



ACTIVE SAFETY

Product Portfolio



- UFOpro
- UFOpro *Black Series*
- UFOmini
- Driving Robot
- Options and Accessories



UFOpro

Standard and Black Series

The Standard UFOpro is designed and optimized for Euro NCAP ADAS testing, whereas the UFOpro *Black Series* is the performance version of the Standard UFOpro. The UFO *Black Series* has the same geometry and hardware as the Standard UFOpro, but can reach speeds up to 100kph with the Global Vehicle Target (GVT) dummy riding on top. This enables the testing of ADAS systems beyond the speeds of Euro NCAP test protocols.

Functionality of the UFOpro (Standard, *Black Series*) can be easily expanded with optional add-on modules and accessories from the UFO portfolio. The Arrow Ramp, for example, can be added for side impact tests by crashing the car dummy into the side of the Vehicle Under Test (VUT). The Vulnerable Road User (VRU) Kit can be added for various pedestrian and bicycle VRU testing. These add-on options not only increase the flexibility of the test system, but also help streamline the testing process by eliminating the need to learn and maintain additional systems.

UFO

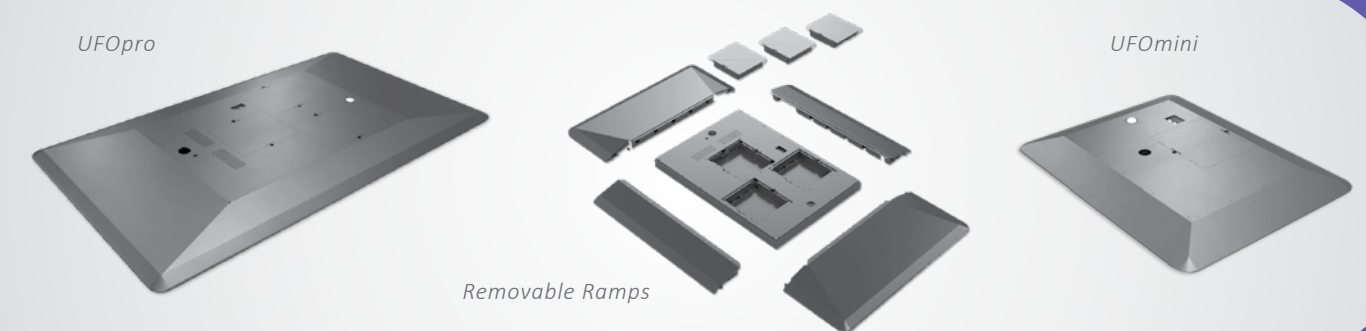
Ultra Flat Overrunable robot platform

UFO was first introduced to the market in 2008, when a German OEM and Tier 1 requested a low-maintenance, overrunable robot platform for active safety testing.

The electrically driven UFO can be controlled remotely by an operator, and can be synchronized with Driving Robots to execute various autonomous test maneuvers. The stability and low profile of the UFO allow auto

manufacturers to run fully autonomous testing on the latest collision mitigation features with maximum accuracy and repeatability, and without risking damage to the robot, test vehicles or the driver.

Efficiency and ease-of-use were core philosophies for subsequent hard- and software development.



UFOpro Add-On Options

Additional Lithium Power Pack

Extra power packs allow ongoing testing without downtime for charging batteries

Heavy Duty Kit

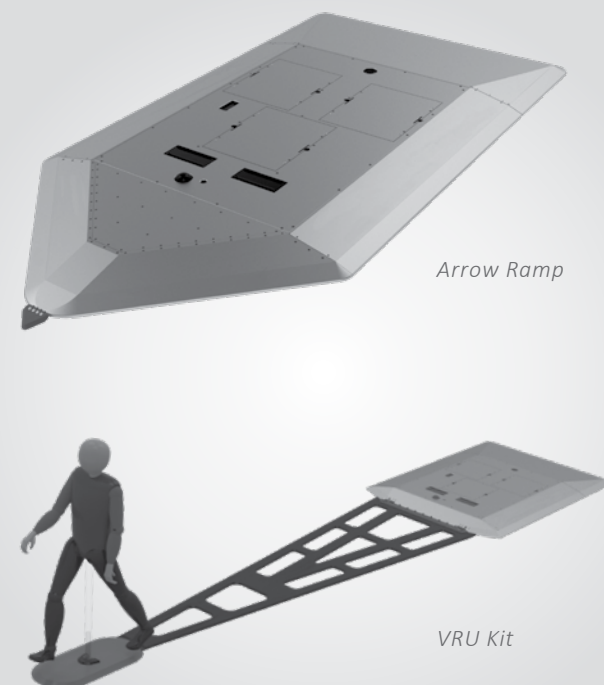
For truck overrunability; includes special reinforced ramps, cover plate and battery covers

Arrow Ramp

Can be swapped with standard front ramp for side impact testing of cars, bicycles, pedestrians, etc.

VRU Kit

Mounting platform for running linear trajectory tests with pedestrian dummies and bicycles



UFOmini

The UFOmini is developed for pedestrian and bicycle testing beyond the bounds of Euro NCAP test protocols. The unique 2+2 wheeler design enables two-dimensional movements of the pedestrian and bicycle dummies, and is able to simulate complex and realistic scenarios for VRU active safety systems. Despite the reduced size of the UFOmini, it retains the same robustness and stability of the standard UFO models, and testing in windy conditions is therefore possible.

