



BST106-B66[A] Weighing Controller

For: Ration Packing Scale

Operation Manual V7.2

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 Packing Scale. Optional Application Modes: Single-hopper-weighing Mode [Single-scale Mode], Double-hopper-weighing Mode [Double-scale Mode] and Bag-weighing Mode with Auto Bag-releasing or Manual Bag-releasing.
- ✧ EMC design with high anti-jamming capability, suitable for industrial environment.
- ✧ 6+8 Red LED digital tubes for English character and digit display.
- ✧ Optional English keypad, Simplified Chinese keypad and Complex Chinese keypad.
- ✧ Menu&Shortcut mode operation with key tone.
- ✧ 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.
- ✧ Max. Connection Quantity: 4 Loadcells (350 Ω).
- ✧ Auto Zero Initial Calibration after Power-on, Auto Zero Tracking, Zero Fine Adjustment, Zero Calibration and Load Calibration functions available.
- ✧ Optional Data Calibration function.
- ✧ Auto-locking, Key-locking, Key-unlocking, Digital Setting&Calibration and I/O Testing functions available.
- ✧ 6 Normally open switch inputs [DI] and 8 normally open transistor switch outputs [DO].
- ✧ Optional 'Fast/Medium/Slow Feeding' DOs for feeding control. Optional Slow Feeding Modes: Continuous Feeding Mode and Inching Feeding Mode.
- ✧ 1 Optional and definable analog signal AO[4~20mA] for weight signal output or 'Fast/Medium/Slow Feeding' 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 Finished or Target Totalized Weight Finished, the packing process will stop automatically].
- ✧ Optional RS232 or RS485 communication ports for linking to Host IPC/PLC and LED Remote Display.
- ✧ With the multitasking mode, the weighing&control process will not be interrupted by parameter setting and the other operations.

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1. Safety Precaution

- **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.

For avoiding bodily injury from electric shock accident and keeping the product separate from strong interference, the metal shell of the product should be grounded directly and the ground resistance should be less than 4Ω .

- **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.

- **Environmental Protection**

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

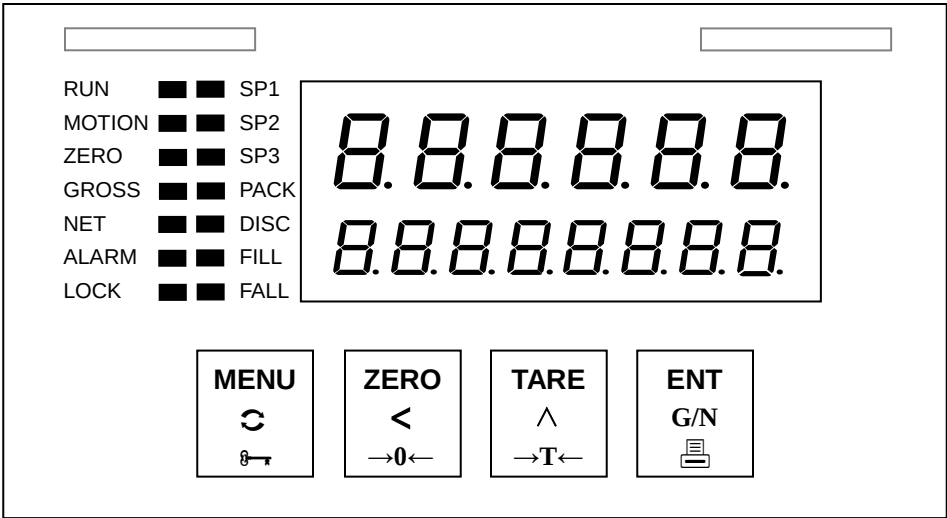
- Executing Standard
 - ✧ CMC GB/T 7724-2008 《Electronic Weighing Meter》 PRC National Standard.
 - ✧ OMIL R76: 2006 《Non-automatic Weighing Instruments》 International Recommendation.
 - ✧ Accuracy Grade: III .
 - ✧ Number of Verification Intervals: 5,000.
 - ✧ Static Weighing Accuracy: 0.2‰.
- Display
 - ✧ 6+8 Red LED digital tubes for for English character and digit display.
 - ✧ Weight Display Range: -99,999~+999,999.
 - ✧ Scale Capacity: Setting Range 1~999,999.
 - ✧ Scale Division: Optional 1, 2, 5, 10, 20, 50, 100, 200, 500.
 - ✧ Display Resolution: 1/100,000.
 - ✧ Weight Unit: Optional kg, t, g, none.
 - ✧ Decimal Point: Optional 0, 0.0, 0.00, 0.000, 0.0000.
 - ✧ Display Refreshing Time: Setting Range 0.01~1.00s.
- Keypad
 - ✧ Optional 4-key English keypad, Simplified Chinese keypad and Complex Chinese keypad.
 - ✧ Menu&Shortcut mode operation with key tone.
- Loadcell Interface
 - ✧ Excitation Voltage/Max. Current: DC9V/120mA [4-350Ω loadcells].
 - ✧ Signal Input Range: 0~22.5mV.
 - ✧ Output Sensitivity of Loadcell: 1.0~2.5mV/V.
 - ✧ 24-bit Σ - 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
 - ✧ 6 Normally Open Switch Inputs [DI].
 - ✧ 8 Normally Open Transistor Switch Outputs [DO]: DC24V, 250mA.
 - ✧ 1 Optional&Definable Analog Signal Output [AO]: 4~20mA, Non-linearity: 0.05%FS.
- Digital Communication Interface
 - ✧ COM1: Fixed configuration RS485&RS232. Free to select one of them via internal dip switch.
 - ✧ Connectable: Host IPC/PLC and LED Remote Display.

□ Operating Specification

- ✧ Operating Voltage: DC24V±20%.
- ✧ Max. Power Consumption: 5W.
- ✧ Outline Size: 110×62×150mm [W×H×D].
- ✧ Panel Cut-out Size: 94×47 mm [W×H].
- ✧ Operating Temperature: -25℃ to +40℃.
- ✧ Storage Temperature: -30℃ to +60℃.
- ✧ Relative Humidity: Max. 85%RH.
- ✧ Protection Level of Front Panel: IP65.
- ✧ Weight: Approx. 0.5kg.

3. Operation Interface

3.1 Operation Interface Diagram



3.4 Keypad Operation

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

Menu Operation	
Key Name	Description
【MENU】	Enter Main Menu. Exit.
【ENT】	Enter. Save. Alarm Acknowledge.
【◀】	Cursor shifts left. Display the previous option.
【▲】	Display the next interface or option. Digit input: +1 (0~9 loop).
Quick Operation	
【  】 *	◇ Key-locking. ◇ Key-unlocking.
【◀】 (【SET】)	Setpoint parameters setting.
【ZERO】 【→0←】 *	◇ [-ZEro-]: Zero Calibration with Power-down Protection and Clearing Tare Weight. ◇ [=ZEro=]: Zero Fine Adjustment without Power-down Protection and without Clearing Tare Weight. ◇ The controller will switch to Gross Weight display.
【TARE】 【→T←】 *	◇ [=tArE=]: Manual Tare without Power-down Protection. ◇ [-PStr-]: Preset Tare Weight with Power-down Protection. ◇ [-rStr-]: Clear Tare Weight with Power-down Protection. ◇ The controller will switch to Net Weight display.
【G/N】	Gross Weight / Net Weight display switch.

*: Keep the key pressed for 2 seconds.

3.3 State Indication

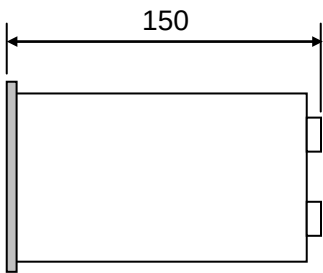
LED light	Description
[RUN]	ON: Running state. OFF: Stop or Calibrating state.
[MOTION]	Weight Dynamic Changing: Weight Variance per [107] 'Stablity Judging Time' is exceeding [106] 'Stablity Judging Range'.
[ZERO]	Net Weight value $\leq$ Non-load Zero Range.
[GROSS]	Gross Weight display.
[NET]	Net Weight display.
[ALARM]	Positive/Negative Deviation Alarm. Pause State.
[LOCK]	ON: Key-locked. OFF: Key-unlocked.
[PACK]	ON: Bag-clamping state. OFF: Bag-releasing state.
[SP1]	Fast Feeding.
[SP2]	Medium Feeding.
[SP3]	Slow Feeding.
[FILL]	Stop state: Weight value is increasing.
	Running state: It's in the feeding process.
[DISC]	Stop state: Weight value is reducing.
	Running state of APPL1/3/4 Hopper-weighing Mode: It's in the discharging process.
[FALL]	ON: Fall Value Auto Correction function is open.

