DS-215HD

Heavy Duty Weighing Scale

Essae®
...for Excellence

Instruction manual

Essae

Vision

Share the wisdom and wealth for the welfare of external and internal customers, business associates and society at large.

Mission

Innovation, Improvement and Institutionalization shall be the pillars of our business

-Electronic Weighing Systems & Solutions -World-class products to meet the needs of local and global market

Quality Policy

Essae-Teraoka commits itself to Total Quality and shall constantly strive to earn "Customer Delight" by assuring quality in all activities.

Commitment to Quality Policy, Constancy of Purpose and Continuous Improvement are our guiding values.

WELCOME

Essae family welcomes you to the fraternity of Essae users.

We thank you for choosing our product. We, at Essae-Teraoka Limited, extend a very hearty welcome to the Essae Club and assure you of our best services for optimum utilisation of our product and services. Essae family congratulates you for the choice of the machine. Thank you for the confidence reposed on us and we assure you of our best services.

We are honoured by your choice and proud of our association. The journey of thousand miles will have to start with the first step. We have taken the first right step together in the journey of our business.

Welcoming you once again to Essae Club and wishing you all the best.

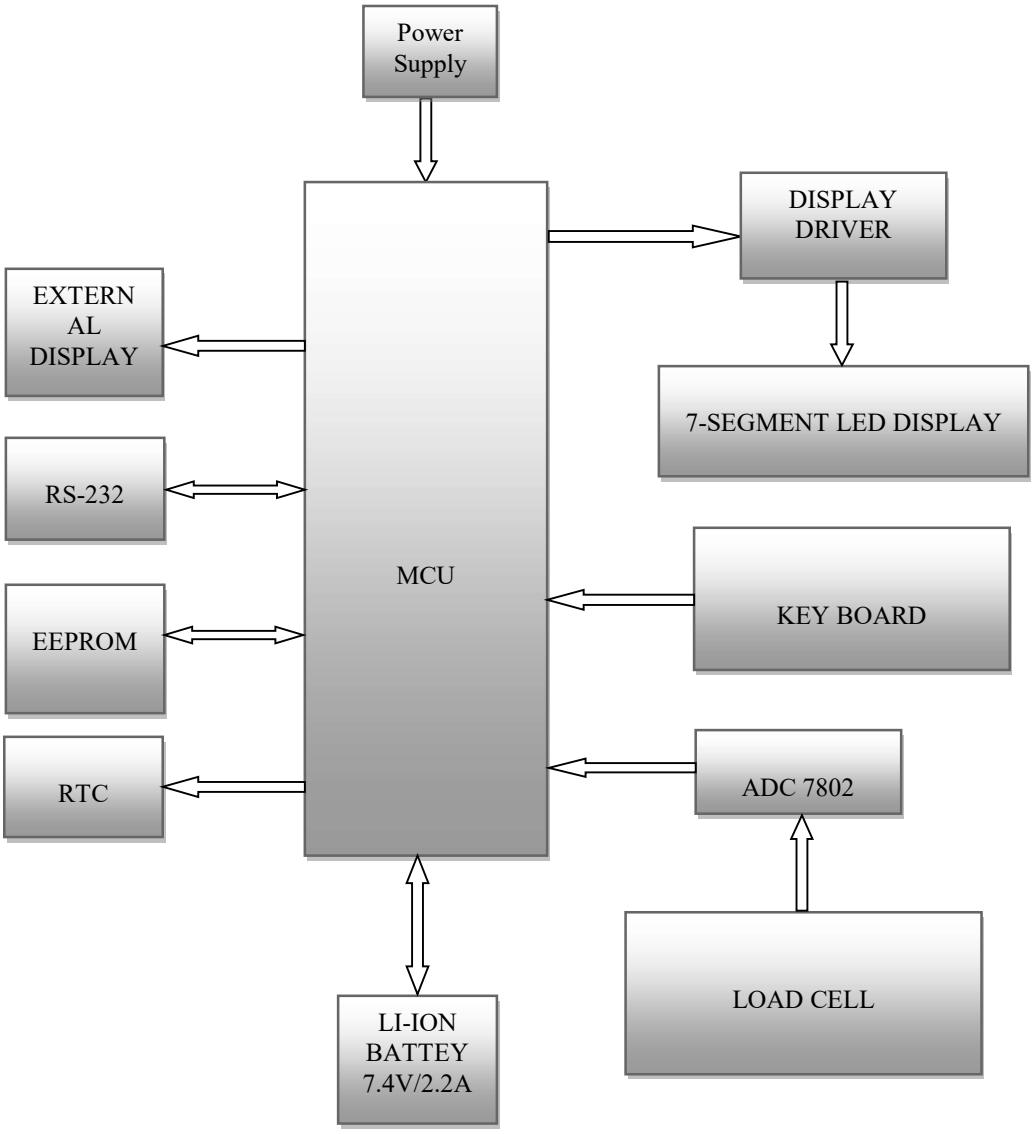
Essae Family

TABLE OF CONTENTS

1.0 TECHNICAL SPECIFICATION:

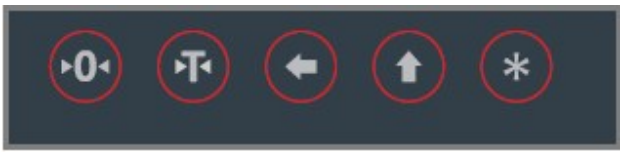
(a) Model Name	DS-215HD Printer
(b) Display Resolution	Spec Selectable
(c) Internal Resolution	Spec Selectable
(d) Capacity	Spec Selectable
(e) Interval	Spec Selectable
(f) Display No. of Digits(Weight) Display Type	6 Digits 7 Segment Green LED display
(g)Weight sensor	Load cell
(h) ADC	NAU7802
(i) Optional Interfaces	**a)** RS-232 # 1 In built for Printer **b)** RS-232 # 2 for PC (DB9 Connector) **c)** USB (Virtual COM port)
(j) Key board	5 keys
(k) Calibration method	Software Calibration.
(l) Power source	AC 230V, 50Hz.
(m) Operating temperature	0°C to 45°C
(n) Humidity	Max. 85 % Rh (non - condensing)
(o) Physical dimension	267(W) x 66(D) x 169(H) mm
(p) Main board CPU	Cortex ARM (32-bit) based Processor.
(q) A/D PCB	In-built
(r) Power supply type	LI-ION / 7.4V, 2.2Ah Battery.

1. 1 Block diagram



