

LOAD CELL TYPE BABY SCALE

*"SUYASUYA" BSL-20*

MAINTENANCE MANUAL

FOCAL CORPORATION, Tokyo, Japan

## - INTRODUCTION -

1. Outline of Baby Scale
2. Disjointing picture of main body
3. Assembling picture of main body
4. Disjointing picture of indicator
5. Assembling picture of indicator
6. Arrangement picture of parts on main electric board
7. Each specification & function and correspondence for Jumper cable
8. Easy adjustment
9. Trouble shooting
10. LCD terminal wiring diagram
11. Electric circuit

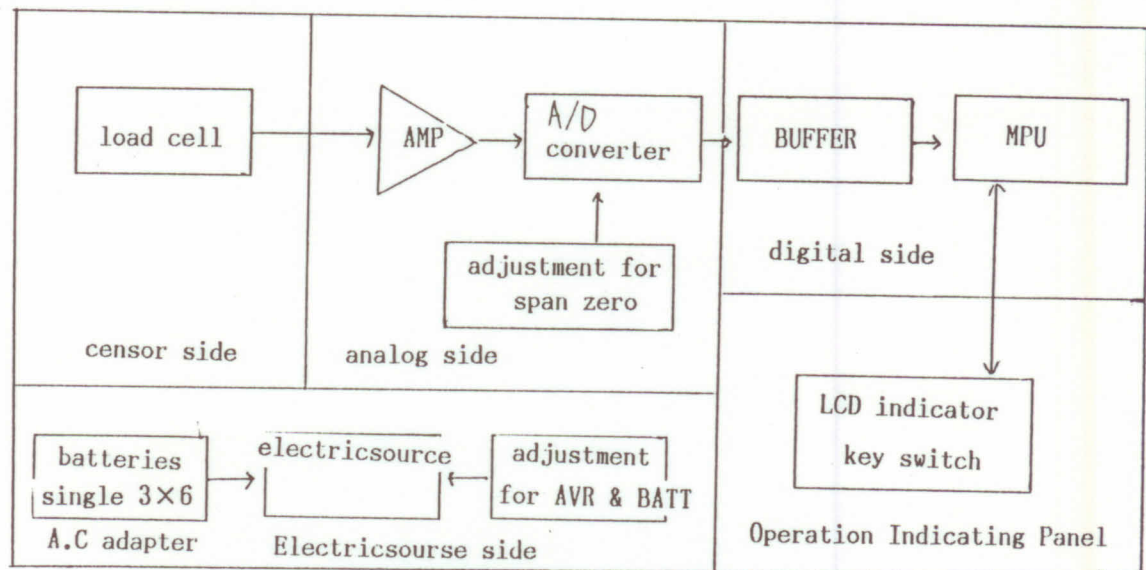
## 1. Outline of Baby Scale

This baby scale is made from a number of electronic parts and micro computer with an electric load cell.

This scale is consisted of a basket, a step, a base plate and an indicator. And you can use this as a little child scale if you take off a basket.

This has high durability and easy maintenance. This is high precise scale with two way battery system for saving energy.

### Action construction drawing



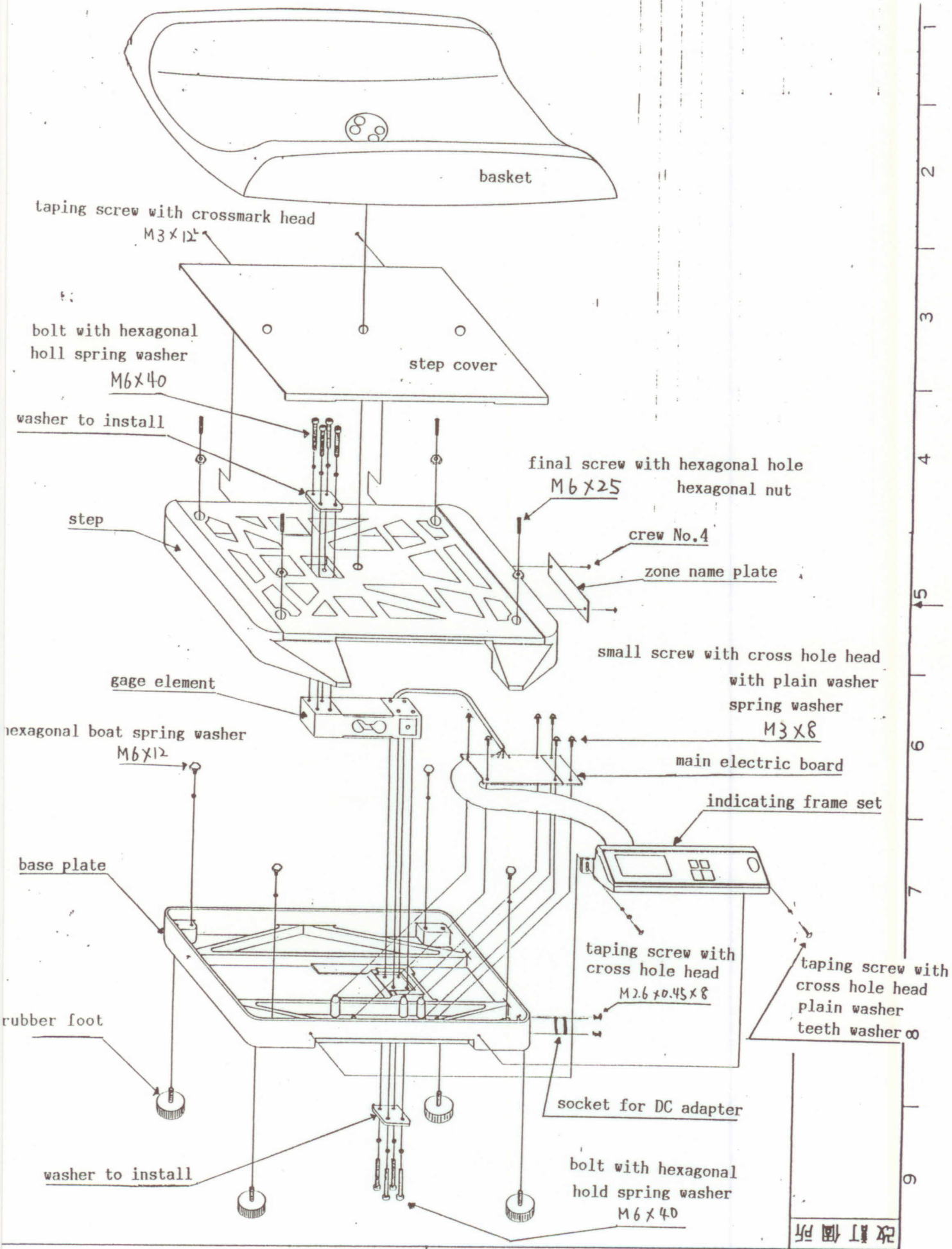
As above drawing, a tiny signal (analog signal) which you got through a load cell proportionating to load, is amplified and is converted to A/D.

