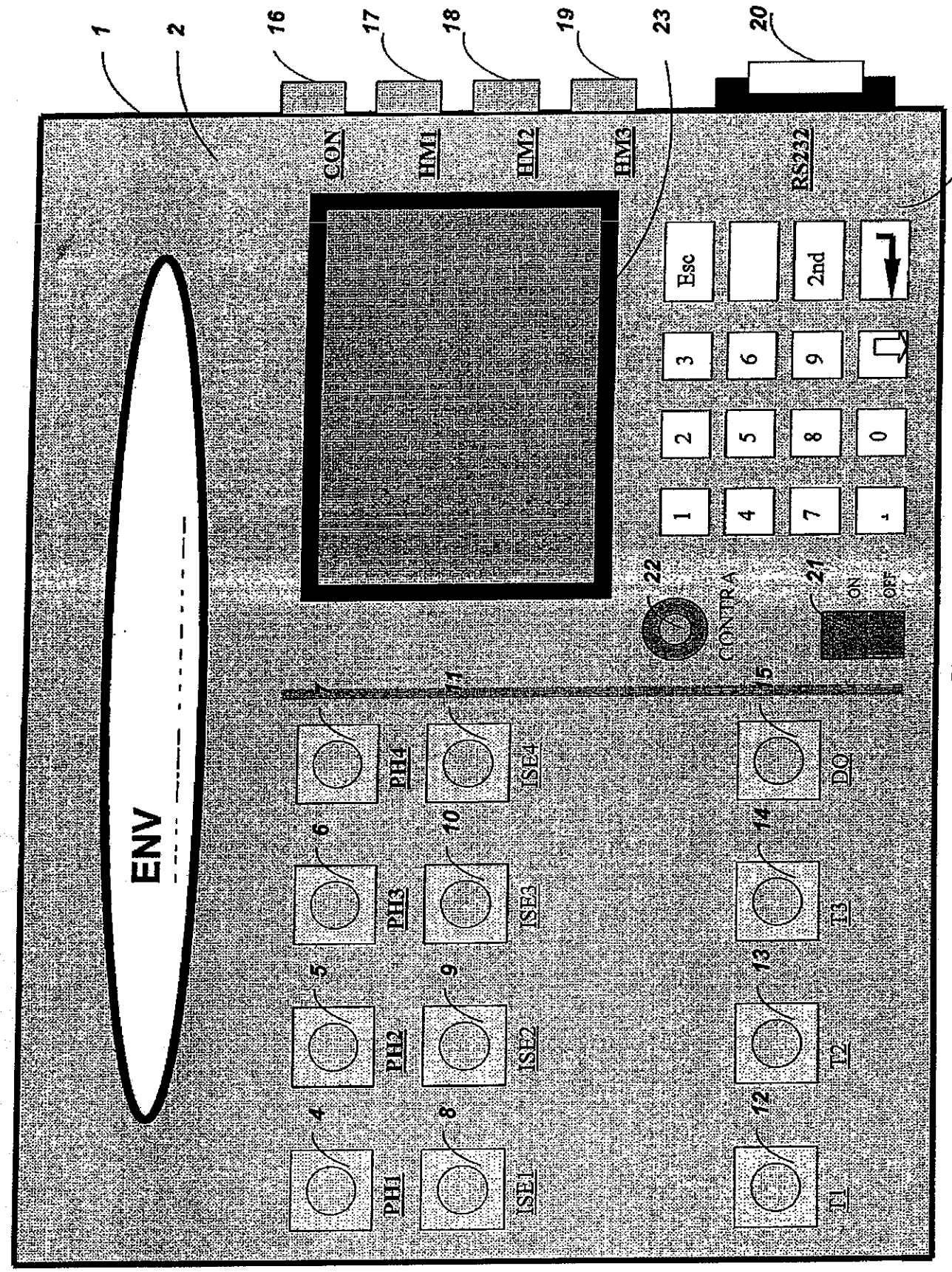

1
2
16
17
18
19
23
20
3
CON
HM1
HM2
HM3
RS232
ENV
Esc
2nd
1
2
3
4
5
6
7
8
9
0
.
CONTRA
ON
OFF
22
21
PH1
PH2
PH3
PH4
ISE1
ISE2
ISE3
ISE4
T1
T2
T3
DO
12
13
14
15
4
5
6
7
8
9
10
11

