



ACTIVE SAFETY


Product Portfolio
2023



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


The electrically-powered 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.




UFOmicro¹

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



UFOnano²

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



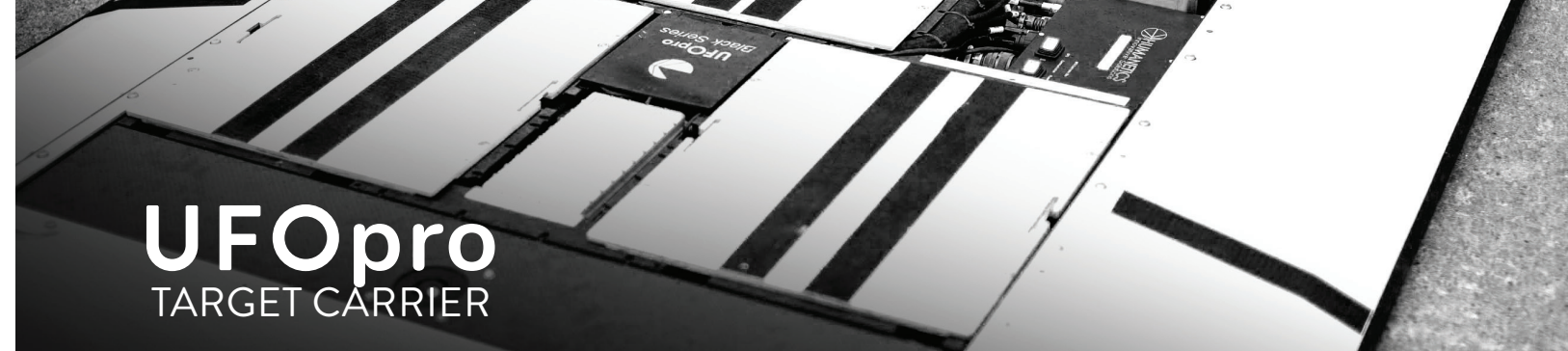
UFOpro³

Designed to cover GVT test scenarios with a speed of up to 100 km/h to mimic real life traffic scenarios.

¹The designated hereinafter referred to as UFOmicro, is describing UFOmicro target carrier.

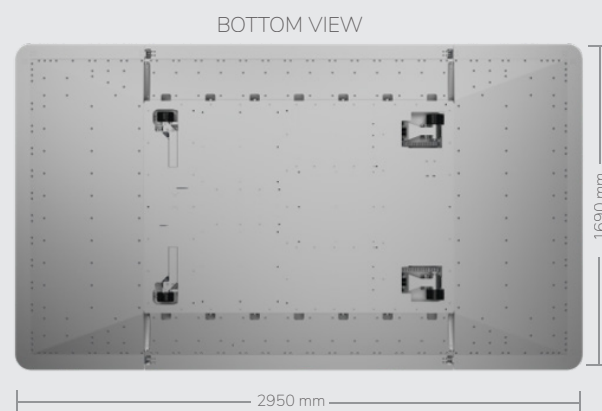
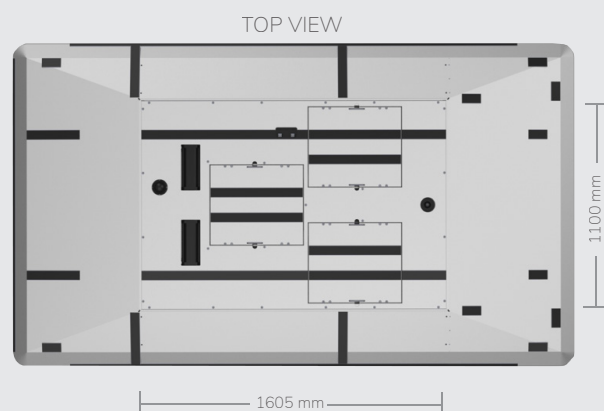
² The designated hereinafter referred to as UFOnano, is describing UFOnano target carrier.

³ The designated hereinafter referred to as UFOpro, is describing UFOpro target carrier.



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 at a slower rate, thus extending battery life and ease 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



See the UFOpro target carrier in action.



UFOpro target carrier

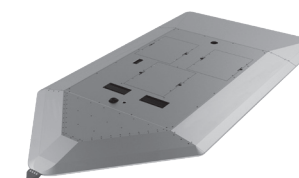
The **UFOpro** is the default version of the UFO with its low overrun height of 98 mm and hot swappable batteries, it is designed for Euro NCAP ADAS testing. The UFOpro is available with an optional ABS system and as a Heavy Duty version. The UFOpro Heavy Duty has the equipment of a UFOpro, but with reinforced ramps and batteries. The UFOpro Heavy Duty can be run over by a car as well as by a commercial vehicle. An additional set of batteries can be purchased separately.

UFOpro Black Series target carrier

With a maximum speed of 100 km/h including a GVT target, the **UFOpro Black Series¹** 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 Black Series is available with an optional ABS system. Both the UFOpro Black Series and the UFOpro share a similar mechanical design, so that an UFOpro can easily be upgraded to a UFOpro Black Series.

Arrow Ramp

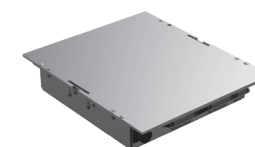
Can be swapped with standard front ramp for side impact testing of cars.



See the Arrow Ramps in action.

Additional Lithium Power Pack

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



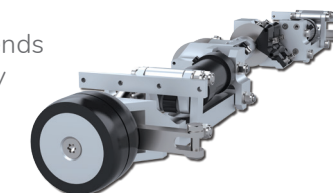
See the fast and easy battery swap.

Anti-Lock Braking System (ABS) Patented

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



See the ABS in action.