2. KEY SHEET & DISPLAY LAYOUT:

2.1 Key Sheet Layout



2.2 Display Layout

3. INDICATOR LAMPS:

LAMP	STATUS -ON
Zero	When the gross weight is zero.
Net	When there is tare weight.
Bat	When the weighing scale operating with battery power supply. **"Blinks"** when the Battery voltage goes below the operating voltage.

4. KEY FUNCTIONS:

KEY	FUNCTIONS
Re-zero	Used to reset the scale to zero. Used to enter into the S-ON mode along with other keys.
Tare	Used for setting and clearing tare weight and to come out of spec setting & Set point mode without storing the values.
←	Used to select the digit in digital tare operation. Used to select the value in spec entry.
↑	Used to Increment selected digit in digital Tare operation Used to change the selected digit in spec value entry
*	Used to increment and storing the spec & Set point values. Used to print the records in serial print.

5. S-ON MODE:

5.1 Scale Calibration

Prior to the calibration of the scale, please note that the **SPEC** settings corresponding to Minimum Display, Weight Decimal Point Position has to be correctly set.

Sl/ No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1.	Entering to the S-ON mode [REZERO] +[T] [↑] [←]	S-ON				Enable the key sequence to enter S-ON mode. The Display will show "S-ON"
2.	Press [REZERO] +[←][T][T]	FS 30.000				By pressing [REZERO] press [←] [T] [T], the display toggles between the message **FS** and the full scale capacity of the machine say **30kg**. If full scale capacity is not there follow the below mentioned steps. Otherwise **jump to step 3**.
2a	Press [↑] Key	00.000				Press [↑] Key Display comes to key entry mode. The first digit starts blinking.
2b	Press [←] Key	00.000				Press [←] Key to select the digit.
2c	Press [↑] Key	00.000				Press [↑] Key. The value of the digit which is blinking will be incremented.
2d	Press [*] Key	02.000				Using [↑] & [←], enter the required value for key entry calibration. Then press [*] Key Display blinking between CAL 00 and Raw count.
3	Press [*] key	CAL 00				Press the [*] key display shows CAL00. Now the machine is ready for zero calibration.
4	Press [*] key	CAL SP				Make sure that platter is empty, and press [*] key again, Now the machine starts zero calibration. After zero calibration display shows CAL SP. Now the machine is ready for span calibration

