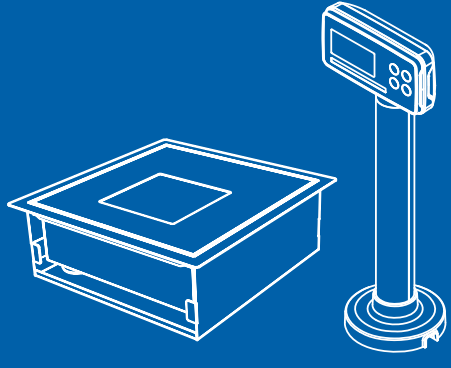
INDUSTRIAL WEIGHING SOLUTION™

PDI SERIES

ECR Interface Scale



www.globalcas.com

OWNER'S MANUAL

CAS

Cautions for Your Safety

Please comply with 'Cautions for Your Safety', which will lead you to use the product safely and properly to prevent any dangerous situations.

- Cautions are divided into 'Warning' and 'Alert', which mean as follows.
- Keep this manual in a place where product users can find out, after finish reading it.

⚠ Warning

'Warning' means a great possibility led to the death or heavy injury when instructions are violated.

⚠ Attention

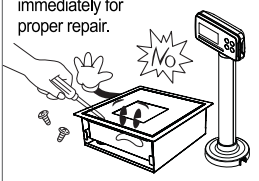
'Alert' means a great possibility led to the injury or material damage when instructions are violated.

⚠ Warning

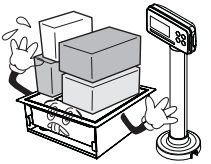
Precautions when installing the scale. To ensure that you get the most from your scale, please follow these instruction.

Do not disassemble the scale.

When any damage or defect occurs, contact your CAS authorized dealer immediately for proper repair.

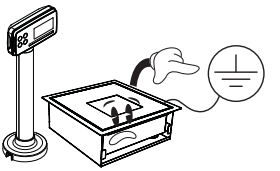


Do not overload beyond the maximum weight limit.



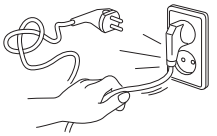
Scale must be grounded to minimize electricity static.

This will minimize defect or electric shock.

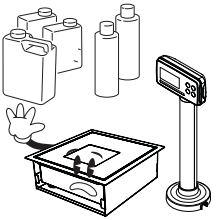


Do not pull the plug by its cord when unplugging.

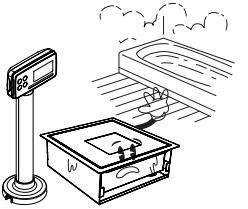
Damaged cord could cause electric shock or fire.



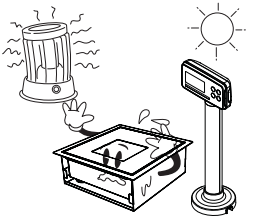
To prevent from fire occurring, Do not place or use the scale near flammable or corrosive gas.



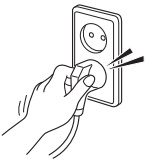
To reduce electric shock or incorrect reading, Do not spill water on the scale or place it in humid condition.



Avoid placing the scale near heater or in direct sunlight.

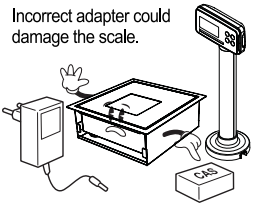


Insert plug firmly to wall outlet to prevent electric shock.



Use proper Adapter.

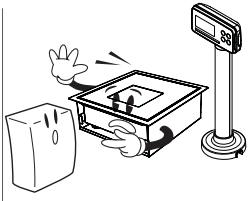
Incorrect adapter could damage the scale.



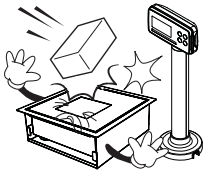
⚠ Attention

Make sure to plug your scal into the proper power outlet. For maximum performance, plug into a power outlet 30 minutes before the usage for warm up.

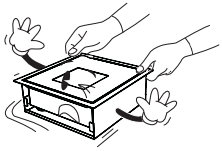
For consistent and accurate reading, maintain periodical check by your CAS authorized dealer.



Avoid sudden shock to the scale.

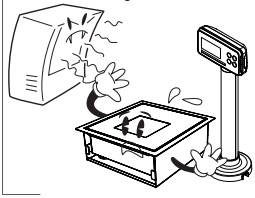


Grab on the bottom of the scale when moving.

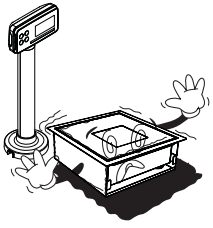


Keep the scale away from other electromagnetic enerating devices.

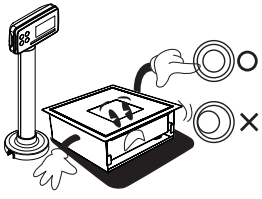
This may interfere with accurate reading.



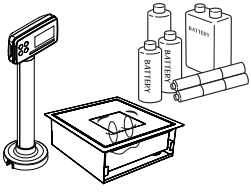
Place the scale on firm and temperature consistent environment.



By adjusting 4 comers of the scale, set the scale even using the built in scale leveling indicator.



Take the battery out when scale is not in use for long time. Leakage from the batteries is hazardous.



Contents

Preface

Thank you very much for purchasing CAS Checkout Scale (PDI).
This produce is characterized by the excellent performance and luxurious features through strict examinations, as well as elaboration for each part under our strict quality control.
PDI is a product with rich functions and various external interfaces, which is designed to comply well with special requirements in a variety of industrial fields under strong and beautiful designs in appearance.
In addition, it is designed for the user-friendly programs for the easier use of indicator by any user with the built-in message display functions to help users understand the product.
Please use the product right and sufficiently utilize functions of PDI as you read this manual thoroughly before using .

