

# CPC COOPERATIVE PATENT CLASSIFICATION

## G PHYSICS (NOTES omitted)

### INSTRUMENTS

#### G01 MEASURING; TESTING (NOTES omitted)

#### G01C MEASURING DISTANCES, LEVELS OR BEARINGS; SURVEYING; NAVIGATION; GYROSCOPIC INSTRUMENTS; PHOTOGRAMMETRY OR VIDEOGRAMMETRY (measuring liquid level [G01F](#); radio navigation, determining distance or velocity by use of propagation effects, e.g. Doppler effects, propagation time, of radio waves, analogous arrangements using other waves [G01S](#))

##### NOTES

1. In this subclass, the following term is used with the meaning indicated:  
"navigation" means determining the position and course of land vehicles, ships, aircraft, and space vehicles.
2. Attention is drawn to the Notes following the title of class [G01](#).

##### 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>Measuring angles</b>	<b>3/22</b>	• using a parallactic triangle with variable angles and a base of fixed length at, near, or formed by the object
1/02	• Theodolites		
1/04	• . combined with cameras		
1/06	• . Arrangements for reading scales	<b>3/24</b>	• using a parallactic triangle with fixed angles and a base of variable length in the observation station, e.g. in the instrument
1/08	• Sextants		
1/10	• . including an artificial horizon ( <a href="#">G01C 1/14</a> takes precedence)	<b>3/26</b>	• using a parallactic triangle with fixed angles and a base of variable length, at, near, or formed by the object
1/12	• . . with a stabilised mirror		
1/14	• . Periscopic sextants	<b>3/28</b>	• . with provision for reduction of the distance into the horizontal plane
<b>3/00</b>	<b>Measuring distances in line of sight; Optical rangefinders (tapes, chains or wheels for measuring length <a href="#">G01B 3/00</a>; active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, <a href="#">G01S 17/48</a>)</b>	<b>3/30</b>	• . . with adaptation to the measurement of the height of an object, e.g. tachometers
		<b>3/32</b>	• by focusing the object, e.g. on a ground glass screen
<b>3/02</b>	• Details	<b>5/00</b>	<b>Measuring height; Measuring distances transverse to line of sight; Levelling between separated points; Surveyors' levels (<a href="#">G01C 3/20</a>, <a href="#">G01C 3/30</a> take precedence)</b>
<b>3/04</b>	• . Adaptation of rangefinders for combination with telescopes or binoculars	<b>5/005</b>	• {altimeters for aircraft ( <a href="#">G01C 5/02</a> , <a href="#">G01C 5/06</a> take precedence)}
<b>3/06</b>	• . Use of electric means to obtain final indication	<b>5/02</b>	• involving automatic stabilisation of the line of sight
<b>3/08</b>	• . . Use of electric radiation detectors	<b>5/04</b>	• Hydrostatic levelling, i.e. by flexibly interconnected liquid containers at separated points
<b>3/085</b>	• . . . {with electronic parallax measurement}	<b>5/06</b>	• by using barometric means
<b>3/10</b>	• using a parallactic triangle with variable angles and a base of fixed length in the observation station, e.g. in the instrument	<b>7/00</b>	<b>Tracing profiles (by photogrammetry or videogrammetry <a href="#">G01C 11/00</a>)</b>
<b>3/12</b>	• . with monocular observation at a single point, e.g. coincidence type ( <a href="#">G01C 3/20</a> takes precedence)	<b>7/02</b>	• of land surfaces
<b>3/14</b>	• . with binocular observation at a single point, e.g. stereoscopic type ( <a href="#">G01C 3/20</a> takes precedence)	<b>7/04</b>	• . involving a vehicle which moves along the profile to be traced
<b>3/16</b>	• . . Measuring marks	<b>7/06</b>	• of cavities, e.g. tunnels
<b>3/18</b>	• . with one observation point at each end of the base ( <a href="#">G01C 3/20</a> takes precedence)	<b>9/00</b>	<b>Measuring inclination, e.g. by clinometers, by levels</b>
<b>3/20</b>	• . with adaptation to the measurement of the height of an object	<b>9/005</b>	• {specially adapted for use in aircraft}