5	Press [*] key	30,000				Place the full scale capacity weight on the platter before commencing calibration, then press the [*] key to do span calibration. If step (2a) to (2d) is performed, place entered Value of weight on the platter and press [*] key. After span calibration the display will show the span count.
6	Coming to weighing mode by pressing [*] key	2.000				Now the machine comes to the weighing mode. Now display will show the weight on the platter which is calibrated.

5.2. Customer Specifications

Customer specs are **C10 – C32**

Sl/No.	**OPERATION**	**DISPLAY**	**INDICATORS**			**REMARKS**
		WEIGHT	**1**	**2**	**3**	
1	[REZERO] +[←][←][←]	SPEC C10				Press [REZERO] & press digit select key 3 times, Now the Customer spec can be entered. After showing SPC 10, the display will show the old spec value.
2	Shows the Spec no. & Spec Values	C10 14				Now the display toggles between SPEC No. & Spec value.
3	Press [←] [↑]	C10 17				By using [←] / [↑] keys new spec values can be entered.
4	Press [*]	C11				Press [*] key to increment the specification count and to store the values entered. Repeat the **step 3** for further specification setting.
5	Press [T]	0.000	X			Press [T] key to exit from this mode to Weighing mode without saving the spec value.

5.3 Weight & Measurement Specifications

W&M Specs are also from **T10-T25**

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1.	Enter in to the maintenance mode [REZERO]+ [T][↑][←]	S-ON				Enable the S-ON mode .The display will show "S-ON".
2	[REZERO] + [←][T][←]	T10 00				Press [REZERO] & press digit select key & Tare key in the sequence shown in operation. After showing SPEC T10, the display will show the old spec value.
3	Shows the Spec no. & Spec Values	T10 15				Now the display toggles between spec number and value.
4	Press [↑][←]	16				By using [↑]/ [←] keys new spec values can be entered.
5	Press [*]	T 11				Press [*] key to increment the specification count and to store the value entered. Repeat the **step 4** for further specification setting.
6	Press [T]	0.000	X			Press [T] key. Display comes back to the weigh mode.

5.4 Internal Count Access

This function is provided for checking of INTERNAL COUNTS of the ADC.

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Enter to the S-ON mode[REZERO]+ [T][↑][←]	S-ON				Display shows S-ON
2	Press [REZERO] +[←][←] [T]	100XXX				Press [REZERO] & press twice [←] key and once [T] key to check the Internal count value of ADC. Display shows Internal count (which is less compared to Raw count).
3	Press [*] key	XXXXXX				The display shows the internal counts. If we press the [*] key again display will show Raw count. [*] key is used to toggle between Raw and internal counts.
4	Press [T]	2.000				Press the [T] key, then machine comes to weighing mode and display shows weight on the platter.

NOTE: If need to change the internal count, press REZERO key. Ex: The count is "**002456**",

press REZERO key to bring down to all "**000000**".

6. OPERATION GUIDE IN WEIGHING MODE:

6.1 One Touch Tare Operation

When Tare weight is unknown.

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode.	0.000				Display in the weighing mode
2	Place 0.5 Kg weight on the platter.	0.200				
3	Press [T] key	0.000		X		Press the Tare [T] Key to tare the weight on the platter.
4	Remove the weight from the platter.	-0.200		X		
5	Press [T] key to cancel the Tare.	0.000				Display in the Weighing mode.

6.2 Digital Tare Operation

Can be used if the Tare value is known.

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode	0.000				Display in the weighing mode.
2	Press [↑]	000.500				Enter the weight value using [↑] & [←] key. Say 000.500 has entered. See note.
3	[T]	0.000		X		Press the Tare [T] Key to tare the weight entered by keyboard.
4	[T]	0.000				Remove the weight from the platter then Press Tare [T] key again to cancel the Tarred value.

Note: [←] key is used to select the digit.
[↑] key is used to increment the digit value (0 to 9).

