

(19)  
(12)(KR)  
(Y1)

(51) 。 Int. Cl. <sup>7</sup>  
A61B 5/04

(45)	2002 10 11
(11)	20 - 0291663
(24)	2002 09 27

---

(21)	20 - 2002 - 0021532	
(22)	2002 07 19	
(62)	2002 - 0042426	
	: 2002 07 19	2002 07 19

---

(73)	( )	
	가 448	3 204

(72) 2가 85 - 6

(74)

가 :

(54) 가 가

, , 가 가  
2 , 2  
가 , 2  
, 2  
가 가 .

2

, , ,

1

가

2

가 가

3

가 가

4

\*

\*

1 ; 2 ;

3 ; 4 ;

5 ; 10;

11; 12,13; 1,2

E1,E2; 1,2 14; LCD

15; LCD 31,32; 1,2

33,34; 1,2 P1,P1',P2,P2' ;

35,36; 1,2 37;

38; 39;

SW1,SW2,SW3; 1,2,3 40,41; 1,2 LF

42; 43;

44; 45;

46; A/D 100;

200;

## (BIA; Bioelectrical Impedance Analysis)

가

가

2

( )

가

,

가 가

,

, , ,

,

,

가

가

가

,

,

, 가 ,

( ; , , , , )

가

가

,

가

, )

가

4

( ; , , , , )

(

)

,

2001 11 21

가

, (BIA) 가 가  
 2 , ( )  
 가 2

가 가

가 가

, 2

가 가

,  
 1 가 가 ,  
 2 , 3  
 가 가 , 4

1 4 , ,  
 (10) (10)  
 1 2 (12)(13),  
 D(15) (100)

1 2 (E1)(E2) 가  
 (11), 1 2 (200),  
 ,

LCD (14) LC

(31)(32);  
 1 2 (31)(32);  
 (33a)(34a) 가 1 2 (33)(34);  
 (31)

1 2 (31)(32);  
 (35)(36);

(100) (37);

1 2 (35)(36) (37)  
 (38);

(38) 1 (E1) 1 2 (33)(34) 1  
 2 LF(Low Frequency) (40)(41) (200) (39);

(100)가 1 2 (33)(34) 1  
 2 LF(40)(41);

(38) 1 2 (33)(34) 2 (E2)  
 (42);

(42) (43);

(43) (44);

(44) (43)  
 (45); ,

(44) LCD(15)  
 (A)/ (D) (46); .

, (39),

1 1 (12) 1 (E1) (200) / 1 (SW1),  
 1 (33) (200) / 2 (SW2),  
 (34) (200) 3 (SW3) .

, 1 2 (P1,P1') (P2,P2') 가  
 2 (P1,P1') (P2,P2') .

, , ,

1 2 (E1)(E2) 1 ,  
 (33 34) (P1,P1') (P2,P2')  
 2 ,

(33 34) (P1,P1') (P2,P2')  
 3 ,

1 2 (33)(34) (P1,P1') (P2,P2')  
 4 ,

1 2 (E1)(E2) (33 34) (P1,P1') (P2,P2')  
 5 ,

1 2 (E1)(E2) (33 34) (P1,P1') (P2,P2')  
 6 ,

1 2 (E1)(E2) 1 2 (33)(34) (P1,P1') (P2,P2')  
 7 .

, 1 7 , 1 7 / (37) 가 LCD(15)  
 가 / (2)(3) / (5) .

