COBOSAFE®

Technical data

	CBSF-Basic	CBSF-XS
Measuring range:	20 ... 500 N	20 ... 280 N
Maximum measurement error:	± 3 % f. V.	± 3 % f. V.
Measuring inaccuracy:	typ. ± 1 % f. V.	typ. ± 1 % f. V.
Capacity of internal memory:	100 single measurements	> 100 single measurements
Voltage supply:	integr. NiMH rechargeable batteries (2 x 1,2 V)	integr. LiPo rechargeable battery 3,7 V (DC)
Power consumption:	20 mA	500 mA
Interface:	USB	USB/wireless
Temperature range:	+10 °C ... +30 °C	+10 °C ... +30 °C
Relative humidity:	20 ... 90 % r. h. 20 ... 90 % r. F. (non-condensing)	20 ... 90 % r. h. (non-condensing)
Protection class:	IP20	IP20
Spring constants (mech. filter):	75 N/mm	75 N/mm
Sampling rate:	≥ 1 kHz	≥ 1 kHz

Dimensions

Height:	70 mm	14 mm
Measuring surface:	80 mm Ø	350 mm²
Incl. handle:	310 x 80 x 70 mm (l x w x h)	140 x 65 x 14 mm (l x w x h)
Weight:	1400 g	350 g

Pressure measurement

Measuring inaccuracy:	typ. ± 10 % or less (measured at 23 °C, 65 % r. h.)	typ. ± 10 % r less (measured at 23 °C, 65 % r. h.)
Temperature range:	+20 °C... +35 °C	+20 °C ... +35 °C
Relative humidity	35 ... ~80 % r. h.	35 ... ~80 % r. h.
Measuring range film LLW:	50 ... 250 N/cm²	50 ... 250 N/cm²
Measuring range film LW:	250 ... 1000 N/cm²	250 ... 1000 N/cm²

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COBOSAFE®

CBSF-Basic

Measurment device for a simplified measuring method for the testing of transient and quasi-static forces on collaborative robots

In conformance with ISO/TS 15066, EN ISO 10218-1, EN ISO 10218-2, DGUV FB-HM 080 and RIA TR R15.806-2018

Developed in conjunction with DGUV

GTE Industrieelektronik GmbH

COBOSAFE

CoboSafe CBSF-Basic

More safety in common working areas for humans and robots: adherence to limit values safe and reliable with applications that are not primarily speed-orientated.

In any human-robot collaboration (HRC) without separating protective equipment, collisions between humans and robots cannot be completely ruled out. The permissible limit values for force and pressure according to current standards must be observed as they ensure the safe operation of HRC work places.

The CBSF-Basic is a force transducer, which in combination with the pressure measurement set CoboSafe-Scan employs a simplified measuring procedure. Here a measuring device is used with only one spring constant which determines the existing collision forces and pressures for different body zones. The system addresses applications that do not primarily work speed-orientated, and is sufficient for a range of different applications.

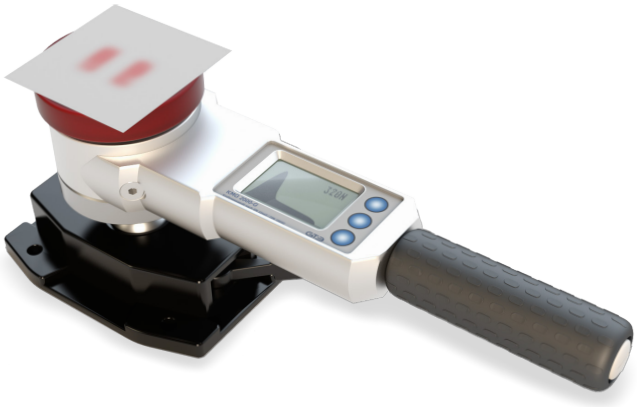
1. CoboSafe-Vision

The CoboSafe-Vision software is used to visualize and evaluate the measurement results. It calculates and determines the values for the transient and quasi-static forces.

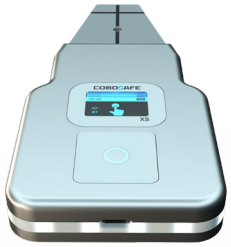
An assessment of the pressure distribution image is possible by means of the two and three-dimensional representation and by using the filters. Individual reporting is also possible, such as csv-export.

CoboSafe components:

1. PC-Software CoboSafe-Vision
2. Force transducer CBSF-Basic (or CBSF-XS)
3. ressure measurement set CoboSafe-Scan



In addition to the CBSF-Basic force transducer, a CBSF-XS version is available, specially for measurements on grippers and for measuring applications with small gap widths.



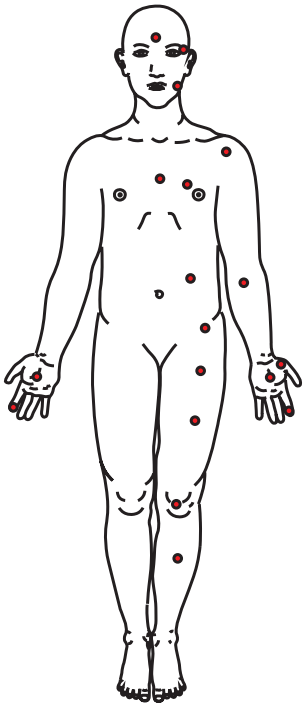
CoboSafe CBSF-XS

2. Force measurement: CBSF-Basic

The force transducer of the CBSF-Basic, made from aluminum, is crafted to a high-quality, and is precise and robust. It consists of a force sensor and a linear-guided measuring mechanism that guarantees an optimum measuring accuracy and reproducibility. The CBSF-Basic is equipped with integrated electronics for the evaluation and memory of the values measured. The transient and quasi-static values are rendered via the display and the force path is represented graphically. The force transducer includes a measuring range of up to 500 N. Via the K1 damping materials, the force transducer can also be adapted to the biofidel properties of different body regions according to current standards.

CoboSafe-Basic in use

Damping Material K1



3. Pressure measurement: Set CoboSafe-Scan

The set CoboSafe-Scan is based on Fuji-film Prescale films. It records the pressure distribution and the maximum pressure.

The films react to the pressure and indicate the pressure distribution. The pressure is determined by the intensity of the disco-louration of the pressure measuring films, to an accuracy of ±10%. Using a scanner and a calibration-sheet, the pressure image is imported into the Software CoboSafe-Vision and evaluated automatically. The imported pressure film is converted into pressure values and the pressure image and maximum pressure are displayed as a result. The set comprises a scanner with calibration element and a Prescale film unit type LLW for a pressure range of 50-250 N/cm². an option. Fujifilm Prescale film is a rolled goods and is then cut to size for the required measuring surface. Further film types for other pressure ranges are availa-ble as an option.

Scanner, Calibration-sheet and Film