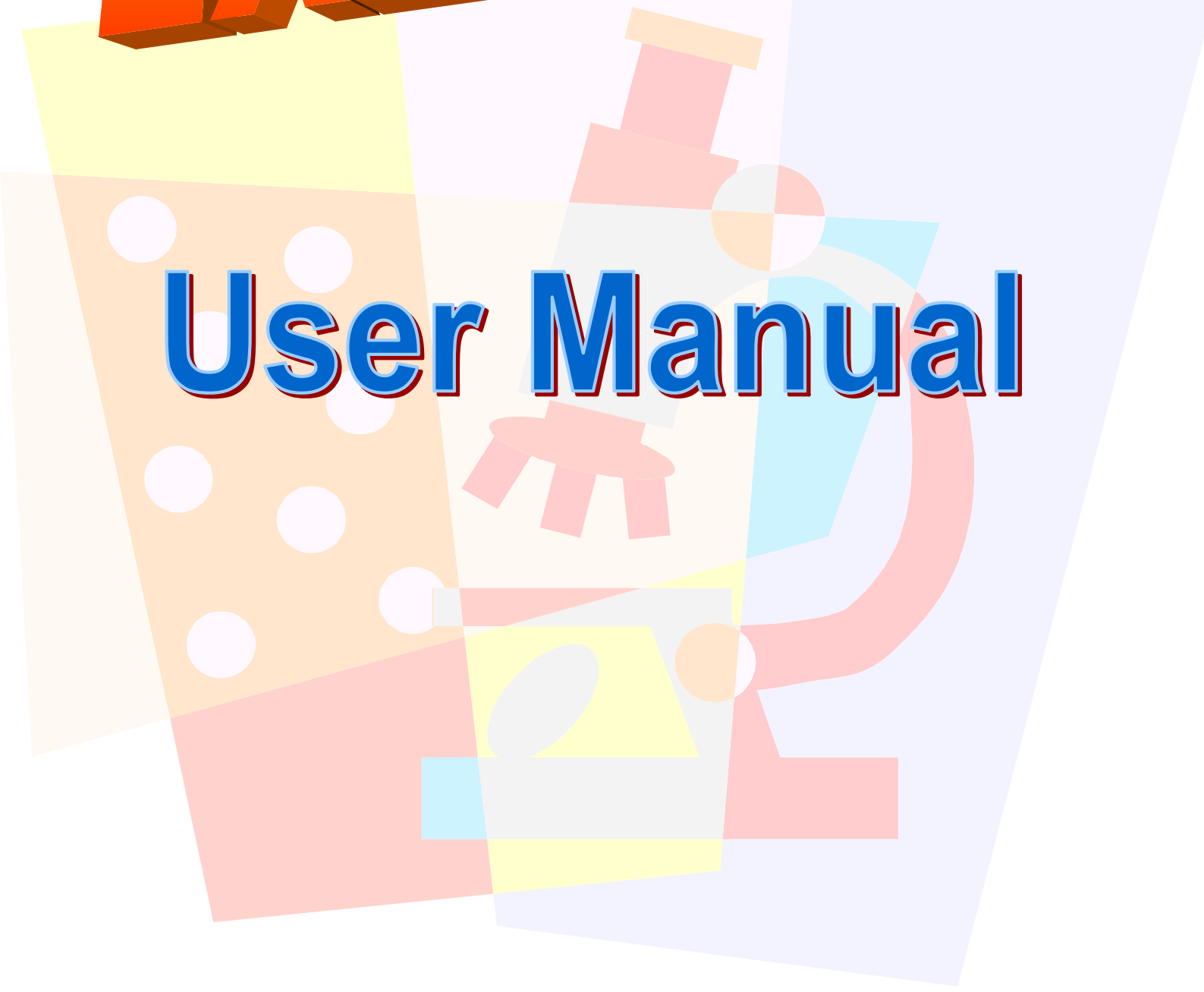
EX2000B



User Manual

TABLE OF CONTENT

CHAPTER 1 MAIN CHARACTERISTICS

2 HIGH PERFORMANCE A/D CONVERTER

- 0.3μV/D - HIGH DEXTERITY.
- ADJUSTABLE SAMPLING SPEED, MAX. 100 TIMES/SEC.
- MAX. DISPLAY RESOLUTION –1/16000.

2 ADJUSTABLE DIGITAL FILTER, CAN BE USED ON PLATFORM SCALE AND HIGH SPEED HOPPER SCALE WITH WIDE APPLICATION RANGE

2 THREE SECTIONS DISPLAY SYSTEM

- 1^{ST} SECTION - INDICATION OF SWITCHING BETWEEN GROSS WEIGHT / NET WEIGHT.
- 2^{ND} SECTION - INDICATION OF CHECKING GROSS WT.,NET WT., TARE AND BATCH SET VALUE.
- 3^{RD} SECTION – LED DISPLAY INDICATES THE CURRENT STATUS OFTHE INDICATOR.

2 FLEXIBLE CALIBRATION PROCEDURES

- 2 POINTS GENERAL CALIBRATION.
- 5 POINTS LINEAL CALIBRATION.
- CAN CALIBRATE ZERO POINT AND SPAN INDIVIDUALLY AND CHECK THE CURRENT WEIGHT VALUE.

2 INCLUDED 8 WEIGHING MODES, APPLICABLE TO MOST OF PRACTICAL SITUATION

- 100 CODES OF MEMORIES
- THE FRONT PANEL KEYS, INTERFACE RS232 / 422 / 485 CAN BE USED AS A SETTER TO INPUT EACH CODE NUMBER'S SET VALUE. CAN SET THE MEMORY FROM THE KEYBOARD OF THE FRONT PANEL OR THROUGH RS232/RS422/RS485.
- THE FRONT PANEL LED CAN BE USES TO MONITOR THE BATCH STATUS OR READ BY CONTROL I/O AND INTERFACE RS232/422/485.
- LOADING AND UNLOADING BATCH TIME CAN BE MONITORED.
- AUTO-FREE FALL COMPENSATION FUNCTION AND SUPPLEMENTARY FLOW CAPABILITY.

2 CONTROL I/O INTERFACE, 8 SETS OF RELAY OUTPUT POINTS AND 6 INPUT POINTS

- ♦ FLEXIBLE SELECTIONS OF INPUT POINTS FOR 7 INPUT SIGNALS.
- ♦ FLEXIBLE SELECTIONS OF OUTPUT POINTS FOR 14 OUTPUT SIGNALS.
- ♦ OUTPUT RELAY CONNECTOR CAN BE SET TO NORMAL OPEN (A) OR NORMAL CLOSE (B) BY USING FUNCTION SETTING.

2 BUILT-IN FULL DUPLEX RS-232C INTERFACE AND CURRENT LOOP ONE WAY OUTPUT INTERFACE

2 SELECTION OF INTERFACE CARD

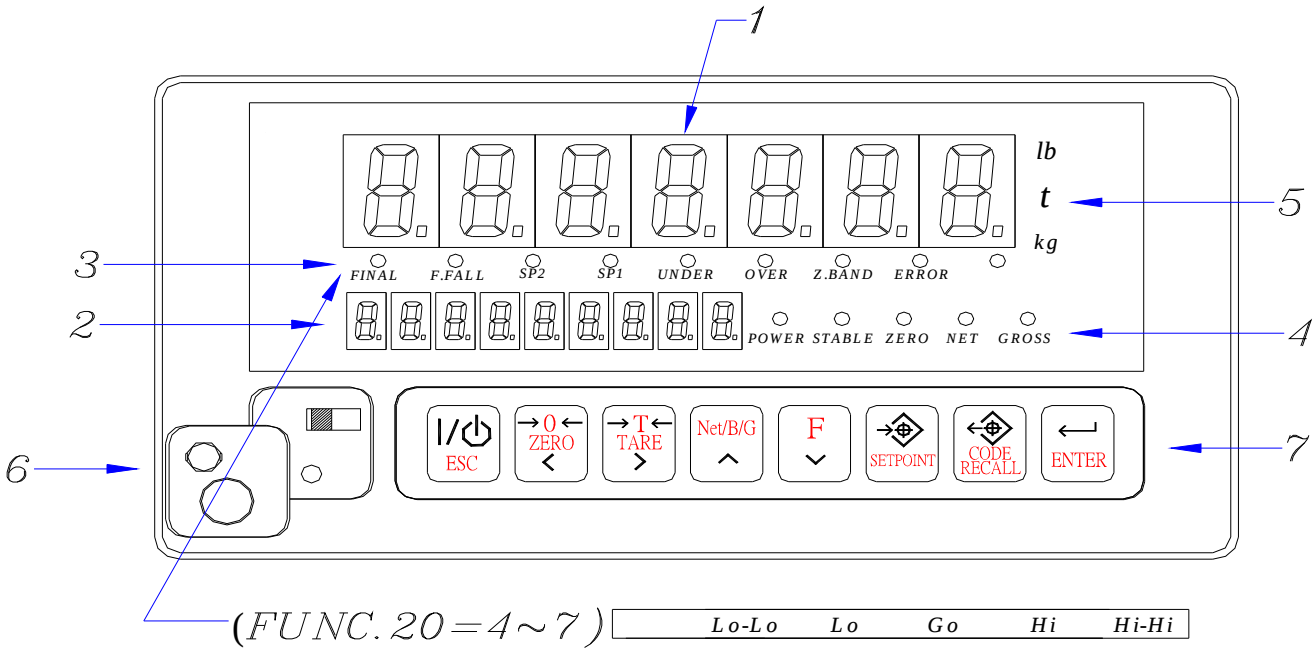
- ♦ RS422 / 485 SERIAL INPUT/OUTPUT INTERFACES.
- ♦ BCD PARALLEL OUTPUT INTERFACE.
- ♦ ANALOG OUTPUT INTERFACE

2 WATER RESISTED FRONT PANEL (SPLASH-PROOF)

2 SELF-DIAGNOSTIC FUNCTION, CONVENIENT FOR MAINTENANCE

CHAPTER 2 SPECIFICATIONS

2-1 FRONT PANEL



1 MAIN DISPLAY SECTION

- 7 digits, bright red LED. 0.8 inches 7 segments display.
- Displays switching between gross wt. / net wt.

2 SUB-DISPLAY SECTION

- 9 digits, bright green LED. 0.3 inches 7 segments display.
- Displays gross wt., net wt., tare, batch and code setting.

3 UPPER ROW STATUS INDICATION LIGHTS

- ☼ FINAL : The final weight setting indication.
  Void when the built-in batch program is activated.
- ☼ F.FALL : Free fall section. (dribble flow)
- ☼ Lo - Lo : Low – Low limit section.
- ☼ SP2 : Set-point 2 of the material dropping section. (medium flow)
- ☼ Lo : Low limit section.
- ☼ SP1 : Set-point 1 of the material dropping section.(full flow)
- ☼ Go : Preset target weight.
- ☼ UNDER : Under limit.
- ☼ HI : High limit section.
- ☼ OVER : Over limit.
- ☼ HI – HI : High – High limit section.
- ☼ Z.BAND : Zero band.
- ☼ ERROR : Incorrect control.

4 THE LOWER ROW STATUS INDICATION LIGHTS

- ☼ POWER : Power ON/OFF indication.
- ☼ STABLE : Weighing stability indication.
- ☼ ZERO : Indication of zero set back on the main display section.
- ☼ NET : Indication of net wt. on the main display section.
- ☼ GROSS : Indication of gross wt. on the main display section.

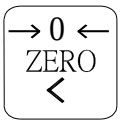
5 WEIGHT UNITS INDICATION

6 CALIBRATION SETTING STATES SWITCH (“ON” WHEN THE SWITCH IS ON THE LEFT AND “OFF” WHEN THE SWITCH IS ON THE RIGHT)

7 KEYS

:

* When setting the parameter or under calibration mode, It works as **Escape**.
* Under the normal mode, it works as **Enter** or **Quit**.
* **Entering standby mode**: All indications (Except power indication light) will shut down.
* **Quitting standby mode**: The indicator will reset.



:

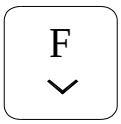
* When setting the parameter, it moves the blinking character one space to the left.
* Under the normal mode, it works as **Zero Weight**. (Under regulation of function 2 and function 8).

:

* When setting the parameter, it moves the blinking character one space to the right.
* Under the normal mode, it works as **Tare**. (Under regulation of function 7 and function 8).

:

* When setting the parameter, **it adds "1" to the blinking number or selects the next item**.
* Under the normal mode, it **switches between Gross wt. and Net wt**. on the main display section.



:

* When setting the parameter, **it rests "1" to the blinking number or selects the previous item**.
* Under the normal mode, it **uses to set function 13**.

:

* Use to **set each batch code** or to **set parameter of check value**.

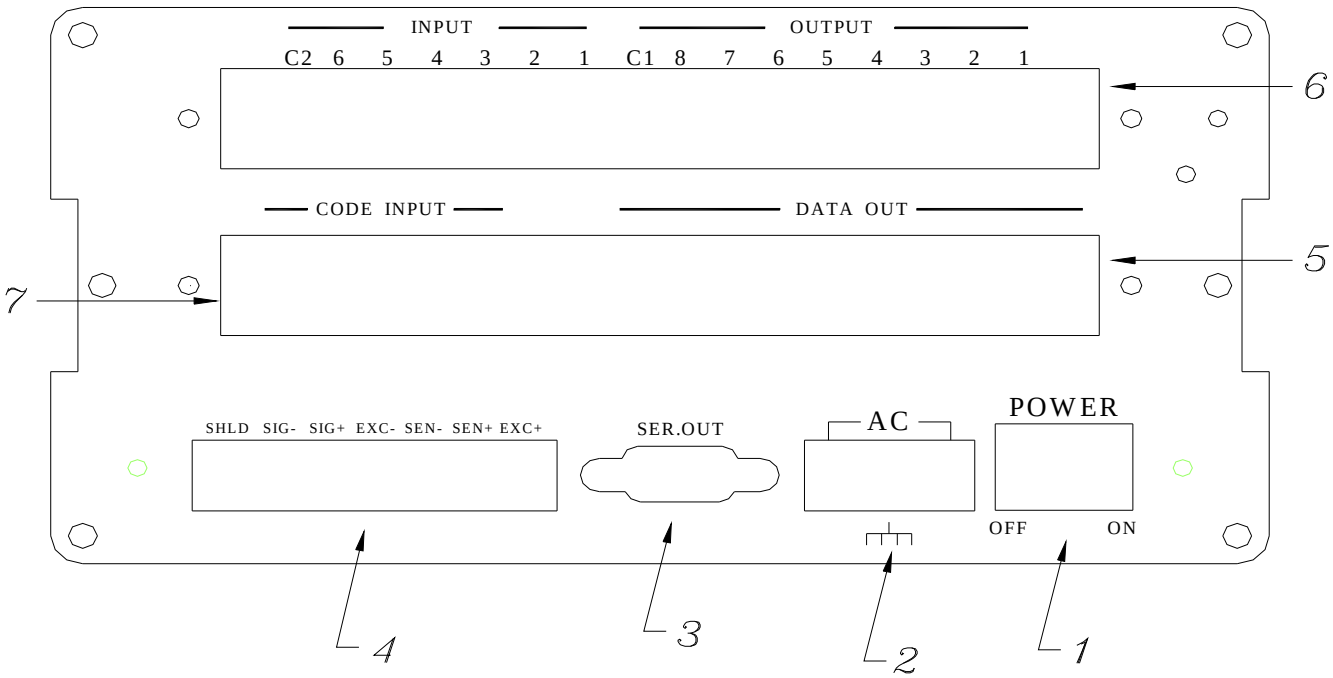
:

* Use to **selects memories of batch** or **memories of check value's parameter**.

:

* **Confirmation key**.

2-2 REAR PANEL



1. Power switch (ON/OFF)
2. AC power in terminal.
3. RS-232 and current loop serial data output.
4. Load cell connection terminal.
5. Location of option interface card.
6. Location of external control input and relay output interface.
7. Input external controller memory code conversion.

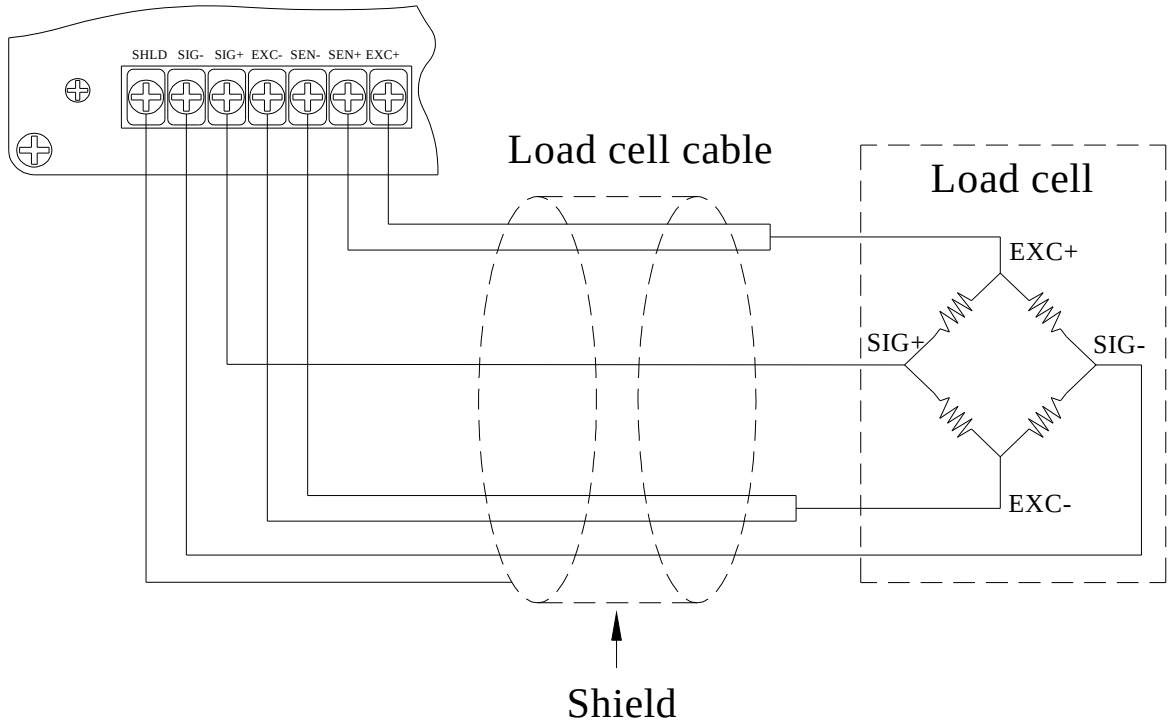
2-3 A/D CONVERSION

- Input sensitivity over 3μV/D
- Internal resolution 1 / 1,000,000
- External resolution 1 / 16,000
- Max. sampling speed 100 Times/sec.
- Zero adjustable range -1 mV ~ 25 mV
- Application range -1 mV ~ 32 mV
- Load cell applied voltage 10 VDC ±5% , 240mA
  (connectable up to eight 350Ω load cells)
- Zero temperature coefficient ± (0.2μV + 8ppm × Dead Load) /℃ TYP
- Temperature coefficient sensitivity ± 8ppm /℃ TYP
- Non linearity 0.01% F.S.

