User Guide

DIGI-28SS

WEIGHING INDICATOR

Contents

·Overview

DIGI-28SS weighing instrument is a kind of intelligent instrument with microprocessor, it is not only fast and accurate weighing, reliable performance, convenient operation, AC/DC power supply, LED display, and also has the characteristics of low power consumption, compact structure, light weight. It is the electronic platform scale, electronic Weighbridge and weighing measurement ideal display instrument.

·Main Technical Performance

1.Accuracy rank: III.
2.A/D conversion speed: 40 times/second.
3.Internal resolution: 300,000.
4.Display resolution: 1/1000～1/30,000.
5.Non linearity: ＜0.016％F.S.
6.Rated Output: 0~20mV.
7.Uninterrupted date, time display and modification.
8.Date, time, weight printing, cumulative printing function.
9.Excitation Voltage：＋DC5V，Analog (up to 4 x 350Ω or 1000Ω load cell) .
10.Power supply: (1)DC6V/3.2Ah re-charge battery. (2)AC220V adapter power supply.
11.Display: 25mm height green LED display,6 digits.
12.LED indicate: battery, stable,G.W., N.W., tare, zero, HL, g, LB, kg.
13.Power consumption: 8VA.
14.Operating temperature: 0℃ ~ 40℃ .
15.Humidity: ≤ 85％.
16.Dimension: 230mm × 150mm × 70mm.
17.Weight: ≈3.5 kg.

·Main Function

1.Automatic keyboard calibration, range from software automatic adjustment.
2.Function with error message indication.
3.Can set time 3~30 minutes automatic shutdown function.
4.Battery voltage indication: when the battery voltage is insufficient, the battery indicator light is bright, indicating the charging (the red indicator light is bright when charging, and the light turn green when voltage is full), low voltage automatic shutdown function.
5. Display and modification of date and time.
6. With the consumption of vibration, shaking the filtering function, animal weighing mode function.
7. The function of the unit can be displayed at any time in the panel.
8. RS232 interface can be connected to the big screen, with weight printing, automatic printing function and tare printing function. Optional interface: contact output of OVER, PASS, UNDER.
9. Strong anti-interference ability, error operation will not lose important parameters, the program can automatically recover.
10. Arbitrary set Index value, a wide range for the largest scale selection, can choose a variety of display resolution, the maximum 1/30000.
11. Automatic zero tracking, zero bit abnormal display, overload alarm and other functions.
12. Direction:
(1)Battery: when the power supply voltage is low.
(2)Stable: when the weighing is stable, it will be bright.

(3)G.W.: when tare is zero, gross weight indicator light is bright.
(4)N.W.: when tare, net weight indicator light is bright.
(5)Tare: when tare is removed, tare indicator light is bright.
(6)Zero: when the scale is zero.
(7)kg: when select units for kg.
(8)LB: when select units for LB.
(9)g: when select units for g.
(10)HL: when select units for HL.
(11)Minus: when the weight value on the platform is negative.
(12)Charge indicator: the red indicator light indicates charging, the green indicator light (red turns green) indicates that the charge is complete.
(13)OVER indicator: indicates that the current weighing display value is higher than the set value.
(14)PASS indicator: indicates the current display value and the set value are consistent.
(15)UNDER indicator: indicates that the current weighing display value is lower than the set value.