Beside, it is converted to 10,000 bit digital signal for span(capacity).

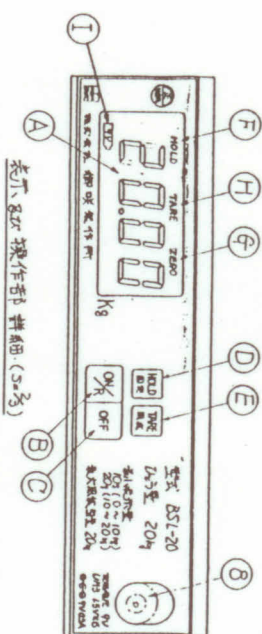
And it is put in 4 bit micro-processor through buffer circuit. The weight is indicated on a liquid crystal after various instrument management have done in MPU. And various control by switch on a control panel are got in MPU, and they are managed in MPU equally and are out put on liquid crystal indicator.

Beside, you can use both of battery and AC electric source as supply electric source, and you can convert these to direct current and supply to various section requested.

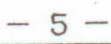
# Disjointing picture of main body



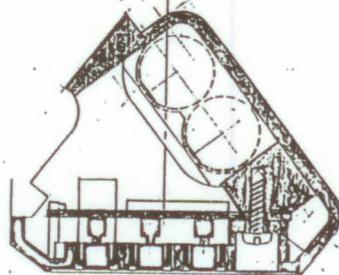
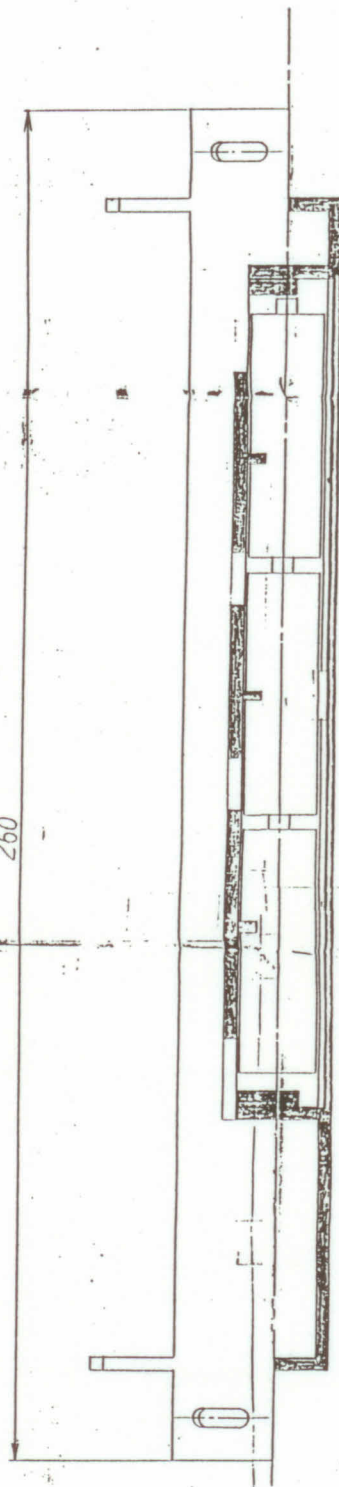
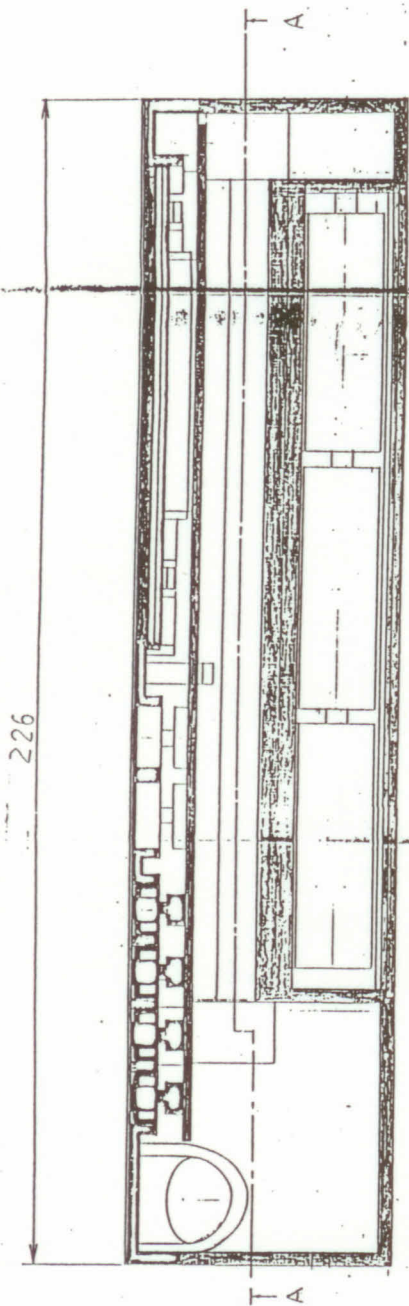
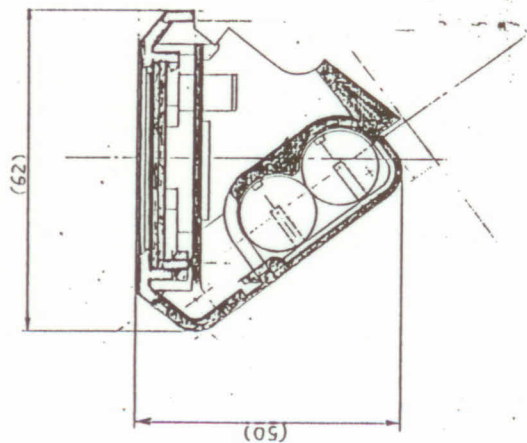




