BST106-B68[U] Weighing Controller

For: Ration Batching Scale with 4-Material&2-Speed Feeding

[Single-Scale Mode]

Operation Manual V9.0

Changsha Supmeter Technological Co.,Ltd.

Preface

Thank you very much for your purchase!

This manual covers safety precaution, technical specifications, user interfaces, installation& connection, functions&operation and so on. In order to make the product running at its best, please read this manual in advance, and reserve it for the future reading.

The technology update, function enhancement and quality improvement may lead to some differences between this manual and the physical product, please understand.

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Main Features:

- ✧ Suitable for Ration Batching Scale with 4-Material&2-Speed Feeding [Single-Scale Mode].
- ✧ EMC design with high anti-jamming capability, suitable for industrial environment.
- ✧ 32-bit ARM CPU with 48MHz clock & high arithmetic speed.
- ✧ 6+8 Red LED digital tubes for English character and digit display.
- ✧ English keypad for Menu&Shortcut mode operation with key tone.
- ✧ 24-bit High-precision and high-speed Σ-△A/D conversion module with 1/1,000,000 internal resolution and sampling frequency 400Hz.
- ✧ Special anti-vibration digital filtering algorithm for ensuring the weighing stability and accuracy when there is strong vibration on the load receptor, and the rapid response capability when the weight signal changes.
- ✧ Max. Connection Quantity: 4 Loadcells (350Ω).
- ✧ Zero Upon Power Up, Zero Auto-tracking, Manual/Auto Zero and Zero Calibration available.
- ✧ Load Calibration and Data Calibration available.
- ✧ Auto-locking, Key-locking, Key-unlocking, Digital Setting&Calibration and I/O Testing functions available.
- ✧ 6 Normally open switch inputs [DI] and 8 normally open transistor switch outputs [DO].
- ✧ Optional 'Bulk/Dribble Feed' DOs for feeding control. Optional Continuous and Jogging Dribble Feed Methods.
- ✧ 1 Optional and definable analog signal AO[4~20mA] for weight signal output or 'Bulk/Dribble Feed' control.
- ✧ Optional 'Auto Correct Inflight' function.
- ✧ Optional 'Pause for Tolerance Alarm', 'Pause for Gross Weight Upper Limit Alarm' and 'Manual Pause' functions.
- ✧ Optional 'Batch Target Control' function [With Batch Count Target finished, the batching process will stop automatically].
- ✧ 'Batching Process Power-off Protection' function available.
- ✧ One Batch Record can be queried.
- ✧ 2 Communication ports [RS232&RS485] for connecting Host IPC/PLC and LED Remote Display.
- ✧ With the multitasking mode, the weighing&control process will not be interrupted by parameter setting and the other operations.

Model Panel-mounting: B68[U]

Model Explosion-proof：B68[U]EX

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1. Safety Precaution



- **Application environment**

  Make sure that this product works under the environment where is accord with the technical specifications.

  Do not open the shell before power-off.

- **Controller Protection**

  For avoiding bodily injury from electric shock accident and separating the controller from strong interference, the metal shell of the controller should be grounded directly with the ground resistance being less than 4Ω.

- **Scale Frame Protection**

  For avoiding bodily injury from electric shock accident and separating the loadcells from strong interference, the scale frame should be grounded directly with the ground resistance being less than 4Ω.

- **Cable Laying**

  Weighing signal, analog signal and communication signal cables should be laid in pipes, and do not lay them together with power cables.

- **Power Supply**

  The power supply of the controller should be separated from the power supply of the driving devices.

  Please make sure that the inputted voltage is correct before power-on.

- **Environmental Protection**

  While being discarded as worthless, the product should be processed lawfully as leady industrial waste for environment protection.

- **Other Notes**

  The installation, wiring and maintenance should be operated by the engineers with the relevant professional knowledge and safety operation ability.

  Although being not described in this manual, the relevant safety operating procedures and standards should be followed.

2. Technical Specifications

□ Executing Standards

- ✧ PRC GB/T 7724-2008《National Standard for Electronic Weighing Meter》.
- ✧ PRC JJG 649-2016《National Verification Regulation for Digital Weighing Indicators (Weighing Indicators)》.
- ✧ OMIL R76-1: 2006《Non-automatic Weighing Instruments》International Recommendation.
- ✧ Accuracy Grade: Ⓘ.
- ✧ Number of Verification Scale Interval: n=3000.

□ Display

- ✧ 6+8 Red LED digital tubes for English character and digit display.
- ✧ Weight Display Range: -99,999~+999,999.
- ✧ Scale Capacity: Setting Range 1~999,999.
- ✧ Scale Division: Optional 1, 2, 5, 10, 20, 50, 100, 200, 500.
- ✧ Display Resolution: 1/100,000.
- ✧ Weight Unit: Optional kg, t, g, none.
- ✧ Decimal Point Position: Optional 0, 0.0, 0.00, 0.000, 0.0000.
- ✧ Display Refreshing Time: Setting Range 0.01~1.00s.

□ Keypad

- ✧ Model Panel-mounting: 4-key English keypad.
- ✧ Model Explosion-proof: 6-key English keypad.
- ✧ Menu&Shortcut mode operation with key tone.

□ Loadcell Interface

- ✧ Excitation Voltage/Max. Current: DC9V/120mA [4-350Ω loadcells].
- ✧ Signal Input Range: 0~22.5mV.
- ✧ Output Sensitivity of Loadcell: 1.0~2.5mV/V.
- ✧ 24-bit Σ-△ADC with internal resolution 1/1,000,000.
- ✧ Sampling Frequency: 400Hz.
- ✧ Special Anti-vibration Digital Filtering Algorithm for precise weighing, stable display and rapid response.
- ✧ Zero Drift: ±0.1μV/℃ RTI (Relative to Input).
- ✧ Gain Drift: ±5ppm/℃.
- ✧ Non-linearity: 0.005%FS.

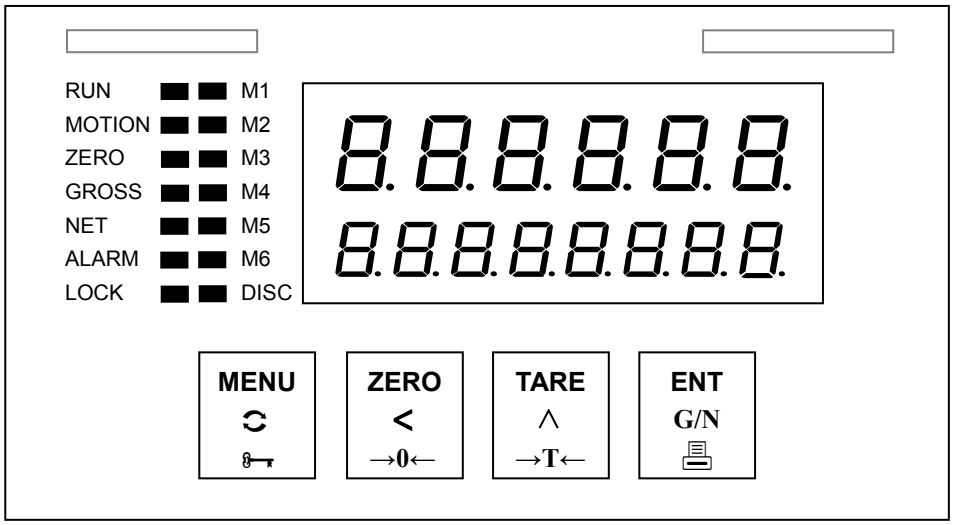
□ Switch&Analog Signal Interface

- ✧ 6 Normally Open Switch Inputs [DI].
- ✧ 8 Normally Open Transistor Switch Outputs [DO]: DC24V, 250mA.
- ✧ 1 Optional&Definable Analog Signal Output [AO]: 4~20mA, Non-linearity: 0.05%FS.

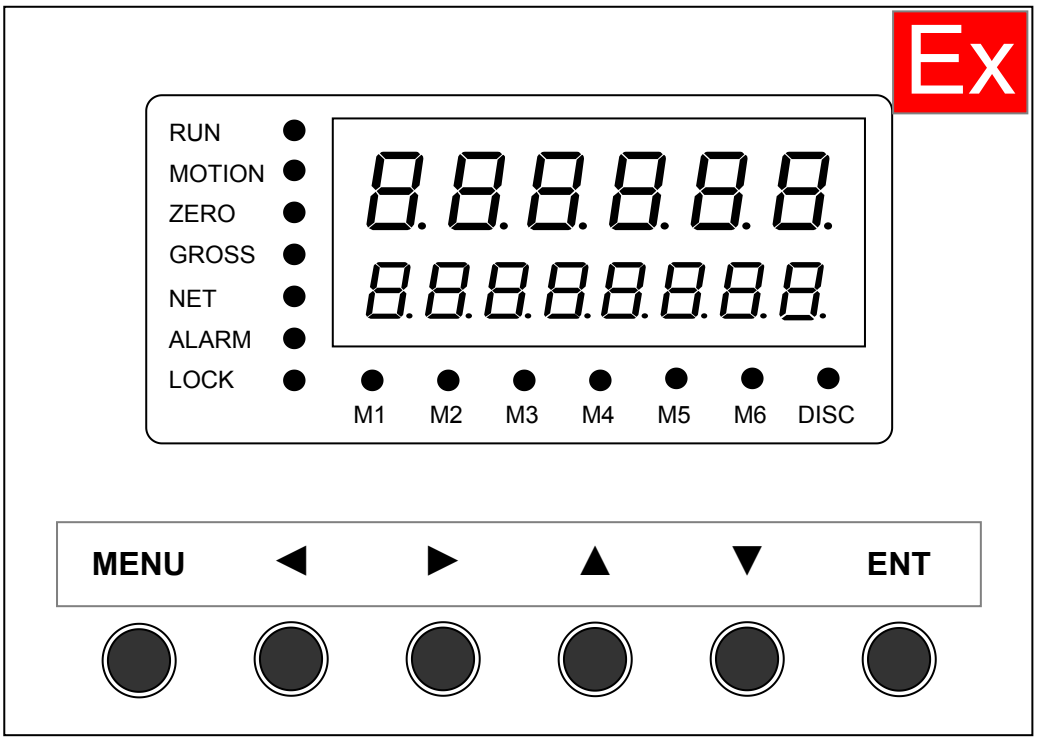
- Digital Communication Interface
  - ✧ COM1: RS232.
  - ✧ COM2: RS485.
  - ✧ Connectable: Host IPC/PLC and LED Remote Display.
- Operating Specification
  - ✧ Operating Voltage
    - Model Panel-mounting: DC24V±20%.
    - Model Explosion-proof: AC110~240V, 50/60Hz.
  - ✧ Max. Power Consumption: 5W.
  - ✧ Outline Size
    - Model Panel-mounting: 110×62×150mm [W×H×D].
    - Model Explosion-proof: 256×290×166mm [W×H×D].
  - ✧ Panel Cut-out Size
    - Model Panel-mounting: 94×47 mm [W×H].
  - ✧ Operating Temperature: -25℃ to +45℃.
  - ✧ Storage Temperature: -30℃ to +60℃.
  - ✧ Relative Humidity: Max. 85%RH.
  - ✧ Application Environment of Model Explosion-proof
    - Explosion gas environment: Zone 1&2.
    - Classes of explosion gas mixture: IIA, IIB.
    - Temperature grades of explosion gas mixture: T1~T6.
    - Ex-mark: Ex d IIB T6 Gb.
  - ✧ Protection Level
    - Front Panel of Model Panel-mounting: IP65.
    - Model Explosion-proof: IP65.
  - ✧ Weight
    - Model Panel-mounting: Approx. 0.5kg.
    - Model Explosion-proof: Approx. 9.2kg.

3. User Interfaces

3.1 Model Panel-mounting User Interface



3.2 Model Explosion-proof User Interface



3.3 Keypad Operation

If there is not any keypad operation in one minute and it's not in the processes of 'F2 System Calibration' & 'F6 Factory Adjustment', the controller will return to 'Main Display Interface' automatically.