UFO KEY FEATURES

- **Low overrun height of 98 mm** – to be overrun/over-braked by a vehicle without damages to the vehicle or the robot platform
- Quick and simple access to all internal components with a **single central cover plate** which can be easily removed with just a few screws
- **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
- **Removable ramps** simplify transportation and storage by reducing the overall size and weight of the robot platform, which can be easily transported with any standard minivan-sized vehicle
- **100% waterproof 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 RCS
- **Stable 4-wheel chassis** for **minimized rolling** of the target in dynamic lateral motions (e.g. wind suction/slipstream during over-taking)
- **Single operator handling**
- **Designated official tool by Euro NCAP laboratories** (e.g. ADAC, AstaZero, CSI, Thatcham)
- Global Vehicle Target (GVT) and UFO robot platform **in accordance with the Euro NCAP/NHTSA/IIHS** confirmation workshops
- UFO-Base control software can be **easily integrated with third-party driving robots**
- **Measures relative distance/orientation between the robot platform and the vehicle being tested** (optional Range-Function); an existing OxTS range system can be connected as well
- **VRU testing** in longitudinal and crossing scenarios
- Additional space available for integration of **V2X** equipment in the central battery bay, including Network, CAN and power connection
- 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 system
- **Additional add-on modules available** for increased testing flexibility

The Driving Robot

The Driving Robot is able to control steering, brake, accelerator and the clutch pedal once installed in the test vehicle. The test vehicle can be navigated around the test track autonomously with highly precise measurements of position, velocity, acceleration, angular rates, roll, pitch, slip angles and more. Fully synchronized tests are made possible when used in conjunction with the UFO and its built-in OxTS RS GPS-aided navigation system.

The Driving Robot is also characterized by its space-saving, compact design that 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 all-inclusive driving robot box, containing all electronic components, can be easily installed with ISOFIX in the rear seat or with a click-in connector into the trunk.

Moreover, the Driving Robot 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 is activated with 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 turntable simulates the original grasp of the car steering wheel for ease of use when needed and is free of any support-arm structures to the windshield or passenger side window.

The Driving Robot can be perfectly integrated into the UFO environment by sharing the same UFO-Base software as the UFO line; no learning curve is needed for additional software. Up to nine (9) UFOs and/or Driving Robots can be controlled, managed and analyzed from just one laptop.



DRIVING ROBOT KEY FEATURES

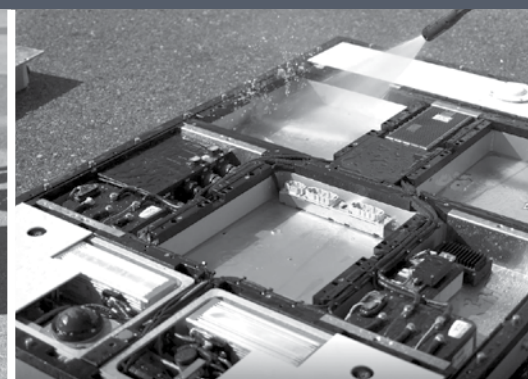
- **Compact design** with slim central stand to eliminate the need for struts to passenger windshield; trunk free for data acquisition
- **No dismantling of the airbag or steering wheel needed** – vehicle retains its full safety features, and no special training for the installation team required
- Independent vehicle electric and **automatic power-off emergency brake system** ensures safety
- **Comfortable seating position** with clear view to the proving ground for the driver
- Electronic components housed in robust and **easy-to-handle exterior box**
- **Self-contained 48V battery** – no additional electricity supply needed from the vehicle
- Smart hardware design allows for **simple, quick installation**
- **Seamless integration with the UFO environment** – utilizes same intuitive and user-friendly UFO-Base software
- **Self-calibration software** ensures fast, effortless start-up



