



# **Check weigher**

**CW-100G-101A**

**User's manual**

(Applicable for MCGS+C01 version)

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The company's Web address <http://www.gmweighing.com>

## 1. Summary

CW-100G checkweigher is an industrial automatic checkweigher with high speed, high precision developed by our company to meet the changing technological update.

Full touch screen makes CW-100G checkweigher easy to operate, external expansion of IO input and output and external serial port communication to achieve multi-point control, monitoring and remote control of the product.

### 1.1 Product Features

Product parameters;

Model number	CW-100G
Power supply	AC220V $\pm$ 10%, 50/60Hz, 350W
Weighing range	5 to 100g
Accuracy of weight check	Plus or minus 0.3 g
Weight checking speed	180 pieces/min
Conveyor belt speed	15 to 60 m/min
Belt size	250mm*100mm
Center distance of drum shaft	250mm
Table height	830 ( $\pm$ 50mm)
Operating temperature	0 to 45°C
Maximum humidity	90% R.H non-dew forming
Ultimate load	The instantaneous ultimate load shall not exceed 200g

Note; Scale stands are strictly prohibited from being used over the range.

### 1.1.1 Mechanical part

1. The servo driver is used as the motor driving device to ensure the stability and adjustability of the speed in the process of weight checking.
2. Double photoelectric mode more accurately determine the object up and down the weighing platform, improve the accuracy and efficiency of weight detection.
3. Scale height adjustment range is larger, convenient for customers to choose to use.
4. Mechanical modular design makes transportation and maintenance more convenient and application adaptability stronger.

### 1.1.2 Electrical part

1. Simple wiring, external only need to access the power cord; The internal use of different specifications pin plug terminal block, wiring is convenient and will not make mistakes.
2. Touch screen operation interface optimization, product parameter setting is simple and the main interface content is richer.
3. The three-color indicator shows qualified (green), out-of-tolerance (red), under tolerance (yellow), and the working state of the inspection weight is clear at a glance. Buzzer user can define the alarm mode.
4. The new algorithm is adopted in the process of weight inspection, and the high precision can be guaranteed in the process of high-speed weighing.
5. Optimize user login and logout function, without tedious operation and effectively prevent others from disoperation.

## 1.2 Usage Notice

### 1.2.1 Precautions

1. Do not perform mechanical or electrical maintenance while live, do not place tools on the scale, and do not perform welding operations on the scale.
2. The installation site must ensure the ground level, after installation through the foundation adjustment, ensure that the weighing table level, tilt does not exceed 0.5 degrees, away from the vibration source.
3. Make sure the equipment is safely grounded and there is no strong electricity or magnetic field interference nearby.
4. Do a good job of fire prevention, avoid direct sunlight to check the weighing table and relatively strong air flow (outdoor air, fan and air conditioning outlet is directly against the weighing table).
5. Should avoid squeezing, stepping on the scale platform, handling should first fixed scale, installed sensor limit to prevent damage to the sensor, prohibit the direct handling of the scale platform to move.

## 2. Product installation

### 2.1 Overall appearance

The product appearance is shown in Figure 2-1 below.



Figure 2-1 Overall appearance of the product

Serial number	Name	Introduction
1	Peduncle	Prevent sliding and vibration of the weighing scale, and adjust the level of the weighing table.
2	Conveyor belt	The conveying end of the weighing platform on the object
3	Weighing platform	Weighing platform for the measured object
4	indicator light	More intuitive display of the weight inspection results, allowing the status of the results to be seen from a distance.



