ANYLOAD

AN610
Integrator

1-855-269-5623
www.anyload.com

PN-250701

TECHNICAL MANUAL

V1.0.0

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Revision History:

Record with brief description of all revisions made to product or manual

Version	Date	Description
1.0.0	September 16, 2026	First public release version.

The most current version of this document, along with any software, firmware, and other product updates, can be found on our website:

www.anyload.com

1. Introduction

This manual provides information on installation, configuration, calibration and servicing of the AN610 Belt Scale Indicator.

For questions regarding this manual or the operation of ANYLOAD products, please contact your authorized ANYLOAD distributor or visit our website at www.anyload.com for support resources and service information.

1.1 Features

- Material: Stainless steel
- IP Rating: IP54
- Full colour touchscreen TFT display
- 16-bit colour screen with 800x480 resolution and LED backlight
- 400Hz sampling frequency
- Configurable anti-vibration digital filtering algorithm for steady response
- Power Supply: 24V DC ±20%
- Measurement Display Units: lb, Klb, kg, g, t
- Parameter and calibration settings are performed on the front display
- Printer format control
- PID controllable output functions
- Speed sensor input
- 3x normally open switch inputs
- 3x normally open transistor output
- 3x analogue signal outputs
- RS-485/Profibus-DP/Profinet /RS-232/(Optional) Ethernet
- Functions:
    - Auto zero tracking
    - Batch weighing
    - Flow weighing/control
    - Speed measurement
    - Tare
    - Print interface
    - Shift records

1.2 Safety

READ this manual BEFORE operating or servicing this equipment or systems with this equipment incorporated.

FOLLOW these instructions carefully.

DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or modify this equipment.

SAVE and distribute this manual for future reference.

Failure to follow the instructions or heed the warnings could result in injury or death. Contact any ANYLOAD dealer or distributor for replacement manuals.

Indicative Markings:

Symbol	Significance
⚠ WARNING ⚠	Warns of a potentially dangerous situation which can result in serious physical injury or death
⚠ CAUTION	Warns of a potentially dangerous situation which can result in slight or moderate physical injury
Notice	Failure to comply to information with this marking may lead to damage to property
⚑ **Important**	Important information about the product
ⓘ **Tip**	Application tips and other information that may be helpful
For emphasis (Italics)	Italics are used to emphasize key information

General Safety:

⚠ WARNING ⚠

ONLY qualified professionals approved should carry out intrinsically safe installations. This work involves extensive knowledge of the product, specific safety standards, and the potentially hazardous environment in which it will be operating.

- Do not allow minors or inexperienced individuals to operate this unit.
- Ensure the unit is fully assembled before operation.
- Keep hands and fingers away from slots, openings, or any potential pinch points.
- Do not use this product if any component appears cracked or damaged.
- Avoid making alterations or modifications to the unit.
- Do not remove or obscure any warning labels.
- Do not submerge the unit in water.
- Before opening the unit, ensure the power cord is disconnected from the power source. Disconnect all power sources before servicing, as multiple power sources may be present. Failure to do so may result in property damage, personal injury, or death.
- For permanently connected equipment, incorporate a readily accessible disconnect device in the building's installation wiring.
- Pluggable units must be installed near an easily accessible socket/outlet.
- Use only copper or copper-clad aluminum conductors when wiring.

Indicator Safety Precautions:

- The unit is supplied with a lithium battery unless it is unable to be transported with the unit. Ensure the unit has the appropriate battery to function before operation.
- Before installing the lithium battery, insulate the positive from the negative terminal, and do not place the unit in fire.
- Ensure the unit is being used in environments in accordance with the technical specifications.
- Do not open the shell of the unit before fully powering off the unit.
- The shell of the unit should be grounded directly to a ground with resistance lesser than 4Ω to avoid electric shock from interaction with the unit.
- All signal cables should be laid in conduits separate from all system power cables.
- Ensure the input voltage is correct before powering on the unit.
- The power supply should be separated from the power supply of the driving devices.

Recommendations for Proper Use:

- Keep the instrument away from heat sources and direct sunlight.
- Protect the instrument from rain unless it is a special IP-rated version.
- Do not clean with water jets unless specified for IP-rated models.
- Avoid dipping the instrument in water or spilling liquids on it.
- Use a soft, dry cloth for cleaning; do not use solvents or abrasive materials.
- Do not install the unit in areas with explosion hazards unless with specially rated models.
- If the working environment reaches the unit's temperature limits, ensure proper airflow around the instrument to prevent malfunctions such as sudden shutdowns or disconnections.

Disposal Guidelines:

Product Disposal: Dispose of this product at authorized waste collection centers at the end of its life cycle. Proper disposal prevents environmental and health risks and supports recycling. Illegal disposal may result in legal penalties.

Battery Disposal: Dispose of batteries at designated centers as per local laws. Batteries may contain harmful substances (e.g., Cd, Li, Hg, Pb) and must not be discarded with household waste. Improper disposal may result in legal penalties.

2. Connection Diagram

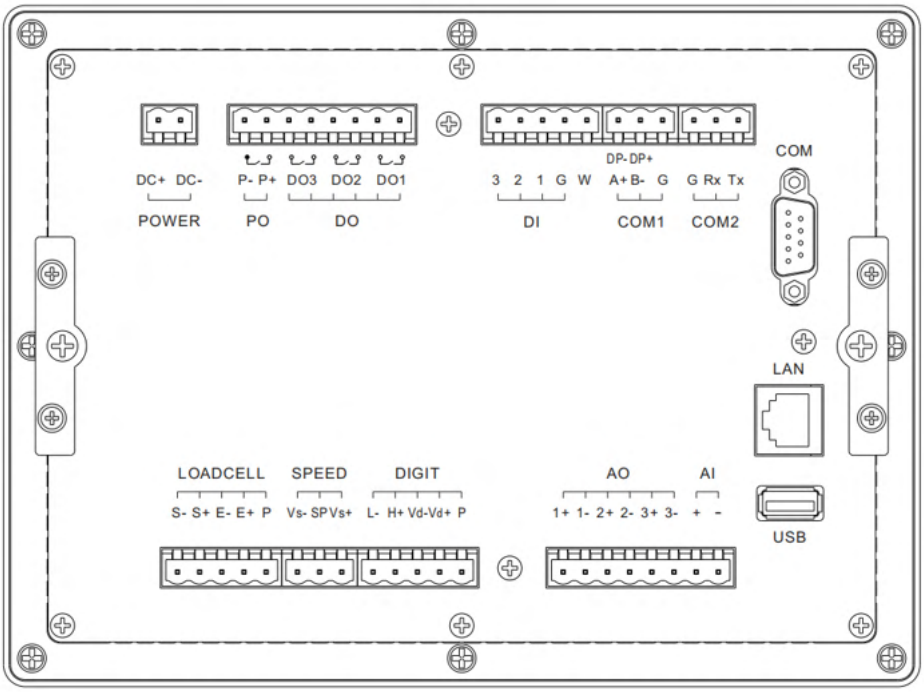


Figure 2-1: Connection Diagram for AN610

2.1 Terminal Pinouts

Table 2-1: Power Supply Terminal Pinout

Pin	Description
POWER	**DC24V [±20%] Power Input Port**
DC-	DC Input -
DC+	DC Input +
Note: The metal shell should be grounded directly.	

Table 2-2: Load Cell Terminal Pinout

Pin	Description
LOADCELL	**Load Cell Port**
S-	Weighing Signal [0~31mV] Input -
S+	Weighing Signal [0~31mV] Input +
E-	Excitation Voltage -
E+	Excitation Voltage + [DC10V]
P	Shield Ground

Table 2-3: Speed Sensor Terminal Pinout

Pin	Description		
SPEED	**Speed Sensor Port**		
	3-Wire [NPN Open-Collector Output Type]	**2-Wire**	**Tachogenerator**
Vs-	Voltage Output -	Pulse Signal Input -	
SP	Pulse Signal Input	Pulse Signal Input +	Sine Wave Signal Input Terminal 1
Vs+	Voltage Output + [DC12V]		Sine Wave Signal Input Terminal 2

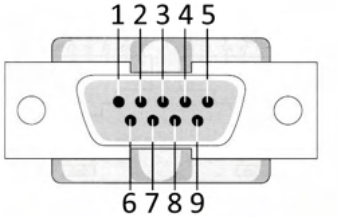
Table 2-4: Analogue Signal Terminal Pinout

Pin	Description
AO	**4~20mA Analogue Output Port [Definable]**
1+ / 1-	AO1 Output [+/-]
2+ / 2-	AO2 Output [+/-]
3+ / 3-	AO3 Output [+/-]
AI	**4~20mA Analogue Input Port**
+ / -	AI Input [+/-]

Table 2-5: Switch Signal Terminal Pinout

No.	Pin	Description
DI		**Switch Signal Input [Definable]**
1	W	Special for manufacturer
2	G	DI Common Terminal [GND]
3	1	Switch Signal Input 1
4	2	Switch Signal Input 2
5	3	Switch Signal Input 3
DO		**Relay Switch Signal Output [Definable]**
1-2	DO1	Normally Open Contact Output 1
3-4	DO2	Normally Open Contact Output 2
5-6	DO3	Normally Open Contact Output 3
Note: Contact Capacity of Relay Switch: AC220V/DC24V, 1A.		
PO		**Transistor Switch Output Port**
7	P+	DC5~24V Input
8	P-	Total Weight High-speed Pulse Output
Note: Contact Capacity of Transistor Switch: DC5~24V, 100mA.		

Table 2-6: Digital Communication Terminal Pinout

Pin		Description	
COM1 [Optional]		**RS485/Profibus-DP Module Digital Communication Port** [It's optional to configure one of the above modules]	
Wiring Terminal		RS485 Module	Profibus-DP Module
G		Signal Ground [GND]	Signal Ground [GND]
B- / DP+		RS485 Data -	Profibus-DP Data +
A+ / DP-		RS485 Data +	Profibus-DP Data -
LAN [RJ45 Socket] [Optional]		**Profinet/Ethernet Module Port**	
COM2 [Wiring Terminal]		**RS232 Digital Communication Port**	
TX		Transmit Data [TXD]	
RX		Receive Data [TXD]	
G		Signal Ground [GND]	
COM [DB9 Socket]		**RS232 Serial Printer Port**	
Pin 2	RXD	Receive Data	
Pin 3	TXD	Transmit Data	
Pin 5	GND	Signal Ground	
DB9 Socket Pinout			
USB		**USB Data Copying Port / HMI Software Download Port / Mouse Port**	

3. Installation

All the terminal blocks on the back of the indicator are removable by pulling/wiggling the blocks. Within each block are screw terminals. Connecting the power, output signal, and load cell to the amplifier can be accomplished with a small flat head screwdriver. It is not explicitly necessary to remove the blocks to connect wires but removing the blocks allows more room for tools.

1. Remove the appropriate terminal blocks (optional)
2. Loosen the terminals far enough that the lower section of the terminal clamp is visible.
3. Insert the loose, stripped wire into the terminal, ensure the wire remains near the top of the terminal hole.
4. Once the terminal is tightened, lightly check that the wires are clamped correctly and will not fall out of the terminal.

   Note: If a wire is not clamped correctly, loosen the terminal again, and ensure the wire is inserted properly into the clamp assembly before tightening.
5. Reinsert terminal blocks if they were removed.

⚠ CAUTION

Care must be taken when tightening the screws to not overtighten them as this can result in cracking or breaking the terminal block or stripping the thread, preventing additional tightening.

4. HMI Interfaces

Figure 4-1: Front Panel, Belt Weighing Interface

4.1 User Login

The User Login is accessible from the "Operator" button in the top right, next to the "Mode" button, and adjusts the user's authorization. The User Login can also be accessed in Menu → F5 Passwords.

Figure 4-2: User Login Button

Table 4-1: User Login Details

Operation	Note
【Operator】	User Login/Logout Factory Default Passwords: • Operator with lowest authorization: None • Technician with lower authorization: -1 • Engineer with higher authorization: 0 • Administrator with highest authorization: 1 • Unlocking HMI: 888888
Passwords Setting	Menu → F5 Passwords
【Mode】	Working Modes Setting

4.2 Working Modes Setting

The Working Modes setting is accessible from the “Mode” button in the top right, next to the “Operator” button, and adjusts the user interface to best suit the chosen application.

Operator Authorization Required: Administrator

Figure 4-3: Working Modes Setting Button

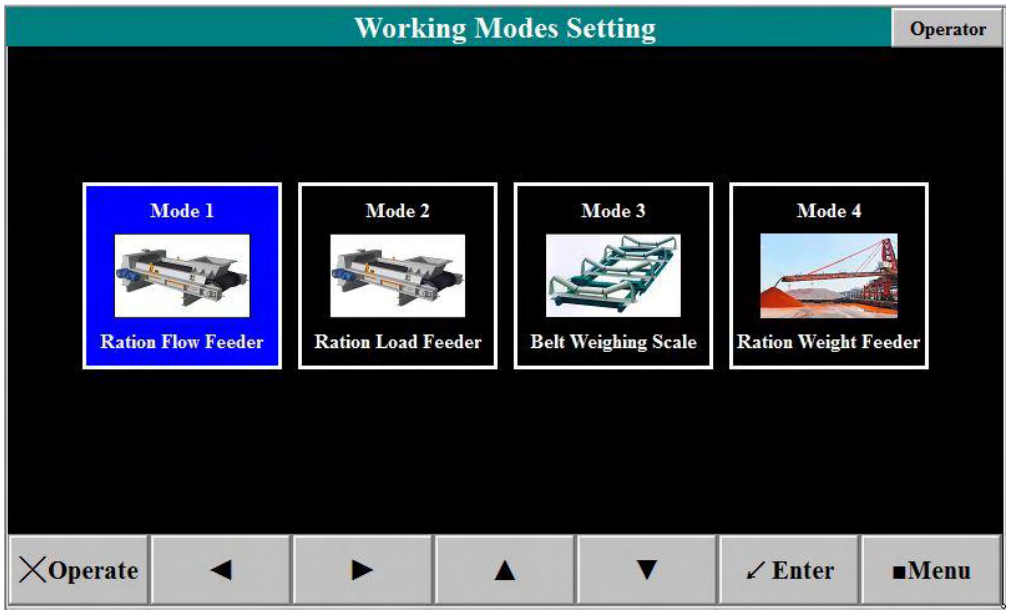


Figure 4-4: Working Modes Setting Menu

4.2.1 Working Mode 1: Ration Flow Feeder

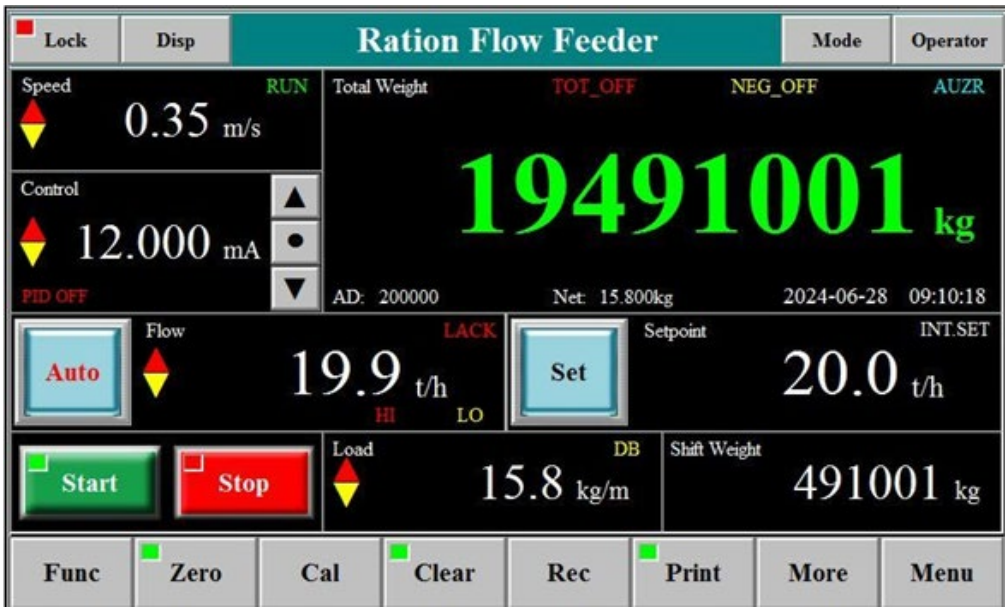


Figure 4-5: Ration Flow Feeder User Interface

Click the【Disp】button to display the following sub-interfaces.

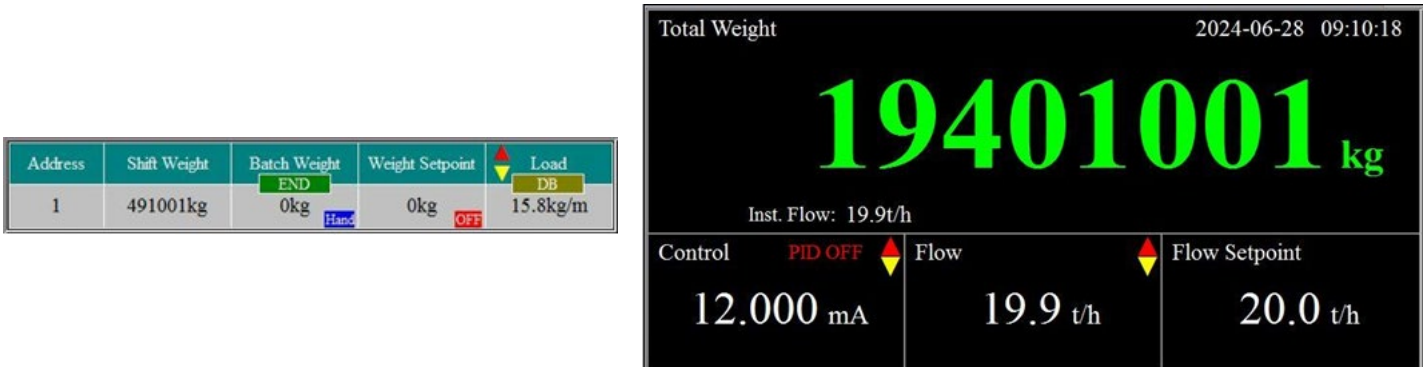


Figure 4-6: Ration Flow Feeder Sub-Interfaces

ⓘ **Tip** Click on number display areas to change number colour. **Operator Authorization:** Administrator

4.2.2 Working Mode 2: Ration Load Feeder

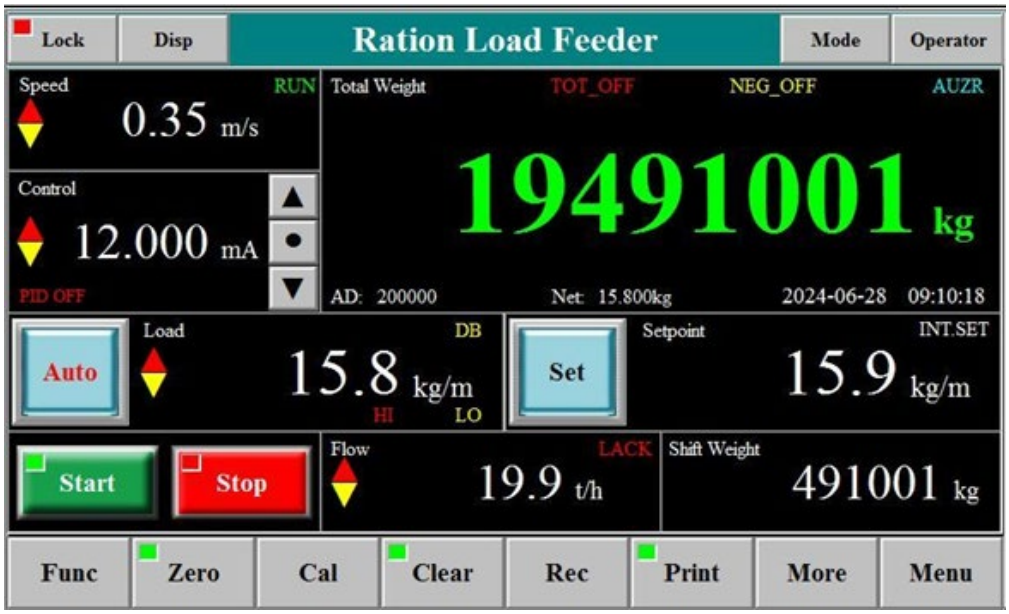


Figure 4-7: Ration Load Feeder User Interface

Click the【Disp】button to display the following sub-interfaces.

