SONDE DI TEMPERATURA - TERMOCOPPIE

Senseca offre un'ampia scelta di termocoppie tipo K, rispondenti alle caratteristiche definite dalla Noma IEC 60584,

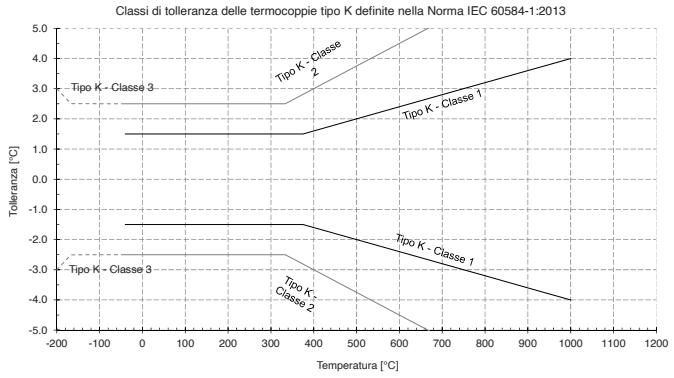
Il tempo di risposta $\tau_{0,63}$ indicato per ogni sonda è il tempo di reazione del sensoe ad una variazione di temperatura, con una variazione del segnale misurato corispondente al 63% della variazione totale, I tempi di risposta sono riferiti:

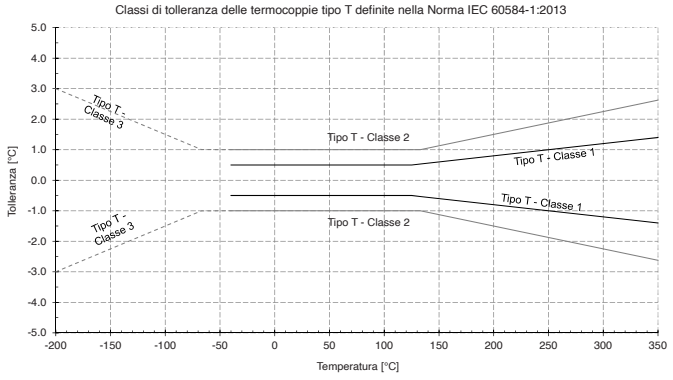
- in acqua a 100 °C per le sonde ad immersione;
- al contatto di una superficie metallica a 200 °C per le sonde a contatto;
- alla temperatura dell'aria a 100 °C per le sonde in aria,

La Noma IEC 60584-1:2013 definisce le classi di tolleranza delle termocoppie come riassunto nella seguente tabella:

	Classe 1		Classe 2		Classe 3	
Tipo termocoppia	Tolleranza[1]	Campo di temp.	Tolleranza[1]	Campo di temp.	Tolleranza[1]	Campo di temp.
T	0,5 °C o 0,004·|t|	-40 °C...+350 °C	1 °C o 0,0075·|t|	-40 °C...+350 °C	1 °C o 0,015·|t|	-200 °C...+40 °C
E	1,5 °C o 0,004·|t|	-40 °C...+800 °C	2,5 °C o 0,0075·|t|	-40 °C...+900 °C	2,5 °C o 0,015·|t|	-200 °C...+40 °C
J		-40 °C...+750 °C		-40 °C...+750 °C	---	---
K		-40 °C...+1000 °C		-40 °C...+1200 °C	2,5 °C o 0,015·|t|	-200 °C...+40 °C
N		-40 °C...+1000 °C		-40 °C...+1200 °C		-200 °C...+40 °C
R	1 °C [1+0,003·(t 1100)]	0 °C...+1100 °C	1,5 °C o 0,0025·|t|	0 °C...+1600 °C	---	---
S		+1100 °C...+1600 °C		0 °C...+1700 °C	---	---
B	---	---		+600 °C...+1700 °C	4 °C o 0,005·|t|	600 °C...+1700 °C
C	---	---	0,01·|t|	+426 °C...+2315 °C	---	---
A	---	---		+1000 °C...+2500 °C	---	---

[1] La tolleranza è espressa come valore numerico o come funzione della temperatura. Il maggiore dei due valori è valido.