CHAPTER 3 INSTALLATION

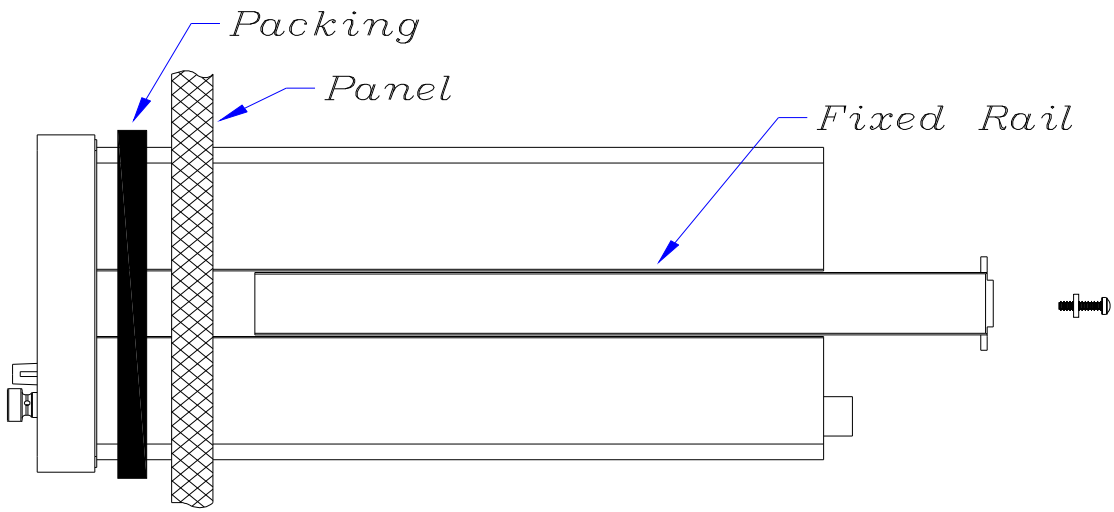
3-1 LOAD CELL

2 WHEN USING A 4 WIRES CABLE TO CONNECT THE LOAD CELL CAN LEAVE SEN+ AND SEN- UNCONNECTED (SEE BELOW DIAGRAM)

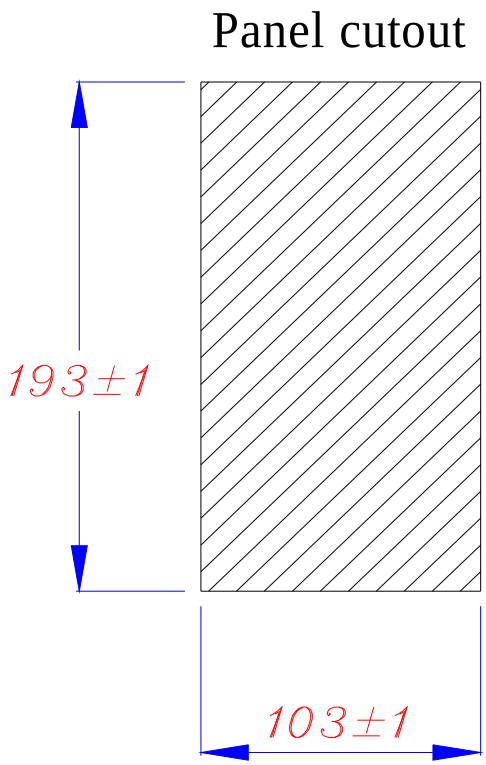


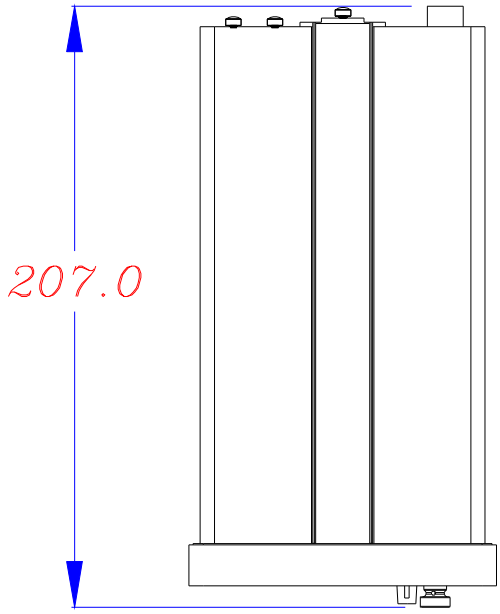
3-2 INDICATOR INSTALLATION AND SIZE

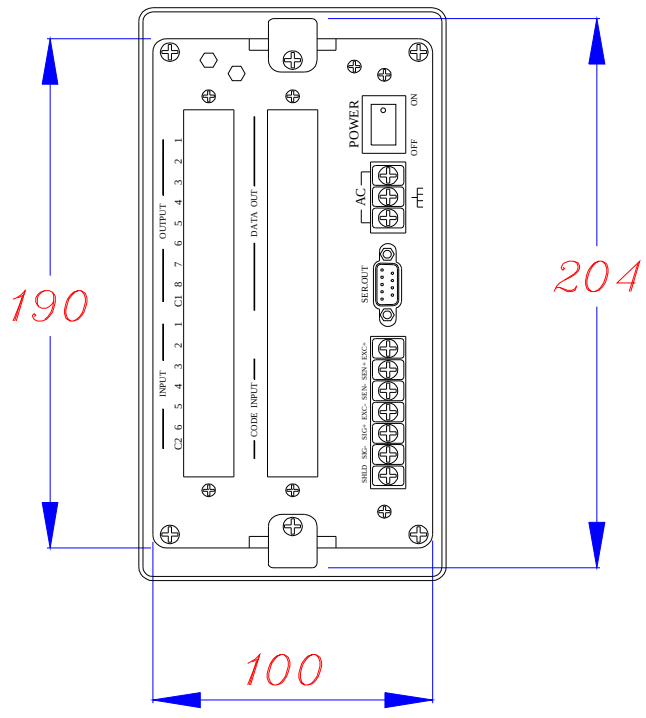
2 THE INDICATOR CAN BE FIXED ON THE CONTROL PANEL AS INDICATED INSTRUCTION BELOW.

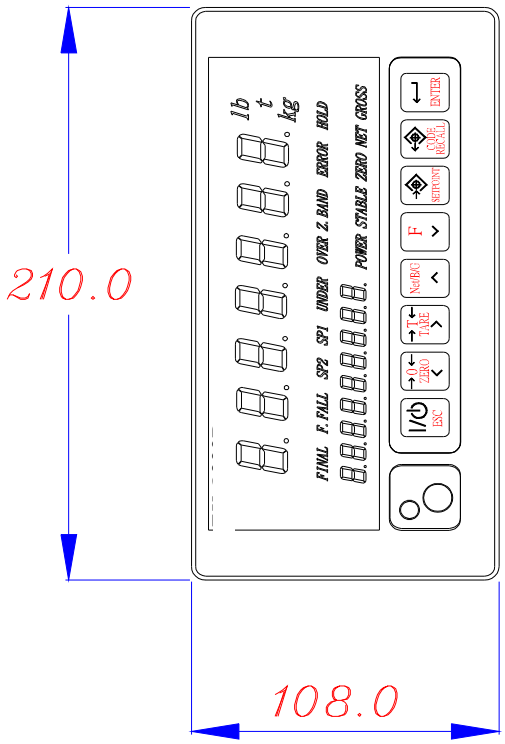


2 INDICATOR SIZE (UNIT: mm)





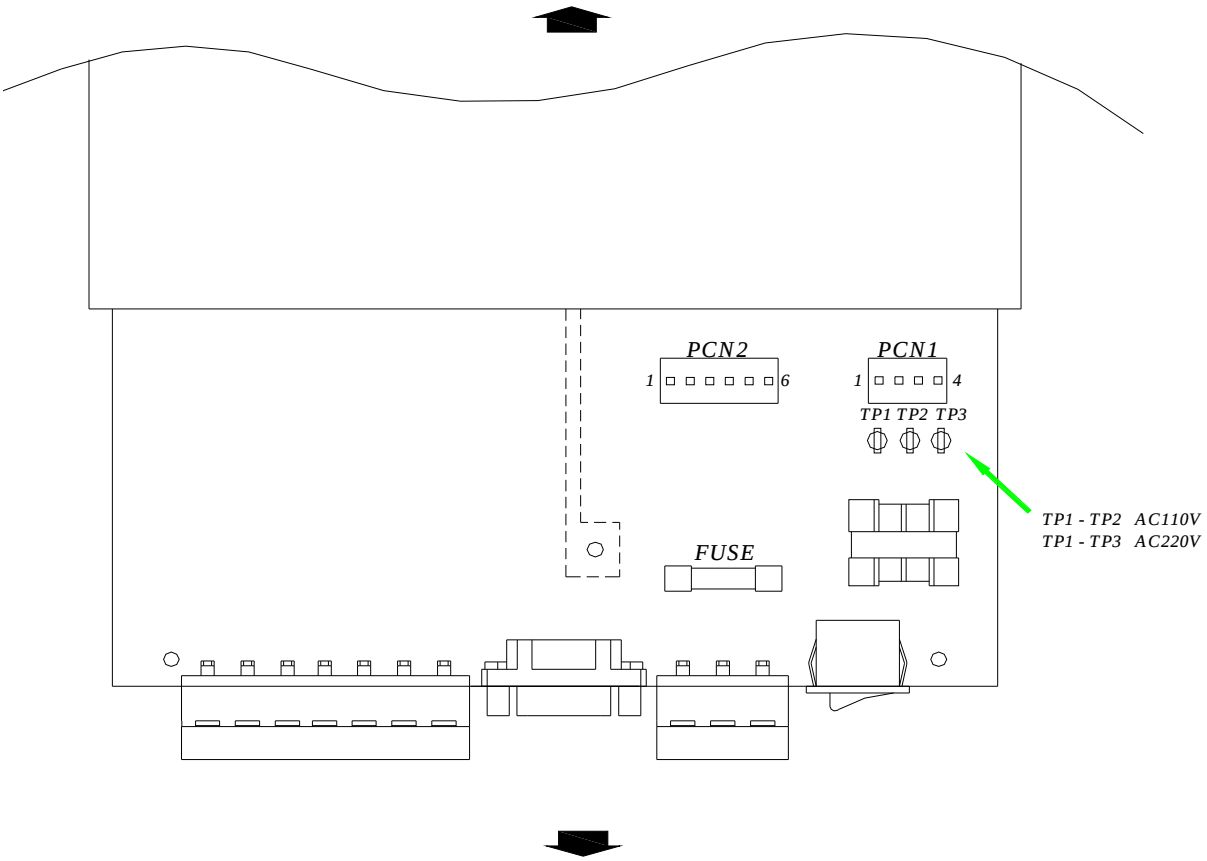




3-3 POWER SUPPLY

2 THE POWER SWITCH AND THE POWER CABLE INSTALLATION ARE INSTRUCTED ON THE REAR PANEL.

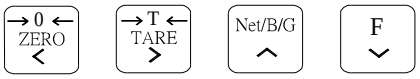
2 IF NEED TO CHANGE A BLOW FUSE OR TO SWITCH THE VOLTAGE AC110V ⇔ AC220V MUST TUNED OFF THE POWER THEN UNSCREW THE SCREWS FROM THE FIXER PANEL, PULL OUT THE MAIN BOARD AND DO THE CHANGES REQUIRED.



3-4 ACCESSORIES

- FUSE 250VAC 1A
- POWER CABLE
- SERIAL OUTPUT D-SUB 9P MALE CONNECTOR
- CODE INPUT D-SUB 9P FEMALE CONNECTOR
- LABEL (STICKER)
- SERVICE MANUAL

CHAPTER 4 OPERATION



Use these 4 keys to key in the appropriate parameter when operating.

⇒ Moves current blinking digit one space to the left.

⇒ Moves current blinking digit one space to the right.

⇒ Adds 1 value to the current blinking number.

⇒ Subtracts 1 value to the current blinking number.

4-1 FUNCTION SETTING OPERATION

(1) Function setting operation only can be operated using the front panel operation keys.

(2) Under the normal mode condition, press and hold the 

key, then press the 

key to enter to the function setting mode.

(3) The main display section indicates the current operating function number. Can select and set desired function number as demanded.

(4) The sub-display section indicates the set value of the current function number

(5) When need to change the set value, press the 

key to enter to the modification mode.

(6) To void setting under modification mode, press the 

key to quit from the setting status.

(7) Press the ENTER key after reentered the required set value, if the function number added “1”, it indicates the inputting of the set value has been completed. (Successful setting) . If appeared Error figures, it indicates the set value is out of range (Unsuccessful setting).

(8) After the setting is completed, press the I/⏻ ESC key to quit from the setting mode and the indicator will reset.

4-2 CODE RECALL OPERATION

(1) The front panel keys, the rear panel CODE INPUT or interfaces RS-232 / 422 / 485, can be used to recall memory code number.

(2) When use the front panel keys for input, press the CODE RECALL key under the normal mode to enter to the code number setting mode.

(3) The number on the right of the code number indicates the current setting content of the code number. (Batch finish value / Target weight value)

(4) The setting is completed after press the ENTER key as a confirmation of setting. It will return to normal mode. If press the I/⏻ ESC key, will quit from the setting mode without saving any of the setting.

(5) When using the rear panel CODE INPUT to input code recall, See 8-2 for instruction.

(6) When using RS-232 / 422 / 485 serial interface to input code recall, See 8-3, 8-4 for instruction.

4-3 BATCH / CHECK VALUE SETTING

(1) Use the front panel keys or interfaces RS-232 / 422 / 458 to input Batch / Check value.

(2) If use the front panel to key in Batch/Check value, press the SETPOINT key under normal mode to enter to Batch / Check value mode.

(3) Select the memory code first. The number located on the right of memory code indicates the current setting code content. (Batch finish value / Target value).

(4) Press the ENTER key to enter to the parameter setting mode of the selected code.

(5) Use →0← ZERO < and →T← TARE > keys to select desired parameter.
Under batch mode (Func. 20 Set 0 ~ 3), can set parameter such as FINAL, F. FALL, SP2, SP1, UNDER, OVER, Z-BAND.
Under check mode (Func. 20 Set 4 ~ 7), can set parameter such as LO-LO, LO, GO, HI, HI- HI, Z-BAND.

(6) The two digits on the left of the sub display area represents codes numbers and the number on the right represents the parameter which indicated by the blinking LED light. If need to re-set, press the ENTER key to enter to the setting mode, then key-in the new set value and press ENTER key to save all inputted parameters.

(7) Follow the method 6 (above), can complete all the setting of all parameters of Batch / Check value mode.

(8) Press the I/⏻ ESC key to quit step by step from the setting mode.

(9) If use interfaces RS-232 / RS-422 / RS-458 to input Batch / Check parameters , see 8-3, 8-4 for reference.

CHAPTER 5 CALIBRATION

5-1 OPERATION ADVISED AND CALIBRATION PROCEDURE

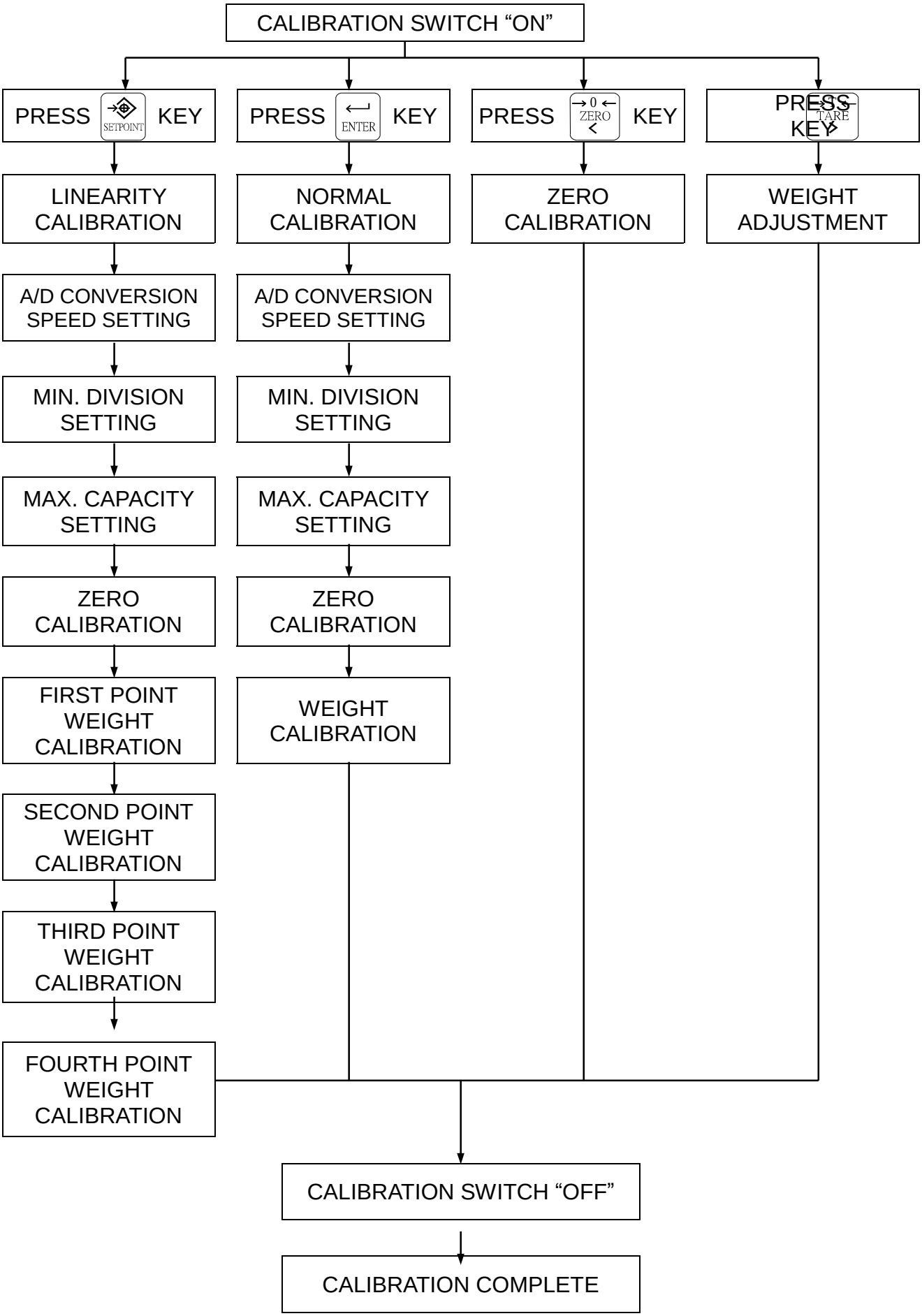
(1) Use the I/⏻ ESC key in any step of calibration procedure to returned to the previous setting.

