

# CPC COOPERATIVE PATENT CLASSIFICATION

**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 "micro-structural devices" and "micro-structural systems".

<b>1/00</b>	<b>Details of thermometers not specially adapted for particular types of thermometer</b> ( <a href="#">circuits for reducing thermal inertia G01K 7/42</a> )	1/24	. . by means of compounded strips or plates, e.g. by bimetallic strips
1/02	. Special applications of indicating or recording means, e.g. for remote indications	1/26	. Compensating for effects of pressure changes
1/022	. . {recording means}	<b>3/00</b>	<b>Thermometers giving results other than momentary value of temperature</b> ( <a href="#">G01K 7/42</a> takes precedence)
1/024	. . {for remote indication ( <a href="#">remote indication per se G08C</a> )}	3/005	. {Circuits arrangements for indicating a predetermined temperature ( <a href="#">fire detection G08B 17/00</a> )}
1/026	. . {arrangements for monitoring a plurality of temperatures, e.g. by multiplexing}	3/02	. giving means values; giving integrated values
1/028	. . {arrangements for numerical indication}	3/04	. . in respect of time
1/04	. . Scales	3/06	. . in respect of space
1/045	. . . {temperature indication combined with the indication of another variable ( <a href="#">indicating of human comfort G01W 1/17</a> )}	3/08	. giving differences of values ( <a href="#">using thermoelectric elements G01K 7/02</a> ); giving differentiated values
1/06	. . . Arrangements for facilitating reading, e.g. illumination, magnifying glass	3/10	. . in respect of time, e.g. reacting only to a quick change of temperature
1/065	. . . . {of liquid column thermometers}	3/12	. . . based upon expansion or contraction of materials
1/08	. Protective devices, e.g. casings	3/14	. . in respect of space
1/083	. . {for clinical thermometers, e.g. contamination preventing sleeves}	2003/145	. . . {Hotspot localization}
1/086	. . . {for tympanic thermometers}	<b>5/00</b>	<b>Measuring temperature based on the expansion or contraction of a material</b> ( <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> )
1/10	. . for preventing chemical attack	5/02	. the material being a liquid ( <a href="#">contained in a hollow body having parts which are deformable or displaceable under the pressure developed by the material G01K 5/32</a> )
1/105	. . . {for siderurgical use}	5/025	. . {Manufacturing of this particular type of thermometer}
1/12	. . for preventing damage due to heat overloading	5/04	. . Details
1/125	. . . {for siderurgical use}	5/06	. . . Arrangements for driving back the liquid column
1/14	. Supports; Fastening devices; Mounting thermometers in particular locations	5/08	. . . Capillary tubes
1/143	. . {for measuring surface temperatures, e.g. of pipe walls}	5/10	. . . Containers for the liquid
1/146	. . {arrangements for moving thermometers to or from a measuring position}	5/12	. . . Selection of liquid compositions
1/16	. Special arrangements for conducting heat from the object to the sensitive element	5/14	. . the liquid displacing a further liquid column or a solid body ( <a href="#">for maximum or minimum indication G01K 5/20</a> )
1/165	. . {for application in zero heat flux sensors}	5/16	. . with electric contacts
1/18	. . for reducing thermal inertia		
1/20	. Compensating for effects of temperature changes other than those to be measured, e.g. changes in ambient temperature		
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		