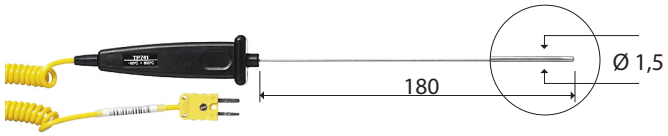
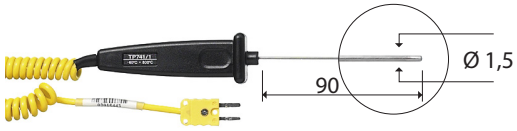
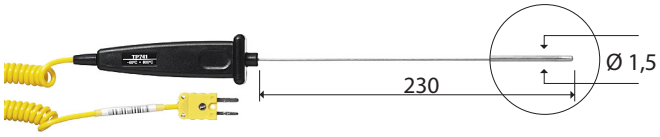
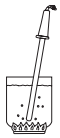
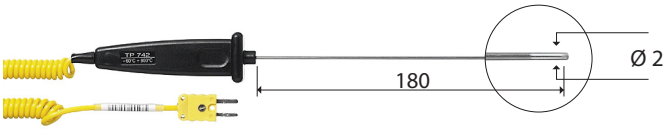
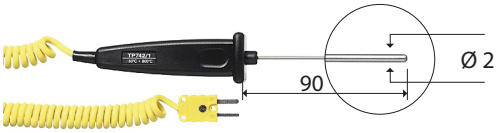
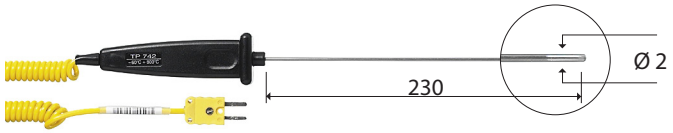
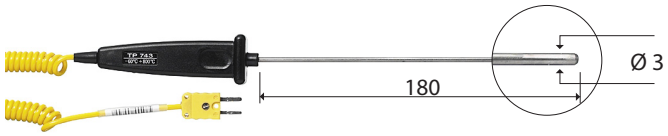
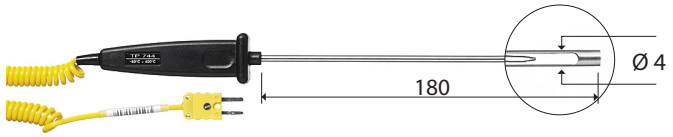
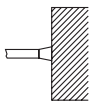
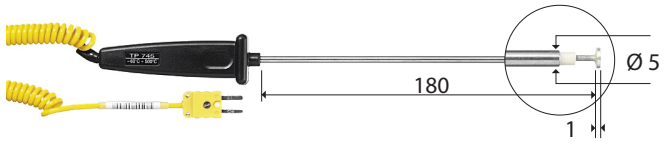
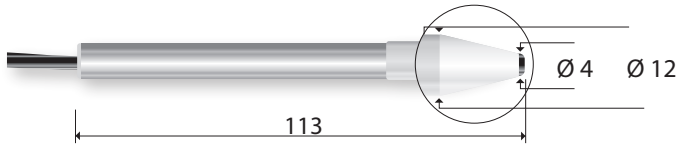
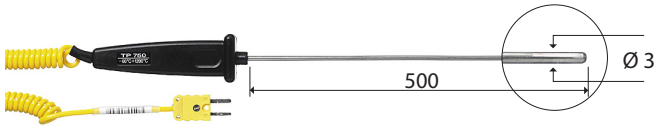
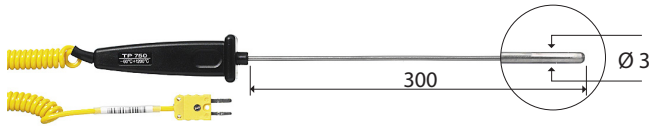
Di seguito vengono riportati gli elementi costituenti i conduttori delle termocoppie, con la rispettiva polarità.

