4active**Systems**

4activeSystems is one of the world's leading companies for active vehicle safety, focusing on advanced dummy objects and test systems for the evaluation and development of AEB/ AES-systems and autonomous driving vehicles.

Since 2006, we have been delivering innovative solutions and products that have become global standards.

Our high-quality products „Made in Austria" combined with excellent support make us a reliable partner for vehicle manufacturers, test labs and automotive suppliers worldwide.

Our team consists of highly qualified, passionate employees with excellent know how in physics, electronics, mechatronics and material science.

4active**AN**

The most realistic animal targets worldwide

☑ available as roe deer, white tail deer, moose, wild boar and cow
☑ realistic properties in size and shape
☑ as an outcome of long-term research projects

Allows testing under rough conditions

☑ extremely light and soft structure to prevent damage on VUT
☑ robust, modular and weatherproof system
☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic- and IR-Systems

Available options

☑ heated animal target – 4activeHT (AN)
☑ additional synchronized articulation (legs)
☑ radar-invisible stand for static tests

4active**AN**

Performance

mono/stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
micro-Doppler spread	optional
near infrared (far infrared★★)	✔
ultrasonic	✔
crash speed	up to 50 km/h★
operation speed	up to 60 km/h★

Dimensions

roe deer	960x1085x170 mm	adult cow standing	2050x550x1350 mm
white tail deer	1490x1210x270 mm	adult cow lying	2050x550x1000 mm
wild boar	1580x1020x560 mm	calf cow standing	1140x500x790 mm
moose	2490x1930x690 mm	calf cow lying	1000x400x380 mm

Weight

roe deer	4,5 kg	adult cow standing	14 kg
white tail deer	7,5 kg	adult cow lying	10 kg
wild boar	14 kg	calf cow standing	4 kg
moose	35 kg	calf cow lying	3 kg

Key features

- ☑ compatible with 4activeFB-small★, 4activeFB-eco★, 4activeSB★, 4activeXB★
- ☑ easy and fast spareparts replacement
- ☑ many different animal types available

★★ optional ★ depending on animal type

I N   P H Y S I C S   W E   T R U S T

4activeBS-adult

EURO NCAP

Official Euro NCAP bicyclist target (EBT)

☑ standard average european utility bike – average male
☑ realistic properties in size, shape and rotating wheels
☑ complies with ISO 19206-4, Euro NCAP, UN-ECE, ...

Allows testing under rough conditions

☑ extremely light and soft structure to prevent damage on VUT
☑ robust, modular and weatherproof system – easy and fast change of spare parts
☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic- and IR-Systems

Available options

☑ heated bicyclist target – 4activeHT
☑ synchronized articulation (pedalling, arm movement, head rotation, ...)
☑ additional active light-kit

4active**BS**-adult

Performance

mono/stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
micro-Doppler spread	✔
near infrared / far infrared★	✔
ultrasonic	✔
crash speed lateral / longitudinal	up to 60 km/h / up to 45 km/h
operation speed	up to 35 km/h

★ optional

Dimensions bike

handlebar height	1200 mm
diameter wheels	700 mm
wheel base	1230 mm
weight	6 kg

Dimensions bicyclist

body height	1800 mm
shoulder width	500 mm
torso angle	10°
weight	< 4 kg

Key features

☑ compatible with 4activeSB, 4activeXB, 4activeFB-small, 4activeFB-eco
☑ rotating wheels - permanent contact to ground
☑ disassemblable bike - easy transportation and storage

4activeBS-child

UN-ECE R151 compliant child bicyclist target

☑ standard average european utility bike – 6 to 7 year old child
☑ realistic properties in size, shape and rotating wheels
☑ complies with UN-ECE R151

Allows testing under rough conditions

☑ extremely lightweight and soft structure to prevent damage on VUT
☑ robust, modular and weatherproof system – easy and fast change of spare parts
☑ realistic response for Radar-, Lidar-, Camera- , Ultrasonic- and IR-Systems

Available options

☑ different frame colours
☑ heated bicyclist target – 4activeHT
☑ ISO-19206-4 dimensions available

4active**BS**-child

Performance

mono/stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
micro-Doppler spread	✔
near infrared / far infrared★	✔
ultra-sonic	✔
crash speed lateral / longitudinal	up to 60 km/h / up to 45 km/h
operation speed	up to 35 km/h

★ optional

Dimensions bike

handlebar height	715 mm
diameter wheels	412 mm
wheel base	733 mm
weight	< 5 kg

Dimensions bicyclist

body height	1200 mm
shoulder width	298 mm
torso angle	10°
weight	< 2 kg

Key features

☑ compatible with 4activeSB★★, 4activeFB-small★★, 4activeFB-eco★★
☑ rotating wheels - permanent contact to the ground
☑ disassemblable bike - easy transportation and storage

★★ extra connection plate needed

4active**C2-GVT**

EURO NCAP

Accredited GVT* for Euro NCAP protocols

- ☑ realistic properties in size, shape
- ☑ complies with Euro NCAP
- ☑ complies with ISO 19206-3

Allows testing under rough conditions

- ☑ extremely light and soft structure to prevent damage on VUT
- ☑ robust, modular and weatherproof system – easy and fast change of spare parts
- ☑ realistic response for Radar-, Lidar-, Camera- , Ultrasonic- and IR-Systems

Available options

- ☑ different car categories
- ☑ different optical appearance and colours
- ☑ active lighting features (brake, blinking, …) based on ECE R48

4active**C2-GVT**

Performance

mono/stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
near infrared	✔
ultrasonic	✔
crash speed lateral / longitudinal	up to 60 km/h / up to 72 km/h★
operation speed	up to 100 km/h

Dimensions

overall length	4060 mm
overall height	1430 mm
overall width	1800 mm
tire diameter	600 mm
wheelbase	2560 mm
weight	< 80 kg

Euro NCAP scenarios

AEB-CCRs / -CCRm / -CCRb	✔
CCFtap, ELK, LSS	✔

Key features

☑ compatible with 4activeFB-large and 4activeFB-small
☑ easy and fast spareparts replacement
☑ easy and fast reassembly in 2 min by 2 people

★ at ELK oncoming with 10% overlap

4active**C2·SUV**

Representative of EU vehicle segment J

- ☑ realistic properties in size and shape
- ☑ designed and tested according to procedures described in ISO 19206-3
- ☑ adding target variety for robustness testing

Allows testing under rough conditions

- ☑ extremely light and soft structure to prevent damage on VUT
- ☑ robust and modular system – easy and fast change of spare parts
- ☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic- and IR-Systems

Available options

- ☑ different car categories
- ☑ different optical appearance and colours
- ☑ active lighting features (brake, blinking, ...) based on ECE R48

4activeC2 - SUV

Performance

mono/stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
near infrared	✔
ultrasonic	✔
crash speed lateral / longitudinal	up to 60 kmh
operation speed	up to 80 kmh

