

| Symbol           | Typ                 | Titel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>G</b>         | <b>Sektion</b>      | <b>SECTION G — PHYSICS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>G01</b>       | <b>Untersektion</b> | <b>INSTRUMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>G01</b>       | <b>Klasse</b>       | <b>MEASURING (counting G06M); TESTING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>G01R</b>      | <b>Unterklasse</b>  | <b>MEASURING ELECTRIC VARIABLES; MEASURING MAGNETIC VARIABLES (measuring physical variables of any kind by conversion into electric variables, <u>see</u> Note (4) following the title of class G01; measuring diffusion of ions in an electric field, e.g. electrophoresis, electro-osmosis, G01N; investigating non-electric or non-magnetic properties of materials by using electric or magnetic methods G01N; indicating correct tuning of resonant circuits H03J 3/12; monitoring electronic pulse counters H03K 21/40 ; monitoring operation of communication systems H04)</b> |
| <b>G01R 1/00</b> | <b>Hauptgruppe</b>  | <b><i>Details of instruments or arrangements of the types included in groups G01R 5/00-G01R 13/00 and G01R 31/00 ( constructional details particular to arrangements for measuring the electric consumption G01R 11/02 ) [3, 2006.01]</i></b>                                                                                                                                                                                                                                                                                                                                         |
| G01R 1/02        | 1-Punkt Untergruppe | . General constructional details (details of a kind applicable to measuring arrangements not specially adapted for a specific variable G01D 7/00)                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| G01R 1/04        | 2-Punkt Untergruppe | . . Housings; Supporting members; Arrangements of terminals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| G01R 1/06        | 2-Punkt Untergruppe | . . Measuring leads; Measuring probes (G01R 19/145, G01R 19/165 take precedence; end pieces for leads H01R 11/00) [3]                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| G01R 1/067       | 3-Punkt Untergruppe | . . . Measuring probes [3]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| G01R 1/07        | 4-Punkt Untergruppe | . . . . Non contact-making probes [6]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| G01R 1/073       | 4-Punkt Untergruppe | . . . . Multiple probes [3]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| G01R 1/08        | 2-Punkt Untergruppe | . . Pointers; Scales, Scale illumination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| G01R 1/10        | 2-Punkt Untergruppe | . . Arrangements of bearings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| G01R 1/12        | 3-Punkt Untergruppe | . . . of strip or wire bearings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| G01R 1/14        | 2-Punkt Untergruppe | . . Braking arrangements; Damping arrangements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| G01R 1/16        | 2-Punkt Untergruppe | . . Magnets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| G01R 1/18        | 2-Punkt Untergruppe | . . Screening arrangements against electric or magnetic fields, e.g. against earth's field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| G01R 1/20        | 1-Punkt Untergruppe | . Modifications of basic electric elements for use in electric measuring instruments; Structural combinations of such elements with such instruments                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| G01R 1/22        | 2-Punkt Untergruppe | . . Tong testers acting as secondary windings of current transformers (voltage or current isolation using transformers G01R 15/18)                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| G01R 1/24        | 2-Punkt Untergruppe | . . Transmission-line, e.g. waveguide, measuring sections, e.g. slotted section                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| G01R 1/26        | 3-Punkt Untergruppe | . . . with linear movement of probe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| G01R 1/28        | 1-Punkt Untergruppe | . Provision in measuring instruments for reference values, e.g. standard voltage, standard waveform                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| G01R 1/30        | 1-Punkt Untergruppe | . Structural combination of electric measuring instruments with basic electronic circuits, e.g. with amplifier                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| G01R 1/36        | 1-Punkt Untergruppe | . Overload-protection arrangements or circuits for electric measuring instruments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| G01R 1/38        | 1-Punkt Untergruppe | . Arrangements for altering the indicating characteristic, e.g. by modifying the air gap (circuits G01D 3/02)                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Symbol           | Typ                 | Titel                                                                                                                                         |
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| G01R 1/40        | 1-Punkt Untergruppe | . Modifications of instruments to indicate the maximum or the minimum value reached in a time interval, e.g. by maximum indicator pointer [3] |
| G01R 1/42        | 2-Punkt Untergruppe | . . thermally operated                                                                                                                        |
| G01R 1/44        | 1-Punkt Untergruppe | . Modifications of instruments for temperature compensation [2]                                                                               |
| <b>G01R 3/00</b> | <b>Hauptgruppe</b>  | <b>Apparatus or processes specially adapted for the manufacture of measuring instruments</b>                                                  |
| <b>G01R 5/00</b> | <b>Hauptgruppe</b>  | <b>Instruments for converting a single current or a single voltage into a mechanical displacement ( vibration galvanometers G01R 9/02)</b>    |
| G01R 5/02        | 1-Punkt Untergruppe | . Moving-coil instruments                                                                                                                     |
| G01R 5/04        | 2-Punkt Untergruppe | . . with magnet external to the coil                                                                                                          |
| G01R 5/06        | 2-Punkt Untergruppe | . . with core magnet                                                                                                                          |
| G01R 5/08        | 2-Punkt Untergruppe | . . specially adapted for wide angle deflection; with eccentrically-pivoted moving coil                                                       |
| G01R 5/10        | 1-Punkt Untergruppe | . String galvanometers                                                                                                                        |
| G01R 5/12        | 1-Punkt Untergruppe | . Loop galvanometers                                                                                                                          |
| G01R 5/14        | 1-Punkt Untergruppe | . Moving-iron instruments                                                                                                                     |
| G01R 5/16        | 2-Punkt Untergruppe | . . with pivoting magnet                                                                                                                      |
| G01R 5/18        | 2-Punkt Untergruppe | . . with pivoting soft iron, e.g. needle galvanometer                                                                                         |
| G01R 5/20        | 1-Punkt Untergruppe | . Induction instruments e.g. Ferraris instruments                                                                                             |
| G01R 5/22        | 1-Punkt Untergruppe | . Thermoelectric instruments (measuring effective values of currents or voltages using thermoconverters G01R 19/03)                           |
| G01R 5/24        | 2-Punkt Untergruppe | . . operated by elongation of a strip or wire or by expansion of a gas or fluid                                                               |
| G01R 5/26        | 2-Punkt Untergruppe | . . operated by deformation of a bimetallic element                                                                                           |
| G01R 5/28        | 1-Punkt Untergruppe | . Electrostatic instruments (combined with radiation detector G01T)                                                                           |
| G01R 5/30        | 2-Punkt Untergruppe | . . Leaf electrometers                                                                                                                        |
| G01R 5/32        | 2-Punkt Untergruppe | . . Wire electrometers; Needle electrometers                                                                                                  |
| G01R 5/34        | 2-Punkt Untergruppe | . . Quadrant electrometers                                                                                                                    |
| <b>G01R 7/00</b> | <b>Hauptgruppe</b>  | <b>Instruments capable of converting two or more currents or voltages into a single mechanical displacement (G01R 9/00 takes precedence)</b>  |
| G01R 7/02        | 1-Punkt Untergruppe | . for forming a sum or a difference                                                                                                           |
| G01R 7/04        | 1-Punkt Untergruppe | . for forming a quotient (for measuring resistance G01R 27/08)                                                                                |
| G01R 7/06        | 2-Punkt Untergruppe | . . moving-iron type                                                                                                                          |
| G01R 7/08        | 2-Punkt Untergruppe | . . moving-coil type, e.g. crossed-coil type                                                                                                  |
| G01R 7/10        | 3-Punkt Untergruppe | . . . having more than two moving coils                                                                                                       |
| G01R 7/12        | 1-Punkt Untergruppe | . for forming product                                                                                                                         |
| G01R 7/14        | 2-Punkt Untergruppe | . . moving-iron type                                                                                                                          |
| G01R 7/16        | 2-Punkt Untergruppe | . . having both fixed and moving coils, i.e. dynamometers                                                                                     |

| Symbol            | Typ                 | Titel                                                                                                                                                                                              |
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| G01R 7/18         | 3-Punkt Untergruppe | . . . with iron core magnetically coupling fixed and moving coils                                                                                                                                  |
| <b>G01R 9/00</b>  | <b>Hauptgruppe</b>  | <b>Instruments employing mechanical resonance</b>                                                                                                                                                  |
| G01R 9/02         | 1-Punkt Untergruppe | . Vibration galvanometers, e.g. for measuring current                                                                                                                                              |
| G01R 9/04         | 1-Punkt Untergruppe | . using vibrating reeds, e.g. for measuring frequency                                                                                                                                              |
| G01R 9/06         | 2-Punkt Untergruppe | . . magnetically driven                                                                                                                                                                            |
| G01R 9/08         | 2-Punkt Untergruppe | . . piezo-electrically driven                                                                                                                                                                      |
| <b>G01R 11/00</b> | <b>Hauptgruppe</b>  | <b>Electromechanical arrangements for measuring time integral of electric power or current, e.g. of consumption (monitoring electric consumption of electrically-propelled vehicles B60L 3/00)</b> |