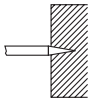
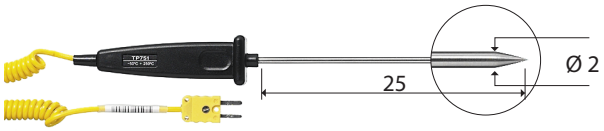
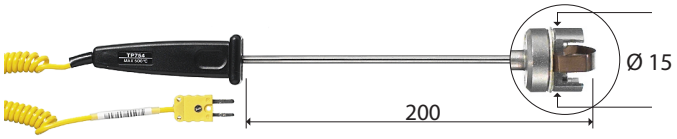
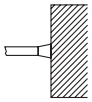
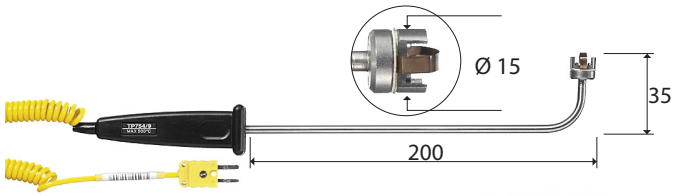
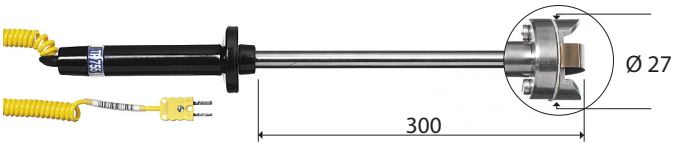
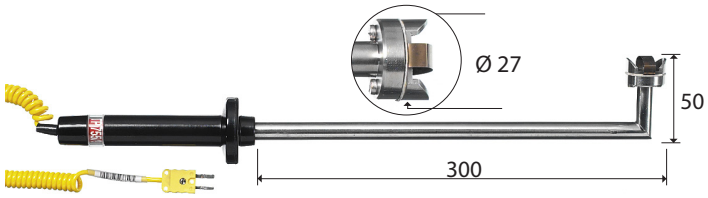
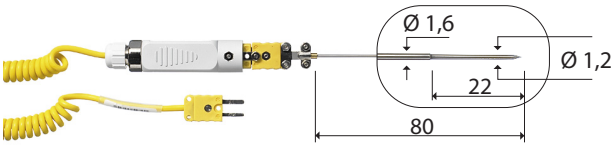
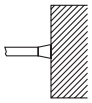
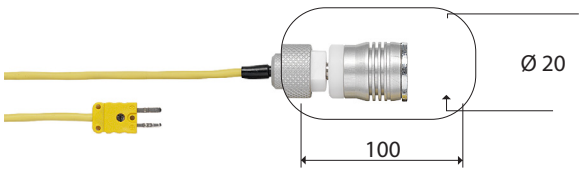
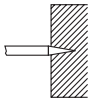
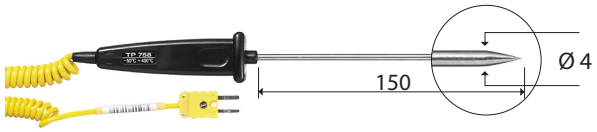
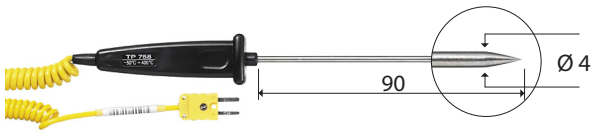
	Elementi e composizione standard della lega	
Tipo di termocoppia	Conduttore positivo	Conduttore negativo
R	Platino – 13 % Rodio	Platino
S	Platino – 10 % Rodio	Platino
B	Platino – 30 % Rodio	Platino
J	Ferro	Rame – Nichel
T	Rame	Rame – Nichel
E	Nichel – Cromo	Rame – Nichel
K	Nichel – Cromo	Nichel – Alluminio
N	Nichel – Cromo – Silicio	Nickel – Silicio
C	Tungsteno – 5 % Reno	Tungsteno – 26 % Reno
A	Tungsteno – 5 % Reno	Tungsteno – 20 % Reno

Tramite la taratura si può caratterizzare metrologicamente lo strumento acquistato, determinando l'errore sistematico del termometro e assicurandone al contempo la riferibilità ai campioni internazionali. I Laboratori Senseca sono in grado di fornire questo servizio emettendo rapporti di taratura in conformità alla Norma ISO 9001 o certificati ACCREDIA LAT in conformità alla Norma ISO/IEC 17025, riconosciuti in ambito internazionale tramite gli accordi ILAC MRA.

