

ER-II SERVICE MANUAL



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1. Introduction

1.1. Preface

Thank you for purchasing of our CAS scale.

This scale has been designed with CAS reliability, under rigid quality control and with outstanding performance.

WE hope that your departments enjoy with high quality of CAS product.

This manual will help you with proper operations and care of the EB series. Please keep it handy for the future references.

1.2. Precaution

- Make sure that you plug your scale into the proper power outlet.
- Place the scale on a flat and stable surface.
- Plug into a power outlet 30 minutes before operations.
- Keep the scale away from strong EMI noises may cause incorrect weight readings.
- This scale must be installed in a dry and liquid free environment.
- Do not subject the scale to sudden temperature changes.
- Do not subject the platter to sudden shocks.
- If the scale is not properly level, please adjust the 4 legs at the bottom of the scale (turn legs clockwise or counterclockwise) so as to center the bubble of the leveling gauge inside the indicated circle.



1.3. Specifications

	ERII – 6	ERII – 15	ERII - 30				
Capacity	<u>Dual Interval</u> 3 kg / 0.001 kg 6 kg / 0.002 kg	Dual Interval 6 kg / 0.002 kg 15 kg / 0.005 kg	Dual Interval 15 kg / 0.005 kg 30 kg / 0.01 kg				
Internal Resolution	1 / 60,000	1 / 60,000	1 / 60,000				
External Resolution	1 / 3,000	1 / 3,000	1 / 3,000				
Display		Three LCDs with 6 digit					
Symbols	Charge, stat bi	pilization, zero, tare, lowe acklight (LCD version onl	er battery, NET y)				
Interface	R	S – 232C (Printer Option	n)				
Keys	Number(0~9), I *	Direct PLU(M1~M4),Clea ; +(add), Power ON/OF	ar, ZERO, TARE, F				
Function	 Direct PLU(4) Price comput Low Battery Auto Power (BL brightness 	 Direct PLU(4) / Indirect PLU(200) Price computing scale Low Battery Indication function Auto Power Off, Auto BL off BL brightness control function 					
Product Size	3	04(W) X 324(D) X 112(H	1)				
Platter Size	290(W) X 209(D)						
Operating Temperature	- 10 °C ~ +40 °C						
Power	12 V Adaptor or PB BATTERY (6V3.6AH/20HR)						
Options	GHT						



1.4. Dimension





1.5. Key & SYMBOLS ON DISPLAY

■ Table : Key Functions

KEYS	FUNCTIONS
0~9	Numbers import
M1 ~ M4	Direct PLU keys
*	Function key, PLU restore, P mode (User s Set-up Mode enter) Push more than 2 second when using P mode
ADD	To make several sales transaction by adding up
С	To Clear data
ZERO	To set zero
TARE	To set up or clear tare value
ON	To turn on/off the scale or backlight(LCD version only)

■ Table : Symbols on Display

KEYS	FUNCTIONS
STABLE (▼)	Weight steady
ZERO (▼)	To adjust zero
TARE (▼)	Tare on
	Backlight on
▶ (▼)	Low power warning
SUM (▼)	Used to call a toral price of add up transations



1.6. SealingMethod





[REVISIONS		10	2			3			
	Model No.	Part ND,	REV SY	ſM	CONTENTS		DRAWN	CHECKED	APPROVED	
+ +									-	- A
									_	
В					STICKE	\mathcal{I}				B
+ -										
С										С
+ +	Statune STICKER								♦	
+ D	I THERE IS A REAL OF THE PARTY							D		
	Tolerances unless othervise specified angular ± DRD.	NAME OR TITL	e Ealin	١G	METHOD	#19 k Yang.	CAS CURPU ANAP-RI KWANG	RATION JECK-MYON I-DIL,KOREA		-
E	DECIMAL ± ORD.	FIRST USED IN ASSEMBLY	N	/A		MATERIAL	N/A			E
			RE	R2		END FINI	SH N/A	DIMENOTE		
+ .			I. W	ORLI T	D WIDE	SCALE	DRAVING			
	UKA¥N		LUKEU	_	AFLKUVFN	SUALE	rak	I NU.	KEV.	-
	20067 37 217 777 77 9/2/1/9					1:1	РРР-Е	R2-MSEA	0	
L	1				2 4 I		AS FORM A4 (210m	mx297mm)		J



2. Calibration

2.1. General Calibration

Pressing and holding calibration switch press [POWER] key to go to calibration mode. User can move to other mode by using [ZERO] key in the calibration mode.

