

CPC COOPERATIVE PATENT CLASSIFICATION

H04Q SELECTING (switches, relays, selectors [H01H](#); electronic switches [H03K 17/00](#))

NOTES

1. This subclass covers:
 - methods, circuits, or apparatus for establishing selectively a connection between a desired number of stations (normally two), or between a main station and a desired number of substations (normally one) for the purpose of transferring information via this connection after it has been established;
 - selective calling arrangements over connections already established.In either case, the connection may be made by means of electric conductors or electromagnetic waves.
2. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "subscriber" is a general term for terminal equipment, e.g. telephone for public use;
 - "substation" means a subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber;
 - "satellite" is a kind of exchange the operation of which depends upon control signals received from a supervisory exchange;
 - "switching centres" includes exchanges and satellites.

1/00	Details of selecting apparatus or arrangements {for establishing connections among stations for the purpose of transferring information via these connections}	1/13	. . {Patch panels for monitoring, interconnecting or testing circuits, e.g. patch bay, patch field or jack field; Patching modules}
1/02	. Constructional details	1/131	. . . {being pivotable}
1/021	. . {using pivoting mechanisms for accessing the interior of the apparatus}	1/133	. . . {being slidable}
1/023	. . {using sliding mechanisms for accessing the interior of the apparatus}	1/135	. . . {characterized by patch cord details}
1/025	. . {Cabinets}	1/136	. . . . {having patch field management or physical layer management arrangements}
1/026	. . . {characterized by door details}	1/138	. . . . . {using RFID}
1/028	. . {Subscriber network interface devices (line interfacing in the subscriber set H04M 1/0293)}	1/14	. . Distribution frames
1/03	. . {Power distribution arrangements}	1/141	. . . {Details of connexions between cable and distribution frame}
1/032	. . . {power failure protection}	1/142	. . . {Terminal blocks for distribution frames}
1/035	. . {Cooling of active equipments, e.g. air ducts}	1/143	. . . {with contacts on circular surface}
1/04	. . Frames or mounting racks for selector switches; Accessories therefor, e.g. frame cover	1/144	. . . {Plugs used in distribution frames}
1/06	. . Cable ducts or mountings specially adapted for exchange installations (in general H02G)	1/145	. . . {with switches arranged in a matrix configuration}
1/062	. . . {vertical management arrangements}	1/146	. . . {with line protection means}
1/064	. . . {horizontal management arrangements}	1/147	. . . {using robots for distributing}
1/066	. . . {arranged on the front side}	1/148	. . . {Identification strips for distribution frames}
1/068	. . . {arranged on the rear side}	1/149	. . . {Wireguides in connector blocks}
1/08	. . Frames or mounting racks for relays; Accessories therefor	1/15	. . {Backplane arrangements}
1/09	. . {Frames or mounting racks not otherwise provided for}	1/155	. . . {characterised by connection features}
1/10	. . Exchange station construction	1/16	. . Wiring arrangements for selector switches or relays in frames
1/11	. . {Protection against environment}	1/18	. Electrical details
1/112	. . . {mechanical protection, e.g. resistance to earthquakes}	1/20	. . Testing circuits or apparatus; Circuits or apparatus for detecting, indicating, or signalling faults or troubles
1/114	. . . {flooding protection, e.g. using water proof provision}	1/22	. . . Automatic arrangements
1/116	. . . {lightning or EMI protection, e.g. shielding or grounding (suppression of noise or interference in transmission systems H04B 15/00)}	1/24	. . . . for connection devices
1/118	. . . {heat or sun protection}	1/245	. . . . . {in time-division multiplex systems}
1/12	. . Arrangements of multiple bars with or without pivotable frames	1/26	. . . . for signalling trouble in unoccupied sub- exchanges
		1/28	. . Current-supply circuits or arrangements for selection equipment at exchanges
		1/30	. . Signalling arrangements; Manipulation of signalling currents (multiplex systems providing for calling or supervisory signals H04J 1/14, H04Q 3/12; telephone substation equipment H04M 1/00)

- 1/32 . . . using trains of dc pulses ([H04Q 1/39 takes precedence](#))
- 1/34 Impulse regenerators with mechanical or other non-electrical marking arrangements
- 1/36 Pulse-correcting arrangements, e.g. for reducing effects due to interference
- 1/38 . . . using combinations of direct currents of different amplitudes or polarities over line conductors or combination of line conductors
- 1/39 . . . using coded pulse groups
- 1/40 . . . whereby duration of pulse or interval between two pulses is variable
- 1/42 involving the position of a pulse in a cycle
- 1/44 . . . using alternate current ([H04Q 1/50 takes precedence](#))
- 1/442 with out-of-voice band signalling frequencies
- 1/4423 {using one signalling frequency}