Menu Operation	
Key Name	Description
【MENU】	Enter Main Menu. Exit.
【ENT】	Enter / Save / Clear Alarm.
【◄】	Cursor shifts left. Display the previous option.
【►】	Cursor shifts left. Display the next option.
【▲】	Display the next interface or option. Digit input: +1 (0~9 loop).
【▼】	Display the previous interface or option. Digit input: -1 (0~9 loop).
Quick Operation	
【MENU】 【🔑】 *	✧ Key-locking. ✧ Key-unlocking.
【◄】 (【SET】)	M1~M4 Target Weight setting.
【◄】 【ZERO】 【→0←】 *	✧ [-ZEro-]: Zero Calibration with Power-down Protection and Clearing Tare Weight. ✧ [≡ZEro≡] Manual Zero without Power-down Protection and without Clearing Tare Weight. ✧ The controller will switch to Gross Weight display.
【▲】 【TARE】 【→T←】 *	✧ [≡tArE≡]: Manual Tare without Power-down Protection. ✧ [-PStr-]: Preset Tare Weight with Power-down Protection. ✧ [-rStr-]: Clear Tare Weight with Power-down Protection. ✧ The controller will switch to Net Weight display.
【ENT】 【G/N】	Gross Weight / Net Weight display switch.
【ENT】	Pause State: ✧ [Cont]: Recover Running. ✧ [StoP]: Stop.

***: Keep the key pressed for 2 seconds.**

3.4 State Indication

LED light	Description
[RUN]	ON: Running state. Blinking: Pause state. OFF: Stop or Calibrating state.
[MOTION]	Weight Dynamic Changing: Weight Variance per [107] 'Stability Time' is exceeding [106] 'Stability Range'.
[ZERO]	Net Weight ≤ Non-load Zero Range.
[GROSS]	Gross Weight display.
[NET]	Net Weight display.
[ALARM]	Up/Low Tolerance Alarm. Pause State.
[LOCK]	ON: Key-locked. OFF: Key-unlocked.
[M1~M4]	ON: Material Mn's feeding process ended. Blinking: Material Mn is in the feeding process.
[M5~M6]	Unused.
[DISC]	Stop state: Weight value is reducing.
	Running state: It's in the dumping process.

3.5 Alarm Signs

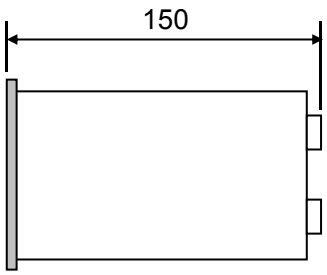
Sign	Alarm Cause	Solution
Err1	RAM Failure.	Replace the chip RAM.
Err2.1 Err2.2	EEPROM Failure.	Replace the chip EEPROM.
Err3	Signal reversed or not connected.	Connect the loadcell correctly.
Err4	ADC Failure.	Replace the ADC module.
oV-Ad	Over ADC Range.	Weighing signal exceeds A/D conversion range. 1. Check if the loadcell is connected. 2. Check if the capacity of loadcell is too small. 3. Check if the loading weight is too big.
oL	Overload Alarm.	Gross Weight > (Scale Capacity + 9 × Scale Division). 1. Check if the loadcell is connected. 2. Check if the capacity of loadcell is too small. 3. Check if the loading weight is too big.
HH	Gross Weight Upper Limit Alarm in Stop state.	Refer to parameter [209] 'Gross Weight Upper Limit'. 1. Modify the set value of 'Gross Weight Upper Limit' if it's too small. 2. Do 'Manual Dump' if the weighing bucket has been filled with too much materials.
Pr-PAUSE	Pause for unexpected power-off.	With unexpected power-off in the auto-batching process, the controller will enter pause state after re-power-on. Press DI button 'Start/Clear Alarm' to recover running.
HH-PAUSE	Pause for Gross Weight Upper Limit Alarm in the auto-feeding process.	Refer to parameter [209] 'Gross Weight Upper Limit'. 1. Modify the set value of 'Gross Weight Upper Limit' if it's too small, and then press DI button 'Start/Clear Alarm' to recover running. 2. Stop batching and do 'Manual Dump' if the weighing bucket has been filled with too much materials.
dI-PAUSE	Manual Pause.	Press DI button 'Start/Clear Alarm' to recover running.

Sign	Alarm Cause	Solution
OV-PAUSE	Pause for Up Tolerance Alarm.	Press DI button 'Start/Clear Alarm' to recover running.
dn-PAUSE	Pause for Low Tolerance Alarm.	It's allowed to do 'Manual Dribble Re-feed'. Press DI button'Start/Clear Alarm' to recover running.
bAt-End	Alarm or Auto-stop for 'Batch Target finished'.	Refer to parameter [208] 'Batch Count Target' and [300] 'Batch Count Target Control'. Clear Screen to clear the message.
LASt-bAt	Last Batch.	The message will disappear after the present batch finished.
oV-tr	Not meet the condition of Maunal Tare.	When Gross Weight is at the state with negative value display, overload alarm or dynamic variation, 'Manual Tare' will be invalid.
oV-nZ	Over 'Manual/Auto Zero Limit'.	Refer to parameter [123] 'Manual/Auto Zero Limit'.
AuZr	Auto Zero .	Refer to parameter [301] 'Cycles to Auto Zero'.
Autr	Auto Tare.	
HEAt	Preheating Time Countdown [min.sec].	Refer to parameter [128] 'Zero Upon Power Up', [129] 'Power Up Zero Time' and [130] 'Power Up Zero Limit'. Wait for the preheating time over or press any key to exit.
oV-Zr	Over 'Power Up Zero Limit'.	

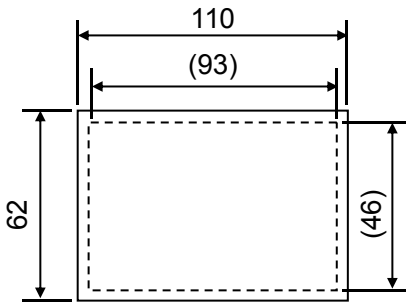
4. Installation&Connection

4.1 Installation

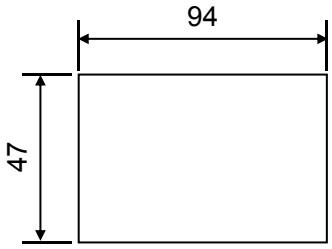
4.1.1 Model Panel-mounting Installation



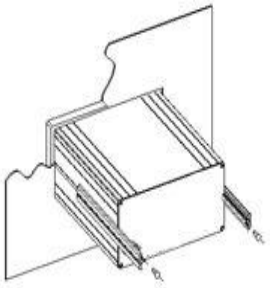
Outline Size



Front Panel Size



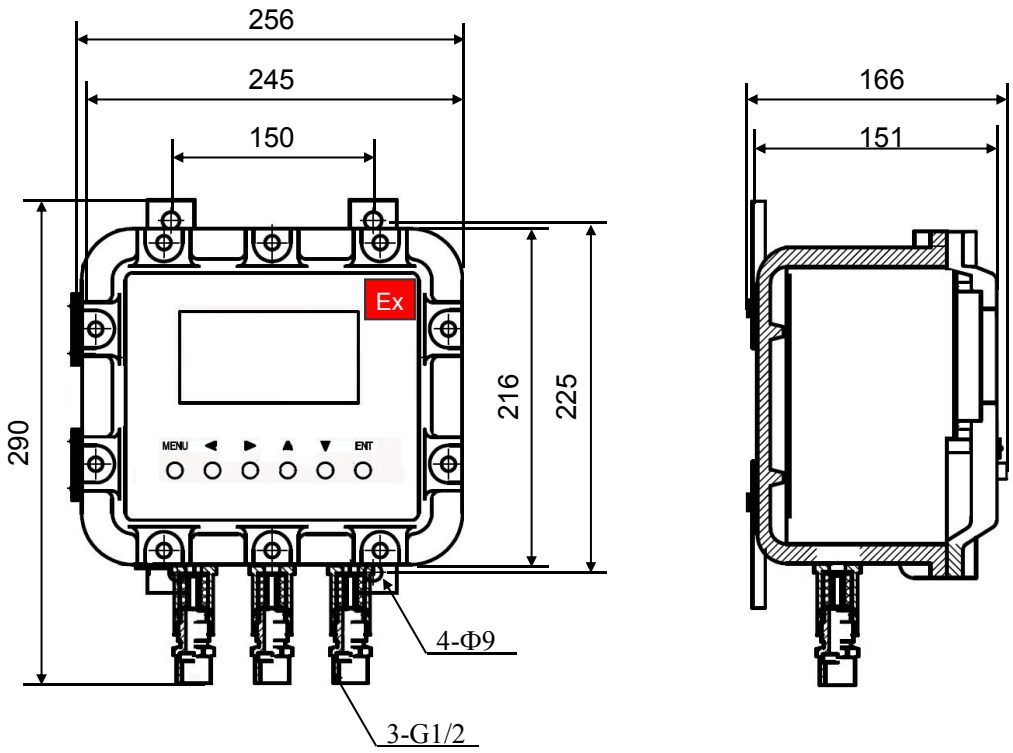
Panel Cut-out Size



Installation Mode

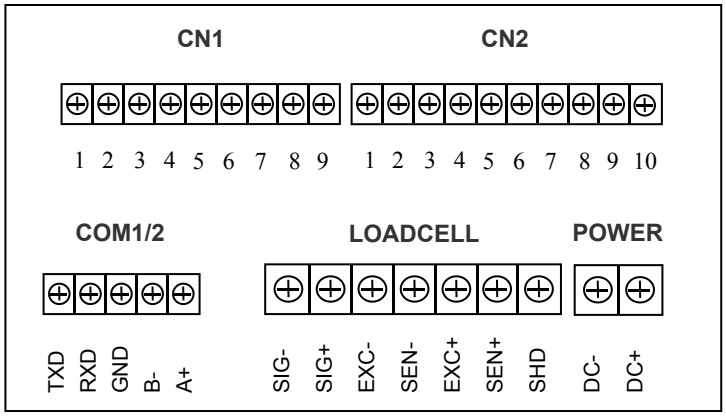
Outline Size W×H×D[mm]	Front Panel Size W×H[mm]	Box Body Size W×H[mm]	Panel Cut-out Size W×H[mm]
110×62×150	110×62	93×46	94×47

4.1.2 Model Explosion-proof Installation



Outline Size W×H×D[mm]	Mounting Size W×H[mm]	Mounting Hole Size [mm]	Cable Joint	
			Thread Size [inch]	Cable Diameter [mm]
256×290×166	150×225	Φ9	G1/2	Φ8~13

4.2 Terminal



No.	Pin	Description	
LOADCELL		**Loadcell Port**	
Connection Mode		6-Wire	4-Wire
Internal Dip Switch S4		S4→【6-WIRE】	S4→【4-WIRE】 [Default Set]
1	SIG-	Weighing Signal [mV] Input -.	Weighing Signal [mV] Input -.
2	SIG+	Weighing Signal [mV] Input +.	Weighing Signal [mV] Input +.
3	EXC-	Excitation Voltage -.	Excitation Voltage -.
4	SEN-	Feedback Voltage -.	
5	EXC+	Excitation Voltage + [DC9V].	Excitation Voltage + [DC9V].
6	SEN+	Feedback Voltage +.	
7	SHD	Shield Ground.	Shield Ground.
POWER		**DC24V[±20%] Power Input Port**	
1	DC-	DC Input -.	
2	DC+	DC Input +.	
The metal shell should be grounded directly. For separating the controller from the interference of the driving devices, the DC24V power supply of the controller should not be shared by the DO.			

AC-DC Switch Power Supply Module for Model Explosion-proof		
No.	Pin	Description
AC_INPUT		**AC110~240V Power Input Port**
1	L	Live Wire.
2	N	Null Wire.
3	E	Protective Ground.
DC_OUTPUT		**DC24V[±10%] Power Output Port** [Connected to the 'POWER' input port on the main circuit board]
4	-V	DC Output -.
5	+V	DC Output +.

No.	Pin	Description
COM1		**RS232 Digital Communication Port**
1	TXD	Transmit Data.
2	RXD	Receive Data.
3	GND	Signal Ground / Shield Ground.
COM1		**RS485 Digital Communication Port**
3	GND	Shield Ground.
4	B-	Data -.
5	A+	Data +.

