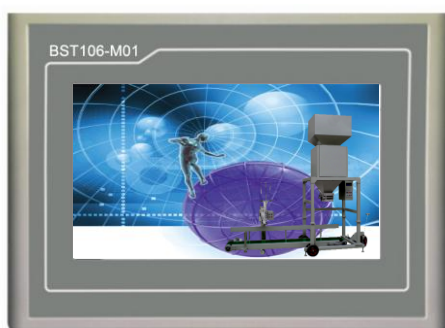


BST106-M01[BH] Weighing Controller

For: Double-hopper-weighing Mode & Double-bag-weighing Mode

Ration Packing Scales

Operation Manual V2.0



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 Double-hopper-weighing with 1-bag-clamping Mode, Double-hopper-weighing with 2-bag-clamping Mode and Double-bag-weighing Mode Ration Packing Scales.
- ✧ EMC design with high anti-jamming capability, suitable for industrial environment.
- ✧ 7"/10.2" Ultralight and ultrathin TFT touch screen with embedded weighing/control module.
- ✧ Loadcell Interface
 - 2 Loadcell ports. Max. Connection Quantity: 2×8 Loadcells (350Ω).
 - 24-bit High-precision and high-speed Σ - Δ 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.
- ✧ I/O Interface
 - 9 Normally open switch inputs [DI] and 16 normally open transistor switch outputs [DO].
 - Optional 'Fast/Medium/Slow Feeding' DOs for feeding control. Optional Slow Feeding Modes: Continuous Feeding Mode and Inching Feeding Mode.
 - 2 Optional and definable analog signal AO[0~10V] for weight signal output or 'Fast/Medium /Slow Feeding' control.
- ✧ Digital Communication Interface
 - 2 Serial Communication ports for connecting Host IPC/PLC, LED Remote Display and Serial Printer.
 - USB port for copying Excel files of History Batch Records via U disk.
- ✧ Software Function
 - Manual Screen-locking/Screen-unlocking, Auto Screen-locking, Digital Setting&Calibration and I/O Testing functions available.
 - Auto Zero Initial Calibration after Power-on, Auto Zero Tracking, Zero Fine Adjustment and Zero Calibration functions available.
 - Load Calibration and Loss Calibration functions available.
 - 10 Formula Forms for packing control.
 - Optional 'Fall Value Auto Correction' function.
 - Optional 'Auto Pause while Deviation Alarming' function.
 - Optional 'Target Batch & Target Totalized Weight Control' function [With Target Batch or Target Totalized Weight finished, the packing process will stop automatically].
 - The present Batch Record can be printed automatically and manually.
 - Historical Batch Records, Totalizing Reports and Formulas can be queried and printed.
 - With the multitasking mode, the weighing&control process will not be interrupted by parameter setting and the other operations.

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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.

● **Prohibit using the product under dangerous environment**

Prohibit using the product under the dangerous environment with combustible gas and explosive dust. If you have this need, please use our explosion-proof products.

● **Avoid using the product under overheated environment**

Make sure that the product works under the environment with allowed temperature range to get good performance and long working life.

Please keep the product away from direct sunlight. If it is installed in a cabinet, please install cooling fans on the top of the cabinet.

● **Controller Grounding Protection**

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

● **Scale Frame Grounding Protection**

For avoiding bodily injury from electric shock accident and keeping the loadcells separate from strong interference, the scale frame should be connected with the electronic scale grounding net and the ground resistance should be 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**

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

If the voltage fluctuation exceeds the allowed range, please use a power stabilizer to get a stable voltage supply.

● **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.

Although the product is made of the lead-free components, after used in the industrial environments, it's possible to be polluted. So, 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 .
 - ✧ Number of Verification Intervals: 5,000.
 - ✧ Static Weighing Accuracy: 0.2‰.
- 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.
 - ✧ Chinese/English graphical interface display 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 kg, t, g, none.
 - ✧ Decimal Point: Optional 0, 0.0, 0.00, 0.000, 0.0000.
- Loadcell Interface
 - ✧ 2 Loadcell ports. Max. Connection Quantity: 2×8 Loadcells (350Ω).
 - ✧ Excitation Voltage/Max. Current: DC5V, 2×120mA.
 - ✧ Signal Input Range: 0~12.5mV.
 - ✧ Output Sensitivity of Loadcell: 1.0~2.5mV/V.
 - ✧ 24-bit Σ - Δ ADC with internal resolution 1/1,000,000.
 - ✧ Sampling Frequency: 400Hz.
 - ✧ Special anti-vibration digital filtering algorithm.
 - ✧ 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 Normally Open Switch Inputs [DI].
 - ✧ 16 Normally Open Transistor Switch Outputs [DO]: DC24V, 500mA.
 - ✧ 2 Optional&Definable Analog Signal Output [AO]: 0~10V/Max.50mA, Non-linearity: 0.05%FS.
- Digital Communication Interface
 - ✧ COM1: RS232.
 - ✧ COM2: RS485.

- ✧ COM1/COM2 for connecting Host IPC/PLC, LED Remote Display and Serial Printer.
- ✧ USB for copying Excel files of History Batch Records via U disk.

□ Report Print

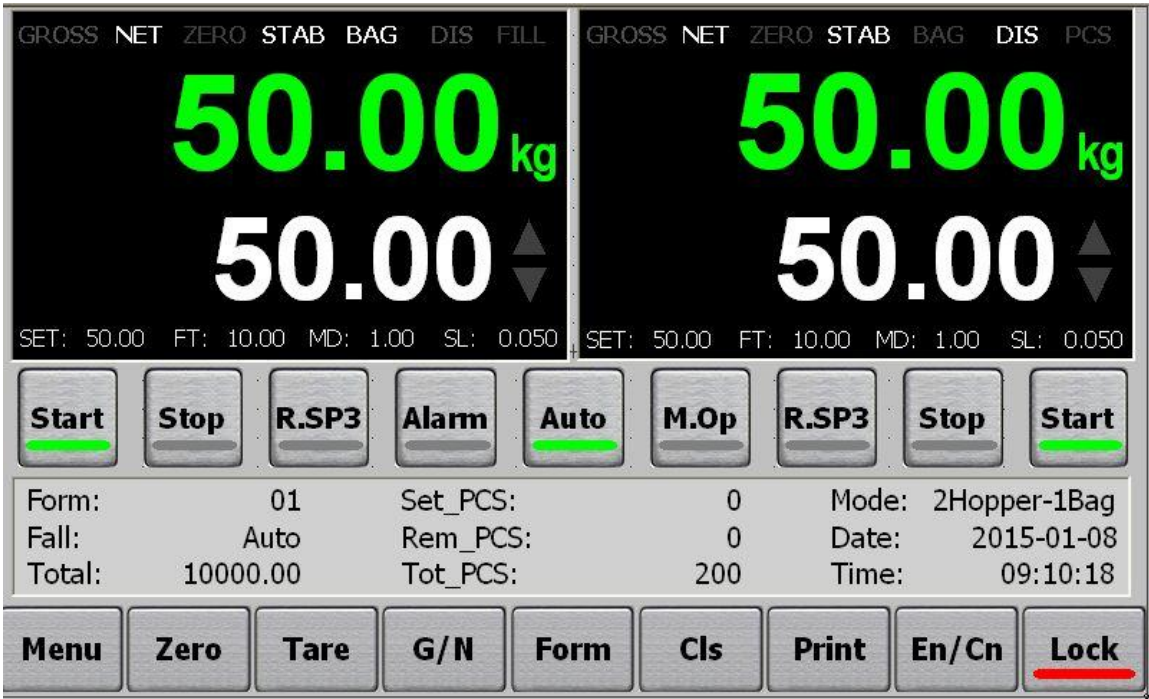
- ✧ The present Batch Record can be printed automatically and manually.
- ✧ Historical Batch Records, Totalizing Reports and Formulas can be queried and printed.

□ Operating Specification

- ✧ Operating Voltage: DC24V $\pm$ 20%.
- ✧ Max. Power Consumption: 6W.
- ✧ 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: -10°C~+40°C.
- ✧ Storage Temperature: -20°C~+60°C.
- ✧ Relative Humidity: Max. 85%RH.

3. Operation Interface

3.1 Operation Interface Diagram



3.2 Button Operation

Name	Operation	State Indicator
【Auto】	Auto / Manual [Emergency Stop] switch. The operating button will be valid only when Parameter [326] 'DI1 Manual/Auto Type' = '0: Push Button'.	Green: Auto state. Grey: Manual State.
【M.Op】	Enter Manual Operation Interface. Valid at Manual state.	Green: Manual state.
【Alarm】	Alarm Query / Clear Alarm. 'Auto/Pause' state: Recover Running after clearing alarm.	Red: Alarm state.
【Start】	Start. 'Auto/Stop' state: Start. In 'Auto/Running' process: Clear Alarm [Deviation Alarm Acknowledge]. 'Auto/Pause' state: Clear Alarm & Recover Running.	Green: Running state. Blinking Green: Pause State.
【Stop】	Stop. Stop after the present batch finished.	Red: Stop state.
【R_SP3】	Start/Stop SP3 Manual Re-feeding. Valid at Auto-pause state with Negative Deviation Alarm.	Green: Re-feeding state.
【Menu】	Enter Main Menu.	
【Zero】	Zero Fine Adjustment.	
【Tare】	Manual Tare.	
【G/N】	Gross Weight / Net Weight display switch.	
【Form】	Working Formula No. Selection.	
【Cls】	Clear Screen: Clear the display value of Feeding Weight, Totalized Weight and Batch Count.	
【Print】	Print Present Batch Record, Totalizing Report and Present Working Formula.	
【En/Cn】	English/Chinese display switch.	
【Lock】	Screen-locking: Locking/unlocking the operating buttons of main display interface. The operating buttons of main display interface will be locked automatically if there is not any button operation in one minute.	Green: Locked. Grey: Unlocked.

Manual Operation Interface:



Name	Operation	State Indicator
【Bag】	Bag-clamping/releasing Request.	Green: Bag-clamping state. Grey: Bag-releasing state.
【Fast】	Manual Start/Stop Fast Feeding.	Green: Fast Feeding state.
【Med】	Manual Start/Stop Medium Feeding.	Green: Medium Feeding state.
【Slow】	Manual Start/Stop Slow Feeding.	Green: Slow Feeding state.
【Dis】	Manual Start/Stop Discharging.	Green: Discharging state.
【Stop/Exit】	Stop and Exit.	

3.3 Data Display

Name	Description
Green Digits	Real-time Weight Value [Weight Unit].
White Digits	Final Feeding Weight.
[▲]	Red: Positive Deviation Alarm.
[▼]	Yellow: Negative Deviation Alarm.
[GROSS]	Gross Weight display.
[NET]	Net Weight display.
[ZERO]	Net Weight value $\leq$ Non-load Zero Range.
[STAB]	Weight is stable.
[BAG]	Bag-clamping state.
[DIS]	Discharging state.
[FILL]	In the process of Filling Materials into Feeding Hopper.
[PCS]	Target Batch Finished / Target Totalized Weight Finished.
[SET]	Target Value.
[FT]	Green: In Fast Feeding process.
	SP1 Initial Lead Value for Fast Feeding.
[MD]	Green: In Medium Feeding process.
	SP2 Initial Lead Value for Medium Feeding.
[SL]	Green: In Slow Feeding process.
	SP3 Fall Value for Slow Feeding.
[Form]	Present Working Formula No.
[Fall]	‘Auto’: Fall Value Auto Correction function is open.
	‘Fixed’: Fall Value Auto Correction function is closed.
[Total]	Totalized Weight.
[Set_PCS]	Target Batch.
[Rem_PCS]	Remainder Batch Count = Target Batch — Batch Count.
[Tot_PCS]	Batch Count.
[Mode]	‘2Hopper-1Bag’: APPL1 Double-hopper-weighing with one Bag-clamping Mode.
	‘2Hopper-2Bag’: APPL1 Double-hopper-weighing with two Bag-clamping Mode.
	‘2-Bag’: APPL2 Double-bag-weighing Mode.
[Date]	Date.
[Time]	Time.

3.4 Alarm Sign

3.4.1 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.
Signal Error	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.	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).	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.

3.4.2 Alarm Message

Message	Alarm Cause	Solution
Gross Weight Upper Limit Alarm	Gross Weight $\geq$ Upper Limit.	Refer to parameter [214] 'Gross Weight Upper Limit'.
Deviation Alarm	Positive Deviation Alarm. Negative Deviation Alarm.	Refer to parameter [209] 'Positive Deviation Permission Value' and [210] 'Negative Deviation Permission Value'.
Pause Alarm	Pause state with Deviation Deviation Alarm.	Refer to parameter [310] 'Auto Pause while Deviation Alarming'. It's allowed to do 'SP3 Manual Re-feeding' for Negative Deviation Alarm. Press DI button 'Start / Clear Alarm' to recover running.
Feeding Overtime Alarm	Feeding Time $\geq$ Max. Value	Refer to parameter [411] 'Max. Feeding Time'.
Discharging Overtime Alarm	Discharging Time $\geq$ Max. Value	Refer to parameter [412] 'Max. Discharging Time'.
Bag-Releasing Overtime Alarm	Bag-Releasing Time $\geq$ Max. Value	Refer to parameter [412] 'Max. Bag-Releasing Time'.
Filling Overtime Alarm	Filling Time $\geq$ Max. Value	Refer to parameter [413] 'Max. Filling Time'.