5/18	. . with electric conversion means for final indication	7/00	<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>
5/20	. . with means for indicating a maximum or a minimum or both (G01K 5/22 takes precedence)	7/003	. . {using pyroelectric elements (radiation pyrometers G01J 5/00)}
5/22	. . with provision for expansion indicating over not more than a few degrees, e.g. clinical thermometer	7/006	. . {using superconductive elements}
5/225	. . . {with means for indicating a maximum, e.g. a constriction in the capillary tube}	7/01	. . using semiconducting elements having PN junctions (G01K 7/02, G01K 7/16, G01K 7/30 take precedence)
5/24	. . with provision for measuring the difference between two temperatures	7/015	. . {using microstructures, e.g. made of silicon}
5/26	. . with provision for adjusting zero point of scale, e.g. Beckmann thermometer	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)
5/28	. 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)	7/021	. . {Particular circuit arrangements (G01K 7/026, G01K 7/12, G01K 7/14 take precedence)}
5/30	. . the gas displacing a liquid column	7/023	. . {provided with specially adapted connectors (connectors per se H01R)}
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)	7/025	. . {expendable thermocouples}
5/323	. . {Selection of fluid compositions}	7/026	. . {Arrangements for signalling rupture or disconnection of the thermocouple}
5/326	. . {using a fluid container connected to the deformable body by means of a capillary tube}	7/028	. . {using microstructures, e.g. made of silicon}
5/34	. . the body being a capsule (G01K 5/36, G01K 5/42 take precedence)	7/04	. . the object to be measured not forming one of the thermo-electric materials
5/36	. . the body being a tubular spring, e.g. Bourdon tube	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
5/38	. . . of spiral formation	7/08	. . the object to be measured forming one of the thermo-electric materials, e.g. pointed type
5/40	. . . of helical formation	7/10	. . Arrangements for compensating for auxiliary variables, e.g. length of lead
5/42	. . the body being a bellows	7/12	. . . Arrangements with respect to the cold junction, e.g. preventing influence of temperature of surrounding air
5/44	. . the body being a cylinder and piston	7/13	. . . . Circuits for cold-junction compensation
5/46	. . with electric conversion means for final indication	7/14	. . Arrangements for modifying the output characteristic, e.g. linearising
5/465	. . . {using electrical contact making or breaking devices}	7/16	. . using resistive elements (resistive elements per se H01C, H01L)
5/48	. the material being a solid	2007/163	. . {provided with specially adapted connectors}
5/483	. . {using materials with a configuration memory, e.g. Ni-Ti alloys}	2007/166	. . {Electrical time domain reflectometry}
5/486	. . {using microstructures, e.g. made of silicon (G01K 7/015, G01K 7/028, G01K 7/226, G01K 17/006 take precedence)}	7/18	. . the element being a linear resistance, e.g. platinum resistance thermometer (G01K 7/26 takes precedence)
5/50	. . arranged for free expansion or contraction	7/183	. . . {characterised by the use of the resistive element}
5/52	. . . with electrical conversion means for final indication	7/186	. . . {using microstructures}
5/54	. . consisting of pivotally-connected elements	7/20	. . . in a specially-adapted circuit, e.g. bridge circuit
5/56	. . constrained so that expansion or contraction causes a deformation of the solid	7/203	. . . . {in an oscillator circuit}
5/58	. . . the solid body being constrained at more than one point, e.g. rod, plate, diaphragm (G01K 5/62 takes precedence)	7/206	. . . . {in a potentiometer circuit}
5/60	. . . . the body being a flexible wire or ribbon	7/21	. . . . for modifying the output characteristic, e.g. linearising
5/62	. . . the solid body being formed of compounded strips or plates, e.g. bimetallic strip	7/22	. . the element being a non-linear resistance, e.g. thermistor (G01K 7/26 takes precedence)
5/64	. . . . Details of the compounds system	7/223	. . . {characterised by the shape of the resistive element}
5/66	. . . . Selection of composition of the components of the system	7/226	. . . {using microstructures, e.g. silicon spreading resistance}
5/68	. . . . Shape of the system	7/24	. . . in a specially-adapted circuit, e.g. bridge circuit
5/70	. . . . specially adapted for indicating or recording	7/245	. . . . {in an oscillator circuit}
5/72	. . . . with electric transmission means for final indication		

