

ECLA EUROPEAN CLASSIFICATION

G01V

GEOPHYSICS; GRAVITATIONAL MEASUREMENTS; DETECTING MASSES OR OBJECTS (detecting or locating foreign bodies for diagnostic, surgical or person-identification purposes A61B; means for indicating the location of accidentally buried, e.g. snow-buried persons [A63B29/02](#); investigating or analysing earth materials by determining their chemical or physical properties G01N; measuring electric or magnetic variables in general, other than direction or magnitude of the earth's field G01R; electronic or nuclear magnetic resonance arrangements [G01R33/20](#); radar, sonar or analogous methods in general, detecting masses or objects involving these methods G01S)

[N: **WARNING** [C9902]

The following IPC groups are not used in the internal ECLA classification scheme. Subject matter covered by these groups is classified in the following ECLA groups:

[G01V3/11](#) covered by [G01V3/10B](#), [G01V3/10C](#)
]

Notes

1. In this subclass, the geophysical methods apply both to the earth and to other celestial objects, e.g. planets.
2. Attention is drawn to the Notes following the title of class G01.

G01V1/00

Seismology; Seismic or acoustic prospecting or detecting

[N: **WARNING**

[N1207]Group [G01V1/159](#) does not correspond to former or current IPC groups. Concordance ECLA:IPC for this group is as follows: - [G01V1/159](#) : [G01V1/02](#)
]

[N: **Notes**

[N1207]Groups [G01V1/44](#) to [G01V1/52](#) take precedence over groups [G01V1/00A](#) to [G01V1/393](#) [G01V1/42](#)
]

G01V1/00A

- [N: Acoustic presence detection (measurement of sonic vibrations G01H; alarm systems G08B)] [C1207]

G01V1/00B

- [N: Seismic data acquisition in general, e.g. survey design ([G01V1/38B](#), [G01V1/42](#) takes precedence)] [C1207]

G01V1/00B2

- [N: with exploration systems emitting special signals, e.g. frequency swept signals, pulse sequences or slip sweep arrangements] [M1207]

G01V1/00B3

- [N: generating single signals by using more than one generator, e.g. beam steering or focussing arrays (G01V1/13, G01V1/38E takes precedence)] [N1204]

G01V1/00E

- [N: Earthquake measurement or prediction (event detection for microseismic events [G01V1/28D](#))] [C1207]