- 1/4426 {using two or more signalling frequencies, transmitted in succession or simultaneously}
- 1/444 with voice-band signalling frequencies
- 1/446 using one signalling frequency ([H04Q 1/46 takes precedence](#))
- 1/4465 {the same frequency being used for all signalling information, e.g. A.C. nr.9 system}
- 1/448 with conversion of a single frequency signal into a digital signal
- 1/4485 {which is transmitted in digital form}
- 1/45 using multi-frequency signalling ([H04Q 1/46 takes precedence](#))
- 1/453 in which m-out-of-n signalling frequencies are transmitted
- 1/4535 {with an additional signal transmitted for voice protection}
- 1/457 with conversion of multifrequency signals into digital signals
- 1/4575 {which are transmitted in digital form}
- 1/46 comprising means for distinguishing between a signalling current of predetermined frequency and a complex current containing that frequency, e.g. speech current
- 1/48 . . . Induced-current signalling arrangements
- 1/50 . . . Conversion between different kinds of signals
- 1/54 . . Amplifier switched-on automatically in dependence on automatically-selected lines
- 1/56 . . Balancing circuitry switched-on automatically in dependence on automatically-selected lines
- 3/00** **Selecting arrangements** ([H04Q 5/00 - H04Q 11/00 take precedence](#))
- 3/0004 . {using crossbar selectors in the switching stages}
- 3/0008 . {using relay selectors in the switching stages}
- 3/0012 . . {in which the relays are arranged in a matrix configuration}
- 3/0016 . {Arrangements providing connection between exchanges}
- 3/002 . . {Details}
- 3/0025 . . {Provisions for signalling (circuitry in [H04Q 1/30](#))}
- 3/0029 . . {Provisions for intelligent networking}
- 3/0033 . . . {customer-controlled}
- 3/0037 . . . {involving call modelling techniques, e.g. modifications to the basic call state model [BCSM]}
- 3/0041 . . . {involving techniques for avoiding interaction of call service features}
- 3/0045 . . . {involving hybrid, i.e. a mixture of public and private, or multi-vendor systems}
- 3/005 . . . {Personal communications services, e.g. provisions for portability of subscriber numbers ([subscriber services provided at exchanges H04M 3/42](#))}
- 3/0054 . . . {Service creation techniques}
- 3/0058 {using service-independent building blocks (SIBBs) or "primitives"}
- 3/0062 . . {Provisions for network management}
- 3/0066 . . . {Bandwidth allocation or management}
- 3/007 . . . {customer-controlled}
- 3/0075 . . . {Fault management techniques}
- 3/0079 {involving restoration of networks, e.g. disaster recovery, self-healing networks}
- 3/0083 . . . {Network planning or design; Modelling of planned or existing networks}
- 3/0087 . . . {Network testing or monitoring arrangements}
- 3/0091 . . . {Congestion or overload control}
- 3/0095 . . . {Specification, development or application of network management software, e.g. software re-use}
- 3/02 . Circuit arrangements for selectors responsive to a permutation code
- 3/04 . Circuit arrangements for receivers of routing digits
- 3/06 . . for group or trunk group selectors
- 3/08 . . for local or long-distance selectors
- 3/10 . . for PBX selectors, i.e. private branch exchange selectors
- 3/12 . . for line selectors providing transfer of routing digits
- 3/14 . . for two-way operation selectors
- 3/16 . . for marking-switches
- 3/18 . Circuit arrangements for first stage of hunting switching
- 3/20 . . for preselectors
- 3/22 . . . comprising common calling and disconnecting circuit
- 3/24 . . for line finders
- 3/26 . . . comprising common calling and disconnecting circuit
- 3/28 . . . comprising main groups and subgroups
- 3/30 . . Selector finders, i.e. alloters
- 3/32 . Circuit arrangements for second or subsequent stages of hunting switching
- 3/34 . . for the second preselection stage
- 3/36 . . for the second line-finder stage
- 3/38 . . for stages after the group selector stage
- 3/40 . . for stages after the line selector, e.g. for extension selector
- 3/42 . Circuit arrangements for indirect selecting controlled by common circuits, e.g. register controller, marker
- 3/44 . . using revertive control
- 3/46 . . using signals other than revertive impulses
- 3/47 . . using translators
- 3/48 . . using markers
- 3/49 . . . for end-to-end marking

3/495	. . . for routing connecting paths	3/78	. Temporary storage of information of calling or called subscriber (intermediate storage means for telegraphic communication H04L 13/08)
3/52	. . using static devices in switching stages, e.g. electronic switching arrangements	5/00	Selecting arrangements wherein two or more subscriber stations are connected by the same line to the exchange
3/521	. . . {using semiconductors in the switching stages}	5/02	. with direct connection for all subscribers, i.e. party-line systems (H04Q 5/24 takes precedence)
3/523	. . . . {Details}	5/04	. . Signalling by currents in one or other or both line wires or additional wires
3/525	. . . {using tubes in the switching stages}	5/06	. . Signalling by amplitude or polarity of dc
3/526	. . . {Optical switching systems}	5/08	. . Signalling by continuous ac