| G01R 11/02        | 1-Punkt Untergruppe | . Constructional details (applicable to electric measuring instruments in general G01R 1/00)                                                                                                       |
| G01R 11/04        | 2-Punkt Untergruppe | . . Housings; Supporting racks; Arrangements of terminals                                                                                                                                          |
| G01R 11/06        | 2-Punkt Untergruppe | . . Magnetic circuits of induction meters [2]                                                                                                                                                      |
| G01R 11/067       | 3-Punkt Untergruppe | . . . Coils therefor [2]                                                                                                                                                                           |
| G01R 11/073       | 3-Punkt Untergruppe | . . . Armatures therefor [2]                                                                                                                                                                       |
| G01R 11/09        | 4-Punkt Untergruppe | . . . . Disc armatures [2]                                                                                                                                                                         |
| G01R 11/10        | 2-Punkt Untergruppe | . . Braking magnets; Damping arrangements                                                                                                                                                          |
| G01R 11/12        | 2-Punkt Untergruppe | . . Arrangements of bearings                                                                                                                                                                       |
| G01R 11/14        | 3-Punkt Untergruppe | . . . with magnetic relief                                                                                                                                                                         |
| G01R 11/16        | 2-Punkt Untergruppe | . . Adaptations of counters to electricity meters                                                                                                                                                  |
| G01R 11/17        | 2-Punkt Untergruppe | . . Compensating for errors; Adjusting or regulating means therefor [2]                                                                                                                            |
| G01R 11/18        | 3-Punkt Untergruppe | . . . Compensating for variations in ambient conditions [2]                                                                                                                                        |
| G01R 11/185       | 4-Punkt Untergruppe | . . . . Temperature compensation [2]                                                                                                                                                               |
| G01R 11/19        | 3-Punkt Untergruppe | . . . Compensating for errors caused by disturbing torque, e.g. rotating-field errors of polyphase meters [2]                                                                                      |
| G01R 11/20        | 3-Punkt Untergruppe | . . . Compensating for phase errors in induction meters [2]                                                                                                                                        |
| G01R 11/21        | 3-Punkt Untergruppe | . . . Compensating for errors caused by damping effects of the current, e.g. adjustment in the overload range [2]                                                                                  |
| G01R 11/22        | 3-Punkt Untergruppe | . . . Adjusting torque, e.g. adjusting starting torque, adjusting of polyphase meters for obtaining equal torques [2]                                                                              |
| G01R 11/23        | 3-Punkt Untergruppe | . . . Compensating for errors caused by friction, e.g. adjustment in the light-load range [2]                                                                                                      |
| G01R 11/24        | 2-Punkt Untergruppe | . . Arrangements for avoiding or indicating fraudulent use [4]                                                                                                                                     |
| G01R 11/25        | 2-Punkt Untergruppe | . . Arrangements for indicating or signalling faults [2, 4]                                                                                                                                        |
| G01R 11/30        | 1-Punkt Untergruppe | . Dynamo-electric motor meters                                                                                                                                                                     |
| G01R 11/32        | 2-Punkt Untergruppe | . . Watt-hour meters                                                                                                                                                                               |
| G01R 11/34        | 2-Punkt Untergruppe | . . Ampère-hour meters                                                                                                                                                                             |
| G01R 11/36        | 1-Punkt Untergruppe | . Induction meters, e.g. Ferraris meters (Ferraris instruments G01R 5/20)                                                                                                                          |

| Symbol            | Typ                 | Titel                                                                                                                                                                                     |
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| G01R 11/38        | 2-Punkt Untergruppe | . . for single-phase operation                                                                                                                                                            |
| G01R 11/40        | 2-Punkt Untergruppe | . . for polyphase operation                                                                                                                                                               |
| G01R 11/42        | 3-Punkt Untergruppe | . . . Circuitry therefor                                                                                                                                                                  |
| G01R 11/46        | 1-Punkt Untergruppe | . Electrically-operated clockwork meters; Oscillatory meters; Pendulum meters                                                                                                             |
| G01R 11/48        | 1-Punkt Untergruppe | . Meters specially adapted for measuring real or reactive components; Meters specially adapted for measuring apparent energy                                                              |
| G01R 11/50        | 2-Punkt Untergruppe | . . for measuring real component                                                                                                                                                          |
| G01R 11/52        | 2-Punkt Untergruppe | . . for measuring reactive component                                                                                                                                                      |
| G01R 11/54        | 2-Punkt Untergruppe | . . for measuring simultaneously at least two of the following three variables: real component, reactive component, apparent energy                                                       |
| G01R 11/56        | 1-Punkt Untergruppe | . Special tariff meters                                                                                                                                                                   |
| G01R 11/57        | 2-Punkt Untergruppe | . . Multi-rate meters (G01R 11/63 takes precedence) [2]                                                                                                                                   |
| G01R 11/58        | 3-Punkt Untergruppe | . . . Tariff-switching devices therefor [2]                                                                                                                                               |
| G01R 11/60        | 2-Punkt Untergruppe | . . Subtraction meters; Meters measuring maximum or minimum-load hours                                                                                                                    |
| G01R 11/63        | 2-Punkt Untergruppe | . . Over-consumption meters, e.g. measuring consumption while a predetermined level of power is exceeded [2]                                                                              |
| G01R 11/64        | 2-Punkt Untergruppe | . . Maximum meters, e.g. tariff for a period is based on maximum demand within that period                                                                                                |
| G01R 11/66        | 3-Punkt Untergruppe | . . . Circuitry                                                                                                                                                                           |
| <b>G01R 13/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for displaying electric variables or waveforms (display by mechanical displacement only G01R 5/00, G01R 7/00, G01R 9/00; recording frequency spectrum G01R 23/18) [4]</b> |
| G01R 13/02        | 1-Punkt Untergruppe | . for displaying measured electric variables in digital form (counters G06M; analogue/digital conversion in general H03M 1/00) [4]                                                        |
| G01R 13/04        | 1-Punkt Untergruppe | . for producing permanent records [4]                                                                                                                                                     |
| G01R 13/06        | 2-Punkt Untergruppe | . . Modifications for recording transient disturbances, e.g. by starting or accelerating a recording medium                                                                               |
| G01R 13/08        | 2-Punkt Untergruppe | . . Electromechanical recording system using a mechanical direct-writing method                                                                                                           |
| G01R 13/10        | 3-Punkt Untergruppe | . . . with intermittent recording by representing the variable by the length of a stroke or by the position of a dot                                                                      |
| G01R 13/12        | 2-Punkt Untergruppe | . . Chemical recording, e.g. clydonographs (G01R 13/14 takes precedence)                                                                                                                  |
| G01R 13/14        | 2-Punkt Untergruppe | . . Recording on a light-sensitive material                                                                                                                                               |
| G01R 13/16        | 2-Punkt Untergruppe | . . Recording on a magnetic medium                                                                                                                                                        |
| G01R 13/18        | 3-Punkt Untergruppe | . . . using boundary displacement                                                                                                                                                         |
| G01R 13/20        | 1-Punkt Untergruppe | . Cathode-ray oscilloscopes (cathode-ray tubes H01J 31/00)                                                                                                                                |
| G01R 13/22        | 2-Punkt Untergruppe | . . Circuits therefor (circuits for generating pulses, e.g. sawtooth waveforms H03K 3/00)                                                                                                 |
| G01R 13/24        | 3-Punkt Untergruppe | . . . Time-base deflection circuits                                                                                                                                                       |
| G01R 13/26        | 3-Punkt Untergruppe | . . . Circuits for controlling the intensity of the electron beam (brilliance control H01J 29/98)                                                                                         |

| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                                                                                                               |
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| G01R 13/28        | 3-Punkt Untergruppe | . . . Circuits for simultaneous or sequential presentation of more than one variable (electronic switches H03K 17/00)                                                                                                                                                                                                                               |