3.4 Alarm Sign

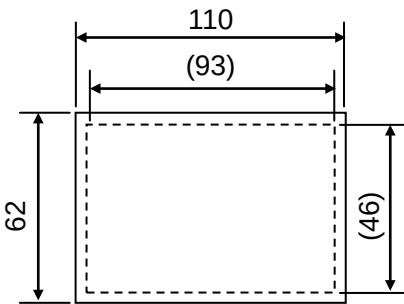
Sign	Alarm Cause	Solution
Err1	RAM Failure.	Replace the chip RAM.
Err2.1/Err2.2	EEPROM Failure.	Replace the chip EEPROM.
Err3	Signal Reversed. Not connected.	Connect the loadcell correctly.
Err4	ADC Failure.	Replace the ADC module.
oV-Ad	Over ADC Range.	Weighing signal exceeds A/D conversion range. 1. Check if the loadcell is connected. 2. Check if the capacity of loadcell is too small. 3. Check if the loading weight is too big.
oL	Overload Alarm.	Gross Weight > (Scale Capacity + 9 × Scale Division). 1. Check if the loadcell is connected. 2. Check if the capacity of loadcell is too small. 3. Check if the loading weight is too big.
HI	Gross Weight Upper Limit Alarm.	Refer to parameter [210] 'Gross Weight Upper Limit'.
OV-PAUSE	Pause state with Positive Deviation Alarm.	Press DI button 'Start/Dev.Ack' to recover running.
dn-PAUSE	Pause state with Negative Deviation Alarm.	It's allowed to do 'SP3 Manual Re-feeding'. Press DI button 'Start/Dev.Ack' to recover running.
bAt-End	Alarm or Auto-stop with 'Target Batch Finished' or 'Target Totalized Weight Finished'.	Refer to parameter [208] 'Target Batch', [209] 'Target Totalized Weight' and [301] 'Target Batch Control'. Clear Screen to clear the message.
LASt-bAt	Last Batch.	The message will disappear after the present batch finished.
oV-tr	Not meet the condition of Manual 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 [131] 'Auto Tare Range'.
oV-nZ	Over 'Zero Fine Adjusting Range'.	Refer to parameter [123] 'Zero Fine Adjusting Range'.
AuZr	Auto Zero Fine Adjustment.	Refer to parameter [302] 'Batch Count for Auto Zero Fine Adjustment'.
Autr	Auto Tare.	Refer to parameter [303] 'Batch Count for Auto Tare'.
HEAt	Preheating Time Countdown [min.sec].	Refer to parameter [128] 'Auto Zero Initial Calibration after Power-on', [129] 'Auto Zero Initial Calibrating Time' and [130] 'Auto Zero Initial Calibrating Range'. Wait for the preheating time over or press any key to exit.
oV-Zr	Over 'Auto Zero Initial Calibrating Range'.	

4. Installation&Connection

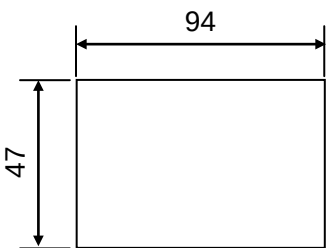
4.1 Installation



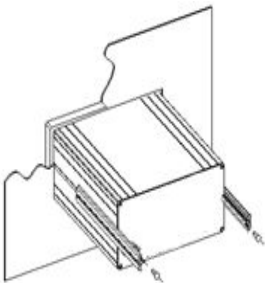
Outline Size



Front Panel Size



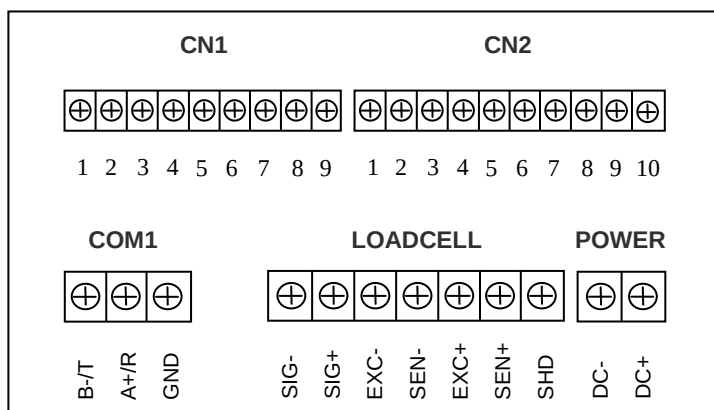
Panel Cut-out Size



Installation Mode

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

4.2 Terminal



No.	Pin	Description	
LOADCELL		Loadcell Port	
Connection Mode		6-Wire	4-Wire
Internal Dip Switch S4		S4→ 【6-WIRE】	S4→ 【4-WIRE】 [Default Set]
1	SIG-	Weighing Signal [mV] Input -.	Weighing Signal [mV] Input -.
2	SIG+	Weighing Signal [mV] Input +.	Weighing Signal [mV] Input +.
3	EXC-	Excitation Voltage -.	Excitation Voltage -.
4	SEN-	Feedback Voltage -.	
5	EXC+	Excitation Voltage + [DC9V].	Excitation Voltage + [DC9V].
6	SEN+	Feedback Voltage +.	
7	SHD	Shield Ground.	Shield Ground.
COM1		RS485/RS232 Digital Communication Port	
Internal Dip Switch S3		S3→ 【RS485】	S3→ 【RS232】 [Default Set]
1	B-/T	B-: Data -.	TXD: Transmit Data.
2	A+/R	A+: Data +.	RXD: Receive Data.
3	GND	Shield Ground.	Signal Ground / Shield Ground.
POWER		DC24V[±20%] Power Input Port	
1	DC-	DC Input -.	
2	DC+	DC Input +.	
The metal shell should be grounded directly to avoid electric shock.			

No.	Pin	Description
CN1 [DI/AO]		Switch Signal Input / Analog Output Port
DI		Switch Signal Input
1	COM	DI Common Terminal [DC-].
2	DI1	Switch Signal Input 1.
3	DI2	Switch Signal Input 2.
4	DI3	Switch Signal Input 3.
5	DI4	Switch Signal Input 4.
6	DI5	Switch Signal Input 5.
7	DI6	Switch Signal Input 6.
AO		Analog Output [Definable]
8	AO+	4~20mA Output +.
9	AO-	4~20mA Output -.

No.	Pin	Description
CN2 [DO]		Transistor Switch Signal Output Port
1	V-	DC24V Input -. DO Common Terminal.
2	DO1	Normally Open Contact Output 1.
3	DO2	Normally Open Contact Output 2.
4	DO3	Normally Open Contact Output 3.
5	DO4	Normally Open Contact Output 4.
6	DO5	Normally Open Contact Output 5.
7	DO6	Normally Open Contact Output 6.
8	DO7	Normally Open Contact Output 7.
9	DO8	Normally Open Contact Output 8.
10	V+	DC24V Input +.
Contact Capacity of Transistor Switch: DC24V, 250mA.		

4.3 DI/DO Function Definition

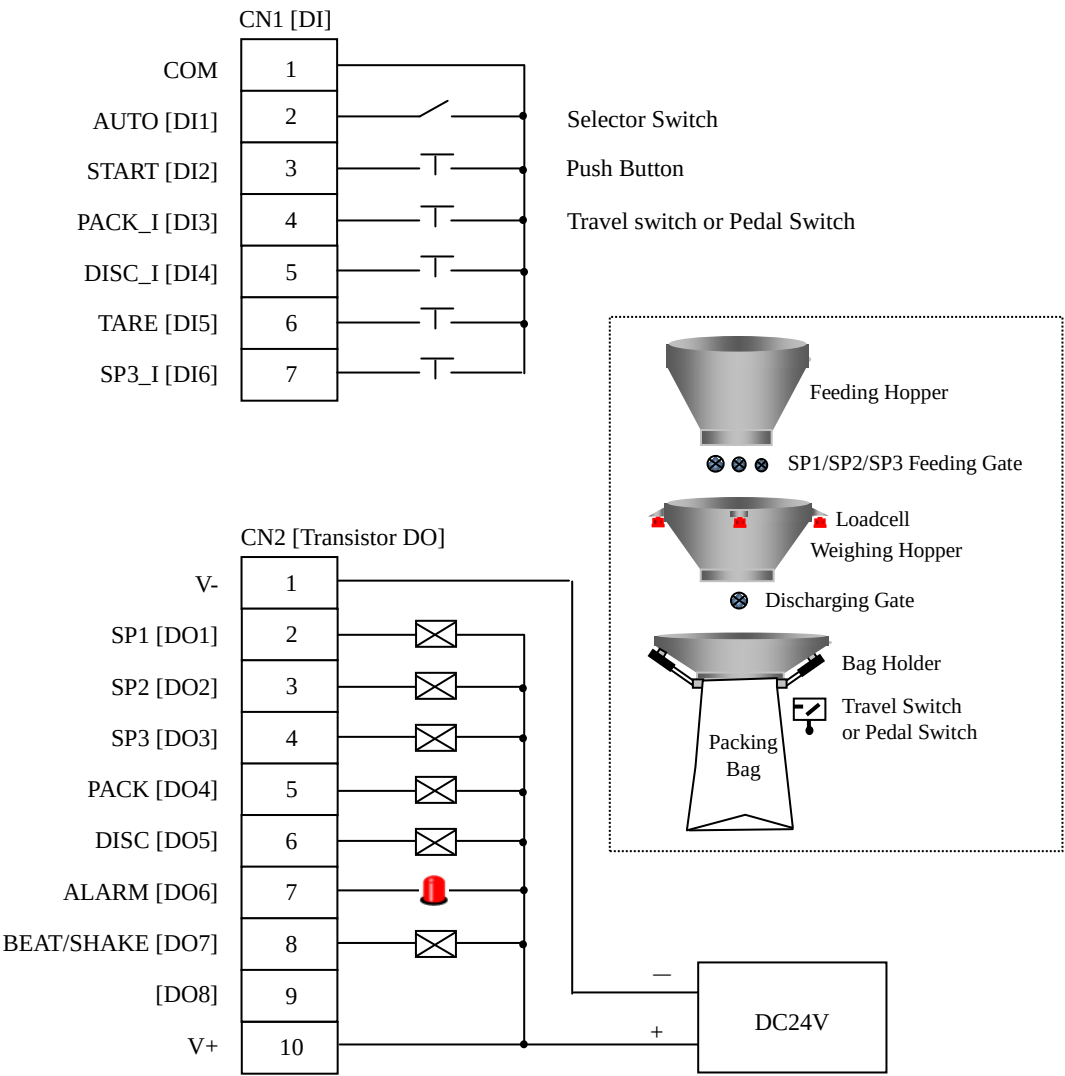
CN1 [DI]			
No.	Pin	Signal Name	Description
1	COM	COM	DI Common Terminal [DC-].
2	DI1	AUTO	Auto/Manual. ON: Auto state. OFF: Manual state / Emergency Stop.
3	DI2	START	Start/Dev.Ack [Deviation Alarm Acknowledge] In running process: Dev.Ack. Pause state: Dev.Ack & Recover Running. OFF→ON→OFF.
4	DI3	PACK_I	Bag-clamping/releasing Request. OFF→ON→OFF.
			APPL4 Slave Controller of Double-hopper-weighing Mode: Unused.
5	DI4	DISC_I	APPL1/3/4 Hopper-weighing Mode: Manual Discharging. Valid at Manual state. ON: Start discharging. OFF: Stop discharging.
			APPL2/5 Bag-weighing Mode: Unused.
6	DI5	TARE	APPL1 Single-hopper-weighing Mode: Manual Tare. APPL2/5 Bag-weighing Mode: Manual Tare. OFF→ON→OFF.
		HDSK_I	APPL3 Host Controller of Double-hopper-weighing Mode: Handshaking Signal from Slave Controller.
			APPL4 Slave Controller of Double-hopper-weighing Mode: Unused.
7	DI6	SP3_I	SP3 Manual Re-feeding. Valid at Manual state and Auto-pause state with Negative Deviation Alarm. ON: Start SP3 Slow Feeding. OFF: Stop SP3 Slow Feeding.