3/528	. . . . {Details}	5/10	. . . using single frequencies for different subscribers
3/54	. . in which the logic circuitry controlling the exchange is centralised	5/12	. . . using combinations of frequencies
3/542	. . . {Logic circuits or arrangements therefor (logic circuits in general H03K 19/00)}	5/14	. . Signalling by pulses
3/545	. . . using a stored programme	5/16	. . . by predetermined number of pulses
3/54508	. . . . {Configuration, initialization}	5/18	. with indirect connection, i.e. through subordinate switching centre
3/54516	. . . . . {Initialization, software or data downloading (G06F 9/445 takes precedence)}	5/20	. . the subordinate centre permitting interconnection of subscribers connected thereto
3/54525	. . . . . {Features introduction}	5/22	. . the subordinate centre not permitting interconnection of subscribers connected thereto
3/54533	. . . . . {Configuration data, translation, passwords, databases}	5/24	. for two-party-line systems
3/54541	. . . . . {using multi-processor systems}	5/245	. . {Circuit arrangements in which for one subscriber low frequency speech and/or signalling signals proceed on the line, while for the other subscriber the low frequency speech and/or signalling signals are modulated upon a high frequency carrier signal}
3/5455	. . . . . {Multi-processor, parallelism, distributed systems}	9/00	Arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station, in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom
3/54558	. . . . . {Redundancy, stand-by}	9/02	. Automatically-operated arrangements
3/54566	. . . . . {Intelligent peripherals, adjunct processors}	9/04	. Arrangements for synchronous operation
3/54575	. . . . . {Software application}	9/06	. Calling by using amplitude or polarity of dc
3/54583	. . . . . {Software development, e.g. procedural, object oriented, software generation, software testing}	9/08	. Calling by using continuous ac
3/54591	. . . . . {Supervision, e.g. fault localisation, traffic measurements, avoiding errors, failure recovery, monitoring, statistical analysis}	9/10	. . using single different frequencies
3/55	. . . using wired logic circuitry	9/12	. . using combinations of frequencies
3/552	. . . . {Wired circuits or arrangements therefor}	9/14	. Calling by using pulses
3/555	. . . . being comprised by electro-magnetic devices	9/16	. . by predetermined number of pulses
3/56	. . in which the control signals are multiplexed	11/00	Selecting arrangements for multiplex systems (multiplex systems H04J)
3/58	. Arrangements providing connection between main exchange and sub-exchange or satellite	11/0001	. {using optical switching}
3/60	. . for connecting to satellites or concentrators which connect one or more exchange lines with a group of local lines	11/0003	. . {Details}
3/602	. . . {Circuit arrangements therefor}	11/0005	. . {Switch and router aspects}
3/605	. . . {Arrangements in the satellite or concentrator}	2011/0007	. . . {Construction}
3/607	. . . . {Details}	2011/0009	. . . . {using wavelength filters}
3/62	. . for connecting to private branch exchanges	2011/0011	. . . . {using wavelength conversion}
3/622	. . . {Circuit arrangements therefor}	2011/0013	. . . . {using gating amplifiers}
3/625	. . . {Arrangements in the private branch exchange}	2011/0015	. . . . {using splitting combining}
3/627	. . . . {Details}	2011/0016	. . . . {using wavelength multiplexing or demultiplexing}
3/64	. Distributing or queueing	2011/0018	. . . . {using tunable transmitters or receivers}
3/645	. . {Circuit arrangements therefor}	2011/002	. . . . {using optical delay lines or optical buffers or optical recirculation}
3/66	. . Traffic distributors	2011/0022	. . . . {using fibre gratings}
3/665	. . . {Circuit arrangements therefor}	2011/0024	. . . . {using space switching}
3/68	. . Grouping or interlacing selector groups or stages	2011/0026	. . . . {using free space propagation (e.g. lenses, mirrors)}
3/685	. . . {Circuit arrangements therefor}		
3/70	. Identification of class of calling subscriber		
3/72	. Finding out and indicating number of calling subscriber		
3/74	. . Identification of subscriber calling from a party-line		
3/76	. Translation from the called subscriber's number to the outgoing or incoming control information		

2011/0028	. . . . .	{using holograms}	11/0428	. .	{Integrated services digital network, i.e. systems for transmission of different types of digitised signals, e.g. speech, data, telecentral, television signals}
2011/003	. . . . .	{using switches based on micro-electro-mechanical systems [MEMS]}	11/0435	. . .	{Details}
2011/0032	. . . . .	{using static wavelength routers (e.g. arrayed waveguide grating router [AWGR])}	11/0442	. . . . .	{Exchange access circuits}
2011/0033	. . . . .	{using time division switching}	11/045	. . . . .	{Selection or connection testing arrangements}
2011/0035	. . . . .	{using miscellaneous components, e.g. circulator, polarisation, acousto/thermo optical}	11/0457	. . . . .	{Connection protocols}
2011/0037	. . .	{Operation}	11/0464	. . . . .	{Primary rate access circuits}
