Instructions for using and installing force sensors and load cells

1. Types

FTC4, FC8S, FTSTM, FTCETM, FC10, FF1, FFT1, FFT6, FTCA, FTCE, FTS, FC2S, FCBS, FD200

2. Description

SIKA force sensors and load cells are passive sensors for measuring forces or weights.
Depending on the sensor, these measured values can be measured in tensile and / or compression loads.
The designs and dimensions of these sensors vary depending on the sensor type and the selected nominal force / nominal load.

3. Intended purpose

Force sensors and load cells are intended for force and weight measurements in test equipment, test rigs, testing devices, scales and for installation in machines and plants. Any other use is considered unintended use.
To guarantee reliable operation, use the sensor only in compliance with the instructions for use and installation. For operation, also comply with the legal and safety regulations for the respective application. This applies correspondingly to the use of accessories.
The sensor is not a safety element within the meaning of its intended use. Flawless and safe operation of this sensor assumes proper transport, correct storage, installation and assembly along with careful operation and maintenance.

For further information about our force sensors and load cells, please visit **www.sika.net**

4. Safety instructions

- Read through and follow these instructions carefully.
- Before assembly, check that the sensor is suitable for your application.
- This concerns the nominal force / nominal load, the operating direction of the force and the installation conditions. With this verification, all hazards and risks are transferred to you; our warranty is void.
- Assembly, operation and maintenance must only be carried out by suitably qualified personnel.
- Comply with the applicable regulations for accident prevention and safety on the job.
- Never use the sensor as a handle or tread. Do not subject it to any other mechanical loads.
- Only use the sensors if they are in flawless condition.

5. Installation and electrical connection

The sensors must be correctly installed to ensure safe and precise measurement of force or weight.
Comply with the following installation instructions:

- Handle the sensor gently.
- Do not overload the sensor.
- The force or weight must only be applied by means of the designated surfaces / thread.
- The forces to be measured must act on the sensor as precisely as possible in the direction of measurement. Torsion and bending moments, off-centre loads and lateral forces can lead to measurement errors and can destroy the sensor if the limits are exceeded.
- During assembly and operation of the sensor, prevent foreign bodies from settling on the strain elements or getting into the openings of the sensor.
- If there is a risk of fracture due to overloading of the sensor and therefore an associated risk for people, take additional protective measures.

Use these bolt sizes and tightening torques:

Force sensors

FTC4	
5 - 50 kN	M8 / 40 Nm
50 - 100 kN	M10 / 70 Nm
200 - 500 kN	M16 / 368 Nm
750 - 1000 kN	M24 / 460 Nm
2 MN	M24 / 460 Nm
3 - 5 MN	M27 / 1500 Nm
FC8S	
5 - 300 kN	M8 / 80 Nm
500 - 1000 kN	M16 / 230 Nm

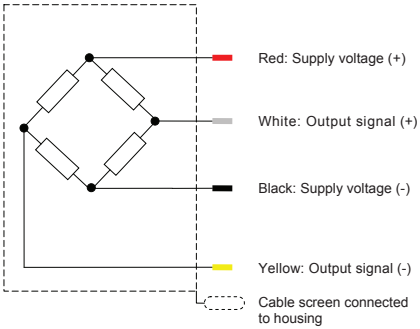
Load cells

FC2S	
100 kg - 30 t	M8 / 80 Nm
50 - 200 t	M16 / 230 Nm
FF1	
2.5 - 200 kg	M8 / 20 Nm
FFT1	
350 kg - 2 t	M12 / 150 Nm
3 - 7.5 t	M20 / 160 Nm
FFT6	
5 - 100 kg	M6 / 10 Nm

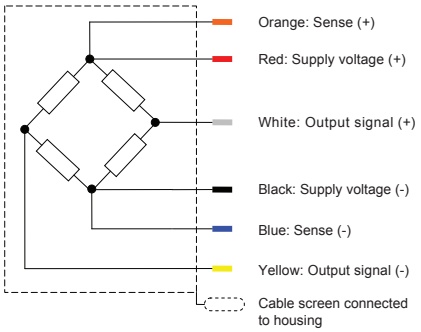
Use strength class 12.9 bolts

Connection diagram

4-wire connection



6-wire connection



4-wire connection

	Colour	MIL6	MIL7	D-Sub9	M12
Supply voltage (+)	Red	A	C	3	1
Supply voltage (-)	Black	B	B	4	3
Output signal (+)	White	D	A	1	2
Output signal (*)	Yellow	C	D	2	4
Cable screen		F	E	5	5

6-wire connection

	Colour	MIL7	D-Sub9
Supply voltage (+)	Red	C	3
Sense (+)	Orange	F	8
Output signal (+)	White	A	1
Supply voltage (-)	Black	B	4
Sense (-)	Blue	G	9
Output signal (*)	Yellow	D	2
Cable screen		E	

Sensors with integrated measurement amplifier

	Colour	M12	MIL6
Supply voltage (+)	Red	1	A
Supply voltage (-)	Black	3	B
Signal	White	4	D
Protection earthing		2	F

Plug assignment

Force sensors and load cells are always supplied by SIKA with open cable heads. Depending on the measurement amplifier, it may be necessary to provide the sensor cable with a plug. Above please find the assignment for the plugs used for SIKA measurement amplifiers.

Supply voltage

4...20 mA / ±5 V = 12...24 VDC
±10 V = 18...24 VDC

- Use only shielded and low-capacitance measurement cables from SIKA.
- Do not lay measurement cables parallel to power current or control cables. If this is not possible (e.g. in cable vaults), protect the measurement cable, e.g. with reinforced steel tubes, and maintain a minimum clearance of 50 cm to the other cables. Power current or control cables should be twisted pairs (15 twists per metre).
- Avoid leakage fields of transformers, motors and contactors.
- Do not create multiple earth connections to sensors, amplifiers and display units.
- Connect all units in the measurement chain to the same protective conductor.
- The connection cable shield is connected to the sensor housing.

Maintenance

SIKA force sensors and load cells are maintenance-free.

If you have any problems or questions, contact your supplier or contact us directly:

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