1. Features

1-1. Features

☐ Suitable for the Checkout scale and weighing system
☐ Easy operations
☐ Simple and prompt full digital calibration (automatic weight setup at once)
☐ Weight backup functions [restoring weight at the power supply On/Off]
☐ Multiple weights setup functions [5 point input weight setup]
☐ Command Mode [ECR Protocol]
☐ 6 line [basic] / 4 line load cell Input

1-2. Major Functions

☐ Free to set the maximum weight and a division value as a user desires
☐ Independent zeroing functions
☐ Compatible various ECR.

1-3. Analog and A/D Conversion

Applied voltage for load cell	DC 5V (350Ω maximum 8 possible connections)
Zeroing range	0 ~ 2mV/V
Input sensitivity	0.5 uV / D (OIML,)Ntep, KS
	0.5 uV / D (Non OIML,)Ntep, KS
Non-straightness	0.01% Full Scale
A/D internal resolution	1 / 520,000
A/D external resolution	1 / 10,000 (NTEP,)OIML, KS
	1 / 20,000 (Non NTEP,)OIML, KS (Possible with the use of sufficient output at 2mV/V L/C)
A/D conversion speed	Maximum 80 rounds/second
Weight setup	Full Digital Calibration : SPACTM (Automatic weight setup at once)

1-4. Digital and Display

Weight display	LCD (6 digit + Sign)
Sign below zero point	"-" minus sign
Sign for status	STABLE, NET, ZERO, COM.

1-5. General Specifications

AC Adapter	AC 100~240 V (DC 12V, 1.25A)
Operating temperature	-10℃ ~ 40℃
Product size	141 X 73 X 101 X 382 (cf. External Dimension)
Product weight	500g

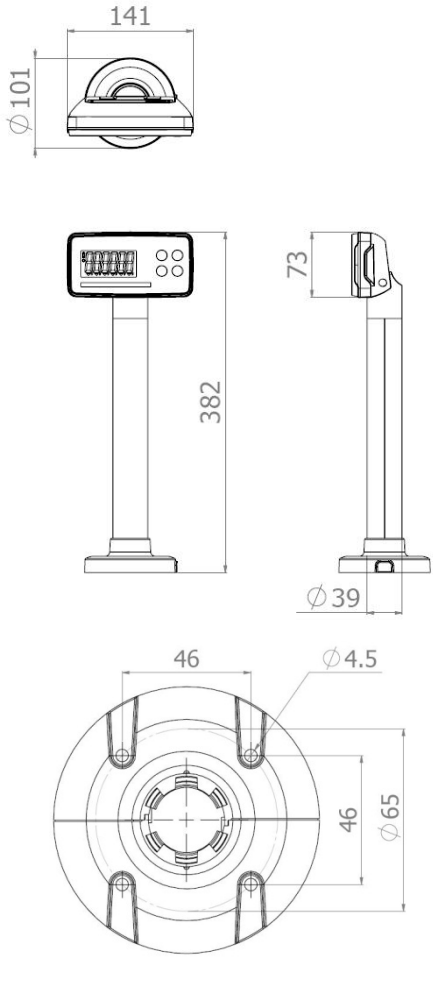
1-6. Communication and Option

Basic	COM1 (RS-232 Printer & PC Interface)
Optional	USB

* USB is option.

2. Specifications in Appearance

2-1. External Dimension (PDI)



2-2. Front Panel Descriptions.

(1) Main Display (Weight Display)

A. Displaying the value of gross or net weight.
B. Displaying error messages for any abnormal motion or weigh setup error/
C. Displaying the status value for the Set Mode and weight setup mode.

(2) Status Display (Lamp)

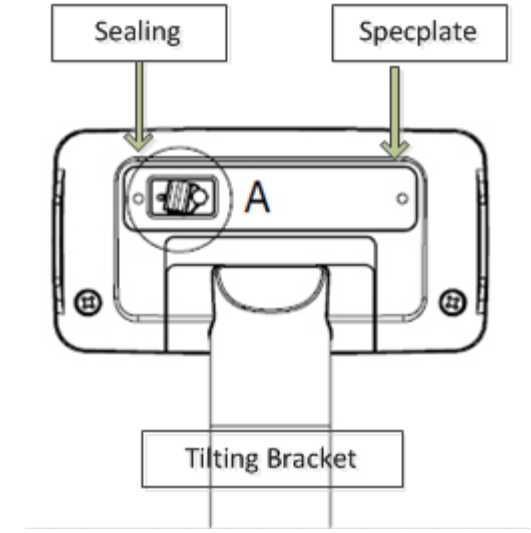
LED Lamp	Descriptions
Stable	The weighed weight is stable.
NET	The current display of weight is a net weight.
Zero point	The current weight is 0 kg.
Communication	The current status is at the communication status.

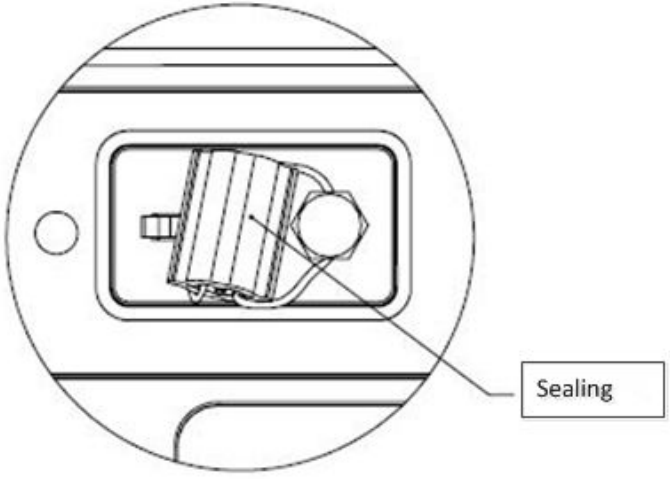
(3) Keyboard

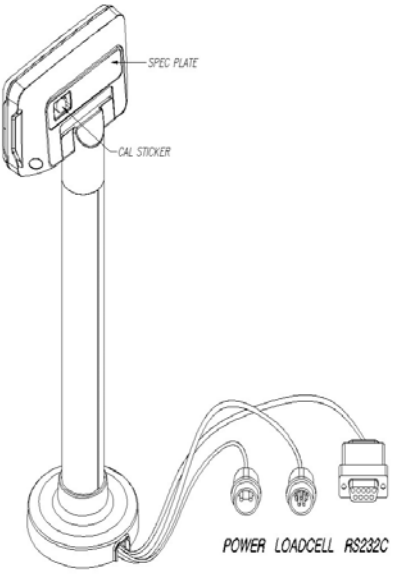
0	* It sets the weight display near zero point to 0. (A range of 2%, 5%, 10%, 20% and 100% can be selected.)
T	* Use it to weigh with the tare. * The current weight is memorized as the tare by pressing the key. * Press the key when the load tray is empty to release the tare.
✳	* Use it to save the current status and exit from the Function mode.
⏻	* Use it to power on/off.

