

TM 6602 / 6612 / 6630

Handheld thermometer for thermocouples and/or resistive probes with memory

TM thermometers are the perfect field tools for daily maintenance and commissioning of temperature probes at 0.02% accuracy.

Description

Easy-to-use and equipped with a large graphical display, TM thermometers are the perfect field tools for daily maintenance and commissioning of temperature probes. 3 models are available with 0.02% accuracy as follows:
TM 6602 for thermocouple measurement
TM 6612 for RTD measurement
TM 6630 for both thermocouple and RTD measurement
With a very low temperature coefficient (10 ppm/°C in thermocouples and 7ppm/°C in resistance), IP54 protection and robust design, TM thermometers are suitable for onsite use even in demanding environmental conditions. They are widely used in the energy field, engineering sector, metal industry and automotive field.
TM thermometers use a graphical interface making programming and reading easier, under graphical or test format. Due to memory feature (10,000 values) and extended functionalities (corrections of calibrated sensors, statistical functions...), TM are well adapted to different process job procedures and ensure full data traceability as well as advanced data exploitation. Use them together with DATACAL calibration software to display, manage data and issue your own customized calibration certificates.
TM thermometers are delivered with 4 alkaline AA batteries in standard. The optional battery charger used a rechargeable battery.

Key features:

- High accuracy: 0.02% reading with an adjustable resolution of 1 µV (TM 6602 / 6630) and 1 mΩ (TM 6612 / 6630)
- Values displayed in °C, °F, mV and Ω
- Low temperature coefficient: 10 ppm /°C for thermocouples and 7 ppm/°C for resistance
- Measurements with HOLD function
- Correction of calibrated sensors
- Display of minimum, maximum and average value
- Backlight
- 10,000 values stored and displayed graphically

Specifications

Specifications and performances of TM 6602 / 6630 @23°C ±5°C

DC voltage

Function	Range	Res.	Accuracy / 1 year	Measuring range
IN	100 mV	1 µV	0.020% RDG + 3 µV	-10 mV / 100 mV

Temperature coefficient < 15 ppm/°C beyond reference domain

Thermocouples: Measurement

Type	Input range	Resolution	Accuracy / 1 year (Measurement)
K	-250 to -200°C -200 to -120°C -120 to 0°C 0 to +1372°C	0.2°C 0.1°C 0.05°C 0.05°C	0.90°C 0.3°C 0.02% RDG + 0.12°C 0.02% RDG + 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	0.8°C 0.25°C 0.02% RDG + 0.09°C
J	-210 to -200°C -200 to -120°C -120 to +60°C +60 to +1200°C	0.05°C 0.05°C 0.05°C 0.05°C	0.3°C 0.25°C 0.02% RDG + 0.11°C 0.02% RDG + 0.09°C
E	-250 to -200°C -200 to -100°C -100 to +450°C +450 to 1000°C	0.1°C 0.05°C 0.05°C 0.05°C	0.55°C 0.2°C 0.02% RDG + 0.07°C 0.02% RDG + 0.05°C
R	-50 to +150°C +150 to +550°C +550 to 1768°C	0.5°C 0.2°C 0.1°C	0.95°C 0.4°C 0.02% RDG + 0.3°C
S	-50 to +150°C +150 to +550°C +550 to +1768°C	0.5°C 0.2°C 0.1°C	0.85°C 0.02% RDG + 0.4°C 0.02% RDG + 0.3°C
B	+400 to +900°C +900 to +1820°C	0.2°C 0.1°C	0.95°C 0.5°C
U	-200 to -100°C -100 to +600°C	0.05°C 0.05°C	0.35°C 0.2°C
L	-200 to -100°C -100°C to +900°C	0.05°C 0.05°C	0.3°C 0.2°C

C	-20 to +900°C +900 to 2310°C	0.1°C 0.1°C	0.3°C 0.02% RDG + 0.15°C
N	-240 to -190°C -190 to -110°C -110 to +0°C +0 to +1300°C	0.2°C 0.1°C 0.05°C 0.05°C	0.6°C 0.25°C 0.15°C 0.02% RDG + 0.07°C
Platine	-100 to +1400°C	0.05°C	0.3°C
Mo	+0 to +1375°C	0.05°C	0.02% RDG + 0.1°C
NiMo/NiCo	-50 to +1410°C	0.05°C	0.02% RDG + 0.35°C

Thermocouples G, D: For specifications, refer to the instruction manual (Available on request)
Accuracy is given for reference @ 0°C.
When using the internal reference junction (except couple B) add an additional uncertainty of 0.3 °C at 0 °C.
It is possible (thermocouple B excepted) to choose by programming the cold junction localization: External at 0°C, internal (temperature compensation of instrument's terminals) or manually entered.
Temperature coefficient: <10% of accuracy /°C

Specifications and performances of TM 6612 / 6630 @23°C ±5°C

Resistance

Function	Range	Resolution	Accuracy / 1 year	Notes
IN	400 Ω	1 mΩ	0.012% RDG + 10 mΩ	Automatic detection: 2, 3 or 4 wires
	3600 Ω	10 mΩ	0.012% RDG + 100 mΩ	Automatic detection: 2, 3 or 4 wires

