CALIBRATION

TC 6621 / TC 6622

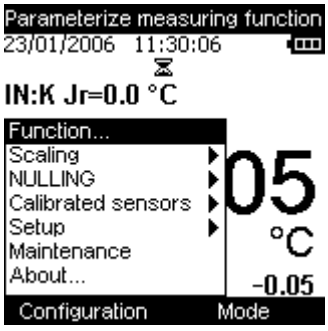
Temperature test tools

Measure and generation
Protected for on-site use
Perfect for control and tests

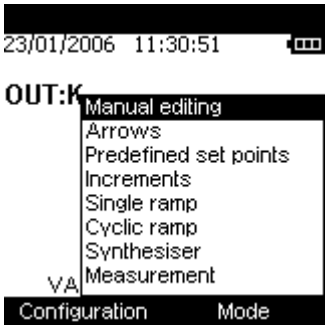
User friendly, robust, these tools have been designed to simplify temperature transmitters and probes maintenance and commissioning. They measure and generate in thermocouple or RTD's.

- **Well adapted for different process job procedures thanks to their ranges and specific functions such scaling, ramping,…**
- **High accuracy: 0,02% of reading**
- **Very low temperature coefficient: 10 ppm /°C in thermocouples and 7 ppm/°C in resistance even in bad outside environmental conditions accuracies are not modified**
- **Measurement and simulation of 14 thermocouples and 12 RTD types**

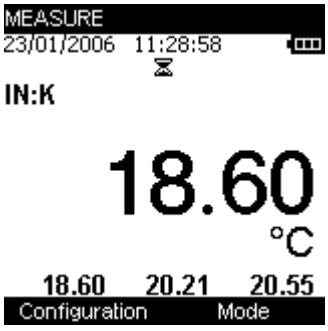
Calibrators TC 6621 and 6622 use a graphic display making easier programming and reading.



Function menu



Operating menu



Reading display

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Process transmitters and other sensors are more and more reliable and accurate, therefore calibrators performances need to be at the same level.
That is the reason why AOIP provides 0,02% of accuracy with thermocouples and Rtd for these onsite instruments.

The resolution is programmable, by user for better reading, with upto 1mΩ or 1µV,.

TC 6621: Specifications (@ 23°C±5°C and between 45% and 75% of relative humidity)

DC VOLTAGE

Function	Range	Resolution	Accuracy / 1Yr	Range
IN	100 mV	1 µV	0,020% r + 3µV	-10 mV /100mV
OUT	80 mV	1 µV	0,020% r + 3µV	-9.5 mV /80 mV

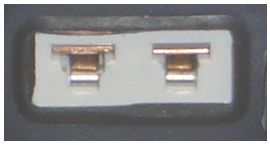
Temperature coeff < 15 ppmR /°C
from 0°C to 18°C and 28°C to 50 °C.