* Function mode, : CAL MODE, SET MODE, TEST MODE

2-3. Rear Panel Descriptions







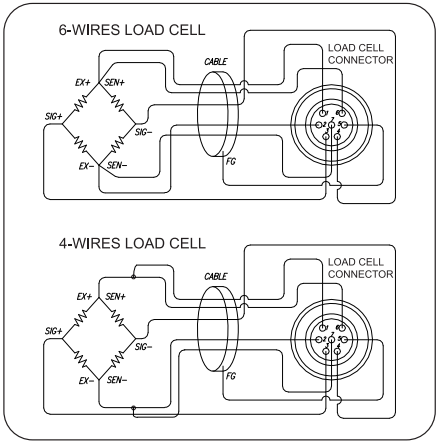
• **SEALING (CAL S/W)**	Use it to set the weight (calibration).
• **POWER**	* Use it for the power supply.
• **LOAD CELL**	A port to connect load cell.
• **RS-232C**	Serial Com 1 (connect PC or printer)

3. How to Install

3-1. How to Connect Load Cell

Connect the load cell connector to the load cell port on the back of the indicator.

* How to connect the load cell to the connector.



Pin Number	Pin Function
1	EXC+
6	SEN+
2	EXC-
7	SEN-
3	SIG+
4	SIG-
5	SHIELD

Note 1. When 4 line load cell is used, connect EXC+ and SEN+ to '+' power supply terminal in the load cell input, and connect EXC- and SEN- to '-' power supply terminal in the load cell input.

* Relationship between the load cell output and input sensitivity.
The input sensitivity of this product is maximum 0.2uV/digit or more.
The following equation should be satisfied upon the system design.

$$0.2uV \leq \frac{\text{Applied voltage of load cell x Output voltage of load cell x Value of a division}}{\text{Rated capacity of load cell x Number of load cell}}$$

Example 1) Number of load cell: 4 ea
Rated capacity of load cell: 500 Kg
Rated output of load cell: 2mV/V
Value of a division: 0.10 Kg
Applied voltage of load cell: 10V (= 10,000 mV)

According to the equation➔ (10000 mV* 2mV * 0.1Kg)/(500Kg * 4) = 1 ≥ 0.2uV
As the calculated value is greater than 0.2uV, this weight system design has no problem.

4. Weight Setup (Calibration) Mode

What is the weight setup?

It refers to the calibration to set the displayed value to the actual weight in displaying weights.

How to Access to the Weight Setup Mode

Turn on the power supply to access to the weight setup mode while pressing Cal S/W after removing the sealing. Press the setup key long in the weight setup mode to return to the weighing mode.

4-1. Weight Setup Menu (CAL1 – CAL9)

CAL 1: Maximum capacity
CAL 2: Minimum division and decimal position setting
CAL 3: Weight calibration
    3-1. Setting the range of multiple calibration
    3-2. Zero calibration
    3-3. Setting weight
    3-4. Span calibration
CAL 7: Gravity adjustment
CAL 8: Zero adjustment
CAL 9: Factor calibration
CAL 10: Setting dual range

CAL 1 (CAL 1 automatically starts.)

Function: Setting Maximum Value **Range of set value: 1 ~ 99,999**		
Used key	Display	Descriptions
 :Save and next Menu navigation  : Set value change  : Changing places	C= 10000	Max. value = 10000kg
	C= 10	Max. value = 10kg

Note 1. It means the maximum weight value to be weighed by the scale.

CAL 2

Function: Minimum division and decimal position setting **Range of set value: 0.001 ~50**		
Used key	Display	Descriptions
 :Save and next Menu navigation   : Set value change	d= 0.001	Minimum division 0.001 kg
	d= 0.002	Minimum division 0.01 kg
	d= 0.005	Minimum division 0.1 kg
	d= 0.01	Minimum division 1 kg
	d= 0.1	Minimum division 10 kg

Note 1. The minimum division means the value of a division.

Note 2. Set the external resolution within 1/30,000 as the value by dividing the maximum weight by the minimum division.
If the external resolution is 1/30,000 or more, Err 21 is shown.

Note 3. The position of a decimal point is decided by the position of a decimal point for the minimum division set in CAL2.

Note 4. If the minimum division is set to any value out of 1, 2 and 5 unit, "ERR DIV" is shown.

CAL 3

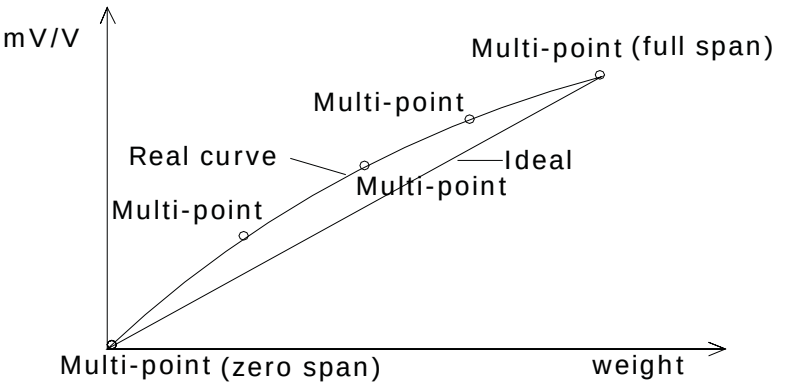
CAL 3-1

Function: Setting Multi Calibration Step
Range of set value: 1 ~ 5

Used key	Display	Descriptions
:Save and next Menu navigation : Set value change : Changing places	STEP- 1	Setting multi calibration for step 1 (CAL3-3 and CAL 3-4 are carried out once)
	STEP- 3	Setting multi calibration for step 3 (CAL3-3 and CAL 3-4 are carried out three times.)
	STEP- 5	Setting multi calibration for step 5 (CAL3-3 and CAL 3-4 are carried out five times.)

