



BST106-M10[EB] Weighing Controller

For: 1-16 Materials Ration Batching Scale

[Single-scale Mode]

Operation Manual V6.0



Changsha Supmeter Technological Co.,Ltd.

Preface

Thank you very much for your purchase!

This manual covers safety precaution, technical specification, operation interface, installation& connection, function&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 14-Material&2-Speed Feeding or 16-Material&1-Speed Feeding [Single-scale Mode].
- ◇ EMC design with high anti-jamming capability, suitable for industrial environment.
- ◇ Cortex-A8 CPU with 600MHz Clock, 128M RAM and 128M Flash.
- ◇ 7"/10.2" Ultralight and ultrathin TFT touch screen with embedded weighing/control module.
- ◇ Loadcell Interface
 - Max. Connection Quantity: 16 Loadcells (350Ω).
 - 24-bit High-precision and high-speed $\Sigma-\Delta$ A/D conversion module with 1/1,000,000 internal resolution and sampling frequency 800Hz.
 - 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.
- ◇ I/O Interface
 - 9 Definable normally open switch inputs [DI] and 18 definable normally open transistor switch outputs [DO].
 - Optional 'Bulk/Dribble Feed' DOs for feeding control. Optional Continuous and Jogging Dribble Feed Methods.
 - 2 Definable analog signal AO[0~10V] for weight signal output or 'Bulk/Dribble Feed' control.
- ◇ Digital Communication Interface
 - COM1[RS232]&COM2[RS485] for connecting Host IPC/PLC and LED Remote Display.
 - COM[RS232] for connecting RS232 Serial Printer.
 - USB1 for connecting USB mouse, downloading HMI software from U-disk and copying data to U-disk.
- ◇ Software Function
 - Manual Screen-locking/Screen-unlocking, Auto Screen-locking, Digital Setting&Calibration and I/O Testing functions available.
 - Zero Upon Power Up, Zero Auto-tracking, Manual/Auto Zero and Zero Calibration available.
 - Load Calibration and Loss Calibration functions available.
 - 100 Recipes for batching control.
 - Optional 'Auto Correct Inflight' function.
 - Optional 'Pause for Tolerance Alarm', 'Pause for Gross Weight Upper Limit Alarm', 'Manual Pause' and 'Auto Dribble Re-feed' functions.
 - Optional 'Batch Target Control' function [With Batch Count Target finished, the batching process will stop automatically].
 - The Batch Records can be printed automatically.
 - Historical Batch Records, Totalizing Reports and Recipes can be queried and printed.
 - With the multitasking mode, the weighing&control process will not be interrupted by parameter setting and the other operations.

Contents

1. SAFETY PRECAUTION	4
2. TECHNICAL SPECIFICATION	5
3. OPERATION INTERFACE	6
3.1 OPERATION INTERFACE OF USER LOGIN	6
3.2 MAIN OPERATION INTERFACE	7
3.3 BUTTON OPERATION	8
3.4 DATA DISPLAY & QUICK SETTING	9
3.5 ALARM SIGN	10
3.5.1 Alarm Message	10
3.5.2 Prompt Message	10
3.5.3 Error Message.....	11
4. INSTALLATION&CONNECTION	12
4.1 INSTALLATION	12
4.1.1 Outline Size	12
4.1.2 Installation Angle	12
4.1.3 Installation Mode.....	13
4.2 TERMINAL	14
4.2.1 Terminal Diagram	14
4.2.2 Power Supply Terminal	14
4.2.3 Loadcell Terminal	15
4.2.4 Digital Communication Terminal	15
4.2.5 Analog&Switch Signal Terminal	16
4.3 DI/DO EX-FACTORY ASSIGNMENT	17
4.4 TYPICAL APPLICATION: M1~M8 RATION BATCHING SYSTEM WITH 2-SPEED FEEDING	19
4.4.1 System Diagram for M1~M8 with 2-Speed Feeding.....	19
4.4.2 DI/DO Connection for M1~M8 with 2-Speed Feeding	20
4.4.3 Working Timing Diagram for M1 Single-material with 2-Speed Feeding	22
4.4.4 Working Timing Diagram for M1~Mn Multiple-material with 2-Speed Feeding	23

5. OPERATION PROCEDURE	24
6. FUNCTION&OPERATION	25
6.1 MAIN MENU INTERFACE	25
6.2 MAIN MENU FUNCTION	26
6.3 F1 SETTINGS	27
6.3.1 Weighing Parameters	27
6.3.2 Calibration Parameters	29
6.3.3 Setpoint Parameters	30
6.3.4 Working Mode Parameters	31
6.3.5 Timer Parameters	34
6.3.6 Communication Parameters.....	37
6.3.7 Display Parameters.....	38
6.4 F2 CALIBRATION	39
6.4.1 Static Calibration	39
6.4.2 Loss Calibration	40
6.5 F9 I/O ASSIGNMENT.....	42
6.5.1 DO Assignment	42
6.5.2 DI Assignment.....	44
6.5.3 AO Assignment.....	45
APPENDIX A. PRINT FORMATS	46
APPENDIX B. REGISTER TABLE OF HOST-SLAVE MODBUS[ASCII/RTU].....	47
APPENDIX C. DATA FRAME FORMAT OF CONTINUOUS SENDING [ASCII].....	51



1. Safety Precaution

- **Lithium Battery Installation**

A Lithium battery should be equipped in the product. If it is not allowed to be transported together with the product because of embargo, please make a purchase according to the model offered by us and install it by yourself.

- **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**

The product, as a low-voltage equipment, should be kept away from the high-voltage equipments.

- **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**

Before the Lithium battery equipped in the product being discarded, please insulate its positive or negative pole, do not put it into fire.

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 Specification

- Executing Standard
 - ◇ CMC GB/T 7724-2008 《Electronic Weighing Meter》 PRC National Standard.
 - ◇ OMIL R76: 2006 《Non-automatic Weighing Instruments》 International Recommendation.
 - ◇ Accuracy Grade: III.
 - ◇ Verification Accuracy: 0.02%.
 - ◇ Static Weighing Accuracy: 0.2%~0.5%.
 - ◇ Batching Accuracy: 0.2%~0.5%.
- Structure&Configuration
 - ◇ 7"/10.2" Ultralight and ultrathin TFT touch screen with embedded weighing/control module.
 - ◇ Cortex-A8 CPU with 600MHz Clock, 128M RAM and 128M Flash.
- Display&Operation
 - ◇ 16-bit Color screen with 800×480[7"] or 1024×600[10.2"] pixel and LED backlight.
 - ◇ Graphic display interface and touch operation.
 - ◇ Weight Display Range: -99,999~+999,999.
 - ◇ Scale Capacity: Setting Range 1~999,999.
 - ◇ Scale Division: Optional 1, 2, 5, 10, 20, 50.
 - ◇ Display Resolution: 1/100,000.
 - ◇ Weight Unit: Optional g, kg, t, lb[pound], oz[ounce], UserSet.
 - ◇ Decimal Point: Optional 0, 0.0, 0.00, 0.000.
- Loadcell Interface
 - ◇ Max. Connection Quantity: 16 Loadcells (350Ω).
 - ◇ Excitation Voltage/Max. Current: DC5V, 250mA.
 - ◇ Signal Input Range: 0~12.5mV.
 - ◇ Output Sensitivity of Loadcell: 1.0~2.5mV/V.
 - ◇ 24-bit $\Sigma-\Delta$ ADC with internal resolution 1/1,000,000.
 - ◇ Sampling Frequency: 800Hz.
 - ◇ Special Anti-vibration Digital Filtering Algorithm for precise weighing, stable display and rapid response.
 - ◇ Zero Drift: $\pm 0.1\mu\text{V}/^\circ\text{C}$ RTI (Relative to Input).
 - ◇ Gain Drift: $\pm 5\text{ppm}/^\circ\text{C}$.
 - ◇ Non-linearity: 0.005%FS.
- Switch&Analog Signal Interface
 - ◇ 9 Definable Normally Open Switch Inputs [DI].
 - ◇ 18 Definable Normally Open Transistor Switch Outputs [DO]: DC24V, 500mA.
 - ◇ 2 Definable Analog Signal Output [AO]: 0~10V/Max.50mA, Non-linearity: 0.05%FS.
- Digital Communication Interface

- ◇ COM1[RS232]&COM2[RS485] for connecting Host IPC/PLC and LED Remote Display.
- ◇ COM[RS232] for connecting RS232 Serial Printer with Baud Rate '9600bps', Parity Check 'None', 8 Data Bits and 1 Stop Bit.
- ◇ USB1 for connecting USB mouse, downloading HMI software from U-disk and copying data to U-disk.

□ Report Print

- ◇ The Batch Records can be printed automatically.
- ◇ Historical Batch Records, Totalizing Reports and Recipes can be queried and printed.

□ Operating Specification

- ◇ Operating Voltage: DC24V ±20%.
- ◇ Max. Power Consumption: 10W.
- ◇ 7" Touch Screen
 - Outline Size: 226.5×163×36mm [W×H×D].
 - Window Size: 153.6×86.64mm [W×H].
 - Panel Cut-out Size: 215×152mm [W×H].
 - Weight: Approx. 0.72kg.
- ◇ 10.2" Touch Screen
 - Outline Size: 274×193×40mm [W×H×D].
 - Window Size: 220.8×132.9mm [W×H].
 - Panel Cut-out Size: 261×180mm [W×H].
 - Weight: Approx. 1.2kg.
- ◇ Protection Level of Front Panel: IP65.
- ◇ Operating Temperature: -25°C to +45°C.
- ◇ Storage Temperature: -30°C to +60°C.
- ◇ Relative Humidity: Max. 85%RH.

3. Operation Interface

3.1 Operation Interface of User Login

Name	Operation	Note
【Login】	User Login. Exfactory Passwords: ◇ Operator: None. ◇ Engineer: 0. ◇ Administrator: 1.	Operation 'Main Menu / F5 User / Password / PSW Set' for Modifying Password.
【User Name】	After password inputted, the matching User Name will be displayed.	◇ Operator: User with lowest authorization. ◇ Engineer: User with higher authorization. ◇ Administrator: User with highest authorization.
【Operate】	Enter 'Main Operation Interface'.	Operation 'Main Menu / F5 User / Password / Login [Logoff]' for Re-login and Logoff.