6.3 Net/Gross Weight Display

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode	0.000	X			Display in the Weighing mode.
2	[REZERO] +[←][←][←]	SPEC C10				Press [REZERO] & press digit select key 3 times, Now the Customer spec can be entered. After showing SPC 10, the display will show the old spec value.
3	Shows the Spec no. & Spec Values	C10 14				Now the display toggles between SPEC No. & Spec value.
4	Press [*]	C22				Go to Spec C22 by Pressing [*] key to increment the specification count and to store the value entered.
5	Press [←] [↑]	C22 01				By using [←] / [↑] keys enter 01 to set digital select [←] key in weigh mode as net/gross weight key.
6	Press [T]	0.000	X			Press [Tare] key to exit from this mode to Weighing mode.
7	Now Press [←] key	0.200				Press [←] key then display will show gross weight.
8	Press [←] key	0.200				Press [←] key, so display will toggle between net weight and gross weight.
9	Press [T] Key	0.000		X		Press [T] Key to tare the value.
10	Place 500 g weight on the platter.	0.500		X		
11	Press [←]	0.700 G 0.500 N				Press [←] Key display shows Gross Weight then again press [←] Key display shows Net Weight
12	Press [T]	0.000	X			Remove the weight on the platter. Press [T] Key again to escape from the gross mode.

6.4 Display Hold Mode

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode	0.000	X			Display in the weighing mode.
2	[REZERO] +[←][←][←]	SPEC C10				Press [REZERO] & press digit select key 3 times, Now the Customer spec can be entered. After showing SPC 10, the display will show the old spec value.
3	Shows the Spec no. & Spec Values	C10 14				Now the display toggles between SPEC No. & Spec value.
4	Press [*]	C21				Go to Spec C21 by Pressing [*] key to increment the specification count and to store the value entered.
5	Press [←] [↑]	C21 10				By using [←] / [↑] keys enter 10 to set digital increment [↑] key in weigh mode as hold key.
6	Press [T]	0.000	X			Press [Tare] key to exit from this mode to Weighing mode.
7	Place 200 g weight on the platter.	0.200				
8	Now Press [↑] key	**H** 0.200				Press [↑] key then **weight will not be sensed here** and display will show '**H**' symbol it indicates holding the weight.
9	Press [T]	0.000				Press [T] Key to escape from hold mode.

6.5 Load Defaults

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Enter to the S-ON mode[REZERO] + [T][↑][←]	S-ON				Display shows S-ON
2	Press [REZERO] +[↑][T][*][←]	**LddEF?**				Press [REZERO] & press [↑] key and once [T] key then press [*] and press [←] to load the defaults. Display shows "**LddEF?"** message.
3	Press [*] key	**LoAdEd**				Now Press [*] key, then display will show the **"LoAdEd**" message after that it will go to weighing mode.
4	Press [T]	0.000				If you don't want to load defaults then Press the [T] key, then machine comes to weighing mode and display shows weight on the platter.

6.6 Minimum Weight

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Enter to the S-ON mode[REZERO] + [T][↑][←]	S-ON				Display shows S-ON
2	Press [REZERO] +[T][T][←]	**n.lnLn.t**				Press [REZERO] & press twice [T] key and once [←] to set the minimum weight value. Now the display toggles between **"n.lnLn.t"** & previous minimum weight value.
3	Press [↑] [←] Key.	0.000				Enter the new minimum weight value using [←] & [↑] keys.
4	Press [*] key	0.000				Press the [*] key, then it will store the value entered. After that machine comes to weighing mode and display shows the weight on the platter.

6.7 Programming Header 1

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode	0.200				Display in the weighing mode.
2	Press [REZERO] +[←][*][←]	**H1.00 066**				Press [REZERO] & press [←] key and press [*] key and then press again [←] to set the Header1 value. Now the display toggles between **"H1.00"** & previous Header1value.
3	Press [↑] [←] Key.	077				Enter the new Header1value using [←] & [↑] keys.
4	Press [*] Key.	**H1.01 097**				Press the [*] key to store the value.
5	Display toggles between **H1.01** & old value of **H1.01**	**H1.01 097**				Repeat Steps 2, 3 & 4.
6	Display toggles between **H1.02** & old value of **H1.02**	**H1.02 110**				Repeat Steps 2, 3 & 4.
7	Press [T] key.	2.000				Press the [T] key, then machine will come to weighing mode.