User also moves to other sub-modes for each mode by using [TARE] key.

Please simply follow below procedure to move to other mode.

- (1) Calibration Mode: Pressing and holding "Calibration Switch" press [POWER] key.
- (2) It displays "CAL-0" after "CAL", and it blinks the version of scale three times.
- (3) Selecting menu: press [TARE].
- (4) ENTER(Setting) : [TARE] key

MODE	Function				
CAL 1	Display normalized AD				
CAL 2	Display Keypad infomation-				
	Weight Setting Mode				
	"UnLoad" \rightarrow [TARE] \rightarrow				
CAL 3	"MIDD" \rightarrow [TARE] after loading for 1/3 weight \rightarrow				
	"FULL" \rightarrow [TARE] after loading for Full weight \rightarrow				
	"MIDD" \rightarrow [TARE] after loading for 1/3 weight \rightarrow "END"				
CAL 4	Option Setting (Table 1 참조)				
CAL 5	Display filtered Raw AD				
CAL 6	Function setting on each Key (Table 2 참조)				
CAL 7	% Calibration				
CAL 8 Battery calibration					
CAL 9	Gravity constant				
	Set calibration factor				
	"Unit" \rightarrow [TARE] \rightarrow select 0, 1 (0:kg, 1: lb) \rightarrow [TARE]				
	"CAPA" → [TARE] → select capacity → [TARE]				
CAL 10	"MCAPA" \rightarrow [TARE] \rightarrow select mid-capacity \rightarrow [TARE]				
	"W-dP" → [TARE] → Select Decimal Point → [TARE]				
	" 1 d " \rightarrow [TARE] \rightarrow Select division \rightarrow [TARE]				
	"Dual" \rightarrow [TARE] \rightarrow Enable dual interval (0:disable, 1:enable) \rightarrow TARE				
CAL 11	Set nation(00 : OIML , 01 : NTEP , 02: KOREA)				



< Modes >

2.1.1.C4 Setting

2.1.1.1. C4-1 Setting

		3	5%
		2	10%
	initial zero range	1	3%
		0	2%
DITS		0	Proper tare
	Tare Type	1	Full Tare
BIT4			
	Successive tare	3	(+), (-) Direction successive Tare
		2	(-) Direction successive Tare
BIT 2~3		1	(+) Direction successive Tare
		0	One Time tare
BIT1			
BITO			

2.1.1.2. C4-2 Setting

BIT7			
BIT6	Use PLU Tare	1	Use
DITE		0	Don't use
BIID	Use PLU Name	1	Use
	Llee Deily Total	0	Don't use
DI14	Use Daily Total	1	Use
	Clear Price	0	Don't clear
DIIS		1	Clear
	Clear Tare	0	Don't clear
DIIZ		1	Clear
DIT1	Use Euro	0	Don't use
DIII		1	Use
DITO	Power On Euro	0	No
UIIU		1	Yes

2.1.1.3. C4-3 Setting

DITZ	Dot Type	0	"." dot
		1	"," comma
BIT6	Use Preset tare	0	Don't use



		1	Use
DITE		0	Don't use
0110	Use back light	1	Use
		0	Don't use
DIT4	Use Head message	1	Use
DITO	Use gram	0	Don't clear
ыю		1	Clear
DITO	Use oz	0	Don't clear
DITZ		1	Clear
DIT1	Use Ib	0	Don't use
		1	Use
PITO	Use Kg	0	No
0110		1	Yes

2.1.1.4. C4-4 Setting

BIT7	Х		
BIT6	Х		
	Price round off	3	00, 25, 50, 75
		2	00, 10, 20
BII 4~5		1	0, 5
		0	normal
BIT3	Х		
BIT2	Х		
	Unit / Price	3	1000/1
		2	100/1
0110~1		1	10/1
		0	1/1