3.2 Main Operation Interface

Parameter [906] 'Main Display Style'= '0: ZQH':

Cycles: 2016-08-12 09:10:18

M8 Final: **100.0** OK

Total: **80000.0**

100.0 NET kg

800.0 GROSS HI OL

Recipe	M1	M2	M3	M4	M5	M6	M7	M8	Cycles
001	M1	M2	M3	M4	M5	M6	M7	M8	Sum
Target	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0
Final	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100
Target	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	800.0
Final	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	800.0

Buttons: Auto, Start, Last, Mat., Clear, Print, Lock, Menu, User (Engineer)

Parameter [906] 'Main Display Style'= '1: GUI1':

2016-08-12 09:10:18

Recipe 001

Sum Target: 800.0

Sum Final: 800.0

Cycle Set: 0

Cycles: 200

Legend:

- AU_FALL (Green)
- ALL_FED (Red)
- BAT_CON (Green)
- BAT_FIN (Red)

Buttons: Auto, Start, Last, Mat., Clear, Print, Lock, Menu, User (Engineer)

3.3 Button Operation

Name	Operation	State Indicator	Authorization
【Auto】	Auto / Manual [Emergency Stop] switch.	Green: Auto state. Grey: Manual state.	All Users
【Start】	Start.	Green: Running state. Grey: Stop state.	
【Re-run】	Clear Alarm & Recover Running.		
【Last】	Last Batch [Normal Stop]. Stop after the present batch finished.	Flashing Red.	
【Pause】	Pause.		
【E-stop】	Emergency Stop.		
【Alarm】	Alarm Query / Clear Alarm. 'Auto/Pause' state: Recover Running after clearing alarm.	Red: Alarm state.	
【Mat.】	Material Selection for Auto-Batching. Mixer in Weighing Hopper Running Selection While Bulk Feeding.	Green/Blue: Selected. Grey: Unselected.	
【Print】	Report Print: ◇ [Auto Print]: Print Batch Records. ◇ [Total]: Print Totalizing Report. ◇ [Recipe]: Print Working Recipe.		
【Lock】	Screen-locking: Locking/unlocking the operating buttons of main display interface. Auto Screen-locking: Refer to parameter [901].	Flashing Red: Locked. Grey: Unlocked.	
【Menu】	Enter Main Menu.		
【User】	User Login. Display: Operator / Engineer / Admin.		
【Zero】	Manual Zero [No Power-down Protection].	Flashing green.	
【Bulk】	Manual Start/Stop Mn Bulk Feed.	Green: Working state.	
【Drip】	Manual Start/Stop Mn Dribble Feed.	Green: Working state.	
【Dump】	Manual Start/Stop Dumping.	Green: Working state.	
【Mn】	Material Selection for Manual Operation.		
【Clear】	Clear Screen: Clear the display values of Feeding Weight, Totalized Weight and Batch Count'.		Engineer Administrator

3.4 Data Display & Quick Setting

Name	Description	Authorization
Biggest Digits	Real-time Weight / Material Mn's Feeding Weight [Weight Unit].	
[GROSS]	Gross Weight.	
[HI]	Gross Weight Upper Limit Alarm.	
[Cycles]	Batch Count.	
[▲]/[HI]	Up Tolerance Alarm.	
[▼]/[LO]	Low Tolerance Alarm.	
[Total]	Total Totalized Weight.	
[RUN]	Auto Running state.	
[PAUSE]	Pause state.	
[ZERO]	Gross Weight \leq Non-load Zero Range.	
[STAB]	Weight is stable.	
[FED]	Material Mn Feeding Ended.	
[AU_FALL]	'Fall Value Auto Correction' Permission.	
[ALL_FED]	All Materials Feeding Ended.	
[BAT_CON]	'Target Batch Control' is allowed. Refer to parameter [301] 'Target Batch Control' and [203] 'Target Batch'.	
[BAT_FIN]	Batch Target Finished.	
[MIX]	The mixer is running.	
[BELT]	The mixing conveyor is running.	
[Recipe]	'Working Recipe No.' Setting.	All Users
	Recipe Parameters Setting.	Engineer
[Mn Target]	Mn Target Weight.	
[Mn Final]	Material Mn's Final Feeding Weight.	
[Sum Target]	The sum of the Target Weight of all the materials selected for batching.	
[Sum Final]	The sum of the Final Feeding Weight of all the materials selected for batching.	
[Cycles Target]	Batch Count Target.	
[Cycles Final]	Batch Count.	
[Time]	Date&Time.	

3.5 Alarm Sign

3.5.1 Alarm Message

Message	Alarm Cause	Solution
Gross Weight Upper Limit	Gross Weight \geq Upper Limit.	Refer to parameter [204] 'Gross Weight Upper Limit'.
Tolerance Alarm	Up Tolerance Alarm. Low Tolerance Alarm.	Refer to parameter [200] 'Allowed Up Tolerance' and [201] 'Allowed Low Tolerance'.
Pause Alarm	For Tolerance Alarm.	Refer to parameter [310] 'Auto Pause for Tolerance Alarm'. It's allowed to do 'Manual Dribble Re-feed' for Low Tolerance Alarm. Press DI button 'Start / Clear Alarm' to recover running.
	For Gross Weight Upper Limit Alarm.	After fault handling, press DI button 'Start / Clear Alarm' to recover running.
	For Auto-feed Timeout Alarm .	
Auto-feed Timeout	Auto Feeding Time \geq T6.	Refer to parameter [406] 'T6 Auto-feed Timeout'.
Auto-dump Timeout	Auto Dumping Time \geq T7.	Refer to parameter [407] 'T7 Auto-dump Timeout'.

3.5.2 Prompt Message

Message	Alarm Cause	Solution
Batch Target Finished	Alarm or Auto-stop with 'Batch Target Finished'.	Refer to parameter [203] 'Batch Count Target' and [301] 'Target Batch Control'.
Last Batch	It's in the batching process of the last batch.	The message will disappear after the present batch finished.
Zero Invalid	Over 'Manual/Auto Zero Limit'.	Refer to parameter [123] 'Manual/Auto Zero Limit'.

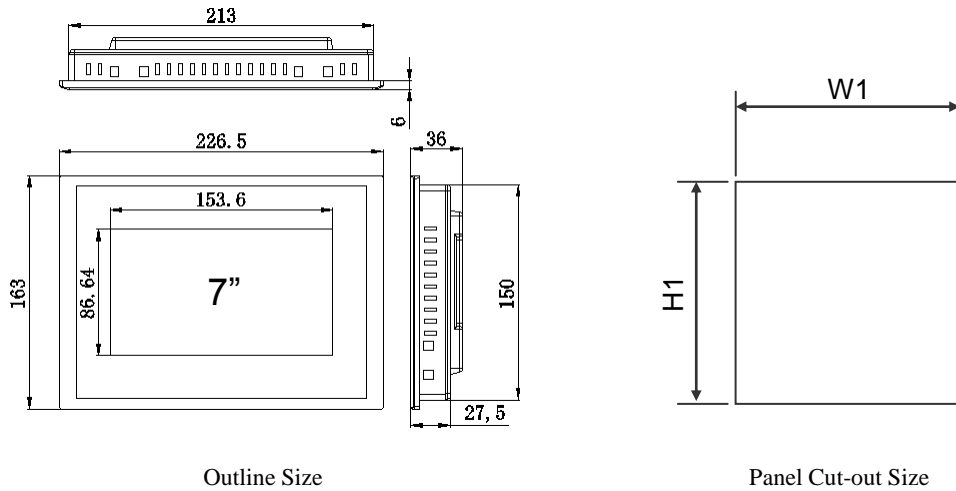
3.5.3 Error Message

Message	Alarm Cause	Solution
RAM Fault	The chip RAM is damaged.	Replace the chip RAM.
EEPROM Fault	The chip EEPROM is damaged.	Replace the chip EEPROM.
Parameter Error	The chip EEPROM is damaged.	Replace the chip EEPROM.
Weighing Signal Error	Weighing signal reversed or not connected.	Connect the loadcell correctly.
ADC Fault	The chip ADC is damaged.	Replace the ADC module.
Over ADC Range	Weighing signal exceeds A/D conversion range.	<ol style="list-style-type: none"> 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.
Overload Alarm	Gross Weight > (Scale Capacity + 9 × Scale Division).	<ol style="list-style-type: none"> 1. Check if the set value of parameter [102] 'Scale Capacity' is reasonable. 2. Check if the loadcell is connected. 3. Check if the capacity of loadcell is too small. 4. Check if the loading weight is too big.
Internal Data-bus Fault		Please contact manufacturer.

4. Installation & Connection

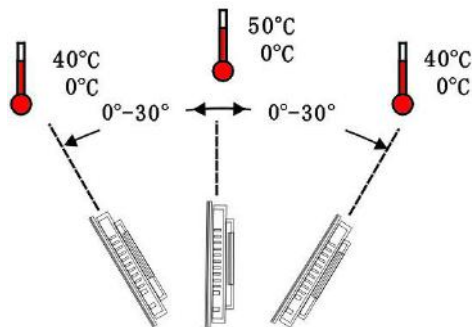
4.1 Installation

4.1.1 Outline Size



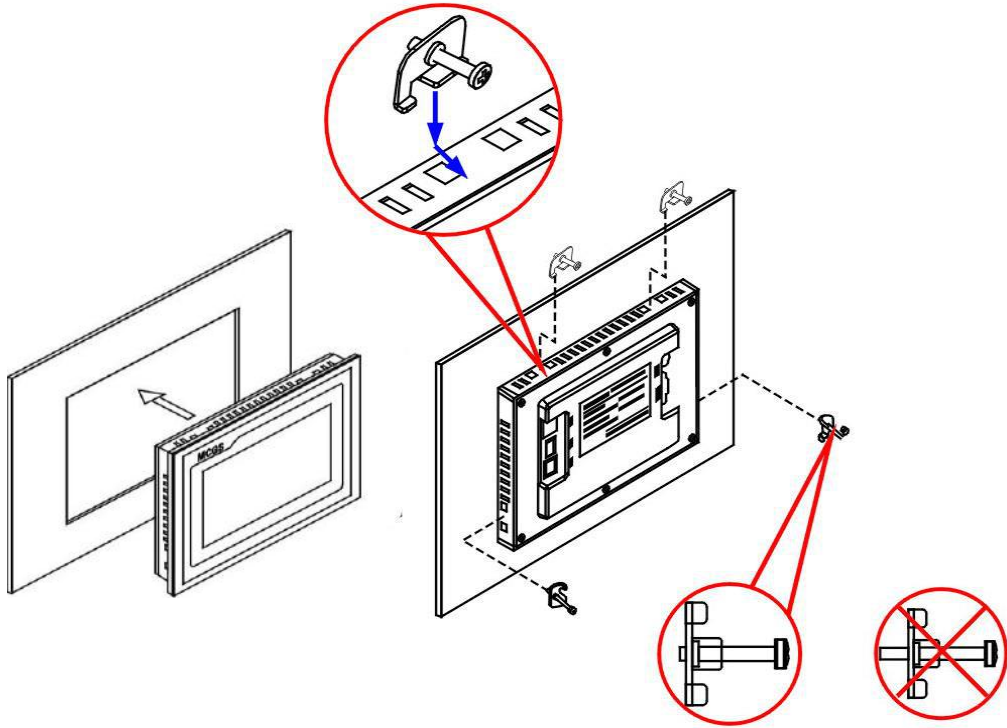
Product	Outline Size W×H×D[mm]	Front Panel Size W×H[mm]	Box Body Size W×H [mm]	Panel Cut-out Size W1×H1[mm]
7"	226.5×163×36	226.5×163	213×150	215×152
10.2"	274×193×40	274×193	259×178	261×180

4.1.2 Installation Angle



The installation angle should be in the range of 0~30°.

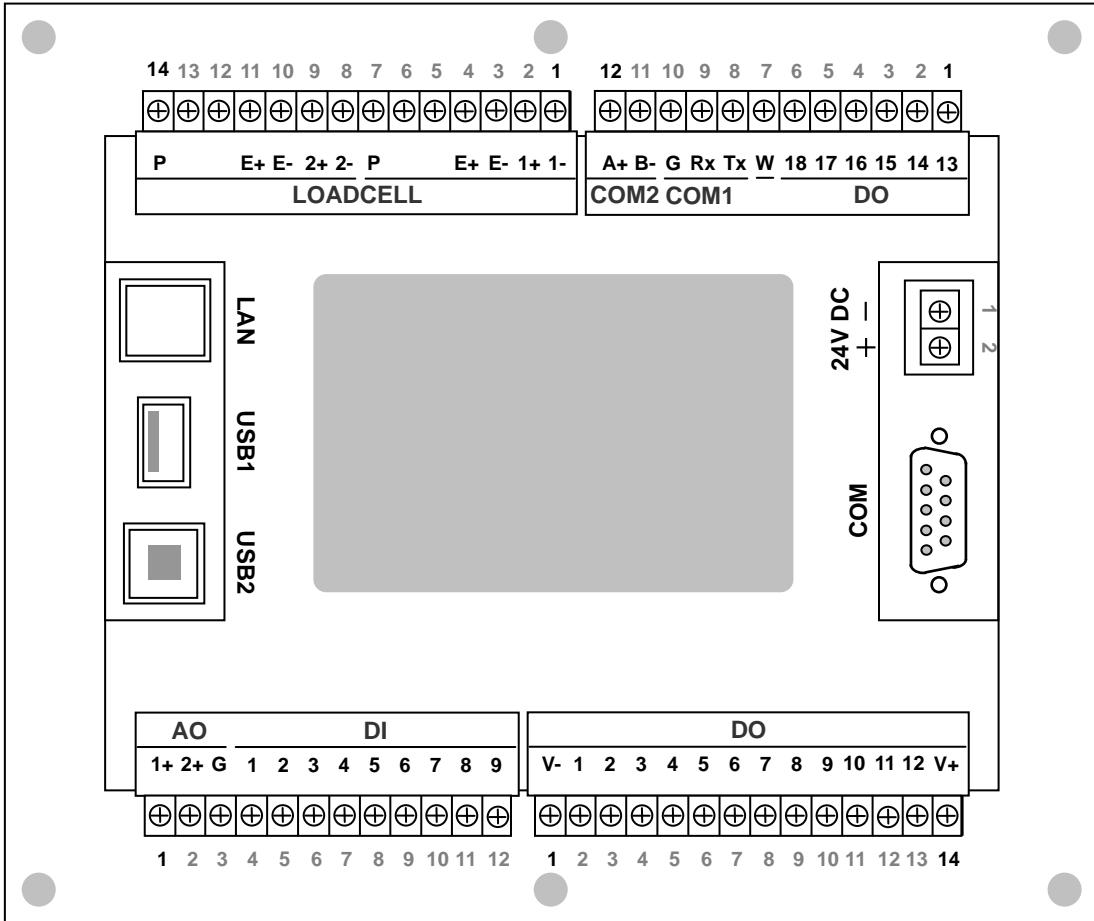
4.1.3 Installation Mode



Before installation the front end of the screw should be flat with the edge of the hook.