(2) If switched off the calibration switch before the calibration is completed , all parameters set during the procedure will not be saved.

(3) The indicator must has completed the normal calibration to proceed with zero calibration or weight adjustment individually for zero or span.

(4) It will not be able to enter zero point calibration or weight adjustment if it was previously calibrated by linearity calibration.

(5) Calibration procedures:


CALIBRATION SWITCH “ON”
PRESS SETPOINT KEY
PRESS ENTER KEY
PRESS →0← ZERO KEY
PRESS TARE KEY
LINEARITY CALIBRATION
NORMAL CALIBRATION
ZERO CALIBRATION
WEIGHT ADJUSTMENT
A/D CONVERSION SPEED SETTING
A/D CONVERSION SPEED SETTING
MIN. DIVISION SETTING
MIN. DIVISION SETTING
MAX. CAPACITY SETTING
MAX. CAPACITY SETTING
ZERO CALIBRATION
ZERO CALIBRATION
FIRST POINT WEIGHT CALIBRATION
WEIGHT CALIBRATION
SECOND POINT WEIGHT CALIBRATION
THIRD POINT WEIGHT CALIBRATION
FOURTH POINT WEIGHT CALIBRATION
CALIBRATION SWITCH “OFF”
CALIBRATION COMPLETE

5-2 NORMAL CALIBRATION

(1) Press the ENTER key to enter to the normal calibration mode.

(2) Set A/D conversion speed when the sub-display section displays Ad5 **XXX** figures, use Net/B/G and F keys to select 10~100 times/sec. (by multiples of 10), press the ENTER key for confirmation.

(3) Set the Min. display division when the sub-display section displays d **XX** figures, use Net/B/G and F keys to select the appropriate parameter, press the ENTER key for confirmation.

(4) Set the Max. capacity when the sub-display section displays C **XXXXXX** figures, use →0← ZERO, →T← TARE, Net/B/G, F keys to select the appropriate parameter. Press the ENTER key for confirmation.

If Error 0 **X** figures appeared , see 5-6 for reference.

(5) Set the zero calibration when the sub-display section displays 0 2Er 0 figures. Make sure that on the platform scale or in the hopper scale is empty, press the ENTER key and on the sub-display section should displays 0 - - - - - and the process is completed after approximately 10 sec.

If Error 0 **X** figures appeared, see 5-6 for reference.

(6) Set the weight calibration when the sub-display section displays S **XXXXXX** figures. Put a known weight object on the platform or in the hopper and use the front panel to key in the weight value. Wait until the the system stabilized, press the ENTER key and on the sub-display section should displays 0 - - - - - and the process is completed after approximately10 sec.

If Error 0 **X** appeared, see 5-6 for reference.

(7) Switch off the calibration switch when the main display section displays CAL. figures, the normal calibration procedure is completed .

5-3 LINEARITY CALIBRATION

(1) Press the SETPOINT key to enter to the calibration mode.

(2) To set the A/D conversion speed, Min. division, Max. capacity and the zero calibration, see 5-2, articles 2, 3, 4, and 5 references.

(3) After completed the zero calibration, Set the 1st set-point weight calibration when the sub-display section displays P 1 **XXXXXX** figures, put a known weight object on the platform or in the hopper and use the front panel keys to key in the weight value. Wait until the system stabilized.
Press the ENTER key and on the sub-display section should displays - - - - - -
and the process is completed after approximately 10 sec.
If Error **X** figures appeared, see 5-6 for reference.

(4) Set the 2nd set point weight calibration when the sub-display section displays P 2 **XXXXXX** figures put a accurate known weight object on the platform or in the hopper (together with previous object) and use the front panel keys to key in the total weight value of all the objects. Wait until the system stabilized, press the ENTER keys, the sub-display section should displays - - - - - - and the process is completed after in approximately 10 sec.
If Error **X** figures appeared, see 5-6 for reference.

(5) Use the above procedure to set the third and the forth weight point calibration.

(6) After finished all the linearity calibration procedure, the system will return to the main frame and the main display section will appeared CAL . figures, turn the calibration switch off and the linearity calibration procedure is completed.

5-4 ZERO CALIBRATION

(1) Press the →0← ZERO < key to enter to the zero calibration.

(2) The sub-display section displays ZERO figures
(Press the SETPOINT key to check the current weight value),
removed all objects on the platform or in the hopper.
Wait until the system stabilized and press the ENTER key,
the sub-display section should displays - - - - - -
and the process is completed after in approximately 10 sec.

(3) When the main display section displays CAL . figures, turn off
the calibration switch and the zero calibration procedure is completed.

5-5 WEIGHT ADJUSTMENT

(1) Press the →T← TARE > key to enter to weight adjustment mode.

(2) When the sub-display section displays S **XXXXXX** figures,
put a accurate known weight object on the platform or in the hopper
(press the SETPOINT key to check the current weight value,
press the SETPOINT key again to return to the setting mode), key in the
appropriate weight value and wait until the system stabilized
to press the ENTER key, the sub-display section should displays
- - - - - - and the process is completed after approximately 10 sec.

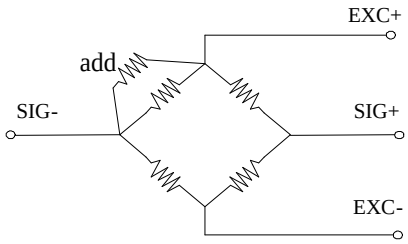
(3) When the main display section displays CAL . figures,
turn off the calibration and the weight adjustment is completed.

5-6 INDICATION OF CALIBRATION ERROR

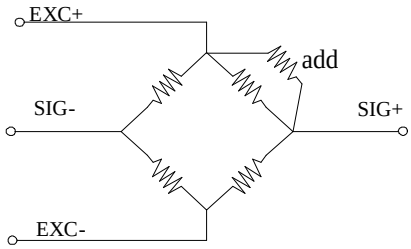
(1) Error 0 Unusual load cell or A/D conversion circuit.

(2) Error 1 (Max. capacity / Min. division) > 16000 or can not be divided integrally.

(3) Error 2 When calibrating the zero point, the load cell output signal is over the Max. adjustable range of 25 mV of the zero point. If the load cell is not damaged and has been correctly used, then connect a low temperature coefficient resister (50kΩ ~ 500kΩ) to adjust load cell's output voltage. See below diagram for reference.



(4) Error 3 When calibrating the zero point, the load cell output signal is under the Min. adjustable range of 25 mV of the zero point. If the load cell is not damaged and has been correctly used, then connect a low temperature coefficient resister (50kΩ ~ 500kΩ) to adjust load cell's output voltage. See below diagram for reference.



(5) Error 4 Weight calibration set value > Max. capacity.

(6) Error 5 Under linearity calibration mode, the weight calibration set value ≤ previous set value

(7) Error 6 The internal resolution is over the range of 0.3μV/D.

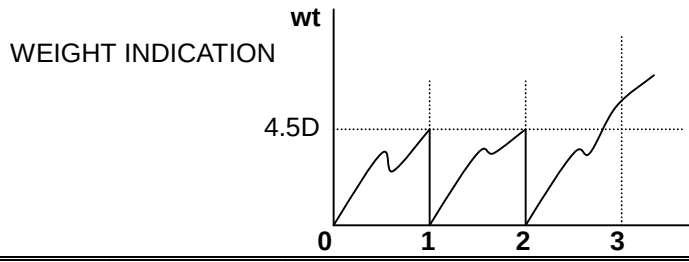
(8) Error 7 Actual scanned weight value ≤ zero point or previous calibration point.

(9) Error 8 Load cell's output voltage is over indicator's scan range 32mV.

CHAPTER 6 BASIC FUNCTIONS SETUP

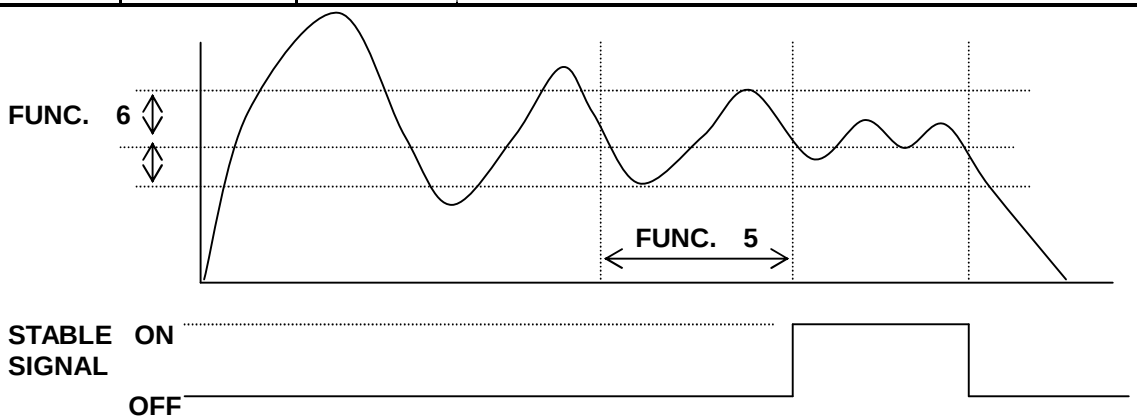
ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC. 0	Weight unit	0	None	1
		1	kg	
		2	t	
		3	lb	
FUNC. 1	Decimal	0	None	0
		1	0.0	
		2	0.00	
		3	0.000	
		4	0.0000	
FUNC. 2	Zero range	0 ~ 30 (±%)	Zero range = Zero calibration ± (Max. capacity × set value %)	2
FUNC. 3	Zero tracking	0.0 ~ 5.0 (sec)	Zero tracking time must be used with zero range at the same time. When set 0.0, the zero tracking function is off.	1.0
FUNC. 4	Zero tracking width	0 ~ 9	Tracking width=(set value×½)D,D=Min.division. The zero tracking range must be used with zero tracking time at the same time. When set 0,The zero tracking function is off.	2

EXAMPLE : FUNC. 3 = 1.0 FUNC. 4 = 9



In zero range (Func. 2), when zero point is at set up time (Func. 3), the set up range is out of range (Func. 4), the indicator will adjust this minor out range back to zero point.

FUNC. 5	Stability detection	0.0 ~ 5.0 (sec)	The stability scanning time must be used with the stability detection range at the same time. When set 0.0,the stability detection is off.	1.0
FUNC. 6	Stability detection range	0 ~ 9	The stability detection range must be used with the stability detection time at the same time. When set 0,the stability detection is off.	2



ITEM	FUNCTION	SET VALUE				FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION			
FUNC. 7	Tare and Zero when the weight is unstable	0	OFF			1
		1	ON			
FUNC. 8	Tare at negative gross	0	OFF			1
		1	ON			
FUNC. 9	Digital filter	0 ~ 49	Two sections of digital filter: 10' : 0 ~ 4 10º : 0 ~ 9 Greater the value means greater the filtering. When set 0, the digital filter function is off .			25
FUNC.10	Keys functions	00000000 ↓ 11111111	0	OFF	The bits and front panel keys position are related from each other	00000000
			1	ON		
FUNC.11	Display rewrite rate	0	20 Times/sec.			0
		1	10 Times/sec.			
		2	5 Times/sec.			
FUNC.12	Contents of Sub-display section	0	None			0
		1	Cross			
		2	Net			
		3	Tare			
		4	Batch codes and Final value			
FUNC.13	“F” key function	0	None			0
		1	Manually output the parallel and serial information.			
		2	Clear Tare			
		3	Batch start			
		4	Batch stop			

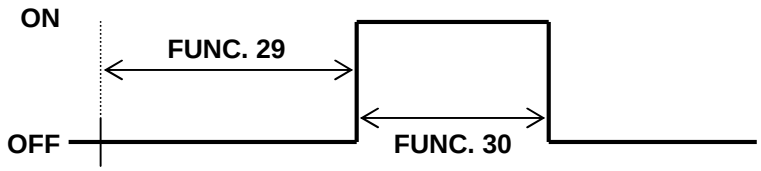
CHAPTER 7 BATCH AND CODE SELECT MODE

7-1 FUNCTIONS SETTING

ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.20	Weighing mode	0	Normal batch	0
		1	Loss-in-weight	
		2	Normal batch (Built-in program)	
		3	Loss-in-weight (Built-in program)	
		4	Check weighing 1	
		5	Check weighing 2	
		6	Check weighing 3	
		7	Check weighing 4	
FUNC.21	Batch start delay time	0.0 ~ 25.5 (sec)	The built-in auto-program starts the batch comparison procedure after input the batch start signal.	0.0
FUNC.22	Batch time monitoring	0 ~ 255 (sec)	The batch time monitoring starts after weighing start. The output signal shut off when the time is reached.	0
FUNC.23	SP1 Waiting time comparison	0.0 ~ 25.5 (sec)	No full flow comparison during this function's set time period If the set value is 0, indicates this function is not in use.	0.0
FUNC.24	SP2 Waiting time comparison	0.0 ~ 25.5 (sec)	No medium flow comparison during this function's set time period. If the set value is 0, indicates this function is not in use.	0.0
FUNC.25	F.FALL Waiting time comparison	0.0 ~ 25.5 (sec)	No dribble flow comparison during this function's set time period. If the set value is 0, indicates this function is not in use.	0.0
FUNC.26	Auto-free fall compensation	0	Off	0
		1	On	
FUNC.27	Auto-free fall compensation effective range	0 ~999999	After start the auto-free fall compensation function in effective range, the program will automatically corrected the next free fall set value.	0
FUNC.28	Batch finish signal	0	Not wait until the weight is stabilized	1
		1	Wait until the weight is stabilized.	
FUNC.29	Batch finish output signal delay time	0.0 ~ 25.5 (sec)	Output the batch finish signal after reached delay time.	0.5

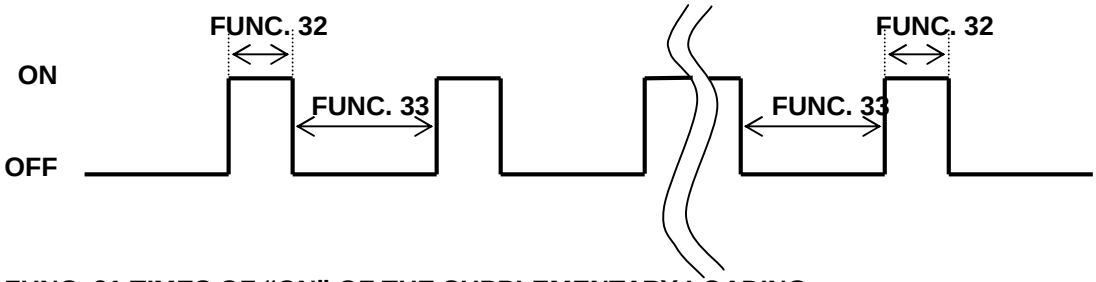
ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.30	Batch finish output signal time	0.0 ~ 25.5 (sec)	Batch finish output signal holding time. If set 0, clear the output signal until the next batch start.	0.5
FUNC.31	Times of supplementary loading	0 ~ 255	If the set value is 0, indicates this function is not in use.	0
FUNC.32	Supplementary loading gate open time	0.01 ~ 2.55	Must be coordinate with times of supplementary loading (Func.31)	0.1
FUNC.33	Supplementary loading gate close time	0.1 ~ 25.5	Must be coordinate with times of supplementary loading (Func.31)	1.0

BATCH FINISH SIGNAL

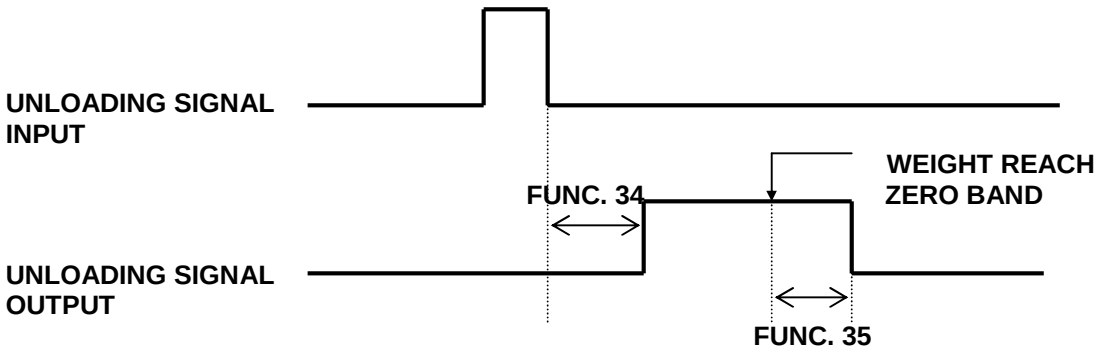


BATCH FINISH

SUPPLEMENTARY LOADING SIGNAL



FUNC. 31 TIMES OF "ON" OF THE SUPPLEMENTARY LOADING

ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.34	Unloading start delay time	0.0 ~ 25.5 (sec)	Delay time setting. Unloading signal ON	0.0
FUNC.35	Unloading stop delay time	0.0 ~ 25.5 (sec)	Delay time setting Unloading signal OFF	0.0
FUNC.36	Max. unloading time	0 ~ 255 (sec)	Will not activate internal unloading control function, If set 0.	0
				
FUNC.37	Under and Over	0	Compare at any weighing moment	0
		1	Compare after final batch	
FUNC.38	Set the zero band in to final weighing value	0	Not setting	0
		1	setting	
FUNC.39	Code number input	0	Front panel input	0
		1	Rear panel code input	

Note :

1. **FUNC. 21 ~ FUNC. 37 use for built-in program of loading and unloading batch. FUNC. 20 set in 2, 3 mode.**
2. **FUNC. 38 only be use for built-in program of unloading batch. FUNC. 20 set in 3 mode.**