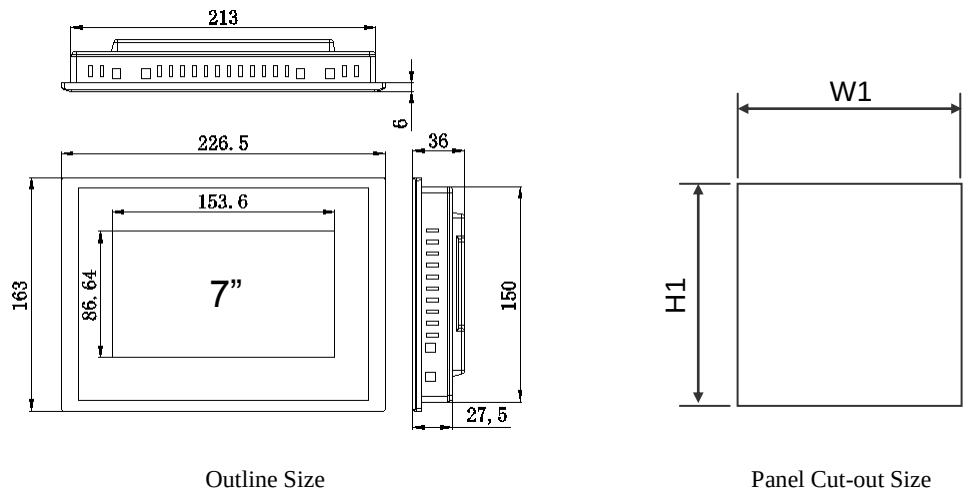
3.4.3 Prompt Message

Message	Alarm Cause	Solution
Batch Finished	Alarm or Auto-stop with 'Target Batch Finished' or 'Target Totalized Weight Finished'.	Refer to parameter [212] 'Target Batch', [213] 'Target Totalized Weight' and [301] 'Target Batch Control'.
Last Batch	It's in the packing process of the last batch.	The message will disappear after the present batch finished.
TARE Invalid	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.
	Over 'Auto Tare Range'.	Refer to parameter [124] 'Auto Tare Range'.
ZERO Invalid	Over 'Zero Fine Adjusting Range'.	Refer to parameter [123] 'Zero Fine Adjusting Range'.
PRINT Invalid	Print port is not defined.	Refer to 'Communication Parameters'.

4. Installation&Connection

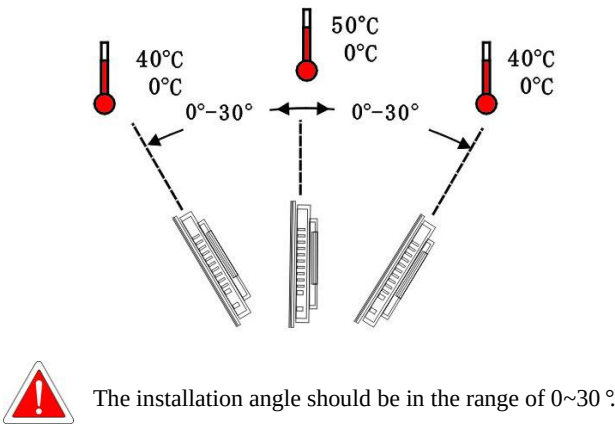
4.1 Installation

4.1.1 Outline Size

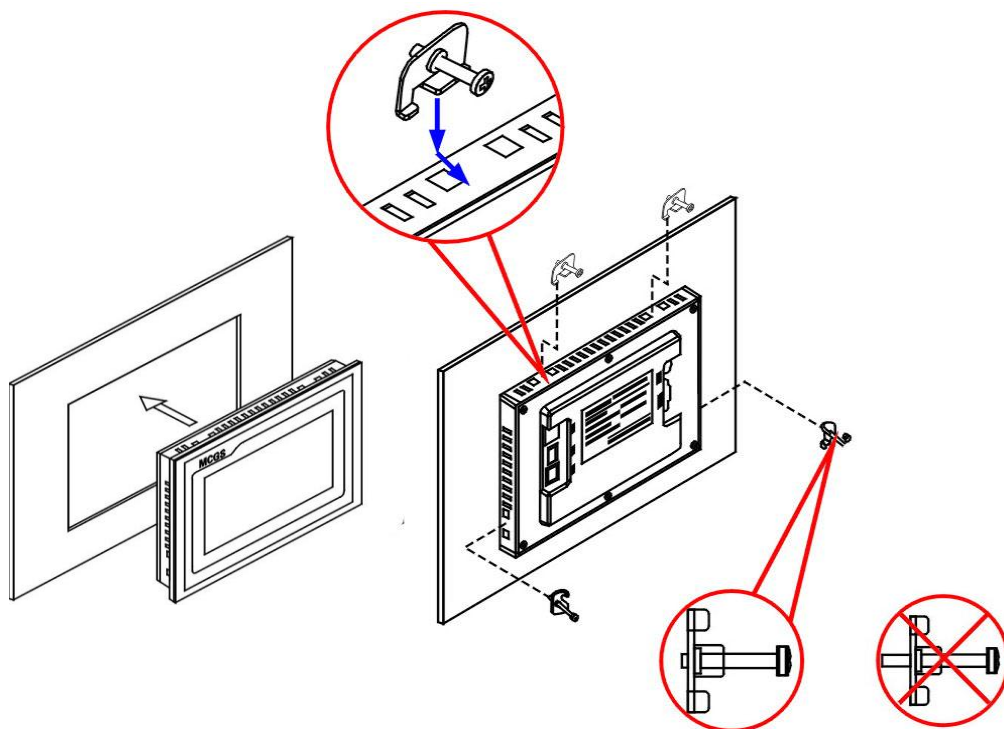


Product	Outline Size W×H×D[mm]	Front Panel Size W×H[mm]	Box Body Size W×H [mm]	Panel Cut-out Size W1×H1[mm]
7"	226.5×163×36	226.5×163	213×150	215×152
10.2"	274×193×40	274×193	259×178	261×180

4.1.2 Installation Angle



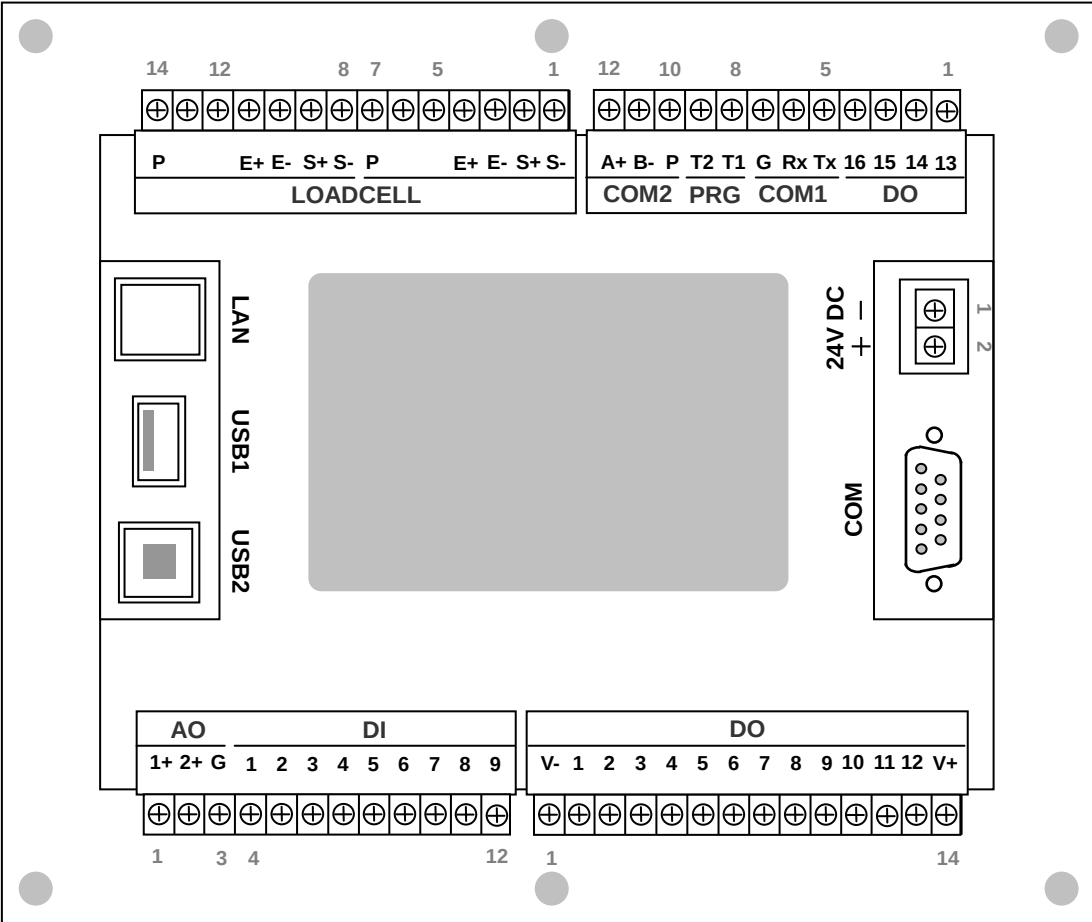
4.1.3 Installation Mode



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 +.

4.2.3 Loadcell Terminal

No.	Pin	Description
LOADCELL		Loadcell Port
Weigher #1 Loadcell Port [LOADCELL1]		
1	S-	Weighing Signal [mV] Input -.
2	S+	Weighing Signal [mV] Input +.
3	E-	Excitation Voltage -.
4	E+	Excitation Voltage + [DC5V].
5		Unused.
6		Unused.
7	P	Shield Ground.
Weigher #2 Loadcell Port [LOADCELL2]		
8	S-	Weighing Signal [mV] Input -.
9	S+	Weighing Signal [mV] Input +.
10	E-	Excitation Voltage -.
11	E+	Excitation Voltage + [DC5V].
12		Unused.
13		Unused.
14	P	Shield Ground.

4.2.4 Digital Communication Terminal

No.	Pin	Description
COM1		RS232 Digital Communication Port [Definable]
5	Tx	Transmit Data [TXD].
6	Rx	Receive Data [RXD].
7	G	Signal Ground / Shield Ground [GND].
COM2		RS485 Digital Communication Port [Definable]
10	P	Shield Ground.
11	B-	Data -.
12	A+	Data +.
USB1		USB Data Copying Port

4.2.5 Analog&Switch Signal Terminal

Name	Pin	Description
AO		Analog Output Port [Definable]
1	AO1+	Weigher #1 AO1[0~10V] Output +.
2	AO2+	Weigher #2 AO2[0~10V] 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.
Contact Capacity of Transistor Switch: DC24V, 500mA.		