Dimensions

overall length	4350 mm
overall height	1640 mm
width (without side mirrors)	1805 mm
tire diameter	720 mm
wheelbase	2600 mm
weight	< 90 kg

Weight

AEB-CCRs / -CCRm / -CCRb	✔
CCFtap, ELK, LSS	✔

Key features

- ☑ compatible with 4activeFB-large, 4activeFB-small
- ☑ easy and fast spareparts replacement
- ☑ easy and fast reassembly in 2 min by 2 people

4active**EK**-Electric Kick Bike

The most realistic e-Kickboard target

☑ replicates scooter-driver properties in size and shape
☑ designed according to upcoming ISO 19206-10 standard (SST)★★
☑ prepared for upcoming NCAP protocols

Allows testing under rough conditions

☑ extremely light and soft structure to prevent damage on VUT
☑ robust and modular system – easy and fast change of spare parts
☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic- and IR-Systems

Available options

☑ heated pedestrian target - 4activeHT★
☑ different optical appearance and colours
☑ different sizes available
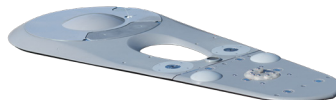
★delivery time on request

4active**EK**-Electric Kick Bike

Performance

mono/stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
micro-Doppler spread	✔
near infrared / far infrared★	✔
ultra-sonic	✔
crash speed	up to 60 km/h
operation speed	up to 10 km/h

★ optional

Dimensions adult

body height	1800 mm
shoulder width	500 mm
torso angle	85 °
weight	< 4 kg

Dimensions scooter

total height	1211 mm
total width	490 mm
footboard height	160 mm
wheel base	1114 mm
wheel diameter	250 mm

Key features

- ☑ compatible with 4activeFB-eco, 4activeFB-small, 4activeSB, 4activeXB
- ☑ easy and fast spareparts replacement
- ☑ easy transportation and storage
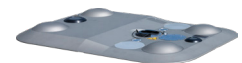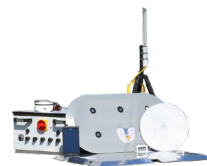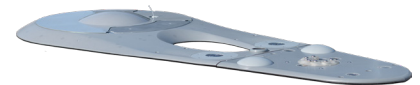
4activeHT

4activeHT - heated cover dummy

☑ applicable as a static or moving object
☑ for testing passive IR-systems like night vision
☑ heating control unit to control five different zones

Optimal heat transfer due to battery powered heated cover

☑ power supply (2x12V) via trailing cable
☑ heating mats ensure an optimal heat transfer to the outer surface
☑ control of 5 different heating zones: head, torso, legs, hands, arms

Available options

☑ 4activePS-HT   - heated static pedestrian target
☑ 4activePA-HT   - heated articulated pedestrian target
☑ 4activeAN-HT - heated animal target

4active**HT**

Dimensions 4activePS-HT

body height adult	1800 mm
weight adult	< 8 kg★
body height child	1154 mm
weight child	< 4 kg ★

Dimensions 4activePA-HT

body height adult	1800 mm
weight adult	< 10 kg★
body height child	1154 mm
weight child	< 5 kg★

Dimensions 4activeAN-HT

body height roe deer★★	170 mm
weight	< 6 kg★

Performance

collision speed crossing scenario	up to 30 km/h (18 mph)
collision speed longitudinal scenario	Δv 20 km/h (12 mph)

★ weight excl. accessories (batteries, cable)

Key features

☑ compatible with 4activeFB-eco, 4activeFB-small, 4activeSB, 4activeXB
☑ power supply (2x12V) via trailing cable
☑ many different types available

4active**MC** (C-NCAP E-Scooter)

The approved E-scooter target for C-NCAP ADAS tests

☑ corresponding to category L3e-A1 as applied by UNECE
☑ realistic properties in size, shape and microdoppler features
☑ complies with ISO/PWI 19206-5, C-NCAP, C-ICAP

Allows testing under rough conditions

☑ extremely light and soft structure to prevent damage on VUT
☑ robust and modular system – easy and fast change of spare parts
☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic-, and IR-Systems

Available options

☑ synchronized movement features (rotating wheels)
☑ different optical appearance and colours
☑ active lighting features (brake, blinking, ...)
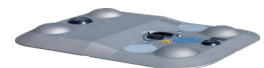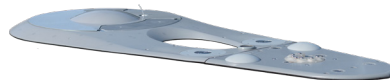
4active**MC** (C-NCAP E-Scooter)

Performance

mono/ stereo camera system, Lidar sensors, Ultrasonic	✔
360° - Radar characteristic	✔
micro-Doppler spread	✔
near infrared / far infrared★	✔
crash speed lateral / longitudinal	up to 60 km/h / up to 40 km/h
operation speed	60 km/h

★ optional

Dimensions motorbike

seat height	760 mm
wheel base	1210 mm
total width	540 mm
wheel diameter	400 mm
weight	< 13,5kg

Dimensions biker

height (body)	1650 mm ± 20
width (shoulder)	450 mm ± 20
depth (torso)	200 mm ± 20
weight	< 4 kg

Key features

☑ compatible with 4activeFB-eco, 4activeFB-small, 4activeXB
☑ easy and fast spareparts replacement
☑ easy transportation and storage

4active**MC-EMT**

EURO NCAP

The approved PTW target for Euro NCAP 2023

☑ corresponding to category L3 as applied by UNECE
☑ realistic properties in size, shape and microdoppler features
☑ complies with ISO 19206-5 WD, Euro NCAP, …

Allows testing under rough conditions

☑ extremely light and soft structure to prevent damage on VUT
☑ robust and modular system – easy and fast change of spare parts
☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic-, and IR-Systems

Available options

☑ synchronized realistic movement features (rotating wheels)
☑ different optical appearance and colours
☑ active lighting features (brake, blinking, …)
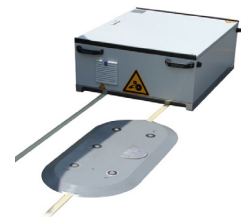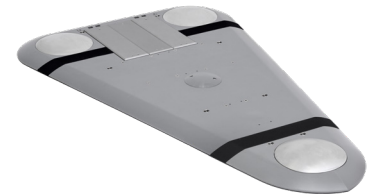
4active**MC-EMT**

Performance

mono/ stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
micro-Doppler spread	✔
near infrared / far infrared★	✔
crash speed lateral / longitudinal	up to 60 km/h / up to 50 + 20 km/h
operation speed	80 km/h

★ optional

Dimensions motorbike

seat height	820 mm
wheel base	1420 mm
total width	750 mm
wheel diameter	17"
weight	< 11 kg

Dimensions biker

height (body)	1800 mm ± 20
width (shoulder)	500 mm ± 20
depth (torso)	235 mm ± 20
weight	< 4 kg

Key features

- ☑ compatible with 4activeFB-small, 4activeFB-large and 4activeXB
- ☑ easy and fast spareparts replacement
- ☑ easy transportation and storage

4active**MC-AMT**

The approved PTW target for upcoming ASEAN NCAP 2026

- ☑ corresponding to category L3e-A2 as applied by UNECE
- ☑ realistic properties in size, shape and microdoppler features
- ☑ complies with ISO 19206-5 WD, ASEAN NCAP,...