4.2 Terminal

4.2.1 Terminal Diagram



4.2.2 Power Supply Terminal

No.	Pin	Description
DC24V		DC24V[±20%] Power Input Port
1	-	DC Input -.
2	+	DC Input +.

For separating the controller from the interference of the driving devices, the DC24V power supply of the controller should not be shared by the DI/DO.

4.2.3 Loadcell Terminal

No.	Pin	Description
LOADCELL		Loadcell Port
1	1-	Weighing Signal [mV] Input -.
2	1+	Weighing Signal [mV] Input +.
3	E-	Excitation Voltage -.
4	E+	Excitation Voltage + [DC5V].
5		Unused.
6		Unused.
7	P	Shield Ground.
8~14		Unused.

4.2.4 Digital Communication Terminal

No.	Pin	Description
7	W	Special for manufacturer.
COM1		RS232 Digital Communication Port [Definable]
8	Tx	Transmit Data [TXD].
9	Rx	Receive Data [RXD].
10	G	COM1 Signal Ground [GND]. COM2 Shield Ground [GND].
COM2		RS485 Digital Communication Port [Definable]
11	B-	Data -.
12	A+	Data +.
COM		RS232 Serial Printer Port [DB9]
2	RXD	Receive Data.
3	TXD	Transmit Data.
5	GND	Signal Ground.
USB1		USB Data Copying Port / HMI Software Download Port / Mouse Port

4.2.5 Analog&Switch Signal Terminal

Name	Pin	Description
AO		0~10V Analog Output Port [Definable]
1	AO1+	AO1 Output +.
2	AO2+	AO2 Output +.
3	G	AO Output -.
DI		Switch Signal Input Port [Valid with high-level input voltage 24V]
4	DI1	Switch Signal Input 1.
5	DI2	Switch Signal Input 2.
6	DI3	Switch Signal Input 3.
7	DI4	Switch Signal Input 4.
8	DI5	Switch Signal Input 5.
9	DI6	Switch Signal Input 6.
10	DI7	Switch Signal Input 7.
11	DI8	Switch Signal Input 8.
12	DI9	Switch Signal Input 9.

Name	Pin	Description
DO		Transistor Switch Signal Output Port [Valid with high-level output voltage 24V]
1	V-	DC24V Input -.
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	DO9	Normally Open Contact Output 9.
11	DO10	Normally Open Contact Output 10.
12	DO11	Normally Open Contact Output 11.
13	DO12	Normally Open Contact Output 12.
14	V+	DC24V Input +.
1	DO13	Normally Open Contact Output 13.
2	DO14	Normally Open Contact Output 14.
3	DO15	Normally Open Contact Output 15.
4	DO16	Normally Open Contact Output 16.
5	DO17	Normally Open Contact Output 17.
6	DO18	Normally Open Contact Output 18.
Contact Capacity of Transistor Switch: DC24V, 500mA.		

4.3 DI/DO Ex-factory Assignment

DI [Valid with high-level input voltage 24V]			
No.	Pin	Signal Name	Description
4	DI1	AUTO [*]	Auto/Manual. ON: Auto state. OFF: Manual state / Emergency Stop.
5	DI2	START	Start. 'Auto/Stop' state: Start. In 'Auto/Running' process: Clear Alarm [Tolerance Alarm Acknowledge] 'Auto/Pause' state: Clear Alarm & Recover Running. OFF→ON→OFF.
6	DI3	LAST	Last Batch [Normal Stop]. OFF→ON→OFF: Stop automatically after the batching process of the present batch ended.
7	DI4	DUMP_I [*]	Manual Dump. ON: Manual Dump. OFF: Stop.
8	DI5	BELT_START	Start Mixing Conveyor. OFF→ON→OFF.
		PAUSE [*]	Manual Pause. OFF→ON→OFF.
9	DI6	BELT_STOP	Stop Mixing Conveyor. OFF→ON→OFF.
		SP3_I [*]	Manual Dribble Re-feed. Valid at Auto-pause state with Mn's Low Tolerance Alarm. ON : Manual Dribble Re-feed. OFF : Stop.
10	DI7	BELT_RDY [*]	Mixing Conveyor Ready. ON: Ready. OFF: Not Ready.
11	DI8	MIXER_START	Start Mixer. OFF→ON→OFF.
12	DI9	MIXER_STOP	Stop Mixer. OFF→ON→OFF.

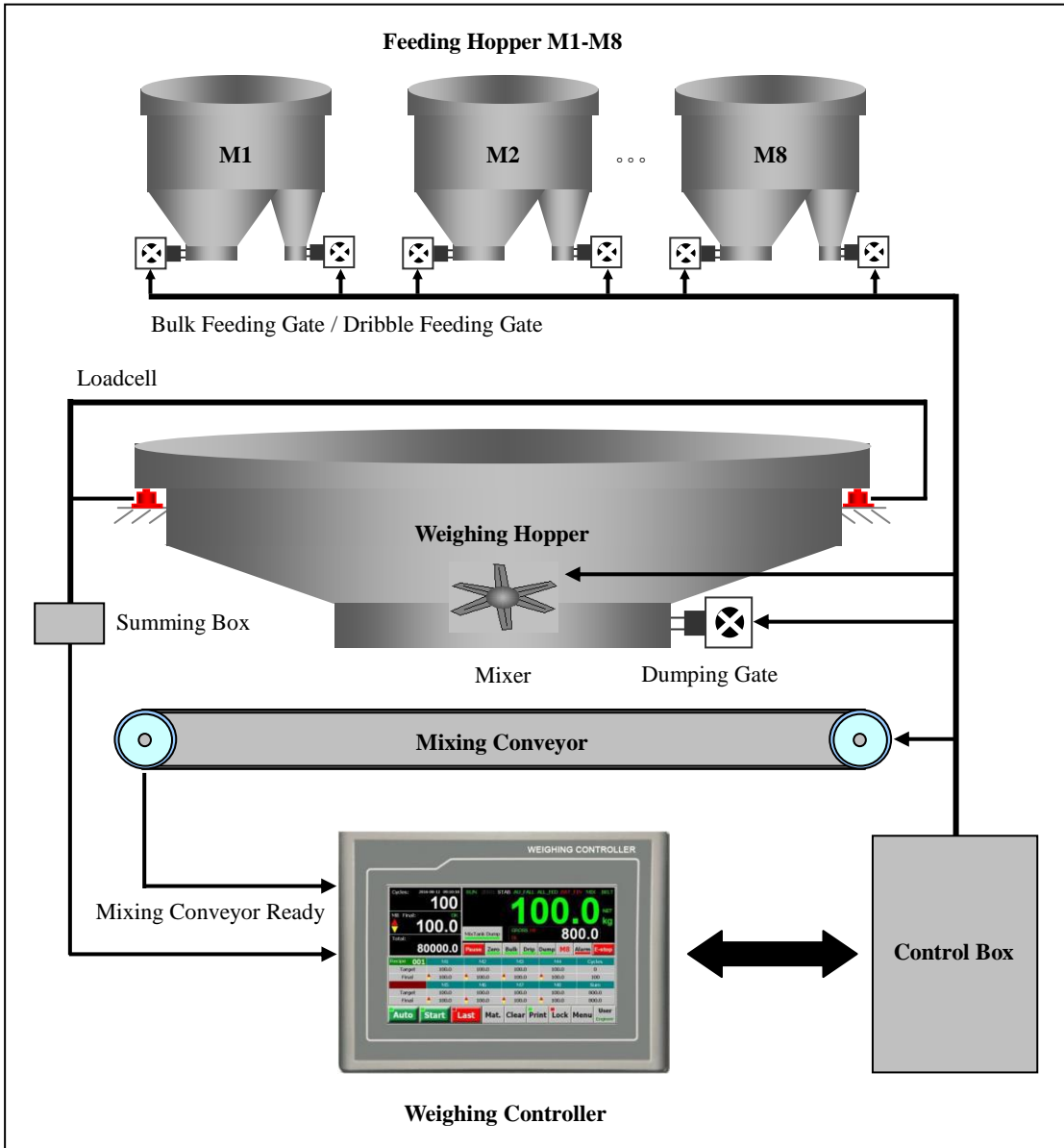
[*]: If need this DI function, the user can define it.

DO [Transistor, Valid with high-level output voltage 24V]			
No.	Pin	Signal Name	Description
1	V-	V-	DC24V Input -.
2	DO1	M1	Material M1 Feeding Permission.
3	DO2	M2	Material M2 Feeding Permission.
4	DO3	M3	Material M3 Feeding Permission.
5	DO4	M4	Material M4 Feeding Permission.
6	DO5	M5	Material M5 Feeding Permission.
7	DO6	M6	Material M6 Feeding Permission.
8	DO7	M7	Material M7 Feeding Permission.
9	DO8	M8	Material M8 Feeding Permission.
10	DO9	M9	Material M9 Feeding Permission.
11	DO10	M10	Material M10 Feeding Permission.
12	DO11	M11	Material M11 Feeding Permission.
13	DO12	M12	Material M12 Feeding Permission.
14	V+	V+	DC24V Input +.
1	DO13	MIXER	Mixer Control.
		M13 [*]	Material M13 Feeding Permission.
2	DO14	BELT	Mixing Conveyor Control.
		M14 [*]	Material M14 Feeding Permission.
		ALL_FED [*]	All Materials Feeding Ended.
3	DO15	SP1	Bulk Feed [M1-Mn COM].
4	DO16	SP3	Dribble Feed [M1-Mn COM].
5	DO17	DUMP	Dump. ON: Open Dumping Gate. OFF: Close Dumping Gate.
6	DO18	ALARM	Alarm/Pause.
			ON: Up/Low Tolerance Alarm.
			ON: Gross Weight Upper Limit Alarm.
			ON: Auto-feed/Auto-dump Timeout Alarm.
			Pulse [ON: 1s; OFF: 1s]: Pause State.

[*]: If need this DI function, the user can define it. All of the DI/DO/AO functions can be defined. Refer to '6.5 F9 I/O Assignment'.