CN2 [Transistor DO]			
No.	Pin	Signal Name	Description
1	V-	V-	DC24V Input -. DO Common Terminal.
2	DO1	SP1	Fast Feeding.
3	DO2	SP2	Medium Feeding.
4	DO3	SP3	Slow Feeding.
5	DO4	PACK	Clamping/Releasing Bag. ON: Clamp Packing Bag; OFF: Release Packing Bag.
			APPL4 Slave Controller of Double-hopper-weighing Mode: Unused.
6	DO5	DISC	APPL1 Single-hopper-weighing Mode / APPL3 Host Controller of Double-hopper-weighing Mode: Discharging. ON: Open Discharging Gate. OFF: Close Discharging Gate.
			APPL4 Slave Controller of Double-hopper-weighing Mode: Unused.
		FEED_END	APPL2/5 Bag-weighing Mode: Feeding Ended. After the present batch finished, this DO switch will turn on with max. holding time 10s and turn off automatically when the next batch starts.
7	DO6	ALARM	ON: Deviation Alarm [DEV] ✧ Positive Deviation Alarm [OVER]. ✧ Negative Deviation Alarm [UNDER].
			ON: Gross Weight Upper Limit Alarm [HI].
			Pulse (ON: 1s; OFF: 1s): Pause State.
8	DO7	BEAT	Bag-beating [Control the bagbeater to beat the packing bag]. Parameter [320]=0.
		SHAKE	Bag-shaking/Bag-moving-down [Control the bagshaker to shake the packing bag down&up and moving the packing bag down to the ground]. Parameter [320]=1.
			APPL4 Slave Controller of Double-hopper-weighing Mode: Unused.
9	DO8	DISC_SLV	APPL3 Host Controller of Double-hopper-weighing Mode: Slave Discharging. ON: Open Slave Discharging Gate. OFF: Close Slave Discharging Gate.
		HDSK_O	APPL4 Slave Controller of Double-hopper-weighing Mode: Handshaking Signal to Host Controller.
10	V+	V+	DC24V Input +.

4.4 Type Applications

4.4.1 DI/DO Connection for APPL1 Single-hopper-weighing Mode

Parameter [300] ‘Application Mode APPL’= ‘1. HOP0 [APPL1 Single-hopper-weighing Mode]’.