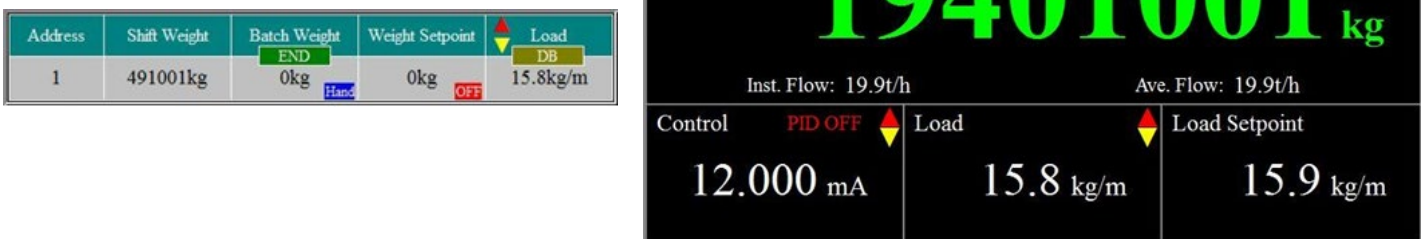


Figure 4-8: Ration Load Feeder Sub-Interfaces

ⓘ **Tip** Click on number display areas to change number colour. **Operator Authorization:** Administrator

4.2.3 Working Mode 3: Belt Weighing Scale

Figure 4-9: Belt Weighing Scale User Interface

Click the【Disp】button to display the following sub-interfaces.

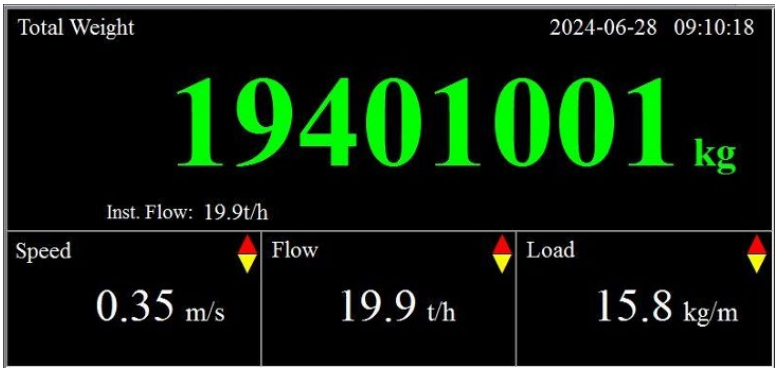


Figure 4-10: Belt Weighing Scale Sub-Interfaces

ⓘ **Tip** Click on number display areas to change number colour. **Operator Authorization:** Administrator

4.2.4 Working Mode 4: Ration Weight Feeder

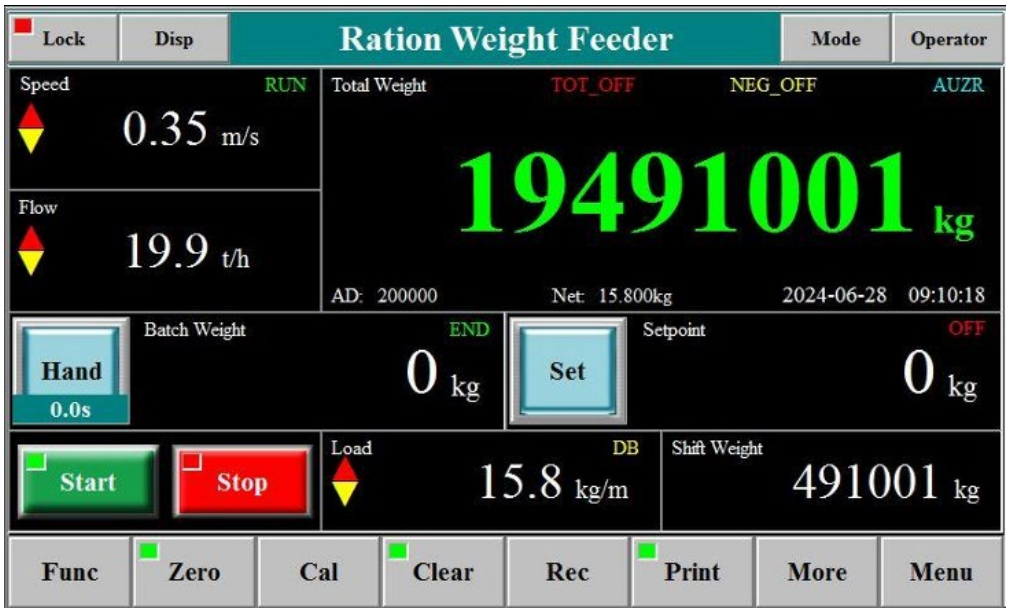


Figure 4-11: Ration Weight Feeder User Interface

Click the【Disp】button to display the following sub-interfaces.

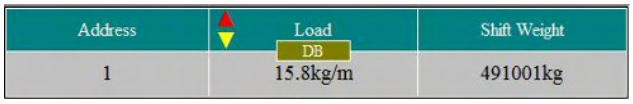


Figure 4-12: Ration Weight Feeder Sub-Interfaces

ⓘ **Tip** Click on number display areas to change number colour. **Operator Authorization:** Administrator

4.3 Running Data Display

Table 4-2: Running Display Parameters

Name	Description	Relevant Parameters
Address	Communication Address	700
Total Weight Display Area		
Weighing OFF (TOT_OFF)	*Weighing Permission* DI switch turned off to stop weighing	807-809
Neg. Acc. OFF (NEG_OFF)	*Negative Accumulating Function* is OFF	120
Auto Zero Tracking (AUZR)	*Zero Auto-Tracking* is enabled	
AD	*Weighing Signal* AD value [Inner Code: 0-1,000,000]	
Net	*Net Weight* on weighing section	
2024-06-28	Date [YYYY-MM-DD / MM-DD-YYYY / DD-MM-YYYY]	900
09:10:18	Time [Hour : Minute : Second]	
Speed Display Area		
Run	The belt is running	
Red ▲	Speed high limit alarm	402
Yellow ▼	Speed low limit alarm	403
Control Current Display Area		
Red ▲	PID high limit alarm	203
Yellow ▼	PID low limit alarm	204
PID OFF	Auto PID for *PID Adjustment Permission* DI switch turned off	807-809
Flow/Load Display Area		
Red ▲	Flow/Load high limit alarm	303/502
Green ▼	Flow/Load low limit alarm	304/503
LACK	Material shortage alarm	304/308/309
High (HI)	Flow/Load positive tolerance alarm	206
Low (LO)	Flow/Load negative tolerance alarm	207
Deadband (DB)	The *Load value* is in the range of weighing deadband	106
Inst. Flow	Instantaneous Flow	305/307
Ave. Flow	Average Flow	306/307
Flow/Load Setpoint Display Area		
INT.SET	Flow setpoint is from parameter Flow Setpoint [200] Load setpoint is from parameter Load Setpoint [221]	209
EXT.AI	Flow Setpoint & Load Setpoint are from AI signal [4-20mA]	209
Batch Weight Display Area		
END	Present batch weight completed	217/218
Weight Setpoint Display Area		
OFF/ON	Batch weight control function OFF/ON	214

4.4 System Fault Alarms

Table 4-3: List of Alarm Messages

No.	Alarm Messages
1	Unmatched Hardware
2	Databus Fault
3	Sensor Power Supply Short-Circuited or ADC Damaged
4	ADC Overflow for Excessive Signal
5	Loadcell Offline or Reversed Weighing Signal

4.5 User Controllable Operation Settings

ⓘ **Tip** Click the【More】button on the Main HMI Interface to display more buttons.

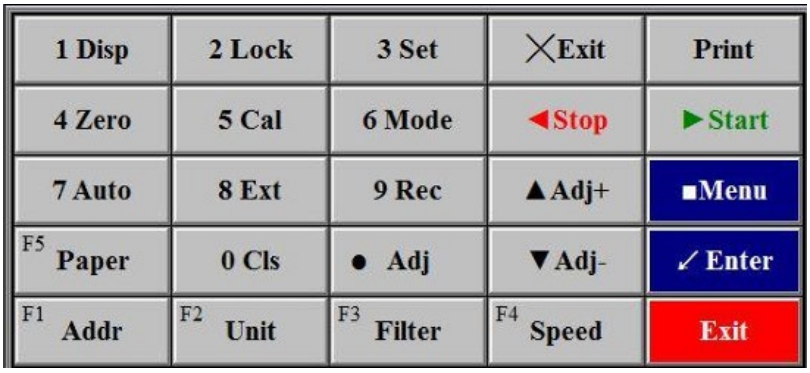


Figure 4-13: Virtual Keypad

Table 4-4: User Login Operations

Name	Operation	State Indicator	Authority
【PSW】 【User】	User Login/Logout Display: Operator/Engineer/Admin./Super		Operator
【2 Lock】	Lock HMI / Unlock HMI / Auto-lock HMI / Dialogbox / Hotkey / Buzzer Alarm / Colors Reset Password for Unlocking HMI: 888888	Red: HMI Locked Grey: Unlocked	

ⓘ **Tip** Click the【Lock】button on the Main HMI Interface to display the following operation interface. To avoid incorrect operation, it's advised to set the button operation mode to "Dialogbox".

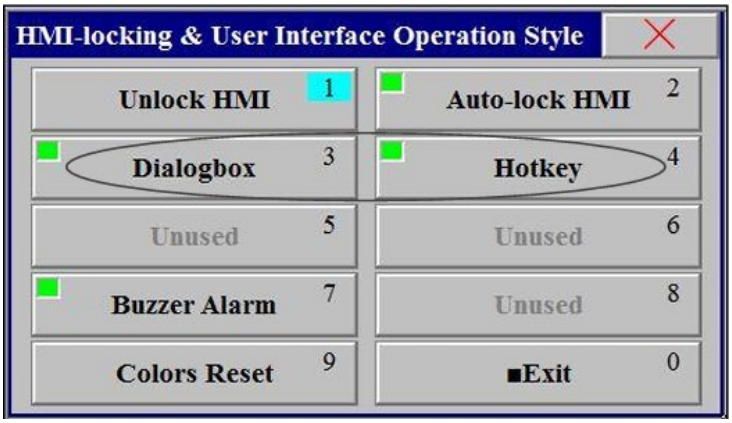


Figure 4-14: User Operation Style Selection

Table 4-5: Parameter Setting Operations

Name	Operation	Authority
【■Menu】	Enter main menu / Exit	Operator
【◄】【►】	Cursor shifts left/right (move between menus)	
【▲】【▼】	Cursor shifts up/down	
【0~9】	Number input	
【-】	Minus sign input	
【↙Enter】	Enter / Save	
【More】	Display virtual keypad	
【Func】 【↙Enter】	Main function settings	Engineer
【Func】	Main function settings	Operator
【F1 Addr】	Communication Address [700] parameter setting	Engineer
【F2 Unit】	Display unit and decimal point setting	
【F3 Filter】	Filter parameters setting	
【F4 Speed】	Speed Source [405] parameter setting	

Table 4-6: System Calibration Operations

Name	Operation	State Indicator	Authority
【4 Zero】	Hotkey: Enter the process of Zero Calibration Dialogbox: Enter the interface of Zero Calibration	Green: Zero Auto -tracking Allowed	Operator
【5 Cal】	Hotkey: Span Calibration with Materials Dialogbox: Span Calibration with Weights / Span Calibration with Materials / Segment Span Correction		Technician

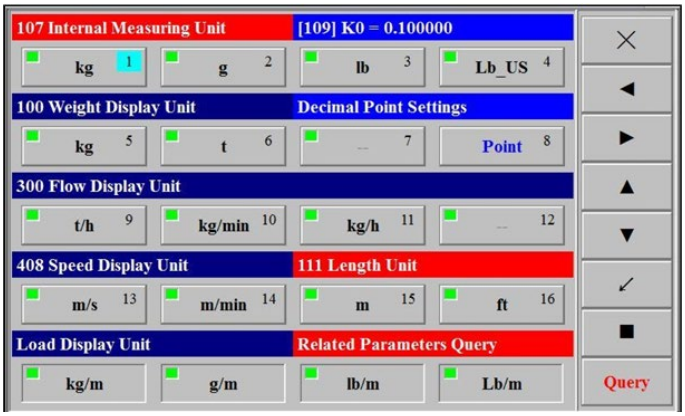
Table 4-7: Data Management Operations

Name	Operation	State Indicator	Authority
【9 Rec】	Real-time Data Query / Clear Shift Weight Records Query/U-disk Copy/Clear/Print		Operator
【Print】	Hotkey: Real-Time Data Print Dialogbox: Real-time Data Print / Auto Print [OFF/Per Hour/Per Shift/Per Day]	Green: Auto Print Allowed	
【Paper】	Printer Paper Feed		
【0 Clear】	Hotkey: Clear Display Value [Clear Total Weight, Present Batch Weight and Total Weight Pulses, it has no effect on Present Shift Weight] Dialogbox: Clear Display Value / Clear Present Batch Weight / Clear Present Shift Weight / Clear All		Admin.

Table 4-8: System Control Operations

Name	Operation	State Indicator	Authority
【6 Mode】	Working Modes Setting		Admin.
【1 Disp】	Display Interface Switch		Operator
【▶Start】	Hotkey: All Start [Start Belt Weigher → Delay Time → Start Feeder]. Dialogbox: Start Belt Weigher / Start Feeder / All Start / Batch Weight Control Permission. Refer to Delay to Start Feeder & Stop Belt Weigher [213] parameter	Green: Running State	
【◀Stop】	Hotkey: All Stop [Stop Feeder → Delay Time → Stop Belt Weigher] Dialogbox: Stop Belt Weigher / Stop Feeder / All Stop / Batch Weight Control Permission	Red: Stop State	
【▲Adj+】	Control Current + 1mA		
【▼ADJ-】	Control Current - 0.5mA		
【·ADJ】	Control Current Setting		
【3 Set】	Ration Flow/Load Feeder: Flow Setpoint [200] / Load Setpoint [221] Parameter Setting		
	Ration Weight Feeder: Parameter [217] "Weight Setpoint" Setting		
【7 Auto】	Ration Flow/Load Feeder: Auto/Manual Feeding Control Mode [208] parameter setting (Auto [PID]/Manual)		Engineer
	Ration Weight Feeder: Batch Loop Mode [215] Parameter Setting (Manual/Auto)		

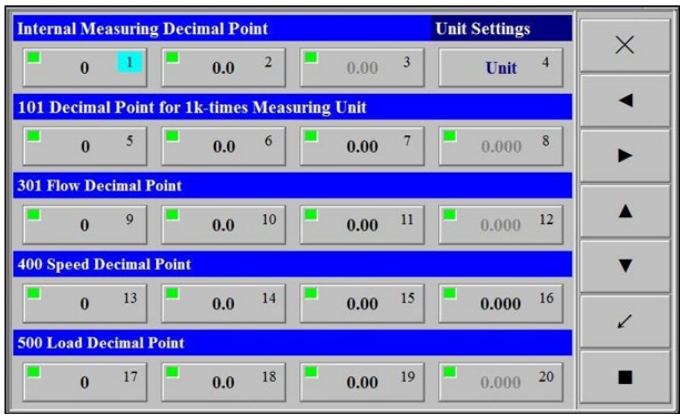
Click the【More】button on the Main HMI Interface to display the keyboard, then click the【F2 Unit】button to display the Unit Settings operation interface. **Operator Authorization Required:** Administrator



【Query】: Query related parameters

【Point】: Display the Decimal Point Settings operation interface

Figure 4-15: Unit Settings Operation Interface



【Unit】: Display the Unit Settings operation interface

Figure 4-16: Decimal Point Settings Operation Interface

5. Settings (F1)

5.1 F1 Settings Location

Figure 5-1: Main Menu Interface

The F1 Settings menu is found in the top left corner of the main menu which can be opened at any time from the bottom right "Menu" icon on the screen.

