



Vehicle dynamics, durability and tire testing

Complete measurement solutions for vehicle testing on the test course and test bench



Absolute attention for tomorrow's world

Kistler develops measurement solutions consisting of sensors, electronics, systems and services. In the physical border area between emissions reduction, quality control, mobility and vehicle safety, we deliver excellence for a future-oriented world and create ideal conditions for Industry 4.0. We thereby facilitate innovation and growth for – and with – our customers.



For the last 25 years, Kistler wheel force sensors have been setting standards when it comes to measuring durability. Customers across the globe appreciate the unique precision and quality of Kistler's sensor technology for road load and test bench applications alike.



Kistler delivers complete systems for high-precision measurements of longitudinal and transverse dynamics in mobile vehicle testing.



Vehicle tires have to meet ever-increasing demands – so requirements for test methods and the measuring systems used for them are becoming stricter. Multi-component measuring hubs on the test bench or RoaDyn wheel force sensors and Correvit sensors on the test track deliver precise test results.

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Customers around the world rely on the comprehensive support and universal measurement solutions from Kistler for their vehicle testing

Efficient vehicle tests from a single source

Innovation cycles in the automotive industry are becoming shorter and shorter. As a long-standing development partner on the cutting edge of research, Kistler enables an efficient, integrated vehicle testing on the test bench and the test course.

No vehicle development without realistic tests and precise verification of all vehicle parameters. With comprehensive measurement solutions for durability, driving dynamics and tire development, Kistler supports comprehensive, integrated testing of a broad range of vehicle models.

A look at complex relationships

Whereas wheel force sensors and measuring hubs measure all forces and torques on the wheel, driving-dynamics measuring systems record the kinematics that occur during driving, for example, the drift and camber angles. Sensors for wheel and body movements round out the picture and enable an analysis of complex relationships thanks to high-resolution data.

Custom-made solutions

Kistler measurement solutions cover the entire measuring chain – from the sensor technology to signal conditioning with all common interfaces to user-friendly software. The modular portfolio is completed by individually produced components such as rims and vehicle-specific adaptations, including the brackets needed to custom-fit the sensors to the test vehicle in minimal time.

Vehicle tests with Kistler:

- Experimental simulation on test benches
- Lane-change tests, ISO 3888-1, ISO 3888-2
- Steady-state circular course drive, ISO 4138
- Load changes on steady-state circular course drive, ISO 9816
- Braking on steady-state circular course drive, ISO 7975
- ABS and ESP tests
- Rolling resistance measurements based on ISO 28580
- Customer-specific applications

Sustainable and cost-effective

Kistler measurement solutions are extremely long-lived, even with daily use on the test course, and supply highly precise measurement data for many years. Our calibration service ensures that high quality standards are met over the long term. Thus for example, Kistler's hexapod calibration bench for wheel force sensors, the only one of its kind in the world, ensures maximum accuracy throughout its entire service life.



RoaDyn S625 sp wheel force sensor



RoaDyn S530 measuring hub

Optimum process reliability and time efficiency

Kistler's DTI (Digital Transducer Interface) technology enables the use of a continuous bus system throughout the entire application. The sensors, transmission and synchronization of measurement data, as well as the power supply, can be configured using just a single cable. The test setup is easier than ever thanks to automatic sensor detection. The installation position, calibration values and any relevant physical variables are automatically detected using KiCenter (Kistler's measurement software) and can be configured in the graphical user interface (GUI). This guarantees optimum process reliability and time efficiency.

An experienced team by your side

Our specialists apply their expertise, experience and commitment to help you achieve your goals, and work together with you to find the right solution for your specific measuring task. With expert consulting before and after your purchase, we ensure that you are – and will always be – ready to measure in record time. We can provide a personalized consultation to help you select and integrate the most appropriate measuring instruments or propose a customized solution for your specific application. Our Tech Centers provide support worldwide for calibration, test instrument monitoring, troubleshooting and repair services.



Vehicle development with the market leader

You can rely on Kistler's measurement technology for precise measurements of fatigue durability or vehicle dynamics, as well as dependable tire tests.

www.kistler.com/en/applications/automotive-research-test/vehicle-dynamics-durability/

RoaDyn S: multi-component wheel force sensors, rotating

RoaDyn S625 sp CFRP: light 6-component wheel force sensor for passenger cars



Technical data			Type 9266A...
Measuring range	F_x / F_z	kN	-20 ... 20
	F_y	kN	-15 ... 15
	M_x / M_z	kN·m	-4 ... 4
	M_y	kN·m	-4 ... 4
Rim sizes		inches	14 ... 18
Data sheet	No.		9266A_000-495

Description

Vehicle dynamics testing, tire testing and data measurement for load spectra on light passenger cars on test courses. Available with in-board or out-board transmission unit with near field telemetry. Made of CFRP for 14 ... 18" rims or aluminum for 12 ... 19".

RoaDyn S630 sp CFRP: light 6-component wheel force sensor for large passenger cars and light SUVs



Technical data			Type 9279A...
Measuring range	F_x / F_z	kN	-30 ... 30
	F_y	kN	-18 ... 18
	M_x / M_z	kN·m	-5 ... 5
	M_y	kN·m	-5 ... 5
Rim sizes		inches	17 ... 22
Data sheet	No.		9279A_000-692

Description

Vehicle dynamics testing, tire testing and data measurement for load spectra on passenger cars and light SUVs on test courses. Available with in-board or out-board transmission unit with near field telemetry.

RoaDyn S635 sp Alu: 6-component wheel force sensor for large passenger cars and light SUVs



Technical data			Type 9267A...
Measuring range	F_x / F_z	kN	-35 ... 35
	F_y	kN	-20 ... 20
	M_x / M_z	kN·m	-5 ... 5
	M_y	kN·m	-5 ... 5
Rim sizes		inches	15 ... 22
Data sheet	No.		9267A_000-559

Description

Vehicle dynamics testing, tire testing and data measurement for load spectra on heavy passenger cars and light SUVs on test courses. Available with in-board or out-board transmission unit with near field telemetry.

RoaDyn S650 sp CFRP: 6-component wheel force sensor for SUVs and light commercial vehicles



Technical data			Type 9268A...
Measuring range	F_x / F_z	kN	-50 ... 50
	F_y	kN	-30 ... 30
	M_x / M_z	kN·m	-6 ... 6
	M_y	kN·m	-6 ... 6
Rim sizes		inches	15 ... 22
Data sheet	No.		9268A_000-497

Description

Vehicle dynamics testing, tire testing and data measurement for load spectra on light SUVs and commercial vehicles on test courses. Available with in-board or out-board transmission unit with near field telemetry. As single-wheel (A1), twin (A3) or super single (A4).

