

H03 BASIC ELECTRONIC CIRCUITRY

H03M CODING, DECODING OR CODE CONVERSION, IN GENERAL (using fluidic means F15C 4/00; optical analogue/digital converters G02F 7/00; coding, decoding or code conversion, specially adapted for particular applications, see the relevant subclasses, e.g. G01D, G01R, G06F, G06T, G09G, G10L, G11B, G11C, H04B, H04L, H04M, H04N; ciphering or deciphering for cryptography or other purposes involving the need for secrecy G09C) **[4]**

CODING AND DECODING	of the sequence of digits.....	7/00
in general.....	parallel/series or vice versa.....	9/00
to or from differential modulation.....	ERROR DETECTION OR ERROR	
in connection with keyboards.....	CORRECTION.....	13/00
CONVERSION	SUBJECT MATTER NOT PROVIDED FOR	
of the form of individual digits.....	IN OTHER GROUPS OF THIS SUBCLASS	99/00

1/00	Analogue/digital conversion; Digital/analogue conversion (conversion of analogue values to or from differential modulation H03M 3/00) [4]	1/46	 with digital/analogue converter for supplying reference values to converter [4]
1/02	. Reversible analogue/digital converters [4]	1/48	. . Servo-type converters [4]
1/04	. using stochastic techniques [4]	1/50	. . with intermediate conversion to time interval (H03M 1/64 takes precedence) [4]
1/06	. Continuously compensating for, or preventing, undesired influence of physical parameters (periodically H03M 1/10) [4]	1/52	. . . Input signal integrated with linear return to datum [4]
1/08	. . of noise [4]	1/54	. . . Input signal sampled and held with linear return to datum [4]
1/10	. Calibration or testing [4]	1/56	. . . Input signal compared with linear ramp [4]
1/12	. Analogue/digital converters (H03M 1/02 H03M 1/10 take precedence) [4]	1/58	. . . Non-linear conversion [4]
1/14	. . Conversion in steps with each step involving the same or a different conversion means and delivering more than one bit [4]	1/60	. . with intermediate conversion to frequency of pulses [4]
1/16	. . . with scale factor modification, i.e. by changing the amplification between the steps [4]	1/62	. . . Non-linear conversion [4]
1/18	. . Automatic control for modifying the range of signals the converter can handle, e.g. gain ranging [4]	1/64	. . with intermediate conversion to phase of sinusoidal signals [4]
1/20	. . Increasing resolution using an n bit system to obtain n + m bits, e.g. by dithering [4]	1/66	. Digital/analogue converters (H03M 1/02 H03M 1/10 take precedence) [4]
1/22	. . pattern-reading type [4]	1/68	. . with conversions of different sensitivity, i.e. one conversion relating to the more significant digital bits and another conversion to the less significant bits [4]
1/24	. . . using relatively movable reader and disc or strip [4,6]	1/70	. . Automatic control for modifying converter range [4]
1/26	. . . with weighted coding, i.e. the weight given to a digit depends on the position of the digit within the block or code word, e.g. there is a given radix and the weights are powers of this radix [4]	1/72	. . Sequential conversion in series-connected stages (H03M 1/68 takes precedence) [4]
1/28	 with non-weighted coding [4]	1/74	. . Simultaneous conversion [4]
1/30	 incremental [4]	1/76	. . . using switching tree [4]
1/32	. . . using cathode-ray tubes [4]	1/78	. . . using ladder network [4]
1/34	. . Analogue value compared with reference values (H03M 1/48 takes precedence) [4]	1/80	. . . using weighted impedances (H03M 1/76 takes precedence) [4]
1/36	. . . simultaneously only, i.e. parallel type [4]	1/82	. . with intermediate conversion to time interval [4]
1/38	. . . sequentially only, e.g. successive approximation type (converting more than one bit per step H03M 1/14) [4]	1/84	. . . Non-linear conversion [4]
1/40	 recirculation type [4]	1/86	. . with intermediate conversion to frequency of pulses [4]
1/42	 Sequential comparisons in series-connected stages with no change in value of analogue signal [4]	1/88	. . . Non-linear conversion [4]
1/44	 Sequential comparisons in series-connected stages with change in value of analogue signal [4]	3/00	Conversion of analogue values to or from differential modulation [4]
		3/02	. Delta modulation, i.e. one-bit differential modulation [4]
		3/04	. Differential modulation with several bits [4]
		5/00	Conversion of the form of the representation of individual digits [4]