- G01V1/02 . Generating seismic energy ([N: [G01V1/00B](#) takes precedence]; [blasting in general F42](#); [nuclear explosives G21J](#)) [[C1207](#)]
- G01V1/04 . . Details
- G01V1/047 . . . Arrangements for coupling the generator to the ground
- G01V1/047A [N: for controlling "Ground Force"] [[N1204](#)]
- G01V1/053 for generating transverse waves
- G01V1/06 . . . Ignition devices ([G01V1/393](#) takes precedence)
- G01V1/08 involving time-delay devices
- G01V1/09 . . . Transporting arrangements, e.g. on vehicles ([G01V1/38](#) takes precedence)
- G01V1/104 . . using explosive charges ([G01V1/157](#) takes precedence)
- G01V1/108 . . . by deforming or displacing surfaces of enclosures
- G01V1/112 for use on the surface of the earth
- G01V1/116 . . . where pressurised combustion gases escape from the generator in a pulsating manner, e.g. for generating bursts
- G01V1/13 . . . Arrangements or disposition of charges to produce a desired pattern in space or time
- G01V1/133 . . using fluidic driving means, e.g. highly pressurised fluids; [N: using implosion] ([G01V1/104](#) takes precedence)
- G01V1/135 . . . by deforming or displacing surfaces of enclosures [N: , e.g. by hydraulically driven vibroseis™] [[C1207](#)]
- G01V1/137 . . . which fluid escapes from the generator in a pulsating manner, e.g. for generating bursts [N: , [airguns](#)]
- G01V1/143 . . using mechanical driving means [N: e.g. motor driven shaft] ([G01V1/104](#), [G01V1/133](#) take precedence)
- G01V1/145 . . . by deforming or displacing surfaces [N: , e.g. by mechanically driven vibroseis™] [[M1207](#)]
- G01V1/147 . . . using impact of dropping masses
- G01V1/153 . . . using rotary unbalanced masses
- G01V1/155 . . . using reciprocating masses
- G01V1/157 . . using spark discharges; using exploding wires ([spark gaps](#), [N: non-enclosed discharge apparatus, not otherwise provided for [H01T](#)])
- G01V1/159 . . [N: using piezoelectric or magnetostrictive driving means (generating mechanical vibrations by using piezoelectric or magnetostrictive effect in general, [B06B1/06](#), [B06B1/08](#))] [[N1204](#)]
- G01V1/16 . Receiving elements for seismic signals (electromechanical transducers [H04R](#)); Arrangements or adaptations of receiving elements [[C1207](#)]
- G01V1/16A . . [N: Details] [[N1204](#)]
- G01V1/16A1 . . . [N: Circuits therefore] [[N1204](#)]
- G01V1/16A2 . . . [N: Arrangements for coupling receivers to the ground] [[N1207](#)]
- G01V1/16D . . [N: Deployment of receiver elements ([G01V1/38D](#) takes precedence)] [[N1207](#)]
- G01V1/18 . . Receiving elements, e.g. seismometer, geophone [N: or torque detectors, for localised single point measurements] [[C1207](#)]
- G01V1/18A . . . [N: Geophones] [[N1204](#)]
- G01V1/18A1 [N: with moving coil] [[N1204](#)]
- G01V1/18A2 [N: with moving magnet] [[N1204](#)]

- G01V1/18A3 [N: Multi-component geophones] [N1204]
- G01V1/18A4 [N: with adaptable orientation, e.g. gimbaled] [N1204]
- G01V1/18B [N: Hydrophones] [N1204]
- G01V1/18B1 [N: Direction-sensitive hydrophones] [N1204]
- G01V1/18B2 [N: with pressure compensating means] [N1204]
- G01V1/18C [N: Combinations of different types of receiving elements] [N1204]
- G01V1/20 . . . Arrangements of receiving elements, e.g. geophone pattern
- G01V1/20B [N: Constructional details of seismic cables, e.g. streamers (integrated optoseismic systems [G01V1/22C](#); line connectors in general [H01R](#), transducer mountings in general [G10K11/00G](#))] [C1207]
- G01V1/20B3 [N: Connectors, e.g. for force, signal or power] [N1204]
- G01V1/20B9 [N: having a continuous structure (detecting traffic [G08G](#), transducers in general [G10K](#))] [N1204]
- G01V1/22 . . . Transmitting seismic signals to recording or processing apparatus (signal transmitting systems in general [G08C](#); transmission systems in general [H04B](#)) [C1207]
- G01V1/22B . . . [N: Radioseismic systems]
- G01V1/22C . . . [N: Optoseismic systems] [N1204]
- G01V1/24 . . . Recording seismic data (transforming one recording into another [G01V1/32](#) ; recording measured values in general [G01D](#)) [C1207]
- G01V1/24B . . . [N: Seismographs]
- G01V1/24C . . . [N: Amplitude control for seismic recording (control of amplification in general [H03G](#))]
- G01V1/24D . . . [N: Digital recording of seismic data, e.g. in acquisition units or nodes] [C1207]
- G01V1/26 . . . Reference-signal-transmitting devices, e.g. indicating moment of firing of shot
- G01V1/28 . . . Processing seismic data, e.g. analysis, for interpretation, for correction ([G01V1/48](#) takes precedence) [C1207]
- G01V1/28B . . . [N: Application of seismic models, synthetic seismograms]
- G01V1/28C . . . [N: Application of the shear wave component and/or several components of the seismic signal]
- G01V1/28C1 [N: Mode conversion] [N1204]
- G01V1/28D . . . [N: Event detection in seismic signals, e.g. microseismics (earthquakes [G01V1/00E](#); [G01V1/36](#) takes precedence)] [C1207]
- G01V1/30 . . . Analysis ([G01V1/50](#) takes precedence) [C1207]
- G01V1/30B [N: for determining seismic cross-sections or geostructures] [C1207]
- G01V1/30B1 [N: in 3D data cubes] [N1204]
- G01V1/30C [N: for determining velocity profiles or travel times] [C1207]
- G01V1/30C1 [N: Travel times] [N1204]
- G01V1/30D [N: for determining physical properties of the subsurface, e.g. impedance, porosity or attenuation profiles] [C1207]
- G01V1/30E [N: for determining seismic attributes, e.g. amplitude, instantaneous phase or frequency, reflection strength or polarity] [N1204]
- G01V1/30F [N: Time lapse or 4D effects, e.g. production related effects to the formation (fluid flow per se [E21B47](#))] [N1204]
- G01V1/32 . . . Transforming one recording into another [N: or one representation into another]

