
	Drive-over Capacity	Passenger vehicles Commercial vehicles Heavy Duty vehicles
	Targets (main use)	Pedestrian Adult Target Articulation (EPTa) Pedestrian Child Target Articulation (EPTc) Bicyclist Adult Target (EBT) Bicyclist Child Target Playing Child Target (PCT) Standing Scooter Target (SST)
CONDITIONS	Operation Temperature Range	-5° C to 45° C
	IP Rating	IP65
	Recommended Storage Temperature	5° C to 25° C

KEY FEATURES

- Hot swappable batteries
- Speeds up to 20 km/h
- RTK DGNSS system for high accuracy
- On-the-spot turning for realistic pedestrian behavior
- Simple and reliable design
- Robust metal construction with ultra-low radar cross-section
- Special stealth outer shell design for optimized radar signature
- Shoulder-to-shoulder testing to 500mm
- Weather resistance due to waterproof design

UFO nano TARGET CARRIER

UFOmicro – TARGET OPTIONS



Bicyclist Adult Target (EBT)¹
(UFO-1-5030)



Bicyclist Child Target¹
(UFO-1-5035)



Pedestrian Adult Target Articulation (EPTa)¹
(UFO-1-5050)



Pedestrian Child Target Articulation (EPTc)¹
(UFO-1-5070)



Playing Child Target (PCT)²
(UFO-1-5180)



Standing Scooter Target (SST)²
(UFO-1-5190)



DRIVINGROBOT COMPACT (DRc)

The DrivingRobot Compact (DRc) is able to control the steering, braking and acceleration of a test vehicle. The test vehicle can be automated and navigated around the test track with precise control of position, velocity, acceleration and more.

Fully synchronized tests are made possible when used with the different UFO target carriers and its GNSS-aided navigation system.



The **DRc** is also characterized by its compact design that frees up space and enables quick and hassle-free installation. The steering and throttle/brake robots are interconnected to provide ample room for electronics and data acquisition systems as well as easy access for test engineers. In addition, the **DRc** Box, contains all electronic components, which can be easily installed with ISOFIX in the rear seats.

Moreover, the **DRc** can be installed without interfering with the original steering wheel, airbag or the seating position of the operator. The **DRc**'s steering ring control is mounted behind the existing steering wheel of the car, allowing the operator to seize control at any time. The seating knee area is also kept clear so the safety of the occupant is not compromised. The robot is free of any support-arm structures to the windshield or passenger side window. The friction compensation limits the influence of the robot to the vehicle's steering system and can be used to simulate the grip of the driver on the steering wheel.

The **DRc** can be perfectly integrated into the UFO product family by sharing the same UFObase Software as the UFO target carrier line. No learning curve is needed for additional software. Multiple UFOs and/or **DRc** for swarm testing can be controlled, managed and analyzed from just one computer.



See the DrivingRobot in action.

DRIVINGROBOT COMPACT (DR_c)



ROBOT CONTROL

Power Supply	48 V battery system, 760 Wh
Swarm Testing	Yes
Signal Channels and Interfaces	CAN, RS232, Ethernet
Sampling Frequency Range	100 Hz
Compatibility	Humanetics UFO target carrier products (third party systems on request/ interfaces)
Power-Off Protection	Dedicated battery system
Screen	Tablet PC for in-car use

STEERING ACTUATOR

Drive Mode	Brushless electric motor
Max Torque	40 Nm at 1300/s
Rated Torque	15 Nm at 1800/s
Max Velocity	2100/s at 10 Nm
Rotational Inertia	0,0656 kgm ² incl. Ring guide
Steering Wheel Diameter	329-389 mm
System Angle Control Accuracy	+/- 0.5°
Control Mode	Path following, wheel angle control, steering wheel angle control, friction compensation
Space Behind Steering Wheel	For fixation of clamps and ring (40 mm)

THROTTLE PEDAL ACTUATOR

Max Continuous Pedal Force	56 N
Max Accelerator Pedal Force	156 N
Max Accelerator Pedal Speed	1 m/s
Max Stroke	104 mm
Control Mode	Speed Control, Position Control, Force Control

BRAKE PEDAL ACTUATOR

Security	Safe Design – driver can overrule the brake and take over control at any time
Drive Mode	Brushless electric motor
Max Braking Force	1000 N (depending on mounting angle)
Max Velocity	1 m/s
Max Stroke	140 mm (depending on mounting angle)
Control Mode	Speed Control, Position Control, Force Control

KEY FEATURES

- Compact design with slim central stand to eliminate the need for struts to passenger windshield; trunk free for data acquisition
- Adjustable friction compensation mode (4 levels) allows testing of LKA scenarios and scenarios where active intervention of steering is involved
- No dismounting of the airbag or steering wheel needed – vehicle retains its full safety features, and no special training for the installation team required
- Comfortable seating position for the driver with clear view to the proving ground
- Electronic components housed in robust and easy-to-handle DrivingRobot Box
- Self-contained 48V battery – no additional electricity supply needed from the vehicle
- Seamless integration with the UFO target carrier environment – utilizes same intuitive and user-friendly UFObase Software
- Smart hardware design allows simple, quick installation
- Self-calibration software ensures fast, effortless start-up

DRIVINGROBOT MODULAR (DRm)

Advanced Driver-Assistance Systems (ADAS) in trucks are increasingly crucial as the industry responds to data-driven safety initiatives and stringent regulations. New regulations aim to significantly reduce road casualties, with heavy vehicles being especially targeted due to their over-representation in fatal collisions.

As such, testing for ADAS compliance is not just a regulatory formality but a vital step in enhancing road safety and moving towards the Vision Zero goal.

While the DrivingRobot Compact (DRc™) has been designed specifically for ADAS and AV testing of passenger vehicles, the DrivingRobot modular (DRm) is completing our portfolio with the option to operate in a great variety of vehicles. The range includes:



The DRm contains the SteeringRobot modular (SRm), the Steering Wheel Adapter and the PedalRobot modular (PRm™). All components are available in individual packages as well as complete DRm60™ or DRm150™ packages. Additionally, the DRm offers both pedal-only and steering-only modes for enhanced flexibility and control.

The DRm provides a solution with its versatile design, allowing for quick preparation of multiple VUTs, flexible steering wheel accommodation, and silent operation. This leads to cost savings, enhanced testing efficiency.

The DRm box and accompanying battery are securely attached with a seatbelt mount or with ISOFIX mount, ensuring a rapid and secure setup for testing.

The SRm will be available as a SRm60™ version for passenger vehicles and is available as a SRm150™ version for heavy goods vehicles with an increased torque.



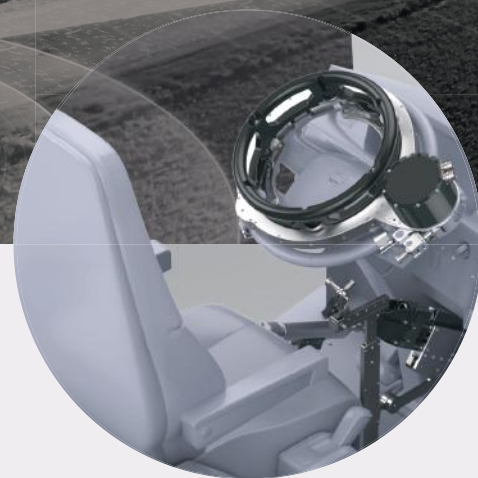
The Steering Wheel Adapter supports steering wheels of 330mm to 550mm in diameter and allows for quick placement. The split of adapter and motor enables the preparation of multiple VUTs.



The PRm™ can be efficiently mounted on the seat rail, optimizing foot space.



DRIVINGROBOT MODULAR (DR_m)



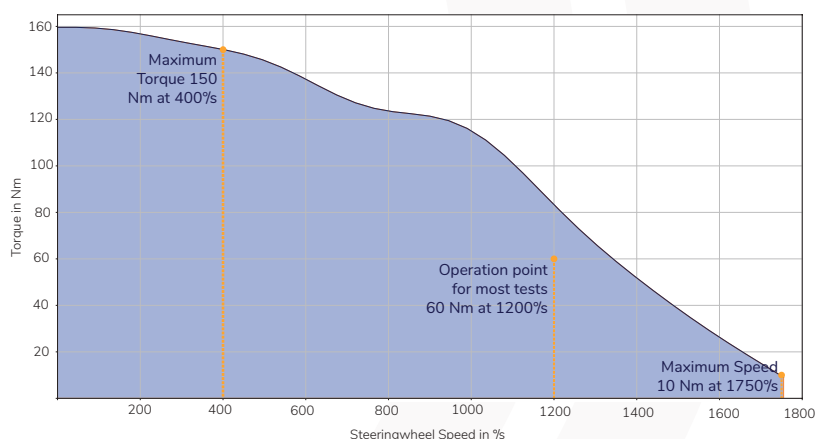
STEERINGROBOT MODULAR (SR_m)

	SR _m 60™	SR _m 150™
Motor	Brushless	Brushless
Max Torque	60 Nm at 1500%/s	150 Nm at 400%/s
Rated Torque	10 Nm at 2500%/s	60 Nm at 1300%/s
Steering Wheel Diameter	330-550 mm	
System Angle Control Accuracy	+/- 0.5°	
Space in front of Steering Wheel	60 mm required	
Control Mode	Path following, wheel angle control, steering wheel angle control, friction compensation	

PEDALROBOT MODULAR (PR_m™)

Max Continuous Pedal Force	56 N
Max Accelerator Pedal Force	156 N
Max Accelerator Pedal Speed	1 m/s
Max Stroke	104 mm
Control Mode	Speed Control, Position Control, Force Control
Security	Safe Design – driver can overrule the brake and take over control at any time
Drive Mode	Brushless electric motor
Max Braking Force	1000 N (depending on mounting angle)
Max Velocity	1 m/s
Max Stroke	140 mm (depending on mounting angle)
Control Mode	Speed Control, Position Control, Force Control

TORQUE - SPEED DIAGRAM DR_m150™



KEY FEATURES

- Designed for Passenger and Commercial Vehicles: Optimized for a wide range of vehicle types to maximize versatility
- Split Design Mounting: Facilitates fast switching of Vehicle Under Tests (VUTs), enhancing testing efficiency
- Simplified installation process with minimal tool use, streamlining the setup process
- No Dismounting of Airbag or Steering Wheel Needed: Maintains all vehicle safety features intact; no specialized training needed for installation
- Comfortable Seating Position for the Driver: Ensures a clear view of the proving ground, enhancing driver comfort and safety during tests

UFObase SOFTWARE

UFObase is the software for the UFO Target Carriers and DrivingRobots, and comes with an intuitive graphical user interface. To minimize preparation time on the proving ground, our UFObase Software can be used to preconfigure and simulate scenarios.