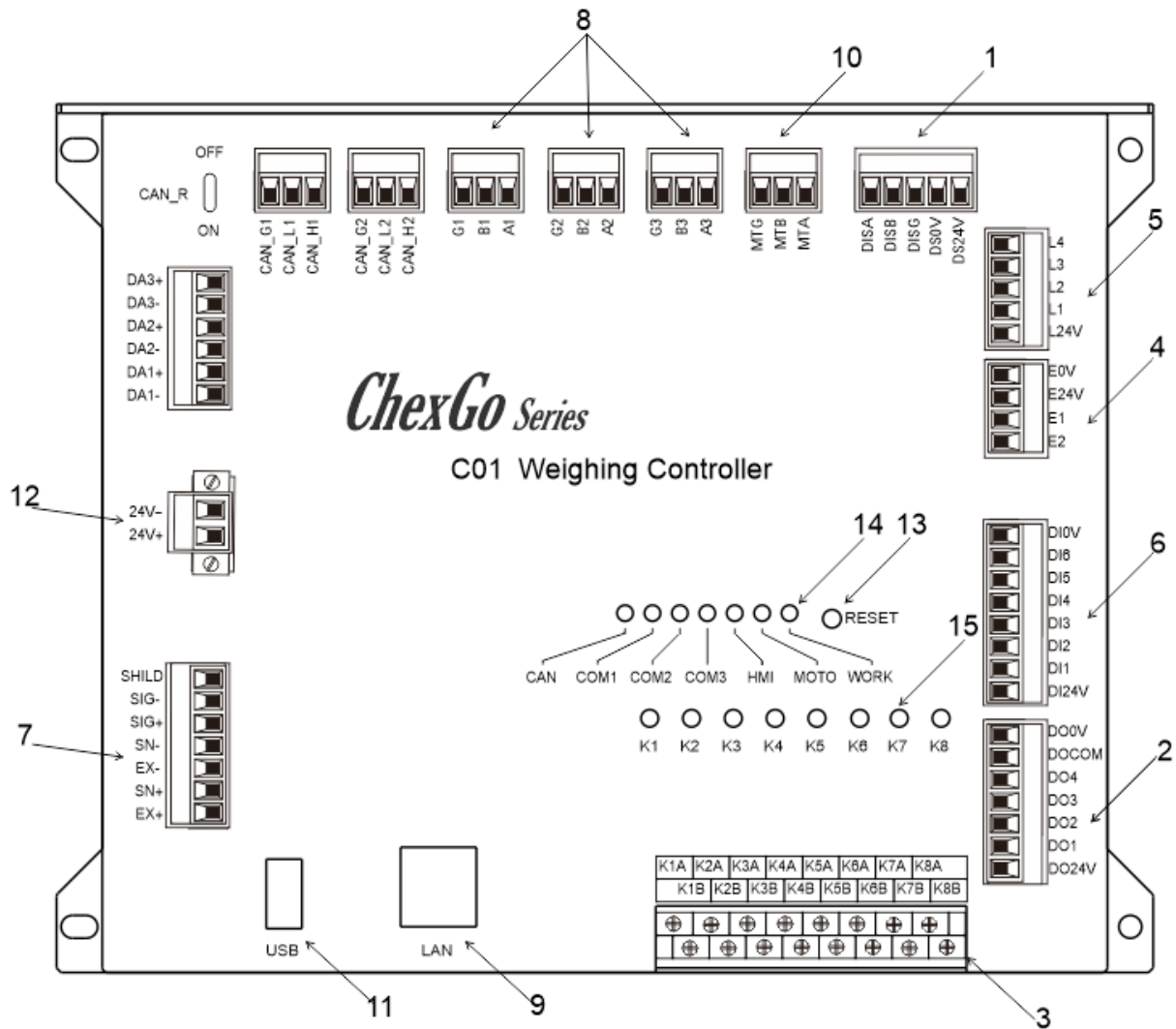


Figure 2-2 Control panel of checkweigher

Serial number	Function
1	Touch screen communication jack
2	External custom outlet OUT1-OUT4
3	External custom output relay K1-K8
4	Detect the photoelectric sensor wiring terminals
5	Alarm light wiring terminals
6	Custom input ports 1-6 externally

7	Sensor terminal
8	External RS-485 communication jack
9	External TCP/IP communication network port
10	Inverter communication jack
11	External USB data interface
12	24V power terminal
13	Reset key
14	Communication status indicator
15	Output relay status indicator light

## 2.4 Electrical interface

Photoelectric sensor (already wired at factory):

E24V: photoelectric sensor DC24V+.

E0V: photoelectric sensor DC24V-.

E1: Signal input of photoelectric sensor for loading of checkweigher.

E2: Check the output photoelectric sensor signal input of the weight balance.

Alarm light (has been connected when leaving the factory):

L24V: Alarm light DC24V+, maximum output power 2VA.

L1: Buzzer.

L2: When the detection result is out of tolerance, the low output is valid until the next check begins.

L3: When the test result is qualified, the low output is valid until the next check begins.

L4: When the detection result is inferior, the low level output is effective until the next check starts.

Input (function can be customized, onsite connection according to actual demand):

DI1: running input. In the stopped state, the input is valid and the system enters the running state.