Fig. 1

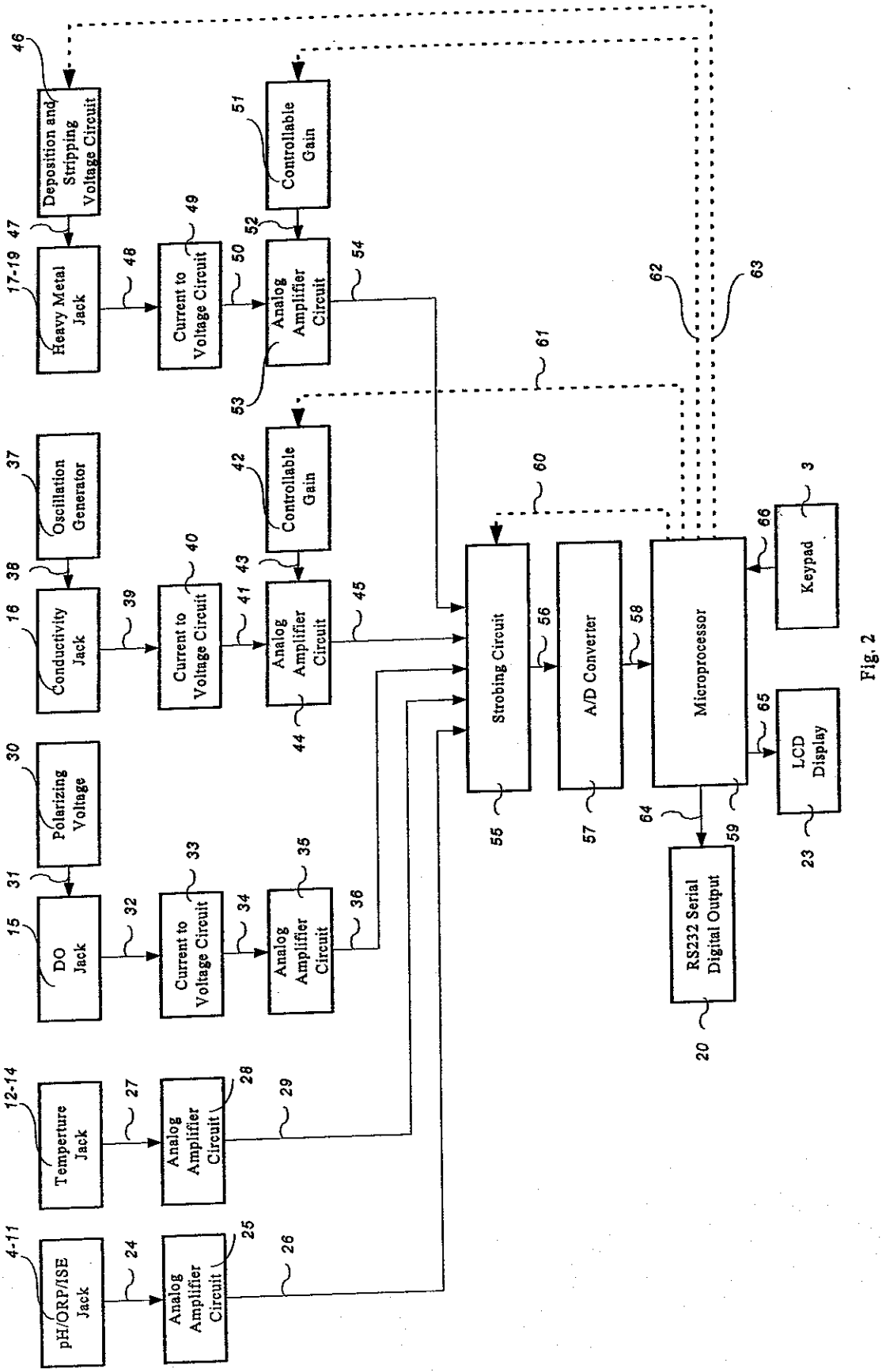

pH/ORP/ISE Jack
4-11
24
Analog Amplifier Circuit
25
26
Temperture Jack
12-14
27
Analog Amplifier Circuit
28
29
DO Jack
15
31
32
Current to Voltage Circuit
33
34
Analog Amplifier Circuit
35
36
Polarizing Voltage
30
Conductivity Jack
16
38
39
Current to Voltage Circuit
40
41
Analog Amplifier Circuit
43
45
44
Oscillation Generator
37
Controllable Gain
42
Heavy Metal Jack
17-19
47
48
Current to Voltage Circuit
49
50
Analog Amplifier Circuit
52
54
53
Controllable Gain
51
Deposition and Stripping Voltage Circuit
46
60
61
62
63
Strobing Circuit
55
56
A/D Converter
57
58
Microprocessor
64
59
RS232 Serial Digital Output
20
66
Keypad
3
65
LCD Display
23