* If the actual curve of load cell is a straight line, set the range of weight setup to 1.

* A function to use, when the output of load cell is corrected by setting multiple points in some sections because the actual curve of load cell is not a straight line.



Zero and Span points to interpolate weight from Load Cell

CAL 3-2

Function: Zero Calibration		
Used key	Display	Descriptions
 : Zeroing	UnLoAd 1234 - - -	Empty the load tray and press the setup key. The current weight value is displayed. Confirm 'Stable' and press the setup key. Zeroing in progress...

Note 1. If zeroing finished with no error, it moves to Setting Weight (CAL 3-3) although no key is pressed.
Note 2. When zero point is too low, an error message "ERR27" is displayed.
Note 3. When zero point is too high, an error message "ERR26" is displayed.

CAL 3-3

Function: Setting Weight
Range of set value: 1 ~ 99,999

Used key	Display	Descriptions
 :Save and next Menu navigation	LOAD 1	It means the weight setting mode. (Number = multi calibration number)
 : Set value change	W=100.00	100.00 (unit: Kg or Ton)
 : Changing places	W= 0.10	0.10 (unit: Kg or Ton)

Note 1. Set the weight within a range of 10% ~ 100%.
Although 100% of the maximum weight is given as the initial value, enter the desired weight again if the weight is different from the initial value.
(If the weight exceeds the maximum weight, "ERR 23" is displayed.)
If the weight is 10% or less, "Err 20" is displayed and if the calibration is set to 10% or less, the accuracy is lowered.

CAL 3-4

Function: Weight Calibration)		
Used key	Display	Descriptions
 :Span adjustment	LoAd 12345 - - -	Load the weight set in CAL3-3 and press the setup key. The current weight value is displayed. Confirm 'Stable' and press the setup key. Span adjustment in progress...

Note 1. CAL 3-3 and CAL 3-4 are repeated as many as STEP is set in CAL 3-1.
At this time, the weight value should be set to a value greater than the previous one.

Note 2. Move to CAL-1 if the span adjustment is over with no error.

Note 3. When zero point is low, an error message "ERR24" is displayed.

Note 4. When zero point is high, an error message "ERR25" is displayed.

Note 5. After finishing calibration, press the setup key for 2 seconds or more to convert to the weighing mode.

Note 6. In order to enter the next CAL menu(CAL 7~10), use 'ZERO' key to enter the mode

CAL 7

Function: Gravity Adjustment		
Used key	Display	Descriptions
 :Save and next Menu navigation	Gr-CAL 9.XXXX	It means you accessed to the menu for the gravity adjustment.
 : Set value change		Set the gravity for the production place.
 : Changing places	Gr-SET 9.XXXX	Set the gravity for the place to use the product.

Note 1. If the gravity of the indicator production place is different from that of the place to use, the gravity adjustment can be done using this function.

CAL 8

Function: Zero adjustment - calibration when any zeroing error occurs.		
Used key	Display	Descriptions
 :Zero adjustment	2-CAL	Empty the load tray and press the setup key.
	1234	The current weight value is displayed. Confirm 'Stable' and press the setup key.
	- - -	Zero adjustment in progress...

Note 1. Use this function when zeroing is not passed for any shock to the load cell.
The range of zero adjustment is 0 ~ 2mV/V.

Note 2. Move to CAL-8 if the zero adjustment is over with no error.

Note 3. When zero point is too low, an error message "Err27" is displayed.

Note 4. When zero point is too high, an error message "Err 26" is displayed.

CAL 9

Function: Factor Calibration		
Used key	Display	Descriptions
 :Save and next Menu navigation	NOT USE	This function cannot be used because of multi calibration.
 : Set value change	FACtor	It means you entered the factor correction mode.
 : Changing places	12345	The current factor is displayed.

Note 1. As this is a menu to set the weight setup with no weight, general users have no need to use it.

Note 2. This can be used only when the range of multi calibration in CAL 4-1 is set to 1.
"NOT USE" is displayed when the range of CAL 4-1 is set to 2 or larger.

Note 3. Enter a password to enter the factor correction mode.

CAL 10

CAL 10-1

Function: Setting Dual Range
Range of set value: 0 ~ 1

Used key	Display	Descriptions
 :Save and next Menu navigation	DUAL- 0	Dual range function is not used.
 : Set value change	DUAL- 1	Dual range function is used.

Note 1. If the resolution capability is 1/10,000 or higher, "OVER" message is displayed and return to the CAL menu mode.

CAL 10-2

Function: Setting the applied section for the Dual Range
Range of set value: 0 ~ 99999

Used key	Display	Descriptions
 :Save and next Menu navigation	M 1000	Dual range is applied to less than 1000kg.
 : Set value change	M 5000	Dual range is applied to less than 5,000kg.
 : Changing places	M 10000	Dual range is applied to less than 10,000kg.

Note 1. If the input value is greater than the maximum value, "ERR SET" message is displayed and returned to the CAL menu mode.

5. Set Mode

5-1. How to Enter the Set Mode

Turn on the power while pressing  key at the indicator front to start the Set Mode.

After finishing the setup in the Set Mode, press  key for a long time

(turn off the power) and turn on the power again.

5-2. Descriptions on key operations in the Set Mode

 :Save and Next Menu navigation

 : Set value change

 : Changing places

5-3. Set Menu Descriptions (F03 ~ F99)

General Function		
F03	(00)	Auto Power Off
F04	(10)	A/D Converting Speed
F05	(10)	Digital Filter
F06	(00)	Vibration Filter
F07	(02)	Motion Detection Condition
F08	(02)	Automatic Zero Tracking Compensation
F09	(00)	Weight Backup
F13	(10)	Set Zero Range
F14	(01)	Set ZERO, TARE Keys Availability
F17	(01)	Set "*" Key
F21	(10)	Set Initial Zero Range
F24	(00)	Set Backlight Operational Condition (LCD)
F25	(03)	Set Backlight Brightness

* Note. Number in () is the default at the factory shipment.