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- G01V1/32B . . . [N: Transforming one representation into another] [N1204]
 - G01V1/34 . . . Displaying seismic recordings [N: or visualisation of seismic data or attributes] [C1207]
 - G01V1/34B . . . [N: Visualisation of seismic data or attributes, e.g. in 3D cubes] [N1204]
 - G01V1/36 . . . Effecting static or dynamic corrections on records, e.g. correcting spread; Correlating seismic signals; Eliminating effects of unwanted energy
 - G01V1/36B . . . [N: Effecting static or dynamic corrections; Stacking]
 - G01V1/36C . . . [N: Seismic filtering ([G01V1/37](#) takes precedence)]
 - G01V1/36C2 [N: by correlation of seismic signals]
 - G01V1/36C3 [N: Inverse filtering]
 - G01V1/37 . . . specially adapted for seismic systems using continuous agitation of the ground, [N: e.g. using pulse compression of frequency swept signals for enhancement of received signals]
 - G01V1/37B [N: Correlating received seismic signals with the emitted source signal]
 - G01V1/38 . . . specially adapted for water-covered areas ([G01V1/28](#), [N: [G01V1/42](#)] take precedence) [C1207]
 - G01V1/38B . . . [N: Seismic data acquisition, e.g. survey design (in general [G01V1/00B](#))] [C1207]
 - G01V1/38C . . . [N: Positioning of seismic devices]
 - G01V1/38C1 [N: dynamic steering, e.g. by paravanes or birds] [N1204]
 - G01V1/38C2 [N: measuring position, e.g. by GPS or acoustically] [N1204]
 - G01V1/38D . . . [N: Deployment of seismic devices, e.g. of streamers (equipment for marine deployment in general B63B)] [N1204]
 - G01V1/38D1 [N: to the seabed] [N1204]
 - G01V1/38E . . . [N: control of source arrays, e.g. for far field control] [N1204]
 - G01V1/387 . . . Reducing secondary bubble pulse, i.e. reducing the detected signals resulting from the generation and release of gas bubbles after the primary explosion
 - G01V1/393 . . . Means for loading explosive underwater charges, e.g. combined with ignition devices
 - G01V1/40 . . . specially adapted for well-logging
 - G01V1/42 . . . using generators in one well and receivers elsewhere or vice-versa ([G01V1/52](#) takes precedence) [N9707]
 - G01V1/44 . . . using generators and receivers in the same well ([G01V1/52](#) takes precedence) [N9707]
 - G01V1/46 Data acquisition [N9707]
 - G01V1/48 Processing data [N9707]
 - G01V1/50 Analysing data [N9707]
 - G01V1/52 . . . Structural details [N9707]
 - G01V1/52A [N: Damping devices] [N1204]
 - G01V3/00** **Electric or magnetic prospecting or detecting (by optical means [G01V8/00](#)); Measuring magnetic field characteristics of the earth, e.g. declination, deviation (for navigation, for surveying G01C; [N: measuring direction or magnitude of magnetic fields or magnetic flux in general [G01R33/02](#)]) [C9412]**

