

| Symbol | Typ | Titel |
|------------------|---------------------|---|
| G | Sektion | SECTION G — PHYSICS |
| G01 | Untersektion | INSTRUMENTS |
| G01 | Klasse | MEASURING (counting G06M); TESTING |
| G01R | Unterklasse | 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) |
| G01R 1/00 | Hauptgruppe | <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> |
| 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) |

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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] |
| G01R 3/00 | Hauptgruppe | Apparatus or processes specially adapted for the manufacture of measuring instruments |
| G01R 5/00 | Hauptgruppe | Instruments for converting a single current or a single voltage into a mechanical displacement (vibration galvanometers G01R 9/02) |
| 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 |
| G01R 7/00 | Hauptgruppe | Instruments capable of converting two or more currents or voltages into a single mechanical displacement (G01R 9/00 takes precedence) |
| 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 |

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| G01R 7/18 | 3-Punkt Untergruppe | . . . with iron core magnetically coupling fixed and moving coils |
| G01R 9/00 | Hauptgruppe | Instruments employing mechanical resonance |
| 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 |
| G01R 11/00 | Hauptgruppe | 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) |
| 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) |

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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 |
| G01R 13/00 | Hauptgruppe | 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] |
| 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) |

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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 |
| G01R 15/00 | Hauptgruppe | <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> |
| 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] |
| G01R 17/00 | Hauptgruppe | Measuring arrangements involving comparison with a reference value, e.g. bridge |
| 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) |

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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 |
| G01R 19/00 | Hauptgruppe | 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] |
| 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] |

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| 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] |
| G01R 21/00 | Hauptgruppe | Arrangements for measuring electric power or power factor (G01R 7/12 takes precedence) [4] |
| 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] |
| G01R 22/00 | Hauptgruppe | 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] |
| 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] |
| G01R 23/00 | Hauptgruppe | Arrangements for measuring frequencies; Arrangements for analysing frequency spectra (frequency discriminators H03D) |
| 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] |

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| 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 |
| G01R 25/00 | Hauptgruppe | 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] |
| 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] |
| G01R 27/00 | Hauptgruppe | Arrangements for measuring resistance, reactance, impedance, or electric characteristics derived therefrom |
| 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] |
| G01R 29/00 | Hauptgruppe | Arrangements for measuring or indicating electric quantities not covered by groups G01R 19/00-G01R 27/00 |
| 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] |
| G01R 31/00 | Hauptgruppe | 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 |

| Symbol | Typ | Titel |
|-------------|---------------------|---|
| | | 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) |
| 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 |
|-------------------|---------------------|---|
| 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] |
| G01R 33/00 | Hauptgruppe | Arrangements or instruments for measuring magnetic variables |
| 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] |
| G01R 35/00 | Hauptgruppe | Testing or calibrating of apparatus covered by the other groups of this subclass [2] |
| 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 |