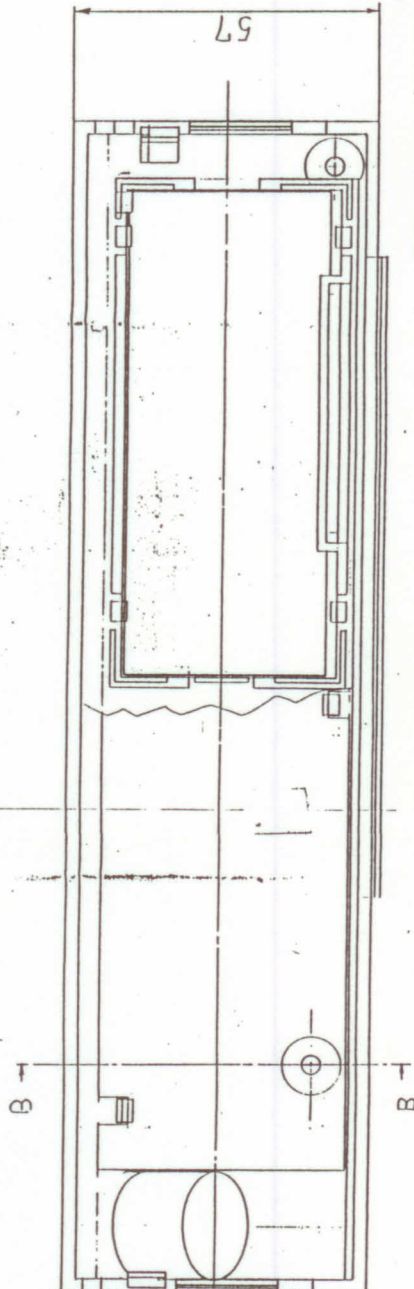
- |  |   |   |  |
|--|---|---|--|
|  | A | B |  |
|--|---|---|--|