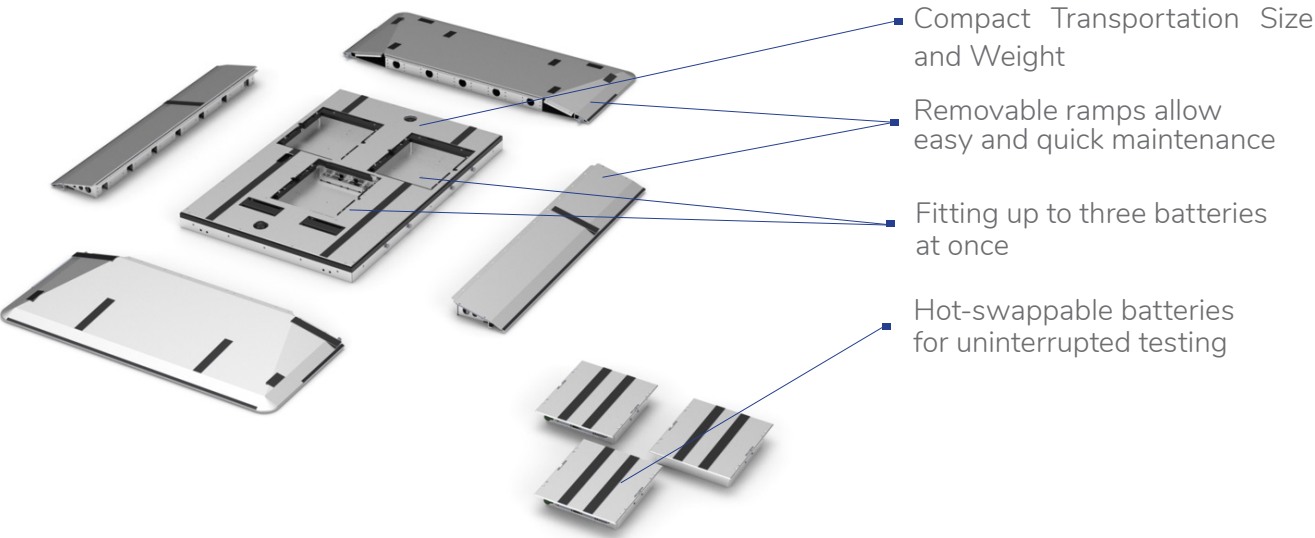


¹ The designated hereinafter referred to as UFOpro Black Series, is describing UFOpro Black Series target carrier

UFOpro

TARGET CARRIER

DESIGN OVERVIEW



SPECIFICATIONS

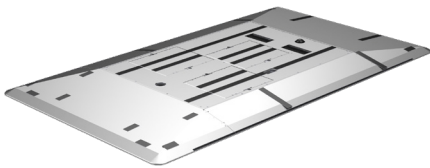
DIMENSIONS	Transportation Size	1605 x 1100 mm
	Test Ready Size	2950 x 1690 mm
	Chassis Height	98 mm
	Test Ready Weight	244 kg
	Test Ready Weight UFOpro BlackSeries	264 kg
	Payload	125 kg
	Overrun Capacity (per wheel)	1500 kg / 3600 kg*
	Clearance	15 mm
DYNAMICS	Maximum Speed Forward	80 km/h
	Maximum Speed Forward UFOpro BlackSeries	100 km/h
	Maximum Speed Backward	20 km/h
	Maximum Longitudinal Acceleration	3 m/s²
	Maximum Longitudinal Deceleration	6 m/s²
	Maximum Lateral Acceleration	1.5 m/s²
	Minimum Turning radius	6 m

UFOpro

TARGET CARRIER

SPECIFICATIONS

ENERGY	Batteries Included	2
	Batteries Included UFOpro BlackSeries	3
	Charger Included	2
	Charger Included UFOpro BlackSeries	3
	Battery Technology	Lithium Ion (LiFePO4)
	Battery Capacity	2048 Wh
	Battery Capacity UFOpro BlackSeries	3072 Wh
	Voltage	51.2
	Battery Slots	3
	Battery Swapping Time	2 minutes (hot swappable)
ACCURACY	Battery Set Charging Time	90 minutes
	Battery Life Time (common NCAP Testing)	Full testing day (up to 60 NCAP scenarios)
	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 Crosssection	in line with ISO 19206-3
	Drive-over Capacity	Passenger vehicles Commercial vehicles Heavy Duty vehicles
	Targets (main use)	Passenger Vehicle 3D Target
OPERATING CONDITIONS	Operation Temperature Range	-5° to 40°
	Weather resistance	fully sealed electronics works under tough conditions
	Recommended Storage Temperature	5° to 25°



The UFOpro conforms to the following scenarios

- » AEB-C2C
- » FCW-C2C
- » ELK (oncoming-overtaking)
- » AES
- » 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 flexibly configurable TrajectoryGenerator Software.

UFOmicro

TARGET CARRIER

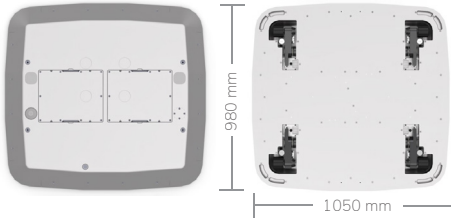
Being the latest addition to the active safety products, the **UFOmicro** target carrier was developed specifically for PTW (Powered Two Wheeler) and VRU (Vulnerable Road User) tests. To cover realistic road traffic conditions and behavior of road users, the **UFOmicro** can reach a speed of up to 90 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.



UFOmicro with PTW target

Even being the most recent addition to the Humanetics UFO model range, the **UFOmicro** can be seamlessly integrated in the existing and proven Humanetics UFObase software environment. The configuration and testing of complex real life scenarios with up to ten robots can be done easily due to the seamless synchronization. Considering the important aspects of reliability and repeatability, the **UFOmicro** was designed with extremely high lateral and longitudinal accuracies for dependable and repeatable testing.

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



Dimension of UFOmicro

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

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



UFOmicro with Pedestrian Adult target

Extensions for VRU und PTW targets: The VRU Extension allow low above surface testing of only 25mm. The PTW extension is used to increase stability for high speed tests.



See the UFOmicro target carrier in action.

