

SONDE TERMICHE – TERMOCOPPIE

Delta OHM offre un'ampia scelta di termocoppie tipo K, rispondenti alle caratteristiche definite dalla Norma IEC 60584.

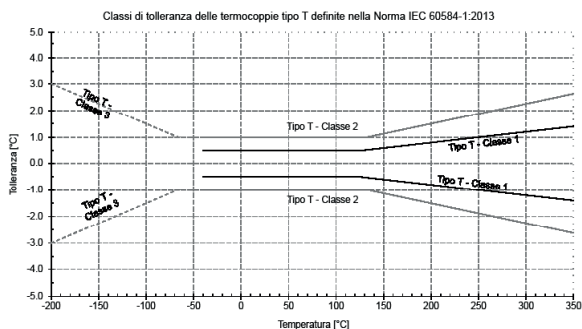
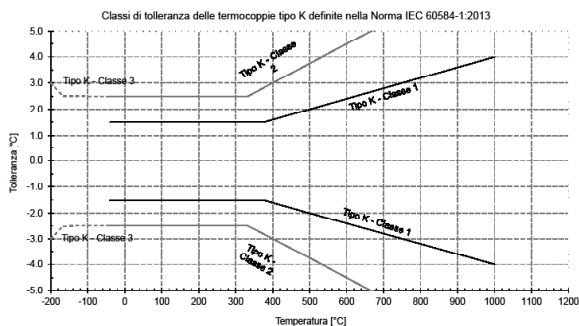
Il tempo di risposta $\tau_{0,63}$ indicato per ogni sonda è il tempo di reazione del sensore ad una variazione di temperatura, con una variazione del segnale misurato corrispondente al 63% della variazione totale. I tempi di risposta sono riferiti:

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

Tipo termocoppia	Classe 1		Classe 2		Classe 3	
	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		0 °C...+1100 °C	1,5 °C o 0,0025· t	0 °C...+1600 °C
S	1,5 °C o 0,0025· t	+1100 °C...+1600 °C	0 °C ...+ 1600 °C	---		---
B	---	---	600 °C ...+ 1700 °C	4 °C o 0,005· t		600 °C ...+ 1700 °C
C	---	---	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.

Tipo di termocoppia	Elementi e composizione standard della lega	
	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	Nichel – 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 Delta OHM 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.



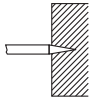
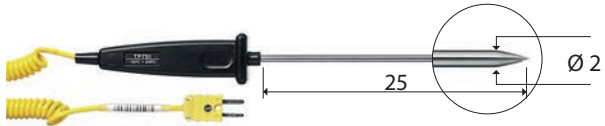
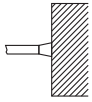
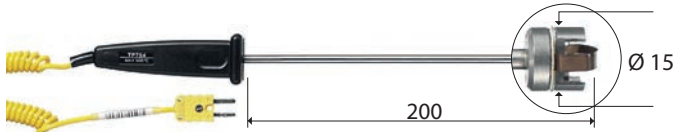
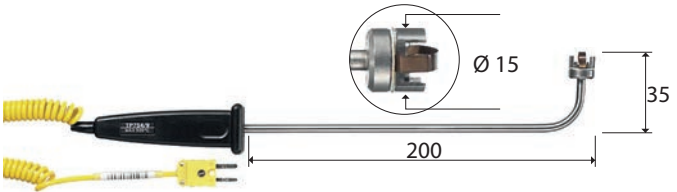
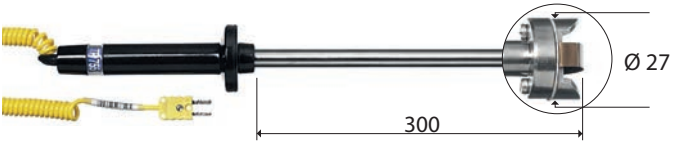
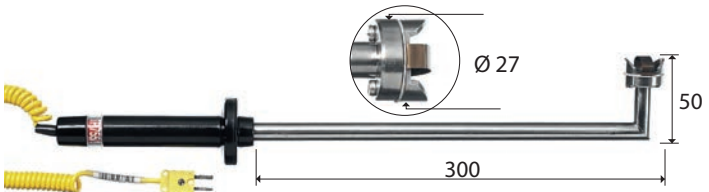

