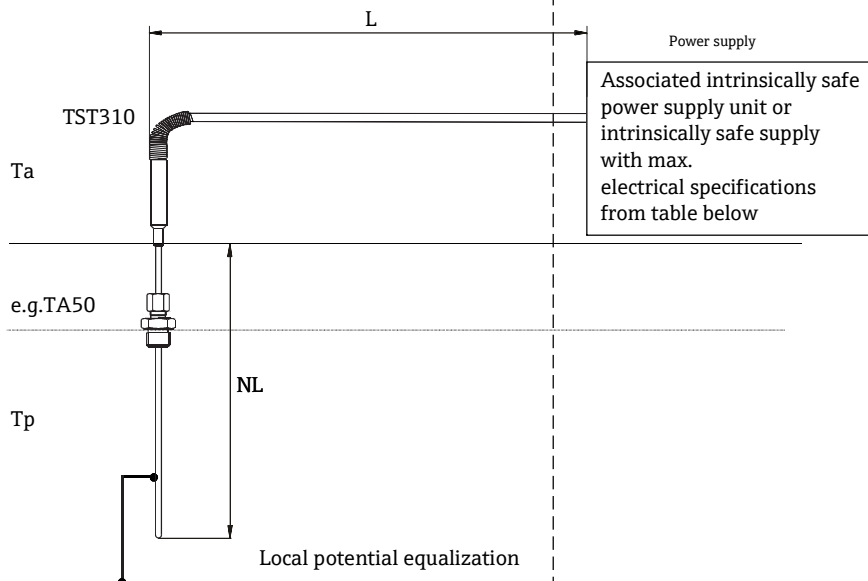


Hazardous area  
Zone 0, 1, 2 or  
Zone 20, 21, 22

Non-hazardous area

⚠ Avoiding electrostatic charge!



**Safety instructions:**

**Intrinsic safety**

- Comply with the installation and safety instructions in the Operating Instructions.
- Install the sensor according to the manufacturer's instructions (e.g. XA00100R/09/a3) and any other valid standards and regulations.
- Observe the pertinent guidelines when interconnecting intrinsically safe circuits (e.g. IEC/EN 60079-14, Proof of Intrinsic Safety).

- Determination of total inner capacitances  $C_i$  and inductances  $L_i$  for cable sensor:

$$C_i = C_{i \text{ Sensor length } NL} \times NL + C_{i \text{ Sensor Tip}} + C_{i \text{ Cable connection}} + C_{i \text{ Cable } L \times L}$$

$$L_i = L_{i \text{ Sensor length } NL} \times NL + L_{i \text{ Sensor Tip}} + L_{i \text{ Cable connection}} + L_{i \text{ Cable } L \times L}$$

Example for determination:

Per option code the sample length are  $L = 1 \text{ m}$  and  $ML = 100 \text{ m}$

$$C_i = C_{i \text{ Sensor length } NL} \times NL + C_{i \text{ Sensor Tip}} + C_{i \text{ Cable connection}} + C_{i \text{ Cable } L \times L}$$

$$C_i = 603 \text{ pF/m} \times 100 \text{ m} + 30 \text{ pF} + 20 \text{ pF} + 18 \text{ pF/m} \times 1 \text{ m}$$

$$C_i = 60.44 \text{ nF}$$

$$L_i = L_{i \text{ Sensor length } NL} \times NL + L_{i \text{ Sensor Tip}} + L_{i \text{ Cable connection}} + L_{i \text{ Cable } L \times L}$$

$$L_i = 0 \text{ } \mu\text{H/m} \times 100 \text{ m} + 0 \text{ } \mu\text{H} + 0 \text{ } \mu\text{H} + 1 \text{ } \mu\text{H/m} \times 1 \text{ m}$$

$$L_i = 1 \text{ } \mu\text{H}$$

Associated intrinsically safe power supply unit or intrinsically safe supply with max. electrical specifications below the characteristic values:

Type	$U_i$	$I_i$	$P_i$
TST310	30 V	140 mA	1000 mW

The total  $C_i$  and  $L_i$  are to be calculated from following values:

	$C_i$	$L_i$
Sensor Tip	30 pF	0
Cable connection	20 pF	0
Cable L/m	18 pF	1 $\mu\text{H}$
Sensor length NL/m	603 pF	0

Approved	Pfanzelt	Date (yyyy-mm-dd)	2013-05-24	Drawing No.	10000006061	Dwg. rev.	-	Revision no.	-	Revision date (yyyy-mm-dd)	-	Name	-	Material	71222490	Endress+Hauser
Designed	Pfanzelt	Date (yyyy-mm-dd)	2013-04-23	Unit	TST310	Scale	1:1	Title			Safety Instructions		Series			
Refer to protection notice ISO 16016	Edge of working parts ISO 13715	Geometrical tolerancing ISO 2768-mH-E		Part No.	-	Format	A4	XA01168T/09/EN/01.13			Objekt version	Sheet	1 of 1		Endress + Hauser Wetzler GmbH+Co. KG Nesselwang / Germany	