1、Product Introduction

First, let us present our sincere thanks for your choosing the static portable axle load scale manufactured by Locosc Ningbo precision Technology Co.,Ltd.

Axle load scale is a weighing instrument for measuring the weight of each wheel axle of a car. This scale is of extraordinary functions and very good performance for that we have strictly implemented quality control measures as well as conducted a number of impact test. LP7560 portable axle scales can be set four work modes, respectively is single-weighing-mode, double-weighing-mode, three-weighing-mode and four-weighing-mode.

Please read and understand this manual thoroughly before using the scale so that you can master the scale functions all around.

2、Precautions

>>The connector of the sensor for each weighing plate is assigned with a number, which must be in one-to-one correspondence to the sensor interface on the operation panel of the instrument box and in the boot, ensure all weighing platform that connected to the instrument are on no-load state.

>>Charge the batter when power is low, so as to prevent that the battery cannot drive the mini printer or battery damage resulted from exorbitant power consumption.

>>Do not knock on the keypad with force; all keys are soft touch type.

>>Do not clean the instrument with flammable materials.

>>Do not install axle load scale at places of high pressure and intense electronic interference.

>>Do not use the scale at places of intense electronic interference strong vibration.

3、Features

>> Each AD channel can be calibrated separately.

>>Display and print each wheel weight. axle weight and the total weight.

>>Inquiry weight proportion of each wheel.

>>Built-in a big-capacity rechargeable battery (6V/10A) and be provided with a real-time battery monitoring function.

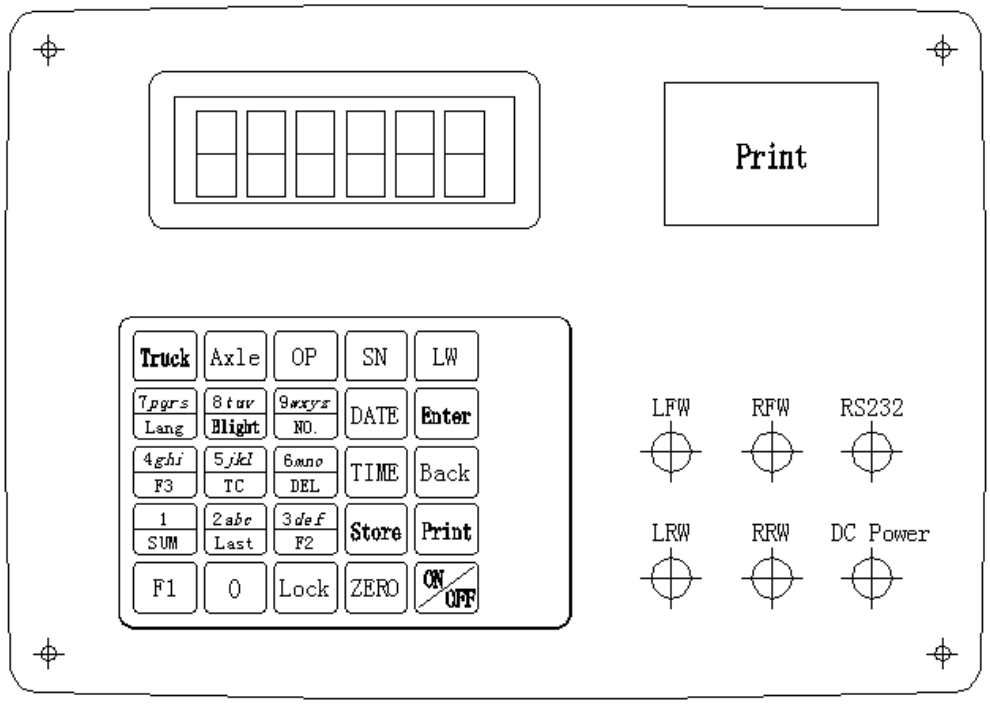
>>Built-in clock for displaying and printing time and date.

>>Built-in micro E18 dot-matrix printer of fast and efficient printing performance.

