



OEM Ability!

RUSSIAN MANUFACTURER  
OF PROCESS CONTROL INSTRUMENTS



**ELEMER-KT**  
Temperature calibrators



ELEMER-KT-150, KT-200



ELEMER-KT-500, KT-650



### High accuracy

Down to  $\pm 0,02$  °C using built-in high accuracy RTD sensor

### Wide temperature range

KT-150	-45 to 150 °C
KT-200	-10 to 200 °C
KT-500	28 to 500 °C
KT-650	28 to 650 °C

### Superior stability 0,01 °C

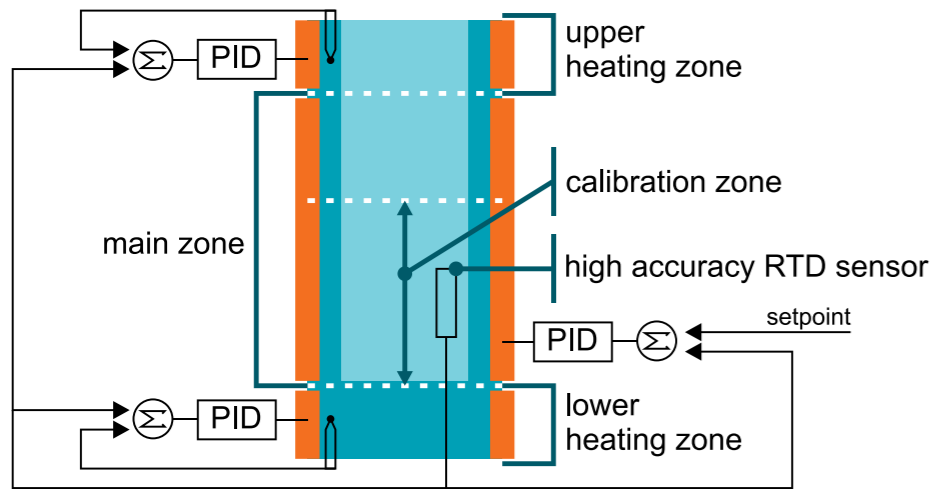
30 min measuring time

### All-in-one calibration system

- Capacious dry well loading up to 4 thermometers
- 4 universal analog inputs

### Automatic control of fixed points cells temperature

### Mains noise immunity



### Enhanced temperature homogeneity

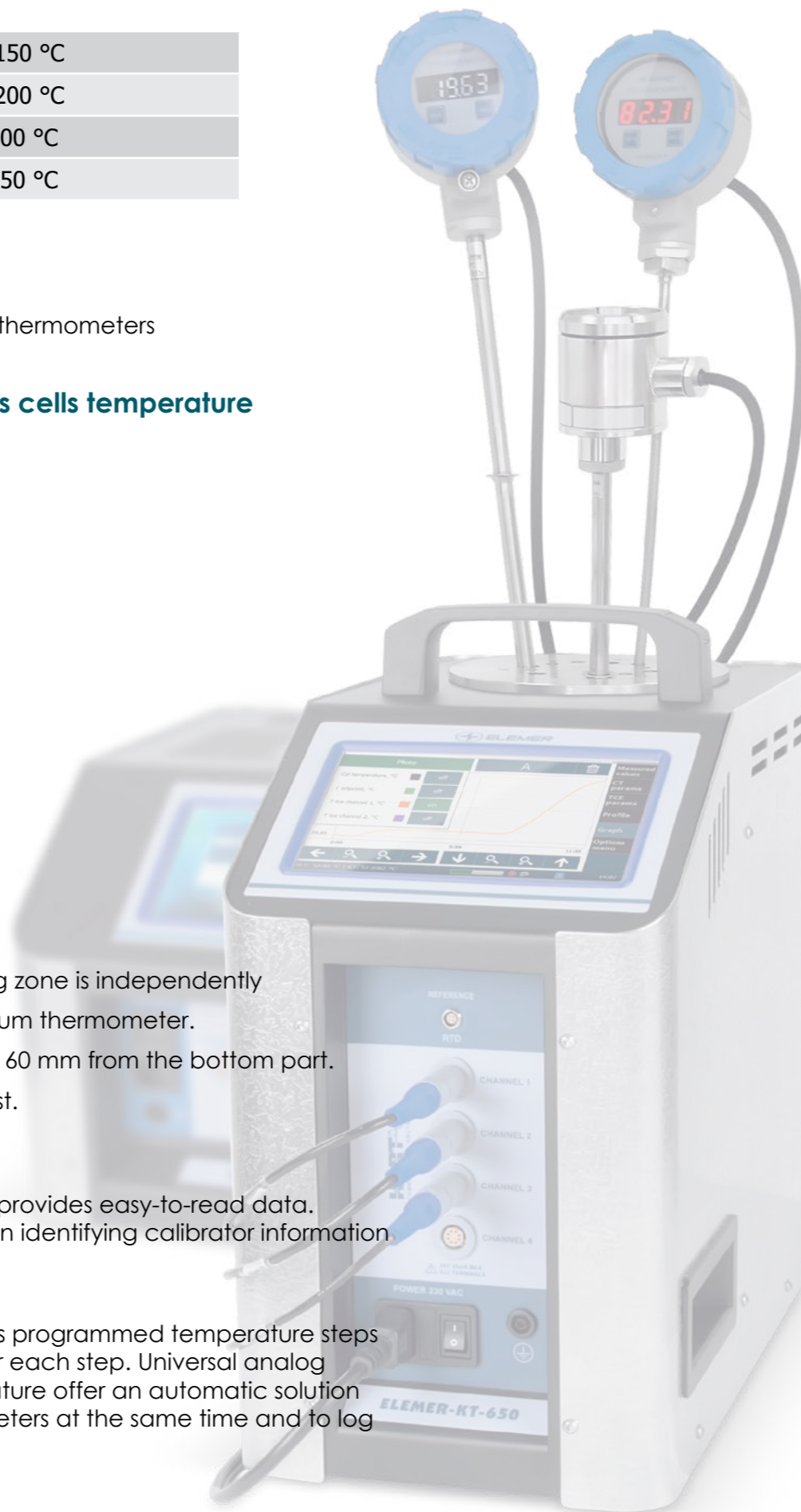
Calibrators feature triple-zone heating technology. Each heating zone is independently PID-controlled. The main zone has a built-in high accuracy platinum thermometer. The lower zone ensures perfect temperature homogeneity within 60 mm from the bottom part. The upper zone compensates for heat loss from sensors-under-test.

