

General Operating Instructions

Force Transducer and Load Cells

Intended use

Force transducers respectively load cells are used for the static and dynamic measurement of forces and masses. Force transducers respectively load cells must never be regarded a safety appliance. The safety of weighing and other machines and components has to be guaranteed by other means. Security relevant risks must by the planners, suppliers or operators of the machines and equipments will minimize. It must be documented and the service personnel communicated. The data sheet of the sensor as well as the valid safety standards are to be considered beside this manual.

Protection from dangerous environmental influences

Force transducers and load cells are measuring instruments. According to environmental protections of sensor these are to be protected against humidity and dirt. High mechanical loads such as impacts and a falling down are to be excluded. The sensors can be stored in the temperature range from -40°C to $+70^{\circ}\text{C}$.

Maintenance

Force transducers and load cells are maintenance-free.

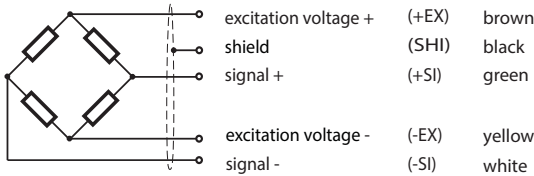
Instructions for installation and use

- Using suitable accessories, the force or load to be measured must be introduced in the direction of measurement as exactly as possible. Torsional and flexural moments as well as off-center and transverse forces may result in measurement errors.
- During operation, force transducers and load cells by the principle of bending will be slightly deflected in the direction of measurement. The equipment must therefore be so installed that it does not restrict or block this shift during operation.
- Force transducers and load cells must be protected against any mechanical overload, including dynamical phenomena, which may occur during measurement. It is to be noted that the overloading can occur working forces also by moments or not measuring direction.
- Optimal measuring results can only be achieved within the nominal temperature range. Environmental temperature must not change faster than 5 K/h. Take appropriate measures, if necessary, to avoid any one-sided heating or cooling of the force transducers or load cells!
- Never tamper with the casing of the sensor since this may destroy the necessary protection of the susceptible measuring element. Special care is required with the membranes and the bellows, which, for reasons of measurement precision, are of a thin design. Do not open any cable connection box.
- At force transducers adjacent construction units can affect their measuring accuracy strongly. Inform with the manufacturer about the specific requirements of the types which can be installed, if you are uncertain.

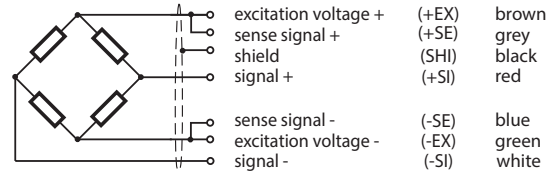
Electrical connection

- Connector pin assignment for force transducers usually in 4-wire system and for load cells in 6-wire system. Application of the 6-wire system ensures the highest measuring accuracy. The measuring errors caused by the length of the cable, can be reduced with the 6-wire system. Change over from 6-wire to 4-wire system the connection +EX are to be connected with +SE and -EX with -SE at evaluation electronics
- With some types the cable colours can deviate because of used special cables. These are find you enclosed in certificates and/or in data sheets (see also www.ast.de). If the sensors are attached as per schema, then produced compressive load a positive output signal. Maximum supply voltage is to be inferred type dependent and from the data sheets.
- The screen of the lead is connected according to standard for the avoidance of disturbances by electromagnetic influences with the transducer body electrically. The screen must be attached over the entire cable extent by means of a cable sleeve at the grounded housing of evaluation electronics. The connection leads may not be longer than 5 cm unshielded mislaid. If the screen is not connected with the transducer body, further suitable measures are to be met when occurrence disturbances.

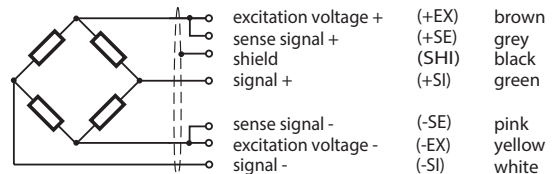
- The connecting cable must not be laid out in parallel with power and control lines. If separate laying-out cannot be achieved, protect the connecting cable by means of an armoured steel pipe and keep as great as possible a distance from any other cable. Keep away from stray fields of transformers, motors etc. The connecting cable must not be shortened or extended. Any change to the connecting cable will change the state of calibration stated by the manufacturer.
- Load cells of the same design and with the same rated load can be connected in parallel. The total load equals the sum of the individual values. Make sure that the load is as evenly distributed as possible.
- If you are uncertain, informing them itself with the manufacturer about the specific requirements of the types which can be installed.



