OTSE-CF
On-line Tension Sensor for Carbon Fibers
with built-in measuring amplifier

Honigmann ■

Scale drawing

male socket
Ø8, 4 - pole, snap-on type

OTSE - CF
sensor module
dwg.: 64_256_925

hexagon socket 2,5

seal gas connection
G1/4"

carrier rail
dwg.: 64_256_993

Ø12

All dimensions in mm
Dimensions of the carrier rail are exemplary and custom-specific.

Rated measuring ranges

Nominal force [N]									
40									

The measuring range of the sensor begins at the force's zero point.
Nominal forces differing from the list are available.

Order code

	OTSE	- CF	- 40	- S
Type				
Design				
Nominal force [N]				
Connection	S: with male socket			

Scope of supply

Sensor according to scale drawing

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Technical data

Nominal force (F_N)	N	40
Accuracy class		0,5
max. wrap angle	°	60
Supply voltage range	V	20 to 28
Current consumption (without load)	mA	approx. 36
Output		
- voltage range	V	0 to ±12, $R_L \geq 1$ kΩ
- voltage span at F_N	V	10
Cut-off frequency (-3dB)	Hz	16
Zero point (in the range of)	V	-5 to -3
Nominal temperature range	°C	5 to 50
Operational temperature range	°C	-10 to 50
Storage temperature range	°C	-30 to 70
Reference temperature	°C	23
Temperature influence per 10 K		
- on the zero point (TK0)	% F_N	< ±0,2
- on the calibration (TKC)	% F_N	< ±0,15
Creep after 30 minutes	% F_N	< ±0,05
Linear output signal up to	% F_N	approx. 125
Mech. overload protection takes effect at	% F_N	approx. 140
Overload protected [1]	% F_N	> 1000
Typ. deflection at nominal force	mm	0,07
Typ. natural frequency of the sensor	kHz	1,5
Weight	g	approx. 160
Connector		male socket, ⌀ 8 mm, 4-pole, snap-on type gold-plated contacts
Sensor housing		aluminium
Protection class		IP54 in conjunction with sealing gas

[1] radial incoming force without additional bending or tilting moment
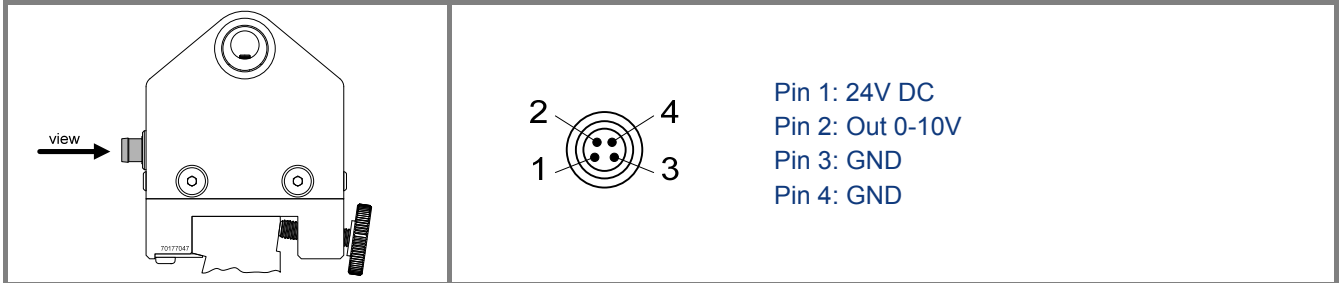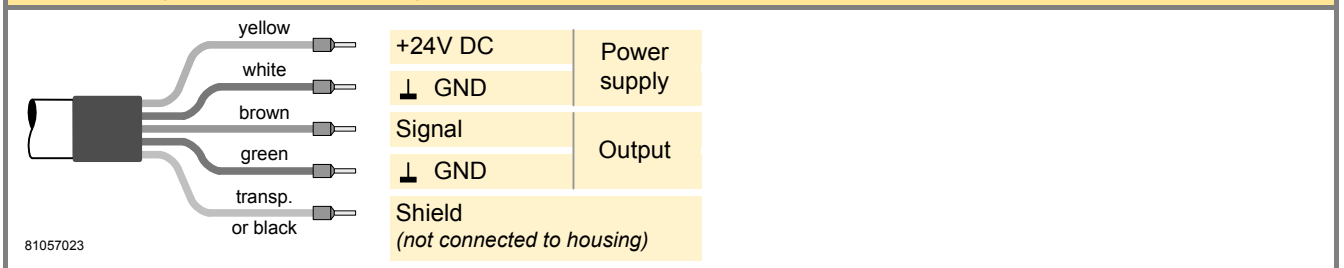
Block diagram
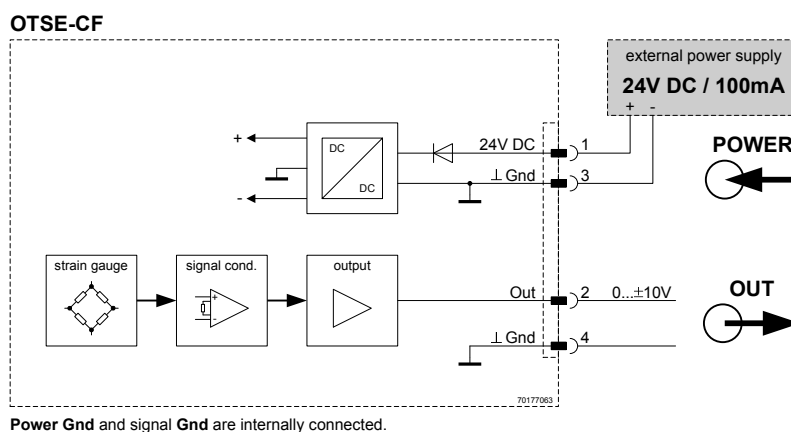
Power Gnd and signal **Gnd** are internally connected.

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Connections

Connector pin assignment

Pin 1: 24V DC
Pin 2: Out 0-10V
Pin 3: GND
Pin 4: GND

Connecting cable colour assignment

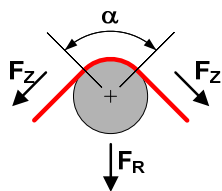| yellow | +24V DC | Power supply |
white	⊥ GND	Power supply
brown	Signal	Output
green	⊥ GND	Output
transp. or black	Shield *(not connected to housing)*	

81057023

Mating connector: female cable connector, angled or straight, ∅ 8 mm, 4-pole, gold plated contacts, snap-on type

Calculating the nominal force

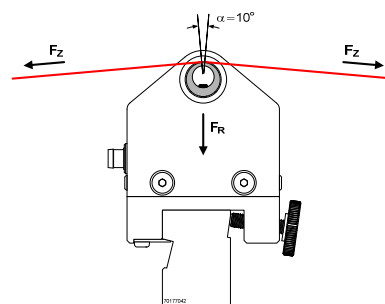The resulting force depends on the wrap angle at the measuring position.

$$F_R = 2 \bullet F_Z \bullet \sin\frac{\alpha}{2}$$

α: wrap angle
F_Z: tension
F_R: resulting force

Example

wrap angle α	resulting force F_R
5°	0,09 ● F_Z
10°	0,17 ● F_Z
20°	0,35 ● F_Z
30°	0,52 ● F_Z

$\alpha = 10°$, $F_Z = 40N$
The resulting force F_R is 6,8N.

Accessories

- Connection cable with mating connector
- Carrier rail