

## Fabric / Air temperature

measurement and monitoring  
at heat treatment process

### TDS



Fabric temperature



Temperature sensor TDS -R



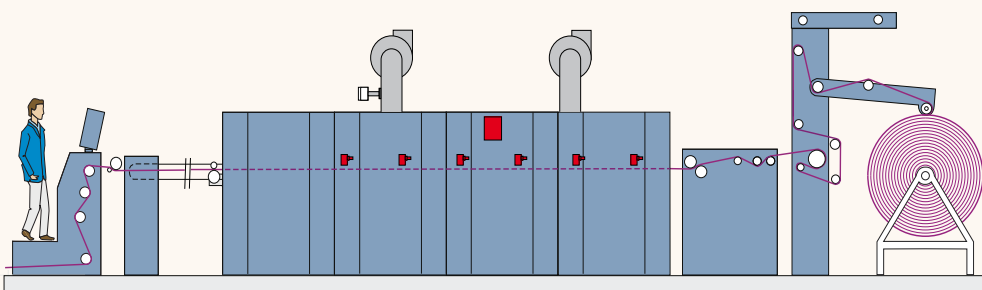
Temperature sensor TDS -A



PLEVA Process Box PPB



up to 8 set of temperature sensors TDS at one process box



Type TDS ST-A • TDS ST-R  
Type TDS HT-A • TDS HT-R

### FEATURES OF PRODUCT

- Non-contact measurement of fabric / air temperature in hot environment
- Fast response time
- Not sensitive to soiling
- No calibration
- No color effect
- No condensation

### BENEFIT FOR CUSTOMER

- Continuous process monitoring
- Reliable calculation of fixation time
- High reproducibility of the fabric

### Application

Monitoring and control of the drying, heat setting and heat treatment process increase productivity, saves energy and guarantees a quality finish. Precise measurement and reliable parameters are relevant preconditions for constant quality in textile production.

In modern finishing processes of textiles more and more special chemicals are applied. These modern processes requires a controlled and reproducible process guidance. The use of fabric temperature sensors TDS in the dryer is absolutely essential.

### Sensors

The temperature sensors TDS are used for non contact measurement of the surface temperature of materials. The special design of the sensor allows it to be used inside a heat treatment machine (e.g. dryer / stenter / oven) up to temperatures of 400 °C.

The measuring principle is based on exchange of thermal radiation between the material to be measured and the sensitive surface of the TDS. It is located behind a radiation permeable window in the TDS sensor.



Sensor type TDS -A (axial)



Sensor type TDS -R (radial)

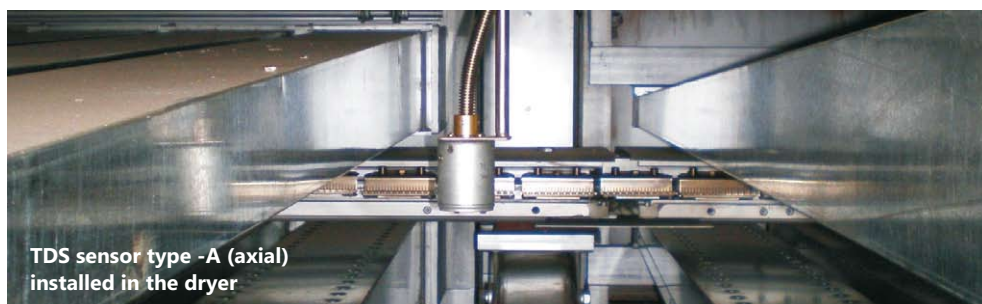
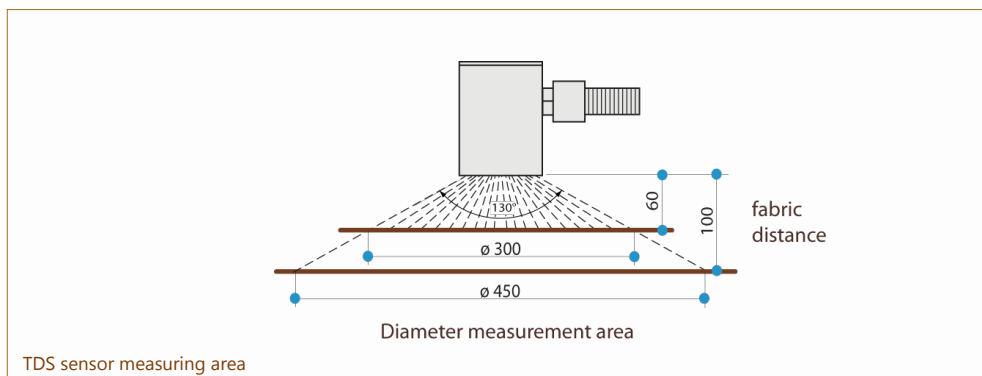
Several TDS sensors are mounted in a heat treatment machine, distributed over the length and width, depending on the particular measurement task. The sensors should be fitted above the material web and approx. 60 mm away from it.