2011/0039	. . . . .	{Electrical control}	11/0471	. . . . .	{Terminal access circuits}
2011/0041	. . . . .	{Optical control}	11/0478	. . .	{Provisions for broadband connections}
2011/0043	. . . . .	{Fault tolerance}	11/0485	. . . . .	{Circuit arrangements therefor (contains no documents, see provisionally H04Q 11/0492)}
2011/0045	. . . . .	{Synchronisation}	11/0492	. . . . .	{Details}
2011/0047	. . . . .	{Broadcast; Multicast}	11/06	. .	Time-space-time switching
2011/0049	. . . . .	{Crosstalk reduction; Noise; Power budget}	11/08	. .	Time only switching
2011/005	. . . . .	{Arbitration and scheduling}	2201/00		Constructional details of selecting arrangements
2011/0052	. . .	{Interconnection of switches}	2201/02	. .	Details of frames
2011/0054	. . . . .	{Distribute-route}	2201/04	. .	Modular construction
2011/0056	. . . . .	{Clos}	2201/06	. .	Cooling arrangements
2011/0058	. . . . .	{Crossbar; Matrix}	2201/08	. .	Pivotable parts
2011/006	. . . . .	{Full mesh}	2201/10	. .	Housing details
11/0062	. .	{Network aspects}	2201/12	. .	Printed circuits
2011/0064	. . .	{Arbitration, scheduling or medium access control aspects}	2201/14	. .	Screening, grounding or crosstalk reduction details
11/0066	. . .	{Provisions for optical burst or packet networks}	2201/16	. .	Coaxial cable connectors
11/0067	. . .	{Provisions for optical access or distribution networks, e.g. Gigabit Ethernet Passive Optical Network (GE-PON), ATM-based Passive Optical Network (A-PON), PON-Ring}	2201/18	. .	Rails
2011/0069	. . .	{using dedicated optical channels}	2201/80	. .	in specific systems
11/0071	. . .	{Provisions for the electrical-optical layer interface}	2201/802	. .	in data transmission systems
2011/0073	. . .	{Provisions for forwarding or routing, e.g. lookup tables}	2201/804	. .	in optical transmission systems
2011/0075	. . .	{Wavelength grouping or hierarchical aspects}	2201/806	. .	in PBX or KTS systems
2011/0077	. . .	{Labelling aspects, e.g. multiprotocol label switching [MPLS], G-MPLS, MPAS}	2201/808	. .	in wireless transmission systems
2011/0079	. . .	{Operation or maintenance aspects}	2209/00		Arrangements in telecontrol or telemetry systems
2011/0081	. . . . .	{Fault tolerance; Redundancy; Recovery; Reconfigurability}	2209/10	. .	using a centralized architecture
2011/0083	. . . . .	{Testing; Monitoring}	2209/20	. .	using a distributed architecture
2011/0084	. . .	{Quality of service aspects}	2209/25	. .	using a mesh network, e.g. a public urban network such as public lighting, bus stops or traffic lights
2011/0086	. . .	{Network resource allocation, dimensioning or optimisation}	2209/30	. .	using a wired architecture
2011/0088	. . .	{Signalling aspects}	2209/40	. .	using a wireless architecture
2011/009	. . .	{Topology aspects}	2209/43	. .	using wireless personal area networks [WPAN], e.g. 802.15, 802.15.1, 802.15.4, Bluetooth or ZigBee
2011/0092	. . . . .	{Ring}	2209/47	. .	using RFID associated with sensors
2011/0094	. . . . .	{Star}	2209/50	. .	using a mobile data collecting device, e.g. walk by or drive by
2011/0096	. . . . .	{Tree}	2209/60	. .	for transmitting utility meters data, i.e. transmission of data from the reader of the utility meter
2011/0098	. . . . .	{Mesh}	2209/70	. .	Arrangements in the main station, i.e. central controller
11/02	. .	for frequency-division multiplexing {(H04Q 11/0001 takes precedence)}	2209/75	. .	by polling or interrogating the sub-stations
11/023	. .	{using a stored programme control}	2209/753	. . .	where the polling of the sub-stations is synchronous
11/026	. . .	{Details}	2209/756	. . .	where the polling of the sub-stations is cyclic, e.g. round-robin
11/04	. .	for time-division multiplexing {(H04Q 11/0001 takes precedence)}	2209/80	. .	Arrangements in the sub-station, i.e. sensing device
11/0407	. .	{using a stored programme control}	2209/82	. .	where the sensing device takes the initiative of sending data
11/0414	. . .	{Details}			
11/0421	. .	{Circuit arrangements therefor}			

- 2209/823 . . . where the data is sent when the measured values exceed a threshold, e.g. sending an alarm
- 2209/826 . . . where the data is sent periodically
- 2209/84 . . Measuring functions
- 2209/845 . . . where the measuring is synchronized between sensing devices
- 2209/86 . . Performing a diagnostic of the sensing device
- 2209/88 . . Providing power supply at the sub-station
- 2209/883 . . . where the sensing device enters an active or inactive mode
- 2209/886 . . . using energy harvesting, e.g. solar, wind or mechanical
- 2213/00 Indexing scheme relating to selecting arrangements in general and for multiplex systems**
- 2213/001 . Motorselectors
- 2213/002 . Graphical representation
- 2213/003 . Constructional details
- 2213/011 . Periodic optical structures, e.g. gratings, holograms
- 2213/012 . Tunable optical systems
- 2213/013 . Optical shutters, e.g. LCD arrays
- 2213/014 . Optical storage, not delay lines
- 2213/015 . 3D-optical arrangement
- 2213/016 . Optical subcarrier modulation
- 2213/017 . Optical polarisation
- 2213/02 . Relay switches
- 2213/03 . PAM
- 2213/031 . PCM
- 2213/032 . Delta modulation