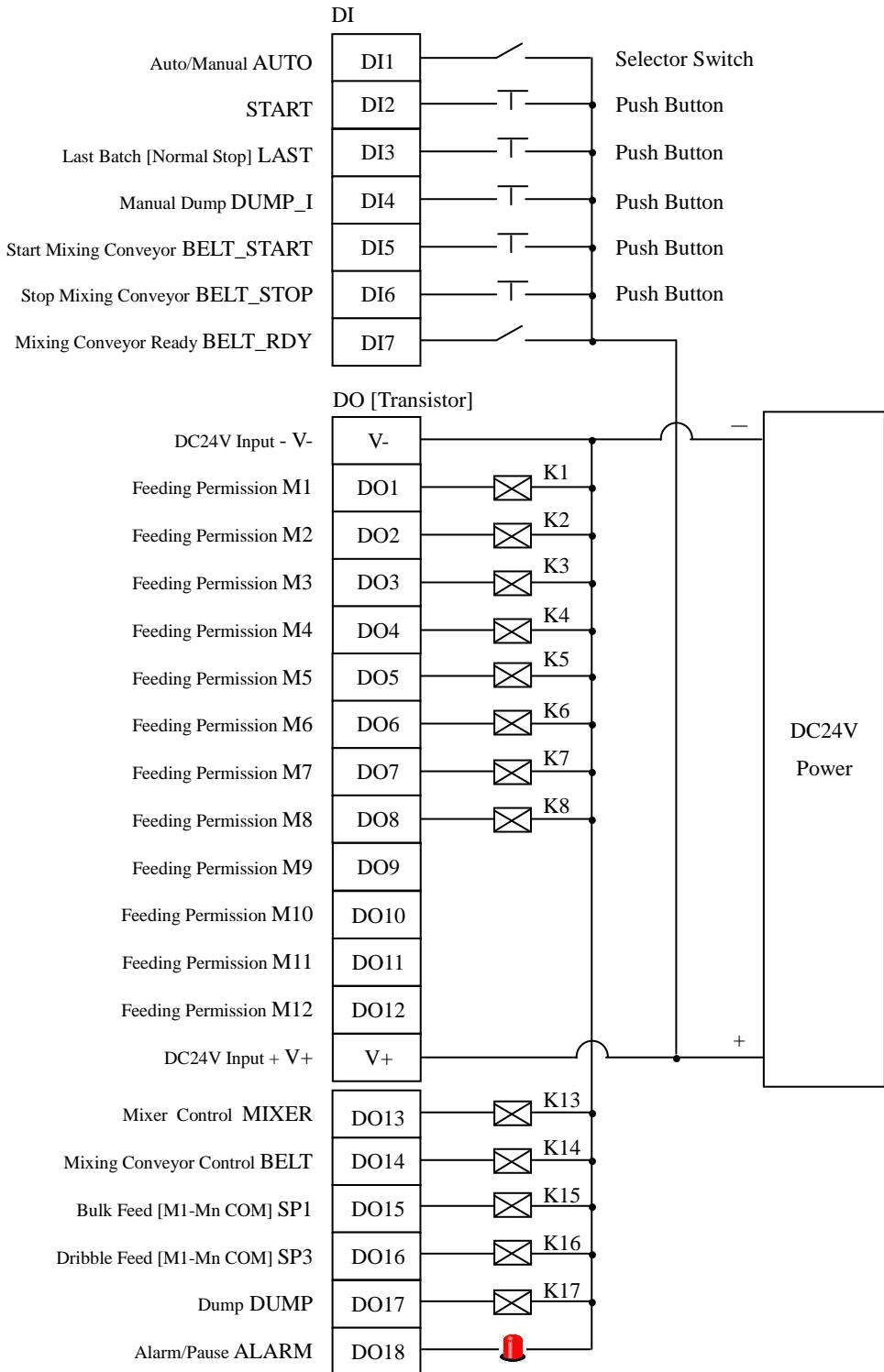
4.4 Typical Application: M1~M8 Ration Batching System with 2-Speed Feeding

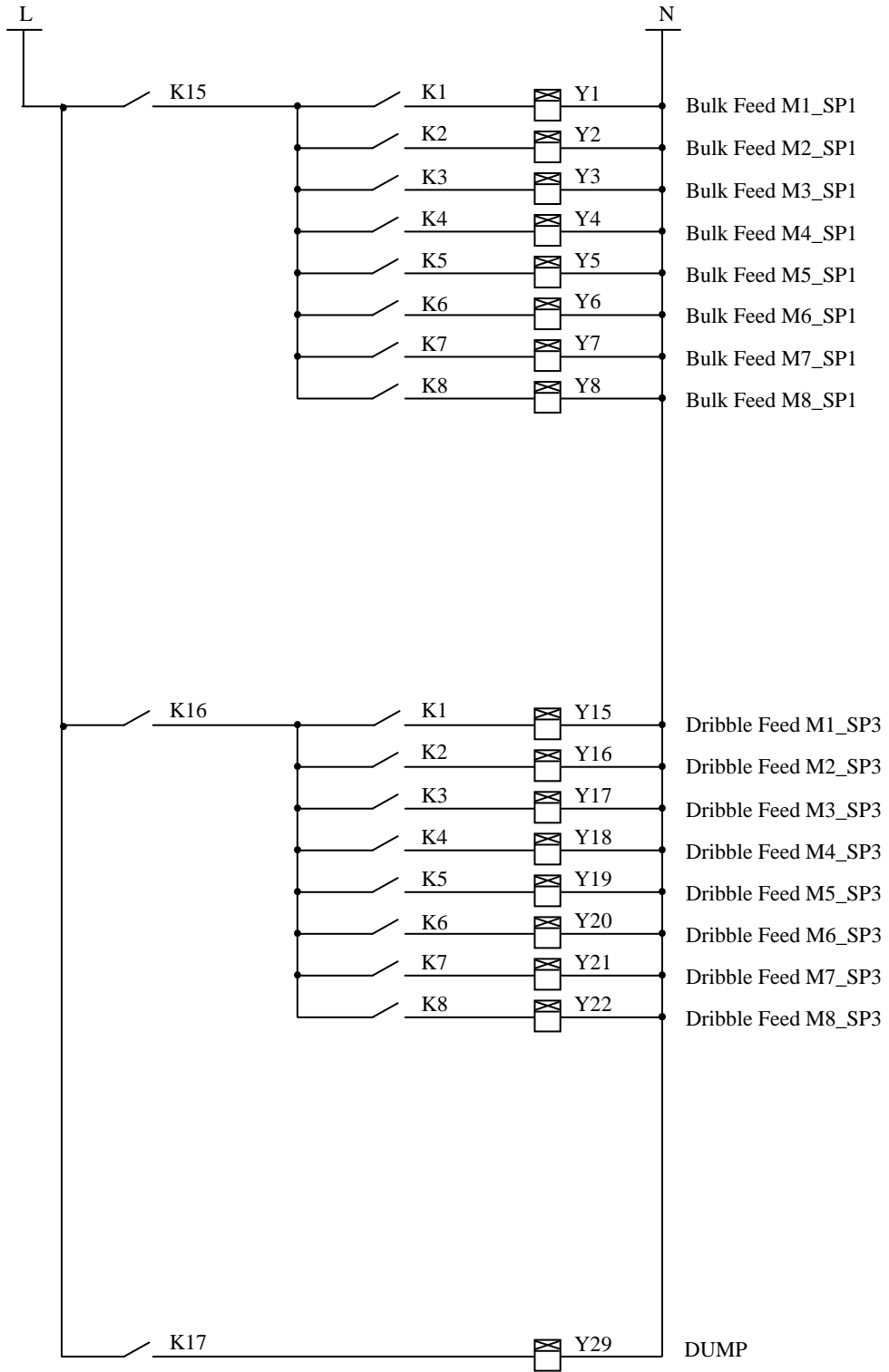
4.4.1 System Diagram for M1~M8 with 2-Speed Feeding



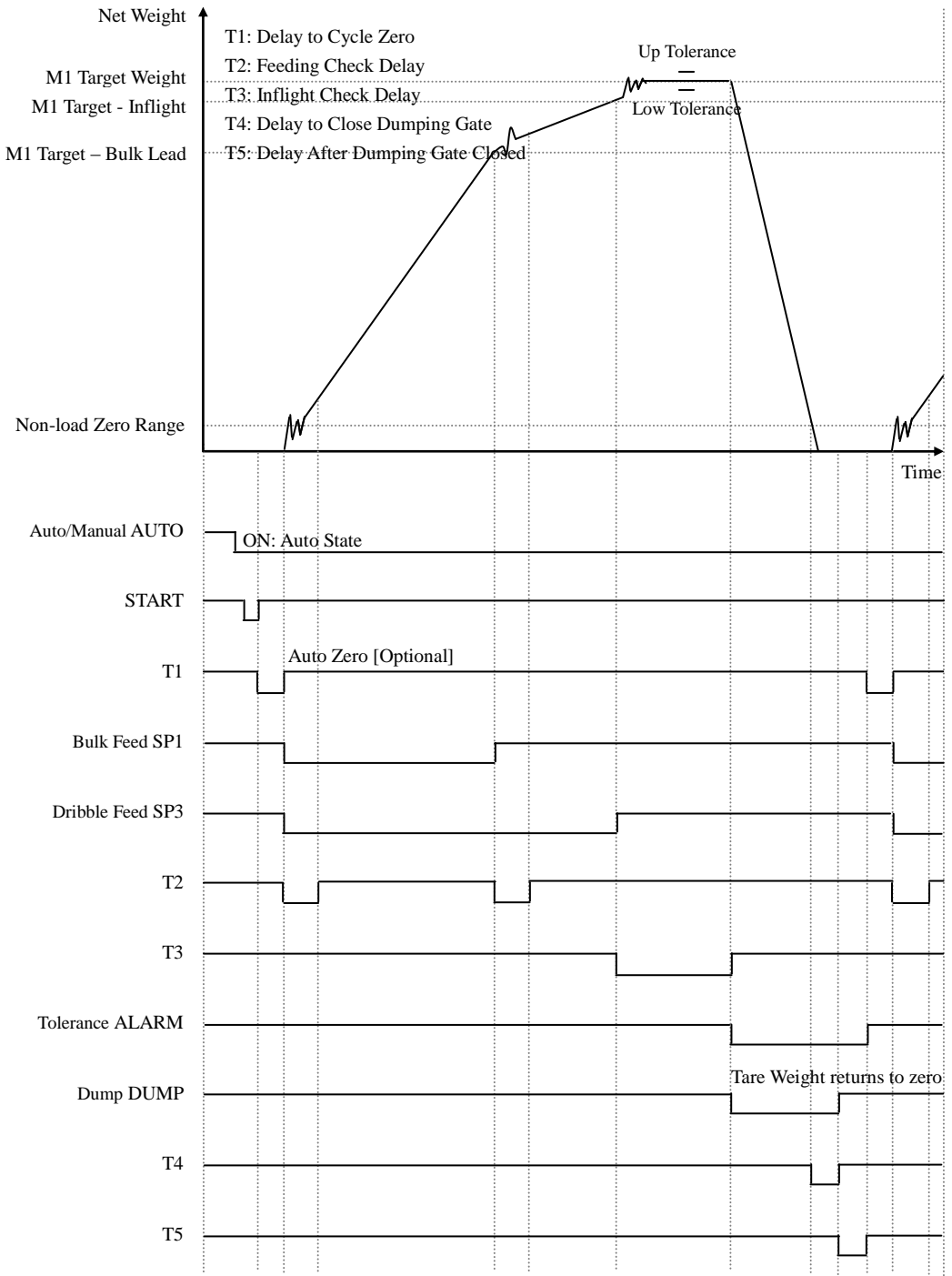
Related Parameter: [300] 'Application Mode'.