| G01R 13/30        | 3-Punkt Untergruppe | . . . Circuits for inserting reference markers, e.g. for timing, for calibrating, for frequency marking                                                                                                                                                                                                                                             |
| G01R 13/32        | 3-Punkt Untergruppe | . . . Circuits for displaying non-recurrent functions such as transients; Circuits for triggering; Circuits for synchronisation; Circuits for time-base expansion                                                                                                                                                                                   |
| G01R 13/34        | 3-Punkt Untergruppe | . . . Circuits for representing a single waveform by sampling, e.g. for very high frequencies (sample-and-hold arrangements G11C 27/02) [2]                                                                                                                                                                                                         |
| G01R 13/36        | 1-Punkt Untergruppe | . using length of glow discharge, e.g. glowlight oscilloscopes (discharge tubes H01J) [4]                                                                                                                                                                                                                                                           |
| G01R 13/38        | 1-Punkt Untergruppe | . using the steady or oscillatory displacement of a light beam by an electromechanical measuring system (such measuring systems <u>per se</u> G01R 5/00, G01R 7/00, G01R 9/00) [4]                                                                                                                                                                  |
| G01R 13/40        | 1-Punkt Untergruppe | . using modulation of a light beam otherwise than by mechanical displacement, e.g. by Kerr effect [4]                                                                                                                                                                                                                                               |
| G01R 13/42        | 1-Punkt Untergruppe | . Instruments using length of spark discharge, e.g. by measuring maximum separation of electrodes to produce spark                                                                                                                                                                                                                                  |
| <b>G01R 15/00</b> | <b>Hauptgruppe</b>  | <b><i>Details of measuring arrangements of the types provided for in groups G01R 17/00-G01R 29/00, G01R 33/00-G01R 33/26 and G01R 35/00 ( details of instruments G01R 1/00; measuring leads, measuring probes G01R 1/06; overload protection arrangements G01R 1/36; circuits for correcting the transfer function G01D 3/02 ) [1, 2006.01]</i></b> |
| G01R 15/04        | 1-Punkt Untergruppe | . Voltage dividers [6]                                                                                                                                                                                                                                                                                                                              |
| G01R 15/06        | 2-Punkt Untergruppe | . . having reactive components, e.g. capacitive transformer [6]                                                                                                                                                                                                                                                                                     |
| G01R 15/08        | 1-Punkt Untergruppe | . Circuits for altering the measuring range                                                                                                                                                                                                                                                                                                         |
| G01R 15/09        | 2-Punkt Untergruppe | . . Autoranging circuits [6]                                                                                                                                                                                                                                                                                                                        |
| G01R 15/12        | 1-Punkt Untergruppe | . Circuits for multi-testers, e.g. for measuring voltage, current, or impedance at will                                                                                                                                                                                                                                                             |
| G01R 15/14        | 1-Punkt Untergruppe | . Adaptations providing voltage or current isolation, e.g. for high-voltage or high-current networks (voltage dividers G01R 15/04) [6]                                                                                                                                                                                                              |
| G01R 15/16        | 2-Punkt Untergruppe | . . using capacitive devices [6]                                                                                                                                                                                                                                                                                                                    |
| G01R 15/18        | 2-Punkt Untergruppe | . . using inductive devices, e.g. transformers [6]                                                                                                                                                                                                                                                                                                  |
| G01R 15/20        | 2-Punkt Untergruppe | . . using galvano-magnetic devices, e.g. Hall-effect devices [6]                                                                                                                                                                                                                                                                                    |
| G01R 15/22        | 2-Punkt Untergruppe | . . using light-emitting devices, e.g. LED, optocouplers [6]                                                                                                                                                                                                                                                                                        |
| G01R 15/24        | 2-Punkt Untergruppe | . . using light-modulating devices [6]                                                                                                                                                                                                                                                                                                              |
| G01R 15/26        | 2-Punkt Untergruppe | . . using modulation of waves other than light, e.g. radio or acoustic waves [6]                                                                                                                                                                                                                                                                    |
| <b>G01R 17/00</b> | <b>Hauptgruppe</b>  | <b>Measuring arrangements involving comparison with a reference value, e.g. bridge</b>                                                                                                                                                                                                                                                              |
| G01R 17/02        | 1-Punkt Untergruppe | . Arrangements in which the value to be measured is automatically compared with a reference value                                                                                                                                                                                                                                                   |
| G01R 17/04        | 2-Punkt Untergruppe | . . in which the reference value is continuously or periodically swept over the range of values to be measured                                                                                                                                                                                                                                      |
| G01R 17/06        | 2-Punkt Untergruppe | . . Automatic balancing arrangements                                                                                                                                                                                                                                                                                                                |
| G01R 17/08        | 3-Punkt Untergruppe | . . . in which a force or torque representing the measured value is balanced by a force or torque representing the reference value                                                                                                                                                                                                                  |
| G01R 17/10        | 1-Punkt Untergruppe | . ac or dc measuring bridges (automatic comparison or re-balancing arrangements G01R 17/02)                                                                                                                                                                                                                                                         |

| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                           |
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| G01R 17/12        | 2-Punkt Untergruppe | . . using comparison of currents, e.g. bridges with differential current output                                                                                                                                                                 |
| G01R 17/14        | 2-Punkt Untergruppe | . . with indication of measured value by calibrated null indicator, e.g. percent bridge, tolerance bridge (G01R 17/12, G01R 17/16 take precedence)                                                                                              |
| G01R 17/16        | 2-Punkt Untergruppe | . . with discharge tubes or semiconductor devices in one or more arms of the bridge, e.g. voltmeter using a difference amplifier                                                                                                                |
| G01R 17/18        | 2-Punkt Untergruppe | . . with more than four branches                                                                                                                                                                                                                |
| G01R 17/20        | 1-Punkt Untergruppe | . ac or dc potentiometric measuring arrangements (automatic comparison or re-balancing arrangements G01R 17/02)                                                                                                                                 |
| G01R 17/22        | 2-Punkt Untergruppe | . . with indication of measured value by calibrated null indicator                                                                                                                                                                              |
| <b>G01R 19/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for measuring currents or voltages or for indicating presence or sign thereof (G01R 5/00 takes precedence; for measuring bioelectric currents or voltages A61B 5/04) [4]</b>                                                    |
| G01R 19/02        | 1-Punkt Untergruppe | . Measuring effective values, i.e. root-mean-square values                                                                                                                                                                                      |
| G01R 19/03        | 2-Punkt Untergruppe | . . using thermoconverters [4]                                                                                                                                                                                                                  |
| G01R 19/04        | 1-Punkt Untergruppe | . Measuring peak values of ac or of pulses [2]                                                                                                                                                                                                  |
