



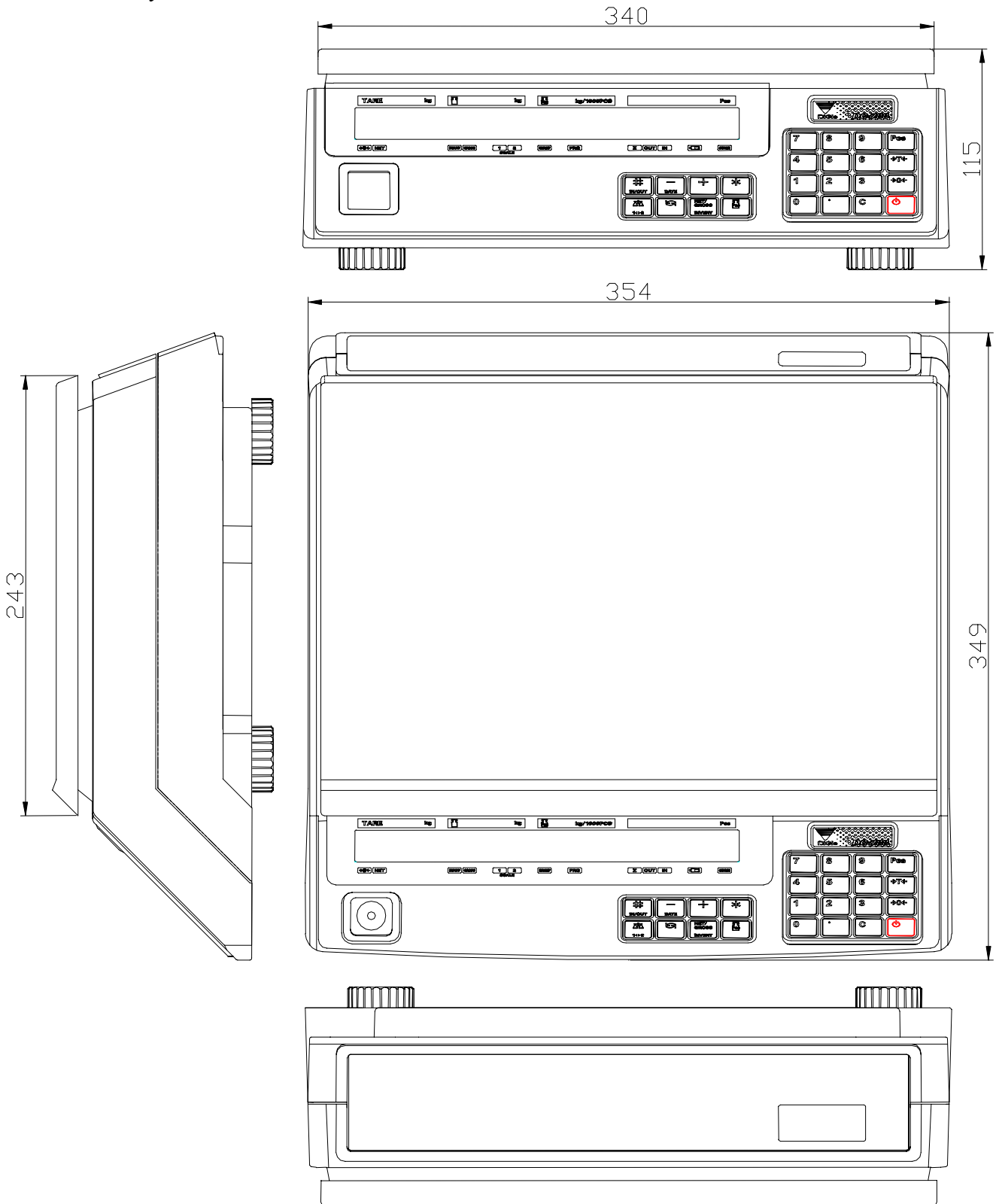
Operation Manual for DC-788

Prepared : 8 July 2003
1st Amendment: : 11 November 2004

1. General Layout	4
2. Purpose	5
3. Features.....	5
4. Operating Conditions	5
5. Charging Conditions (for Rechargeable battery only).....	5
7. Display and Indicators.....	6
7.1. Display Specifications.....	6
7.2. Indicators.....	6
8. Dimensions	6
9. External Connectors	7
10. Main Components	7
11. Existing parts to be used.....	7
12. Keysheet Layout.....	8
13. Key Functions.....	8
14. Notable differences from current Teraoka scales:	9
15. Block Diagram of Electrical Connection	9
16. Physical layout of Electrical Connection	10
17. Hardware Description.....	11
17.1. Microcomputer.....	11
17.2. Pin Assignment.....	11
18. Maintenance Mode	Error! Bookmark not defined.
18.1. SPAN Adjustment.....	Error! Bookmark not defined.
18.2. Escape from Maintenance mode	Error! Bookmark not defined.
18.3. Specification Setting	Error! Bookmark not defined.
18.3.1. Specification Enter (141).....	Error! Bookmark not defined.
18.3.2. Specification Enter (142).....	Error! Bookmark not defined.
18.4. Internal Count & A/D Count Display	Error! Bookmark not defined.
18.5. Operational Specification List	Error! Bookmark not defined.
19. Operations In Weighing Mode.....	13
19.1. ON/OFF	13
19.2. Tare Subtraction.....	13
19.2.1. One Touch Tare Subtraction	13
19.2.2. Digital Tare Subtraction	13
19.3. Unit Weight Entry Operation.....	13
19.3.1. By Sampling.....	13
19.3.2. Digital Unit Weight Operation.....	14
19.4. Insufficient Sampling Weight Operation	14
19.4.1. Add Samples	14
19.4.2. Adopt Suggestion	14
19.4.3. Ignore Suggestion.....	14
19.5. Parts Counting Operation.....	15
19.5.1. Single Counting Operation.....	15
19.5.3. Negative Counting Function	15
19.6. Net/Gross Operation	16
19.7. Item Code Call Up	17
19.7.1. Recall Numeric Item Code.....	17
19.7.2. Recall Alphanumeric Item Code	17
Memory Field of Item Code.....	17

20. Operations In Program Mode	18
20.1. Program Item Code	18
20.2. Delete Item Code in Memory.....	19
20.2.1. Delete a Certain Item Code	19
20.2.2. Delete all Item Code.....	19
20.2.3. Delete all Inventory Value from Memory	19
20.2.4. Delete all Unit Weight Value from Memory.....	19
20.2.5. Delete all Tare Weight Value from Memory	20
20.2.6. Delete all Parts Numbers from Memory	20
20.2.7. Delete all Setpoint Data from Memory	20
20.2.8. Delete all Parts Name from Memory	20
20.2.9. Reset Sequence Number to 0.....	21
20.3. Review Item Code.....	21
20.4. Program Setpoint to Operate all Items	21
20.5. Date and Time	21

1. General Layout



2. Purpose

To develop a low cost LCD display counting scale which caters to OIML, UL, EU Standard and meets requirement of major customers.

