ACTIVE SAFETY

Product Portfolio

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

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.

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**

- Cover plate is easily removed
- Quick access to internal components
- Waterproof design for easy cleanup
- Stable 4-wheel chassis
- Screw-less, welded ramp system
- Designed to enable swappable batteries
- Quick and simple access to all internal components

**UFO-Base Control Software**

- 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 Key Features**

- 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
- 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

**Driving Robot 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)

**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.
**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.

**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

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.
PRODUCT PACKAGE OVERVIEW

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Key: ⚫ = Standard  O = Optional  — = Not Available

1. Optional instead of the OxTS OEM: Genesys ADMA slim.
2. Optional instead of the OxTS RT3005GG: Genesys ADMA.
3. WiFi Access Point included in dGPS base station option for Driving Robot.

**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
- 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

**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 UFOnini (#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, overrannable
- 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

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

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

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

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

Driving Robot
**UFO ROBOT PLATFORM OPTIONS**

### 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

### 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

### 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 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

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

**SOFTWARE OPTIONS (UFO & DRIVING ROBOT)**

### 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

### 4.4 Test & Evaluation for Euro NCAP  #UFO-1-7070
- Predefined tests compliant to Euro NCAP test protocols (C2C, Pedestrian, LSS)
- Recording of Euro NCAP specific data in the UFO software (for Humanetics Systems – UFO, driving robot)
- 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)
  - Yaw velocity of VUT
  - Yaw velocity of GVT
  - Steering wheel velocity (limited to Humanetics Driving Robot)
  - Deceleration of GVT
- 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)

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.

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.

COMMUNICATION OPTIONS (UFO & DRIVING ROBOT)

6.1 dGPS Base Station – Standalone Unit for UFO (#UFO-1-8040), (#UFO-1-8160 [800MHz])
- Compatible with Oxford RT Series
- RTCMv3 correction data format
- RS232/Ethernet output of position data
- Glonass incl.
- 1x Radio Modem (SATTEL – 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

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

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

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; EC; KD; KT)

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

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
- 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

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)
- Repair kit included
- Available colors: grey, white, blue or red

7.5 Global Vehicle Target (GVT) - Inflatable Version
- 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)
- Repair kit included
- Available colors: grey, white, blue or red

7.6 Middle Size Car (C2) - Inflatable Version
- 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)
- Repair kit included
- Available colors: grey, white, blue or red

7.7 Global Vehicle Target (GVT) - Hardened Version
- Hardened tubular structure
- Hardened 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)
- Repair kit included
- Available colors: grey, white, blue or red

7.8 Middle Size Car (C2) - Hardened Version
- Hardened tubular structure
- Hardened 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)
- Repair kit included
- Available colors: grey, white, blue or red

COMMUNICATION OPTIONS CONT'D. (UFO & DRIVING ROBOT)
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
- Adaptation 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)

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)

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)

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

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

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)

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

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
SERVICE AND SUPPORT

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

Billed in 1/4 hour increments; minimum is 1/2 hour.
*At least 48 hrs advance notice is required for standby support needs.

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

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*

PRODUCT LIST

POS.
PART NUMBER
DESCRIPTION

UFO Robot
1.1 #UFO-2-SET-xx UFOpro
1.2 #UFO-3-SET-xx UFOpro Block 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-1-9050)
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-1-7070)
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

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<table>
<thead>
<tr>
<th>POS.</th>
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<tr>
<td>4.1</td>
<td>#UFO-1-9010</td>
<td>Synchronization Software</td>
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<td>4.2</td>
<td>#UFO-1-9030</td>
<td>Data Link Software</td>
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<td>4.3</td>
<td>#UFO-1-9040</td>
<td>Range Functionality Software</td>
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<td>4.4</td>
<td>#UFO-1-7070</td>
<td>Euro NCAP Test &amp; Evaluation</td>
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<td>4.5</td>
<td>#UFO-1-8110</td>
<td>Tablet with UFO Mobile App</td>
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<tr>
<td>5.1a</td>
<td>#UFO-1-8010</td>
<td>Tripod with Warning Light and Buzzer</td>
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<tr>
<td>5.1a</td>
<td>#UFO-1-8015</td>
<td>Tripod with Warning Light and Buzzer w/o Safety Box*</td>
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<td>#UFO-1-8020</td>
<td>Light Barrier for Entrance Safeguard</td>
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<td>5.2b</td>
<td>#UFO-1-8025</td>
<td>Light Barrier for Entrance Safeguard w/o Safety Box*</td>
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<td>#UFO-1-8035</td>
<td>Traffic Light w/o Safety Box*</td>
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*Up to two applications can be connected to one safety box.

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<tr>
<td>6.1a</td>
<td>#UFO-1-8040</td>
<td>dGPS Base Station – Standalone – UFO, 400MHz</td>
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<td>6.1b</td>
<td>#UFO-1-8160</td>
<td>dGPS Base Station – Standalone – UFO, 800MHz</td>
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<td>dGPS Base Station – Standalone – DR, 400MHz</td>
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<td>#UFO-1-8290</td>
<td>dGPS Base Station – Standalone – DR, 800MHz</td>
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<td>#UFO-1-8050</td>
<td>dGPS Base Station – Control Box Extension</td>
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<td>6.4</td>
<td>#UFO-1-9020</td>
<td>dGPS in VUT (OxTS RT3004G)</td>
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<td>#UFO-1-8100</td>
<td>dGPS Mounting Kit – NAV Compatible</td>
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<td>#UFO-1-8260</td>
<td>dGPS Mounting Kit – RT2000 &amp; RT3000 Compatible</td>
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<td>6.6</td>
<td>#UFO-1-2030</td>
<td>Vehicle Box (Additional)</td>
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<td>#UFO-1-8140</td>
<td>Mobile Rocket Mounting Kit</td>
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<td>#UFO-1-8090</td>
<td>Outdoor Speed Trap</td>
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<td>6005 660</td>
<td>Audio-Visual Alarm Detection in VUT</td>
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<td>Global Vehicle Target (GVT) Rev. F.05</td>
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<td>7.2</td>
<td>#UFO-1-5080xx</td>
<td>Static Stand for GVT</td>
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<td>#UFO-1-5030</td>
<td>Middle Size Car (C2)</td>
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<td>7.4</td>
<td>#UFO-1-5090</td>
<td>Inflatable 3D Car – for Active Side Crashes</td>
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<td>7.5</td>
<td>#UFO-1-5100</td>
<td>Crashable Signal Lights Set (Includes Integration)</td>
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<td>#UFO-1-5030</td>
<td>Bicycle Dummy Euro NCAP</td>
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<td>Pedestrian Dummy – Adult Articulated</td>
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<td>7.8</td>
<td>#UFO-1-5070</td>
<td>Pedestrian Dummy – Child Articulated</td>
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