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Electronic

DEFINITIONS FOR THE DIGITAL AGE

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error detection and correction or **error control** or **error-reduction methods** any ALGORITHM that will detect and correct errors, ranging from PARITY methods or CYCLIC REDUNDANCY CHECK to more elaborate methods that can correct all but gross errors.

errored second one second of a digital communication that contains at least one error.

error extension or **error multiplication** a problem of SCRAMBLER circuits or CODE CONVERTERS in which one bit of error in a signal can cause up to four errors in the decoded data, particularly if the error arises in a FEEDBACK signal.

error function a calculation of probability of digital BIT ERROR RATE made assuming GAUSSIAN NOISE.

error rate see BIT ERROR RATE.

error-reduction methods see ERROR DETECTION AND CORRECTION.

error signal or **error voltage** or **system deviation** in a control system, the difference between a set level (e.g. of temperature) and the achieved level.

error spread a set of errors caused by a single bit error (see BIT ERROR RATE) and ERROR EXTENSION.

error voltage see ERROR SIGNAL.

Esaki diode see TUNNEL DIODE.

escape ray an electromagnetic wave that strikes the IONOSPHERE at more than the CRITICAL ANGLE, so that it escapes into space and is not reflected.

ESD see ELECTROSTATIC DISCHARGE.

ESR see EFFECTIVE SERIES RESISTANCE.

etched PCB a PRINTED CIRCUIT BOARD created by etching rather than by drawing with a conductive ink.

etching the dissolving of material by a chemical process, particularly with acids. Etching is used to produce PRINTED CIRCUIT BOARDS (using solutions of materials such as ferric chloride), and in the production of TRANSISTORS and INTEGRATED CIRCUITS.

etch-resistant ink a type of ink used to mark out PRINTED CIRCUIT BOARDS. The areas of copper covered by the ink will not be etched (see ETCHING) away.

ETF see ELEVEN TO FOURTEEN MODULATION.

ethanol or **ethyl alcohol** a cleaning agent that absorbs water. Ethanol is toxic, particularly to the liver, and highly flammable.

Ethernet a widely used HALF-DUPLEX computer network using 5-ohm coaxial cable, maximum length 2.5 km. The data rate is 10 Mb/s, using a MANCHESTER CODE format.

ethyl alcohol see ETHANOL.

ETSI see EUROPEAN TELECOMMUNICATIONS STANDARDS INSTITUTE.

EU directives regulations that affect many aspects of electronics, particularly CE MARK and the LOW VOLTAGE DIRECTIVE.

Euro AV connector see SCART CONNECTOR.

Eurocard any of a set of standard PRINTED CIRCUIT BOARD sizes, used for experimental work.

Eurocard prototyping boards a set of standardized printed circuit BREADBOARDS that are intended for testing construction of digital circuits.

euroconnector see IEC CONNECTOR.

Eurocrypt the SCRAMBLER system used for D-MAC (see MAC) analogue satellite transmissions in Europe.

Eurocypher a form of scrambler system for MAC broadcasts.

Euronet the European Union data communications system, using PACKET SWITCHING and linked to the public system.

European broadcasting union (EBU) an organization founded in 1950 to promote international cooperation in broadcasting.

European radio messaging system (ERMES) a standard for radio messaging using sixteen channels in the 169.425 MHz to 169.80 MHz band for digital communications at 6.25 Kb/s with ERROR CORRECTION. Receivers are designed to scan all the sixteen channels.

Eurosocket or **IEC connector** a three-contact plug and socket arrangement used to connect small electronic equipment to the mains and designed so as to minimize the risk of shock if the connection is parted while still live. See Fig. 41.

eutectic alloy a SOLDER alloy of tin and lead which has the lowest melting point (183°C) of all the possible tin/lead alloy compositions.

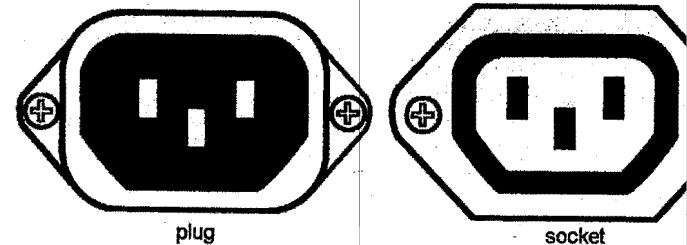


Fig. 41. Eurosocket

evaporated coating a film of metal produced by evaporating the metal in a vacuum, typically used to metallize an insulator in the construction of a CAPACITOR.

even function a waveform that can be analyzed in terms of cosine terms (see FOURIER SERIES) only, with an amplitude that is not zero at time zero. Contrast ODD FUNCTION.

even parity a PARITY scheme in which the number of 1 bits in a byte must be even, otherwise an error is signalled.

EVF see ELECTRONIC VIEWFINDER.

EVR see ELECTRONICALLY VARIABLE RESISTOR.

exalted carrier reception a method of minimizing distortion in a transmission that uses reduced carrier power, in which the remaining CARRIER (sense 1) is used to generate a larger modulated signal in phase, and this is then demodulated. See also REDUCED CARRIER TRANSMISSION; SINGLE-SIDEBAND.

excess current protection a circuit that will cut off or reduce a supply voltage when excessive current flows. See also CROWBAR CIRCUIT.

excess noise the difference between the NOISE generated in a component or system and the theoretical noise that would be emitted from an object (BLACK BODY) at a temperature of 290K.

excess noise temperature a figure calculated from the ratio of NOISE TEMPERATURES of transmitter and receiver.

excess-3 code a form of BCD code in which 3 is added to each denary digit before coding to 8-4-2-1 BINARY (sense 1).

In such a code any code below above 1100 must be an error, making detection easy.

excess voltage protection a circuit will reduce or cut-off a voltage if the output voltage exceeds a preset level. See also CROWBAR CIRCUIT.

exchangeable card architecture see PLUG AND PLAY.

excitation the addition of energy to a system, for example signals that are input for a system such as an AN OSCILLATOR.

exclusive OR (XOR) gate a logic gate giving a logic comparison. The XOR gate produces an output if any of its inputs are at logic 1. The XOR gate excludes the case where more than one input is at logic 1. See Fig. 42.

exosphere the low-density region of the atmosphere lying beyond 400 km.

exotic supply a source of electricity that does not use conventional primary or chemical cell actions, such as nuclear cells, PHOTOCELLS and FUEL CELLS. The fuel cell is in such large production now as almost to be regarded as conventional.

expanded sweep a TIMEBASE for a CATHODE-RAY OSCILLOSCOPE in which the timebase amplitude can be greatly increased. This allows the effect of a small waveform to be examined in great detail without the need to switch the timebase speed and resynchronize. **expander** a circuit that increases the DYNAMIC RANGE of an audio signal.