ATO-DDC5-CHB
Weighing controller
Instruction ATO-DDC5-CHB

Safety Caution

Please be sure to comply with the following recorded notes in the product manual. There is a risk of serious injury or accident if you do not follow the note for use.

- Please do not use in life-related equipment, such as atomic energy, medical devices, etc.
- The meter has not power fuse, please install safety circuit breaker, such as fuse, etc., in the power supply circuit of the meter.
- Please do not use it outside the specifications provided by the product.
- Please do not use in flammable and explosive places.
- Please avoid installing in the top of a high heating value meter (heater, transformer, high-power resistance).
- When the ambient temperature is above 50℃, please use a forced fan or cooler to cool, but do not let the cooling air blow directly to the instrument.
- For panel-mounted meters, in order to avoid user access to high-voltage parts, such as power terminals, please take necessary measures on the final equipment.
- The installation, commissioning and maintenance of the product shall be carried out by qualified engineers and technicians.
- If a failure or anomaly of the product is likely to cause the major system accident, please set up an appropriate protective circuit externally to prevent the accident.
- The company shall not bear any direct or indirect loss other than the product itself.
- We reserve the right to change the product specification without notice.

1. Overview

ATO-DDC5-CHB is an economical digital weighing controller with gross value, net value, peak value, valley value display, which can be switched at any time.
Two alarm outputs.
Optional 6 alarm modes
The peak valley value uses 2 comparison values as threshold values. When the real-time weight exceeds the peak threshold value, the peak value is compared. When the real-time weight is below the threshold value of valley value, the valley value is compared.
Digital weighing controller has the function of auto-tracking, stability judgment, boot automatic zero-clearing, etc.
Indicator light definition: 12 indicator lights, such as, alarm 1, alarm 2, MOT, zero, gross, net, peak, valley, t, kg, g, kN.

2. Model specification

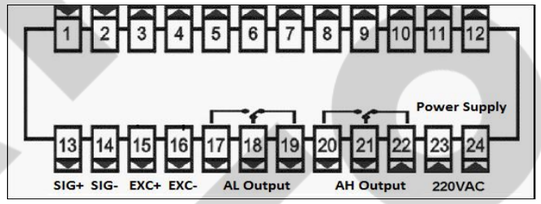
Model: ATO-DDC5-CHB
Boundary dimension: horizontal type, 160×80×125(W×H×L)mm, hole size 152*76mm
Display mode: Red LED single display 5 bits
Input signal: ±25mV
Control output: two alarm outputs
External power supply: DC 10V/150mA
Power supply: AC 220V

3. Technical specifications

Power supply: AC 85~265V, 50Hz, 7.5W
Use environment: 0~50 ℃, 10~85%RH (no dewing)
Digital display: 5 digit red LED display
Display range:-19999~45000, overload display o.L
Decimal point position: 5 different positions can be selected
Sensor voltage: DC 10V/150mA
Incoming signal: 0~±25mV
Sampling speed: 10 times per second
Maximum display points: 10000
It will display countdown 9~0 in startup picture when power on.
Auto returning to zero: The range is depended on the range of Eror.
Comparative control output: six ways to compare, select by setting.
-HH-: when gross value > comparing setting value, controller outputs
-LL-: when gross value < comparing setting value, controller outputs
HP-S: when positive deviation of gross value and setting value Au > comparing setting value, controller outputs
LP-S: when negative deviation of gross value and setting value Au > comparing setting value, controller outputs
HLPS: when absolute value of deviation of gross value and setting value Au > comparing setting values, controller outputs
n-HL: when absolute value of deviation of gross value and setting value Au < comparing setting values, controller outputs

4. Installation and wiring

Wiring diagram:



5. Parameter list

Group 1 parameters

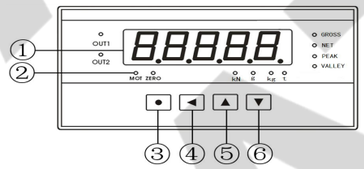
Code	Name	Contents	Value range	Introduction
out1	OUT1	Comparison value of the 1st comparison control output	-19999~45000	7
out2	OUT2	Comparison value of the 2nd comparison control output	-19999~45000	7
Au	Au	Target values of comparison control output	-19999~45000	7
oA	oA	Password	0~9999	6.4
ALo1	ALo1	Comparison mode of the 1st comparison control output	6 modes	7
ALo2	ALo2	Comparison mode of the 2nd comparison control output	6 modes	7
HYA1	HYA1	Sensitivity of the 1st comparison control output	0~19999	7
HYA2	HYA2	Sensitivity of the 2nd comparison control output	0~19999	7
AHH	AHH	Detect threshold value of peak value	-19999~45000	7
ALL	ALL	Detect threshold value of valley value	-19999~45000	7