No.	Pin	Description
CN1 [DI/AO]		**Switch Signal Input / Analog Output Port**
DI		**Switch Signal Input**
1	COM	DI Common Terminal [DC-].
2	DI1	Switch Signal Input 1.
3	DI2	Switch Signal Input 2.
4	DI3	Switch Signal Input 3.
5	DI4	Switch Signal Input 4.
6	DI5	Switch Signal Input 5.
7	DI6	Switch Signal Input 6.
AO		**4~20mA Analog Output [Definable]**
8	AO+	AO Output +.
9	AO-	AO Output -.
CN2 [DO]		**Transistor Switch Signal Output Port**
1	V-	DC24V Input -. DO Common Terminal.
2	DO1	Normally Open Contact Output 1.
3	DO2	Normally Open Contact Output 2.
4	DO3	Normally Open Contact Output 3.
5	DO4	Normally Open Contact Output 4.
6	DO5	Normally Open Contact Output 5.
7	DO6	Normally Open Contact Output 6.
8	DO7	Normally Open Contact Output 7.
9	DO8	Normally Open Contact Output 8.
10	V+	DC24V Input +.
Contact Capacity of Transistor Switch: DC24V, 250mA.		

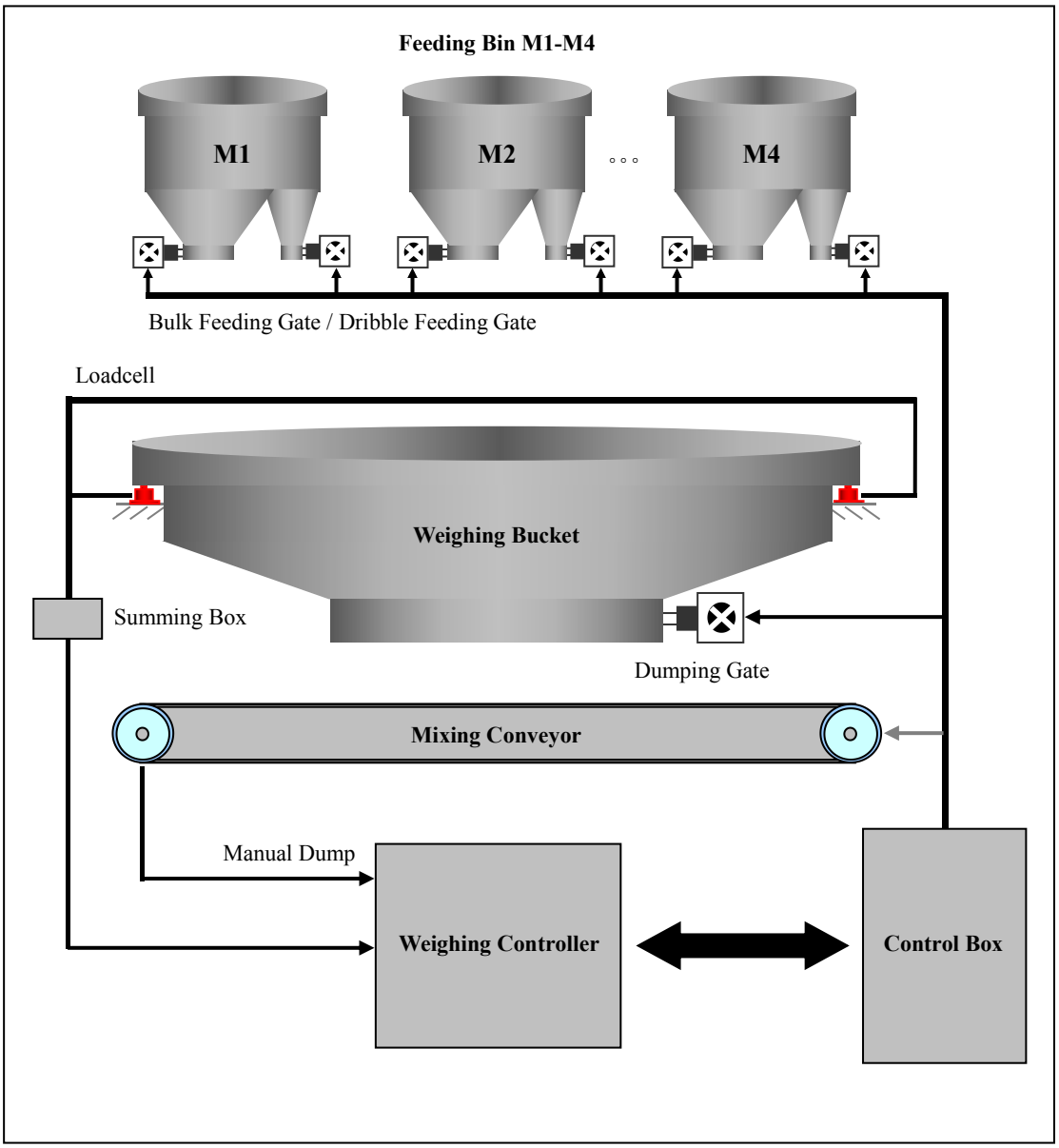
4.3 DI/DO Function Definition

CN1 [DI]			
No.	Pin	Signal Name	Description
1	COM	COM	DI Common Terminal [DC-].
2	DI1	AUTO	Auto/Manual. ON: Auto state. OFF: Manual state / Emergency Stop.
3	DI2	START	Start / Clear Alarm. In running process: Clear Alarm. Pause state: Clear Alarm & Recover Running. OFF→ON→OFF.
4	DI3	PAUSE	Manual Pause. OFF→ON→OFF.
5	DI4	DUMP_I	Manual Dump. 1. Stop state: ON: Manual Dump; OFF: Stop. 2. In the Auto-batching process If [312] 'Dumping Mode' = '*0. HAnd*', it's necessary to input the DI signal 'Manual 'Dump' (OFF→ON→OFF) for triggering the dumping process.
6	DI5	STOP	Normal Stop [Last Batch]. OFF→ON→OFF: The batching process will stop automatically after the present batch finished.
7	DI6	SP3_I	Manual Dribble Re-feed. Valid at Pause state with Mn's Low Tolerance Alarm. ON: Start Mn's Dribble Feed. OFF: Stop Mn's Dribble Feed.

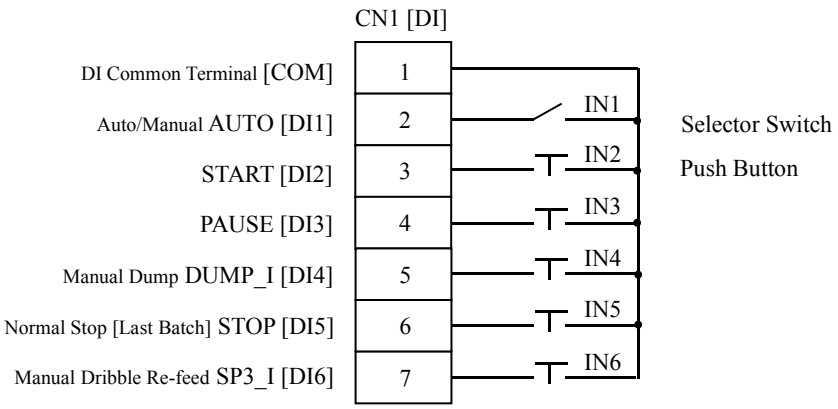
CN2 [Transistor DO]			
No.	Pin	Signal Name	Description
1	V-	V-	DC24V Input -. DO Common Terminal.
2	DO1	M1	M1 Feeding Permission.
3	DO2	M2	M2 Feeding Permission.
4	DO3	M3	M3 Feeding Permission.
5	DO4	M4	M4 Feeding Permission.
6	DO5	SP1	Bulk Feed [Used for Material M1~M4].
7	DO6	SP3	Dribble Feed [Used for Material M1~M4].
8	DO7	DUMP	Dump. ON: Open Dumping Gate. OFF: Close Dumping Gate. Refer to Parameter [312] 'Dumping Mode'.
		FD_END	Feeding Ended. After the present batch finished, this DO switch will turn on with max. hold time 10s and turn off automatically when the next batch starts. Refer to Parameter [312] 'Dumping Mode'.
9	DO8	ALARM	Alarm/Pause.
			ON: Up/Low Tolerance Alarm.
			ON: Gross Weight Upper Limit Alarm.
			Pulse (ON: 1s; OFF: 1s): Pause State.
10	V+	V+	DC24V Input +.

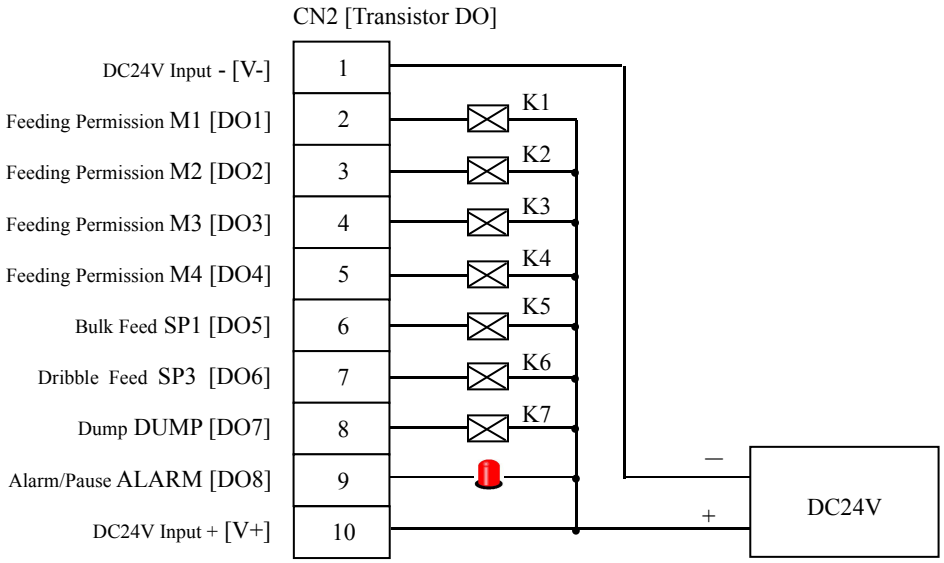
4.4 Typical Applications

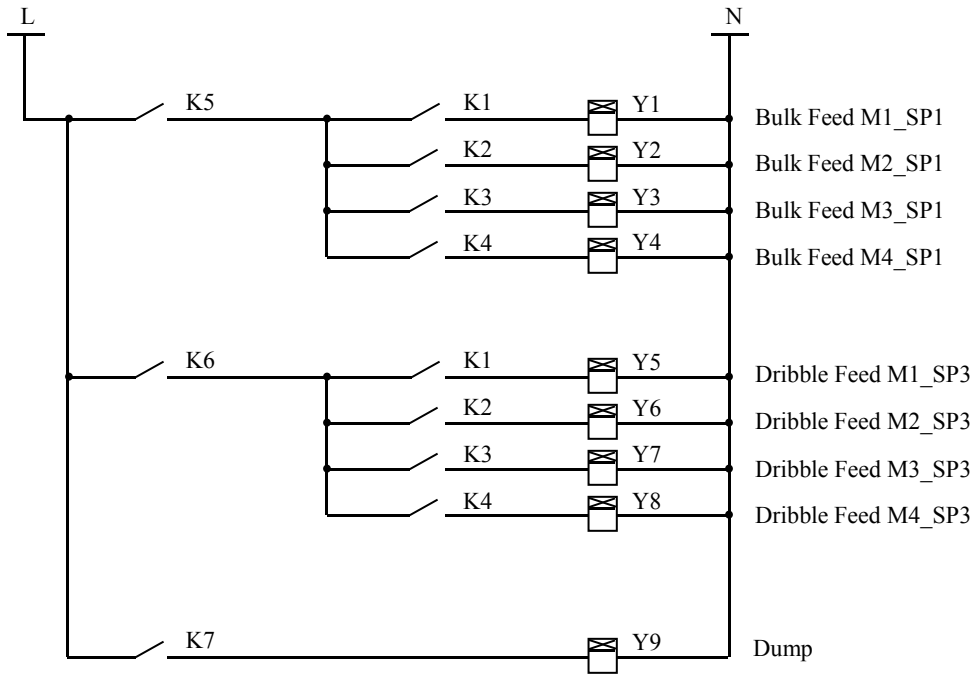
4.4.1 System Diagram for M1~M4 Ration Batching System