7-2 EXTERNAL INPUT SIGNAL SETTING

ITEM	FUNCTION	SET VALUE PARAMETER - DESCRIPTION	FACTORY STANDARD SET VALUE
FUNC.41	Input 1	0 ⇒ No use	1
FUNC.42	Input 2	1 ⇒ Zero 2 ⇒ Tare	2
FUNC.43	Input 3	3 ⇒ Clear Tare	3
FUNC.44	Input 4	4 ⇒ Batch Start 5 ⇒ Batch Stop	4
FUNC.45	Input 5	6 ⇒ Unloading Start	5
FUNC.46	Input 6	7 ⇒ Print serial and parallel output information manually	6

7-3 RELAY OUTPUT SIGNAL SETTING

<table>
<tr><th rowspan="2">ITEM</th><th rowspan="2">FUNCTION</th><th colspan="4">SET VALUE</th><th rowspan="2">FACTORY STANDARD SET VALUE</th></tr>
<tr><th>PARAMETER</th><th colspan="3">DESCRIPTION</th></tr>
<tr><td rowspan="2">FUNC.50</td><td rowspan="2">Output Connection mode</td><td rowspan="2">00000000
↓
11111111</td><td>0</td><td>Normal Open (connection A)</td><td rowspan="2">The bits and output point position are related from each other</td><td rowspan="2">00000000</td></tr>
<tr><td>1</td><td>Normal Close (connection B)</td></tr>
<tr><td>FUNC.51</td><td>Output 1</td><td colspan="4" rowspan="9">PARAMETER Þ DESCRIPTION

0 ⇒ No use
1 ⇒ Zero Band
2 ⇒ Under/Hi-Hi
3 ⇒ Over/Hi
4 ⇒ SP1/Go
5 ⇒ SP2/Lo
6 ⇒ Free Fall / Lo - Lo
7 ⇒ Unloading
8 ⇒ Batch Finish
9 ⇒ Stable
10 ⇒ Running (built-in program in weighing process)
11 ⇒ Error (built-in program incorrect weighing)
12 ⇒ External Input signal acknowledge
13 ⇒ Weighing Capacity Overflow
14 ⇒ Battery Low</td><td>1</td></tr>
<tr><td>FUNC.52</td><td>Output 2</td><td>2</td></tr>
<tr><td>FUNC.53</td><td>Output 3</td><td>3</td></tr>
<tr><td>FUNC.54</td><td>Output 4</td><td>4</td></tr>
<tr><td>FUNC.55</td><td>Output 5</td><td>5</td></tr>
<tr><td>FUNC.56</td><td>Output 6</td><td>6</td></tr>
<tr><td>FUNC.57</td><td>Output 7</td><td>7</td></tr>
<tr><td>FUNC.58</td><td>Output 8</td><td>8</td></tr>
</table>

7-4 WEIGHING MODE OPERATION

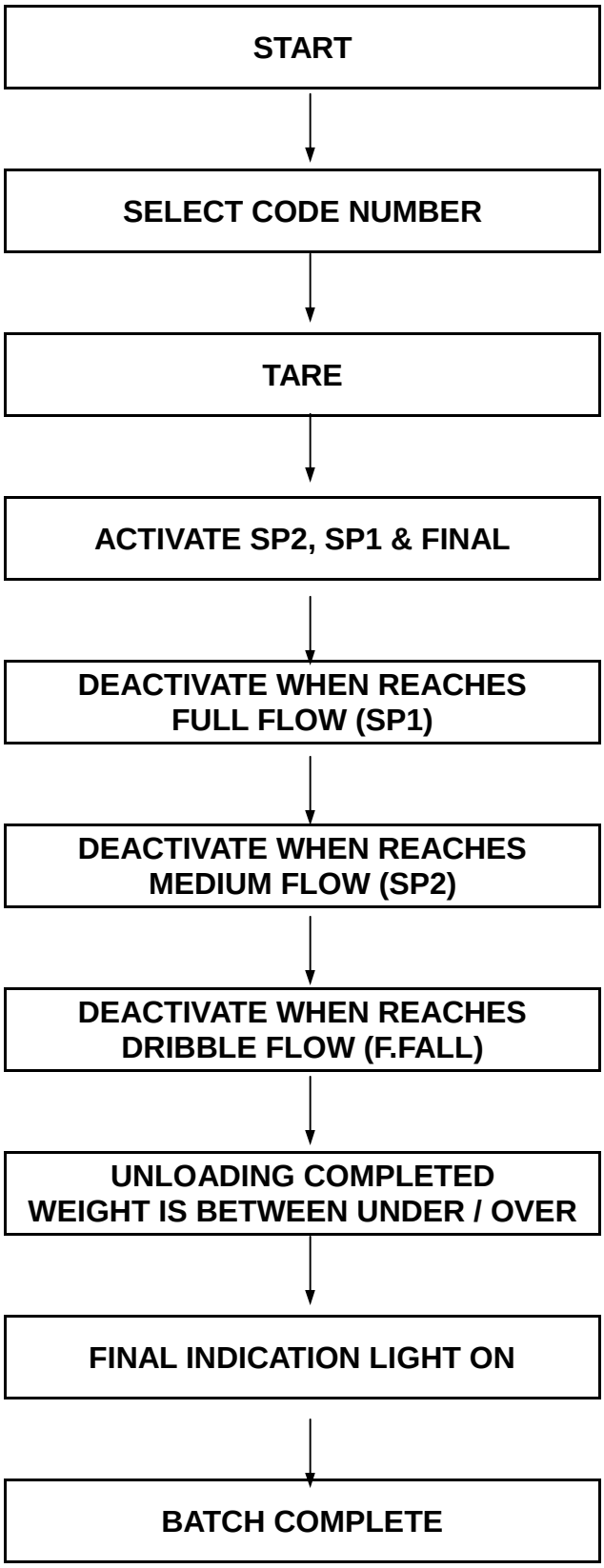
7-4-1 NORMAL LOADING BATCH (FUNC. 20 = 0)

OUTPUT SIGNAL CONDITION:

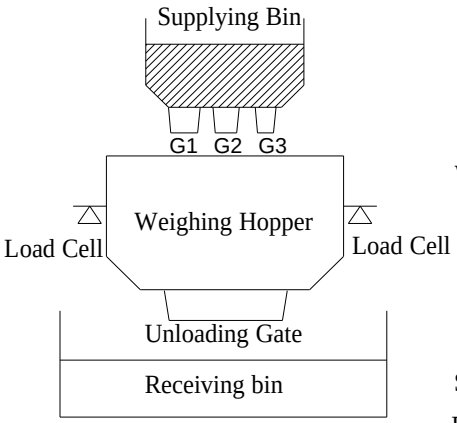
SIGNAL	OUTPUT CONDITION	ON/OFF STATUS		
		RELAY OUTPUT		FRONT PANEL LED INDICATION LIGHT
		FUNC. 50 = 00000000	FUNC. 50 = 11111111	
FINAL	UNDER ≤ NET ≤ OVER	X	X	ON
F.FALL (dribble)	NET ≥ Final – F.FALL	ON	OFF	ON
SP2 (medium)	NET ≥ Final – SP2	ON	OFF	ON
SP1 (full)	NET ≥ Final – SP1	ON	OFF	ON
UNDER	NET < Final - UNDER	ON	OFF	ON
OVER	NET > Final + OVER	ON	OFF	ON
Zero Band	Gross ≤ Zero Band	ON	OFF	ON

4 Relay signal can use Func.50 to selects output logic.
Each selection of output signal can be modified by using Func.51~58.

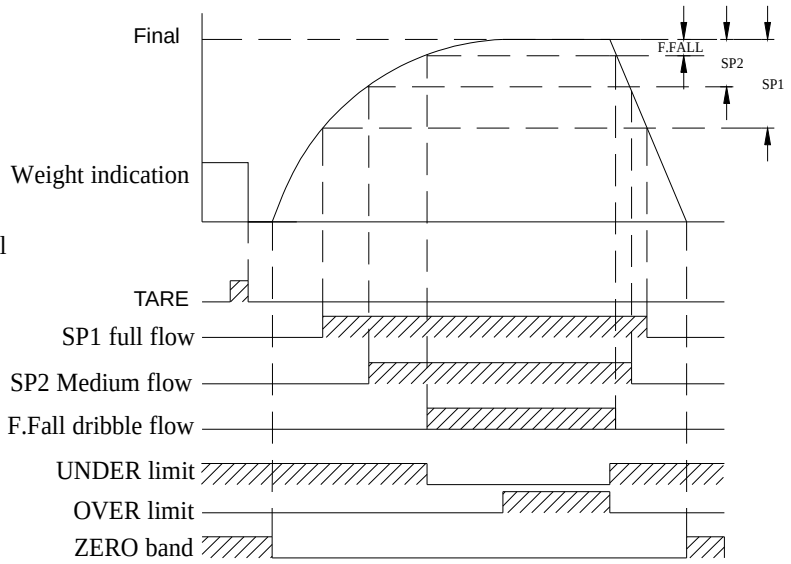
BATCH PROCEDURE CHART:



FUNCTIONAL DESCRIPTION:



Up to 100 sets of supply bin
G1: Full flow gate (SP1)
G2: Medium flow gate (SP2)
G3: Dribble flow gate (F.FALL)



1. Select supply bin (memory code)
2. Tare.
3. G1、G2、G3 gates full open
4. G1 gate closes when reached full flow weight SP1.
5. G2 gate closes when reached medium flow weight SP2.
6. G3 gate closes when reached free flow weight F.FALL
7. Use under/over output signal or front panel indication light (final) to check if the weight value is between under and over.
8. If have more than one supplying bin, repeat step 1 ~ 7.
9. After flow completed, start unloading process. Use zero band range signal to monitor if the unloading process is finish.
   Can start next flow after completed the process.

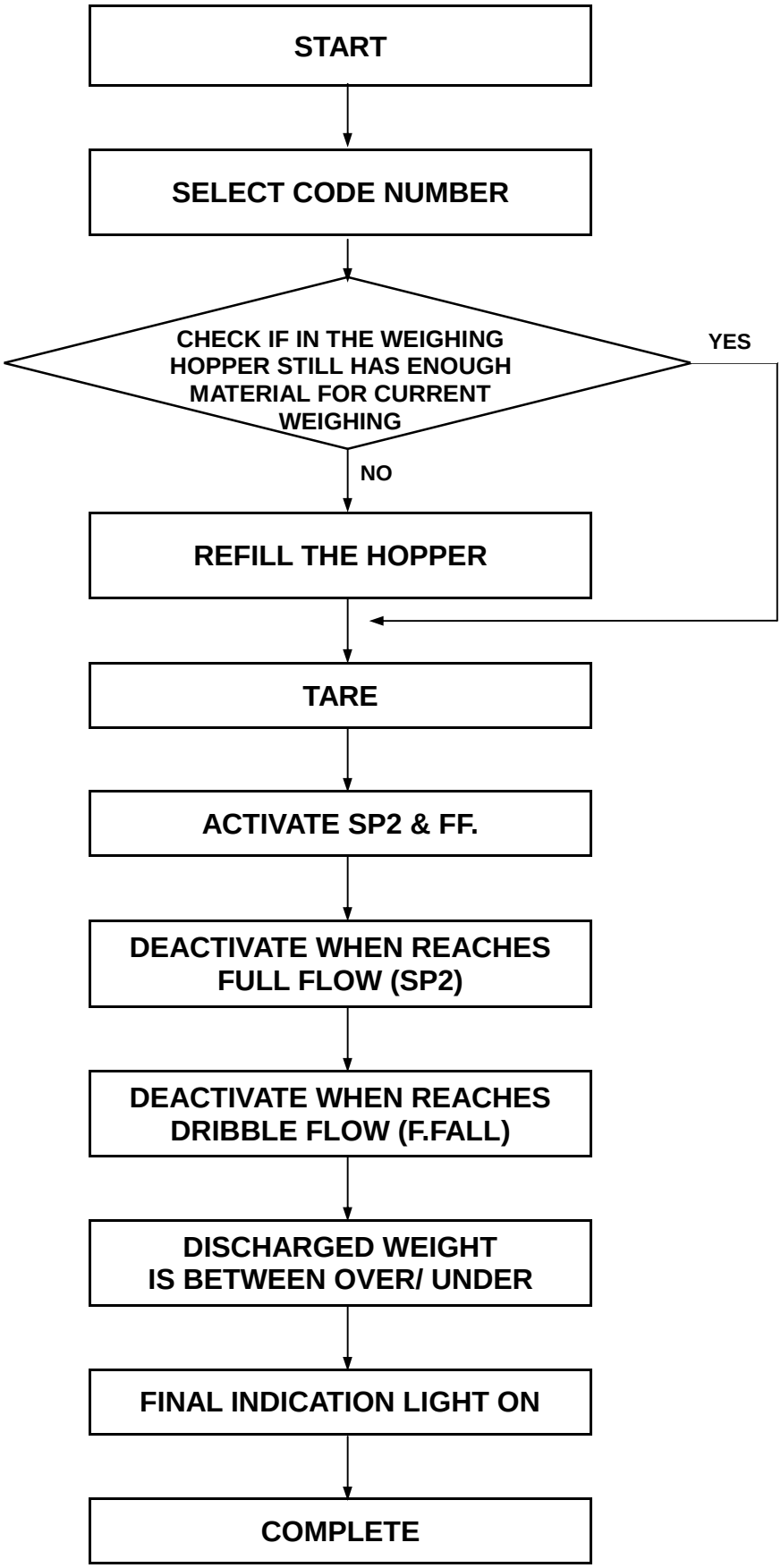
7-4-2 NORMAL DISCHARGING BATCH (FUNC. 20 = 1)

OUTPUT SIGNAL CONDITION:

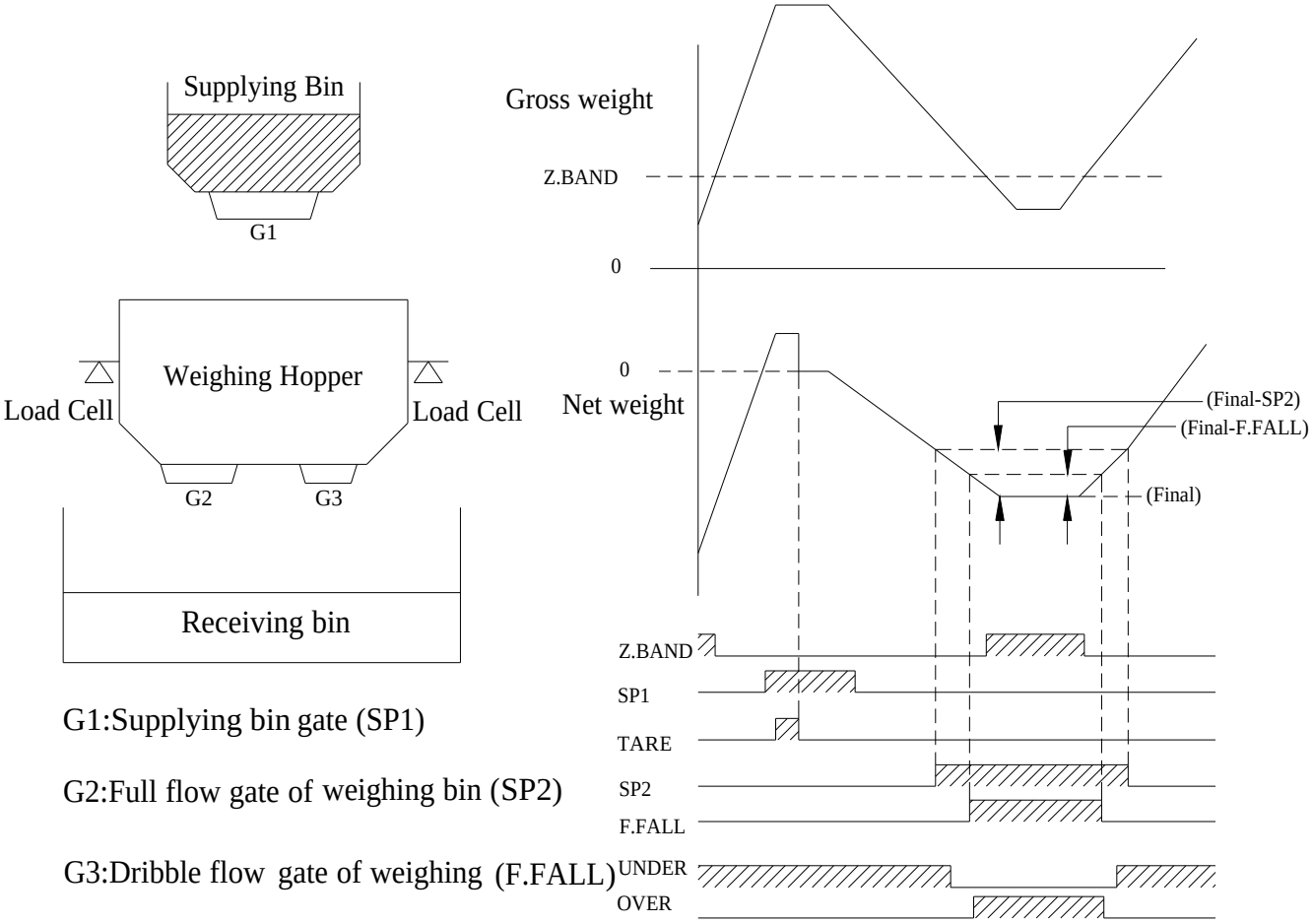
SIGNAL	OUTPUT CONDITION	ON/OFF STATUS		
		RELAY OUTPUT		FRONT PANEL LED INDICATION LIGHT
		FUNC. 50 = 00000000	FUNC. 50 = 11111111	
FINAL	UNDER ≤ -NET ≤ OVER	X	X	ON
F.FALL (dribble)	-NET ≥ Final – F.FALL	ON	OFF	ON
SP2 (full)	-NET ≥ Final – SP2	ON	OFF	ON
SP1 (supply)	Gross ≥ SP1	ON	OFF	ON
UNDER	-NET < Final - UNDER	ON	OFF	ON
OVER	-NET > Final + OVER	ON	OFF	ON
Zero Band	Gross ≤ Zero Band	ON	OFF	ON

4 Relay signal can use Func.50 to select output logic.
Each selection of output signal can be modified by using Func.51~58.