Connection in resistance and RTDs through banana plugs or 4-pin round connector
Temperature coefficient: < 7 ppm/°C beyond reference domain
R internal: < 1 Ω
Noise VLF < 1 mV (@ F< 100 Hz)

Resistive probes: Measurement

Sensor	Range (Input and Output)	Resolution	Accuracy / 1 year (Measurement)
Pt50 (= 3851)	-220°C to +850°C	0.01°C	0.012% RDG + 0.06°C
Pt100 (= 3851)	-220°C to +850°C	0.01°C	0.012% RDG + 0.05°C
Pt100 (= 3916)	-200°C to +510°C	0.01°C	0.012% RDG + 0.05°C
Pt100 (= 3926)	-210°C to +850°C	0.01°C	0.012% RDG + 0.05°C

Pt200 (= 3851)	-220°C to +120°C	0.01°C	0.012% RDG + 0.12°C
Pt500 (= 3851)	-220°C to +1200°C	0.01°C	0.012% RDG + 0.07°C
Pt1000 (= 3851)	-220°C to +760°C	0.01°C	0.012% RDG + 0.05°C
Ni100 (= 618)	-60°C to 180°C	0.01°C	0.012% RDG + 0.03°C
Ni120 (= 672)	-40°C to +205°C	0.01°C	0.012% RDG + 0.03°C
Ni1000 (= 618)	-60°C to +180°C	0.01°C	0.012% RDG + 0.03°C
Cu10 (= 427)	-50°C to 150°C	0.01°C	0.012% RDG + 0.18°C
Cu50 (= 428)	-50°C to +150°C	0.01°C	0.012% RDG + 0.06°C

Resistive probes measurements in 2, 3 or 4 wires: automatic recognition of number of connected wires, with indication on screen
Accuracies are given for 4-wire mounted probes
Take into account particular error of temperature sensor used and implementation conditions
Measuring current: 0.65 mA
Temperature coefficient: < 10% of accuracy /°C

Further features

Calibrated sensors	A database can be created to design curves for sensor s after calibration according to the corrections mentioned on a calibration report.
Data recording	Data are recorded either manually on event or automatically with programmable frequency. Data is stored with date and time and can be displayed as list or curve.
Statistical functions	Continuous display of average, minimum and maximum value of the signal under monitoring, as well as number of measurements.

General specifications

Size	157 x 85 x 45 mm
Weight	306 g
Display	160 x 160 pixel liquid crystal graphical display with backlite Display of result as table of values or trend curve
Power supply	4 AA batteries 1.5 V or rechargeable Ni-Mh batteries with internal charger in option
Communication ports	USB
Storage capacity	10,000 data with date and time into one or several acquisition bursts

Environmental specifications

Reference range	23°C ± 5°C (RH: 45 to 75 % w/o condensing)
Operating reference range	-10 to 50°C (RH: 20 to 80 % w/o condensing)
Limit operating range	-15°C to +55°C (RH: 10 to 80 % w/o condensing) (70% at 55°C)
Storage temperature limits	-30°C to +60°C
Maximum height	0 to 2,200 m
IP protection	IP54 according to EN60529

Safety specifications

Protections	• Electronic protection up to 250 V for ‘voltage’ wires • Fuse protection for ‘current’ wires • Protection against ‘current’ circuit breaking during inductive resistance measurements
Class	In accordance with EN 61010-1 Category II, pollution 2
Rated voltage	60 V
Chocks and vibrations	EN 61010-1
EMC conformity	

Models and accessories

Instruments:

TM 6602 Handheld thermometer for thermocouples with memory
Delivered in standard with:

- User manual
- 4 AA batteries
- Protection sheath
- Carrying strap
- Factory test report

TM 6612 Handheld thermometer for resistive probes with memory
Delivered in standard with:

- User manual
- 4 AA batteries
- Protection sheath
- Carrying strap
- Factory test report

TM 6630 Handheld thermometer for thermocouples and resistive probes with memory
Delivered in standard with:

- User manual
- 4 AA batteries
- Protection sheath
- Carrying strap
- Factory test report

Accessories:

AC6908	Soft carrying case for hand-held instruments
AN6011	Charger + batteries for hand-held instruments
ER 49519-000	USB cable mini B

Probes for TM 6602 / 6630:

ER 48145-130	Male compensated plug type T
ER 48145-140	Male compensated plug type J
ER 48145-150	Male compensated plug type S
ER 48145-160	Male compensated plug type K
ACC-A-R	Male compensated plug type LNRBEUC or D
T101	Flexible type K sensor
T102	Rigid K type sensor
T104	Soft K sensor
T105	Penetration K sensor
T106	Surface K sensor
T703A	Surface temp. sensor K couple
T704	Surface K sensor + springplate

Probes for TM 6612 / 6630:

ER48493-000 4-pin LEMO connector for Pt100*
S101E Pt100 environment sensor
S102E Pt100 immersion sensor
S103E Flexible housing sensor
*This accessory is necessary for RTDs with bare wires

Software:

DATACAL TCTM Calibration software for TC / TM series
Supplied with USB cable mini B

Certification:

QMA11EN COFRAC certificate of calibration
With all relevant data points where the device has been tested

Packing information:

Size 157 x 85 x 45 mm
Weight without packing 306 g