, (10) , (100) / (2)(3), (11) (1),  
 / (2)(3) (5) , (37) (4),  
 (1)(2)(3)(4)(5)(37) 1 2 (12)(13) LCD(15) ( )  
 100)

.  
 (11) 가 (10) / (2)(3)  
 , ,  
 (4) (200) (100) 가  
 .  
 1 4

, ( ) 가 (1) (200) (100)  
 , , ( ; , , , , )

, (1) LCD(15) (11) 가 (4)  
 / (2)(3)

, (38) LCD (14) LCD(15) / (2)(3)  
 ( ; 170) (cm) (4)

, (38) LCD (14) LCD(15) / (2)(3)  
 ( ; 60) (kg) (4)

, (38) LCD (14) LCD(15) / (2)(3)  
 ( ; 20 ) (Age) (4)

, (38) LCD (14) LCD(15) / (2)(3)  
 (4)

, (11)

, (11) 가

, (100) 1 2 (31)(32) , 1  
 2 (31)(32) (33a)(34a) 가 1 2 (33)(34) 가 2 , (P1,P  
 1 2 (33)(34)

1') ( $P_2, P_2'$ ) 가

$(11)$ $, \quad (33 \quad 34) \quad , \quad (33 \quad 34) \quad , \quad (33 \quad 34) \quad , \quad (33 \quad 34)$ $2 \quad (E1)(E2) \quad (33 \quad 34) \quad , \quad 1 \quad 2 \quad (E1)(E2) \quad (33)(34)$ $34) \quad , \quad 1 \quad 2 \quad (E1)(E2) \quad 1 \quad 2 \quad (E1)(E2) \quad (33)(34)$	$1 \quad (E1)(E2) \quad (P_1, P_1') \quad (P_2, P_2')$ $2 \quad (P_1, P_1') \quad (P_2, P_2')$ $3 \quad (33 \quad 34) \quad , \quad 1 \quad 2 \quad (P_1, P_1') \quad (P_2, P_2')$ $4 \quad (P_1, P_1') \quad (P_2, P_2')$ $5 \quad (33 \quad 34) \quad , \quad 1 \quad 2 \quad (E1)(E2) \quad (33)(34)$ $6 \quad (P_1, P_1') \quad (P_2, P_2')$	$1 \quad (P_1, P_1') \quad (P_2, P_2')$ $1 \quad (P_1, P_1') \quad (P_2, P_2')$
---	---	--

7

(11)

$2 \quad (31)(32)$	$1 \quad (P_1, P_1') \quad (P_2, P_2')$
--------------------	---

[ 1 ]

$1 \quad 2 \quad (E1)(E2) \quad 1 \quad 2 \quad (31)(32) \quad 1 \quad 2 \quad (33)(34)$ $14) \quad , \quad , \quad 1 \quad 2 \quad (37) \quad , \quad , \quad 1 \quad 7 \quad (37) \quad , \quad , \quad 1 \quad 2 \quad (38) \quad , \quad , \quad 1 \quad 2 \quad (38)$ $a) \quad , \quad 1 \quad 2 \quad (31)(32) \quad 1 \quad 2 \quad (35)(36) \quad 1 \quad 2 \quad (33)(34) \quad 1 \quad 2 \quad (33a)(34)$ $\quad , \quad (38) \quad 1 \quad 2 \quad 1 \quad 2 \quad (35)(36) \quad 1 \quad 2 \quad (33)(34) \quad 1 \quad 2 \quad (33)(34)$ $\quad , \quad (38) \quad 1 \quad 2 \quad (33)(34) \quad 1 \quad 2 \quad (33)(34) \quad 1 \quad 2 \quad (31)(32)$	$1 \quad (100) \quad (10)$ $1 \quad (38) \quad LCD(15) \quad 1 \quad (11) \quad LCD \quad ($ $1 \quad (33)(34) \quad 1 \quad (38) \quad 1 \quad (33)(34) \quad 1 \quad (33)(34)$
--	--

$9) \quad , \quad 1 \quad 3 \quad (38) \quad 1 \quad 2 \quad (SW1 \quad SW3) \quad , \quad 1 \quad (SW1) \quad 1 \quad 2,3 \quad (35)(36) \quad 1 \quad (SW2)(SW3) \quad , \quad 1 \quad (SW1) \quad (200)$ $1 \quad (12) \quad 1 \quad (E1)$	$1 \quad (35)(36) \quad 1 \quad (SW1) \quad 1 \quad (SW2)(SW3) \quad , \quad 1 \quad (SW1) \quad (200)$
--	---

$(15) \quad , \quad (2)(3) \quad (37) \quad 1 \quad 7 \quad / \quad (5)$	$1 \quad , \quad LCD \quad /$
--	-------------------------------

, 가 (100) 1 2 (12)(13) 가 .