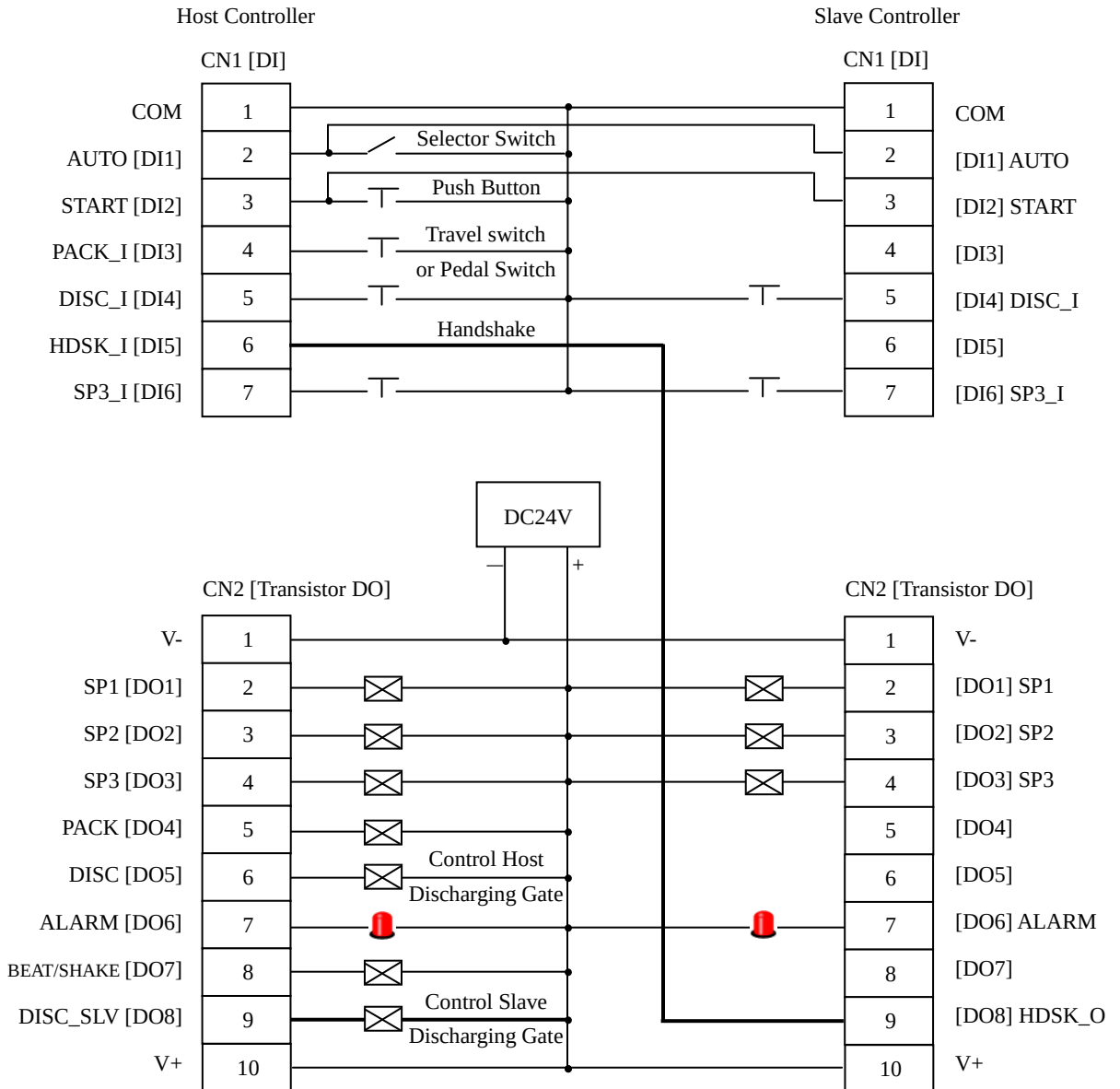


4.4.2 DI/DO Connection for APPL3/4 Double-hopper-weighing Mode

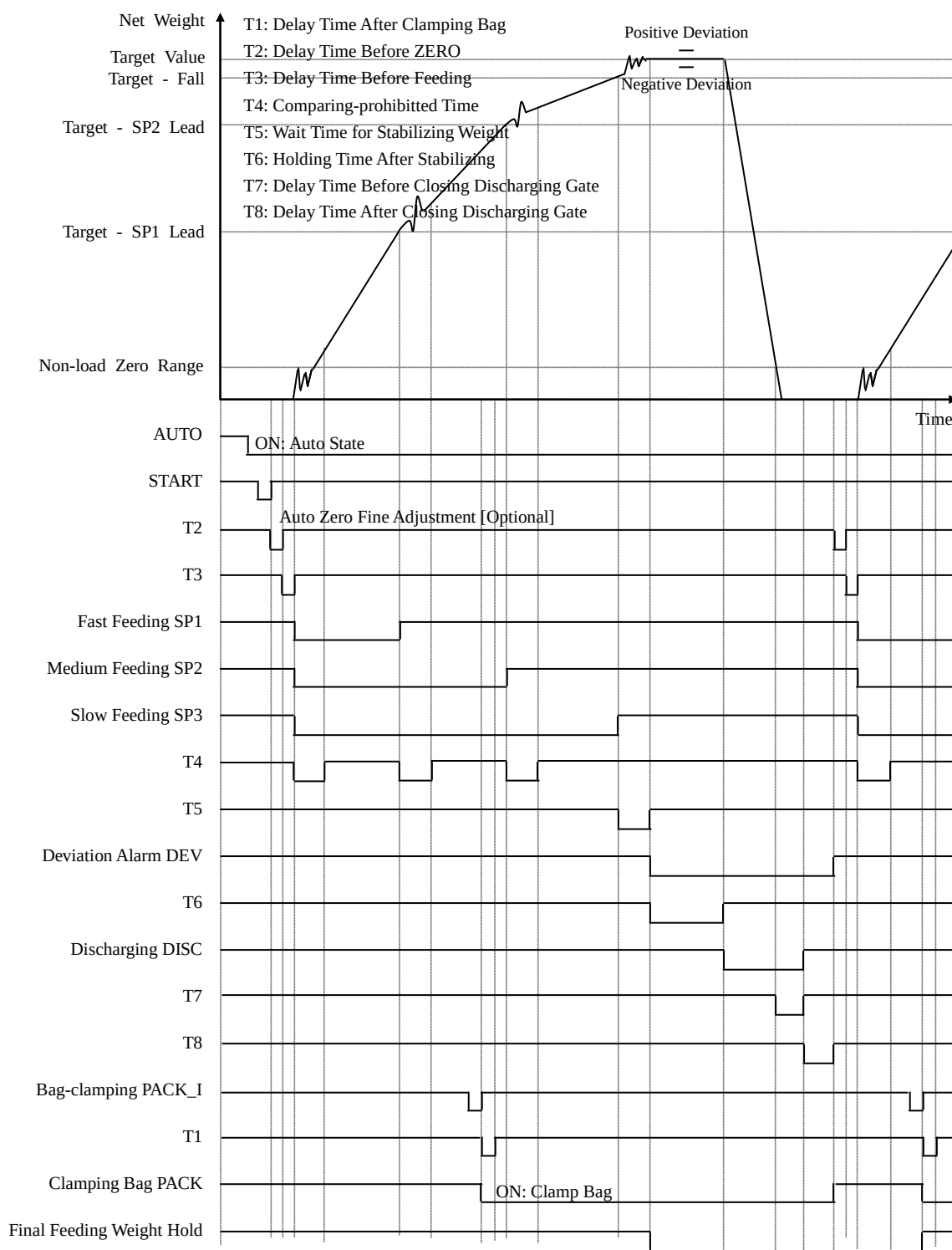
Host Controller: Parameter [300] 'Application Mode APPL'= '3. HOP1 [APPL3 Host Controller of Double-hopper-weighing Mode]'.
 Slave Controller: Parameter [300] 'Application Mode APPL'= '4. HOP2 [APPL4 Slave Controller of Double-hopper-weighing Mode]'.

Slave Controller: Parameter [300] 'Application Mode APPL'= '4. HOP2 [APPL4 Slave Controller of Double-hopper-weighing Mode]'.

Only the host controller has the control rights of 'Bag-clamping/releasing', 'Host&Slave Discharging Gate' and 'Bag-beating/ Bag-shaking/Bag-moving-down'.



4.4.3 Working Timing Diagram of APPL1/3/4 Hopper-weighing Mode



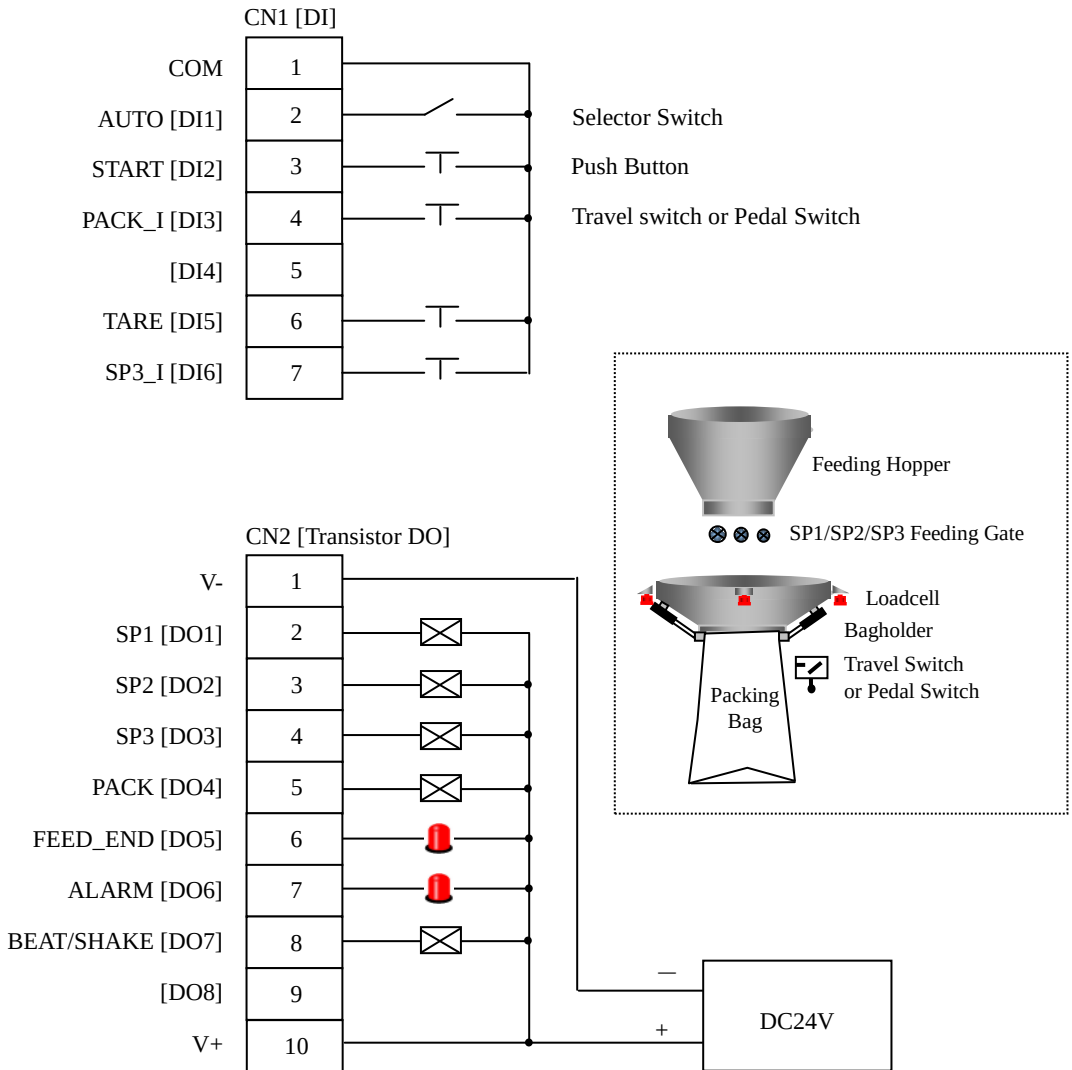
4.4.4 Working Process Table of APPL1/3/4 Hopper-weighing Mode

Step	Working Process	Para. No.	Input	Output	Note
00	Stop/Manual state?		DI1		OFF: Manual state / Emergency Stop. All DO switches turn off.
	Auto state?		DI1		ON: Auto state.
01	Start state?		DI2		OFF→ON→OFF: Start
	Application Mode? 1: Single-hopper-weighing Mode 3: Host Controller of Double-hopper-weighing Mode 4: Slave Controller of Double-hopper-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	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			Setpoint Parameters: 200~210.
	Close 'Fast Feeding Gate'.			DO1/AO	
06	Comparing-prohibited Time T4.SP2.	404			
07	'Medium Feeding Weight' reached?	203			
	Close 'Medium Feeding Gate'.			DO2/AO	
08	Comparing-prohibited Time T4.SP3.	405			
09	'Slow Feeding Weight' reached?	204			
	Close 'Slow Feeding Gate'.			DO3/AO	
10	Wait Time for Stabilizing Weight T5.	406			
11	Deviation calculation and alarm.	205~206		DO6	
	SP3 Auto Re-feeding?	308~309		DO3/AO	
12	Wait Time for Stabilizing Weight T5 after Auto Re-feeding.	406			