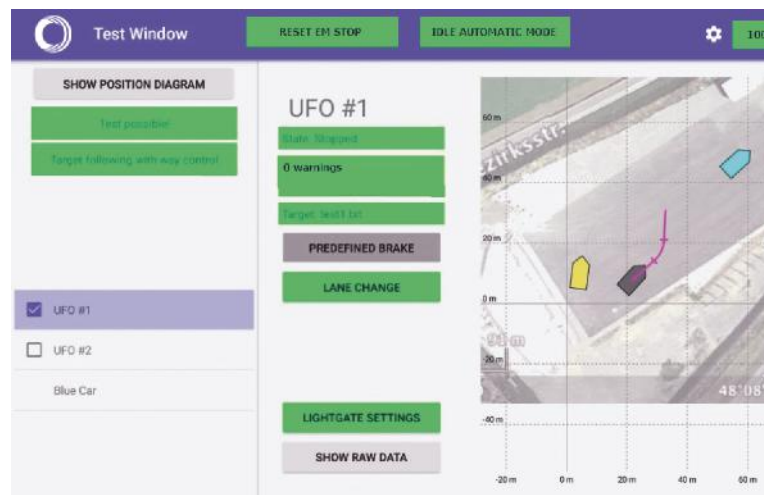
Test scenarios can be created and run with multiple target carriers and/or DrivingRobots simultaneously for swarm testing. The operator can live-monitor all connected robots, vehicles and their corresponding data such as position and speed.

robot to a standstill. The control panel guarantees that a single operator is in command while a test is active, and can intervene if necessary. Additional equipment from Humanetics, such as the Traffic Light Box, can easily be added to the test setup in the UFObase software.



Distinguishable and selectable control modes ensure that the UFOs and DrivingRobots operate in exact accordance with the customer's specifications. One can choose between way- or speed-controlled tests, and manual or automated triggers to predefine specific test scenarios like braking, lane change, and so on.

The optional Synchronization Software package offers additional synchronization modes between UFO target carriers and/or DrivingRobots to the VUT (Vehicle Under Test). To provide a maximum level of security, all UFO target carriers and DrivingRobots have their own on-board controller which in critical situations can bring the



UFObase script language (UBS) is designed to give the user extensive flexibility in programming complex and multi-functional test scenarios. Evasive maneuvers are used to support the test engineers in increasing safety and efficiency by avoiding / mitigating collisions. With the ISO interface (ISO 22133 WD) the robot infrastructure and the robots themselves can be connected with third party test equipment, which enables flexible monitoring and control.

See the Optimized ADAS
workflow in action.



ADAS WORKFLOW SOFTWARE



OPTIMIZED ADAS WORKFLOW

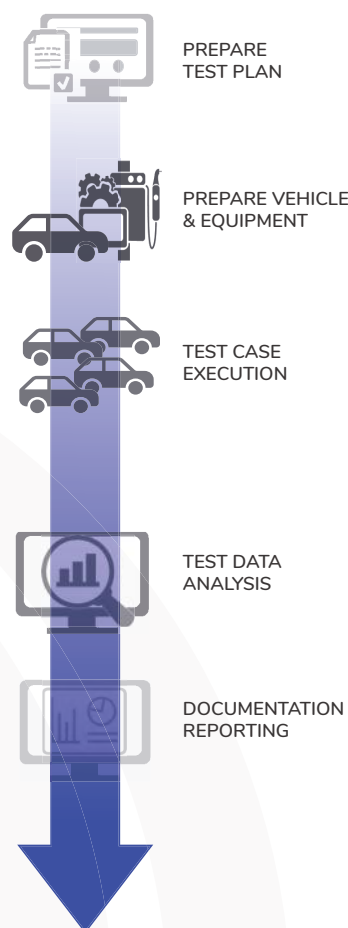
In cooperation with AVL, Humanetics has designed an optimized workflow for proving ground testing which supports customers in their daily challenges. This comprehensive prepackaged Suite is intended to simplify and streamline future ADAS test procedures while saving time and cost. In addition to the software side, the ADAS Suite also includes the UFO Target Carrier and DrivingRobot.

Test Preparation - Execution

- A wide range of preconfigured test scenarios utilizing UFO target carrier and/or DrivingRobot are part of the library (Euro NCAP and others)
- Scenarios adapt based on data input from test engineer (ex: overlap based on vehicle's width)
- Robots are self-calibrated

Test Evaluation - Reporting

- Instant validation of the test case
- Test plan is automatically identified in order to eliminate potential human errors
- Automated report generation with standardized set of NCAP report templates, which can also be adapted according to customer requirements



KEY FEATURES

- Intuitive graphical user interface with test simulation and on-line monitoring of UFO target carrier and/or DrivingRobot position
- Monitors multiple UFOs and/or DrivingRobots from one operator source simultaneously for swarm testing
- Visual meeting/crash point configuration
- Live raw-data monitoring
- On-board controller
- Distinctive control algorithms (velocity, way, synchronized to VUT)
- PMC file importer (ABD driving robots)
- Data Outputs: Log-file after test, CAN live data output, NCOM stream live output
- Virtual fence provides additional safety precaution
- UFObase Script language (UBS)
- ISO interface (ISO22133 WD) monitoring and control



TRACKBASE CONNECT™

In the dynamic landscape of ADAS/AV testing, the demand for efficient proving ground testing has emerged as a critical necessity. Our new software solutions is offering a holistic view.

TrackBase Connect™ is an advanced proving ground software solution designed to enhance efficiency and success of your testing processes. Central to this solution is the efficient utilization of space and resources. Different test teams can share testing areas in parallel. TrackBase Connect™'s capabilities extend to **enhancing the overall efficiency of proving ground operations**. By facilitating resource sharing and minimizing time wastage, it substantially boosts productivity across the board. Visual representation plays a pivotal role, offering a comprehensive overview of ongoing activities and resource allocation. This **transparency enables optimal test planning and execution**.

Integration is a cornerstone of TrackBase Connect™. It seamlessly incorporates diverse elements such as test equipment (which conform to ISO22133 standards), vehicles, and various infrastructure components. The integration extends to infrastructure equipment like traffic lights, road lights, weather stations and more. This consolidation into a single solution streamlines operations and enhances accuracy.

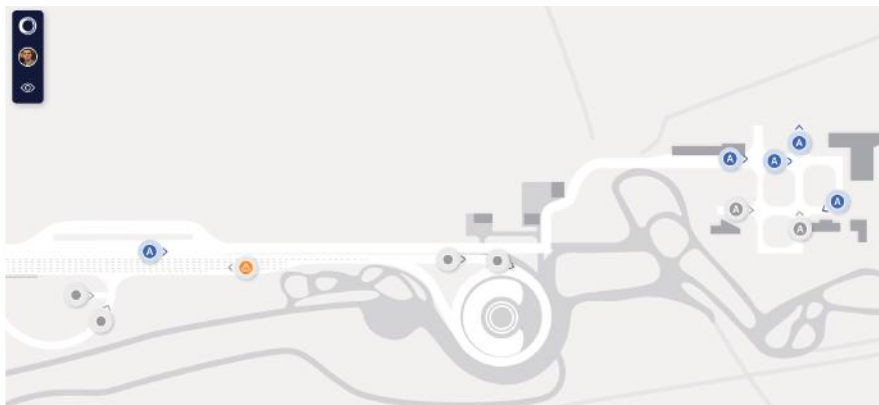
We are dedicated to understanding the unique challenges of ADAS/AV testing, which is why we provide thorough support and during the implementation of TrackBase Connect™. To ensure a smooth process and getting the most out of the software. Each implementation is tailored to your needs, and designed to maximize the value you derive from the software.