Group 2 parameters

Fi	Fi	Coefficient	0.5000~3.0000	8.1
F-r	F-r	Range	100~45000	8.2
in-b	in-b	Zero point	-19999~45000	8.3
mv	mv	Sensitivity of sensor	0.8000~3.0000	8.4
in-d	in-d	Display the decimal point position	5 modes	8.5
SZro	SZro	Automatic returning to zero selection when power on	oFF / oN	8.6
Zror	Zror	Zero setting range	0~10000	8.7
FLtr	FLtr	Digital filtering	1~20	8.8
unit	unit	Unit	0~3	8.9
Std	Std	Stability judgment range	1~100	8.10
tr-d	tr-d	Zero tracking range	0~4	8.11
oA1	oA1	Alarm setting value selection control by password	oFF / oN	8.12

6. Operation

6.1 Panel and key instructions



Name	Introductions
①Display window	1. Display measured values respectively, such as gross value, net value, peak value and valley value 2. Displays parameter symbols and parameter values in the parameter setting state
②Indicator light	1. out1, out2 are comparative output indicator light 2. MOT light is on, measured value is changed. 3. Zero light is on, measured value is zero. 4. GROSS light is on, display gross value. 5. NET light is on, display net value. 6. PEAK light is on, display peak value. 7. VALLEY light is on, display valley value. 8. kN, g, kg, t are measurement unit indicator lights
Operational key ③Setting key	1. Press it for 2 seconds to enter into the setting state. 2. Press it, and then press ⑤ within 2 seconds until showing CAL, enter into the adjustment state. 3. Press it, and then press ⑥ within 2 seconds, after 2 seconds valley value will be cleared.
④Left key	1. When the weight does not change, after pressing the key controller notes the gross value as the net minus deduction value, and transfers to the net value to show. 2. Move the modification position when set. 3. When setting a parameter, enter into parameter modification.
⑤ Add key	1. When measuring state, switch to gross value, net value, peak value and valley value. 2. Increase the modification position value when setting.
⑥Reduction key	1. If the gross value does not exceed the zero range and the measurement value remains unchanged, press this key to return to zero for 2 seconds. 2. Reduce the modification position value when setting.

6.2 Parameter setting instructions

The parameters of the instrument are divided into two groups, each of which is listed in Chapter 5, the parameter list.
★ The first group of parameters oA and the second group of parameters are controlled by the password. The password is not allowed to enter when the password is not set.
★ Whether the out1, out2, Au parameters can be selected by password control through the preferences of oA1
When oA1 is set as OFF, and it is not controlled by it. When set to ON, if it is not set, though it can be entered and modified, it cannot be stored.

6.3 Setting method of comparison Control output comparison value

The comparison value is in the first set of parameters.
1. Press the setting key ③ for 2 seconds to enter into setting state, and the meter shows out1.
2. You can select the other parameters of this group in order by single pressing the ③key.
3. Press the ④ key to call out the original set value of the current parameter, and the flicker bit is a correction bit
4. Move the modification bit through the ④ key, the ⑤ key is for appreciation, and the ⑥ key is for decrease in value, and modify the parameter to the required value.
5. Press the ③ key to save the modified parameter and automatically go to the next parameter. If this is the last parameter, press the ③ key and then go to the first parameter.
The other parameters of this group can be set up by repeating the Step 2 ~5.
★ If the modified parameter cannot be stored, it is because the parameter oA1 is set to ON, so that the parameter is controlled by the password, and the password should be set first.

6.4 Password setting method

When the instrument is in the measurement state, the password can be set.
1. Hold down the settings key③ until out1 is displayed
2. Press the ③key continuously and switch to oA
3. Press the ④ key to enter the state of modification, in the cooperation of ④、⑤, the ⑥ key will be modified to 01111
4. Press the ③ key to complete the password setup

6.5 Setting method of other parameters

1. At first, set the password as 6.4
2. The parameters oA after the parameters in the first set of parameters Press the ③ key to select
3. The parameters of the other groups are entered in sequence by holding down the ③ setting key and the symbols of the first parameter of the group are displayed by the meter.
4. After entering the group in which the parameters need to be set, press ③ key in sequence to select the parameters that need to be set in this group
5. Press the ④ key to call out the original set value of the current parameter, and the flicker bit is a modified bit

6. Move the modification bit through the ⟨ key, add value to the ∧ key, reduce the value of the ∨ key, and modify the parameter to the desired value

★ The parameter of parameter value is indicated by the form of symbol. The flicker bit should be at the end of the modification.

7. Press the ◎ key to store the modified parameter and go to the next parameter

Repeat Step 4 ~ 7 to set other parameters of this group.

