Digital Amplifier

Instruction manual

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Instruction Manual

Read this manual before operating or servicing this equipment and follow these instructions carefully.

Save this manual for future reference.

O Safety Precautions

Warning ⚠

- If there is a possibility of a major system accident due to a malfunction or abnormality of this product, please install an appropriate protection circuit externally.
- Do not use this product outside of the specifications stated in this product, as this may cause electric shock, fire, or malfunction.
- Do not use in places where flammable, explosive gases, corrosive gases, dust, salts, or metal powders are generated.
- Do not install it in places where there is a strong temperature change (condensation may occur) or where heat accumulation may occur due to heat radiation, etc.
- Please do not mix metal pieces or wire debris into this product, as this may cause electric shock, fire, or malfunction.
- Please make sure to tighten the terminal screws, if not fully tightened, it may cause electric shock, fire.
- The manual is subject to change without notice, please refer to the latest version when reviewing. If you have any questions, please contact us.
- The Company shall not be liable for any direct or indirect losses other than the product itself.

1. Specifications

Power Supply	DC:10V-30V
Input Range	0.4mV/V~6mV/V
Excitation Voltage	5VDC±2%，100mA (up to 4 350Ω sensors)
Internal Resolution	24-bit, Delta-Sigma method
Display Accuracy	1/10000
Sampling Rate	10 , 40, **640, 1280**HZ
Baud Rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Operating Temperature	-30℃~60℃
Withstand voltage	1 minute at 2000V AC50/60Hz

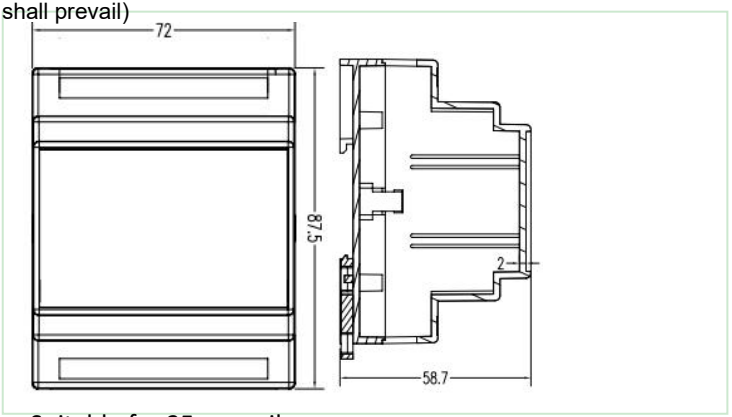
Protocol	Modbus RTU & Free
Serial Interface	RS485 and RS232
I/O	3 transistor outputs, 24V/1A load capacity, 2 input
Analog Output（optional)	0~20mA, 4~20mA, 0~±10V

2. Installation And Enclosure Size

Warning ⚠

To prevent electric shock and machine failure, be sure to disassemble and assemble the unit in the event of a power failure.

O Dimensions (the following drawings are for reference, the specific items shall prevail)

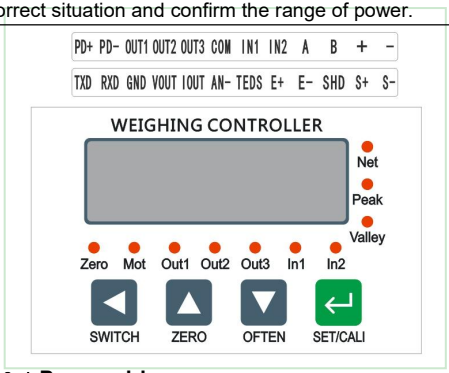


Suitable for 35mm rails

3. Wiring

Warning ⚠

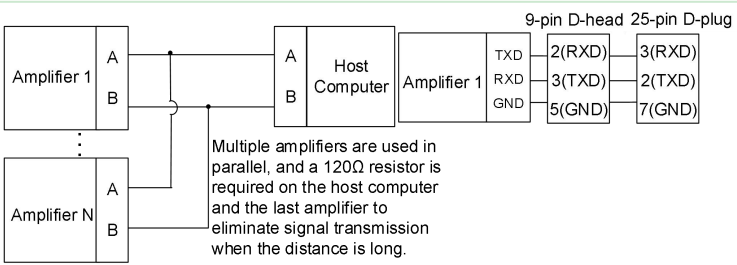
To prevent electric shock and machine failure, be sure to power on the wiring correct situation and confirm the range of power.



3.1 Power wiring

+	Voltage+	−	Voltage-

3.2 Serial connection



3.3 Analog output connection

The analog module can be added, it can output 0~20mA, 4~20mA, 0~±10V .

IOUT and AN- are connected for current output, and VOUT and AN- are connected for voltage output.

O3. 4 Sensor connection

Excitaiton+	Excitaiton-	Shield	Signal+	Signal-
E+	E—	SHD	S+	S—

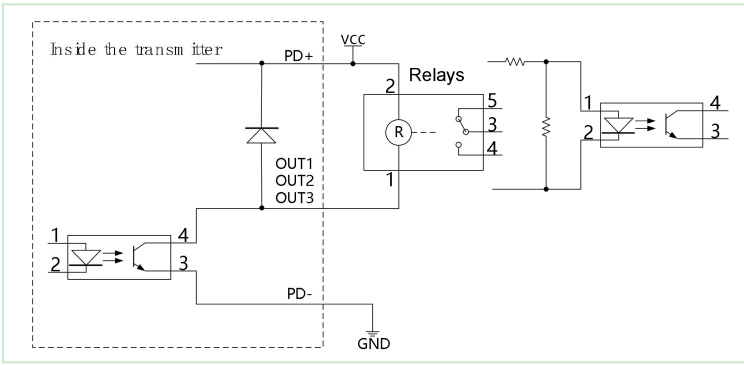
Note: When using a six-wire sensor, the EX+ and SN+ of the sensor should be shorted to the E+ port of the amplifier; EX- and SN- are shorted to the E-port of the amplifier.

1. Since the output signal of the sensor is an analog signal that is sensitive to electronic noise, the sensor wiring should be shielded and laid separately from other cables, especially away from the AC power supply;

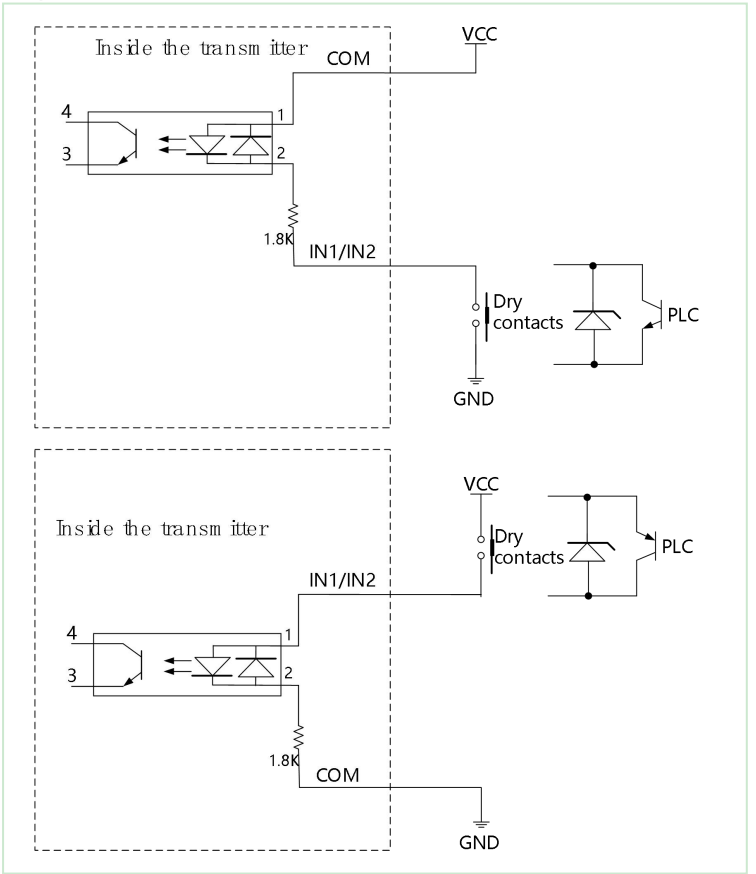
2. For applications where multiple sensors are connected in parallel, it is important to ensure that the sensitivity (mV/V) of each sensor is consistent.

O3. 5 I/O connection

Transistor output wiring diagram (the transistor of the amplifier adopts photoelectric isolation, so a DC 24V power supply needs to be provided externally as the transistor working power supply, the positive pole of the power supply is connected to the amplifier PD+, and the negative pole is connected to PD-.) The transistor output mode is NPN.