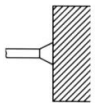
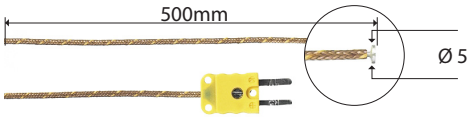
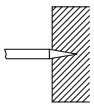
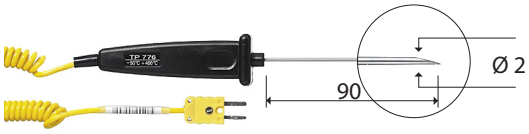
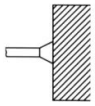
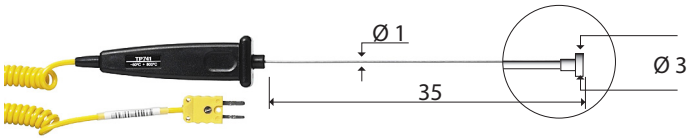
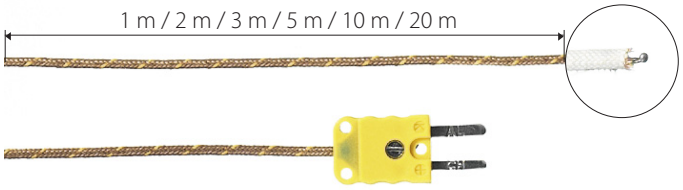
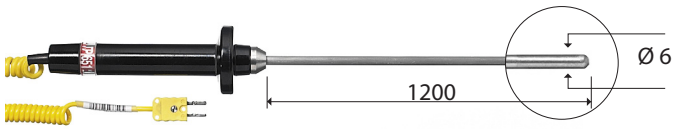
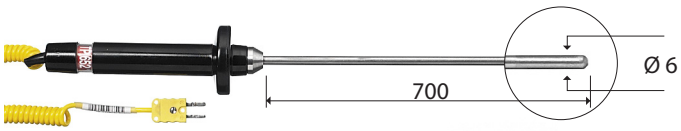
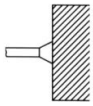
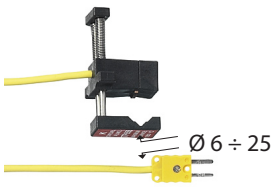
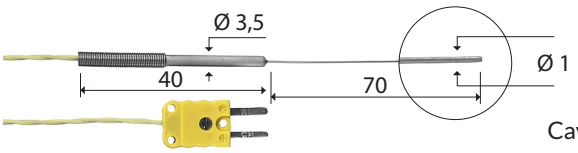
LAT N° 124

Temperature - Humidity - Pressure - Air speed
Photometry/Radiometry - Acoustics

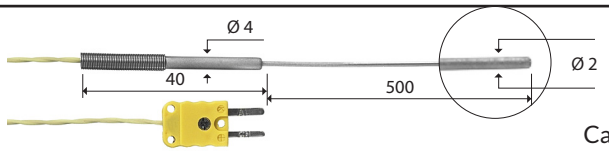
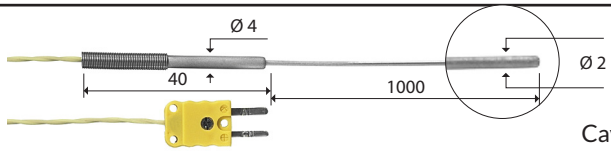
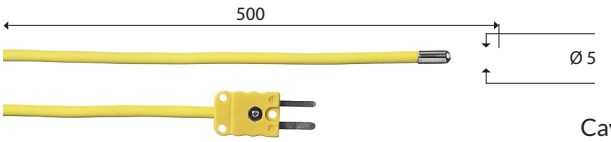
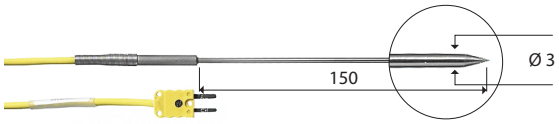
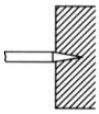
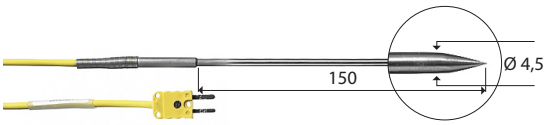
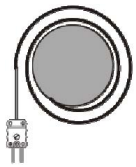
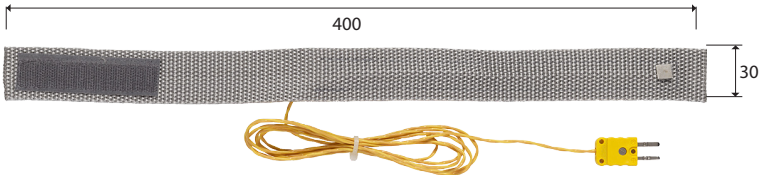
TERMOCOPPIE tipo "K" – Chromel (Ni-Cr) / Alumel (Ni-Al) – Classe 1				
CODICE	T_{max}(°C)	IMPIEGO	$\tau_{0.63}$	DIMENSIONI
TP741	+800		2s	
TP741/1	+400		2s	
TP741/2	+800		2s	
TP742	+800		2s	
TP742/1	+400		2s	
TP742/2	+800		2s	
TP743	+800		3s	
TP744	+400		4s	
TP745	+500		5s	
TP746	+250		2s	
TP750	+1000		3s	
TP750.0	+800		3s	

