WEIGHING CONTROLLER

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Model: PCE-N45F

Force Indicator

Please read this manual carefully before operation

USER'S MANUAL

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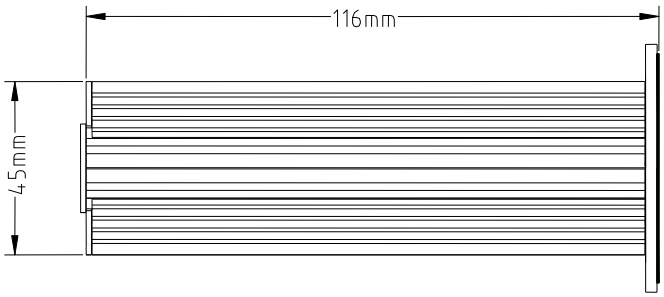
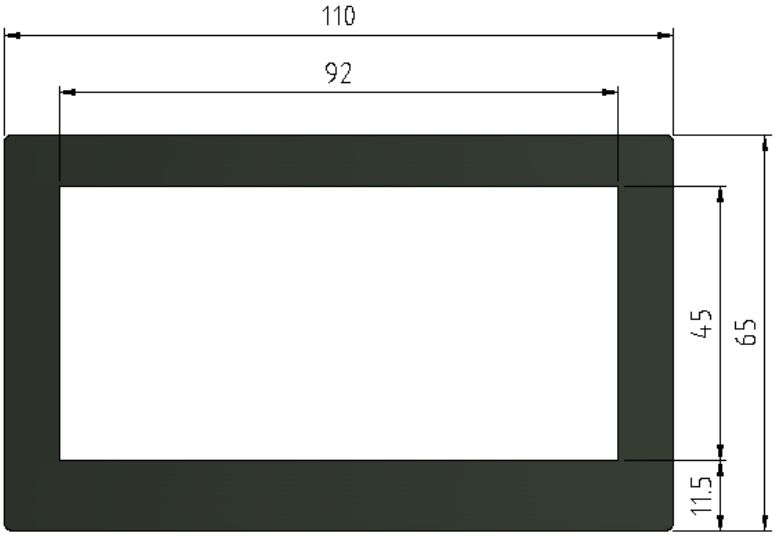
1. Main specifications

Specifications	
Housing	Metal shielded housing, with OLED display
dimensions (w × h × d)	110mm×62mm×116mm
Protection	IP65 (front panel)
Operation Condition	Temperature：-10℃～40℃ (14°～104° F) Relative humidity：10%~95%，non-condensing
Power	+24VDC（±15%），Consumption <6W
Display	128×64 dot matrix、Yellow-Green OLED
Display resolution	Max.100,000
Platform	1 with analog load cell
Load cells	1～6 x 350 Ohm（Sensitivity is 2 or 3mV/V）
A/D Speed	200Hz (200times/s)
Excitation Voltage	5VDC
Min.Input sensitivity	0.6μV/d
Keypads	4 function keys
Basic	Serial Output： RS232 or RS485 I/O interface： 1xIn 4xOut
Optional	I/O interface：4xIn 8xOut Analog signal 0～20mA、4～20mA、0～24mA 0～10V、0～5V、-5～+5V、-10～+10V

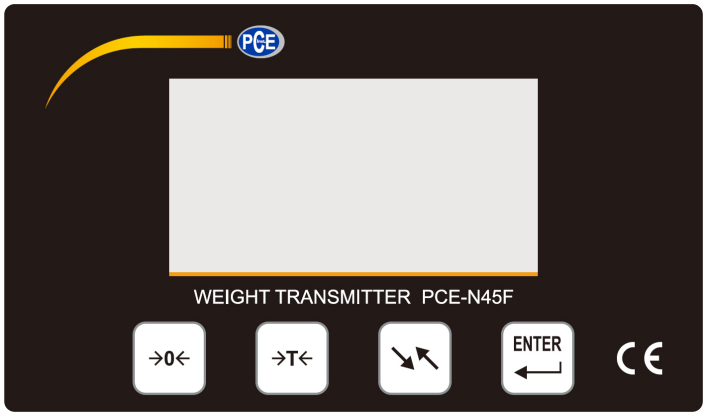
2. Dimensions



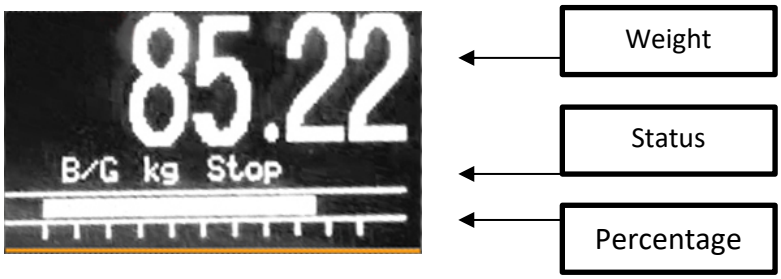


Installation hole size 92×45mm

3. Front Overlay and Keypad



Display



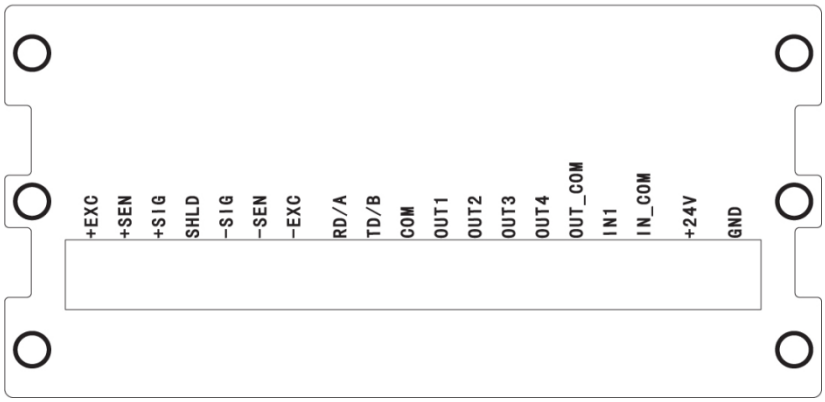
Signs

Status	Note
～	Stable, on for dynamic mode, off for static mode
B/G	Gross weight
Net	Net weight
Kg	Unit
Stop	Stop
Run	Run
M1～M4	Material 1-4
>>	Fast filling
>	Fine filling