Allows testing under rough contitions

- ☑ extremely light and soft structure to prevent damage on VUT
- ☑ robust and modular system – easy and fast change of spare parts
- ☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic-, and IR-Systems

Additional features

- ☑ synchronized movement features
- ☑ active lighting features
- ☑ available with microdoppler features

V.1.0
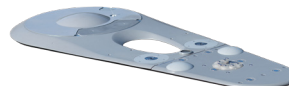
4activeMC-AMT

Performance

mono/ stereo camera system, Lidar sensors, Ultrasonic ✔	
360° - Radar characteristic	✔
micro-Doppler spread	✔
near infrared	✔
crash speed lateral / longitudinal	up to 60 km/h / up to 60 km/h
operation speed	80 km/h

Dimensions motorbike

seat height	760 mm
wheel base	1255 mm
total width	675 mm
wheel diameter	
weight	< 11 kg

Dimensions biker

height (body)	1650 mm ± 20
width (shoulder)	450 mm ± 20
depth (torso)	200 mm ± 20
weight	< 4 kg

Key features

☑ compatible with 4activeFB-eco, 4activeFB-small, 4activeXB
☑ easy and fast spareparts replacement
☑ easy transportation and storage

4active**OD**-newborn

4activeOD-newborn

☑ for testing occupant detection systems
☑ simulates typical postures of a newborn child
☑ complies with EuroNCAP-test protocol CPD version 1.2

Test setups

☑ different CRS possible
☑ different seat positions
☑ remote control of functionalities

Physical properties

☑ human like behaviour including breathing, limb and head movement
☑ adjustable breathing patterns
☑ realistic response to relevant sensor systems

4active**OD**-newborn

Performance

radar systems	☑
camera systems	☑
lidar systems	☑
ultrasonic systems	☑
wifi sensing systems	☑
euroNCAP movement patterns	☑
modular concept	☑
user defined movement patterns	☑

Dimensions

body height	460mm ± 10
shoulder width	125mm ± 10
head circumference	320mm ± 10
chest circumference	310mm ± 10

Key features

☑ quick setup and robust and modular system
☑ adjustable movement patterns
☑ easy and flexible control

4active**PA**

EURO NCAP

4activePA - The official Euro NCAP pedestrian target (EPTa, EPTc)

- ☑ 50% adult male, 7-year-old child
- ☑ replicates human properties in size, shape and articulation
- ☑ complies with ISO 19206-2, Euro NCAP, CNCAP, JNCAP, ...

Allows testing under rough conditions

- ☑ extremely light and soft structure to prevent damage on VUT
- ☑ robust, modular and weatherproof system – easy and fast change of spare parts
- ☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic- and IR-Systems

Available options

- ☑ different optical appearance and colours
- ☑ heated pedestrian target – 4activeHT
- ☑ additional synchronized articulation (arms, head, ...)

4active**PA**

Performance

mono/stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
micro-Doppler spread	✔
near infrared / far infrared★	✔
ultra-sonic	✔
crash speed	up to 60 km/h
operation speed	up to 10 km/h

Dimensions adult

body height	1800 mm
shoulder width	500 mm
torso angle	85 °
weight	< 7 kg

Dimensions child

body height	1154 mm
shoulder width	298 mm
torso angle	78 °
weight	< 4 kg

Key features

- ☑ compatible with 4activeSB, 4activeFB-small, 4activeFB-eco
- ☑ easy transportation and storage
- ☑ easy and fast spareparts replacement

4active**PS**

4activePS - static pedestrian target

- ☑ 50% adult male, 7-year-old child, 2-year, 1-year old child (crawling, sitting, lying)
- ☑ replicates human properties in size, shape and articulation
- ☑ complies with ISO 19237, ISO 19206-2, Euro NCAP, JNCAP, ...

Allows testing under rough conditions

- ☑ extremely light and soft structure to prevent damage on VUT
- ☑ robust and modular system – easy and fast change of spare parts
- ☑ realistic response for Radar-, Lidar, Camera and IR-Systems

Available options

- ☑ different optical appearance
- ☑ different colours
- ☑ heated pedestrian target – 4activeHT

4active**PS**

Performance

mono/stereo camera system, Lidar sensors	✔
360° - Radar characteristic	✔
micro-Doppler spread	✔
near infrared / far infrared★	✔
ultra-sonic	✔
crash speed	up to 60 km/h
operation speed	up to 10 km/h

★ optional

Dimensions adult

	4activePS-adult	4activePS-child	4activePS-1year	4activePS-2year
body height	1800 mm	1154 mm	658 mm	865 mm
shoulder width	500 mm	298 mm	172 mm	232 mm
head width	170 mm	150 mm	109 mm	132 mm
torso angle	85 °	78 °	85 °	85 °
weight	< 4 kg	< 2 kg	< 2 kg	< 2 kg

Key features

☑ compatible with 4activeFB-small★, 4activeFB-eco★, 4activeSB★
☑ easy transportation and storage
☑ easy and fast spareparts replacement

★ depending on dummy type

4activeFB-eco

EURO NCAP

Highly automated robotic platforms for future ADAS and AD testing

☑ precise dynamic Swarm-trajectories, live monitoring and auto-reporting
☑ open interfaces (OTX) and extensive connectivity (Mesh)
☑ designed according to related ISO-standards and certified to Euro NCAP

The worlds lowest-profile robotic platform with maximum performance

☑ extremely low profile (20-35 mm) and zero radar reflectivity
☑ precise dual antenna dGNSS/IMU (GPS RTK-L2, GLONASS, Beidou, Galileo)
☑ speeds up to 30 km/h with high accelerations +2,5 m/s² and -6 m/s²

Highest efficiency under rough conditions

☑ autonomous fast charging technology - 8 min charging / 2-5 h testing
☑ traversable by heavy vehicles – protection class waterproof
☑ automatic target adaption and intuitive operation
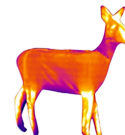
4active**FB**-eco

Performance

maximum speed	5 / 8 / 10 / 20 / 30 km/h
acceleration	2,5 m/s² and -6 m/s² ★
accuracy	up to 2 cm
GNSS / inertialsystem	dual antenna IMU/dGNSS (GPS RTK-L2, GLONASS, Beidou, Galileo)
battery system	LTO 20 Ah – autonomous fast charging
drive system	1000 W dual power drive units
communication	WLAN mesh system
control software	4a Control (DEMO, CERT, NCAP, SWARM)
remote control	ruggedized outdoor safety panel

