

# **SY-2105 Weighing Displaying Controller**

## **Operation Introductions**

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# CHAPTER 1

## INTRODUCTION

### 1.1 General

This operation manual details about SY-2105 weighing display controller of the installation, operation, calibration and maintenance of the information.

### 1.2 Application

SY-2105 weighing display controller including site installation type and panel installation type, is a micro-computer driven instrument used for deriving rate and quantity of flowing material from signals representing the weight of a segment of moving material and its velocity, Instrument built-in PID regulator, To provide standard 4-20mA output, Control the feeding machine operation. And provide remote pulse count output, Can add communications board use RS232 or RS485 serial channel and PLC or PC communications. It has many merits such as high accuracy, stably, easy to set up, advanced method to calibrate, whole Chinese and English menu, convenient to operate, etc.

### 1.3 Environmental Parameters

1. Indoor/Outdoor: Should be mounted as close to the load cells as possible without being exposed to excessive heat or moisture.
2. Temperature(Ambient)
  - Storage:  $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$
  - Operating:  $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$
3. Maximum relative humidity up to 95% non-condensing

### 1.4 Power Requirements

1. Nominal voltage:  $220\text{VAC} \pm 10\%$
2. Nominal frequency: 50Hz
3. Operating range: Nominal voltage  $\pm 10\%$
4. Fusing 2A: 2.0Amp
5. Power Consumption: 50VA max
3. EMI/RFI: Filter

### 1.5 Load Cell (Weight)

1. Load cell input circuits
  - Number: Up to SIX 350 ohm load cell in parallel. Cable distance 60 m. or less.
  - Sensitivity:  $0.5\text{mV/V} \sim 3.3\text{mV/V}$
  - Maximum usable signal: 33mV
  - Load cell cable shield: Connected to earth ground.
2. Load cell Excitation Power Supply
  - 10VDC  $\pm 10\%$ , 200mA
  - Output short circuit: 1.5 A maximum
3. Excitation –sense circuitry

6 Wire System: Cable distance over 60 m. (not to exceed 900 m.).  
Nominal input voltage:  $\pm 5\text{VDC}$  (10 volts)  
Jumper selectable: Local or remote sense.

#### **1.6 The Mother Board Digital Input Port**

The Integrator has provisions for three programmable logical inputs, receive several switch signals.

#### **1.7 The Mother Board Digital Output Port**

The Integrator has provisions for three programmable logical outputs, 24VDC open collector output. Direct drive control relay.

#### **1.8 Communication Board (Options)**

The Integrator installation one communications board, can use standard after the RS-232C or RS-485 serial interface and superordination machine communication, PC can acquisition instrumentation data and an instrument operation.

## **CHAPTER 2 INSTALLTION**

### **2.1 General**

This chapter includes SY-2105 weighing displaying controller of the installation, configuration, and initial programming. Instrument should not be installed in a drastic change in the local conditions, Try to choose indoor installations, or need to install the protection facilities to avoid direct sunlight, damp, collision and severe mechanical vibrations, Instrument can be installed in the furthest distance weighing transducer 900 meters place.

### **2.2 Installation**

SY-2105 weighing displaying controller on site installation type feeder controller through the four installation holes after box in a strong vertically mounted on the wall, plain.

### **2.3 Installation Warning**

#### **WARNING**

**Having read the following warning regulations do not carry out any before installation, operation and maintenance of the operation!**

1. In has not fully understand manual before, do not connect meter power supply.
2. Strictly abide by the warning in this manual and operating procedures, avoid injuries and damage of equipment.

### **2.4 Wiring**

1. Some critical wiring considerations:
  - A. Insure power close.
  - B. Do not route load cell and signal cables in the same conduit with power cables or any large source of electrical noise.
  - C. Wiring should be long enough, and routed to allow the chassis to be removed from the front for servicing if necessary.
  - D. Connect the shields ONLY where shown.
  - E. Check that all wires are tight in their connections.
  - F. A readily accessible disconnect device (maximum 20 amps) shall be incorporated in the field wiring. This disconnect should be in easy reach of the operator and it must be marked as the disconnecting device for the equipment.
  - H. Never use a "megger" to check the wiring.
2. To connect incoming power,use the following procedure:

NOTE: All units shipped from the factory are configured for 220VAC.

  - A. For input power, use 14 AWG stranded wire.
  - B. Wire the safety ground terminal located on the right back side of the enclosure.
  - C. Wire the HOT to terminal labeled HOT.
  - D. Wire the NEUTRAL to the terminal labeled NEUTRAL.

## 2.5 Instrument Initialization

Mechanical and electrical installation for instrument is completed, initialized programming. The following parameters should be given before the calibration.

### 2.5.1 Units the integrator

Press the MENU key twice, The following screen appears.

```
-MAIN MENU 2-
Press [MENU], NEXT
          SCALE  CAL
DISP     DATA  DATA
```

Press the DISPLAY soft key. The following screen appears.

```
Use Down Scroll
Key to advance
Through the menus
```

Press the DOWN SCROLL key. The following screen appears.

```
-DISPLAY SCROLL 1-
Totalization Unites
t
CHOICE EXIT
```

Default: t

Selections: t, kg

The units to be used for total are selected here. Press ENTER soft key to accept the default unit ,or choices soft key to scroll selections. Press ENTER to confirm your selection. Scroll down.

```
-DISPLAY SCROLL 2-
Rate Unites
t/h
CHOICE EXIT
```

Default: t/h

Selections: t/h, kg/h

The Flux is displayed according to the units selected here. Press ENTER soft key to accept the default unit, or CHOICES soft key to scroll selections. Press ENTER to confirm your selection. Scroll down.