UFOmicro

TARGET CARRIER



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

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 Crossection	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 Target (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)
OPERATING CONDITIONS	Operation Temperature Range	-5° to 40°
	Weather resistance	fully sealed electronics works under tough conditions
	Recommended Storage Temperature	5° to 25°

UFOmicro

TARGET CARRIER

UFOmicro – Target Options



European Motorcycle Target & Stands¹
(UFO-1-5140)
Euro NCAP approved with UFOmicro



E-Scooter CNCAP Target¹
(UFO-1-5150)



European Motorcycle Target & Stands¹
(UFO-1-5140)
Euro NCAP approved with UFOmicro



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)
Euro NCAP approved with UFOmicro



Pedestrian Adult Target Articulation (EPTa)¹
(UFO-1-5050)
Euro NCAP approved with UFOmicro



Bicyclist Adult Target (EBT)¹
(UFO-1-5030)
Euro NCAP approved with UFOmicro



UFO nano

TARGET CARRIER

The UFO nano target carrier was developed specifically for pedestrian and bicycle testing. Its 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.



UFO nano with Playing Child target

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.

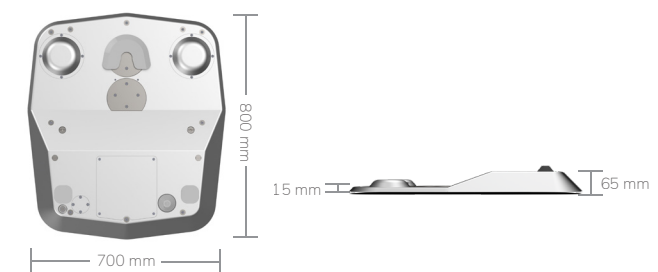
It can easily accommodate a pedestrian test target with a shoulder width footprint barely larger than that of a real person, allowing multiple dummies to 'swarm' together with closest shoulder to shoulder distance and mimic individualized behavior.



UFO nano with Pedestrian Adult target

Humanetics UFObase Control Software for complex testing using different robots from the Humanetics family.

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



Dimension of UFO nano



See the UFO nano target carrier in action.

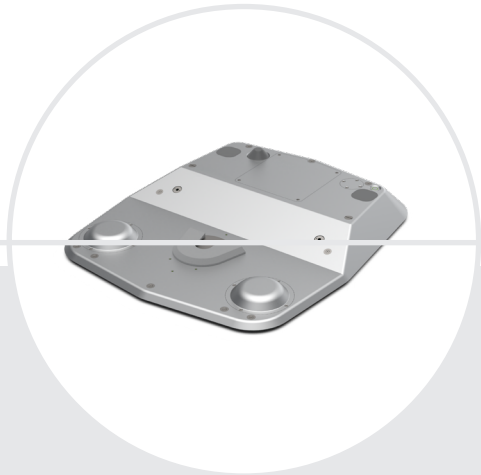
¹ Image 4activeSystems GmbH

² Image Messring GmbH

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/s²
	Maximum Longitudinal Deceleration	3 m/s²
	Maximum Lateral Acceleration	1.5 m/s²
	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)	Full testing day (up to 60 NCAP scenarios)
ACCURACY	Accuracy	in line with ISO 19206-7
	GNSS Unit Oxford	OEM1000v2
	GNSS Unit SBG	Ellipse-D
AREA OF APPLICATION	Radar Crosssection	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)
OPERATING CONDITIONS	Operation Temperature Range	-5° to 40°
	Weather resistance	fully sealed electronics works under tough conditions
	Recommended Storage Temperature	5° to 25°



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


UFO nano – Target Options




Bicyclist Adult Target (EBT)¹
(UFO-1-5030)
Euro NCAP approved with UFO nano




Bicyclist Child Target¹
(UFO-1-5035)




Pedestrian Adult Target Articulation (EPTa)¹
(UFO-1-5050)
Euro NCAP approved with UFO nano



Pedestrian Child Target Articulation (EPTc)¹
(UFO-1-5070)
Euro NCAP approved with UFO nano



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



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

¹ Image 4activeSystems GmbH
² Image Messring GmbH

DrivingRobot

The **DrivingRobot** is able to control the steering, braking and acceleration of a test vehicle. The test vehicle can be navigated around the test track automated with highly precise control of position, velocity, acceleration and more. Fully synchronized tests are made possible when used with the various UFO target carriers and its GNSS-aided navigation system.



The **DrivingRobot** 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 **DrivingRobot** Box, contains all electronic components, which can be easily installed with ISOFIX in the rear seats.



See the **DrivingRobot** in action.

Moreover, the **DrivingRobot** can be installed without interfering with the original steering wheel, airbag or the seating position of the operator. The robot turntable is installed behind the vehicle's steering wheel, and can be activated by the grasp of the operator. In the event of an emergency, the operator can simply let go of the robot wheel and immediately take manual control of the vehicle's steering wheel. 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 **DrivingRobot** 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 **DrivingRobots** for swarm testing can be controlled, managed and analyzed from just one computer.



DrivingRobot



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

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

THROTTLE PEDAL ACTUATOR

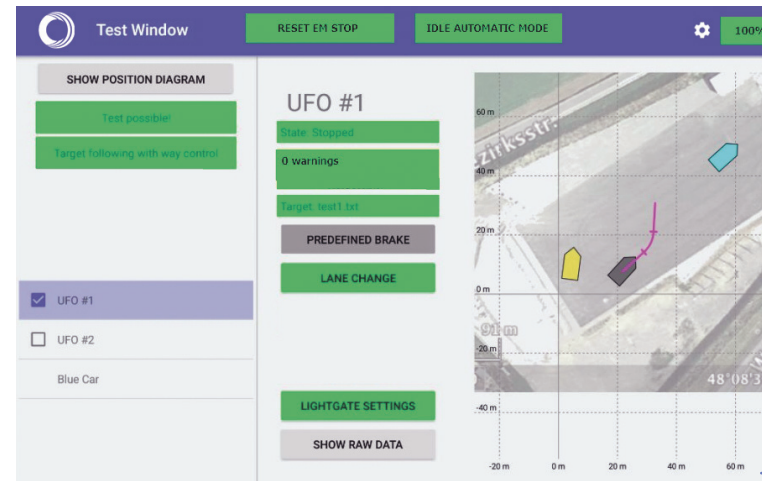
Max Continuous Pedal Force	56 N
Max Throttle Pedal Force	156 N
Max Throttle Pedal Speed	1 m/s
Max Stroke	104 mm
Control Mode	Speed Control, Position Control, Force Control

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

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, **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 the corresponding data such as position and speed.