In groups H03M 5/02 H03M 5/22, in the absence of an indication to the contrary, classification is made in the last appropriate place. [4]

- 5/02 . Conversion to or from representation by pulses [4]
- 5/04 . . the pulses having two levels [4]
- 5/06 . . . Code representation, e.g. transition, for a given bit cell depending only on the information in that bit cell [4]
- 5/08 Code representation by pulse width [4]
- 5/10 Code representation by pulse frequency [4]
- 5/12 Biphase level code, e.g. split phase code, Manchester code; Biphase space or mark code, e.g. double frequency code [4]
- 5/14 . . . Code representation, e.g. transition, for a given bit cell depending on the information in one or more adjacent bit cells, e.g. delay modulation code, double density code [4]
- 5/16 . . the pulses having three levels [4]
- 5/18 . . . two levels being symmetrical with respect to the third level, i.e. balanced bipolar ternary code [4]
- 5/20 . . the pulses having more than three levels [4]
- 5/22 . Conversion to or from representation by sinusoidal signals [4]

7/00 Conversion of a code where information is represented by a given sequence or number of digits to a code where the same information is represented by a different sequence or number of digits [4]

In groups H03M 7/02 H03M 7/30, in the absence of an indication to the contrary, classification is made in the last appropriate place. [4]

- 7/02 . Conversion to or from weighted codes, i.e. the weight given to a digit depending on the position of the digit within the block or code word [4]
- 7/04 . . the radix thereof being two [4]
- 7/06 . . the radix thereof being a positive integer different from two [4]
- 7/08 . . . the radix being ten, i.e. pure decimal code [4]
- 7/10 . . the radix thereof being negative [4]
- 7/12 . . having two radices, e.g. binary-coded-decimal code [4]
- 7/14 . Conversion to or from non-weighted codes [4]
- 7/16 . . Conversion to or from unit-distance codes, e.g. Gray code, reflected binary code [4]
- 7/18 . . Conversion to or from residue codes [4]
- 7/20 . . Conversion to or from n-out-of-m codes [4]
- 7/22 . . . to or from one-out-of-m codes [4]
- 7/24 . . Conversion to or from floating-point codes [4]
- 7/26 . Conversion to or from stochastic codes [4]
- 7/28 . Programmable structures, i.e. where the code converter contains apparatus which is operator-changeable to modify the conversion process [4]
- 7/30 . Compression (speech analysis-synthesis for redundancy reduction G10L 19/00; for image communication H04N); Expansion; Suppression of unnecessary data, e.g. redundancy reduction [4]
- 7/32 . . Conversion to or from delta modulation, i.e. one-bit differential modulation [4]
- 7/34 . . . adaptive [4]

- 7/36 . . Conversion to or from differential modulation with several bits, i.e. the difference between successive samples being coded by more than one bit [4]
- 7/38 . . . adaptive [4]
- 7/40 . . Conversion to or from variable length codes, e.g. Shannon-Fano code, Huffman code, Morse code [4]
- 7/42 . . . using table look-up for the coding or decoding process, e.g. using read-only memory [4]
- 7/44 . . . Suppression of irrelevant zeroes [4]
- 7/46 . . Conversion to or from run-length codes, i.e. by representing the number of consecutive digits, or groups of digits, of the same kind by a code word and a digit indicative of that kind [4]
- 7/48 . . . alternating with other codes during the code conversion process, e.g. run-length coding being performed only as long as sufficiently long runs of digits of the same kind are present [4]
- 7/50 . . Conversion to or from non-linear codes, e.g. companding [4]

9/00 Parallel/series conversion or vice versa (digital stores in which the information is moved stepwise G11C 19/00) [4]

11/00 Coding in connection with keyboards or like devices, i.e. coding of the position of operated keys (keyboard switch arrangements, structural association of coders and keyboards H01H 13/70, H03K 17/94) [4]

