

CPC COOPERATIVE PATENT CLASSIFICATION

G PHYSICS (NOTES omitted)

INSTRUMENTS

G01 MEASURING; TESTING (NOTES omitted)

G01K MEASURING TEMPERATURE; MEASURING QUANTITY OF HEAT; THERMALLY-SENSITIVE ELEMENTS NOT OTHERWISE PROVIDED FOR (sensing temperature changes for compensating measurements of other variables for compensating readings of instruments for variation in temperature, see [G01D](#) or relevant subclasses for variable measured; radiation pyrometry [G01J](#); investigating or analysing materials by use of thermal means [G01N 25/00](#); compound sensitive elements, e.g. bimetallic, [G12B 1/02](#))

NOTES

1. In this subclass, the following term is used with the meaning indicated :
 - "thermometer" includes thermally-sensitive elements not provided for in other subclasses.
2. Attention is drawn to the Notes following the title of class [G01](#).
3. Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "microstructural devices" and "microstructural systems".

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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| 1/00 | Details of thermometers not specially adapted for particular types of thermometer (circuits for reducing thermal inertia G01K 7/42) | 1/146 | • • {arrangements for moving thermometers to or from a measuring position} |
| 1/02 | • Special applications of indicating or recording means, e.g. for remote indications | 1/16 | • Special arrangements for conducting heat from the object to the sensitive element |
| 1/022 | • • {recording means} | 1/165 | • • {for application in zero heat flux sensors} |
| 1/024 | • • {for remote indication (remote indication per se G08C)} | 1/18 | • • for reducing thermal inertia |
| 1/026 | • • {arrangements for monitoring a plurality of temperatures, e.g. by multiplexing} | 1/20 | • Compensating for effects of temperature changes other than those to be measured, e.g. changes in ambient temperature |
| 1/028 | • • {arrangements for numerical indication} | 1/22 | • • by means of fluid contained in a hollow body having parts which are deformable or displaceable under the pressure developed by the fluid |
| 1/04 | • • Scales | 1/24 | • • by means of compounded strips or plates, e.g. by bimetallic strips |
| 1/045 | • • • {temperature indication combined with the indication of another variable (indicating of human comfort G01W 1/17)} | 1/26 | • Compensating for effects of pressure changes |
| 1/06 | • • • Arrangements for facilitating reading, e.g. illumination, magnifying glass | 3/00 | Thermometers giving results other than momentary value of temperature (G01K 7/42 takes precedence) |
| 1/065 | • • • • {of liquid column thermometers} | 3/005 | • {Circuits arrangements for indicating a predetermined temperature (fire detection G08B 17/00)} |
| 1/08 | • Protective devices, e.g. casings | 3/02 | • giving means values; giving integrated values |
| 1/083 | • • {for clinical thermometers, e.g. contamination preventing sleeves} | 3/04 | • • in respect of time |
| 1/086 | • • • {for tympanic thermometers} | 3/06 | • • in respect of space |
| 1/10 | • • for preventing chemical attack | 3/08 | • giving differences of values (using thermoelectric elements G01K 7/02); giving differentiated values |
| 1/105 | • • • {for siderurgical use} | 3/10 | • • in respect of time, e.g. reacting only to a quick change of temperature |
| 1/12 | • • for preventing damage due to heat overloading | | |
| 1/125 | • • • {for siderurgical use} | | |
| 1/14 | • Supports; Fastening devices; Mounting thermometers in particular locations | | |
| 1/143 | • • {for measuring surface temperatures, e.g. of pipe walls} | | |