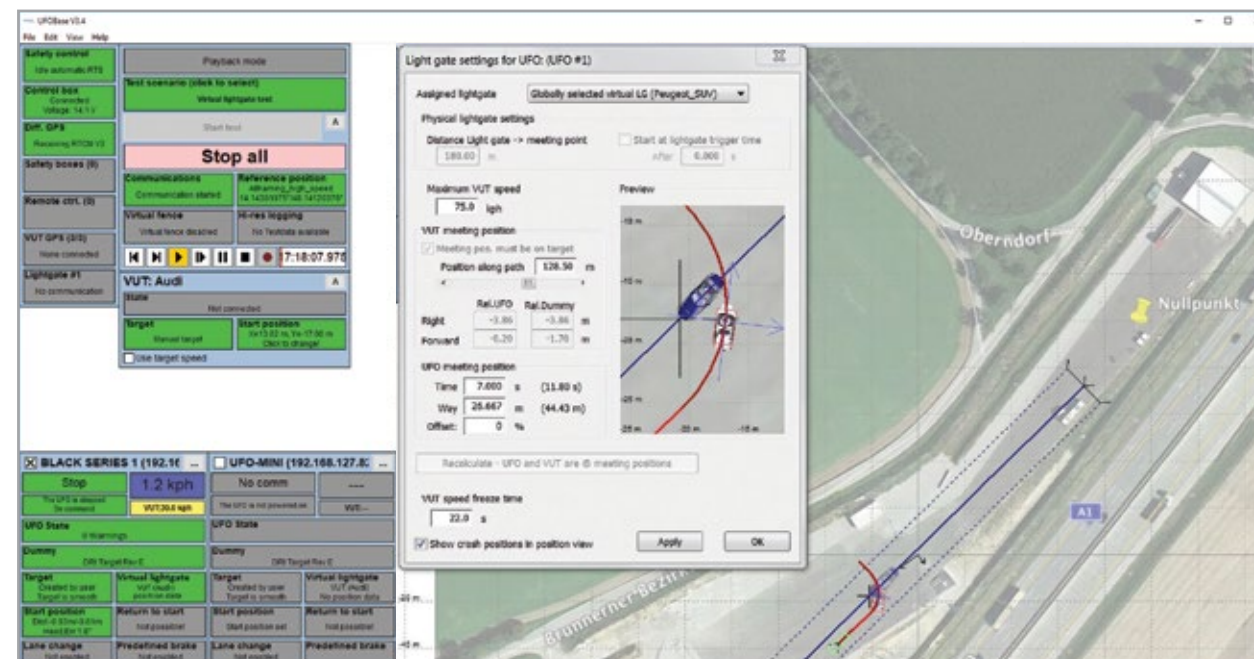
Cover plate is easily removed



Quick access to internal components



Waterproof design for easy cleanup



UFO-Base User Interface

Software

UFO-Base is the official operator software for the UFO and Driving Robot, and comes with an intuitive graphical user interface that runs on a rugged outdoor computer. To minimize preparation time on the proving ground, UFO-Base can be used to preconfigure and simulate simple to complex scenarios offline. Test scenarios can be created and run from up to nine (9) UFOs and/or Driving Robots simultaneously. The operator can live-monitor all connected robots, vehicles and the corresponding data such as position, speed etc.

Distinguishable and selectable control modes ensure that the UFOs and Driving Robots 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 unlocks additional synchronization modes between UFOs and/or Driving Robots to the VUT.

To provide a maximum level of security, all UFOs and Driving Robots have their own on-board controller which in critical situations can bring the robot to a standstill. The newly developed Master Control Panel guarantees that there is only one operator per running test, and enables them to intervene if necessary.

Additional equipment from Humanetics, e.g. a traffic light box, can easily be added to the test setup in UFO-Base.

SOFTWARE KEY FEATURES

- **Intuitive graphical user interface** with test simulation and online monitoring of UFO and/or Driving Robot position
- **Monitors up to nine (9) UFOs and/or Driving Robots** from one operator source simultaneously
- 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)
- Logfile (10 Hz & 100 Hz)
- **Virtual fence** provides additional safety precaution



WiFi Interface



User-friendly touchscreen



PMC trajectory file exchange

PRODUCT PACKAGE OVERVIEW

	UFOmini	UFOpro	UFOpro Black Series	Driving Robot
Printed User Manual	●	●	●	●
Rugged Computer	● <i>Laptop</i>	● <i>Laptop</i>	● <i>Laptop</i>	● <i>Tablet</i>
Base Software	●	●	●	●
Master Control Panel	●	●	●	—
Control Box	●	●	●	—
Vehicle Box	●	●	●	—
Driving Robot Box	—	—	—	●
ISOFIX for Box in Vehicle	●	●	●	●
Tool & Spare Parts Box	●	●	●	●
One Man UFO Mover	●	●	●	—
Batteries	● <i>1</i>	● <i>2</i>	● <i>3</i>	● <i>1</i>
Charger	● <i>1</i>	● <i>2</i>	● <i>3</i>	● <i>1</i>
dGPS Unit	<i>OxTS OEM¹ with Glonass</i>	<i>OxTS OEM¹ with Glonass</i>	<i>OxTS OEM¹ with Glonass</i>	<i>OxTS RT3005GG² with Glonass</i>
dGPS Base Station	○	○	○	○
WiFi Access Point (Rocket)	●	●	●	○ ³
Visualization Tablet	○	○	○	○
Synchronization Software	○	○	○	○
Data Link Software	○	○	○	○
Range Functionality	○	○	○	○

Key: ● = Standard ○ = Optional — = Not Available

¹Optional instead of the OxTS OEM: Genesys ADMA slim.

²Optional instead of the OxTS RT3005GG: Genesys ADMA.

³WiFi Access Point included in dGPS base station option for Driving Robot.

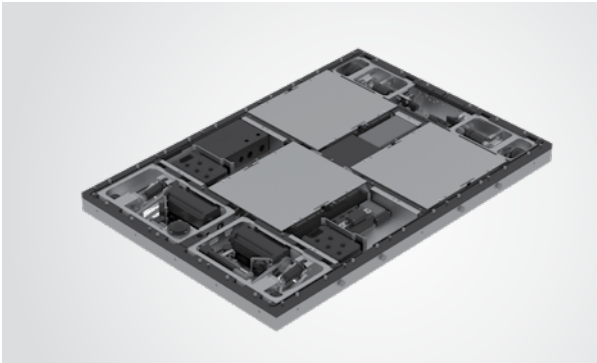
UFO ROBOT PLATFORM SPECIFICATIONS

Standard features for all UFO models:

- Aluminum frame
- Set of RCS-optimized aluminum ramps (welded without rivets and overhead screws)
- Lifting handles
- One man UFO-Mover set for quick, easy transportation
- 2x electric engines
- 48V electric system
- LiFePO4 battery
- OxTS OEM GPS unit (optional: Genesys ADMA slim)
- WiFi access point on tripod
- Overrunable WiFi antenna
- Fail-safe braking system
- Buzzer warning before/during drive
- Safe low speed manual operation
- Optional safety elements (flash lights, buzzers, light gates, signal lamps) can be integrated into the UFO testing environment