DI2: Stop input. In the running state, the input is valid and the system enters the stop state.



K1: defined as operation. When the system is in operation state, the relay output is closed, and K1A and K1B are switched on. Used to control the start and stop of frequency converter.

K2: defined as stop. When the system is in the stopped state, the relay output closes and K2A and K2B are switched on. This definition is the factory default setting and can be modified according to the actual needs.

K3: defined as out of tolerance elimination, the product test result is out of tolerance, and within the range of out of tolerance elimination duration, the relay output is closed, K3A, K3B switched on. This definition is the factory default setting, and can be modified according to the actual demand.

K4: defined as under error elimination, product detection result is under error, and within the range of under error elimination duration, the relay output is closed, K4A, K4B on. This definition is the default setting of the factory, and can be modified according to the actual demand.

K5: defined as alarm. When alarm occurs in the system, the output of the relay is closed and K5A and K5B are switched on. This definition is the factory default setting, and can be modified according to the actual demand.

K6: defined as batch completion, after the completion of the product test batch, the relay output is closed, K6A, K6B on. This definition is the factory default setting, and can be modified according to the actual demand.

K7: defined as qualified indication, after the product test is qualified, the relay output is closed, K7A, K7B on. This definition is the factory default setting, and can be modified according to the actual demand.

K8: defined as rejection of unqualified. When unqualified is detected, the output of the relay is closed, and K8A and K8B are switched on. This definition is the factory default setting, and can be modified according to the actual demand.



W: corresponds to connect the motor W terminal.


Note: L, N and G are the external AC power supply, and U, V and W are the output power supply of the inverter to power the motor. These two groups of power supplies have been connected before delivery. If the frequency converter or motor needs to be reconnected in the subsequent use and maintenance process, please be sure to connect correctly according to the instructions, and remember not to connect it backwards, otherwise it will cause damage to the frequency converter.

## **2.5 Power supply power**

AC220V $\pm$ 10%, 50/60Hz, 350W.





11.  Click this type of action box to open and close the corresponding function Settings.

### 3.2.2 Zero clear operation

If the touch screen displays the real-time weight value of the checkweigher in the stopped state is not zero (zero indicates the off state), click "Clear zero" to clear the weighing platform, so that the real-time weight value is displayed as zero, and then the zero indicates the on state.(It can be operated only in the stopped state).

If the weight check scale shows that the weight is unchanged, the stable identifier bit is on; otherwise, the stable identifier bit is off (the stable identifier bit is only related to the weight state, and has nothing to do with the operation of the checkweigher and the size of the weight value).

### 3.2.3 Start up operation

Click "Start" on the touch screen to start the weight checking scale, and the weight checking motor drives the weight checking belt to rotate. At this time, the operation label on the touch screen is "Running", and the weight checking operation can start.

### 3.2.4 Stop operation

Click "Stop" on the touch screen to stop the weight inspection belt and end the weight inspection process. At this time, the operation label on the touch screen is "Stopped".

### 3.2.5 Power off operation

Turn knob switch to "0" position, touch screen off, disconnect power.The above operations can only be performed when there is no weight product on the checkweigher.

## 3.3 User login

Under the touch screen initial interface, click "Product" or "Settings" to pop up the password login box, select the user to enter the corresponding password and click "Confirm" to log in.The initial passwords of the operator and administrator are written in the user description.





Product name	Name of the product under inspection
Belt speed	Weigh the speed at which the belt is running
Standard weight	The standard weight of the product to be checked
Upper limit	In the process of weight inspection, if the weighing value is greater than the target value + the upper limit value, it will be judged as out of tolerance
Lower limit value	In the process of weight inspection, if the weighing value is less than the target value-lower limit value, it will be judged as undererror
Tare weight	The weight of the item's outer packaging
Qualified culling distance	The distance traveled by the product from the end of the scale to the start of the qualified culling mechanism
Duration of qualified culling	The duration of the qualifying cull mechanism's action
Out-of-tolerance culling distance	The distance traveled by the product from the end of the scale to the start of the offset removal mechanism
Underweight culling distance	The distance traveled by the product from the end of the scale to the start of the underbalance removal mechanism
The out-of-tolerance culling action time	The duration of the kill mechanism's action
Undershoot culling action time	The duration of the underkill operation
Unqualified culling distance	The distance traveled from the end of the scale to the nonconforming product after the start of the removal mechanism
The time of the unqualified culling action	The continuous action time of the rejection mechanism for nonconforming products (including out-of-error + undererror)
Correction factor	Standard no correction is 1000. Correction factor = $1000 + (\text{actual weight} - \text{test weight result}) / \text{min indexing}$ . That is, if the weight test result is light, the correction factor is the number greater than 1000, if the weight test result is heavy, the correction factor is the number less than 1000