- 2213/033 . Other modulation methods
- 2213/034 . Codec; PCM compression
- 2213/036 . Series parallel conversion; Parallel bit transmission
- 2213/037 . Resonant transfer; Sample and hold
- 2213/038 . Optical modulation
- 2213/04 . Coordinate switches; Crossbar switches
- 2213/042 . Elements placed in matrix relation, not serving as connection switch
- 2213/046 . Binary switch (Beta element)
- 2213/05 . Software aspects
- 2213/052 . Multi-tasking
- 2213/053 . Priority levels
- 2213/054 . Expert systems, e.g. neural networks
- 2213/055 . Linked lists
- 2213/056 . Software routines, e.g. finite state machines
- 2213/058 . IRQ
- 2213/061 . Preselector; Second line switch
- 2213/062 . Finder switch (e.g. line finder, call finder)
- 2213/063 . Strowger-switch as finder switch
- 2213/064 . Cascaded finder or preselector switches
- 2213/065 . Group selector
- 2213/066 . Switch with two or more wipersets
- 2213/067 . Finder switch serving as final selector
- 2213/068 . Final selector
- 2213/069 . Panel switches
- 2213/07 . Call distribution; Call detection; Call signalling by common apparatus
- 2213/072 . Sequence circuits
- 2213/076 . Distributing frame; Cross connect
- 2213/08 . Power supply
- 2213/082 . Phantom circuits
- 2213/09 . Subscriber related equipment; Analog terminal
- 2213/091 . Indication of kind/number of subscriber
- 2213/092 . Scanning of (subscriber) lines, registers, translators
- 2213/093 . Personal computer
- 2213/094 . Range extender
- 2213/095 . User access; PIN code
- 2213/096 . Digital subscriber terminal
- 2213/097 . Numbering
- 2213/098 . Mobile subscriber
- 2213/099 . Loop multiplexer (not ISDN BRI/PRI; not 381), e.g. loop splitter
- 2213/10 . Register
- 2213/101 . Discriminating selectors
- 2213/102 . Common translator
- 2213/103 . Memories
- 2213/104 . Central control; Computer control
- 2213/106 . Microcomputer; Microprocessor
- 2213/107 . Control equipment for part of the connection
- 2213/109 . Initialising; Downloading of parameters or program routines
- 2213/11 . Sequence switches
- 2213/12 . Call indicator, e.g. number indicator
- 2213/121 . Marker
- 2213/124 . Pulse distributor
- 2213/13 . Charging
- 2213/13001 . Step by step switches
- 2213/13003 . Constructional details of switching devices
- 2213/1301 . Optical transmission, optical switches
- 2213/13012 . Hybrid fiber coax, HFC
- 2213/13016 . Optical subcarrier modulation
- 2213/1302 . Relay switches
- 2213/1303 . Pulse amplitude modulation, PAM
- 2213/13031 . Pulse code modulation, PCM
- 2213/13034 . A/D conversion, code compression/expansion
- 2213/13036 . Serial/parallel conversion, parallel bit transmission
- 2213/13038 . Optical modulation
- 2213/13039 . Asymmetrical two-way transmission, e.g. ADSL, HDSL
- 2213/1304 . Coordinate switches, crossbar, 4/2 with relays, coupling field
- 2213/13046 . Binary switch, ?-element
- 2213/1305 . Software aspects
- 2213/13051 . Software generation
- 2213/13052 . Multitasking
- 2213/13053 . Priority levels
- 2213/13054 . Expert system
- 2213/13056 . Routines, finite state machines
- 2213/13057 . Object-oriented software
- 2213/13058 . Interrupt request
- 2213/1307 . Call setup
- 2213/13072 . Sequence circuits for call signaling, ACD systems
- 2213/13076 . Distributing frame, MDF, cross-connect switch
- 2213/1308 . Power supply
- 2213/13082 . Power supply via phantom line
- 2213/1309 . Apparatus individually associated with a subscriber line, line circuits
- 2213/13091 . CLI, identification of calling line
- 2213/13092 . Scanning of subscriber lines, monitoring
- 2213/13093 . Personal computer, PC
- 2213/13094 . Range extender
- 2213/13095 . PIN / Access code, authentication
- 2213/13096 . Digital apparatus individually associated with a subscriber line, digital line circuits

- 2213/13097 . Numbering, addressing
- 2213/13098 . Mobile subscriber
- 2213/13099 . Loop multiplexer
- 2213/131 . Register
- 2213/13102 . Common translator
- 2213/13103 . Memory
- 2213/13104 . Central control, computer control
- 2213/13106 . Microprocessor, CPU
- 2213/13107 . Control equipment for a part of the connection, distributed control, co-processing
- 2213/13109 . Initializing, personal profile
- 2213/13121 . Marker
- 2213/13124 . Pulse distributor
- 2213/1313 . Metering, billing
- 2213/13134 . Coin boxes, payphone, prepaid
- 2213/13136 . Collect call ([information service H04Q 2213/13376](#))
- 2213/13138 . Least cost routing, LCR
- 2213/13139 . Fraud detection/prevention
- 2213/13141 . Hunting for free outlet, circuit or channel
- 2213/13144 . Searching path through number of switching stages or nodes, e.g. reversion blocking
- 2213/13145 . Rerouting upon failure
- 2213/13146 . Rerouting upon blocking/overload, rearrangement
- 2213/13148 . Maximum profit routing
- 2213/13149 . Change of provider, e.g. network or service
- 2213/1315 . Call waiting
- 2213/13152 . Callback
- 2213/13156 . Automatic digit redialling, automatic call retry
- 2213/1316 . Service observation, testing
- 2213/13162 . Fault indication and localisation
- 2213/13163 . Fault alarm
- 2213/13164 . Traffic (registration, measurement,...)