RS-232 Serial Communication Function		
F26	(00)	Device ID
F27	(00)	Parity Bit
F28	(04)	COM1 Baud Rate
F29	(00)	COM1 Usage
F30	(00)	COM1 Output Format
F31	(00)	COM1 - Output Mode
F32	(04)	COM2 Baud Rate
F33	(01)	COM2 Usage
F34	(00)	COM2 Output Format
F35	(00)	COM2 - Output Mode
F36	(01)	Set ECR Type
Print Function		
F43	(01)	Print Line Feed

Set Mode Initialization		
F99	-	Set the Set value of Set Mode to the Factory Default

* Note. Number in () is the default at the factory shipment.

5-3-1. General Function

F03

Function	Auto Power OFF	
Setting range (00 ~ 30)	Display	Meaning
	F03. 00	Not used.
	F03. 10	Automatic power off after 10 minutes in the waiting mode.
	F03. 30	Automatic power off after 30 minutes in the waiting mode.

Note 1. The power is automatically off if the defined time continues at the zero point after the automatic power off is set.

F04

Function	Setting A/D Converting Speed	
Setting range (00 ~ 99)	Display	Meaning
	F04. 10	10 rounds/second
	F04. 20	20 rounds/second
	F04. 80	80 rounds/second

F05

Function	Setting digital filter	
Setting range (00 ~ 50)	Display	Meaning
	F05. 10	Display of average for No. 10
	F05. 30	Display of average for No. 30
	F05. 50	Display of average for No. 50

F06

Function	Setting vibration filter	
Setting range (00 ~ 99)	Display	Meaning
	F06. 00	Vibration filter OFF
	F06. 10	Compensation for the vibration value of 5 divisions (0.5d * 10)
	F06. 99	Compensation for the vibration value of 49.5 divisions (0.5d * 99)

Note 1. Apply this function to a place with heavy vibrations.
(The display response speed becomes slower when the vibration filter is applied.)
Note 2. This function should be adjusted appropriately to the site while the speed of weight variations in F04 is being lowered little by little.

F07

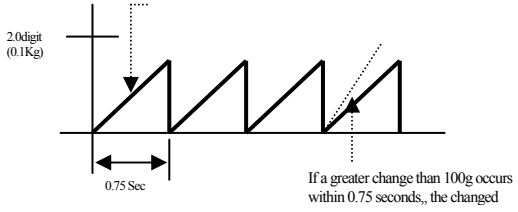
Function	Setting Motion Detection Condition	
Setting range (1 ~ 99)	Display	Meaning
	F07. 1	The 'Stable' lamp is lit if the weight changes within 0.5 division.
	F07. 2	The 'Stable' lamp is lit if the weight changes within 1 division.
	F07. 10	The 'Stable' lamp is lit if the weight changes within 5 division.

F08

Function	Setting Automatic Zero Tracking Compensation	
Setting range (0~9)	Display	Meaning
	F08. 0	Automatic zero function is not used.
	F08. 1	If it changes slowly to 0.5 divisions or less, it is compensated.
	F08. 2	If it changes slowly to 1.0 divisions or less, it is compensated.
	F08. 9	If it changes slowly to 4.5 divisions or less, it is compensated.

Note 1. This function compensates zero automatically if the weight at the zero point does not exceed the division in a certain range within a specific time.

Ex) If F08 is set to "4" when the maximum displayed division is 120.0kg and the value of a division is set to 0.05kg;



F09

Function	Weight Backup Function	
Setting range (0, 1)	Display	Meaning
	F09. 0	Weight backup is not used.
	F09. 1	Weight backup is used.

Note 1. As the backup state memorizes the initial status at zero for the weighing machine even during the blackout or when the power is turned off, the weight value is displayed if there is any weighing object in the weighing machine when the power is turned on.
If the weighing tray is empty, press the "ZERO" key to memorize the zero again.

F13

Function	Set Zero Range	
Setting range (0~99)	Display	Meaning
	F13. 2	The 'Zero' Key is operated within 2% of the maximum weight.
	F13. 10	The 'Zero' Key is operated within 10% of the maximum weight.
	F13. 99	The 'Zero' Key is operated within 99% of the maximum weight.

Note. Be aware that the load cell can be damaged if you set the value to F13=10% or more.

F14

Function	ZERO and TARE Keys Availability	
Setting range (0, 1)	Display	Meaning
	F14. 0	Always operated.
	F14. 1	Operated when the weight is 'Stable'.

F17

Function	Weight Backup Function	
Setting range (0, 1)	Display	Meaning
	F17. 0	Disuse Print.
	F17. 1	Use Print.

F21

Function	Set the initial zero range	
Setting range (02~10)	Display	Meaning
	F21. 02	Set the initial zero up to 2% of the maximum weight
	F21. 10	Set the initial zero up to 10% of the maximum weight

Note 1. Please consult with an engineer because setting 10 or larger value might affect the load cell greatly.

F24

Function	Backlight Operation	
Setting range (0~5)	Display	Meaning
	F24 0	Backlight off
	F24 1	Backlight on when any key is operated.
	F24 2	Backlight on when the weight changes.
	F24 3	Backlight on when it is 'Stable' after the weight changes.
	F24 4	Backlight on when a key operates or the weight changes.
	F24 5	Backlight on all the time

Note. Although it is set to 5, press the power key shortly to turn off the backlight.

F25

Function	Set Backlight and LED Brightness	
Setting range (1~7)	Display	Meaning
	F25 1	Set 10% of brightness
	F25 2	Set 30% of brightness
	F25 3	Set 50% of brightness
	F25 4	Set 60% of brightness
	F25 5	Set 70% of brightness
	F25 6	Set 90% of brightness
	F25 7	Set 100% of brightness

Note 1. Any value out of the setting range, the brightness will be set to '3'.