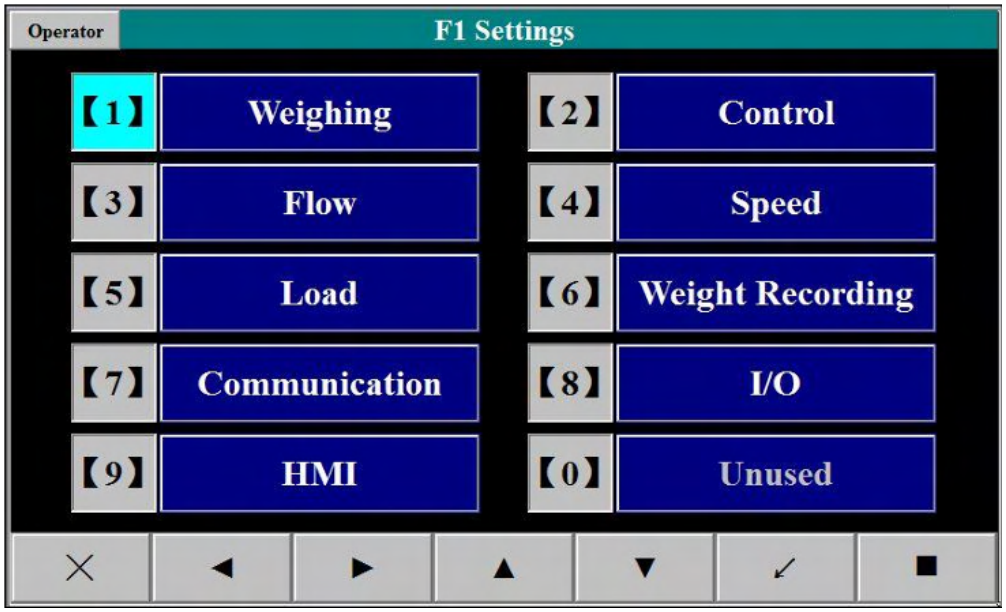


Figure 5-2: F1 Settings Menu

5.2 Operation Procedure Flowchart

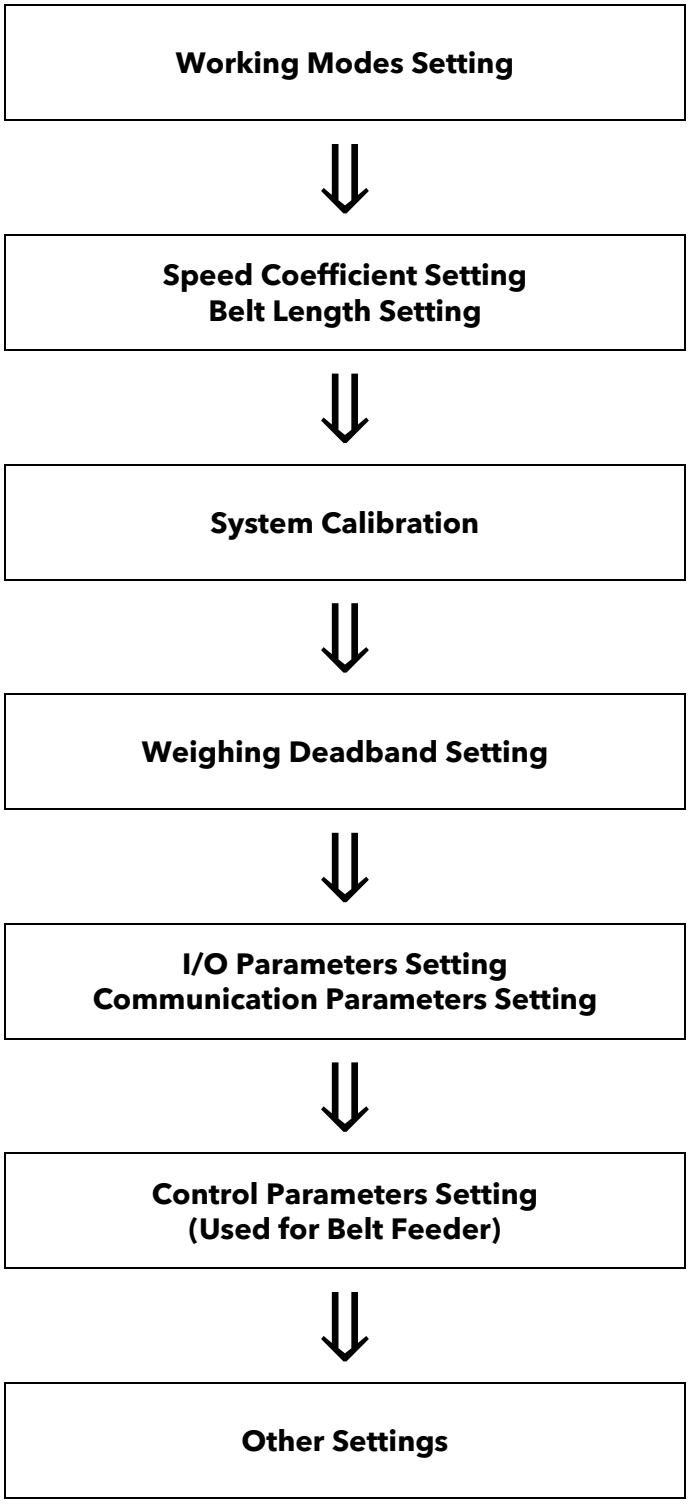


Figure 5-3: Operation Procedure Flowchart

5.3 Weighing Parameters

Table 5-1: Weighing Parameters

No.	Range	Default	Description	Register
100	0~1	0	**Weight Display Unit** Internal Measuring Unit [107] = kg: 0: kg 1: t Internal Measuring Unit [107] = g: 0: g 1: kg Internal Measuring Unit [107] = lb: 0: lb 1: Klb Internal Measuring Unit [107] = Lb_US: 0: Lb 1: t [US ton]	40100
101	0~2	1	**Weight Display Decimal Places** Controls *additional* decimal places beyond the internal scale settings. Ex. If the decimal point of *Total Weight* is 0, the Weight Display Decimal Places [101] options will be 0: 0; 1: 0.0; 2: 0.00	40102
102	0.001~ 9999.999	10.000 [*]	**Belt Length** [m or ft] Unit depends on value set for Length Unit [111]	40104
103	1~ 99999.9	100.0 [*]	**Speed Coefficient** [pulse/m or pulse/ft] Unit depends on value set for Length Unit [111]	40106
104	-999999~999999	0 [*]	**Zero Value**	40108
105	0.0001~ 9999.9999	1.0000 [*]	**Materials Calibration Coefficient K2**	40110
106	0~99.99	0.00 [*]	**Weighing Deadband** When the load value is within the range of ± *Weighing Deadband*, the variance of *Total Weight* will be ignored, and the display values of *Flow and Load* will be forced to zero. The unit for this parameter is determined by the Internal Measuring Unit [107] and Length Unit [111] as, $\frac{Internal\ Measuring\ Unit}{Length\ Unit}$ Ex. If the Internal Measuring Unit [107] = kg and the Length Unit [111] = m, then the range for the Weighing Deadband is between ±(0.00~99.99) kg/m	40112
107	0~2	0/1/2/3 [*]	**Internal Measuring Unit** 0: kg 1: g 2: lb 3: Lb_US (1 US Ton = 2000lb)	40114
108	0.0001~9999.9999	1.0000 [*]	**Poises Calibration Coefficient K1**	40116
109	0.000001~1999.999999	0.100000 [*]	**Static Span Coefficient K0**	40118
110	1~99	3	**Calibrating Turns** Number of complete belt revolutions the system runs to complete a calibration process where 1 Turn = 1 Belt Length.	40120
111	0~1	0	**Length Unit** 0: m; 1: ft	40122
112	0.1~1000	10.0	**Poises' Weight** (Weight of Calibration Weights) Unit depends on value set for Internal Measuring Unit [107]	40124
113	0.001~50	1.000	**Weighing Section Length** [m or ft] Unit depends on value set for Length Unit [111]	40126
114	4~20	12.00	**Control Current for Calibration** [mA]	40128

No.	Range	Default	Description	Register
115	0~1	0	**Zero Auto-Tracking Permission** When enabled, the controller monitors the load while the belt is running and automatically updates Zero Value [104] if the measured load remains within the Zero Auto-Tracking Range [116] for the specified number of Calibrating Turns [110]. If the load leaves this range, auto-tracking stops. The new Zero Value [104] is only saved if its change is within the Zero Auto-Adjusting Range [117] and according to the Auto-Zero Save Area [118] setting. 0: OFF; 1: ON	40130
116	0~99.99	0.00	**Zero Auto-Tracking Range** The unit for this parameter is determined by the Internal Measuring Unit [107] and Length Unit [111] as, $\frac{Internal\ Measuring\ Unit}{Length\ Unit}$. Value is ± the range set in parameter. Ex. If the Internal Measuring Unit [107] = kg and the Length Unit [111] = m and the Zero Auto-Tracking Range parameter is set to 0.50, then the resulting range for Zero Auto-Tracking is ± 0.50 kg/m	40132
117	0%~100%	5%	**Zero Auto-Adjusting Range** 0: Unlimited Not 0: ± Zero Auto-Adjusting Range [117] × [104] Zero Value	40134
118	0~1	1	**Auto-Zero Save Area** 0: No Power-down Protection [No Refreshing Original Zero Value] 1: Power-down Protection [Refresh Original Zero Value]	40136
119	1~5	1	**Segment Span Correction Point Number**	40138
120	0.001~999.999	0.100	**Belt Speed for Segment Span Correction** Unit depends on value set for Speed Display Unit [408]	40140
121	0.5~2	1	**Segment Span Correction Ratio**	40142
122	0~5	0	**Valid Segment Span Correction Points**	40144
123	0	0	**Unused**	40146
124	0~1	0	**Add Materials Calibrating Weight to Total Weight** 0: Manual; 1: Auto	40148
125	0~1	1	**Negative Accumulating Permission** 0: OFF [When Load<0, negative weight variance will be ignored] 1: ON	40150

[*]: 'User Default' operation has no effect on the parameters with the mark [*].

5.4 Control Parameters

Table 5-2: Control Parameters

No.	Range	Default	Description	Register
200	0~9999.99	20.00	**Flow Setpoint** The unit for this parameter is determined by the Flow Display Unit [300]. Ex. If the Flow Display Unit [300] = kg/h, then the range for the Flow Setpoint is between (0.00~9999.99) kg/h.	40200
201	1~500	10.0	**P Value (Fuzzy PID Adjusting Proportion)** A larger P value will make a more precise feeding adjustment but a longer time for flow/load to reach its setpoint.	40202
202	0~999.9	0	**I Value (Fuzzy PID Adjusting Interval)** [s] A smaller I value will make more frequent adjustments but creates greater potential for over-adjustment. 0: Auto-calculates interval from belt speed and Feedback Length [210] (recommended for variable-speed belts) >0: Fixed PID adjustment interval in seconds. Uses the material travel time over Feedback Length [210]	40204
203	4~20	20.00	**PID High Limit** [mA] Sets the maximum analog output current the PID controller can apply during automatic control. Value should be greater than the value set for PID Low Limit [204] and less than 20.00 mA.	40206
204	4~20	5.00	**PID Low Limit [mA]** Sets the minimum analog output current the PID controller can apply during automatic control. Value should be greater than 4.00 mA and less than the value set for PID High Limit [203].	40208
205	1%~500%	100%	**Control Ratio** The 2nd & 3rd Control Current = Control Ratio × (1st Control Current [mA] - 4.00 mA) + 4.00 mA	40210
206	0.5%~100%	10.00%	**Flow/Load Positive Tolerance Limit** Defines the maximum percentage above the flow/load setpoint that is allowed before a high-tolerance condition is indicated.	40212
207	0.5%~100%	10.0%	**Flow/Load Negative Tolerance Limit** Defines the maximum percentage below the flow/load setpoint that is allowed before a low-tolerance condition is indicated.	40214
208	0~1	1	**Auto/Manual Feeding Control Mode** Selects whether the feeder is controlled automatically by PID to follow the setpoint or manually by a fixed operator-set output. 0: Auto [PID]; 1: Manual	40216
209	0~1	0	**Flow/Load Setting Mode** Selects whether the flow or load setpoint is taken from internal parameters or from an external 4–20 mA analog input. 0: Internal Set; 1: External Analog Input [4-20mA] Set	40218
210	0.001~999.999	3	**Fuzzy PID Feedback Length** PID feedback delay distance. Unit depends on value set for Length Unit [111] Recommended: L1 + (1.2 to 1.5) × L2 L1 = Horizontal distance from the feeder discharge point to the start of the weighing section L2 = Weighing section length	40220

No.	Range	Default	Description	Register
211	0~2	1	**PID Initial Current** Selects the output current used when PID control starts, before normal PID adjustment begins. 0: Present Value; 1: Fuzzy Value; 2: Set Value [219]	40222
212	0.01~99999.99	2.5	**Fuzzy Equivalent** Defines the expected change in flow or load per 1 mA change in PID output. Used to guide initial and coarse PID adjustments. If PID Compare Mode [220] = 0 (Ration Flow Mode), the unit is based on the Flow Display Unit [300]. Ex. If PID Compare Mode [220] = 0 and the Flow Display Unit [300] = kg/min, then the Fuzzy Equivalent unit will be displayed as [kg/min]/mA. If PID Compare Mode [220] = 1 (Ration Load Mode), the unit is based on the Internal Measuring Unit [107] and the Length Unit [111]. Ex. If PID Compare Mode [220] = 1, the Internal Measuring Unit [107] = kg, and the Length Unit [111] = m, then the Fuzzy Equivalent unit will be displayed as [kg/m]/mA.	40224
213	0~999.9	3	**Delay to Start Feeder & Stop Belt Weigher** [s] Time delay to start the feeder and to stop the belt weigher. Time Delay to Start Feeder All Start: Start Belt Weigher → Delay Time → Start Feeder. Time Delay to Stop Belt Weigher All Stop: Stop Feeder → Delay Time → Stop Belt Weigher.	40226
214	0~1	0	**Batch Weight Control Permission** 0: OFF; 1: ON	40228
215	0~1	0	**Batch Loop Mode** 0: Manual; 1: Auto	40230
216	0~9999.9	60	**Batch Auto-Loop Interval** [s] Sets the delay time between the completion of one batch and the automatic start of the next batch when Batch Loop Mode [215] is set to 1 (Auto).	40232
217	0~9999999	0	**Weight Setpoint of Present Batch** Unit depends on value set for Internal Measuring Unit [107]	40234
218	0~9999999	0	**Preact Weight of Present Batch** Defines the amount of weight before the Weight Setpoint of Present Batch [217] at which feeding is pre-emptively stopped to compensate for material delay and prevent overshoot. Unit depends on value set for Internal Measuring Unit [107]	40236
219	4~20	12	**PID Initial Current Set Value** [mA]	40238
220	0~1	0	**PID Compare Mode** 0: Ration Flow Mode; 1: Ration Load Mode	40240
221	0~9999.99	10	**Load Setpoint** Unit based on Internal Measuring Unit [107] & Length Unit [111]	40242

5.5 Flow Control Parameters

Table 5-3: Flow Control Parameters

No.	Range	Default	Description	Register
300	0~2	0	**Flow Display Unit** Internal Measuring Unit [107] = kg: 0: t/h 1: kg/min 2: kg/h Internal Measuring Unit [107] = g: 0: kg/h 1: g/min 2: g/h Internal Measuring Unit [107] = lb: 0: Klb/h 1: lb/min 2: lb/h Internal Measuring Unit [107] = Lb_US: 0: t/h 1: Lb/min 2: Lb/h	40300
301	0~2	1	**Flow Decimal Point** 0: 0 1: 0.0 2: 0.00	40302
302	0.01~9999.99	100	**Flow Capacity** Unit is based on the Flow Display Unit [300]	40304
303	0%~100%	100%	**Flow High Limit** Sets the maximum allowable flow, expressed as a percentage of Flow Capacity [302], before a high-flow condition is indicated.	40306
304	0%~100%	0	**Flow Low Limit** Sets the minimum allowable flow, expressed as a percentage of Flow Capacity [302], before a low-flow condition is indicated.	40308
305	1~200	10	**Instantaneous Flow Smoothening Filter** Higher filter values stabilize real-time instantaneous flow readout at the expense of slower response speed.	40310
306	1~300	10	**Average Flow Smooth Filter** [s] Higher filter values stabilize average flow readout at the expense of slower response speed.	40312
307	0~1	1	**Flow for PID Adjustment** Flow value used by the PID controller for control calculations. 0: Instantaneous Flow; 1: Average Flow	40314
308	0~999	0	**Material Shortage Timeout** [s] Set value=0: No Judging Material Shortage. Set value>0: Max. Allowable Material Shortage Time.	40316
309	0~1	0	**Stop Feeding for Material Shortage** 0: OFF 1: ON [Once flow value is less than the Flow Low Limit [304] value, for the Material Shortage Timeout [308] time, the feeding system will stop automatically]	40318

5.6 Speed Control Parameters

Table 5-4: Speed Control Parameters

No.	Range	Default	Description	Register
400	0~3	2	**Speed Decimal Point** 0: 0 1: 0.0 2: 0.00 3: 0.000	40400
401	0.001~999.999	3.000	**Speed Capacity** Unit depends on value set for Speed Display Unit [408]	40402
402	0%~100%	100%	**Speed High Limit** Sets the maximum allowable belt speed, expressed as a percentage of Speed Capacity [401], before a high-speed condition is indicated.	40404
403	0%~100%	0.00%	**Speed Low Limit** Sets the minimum allowable belt speed, expressed as a percentage of Speed Capacity [401], before a low-speed condition is indicated.	40406
404	1~200	20	**Speed Smooth Filter** Higher filter values stabilize real-time speed at the expense of slower response speed	40408
405	0~4	0	**Speed Source** 0: External Speed [Weigh via speed sensor signal] 1: Internal Speed1 [Weigh via internal speed] 2: Internal Speed2 [SIN/VS- switch starts internal speed] (Connect a normally open switch that shows the running state of the weighing belt between the terminal *SIN* and *VS*- of the controller. When the switch is on, the controller will weigh by *Inner Speed*, and stops weighing when the switch turns off) 3: Internal Speed3 [External speed signal starts internal speed] 4: AO Speed [Proportional to AO control current] Note: If a DI Signal [807/808/809] is defined as 1: Weighing Permission, then weighing only occurs when that DI is on.	40410
406	0~999.999	0.5	**Internal Speed** The bigger set value of Filter3 will make the real-time speed more stable with slower response speed. Unit depends on value set for Speed Display Unit [408]	40412
407	0.1~3	1	**Speed Pulse High Limit** [kHz] Speed Pulse Frequency High Limit: if the frequency of speed pulse exceeds this set value, the speed pulse will be invalid.	40414
408	0~1	0	**Speed Display Unit** If Length Unit [111] = m: 0: m/s 1: m/min If Length Unit [111] = ft: 0: ft/s 1: ft/min	40416

5.7 Load Control Parameters

Table 5-5: Load Control Parameters

No.	Range	Default	Description	Register
500	0~2	1	**Load Decimal Point** 0: 0 1: 0.0 2: 0.00	40500
501	0.01~9999.99	100	**Load Capacity** Unit based on Internal Measuring Unit [107] & Length Unit [111]. Ex. If Internal Measuring Unit [107] = kg and Length Unit [111] = m, then the range for the Load Capacity is between (0.01~9999.99) kg/m	40502
502	0%~100%	100%	**Load High Limit** Sets the maximum allowable load limit, expressed as a percentage of Load Capacity [501], before a high-load condition is indicated.	40504
503	0%~100%	0	**Load Low Limit** Sets the minimum allowable load limit, expressed as a percentage of Load Capacity [501], before a low-load condition is indicated.	40506
504	0~9	5	**Load Anti-vibration Filter (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	40508
505	1~400	100	**Load Smooth Filter** Higher filter values stabilize real-time load at the expense of slower response speed	40510
506	0~999.999	0	**Speed Value for Load Calculation** 0: Load value on the belt weigher is calculated according to the actual detected speed >0: Load value on the receiving belt is calculated according to this chosen value Unit depends on value set for Speed Display Unit [408]	40512

5.8 Weight Recording Parameters

Table 5-6: Weight Recording Parameters

No.	Range	Default	Description	Register
600	0~3	2	**Shifts Per Day** 0: One Shift 1: Two Shifts 2: Three Shifts 3: Four Shifts	-----
601	00:00~23:59	07:59	**Shift1 End Time**	-----
602	00:00~23:59	15:59	**Shift2 End Time**	-----
603	00:00~23:59	23:59	**Shift3 End Time**	-----
604	00:00~23:59	23:59	**Shift4 End Time**	-----
605	0~3	0	**Auto Clear Display Value** 0: OFF 1: Per Shift 2: Per Day 3: Per Month Auto Clear Display Value has no effect on Present Shift Weight	-----
606	0	0	**Print Formats** 0: Print Format 1	-----
607	0~1	0	**Signature Column Print** 0: OFF; 1: ON	-----
608	0~1	0	**Printer Auto-Feeds Paper** 0: OFF; 1: ON	-----
609	0~3	0	**Auto Print** 0: OFF 1: Per Hour 2: Per Shift 3: Per Day	-----
610	0~1	0	**Micro Printer Selection** 0: Built-in Printer; 1: External Printer	-----