9/02	. Details	11/24	. . . . with optical-mechanical projection ( <a href="#">G01C 11/26</a> takes precedence)
9/04	. . Transmission means between sensing element and final indicator for giving an enlarged reading	11/26	. . . . using computers to control the position of the pictures
9/06	. . Electric or photoelectric indication or reading means	11/28	. . . . Special adaptation for recording picture point data, e.g. for profiles
2009/062	. . . {capacitive}	11/30	. . by triangulation
2009/064	. . . {inductive}	11/32	. . . Radial triangulation
2009/066	. . . {optical}	11/34	. . . Aerial triangulation
2009/068	. . . {resistive}	11/36	. Videogrammetry, i.e. electronic processing of video signals {from a single source or } from different sources to give parallax or range information
9/08	. . Means for compensating acceleration forces due to movement of instrument	<b>13/00</b>	<b>Surveying specially adapted to open water, e.g. sea, lake, river or canal (liquid level metering <a href="#">G01F</a>)</b>
9/10	. by using rolling bodies {, e.g. spheres, cylinders, mercury droplets}	13/002	. {Measuring the movement of open water}
2009/102	. . {cylinders}	13/004	. . {vertical movement}
2009/105	. . {mercury droplets}	13/006	. . {horizontal movement}
2009/107	. . {spheres}	13/008	. {measuring depth of open water}
9/12	. by using a single pendulum {plumb lines <a href="#">G01C 15/10</a> }	<b>15/00</b>	<b>Surveying instruments or accessories not provided for in groups <a href="#">G01C 1/00</a> - <a href="#">G01C 13/00</a></b>
9/14	. . movable in more than one direction	15/002	. {Active optical surveying means ( <a href="#">optical plumbing <a href="#">G01C 15/105</a></a> )}
9/16	. by using more than one pendulum	15/004	. . {Reference lines, planes or sectors}
9/18	. by using liquids	15/006	. . . {Detectors therefor}
2009/182	. . {conductive}	15/008	. . {combined with inclination sensor}
2009/185	. . {dielectric}	15/02	. Means for marking measuring points
2009/187	. . {magnetic, e.g. ferromagnetic}	15/04	. . Permanent marks; Boundary markers
9/20	. . the indication being based on the inclination of the surface of a liquid relative to its container	15/06	. . Surveyors' staffs; Movable markers
9/22	. . . with interconnected containers in fixed relation to each other	15/08	. . . Plumbing or registering staffs or markers over ground marks
9/24	. . in closed containers partially filled with liquid so as to leave a gas bubble	15/10	. Plumb lines
9/26	. . . Details	15/105	. . {Optical plumbing}
9/28	. . . . Mountings	15/12	. Instruments for setting out fixed angles, e.g. right angles
9/30	. . . . Means for adjusting dimensions of bubble	15/14	. Artificial horizons
9/32	. . . . Means for facilitating the observation of the position of the bubble, e.g. illuminating means	<b>17/00</b>	<b>Compasses; Devices for ascertaining true or magnetic north for navigation or surveying purposes (using gyroscopic effect <a href="#">G01C 19/00</a>)</b>
9/34	. . . of the tubular type, i.e. for indicating the level in one direction only	17/02	. Magnetic compasses
9/36	. . . of the spherical type, i.e. for indicating the level in all directions	17/04	. . with north-seeking magnetic elements, e.g. needles
<b>11/00</b>	<b>Photogrammetry or videogrammetry, e.g. stereogrammetry; Photographic surveying</b>	17/06	. . . Suspending magnetic elements
11/02	. Picture taking arrangements specially adapted for photogrammetry or photographic surveying, e.g. controlling overlapping of pictures	17/08	. . . . by flotation
11/025	. . {by scanning the object}	17/10	. . . Comparing observed direction with north indication
11/04	. Interpretation of pictures	17/12	. . . . by sighting means, e.g. for surveyors' compasses
11/06	. . by comparison of two or more pictures of the same area	17/14	. . . . by reference marks, e.g. for ships' compasses
11/08	. . . the pictures not being supported in the same relative position as when they were taken	17/16	. . . . by clinometers, e.g. for determining dip or strike of geological strata
11/10	. . . . using computers to control the position of the pictures	17/18	. . . Supporting or suspending compasses, e.g. by gimbal, by flotation
11/12	. . . the pictures being supported in the same relative position as when they were taken	17/20	. . . Observing the compass card or needle
11/14	. . . . with optical projection ( <a href="#">G01C 11/26</a> takes precedence)	17/22	. . . . by projection
11/16	. . . . . in a common plane	17/24	. . . . Illumination
11/18	. . . . . involving scanning means	17/26	. . . . using electric pick-offs for transmission to final indicator, e.g. photocell
11/20	. . . . . in separate planes	17/28	. . Electromagnetic compasses (with north seeking magnetic elements and having electric pick-offs <a href="#">G01C 17/26</a> )
11/22	. . . . with mechanical projection ( <a href="#">G01C 11/26</a> takes precedence)	17/30	. . . Earth-inductor compasses