★ Euro NCAP-compliant incl. EPT, EBT mounted

Dimensions

length	809 mm
width	600 mm
chassis height	20-50 mm
weight	24,8 kg

Model types

- ☑ 4activeFB-eco - DEMO: 8 km/h - selected VRU trajectories for demo events
- ☑ 4activeFB-eco - CERT: 20 km/h - specifically for certification inspections
- ☑ 4activeFB-eco - NCAP: 10 / 20 km/h - acceleration (+3m/s²) acc. Euro NCAP 2020
- ☑ 4activeFB-eco - SWARM: 30 km/h - dynamic Swarm-trajectories

4active**FB**·small

EURO NCAP

The most flexible and incomparably thin platform worldwide

☑ certified to Euro NCAP, UNECE and ISO standards
☑ height and ground clearance for VRU targets (EPT, EBT, EMT)
☑ advanced electronic braking system (eABS)

Fully synchronized operation with all relevant driving robots

☑ real time position data from/to robot - import/export drive files
☑ compensates path errors of the VUT with or without driving robot
☑ full synchro mode - synchronization of 5 independent platforms

Allows testing under rough conditions

☑ overrunable by heavy vehicles - trucks (40 tons)
☑ easy and efficient testing under worst conditions - IP67 waterproof
☑ precise performance at high speeds (up to 80 km/h)

4active**FB**-small

Performance

speed levels	20/60/80 km/h
acceleration longitudinal	+ 3 m/s² / - 5 m/s² ★
acceleration lateral	± 3 m/s²
turning radius	0.5 m
ground clearance	0-7 mm
maximum payload	80 kg
battery charging time	~ 1,5h ★★
battery operating time	EPT > 6h / EBT > 3h / PTW >1 h(@50 km/h) ★★★
positioning system	dual antenna dGPS/INS (GPS/GLO/BDS/GAL)
protection class	IP67
operation temperature range	-10° to 40° C (-20° to 55° C) ★★★★

★ depends on speed ★★ at 20°C ★★★ depending on acceleration ★★★★ additional test equipment available

Dimensions

length	2200 mm
width	900 mm
weight	55 kg
transport dimensions	1490 x 950 x 90 mm

Key features

- ☑ unrivaled thinness
- ☑ most flexible platform on the market
- ☑ fast and easy battery exchange

4active**FB**-large

The best global solution fulfilling all Euro NCAP C2C specifications

☑ certified to Euro NCAP, UNECE and ISO standards
☑ safety during high-speed travel and crossing with a thin, triangular design
☑ no GPS loss during battery replacement (hot swap) and quickly ready for operation

Fully synchronized operation with all relevant driving robots

☑ real time position data from/to robot - import/export drive files
☑ compensates path errors of the VUT with or without driving robot
☑ full synchro mode - synchronization of 5 independent platforms

Allows testing under rough conditions

☑ overrunable by heavy vehicles - trucks (40 tons)
☑ easy and efficient testing under worst conditions - IP67 waterproof
☑ precise performance at highest speeds

4active**FB**-large

Performance

speed levels	50/80/100 km/h
acceleration longitudinal	+ 3 m/s² - 6 m/s² ★
acceleration lateral	± 3 m/s²
turning radius	7 m
ground clearance	0-15 mm
maximum payload	150 kg
battery charging time	~ 1 h ★★
battery operating time	4a GVT > 4h (@50 km/h)★★★
positioning system	dual antenna dGNSS-IMU
dGNSS-RTK	L1/L2 GPS/GLONASS/BEIDOU/GALILEO
protection class	IP67
operation temperature range	-10° to 40° C (-20° to 55° C) ★★★★

★depends on speed ★★at 20°C ★★★depending on acceleration ★★★★additional test equipment available

Dimensions

length	2400 mm
width	1400 mm
weight	155 kg

Key features

- ☑ fast and easy battery swap system
- ☑ stealth technology - very low radar cross section
- ☑ Euro NCAP scenarios: AEB-CCRs/CCRm/CCRb, CCFtap, ELK, LSS

4activeSB

The propulsion system for Euro NCAP VRU

☑ certified to Euro NCAP, UNECE and ISO standards
☑ platform speed up to 20 km/h - correction of velocity via GPS
☑ complies with ISO 19237, ISO 22078, Euro NCAP, JNCAP, CNCAP, ...

Full synchro mode with all relevant driving robots and dGNSS-systems

☑ real time position data from/to robot - import/export drive files
☑ compensates path errors of the VUT with or without driving robot
☑ full synchro mode - compatible with all common dGNSS-systems

Easy transport and quick set up

☑ fast installation in about 30 min
☑ battery powered system - operating time up to 8 h
☑ rigorous testing cycles for reliability

4active**SB**

Performance

vehicle speed	100 km/h
platform speed	20 km/h
acceleration	3.5 m/s²
system length crossing	40 m
system length longitudinal	60 m
power supply	110-230 VAC / 50-60Hz
protection class	IP 54

Dimensions

weight driving unit	85 kg
weight deflection unit	60 kg
weight platform	12 kg
height platform	25 mm

Euro NCAP scenarios

CPFA / CBFA	✔	CPDA	✔
CPNA / CPNCO / CBNA	✔	CPTA / CPRA / CBTA	✔
CPLA / CBLA	✔		

Key features

- ☑ easy and fast assembly/disassembly
- ☑ easy operation via WLAN (laptop, control panel)
- ☑ automatic triggering of dummy articulations

4active**XB**

The propulsion system for Euro NCAP VRU

- ☑ certified to Euro NCAP, UNECE and ISO standards
- ☑ platform speed up to 50 km/h - correction of velocity via GPS
- ☑ complies with ISO 19237, ISO 22078, Euro NCAP, JNCAP, CNCAP, ...

Full synchro mode with all relevant driving robots and dGNSS-systems

- ☑ real time position data from/to robot - import/export drive files
- ☑ compensates path errors of the VUT with or without driving robot
- ☑ full synchro mode - compatible with all common dGNSS-systems

Easy transport and quick set up

- ☑ fast installation in about 30 min
- ☑ low power needed - supercapacitors
- ☑ rigorous testing cycles for reliability

4active**XB**

Performance

vehicle speed	100 km/h
platform speed	50 km/h
acceleration	3.5 m/s²
system length crossing	50 m
system length longitudinal	60 m
power supply	110-230 VAC / 50-60Hz

Dimensions

weight driving unit	208 kg
weight deflection unit	135 kg
weight platform	12 kg
height platform	25 mm