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| 3/12 | . . . based upon expansion or contraction of materials | 5/48 | . the material being a solid |
| 3/14 | . . in respect of space | 5/483 | . . {using materials with a configuration memory, e.g. Ni-Ti alloys} |
| 2003/145 | . . . {Hotspot localization} | 5/486 | . . {using microstructures, e.g. made of silicon (G01K 7/015, G01K 7/028, G01K 7/226, G01K 17/006 take precedence)} |
| 5/00 | Measuring temperature based on the expansion or contraction of a material (G01K 9/00 takes precedence; giving other than momentary value of temperature G01K 3/00; of vapour arising from a liquid G01K 11/02; thermally-actuated switches H01H) | 5/50 | . . arranged for free expansion or contraction |
| 5/02 | . the material being a liquid (contained in a hollow body having parts which are deformable or displaceable under the pressure developed by the material G01K 5/32) | 5/52 | . . . with electrical conversion means for final indication |
| 5/025 | . . {Manufacturing of this particular type of thermometer} | 5/54 | . . consisting of pivotally-connected elements |
| 5/04 | . . Details | 5/56 | . . constrained so that expansion or contraction causes a deformation of the solid |
| 5/06 | . . . Arrangements for driving back the liquid column | 5/58 | . . . the solid body being constrained at more than one point, e.g. rod, plate, diaphragm (G01K 5/62 takes precedence) |
| 5/08 | . . . Capillary tubes | 5/60 | the body being a flexible wire or ribbon |
| 5/10 | . . . Containers for the liquid | 5/62 | . . . the solid body being formed of compounded strips or plates, e.g. bimetallic strip |
| 5/12 | . . . Selection of liquid compositions | 5/64 | Details of the compounds system |
| 5/14 | . . the liquid displacing a further liquid column or a solid body (for maximum or minimum indication G01K 5/20) | 5/66 | Selection of composition of the components of the system |
| 5/16 | . . with electric contacts | 5/68 | Shape of the system |
| 5/18 | . . with electric conversion means for final indication | 5/70 | specially adapted for indicating or recording |
| 5/20 | . . with means for indicating a maximum or a minimum or both (G01K 5/22 takes precedence) | 5/72 | with electric transmission means for final indication |
| 5/22 | . . with provision for expansion indicating over not more than a few degrees, e.g. clinical thermometer | 7/00 | Measuring temperature based on the use of electric or magnetic elements directly sensitive to heat (giving results other than momentary value of temperature G01K 3/00; measuring electric or magnetic variables G01R); {Power supply, e.g. by thermoelectric elements} |
| 5/225 | . . . {with means for indicating a maximum, e.g. a constriction in the capillary tube} | 7/003 | . {using pyroelectric elements (radiation pyrometers G01J 5/00)} |
| 5/24 | . . with provision for measuring the difference between two temperatures | 7/006 | . {using superconductive elements} |
| 5/26 | . . with provision for adjusting zero point of scale, e.g. Beckmann thermometer | 7/01 | . using semiconducting elements having PN junctions (G01K 7/02, G01K 7/16, G01K 7/30 take precedence) |
| 5/28 | . the material being a gas (contained in a hollow body having parts which are deformable or displaceable under the pressure developed by the material G01K 5/32) | 7/015 | . . {using microstructures, e.g. made of silicon} |
| 5/30 | . . the gas displacing a liquid column | 7/02 | . using thermoelectric elements, e.g. thermocouples ({cooling arrangements in electronic devices using the Peltier effect H01L 23/38; thermo-electric or thermo-magnetic devices per se H01L 35/00, H01L 37/00}) |
| 5/32 | . the material being a fluid contained in a hollow body having parts which are deformable or displaceable (under pressure developed by evaporation G01K 11/04; pressure measuring devices in general G01L) | 7/021 | . . {Particular circuit arrangements (G01K 7/026, G01K 7/12, G01K 7/14 take precedence)} |
| 5/323 | . . {Selection of fluid compositions} | 7/023 | . . {provided with specially adapted connectors (connectors per se H01R)} |
| 5/326 | . . {using a fluid container connected to the deformable body by means of a capillary tube} | 7/025 | . . {expendable thermocouples} |
| 5/34 | . . the body being a capsule (G01K 5/36, G01K 5/42 take precedence) | 7/026 | . . {Arrangements for signalling rupture or disconnection of the thermocouple} |
| 5/36 | . . the body being a tubular spring, e.g. Bourdon tube | 7/028 | . . {using microstructures, e.g. made of silicon} |
| 5/38 | . . . of spiral formation | 7/04 | . . the object to be measured not forming one of the thermo-electric materials |
| 5/40 | . . . of helical formation | 7/06 | . . . the thermo-electric materials being arranged one within the other with the junction at one end exposed to the object, e.g. sheathed type |
| 5/42 | . . the body being a bellows | 7/08 | . . the object to be measured forming one of the thermo-electric materials, e.g. pointed type |
| 5/44 | . . the body being a cylinder and piston | 7/10 | . . Arrangements for compensating for auxiliary variables, e.g. length of lead |
| 5/46 | . . with electric conversion means for final indication | 7/12 | . . . Arrangements with respect to the cold junction, e.g. preventing influence of temperature of surrounding air |
| 5/465 | . . . {using electrical contact making or breaking devices} | | |