- 17/32 . . . Electron compasses  
 17/34 . Sun- or astro-compasses  
 17/36 . Repeaters for remote indication of readings of a master compass  
 17/38 . Testing, calibrating, or compensating of compasses
- 19/00 Gyroscopes; Turn-sensitive devices using vibrating masses; Turn-sensitive devices without moving masses; Measuring angular rate using gyroscopic effects**
- 19/005 . {Measuring angular rate using gyroscopic effects}
- WARNING**
- Group [G01C 19/005](#) is incomplete pending reclassification of documents from groups [G01P 9/00](#), [G01P 9/02](#) and [G01P 9/04](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 19/02 . Rotary gyroscopes
- WARNING**
- Groups [G01C 19/02](#), [G01C 19/025](#), [G01C 19/04](#), [G01C 19/06](#), [G01C 19/08](#), [G01C 19/10](#), [G01C 19/12](#), [G01C 19/14](#), [G01C 19/16](#), [G01C 19/18](#), [G01C 19/20](#), [G01C 19/22](#), [G01C 19/24](#), [G01C 19/26](#), [G01C 19/28](#), [G01C 19/30](#), [G01C 19/32](#), [G01C 19/34](#), [G01C 19/36](#), [G01C 19/38](#), [G01C 19/40](#), [G01C 19/42](#), [G01C 19/44](#), [G01C 19/46](#), [G01C 19/48](#), [G01C 19/50](#), [G01C 19/52](#) and [G01C 19/54](#) are incomplete pending reclassification of documents from group [G01P 9/02](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 19/025 . . {Gyroscopes functioning for short periods}  
 19/04 . . Details  
 19/06 . . . Rotors  
 19/065 . . . . {Means for measuring or controlling of rotors' angular velocity}
- WARNING**
- Group [G01C 19/065](#) is incomplete pending reclassification of documents from groups [G01P 9/00](#) and [G01P 9/02](#).
- Groups [G01P 9/00](#), [G01P 9/02](#) and [G01C 19/065](#) should be considered in order to perform a complete search.
- 19/08 . . . . electrically driven ([G01C 19/14](#) takes precedence)  
 19/10 . . . . . Power supply  
 19/12 . . . . fluid driven ([G01C 19/14](#) takes precedence)  
 19/14 . . . . Fluid rotors  
 19/16 . . . Suspensions; Bearings  
 19/18 . . . . providing movement of rotor with respect to its rotational axes ([G01C 19/20](#), [G01C 19/24](#) take precedence)  
 19/20 . . . . in fluid  
 19/22 . . . . torsional  
 19/24 . . . . using magnetic or electrostatic fields
- 19/26 . . . Caging, i.e. immobilising moving parts, e.g. for transport  
 19/28 . . . Pick-offs, i.e. devices for taking-off an indication of the displacement of the rotor axis  
 19/30 . . . Erection devices, i.e. devices for restoring rotor axis to a desired position ([for instrument indicating the vertical G01C 19/46](#))  
 19/32 . . . Indicating or recording means specially adapted for rotary gyroscopes  
 19/34 . . for indicating a direction in the horizontal plane, e.g. directional gyroscopes  
 19/36 . . . with north-seeking action by magnetic means, e.g. gyromagnetic compasses  
 19/38 . . . with north-seeking action by other than magnetic means, e.g. gyrocompasses using earth's rotation  
 19/40 . . for control by signals from a master compass, i.e. repeater compasses  
 19/42 . . for indicating rate of turn; for integrating rate of turn  
 19/44 . . for indicating the vertical  
 19/46 . . . Erection devices for restoring rotor axis to a desired position  
 19/48 . . . . operating by electrical means ([G01C 19/54](#) takes precedence)  
 19/50 . . . . operating by mechanical means ([G01C 19/54](#) takes precedence)  
 19/52 . . . . operating by fluid means ([G01C 19/54](#) takes precedence)  
 19/54 . . . . with correction for acceleration forces due to movement of instrument  
 19/56 . Turn-sensitive devices using vibrating masses, e.g. vibratory angular rate sensors based on Coriolis forces
- WARNING**
- Groups [G01C 19/56](#) - [G01C 19/5783](#) are incomplete pending reclassification of documents from group [G01P 9/04](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 19/5607 . . using vibrating tuning forks ([double-ended tuning forks using planar vibrating masses suspended at opposite ends G01C 19/5719](#))  
 19/5614 . . . Signal processing  
 19/5621 . . . the devices involving a micromechanical structure  
 19/5628 . . . Manufacturing; Trimming; Mounting; Housings  
 19/5635 . . using vibrating wires or strings  
 19/5642 . . using vibrating bars or beams  
 19/5649 . . . Signal processing  
 19/5656 . . . the devices involving a micromechanical structure  
 19/5663 . . . Manufacturing; Trimming; Mounting; Housings  
 19/567 . . using the phase shift of a vibration node or antinode  
 19/5677 . . . of essentially two-dimensional vibrators, e.g. ring-shaped vibrators  
 19/5684 . . . . the devices involving a micromechanical structure