Temperature with Thermocouples

	IN			OUT		
probe	**IN range**	**Resolution**	**Accuracy / 1 yr**	**OUT range**	**Resolution**	**Accuarcy / 1 yr**
K	- 250 to - 200°C - 200 to - 120°C - 120 to - 50°C -50 to + 1 372°C	0,20°C 0,10°C 0,05°C 0,05°C	0,90°C 0,3°C 0,02 % r+ 0,12°C 0,02 % r+ 0,11°C	- 240 to - 50°C - 50 to + 120°C +120 to + 1 372°C	0,20°C 0,10°C 0,05°C	0,80°C 0,30°C 0,020 % r+ 0,11°C
T	- 250 to - 200°C - 200 to - 50°C - 50 to + 400°C	0,2°C 0,05°C 0,05°C	0,80°C 0,25°C 0,02 % r+ 0,09°C	- 240 to - 100°C - 100 to - 40°C - 40 to + 400°C	0,20°C 0,05°C 0,05°C	0,50°C 0,25°C 0,020 % r+ 0,10°C
J	- 210 to - 200°C - 200 to - 120°C - 120 to + 60°C + 60 to + 1 200°C	0,05°C 0,05°C 0,05°C 0,05°C	0,30°C 0,25°C 0,020 % r+ 0,11°C 0,020 % r+ 0,09°C	- 210 to +50°C + 50 to + 500°C + 500 to + 1 200°C	0,05°C 0,05°C 0,05°C	0,35°C 0,020 % r+ 0,11°C 0,020 % r+ 0,09°C
E	- 250 to - 200°C - 200 to - 100°C - 100 to + 450°C +450 to + 1 000°C	0,1°C 0,05°C 0,05°C 0,05°C	0,55°C 0,20C 0,020 % r+ 0,07°C 0,020 % r+ 0,05°C	- 240 to - 100°C - 100 to + 40°C + 40 to + 1 000°C	0,1°C 0,1°C 0,05°C	0,55°C 0,20°C 0,020 % r+ 0,06°C
R	- 50 to + 150°C + 150 to + 550°C +550 to + 1 768°C	0,50°C 0,20°C 0,10°C	0,95°C 0,40°C 0,020 % r+ 0,30°C	- 50 to + 350°C + 350 to + 900°C + 900 to + 1 768°C	0,50°C 0,20°C 0,10°C	0,95°C 0,5°C 0,020 % r+ 0,30°C
S	- 50 to + 150°C + 150 to + 550°C +550 to + 1 768°C	0,5°C 0,2°C 0,1°C	0,85°C 0,020 % r+ 0,4°C 0,020 % r+ 0,3°C	- 50 to + 350°C + 350 to + 900°C + 900 to + 1 768°C	0,50°C 0,20°C 0,10°C	0,90°C 0,020 % r+ 0,40°C 0,020 % r+ 0,30°C
B	+ 400 to + 900°C +900 to + 1 820°C	0,2°C 0,1°C	0,95°C 0,50°C	+ 400 to + 850°C + 850 to + 1 820°C	0,20°C 0,10°C	0,95°C 0,50°C
U	- 200 to - 100°C - 100 to + 600°C	0,05°C 0,05°C	0,35°C 0,20°C	- 200 to - 70°C - 70 to + 600°C	0,05°C 0,05°C	0,35°C 0,20°C
L	- 200 to - 100°C - 100 to + 900°C	0,05°C 0,05°C	0,30°C 0,20°C	- 200 to - 70°C - 70 to +900°C	0,05°C 0,05°C	0,30°C 0,25°C
C	- 20 to + 900°C +900 to + 2 310°C	0,1°C 0,1°C	0,30°C 0,020 % r+ 0,15°C	- 20 to + 900°C + 900 to + 2 310°C	0,10°C 0,10°C	0,35°C 0,020 % r+ 0,15°C
N	- 240 to - 190°C - 190 to - 110°C - 110 to – 0°C + 0 to + 1 300°C	0,2°C 0,1°C 0,05°C 0,05°C	0,60°C 0,25°C 0,15°C 0,020 % r+ 0,07°C	- 240 to + 10°C + 10 to + 250°C + 250 to + 1 300°C	0,20°C 0,10°C 0,05°C	0,90C 0,20°C 0,020 % r+ 0,09°C
Platine	- 100 to + 1 400°C	0,05°C	0,3°C	- 100 to + 1 400°C	0,05°C	0,35°C
Mo	0 to + 1 375°C	0,05°C	0,020 %r+ 0,10°C	+ 0 to + 1 375°C	0,05°C	0,25°C
NiMo/NiCo	- 50 to + 1 410°C	0,05°C	0,020 %r+ 0,35°C	- 50 to + 1 410°C	0,05°C	0,020 %r+ 0,35°C

CJC accuracy : ± 0,3°C
Temperature Coefficient:<20ppm/°C from 0 to 18°C and 28 to 50°C

Connexion of thermocouples:



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TC 6622 Specifications (@ 23°C±5°C and between 45% and 75% of relative humidity)