- 11/02 . Details [5]
- 11/04 . . Coding of multifunction keys [5]
- 11/06 . . . by operating the multifunction key itself in different ways [5]
- 11/08 by operating selected combinations of multifunction keys [5]
- 11/10 by methods based on duration or pressure detection of keystrokes [5]
- 11/12 by operating a key a selected number of consecutive times whereafter a separate enter key is used which marks the end of the series [5]
- 11/14 . . . by using additional keys, e.g. shift keys, which determine the function performed by the multifunction key [5]
- 11/16 wherein the shift keys are operated after the operation of the multifunction keys [5]
- 11/18 wherein the shift keys are operated before the operation of the multifunction keys [5]
- 11/20 . Dynamic coding, i.e. by key scanning (H03M 11/26 takes precedence) [5]
- 11/22 . Static coding (H03M 11/26 takes precedence) [5]
- 11/24 . . using analogue means [5]
- 11/26 . using opto-electronic means [5]

- 13/00 Coding, decoding or code conversion, for error detection or error correction; Coding theory basic assumptions; Coding bounds; Error probability evaluation methods; Channel models; Simulation or testing of codes** (error detection or error correction for analogue/digital, digital/analogue or code conversion H03M 1/00 H03M 11/00; specially adapted for digital computers G06F 11/08, for information storage based on relative movement between record carrier and transducer G11B, e.g. G11B 20/18, for static stores G11C) [4,7]
- 13/01 . Coding theory basic assumptions; Coding bounds; Error probability evaluation methods; Channel models; Simulation or testing of codes [7]
- 13/03 . Error detection or forward error correction by redundancy in data representation, i.e. code words containing more digits than the source words [7]
- 13/05 . . using block codes, i.e. a predetermined number of check bits joined to a predetermined number of information bits [7]
- 13/07 . . . Arithmetic codes [7]
- 13/09 . . . Error detection only, e.g. using cyclic redundancy check (CRC) codes or single parity bit [7]
- 13/11 . . . using multiple parity bits [7]
- 13/13 . . . Linear codes [7]
- 13/15 Cyclic codes, i.e. cyclic shifts of codewords produce other codewords, e.g. codes defined by a generator polynomial, Bose-Chaudhuri-Hocquenghem (BCH) codes (H03M 13/17 takes precedence) [7]
- 13/17 Burst error correction, e.g. error trapping, Fire codes [7]
- 13/19 Single error correction without using particular properties of the cyclic codes, e.g. Hamming codes, extended or generalised Hamming codes [7]
- 13/21 . . . Non-linear codes, e.g. m-bit data word to n-bit code word (mBnB) conversion with error detection or error correction [7]
- 13/23 . . using convolutional codes, e.g. unit memory codes [7]
- 13/25 . Error detection or forward error correction by signal space coding, i.e. adding redundancy in the signal constellation, e.g. Trellis Coded Modulation (TCM) [7]
- 13/27 . using interleaving techniques [7]
- 13/29 . combining two or more codes or code structures, e.g. product codes, generalised product codes, concatenated codes, inner and outer codes [7]
- 13/31 . combining coding for error detection or correction and efficient use of the spectrum (without error detection or correction H03M 5/14) [7]
- 13/33 . Synchronisation based on error coding or decoding [7]
- 13/35 . Unequal or adaptive error protection, e.g. by providing a different level of protection according to significance of source information or by adapting the coding according to the change of transmission channel characteristics [7]
- 13/37 . Decoding methods or techniques, not specific to the particular type of coding provided for in groups H03M 13/03 H03M 13/35 [7]
- 13/39 . . Sequence estimation, i.e. using statistical methods for the reconstruction of the original codes [7]
- 13/41 . . . using the Viterbi algorithm or Viterbi processors [7]
- 13/43 . . Majority logic or threshold decoding [7]
- 13/45 . . Soft decoding, i.e. using symbol reliability information (H03M 13/41 takes precedence) [7]
- 13/47 . Error detection, forward error correction or error protection, not provided for in groups H03M 13/01 H03M 13/37 [7]
- 13/49 . . Unidirectional error detection or correction [7]
- 13/51 . . Constant weight codes; n-out-of-m codes; Berger codes [7]
- 13/53 . . Codes using Fibonacci numbers series [7]
- 99/00 Subject matter not provided for in other groups of this subclass [8]**