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----



B-B CROSS SECTION



A-A CROSS SECTION

改訂箇所

Assembling picture of indicator

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

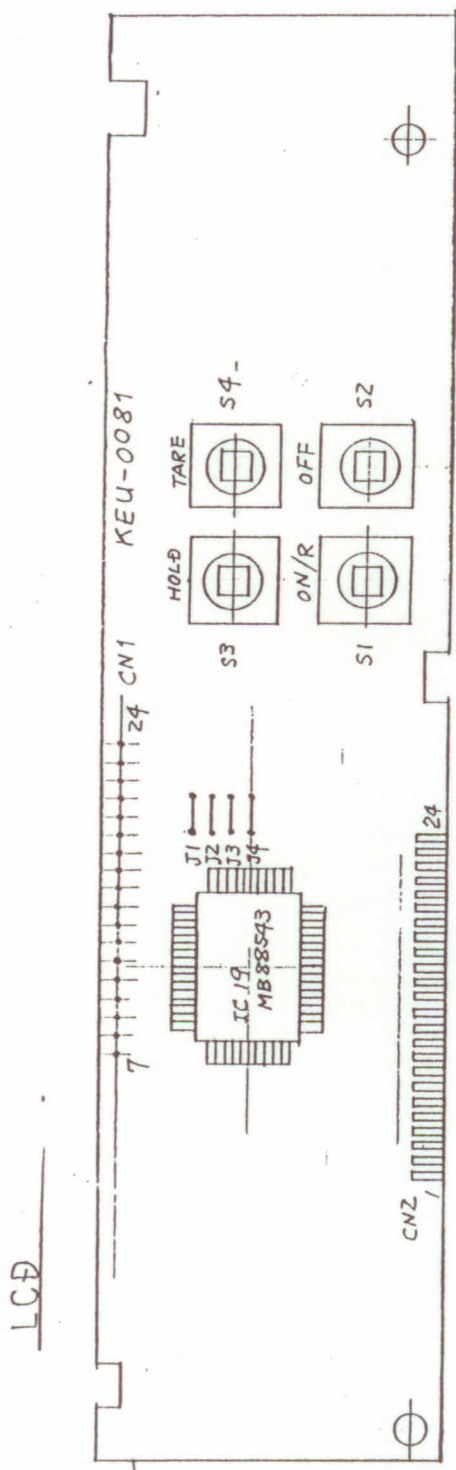
鋼鉄製作所

KUW-0058

表示部組立図

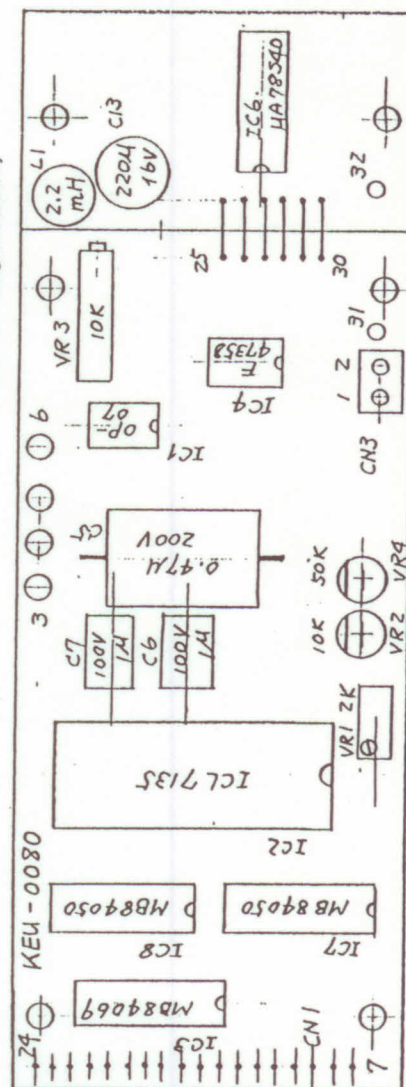


arrangement picture of parts on main  
electric board



VR3 adjustment of electric source  
(shift adjustment)

main electric board



VR1 Span adjustment VR4 Battery  
VR2 zero adjustment 7V adjustment



7. Each specification & function and correspondence for JUMPER cable.

Although there are four JUMPER cable J1-J4 on LCD indicating electric board showing on page 7, each of JUMPER cable has the specification and function as follows. When JUMPER cable is connected it is ON, not connected it is OFF, at following table.

Name of JUMPER cable	J1	ON	ON
	J2	ON	ON
	J3	ON	ON
	J4	ON	OFF
Capacity			20.00 kg
Accuracy			1/1000
Name		test mode	baby scale

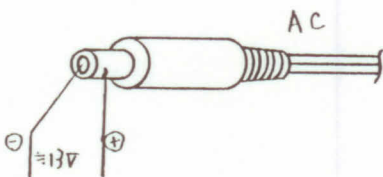
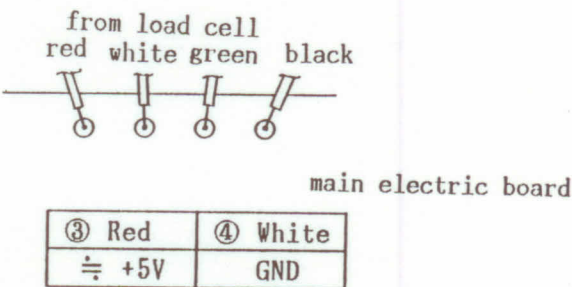
The meaning of TEST MODE is that it is mode when you adjust in plant, which indicates approximately 10,000 for each specification capacity.

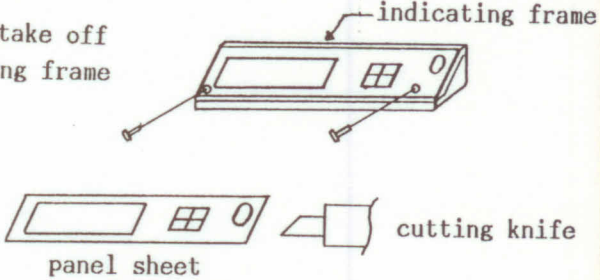
## 8. Easy adjustment

This baby scale has been checked for span(capacity) adjustment and temperature test, but we describe how to make easy adjustment if you will have an error on indicating figure as fellows.

1. First, you take off a basket, step cover and a step.  
(Please refer to 2. Disjointing picture of main body.)
2. Please connect AC adapter to main body.
3. You put on 20 Kg check weight on platter after you turned on switch, and confirmed 0.00 indicating on liquid crystal indicator. When it indicates smaller than 20.00 Kg, please revolve a little bit span adjustment volume VR1 (refer to page 6. arrangement picture of parts on main electric board) on main electric board (refer 2. disjointing picture of main board) clockwise, and when it indicates bigger than 20.00 Kg, please rebolve a little bit it counter-clockwise.
4. Please press the switch ON/R after taking off check weight.  
(confirm indicating 0.00 please)
5. Please confirm 20.00 Kg indicating on liquid crystal indicator after you put 20Kg test weight again.  
Please repeate it three, four or five times until it will indicate 20Kg, if it will not indicate 20Kg.
6. Please thrn off switch and attah a step, a step cover and a basket, after you fonfirmed that liquid crystal indicator shows correct weight comparing with actual test weight.  
Then, all of adjustment has finished.