- 2213/13166 . Fault prevention
- 2213/13167 . Redundant apparatus
- 2213/13168 . Error Correction
- 2213/13172 . Supervisory signals
- 2213/13173 . Busy signals
- 2213/13174 . Data transmission, file transfer
- 2213/13175 . Graphical user interface [GUI], WWW interface, visual indication
- 2213/13176 . Common channel signaling, CCS7
- 2213/13178 . Control signals
- 2213/13179 . Fax, still picture
- 2213/1318 . Ringing
- 2213/1319 . Amplifier, attenuation circuit, echo suppressor
- 2213/13191 . Repeater
- 2213/13194 . Four wire connection, transmission
- 2213/13196 . Connection circuit/link/trunk/junction, bridge, router, gateway
- 2213/13199 . Modem, modulation
- 2213/132 . Multiple-zone-metering
- 2213/13201 . Change-over of service during connection
- 2213/13202 . Network termination [NT]
- 2213/13203 . Exchange termination [ET]
- 2213/13204 . Protocols
- 2213/13205 . Primary rate access, PRI
- 2213/13206 . User-to-user signaling, UUS
- 2213/13208 . Inverse multiplexing, channel bonding, e.g. TSSI aspects
- 2213/13209 . ISDN
- 2213/13213 . Counting, timing circuits
- 2213/13214 . Clock signals
- 2213/13215 . Code checking, CRC
- 2213/13216 . Code signals, frame structure
- 2213/13217 . Crankback in routing, trombone connection, loopback circuit
- 2213/1322 . PBX
- 2213/13222 . PBX circuits in public exchange, centrex
- 2213/13224 . Off-net subscriber, dial in to/out from network, teleworking
- 2213/1323 . Party line
- 2213/1324 . Conference call
- 2213/13242 . Broadcast, diffusion, multicast, point-to-multipoint (1 : N)
- 2213/13246 . Instant speaker's algorithm [ISA]
- 2213/13248 . Multimedia
- 2213/1325 . Priority service
- 2213/13251 . Restricted service, class of service
- 2213/13256 . Call screening
- 2213/1326 . Consultation call, broker's call, call hold, toggling
- 2213/1327 . Release and resetting of connection
- 2213/13271 . Forced release
- 2213/13272 . Premature release
- 2213/13274 . Call rejection, call barring
- 2213/1328 . Call transfer, e.g. in PBX
- 2213/13281 . Call transfer/forward at night
- 2213/13282 . Call forward, follow-me, call diversion
- 2213/13284 . Call tracing
- 2213/13286 . Direct in-dialling in PBX, DDI
- 2213/13287 . Wake-up call service
- 2213/13288 . Closed user groups, CUG
- 2213/1329 . Asynchronous transfer mode, ATM
- 2213/13291 . Frequency division multiplexing, FDM
- 2213/13292 . Time division multiplexing, TDM
- 2213/13293 . TASI, irregular time division, burst switching
- 2213/13294 . CDMA, code division multiplexing, i.e. combinations of [H04Q 2213/13291](#) and/or [H04Q 2213/13292](#) with space division
- 2213/13295 . Wavelength multiplexing, WDM
- 2213/13296 . Packet switching, X.25, frame relay
- 2213/13297 . Coupling different rates in TDM systems, data rate adaptation
- 2213/13298 . Local loop systems, access network
- 2213/13299 . Bus
- 2213/133 . Multiple-time-metering
- 2213/13302 . Magnetic elements
- 2213/13305 . Transistors, semiconductors in general
- 2213/13306 . Ferro-electric elements
- 2213/1331 . Delay elements, shift registers
- 2213/1332 . Logic circuits
- 2213/13322 . Integrated circuits
- 2213/1333 . Random systems
- 2213/13331 . Abbreviated dialling
- 2213/13332 . Broadband, CATV, dynamic bandwidth allocation
- 2213/13333 . Earth satellites
- 2213/13334 . Key telephone systems
- 2213/13335 . Simulation, emulation
- 2213/13336 . Store & forward, messaging systems ([email H04Q 2213/13375](#))
- 2213/13337 . Picturephone, videotelephony
- 2213/13338 . Do-not-disturb
- 2213/13339 . Ciphering, encryption, security
- 2213/1334 . Configuration within the switch
- 2213/13341 . Connections within the switch

- 2213/13342 . Arrangement of switches in the network
- 2213/13343 . Neural networks
- 2213/13344 . Overflow
- 2213/13345 . Intelligent networks, SCP
- 2213/13348 . Channel/line reservation
- 2213/13349 . Network management
- 2213/13352 . Self-routing networks, real-time routing
- 2213/13353 . Routing table, map memory
- 2213/1336 . Synchronisation
- 2213/13361 . Synchronous systems
- 2213/13362 . Asynchronous systems
- 2213/13363 . Pulse stuffing, bit stuffing
- 2213/13367 . Hierarchical multiplexing, add-drop multiplexing
- 2213/1337 . Operator, emergency services
- 2213/13372 . Intercepting operator
- 2213/13374 . Paging
- 2213/13375 . Electronic mail
- 2213/13376 . Information service, downloading of information, 0800/0900 services
- 2213/13377 . Recorded announcement
- 2213/13378 . Speech recognition, speech analysis
- 2213/1338 . Inter-exchange connection
- 2213/13381 . Pair-gain system, digital loop carriers
- 2213/13383 . Hierarchy of switches, main and subexchange, e.g. satellite exchange