Note

Groups [G01V3/15](#) to [G01V3/34](#) take precedence over groups [G01V3/02](#) to [G01V3/14](#)

- G01V3/02 . operating with propagation of electric current
- G01V3/04 . . using dc
- G01V3/06 . . using ac

- G01V3/08 . operating with magnetic or electric fields produced or modified by objects or geological structures or by detecting devices (with electromagnetic waves [G01V3/12](#); measuring the magnetic field characteristics of the earth [G01V3/40](#))
- G01V3/08B . . [N: the magnetic field is produced by the objects or geological structures (characterised by the method of magnetic field measurement [G01R33/00](#))]
- G01V3/08C . . [N: operating with fields produced by spontaneous potentials, e.g. electrochemical or produced by telluric currents ([G01V3/26](#) takes precedence)]
- G01V3/08F . . [N: Controlled source electromagnetic [CSEM] surveying] [N1204]
- G01V3/08G . . [N: the earth magnetic field being modified by the objects or geological structures] [N1204]
- G01V3/08H . . [N: operating with electric fields ([G01V3/08C](#) takes precedence)] [N1204]
- G01V3/10 . . using induction coils
- G01V3/10B . . . [N: by measuring the impedance of the search coil; by measuring features of a resonant circuit comprising the search coil (measuring impedance or characteristics derived therefrom [G01R27/00](#), e.g. quality factor [G01R27/26](#))]
- G01V3/10B2 [N: by measuring amplitude] [N9607]
- G01V3/10C . . . [N: using several coupled or uncoupled coils ([G01V3/10B](#) takes precedence)]
- G01V3/10C2 [N: forming directly coupled primary and secondary coils or loops]
- G01V3/10C2B [N: using compensating coil or loop arrangements]
- G01V3/10C3 [N: the emitter and the receiver coils or loops being uncoupled by positioning them perpendicularly to each other]

- G01V3/12 . operating with electromagnetic waves [N: (operating with millimetre waves [G01V8/00M](#))] [C9805]

- G01V3/14 . operating with electron or nuclear magnetic resonance

- G01V3/15 . specially adapted for use during transport, e.g. by a person, vehicle or boat
- G01V3/16 . . specially adapted for use from aircraft ([G01V3/165](#) to [G01V3/175](#) take precedence)
- G01V3/165 . . operating with magnetic or electric fields produced or modified by the object or by the detecting device (with electromagnetic waves [G01V3/17](#))
- G01V3/17 . . operating with electromagnetic waves [N: (operating with millimetre waves [G01V8/00M](#))] [C9805]

- G01V3/175 . . operating with electron or nuclear magnetic resonance

- G01V3/18 . specially adapted for well-logging
- G01V3/20 . . operating with propagation of electric current
- G01V3/22 . . . using dc
- G01V3/24 . . . using ac