3. Features

- * Low cost counting scale.
- * Quick response to weight changes.
- * Capacity : 500g; 1kg; 2.5kg; 5kg; 10kg; 25kg; 50kg
- * Resolution : Display Resolution 1/10,000.
Internal Resolution 1/1000,000.
- * Rechargeable Battery backup for 24 hours of continuous usage (optional).
- * 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 can not 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.
- * Water proof keyboard and splash proof housing.
- * 24 switch keys
 - ON/OFF key.
 - 10 Numeric keys.
 - 13 Operational keys.
- * Large platter : 340 x 243 mm.
- * Plastic housing.
- * 25 digits with 19 segments Back-light LCD Operator displays.
- * RS-232C interface for data communication and printer connection.
 - Gross Weight, Tare Weight, Net Weight, Unit Weight, Count, PLU code, Product Description, Product Lot No., Accumulated count.
- * Two scale channels, one for built-in platform, another for remote platform.
- * External printer connectible (RS-232C)
 - Label printer : DIGI GP-460R
 - Bar code printer : ZEBRA LP-2844
 - Receipt printer : EPSON TM-U200
- * 100 PLU, each PLU consists of Unit Weight, Tare Weight, Product Description(32 characters), Product Lot No. (32 characters), Set point(Hi/OK/Low).

4. Operating Conditions

- * Power Source : AC 240/230/220V, 117/100V.
: DC 6V 5Ah rechargeable battery (optional).
- * Operating Temperature : -10°C ~ +40°C (OIML).
- * Operating Humidity : 15 ~ 85% RH.
- * Power Consumption : 18W when using AC power.
: 1W when using rechargeable battery.

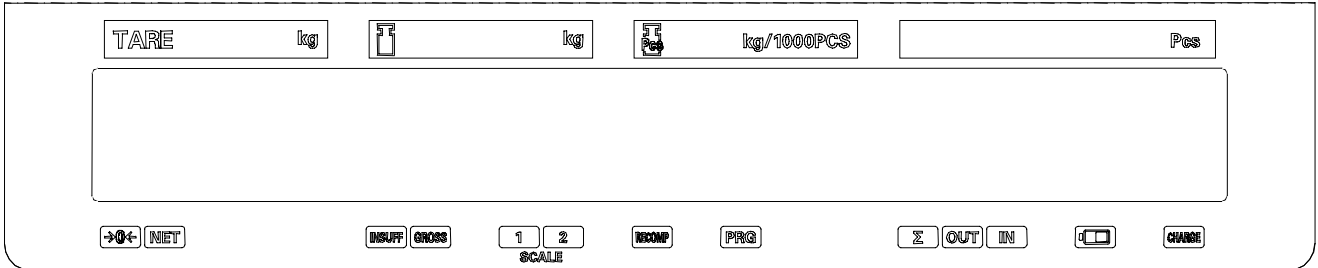
5. Charging Conditions (for Rechargeable battery only)

- * Power Source : AC 240/230/220V, 117/100V.
- * Charge Current : 800 mA.
- * Charge Time : 8 - 10 hours.

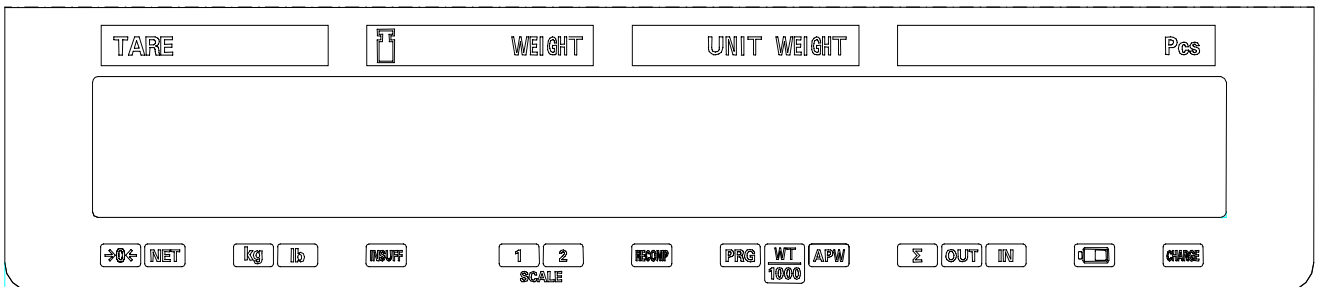
6. Analog Specification

- * Input sensitivity : 1mV/V.
- * Zero adjust range : $0 \pm 5\text{mV}$.
- * Zero balance range : $0 \pm 0.5\text{mV}$.
- * L/C applied voltage : DC 5V.
- * Speed of A/D conversion : 30 times/sec.
- * Internal Resolution : 1000,000.

7. Display and Indicators



Type A(Standard type with NET/GROSS shift function)



Type B(Special type with kg/lb shift function)

Type B(Special type with WT/100 or APW function)

7.1. Display Specifications

- * Tare Weight Display : 5 digits.
- * Weight Display : 5 digits.
- * Unit Weight Display : 5 digits.
- * Quantity Display : 7 digits.

7.2. Indicators

- * ZERO : On when zero point is adjusted and weight is stable.
- * NET : On when tare subtraction is performed.
- * kg : On when the item is weighed in kg unit with [kg/lb] key pressed. **(type B version only)**
- * lb : On when the item is weighed in lb unit with [kg/lb] key pressed. **(type B version only)**
- * INSUFF : On when the net weight is below a specific percentage of capacity weight.
- * GROSS : On when [Gross/Net] key is pressed. **(type A version only)**
- * SCALE1 : On when the scale 1 is in use.
- * SCALE2 : On when the scale 2 is in use.
- * RECOMP : On when unit weight recomputing is enable.
- * PROG : On when in the programming mode.
- * WT/1000 : On when the display unit weight is 1000PCS base. **(type B version only)**
- * APW : On when the display unit weight is one PCS base. **(type B version only)**
- * Σ : On when quantity is accumulating.
- * OUT : On when remove a quantity of parts to item inventory.
- * IN : On when add a quantity of parts to item inventory.
- * BATT : On when Battery is weak and needs to charge (only for rechargeable battery type).
- * CHARGE : On when Battery is charging (only for rechargeable battery type)..

8. Dimensions

- * Platter size : 340 x 243 mm.
- * Overall size : 354 x 349 x 115 mm.