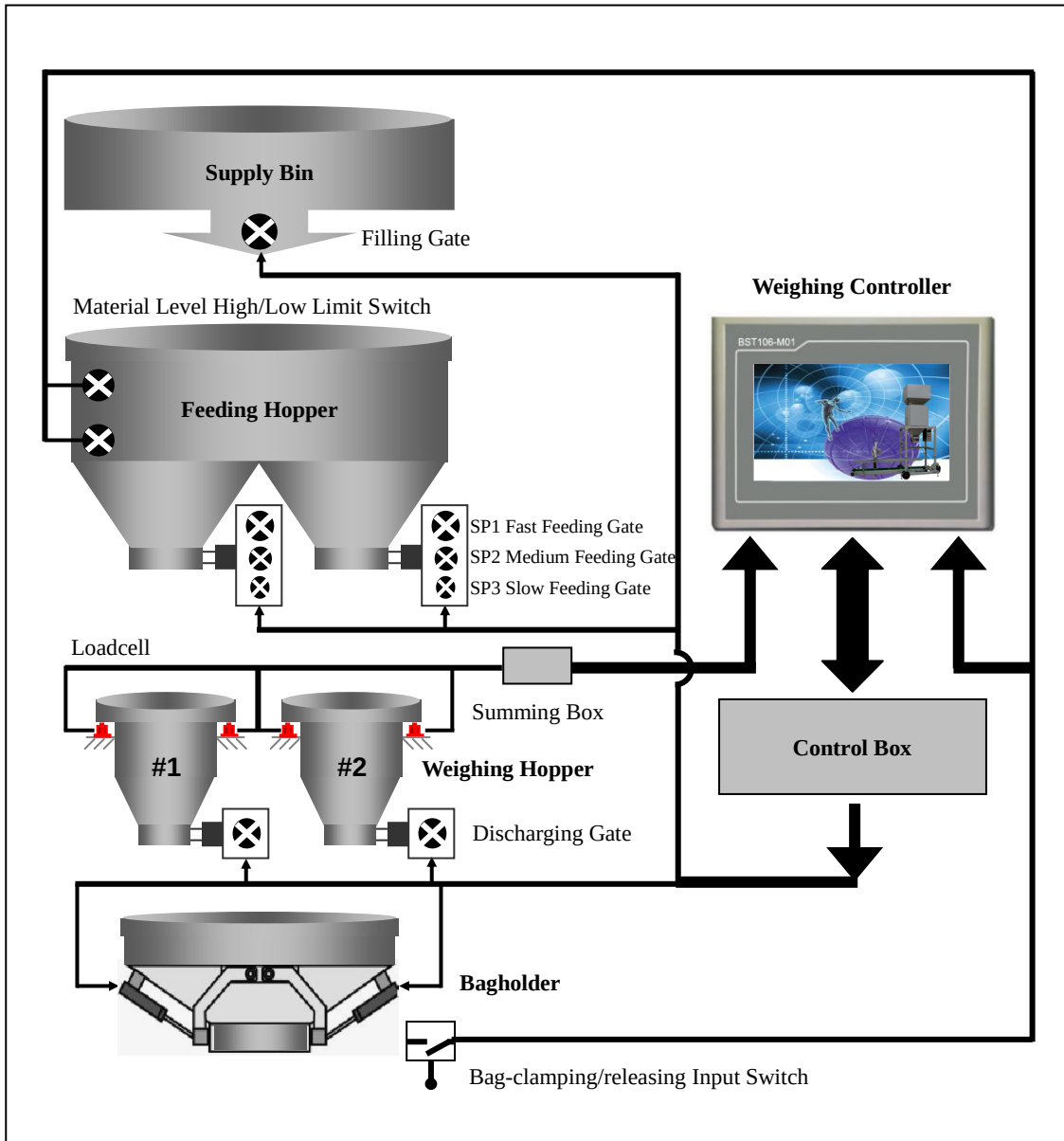
4.3 DI/DO Function Definition

DI [Valid with high-level input voltage 24V]			
No.	Pin	Signal Name	Description
4	DI1	AUTO	Auto/Manual. Connect push button or selector switch [Definable].
			Connect push button: OFF→ON→OFF: Auto / Manual [Emergency Stop] switch
			Connect selector switch: ON: Auto state. OFF: Manual state / Emergency Stop.
5	DI2	START1	#1 Start. 'Auto/Stop' state: Start. In 'Auto/Running' process: Clear Alarm [Deviation Alarm Acknowledge] 'Auto/Pause' state: Clear Alarm & Recover Running. OFF→ON→OFF.
6	DI3	BAG_I1	[#1] Bag-clamping/releasing Request. OFF→ON→OFF.
7	DI4	DISC_I1	APPL1 Double-hopper-weighing Mode: #1 Manual Discharging. Valid at Manual state. ON: Start discharging. OFF: Stop discharging.
8	DI5	DISC_I2	APPL1 Double-hopper-weighing Mode: #2 Manual Discharging.
9	DI6	BAG_I2	#2 Bag-clamping/releasing Request.
10	DI7	START2	#2 Start.
11	DI8	FH_HI	Feeding Hopper Material Level High Limit.
12	DI9	FH_LO	Feeding Hopper Material Level Low Limit.

DO [Transistor, Valid with high-level output voltage 24V]			
No.	Pin	Signal Name	Description
1	V-	V-	DC24V Input -.
2	DO1	1_SP1	#1 Fast Feeding.
3	DO2	1_SP2	#1 Medium Feeding.
4	DO3	1_SP3	#1 Slow Feeding.
5	DO4	1_BAG	[#1] Clamping/Releasing Bag. ON: Clamp Packing Bag; OFF: Release Packing Bag.
6	DO5	1_DISC	APPL1 Double-hopper-weighing Mode: #1 Discharging. ON: Open Discharging Gate; OFF: Close Discharging Gate.
		1_FEED_END	APPL2 Double-bag-weighing Mode: #1 Feeding Ended.
7	DO6	1_ALARM	#1 Alarm/Pause.
			ON: Positive/ Negative Deviation Alarm
			ON: Gross Weight Upper Limit Alarm.
			ON: Feeding/Discharging/Bag-releasing/Filling Overtime Alarm.
			Pulse [ON: 1s; OFF: 1s]; Pause State.
8	DO7	1_BEAT	[#1] Bag-beating. Parameter [320]=0. Control the bagbeater to beat the packing bag.
		1_SHAKE	[#1] Bag-shaking/Bag-moving-down. Parameter [320]=1. Control the bagshaker to shake the packing bag down&up and moving the packing bag down to the ground.
9	DO8	FILL	Filling Materials into Feeding Hopper. Refer to parameter [413] 'Max. Filling Time T12'.
10	DO9	BAT_END	Target Batch Finished / Target Totalized Weight Finished.
11	DO10	2_BEAT	#2 Bag-beating.
		2_SHAKE	#2 Bag-shaking/Bag-moving-down.
12	DO11	2_ALARM	#2 Alarm/Pause.
13	DO12	2_DISC	APPL1 Double-hopper-weighing Mode: #2 Discharging.
		1_FEED_END	APPL2 Double-bag-weighing Mode: #2 Feeding Ended.
14	V+	V+	DC24V Input +.
1	DO13	2_BAG	#2 Clamping/Releasing Bag.
2	DO14	2_SP3	#2 Slow Feeding.
3	DO15	2_SP2	#2 Medium Feeding.
4	DO16	2_SP1	#2 Fast Feeding.

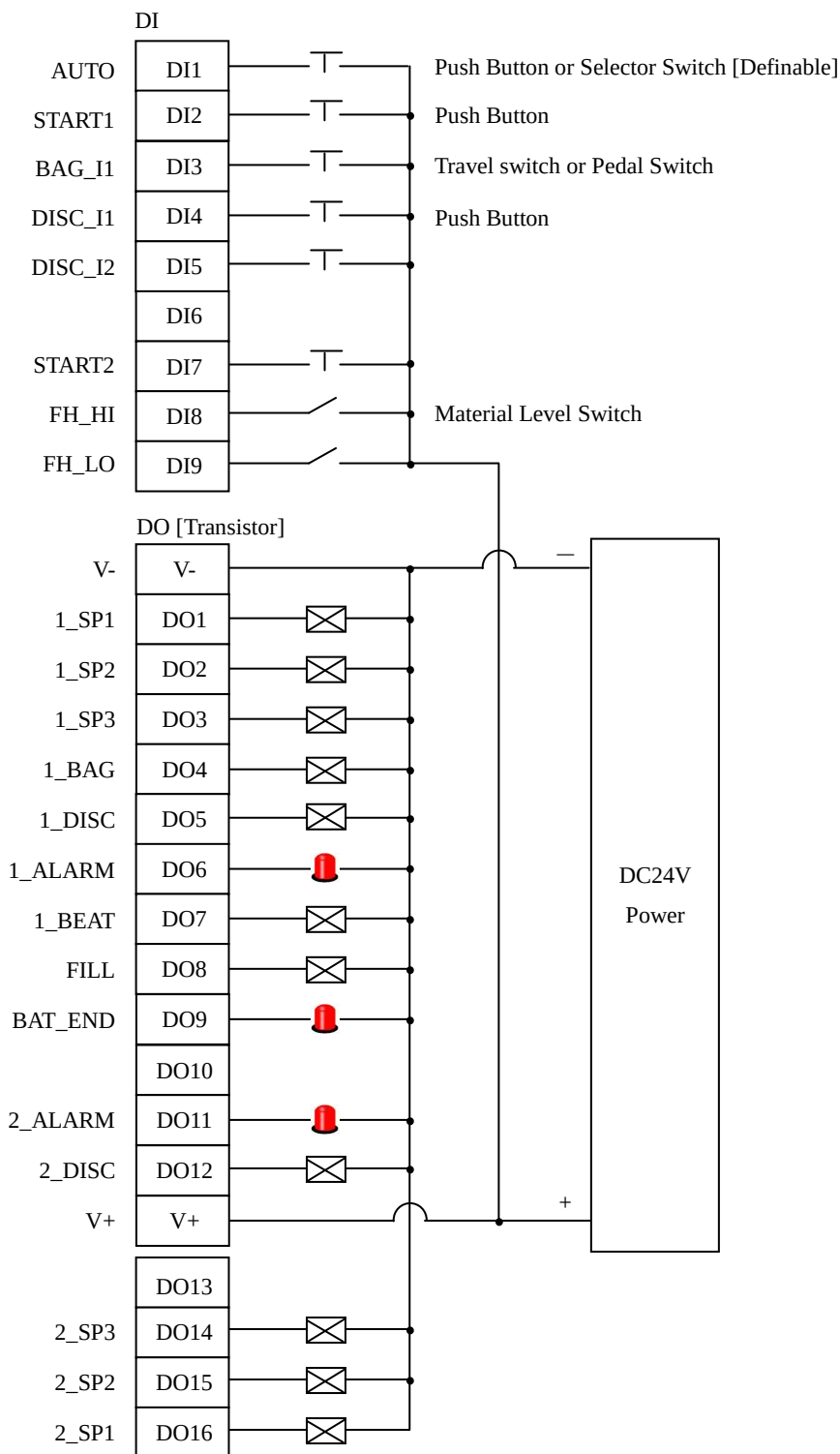
4.4 Type Applications

4.4.1 System Diagram for APPL1 Double-hopper-weighing with one Bag-clamping Mode

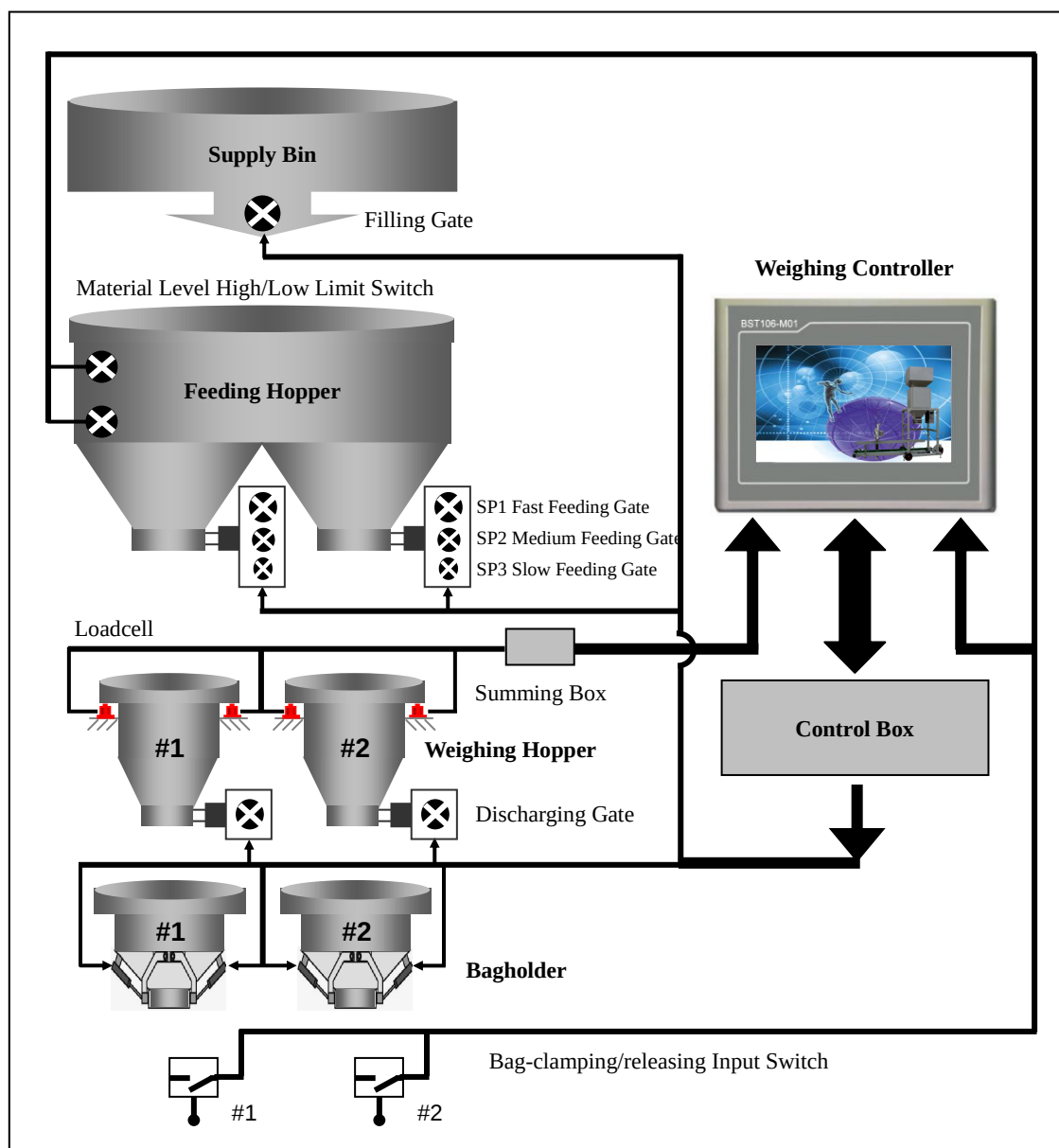


Parameter [300] 'Application Mode' = '1: 2-Hopper & 1-Bag'.