### 2.5.2 Units the integrator

Press the EXIT soft key. Return to MAIN MENU 2.

Press the SCALE DATA soft key. The following screen appears.

Use Down Scroll  
Key to advance  
Through the menus

Press the DOWN SCROLL key. The following screen appears.

-SC DATA SCROLL 1-  
Max.Scale Capacity  
100.000 t/h  
ENTER EXIT CLEAR

Default: 100.0  
Min 0.01  
Max 20000

The next entry is the scale capacity, which is the maximum rate at which the scale is allowed to work. This entry also defines the default number of decimal places that are used for displaying rate. Use numeric keys for entering the number, confirm with ENTER. Scroll down.

**2.5.3 Scale Divisions**

Press the DOWN SCROLL key. The following screen appears.

-SC DATA SCROLL2 -  
Scale divisions  
> 0.1  
CHOICE EXIT

Default: 1  
Selections 1, 0.1, 0.01, 0.001

**2.5.4 Speed signal input methods**

Press the DOWN SCROLL key. The following screen appears.

-SC DATA SCROLL 5-  
Speed model  
> Extr  
CHOICE EXIT

Default: Extr  
Selections Extr, Simu

In not connected speed sensor select simulate speed signal when function, instrument internal simulation for 20 Hz ac frequency speed signal, for the user to use.

**2.6 Defining the Calibration Test Duration**

Press the EXIT soft key. Return to MAIN MENU 2.  
Press the CAL DATA soft key. The following screen appears.

```
-CAL DATA SCROLL1-  
CAL Model:  
>R-CAL  
CHOICE NEXT
```

Press the DOWN SCROLL key. The following screen appears.

```
-CAL DATA SCROLL11-  
Establish test  
duration  
AUTO  MANUAL
```

Zero and Span calibrations are more accurate if executed on an entire belt revolution or multiple of it. Press either AUTO or MANUAL, MANUAL is the recommended selection.

**2.6.1 Manual Entry of Test Duration**

This procedure allows direct entry of parameters that would otherwise be generated by the acquire Test Duration modes. This menu is generally used when the operator cannot see the belt while standing at the front panel.

If MANUAL Pressed, the system prompts the operator for running the belt at its maximum speed. The following screen appears.

```
length of one  
belt revolution.  
10.000 m  
ENTER NEXT CLEAR
```

Default: 10.000  
Min 0.1  
Max 1000

Measure the length of the belt strap balance a week, accurate to 3 mm, The operator is prompted to enter the length of one belt revolution. When ENTER is pressed.the length of the belt travel according to the above entered parameters.

Press the NEXT soft key. The following screen appears.

```
the number of  
belt revolution  
2     revs  
ENTER NEXT CLEAR
```

Default: 1  
Min 1  
Max 100

Press numeric keys input the time for revolutions.When ENTER is pressed.the system number of the belt travel according to the above entered parameters.

Press the NEXT soft key. The following screen appears.

```

the time for
revolutions
  10      S
ENTER START CLEAR

```

```

Default:  10
Min       5
Max      1200

```

Press numeric keys input the time for revolutions. When ENTER is pressed, the system time of the belt travel according to the above entered parameters. Press the START soft key. The following screen appears.

In a belt sign to say a point on for reference points, the biggest speed belt, until the start belt sign running through the reference point press a stopwatch, start time, when mark continuous through the reference point number and input belt loops several phase also again press a stopwatch, a stopwatch shows the time which is running time, belt calibration after input and Press the ENTER soft key.

Then press the start button, began to establish calibration test cycle. The screen showed as follows: The operation in calibration belt says must be finished before.

```

Timing belt travel

  XX sec
  EXIT

```

Instrument for the rest of the time, when the countdown to zero, to set up test cycle ends. Meter automatic shows as follows:

```

-CAL DATA SCROLL12-
MAX speed capacity
  XX.XX  m/s
  EXIT

```

Since then instrument has been established test cycle, to set up test cycle is in zero calibration and calibration interval before the work must be finished, Instrument only the correct established the test cycle, can correct zero calibration and calibration interval. Press the EXIT soft key. Return to MAIN MENU 2. For zero and calibration interval.

## 2.7 Auto zero calibration

In auto zero calibration period, the maximum speed belt running.