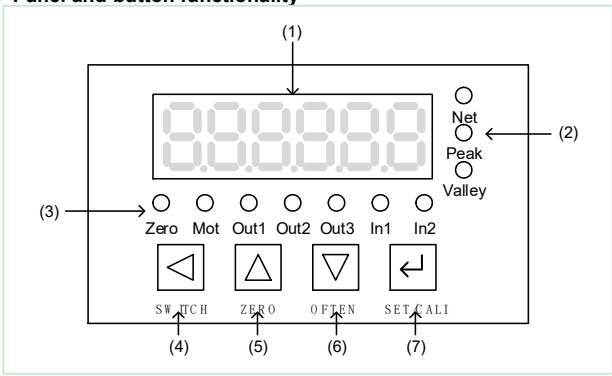


OInput connection



4. Display panel

Panel and button functionality



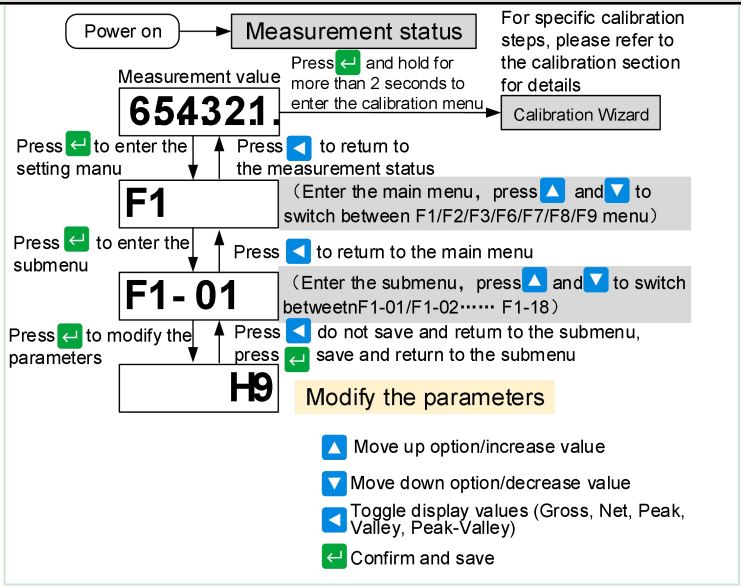
Name	Descriptions
Display	**Main interface:** displays gross, net, peak, valley, peak and valley **Menu operation interface:** menu, parameters
Net	**In the main interface, press τ to toggle the display value** **Gross:** lights of Net, Peak, and Valley are all off
Peak	**Net:** Net light on **Peak:** Peak light on
Valley	**Valley:** Valley light on **Peak and Valley:** Peak light and Valley light on
Mot	**Mot light on**: The current values are unstable; **Mot light off**: The current value is stable
Zero	**Zero light on:** The current weight value is 0
Out1	**Out1 light on:** Output port 1 is on
Out2	**Out2 light on:** Output port 2 is on
Out3	**Out3 light on:** Output port 3 is on
In1	**In1 light on:** Input port 1 is on

In2	**In2 light on:** Input port 2 is on

Button	In the state of displaying gross, net, peak and valley		In the menu operation interface, when you need to set/modify parameters, view menus, and calibrate	
	Short press the button	**Press and hold the button**	**Short press the button**	**Press and hold the button**
▲ ZERO	Zero the weight diplay	/	Move up option/ increase value	/
▼ OFTEN	Go to the often menu	/	Move down option/ decrease value	/
◀ SWITCH	Toggle display values (Gross, Net, Peak, Valley, Peak-Valley)	/	Shift/Return (do not save)	Return (do not save)
↵ SET/CALI	Enter the setup menu	Enter the calibration menu	Confirm and save	/

∅ **In the calibration modification interface, regardless of whether it is saved or not, the return directly switches to the next parameter**

5. Parameter setup



6. Menu details

Main menu		
Name	**symbol**	**Meaning**
F1	**F1**	Basic parameters
F2	**F2**	Peak/valley parameters
F3	**F3**	Compara parameters
F6	**F6**	I/O parameters
F7	**F7**	Communication parameters
F8	**F8**	Analog parameters

F9	**F9**	Other parameters

6.1 Basic Parameters

F1 menu				
Submenu	**Name**	**Range**	**Defaul value**	**Analysis**
F1-01	Unit Selection	**Hg**:Kg; **g**:g; **n**:n; **t**:t; **nonE**: customize	**Hg**	8.1.1
F1-02	Power Clear Range	0~100 (% of full scale)	000	8.1.2
F1-03	Manual Clear Range	0~100 (% of full scale)	100	8.1.3
F1-04	Stable Range	0~9999, the same unit with the real-time weight	0000.20	8.1.4
F1-05	Stable Time	0.1~5.0 seconds, unit 0.1s	1.0	8.1.4
F1-06	Zero Range	0~99, the same unit with the real-time weight	0000.05	8.1.5
F1-07	Auto Zero Range	0~999.9, the same unit with the real-time weight	000.000	8.1.6
F1-08	Auto Zero Time	0~5.0 seconds, unit 0.1s	1.0	8.1.6
F1-09	Creep Range	0~9.999, unit: 0.001 division	0.000	8.1.7
F1-10	Creep Time	0~999.9, unit: 0.1s	010.0	8.1.7
F1-11	AD_Speed	**10**, **40**, **640**, **1280**HZ	**640**	8.1.8
F1-12	Filter Type	**0**: not used **1**:Composite filter (recommended) **2**: Median Filter **3**: First-Order Filter **4**: Sliding average filter **5**: Median average filter **6**: Slip median mean Filter **7**: Average filter + first-order filter **8**: Median filter + first order filter **9**:Sliding average filter + first-order filter **10**:Median avergae filter+	**9**	8.1.9
F1-13	Filter Level	0~50	20	8.1.9

6.2 Peak/valley parameters

F2 menu				
Submenu	**Name**	**Range**	**Defaul value**	**Analysis**
F2-01	Peak Enable Type	**nonE**: Turn off peak detection **HrL**: Peak detection is initiated when the force value exceeds the peak threshold **EËH**: Peak detection is initiated when it is externally triggered and the peak threshold is met **EEr**: Starts peak detection when there is an external signal (ignores the threshold), and ends when there is no external signal	**HrL**	8.2
F2-02	Peak Threshold	−99999~999999, the same unit with the real-time weight	0000.00	8.2
F2-03	Peak FallBack	0~999999, the same unit with the real-time weight	0000.00	8.2
F2-04	Valley Enable Type	**nonE**:Turn off valley detection **HrL**: Valley detection is initiated when the force value exceeds the valley threshold **EËH**: Valley detection is initiated when it is externally triggered and the valley threshold is met **EEr**: Starts valley detection when there is an external signal (ignores the threshold), and ends when there is no external signal	**HrL**	8.2
F2-05	Valley Threshold	−99999~999999, the same unit with the real-time weight	0000.00	8.2
F2-06	Valley FallBack	0~999999, the same unit with the real-time weight	0000.00	8.2
F2-07	Interval Time	0~2.55s	0.50	8.2

6.3 Compara parameters

F3 menu		
Symbol	**Name**	**Analysis**
F3-1	Comparator 1 parameter	8.3
F3-2	Comparator 2 parameter	8.3
F3-3	Comparator 3 parameter	8.3

Comparator N parameters (N refers to 1, 2, 3)				
Submenu	**Name**	**Range**	**Defaul value**	**Analysis**
F3-1.1 **F3-2.1** **F3-3.1**	Enable Type	**nonE**: Turn off comparator **Por**: Start the comparator immediately after powering up **EEr**: External signal start-stop comparator	**Por**	
F3-1.2 **F3-2.2** **F3-3.2**	Compare Type	**0**: Force value≥HiLimit **1**: MiLimit＜Force value≤HiLimt **2**: LoLimit＜Force value≤MiLimit **3**: Force value≤LoLimit **4**: Force value≥HiLimt LoLimit＜Force value≤MiLimit **5**: Force value≥HiLimt Force value≤LoLimit **6**: Force value≤LoLimit MiLimit＜Force value≤HiLimt	**0**	8.3.1
F3-1.3 **F3-2.3** **F3-3.3**	Data Source	**GroSS**: Gross **EAS**: Measurement **P-v**: Peak-valley **vALLEy**: Valley **PEAK**: Peak **nEt**: Net	**GroSS**	
F3-1.4 **F3-2.4** **F3-3.4**	Delay	0~25.5 seconds	00.1	8.3.2
F3-1.5 **F3-2.5** **F3-3.5**	HiLimit	−99999~999999, the same unit with the real-time weight	999.99	
F3-1.6 **F3-2.6** **F3-3.6**	MiLimit	−99999~999999, the same unit with the real-time weight	0000.00	