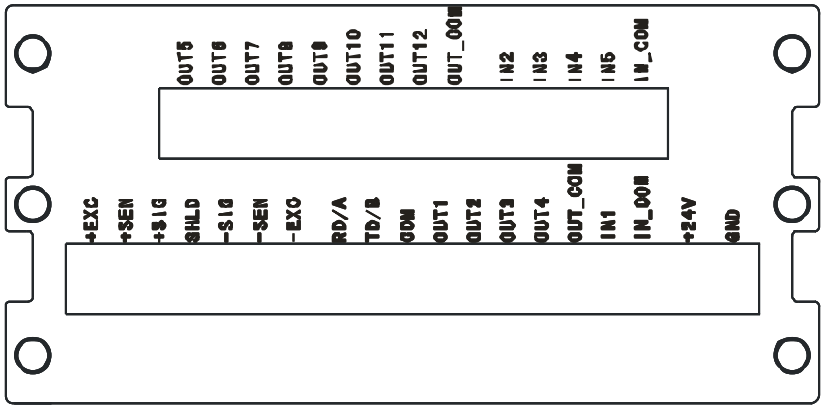
Keys' functions for parameter set or choose

Keys	Menu	Parameter set	Parameter Input
→0←	Return	Return	Cancel and Quit
→T←	Up	Previous	Increase digits
↘↖	Down	Next	Move right
ENTER ↵	Enter	Quit confirm	Quit confirm

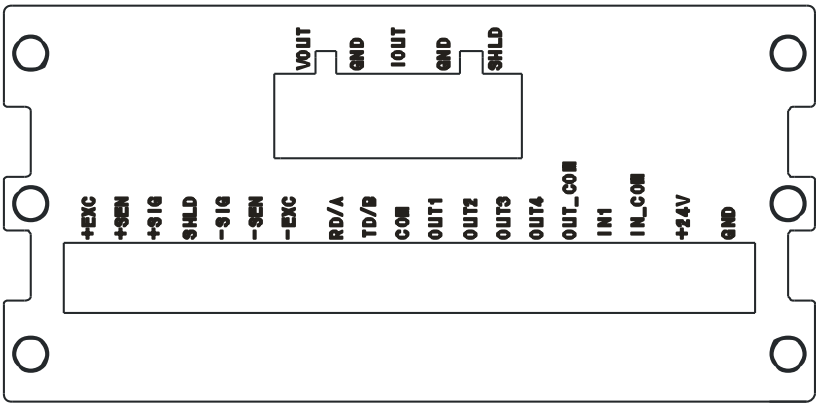
4. Rear Back Interface



PCE-N45F



PCE-N45F-IO



PCE-N45F-DA

5. Load Cell Interface

It can be connected with 6x350Ω analog load cells (around 58Ω minimum resistance), to confirm the range of the load cells, the total resistance (TSR) can be calculated with the formula as below:

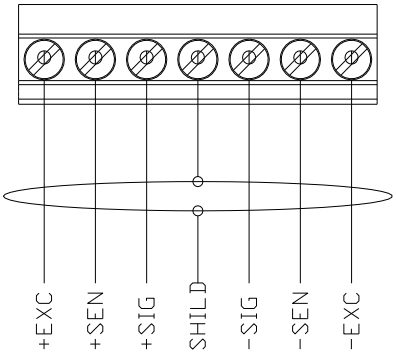
$$\text{TSR} = \frac{\text{Input resistance (Ω)}}{\text{Load cell numbers}}$$

Before connecting the load cells, make sure the TSR is above 58Ω, if it's less, the indicator can't work. Besides this, the cable distance must be considered, too, below is the maximum distance suggested:

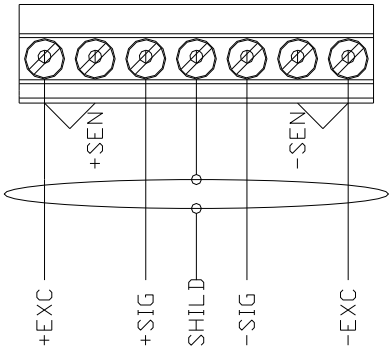
TSR （Ω）	24# cable (m)	20# cable (m)	16# cable (m)
350	243	610	1219
58（6-350 Ω）	40	122	224

Load cell interface definitions:

Pins	Signal	Note
+EXC	+Excitation	4-wire load cells short connected
+SEN	+Sense	
+SIG	+Signal	
SHD	Shield	
-SIG	-Signal	
-SEN	-Sense	4-wire load cells short connected
-EXC	-Excitation	



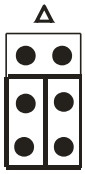
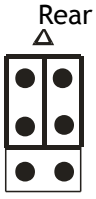
6-wire load cell or junction box



4-wire load cell or junction box

6. Serial Interface

It has only one serial interface, to change it by switch for RS232 or RS485，method as below:

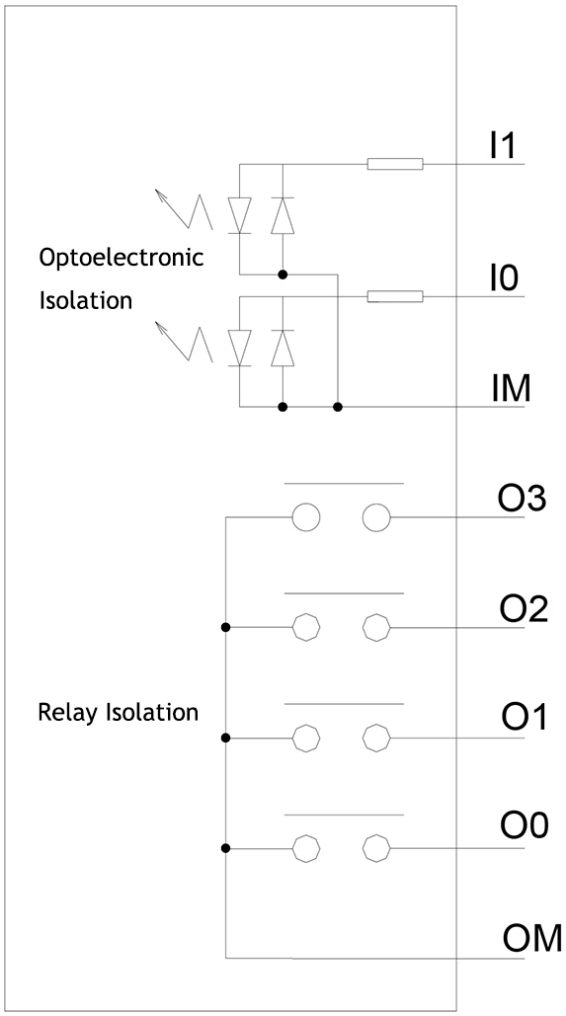
Pins	RS-232	RS-485
Bridge Joint / Pin signs	Rear  Front	Rear  Front
RD/A	RS-232 Receive	RS-485A
TD/B	RS-232 Transmit	RS-485B
COM	Ground	Blank

