ISHIDA

BWI-15W

SERVICE MANUAL

IMPORTANT

- Do not carry out any installation, operation, service or maintenance without thoroughly understanding the contents of this manual.
- Keep this manual available at all times for installation, operation, service, and maintenance.

ISHIDA CO., LTD.

Manual No. 0054A

You can help improve this manual by calling attention to errors and recommending improvements. Please express your comments to the nearest Ishida Company representative. **Thank you!**

SAFETY CONSIDERATIONS

These safety measures must be followed to ensure the safe servicing of this machine:

Servicing is to be done by qualified service personnel only

These service instructions are for use by qualified service personnel who fully understand the potential hazards involved. To avoid any possible danger, do not perform any service procedures unless qualified to do so.

Perform only the specified service procedures

To ensure personal safety, do not perform any service procedures which are not specifically mentioned in this service manual.

Properly ground machinery

As a Class 1 electrical device, this machine requires protective grounding for safe operation. To avoid any potential electrical shock, securely attach the protective ground wire to the main grounding provision.

Avoid servicing while power is being supplied

Machine servicing while power is being supplied and covers or enclosures are opened or removed should be avoided as much as possible. When servicing cannot be performed by any other means, service personnel should take precautions against the danger of electrical shock or other potential hazard involved.

Take precaution against residual electrical charge hazard

Capacitors inside the machine may still hold an electrical charge even after power is disconnected.

Use same type fuses and components for replacement parts

To avoid the potential hazards involved, do not replace fuses or components with types other than those specified in the parts list for this machine.

The following symbols are used to alert service personnel of potential danger or special circumstances related to the safe and proper servicing of this machine:

⚠ *WARNING!*	Precautions which must be followed to prevent the possibility of death or serious injury.
⚠ *CAUTION!*	Precautions which must be followed to prevent the possibility of light or moderately severe injury to personnel or damage to the equipment.
NOTE:	Important information for the operation of the machine.

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APPPENDIX

Overview 1

1. SPECIAL FEATURES

(1) Electrical Power

This electrical current used in this scale corresponds with the standard electrical current of the country for which it is intended. For a brighter display, the BWI-15 W employs a fluorescent lamp.

COUNTRY	VOLTAGE
USA	AC 115 V
ASIA	AC 220 V
EUROPE	AC 230 V
OCEANIA	AC 240 V

(2) Option

The BWI-15 W can be connected to a relay output unit and RS-232C output board.

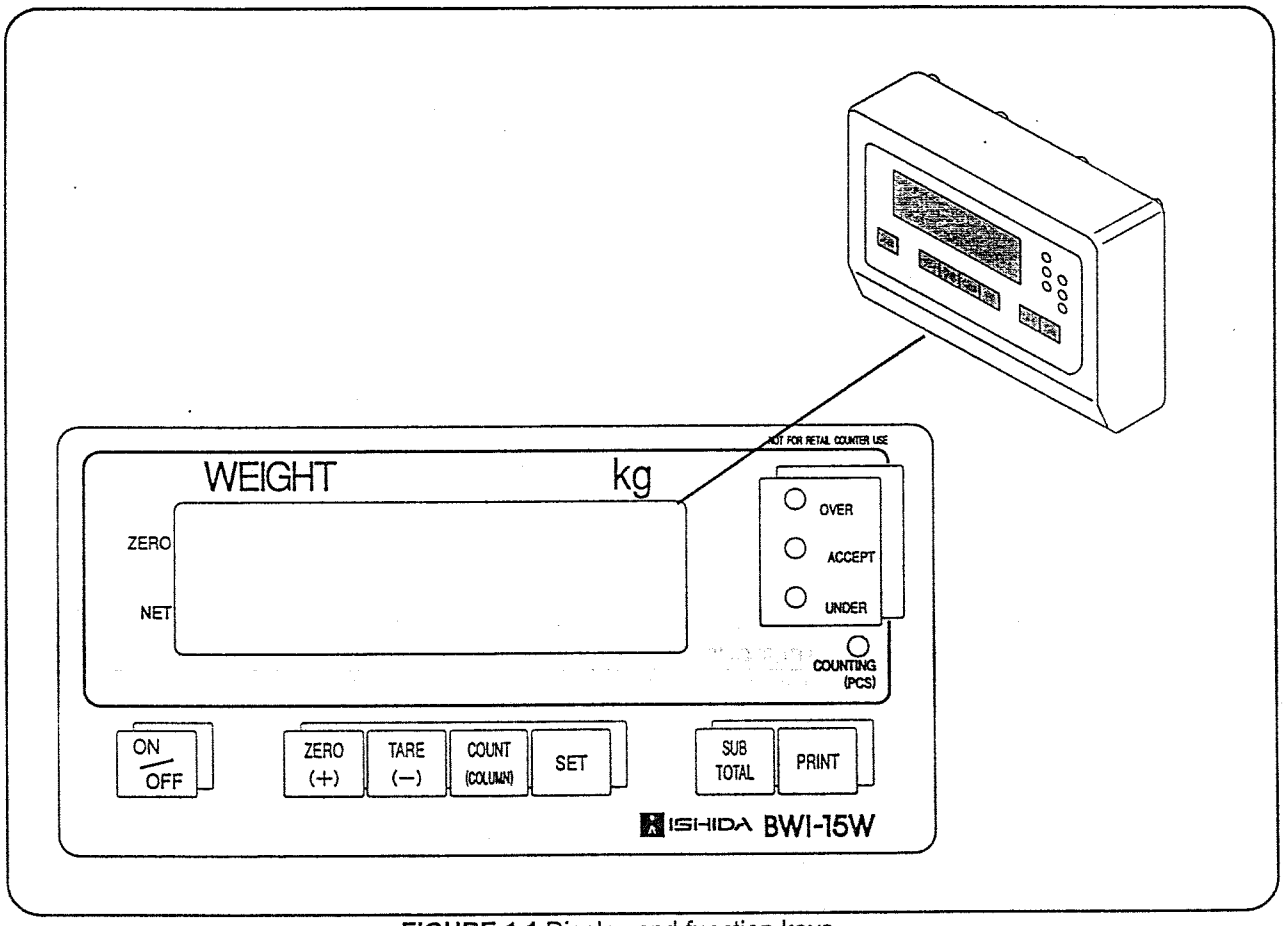


FIGURE 1.1 Display and function keys

(3) External Dimensions

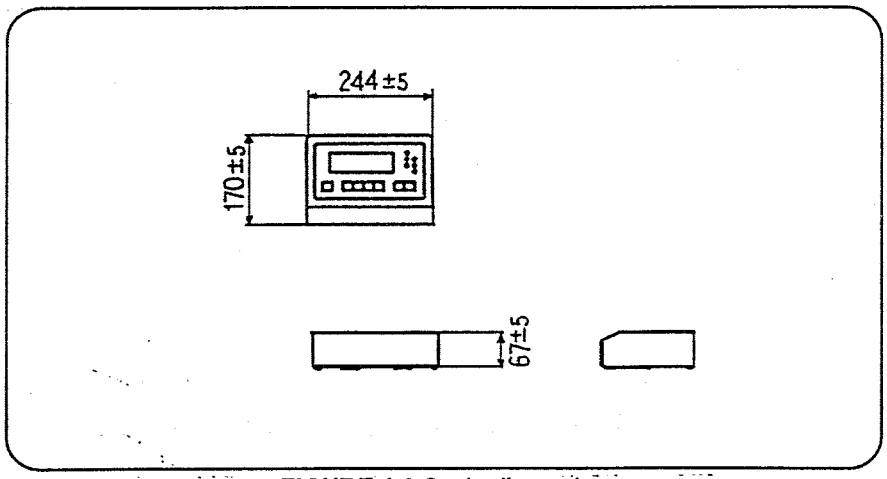


FIGURE 1.2 Scale dimensions

(4) Specifications

ITEM	UNIT	SPECIFICATIONS
MODEL		BWI-15W
A/D CONVERTER		Delta Sigma
AMP		LC8500
CHANGE SPEED	No./sec.	40
MAX. DISPLAY INTERNAL NUMBER (RESOLUTION)		3000 (15000)
MAXIMUM INPUT	mV	20
MINIMUM RANGE	mV	3
MINIMUM INPUT SENSITIVITY /e	μV	1
MINIMUM INPUT ALLOWANCE I/D		2.00
GENERAL ERROR	%/FS	0.005
OUTPUT TEMP.	ppmRead/°C	5
TEMP. EFFECT ON ZERO ADJUSTMENT	μV/°C	0.1
DETECTION VOLTAGE OUTPUT CURRENT	V(DC) mA(DC)	12 140
EXTERNAL OUTPUT SIGNAL TEMP RANGE IN USE		RS-232C Parallel Relay (Option: Relay Output Unit coupler output)
POWER SUPPLY	°C	Between -5° and 35°
	V(AC)	115 220 230 240
ALLOWANCE ERROR ALLOCATION		0.5

(5) Built-in Functions

ITEM	SPECIFICATIONS	REFERENCE
WEIGH UNIT	Displays only one weigh unit (cannot change between kg and lbs)	
UNIT WEIGHING	Can weigh in multiples of 5, 10, 20, AND 50	Changed in test mode
UNIT CHANGE	Can switch between kg and lbs	
CHECK	Upper/lower limit (alerts by flashing display, LED, and buzzer)	
TARE	Keyboard tare (only one item)	

(6) Hardware

ITEM	SPECIFICATIONS	REFERENCE
CASE	SUS 304	Specifications listed separately
SEALING	Corresponds to respective country (seal, seal screw)	
POWER	Uses 100/115 or 220/240VAC 50-60Hz	Transistor varies with voltage type
KEY SWITCHES	7 keys	
LAMP	5 FIP bulbs	

(7) Display

ITEM	SPECIFICATIONS	REFERENCE
DISPLAY	Weighing, counting FIP 5 bulbs Zero adjustment mark, Tare subtraction mark Console X2 Check mark (Upper/lower limit, within weight) LED X3 Mode display mark (Capacity, mode) LED X4	
RESOLUTION	1/500 to 1/15000 (1/500, 1/600, 1/1000, 1/1200, 1/1500, 1/2000, 1/2500. 1/3000, 1/5000, 1/6000, 1/7500, 1/10000, 1/12000, 1/15000 settings are possible)	
DECIMAL MARKS	possible to change between "." or ", "	
DECIMAL PLACE	XXXXX XXXX.X XXX.XX XX.XXX	
MULTIPLIER	X1, X2, X5	

(8) Electrical Specifications

ITEM	SPECIFICATIONS	REFERENCE
ANALOG OUTPUT VOLTAGE	DC 12V ± 5%	
ANALOG OUTPUT CURRENT	MAX 140 mA	350 Ω load cell equivalent to four load cells
ZERO ADJUSTMENT RANGE	0.1 mV t o 20 mV	
INPUT SENSITIVITY	0.8μ V/D or more	
NON-LINEARITY	±0.01% of full capacity	
TEMPERATURE COEFFICIENT	ZERO ±(0.5μ V+0.0008% of dead load) / °C Span ±0.0008% / °C	
INPUT NOISE	0.4 μ Vp-p or less	
INTERNAL RESOLUTION	1/75000 (When display resolution is 1/15000)	
A/D CONVERTER RES.	1/1048576	20 bit full scale
SAMPLING SPEED	40 times/sec.	

(9) Option

ITEM	SPECIFICATIONS	REFERENCE
RS-232C OUTPUT BOARD	Only internal format output is possible	Protocol cannot be changed
RELAY OUTPUT UNIT	Stable, zero adjustment, within range, over upper limit	Tare subtraction is possible

SETTING MODE 2

SETTING MODE

2.1 Setting Chart

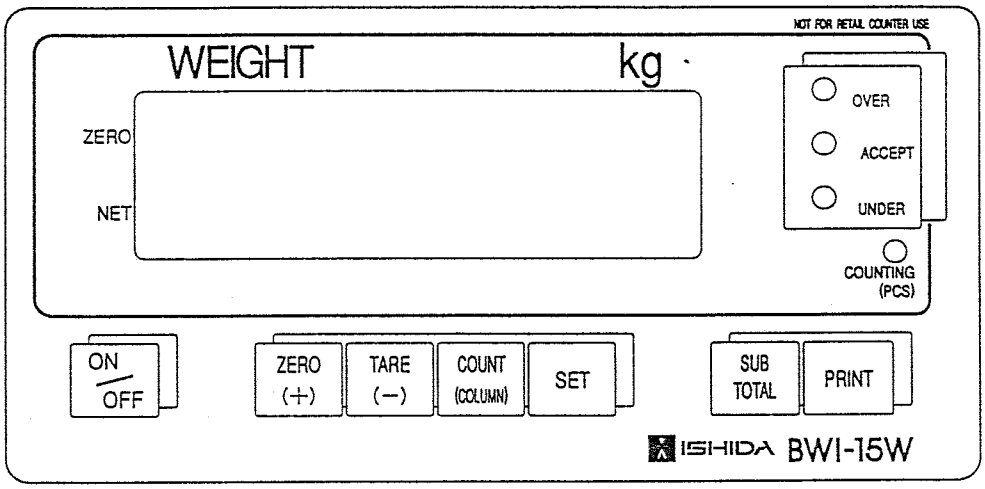
ITEM	OPERATION
BUZZER	Can switch the internal buzzer ON/OFF.
COMMUNICATION PROTOCOL	Can select among three format types when the when RS-232C output board is installed.

