Title (en)
  Zero crossing circuit.

Title (de)
  Nulldurchgangsschaltung.

Title (fr)
  Circuit de commutation au passage par zéro.

Publication
  EP 0108538 A1 19840516 (EN)

Application
  EP 83306408 A 19831021

Priority
  GB 8230339 A 19821023

Abstract (en)
  A microprocessor-based zero crossing circuit produces in response to an input command provided by closure of a switch (18) an output signal (13,
  14) which is synchronised with the zero crossing points of an a.c. supply and includes a predetermined delay. By this means the output signal (13,
  14) may be used to operate or control operation of, for example, a circuit breaker for the a.c. supply in order to minimise contact arcing. The circuit
  is useful in an electricity supply meter when the input command on input 12 is generated by a credit or prepayment mechanism which acts to cut-off
  an a.c. supply on expiry of credit. Following a cut-off command on input 12 the circuit produces the synchronised output signal (13, 14) appropriately
  delayed to take into account the operating time of the circuit breaker so that its contacts (20, 21) open as nearly coincident as possible with a zero
  crossing point of the supply.

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  H01H 9/56

IPC 8 full level
  H01H 9/56 (2006.01); H01H 51/12 (2006.01)

CPC (source: EP)
  H01H 9/56 (2013.01); H01H 51/12 (2013.01)

Citation (search report)
  • [Y] US 4001643 A 19770104 - RAMBERG HAROLD C, et al
  • [A] US 4311956 A 19820119 - TOLMIE JR ROBERT J
  • [A] US 3566152 A 19710223 - CASEY EDWARD J, et al
  • [A] EP 0034448 A2 19810826 - LYONS CLAUDE LTD [GB]
  • [A] US 3265933 A 19660809 - PERRY ELIJAH R, et al
  • [A] US 3243656 A 19660329 - JOHN BAUDE
  • [A] US 3206642 A 19650914 - JOHN FARVIS WILLIAM EWART
  • [A] US 4153922 A 19790508 - AZUMA NOBUO, et al
  • [A] GB 2090702 A 19820714 - GEN ELECTRIC
  • [A] GB 2057207 A 19810325 - GEN ELECTRIC
  • [A] US 3950657 A 19760413 - SHENG ABEL CHING NAM, et al
  • [A] US 4010386 A 19770301 - ROSSELL ALLEN J
  • [A] US 4306263 A 19811215 - GRAY KEITH I, et al
  • [AP] EP 0063893 A2 19821103 - MAINMET LTD [GB]
  • [Y] Patent Abstracts of Japan vol. 4, no. 170, 22 November 1980 & JP-A-55-118223
  • [A] IBM TECHNICAL DISCLOSURE BULLETIN, vol. 15, no. 3, August 1972 L.M. ERNST et al. "Current zero-crossing detection for thyristor control",
    page 734
  • [A] IBM TECHNICAL DISCLOSURE BULLETIN, vol. 24, no. 10, March 1982 J.H. DODGE et al. "Microcomputer control of zero-crossing detection
    accuracy", pages 5025-5027

Cited by
  WO2011072816A1; ES2153776A1; EP0338374A3; EP0170925A1; FR2953938A1; CN102834885A; US5530615A; EP0571122A1;
  WO9010942A1; US9105417B2; US9793716B2; US10236691B2; EP0200099B1

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