Total lot	Total number of pieces of heavy product inspected
Qualified batches	Number of eligible batches of products
Sampling starting percentage	The sampling data to this percentage is discarded after the object is placed on the scale
Percentage used for sampling	Data that is consistently used as a percentage from the start of sampling is used to calculate the weight check result
Dynamic zeroing filter grade	Filtering parameters in the weighing process
Dynamic clearing stability range	When the belt is running, within the stability determination time, the weight variation range is judged to be stable within this setting value, and only when it is stable can dynamic zeroing be allowed
Dynamic zeroing and stabilizing time	When the belt is running, within this setting value, the range of weight variation is judged as the stability of the scale platform within the range of dynamic zero clearance stability. Only when the stability allows the dynamic zero clearance
Maximum sampling time	Maximum sampling time during weighing
Cont.ZERO Failure Alarm Threshold	How many times did the weighing platform fail to reset dynamically during the weighing process
Number of Averaging Samples	During servo control, the average value of the set number of products is compared with the user set value, and the difference between them is used as the basis of control. When it is 0, the filling servo function is not used
Plus frequency	Pulse frequency value of servo motor
Skip Samples	It is equivalent to the number of objects from the charging machine to the photoelectric switch of the weighing scale. It also refers to the number of products passed before the next correction
Diff in Gram	This setting is the adjusted weight corresponding to each correction pulse
Target Weight	Equivalent to the target value of package inspection weight
Tendency Max.Limit	When the weight is higher than this value, it will not participate in the average value calculation and will generate an alarm

Tendency Min.Limit	When the weight is lower than this value, it will not participate in the average value calculation and will generate an alarm
Servo motor dead zone	If the absolute value of weight error is lower than this value, it will not be corrected
Maximun servo modulation	Refers to the maximum allowable modulation correction
Tendency Max.Limit Alarm&Stop	Eliminate servo upper limit alarm shutdown
Tendency Min.Limit Alarm&Stop	Eliminate servo lower limit alarm shutdown
Servo longtime Alarm&Stop	Alarm shutdown not corrected in time

### 3.4.3 Modify product parameters

On the Product list page, select the product whose parameters you want to modify from the product list and click "Product Parameters" to enter the product parameters interface to modify the selected product parameters (the newly added product directly jumps to the product parameters interface).

- The standard weight refers to the weight of the product to be checked, and the upper and lower limit is the allowable deviation value of qualified product; If it is not necessary to calculate the packaging weight of the product, the outer packaging weight of the product can be written into the tare weight column, and the net weight should be filled in the standard weight column.
- The product number is automatically generated by the system; The linear speed of the belt is calculated from the detection speed, and changes with the change of the detection speed. It cannot be filled in (the linear speed of the belt should be consistent with the linear speed of the front and rear end conveying mechanism).
- The compensation weight difference value is calculated by dynamic calibration. Under normal circumstances, manual change is prohibited to prevent deviation between the product weight and the actual weight.
- When filling in the product parameters, attention should be paid to its value range. Generally, if it is lower than the lower limit of the parameter range, the parameter value will remain unchanged; if it is higher than the upper limit of the parameter range, the upper limit of the parameter range will be written by default.
- The definition of weight checking speed, belt speed and correction coefficient is described in detail on the help interface of product parameters. If necessary, you can click "Help" to view.



The weight calibration scale	Put the weight on and after entering the weight of the weight, click
Current voltage value	The current voltage value of the sensor
Empty scale voltage value	The voltage value of the sensor when the top of the scale is emptied
Weight voltage value	The voltage value of the sensor after placing the weight

### 3.5.1 The weight calibration scale

In the setting page, click "Static calibration" to enter the interface of weight calibration, follow the steps on the touch screen to calibrate the scale, and click "Exit" to return to the main interface after the calibration is completed. For specific operation methods, please refer to "Operation Instructions on Buttons and Operation Frames" in Section 3.3.2.