2.2 Control Panel

BWI-15W

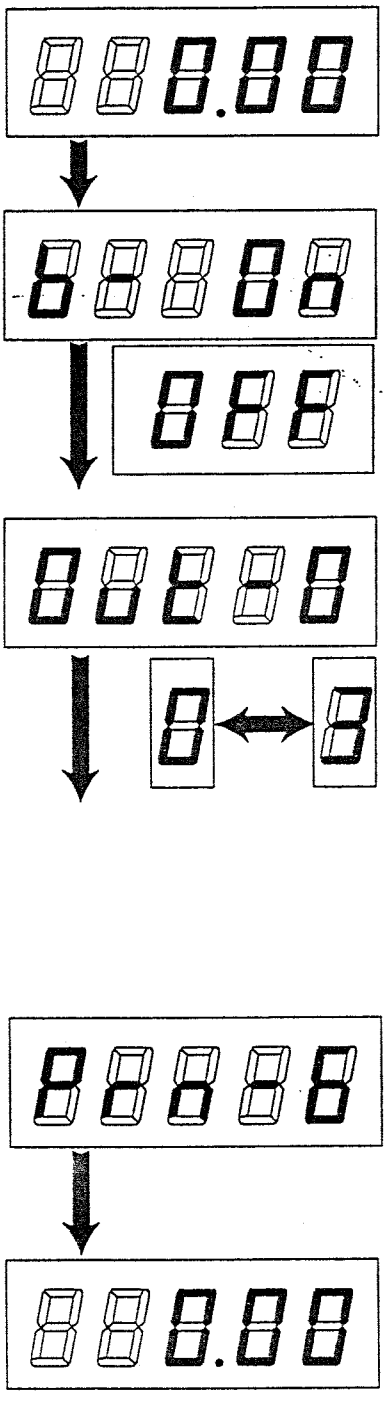
Example:

Singapore, New Zealand Specifications



2.3 Setting Procedure

Display **Operation**



1. Press the [SET] key for more than eight seconds.

2. This calls up the buzzer function. Use the [ZERO] key to activate and deactivate the buzzer function. The default setting is ON. Press [SET] after making selection.

3. This calls up the communication protocol function. Use the [ZERO] key to select from modes 0 - 3.

0	DATA 1 (PC Interlock Output format)
1	DATA 2
2	DATA 3
3	Not in use

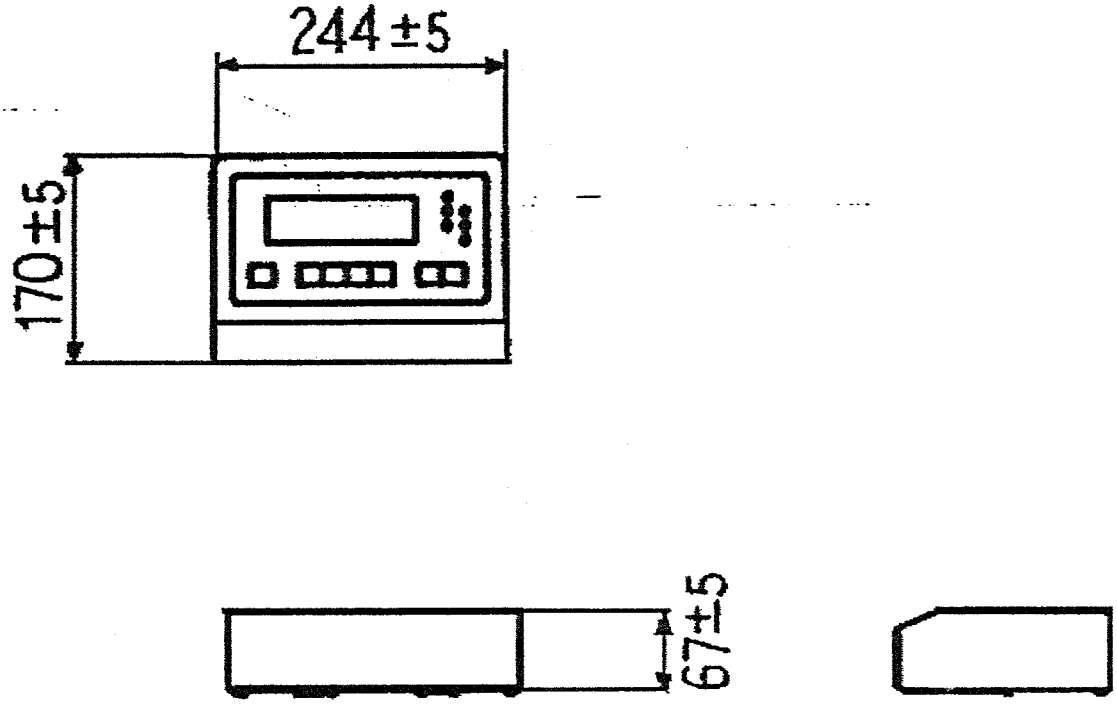
Press the [SET] key to select communication protocol.

4. Press the [SET] key.

5. Press the [SET] key.

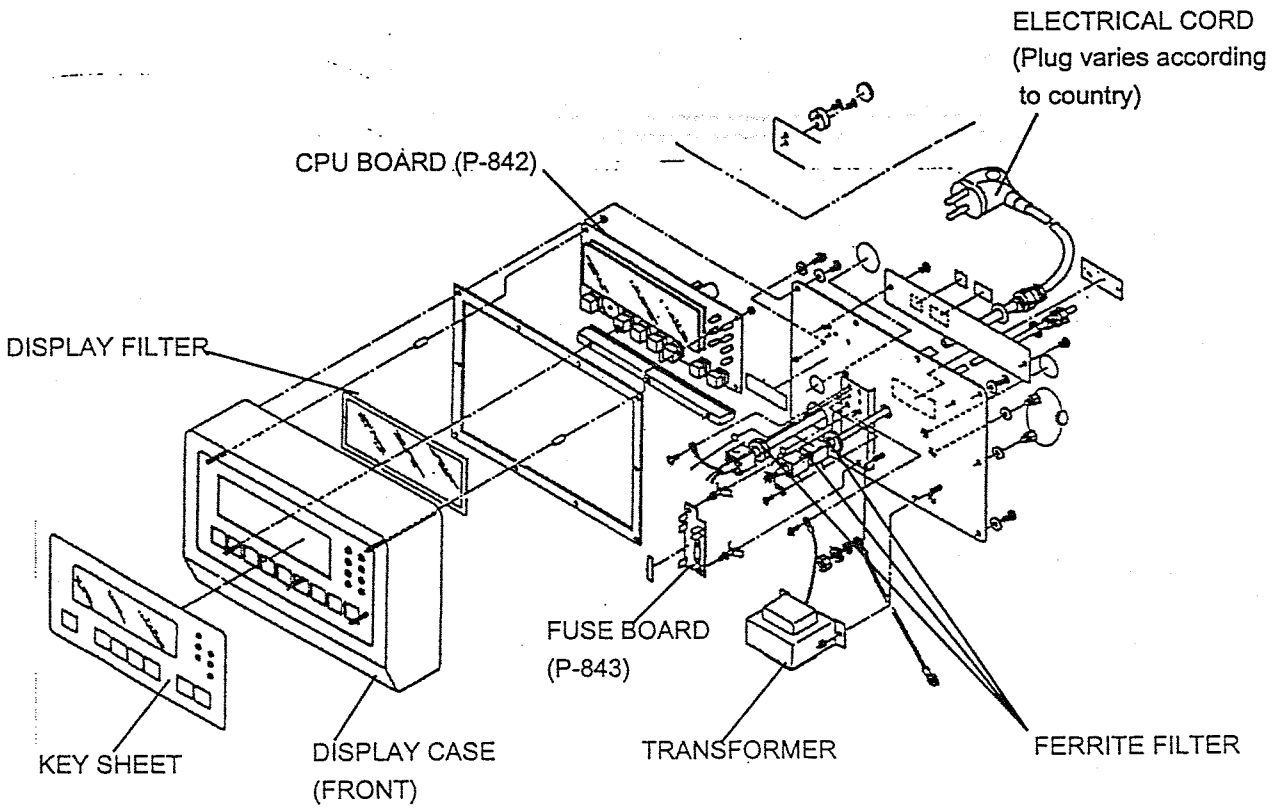
ELECTRICAL AND MECHANICAL 3

3.1 EXTERNAL DIMENSIONS



3.2 Disassembly Diagram and Part Names

3.2.1 Display Unit

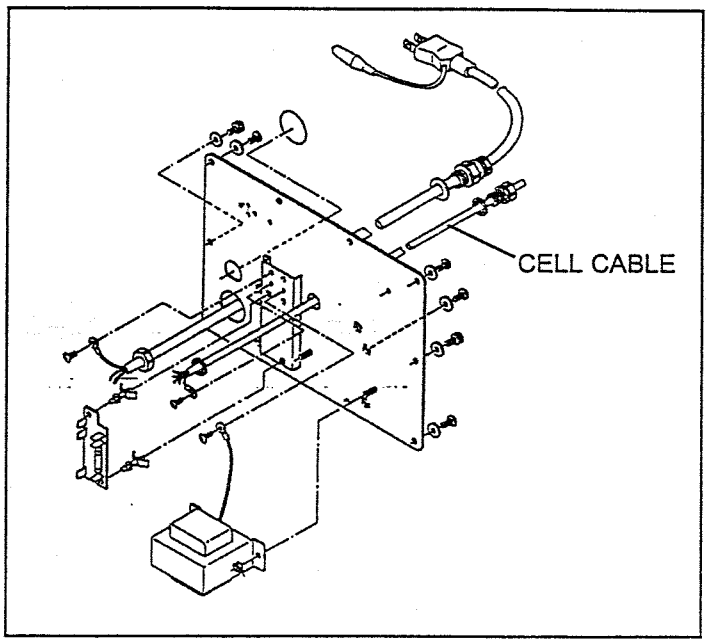


NOTE: PLEASE BE ADVISED THAT THE DETAILS LISTED ABOVE ARE SUBJECT TO CHANGE WITHOUT ADVANCED NOTICE.

3.3 *Load Cell and Cell Cable*

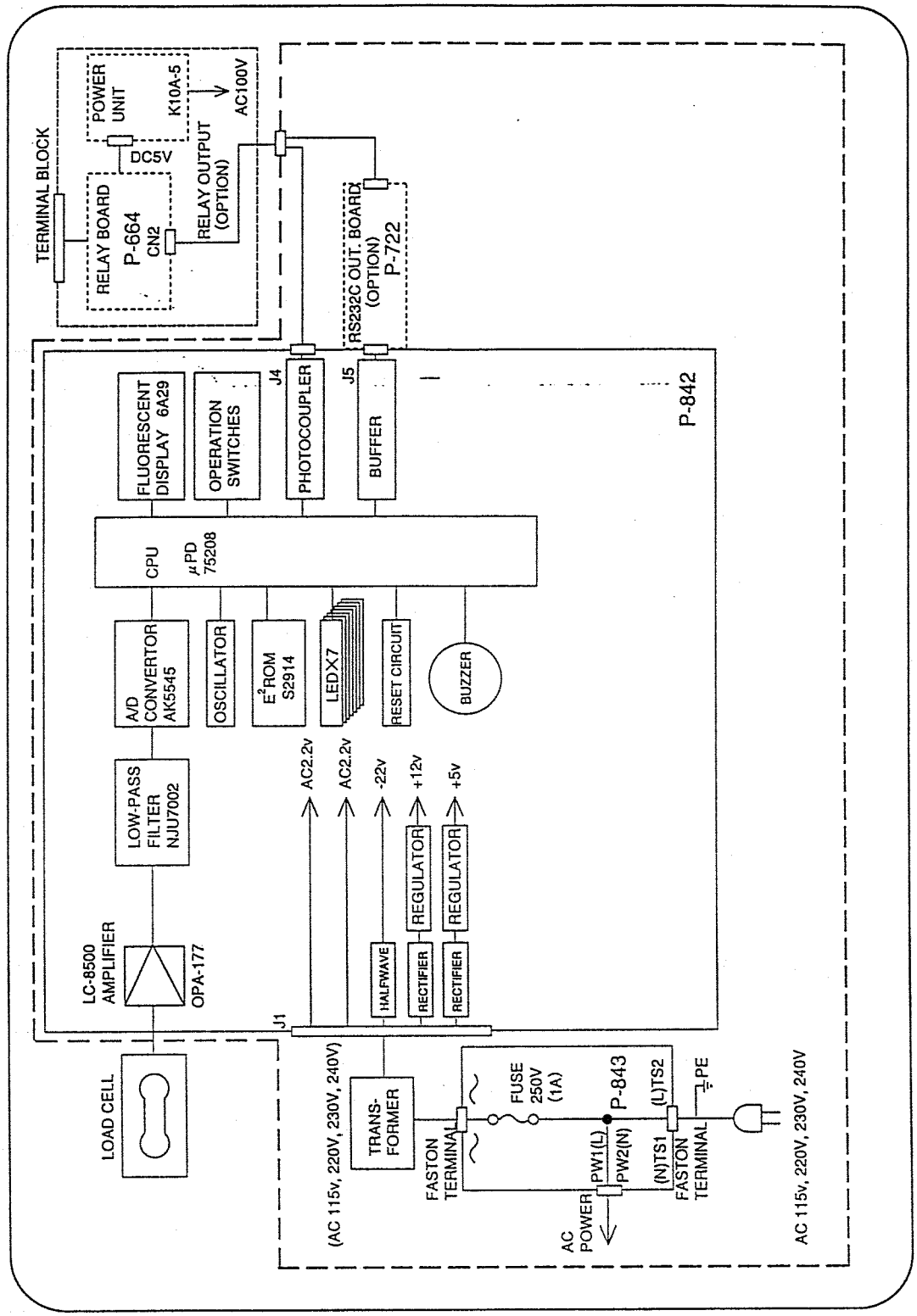
Refer to section (8) *Electrical Specifications* on page 1-5 for information concerning the load cell.

The cell cable should be within 4.5-6.55mm diameter.