RoaDyn S: multi-component wheel force sensors, rotating

RoaDyn S660 sp: 6-component wheel force sensor for SUVs, light commercial vehicles and motorsport



Technical data			Type 9248A...
Measuring range			
F_x / F_z	kN		-60 ... 60
F_y	kN		-36 ... 36
M_x / M_z	kN·m		-7.5 ... 7.5
M_y	kN·m		-8.5 ... 8.5
Rim sizes	inches		15 ... 22
Data sheet	No.		9248A1_000-970

Description Vehicle dynamics testing, tire testing and data measurement for load spectra on SUVs, light commercial vehicles and racecars on test courses. With in-board or out-board transmission unit with near field telemetry. Single-wheel (A1), twin (A3) or super single (A4).

RoaDyn S6ST sp: 6-component wheel force sensor light commercial vehicles



Technical data			Type 9282A...
Measuring range			
F_x / F_z	kN		-80 ... 80
F_y	kN		-50 ... 50
M_x / M_z	kN·m		-15 ... 15
M_y	kN·m		-25 ... 25
Rim sizes	inches		16 ... 24
Data sheet	No.		9282A_000-696

Description Vehicle dynamics testing, tire testing and data measurement for load spectra on light commercial vehicles on test courses. Available with in-board or out-board transmission unit with near field telemetry. As single-wheel (A1), twin (A3) or super single (A4).

RoaDyn S6MT sp: 6-component wheel force sensor medium-weight commercial vehicles



Technical data			Type 9270A...
Measuring range			
F_x / F_z	kN		-120 ... 120
F_y	kN		-70 ... 70
M_x / M_z	kN·m		-18 ... 18
M_y	kN·m		-30 ... 30
Rim sizes	inches		17.5 ... 24
Data sheet	No.		9270A_000-858

Description Vehicle dynamics testing, tire testing and data measurement for load spectra on medium-weight commercial vehicles on test courses. Available with in-board or out-board transmission unit with near field telemetry. As single-wheel (A1), twin (A3) or super single (A4).

RoaDyn S6XT sp: 6-component wheel force sensor heavy commercial vehicles and special commercial vehicles



Technical data			Type 9262A...
Measuring range			
F_x / F_z	kN		-250 ... 250
F_y	kN		-100 ... 100
M_x / M_z	kN·m		-50 ... 50
M_y	kN·m		-80 ... 80
Rim sizes	inches		≥19.5
Data sheet	No.		9262A_000-862

Description Vehicle dynamics testing, tire testing and data measurement for load spectra on commercial vehicles, agricultural vehicles and all-terrain vehicles on test courses. Available with in-board or out-board transmission unit with near field telemetry. As single-wheel (A1), twin (A3) or super single (A4).

RoaDyn P: 1-component wheel torque transducers

RoaDyn P106 / P109: wheel torque transducers for passenger cars, SUVs, light commercial vehicles ...



Technical data		Type 9294B11	Type 9294B13
Measuring range (switchable)			
Upper measuring range M_y	kN·m	-6 ... 6	-9 ... 9
Lower measuring range M_y	kN·m	-0.6 ... 0.6	-0.9 ... 0.9
Max. load forces F_z	kN	-24 ... 24	-60 ... 60
Max. load torque M_x / M_z	kN·m	-6 ... 6	-7.5 ... 7.5
Rim sizes	inches	14 ... 22	14 ... 22
Data sheet	No.	9294B_000-634	9294B_000-634

Description

Torque and braking force measurement on passenger cars and SUVs, light commercial vehicles and high-performance vehicles in the areas of vehicle stability, traction control, antiblock system, force distribution, coasting torque. Customized measuring ranges on request.

RoaDyn P1ST / P1MT: wheel torque transducers for commercial vehicles



Technical data		Type 9299A1	Type 9299A2
Measuring range (switchable)			
Upper measuring range M_y	kN·m	-20 ... 20	-30 ... 30
Lower measuring range M_y	kN·m	-2 ... 2	-3 ... 3
Max. load forces F_z	kN	-80 ... 80	-90 ... 90
Max. load torque M_x / M_z	kN·m	-10 ... 10	-15 ... 15
Rim sizes	inches	≥16	≥17.5
Data sheet	No.	9299A_000-993	9299A_000-993

Description

Torque and braking force measurement on commercial vehicles in the areas of vehicle stability, traction control, antiblock system, force distribution, coasting torque. Customized measuring ranges on request.

RoaDyn P1HT: wheel torque transducer for commercial vehicles



Technical data		Type 9299A3
Measuring range (switchable)		
Upper measuring range M_y	kN·m	-50 ... 50
Lower measuring range M_y	kN·m	-5 ... 5
Max. load forces F_z	kN	-120 ... 120
Max. load torque M_x / M_z	kN·m	-25 ... 25
Rim sizes	inches	≥19.5
Data sheet	No.	9299A_000-993

Description

Torque and braking force measurement on commercial vehicles in the areas of vehicle stability, traction control, antiblock system, force distribution, coasting torque. Customized measuring ranges on request. Can be converted to S6XT by replacing sensing elements.

Acceleration: IEPE and capacitance accelerometers

50 ... 2 000 g Ceramic Shear Miniature accelerometer (3-axis) – for durability testing



Technical data		Type 8763B050...	Type 8763B100...
Range	g	±50	±100
Sensitivity at 100 Hz	mV/g	100	50
Frequency range ±5 %	Hz	0.5 ... 7 000	0.5 ... 7 000
Transverse sensitivity, max. 5 %	%	2.5	2.5
Temp. coefficient sensitivity	%/°C	0.01 (0.18 max.)	0.01 (0.18 max.)
Weight	grams	4.5 / 5.0 *	4.5 / 5 *
Data sheet	No.	8763B_000-928	8763B_000-928

Description

Triaxial accelerometer for vehicle testing, e.g., dynamic vibration measurements, NVH and durability tests.

Additional measuring ranges available (see data sheet).