- G01V3/26 . . . operating with magnetic or electric fields produced or modified either by the surrounding earth formation or by the detecting device ([with electromagnetic waves G01V3/30](#))
- G01V3/26B [N: Operating with fields produced by spontaneous potentials, e.g. electrochemicals or produced by telluric currents]
- G01V3/28 using induction coils
- G01V3/30 . . . operating with electromagnetic waves
- G01V3/32 . . . operating with electron or nuclear magnetic resonance
- G01V3/34 . . . Transmitting data to recording or processing apparatus; Recording data
- G01V3/36 . . . Recording data ([G01V3/34 takes precedence](#))
- G01V3/38 . . . Processing data, e.g. for analysis, for interpretation, for correction ([computing in general G06](#))
- G01V3/40 . . . specially adapted for measuring magnetic field characteristics of the earth
- G01V5/00** **Prospecting or detecting by the use of nuclear radiation, e.g. of natural or induced radioactivity (determining the properties of materials G01N; measuring nuclear radiation G01T)**
 - [N: **WARNING**
[N1108] Pending reclassification, the subgroups of this group are not complete; see also this group
]
- G01V5/00D . . . [N: Detecting hidden objects, e.g. weapons, explosives ([sorting of materials or articles according to radioactive properties B07C5/342](#); [investigating or analysing materials by the use of wave or particle radiation G01N23/00](#))]
- G01V5/00D2 [N: Active interrogation, i.e. using an external radiation source, e.g. using pulsed, continuous or cosmic rays] [N1108]
- G01V5/00D2A [N: Measuring scattered radiation] [N1108] [C1207]
- G01V5/00D2B [N: Mixed interrogation beams, e.g. using more than one type of radiation beam] [N1108] [C1207]
- G01V5/00D2C [N: Multiple energy techniques using one type of radiation, e.g. X-rays of different energies ([multi-beam applications, e.g. X-rays and neutrons G01V5/00D2B](#); [spectroscopic applications G01V5/00D2](#))] [N1108] [C1207]
- G01V5/00D2D [N: using Tomography, e.g. CT or SPECT ([detector details in CT applications G01T1/29D4](#))] [N1108] [C1207]
- G01V5/00D2E [N: using stereoscopic means] [N1108] [C1207]
- G01V5/00D2F [N: having relative motion between the source, detector and object other than by conveyor ([G01V5/00D2D takes precedence](#))] [N1108] [C1207]
- G01V5/00D4 [N: Passive interrogation ([for hand, feet or portals G01T1/167](#); [for contaminated surface areas G01T1/169](#))] [N1108] [C1207]
- G01V5/00D6 [N: utilizing a network, e.g. a remote expert, accessing remote data or the like] [N1204]
- G01V5/00D8 [N: detecting special nuclear material [SNM], e.g. Uranium-235, Uranium-233 or Plutonium-239] [N1204]
- G01V5/02 . . . specially adapted for surface logging, e.g. from aircraft

- G01V5/02B . . [N: specially adapted for use from aircraft]
- G01V5/04 . specially adapted for well-logging
- G01V5/04B . . [N: Transmitting data to recording or processing apparatus; Recording data]
- G01V5/06 . . for detecting naturally radioactive minerals
- G01V5/08 . . using primary nuclear radiation sources or X-rays [N: e.g. for inducing radioactivity; investigating or analysing materials by the use of wave or particle radiation, e.g. X-rays, neutrons [G01N23/00](#)]
- G01V5/08B . . . [N: using another radioactive source]
- G01V5/10 . . . using neutron sources [N: neutron generating tubes [H05H5/00](#); neutron sources using isotopes [G21G4/00](#)]
- G01V5/10B [N: and detecting the secondary Y-rays produced in the surrounding layers of the bore hole]
- G01V5/10B2 [N: the neutron source being of the pulsed type]
- G01V5/10C [N: and detecting secondary Y-rays as well as reflected or back-scattered neutrons]
- G01V5/10C2 [N: the neutron source being of the pulsed type]
- G01V5/10D [N: and detecting reflected or back-scattered neutrons]
- G01V5/10D2 [N: the neutron source being of the pulsed type]
- G01V5/12 . . . using gamma or X-ray sources [N: gamma sources using isotopes [G21G4/00](#); X-ray tubes [H01J35/00](#)]
- G01V5/12B [N: and detecting the secondary gamma- or X-rays in different places along the bore hole]
- G01V5/14 . . . using a combination of several sources, e.g. a neutron and a gamma source
- G01V5/14B [N: using a neutron source combined with a gamma- or X-ray source]

G01V7/00 Measuring gravitational fields or waves; Gravimetric prospecting or detecting