Euro NCAP scenarios

CPFA	✔
CPNA / CPNC / CBNA	✔
CPLA / CBLA	✔
CPTA / CPRA	✔

Key features

- ☑ easy and fast assembly/disassembly
- ☑ easy operation via WLAN (laptop, control panel)
- ☑ automatic triggering of dummy articulations
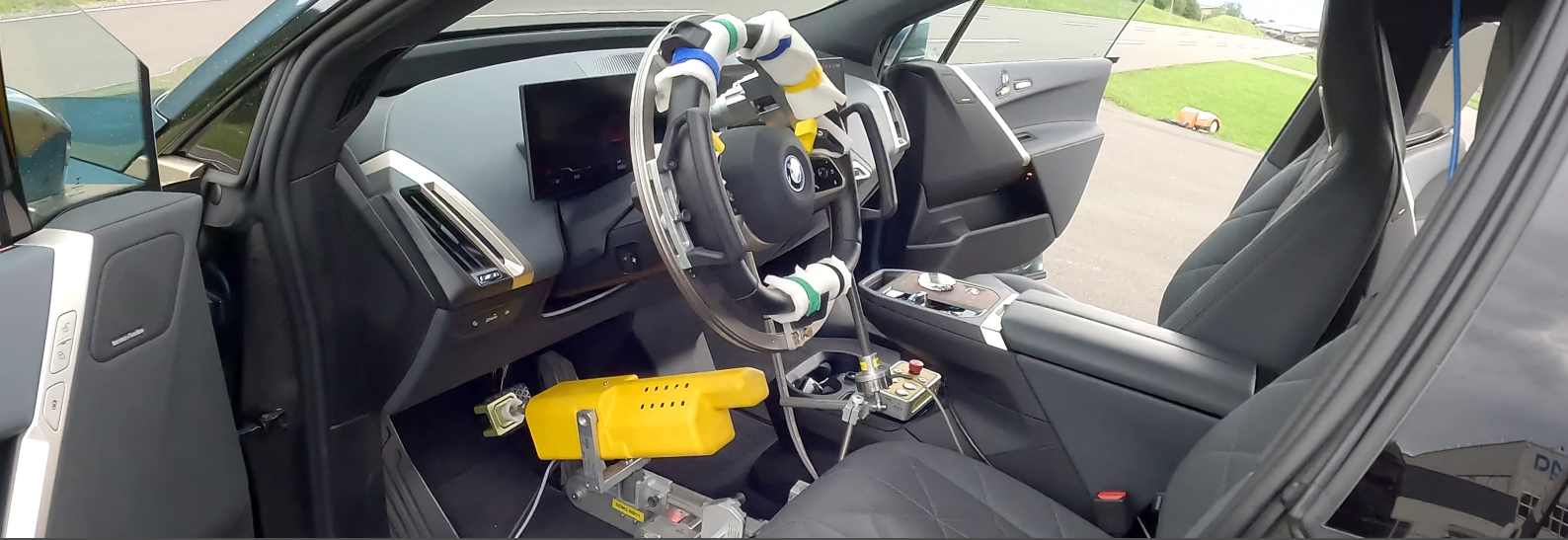
I N   P H Y S I C S   W E   T R U S T

4active**DR**-Driving Robot

STÄHLE
ROBOT SYSTEMS

Highly advanced system for computer controlled driving of cars & trucks

☑ drives the vehicle by operating the steering wheel, accelerator and brake pedal
☑ providing lateral and/or longitudinal closed-loop or open-loop operation modes
☑ to perform standard and customized test procedures with robotic precision

Providing the highest level of user friendliness

☑ highly flexible and user-friendly interface
☑ full integration in the 4a driving robot control center
☑ modular actuator design and flexible application software

Precise - Reliable - Efficient

☑ designed for a fast installation into vehicles without changes to the car
☑ compact, lightweight, fast installation and rugged components
☑ truck kit option available

4active**DR**-Driving Robot

Steering actuator

	ADAS/ NCAP config.	High Dynamic config.
nominal load point	10 Nm @ 720 °/sec	60 Nm @ 1280 °/sec
max. speed	750 °/sec	1700 °/sec
max. torque	30 Nm	75 Nm

- ☑ steering wheel diameter range - app. 377 – 405 mm
- ☑ torque support on driver'side
- ☑ uncovered airbag area
- ☑ handle bars for the driver

Throttle actuator

angle	90°max.
torque	15 Nm (nom), 30 Nm (max)
velocity	330 °/s max.

- ☑ lays on pedal (free access to human foot)
- ☑ adjustable position

Brake actuator

	ADAS/NCAP config.	High Dynamic config.
stroke	150 mm max.	150 mm max.
force	350 N max.	1.800 N max.
velocity	0.4 m/s max.	2.1 m/s max.

- ☑ pneumatical brake redundancy upon request
- ☑ clamping attachment, no drills

Key extensions

- ☑ clutch + shift robot for manual transmission
- ☑ truck adapter set
- ☑ driverless add-ons with brake redundancy
- ☑ keyboys for starting / stopping engine

IN PHYSICS WE TRUST

4active**EQ** - AVL Smart ADAS Analyzer

The best solution to support the workflow for NCAP and active safety testing

☑ independent, open solution for evaluation and reporting of active safety tests
☑ validates high rated NCAP results in a very short cycle
☑ always up-to-date databases for rapidly changing test requirements

Providing highest level of user friendliness

☑ workflow optimized user interface for faster results
☑ open interfaces and seamless integration into 4activeSystems test equipment
☑ pre-defined set of NCAP report templates

Precise - reliable - efficient

☑ fully automated import, validation and scoring of test data
☑ instantaneous online validation of ADAS (e.g. NCAP) tests during test execution
☑ sophisticated and well-proven data processing core

4activeEQ - AVL Smart ADAS Analyzer

Supported protocols & report templates

|	
EU-NCAP 2019	AEB/FCW City, AEB/FCW Inter-Urban, AEB/FCW VRU-Pe, AEB/FCW VRU-Cy, LDW, LKA, ELK
EU-NCAP 2020	AEB/FCW Car-to-Car, AEB/FCW VRU-Pe, AEB/FCW VRU-Cy, LDW, LKA, ELK
A-NCAP 2020	AEB/FCW Car-to-Car, AEB/FCW VRU-Pe, AEB/FCW VRU-Cy, LDW, LKA, ELK
C-NCAP 2021	AEB/FCW Car-to-Car, AEB/FCW VRU-Pe, AEB/FCW VRU-TW, LKA, LDW
C-IASI 2018	AEB/FCW Car-to-Car

Reporting standards

EU-NCAP	Excel & MME
A-NCAP	Excel & MME
C-NCAP	Excel
C-IASI	Excel

Key features

- ☑ pre-configured test plans
- ☑ instant test validation and scoring
- ☑ automatic failure detection
- ☑ ready to use report templates

