



Operation Manual

Model: DI-166

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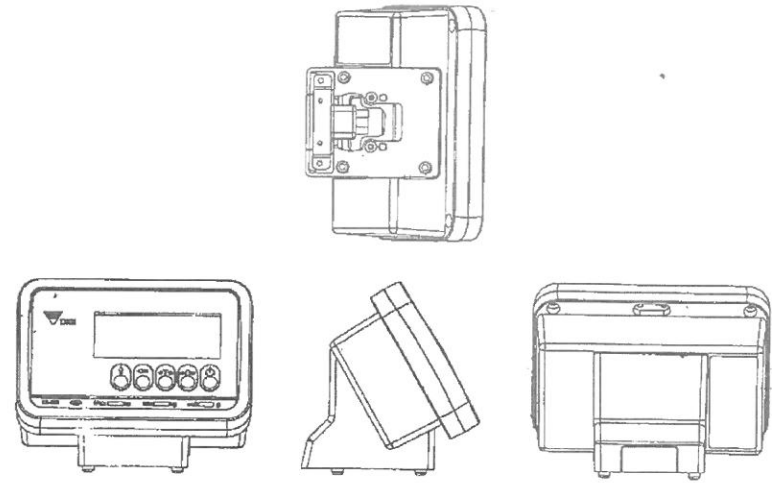
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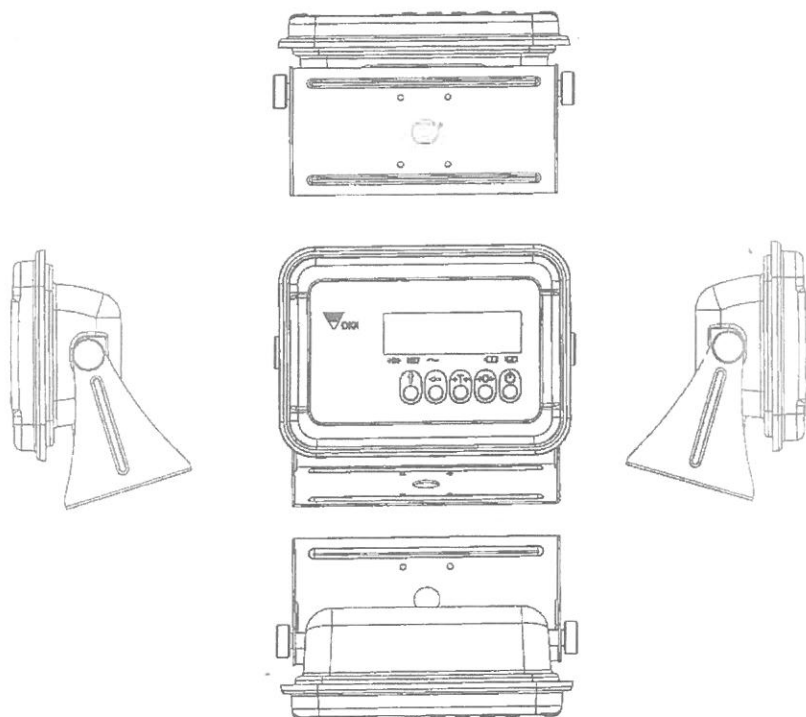
1. General Specification

1.1. General Layout

DI-166



DI-166SS



1.2. Features

- * Low cost digital indicator-
- * Quick response to weight changes-
- * Resolution : Display Resolution: variable
: Internal Resolution : 1/150,000-
- * Low power consumption : Rechargeable Battery backup for 60 hours (Backlight Off) 7 hours (Backlight On) of continuous usage -
- * Intelligent power control
 - A- When AC power is available, scale will use AC power only whatever rechargeable battery is installed or not-
When AC power is shut off, scale will use battery automatically-
 - B- When scale works on rechargeable battery, if the battery is weak, the battery indicator will light up-
When the power from battery becomes low such that the scale cannot compute accurately, all Displays will shut off except the Battery indicator- The power is then shut off completely after 1 minute-
 - C- Scale detects rechargeable battery voltage and control battery charge process automatically-
The battery charge indicator lights up when rechargeable battery is being charged-
- * Calibration by software-
- * 6 digits with 8 segments large size LCD Operator displays with backlight- (figure size: 23×10-9 mm)-
- * 5 operational keys:
UP; LEFT; TARE; ZERO; ON/OFF;
- * Stainless housing-
- * Protection degree: IP68-
- * One scale channels for remote weighing platforms connection -(14 pin Am phenol)
- * Support 4x load cells 350 Ohm-
- * Two set point(Hi/OK/Low)-
- * RS-232C interface for data communication-
- * External Remote Display-

