

# CPC COOPERATIVE PATENT CLASSIFICATION

## G PHYSICS (NOTES omitted)

### INSTRUMENTS

#### G01 MEASURING (counting [G06M](#)); 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".

<b>1/00</b>	<b>Details of thermometers not specially adapted for particular types of thermometer (circuits for reducing thermal inertia <a href="#">G01K 7/42</a>)</b>	1/18	• . for reducing thermal inertia
1/02	• Special applications of indicating or recording means, e.g. for remote indications	1/20	• Compensating for effects of temperature changes other than those to be measured, e.g. changes in ambient temperature
1/022	• . {recording means}	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
1/024	• . {for remote indication (remote indication per se <a href="#">G08C</a> )}	1/24	• . by means of compounded strips or plates, e.g. by bimetallic strips
1/026	• . {arrangements for monitoring a plurality of temperatures, e.g. by multiplexing}	1/26	• Compensating for effects of pressure changes
1/028	• . {arrangements for numerical indication}	<b>3/00</b>	<b>Thermometers giving results other than momentary value of temperature (<a href="#">G01K 7/42</a> takes precedence)</b>
1/04	• . Scales	3/005	• {Circuits arrangements for indicating a predetermined temperature (fire detection <a href="#">G08B 17/00</a> )}
1/045	• . . {temperature indication combined with the indication of another variable (indicating of human comfort <a href="#">G01W 1/17</a> )}	3/02	• giving means values; giving integrated values
1/06	• . . . Arrangements for facilitating reading, e.g. illumination, magnifying glass	3/04	• . in respect of time
1/065	• . . . {of liquid column thermometers}	3/06	• . in respect of space
1/08	• Protective devices, e.g. casings	3/08	• giving differences of values (using thermoelectric elements <a href="#">G01K 7/02</a> ); giving differentiated values
1/083	• . {for clinical thermometers, e.g. contamination preventing sleeves}	3/10	• . in respect of time, e.g. reacting only to a quick change of temperature
1/086	• . . {for tympanic thermometers}	3/12	• . . based upon expansion or contraction of materials
1/10	• . for preventing chemical attack	3/14	• . in respect of space
1/105	• . . {for siderurgical use}	2003/145	• . . {Hotspot localization}
1/12	• . for preventing damage due to heat overloading	<b>5/00</b>	<b>Measuring temperature based on the expansion or contraction of a material (<a href="#">G01K 9/00</a> takes precedence; giving other than momentary value of temperature <a href="#">G01K 3/00</a>; of vapour arising from a liquid <a href="#">G01K 11/02</a>; thermally-actuated switches <a href="#">H01H</a>)</b>
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}		
1/146	• . {arrangements for moving thermometers to or from a measuring position}		
1/16	• Special arrangements for conducting heat from the object to the sensitive element		
1/165	• . {for application in zero heat flux sensors}		