Press the MENU key. Return to MAIN MENU 1. The following screen appears.

```

-MAIN MENU 1-
Press [MENU], NEXT
ZERO  SPAN  MAT,L
CAL   CAL   CAL

```

Press the ZERO CAL soft key. The following screen appears.

```
-ZERO CAL-
Run belt empty,
then press START.
START  EXIT MANUAL
```

Press the START soft key. The following screen appears.

```
AUTO ZEROING
Timing remaining XX S
      XX.XX t/h
Tot   X.XXX t
```

When the rest of the time is 0, The following screen appears.

```
AUTO ZERO COMPLETE
Tot   XXX.XX t
ErrOR XX.XX %
CHANGE EXIT
```

Such as the need to change the zero, Press the CHANGE soft key. The following screen appears.

```
ZERO CHANGED
New      XXXXX
Old      XXXXX
RUN      MENU
```

## 2.8 Automatic span calibration

After the completion of the zero calibration, Press the MENU key. Return to MAIN MENU

1. Press the SPAN CAL soft key. The following screen appears.

```
-SPAN CAL-
Run belt empty,
then press NEXT
NEXT  EXIT MANUAL
```

Press the NEXT soft key. The following screen appears.

```
-AUTO SPANNING-
Calibration Value
      1.000 t
START  EXIT  CLEAR
```

Press the START soft key. The following screen appears.

```
-AUTO SPAN CAL-
Timing Remaining  XX
                  X.XXX t/h
Tot              X.XXX t
```

In automatic calibration interval during than normal, and the instrument resolution when 10 times as high. And the rest of the time is 0 screens.

```
AUTO SPAN COMPLETE
Tot              XX.XX t
Error           0.00%
CHANGE  EXIT
```

Such as the need to change the interval, Press the CHANGE soft key. The following screen appears.

```
SPAN CHANGED
New           XXXXX
Old           XXXXX
RUN  MENU
```

Such as the instrument shows

```
-DATA ERROR-
MAX VALU 90000000
MIN VALU      0
EXIT
```

Please check input parameters is correct and, when necessary, to engineer consultation.

## CHAPTER 3 OPERATING SUBSIDIARY

### 3.1 Front Panel



#### 3.1.1 LED Status Indicators

The five red status indicators show the status of the integrator.

1. Remote set instructions
2. Automatic control instructions
3. Alarm pending.
4. Batch or Load Out running.
5. Ready (powered on, no alarm, no calibration running).

#### 3.1.2 Keyboard

1. Run - Access the Run Menu. Returns integrator to Run Mode whenever pressed, see Section 3.5 for detailed description.
2. Menu - Permits entry to menus, see Section 3.4.
3. Up and Down Arrow - Scrolls up or down in the selected menu.
4. Soft keys - Select displayed function directly above the key. Moves cursor left and right during string editing.
5. Alpha/Numeric Keys 1 through 0 - Enter numerals and letters when string editing. Similar to telephone keys.
6. Decimal Point key - Enters decimal point.
7. Clear Key - Removes wrong entries prior to pressing ENTER soft key.
8. Remote or Local Key - Choose set point input methods.
9. Auto or Manual Key - Set adjusts work mode.
10. Start - Starts load out. Restart if interrupted.
11. Stop - Interrupts load out. Aborts load out if already interrupted.

NOTE: Start - Stop keys are only active with Load Out option.

#### 3.1.3 Menu Displays

The integrator is a menu driven machine that allows the operator to access all setup,

test and calibration parameters. Main Menu screens 1 through 5 can be accessed at

anytime by pressing the MENU key until the desired menu screen is displayed. Menu scrolls may be selected by pressing the soft key directly below the desired scroll, and then using the Up/down scroll key.

-MAIN MENU 1-		
Press [MENU], NEXT		
ZERO	SPAN	MAT'L
CAL	CAL	CAL

-MAIN MENU 2-		
Press [MENU], NEXT		
	SCALE	CAL
DISP	DATA	DATA

-MAIN MENU 3-		
Press [MENU], NEXT		
DIAG		

-MAIN MENU 4-		
Press [MENU], NEXT		
INPUT	OUTPUT	LARM
SET	SET	SET

-MAIN MENU 5-		
Press [MENU], NEXT		
CTRL	COMM	PSW

### 3.2 Normal Power on

When the integrator is powered on after initial programming, the RUN Menu is displayed unless the hardware configuration has been changed.

XXXX.XX t
XXX.X t/h
XXX.X m/s
Clear

The first line always displays the MASTER TOTAL, which is the number of t totalized by the scale since installation. This number cannot be cleared.

The second line always displays the flux.

The third line is by default blank, but can be programmed to show either the belt speed, the belt loading or the date and time.

The four line normal don't show, when the meter appear alarm will show the police, to prompt the user to view, and alarm light will light up. Press the button below alarm the meter will show specific alarm information.

The remote and automatic meter indicator will show the current state of the control, Remote light with 4-20ma analog input as the set value ratio, Going out for the use ratio of local setting. With the right distance/local key in operation interface or in the control parameters when switching menu changes. Automatic light for automatic adjustment control when using manual control, extinguishing, can use the right automatic/manual button in the operation interface or in the control parameters when the menu changes conversion.

## CHAPTER 4 MENU

### 4.1 MAIN MENU 1

Main Menu 1 contains the Calibration Menu. Menu 1 is selected by pressing the MENU key until Main Menu 1 appears. Desired calibration scrolls are selected by pressing the soft keys directly below the desired scroll.

-MAIN MENU 1-		
Press [MENU], NEXT		
ZERO	SPAN	MAT'L
CAL	CAL	CAL

#### 4.1.1 Zero Calibrate Scroll

The zeroing process is implemented as a machine directed procedure.

##### 1. Auto Zero

Press the ZERO CAL soft key. The following screen appears.

-ZERO CAL-		
RUN belt empty, then press START.		
START	EXIT	MANUAL

Pressing the EXIT soft key returns the operator to Main Menu 1. Pressing MANUAL advances to Step 2 below. Pressing RUN at any time returns to the Run Menu.