4、Parameters performance

>>The level of accuracy	III
>>Initial zero range	100%
>>Manually zero range	100%
>>Operation temperature	-10~+40℃
>>Storage temperature	-10~+40℃
>>Operation humidity	≤90%RH

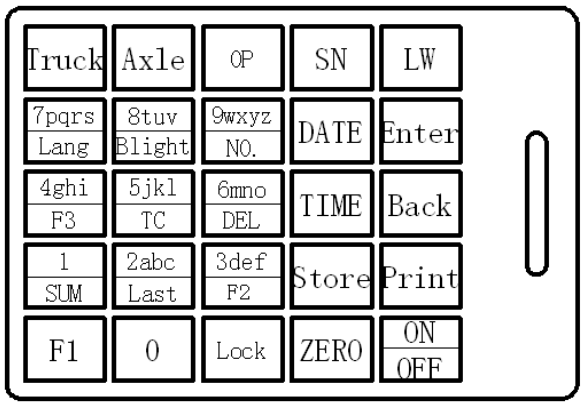
5、View of Front Operation Panel



Front operation panel is composed of LCD screen, film keypad for operation, micro printer, sensor interface, serial RS232 interface and charging interface.

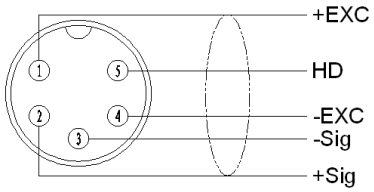
(1) LCD screen(240×64)

(2) film keypad for operation

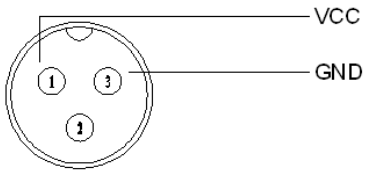


(3) micro printer

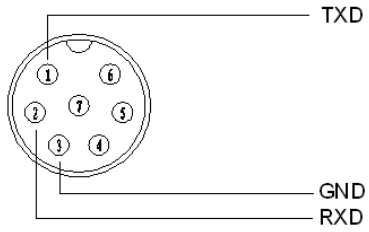
(4) LP7560 sensor signal is realized with five-core fast aviation joint.



(5) LP7560 DC Power is realized with three-core fast aviation joint.



(6) LP7560 RS232 signal is realized with three-core fast aviation joint.



6、Keypad introduction

Keys	Keys name	Function descriptions
Truck	[Truck]	Set truck number
Axle	[Axle]	View each wheel weight percentage of the total weight
OP	[OP]	Kg / lb switch
SN	[SN]	Set the ID No. of cargoes
LW	[LW]	Set overweight alarm value and zero value.
8 tuv Blight	[8/Blight]	Powering on/off LCD backlight
9 wxyz No.	[9/No.]	Enter serial No. to inquire about stored records.
DATE	[DATE]	Set up the date of system clock
Enter	[Enter]	Enter the menu or confirm data
5 jkl TC	[5/TC]	Deleting all records stored
6 mno DEL	[6/DEL]	Deleting the last record stored
TIME	[TIME]	Setting the real-time of system clock
Back	[Back]	Back and cancel
1 SUM	[SUM]	Viewing the number of saved records and the total capacity of storage space

2abc Last	[Last]	Viewing records in reserves sequence
Store	[Store]	Saving and printing the current record
Print	[Print]	Printing weight data
F1	[F1]	System key
Lock	[Lock]	Locking and unlocking the current weight data
ZERO	[ZERO]	Press this key,all weighing platforms are reset
ON OFF	[ON/OFF]	Turning on/off the instrument

7、Operation of the Instrument

■power on/off

At power off mode, press ON OFF to power on, it will go to the weighing interface. At weighing mode, press ON OFF to power off.

■Set System Parameter Setup

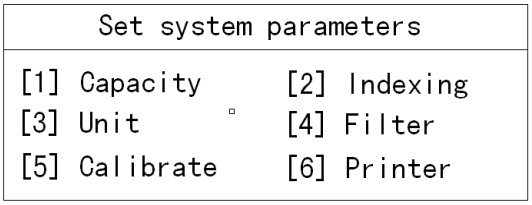
●Entering System Parameter Operation:

Press F1 key on the operation panel, the following interface for setting time is displayed.