BATCH PROCEDURE CHART:



FUNCTIONAL DESCRIPTION:



G1:Supplying bin gate (SP1)

G2:Full flow gate of weighing bin (SP2)

G3:Dribble flow gate of weighing (F.FALL)

1. Check if in the weighing bin still has enough material for current weighing, if not enough, refill the necessary material in to weighing bin by opening gate G1. G1 closed after reaches SP1 full loading weight.
2. Tare.
3. Open gates G2 and G3.
4. G2 gate closed when discharged weight reaches SP1 full flow section.
5. G3 gate closed when discharged weight reaches F.FALL dribble flow section.
6. Use over limit/under limit output signal or front panel FINAL indication light to check whether the weighting value is between over limit/under limit.
7. Repeat step 1~6 for next discharge.

7-4-3 BUILT-IN CHARGING BATCH PROCEDURE (FUNC. 20 = 2)

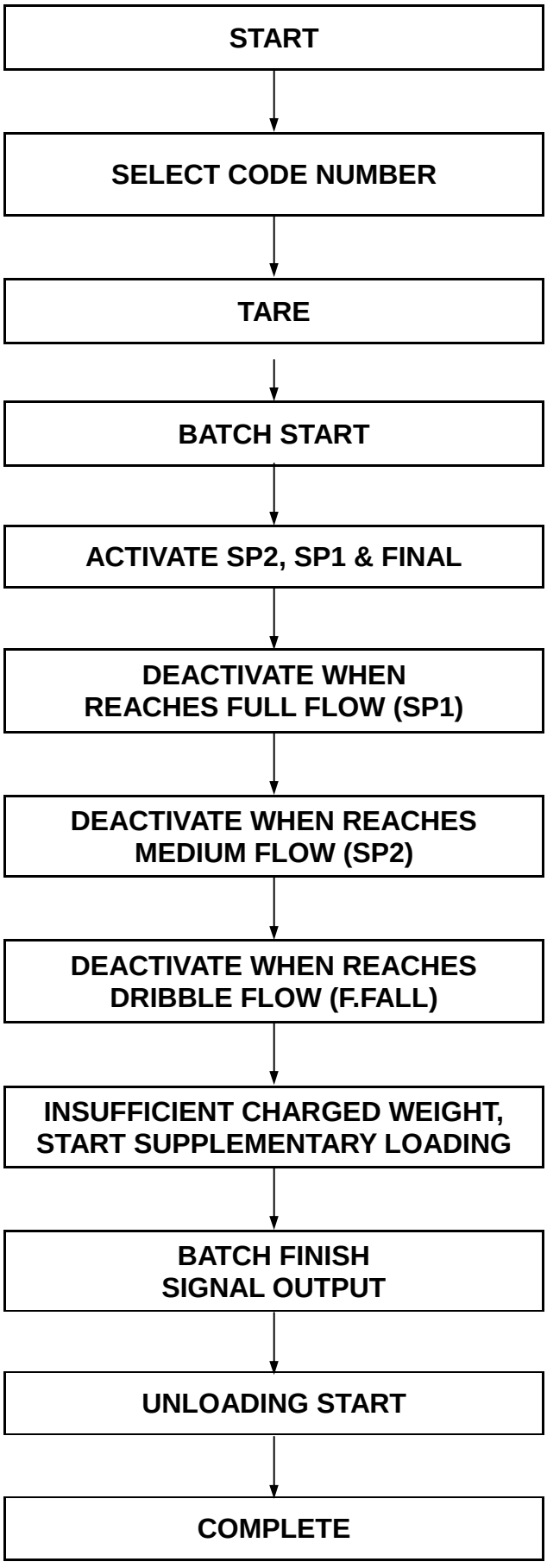
OUTPUT SIGNAL CONDITION:

SIGNAL	OUTPUT CONDITION	ON/OFF STATUS		
		RELAY OUTPUT		FRONT PANEL LED INDICATION LIGHT
		FUNC. 50 = 00000000	FUNC. 50 = 11111111	
F.FALL (dribble)	NET ≥ Final – F.FALL	OFF	ON	OFF
SP2 (medium)	NET ≥ Final – SP2	OFF	ON	OFF
SP1 (full)	NET ≥ Final – SP1	OFF	ON	OFF
UNDER	NET < Final - UNDER	ON	OFF	ON
OVER	NET > Final + OVER	ON	OFF	ON
Zero Band	Gross ≤ Zero Band	ON	OFF	ON

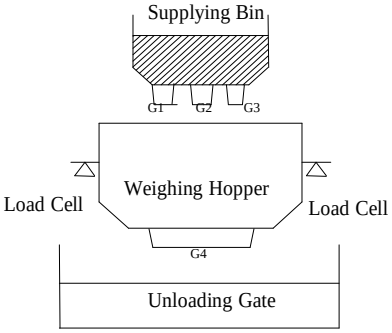
4 The full, medium and dribble flow input signal ON after input the start signal. Output OFF when the weight reaches the set value.
Output ON when any of the rest signals reaches each respective Pre-established condition.

4 Relay signal can uses Func.50 to select output logic.
Each selection of output signal can be modified by using Func.51~58.

BATCH PROCEDURE CHART:



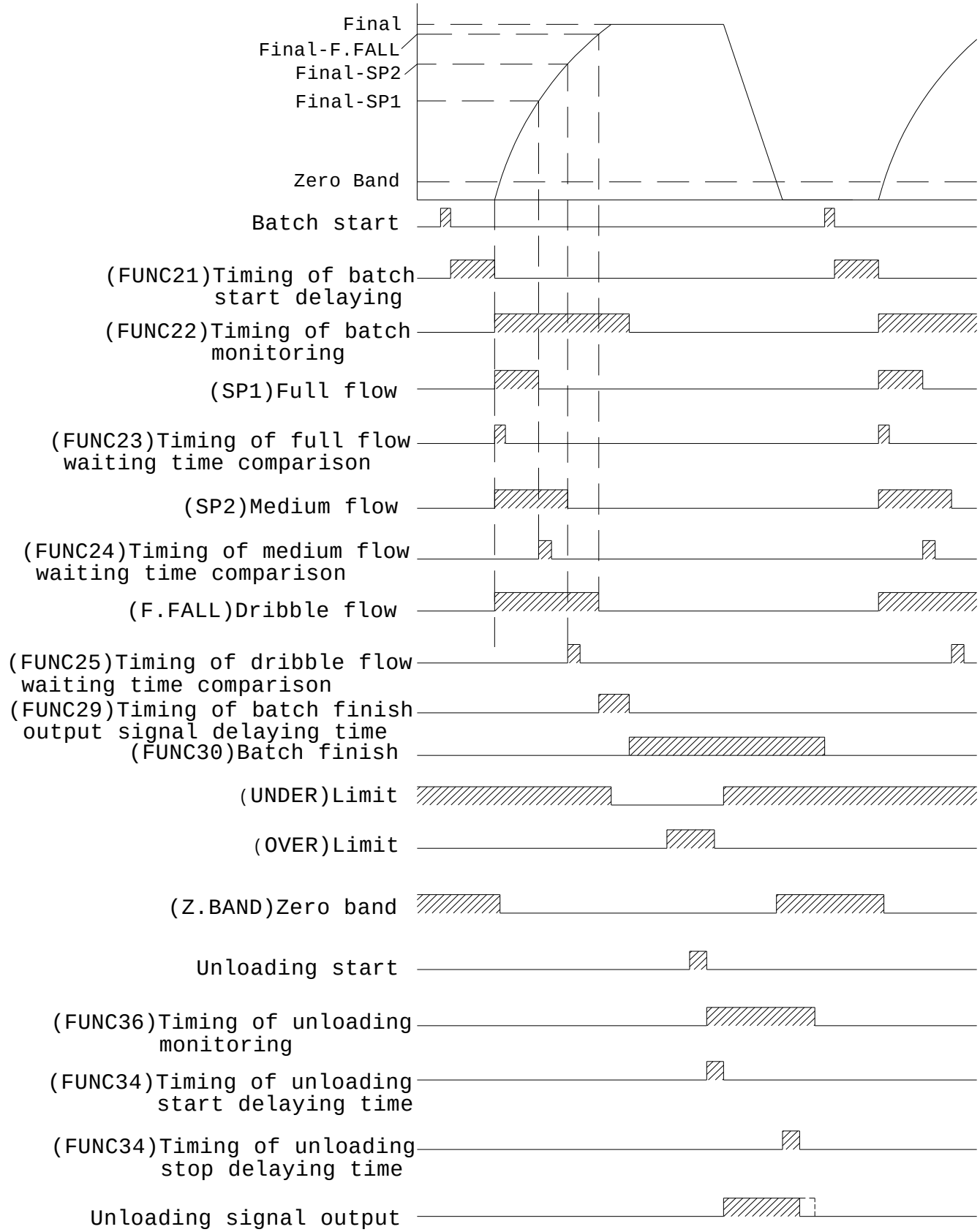
FUNCTIONAL DESCRIPTION:



Up to 100 sets of supply bin
G1: Full flow gate (SP1)
G2: Medium flow gate (SP2)
G3: Dribble flow gate (F.FALL)
G4: Unloading gate.

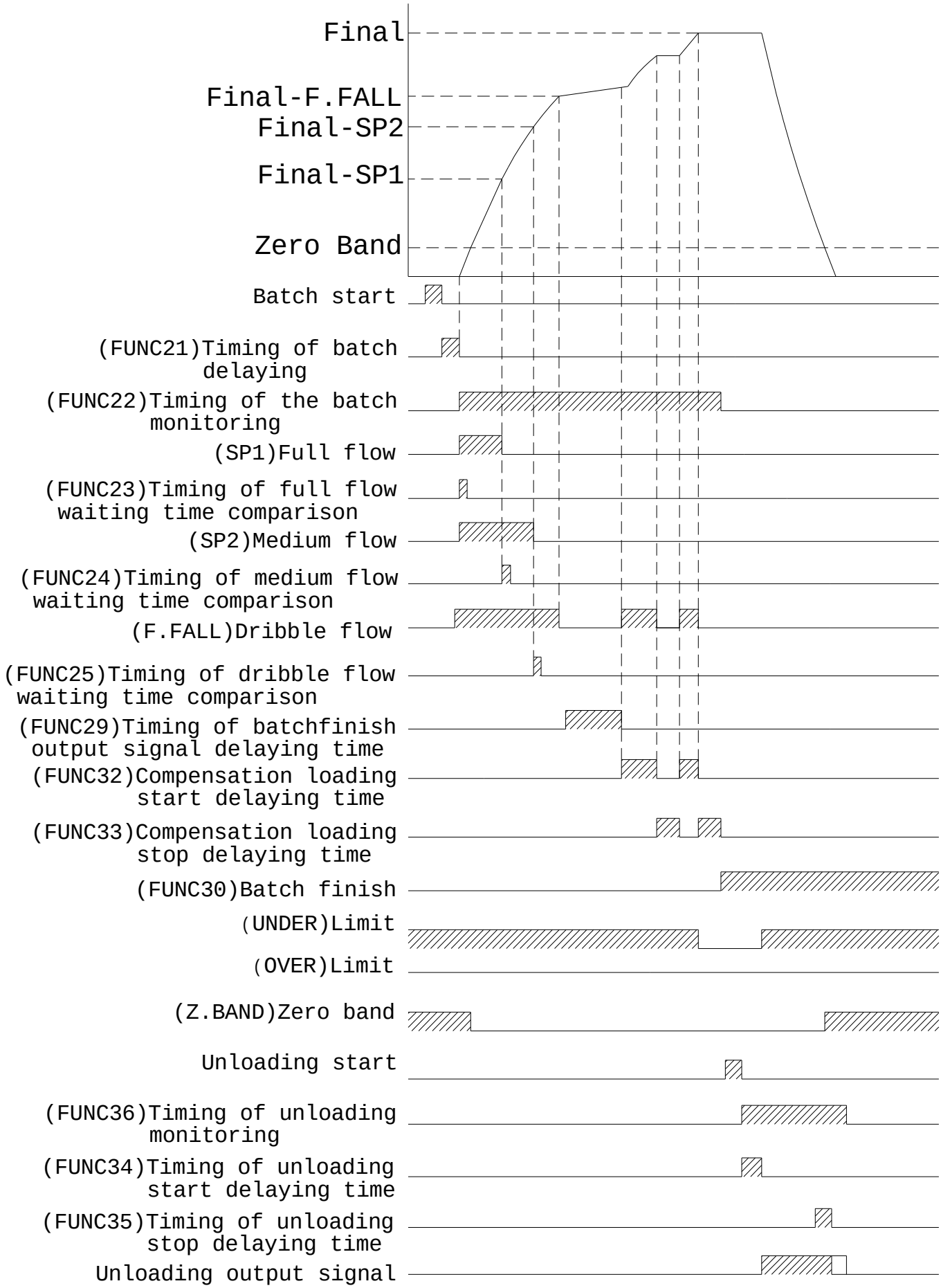
MODE 1

1. Input the batch start signal, activates the timing of batch delaying. (Func.21)
2. When reaches the batch delaying start time,
   a) Starts the timing of the batch monitoring time. (Func.22)
   b) SP1, SP2 and F.FALL output signal are turned ON.
   c) Starts the timing of SP1 (full flow) waiting time comparison. (Func.23)
3. When the weight reaches (Final-SP1) set value.
   a) The full flow (SP1) signal is turned off.
   b) Starts the timing of SP2(medium flow)waiting time comparison.(Func.24)
4. When the weight reaches (Final-SP2) set value.
   a) The medium flow (SP2) signal is turned off.
   b) Starts the timing of F.FALL (dribble flow)waiting time comparison.(25)
5. When the weight reaches (Final-F.FALL) set value.
   a) The dribble flow (F.FALL) signal is turned off.
   b) Starts the timing of the final batch signal output delaying time(Func.28)
6. When reaches the batch finish output signal delaying time, if
   a) Func.28 = 0 then the batch finish signal is tuned on.
   b) Func.28 = 1 then must wait until the weighing is stabilized
      $\Rightarrow$ the batch finish signal is turned on
7. When the batch finish output signal is tuned on
   a) Func.37 = 1 then the over/under signal justify when to output the signal
   b) Calculates the auto-free flow compensation.
   c) Deactivates the timing of batch monitoring.
   d) Output the weighing data if setting the auto-transmitting mode for Interfaces RS-232, RS-422, RS-485 and BCD.
8. When there is more than one supplying bins and need to proceed the next material weighing, select code number and then tare and repeat step 1~8.
9. Activates the unloading start delaying time when input the unloading start signal(Func.34)
10. When reaches unloading start delaying time,
    a) Starts the timing of the unloading monitoring time. (Func.36)
    b) Unloading output signal is turned ON.
11. When the gross weight is less than the zero range,
    a) Deactivates the timing of unloading monitoring.
    b) Starts the timing of unloading stop delaying time. (Func.35)
12. The unloading signal turned off when the timing reaches unloading stop delaying set value.


Final
Final-F.FALL
Final-SP2
Final-SP1
Zero Band
Batch start
(FUNC21)Timing of batch start delaying
(FUNC22)Timing of batch monitoring
(SP1)Full flow
(FUNC23)Timing of full flow waiting time comparison
(SP2)Medium flow
(FUNC24)Timing of medium flow waiting time comparison
(F.FALL)Dribble flow
(FUNC25)Timing of dribble flow waiting time comparison
(FUNC29)Timing of batch finish output signal delaying time
(FUNC30)Batch finish
(UNDER)Limit
(OVER)Limit
(Z.BAND)Zero band
Unloading start
(FUNC36)Timing of unloading monitoring
(FUNC34)Timing of unloading start delaying time
(FUNC34)Timing of unloading stop delaying time
Unloading signal output

MODE 2 (SUPPLEMENTARY LOADING)

1. Batch start signal output, activates the timing of batch delaying. (Func.21)
2. When reaches the batch delaying start time,
    a) Starts the timing of the batch monitoring time. (Func.22)
    b) SP1, SP2, and F.FALL output signal is turned on.
    c) Starts the timing of SP1 (full flow) waiting time comparison. (Func.23)
3. When the weight reaches (Final-SP1) set value.
    a) The flow fall (SP1) signal is turned off.
    b) Starts the timing of SP2(medium flow)waiting time comparison.(24)
4. When the weight reaches (Final-SP2) set value.
    a) The medium flow (SP2) signal is turned off.
    b) Starts the timing of F.FALL(dribble flow) waiting time comparison.(25)
5. When the weight reaches (Final-F.FALL) set value.
    a) The dribble flow (F.FALL) signal is turned off.
    b) Starts the timing of the batch finish output signal delaying time (Func.29)
6. When reaches the batch finish output signal delaying time and the weighing is stable. (Func.28 = 1)
    a) Calculates the auto-free fall compensation.
    Checks if the net weight value is lower than under limit.
    b) The dribble signal start.
    c) Starts the timing of the open gate time of the supplementary loading(Func.32)
7. When reaches the open gate time of the supplementary loading.
    a) The dribble flow (F.FALL) signal is turned off
    b) Starts the timing of the close gate time of the supplementary loading(Func.33)
8. When reaches the close gate time of the supplementary loading, if the net weight value is lower than under limit and times of supplementary loading (Func.31) has not yet been completed, then repeat step 6-b), c) and steps 7-8.
9. When reaches the close gate time of the supplementary loading, if the net weight value is greater or equal under limit.
    a) Batch finish signal is turned on.
    b) Func.37 = 1 then the over/under signal justify output.
    c) Deactivates the timing of batch monitoring.
    d) Output the weighing data if setting the auto-transmission mode for Interfaces RS-232, RS-422, RS-485 and BCD.
10. When there is more than one supplying bin and need to proceed the next material weighing, select code number and tare and repeat steps 1~10
11. Activates unloading start delaying time when input the unloading start time signal (34)
12. When reaches unloading start delaying time.
    a) Starts the timing of unloading monitoring time. (Func.36)
    b) Unloading output signal is turned ON.
13. When the gross weight is less than the zero range.
    a) Deactivates the timing of the unloading monitoring.
    b) Starts the timing of unloading stop delaying time. (Func.35)
14. The unloading signal turned off when the timing reaches the unloading stop delaying set value.