KEY FEATURES

- Improved Area Usage
Parallel test teams with shared area utilization
- Easy Coordination between teams
Shared status of testing team and driveables, scenario area usage with team members, other teams as well as proving ground
- Infrastructure integration
Weather station, Traffic Lights, Road Lights, Rain Generator, Access Gates / Traffic Lights, Mesh Wifi, Road Conditions
- Integration option with third-party ADAS equipment
ISO22133 compatible device

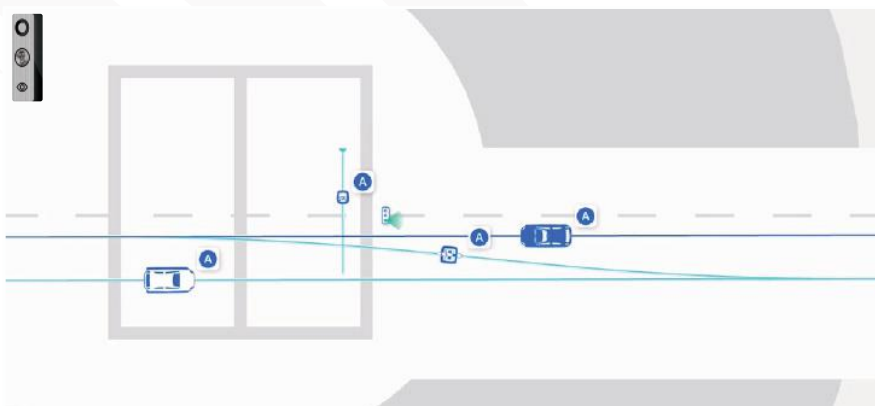
VISUALIZATION OF ALL ACTIVITIES

Gain real-time visibility into proving ground activities, including space requirements, team activities, and drivable status, through advanced visualization techniques. Effectively coordinate and manage test operations by monitoring vehicle readiness and automated movements along designated trajectories.



INTEGRATION OF PROVING GROUND EQUIPMENT

Make the most of third-party integration, like traffic lights. This allows through testing of advanced ADAS/AV scenarios, efficiently designating restricted zones during active tests. Elevate control and precision on the proving ground by integrating third-party elements into your scenarios, managing complexity and controlled access effectively.



SERVICE PACKAGES

Reliability and flexibility are crucial in everyday testing on the proving ground. With our mission in mind to best serve our customers, Humanetics has created service packages particularly tailored for active safety testing. The service packages are available as standard, professional and premium versions.

The service packages are valid for one year from the date of order receipt and can be purchased for each robot separately. Customers will be notified about the annual services by the Humanetics support team. Other package services can be freely scheduled and chosen on demand by the customer. Please note that repair and shipping costs are not included in the packages. Details of the different services packages are listed hereafter.



Remote support: Our team is available to answer any questions you may have: Monday to Thursday 08:30 a.m. to 05:00 p.m. and Friday 08:30 a.m. to 12:00 p.m. CET. Additional support, outside of our standard support times is available with a 48 hour in advance notice.



Priority remote support: In addition to remote support hours, our team is available to answer any questions you may have, outside of the standard support times and is available with a 48 hour advance notice without additional charges (Saturday and Sunday excluded). Support inquiries will be processed with priority.



Priority ticket system: Tickets arising from support calls, support emails and/or remote support sessions are being processed with priority, with third level support of development department if required. Ticket processing and customer communication within 12 hours.



Annual robot service: Regular robot maintenance extends their lifespan and ensures smooth operation. The annual robot service is available for UFOs and DrivingRobots. It includes cleaning and inspection of components as well as replacement of standard wear parts (list can be provided on demand). Other components can be replaced if necessary. In addition, the service includes safety components check and software updates. Please note that the service must be utilized within a year.



Pool equipment access: If robots are not ready for operation due to malfunctions, replacement equipment is provided - including robot infrastructure set, batteries and smart charger.



Priority spare parts delivery: In stock spare parts are being packed and shipped within 24 hours after order receipt.



Annual battery health-check: The annual battery health-check includes a thorough check of the robot's batteries at a Humanetics' facility, including the next health check reference.































Software update: Quarterly update of the software of UFOs and DrivingRobot.



Loan platform during service and repair: If needed, a loan robot will be provided during annual robot maintenance or repair periods.



Spare parts frame contract: Fixed prices of spare parts, guaranteed for a period of one year.

	STANDARD	PROFESSIONAL	PREMIUM*
 Software Update			
 Remote Support			
 Annual Robot Service			
 Annual Battery Health Check			
 Priority Remote Support			
 Priority Ticket System			
 Pool Equipment Access			
 Priority Spare Parts Delivery			
 Spare Parts Frame Contract			
 Loan Platform during Repair			
 Loan Platform during Service			

* Premium Service Package is not available in the US.

STANDARD SERVICE PACKAGE

The standard package facilitates smooth operation with remote support during business hours and beyond, with 48 hours notice. Quarterly updates keep your software up to date.

PROFESSIONAL SERVICE PACKAGE

The professional service package covers base service requirements that arise when using the robots. The costs vary depending on the number of robots and kind of infrastructure set. Additionally, the annual robot service is included, ensuring regular maintenance, cleaning, inspection, and replacement of standard wear parts for UFOs and DrivingRobots. Remote support is also provided, offering assistance and troubleshooting as needed.

PREMIUM SERVICE PACKAGE

The premium service package covers all customer needs for a carefree and smooth working day. The costs vary depending on the number of robots and kind of infrastructure set. It includes priority spare parts delivery, with in-stock parts shipped within 24 hours, as well as loan platforms during service and repair.

PRODUCT OVERVIEW

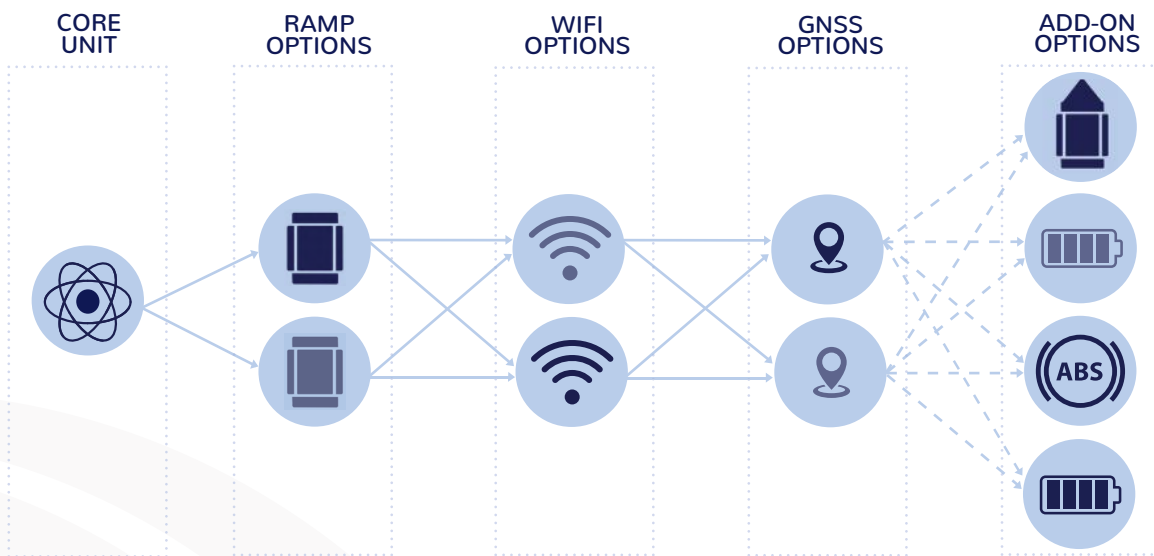


		UFOpro	UFOpro BlackSeries	UFOmicro	UFOnano
DIMENSIONS	Transportation Size	1605 x 1100 mm	1605 x 1100 mm	1050 x 980 mm	700 x 800 mm
	Test Ready Size	2950 x 1690 mm	2950 x 1690 mm	1050 x 980 mm	700 x 800 mm
	Chassis Height	98 mm	98 mm	70 mm	15 - 65 mm
	Test Ready Weight	244 kg	264 kg	85 kg	25 kg
	Payload	125 kg	125 kg	25 kg	12 kg
	Overrun Capacity (per wheel)	1500 kg / 3600 kg*	1500 kg / 3600 kg*	3600 kg	3600 kg
	Clearance	15 mm	15 mm	15 mm	10 mm
DYNAMICS	Maximum Speed Forward	80 km/h	100 km/h	90 km/h	20 km/h
	Maximum Speed Backward	20 km/h	20 km/h	20 km/h	10 km/h
	Maximum Longitudinal Acceleration	1.8 m/s ²	1.4 m/s ²	4 m/s ²	2 m/s ²
	Maximum Longitudinal Deceleration	6 m/s ²	6 m/s ²	6 m/s ²	3 m/s ²
	Maximum Lateral Acceleration	1.5 m/s ²	1.5 m/s ²	3 m/s ²	1.5 m/s ²
	Minimum Turning radius	6 m	6 m	8 m	0 m (turn on spot)
ENERGY	Batteries Included	2	3	2	4
	Charger Included	2	3	2	2
	Battery Technology	Lithium Ion Phosphate (LiFePO4)	Lithium Ion Phosphate (LiFePO4)	Lithium Ion Phosphate (LiFePO4)	Lithium Ion