4.4.2 DI/DO Connection for APPL1 Double-hopper-weighing with one Bag-clamping Mode

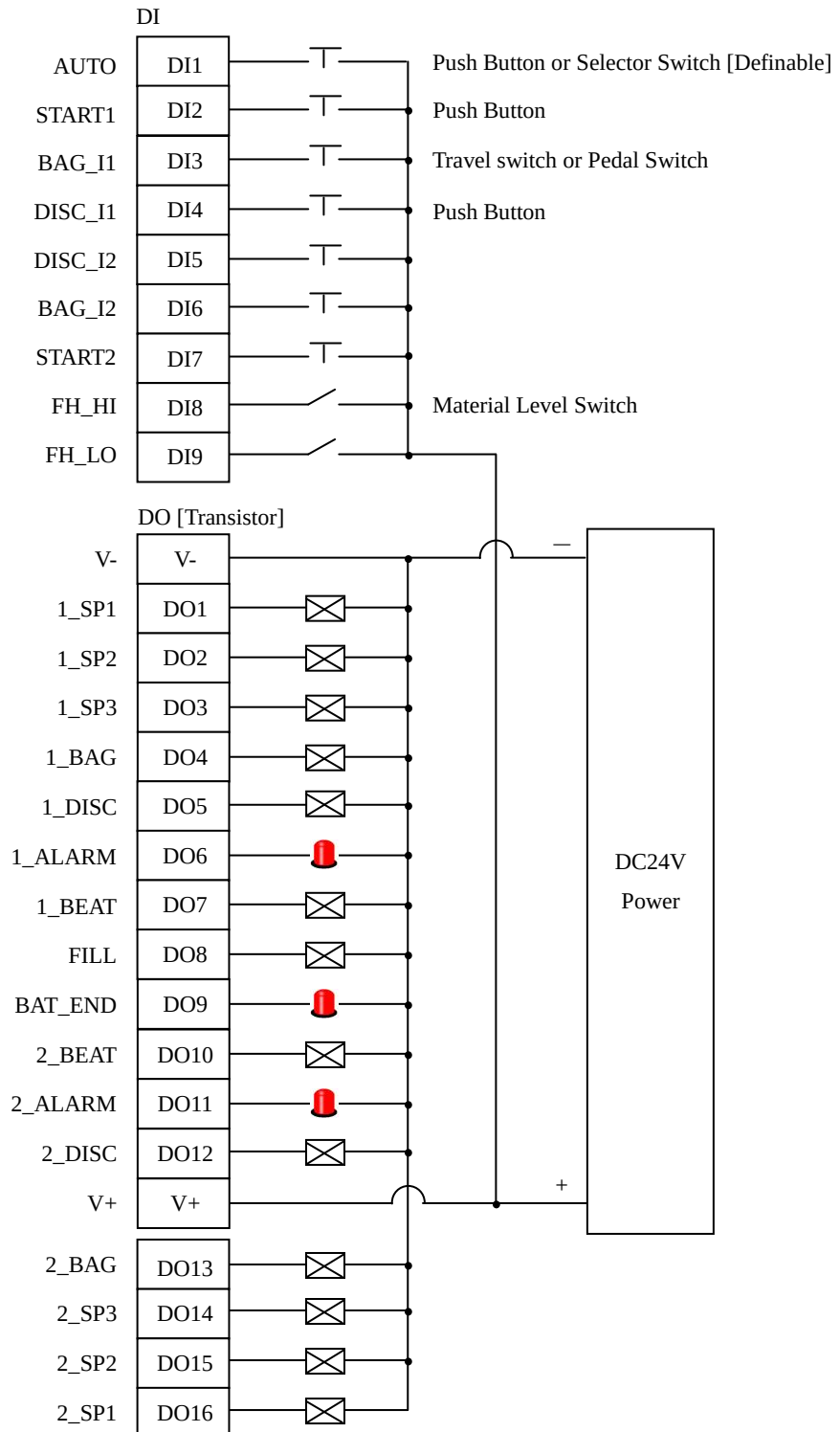


4.4.3 System Diagram for APPL1 Double-hopper-weighing with two Bag-clampings Mode

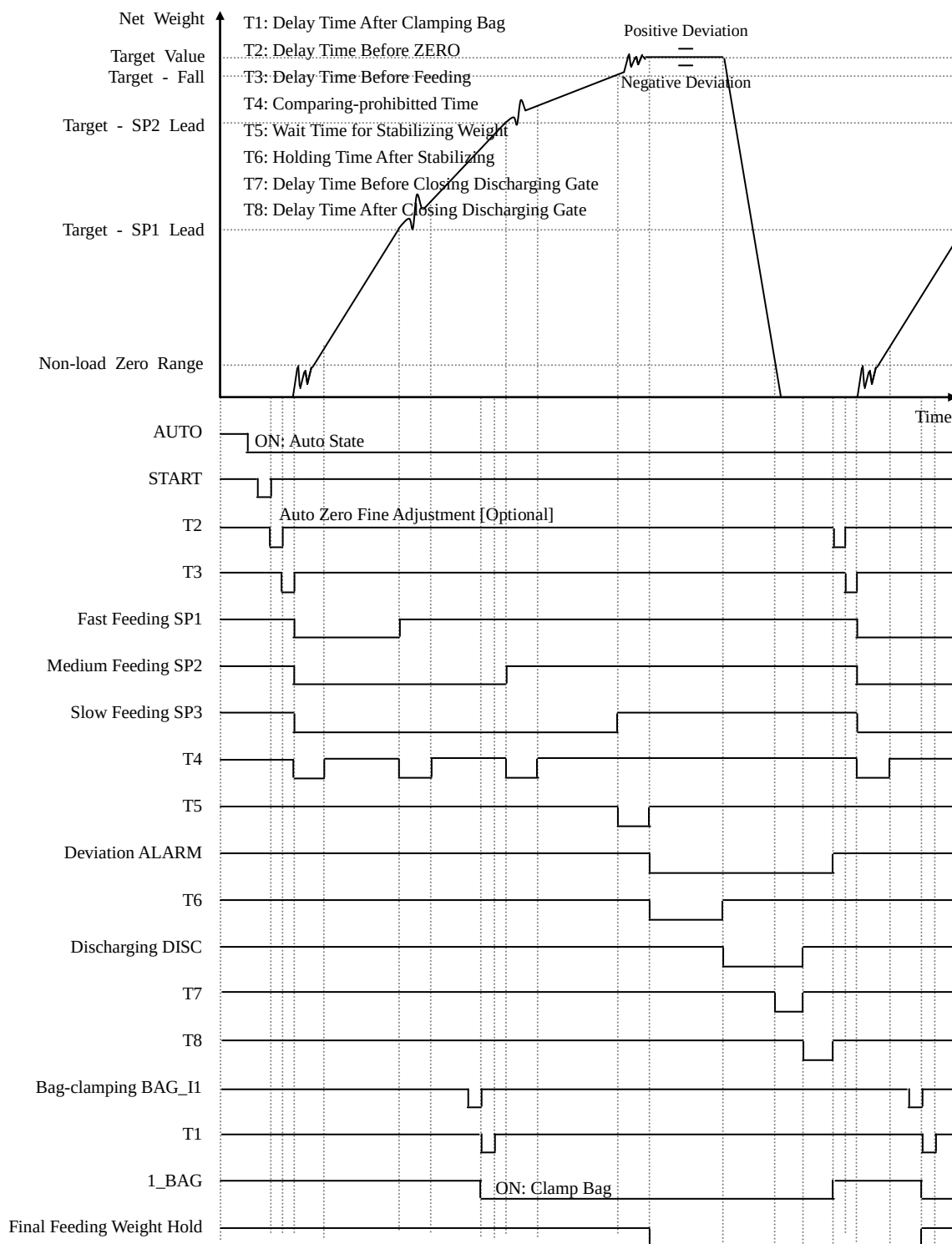


Parameter [300] 'Application Mode' = '2: 2-Hopper & 2-Bag'.

4.4.4 DI/DO Connection for APPL1 Double-hopper-weighing with two Bag-clampings Mode



4.4.5 Working Timing Diagram of APPL1 Double-hopper-weighing Mode

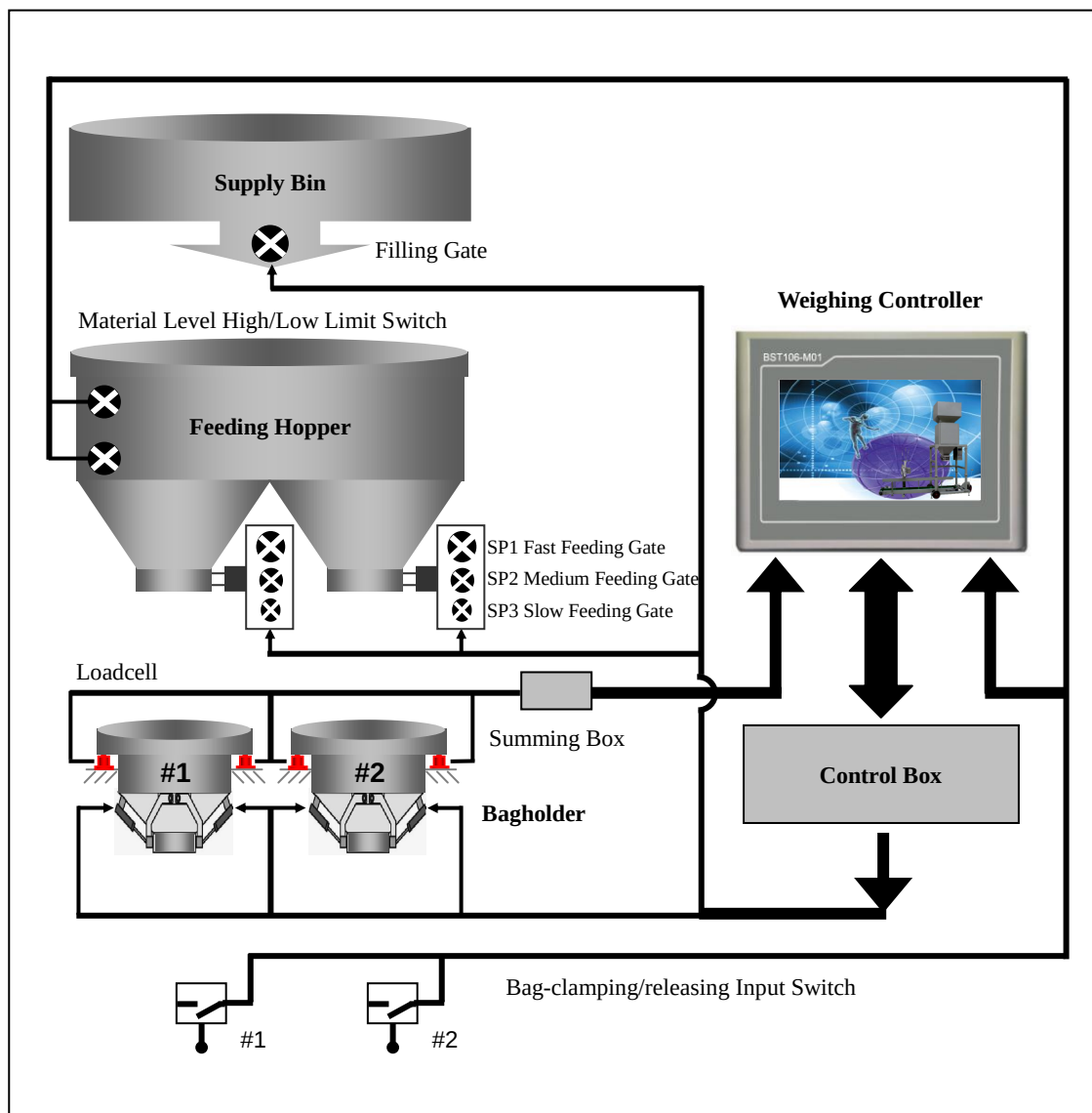


4.4.6 Working Process Table of APPL1 Double-hopper-weighing Mode

Step	Working Process	Para. No.	Input	Output	Note
00	Stop/Manual state?	326	DI1		DI1 can be defined as: 0: Push Button [OFF→ON→OFF] 1: Selector Switch [OFF/ON]
	Auto state?		DI1		
01	Start state?		DI2 DI7		OFF→ON→OFF: Start.
	Application Mode? 1: 2-Hopper & 1-Bag Mode.	300			2: 2-Hopper & 2-Bag Mode.
	DO Feeding's Start Mode?	304			0: 'SP1/SP2/SP3 Start at the same time' Mode 1: 'SP1/SP2/SP3 Start one by one' Mode
	AO Feeding Control?	315~318			
	SP3 Slow Feeding Mode?	305~307			0: Continuous Feeding Mode 1: Inching Feeding Mode
02	Auto Zero Fine Adjustment?	123/302			
	Delay Time Before ZERO T2	401			
	Delay Time Before Feeding T3.	402			Suggestion : T3=0.
03	Open Feeding Gates.				
04	Comparing-prohibited Time T4.SP1.	403			
05	'Fast Feeding Weight' reached?	202/206			Formula Parameters: 200~214.
	Close 'Fast Feeding Gate'.			DO1 DO16	AO1 AO2
06	Comparing-prohibited Time T4.SP2.	404			
07	'Medium Feeding Weight' reached?	203/207			
	Close 'Medium Feeding Gate'.			DO2 DO15	AO1 AO2
08	Comparing-prohibited Time T4.SP3.	405			
09	'Slow Feeding Weight' reached?	204/208			
	Close 'Slow Feeding Gate'.			DO3 DO14	AO1 AO2
10	Wait Time for Stabilizing Weight T5.	406			
11	Deviation calculation and alarm.	209~210		DO6 DO11	
	SP3 Auto Re-feeding?	308~309		DO3 DO14	AO1 AO2
12	Wait Time for Stabilizing Weight T5 after Auto Re-feeding.	406			
13	Deviation calculation and alarm after Auto Re-feeding.				
	Auto Pause while Deviation Alarming?	310		DO6 DO11	DO6&DO11 output pulse signal [ON: 1s; OFF: 1s]: Pause State.
	Do 'SP3 Manual Re-feeding' in Pause state with Negative Deviation Alarm.			DO3 DO14	AO1 AO2