9. External Connectors

- * AC receptacle.
- * RS-232C interface.
- * 14 pin femal amphenol for external loadcell

10. Main Components

- * Microcomputer : Hitachi HD64F73687(56K Flash) / HD64F3684(32K Flash) / HD6433687(56K ROM) / HD6433686(48K ROM) ./ HD6433685(40K ROM) / HD6433684(32K ROM) / HD6433683(23K ROM)
- * Crystal Oscillator : 10 MHz.
- * Display device : Back-light LCD.
- * Loadcell : Sensitivity 1~3mV/V

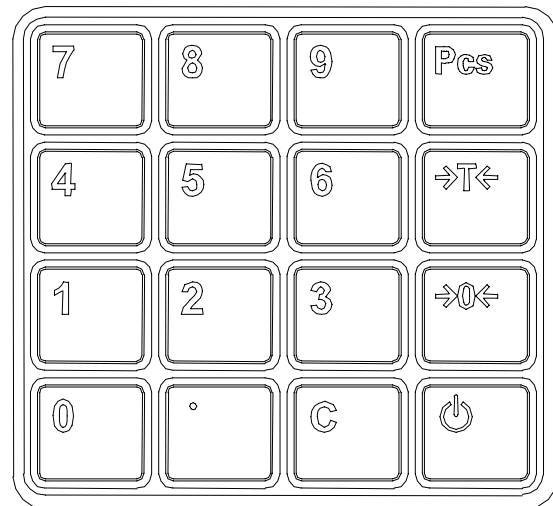
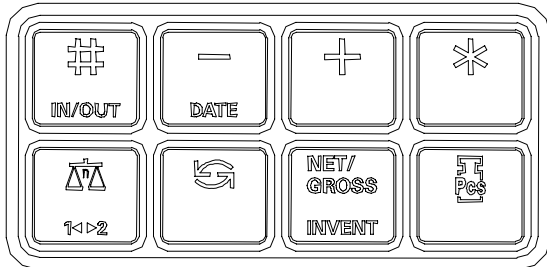
11. Existing parts to be used

- * P type Loadcell (DS-788).
- * Back-lightLCD(SM-100).
- * Housing and Mechanical Blocks (DS-788).

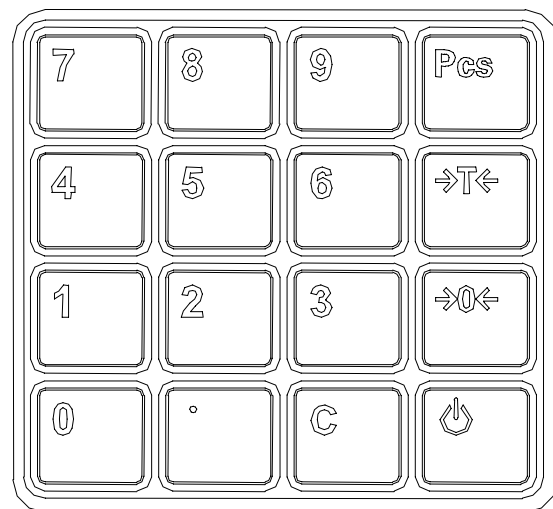
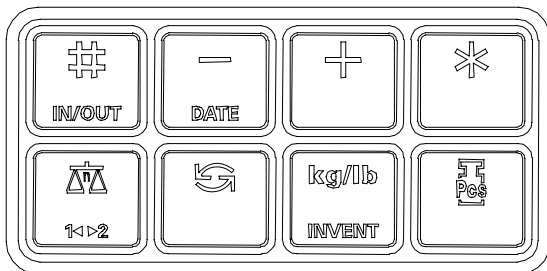
12. Capacity/Minimum Graduation/Tare range

Capacity	Minimum Graduation	Tare Rang
500g	0.1g (1e = 200IR)	0 - 249.9g
1kg	0.2g (1e = 200IR)	0 - 0.4998kg
2.5kg	0.5g (1e = 200IR)	0 - 0.9995kg
5kg	1g (1e = 200IR)	0 - 0.999kg
10kg	2g (1e = 200IR)	0 - 9.998kg
25kg	5g (1e = 200IR)	0 - 9.995kg
1lb	0.0001 lb (1e = 100IR)	0 - 0.4999 lb
2 lb	0.0002 lb (1e = 100IR)	0 - 0.9998 lb
5 lb	0.0005 lb (1e = 100IR)	0 - 0.9995 lb
10 lb	0.001 lb (1e = 100IR)	0 - 9.999 lb
20 lb	0.002 lb (1e = 100IR)	0 - 9.998 lb
50 lb	0.005 lb (1e = 100IR)	0 - 9.995 lb

12. Keysheet Layout




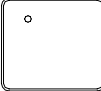













Type A



Type B

13. Key Functions

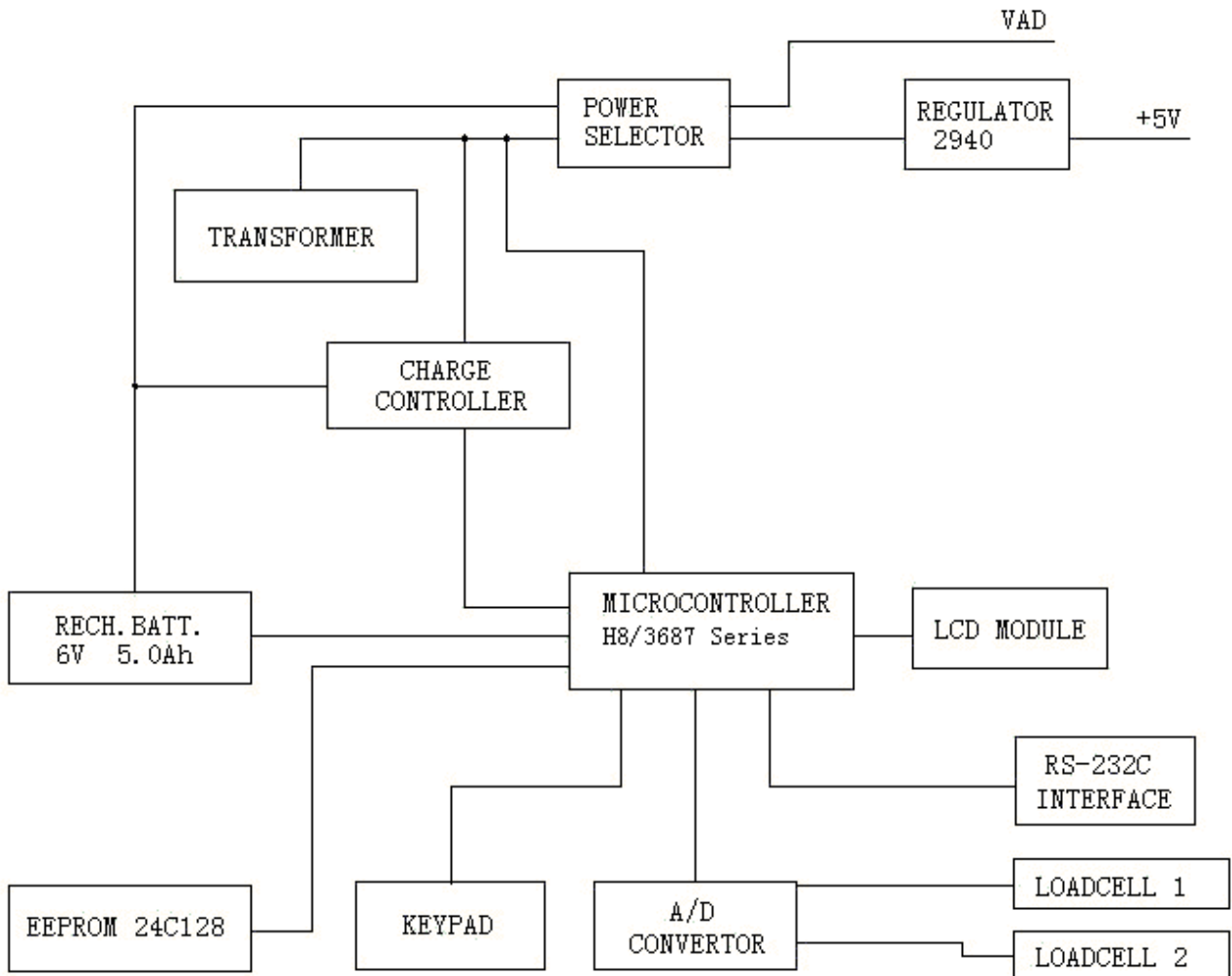
		: ON/OFF key. Turn the power ON or OFF.
 to 		: Numeric keys. Input numerical value.
		: Decimal Point key. Set decimal point.
		: CLEAR key. Clear numerical values.
		: Sampling key. Used for computing unit weight by sampling.
		: TARE key. Set or clear tare value.
		: RE-ZERO key. Resets weight display to zero.
		: PLU CODE key. Used to call out PLU data.