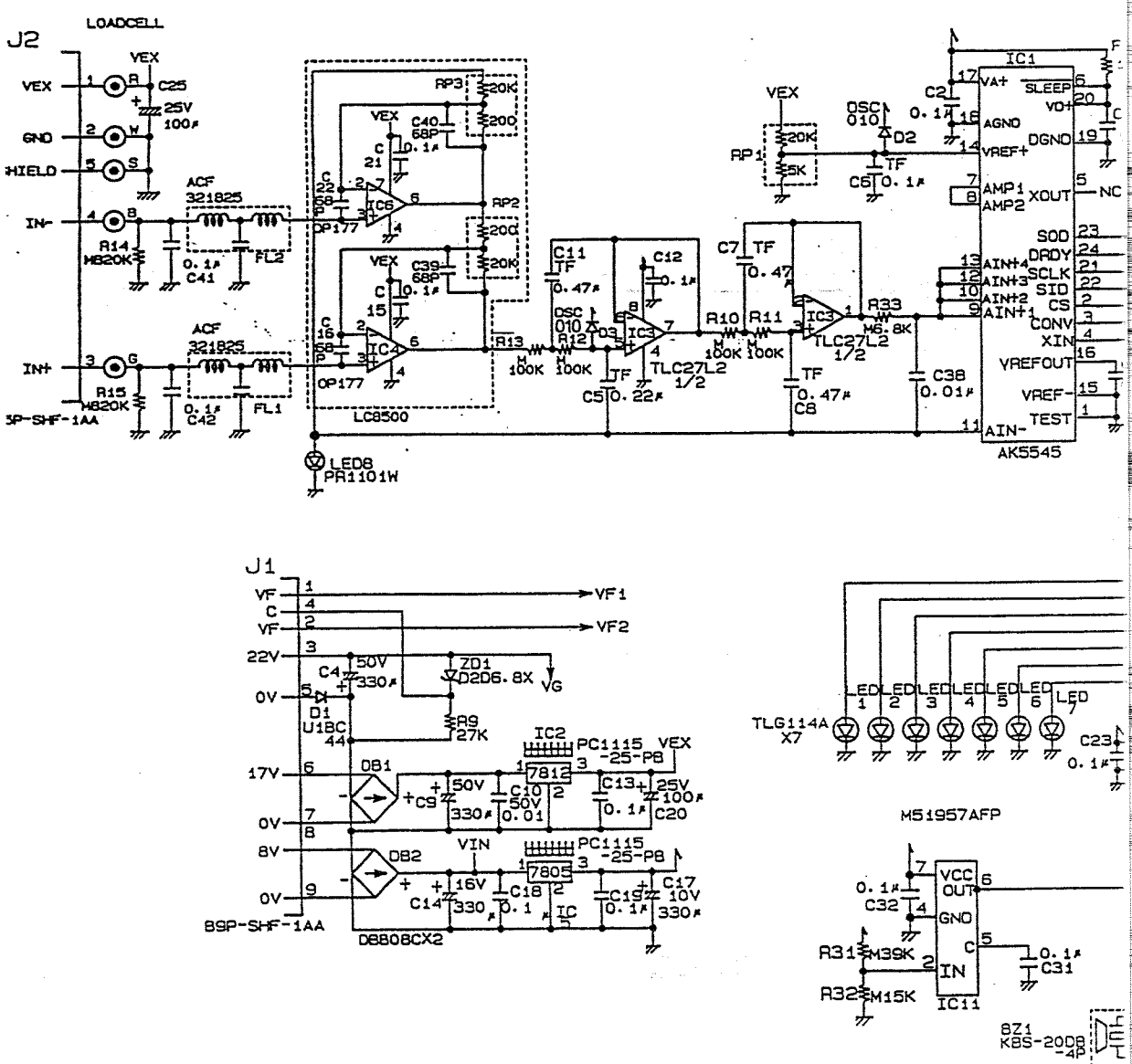


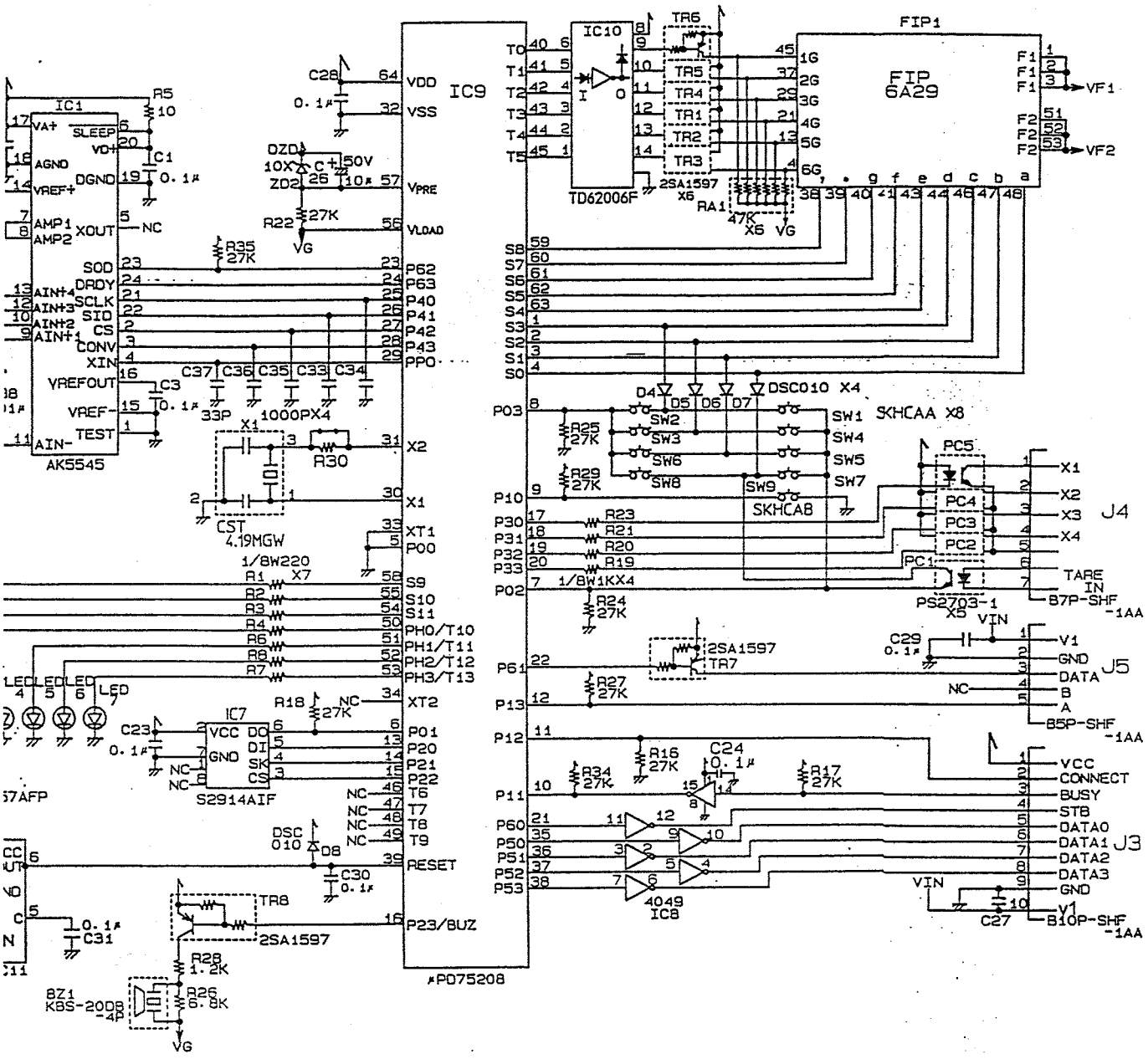
3.4 ELECTRICAL COMPONENTS

3.4.1 Block Diagram



3.4.2 Circuit Board




IC1
AK5545
IC9
μPD75208
IC10
TD62006F
FIP1
FIP
6A29
IC7
S2914AIF
IC8
4049
J4
J5
J3
SKHCAA X8
SKHCA8
DSC010 X4
PS2703-1 X5
TR1
TR2
TR3
TR4
TR5
TR6
TR7
TR8
RA1
47K X6 VG
2SA1597 X6
CST 4.19MGW
1000PX4
1/8W220
1/8W1KX4
B7P-SHF -1AA
B5P-SHF -1AA
B10P-SHF -1AA
VF1
VF2
VG

3.4.3 CPU Board I/O Signals

J1

PIN NO.	SIGNAL	OPERATION	IN
1	AC 1.5 V	Display heater power	√
2	AC 1.5 V	Display heater power	√
3	AC 25 V	Display unit drive (-35V)	√
4	0 V		
5	0 V		
6	AC 14 V	Generates Vex (+12 V)	√
7	0 V		
8	AC 8 V	Generates Vcc (+5V)	√
9	0 V		

J2

PIN NO.	SIGNAL	OPERATION	IN	OUT
1	Vex	+12 V		√
2	GND	Analog GND		
3	+IN		√	
4	–IN		√	
5	GND	Analog GND		

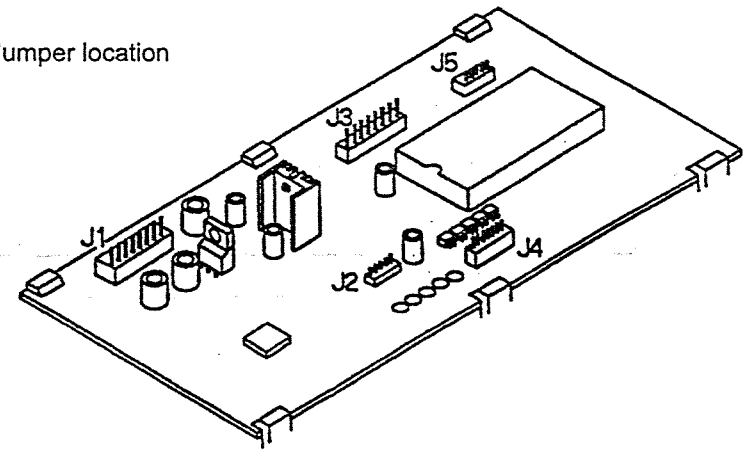


Figure 4.1 Jumper location

J3

PIN NO.	SIGNAL	OPERATION	IN	OUT
1	Vcc	+5 V		√
2	Connect sig.		√	
3	Busy		√	
4	STB			√
5	Data 0	Print data		√
6	Data 1	Print data		√
7	Data 2	Print data		√
8	Data 3	Print data		√
9	GND			
10	V1	Approx. 9 V		√

J4

PIN NO.	SIGNAL	OPERATION	IN	OUT
1	X1	Stable		√
2	X2	Zero point		√
3	X3	Within limit		√
4	X4	Exceeds limit		√
5	Common			
6	Ext. Input		√	
7	Common			

J5

PIN NO.	SIGNAL	OPERATION	IN	OUT
1	V1	Approx. 9V		√
2	SG	Signal GND		
3	Data	Serial data		√
4	NC			
5	A	Connection signal	√	

OPTION 4

4.1 RELAY OUTPUT UNIT

A relay output unit is available as an option for the BWI-15W.

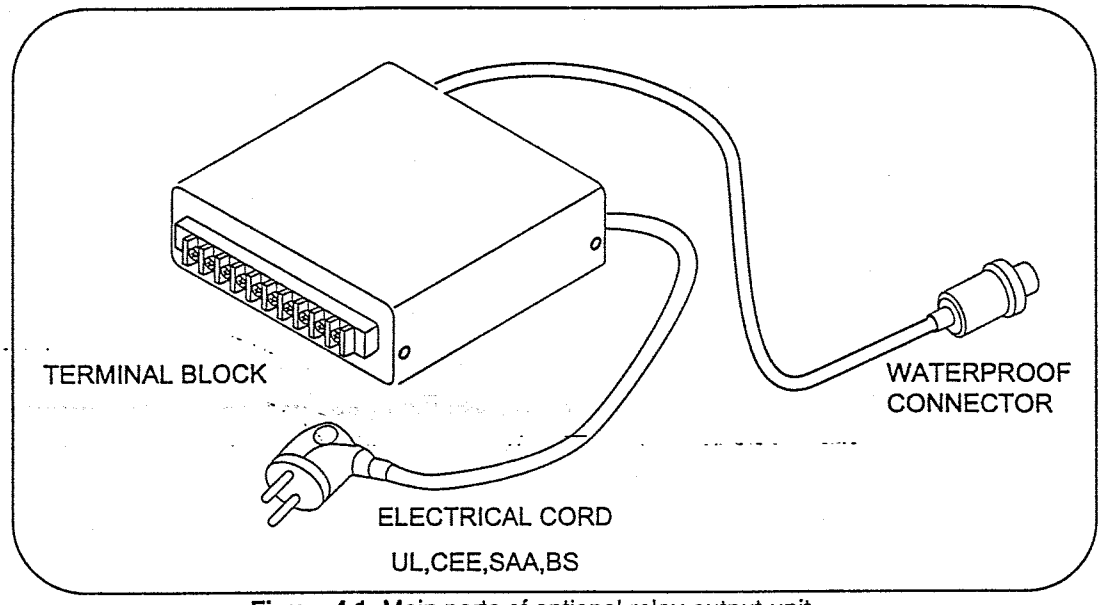


Figure 4.1 Main parts of optional relay output unit

4.1.1 Special Features

- The relay output unit can exchange signals from other devices by using TARE IN signals and the X1-X4 signals used by the P-842 (J4).
- The relay in the relay output unit uses an OMRON (G6B-1114P) and can regulate AC250V 5A when there is a resistance load.
- Tare subtraction can be performed from external devices through the relay output unit.
- A NEC photocoupler (PS-2701) provides insulation to protect P-842 (J4) signals from external noise.