1.3. Operating Conditions

- * Power Source : AC 240/230/220V, 117/100V(+10%,-15%)-
: Rechargeable battery (6V 1-2Ah)-
- * Operating Temperature : -10°C/14°F ~ +40°C/+104°F (OIML)-
- * Operating Humidity : 15 ~ 85% RH-
- * Power Consumption : 18W when using AC power-
: 0-72W when using rechargeable battery-

1.4. Charging Conditions (for Rechargeable battery only)

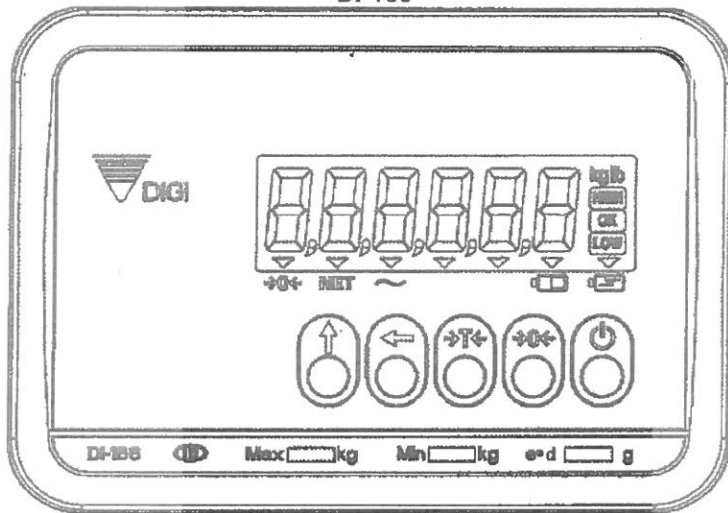
- * Power Source : AC 240/230/220V, 117/100V(+10%,-15%)-
- * Charge Current : 300mA-
- * Charge Time : 5 ~ 6 hours-

1.5. Analog Specification

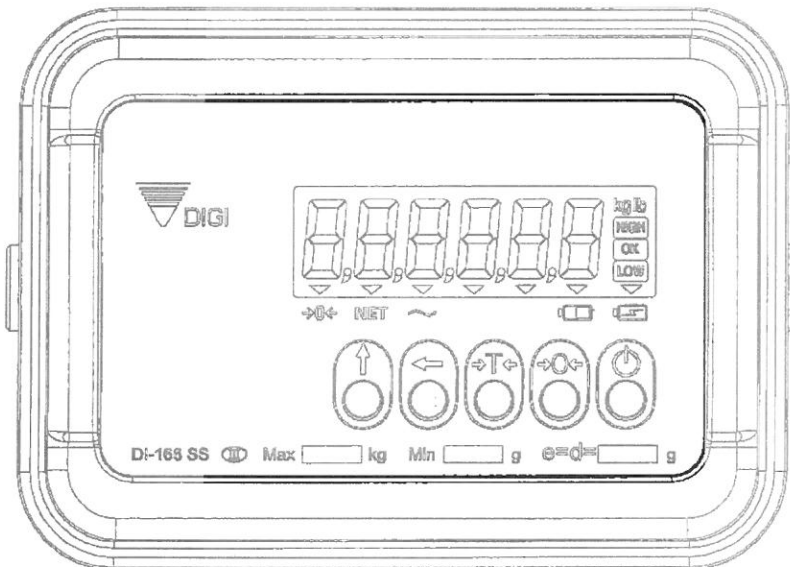
- * Input sensitivity : 0-4mV/V ~ 2mV/V-
- * Zero adjust range : 0 ± 5mV-
- * Zero balance range : 0 ± 0-5mV-
- * L/C applied voltage : DC 5V-
- * Speed of A/D conversion : 10times/sec-
- * Internal Resolution : 150,000-