·Operational principle

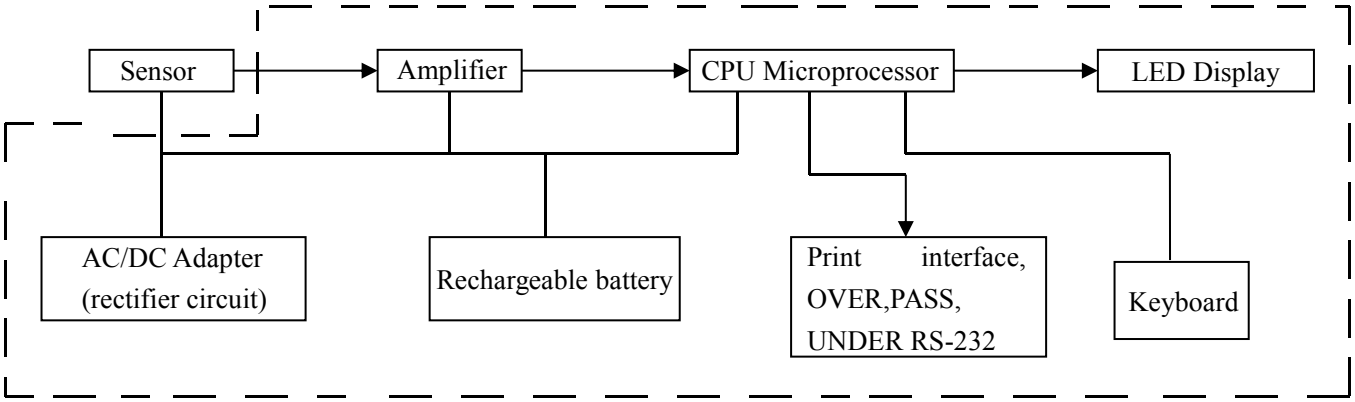

Fig 1 Instrument Principle Diagram

DIGI-28SS weighing instrument outside the high precision resistance strain type weighing sensor, the instrument is equipped with a sensor dedicated power supply (+5V). When the sensor force to produce deformation, the output voltage signal is proportional to the force received.

The sensor outputs the signal is enlarge by the high gain, low drifting, the high impedance input's operational amplifier. Because it use a monolithic microprocessor software zero adjustment and zero automatic tracking procedure, thus the drifting produced by the sensor and the direct-current amplifier is overcome, so the electronic scale can zero automatic adjust and has the long-term stability.

·Operation instructions

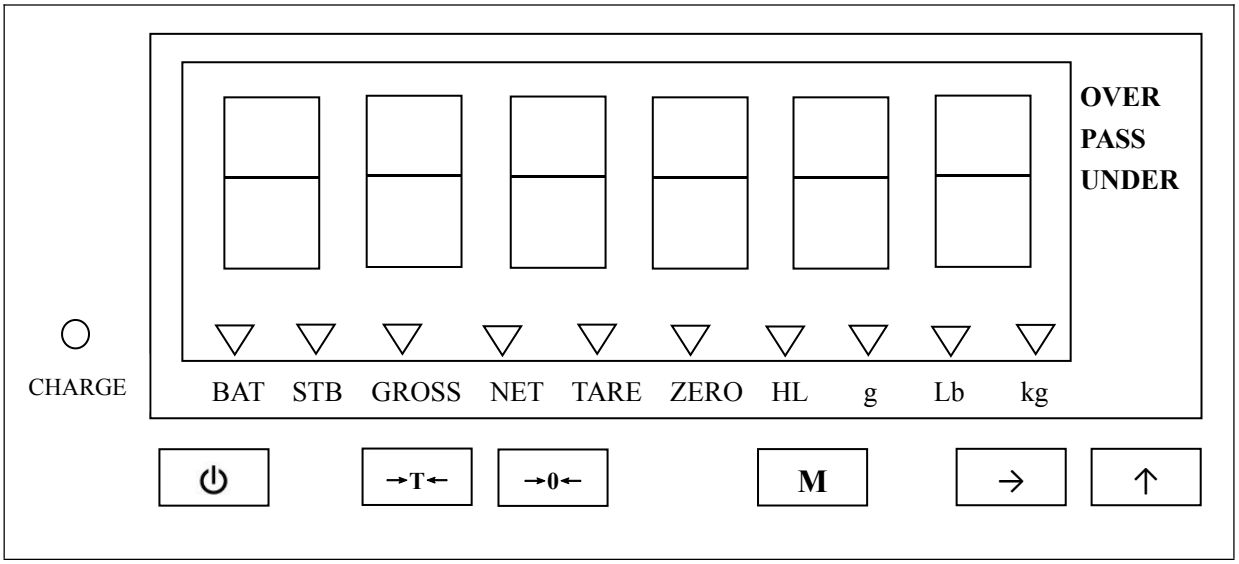

Fig 2 DIGI-28SS Front-Panel diagram

1.Press key's use

(1)【⏻】: the power source on or off. Press【⏻】instrument self-checking from 0 to 9,

then enter the weighing condition. OFF: press【⏻】1.0 second, the measuring appliance closes down automatically.