- 19/5691 . . . of essentially three-dimensional vibrators, e.g. wine glass-type vibrators
- 19/5698 . . using acoustic waves, e.g. surface acoustic wave gyros
- 19/5705 . . using masses driven in reciprocating rotary motion about an axis
- 19/5712 . . . the devices involving a micromechanical structure
- 19/5719 . . using planar vibrating masses driven in a translation vibration along an axis
- 19/5726 . . . Signal processing
- 19/5733 . . . Structural details or topology
- 19/574 . . . . the devices having two sensing masses in anti-phase motion
- 19/5747 . . . . . each sensing mass being connected to a driving mass, e.g. driving frames
- 19/5755 . . . . the devices having a single sensing mass
- 19/5762 . . . . . the sensing mass being connected to a driving mass, e.g. driving frames
- 19/5769 . . . Manufacturing; Mounting; Housings
- 19/5776 . . Signal processing not specific to any of the devices covered by groups [G01C 19/5607](#) - [G01C 19/5719](#)
- 19/5783 . . Mountings or housings not specific to any of the devices covered by groups [G01C 19/5607](#) - [G01C 19/5719](#)
- 19/58 . Turn-sensitive devices without moving masses
- 19/60 . . Electronic or nuclear magnetic resonance gyrometers
- 19/62 . . . with optical pumping
- 19/64 . . Gyrometers using the Sagnac effect, i.e. rotation-induced shifts between counter-rotating electromagnetic beams
- 19/66 . . . Ring laser gyrometers
- 19/661 . . . . {details}
- 19/662 . . . . . {signal readout; dither compensators}
- 19/664 . . . . . {means for removing the dither signal}
- 19/665 . . . . . {control of the cavity }
- 19/667 . . . . {using a multioscillator ring laser}
- 19/668 . . . . {Assemblies for measuring along different axes, e.g. triads}
- 19/68 . . . . Lock-in prevention
- 19/70 . . . . . by mechanical means
- 19/72 . . . with counter-rotating light beams in a passive ring, e.g. fibre laser gyrometers
- 19/721 . . . . {Details}
- 19/722 . . . . . {of the mechanical construction}
- 19/723 . . . . {Heterodyning fibre optic gyrometers}
- 19/725 . . . . {using nxn optical couplers, e.g. 3x3 couplers}
- 19/726 . . . . {Phase nulling gyrometers, i.e. compensating the Sagnac phase shift in a closed loop system}
- 19/727 . . . . {using a passive ring resonator}
- 19/728 . . . . {Assemblies for measuring along different axes, e.g. triads}

**21/00**

**Navigation; Navigational instruments not provided for in groups [G01C 1/00](#) - [G01C 19/00](#)** (measuring distance traversed on the ground by a vehicle [G01C 22/00](#); control of position, course, altitude or attitude of vehicles [G05D 1/00](#); traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle [G08G 1/0968](#))