* Depending on connector type

50 ... 100 g Ceramic Shear Miniature accelerometer (3-axis) – for durability testing



Technical data		Type 8764B050...	8764B100...
Range	g	±50	±100
Sensitivity at 100 Hz	mV/g	100	50
Frequency range ±5 %	Hz	0.5 ... 10 000	0.5 ... 10 000
Transverse sensitivity	%	2.5	2.5
Temp. coefficient sensitivity	%/°C	0.01 (0.07 max.)	0.01 (0.07 max.)
Weight (approx.)	grams	6 / 6.2 *	6 / 6.2 *
Data sheet	No.	8764B_003-201	8764B_003-201

Description

Triaxial accelerometer for vehicle testing, e.g., dynamic vibration measurements, NVH and durability tests.

Additional measuring ranges available (see data sheet).

* Depending on connector type

2 ... 200 g K-Beam, variable capacitive accelerometers (1-axis) – for longitudinal dynamics testing



Technical data		Type 8316A010	Type 8316A030
Range	g	±10	±30
Sensitivity ±5 % (max.)	mV/g	800	266.6
Frequency range ±5 %	Hz	0 ... 1 000	0 ... 1 500
Transverse sensitivity	%	1.0 (3.0 max.)	1.0 (3.0 max.)
Temp. coefficient sensitivity	%/°C	0.01 (0.030 max.)	0.01 (0.030 max.)
Weight	grams	15 / 12 *	5 / 12 *
Data sheet	No.	8316A_003-324	8316A_003-324

Description

High-precision, low-noise, single-axis accelerometer for driving dynamics applications. Additional measuring ranges available (see data sheet).

* Depending on case

2 ... 200 g K-Beam triax, variable capacitive accelerometers (3-axial) – for longitudinal and transverse dynamics testing



Technical data		Type 8396A010	Type 8396A030
Range	g	±10	±30
Sensitivity ±5 % (max.)	mV/g	800	266.6
Frequency range ±5 %	Hz	0 ... 1 000	0 ... 1 500
Transverse sensitivity	%	1.0 (3.0 max.)	1.0 (3.0 max.)
Temp. coefficient sensitivity	%/°C	0.01 (0.030 max.)	0.01 (0.030 max.)
Weight (without cable)	grams	30 / 33 *	30 / 33 *
Data sheet	No.	8396A_003-325	8396A_003-325

Description

High-precision, low-noise, triaxial accelerometer for driving dynamics applications. Additional measuring ranges available (see data sheet).

* Depending on output type

Contact-free sensors for driving dynamics measurements

Correxit L-Motion: 1-axis optical sensors for measuring longitudinal dynamics



Technical data		Type 5335A... (Stand.)	Type 5337A... (Small)
Speed range	km/h	0.1 ... 250 (400) *	0.1 ... 250 (400) *
Distance resolution	mm	1.0	1.0
Measurement accuracy	%FSO	<±0.1	<±0.1
Measurement frequency	Hz	500	500
Working range	mm	350 ±100	350 ±100
Weight of electronics	grams	1 100	890
Data sheet	No.	5335A_003-279d	5335A_003-279d

Description High-precision slip-free measurement of distance, longitudinal speed and acceleration in dynamic vehicle testing, e.g., DIN 70028 Measuring the stopping distance with ABS in straight-ahead stops, ISO 14512 Straight-ahead braking on surfaces with split coefficient of friction.

Correxit SFII: 2-axis optical sensors for measuring longitudinal and transverse dynamics



Technical data		Type CSF2A...
Speed range	km/h	0.3 ... 250 (400) *
Measurement accuracy	%FSO	≤±0.5
Angle range / angular resolution	°	±40 / <±0.1
Measurement frequency	Hz	250
Working range	mm	180 ±50
Interfaces		CAN, RS-232C
Data sheet	No.	CSF2A_000-812

Description High-precision, slip-free measurement of distance, speed (longitudinal and transverse speed) and angle in dynamic vehicle testing. Available with and without protection glass and optional racing version, calibrated to 400 km/h.

Correxit S-Motion DTI: 2-axis optical sensors for measuring longitudinal and transverse dynamics



Technical data		Type 2055A... (Stand.)	Type 2053A... (Small)
Speed range	km/h	±0.1 ... 250 (400) *	±0.1 ... 250 (400) *
Measurement accuracy	%FSO	≤±0.2	≤±0.2
Angle range / angular resolution	°	±30 / <±0.01	±30 / <±0.01
Measurement frequency	Hz	500	500
Working range	mm	350 ±100	350 ±100
Interfaces		CAN, USB, Ethernet	CAN, USB, Ethernet
Data sheet	No.	2053A_003-351	2053A_003-351

Description High-precision, slip-free measurement of distance, speed (absolute, longitudinal, transverse speed) and angle in dynamic vehicle testing, e. g. steady-state circular course drive (ISO 4138).

Correxit S-350: 2-axis optical sensors for measuring longitudinal and transverse dynamics



Technical data		Type CS350A...	Type CM350A...
Speed range	km/h	0.5 ... 250 (400) *	0.5 ... 400
Measurement accuracy	%FSO	≤±0.2	≤±0.2
Angle range / angular resolution	°	±40 / <±0.1	±40 / <±0.1
Measurement frequency	Hz	250	250
Working range	mm	350 ±100	350 ±50
Interfaces		CAN, USB, RS-232C	CAN, RS-232C
Data sheet	No.	CS350A_000-807	CM350A_003-148

Description High-precision, slip-free measurement of distance, speed (longitudinal and transverse speed) and angle in dynamic vehicle testing, e. g. steady-state circular course drive (ISO 4138).

* Standard 250 km/h / optional calibration up to 400 km/h available

Contact-free sensors for driving dynamics measurements

Correvit S-175 Racing: 2-axis optical sensors for measuring longitudinal and transverse dynamics



Technical data		Type 18030779
Speed range	km/h	0.5 ... 400
Measurement accuracy (angle)	%FSO (°)	≤±0.2
Angle range * / angular resolution	°	±30 / <±0.1
Measurement frequency	Hz	250
Working range	mm	175 ±25
Interfaces		CAN, RS-232C
Data sheet	No.	18030779_003-246

Description High-precision, slip-free measurement of distance, longitudinal / transverse speed and angle at high speeds, e.g., racing conditions.