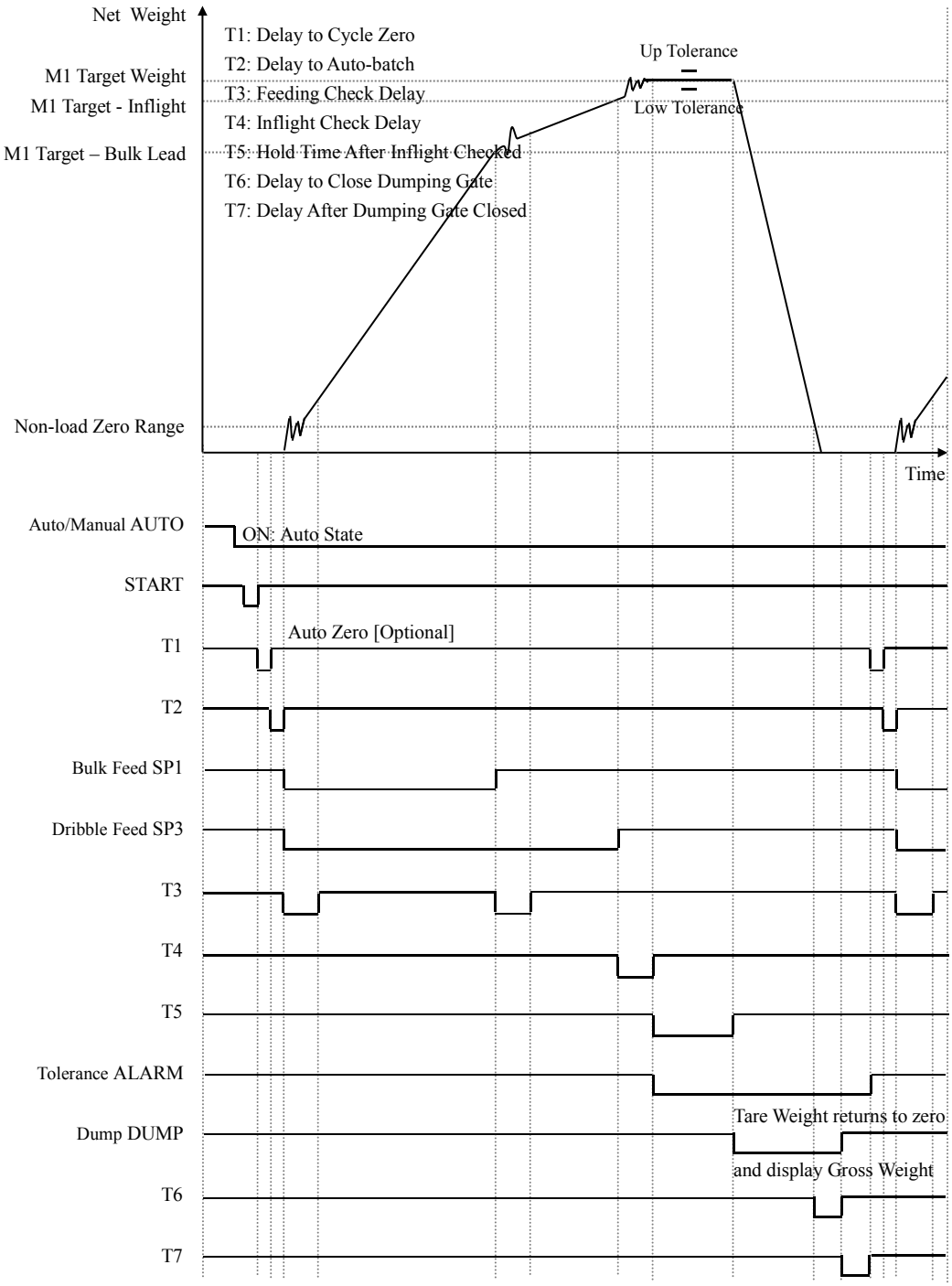
4.4.2 DI/DO Connection for M1~M4 Ration Batching System



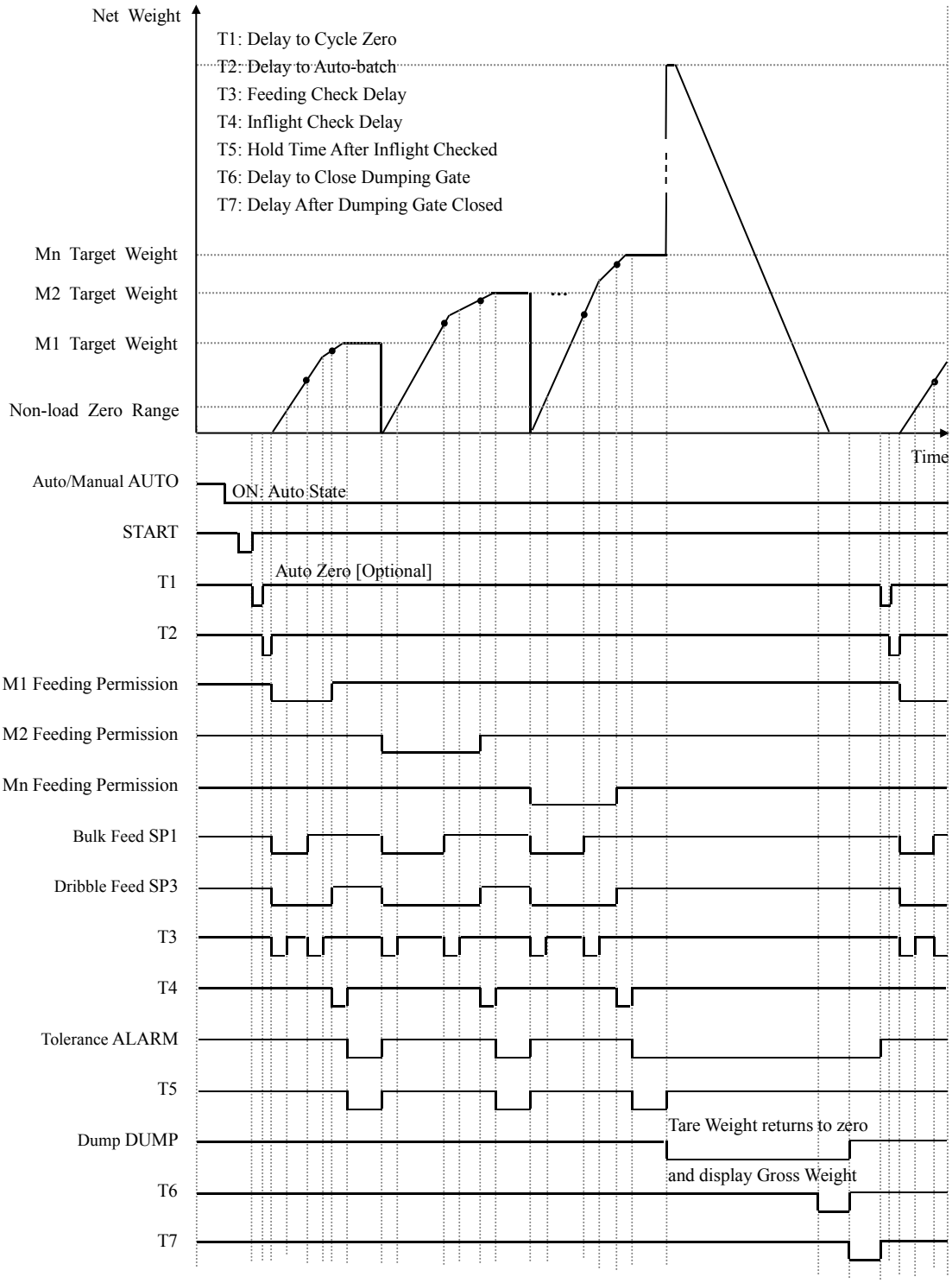



L
N
K5
K1
Y1
Bulk Feed M1_SP1
K2
Y2
Bulk Feed M2_SP1
K3
Y3
Bulk Feed M3_SP1
K4
Y4
Bulk Feed M4_SP1
K6
K1
Y5
Dribble Feed M1_SP3
K2
Y6
Dribble Feed M2_SP3
K3
Y7
Dribble Feed M3_SP3
K4
Y8
Dribble Feed M4_SP3
K7
Y9
Dump

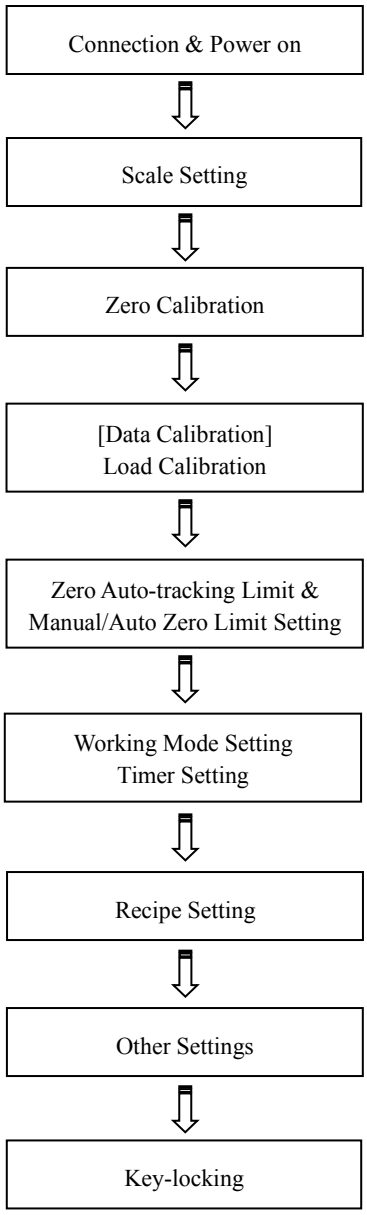
4.4.3 Working Timing Diagram of M1 Single-material Ration Feeding



4.4.4 Working Timing Diagram of M1~Mn Multiple-material Ration Batching System



5. Operation Procedure



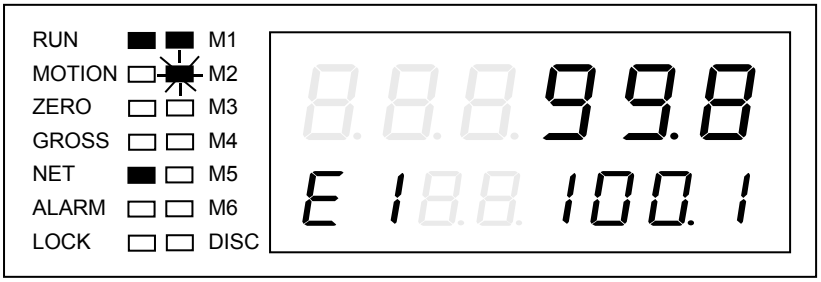
6. Functions&Operation

6.1 Main Display Interfaces

【G/N】: Gross Weight / Net Weight display switch.
【▲】【▼】: Display interface switch.
When the feeding process of each material starts, the lamp [Mn] will blink and the upper display area will switch to display 'Net Weight' automatically. And the lamp [Mn] will keep turning on after Mn's feeding process ended.
After the batching process ended, the upper display area will switch to display 'Gross Weight' automatically.

6.1.1 Gross/Net Weight, Mn's Feeding Weight

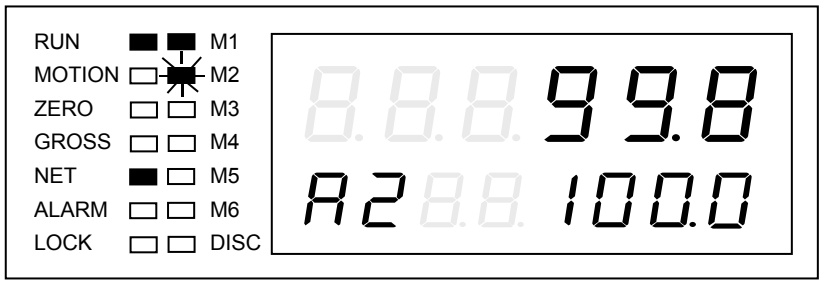
[Mn] blinking: Material No. Mn in feeding process
and its Feeding Weight.



E1~E4: Material No. Mn-1 and its Final Feeding Weight.
It will be kept displaying till Mn's feeding process ended.