, 1 (E1) 2 (13) 2 (E2) (42)

, (42) (38) 2 (E2) (42)

, (43) (44) (43) A/D (46)

,  
A/D (46) (44)  
LCD(15)

, (38) 1 2 (12)(13) 가 (1)  
1) , A/D (46)

LCD (14) LCD (15)

, (45) (44) (43)

[ 2 ]

1 (33) (100) (P1,P1') 1 (31) 1 (33) , 가 (10)

, , 1 7 (37) (38) LCD(15) (11) LCD (14)

, 1 (31) 1 (33) 1 (33a) 1  
(35) (35) (38) (38) (33) (33a) 1

, 1 (38) 1 (35) 가 1 (33) (33) 1  
(33) 가 1 (31) (33) (33) 1

, 3 (38) 1 (35) (35) 2 (SW1 SW3) 1,3 (SW1)(SW3) , 2 (SW2) (39)  
(33) , (P1,P1') (200) 1

, (15) (37) 1 7 / (2)(3) (5) , LCD 2

, 가 1 (31) 1 (33) (P1,P1')

, 1 (33) (P1,P1') (42)

, (42) (38) 1 (33) (P1,P1')  
(43) , (44)

, (44) (43) A/D (46)

A/D (46) LCD(15) .

, (38) 1 (33) (P1,P1') 가  
(11) , A/D (46)

LCD (14) LCD(15) .

, 1 (31) 2 (34) 1 (31) (33)  
(33)(34) 2 (32) , , 1 2 .

[ 3 ]

2 (34) (100) (P2,P2') 2 (32) 2 (34) , , 1 2 .  
(37) .

, , 1 7 (37) (38) (11) LCD(15) LCD (14)

, 2 (32) 2 (38) (34a) , , 1 2 .

(34) 가 2 (32) (36) 가 2 (34) , , 1 2 .

, 3 (38) (SW1 SW3) 2 1,2 (36) (SW1)(SW2)  
(34) , 3 (39) (SW3) , 3 (200) 2 .  
(P2,P2')

, (15) (37) 1 7 (37) (5) , LCD / (2)(3) / .  
3 .

, 가 2 (32) 2 (34) (P2,P2') .

, 2 (34) (P2,P2') (42)  
 .  
 , (42) (38) 2 (34) (P2,P2') (42)  
 (43) , (43)  
 , (44) (43) A/D (46)  
 ,  
 A/D (46) LCD(15) .  
 , (11) (38) 2 (34) (P2,P2') 가 LCD (14) LCD(15)  
 (33)(34) 1 (31) (33) (32) (31) (33) (34) 1 2  
 [ 4 ]  
 1 2 (33)(34) 가 (100) (P1,P1') (P2,P2') 1 2 (31)(32) 1  
 2 (33)(34) , (10) (37) (38) (11) LCD (15) LCD (14)  
 , 1 7 (37) (38) (11) LCD (15) LCD (14)  
 a) 1 2 (31)(32) 1 2 (33)(34) (33)(34) 1 2 (33a)(34) 1  
 , (38) 1 2 (35)(36) (35)(36) 가 1 2 (31)(32) (33)(34)  
 (33)(34) 가 1 2 (31)(32) (33)(34)  
 , (39) 1 3 (38) 1 2 (SW1 SW3) 1 2 (35)(36) (SW1) 2,3 (SW2)(SW3) 2,3 (SW2)(S  
 W3) (200) 1 2 (33)(34) (P1,P1')(P2,P2')  
 , (15) (37) 1 7 / (2)(3) / (5) , LCD 4

, 가 1 (31) 1 (33) (P1,P1') , 2  
 (32) 2 (34) (P2,P2')

, 1 2 (33)(34) (P1,P1') (P2,P2')  
 (42)