1.6. Display and Indicators

DI-166



DI-166SS



1.6.1. Display Specifications

* Weight Display : 6 digits

1.6.2. Indicators



— sign on when current zero point is within 1/4d of true zero and true zero-



— sign on when tare weight is set-



— sign on when weight/scale is in stable condition-



— sign on when Battery is weak and needs to charge (only for rechargeable battery type)-



— sign on when Battery is charging (only for rechargeable battery type)-



— sign on when the display unit of weight is kg-



— sign on when the display unit of weight is lb-



— sign on when weight is high than setpoint2-



— sign on when weight is between setpoint1 and setpoint2



— sign on when weight is below setpoint1 and high than 1d-

1.7. Dimensions

* 220mm/8-7in (W) × 195mm/7-68in (H) × 85mm/3-35in (D)

1.8. External Connectors

- * AC plug-
- * Load cell connector-
- * RS-232C interface or Remote Display interface

2. Main Operation

[ON/OFF] -----To turn on or off the display-

[REZERO] -----To re-zero the scale-

[TARE] -----To set tare weight-

[←] -----To set digital tare weight value, /To shift the digital which to be edit-

[↑] -----To change weight unit, /To change numeric data for set-up mode-

2.1. ZERO Resetting

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE
Weighing mode-		0-0 0 0	▼		▼
Put tare (e-g- 3 g) on platter		0-0 0 3			▼
Zero resetting-	[REZERO]	888888			▼
		0-0 0 0	▼		▼
Remove the weight		-0-0 03			▼
Zero resetting-	[REZERO]	888888			▼
		0-0 0 0	▼		▼

Note: 1) If the weight is within the available range of zero resetting, the display will return to 0-
If it is out of the range, the weight will remain in the display, the buzzer will beep alarm-

2.2. One-touch Tare Weight Reduction

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE
Weighing mode-		0-0 0 0	▼		▼
Put tare (e-g- 30 g) on platter		0-0 3 0			▼
Subtract the tare weight-	[TARE]	0-0 0 0		▼	▼
Remove the weight		-0-0 3 0	▼	▼	▼
Clear the tare weight-	[TARE]	0-0 0 0	▼		▼

Note: 1) If the tare weight is within the available range of tare reduction, the display will return to 0 and NET lamp will light
up -
If it is out of the range, the weight will remain in the display, the buzzer will beep alarm-

2.3. Digital Tare Weight Reduction

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE
Weighing mode-		0-0 0 0	▼		▼
Press [←] to shift a digit to where tare weight to be set-	[←]	0-0 0 0	▼		▼
Digit to set the tare will blink-					
Press [↑] to input the weight-	[↑]	0-0 0 1	▼		▼
Each time [↑] is pressed, the figure will advance 1 only-					
Repeat step # 1 and # 2 until desired tare weight is set at each digit-		0-0 3 5	▼		▼
Set the tare weight-	[TARE]	-0-0 3 5	▼	▼	▼
Clear the tare weight-	[TARE]	0-0 0 0	▼		▼

Note: 1) If the tare weight is within the available range of tare reduction, the display will return to 0 and NET lamp will light
up -
If it is out of the range, the weight will remain in the display, the buzzer will beep alarm-

2.4. Change Weight unit

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE	
Weighing mode-		0-0 0 0	▼		▼	kg
Put tare (e-g- 400 g) on platter		0-4 0 0			▼	kg
Press [↑] to shift weight unit alternately between kg and lb-	[↑]	0-8 8 0			▼	lb
Return to kg mode	[↑]	0-4 0 0			▼	kg
Remove the weight		0-0 0 0	▼		▼	kg