The belt be running during Auto Zero, since a complete zeroing procedure requires at least one full revolution of the belt to be averaged.

When START is pressed, the following screen is displayed.

AUTO ZEROING		
Time remaining	XX	
	XX.XX	t/h
Tot	XX.XX	t

During Auto Zero, Resolution of the total is ten times higher than normal. The number of seconds in Line 2 is calculated based on the current speed, and corresponds to the time remaining for completing the test. If the belt is not running at the moment the test is started or it is stopped during the test, a message is displayed, indicating the procedure has been aborted.

```

AUTO ZERO COMPLETE
Tot      XXX.X t
Err      XX %
CHANGE EXIT

```

The word "COMPLETE" is flashing. The percentage of error is related to full scale capacity. Pressing EXIT is pressed, the zero number is changed and the next screen appears.

```

ZERO CHANGED
New      #####
Old      #####
RUN      MENU

```

Press Menu to repeat Auto Zero calibration. Press RUN to return to the Run Menu.

## 2. Manual Zero

The Manual Zero procedure shows the zero constant and allows direct entry if known. Use the ENTER key to confirm the new number.

```

-MANUAL ZERO-
  XX.XX t/h
Zero  XXXXX
ENTER NEXT CLEAR

```

```

Default: 10000
Min      0
Max      60000

```

### 4.1.2 Span Calibrate Scroll

Three simulated load span calibration options are available: R-Cal, Test Weights and Test Chain. Test Weights or Test Chains require additional hardware and handling equipment.

The system allows the operator to select which one of the three methods is to be used for routine calibration. The selection is made in Main Menu 2, CALIB DATA Scroll 1.

#### 1. Auto Span

Press the SPAN CAL soft key. The following screen appears.

```

-SPAN CAL-
RUN belt empty,
then press START
NEXT  EXIT MANUAL

```

When NEXT is pressed, the following screen is displayed.

```

-AUTO SPANING-
Calibration Value
  XXXX.X t
START  EXIT  CLEAR

```

Press the START soft key. The following screen appears.

```

-AUTO SPAN CAL-
Timing Remaining XXX
  XX.XX t/h
Tot   XX.XX t

```

In automatic calibration interval during than normal, and the instrument resolution when 10 times as high. And the rest of the time is 0 screens.

```

-AUTO SPAN COMPLETE-
Tot   XXX.X t
Error XX.XX %
CHANGE EXIT

```

Such as the need to change the interval, Press the CHANGE soft key. The following screen appears.

```

SPAN CHANGED
New      XXXXX
Old      XXXXX
RUN  MENU

```

Such as the instrument shows

```

-DATE ERROR-
MAX VALU  90000000
MIN VALE  70000
EXIT

```

Please check input parameters is correct and, when necessary, to engineer consultation.

## 2. Manual Span

If the span constant is known, the manual span procedure allows the operator to make a direct a change of span.

```

-MANUAL SPAN-
  XXXXX t/h
Span   XXXXX
ENTER  EXIT  CLEAR

```

```

Default:  10000
Min       0

```

Max 90000000

The EXIT key returns the operator to Main Menu 1.

It is very important to note that entering the Manual Span sets the material factors to INVALID(if any). This means that the automatic span tests need to be run again after a manual span entry has been performed, in order to acquire the material factors again.

#### 4.1.3 Material Span Calibration

Material span calibration is a machine directed procedure for calibrating the belt scale using actual material.

Preweighed or postweighed material, having been weighed to a known accuracy on a static scale, passes across the belt scale. This procedure automatically adjusts the integrator span and factors all simulated load test Cal Cons if the operator prefers they be factored.

##### 1. Starting the Test

Press the MAT'L CAL soft key. The following screen appears.

```
-MAT,L CAL-  
RUN belt empty,  
the Press START.  
START  EXIT
```

The operator must run the belt for at least one minute or one belt revolution before proceeding. After START is pressed, the master weight totalizer is disengaged.

When START is pressed, the following screen appears.

##### 2. Running the Test with Material

```
XXXX.XX  t  
XXX.X    t/h  
Press DONE to end  
DONE  EXIT
```

During the material calibrate procedure, the resolution of total t counted is ten times higher than normal.

Wait until all material has passed over the scale, then press DONE. Pressing ABORT forces the program back to the to of the MAT'L CAL Scroll.

##### 3. Entering the Reference Weight

```
XXXX.XXX  t  
Calibration Value  
XXX.XXX  t  
ENTER  EXIT  CLEAR
```

The operator has to enter the actual material weight in the same weight units as the integrator is setup for. Example: Convert pounds to the nearest hundredth (0.01) of a ton and enter if the integrator is set up for tenths (0.1) of a ton increments. Material calibration is running at ten times normal.

After the material weight is entered, press ENTER to confirm.

If ABORT is pressed, the information acquired during the test is lost and the system returns to Main Menu 1 screen.

#### 4. Updating the Span Constant

After the amount of material has been entered, the following screen is displayed.

```
MAT'L CAL COMPLETE
Error      XX.X %
Change span?
CHANGE ABORT
```

The word "COMPLETE" is flashing. Pressing CHANGE changes from Error % to Actual Difference of Total. Pressing ABORT returns the operator to Main Menu 1.