5.9 Communication Parameters

Table 5-7: Communication Parameters

No.	Range	Default	Description	Register
700	1~99	1	**Communication Address**	40700
701	0~5	3	**COM1 [RS485...] Baud Rate** 0: 1200bps 1: 2400bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 115200bps	40702
702	0~5	3	**COM2 [RS232] Baud Rate** 0: 1200bps 1: 2400bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 115200bps	40704
703	0~2	0	**COM1 Parity Check** 0: None 1: Even 2: Odd	40706
704	0~2	0	**COM2 Parity Check** 0: None 1: Even 2: Odd	40708
705	0~9	1	**COM1 Communication Mode** 0: Host-Slave Modbus ASCII 1: Host-Slave Modbus RTU 2: Continuous Sending ASCII 3: Continuous Sending RTU 4: Ethernet Modbus TCP 5: Profibus-DP 6: Unused 7: Profinet 8: Unused 9: Unused	40710
706	0~3	1	**COM2 Communication Mode** 0: Host-Slave Modbus ASCII 1: Host-Slave Modbus RTU 2: Continuous Sending ASCII 3: Continuous Sending RTU	40712
707	0~3	0	**COM1 Modbus Data Format** Reading & Writing Order of 4-Byte Registers: 0: 4321 [HB4 HB3 LB2 LB1] 1: 3412 [HB3 HB4 LB1 LB2] 2: 1234 [LB1 LB2 HB3 HB4] 3: 2143 [LB2 LB1 HB4 HB3] The HEX byte order of float and long int registers in the controller is *HB4 HB3 LB2 LB1*	40714
708	0~3	0	**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] The HEX byte order of float and long int registers in the controller is *HB4 HB3 LB2 LB1*	40716
709	0	0	**Unused**	40718
710	0	0	**Unused**	40720
711	0	0	**Unused**	40722
712	0	0	**Unused**	40724
713	0	0	**Unused**	40726
714	15 characters		**IP Address of HMI Ethernet** Default Value: 192.168.0.100	-----
715	0~65535	502	**Port Number of HMI Ethernet**	-----
716	0~1	1	**HMI Ethernet Permission** 0: OFF; 1: ON (Operation Authorization: Factory)	40732
717			**IP Address of COM1 Ethernet Module** Use specialized software to set.	-----
718			**Port Number of COM1 Ethernet Module** Use specialized software to set.	-----

5.10 I/O Parameters

Table 5-8: I/O Parameters

No.	Range	Default	Description	Register
800	0~9	2	**Analog Output 1 (AO1) Signal** 0: None 1: Flow Output/Capacity [302] 2: Control Current Output 3: Load Output/Capacity [501] 4: Speed Output/Capacity [401] 5: From Analog Input (AI) Port 6: From Communication Port 7: Weight High-Speed Pulse [4mA→20mA→4mA] 8: Weight Low-Speed Pulse [4mA→20mA→4mA] 9: Batch Weight Output Capacity: Weight Setpoint of Present Batch [217]	40800
801	0~9	1	**Analog Output 2 (AO2) Signal** 0: None 1: Flow Output/Capacity [302] 2: Control Current Output 3: Load Output/Capacity [501] 4: Speed Output/Capacity [401] 5: From Analog Input (AI) Port 6: From Communication Port 7: Weight High-Speed Pulse [4mA→20mA→4mA] 8: Weight Low-Speed Pulse [4mA→20mA→4mA] 9: Batch Weight Output Capacity: Weight Setpoint of Present Batch [217]	40802
802	0~9	0	**Analog Output (AO3) Signal** 0: None 1: Flow Output/Capacity [302] 2: Control Current Output 3: Load Output/Capacity [501] 4: Speed Output/Capacity [401] 5: From Analog Input (AI) Port 6: From Communication Port 7: Weight High-Speed Pulse [4mA→20mA→4mA] 8: Weight Low-Speed Pulse [4mA→20mA→4mA] 9: Batch Weight Output Capacity: Weight Setpoint of Present Batch [217]	40804
803	0~22	20	**Digital Output 1 (DO1) Signal** 0: None 1: Flow High Limit Alarm 2: Flow Low Limit Alarm 3: Load High Limit Alarm 4: Load Low Limit Alarm 5: Speed High Limit Alarm 6: Speed Low Limit Alarm 7: PID High Limit Alarm 8: PID Low Limit Alarm 9: Flow/Load Positive Tolerance Alarm 10: Flow/Load Negative Tolerance Alarm 11: Weight Low-Speed Pulse [OFF→ON→OFF] 12: PID Auto Control State 13: Calibrating State 14: Running State 15: Controlled by DI1 16: Controlled by DI2 17: Controlled by DI3 18: Controlled by Comm. Command 19: Feeder Start/Stop Control 20: Belt Weigher Start/Stop Control 21: Pres. Batch Weight Complete [ON] 22: Pres. Batch Weight Complete [OFF] For 20/21: DO1 turns ON/OFF when Present Batch Weight reaches Weight Setpoint [217]	40806

No.	Range	Default	Description	Register
804	0~22	19	**Digital Output 2 (DO2) Signal** 0: None 1: Flow High Limit Alarm 2: Flow Low Limit Alarm 3: Load High Limit Alarm 4: Load Low Limit Alarm 5: Speed High Limit Alarm 6: Speed Low Limit Alarm 7: PID High Limit Alarm 8: PID Low Limit Alarm 9: Flow/Load Positive Tolerance Alarm 10: Flow/Load Negative Tolerance Alarm 11: Weight Low-Speed Pulse [OFF→ON→OFF] 12: PID Auto Control State 13: Calibrating State 14: Running State 15: Controlled by DI1 16: Controlled by DI2 17: Controlled by DI3 18: Controlled by Comm. Command 19: Feeder Start/Stop Control 20: Belt Weigher Start/Stop Control 21: Pres. Batch Weight Complete [ON] 22: Pres. Batch Weight Complete [OFF] For 20/21: DO1 turns ON/OFF when Present Batch Weight reaches Weight Setpoint [217]	40808
805	0~22	0	**Digital Output 3 (DO3) Signal** 0: None 1: Flow High Limit Alarm 2: Flow Low Limit Alarm 3: Load High Limit Alarm 4: Load Low Limit Alarm 5: Speed High Limit Alarm 6: Speed Low Limit Alarm 7: PID High Limit Alarm 8: PID Low Limit Alarm 9: Flow/Load Positive Tolerance Alarm 10: Flow/Load Negative Tolerance Alarm 11: Weight Low-Speed Pulse [OFF→ON→OFF] 12: PID Auto Control State 13: Calibrating State 14: Running State 15: Controlled by DI1 16: Controlled by DI2 17: Controlled by DI3 18: Controlled by Comm. Command 19: Feeder Start/Stop Control 20: Belt Weigher Start/Stop Control 21: Pres. Batch Weight Complete [ON] 22: Pres. Batch Weight Complete [OFF] For 20/21: DO1 turns ON/OFF when Present Batch Weight reaches Weight Setpoint [217]	40810
806	0~22	0	**Digital Output 4 (DO4) Signal** Unconfigured	40812
807	0~12	0	**Digital Input 1 (DI1) Signal** 0: None 1: Weighing Permission (ON: Weighing allowed; OFF: Weighing not allowed) 2: PID Permission (ON: PID control is allowed; OFF: PID control not allowed) 3: System Ready (ON: Start signal is valid; OFF: Start signal is invalid) 4: Zero Calibration [OFF→ON→OFF] 5: Clear Display Value [OFF→ON→OFF] 6: Start [OFF→ON→OFF] 7: Stop [OFF→ON→OFF] 8: PID Auto Control Mode (ON: Auto; OFF: manual) 9: Flow/Load Internal Set Mode (ON: Internal Set; OFF: External AI 4-20mA) Set 10: Clear Present Batch Weight [OFF→ON→OFF] 11: Batch Weight Control Permission (ON: Allowed; OFF: Not Allowed) 12: End Present Batch Weight Control [OFF→ON→OFF]	40814

No.	Range	Default	Description	Register
808	0~12	0	**Digital Input 2 (DI2) Signal** 0: None 1: Weighing Permission (ON: Weighing allowed; OFF: Weighing not allowed) 2: PID Permission (ON: PID control is allowed; OFF: PID control not allowed) 3: System Ready (ON: Start signal is valid; OFF: Start signal is invalid) 4: Zero Calibration [OFF→ON→OFF] 5: Clear Display Value [OFF→ON→OFF] 6: Start [OFF→ON→OFF] 7: Stop [OFF→ON→OFF] 8: PID Auto Control Mode (ON: Auto; OFF: manual) 9: Flow/Load Internal Set Mode (ON: Internal Set; OFF: External AI 4-20mA) Set 10: Clear Present Batch Weight [OFF→ON→OFF] 11: Batch Weight Control Permission (ON: Allowed; OFF: Not Allowed) 12: End Present Batch Weight Control [OFF→ON→OFF]	40816
809	0~12	0	**Digital Input 3 (DI3) Signal** 0: None 1: Weighing Permission (ON: Weighing allowed; OFF: Weighing not allowed) 2: PID Permission (ON: PID control is allowed; OFF: PID control not allowed) 3: System Ready (ON: Start signal is valid; OFF: Start signal is invalid) 4: Zero Calibration [OFF→ON→OFF] 5: Clear Display Value [OFF→ON→OFF] 6: Start [OFF→ON→OFF] 7: Stop [OFF→ON→OFF] 8: PID Auto Control Mode (ON: Auto; OFF: manual) 9: Flow/Load Internal Set Mode (ON: Internal Set; OFF: External AI 4-20mA) Set 10: Clear Present Batch Weight [OFF→ON→OFF] 11: Batch Weight Control Permission (ON: Allowed; OFF: Not Allowed) 12: End Present Batch Weight Control [OFF→ON→OFF]	40818
810	0~1	0	**Buzzer Alarm** 0: OFF; 1: ON	40820
811	0.0~9.9	1	**Delay to Alarm** [s]	40822
812	1~1000	100	**Weight Per High-Speed Pulse** Defines the amount of accumulated weight that generates one high-speed output pulse from the PO/AO port. Unit based on Internal Measuring Unit [107]	40824
813	50~500	100	**High-speed Pulse Width** [ms] Width of Total Weight High-Speed Pulse.	40826
814	10~10000	1000	**Weight Per Low-speed Pulse** Defines the amount of accumulated weight that generates one low-speed output pulse from the PO/AO port. Unit based on Internal Measuring Unit [107]	40828
815	50~1000	200	**Low-speed Pulse Width** [ms] Width of Total Weight Low-speed Pulse.	40830

5.11 HMI Parameters

Table 5-9: HMI Parameters

No.	Range	Default	Description	Register
900	0~2	0	**Date Format** 0: YYYY-MM-DD [Year-Month-Day] 1: MM-DD-YYYY [Month-Day-Year] 2: DD-MM-YYYY [Day-Month-Year]	-----
901	0~1	0	**Auto-lock HMI** 0. OFF 1. ON [If there is no activity for 1 minute the display will lock itself]	-----
902			**Exfactory Date**	-----
903			**Serial No.**	-----
904			**Weighing Module Version No.** BL-MXXXXXX-VX.X	-----
905			**Human Machine Interface [HMI] Version No.** BL-HXXXXXX-VX.X	-----
906	0~1	0	**User Interface Style** 0: Digital User Interface [DUI] 1: Graphical User Interface [GUI] [Unused]	-----
907	0~1	0	**User Operation Style** 0: Dialogue box 1: Hotkey	-----

5.12 Parameter Setting Example

To modify Belt Length [102], perform the following steps:

1) Enter 【1】Weighing from *F1 Settings* to bring up the following menu:

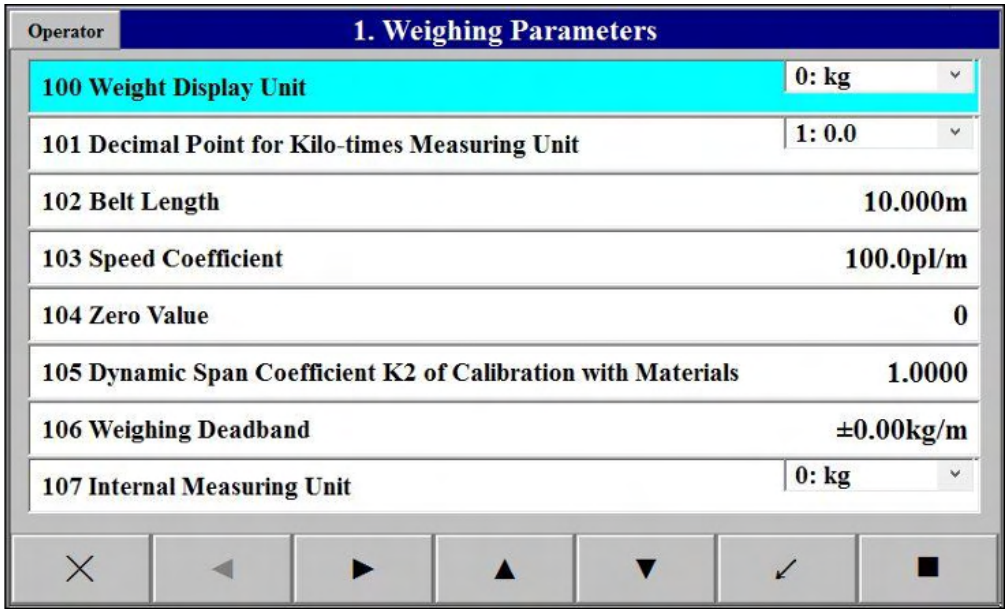


Figure 5-4: Weighing Parameters Settings Menu

2) Select 【102】Belt Length to bring up the digit keypad detailed below

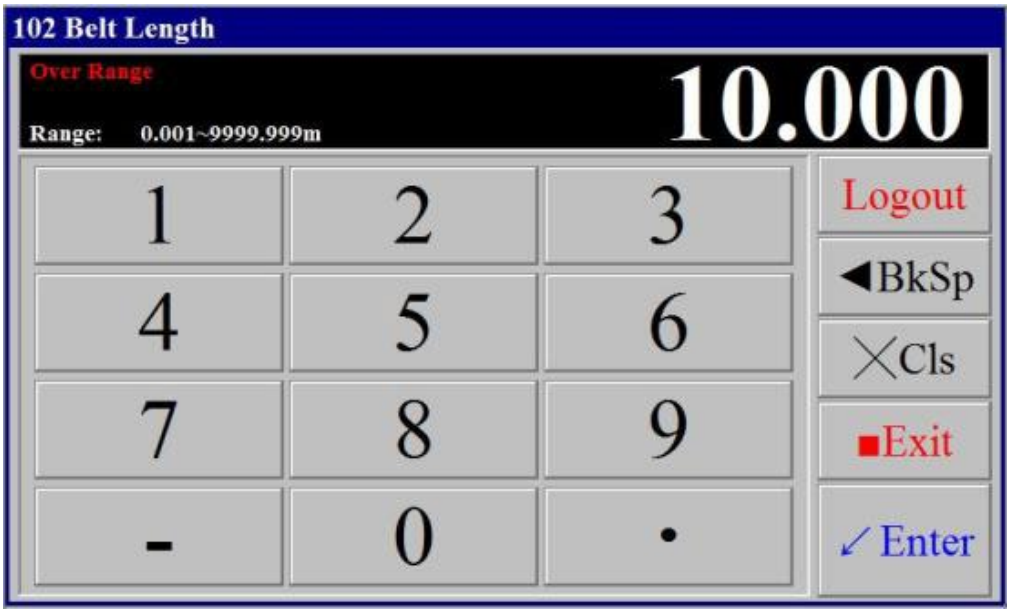


Figure 5-5: Digit Keypad Input Menu

3) Enter "10.000" and click "Enter" to save the new belt length value.

6. Calibration (F2)

All calibration settings are found by going through the main menu and selecting *F2 Calibration*.

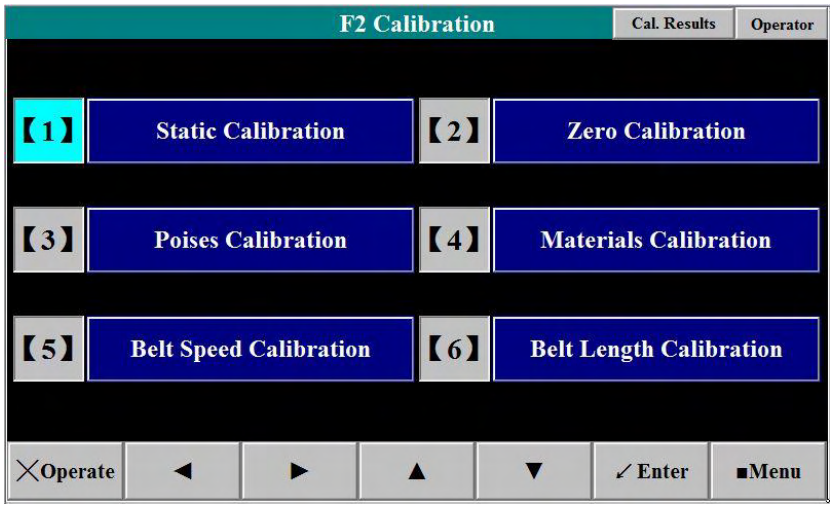


Figure 6-1: F2 Calibration Menu Options

6.1 Calibration Overview

【1】Static Calibration:	Static Span Calibration with a group of hanging poises or chain rolling poises loaded on the weighing section of the belt scale for correcting *Static Span Coefficient K0*
【2】Zero Calibration:	Zero Calibration is performed with the empty belt scale running to correct zero value
【3】Poises Calibration:	Dynamic Poises Calibration with a group of hanging poises or chain rolling poises loaded on the weighing section of the running belt scale for correcting *Poises Calibration Coefficient K1*
【4】Materials Calibration:	Dynamic Materials Calibration with the materials being transported and passing through the weighing section for correcting *Materials Calibration Coefficient K2*
【5】Belt Speed Calibration:	Belt Speed Calibration for correcting Speed Coefficient
【6】Belt Length Calibration:	Belt Length Calibration for correcting Belt Length

6.1.1 Two typical procedures are recommended for calibration:

NOTE: Method 2 is recommended.

Method 1:

- **Initial calibration:** Zero Calibration → Materials Calibration
- **Daily maintenance:** Zero Calibration
- **Recalibration:** Zero Calibration → Materials Calibration

Method 2:

- **Initial Calibration:** Zero Calibration → Span Calibration with Weights → Materials Calibration
- **Daily maintenance:** Zero Calibration → Span Calibration with Weights (OPTIONAL)
- **Recalibration:** Static Calibration → Zero Calibration → Span Calibration with Weights → Materials Calibration

6.2 Static Span Calibration

Keep the belt weigher stopped. Perform Static Zero Detection with no load on the belt. Then place hanging weights or chain rolling weights on the weighing section and perform Static Span Calibration to correct parameter 109, "Static Span Coefficient K0."