The measurement area then has a diameter of 300 mm. A flexible metal conduit is flanged onto the sensor. It protects the wiring electromechanically.

### TDS sensor types

TDS ST measuring range 0..250 °C  
 • Type TDS ST-A (connection axial)  
 • Type TDS ST-R (connection radial)

TDS HT measuring range 0..400 °C  
 • Type TDS HT-A (connection axial)  
 • Type TDS HT-R (connection radial)



TDS sensor type -A (axial) installed in the dryer

One process box for multiple sensors

PLEVA Process Box

**PLEVA Process Box PPB**

The new PLEVA Process box is designed to connect multiple PLEVA sensors to one micro processor box fitted outside of the heat treatment machine.

- up to 8 fabric/air temperature sensors TDS
- optional 1 air humidity sensor FSX
- optional 1 residual moisture sensor RR

The new process box type PPB is equipped with the latest state of processor technology and improved EMC protection. The modular electronics is easily expandable for additional sensors. The box is with compatible mounting dimension to previous panel.

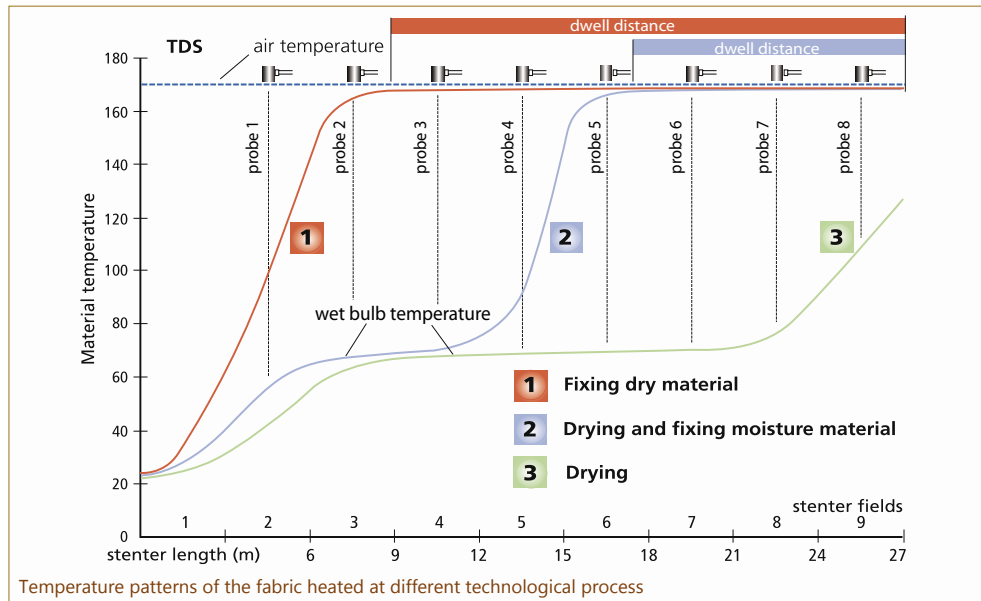


PLEVA Process Box PPB

**Mode of operation**

In the example depicted of a tendering frame having 9 zones, the temperature patterns of the products heated are being subjected to different technological processes.

The tendering frame is equipped with TDS sensors in each field from no. 2 to 9. In the diagram below, the air temperature is settled to 175 °C. The required fixing temperature is 170 °C.



- 1 Fixing of dry fabric**  
The product quickly heats up and attains its fixing temperature in the 3rd processing zone. The fixing process begins now.
- 2 Drying and fixing of wet material**  
The product is initially heated up to the wet bulb temperature. There is a state of equilibrium for the product between the energy which is absorbed by the dryer and the energy required for evaporating away the moisture content in the fabric. After the level of moisture has fallen to residual moisture values, the temperature of the product then continuous to rise and reaches the required fixing temperature at the 6th processing zone.
- 3 Drying**  
The product is heated up to the wet bulb temperature. The speed of the dryer must be controlled, in order to ensure that the product only continuous to heat up on reaching the end of the dryer.