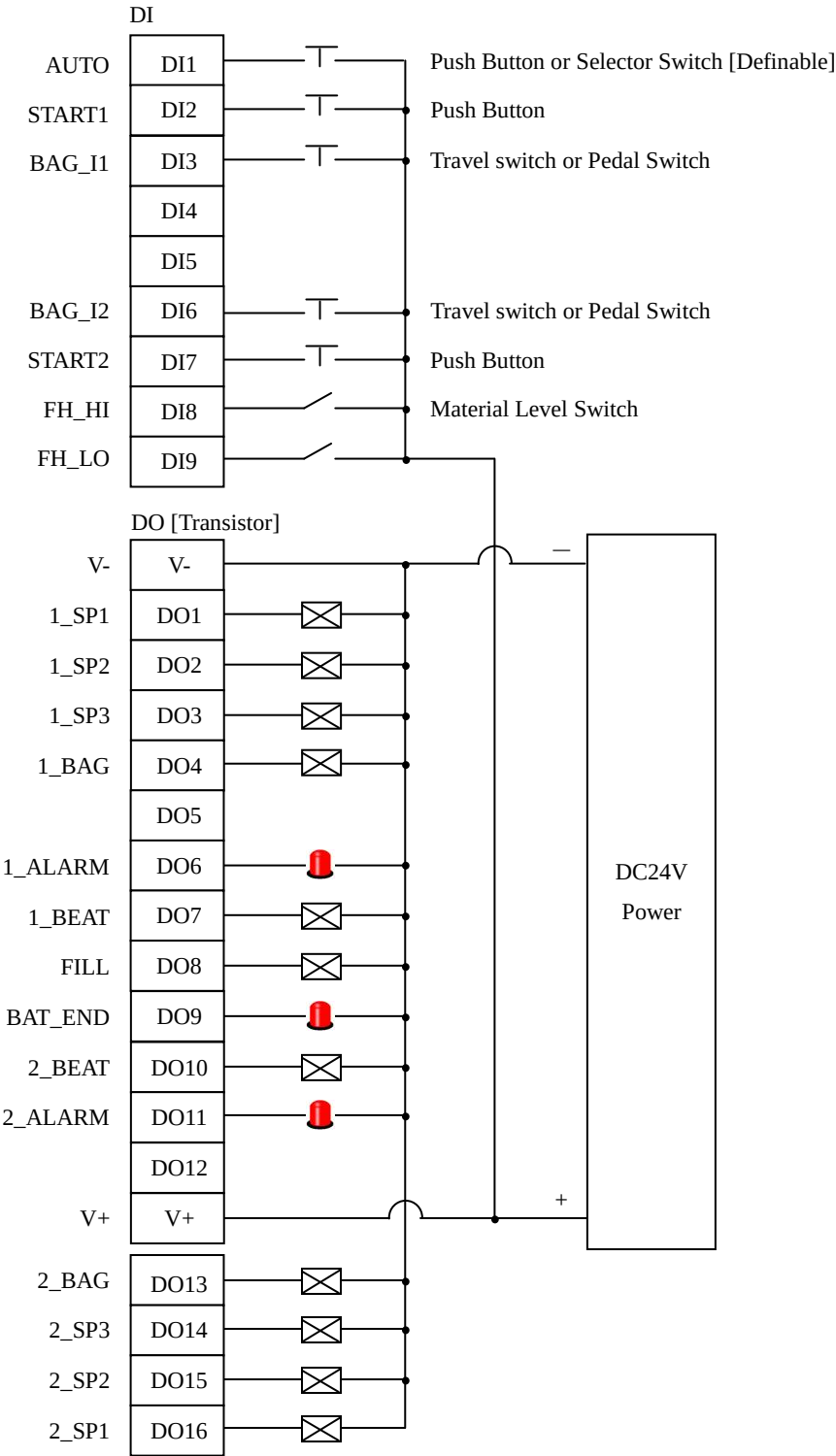
Step	Working Process	Para. No.	Input	Output	Note
13	Press 'Start / Clear Alarm' button to recover running.		DI2 DI7		
14	Wait Time for Stabilizing Weight T5 after Manual Re-feeding.	406			
	Deviation calculation and alarm after Manual Re-feeding.				
15	Fall Value Auto Correction?	205/208 311~314			
	Auto-record 'Final Feeding Weight'.				
	Auto-print?	319 807		COM1 COM2	
	Holding Time After Stabilizing T6.	407			Suggestion : T6=0.
18	Bag Clamped?	410	DI3 DI6	DO4 DO13	It's free to clamp and release bag in feeding process.
	Delay Time After Clamping Bag T1.	400			
	Open 'Discharging Gate'.		DI4 DI5	DO5 DO12	Once bag released in discharging process, the discharging gate will be closed immediately.
19	Have the materials in the weighing hopper been discharged completely?	211			Net Weight $\leq$ Non-load Zero Range?
20	Delay Time Before Closing Discharging Gate T7.	408			
	Close 'Discharging Gate'.				
21	Delay Time After Closing Discharging Gate T8	409			
	Bag-beating or Bag-shaking [Bag-moving-down]?	320~325		DO7 DO10	
	Target Batch / Target Totalized Weight Control?	301 212~213		DO9	With Target Batch finished or Target Totalized Weight finished, the packing process will stop automatically.
	Return to Step 00 or 01.				
	Release bag automatically after Bag-beating / Bag-shaking [Bag-moving-down] ended?	327 328		DO4 DO13	
	Release bag manually after Bag-beating / Bag-shaking [Bag-moving-down] ended?	327	DI3 DI6	DO4 DO13	
	Filling Materials into Feeding Hopper?	413	DI8 DI9	DO8	
	Filling Overtime Alarm?	413		DO6 DO11	
	Discharging Overtime Alarm?	412			
	Feeding Overtime Alarm?	411			
	Gross Weight Upper Limit Alarm?	214			

4.4.7 System Diagram for APPL2 Double-bag-weighing Mode

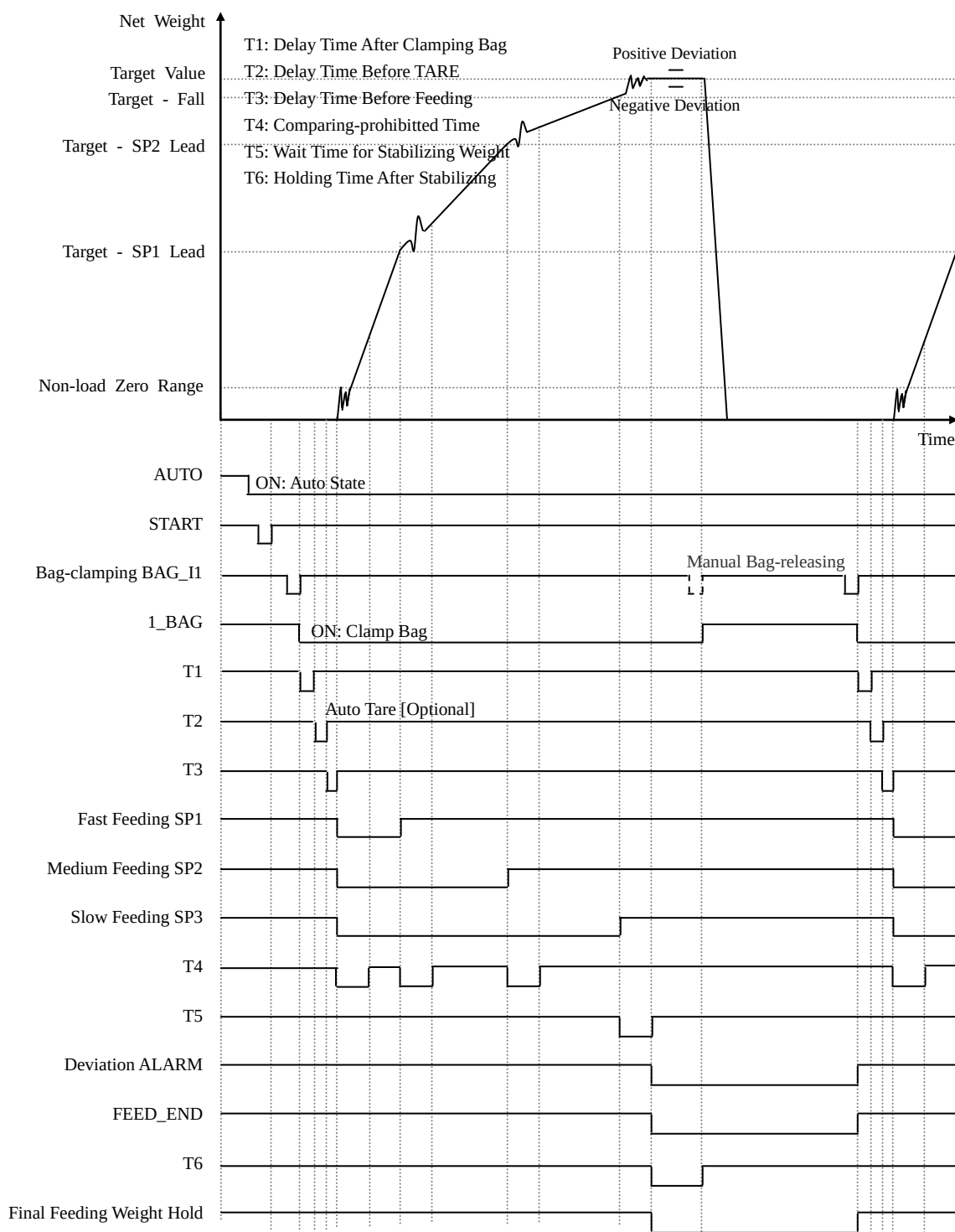


Parameter [300] 'Application Mode' = '3: 2-Bag'.

4.4.8 DI/DO Connection for APPL2 Double-bag-weighing Mode



4.4.9 Working Timing Diagram of APPL2 Double-bag-weighing Mode

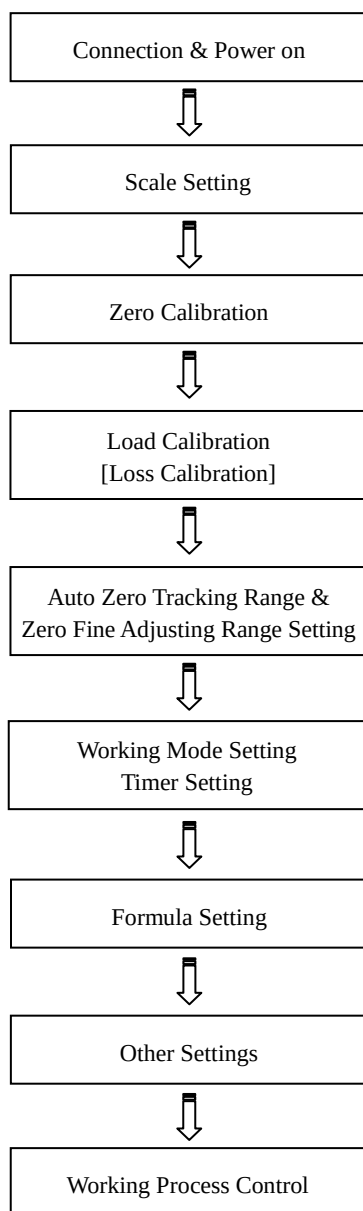


4.4.10 Working Process Table of APPL2 Double-bag-weighing Mode

Step	Working Process	Para. No.	Input	Output	Note
00	Stop/Manual state?	326	DI1		DI1 can be defined as: 0: Push Button [OFF→ON→OFF] 1: Selector Switch [OFF/ON]
	Auto state?		DI1		
01	Start state?		DI2 DI7		OFF→ON→OFF: Start.
	Application Mode? 2: APPL2 Double-bag-weighing Mode	300			
	DO Feeding's Start Mode?	304			0: 'SP1/SP2/SP3 Start at the same time' Mode 1: 'SP1/SP2/SP3 Start one by one' Mode
	AO Feeding Control?	315~318			
	SP3 Slow Feeding Mode?	305~307			0: Continuous Feeding Mode 1: Inching Feeding Mode
02	Bag Clamped?	410	DI3 DI6	DO4 DO13	Once bag released in feeding process, the feeding gate will be closed immediately.
	Delay Time After Clamping Bag T1.	400			
03	Auto Tare?	303			
04	Delay Time Before TARE T2	401			
	Delay Time Before Feeding T3.	402			Suggestion : T3=0.
05	Open Feeding Gates.				
06	Comparing-prohibited Time T4.SP1.	403			
07	'Fast Feeding Weight' reached?	202/206			Formula Parameters: 200~214.
	Close 'Fast Feeding Gate'.			DO1 DO16	AO1 AO2
08	Comparing-prohibited Time T4.SP2.	404			
09	'Medium Feeding Weight' reached?	203/207			
	Close 'Medium Feeding Gate'.			DO2 DO15	AO1 AO2
10	Comparing-prohibited Time T4.SP3.	405			
11	'Slow Feeding Weight' reached?	204//208			
	Close 'Slow Feeding Gate'.			DO3 DO14	AO1 AO2
12	Wait Time for Stabilizing Weight T5.	406			
13	Deviation calculation and alarm.	209~210		DO6 DO11	
	SP3 Auto Re-feeding?	308~309		DO3 DO14	AO1 AO2