 DATE	: MINUS key. Correct operation on products.
	: PLUS key. Used for accumulation.
	: Data Setting key. Set up SPEC data or clear TOTAL data.
 1<>2	:Select 1 st Scale or 2 nd Scale
	: MODE SET key. Used to enter programming mode from weighing mode.
NET/ GROSS INVENT	: NET/GROSS change key. Used to change display between Gross and Net.(Only on type A)
kg/lb INVENT	: kg/lb conversion key. Used to convert the weighing unit between kg and lb. (Only on type B)
	: UNIT WEIGHT key. Used to set unit weight and display All digits of Unit Weight.

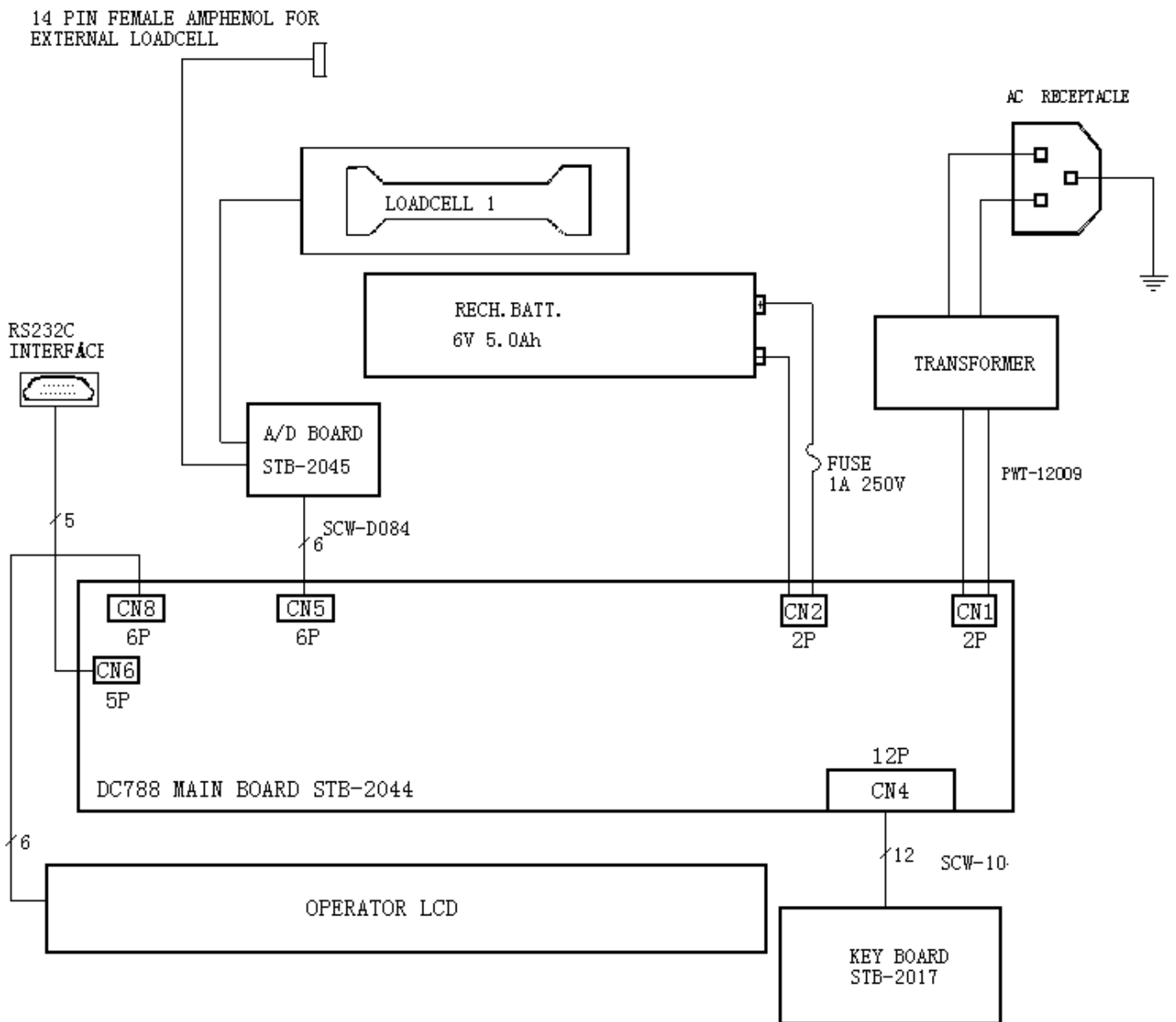
14. Notable differences from current Teraoka scales:

* Low cost LCD display counting scale.

15. Block Diagram of Electrical Connection



16. Physical layout of Electrical Connection



17. Hardware Description

17.1. Microcomputer

The H8/3687 Series Microcomputer was chosen for the following reasons:

- * Cheaper.
- * High-speed CPU with sixteen 16-bit registers.
- * 33 interrupt sources and efficient interrupt processing.
- * Four versatile timers.
- * Two on-chip serial communication interface channels.
- * 8-channel 10-bit resolution A/D converter.
- * I²C bus interface.
- * Less chip count.
- * Pin compatibility of similar package with difference ROM sizes.
- * Instruction set is compatible with the H8/300 CPU.
- * Good support.

