SECTION H — ELECTRICITY

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]**

Subclass index

1/00 **Analogue/digital conversion; Digital/analogue conversion** (conversion of analogue values to or from differential modulation H03M 3/00) **[4]**

1/02 • Reversible analogue/digital converters **[4]**

1/04 • using stochastic techniques **[4]**

1/06 • Continuously compensating for, or preventing, undesired influence of physical parameters (periodically H03M 1/10) **[4]**

1/08 • • of noise **[4]**

1/10 • Calibration or testing **[4]**

1/12 • Analogue/digital converters (H03M 1/02-H03M 1/10 take precedence) **[4]**

1/14 • • Conversion in steps with each step involving the same or a different conversion means and delivering more than one bit **[4]**

1/16 • • • with scale factor modification, i.e. by changing the amplification between the steps **[4]**

1/18 • • Automatic control for modifying the range of signals the converter can handle, e.g. gain ranging **[4]**

1/20 • • Increasing resolution using an n bit system to obtain n + m bits, e.g. by dithering **[4]**

1/22 • • pattern-reading type **[4]**

1/24 • • • using relatively movable reader and disc or strip **[4, 6]**

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]**

1/28 • • • • with non-weighted coding **[4]**

1/30 • • • • • incremental **[4]**

1/32 • • • using cathode-ray tubes **[4]**

1/34 • • Analogue value compared with reference values (H03M 1/48 takes precedence) **[4]**

1/36 • • • simultaneously only, i.e. parallel type **[4]**

1/38 • • • sequentially only, e.g. successive approximation type (converting more than one bit per step H03M 1/14) **[4]**

1/40 • • • • recirculation type **[4]**

1/42 • • • • Sequential comparisons in series-connected stages with no change in value of analogue signal **[4]**

1/44 • • • • Sequential comparisons in series-connected stages with change in value of analogue signal **[4]**

1/46 • • • • with digital/analogue converter for supplying reference values to converter **[4]**

1/48 • • Servo-type converters **[4]**

1/50 • • with intermediate conversion to time interval (H03M 1/64 takes precedence) **[4]**

1/52 • • • Input signal integrated with linear return to datum **[4]**

1/54 • • • Input signal sampled and held with linear return to datum **[4]**

1/56 • • • Input signal compared with linear ramp **[4]**

1/58 • • • Non-linear conversion **[4]**

1/60 • • with intermediate conversion to frequency of pulses **[4]**

1/62 • • • Non-linear conversion **[4]**

1/64 • • with intermediate conversion to phase of sinusoidal signals **[4]**

1/66 • Digital/analogue converters (H03M 1/02-H03M 1/10 take precedence) **[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]**

1/70 • • Automatic control for modifying converter range **[4]**

1/72 • • Sequential conversion in series-connected stages (H03M 1/68 takes precedence) **[4]**

1/74 • • Simultaneous conversion **[4]**
1/76 • • • using switching tree **[4]**
1/78 • • • using ladder network **[4]**
1/80 • • • using weighted impedances (H03M 1/76 takes precedence) **[4]**
1/82 • • with intermediate conversion to time interval **[4]**
1/84 • • • Non-linear conversion **[4]**
1/86 • • with intermediate conversion to frequency of pulses **[4]**
1/88 • • • Non-linear conversion **[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]

Note(s)

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.

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]

Note(s)

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.

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 [2006.01]