4.4.2 DI/DO Connection for M1~M8 with 2-Speed Feeding

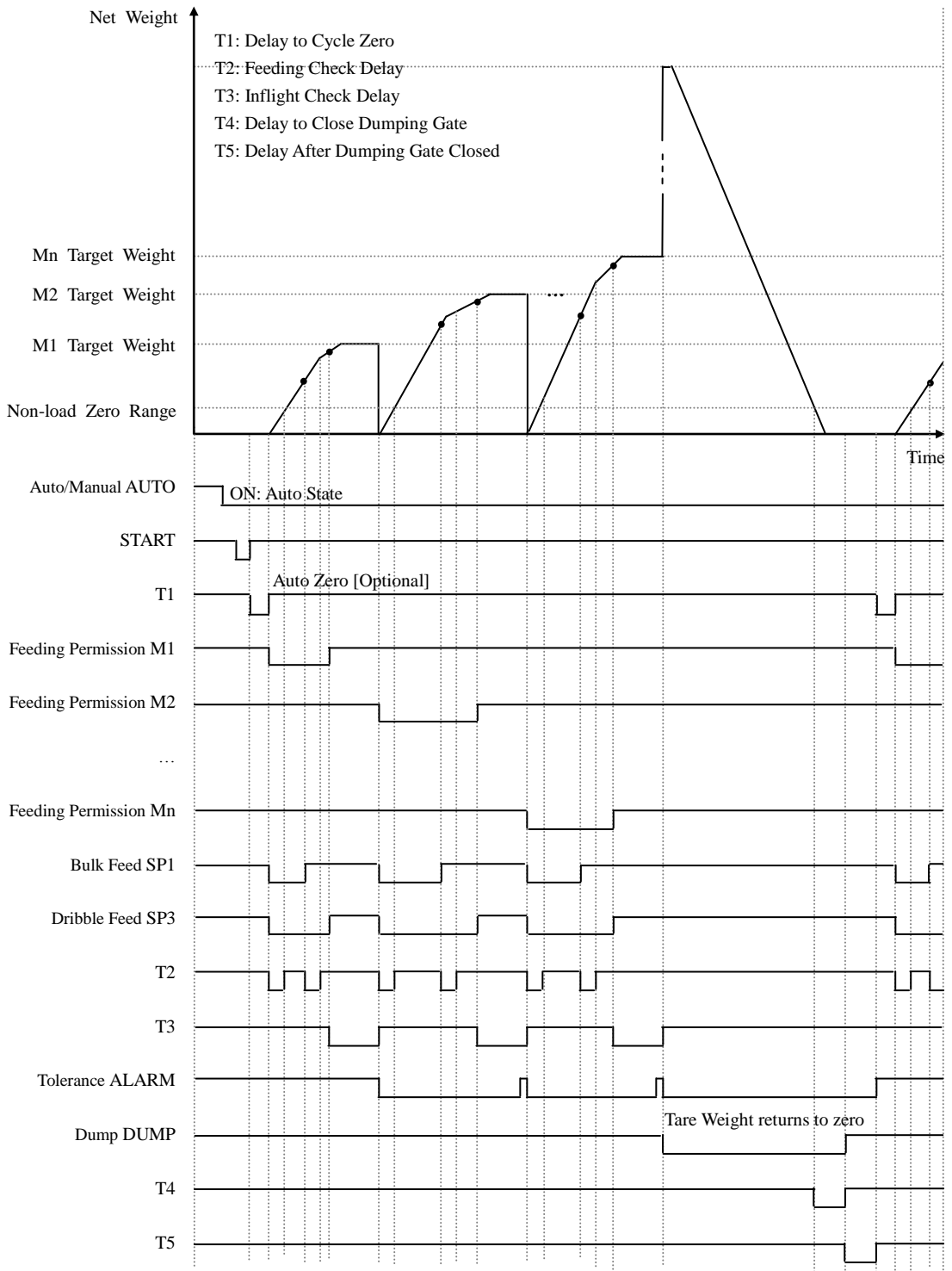




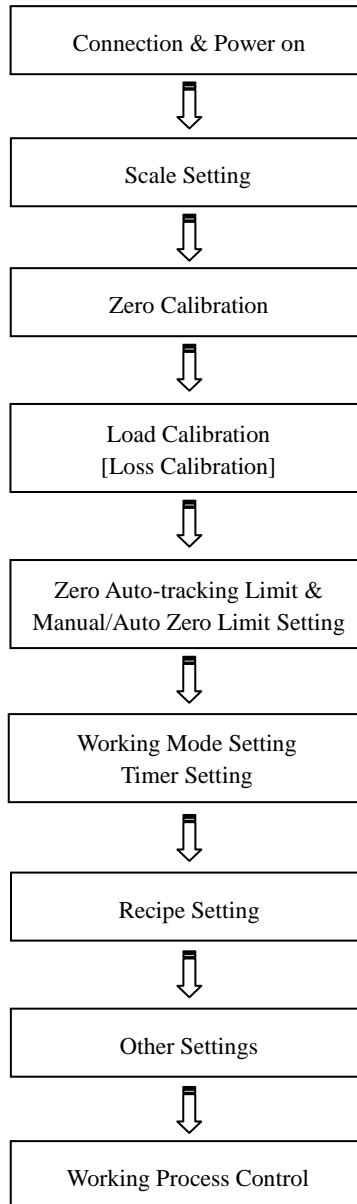
4.4.3 Working Timing Diagram for M1 Single-material with 2-Speed Feeding



4.4.4 Working Timing Diagram for M1~Mn Multiple-material with 2-Speed Feeding



5. Operation Procedure



6. Function&Operation

6.1 Main Menu Interface



6.2 Main Menu Function

Main Menu	Second Menu	Description	Authorization
F1 Settings	Scale	Scale parameters setting.	Engineer Administrator
	Calibration	Calibration parameters setting.	
	Setpoint	Setpoint parameters setting.	
	Mode	Working mode parameters setting.	
	Timer	Timer parameters setting.	
	Comm.	Communication parameters setting.	
	Display	Display and operation interface parameters setting.	
F2 Calibration	1 Static Cal.	Zero Calibration without loading on the scale to correct Zero Value.	
		Load Calibration with loading standard weights on the scale to correct Span Coefficient.	
	2 Loss Cal.	Loss Calibration to correct Span Coefficient according to the weight of the materials dumped from the weighing hopper.	
F3 Statistics	Real-time	Real-time Data Query.	All Users ['Delete' only for Engineer & Administrator]
	Batch Rec.	Historical Batch Records Query / USB Copy [Excel Format] / Delete.	
	Hour Rec.	Hour Records Query / USB Copy [Excel Format] / Delete.	
	Alarm Query	Alarm Query / Clear Alarm.	
F4 Recipe		Recipe management.	Engineer&Admin.
F5 User	Password	Login/Password Set/Logoff. Exfactory Passwords: Operator: None; Engineer: 0; Administrator: 1.	All Users
	Fac. Code	Factory Code.	Factory
	Fac. Inf.	Factory Information.	
F6 Timer		Date&time Setting.	Engineer&Admin.
F7 Default	Part-Default	Reset partial parameters to default values.	Administrator
	All-Default	Reset all parameters to default values.	
	Para. Backup	Parameter Backup.	
	Para. Recover	Parameter Recover.	
F8 I/O Test	Reliability	I/O Reliability Test.	
	AO Adjust	AO Zero/Full Adjustment and AO Linearity Test.	
F9 I/O Assignment	DO Assign	DO Function Assignment.	Administrator
	DI Assign	DI Function Assignment.	
	AO Assign	AO Function Assignment.	
Operate		Return to Operation Interface.	All Users

6.3 F1 Settings

6.3.1 Weighing Parameters

No.	Sign	Range	Default	Description	REG
100	Weight Unit	0~5	2	Weight Unit 0: UserSet; 1: g; 2: kg; 3: t 4: lb[pound]; 5: oz[ounce]	40101
101	Decimal Point Position	0~3	2	Decimal Point Position 0: 0 1: 0.0 2: 0.00 3: 0.000	40103
102	Scale Capacity	1~999999	10000	Scale Capacity Max. allowed loading weight of the load receptor. Scale Capacity ≤ Total Capacity of Loadcells – Self-weight of Load Receptor.	40105
103	Scale Division	1~50	1	Scale Division 0: 1; 1: 2; 2: 5; 3: 10; 4: 20; 5: 50	40107
104	Zero Value	-20000~ +999999	0 [*]	Zero Value Only for query.	40109
105	Span Coefficient	0.0001~ 999.9999	1.0000 [*]	Span Coefficient Only for query.	40111
106	Unused	0	0	Unused	40113
107	Unused	0	0	Unused	40115
108	Stablity Range	0~99	0	Stablity Range [d: Division] Weight Variance per [109] 'Stablity Time' being within [108] 'Stablity Range' means 'Weight is stable'.	40117
109	Stablity Time	0.1~9.9	1.0	Stablity Time [s]	40119

[*]: 'Part-Default' operation has no effect on the parameter.

No.	Sign	Range	Default	Description	REG
110	Bulk Anti-vibration Filter1	0~19	3 [13]	Bulk Anti-vibration Filter1 Filter1 is used for setpoint control of Bulk Feed.	40121
111	Dribble Anti-vibration Filter2	0~19	17	Dribble Anti-vibration Filter2 Filter2 is used for setpoint control of Dribble Feed and stable weight display.	40123
<p style="text-align: center;">Demand: Filter2's 10⁰ Digit \geq Filter1's 10⁰ Digit + 2</p>				Filter1&2's 10⁰ Digit Set	
				Set Value	Cutoff Frequency
				0	None
				1	11.2Hz
				2	8.0Hz
				3	5.6Hz
				4	4.0Hz
				5	2.8Hz
				6	2.0Hz
				7	1.4Hz
				8	1.0Hz
				9	0.7Hz
				Filter1&2's 10¹ Digit Set	
				Set Value	Anti-Vibration Grade
0	Medium				
1	High				
112	Weight Display Smooth Filter3	1~80	80	Weight Display Smooth Filter3 The bigger set value of Filter3 will make the real-time weight more stable with slower response speed.	40125

6.3.2 Calibration Parameters

No.	Sign	Range	Default	Description	REG
120	Zero Auto-tracking Permission	0~1	0	Zero Auto-tracking Permission <i>0: OFF</i> <i>1: ON</i> [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]	40151
121	Zero Auto-tracking Time	0.1~9.9	1.0	Zero Auto-tracking Time [s]	40153
122	Zero Auto-tracking Limit	0.1~50.0	1.0	Zero Auto-tracking Limit [d: Division]	40155
123	Manual/Auto Zero Limit	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 \leq (Scale Capacity \times 4%).	40157
124	Zero Display Limit	0~99	5	Zero Display Limit When the absolute value of weight is within this range, the real-time weight will return to zero. Please preset it to zero for metrological certification in order that the minimum division value can be displayed.	40159
125	Zero Upon Power Up	0~1	0	Zero Upon Power Up <i>0: OFF</i> <i>1: ON</i> [without Power-down Protection]	40161
126	Power Up Zero Time	0~1800	30	Power Up Zero Time [s]	40163
127	Power Up Zero Limit	0~50000	50	Power Up Zero Limit Suggestion: Set value \leq (Scale Capacity \times 20%).	40165

6.3.3 Setpoint Parameters

No.	Sign	Range	Default	Description	REG
200	Up Tolerance Limit	0.1~100.0 %	1.0%	<p>Up Tolerance Limit</p> <p>Up Tolerance = Final Feeding Weight – Target Weight.</p> <p>If ‘Up Tolerance > Target Weight × Set Value’, the DO switch ‘Up Tolerance Alarm’ will turn on automatically.</p>	40201
201	Low Tolerance Limit	0.1~100.0 %	1.0%	<p>Low Tolerance Limit</p> <p>Low Tolerance = Target Weight – Final Feeding Weight.</p> <p>If ‘Low Tolerance > Target Weight × Set Value’, the DO switch ‘Low Tolerance Alarm’ will turn on automatically.</p>	40203
202	Non-load Zero Range	0~60000	20	<p>Non-load Zero Range</p> <p>Set value = 0: In the auto-dumping process, the condition ‘Gross Weight ≤ Non-load Zero Range’ will be ignored.</p> <p>Set value > 0: In the auto-dumping process, ‘Gross Weight ≤ Non-load Zero Range’ will be used as the judging condition that the materials in the weighing hopper have been dumped completely.</p>	40205
203	Batch Count Target	0~60000	0	<p>Batch Count Target</p> <p>Set value = 0: No judging ‘Batch Count Target Finished’.</p> <p>Set value > 0: After Batch Count reached to this set value, the controller will display prompt message.</p>	40207
204	Gross Weight Upper Limit	0~999999	0	<p>Gross Weight Upper Limit</p> <p>Set value = 0: No judging ‘Gross Weight Upper Limit’.</p> <p>Set value > 0: If ‘Gross Weight ≥ Upper Limit’, the controller will display alarm message.</p>	40209