5-3-2. RS-232 (Serial Communication) Function

F26

Function	Set Device ID	
Setting range (00 ~ 99)	Display	Meaning
	F26. 00	Device ID 00
	F26. 99	Device ID 99

Note 1. This function enables to use the unique indicator ID in the command mode.

F27

Function	Set Parity Bit – RS232C & PRT	
Setting range (0 ~ 3)	Display	Meaning
	F27. 0	Data bit 8, stop bit 1, parity bit: none
	F27. 1	Data bit 7, stop bit 1, parity bit: even number
	F27. 2	Data bit 7, stop bit 1, parity bit: odd number
	F27. 3	Data bit 7, stop bit 2, parity bit: odd number

Note 1. F26 and F27 apply commonly to 2 serial communications (RS23C and PRT).

Serial Communication COM1 Function

F28

Function	Set COM1 Baud Rate	
Setting range (0 ~ 8)	Display	Meaning
	F28. 0	600 bps
	F28. 1	1200 bps
	F28. 2	2400 bps
	F28. 3	4800 bps
	F28. 4	9600 bps
	F28. 5	19200 bps
	F28. 6	38400 bps
	F28. 7	57600 bps
	F28. 8	115200 bps

F29

Function	Set COM1 - Usage	
Setting range (0 ~ 1)	Display	Meaning
	F29 0	Connect to a printer
	F29 1	Connect to a computer or auxiliary display

* If F29: 0 and F33 : 0, "ERR-Set" is displayed with no print.

F30

Function	Set COM1 - Output Format	
Setting range (0 ~ 2)	Display	Meaning
	F30 0	22 bytes for CAS
	F30 1	10 bytes for CAS
	F30 2	18 bytes for AND

F31

Function	Set COM1 - Output Mode	
Setting range (0 ~ 4)	Display	Meaning
	F31 0	No data out
	F31 1	Transmission for both the stable and instable time (stream mode)
	F31 2	One time transmission after the weight is stabilized.
	F31 3	Transmission only if data is requested. * Data request signal: device ID (F26) _ 1 byte communication (Data on request: 1= 0x01, 10 = 0x0A)
	F31 4	Response to the data request - Command Mode

Set the value of F31 to '1' or more if the print mode is used.

Note 1. Command Mode Table

Data Request Signal of CI-200												Descriptions on Request Signal	CI-200 Output Signal
0	1	2	3	4	5	6	7	8	9	10	11		
D	dd		K	Z	CR	LF						Zero Point Key	Received Data Return
D	dd		K	T	CR	LF						Taro Point Key	Received Data Return
D	dd		K	W	CR	LF						Weight Data Request Signal	Received Data Return
D	dd		I	D	0	0	0	0	0	CR	LF	Device Number	Received Data Return

Note 1. (D : 0x44, dd:00~99, K:0x4B , Z:0x5A , CR : 0×0D, LF: 0×0A)
dd = Device Number (2byte), CR = 0×0D, LF: 0×0A
Ex) If a device number is 10, dd becomes 0x31 and 0x30.

Ex) If you want to operate the zero point key when a device number is 11, the indicator operates zeroing if the hex code of "44 31 31 4B 5A 0D 0A" is sent.

Serial Communication COM2 Function (USB Option)

F32

Function	Set COM2 Baud Rate	
Setting range (0~8)	Display	Meaning
	F32 0	600 bps
	F32 1	1200 bps
	F32 2	2400 bps
	F32 3	4800 bps
	F32 4	9600 bps
	F32 5	19200 bps
	F32 6	38400 bps
	F32 7	57600 bps
	F32 8	115200 bps

F33

Function	Set COM2 - Usage	
Setting range (0~1)	Display	Meaning
	F33 0	Connect to a printer
	F33 1	Connect to a computer or auxiliary display

* If F29: 0 and F33 : 0, "ERR-Set" is displayed with no print.
* COM1 and COM2 cannot be used together as the printer function.

F34

Function	Set COM2 - Output Format	
Setting range (0~2)	Display	Meaning
	F34 0	22 bytes for CA
	F34 1	10 bytes for CA
	F34 2	18 bytes for AND

F35

Function	Set COM2 - Output Mode	
Setting range (0~4)	Display	Meaning
	F35 0	No data out
	F35 1	Transmission for both the stable and instable time (stream mode)
	F35 2	One time transmission after the weight is stabilized.
	F35 3	Transmission only if data is requested. * Data request signal: device ID (F26) _ 1 byte communication (Data on request: 1=0x01, 10=0x0A)
	F31 4	Response to the data request - Command Mode

Set the value of F35 to '1' or more if the print mode is used.

F36

MENU	ECR-TYPE		
Setting range (1 ~ 18)	Display	ECR-TYPE	Data Format & Baud Rate **B:** Data Boadrate **D** : Data Bit **S** : Stop Bit **P** : Parity Bit
	F36 1	Most P.O.S, ECRs and Some TEC P.O.S System	B:9600, D:8, S:1, P:NONE
	F36 2	SHARP ER-Axxx, ER-A450T, New SANYO ECRs using RS-232 and TOLEDO 3213 etc.	B:9600, D:8, S:1, P:NONE
	F36 3	SHARP ER-AXXX, New SANYO ECRs using RS-232, TOLEDO 3213 etc (Most P.O.S System)	B:9600, D:8, S:1, P:NONE
	F36 4	NCI ECR(NCR2170), SAMSUNG ER-5100,ER-5115, CRS, Many other ECRs	B:9600, D:8, S:1, P:NONE
	F36 5	SAMSUNG ER-670	B:9600, D:8, S:1, P:NONE
	F36 6	SAMSUNG ECR(SPAIN)	B:9600, D:8, S:1, P:NONE
	F36 7	AP 1 (Type1_ ECR send to scale 11H)	B:9600, D:8, S:1, P:NONE
	F36 8	ELZAB Delta	B:9600, D:8, S:1, P:EVEN
	F36 9	ELZAB ALFA	B:9600, D:8, S:1, P:EVEN
	F36 10	MEDESA S100 – ECR	B:9600, D:8, S:1, P:EVEN
	F36 11	MEDESA S100 – ECR (answer for ENQ)	B:9600, D:8, S:1, P:EVEN
	F36 12	MEDESA S100 – ECR (continuous transmision)	B:9600, D:8, S:1, P:EVEN
	F36 13	MEDESA S100 – ECR (answer for ENQ)	B:9600, D:8, S:1, P:EVEN
	F36 14	IBM (Dialog #2)	B:2400, D:8, S:1, P:ODD
	F36 15	IBM (Dialog #6)	B:2400, D:8, S:1, P:ODD
	F36 16	PSE Protocol	B:9600, D:8, S:1, P:NONE
	F36 17	WIZ Protocol (Israel)	B:9600, D:8, S:1, P:NONE
	F36 18	NETTO Protocol (Poland)	B:2400, D:7, S:2, P:ODD

* The data format and baud rate settings and use by ECR-Type.