## 9. Trouble shooting

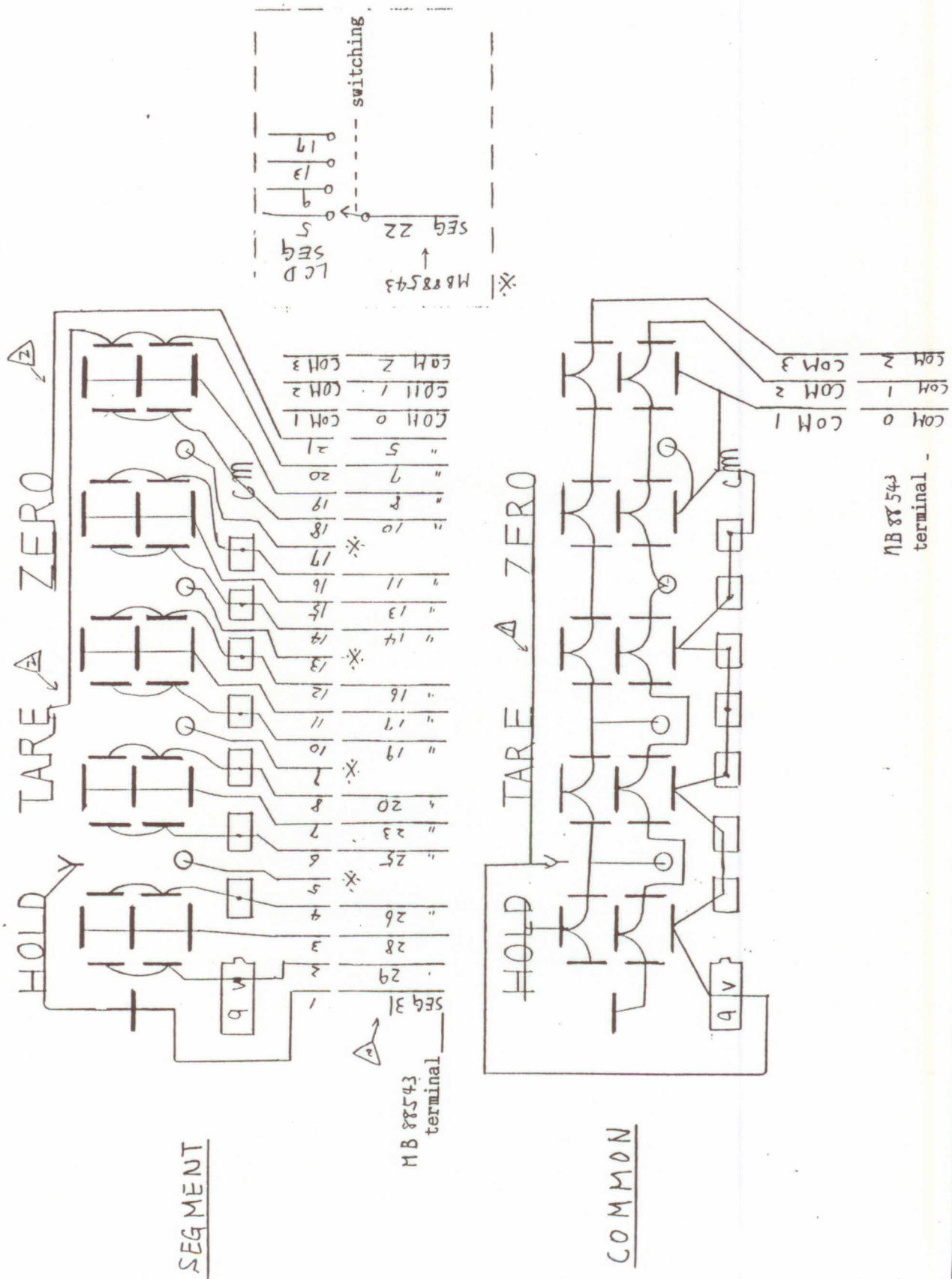
Trouble's phenomenon	Cause & countermeasure								
<p>A) Liquid crystal indicator on panel does not indicate at all even when you turn on electric source switch ON/R.</p>	<p>1. Inferior of AC adapter system</p> <ol style="list-style-type: none"> <li>1) Take off a plug from adapter and reconnect it to adapter again.</li> <li>2) Inferior of AC adapter-self               <ul style="list-style-type: none"> <li>- Confirm out put about 13V on AC adapter's plug using tester or DVM as following picture.</li> </ul> </li> </ol>  <p>2. Inferior of battery system</p> <ol style="list-style-type: none"> <li>1) Exchange six pieces of new batteries please, since they run out naturally.</li> </ol> <p>3. Inferior of electric system</p> <ol style="list-style-type: none"> <li>1) Please check the connector connecting from a load cell on main electric board useing DVM as follows. (refer to Page 7)</li> </ol>  <table border="1" data-bbox="785 1521 1088 1603"> <tr> <td>③ Red</td><td>④ White</td></tr> <tr> <td>≐ +5V</td><td>GND</td></tr> </table> <p>It is inferior of printed electric board bord except above mentiond. Dispatch is to our plant fo fix it.</p> <table border="1" data-bbox="782 1751 1085 1833"> <tr> <td>⑤ Green</td><td>⑥ Black</td></tr> <tr> <td>≐ ±10mv</td><td>GND</td></tr> </table> <p>The load cell is inferior when there is no out put of voltage and except above mentiond. Dispatch the load cell to our plant to fix please.</p>	③ Red	④ White	≐ +5V	GND	⑤ Green	⑥ Black	≐ ±10mv	GND
③ Red	④ White								
≐ +5V	GND								
⑤ Green	⑥ Black								
≐ ±10mv	GND								