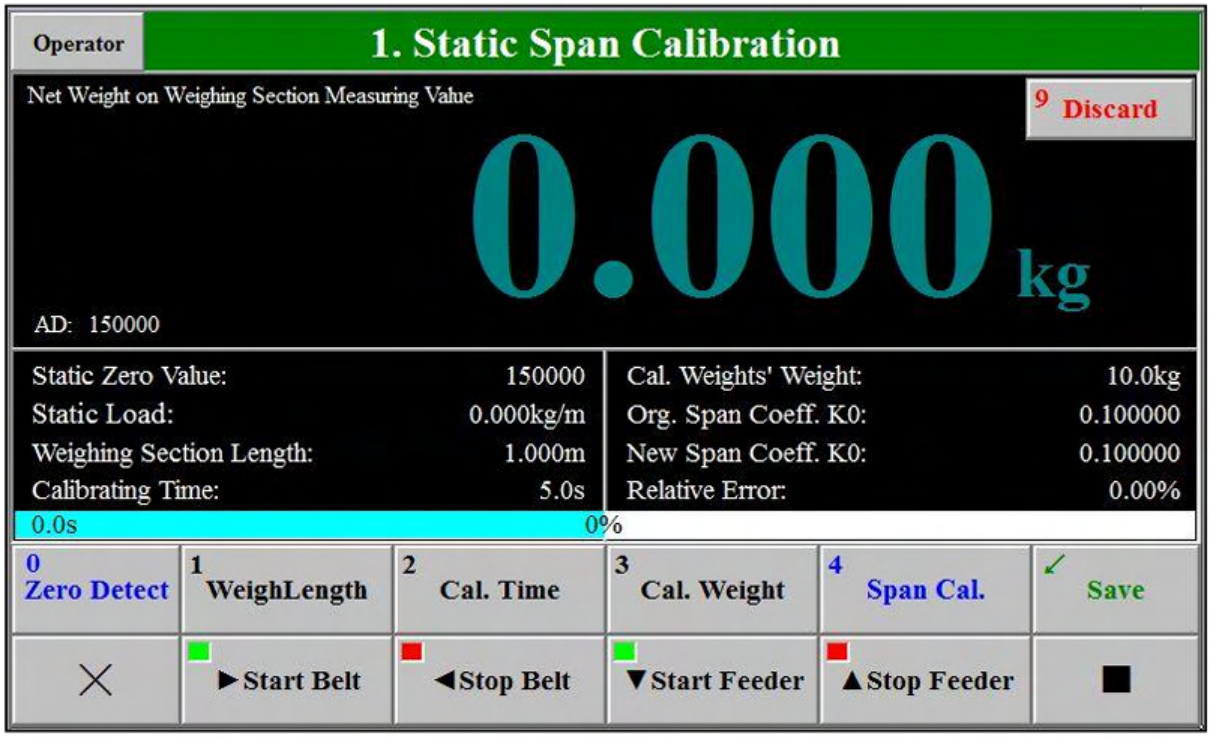


Figure 6-2: Static Calibration Interface

6.2.1 Static Span Calibration Operation Steps:

1: Ensure the belt is currently empty and stopped
2: Select *1 WeighLength* to specify the Weighing Section Length
3: Select *2 Cal. Time* to set the Calibrating Time
4: Click • *Zero Detect* to start zero detection
5: Zero detection ends automatically after the set calibration time
6: Apply a constant load onto the Weight Trays of the CNV100 frame
7: Click *3 Poises Weight* to input the test weight's total weight
8: Click *4 Span Cal.* to start static span calibration. This will be the new Static Span Coefficient K0
9: After the specified calibration time passes, the span calibration process will end automatically
10: Click ↙Save to save the new *Static Span Coefficient K0*

Note: the *9 Discard* button can be used to exit calibration and discard the result at any time

6.3 Zero Calibration

The purpose of this section is to define the Dynamic Zero Value (104 Zero Value). This value is used to determine the weight and speed of the belt with no material.

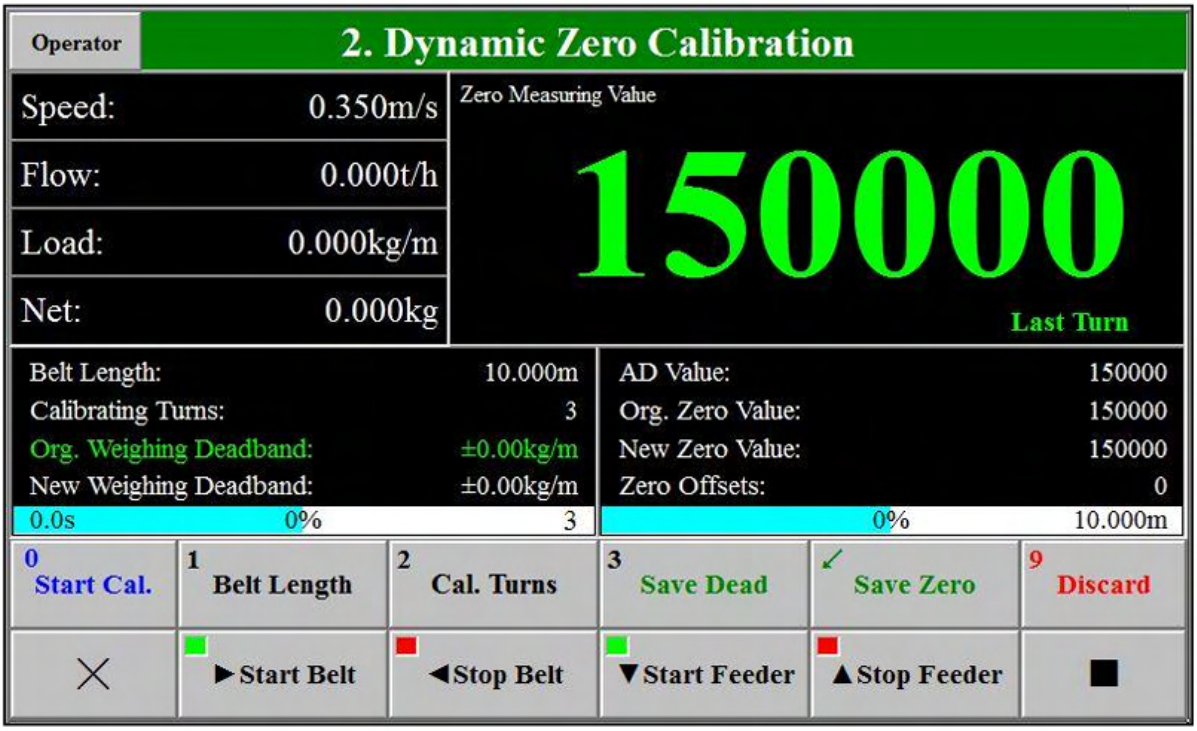


Figure 6-3: Zero Calibration Interface

6.3.1 Zero Calibration Operation Steps:

1: Remove all test weights and objects off the scale and ensure that the scale is empty.

2: Click the button *1 Belt Length* to set Belt Length. Enter the length of the belt.

3: Click the button *2 Cal. Turns* to set Calibrating Turns. Enter the number of complete belt revolutions required for calibration.

Note: A setting of **5 Cal. Turns** on a 100 ft belt results in approximately 500 ft of belt travel during calibration.

4: Start the belt scale with no material on the belt.

5: Once the belt is running normally, click • *Start Cal.* to begin zero calibration

NOTE: After the belt scale runs the specified calibrating turns, the calibrating process will end automatically

6: Click the button ↙*Save Zero* to save the new *Zero Value*

NOTE: the *9 Discard* button can be used to exit calibration and discard the result at any time

Weighing Deadband Detection (Operator Authorization: Engineer)

After completing Zero and Span Calibration, perform Zero Calibration again if necessary to correct the Weighing Deadband detection.

6.4 Span Calibration with Weights

This section describes how to perform the Span Calibration with Weights. This is to adjusts the belt scale's K1 calibration coefficient using a known test load.

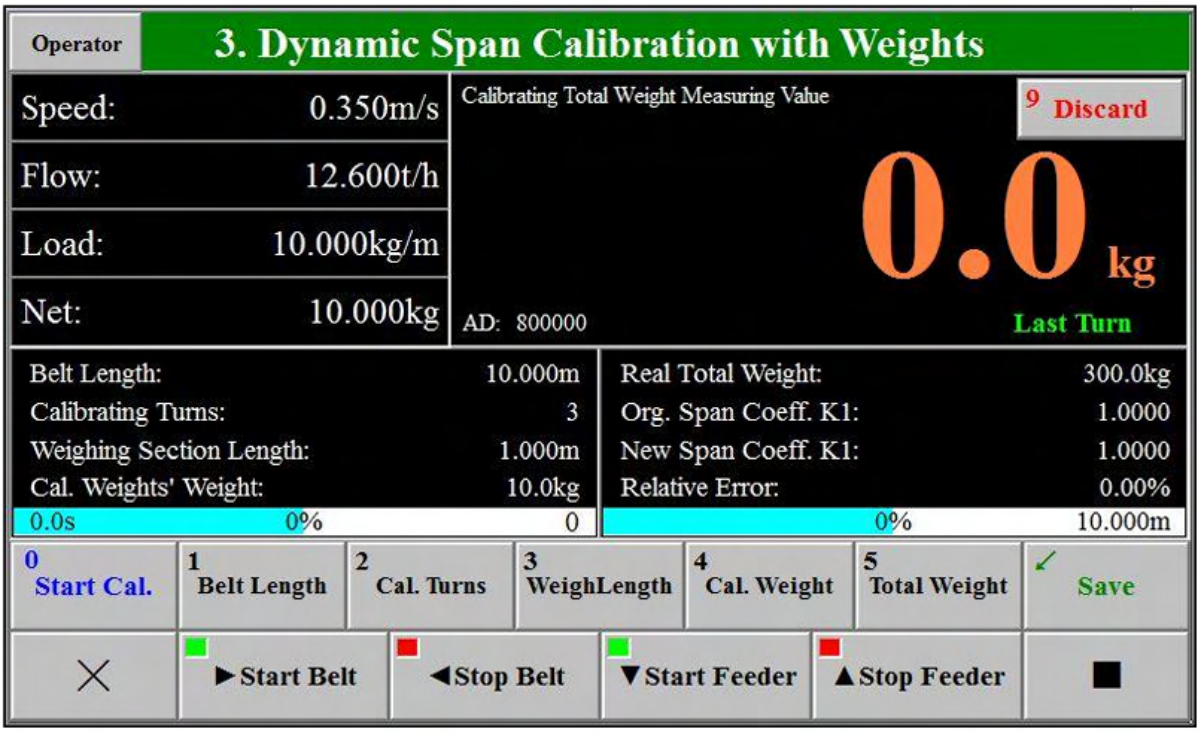


Figure 6-4: Poises Calibration Interface

6.4.1 Span Calibration with Weights Operation Steps:

1: Ensure the belt is empty and stopped
2: Click the button *1 Belt Length* to set Belt Length
3: Click the button *2 Cal. Turns* to set the required number of belt revolution

Note: A setting of **5 Cal. Turns** on a 100 ft belt results in approximately 500 ft of belt travel during calibration.

4: Click the button *3 WeighLength* to set Weighing Section Length

Note: This is the section where weight readings will be taken in. Defined as the length of the portion of the conveyor belt that is supported by the load cells and actively contributes to the weight measurement.

5: Apply a constant load on the belt scale by placing known test weights in the calibration trays.
6: Click the button *4 Cal. Weight* to enter the weight of the test weight used.
7: Start the belt with the test weights loaded, do not start the feeder
8: After running the belt scale normally, click the button • *Start Cal.* to begin calibration.
9: Calibration ends automatically after the specified number of belt revolutions.
10: Click the button *5 Total Weight* to input Real Total Weight value

$$Real\ Total\ Weight = \frac{Num.of\ Belt\ Turns \times Belt\ Length \times Known\ Test\ Weights\ Used}{Weighing\ Section\ Length}$$

11: Click the button ✓Save to save the new *Poises Calibration Coefficient K1*

Note: the *9 Discard* button can be used to exit calibration and discard the result at any time

6.5 Span Calibration with Materials

This section describes how to calibrate the belt scale by using materials of a known mass. Two different types of materials can be used for this calibration step.

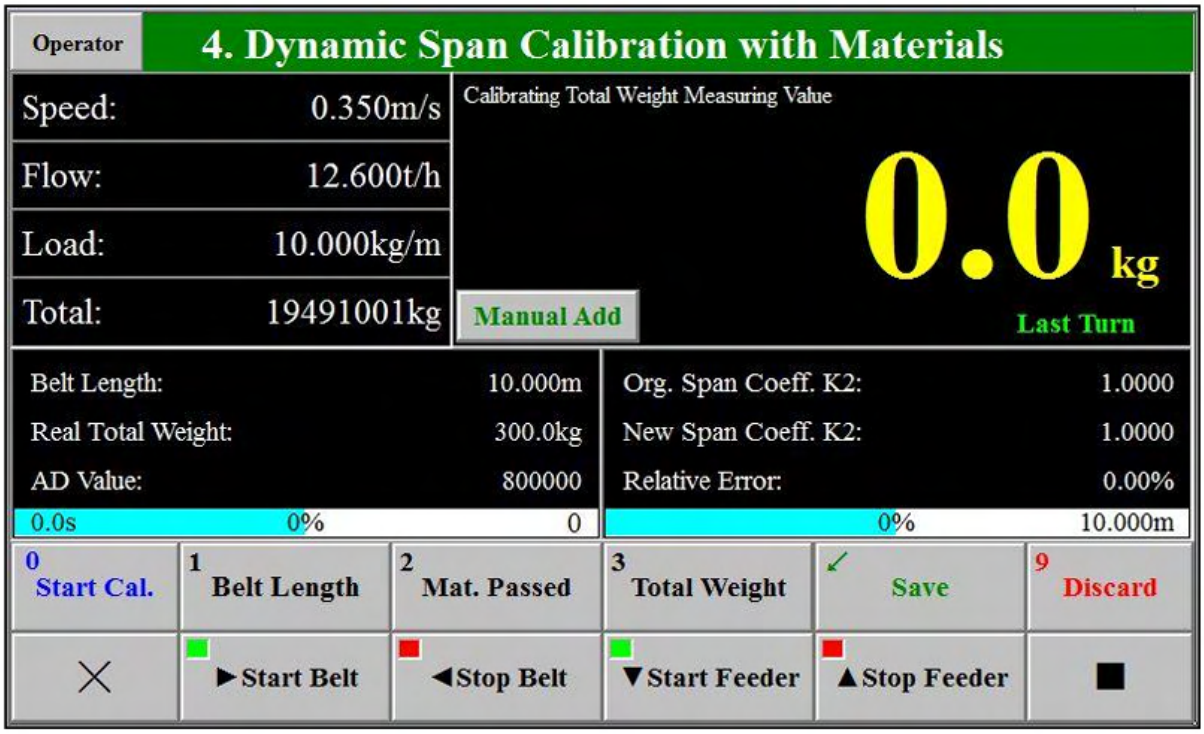


Figure 6-5: Materials Calibration Interface

6.5.1 Dynamic Span Calibration with Materials Operation Steps:

1: Ensure the belt is empty
2: Click *1 Belt Length* to set Belt Length and start the belt. Ensure no material is on the belt.
3: Once the belt is running normally, click the button •*Start Cal.* to start calibrating
4: Start the feeder or manually add material that has been pre-weighed using a high-precision static weigher onto the belt scale.
5: After all materials have passed through the weighing section, click the button *2 Mat. Passed*
6: After the belt scale completes the last turn, the calibrating process will end automatically
7: Select *3 Total Weight* and enter the *Real Total Weight*, which is the actual weight of the material used for calibration.
8: Click the button ↙*Save* to save the new *Materials Calibration Coefficient K2*

a. Click the button *Manual Add* to add Real Total Weight to Total Weight if necessary

Note: the *9 Discard* button can be used to exit calibration and discard the result at any time

6.6 Segment Span Correction

Calibrate and correct the belt scale's weighing accuracy at multiple belt speeds by comparing the controller's measured weight with a known reference weight.

This ensures the belt scale maintains accurate weight measurements across different operating speeds by establishing a Segment Span Correction Ratio for each selected speed.

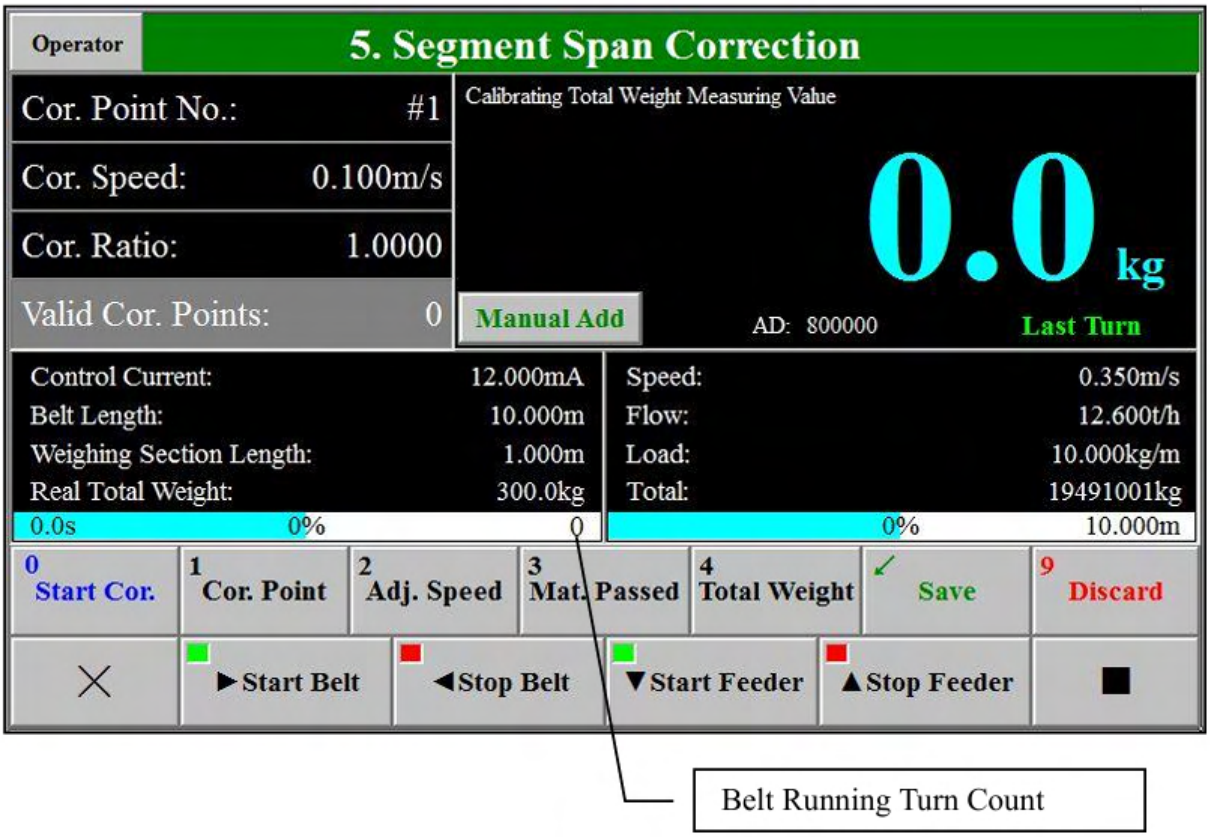


Figure 6-6: Segment Span Correction Interface

6.6.1 Segment Span Correction Operational Steps

1: Select【1 Cor. Point】to set Segment Span Correction Point Number. Up to 5 points can be selected.
2: Ensure the belt is empty and start the belt. Do not start the feeder
3: Select【2 Adj. Speed】to set *Control Current* for adjusting Belt Speed.
4: Once the belt is running normally, select【0 Start Cor.】to start collection process
5: Start the feeder to feed or feed manually the materials that have been weighed by a high-precision static weigher onto the belt. Record the weight of the material used.
6: Once all materials have passed through the weighing section of the belt, select【3 Mat. Passed】
7: After the belt scale completes the last turn, the calibrating process will end automatically
8: Select【4 Total Weight】to input *Real Total Weight*. This is the weight of the material used.
    a. 【Manual Add】can also be used to add Real Total Weight to Total Weight if necessary
9: Select【↙Save】to save the Belt Speed and Segment Span Correction Ratio
10: Increase the belt speed sequentially from Correction Point 1 to Point 5. At each point, maintain a constant belt speed. Repeat the steps above for each point.
    a. This creates a corresponding belt speed ratio at each point.