17.2. Pin Assignment

Pin	I/O	Assignment	Device	Remark
P10/TMOW	I	-		
P11/PWM	I	-		
P12	I	ACIN	AC Power	Detects AC Power
P14/IRQ0	I	-		
P15/IRQ1/TMIB1	I	-		
P16/IRQ2	I	-		
P17/IRQ3/TRGV	I	K0	Keyboard	Key Return Line
P20/SCK3	O	RTS	MAX232	RS-232C
P21/RXD	I	RXD	MAX232	RS-232C
P22/TXD	O	TXD	MAX232	RS-232C
P23	I	CTS	MAX232	RS-232C
P24	O	CVD	R12	Device Power Control
P30	O	T1	KEYBOARD	Key Scanning Line
P31	O	T2	KEYBOARD	Key Scanning Line
P32	O	T3	KEYBOARD	Key Scanning Line
P33	O	T4	KEYBOARD	Key Scanning Line
P34	O	T5	KEYBOARD	Key Scanning Line
P35	O	T6	KEYBOARD	Key Scanning Line
P36	I	-		
P37	I	-		
P50/WKP0	I	-		
P51/ WKP 1	I	-		
P52/ WKP 2	O	TBT	R8	Controls BATT Detector
P53/ WKP 3	O	CVAD	R6	Controls BATT Power To A/D
P54 WKP 4	O	BTPW	R4	Controls BATT Power To M/B
P55/ WKP 5/ADTRG	O	BTCHG	R2	Controls BATT Charger
P56/SDA	I/O	SDA	AT24C128,HMS093AL	EEPROM,LCM
P57/SCL	O	SCL	AT24C128,HMS093AL	EEPROM,LCM
P60/FTIOA0	O	RTCCS	3511A	Real Time Clock
P61/FTIOB0	O	RTCCK	3511A	Real Time Clock
P62/FTOC0	I/O	RTCSIO	3511A	Real Time Clock
P63/FTIOD0	O	CBUZZ	R40	Buzzer Sounder
P64/FTIOA1	O	ADCHAN	A/D Board	Controls A/D Channel
P65/FTIOB1	O	ADSCLK	A/D Board	Controls A/D Conversion
P66/FTIOC1	O	ADSDI	A/D Board	Controls A/D Conversion
P67/FTIOD1	I	ADSDO	A/D Board	Controls A/D Conversion
P70/SCK3_2	I	-		
P71/RXD_2	I	-		
P71/TXD_2	I	-		
P74/TMRIV	O	EEPWP	AT24C128	EEPROM
P75/TMCIV	I	-		
P76/TMOV	I	-		

Pin	I/O	Assignment	Device	Remark
P85	I/O	JUMPER&E7	JUMPER&E7	MODE SELECT
P86	I/O	E7	E7	MODE SELECT
P87	I/O	E7	E7	MODE SELECT
PB0/AN0	I	-		
PB1/AN1	I	K1	Keyboard	Key Return Line
PB2/AN2	I	K2	Keyboard	Key Return Line
PB3/AN3	I	K3	Keyboard	Key Return Line
PB4/AN4	I	K4	Keyboard	Key Return Line
PB5/AN5	I	-		
PB6/AN6	I	BTV	Battery	Detects Battery Voltage
PB7/AN7	I	-		
NMI	I	-	JUMPER	MODE SELECT
OSC1	I	-	Oscillator	10 MHz Crystal
OSC2	O	-	Oscillator	10 MHz Crystal
X1	I	-	Oscillator	32.768 kHz Crystal
X2	O	-	Oscillator	32.768 kHz Crystal
AVCC	-	-	-	Analog power supply
VCL	-	-	-	Connected to VSS PIN
VCC	-	-	-	Power supply
VSS	-	-	-	Ground
TEST	I	-	-	Connected to VSS PIN
RES	I	-	Reset device	System Reset

19. Operations In Weighing Mode

19.1. ON/OFF

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Display for 1.5 seconds. *Note1	[ON/OFF]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8						
Blank for 1.5 seconds.											
Display for 1.5 seconds.		8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8						
Blank for 1.5 seconds.											
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼		▼	▼		
OFF	[ON/OFF]										

Note: 1) Power On Segment Check Style can be selected by setting SPEC08.0. In this example assume SPEC08.0 = 0.

19.2. Tare Subtraction

19.2.1. One Touch Tare Subtraction

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼		▼	▼		
Put tare (e.g. 30 g) on platter		0.0 0 0	0.0 3 0	0	0				▼		
Subtract the tare weight.	[T]	0.0 3 0	0.0 0 0	0	0		▼	▼	▼		
Remove the tare weight		0.0 3 0	-0.0 3 0	0	0	▼	▼		▼		
Clear the tare weight.	[T]	0.0 0 0	0.0 0 0	0	0	▼		▼	▼		

19.2.2. Digital Tare Subtraction

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼		▼	▼		
Key in the tare weight. (e.g. 50g).	[0] [.] [0] [3]		0.0 3								
Subtract the tare weight.	[T]	0.0 3 0	-0.0 3 0	0	0		▼	▼	▼		
Clear the tare weight.	[T]	0.0 0 0	0.0 0 0	0	0	▼		▼	▼		
Key in the tare weight. (e.g. 2kg).	[2]		2								
Subtract the tare weight.	[T]	2.0 0 0	-2.0 0 0	0	0		▼	▼	▼		
Clear the tare weight.	[T]	0.0 0 0	0.0 0 0	0	0	▼		▼	▼		

19.3. Unit Weight Entry Operation

19.3.1. By Sampling

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Put 10 pieces of samples on platter		0.0 0 0	0.0 9 6	0	0				▼		
Compute unit weight.	[Pcs]	-----	-----	-----	-----				▼		
		0.0 0 0	0.0 9 6	9.6 3 6 6	1 0				▼		
Clear unit weight.	[C]	0.0 0 0	0.0 9 6	0	0				▼		
Put 15 pieces of samples on platter		0.0 0 0	0.1 4 4	0	0				▼		
Input sampling quantity.	[1] [5]		1 5								
Compute unit weight.	[Pcs]	-----	-----	-----	-----				▼		
		0.0 0 0	0.0 9 6	9.6 3 2 6	1 5				▼		
Put some more pieces of samples on platter (e.g. 5pcs)		0.0 0 0	0.1 9 2	9.6 3 2 6	20				▼	▼	
Re-compute function enabled while RECOMP lamp is on.											
Re-compute unit weight.	[Pcs]	-----	-----	-----	-----				▼	▼	
The accuracy of unit weight can be improved after re-computing.		0.0 0 0	0.1 9 2	9.6 2 9 8	20				▼		