NOTE: All the header values are "**Decimal Values**".

6.8 Programming Header 2

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode	0.200				Display in the weighing mode.
2	Press [REZERO] +[↑][*][↑]	**H2.00 066**				Press [REZERO] & press [↑] key and press [*] key and then press again [↑] to set the Header2 value. Now the display toggles between **"H2.00"** & previous Header1value.
3	Press [↑] [←] Key.	077				Enter the new Header2 value using [←] & [↑] keys.
4	Press [*] Key.	**H2.01 097**				Press the [*] key to store the value.
5	Display toggles between **H2.01** & old value of **H2.01**	**H2.01 097**				Repeat Steps 2, 3 & 4.
6	Display toggles between **H2.02** & old value of **H2.02**	**H1.02 110**				Repeat Steps 2, 3 & 4.
7	Press [T] key.	2.000				Press the [T] key, then machine will come to weighing mode.

6.9 ASCII table for Header Programming

Dec Value	Character	Dec Value	Character	Dec Value	Character
032	(space)	064	@	096	`
033	!	065	A	097	a
034	"	066	B	098	b
035	#	067	C	099	c
036	$	068	D	100	d
037	%	069	E	101	e
038	&	070	F	102	f
039	'	071	G	103	g
040	(	072	H	104	h
041	)	073	I	105	i
042	*	074	J	106	j
043	+	075	K	107	k
044	,	076	L	108	l
045	-	077	M	109	m
046	.	078	N	110	n
047	/	079	O	111	o
048	0	080	P	112	p
049	1	081	Q	113	q
050	2	082	R	114	r
051	3	083	S	115	s
052	4	084	T	116	t
053	5	085	U	117	u
054	6	086	V	118	v
055	7	087	W	119	w
056	8	088	X	120	x
057	9	089	Y	121	y
058	:	090	Z	122	z
059	;	091	[	123	{
060	<	092	\	124	|
061	=	093	]	125	}
062	>	094	^	126	~
063	?	095	_		

6.10 Show & Set Time & Date

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode	0.200				Display in the weighing mode.
2	Press [REZERO] +[↑][↑][*]	**12.55.06**				Press [REZERO] & press [↑] key and press [↑] key and then press again [*] to set the Header2 value. Now the display show the time.
3	Press [↑] [←] Key.	**02.43.12** hh.mm.ss				Set the required time using [←] & [↑] keys.
4	Press [*] Key.					Press the [*] key to store the value then it will show the date. Now if again press [*] key it will show the time. Means display will toggle between time and date.
5	Press [↑] [←] Key.	**040814** dd/mm/yy				Set the required date using [←] & [↑] keys.
6	Press [T] key.	2.000				Press the [T] key, then machine will come to weighing mode.

6.11 Unit Weight Sampling

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode	0.200				Display in the weighing mode.
2	Press [REZERO] +[↑][←][*]	**San.005**				Press [REZERO] & press [↑] key and once [←] and then press [*] key. Now the display will show **"San.005"**
	Press [↑]	**San.010**				Press [↑] and used to increase the sample values (5, 10, 20, 50, 100, 200, 500, 1000).
3	Press [←][↑] key.	**"San.025"**				Enter the new sample values using [←] & [↑] keys (one by one).
4	Press [*] key	**25**				Press [REZERO] key then Keep the weight on the platter now. Press the [*] key, then it will store the value entered. After that machine comes to **quantity** mode and display shows the **25.** Means 200g equal to 25 pieces.
5	Press [T] or [←] key.	2.000				Press the [T] or [←] key, then machine will come to weighing mode.

6.12 Conversion Constant

Sl/No.	OPERATION	DISPLAY	INDICATORS			REMARKS
		WEIGHT	1	2	3	
1	Initial Weigh mode	0.200				Display in the weighing mode.
2	Press [REZERO] +[T][T][T]	**Ut.CnSt**				Press [REZERO] & press trice [T] key to set the Conversion constant value. Now the display toggles between **"Ut.CnSt"** & previous Conversion constant value.
3	Press [↑] [←] Key.	1.20000				Enter the new Conversion constant value using [←] & [↑] keys.
4	Press [*] key	0.240				Press the [*] key, then it will store the value entered. After that machine comes to weighing mode and display shows the weight on the platter multiplied by that conversion constant.