(2)【→T←】: the current weight will do tares the elimination, skins lamp to be bright indicates the net weight.

(3)【→0←】: zero set, the reset scope is the full scale±2%.

(4)【M】: use in establishing operates and demonstrates weight unit's automatic switching.

same time there is a contact closure output (Output plate type selection). If you want to modify, press【→】【↑】keys, enter a new value, press 【M】 key to input.

(5)【↑】: press【↑】one time ,then the current weight printing, and demonstrates the accumulation number of times"n ××"and the accumulation weight"YYYYYY"each 1.5 second.

(6)【→】: print the weight of the current print, and demonstrates the accumulation number of times"n ××"and the accumulation weight"YYYYYY"each 1.5 seconds.

In the above demonstration process, press【→0←】, can clear the accumulation number of times and the accumulation weight.

Printing format can be divided into: weight printing, label printing. The following print format is weight print:

Press【↑】key each time, the weight of the current will be printed, press 【→】 key to print accumulative total the weight

of the current has been printed（ press【↑】key first,the printer will print the first three lines of the format as follow）.

Printing format：

DATE： 28 / 08 / 2018

TIME： 12：34：56

S / N	WEIGHT	kg	TOTAL
001	10.00		10.00
002	20.00		20.00
003	30.00		30.00
TOTAL:		60.00	kg

2.Date, Time and Buzzer set

The short-circuit-board devices inserted JP1 at “OFF” position, then can operation as the following:

①Press【→T←】key 1.5 seconds, and the instrument show “OFF XX”.“OFF XX”'as the shutdown time, with 3, 10, 15, 30 and 0 respectively. Press【↑】key to select a certain value of the device. 3, 10, 15 and 30 respectively, indicate that the weighing or keyboard has no change or operation after 3 minutes, 10 minutes, 15 minutes and 30 minutes. The instrument shut down automatically. 0 means that there is no automatic shutdown function. Press【M】key to indicate input.

②Instrument show “bp On” or “bp OFF”, press【↑】key to select On or OFF said the buzzer work or doesn’t work, buzzer does not ring can save power consumption, after selection, press【M】key to input.

③Instrument show “L XX. X”, said weight display when the value is higher than this value but not have reached the required value, UNDER indicator light is on, at the same time there is a contact closure output (Output plate type selection). If you want to modify, press【→】【↑】keys, enter a new value, press【M】key to input.

④Instrument show “o XX. X”, expressed as a set value (qualified value), is the same as the weighing display value, but the PASS indicator light is on when the high value is not reached. At the same time there is a contact closure output (Output plate type selection). If you want to modify, press【→】【↑】keys, enter a new value, press【M】key to input.

⑤Instrument show “H XX. X”, said weight display when the value is higher than this value, OVER indicator light is on, at the same time there is a contact closure output. Press【→】【↑】keys, enter a new value, press【M】key to input.

⑥Instrument show“ 18.08.28 ”, said 18 represents the year, 08 represents the month., 28 represents the day. If you want to modify, press【→】【↑】keys, enter a new value, press【M】key to input.

⑦Instrument show “ 12.34.56 ”, said 12 represents the hour, 34 represents the minute, 56 represents the second. Here with a 24-hours to show. If you want to modify, press【→】【↑】keys, enter a new value, press【M】key to confirm, return to weigh.

·Installation

1. Sensor signal line connection: when used for the first time,sensor output lines must be welded:
   (1)Welding on circuit board JT1:
      ① F.G: shielding wire;
      ② -E: power negative electrode;
      ③ -S: -signal input;
      ④ +S: +signal input;
      ⑤ +E: power cathode.
   (2)Welding on Round 5P Aviation Plug:
      ① +S : +signal input;
      ② -S : -signal input;
      ③ F.G : shielding wire;
      ④ +E : power cathode;
      ⑤ -E : power negative electrode;

2. RS-232 output connection:
   (1) connect the 232 output line to JT2:
      ① G : ground line GND;
      ② T : data output, TXD.
   (2)Welding on 9P Ladder Plug:
      ③ data output, TXD;
      ⑤ ground line GND.