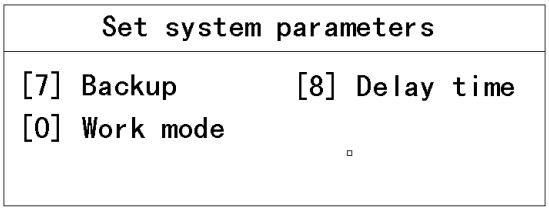


Press Alphabetical key to enter system parameter setting password “123456” directly, then press Enter key to enter the main interface for setting system parameters. There will be a long buzzer sound in case of password error, upon which the system exits this interface.

●Introduction of the Main Interface for Setting System Parameters



System setup main interface 1

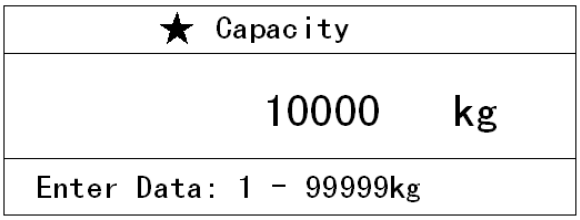


System setup main interface 2

Press Alphabetical key to enter the menu corresponding to digital, press DATE key to switchover and press Back back to the weighing interface.

■Set Capacity

Press digit '1' in the main interface of system parameter setup to enter the following setting menu for weighing range.



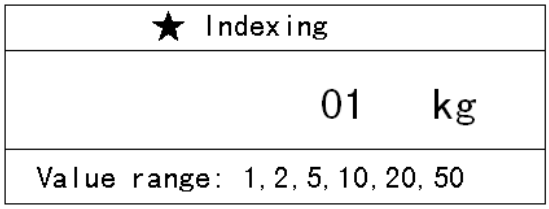
Set weighing capacity: referring to the max weighing range of single weighing plate. This parameter shall be determined according to the rated weighing range of the actually configured weighing plated.

Press Numerical key to enter values as desired directly. Confirmed by pressing Enter key, then it is saved to EEPROM (press Back key to cancel). Now the system returns to the main menu of system parameter setup.

Please ensure the data less than 60000kg otherwise will be error.

■Indexing

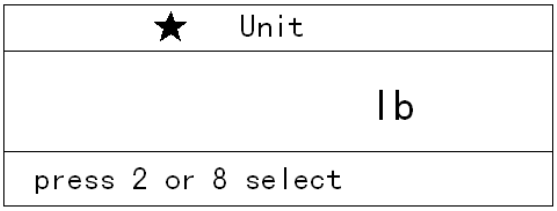
Press digit '2' in the main interface of system parameter setup to enter the following setting menu for index.



Press numerical keys 8 tuv Blight and 2 abc Last to chose a desired value as needed. Confirmed by pressing Enter key, then it is saved to EEPROM(press Back key to cancel). Now the system returns to the main menu of system parameter setup.

■Unit

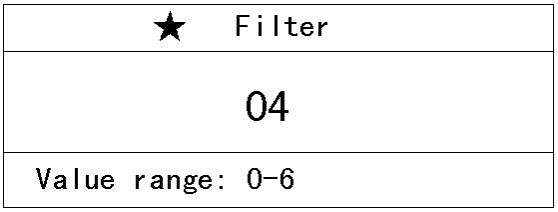
Press digit '3' in the main interface of system parameter setup to enter the following setting menu for unit.



Press numerical keys 8 tuv Blight and 2 abc Last to chose the uni as needed. Confirmed by pressing Enter key, then it is saved to EEPROM(press Back key to cancel). Now the system returns to the main menu of system parameter setup.

■Set Filter

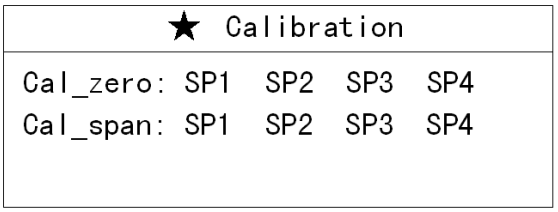
Press digit '4' in the main interface of system parameter setup to enter the following setting menu for Filter.