Trouble's phenomenon	Cause & contermeasure
<p>B) Some digits of liquid crystal indicator or some segment does not indicate.</p>	<ol style="list-style-type: none"> <li>1. Inferior of contact of rubber connection.  Take off screws of indicating frame after taking off panel sheet carefully using knife. Next, take off indicating frame useing some tweezers, then clean up both side of contacting face of rubber connector with soft cloth containing thinner.</li> </ol> <div data-bbox="678 628 1396 906"> <p>how to take off indicating frame</p>  <p>indicating frame</p> <p>panel sheet</p> <p>cutting knife</p> </div> <ol style="list-style-type: none"> <li>2. Inferior of LCD indicating.  Exchange LCD indicating electric board please (refer to Page 7)</li> </ol>
<p>C) Liquid crystal indicator indicates lighter for whole.</p>	<ol style="list-style-type: none"> <li>1. Running out of battery  Please exchange six pieces of new batteries as they run out, if 9V is indicating which located on left and below of liquid crystal indicator.</li> <li>2. Inferior of contacting of rubber connector.  Please clean up contacting face of rubber connector accordding to B).</li> <li>3. Please exchange LCD as it indicates lighter if the life of liquid crystal is over.</li> <li>4. Inferior of electric source for liquid crystal on main electric bord. (refer to Page 7)  Please measure boltage between ③ red and ④ white from a load cell as above C) by tester. Dispatch it to our plant as electric board is inferior if out put is excepting 5V. We will re-adjust and fix it.</li> </ol>



Trouble's phenomenon	Cause & countermeasure
<p>D) Electric source is not turned off even if you press an electric switch OFF.</p>	<ol style="list-style-type: none"> <li>1. Ribbon cable No.24 which is wiring to CN1 with LCD and main electric board (refer to page 7) is cut off at the road of an electric board. Re-connect with a soldering copper please.</li> <li>2. Confirm OFF switch does work with your finger pressing OFF switch on indicating control panel. If it seems not to work, according to B) how to take off indicating frame, you take off a panel sheet and confirm OFF switch's action. If it does not work, OFF switch is inferior. If it does work, it seems that a panel sheet with carefull attention.</li> </ol> <p>In case of action inferior of switch such as same way please.</p>
<p>E) Can not measure accurately</p>	<ol style="list-style-type: none"> <li>1. Inferior of adjustment four pieces of adjusting stand. (Is not there ratting among four adjusting stand.)</li> <li>2. Inferior of level adjustment.</li> <li>3. Is not a table for a baby scale shivering ?</li> <li>4. Does not some step contact with something ?</li> </ol>

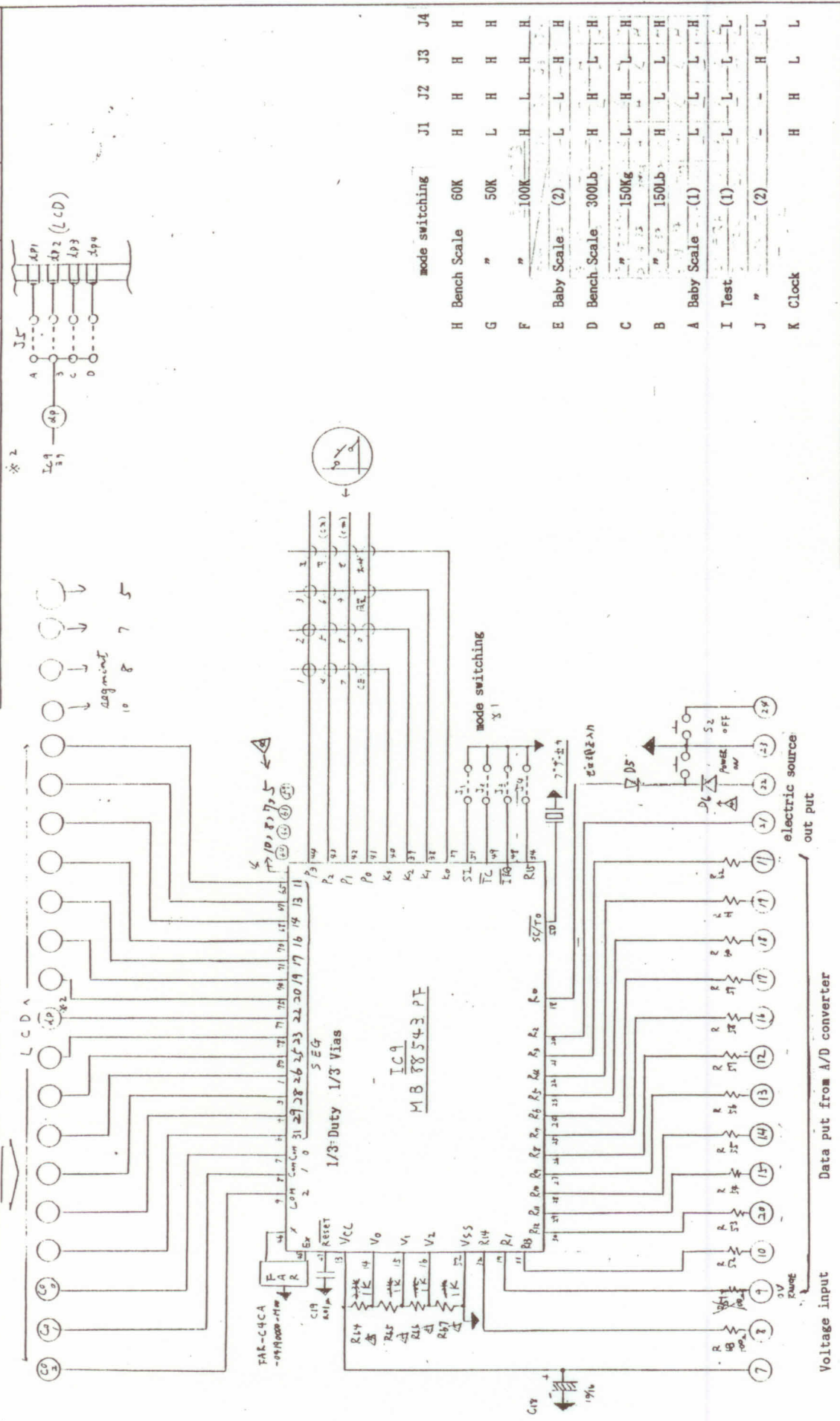
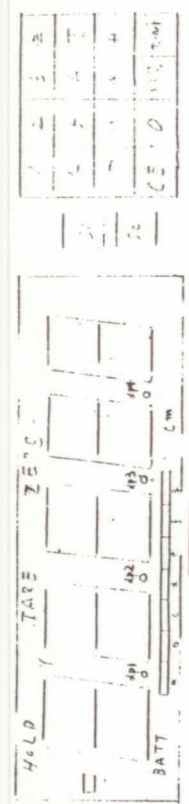
## LCD terminal wiring diagram