, (42) (38) 1 2 (33)(34) (P1,P1') (P2,P2') (P  
 1,P1') (P2,P2') (43)  
 , (43) (42)  
 (44)

, (44) (43) A/D (46)

,  
 A/D (46) (44)  
 LCD(15)

, (38) 1 2 (33)(34) (P1,P1') (P2,P2') 가  
 (11) , A/D (46)

, LCD(15) LCD

, 1 2 (31)(32) 1 2 (33)(34)  
 . [ 5 ]

1 2 (E1)(E2) 1 (33) (P1,P1')  
 3) , 가 (100) 1 (31) 1 (3) .  
 (37)

, , 1 7 (37) (38) (11)  
 14) , LCD(15) LCD ( .

, 1 (31) 1 (33) 1 (33a) 1  
 (35) (38) , (38) (33a) 1

(33) 가 1 (31) 1 (35) 가 1 (33) 1  
 (33) 가 1 (31) (35) 1 (33) 1

, 1 3 (38) 1 (38) 1 (35) (39)  
 1 (E1) 1 (SW1 SW3) 1 (SW3) 1,2 (SW1)(SW2)  
 (33) (P1,P1') (200)

, (15) (37) 1 7 / (5) , LCD 5  
 / (2)(3) .  
 , 가 1 (31) 1 2 (33) (P1,P1') 가 .  
 (100) (12)(13)  
 , 1 (E1) 2 (13) 2 (E2) (42)  
 2 (E2) 1 (E1)

, 1 (33) (P1,P1') (42) (43) (42) (44)

, (44) (43) A/D (46)

A/D (46) (44) LCD(15)

, (33) (38) 1 2 (12)(13) (11) 가 , 1  
 (P1,P1') 가 , A/D (46)

LCD (14) LCD(15)

, 1 (31) 2 (32) 1 (31) (34) 1 (33) , 1 2  
 (33)(34) (34) (100) (37) , , (32) 2

[ 6 ]  
 1 2 (E1)(E2) 2 (34) (P2,P2') 2 (32) 2  
 (34) , , (10) (37) (38) (11) LCD (14)

, 2 (32) 2 (34) 2 (34a) 2  
 (36) (38)

(34) 가 2 (38) 2 (36) 가 2 (34) 2  
 (34) 가 2 (32) (38) 2 (36) 2 (34) 2  
 , 1 3 (SW1 SW3) 1,3 (SW2) 1,3 (SW1)(SW3) 1,3 (SW1)(SW3)  
 1 (E1) 2 (34) (P2,P2') (200)

, (15) (37) 1 7 / (5)  
 6 / (2)(3)

, 가 2 (32) 2 (34) (P2,P2') 가  
 (100) 1 (E1) 2 (13) 2 (E2)  
 , 2 (E2) 1 (E1) (42)

, 2 (34) (P2,P2') (42)

, (42) (43) (38) 2 (E2) (34) (P2,P2')  
 (43) (42) (44)

, (44) (43) A/D (46)

A/D (46) (44)  
 LCD(15)

, (34) (38) 1 2 (12)(13) (11) 가 2  
 (P2,P2') 가  
 , A/D (46)

LCD (14) LCD(15)

, 2 (32) 1 (33) (34) 2 (32) 2 (34)  
 (33)(34) 1 (31)

[ 7 ] 1 2

1 2 (E1)(E2) 1 2 (33)(34) 가 (P1,P1')(P2,P2')  
 1 2 (31)(32) 1 2 (33)(34) , (100)  
 (37) . (10)

, 1 7 (37) (38) (11) LCD (LCD (14))

a) 1 2 (31)(32) 1 2 (33)(34) 1 2 (33a)(34)  
 (38) 1 2 (35)(36) 가 1 2 (33)(34) 가 1 2 (31)(32) (33)(34)

, (38) 1 3 (SW1 SW3) 1 2 (35)(36)  
 (39) 3 (SW1 SW3) (200) 1 (E1) 1 2 1  
 (33)(34) (P1,P1')(P2,P2')

, (37) , LCD (15) 1 7 / (2)(3) / (5)  
 , 가 1 2 (31)(32) 1 2 (33)(34) (P1,P1')(P2,P2')  
 2,P2') 12)(13) 가

, 1 (E1) 2 (13) 2 (E2) (42)  
 , 2 (E2) 1 (E1)

, 1 2 (33)(34) (P1,P1')(P2,P2')  
 (42) .