F3-1.7 **F3-2.7** **F3-3.7**	LoLimit	-99999~999999, the same unit with the real-time weight	-99.99	

6.4 I/O parameters

F6 menu				
Submenu	**Name**	**Range**	**Defaul value**	**Analysis**
F6-00	Output port test	OUT1:**o1.on**/**o1.oFF** OUT2:**o2.on**/**o2.oFF** OUT3:**o3.on**/**o3.oFF**	**o.1oFF**	8.4.1
F6-01	Output port 1 setup	**0**: Communication control **1**: Zero **2**: Stability **3**: Overload **4**: Alarm **10**: Comparator 1 results **11**: Comparator 2 results **12**: Comparator 3 results **13**: Cmparator 4 results(Not supported) **14**: Comparator 5 results(Not supported) **15**: Comparator 6 results(Not supported)	**10**	8.4.2
F6-02	Output port 2 setup		**11**	
F6-03	Output port 3 setup		**12**	
F6-50	Valid input time	0.01~2.55 seconds	**0.05**	8.4.3
F6-51	Input port 1 setup	**0**: Turn off **1**: Clear **2**: Remove the tare weight **3**: Restore the removed tare weight **4**: Turn on the peak/valley detection **5**: Clear peak/valley **10**: Turn on comparator 1 **11**: Turn on comparator 2	**0**	8.4.4

F6-52	Input port 2 setup		**0**	

6.5 Communication parameters

F7 menu		
Symbol	**Name**	**Submenu**
F7.485	RS485 interface	**F7.101~F7.115**
F7.232	RS232 interface	**F7.201~F7.215**

F7 menu				
Submenu	**Name**	**Range**	**Defaul value**	**Analysis**
F7.101 **F7.201**	Protocol type	**rtu**: Modbus RTU **FrEE**: Free	**rtu**	
F7.102 **F7.202**	Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	9600	
F7.103 **F7.203**	Module address	1~247	001	
F7.104 **F7.204**	Data format	**8-n-2**: 8 bits of data; no check; 2 top bits **8-n-1**: 8 bits of data; no check; 1 stop bit **8-o-1**: 8 bits of data; odd check; 1 stop bit **8-E-1**: 8 bits of data; even check; 1 stop bit **7-n-2**: 7 bits of data; no check; 2 stop bits **7-o-1**: 7 bits of data; odd check; 1 stop bit **7-E-1**: 7 bits of data; even check; 1 stop bit	**8-n-1**	

F7.105 **F7.205**	Response delay	0~255ms	000	
F7.106 **F7.206**	CRC check	**oFF**: Turn off CRC check **on**: Turn on CRC check (invalid for Modbus RTU protocol)	**oFF**	
F7.107 **F7.207**	High and low setup	**HH-LL**: 32-bit data is placed high first, then low **LL-HH**: 32-bit data is placed low first, then high (Valid only for Modbus RTU protocol)	**HH-LL**	
F7.110 **F7.210**	Continuous send setup	**oFF**: Turn off continuous sending **on**: Turn on continuous sending	**oFF**	9.1.1
F7.111 **F7.211**	Data sources of continuous sending	**GroSS**: Gross **AdC**: AD value **EAS**: Measurement **P-v**: Peak-valley **vALLEy**: Valley **PEAH**: Peak **nEt**: Net	**GroSS**	9.1.1
F7.112 **F7.212**	The way of the data is sent	**oFF**: It is sent regardless of whether the data changes or not **on**: It is only sent when the data is updated	**oFF**	9.1.1
F7.113 **F7.213**	The interval between data sending	0~60.000s	00.000	9.1.1
F7.114 **F7.214**	Format	**Std**: Standard format **SËP**: Simple format **SËP2**: Simple format 2	**Std**	9.1.1

6.6 Analog parameters

F8 menu				
Submenu	**Name**	**Range**	**Defaul value**	**Analysis**
F8-01	Type	**n-10u**:0~±10V **4-20Ë**:4~20mA **0-20Ë**:0~20mA	**n-10u**	8.5
F8-02	Data Type	**GroSS**: Gross **EAS**: Measurement **P-v**: Peak-valley **vALLEy**: Valley **PEAH**: Peak **nEt**: Net	**GroSS**	8.5
F8-03	Analog Value1	-9.999~25.000	00.000	8.5

F8-04	Analog Value2	-9.999~25.000	10.000	8.5
F8-05	Weight1	−99999~999999, the same unit with the real-time weight	0000.00	8.5
F8-06	Weight2	−99999~999999, the same unit with the real-time weight	0100.00	8.5
F8-07	Analog Adj1	**S1 AdJ**: 0. 001 V(mA); **n1 AdJ**: 0. 01 V(mA); **L1 AdJ**: 0. 1 V(mA)	**n1 AdJ**	8.5
F8-08	Analog Adj2		**n1 AdJ**	8.5

6.7 Other parameters

F9 menu				
Submenu	**Name**	**Range**	**Defaul value**	**Analysis**
F9-01	Refresh rate of display	001~200 times/sec	010	8.6.1
F9-02	TEDS scan	**oFF**: Detects the TEDS sensor only on power-up **on**: Scans the TEDS sensor every 1 second (only supported by the TEDS version)		8.6.2
F9-03	Sensor millivolt value	-39.000mV~39.000mV	Real-time values	8.6.3
F9-04	Set a parameter password	Set the password to enter the F1~F9 menu, you need to turn on this function in the background to set the password		
F9-05	Restore the default	Restore all parameters of F1~F9	**ContË**	8.6.4
F9-06	Version	Software version		8.6.5

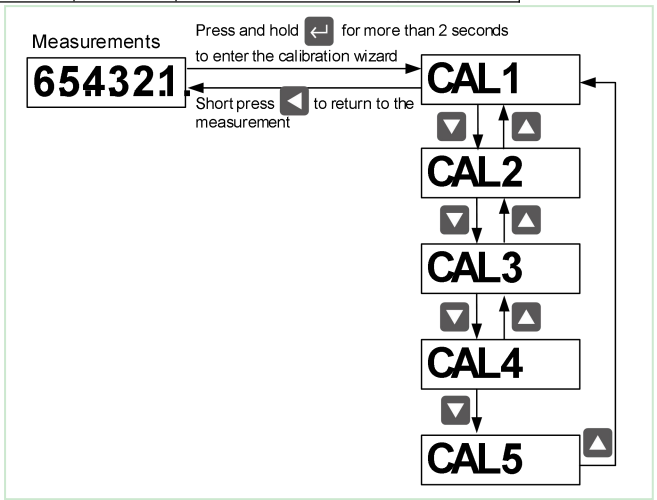
7. Calibration

This amplifier should be calibrated when the user uses this amplifier for the first time, or when any part of the measurement system changes, and when the calibration parameters of the current equipment do not meet the user's requirements. Calibration can be done with weights and sensitivity (weight-free calibration), and the calibration can be modified for any one or more of the calibration parameters.

Press and hold 8 for more than 2 seconds to enter the calibration wizard, please follow the calibration wizard prompts to complete the calibration steps.

7.1 Calibration parameters

Calibration menu		
Name	**Symbol**	**Meaning**
CAL1	**CAL1**	Weight calibration
CAL2	**CAL2**	Sensitivity calibration
CAL3	**CAL3**	Multi-point correction
CAL4	**CAL4**	Set the calibration menu password
CAL5	**CAL5**	Restore the calibration parameters



7.2 Calibration process

Calibration methods are divided into weight calibration and weightless calibration (sensitivity calibration)

π Weight calibration (**CAL1**)：Gain-point is calibrated with weights

π Weightless calibration (**CAL2**)：Gain-point is not calibrated, but is calculated from input sensor sensitivity.

🕮 Weight Calibration-CAL1

Weight Calibration Parameters (Gain Calibration with Weights)

CAL1				
Name	**Symbol**	**Meaning**	**Range**	**Default value**
div	**dËv**	Division	0.0001, 0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50	0. 01
CAP	**CAP**	Capacity	0~999999, the same unit with the real-time weight	100. 00
ZEro	**ZEro**	Zero-point calibration	-99999~999999, the same unit with the real-time weight	
SPAn	**SPAn**	Gain-point calibration	-99999~999999, the same unit with the real-time weight	

dËv(div):——The division setup is the minimum value that can be read by the amplifier. (For example, 1000g weight, when it is divided into 10 equal parts, the graduation value is 100g, when it is divided into 100 equal parts, the graduation value is 10g, when it is divided into 1000 equal parts, the index value is 1g) The decimal point displayed on the digital tube is related to the division, select the division to 0.1, then it will be displayed to 0.0, and select the division to 0.01, then it will be displayed to 0.00.