| G01R 19/06        | 1-Punkt Untergruppe | . Measuring real component; Measuring reactive component                                                                                                                                                                                        |
| G01R 19/08        | 1-Punkt Untergruppe | . Measuring current density                                                                                                                                                                                                                     |
| G01R 19/10        | 1-Punkt Untergruppe | . Measuring sum, difference, or ratio                                                                                                                                                                                                           |
| G01R 19/12        | 1-Punkt Untergruppe | . Measuring rate of change                                                                                                                                                                                                                      |
| G01R 19/14        | 1-Punkt Untergruppe | . Indicating direction of current; Indicating polarity of voltage                                                                                                                                                                               |
| G01R 19/145       | 1-Punkt Untergruppe | . Indicating the presence of current or voltage [3]                                                                                                                                                                                             |
| G01R 19/15        | 2-Punkt Untergruppe | . . Indicating the presence of current [3]                                                                                                                                                                                                      |
| G01R 19/155       | 2-Punkt Untergruppe | . . Indicating the presence of voltage [3]                                                                                                                                                                                                      |
| G01R 19/165       | 1-Punkt Untergruppe | . Indicating that current or voltage is either above or below a predetermined value or within or outside a predetermined range of values (circuits with regenerative action, e.g. Schmitt trigger H03K 3/00; threshold switches H03K 17/00) [3] |
| G01R 19/17        | 2-Punkt Untergruppe | . . giving an indication of the number of times this occurs [3]                                                                                                                                                                                 |
| G01R 19/175       | 1-Punkt Untergruppe | . Indicating the instants of passage of current or voltage through a given value, e.g. passage through zero [3]                                                                                                                                 |
| G01R 19/18        | 1-Punkt Untergruppe | . using conversion of dc into ac, e.g. with choppers                                                                                                                                                                                            |
| G01R 19/20        | 2-Punkt Untergruppe | . . using transducers                                                                                                                                                                                                                           |
| G01R 19/22        | 1-Punkt Untergruppe | . using conversion of ac into dc                                                                                                                                                                                                                |
| G01R 19/25        | 1-Punkt Untergruppe | . using digital measurement techniques (arrangements for displaying measured electric variables in digital form G01R 13/02) [3]                                                                                                                 |
| G01R 19/252       | 2-Punkt Untergruppe | . . using analogue/digital converters of the type with conversion of voltage or current into frequency and measuring of this frequency [4]                                                                                                      |
| G01R 19/255       | 2-Punkt Untergruppe | . . using analogue/digital converters of the type with counting of pulses during a period of time proportional to voltage or current, delivered by a pulse generator with fixed frequency [4]                                                   |

| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                    |
|-------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G01R 19/257       | 2-Punkt Untergruppe | . . using analogue/digital converters of the type with comparison of different reference values with the value of voltage or current, e.g. using step-by-step method [4]                                                                                 |
| G01R 19/28        | 1-Punkt Untergruppe | . adapted for measuring in circuits having distributed constants                                                                                                                                                                                         |
| G01R 19/30        | 1-Punkt Untergruppe | . Measuring the maximum or the minimum value of current or voltage reached in a time interval (G01R 19/04 takes precedence; modifications of instruments to indicate the maximum or the minimum value reached in a time interval G01R 1/40) [2, 3]       |
| G01R 19/32        | 1-Punkt Untergruppe | . Compensating for temperature change (modifications of instruments for temperature compensation G01R 1/44) [2]                                                                                                                                          |
| <b>G01R 21/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for measuring electric power or power factor (G01R 7/12 takes precedence) [4]</b>                                                                                                                                                        |
| G01R 21/01        | 1-Punkt Untergruppe | . in circuits having distributed constants (G01R 21/04, G01R 21/07, G01R 21/09, G01R 21/12 take precedence ) [2]                                                                                                                                         |
| G01R 21/02        | 1-Punkt Untergruppe | . by thermal methods [2]                                                                                                                                                                                                                                 |
| G01R 21/04        | 2-Punkt Untergruppe | . . in circuits having distributed constants                                                                                                                                                                                                             |
| G01R 21/06        | 1-Punkt Untergruppe | . by measuring current and voltage (G01R 21/08-G01R 21/133 take precedence) [4]                                                                                                                                                                          |
| G01R 21/07        | 2-Punkt Untergruppe | . . in circuits having distributed constants (G01R 21/09 takes precedence) [2]                                                                                                                                                                           |
| G01R 21/08        | 1-Punkt Untergruppe | . by using galvanomagnetic-effect devices, e.g. Hall-effect devices (such devices <u>per se</u> H01L) [2]                                                                                                                                                |
| G01R 21/09        | 2-Punkt Untergruppe | . . in circuits having distributed constants [2]                                                                                                                                                                                                         |
| G01R 21/10        | 1-Punkt Untergruppe | . by using square-law characteristics of circuit elements, e.g. diodes, to measure power absorbed by loads of known impedance (G01R 21/02 takes precedence) [2]                                                                                          |
| G01R 21/12        | 2-Punkt Untergruppe | . . in circuits having distributed constants                                                                                                                                                                                                             |
| G01R 21/127       | 1-Punkt Untergruppe | . by using pulse modulation (G01R 21/133 takes precedence) [4]                                                                                                                                                                                           |
| G01R 21/133       | 1-Punkt Untergruppe | . by using digital technique [4]                                                                                                                                                                                                                         |
| G01R 21/14        | 1-Punkt Untergruppe | . Compensating for temperature change [2]                                                                                                                                                                                                                |
| <b>G01R 22/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for measuring time integral of electric power or current, e.g. electricity meters ( electromechanical arrangements therefor G01R 11/00 ; monitoring electric consumption of electrically-propelled vehicles B60L 3/00 ) [4, 2006.01]</b> |
| G01R 22/02        | 1-Punkt Untergruppe | . by electrolytic methods [4]                                                                                                                                                                                                                            |
| G01R 22/04        | 1-Punkt Untergruppe | . by calorimetric methods [4]                                                                                                                                                                                                                            |
| G01R 22/06        | 1-Punkt Untergruppe | . by electronic methods [2006.01]                                                                                                                                                                                                                        |
| G01R 22/08        | 2-Punkt Untergruppe | . . using analogue techniques [2006.01]                                                                                                                                                                                                                  |
| G01R 22/10        | 2-Punkt Untergruppe | . . using digital techniques [2006.01]                                                                                                                                                                                                                   |
| <b>G01R 23/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for measuring frequencies; Arrangements for analysing frequency spectra ( frequency discriminators H03D)</b>                                                                                                                             |
| G01R 23/02        | 1-Punkt Untergruppe | . Arrangements for measuring frequency, e.g. pulse repetition rate; Arrangements for measuring period of current or voltage (measuring short time intervals G04F)                                                                                        |
| G01R 23/04        | 2-Punkt Untergruppe | . . adapted for measuring in circuits having distributed constants                                                                                                                                                                                       |
| G01R 23/06        | 2-Punkt Untergruppe | . . by converting frequency into an amplitude of current or voltage                                                                                                                                                                                      |