TERMOCOPPIE tipo "K" – Chromel (Ni-Cr) / Alumel (Ni-Al) – Classe 1				
CODICE	T_{max}(°C)	IMPIEGO	$\tau_{0.63}$	DIMENSIONI
TP751	+200		2s	
TP754	+300		2s	
TP754/9	+300		2s	
TP755	+300		2s	
TP755/9	+300		2s	
TP756	+200		2s	
TP757	+180		30s	Sonda per misure a contatto su superfici metalliche magnetiche 
TP758	+400		4s	
TP758.1	+400		4s	

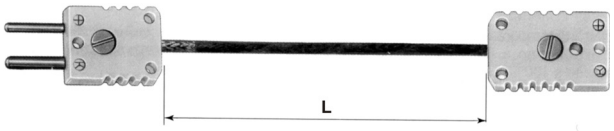
TERMOCOPPIE tipo "K" – Chromel (Ni-Cr) / Alumel (Ni-Al) – Classe 1

CODICE	T_{max}(°C)	IMPIEGO	$\tau_{0.63}$	DIMENSIONI
TP772	+400		3s	
TP776	+200		2s	
TP777	+200		3s	
TP647	+300		2s	Cavo in vetroresina 
TP647/2				
TP647/3				
TP647/5				
TP647/10				
TP647/20				
TP651	+1200		6s	
TP652	+1200		6s	
TP655	+180		2s	 Cavo 2 m
TP656	+200		1s	 Cavo 3 m

TERMOCOPPIE tipo "K" – Chromel (Ni-Cr) / Alumel (Ni-Al) – Classe 1

CODICE	T_{max}(°C)	IMPIEGO	$\tau_{0.63}$	DIMENSIONI
TP656/1	+1000		1s	 Cavo 3 m
TP656/2	+1000		1s	 Cavo 3 m
TP657/1	+100		5s	 Cavo flessibile
TP659	+400		3s	
TP660	+400		4s	
TP662	+180		120s	 Sonda a nastro con velcro per misure su tubi con Ø max 110 mm

CAVI E CONNETTORI TERMOCOPPIE

CM CS	"K"	
PW PW5 PW10	"K"	 Lunghezza cavo: 2 m/5 m/10 m

WARRANTY

The manufacturer is required to respond to the "factory warranty" only in those cases provided by Legislative Decree 6 September 2005 - n. 206. Each instrument is sold after rigorous inspections; if any manufacturing defect is found, it is necessary to contact the distributor where the instrument was purchased from. During the warranty period (24 months from the date of invoice) any manufacturing defects found will be repaired free of charge. Misuse, wear, neglect, lack or inefficient maintenance as well as theft and damage during transport are excluded. Warranty does not apply if changes, tampering or unauthorized repairs are made on the product. Solutions, probes, electrodes and microphones are not guaranteed as the improper use, even for a few minutes, may cause irreparable damages. The manufacturer repairs the products that show defects of construction in accordance with the terms and conditions of warranty included in the manual of the product. For any dispute, the competent court is the Court of Padua. The Italian law and the "Convention on Contracts for the International Sales of Goods" apply

TECHNICAL INFORMATION

The quality level of our instruments is the result of the continuous product development. This may lead to differences between the information reported in the manual and the instrument you have purchased. We reserves the right to change technical specifications and dimensions to fit the product requirements without prior notice.

DISPOSAL INFORMATION

Electrical and electronic equipment marked with specific symbol in compliance with 2012/19/EU Directive must be disposed of separately from household waste. European users can hand them over to the dealer or to the manufacturer when purchasing a new electrical and electronic equipment, or to a WEEE collection point designated by local authorities. Illegal disposal is punished by law.

Disposing of electrical and electronic equipment separately from normal waste helps to preserve natural resources and allows materials to be recycled in an environmentally friendly way without risks to human health.

CE RoHS