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| 7/13 | Circuits for cold-junction compensation | 11/006 | . {using measurement of the effect of a material on microwaves or longer electromagnetic waves, e.g. measuring temperature via microwaves emitted by the object (G01K 17/003 , G01J 5/00 take precedence; measuring the effect of a material on X-, gamma- or particle radiation G01K 11/30)} |
| 7/14 | . . Arrangements for modifying the output characteristic, e.g. linearising | 11/02 | . using evaporation or sublimation, e.g. by observing boiling |
| 7/16 | . using resistive elements (resistive elements per se H01C , H01L) | 11/04 | . . from material contained in a hollow body having parts which are deformable or displaceable under the pressure developed by the vapour |
| 2007/163 | . . {provided with specially adapted connectors} | 11/06 | . using melting, freezing, or softening |
| 2007/166 | . . {Electrical time domain reflectometry} | 11/08 | . . of disposable test bodies, e.g. cone |
| 7/18 | . . the element being a linear resistance, e.g. platinum resistance thermometer (G01K 7/26 takes precedence) | 11/10 | . using sintering |
| 7/183 | . . . {characterised by the use of the resistive element} | 11/12 | . using change of colour or translucency (G01K 11/32 takes precedence; heat-sensitive sheets for use in thermography B41M 5/00 ; {tenebrescent compositions C09K 9/00 }) |
| 7/186 | . . . {using microstructures} | 11/125 | . . {using change in reflectance} |
| 7/20 | . . . in a specially-adapted circuit, e.g. bridge circuit | 11/14 | . . of inorganic materials |
| 7/203 | {in an oscillator circuit} | 11/16 | . . of organic materials |
| 7/206 | {in a potentiometer circuit} | 11/165 | . . . {liquid crystals (liquid crystal compositions C09K 19/00 ; electro-optic liquid crystals G02F 1/13)} |
| 7/21 | for modifying the output characteristic, e.g. linearising | 11/18 | . . of materials which change translucency |
| 7/22 | . . the element being a non-linear resistance, e.g. thermistor (G01K 7/26 takes precedence) | 11/20 | . using thermoluminescent materials (G01K 11/32 takes precedence) |
| 7/223 | . . . {characterised by the shape of the resistive element} | 11/22 | . using measurement of acoustic effects |
| 7/226 | . . . {using microstructures, e.g. silicon spreading resistance} | 11/24 | . . of the velocity of propagation of sound |
| 7/24 | . . . in a specially-adapted circuit, e.g. bridge circuit | 11/26 | . . of resonant frequencies |
| 7/245 | {in an oscillator circuit} | 11/265 | . . . {using surface acoustic wave [SAW]} |
| 7/25 | for modifying the output characteristic, e.g. linearising | 11/28 | . using measurements of density {(measuring density in general G01N 9/00)} |
| 7/26 | . . the element being an electrolyte | 11/30 | . using measurement of the effect of a material on X-radiation, gamma radiation or particle radiation |
| 7/28 | . . . in a specially-adapted circuit, e.g. bridge circuit | 11/32 | . using changes in transmission, scattering or fluorescence in optical fibres {(in general G01D 5/268)} |
| 7/30 | . using thermal noise of resistances or conductors | 11/3206 | . . {at discrete locations in the fibre, e.g. by means of Bragg gratings} |
| 7/32 | . using change of resonant frequency of a crystal | 11/3213 | . . . {using changes in fluorescence, e.g. at the distal end of the fibre} |
| 7/34 | . using capacitive elements (capacitors per se H01G) | 2011/322 | . . {using Brillouin scattering} |
| 7/343 | . . {the dielectric constant of which is temperature dependant} | 2011/324 | . . {using Raman scattering} |
| 7/346 | . . {for measuring temperature based on the time delay of a signal through a series of logical ports} | 13/00 | Adaptations of thermometers for specific purposes |
| 7/36 | . using magnetic elements, e.g. magnets, coils (magnetic elements per se H01F) | 13/002 | . {for measuring body temperature (G01K 5/22 takes precedence; for prediction aspects G01K 7/42 ; diagnostic temperature sensing A61M 39/0247)} |
| 7/38 | . . the variations of temperature influencing the magnetic permeability | 13/004 | . . {Infrared clinical thermometers, e.g. tympanic} |
| 7/40 | . using ionisation of gases | 13/006 | . {for cryogenic purposes} |
| 7/42 | . Circuits for reducing thermal inertia; Circuits for predicting the stationary value of temperature | 13/008 | . . {using microstructures, e.g. made of silicon} |
| 2007/422 | . . {Dummy objects used for estimating temperature of real objects} | 13/02 | . for measuring temperature of moving fluids or granular materials capable of flow |
| 7/425 | . . {Thermal management of integrated systems} | 13/022 | . . {Suction thermometers} |
| 7/427 | . . {Temperature calculation based on spatial modeling, e.g. spatial inter- or extrapolation} | 2013/024 | . . {Moving gas} |
| 9/00 | Measuring temperature based on movements caused by redistribution of weight, e.g. tilting thermometer (not giving momentary value of temperature G01K 3/00) | 2013/026 | . . {Moving liquid} |
| 11/00 | Measuring temperature based upon physical or chemical changes not covered by groups G01K 3/00, G01K 5/00, G01K 7/00 or G01K 9/00 | 13/028 | . . {for use in total air temperature [TAT] probes} |
| 11/003 | . {using absorption or generation of gas, e.g. hydrogen} | 13/04 | . for measuring temperature of moving solid bodies |
| | | 13/06 | . . in linear movement |
| | | 13/08 | . . in rotary movement |