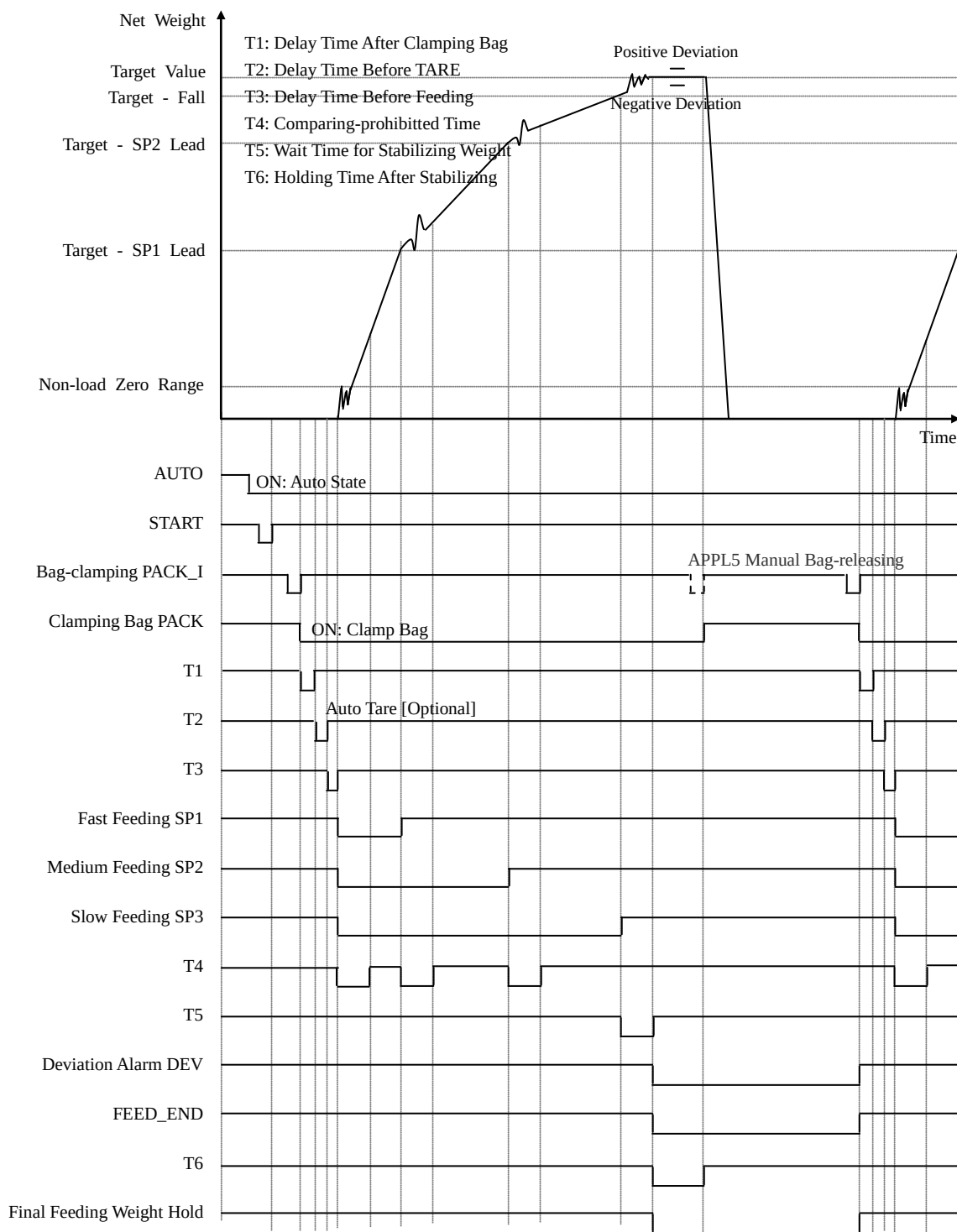
Step	Working Process	Para. No.	Input	Output	Note
13	Deviation calculation and alarm after Auto Re-feeding.				
	Auto Pause while Deviation Alarming?	310		DO6	DO6 outputs pulse signal [ON: 1s; OFF: 1s]: Pause State.
	Do 'SP3 Manual Re-feeding' in Pause state with Negative Deviation Alarm.		DI6	DO3/AO	
	Wait for press 'START' DI button to recover running.		DI2		
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?	204 311~314			
	Auto-record 'Final Feeding Weight'.				
	Holding Time After Stabilizing T6	407			Suggestion : T6=0.
16	Double-hopper-weighing Mode: Double-scale Handshake.	300	DI5	DO8	
17	Double-hopper-weighing Mode: Wait for discharging.			HOST DO5	Control Host Discharging Gate
				HOST DO8	Control Slave Discharging Gate
18	Bag Clamped?	HOST 410	HOST DI3	HOST DO4	It's free to clamp and release bag in feeding process.
	Delay Time After Clamping Bag T1.	400			
	Open 'Discharging Gate'.				Once bag released in discharging process, the discharging gate will be closed immediately.
19	Have the materials in the weighing hopper been discharged completely?	207			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	
	Target Batch / Target Totalized Weight Control?	301 208~209			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.

4.4.5 DI/DO Connection for APPL2/5 Bag-weighing Mode

Parameter [300] 'Application Mode APPL'= '2. bAg0 [APPL2 Bag-weighing Mode with Auto Bag-releasing]'. Parameter [300] 'Application Mode APPL'= '5. bAg1 [APPL5 Bag-weighing Mode with Manual Bag-releasing]'.



4.4.6 Working Timing Diagram of APPL2/5 Bag-weighing Mode

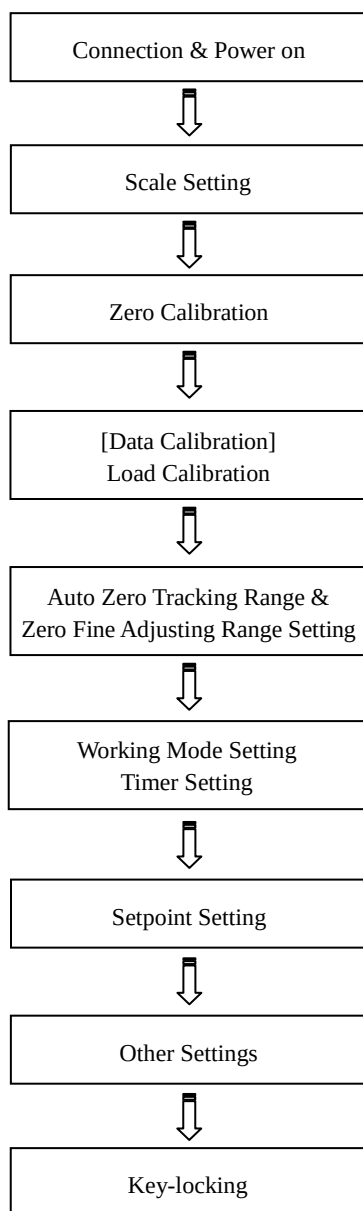


4.4.7 Working Process Table of APPL2/5 Bag-weighing Mode

Step	Working Process	Para. No.	Input	Output	Note
00	Stop/Manual state?		DI1		OFF: Manual state / Emergency Stop. All DO switches turn off.
	Auto state?		DI1		ON: Auto state.
01	Start state?		DI2		OFF→ON→OFF: Start
	Application Mode? 2: Bag-weighing Mode with Auto Bag-releasing 5: Bag-weighing Mode with Manual Bag-releasing	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	DO4	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			Setpoint Parameters: 200~210.
	Close 'Fast Feeding Gate'.			DO1/AO	
08	Comparing-prohibited Time T4.SP2.	404			
09	'Medium Feeding Weight' reached?	203			
	Close 'Medium Feeding Gate'.			DO2/AO	
10	Comparing-prohibited Time T4.SP3.	405			
11	'Slow Feeding Weight' reached?	204			
	Close 'Slow Feeding Gate'.			DO3/AO	
12	Wait Time for Stabilizing Weight T5.	406			
13	Deviation calculation and alarm.	205~206		DO6	
	SP3 Auto Re-feeding?	308~309		DO3/AO	

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	DO6 outputs pulse signal [ON: 1s; OFF: 1s]: Pause State.
	Do 'SP3 Manual Re-feeding' in Pause state with Negative Deviation Alarm.		DI6	DO3/AO	
	Wait for press 'START' DI button to recover running.		DI2		
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	
	Fall Value Auto Correction?	204 311~314			
18	Auto-record 'Final Feeding Weight'.				
	Holding Time After Stabilizing T6.	407			Suggestion : T6=0.
19	Bag-beating or Bag-shaking [Bag-moving-down]?	320~325		DO7	
	Bag-beating or Bag-shaking [Bag-moving-down] ended?				
20	Bag-weighing Mode with Auto Bag-releasing: Auto-release bag.	300		DO4	
	Bag-weighing Mode with Manual Bag-releasing: Manual release bag by DI3.	300	DI3	DO4	
	Has the bagshaker moved back to its original position?				
	Has the bag been separated from the bagholder?	207			Net Weight $\leq$ Non-load Zero Range?
21	Target Batch / Target Totalized Weight Control?	301 208~209			With Target Batch finished or Target Totalized Weight finished, the packing process will stop automatically.
	Return to Step 00 or 01.				