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 robot to a standstill. The Control Panel guarantees that there is only one operator per running test monitoring the UFO target carriers, and enables them to 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.

UFObase script language (UBS) is designed to give the user extensive flexibility in programming complex and multifunctional 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. It enables flexible monitoring and control.



See the Optimized ADAS workflow in action.

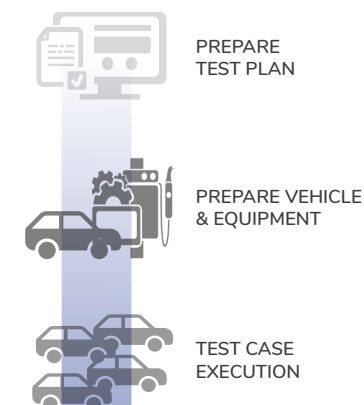
SOFTWARE

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 ADASuite also includes the UFO Target Carrier and DrivingRobot.

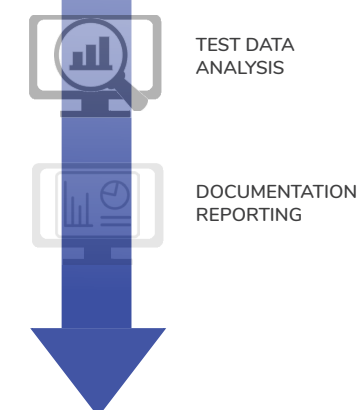
Test Preparation - Execution

- » A wide range of preconfigured test scenarios utilizing UFO target carrier and/or DrivingRobot are part of the library (Euro NCAP and others)
- » Scenarios are adapting based on data input from test engineer (ex: overlap based on vehicle's width)
- » Robots are self-calibrated
- » Functions for testing efficiency: automatic return to start



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 online 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 configurator
- » Live raw-data monitoring
- » On-board controller
- » Distinctive control algorithms (velocity, way, synchronized to VUT)
- » PMC file importer (ABD driving robots)
- » Data Outputs: Logfile 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


ACTIVE SAFETY 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 basic, advanced 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 services of the packages 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 8:30 a.m. to 5:00 p.m., Friday 8:30 a.m. to 12:00 p.m CET. Additional support, outside of our standard support times is available with a 48 hours 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 hours in 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. Processing the ticket and contacting you within 12 hours.
- 


Annual robot service: Regular maintenance of robots extends their lifespan and 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 claimed 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: On 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 our factory in Linz, Austria, 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.
- 

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

ACTIVE SAFETY SERVICE PACKAGES

	BASIC SERVICE PACKAGE	ADVANCED SERVICE PACKAGE	PREMIUM SERVICE PACKAGE
 Remote support	✓	✓	✓
 Annual robot service	✓	✓	✓
 Annual battery health check	✓	✓	✓
 Software update	✓	✓	✓
 Priority remote support		✓	✓
 Priority ticket system		✓	✓
 Pool equipment access		✓	✓
 Priority spare parts delivery			✓
 Spareparts frame contract			✓
 Loan platform during repair			✓
 Loan platform during service			✓

BASIC SERVICE PACKAGE

The basic service package is covering base service requirements that arise when using the robots. Additional services can be purchased for an additional charge. The costs vary depending on the number of robots and kind of infrastructure set.


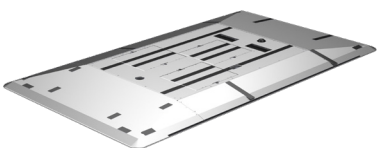

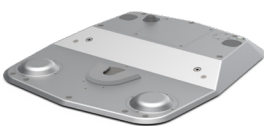
ADVANCED SERVICE PACKAGE

The advanced service package is bridging the gap between the basic and the premium service packges. Additional services can be purchased for an additional charge. The costs vary depending on the number of robots and kind of infrastructure set.

PREMIUM SERVICE PACKAGE

The premium service package is covering all customer needs for a carefree and smooth working day. The costs vary depending on the number of robots and kind of infrastructure set.

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	20 - 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	3 m/s²	3 m/s²	4 m/s²	2 m/s²
	Maximum Longitudinal Deceleration	6 m/s²	6 m/s²	6 m/s²	3 m/s²
	Maximum Lateral Acceleration	1.5 m/s²	1.5 m/s²	3 m/s²	1.5 m/s²
	Minimum Turning radius	6 m	6 m	8 m	0 m (turn on spot)
	Batteries Included	2	3	2	4
	Charger Included	2	3	2	2
	Battery Technology	Lithium Ion (LiFePO4)	Lithium Ion (LiFePO4)	Lithium Ion (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 60 NCAP scenarios)	Half testing day	Full testing day (up to 60 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 Crosssection	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 Target (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)
OPERATING CONDITIONS	Operation Temperature Range	-5° to 40°	-5° to 40°	-5° to 40°	-5° to 40°
	Weather resistance	fully sealed electronics	fully sealed electronics	fully sealed electronics	fully sealed electronics
	Recommended Storage Temperature	5° to 25°	5° to 25°	5° to 25°	5° to 25°

UFOpro / UFOpro BlackSeries

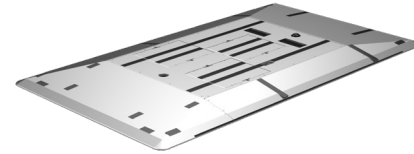
TARGET CARRIER

1 - pro UFOpro - Core

#UFO-2

» UFOpro target carrier is designed for passenger vehicle testing. It speeds up to 80 km/h and has following included:

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



1 - UFOpro Black Series - Core

#UFO-3

» UFOpro BlackSeries target carrier is designed for passenger vehicle testing. It speeds up to 100 km/h and has following included:

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

UFOmicro - 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 100 Mbps+ TCP/IP speed over multi-km distances



UFOmicro - 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



1.2 - UFOpro Optional Extensions

ABS Set (UFO-1-8320)

- » Rotary encoders, mounted on front tires
- » For reduced flat spots and controlled deceleration
- » Can be installed in UFOpro or UFOpro Black Series
- » Special control algorithm to deliver best accuracy during deceleration to avoid flat spots on tires for an increased lifetime of tires

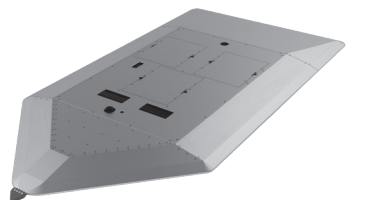


See the ABS Upgrade in action.