CAP(CAP):——The maximum range of the sensor.

ZEro(Zero):——The zero point is the weight of the sensor when it is unloaded.

SPAn(Span):——The gain calibration is the weight value entered by the sensor after the weight is loaded

(it is recommended to place more than 25% of the full scale weight).

☜1. Enter the Weight Calibration menu (**CAL1**): Press and hold **8** for more than 2 seconds to **CAL1**.

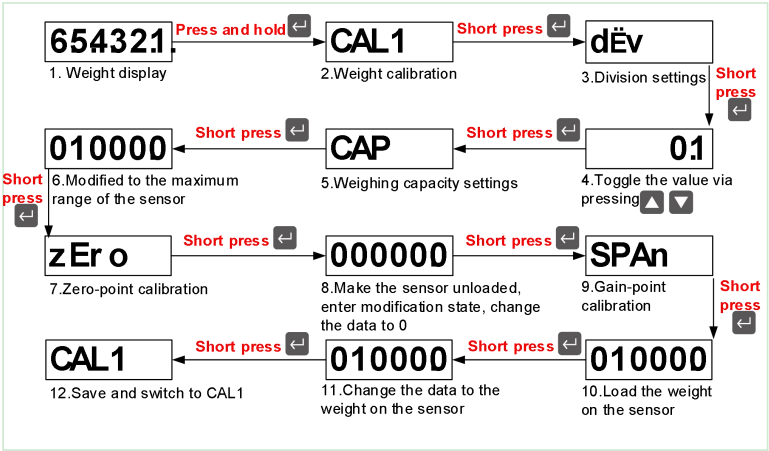
☜2. Division (**dËv**): **CAL1** short press **8** to enter **dËv**, then press **8** to enter the modification state, toggle the value via pressing πθ, press 8 to save and switch to the **CAP**.

☜3. Capacity (**CAP**): Short press 8 to enter **CAP** modification state, press τ to move data modification position, press πθ to increase or decrease the data, change the data to the maximum range of the sensor, press **8** to save and switch to **ZEro**。

☜4. Zero-point calibration (**ZEro**): Make the sensor unloaded, press **8** to appear a real-time weight value, then press **8** to enter the modification state, change the

data to 0, press τ to move data modification position, press πθ to increase or decrease the data, and finally press 8 to save and switch to **SPAn**。

☜5. Gain-point calibration（**SPAn**）：Load the weight on the sensor(more than 25% of the sensor capacity), press 8 to appear a real-time weight value, then press 8 to enter the modification state, change the data to 0, press τ to move data locations, press πθ to increase or decrease the data, and finally press 8 to save and switch to **CAL1**.



🕮 Weightless calibration-CAL2

Sensitivity calibration（Gain-point is not calibrated, but is calculated from input sensor sensitivity.）

CAL2				
Name	**Symbol**	**Meaning**	**Range**	**Default value**
div	**dËv**	Division	0.0001, 0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50	0. 01
CAP	**CAP**	Capacity	0~999999, the same unit with the real-time weight	100. 00
ZEro	**ZEro**	Zero-point calibration	-99999~999999, the same unit with the real-time weight	

SEn	**SEn**	Sensitivity	0.4000~6.000mV/V	2. 000
SPAn	**SPAn**	Full-scale range	-99999~999999, the same unit with the real-time weight	

dËv(div)——The division setup is the minimum value that can be read by the amplifier. (For example, 1000g weight, when it is divided into 10 equal parts, the graduation value is 100g, when it is divided into 100 equal parts, the graduation value is 10g, when it is divided into 1000 equal parts, the index value is 1g) The decimal point displayed on the digital tube is related to the division, select the division to 0.1, then it will be displayed to 0.0, and select the division to 0.01, then it will be displayed to 0.00.

CAP(CAP)——The maximum range of the sensor.

ZEro(Zero)——The zero point is the weight of the sensor when it is unloaded.

SEn(SEn)——The sensitivity of the sensor.

SPAn(Span)——The full-scale range of the sensor.

☜1. Enter the Weightless Calibration menu (**CAL2**): Press and hold **8** for more than 2 seconds to **CAL1**, then press θ to **CAL2.**

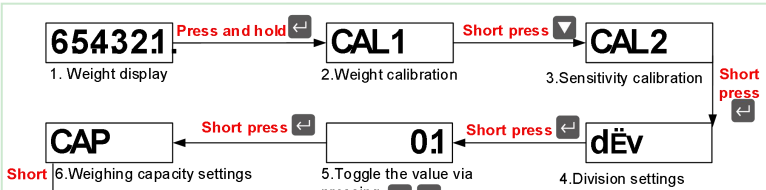
☜2.Division (**dËv**): **CAL2** short press **8** to enter **dËv**, then press **8** to enter the modification state, toggle the value via pressing πθ, press 8 to save and switch to the **CAP**.

☜3. Capacity (**CAP**): Short press 8 to enter **CAP** modification state, press τ to move data modification position, press πθ to increase or decrease the data, change the data to the maximum range of the sensor, press **8** to save and switch to **ZEro**。

☜4. Zero-point calibration (**ZEro**): Make the sensor unloaded, press **8** to appear a real-time weight value, then press **8** to enter the modification state, change the data to 0, press τ to move data modification position, press πθ to increase or decrease the data, and finally press **8** to save and switch to **SEn**。

☜5. Sensitivity (**SEn**): Enter the sensitivity into the amplifier, press τ to move data modification position, press πθ to increase or decrease the data, press **8** to save and switch to **SPAn**.

☜6. Sensor range (**SPAn**): Enter the range of the sensor, change the data to the sensor range, press τ to move data modification position, press πθ to increase or decrease the data, press **8** to save and switch to **CAL2**.



🕮 Multi-point correction–CAL3

Multi-point correction (When there is a non-linear relationship between the displayed value and the actual weight on the sensor, the data needs to be corrected， up to 10 points.)

CAL3				
Name	**Symbol**	**Meaning**	**Range**	**Default valut**
CLS	**CLS**	Clear the multi-point corrections	Clear the multi-point corrections	
qty	**qty**	Displays the qty of multi-points	0~10(displays the number of multipoint corrections inserted)	0
inS	**ËnS**	Insert multi-point correction data	-99999~999999, the same unit with the real-time weight	0.00

CLS(CLS)——Clear the previously corrected data.

qty(qty)——Display the qty of multi-points have been inserted

ËnS(inS)——A known weight is placed onto the sensor, and then the placed weight value is inserted in the multipoint correction data

☜Figure1. Enter the multi-point correction（**CAL3**）：Press and hold **8** for more than 2 seconds to enter **CAL1**, then press θ to enter **CAL2**, and then press θ to enter **CAL3**.

☜ Figure2. Clear multi-point correction parameter（**CL5**）：**CAL3** press 8 to enter

CLS, then press 8 to enter **ContË**, and press 8 to clear the multi-point correction and switch to **qty.**

☜ Figure3. View the qty of multi-point corrections (**qty**) : **CLS** press θ to switch to **qty**, then press 8 to show the qty of multi-point corrections, press 8 or τ to switch to **ËnS.**

☜ Figure4. Insert multi-point correction data (**ËnS**) : **qty** press θ to enter to **ËnS**, put the weight on the sensor, press 8 to display the current weight value, then press 8 to enter the modified state, press τ to move data modification position, press π and θ to increase or decrease the data, modify the data which we need to be displayed, then press 8 to save and enter to **ContË**.If you don't want to proceed to the next correction point, press τ to return to **ËnS**, if you want to move the next correction point, please press 8 .