7. I/O

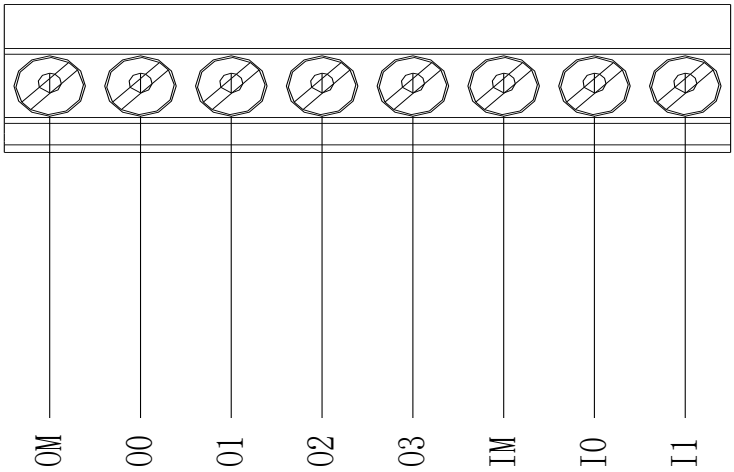
The basic type has one passive input and 4 relay open output

Basic type Pin’s definitions：

Pins	Signal	Note
OUT1	Output 1	Output properties: AC：30～250VAC/1A DC：5～30VDC/2A
OUT2	Output 2	
OUT3	Output 3	
OUT4	Output 4	
OUT_COM	Output common port	
IN1	Input 1	High level：10～24VDC Low level：0～3VDC
IN_COM	Input common port	



I/O interface drawing



Output – OM/O0/O1/O2/O3

Input – IM/I0/I1

PCE-N45F-IO has 4 passive input and 8 relay open output

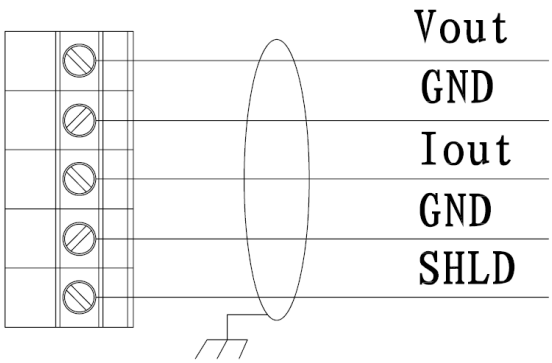
Pins definitions:

Pin	Signal	Description
OUT5	Output 5	Output properties: AC：30～250VAC/1A DC：5～30VDC/2A
OUT6	Output 6	
OUT7	Output 7	
OUT8	Output 8	
OUT9	Output 9	
OUT10	Output 10	
OUT11	Output 11	
OUT12	Output 12	
OUT_COM	Output common port	
IN2	Input 2	High level：10～24VDC Low level：0～3VDC
IN3	Input 3	
IN3	Input 3	
IN4	Input 4	
IN_COM	Input common port	

8. Analog Quantity Output

PCE-N45F supply many types of analog signals which with proportional output according to the weight of the scale

Pins	Signal	Note
VOUT	Voltage output	Output resistance 0～600Ω, output can be： 0～＋5V；0～＋10V；-5V～＋5V；-10V～＋10V;
GND	Voltage output	
IOUT	Electric current output	Output can be： 4mA～20mA；0mA～20mA；0mA～24mA
GND	Voltage output GND	
SHLD	Shield	



9. Parameter Set

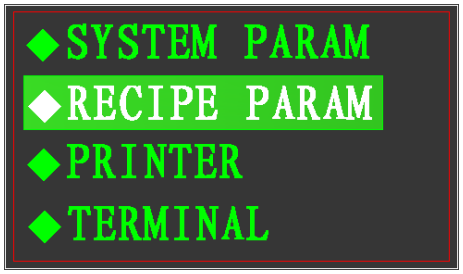
9.1 Enter setting menu

On weighing mode，keep pressing ENTER key to enter parameter setting mode.

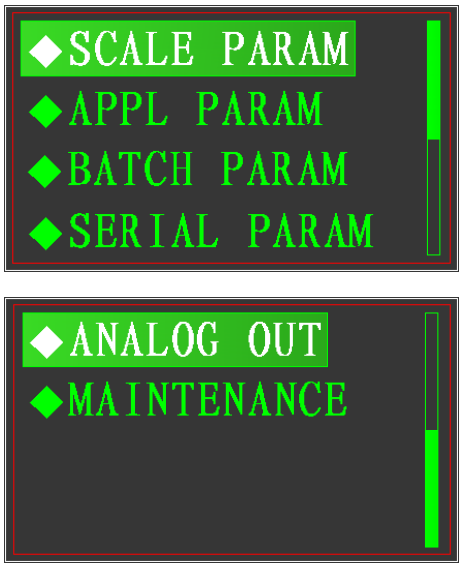
9.2 Quit Setting

On any mode，continuous press →0← key to return to previous step or quit the setting mode.

9.3 Main Set Menu

	Press ↘↖ key or →T← key to select the menu to be set, press ENTER key to enter secondary menu, press →0← key to quit the set

9.4 System Parameter Set

	Press ↘↖ key or →T← key to select the menu to be set, press ENTER key to enter the chosen menu, press →0← key to return to previous step.

9.4.1 Scale Set

◆CAPACITY ◆INCREMENT ◆CAL. UNIT ◆CAL. ZERO ◆CAL. SPAN ◆CAL. BOTH ◆CHECK PARAM ◆EXPAND	Press ↘↖ key or →T← key to select the menu to be set, press ENTER ↵ key to enter the chosen menu, press →0← key to return to previous step.

Max.capacity

◆CAPACITY 000100	Range: 1～200000. Default：100. Press ↘↖ key to move the cursor, press →T← to change the chosen digits, press ENTER ↵ to save to return to previous step. Press →0← key to return to previous step without change

Division

◆INCREMENT 0. 001	Division to be chosen：0.0001，0.0002，0.0005，0.001，0.002，0.005，0.01，0.02，0.05，0.1，0.2，0.5，1，2，5. Default: 0.001 *Note: Only the below two conditions ok, the chosen division can be accepted:* 1：1000 =< F.S./Division = < 20000. 2：F.S./Division = multiple of 100. Press ↘↖ or →T← key to change the division, Press ENTER ↵ Enter to save and return, press →0← key to return without change

Calibration Unit

◆CAL. UNIT kg	Press ↘↖ or →T← key to change the division, Press ENTER ↵ Enter to save and return, press →0← key to return without change

Zero Calibration

◆CAL. ZERO CAL. ZERO? ×	Press →0← key to return without change Press ↘↖ or →T← key to choose √ or X, If √ chosen, press ENTER ↵ key to enter zero calibration, or return directly.
◆CAL. ZERO EMPTY SCALE?	When there is nothing on the scale and it's stable, press ENTER ↵ key to start zero calibration.
◆CAL. ZERO PROGRESS 60%	The indicator is sampling the A/D data of zero point, it ends when it became 0% from 100%.