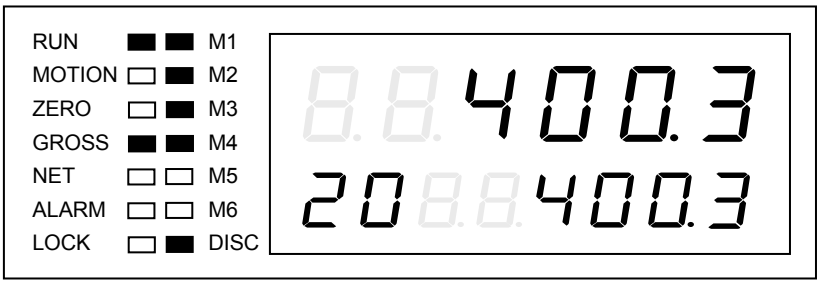
6.1.2 Gross/Net Weight, Mn's Target Weight ['An']

[Mn] blinking: Material No. Mn in feeding process
and its Feeding Weight.



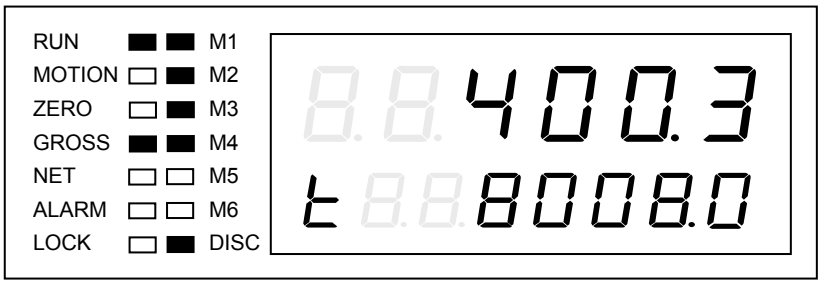
A1~A4: Mn's Target Weight [SET].

6.1.3 Gross/Net Weight, Batch Count, Total Feeding Weight



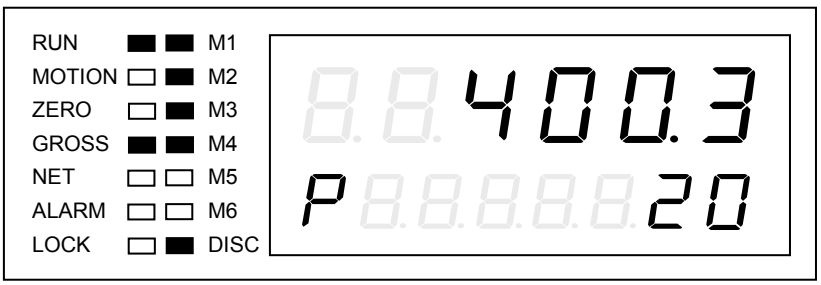
Batch Count: only display the last two bits; Total Feeding Weight of M1~Mn. The Final Total Feeding Weight will be kept displaying till the next batching process starts.

6.1.4 Gross/Net Weight, Totalized Weight [‘t’]



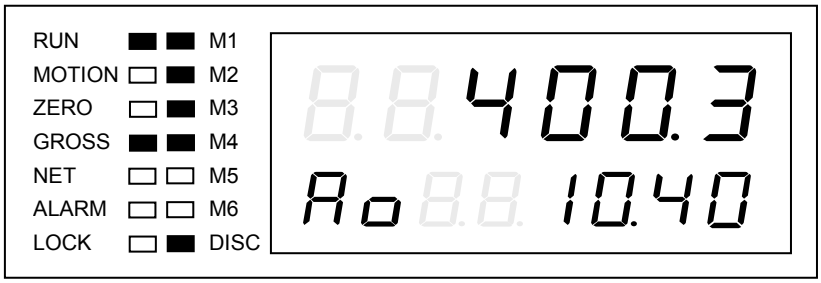
t: Totalized Weight of M1~Mn.

6.1.5 Gross/Net Weight, Batch Count [‘P’]



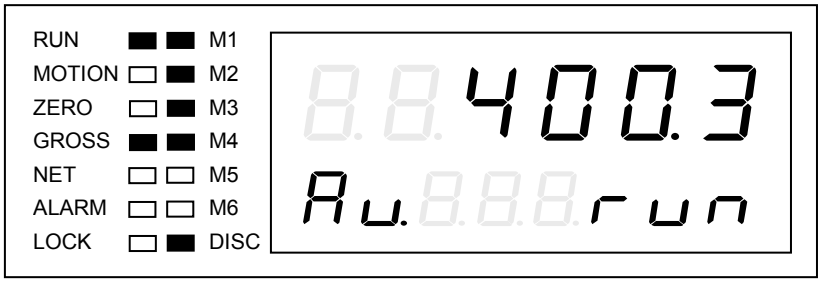
P: Batch Count (0~9999999).

6.1.6 Gross/Net Weight, AO Output Value ['Ao']



AO: 4.00~20.00mA.

6.1.7 Gross/Net Weight, Working State



Hd: Manual State; Au: Auto State.

Run: Running State; PAUS: Pause State; StoP: Stop State.

6.2 Main Menu

Main Menu		Second Menu	
Sign	Function	Sign	Description
F1-SEt	Parameter Setting	-SCAL-	Scale parameters setting.
		-CALP-	Calibration parameters setting.
		-SEtP-	Recipe parameters setting.
		-APPL-	Working mode parameters setting.
		--tI--	Timer parameters setting.
		-SErP-	Communication parameters setting.
		-dISP-	User interface parameters setting.
F2-CAL	System Calibration	-ZEro-	Zero Calibration without loading on the weigher to correct Zero Value.
		-dAtA-	Data Calibration: Input the specification parameter values of loadcell [Total Capacity and Output Sensitivity] according to the actual configuration of the weighing system to correct Span Coefficient. If there is no access to get the specification parameter values for Data Calibration, then it's necessary to do Load Calibration.
		-LoAd-	Load Calibration: After doing Data Calibration, if there are conditions for Load Calibration, do Load Calibration with loading standard weight on the weigher to correct Span Coefficient further for higher weighing accuracy.
F3-rEC	Record Query		Query one Batch Record.
F4-CLn	Data Clearing	--CLS-	Clear Screen: Clear Feeding Weight, Totalized Weight and Batch Count.
F5-Loc	Key-locker	-oPEn-	Key-unlocking.
		-Locc-	Key-locking.
		-PASS-	Password Set. Exfactory Passwords: ✧ Operator Password: 000000. ✧ Administrator Password: 000001.

Main Menu		Second Menu	
Sign	Function	Sign	Description
F6-FAC	Factory Adjustment	Special for manufacturer.	
		-SPAn-	Exfactory Span Adjustment: Use standard weighing test equipment to adjust the weighing signal interface for normalizing Span Coefficient to 1.
		-AdtS-	AD Value of Weighing Signal Linearity Test.
		-AoZr-	AO Zero Adjustment.
		-AoFL-	AO Full Adjustment.
		-AotS-	AO Linearity Test.
		-dotS-	DO Output Test.
		-dItS-	DI Input Test.
		-dEFU-	RAM Reset: Reset to factory defaults.
		-dStS-	Display/DO Reliability Test.
F7-InF	Product Information	Only for query.	
		--VEr-	Version No.
		--Sn--	Serial No.
		-dAtE-	Exfactory Date.
F8-Aud	Audit Trail	Only for query.	
		-Cntr-	Operation Audit Trail Counter [0~999999].
		-oPtr-	Operation Trail (Only for query). ✧ nonE: No Operation. ✧ SCAL: Scale Setting. ✧ dEFU: RAM Reset.

6.3 F1-SET Parameter Setting

6.3.1 Weighing Parameters (SCAL)

No.	Sign	Range	Default	Description	Set
100	UnIt	0~3	1	**Weight Unit** *0: None* *1: kg* *2: t* *3: g*	
101	dot	0~4	oooo.o	**Decimal Point Position** *0: ooooo* *1: oooo.o* *2: ooo.oo* *3: oo.ooo* *4: o.oooo*	
102	SCAL	1~999999	10000	**Scale Capacity** Max. allowed loading weight of the load receptor. Scale Capacity ⩽ Total Capacity of Loadcells – Self-weight of Load Receptor. When 'Weight value = Scale Capacity', AO of weight signal will output current 20mA.	
103	dIV	1~500	1	**Scale Division** *1, 2, 5, 10, 20, 50, 100, 200, 500*	
104	ZEro	-20000~ +999999	0 [*]	**Zero Value** Only for query.	
105	SPAn	>0	1.0000 [*]	**Span Coefficient** Max. display value: 99.9999. Only for query.	
106	Stb.r	0~5	0	**Stability Range** [Division] Set value = 0: No 'Stability Judging'. Set value > 0: Weight Variance per [107] 'Stability Time' being in [106] 'Stability Range' means 'Weight is stable'.	
107	Stb.t	0.1~9.9	0.5	**Stability Time** [s]	

[*]: 'RAM Reset' operation has no effect on the parameter.

<table>
<tr><th>No.</th><th>Sign</th><th>Range</th><th>Default</th><th>Description</th><th>Set</th></tr>
<tr><td>108</td><td>FLt1</td><td>0~9</td><td>3</td><td colspan="2">Bulk Anti-vibration Filter1
Filter1 is used for setpoint control of Bulk Feed.</td><td></td></tr>
<tr><td>109</td><td>FLt2</td><td>0~9</td><td>7</td><td colspan="2">Dribble Anti-vibration Filter2
Filter2 is used for setpoint control of Dribble Feed and stable weight display.</td><td></td></tr>
<tr><td colspan="4" rowspan="11">Demand: Filter2≥Filter1+ 2</td><td>Set Value</td><td>Cutoff Frequency</td><td rowspan="11"></td></tr>
<tr><td>0</td><td>None</td></tr>
<tr><td>1</td><td>11.2Hz</td></tr>
<tr><td>2</td><td>8.0Hz</td></tr>
<tr><td>3</td><td>5.6Hz</td></tr>
<tr><td>4</td><td>4.0Hz</td></tr>
<tr><td>5</td><td>2.8Hz</td></tr>
<tr><td>6</td><td>2.0Hz</td></tr>
<tr><td>7</td><td>1.4Hz</td></tr>
<tr><td>8</td><td>1.0Hz</td></tr>
<tr><td>9</td><td>0.7Hz</td></tr>
<tr><td>110</td><td>StAb</td><td>1~80</td><td>40</td><td colspan="2">Weight Display Smooth Filter3
The bigger set value of Filter3 will make the weight display value more stable with slower response speed.</td><td></td></tr>
</table>

6.3.2 Calibration Parameters (CALP)

No.	Sign	Range	Default	Description	Set
120	AZt.P	0~1	0	**Zero Auto-tracking Permission** *0: oFF* *1: on* [Only after weight being stable and the zero variation in 'Zero Auto-tracking Time' is within the range of 'Zero Auto-tracking Limit', the result of Zero Auto-tracking will be valid]	
121	AZt.t	0.1~9.9	1.0	**Zero Auto-tracking Time** [s]	
122	AZt.r	0.1~50.0	1.0	**Zero Auto-tracking Limit** [Division]	
123	nZ	0~50000	50	**Manual/Auto Zero Limit** Only when the weight variation caused by Zero Value changing is within this range, Manual Zero and Auto Zero will be valid. Suggestion: Set value ≤ (Scale Capacity × 4%).	
124	dZr	0~99	5	**Zero Display Limit** When the absolute value of weight is within this range, the weight display value will return to zero.	
125	totL	1~999999	12000 [*]	**Total Capacity of Loadcells** Total Capacity of Loadcells = Loadcell Capacity × Quantity. Only for query.	
126	SEnS	0.5000 ~5.0000	2.0000 [*]	**Output Sensitivity of Loadcell** [mV/V] Only for query.	
127	Ao.Er	-2.00~+2.00	0.00	**AO Offset Value** [mA] Try to change 'AO Offset Value' for making the AO current display value of the AO receiving terminal the same as that of the controller. If the AO current display value of the AO receiving terminal is smaller than that of the controller because of signal attenuating, the 'AO Offset Value' should be set to positive value. If the AO current display value of the AO receiving terminal is bigger than that of the controller because of interference signal superposing, the 'AO Offset Value' should be set to negative value. 【▲】: Optional '0' or ' -' (negative sign) at the highest bit.	