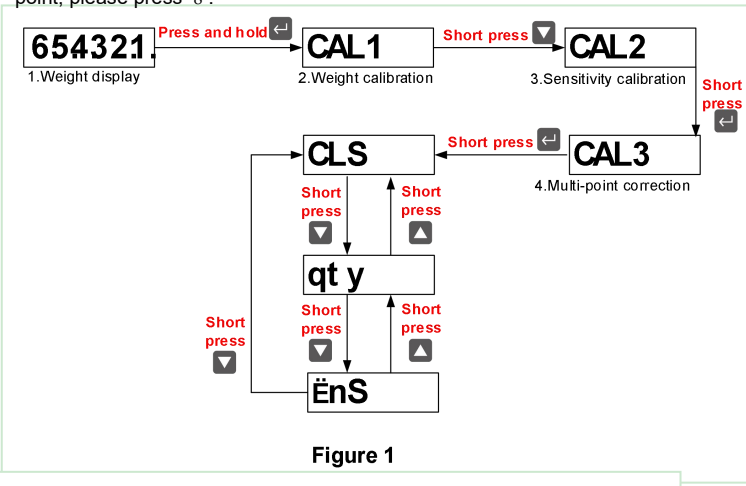


Figure 1

Figure 2

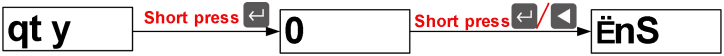
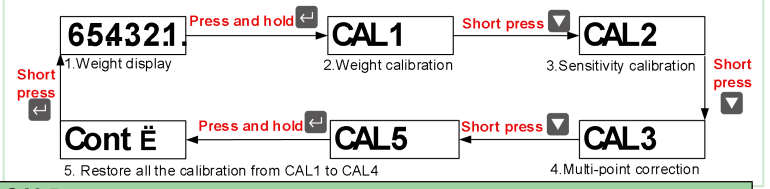


Figure 3

Restore the calibration parameters-CAL5



CAL5				
Name	**Symbol**	**Content**	**Range**	**Defaul value**
CAL5	**CLA5**	Restore the calibration parameters	The parameters from CAL1 to CAL7	

☜Steps to restore calibration parameters：Press 8 and hold for more 2 seconds to enter **CAL1**, then press π or θ to switch to **CAL5**, press 8 to enter **ContË**, press 8 to restore calibration parameters and restart the module.

8.The analysis of some parameters

8.1 Basic Parameters（F1）

8.1.1 F1-01 Unit Selection

Option	Unit	Option	Unit	Option	Unit	Option	Unit	Option	Unit
Hg	kg	t	t	nonE	customize	g	g	n	N

3.1.2 F1-02 Power Clear Range

The range of automatic zero clearing when the amplifier is powered on, centered on the zero point of calibration, the unit is the percentage of full scale. For example, if the full-scale range is 100kg and the power clear range is set to 10, the weight on the sensor is within the range of ±10kg (i.e., ±100kgX10%), and the amplifier will be cleared when it is powered on. There are two conditions that must be met to perform the power clear function, one is that the weight must be within the range, and the other is that the weight must be stable.

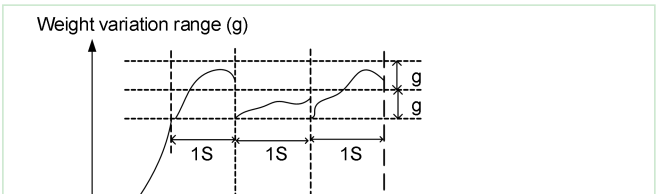
3.1.3 F1-03 Manual Clear Range

When the weight on sensor within the range of manual clear range, when manual zeroing is performed, the weight can be displayed as zero, and the zeroing value remains unchanged after power-off. The unit is the percentage of full scale. When the range is 100, manual clear can be performed in any case. When the range is 100, manual clear is turned off. When the range is 1~99, the weight must be within the range and stable. For example, if the full-scale range is 100kg and the manual clear range is set to 20, the weight on the sensor is within the range of ±20kg (i.e., ±100kgX20%), and the amplifier will be cleared when it is performed

3.1.4 F1-04 Stable Range & F1-05 Stable Time

The MOT light is on, indicating that the weight is unstable. In the case of unstable weight, it cannot be calibrated and cleared. Stability judgment includes stable range and stable time, and within the stability time, the weight change is within the stability range, it is judged to be stable.

O Assuming that the weight unit is g, the stable range is set to 1g, and the stable time is 1s. F1-04=1g，F1-05=1s



☜ When the weight value changes by more than 1 g in 1 second, the MOT light is on, and when the weight value changes by more than 1 g in 1 second, the MOT light is not on, and it is tracked every 1 second.

3.1.5 F1-06 Zero Range

The weight value varies within the zero range, and the weight value is judged to be zero.

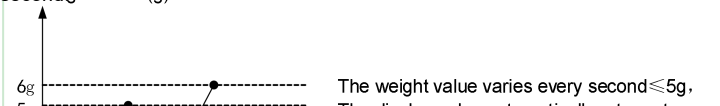
3.1.6 F1-07 Auto Zero Range and F1-08 Auto Zero Time

O After the sensor calibrates the zero point, the weight value changes in the auto zero range and the auto zero time, and the changed value is finally judged to be zero. It is used to ensure the accuracy and stability of weighing results.

O The function of auto zero range:

1. Improve the weighing accuracy, which can eliminate the possible errors of the weighing equipment itself, such as sensor deviation, mechanical wear, etc., so as to improve the accuracy of weighing.
2. Enhance the stability of the weighing results, in the dynamic weighing process, due to environmental factors or fluctuations in the equipment itself, may lead to a decrease in the stability of the weighing results, adjusting the auto zero range can offset these effects to a certain extent, ensuring the stability of the weighing results.
3. Easy to calibrate and maintain. By adjusting the auto zero range, it is easier to judge the calibration status of weighing equipment, find and solve potential problems in time, and ensure the normal operation of the equipment.

O Assuming that the F1-07 auto zero range is 5g, the F1-08 auto zero time is 1 second.



☜ If the weight value never fluctuates more than 5g in 1 second, the displayed weight value is always 0 and is tracked every 1 second.

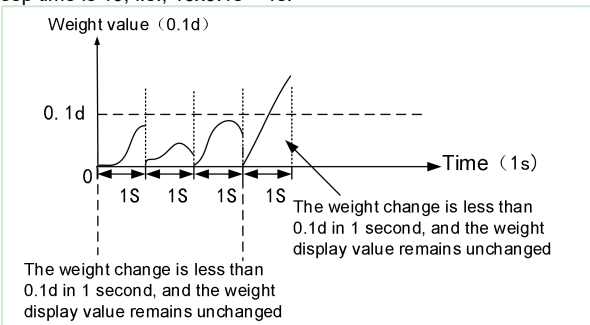
∅ Zero tracking is automatically turned off during calibration and re-opened after calibration.

∅ The auto zero range set must be less than the manual clear range.

3.1.7 F1-09 Creep Range and F1-10 Creep Time

O Creep refers to the fact that in a constant environment (such as temperature, humidity, etc.), under the same load, the output signal of the sensor changes over time.

O Suppose the creep range of F1-09 is 100, that is, 100x0.001d=0.1d; The F1-10 creep time is 10, i.e., 10x0.1s = 1s.



☜ When the weight changes less than 0.1 division in 1 second, the weight display value remains the same, and when the weight changes more than 0.1 division in 1 second, the displayed value changes, and it is tracked every 1 second.

∅ Creep tracking is only effective when the measurement state is stable.

3.1.8 F1-11 AD_Speed

O The conversion of analog signals to digital signals, referred to as AD conversion, the faster the AD conversion speed, the lower the accuracy of data acquisition.

8.1.9 F1-12 Filter Type and F1-13 Filter Level

O Filtering is the operation of filtering out a specific band frequency from a signal, it is an important measure to suppress and prevent interference. In order to obtain a weighing data as close to the real as possible, the amplifier will use digital filtering to process the data signal. Different filter types can be selected according to different applications.

O The smaller the filter level, the faster the signal response speed of the data output, but the worse the effect on noise filtering. The bigger the filter level, the slower the response speed of the output signal, but the better the effect of noise filtering.

8.2 Peak/valley parameters（F2）

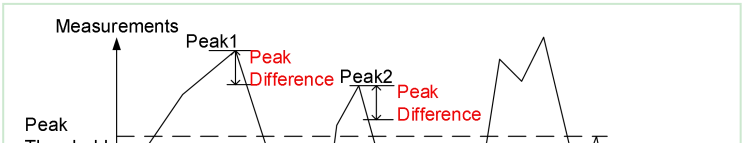
You can view the peak/valley values by switching the display values, when switching to the peak display, the Peak indicator lights up, when switching to the valley display, the Valley indicator lights up, and when switching to the peak-to-valley display, the Peak and Valley indicators are on at the same time. When the next peak/trough occurs, the display data is overwritten.

O Peak Threshold: When the measured value exceeds the peak threshold, the peak detection is initiated.

O Peak Difference: The measured value falls back beyond the "peak difference", the amplifier completes the peak detection and obtains the peak.

O Valley Threshold: When the measured value is below the valley threshold, the valley detection is initiated.