Fig. 2

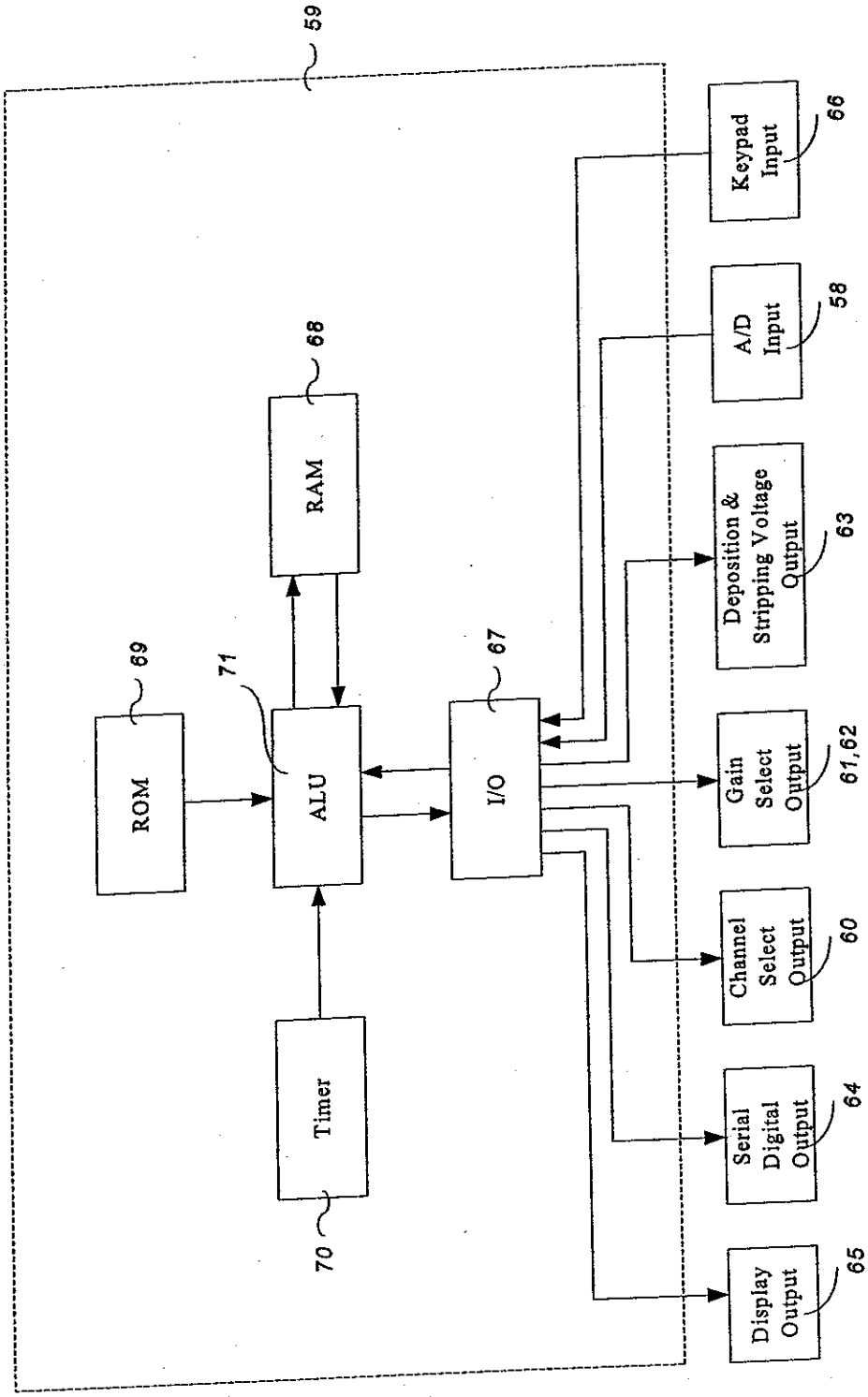

59
Keypad Input
66
A/D Input
58
Deposition & Stripping Voltage Output
63
Gain Select Output
61,62
Channel Select Output
60
Serial Digital Output
64
Display Output
65
68
RAM
69
ROM
71
ALU
67
I/O
Timer
70