2.5. SPAN SW ON/OFF Check

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE	
Weighing mode-		0-0 0 0	▼		▼	kg
Press [REZERO]	[REZERO]	8 8 8 8 8 8				
Press [T][←][←] by holding [REZERO]	[REZERO]+	STEA0				
Displays software code for 2 seconds-	[T][←][←]					
If the SPAN SW is at off status, it will display "S-OFF"-		S-OFF				
If the SPAN SW is at on status, it will display "S-ON"-		S-ON				
Returns to weight mode after 3 seconds-		0-0 0 0	▼		▼	kg

2.6. Internal Count Display

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE	
Weighing mode-		0-0 0 0	▼		▼	kg
Press [REZERO]	[REZERO]	8 8 8 8 8 8				
Press [←][←][T] by holding [REZERO]	[REZERO]+					
To display A / D row data	[←][←][T]	1,2,0,2,3,4				
Press [↑] key-						
To display internal Count,		1-0-0-0-0-0				
Press [↑] key-						
To display A / D row data-		1,2,0,2,3,4				
Press [T] key returns to weight mode-	[T]	0-0 0 0	▼		▼	kg

2.7. SPEC's Data Setting for Weigh & Measure

Turn on the SPAN SW- (JP1 on Main Board-)

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE	
Weighing mode-		0-0 0 0	▼		▼	kg
Press [REZERO]	[REZERO]	8 8 8 8 8 8				
Press [←] 3 times by holding [REZERO]	[REZERO]+	SPO0/ 1 1 0 0				
SP No- and SP data alternately display	[←][←][←]					
Press [←] to shift a digit to where SPEC data to be set-	[←]	1 1 0 0				
Digit to set the SPEC will blink-						
Press [↑] to select SPEC set-	[↑]	1 1 1 0				
Each time [↑] is pressed, the figure will shift between 1 and 0-						
Press [REZERO] to save SPEC change-	[REZERO]	SP01/ 0 0 0 0				
Press [TARE] to store the SPEC setting and exit to weight mode		0-0 0 0	▼		▼	kg

Note:1) Press [TARE] key to go back to weighing mode without save change-

2)As introduced at the previous section, there are 2 kinds of key-operation when entering SPEC setting mode-

a - [REZERO] + [T] [T] [T] ----- for SPEC No-0-No-19

b - [REZERO] + [←] [←] [←] -----for SPEC No-20-No-29

When SPEC setting operation , the following display will appear-

Bit3 Bit2 Bit1 Bit0

1	1	0	0
---	---	---	---

SPEC data

*The SPEC No- such as "SP01" and SPEC data such as "1100" alternately display at start-

*After any key is pressed, it stop alternately display-

*The blinking digit indicates the current programmable position-

When setting or changing SPEC data, key switches function are as follows-

[REZERO] -----SPEC No- skips each time this key is pressed-

[T] ----- To renew the data and exit this mode-

[←] ----- To move digit position- The blinking position will move to next digit-

[↑] ----- To change SPEC data to either "0" or "1".

From the next page, the SPEC data list is attached so that you can set/change the data according to your requirement-

2.8. Weight Calibration (SPAN Adjustment)

Turn on the SPAN SW- (JP1 on Main Board-)