2.1.1.5. C4-5 Setting

BIT7	Use Standby time	0	Don't use
		1	Use
BIT6	Price decimal point	7	Special case
		6	0.00000
		5	0.00000



		4	0.0000
		3	0.000
		2	0.00
		1	0.0
		0	0
DITO	Use Unit message	0	Don't use
		1	Use
DIT 2	Use Total price window over	0	Don't use
		1	Use
	Print type	3	Don't use
		2	DEP-50
BII V~I		1	
		0	

2.1.2. SPAN Calibration Setting (C-3)

(1) Pressing and holding "Calibration Switch" press [POWER] key.

After "CAL" message blinks three times and shows the version of scale, it displays "CAL 1" message.

- (2) Press [ZERO] to display "CAL-3".
- (3) Press [TARE] key and then it displays "zero" message.
- (4) Press [TARE] key and then it displays "midup" message
- (5) Load middle weight (ex:1/3 full capacity) on the platform
- (6) Press [TARE] key and then it displays "span" message
- (7) Load full weight on the platform
- (8) Press [TARE] key and then it displays "middn" message
- (9) Load middle weight (ex:1/3 full capacity) on the platform
- (10) Press [TARE] key and then it display "CAL 3" message

2.1.3. Gravity Constant Value Setting (C-9)

Current gravitational Acceleration value is set to 9.7994 $\mbox{m/s}^2$.

(1) Pressing and holding "Calibration Switch" press [POWER] key.

After "CAL" message blinks three times and shows the version of scale, it displays "CAL-1" message.

(2) Press [ZERO] to display "C-9".



- (3) Press [TARE] key, and then "G-1" message and "9.7994" will be shown. The first digit,"9" will blink.
- (4) Input a gravitational acceleration value by using [ZERO] key.
- (5) Press [TARE] key, and then "G-2" message blinks."9.7994" will be shown. The first digit,"9" will blink.
- (6) Input a gravitational acceleration value by using [ZERO] key.
- (7) Press [TARE] key to save the gravitational acceleration value, and "C-9" message will be shown.

2.1.4. Calibration factor Setting (C-10)

- (1) Pressing and holding "Calibration Switch" press [POWER] key.
- (2) After "CAL" message blinks three times and shows the version of scale, it displays "CAL-1" message.
- (3) Press [ZERO] to display "C-10".
- (4) Press [TARE] key, and then "UNIT " message and "0" will be shown. The first digit,"0" will blink. It means calibration unit is "kg" (0 : kg, 1 : lb)
- (5) Input a calibration unit by using [ZERO] key.
- (6) Press [TARE] key, and then "CAPA" message blinks."0015" will be shown. The first digit,"0" will blink. It means a full-capability is "15 (calibration unit, kg or lb)"
- (7) Input a capability by using [ZERO] key.
- (8) Press [TARE] key, and then "MCAPA" message blinks."0005" will be shown. The first digit,"0" will blink. It means a mid-capability is "05 (calibration unit, kg or lb)"
- (9) Input a capability by using [ZERO] key.
- (10)Press [TARE] key, and then "W-dP" message blinks."3" will be shown. The first digit,"3" will blink. It means a weight decimal point is "3 (will display 0.000)"
- (11)Input a weight decimal point by using [ZERO] key.
- (12) Press [TARE] key, and then "1d " message blinks."0.005" will be shown. The third digit,"0" will blink. It means a division is "0.005 (calibration unit, kg or lb)"
- (13) Input a division by using [ZERO] key.
- (14) Press [TARE] key, and then "dual " message blinks."1" will be shown. The third digit,"1" will blink. It means a dual interval is disable. (0 : disable, 1 : enable)"
- (15) Input a dual interval enable by using [ZERO] key.
- (16) Press [TARE] key to save the calibration factor, and "C-10" message will be shown.

2.1.5. Displaying Real A/D Value (C-5)

Display Raw AD



2.1.6. Input Function Key Code (C-6)

- (1) Under the calibration switch ON press [POWER] key.
- > "CAL" message blinks three times.
- (2) Press [ZERO] to display "C-6".
- (3) "E-SET" display on the weight window.
- (4) "XX" message shows up on the total price window.
- (5) Input "Soft Key Code" in the following table.