5. Operation Procedure

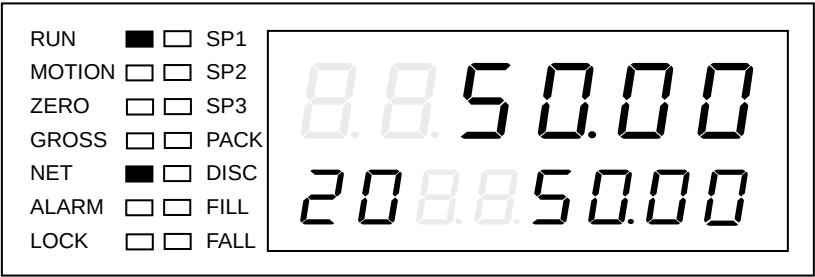


6. Function&Operation

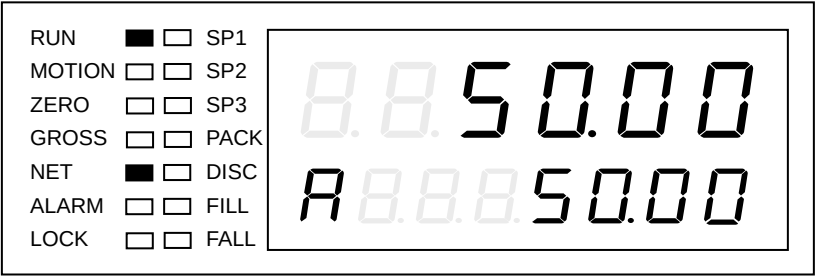
6.1 Main Display Interface

- 【G/N】 : Gross Weight / Net Weight display switch.
- 【▲】 : Display interface switch.

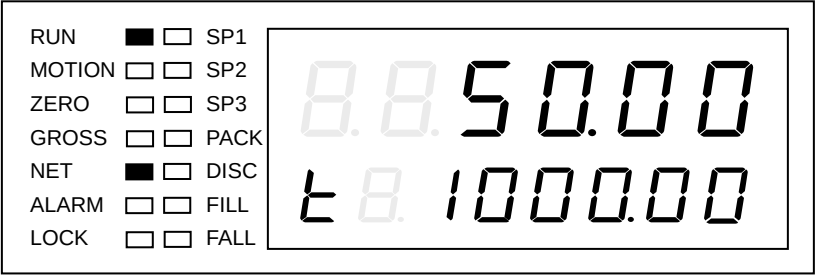
6.1.1 Gross/Net Weight, Batch Count, Final Feeding Weight



6.1.2 Gross/Net Weight, Target Value ['A']



6.1.3 Gross/Net Weight, Totalized Weight ['t']



6.2 Main Menu

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

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

6.3 F1-SET Parameter Setting

6.3.1 Weighing Parameters (SCAL)

No.	Sign	Range	Default	Description	Set
100	UnIt	0~3	1	Weight Unit 0: None 1: kg 2: t 3: g	
101	dot	0~4	000.00	Decimal Point 0: 00000 1: 0000.0 2: 000.00 3: 00.000 4: 0.0000	
102	SCAL	1~999999	10000	Scale Capacity Max. loading weight of the load receptor. Scale Capacity $\leq$ (Loadcell Capacity $\times$ Loadcell Quantity) – Load Receptor Weight. When ‘Weight value = Scale Capacity’, AO of weight signal will output current 20mA.	
103	dIV	1~500	1	Scale Division 1, 2, 5, 10, 20, 50, 100, 200, 500	
104	ZErO	-20000~ +999999	0 [*]	Zero Value Only for query.	
105	SPAn	>0	1.0000 [*]	Span Coefficient Max. display value: 99.9999. Only for query.	
106	Stb.r	0~500	1	Stablity Judging Range [Division] Set value = 0: No ‘Stablity Judging’. Set value > 0: Weight Variance per [107] ‘Stablity Judging Time’ being in [106] ‘Stablity Judging Range’ means ‘Weight is stable’.	
107	Stb.t	0.5~5.0	1.0	Stablity Judging Time [s]	

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

No.	Sign	Range	Default	Description	Set
108	FrE	400	400	Sampling Frequency [Hz] 400	
109	FILt	00~79	35	Anti-Vibration Digital Filter 1-2 10 ¹ Digit: Filter1 for SP1/SP2 feeding control. 10 ⁰ Digit: Filter2 for SP3 feeding control.	
				Digit	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
110	StAb	1~20	1	Smooth Digital Filter 3 Smooth Filtering Sample Number. Further lower the cutoff frequency for more stable weight display.	

6.3.2 Calibration Parameters (CALP)

No.	Sign	Range	Default	Description	Set
120	AZt.P	0~1	0	Auto Zero Tracking Permission 0: <i>oFF</i> 1: <i>on</i> (Only when weight is stable, Auto Zero Tracking will be allowed. Refer to Parameter [106]/[107])	
121	AZt.t	1~10	1	Auto Zero Tracking Time T [s] T = Set value × [107] Stability Judging Time.	
122	AZt.r	0.1~50.0	0.2	Auto Zero Tracking Range [Division] Zero Tracking Rate = [122] / [121]. Suggestion: Zero Tracking Rate ≤ 0.5[Division/s].	
123	nZ	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%).	
124	LoAd	1~999999	10000	Calibrating Weight Loading Weight for Span Calibration.	
125	totL	1~999999	12000 [*]	Total Capacity of Loadcells Total Capacity of Loadcells = Loadcell Capacity × Loadcell Number. Only for query.	
126	SEnS	0.5000 ~5.0000	2.0000 [*]	Output Sensitivity of Loadcell [mV/V] Only for query.	
127	Ao.Er	-2.00~+2.00	0.00	AO Offset Value [mA] Try to change 'AO Offset Value' for making the AO current display value of the AO receiving terminal the same as that of the controller. If the AO current display value of the AO receiving terminal is smaller than that of the controller because of signal attenuating, the 'AO Offset Value' should be set to positive value. If the AO current display value of the AO receiving terminal is bigger than that of the controller because of interference signal superposing, the 'AO Offset Value' should be set to negative value. 【▲】 : Optional '0' or '-' (negative sign) at the highest bit.	

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

No.	Sign	Range	Default	Description	Set
128	InI.Z	0~1	0	Auto Zero Initial Calibration after Power-on 0: <i>oFF</i> 1: <i>on</i> [without Power-down Protection]	
129	InI.t	0~1800	10	Auto Zero Initial Calibrating Time [s]	
130	InI.r	0~50000	50	Auto Zero Initial Calibrating Range Suggestion: Set value $\leq$ (Scale Capacity $\times$ 20%).	
131	t.rAg	0~50000	50	Auto Tare Range Used for APPL2/5 Bag-weighing Mode. When Gross Weight is within this range, 'Auto Tare' without Power-down Protection will be valid.	

6.3.3 Setpoint Parameters (SEtP)

No.	Sign	Range	Default	Description	Set
201	SEt	0~60000	5000	Target Value Set value = 0: The feeding system does not work.	
202	SP1	0~60000	1000	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.	
203	SP2	0~60000	100	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.	
204	FALL	0~60000	50	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'.	
205	OV	0~60000	5	Positive Deviation Permission Value Positive Deviation = Feeding Weight—Target Value. If 'Positive Deviation > Permission Value', the DO switch 'Positive Deviation Alarm' will turn on automatically.	
206	Und	0~60000	5	Negative Deviation Permission Value Negative Deviation = Target Value—Feeding Weight. If 'Negative Deviation > Permission Value', the DO switch 'Negative Deviation Alarm' will turn on automatically.	

No.	Sign	Range	Default	Description	Set
207	nuLL	0~60000	50	Non-load Zero Range APPL1/3/4 Hopper-weighing Mode: In the auto-discharging process, 'Net Weight $\leq$ Non-load Zero Range' is used as the judging condition that the materials in the weighing hopper have been discharged completely. APPL2/5 Bag-weighing Mode: After auto-releasing bag, if Net Weight is still greater than Non-load Zero Range, it means that the packing bag filled with materials is still hanging on the bagholder. Only after the packing bag separated from the bagholder, then the inputted DI signal of 'Bag-clamping Request' will be valid.	
208	PCS	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.	
209	tot	0~999999	0	Target Totalized Weight Its Display Unit is $1000 \times$ '[100] 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.	
210	HI	0~999999	0	Gross Weight Upper Limit Set value = 0: No judging 'Gross Weight Upper Limit'. Set value > 0: If 'Gross Weight $\geq$ Upper Limit', the controller will display alarm message.	

6.3.4 Working Mode Parameters (APPL)

No.	Sign	Range	Default	Description	Set
300	APPL	1~5	1/2/3/4/5 [*]	Application Mode 1. <i>HOP0</i> [APPL1 Single-hopper-weighing Mode] 2. <i>bAg0</i> [APPL2 Bag-weighing Mode with Auto Bag-releasing] 3. <i>HOP1</i> [APPL3 Host Controller of Double-hopper-weighing Mode] 4. <i>HOP2</i> [APPL4 Slave Controller of Double-hopper-weighing Mode] 5. <i>bAg1</i> [APPL5 Bag-weighing Mode with Manual Bag-releasing] To Double-weighing-hopper Packing Scale, one of the controllers should be set as Host Controller, the another as Slave Controller. Operating Authorization: Administrator.	
301	P.Ctr	0~1	0	Target Batch Control Target Totalized Weight Control 0: <i>oFF</i> 1: <i>on</i> [With Target Batch Finished or Target Totalized Weight Finished, the packing process will stop automatically]	
302	Au.Zr	0~99	1	Batch Count for Auto Zero Fine Adjustment Used for APPL1/3/4 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.	
303	Au.tr	0~99	1	Batch Count for Auto Tare Used for APPL2/5 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.	