### Colour touch screen

The 7" full colour WVGA display provides easy-to-read data. Intuitive menu navigation helps in identifying calibrator information for any operational mode.

### Autostepping mode

The autostepping mode enables programmed temperature steps and rates including hold time for each step. Universal analog inputs and the autostepping feature offer an automatic solution to calibrate up to four thermometers at the same time and to log calibration data.



### Up to 4 thermometers calibration at the same time

- 2/3/4-wired RTD
- Thermocouples
- Temperature transmitters with 4-20 mA output
- Built-in power source for 4-20 mA transmitters



### HART protocol compatibility

- Transmitter configuration mode
- Automated loop current tuning
- Automated sensor calibration



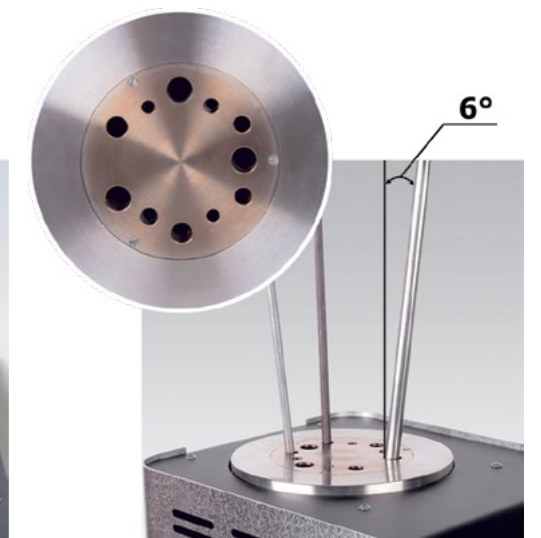
### Angular design external reference sensor

The specially designed reference sensor is angled at 90 °.

The top of the sensor is only slightly higher than the calibrator top which makes it possible the immersion of sensors with big connection heads.