Press numerical keys 8 tuv Blight and 2 abc Last to chose a desired value as needed and according to the stability of the stability of weighing data. Confirmed by pressing Enter key, then it is saved to EEPROM(press Back key to cancel). Now the system returns to the main menu of system parameter setup. The bigger the value is, the more stable the weighing data will be.

■Calibration

Press digit '5' in the main interface of system parameter setup to enter the following setting menu for Calibration.

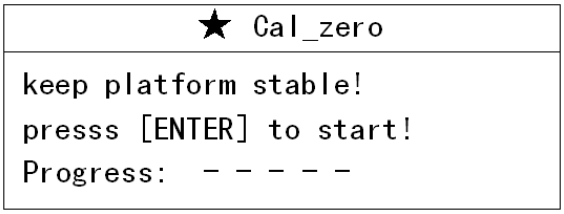


Calibration operations include zero-point calibration and loading-point calibration of each weighing plate, to which attention shall be paid for not confusing.

Press numerical keys 8 tuv Blight and 2 abc Last to switchover up and down, press numerical keys 6 mno DEL and 4 ghi F3 to switchover left and right. Select the operation to be performed, which can be zero-point calibration or loading-point calibration as well as confirm the specific weighing plate. Press Enter key after selection to enter the corresponding interface. Press Back key to returns to the main menu of system parameter setup.

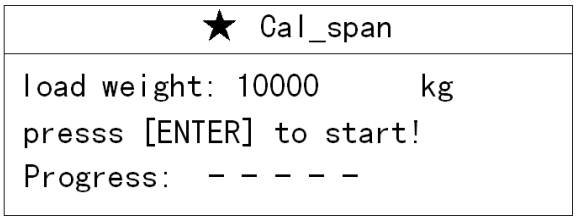
● Cal_zero

First, Confirming that the scale is of zero load, chose a option of “Cal_zero” and press Enter key to start zero-point calibration, and the progress bar starts displaying operation progress. The system returns to main menu of calibration after the progress bars prompt that calibration is completed and a short buzzer beep is heard.



First, load counterweights (alternatives can also be adopted) of certain weight to the corresponding weighing plate; then select the loading point of corresponding weighing plate for calibration and press Enter key to enter the corresponding calibration interface.

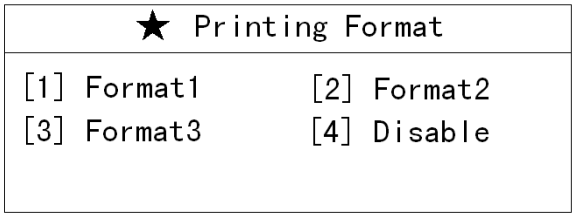
Enter a weight value corresponding with the loaded counterweight, then press Enter key to start loading-point calibration and the progress bar starts displaying operation progress. The system returns to main menu of calibration after the progress bar prompts that calibration is completed and a short buzzer beep is heard.



Press Back key return to the system setup main interface after finish calibration.

■Set Printing Format

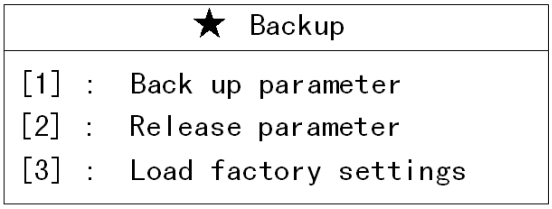
Press digit ‘6’ in the main interface of system parameter setup to enter the following setting menu for printing format.



Press Numerical key to select a printing format as desired directly. Confirmed by pressing Enter key, then it is saved to EEPROM (press Back key to cancel). Now the system returns to the main menu of system parameter setup. Please select the third printing format to print normally.

■Set Backup

Press digit ‘7’ in the main interface of system parameter setup to enter the following setting menu for setting backup.



Parameter operations include three operation forms: backing up aligned parameters, releasing aligned parameters and restoring factory settings.