4.1.2 Block Diagram

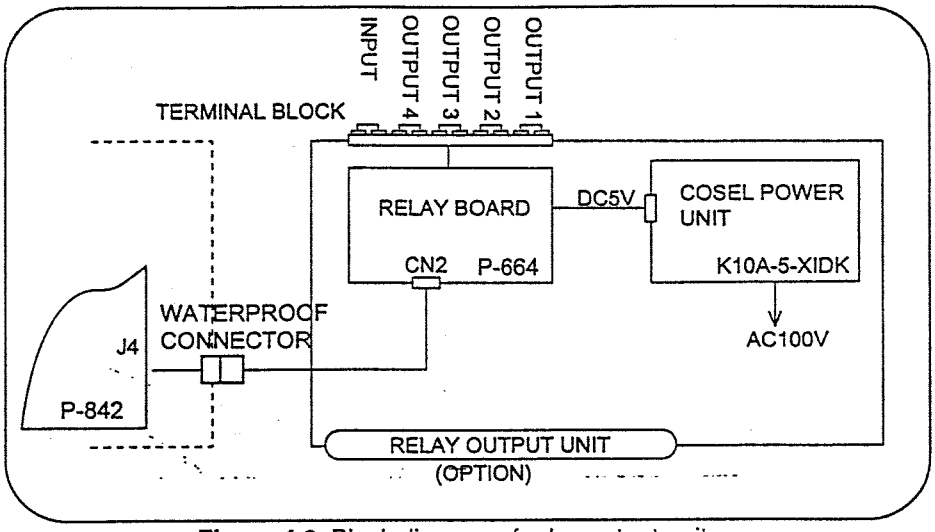


Figure 4.2 Block diagram of relay output unit

4.1.3 Wiring Diagram

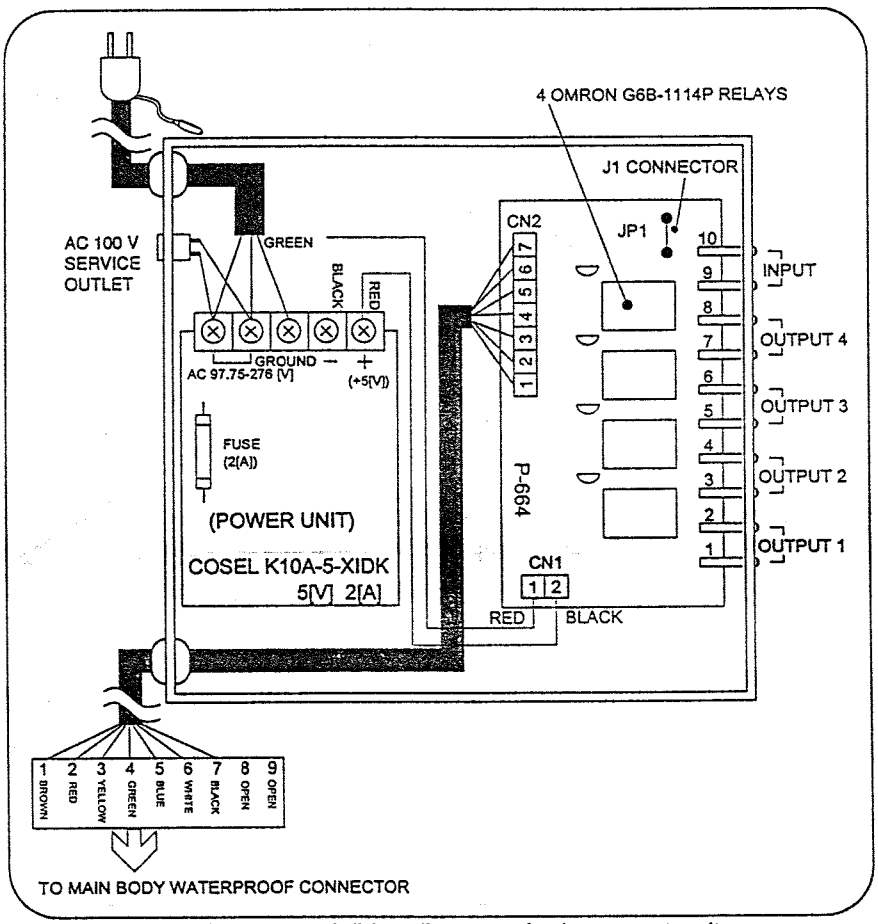


Figure 4.3 Wiring diagram of relay output unit

4.1.4 Installation Method

(1) Peel off the round seal from the back of the display panel.
(2) Remove the cover screws in the back of display panel (10 screws).
(3) Take off the front display.

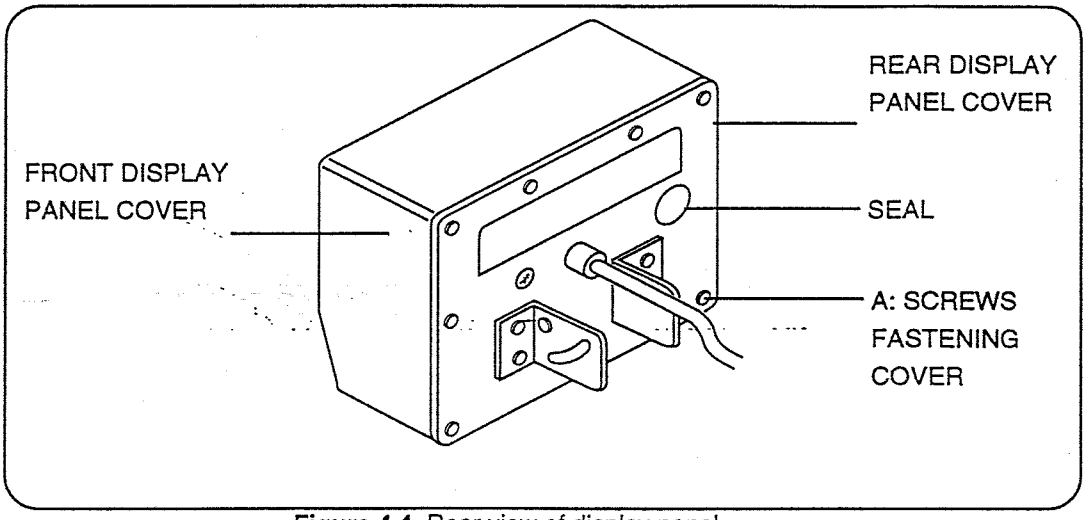


Figure 4.4 Rear view of display panel

(4) Pull the signal cable (waterproof connector) through the hole where the seal was removed and fasten connector.
(5) Firmly insert the signal connector in J4 (connector No.) located on the P-842 board.
(6) Attach the display front cover and fasten with screws (A: total: 10 screws)

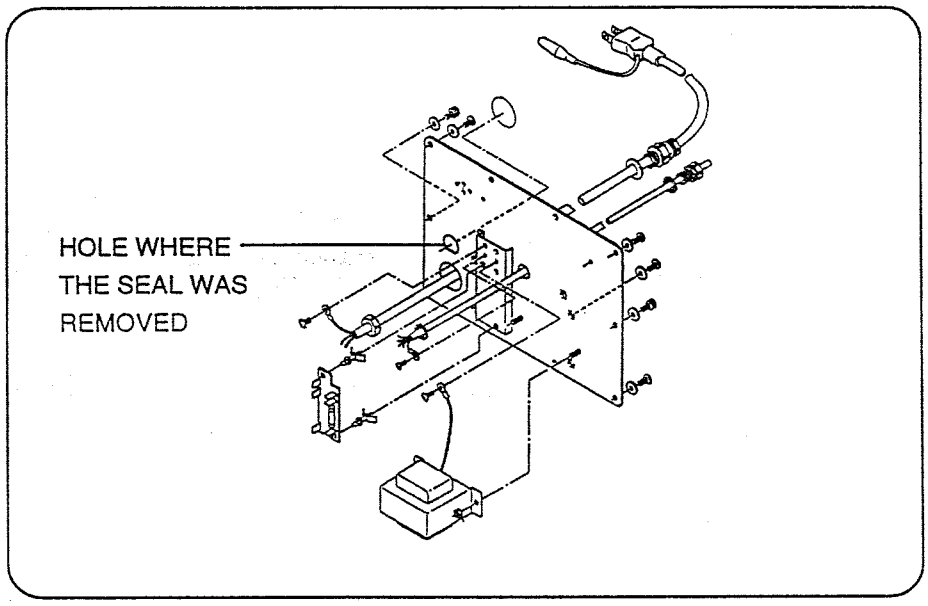


Figure 4.5 Disassembly diagram of display panel

(7) Insert the connector from the relay output unit to the installed connector and turn the connector to firmly secure the connection.

(8) Set the relay output unit in a place protected from moisture.

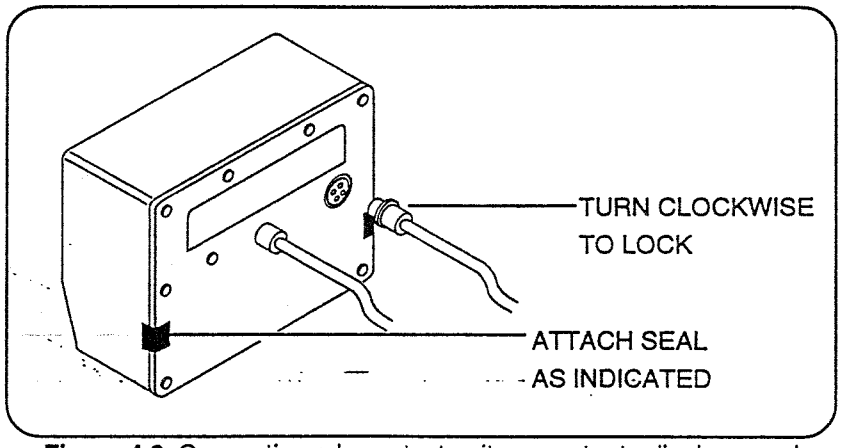


Figure 4.6 Connecting relay output unit connector to display panel

4.1.5 Contact I/O Functions

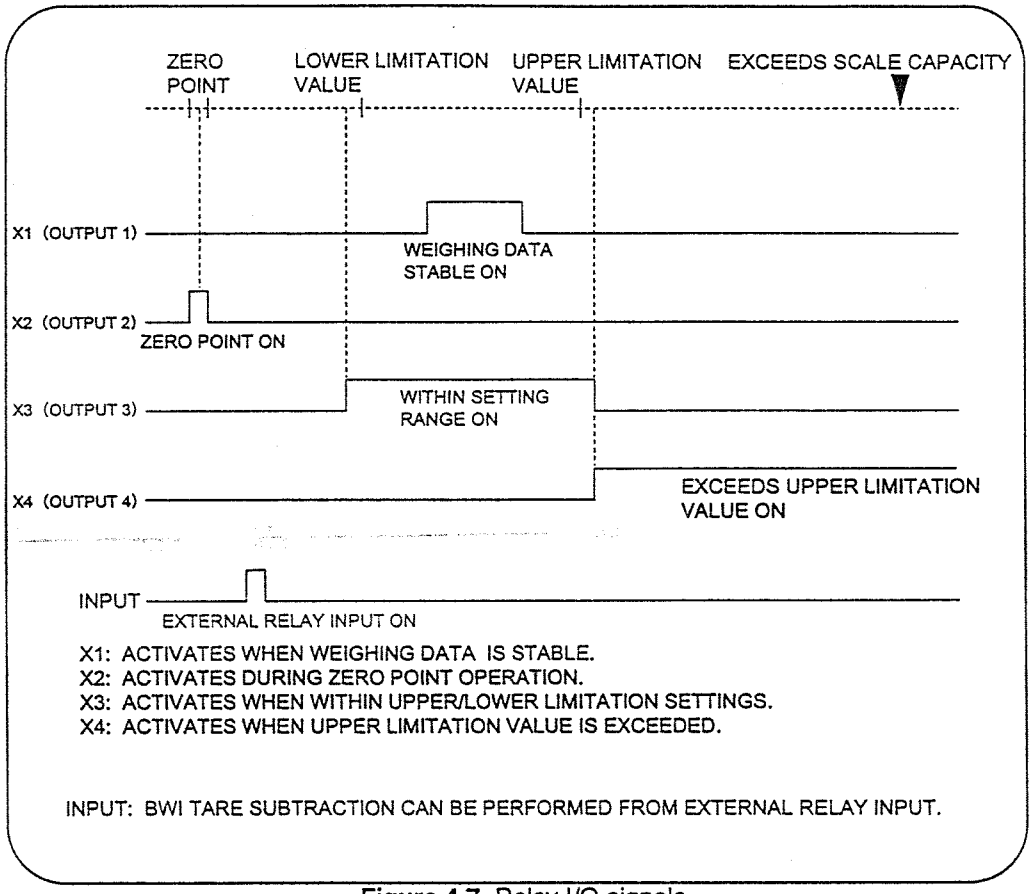


Figure 4.7 Relay I/O signals

4.1.6 Output Relay Specifications

	RESISTANCE LOAD(RATIO 100%)	INDUCTIVE LOAD (RATIO)
RATED LOAD	AC 250 [V] 5 [A], DC 30 [V] 5 [A]	AC 250 [V] 2 [A], DC 30 [V] 2 [A]
RATED CURRENT	5 [A]	
MAX. RELAY VOLTAGE	AC 380 [V], DC 125 [V]	
MAX. RELAY CURRENT	5 [A]	
MAX. OPEN/CLOSE	1250 [VA] 150 [W]	500 [VA] 60 [W]

AREA ENVIRONMENT	RANGE
Temperature	-25 to +70° (no condensation)
Humidity	45 to 85% RHI

4.1.7 P-664 Circuit Diagram

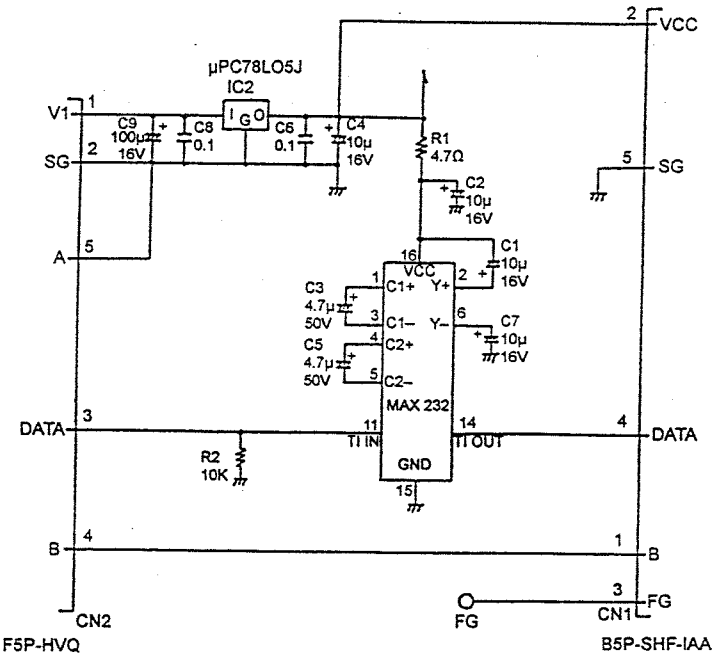


Figure 4.8 Diagram of P-664 circuit

4.2. RS-232C OUTPUT

Data can be sent to external devices using an optional RS-232C board.