AVL
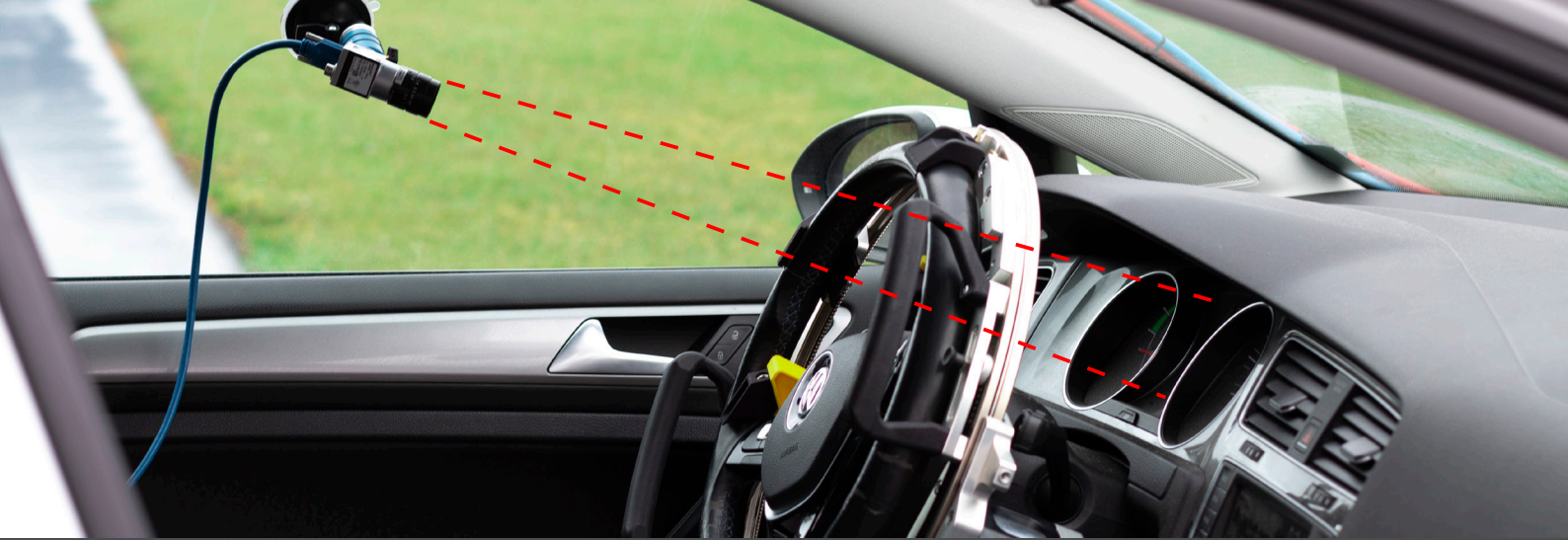
4active**EQ**-AVAD 3

Detector for audio/visual signals from the vehicle

☑ detects acoustic and optical warnings and messages from inside the vehicle
☑ using high-performance camera and microphone
☑ ideally suited for AEB, FCW, SAS, LSS in compliance with EuroNCAP

Successfully used by most manufacturers, OEMs and test laboratories

☑ very fast, top-quality processor for sound and image processing
☑ up to 8 patterns, colours and colour search areas - up to 100 simultaneous tones
☑ different software feature codes available

Precise - reliable - efficient

☑ easy handling and easy system configuration
☑ recognizes incoming signals and triggers corresponding records within milliseconds
☑ measurement profiles can be saved at any time and reloaded later on

4active**EQ**-AVAD 3

Performance

frame rate	up to 100 Hz (optional up to 300 Hz)
latency	down to 4 ms (depending on configuration)
input power	9-36V DC
cooling	passive (no fan)
CAN Baudrate	up to 1KHz

Dimensions

size	320x320x85mm
weight	7,5kg

Specification

- ☑ minimal latency times (according to NCAP specifications)
- ☑ 100 Hz frame rate (optional up to 300 fps)
- ☑ CAN-and LAN outputting rate 1 KHz maximum
- ☑ just a few milliseconds of information delay
- ☑ status signals activate the memory function

Optional enhancements

- ☑ CAN interface with two channels for vehicle data
- ☑ up to 8 patterns, colours and colour search areas
- ☑ up to 100 simultaneous tones
- ☑ single measuring camera optional up to 300 fps
- ☑ LAN communications interface
- ☑ single result combinations logically linkable to an overall result
- ☑ triggering from bit patterns for ECU messages with latency time calculation

DTC GmbH
Navigation & Security Solutions

4active**EQ**-Light System

Easily transportable Light System for night tests in urban situations

☑ light system acc. to Euro NCAP / CNCAP TEST PROTOCOL – AEB VRU systems
☑ in compliance with the European standard DIN EN 13201, ISO 19237
☑ reflecting real world conditions

Allows testing under rough conditions

☑ absolutely waterproof for testing under rainy conditions
☑ ballast elements to guarantee a wind stability up to 20 m/s
☑ compact size for easy transport and storage

Available options:

☑ Light system for night tests acc. to Euro NCAP 2020 (5 pcs)
☑ Light system for night tests acc. to CNCAP (6 pcs)
☑ Light system for night tests acc. to Euro NCAP 2023 (7 pcs)

4active**EQ**-Light System

Performance

LED Light	220-240V. 50-60Hz. 4.000K white

Dimensions

height elevator tripod	5000 mm
width elevator tripod	1200 mm
packing size per set	2150x950x1150 mm
packing weight per set	380★ / 430★★ / 520★★★ kg

★ applies to Euro NCAP 2020 ★★ applies to CNCAP ★★★ applies to Euro NCAP 2023

Equipment

- ☑ 5x★ (6x★★/ 7x★★★) elevator tripod for raising the lamp
- ☑ 5x★ (6x★★ / 7x★★★) LED light
- ☑ 1x luxmeter for verifying the specified illumination
- ☑ 4x★ (5x★★/ 6x★★★) cable 25m including drum
- ☑ 1x cable 25m
- ☑ 1x measuring tape
- ☑ 1x water level
- ☑ 1x aluminium plate
- ☑ aluminium transport boxes
- ☑ ballast element for weighting, available with 20 kg

★ applies to Euro NCAP 2020 ★★ applies to CNCAP ★★★ applies to Euro NCAP 2023

Key features

- ☑ absolutely waterproof
- ☑ wind stability up to 20 m/s
- ☑ reflects real world conditions
- ☑ compact size for easy transport and storage

4active**EQ**-Mesh

4activeEQ-Mesh - unlike any other wireless mesh system

☑ to extend network range, proving ground coverage and mobility
☑ one network node can make multiple connections simultaneously
☑ routes data continuously and instantaneously

Providing fully mobile broadband connectivity

☑ edge devices get connected via 2.4GHz and 5Ghz simultaneously
☑ quickly adapts to rapidly-deployed and quickly or constantly moving platforms
☑ routing decisions are based on the lowest latency

Precise - reliable - efficient in any application

☑ support for several strong cryptographic options
☑ high bandwidth for data, voice, and video applications
☑ scalability to hundreds of mobile, high-bandwidth nodes