5-3-3. Print Function

F43

Function	Set Line Feed	
Setting range (0~9)	Display	Meaning
	F43 1	1 Line feed
	F43 9	9 Line feed

【 Print Format 】

```
No.0001
Gross :    0.999 kg
Tare  :    0.000 kg
Net   :    0.999 kg

No.0002
Gross :    0.999 kg
Tare  :    0.000 kg
Net   :    0.999 kg

No.0003
Gross :    0.999 kg
Tare  :    0.000 kg
Net   :    0.999 kg

No.0004
Gross :    0.999 kg
Tare  :    0.000 kg
Net   :    0.999 kg
```

Note 1. If the power is turned off and then on, the number and total are initialized to 0001.
Note 2. The possible number for print is a range of 1~9999.

F99

Function	Set default	
Setting range (0, 1)	Display	Meaning
	0	No initialization functions for indicator.
	1	Carry out the initialization functions for indicator.

Note 1. To set values to the same as the factory default for the indicator, press the setup key after setting F99 to 1.

6. Test Mode

6-1. How to Enter the Test Mode

Test mode starts when the power is turned on while pressing  key in the front of the indicator.
Press the number for the test menu as you wish.

To exit the TEST mode, press  key for a long time (turn off the power) and turn on the power again.

6-2. Test Menu (TEST 1 – TEST4)

Test 1: Key test

Test 2: Display test

Test 3: Load cell test and A/D conversion test

Test 4: RS-232 serial communication test (COM1, COM2)

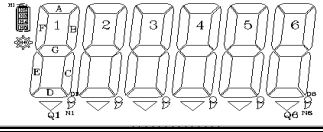
Test 1

Function: Key test		
Used key	**Display**	**Descriptions**
 : Test value change  : Test / Move to next menu	KEY 1	When you press any key to test, the number and code for the key are displayed on the screen.

<Key List>

Key	number	Key	number	Key	number	Key	number
	62		60		27		30

Test 2

Function: Display Screen Test		
Used key	**Display**	**Descriptions**
: Test / Move to next menu		An LCD lamp is on.

Test 3

Function: Load cell test and A/D conversion test		
Used key	**Display**	**Descriptions**
: Test / Move to next menu	XXXXXX X.XX	The internal value for the current weight value is displayed. The output value of the current load cell is displayed in mv/V.

Note 1.Check this number to see if it moves well, while loading or unloading a weight to the load tray. If the number is fixed or "0" is displayed, check the connection of load cell once again.

Test 4

Function: Serial Communication Test		
Used key	**Display**	**Descriptions**
: Test value change : Test / Move to next menu	Tx -- Rx ------ 05 --13	Status to wait for transmission or reception Transmission: 5, Reception: 13

Note 1. Run this test while the communication program in the computer (ex: Hyper Terminal) is executing after connecting a serial port in the computer to the serial port on the back.

Note 2. Send '1' from the computer keyboard, check whether or not '1' is received properly on the indicator's screen, and then check whether or not '1' is received properly on the computer after pressing '1' from the indicator's keyboard.

7. Weighing Mode

7-1. Zeroing Function (used when the zero point changes)

■ Range of zero point: within a range set in F13

Zero chanced.

Press Zero Key to set the zero lamp on and 0.

7-2. Tare Function (used for weighing with a container) - LED

■ Maximum tare set range: maximum weight

* Caution: the weight including the tare cannot exceed the maximum weight.

Put a container on the load tray.
(Container weight: 10kg)

Press the tare key.
(Tare is saved.)

Put an object on the load tray.
(Net weight: 20kg)

Press the 'total * net weight' key (the value of object's weight is displayed.)
Remove the container and object from the load tray to display the saved tare.

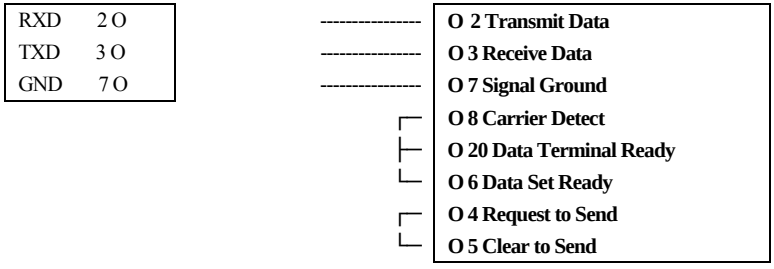
■ If the tare is removed;

Remove the container and object from the load tray, and press the tare key (picture on the right) if the saved tare is only displayed (picture on the left).

8. RS-232C Interface in Detail

8-1. RS-232C Port Connection

(1) COM1 - RXD: Pin No. 2, TXD: Pin No. 3, GND: Pin No. 7



8-2. RS-232 Communication Protocol

8-2-1. 22 Bytes for CAS

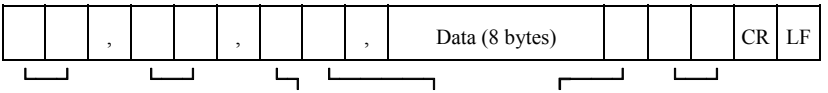
(1) Data bit: 8, Stop bit: 1, Parity bit: none

(2) Code: ASCII

(3) Set the time to send data to the computer in the Set Mode.