4.2.1 Special Features

- There are three types of test layouts.
- The hardware is shared and can output data using one of three formats.
- Selection among the three formats can be easily performed in registration mode.

4.2.2 Installation

The method of running the cable and fastening the cord clamp is the same as the relay output unit. To install the RS-232C output board, attach the RS-232C output board (P-722) to the P-842 as shown in the illustration below:

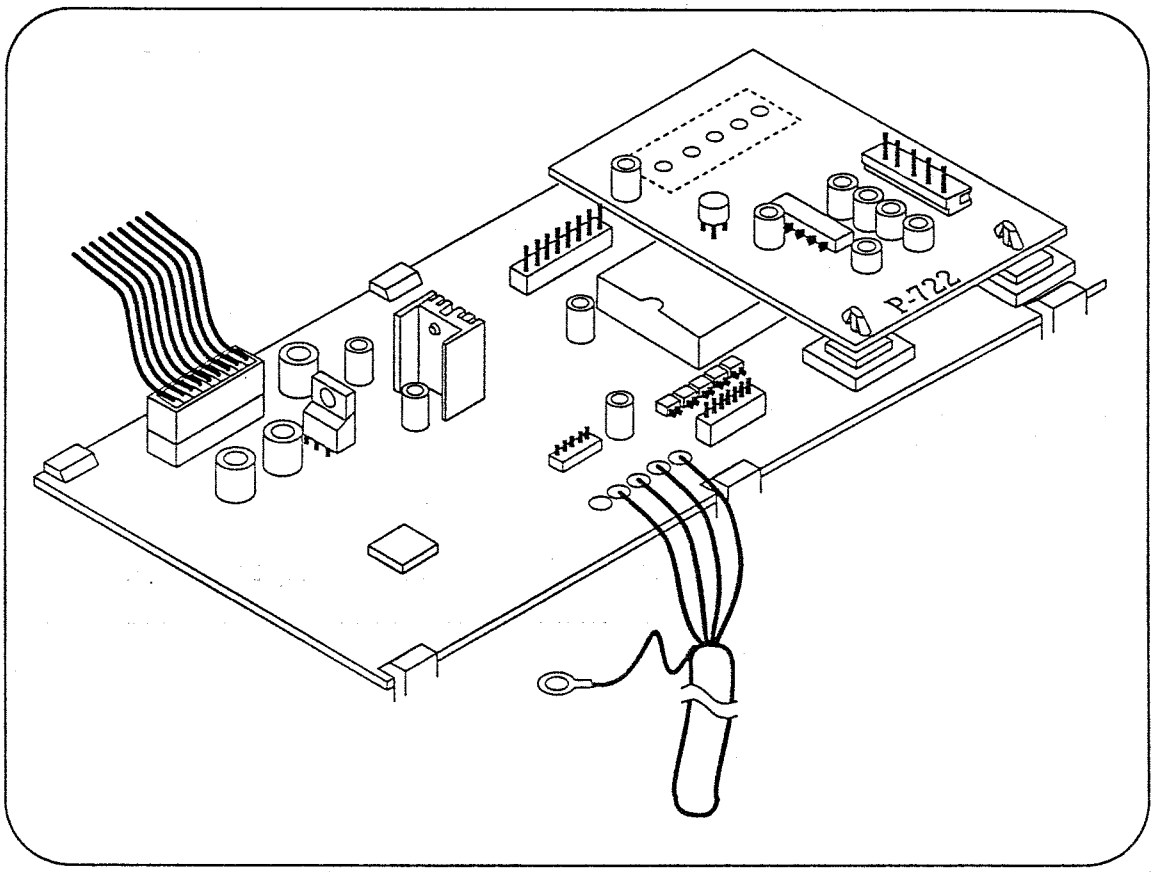


Figure 4.9 Installation of RS-232C output board

4.2.3 Communication Protocol

The three types of communication protocols which can be selected are:

1. Data 1 (PC Interlock Communication)
2. Data 2 (DAP-01format)
3. Data 3 (not available for pound specifications)

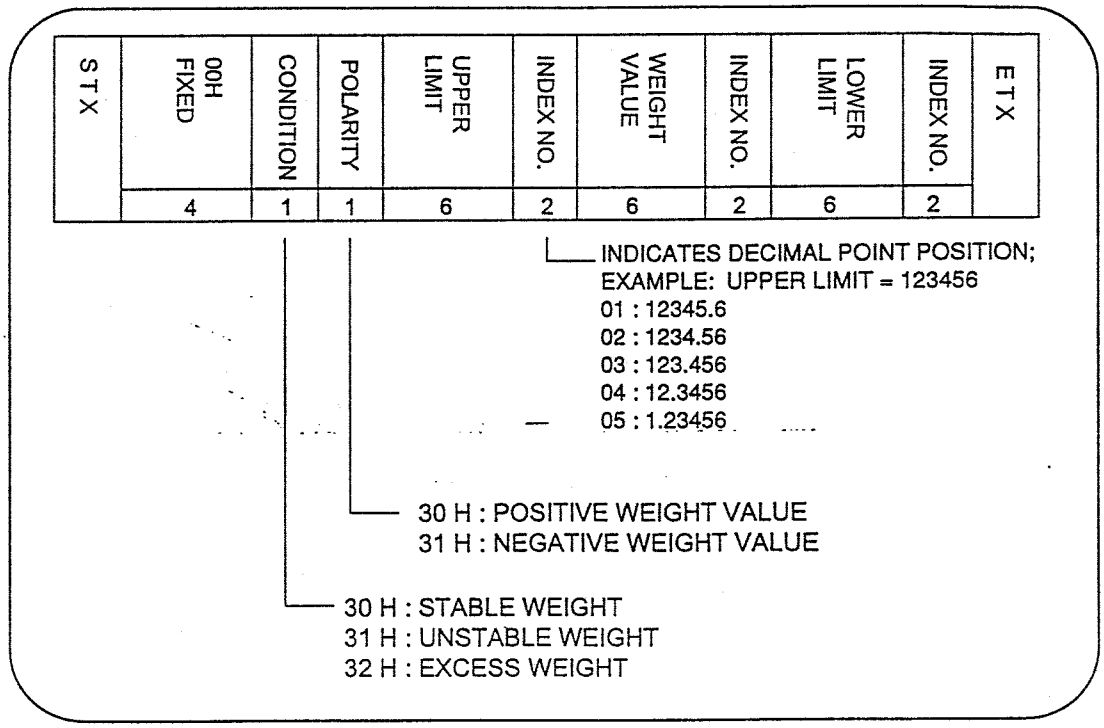
A. Communication Protocol

The three protocols share the transmission settings expressed in the chart below:

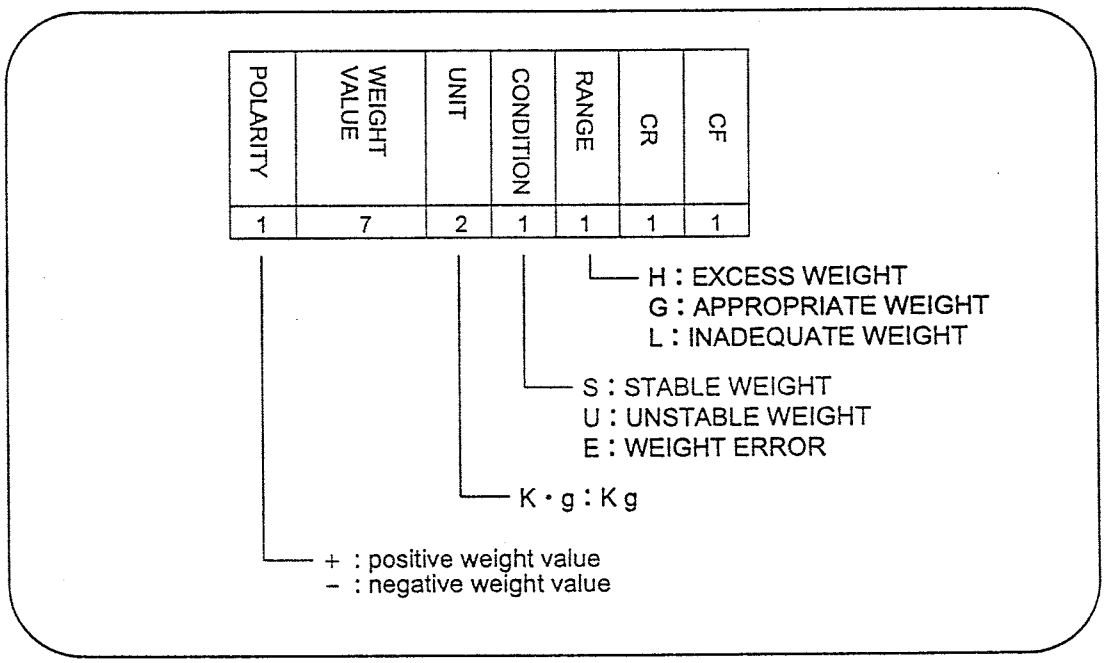
CATEGORY	SETTINGS
Trans. Method	Non-sequential (transmission)
Synchronous	Asynchronous
Speed	9600 bps (constant)
Code	ASCII code
Signal Level	RS-232C
Data Format	Start bit 1 Data bit 8 (7 bit is fixed at [0]) Stop bit 2 Parity bit NONE
Trans. Cycle	Approximately 250 m/sec

B. Electronic Data

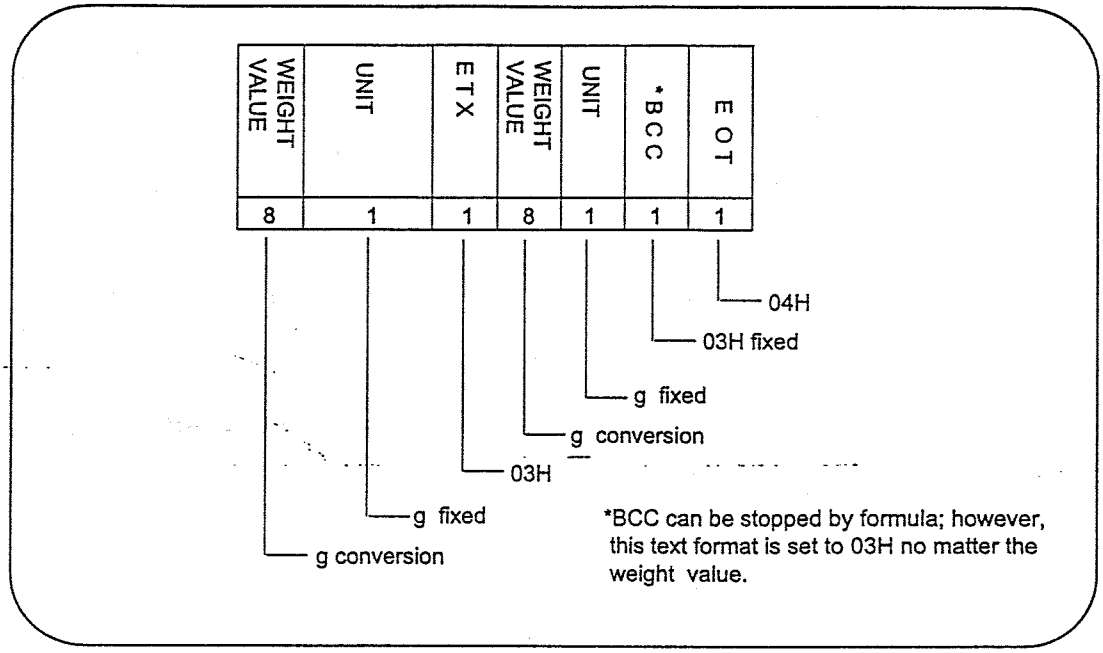
1. Data 1 PC Interlock Communication



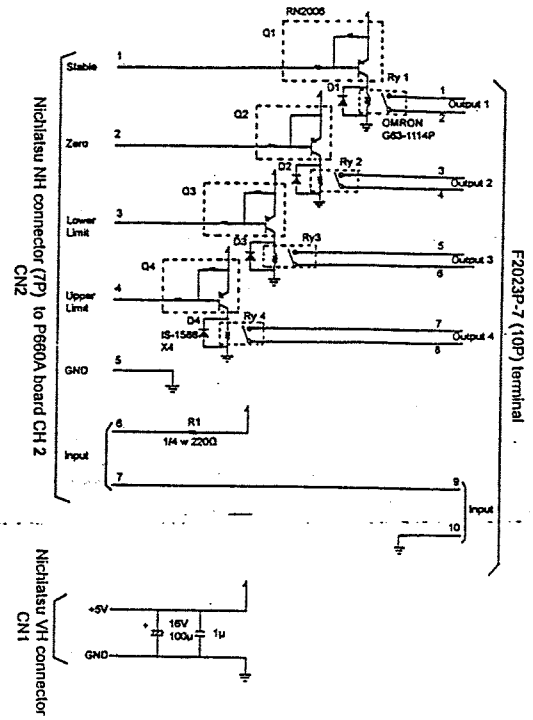
B. Data 2 (DAP-01format)