O Valley Difference: The measured value rise back beyond the "valley difference", the amplifier completes the peak detection and obtains the peak.



🡻 As shown in the figure above, when the measured value exceeds the "peak threshold", the amplifier starts to detect the peak, and when the measured value falls back beyond the "peak difference", the amplifier completes the peak detection and obtains the peak.

🡻When a peak is detected, the peak can only be redetected when the measured value falls back below the Peak Threshold and then exceeds the Peak Threshold again. To obtain the peak, you need to exceed the "peak threshold" + the fallback range exceeds the "peak return".

🡻 Valley detections are similar to peak detections and are no longer described separately.

Maximum&Minimum Detection:

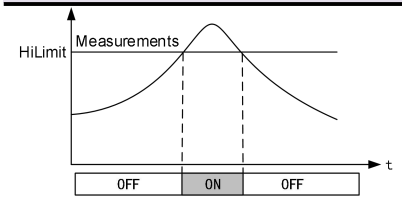
The maximum value of the measured value is obtained: "Peak Threshold" is set as needed and "Peak Difference" is set to 0.

The minimum value of the measured value is obtained: "Valley Threshold" is set as needed and "Valley Difference" is set to 0.

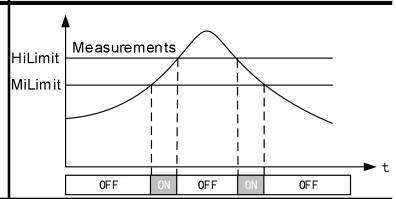
8.3 Compara parameters（F3）

8.3.1 F3-1.2/F3-2.2/F3-3.2 Compare Type（29）

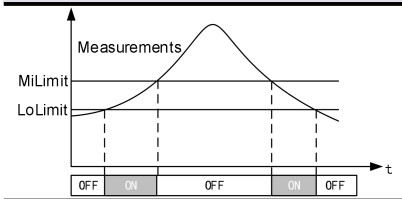
📖 0: Measurements≥HiLimit



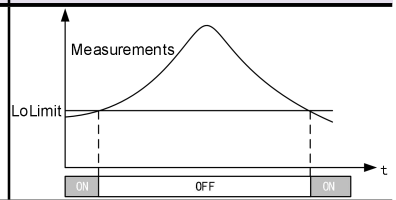
📖 1: MiLimit＜Measurements≤HiLimit



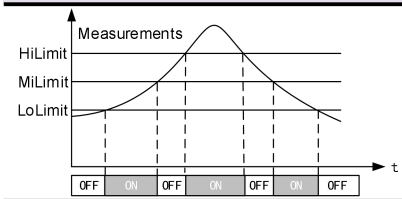
📖 2: LoLimit＜Measurements≤MiLimit



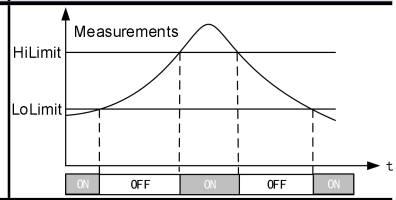
📖 3: Measurements≤LoLimit



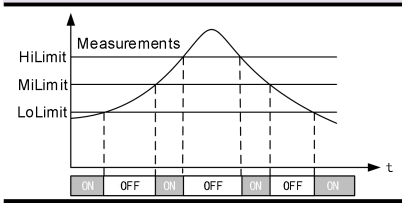
📖 4: Measurements≥HiLimit
LoLimit＜Measurements≤MiLimit



📖 5: Measurements≥HiLimit
Measurements≤LoLimit



📖 6: Measurements≤LoLimit
MiLimit＜Measurements≤HiLimit

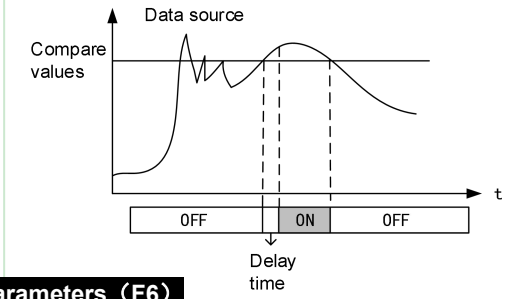


O Comparator 1 setup steps

a.F3-1.1 Turn on the comparator ∅ **b.F3-1.2** Select compare type ∅ **c.F3-1.3** Select data source∅**d.F3-1.4** Set the delay time∅**e**. Compare values：**F3-1.5** Set HiLimit/**F3-1.6** Set MiLimit/**F3-1.7** Set LoLimit

O Comparator 2 and Comparator 3 setup steps are the same as Comparator 1 setup steps, and will not be described separately here.

8.3.2 F3-1.4/F3-2.4/F3-3.4 Delay



8.4 I/O parameters（F6）

8.4.1 F6-00 Output port test

OEnter **F6-00** to test whether the output port is normal，CH1 light is on when switching to **o1.on**，CH2 light is on when swithcing to **o2.on**; CH3 light is on when switching to **o3on**.

8.4.2 F6-01 Output port 1 and F6-02 Output port 2 / F6-03 Output port 3

O Steps to turn on the transistor output：

A: Connect the wires according to the wiring diagram.

B: Set the output condition, the output port OUT1 corresponds to the F6-01 setup condition, the output port OUT2 corresponds to the F6-02 setup condition, and the output port OUT3 corresponds to the F6-03 setup condition. For a comparative output of force values, select **10**,**11** and**12**，and refer to the F3 menu and its analysis for Comparator 1 results, Comparator 2 results, and Comparator 3 results.

8.4.3 F6-50 Valid input time

O Set the holding time of the input signal, the larger the setup, the longer the input signal needs to be maintained, and the better the anti-interference effect; The smaller the setup, the faster the response.

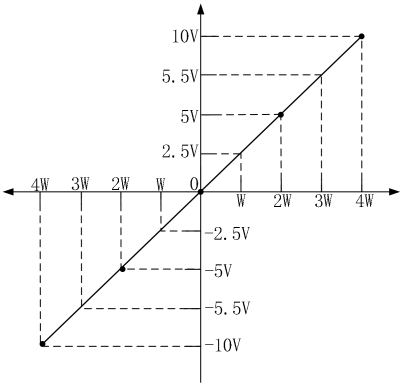
8.4.4 F6-51/F6-52 Input port 1 and 2 setup

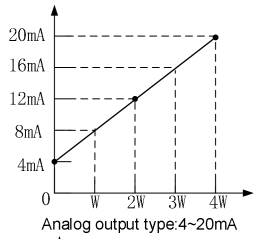
O An external signal is given to the amplifier through the input port, and after receiving the external signal, the amplifier turns on one of the selected functions in the **F6-51**/ **F6-52** the most commonly used function is clearing.

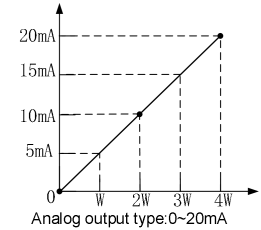
8.5 Analog parameters（F8）

(After calibrating the amplifier, if you need to output analogue, you must enter the F8 menu to set the analogue parameters.)

O The analog output is linearly related to the weight value.







☜1. Setting the analog output type(F8-01)：0~20mA/4~20mA/0~±10V.

☜2. Select the analog data type (F8-02): Measured/Gross/Net/Peak/Valley/Peak and Valley.

☜3. Set the analog output value (F8-03) and (F8-04): Set the corresponding analog output value of the first point and the output value of the second analog according to the analog output type selected by F8-01 (if 0~20mA is selected: the first analog is 0.000, the second analog is 20.000; if 4~20mA is selected: the first analog is 4.000, the second analog is 20.000; if 0-10V is selected: 0.000 for the first point and 10.000 for the second point. ）

☜4. Set the weight values (F8-05) and (F8-06): F8-05 is the zero weight value of 0, and F8-06 is the full-scale weight value.

☜5. Fine-tune the first analog output value (F8-07) and fine-tune the second analog output value (F8-08): When the analog output value of the first and second points

is deviated, it can be fine-tuned by F8-07 and F8-08 to make the output accurate.

After the analog parameters are set, do not enter F8-01 to confirm the output type, if you enter F8-01, and press the confirm button again, the voltage or current setting parameters in F8 will return to the default value, if you want to enter F8-01 to view, press the back button to exit.

8.6 Other parameters（F9）

8.6.1 F9-01 Refresh rate of display

O The number of refresh rates displayed by the digital tube.

8.6.2 F9-02 TEDS scan

O For amplifiers with TEDS, there is no F9-02 menu if without the TEDS function.