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 for exchange of standard front ramp for UFOpro / UFOpro BlackSeries
- » Arrow Ramp frame from aluminum for passenger car overrun



See the Arrow Ramp Set in action.



UFOpro / UFOpro BlackSeries

TARGET CARRIER

1.3 - UFOpro Additional Equipment

UFOpro Battery (UFO-1-3010)

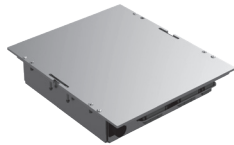
- » UN 38.3 certified
- » Voltage 52.8 V
- » Capacity 2,91 kWh/set
- » Cell type LiFePo4

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

- » UN 38.3 certified
- » Voltage 52.8 V
- » Capacity 972 Wh
- » Cell type LiFePo4

UFOpro Battery Transport Box (UFO-1-2220)

- » Transport box for batteries for safe transport due to the precisely fitting cut-out



See the the easy battery swap in action



UFOmicro

TARGET CARRIER

2 UFOmicro – Core

#UFO-8

- » UFOmicro target carrier is desgind for PTW testing. It speeds up to 90 km/h andand has following included:
 - Two hot swappable batteries and chargers
 - UFOmicro tool part and spare part box
 - Carrying Handles



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 Ellipse-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 Extensions

UFOmicro - VRU Extension (UFO-8-1100)

- » Allows VRU testing with low height of only 25 mm
- » 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)

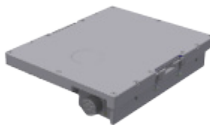
- » Allows PTW testing with increased stability
- » UFOmicro with PTW extension can be used with the following targets:
 - European Motorcycle Target & Stands (UFO-1-5140)
 - NCAP approved combination
 - E-Scooter CNCAP Target (UFO-1-5150)
 - NCAP approved combination



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)

- » Transport box for batteries for safe transport due to the precisely fitting cut-out.



UFOmicro

TARGET CARRIER

UFOmicro – Target Options



European Motorcycle Target & Stands¹
(UFO-1-5140)
Euro NCAP approved with UFOnano



E-Scooter CNCAP Target¹
(UFO-1-5150)



Bicyclist Adult Target (EBT)¹
(UFO-1-5030)
Euro NCAP approved with UFOnano



Pedestrian Child Target Articulation (EPTc)¹
(UFO-1-5070)
Euro NCAP approved with UFOnano



Pedestrian Adult Target Articulation (EPTa)¹
(UFO-1-5050)
Euro NCAP approved with UFOnano



Bicyclist Child Target¹
(UFO-1-5035)



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



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

¹ Image 4activeSystems GmbH
² Image Messring GmbH

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 the spot
- » 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 Ellipse-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 - Batteries Set (UFO-1-3160)

- » Includes two UFO nano batteries



UFO nano – Target Options



Bicyclist Adult Target (EBT)¹
(UFO-1-5030)
Euro NCAP approved with UFO nano



Bicyclist Child Target¹
(UFO-1-5035)



Pedestrian Adult Target Articulation (EPTa)¹
(UFO-1-5050)
Euro NCAP approved with UFO nano



Pedestrian Child Target Articulation (EPTc)¹
(UFO-1-5070)
Euro NCAP approved with UFO nano



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



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

¹ Image 4activeSystems GmbH
² Image Messring GmbH

DrivingRobot

4 DrivingRobot

#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 – incl. mounting strat)
- » Two dGNSS antenna for mounting on the vehicle incl. 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

4.1 DrivingRobot - WiFi Options

VUT & Driving Robot 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 100Mbps+ TCP/IP speed over multi-km distances.

VUT & Driving Robot 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 conatantly-moving network elements.

4.2 Audiovisual Alarm Detection in VUT

#UFO-1-8510

- » AVAD 3 System from DTC
- » Detector for audio-visual signals from the vehicle
- » Windshield mounting kit
- » Color and pattern recognition

ROBOT INFRASTRUCTURE

5 Robot Infrastructure Set

The infrastructure set contains all components that are necessary to operate with our UFO target carriers. The infrastructure set is available in two versions.

5.1 Robot Infrastructure Set - M2

#UFO-1-8550

Tripod with Rocket – M2 (UFO-1-8150)

- » The Tripod with Rocket is powered by the Control Box and provides a stable WiFi connection to all devices
- » It comes with sand bags to achieve high stability



Control Box Set (UFO-1-2160-UNIV)

- » Stationary autonomous unit for the central coordination of the UFO systems
- » Setting up of the Wifi network (via access point)
- » Transmission of the 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
- » Communicating with the Control Box and transmit positioning information and connected device data.
- » Enalbes to connect third party equipment



VUT & Driving Robot Bullet - M2 (UFO-1-8410)

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



Isofix Box Holder (UFO-1-8130)

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



ROBOT INFRASTRUCTURE

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

- » Mobile stand-alone unit for central coordination of the UFO system via the UFO operator
- » Allows the adjusting and operation of the UFO carrier platform in manual or automatic mode via the UFO operator
- » Visualization of the UFO system, mobile phone-based emergency stop



Rugged Outdoor Control Computer - EN / GER (UFO-1-8250-GER/EN)

- » Mobile computer for running the software UFObase, Evaluation and Trajectory Generator
- » Robust design and daylight screen support outdoor usage



Optional Equipment

Traffic Light Set - M2 (UFO-1-8035-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 incl.
- » Static object box with two connection ports
- » WiFi connection
- » Battery powered



See the Traffic Light in action.