**WARNING**

Group [G01C 21/00](#) is impacted by reclassification into groups [G01C 21/38](#) - [G01C 21/3896](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 21/005 . {with correlation of navigation data from several sources, e.g. map or contour matching ([G01C 21/30](#) takes precedence)}
- 21/02 . by astronomical means ([G01C 21/24](#), [G01C 21/26](#) take precedence)
- 21/025 . . {with the use of startrackers}
- 21/04 . by terrestrial means ([G01C 21/24](#), [G01C 21/26](#) take precedence)
- 21/06 . . involving measuring of drift angle; involving correction for drift
- 21/08 . . involving use of the magnetic field of the earth
- 21/10 . by using measurements of speed or acceleration ([G01C 21/24](#), [G01C 21/26](#) take precedence)
- 21/12 . . executed aboard the object being navigated; Dead reckoning
- 21/14 . . . by recording the course traversed by the object ([G01C 21/16](#) takes precedence)
- 21/16 . . . by integrating acceleration or speed, i.e. inertial navigation

**WARNING**

Groups [G01C 21/16](#) - [G01C 21/188](#) are incomplete pending reclassification of documents from groups [G01P 9/00](#), [G01P 9/02](#) and [G01P 9/04](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 21/165 . . . . {combined with non-inertial navigation instruments}

**WARNING**

Group [G01C 21/165](#) is impacted by reclassification into groups [G01C 21/1652](#), [G01C 21/1654](#), and [G01C 21/1656](#).

Groups [G01C 21/165](#), [G01C 21/1652](#), [G01C 21/1654](#), and [G01C 21/1656](#) should be considered in order to perform a complete search.

21/1652 . . . . . {with ranging devices, e.g. LIDAR or RADAR}

**WARNING**

Group [G01C 21/1652](#) is incomplete pending reclassification of documents from group [G01C 21/165](#).

Groups [G01C 21/165](#) and [G01C 21/1652](#) should be considered in order to perform a complete search.

21/1654 . . . . . {with electromagnetic compass}

**WARNING**

Group [G01C 21/1654](#) is incomplete pending reclassification of documents from group [G01C 21/165](#).

Groups [G01C 21/165](#) and [G01C 21/1654](#) should be considered in order to perform a complete search.

21/1656 . . . . . {with passive imaging devices, e.g. cameras}

**WARNING**

Group [G01C 21/1656](#) is incomplete pending reclassification of documents from group [G01C 21/165](#).

Groups [G01C 21/165](#) and [G01C 21/1656](#) should be considered in order to perform a complete search.

21/166 . . . . . {Mechanical, construction or arrangement details of inertial navigation systems}

**WARNING**

Group [G01C 21/166](#) is incomplete pending reclassification of documents from group [G01C 21/16](#).

Groups [G01C 21/16](#) and [G01C 21/166](#) should be considered in order to perform a complete search.

21/18 . . . . . Stabilised platforms, e.g. by gyroscope

21/183 . . . . . {Compensation of inertial measurements, e.g. for temperature effects}

**WARNING**

Group [G01C 21/183](#) is incomplete pending reclassification of documents from groups [G01C 21/16](#).

Groups [G01C 21/16](#) and [G01C 21/183](#) should be considered in order to perform a complete search.

21/185 . . . . . {for gravity}

**WARNING**

Group [G01C 21/185](#) is incomplete pending reclassification of documents from groups [G01C 21/16](#).

Groups [G01C 21/16](#) and [G01C 21/185](#) should be considered in order to perform a complete search.

21/188 . . . . . {for accumulated errors, e.g. by coupling inertial systems with absolute positioning systems}

**WARNING**

Group [G01C 21/188](#) is incomplete pending reclassification of documents from groups [G01C 21/16](#).

Groups [G01C 21/16](#) and [G01C 21/188](#) should be considered in order to perform a complete search.

21/20 . Instruments for performing navigational calculations ([G01C 21/24](#), [G01C 21/26](#) take precedence)

21/203 . . {Specially adapted for sailing ships}

21/206 . . {specially adapted for indoor navigation}

21/22 . . Plotting boards

21/24 . specially adapted for cosmonautical navigation

21/26 . specially adapted for navigation in a road network

21/265 . . {constructional aspects of navigation devices, e.g. housings, mountings, displays ([G01C 21/3688](#) takes precedence)}

21/28 . . with correlation of data from several navigational instruments

21/30 . . . Map- or contour-matching

21/32 . . . . Structuring or formatting of map data

**WARNING**

Group [G01C 21/32](#) is impacted by reclassification into groups [G01C 21/38](#) - [G01C 21/3896](#).

Groups [G01C 21/32](#) and [G01C 21/38](#) - [G01C 21/3896](#) should be considered in order to perform a complete search.