[*]: 'RAM Reset' operation has no effect on the parameter.

No.	Sign	Range	Default	Description	Set
128	InI.Z	0~1	0	**Zero Upon Power Up** *0: oFF* *1: on* [without Power-down Protection]	
129	InI.t	0~1800	10	**Power Up Zero Time** [s]	
130	InI.r	0~50000	50	**Power Up Zero Limit** Suggestion: Set value ≤ (Scale Capacity × 20%).	

6.3.3 Recipe Parameters (SEtP)

No.	Sign	Range	Default	Description	Set
201	CH.no	1~4	1	**Material No. Mn** [2N2]~[2N6] are the parameter numbers of material 'Mn'.	
2N2	SEt.n	0~60000	1000	**Mn Target Weight** Set value = 0: Mn will not participate in the batching process.	
2N3	SP1.n	0~60000	100	**Mn Bulk Lead Weight** Set value = 0: The DO switch 'Bulk Feed' will not participate in the feeding process. Set value > 0: When 'Feeding Weight ≥ (Target Weight − Bulk Lead)' in the feeding process, the DO switch 'Bulk Feed' will turn off automatically.	
2N4	FAL.n	0~60000	50	**Mn Dribble Inflight Weight** When 'Feeding Weight ≥ (Target Weight − Inflight)' in the feeding process, the DO switch 'Dribble Feed' will turn off automatically. Note: It has one more decimal than 'Target Weight'.	
2N5	OV.n	0~60000	5	**Mn Up Tolerance Limit** Up Tolerance = Final Feeding Weight – Target Weight. If 'Up Tolerance > Set Value', the DO switch 'Up Tolerance Alarm' will turn on automatically.	
2N6	Und.n	0~60000	5	**Mn Low Tolerance Limit** Low Tolerance = Target Weight – Final Feeding Weight. If 'Low Tolerance > Set Value', the DO switch 'Low Tolerance Alarm' will turn on automatically.	
207	nuLL	0~60000	50	**Non-load Zero Range** In the auto-dumping process, 'Net Weight ≤ Non-load Zero Range' is used as the judging condition that the materials in the weighing bucket have been dumped completely.	

No.	Sign	Range	Default	Description	Set
208	PCS	0~9999	0	**Batch Count Target** Set value = 0: No judging 'Batch Count Target Finished'. Set value > 0: After Batch Count reached to this set value, the controller will display prompt message.	
209	HH	0~100000	0	**Gross Weight Upper Limit** Set value = 0: No judging 'Gross Weight Upper Limit'. Set value > 0: ✧ Stop state: If 'Gross Weight ≥ Upper Limit', the controller will display alarm message. ✧ Auto-feeding process: If 'Gross Weight ≥ Upper Limit', the feeding process will pause for avoiding that the materials overflow from the weighing bucket, and the controller will display alarm message.	
210	FEd.n	1~4	1	**Material Quantity for Batching [N]** N=1: M1 Single-material Ration Feeding. N=2~4: M1~Mn Multiple-material Ration Batching.	

6.3.4 Working Mode Parameters (APPL)

No.	Sign	Range	Default	Description	Set
300	P.Ctr	0~1	0	**Batch Count Target Control** *0: oFF* *1: on* [With Batch Count Target finished, the batching process will stop automatically]	
301	Au.Zr	0~99	1	**Cycles to Auto Zero** Set value=0: No doing 'Auto Zero'. Set value > 0: After Batch Count reached to this set value, the controller will do 'Auto Zero' without power-down protection before batching.	
302	SP3	0~3	0	**Feeding's Start Sequence&Dribble Feed Method** *0: Together [Bulk+Dribble] & Continuous Dribble* *1: Together [Bulk+Dribble] & Jogging Dribble* *2: In order [Bulk→Dribble] & Continuous Dribble* *3: In order [Bulk→Dribble] & Jogging Dribble* Jogging DO outputs ON/OFF. Jogging AO outputs 4mA/'Dribble Feed AO Control Current'.	
303	tI.A	0.03~9.99	3.00	**Ta Dribble Jog ON Time** [s]	
304	tI.b	0.03~9.99	1.00	**Tb Dribble Jog OFF Time** [s]	
305	F.SP3	0~1	0	**Auto Dribble Re-feed for Inflight** *0: oFF* *1: on* [If the auto-feeding process stops abnormally because of heavy impact on the weighing bucket, and 'Feeding Weight < (Target Weight − Inflight)', the DO switch 'Dribble Feed' will turn on again automatically for re-feeding. When 'Feeding Weight ≥ (Target Weight − Inflight)', the DO switch 'Dribble Feed' will turn off automatically to stop re-feeding]	
306	d.SP3	0~1	0	**Auto Dribble Re-feed for Low Tolerance** *0: oFF* *1: on* [After the processes of auto-feeding and 'Auto Dribble Re-feed for Inflight' stopped, the controller will calculate the Ideal Inflight Value. If 'Feeding Weight < (Target Weight − Low Tolerance Limit)', the DO switch 'Dribble Feed' will turn on again automatically for re-feeding. When 'Feeding Weight ≥ (Target Weight − Ideal Inflight Value)' or 'Feeding Weight ≥ (Target Weight − Low Tolerance Limit)' , the DO switch 'Dribble Feed' will turn off automatically to stop re-feeding]	

No.	Sign	Range	Default	Description	Set
307	PAUS	0~1	0	**Pause for Tolerance Alarm** *0: oFF* *1: on* [The controller will display alarm message in Pause state. In Pause state with Low Tolerance Alarm, it's allowed to do 'Manual Dribble Re-feed', when 'Feeding Weight ⩾ (Target Weight − Low Tolerance Limit)', the re-feeding process will stop automatically, and then press the DI button 'Start/Clear Alarm' to recover running]	
308	F.Cor	0~1	0	**Auto Correct Inflight** *0: oFF* *1: on*	
309	Cor.n	1~99	3	**Cycles to Correct Inflight N** After Tolerance Alarm Count reached to N, Inflight Weight will be corrected automatically.	
310	C.rAg	1~60000	50	**Inflight Correction Limit** If the absolute value of Tolerance exceeds this range, it will not be used for the calculation of Inflight Correction Value.	
311	C.rAt	(25~100)%	50%	**Inflight Correction Ratio** [%] *25%; 50%; 100%* New Inflight Weight = Original Inflight Weight + Tolerance Value × Inflight Correction Ratio. Tolerance Value = Final Feeding Weight − Target Weight.	
312	dISC	0~2	1	**Dumping Mode** *0. HAnd* [Manual Dump: DO7 works as switch 'Dump', and it's necessary to input the DI signal 'Manual Dump' (OFF→ON→OFF) for triggering the dumping process] *1. Auto* [Auto Dump: DO7 works as switch 'Dump', and enter dumping process automatically] *2. End* [Feeding Ended: DO7 works as switch 'Feeding Ended']	

No.	Sign	Range	Default	Description	Set
313	Ao	0~4	0	**AO Signal** *0. groS* [Gross Weight] *1. nEt* [Net Weight] *2. dISP* [Displayed Weight] *3. bAt* [Total Feeding Weight of Present Batch] *4. FEEd* [Feed Control]	
314	A.SP1	4.00~20.00	18.00	**Bulk Feed AO Control Current** [mA] It's valid only when the parameter [313] 'AO Signal' is set to '4. FEEd'.	
315	A.SP3	4.00~20.00	6.00	**Dribble Feed AO Control Current** [mA] It's valid only when the parameter [313] 'AO Signal' is set to '4. FEEd'.	

6.3.5 Timer Parameters (-tI-)

No.	Sign	Range	Default	Description	Set
400	t1.Zr	0.00~9.99	2.00	**T1 Delay to Cycle Zero** [s] If Auto Zero (set via the parameter [301]) is not necessary before batching, the time T1 will not be delayed. T1 delaying process: [106] 'Stability Range'=0: Delay according to the set value of T1. [106] 'Stability Range'>0: If the delayed time is up to 2s, then once the real-time weight is stable, the T1 delaying process will end immediately. Then the controller will do 'Auto Zero'.	
401	t2.Fd	0.00~9.99	0.00	**T2 Delay to Auto-batch** [s] After the time T2 delayed, the batching process will start.	
402	t3. P1	0.00~9.99	0.50	**T3.SP1 Bulk Feed Check Delay** [s] When the process of 'Bulk Feed' starts, the impact of falling materials will make the weighing bucket vibrating, so it's prohibited to check the feeding weight in the time T3.SP1.	
403	t3.P3	0.00~9.99	0.80	**T3.SP3 Dribble Feed Check Delay** [s] When the process of 'Bulk Feed' stops, the flow sudden-change of falling materials will make the weighing bucket vibrating, so it's prohibited to check the feeding weight in the time T3.SP3. This parameter is invalid to the processes of 'Auto Dribble Re-feed' and 'Manual Dribble Re-feed'.	
404	t4.Sb	0.00~9.99	1.00	**T4 Inflight Check Delay** [s] When 'Dribble Feed', 'Auto Dribble Re-feed' or 'Manual Dribble Re-feed' stops, some materials have left the feeding bin but still in mid-air, so it's necessary to delay the time T4 for ensuring all of the materials in mid-air fell into the weighing bucket. T4 delaying process: [106] 'Stability Range'=0: Delay according to the set value of T4. [106] 'Stability Range'>0: If the delayed time is up to 2s, then once the real-time weight is stable, the T4 delaying process will end immediately. Then the controller will do Final Feeding Weight Detection, Tolerance calculation and Tolerance alarm.	

No.	Sign	Range	Default	Description	Set
405	t5.Hd	0.00~9.99	0.00	**T5 Hold Time After Inflight Checked** [s] After the time T5 delayed, the feeding process of the next material or the dumping process will start.	
406	t6.C1	0.00~9.99	0.50	**T6 Delay toClose Dumping Gate** [s] After 'Net Weight ≤ Non-load Zero Range' in the auto-dumping process and then the time T6 delayed for ensuring all of the materials in the weighing bucket dumped completely, the DO switch 'Dump' will turn off automatically to close the dumping gate.	
407	t7.C2	0.00~9.99	1.00	**T7 Delay After Dumping Gate Closed** [s] The delay time T7 is for ensuring the dumping gate closed. Then the next ration batching process will start automatically.	