Correvit S-HR: 2-axis optical sensors for measuring longitudinal and transverse dynamics



Technical data		Type CSHRA...
Speed range	km/h	0.5 ... 250
Measurement accuracy (angle)	%FSO (°)	≤±0.2 (<±0.1)
Angle range * / angular resolution	°	±40 / <±0.01
Measurement frequency	Hz	250
Working range	mm	250 ±50
Interfaces		CAN, USB, RS-232C
Data sheet	No.	CSHRA_000-806

Description High-precision, slip-free measurement of distance, longitudinal / transverse speed and angle (high-resolution) in dynamic vehicle testing, e. g. ISO 4138 steady-state circular course drive, ISO 7401 step steering input, tire testing .

* High-resolution ±15°

Kistler GPS sensors: for GPS measurement of speed, position and distance



Technical data		Type CGPSSA...	
Speed range	km/h	0.1 ... 1 600	
Measurement accuracy	km/h	0.1	
Measurement frequency	%	100, 20, 10	
Signal outputs:	analog	V	0 ... 10
	digital	Pulse/m	1 ... 1 000 TTL
Interfaces			CAN, USB
Data sheet	No.	CGPSSA_003-080	

Description High-precision slip-free measurement of distance, longitudinal speed and acceleration in dynamic vehicle testing, e.g., DIN 70028 Measuring the stopping distance with ABS in straight-ahead stops, ISO 14512 Straight-ahead braking on surfaces with split coefficient of friction.

Microstar II: Microwave sensors for measuring longitudinal dynamics



Technical data		Type CMSTRA...
Speed range	km/h	0.5 ... 400
Distance resolution	mm	9.5
Measurement accuracy	%FSO	<±0.5
Measurement frequency	Hz	250
Working range	mm	300 ... 1 200
Interfaces		CAN, USB, RS-232C
Data sheet	No.	CMSTRA_000-894

Description Microstar II Sensors are designed for longitudinal vehicle dynamics tests which require a large working range, making them ideally suited for off-road applications. The Microstar II is also suited for rail car testing.

Other sensors for driving dynamics measurements

HF sensors: optical laser height-sensors for distance measurement



Technical data			Type	CHFA...
Measuring range	CHFA1...	mm	100 ...	350
	CHFA2...	mm	125 ...	625
	CHFA3...	mm	150 ...	900
Resolution	CHFA1...	mm	0.1	
	CHFA2...	mm	0.2	
	CHFA3...	mm	0.3	
Sampling rate		kHz	0.3 ...	8
Data sheet	No.		CHFA_000-815	

Description

Ride height sensors for measuring pitch and roll angle, for example. Other applications include uplift measurement, wheel travel, dynamic tire flat spotting. The dynamic camber angle can be measured with the DCA system, consisting of two HF sensors.

DCA System: optical sensor system for measuring camber angle



Technical data			Type	KCD1590...
Sensor relative to wheel center		mm	62 ...	195
Max. wheel diameter		mm	≤800	
Max. measuring range for camber angle		°	±25	
Camber angle accuracy		°	<0.5	
Camber angle resolution		°	0.04	
Interfaces			CAN, USB, RS-232C	
Data sheet	No.		KCD15905_000-884	

Description

Dynamic camber angle measurement relative to the road surface; for determining the characteristic curve for camber as a function of transverse acceleration, for chassis construction, for defining tire characteristics. Additional measurement of side-slip angle with Corevit SFII sensor (optional).

Kistler MSW DTI: measurement steering wheel for contact-free measurement of steering moment, steering angle and steering speed



Technical data			Type	5612A1...	Type	5612A2...
Steering moment	Measuring range	N·m	±50		±250	
	Accuracy	%FSO	±0,15		±0,15	
	Linearity deviation	%FSO	±0,15		±0,15	
Steering angle	Measuring range	°	≥±1 250		≥±1 250	
	Steering speed	°/s	≤2 000		≤2 000	
	Resolution / Accuracy	°	±0.015 / ±0.1		±0.015 / ±0.1	
Data sheet	No.		5612A_003-350		5612A_003-350	

Description

Measurement steering wheel for recording steering moment, steering angle and steering speed, with 1 000 Hz update rate. For passenger cars and commercial vehicles. No negative impact on steering wheel functions (e.g., airbag) or control elements. Interfaces: CAN, USB, Ethernet.

RV-4: wheel vector sensor for simultaneous measurement of wheel position and orientation in 5 axes



Technical data			Type	CRV4A...
Measuring range	X, Y axis / Z axis	mm	±150 / ±200	
	Camber	°	±10	
	Wheel steering angle	°	±45	
Accuracy	X, Y axis / Z axis	mm	±1 / ±0.7	
	Camber	°	±0.2	
	Wheel steering angle	°	±0.1	
Data sheet	No.		CRV4A_000-816	

Description

For simultaneous measurement of the wheel position and orientation in 5 axes. For various measurement tasks, such as weight shift and wheel travel during braking, change in camber angle when cornering, dynamic self-steering effect, tire strain, etc.

Other sensors for driving dynamics measurements

WPT: wheel pulse encoder for determining wheel rotation, distance and speed



Technical data			Type CWPTA...
Permissible rotational speed	Maximum	rpm	6 000
	Continuous operation	rpm	3 000
Deliverable pulse counts		Pulse/rev	10 ... 5 000
Degree of protection			IP67
Pulse frequency		kHz	300
Power supply, U _B		VDC	5 ... 30
Data sheet		No.	CWPTA_000-811

Description

Acquisition of wheel rotation on vehicles, e.g., wheel slip measurement, acceleration and braking tests, tests of ABS systems, measurement of tire speed differential when using multiple wheel pulse encoders.

PFT: pedal force sensors



Technical data		Type CPFTA...	Type CPFTB...
Measuring range	N	0 ... 1 500 / 0 ... 250	0 ... 1 500
Linearity	%FSO	±0.7	±0.5
Output range	V	0 ... 1.5	0 ... 5
Power supply	V	12	11 ... 25
Operating temperature range	°C	0 ... 60	-10 ... 50
Sensor dimensions	mm	65x52x32	50x70x27
Data sheet	No.	CPFTA_000-818	CPFTB_000-978

Description

Measurement of forces exerted by the driver on the brake pedal during the braking test.

CDFL1x-5bar/CDFL3x-5bar: fuel flow meters for use in mobile vehicle tests



Technical data		Type CDFL1A...	Type CDFL3A...
Measuring range	l/h	0.5 ... 250	0.5 ... 250
Measurement accuracy	%FSO	±0.5	±0.5
Reproducibility	%	±0.2	±0.2
Max. operating pressure	bar	5	5
Pressure drop	bar	0 ... 0.5	0 ... 0.5
Interfaces		CAN, USB, RS-232C	CAN, USB, RS-232C
Data sheet	No.	CDFLA_000-814	CDFLA_000-814

Description

CDFL1A... for measurement of fuel consumption in vehicles without fuel return flow.
CDFL3A... for vehicles with fuel return flow.