#### 5. Acquiring the Material Factors

If CHANGE was pressed, the following screen is displayed confirming the new span constant was installed. At this point, the scale is calibrated to the actual material test.

```
-SPAN CHANGED-
New       XXXXX
Old       XXXXX
RUN      MENU
```

If RUN is pressed returns the running.

If the following screen is displayed.

```
INPUT ERROR
Max 45000000
Min 500
RETURN
```

Please check input parameters correctly, must to the engineer when consulting.

### 4.2 MAIN MENU 2

Main Menu 2 contains the setup and configuration menus. Main Menu 2 is selected by pressing the MENU key until Main Menu 2 appears. Setup scrolls are selected by pressing the key directly below the desired scroll.

```
-MAIN MENU 2-
Press [MENU], NEXT
          SCALE  CAL
DISP     DATA  DATA
```

#### 4.2.1 Display

Press the DISPLAY soft key. The following screen appears.

Use Down Scroll  
Key to advance  
Through the menus

Press the DOWN SCROLL key. The following screen appears.

-DISPLAY SCROLL1-  
Totalization Unites  
t  
CHOICE EXIT

Default: t  
Selections: t, kg

The units to be used for totalization are selected here. Pressing the CHOICE soft key to scroll selections. Pressing the DOWN SCROLL key. The following screen appears.

-DISPLAY SCROLL2-  
Rate Unites  
t/h  
CHOICE EXIT

Default: t/h  
Selections: t/h, kg/h

The rate is displayed according to the units selected here. Pressing the CHOICE soft key to scroll selections. Pressing the DOWN SCROLL key. The following screen appears.

-DISPLAY SCROLL3-  
Damping RATE  
0 S  
ENTER EXIT CLEAR

The ramping rate is on the screen can be damped by a programmable factor. Press ENTER soft key to accept the default unit. Pressing the DOWN SCROLL key. The following screen appears.

-DISPLAY SCROLL4-  
Run display line 3  
Speed  
CHOICE EXIT

Default: Speed  
Selections: Speed,Set,Error,CUR1,CUR2

The Run Menu can be configured to display on line 3 either Belt Speed,Set,Error,CUR1 and CUR2. Pressing the CHOICE soft key to scroll selections. Pressing the DOWN SCROLL key. The following screen appears.

```
-DISPLAY SCROLL5-  
Language  
>english  
CHOICE EXIT
```

Default: english  
Selections: english, china

Pressing the CHOICE soft key to scroll selections. Pressing the DOWN SCROLL key.  
The following screen appears.

#### 4.2.2 SCALE DATA

Press the SCALE DATA key. The following screen appears.

```
Use Down Scroll  
Key to advance  
Through the menus
```

##### 1. Scale Capacity and Divisions

The first entry is the scale capacity, which is the maximum rate at which the scale is allowed to work. This entry also defines the default number of decimal places that are used for displaying rate. Use numeric keys for entering the number, confirm with ENTER. Scroll down.

Press the DOWN SCROLL key. The following screen appears.

```
-SC DATA SCROLL 1-  
Max. Scale Capacity  
100.000 t/h  
ENTER EXIT CLEAR
```

Default: 100.0  
Min 0.01  
Max 20000

This entry also defines the default number of decimal places that work. This entry also defines the default number of decimal places that are used for displaying rate. Use numeric keys for entering the number, confirm with ENTER. Scroll down.

Press the DOWN SCROLL key. The following screen appears.

```
-SC DATA SCROLL2 -  
Scale divisions  
> 0.1  
CHOICE EXIT
```

Default: 1  
Selections 1, 0.1, 0.01, 0.001

Press the CHOICES SOFT key to scroll selections. Scroll down.

## 2. Setting the Dead Band

The dead band is a percentage of the scale rate in which the rate is ignored and a zero rate is forced. Also totalization is frozen when rate is below dead band.

```
-SC DATA SCROLL3 -  
Zero dead:  
  0 %  
ENTER  EXIT CLEAR
```

Default: 0 %

Min 0 %

Max 5 %

## 3. Defining the Speed Input

```
-SC DATA SCROLL 5-  
Speed model  
>Extr  
CHOICE EXIT
```

Default: Extr

Selections Extr, Simu

In not connected speed sensor select simulate speed signal when function, instrument internal simulation for 20 Hz ac frequency speed signal, for the user to use.

### 4.2.3 CAL DATA

See to 2.6.

### 4.3 MAIN MENU 3

The main menu 3 contains system testing and diagnosis function, press the menu to screen.

```
-MAIN MENU3-  
Press [MENU]. NEXT  
  
DIAG
```

Press the DIAG soft key. The following screen appears.

```
-SYSTEM TESTING-  
XXXXX  A/D  
XXXX   HZ  
EXIT   XX.XX m/s
```

The first line always displays weight signal converter by A/D the original data.

The second line always displays the speed pulse frequency division the frequency.