6.3.6 Communication Parameters (SErP)

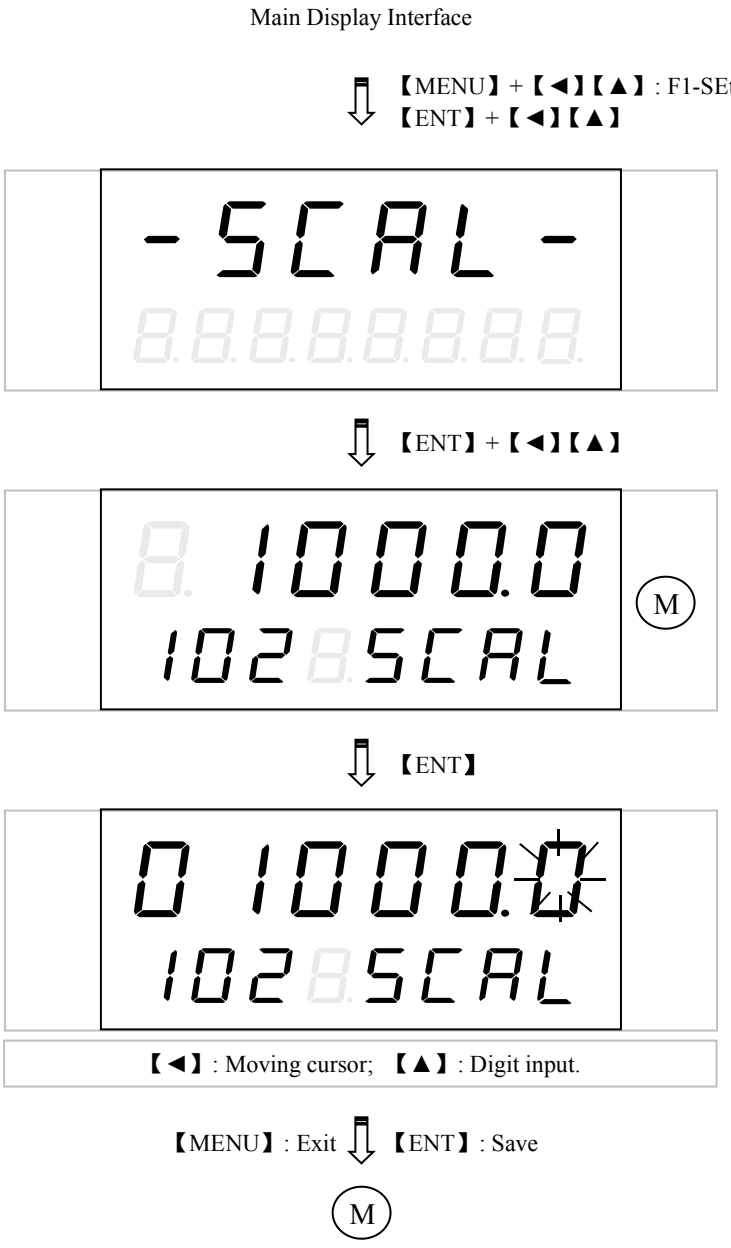
<table>
<tr><th>No.</th><th>Sign</th><th>Range</th><th>Default</th><th>Description</th><th>Set</th></tr>
<tr><td>800</td><td>Adr</td><td>0~99</td><td>1</td><td>Communication Address</td><td></td></tr>
<tr><td>801
802</td><td>bPS1
bPS2</td><td>0~2</td><td>0
0</td><td>COM1 Baud Rate
0 : 9600bps; 1 : 19200bps; 2: 115200bps</td><td></td></tr>
<tr><td>803
804</td><td>CHC1
CHC2</td><td>0~2</td><td>0
0</td><td>COM1 Parity Check
0. none [None Check]
1. EVEn [Even Check]
2. odd [Odd Check]</td><td></td></tr>
<tr><td>805
806</td><td>Con1
Con2</td><td>0~2</td><td>0
0</td><td>COM1 Communication Mode
0. HASC [Host-slave, Modbus ASCII]
1. Hrtu [Host-slave, Modbus RTU]
2. Cont [Continuous Sending ASCII]</td><td></td></tr>
<tr><td>807</td><td>dAtA</td><td>0~4</td><td>2</td><td>Data for Continuous Sending Mode
0. groS [Gross Weight]
1. nEt [Net Weight]
2. dISP [Displayed Characters]
3. bAt [Total Feeding Weight of Present Batch]
4. tot [Totalized Weight]</td><td></td></tr>
<tr><td>808</td><td>S.FrE</td><td>0~7</td><td>2</td><td>Continuous Sending Frequency [Hz]
0: 1Hz; 1: 2Hz; 2: 5Hz; 3: 10Hz
4: 20Hz; 5: 25Hz; 6: 50Hz; 7: 100Hz
<table>
<tr><th>Baud Rate</th><th>Max. Sending Frequency</th></tr>
<tr><td>9600bps</td><td>50Hz</td></tr>
<tr><td>19200/115200bps</td><td>100Hz</td></tr>
</table></td><td></td></tr>
<tr><td>809</td><td>dAt.F</td><td>0~3</td><td>0</td><td>Modbus Data Format
Reading&Writing Order of 4-Byte Registers:
0: 4321 [HB4 HB3 LB2 LB1]
1: 3412 [HB3 HB4 LB1 LB2]
2: 1234 [LB1 LB2 HB3 HB4]
3: 2143 [LB2 LB1 HB4 HB3]
The HEX byte order of float and long int registers in the controller is ‘HB4 HB3 LB2 LB1’.</td><td></td></tr>
</table>

6.3.7 Display Parameters (dISP)

No.	Sign	Range	Default	Description	Set
901	dS.tI	0.01~1.00	0.20	**Display Refreshing Time** [s]	
902	A.Loc	0~1	0	**Auto-Locking** *0: oFF* *1: on* [If there is not any keypad operation in one minute and it's not in the processes of 'F2 System Calibration' & 'F6 Factory Adjustment', the controller will lock the keypad and return to 'Main Display Interface' automatically]	

6.3.8 A Sample of Parameter Setting

Modify the parameter '[102] Scale Capacity'.



6.4 F2-CAL System Calibration

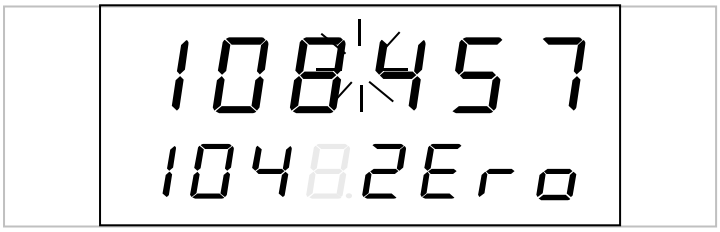
After doing ‘System Calibration’, Tare Weight value will return to zero automatically.

6.4.1 Zero Calibration (ZEro)

Do Zero Calibration without loading on the weigher and save the new Zero Value.

Main Display Interface

M ⇩ 【MENU】+【◄】【▲】: F2-CAL
【ENT】+【◄】【▲】: -ZEro-
【ENT】



【◄】【▲】:
- ✧ 104: New Zero Value.
- ✧ oLd: Original Zero Value.
- ✧ Er: Error = New Value - Original Value.

If Zero Value exceeds allowed range, it’s not allowed to be saved.

【MENU】: Exit ⇩ 【ENT】: Save

M

6.4.2 Data Calibration (dAtA)

Input the specification parameter values of loadcell [Total Capacity and Output Sensitivity] according to the actual configuration of the weighing system to correct Span Coefficient. If there is no access to get the specification parameter values for Data Calibration, then it's necessary to do Load Calibration.

Main Display Interface

M ⇩ 【MENU】+【◄】【▲】: F2-CAL
【ENT】+【◄】【▲】: -dAtA-
【ENT】



Input 'Total Capacity of Loadcells' [totL]: 1~999999 Weight Unit.

⇩ 【ENT】



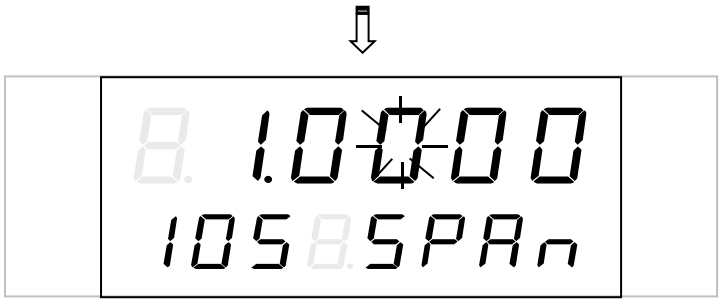
Input 'Output Sensitivity of Loadcell' [SEnS]: 0.5000~5.0000mV/V.

⇩ 【ENT】



Input 'Voltage Ratio' [VoL.r]: 1.0000~2.0000.

⇩ 【ENT】



【◄】【▲】:

- ✧ 105: New Span Coefficient value.
- ✧ oLd: Original Span Coefficient value.
- ✧ Sr: Span Correction Ratio = New Value / Original Value.

【MENU】: Exit 【ENT】: Save

M

Note:

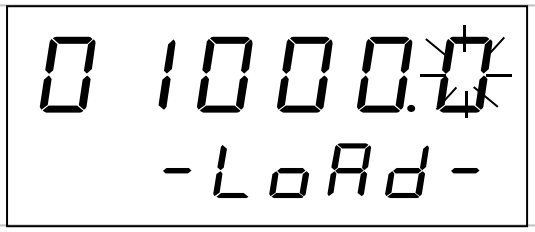
- ✧ Total Capacity of Loadcells = Loadcell Capacity × Quantity.
- ✧ Voltage Ratio = Excitation Voltage on the terminal of Controller / Excitation Voltage on the terminal of loadcells.
- ✧ The rated excitation voltage for loadcells is DC9V. It's best to measure the actual voltage value.
- ✧ 4-wire connection: The voltage attenuation is big, the voltage on both sides should be measured.
- ✧ 6-wire connection: The voltage attenuation is small, Voltage Ratio can be set to 1.0000.

6.4.3 Load Calibration (LoAd)

After doing Data Calibration, if there are conditions for Load Calibration, do Load Calibration with loading standard weight on the weigher to correct Span Coefficient further for higher weighing accuracy. The loading weight should be bigger than 50% of Scale Capacity value.

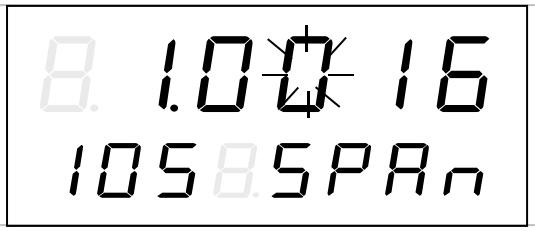
Main Display Interface

M ⇩ 【MENU】+【◄】【▲】: F2-CAL
【ENT】+【◄】【▲】: -LoAd-
【ENT】



Input 'Calibrating Weight': 1~999999 Weight Unit.

⇩ 【ENT】



【◄】【▲】:

- ✧ 105: New Span Coefficient value.
- ✧ oLd: Original Span Coefficient value.
- ✧ Sr: Span Correction Ratio = New Value / Original Value.
- ✧ Ad: AD Value.

If AD Value ≤ Zero Value, display 'Err', and it's not allowed to save Span Coefficient.

【MENU】: Exit ⇩ 【ENT】: Save

M

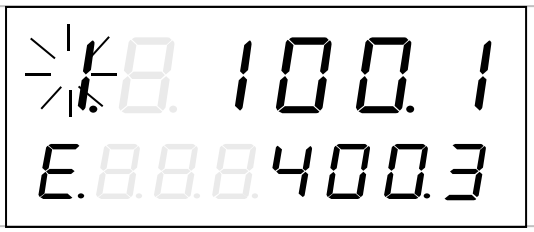
6.5 F3-REC Record Query

Main Display Interface

M ⇩ 【MENU】+【◄】【▲】: F3-rEC
【ENT】

One Batch Record can be queried.
【◄】: Query the previous item of this record.
【▲】: Query the next item of this record.

1~4: Feeding Weight of Material M1~M4.



E: Total Feeding Weight.

⇩ 【MENU】

M

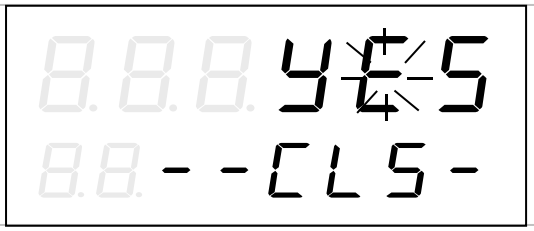
6.6 F4-CLN Data Clearing

Main Display Interface

M

【MENU】+【◄】【▲】: F4-CLn
【ENT】+【◄】【▲】: --CLS-
【ENT】

CLS: Clear Screen.



【◄】【▲】: YES/NO.

【MENU】: Exit 【ENT】: Enter

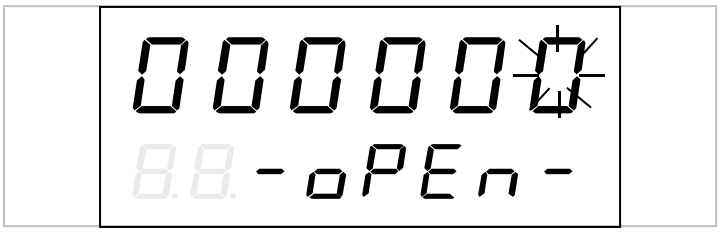
M

6.7 F5-LOC Key-locker

6.7.1 Key-unlocking (oPEn)

Main Display Interface

M ⇩ 【MENU】+【◄】【▲】: F5-Loc
【ENT】+【◄】【▲】: -oPEn-
【ENT】



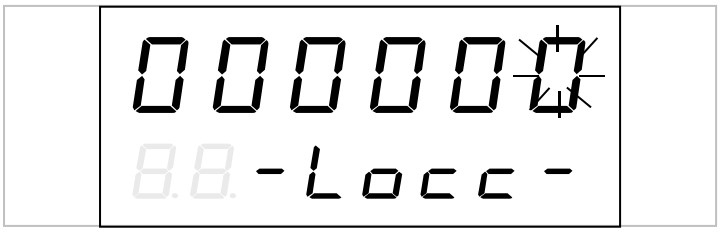
⇩ 【ENT】: If inputted password is correct, Key-unlocking will be valid and [LOCK] will turn off.