19.3.2. Digital Unit Weight Operation

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Put weight on platter		0.0 0 0	0.5 2 8	0	0				▼		
Key in unit weight.	[5] [.] [2] [5]			5.2 5 7 8					▼		
	[7] [8]										
Set unit weight.	[UNIT WEIGHT]	0.0 0 0	0.5 2 8	5.2 5 7 8	1 0 0				▼		
Clear unit weight.	[C]	0.0 0 0	0.5 2 8	0	0				▼		

19.4. Insufficient Sampling Weight Operation

19.4.1. Add Samples

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Put 10 pieces of samples on platter		0.0 0 0	0.0 1 6	0	0			▼	▼		
Add samples till the INSUFF lamp is "OFF" (e.g. 2)		0.0 0 0	0.0 2 0	0	0				▼		
Input sampling quantity before	[1] [2]			1 2							
Compute unit weight.	[Pcs]	-----	-----	-----	-----				▼		
		0.0 0 0	0.0 2 0	1.7 0 0 0	12				▼		

19.4.2. Adopt Suggestion

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Put 10 pieces of samples on platter		0.0 0 0	0.0 1 6	0	0			▼	▼		
The INSUFF lamp is "ON" when sampling weight is under a certain level.											
	[Pcs]	-----	-----	-----	-----			▼	▼		
Giving a suggestion.				A d d	1 0			▼	▼		
Add exactly 10 more pieces of samples				A d d	0				▼		
Compute unit weight.	[Pcs]	-----	-----	-----	-----				▼		
		0.0 0 0	0.0 3 2	1.6 0 0 0	2 0				▼		

19.4.3. Ignore Suggestion

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Put 10 pieces of samples on platter		0.0 0 0	0.0 1 6	0	0			▼	▼		
The INSUFF lamp is "ON" when sampling weight is under a certain level.											
	[Pcs]	-----	-----	-----	-----			▼	▼		
Giving a suggestion.				A d d	1 0			▼	▼		
Ignore the suggestion.	[Pcs]	-----	-----	-----	-----			▼	▼		
		0.0 0 0	0.0 1 6	1.5 9 0 2	1 0				▼		

19.5. Parts Counting Operation
19.5.1. Single Counting Operation

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Enter Unit weight by any means of 19.3 Unit Weight Entry Operation		0.0 0 0	0.0 0 0	0.5 0 0 2	0	▼			▼		
Put bulk quantity on platter		0.0 0 0	0.4 0 0	0.5 0 0 2	8 0 0				▼		
	[*]	0.0 0 0	0.4 0 0	0.5 0 0 2	8 0 0				▼		

Note: 1) If DC-788 is connected to printer/PC, the data is printed/output by pressing [*] key.

19.5.2. Accumulation & Subtraction Operation

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Enter Unit weight by any means of 19.3 Unit Weight Entry Operation		0.0 0 0	0.0 0 0	0.5 0 0 2	0	▼			▼		
Put product on platter		0.0 0 0	0.4 0 0	0.5 0 0 2	8 0 0				▼		
Accumulate the data.	[+]		t O t A L	1	8 0 0						▼
Return to Weighing mode.	[C]	0.0 0 0	0.4 0 0	0.5 0 0 2	8 0 0				▼		▼
Remove product from platter		0.0 0 0	0.0 0 0	0.5 0 0 2	0	▼			▼		▼
Put product on platter		0.0 0 0	0.2 5 0	0.5 0 0 2	5 0 0				▼		▼
Subtract the data.	[-]		C o r r	0	3 0 0				▼		▼
Return to Weighing mode.	[C]	0.0 0 0	0.2 5 0	0.5 0 0 2	5 0 0				▼		▼
Remove product from platter		0.0 0 0	0.0 0 0	0.5 0 0 2	0	▼			▼		▼
Clear unit weight.	[C]	0.0 0 0	0.0 0 0	0	0	▼		▼	▼		▼
Display total when unit weight is 0.	[+]		t O t A L	0	3 0 0						▼
Return to Weighing mode.	[C]	0.0 0 0	0.0 0 0	0	0	▼		▼	▼		▼
	[1] [0] [0]			1 0 0							
Accumulate the data.	[+]		t O t A L	1	4 0 0						▼
Return to Weighing mode.	[C]	0.0 0 0	0.0 0 0	0	0	▼		▼	▼		▼
	[3] [7]			3 7							
Subtract the data.	[-]		C o r r	1	3 6 3						▼
Return to Weighing mode.	[C]	0.0 0 0	0.0 0 0	0	0	▼		▼	▼		▼
	[*]	0.0 0 0	0.0 0 0	0	0	▼		▼	▼		▼

Note: 1) If DC-788 is connected to printer/PC, the data is printed/output by pressing [+], [-] and [*] key.

19.5.3. Negative Counting Function

	1 - ZERO	2 - NET	3 - INSUFF	4 - SCALE1	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Put container with parts on platter		0.0 0 0	1.2 5 5	0	0				▼		
Subtract the tare weight.	[T]	1.2 5 5	0.0 0 0	0.0 0 0	0		▼	▼	▼		
Take 10 pcs of parts from container		1.2 5 5	-0.0 2 5	0	0		▼		▼		
Compute unit weight.	[Pcs]	-----	-----	-----	-----		▼		▼		
:							▼		▼		
		1.2 5 5	-0.0 2 5	2.4 7 8	10		▼		▼		
Take bulk number from container		1.2 5 5	-0.0 9 9	2.4 7 8	40		▼		▼		
	[*]	1.2 5 5	-0.0 9 9	2.4 7 8	40		▼		▼		

Note: 1) If DC-788 is connected to printer/PC, the data is printed/output by pressing [*] key.

19.6. Net/Gross Operation

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - MEMORY					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Put product on platter		0.0 0 0	0.4 0 0	0	0						
Read out Gross weight	[Gross]		0.4 0 0					▼			
Return to Weighing mode.	[Gross]	0.0 0 0	0.4 0 0	0	0						
Subtract the tare weight.	[T]	0.4 0 0	0.0 0 0	0.0 0 0	0		▼				
Read out Gross weight	[Gross]		0.4 0 0					▼			
Put more product on platter			0.6 5 0					▼			
Return to Weighing mode.	[Gross]	0.4 0 0	0.2 5 0	0	0		▼				

Note: 1) Only type A have Net/Gross function to shift display between Net weight and Gross weight.

19.7. kg/lb Operation

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - kg	6 - lb					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Put product on platter		0.0 0 0	0.4 0 0	0	0					▼	
Shift to lb mode	[kg/lb]	0.0 0 0	0.8 8 0	0	0						▼
Return to kg mode	[kg/lb]	0.0 0 0	0.4 0 0	0	0					▼	
	[kg/lb]	0.0 0 0	0.8 8 0	0.0 0 0	0						▼
Compute unit weight.	[Pcs]	-----	-----	-----	-----						▼
		0.0 0 0	0.8 8 0	8 7.9 9 2	1 0						▼

Note: 1) Only type B have kg/lb function to shift weight unit between kg and lb.