Resistance

Function	Range	Resolution	Accuracy / 1yr	Range	Notes
In	400 Ohm	1 mΩ	0,012% r + 10 mΩ	0 Ω to 400 Ω	Automatic detection : 2, 3 or 4 wires.
	3600 Ohm	10 mΩ	0,012% r + 100 mΩ	0 Ω to 3600 Ω	Automatic detection : 2, 3 or 4 wires.
Out	400 Ohm (DC Current)	1 mΩ	0,012% r+30 mΩ	0 Ω to 400 Ω	Acceptable current: 0.1 mA to 1 mA
	3500 Ohm (DC Current)	10 mΩ	0,012%r+300 mΩ	0 Ω to 3500 Ω	Acceptable current :0.1 mA to 1 mA

Temperature coefficient:<7ppm/°C from 0 to18°C and 28 to 50°C
Rising time in simulation<1ms
R internal <1Ω
Noise VLF<1mV (@ F<100Hz)

Sensor	IN/OUT Range	Resolution	Accuracy / 1yr IN	Accuracy / 1yr OUT
Pt 50 (α = 3851)	- 220°C + 850°C	0,01°C	0,012 % + 0,06°C	0,012 % + 0,18°C
Pt 100 (α = 3851)	- 220°C + 850°C	0,01°C	0,012 % + 0,05°C	0,012 % + 0,12°C
Pt 100 (α = 3916)	- 200°C + 510°C	0,01°C	0,012 % + 0,05°C	0,012 % + 0,12°C
Pt 100 (α = 3926)	- 210°C + 850°C	0,01°C	0,012 % + 0,05°C	0,012 % + 0,12°C
Pt 200 (α = 3851)	- 220°C + 1 200°C	0,01°C	0,012 % + 0,12°C	0,012 % + 0,33°C
Pt 500 (α = 3851)	- 220°C + 1 200°C	0,01°C	0,012 % + 0,07°C	0,012 % + 0,18°C
Pt 1 000 (α = 3851)	- 220°C + 760°C	0,01°C	0,012 % + 0,05°C	0,012 % + 0,08°C
Ni 100 (α = 618)	- 60°C + 180°C	0,01°C	0,012 % + 0,03°C	0,012 % + 0,08°C
Ni 120 (α = 672)	- 40°C + 205°C	0,01°C	0,012 % + 0,03°C	0,012 % + 0,08°C
Ni 1 000 (α = 618)	- 60°C + 180°C	0,01°C	0,012 % + 0,03°C	0,012 % + 0,08°C
Cu 10 (α = 427)	- 70°C + 150°C	0,01°C	0,012 % + 0,18°C	0,012 % + 0,10°C
Cu 50 (α = 428)	- 50°C + 150°C	0,01°C	0,012 % + 0,06°C	0,012 % + 0,15°C

Temperature Coefficient: < 10 % of accuracy/°C.
For measurement, accuracy is given for a 4 wires connection. Sensor accuracy is not taken into account in this accuracy.
Automatic wires number detection
Measuring current: 0.65 mA
Simulation current: de 0,1 mA à 1mA
Minimal Current pulse duration: < 1 ms

Connexion of RTD:

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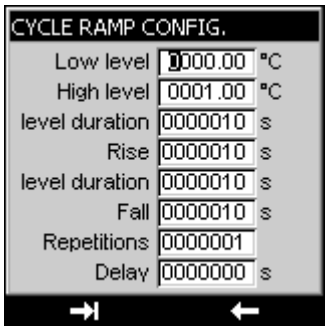
Simulation function:

Simple and cyclical ramps
Ramps can be generated by TC 6621 and TC6622 with setting of low and high dwell, rising and falling times, and stabilisation and delay times. Delay time (Programmable between 1 to 3600 seconds) allows a single user to launch ramp and go to the control panel.

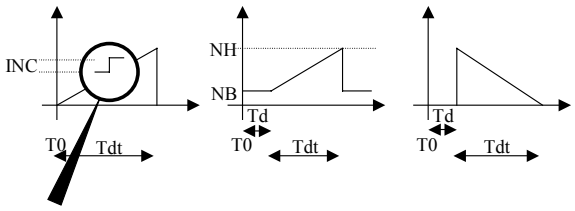


Cyclical ramps parameters

Synthesizer mode: This mode allows sending of predefined values with programmable frequency.