Removable multihole inserts



Angled probe holes

### Unique dry well capacity





- Standard solid dry well with up to 6° angled holes which ensures multi-mounting of sensors with big connection heads and increases calibrator throughput
- Solid dry well with customized pre-drilled holes ranging from 2 to 22 mm
- Dry well with Ø37 mm removable customized insert

# ELEMER-KT-150, ELEMER-KT-200, ELEMER-KT-500, ELEMER-KT-650

Temperature calibrators



## Main specifications

	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
   				
Range (at 20 °C ambient temperature)				
	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
	-45...150 °C (-49...302 °F)	-10...200 °C (14...392 °F)	+28...500 °C (82...932 °F)	+28...650 °C (82...1202 °F)
Accuracy, °C				
Modification	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
M1-A	$\pm(0,02 + 0,0002 \times  t )$	$\pm(0,02 + 0,0002 \times  t )$	$\pm(0,02 + 0,0002 \times  t )$	$\pm(0,03 + 0,0003 \times  t )$
M1-B	$\pm(0,03 + 0,0003 \times  t )$	$\pm(0,03 + 0,0003 \times  t )$	$\pm(0,03 + 0,0003 \times  t )$	$\pm(0,03 + 0,0003 \times  t )$
Replacement insert	$\pm(0,03 + 0,0003 \times  t )$	$\pm(0,03 + 0,0003 \times  t )$	$\pm(0,03 + 0,0003 \times  t )$	$\pm(0,03 + 0,0003 \times  t )$
Axial uniformity in 60 mm bottom part of calibration zone (solid dry well), °C				
Modification	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
M1-A	$\pm(0,02 + 0,0003 \times  t )$	$\pm(0,02 + 0,0003 \times  t )$ -10...110 °C	$\pm(0,02 + 0,0002 \times  t )$	$\pm(0,02 + 0,0002 \times  t )$
		$\pm(0,03 + 0,0004 \times  t )$ 110...200 °C		
M1-B	$\pm(0,03 + 0,0004 \times  t )$	$\pm(0,03 + 0,0004 \times  t )$	$\pm(0,02 + 0,0004 \times  t )$	$\pm(0,02 + 0,0004 \times  t )$
M2	$\pm(0,03 + 0,0004 \times  t )$	$\pm(0,03 + 0,0004 \times  t )$	$\pm(0,02 + 0,0004 \times  t )$	$\pm(0,02 + 0,0004 \times  t )$
Axial uniformity in 60 mm bottom part of calibration zone (replacement insert), °C				
Modification	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
M2	$\pm(0,01 + 0,0001 \times  t )$	$\pm(0,01 + 0,0001 \times  t )$	$\pm(0,01 + 0,0007 \times  t )$	$\pm(0,01 + 0,0007 \times  t )$
Radial (hole-to hole) uniformity between similarly sized holes (solid dry well), °C				
Modification	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
M1-A	$\pm(0,01 + 0,0001 \times  t )$	$\pm(0,02 + 0,0003 \times  t )$	$\pm(0,02 + 0,0003 \times  t )$	$\pm(0,02 + 0,0003 \times  t )$
M1-B	$\pm(0,01 + 0,0001 \times  t )$	$\pm(0,02 + 0,0003 \times  t )$	$\pm(0,02 + 0,0004 \times  t )$	$\pm(0,02 + 0,0004 \times  t )$
M2	$\pm(0,01 + 0,0001 \times  t )$	$\pm(0,03 + 0,0003 \times  t )$	$\pm(0,02 + 0,0004 \times  t )$	$\pm(0,02 + 0,0004 \times  t )$
Radial (hole-to hole) uniformity between similarly sized holes (replacement insert), °C				
Modification	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
M2	$\pm(0,01 + 0,0001 \times  t )$	$\pm(0,01 + 0,0001 \times  t )$	$\pm(0,01 + 0,0002 \times  t )$	$\pm(0,01 + 0,0002 \times  t )$
Stability (30 minutes measuring time), °C				
	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
	$\pm 0,01$	$\pm 0,01$	$\pm(0,01 + 0,0001 \times t)$	$\pm(0,01 + 0,0001 \times t)$

