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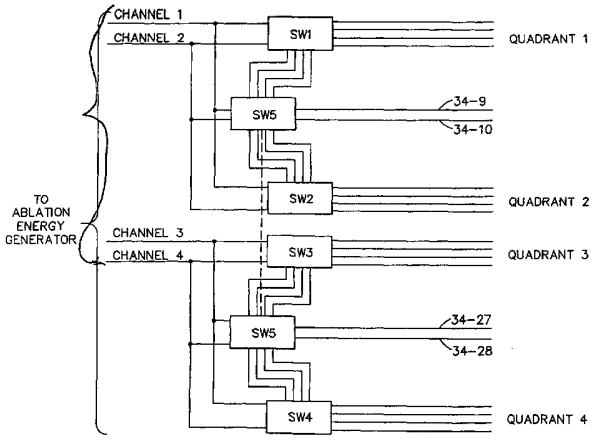
(54) Title: METHOD AND APPARATUS FOR CONTROL OF ABLATION ENERGY AND ELECTROGRAM ACQUISITION THROUGH MULTIPLE COMMON ELECTRODES IN AN ELECTROPHYSIOLOGY CATHETER



(57) Abstract: Method and apparatus for control of ablation energy and electrogram acquisition through multiple common electrodes in an electröphysiology catheter. A device that routes ablation energy to and that routes mapping signals received from an electrophysiology catheter having a plurality of conductive filaments including circuitry that provides, for each conductive filament when ablation energy is being delivered, an electrical signal path that has a low impedance for ablation energy and a high impedance for mapping signals. The device also includes circuitry that provides, for each conductive filament, when mapping signals are being received, an electrical signal path that has a high impedance for ablation energy and low impedance for mapping signals. At least one switch is provided that selectively groups electrodes into sectors for delivery of ablation energy.

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IPC 7 A61B18/12 A61B5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94 06349 A (BEATTY GRAYDON ERNEST ;BUDD JEFFREY R (US); KAGAN JONATHAN (US); E) 31 March 1994 (1994-03-31)	1-4,11
A	page 2 -page 21; figure 1	5-10
X	WO 01 82814 A (BARD INC C R) 8 November 2001 (2001-11-08)	1-4,11
A	page 3 -page 23; figure 1	5-10
X	EP 1 169 976 A (BIOSENSE INC) 9 January 2002 (2002-01-09)	1-4,11
A	column 3, paragraph 11 -column 23, paragraph 98	5-10
X	US 5 681 308 A (SHARKEY HUGH R ET AL) 28 October 1997 (1997-10-28)	1-4,11
A	column 3 -column 12; figure 8	5-10

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
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PCT/US 03/08002

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 341 807 A (NARDELLA PAUL C) 30 August 1994 (1994-08-30)	1-4,11
A	column 1, line 64 -column 7, line 30; figure 5	5-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internatior plication No
PCT/US 03/08002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9406349 A	31-03-1994	US 5311866 A	17-05-1994
		US 5297549 A	29-03-1994
		AT 160273 T	15-12-1997
		CA 2144973 A1	31-03-1994
		DE 69315354 D1	02-01-1998
		DE 69315354 T2	19-03-1998
		EP 0661948 A1	12-07-1995
		JP 8501477 T	20-02-1996
		WO 9406349 A1	31-03-1994
		US 2003176799 A1	18-09-2003
		US 5662108 A	02-09-1997
		US 6647617 B1	18-11-2003
WO 0182814 A	08-11-2001	EP 1284670 A2	26-02-2003
		JP 2003531667 T	28-10-2003
		WO 0182814 A2	08-11-2001
		US 2002107511 A1	08-08-2002
EP 1169976 A	09-01-2002	US 6546270 B1	08-04-2003
		AU 5424601 A	10-01-2002
		CA 2352690 A1	07-01-2002
		EP 1169976 A1	09-01-2002
		JP 2002065626 A	05-03-2002
US 5681308 A	28-10-1997	US 5575788 A	19-11-1996
		US 5558672 A	24-09-1996
		US 5569241 A	29-10-1996
		US 5505730 A	09-04-1996
		AU 2871795 A	19-01-1996
		WO 9600041 A1	04-01-1996
		US 5769846 A	23-06-1998
		NL 1000670 C2	22-04-1996
		NL 1000670 A1	27-12-1995
		WO 0176495 A1	18-10-2001
		US 6024743 A	15-02-2000
		US 6302898 B1	16-10-2001
		US 6006755 A	28-12-1999
		US 6009877 A	04-01-2000
		US 6056744 A	02-05-2000
		US 6044846 A	04-04-2000
		US 6092528 A	25-07-2000
		US 2003109866 A1	12-06-2003
		US 6002968 A	14-12-1999
		US 6254598 B1	03-07-2001
		US 6315776 B1	13-11-2001
		US 6405732 B1	18-06-2002
		US 5964755 A	12-10-1999
		US 2001034518 A1	25-10-2001
		US 2002115991 A1	22-08-2002
		US 2002103483 A1	01-08-2002
		AU 707548 B2	15-07-1999
		AU 2998195 A	19-01-1996
		CA 2193964 A1	04-01-1996
		EP 0767629 A1	16-04-1997
		WO 9600042 A1	04-01-1996
		US 2003144659 A1	31-07-2003
		US 2002091381 A1	11-07-2002
		US 5827273 A	27-10-1998

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internatio lication No
PCT/US 03/08002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5681308 A		US 5800429 A	01-09-1998
		US 5746224 A	05-05-1998
		US 5823197 A	20-10-1998
		US 5843077 A	01-12-1998
US 5341807 A	30-08-1994	CA 2139312 A1	06-01-1994
		EP 0648087 A1	19-04-1995
		JP 8505291 T	11-06-1996
		WO 9400050 A1	06-01-1994