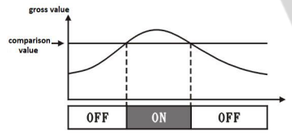
Exit setting: When the parameter symbol is displayed, hold down the settings key of ◎ until you exit the setting state of the parameter.

7. The description of output comparison value parameter is controlled

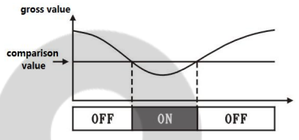
Each control output comparison value has three parameters, which are used to control the output comparison value, select the comparison mode and compare the sensitivity of the comparison value.

- out1 and out2 are the comparison of the 1st and 2nd control outputs, respectively
- Au is the target value of the comparative control output.
- ALo1 ~ ALo2 are two selection and comparison methods, respectively
- All comparison values are equal to the gross value.
- Each comparative output control point is correlated with three parameters of out, ALo, HYA
- If the third to sixth comparisons are used, they are also related to the Au parameters.
- out1, out2: Point 1, point 2, compare the output of the comparison value set.
- ALo1, ALo2: The first and second point comparison output comparison mode setting.

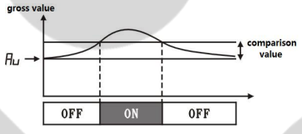
-HH- indicates gross value > the output conductance in comparison value



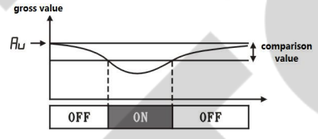
-LL- indicates gross value > the output conductance in comparison value



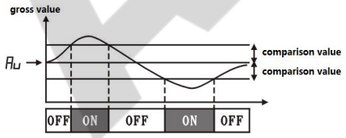
HP-S indicates positive deviation between gross value and given value Au > the output conductance in comparison value



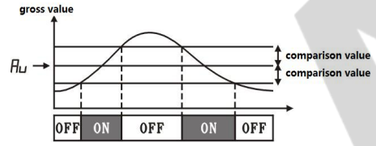
LP-S indicates positive deviation between gross value and given value Au > the output conductance in comparison value



HLPS indicates the deviation absolute value of gross value and set value Au > the output conductance in comparison value



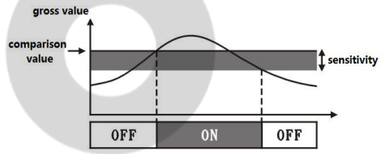
n-HL indicates the deviation absolute value of gross value and set value Au < the output conductance in comparison value



HYA1、HYA2 Sensitivity setting for comparison output of point 1 and 2.

- The sensitivity is the extended region of output recovery set according to the need to prevent the gross value from fluctuating near the comparison value resulting in frequent output ON,OFF

For example: when the comparison way is -HH-



- AHH peak value judgment threshold value

When the real time weight exceeds the peak threshold, the new peak value comparison is performed, and the new peak value is retained until the weight exceeds the peak threshold value again.

- ALL valley threshold value

When the real time weight is below the threshold of the valley value, the new valley value is compared, and the new valley value is kept until the weight is lower than the threshold value of the valley value again.

8. Parameter specification

8.1 FC coefficient

The coefficient is a full scale calibration coefficient, and the factory has been calibrated. When users do not modify, they can not be calibrated.

8.2 F-r range

The sensor range is the sum of n sensor ranges. The user sets the parameter according to the actual range, indicating that the sensor's range is F-r. The factory settings is 10000.

8.3 Zn-b null point

Zero values range is from-1999 to 45000, the factory settings is 10000.

8.4 Au-u transducer sensitivity

The unit of sensor sensitivity is MV/v, and the factory settings is 2.0000.

8.5 Zn-d scaling position

There are 5 decimal places, respectively are 00000.、0000.0、000.00、00.000、0.0000. The factory settings is 00000

8.6 SEro Automatic zero clearing selection

Automatic zero clearing parameters of meter. When it's SEro = oN, it will automatic clearing; when it's SEro = oFF, the automatic clearing is invalid, and the factory settings is oN。

8.7 Eror zero setting

When the measured value is within zero range, press the ∨ button for 2 seconds to make the display zero. In measuring condition. The factory settings is 1000.

8.8 FLtr digital filtering

The force measurement device is affected by its own natural frequency and the external vibration conduction will produce random vibration, which makes the display value of the instrument unstable. The appropriate digital filter is selected according to the size of its vibration to make the display stable. The smaller digital filter is selected for vibration hours, and the larger number is chosen for large vibration.

Optional range is 1 / 20. The factory settings is 1.

8.9 UnIt Unit selection

0 - t, 1 - kg, 2 - g, 3 - kN.

8.10 Std Stable range

When the variation within 1 second of the measured value exceeds the value of the set parameters, the instrument considers the force value At this time the Mot lights are on.