- During calibration, ensure that the checkweigher is in the stopped state; otherwise, the interface of the checkweigher cannot be entered; Calibration should ensure that there is no item on the weighing platform, no vibration on the weighing platform, and no relatively strong air flow around the checkweigher.
- When the weighing platform is empty, ensure that the weighing platform is at zero position and stable. Otherwise, please eliminate interference and click "Calibrate the weighing platform". The second step can only be carried out when the touch screen indicator is 0 and the stability sign is lit.
- When placing the weight, try to avoid the weight hitting the surface of the weighing platform. Enter the correct weight into the weight box of the weighing platform, otherwise it will lead to inaccurate calibration scale or calibration failure (the weight of the weighing platform should be greater than the product weight and not exceed the maximum range of the checkweigher).
- If the calibration fails, please check whether the scale is stable and whether the sensor is interfered by the outside world or whether the scale is in contact with other equipment, and re-calibrate after troubleshooting.

### 3.5.2 Dynamic calibration of scale

On the product page, click "Dynamic calibration" to enter the dynamic calibration interface, and perform dynamic calibration according to the text prompts. When completed, relevant parameters will be automatically calculated and generated and product parameters will be written. Click "Exit" to return to the main interface after completion of calibration. For details, please refer to Section 3.3.2 "Operation Instructions for Buttons and Operation Frames".



Correction factor	<p>The standard value is 1000. After the number of dynamic calibration is completed, the controller will automatically calculate this value according to the dynamic result and static weight.</p> <p>If it is not convenient for dynamic calibration, you need to enter this value manually, which can be set in the product parameter interface, and fill in the size of the value refer to the method in the dynamic calibration parameter help interface</p>
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- Calibration must ensure that the check scale in the stopped state, otherwise can not enter the dynamic calibration interface;When calibrating, ensure that there is no item on the scale, no vibration on the scale, and no relatively strong air flow around the scale.
- When the weighing platform is empty, it should be ensured that the weighing platform is at zero position and stable, otherwise, please eliminate external interference and carry out "zero clearing" operation.
- When placing the product, the product should avoid hitting the surface of the weighing platform. Only after the weight is stable can you click "Obtain static weight";If the product has a gross weight value, please set the gross weight value first before dynamic calibration.
- The initial value of learning times defaults to 10. If the learning results are poor in accuracy, you can appropriately increase the number of learning times;If the production requirement is not high, the learning times can be appropriately reduced to improve the learning speed;External interference should be avoided in the learning process, and the system will automatically save the learning results and display them after the completion of learning.
- The change of product detection speed requires dynamic calibration again.
- The principle of dynamic calibration, attention to implementation and alternative methods are introduced in detail in the interface of dynamic calibration parameter help. If necessary, you can click Help to view.















<b>011</b>	Busy Stop + communication	When the system is in busy state, busy detection is valid, this output is invalid, busy state is invalid and communication command is received, this output is valid, busy detection is invalid, this output is valid
<b>012</b>	Busy stop	When the system is in busy state, busy detection is valid and this output is invalid, busy state is invalid, this output is valid, busy detection is invalid, this output is valid
<b>013</b>	Feed photoelectric output	According to the state of the input photoelectric output, the input photoelectric effective, then the output effective.
<b>014</b>	Discharge photoelectric output	According to the state output of discharge photoelectric, discharge photoelectric is effective, then the output is effective.
<b>015</b>	Speed up pulse	Servo feedback function
<b>016</b>	Deceleration pulse	Servo feedback function
<b>017</b>	Buzzer alarm output	Output in different ways depending on your choice
<b>018</b>	Qualified Cull	



	error products to be removed in this distance, it will alarm and stop
If not eliminated in time, the alarm will be stopped	After the next unqualified product has gone through the reinspection process, the last product has not been removed, the alarm will be stopped
Busy alarm stop	In the last product has not been out of the inspection belt, the next product into the inspection belt, it will show busy alarm and stop.If the back end is connected with an over and under error elimination mechanism, the default is over error elimination
The time of overplugging will alarm and stop the machine	Indicates that if the discharge photoelectric induction continues, and exceeds the plugging time set in the system parameter interface, it will alarm and stop
If the maximum time on the scale is exceeded, it will alarm and stop	There are two kinds of action;1. If the maximum time on the scale set on the touch screen is more than 2 times of the time required for the object to pass the scale, the maximum alarm time on the scale is twice of the time required for the object to pass the scale. 2. If the maximum time on the weighing platform set on the touch screen is less than or equal to twice the time required for the object to pass the weighing platform, the maximum alarm time on the weighing platform is the maximum time on the weighing platform set on the touch screen
The number of consecutive unqualified alarms	The number of consecutive failed alarms
The number of super continuous disconformance alarm stops	In the product parameter setting interface, you can set the alarm number of continuous nonconformance. If the set value is not zero and the switch is on, the number of continuous nonconformance will alarm and stop when it reaches this value