### 4.4 MAIN MENU 4

Main Menu 4 is dedicated to the definition of the input output (I/O) and alarms.

```
-MAIN MENU4-
Press [MENU]. NEXT
INPUT OUTPUT ALARM
SET    SET    SET
```

**4.4.1 Input Definition**

Press the INPUT SET soft key. The following screen appears.

```
Use Down Scroll
Key to advance
Through the menus
```

Press the DOWN SCROLL key. The following screen appears.

```
-INPUT SET1-
DEFINE:
  no
CHOICES EXIT
```

Default: no  
Selections no, Run, Clear, ZeroAl

Press the DOWN SCROLL key. The following screen appears.

```
-INPUT SET2-
DEFINE:
  no
CHOICES EXIT
```

Default: no  
Selections no, Run, Clear, ZeroAl

Press the DOWN SCROLL key. The following screen appears.

```
-INPUT SET3-
DEFINE:
  no
CHOICES EXIT
```

Default: no  
Selections no, Run, Clear, ZeroAl

**4.4.2 Output Definition**

Press the OUTPUT SET soft key. The following screen appears.

Use Down Scroll  
Key to advance  
Through the menus

Press the DOWN SCROLL key. The following screen appears.

-OUTPUT SET1-  
DEFINE:  
Total  
CHOICES EXIT

Default: Total

Selections Total, HiRate, LoRate, HiSpeed, LoSpeed CtrErr

Press the DOWN SCROLL key. The following screen appears.

-OUTPUT SET2-  
DEFINE:  
Total  
CHOICES EXIT

Default: Total

Selections Total, HiRate, LoRate, HiSpeed, LoSpeed CtrErr

Press the DOWN SCROLL key. The following screen appears.

-OUTPUT SET3-  
DEFINE:  
Total  
CHOICES EXIT

Default: Total

Selections Total, HiRate, LoRate, HiSpeed, LoSpeed CtrErr

Press the DOWN SCROLL key. The following screen appears.

-OUTPUT SET4-  
DEFINE:  
Total  
CHOICES EXIT

Default: Total

Selections Total, HiRate, LoRate, HiSpeed, LoSpeed CtrErr

Press the DOWN SCROLL key. The following screen appears.

-ANALOG OUTPUT1-  
DEFINE:  
no  
CHOICES EXIT

Default: no  
Selections no, Rate, Speed, Ctrl, HiSpeed

Press the DOWN SCROLL key. The following screen appears.

```
-ANALOG OUTPUT2-  
DEFINE:  
no  
CHOICES EXIT
```

Default: no  
Selections no, Rate, Speed, Ctrl, HiSpeed

#### 4.4.3 ALARM Definition

Press the ALARMS DEFINE soft key. The following screen appears.

```
Use Down Scroll  
Key to advance  
Through the menus
```

##### 1. Definition High Rate Alarm

Press the DOWN SCROLL key. The following screen appears.

```
-ALARM SCROLL 1-  
High rate set  
100%  
ENTER EXIT CLEAR
```

Default: 100  
Min 0  
Max 100

The value is relative scale biggest flow percentage, Press numeric key input need to value, Press the ENTER soft key to complete the input.

##### 2. Definition High Rate Alarm Delays

Press the DOWN SCROLL key. The following screen appears.

```
-ALARM SCROLL 2-  
High rate delays  
0 s  
ENTER EXIT CLEAR
```

Default: 0  
Min 0  
Max 50

Press numeric keys input delay time, Press the ENTER soft key to complete the input. When time is zero don't alarming.

##### 3. Definition Low Rate Alarm

Press the DOWN SCROLL key. The following screen appears.

-ALARM SCROLL 3-
Low rate set
10%
ENTER EXIT CLEAR

Default: 10  
Min 0  
Max 100

The value is relative scale biggest flow percentage, Press numeric key input need to value, Press the ENTER soft key to complete the input.

#### 4. Definition Low Rate Alarm Delays

Press the DOWN SCROLL key. The following screen appears.

-ALARM SCROLL 4-
Low rate delays
0 s
ENTER EXIT CLEAR

Default: 0  
Min 0  
Max 50

Press numeric keys input delay time, Press the ENTER soft key to complete the input. When time is zero don't alarming.

#### 5. Definition High Speed Alarm

Press the DOWN SCROLL key. The following screen appears.

-ALARM SCROLL 5-
High speed set
100%
ENTER EXIT CLEAR

Default: 100  
Min 0  
Max 100

The value is relative scale biggest speed percentage, Press numeric key input need to value, Press the ENTER soft key to complete the input.

#### 6. Definition High Speed Alarm Delays

Press the DOWN SCROLL key. The following screen appears.

-ALARM SCROLL 6-
High speed delays
0 s
ENTER EXIT CLEAR

Default: 0

Min 0  
Max 50

Press numeric keys input delay time, Press the ENTER soft key to complete the input.  
When time is zero don't alarming.

### 7. Definition Low Speed Alarm

Press the DOWN SCROLL key. The following screen appears.

```
-ALARM SCROLL 7-  
Low speed set  
100%  
ENTER EXIT CLEAR
```

Default: 100  
Min 0  
Max 100

The value is relative scale biggest speed percentage, Press numeric key input need to value, Press the ENTER soft key to complete the input.

### 8. Definition Low Speed Alarm Delays

Press the DOWN SCROLL key. The following screen appears.

```
-ALARM SCROLL 8-  
Low speed delays  
0 s  
ENTER EXIT CLEAR
```

Default: 0  
Min 0  
Max 50

Press numeric keys input delay time, Press the ENTER soft key to complete the input.  
When time is zero don't alarming.