·Maintenance and Attention

1. To guarantee indicator's service life, it is not suitable to use under the sunlight perpendicular incidence, place should be smooth.
2. Should not be placed in the dust and used in severe vibration place.
3. The weight (include tare) refuses to surpass the max weighing value.
4. If not use, should extract the 220V power line.
5. When a battery symbol is used for a period of time, indicate the battery voltage is insufficient, at this time to respond to rechargeable batteries for charging, so as not to affect the accuracy of the measurement.
6. Refuse the use strong solvent (for example: the benzene, the nitric acid class oil) clean the machine case.
7. Do not to pour water into the measuring appliance, prevents the electric appliance part to damage and receive an electric shock.
8. When the breakdown in the use process, should tear off the power plug immediately, generally non weighing instrument manufacturers will be sent back to the company to repair it. Please do not repair voluntarily, in order to avoid creates a bigger damage.
9. If already reinforced the lead sealing on the weighing indicator, the user refuses to open voluntarily.

·Common Breakdown and Solution

Indication	Reason	Solution
No demonstration after press【⏻】key	Not to insert 220V power source or not loads the rechargeable battery	To insert 220V power source or loads the rechargeable battery in
No response after press【⏻】key	The switch bad contact	Replace the switch
No response after press【⏻】key or other key	The switch bad contact	Replace the switch
Lacks the stroke when indicator self-checks	The pin bad contact or the faulty soldered joint or have the possibility to hit cause the damage	Replace new LED nixie tube
Demonstration weight is inaccurate	The sensor lead wire has not welded,long-term overload causes the sensor to be wear	Inspect the sensor lead wire and the welding and calibration according to the instruction booklet
When platform scale idling the indicator reading is not steady	Under the scale plate has the foreign matter or the four feet is well-grounded not steadily, using place vibration or the sensor lead wire bumping the scale pan	Open the scale plate to inspect and clean, but can not use the water to clean
Buzzer no response when press any key	The buzzer has set not to be loud,or buzzer damage	Reset or change the buzzer
Can not calibration	Not inserted the short-circuiting device “ON” the position	Inserted the short-circuiting device ”ON” the position
After the calibration, indicator demonstration and weights are inconsistent	Put the weights quantity and the hypothesis demarcation weights quantity does not tally	Set and calibration according to the instruction booklet
Error when calibration	The sensor lead attachment is not correct connect,simulation demarcation wrong	Inspect the lead wire, welding and the calibration according to demarcation method
The indicator did not return to zero after calibration	The weighing platform has weights when calibration	Re-calibration after clear weights
With period of time indicator reading inaccurate	The battery voltage is insufficient,battery mark	Replace the new battery or carries on the charge

Special attention:
1.Before starting the machine, the output line of the weighing sensor must be welded on the JT1 or CN1 or 5P Aviation Plug of the circuit board.
2.No connection sensor (instrument no load) boot will cause instability of instrument display.

DIGI-28SS Weighing Instrument parameters

Key distribution panel:

【⏻】	【→T←】	【→0←】	【M】	【→】	【↑】
ON/OFF	Tare	Zero	Function	Accumulation Print	Print

Parameter settings:

1. First, open the instrument housing, the short-circuit-board devices inserted JP1 at "ON" position, press【⏻】key,after the instrument is self tested, the battery capacity is pbt99, then can operate as the following:

2. Press【→T←】key 1.5 seconds, show "CAL", press【M】.

3. Show "Set" that the parameter setting menu, press【→】key to enter the menu.

4. Show "d 0.005" indicates that the scale value of the scale is 5g, if not changed press【M】key directly. If you need to change the grading value, press【↑】key to select 0.0001-50 circularly, and then press【M】key to confirm.