19.8. Select 1st Scale or 2nd Scale Operation

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - Scale1	6 - Scale2					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼	▼	
Select 1 st Scale or 2 nd Scale key	[Scale]	0.0 0 0	0.0 0 0	0	0	▼			▼	▼	
		0.0 0 0	0.0 0 0	0	0	▼			▼		▼
Select 1 st Scale or 2 nd Scale key	[Scale]	0.0 0 0	0.0 0 0	0	0	▼			▼		▼
		0.0 0 0	0.0 0 0	0	0	▼			▼	▼	

Note: 1) This function available only when SPEC26 2nd Scale is enable.

19.9. Item Code Call Up

19.9.1. Recall Numeric Item Code

OPERATION	Key-in	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - IN			6 - OUT		
		TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter item code.	[1] [0] [0]			1 0 0							
Call up item code.	[CODE]	0.0 0 0	0.0 0 0	1.6 9 8 0	0	▼				▼	
Select "In-Out" status.	[IN/OUT]	0.0 0 0	0.0 0 0	1.6 9 8 0	0	▼					▼
Put bulk parts on platter.		0.0 0 0	0.1 4 5	1.6 9 8 0	8 4						▼
	[*]	0.0 0 0	0.1 4 5	1.6 9 8 0	8 4						▼

Note: 1) If DC-788 is connected to printer/PC, the data is printed/output by pressing [*] key.

And inventory value will update according to the IN/OUT status and Accumulation when quantity is accumulating.

Subtract from inventory when OUT status. Accumulate inventory when IN status.

19.9.2. Recall Alphanumeric Item Code

OPERATION	Key-in	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - IN			6 - OUT		
		TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
ASCII enter mode.	[.]		A S C 0 1	0 0 0 -	CODE						
Call up PLU.	[8] [0]		A S C 0 1	0 8 0 - P	CODE						
"+" key to move cursor ahead.	[+]		A S C 0 2	0 0 0 -	CODE						
"-" key to move cursor back.	[-]		A S C 0 1	0 8 0 - P	CODE						
"C" key to delete character.	[C]		A S C 0 2	0 0 0 -	CODE						
	[6] [5]		A S C 0 1	0 6 5 - A	CODE						
	[+] [6] [6]		A S C 0 2	0 6 6 - b	CODE						
Call up item code "ABC10".	[CODE]	0.0 0 0	0.0 0 0	1.6 9 8 0	0	▼				▼	
Select "In-Out" status.	[IN/OUT]	0.0 0 0	0.0 0 0	1.6 9 8 0	0	▼					▼
Put bulk parts on platter.		0.0 0 0	0.1 4 5	1.6 9 8 0	8 4	▼					▼
	[*]	0.0 0 0	0.1 4 5	1.6 9 8 0	8 4	▼					▼

Note: 1) If DC-788 is connected to printer/PC, the data is printed/output by pressing [*] key.

And inventory value will update according to the IN/OUT status and Accumulation when quantity is accumulating.

Subtract from inventory when OUT status. Accumulate inventory when IN status.

19.9.3. Review Current PLU Contents

OPERATION	Key-in	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - IN			6 - OUT		
		TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter item code.	[1] [0] [0]			1 0 0							
Call up item code.	[CODE]	0.0 0 0	0.0 0 0	1.6 9 8 0	0	▼				▼	
Select "In-Out" status.	[IN/OUT]	0.0 0 0	0.0 0 0	1.6 9 8 0	0	▼					▼
Put bulk parts on platter.		0.0 0 0	0.1 4 5	1.6 9 8 0	8 4						▼
Review PLU contents[Scale]	[Scale]		ICODE		100						
	[Scale]		Pno		123A						
	[Scale]		Pname		SCREW						
	[Scale]		Lnum		2						
	[Scale]		INVENT		4012						
	[Scale]	0.0 0 0	0.1 4 5	1.6 9 8 0	8 4						▼

Note: 1) If DC-788 is connected to printer/PC, the data is printed/output by pressing [*] key.

Memory Field of Item Code

- Memory Field

Parameters	Max. length
Item Code	10 digits numeric data or Alphanumeric data
Parts No.	16 digits Alphanumeric data
Parts Name	32 Alphanumeric data
Lot Number	32 Alphanumeric data
Tare Weight	5 digits + Decimal figure
Unit Weight	5 digits + Decimal figure
Inventory	8 digits
Setpoint Value	2 points

20. Operations In Program Mode

20.1. Program Item Code

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1 2 3 4 5 6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼
Enter into Program mode. The total number of item codes in memory appears in QTY column.	[MODE]		P r o G		C 0	▼
To program Item Code. *Note1	[1] [0] [0]			1 0 0		▼
	[CODE]	0.0 0 0	0.0 0 0	0	0	▼
To program Tare Weight.		0.1 2 0	- 0.1 2 0	0	0	▼
Enter tare WT by any means of 19.2.						
To program Unit Weight.		0.1 2 0	0.1 4 5	1.6 9 8 0	84	▼
Enter unit WT by any means of 19.3.						
Store the data to program Inventory.	[INVENT]			0	INVENT	▼
	[6] [0] [0]			6 0 0	INVENT	▼
Store the data to program Parts Number.	[*]		A S C 0 1	0 0 0 -	P- No	▼
e.g. Parts No is TA12.	[8] [4]		A S C 0 1	0 8 4 - T	P- No	▼
	[6] [5]		A S C 0 2	0 6 5 - A	P- No	▼
	[4] [9]		A S C 0 3	0 4 9 - 1	P- No	▼
	[5] [0]		A S C 0 4	0 5 0 - 2	P- No	▼
Store the data to program Parts Name.	[*]		A S C 0 1	0 0 0 -	P-NAME	▼
e.g. Parts Name is SCREW.	[8] [3]		A S C 0 1	0 8 3 - S	P-NAME	▼
	[6] [7]		A S C 0 2	0 6 7 - C	P-NAME	▼
	[8] [2]		A S C 0 3	0 8 2 - R	P-NAME	▼
	[6] [9]		A S C 0 4	0 6 9 - E	P-NAME	▼
	[8] [7]		A S C 0 5	0 8 7 - W	P-NAME	▼
Store the data to program Lot Number.	[*]		A S C 0 1	0 0 0 -	LOt NO	▼
e.g. Lot Number is LT68. [7] [6]	[7] [6]		A S C 0 1	0 7 6 - L	LOt NO	▼
	[8] [4]		A S C 0 2	0 8 4 - T	LOt NO	▼
	[5] [4]		A S C 0 3	0 5 4 - 6	LOt NO	▼
	[5] [6]		A S C 0 4	0 5 6 - 8	LOt NO	▼
Store the data to program Setpoint 1.	[*]		SET 1		0	▼
e.g. Setpoint 1 value is 100pcs.	[1] [0] [0]		SET 1		100	▼
Store the data to program Setpoint 2.	[+]		SET 2		0	▼
e.g. Set point2 value is 50%.	[5] [0]		SET 2		50	▼
Store the data.	[*]		P r o G		C 1	▼
Quit to Weighing mode.	[MODE]		0.0 0 0	0	0	▼

*Note1: To enter alphanumeric character to item code, press [•] key to change the screen to the display of alphanumeric entry.