7/25	. . . . for modifying the output characteristic, e.g. linearising	11/265	. . . {using surface acoustic wave [SAW]}
7/26	. . the element being an electrolyte	11/28	. using measurements of density {(measuring density in general G01N 9/00)}
7/28	. . . in a specially-adapted circuit, e.g. bridge circuit	11/30	. using measurement of the effect of a material on X-radiation, gamma radiation or particle radiation
7/30	. using thermal noise of resistances or conductors	11/32	. using changes in transmission, scattering or fluorescence in optical fibres {(in general G01D 5/268)}
7/32	. using change of resonant frequency of a crystal	11/3206	. . {at discrete locations in the fibre, e.g. by means of Bragg gratings}
7/34	. using capacitative elements (capacitors per se H01G)	11/3213	. . . {using changes in fluorescence, e.g. at the distal end of the fibre}
7/343	. . {the dielectric constant of which is temperature dependant}	2011/322	. . {using Brillouin scattering}
7/346	. . {for measuring temperature based on the time delay of a signal through a series of logical ports}	2011/324	. . {using Raman scattering}
7/36	. using magnetic elements, e.g. magnets, coils (magnetic elements per se H01F)	<b>13/00</b>	<b>Adaptations of thermometers for specific purposes</b>
7/38	. . the variations of temperature influencing the magnetic permeability	13/002	. {for measuring body temperature (G01K 5/22 takes precedence; for prediction aspects G01K 7/42; diagnostic temperature sensing A61M 39/0247)}
7/40	. using ionisation of gases	13/004	. . {Infrared clinical thermometers, e.g. tympanic}
7/42	. Circuits for reducing thermal inertia; Circuits for predicting the stationary value of temperature	13/006	. {for cryogenic purposes}
2007/422	. . {Dummy objects used for estimating temperature of real objects}	13/008	. . {using microstructures, e.g. made of silicon}
7/425	. . {Thermal management of integrated systems}	13/02	. for measuring temperature of moving fluids or granular materials capable of flow
7/427	. . {Temperature calculation based on spatial modeling, e.g. spatial inter- or extrapolation}	13/022	. . {Suction thermometers}
<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 G01K 3/00)</b>	2013/024	. . {Moving gas}
<b>11/00</b>	<b>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</b>	2013/026	. . {Moving liquid}
11/003	. {using absorption or generation of gas, e.g. hydrogen}	13/028	. . {for use in total air temperature [TAT] probes}
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)}	13/04	. for measuring temperature of moving solid bodies
11/02	. using evaporation or sublimation, e.g. by observing boiling	13/06	. . in linear movement
11/04	. . from material contained in a hollow body having parts which are deformable or displaceable under the pressure developed by the vapour	13/08	. . in rotary movement
11/06	. using melting, freezing, or softening	13/10	. 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)
11/08	. . of disposable test bodies, e.g. cone	13/12	. combined with sampling devices for measuring temperatures of samples of materials
11/10	. using sintering	13/125	. . {for siderurgical purposes}
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})	<b>15/00</b>	<b>Testing or calibrating of thermometers</b>
11/125	. . {using change in reflectance}	15/002	. {Calibrated temperature sources, temperature standards therefor (arrangements with respect to the cold junction of thermo-electric elements G01K 7/12)}
11/14	. . of inorganic materials	15/005	. {Calibration}
11/16	. . of organic materials	15/007	. {Testing}
11/165	. . . {liquid crystals (liquid crystal compositions C09K 19/00; electro-optic liquid crystals G02F 1/13)}	<b>17/00</b>	<b>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)</b>
11/18	. . of materials which change translucency	17/003	. {for measuring the power of light beams, e.g. laser beams}
11/20	. using thermoluminescent materials (G01K 11/32 takes precedence)	17/006	. {Microcalorimeters, e.g. using silicon microstructures}
11/22	. using measurement of acoustic effects	17/02	. Calorimeters using transport of an indicating substances, e.g. evaporation calorimeters
11/24	. . of the velocity of propagation of sound	17/025	. . {where evaporation, sublimation or condensation caused by heating or cooling, is measured}
11/26	. . of resonant frequencies	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}

## G01K

- 17/06 . Measuring quantity of heat conveyed by flowing mediums, 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}
- 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 [G01K 17/08](#))}

### 19/00 Testing or calibrating calorimeters

#### 2201/00 Application of thermometers in air-conditioning systems

- 2201/02 . in vehicles

#### 2203/00 Application of thermometers in cryogenics

#### 2205/00 Application of thermometers in motors, e.g. of a vehicle

- 2205/02 . for measuring inlet gas temperature
- 2205/04 . for measuring exhaust gas temperature

#### 2207/00 Application of thermometers in household appliances

- 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

#### 2211/00 Thermometers based on nanotechnology

#### 2213/00 Temperature mapping

#### 2215/00 Details concerning sensor power supply

#### 2217/00 Temperature measurement using electric or magnetic components already present in the system to be measured

#### 2219/00 Thermometers with dedicated analog to digital converters