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE	
Weighing mode-		0-0 0 0	▼		▼	kg
Press [REZERO]	[REZERO]	8 8 8 8 8 8				
Press [←] [T] [T] by holding [REZERO]	[REZERO]+	CAL				
"G0" and "9-7946" alternately display	[←][T][T]					
Move the position to edit G by press [←]-	[←][←][←][←]	G0 / 9-7 9 4 6				
Select the G value at the blink digit by press [↑]-	[↑][↑][↑][↑][↑]	9- 0 0 0 0				
Press [REZERO] to save setting and exit to next step-	[REZERO]	DP / 0 0 0 0 0-0				
"DP" and "00000-0" alternately display						
Change the position of Decimal Point by press [←]-	[←][←]	0 0 0-0 0 0				
Press [REZERO] to save setting and exit to next step-	[REZERO]	CAP1 / 0 0 0- 0 0 0				
Move the position to edit capacity by press [←]-	[←][←][←][←]	0 0 0- 0 0 0				
Select the capacity weight at the blink digit by press [↑]-	[↑][↑]	0 2 0- 0 0 0				
Press [REZERO] to save setting and exit to next step-	[REZERO]	d1 / 1				
Press [↑]to select set minimum display figure-	[↑][↑]	5				
Press [REZERO] to save setting and exit to next step-	[REZERO]	CAP2 / 0 0 0- 0 0 0				
Move the position to edit according to capacity by[←]-	[←][←][←][←]	0 0 0- 0 0 0				
Enter the capacity weight at the blink digit by press [↑]-	[↑]	0 1 0- 0 0 0				
Press [REZERO] to save setting and exit to next step-	[REZERO]	d2 / 1				
Press [↑] to select set minimum display figure-		2				
Press [REZERO] to save setting and exit to next step-	[REZERO]	UNIT / kg				kg
Select weight unit by press [↑]-						
Press [REZERO] to save setting and exit to next step-	[REZERO]	CAL00				kg
Press [REZERO] to insure the zero point-	[REZERO]	-----				kg
Put weight (e-g- 10kg) on platter-						
Enter the weight which is used to calibrate by taking the same steps as above-						
Press [REZERO] to take SPAN calibration-	[REZERO]	-----				kg
Return to weight mode-		1 0-0 0 0			▼	kg

Note:1): G value entry may be skipped if G calibration inhibit (depends on SPEC22 bit1)-

9-79476 is the default G value of Shanghai-

2): If calibrate with FS weight, skip enter weight by press [REZERO], the default calibration weight is FS-

3): You had better use more than 1/3 capacity weight to calibrate the full SPAN- If using less 30 % of capacity weight, weight error may be created Incidentally-

4): Check to see if the displayed weight is correct when placing 1 / 3, 2 / 3, and full capacity weight-

2.9. G Calibration (Gravity Adjustment)

Turn on the SPAN SW- (JP1 on Main Board-)

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE	
Weighing mode-		9-000			▼	kg
Press [REZERO]	[REZERO]	8 8 8 8 8 8				
Press [←][T][↑] by holding [REZERO]	[REZERO]+ [←][T][↑]	G1/ 0-0 0 0 0				
"G1" and "0-0000" alternately display		G1/ 0-0 0 0 0				
Move the position to edit G by press [←]-	[←][←][←][←]	0- 0 0 0 0				
Select the G value at the blink digit by press [↑]-	[↑][↑][↑][↑][↑]	8- 0 0 0 0				
Press [REZERO] to calibration and exit to weight mode-	[↑][↑]	8-0 0 0			▼	kg

Note: This function depends on SPEC22 bit1-

2.10. Set point Set

OPERATION	Key-in	WEIGHT	ZERO	NET	STABLE	
Weighing mode-		0-0000			▼	kg
Press [REZERO]	[REZERO]	8 8 8 8 8 8				
Press [↑][↑][↑] by holding [REZERO]	[REZERO]+ [↑][↑][↑]	SPT1/ 0 0-0 0 0 0				
Move the position to edit according to capacity by[←]-	[←][←][←]	0 0-0 0 0 0				
Enter the setpoint1 weight at the blink digit by press [↑]-	[↑][↑]	0 0-2 0 0 0				
Press [REZERO] to next step-	[REZERO]	SPT2/0 0 0- 0 0 0				
Move the position to edit according to capacity by[←]-	[←][←][←][←]	0 0-0 0 0 0				
Enter the capacity weight at the blink digit by press [↑]-	[↑]	0 1-0 0 0 0				
Press [REZERO] to save setting and return to weight-	[REZERO]	0-0000				kg
Put weight (e-g- 0-1kg) on platter-		0-1000				kg LOW
Add weight (e-g- 0-2kg) on platter-		0-3000				kg OK
Add weight (e-g- 0-8kg) on platter-		1-1000				kg HIGH
Remove the weight on platter-		0-0000				kg

Note: This function depends on SPEC2 bit0-

2.11.Operational Specification List

For The Customer - (1 4 1)