### 9. Definition CTRL ERROR

Press the DOWN SCROLL key. The following screen appears.

```
-ALARM SCROLL 9-  
CTRL ERROR SET  
20%  
ENTER EXIT CLEAR
```

Default: 20  
Min 0  
Max 100

The value is ctrl CTRL ERROR percentage, Press numeric key input need to value, Press the ENTER soft key to complete the input.

### 10. Definition CTRL ERROR Delays

Press the DOWN SCROLL key. The following screen appears.

-ALARM SCROLL 10-  
CTRL ERROR DELAY  
0 s  
ENTER EXIT CLEAR

Default: 0  
Min 0  
Max 50

Press numeric keys input delay time, Press the ENTER soft key to complete the input.  
When time is zero don't alarming.

#### 4.5 MAIN MENU 5

Main Menu 5 is dedicated to the control communication and password.

-MAIN MENU5-  
Press [MENU], NEXT  
CTRL COMM PWD

##### 4.5.1 Control

Press the Control soft key. The following screen appears.

Use Down Scroll  
Key to advance  
Through the menus

Press the DOWN SCROLL key. The following screen appears.

-CTRL DATA SCROLL 1-  
Proportional  
150 %  
ENTER EXIT CLEAR

Default: 150  
Min 0  
Max 500

Press numeric keys input proportional, Press the ENTER soft key to complete the input.  
Press the DOWN SCROLL key. The following screen appears.

-CONTROL SCROLL 2-  
Integration  
5 s  
ENTER EXIT CLEAR

Default: 5  
Min 0

Max 250

Press numeric keys input integration, Press the ENTER soft key to complete the input.  
Press the DOWN SCROLL key. The following screen appears.

```
-CONTROL SCROLL 3-
Defferential time
    5 s
ENTER
```

Default: 5  
Min 0  
Max 250

Press numeric keys input defferential time, Press the ENTER soft key to complete the input.

#### 4.5.2 Communication

The communication board has one serial channel, which can be configured using jumpers as an RS232 or an RS485 channel. The serial channel can be used for printing or for a serial communication with an intelligent device such as a PLC or a PC. Two CMM boards can be installed and programmed, typically one for the printer and one for the supervisor.

The following screens define the communication parameters for the serial channel.  
Press the COMM soft key. The following screen appears.

```
Use Down Scroll
Key to advance
Through the menus
```

Press the DOWN SCROLL key. The following screen appears.

```
-COMM SCROLL 1-
Baud rate
>19200
CHOICE EXIT
```

Default: 19200  
Selections 19200, 9600, 4800, 2400, 1200

Press the DOWN SCROLL key. The following screen appears.

```
-COMM SCROLL 2-
Address
1
ENTER EXIT CLEAR
```

Press numeric keys input address, Press the ENTER soft key to complete the input.

#### 4.5.3 Password

Press the PWD soft key. The following screen appears.

<p>-SET PASSWORD- Enter NEW PASSWORD **** ENTER EXIT CLEAR</p>
--

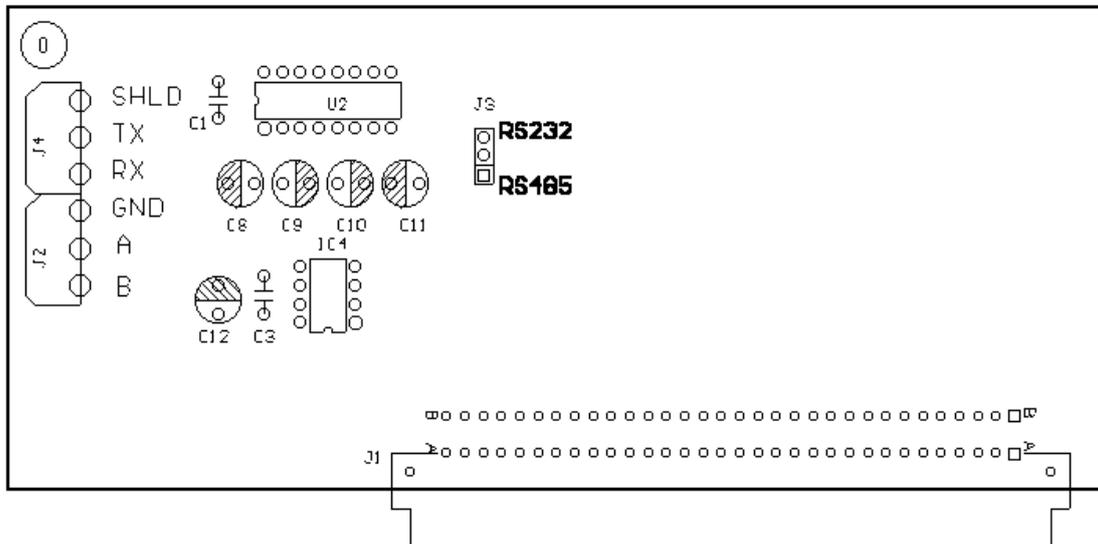
Press numeric keys input four bits password, Press the ENTER soft key to complete the input.

**Note:** the system default no password protection, users must set password, will effectively. When the password after setting, through the menu button in the main menu, need to input system password to enter the main menu. When the password set to zero cancel password protection.

## APPENDIX 1 COMMUNICATION BOARD (Options)

Expansion slot of the mother board can be installed communication board, The master-slave type communications protocol. PC call instrument, and send commands to control. Reading and writing instrument process parameters and display, or directly for remote keyboard. The Instrument address in the main menu 5 of setting..See 4.52.