7. POWER FAIL RETAIN

Power fail retain function will work only when **SPEC T13 MSD** is set to 1.

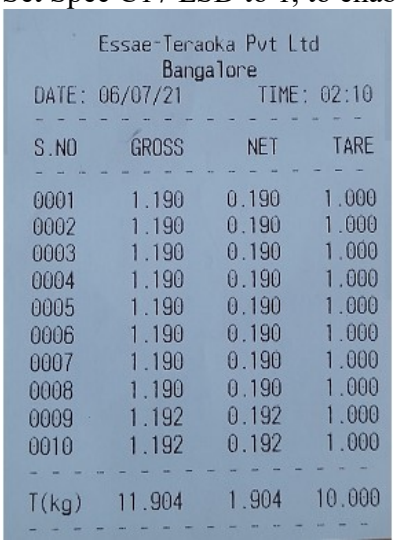
(1) Switch "OFF" and "ON" A.C. Main supply to the scale.

(2) Then display will show "**PF rEt**" message.

Note: Power fail retain function will work only for the weight greater than 0.5 % of the full scale capacity.

8 . STANDARD PRINT FORMAT:

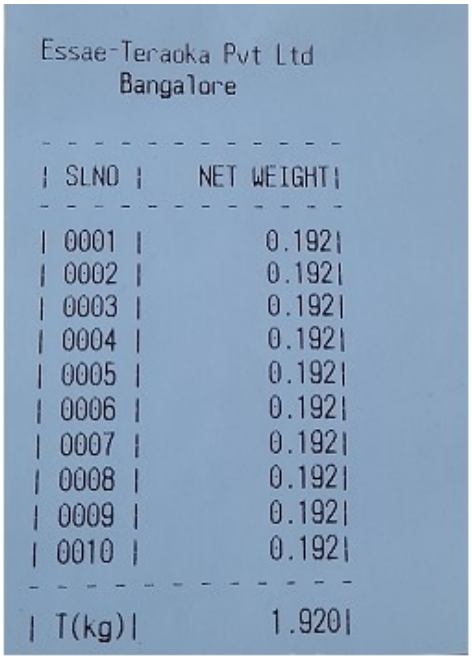
- 1) Sample Standard Net weight Print Format
- Set Spec C11 LSD to 7, to enable the serial print.
- Set Spec C17 LSD to 1, to enable the all wt. Print Format.



Essae-Teraoka Pvt Ltd
Bangalore
DATE: 06/07/21 TIME: 02:10

S.NO	GROSS	NET	TARE
0001	1.190	0.190	1.000
0002	1.190	0.190	1.000
0003	1.190	0.190	1.000
0004	1.190	0.190	1.000
0005	1.190	0.190	1.000
0006	1.190	0.190	1.000
0007	1.190	0.190	1.000
0008	1.190	0.190	1.000
0009	1.192	0.192	1.000
0010	1.192	0.192	1.000
T(kg)	11.904	1.904	10.000

- 2) Sample Standard Net weight Print Format
- Set spec **C11** LSD to **7**, to enable the serial print
- Set spec **C17** LSD to **2**, to enable the Net Wt. only Print Format.



```
Essae-Teraoka Pvt Ltd
      Bangalore

- - - - - - - - - - - -
| SLNO |    NET WEIGHT|
- - - - - - - - - - - -
| 0001 |          0.192|
| 0002 |          0.192|
| 0003 |          0.192|
| 0004 |          0.192|
| 0005 |          0.192|
| 0006 |          0.192|
| 0007 |          0.192|
| 0008 |          0.192|
| 0009 |          0.192|
| 0010 |          0.192|
- - - - - - - - - - - -
| T(kg)|          1.920|
```

9. DATA MEMORY:

Saving the Records in data memory and Reading the Records from data memory is implemented in this version. Total 1000 records will be stored in data memory. So after reaching the end of the record the old record will be deleted. Record contains net, gross, tare weights information and quantity, unit weight, time & date details.

Note: Data saving is possible in "Custom Print Format" mode only.