| G01R 23/07        | 3-Punkt Untergruppe | . . . using response of circuits tuned on resonance, e.g. grid-drip meter [2]                                                                                                                                                                            |

| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                             |
|-------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G01R 23/08        | 3-Punkt Untergruppe | . . . using response of circuits tuned off resonance                                                                                                                                                                                                              |
| G01R 23/09        | 3-Punkt Untergruppe | . . . using analogue integrators, e.g. capacitors establishing a mean value by balance of input signals and defined discharge signals or leakage (radiation-measuring instruments in which pulses generated by a radiation detector are integrated G01T 1/15) [2] |
| G01R 23/10        | 2-Punkt Untergruppe | . . by converting frequency into a train of pulses, which are then counted                                                                                                                                                                                        |
| G01R 23/12        | 2-Punkt Untergruppe | . . by converting frequency into phase shift                                                                                                                                                                                                                      |
| G01R 23/14        | 2-Punkt Untergruppe | . . by heterodyning; by beat-frequency comparison (generation of oscillations by beating unmodulated signals of different frequencies H03B 21/00) [2]                                                                                                             |
| G01R 23/15        | 2-Punkt Untergruppe | . . Indicating that frequency of pulses is either above or below a predetermined value or within or outside a predetermined range of values, by making use of non-linear or digital elements [3]                                                                  |
| G01R 23/16        | 1-Punkt Untergruppe | . Spectrum analysis; Fourier analysis                                                                                                                                                                                                                             |
| G01R 23/163       | 2-Punkt Untergruppe | . . adapted for measuring in circuits having distributed constants [3]                                                                                                                                                                                            |
| G01R 23/165       | 2-Punkt Untergruppe | . . using filters [3]                                                                                                                                                                                                                                             |
| G01R 23/167       | 3-Punkt Untergruppe | . . . with digital filters [3]                                                                                                                                                                                                                                    |
| G01R 23/17        | 2-Punkt Untergruppe | . . with optical auxiliary devices [3]                                                                                                                                                                                                                            |
| G01R 23/173       | 2-Punkt Untergruppe | . . Wobulating devices similar to swept panoramic receivers (panoramic receivers <u>per se</u> H03J 7/32) [3]                                                                                                                                                     |
| G01R 23/175       | 2-Punkt Untergruppe | . . by delay means, e.g. tapped delay lines [3]                                                                                                                                                                                                                   |
| G01R 23/177       | 2-Punkt Untergruppe | . . Analysis of very low frequencies [3]                                                                                                                                                                                                                          |
| G01R 23/18        | 2-Punkt Untergruppe | . . with provision for recording frequency spectrum                                                                                                                                                                                                               |
| G01R 23/20        | 2-Punkt Untergruppe | . . Measurement of non-linear distortion                                                                                                                                                                                                                          |
| <b>G01R 25/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for measuring phase angle between a voltage and a current or between voltages or currents (measuring power factor G01R 21/00; measuring position of individual pulses in a pulse train G01R 29/02; phase discriminators H03D) [2]</b>             |
| G01R 25/02        | 1-Punkt Untergruppe | . in circuits having distributed constants                                                                                                                                                                                                                        |
| G01R 25/04        | 1-Punkt Untergruppe | . involving adjustment of a phase shifter to produce a predetermined phase difference, e.g. zero difference                                                                                                                                                       |
| G01R 25/06        | 1-Punkt Untergruppe | . employing quotient instrument                                                                                                                                                                                                                                   |
| G01R 25/08        | 1-Punkt Untergruppe | . by counting of standard pulses (measuring time intervals G04F) [2]                                                                                                                                                                                              |
| <b>G01R 27/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for measuring resistance, reactance, impedance, or electric characteristics derived therefrom</b>                                                                                                                                                 |
| G01R 27/02        | 1-Punkt Untergruppe | . Measuring real or complex resistance, reactance, impedance, or other two-pole characteristics derived therefrom, e.g. time constant (by measuring phase angle only G01R 25/00)                                                                                  |
| G01R 27/04        | 2-Punkt Untergruppe | . . in circuits having distributed constants                                                                                                                                                                                                                      |
| G01R 27/06        | 3-Punkt Untergruppe | . . . Measuring reflection coefficients; Measuring standing-wave ratio                                                                                                                                                                                            |
| G01R 27/08        | 2-Punkt Untergruppe | . . Measuring resistance by measuring both voltage and current                                                                                                                                                                                                    |
| G01R 27/10        | 3-Punkt Untergruppe | . . . using two-coil or crossed-coil instruments forming quotient                                                                                                                                                                                                 |
| G01R 27/12        | 4-Punkt Untergruppe | . . . . using hand generators, e.g. meggers                                                                                                                                                                                                                       |



| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                                                 |
|-------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G01R 27/14        | 2-Punkt Untergruppe | . . Measuring resistance by measuring current or voltage obtained from a reference source (G01R 27/16, G01R 27/20, G01R 27/22 take precedence)                                                                                                                                        |
| G01R 27/16        | 2-Punkt Untergruppe | . . Measuring impedance of element or network through which a current is passing from another source, e.g. cable, power line                                                                                                                                                          |
| G01R 27/18        | 3-Punkt Untergruppe | . . . Measuring resistance to earth                                                                                                                                                                                                                                                   |
| G01R 27/20        | 2-Punkt Untergruppe | . . Measuring earth resistance; Measuring contact resistance of earth connections, e.g. plates                                                                                                                                                                                        |
| G01R 27/22        | 2-Punkt Untergruppe | . . Measuring resistance of fluids (measuring vessels, electrodes therefor G01N 27/07)                                                                                                                                                                                                |
| G01R 27/26        | 2-Punkt Untergruppe | . . Measuring inductance or capacitance; Measuring quality factor, e.g. by using the resonance method; Measuring loss factor; Measuring dielectric constants                                                                                                                          |
| G01R 27/28        | 1-Punkt Untergruppe | . Measuring attenuation, gain, phase shift, or derived characteristics of electric four-pole networks, i.e. two-port networks; Measuring transient response (in line transmission systems H04B 3/46)                                                                                  |
| G01R 27/30        | 2-Punkt Untergruppe | . . with provision for recording characteristics, e.g. by plotting Nyquist diagram                                                                                                                                                                                                    |
| G01R 27/32        | 2-Punkt Untergruppe | . . in circuits having distributed constants [2]                                                                                                                                                                                                                                      |
| <b>G01R 29/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for measuring or indicating electric quantities not covered by groups G01R 19/00-G01R 27/00</b>                                                                                                                                                                       |
| G01R 29/02        | 1-Punkt Untergruppe | . Measuring characteristics of individual pulses, e.g. deviation from pulse flatness, rise time, duration (of amplitude G01R 19/00; of repetition rate G01R 23/00; of phase difference of two cyclic pulse trains G01R 25/00; monitoring pattern of pulse trains H03K 5/19) [3]       |
| G01R 29/027       | 2-Punkt Untergruppe | . . Indicating that a pulse characteristic is either above or below a predetermined value or within or beyond a predetermined range of values [3]                                                                                                                                     |
| G01R 29/033       | 3-Punkt Untergruppe | . . . giving an indication of the number of times this occurs [3]                                                                                                                                                                                                                     |