改訂	部品表	部品名	材料	寸	備	氏名
	IC1, IC8	部品表				
IC4	部品表					
IC11, IC12	部品表					
IC13	部品表					
IC14, IC15	部品表					
IC16, IC17, IC18	部品表					
IC19, IC20	部品表					
IC21, IC22	部品表					
IC23, IC24	部品表					
IC25, IC26	部品表					
IC27, IC28	部品表					
IC29, IC30	部品表					
IC31, IC32	部品表					
IC33, IC34	部品表					
IC35, IC36	部品表					
IC37, IC38	部品表					
IC39, IC40	部品表					
IC41, IC42	部品表					
IC43, IC44	部品表					
IC45, IC46	部品表					
IC47, IC48	部品表					
IC49, IC50	部品表					
IC51, IC52	部品表					
IC53, IC54	部品表					
IC55, IC56	部品表					
IC57, IC58	部品表					
IC59, IC60	部品表					
IC61, IC62	部品表					
IC63, IC64	部品表					
IC65, IC66	部品表					
IC67, IC68	部品表					
IC69, IC70	部品表					
IC71, IC72	部品表					
IC73, IC74	部品表					
IC75, IC76	部品表					
IC77, IC78	部品表					
IC79, IC80	部品表					
IC81, IC82	部品表					
IC83, IC84	部品表					
IC85, IC86	部品表					
IC87, IC88	部品表					
IC89, IC90	部品表					
IC91, IC92	部品表					
IC93, IC94	部品表					
IC95, IC96	部品表					
IC97, IC98	部品表					
IC99, IC100	部品表					
IC101, IC102	部品表					
IC103, IC104	部品表					
IC105, IC106	部品表					
IC107, IC108	部品表					
IC109, IC110	部品表					
IC111, IC112	部品表					
IC113, IC114	部品表					
IC115, IC116	部品表					
IC117, IC118	部品表					
IC119, IC120	部品表					
IC121, IC122	部品表					
IC123, IC124	部品表					
IC125, IC126	部品表					
IC127, IC128	部品表					
IC129, IC130	部品表					
IC131, IC132	部品表					
IC133, IC134	部品表					
IC135, IC136	部品表					
IC137, IC138	部品表					
IC139, IC140	部品表					
IC141, IC142	部品表					
IC143, IC144	部品表					
IC145, IC146	部品表					
IC147, IC148	部品表					
IC149, IC150	部品表					
IC151, IC152	部品表					
IC153, IC154	部品表					
IC155, IC156	部品表					
IC157, IC158	部品表					
IC159, IC160	部品表					
IC161, IC162	部品表					
IC163, IC164	部品表					
IC165, IC166	部品表					
IC167, IC168	部品表					
IC169, IC170	部品表					
IC171, IC172	部品表					
IC173, IC174	部品表					
IC175, IC176	部品表					
IC177, IC178	部品表					
IC179, IC180	部品表					
IC181, IC182	部品表					
IC183, IC184	部品表					
IC185, IC186	部品表					
IC187, IC188	部品表					
IC189, IC190	部品表					
IC191, IC192	部品表					
IC193, IC194	部品表					
IC195, IC196	部品表					
IC197, IC198	部品表					
IC199, IC200	部品表					
IC201, IC202	部品表					
IC203, IC204	部品表					
IC205, IC206	部品表					
IC207, IC208	部品表					
IC209, IC210	部品表					
IC211, IC212	部品表					
IC213, IC214	部品表					
IC215, IC216	部品表					
IC217, IC218	部品表					
IC219, IC220	部品表					
IC221, IC222	部品表					
IC223, IC224	部品表					
IC225, IC226	部品表					
IC227, IC228	部品表					
IC229, IC230	部品表					
IC231, IC232	部品表					
IC233, IC234	部品表					
IC235, IC236	部品表					
IC237, IC238	部品表					
IC239, IC240	部品表					
IC241, IC242	部品表					
IC243, IC244	部品表					
IC245, IC246	部品表					
IC247, IC248	部品表					
IC249, IC250	部品表					
IC251, IC252	部品表					
IC253, IC254	部品表					
IC255, IC256	部品表					
IC257, IC258	部品表					
IC259, IC260	部品表					
IC261, IC262	部品表					
IC263, IC264	部品表					
IC265, IC266	部品表					
IC267, IC268	部品表					
IC269, IC270	部品表					
IC271, IC272	部品表					
IC273, IC274	部品表					
IC275, IC276	部品表					
IC277, IC278	部品表					
IC279, IC280	部品表					
IC281, IC282	部品表					
IC283, IC284	部品表					
IC285, IC286	部品表					
IC287, IC288	部品表					
IC289, IC290	部品表					
IC291, IC292	部品表					
IC293, IC294	部品表					
IC295, IC296	部品表					
IC297, IC298	部品表					
IC299, IC300	部品表					
IC301, IC302	部品表					
IC303, IC304	部品表					
IC305, IC306	部品表					
IC307, IC308	部品表					
IC309, IC310	部品表					
IC311, IC312	部品表					
IC313, IC314	部品表					
IC315, IC316	部品表					
IC317, IC318	部品表					
IC319, IC320	部品表					
IC321, IC322	部品表					
IC323, IC324	部品表					
IC325, IC326	部品表					
IC327, IC328	部品表					
IC329, IC330	部品表					
IC331, IC332	部品表					
IC333, IC334	部品表					
IC335, IC336	部品表					
IC337, IC338	部品表					
IC339, IC340	部品表					
IC341, IC342	部品表					
IC343, IC344	部品表					
IC345, IC346	部品表					
IC347, IC348	部品表					
IC349, IC350	部品表					
IC351, IC352	部品表					
IC353, IC354	部品表					
IC355, IC356	部品表					
IC357, IC358	部品表					
IC359, IC360	部品表					
IC361, IC362	部品表					
IC363, IC364	部品表					
IC365, IC366	部品表					
IC367, IC368	部品表					
IC369, IC370	部品表					
IC371, IC372	部品表					
IC373, IC374	部品表					
IC375, IC376	部品表					
IC377, IC378	部品表					
IC379, IC380	部品表					
IC381, IC382	部品表					
IC383, IC384	部品表					
IC385, IC386	部品表					
IC387, IC388	部品表					
IC389, IC390	部品表					
IC391, IC392	部品表					
IC393, IC394	部品表					
IC395, IC396	部品表					
IC397, IC398	部品表					
IC399, IC400	部品表					
IC401, IC402	部品表					
IC403, IC404	部品表					
IC405, IC406	部品表					
IC407, IC408	部品表					
IC409, IC410	部品表					
IC411, IC412	部品表					
IC413, IC414	部品表					
IC415, IC416	部品表					
IC417, IC418	部品表					
IC419, IC420	部品表					
IC421, IC422	部品表					
IC423, IC424	部品表					
IC425, IC426	部品表					
IC427, IC428	部品表					
IC429, IC430	部品表					
IC431, IC432	部品表					
IC433, IC434	部品表					
IC435, IC436	部品表					
IC437, IC438	部品表					
IC439, IC440	部品表					
IC441, IC442	部品表					
IC443, IC444	部品表					
IC445, IC446	部品表					
IC447, IC448	部品表					
IC449, IC450	部品表					
IC451, IC452	部品表					
IC453, IC454	部品表					
IC455, IC456	部品表					
IC457, IC458						