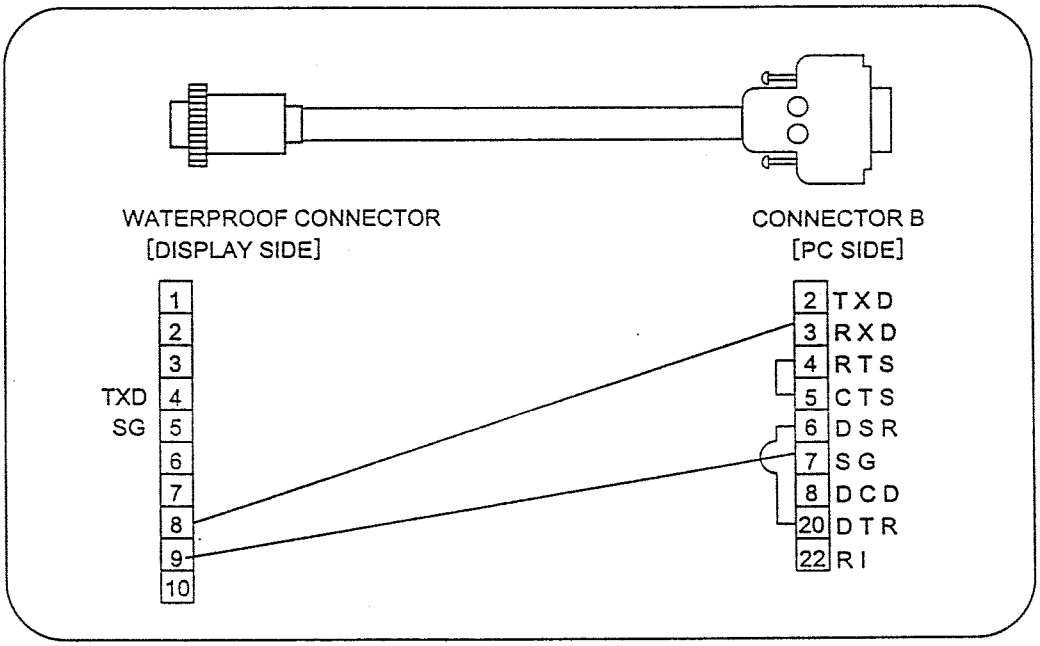
C. Data 3 (not available under pound specifications)



4.2.4 P-722 Circuit Diagram



4.2.5 Communication Cable Wiring



MAIN BOARD REPLACEMENT 5

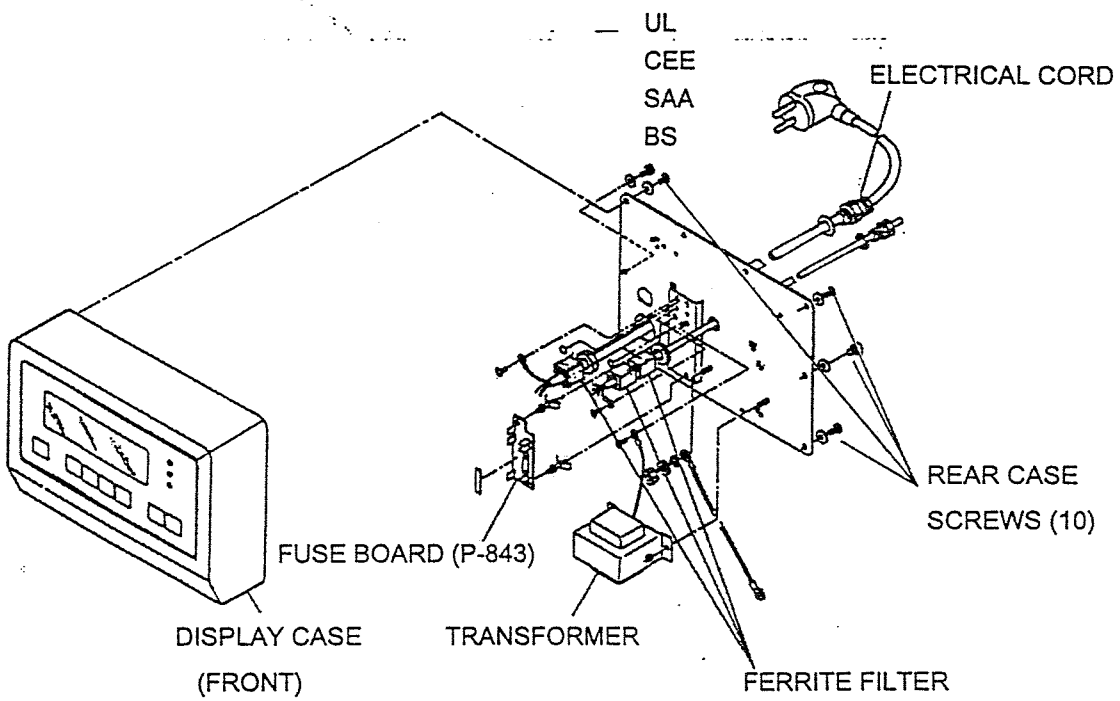
5.1 REPLACEMENT OF MAIN BOARD CPU

1) Loosen the 10 screws in the back of the display and remove the rear case.

NOTE: Plug varies according to country.

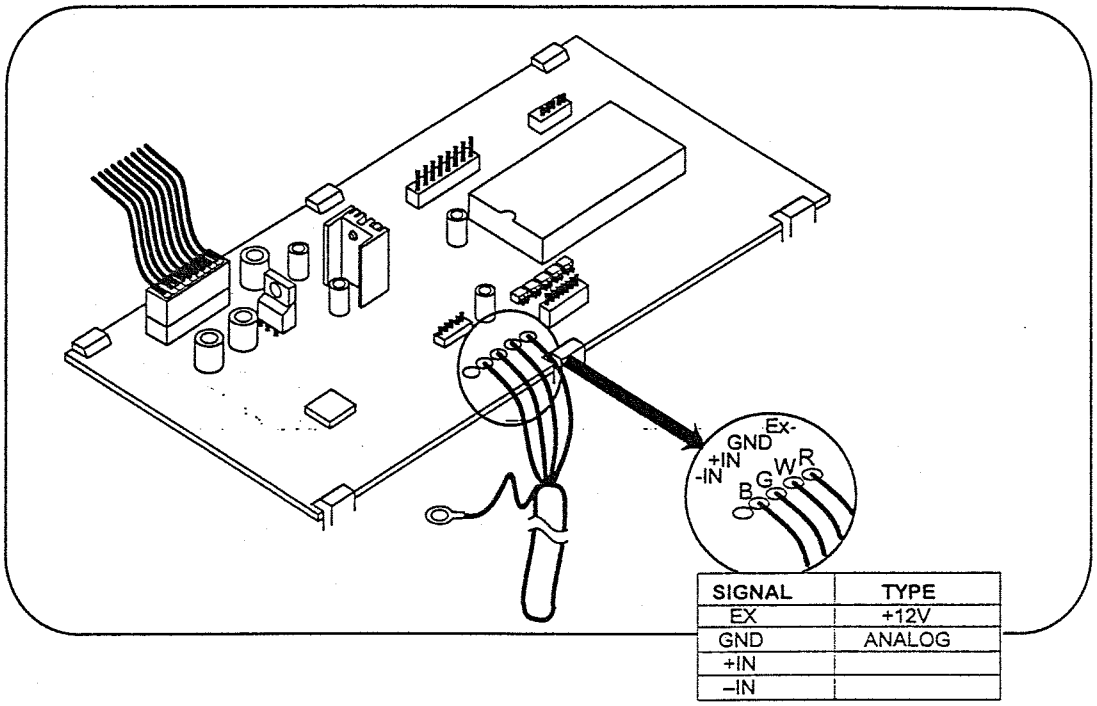
PRIMARY VOLTAGE	100/115V
	220/240V
	230V

The BWI-15 W uses three type types of transformers. The transformer in use varies according to country.



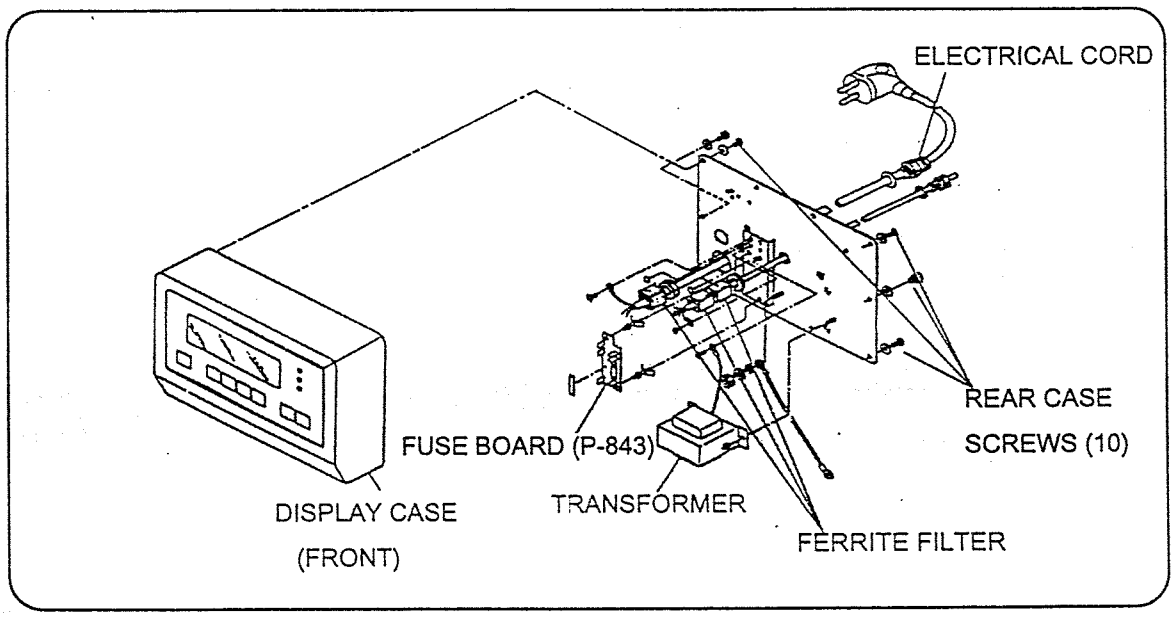
CAUTION! Since the transformer is located in the rear, be careful when removing the rear case.

2) Detach cell cable. Remove the main board, and disconnect the wires (4) soldered to the cell cable.



SIGNAL	TYPE
EX	+12V
GND	ANALOG
+IN	
–IN	

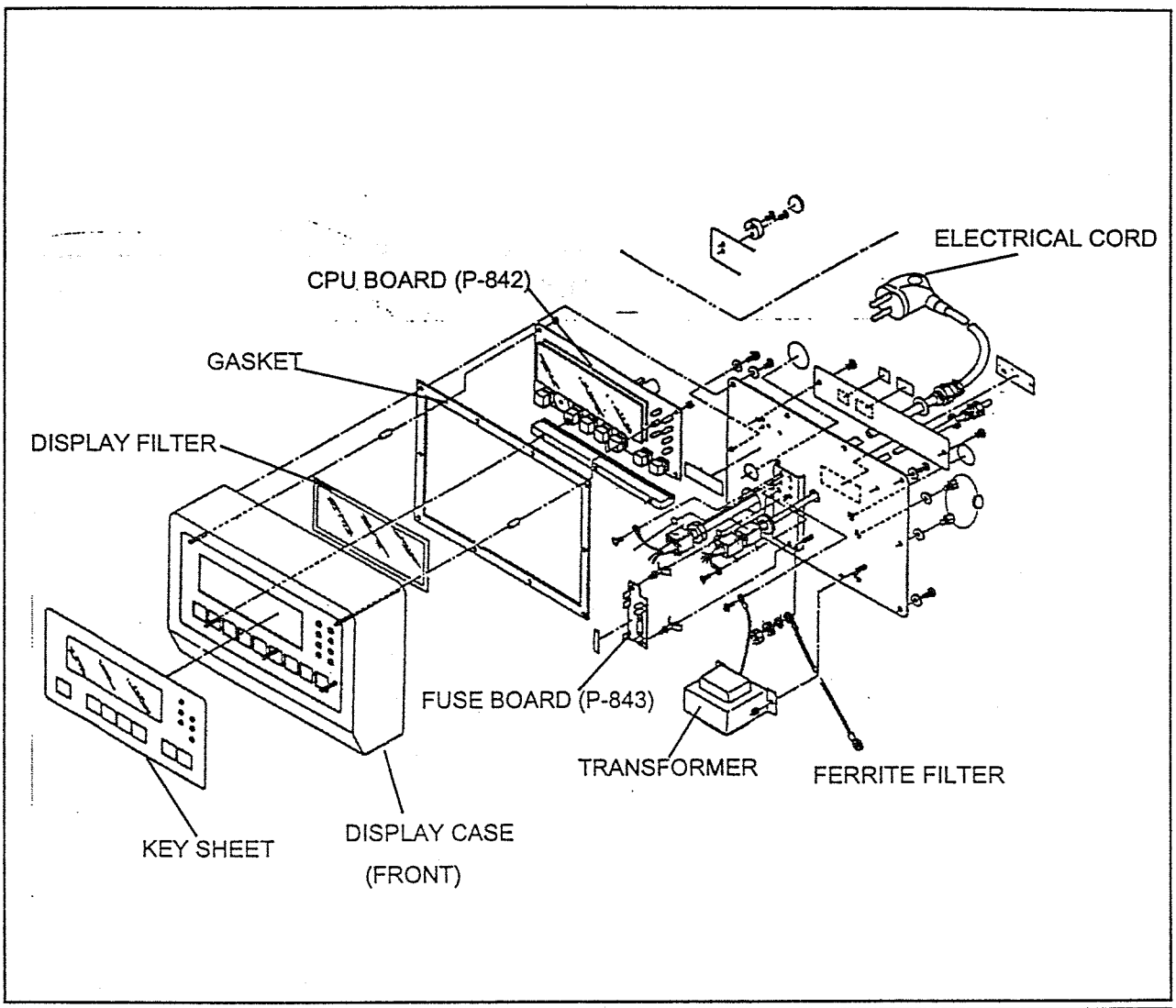
3) Install main board in reverse order. Place the crimp-style terminals in their designated place and tighten screws.