O TEDS function: the sensitivity, capacity and other information of the sensor are imported into the TEDS chip, and the chip is bound to the sensor, and the amplifier can be exempted from calibration by identifying the chip data, so that the on-site measurement system has the function of automatic calibration.

8.6.3 F9-03 Sensor millivolt value

O The F9-03 can displays the millivolt value output from the sensor to the amplifier, which is proportional to the weight value of the amplifier. The millivolt value can be used to determine whether the sensor is normal or not.

8.6.4 F9-05 Restore the default(F9-05 can restore the parameters of F1~F9 to the factory default.)

O a. Enter the F9-05 ∅b.Press8 to enter **ContË**∅c.Press8 to save and return to the value diplay.

8.6.5 F9-06 Version

O With the addition, deletion and modification of functions of the same model products, they are distinguished by different version numbers.

9. Communication parameters

9.1 Continuous send setup(Modbus protocol is invalid)

By continuous sending, the amplifier can continuously send data to the host computer.

9.1.1 Continuous sending setup of Free protocol

☜1. Enter to F7.101/FA.201 and select **FrEE**.

☜2. Enter F7.110/F7.210 to select **on** to turn on the continuous sending.

☜3. Enter to F7.111/F7.211 to select the data sources of continuous sending, and generally select **GroSS**.

☜4. Enter to F7.112/F7.212 to select the way of the data is sent.

☜5. Enter to F7.113/F7.213 to set the interval between data sending.

⬇The interval between data sending cannot be shorter than the time required for one frame. For example, if the baud rate is 9600, then the speed is 9600 bits/second, and 1 byte = 10 bits, so the speed is 960 bytes/second, which means that 960 bytes can be sent in 1 second. If the data format is FE 01 50 00 00 00 00 06 CF FC CC FF, that is, 12 bytes per frame, then the time required for a frame (12 bytes) is 12/960 = 0.0125 seconds = 12.5 milliseconds. The interval between data sending must greater than 12.5 milliseconds. Of course, you can also set the baud rate to a higher rate to shorten the interval.

☜6. Enter to F7.114/F7.214 to select the format.

For example, if the division is 0.01 and the digital tube displays 0.82, you can choose the following different formats to return.

Std—standard format: FE 01 50 00 00 00 00 52 CF FC CC FF

SËP—simple format：0.82（If the amplifier does not have ASCII protocol, select **SËP** format, can send the data to the host computer in ASCII format, note that the host computer needs to set the HEX display.）

SËP2—simple format 2：FE 01 50 00 00 52 CF FC CC FF(The data length is only 2 bytes)

9.2Modbus RTU

ꕥData format：8 bits of data; odd check; 1 stop bit

8 bits of data; even check; 1 stop bit

8 bits of data; no check; 1 stop bit（default）

8 bits of data; no check; 2 top bits

ꕥBaud rate：1200, 2400, 4800, **9600（default）**, 19200, 38400, 57600, 115200bps

ꕥRead Registers (Function Code 03): read the data of the amplifier

1. Sending format

Amplifier address	Function code	Register start address		Qty of registers		CRC16 check	
Addr	03	High 8-bit	Low 8-bit	High 8-bit	Low 8-bit	Low 8-bit	High 8-bit

2. Return format

Amplifier address	Function code	Qty of bytes	Register data		CRC16 check	
Addr	03	N	High 8-bit	Low 8-bit	Low 8-bit	High 8-bit

O Read gross weight as an example

Category	Name	Register address	Data type	Description	Attribute	Default
Weighing function	Gross	40081 (080)	High 16-bit (signed)	Actual gross weight, negative number using standard complement	Read-only	--
		40082 (081)	Low 16-bit (signed)			

The register address is 080 and 081 (if it is a Siemens PLC, please use the register addresses 40081 and 40082), the register start address is 080 (the hexadecimal of 80 is 50), and the qty of registers is 2. The default amplifier address is 01 (when 2 or more amplifiers are connected in parallel, 2 different amplifier addresses need to be set for the host computer to identify). The function code of the read register is 03, and the CRC16 check code converted from all the previous data 01 03 00 05 00 02 is C4 1A, and the above data are written into instructions according to the read register sending format as 01 03 00 50 00 02 C4 1A.

Amplifier address	Function code	Register start address		Qty of registers		CRC16 check	
01	03	00	50	00	02	C4	1A

In the returned data, the register data 00 00 00 84 is the gross, and the decimal value of 84 is 132.

Amplifier address	Function code	Qty of bytes	The first set of register data		The second set of register data		CRC16 check	
01	03	04	00	00	00	84	FA	50

The register data 00 00 00 84 to decimal is 132, if the data starting with F is negative, the calculation formula is the obtained data – FF FF FF FF-1, for example, FF FF FE C9-FF FF FF FF-1=4294966985-4294967295-1=-33.

Write registers (writing code 0x10): change the data of the amplifier

1. Sending format

Amplifier address	Function code	The first set of register data		Qty of registers		Qty of bytes	Register data		CRC16 check	
Addr	10	High 8-bit	Low 8-bit	High 8-bit	Low 8-bit	N	High 8-bit	Low 8-bit	Low 8-bit	High 8-bit

2. Received format

Amplifier address	Function code	Register start address		Qty of registers		CRC16 check	
Addr	10	High 8-bit	Low 8-bit	High 8-bit	Low 8-bit	Low 8-bit	High 8-bit

Manual clear range as an example

Category	Name	Register address	Data type	Description	Attribute	Default
Weighing function	Manual clear range	40094 (093)	16-bit unsigned	Set the range of manual clearing; The unit is a percentage of full scale; After 0 is written, the manual clearing function is invalid	Write-only	--

If the register address is 093 (40094 if it is a Siemens PLC), then the register start address is 093 (the hexadecimal value of 93 is 5D), and the qty of registers is 1. The default amplifier address is 01 (when 2 or more amplifiers are connected in parallel, 2 different amplifier addresses need to be set for the host computer to identify). The function code of the write register is 10, the register data is assumed to be set 100%, the hexadecimal system of 100 is 64, and the CRC16 check code is converted to AA F6 based on all the previous data 01 10 00 5D 00 01 02 00 64. Write the above data into instructions in write register format as 01 10 00 5D 00 01 02 00 64 AA F6.

Amplifier address	Function code	Register start address		Qty of registers		Qty of bytes	Register data		CRC16 check	
01	10	00	5D	00	01	02	00	64	AA	F6

Received format 01 10 00 5D 00 01 90 1B

Amplifier address	Function code	Register start address		Qty of registers		CRC16 校验	
01	10	00	5D	00	01	90	1B

The following are some commonly used commands, please refer to the protocol description for specific protocol content!

9.2.1 Read gross weight value (Modbus RTU protocol)

Send: 01 03 00 50 00 02 C4 1A(The hexadecimal of register address 80 is 50)
Receive: 01 03 04 00 00 00 84 FA 50 (data varies according to actual conditions)
The register data 00 00 00 84 to decimal is 132, if the data starting with F is negative, the calculation formula is the obtained data – FF FF FF FF-1, for example, FF FF FE C9-FF FF FF FF-1=4294966985-4294967295-1=-33.

9.2.2 Weight calibration(Modbus RTU protocol)

Zero-point calibration(Leave the sensor unloaded before sending the zero calibration command)
Send: 01 10 00 24 00 04 08 7F FF FF FF 00 00 00 00 8E 7A
Receive: 01 10 00 24 00 04 81 C1
Gain-point calibration(Put at least 25% of the full scale weight on the sensor)

Send: 01 10 00 28 00 04 08 7F FF FF FF 00 00 07 D0 9D C6(Take 2000 as an example)
Send: 01 10 00 28 00 04 08 7F FF FF FF 00 00 0B B8 99 28(Take 3000 as an example)
Send: 01 10 00 28 00 04 08 7F FF FF FF 00 00 13 88 93 3C(Take 5000 as an example)
Send: 01 10 00 28 00 04 08 7F FF FF FF 00 00 27 10 84 56(Take 10000 as an example)
Receive: 01 10 00 28 00 04 41 C2

9.2.3 Weightless calibration /Sensitivity calibration (Modbus RTU protocol)

Sensitivity of the sensor
Send: 01 10 00 2E 00 02 04 00 00 27 10 6A 07(Take 1mV/V as an example)
Send: 01 10 00 2E 00 02 04 00 00 4E 20 44 43(Take 2mV/V as an example)
Receive: 01 10 00 2E 00 02 21 C1
Capacity of the sensor
Send: 01 10 00 30 00 02 04 00 00 07 D0 F3 17(Take 2000 as an example)
Send: 01 10 00 30 00 02 04 00 00 0B B8 F7 F9(Take 3000 as an example)
Send: 01 10 00 30 00 02 04 00 00 13 88 FD ED(Take 5000 as an example)
Send: 01 10 00 30 00 02 04 00 00 27 10 EA 87(Take 10000 as an example)
Receive: 01 10 00 30 00 02 41 C7