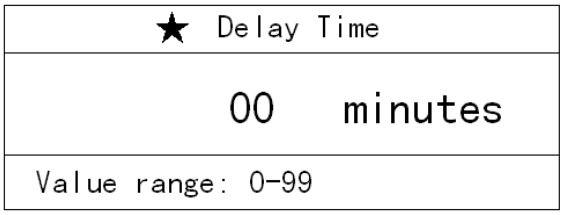
Backing up aligned parameters: this is normally just allowed with the alignment personnel of the manufacturer. This operation is executed by the alignment personnel after the equipment is fully aligned. The aligned parameters can be backed up. Press numerical key ‘1’ directly to back up aligned parameters.

Releasing aligned parameters: in case that the aligned data are disordered by the user on site or that the aligned data are in chaos for causes out of control, which lead that the aligned parameter cannot be released, the user can execute this operation to restore the parameters to factory settings. Press numerical key ‘2’ directly to release aligned parameters.

Restore factory settings: this operation is normally unnecessary. To restore factory settings, press numerical key ‘3’ directly to restore factory settings.

■Delay time

Press digit ‘8’ in the main interface of system parameter setup to enter the following setting menu for setting delay time.



Press Numerical key to enter values as desired directly. Confirmed by pressing 

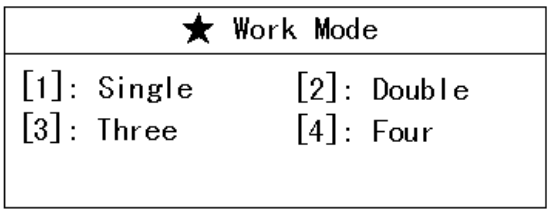
key, then it is saved to EEPROM (press 

key to cancel). Now the system returns to the main menu of system parameter setup.

Shutdown time: with this setting, the instrument will shut down automatically in case of no key operation if this preset time has elapsed, with which to save energy. If this time is set as 0, the function of automatic shutdown is turned off.

■Set Work Mode

Press digit ‘0’ in the main interface of system parameter setup to enter the following setting menu for setting work mode.



Press ‘1’ or ’2’ or ’3’ or ’4’ to select the work mode as desired directly. Confirmed by pressing Enter key, then it is saved to EEPROM (press Back key to cancel). Now the system returns to the main menu of system parameter setup.

four work mode:

Single-plate mode: just displaying the weight of the current axle.

Double-pate mode: simultaneously displaying the weight of the two wheels on the same axle.

Total weight = weight of Wheel 1 + weight of Wheel 2.

Three-plate mode: simultaneously displaying the weight of three wheels.

Weight of Axle 1 = weight of Wheel 2 + weight of Wheel3,

Total weight = weight of Wheel 1 + weight of Wheel 2 + weight of Wheel 3.

Four-plate mode: simultaneously displaying the weight of four wheels.

Weight of Axle 1 = weight of Wheel 1 + weight of Wheel 2,

Weight of Axle 2 = weight of Wheel 3 + weight of Wheel 4,

Total weight = weight of Wheel 1 + weight of Wheel 2 + weight of Wheel 3 + weight of Wheel 4.

Single-plate mode: just one weighting plate needs to insert. When the first axle of the car is loaded to the weighing plate, the weight of the axle is displayed. Then the second axle of the car is loaded to the weighing plate; the weight of this axle is displayed, and so on. After one axle is loaded to the weighing plate and the data gets stable, the current weight can be saved and printed by pressing Store key. After the complete car is weighed, the total weight can be printed by printing Print key. For printing format, see Appendix I “Printing Format”.

Double-plate mode: just two weighting plates need to insert. When the two wheels of the first axle are loaded to the weighing plate, the weight of each wheel and the axle weight are displayed. Then the two wheels of the second axle are loaded to the weighing plate, the weight of each wheel and the axle weight are displayed and so on. After one group of wheels are loaded to the weighing plate and the data gets stable, the current weight can be saved and printed by pressing Store key. After the complete car is weighed, the total weight can be printed by printing Print key. For printing format, see Appendix I “Printing Format”.

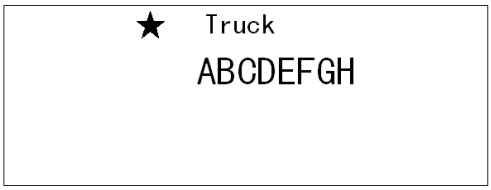
Three-plate mode: just three weighing plates need to insert, especially to tricycle. When the three wheels of the tricycle are loaded to the weighing plate, the weight of each wheel and the axle weight and the weight of tricycle are displayed. After the tricycle are loaded to the weighing plate and the data gets stable, the current weight can be saved by pressing Store key and printed by printing Print key. For printing format, see

Appendix I “Printing Format”.