Weight Calibration

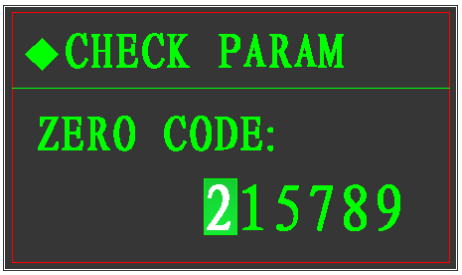
◆CAL. SPAN CAL. SPAN? ×	Press →0← key to return without change Press ↘↖ or →T← key to choose √ or X, If √ chosen, press ENTER ↵ key to enter weight calibration, or return directly.

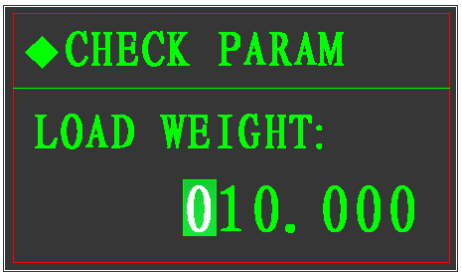
◆CAL. SPAN LOAD WEIGHT	Put the weight on the scale
◆CAL. SPAN WEIGHT: 000. 000	Input the weight value the same as the calibration weight Press key to move the cursor. Press →T← key to change the digits. Press ENTER key to save the change and start to calibrate. Press →0← key to cancel and return.
◆CAL. SPAN PROGRESS 60%	The indicator is sampling the A/D data of calibration point, it ends when it became 0% from 100%.
◆CAL. SPAN TOO SMALL!	The weight value is too small. Trouble shooting: 1、 The weight is really too light. 2、Wrong connection of the signal cable or excitation cable
◆CAL. SPAN CAL SUCCESS!	Calibration done.

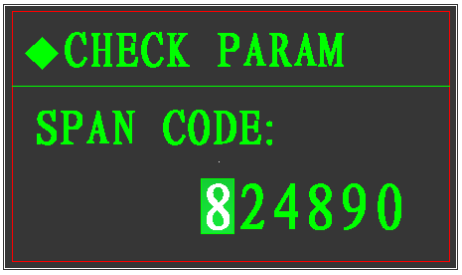
Full Calibration

This calibration is jointed the zero calibration and weight (capacity) calibration, prease refer to above steps.

Calibration parameters







This parameter can be retrieved and can be modified, after tested well, please record those three parameters for use in future.

When the data in EEPROM get problem, reload those three parameters, it doesn't need to do calibration again.

If the same model indicator to be changed and those three parameters reloaded, it doesn't need to do calibration, either.

Input the weight value the same as the calibration weight

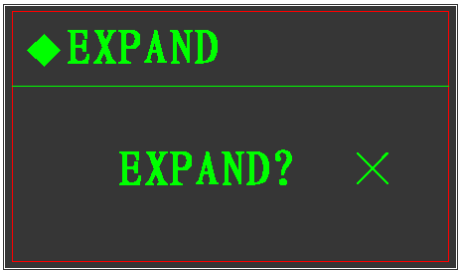
Press ↘↖ key to move the cursor.

Press →T← key to change the digits.

Press ENTER ↵ key to save the change and enter next parameter.

Press →0← key to cancel and return.

Expansion Display



If 10 times resolution display needed, open the expand display:

Press →0← key to cancel and return.

Press ↘↖ or →T← key to chose √ or X

Press ENTER ↵ key to confirm and return.

9.4.2 Operation Set

Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter.

Press →0← key to return the previous step.

Tare Operation

◆TARE ALLOW ENABLE	Choices: Disable tare Enable tare Press ↘↖ or →T← key to change Press ENTER key to save and return. Press →0← key to cancel and return.

Zero upon Power on

◆PWR-UP ZERO 2 %	Choices: 0%, 2%, 20% Press ↘↖ or →T← key to change Press ENTER key to save and return. Press →0← key to cancel and return.

Zero by Keypad

◆KEYPAD ZERO 2 %	Choices: 0%, 2%, 20% Press ↘↖ or →T← key to change Press ENTER key to save and return. Press →0← key to cancel and return.

Zero Tracking

◆AZM RANGE 2 d	0: None; 1: 0.5d; 2: 1d; 3: 2d; 4: 3d; 5: 4d; 6: 5d; Press ↘↖ or →T← key to change Press ENTER key to save and return. Press →0← key to cancel and return.

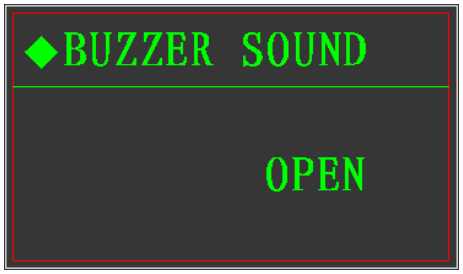
Vibration checking

	0：None 1：Vibration checking range = 1d； 2：Vibration checking range = 2d； 3：Vibration checking range = 3d； 4：Vibration checking range = 4d； 5：Vibration checking range = 5d； Press ↘↖ or →T← key to change Press ENTER key to save and return. Press →0← key to cancel and return.

Digital filtering

	Set range of 1-9, the more, the weight is more stable and the longer time to be stable. *Normally, if the digital filtering number set to be higher, the advance volume should be bigger, so on the batching mode, the advance volume needs to be adjusted again after the filtering number changed.* Press ↘↖ or →T← key to change Press ENTER key to save and return. Press →0← key to cancel and return.

Buzzer Set

	On or Off Press ↘↖ or →T← key to change Press ENTER key to save and return. Press →0← key to cancel and return.

9.4.3 Batching Set

◆WORK MODE ◆MATERIEL ◆DOORS ◆FEED MODE ◆FEED ACTION ◆DIS ACTION ◆NEAR ZERO ◆ADJUST FREQ ◆TIME PARAM ◆TOL FREQ ◆TOL RANGE ◆FIRST TARE ◆CYCLE TIMES ◆ADJUST RANGE	Press ↘↖ or →T← key to chose the menu to be set. Press ENTER ↵ key to enter. Press →0← key to return previous step.

Batching mode:

◆WORK MODE LOSE IN WT	Choices: 4 materials batching Single material weight lose Free setpoint. Press ↘↖ or →T← key to change Press ENTER ↵ key to save and return. Press →0← key to cancel and return.

Material quantity

◆MATERIEL 1	If there is no I/O board, it can be set to be 1 only. If there is the I/O board, it can be set from 1-4. Press ↘↖ or →T← key to change Press ENTER ↵ key to save and return. Press →0← key to cancel and return.

Feeding door

◆DOORS M1 M2 M3 M4 1 2 2 2	1：single door single speed 2：double doors double speed If there is no I/O board, only M1 can be set Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ↵ key to save and return to previous step. Press →0← key to cancel and return to previous step.

Feeding mode

◆FEED MODE DOUBLE	This parameter only valid for double doors and double speed All open: On fast feeding, open two doors at the same time. One open: On fast feeding, open fast feeding door. Press ↘↖ or →T← key to change Press ENTER ↵ key to save change and return. Press →0← key to cancel and return.