9.2.4 Weighing function (Modbus RTU protocol)

The maximum weight of the sensor
Send: 01 10 00 56 00 02 04 00 00 07 D0 75 15(Take 2000 as an example)
Send: 01 10 00 56 00 02 04 00 00 0B B8 71 FB(Take 3000 as an example)
Send: 01 10 00 56 00 02 04 00 00 13 88 7B EF(Take 5000 as an example)
Send: 01 10 00 56 00 02 04 00 00 27 10 6C 85(Take 10000 as an example)
Receive: 01 10 00 56 00 02 A1 D8
Division
Send: 01 10 00 58 00 01 02 00 00 AB 48(Take 0.001 as an example)
Send: 01 10 00 58 00 01 02 00 06 2B 4A(Take 0.01 as an example)
Send: 01 10 00 58 00 01 02 00 09 6B 4E(Take 0.1 as an example)
Send: 01 10 00 58 00 01 02 00 0C AB 4D(Take 1 as an example)
Send: 01 10 00 58 00 01 02 00 0E 2A 8C(Take 5 as an example)
Receive: 01 10 00 58 00 01 80 1A

9.2.5 Manual Clear Range (Modbus RTU protocol)

Set the manual clearing range
Send: 01 10 00 5D 00 01 02 00 0A 2B 1A(Take 10% of full scale as an example)
Send: 01 10 00 5D 00 01 02 00 14 AB 12(Take 20% of full scale as an example)
Send: 01 10 00 5D 00 01 02 00 32 2A C8(Take 50% of full scale as an example)
Send: 01 10 00 5D 00 01 02 00 50 AB 21(Take 80% of full scale as an example)

Send: 01 10 00 5D 00 01 02 00 64 AA F6(Take 100% of full scale as an example)
Receive: 01 10 00 5D 00 01 90 1B

Perform manual clearing

Send: 01 10 00 5E 00 01 02 00 01 6A EE

Receive: 01 10 00 5E 00 01 60 1B

9.3 Free Protocol

Data format: 8 bits of data; no check; 1 stop bit（**default**）

Baud rate: 1200, 2400, 4800, **9600**（**default**）, 19200, 38400, 57600, 115200bps

1. Sending format

Start flag	Amplifier address	Register address	Command parameter	CRC check (Optional)		End flag
FE	Addr	1-bit	0~255-bit	High 8-bit	Low 8-bit	CF FC CC FF

2. Received format of successful connection

Start flag	Amplifier address	Command parameter	CRC check (Optional)		End flag
FE	Addr	F1	High 8-bit	Low 8-bit	CF FC CC FF

Connection command (default amplifier address is 1)

Category	Name	Register address	Command parameter	Description
System	Conection	0x00	None	After receiving the command, the amplifier sends 0XF1 to the host, indicating that the connection is successful Receive：FE ADDR F1 CF FC CC FF

Send: FE 01 00 CF FC CC FF

Start flag	Amplifier address	Register address	Command parameter	End flag
FE	01	00	None	CF FC CC FF

Receive: FE 01 F1 CF FC CC FF

Start flag	Amplifier address	Data	End flag
FE	01	F1	CF FC CC FF

3. Received format of write registers(change the data of the amplifier)

Start flag	Amplifier address	Command parameter	Data	CRC check (Optional)		End flag
FE	Addr	F2	0: failed;	High 8-bit	Low 8-bit	CF FC CC FF

			1: Success			

9.3.1 Set the clear range (default amplifier address is 1)

Category	Name	Register address	Command parameter	Description
Weighing function	Set the clear range	0x55	Channel+ ManualRange+ PowerRange	**Channel** (1 byte): sensor channel number; Numbering from 0; 0xFF means all channels **ManualRange** (1 byte): manual clear range. **PowerRange** (1 byte): power clear range; The unit is a percentage of full scale; The parameter range is 0~100, if it is set to 0, the corresponding function is disabled

Send: FE 01 55 00 32 64 CE FC CC FF(For example, the manual clear range is 50%, the power clear range is 100%, the hexadecimal range of 50 is 32, and the hexadecimal range of 100 is 64.) Command parameters: channel number 00; Manual clear range 32; Power clear range 64.)

Start flag	Amplifier address	Register address	Command parameter	End flag
FE	01	55	00 32 64	CF FC CC FF

Receive: FE 01 F2 01 CF FC CC FF(01 Success)

Start flag	Amplifier address	Command parameter	Data	End flag
FE	01	F2	01	CF FC CC FF

4. Received format of read Instruction (read amplifier internal data)

Start flag	Amplifier address	Register address	Command parameter	CRC check (Optional)		End flag
FE	Addr	1-bit	1~253-bits	High 8-bit	Low 8-bit	CF FC CC FF

9.3.2 Read gross weight (default amplifier address is 1)

Category	Name	Register address	Command parameter	Description
Weighing function	Read gross weight	0x50	Channel	The amplifier returns the current gross weight value to the host; The high-bit byte comes first

				Channel (1 byte): sensor channel number; Numbering from 0; 0xFF means all channels Received format: FE Addr 50 Channel Value1 Value2 Value3 Value4 CF FC CC FF

Send: FE 01 50 00 CF FC CC FF (Command parameter 00 is the channel number)

Start flag	Amplifier address	Register address	Command parameter	End flag
FE	01	50	00	CF FC CC FF

Received: FE 01 50 00 00 00 00 46 CF FC CC FF(The corresponding command parameter content: channel number 00, gross weight value 00 00 00 46.)

Start flag	Amplifier address	Register address	Command parameter	End flag
FE	01	50	00 00 00 00 46	CF FC CC FF

9.3.3 Commands are sent continuously(default amplifier address is 1)

Category	Name	Register address	Command parameter	Description
System	Measurements are continuously transmitted	0x07	Channel+ Enable+ DataType+ SendType+ Intervals+ Style (optional)	**Channel**(1 byte): sensor channel number; Numbering from 0; 0xFF means all channels **Enable**(1 byte): 0x01: continuous sending; 0x00: closed; **DataType**(1 byte): 00: measured value; 01: AD internal code value; 02: gross; 03: net; 04: peak; 05: Valley; 06: Peak-to-valley **SendType**(1 byte): 0x00: Send regardless of whether the data has changed or not; 0x01: Sends only when the data changes **Intervals**(1 byte): Continuous send intervals; unit: ms **Style**(1 字节): Command format; 0x00: Standard format; 0x01:

				Simplified format

Send: FE 01 07 00 01 02 00 32 CF FC CC FF(Command parameters: Channel number **00**; Enable **01**; data type **02**; Send regardless of whether the data has changed or not **00**; Continuous send intervals 50ms, The hexadecimal system of 50 is 32.)

Start flag	Amplifier address	Register address	Command parameter	End flag
FE	01	07	00 01 02 00 32	CF FC CC FF

FE 01 07 00 01 02 00 14 CF FC CC FF(gross, send regardless of whether the data has changed or not, continuous send intervals is 20ms)

FE 01 07 00 01 02 00 0A CF FC CC FF(gorss, send regardless of whether the data has changed or not, continuous send intervals is 10ms)

FE 01 07 00 01 02 00 05 CF FC CC FF(gorss, send regardless of whether the data has changed or not, continuous send intervals is 5ms)

Receive: FE 01 50 00 00 00 00 EA CF FC CC FF(The measurements are continuously transmitted is the gross weight, and the register address for the gross weight is 50)

Start flag	Amplifier address	Register address	Command parameter	End flag
FE	01	50	00 00 00 00 EA	CF FC CC FF

10. Errors

Errors are judged by symbols

No.	Symbol	Content	Reason
1	**Err01**	Power-on zeroing error	1.The clear range is set too small, and the weight value exceeds the range. 2.Clear to zero when the weight is unstable.
2	**Err02**	Manual zeroing error	
3	**Err06**	The weight is unstable	
4	**Err20**	The data is out of range	
5	**Err21**	The weight value is unreasonable	
6	**Err22**	No weights are placed during weight calibration	Weight calibration, when the gain is calibrated, the weight is not placed
7	**Err25**	The password was entered incorrectly	

8	**Err90**	Sensor failure	
9	**Err91**	The AD chip is faulty	