5.2 SPAN ADJUSTMENT

Perform span adjustment in test mode.

5.3 DISASSEMBLY DIAGRAM



CAUTION! The main body of the scale is waterproof. However, if thegasket is worn or broken, moisture could seep into the scale. For this reason, always check the condition of the gasket to confirm it is sealing properly.
A loose rear case screw can also be the source of a water leak. Check screws to make sure they are tightly fastened.

TEST MODE 6

6.1 A/D Initialization and Span Adjustment

In test mode, the following operations are performed: 1) setting A/D initial conversion value and span adjustment, 2) checking mode operations, and 3) clearing RAM.

Accessing a test mode must be performed during start up. If the display is off, turn ON the scale. If the display is lit, press the [ON/OFF] key and the display will turn off.

6.1.1 Mode Functions

A. MODE 1

After E²ROM initilization has been executed and the model ID number has been set, the A/D inital conversion value and span adjustment can be entered in this mode. When automatic span adjustment cannot be performed in MODE 3, adjustment is performed in MODE 1.

B. MODE 2

After the model ID number has been set, A/D initialization and span adjustment are performed in MODE 2.

C MODE 3

Only A/D initial conversion value and span adjustment are performed in this mode.

Mode 1	Mode 2	Mode 3	Function
			E²ROM initialization
	↓		Model ID No. and specification setting number
↓	↓	↓	A/D initialization and span adjustment

To set and adjust the A/D initial conversion value and span adjustment, follow the methods outlined in this chapter. To increase the setting values, press the [ZERO] key. To decrease the setting values, press the [TARE] key.

6.1.2 Setting and Adjustment Method

To increase the setting values, press the [ZERO] key. To decrease the setting values, press the [TARE] key.

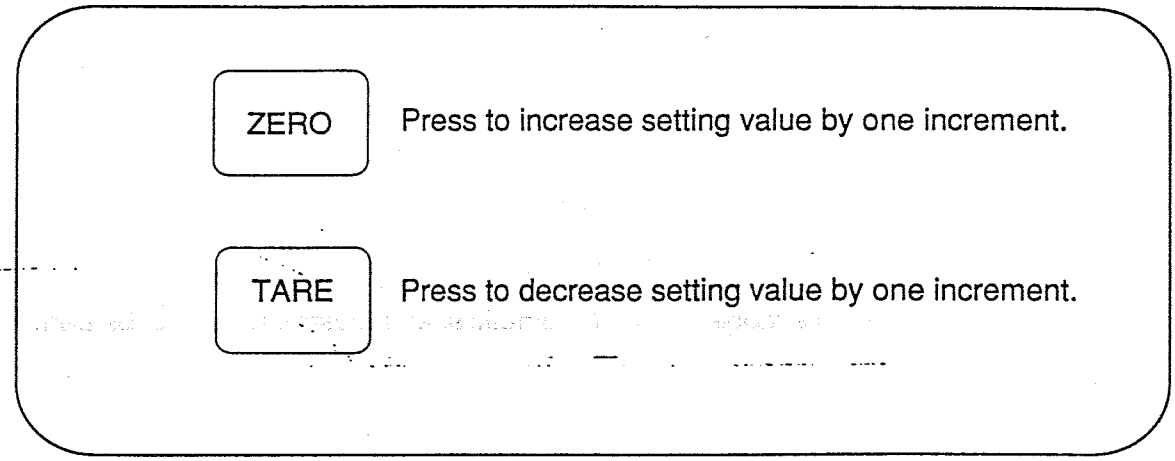
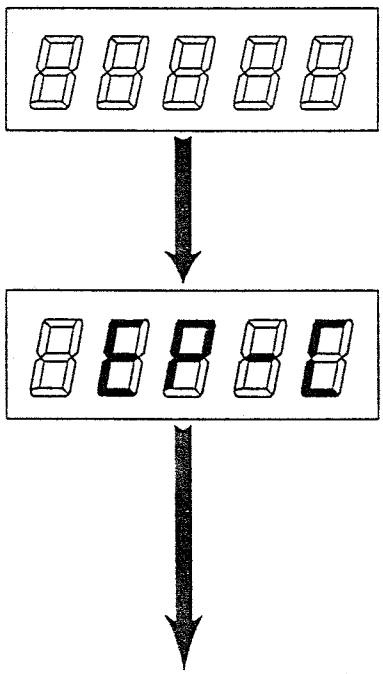


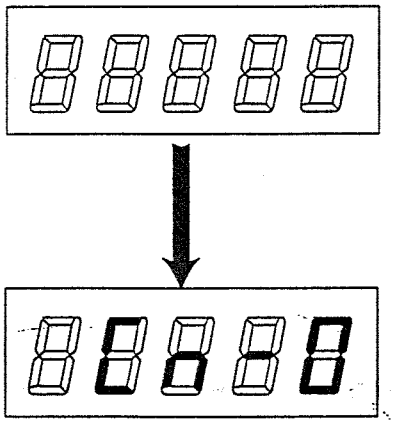
Figure 6.1 Changing setting values

Calling up MODE 1

DISPLAY	OPERATION
	While holding down the [ZERO] and [SET] keys at the same time, press the [ON/OFF] key. Release the [ON/OFF] key first, then release the [ZERO] and [SET] keys at the same time to enter MODE 1. Press [ZERO] and E²ROM will be initialized and standard span coefficients will be written to RAM. The scale will automatically enter MODE 2.

Calling up MODE 2

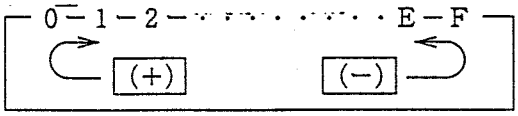
DISPLAY



A display other than Cn-0 may appear.

OPERATION

While holding down the ZERO and the COUNT keys at the same time, press the ON/OFF key. Release the ON/OFF key first, then release the ZERO and COUNT keys at the same time to enter MODE 2. (This is unnecessary if already in MODE 2.)



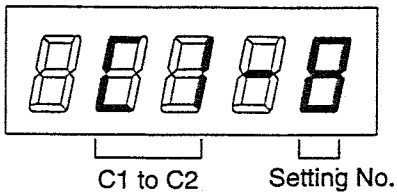
NOTE: Do not enter setting other than F.

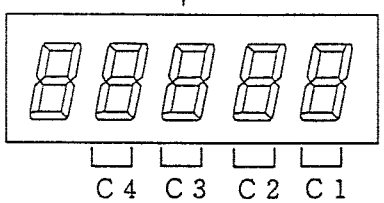
After model No. "F" is displayed, press the COUNT key, then enter specification settings C1 to C8. Refer to *Specification Settings* found in the Appendix for setting.

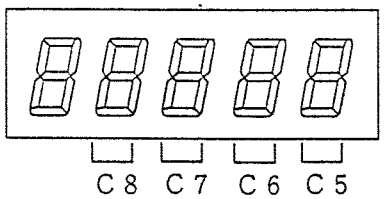
Procedure for C1 to C8 Settings

DISPLAY

Example: C1 is set to 8.



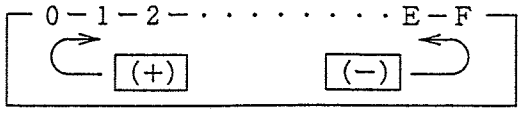




OPERATION

Performing settings for C1

1. Press either the [(+)] or [(–)] key to set C1 No. The display is as shown below:



Refer to Specification Settings for setting information.

2. After the setting number. is shown, press the [COUNT] key.
3. Repeat steps 1 and 2 to set C2 to C8.

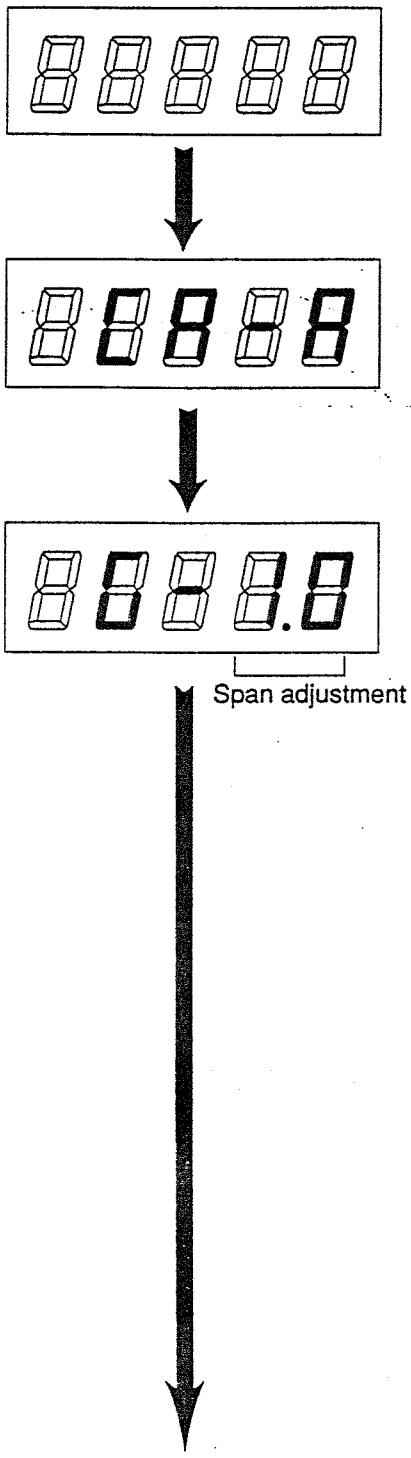
NOTE: Pressing the [COUNT] key will advance from C1 to C8. These items, however, cannot be displayed in reverse order. Example: switching from C8 to C7. To return to previous mode, the scale must be restarted. Repeat procedures for entering MODE 2 and adjust desired setting.

The display shows the settings for C1 to C4. After confirming that settings are correct, press the [COUNT] key to proceed to next confirmation.

The display shows the settings for C5 to C8. After confirming that settings are correct, press the [COUNT] key to proceed to MODE 3.

Procedure for Simple Span Adjustment

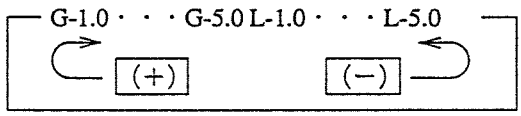
DISPLAY **OPERATION**



While holding down the [ZERO] and [TARE] keys a the same time, press the [ON/OFF] key. Release the [ON/OFF] key first, then release the [ZERO] and [TARE] keys to enter MODE 3. (This is unnecessary if already in MODE 3.)
Set to "9," and then press [COUNT] to proceed to Simple Span Adjustment mode.

Usually, it is necessary to have a weight equal to the scale's maximum weight capacity to perform span adjustment. However, span adjustment can be performed in this mode by substituting a lighter weight as a simple span weight
For greater precision, we recommend using a span weight equal to the scale's maximum weight capacity (G-10). **Table 1.1** shows the simple span adjustment.

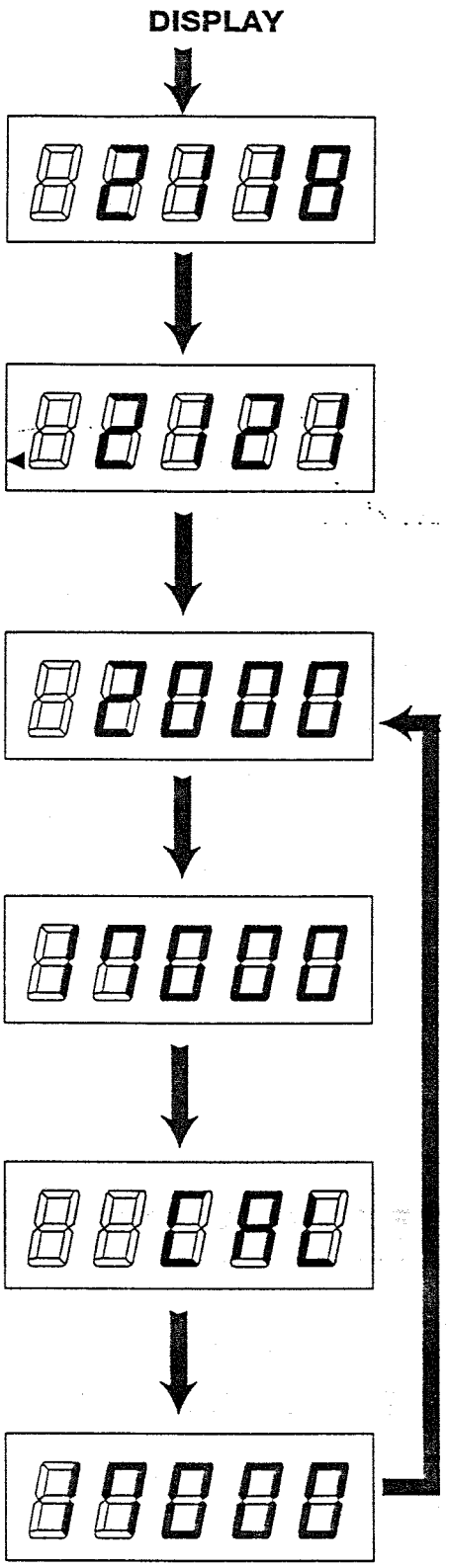
1. Press [(+)] or [(–)] to set desired number.