For first example, press '16' as SOFT KEY CODE and then press '+' key.

For second example, press `19' as SOFT KEY CODE and then ` Σ' key.

(5) Press 'C' key to exit from "Input Soft Key Code" mode.

• NOTE: User doesn't need MATRIX KEY CODES by inputting soft key code because MATRIX KEY CODES are fixed in hardware.

*** FIXED KEYS & THEIR SOFT KEY CODES**

KEYS	MATRIX KEY CODES	SOFT KEY CODES
"0" through "9"	0 through 9	0 through 9
"C"	10	10
"ON/OFF"	12	12
"ZERO"	13	13
"TARE"	14	14

*** CHANGEABLE KEYS & SOFT KEY CODES**

FUNCTION	SOFT KEY CODES	REMARK
<i>"</i> 00″	11	
ADD	16	
TTP CALL	18	
PAY	19	
MR	20	
MW	21	
CAN	22	
MODE	23	
1/2	24	
1/4	61	25
PRE PACK	26	



KG/LB	27	
TEST	28	
HOLD	29	
PRINT	30	
NO FUNCTION	31	
EURO	60	
PERSENT TARE	62	
TARE SAVE	63	
BOTH SAVE	64	
PERSET	65	
MUL "X"	66	
PLU	32~59	

KEYS	MATRIX KEY CODES	SOFT KEY CODES
"0" through "9"	0 through 9	0 through 9
"C"	10	10
"ON/OFF"	12	12
"ZERO"	13	13
"TARE"	14	14

2.1.7. Percent Calibration (C-7)

(1) Pressing and holding "Calibration Switch" press [POWER] key.

After "CAL" message blinks three times and shows the version of scale, it displays "CAL 1" message.

- (2) Press [ZERO] to display "CAL-7".
- (3) Press [TARE] key and then it displays "per 0 " message. Select the percent value using the [numeric] key. You can choose 10~90 percent.
- (4) Press [TARE] key and then it displays "zero" message
- (5) Press [TARE] key and then it displays "pspan" message
- (6) Load choice percentage weight of full weight on the platform
- (7) Press [TARE] key and then it displays "CAL 7" message

2.1.8. Battery Calibration (C-8)

(1) Pressing and holding "Calibration Switch" press [POWER] key.

After "CAL" message blinks three times and shows the version of scale, it displays "CAL 1" message.

(2) Press [ZERO] to display "CAL-8".



- (3) Press [TARE] key and then it displays voltage of battery.
- (4) Change the jumper-pin of main PCB, 'BAT' to '+ 5V'.
- (5) Press [ZERO] key two times and then Press [-] key two times.And then it display '500'
- (6) Change the jumper-pin of main PCB, '+ 5V' to 'BAT'.
- (7) You can see the calibrated voltage of battery.



3. The Schematics and Diagram

3.1. System Block Diagram





Circuit Diagram

3.1.1.Main





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3.1.2. Power Part & Back_Light RECHARGEABLE BATTERY





3.1.3. Key Part



Title							
ER2 KEY CIRCUIT (MEMBRANE)							
Size	Document Number					Rev	
A	2101 - E20 - 0030					0	
Date:	Tuesday, May 29, 2007	Sheet	1	of	4	_	



3.1.4. Display Driver(Main PCB) & REAR Display



REAR DISPLAY PCB



Title	ER2 DISPLAY (REAR)					
Size A3	Document Number 6110 - PER - 0002					Rev
Date:	Tuesday May 29, 2007	Sheet	4	of	4	

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4. Exploded View



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Load Cell drawing



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5. Part Location

5.1. Main PCB (Top)



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5.2. Main PCB (Bottom)



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5.3. Rear Display PCB (Top)