6.3.4 Working Mode Parameters

No.	Sign	Range	Default	Description	REG
300	Application Mode	0~15	7 [*]	Application Mode 0: M1 Single-material Feeding Mode 1: M1-M2 Batching Mode 2: M1-M3 Batching Mode 3: M1-M4 Batching Mode 4: M1-M5 Batching Mode 5: M1-M6 Batching Mode 6: M1-M7 Batching Mode 7: M1-M8 Batching Mode 8: M1-M9 Batching Mode 9: M1-M10 Batching Mode 10: M1-M11 Batching Mode 11: M1-M12 Batching Mode 12: M1-M13 Batching Mode 13: M1-M14 Batching Mode 14: M1-M15 Batching Mode 15: M1-M16 Batching Mode Authorization: Administrator.	40301
301	Batch Target Control	0~1	0	Batch Target Control 0: OFF 1: ON [With Batch Count Target finished, the batching process will stop automatically]	40303
302	Cycles to Auto Zero	0~99	10	Cycles to Auto Zero Set value=0: No doing 'Auto Zero'. Set value > 0: To the first two batches after 'Start' signal inputted, the controller will do 'Auto Zero' [without power-down protection] before feeding; then to the next batches, only after Batch Count reached to this set value, the controller will do 'Auto Zero' before feeding.	40305
303	Unused	0	0	Unused	40307
304	Start Sequence	0~1	0	Feeding's Start Sequence 0: Together[Bulk +Dribble] 1: In Order[Bulk →Dribble]	40309

[*]: 'Part-Default' operation has no effect on the parameter.

No.	Sign	Range	Default	Description	REG
305	Dribble Feed Method	0~1	0	Dribble Feed Method <i>0: Continuous</i> <i>1: Jogging</i> [DO outputs ON/OFF; AO outputs 0V/‘Control Voltage for Dribble Feed’]	40311
306	t1 Dribble Jog ON Time	0.03 ~9.99	0.50	t1 Dribble Jog ON Time [s]	40313
307	t2 Dribble Jog OFF Time	0.03 ~9.99	0.50	t2 Dribble Jog OFF Time [s]	40315
308	Auto Dribble Re-feed for Inflight	0~1	0	Auto Dribble Re-feed for Inflight <i>0: OFF</i> <i>1: ON</i> [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 \geq (Target Weight – Inflight)’, the DO switch ‘Dribble Feed’ will turn off automatically to stop re-feeding]	40317
309	t3 Dribble Re-feed for Low Tolerance	0.00 ~5.00	0.00	t3 Auto Dribble Re-feeding Time for Low Tolerance [s] Set value = 0: No Auto Re-feeding. Set value > 0: After the processes of auto-feeding and ‘Auto Dribble Re-feed for Inflight’ stopped, if ‘Feeding Weight < (Target Weight – Low Tolerance Limit)’, the process of ‘Auto Dribble Re-feed for Low Tolerance’ with t3 as the re-feeding time per time will start automatically, once ‘Feeding Weight \geq (Target Weight – Low Tolerance Limit)’ or the re-feeding times reached to 10, the re-feeding process will stop immediately. Empirical value: t3 = 0.10~0.20s.	40319
310	Pause for Tolerance Alarm	0~1	0	Pause for Tolerance Alarm <i>0: OFF</i> <i>1: ON</i> [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 \geq (Target Weight – Low Tolerance Limit)’, the re-feeding process will stop automatically, and then press the DI button ‘Start/Clear Alarm’ to recover running]	40321

No.	Sign	Range	Default	Description	REG
311	Auto Correct Inflight	0~1	0	Auto Correct Inflight 0: OFF 1: ON	40323
312	Cycles to Correct Inflight	1~99	3	Cycles to Correct Inflight N After Tolerance Alarm Count reached to N, Inflight Weight will be corrected automatically.	40325
313	Inflight Correction Limit	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.	40327
314	Inflight Correction Ratio	0~2	1	Inflight Correction Ratio [%] 0: 25% 1: 50% 2: 100% New Inflight Weight = Original Inflight Weight + Tolerance Value × Inflight Correction Ratio. Tolerance Value = Final Feeding Weight - Target Weight.	40329
317	Dumping Mode	0~3	2	Dumping Mode 0: Separately [Dump after one material has been fed] 1: Together [Dump after all materials have been fed]	40331

6.3.5 Timer Parameters

No.	Sign	Range	Default	Description	REG
400	T1 Delay to Cycle Zero	0.00 ~9.99	2.00	<p>T1 Delay to Cycle Zero [s]</p> <p>If Auto Zero (set via parameter [302]) is not necessary before feeding, the time T1 will not be delayed.</p> <p>T1 delaying process: If the delayed time is up to 1s, then once the real-time weight is stable, the T1 delaying process will end immediately. Refer to parameter [108] 'Stability Range' and [109] 'Stability Time'.</p> <p>Then the controller will do 'Auto Zero'.</p>	40401
401	T4.SP1 Bulk Feed Check Delay	0.00 ~9.99	0.50	<p>T4.SP1 Bulk Feed Check Delay [s]</p> <p>When the process of Bulk Feeding starts, the impact of falling materials will make the weighing hopper vibrating, so it's prohibited to check the feeding weight in the time T4.SP1.</p>	40403
402	T4.SP3 Dribble Feed Check Delay	0.00 ~9.99	0.80	<p>T4.SP3 Dribble Feed Check Delay [s]</p> <p>When the process of Medium Feeding stops, the flow sudden-change of falling materials will make the weighing hopper vibrating, so it's prohibited to check the feeding weight in the time T4.SP3.</p> <p>This parameter is invalid to the processes of 'Auto Dribble Re-feed' and 'Manual Dribble Re-feed'.</p>	40405
403	T3 Inflight Check Delay	0.00 ~9.99	2.00	<p>T3 Inflight Check Delay [s]</p> <p>When 'Dribble Feed', 'Auto Dribble Re-feed' or 'Manual Dribble Re-feed' stops, some materials have left the feeding hopper but still in mid-air, so it's necessary to delay the time T3 for ensuring all of the materials in mid-air fell into the weighing hopper.</p> <p>T3 delaying process: If the delayed time is up to 1s, then once the real-time weight is stable, the T3 delaying process will end immediately. Refer to parameter [108] 'Stability Range' and [109] 'Stability Time'.</p> <p>Then the controller will do Final Feeding Weight Detection, Tolerance calculation and Tolerance alarm.</p> <p>After the batching process ended, the DO switch 'Dump' will turn on automatically to open the dumping gate and enter the dumping process.</p>	40407

No.	Sign	Range	Default	Description	REG
404	T4 Delay to Close Dumping Gate	0.00 ~9.99	0.50	<p>T4 Delay to Close Dumping Gate [s]</p> <p>If Parameter [202] ‘Non-load Zero Range’ = 0: After the dumping gate opened, the condition ‘Gross Weight ≤ Non-load Zero Range’ will be ignored, after the time T4 delayed for ensuring all of the materials in the weighing hopper dumped completely, the dumping gate will be closed automatically.</p> <p>If Parameter [202] ‘Non-load Zero Range’ > 0: After the dumping gate opened, only when ‘Gross Weight ≤ Non-load Zero Range’ and then the time T4 delayed for ensuring all of the materials in the weighing hopper dumped completely, the dumping gate will be closed automatically.</p>	40409
405	T5 Delay After Dumping Gate Closed	0.00 ~9.99	1.00	<p>T5 Delay After Dumping Gate Closed [s]</p> <p>The delay time T5 is for ensuring the dumping gate closed.</p> <p>Then the next ration batching process will start automatically.</p>	40411
406	T6 Auto-feed Timeout	0~999	0	<p>T6 Auto-feed Timeout [s]</p> <p>Set value = 0: No Limit.</p> <p>Set value > 0: Once the auto feeding time \geq T6, the alarm signal ‘Auto-feed Timeout’ will be outputted and the auto-running process will pause. After fault handling, press DI button ‘Start / Clear Alarm’ to recover running.</p>	40413
407	T7 Auto-dump Timeout	0~999	5	<p>T7 Auto-dump Timeout [s]</p> <p>Set value = 0: No Limit.</p> <p>Set value > 0: Once ‘Auto Dumping Time \geq T7’, the alarm signal ‘Auto-dump Timeout’ will be outputted.</p> <p>Auto Dumping Time: The time from the dumping process starting to ‘Gross Weight ≤ Non-load Zero Range’.</p>	40415

No.	Sign	Range	Default	Description	REG
408	T8 Mixing Time Before Auto-dumping	0~9999	0	<p>T8 Mixing Time Before Auto-dumping [s]</p> <p>Without the DO signal 'Mixing Tank Dump' being used, the mixer fixed is in the weighing hopper. Set value = 0: The mixer will not work before weighing hopper auto-dumping. Set value > 0: The mixer will work for the time T8 before weighing hopper auto-dumping.</p>	40417
				<p>With the DO signal 'Mixing Tank Dump' being used, the mixer is fixed in the mixing tank. Set value = 0: The mixer will not work before mixing tank auto-dumping. Set value > 0: The mixer will work for the time T8 [starting timing from the mixing conveyor stopped] before mixing tank auto-dumping.</p>	
409	T9 Delay to Dump Af Conveyor Ready	0~999	3	<p>T9 Delay to Dump After Conveyor Ready [s]</p> <p>With the DI signal 'Mixing Conveyor Ready' being used, it's allowed to auto-dump materials to the mixing conveyor only after the DI turned on and then the time T9 delayed for ensuring that the mixing conveyor has run normally before weighing hopper dumping.</p>	40419
410	T10 Residual Materials Delivery Time	0~9999	5	<p>T10 Residual Materials Delivery Time [s]</p> <p>After the weighing hopper auto-dumping process ended, the mixing conveyor will keep running still for the time T10 to empty the residual materials on the conveyor, and the it will stop automatically.</p>	40421
411	T11 Dumping Time of Mixing Tank	0~9999	0	<p>T11 Dumping Time of Mixing Tank [s]</p> <p>Set value = 0: No need to control the dumping gate of the mixing tank. Set value > 0: After the mixer in the mixing tank stopped, the dumping gate of the mixing tank will open automatically and keep open for the time T11 to empty the materials in the mixing tank, and then it will close automatically.</p>	40423