ENERGY	Battery Capacity	2048 Wh	3072 Wh	512 Wh	144 Wh
	Voltage	51.2	51.2	51.2	28
	Battery Slots	3	3	2	2
	Battery Swapping Time	2 minutes (hot swappable)	2 minutes (hot swappable)	2 minutes (hot swappable)	2 minutes (hot swappable)
	Battery Set Charging Time	90 minutes	90 minutes	25 minutes	90 minutes
	Battery Life Time (common NCAP Testing)	Full testing day (up to 60 NCAP scenarios)	Full testing day (up to 80 NCAP scenarios)	Half testing day	Full testing day (up to 30 NCAP scenarios)
ACCURACY	Speed Control Accuracy	0.2 km/h	0.2 km/h	0.2 km/h	0.2 km/h
	Speed Measurement Accuracy	0.01 km/h	0.01 km/h	0.01 km/h	0.01 km/h
	Side Control Accuracy	50 mm	50 mm	50 mm	50 mm
	Yaw Rate	+/- 1 deg/s	+/- 1 deg/s	+/- 1 deg/s	+/- 1 deg/s
	Accuracy	in line with ISO 19206-7	in line with ISO 19206-7	in line with ISO 19206-7	in line with ISO 19206-7
	GNSS Unit Oxford	OEM3000v3	OEM3000v3	OEM1000v2	OEM1000v2
	GNSS Unit SBG	-	-	Ellipse-D	Ellipse-D
AREA OF APPLICATION	Radar Cross-section	in line with ISO 19206-3	in line with ISO 19206-3	in line with ISO 19206-9 / 19206-5 / ISO 19206-4 / ISO 19206-2	in line with ISO 19206-9 / 19206-4 / 19206-2
	Drive-over Capacity	Passenger vehicles Commercial vehicles Heavy Duty vehicles	Passenger vehicles Commercial vehicles Heavy Duty vehicles	Passenger vehicles Commercial vehicles Heavy Duty vehicles	Passenger vehicles Commercial vehicles Heavy Duty vehicles
	Targets (main use)	Passenger Vehicle 3D Target (GVT) REF. F Passenger Vehicle 3D Target (GVT) REF. G	Passenger Vehicle 3D Target (GVT) REF. F Passenger Vehicle 3D Target (GVT) REF. G	European Motorcycle (EMT) E-Scooter CNCAP Target (PTW) Pedestrian Adult Target Articulation (EPTa) Pedestrian Child Target Articulation (EPTc) Bicyclist Adult Target (EBT) Bicyclist Child Target Playing Child Target (PCT) Standing Scooter Target (SST)	Pedestrian Adult Target Articulation (EPTa) Pedestrian Child Target Articulation (EPTc) Bicyclist Adult Target (EBT) Bicyclist Child Target Playing Child Target (PCT) Standing Scooter Target (SST)
CONDITIONS	Operation Temperature Range	-5° C to 45° C	-5° C to 45° C	-5° C to 45° C	-5° C to 45° C
	Weather resistance	fully sealed electronics	fully sealed electronics	fully sealed electronics	fully sealed electronics
	Recommended Storage Temperature	5° C to 25° C	5° C to 25° C	5° C to 25° C	5° C to 25° C
	IP Rating	IP65	IP65	IP65	IP65
	Relative Humidity Range	0%-95%, not condensing	0%-95%, not condensing	0%-95%, not condensing	0%-95%, not condensing

OPTIONS FOR YOUR NEEDS

All our platforms offer customizable purchasing options, each containing a core unit. Customers can choose between WiFi configurations (Mesh or M2) and GNSS systems (SGB or OxTS), along with various add-on options. Each component is designed to integrate seamlessly, allowing you to create a tailored solution that meets your specific testing requirements.

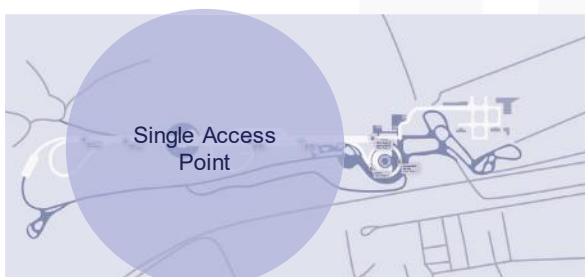


Wifi Options

Understanding the differences between Ubiquiti M2 and Rajant Mesh systems is crucial for selecting the right wireless network solution for your needs.

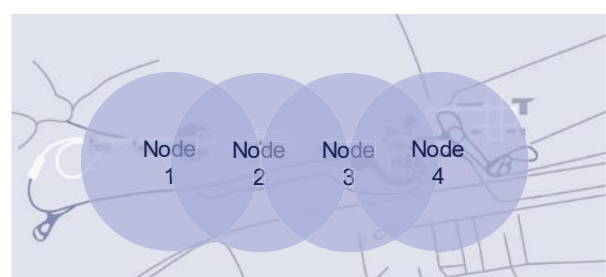
Ubiquiti M2

The Ubiquiti M2 system operates with a single Access Point connected to multiple Clients. In this setup, each client device communicates solely with the Access Point. All network traffic is routed through the Access Point, which then forwards the data to the intended recipient. The maximum operational distance on a proving ground is limited by the range of a single antenna.



Rajant Mesh

In contrast, the Rajant Mesh system uses a network of multiple equal Mesh nodes. Each node in the network is connected to all nearby nodes, creating a robust and flexible communication web. The system automatically selects the best path for data transmission, enhancing network efficiency and reliability. This setup is referred to as WiFi with multiple equal Mesh nodes. The maximum distance on a proving ground can be extended by adding additional nodes, each covering approximately a 250-meter radius.



UFOpro / UFOpro BLACKSERIES TARGET CARRIER

1 UFOpro - Core

#UFO-2

UFOpro target carrier is designed for passenger vehicle testing with speeds up to 80 km/h and includes the following:

- Two hot swappable batteries, ideal for a full testing day
- UFO toolbox and spare part box
- Four UFO handles for carrying the UFO
- One battery charging set with transport box



See the UFOpro target carrier in action.



1 UFOpro Black Series - Core

#UFO-3

UFOpro *BlackSeries* target carrier is designed for passenger vehicle testing with speeds up to 100 km/h and includes the following:

- Three hot swappable batteries, ideal for a full testing day
- UFO toolbox and spare part box
- Four UFO handles for carrying the UFO
- One battery charging set with transport box



See the UFOpro BlackSeries target carrier in action.



1.1 UFOpro Ramp Options

UFOpro - Standard Ramps (UFO-1-1010-0051)

- Screw-less, welded ramps system for reduced Radar Cross Section designed for passenger vehicle testing.

UFOpro - Heavy Duty Ramps (UFO-1-1020-0021)

- Reinforced, screw-less, welded ramps system for reduced Radar Cross Section designed for Heavy Duty Vehicle Testing.

UFOpro / UFOpro BLACKSERIES TARGET CARRIER

1.2 UFOpro WiFi Options

UFOpro - WiFi - M2 (UFO-2-1001)

- Powerful M2 WiFi connection with up to 600mW of power. The M2 is ideal for long-distance links, capable of 100Mbps+ TCP/IP speed over multi-km distances

UFOpro - WiFi - Mesh (UFO-2-1002)

- Mesh network node enables reliable edge connectivity. It uses 2.4-5 GHz dual-band transceiver and is designed for constantly-moving network elements.

1.3 UFOpro Optional Add-ons

ABS Set (UFO-1-8320)

- Rotary encoders, mounted on front tires
- For reduced flat spots and controlled deceleration
- Can be installed either in UFOpro or UFOpro Black Series
- Special control algorithm to deliver best accuracy during deceleration to avoid tire flat spots and increase their lifespan.



See the ABS Upgrade
in action.



UFOpro - Arrow Ramp Set (UFO-1-1040-0042)

- Designed for side impact scenarios (UFO with GVT crashing into side of VUT)
- Designed to slide smoothly under vehicle tire
- Arrow Ramp can be swapped with a front ramp for UFOpro / UFOpro BlackSeries
- Arrow Ramp frame is made from aluminum for passenger car overrun



See the Arrow Ramp
Set in action.



UFOpro / UFOpro BLACKSERIES TARGET CARRIER

1.3 UFOpro Optional Add-ons

UFOpro Battery (UFO-1-3010)

- UN 38.3 certified
- Voltage 52.8 V
- Capacity 2,91 kWh/set
- Cell type LiFePo4



See the easy battery
swap in action



UFOpro Battery - Heavy Duty Version (UFO-1-3080)

- UN 38.3 certified
- Voltage 52.8 V
- Cell type LiFePo4

UFOpro Battery Transport Box (UFO-1-2220)

- Reinforced case for safe transport and storage of the UFOpro batteries.
- Up to three can be stored per case



UFOmicro TARGET CARRIER

2 UFOmicro – Core

#UFO-8

Designed for PTW testing reaching speeds up to 90 km/h and includes the following:

- UFOmicro robot, including GNSS unit
- Two chargers and two batteries
- UFOmicro tool part box
- Spare part box



See the UFOmicro in action



2.1 UFOmicro – WiFi Options

UFOmicro - WiFi - M2 (UFO-8-1001)

- Powerful M2 WiFi connection with up to 600mW of power. The M2 is ideal for long-distance links, capable of 100Mbps+ TCP/IP speed over multi-km distances



UFOmicro - WiFi - Mesh (UFO-8-1002)

- Mesh network node enables reliable edge connectivity. It uses 2.4-5 GHz dual-band transceiver and is designed for constantly-moving network elements



2.2 UFOmicro – GNSS Options

UFOmicro - GNSS - SBG (UFO-9-0219)

- The Eclipse-D Inertial Navigation System integrating a dual-antenna, multi-band GNSS receiver, capable of delivering precise heading as well as centimeter level position accuracy in the most challenging GNSS conditions.