Mobile Rocket Mounting Kit (UFO-1-8140)

- » 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



ROBOT INFRASTRUCTURE

Pedestrian Trigger Box Set - M2 (UFO-1-2050)

- » Allows the control of 4a remote controller directly from Humanetics Software
- » Charger and software incl.
- » WiFi Connection
- » Battery powered
- » Automatic triggering of pedestrian articulation
- » Incl. 4a remote controller
- » Delivers most accurate synchronization in the movement of VRU dummies



Light Gate Set - M2 (UFO-1-8095-UNIV)

- » Battery powered Multifunction Box
- » Two tripots
- » Wifi connection

See the Robot Infrastructure and UFObase Control Software in action.



5.2 Robot Infrastructure Set - Mesh (coming Soon)

#UFO-1-8555-UNIV

- Control Panel Set - Mesh
- VUT & Driving Robot Mobile Node - Mesh
- Tripot with Static Node - Mesh
- Vehicle Box
- Control Box Set
- Isofix Box Holder
- Rugged Outdoor Control Computer

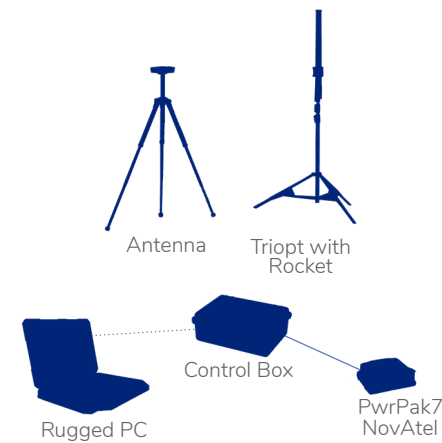
Optional Equipment

- Traffic Light Set - Mesh
- Light Gate Set - Mesh
- Pedestrian Trigger Box Set - Mesh

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



6.1 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

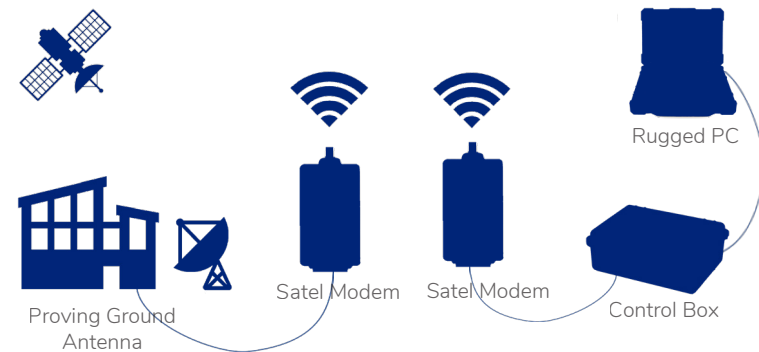
6.2 GNSS Set - VUT & DrivingRobot

#UFO-5-1001

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

Proving Ground Solution

- » Includes Satel Modem Set 400 / 800 with:
 - RCTMv3 correction data
 - RS232 Connection to Control Box
- » Includes Tested Base Stations with:
 - PwrPak7
 - ProPak6
 - RT-Base S
 - Racelogic Vbox RTK-Basisstation



dGNSS POSITIONING SYSTEMS

6.3 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 incl.

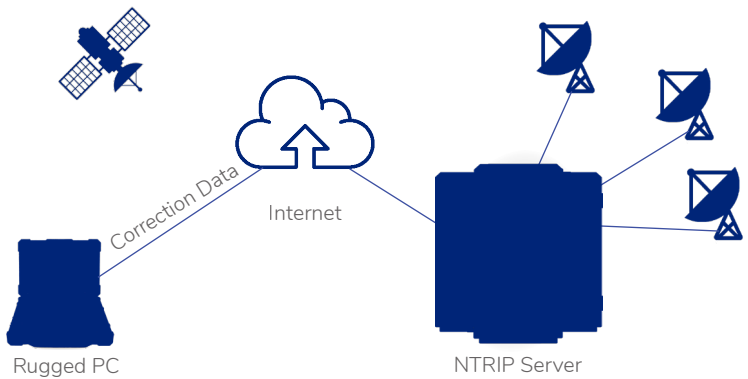
6.4 Satel Modem Set 800

#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

Nation Wide Solution

- » Includes NTRIP(Networked Transport of RTCM via Internet Protocol) with:
 - Possibility to receive NTRIP correction data
 - Local NTRIP data stream not included



6.5 NTRIP Interface

#UFO-1-9110

- » 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

7.1 UFObase #UFO-1-9060

- » UFObase is the software platform which precise and accurate movement of all UFO target caries and Driving Robots. It is used to generate, simulate, and execute test scenarios. It is the software core on which all software products are based.

7.2 Synchronized Virtual Lightgate Feature #UFO-1-9010

- » Enables the UFO to adjust longitudinal and lateral 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 in helpful in windy testing conditions or with manual driven VUT



7.3 Data Forwarding Feature #UFO-1-9030

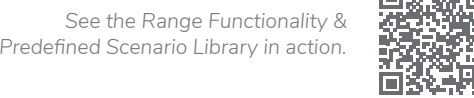
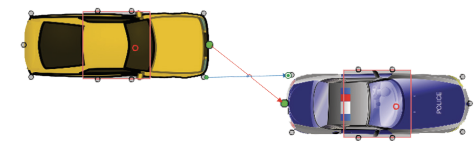
- » The data from the robot can be transferred directly to the VUT during the test trough a CAN port (either through the Vehicle Box or through the DrivingRobot Box)
- » It includes position data, velocity data, acceleration data, NCOM data and CAN-DBC file



SOFTWARE

7.4 Distance Calculation Functionality #UFO-1-9040

- » Calculates distances from manually defined positions of robots and VUTs, enabling better understanding of distances, target placement and timing
- » Possibility to define specific measurement points on the robots and VUTs
- » Real-time display of distances between measurement points
- » Includes longitudinal synchronization between test robots