Note: the *9 Discard* button can be used to exit calibration and discard the result at any time

6.7 Belt Speed Calibration

This section explains how to calibrate belt speed when the speed coefficient is unknown. It guides the user through running the belt weigher without load, timing a set number of belt revolutions, entering the belt length, calibration turns, and measured time, then starting the calibration so the controller can automatically calculate and save the new speed coefficient.

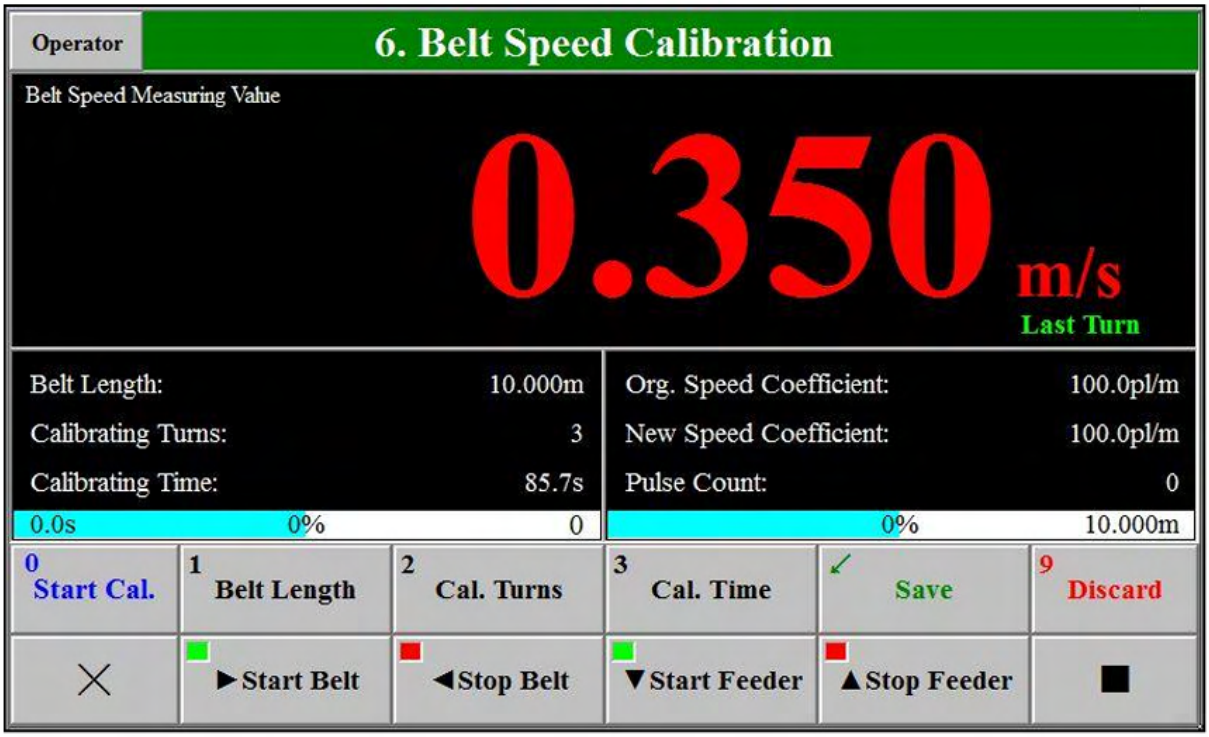


Figure 6-7: Belt Speed Calibration Interface

6.7.1 Belt Speed Calibration Operation Steps:

Note: a stopwatch is required for this operation. The stopwatch is used to measure how long each turn of the belt will take. Use a stopwatch to measure the time [T seconds] of the belt scale running N turns.

1: Ensure the belt is empty and free of materials, and the belt is running at a constant speed.
2: Select *1 Belt Length* and enter the length of the belt.
3: Select *2 Cal. Turns* and enter the number of turns (N) the belt makes
4: Select *3 Cal. Time* to set the length of time (T) for calibration
5: Select •*Start Cal.* to start calibrating
6: After the belt scale has run for the calibrating time, the calibrating process will end automatically
7: Click the button ↙*Save* to save the new *Speed Coefficient*

Note 【*9 Discard*】 button can be used to exit calibration and discard the result at any time

6.8 Belt Length Calibration

If the belt length is unknown, measure the time T it takes for the belt to complete N full revolutions using a stopwatch. Enter the measured calibration time T, the number of calibrations turns N, and the speed sensor's specified Speed Coefficient [pulses/m]. Start the belt weigher, and after the belt completes the set number of revolutions, the controller will automatically calculate Parameter 102: Belt Length.

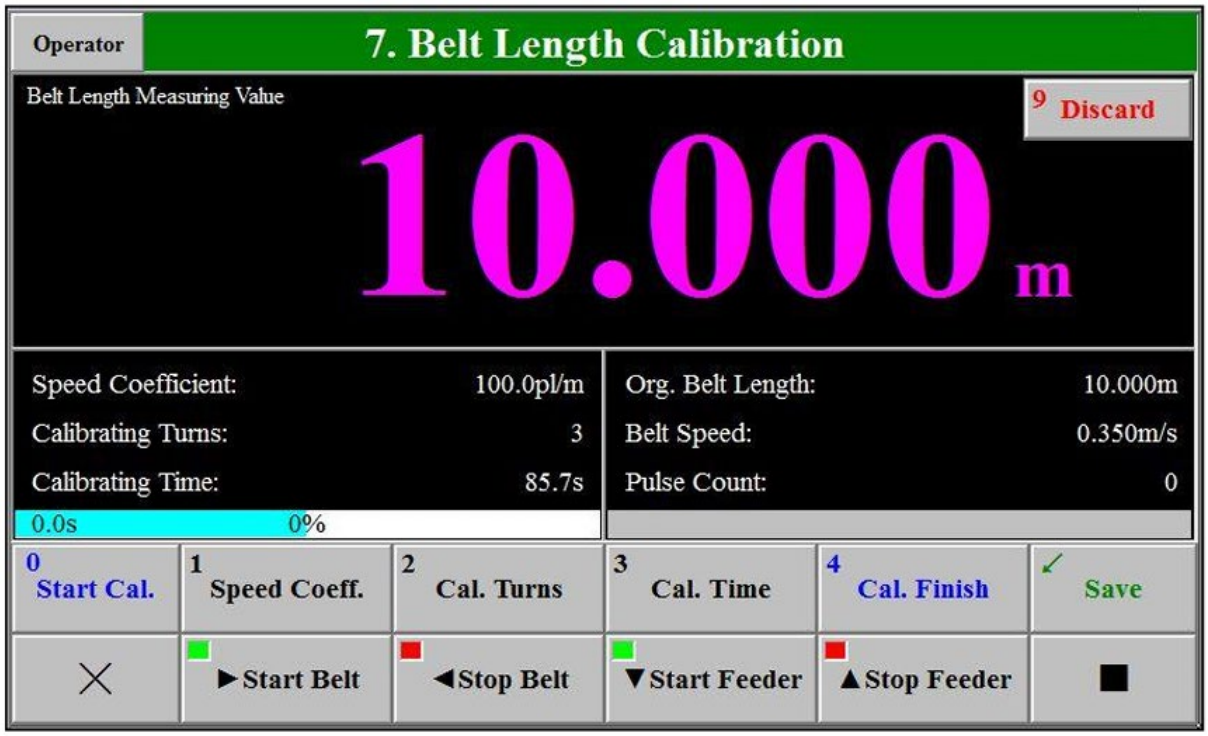


Figure 6-8: Belt Length Calibration Interface

6.8.1 Belt Length Calibration Operation Steps:

8: Ensure the belt is empty and free of materials, and the belt is running at a constant speed.
1: Select *1 Speed Coeff* to set the speed of the speed sensor
2: Select *2 Cal. Turns* and enter the number of turns (N) the belt makes
3: Select *3 Cal. Time* to set the length of time (T) for calibration
4: Click the button •*Start Cal.* to start calibrating
5: After the belt scale has run for the calibrating time, the calibrating process will end automatically
6: Click the button ↙*Save* to save the new *Belt Length*

Note 【*9 Discard*】 button can be used to exit calibration and discard the result at any time

7. Additional Menu Interfaces

7.1 Statistics (F3)

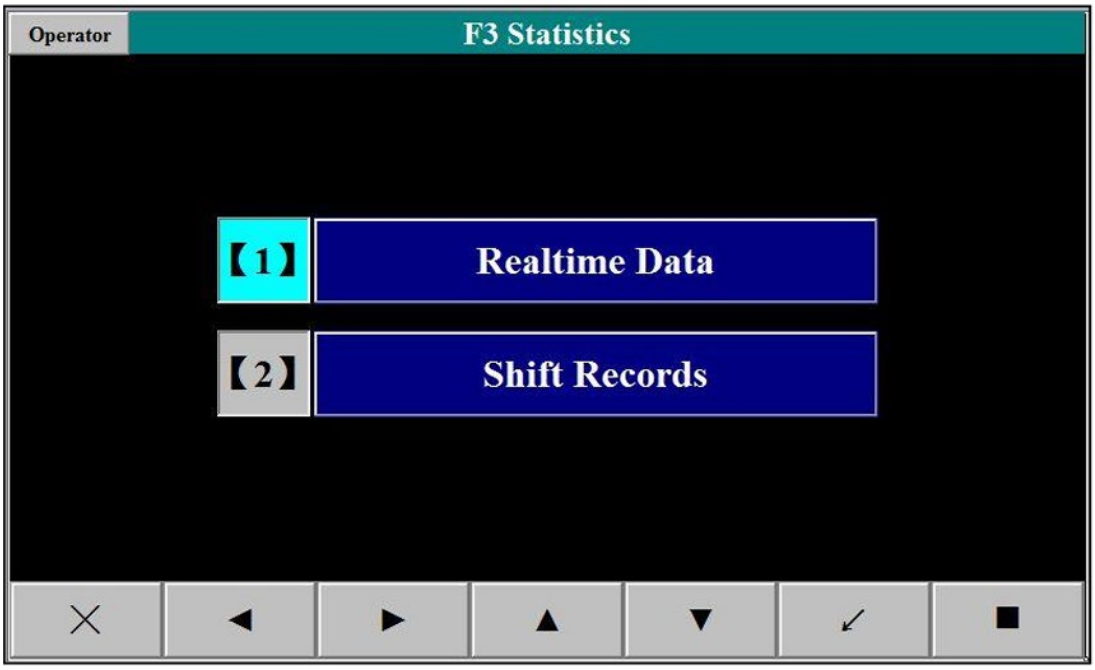


Figure 7-1: F3 Statistics Selection Menu

7.1.1 Realtime Data【1】

The real-time data interface is used primarily to query or clear the live data stored in the indicator.

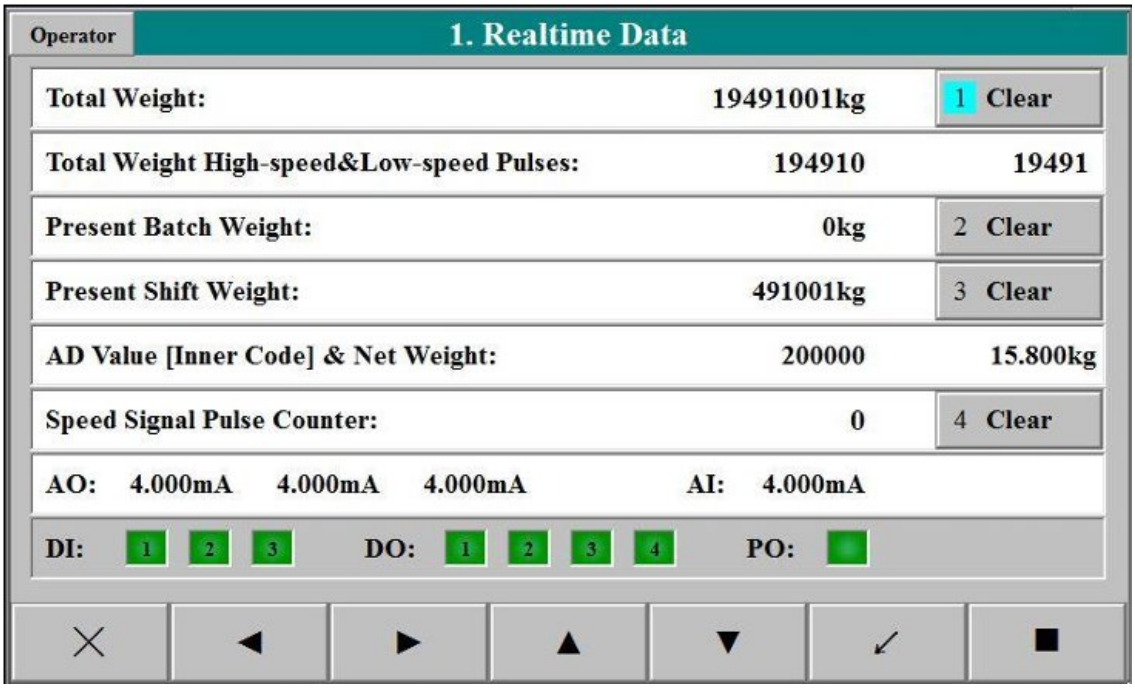


Figure 7-2: Realtime Data Interface

1 Clear: Clear Total Weight and Total Weight Pulses counter **(Operator Authorization: Engineer)**
2 Clear: Clear Present Batch Weight **(Operator Authorization: Engineer)**
3 Clear: Clear Present Shift Weight **(Operator Authorization: Administrator)**
4 Clear: Clear Speed Signal Pulse Counter **(Operator Authorization: None)**

7.1.2 Shift Records【2】

The Shift Records interface is used to query, print, clear, or copy via USB (.csv) shift weight records in a year.

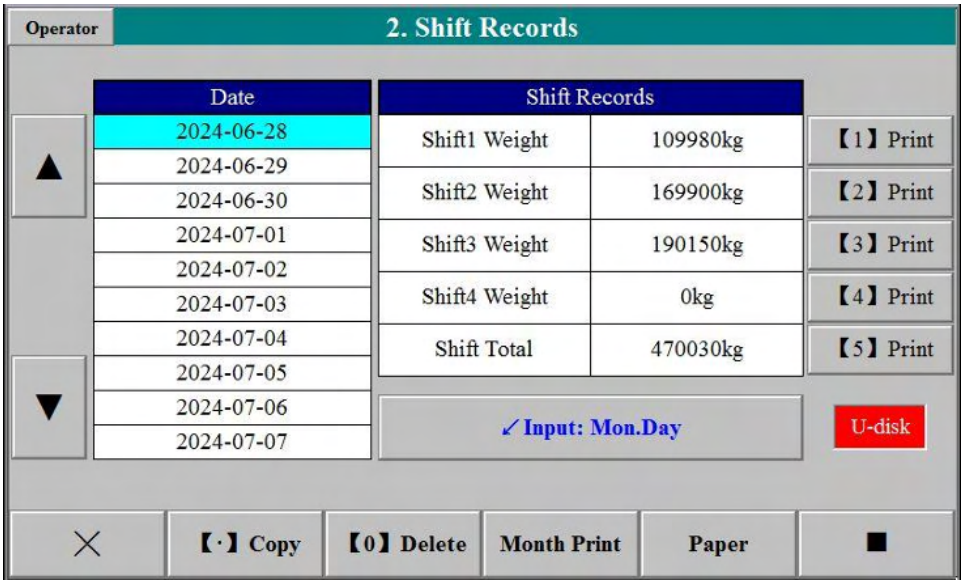


Figure 7-3: Shift Records Interface

Input: Mon.Day / ▼/▲: Record Query **(Operator Authorization: None)**
• *Copy*: Copy 'ShiftRecords.csv' to U-disk **(Operator Authorization: None)**
0 Delete: Delete Shift Weight Records **(Operator Authorization: Administrator)**

7.2 Passwords (F5)

The Password interface is used to change user passwords and allows users to login/logout.

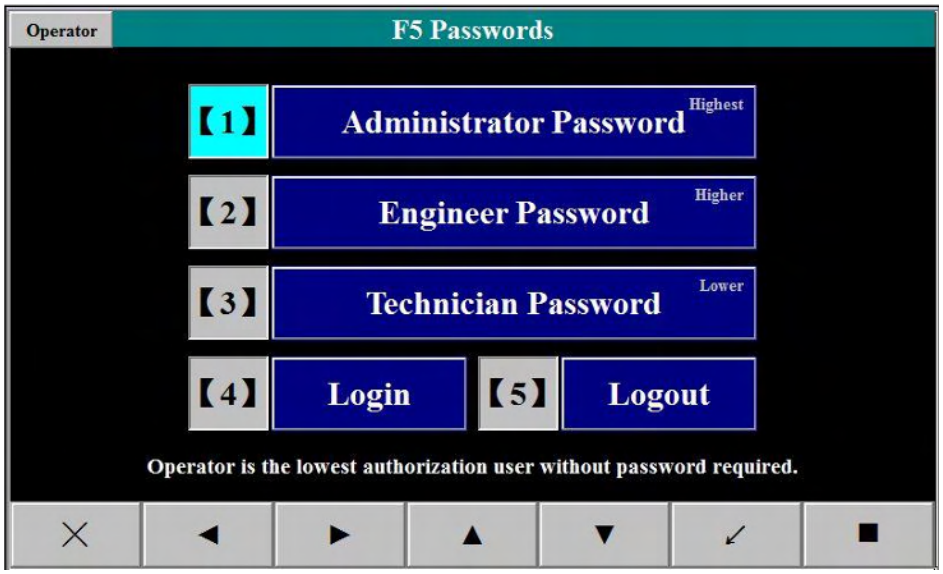


Figure 7-4: Password Configuration Interface

Default passwords:

- Operator with lowest authorization: None
- Technician with lower authorization: -1
- Engineer with higher authorization: 0
- Administrator with highest authorization: 1
- Unlocking HMI: 888888

7.3 Time (F6)

The time interface is used to adjust the date and time of the unit. **(Operator Authorization: Engineer)**

Figure 7-5: Time Setting Interface

7.4 Default (F7)

The Default interface is used to reset parameters to user or factory default settings.