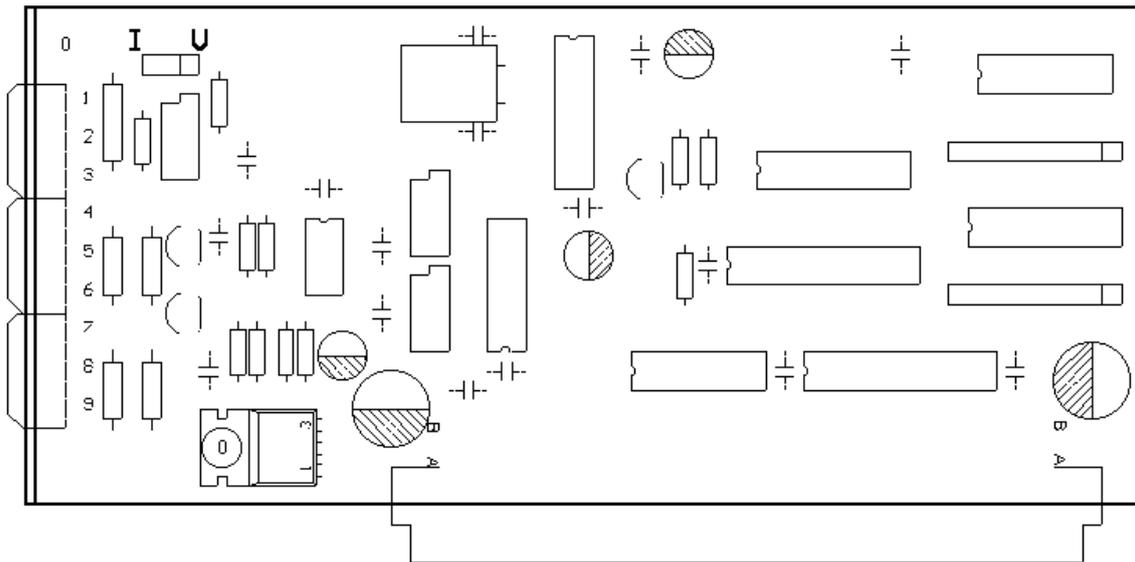
Communication board using standard RS232 and RS485 ways.Users should according to choose way of communication in their communications board classy jump line J3.



## APPENDIX 2 CURRENT INPUT/OUTPUT BOARD (Options)

The current board including tow ways 4 ~ 20 mA current output and one road 4 ~ 20 mA current input or 1 ~ 5 V voltage input, including current input one for adjustor control output, the output current for current analog output. Current input for remote control point set.

Jump line I/V used to choose 1 ~ 5 V voltage input or 4 ~ 20 mA current input.



## APPENDIX 3 SY-2105 Modbus-RTU Communication protocol

### 3.1 General

Instrument can use Modbus-RTU communication mode of the PC or PLC, Protocol format:

Baud rate: 1200、2400、4800、9600、19200

Start bit 1

Data bits 8

Stop bits 1

Parity E

### 3.2 Read data sending data format

1	2	3	4	5	6	7	8
Address	Function code	A1	A2	A3	A4	CRC Parity code	
1-255	03H	00	00	00	02	Hbit	Lbit

Explain:

1. Instrument with a byte represents the address
2. A1,A2 and A3,A4 Formed two double byte data. CRC Parity code is a double byte data. All the data are high in the front, and low last.
3. A1,A2 For the address of the beginning to collect. A3,A4 For the number of data read.

### 3.3 return data format

1	2	3	4	5	...				
Address	Function code	Data Number	Hbit	Lbit	...	Hbit	Lbit	Hbit	Lbit
1-255	03H	02	Data 1		...	Data N		CRC	

Explain:

1. Return bytes:  $N \times 2$

### 3.4 parameter address

Parameters meaning	address	Data type
Rate	0000H	4 Bits float
Total	0001H	4 Bits float
SetRate	0002H	4 Bits float
Speed	0003H	4 Bits float

### 3.5 example

Read Rate (Address: 1)

Send Data: 01 03 00 00 00 02 C4 0B

Return Data: 01 03 04 E0 77 C2 54 2D 76

Data transfer: E0 77 C2 54 TO C2 54 E0 77.

Float Data: -53.2192 t/h

### 3.6 send data format

1	2	3	4	5	6	7	8	9	10	11	12	13
Address	Function code	A1	A2	A3	A4	A5	D1	D2	D3	D4	CRC Parity code	
1-255	10H	00H	00H	00H	02H	04H	00H	00H	42H	48H	Hbit	Lbit

Explain:

1. Instrument with a byte represents the address
2. A1,A2 and A3,A4 Formed two double byte data. CRC Parity code is a double byte data. All the data are high in the front, and low last.
3. A1,A2 For the address of the beginning to collect. A3,A4 For the number of data read.A5 For Bits number.
4. D1,D2,D3,D4 For the write data.

### 3.7 example

Write SetRate (Address: 1)

Send Data: 01 03 00 00 00 02 C4 0B

Return Data: 01 10 00 00 00 01 04 00 00 42 48 C3 39

Data transfer: 00 00 42 48 TO Float Data: 50.00 t/h.