SAG, DAG, TAG: gyro modules for dynamic yaw rate measurement



Technical data		Type KCD16008	Type KCD16922
Nominal sensitivity	°/s	±150 (12.5 mV/°/s)	±150 (12.5 mV/°/s)
Zero rate bias / Signal hub, nominal	VDC	±2.5 / ±2.0	±2.5 / ±2.0
Supply voltage	VDC	8 ... 42	8 ... 42
Shock (operation)	g	1 000	1 000
Dimensions (LxWxH)	mm	51x34x19	76x38x30
Weight	grams	45	100
Data sheet	No.	KCD16008_000-917	KCD16008_000-917

Description

Gyro modules for dynamic yaw and roll rate measurement, side-slip angle correction, position and motion sensing.
KCD16008 = 1-axis, KCD16922 = 3-axis; 2-axis on request.

RoaDyn S: multi-component test bench measuring hubs (durability)

RoaDyn S625 nsp: 6-component test bench measuring hub for light and medium-size passenger cars



Technical data			Type 9266A2
Measuring range	F_x	kN	-20 ... 20
	F_y	kN	-15 ... 15
	F_z	kN	-20 ... 20
	M_x	kN·m	-4 ... 4
	M_y	kN·m	-4 ... 4
	M_z	kN·m	-4 ... 4
Data sheet	No.	9266A_000-580	

Description Load monitoring and determination of transfer functions of test benches for durability testing of passenger cars.

RoaDyn S635 nsp: 6-component test bench measuring hub for large passenger cars and light SUVs



Technical data			Type 9267A2
Measuring range	F_x	kN	-35 ... 35
	F_y	kN	-20 ... 20
	F_z	kN	-35 ... 35
	M_x	kN·m	-5 ... 5
	M_y	kN·m	-5 ... 5
	M_z	kN·m	-5 ... 5
Data sheet	No.	9267A_000-581	

Description Load monitoring and determination of transfer functions of test benches for durability testing of heavy passenger cars and light SUVs.

RoaDyn S650 nsp: 6-component test bench measuring hub for SUVs and light commercial vehicles



Technical data			Type 9268A2...
Measuring range	F_x	kN	-50 ... 50
	F_y	kN	-30 ... 30
	F_z	kN	-50 ... 50
	M_x	kN·m	-6 ... 6
	M_y	kN·m	-6 ... 6
	M_z	kN·m	-6 ... 6
Data sheet	No.	9268A_000-582	

Description Load monitoring and determination of transfer functions of test benches for durability testing of SUVs and light commercial vehicles.

RoaDyn S: multi-component test bench measuring hubs (durability)

RoaDyn S660 nsp: 6-component test bench measuring hub for SUVs, light commercial vehicles and racecars



Technical data			Type 9248A2...
Measuring range	F_x	kN	-60 ... 60
	F_y	kN	-36 ... 36
	F_z	kN	-60 ... 60
	M_x	kN·m	-7.5 ... 7.5
	M_y	kN·m	-8.5 ... 8.5
	M_z	kN·m	-7.5 ... 7.5
Data sheet	No.	9248A2_000-969	

Description

Load monitoring and determination of transfer functions of test benches for durability testing of SUVs, light commercial vehicles and racecars.

RoaDyn S6XT nsp: 6-component test bench measuring hub for commercial vehicles



Technical data			Type 9262A
Measuring range	F_x	kN	-250 ... 250
	F_y	kN	-100 ... 100
	F_z	kN	-250 ... 250
	M_x	kN·m	-50 ... 50
	M_y	kN·m	-80 ... 80
	M_z	kN·m	-50 ... 50
Data sheet	No.	9262A_000-864	

Description

Load monitoring and determination of transfer functions of test benches for durability testing of heavy commercial vehicles.

RoaDyn P/S: multi-component measuring hubs (tire characteristics)

RoaDyn P530: 5/6-component measuring hub for tire and wheel test benches for passenger car tires (piezo)



Technical data			Type 9295B...
Measuring range	F_x	kN	-20 ... 20
	F_y	kN	-20 ... 20
	F_z	kN	0 ... 30
	M_x	kN·m	-7.5 ... 7.5
	M_y	kN·m	-3 ... 3
	M_z	kN·m	-3 ... 3
Data sheet	No.	9295B_000-991	

Description

For measuring wheel forces and torques on tires for passenger cars on tire test benches. Measurement of irregularities and vibrations, and determination of tire ID data. Maximum rotational speed 3 000 rpm. Rim size ≥ 13 ; other sizes possible (with corresponding adapter).

RoaDyn S530: 5/6-component measuring hub for tire and wheel test benches for passenger car tires (DMS)



Technical data			Type 9289A013A...
Measuring range	F_x	kN	-20 ... 20
	F_y	kN	-20 ... 20
	F_z	kN	0 ... 30
	M_x	kN·m	-7.5 ... 7.5
	M_y	kN·m	-3 ... 3
	M_z	kN·m	-3 ... 3
Data sheet	No.	9289A013_003-238e	

Description

For measuring wheel forces and torques on tires on passenger cars on tire test benches. With a focus on long-term measurements in the area of tire service life and tire wear, and well as F&M measurements. Maximum rotational speed 3 000 rpm. Rim size ≥ 13 ; other sizes possible (with corresponding adapter).

RoaDyn S5ST: 5/6-component measuring hub for tire and wheel test benches for heavy passenger car and light commercial vehicle tires (DMS)



Technical data			Type 9289A253
Measuring range	F_x	kN	-60 ... 60
	F_y	kN	-40 ... 40
	F_z	kN	0 ... 60
	M_x	kN·m	-29 ... 29
	M_y	kN·m	-15 ... 15
	M_z	kN·m	-9 ... 9
Data sheet	No.	9289A_000-986	

Description

For measuring wheel forces and torques on tires for heavy passenger cars and light commercial vehicles on tire test benches, to determine the corresponding tire characteristics and ID data; maximum rotational speed 1 850 rpm; rim size ≥ 13 "; other sizes possible (with adapter).