5.4. Rear Display PCB (Bottom)





6. Error Messages & Solution

Error				
Message	Description	Solution		
on Display				
"Err 0"	The "Err 0" occurs when scale is not stable.	Remove unstable facts.		
"Frr 1"	The "Err 1" occurs when a current zero point has	Please call your CAS		
	shifted from the last span calibration.	dealer.		
"Frr 2"	The "Err 2" is not a real error. Only it prompts	Please call your CAS		
	return CAL switch to the normal position.	dealer.		
"Frr 3"	The "Err 3" is an overload error	Please remove the		
		weight.		
"Frr 4"	The "Err 4" is leakage of navment	Scale needs more		
		payment.		
"Err 5"	The "Err 5" means there is already tare.	Remove the tare.		
"Err 6"	The "Err 6" means total price summation is	Please change unit price		
	over.	or remove some weight.		
"Err 7"	The "Frr 7" means total price is over.	Please change unit price		
		or remove some weight.		
"Frr 8"	The "Frr 8" means Furo rating price is over	Please change unit price		
		or change euro rate.		
	The "Err 11" means a writing error of the internal			
"Frr 11"	nonvolatile memory. To recognize this error, be	If it still has "Err 11",		
	sure to check the voltage on the circuit and do	replace the digital module.		
	calibration procedures.			
	The "Err 12" warns that the scale has lost the	Enter each condition codes		
"Err 12"	parameters for weighing regulations or has lost	again (?).		
	the factors for a digital span calculation.	Please try a span calibration		
		again if still not fixed.		
		Please try to find out which		
"Err 13"	The "Err 13" means the soft key code is broken.	key lost soft key code and		
		then input this code again.		
"Err 14"	The "Err 14" means calibration range is not	Please call your CAS		
	correct.	dealer.		
"Err 15"	The "Err 15" means 1/2 or 1/4 unit price is over.	Please change unit price		



7. Part List

1.1 MAIN PCB ASS'Y [110E20EMAPUN0101]

No	Part Name	Specification	Part Number	Q'ty	Remark
	MAIN PCB ASS'Y	ER2-15CB(LCD)		1	MAIN PCB ASS'Y
1	PCB-MAIN	6100-PER-0001-A(ER LCD)	6100PER00010	1	
2	ONE MODULE	ONE MODULE		1	ONE MODULE1
3	IC(REGULATOR)	KA7809A(D-PACK)	6220IS078090	1	U5
4	IC(REGULATOR)	XC6204C502MR(5.0V)	6220IS0C5020	1	U2
5	IC(LCD DRIVER)	HOLTEX HT1622 (ERS-LCD)	6224I0016220	1	U4
6	IC(DC DC CONVERTER)	MC34063AD	6242I003406A	1	U3
7	IC(C MOS)	74HC245D(LP-II)	6236IS00245A	2	U6,7
8	IC(INTERFACE)	MAX3232(3.3V)(SMD)	6232IS032320	1	U1



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9	TRANSISTOR CHIP	KTA1504 SY	628110015040	1	Q1
10	TRANSISTOR CHIP	KTA1666	628110016660	1	Q2
11	TRANSISTOR CHIP	2N2222AS	628110022220	1	Q3
12	DIODE POWER	1N5819(SMD)	6291IS058190	4	D1,3,4,6
13	DIODE-CHIP	KDS184	6294ICP01840	1	D8
14	DIODE-CHIP	KDS160(SMD)	6294ICP01600	5	D9,10,11,12,13
15	DIODE-SWITCHING	PMLL4148L(LP-CONT')	6294ISW4148A	1	D7
16	DIODE-POWER	1N5406	6291IP054060	1	D5
17	RESISTOR 2W	CFR 0.33Ω (±5%)	6512CJ000033	1	R4
18	RESISTOR-CHIP 1/10W	RR1220P-103D(10K)	6527ID301000	3	R1,5,13
19	RESISTOR-CHIP 1/10W	RR1220P-472D(4.7 kΩ)	6527ID300470	1	R2
20	RESISTOR-CHIP 1/10W	RR1220P-102D(1K)	6527ID300100	2	R3,10