8.11 tr-d Zero tracking range

If the force is in zero tracking range within 1 second or greater than or equal, the reading will be tracked to zero. Zero tracking range is 0 ~ 4, and if it's not tracking when 0.

8.12 oA1 Password control selection for comparing output settings

This parameter determines whether the comparison output settings are controlled by the password:

on - Comparison output settings are controlled by passwords

oFF - Comparison output settings are not controlled by passwords

9. Calibration Instructions

Notice: before calibration, the tr-d zero tracking points is closed; it can not be cleared by ZERO key; If the power is turned on to clear the zero automatically, please set the SEro parameters to OFF, then power on again before calibrating.

9.1 Automatic calibration

When it leave the factory, the parameter is set to F-r =10000 Au-u =2.0000

9.1.1Automatic zero adjustment :

Press ◎ for 2 seconds then press ∧ for 2 seconds to enter into the adjustment state, showing CAL. Press the ∨button to enter into the zero calibration. After the zero-position calibration is completed, it is shown 00000 that there is a scintillation at the end.

If you only adjust to zero, do not adjust the range, press the ◎ key to exit adjustment, and return to normal measurement.

9.1.2Automatic range adjustment

Press ◎ for 2 seconds then press ∧ for 2 seconds to enter into the adjustment state, showing CAL.

①Press the ∨button to enter into the zero calibration. After the zero-position calibration is completed, it is shown 00000 to enter range calibration.

②The standard weight is placed on the force measuring device, and the display value is set to the standard value of the standard weight by means of the cooperation of the ◎ key, and the calibration of the measuring range is completed by pressing the ⟨, ∧ and ∨ key.

③If zero is not calibrated, press the ⟨ key to enter the range calibration directly after displaying CAL. Press the key to enter the numerical modification. The display value will be set as the standard value of the standard weight. Press the key to confirm the exit after the modification. Press the ⟨ key to enter the numerical modification. The display value will be set as the standard value with the ∧ , ∨ and ⟨ key. Press the ◎ key to confirm the exit after the modification.

★ Press ◎ before withdrawal to make sure MOT lights are not on

9.2 User has not weights calibration

When the instrument leaves the factory, it has been calibrated according to the sensitivity and range. The user only needs to set up the sensitivity of the sensor, display the decimal point and the range, and then make sure that the range is not calibrated when the input of the range and sensitivity is correct.

For example: the sensitivity of the sensor is 2.002 MV/v, and the measuring range of 4 sensors is 1 t. total range 4t

Unable code correction parameter setting :

F-r	Range	40000
Au-u	Transducer sensitivity	2.0020
Zn-d	Display the decimal point position	0.0000

9.3User manual fine-tuning

When the weighing material is full, it can be achieved by adjusting the zero and coefficient when the calibration condition is not met. Notice: please record the values of the parameters of Zn-b and FC, which cannot be recovered after calibration.

9.3.1Fine-tuning zero point

For example,

In a large storage tank, the zero point is changed greatly due to the mechanical structure or the change of the mechanical state of the sensor. The display weight is not correct, and the tank can not clear the calibrated zero point, so it can be adjusted by manual input of the zero internal code.

The material in the tank is estimated to be 20 000 kg according to the volume, but it can actually be shown to be 21 000 kg. If the 1000kg material is added, the display will also increase 1000 kg at the same time, then the weight is not allowed to be caused by the zero point change, and the zero parameter can be modified to Zn-b and the zero point can be adjusted up to 1000kg.

Zero adjustment formula:

Adjusted display value = Display value before zero adjustment - (Zn-b)

9.3.2Fine-tuning coefficient

For example,

Assuming that the weight of the weighing platform is 1000kg and the meter shows 997kg, the calibration coefficient needs to increase by 1000÷997, which is equal to 1.00301. The original calibration coefficient is FC =2.1672, and it is necessary to expand the coefficient 2.1672 by 1.00301 times, that is, FC =2.1737.

Coefficient correction formula:

Adjusted display value = Display value before coefficient correction × FC -(Zn-b)

★ Err1 : the automatic calibration range can be calibrated up to 10000. if it exceeds 10000, Err1 can be shown.

★ Err2: when calibrating the measuring range automatically, the input signal number value exceeds the limit. It may be that the value of the parameter F-r is too large.

★ Err3: When zero is adjusted, the input signal exceeds 50% of the total range

★ o.L :

When the product of input signal and coefficient, range, and sensitivity of the instrument is out of range, o.L is shown.

When the measured value of the instrument is greater than 45000 or less than -19999, showing o.L

When the peak value or valley value exceeds the limit, o.L will be displayed. and the peak and valley value will be cleared to show the normal value.