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| 13/10 | <ul style="list-style-type: none"> for measuring temperature within piled or stacked materials (by special arrangements for conducting heat from the object to the sensitive heat element G01K 1/16) | 2203/00 | Application of thermometers in cryogenics |
| 13/12 | <ul style="list-style-type: none"> combined with sampling devices for measuring temperatures of samples of materials | 2205/00 | Application of thermometers in motors, e.g. of a vehicle |
| 13/125 | <ul style="list-style-type: none"> . . {for siderurgical purposes} | 2205/02 | <ul style="list-style-type: none"> for measuring inlet gas temperature |
| 15/00 | Testing or calibrating of thermometers | 2205/04 | <ul style="list-style-type: none"> for measuring exhaust gas temperature |
| 15/002 | <ul style="list-style-type: none"> {Calibrated temperature sources, temperature standards therefor (arrangements with respect to the cold junction of thermo-electric elements G01K 7/12)} | 2207/00 | Application of thermometers in household appliances |
| 15/005 | <ul style="list-style-type: none"> {Calibration} | 2207/02 | <ul style="list-style-type: none"> for measuring food temperature |
| 15/007 | <ul style="list-style-type: none"> {Testing} | 2207/04 | <ul style="list-style-type: none"> . . for conservation purposes |
| 17/00 | Measuring quantity of heat (measuring temperature by calorimetry G01K 3/00 - G01K 11/00 ; specially adapted for measuring thermal properties of materials, e.g. specific heat, heat of combustion G01N) | 2207/06 | <ul style="list-style-type: none"> . . for preparation purposes |
| 17/003 | <ul style="list-style-type: none"> {for measuring the power of light beams, e.g. laser beams} | 2207/08 | <ul style="list-style-type: none"> . . with food recipients having temperature sensing capability |
| 17/006 | <ul style="list-style-type: none"> {Microcalorimeters, e.g. using silicon microstructures} | 2211/00 | Thermometers based on nanotechnology |
| 17/02 | <ul style="list-style-type: none"> Calorimeters using transport of an indicating substances, e.g. evaporation calorimeters | 2213/00 | Temperature mapping |
| 17/025 | <ul style="list-style-type: none"> . . {where evaporation, sublimation or condensation caused by heating or cooling, is measured} | 2215/00 | Details concerning sensor power supply |
| 17/04 | <ul style="list-style-type: none"> Calorimeters using compensation methods {, i.e. where the absorbed or released quantity of heat to be measured is compensated by a measured quantity of heating or cooling} | 2217/00 | Temperature measurement using electric or magnetic components already present in the system to be measured |
| 17/06 | <ul style="list-style-type: none"> Measuring quantity of heat conveyed by flowing media, e.g. in heating systems (G01K 17/02, G01K 17/04 take precedence) {e.g. the quantity of heat in a transporting medium, delivered to or consumed in an expenditure device} | 2219/00 | Thermometers with dedicated analog to digital converters |
| 17/08 | <ul style="list-style-type: none"> . . based upon measurement of temperature difference {or of a temperature} | | |
| 17/10 | <ul style="list-style-type: none"> . . . between an inlet and an outlet point, combined with measurement of rate of flow of the medium {if such, by integration during a certain time-interval} | | |
| 17/12 | <ul style="list-style-type: none"> Indicating product of flow and temperature difference directly {or temperature} | | |
| 17/14 | <ul style="list-style-type: none"> using mechanical means for both measurements | | |
| 17/16 | <ul style="list-style-type: none"> using electrical {or magnetic} means for both measurements | | |
| 17/18 | <ul style="list-style-type: none"> using electrical {or magnetic} means for one measurement and mechanical means for the other | | |
| 17/185 | <ul style="list-style-type: none"> {where the indicating-instrument is driven electrically or magnetically by the temperature-measurement device and mechanically by the flow-measurement device} | | |
| 17/20 | <ul style="list-style-type: none"> . . . across a radiating surface, combined with ascertainment of the heat transmission coefficient {materials therefor G01K 17/08} | | |
| 19/00 | Testing or calibrating calorimeters | | |
| 2201/00 | Application of thermometers in air-conditioning systems | | |
| 2201/02 | <ul style="list-style-type: none"> in vehicles | | |