Final
Final-F.FALL
Final-SP2
Final-SP1
Zero Band
Batch start
(FUNC21)Timing of batch delaying
(FUNC22)Timing of the batch monitoring
(SP1)Full flow
(FUNC23)Timing of full flow waiting time comparison
(SP2)Medium flow
(FUNC24)Timing of medium flow waiting time comparison
(F.FALL)Dribble flow
(FUNC25)Timing of dribble flow waiting time comparison
(FUNC29)Timing of batchfinish output signal delaying time
(FUNC32)Compensation loading start delaying time
(FUNC33)Compensation loading stop delaying time
(FUNC30)Batch finish
(UNDER)Limit
(OVER)Limit
(Z.BAND)Zero band
Unloading start
(FUNC36)Timing of unloading monitoring
(FUNC34)Timing of unloading start delaying time
(FUNC35)Timing of unloading stop delaying time
Unloading output signal

7-4-4 BUILT-IN DICHARGING BATCH PROCEDURE (FUNC. 20 = 3)

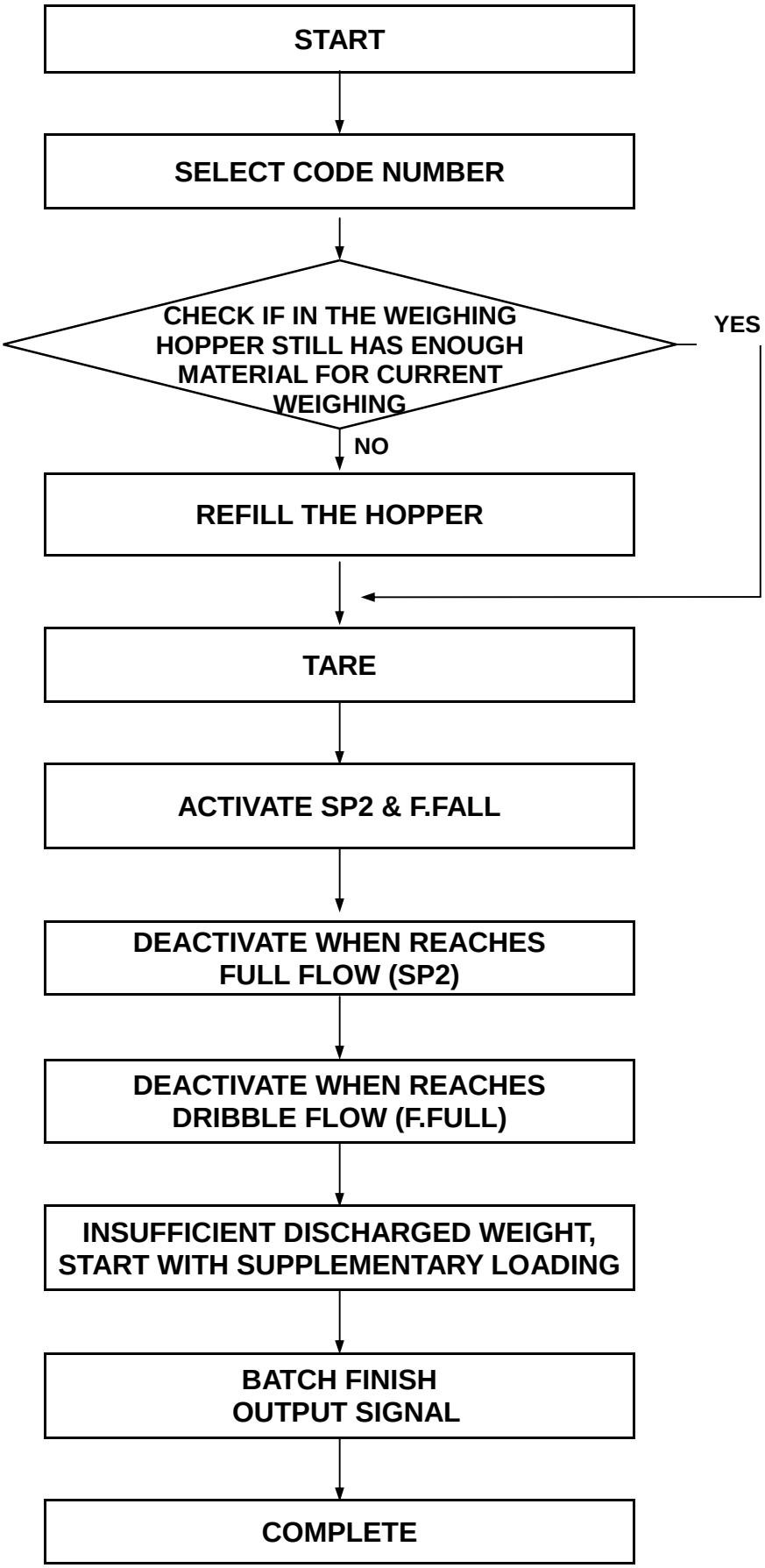
OUTPUT SIGNAL CONDITION:

SIGNAL	OUTPUT CONDITION	ON/OFF STATUS		
		RELAY OUTPUT		FRONT PANEL LED INDICATION LIGHT
		FUNC. 50 = 00000000	FUNC. 50 = 11111111	
F.FALL (dribble)	-NET ≥ Final – F.FALL	OFF	ON	OFF
SP2 (full flow)	-NET ≥ Final – SP2	OFF	ON	OFF
SP1 (supply)	Gross ≥ SP1	OFF	ON	OFF
UNDER	-NET < Final - UNDER	ON	OFF	ON
OVER	-NET > Final + OVER	ON	OFF	ON
Zero Band	Gross ≤ Zero Band	ON	OFF	ON

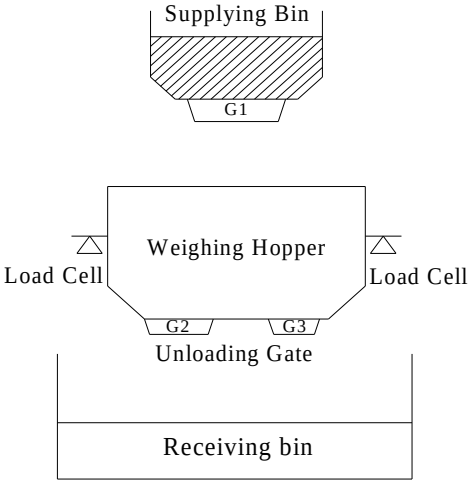
4 The full and dribble flow input ON after input the start signal.
Output OFF when the weight reaches the set value.
Output ON when any of the rest signals reaches each respective established condition.

4 Relay signal can use Func.50 to select output logic.
Each selection of output signal can be modified by using Func.51~58.

BATCH PROCEDURE CHART:



FUNCTIONAL DESCRIPTION :



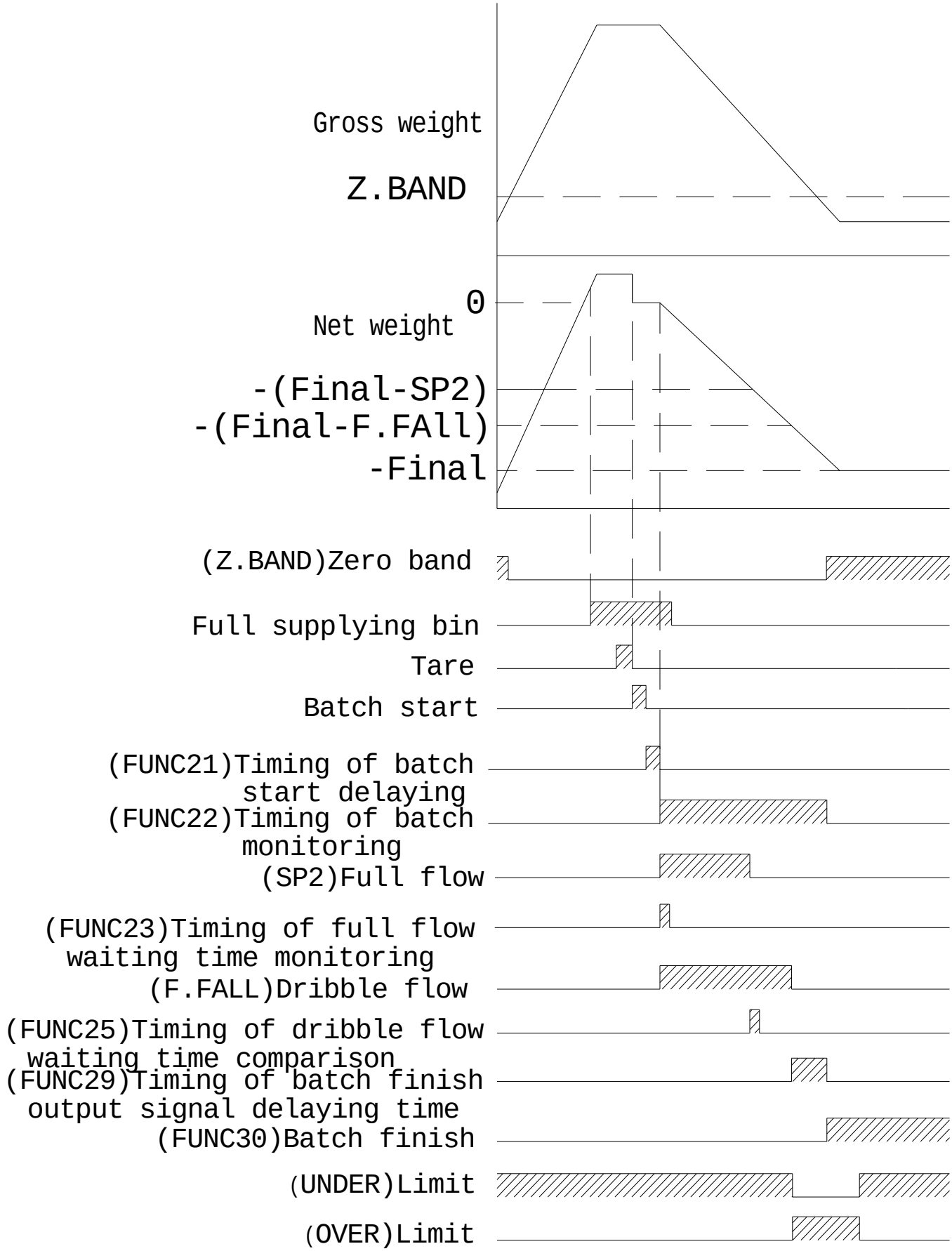
G1:Supplying bin gate (SP1)

G2:Full flow gate of weighing bin (SP2)

G3:Dribble flow gate of weighing (F.FALL)

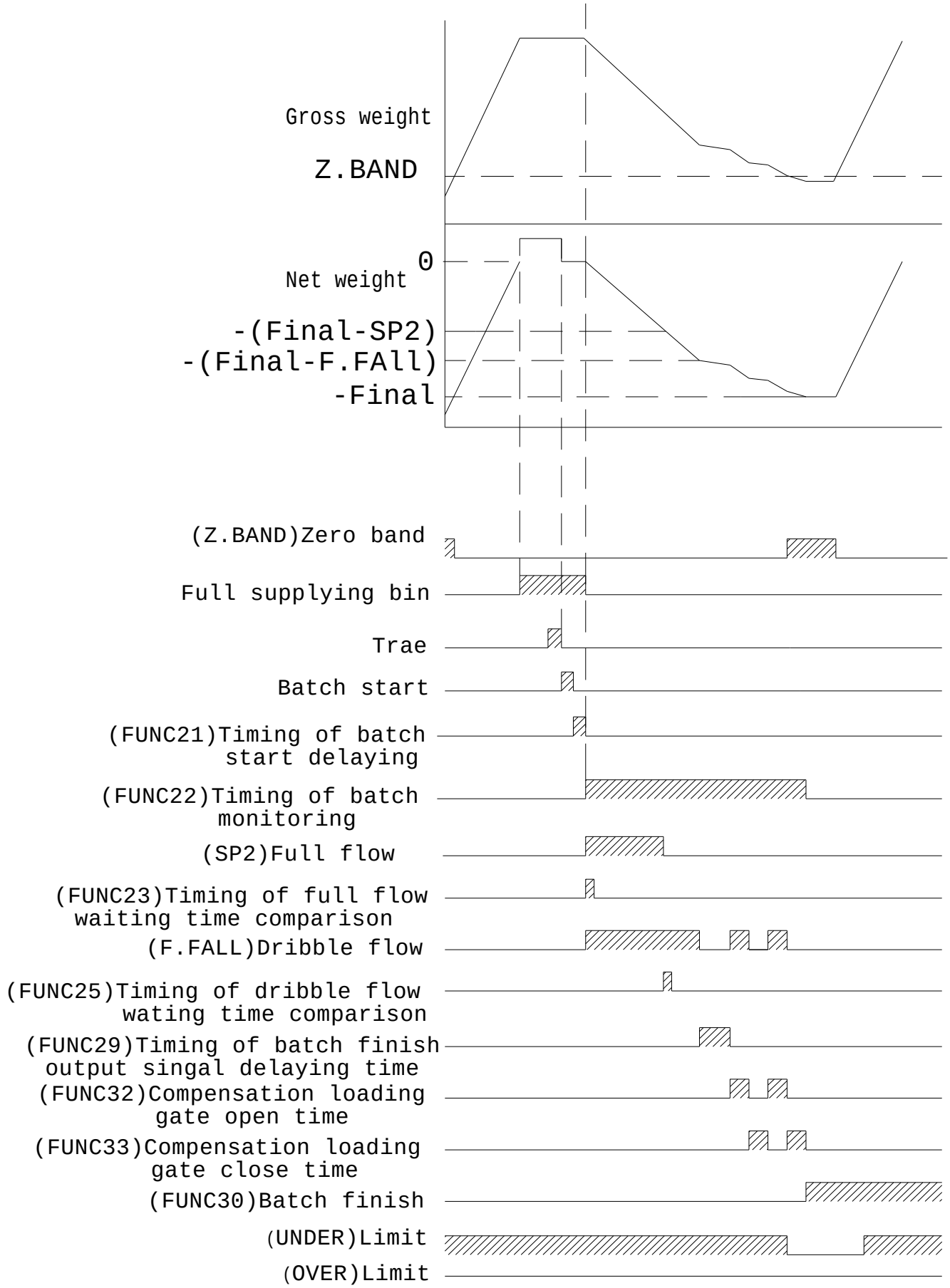
MODE 1

1. Check if in the weighting bin still has enough material for current weighing, if not enough, fill the necessary material in to weighing bin by opening gate G1.G1 closed after gross weight reaches SP1 full loading.
2. Tare and input the batch start signal and activate the timing of batch start delaying time.
3. When reaches the batch start delaying time.
   a) Activates the batch time monitoring.
   b) Full flow and dribble flow output signal is ON
   c) Activates the full flow comparison waiting time.
4. When the weight reaches (Final-SP2) set value.
   a) The full flow signal is turned off.
   b) Activates full flow comparison waiting time.
5. When the weight reaches (Final-F.FALL) set value.
   a) The dribble flow signal is turned off.
   b) Activates batch finish output signal delaying time.
6. When reaches batch finish output signal delaying time. (Func.28 = 1)
   a) Func.37 = 1 then the over/under limit justify output.
   b) Calculates the auto-free fall compensation.
   c) Deactivates the timing of the batch monitoring.
   d) Output the weighing data if setting the auto-transmission mode for interfaces RS-232, RS-422, RS-485 and BCD.


Gross weight
Z.BAND
0
Net weight
-(Final-SP2)
-(Final-F.FAll)
-Final
(Z.BAND)Zero band
Full supplying bin
Tare
Batch start
(FUNC21)Timing of batch start delaying
(FUNC22)Timing of batch monitoring
(SP2)Full flow
(FUNC23)Timing of full flow waiting time monitoring
(F.FALL)Dribble flow
(FUNC25)Timing of dribble flow waiting time comparison
(FUNC29)Timing of batch finish output signal delaying time
(FUNC30)Batch finish
(UNDER)Limit
(OVER)Limit

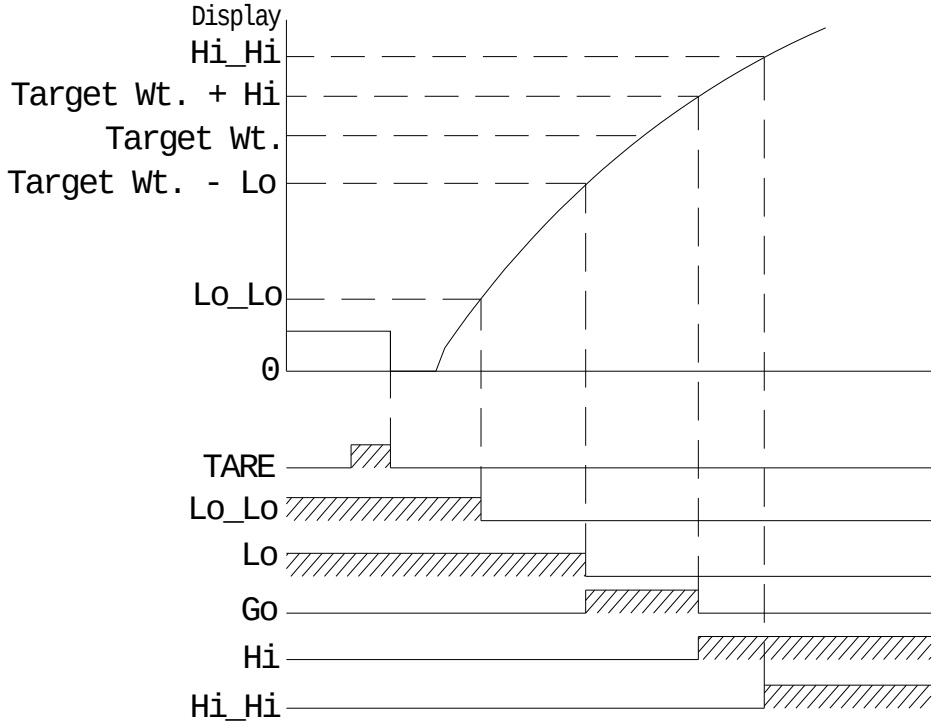
MODE 2 (SUPPLEMENTARY LOADING)

1. Check if the weighing bin still has enough material for current weighing, if not enough, fill the necessary material in to weighing bin by opening gate G1.G1 closed after gross weight reaches SP1 full loading.
2. Tare and input the batch start signal and activate the timing of batch start delaying time.
3. When reaches the batch start delaying time.
   a) Activates the batch time monitoring.
   b) Full flow and dribble flow output signal is turned on.
   c) Activates the full flow comparison waiting time.
4. When the weight reaches (Final-SP2) set value.
   a) The full flow signal is turned off.
   b) Activates dribble flow comparison waiting time.
5. When the weight reaches (Final-F.FALL) set value.
   a) The dribble flow signal is turned off.
   b) Activates the batch finish signal output delaying time.
6. When reaches the batch finish signal output delaying time. (Func.28 = 1)
   a) Calculates the auto-free fall compensation.
      Check if the net weight value is lower than under limit.
   b) The dribble flow output signal is turned on
   c) Start the timing of the open gate time of the supplementary loading.
7. When reaches the open gate time of the supplementary loading.
   a) The dribble flow (F.FALL) signal is turned off.
   b) Start the timing of the close gate time of the supplementary loading
8. When reaches the close gate time of the supplementary loading, if the net weight value is lower than under limit and times of the supplementary loading has not yet completed, then repeat step 6 b), c) and steps 7-8.
9. When reaches the close gate time of the supplementary loading, if the net weight value is greater or equal than the under limit value.
   a) the batch finish signal is turned on.
   b) Func.37 = 1 then the over/under limit signal justify output.
   c) Deactivates the timing of batch monitoring.
   d) Output the weighing data if setting the auto-transmitting mode for interfaces RS-232, RS-422, RS-485 and BCD.