- 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](#))
- 5/025 . . {Manufacturing of this particular type of thermometer}
- 5/04 . . Details
- 5/06 . . . Arrangements for driving back the liquid column
- 5/08 . . . Capillary tubes
- 5/10 . . . Containers for the liquid
- 5/12 . . . Selection of liquid compositions
- 5/14 . . the liquid displacing a further liquid column or a solid body ([for maximum or minimum indication G01K 5/20](#))
- 5/16 . . with electric contacts
- 5/18 . . with electric conversion means for final indication
- 5/20 . . with means for indicating a maximum or a minimum or both ([G01K 5/22 takes precedence](#))
- 5/22 . . with provision for expansion indicating over not more than a few degrees, e.g. clinical thermometer
- 5/225 . . . {with means for indicating a maximum, e.g. a constriction in the capillary tube}
- 5/24 . . with provision for measuring the difference between two temperatures
- 5/26 . . with provision for adjusting zero point of scale, e.g. Beckmann thermometer
- 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](#))
- 5/30 . . the gas displacing a liquid column
- 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](#))
- 5/323 . . {Selection of fluid compositions}
- 5/326 . . {using a fluid container connected to the deformable body by means of a capillary tube}
- 5/34 . . the body being a capsule ([G01K 5/36, G01K 5/42 take precedence](#))
- 5/36 . . the body being a tubular spring, e.g. Bourdon tube
- 5/38 . . . of spiral formation
- 5/40 . . . of helical formation
- 5/42 . . the body being a bellows
- 5/44 . . the body being a cylinder and piston
- 5/46 . . with electric conversion means for final indication
- 5/465 . . . {using electrical contact making or breaking devices}
- 5/48 . . the material being a solid
- 5/483 . . {using materials with a configuration memory, e.g. Ni-Ti alloys}
- 5/486 . . {using microstructures, e.g. made of silicon ([G01K 7/015, G01K 7/028, G01K 7/226, G01K 17/006 take precedence](#))}
- 5/50 . . arranged for free expansion or contraction
- 5/52 . . . with electrical conversion means for final indication
- 5/54 . . consisting of pivotally-connected elements
- 5/56 . . constrained so that expansion or contraction causes a deformation of the solid
- 5/58 . . . the solid body being constrained at more than one point, e.g. rod, plate, diaphragm ([G01K 5/62 takes precedence](#))
- 5/60 . . . . the body being a flexible wire or ribbon
- 5/62 . . . the solid body being formed of compounded strips or plates, e.g. bimetallic strip
- 5/64 . . . . Details of the compounds system
- 5/66 . . . . Selection of composition of the components of the system
- 5/68 . . . . Shape of the system
- 5/70 . . . . specially adapted for indicating or recording
- 5/72 . . . . with electric transmission means for final indication
- 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}**
- 7/003 . . {using pyroelectric elements ([radiation pyrometers G01J 5/00](#))}
- 7/006 . . {using superconductive elements}
- 7/01 . . using semiconducting elements having PN junctions ([G01K 7/02, G01K 7/16, G01K 7/30 take precedence](#))
- 7/015 . . {using microstructures, e.g. made of silicon}
- 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](#))
- 7/021 . . . {Particular circuit arrangements ([G01K 7/026, G01K 7/12, G01K 7/14 take precedence](#))}
- 7/023 . . . {provided with specially adapted connectors ([connectors per se H01R](#))}
- 7/025 . . . {expendable thermocouples}
- 7/026 . . . {Arrangements for signalling rupture or disconnection of the thermocouple}
- 7/028 . . . {using microstructures, e.g. made of silicon}
- 7/04 . . the object to be measured not forming one of the thermo-electric materials
- 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
- 7/08 . . the object to be measured forming one of the thermo-electric materials, e.g. pointed type
- 7/10 . . Arrangements for compensating for auxiliary variables, e.g. length of lead
- 7/12 . . . Arrangements with respect to the cold junction, e.g. preventing influence of temperature of surrounding air
- 7/13 . . . . Circuits for cold-junction compensation
- 7/14 . . Arrangements for modifying the output characteristic, e.g. linearising
- 7/16 . . using resistive elements ([resistive elements per se H01C, H01L](#))
- 2007/163 . . . {provided with specially adapted connectors}
- 2007/166 . . . {Electrical time domain reflectometry}
- 7/18 . . the element being a linear resistance, e.g. platinum resistance thermometer ([G01K 7/26 takes precedence](#))