Fig. 3

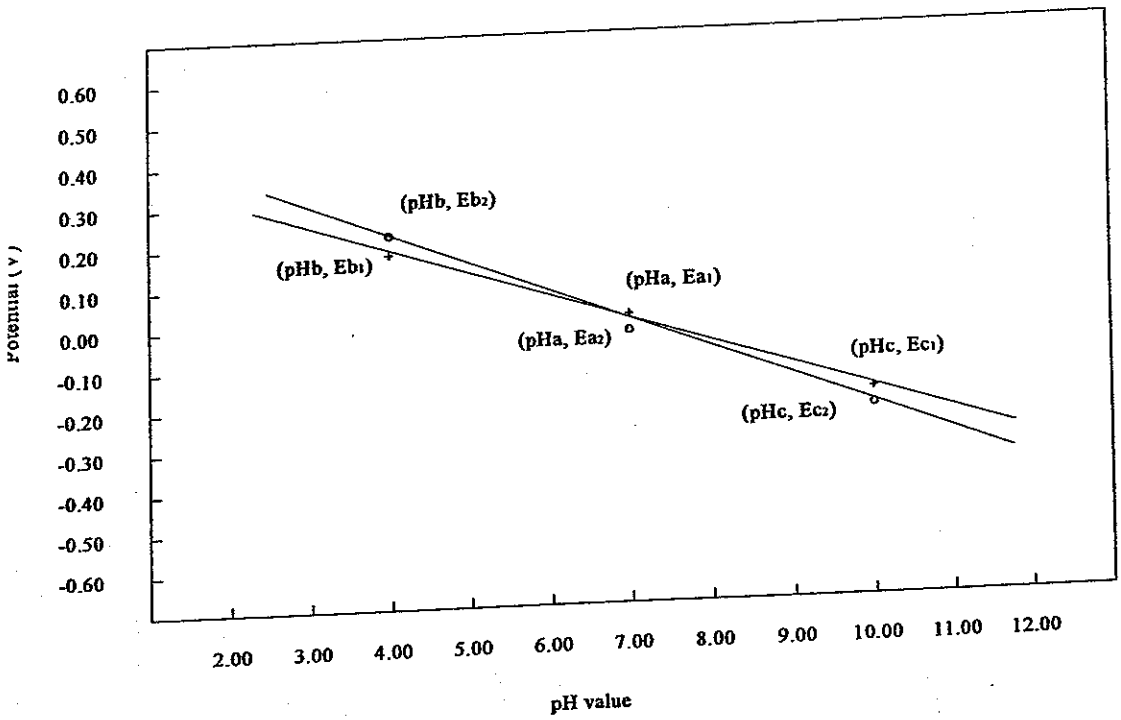

0.60
0.50
0.40
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
-0.40
-0.50
-0.60
potential (v)
(pHb, Eb2)
(pHb, Eb1)
(pHa, Ea1)
(pHa, Ea2)
(pHc, Ec1)
(pHc, Ec2)
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
pH value