Feeding action

◆FEED ACTION AUTO	Choice：Auto or manual Press ↘↖ or →T← key to change Press ENTER ↵ key to save change and return. Press →0← key to cancel and return.

Discharge mode

◆DIS ACTION AUTO	Choice：Auto or manual Press ↘↖ or →T← key to change Press ENTER key to save change and return. Press →0← key to cancel and return.

Empty scale range

◆NEAR ZERO 1. 0 %	Choice：0%～9.9%×F.S Only the weight on the scale is less than this range and the cursor and output is effective, otherwise it's taken as not empty. Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER key to save and return to previous step. Press →0← key to cancel and return to previous step.

Frequency Adjust

◆ADJUST FREQ 1	Choice：0～9 When it set to be 0, it means no adjust Press ↘↖ or →T← key to change Press ENTER key to save change and return. Press →0← key to cancel and return.

Time Parameter

◆START TIME ◆FORBID TIME ◆CHECK TIME ◆UNLOAD TIME	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.

Delay start time

◆START TIME 1.0 S	Choice：0.0～9.9 seconds After batching start, after the delay time, it can start to tare, open the door and start to feed. Press key to move cursor. Press →T← key to modify the chosen digits. Press ENTER key to save and return to previous step. Press →0← key to cancel and return to previous step.

Comparing time forbidden

◆FORBID TIME 1.0 S	Choice：0.0～9.9 seconds The comparing time of fast and fine feeding both to be set in this menu. Press key to move cursor. Press →T← key to modify the chosen digits. Press ENTER key to save and return to previous step. Press →0← key to cancel and return to previous step.

Delay checking time

◆M1 CHECK TIME ◆M2 CHECK TIME ◆M3 CHECK TIME ◆M4 CHECK TIME Press key or →T← key to choose	◆M1 CHECK TIME 1.0 S Choice：0.0～9.9 seconds, the stabling time after batching finish of material 1

the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.	◆M2 CHECK TIME 1.0 S Choice：0.0～9.9 seconds, the stabling time after batching finish of material 2 ◆M3 CHECK TIME 1.0 S Choice：0.0～9.9 seconds, the stabling time after batching finish of material 3 ◆M4 CHECK TIME 1.0 S Choice：0.0～9.9 seconds, the stabling time after batching finish of material 4

Delay time of discharge

◆UNLOAD TIME 1.0 S	Choice：0.0～9.9 seconds. When it reach to the range of empty scale, it will close the door after this time, to make sure full discharge. Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ↵ key to save and return to previous step. Press →0← key to cancel and return to previous step.

Tolerance checking frequency

◆TOL FREQ 1	Choice：0～99 Checking tolerance after the times of batching, if it was set of 0, it will not check. Press ↘↖ or →T← key to change Press ENTER key to save change and return. Press →0← key to cancel and return.

Tolerance range set

◆TOL RANGE 1. 0 %	Choice：0%～9.9%×Target weight When it checking, if value of the actual weight minus the target weight is less than this value, it will be taken as ok, if not, it's out of tolerance range. Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER key to save and return to previous step. Press →0← key to cancel and return to previous step.

First material tare

◆FIRST TARE FIRST TARE? ×	×：The first material doesn't need tare √：The first material need tare Press ↘↖ or →T← key to change Press ENTER key to save change and return. Press →0← key to cancel and return.

Cycle times of batching

◆CYCLE TIMES 1	It will stop after this cycle times. Press ↘↖ or →T← key to change Press ENTER key to save change and return. Press →0← key to cancel and return.

Adjust range

◆ADJUST RANGE 1. 0 %	Choice：0%～9.9%×Target weight Only the value of actual weight minus target weight is less this range, it goes to adjust, when it's set to be 0, this function off. Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ↵ key to save and return to previous step. Press →0← key to cancel and return to previous step.

9.4.4 Communication protocol

◆FORMAT ◆BAUDRATE ◆PARITY ◆CHECKSUM ◆NODE ADDRESS	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter. Press →0← key to return the previous step.

Output mode

◆FORMAT MODBUS RTU	No output Continuous output format A Command output format A Continuous output format B Command output format B MODBUS RTU output Press ↘↖ or →T← key to change Press ENTER ↵ key to save change and return. Press →0← key to cancel and return.

Baud rate

◆BAUDRATE 19200	Choice:300 bit/s; 600 bit/s; 1200 bit/s; 2400 bit/s; 4800 bit/s; 9600 bit/s; 19200 bit/s; 38400 bit/s; 57600 bit/s; 115200 bit/s; Press ↘↖ or →T← key to change Press ENTER ← key to save change and return. Press →0← key to cancel and return.

Parity check

◆PARITY 8 BIT NONE	Choice: 8 digits no parity check 7 digits even parity check 7 digits odd parity check 8 digits even parity check 8 digits odd parity check Press ↘↖ or →T← key to change Press ENTER ← key to save change and return. Press →0← key to cancel and return.

Checksum

◆CHECKSUM NO	Choice: No transmitting Transmitting Press ↘↖ or →T← key to change Press ENTER ← key to save change and return. Press →0← key to cancel and return.

Indicator address

◆NODE ADDRESS 10	Choice: 1—64 Keep the uniqueness of address in the same network Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ← key to save and return to previous step.

	Press →0← key to cancel and return to previous step.

9.4.5 Analog quantity output

◆FIELD MAP ◆ANALOG. ZERO ◆ANALOG. SPAN	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter. Press →0← key to return the previous step.

Output type choose

◆FIELD MAP 4～20mA	Choice：0～＋5V； 0～＋10V； －5V～＋5V； －10V～＋10V； 4mA～20mA； 0mA～20mA； 0mA～24mA； Press ↘↖ or →T← key to change Press ENTER ↵ key to save change and return. Press →0← key to cancel and return.

Zero calibration (coarse-small-fine)

◆ZERO. COARSE ◆ZERO. SMALL ◆ZERO. FINE Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter. Press →0← key to return the previous step.	◆ZERO. COARSE 000000 ◆ZERO. SMALL 000000

	◆ZERO. FINE 000000

Full scale calibration (coarse-small-fine)

◆SPAN. COARSE ◆SPAN. SMALL ◆SPAN. FINE Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter. Press →0← key to return the previous step.	◆SPAN. COARSE 065000 ◆SPAN. SMALL 065000 ◆SPAN. FINE 065000

9.4.6 Diagnosis and maintenance

◆RELOAD ◆FREE CAL ◆INPUT TEST ◆OUTPUT TEST ◆BACKUP ◆RELEASE ◆OUT MAPPING	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter. Press →0← key to return the previous step.

Reload

◆RELOAD RELOAD? ×	Choose √ to reload the default parameters
◆RELOAD RELOAD.....	Reloading…

Free calibration

◆FREE CAL FREE CAL? ×	Choose √ to enter
◆CAPACITY ◆SENSITIVITY ◆CAL. ZERO ◆MANUAL MEND	Menus Press ↘↖ key or →T← key to choose the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.
◆CAPACITY 000100	Input the full capacity of load cells Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER key to save and return to previous step. Press →0← key to cancel and return to previous step.