Gross weight
Z.BAND
0
Net weight
-(Final-SP2)
-(Final-F.FAll)
-Final
(Z.BAND)Zero band
Full supplying bin
Trae
Batch start
(FUNC21)Timing of batch start delaying
(FUNC22)Timing of batch monitoring
(SP2)Full flow
(FUNC23)Timing of full flow waiting time comparison
(F.FALL)Dribble flow
(FUNC25)Timing of dribble flow wating time comparison
(FUNC29)Timing of batch finish output singal delaying time
(FUNC32)Compensation loading gate open time
(FUNC33)Compensation loading gate close time
(FUNC30)Batch finish
(UNDER)Limit
(OVER)Limit

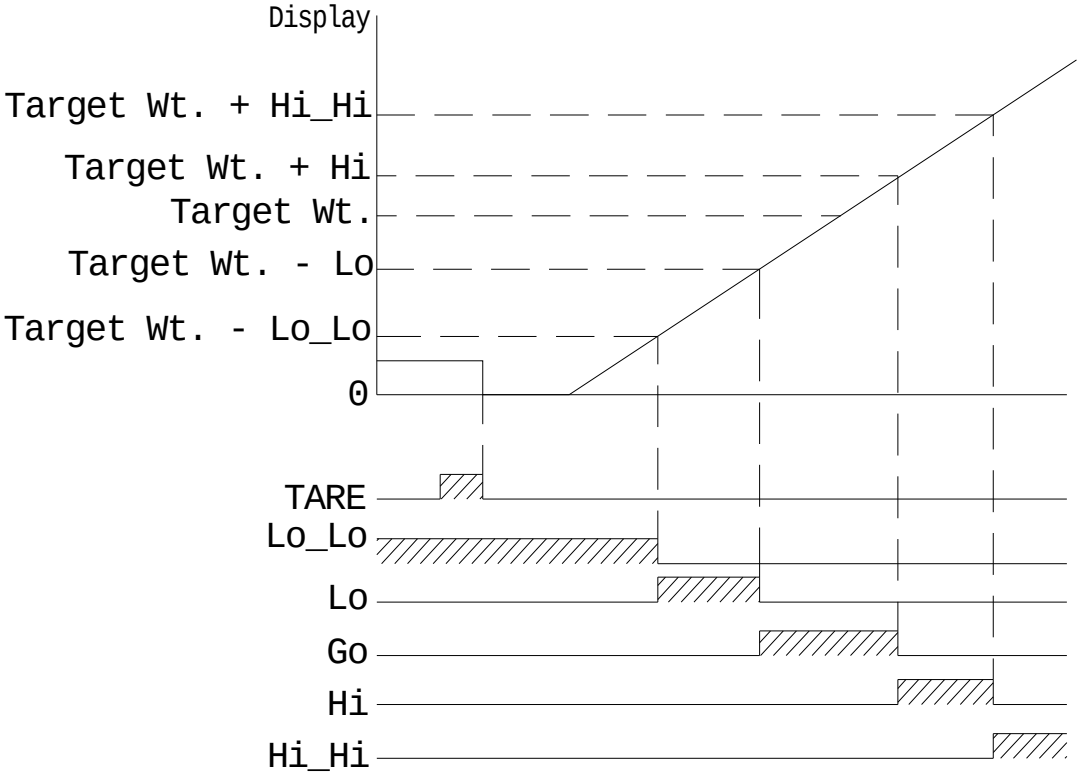
7-5 CHECK MODE OPERATION

7-5-1 CHECK MODE 1 (FUNC.20 = 4)



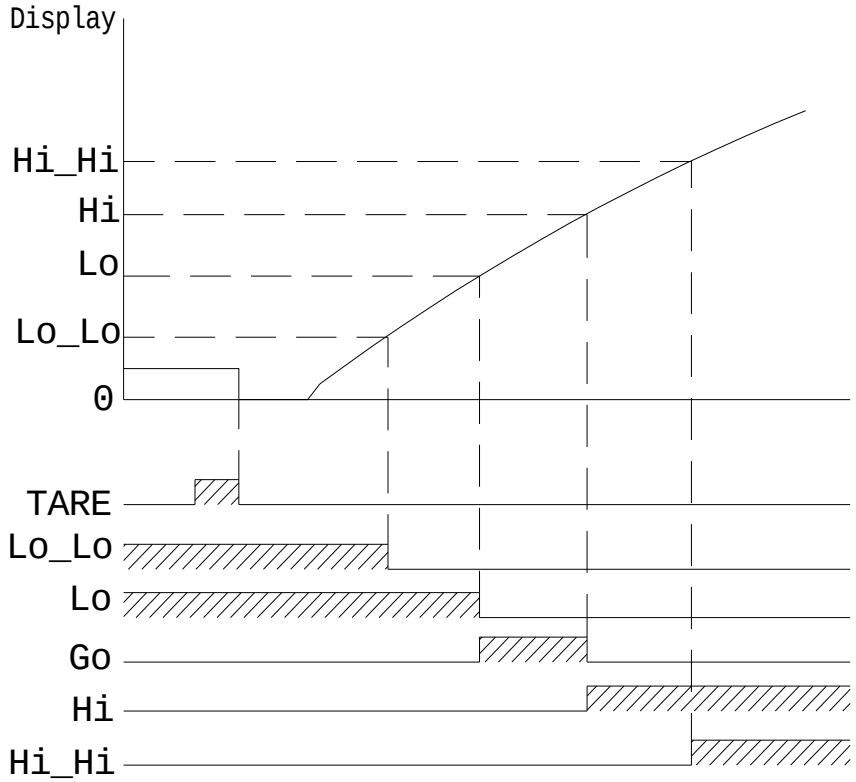
SIGNAL	OUTPUT CONDITION	ON/OFF STATUS		
		RELAY OUTPUT		FRONT PANEL LED INDICATION LIGHT
		FUNC. 50 = 00000000	FUNC. 50 = 11111111	
Lo - Lo	NET < Lo - Lo	ON	OFF	ON
Lo	NET < Target Wt. – Lo	ON	OFF	ON
Go	Target Wt. + Hi ≥ NET ≥ Target Wt. – Lo	ON	OFF	ON
Hi	NET > Target Wt. + Hi	ON	OFF	ON
Hi - Hi	NET > Hi - Hi	ON	OFF	ON
Zero Band	Gross ≤ Zero Band	ON	OFF	ON

7-5-2 CHECK MODE 2 (FUNC.20 = 5)



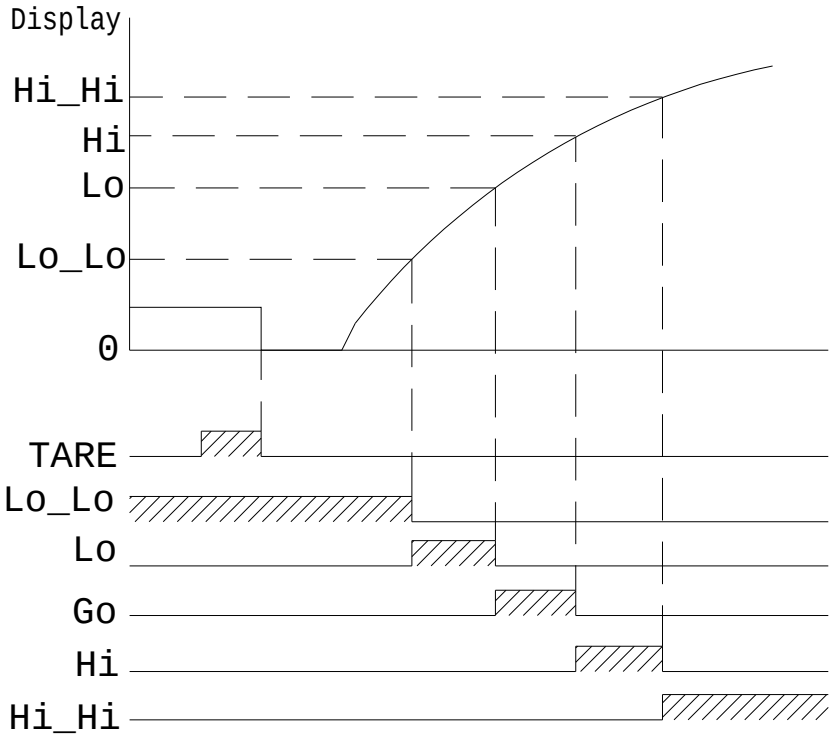
SIGNAL	OUTPUT CONDITION	ON/OFF STATUS		
		RELAY OUTPUT		FRONT PANEL LED INDICATION LIGHT
		FUNC. 50 = 00000000	FUNC. 50 = 11111111	
Lo - Lo	NET < Lo - Lo	ON	OFF	ON
Lo	Target Wt. – Lo > NET ≥ Target Wt. – Lo - Lo	ON	OFF	ON
Go	Target Wt. + Hi ≥ NET ≥ Target Wt. – Lo	ON	OFF	ON
Hi	Target Wt. + Hi - Hi ≥ NET > Target Wt. + Hi	ON	OFF	ON
Hi - Hi	NET > Hi - Hi	ON	OFF	ON
Zero Band	Gross ≤ Zero Band	ON	OFF	ON

7-5-3 CHECK MODE 3 (FUNC.20 = 6)



SIGNAL	OUTPUT CONDITION	OIN/OFF STATUS		
		RELAY OUTPUT		FRONT PANEL LED INDICATION LIGHT
		FUNC. 50 = 00000000	FUNC. 50 = 11111111	
Lo - Lo	NET < Lo - Lo	ON	OFF	ON
Lo	NET < Lo	ON	OFF	ON
Go	Hi ≥ NET ≥ Lo	ON	OFF	ON
Hi	NET > Hi	ON	OFF	ON
Hi - Hi	NET > Hi - Hi	ON	OFF	ON
Zero Band	Gross ≤ Zero Band	ON	OFF	ON

7-5-4 CHECK MODE 4 (FUNC.20 = 7)



SIGNAL	OUTPUT CONDITION	ON/OFF STATUS		
		RELAY OUTPUT		FRONT PANEL LED INDICATION LIGHT
		FUNC. 50 = 00000000	FUNC. 50 = 11111111	
Lo - Lo	NET < Lo - Lo	ON	OFF	ON
Lo	Lo > NET ≥ Lo - Lo	ON	OFF	ON
Go	Hi ≥ NET ≥ Lo	ON	OFF	ON
Hi	Hi - Hi ≥ NET > Hi	ON	OFF	ON
Hi - Hi	NET > Hi - Hi	ON	OFF	ON
Zero Band	Gross ≤ Zero Band	ON	OFF	ON

7-6 FOR YOUR INFORMATION

2 AUTO-TRANSFER

Auto-transfer is the data transfer mode of RS-232, RS-422, RS-485 and BCD interfaces.
The data transfer has different result when is under different weighing modes.

a) Normal loading batch / loss-in-weight
When the net weight value is greater than four times of the minimum division and full, medium, dribble flow set-points output signals are turned ON, then output the data once and the net weight value should returned between the range of four times of the min. division.
Repeat previous moves to output the data again.

b) Built-in loading batch / loss-in-weight procedure
The data output once when batch finish signal is turned ON.

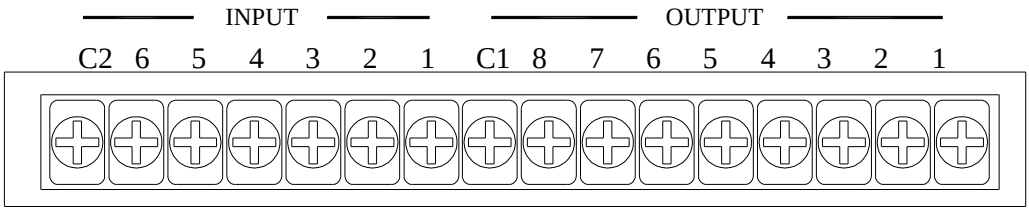
c) Check mode
When the net weight value is greater than four times of the minimum division then output the data once and the net weight value should returned between the range of four times of the min. division.

2 AUTO-FREE FALL COMPENSATION

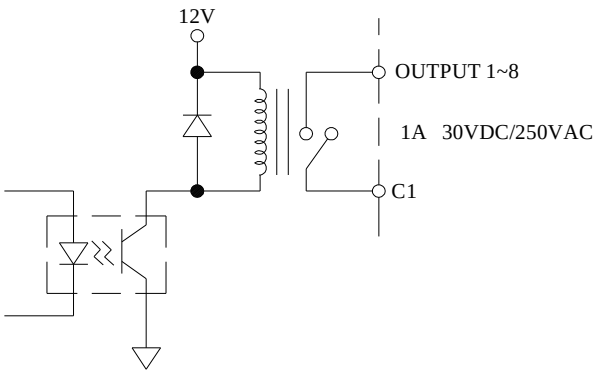
Auto-free fall compensation adjusts the next free fall value according last four times of the actual free fall average value.
If the actual free fall value is out of the compensation effective range (Func.27), the current free fall value is voided.

CHAPTER 8 INTERFACE

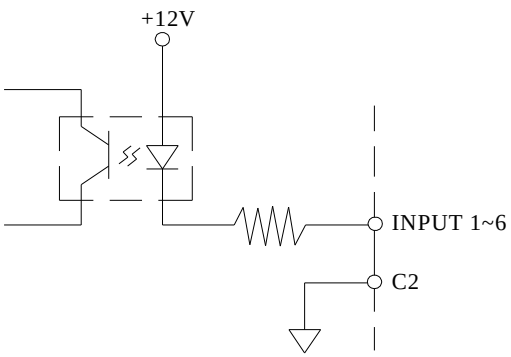
8-1 EXTERNAL INPUT AND RELAY OUTPUT



REAR PANEL OUTPUT/INPUT TERMINALS



RELAY OUTPUT CIRCUIT



OUTPUT CIRCUIT

INPUT TERMINAL FUNCTION SELECTION TABLE

PARAMETER	FUNCTION NAME	READ TYPE	DESCRIPTION
0	Not in use		
1	Zero	Fall edge	Clears the gross weight to 0 in Func.2 zero point range
2	Tare	Fall edge	Subtracts the net weight
3	Clear Tare	Fall edge	Clears the tare value
4	Batch Start	Fall edge	Executes activation procedure In built-in weighing mode
5	Batch Stop	Fall edge	Executes deactivation procedure In built-in weighing mode
6	Unload Start	Fall edge	Executes activation of unloading procedure in built-in loading batch mode.
7	Print	Fall edge	Executes manual output of serial And parallel data

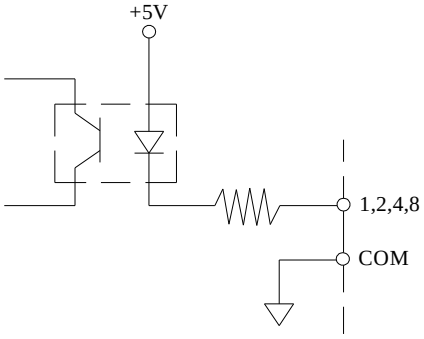
4 Can select every above mentioned function setting by input-points of Func.41~46.

OUTPUT TERMINAL FUNCTION SELECTION TABLE

PARAMETER	FUNCTION NAME	DESCRIPTION
0	Not in use	
1	Zero Band	Works as zero point reference when the gross weight is at zero band range in control procedure
2	Under	Works as under limit signal in weighing mode
	Hi - Hi	Works as Hi-Hi signal in check weighing mode
3	Over	Works as over limit signal in weighing mode.
	Hi	Works as Hi signal in check weighing mode
4	SP1	Works as full flow signal in loading batch. Works as full weighing bin signal in loss-in Weight.
	Go	Works as Go signal in check weighing mode
5	SP2	Works as medium flow signal in loading batch. Works as full flow signal in loss-in-weight.
	Lo	Works as Lo signal in check weighing mode.
6	Free Fall	Works as dribble flow signal in weighing mode.
	Lo – Lo	Works as Lo-Lo signal in check weighing mode.
7	Unloading	Execute unloading output signal
8	Batch Finish	Use for built-in weighing mode procedure.
9	Stable	Output when the weighing is stabilized
10	Running Built-in weighing procedure	Use for built-in weighing mode procedure.
11	Error Built-in unusual weighing procedure	Use for built-in weighing mode procedure.
12	Ext. in-acknowledge	If input ON signal externally then the signal is ON. If input OFF signal externally then the signal is OFF.
13	Weighing Capacity Overflow	Is turned ON when the gross weight is greater Than the maximum capacity.
14	Battery Low	Insufficient battery charge. Refer to 9-7 for maintenance

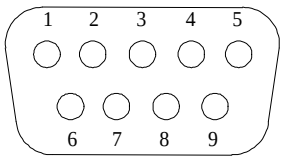
4 a) Can select every above mentioned function setting by input point of Func.41~46.
b) Use Func.50 to set output connection type (normal open/normal close)

8-2 EXTERNAL CONTROL CODE SELECTION



INPUT CIRCUIT

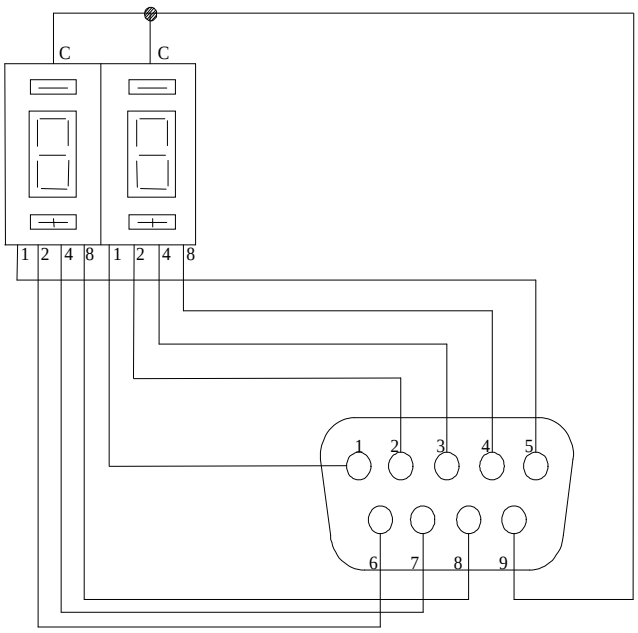
PIN POSITION



REAR PANEL CODE INPUT

PIN NUMBER	FUNCTION	
1	1	10^0
2	2	
3	4	
4	8	
5	1	10^1
6	2	
7	4	
8	8	
9	COM	

EXTERNAL CONNECTION OF NUMBER TUMBWHEEL SWITCH (EXAMPLE)



REAR PENAL CODE INPUT

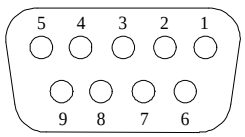
8-3 RS-232C AND CURRENT LOOP SERIAL OUTPUT/INPUT INTERFACES

Use the interface to connect related external equipment such as larger PLC display indicator, printer (serial interface) or Personal Computer (PC).