Step	Working Process	Para. No.	Input	Output	Note
14	Wait Time for Stabilizing Weight T5 after Auto Re-feeding.	406			
15	Deviation calculation and alarm after Auto Re-feeding.				
	Auto Pause while Deviation Alarming?	310		DO6 DO11	DO6&DO11 output pulse signal [ON: 1s; OFF: 1s]: Pause State.
	Do 'SP3 Manual Re-feeding' in Pause state with Negative Deviation Alarm.			DO3 DO14	AO1 AO2
	Press 'Start / Clear Alarm' button to recover running.		DI2 DI7		
16	Wait Time for Stabilizing Weight T5 after Manual Re-feeding.	406			
	Deviation calculation and alarm after Manual Re-feeding.				
17	Output 'Feeding Ended' signal.			DO5 DO12	
	Fall Value Auto Correction?	205/208 311~314			
18	Auto-record 'Final Feeding Weight'.				
	Auto-print?	319 807		COM1 COM2	
	Holding Time After Stabilizing T6.	407			Suggestion : T6=0.
19	Bag-beating or Bag-shaking [Bag-moving-down]?	320~325		DO7 DO10	
	Bag-beating or Bag-shaking [Bag-moving-down] ended?				
20	Release bag automatically?	327		DO4 DO13	
	Release bag manually?	327	DI3 DI6	DO4 DO13	
	Has the bagshaker moved back to its original position?				
	Has the bag been separated from the bagholder?	211			Net Weight $\leq$ Non-load Zero Range?
21	Target Batch / Target Totalized Weight Control?	301 212~213		DO9	With Target Batch finished or Target Totalized Weight finished, the packing process will stop automatically.
	Return to Step 00 or 01.				
	Filling Materials into Feeding Hopper?	413	DI8 DI9	DO8	
	Filling Overtime Alarm?	413		DO6 DO11	
	Bag-releasing Overtime Alarm?	412			
	Feeding Overtime Alarm?	411			
	Gross Weight Upper Limit Alarm?	214			

5. Operation Procedure



6. Function&Operation

6.1 Main Menu Interface



6.2 Main Menu Function

Main Menu	Second Menu	Description
F1 SET	Scale	Scale parameters setting.
	Calibration	Calibration parameters setting.
	Formula	Present working formula parameters setting.
	Mode	Working mode parameters setting.
	Timer	Timer parameters setting.
	Comm.	Communication parameters setting.
	Display	Display and operation interface parameters setting.
F2 CAL	Zero Cal.	Zero Calibration without loading on the weigher to correct Zero Value.
	Load Cal.	Load Calibration with loading standard weights on the weigher to correct Span Coefficient.
	Loss Cal.	Loss Calibration to correct Span Coefficient according to the weight of the materials discharged from the weighing hopper.
F3 DATA	Real-time	Real-time data query.
	Records	Record Management: Query/print/copy Historical Batch Records.
F4 CLS		Clear all of the Historical Batch Records. Special for administrator.
F5 USER	Password	Password Set. Exfactory Passwords: ✧ Operator Password: 000000. ✧ Administrator Password: 000001.
	Auth. Code	Special for manufacturer.
F6 FAC		Special for administrator.
	Hardware	Hardware test.
	I/O Test	I/O test.
	Part-Default	Reset partial parameters to default values.
	All-Default	Reset all parameters to default values.
	AO Adj.	AO Zero/Full Adjustment and AO Linearity Test.
F7 TIME		Date&time setting.
F8 FORM		Formula management.
F9 INF		Version No. / Serial No. / Exfactory Date. Only for query.
MAIN		Return to Main Display Interface.

6.3 F1 Parameter Setting

6.3.1 Weighing Parameters [Scale]

No.	Sign	Range	Default	Description	REG
100	Weight Unit	0~3	1	Weight Unit 0: None 1: kg 2: t 3: g	40101
101	Decimal Point	0~4	2	Decimal Point 0: 0 1: 0.0 2: 0.00 3: 0.000 4: 0.0000	40103
102	Scale Capacity	1~999999	10000	Scale Capacity Max. loading weight of the load receptor. Scale Capacity ≤ (Loadcell Capacity × Loadcell Quantity) – Load Receptor Weight.	40105
103	Scale Division	1~50	1	Scale Division 0: 1 1: 2 2: 5 3: 10 4: 20 5: 50	40107
104	#1 Zero Value	-20000~ +999999	0 [*]	#1 Zero Value Only for query.	40109
105	#1 Span Coefficient	0.0001 ~999.9999	1.0000 [*]	#1 Span Coefficient Only for query.	40111
106	#2 Zero Value	-20000~ +999999	0 [*]	#1 Zero Value Only for query.	40113
107	#2 Span Coefficient	0.0001 ~999.9999	1.0000 [*]	#1 Span Coefficient Only for query.	40115

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

6.3.2 Calibration Parameters [Calibration]

No.	Sign	Range	Default	Description	REG
120	Auto Zero Tracking	0~1	0	Auto Zero Tracking Permission 0: OFF 1: ON (Only when weight is stable, Auto Zero Tracking will be allowed. Refer to Parameter [108]/[109])	40151
121	Zero Tracking Time	1~10	1	Auto Zero Tracking Time T [s] T = Set value × [109] Stability Judging Time.	40153
122	Zero Tracking Range	0.1~50.0	0.2	Auto Zero Tracking Range [Division] Zero Tracking Rate = [122] / [121]. Suggestion: Zero Tracking Rate ≤ 0.5[Division/s].	40155
123	Zero Fine Adj. Range	0~50000	50	Zero Fine Adjusting Range If Gross Weight variation caused by Zero Value changing is within this range, 'Zero Fine Adjustment' will be valid. Suggestion: Set value ≤ (Scale Capacity × 4%).	40157
124	Auto Tare Range	0~50000	50	Auto Tare Range Used for APPL2 Double-bag-weighing Mode. When Gross Weight is within this range, 'Auto Tare' without Power-down Protection will be valid.	40159
125	Auto Zero Initial Cal.	0~1	0	Auto Zero Initial Calibration after Power-on 0: OFF 1: ON [without Power-down Protection]	40161
126	AutoZero Ini. Cal.Time	0~1800	10	Auto Zero Initial Calibrating Time [s]	40163
127	AutoZero Ini. Cal.Range	0~50000	50	Auto Zero Initial Calibrating Range Suggestion: Set value ≤ (Scale Capacity × 20%).	40165

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

No.	Sign	Range	Default	Description	REG
128	#1 Min. Weight AO1 Value	0.00 ~10.00	4.00	#1 Min. Weight AO1 Value of Weigher No.1 [V] It's the AO1 output value of weight signal when 'Weight value ≤ 0 '.	40167
129	#1 Max. Weight AO1 Value	0.00 ~10.00	20.00	#1 Max. Weight AO1 Value [V] It's the AO1 output value of weight signal when 'Weight value $\geq$ Scale Capacity'. Demand: [128]<[129].	40169
130	#2 Min. Weight AO2 Value	0.00 ~10.00	4.00	#2 Min. Weight AO2 Value [V] It's the AO2 output value of weight signal when 'Weight value ≤ 0 '.	40171
131	#2 Max. Weight AO2 Value	0.00 ~10.00	20.00	#2 Max. Weight AO2 Value [V] It's the AO2 output value of weight signal when 'Weight value $\geq$ Scale Capacity'. Demand: [130]<[131].	40173

6.3.3 Formula Parameters [Formula]

No.	Sign	Range	Default	Description	REG
200	Working Formula No.	1~9	1	Present Working Formula No.	40199
201	#1 Target Value	0~60000	5000	#1 Target Value Set value = 0: The feeding system does not work.	40201
202	#1 SP1 Initial Lead Value	0~60000	1000	#1 SP1 Initial Lead Value for Fast Feeding Set value = 0: The DO switch 'SP1 Fast Feeding' will not participate in the feeding process. Set value > 0: When 'Feeding Weight $\geq$ (Target Value - SP1 Lead)' in the feeding process, the DO switch 'SP1 Fast Feeding' will turn off automatically.	40203
203	#1 SP2 Initial Lead Value	0~60000	100	#1 SP2 Initial Lead Value for Medium Feeding Set value = 0: The DO switch 'SP2 Medium Feeding' will not participate in the feeding process. Set value > 0: When 'Feeding Weight $\geq$ (Target Value - SP2 Lead)' in the feeding process, the DO switch 'SP2 Medium Feeding' will turn off automatically.	40205
204	#1 SP3 Fall Value	0~60000	50	#1 SP3 Fall Value for Slow Feeding When 'Feeding Weight $\geq$ (Target Value - SP3 Fall)' in the feeding process, the DO switch 'SP3 Slow Feeding' will turn off automatically. Note: It has one more decimal than 'Target Value'.	40207
205	#2 Target Value	0~60000	5000	#2 Target Value	40209
206	#2 SP1 Initial Lead Value	0~60000	1000	#2 SP1 Initial Lead Value for Fast Feeding	40211
207	#2 SP2 Initial Lead Value	0~60000	100	#2 SP2 Initial Lead Value for Medium Feeding	40213
208	#2 SP3 Fall Value	0~60000	50	#2 SP3 Fall Value for Slow Feeding	40215
209	Positive Deviation	0~60000	5	Positive Deviation Permission Value Positive Deviation = Final Feeding Weight - Target Value. If 'Positive Deviation > Permission Value', the DO switch 'Positive Deviation Alarm' will turn on automatically.	40217

No.	Sign	Range	Default	Description	REG
210	Negative Deviation	0~60000	5	Negative Deviation Permission Value Negative Deviation = Target Value – Final Feeding Weight. If ‘Negative Deviation > Permission Value’, the DO switch ‘Negative Deviation Alarm’ will turn on automatically.	40219
211	Non-load Zero Range	0~60000	50	Non-load Zero Range APPL1 Double-hopper-weighing Mode: In the auto-discharging process, ‘Net Weight ≤ Non-load Zero Range’ is used as the judging condition that the materials in the weighing hopper have been discharged completely. APPL2 Double-bag-weighing Mode: In the process of auto-releasing bag, ‘Net Weight ≤ Non-load Zero Range’ is used as the judging condition that the packing bag filled with materials has separated from the bagholder.	40221
212	Target Batch	0~9999	0	Target Batch Set value = 0: No judging ‘Target Batch Finished’. Set value > 0: After Batch Count reached to this set value, the controller will display prompt message.	40223
213	Target Totalized Weight	0~999999	0	Target Totalized Weight Its Display Unit is $1000 \times [100] \text{ Weight Unit}$, and its Decimal Point is in accordance with the set value of [101]. Set value = 0: No judging ‘Target Totalized Weight Finished’. Set value > 0: After Totalized Weight reached to this set value, the controller will display prompt message.	40225
214	Gross Weight UpperLimit	0~999999	0	Gross Weight Upper Limit Set value = 0: No judging ‘Gross Weight Upper Limit’. Set value > 0: If ‘Gross Weight ≥ Upper Limit’, the controller will display alarm message.	40227

6.3.4 Working Mode Parameters [Mode]

No.	Sign	Range	Default	Description	REG
300	Application Mode	1~2	1/2 [*]	Application Mode 1: 2-Hopper & 1-Bag [APPL1 Double-hopper -weighing with one bag-clamping Mode] 2: 2-Hopper & 2-Bag [APPL1 Double-hopper -weighing with two bag-clampings Mode] 3: 2-Bag [APPL2 Double-bag-weighing Mode] Operating Authorization: Administrator.	40301
301	Batch/Weight Control	0~1	0	Target Batch Control Target Totalized Weight Control 0: OFF 1: ON [With Target Batch finished or Target Totalized Weight finished, the packing process will stop automatically]	40303
302	BatchCount for AutoZero	0~99	1	Batch Count for Auto Zero Fine Adjustment Used for APPL1 Double-hopper-weighing Mode. Set value=0: No doing 'Auto Zero Fine Adjustment'. Set value > 0: After Batch Count reached to this set value, the controller will do 'Auto Zero Fine Adjustment' without power-down protection before feeding.	40305
303	BatchCount for AutoTare	0~99	1	Batch Count for Auto Tare Used for APPL2 Double-bag-weighing Mode. Set value = 0: No doing 'Auto Tare'. Set value > 0: After Batch Count reached to this set value, the controller will do 'Auto Tare' without power-down protection before feeding.	40307
304	DO Feeding's Start Mode	0~1	0	DO Feeding's Start Mode 0: Same Time ['SP1&SP2&SP3 Start at the same time' Mode] 1: One by One ['SP1/SP2/SP3 Start one by one' Mode]	40309
305	SP3 Slow Feeding Mode	0~1	0	SP3 Slow Feeding Mode 0: Continuous [Continuous Feeding Mode] 1: Inching [Inching Feeding Mode: SP3 works with Inching Feeding Mode in Slow Feeding process. Inching DO outputs ON/OFF; Inching AO outputs 0V/'Control Voltage for SP3 Slow Feeding']	40311
306	SP3 ON Hold Time Ta	0.03 ~9.99	3.00	SP3 ON Holding Time Ta [s] Used for SP3 Inching Feeding Mode.	40313