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

No.	Sign	Range	Default	Description	Set
304	FEEd	0~1	0	DO Feeding's Start Mode 0: 'SP1/SP2/SP3 Start at the same time' Mode 1: 'SP1/SP2/SP3 Start one by one' Mode	
305	SP3	0~1	0	SP3 Slow Feeding Mode 0: Continuous Feeding Mode 1: Inching Feeding Mode [SP3 works with Inching Feeding Mode in Slow Feeding process. Inching DO outputs ON/OFF; Inching AO outputs 4mA/'Control Current for SP3 Slow Feeding']	
306	tI.A	0.03~9.99	3.00	SP3 ON Holding Time Ta [s] Used for SP3 Inching Feeding Mode.	
307	tI.b	0.03~9.99	1.00	SP3 OFF Holding Time Tb [s] Used for SP3 Inching Feeding Mode.	
308	F.SP3	0~1	0	SP3 Auto Re-feeding for Fall Point 0: oFF 1: on [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]	
309	d.SP3	0~1	0	SP3 Auto Re-feeding for Negative Deviation 0: oFF 1: on [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]	

No.	Sign	Range	Default	Description	Set
310	PAUS	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 $\geq$ (Target Value - Negative Deviation Permission Value)', the re-feeding process will stop automatically, and then press the DI button 'Start/Dev.Ack' to recover running]	
311	F.Cor	0~1	0	Fall Value Auto Correction <i>0: oFF</i> <i>1: on</i>	
312	Cor.n	1~99	3	Interval of Fall Value Auto Correction N After Deviation Alarm Count reached to N, Fall Value will be corrected automatically.	
313	C.rAg	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.	
314	C.rAt	(25~100)%	50%	Fall Value Auto Correction Ratio [%] <i>25%; 50%; 100%</i> New Fall Value = Orignal Fall Value + Deviation Value $\times$ Fall Value Auto Correction Ratio. Deviation Value = Feeding Weight - Target Value.	
315	Ao	0~4	0	AO Signal <i>0. groS</i> [Gross Weight] <i>1. nEt</i> [Net Weight] <i>2. dISP</i> [Displayed Weight] <i>3. bAt</i> [Final Feeding Weight of Present Batch] <i>4. FEEd</i> [Control Current for Fast/Medium/ Slow Feeding]	
316	A.SP1	4.00~20.00	18.00	Control Current for SP1 Fast Feeding [mA] It's valid only when the parameter [315] 'AO Signal' is set to '4. FEEd'.	
317	A.SP2	4.00~20.00	12.00	Control Current for SP2 Medium Feeding [mA] It's valid only when the parameter [315] 'AO Signal' is set to '4. FEEd'.	
318	A.SP3	4.00~20.00	6.00	Control Current for SP3 Slow Feeding [mA] It's valid only when the parameter [315] 'AO Signal' is set to '4. FEEd'.	

No.	Sign	Range	Default	Description	Set
319	A.Prt	0~1	0	Unused	
320	bEAt	0~2	0	Bag-beating/Bag-shaking[Bag-moving-down] Permission <i>0. oFF</i> <i>1. bEAt</i> [Bag-beating] <i>2. SHAC</i> [Bag-shaking/Bag-moving-down]	
321	bt.n	0~99	3	Bag-beating/Bag-shaking Times	
322	tI.C	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.	
323	tI.d	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.	
324	tI.E	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.	
325	tI.F	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.	

6.3.5 Timer Parameters (-tI-)

No.	Sign	Range	Default	Description	Set
400	t1.PC	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.	
				APPL1/3/4 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.	
				APPL2/5 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.Zr	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: [106] 'Stablity Judging Range'=0: Delay according to the set value of T2. [106] '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'.	
402	t3.Fd	0.00~9.99	0.00	Delay Time Before Feeding T3 [s] After the time T3 delayed, the feeding process will start.	

No.	Sign	Range	Default	Description	Set
403	t4.P1	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.	
404	t4.P2	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.	
405	t4.P3	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.	
406	t5.Sb	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: [106] 'Stablity Judging Range'=0: Delay according to the set value of T5. [106] 'Stablity 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.	

No.	Sign	Range	Default	Description	Set
407	t6.Hd	0.00~9.99	0.00	Holding Time After Stabilizing T6 [s]	
				APPL1/3/4 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.	
				APPL2/5 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]. APPL2 Bag-weighing Mode with 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. APPL5 Bag-weighing Mode with 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.C1	0.00~9.99	0.50	Delay Time Before Closing Discharging Gate T7 [s] APPL1/3/4 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.	
409	t8.C2	0.00~9.99	0.50	Delay Time After Closing Discharging Gate T8 [s] APPL1/3/4 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], and after it is end, the DO switch 'Clamping/Releasing Bag' will turn off automatically to release the packing bag.	

No.	Sign	Range	Default	Description	Set
410	t9.In	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'.	
411	tA.Fd	0~999	0	Max. Feeding Time Ta [s] Set value = 0: No Limit. Set value > 0: Once the feeding time $\geq$ Ta, the feeding process will end automatically.	
412	tb.dS	0~999	0	Max. Discharging Time Tb [s] APPL1/3/4 Hopper-weighing Mode: Set value = 0: No Limit. Set value > 0: Once the discharging time $\geq$ Tb, the discharging process will end automatically.	

6.3.6 Communication Parameters (SErP)

No.	Sign	Range	Default	Description	Set
800	Adr	0~99	1	Communication Address	
801	bPS1	0~5	3	COM1 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>	
802	CHC1	0~2	0	COM1 Parity Check <i>0. none</i> [None Check] <i>1. EVEn</i> [Even Check] <i>2. odd</i> [Odd Check]	
803	Con1	0~2	0	COM1 Communication Mode <i>0. HASC</i> [Host-slave, Modbus ASCII] <i>1. Hrtu</i> [Host-slave, Modbus RTU] <i>2. Cont</i> [Continuous Sending ASCII]	
804	dAtA	0~4	2	Data for Continuous Sending Mode <i>0. groS</i> [Gross Weight] <i>1. nEt</i> [Net Weight] <i>2. dISP</i> [Displayed Characters] <i>3. bAt</i> [Final Feeding Weight of Present Batch] <i>4. tot</i> [Totalized Weight]	

No.	Sign	Range	Default	Description	Set
805	S.Int	4~400	80	Continuous Sending Interval Number N Sending Interval Time: $T = N \times 2.5$ [ms]. Sending Frequency: $F = 1000 / T$ [Hz].	
				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
806	dAt.F	0~3	0	Modbus Data Format Reading&Writing Order of 4-Byte Registers: 0: 4321 [HB4 HB3 LB2 LB1] 1: 3412 [HB3 HB4 LB1 LB2] 2: 1234 [LB1 LB2 HB3 HB4] 3: 2143 [LB2 LB1 HB4 HB3] The HEX byte order of float and long int registers in the weighing controller is 'HB4 HB3 LB2 LB1'.	

6.3.7 Display Parameters (dISP)

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

6.3.8 A Sample of Parameter Setting

Modify the parameter '[102] Scale Capacity'.

Main Display Interface

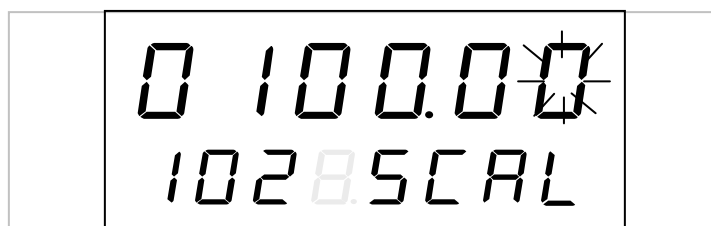
↓ 【MENU】 + 【◀】【▲】 : F1-SEt
 ↓ 【ENT】 + 【◀】【▲】



↓ 【ENT】 + 【◀】【▲】



↓ 【ENT】



【◀】 : Moving cursor; 【▲】 : Digit input.

【MENU】 : Exit ↓ 【ENT】 : Save



6.4 F2-CAL System Calibration

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

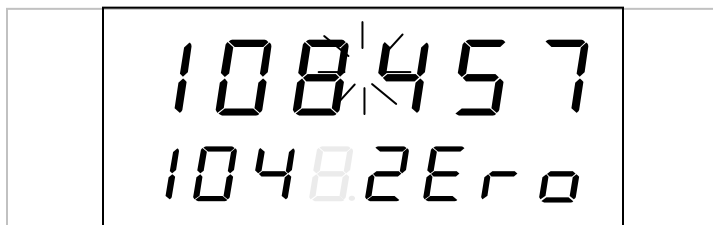
6.4.1 Zero Calibration (ZEro)

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

Main Display Interface



【MENU】 + 【◀】【▲】 : F2-CAL
【ENT】 + 【◀】【▲】 : -ZEro-
【ENT】



【◀】【▲】 :

◇ 104: New Zero Value (-20000~+999999).