UFOmicro - GNSS - OXTS (UFO-9-0181)

- The OEM1000 INS solution enables precise centimeter level positioning accuracy



UFOmicro

TARGET CARRIER

2.3 UFOmicro – Optional Extension

UFOmicro - VRU Extension (UFO-8-1100)

- Allows VRU testing with increased stability
- UFOmicro with VRU extension can be used with the following targets:
 - Pedestrian Adult Target Articulation (EPTa) (UFO-1-5050)
→ NCAP approved combination
 - Pedestrian Child Target Articulation (EPTc) (UFO-1-5070)
→ NCAP approved combination
 - Bicyclist Adult Target (EBT) (UFO-1-5030)
→ NCAP approved combination
 - Bicyclist Child Target (UFO-1-5035)
 - Playing Child Target (PCT) (UFO-1-5180)
 - Standing Scooter Target (SST) (UFO-1-5190)



UFOmicro - PTW Extension (UFO-8-1200)

- Allows for PTW testing with increased stability
- UFOmicro with PTW extension can be used with the following targets:
 - European Motorcycle Target & Stands (UFO-1-5140)
→ NCAP approved combination
 - E-Scooter CNCAP Target (UFO-1-5150)
→ NCAP approved combination



2.4 UFOmicro – Additional Equipment

UFOmicro - Battery (UFO-8-3170)

- UN 38.3 certified
- Voltage 52.8 V
- Capacity 0,51 kWh/set
- Cell type LiFePo4

UFOmicro - Battery Transport Box (UFO-1-6120)

- Reinforced case for safe transport and storage of the UFOmicro batteries



UFO nano

TARGET CARRIER

3 UFO nano -Core

#UFO-9

- Designed for pedestrian and bicycle testing
- Maximum speed of up to 20 km/h
- Turn on spot function
- Two hot swappable batteries
- UFO toolbox and spare part box
- One battery charging set with transport box



See the UFO nano in action



3.1 UFO nano – WiFi Options

UFO nano - WiFi - M2 (UFO-9-1001)

- Powerful M2 WiFi connection with up to 600mW of power. The M2 is ideal for long-distance links, capable of 100Mbps+ TCP/IP speed over multi-km distances



UFO nano - WiFi - Mesh (UFO-9-1002)

- Mesh network node enables reliable edge connectivity. It uses 2.4-5 GHz dual-band transceiver and is designed for constantly-moving network elements



3.2 UFO nano – GNSS Options

UFO nano - GNSS - SBG (UFO-9-0219)

- The Eclipse-D Inertial Navigation System integrating a Dual-antenna, multi-band GNSS receiver, capable of delivering precise heading as well as centimeter level position accuracy in the most challenging GNSS conditions



UFO nano - GNSS - OxTS (UFO-9-0181)

- The OEM1000 INS solution enables precise centimeter level positioning accuracy



UFO nano

TARGET CARRIER

3.3 UFO nano – Additional Equipment

UFO nano - Battery Set (UFO-1-3160)

- Includes two additional UFO nano batteries

DRIVINGROBOT

4 DrivingRobot compact

#UFO-5

- Steering mechanics applied on original steering wheel
- Steering and lateral path following software
- Pedal mechanics
- Pedal control and longitudinal path following software
- GNSS unit OxTS RT (UFO-5-1001 dual antenna – including mounting strat)
- Two dGNSS antenna for mounting on the vehicle including additional antenna base discs for glass roofs
- WiFi communication equipment
- Tool set
- 48 V lithium battery pack for independent power supply
- One battery charger
- Optimized for ADAS / AV testing protocols
- ISOFIX connector for DrivingRobot Box



Please note: DGNSS correction data to be supplied by customer

VUT & DrivingRobot GNSS Set (UFO-5-1001)

- GNSS Mounting Plate for Cars
- IMU Mounting Kit
- GNSS Unit RT3000V3

4.1 DrivingRobot compact- WiFi Options

VUT & DrivingRobot Bullet - M2 (UFO-1-8410)

- Powerful M2 WiFi connection with up to 600mW of power. The M2 is ideal for long-distance links, capable of 100 Mbps+ TCP/IP speed over multi-km distances.

VUT & DrivingRobot Mobile Node - Mesh (UFO-1-8630)

- Mesh network node enables reliable edge connectivity. It uses 2.4-5 GHz dual-band transceiver and is designed for constantly-moving network elements.

4.2 Audiovisual Alarm Detection in VUT

#UFO-1-8510

- AVAD 4 System from DTC
- Detector for audio-visual signals from the vehicle
- Windshield mounting kit
- Color and pattern recognition

DRIVINGROBOT

5.1 DrivingRobot modular

DRm150™ (UFO-6-DRm150)

- SteeringRobot modular Unit 150 (SRm150)
- PedalRobot modular Unit
- Seat Rail Mount
- Steering Wheel Adapter
- Isofix Holder
- Control Tablet & Mount
- Network option



5.2 SteeringRobot modular

SRm150™ (UFO-6-SRm150)

- SteeringRobot modular Unit 150 (SRm150)
- Pedal Robot modular Unit
- Seat Rail Mount
- Steering Wheel Adapter
- Isofix Holder
- Control Tablet & Mount
- Network option



5.3 PedalRobot modular

PRm™ (UFO-6-PRm)

- PedalRobot modular Unit
- Seat Rail Mount
- Isofix Holder
- Control Tablet & Mount
- Network option



5.4 Steering Wheel Adapter

- The Steering Wheel Adapter can be mounted on steering wheels with a diameter between 330-550 mm
- The Steering Wheel Adapter is the same for the SRm150 and SRm60
- Multiple Steering Wheel Adapters allow to fastly switch between VUTs as mounting can be done preadvance

#UFO-6-0007



DRIVINGROBOT

5.5 DrivingRobot GNSS Options

VUT & DrivingRobot GNSS Set (UFO-5-1001)

- GNSS Mounting Plate for Cars
- IMU Mounting Kit
- GNSS Unit RT3000V3

VUT & DrivingRobot Bullet - M2 (UFO-1-8410)

- Powerful M2 WiFi connection with up to 600mW of power. The M2 is ideal for long-distance links, capable of 100 Mbps+ TCP/IP speed over multi-km distances.

VUT & DrivingRobot Mobile Node - Mesh (UFO-1-8630)

- Mesh network node enables reliable edge connectivity. It uses 2.4-5 GHz dual-band transceiver and is designed for constantly-moving network elements

5.6 Audiovisual Alarm Detection in VUT

#UFO-1-8510

- AVAD 4 System from DTC
- Detector for audio-visual signals from the vehicle
- Windshield mounting kit
- Color and pattern recognition

ROBOT INFRASTRUCTURE

6 Robot Infrastructure Set

The infrastructure set contains all components necessary to operate our UFO target carriers. The infrastructure sets are available in two versions: Ubiquiti M2 and Rajant Mesh. Details on the differences between the two are described on the following pages.

6.1 Robot Infrastructure Set - M2 / Mesh

#UFO-1-8550 / #UFO-1-8555

Control Box Set (UFO-1-2160)

- Stationary autonomous unit for the central coordination of the UFO systems
- Transmission of correction data
- Offers an interface to the control computer as well as a stationary emergency stop



Vehicle Box (UFO-1-2130)

- Can be used in the VUT as an interface for GNSS and WiFi data
- Communicates with the Control Box and transmits positioning information and connected device data
- Enables connection to third party equipment



Control Panel Set – M2 (UFO-1-8240-UNIV) / Mesh (UFO-1-8245-UNIV)

- Mobile stand-alone unit for centralized coordination of the UFO system by a single operator
- Allows the adjustment and operation of the UFO carrier platform in manual or automatic mode via UFO operator
- Visualization of the UFO system, mobile phone-based emergency stop



VUT & DrivingRobot Bullet - M2 (UFO-1-8410) / VUT & DrivingRobot Mobile Node - Mesh (UFO-1-8157)

- WiFi access point / node for the VUT
- Bullet M2 / ES1 Mesh



ROBOT INFRASTRUCTURE

Isifix Box Holder (UFO-1-8130)

- Designed according to international standard for attachment points for child safety seats in passenger cars
- Used to keep the Vehicle Box positioned in the car



Rugged Outdoor Control Computer - EN / GER (UFO-1-8240-GER/EN)

- Mobile computer for running the UFObase Software. Contains Evaluation and Trajectory Generation software
- Robust design and bright screen settings support outdoor usage



Tripod with Rocket – M2 (UFO-1-8150) / Tripod with Node - Mesh (UFO-1-8155)

- The Tripod with Rocket or Mesh node provides a stable WiFi connection to all devices
- It comes with sand bags to achieve high stability



Optional Equipment

Mobile Rocket Mounting Kit (UFO-1-8140)

- Allows the control of 4a remote controller directly from Humanetics Software
- Powered by the control box and ensuring a stable WiFi connection
- Enhances the communication between robots on the proving ground
- Enables fast testing for realistic test scenarios

*Antenna not included



Light Gate Set - M2 (UFO-1-8095-UNIV) / Mesh (UFO-1-8096-UNIV)

- Battery powered Multifunction Box
- Two tripods
- WiFi connection

See the Robot Infrastructure and UFObase Control Software in action.



ROBOT INFRASTRUCTURE

Traffic Light Set - M2 (UFO-1-8035-UNIV) / Mesh (UFO-1-8036-UNIV)

- Test-ready indicator
- Can be programmed for driver's view: indicating green (go) when the UFO target carrier is ready; and spectator's view: indicating red (do not enter) while the UFO target carrier is in operation
- Charger and software included
- Static object box with two connection ports
- WiFi connection
- Battery powered



See the Traffic Light
in action.