7.5 DrivingRobot Friction Compensation Feature #UFO-1-9190

- » Reducing 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



7.6 Advanced Scenario Scripting Feature #UFO-1-9170

- » Creation of complex scenarions with multiple test phases (UFObase Scenario (UBS))
- » UBS code consists of:
 - Variables (enables the definition of parameters within UFObase)
 - Triggers (defines the transition between self-defined test phases)
 - Test Phases and generic trajectories

7.7 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



SOFTWARE

7.8 NCAP Library Subscription - UFO only

#UFO-1-9230

- » Simplifying 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
- » Supporting engineers with the quick and easy set up of test scenarios, save time, and reduce 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

7.9 NCAP Library Subscription - UFO + Driving Robot

#UFO-1-9240

- » Simplifying 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
- » Supporting engineers with the quick and easy set up of test scenarios, save time, and reduce 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 and DrivingRobot

7.10 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
- » Scenarios can be conducted with UFO target carrier and Humanetics Vehicle Box
- » For the evaluation and reporting of scenarios involving the Humanetics DrivingRobot also 2.5 required
- » AVL and Humanetics Product

Automatic evaluation of Euro NCAP Tests



See the Test Evaluation & Reporting Suite in action.



SOFTWARE

7.11 Test Evaluation and Reporting Suite – UFO + Driving Robot

#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
- » Scenarios can be conducted with UFO target carrier and Humanetics DrivingRobot
- » For the evaluation and reporting of scenarios involving the Humanetics DrivingRobot also 2.5 required
- » AVL and Humanetics Product

7.12 UFO as Master Vehicle Feature

#UFO-1-9160

- » Enables the Humanetics UFO target carrier to used as leading vehicle for the DrivingRobot and other target carriers
- » Enables to conduct scenarios also with limited space on the proving ground

See the UFO target carrier as Master Vehicle in action.



7.13 Manual Speedup Feature

#UFO-1-9270

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

7.14 Trigger Edit Feature

#UFO-1-9280

- » Enables the user to define specific trigger conditions to create more complex scenarios
- » Triggers can be defined and set as needed: e.g. if distance is less than 10m → stop VUT

SOFTWARE

7.15 Teachmode Feature

#UFO-1-9290

- » Trajectory is run with VUT and saved as trajectory within UFObase
- » Supports fast creation of scenarios by physically running the test

7.16 Trajectory Generator

#UFO-1-9210

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

7.17 ISO22133 Compatability Feature (Coming Soon)

#UFO-1-9310

- » Standardized method to control and monitor active safety testing equipment
- » Can be activated for UFO target carrier and DrivingRobot
- » Only a subset of the functionality required for static test runs is supported

7.18 Test Validation Feature

#UFO-1-9320

- » Automatically validates if the scenario was executed correctly from the testing equipment
- » Includes UFO target carriers and VUT (Manually driven or with DrivingRobot)

DELIVERY

8.1 Online Training at Delivery

#UFO-1-7200

- » Detailed user manual
 - » Best practice guidelines and installation videos
 - » Online Training incl.
 - » Included with each robot*
- » Good internet connection at proving ground is required

* Portable Video device for Microsoft Teams Meeting is recommended

8.2 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

*Price: on demand

8.3 Elite Delivery*

#UFO-1-7210



- » Detailed user manual
 - » Best practice guidelines
 - » Installation videos
 - » Humanetics training engineers visiting customer site and delivering training
- » Theoretical training
 - » Sessions on the proving ground

*Price: on demand

SERVICE PACKAGES

8.4 Basic Service Package		#UFO-1-7340
» Covering base service requirements	» Annual battery health-check	
» Remote support	» Software update	
» Annual robot service		
8.5 Advanced Service Package		#UFO-1-7350
» Bridging the gap between the basic and the premium service packages	» Annual robot service & battery health-check	
» Priority ticket system and remote support	» Software update	
	» Pool equipment access	
8.6 Premium Service Package		#UFO-1-7360
» Covering all customer needs for a carefree and smooth working day	» Pool equipment access	
» Priority ticket system and remote support	» Loan platform during service and repair	
» Annual robot service & battery health-check	» Spareparts frame contract	
» Software update		

TARGET OPTIONS

9.1 Passenger Vehicle 3D Target (GVT) REF. F / REF. G		#UFO-1-5010 / #UFO-1-5110
» Compatible with UFOpro and UFOpro Black Series		
» Modeled after Ford Fiesta – Realistic – replicates radar and visual properties of a real car		
» Can be used for Euro NCAP CCR evaluations, CCFtap scenarios as well as internal development		
9.2 Stationary Stand for Passenger Vehicle 3D Target		#UFO-1-5080
» Used for stationary tests		
» Fitting Passenger Vehicle 3D Target REF. F and REF. G		

TARGET OPTIONS

9.3 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



9.4 Bicycle Child Target¹

#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



9.5 Pedestrian Adult Target Articulation (EPTa)¹

#UFO-1-5050

- » Replicates human properties in size and shape, with articulating legs
- » Articulated EPT – Euro NCAP Pedestrian Target
- » 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

9.6 Pedestrian Child Target Articulation (EPTc)¹

#UFO-1-5070

- » Represents a 7 year old child with articulating legs
- » Homogeneous distribution of radar cross section
- » 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

TARGET OPTIONS

9.7 European Motorcycle Target & Stands (PTW)¹

#UFO-1-5140

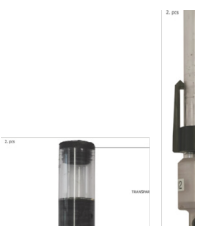
- » Corresponding to category L3 as applied by UNECE
- » Realistic properties in size and shape and rotational features
- » Compliant to ISO 19206-5 WD, Euro NCAP
- » Crash speed lateral up to 60 km/h / longitudinal up to 50 + 20 km/h



9.8 Motorcycle Stands (PTW)

#UFO-1-5140-6001

- » Needed for the usage of European Motorcycle Target (9.7)