◆SENSITIVITY 2 mV/V	Input the sensitivity of load cells Press ↘↖ or →T← key to change Press ENTER ↵ key to save change and return. Press →0← key to cancel and return.
◆CAL. ZERO EMPTY SCALE? ◆CAL. ZERO PROGRESS 60%	Zero calibration
◆MANUAL MEND WT 50.000 LMT 4509000	Adjust the present weight manually Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ↵ key to save and return to previous step. Press →0← key to cancel and return to previous step.

Input interface test

◆INPUT TEST INPUT TEST? ×	Choose √ to enter test menu

◆INPUT TEST I1 I2 I3 I4 I5	Input test interface

Output interface test

◆OUTPUT TEST OUTPUT TEST? ×	Choose √ to enter test menu
◆OUTPUT TEST	Output test interface

Backup parameters

◆BACKUP BACKUP? ×	Choose √ to backup parameters
◆BACKUP PASSWORD: 1186	Input the password

◆BACKUP PASSWORD ERROR!	Password wrong
◆BACKUP BACKUP.....	Backup

Retrieve the backup parameters

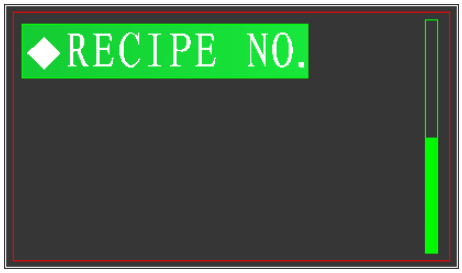
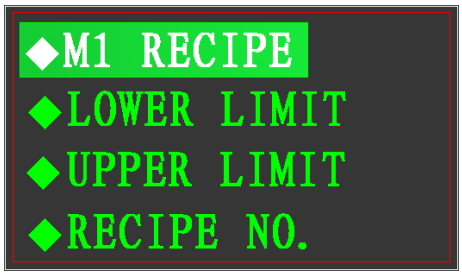
◆RELEASE RELEASE? ×	Choose √ to retrieve the backup parameters
◆RELEASE NOT BACKUP!!	Indicates that there is no backup parameters
◆RELEASE RELEASE.....	Retrieving…

Alternate output mapping

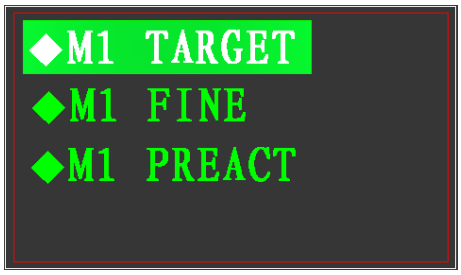
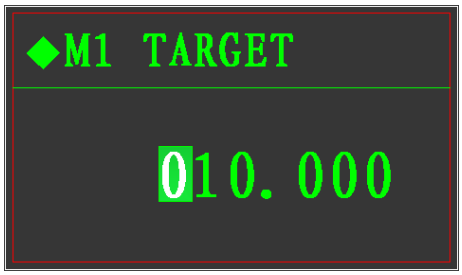
◆OUT MAPPING TOL	Choices: Tolerance output, fast feeding output, fine feeding output, discharging output. If the original output interface broken or with problem, you can mapping that interface to this alternate one by changing the cables. Press ↘↖ or →T← key to change

	Press ENTER key to save change and return. Press →0← key to cancel and return.

9.5 Recipes Parameters set

Basic + 4 materials type 	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.
IO + 4 materials type  	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.
Basic + 1 material weight losing  	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.
Basic + setpoints	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.

M1 recipe set

	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.
	Target weight: The final weight filled in the tank/container, etc. Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER key to save and return to previous step. Press →0← key to cancel and return to previous step.

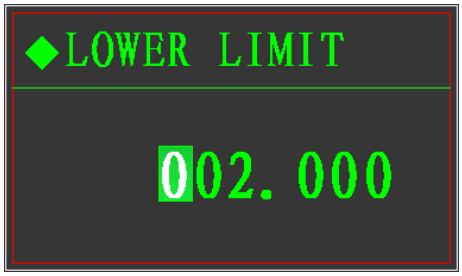
◆M1 FINE 002.000	Fine weight: The relative weight between TARGET and FAST (when it finish the fast filling and change to fine filling), it's the relative value but not actual value. Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ↵ key to save and return to previous step. Press →0← key to cancel and return to previous step.
◆M1 PREACT 000.050	PREACT: Decide the weight of end of the fine feeding (TARGET — PREACT). Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ↵ key to save and return to previous step. Press →0← key to cancel and return to previous step.

M2、M3、M4 recipes the same as M1

Recipe numbers set

◆RECIPE NO. 1	One number can preset of 3 recipes If a new recipe, you need to set the recipe number, if it's the recipe already in the indicator, you can modify it directly. Press ↘↖ or →T← key to change Press ENTER ↵ key to save change and return. Press →0← key to cancel and return.

Upper and lower weight limitations

 	It needed to be set when it using for losing weight filling Lower limitation: the minimum remaining after the end of discharging. Upper limitation: the approximated maximum weight it can reach. During feeding, if the weight <(target + lower limitation), the indicator will open the supplement feeding valve until the weight reach to upper limitation and then start to discharge. Note: If the target weight < (Upper limitation - Lower limitation), every start will end after once time discharge. If the target weight > (Upper limitation - Lower limitation), it will discharge more times until it reach to the target value. Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ← key to save and return to previous step. Press →0← key to cancel and return to previous step.

Setpoint 1

	Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ← key to save and return to previous step. Press →0← key to cancel and return to previous step.

Setpoint 2 and setpoint 3 the same as above set.

Preaction 1 set

◆PREACT1 000. 020	Press ↘↖ key to move cursor. Press →T← key to modify the chosen digits. Press ENTER ↵ key to save and return to previous step. Press →0← key to cancel and return to previous step.

Preaction 2 and preaction 3 the same set as above

9.6 Printing table format

◆PRINT ALLOT ◆PRINT TOTAL ◆PRINT RECIPE	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter. Press →0← key to return the previous step.

9.7 System set

◆LANGUAGE ◆SCREEN TIME ◆CONTRAST	Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter. Press →0← key to return the previous step.
◆LANGUAGE ENGLISH	Language set Press ↘↖ key or →T← key to choose the menu to be set, press ENTER ↵ key to enter. Press →0← key to return the previous step.

◆SCREEN TIME 10 MIN	Screensaver time set If it's set to be 0, the function off Press ↘↖ key or →T← key to choose the menu to be set, press ENTER key to enter. Press →0← key to return the previous step.
◆CONTRAST 5	Screen contrast adjust, the bigger number, the more bright the screen. Press ↘↖ or →T← key to change Press ENTER key to save change and return. Press →0← key to cancel and return.