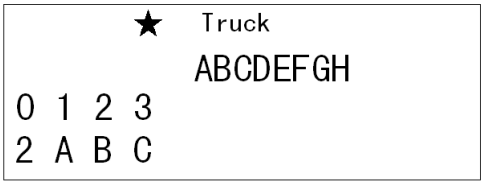
Four-plate mode: four weighting plates are necessary for use simultaneously; in this mode, only 4-wheel cars can be weighed, that is to say, the four wheels of the car must be loaded to the weighing plate and that the weight of the four wheels, the weight of the two axles and the total weight of the car can be displayed. After the four wheels are loaded to the weighing plate and the value gets stable, press Store key to record the weight. The weight can be printed by printing Print key. For printing format, see Appendix I “Printing Format”.

■Set truck

Press Truck key on the operation panel, the following interface is shown:



Press Alphabetical key to select the alpha you needed corresponding to digital, for example, press ‘2’ the following interface is shown:



Press ‘1’ to select ‘A’, Confirmed by pressing Enter key, then it is saved to EEPROM (press Back key to cancel). Now the system returns to weighing interface.

■Set Cargo ID

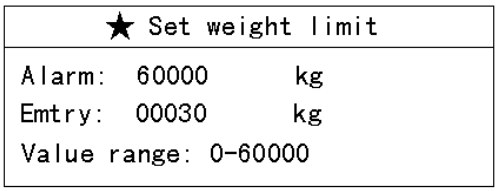
Press SN key on the operation panel, the following interface is shown:



The user shall assign the cargo with an ID No. as needed. When setting this parameter, press Numerical key directly to enter the corresponding ID No, Confirmed by pressing Enter key, then it is saved to EEPROM (press Back key to cancel). Now the system returns to weighing interface.

■Set Weight Limit

Press LW key on the operation panel, the following interface is shown:



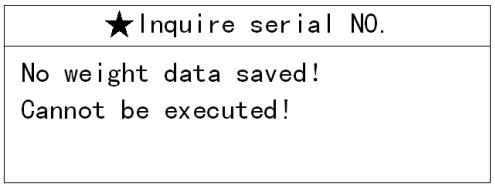
There are two operations for this option, which are overload alarm value and empty scale value. Press Enter key to shift the item to set and press Back key to modify the input.

Alarm value: this is the value of weight which exceeds the required limit and initiates alarm; it's the total weight loaded to all the weighing plate. If the actually weighed weight exceeds the set value, buzzer beep will be emitted intermittently. Overload alarm value can be set as 0 which means that the overload alarm is disabled.

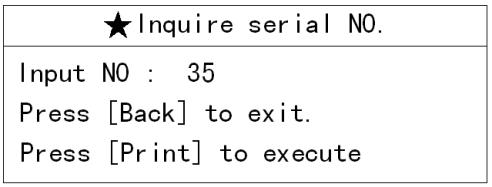
Empty scale value: this is the limiting value for distinguishing two weighing operations conducted consecutively. If the total weight of all the weighing plates is bigger than this value, it means the scale has been loaded; otherwise, it is not loaded and not be recognized. It's a criterion for distinguishing the two weighing operations and for avoiding repeated entering and printing.

■Inquire Serial No.

Press LW key on the operation panel, the following interface is shown if there is no data saved:



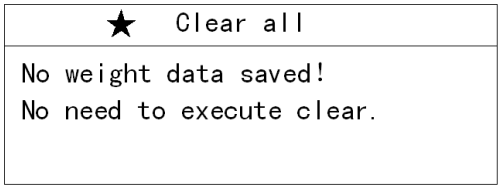
The following interface will be shown if there is data saved:



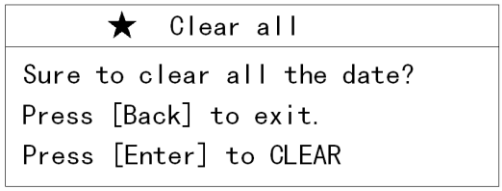
Enter the serial No. to be inquired as prompted, then press Enter key to confirm, upon which the following recording information you will see and print. Now press Enter key to back, press Print key to print the record, press Back key to exit. If the serial No. you input more than the last serial No, it will display "enter number over".