One Man UFO-Mover Set



UFO without Cover or Ramps

1.1 UFOpro (#UFO-2-SET-xx)

- Stable 4-wheel chassis for minimized rolling of the target on top
- Rotatable GPS connector for GPS antenna mounted on dummy car
- GPS antenna with detachable cable (external mounting)
- Position markings (Velcro) on ramps for precise and reproducible mounting of the 3D soft car target GVT Rev F
- Hydraulic/electric brake system
- 2x Lithium Power Packs incl. battery monitoring system (BMS)
- 2x Smart Charger
- Sufficient mass for stable driving at high speeds (e.g. wind suction during over-taking, slipstream)
- Frame Size: 1100x1605mm
- Overall Size: 1690x2950mm (Footprint size optimized for GVT)
- Height: 98mm
- 120kg carrying weight of core system
- Approximately 240kg test ready weight (e.g. wind suction during over-taking, slipstream)
- Max. speed with GVT dummy: **80kph**
- Max. acceleration with GVT-Rev F 0 - 72 kph: 1.4m/s²
- Max. deceleration with GVT-Rev F 50 - 0 kph: controlled: 6m/s²
- *Optional:* 3rd battery can be inserted for longer testing duration and for frequently high deceleration tests (recuperation)
- *Optional:* the 3rd battery space (36x36x8cm) can be used for integration of **V2X** functionality or any other kind of electronic that may be needed in the future



1.2 UFOpro Black Series (#UFO-3-SET-xx)

- In addition to UFOpro:**

 - Max. speed with GVT dummy: **100kph**
 - Control algorithm for high speeds
 - Longer gear ratio
 - One additional battery (incl. three in total)
 - One additional charger (incl. three in total)
- Carbon fiber cover plates
 - Approximately 260kg test ready weight (one additional battery weight)
 - Max. acceleration with GVT-Rev F 0 - 72 kph: 1.4m/s²
 - Max. deceleration with GVT-Rev F 50 - 0 kph: controlled: 6m/s²

1.3 UFOmini (#UFO-4-SET-xx)

- Frame size: 835x1180mm
 - Overall size: 1282x1627mm
 - Height: 98mm
 - Carrying weight of core system: 75kg
 - Approximately 160kg test ready weight
 - Max. speed: 30 kph
 - Max. acceleration: 0 - 20 kph: 2,5m/s²
- Max. deceleration: 25 - 0 kph: controlled 4m/s²
 - 2+2 wheel chassis for on-spot turning with central differential drive system
 - GPS Antenna integrated, overrunable
 - 1x Lithium Power Pack incl. battery monitoring system (BMS)
 - 1x Smart Charger

1.4 UFOpro Operator Training & Final Acceptance Testing (FAT), Europe (#UFO-1-7050)

- **Phase 1:** Setup, installation, Final Acceptance, and training (software, testing, maintenance, commissioning test run)
 - » 4 days, 2 product specialists; Monday noon to Friday noon
 - **Phase 2:** 1 product specialist on-site for Q&A session (scheduled on demand)
 - » 1 1/2 days
- Location: customer proving ground
 - Max. 3 trainees per training

1.5 UFOpro Operator Training & Final Acceptance Testing (FAT), Overseas (#UFO-1-7080)

- Setup, installation, Final Acceptance, and training (software, testing, maintenance, commissioning test run)
 - 7 working days
 - » 1st week: 2 product specialists
 - » 2nd week: 1 product specialist
- Location: customer proving ground
 - Max. 3 trainees per training

2.1 Driving Robot (#UFO-5-SET-xx)

- Mounting platform
- Mounting kit to mounting platform
- Steering mechanics, using original steering wheel
- Steering and lateral path following software
- Pedal mechanics
- Pedal control and longitudinal path following software
- GPS unit OxTS RT 3005G (with Glonass; dual antenna – optional: Genesys ADMA)
- 2x dGPS antenna for mounting on the vehicle
- W-LAN communication equipment
- 1x 48V Lithium Battery Pack for independent power supply
- 1x Lithium battery charger
- Optimized for Euro NCAP testing protocols
- ISOFIX connector for Driving Robot control box



Driving Robot

2.2 Driving Robot Operator Training & Final Acceptance Testing (FAT) Europe (#UFO-1-7120)

- **Part 1:** Setup, installation, Final Acceptance, and training (software, testing, maintenance, commissioning test run)
 - » 4 days, 2 product specialists; Monday noon to Friday noon
 - **Part 2:** 1 product specialist on-site for Q&A session (scheduled on demand)
 - » 1 1/2 days
- Location: customer proving ground
 - Max. 3 trainees per training

2.3 Driving Robot Operator Training & Final Acceptance Testing (FAT) Overseas (#UFO-1-7130)

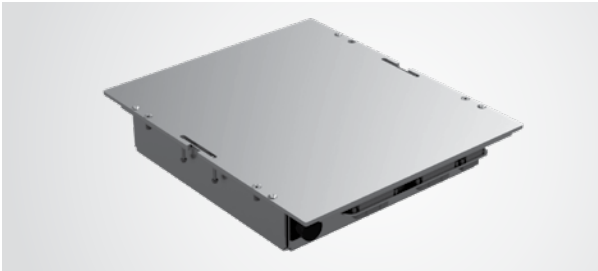
- Setup, installation, Final Acceptance, and training (software, testing, maintenance, commissioning test run)
 - 7 days, 1 product specialist; Monday noon to Friday noon
- Location: customer proving ground
 - Max. 3 trainees per training

UFO ROBOT PLATFORM OPTIONS

SOFTWARE OPTIONS (UFO & DRIVING ROBOT)

3.1 Additional Lithium Power Pack #UFO-1-3010 (Europe); #UFO-1-3030 (Overseas)

- Battery monitoring system with communication to UFO and SmartCharger
- Nominal voltage 52,8V
- Nominal energy 971Wh
- Water resistant when mounted in UFO