9.9 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



9.10 E-Scooter CNCAP Target Stands (PTW)

#UFO-1-5150-6001

- » Needed for the usage E-Scooter CNCAP Target Stands (9.9)



TARGET OPTIONS

9.11 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



9.12 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



9.13 Euro NCAP Pedestrian Target (EPTa)² (coming soon)

- » Size, shape, realistic sesor signature as well as leg movement meets complete NCAP specifications
- » Collision resistant design up to 60 km/h
- » Stable measurement of leg micro-Doppler effect according to protocols
- » ISO19206-2 compliant



10.1 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 Black Series, UFOmicro and UFOnano



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		
4	UFO-5	DrivingRobot
4.1	UFO-1-8410	VUT & Driving Robot Bullet - M2
4.1	UFO-1-8630	VUT & Driving Robot Mobile Node - Mesh
4.2	UFO-1-8510	Audiovisual Alarm Detection VUT

¹ Image 4activeSystems GmbH

² Image Messring GmbH

PRODUCT LIST

POS	PART NUMBER	DESCRIPTION
INFRASTRUCTURE		
5		Robot Infrastructure Set
5.1	UFO-1-8550-UNIV	Robot Infrastructure Set - M2
5.1	UFO-1-8150	Tripot with Rocket - M2
5.1	UFO-1-2160-UNIV	Control Box Set - M2
5.1	UFO-1-2130	Vehicle Box - M2
5.1	UFO-1-8410	VUT & DrivingRobot Bullet for VUT Kit
5.1	UFO-1-8130	Isofix Box Holder
5.1	UFO-1-8240-UNIV	Control Panel Set – M2
5.1	UFO-1-8240-GER/EN	Rugged Outdoor Control Computer - EN /GER
5.1	UFO-1-8140	Mobile Rocket Mounting Kit
5.1	UFO-1-8035-UNIV	Traffic Light Set - M2
5.1	UFO-1-8140	Mobile Rocket Mounting Kit
5.1	UFO-1-2050	Pedestrian Trigger Box Set - M2
5.1	UFO-1-8095-UNIV	Light Gate Set - M2
5.2	UFO-1-8555-UNIV	Robot Infrastructure Set - Mesh
dGNSS		
6.1	UFO-1-8050	GNSS Base Station - dGNSS Control Box Extension
6.2	UFO-5-1001	GNSS Set - VUT & DrivingRobot
6.3	UFO-1-8800	Satel Modem Set 400
6.4	UFO-1-8810	Satel Modem Set 800
6.5	UFO-1-8560	NTRIP Interface

PRODUCT LIST

POS	PART NUMBER	DESCRIPTION
SOFTWARE		
7.1	UFO-1-9060	UFObase - Core
7.2	UFO-1-9010	Synchronized Virtual Lightgate Feature
7.3	UFO-1-9030	Data Forwarding Feature
7.4	UFO-1-9040	Distance Calculation Feature
7.5	UFO-1-9190	DrivingRobot Friction Compensation Feature
7.6	UFO-1-9170	Advanced Scenario Scripting Feature
7.7	UFO-1-9180	Audiovisual Alarm Detection Interface Feature
7.8	UFO-1-9230	NCAP Library Subscription - UFO only
7.9	UFO-1-9240	NCAP Library Subscription - UFO + Driving Robot
7.10	UFO-1-9140	Test Evaluation and Reporting Suite – UFO only
7.11	UFO-1-9150	Test Evaluation and Reporting Suite – UFO + Driving Robot
7.12	UFO-1-9160	UFO as Master Vehicle Feature
7.13	UFO-1-9270	Manual Speedup Feature
7.14	UFO-1-9280	Trigger Edit Feature
7.15	UFO-1-9290	Teachmode Feature
7.16	UFO-1-9210	Trajectory Generator
7.17	UFO-1-9310	ISO22133 Compatability Feature
7.18	UFO-1-9320	Test Validation Feature
DELIVERY & SERVICE		
8.1	UFO-1-7200	Online Training at Delivery
8.2	UFO-1-7160	Factory Delivery
8.3	UFO-1-7210	Elite Delivery
8.4	UFO-1-7340	Basic Service Package
8.5	UFO-1-7350	Advanced Service Package
8.6	UFO-1-7360	Premium Service Package

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

PRODUCT LIST

POS	PART NUMBER	DESCRIPTION
TARGETS		
9.1	UFO-1-5010	Passenger Vehicle 3D Target (GVT) REF. F
9.1	UFO-1-5110	Passenger Vehicle 3D Target (GVT) REF. G
9.2	UFO-1-5080	Stationary Stand for Passenger Vehicle 3D Target
9.3	UFO-1-5030	Bicyclist Adult Target (EBT)
9.4	UFO-1-5035	Bicyclist Child Target
9.5	UFO-1-5050	Pedestrian Adult Target Articulation (EPTa)
9.6	UFO-1-5070	Pedestrian Child Target Articulation (EPTc)
9.7	UFO-1-5140	European Motorcycle Target & Stands (PTW)
9.8	UFO-1-5140-6001	Motorcycle Stands (PTW)
9.9	UFO-1-5150	E-Scooter NCAP Target (PTW)
9.10	UFO-1-5150-6001	E-Scooter NCAP Target Stands (PTW)
9.11	UFO-1-5180	Playing Child Target (PCT)
9.12	UFO-1-5190	Standing Scooter Target (SST)
9.13	Coming Soon	Euro NCAP Pedestrian Target (EPTa)

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.

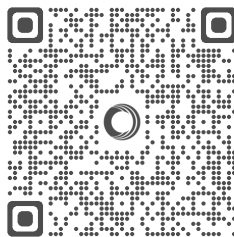
If you have questions regarding your existing Humanetics Active Safety products, please reach out to our support team. Our support team can be reached monday to thursday from 8:30 a.m. to 5:00 p.m. and friday from 8:30 a.m. to 12:00 p.m.

Support Team

Hotline: +43 732 343 2001
E-Mail: activesafety.support@humanetics.eu

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 travelling 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 the detect a likely collision to alert the driver.



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