SPEC NO	BIT 3	BIT 2	BIT 1	BIT 0
0	Auto Power-off function (for no key operation & weigh operation) 0000 - Auto power-off disable when scale is not in use 0001 - 3 minute 0010 - 10 minutes 0011 - 30 minutes 0100 - 1 hour 0101 - 3 hours 0110 ~ 1111 - Not used			
1	Buzzer 0 - On 1 - Off	Error alarm 0 - On 1 - Off	Set point alarm 0 - On 1 - Off	
2	Control of LCD Backlight 0 0 - Auto 0 1 - Always on 1 0 - Always off 1 1 - Not used		Auto Back-Light Interval 0 - 6s 1 - 15s	Set point type 0 - % Weight 1 - Weight
3	RTS/CTS handshaking of RS-232C 0 - On 1 - Off	Baud rate of RS-232C 000 - 1200 bps 001 - 2400 bps 010 - 4800 bps 011 - 9600 bps	100 - 19200 bps 101 - Not used 110 - Not used 111 - Not used	
4	Stop bit of RS-232C 0 - 1 bit 1 - 2 bit	Data length of RS-232C 0 - 7 bit 1 - 8 bit	Parity of RS-232C 00 - None 01 - Odd 10 - Even 11 - Not used	
5	RS-232C PC protocol 0000 - Inhibit data transfer 0001 - Standard stream type (Continuous output) 0010 - Standard manual type 0011 - Standard command type 0100 - type M (Checkout-Dialog 02/04) 0101 - type P (Checkout-Dialog 06) 0110 ~ 1011 not used 1100 - Printer GP460Pro 1101 - Printer LP2844 1110 - Printer GP460R or LableDoctor 1111 - Printer EPSON TM-U220			
6	Interval of time out error of RS-232C 00 - 1 second 01 - 3 second 10 - 5 second 11 - 10 second		Transmission condition of RS-232C 0 - Weight stable 1 - Unconditional	Additional parity code in text of RS-232C 0 - No 1 - Yes

SPEC NO	BIT 3	BIT 2	BIT 1	BIT 0
7	Tare weight in text of RS-232C 0 - No 1 - Yes	Scale No. in text of RS-232C 0 - No 1 - Yes	Header Code in text of RS-232C 0 - No 1 - Yes	Weight range of data output 0 - Always 1 - Over 20e
8	Key operation for tare in POS-weight-mode. (for checkout Dialog02/04 and Dialog 06 only.) 0 - Allow 1 - Inhibit	Calculate and check CS, KW validly. (for checkout Dialog 06 only.) 0 - No 1 - Yes	STATUS data in text of RS-232C 0 - No 1 - Yes	Weight unit after net weight and tare weight in the text of RS-232C 0 - Allow 1 - Inhibit
9		Total weight printing when weight is zero 0 - Inhibit 1 - Allow	Sending default format to the LP2844 or GP460Pro 0 - Inhibit 1 - Allow	
10		External printer print format for LP2844 or GP460Pro 000 - Default Format 001 - Customer Format 1 010 - Customer Format 2 011 - Customer Format 3 100 - Customer Format 4 101 - Customer Format 5 110 - Customer Format 6 111 - Customer Format 7		
11				

For Weight & Measure - (1 4 2)

NOTE: It can only work when the SPAN Switch is on (Enable)

SPEC NO	BIT 3	BIT 2	BIT 1	BIT 0
20	Version display when power on 0 - Allow 1 - Inhibit	Type of Decimal point 0 - ,(Standard) 1 - ,(Europe)	Start range 00 - ±10% F.S. 01 - ±20% F.S. 10 - ±50% F.S. 11 - ±100% F.S.	
21	Negative weight display mask 0 - Minus gross > 9e 1 - Minus gross Weight	Re-call Last zero data 0 - Allow 1 - Inhibit	GAIN 00 - 64 /* 1.1~2mV/V */ 01 - 128 /* 0.4~1mV/V */ 10 ~ 11 - Not used	
22	Weight stability condition 00 - Loose 01 - Normal 10 - Tight 11 - Stringent		G Calibration 0 - Allow 1 - Inhibit	IR mode protected by SPAN SW 0 - NO 1 - YES
23	Manual tare cancellation 0 - Allow 1 - Inhibit	Tare subtraction 0 - Allow 1 - Inhibit	Tare accumulation 0 - Allow 1 - Inhibit	Auto tare clear when rezero 0 - Allow 1 - Inhibit
24	Digital tare 0 - Allow 1 - Inhibit	Priority of Tare Operation 0 - One Touch Tare Priority 1 - Digit Tare Priority	Zero tracking when tare 0 - Allow 1 - Inhibit	Weight reset when tare 0 - Allow 1 - Inhibit