Pedestrian Trigger Box Set - M2 (UFO-1-2050) / Mesh (UFO-1-2055)

- Allows the control of 4a remote controller directly from Humanetics Software
- Charger and software included
- WiFi connection
- Battery powered
- Automatic triggering of pedestrian articulation
- Includes a 4a remote controller
- Delivers the most accurate synchronization in the movement of VRU dummies



Tripod with Static Node + POE Supply Box Set - Mesh (UFO-1-8156-UNIV)

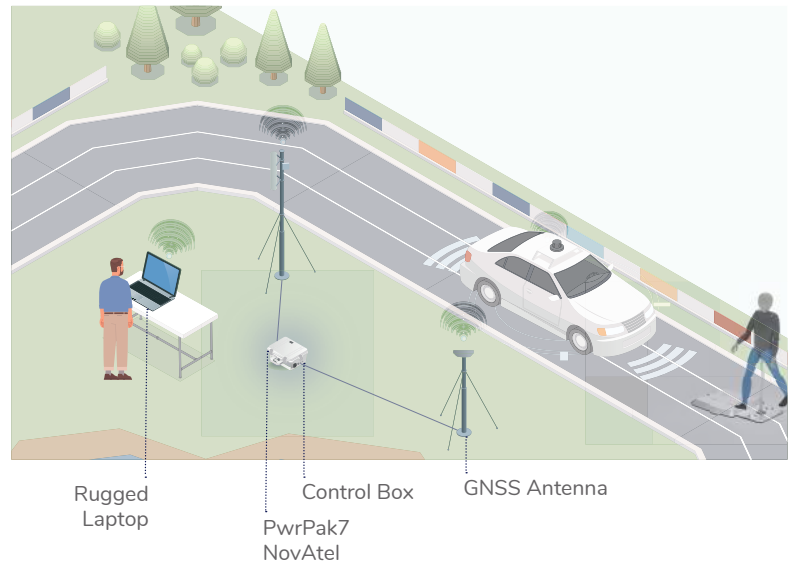
- A mobile mesh node to extend the existing mesh allowing to cover large area testing
- Battery powered



dGNSS POSITIONING SYSTEMS

Humanetics Standard Solution Integrated dGNSS unit

- Includes dGNSS Base Station with:
 - Integrated dGNSS unit (Novatel)
 - GNSS antenna on tripod with TNC cable
- The PwrPak7 is a compact enclosure that delivers scalable Global Navigation Satellite System (GNSS) with internal storage and INS options



7.1 GNSS Base Station - dGNSS Control Box Extension

#UFO-1-8050

- Requires Robot Infrastructure Set M2 / Mesh
- Integrated dGNSS receiver
- dGNSS correction data is distributed within the UFO WiFi system (radio modem not required)
- dGNSS unit (Novatel) mounted inside Control Box
- Glonass Beidou Galileo incl.
- GNSS antenna on tripod with TNC cable
- Settings via UFO Control Laptop

7.2 GNSS Set - VUT & DrivingRobot

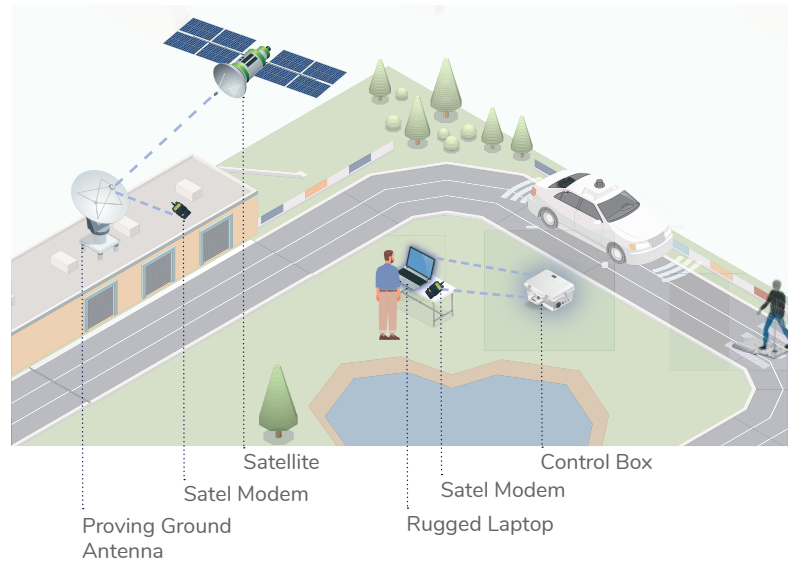
#UFO-5-1001

- GPS mounting plate for cars
- IMU mounting kit
- GNSS Unit RT3000V3

dGNSS POSITIONING SYSTEMS

Proving Ground Solution

- Satel Modem transmit the data of already installed base stations on the proving ground to the Humanetics Control Box
- Our Humanetics system is tested with following Base Stations:
 - PwrPak7
 - ProPak6
 - RT-Base S
 - Racelogic Vbox RTK-Basisstation



7.3 Satel Modem Set 400

#UFO-1-8800

- Two Satel modems for Europe incl., for other regions on request
- RCTMv3 correction data for all the Humanetics robots involved in testing
- Integrated battery and charger included

7.4 Satel Modem Set 800

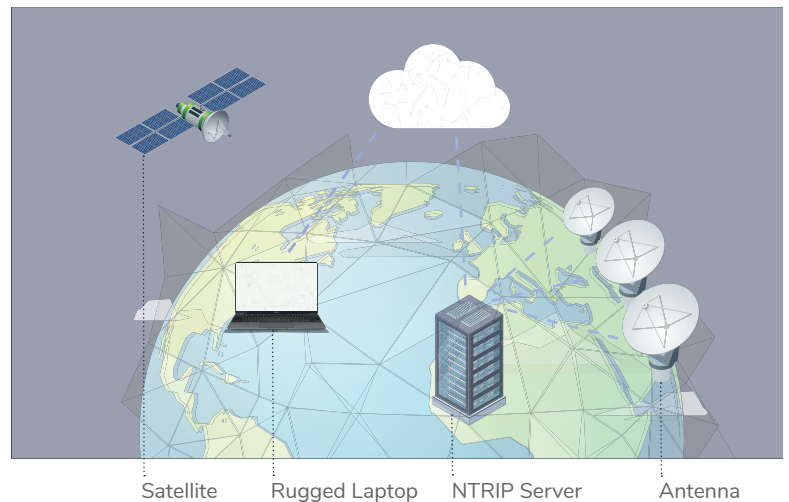
#UFO-1-8810

- Two Satel modems for Europe incl., for other regions on request
- RCTMv3 correction data for all the Humanetics robots involved in testing

dGNSS POSITIONING SYSTEMS

Nation Wide Solution

- The Networked Transport of RTCM via Internet Protocol (NTRIP) is a protocol for streaming differential GPS (DGPS) corrections over the Internet for real-time kinematic positioning.
- The Humanetics system offer the possibility to receive and use NTRIP correction data



7.5 NTRIP Interface

#UFO-1-8560

- Possibility to receive NTRIP correction data
- Other NTRIP client on request
- Lefebure NTRIP Client (others on request)

Note: Local NTRIP data stream subscription not included

SOFTWARE

8 UFObase

#UFO-1-9060

- Base Software, handles communication, execution of tests, virtual lightgate, simulation, simple trajectory generator

8.1 Basic Software Bundle

#UFO-1-9340

UFObase (UFO-1-9060)

- Base Software, handles communication, execution of tests, virtual lightgate, simulation, simple trajectory generator

Synchronized Virtual Lightgate Feature (UFO-1-9010)

- Enables the UFO to adjust longitudinal and lateral position relative to the VUT as soon as the VUT passes the virtual light gate
- Speed of UFO target carrier is synchronized with test vehicle speed at all times (for accurate point of impact)
- Enables maximum accuracy and repeatability of longitudinal lateral test scenarios
- Beneficial and helpful in windy testing conditions or with manual driven VUT



See the Full Synchronization Software in action.

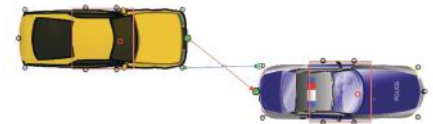


Data Forwarding Feature (UFO-1-9030)

- The data from the robot can be transferred directly to the VUT during the test through a CAN port (either through the Vehicle Box or through the DrivingRobot Box)
- It includes position data, velocity data, acceleration data, NCOM data and CAN-DBC file

Distance Calculation Feature (UFO-1-9040)

- The data from the robot can be transferred directly to the VUT during the test through a CAN port (either through the Vehicle Box or through the DrivingRobot Box)
- It includes position data, velocity data, acceleration data, NCOM data and CAN-DBC file



See the Range Functionality & Predefined Scenario Library in action.



Event Trigger Handling Feature (UFO-1-9300)

SOFTWARE

UFO as Master Vehicle Feature (UFO-1-9160)

- UFO target carrier can be used as leading vehicle with the DrivingRobot as the following vehicle
- Enables to conduct scenarios also with limited space on the proving ground

See the UFO target carrier as Master Vehicle in action.



Teachmode Feature (UFO-1-9290)

- Trajectory is run with VUT and saved as trajectory within UFObase

Trajectory Generator (UFO-1-9210)

- User-friendly trajectory generator for UFObase scenarios
- Quick trajectory generation with predefined NCAP scenarios and easy scenario adaption

8.2 Scenario Scripting Bundle

#UFO-1-9350

Advanced Scenario Scripting Feature (UFO-1-9170)

- New way to draw test scenarios with multiple test phases (UFObase Scenario (UBS))

Trigger Edit Feature (UFO-1-9280)

- Enables the user to define specific trigger conditions to create more complex scenarios

8.3 NCAP Library Subscription - UFO only

#UFO-1-9230

- New way to draw test scenarios with multiple test phases (UFObase Scenario (UBS))
- Simplifies the process of configuring tests on the proving ground and staying up to date with the latest test scenarios by providing a comprehensive collection of pre-configured tests
- Quickly and easily set up test scenarios, saving time and reducing the risk of errors.
- Covering over 500 NCAP scenarios and driving conditions to ensure that your ADAS systems are tested to the highest standards
- Subscription model ensures that new tests are uploaded as soon as they are published, making sure you have the latest test configurations installed for UFOs

8.4 NCAP Library Subscription - UFO only + DrivingRobot

#UFO-1-9240

- Enables the user to define specific trigger conditions to create more complex scenarios
- Simplifies the process of configuring tests on the proving ground and staying up to date with the latest test scenarios by providing a comprehensive collection of pre-configured tests
- Subscription model ensures that new tests are uploaded as soon as they are published, making sure you have the latest test configurations installed for UFOs and DrivingRobot

SOFTWARE

8.5 Test Evaluation and Reporting Suite – UFO only

#UFO-1-9140

- Validates and evaluates test results for Euro NCAP Scenarios
- Evaluation possible with third party testing systems on request
- Automatically generates Euro NCAP conform MME reports



8.6 Test Evaluation and Reporting Suite – UFO + DrivingRobot

#UFO-1-9150

- Validates and evaluates test results for Euro NCAP Scenarios
- Evaluation possible with third party testing systems on request
- Automatically generates Euro NCAP conform MME reports

See the Test Evaluation & Reporting Suite in action.