21/34 . . Route searching; Route guidance

21/3407 . . . {specially adapted for specific applications}

21/3415 . . . . {Dynamic re-routing, e.g. recalculating the route when the user deviates from calculated route or after detecting real-time traffic data or accidents}

21/3423 . . . . {Multimodal routing, i.e. combining two or more modes of transportation, where the modes can be any of, e.g. driving, walking, cycling, public transport}

21/343 . . . . {Calculating itineraries, i.e. routes leading from a starting point to a series of categorical destinations using a global route restraint, round trips, touristic trips ([travelling salesman problem G06Q 10/04](#); [optimisation of routes G06Q 10/047](#))}

21/3438 . . . . {Rendez-vous, i.e. searching a destination where several users can meet, and the routes to this destination for these users; Ride sharing, i.e. searching a route such that at least two users can share a vehicle for at least part of the route}

21/3446 . . . {Details of route searching algorithms, e.g. Dijkstra, A\*, arc-flags, using precalculated routes}

21/3453 . . . {Special cost functions, i.e. other than distance or default speed limit of road segments}



- 21/3461 . . . . {Preferred or disfavoured areas, e.g. dangerous zones, toll or emission zones, intersections, manoeuvre types, segments such as motorways, toll roads, ferries}
  - 21/3469 . . . . {Fuel consumption; Energy use; Emission aspects}
  - 21/3476 . . . . {using point of interest [POI] information, e.g. a route passing visible POIs}
  - 21/3484 . . . . {Personalized, e.g. from learned user behaviour or user-defined profiles}
  - 21/3492 . . . . {employing speed data or traffic data, e.g. real-time or historical ([traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle G08G 1/0968](#))}
  - 21/36 . . . Input/output arrangements for on-board computers
  - 21/3602 . . . . {Input other than that of destination using image analysis, e.g. detection of road signs, lanes, buildings, real preceding vehicles using a camera}
  - 21/3605 . . . . {Destination input or retrieval}
  - 21/3608 . . . . {using speech input, e.g. using speech recognition}
  - 21/3611 . . . . {using character input or menus, e.g. menus of POIs ([character input methods in general G06F 3/0233](#))}
  - 21/3614 . . . . {through interaction with a road map, e.g. selecting a POI icon on a road map}
  - 21/3617 . . . . {using user history, behaviour, conditions or preferences, e.g. predicted or inferred from previous use or current movement}
  - 21/362 . . . . {received from an external device or application, e.g. PDA, mobile phone or calendar application}
  - 21/3623 . . . . {using a camera or code reader, e.g. for optical or magnetic codes}
  - 21/3626 . . . . {Details of the output of route guidance instructions ([traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle G08G 1/0968](#))}
  - 21/3629 . . . . {Guidance using speech or audio output, e.g. text-to-speech ([text to speech systems per se G10L 13/00](#))}
  - 21/3632 . . . . {Guidance using simplified or iconic instructions, e.g. using arrows ([G01C 21/365 takes precedence](#))}
  - 21/3635 . . . . {Guidance using 3D or perspective road maps}
  - 21/3638 . . . . {including 3D objects and buildings (three dimensional [3D] modelling, e.g. data description of 3D objects [G06T 17/00](#); geographic models [G06T 17/05](#))}
  - 21/3641 . . . . {Personalized guidance, e.g. limited guidance on previously travelled routes}
  - 21/3644 . . . . {Landmark guidance, e.g. using POIs or conspicuous other objects}
  - 21/3647 . . . . {Guidance involving output of stored or live camera images or video streams}
  - 21/365 . . . . {Guidance using head up displays or projectors, e.g. virtual vehicles or arrows projected on the windscreen or on the road itself}
  - 21/3652 . . . . {Guidance using non-audiovisual output, e.g. tactile, haptic or electric stimuli}
  - 21/3655 . . . . {Timing of guidance instructions}
  - 21/3658 . . . . {Lane guidance}
  - 21/3661 . . . . {Guidance output on an external device, e.g. car radio}
  - 21/3664 . . . . {Details of the user input interface, e.g. buttons, knobs or sliders, including those provided on a touch screen; remote controllers; input using gestures}
  - 21/3667 . . . . {Display of a road map ([G01C 21/3614 takes precedence](#); guidance using 3D or perspective road maps [G01C 21/3635](#))}
  - 21/367 . . . . {Details, e.g. road map scale, orientation, zooming, illumination, level of detail, scrolling of road map or positioning of current position marker}
  - 21/3673 . . . . {Labelling using text of road map data items, e.g. road names, POI names}
  - 21/3676 . . . . {Overview of the route on the road map}
  - 21/3679 . . . . {Retrieval, searching and output of POI information, e.g. hotels, restaurants, shops, filling stations, parking facilities ([G01C 21/3611 takes precedence](#))}
  - 21/3682 . . . . {output of POI information on a road map ([G01C 21/3614](#), [G01C 21/3685 take precedence](#))}
  - 21/3685 . . . . {the POI's being parking facilities}
  - 21/3688 . . . . {Systems comprising multiple parts or multiple output devices (not client-server), e.g. detachable faceplates, key fobs or multiple output screens}
  - 21/3691 . . . . {Retrieval, searching and output of information related to real-time traffic, weather, or environmental conditions ([arrangements for giving variable traffic instructions G08G 1/09](#))}
  - 21/3694 . . . . {Output thereof on a road map}
  - 21/3697 . . . . {Output of additional, non-guidance related information, e.g. low fuel level ([G01C 21/3679 takes precedence](#))}
  - 21/38 . . {Electronic maps specially adapted for navigation; Updating thereof}
- WARNING**
- Groups [G01C 21/38](#) - [G01C 21/3896](#) are incomplete pending reclassification of documents from groups [G01C 21/00](#) and [G01C 21/32](#).
- Groups [G01C 21/00](#), [G01C 21/32](#), and [G01C 21/38](#) - [G01C 21/3896](#) should be considered in order to perform a complete search.
- 21/3804 . . {Creation or updating of map data}
  - 21/3807 . . . {characterised by the type of data}
  - 21/3811 . . . . {Point data, e.g. Point of Interest [POI]}
  - 21/3815 . . . . {Road data}
  - 21/3819 . . . . {Road shape data, e.g. outline of a route}
  - 21/3822 . . . . {Road feature data, e.g. slope data}
  - 21/3826 . . . . {Terrain data}
  - 21/383 . . . . {Indoor data}
  - 21/3833 . . . {characterised by the source of data}
  - 21/3837 . . . . {Data obtained from a single source}