■Clear all

Press 5 jkl / TC key on the operation panel, the following interface is shown if there is no data saved:



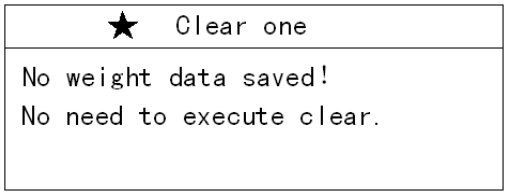
The following interface will be shown if there is data saved:



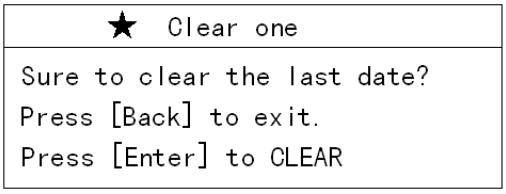
Press Enter key to clear all the date, press Back key to exit.

■Clear one

Press 6mno DEL key on the operation panel, the following interface is shown if there is no data saved:



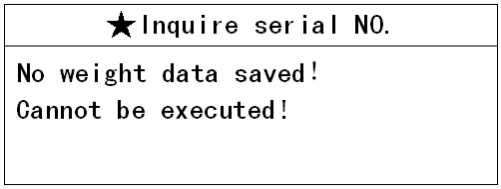
The following interface will be shown if there is data saved:



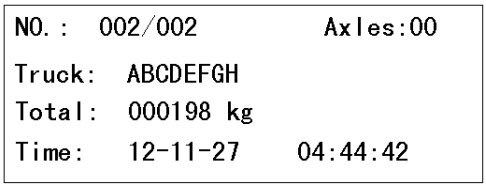
Press Enter key to clear the last date, press Back key to exit.

■Operate Individually

Press 2abc Last key on the operation panel, the following interface is shown if there is no data saved:



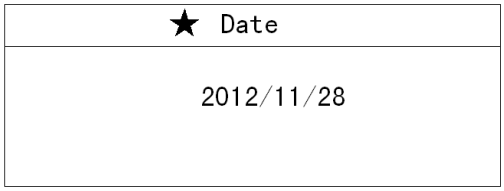
The following interface will be shown if there is data saved:



At first, it shows a recent weighing record, and then press 2abc Last key to inquires the record reversely.

■Set Date

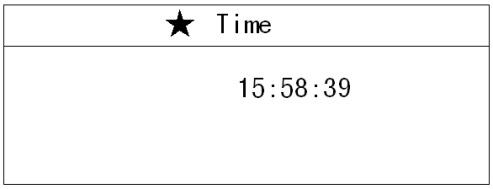
Press DATE key on the operation panel, the following interface is shown:



Press numerical keys to enter the current date directly. Confirmed by pressing Enter key, then it is saved to EEPROM (press Back key to cancel). Now the system returns to weighing interface.

■Set Time

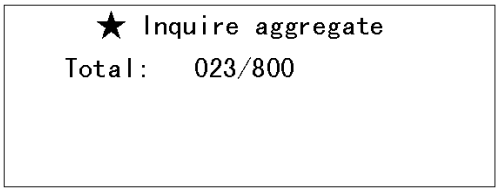
Press TIME key on the operation panel, the setting time interface is shown:



Press numerical keys to enter the current date directly. Confirmed by pressing Enter key, then it is saved to EEPROM (press Back key to cancel). Now the system returns to weighing interface.

■Inquire aggregate

Press 1 SUM key on the operation panel, the Inquiring aggregate interface is shown:



For example, if the aggregate amount is 003/500, it means now there are totally 3 records and up to 500 record entries are allowed to store in the system.