4active**EQ**-Mesh

Performance

frequency	2.4 GHz and 5 GHz
antenna connector	(2) Type N (female)
modulation	DSSS *, CCK *, OFDM
max. physical layer data rate	300 Mbps (throughput varies)
max. RF transmit power **	29 dBm ± 2 dB
receive sensitivity	varying between -93 dBm ± 2 dB and -72 dBm ± 2 dB
input voltage	9 - 30 VDC Passive PoE
power cunsumption	2.8 W (average, idle); 15 W (maximum, peak) @ 24 V
protection class	IP67
operating temperature	-40°C to +60°C
ethernet	10/100/1000 Mbps IEEE 802.3, RJ-45, auto MDI/MDIX
certification	ES1-2450R: FCC(US), IC(Canada), MIC(Japan), CE mark(European Economic Area, Switzerland, Turkey), AS/NZS 4268, IFT/NOM(Mexico), CRC(Colombia), Indonesia, TRA(UAE), India, Malaysia, ANATEL (Brazil), Phillippines
USB	Micro-B USB port for firmware upgrades and GPS device add-on

★concerns only 2,4 GHz ★★ is governed by local regulations and varies by frequency

Properties

dimensions	155 mm x 149 mm x 41 mm
weight	440 g ± 10 g

Key features

☑ no single point of failure
☑ low maintenance and easy integration
☑ scalability and 802.11 compatibility

4active**EQ**-Obstruction Wall

Easy transportable obstruction wall for ADAS and AD testing

- ☑ represents properties of a brick wall
- ☑ intransparent to all state of the art sensor systems
- ☑ designed according to NCAP-requirements for AEB VRU Systems

Allows testing under rough conditions

- ☑ extremely light and soft structure to prevent damage on VUT - easy to build up
- ☑ robust, modular and weatherproof system - wind stability up to 20 m/s
- ☑ realistic response for Radar-, Lidar-, Camera-, Ultrasonic- and IR-Systems

Available options

- ☑ different optical appearance
- ☑ different sizes
- ☑ different colours

4active**EQ**-Obstruction Wall

Dimensions

|	
height	2000 mm
length per part	1220 mm
total length (7 parts)	8500 mm
weight	31 kg
colour	light grey

Radar Properties

IR Reflectivity	850 to 910 nm -> 50%
Radar Reflectivity★	10-30 dBsm (viewing angle 0 deg) 20-0 dBsm (viewing angle 45 deg)

★for a frequency of 77 GHz

Key features

- ☑ easy transport and storage
- ☑ multi layer structured fibre reinforced construction
- ☑ built of modular segments - easily expandable
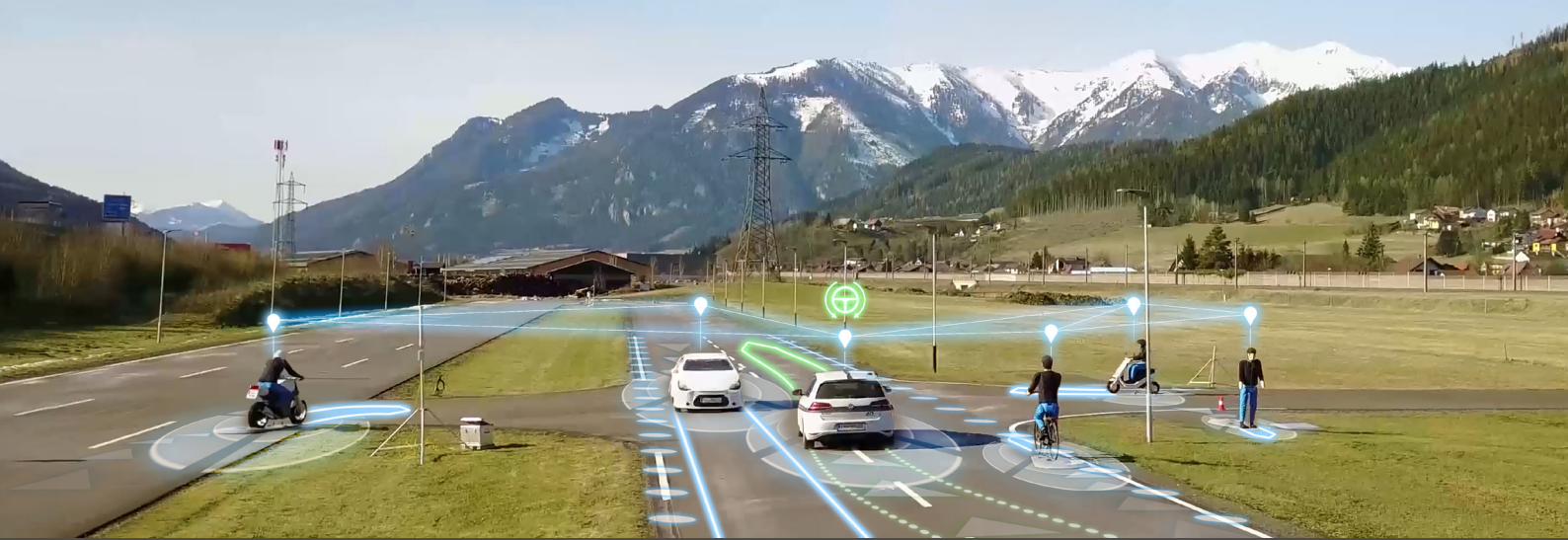
4active**FB**-Control Center

**The ideal tool for mapping the diversity of all test requirements**

☑ navigation and control of official NCAP, UNECE or individual tests
☑ multivendor control (ISO 22133), live monitoring and reporting
☑ offline validation and examination of planed trajectories

Innovative features for an efficient and safe testing procedure

☑ full NCAP, ISO and UNECE databases
☑ multiple platform control and safety monitoring features
☑ full synchronization mode of all participants

Efficient testing solution for maximum testing output

☑ easy and intuitive operation
☑ automatic evaluation and reporting after every test
☑ various test automations to ensure effective test execution
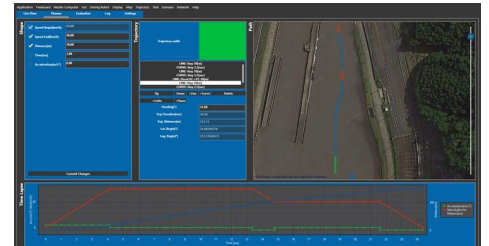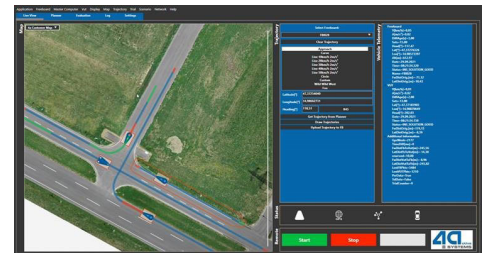
4active**FB**-Control Center