5. Show "Max 150.00" indicates the maximum weight of the scale. If you need to change it, press【→】key to select the position, and the selected position flickers. Every time you press【→】key, the number moves one bit to the right and flickers. Then press【↑】key to increase the flickering bit from 0 to 9, and each time you press the【↑】key, the number increases one bit upward. Repeat pressing【→】and【↑】keys to display as “Max 150.00”, press【M】key to confirm.

6. Show "r AB" indicates the setting of zero setting range and zero tracking range of the scale, and R is the prompt (factory setting r 23).

A: to boot zero range, 1-9 corresponds to 10-90%FS, 0 does not start zero.

B: for the zero tracking range, 1-9 corresponds to (1-9) x 0.3d, 0 zero does not track.

7. Show "U CD" that indicates the setting of the weighing unit. U is a prompt (factory settings U 00).

C: is the second unit of weight scales, 0: kg, 1: LB, 2: HL, 3: g.

D: is the basic unit of weight scales, 0: kg.

Press【↑】key to select the basic unit, press【→】key to select the second unit of weight, press【M】key to confirm. For example:①The main unit is kg, which can be converted to LB and set to "U 10".

②The main unit is kg, which can be converted to HL and set to "U 20".

8. Show "b 9600" indicates the baud rate of serial communication, press【↑】key to select one of a kind of 1200, 2400, 4800, 9600(b 9600 factory settings), then press【M】key to confirm.

9. Show "rS XX" indicates the parameter settings of serial printing RS-232 interface (instrument D-SUB-9):

(1)When set XX = 99, the normal instrument does not express send data, only【→】or【↑】key send data at this time to connect the printer(as printer M-2000) can print out the current weight. Press【→】key to select the position, press【↑】key to select the appropriate value 99, and then press【M】key to confirm.

Every time you press【↑】key, you can print the current weight, and press【→】key to print the current printed weight accumulatively (the first three lines of the following format are printed by the printer when you press【↑】key). Printing format:

DATE： 28 / 08 / 2018

TIME： 12：34：56

S / N	WEIGHT	kg	TOTAL
001	10.10		11.10
002	12.20		23.30
003	13.30		36.60
004	14.40		51.00
005	15.50		66.50
006	16.60		83.10
007	17.70		100.80
008	18.80		119.60
009	19.90		139.50
010	28.50		168.00
TOTAL:	168.00	kg	

(2) When set XX = 98, represented as independent print format (label printing).

Press【→】key to select the position, press【↑】key to select the appropriate value 98, and then press【M】key to confirm.

Printing format, DATE : 28 / 08 / 2018

TIME : 12 : 34 : 56

Gross : 100.0kg

Tare : 20.0kg

Net : 80.0kg

(3) When set XX = 1 ~ 97, represents sending data for reply.

Press【→】key to select the position, press【↑】key to select the appropriate value 1~97, and then press【M】key to confirm.

① When the indicator receives orders STX, R, D, S, n,BCC, CR, and n=XX, the indicator returns data (the order address is the same as the indicator address).

STX, n, X1, X2, X3, X4, X5, X6, X7, SA, BCC, CR

SA = 0, 1, 0, 0, Overflow, Net weight, Stable, Zero.

BCC is the verification value, the data will take the low byte from STX to BCC (low 8), and = 02H or 0DH, automatic add 1.

② When the indicator receives orders STX, T, A, R, n, BCC, CR, it means press【→T←】one time, and n=XX (the order address the same as the indicator address).

(4) When set XX = 00, the indicator sends data outward automatically. Press【↑】key to select the appropriate value 00, and then press【M】key to confirm.

Communication form: 1 outset position, 8 data positions, 1 stop position, non-parity check position, the baudrate from 1200 to 9600, transmits continuously, each second 10 times.

=, X7, X6, X5, X4, X3, X2, X1, SA, CR

X1~X7 is the weight value, X1 is the low position, X7 is the top position, the decimal point and the minus sign contain in X1~X7.

SA status byte each definition is as follows:

High							low
0	0	0	0	Overflow	Net, W	Stable	Zero

For example:

the value show as 35.25, that serial outputs are: =, 3, 5,·, 2, 5, blank space, blank space, blank (42H),

16 enter the system number: 3DH, 35H, 32H, 2EH, 35H, 20H, 20H, 42H, 0DH

10. Show "H 0" that static weighing or animal weighing mode is set.

"H=0", which represents the static weighing mode.