M

6.7.2 Key-locking (Locc)

Main Display Interface

M ⇩ 【MENU】+【◄】【▲】: F5-Loc
【ENT】+【◄】【▲】: -Locc-
【ENT】



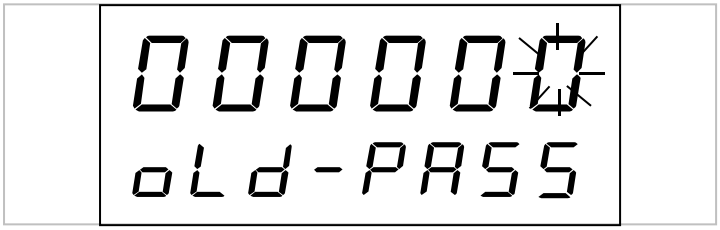
⇩ 【ENT】: If inputted password is correct, Key-locking will be valid and [LOCK] will turn on.

M

6.7.3 Password Set (PASS)

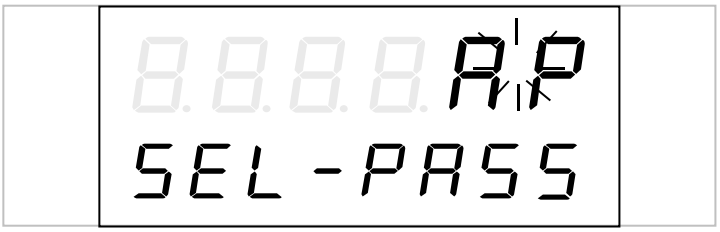
Main Display Interface

M ⇩ 【MENU】+【◄】【▲】: F5-Loc
【ENT】+【◄】【▲】: -PASS-
【ENT】

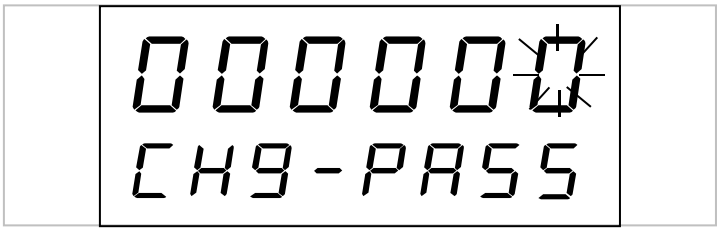


⇩ 【ENT】

If inputted is Operator Password, this operation interface will be skipped; if inputted is Administrator Password, 'Administrator Password [AP]' or 'Operation Password [oP]' can be modified via【◄】【▲】.



⇩ 【ENT】



Input the new Password. Please remember it.

【MENU】: Exit ⇩ 【ENT】: Save

M

Appendix A. Register Table of Host-Slave MODBUS[ASCII/RTU]

Data Name	Type	Address	Attribute	Command [HEX]	Description
Gross Weight	Long	40001	R	03	
Net Weight	Long	40003	R	03	
Running State 1	UnShort	40005.0	R	03	1: Auto; 0: Manual.
		40005.1			1: Running.
		40005.2			1: Last Batch.
		40005.3			1: Up Tolerance Alarm.
		40005.4			1: Low Tolerance Alarm.
		40005.5			1: Dumping.
		40005.6			1: Present Batch Feeding Ended.
		40005.7			1: Batch Target finished.
		40005.8			1: Pause.
		40005.9			1: Gross Weight Upper Limit Alarm
		40005.10			
		40005.11			
		40005.12			1: Non-load Zero Range.
		40005.13			1: Weight is stable.
		40005.14			1: Overload Alarm.
		40005.15			1: Controller Fault.
Running State 2	UnShort	40006.0	R	03	1: M1 Bulk Feeding.
		40006.1			1: M1 Dribble Feeding.
		40006.2			1: M2 Bulk Feeding.
		40006.3			1: M2 Dribble Feeding.
		40006.4			1: M3 Bulk Feeding.
		40006.5			1: M3 Dribble Feeding.
		40006.6			1: M4 Bulk Feeding.
		40006.7			1: M4 Dribble Feeding.
		40006.8			
		40006.9			
		40006.10			
		40006.11			
		40006.12			
		40006.13			
		40006.14			
		40006.15			

Data Name	Type	Address	Attribute	Command [HEX]	Description
DO State	UnShort	40007.0	R	03	1: DO1 ON; 0: DO1 OFF.
		40007.1			1: DO2 ON; 0: DO2 OFF.
		40007.2			1: DO3 ON; 0: DO3 OFF.
		40007.3			1: DO4 ON; 0: DO4 OFF.
		40007.4			1: DO5 ON; 0: DO5 OFF.
		40007.5			1: DO6 ON; 0: DO6 OFF.
		40007.6			1: DO7 ON; 0: DO7 OFF.
		40007.7			1: DO8 ON; 0: DO8 OFF.
		40007.8			
		40007.9			
		40007.10			
		40007.11			
		40007.12			
		40007.13			
		40007.14			
		40007.15			
Operation	UnShort	40008	W	06	0xA500: Start / Clear Alarm. 0xA501: Emergency Stop. 0xA502: Normal Stop [Last Batch]. 0xA503: Manual Dump. 0xA504: Stop Manual Dump. 0xA505: Manual Dribble Re-feed. 0xA506: Stop Dribble Re-feed. 0xA507: Manual Pause. 0xA508: Unused. 0xA509: Unused. 0xA50A: Clear Screen. 0xA50B: Manual Tare. 0xA50C: Clear Alarm. 0xA50D: Manual Zero. 0xA50E: Zero Calibration. 0xA50F: Load Calibration [Do Span Calibration with the value of 'Calibrating Weight' as loading weight]. 0xA510~0xA5FF: Unused.
Calibrating Weight	UnLong	40009	R/W	03/10	
Totalized Weight	UnLong	40011	R	03	
Batch Count	UnLong	40013	R	03	

Data Name	Type	Address	Attribute	Command [HEX]	Description
Batch Count Target	UnShort	40015	R/W	03/06	
Non-load Zero Range	UnShort	40016	R/W	03/06	
Gross Weight Upper Limit	UnLong	40017	R/W	03/10	
Material Quantity for Batching	UnShort	40019	R/W	03/06	
	UnShort	40020	R/W	03/06	
Total Feeding Weight	UnLong	40021	R	03	
Total Target Weight	UnLong	40023	R	03	
M1 Final Feeding Weight	UnShort	40025	R	03	
M1 Target Weight	UnShort	40026	R/W	03/06	
M1 Bulk Lead Value	UnShort	40027	R/W	03/06	
M1 Dribble Inflight	UnShort	40028	R/W	03/06	
M2 Final Feeding Weight	UnShort	40029	R	03	
M2 Target Weight	UnShort	40030	R/W	03/06	
M2 Bulk Lead Weight	UnShort	40031	R/W	03/06	
M2 Dribble Inflight	UnShort	40032	R/W	03/06	
M3 Final Feeding Weight	UnShort	40033	R	03	
M3 Target Weight	UnShort	40034	R/W	03/06	
M3 Bulk Lead Weight	UnShort	40035	R/W	03/06	
M3 Dribble Inflight	UnShort	40036	R/W	03/06	
M4 Final Feeding Weight	UnShort	40037	R	03	
M4 Target Weight	UnShort	40038	R/W	03/06	
M4 Bulk Lead Weight	UnShort	40039	R/W	03/06	
M4 Dribble Inflight	UnShort	40040	R/W	03/06	

UnShort: Unsigned Short Int; UnLong: Unsigned Long Int; Long: Signed Long Int.

Appendix B. Data Frame Format of Continuous Sending [ASCII]

<table>
<tr><th colspan="2">Field Name</th><th>Code</th><th>HEX</th><th>Description</th><th>Example</th></tr>
<tr><td colspan="2">START [Byte1]</td><td>=</td><td>3D</td><td></td><td>=</td></tr>
<tr><td colspan="2" rowspan="3">Weighing State
[Byte2]</td><td>O</td><td>4F</td><td>Overload</td><td rowspan="3">S</td></tr>
<tr><td>S</td><td>53</td><td>Stable</td></tr>
<tr><td>M</td><td>4D</td><td>Motion</td></tr>
<tr><td colspan="2" rowspan="6">Data Name
[Byte3]</td><td>G</td><td>47</td><td>Gross Weight</td><td rowspan="6">N</td></tr>
<tr><td>N</td><td>4E</td><td>Net Weight</td></tr>
<tr><td>B</td><td>42</td><td>Total Feeding Weight of Present Batch</td></tr>
<tr><td>T</td><td>54</td><td>Totalized Weight</td></tr>
<tr><td>D</td><td>44</td><td>Displayed Characters</td></tr>
<tr><td>U</td><td>55</td><td>Unused</td></tr>
<tr><td rowspan="20">Data
[9 Bytes]</td><td rowspan="4">Format A:
Weight Data
[Byte4~12]</td><td>+/-</td><td>2B/2D</td><td>Sign</td><td rowspan="4">+00123.4k
[DEC]</td></tr>
<tr><td>Weight Value
[7 Bytes]</td><td>30~39
2EH</td><td>0~9
Decimal Point ‘.’</td></tr>
<tr><td>Unit [1 Byte]:
(Space)
k
t
g</td><td>
20
6B
74
67</td><td>Space: None
k: kg</td></tr>
<tr><td rowspan="16">Format B:
Displayed Characters
[Byte4~12]</td><td>d</td><td>64</td><td>ID Code</td><td>d</td></tr>
<tr><td rowspan="8">Point Code
[1 Byte]</td><td rowspan="8">00~FF</td><td>BIT7=0: Unused</td><td rowspan="14">2. dISP

Highest Bit’s Point: ON

Point Code =20H</td></tr>
<tr><td>BIT6=0: Unused</td></tr>
<tr><td>If BIT5=1:
Highest Bit’s Point: ON</td></tr>
<tr><td>If BIT4=1:
Bit5’s Point: ON</td></tr>
<tr><td>If BIT3=1:
Bit4’s Point: ON</td></tr>
<tr><td>If BIT2=1:
Bit3’s Point: ON</td></tr>
<tr><td>If BIT1=1:
Bit2’s Point: ON</td></tr>
<tr><td>If BIT0=1:
Lowest Bit’s Point: ON</td></tr>
<tr><td>Characters
[6 Bytes]</td><td>XX XX XX
XX XX XX</td><td>ACSII</td></tr>
<tr><td>d</td><td>64</td><td>ID Code</td><td>d</td></tr>
<tr><td colspan="2">SUM Check [Byte13]</td><td>1 Byte</td><td>XX</td><td>SUM=Byte1+Byte2+…
+Byte12</td><td></td></tr>
<tr><td colspan="2">END
[Byte14~15]</td><td><CR>
<LF></td><td>0D
0A</td><td></td><td><CR>
<LF></td></tr>
</table>

Example 1. Sending Weight Data '+00123.4kg'

Byte	Field Name	HEX	Note
1	START	3D	=
2	Weighing State	53	S
3	Data Name	4E	N
4	Sign	2B	+
5	Weight Value	30	0
6	Weight Value	30	0
7	Weight Value	31	1
8	Weight Value	32	2
9	Weight Value	33	3
10	Weight Value	2E	.
11	Weight Value	34	4
12	Unit	6B	k
13	SUM	CC	SUM=Byte1+Byte2+…+Byte12
14	END	0D	<CR>
15	END	0A	<LF>

Example 2. Sending Displayed Characters '2. dISP'

Byte	Field Name	HEX	Note
1	START	3D	=
2	Weighing State	53	S
3	Data Name	44	D
4	ID Code	64	d
5	Point Code	20	
6	Displayed Characters	32	2
7	Displayed Characters	20	Space
8	Displayed Characters	64	d
9	Displayed Characters	49	I
10	Displayed Characters	53	S
11	Displayed Characters	50	P
12	ID Code	64	d
13	SUM	5E	SUM=Byte1+Byte2+…+Byte12
14	END	0D	<CR>
15	END	0A	<LF>

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