6.3.6 Communication Parameters

No.	Sign	Range	Default	Description	REG	
800	Communication Address	0~99	1	Communication Address	40801	
801	COM1 Baud Rate	0~2	0	COM1[RS232]/COM2[RS485] Baud Rate <i>0: 9600bps; 1: 19200bps; 2: 115200bps</i>	40803	
802	COM2 Baud Rate		0		40805	
803	COM1 Parity Check	0~2	0	COM1/COM2 Parity Check <i>0: None</i> <i>1: Even</i> <i>2: Odd</i>	40807	
804	COM2 Parity Check		0		40809	
805	COM1 Comm. Mode	0~2	0	COM1/COM2 Communication Mode <i>0: Host-salve Modbus[ASCII]</i> <i>1: Host-salve Modbus[RTU]</i> <i>2: Continuous Sending[ASCII]</i>	40811	
806	COM2 Comm. Mode		0		40813	
807	Continuous Sending	0~7	1	Data for Continuous Sending Mode <i>0: Gross Weight</i> <i>1: Final Total Feeding Weight</i> <i>2: Batch Count</i> <i>3: Total Totalized Weight</i> <i>4: All Above Data</i>	40815	
808	Continuous Sending Frequency	0~7	2	Continuous Sending Frequency [Hz] <i>0: 1Hz; 1: 2Hz; 2: 5Hz; 3: 10Hz</i> <i>4: 20Hz; 5: 25Hz; 6: 50Hz</i>	40817	
				Note		
				Baud Rate		Max. Sending Frequency
				9600 bps		5Hz
				19200 bps		10Hz
115200 bps	50Hz					
809	COM1 Modbus Data Format	0~3	0	COM1/COM2 Modbus Data Format Reading&Writing Order of 4-Byte Registers: <i>0: H4 H3 L2 L1</i> <i>1: H3 H4 L1 L2</i> <i>2: L1 L2 H3 H4</i> <i>3: L2 L1 H4 H3</i> The HEX byte order of float and long int registers in the controller is 'H4 H3 L2 L1'.	40819	
810	COM2 Modbus Data Format				40821	

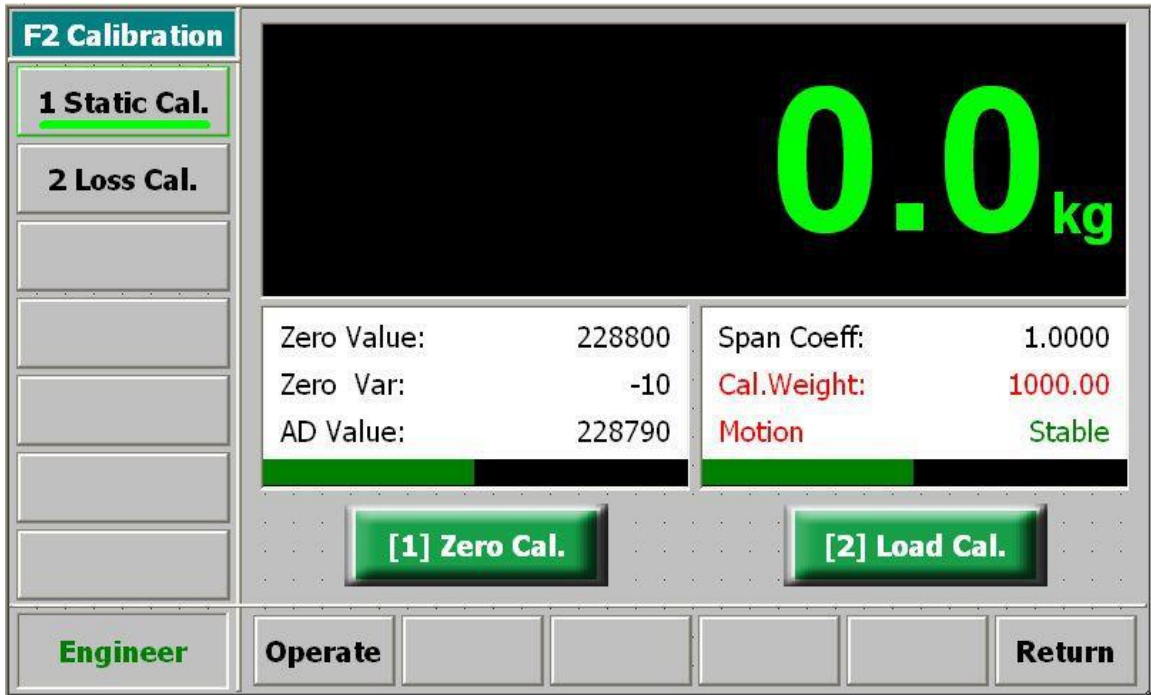
6.3.7 Display Parameters

No.	Sign	Range	Default	Description	REG
900	Date Format	0~2	0	Date Format <i>0: YYYY-MM-DD</i> [Year-Month-Day] <i>1: MM-DD-YYYY</i> [Month-Day-Year] <i>2: DD-MM-YYYY</i> [Day-Month-Year]	
901	Auto Screen-locking	0~1	0	Auto Screen-locking <i>0: OFF</i> <i>1: ON</i> [The operating buttons of main display interface will be locked automatically if there is not any button operation in one minute]	
902	Exfactory Date			Exfactory Date	
903	Serial No.			Product Serial No.	
904	Module Version No.			Sampling Module Software Version No. EB-MXXXXXXXX-VX.X	
905	HMI Version No.			HMI Software Version No. EB-HXXXXXXXX-VX.X	
906	Main Display Style	0~1	0	Main Display Style <i>0: ZQH</i> <i>1: GUII</i>	
907	Main Operation Style	0~1	0	Main Operation Style <i>0: Dialogbox</i> <i>1: Hotkey</i>	

[*]: 'Part-Default' operation has no effect on the parameter.

6.4 F2 Calibration

6.4.1 Static Calibration



Operation Steps:

- ✧ Step1: Zero Calibration. Let the scale at unloading and static state, after the real-time weight display value being stable, press the button **【Zero Cal.】** to display and save the new Zero Value. If the new Zero Value is not in its allowed range, the operation **【Zero Cal.】** will be invalid.
- ✧ Step2: Load Calibration. Load standard weights on the scale with ‘Loading weight \geq [50% \times Scale Capacity]’, after the real-time weight display value being stable, press the button **【Load Cal.】** to input ‘Calibrating Weight’ value, then the new Span Coefficient value will be displayed and saved. If the loading weight is too small [AD Value \leq Zero Value], the operation **【Load Cal.】** will be invalid.

Sign	Data	Sign	Data
Big Digits	Real-time Weight [Weight Unit].		
Zero Value	The saved ‘Zero Value’.	Span Coeff	The saved ‘Span Coefficient’ value.
Zero Var	Zero Variation = AD Value – Zero Value.	Cal. Weight	Calibrating Weight = Weight of Standard Weights
AD Value	Real-time AD Value of weighing signal.	Motion	Weight is dynamic changing.
		Stable	Weight is stable.

6.4.2 Loss Calibration

Do Loss Calibration to correct Span Coefficient according to the weight of the materials dumped from the weighing hopper.



Operation Steps:

- Step1: Feed some materials into the weighing hopper, then stop the feeding process. After the real-time weight being stable, press **【FeedEnd】** to get AD0 Value.

Name	Operation	State Indicator
【Mn】	Material Selection for Manual Operation.	
【Bulk】	Manual Start/Stop Bulk Feed.	Green: Bulk Feed state.
【Drip】	Manual Start/Stop Dribble Feed.	Green: Dribble Feed state.
【Dump】	Manual Start/Stop Dumping.	Green: Dumping state.
【Stop】	Stop Feeding and Dumping.	

- Step2: Dump the partial or all materials in the weighing hopper into a container, then stop the dumping process. After the real-time weight being stable, press **【LossEnd】** to get AD1 Value.
- Step3: Weigh the actual weight of the materials in the container on a high-accuracy scale, then press the button **【Weight】** to input the weight value as 'Calibrating Weight'.

◇ Step4: Press **【Save】** to display and save the new 'Span Coefficient' value. If the dumping weight [the weight of the materials dumped from the weighing hopper] is too small, the operation **【Save】** will be invalid.

Sign	Data	Sign	Data
Big Digits	Real-time Weight [Weight Unit].		
Motion	Weight is dynamic changing.	Span Coeff	The saved 'Span Coefficient' value.
Stable	Weight is stable.		
AD Value	Real-time AD Value of weighing signal.	Cal. Weight	Calibrating Weight = Dumping Weight
AD0 Value	The AD Value after Feeding ended.	AD1 Value	The AD Value after Dumping ended.

6.5 F9 I/O Assignment

6.5.1 DO Assignment

No.	Sign	Range	Default	Description	REG
				DO Function Options	
				<i>0: None</i>	
				<i>1: Material M1 Feeding Permission</i>	
				<i>2: Material M2 Feeding Permission</i>	
				<i>3: Material M3 Feeding Permission</i>	
				<i>4: Material M4 Feeding Permission</i>	
				<i>5: Material M5 Feeding Permission</i>	
				<i>6: Material M6 Feeding Permission</i>	
				<i>7: Material M7 Feeding Permission</i>	
				<i>8: Material M8 Feeding Permission</i>	
				<i>9: Material M9 Feeding Permission</i>	
				<i>10: Material M10 Feeding Permission</i>	
				<i>11: Material M11 Feeding Permission</i>	
				<i>12: Material M12 Feeding Permission</i>	
				<i>13: Material M13 Feeding Permission</i>	
				<i>14: Material M14 Feeding Permission</i>	
				<i>15: Material M15 Feeding Permission</i>	
				<i>16: Material M16 Feeding Permission</i>	
				<i>17: Bulk Feed [M1-Mn COM]</i>	
				<i>18: Dribble [M1-Mn COM]</i>	
				<i>19: Dump</i>	
				<i>20: Alarm/Pause</i>	
				<i>21: Material M1 Bulk Feed</i>	
				<i>22: Material M1 Dribble Feed</i>	
				<i>23: Material M2 Bulk Feed</i>	
				<i>24: Material M2 Dribble Feed</i>	
				<i>25: Material M3 Bulk Feed</i>	
				<i>26: Material M3 Dribble Feed</i>	
				<i>27: Material M4 Bulk Feed</i>	
				<i>28: Material M4 Dribble Feed</i>	
				<i>29: Material M5 Bulk Feed</i>	
				<i>30: Material M5 Dribble Feed</i>	
				<i>31: Material M6 Bulk Feed</i>	
				<i>32: Material M6 Dribble Feed</i>	
				<i>33: Material M7 Bulk Feed</i>	
				<i>34: Material M7 Dribble Feed</i>	
				<i>35: Material M8 Bulk Feed</i>	
				<i>36: Material M8 Dribble Feed</i>	
				<i>37: Unused</i>	
				<i>38: Unused</i>	
				<i>39: Unused</i>	
				<i>40: Unused</i>	
700	DO1	0~60	1		40701
701	DO2		2		40703
702	DO3		3		40705
703	DO4		4		40707
704	DO5		5		40709
705	DO6		6		40711
706	DO7		7		40713
707	DO8		8		40715
708	DO9		9		40717
709	DO10		10		40719
710	DO11		11		40721
711	DO12		12		40723
712	DO13		58		40725
713	DO14		59		40727
714	DO15		17		40729
715	DO16		18		40731
716	DO17		19		40733
717	DO18		20		40735

No.	Sign	Range	Default	Description	REG
				DO Function Options <i>41: Gross Weight Upper Limit Alarm</i> <i>42: Tolerance Alarm</i> <i>43: Up Tolerance Alarm</i> <i>44: Low Tolerance Alarm</i> <i>45: Auto-feed Timeout Alarm</i> <i>46: Auto-dump Timeout Alarm</i> <i>47: All Timeout Alarms</i> <i>48: Unused</i> <i>49: Unused</i> <i>50: Mixing Tank Dump</i> <i>51: Auto State</i> <i>52: Running State</i> <i>53: Stop State</i> <i>54: Pause State</i> <i>55: Feeding State</i> <i>56: All Materials Feeding Ended</i> <i>57: Batch Target Finished</i> <i>58: Mixer Control</i> <i>59: Mixing Conveyor Control</i> <i>60: Unused</i>	

Refer to '4.3 DI/DO Ex-factory Assignment'.