| G01R 29/04        | 1-Punkt Untergruppe | . Measuring form factor, i.e. quotient of root-mean-square value and arithmetic mean of instantaneous value; Measuring peak factor, i.e. quotient of maximum value and root-mean-square value                                                                                         |
| G01R 29/06        | 1-Punkt Untergruppe | . Measuring depth of modulation                                                                                                                                                                                                                                                       |
| G01R 29/08        | 1-Punkt Untergruppe | . Measuring electromagnetic field characteristics                                                                                                                                                                                                                                     |
| G01R 29/10        | 2-Punkt Untergruppe | . . Radiation diagrams of aeriels                                                                                                                                                                                                                                                     |
| G01R 29/12        | 1-Punkt Untergruppe | . Measuring electrostatic fields                                                                                                                                                                                                                                                      |
| G01R 29/14        | 2-Punkt Untergruppe | . . Measuring field distribution                                                                                                                                                                                                                                                      |
| G01R 29/16        | 1-Punkt Untergruppe | . Measuring asymmetry of polyphase networks                                                                                                                                                                                                                                           |
| G01R 29/18        | 1-Punkt Untergruppe | . Indicating phase sequence; Indicating synchronism                                                                                                                                                                                                                                   |
| G01R 29/20        | 1-Punkt Untergruppe | . Measuring number of turns; Measuring transformation ratio or coupling factor of windings (calibrating instrument transformers G01R 35/02)                                                                                                                                           |
| G01R 29/22        | 1-Punkt Untergruppe | . Measuring piezo-electric properties                                                                                                                                                                                                                                                 |
| G01R 29/24        | 1-Punkt Untergruppe | . Arrangements for measuring quantities of charge (electrostatic instruments G01R 5/28; indicating presence of current G01R 19/15; arrangements for measuring time integral of electric power or current G01R 22/00) [2]                                                              |
| G01R 29/26        | 1-Punkt Untergruppe | . Measuring noise figure; Measuring signal-to-noise ratio [2]                                                                                                                                                                                                                         |
| <b>G01R 31/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements for testing electric properties; Arrangements for locating electric faults; Arrangements for electrical testing characterised by what is being tested not provided for elsewhere (measuring leads, measuring probes G01R 1/06; indicating electrical condition of</b> |

| Symbol                                                                                                                                                                                                                        | Typ                 | Titel                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>switchgear or protective devices H01H 71/04, H01H 73/12, H02B 11/10, H02H 3/04; testing or measuring semiconductors or solid state devices during manufacture H01L 21/66; testing line transmission systems H04B 3/46)</b> |                     |                                                                                                                                                                                                                                                                                                             |
| G01R 31/01                                                                                                                                                                                                                    | 1-Punkt Untergruppe | . Subjecting similar articles in turn to test, e.g. "go/no-go" tests in mass production; Testing objects at points as they pass through a testing station (G01R 31/18 takes precedence) [6]                                                                                                                 |
| G01R 31/02                                                                                                                                                                                                                    | 1-Punkt Untergruppe | . Testing of electric apparatus, lines, or components for short-circuits, discontinuities, leakage, or incorrect line connection                                                                                                                                                                            |
| G01R 31/04                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Testing connections, e.g. of plugs, of non-disconnectable joints                                                                                                                                                                                                                                        |
| G01R 31/06                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Testing of electric windings, e.g. for polarity (measuring number of turns, transformation ratio, or coupling factor G01R 29/20)                                                                                                                                                                        |
| G01R 31/07                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Testing of fuses (means for indicating condition of fuse structurally associated with the fuse H01H 85/30) [6]                                                                                                                                                                                          |
| G01R 31/08                                                                                                                                                                                                                    | 1-Punkt Untergruppe | . Locating faults in cables, transmission lines, or networks (emergency protective circuit arrangements H02H)                                                                                                                                                                                               |
| G01R 31/10                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . by increasing destruction at fault, e.g. burning-in by using a pulse generator operating a special programme                                                                                                                                                                                            |
| G01R 31/11                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . using pulse-reflection methods                                                                                                                                                                                                                                                                          |
| G01R 31/12                                                                                                                                                                                                                    | 1-Punkt Untergruppe | . Testing dielectric strength or breakdown voltage                                                                                                                                                                                                                                                          |
| G01R 31/14                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Circuits therefor                                                                                                                                                                                                                                                                                       |
| G01R 31/16                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Construction of testing vessels; Electrodes therefor                                                                                                                                                                                                                                                    |
| G01R 31/18                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Subjecting similar articles in turn to test, e.g. "go/no-go" tests in mass production                                                                                                                                                                                                                   |
| G01R 31/20                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Preparation of articles or specimens to facilitate testing                                                                                                                                                                                                                                              |
| G01R 31/24                                                                                                                                                                                                                    | 1-Punkt Untergruppe | . Testing of discharge tubes (during manufacture H01J 9/42) [2]                                                                                                                                                                                                                                             |
| G01R 31/25                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Testing of vacuum tubes [2]                                                                                                                                                                                                                                                                             |
| G01R 31/26                                                                                                                                                                                                                    | 1-Punkt Untergruppe | . Testing of individual semiconductor devices (measurement of impurity content of materials G01N) [2]                                                                                                                                                                                                       |
| G01R 31/265                                                                                                                                                                                                                   | 2-Punkt Untergruppe | . . Contactless testing [6]                                                                                                                                                                                                                                                                                 |
| G01R 31/27                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Testing of devices without physical removal from the circuit of which they form part, e.g. compensating for effects due to surrounding elements [6]                                                                                                                                                     |