- Each record **size** is **32** KB.
- Spec **T15 MSD** is implemented to select **data saving** options. If Spec **T15 MSD** is
  1. No data saving only printing is possible.
  2. Data saving only printing not possible. Data saving and printing both are possible.
- Spec **T16 LSD** is implemented to **delete records on total print**. It should be '**0**' to enable this feature. By default it is enabled.

- Control commands implemented to **print** the required **data**.
- **Ctrl+R** ---- To **read all** the stored records.
- **Ctrl+T** ---- To **print** all the records **with total**.
- **Ctrl+D** ---- To **delete all** the records.
- If memory not connected then it will show the **"MEMORY NOT CONNECTED"** message.
- If no records are available then it will show the **"NO RECORDS ARE AVAILABLE TO PRINT"** message.
- If we deleted all the records then it will show the **"DELETED ALL THE RECORDS"** message.

10. RTC:

1. To display and set Time & Date we have to press the following key combination.

   {REZERO_KEY + DIGINC_KEY, DIGINC_KEY, STAR_KEY}.

2. By pressing '*' key display will change from time to date and date to time.
3. We can change the time & date by pressing digital increment key and digital select key.

11. SINGLE KEY CALIBARTION:

1. Implemented single key CAPACITY, ACCURACY, DECIMAL POINT SELECTION, AND CALIBARTION. And single key TARE AND REZERO.
2. NOTE: 1. LONG PRESS = PRESS AND HOLD KEY FOR 5 SECONDS
   2. SHORT PRESS= PRESS THE KEY JUST ONCE (HALF SECOND)
3. To do Calibration presses the SON key. When Display showing SON LONG PRESS THE REZERO KEY.
4. When display changes from SON to CAP release the REZERO key.
5. After long press display toggles between CAP and value in Kg ex :(150.00) this is the previous or default capacity.
6. If u wants to change the capacity accuracy SHORT PRESS the Rezero key. After short press of key display toggles between CAP and value in kg (60.00). It will show one by one capacity option in kgs as 150.00, 60.00, and 300.00 by SHORT PRESSING REZERO key you can select different option. When the needed weight comes stop short pressing key and display toggles between CAP and CAPACITY WEIGHT ex: if u stops at 300.00 kg display toggle between CAP and 300.00.

7. After the selection of the respective capacity LONG PRESS THE REZERO KEY until display changes to CAP LOADED after seeing the message CAP LOADED release the REZERO KEY pressing. At this time your selected capacity stored.
8. At the POINT 5 showing capacity is okay and u doesn't want to change the capacity means just LONG PRESS the Rezero key until display shows CAP LOADED.
9. After the release of key the display enters the calibration mode and it will shows the FS and weight in (ex: 100.00) kg weight showing is 1/3 rd of the capacity selected.
10. If you want to calibrate at this weight means LONG PRESS the Rezero key until display toggles between CAL00 and RAW COUNT (ex:1254).
11. If you want to change the calibration weight then at POINT 9 short press the REZERO KEY DISPLAY ENTERS KEYCAL mode and toggles between KEYCAL and weight 5 kg . You can increase the weight by short pressing the Rezero key. Each short press of the key add 5 kg to the display weight when the KEYCAL weight reach the capacity selected it will roll over from the initial 5 kg.
12. After selection of the calibration weight long press the Rezero key to enter the CAL00 mode.
13. At the CAL00 mode with the empty panel long press the Rezero key up to display changes to CAL SP mode.
14. At the CAL SP mode place the calibration weight that u selected in KEYCAL or FS mode and long press the Rezero key to calibration. Press until display show CALOVR if the CALOVR message came means calibration over. After CALOVR message release the key the display will shows the weight that is present on the panel.
15. In normal mode REZERO TARE key has been combined as single key with Rezero % is 5%. That means total capacity 5 % of the weight is considered as Rezero and above 5% weight is considered as tare weight.

12. DOCUMENT REVISION HISTORY:

Rev	Date	Prepared by	Checked By	Approved By	Details
R01	08/07/2021	PUTTASWAMAPPA MADHU Digitally signed by PUTTASWAMAPPA MADHU Date: 2021.07.09 10:50:11 +05'30'	Prashantha Kumar. G		Instruction manual Revised