, (42) (38) , 1 2 (E2) (33)(34) (P1,P1')  
 (P2,P2') (43) (43) (43) (44)

, (44) (43) A/D (46)

A/D (46) (44) LCD(15)

$$2 \quad , \quad (38) \quad 1 \quad 2 \quad (12)(13) \quad \text{가} \quad , \quad 1 \\ 2 \quad , \quad (33)(34) \quad (P1,P1') (P2,P2') \text{가} \quad , \quad A/D \quad (46) \quad (11)$$

LCD(15) . LCD (14)

$$1 \quad 2 \quad (31)(32) \quad 1 \quad 2 \quad (33)(34)$$

(100)

$$, \quad (100) \quad 1 \quad 2 \quad (31)(32) \quad 1 \quad 2 \\ (33)(34) \quad .$$

$$, \quad \begin{matrix} 1 & 2 \\ & (10) \end{matrix} \quad \begin{matrix} (33)(34) \\ (10) \end{matrix} \quad \begin{matrix} (\textbf{P}1,\textbf{P}1^{'}) \\ (\textbf{P}2,\textbf{P}2^{'}) \end{matrix} \quad \begin{matrix} (37) \\ (37) \end{matrix}$$

$$\begin{array}{ccccccccc}
& & & (38) & & & & (38) & \\
& & (39) & & 1 & & 3 & (SW1 & SW3) & 1 & ( \\
& (SW2)(SW3) & & & & & , & 2,3 & (SW \\
& (200) & & & 1 & & 2 & (33)(34) & (P1, \\
& & & & & & . & & (P1,
\end{array}$$

, (38) 1 2 LF(40)(41),  
 1 2 LF(40)(41) (100)가, 1 2 (33)(34)  
 (P1,P1') (P2,P2') 가,

가 가  
가 가  
2 ( ) 2  
가 ,  
2  
가

, 가 가

.

(57)

1.

,

1,2 ;  
1,2 1,2 ; 가 1,2 ;

1,2

;

1,2

;

1

1,2

1,2 LF

;

가

1,2

1,2 LF;

1,2

2

;

;

;

; ,

A/D ;

LCD

가 가

2.

1 , ,

1 1 / 2 / 1 1  
/ 3 , 2 , 2 가 가

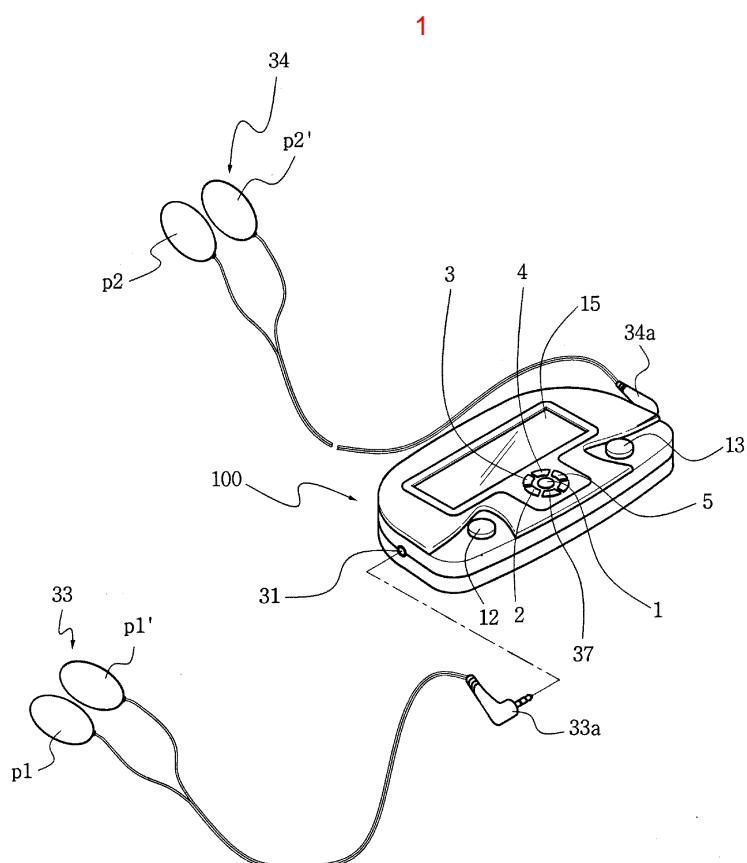
3.