20.2. Delete Item Code in Memory

20.2.1. Delete a Certain Item Code

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	Pr o G			C 20						▼
To program Item Code.	[1] [0] [0]			100							▼
				100	CLEAR						▼
Delete item code.	[C]	Pr o G			C 19						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.2.2. Delete all Item Code

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	Pr o G			C 20						▼
[RE-ZERO]	[RE-ZERO]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8 8						▼
[RE-ZERO] + [.] [.] [0]	[RE-ZERO] +		ALL		CLEAR						▼
Enter . . 0 while pressing. [RE-ZERO]	[.] [.] [0]										▼
Delete all item code.	[C]	Pr o G			C 0						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.2.3. Delete all Inventory Value from Memory

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	Pr o G			C 20						▼
[RE-ZERO]	[RE-ZERO]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8 8						▼
[RE-ZERO] + [.] [.] [1]	[RE-ZERO] +		INVENT		CLEAR						▼
Enter . . 1 while pressing. [RE-ZERO]	[.] [.] [1]										▼
Delete all invent value.	[C]	Pr o G			C 20						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.2.4. Delete all Unit Weight Value from Memory

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	Pr o G			C 20						▼
[RE-ZERO]	[RE-ZERO]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8 8						▼
[RE-ZERO] + [.] [.] [2]	[RE-ZERO] +		UNITW		CLEAR						▼
Enter . . 2 while pressing. [RE-ZERO]	[.] [.] [2]										▼
Delete all Unit Weight value.	[C]	Pr o G			C 20						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.2.5. Delete all Tare Weight Value from Memory

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	Pr o G			C 2 0						▼
[RE-ZERO]	[RE-ZERO]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8 8						▼
[RE-ZERO] + [.] [.] [3]	[RE-ZERO] +		TAREW		CLEAR						▼
Enter . . 3 while pressing. [RE-ZERO]	[.] [.] [3]										
Delete all Tare Weight value.	[C]	Pr o G			C 2 0						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.2.6. Delete all Parts Numbers from Memory

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	Pr o G			C 2 0						▼
[RE-ZERO]	[RE-ZERO]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8 8						▼
[RE-ZERO] + [.] [.] [4]	[RE-ZERO] +		PARTSNo		CLEAR						▼
Enter . . 4 while pressing. [RE-ZERO]	[.] [.] [4]										
Delete all Parts Number.	[C]	Pr o G			C 2 0						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.2.7. Delete all Setpoint Data from Memory

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	Pr o G			C 2 0						▼
[RE-ZERO]	[RE-ZERO]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8 8						▼
[RE-ZERO] + [.] [.] [5]	[RE-ZERO] +		SetPOINT		CLEAR						▼
Enter . . 5 while pressing. [RE-ZERO]	[.] [.] [5]										
Delete all Setpoint Data.	[C]	Pr o G			C 2 0						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.2.8. Delete all Parts Name from Memory

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	Pr o G			C 2 0						▼
[RE-ZERO]	[RE-ZERO]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8 8						▼
[RE-ZERO] + [.] [.] [6]	[RE-ZERO] +		PName		CLEAR						▼
Enter . . 6 while pressing. [RE-ZERO]	[.] [.] [6]										
Delete all Parts Name.	[C]	Pr o G			C 2 0						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.2.9. Reset Sequence Number to 0

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	P r o G			C 20						▼
[RE-ZERO]	[RE-ZERO]	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8	8 8 8 8 8 8 8						▼
[RE-ZERO] + [.] [.] [7]	[RE-ZERO] +		SN		CLEAR						▼
Enter . . 7 while pressing. [RE-ZERO]	[.] [.] [7]										▼
Reset Sequence Number	[C]	P r o G			C 20						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

Note: *1) Press [MODE] key to go back to weighing mode without clearing.

20.3. Review Item Code

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
[MODE]	[MODE]	P r o G			C 20						▼
	[CODE]		CH1		100						▼
[+]	[+]		CH2		123						▼
[-]	[-]		CH1		100						▼
Quit to Program mode.	[MODE]	P r o G			C 20						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

20.4. Program Setpoint to Operate all Items

General setpoint value can be programmed to operate on all items. This value is enabled when no code number is selected or the item code re-called in operation mode has no setpoint data.

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	P r o G			C 20						▼
Setpoint Program mode.	[+]		SET 1	0	0						▼
	[1] [0] [0]		SET 1	0	100						▼
Store Setpoint 1 value.	[+]		SET 2	0	0						▼
	[5] [0]		SET 2	0	50						▼
Store Setpoint 1 value.	[+]	P r o G			C 20						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

20.5. Date and Time

	1 - ZERO	2 - NET	3 - GROSS	4 - INSUFF	5 - RECOMP	6 - PROG					
OPERATION	Key-in	TARE	WEIGHT	U.Weight	QTY.	1	2	3	4	5	6
Weighing mode.		0.0 0 0	0.0 0 0	0	0	▼			▼		
Enter into Program mode.	[MODE]	P r o G			C 20						▼
Display current date & time.	[-]		2 6 - 0 8	0 3 TUE	1 5 - 2 8						▼
	[-]	EntEr	D-M-Y		2 6 0 8 0 3						▼
	[2] [8] [0] [8]	EntEr	D-M-Y	2 8 0 8 0 3	2 6 0 8 0 3						▼
	[0] [3]										▼
Store date setting.	[*]	EntEr	TIME		1 5 - 2 8						▼
	[1] [5] [2] [5]	EntEr	TIME	1 5 2 5	1 5 - 2 8						▼
Store time setting.	[*]	P r o G			C 20						▼
Quit to Weighing mode.	[MODE]	0.0 0 0	0.0 0 0	0	0	▼			▼		

21. Error Message List

The following error message will appear when an incorrect operation is performed.

Message	Remarks	Appropriate Operation
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 $\geq 9d$.	REZERO or ON/OFF again.
E r r o r	When calibration operation is not correct, when A/D fault, or when an error occurs in RS-232C communication.	Repeat calibration operation.
8 8 8 8 8	When scale is not steady when power on.	Place scale on firm, flat base.
Total FULL	When current Total overflow.	Clear current Total.