| G01R 31/28                                                                                                                                                                                                                    | 1-Punkt Untergruppe | . Testing of electronic circuits, e.g. by signal tracer (testing for short-circuits, discontinuities, leakage or incorrect line connection G01R 31/02; checking computers G06F 11/00; checking static stores for correct operation or testing static stores during standby or offline operation G11C 29/00) |
| G01R 31/30                                                                                                                                                                                                                    | 2-Punkt Untergruppe | . . Marginal testing, e.g. by varying supply voltage (marginal testing of computers G06) [2]                                                                                                                                                                                                                |
| G01R 31/302                                                                                                                                                                                                                   | 2-Punkt Untergruppe | . . Contactless testing (non contact-making probes G01R 1/07) [5]                                                                                                                                                                                                                                           |
| G01R 31/303                                                                                                                                                                                                                   | 3-Punkt Untergruppe | . . . of integrated circuits (G01R 31/305-G01R 31/315 take precedence) [6]                                                                                                                                                                                                                                  |
| G01R 31/304                                                                                                                                                                                                                   | 3-Punkt Untergruppe | . . . of printed or hybrid circuits (G01R 31/305-G01R 31/315 take precedence) [6]                                                                                                                                                                                                                           |
| G01R 31/305                                                                                                                                                                                                                   | 3-Punkt Untergruppe | . . . using electron beams [5]                                                                                                                                                                                                                                                                              |
| G01R 31/306                                                                                                                                                                                                                   | 4-Punkt Untergruppe | . . . . of printed or hybrid circuits [6]                                                                                                                                                                                                                                                                   |
| G01R 31/307                                                                                                                                                                                                                   | 4-Punkt Untergruppe | . . . . of integrated circuits [6]                                                                                                                                                                                                                                                                          |

| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                                                                                                       |
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| G01R 31/308       | 3-Punkt Untergruppe | . . . using non-ionising electromagnetic radiation, e.g. optical radiation [5]                                                                                                                                                                                                                                                              |
| G01R 31/309       | 4-Punkt Untergruppe | . . . . of printed or hybrid circuits [6]                                                                                                                                                                                                                                                                                                   |
| G01R 31/311       | 4-Punkt Untergruppe | . . . . of integrated circuits [6]                                                                                                                                                                                                                                                                                                          |
| G01R 31/312       | 3-Punkt Untergruppe | . . . by capacitive methods [5]                                                                                                                                                                                                                                                                                                             |
| G01R 31/315       | 3-Punkt Untergruppe | . . . by inductive methods [5]                                                                                                                                                                                                                                                                                                              |
| G01R 31/316       | 2-Punkt Untergruppe | . . Testing of analog circuits [6]                                                                                                                                                                                                                                                                                                          |
| G01R 31/3161      | 3-Punkt Untergruppe | . . . Marginal testing [6]                                                                                                                                                                                                                                                                                                                  |
| G01R 31/3163      | 3-Punkt Untergruppe | . . . Functional testing [6]                                                                                                                                                                                                                                                                                                                |
| G01R 31/3167      | 2-Punkt Untergruppe | . . Testing of combined analog and digital circuits [6]                                                                                                                                                                                                                                                                                     |
| G01R 31/317       | 2-Punkt Untergruppe | . . Testing of digital circuits [6]                                                                                                                                                                                                                                                                                                         |
| G01R 31/3173      | 3-Punkt Untergruppe | . . . Marginal testing [6]                                                                                                                                                                                                                                                                                                                  |
| G01R 31/3177      | 3-Punkt Untergruppe | . . . Testing of logic operation, e.g. by logic analysers [6]                                                                                                                                                                                                                                                                               |
| G01R 31/3181      | 3-Punkt Untergruppe | . . . Functional testing (G01R 31/3177 takes precedence) [6]                                                                                                                                                                                                                                                                                |
| G01R 31/3183      | 4-Punkt Untergruppe | . . . . Generation of test inputs, e.g. test vectors, patterns or sequences [6]                                                                                                                                                                                                                                                             |
| G01R 31/3185      | 4-Punkt Untergruppe | . . . . Reconfiguring for testing, e.g. LSSD, partitioning [6]                                                                                                                                                                                                                                                                              |
| G01R 31/3187      | 4-Punkt Untergruppe | . . . . Built-in tests [6]                                                                                                                                                                                                                                                                                                                  |
| G01R 31/319       | 4-Punkt Untergruppe | . . . . Tester hardware, i.e. output processing circuits [6]                                                                                                                                                                                                                                                                                |
| G01R 31/3193      | 5-Punkt Untergruppe | . . . . . with comparison between actual response and known fault-free response [6]                                                                                                                                                                                                                                                         |
| G01R 31/327       | 1-Punkt Untergruppe | . Testing of circuit interrupters, switches or circuit-breakers (structural association with switches H01H) [6]                                                                                                                                                                                                                             |
| G01R 31/333       | 2-Punkt Untergruppe | . . Testing of the switching capacity of high-voltage circuit-breakers (means for detecting the presence of an arc or discharge in switching devices H01H 9/50, H01H 33/26) [6]                                                                                                                                                             |
| G01R 31/34        | 1-Punkt Untergruppe | . Testing dynamo-electric machines (testing electric windings G01R 31/06; methods or apparatus specially adapted for manufacturing, assembling, maintaining or repairing dynamo-electric machines H02K 15/00) [3]                                                                                                                           |
| G01R 31/36        | 1-Punkt Untergruppe | . Apparatus for testing electrical condition of accumulators or electric batteries, e.g. capacity or charge condition (accumulators combined with arrangements for measuring, testing or indicating condition H01M 10/48; circuit arrangements for charging, or depolarising batteries or for supplying loads from batteries H02J 7/00) [3] |
| G01R 31/38        | 1-Punkt Untergruppe | . Testing of sparking-plugs (testing non-electrical properties G01M 19/02) [6]                                                                                                                                                                                                                                                              |