8.7 DrivingRobot Software Bundle

#UFO-1-9360

DrivingRobot Friction Compensation Feature (UFO-1-9190)

- Reduces the friction of the DrivingRobot, in test scenarios where the steering is actively intervening
- Can be tuned in several modes.
- Needed for Euro NCAP LSS scenarios

Audiovisual Alarm Detection Interface Feature (UFO-1-9180)

- Needed for Forward Collision Warning and Blindspot Tests
- Signals from AVAD System are sent to Humanetics Software and used for advanced scenario control (FCW-Tests, Blindspot)
- Trigger signals from AVAD are saved as part of Humanetics result files
- Possibility to integrate AVAD 2/3/4 with Humanetics DrivingRobot



Manual Speedup Feature(UFO-1-9270)

- Developed for testing cars with manual gearbox
- VUT is accelerated manually and then transferred to the DrivingRobot

DELIVERY

9.1 Online Training at Delivery

#UFO-1-7200

- Detailed user manual
- Best practice guidelines and installation videos
- Online Training included with each robot
 - Good Internet connection at proving ground is required
 - Portable video device with Microsoft Teams is recommended

Online training may not be available in the US

9.2 Factory Delivery*

#UFO-1-7160

- Detailed user manual
- Best practice guidelines
- Installation videos
- Visit to the Linz Humanetics active safety development center
- Theoretical training
- Sessions on the proving ground

Factory delivery is not available in the US

9.3 Elite Delivery*

#UFO-1-7210

- Detailed user manual
- Best practice guidelines
- Installation videos
- Customer site visits with on-site training with a Humanetics training engineer
- Theoretical training
- Sessions on the proving ground

* Price on demand

SERVICE PACKAGES

9.4 Standard Service Package

#UFO-1-7510

- Remote support
- Software update

9.5 Professional Service Package

#UFO-1-7340

- Covering simple robot service requirements
- Remote support
- Annual robot service
- Annual battery health-check
- Software update

9.6 Premium Service Package

#UFO-1-7360

- Includes the benefits of the Professional Service Package and beyond
- Covering all customer needs for a carefree and smooth working day
- Priority ticket system and remote support
- Annual robot service and battery health-check
- Software update
- Access to pool equipment
- Loan platform during service and repair
- Spare parts frame contract

Premium service package is not available in the US

TARGET OPTIONS

10.1 Passenger Vehicle 3D Target (GVT) REF. F

#UFO-1-5010

- Compatible with UFOpro and UFOpro Black Series
- Modeled after Ford Fiesta
 - Realistically replicates radar and visual properties of a real car



10.2 Passenger Vehicle 3D Target (GVT) REF. G

#UFO-1-5110

- Can be used for Euro NCAP CCR evaluations, CCftap scenarios as well as internal development



10.3 Stationary Stand for Passenger Vehicle 3D Target

#UFO-1-5080

- Used for stationary tests
- Fits Passenger Vehicle 3D Target REF. F and REF. G



10.4 Pedestrian Dummy - Adult Articulating (EPTa)²

AVAILABLE NOW

- Euro NCAP-compliant adult pedestrian target from Messring
- Replicates human properties in size and shape, with articulating legs
- Articulated EPT – Euro NCAP Pedestrian Target
- Web based control, no remote control required
- IMU-trigger (acceleration sensor)
- Leg movement starts automatically when the platform accelerates
- Very robust design



² Image Messring GmbH

TARGET OPTIONS

10.5 Pedestrian Dummy - Child Articulating (EPTc)²

AVAILABLE NOW

- Euro NCAP-compliant child pedestrian target from Messring
- Articulated EPT – Euro NCAP Pedestrian Target
- Web based control, no remote control required
- IMU-trigger (acceleration sensor)
- Leg movement starts automatically when the platform accelerates
- Very robust design



10.6 Bicyclist Adult Target (EBT)¹

#UFO-1-5030

- Full Adult Bicycle target Package includes: bicycle, human dummy, 3x wheels, 15x spokes
- Compliant with Euro NCAP VRU testing protocols
- Rotating wheels
- Adjustable torso position (aero, upright)
- Crashable up to 60 km/h
- Water resistant



10.7 Bicycle Dummy Child¹

#UFO-1-5035

- Euro NCAP-compliant child bicyclist target
- Represents a 6-7 year old child with articulating legs
- Robust and modular system – easy and fast change of spare parts
- Crashable up to 60 km/h



10.8 Pedestrian Dummy - Adult Articulating (EPTa)¹

#UFO-1-5050

- Euro NCAP-compliant adult pedestrian target from 4activeSystems
- Replicates human properties in size and shape, with articulating legs
- Articulated EPT – Euro NCAP Pedestrian Target
- Homogeneous distribution of radar cross section (RCS)
- Visual signature – mono and stereo camera
- Crashable up to 60 km/h
- Water resistant



Note: articulation with UFO-1-2050 Pedestrian trigger Box or 4a remote controller to be provided by customer

¹ Image 4activeSystems GmbH

² Image Messring GmbH

TARGET OPTIONS

10.9 Pedestrian Dummy - Child Articulating (EPTc)¹

#UFO-1-5070

- Euro NCAP-compliant child pedestrian target from 4activeSystems
- Represents a 7 year old child with articulating legs
- Articulated EPT – Euro NCAP Pedestrian Target
- Homogeneous distribution of radar cross section (RCS)
- Visual signature – mono and stereo camera
- Crashable up to 60 km/h
- Water resistant



Note: articulation with UFO-1-2050 Pedestrian trigger Box or 4a remote controller to be provided by customer

10.10 European Motorcycle Target & Stands (PTW)¹

#UFO-1-5140

- Corresponding to category L3 as applied by UNECE
- Realistic properties in size and shape and rotational features
- Compliant to ISO 19206-5 WD, Euro NCAP
- Compatible with UFOmicro target carrier
- Crash speed lateral up to 60 km/h / longitudinal up to 50 + 20 km/h



10.11 E-Scooter CNCAP Target (PTW)¹

#UFO-1-5150

- Compatible with UFOmicro target carrier
- Crash speed lateral up to 60 km/h / longitudinal up to 40 km/h
- Corresponding to category L3e-A1 as applied by UNECE



10.12 Motorcycle Stands (PTW)

#UFO-1-5140-6001

- Needed for the usage of the PTW targets like E-Scooter (10.8) or European Motorcycle Target (10.7)



¹ Image 4activeSystems GmbH

TARGET OPTIONS

10.13 Playing Child Target (PCT)²

#UFO-1-5180

- Target in the shape of a two-year-old child sitting on a play car
- Available in different colors
- Compatible with UFOnano target carrier
- Dimension: 680 x 580 x 360 mm | Weight: 2.2 kg



10.14 Standing Scooter Target (SST)²

#UFO-1-5190

- Target in the shape of a young woman (P50 median female)
- Compatible with UFOnano target carrier
- Realistic sensor response for radar, camera, lidar, ultrasound and IR
- Dimension: 1660 x 1050 x 415 mm | Weight: 5.6 kg



11.1 UFO Service Carrier

#UFO-1-6060

- Manual hydraulic lifting device for transportation; can be used as a service table
- Net weight: 138 kg | Carrying capacity: 500 kg
- Dimension (table top): 800x1600 mm
- Lifting height: 310 - 900 mm
- Stroke/step: 25 mm
- For for UFOpro, UFOpro *BlackSeries*, UFOmicro and UFOnano





EXIT

HUMANETICS

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HUMANETICS

PRODUCT LIST

POS	PART NUMBER	DESCRIPTION
UFOpro		
1	UFO-2	UFOpro - Core
1	UFO-3	UFOpro Black Series - Core
1.1	UFO-1-1010-0051	UFOpro - Standard Ramps
1.1	UFO-1-1020-0021	UFOpro - Heavy Duty Ramps
1.2	UFO-2-1001	UFOpro - WiFi - M2
1.2	UFO-2-1002	UFOpro - WiFi - Mesh
1.3	UFO-1-8320	UFOpro - ABS Set
1.3	UFO-1-1040-0042	UFOpro - Arrow Ramp Set
1.3	UFO-1-3010	UFOpro - Battery
1.3	UFO-1-3080	UFOpro - Battery Heavy Duty Version
1.3	UFO-1-2220	UFOpro - Battery Transport Box
UFOmicro		
2	UFO-8	UFOmicro - Core
2.1	UFO-8-1001	UFOmicro - WiFi - M2
2.1	UFO-8-1002	UFOmicro - WiFi - Mesh
2.2	UFO-9-0219	UFOmicro - GNSS - SBG
2.2	UFO-9-0181	UFOmicro - GNSS - OXTS
2.3	UFO-8-1100	UFOmicro - VRU Extension
2.3	UFO-8-1200	UFOmicro - PTW Extension
2.4	UFO-8-3170	UFOmicro - Battery
2.4	UFO-1-6120	UFOmicro - Battery Transport Box
UFOnano		
3	UFO-9	UFOnano - Core
3.1	UFO-9-1001	UFOnano - WiFi - M2
3.1	UFO-9-1002	UFOnano - WiFi - Mesh
3.2	UFO-9-0219	UFOnano - GNSS - SBG
3.2	UFO-9-0181	UFOnano - GNSS - OXTS
3.3	UFO-1-3160	UFOnano - Battery Set
DrivingRobot compact		
4	UFO-5	DrivingRobot compact
4	UFO-5-1001	VUT & DrivingRobot GNSS Set
4.1	UFO-1-8410	VUT & DrivingRobot Bullet - M2