Complies With

Euro NCAP 2018, 2020, 2023	ISO WD 19206-5
C-NCAP 2018, 2021, 2024	ISO PRE 19206-6
ISO 22133-1	ISO 19237
ISO 17387	ISO 22078
ISO CD 19206-3	ISO CD 22737
ISO 19206-4	UN ECE 157, 159, 152

Software

☑ open interfaces to import / export data from / to the virtual validation (openX, etc.)
☑ open and standardized interfaces to provide a seamless connection to various simulation-, development- and evaluation tools

Key features

☑ predefined NCAP, ISO and UNECE databases
☑ free – Scenario for complex and individual scenarios
☑ multiple platform and driving robot control
☑ location storage of multiple test tracks
☑ live data of all participants
☑ several map providers for all countries over the world
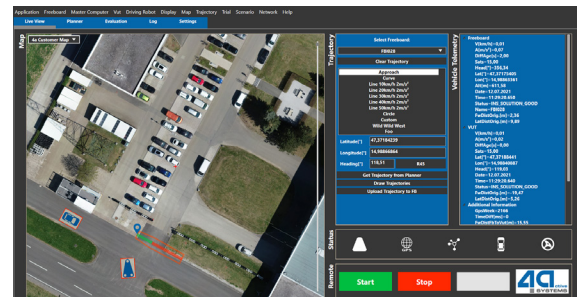
4active**IPS** - Indoor Positioning System

4activeIPS - Indoor Positioning System

☑ testing possibility without satellite based INS information
☑ uses the industry-leading Ultra-Wideband (UWB) technology
☑ GPS data output format

Innovative features for an efficient and safe testing procedure

☑ synchronization of max. 5 platforms
☑ 8 beacons necessary for position calculation
☑ easy network expansion

Efficient testing solution for maximum testing output

☑ user-friendly usage and installation
☑ live monitoring in real time
☑ the same platform can be operated with GPS or IPS

V.1.1

4active**IPS** - Indoor Positioning System

Technical features

localization accuracy equivalent to current RTK GPS accuracy	< 5cm, 0,1°
position in global coordinates	accuracy 2cm RMS
measurement accuracy of speed	0.01 km/h RMS
angle measuring accuracy	up to 0.2°
operating temperature	-20°C to 60°C
distance between beacons	25-30m

UWB Radio

frequency Channel 4	3993.6 MHz ± 450 MHz
frequency Channel 7	6489.6 MHz ± 450 MHz
transmit power	-41.3 dBm/MHz

VIPS Static Beacon consists of

VIPS Beacon unit
Beacon mounting plate
VIPS Beacon power supply

VIPS Vehicle Rover with IMU consists of

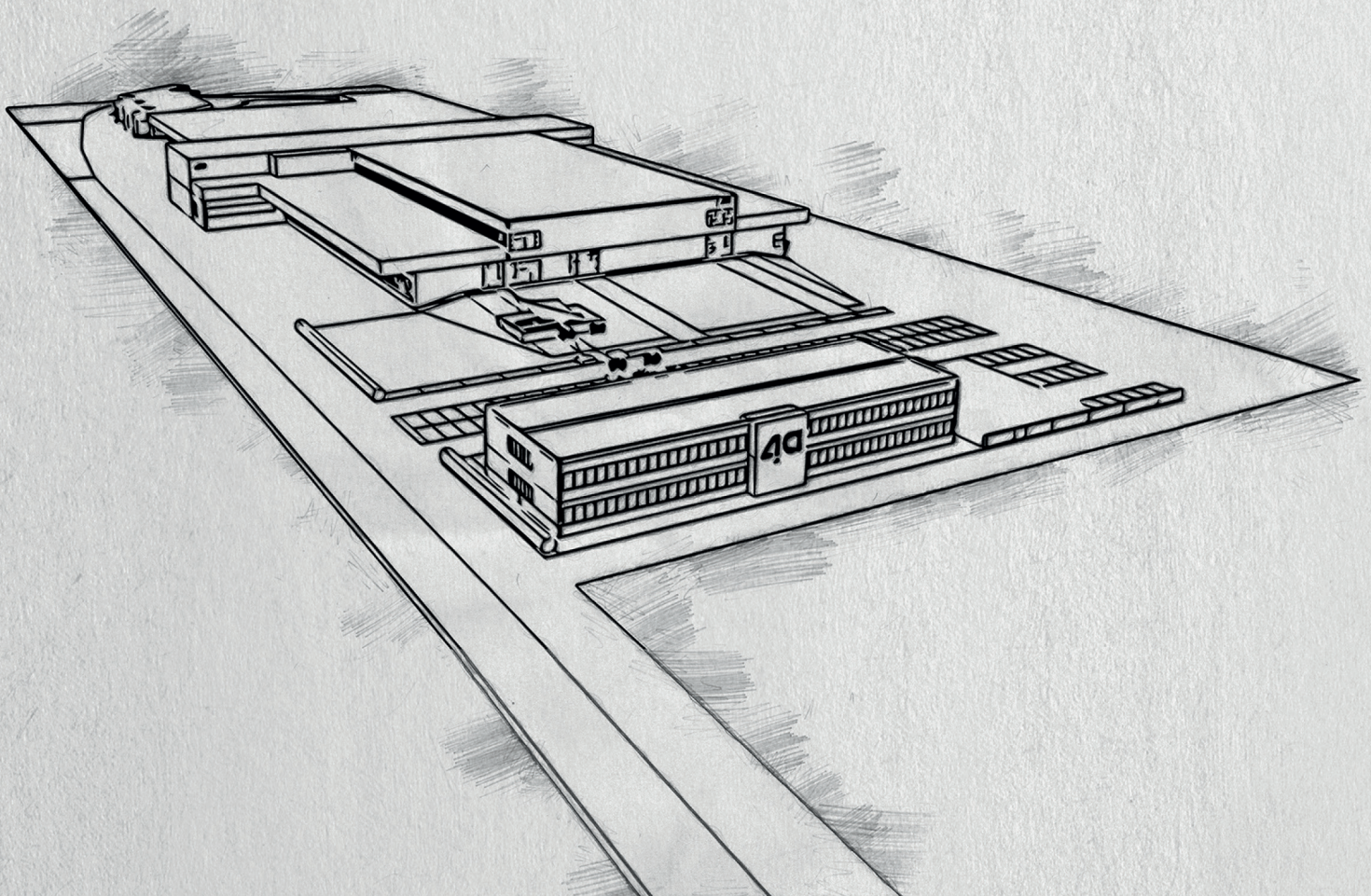| |
|---|
| VIPS Rover unit V2 with GeneSys ADMA IMU |
| Interfacebox with antenna for time syncronization via GPS |
| VIPS Rover power supply |

Key features

- ☑ bluetooth interface for installation and firmware updates
- ☑ compatible with FB-small, FB-large
- ☑ visual contact must be given, using UWB - neu formulieren!!