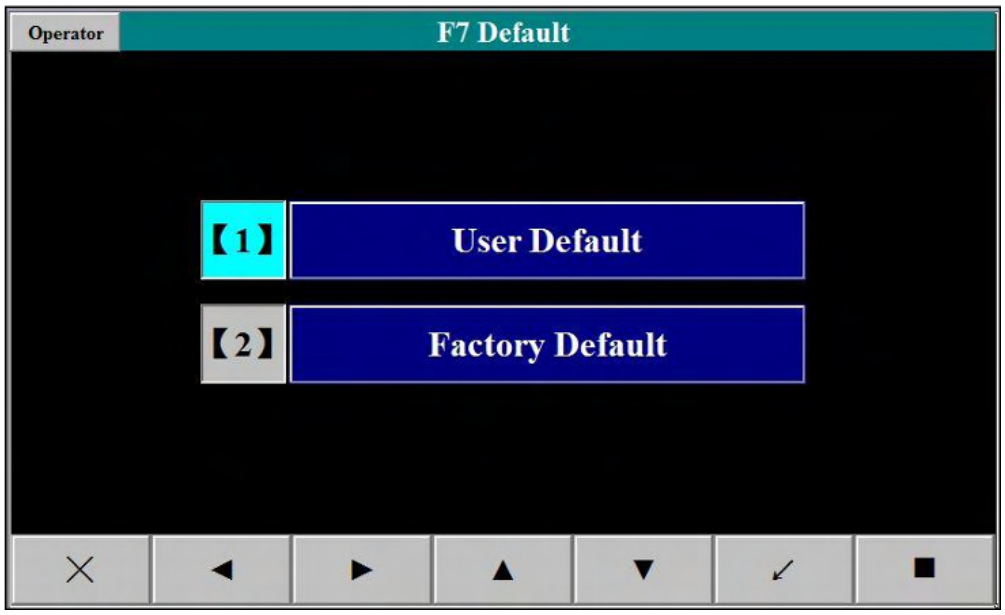


Figure 7-6: Default Settings Interface

User Default operation has no effect on critical aspects of Weighing Parameters or any of the I/O Parameters. Section *5 Settings (F1)* details specific affected parameters. **(Operator Authorization: Administrator)**.

Factory Default operation will reset *all* parameters to default values. **(Operator Authorization: Factory)**.

7.5 I/O Test (F8)

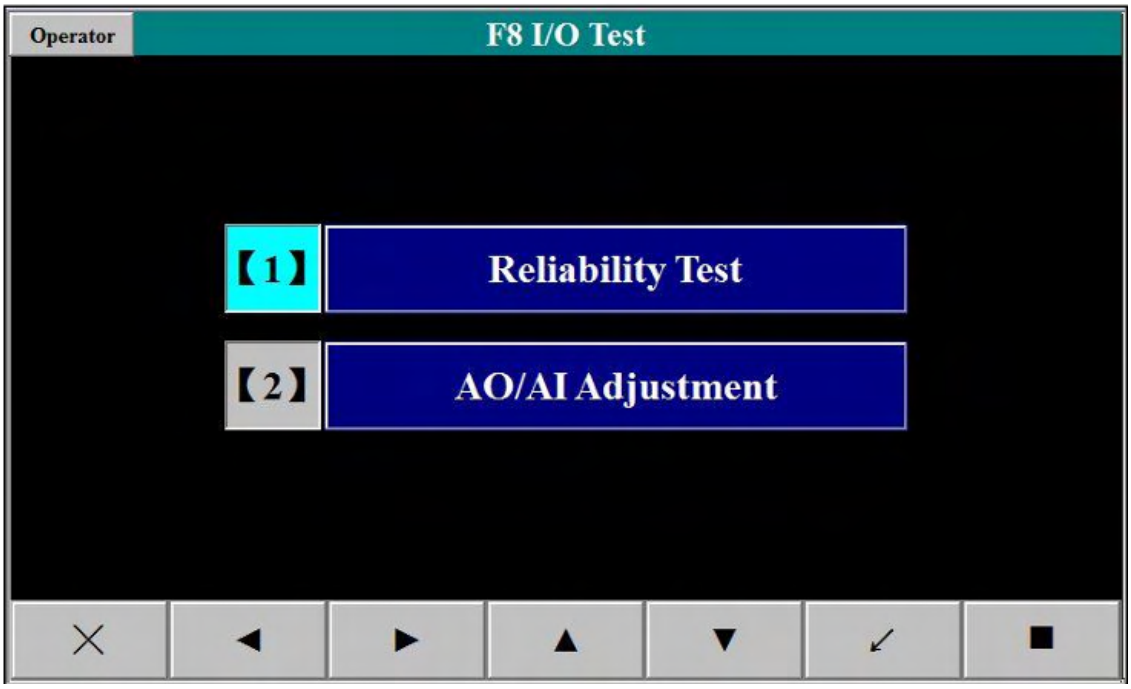


Figure 7-7: I/O Test Interface

Input/Output (I/O) Reliability Test	**Operator Authorization: Administrator**
Analog Output (AO) / Analog Input (AI) Zero/Full Adjustment Test	
Analog Output (AO) / Analog Input (AI) Linearity Test	

7.5.1 I/O Reliability Test

Input/Output (I/O) Reliability Test **(Operator Authorization: Administrator)**

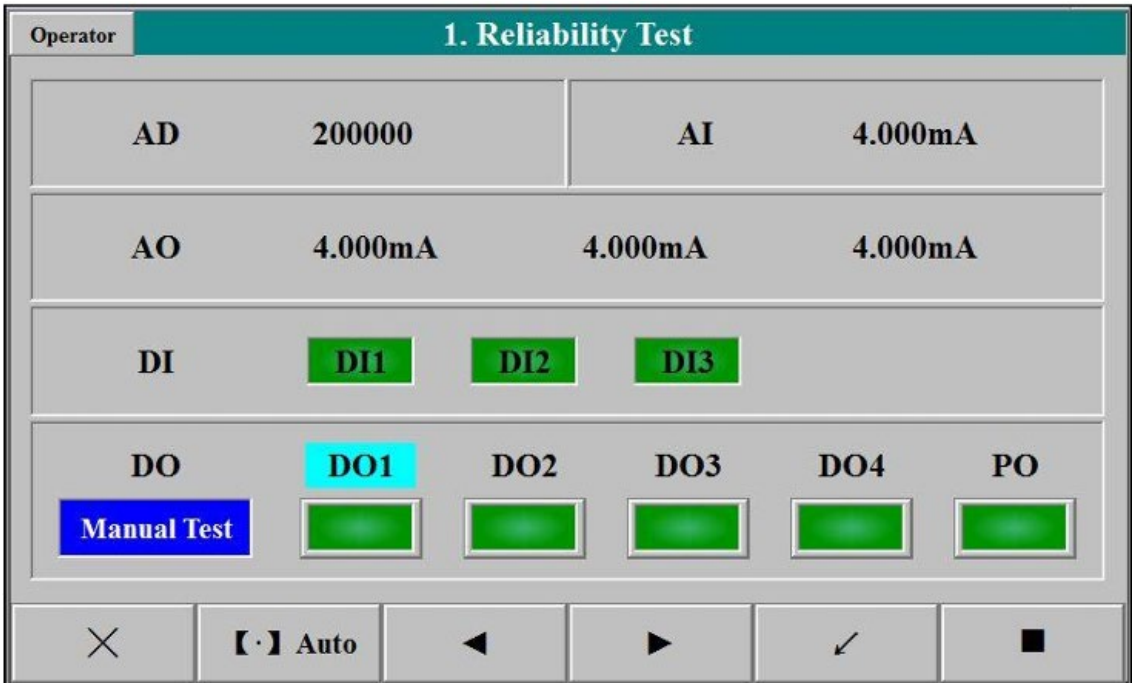


Figure 7-8: I/O Reliability Test Interface

7.5.2 AO/AI Adjustment

Analog Output (AO) / Analog Input (AI) Zero Adjustment, Full Adjustment, and Linearity Test
(Operator Authorization: Administrator)

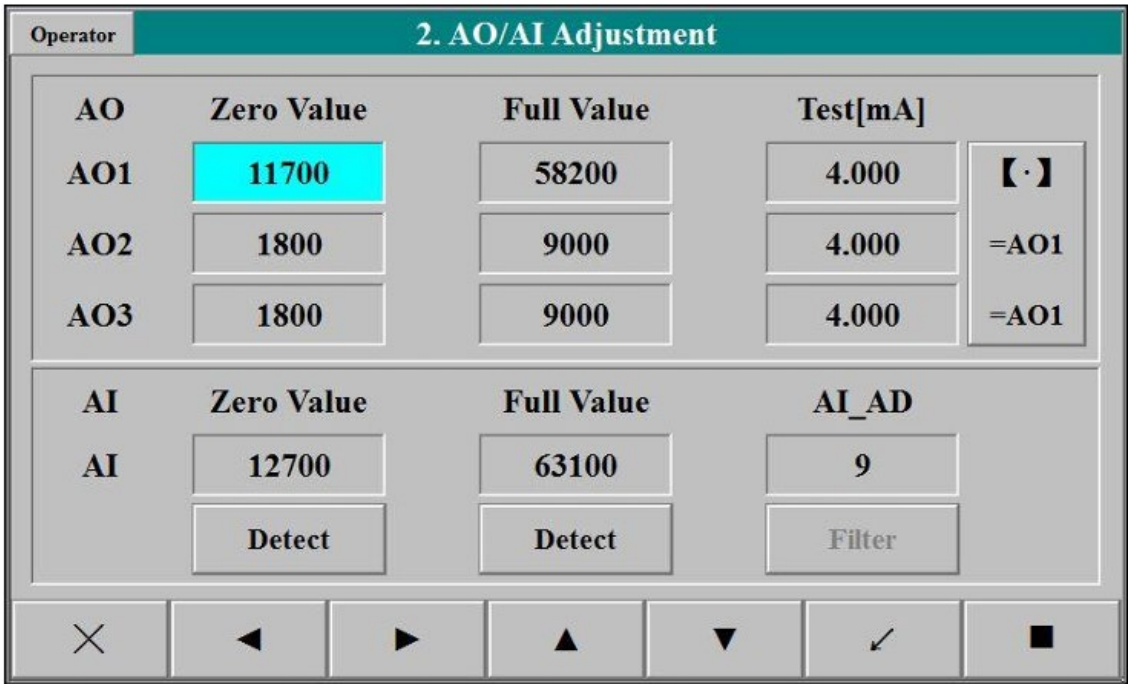


Figure 7-9: AO/AI Adjustment Interface

7.6 Main Interface Options

7.6.1 Functions Menu

To access the Main Functions Setting Interface, press the 【Func】button on the main interface.

Figure 7-10: Main Functions Setting Access Button

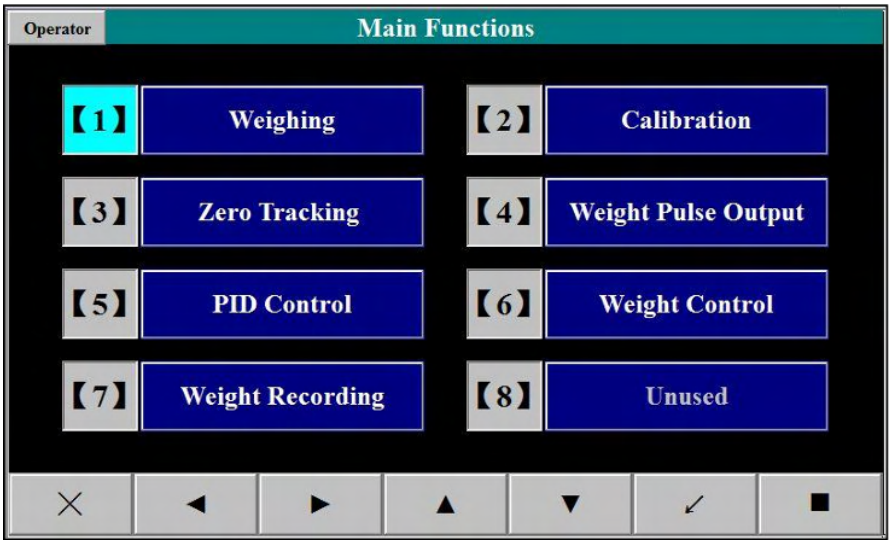


Figure 7-11: Main Functions Setting Interface

This menu provides quick access to the most relevant parameters found in Settings (F1), but uses a slightly different interface design.

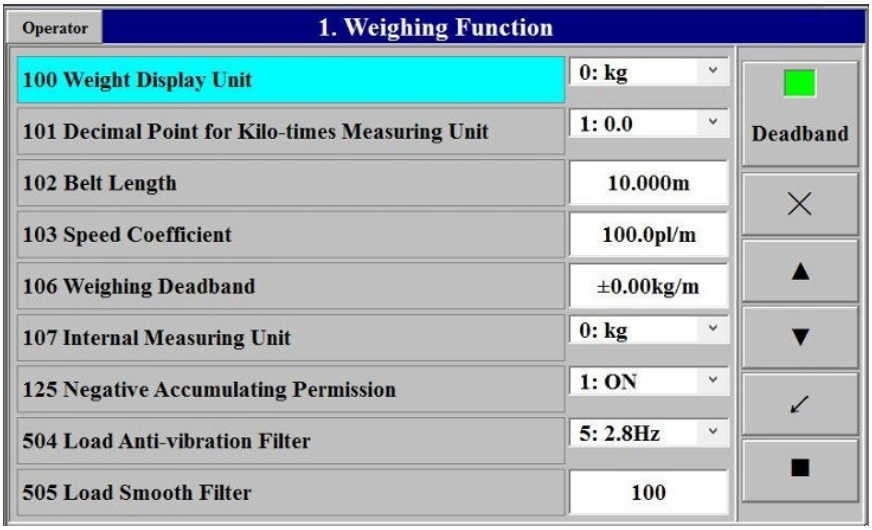


Figure 7-12: 1 Weighing Function Settings Interface

7.6.2 Lock Menu

Figure 7-13: Lock Setting Access Button

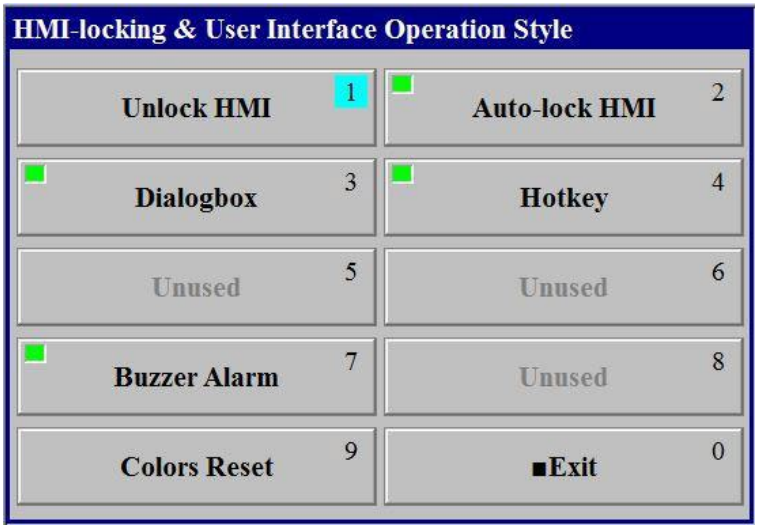


Figure 7-14: HMI-Locking & User Interface Operation Style Interface

It's recommended to set the button operation to "Dialogbox" to avoid accidental inputs during use.

7.6.3 Start Menu

Figure 7-15: Start Operations Interface Access Button

Figure 7-16: Start Operations Interface

1 Start Belt Weigher: Turns on Digital Output (DO) switch "Belt Weigher Start/Stop Control" to start the belt weigher

2 Start Feeder: Turns off the DO switch "Feeder Start/Stop Control" if the belt scale is running

3 All Start: Starts the belt weigher and the feeder after waiting the specified delay time

4 Batch Weight Control: Toggles batch weight control **(Operator Authorization: Engineer)**

213 Delay to Start Feeder: **(Operator Authorization: Engineer)**

7.6.4 Stop Menu

Figure 7-17: Stop Operations Interface Access Button

Figure 7-18: Stop Operations Interface

1 Stop Belt Weigher: Turns off DO switch "Belt Weigher Start/Stop Control" to stop the belt weigher
2 Stop Feeder: Turns off the DO switch "Feeder Start/Stop Control" if the belt scale is running
3 All Stop: Stops the feeder and the belt weigher after waiting the specified delay time
4 Batch Weight Control: Toggles batch weight control **(Operator Authorization: Engineer)**
213 Delay to Start Feeder: **(Operator Authorization: Engineer)**

7.6.5 Records Menu

This menu brings up direct access to *F3 Statistics*.