Connector pin assignment 4-wire system



Connector pin assignment 6-wire system



Connector pin assignment 6-wire system (DIN)

A.S.T. - Angewandte System Technik GmbH
Mess- und Regeltechnik



EG-Konformitätserklärung EC Declaration of Conformity

No. 05/16

Hersteller: A.S.T. - Angewandte System Technik GmbH
Manufacturer: Mess- und Regeltechnik
Anschriřt: Marschnerstraße 26, 01307 Dresden
Address: Bundesrepublik Deutschland

Produktbezeichnung: Kraftaufnehmer / Wägezellen der Typenreihen
KAB, KAC, KAD, KAD-S, KAD-T, KAF, KAF-S, KAM, KAM-S, KAN
KAN-DZ, KAN-S, KAP-S, KAR-S, KAS, KAU, KAW, KAW-S, KAZ
mit 350Ω bis 700Ω Metallfolien-Dehnungsmessstreifen in Vollbrücken-
anordnung und maximaler Brückenspeisepannung 10V
Product description: Type series of transducers / load cells
KAB, KAC, KAD, KAD-S, KAD-T, KAF, KAF-S, KAM, KAM-S, KAN,
KAN-DZ, KAN-S, KAP-S, KAR-S, KAS, KAU, KAW, KAW-S, KAZ
with 350Ω to 700Ω strain gauge bridge and 10V maximum excitation
voltage

Die bezeichneten Produkte stimmen in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender Europäischer Richtlinie überein:
The products described above in the form as delivered is in conformity with the provisions of the following European Directive:

den folgenden grundlegende Sicherheits- und Gesundheitsschutzanforderungen nach Anhang I der Richtlinie Maschinen (2006/42/EG) sind angewandt und eingehalten:

- Allgemeine Grundsätze Nr. 1
- Artikel 1.3.2 und 4.1.2.3

Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie Maschinen (2006/42/EG) entspricht.

Die unvollständige Maschine entspricht weiterhin allen Bestimmungen der Richtlinie für die Elektromagnetische Verträglichkeit (2014/30/EU).

Die zur Maschine gehörenden speziellen technischen Unterlagen nach Anhang VII Teil B wurden erstellt.

Der Hersteller verpflichtet sich, die speziellen Unterlagen zur unvollständigen Maschine einzelstaatlichen Stellen auf Verlangen elektronisch zu übermitteln.

Name des Dokumentationsbevollmächtigten: Dr.-Ing. Gerd Heinrich
Adresse des Dokumentationsbevollmächtigten: siehe Adresse des Herstellers

Hinweis: Bei einer nicht mit uns abgestimmten Änderung oder einer nicht bestimmungsgemäßen Verwendung verliert diese Erklärung ihre Gültigkeit.

G. Heinrich
gez. Dr.-Ing. Gerd Heinrich
Qualitätsmanagementbeauftragter

Dresden, den 04.04.2016

A.S.T. - Angewandte System Technik GmbH
Mess- und Regeltechnik
Marschnerstraße 26
D-01307 Dresden

http://www.ast.de
Tel (0351) 44 55 30
Fax (0351) 4455-451

Geschäftsführer:
Matthias Boeck
HRB-Nr.: 5910
Kreisgericht
Dresden

Bankverbindung:
Ostsächsische
Sparkasse Dresden
BLZ 850 503 00
Konto 3120 1040 93

A.S.T. - Angewandte System Technik GmbH
Mess- und Regeltechnik



Anhang zur EG-Konformitätserklärung Annex A to the EC Declaration of Conformity

No. 05/16

Produktbezeichnung: Kraftaufnehmer / Wägezellen der Typenreihen
KAB, KAC, KAD, KAD-S, KAD-T, KAF, KAF-S, KAM, KAM-S, KAN
KAN-DZ, KAN-S, KAP-S, KAR-S, KAS, KAU, KAW, KAW-S, KAZ
Mit 350Ω bis 700Ω Metallfolien-Dehnungsmessstreifen in Vollbrücken-
anordnung und maximaler Brückenspeisepannung 10V
Product description: Type series of transducers / load cells
KAB, KAC, KAD, KAD-S, KAD-T, KAF, KAF-S, KAM, KAM-S, KAN,
KAN-DZ, KAN-S, KAP-S, KAR-S, KAS, KAU, KAW, KAW-S, KAZ
with 350Ω to 700Ω strain gauge bridge and 10V maximum excitation
voltage

Die Konformität mit der Richtlinie 2004/108/EG wird nachgewiesen durch die Einhaltung folgender harmonisierter Normen:
Conformity to the Directive 2004/108/EC is assured through the application of the following harmonised standards:

| | |
|---|--|
| Störfestigkeit: Interference resistance: | DIN EN 61000-6-2:2006-03 |
| Störaussendung: Emitted interference: | DIN EN 61000-6-3:2005-06 |
| DIN EN 55011:2003-08 Emitted interference: | Grenzwertkurve Klasse A limit value curve class A |

Hinweis:

Die Kraftaufnehmer / Wägezellen sind nur in Verbindung mit Speise- und Auswertegeräten funktionsfähig.

Die Inbetriebnahme ist daher erst dann erlaubt, wenn sichergestellt ist, dass das gesamte System, bestehend aus Speise- oder Auswertegerät mit angeschlossenem Kraftaufnehmer / Wägezelle, den Bestimmungen der EMV-Richtlinie entspricht.

Bei einer nicht mit uns abgestimmten Änderung oder einer nicht bestimmungsgemäßen Verwendung verliert diese Erklärung ihre Gültigkeit.

Advice:

The force transducer / load cells are functional only in combination with power supplies and electronic evaluation devices.

The commissioning of the entire system, consisting of power supply or electronic evaluation device with a connected force transducer / load cell, is allowed only if the requirements of the EMC directive are fulfilled.

If you make a technical change without our agreement or you don't use this product in accordance with the specified application in the manual, then the declaration loses its validity.

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