

# 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.

<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>	1/146	• • {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 <a href="#">G08C</a> )}	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 <a href="#">G01W 1/17</a> )}	1/26	• Compensating for effects of pressure changes
1/06	• • • Arrangements for facilitating reading, e.g. illumination, magnifying glass	<b>3/00</b>	<b>Thermometers giving results other than momentary value of temperature (<a href="#">G01K 7/42</a> takes precedence)</b>
1/065	• • • • {of liquid column thermometers}	3/005	• {Circuits arrangements for indicating a predetermined temperature (fire detection <a href="#">G08B 17/00</a> )}
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 <a href="#">G01K 7/02</a> ); 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}		

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)}
<b>5/00</b>	<b>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)</b>	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	<b>7/00</b>	<b>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}</b>
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}		

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 ( <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> )}
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 ( <a href="#">resistive elements per se H01C</a> , <a href="#">H01L</a> )	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 ( <a href="#">G01K 7/26</a> takes precedence)	11/10	. using sintering
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
		13/06	. . in linear movement
		13/08	. . in rotary movement

13/10	<ul style="list-style-type: none"> <li>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>)</li> </ul>	2203/00	Application of thermometers in cryogenics
13/12	<ul style="list-style-type: none"> <li>combined with sampling devices for measuring temperatures of samples of materials</li> </ul>	2205/00	Application of thermometers in motors, e.g. of a vehicle
13/125	<ul style="list-style-type: none"> <li>. . {for siderurgical purposes}</li> </ul>	2205/02	<ul style="list-style-type: none"> <li>for measuring inlet gas temperature</li> </ul>
15/00	Testing or calibrating of thermometers	2205/04	<ul style="list-style-type: none"> <li>for measuring exhaust gas temperature</li> </ul>
15/002	<ul style="list-style-type: none"> <li>{Calibrated temperature sources, temperature standards therefor (arrangements with respect to the cold junction of thermo-electric elements <a href="#">G01K 7/12</a>)}</li> </ul>	2207/00	Application of thermometers in household appliances
15/005	<ul style="list-style-type: none"> <li>{Calibration}</li> </ul>	2207/02	<ul style="list-style-type: none"> <li>for measuring food temperature</li> </ul>
15/007	<ul style="list-style-type: none"> <li>{Testing}</li> </ul>	2207/04	<ul style="list-style-type: none"> <li>. . for conservation purposes</li> </ul>
17/00	Measuring quantity of heat (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> )	2207/06	<ul style="list-style-type: none"> <li>. . for preparation purposes</li> </ul>
17/003	<ul style="list-style-type: none"> <li>{for measuring the power of light beams, e.g. laser beams}</li> </ul>	2207/08	<ul style="list-style-type: none"> <li>. . with food recipients having temperature sensing capability</li> </ul>
17/006	<ul style="list-style-type: none"> <li>{Microcalorimeters, e.g. using silicon microstructures}</li> </ul>	2211/00	Thermometers based on nanotechnology
17/02	<ul style="list-style-type: none"> <li>Calorimeters using transport of an indicating substances, e.g. evaporation calorimeters</li> </ul>	2213/00	Temperature mapping
17/025	<ul style="list-style-type: none"> <li>. . {where evaporation, sublimation or condensation caused by heating or cooling, is measured}</li> </ul>	2215/00	Details concerning sensor power supply
17/04	<ul style="list-style-type: none"> <li>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}</li> </ul>	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"> <li>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}</li> </ul>	2219/00	Thermometers with dedicated analog to digital converters
17/08	<ul style="list-style-type: none"> <li>. . based upon measurement of temperature difference {or of a temperature}</li> </ul>		
17/10	<ul style="list-style-type: none"> <li>. . . 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}</li> </ul>		
17/12	<ul style="list-style-type: none"> <li>. . . . Indicating product of flow and temperature difference directly {or temperature}</li> </ul>		
17/14	<ul style="list-style-type: none"> <li>. . . . . using mechanical means for both measurements</li> </ul>		
17/16	<ul style="list-style-type: none"> <li>. . . . . using electrical {or magnetic} means for both measurements</li> </ul>		
17/18	<ul style="list-style-type: none"> <li>. . . . . using electrical {or magnetic} means for one measurement and mechanical means for the other</li> </ul>		
17/185	<ul style="list-style-type: none"> <li>. . . . . {where the indicating-instrument is driven electrically or magnetically by the temperature-measurement device and mechanically by the flow-measurement device}</li> </ul>		
17/20	<ul style="list-style-type: none"> <li>. . . across a radiating surface, combined with ascertainment of the heat transmission coefficient {<a href="#">materials therefor G01K 17/08</a>}</li> </ul>		
19/00	Testing or calibrating calorimeters		
2201/00	Application of thermometers in air-conditioning systems		
2201/02	<ul style="list-style-type: none"> <li>in vehicles</li> </ul>		