Process Box PPB installed outside at dryer

Type PPB

FEATURES OF PRODUCT

- Connection of multiple PLEVA sensors to one box
- Latest state of processor technology and improved EMC protection
- Compatible mounting dimension with previous panel

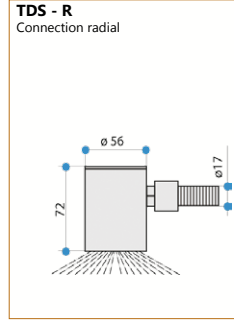
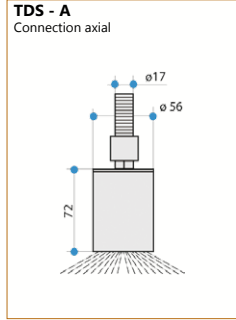
BENEFIT FOR CUSTOMER

- Economical price for sensor package
- One process box for multiple sensors reduces installation works
- Reduced wiring and cable costs

## Fabric / Air temperature sensors

Type TDS -A • TDS -R

### Technical Data

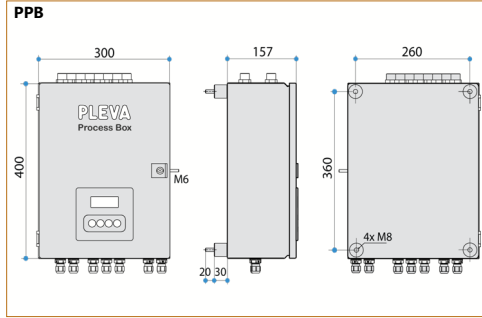


#### Sensor TDS

Ambient temperature / Measuring range 0..250°C: Type TDS ST-A • TDS ST-R  
 Measuring range 0..400°C: Type TDS HT-A • TDS HT-R  
 Accuracy measuring range: +/- 1 %  
 Distance to material: 20..120 mm (optimal 60mm)  
 Measuring area: 140 mm at 20 mm distance  
 300 mm at 60 mm distance  
 550 mm at 120 mm distance  
 Cable length (standard): 5 m / 7 m / 10 m  
 Cable length (optional): 13 m / 16 m (other on request)  
 Weight TDS sensor: 0.5 kg without flexible tube  
 Weight flexible tube: 0.3 kg per m flexible tube

## PLEVA Process Box

Type PPB

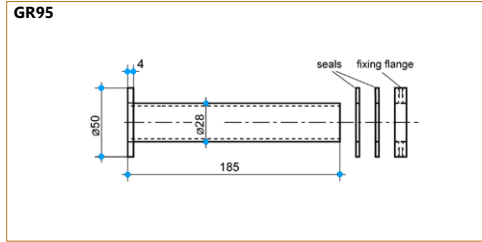


#### PLEVA Process Box PPB

Sensors maximal: 8x TDS, 1x FSX, 1x RR  
 Ambient temperature: max. 50 °C  
 Power supply: 24V DC (+/- 10%)  
 Power consumption: max. 45 VA  
 Current: max. 1.6 Amps  
 Communication: RS485 serial  
 Protocols: MODBUS, PLEVA, MININET  
 Analogue outputs: 8 signals 0/4 .. 20mA (isolated)  
 Weight approx.: 10 kg

## Accessories

Type GR95

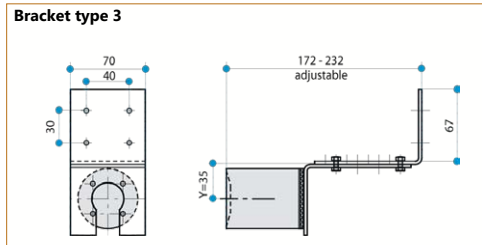


#### Grommet through the dryer wall

for flexible metal conduit of sensor TDS

Type: GR95  
 Material: steel  
 Weight: 0.54 kg

Type MB03



#### Bracket of sensor TDS

for mounting in the dryer

Type: MB03  
 Material: steel  
 Weight: 0.37 kg

### Types of PLEVA Process Box

PLEVA Process Box type PPB	TDS	FSX	RR
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4 0 0 x		0	0
4 1 1 x	4	1	1
6 0 0 x		0	0
6 1 1 x	6	1	1
8 0 0 x		0	0
8 1 1 x	8	1	1
OPTION OUTPUTS:			
x x x 1	= Analogue outputs signals 0/4..20mA for each sensor isolated + Communication Bus RS485		
x x x 0	= Communication Bus RS485 (no analog outputs)		

### Available monitoring and control systems for different applications

- **CIMATIC Touch panels** PP70 • PP100 • PP150 PC based, with separate PLC and standard software.
- **PLEVATEC Touch panels** PC based, with separate PLC and modular software for special applications.
- **ECO-OPTIDRY®** with energy consumption meter for drying process
- **Add'nDry** for coating process
- **PadderControl** for continuous dyeing process
- **SizeControl** for controlled size pick-up
- **DensityControl** for pick/course density
- **StraightLiner** for automatic straightening and distortion analysis
- **StructureDetector** for distortion analysis

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