7/183	. . . {characterised by the use of the resistive element}	11/12	. . using change of colour or translucency ( <a href="#">G01K 11/32</a> takes precedence; heat-sensitive sheets for use in thermography <a href="#">B41M 5/00</a> ; {tenebrescent compositions <a href="#">C09K 9/00</a> })
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 <a href="#">C09K 19/00</a> ; electro-optic liquid crystals <a href="#">G02F 1/13</a> )}
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 ( <a href="#">G01K 7/26</a> takes precedence)	11/20	. . using thermoluminescent materials ( <a href="#">G01K 11/32</a> 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 <a href="#">G01N 9/00</a> )}
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 <a href="#">G01D 5/268</a> )}
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 ( <a href="#">capacitors per se H01G</a> )	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}	<b>13/00</b>	<b>Adaptations of thermometers for specific purposes</b>
7/36	. . using magnetic elements, e.g. magnets, coils ( <a href="#">magnetic elements per se H01F</a> )	13/002	. . {for measuring body temperature ( <a href="#">G01K 5/22</a> takes precedence; for prediction aspects <a href="#">G01K 7/42</a> ; diagnostic temperature sensing <a href="#">A61M 39/0247</a> )}
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}
<b>9/00</b>	<b>Measuring temperature based on movements caused by redistribution of weight, e.g. tilting thermometer (not giving momentary value of temperature <a href="#">G01K 3/00</a>)</b>	2013/026	. . {Moving liquid}
<b>11/00</b>	<b>Measuring temperature based upon physical or chemical changes not covered by groups <a href="#">G01K 3/00</a>, <a href="#">G01K 5/00</a>, <a href="#">G01K 7/00</a> or <a href="#">G01K 9/00</a></b>	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
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 ( <a href="#">G01K 17/003</a> , <a href="#">G01J 5/00</a> take precedence; measuring the effect of a material on X-, gamma- or particle radiation <a href="#">G01K 11/30</a> )}	13/06	. . in linear movement
11/02	. . using evaporation or sublimation, e.g. by observing boiling	13/08	. . in rotary movement
11/04	. . from material contained in a hollow body having parts which are deformable or displaceable under the pressure developed by the vapour	13/10	. . for measuring temperature within piled or stacked materials (by special arrangements for conducting heat from the object to the sensitive heat element <a href="#">G01K 1/16</a> )
11/06	. . using melting, freezing, or softening	13/12	. . combined with sampling devices for measuring temperatures of samples of materials
11/08	. . of disposable test bodies, e.g. cone	13/125	. . {for siderurgical purposes}
11/10	. . using sintering	<b>15/00</b>	<b>Testing or calibrating of thermometers</b>
		15/002	. . {Calibrated temperature sources, temperature standards therefor (arrangements with respect to the cold junction of thermo-electric elements <a href="#">G01K 7/12</a> )}
		15/005	. . {Calibration}
		15/007	. . {Testing}

<b>17/00</b>	<b>Measuring quantity of heat</b> (measuring temperature by calorimetry <a href="#">G01K 3/00</a> - <a href="#">G01K 11/00</a> ; specially adapted for measuring thermal properties of materials, e.g. specific heat, heat of combustion <a href="#">G01N</a> )	<b>2211/00</b>	<b>Thermometers based on nanotechnology</b>
17/003	. {for measuring the power of light beams, e.g. laser beams}	<b>2213/00</b>	<b>Temperature mapping</b>
17/006	. {Microcalorimeters, e.g. using silicon microstructures}	<b>2215/00</b>	<b>Details concerning sensor power supply</b>
17/02	. Calorimeters using transport of an indicating substances, e.g. evaporation calorimeters	<b>2217/00</b>	<b>Temperature measurement using electric or magnetic components already present in the system to be measured</b>
17/025	. . {where evaporation, sublimation or condensation caused by heating or cooling, is measured}	<b>2219/00</b>	<b>Thermometers with dedicated analog to digital converters</b>
17/04	. 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}		
17/06	. Measuring quantity of heat conveyed by flowing media, e.g. in heating systems ( <a href="#">G01K 17/02</a> , <a href="#">G01K 17/04</a> take precedence) {e.g. the quantity of heat in a transporting medium, delivered to or consumed in an expenditure device}		
17/08	. . based upon measurement of temperature difference {or of a temperature}		
17/10	. . . 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	. . . . Indicating product of flow and temperature difference directly {or temperature}		
17/14	. . . . . using mechanical means for both measurements		
17/16	. . . . . using electrical {or magnetic} means for both measurements		
17/18	. . . . . using electrical {or magnetic} means for one measurement and mechanical means for the other		
17/185	. . . . . {where the indicating-instrument is driven electrically or magnetically by the temperature-measurement device and mechanically by the flow-measurement device}		
17/20	. . . across a radiating surface, combined with ascertainment of the heat transmission coefficient {(materials therefor <a href="#">G01K 17/08</a> )}		
<b>19/00</b>	<b>Testing or calibrating calorimeters</b>		
<b>2201/00</b>	<b>Application of thermometers in air-conditioning systems</b>		
2201/02	. in vehicles		
<b>2203/00</b>	<b>Application of thermometers in cryogenics</b>		
<b>2205/00</b>	<b>Application of thermometers in motors, e.g. of a vehicle</b>		
2205/02	. for measuring inlet gas temperature		
2205/04	. for measuring exhaust gas temperature		
<b>2207/00</b>	<b>Application of thermometers in household appliances</b>		
2207/02	. for measuring food temperature		
2207/04	. . for conservation purposes		
2207/06	. . for preparation purposes		
2207/08	. . with food recipients having temperature sensing capability		