Lithium Power Pack

3.2 Heavy Duty Kit (Truck Overrunability) #UFO-1-1020

- Special reinforced ramps for truck overrunability
- Axle load for truck axle (static): 7.5 tons per axle
- Reinforced cover plate
- Reinforced battery covers (3 pcs)
- Battery case stiffener (3 pcs)
- UFO overrun height: 100mm
- Installation guide

3.3 Arrow Ramp #UFO-1-1040

- Designed for side impact scenarios (UFO and car, bicycle or other dummy crashing into side of VUT)
- Designed to slide smoothly under vehicle tire
- Arrow ramp for exchange of standard front ramp for UFOpro/UFOpro Black Series
- Arrow Ramp frame from aluminum for passenger car overrun

3.4 VRU Kit #UFO-1-1060

- Dummy mounting platform for articulating pedestrian dummies and bicycles
- To push/pull a pedestrian dummy or bicycle dummy by UFO
- For linear trajectories
- For UFOpro and UFOpro Black Series
- Articulation can be triggered by UFO-Base software
- 1x VRU arm with magnets and U-shaped connector for articulated and bicycle dummies
- 1x ramp with integrated mechanical clamping mechanism incl. mechanical overload releasing mechanism
- 1x overrunable GPS antenna for UFO
- 1x VRU box for connecting 4a dummy remote control

Dummy and remote control for articulation is not included. See Pedestrian Dummy (7.7, 7.8).

4.1 Synchronization Software (#UFO-1-9010)

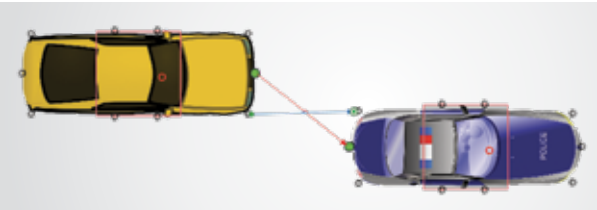
- Speed of UFO is synchronized with test vehicle speed at all times (for accurate point of impact) – approx. +/- 5% depending on frequency of speed change
- Enables maximum reproducibility and repeatability of test scenarios

4.2 Data Link Software #UFO-1-9030

- Facilitates intercommunication between UFO and other devices within the test system via standard communication network options:
 - » RS232
 - » CAN (CAN dbc file)
 - » LAN (Ethernet)

4.3 Range Functionality #UFO-1-9040

- Measures relative motion between UFO and VUT
- Provides precise off-lane position measurements
- Verifies accuracy of radar and sensors within the ADAS systems



Range Functionality

4.4 Test & Evaluation for Euro NCAP #UFO-1-7070

- Predefined tests compliant to Euro NCAP test protocols (C2C, Pedestrian, LSS)
 - » Yaw velocity of VUT
 - » Yaw velocity of GVT
- Recording of Euro NCAP specific data in the UFO software (for Humanetics Systems – UFO, driving robot)
 - » Steering wheel velocity (limited to Humanetics Driving Robot)
 - » Deceleration of GVT
- Compliant to Euro NCAP test parameters:
 - » Speed of VUT (GPS-speed)
 - » Speed of GVT (GPS-speed)
 - » Lateral deviation from test path for VUT
 - » Lateral deviation from test path for GVT
 - » Relative distance VUT and GVT (CCrb)
- Evaluation of test results with output of validity of test after test (limited to Humanetics System Data)

Test & Evaluation (4.4) requires Data Link Software (4.2) and Range Functionality (4.3)

4.5 Tablet with UFO mobile App (#UFO-1-8110)

- Bird's eye view of proving ground
- Informational display includes current speed, target speed, deviation from programmed path
- Driver guidance and navigation
- Virtual traffic light
- Event triggering from VUT by driver
- Visual interface of UFO system
- Monitoring of UFO system and testing
- WiFi connection
- Raw data

SAFETY ACCESSORY OPTIONS (UFO & DRIVING ROBOT)

COMMUNICATION OPTIONS (UFO & DRIVING ROBOT)

5.1 Tripod with Warning Light and Buzzer (#UFO-1-8010)

- Tripod with warning sign
- Flashing warning light (active when UFO is armed)
- Warning buzzer (active when UFO is in motion)
- Safety-Box (self-contained housing with electronic, WiFi and battery)
- Two connection ports for additional safety equipment (Light Barrier [5.2], Traffic Light [5.3])
- Charger incl.
- Software incl.



Tripod

5.2 Light Barrier for Entrance Safeguard (#UFO-1-8020)

- Infrared light gate on tripod
- Used to secure test area entrances
- Safety-Box (self-contained housing with electronic, WiFi and battery)
- Two connection ports for additional safety equipment (Tripod [5.1], Traffic Light [5.3])
- Charger incl.
- Software incl.

5.3 Traffic Light #UFO-1-8030

- Test-ready indicator
- Can be programmed for driver's view: indicating green (go) when the UFO is ready; and spectator's view: indicating red (do not enter) while the UFO is in operation
- Safety-Box (self-contained housing with electronic, WiFi and battery)
- Two connection ports for additional safety equipment (Tripod [5.1], Light Barrier [5.2])
- Charger incl.
- Software incl.