"H=1", indicating the animal weighing mode. When the animal is stable on the scale, the number of locks is

locked. When the weight changes more than 5d, the new weight is locked.

"H=2", indicating the animal weighing mode. When the animal is stabilized on the scale, the number is locked. The weight change shows no change. The animal leaves the scale and shows zero.

11. After setting up, insert short circuited device JP in "OFF" position.

Calibration:

The first time to use the electronic scale, must calibration before use (weight calibration), guarantee the accuracy, electrifies 20 minutes later, so demarcation:

1. First, open the instrument housing, insert the short circuit JP1 into the “ON” position on the circuit board, press【⏻】key, shown as "0", then can operate as the following:
2. Press【→T←】key 1.5 seconds, show "CAL", press【→】key to enter the calibration state.
3. Show "CAL 00" that the zero adjust, the platform scales without weights confirmed by【M】key to enter the auto-zero correction, indicating "------", show up after a few seconds when the calibration weight, such as 150.00kg.
4. At this time, the standard weights can be loaded, such as the weight of the weights is 20 kg. When the weights are stabilized, the selected position is flickered by pressing【→】key. Each time the [punch] key is pressed, the number of flickering bits moves one bit to the right and flickers. Then the【↑】key is pressed to increase the number of flickering bits from 0 to 9, and the number of flickering bits increases one bit per press the【↑】key. Repeat press【→】and【↑】keys to display as "20.00" and press【M】.
5. Instrument display automatically "------" calculated electronic scales to enter the calibration status.
6. Show "20.00kg" that the same value and weight value, and is re-calibrated if inconsistent.
7. Unloaded weight 20kg show "0.00kg", units without heavy objects weighing indicator light zero.
8. End of calibration (insert short circuited device to "OFF" position) and return to weighing mode.

AD value display:

Inserts short-circuiting device JP1 in “ON” position, press【→T←】1.5 seconds, show as “CAL”, press【M】show as“SEt” expression measuring range establishment menu, press【M】key, show as “A-d” press【→】key enters the AD value demonstration, under the spatial scale condition generally show as 70000, press【M】, ESC.

Automatic shutdown,buzzer sound,date and time settings:

The short-circuit-board devices inserted JP1 at “OFF” position, then can operation as the following:

①Press【→T←】key 1.5 seconds, and the instrument show “OFF XX”.“OFF XX”'as the shutdown time, with 3, 10, 15, 30 and 0 respectively. Press【↑】key to select a certain value of the device. 3, 10, 15 and 30 respectively, indicate that the weighing or keyboard has no change or operation after 3 minutes, 10 minutes, 15 minutes and 30 minutes. The instrument shut down automatically. 0 means that there is no automatic shutdown function. Press【M】key to indicate input.

②Instrument show “bp On” or “bp OFF”, press【↑】key to select On or OFF said the buzzer work or doesn’t work, buzzer does not ring can save power consumption, after selection, press【M】key to input.

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④Instrument show “o XX. X”, expressed as a set value (qualified value), is the same as the weighing display value, but the PASS indicator light is on when the high value is not reached. At the same time there is a contact closure output (Output plate type selection). If you want to modify, press【→】【↑】keys, enter a new value, press【M】key to input.

⑤Instrument show “H XX. X”, said weight display when the value is higher than this value, OVER indicator light is on, at the same time there is a contact closure output. Press【→】【↑】keys, enter a new value, press

【M】key to input.

⑥Instrument show“ 18.08.28 ”, said 18 represents the year, 08 represents the month., 28 represents the day. If you want to modify, press【→】【↑】keys, enter a new value, press【M】key to input.

⑦Instrument show “ 12.34.56 ”, said 12 represents the hour, 34 represents the minute, 56 represents the second. Here with a 24-hours to show. If you want to modify, press【→】【↑】keys, enter a new value, press【M】key to confirm, return to weigh.