Fig. 4

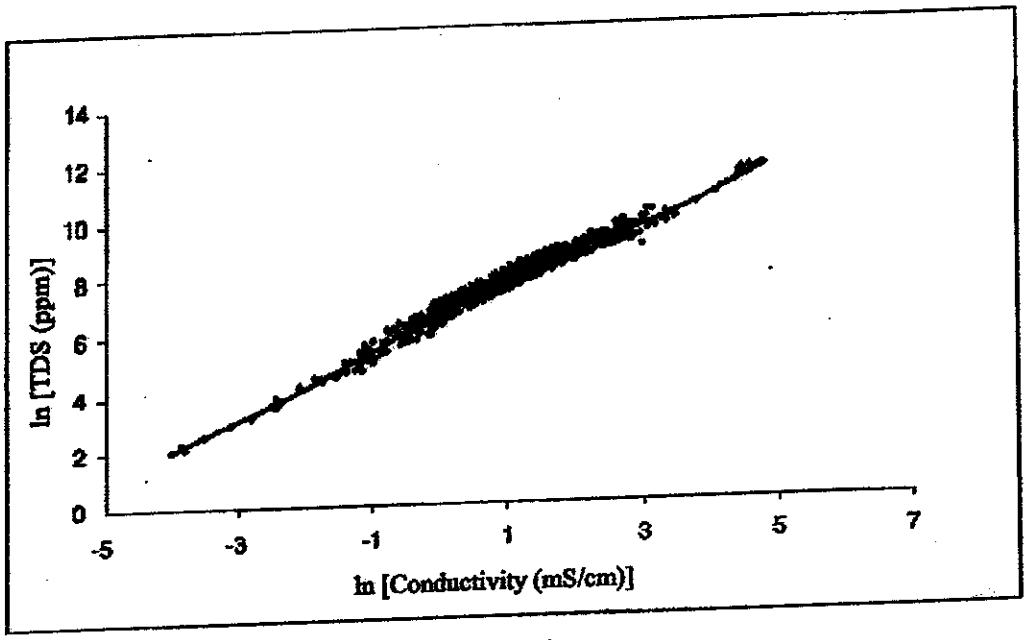

14
12
10
8
6
4
2
0
ln [TDS (ppm)]
-5
-3
-1
1
3
5
7
ln [Conductivity (mS/cm)]

Fig. 5-1

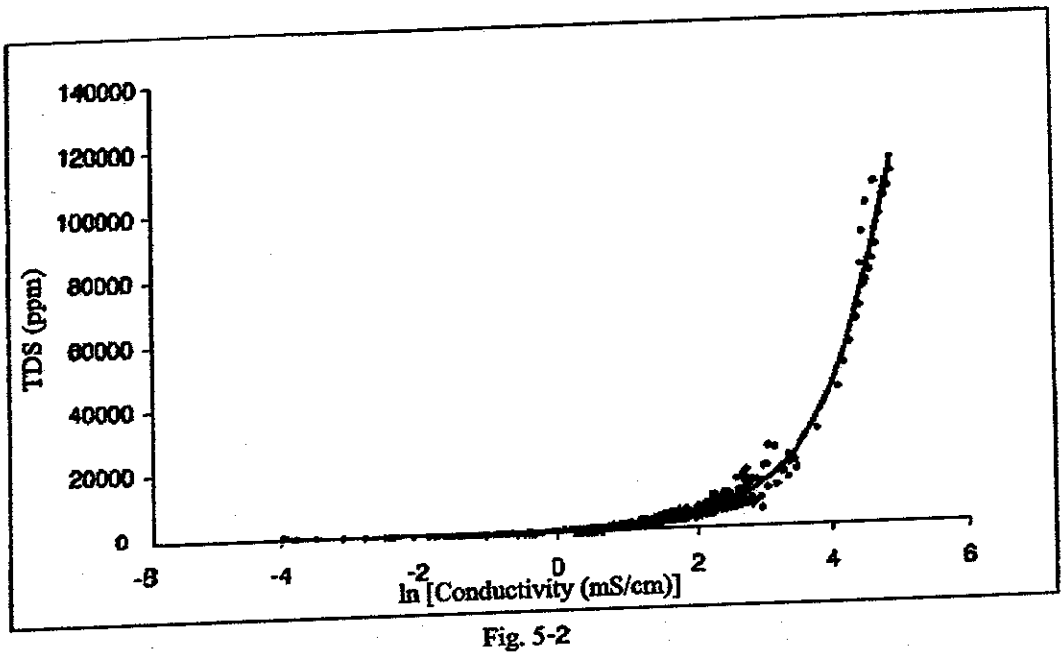

140000
120000
100000
80000
60000
40000
20000
0
TDS (ppm)
-8
-4
-2
0
2
4
6
ln [Conductivity (mS/cm)]