| G01R 31/40        | 1-Punkt Untergruppe | . Testing power supplies [6]                                                                                                                                                                                                                                                                                                                |
| G01R 31/42        | 2-Punkt Untergruppe | . . AC power supplies [6]                                                                                                                                                                                                                                                                                                                   |
| G01R 31/44        | 1-Punkt Untergruppe | . Testing lamps (discharge lamps G01R 31/24; structurally associated with light source circuit arrangements for detecting lamp failure H05B 37/03) [6]                                                                                                                                                                                      |
| <b>G01R 33/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements or instruments for measuring magnetic variables</b>                                                                                                                                                                                                                                                                         |
| G01R 33/02        | 1-Punkt Untergruppe | . Measuring direction or magnitude of magnetic fields or magnetic flux (G01R 33/20 takes precedence; measuring direction or magnitude of the earth's field for navigation or surveying G01C; for prospecting, for measuring the magnetic field of the earth G01V 3/00) [4]                                                                  |

| Symbol       | Typ                 | Titel                                                                                                                      |
|--------------|---------------------|----------------------------------------------------------------------------------------------------------------------------|
| G01R 33/022  | 2-Punkt Untergruppe | . . Measuring gradient [3]                                                                                                 |
| G01R 33/025  | 2-Punkt Untergruppe | . . Compensating stray fields [3]                                                                                          |
| G01R 33/028  | 2-Punkt Untergruppe | . . Electrodynamic magnetometers [3]                                                                                       |
| G01R 33/032  | 2-Punkt Untergruppe | . . using magneto-optic devices, e.g. Faraday [3]                                                                          |
| G01R 33/035  | 2-Punkt Untergruppe | . . using superconductive devices [3]                                                                                      |
| G01R 33/038  | 2-Punkt Untergruppe | . . using permanent magnets, e.g. balances, torsion devices [3]                                                            |
| G01R 33/04   | 2-Punkt Untergruppe | . . using the flux-gate principle                                                                                          |
| G01R 33/05   | 3-Punkt Untergruppe | . . . in thin-film element [3]                                                                                             |
| G01R 33/06   | 2-Punkt Untergruppe | . . using galvano-magnetic devices                                                                                         |
| G01R 33/07   | 3-Punkt Untergruppe | . . . Hall-effect devices [6]                                                                                              |
| G01R 33/09   | 3-Punkt Untergruppe | . . . Magneto-resistive devices [6]                                                                                        |
| G01R 33/10   | 2-Punkt Untergruppe | . . Plotting field distribution                                                                                            |
| G01R 33/12   | 1-Punkt Untergruppe | . Measuring magnetic properties of articles or specimens of solids or fluids (involving magnetic resonance G01R 33/20) [4] |
| G01R 33/14   | 2-Punkt Untergruppe | . . Measuring or plotting hysteresis curves                                                                                |
| G01R 33/16   | 2-Punkt Untergruppe | . . Measuring susceptibility                                                                                               |
| G01R 33/18   | 2-Punkt Untergruppe | . . Measuring magnetostrictive properties                                                                                  |
| G01R 33/20   | 1-Punkt Untergruppe | . involving magnetic resonance (medical aspects A61B 5/055; magnetic resonance gyrometers G01C 19/60) [4, 5]               |
| G01R 33/24   | 2-Punkt Untergruppe | . . for measuring direction or magnitude of magnetic fields or magnetic flux [4]                                           |
| G01R 33/26   | 3-Punkt Untergruppe | . . . using optical pumping [4]                                                                                            |
| G01R 33/28   | 2-Punkt Untergruppe | . . Details of apparatus provided for in groups G01R 33/44-G01R 33/64 [5]                                                  |
| G01R 33/30   | 3-Punkt Untergruppe | . . . Sample handling arrangements, e.g. sample cells, spinning mechanisms [5]                                             |
| G01R 33/31   | 4-Punkt Untergruppe | . . . . Temperature control thereof [6]                                                                                    |
| G01R 33/32   | 3-Punkt Untergruppe | . . . Excitation or detection systems, e.g. using radiofrequency signals [5]                                               |
| G01R 33/34   | 4-Punkt Untergruppe | . . . . Constructional details, e.g. resonators [5]                                                                        |
| G01R 33/341  | 5-Punkt Untergruppe | . . . . . comprising surface coils [6]                                                                                     |
| G01R 33/3415 | 6-Punkt Untergruppe | . . . . . comprising arrays of sub-coils [6]                                                                               |
| G01R 33/343  | 5-Punkt Untergruppe | . . . . . of slotted-tube or loop-gap type [6]                                                                             |
| G01R 33/345  | 5-Punkt Untergruppe | . . . . . of waveguide type (G01R 33/343 takes precedence) [6]                                                             |
| G01R 33/36   | 4-Punkt Untergruppe | . . . . Electrical details, e.g. matching or coupling of the coil to the receiver [5]                                      |
| G01R 33/38   | 3-Punkt Untergruppe | . . . Systems for generation, homogenisation or stabilisation of the main or gradient magnetic field [5]                   |
| G01R 33/381  | 4-Punkt Untergruppe | . . . . using electromagnets (electromagnets <u>per se</u> H01F 7/06) [6]                                                  |

| Symbol            | Typ                 | Titel                                                                                                                                |
|-------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| G01R 33/3815      | 5-Punkt Untergruppe | . . . . . with superconducting coils, e.g. power supply therefor (superconductive magnets H01F 6/00) [6]                             |
| G01R 33/383       | 4-Punkt Untergruppe | . . . . . using permanent magnets (permanent magnets <u>per se</u> H01F 7/02) [6]                                                    |
| G01R 33/385       | 4-Punkt Untergruppe | . . . . . using gradient magnetic field coils [6]                                                                                    |
| G01R 33/387       | 4-Punkt Untergruppe | . . . . . Compensation of inhomogeneities (screening G01R 33/42) [6]                                                                 |
| G01R 33/3873      | 5-Punkt Untergruppe | . . . . . using ferromagnetic bodies [6]                                                                                             |
| G01R 33/3875      | 5-Punkt Untergruppe | . . . . . using correction coil assemblies, e.g. active shimming [6]                                                                 |
| G01R 33/389       | 4-Punkt Untergruppe | . . . . . Field stabilisation [6]                                                                                                    |
| G01R 33/42        | 3-Punkt Untergruppe | . . . Screening (screening in general H05K 9/00) [5, 6]                                                                              |
| G01R 33/421       | 4-Punkt Untergruppe | . . . . . of main or gradient magnetic field [6]                                                                                     |
| G01R 33/422       | 4-Punkt Untergruppe | . . . . . of the radiofrequency field [6]                                                                                            |
| G01R 33/44        | 2-Punkt Untergruppe | . . using nuclear magnetic resonance (NMR) (G01R 33/24, G01R 33/62 take precedence) [5]                                              |
| G01R 33/46        | 3-Punkt Untergruppe | . . . NMR spectroscopy [5]                                                                                                           |
| G01R 33/465       | 4-Punkt Untergruppe | . . . . . applied to biological material, e.g. <u>in vitro</u> testing [6]                                                           |
| G01R 33/48        | 3-Punkt Untergruppe | . . . NMR imaging systems [5]                                                                                                        |
| G01R 33/483       | 4-Punkt Untergruppe | . . . . . with selection of signal or spectra from particular regions of the volume, e.g. <u>in vivo</u> spectroscopy [6]            |
| G01R 33/485       | 5-Punkt Untergruppe | . . . . . based on chemical shift information [6]                                                                                    |
| G01R 33/50        | 4-Punkt Untergruppe | . . . . . based on the determination of relaxation times [5]                                                                         |
| G01R 33/54        | 4-Punkt Untergruppe | . . . . . Signal processing systems, e.g. using pulse sequences [5]                                                                  |
| G01R 33/56        | 5-Punkt Untergruppe | . . . . . Image enhancement or correction, e.g. subtraction or averaging techniques [5]                                              |
| G01R 33/561       | 6-Punkt Untergruppe | . . . . . by reduction of the scanning time, i.e. fast acquiring systems, e.g. using echo-planar pulse sequences [6]                 |
| G01R 33/563       | 6-Punkt Untergruppe | . . . . . of moving material, e.g. flow-contrast angiography [6]                                                                     |
| G01R 33/565       | 6-Punkt Untergruppe | . . . . . Correction of image distortions, e.g. due to magnetic field inhomogeneities [6]                                            |
| G01R 33/567       | 6-Punkt Untergruppe | . . . . . gated by physiological signals [6]                                                                                         |
| G01R 33/58        | 4-Punkt Untergruppe | . . . . . Calibration of imaging systems, e.g. using test probes [5]                                                                 |
| G01R 33/60        | 2-Punkt Untergruppe | . . using electron paramagnetic resonance (G01R 33/24, G01R 33/62 take precedence) [5]                                               |
| G01R 33/62        | 2-Punkt Untergruppe | . . using double resonance (G01R 33/24 takes precedence) [5]                                                                         |
| G01R 33/64        | 2-Punkt Untergruppe | . . using cyclotron resonance (G01R 33/24 takes precedence) [5]                                                                      |
| <b>G01R 35/00</b> | <b>Hauptgruppe</b>  | <b>Testing or calibrating of apparatus covered by the other groups of this subclass [2]</b>                                          |
| G01R 35/02        | 1-Punkt Untergruppe | . of auxiliary devices, e.g. of instrument transformers according to prescribed transformation ratio, phase angle, or wattage rating |
| G01R 35/04        | 1-Punkt Untergruppe | . of instruments for measuring time integral of power or current                                                                     |

| Symbol     | Typ                 | Titel                       |
|------------|---------------------|-----------------------------|
| G01R 35/06 | 2-Punkt Untergruppe | . . by stroboscopic methods |