10. Appendix: Communication Protocol

10.1 Command transmitting Format A

Data format（18 bytes）																	
STX	A	B	C	X	X	X	X	X	X	X	X	X	X	X	X	CR	CKS
I	II			III						IV						V	VI

I、<STX>ASCII start sign (02H)。
II、status A、B、C, refer to below table
III、Weight value, gross weight or net weight, 6 ASCII digits without sign and decimal point.
IV、Tare value，6 ASCII digits without sign and decimal point.
V、<CR>ASCII Enter sign (ODH)。
VI、<CKS> checksum

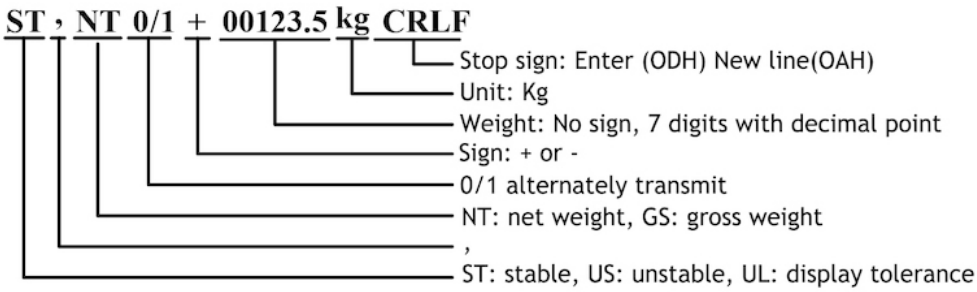
BIT	Status A	Status B	Status C
Bit0	Decimal point position: 001:XXXXX0 010:XXXXXX 011:XXXXX.X 100:XXXX.XX 101:XXX.XXX	0=Current value is gross 1=Current value is net	000：Stop 001：Material 1 feed 010：Material 2 feed 011：Material 3 feed 100：Material 4 feed 101：Discharging 110：Batching Suspense 111：Batching run
Bit1		0=Display value is positive 1=Display value is negative	
Bit2		0=Within display range 1=Out of display range	
Bit3	Fast feed output 0=Off 1=On	0=Current weighing stable 1=Current weighing unstable	Always 0
Bit4	Fine feed output 0=Off 1=On	Always 1	0：stand display 1：×10 display

Bit5	Always 1	Always 1	
Bit6	Always 0	Always 0	
Bit7	Always 0	Always 0	

10.2 Command transmitting format A

No.	Command sign	Note
1	“C” or “c”	Clear tare
2	“P” or “p”	Print gross tare net
3	“T” or “t”	Tare
4	“Z” or “z”	Zero

10.3 Continuous transmit format B

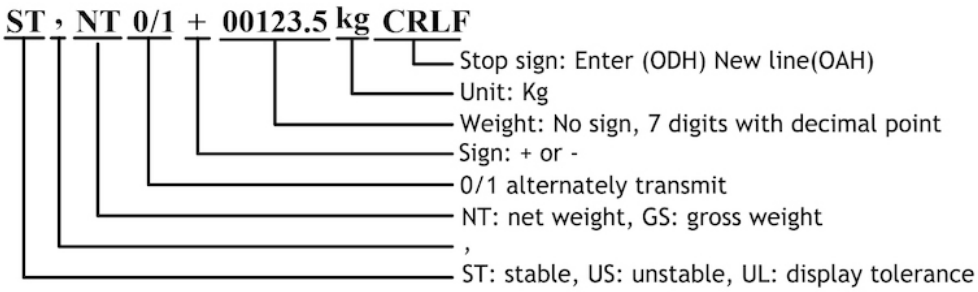


10.4 Command output format B

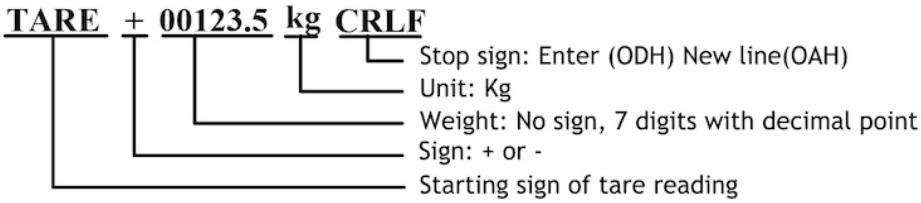
No.	Command letter	Indicator response
1	READ+ENTER NEWLINE	Refer to <Indicator weight reading and status>
2	TARE+ ENTER NEWLINE	Refer to <Tare weight reading and status>
3	TARE ON+ ENTER NEWLINE	Tare operation Works： return YES+ ENTER NEWLINE No work：return NO？ + ENTER NEWLINE
4	TARE OFF+ ENTER NEWLINE	Clear tare Works：return YES+ ENTER NEWLINE No work：return NO？ + ENTER NEWLINE
5	ZERO ON+ ENTER NEWLINE	Zero operation Works：return YES+ ENTER NEWLINE No work：return NO？ + ENTER NEWLINE
6	CAL XXXXXX+ ENTER NEWLINE	XXXXXX is loading weight value, W, without decimal point If W=0，zero calibration. If W≠0，loading weight calibration. Indicator response： Zero calibration done: ZERO YES+ ENTER NEWLINE Zero calibration vibrate： ZERO E1+ ENTER NEWLINE Loading weight calibration done SPAN YES+ ENTER NEWLINE Loading weight calibration vibrate:

		SPAN E1+ ENTER NEWLINE Input data is too small: SPAN E2+ ENTER NEWLINE Input data is too big: SPAN E3+ ENTER NEWLINE Loading weight is too big: SPAN E4+ ENTER NEWLINE

Indicator weight reading and status, the indicator response format:



Tare weight reading and status, the indicator response:



10.5 MODBUS output format

MODBUS is the master-slave type network communication protocol, this indicator acts as the subordinate in the network for called by the host system, the format is RTU and support 03 and 06 functions. The parameter needs to be set as F4.1=5 and the address of Modbus to set in F4.5, the mapping address definitions as the below table:

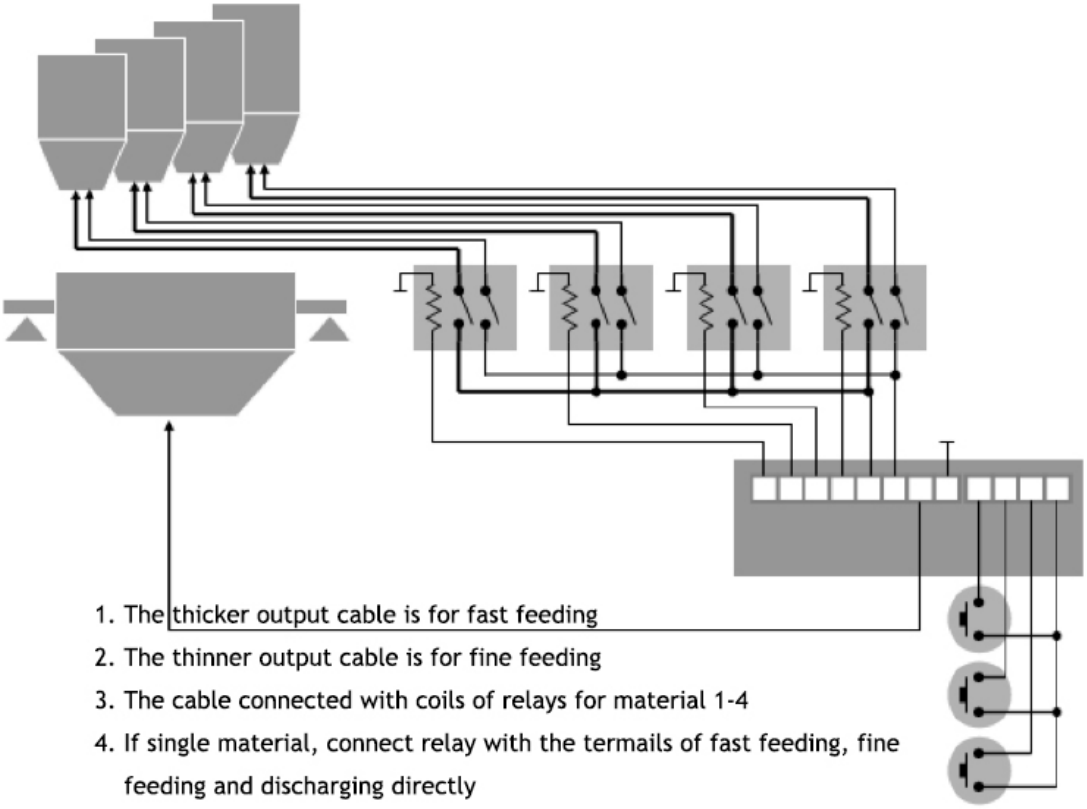
Address	Digits	Note (read only)
40001		Current gross weight value
40002		Current display weight value
40003	.0	1=material 1 in fast feeding
	.1	1=material 1 in fine feeding
	.2	1=scale is empty
	.3	1=reach to setpoint 1 （setpoint type）
	.4	1=material 2 in fast feeding
	.5	1=material 2 in fine feeding
	.6	1=reach to setpoint 2 （setpoint type）
	.7	1=reach to setpoint 3 （setpoint type）
	.8	1=material 3 in fast feeding
	.9	1=material 3 in fine feeding
	.10	1=supplement feeding (single material losing weight mode)
	.11	1=Indicator above tolerance or lower than tolerance
	.12	1=material 4 in fast feeding

	.13	1=material 4 in fine feeding
40004	.0	01～11：current recipe numbers（1～3）
	.1	
	.2	
	.3	
	.4	1=batching run
	.5	1=batching suspense
	.6	1=discharging
	.7	1=feeding finish, waiting for discharging
	.8	0000=0.001；0011=0.01；0110=0.1；1001=1； 0001=0.002；0100=0.02；0111=0.2；1010=2； 0010=0.005；0101=0.05；1000=0.5；1011=5； 1100=10；1101=20；1110=50； current division.
	.9	
	.10	
	.11	
	.12	1=batching tolerance
	.13	1=scale vibrate
	.14	1=manual feeding mode
	.15	1=manual discharging mode
40005		1～4 material batching mode: actual batched weight of current material 1. Single material losing weight mode: the current batched value of this filling. (the batching value kept till start of next cycle).
40006		1～4 material batching mode: actual batched weight of current material 2. Single material losing weight mode: the current accumulated value of this filling. (the batching value kept till start of next cycle).
40007		actual batched weight of current material 3. (the batching value kept till start of next cycle).
40008		actual batched weight of current material 4. (the batching value kept till start of next cycle).

Address	Mapping（read and write）
40009	Tare value
40010	Target value of material 1
40011	Target value of material 2
40012	Target value of material 3
40013	Target value of material 4
40014	Fast feeding value of material 1
40015	Fast feeding value of material 2
40016	Fast feeding value of material 3
40017	Fast feeding value of material 4
40018	Preaction quantity of material 1
40019	Preaction quantity of material 2
40020	Preaction quantity of material 3
40021	Preaction quantity of material 4
40022	Range of empty scale
40023	Preaction adjust frequency
40024	Start delay time
40025	Discharge delay time
40026	Forbid comparing time
40027	Delay check time of material 1
40028	Delay check time of material 2
40029	Delay check time of material 3
40030	Delay check time of material 4
40031	Lower tank weight
40032	Upper tank weight
40033	Weight value of setpoint 1
40034	Weight value of setpoint 2
40035	Weight value of setpoint 3
40036	Preaction quantity of setpoint 1

40037		Preaction quantity of setpoint 2
40038		Preaction quantity of setpoint 3
40039		Quantity used of material 1 (higher digits)
40040		Quantity used of material 1 (lower digits)
40041		Quantity used of material 2 (higher digits)
40042		Quantity used of material 2 (lower digits)
40043		Quantity used of material 3 (higher digits)
40044		Quantity used of material 3 (lower digits)
40045		Quantity used of material 4 (higher digits)
40046		Quantity used of material 4 (lower digits)
40047	0	1=Zero calibration done
	1	1=Loading weight calibration done
	2	1=Writing value less than 1% during loading weight calibration
	3	1=Writing value more than full scale during loading weight calibration
	4	1=Loading weight is not enough during loading weight calibration
	5	1=running, calibration not allowed
40048		Floating number of current weight
40049		

Address		Mapping（Write only）
40101	.0	0001～0100：appoint the material number to be operated
	.1	
	.2	
	.3	
	.4	Start manual feeding, material bits 0-3 given： （Eg: If 0001: material 1 batching, If 0010: material 2 batching, If 0011: material 3 batching, If 0100: material 4 batching)
	.5	/
	.6	/
	.7	/
	.8	Start auto feeding
	.9	Suspend batching or discharging
	.10	Stop emergency
	.11	Start discharge（after feeding end and discharging type is manual）
	.12	Tare（not batching, not vibrate and tare allowed）
	.13	Clear tare（not batching, not vibrate and tare allowed）
	.14	Zero（not batching, not vibrate）
	.15	Continue batching or discharging
40102	.0	0001～0011：Choose working recipe number
	.1	
	.2	
	.3	
	.4	10：Chose manual batching during all cycles. 11：Chose auto batching during all cycles.
	.5	
	.6	10：Chose manual discharging during all cycles. 11：Chose auto discharging during all cycles.
	.7	
40103		Scale calibration： 0：Zero calibration XXXXX：loading weight calibration（XXXXX is the value of the loading weight）

10.6 Multi materials jointed work with relay connected

The below chart is for connecting of 4 materials batching, the input and output can be connected as common source or common grounded, for single material, connect the three relay to the connecting terminals of fast feeding, fine feeding and discharging.