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21	RESISTOR-CHIP 1/10W	RR1220P-104D(100K)	6527ID310000	4	R6,9,11,14	
22	RESISTOR-CHIP 1/10W	RR1220P-202D(2 kΩ)	6527ID300200	1	R7	
23	RESISTOR-CHIP 1/10W	RR1220P-101D(100Ω)	6527ID010000	1	R8	
24	RESISTOR-CHIP 1/10W	RR1220P-100D(10Ω)	6527ID001000	1	R16	
25	RESISTOR-CHIP 1/10W	RR1220P-203D(20K)	6527ID302000	1	R12	
26	RESISTOR-CHIP 1/10W	RR1220P-222D(2.2K)	6527ID300220	1	R15	
27	RESISTOR-CHIP-ARRAY	RP164P103J(=1608 10kΩ X 4PCS)	6598IJ301000	3	RL1,2,3	
28	INDUCTANCE	HB-1M2012-102JT(TP2,LP2,DBB)	6670T0001020	8	L1,2,3,4,5,7,8,9	
29	INDUCTANCE	220uH(NT SERIES)	6670T0102200	1	L6	
30	CONDENSER-CERAMIC	0.01uF/3KV	6710CAP0103B	1	C2,19	
31	CONDENSER-CERAMIC	0.001uF/3KV		4	C19,20,21,23	
32	CONDENSER-CHIP	CL21F 471KBNC	6712CHP04710	1	C14	



CORPORATION		ER-II Service I	Manual		1			
33	CONDENSER-CHIP	CL21F 104KBNC	6712CHP01040	10	C1,3,4,5,6,7,8,9,10,13,17			
34	CONDENSER-ELECTRIC	100uF/16V	6704C1601000	2	C11, C18			
35	CONDENSER-ELECTRIC	470uF/35V	6704C3504700	3	C12, C15, C16			
36	CONNECTOR WIRE	D9P*3P*230mm(ER-2)	7840W0012230	1	RS232 WIRE			
37	CONNECTOR(WAFER)	03-5267	7805CCN67030	1	CN3			
38	CONNECTOR(WAFER)	5273-02 (LPH03-02)	7804CCN73020	1	CN2			
39	CONNECTOR(WAFER)	5273-03 (LPH03-03)	7804CCN73030	2	CN1,5			
40	SOCKET CONNECTOR	5332-50P	7813C000050B	1	CN6			
41	FPC-CONNECTOR	FCZ254-11A	7807CFP0011A	1	CN7			
42	CUSHION-VFD	30*20*2T	2631A0000010	3	CUSHION			
43	FERRITE BEAD SMD ARRAY	MZA3216R102A(TDK)	6810F0001020	1	LL1			
44	FUSE	1.6A/250V ø5 UL,S,VDE,BSI(유) fast blow type	7620S0516000	1	F1			



CORPORATION		ER-II Service	Manual				
4	5 FUSE HOLDER	GF-205B(EXP-300L)	7630S0002050	1	FUSE1		
4	5 JUMPER	2PIN	7821CJM00020	3	JP1,2,3		
4	7 LCD	PT-215(CHINA)ER-2	7212D0002150	3	LCD1,2,3		
48	3 LED BACK LIGHT	MD-2766-K(CHINA)ER-2	7224D0027660	3	LED_BL 1,2,3		
49	e Led Lamp	ø5-RED	7232DR00005A	1	D2		
50	PIEZO BUZZER	HYR-1407A(ER-2)	7002Z0014070	1	BUZZER		
53	L TACT S/W	11902(DJTA-1102)	7600STA19020	1	S1 (CAL SW)		

1.2 REAR DISPLAY PCB ASS'Y [110E20ERDPUN0101]

No	Part Name	Specification	Part Number	Q'ty	Remark
	REAR DISPLAY PCB ASS'Y	ER2-15CB(LCD)	110E20ERDPUN0101	1	REAR DISPLAY PCB ASS'Y



CORPORATION		ER-II Service Manual			
1	CUSHION-VFD	30*20*2T	2631A0000010	3	CUSHION
2	PCB-DISPLAY	6110PER2001A (ER2-ONEMODULE)	6110PER2001A	1	REAR PCB
3	LCD	PT-215(CHINA)ER-2	7212D0002150	3	LCD1,2,3
4	LED BACK LIGHT	MD-2766-K(CHINA)ER-2	7224D0027660	3	LED_BL 1,2,3
5	FLAT CABLE CONNECTOR	50P*50P*500mm(ER-2)	7850W00B0500	1	CN1