- G01V7/00B . [N: using a resonating body or device, e.g. string ([G01V7/08](#) to [G01V7/12](#) take precedence; measuring resonant frequency of mechanical vibrations [G01H13/00](#); measuring frequency per se [G01R23/00](#))]
- G01V7/02 . Details
- G01V7/04 . . Electric, photoelectric, or magnetic indicating or recording means
- G01V7/06 . . Analysis or interpretation of gravimetric records
- G01V7/08 . using balances ([balances in general G01G](#))
- G01V7/10 . . using torsion balances, e.g. Eötvös balance
- G01V7/12 . using pendulums
- G01V7/14 . using free-fall time
- G01V7/16 . specially adapted for use on moving platforms, e.g. ship, aircraft

G01V8/00 Prospecting or detecting by optical means (measurement of characteristics of light [G01J](#); optical scanning systems [G02B26/10](#); discharge tubes detecting the presence of radiation [H01J40/00](#), [H01J47/00](#); semiconductor devices sensitive to light [H01L31/00](#)) [N9412]

Note

This group covers the use of [N: millimetre waves,] infra-red, visible or ultra-violet light.

- G01V8/00M . [N: operating with millimetre waves, e.g. measuring the black body radiation] [N9805]
- G01V8/02 . Prospecting [N9412]
- G01V8/10 . Detecting, e.g. by using light barriers (by reflection from the object [G01S17/00](#); counting of objects carried by a conveyer [G06M7/00](#); signalling or calling arrangements [G08B](#); detecting movement of traffic to be counted or controlled [G08G1/01](#); proximity switches [H03K17/945](#), [H03K17/965](#)) [N9412]
- G01V8/12 . . . using one transmitter and one receiver [N9412]
- G01V8/14 using reflectors [N9412]
- G01V8/16 using optical fibres [N9412]
- G01V8/18 using mechanical scanning systems [N9412]
- G01V8/20 . . . using multiple transmitters or receivers [N9412]
- G01V8/22 using reflectors [N9412]
- G01V8/24 using optical fibres [N9412]
- G01V8/26 using mechanical scanning systems [N9412]

- G01V9/00** **Prospecting or detecting by methods not provided for in groups [G01V1/00](#) to [G01V8/00](#) [C9412]**

- G01V9/00A . [N: using fields or radiation detectable only by persons susceptible therefor, e.g. radio-esthesia, dowsing]
- G01V9/00B . [N: by thermal methods, e.g. after generation of heat by chemical reactions]
- G01V9/00C . [N: by detecting gases or particles representative of underground layers at or near the surface (analysing earth materials [G01N33/24](#); analysing gases per se [G01N](#))]
- G01V9/02 . Determining existence or flow of underground water

- G01V11/00** **prospecting or detecting by methods combining techniques covered by two or more of main groups [G01V1/00](#) to [G01V9/00](#)**

- G01V11/00B . [N: Details, e.g. power supply systems for logging instruments, transmitting or recording data, specially adapted for well logging, also if the prospecting method is irrelevant (means for transmitting well survey signals [E21B47/12](#); signal transmission systems in general [G08C](#); transmission in general [H04B](#))]
- G01V11/00B2 . . [N: Devices for positioning logging sondes with respect to the borehole wall (centralising devices for drilling rods or pipes [E21B17/10](#); setting or locking tools in boreholes [E21B23/00](#); Locating objects in boreholes [E21B47/09](#))]
- G01V11/00C . [N: using the seismo-electric effect] [N0901]

- G01V13/00** **Manufacturing, calibrating, cleaning, or repairing instruments or devices covered by the preceding groups**

- G01V15/00** **Tags attached to, or associated with, an object, in order to enable detection of the object** (record carriers for use with machines [G06K19/00](#); signs, labels [G09F](#)) [[N9412](#)]
- G01V99/00** **Subject matter not provided for in other groups of this subclass** [[N0901](#)]
- G01V99/00B** . [N: Geomodels or geomodelling, not related to particular measurements] [[N1204](#)]