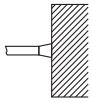
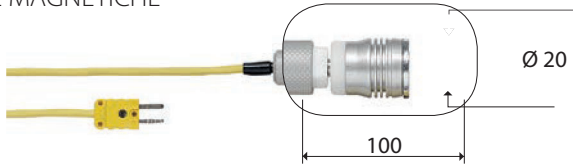
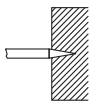

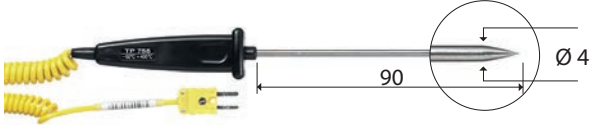
LAT N° 124

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

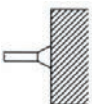
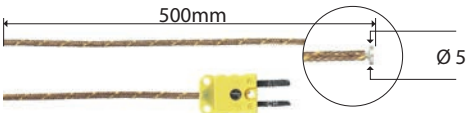

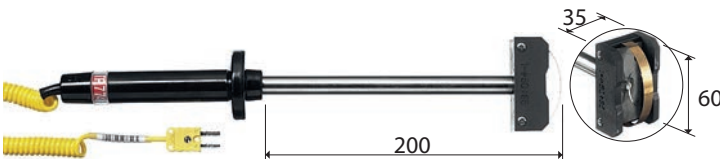
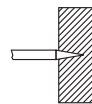
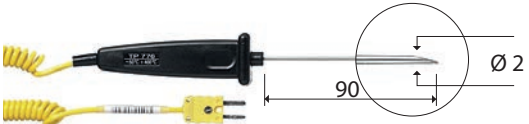
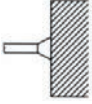
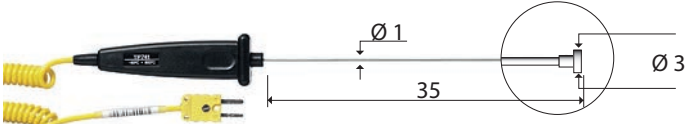
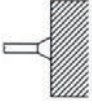

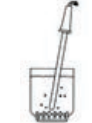



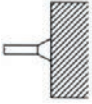

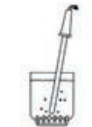
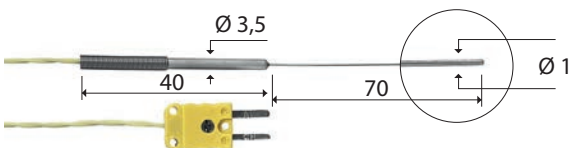
TERMOCOPPIE tipo "K" – Chromel (Ni-Cr) / Almel (Ni-Al) – Classe 1

CODICE	Tmax (°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) / Almel (Ni-Al) – Classe 1

CODICE	Tmax (°C)	IMPIEGO	$\tau_{0,63}$	DIMENSIONI
TP751	+200		2s	
TP754	+500		2s	
TP754/9	+500		2s	
TP755	+800		2s	
TP755/9	+800		2s	
TP756	+200			2s
TP757	+180		30s	SONDA MAGNETICA PER MISURE A CONTATTO SU SUPERFICI METALLICHE MAGNETICHE 
TP758	+400		4s	
TP758.1	+400		4s	



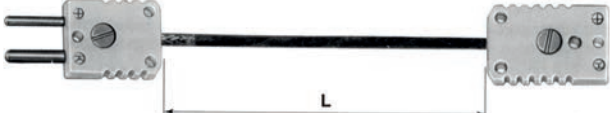
TERMOCOPPIE tipo "K" – Chromel (Ni-Cr) / Almel (Ni-Al) – Classe 1

TP772	+400		3s	
TP774	+250		2s	
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	
TP656	+200		1s	

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

CODICE	Tmax (°C)	IMPIEGO	$\tau_{0.63}$	DIMENSIONI
TP656/1	+1000		1s	
TP656/2	+1000		1s	
TP657/1	+100		5s	
TP659	+400		3s	
TP660	+400		4s	
TP661	+50		30s	
TP662	+180		120s	
TP663	+1050		3s	

THERMOCOUPLE CONNECTORS AND CABLES

CM CS	"K"	 	CS CM
PW	"K"		Lunghezza cavo: 2m/5m/10m/15m/20m