Upper limit of motor load	The maximum load the motor can withstand
Stop above the motor load limit	The upper limit of motor load can be set in the system parameter interface of the product. When the weight of the product or the object to be weighed exceeds the set upper limit, it will alarm and stop
Overweight or underweight alarm and stop	Display on the main page that the result of this test product is out of tolerance or under tolerance and the device will stop.If you need to use this function, you need to move forward the discharge photoelectric position, please contact our technical department for details
The main page displays the information of overshoot and undershoot	On the main page, it shows that the result of this test is out of tolerance, under tolerance, or qualified
The main page will display only the weight test result	Only the product weight test result of this test is displayed on the main page
Auxiliary display of real-time weight	Display the detected real-time product weight on the main page
Units	g/kg/t Optional
Minimum indexing	0.001. 0.002. 0.005. 0.010. 0.020. 0.050 Optional
Check scale for stability range	When calibrating the scale, the weight variation range is judged to be stable within this setting value
Judge the range of stability;	During the stabilization time, the range of weight variation is judged to be stable within this setting value

Zero tracking range	Weight value within this range, automatically clear zero
Clear range	The range at which the scale table is zeroed out during weighing
Automatic zeroing at startup	Perform zero clearing once the scale platform is started
Check the maximum judgment time of the scale	Is the longest judgment time in the process of weight calibration, indicating that the weighing platform must be stable and the zero voltage must be within the limited range during the calibration of the empty weighing platform and the weight calibration process. If the above conditions are not met and the maximum judgment time is exceeded, the alarm will be given and the weighing will fail
Decimal point	0 0.0 0.00 0.000 0.0000 Optional
Maximum range	100G
Check scale for stability time	When checking the scale, the range of weight variation is judged to be stable within the stability range of the scale
Stabilizing time	Within this setting, the range of weight variation is judged to be stable within the range of stability
Zero tracking time	During this time, the system data drift does not exceed the zero tracking range
The system automatically clears zeros after power-on	Zero clearing operation will be performed once on the scale platform
Feed to shake time	Do not sample during this time after feeding
Time to remove shaking from material	Do not sample during this time before discharging
Length of scale table	800mm

Maximum time on the scale table	Maximum time an item is on the scale
Material blocking time	From the discharge photoelectric induction to the material time, more than this time alarm
Dynamic zero clearance range	Range of zeroing of the weighing platform during the weight checking process
Digital filtering level	0 to 9 can be set
AD sampling rate	120 beats per second 240 beats per second 480 beats per second
Pre-filter grade	0 to 20 optional
Time between photoelectric dust removal	When the system runs to the set value, the photoelectric dust removal begins
Duration of photoelectric dust removal	The output time of the photoelectric dust removal switch
Buzzer buzzer type	There are four types to choose from, which are undererror, out-of-error, unqualified, and qualified
Buzzer sounding mode	There are three ways to choose from, long buzzer, off, and delay
Buzzer delay time	The delay time is 0.000-10.000S
Over/Under Alarm Popup Window	The pop-up window displays the alarm information when the error is not suspended
Over/Under Alarm Recorded	Over/under tolerance alarm is recorded in alarm record

























## 8. Program upgrade

The device can upgrade the motherboard program and touch screen program through the way of U disk. For details, please refer to "Operation Instructions on Buttons and Operation Frames" in section 3.3.2.