Immersion depth, insert size, mm				
	ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650
Solid dry well	180	165	190	190
Replacement insert	180	165	235	235
Insert diameter	36	36	36	36
Display accuracy				
All models	0,001 °C (°F)			
Operating conditions				
All models	10...35 °C, 0...75 %			
Size (H, W, D), mm				
ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650	
290 × 330 × 360	290 × 330 × 360	370 × 220 × 380	370 × 220 × 380	
Weight, kg				
ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650	
16	20	24	24	
Power				
ELEMER-KT-150	ELEMER-KT-200	ELEMER-KT-500	ELEMER-KT-650	
187 to 242 V, 50 ±1 Hz, 300W	187 to 242 V, 50 ±1 Hz, 300W	187 to 242 V, 50 ±1 Hz, 2500/1000 W in heating/operational mode		

## Analog inputs specifications

Resistance accuracy		TC accuracy	
0...10 Ohm	$\pm 6 \times 10^{-4}$ Ohm	Type K (-50...1300 °C)	±0,2 °C
10...400 Ohm	$\pm 6 \times 10^{-5} \times R$ Ohm	Type L (-50...600 °C)	±0,1 °C
0...100 Ohm	$\pm 6 \times 10^{-3}$ Ohm	Type E (-50...900 °C)	±0,1 °C
100...2000 Ohm	$\pm 6 \times 10^{-5} \times R$ Ohm	Type J (-50...1100 °C)	±0,2 °C
RTD connection types		Type B (290...600 °C)	±1,0 °C
2/3/4- wire		Type B (601...1800 °C)	±0,6 °C
RTD accuracy, °C		Type S (0...1800 °C)	±0,6 °C
Pt10, Pt50, Pt100, Pt500, Pt1000 (-200...0 °C)	±0,015 °C	Type R (0...1800 °C)	±0,6 °C
		Type T (-50...400 °C)	±0,1 °C
Pt10, Pt50, Pt100, Pt500, Pt1000 (0...600 °C)	$\pm(7 \times 10^{-5} \times t + 0,015)$ °C	Type M (-50...100 °C)	±0,1 °C
		Type N (-50...1300 °C)	±0,2 °C
Voltage accuracy		Current accuracy	
-100...100 mV	$\pm(7 \times 10^{-5} \times  U  + 3)$ μV	0...25 mA	$\pm(10^{-4} \times I + 1)$ μA
0...10 V	$\pm(12,5 \times 10^{-5} \times  U  + 5)$ mV		
Transmitter power supply			
24 VDC			



# ITS-90

## FIXED POINTS

### ELEMER pure-metal fixed point cells are specially designed for dry-block ELEMER-KT calibrators

- Smaller dimensions of fixed point cells allows to decrease their cost and make it more transportable
- Stainless steel case cells much less fragile than quartz glass and suitable for industrial calibrating
- The realization of fixed point cells are easily automated through our programmable ELEMER-KT temperature calibrators



### ITS-90 fixed point cells specifications

Cells	Temperature	Uncertainty*	Calibrator model
Triple Point of Mercury (TPHg)	-38,8344 °C	±1,2 mK	ELEMER-KT-150
Melting Point of Gallium (MPGa)	29,7646 °C	±1,2 mK	ELEMER-KT-150
Freezing Point of Indium (FPIIn)	156,5985 °C	±4 mK	ELEMER-KT-650
Freezing Point of Tin (FPSn)	231,928 °C	±4 mK	ELEMER-KT-650
Freezing Point of Zinc (FPZn)	419,527 °C	±10 mK	ELEMER-KT-650

### Cell types

Type	Sealed metal	Resealable metal
Features	<ul style="list-style-type: none"> <li>• Simplicity and convenience</li> <li>• Protected against contamination</li> <li>• Protected against ambient pressure variation (sealed to 1 atm with pure argon at the freeze temperature)</li> <li>• Transportable between labs (Robust stainless steel case)</li> </ul>	<ul style="list-style-type: none"> <li>• Closer to ITS-90 temperature</li> <li>• Sealed with port for gas supply</li> <li>• Resettable pressure</li> <li>• Transportable between labs (Robust stainless steel case)</li> </ul>