RoaDyn S5MT: 5/6-component measuring hub for tire and wheel test benches for light and medium-weight commercial vehicle tires (DMS)



Technical data			Type 9289A263
Measuring range	F_x	kN	-100 ... 100
	F_y	kN	-50 ... 50
	F_z	kN	0 ... 100
	M_x	kN·m	-40 ... 40
	M_y	kN·m	-30 ... 30
	M_z	kN·m	-15 ... 15
Data sheet	No.	9289A_000-987	

Description

For measuring wheel forces and torques on tires for light and medium-weight commercial vehicles, to determine the corresponding tire characteristics and ID data. passenger cars on tire test benches. Maximum rotational speed 1 000 rpm. Rim size ≥ 17.5 ; other sizes possible (with adapter).

RoaDyn P/S: multi-component measuring hubs (rolling resistance)

RoaDyn S220: 2-component measuring hub for measuring rolling resistance of passenger cars and SUVs on tire test benches (DMS)



Technical data		Type 9289A103
Measuring range		
F_x	kN	-0.4 ... 0.4
F_z	kN	0 ... 15
Max. load F_y	kN	-0.5 ... 0.5
speed	rpm	≤3 000
Operating temperature range	°C	5 ... 80
Data sheet	No.	9289A_000-761

Description

Measurement of rolling resistance of passenger car tires on tire test benches, based on the widely used rolling resistance standards ISO 28580; SAE J1269; ECE R117, etc.

RoaDyn S260: 2-component measuring hub for measuring rolling resistance of commercial vehicles on tire test benches (DMS)



Technical data		Type 9289A113
Measuring range		
F_x	kN	-1.2 ... 1.2
F_z	kN	-60 ... 60
Max. load F_y	kN	-1.5 ... 1.5
speed	rpm	≤2 000
Operating temperature range	°C	5 ... 80
Data sheet	No.	9289A_000-891

Description

Measurement of rolling resistance of commercial vehicle tires on tire test benches, based on the widely used rolling resistance standards ISO 28580; SAE J1269; ECE R117, etc.

Data transmission for vehicle dynamics, tire, and durability tests

KiRoad Performance: electronics unit for wheel force transducers



Technical data		Type 9817A...
Weight of complete system	kg	2.9
Dimensions (LxWxH, with connectors)	mm	199x182x127
Power supply	V	10 ... 36
Max. power consumption	W	150
Operating temperature range	°C	0 ... 55
Interfaces		CAN, USB, Ethernet ...
Data sheet	No.	9817A_003-233

Description

High-quality, fully digital measured data transmission and electronics system, designed specifically to meet customer requirements, for Kistler 6-component wheel force sensor systems. The system is particularly suitable for use in vehicle testing.

KiRoad Wireless P1 Onboard Unit for RoaDyn P1...



Technical data		Type 9813B...
Weight, approx.	kg	2.5
Dimensions (LxWxH)	mm	181x125x149
Power supply	VDC	10 ...28
Max. power consumption	W	17
Operating temperature range	°C	-20 ... 60
Interfaces		CAN, USB, Ethernet ...
Data sheet	No.	9813B_003-282d

Description

For outputting measurement data to the data logger. If a Kistler DTI-Logger is used for data measurement, one cable for the Onboard Unit is all that is required to transfer data, take over the power supply and perform the configuration with the KiCenter software.

KiRoad Wireless P1 Wheel Unit for RoaDyn P1...



Technical data		Type 9811B1
Weight, approx.	grams	700
Dimensions (LxWxH), approx.	mm	112x112x89
Power supply		Lithium-ion battery
Number of load cycles		>500
Operating temperature range	°C	-50 ... 60
Wireless standard		IEE 802.11n
Data sheet	No.	9811B1_003-283d

Description

For use with the KiRoad Wireless P1 Onboard Unit Type 9813B... The system is used for digital transmission of measurement signals and system control information via WLAN between the wheel force transducer and the Onboard Unit in the vehicle interior.

CAN Hub



Technical data		Type 5608A3
Weight, approx.	grams	380
Dimensions (LxWxH)	mm	125x65x66
Connector type		D-Sub
Operating temperature range	°C	-25 ... 50
Inputs	No.	4
Outputs	No.	1
Data sheet	No.	003-349

Description

For connecting to CAN devices.

The new DTI technology

New data transmission technology for driving dynamics, tire and durability tests – for quick and easy test setup.

DTI stands for Digital Transducer Interface; this new technology from Kistler enables the use of a continuous bus system throughout the entire application. Only one cable is required for data transmission, synchronization, configuration and power supply, significantly reducing the wiring effort. This makes the actual measurement process extremely efficient and reduces sources of error in the application.

At present, the following possibilities are available for using Kistler DTI technology:

- New purchase of a DTI sensor system (e.g., Correvit L-Motion)
- Conversion of an existing Kistler sensor system, integration of the DTI function in existing equipment – analog, CAN or event module (Event-Mod)
- Retrofitting of a third-party sensor system, integration of the DTI function in sensors provided by the customer – analog, CAN or event module (Event-Mod)

The DTI function is integrated in the sensor, the cable or the connector.

DTI-Logger: data transmission



Technical data		Type
Weight, approx.	grams	900
Dimensions (LxWxH)	mm	164x125x65
Power supply	VDC	10 ...28
Operating temperature range	°C	-25... 50
Inputs		DTI
Outputs		Ethernet TCP/IP
Data sheet	No.	5434A_003-274d

Description

For measurement data recording and configuration, synchronization, power supply. For more information, visit: www.kistler.com/en/applications/automotive-research-test/digital-transducer-interface-technology/

DTI hub



Technical data		Type 5608A1
Weight, approx.	grams	430
Dimensions (LxWxH)	mm	125x65x66
Connector type		LEMO
Operating temperature range	°C	-25 ... 50
Inputs		8
Outputs		1
Data sheet	No.	003-349

Description

Connection using a hub is recommended if many sensors or channels are used; this makes it possible to work with shorter cables, facilitating wiring in the vehicle.