Traffic Light

6.1 dGPS Base Station – Standalone Unit for UFO #UFO-1-8040 [400MHz], #UFO-1-8160 [800MHz]

- Compatible with Oxford RT Series
- RTCMV3 correction data format
- RS232/Ethernet output of position data
- Glonass incl.
- 1x Radio Modem (SATEL – SATELLINE-EASy; 400MHz or 800MHz) with antenna
- Outdoor case with display, internal battery and charger
- GPS antenna on tripod

6.2 dGPS Base Station – Standalone Unit for Driving Robot #UFO-1-8280 [400MHz], #UFO-1-8290 [800MHz]

- In addition to 6.1:
- WiFi Access Point
 - » Tripod
 - » Rocket
 - » WiFi Antenna

6.3 dGPS Base Station – Control Box Extension for UFO #UFO-1-8050

- Integrated dGPS receiver
- dGPS correction signal is distributed within the UFO WiFi system (radio modem not required)
- dGPS unit (Novatel) mounted inside Control Box
- Glonass incl.
- GPS antenna on tripod with TNC cable
- Control Box power cable
- Settings via UFOControl laptop

6.4 dGPS in VUT #UFO-1-9020

- dGPS/IMU (up to 2 cm accuracy)
- OxTS RT 3004G
- Glonass incl.
- RTK correction
- dGPS antenna for vehicle mounting
- Connection to vehicle box for correction data (RS-232)

6.5 IMU Mounting Kit #UFO-1-8100 [for RT1000 and xNAV Series], #UFO-1-8260 [for RT2000 and 3000 Series]

- Strut for fixation of the IMU unit in car
- Brackets for mounting the IMU unit
- Flexible adjustment for different roof to floor distances
- Clamping between roof and floor
- Compatible with OxTS 3000 Series, RT1000/xNAV, and RT2000/RT3000 Series IMU units



IMU Mounting Kit

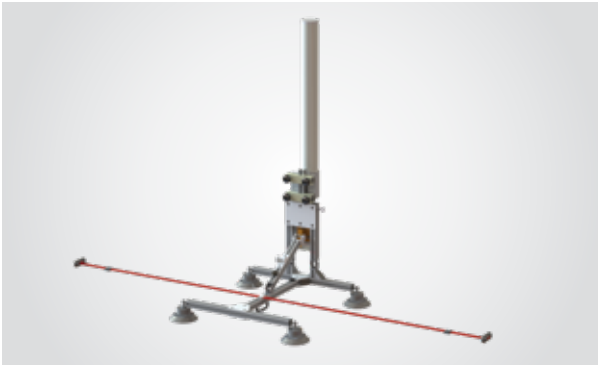
6.6 Vehicle Box for UFO #UFO-1-2030

- Additional Vehicle Box to equip a second VUT
- WiFi antenna
- Connecting cables
- ISO fix mounting
- An additional dGPS in the VUT is recommended (see Pos. 6.4)

6.7 Mobile Rocket – Mounting Kit for UFO #UFO-1-8140

- WiFi access point (compatible with static tripod)
- Vacuum mountings
- Securing belts
- Bullet for control box including mounting for tripod
- Power over Ethernet (PoE) power supply

WiFi antenna not included



Mounting Kit

6.8 Outdoor Speed Trap – For Testing Without GPS in VUT #UFO-1-8090

- Speed trap for measuring approaching velocity of VUT
- UFO triggered by time of impact
- Single velocity measuring point
- GPS not required with light gate (TAGHeuer) activated trigger
- 2x tripod with sender/receiver units and reflectors
- Communication module incl.
- Microprocessor with real-time clock
- LCD display
- Transmission of measured velocity and synchronization of measurements via WiFi

- Battery (up to 10h operation time)
- Rugged, water-resistant case



Outdoor Speed Trap

6.9 Audiovisual Alarm Detection in VUT #6-005-660

- Detector for audio-visual signals from the vehicle (AVAD 3 v4)
- 2x High speed cameras (100FPS)
- Windshield mounting kit
- Audiovisual controller
- Detection software
- Color recognition
- Pattern recognition
- Additional Search Region (SR)
- Additional signal recognitions (ES; EK; KO; KT)



Audiovisual Alarm Detector

7.1 Global Vehicle Target (GVT) - UFO Version (Rev. F-05) #UFO-1-5010-xx

- Soft car target GVT for UFOpro
- Modeled after Ford Fiesta
 - » Realistic – replicates radar and visual properties of a real car
- Photorealistic vinyl skin with radar material
- Vinyl covered internal bulkheads
- Full-diameter wheels with custom radar reflectors
- Front, rear and side skirts with integrated radar absorbing material
- Side mirrors with metallic material and side mirror supports
- Windscreen support piece

- Plastic stiffeners in the skins
- Reflective lights
- Manufactured by DRI Advanced Systems



Global Vehicle Target (GVT)

7.2 Static Stand for Global Vehicle Target (GVT) – UFO Version #UFO-1-5080xx

- To perform tests without UFO
- Foam stripes with UFO geometry to support GVT

7.3 Middle Size Car (C2) #UFO-1-5020

- Represents a free standing 3D car target
- Modeled after Ford Fiesta
 - » Realistic – replicates radar and visual properties of a real car
- Crashable up to 65km/h
- Reflective lights
- Interfaced to UFOpro
- Active lights and indicators (optional)



Middle Size Car

7.4 Inflatable 3D Vehicle Dummy – for Active Side Crashes #UFO-1-5090

- Inflatable tubular structure
- Softshell cover
- Vehicle optic cover
- Interface for mounting on UFO using proven Velcro system
- Crashable up to 80kph differential speed
- Perfect for side impact crashes due to its light weight and flexibility (does not deploy airbag)
- Air compressor included
- Repair kit included
- Available colors: grey, white, blue or red