Figure 7-19: Records Access Button

7.6.6 Zero Menu

Figure 7-20: Zero Calibration Access Button

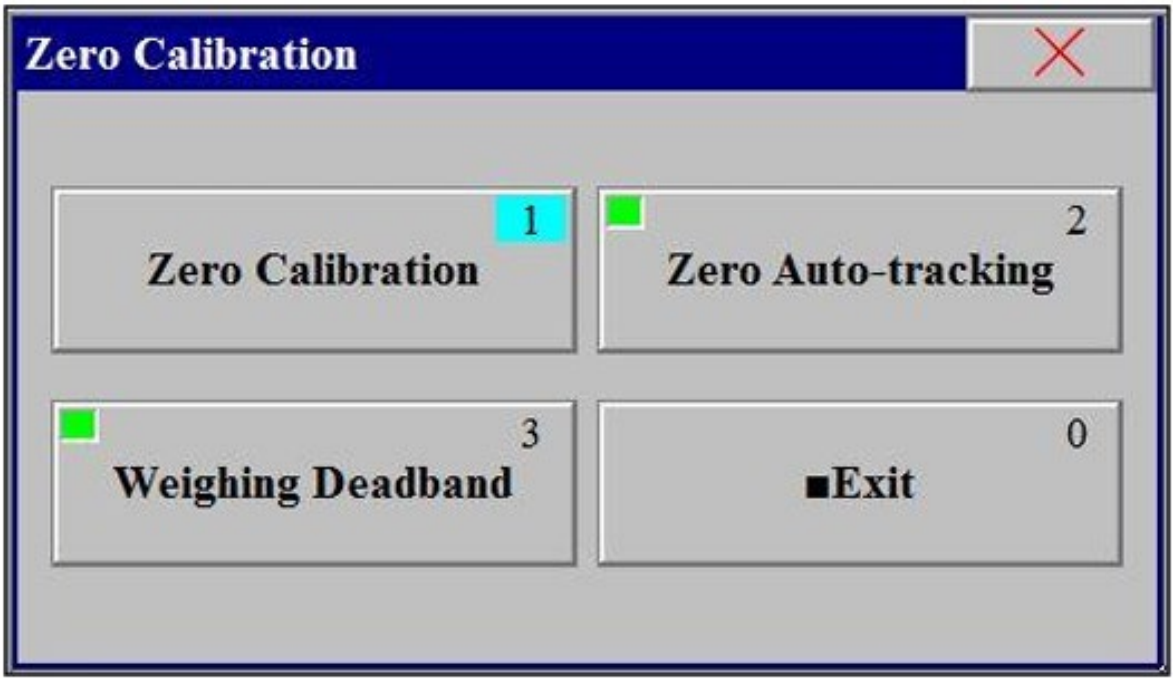


Figure 7-21: Zero Calibration Menu

1 Zero Calibration: Enters Zero Calibration interface (see *6.3 Zero Calibration*)
2 Zero Auto-tracking: Toggles Zero Auto-tracking function **(Operator Authorization: Administrator)**
3 Weighing Deadband: Toggles Weighing Deadband **(Operator Authorization: Administrator)**

7.6.7 Cal. Menu

Figure 7-22: Dynamic Span Calibration Access Button

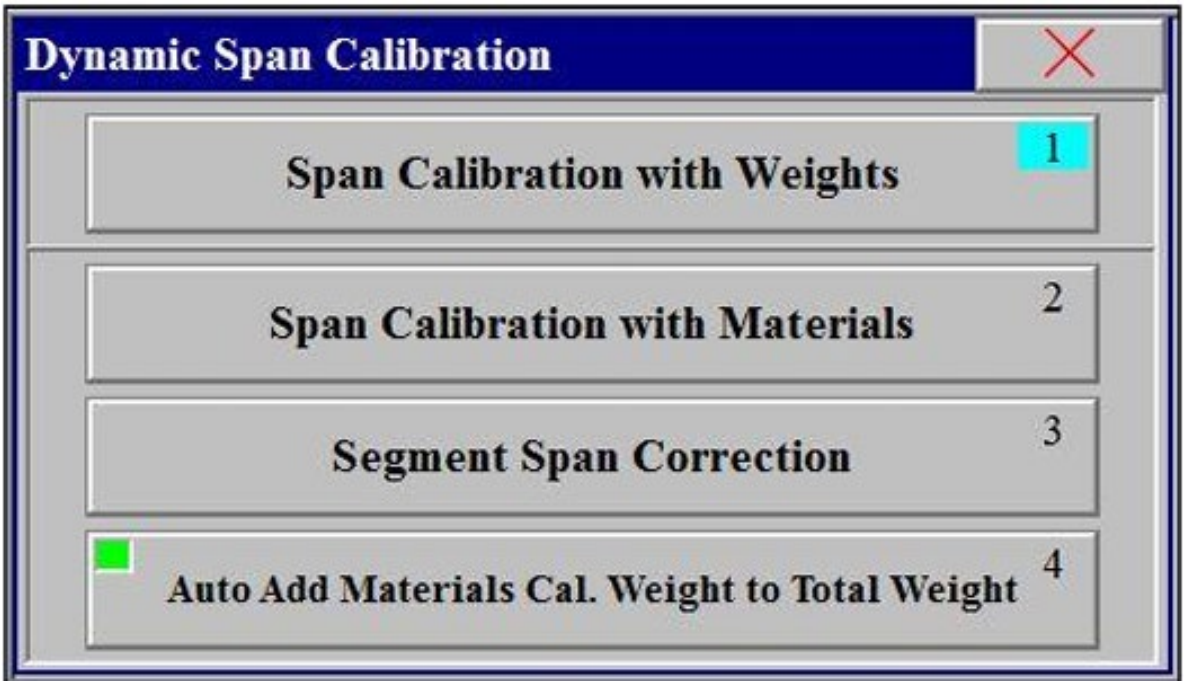


Figure 7-23: Dynamic Span Calibration Menu

(Operator Authorization: Technician)

1 Span Calibration with Weights	Enter "Dynamic Span Calibration with Weights" interface
2 Span Calibration with Materials	Enter "Dynamic Span Calibration with Materials" interface
3 Segment Span Correction	Enter "Segment Span Correction" interface
4 Auto Add Materials Cal. Weight to Total Weight	Change value of Add Materials Calibrating Weight to Total Weight [124] parameter (0: Manual & 1: Auto)

7.6.8 Clear Menu

Figure 7-24: Clear Data Menu Access Button

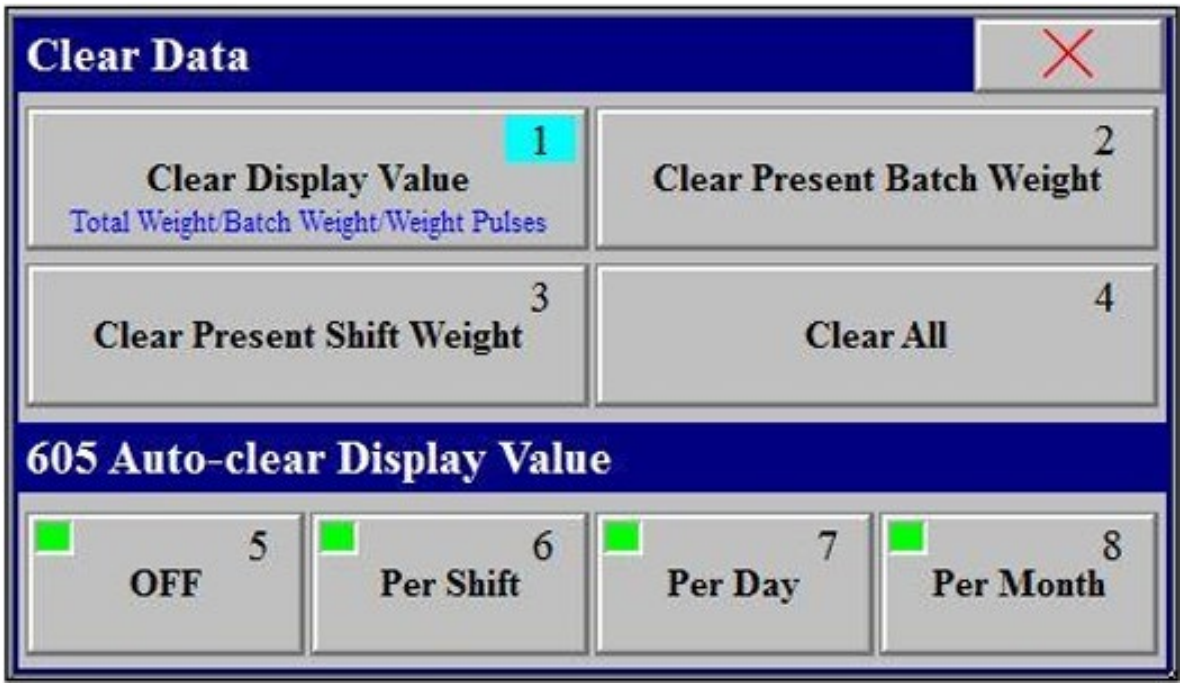


Figure 7-25: Clear Data Interface

1 Clear Display Value: Clears *Total Weight*, *Present Batch Weight*, and *Total Weight Pulses*, no effect on *Present Shift Weight* **(Operator Authorization: Engineer)**
2 Clear Present Batch Weight: **(Operator Authorization: Engineer)**
3 Clear Present Shift Weight: **(Operator Authorization: Administrator)**
4 Clear All **(Operator Authorization: Administrator)**
606 Auto Clear Display Value **(Operator Authorization: Engineer)**

7.6.9 Print Menu

Figure 7-26: Data Print Menu Access Button

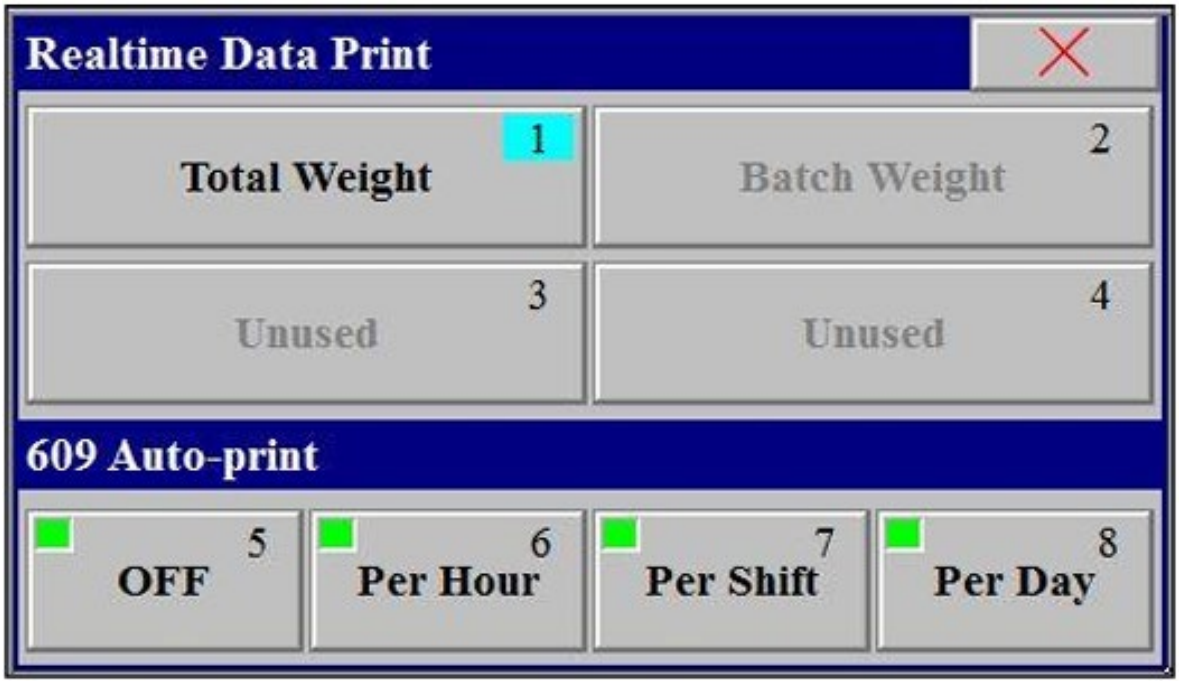
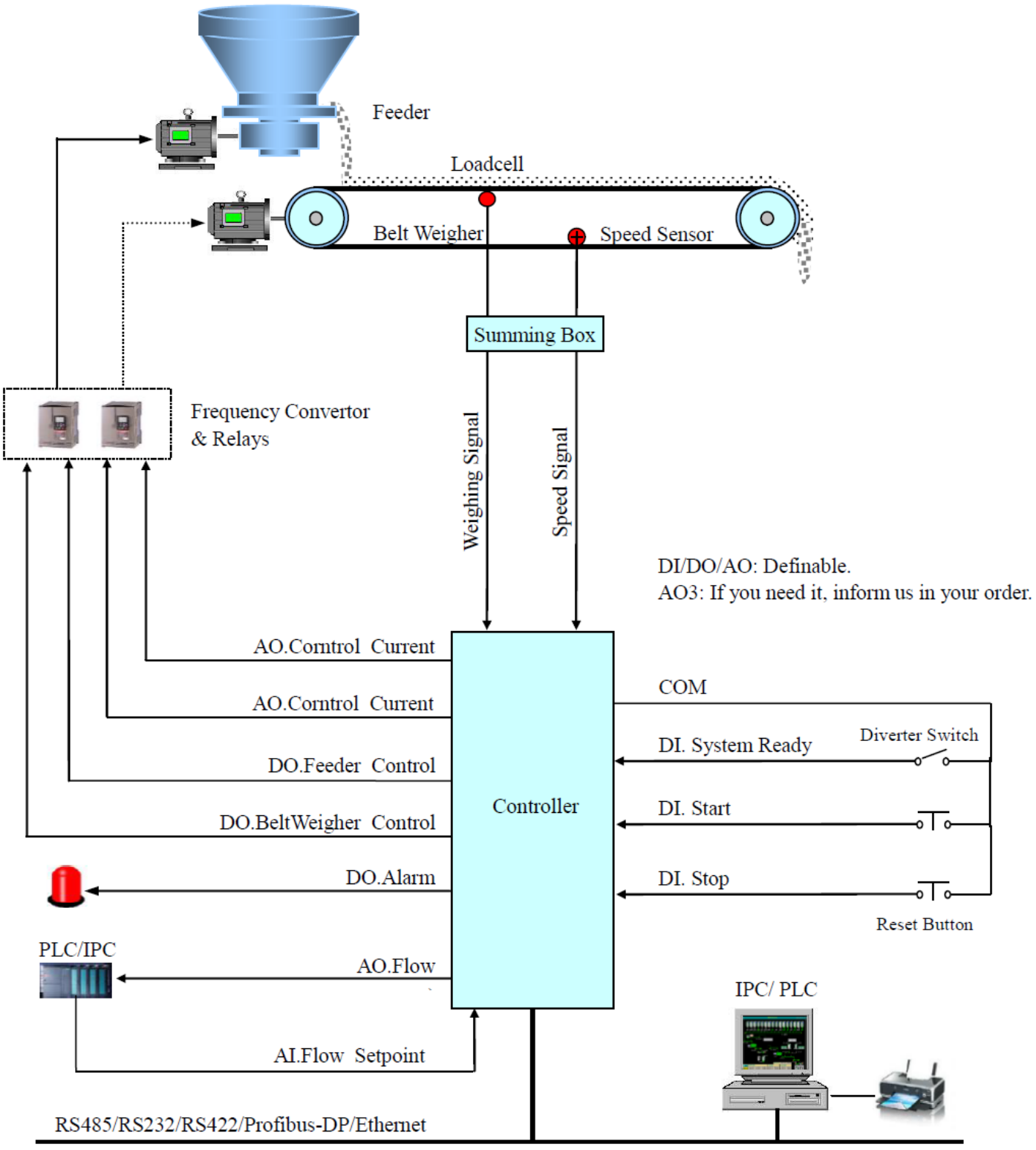


Figure 7-27: Realtime Data Print Interface

1 Total Weight: *Auto Print*

Displays total weight real-time value
(Operator Authorization: Engineer)

8. Ration Flow Auto-Feeding System Example

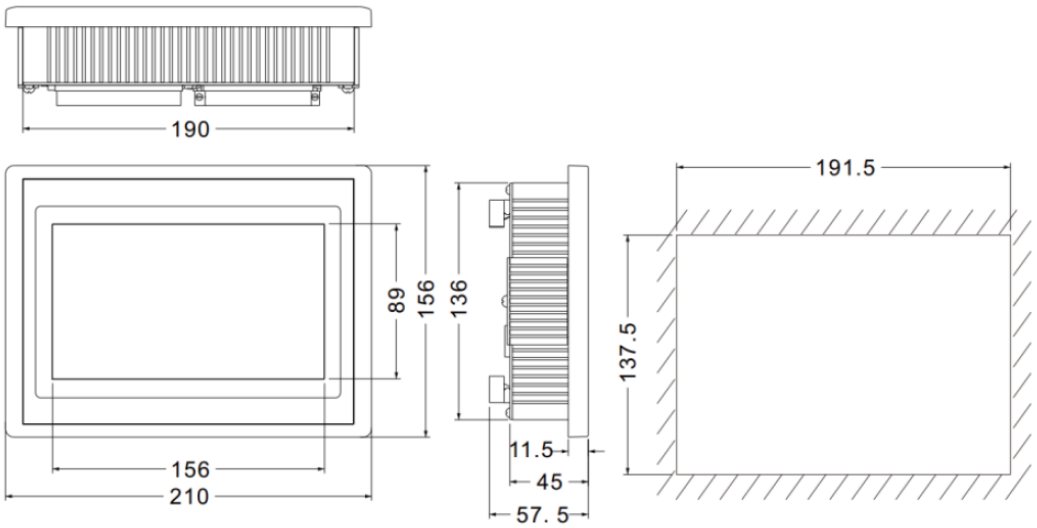


9. Operation

- The indicator is rated for IP54, take care not to allow excessive water/dust ingress as it can affect the output or render the unit inoperable.
- For the most stable readouts, a reliable high-quality DC power supply should be used. Double check the supply voltage before powering on the unit to avoid possible damage.
- The indicator should only be used in environments compliant with the technical specifications.
- To avoid shock while using the indicator, the metal shell of the controller should always remain grounded.
- The load cell cable should be run through areas free of electrical and magnetic fields as the load cell must be able to transmit signal differences of a few μV to the amplifier, these fields can induce interference voltages.
- If cables are being laid through cable conduits, sensor wires should not be laid together with power cables.

10. Technical Specifications

10.1 Drawings & Dimensions



Outline Size W×H×D[mm]	Front Panel Size W×H[mm]	Box Body Size W×H[mm]	Panel Cut-out Size W×H[mm]
210×156×57.5	210×156	190×136	191.5×137.5

Figure 10-1: Unit Dimensions

10.2 General Specifications Table

Table 10-1: Product Specifications

Max. Number of Load Cells	8 x 350Ω
Max. Power Consumption	10W
Load Cell Excitation Voltage	10V DC
Communication Interface	RS232, RS485, Ethernet, Profinet, Profibus-DP, USB
Print Interface	RS232
Input Range	0-31mV
Sampling Frequency	400Hz
CPU	Cortex-A8, 600MHz clock
Enclosure Material	Stainless Steel
Measurement Display Units	lb, Klb, g, kg, t
Working Temperature	-13°F to 113°F/-25°C to +45°C
Display Type	7" Full colour touchscreen TFT display
Power Supply	24V DC, 10W max
IP Rating	IP65 front panel, IP54 unit enclosure

10.3 Additional Specifications

- Load Cell Interface
    - Max. current: 250mA
    - Signal input range: 0-31mV
        - 1.0-3.0mV/V load cell sensitivity
    - 24-bit Σ-△ADC with internal resolution of 1/1,000,000
    - Zero drift: ±0.1μV/℃ relative to input (RTI)
    - Gain drift: ±5ppm/℃
    - Non-linearity: 0.005%FS.
- Speed Sensor Interface
    - Output voltage: 12VDC
    - Max. current: 100mA
    - Speed pulse input range: 0.5-3000Hz
- Switch Signal Interface
    - 3x Definable Normally Open switch inputs [DI]
    - 3x Definable Normally Open relay switch outputs [DO]
        - Max. voltage: 220VAC/24VDC
        - Max. current: 1A
    - 1x Transistor switch output [PO]
        - Voltage: 5-24VDC
        - Max. current: 100mA
- Analogue Signal Interface
    - 3x Definable analogue signal outputs [AO]: 4-20mA output, 12-bit DAC
    - (Optional) 1x analogue signal input [AI]: 4-20mA input, 12-bit ADC
- Digital Communication Interface
    - (Optional) COM1: RS485/Profibus-DP/Profinet/Ethernet
    - COM2: RS232
    - COM1/2: IPC/PLC, LED remote display, wireless module
    - COM[RS232] DB9: Serial printer with 9600bps baud rate, no parity check, 8 data bits, 1 stop bit
    - USB: port for downloading HMI software and copying data to U-disk
- Operating and dimension specifications
    - Voltage: 24VDC±20%
    - Outline Size: 210×156×57.5mm [W×H×D]
    - Window Size: 156×89mm [W×H]
    - Box Body Size: 190×136mm [W×H]
    - Panel Cut-out Size: 191.5×137.5mm [W×H]
    - Operating Temperature: -25℃ to +45℃
    - Storage Temperature: -30℃ to +60℃
    - Relative Humidity: Max. 85%RH
    - Weight: Approx. 1.25kg

⚑ Important

Specifications are subject to change *without* notice. Users are encouraged to refer to our website or confirm with our team any details, questions, or concerns.

Please **Contact Our Authorized Dealer** for Technical Assistance:

Notes:

1-855-269-5623
www.anyload.com

PN-250701