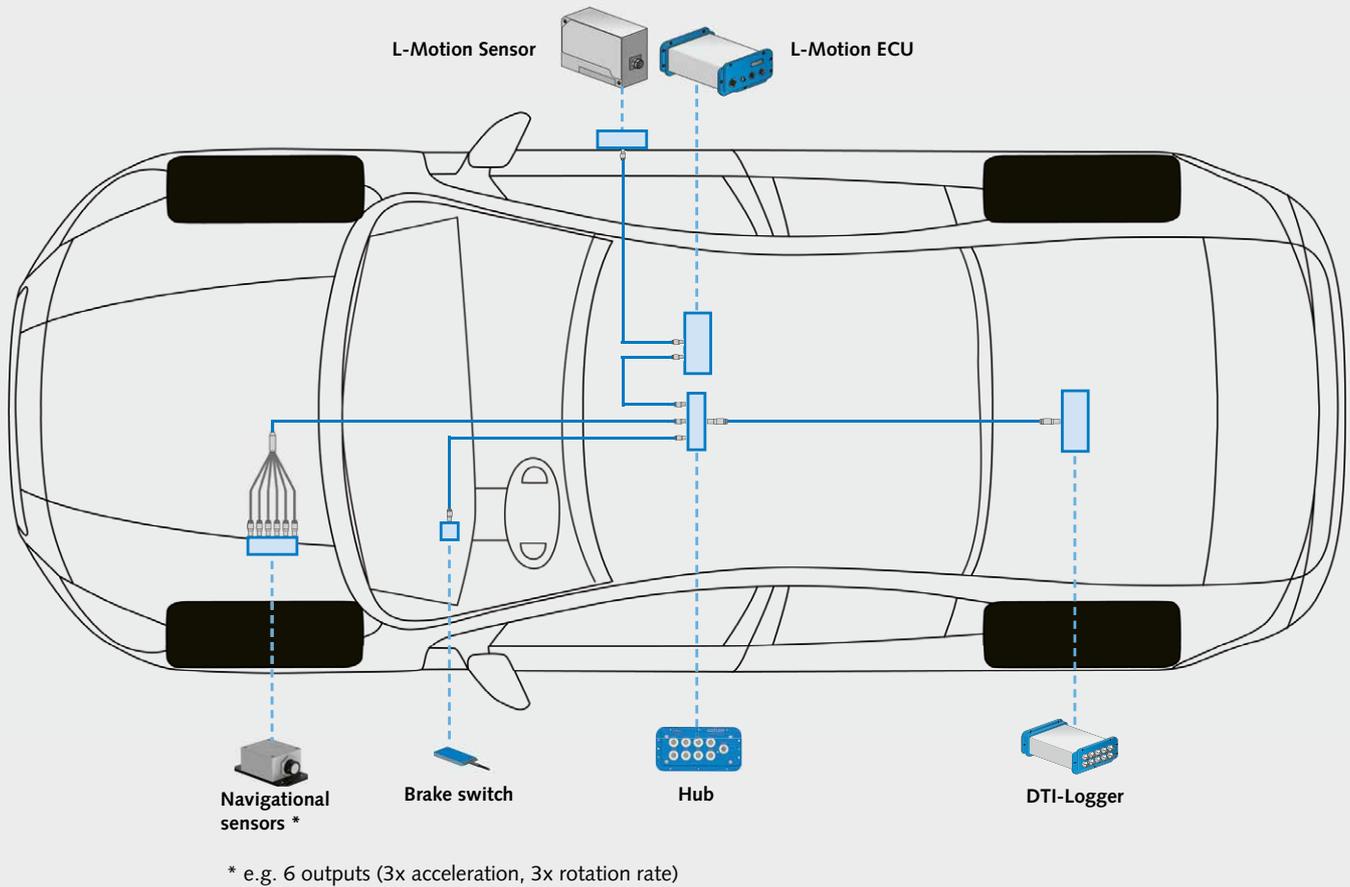
CAN-DTI hub



Technical data		Type 5608A2
Weight, approx.	grams	380
Dimensions (LxWxH)	mm	125x65x66
Connector types		D-Sub / LEMO
Operating temperature range	°C	-25 ... 50
Inputs		4
Outputs		1
Data sheet	No.	003-349

Description

Connection using a hub is recommended if many sensors or channels are used; this makes it possible to work with shorter cables, facilitating wiring in the vehicle.



Application example: braking distance measurement – connection to the DTI-Logger via a hub, e.g., DTI hub, Type 5608A1

DTI data transmission

Kistler DTI technology enables the use of a continuous bus system throughout the entire application. All signals are converted into a digital output directly in the Kistler DTI sensors. The sensor data is transmitted to the central Kistler DTI logger and transmitted to the computer via Ethernet for evaluation. The test setup is easier than ever thanks to automatic sensor detection: The installation position, calibration values and any relevant physical variables are automatically detected using the Kistler KiCenter measurement software and can be configured in the GUI. This guarantees optimum process reliability and time efficiency.

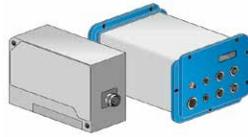
Conventional data transmission	DTI data transmission
Every sensor must be separately connected to DAQ	BUS system; easy networking of sensors
Sensors may need to be individually connected to the power supply	Sensor power supply via DTI-Logger
Every sensor must be separately connected to configuration PC	Connected sensors can be configured directly via DTI-Logger
Complicated wiring	Easy wiring
Sensor settings must be imported into DAQ	Calibration data stored in DTI modules/sensors
Sensor synchronization difficult or impossible	Synchronization of entire system takes place via DTI interface

DTI system components

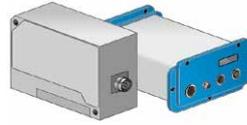
Sensors and electronics



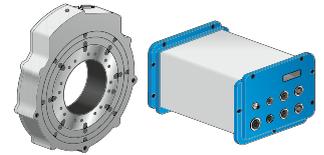
DTI-Logger, Type 5343A,
Art. No. 18032939



L-Motion ECU Standard, Type 5335A, Art. no. 18033082
S-Motion ECU Standard, Type 2055A, Art. no. 18034449



L-Motion, ECU Small, Type 5337A,
Art. no. 18032940
S-Motion ECU Small, Type 2055A,
Art. no. 18034450



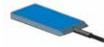
Kistler measurement steering
wheel, Type 5612A, Art. no.
18025194, 18025358



DTI light barrier,
Art. no. 18034433

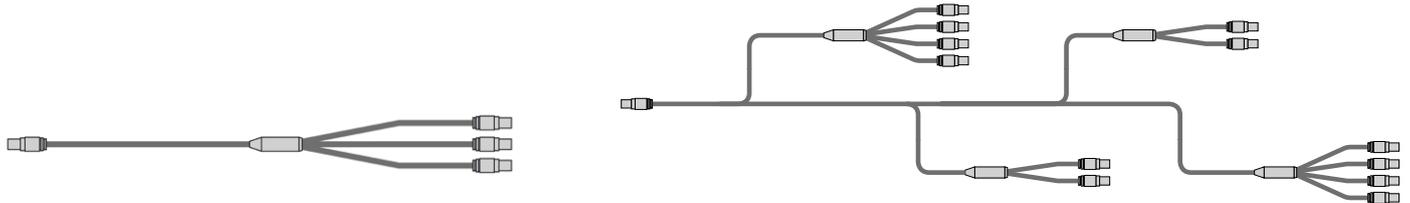


DTI pedal force sensor,
Art. no. 18034424



DTI brake switch (blue),
Art. no. 18034555

DTI cables and cable trees



Cables and cable trees can be configured individually. We verify the feasibility in advance.