製図者	検査者	部品名	材質	寸	備考
1					



製図	設計	審査	承認	Electric circuit for Digital baby scale
1	1	1	1	with load cell

株式会社	御咲製作所	KEU-0081	5
------	-------	----------	---



改訂箇所

寸法の普通許容差

寸法の記入のない寸法の普通許容差は  
JIS B 0404 1-14 又は 1-16  
に示された下表によること

寸法の区分 を 超 え	公差等級		14 級	16 級
	以 下			
0.5	3		± 0.1	—
3	6		± 0.1	± 0.2
6	30		± 0.2	± 0.5
30	120		± 0.3	± 0.8
120	315		± 0.5	± 1.2
315	1,000		± 0.8	± 2
1,000	2,000		± 1.2	± 3

KEU-0080

CN1

KEU-0081

CN1 CN2

LCD

CN2

7	VCC
8	BATT
9	O.F
10	POL
11	BSY
12	D1
13	D2
14	D3
15	D4
16	B8
17	B4
18	B2
19	B1
20	D5
21	HOLD
22	ON/R
23	GND
24	OFF

ribbon  
feeder

7	VCC	1	SEG31
8	R14	2	" 29
9	R1	3	" 28
10	R13	4	" 26
11	R3	5	" 25
12	R8	6	SEG25
13	R9	7	" 23
14	R10	8	" 20
15	R11	9	" C
16	R7	10	SEG19
17	R6	11	" 17
18	R5	12	" 16
19	R4	13	" B
20	R12	14	SEG14
21	R2	15	" 13
22	R0	16	" 11
23	GND	17	" A
24	S2	18	SEG10
		19	" 8
		20	" 7
		21	" 5
		22	C01
		23	C02
		24	C03

コネクタ

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

CN3

1	9V	RED
2	GND	BLK

load cell

3	+5V	RED
4	GND	WHT
5	IN+	GRN
6	IN-	BLK
	F.G	

four cable shield

AC adapter

31	+	RED
32	GND	BLK

RED	+
BLK	-

battery

備

考

A 品番  
PARTS  
NO.

部 品 名 称  
NAME OF PARTS

材 料  
MATERIAL

仕上重量  
(kg)  
WEIGHT

摘 要  
REMARKS

製 番 FILE NO.

製 番 ORDER NO.

第 三 角 法  
THIRD ANGLE PROJECTION

日 付 DATE  
1988. 11. 7

尺 度 SCALE  
1/2

形 式 TYPE

納入先 CUSTOMER

承 認  
APPROVED BY

検 図  
CHECKED BY

担 当 製 図  
DESIGNED BY

図 名 TITLE

SUYASUYA Mutual wiring Diagram



株 式 会 社  
御 咲 製 作 所

図 番 DWG. NO.

4

3

2

1