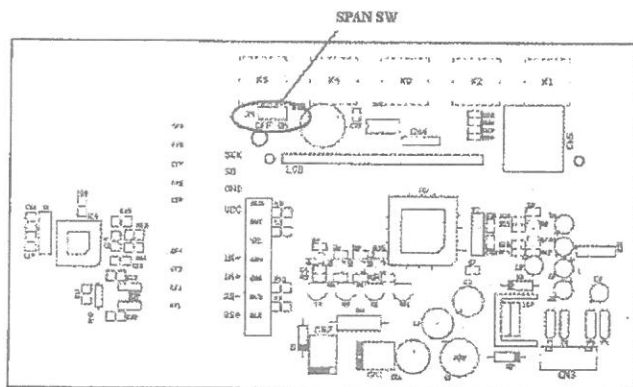
SPEC NO	BIT 3	BIT 2	BIT 1	BIT 0
25	Tare auto clear 0 - Allow 1 - Inhibit	Auto clear condition 0 - >= Gross 21e & >= Net 5e 1 - >= Net 1e & Price not 0 (Remote display version set to 1 only)	Unit price auto clear 0 - Allow 1 - Inhibit	Animal Mode 0 - Allow 1 - Inhibit
26	Decimal point position on unit price and total price display 00 - No decimal point for Unit & Total Price 01 - 2nd digit (0000.0) for Unit, 2nd digit (00000.0) for Total Price 10 - 3rd digit (000.00) for Unit, 3rd digit (0000.00) for Total Price 11 - 4th digit (00.000) for Unit, 4th digit (000.000) for Total Price		Rounding for total price 00 - Rounding 01 - Truncation 10 - Cut up 11 - Not used	

SPEC NO	BIT 3	BIT 2	BIT 1	BIT 0
27	Weight change or remove check of data output 0 - Change 1 - Remove	Additional rounding for total price 000 - No additional rounding 001 - 1/4 rounding (25 step) 010 - Special rounding (5 step) 011 - 5 floor rounding (0-4 -> 0, 5-9 -> 5) 100 - Rounding for 1 st digit 101 - Truncate 1 st digit 110 - Cut up 1 st digit 111 - Not used		
28	UP key function 0 - Weight unit convert 1 - Data send	Re-zero function 0 - Allow 1 - Inhibit	Re-Zero range 00 - ±2% F.S. 01 - ±4% F.S. 10 - ±10% F.S. 11 - ±100% F.S.	
29				

3. Quick Maintenance Operation Table

Key Operation	Functions	Display
*Internal Count Display	[REZERO] + [◀][▶][T]	*Refer to 15-6-
*SPAN Adjustment	[REZERO] + [◀][T][▶]	*Refer to 15-8-
SPEC Setting for # 00- # 19)To set SPEC141 data	[REZERO] + [T][▶][▶]	*Refer to 15-7
*SPEC Setting for # 20- # 30)To set SPEC142 data	[REZERO] + [◀][▶][▶]	*Refer to 15-7
SPAN SW ON/OFF Check	[REZERO] + [▶][▶][▶]	*Refer to 15-5
Set Point Set	[REZERO] + [▶][▶][▶]	*Refer to 15-10
*G SPAN Adjustment	[REZERO] + [◀][▶][▶]	*Refer to 15-9

Note: Key operation with mark * is required to set SPAN SW to ON-



4. Error Message Display

ERROR	Probable Cause	Remedy
8 8 8 8 8 (Lock-up)	Zero-point is out of range-	Need to re-calibrate the scale-
O F	When displayed weight exceeded capacity+9d, or something is on the platter when power on-	Remove the item on the platter-
U F	When displayed minus weight >= 9d-	REZERO or ON/OFF again-