- 2213/13384 . Inter-PBX traffic, PBX networks, e.g. corporate networks
- 2213/13385 . Off-net subscriber
- 2213/13386 . Line concentrator
- 2213/13387 . Call gapping
- 2213/13388 . Saturation signaling systems
- 2213/13389 . LAN, internet
- 2213/1339 . Fixed association of channels
- 2213/13391 . Channel assigned to connections
- 2213/13392 . Channels assigned according to rules
- 2213/13393 . Time slot switching, T-stage, time slot interchanging, TSI
- 2213/13395 . Permanent channel, leased line
- 2213/13396 . Signaling in general, in-band signalling
- 2213/13399 . Virtual channel/circuits
- 2213/134 . Coin box
- 2213/13402 . Data transmission out of voice frequency band ([ADSL H04Q 2213/13039](#))
- 2213/13405 . Dual frequency signaling, DTMF
- 2213/13407 . Detection of data transmission mode
- 2213/135 . Service creation
- 2213/13501 . Feature interactions
- 2213/13502 . primitives - inc. service-independent building blocks [SIBBs]
- 2213/13503 . object-oriented systems
- 2213/13504 . client/server architectures
- 2213/13505 . management information base [MIB]
- 2213/13511 . reservation
- 2213/13512 . 800 - freephone
- 2213/13513 . UPT - personal as opposed to terminal mobility, inc. number portability
- 2213/13514 . quality of service - inc. grade of service
- 2213/13515 . authentication, authorisation - fraud prevention
- 2213/13516 . agents or brokers - user, terminal etc., also OSI agent/managers
- 2213/13517 . SLEE - service logic execution
- 2213/13521 . fault management
- 2213/13522 . traffic management
- 2213/13523 . bandwidth management, e.g. capacity management
- 2213/13524 . cost management ([least cost H04Q 2213/13138](#))
- 2213/13525 . GUI - graphical user interface, inc. for service creation
- 2213/13526 . resource management
- 2213/13527 . protocols - X.25, TCAP etc.
- 2213/13528 . SCP architecture
- 2213/13531 . virtual networks - inc. PVN
- 2213/13532 . mobile networks
- 2213/13533 . multivendor and hybrid, e.g. public/private, networks, inc. international
- 2213/13534 . Internet - WWW, HTML, browsers etc.
- 2213/13535 . distributed systems - also domains in service creation
- 2213/13541 . routing
- 2213/13542 . numbering plans, e.g. number re-allocation
- 2213/13543 . network planning, configuration management, e.g. for growth
- 2213/13544 . modeling or simulation, particularly of networks
- 2213/13545 . monitoring of signaling messages, intelligent network
- 2213/13546 . Intelligent Peripheral
- 2213/13547 . subscriber, e.g. profile, database, database access
- 2213/13548 . call modeling, e.g. Basic Call State Model
- 2213/13561 . congestion - inc. overflow
- 2213/13562 . blocking
- 2213/13563 . call gapping, e.g. to prevent congestion
- 2213/13564 . load balancing
- 2213/13565 . restoration, e.g. disaster recovery, self-healing networks
- 2213/13566 . mediation
- 2213/13567 . negotiation, management policy, goals
- 2213/136 . Collect call, e.g. 800 service
- 2213/138 . Least cost routing
- 2213/14 . Busy test, e.g. marking busy
- 2213/141 . Hunting for free outlet, circuit, channel
- 2213/144 . Searching a free path through cascaded switching stages
- 2213/145 . Rerouting, e.g. on failure
- 2213/146 . Rearrangement
- 2213/15 . Waiting
- 2213/152 . Automatic call retry
- 2213/156 . Automatic redialling
- 2213/16 . Service observation; Fault circuit; Testing
- 2213/161 . Blocking or cutoff of faulty apparatus, e.g. timed out
- 2213/162 . Fault indication, e.g. localisation
- 2213/163 . Fault alarm
- 2213/164 . Traffic registration; Adaptation of traffic possibilities
- 2213/166 . Prevention of faults
- 2213/167 . Redundancy
- 2213/171 . Number indicating signals (no dial signals)
- 2213/172 . Supervisory signals
- 2213/173 . Busy signal
- 2213/174 . Data transmission
- 2213/175 . Other signals
- 2213/176 . Common channel signalling
- 2213/177 . Number sending signals, e.g. dialling tone, proceed to send
- 2213/178 . Control signals, e.g. also service connection

- 2213/179 . Facsimile; Fax, e.g. still picture
- 2213/18 . Ringing
- 2213/182 . Ring trip
- 2213/19 . Echo-cancelling; Hybrid; Amplifier; Attenuator
- 2213/191 . Repeater
- 2213/192 . Common amplifier for bidirectional traffic
- 2213/194 . Four-wire connection or transmission
- 2213/196 . Connection-circuit; Trunk; Junction circuit
- 2213/197 . Ping-pong transmission
- 2213/198 . Temporary associated devices; Pooled adapters
- 2213/199 . Modem
- 2213/20 . ISDN
- 2213/201 . Change-over service
- 2213/202 . Network termination [NT]
- 2213/203 . Exchange termination [ET]
- 2213/204 . ISDN protocol; ISO 7
- 2213/205 . Primary rate access
- 2213/206 . User-to-user signalling