■Lock Weight Data

Press Lock key on the operation panel once, the weight data on the main interface is locked, that is to say, the displayed weight will not change along with load change; press the key again, the data is unlocked, which means the displayed weight is the actually loaded weight. The weight data can be locked first if the

weighing report cannot be saved or printed for vibration by the car is intense for that the car engine is not stopped, then to save or print the report.

8、Serial Port Communication Protocol

Serial port communication adopts continuous output, with which 20 effective data frames are output per second.

Communication port: RS232
Baud rate: 9600Bit/S
Data bit: 8 bit
Check bit: none
Stop bit: 1 bit

Each weight data occupies 6 bytes; no symbols to positive data; negative data are with symbols. For single weighing-plate mode, each frame of data totally outputs 8 bytes. For double weighing-plate mode, each frame of data totally outputs 14 bytes. For three weighing-plate mode, each frame of data totally outputs 20 bytes. For four weighing-plate mode, each frame of data totally outputs 28 bytes.

9、communication format:

Single weighing-plate mode format: AAAAAA
AAAAAA: indicate wheel1 weight value

Double weighing-plate mode format: AAAAAABBBBBB
AAAAAA: indicate wheel1 weight value
BBBBBB: indicate wheel2 weight value

Three weighing-plate mode format: AAAAAABBBBBBCCCCCC
AAAAAA: indicate wheel1 weight value
BBBBBB: indicate wheel2 weight value
CCCCCC: indicate wheel3 weight value

Four weighing-plate mode format: AAAAAABBBBBBCCCCCCDDDDDD
AAAAAA: indicate wheel1 weight value
BBBBBB: indicate wheel2 weight value
CCCCCC: indicate wheel3 weight value
DDDDDD: indicate wheel4 weight value

Appendix I: Printing Format

Printing format 2 for single weighing-plate mode:

```
WEIGHTING REPORT
--------------------------
NO.: 05
Date: 2012-11-07
Time: 14:08:36
Truck: ABDC2012
Cargo: 32
Axle01: 195kg
Axle02: 155kg
Axle03: 350kg
--------------------------
Total: 700kg
```

Printing format 2 for double weighing-plate mode:

```
WEIGHTING REPORT
--------------------------
NO.: 05
Date: 2012-11-07
Time: 14:08:36
Truck: ABDC2012
Cargo: 32
LW: 295kg
RW: 220kg
Axle01:515kg
LW: 535kg
RW: 545kg
Axle02:1080 kg
LW: 620kg
RW: 575kg
Axle03:1195kg
--------------------------
Total: 2790kg
```

Operation of format 1 and 2:

Axles shall be loaded to the weighing plate. Press “Save” to print the current axle weight after the data has been stable and press “Print” to print the total weight after all the axles have been weighed.

Printing format 3 for single weighing-plate mode:

```
WEIGHTING REPORT
--------------------------
NO.: 05
Date: 2012-11-07
Time: 14:08:36
Truck: ABDC2012
Cargo: 32
Axle1: 2000kg
--------------------------
Total: 2000kg
```

Printing format 3 for double weighing-plate mode:

```
WEIGHTING REPORT
--------------------------
NO.: 05
Date: 2012-11-07
Time: 14:08:36
Truck: ABDC2012
Cargo: 32
LW: 1000kg
RW: 1000kg
Axle1: 2000kg
--------------------------
Total: 2000kg
```

Printing format 3 for three weighing-plate mode:

```
WEIGHTING REPORT
--------------------------
NO.: 05
Date: 2012-11-07
Time: 14:08:36
Truck: ABDC2012
Cargo: 32
FW: 1000kg
LRW: 1000kg
RRW: 1000kg
Axle 1: 2000kg
--------------------------
Total: 3000kg
```

Printing format 3 for four weighing-plate mode:

```
WEIGHTING REPORT
--------------------------
NO.: 05
Date: 2012-11-07
Time: 14:08:36
Truck: ABDC2012
Cargo: 32
LFW: 1000kg
RFW: 1000kg
Axle 1: 2000kg
LRW: 1000kg
RRW: 1000kg
Axle 2: 2000kg
--------------------------
Total: 4000kg
```

Operation of format 3:

Axles or the complete car shall be loaded to the weighing plate. Press “Print” after the data has been stable.