Steps mode: This mode allows sending of values with programmable amplitude and frequency

Steps mode parameters



To : Starting time
Td : **Delay**
Tdt : **Total time**
NB : **Low level**
NH : **High level**
INC : **Steps** (Step value in°C or °F)

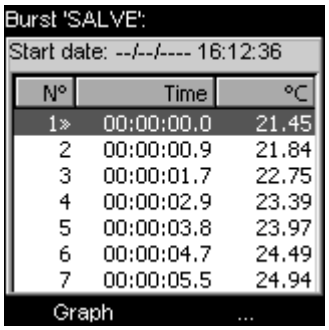
Scaling: This operation allows to correct probes errors. Scaling is performed using up to 10 segments, in order to fit with the real calibrated value.

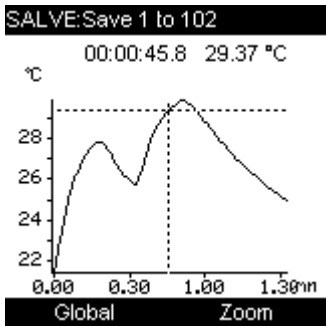
Measurement functions:

Calibrated sensors: A database can be created to design curves for sensors after calibration in relation with the corrections showed on a calibration report.

Scaling: This operation allows to correct probes errors. Scaling is performed using up to 10 segments, in order to fit with the real calibrated value.

Data recording: Data are recorded either manually on event or automatically with programmed frequency. Data are dated and can be displayed as list or curves.





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Other functions:

Interface language: TC have 5 languages: French, English, German, Italian and Spanish.
Display contrast : When dark conditions, user can modify display contrast and switch on display back-light. Back-light timer programmable
Display resolution: User can select 3 resolutions (upto 3 decimal places): High, middle or low resolution.
Date and time display: These in formations are permanently display on the screen

Statistics:
At the bottom of the screen, maximum, average and minimum values measured are displayed. Reset function allows re-calculating of the values.
Hold: To freeze the display.
Filter: A filter in seconds can be applied in order to avoid fluctuation of the value.
Embedded software update: According to the improvements for these calibrators, AOIP offers you the upgrade of the instrument using USB port free of charge
Delay function: When simulating steps or ramps, this function allows to delay the start.

Power supply

In standard TC 6621 and 6621 are delivered with 4 AA batteries. An optional rechargeable Batteries + charger allows to use instrument directly connected to the main or with the rechargeable batteries

Autonomy:

Mode	IN	OUT
Autonomy	40 hours	33 hours

Mechanical characteristics and applied standards

Dimensions(Without sheath): 157x85x45 mm
Weight: 306 g
Waterproof: IP 54 acc EN 60529
Environmental conditions
Reference domain : 23°C ± 5°C, relative humidity : 45 % to 75 %.
Nominal working domain : -10°C to + 50°C, relative humidity: 20 % at 80 % w/o condensation.
Limit working domain : - 10°C to + 55°C, relative hum: 10 % to 80 % (70 % at 55°C).
Transport and storage conditions : - 30°C to + 60°C (without batteries or rechargeable batteries).
Electrical safety: EN 61010
EMC: EN61326
Thermocouples Connection with miniature compensated connector
RTD Connection 4 pin round connector or 4 banana plugs
USB Connection for PC connection (Software upgrade and application with DATACAL)

Supplied in standard:

Protection sheath, 4 AA batteries, instruction manual, transportation wrist-strap .

Optional external Charger+batteries connectable to the main

Ordering instructions:

Thermocouple test tool	TC6621
RTD test tool	TC6622

Options:

Rechargeable batteries +Charger	AN 6011
Flexible thermocouple type K	T101
Rigid thermocouple type K	T102
Teflon flexible thermocouple type K	T103
Air ambient Pt100	S101D
Waterproof Pt100	S102D

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