- 21/3841 . . . . {Data obtained from two or more sources, e.g. probe vehicles}
- 21/3844 . . . . {Data obtained from position sensors only, e.g. from inertial navigation}
- 21/3848 . . . . {Data obtained from both position sensors and additional sensors}
- 21/3852 . . . . {Data derived from aerial or satellite images}
- 21/3856 . . . . {Data obtained from user input}
- 21/3859 . . . {Differential updating map data}
- 21/3863 . . {Structures of map data}
- 21/3867 . . . {Geometry of map features, e.g. shape points, polygons or for simplified maps}
- 21/387 . . . {Organisation of map data, e.g. version management or database structures}
- 21/3874 . . . . {Structures specially adapted for data searching and retrieval}
- 21/3878 . . . . {Hierarchical structures, e.g. layering}
- 21/3881 . . . . {Tile-based structures}
- 21/3885 . . {Transmission of map data to client devices; Reception of map data by client devices}
- 21/3889 . . . {Transmission of selected map data, e.g. depending on route}
- 21/3893 . . . {Transmission of map data from distributed sources, e.g. from roadside stations}
- 21/3896 . . . {Transmission of map data from central databases}
  
- 22/00 Measuring distance traversed on the ground by vehicles, persons, animals or other moving solid bodies, e.g. using odometers, using pedometers**
- 22/002 . {for cycles}
- 22/004 . {for golf carts }
- 22/006 . {Pedometers}
- 22/008 . {for skates}
- 22/02 . by conversion into electric waveforms and subsequent integration, e.g. using tachometer generator {([G01C 22/002](#), [G01C 22/004](#), [G01C 22/006](#) take precedence)}
- 22/025 . . {Differential odometers}
  
- 23/00 Combined instruments indicating more than one navigational value, e.g. for aircraft; Combined measuring devices for measuring two or more variables of movement, e.g. distance, speed or acceleration**
- 23/005 . {Flight directors (indicating arrangements specially adapted for rotary gyroscopes [G01C 19/32](#))}
  
- 25/00 Manufacturing, calibrating, cleaning, or repairing instruments or devices referred to in the other groups of this subclass (testing, calibrating or compensating compasses [G01C 17/38](#))**
- 25/005 . {initial alignment, calibration or starting-up of inertial devices}