- ▣ Send all the time: if F30 and F35 are set to 1.
- ▣ Send when the weight is stable: if F30 and F35 are set to 2.
- ▣ Send upon data request: if F30 and F35 are set to 3.
- ▣ Only if the computer send 1 byte of the indicator's device ID to the indicator, the indicator makes the defined output format.

(4) Transmission Data Format (22 bytes)



US (Unstable) GS (Gross weight) Device ID Lamp Status byte Empty Unit (kg/t)
ST (Stable) NT (Net weight)
OL (Overload)

▣ Device ID: Send ing1 byte of device ID to selectively receive the information from the indicator to the receiver.
(Device ID is set in F26.)

▣ Data (8 bytes): When the weight date including a decimal, for example, 13.5 kg, 8 bytes of ASCII code corresponding to 0',‘0’,‘0’, ‘0’,‘1’,‘3’,‘.’and‘5’ are sent.

▣ Lamp Status Byte

Bt7 1	Bt6 Stable	Bt5 0	Bt4 Hold	Bt3 Printer	Bt2 Gross Weight	Bt1 Tare	Bt0 Zero Point

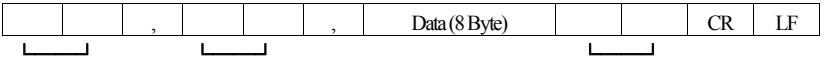
8-2-2. 10 Bytes for CAS

(1) Data bit: 8, Stop bit: 1, Parity bit: none
(2) Code: ASCII
(3) Transmission data format: (10 bytes)

Data (8 bytes)	CR	LF

8-2-3. 18 Bytes for AND

(1) Data bit: 7, Stop bit: 1, Parity bit: odd number / even number
(2) Code: ASCII
(3) Transmission data format (18 bytes)



US (Unstable) GS (Gross Weight) Unit (kg/t)
ST (Stable) NT (Net Weight)
OL (Overload)

9. Error Message

9-1. Error Message from the Weight Setup Mode

Error	Cause	Solution
Err 21	The resolution was set in excess of the tolerance 1/30,000.	Lower the resolution. As the resolution = maximum tolerance / value of one division, adjust the resolution to 1/30,000 or less by correcting either the maximum allowable weight in CAL 1 or the value of one division in CAL3 in the weight setup mode.
Err 22	The weight for the span adjustment was set to less than 10% of the maximum capacity.	Set the weight to 10% or more of the maximum capacity (set in CAL 1) from CAL 4 in the weight setup mode.
Err 23	The weight for the span adjustment was set to more than 100% of the maximum capacity.	Set the weight within the maximum capacity (set in CAL 1) from CAL 4 in the weight setup mode.
Err 24	Too low span.	Set the weight again by lowering the resolution as the setting of the current resolution is not possible because of either abnormality or lower output in the load cell. Two low weight for PCS and percent sample.
Err 25	Too high span.	There is either any abnormality or too high output in the load cell. Execute steps from the zeroing step in CAL 4 in the weight set up again. Two high weight for PCS and percent sample.
Err 26	Too high zero point.	Check whether or not the load tray is empty. Retry the weight setup after check at the test mode 3.
Err 27	Too low zero point.	Set the weight setting again after confirming what force is given to the load tray of the scale in the test mode 3.
Err 28	Weight is shaking.	Check the connection of the load cell connector.

9-2. Error Message from the Weighing Mode

Error	Cause	Solution
Err 01	The initialization of the scale cannot be done because of the shaking weight.	Turn on the power after placing the scale at a flat place with no vibration.
Err 02	Either the connection of load cell is wrong or there is abnormality in the A/D conversion section.	Check the connection between the load tray and the body.
Err 08	The zero key, tare key and start key were disabled at the instable weight.	Set the zero key, tare key and start key to the proper user conditions at F14 in the Set Mode.
Err 09	The current weight is out of the range of zero point.	Set the range of operations for the zero key to within 2% or 10% at F13 in the Set Mode.
Err 10	The tare to set is out of the maximum weight of the scale.	Set the tare to less than the maximum weight.
Err 13	The set value of zero point on the weight setting is out of range.	Check the status of the load tray and set the weight again.
Err 15	The range exceeded during setting the item code in the command mode.	Check the range of item code.
Err 82	There is abnormalities in the A/D set section..	Make an inquiry to A/S.
Over	The current weight on the load tray is too heavy and out of the allowable tolerance.	Avoid any weight in excess of the maximum allowable limit on the scale. If the load cell is damaged, it should be replaced.

☐ Descriptions on Abbreviation on the Display

Abbreviation	Descriptions	Abbreviation	Descriptions
"LOCK"	Key Lock	"UnLoad"	Unload the load tray
"PASS"	Enter Password	"LoAd"	Load a weight
"Discord"	Re-enter Password	"Good"	Successful Execution
""CAL	Weight Set Mode	"SyS"	System Mode
"SET"	Set Mode	"PCS"	PCS Mode
"TEST"	Test Mode	"Per"	Percent Mode
"OUEr"	Exceeding Maximum Load		

Appendix 1. ASCII Code Table

Character	Code	Character	Code	Character	Code	Character	Code	Character	Code	Character	Code
Space	32	0	48	@	64	P	80	`	96	p	112
!	33	1	49	A	65	Q	81	a	97	q	113
“	34	2	50	B	66	R	82	b	98	r	114
#	35	3	51	C	67	S	83	c	99	s	115
$	36	4	52	D	68	T	84	d	100	t	116
%	37	5	53	E	69	U	85	e	101	u	117
&	38	6	54	F	70	V	86	f	102	v	118
‘	39	7	55	G	71	W	87	g	103	w	119
(	40	8	56	H	72	X	88	h	104	x	120
)	41	9	57	I	73	Y	89	i	105	y	121
*	42	:	58	J	74	Z	90	j	106	z	122
+	43	;	59	K	75	[	91	k	107	{	123
,	44	<	60	L	76	\	92	l	108	|	124
-	45	=	61	M	77	]	93	m	109	}	125
.	46	>	62	N	78	^	94	n	110	~	126
/	47	?	63	O	79	_	95	o	111	End	0

MEMO

MEMO

MEMO

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