# ETS

## REFERENCE THERMOMETERS



### Highly accurate temperature measurement with reference thermometers

Model	Sheath material	Temperature range	Uncertainty*						
			TPW (0,01 °C)	MPGa (29,7646 °C)	FPIIn (156,5985 °C)	FPSn (231,928 °C)	FPZn (419,527 °C)	FPAI (660,323 °C)	FPCu (1084,62 °C)
ETS-1S-1 (ETS-1Q-1)	Leuco Sapphire (Fused quartz)	0...+660,323 °C	2 mK	2 mK	5 mK	5 mK	10 mK	10 mK	—
ETS-1S-2 (ETS-1Q-2)	Leuco Sapphire (Fused quartz)	0...+660,323 °C	10 mK	10 mK	20 mK	20 mK	20 mK	30 mK	—
ETS-2S-1 (ETS-2Q-1)	Leuco Sapphire (Fused quartz)	0...+419,527 °C	2 mK	2 mK	5 mK	5 mK	10 mK	—	—
ETS-3M-1	Inconel	0...+231,928 °C	2 mK	2 mK	5 mK	5 mK	—	—	—
ETS-4S-2 (ETS-4Q-2)	Leuco Sapphire (Fused quartz)	+419,527...+1084,62 °C	—	—	—	—	70 mK	100 mK	150 mK

\*These are expanded uncertainties of measurement with a coverage probability of 95% and have a coverage factor of  $k = 2$ .



EU Notified Body  
No. 2549

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## EU-TYPE EXAMINATION CERTIFICATE

*ES tipa pārbaudes sertifikāts*

No. 3-112-136/2016

<b>Holder of Certificate:</b> <i>Sertifikāta turētājs:</i>	Research and Production Enterprise "ELEMER" LLC Building 7/1, road 4807, Zelenograd, Moscow, 124489, Russia Web: www.elemer.ru Phone: +7 495 9871238, fax: +7 499 7351288, e-mail: elemer@elemer.ru
<b>Product name, model / type:</b> <i>Produkta nosaukums, modelis / tips:</i>	Temperature Calibrators. Models: ELEMER-KT-150K, ELEMER-KT-200K, ELEMER-KT-500K, ELEMER-KT-650K.
<b>Essential characteristics:</b> <i>Būtiskie raksturlielumi:</i>	187-242 V AC, 50 Hz, 300 W or 2500/1000 W, Class I, IPX0.
<b>Manufacturer, address:</b> <i>Ražotājs, adrese:</i>	Research and Production Enterprise "ELEMER" LLC Building 7/1, road 4807, Zelenograd, Moscow, 124489, Russia Web: www.elemer.ru Phone: +7 495 9871238, fax: +7 499 7351288, e-mail: elemer@elemer.ru
<b>Trademark:</b> <i>Zīmols:</i>	

**EU type examination of apparatus carried out according to module B (Part A Annex III of Directive 2014/30/EU).  
The apparatus is considered to meet the requirements of the following directives and standards:**

<b>Assessment regulations:</b> <i>Novērtēšanas normatīvi:</i>	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility corresponds with LR Ministru kabineta noteikumi Nr. 208 "Iekārtu elektromagnētiskās saderības noteikumi"
<b>Used standards:</b> <i>Lietotie standarti:</i>	EN 61326-1:2013, EN 61000-3-2:2014, EN 61000-3-3:2013, EN 61010-1:2010
<b>Test reports references:</b> <i>Testēšanas pārskatu atsauces:</i>	No. 213-ECE/16 dated 27 July 2016 (JSC STC "SAMTES") No. 214-ECE/16 dated 28 July 2016 (JSC STC "SAMTES") No. 214-SCE/16 dated 08 August 2016 (JSC STC "SAMTES")

**Notes:**

*Piezīmes:*

- The manufacturer shall keep a copy of the EU-type examination certificate, its annexes and additions together with the technical documentation at the disposal of the national authorities for 10 years after the apparatus has been placed on the market.
- The manufacturer shall take all measures necessary so that the manufacturing process and its monitoring ensure conformity of the manufactured apparatus with the approved type described in this EU-type examination certificate and with the requirements of the above Directives that apply to them.
- The manufacturer shall affix the CE marking to each individual apparatus that is in conformity with the type described in this EU-type examination certificate and satisfies the applicable requirements of this Directive.
- The manufacturer shall draw up a written EU declaration of conformity for each apparatus model and keep it at the disposal of the national authorities for 10 years after the apparatus has been placed on the market.

**Director of Certification:**  
*Sertifikācijas direktors:*



Sergey Kovalev



Date of issue: September 27, 2016  
Certificate is valid until: September 27, 2021

Certificate No. 3-112-136/2016



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