DISPLAY	SIMPLE SPAN WEIGHT	
	MTX-150 (300) W	MTX-30 (60) W
G-1.0	150 kg (300 lbs)	30 kg (60 lbs)
G-2.0	75 kg (150 lbs)	15 kg (30 lbs)
G-2.5	60 kg (120 lbs)	12 kg (24 lbs)
G-5.0	30 kg (60 lbs)	6 kg (12 lbs)

Table 1.1 Span mode settings

After setting mode, press the [COUNT] key, and proceed to A/D conversion data confirmation mode.



OPERATION

A/D conversion data is displayed. Confirm data and press the ZERO key to advance to next display.

The display expresses the value for the present zero point and A/D converter value. Since the A/D converter initial value was adjusted to 2000, the amount changed between the A/D converter inital value and present setting can be calculated by subtracting 2000. The difference in the case of 2121 would be a positive 121.

Press the ZERO key to advance to the next setting.

Performing Span Adjustment

Press the ZERO key for zero adjustment.

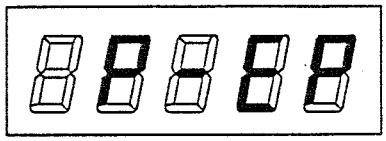
Place the span weight on the weigh platform. If using the simple span weight method, place item equal to the simple span weight on the weigh platform. The display will show 17000. Confirm that the display is stable and press the TARE key. CAL will appear on the display.

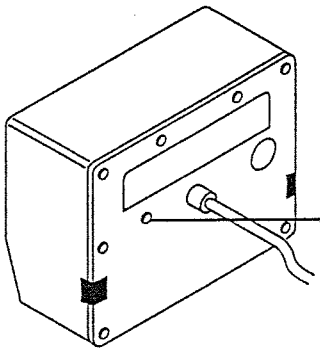
Span adjustment will be performed automatically. When completed, the display will advance.

After span adjustment is completed, 17000 appears. Remove the span weight and the display will show a number around 2000. Repeat adjustment until the zero point equals 2000 and the span adjustment equals 17000. This usually takes about three times to complete.

CAUTION!: In the case the displayed figure after automatic span adjustment is not close to 17000*, then the span adjustment must be manually entered. This can only be done in MODE 1.

When span adjustment is completed, span data needs to be written to E²ROM. Remove the seal from the back of the scale. Using a thin non-metalic rod, press the setting switch. While pressing the setting switch, P-EP will be displayed, and a beep will sound when data is saved to memory.





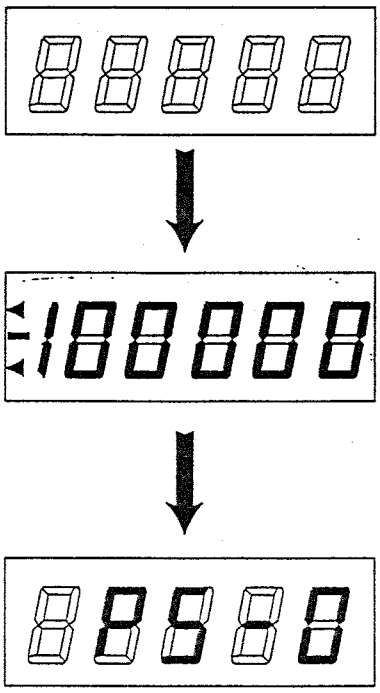
CAUTION!
Do not use a metallic object to press switch.

Sealing screw

EC specifications require a service seal.

6.2 CHECK MODE

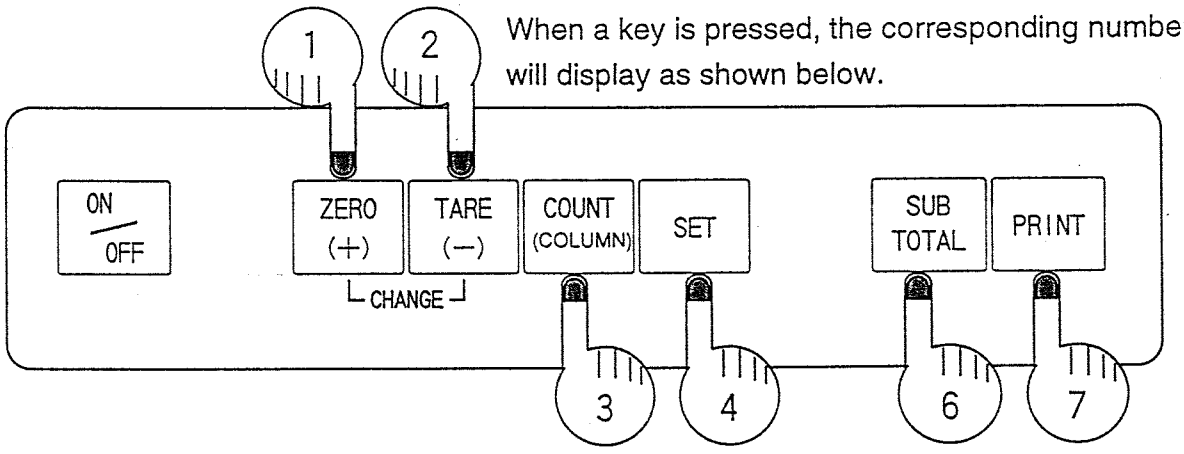
DISPLAY **OPERATION**



While holding the [COUNT] and [SET] keys, press the [ON/OFF] key.

All segments will light in sequence 0 to 9 and A to F.
The LED elements will light.
Check that all of the segments light properly.

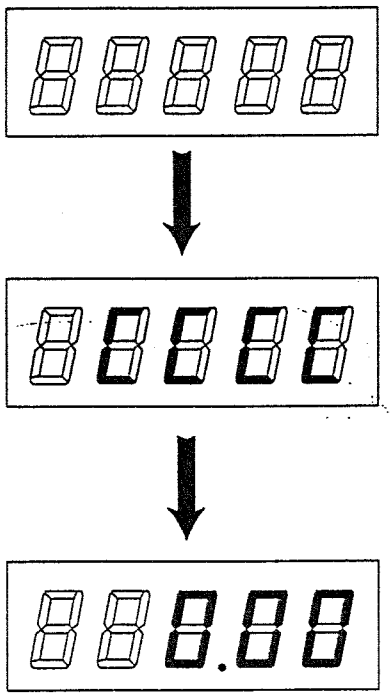
Check key input by pressing each key and confirming that the corresponding numerals (see below) are displayed



When a key is pressed, the corresponding number will display as shown below.

6.3 RAM CLEAR

DISPLAY



OPERATION

While holding down the [SET] key, press the [ON/OFF] key to execute RAM clear.

Executing RAM Clear

The display to the left shows that RAM clear is being executed. In RAM clear, the upper and lower limits, keyboard tare, and scale capacity return to initial settings. Settings entered in setting mode also return to initial settings.

When RAM clear is completed, the scale enters standard operating mode.

Troubleshooting 7

7.1 NOTHING APPEARS AFTER PRESSING ON/OFF:

(1) The 1 [A] fuse on the fuse board is burned out. (retail fuse: 250 [V] 1 [A])

CAUTION!: USA specifications require 125/250V UL standard 1A fuses. Europe uses IEC passed fuses.

(2) Faulty electrical cable: plug, bad connection, contact break, etc.,.

(3) Faulty transformer.

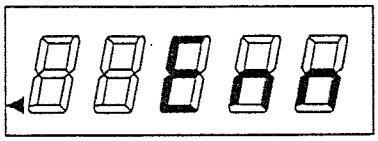
(4) Faulty CPU board (P-842)

* J1 jack is unplugged or has bad connection
* Faulty power switch circuit
* Faulty oscillator circuit
* Faulty reset circuit
* Faulty CPU (mPD75208)
* Faulty display element

(5) Faulty ON/OFF key

7.2 ERROR MESSAGE AFTER PRESSING ON/OFF:

* EEPROM aberration: re-register data and write to EEPROM.



Display error is shown above

7.3 FLASHING DISPLAY AND INOPERATIVE WEIGHING FUNCTION:

A/D converter is likely unstable for one of the following reasons:

* Cell cable is improperly soldered
* Faulty load cell
* Faulty amp circuit
* Faulty A/D converter (AK5545)
* +5V or +12V is unstable due to faulty voltage regulator.
* Object making contact with weighing unit

7.4 ABNORMAL ZERO POINT RETURN, WEIGHT, WEIGHING:

(1) Mechanical

* Unlevel weigh platform
* Affected by external vibration
* Object making contact with weigh platform, platform stand, or load cell

(2) Electrical

* Faulty load cell
* Faulty amp circuit
* Faulty A/D converter (AK 5545)

7.5 SPECIAL DECIMAL SEGMENT DOESN'T DISPLAY OR FLASHES:

(1) Faulty display lamp

(2) Faulty CPU (µPD75208)

(3) Faulty IC10

(4) Faulty TR1-6

7.6 INOPERATIVE KEY FUNCTION:

(1) Faulty key element

(2) Faulty CPU (µPD75208)

APPENDIX

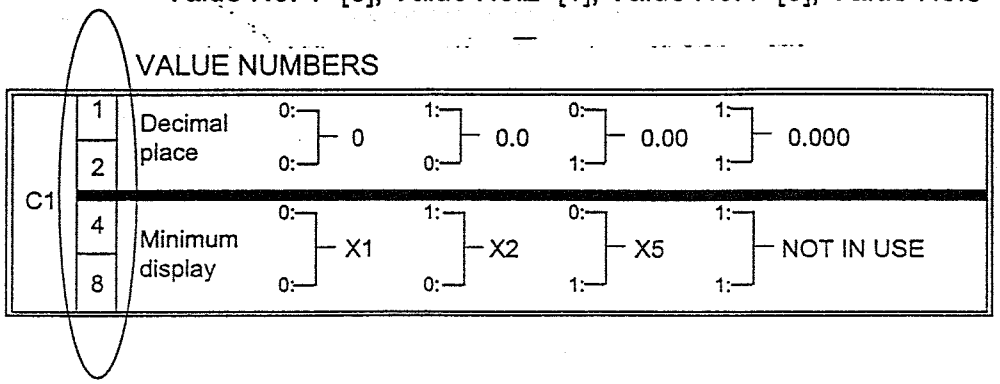
A-1 DETERMINING SPECIFICATION SETTINGS

This section gives an example of how to determine specification settings. Use this information as a reference when performing actual settings.

Example:

Follow the procedure below in order to set C1 to a decimal place of [0.00] and to a minimum display of [X5].

1. Look up the value numbers for the desired specifications on the specification setting table (next page).
   - •Values No.1 and No. 2 are used to set the decimal place for C1. Value No.4 and No. 8 are used to set minimum display.
   - •The specification setting table shows the following: Value No. 1=[0]; Value No.2=[1]; Value No.4=[0]; Value No.8=[1]



2. Convert the value numbers to the corresponding setting number by referring to the Setting Number Conversion Table below. (Each set ting number represents a diffferent combination of the four value numbers.)
   - •"A" represents the setting number derived from the combination above.

SETTING NUMBER CONVERSION TABLE

Value No.																
	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
	2	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
	4	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
	8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
SET NO.		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

3. Use the same procedure to convert the value numbers of C2 to C8 to their respective specification setting numbers.

NOTE: Since C2 does not have assigned value numbers, it is the only mode which shows the setting numbers directly.

A2 SPECIFICATION SETTING TABLE

Cn		Only F setting is possible with BWI-15
C1	1 2	Decimal place: 0: 0 / 1: 0.0 / 2: 0.00 / 3: 0.000
	4 8	Minimum display: 0: X1 / 1: X2 / 2: X5 / 3: NOT IN USE
C2		(0) 1/500 (1) 1/600 (2) 1/1000 (3) 1/1200 (4) 1/1500 (5) 1/2000 (6) 1/2500 (7) 1/3000 (8) 1/5000 (9) 1/6000 (A) 1/7500 (B) 1/10000 (C) 1/12000 (D) 1/15000 (E) & (F) not in use
C3	1	Zero point width — 0: 1/4 zero 1: 1/2 zero
	2	Zero point mark — 0: Provisional zero 1: True zero
	4	Below zero display — 0: Minus value 1: (----)
	8	Decimal point type — 0: "." 1: ","
C4	1	Overscale value — 0: 9d 1: 3d
	2	Overscale display — 0: Blank 1: "OL"
	4 8	Initial Start: 0: ±10000 / 1: ±5000 / 2: ±1500 / 3: ±500
C5	1	Tare subtraction — 0: Yes 1: No
	2	Tare wt. clear using zero key — 0: No 1: Yes
	4	Zero key input during tare — 0: Yes 1: No
	8	Tare setting by numeric entry — 0: No 1: Yes
C6	1	Zero tracking — 0: Strong 1: Weak
	2	Reserve
	4	Zero return function — 0: On 1: Off
	8	Switching mode — 0: Weigh ↔ Count 1: Kg ↔ Lb.
C7	1 2	Unit (Output Control): 0: Kg (Kg-lb) / 1: g / 2: Lb
	4	Printout — 0: Continuous 1: Separate
	8	Reserve
C8	1 2 4 8	Only 0 setting is possible with BWI-15

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