



**CTS Tension Sensor  
Instruction Manual**

**1. Introduction**

The CTS series tension sensor(load cell) is intended to measure the tension of the web which applied to the tension sensing roller.

The sensor employs strain gauge bridge circuit to detect the force, it is designed with high-precision structure, the sensor converts the force to a proportional electrical signal.

The sensor can work with the TC950, TC808 and TC818 tension controller to form a closed-loop tension control system to get the precise control of the web tension. The tension control system are widely used in papermaking, printing, packaging, textile and many other applications.

The red point indicates the direction of the force, please note the direction of the tension sensor when making the mechanical mounting.

**2. Coding**

CTS105-17-500  
(1) (2)

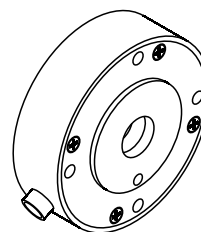
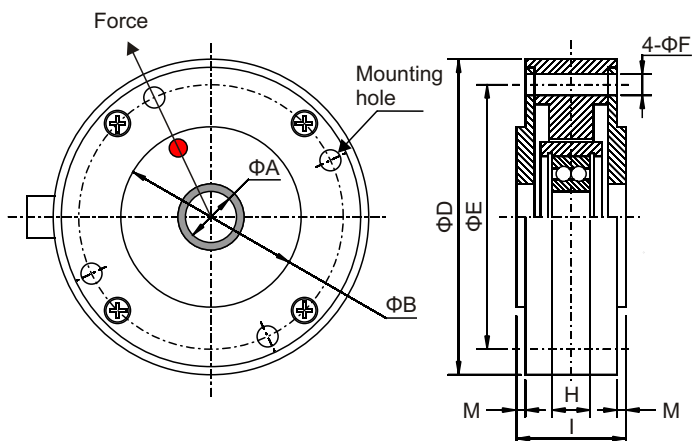
(1) Dimensions

Code	Meaning
105-17	Outer diameter: 105mm, bearing inner diameter: 17mm
125-25	Outer diameter: 125mm, bearing inner diameter: 25mm

(2) Rated load

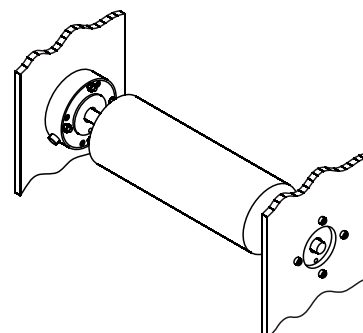
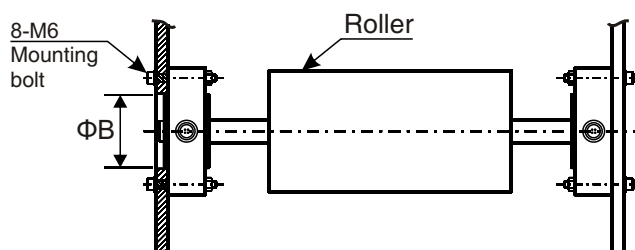
Code	Range	Code	Range
250	250N	500	500N
300	300N	1000	1000N

**3. Dimensions**



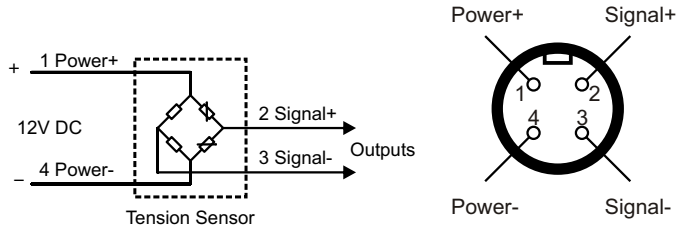
Basic Model	Capacity (Kg)	Dimensions(mm)									
		A	B	C	D	H	I	G	E	F	M
CTS105-17	0-30	17	60		105	16	36.5		88	7	3
CTS125-25	0-30, 50	25	70		125	18	47.5		105	7	4

**4. Installation**



Embed part of ΦB into plate and fix the tension sensor with 8 pieces of M6 bolts.

## 5. Wire

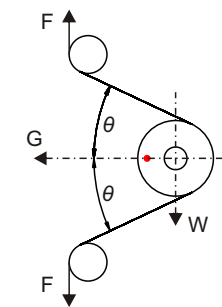


## 6. Usage notes

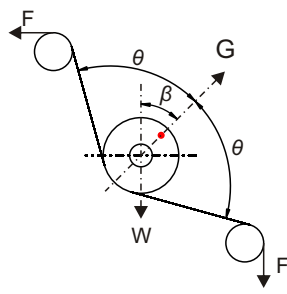
1. The red point indicates the direction of the resultant of forces.
2. The sensors has been tested strictly in the factory, please do not disassemble or modify the structure of the sensor unnecessarily.

Note: The two sensors connected in series must be supplied with two independent power supplies.

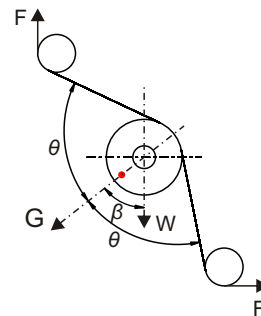
## 7. Force analysis



Resultant horizontal



Resultant upward



Resultant downward

The red point indicates the direction of the resultant of forces.  
 $\theta$  = Angle between resultant and web  
 $\beta$  = Angle between resultant and vertical  
 $G$  = Resultant of forces  
 $F$  = Web tension  
 $W$  = Weight of roller

## 8. Technical specifications

<b>Insulation Resistance</b>	$\geq 2000\text{M}\Omega$ (100 V)
<b>Input Impedance</b>	$\geq 350\Omega$
<b>Output Impedance</b>	$\geq 350 \pm 1\Omega$
<b>Excitation</b>	6~12 VDC
<b>Power Consumption</b>	$\leq 0.4\text{W}$
<b>Zero</b>	$\leq 1\%$ F.S
<b>Rated Output</b>	2mV/V
<b>Safe Overload</b>	150% F.S
<b>Non-linearity</b>	0.1% F.S
<b>Hysteresis</b>	0.1% F.S
<b>Repeatability</b>	0.1% F.S
<b>Size</b>	Refer to mechanical drawing
<b>Weight</b>	1.5kg(CTS105-17), 2.7kg(CTS125-25)
<b>Socket Model Code</b>	XS12J5A
<b>Plug Model Code</b>	XS12K5P
<b>Environment</b>	Do not use in strong corrosion environment