System Setting		2021-10-26 11:02:39		Reserved >	
Device Model: CW-600G-101B > Work Model: Check Model > Language: ENG[ENG] <div>             HMI Version: 00.01.05              Time: 2021/08/02 08:00:30              MainBoard Version: 0.00.00              Time: 2021/08/02 08:00:30  <div>Mainboard Upgrade With U-disk</div> </div>		Cal Para. Reset		I/O Define Reset	
		Product Para. Reset		Work Para. Reset	
		Communication parameter reset		Belt Para. Reset	
		All Para. Reset		Setting Date/Time	
Work Para.	I/O	Static Weight Calibration	Belt Speed Calibration	System Info.	EXIT

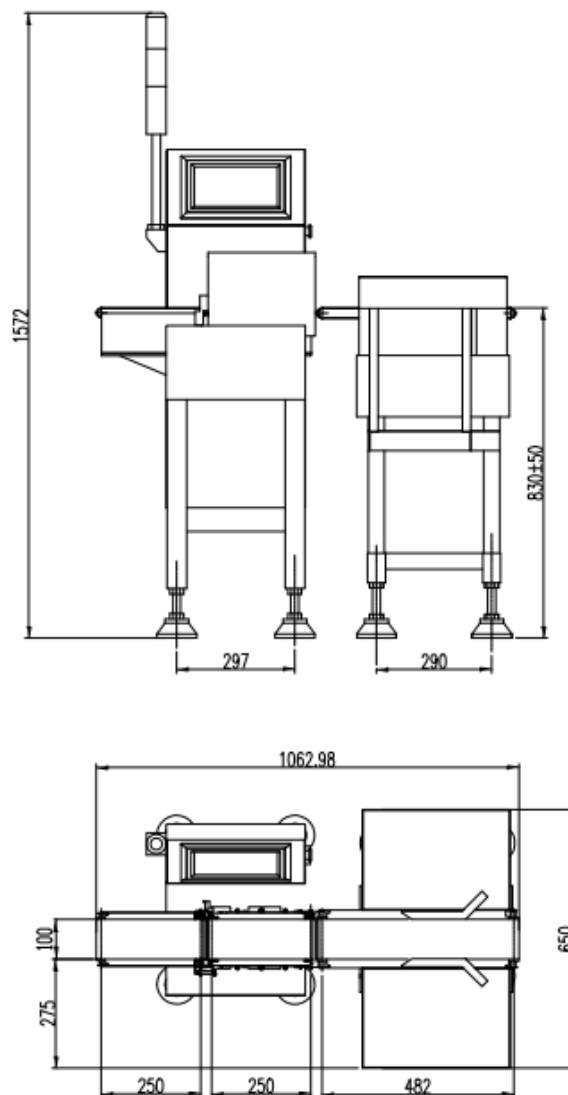
Figure 8-1 System Information screen example

After contacting our technical department, confirm that it is necessary to upgrade the program of the motherboard or touch screen. Obtain the corresponding program upgrade package first. Insert the USB flash drive with the upgrade package, click the "USB flash Drive Upgrade Controller" button to enter the upgrade interface, and perform the corresponding program upgrade according to the interface instructions. It is suggested to upgrade the program of the equipment under the guidance of our technical personnel, so as to avoid equipment failure or damage.

## 9. Size

When the equipment is installed on site, it is necessary to ensure that there is no contact between the weighing table and the surrounding area to avoid affecting the normal weighing. The distance between the surrounding area of the weighing table should be greater than 10mm.

### 9.1 Outline size drawing (unit: mm)



**\* Note: The width, length and height of the scale stand of non-standard customized products may be different from that of the standard products. For details, please refer to the technical documents or drawings confirmed by the user.**





### 10.2.7 Continuous nonconformity alarm

- The number of consecutive disqualifications exceeding the set value. Alarm prompt, no need to deal with the weight check work normally.

### 10.2.8 Excess plugging time

- During operation, the object stays too long at the feeding or discharging end. Solution Check the reason for the object staying time is too long and deal with it in time.

### 10.2.9 Below the minimum sampling time

- The object is coming off the scale too quickly in operation. Adjust the speed of the belt of the weighing table within the detectable range.

### 10.2.10 Super maximum sampling time

- Long period of time when the object in operation is not off the scale. Check the reason why the object is not out of the weighing table for a long time and deal with it in time.

### 10.2.11 Overload motor load limit

- The weight of the object exceeds the maximum range by a certain amount (exceeds the maximum weight of the motor). Handling Methods Do not weigh objects beyond the maximum range.

### 10.2.12 Automatic zeroing failed

- 1. The current weight is out of the zero clearance range.
- 2. The scale is unstable. Treatment Method 1 Empty the scale table 2 Make sure the scale is stable