Fig. 5-2

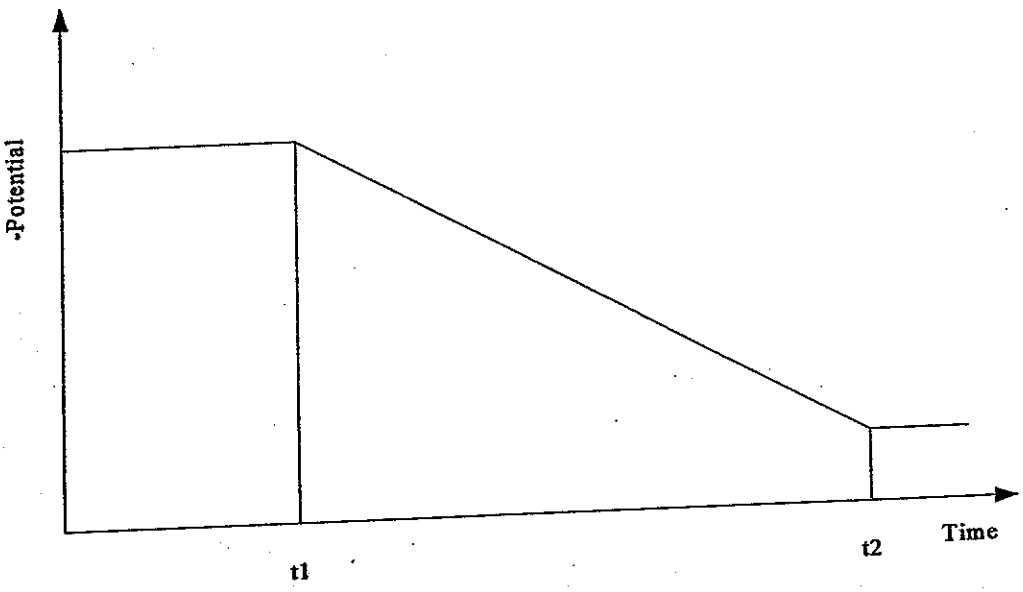


Fig. 6

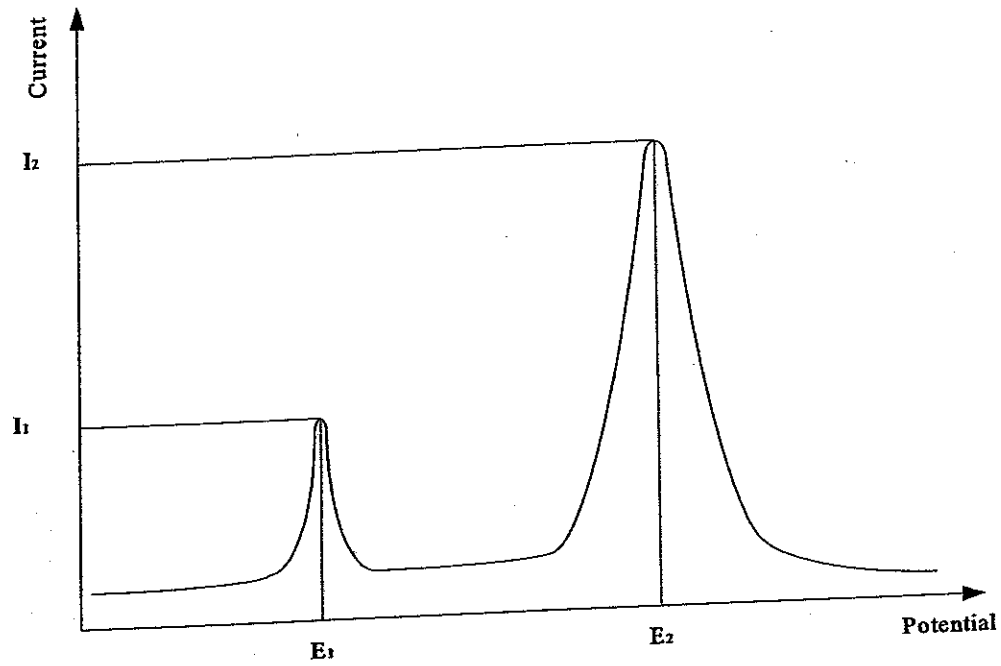


Fig. 7

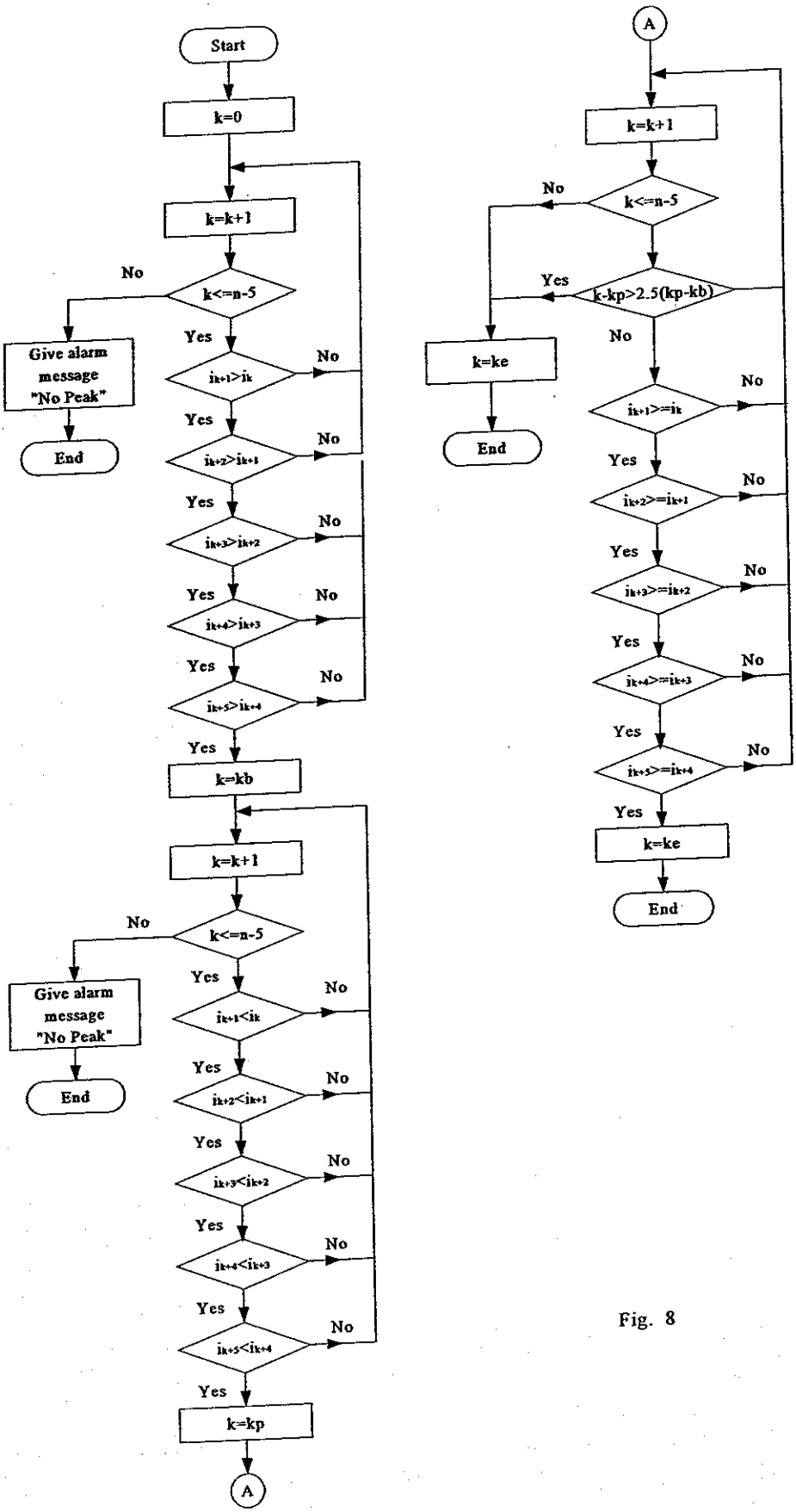

Start
k=0
k=k+1
No
k<=n-5
Yes
Give alarm message "No Peak"
End
ik+1>ik
No
Yes
ik+2>ik+1
No
Yes
ik+3>ik+2
No
Yes
ik+4>ik+3
No
Yes
ik+5>ik+4
No
Yes
k=kb
k=k+1
No
k<=n-5
Yes
Give alarm message "No Peak"
End
ik+1<ik
No
Yes
ik+2<ik+1
No
Yes
ik+3<ik+2
No
Yes
ik+4<ik+3
No
Yes
ik+5<ik+4
No
Yes
k=kp
A
A
k=k+1
No
k<=n-5
Yes
k-kp>2.5(kp-kb)
No
k=ke
End
ik+1>=ik
No
Yes
ik+2>=ik+1
No
Yes
ik+3>=ik+2
No
Yes
ik+4>=ik+3
No
Yes
ik+5>=ik+4
No
Yes
k=ke
End

Fig. 8