3D Vehicle Dummy

7.5 Crashable Signal Light-Set #UFO-1-5100

- Free configuration of lights (flashing brake lights and/or emergency flashers at a specific deceleration level; programmable frequency and duty level)
- Signal lights configuration user-defined or calculated in accordance to UFO trajectory

Note: If Crashable Signal Light Set ordered separately, a UFO integration charge will be assessed. This charge includes:

- » Installation of magnetic connector to UFO
- » Adaption of Vehicle Dummy cover
- » Software update

7.6 Bicycle Dummy for Euro NCAP #UFO-1-5030

- Full Adult Bicycle Dummy 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 60km/h
- Attached via its lower interface to the VRU Kit (see VRU Kit)
- Water resistant
- Manufactured by 4active Systems (4a)



Bicycle Dummy

7.7 Pedestrian Dummy – Adult Articulating #UFO-1-5050

- Euro NCAP-compliant adult pedestrian dummy
- Replicates human properties in size and shape, with articulating legs
- Weight < 4kg
- Static EPT – Euro NCAP Pedestrian Target Static
- Homogeneous distribution of radar cross section (RCS)
- Visual signature – mono and stereo camera
- Crashable up to 60km/h
- Water resistant
- Performance not impacted by windy conditions
- Optional infrared signature (IR)
- Manufactured by 4active Systems (4a)



Adult Pedestrian Dummy

7.8 Pedestrian Dummy – Child Articulating #UFO-1-5070

- Euro NCAP-compliant child pedestrian dummy
- Represents a 7-year-old child with articulating legs
- Weight < 2kg
- Static EPT – Euro NCAP Pedestrian Target Static
- Homogeneous distribution of radar cross section (RCS)
- Visual signature – mono and stereo camera
- Crashable up to 60km/h
- Water resistant
- Performance not impacted by windy conditions
- Optional infrared signature (IR)
- Manufactured by 4active Systems (4a)



Child Pedestrian Dummy

8.1 UFOpro Mover #UFO-1-6010

- Ramp removals not required, for faster handling and mobility
- Aluminum with 4 wheels
- Built-in rope system and UFO detachable connectors for lifting
- Central winch for synchronized lifting
- Foldable for easy storage



UFOpro Mover

8.2 UFO Handling Device for Crane #UFO-1-6030

- Load traverse for balance
- 4-point wires for stability
- 4x detachable connectors to UFO with locking pins



UFO Handling Device for Crane

8.3 Easy UFO Loader for Vans #UFO-1-6040

- 250kg payload
- Telescopic arm; lateral movement
- Electric winch
- Installation included*

*Vehicle type must be compatible with Loader for installation; customer responsible for transporting vehicle to installation site (Linz, Austria).



UFO Loader for Vans

8.4 UFOmini Service Carrier #UFO-1-6050

- Manual hydraulic lifting device for transportation; can be used as a service table
- Net weight: 48kg
- Carrying capacity: 150kg
- Dimension (table top): 450x740mm

- Lifting height: 225 - 750mm
- Stroke/step: 30mm



UFOmini Service Carrier

8.5 UFOpro Service Carrier #UFO-1-6060

- Manual hydraulic lifting device for transportation; can be used as a service table
- Net weight: 138kg
- Carrying capacity: 500kg
- Dimension (table top): 800x1600mm

- Lifting height: 310 - 900mm
- Stroke/step: 25mm



UFOpro Service Carrier

SERVICE AND SUPPORT

PRODUCT LIST

9.1 UFO Annual Maintenance Service #UFO-1-7010

- Cleaning and inspection of all components
 - Tire replacement (4x new)
 - Ball bearing (tires and brake-shaft) replacement
 - Chain replacement
 - Brake fluid change
 - Replacement of brake pads and discs
- Replacement of ground contact plate and screws (for core robot)
 - Battery health check
 - Electronic safety components check
 - Software update to the latest version
 - Test run

9.2 Product Support Package #UFO-1-7020 (50 hours), #UFO-1-7030 (100 hours), #UFO-1-7040 (200 hours)

- Product support by telephone and email (see time table below)
 - Standard support packages available at 50, 100 and 200 support-units
- Advance purchase of support package is strongly recommended for faster ordering & service process

SUPPORT HOTLINE:
+43 660 92 84 571

SUPPORT EMAIL:
activesafety.support@humanetics.eu

SUPPORT UNITS	UNIT/HOUR	DAY	TIME (CET)
	1	Monday-Friday	08:00-17:00
	2	Monday-Friday	17:00-08:00*
	2	Saturday, Sunday	08:00-17:00*
	3	Saturday, Sunday	17:00-08:00*

Billed in 1/4 hour increments; minimum is 1/2 hour.

*At least 48 hrs advance notice is required for standby support needs.