PRODUCT LIST

POS	PART NUMBER	DESCRIPTION
4.1	UFO-1-8630	VUT & DrivingRobot Mobile Node - Mesh
4.2	UFO-1-8510	Audiovisual Alarm Detection in VUT
DrivingRobot modular		
5.1	UFO-6-DRm150	DRm150™
5.2	UFO-6-SRm150	SRm150™
5.3	UFO-6-PRm	PRm™
5.4	UFO-6-0007	Steering Wheel Adapter
5.5	UFO-5-1001	VUT & DrivingRobot GNSS Set
5.5	UFO-1-8410	VUT & DrivingRobot Bullet - M2
5.5	UFO-1-8630	VUT & DrivingRobot Mobile Node - Mesh
5.6	UFO-1-8510	Audiovisual Alarm Detection in VUT
Robot Infrastructure Set		
6.1	UFO-1-8550	Robot Infrastructure Set - M2
6.1	UFO-1-8555	Robot Infrastructure Set - Mesh
6.1	UFO-1-2130	Vehicle Box
6.1	UFO-1-8240-UNIV	Control Panel Set – M2
6.1	UFO-1-8245-UNIV	Control Panel Set – Mesh
6.1	UFO-1-8410	VUT & DrivingRobot Bullet - M2
6.1	UFO-1-8157	VUT & DrivingRobot Mobile Node - Mesh
6.1	UFO-1-8130	Isofix Box Holder
6.1	UFO-1-8240-GER/EN	Rugged Outdoor Control Computer - EN / GER
6.1	UFO-1-8150	Tripod with Rocket – M2
6.1	UFO-1-8155	Tripod with Node - Mesh
6.1	UFO-1-8140	Mobile Rocket Mounting Kit
6.1	UFO-1-8095-UNIV	Light Gate Set - M2
6.1	UFO-1-8096-UNIV	Light Gate Set - Mesh
6.1	UFO-1-8035-UNIV	Traffic Light Set - M2
6.1	UFO-1-8036-UNIV	Traffic Light Set - Mesh
6.1	UFO-1-2050	Pedestrian Trigger Box Set - M2
6.1	UFO-1-2055	Pedestrian Trigger Box Set - Mesh
6.1	UFO-1-8156-UNIV	Tripod with Static Node + POE Supply Box Set - Mesh

PRODUCT LIST

POS	PART NUMBER	DESCRIPTION
dGNSS		
7.1	UFO-1-8050	GNSS Base Station - dGNSS Control Box Extension
7.2	UFO-5-1001	GNSS Set - VUT & DrivingRobot
7.3	UFO-1-8800	Satel Modem Set 400
7.4	UFO-1-8810	Satel Modem Set 800
7.5	UFO-1-8560	NTRIP Interface
SOFTWARE		
8	UFO-1-9060	UFObase - Core
8.1	UFO-1-9340	Basic UFO Software Bundle
8.1	UFO-1-9010	Synchronized Virtual Lightgate Feature
8.1	UFO-1-9030	Data Forwarding Feature
8.1	UFO-1-9040	Distance Calculation Feature
8.1	UFO-1-9300	Event Trigger Handling Feature
8.1	UFO-1-9160	UFO as Master Vehicle Feature
8.1	UFO-1-9290	Teachmode Feature
8.1	UFO-1-9210	Trajectory Generator
8.2	UFO-1-9350	Scenario Scripting Bundle
8.2	UFO-1-9170	Advanced Scenario Scripting Feature
8.2	UFO-1-9280	Trigger Edit Feature
8.3	UFO-1-9230	NCAP Library Subscription - UFO only
8.4	UFO-1-9240	NCAP Library Subscription - UFO + Driving Robot
8.5	UFO-1-9140	Test Evaluation and Reporting Suite – UFO only
8.6	UFO-1-9150	Test Evaluation and Reporting Suite – UFO + Driving Robot
8.7	UFO-1-9360	Driving Robot Software Bundle
8.7	UFO-1-9190	DrivingRobot Friction Compensation Feature
8.7	UFO-1-9180	Audiovisual Alarm Detection Interface Feature
8.7	UFO-1-9270	Manual Speedup Feature
DELIVERY & SERVICE		
9.1	UFO-1-7200	Online Training at Delivery*
9.2	UFO-1-7160	Factory Delivery*
9.3	UFO-1-7210	Elite Delivery

PRODUCT LIST

POS	PART NUMBER	DESCRIPTION
9.4	UFO-1-7510	Standard Service Package
9.5	UFO-1-7340	Professional Service Package
9.6	UFO-1-7360	Premium Service Package

TARGETS		
10.1	UFO-1-5010	Passenger Vehicle 3D Target (GVT) REF. F
10.2	UFO-1-5110	Passenger Vehicle 3D Target (GVT) REF. G
10.3	UFO-1-5080	Stationary Stand for Passenger Vehicle 3D Target
10.4	AVAILABLE NOW	Pedestrian Adult Target Articulation (EPTa)
10.5	AVAILABLE NOW	Pedestrian Child Target Articulation (EPTc)
10.6	UFO-1-5030	Bicyclist Adult Target (EBT)
10.7	UFO-1-5035	Bicyclist Child Target
10.8	UFO-1-5050	Pedestrian Adult Target Articulation (EPTa)
10.9	UFO-1-5070	Pedestrian Child Target Articulation (EPTc)
10.10	UFO-1-5140	European Motorcycle Target & Stands (PTW)
10.11	UFO-1-5150	E-Scooter CNCAP Target (PTW)
10.12	UFO-1-5140-6001	Motorcycle Stands (PTW)
10.13	UFO-1-5180	Playing Child Target (PCT)
10.14	UFO-1-5190	Standing Scooter Target (SST)
11.1	UFO-1-6060	UFO Service Carrier

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* Delivery and service options are not available in the US

All designated referred to as UFO, are describing UFO target carrier incl. UFOpro target carrier, UFOpro Black Series target carrier, UFO nano target carrier and UFO micro target carrier.

All prices are in EUR and do not contain any taxes or duties. All products are designed and produced according to European standards. Buyer is responsible for compliance with local safety and environmental requirements.

If you are interested in learning more about our products or would like to witness a live demonstration, please do not hesitate to contact your local sales representative or write us an e-mail at sales.austria@humaneticsatd.com.

If you have questions regarding your existing Humanetics active safety products, please reach out to our support team. Our support team can be reached Monday to Thursday from 8:30 a.m. to 5:00 p.m. and Friday from 8:30 a.m. to 12:00 p.m.

Support Team

Hotline: +43 732 343 2001

E-Mail: activesafety.support@humanetics.eu

THE GLOSSARY

PRODUCT	DESCRIPTION
UFOpro target carrier (UFOpro)	UFOpro target carrier for use with vehicle targets.
UFOpro Black Series target carrier (UFOpro Black Series)	100km/h version of the UFOpro for use with vehicle targets.
UFOnano target carrier (UFOnano)	UFOnano target carrier for use with VRU targets.
UFOmicro target carrier (UFOmicro)	UFOmicro target carrier for use with PTW targets.
UFO target carrier model range (UFO models)	Used to specify all Humanetics UFO models. UFOpro, UFOpro Black Series, UFOnano, UFOmicro.
UFObase Software (UFObase)	UFObase Software to control Humanetics active safety products.
Global Vehicle Target (GVT)	Vehicle target used in NCAP protocol as defined in Euro NCAP TB025.
Powered Two Wheeler (PTW)	Motorized two-wheelers such as motorcycles.
Vulnerable Road User (VRU)	Road users who are particularly at risk of being injured or killed in traffic because they are not surrounded by a "protective shell" such as a driver's cab. E.g. pedestrians and cyclists.
Vehicle Under Test (VUT)	Vehicle tested according to protocol with a pre-crash collision mitigation or avoidance system on board.
Autonomous Emergency Braking (AEB)	Automatic braking that is applied from the vehicle in response to the detection of a likely collision to reduce the vehicle speed and potentially avoid the collision.
Lane Keeping Assist (LKA)	Heading correction that is applied automatically by the vehicle in response to the detection of the vehicle that is about to drift beyond a delineated edge line or road edge of the current travel lane.
Car-to-Car Rear Braking (CCRB)	Collision in which a vehicle travels forwards towards another vehicle that is traveling at constant speed and then decelerates, and the frontal structure of the vehicle strikes the rear structure of the other.
Emergency Lane Keeping (ELK)	Automatically applied heading correction by the vehicle in response to the detection of the vehicle that is about to drift beyond the edge of the road or into oncoming or overtaking traffic in the adjacent lane.
Autonomous Emergency Steering (AES)	Automatically applied steering by the vehicle in response to the detection of a likely collision to steer the vehicle around the vehicle in front to avoid the collision.
Emergency Steering Support (ESS)	System to support the driver steering input in response to the detection of a likely collision to alter the vehicle path and potentially avoid a collision.
Forward Collision Warning (FCW)	Audio-visual warning that is provided automatically by the vehicle to detect a likely collision to alert the driver.





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PROTECTING HUMANS IN MOTION



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