- 2213/208 . Inverse multiplexing; Time slot sequence integrity [TSSI] aspects
- 2213/21 . Impulse transmission
- 2213/211 . Impulse correction or reshaping
- 2213/212 . Absorbing of digits
- 2213/214 . Phase shifted impulses; Clock signals; Timing
- 2213/215 . Code checking
- 2213/216 . Code signals; Framing (not synchronizing)
- 2213/217 . Setting of switch by means of pulses
- 2213/218 . Bistable relays, e.g. Ferreed
- 2213/22 . PBX
- 2213/222 . PBX circuits in public exchange (Centrex)
- 2213/23 . Partyline
- 2213/24 . Conference circuit
- 2213/242 . Broadcast and multicast (1:N)
- 2213/243 . Con-cast, e.g. multipoint-point (N:1)
- 2213/246 . Instant speaker's algorithm [ISA]
- 2213/25 . Preferential service
- 2213/251 . Restricted service
- 2213/252 . Breaking-in on existing connection
- 2213/256 . Call screening
- 2213/26 . Call-back
- 2213/27 . Release
- 2213/271 . Forced release
- 2213/272 . Premature release
- 2213/274 . Call rejection
- 2213/28 . Call transfer
- 2213/281 . Prepared call transfer, e.g. night service, intercepting service
- 2213/282 . Call forwarding
- 2213/284 . Call tracing
- 2213/286 . Direct inward dialling [PBX]
- 2213/287 . Call service, e.g. morning call service
- 2213/29 . ATM
- 2213/291 . Frequency division multiplex
- 2213/292 . Time (de)multiplexing
- 2213/293 . Irregular time switching, e.g. TASI; Burst switching
- 2213/294 . Other multiplexing systems, e.g. codemultiplex, TDM, FDM, FDM and Space division, TDM and Space division
- 2213/295 . Wavelength division multiplex
- 2213/296 . Packet switching
- 2213/297 . Coupling circuits between different (rate) TDM systems
- 2213/298 . Loop or ring system
- 2213/299 . Bus
- 2213/301 . Tubes and other non-linear elements with 2 electrodes, e.g. diodes
- 2213/302 . Magnetic elements
- 2213/303 . Tubes and other non-linear elements with more than two electrodes
- 2213/304 . Supra-conductors; thermistors; varistors
- 2213/305 . Transistors
- 2213/306 . Ferro-electric elements
- 2213/307 . Hall elements
- 2213/308 . Photo conductors; Photo elements
- 2213/31 . Delay devices; Circuits, e.g. shift memories
- 2213/32 . Logic elements
- 2213/322 . Integrated circuit
- 2213/33 . Special systems; Special service
- 2213/331 . Abbreviated dialing
- 2213/332 . Broadband system
- 2213/333 . Systems with earth-satellites
- 2213/334 . Key telephone system
- 2213/335 . Simulation
- 2213/336 . Store and forward, e.g. message switching
- 2213/337 . Picturephone
- 2213/338 . Do not disturb
- 2213/339 . Ciphering/encryption
- 2213/34 . General scheme; Position of components in an exchange
- 2213/341 . Contactbank connections
- 2213/342 . General scheme; Position of exchanges
- 2213/343 . Neural network
- 2213/344 . Overflow
- 2213/345 . Intelligent network
- 2213/346 . Switch with inverted grouping
- 2213/347 . Nodal network
- 2213/348 . Reservation of lines/channels
- 2213/349 . Network management; Expert system
- 2213/35 . Separate control and speech paths, e.g. route-searching planes
- 2213/352 . Self-routing switch
- 2213/353 . Map memory
- 2213/36 . Synchronisation
- 2213/361 . Synchronous system
- 2213/362 . Asynchronous system
- 2213/363 . Bit or pulse stuffing
- 2213/366 . Integrated systems, e.g. transparency
- 2213/367 . Multiple multiplexing; Hierarchical multiplexing
- 2213/37 . Operator
- 2213/372 . Intervention by operator; Intercepting operator
- 2213/374 . Paging
- 2213/375 . Electronic mail
- 2213/376 . Information service
- 2213/377 . Recorded announcement
- 2213/378 . Speech recognition; Speech analysis
- 2213/38 . Interexchange connections, e.g. connections of different kinds of networks
- 2213/381 . Pair gain system
- 2213/382 . Provisions for interexchange traffic in the local exchange
- 2213/383 . Main and subexchange, e.g. satellite exchanges
- 2213/384 . Inter-PBX traffic; PBX networks
- 2213/385 . Traffic in PBX to and from public exchange
- 2213/386 . Line concentrator

- 2213/388 . Saturation signalling system
- 2213/39 . Channels assigned to subscribers
- 2213/391 . Channel allocation to connections
- 2213/392 . Channel allocation - special rules
- 2213/393 . Channel interchanging, e.g. time slot switching
- 2213/394 . Channel assignment without time slot switching
- 2213/395 . (Semi)permanent channels, e.g. leased lines
- 2213/396 . Signalling in general; Special register channel
- 2213/399 . Virtual channel allocation
- 2213/401 . DC and voltages of different kinds or values
- 2213/402 . AC outside voice band
- 2213/403 . Voice frequency
- 2213/405 . Voice frequency current used for digit selection
- 2213/407 . Push-button dialling ([not H04Q 2213/405](#))