POS.	PART NUMBER	DESCRIPTION
UFO Robot		
1.1	#UFO-2-SET-xx	UFOpro
1.2	#UFO-3-SET-xx	UFOpro Black Series
1.3	#UFO-4-SET-xx	UFOmini
1.4	#UFO-1-7050	Training & FAT Europe
1.5	#UFO-1-7080	Training & FAT Overseas

Driving Robot		
2.1	#UFO-5-SET-xx	Driving Robot Including GPS Unit
2.2	#UFO-1-7120	Training & FAT Europe
2.3	#UFO-1-7130	Training & FAT Overseas

UFO Option Packages		
P1	#UFO-98-0010	Euro NCAP Package Synchronization Software (#UFO-1-9010) Data Link Software (#UFO-1-9030) Range Functionality (#UFO-1-9040) Test & Evaluation Tool (#UFO-1-7070)
P2	#UFO-98-0020	Precrash-Side Evaluation Package Arrow Ramp (#UFO-1-1040) Inflatable 3D Dummy (#UFO-1-5090)
P3	#UFO-98-0030	VRU Package VRU Arm (#UFO-1-1060) Articulating Pedestrian – Adult (#UFO-1-5050) Articulating Pedestrian – Child (#UFO-1-4070) Bicycle Dummy (#UFO-1-5030)
P4	#UFO-98-0040	Safeguard Package 2x Traffic Light (#UFO-1-8030) 1x Active Warning Tripod (#UFO-1-8010) 1x Light Barrier Set w/o Safety Box (#UFO-1-8025)
P5	#UFO-98-0050	Premium Service Package 100 Hours Online Support (#UFO-1-7030) 1x Annual Service – Shipping by Customer (#UFO-1-7010) 1x Loan Platform During Annual Service – Shipping by Customer 1x Loan Platform During UFO Repairs – Shipping by Customer

UFO Robot Options		
3.1a	#UFO-1-3010	Additional Lithium Power Pack – Europe
3.1b	#UFO-1-3030	Additional Lithium Power Pack – Overseas
3.2	#UFO-1-1020	Heavy Duty Kit (Truck Overrun Ability)
3.3	#UFO-1-1040	Arrow Ramp
3.4	#UFO-1-1060	VRU Kit Including GPS Antenna

xx = Country Code (EU, US, JP, CN, KO, EN)

PRODUCT LIST CONT'D.

POS.	PART NUMBER	DESCRIPTION
Software Options (UFO & Driving Robot)		
4.1	#UFO-1-9010	Synchronization Software
4.2	#UFO-1-9030	Data Link Software
4.3	#UFO-1-9040	Range Functionality Software
4.4	#UFO-1-7070	Euro NCAP Test & Evaluation
4.5	#UFO-1-8110	Tablet with UFO Mobile App

Safety Options (UFO & Driving Robot)		
5.1a	#UFO-1-8010	Tripod with Warning Light and Buzzer
5.1a	#UFO-1-8015	Tripod with Warning Light and Buzzer w/o Safety Box*
5.2a	#UFO-1-8020	Light Barrier for Entrance Safeguard
5.2b	#UFO-1-8025	Light Barrier for Entrance Safeguard w/o Safety Box*
5.3a	#UFO-1-8030	Traffic Light
5.3b	#UFO-1-8035	Traffic Light w/o Safety Box*

*Up to two applications can be connected to one safety box.

Communication Options (UFO & Driving Robot)		
6.1a	#UFO-1-8040	dGPS Base Station – Standalone – UFO, 400MHz
6.1b	#UFO-1-8160	dGPS Base Station – Standalone – UFO, 800MHz
6.2a	#UFO-1-8280	dGPS Base Station – Standalone – DR, 400MHz
6.2b	#UFO-1-8290	dGPS Base Station – Standalone – DR, 800MHz
6.3	#UFO-1-8050	dGPS Base Station – Control Box Extension
6.4	#UFO-1-9020	dGPS in VUT (OxTS RT3004G)
6.5a	#UFO-1-8100	dGPS Mounting Kit – xNAV Compatible
6.5b	#UFO-1-8260	dGPS Mounting Kit – RT2000 & RT3000 Compatible
6.6	#UFO-1-2030	Vehicle Box (Additional)
6.7	#UFO-1-8140	Mobile Rocket Mounting Kit
6.8	#UFO-1-8090	Outdoor Speed Trap
6.9	6 005 660	Audio-Visual Alarm Detection in VUT

UFO Dummy Options		
7.1	#UFO-1-5010-xx	Global Vehicle Target (GVT) Rev. F-05
7.2	#UFO-1-5080-xx	Static Stand for GVT
7.3	#UFO-1-5020	Middle Size Car (C2)
7.4	#UFO-1-5090	Inflatable 3D Car – for Active Side Crashes
7.5	#UFO-1-5100	Crashable Signal Lights Set (Includes Integration)
7.6	#UFO-1-5030	Bicycle Dummy Euro NCAP
7.7	#UFO-1-5050	Pedestrian Dummy – Adult Articulated
7.8	#UFO-1-5070	Pedestrian Dummy – Child Articulated

xx = Country Code (EU, US, JP, CN, KO, EN)

PRODUCT LIST CONT'D.

POS.	PART NUMBER	DESCRIPTION
UFO Transportation Options		
8.1	#UFO-1-6010	UFOpro Mover
8.2	#UFO-1-6030	UFO Handling Device for Crane
8.3	#UFO-1-6040	Easy UFO Loader for Van
8.4	#UFO-1-6050	UFOmini Service and Transport Carrier
8.5	#UFO-1-6060	UFOpro Service and Transport Carrier

Service and Support		
9.1	#UFO-1-7010	UFO Annual Service
9.2	#UFO-1-7020	50 Units Support Package
9.3	#UFO-1-7030	100 Units Support Package
9.4	#UFO-1-7040	200 Units Support Package

Shipment		
99		Packing and Shipping

xx = Country Code (EU, US, JP, CN, KO, EN)

All products are designed and produced according to European standards.
Buyer is responsible for compliance with local safety and environmental requirements.





HUMANETICSATD.COM

HUMANETICS AUSTRIA GMBH

Salzburgerstr. 34 | 4020 Linz, Austria | tel. +43 732 343200 | fax. +43 732 34320028 | sales@humanetics.eu