No.	Sign	Range	Default	Description	REG
307	SP3 OFF Hold Time Tb	0.03 ~9.99	1.00	SP3 OFF Holding Time Tb [s] Used for SP3 Inching Feeding Mode.	40315
308	SP3 Re-feeding for Fall	0~1	0	SP3 Auto Re-feeding for Fall Point <i>0: OFF</i> <i>1: ON</i> [If the auto-feeding process stops abnormally because of large impact on the weighing hopper, and 'Feeding Weight < (Target Value — SP3 Fall)', the DO switch 'SP3 Slow Feeding' will turn on again automatically for re-feeding. When 'Feeding Weight ≥ (Target Value — SP3 Fall)', the DO switch 'SP3 Slow Feeding' will turn off automatically to stop re-feeding]	40317
309	SP3 Re-feeding for Dev.	0~1	0	SP3 Auto Re-feeding for Negative Deviation <i>0: OFF</i> <i>1: ON</i> [After the processes of auto-feeding and 'SP3 Auto Re-feeding for Fall Point' stopped, the the controller will calculate the ideal value of 'SP3 Fall'. If 'Feeding Weight < (Target Value — Negative Deviation Permission Value)', the DO switch 'SP3 Slow Feeding' will turn on again automatically for re-feeding. When 'Feeding Weight ≥ (Target Value — Ideal Value of SP3 Fall)' or 'Feeding Weight ≥ (Target Value — Negative Deviation Permission Value)', the DO switch 'SP3 Slow Feeding' will turn off automatically to stop re-feeding]	40319
310	Auto Pause with Dev.	0~1	0	Auto Pause while Deviation Alarming <i>0: OFF</i> <i>1: ON</i> [The controller will display alarm message in Pause state. In Pause state with Negative Deviation Alarm, it's allowed to press the DI button 'SP3_I' to do 'SP3 Manual Re-feeding', when 'Feeding Weight ≥ (Target Value — Negative Deviation Permission Value)', the re-feeding process will stop automatically, and then press the DI button 'Start/Clear Alarm' to recover running]	40321
311	Fall Auto Correction	0~1	0	Fall Value Auto Correction <i>0: OFF</i> <i>1: ON</i>	40323

No.	Sign	Range	Default	Description	REG
312	Fall Auto Cor. Interval	1~99	3	Interval of Fall Value Auto Correction N After Deviation Alarm Count reached to N, Fall Value will be corrected automatically.	40325
313	Fall Auto Cor. Range	1 ~60000	50	Fall Value Auto Correction Range If the absolute value of deviation exceeds this range, it will not be used for the calculation of Fall Correction Value.	40327
314	Fall Auto Cor. Ratio	25% ~100%	50%	Fall Value Auto Correction Ratio [%] 25%; 50%; 100% New Fall Value = Original Fall Value + Deviation Value × Fall Value Auto Correction Ratio. Deviation Value = Final Feeding Weight — Target Value.	40329
315	AO Signal	0~4	0	AO Signal 0: Gross [Gross Weight] 1: Net [Net Weight] 2: Display [Displayed Weight] 3: Batch [Final Feeding Weight of Present Batch] 4: Feed [Control Voltage for Fast/Medium/Slow Feeding]	40331
316	SP1 Control Voltage	0.00 ~10.00	10.00	Control Voltage for SP1 Fast Feeding [V] It's valid only when the parameter [315] 'AO Signal' is set to '4: Feed'.	40333
317	SP2 Control Voltage	0.00 ~10.00	8.00	Control Voltage for SP2 Medium Feeding [V] It's valid only when the parameter [315] 'AO Signal' is set to '4: Feed'.	40335
318	SP3 Control Voltage	0.00 ~10.00	4.00	Control Voltage for SP3 Slow Feeding [V] It's valid only when the parameter [315] 'AO Signal' is set to '4: Feed'.	40337
319	Auto Print	0~1	0	Auto Print 0: OFF 1: ON [It's necessary to define print port] Refer to Appendix A.	40339
320	Bag-beating/Bag-shaking	0~2	0	Bag-beating/Bag-shaking[Bag-moving-down] Permission 0. OFF 1: Beating [Bag-beating] 2: Shaking [Bag-shaking/Bag-moving-down]	40341

No.	Sign	Range	Default	Description	REG
321	Beating/Shaking Times	0~99	3	Bag-beating/Bag-shaking Times	40343
322	Beat/Shake Hold Time Tc	0.1 ~9.9	1.0	Bag-beating/Bag-shaking Holding Time Tc [s] After the packing bag filled with materials,the Bag-beating/Bag-shaking process will start. The DO switch of 'Bag-beating/Bag-shaking' will keep on 'ON' state in the time Tc to control the bagbeater to beat the packing bag or to control the bagshaker to shake the packing bag down.	40345
323	Beat/Shake Interval Td	0.1 ~9.9	1.0	Interval Time of Bag-beating/Bag-shaking Td [s] The DO switch of 'Bag-beating/Bag-shaking' will keep on 'OFF' state in the time Td to let the bagbeater or the bagshaker move back to its original position.	40347
324	Moving Bag down Te	0.0 ~9.9	2.0	Time of Bagshaker Moving Bag down Te [s] Set value = 0: No process of moving bag down. Set value > 0: After the bag-shaking process ended, the process of moving bag down will start. The DO switch of 'Bag-moving-down' will keep on 'ON' state in the time Te to control the bagshaker to moving the packing bag down to the ground.	40349
325	Bagshaker Move Back Tf	0.1 ~9.9	2.0	Time of Bagshaker Moving Back Tf [s] After the time Te ended, it's allowed to release the packing bag automatically or manually. Then after releasing the packing bag, the DO switch of 'Bag-moving-down' will keep on 'OFF' state in the time Tf to let the bagshaker move back to its original position.	40351
326	DI1 Manual/Auto Type	0~1	0	DI1 Manual/Auto Signal Type 0: Push Button [OFF→ON→OFF] 1: Selector Switch [OFF/ON]	40353
327	Bag-releasing Mode	0~1	0	Bag-releasing Mode 1: Auto 2: Manual	40355
328	Count for Bag-releasing	0~99	1	Batch Count for Auto Bag-releasing Used for APPL1 Double-hopper-weighing Mode. Set value=0: It's not need to clamp and release bag. Set value > 0: After Batch Count reached to this set value, the packing bag will be released automatically.	40357

6.3.5 Timer Parameters [Timer]

No.	Sign	Range	Default	Description	REG
400	T1 After Clamping Bag	0.00 ~9.99	0.50	Delay Time After Clamping Bag T1 [s] After 'Bag-clamping Request' DI signal took effect, the DO switch 'Clamping/Releasing Bag' will turn on automatically to clamp the packing bag. The delay time T1 is used for ensuring the action of 'Clamping Bag' finished.	40401
				APPL1 Double-hopper-weighing Mode: Only after the action of 'Clamping Bag' being finished, it's allowed to enter the auto-discharging process. If there is a 'Bag-releasing Request' signal inputted in the auto discharging process, the discharging process will stop immediately, the discharging gate will close and the packing bag will be released automatically.	
				APPL2 Double-bag-weighing Mode: Only after the action of 'Clamping Bag' being finished, it's allowed to enter the auto-feeding process. If there is a 'Bag-releasing Request' signal inputted in the auto-feeding process, the feeding process will stop immediately, the feeding gate will close and the packing bag will be released automatically.	
401	T2 Before ZERO/TARE	0.00 ~9.99	1.00	Delay Time Before ZERO/TARE T2 [s] Delay Time Before Auto Zero Fine Adjustment & Auto Tare. If Auto Zero Fine Adjustment and Auto Tare (set via the parameters [302]&[303]) are not necessary before feeding, the time T2 will not be delayed. T2 delaying process: [108] 'Stablity Judging Range'=0: Delay according to the set value of T2. [108] 'Stablity Judging Range'>0: If the delayed time is up to 2s, then once the weight value is stable, the T2 delaying process will end immediately. Then the controller will do 'Auto Zero Fine Adjustment' or 'Auto Tare'.	40403
402	T3 Before Feeding	0.00 ~9.99	0.00	Delay Time Before Feeding T3 [s] After the time T3 delayed, the feeding process will start.	40405

No.	Sign	Range	Default	Description	REG
403	T4.SP1 No Comp.	0.00 ~9.99	0.50	Comparing-prohibited Time T4.SP1 [s] When the process of 'Fast Feeding' starts, the impact of falling materials will make the weighing hopper vibrating, so it's prohibited to compare Feeding Weight with SP1 Setpoint in the time T4.SP1.	40407
404	T4.SP2 No Comp. Time	0.00 ~9.99	0.50	Comparing-prohibited Time T4.SP2 [s] When the process of 'Fast Feeding' stops, the flow sudden-change of falling materials will make the weighing hopper/bag vibrating, so it's prohibited to compare Feeding Weight with SP2 Setpoint in the time T4.SP2.	40409
405	T4.SP3 No Comp. Time	0.00 ~9.99	0.80	Comparing-prohibited Time T4.SP3 [s] When the process of 'Medium Feeding' stops, the flow sudden-change of falling materials will make the weighing hopper/bag vibrating, so it's prohibited to compare Feeding Weight with SP3 Setpoint in the time T4.SP3.	40411
406	T5 for Stabilizing	0.00 ~9.99	1.00	Wait Time for Stabilizing Weight T5 [s] When 'SP3 Slow Feeding', 'SP3 Auto Re-feeding' or 'SP3 Manual Re-feeding' stops, some materials have left the feeding hopper but still in mid-air, so it's necessary to delay the time T5 for ensuring all of the materials in mid-air fell into the weighing hopper or packing bag. T5 delaying process: [108] 'Stability Judging Range'=0: Delay according to the set value of T5. [108] 'Stability Judging Range'>0: If the delayed time is up to 2s, then once the weight value is stable, the T5 delaying process will end immediately. Then the controller will do Feeding Weight Detection, Deviation calculation and Deviation alarm.	40413

No.	Sign	Range	Default	Description	REG
407	T6 After Stabilizing	0.00 ~9.99	0.00	Holding Time After Stabilizing T6 [s]	40415
				APPL1 Double-hopper-weighing Mode: After the time T6 delayed, the DO switch 'Discharging' will turn on automatically to open the discharging gate and enter the discharging process.	
				APPL2 Double-bag-weighing Mode: After the time T6 delayed, the process of bag-beating/bag-shaking[bag-moving-down] will start if it is allowed by setting the parameters [320~325]. Parameter [327]= '1: Auto Bag-releasing': After the process of bag-beating/bag-shaking [bag-moving-down] ended, the DO switch 'Clamping/Releasing Bag' will turn off automatically to release the packing bag. Parameter [327]= '2: Manual Bag-releasing': After the process of bag-beating/bag-shaking [bag-moving-down] ended, the DO switch 'Clamping/Releasing Bag' will be turned off by the DI signal of 'Bag-releasing Request' for releasing the packing bag.	
408	T7 Bf Closing Dis. Gate	0.00 ~9.99	0.50	Delay Time Before Closing Discharging Gate T7 [s] APPL1 Double-hopper-weighing Mode: After 'Net Weight $\leq$ Non-load Zero Range' in the auto-discharging process and then the time T7 delayed for ensuring all of the materials in the weighing hopper discharged completely, the DO switch 'Discharging' will turn off automatically to close the discharging gate.	40417

No.	Sign	Range	Default	Description	REG
409	T8 Af Closing Dis. Gate	0.00 ~9.99	0.50	Delay Time After Closing Discharging Gate T8 [s] APPL1 Double-hopper-weighing Mode: The delay time T8 is for ensuring the discharging gate closed. Then the next ration feeding process will start automatically. In the meantime, the process of bag-beating /bag-shaking[bag-moving-down] will start if it is allowed by setting the parameters [320~325]. Parameter [327]= ‘1: Auto Bag-releasing’: After the process of bag-beating /bag-shaking [bag-moving-down] is end, the DO switch ‘Clamping/Releasing Bag’ will turn off automatically to release the packing bag. Refer to Parameter [328]. Parameter [327]= ‘2: Manual Bag-releasing’: After the process of bag-beating /bag-shaking bag-moving-down] is end, the DO switch ‘Clamping/Releasing Bag’ will be turned off by the DI signal of ‘Bag-releasing Request’ for releasing the packing bag.	40419
410	T9 Clamping /Releasing	0.00 ~1.00	0.50	Time Interval of Bag Clamping/Releasing T9 [s] After ‘Bag-clamping/releasing Request’ signal took effect, it will not be responded again in the time T9 for avoiding misoperation of ‘Bag-clamping/releasing’.	40421
411	T10 Max. Feeding Time	0~999	0	Max. Feeding Time T10 [s] Set value = 0: No Limit. Set value > 0: Once the feeding time $\geq$ T10, the feeding process will end with ‘Feeding Overtime’ alarm automatically.	40423

No.	Sign	Range	Default	Description	REG
412	T11 Return to Zero	0~999	0	Max. Time of Weight Returning to Zero T11 [s]	40425
				APPL1 Double-hopper-weighing Mode: Max. Discharging Time T11 [s] Set value = 0: No Limit. Set value > 0: Once 'Discharging Time $\geq$ T11', the discharging process will end with 'Discharging Overtime' alarm automatically. Discharging Time: The time from the discharging process starting to 'Net Weight $\leq$ Non-load Zero Range'.	
				APPL2 Double-bag-weighing Mode: Max. Bag-Clamping Time T11 [s] Set value = 0: No Limit. Set value > 0: Once 'Bag-clamping Time $\geq$ T11', 'Bag-Releasing Overtime' alarm signal will be outputted. Once 'Net Weight $\leq$ Non-load Zero Range', the 'Bag-Releasing' DO signal will be outputted again and the 'Bag-Releasing' process will end automatically. Bag-clamping time: The time from the bag-clamping process starting to 'Net Weight $\leq$ Non-load Zero Range'.	
413	T12 Max.Filling Time	0 ~9999	0	Max. Time of Filling Materials into Feeding Hopper T12 [s] Set value = 0: No Limit. Set value > 0: Once 'Filling Time $\geq$ T12', the process of 'Filling Materials into Feeding Hopper' will end with 'Filling Overtime' alarm automatically. Filling Materials into Feeding Hopper Process: ✧ When the DI switch 'Material Level Low Limit' turns on, the DO switch 'Filling Materials into Feeding Hopper' will turn on to open the Filling Gate automatically, and the timer of 'Filling Time' will start. ✧ When the DI switch 'Material Level High Limit' turns on or 'Filling Time $\geq$ T12', the DO switch 'Filling Materials into Feeding Hopper' will turn off to close the Filling Gate and the process of 'Filling Materials into Feeding Hopper' will end automatically.	40427

