

Title (en)
A SWITCHING CIRCUIT.

Title (de)
SCHALTKREIS.

Title (fr)
CIRCUIT DE COMMUTATION.

Publication
EP 0437447 B1 19940713

Application
EP 89910212 A 19890918

Priority
• NO 884150 A 19880919
• NO 8900095 W 19890918

Abstract (en)
[origin: US5283706A] An electrical switching circuit comprising an electromagnetic relay and a by directively controlled contactless switch. The electrical switching circuit being able to make and break a capacitive, inductive or pure resistive electrical loads without forming arcs and without substantial heat loss. A control voltage as applied through a phase detecting opticoel coupler to a by directively controlled contactless switch, such as a triac. The same control voltage is also connected to a time delay circuit wherein the time delay circuit after being charged energizes an electromagnetic relay connecting the load circuit. Upon disconnecting the load the sequence of operation is reversed. The electromagnetic relay is deenergized while the time delay circuit retains the opticoel coupler connection which in turn retains the energization of the contactless switch until the phase of the load energy source to be precisely at the zero voltage crossing at which time the contactless switch is also deenergized. The delay built into the time delay circuit is at least one half of the period of the load energy source so that the disconnection will be made at the zero voltage crossover point to prevent any arc from occurring.

IPC 1-7
H01H 9/54; **H01H 47/18**

IPC 8 full level
H01H 9/56 (2006.01); **H01H 9/54** (2006.01); **H01H 47/18** (2006.01)

CPC (source: EP US)
H01H 9/542 (2013.01 - EP US); **H01H 47/18** (2013.01 - EP US); **H01H 2009/545** (2013.01 - EP US)

Cited by
DE10156342B4; CN102969201A; DE19803992A1; DE19803992C2; EP2873083B1; EP2898521B1

Designated contracting state (EPC)
AT BE CH DE FR GB IT LI LU NL SE

DOCDB simple family (publication)
US 5283706 A 19940201; AT E108572 T1 19940715; AU 4214389 A 19900418; DE 68916804 D1 19940818; DE 68916804 T2 19950223; EP 0437447 A1 19910724; EP 0437447 B1 19940713; FI 911187 A0 19910311; FI 93402 B 19941215; JP H04501785 A 19920326; LV 10542 A 19950220; LV 10542 B 19950620; NO 168009 B 19910923; NO 168009 C 19940621; NO 884150 D0 19880919; NO 884150 L 19900320; WO 9003655 A1 19900405

DOCDB simple family (application)
US 67151991 A 19910319; AT 89910212 T 19890918; AU 4214389 A 19890918; DE 68916804 T 19890918; EP 89910212 A 19890918; FI 911187 A 19910311; JP 50951789 A 19890918; LV 920540 A 19921229; NO 884150 A 19880919; NO 8900095 W 19890918