1 , 1 2 ,

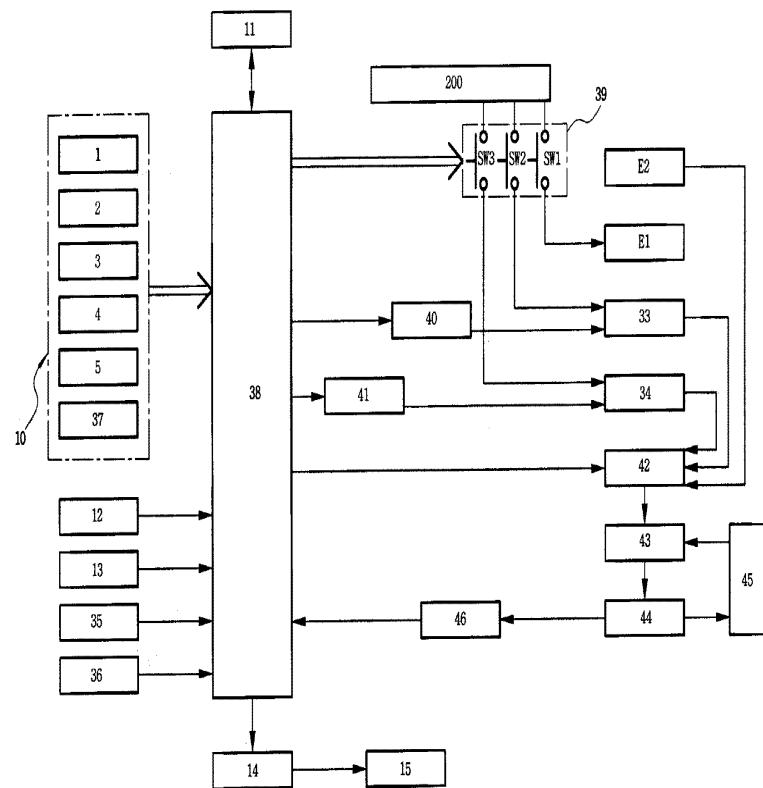
가 2 . 가  
가 가

4.

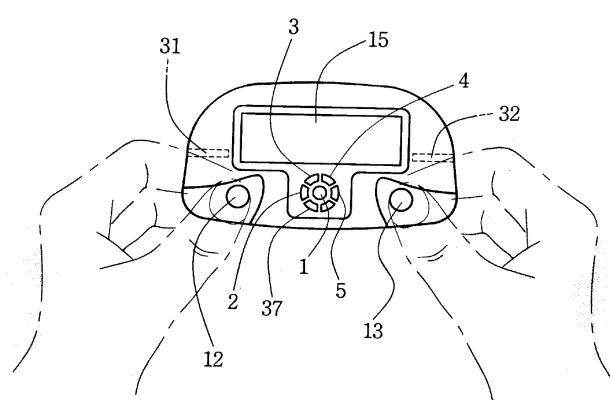
1 , ,  
 1 2  
 2 ,  
 3 , 1 , 2  
 4 , 1 , 2  
 5 , 1 , 2  
 6 ,  
 1 2  
 1 2  
 7  
 가 가



2



3



4