6.5.2 DI Assignment

No.	Sign	Range	Default	Description	REG
				DI Function Options	
				<i>0: None</i>	
				<i>1: Auto/Manual [ON/OFF]</i>	
				<i>2: Start</i>	
				<i>3: Auto-dump Permission</i>	
				<i>4: Manual Dump</i>	
				<i>5: Clear Alarm</i>	
				<i>6: Last Batch [Normal Stop]</i>	
				<i>7: Manual Zero</i>	
				<i>8: Pause</i>	
718	DI1		0[1]	<i>9: Recover Running</i>	40737
719	DI2		2	<i>10: Manual Dribble Re-feed</i>	40739
720	DI3		6	<i>11: E-stop [Emergency Stop]</i>	40741
721	DI4		0[4]	<i>12: Unused</i>	40743
722	DI5	0~60	23	<i>13: Unused</i>	40745
723	DI6		24	<i>14: Unused</i>	40747
724	DI7		0[25]	<i>15: Start/E-stop [Emergency Stop]</i>	40749
725	DI8		21	<i>16: Unused</i>	40751
726	DI9		22	<i>17: Unused</i>	40753
				<i>18: Unused</i>	
				<i>19: Unused</i>	
				<i>20: Unused</i>	
				<i>21: Start Mixer</i>	
				<i>22: Stop Mixer</i>	
				<i>23: Start Mixing Conveyor</i>	
				<i>24: Stop Mixing Conveyor</i>	
				<i>25: Mixing Conveyor Ready</i>	
				<i>26: Mixing Tank Manual Dump</i>	
				<i>27~60: Unused</i>	

Refer to '4.3 DI/DO Ex-factory Assignment'.

6.5.3 AO Assignment

No.	Sign	Range	Default	Description	REG
727	AO1 Signal	0~4	4	AO1 Signal <i>0: Gross Weight</i> <i>1: Net Weight</i> <i>2: Unused</i> <i>3: Final Total Feeding Weight</i> <i>4: Feed Control</i>	40755
728	Bulk/Med /Dribble AO1	0.00~10.00	5.00	Bulk Feed AO1 Control Voltage [V]	40757
		0.00	0.00	Unused	40759
		0.00~10.00	2.00	Dribble Feed AO1 Control Voltage [V]	40761
729	AO1 Low/High Limit	0.00~10.00	0.00	AO1 Low Limit Value [V]	40763
		0.00~10.00	5.00	AO1 High Limit Value [V]	40765
730	AO2 Signal	0~4	4	AO2 Signal <i>0: Gross Weight</i> <i>1: Net Weight</i> <i>2: Unused</i> <i>3: Final Total Feeding Weight</i> <i>4: Feed Control</i>	40767
731	Bulk/Med /Dribble AO2	0.00~10.00	5.00	Bulk Feed AO2 Control Voltage [V]	40769
		0.00	0.00	Unused	40771
		0.00~10.00	2.00	Dribble Feed AO2 Control Voltage [V]	40773
732	AO2 Low/High Limit	0.00~10.00	0.00	AO2 Low Limit Value [V]	40775
		0.00~10.00	5.00	AO2 High Limit Value [V]	40777
733	AO Max. Weight	1~999999	10000	Max. Weight Value for AO1&AO2 Output Weight \geq [733]: AO= High Limit Value. Weight \leq 0: AO=Low Limit Value.	40779

Appendix A. Print Formats

□ Table 1. Batch Records

BATCH RECORD		
2016-08-12	06:00:10	Starting Time of Auto-printing
PCS:	#99	Batch No.
M1:	100.2kg	Material M1 Feeding Weight
M2:	100.1kg	Material M2 Feeding Weight
...
Mn:	100.0kg	Material Mn Feeding Weight
SUM:	800.2kg	Total Feeding Weight
PCS:	#100	
M1:	100.1kg	
M2:	100.1kg	
...	...	
Mn:	100.1kg	
SUM:	800.3kg	
2016-08-12	09:10:20	End Time of Auto-printing

□ Table 2. Totalizing Report

TOTAL REPORT		
T_PCS:	100	Total Batch Count
TOTAL:	80000.0kg	Total Totalized Weight
M1_TOT:	10000.0kg	Material M1 Totalized Weight
M2_TOT:	10000.0kg	Material M2 Totalized Weight
...
Mn_TOT:	10000.0kg	Material Mn Totalized Weight
2016-08-12	09:10:30	

□ Table 3. Recipe

RECIPE		
RECIPE:	001	Recipe No.
M1:	100.0kg	Material M1 Target Weight
M2:	100.0kg	Material M2 Target Weight
...
Mn:	100.0kg	Material Mn Target Weight
SUM:	800.0kg	Total Target Weight
2016-08-12	09:10:40	

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

Data Name	Type	Address	Attr.	CMD [HEX]	Description
Materials Selection for Auto-Batching	Long	40197	R/W	03/10	Bit=1: Material Selected
		Bit0			M1
		Bit1			M2
		Bit2			M3
		Bit3			M4
		Bit4			M5
		Bit5			M6
		Bit6			M7
		Bit7			M8
		Bit8			M9
		Bit9			M10
		Bit10			M11
		Bit11			M12
		Bit12			M13
		Bit13			M14
		Bit14			M15
Bit15	M16				
Working Recipe No.	Long	40199	R/W	03/10	0~99: Recipe No. 1~100
Static Calibration	Long	41101	W	10	0x01: Start Calibration 0x21: End Zero Calibration 0x22: End Load Calibration
AD Value	Long	41003	R	03	
Calibrating Weight	Long	41105	W	10	Used for Load Calibration
Gross Weight	Long	41201	R	03	
Net Weight	Long	41203	R	03	
Final Feeding Weight	Long	41205	R	03	M1
	Long	41207	R	03	M2
	Long	41209	R	03	M3
	Long	41211	R	03	M4
	Long	41213	R	03	M5
	Long	41215	R	03	M6
	Long	41217	R	03	M7
	Long	41219	R	03	M8
	Long	41221	R	03	M9
	Long	41223	R	03	M10
	Long	41225	R	03	M11
	Long	41227	R	03	M12
	Long	41229	R	03	M13
	Long	41231	R	03	M14
	Long	41233	R	03	M15
	Long	41235	R	03	M16

Data Name	Type	Address	Attr.	CMD [HEX]	Description
Batch Count	Long	41369	R	03	
Totalized Weight	Long	41301	R	03	M1
	Long	41303	R	03	M2
	Long	41305	R	03	M3
	Long	41307	R	03	M4
	Long	41309	R	03	M5
	Long	41311	R	03	M6
	Long	41313	R	03	M7
	Long	41315	R	03	M8
	Long	41333	R	03	M9
	Long	41335	R	03	M10
	Long	41337	R	03	M11
	Long	41339	R	03	M12
	Long	41341	R	03	M13
	Long	41343	R	03	M14
	Long	41345	R	03	M15
	Long	41347	R	03	M16
Total Totalized Weight	Long	41367	R	03	M1-Mn
Running State	Long	41237	R	03	
		Bit0			1: Batch Target Finished
		Bit1			1: Auto; 0: Manual
		Bit2			1: Feeding Ended
		Bit3			1: Running
		Bit4			1: Pause
		Bit5			1: Non-load Zero Range
		Bit6			1: Weight is stable
		Bit7			1: Zeroing
		Bit8			1: Dumping
		Bit9			1: Alarm/Pause
		Bit10			1: Bulk Feed
		Bit11			1: Dribble Feed
		Bit12			1: Low Tolerance Alarm
		Bit13			1: Up Tolerance Alarm
		Bit14			1: Overload Alarm
Bit15	1: Gross Weight Upper Limit				
	Long	41239	R	03	Special for manufacturer
Working Material No.	Long	41245	R	03	1~16: M1~M16

Data Name	Type	Address	Attr.	CMD [HEX]	Description
Alarm State	Long	41247	R	03	
		Bit0			1: RAM Fault
		Bit1			1: EEPROM Fault
		Bit2			1: Parameter Error
		Bit3			1: Signal Error
		Bit4			1: ADC Fault
		Bit5			1: Over ADC Range
		Bit6			1: Overload Alarm
		Bit7			1: Gross Weight Upper Limit
		Bit8			1: Tolerance Alarm
		Bit9			1: Pause
		Bit10			1: Auto-feed Timeout
		Bit11			1: Auto-dump Timeout
		Bit12			
		Bit13			
		Bit14			
		Bit15			1: Batch Target Finished
		Bit 16			1: Last Batch
Bit 17	1: ZERO Invalid				
Auto/ Manual switch	Long	41401	W	10	0xFF: Auto/Manual switch. 0xA5: Stop
Start/Stop Control	Long	41403	W	10	0x55: Start 0x5C: Last Batch [Normal Stop]
	Long	41405	W	10	0x55: Unused
Manual Operation	Long	41407	W	10	0x01~0x10: Start/Stop M1~M16 Bulk Feed
					0x11~0x20: Start/Stop M1~M16 Dribble Feed
					0x21: Start/Stop Dumping
					0x45: Clear Alarm 0x55: Manual Start/Stop SP3 Re-feed [Valid at Auto-pause state with Low Tolerance Alarm]
Function Operation	Long	41409	W	10	0xA1: Manual Zero 0xA3: Clear Screen
Recover Running	Long	41421	W	10	0xFF: Auto/Pause state: Clear Alarm & Recover Running

Long: Signed Long Int.

Recipes Modification

Step1: Select Recipe No. for Modifying.					
Data Name	Type	Address	Attr.	CMD [HEX]	Description
Recipe No. for Modifying	Long	41997	R/W	03/10	0~99: Recipe No. 1~100

Step2: Modify Recipe Parameters.								
Parameter	Material No. / Register Address							
	M1	M2	M3	M4	M5	M6	M7	M8
Target Weight	42001	42007	42013	42019	42025	42031	42037	42043
Bulk Lead Weight	42003	42009	42015	42021	42027	42033	42039	42045
Dribble Inflight Weight	42005	42011	42017	42023	42029	42035	42041	42047
	M9	M10	M11	M12	M13	M14	M15	M16
Target Weight	42049	42055	42061	42067	42073	42079	42085	42091
Bulk Lead Weight	42051	42057	42063	42069	42075	42081	42087	42093
Dribble Inflight Weight	42053	42059	42065	42071	42077	42083	42089	42095

Parameter	Range	Default	Description
Material Mn Target Weight	0~60000	1000	Set value = 0: Material Mn will not participate in the batching process.
Material Mn Bulk Lead Weight	0~60000	50	<p>Set value = 0: The DO switch 'Bulk Feed' will not participate in the feeding process.</p> <p>Set value > 0: When 'Feeding Weight \geq (Target Weight - Bulk Lead)' in the feeding process, the DO switch 'Bulk Feed' will turn off automatically.</p> <p>The auto-feeding process of the first batch after 'Start' signal inputted:</p> <ul style="list-style-type: none"> ◇ If 'Net Weight \geq (Target Weight - Inflight)', then the material Mn's auto-feeding process of the first batch will be skipped. ◇ If '(Target Weight \times 50%) \leq Net Weight \leq (Target Weight - Inflight)', then the DO switch 'Dribble Feed' will not participate in the material Mn's auto-feeding process of the first batch, and only the DO switch 'Dribble Feed' will do.
Material Mn Dribble Inflight Weight	0~60000	50	<p>When 'Feeding Weight \geq (Target Weight - Inflight)' in the feeding process, the DO switch 'Dribble Feed' will turn off automatically.</p> <p>Note: It has one more decimal than 'Target Weight'.</p>

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

Table 1

FORMAT	START	DATA1	DATA 2	...	DATA N	Checksum	END
Character	=	See Table 3					CR LF
ASCII	3DH						0DH 0AH
Bytes	1	7	7	7	7	2	2

How to get 'Checksum': Add all the ASCII values ahead of Checksum to get a single-byte hexadecimal data, then convert it to two ASCII values.

Table 2

Character	Minus Sign '-'	Decimal Digit 0~9	Decimal Point '.'
ASCII	2DH	30H~39H	2EH

Table 3

[807] Set	DATA1			
[807]=0	Gross Weight			
[807]=1	Final Total Feeding Weight			
[807]=2	Batch Count			
[807]=3	Total Totalized Weight			
	DATA1	DATA2	DATA3	DATA4
[807]=4	Gross Weight	Final Total Feeding Weight	Batch Count	Total Totalized Weight

Parameter [807]: 'Data for Continuous Sending Mode'.



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