◇ oLd: Original Zero Value.

◇ Er: Error = New Value - Original Value.

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

【MENU】 : Exit



【ENT】 : Save



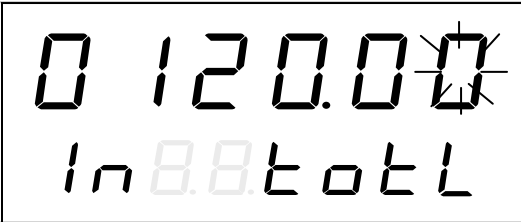
6.4.2 Data Calibration (dAtA)

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

Main Display Interface



 【MENU】 + 【◀】【▲】 : F2-CAL
 【ENT】 + 【◀】【▲】 : -dAtA-
 【ENT】



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


 【ENT】



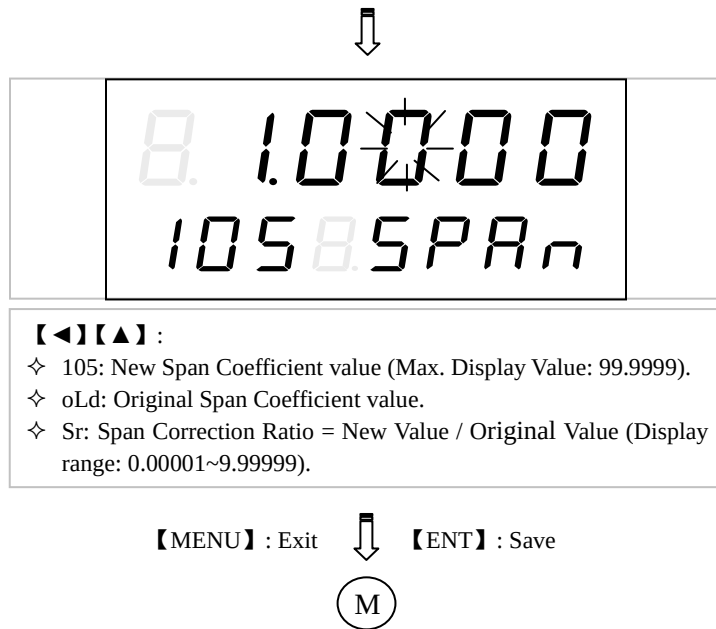
Input 'Output Sensitivity of Loadcell' [SEnS]: 0.5000~5.0000mV/V.


 【ENT】



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


 【ENT】



Note:

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

6.4.3 Load Calibration (LoAd)

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

Main Display Interface



 【MENU】 + 【◀】【▲】 : F2-CAL
 【ENT】 + 【◀】【▲】 : -LoAd-
 【ENT】

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


 【ENT】

【◀】【▲】 :

- ✧ 105: New Span Coefficient value (Max. Display Value: 99.9999).
- ✧ oLd: Original Span Coefficient value.
- ✧ Sr: Span Correction Ratio = New Value / Original Value (Display Range: 0.00001~9.99999).
- ✧ Ad: AD Value.

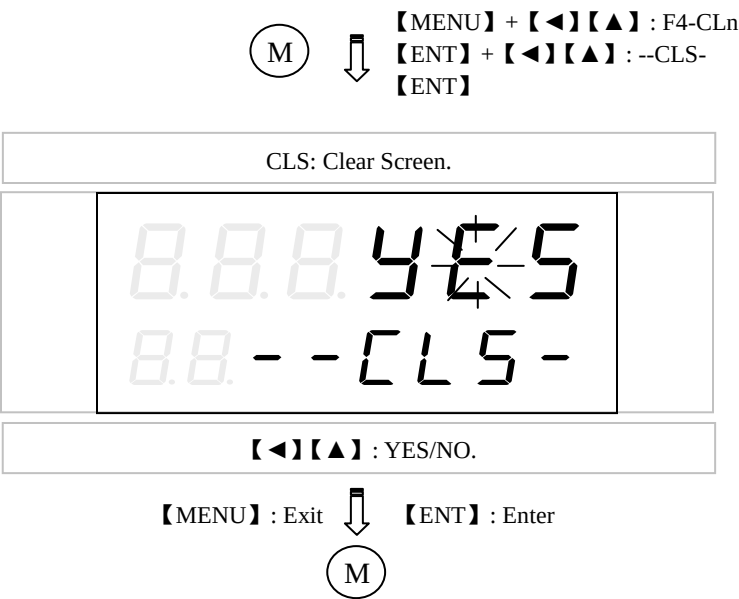
If AD Value ≤ Zero Value, display 'Err', and it's not allowed to save Span Coefficient.

【MENU】 : Exit
 
 【ENT】 : Save



6.5 F4-CLN Data Clearing

Main Display Interface

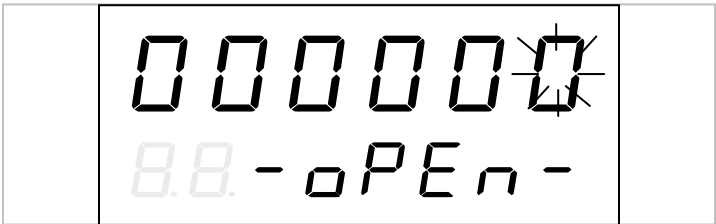


6.6 F5-LOC Key-locker

6.6.1 Key-unlocking (oPEn)

Main Display Interface

(M) ↓ 【MENU】 + 【◀】【▲】 : F5-Loc
 ↓ 【ENT】 + 【◀】【▲】 : -oPEn-
 【ENT】



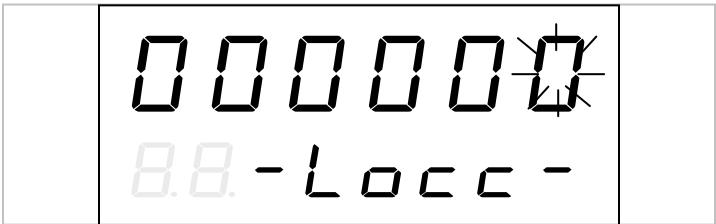
↓ 【ENT】: If inputted password is correct, Key-unlocking
 will be valid and [LOCK] will turn off.



6.6.2 Key-locking (Locc)

Main Display Interface

(M) ↓ 【MENU】 + 【◀】【▲】 : F5-Loc
 ↓ 【ENT】 + 【◀】【▲】 : -Locc-
 【ENT】



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

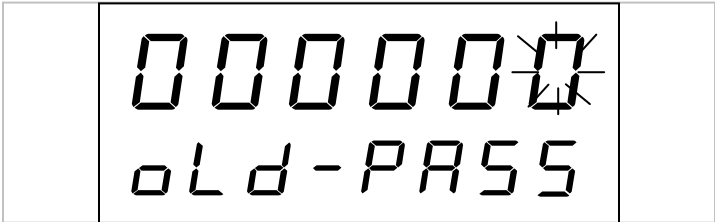


6.6.3 Password Set (PASS)

Main Display Interface

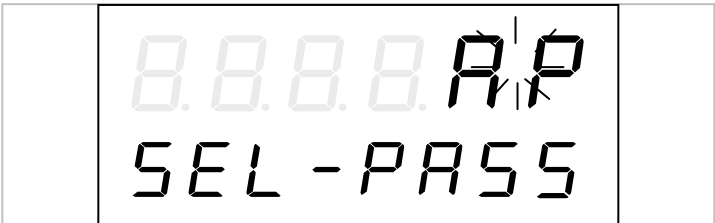


 【MENU】 + 【◀】【▲】 : F5-Loc
 【ENT】 + 【◀】【▲】 : -PASS-
 【ENT】

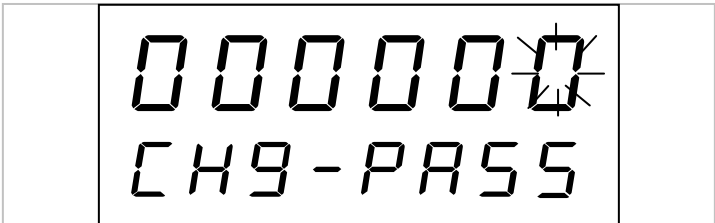



 【ENT】

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




 【ENT】



Input the new Password. Please remember it.

【MENU】 : Exit
 
 【ENT】 : Save


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

Data Name	Type	Address	Attribute	Command [HEX]	Description
Gross Weight	Long	40001	R	03	
Net Weight	Long	40003	R	03	
Running State 1	UnShort	40005.0	R	03	1: Auto; 0: Manual.
		40005.1			1: Running.
		40005.2			1: Last Batch.
		40005.3			1: 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			
		40007.9			
		40007.10			
		40007.11			
		40007.12			
		40007.13			
		40007.14			
		40007.15			
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: Unused.
					0xA50A: Clear Screen.
					0xA50B: Manual Tare.
					0xA50C: Deviation Alarm Ack.
Calibrating Weight	UnLong	40009	R/W	03/10	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.
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.
	UnShort	40020	R/W	03/06	Unused.
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.

Appendix B. 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	
	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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