6.3.6 Communication Parameters [Comm.]

No.	Sign	Range	Default	Description	REG
800	Comm. Address	0~99	1	Communication Address	40801
801	COM1 Baud Rate	0~5	3	COM1[RS232]/COM2[RS485] Baud Rate <i>0: 1200bps</i> <i>1: 2400bps</i> <i>2: 4800bps</i> <i>3: 9600bps</i> <i>4: 19200bps</i> <i>5: 115200bps</i>	40803
802	COM2 Baud Rate		3		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: Modbus ASCII</i> <i>1: Modbus RTU</i> <i>2: Sending</i> <i>3: Print</i>	40811
806	COM2 Comm. Mode		0		40813
807	Continuous Sending Data	0~4	2	Data for Continuous Sending Mode <i>0: Gross</i> [Gross Weight] <i>1: Net</i> [Net Weight] <i>2: Dispaly</i> [Displayed Characters] <i>3: Batch</i> [Final Feeding Weight of Present Batch] <i>4: Total</i> [Totalized Weight]	40815

No.	Sign	Range	Default	Description	REG
808	Cont. Sending Interval	4~400	80	Continuous Sending Interval Number N Sending Interval Time: $T = N \times 2.5$ [ms]. Sending Frequency: $F = 1000 / T$ [Hz].	40817
				Examples	
				Interval Number N	Sending Frequency F
				4	100Hz
				8	50Hz
				10	40Hz
				40	10Hz
				80	5Hz
				100	4Hz
				400	1Hz
				Note	
				Baud Rate	Max. Sending Frequency
				1200bps	5Hz
				2400bps	10Hz
				4800 bps	25Hz
				9600 bps	50Hz
				19200 bps	100Hz
				115200 bps	100Hz
809	COM1 Modbus Data Format	0~3	0	COM1/COM2 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]	40819
810	COM2 Modbus Data Format			The HEX byte order of float and long int registers in the weighing controller is 'HB4 HB3 LB2 LB1'.	40821

6.3.7 Display Parameters [Display]

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	Exfactory Date		[*]	Exfactory Date Special for manufacturer.	
902	Serial No.		[*]	Product Serial No. Special for manufacturer.	

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

6.4 F2 System Calibration

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

6.4.1 Zero Calibration [Zero Cal.]

Do Zero Calibration with no loading on the weigher and save the new Zero Value.

The screenshot shows the 'F2 CAL' menu with 'Zero Cal.' selected. The main display shows '50.00 kg' in large green digits. Below the display, the following parameters are listed:

Org.Zero	228800	New Zero:	227600
Cor:	-1200	CorP:	-0.5%
AD Value:	227600	Motion	Stable

A 'Save' button is visible at the bottom right of the screen. The bottom of the screen shows a 'User Name Operator' field and a row of buttons: 'Main', '#1', '#2', '#3', '#4', and 'Return'.

Operation Steps:

- ✧ Step1: Press the button **【#1】** / **【#2】** to let its status bar being green for selecting 'Weigher No.'.
- ✧ Step2: Let the weigher at unloading state.
- ✧ Step3: After Weight Display Value being stable and the status bar of button **【Save】** being green, press button **【Save】**.
- ✧ If the new Zero Value is not in its allowed range, the status bar of button **【Save】** will be grey and it's not allowed to save the new Zero Value.

Sign	Data	Sign	Data
Big Digits	Real-time Weight Value [Weight Unit]		
Org. Zero	Original Zero Value	New Zero	New Zero Value
Cor	Zero Correction Value = New Value - Original Value	Cor. P	Zero Deviation Percent =(New Value / Original Value)×100%
AD Value	Weighing Signal AD Value	Motion Stable	Weight is dynamic changing Weight is Stable

6.4.2 Load Calibration [Load Cal.]

Do Load Calibration with loading standard weight on the weigher to correct Span Coefficient. The loading weight should be bigger than 50% of Scale Capacity value.

Operation Steps:

- ✧ Step1: Press the button **【#1】** / **【#2】** to let its status bar being green for selecting 'Weigher No.'.
- ✧ Step2: Load standard weights on the weigher.
- ✧ Step3: Press button **【C.Weight】** to input 'Calibrating Weight' value.
- ✧ Step4: After Weight Display Value being stable and the status bar of button **【Save】** being green, press button **【Save】**.
- ✧ If the loading weight is too small [$AD\ Value \leq Zero\ Value$] or the new Span Coefficient is not in its allowed range, the status bar of button **【Save】** will be grey and it's not allowed to save the new Span Coefficient.

Sign	Data	Sign	Data
Big Digits	Real-time Weight Value [Weight Unit]		
Org. Span	Original Span Coefficient Value	New Span	New Span Coefficient Value
C. Weight	Calibrating Weight = Weight of Standard Weights	Cor. R	Span Correction Ratio = New Value / Original Value
AD Value	Weighing Signal AD Value	Motion Stable	Weight is dynamic changing Weight is Stable

6.4.3 Loss Calibration [Loss Cal.]

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

F2 CAL

Zero Cal.

Load Cal.

Loss Cal.

[Re-Cal]

50.00 kg

Bag Fast Med Slow Dis

Org.Span: 1.0016 New Span: 1.0016
 C.Weight: 50.00 Cor.R: 1.00000
 AD Value: 550706 Motion **Stable**

Feed-End Loss-End C.Weight Save

User Name Operator

Main #1 #2 #3 #4 Return

Operation Steps:

- ✧ Step1: Press the button **【#1】** / **【#2】** to let its status bar being green for selecting 'Weigher No.'.
- ✧ Step2: Feeding materials into the weighing hopper.
- ✧ Step3: After Weight Display Value being stable, press button **【Feed-End】** to let its status bar being green.
- ✧ Step4: Discharge partial or all materials in the weighing hopper into the packing bag.
- ✧ Step5: After Weight Display Value being stable, press button **【Loss-End】** to let its status bar being green.
- ✧ Step6: Use a high-accuracy weigher to weigh the actual weight of the materials in the packing bag.
- ✧ Step7: Press the button **【C. Weight】** to input 'Calibrating Weight' value.
- ✧ Step8: If the status bar of button **【Save】** is green, then press button **【Save】**.
- ✧ If the discharging weight is too small or the new Span Coefficient is not in its allowed range, the status bar of button **【Save】** will be grey and it's not allowed to save the new Span Coefficient.

Sign	Data	Sign	Data
Big Digits	Real-time Weight Value [Weight Unit]		
Org. Span	Original Span Coefficient Value	New Span	New Span Coefficient Value
C. Weight	Calibrating Weight = Weight of Materials	Cor. R	Span Correction Ratio = New Value / Original Value
AD Value	Weighing Signal AD Value	Motion Stable	Weight is dynamic changing Weight is stable

Appendix A. Print Formats

□ Table 1. Batch Record

BATCH RECORD

PCS:	#200	PCS: Batch No.
DATE:	2015-01-18	
TIME:	09:10:18	
FORM:	#1	FORM: Formula No.
SCALE:	#1	SCALE: Weigher No.
NET:	50.00kg	

□ Table 2. Totalizing Report

TOTAL REPORT

DATE:	2015-01-18	
TIME:	09:10:18	
PCS_1:	100	PCS_1: #1 Batch Count
TOT_1:	5000.00kg	TOT_1: #1Totalized Weight
PCS_2:	100	PCS_2: #2 Batch Count
TOT_2:	5000.00kg	TOT_2: #2Totalized Weight
T_PCS:	200	T_PCS: Total Batch Count
T_TOT:	10000.00kg	T_TOT: Total Totalized Weight

□ Table 3. Formula

SCALE #1 FORMULA

FORM:	#1
SET:	50.00kg
SP1:	10.00kg
SP2:	1.00kg
FALL:	0.050kg
OVER:	0.05kg
UNDER:	0.05kg
NULL:	0.50kg
PCS:	0

Appendix B. 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: Positive Deviation Alarm.
		40005.4			1: Negative Deviation Alarm.
		40005.5			1: Pause.
		40005.6			
		40005.7			
		40005.8			
		40005.9			
		40005.10			
		40005.11			
		40005.12			1: Non-load Zero Range.
		40005.13			1: Weight Value is stable.
		40005.14			1: Overload Alarm.
		40005.15			1: Controller Fault.
Running State 2	UnShort	40006.0	R	03	1: Fast Feeding.
		40006.1			1: Medium Feeding.
		40006.2			1: Slow Feeding.
		40006.3			1: Bag-clamping. 0: Bag-releasing.
		40006.4			1: Discharging.
		40006.5			1: Deviation Alarm.
		40006.6			1: Feeding Ended.
		40006.7			1:Gross Weight Upper Limit Alarm.
		40006.8			1: Target Batch Finished.
		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			1: DO9 ON; 0: DO9 OFF.
		40007.9			1: DO10 ON; 0: DO10 OFF.
		40007.10			1: DO11 ON; 0: DO11 OFF.
		40007.11			1: DO12 ON; 0: DO12 OFF.
		40007.12			1: DO13 ON; 0: DO13 OFF.
		40007.13			1: DO14 ON; 0: DO14 OFF.
		40007.14			1: DO15 ON; 0: DO15 OFF.
		40007.15			1: DO16 ON; 0: DO16 OFF.
Operation	UnShort	40008	W	06	0xA500: Start / Deviation Alarm Acknowledge. 0xA501: Emergency Stop. 0xA502: Last Batch. 0xA503: Manual Discharging. 0xA504: Stop Manual Discharging. 0xA505: SP3 Manual Feeding. 0xA506: Stop SP3 Manual Feeding. 0xA507: Unused. 0xA508: Unused. 0xA509: Print. 0xA50A: Clear Screen. 0xA50B: Manual Tare. 0xA50C: Clear Alarm [Deviation Alarm Ack.] 0xA50D: Zero Fine Adjustment. 0xA50E: Zero Calibration. 0xA50F: Load Calibration. Do Span Calibration with the value of parameter '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
Target Batch	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	
	UnShort	40019	R/W	03/06	Unused.
Present Working Formula No.	UnShort	40020	R/W	03/06	
Final Feeding Weight	UnShort	40021	R	03	
Target Value	UnShort	40022	R/W	03/06	
SP1 Initial Lead Value for Fast Feeding	UnShort	40023	R/W	03/06	
SP2 Initial Lead Value for Medium Feeding	UnShort	40024	R/W	03/06	
SP3 Fall Value for Slow Feeding	UnShort	40025	R/W	03/06	
Target Totalized Weight	UnLong	40026	R/W	03/10	

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

Register Table of Formulas

Parameter	Formula No. / Register Address									
	1	2	3	4	5	6	7	8	9	10
#1 Target Value	42001	42101	42201	42301	42401	42501	42601	42701	42801	42901
#1 SP1 Initial Lead Value for Fast Feeding	42003	42103	42203	42303	42403	42503	42603	42703	42803	42903
#1 SP2 Initial Lead Value for Medium Feeding	42005	42105	42205	42305	42405	42505	42605	42705	42805	42905
#1 SP3 Fall Value for Slow Feeding	42007	42107	42207	42307	42407	42507	42607	42707	42807	42907
#2 Target Value	42009	42109	42209	42309	42409	42509	42609	42709	42809	42909
#2 SP1 Initial Lead Value for Fast Feeding	42011	42111	42211	42311	42411	42511	42611	42711	42811	42911
#2 SP2 Initial Lead Value for Medium Feeding	42013	42113	42213	42313	42413	42513	42613	42713	42813	42913
#2 SP3 Fall Value for Slow Feeding	42015	42115	42215	42315	42415	42515	42615	42715	42815	42915

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

Filed Name		Code	HEX	Description	Example	
START [Byte1]		=	3D		=	
Weighing State [Byte2]		O	4F	Overload	S	
		S	53	Stable		
		M	4D	Motion		
Data Name [Byte3]		G	47	Gross Weight	N	
		N	4E	Net Weight		
		B	42	Final Feeding Weight of Present Batch		
		T	54	Totalized Weight		
		D	44	Displayed Characters		
		U	55	Unused		
Data [9 Bytes]	Format A: Weight Data [Byte4~12]	+/-	2B/2D	Sign	+00123.4k [DEC]	
		Weight Value [7 Bytes]	30~39 2EH	0~9 Decimal Point ‘.’		
		Unit [1 Byte]: (Space) k t g	20 6B 74 67	Space: None k: kg		
		d	64	ID Code		d
	Format B: Displayed Characters [Byte4~12]	Point Code [1 Byte]	00~FF	BIT7=0: Unused	2. dISP Highest Bit’s Point: ON Point Code =20H	
				BIT6=0: Unused		
				If BIT5=1: Highest Bit’s Point: ON		
				If BIT4=1: Bit5’s Point: ON		
				If BIT3=1: Bit4’s Point: ON		
				If BIT2=1: Bit3’s Point: ON		
				If BIT1=1: Bit2’s Point: ON		
				If BIT0=1: Lowest Bit’s Point: ON		
		Characters [6 Bytes]	XX XX XX XX XX XX	ACSII		
	d	64	ID Code	d		
	SUM Check [Byte13]		1 Byte	XX	SUM=Byte1+Byte2+... +Byte12	
	END [Byte14~15]		<CR> <LF>	0D 0A		<CR> <LF>

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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