Other components

	Type/Art. no.
• DTI-Converter CAN, Type 5639	18033804
• DTI-Converter WPT (wheel pulse transducer)	55163827
• WPT sensor with DTI function	CWPTA461
• 1-channel DTI-Integration digital *	18034016
• 1-channel DTI-Integration analog *	18034245
• 3-channel DTI-Integration analog * (cable, connector, board, shell ...)	18034246

* optionally available as cable solution or mounting variant (sensors provided)

Advantages of DTI technology at a glance:

- Efficient and space-saving: one cable for data, synchronization, configuration and power supply
- Decentral data acquisition possible
- Highly reliable mating connectors
- Compatible with existing sensors



Calibrating a RoadDyn wheel force sensor on hexapod measurement system

Service tailored to your success

Calibration of RoaDyn wheel force sensors

Kistler is setting new standards for RoaDyn wheel force sensor calibration with a unique hexapod measurement system. After the calibration is complete, all of the results are stored in a database. This enables easy, reliable and efficient test instrument monitoring in compliance with the DIN EN ISO 9001:2008 quality standard. Potential follow-up costs are reduced – and you can count on precise measuring results at all times. Further information can be found in document 960-077 (Calibration).

Calibration of optical sensors

Kistler's Correvit sensors are calibrated on a roller test bench (distance and speed) in strict compliance with the manufacturer's specifications and are delivered with a factory calibration certificate. For MSW sensors and data acquisition systems, we offer the option of ISO 17025 calibration. Please contact your local Kistler representative for information on calibrating speed sensors and other sensors.

Our services at a glance:

- Comprehensive product and application consulting for measuring systems and applications
- Customized sensor versions
- Calibration and repair service
- Practical training for products and systems

Training courses: expertise based on experience

The quickest way to become a measurement expert is by taking a Kistler training course. Come and learn about our sensors and measuring systems from our experienced trainers and get important practical tips for your own work. In addition to providing thorough training documentation, we make sure that all participants have the opportunity to operate the devices themselves and practice key handling procedures.

Kistler – at work around the world for our customers

The Kistler sales and service network ensures close contact with the customer. Approximately 1,860 employees at 61 locations worldwide are dedicated to developing new measurement solutions and offer customized on-site support of individual applications.



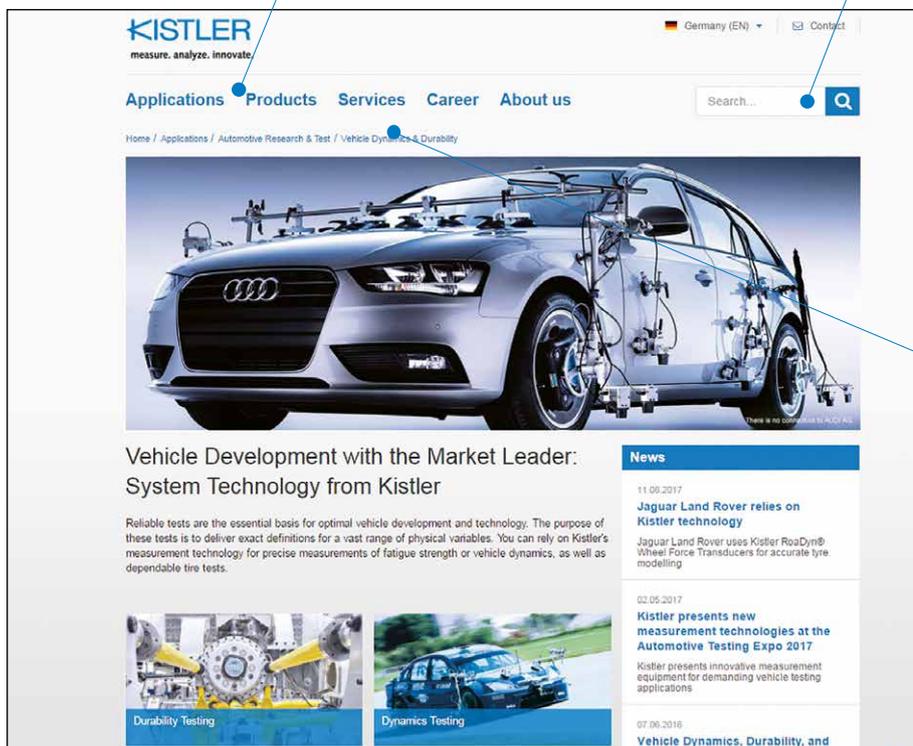
Your contacts

Whether you want our consulting services or need installation support, you'll find the address for your personal contact on our website.



Data sheets and documentation

Use our online search function to download data sheets, brochures and CAD data.



The screenshot shows the Kistler website interface. At the top left is the Kistler logo with the tagline "measure. analyze. innovate." and a navigation menu with "Applications", "Products", "Services", "Career", and "About us". A search bar is located on the right. The main content area features a large image of a silver Audi car equipped with various sensors and measurement equipment. Below this image is the heading "Vehicle Development with the Market Leader: System Technology from Kistler" and a paragraph of text explaining the importance of reliable tests. To the right of the main image is a "News" section with three articles: "11.09.2017 Jaguar Land Rover relies on Kistler technology", "02.05.2017 Kistler presents new measurement technologies at the Automotive Testing Expo 2017", and "07.06.2016 Vehicle Dynamics, Durability, and". At the bottom left, there are two smaller images labeled "Durability Testing" and "Dynamics Testing".



Instruction and training events

Instruction and training courses in which our sensors and measuring systems are explained by experienced Kistler trainers are the most efficient way to obtain the necessary expertise.

Find out more about our applications:
www.kistler.com/applications

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measure. analyze. innovate.