Double ways (Full duplex) data output/input RS-232C.
Single way data output Current Loop.
The internal output circuit of Current Loop and RS-232C are parallel and must provide electricity externally to use Current Loop properly.

INTERFACE	SIGNAL SPECIFICATION	OUTPUT CODE
RS-232C	EIA RS-232C	ASC I I
Current Loop	20mA Current Loop 1=20mA , 0=0mA	ASC II

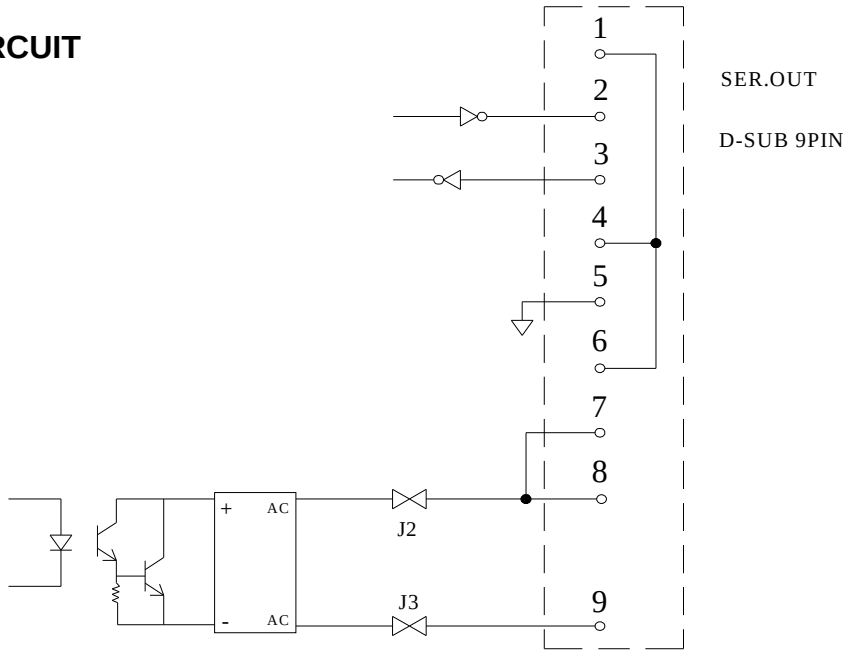
8-3-1 PIN POSITION



REAR PENAL SER.OUT

PIN NUMBER	FUNCTION	NOTE
1	NONE	Pin No. 1, 2 & 3 internal short circuit Pin No. 7 & 8 internal short circuit
2	TXD	
3	RXD	
4	NONE	
5	SG	
6	NONE	
7	NONE	
8	C-Loop	
9	C-Loop	

INTERNAL CIRCUIT



8-3-2 FUNCTION SETTING

ITEM	FUNCTION	SET VALUE			FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION		
FUNC.60	Data type	0	As displayed		0
		1	Gross		
		2	Net		
		3	Tare		
		4	G / N / T		
FUNC.61	Transfer mode	0	Stream		0
		1	Auto-transfer		
		2	Manual-transfer		
		3	Command mode		
		4	Speed mode Comparison condition + Gross weight		
		5	Speed mode Comparison condition + Net weight		
FUNC.62	Transfer speed	0	1200		1
		1	2400		
		2	4800		
		3	9600		
		4	19200		
		5	38400		
FUNC.63	Parity bit Bit length Stop bit	0	N、8、1	None parity bit、8 data bit、1 stop bit.	2
		1	O、7、1	Odd parity bit、7 data bit、1 stop bit.	
		2	E、7、1	Even parity bit、7 data bit、1 stop bit.	
FUNC.64	Finish character	0	CR		1
		1	CR + LF		
FUNC.65	Unstable or Over max. capacity	0	Output continue		0
		1	Output stop		
FUNC.66	Code number	0	No output		0
		1	Output		

8-3-3 TRANSMITTING FORMAT

2 NOT INCLUDED CODE NUMBER FORMAT

Cond.1		,	Cond. 2		,	Included + / - and decimal's weighing data								Unit		Finish code	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

2 INCLUDED CODE NUMBER FORMAT

Word ID.		,	Code No.		,	Cond. 1		,	Cond. 2		,	Included + / - and decimal's weighing data								Unit		Finish code	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

2 SPEED MODE FORMAT

Compare Cond.	Included + / - and decimal's gross/net weighing data								Finish code	
1	2	3	4	5	6	7	8	9	10	11

2 DESCRIPTION

	OUTPUT	ASC II	DESCRIPTION
Character ID.	CD	43H、44H	Fixed character
Condition 1	OL	4FH、4CH	Overload weighing
	ST	53H、54H	Stable weight
	US	55H、53H	Unstable weight
Condition 2	GS	47H、53H	Gross weight
	NT	45H、54H	Net weight
	TR	54H、52H	Tare
Weighing data	0 ~ 9	30H ~ 39H	Weight number
	+ , -	2BH、2DH	Positive/Negative
	Blank	20H	Overload weighing
	.	2EH	Decimal
Unit	Blank	20H、20H	No unit
	Kg	6BH、67H	Kilogram
	Blank ,t	20H、74H	Ton
	lb	6CH、62H	Pound
Finish code	CR	0DH	Data finish code
	CR , LF	0DH、0AH	
Partition code	,	2CH	

Comparison Condition	b7	b6	b5	b4	b3	b2	b1	b0

b0 Þ Zero Band Zero band
b1 ⇒ Over / Hi-Hi Over limit
b2 ⇒ Under / Hi Under limit
b3 ⇒ SP1 / Go Full flow
b4 ⇒ SP2 / Lo Medium flow
b5 ⇒ Free Fall / Lo-Lo Dribble flow
b6 ⇒ Unloading Unload
b7 ⇒ Batch Finish Batch finish

8-3-4 COMMAND MODE

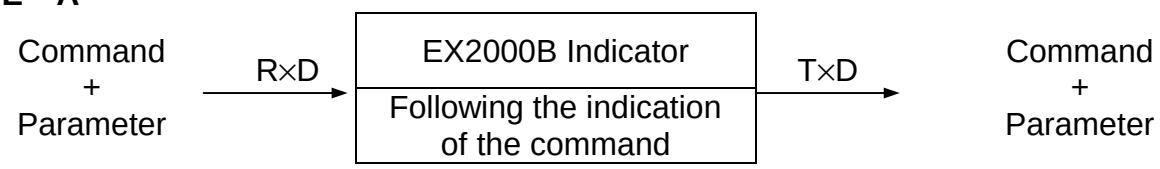
The indicator accepted external command when transfer mode was set at command mode. See below for command states description.

COMMAND	TYPE	FUNCTION
MG	A	Display gross weight
MN	A	Display net weight
MT	A	Subtract gross weight
CT	A	Clear tare
MZ	A	Clear to zero
RW	B	Read weighing
RB	B	Read current weighing's net weight value and the comparison status, same format as Func.61 (5) speed mode
RF	B	Read one previous final batch weight value, Same output format of Func.60
RSXX	B	Read the set value of XX code and see command description (4) for reference for it format
BB	A	Batch start
BD	A	Unloading start
HB	A	Batch stop
SCXX	A	Select memory code number
SSXX	A	Set the set value of XX code and see command description (5) for reference for it format

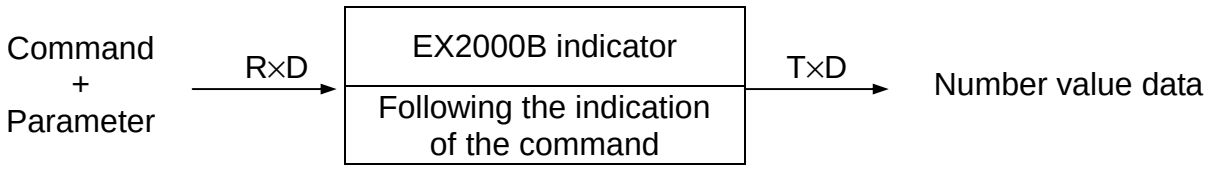
COMMAND DESCRIPTION :

(1) COMMAND TYPE

TYPE " A "



TYPE " B "



NOTE: Depend the type of command to add or not to add parameter after commanding.

(2) Commands “ RF ”、“ BB ”、“ HB ” only applicable in built-in weighing procedure mode (Func.20 = 2、3)
Command “BD” only applicable in built in built-in loading batch procedure mode (Func.20 = 2)

(3) Command “ RSXX ”、“ SCXX ”、“ SSXX ”, the XX should have a set parameter in numbers in tens (2 digits). The range are 00、01、02…99.

(4) Command “ RSXX ” applicable data form :

Func.20 = 0 ~ 3

	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes
CDXX :	Final	F.Fall	SP2	SP1	Under	Over	Z.Band

Func.20 = 4 ~ 7

	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes
CDXX :	Lo-Lo	Lo	Target	Hi	Hi-Hi	Z.Band

(5) Command “ SSXX ” form :

Func.20 = 0 ~ 3

	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes
SSXX :	Final	F.Fall	SP2	SP1	Under	Over	Z.Band

Func.20 = 4 ~ 7

	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes	6 bytes
SSXX :	Lo-Lo	Lo	Target	Hi	Hi-Hi	Z.Band

(6) Incorrect types (Error)

E1 : Incorrect command format.
E2 : The parameter added is out of the range.
E3 : Unmatched executive condition.

8-3-5 PROGRAM (EXAMPLE)

2 SETTING EX2000B

FUNC. No.	SET VALUE	FUNCTION
Func.60	0	Data type and main display work simultaneously
Func.61	0	Continuous transfer
Func.62	1	Transfer speed 2400 baud rate
Func.63	2	Data length 7 bit , Even parity bit , 1 stop bit.
Func.64	0	Character finish CR

2 PROGRAM

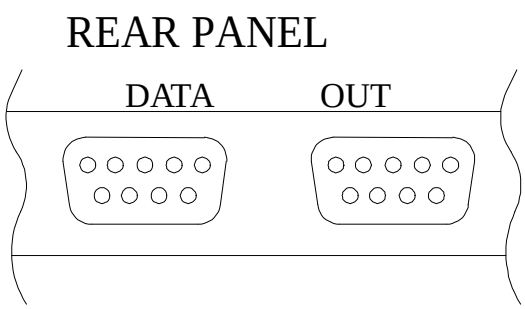
```
10  OPEN  “COM1 : 2400 , E , 7 , 1 , CD0 , CS0 , DS0 , OP0” FOR  RANDOM  AS #1
20  LINE  INPUT  #1 ,  DATA$
30  PRINT  DATA$
40  GOTO  20
50  CLOSE  #1
60  END
```

8-4 INTERFACE RS-422 / RS-485

Use these interfaces to connect related external equipment such as PLC or Personal Computer (PC).

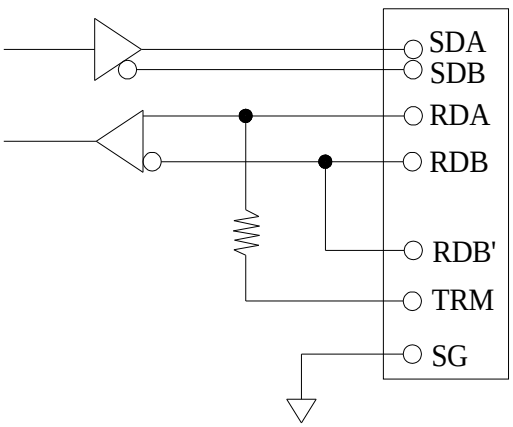
The indicator can connect serially/parallel up to 10 equipment by using these interfaces.
When the output signal specification follows the EIA RS-422 or RS-485, the output code is ASC II

8-4-1 IN POSITION



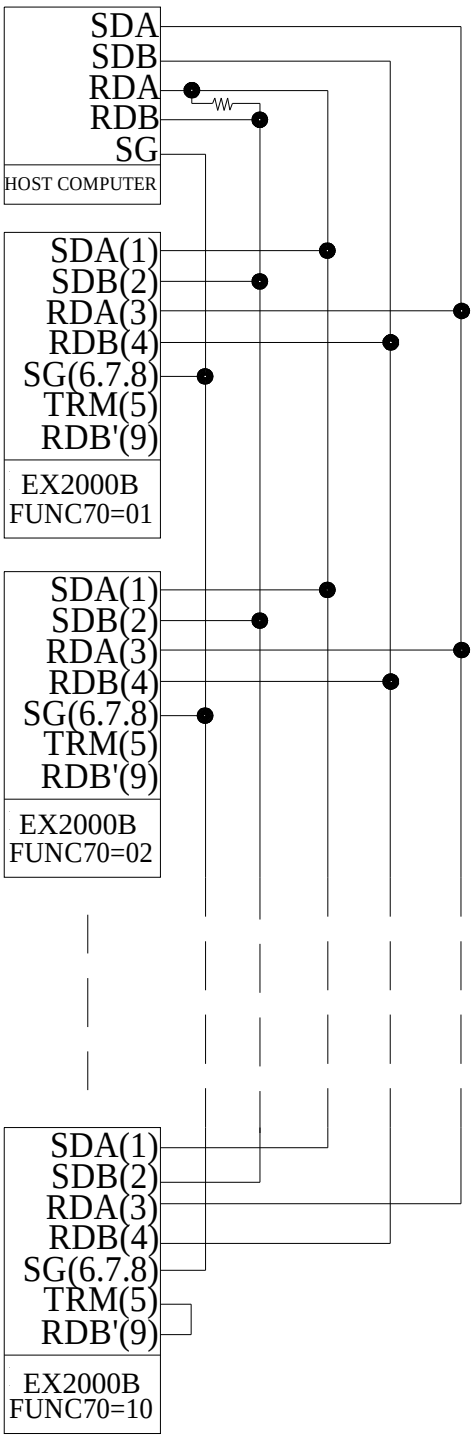
PIN NUMBER	FUNCTION
1	SDA
2	SDB
3	RDA
4	RDB
5	TRM
6	SG
7	
8	
9	RDB’

INTERNAL CIRCUIT

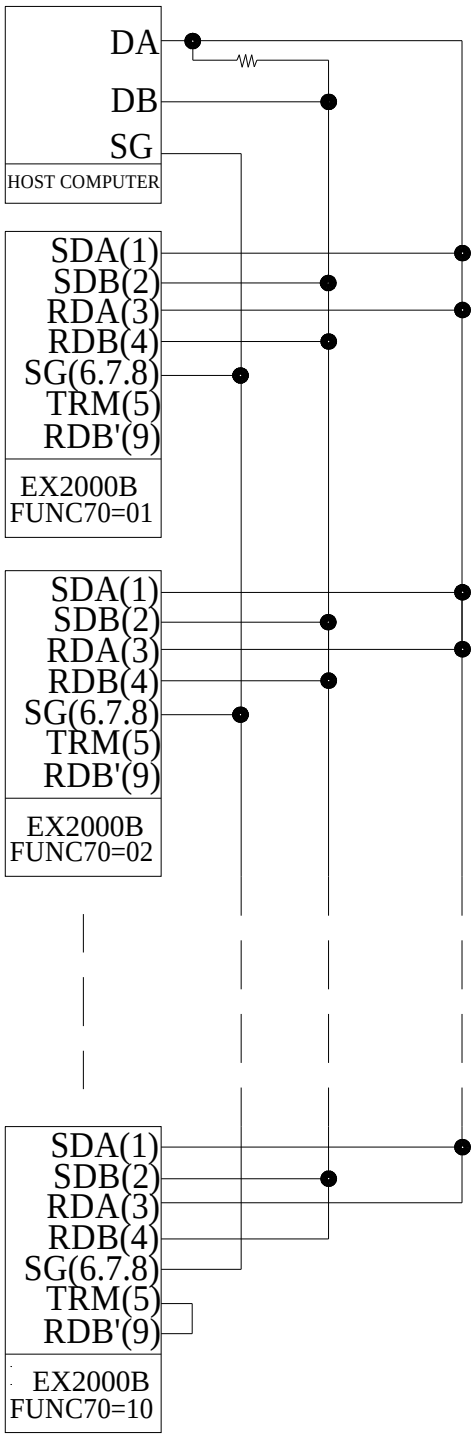


8-4-2 CONNECTION METHOD

RS-422



RS-485



2 **FOR YOUR INFORMATION**

- Do not require external resister since in the indicator interface has a built-in terminator.
- When the last equipment is connected with EX2000B, the fifth pin (TRM) and the ninth pin (RDB') must be connected.
- Does not need to be connected the signal ground (SG) if the indicator's computer does not has it.

8-4-3 FUCTION SETTING

ITEM	FUNCTION	SET VALUE			FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION		
FUNC.70	Location	0	Not in use		0
		01 ~ 99	Location setting		
FUNC.71	Data type	0	As displayed		0
		1	Gross		
		2	Net		
		3	Tare		
		4	G / N / T		
FUNC.72	Transfer mode	0	Stream		3
		1	Auto-transfer		
		2	Manual-transfer		
		3	Command mode		
		4	Speed mode Comparison condition + gross wt.		
		5	Speed mode Comparison condition + net weight		
FUNC.73	Transfer speed	0	1200		1
		1	2400		
		2	4800		
		3	9600		
		4	19200		
FUNC.74	Parity bit Bit length Stop bit	0	N、8、1	None parity bit、8 data bits 、1 stop bit.	2
		1	O、7、1	Odd parity bit、7 data bits 、1 stop bit.	
		2	E、7、1	Even parity bit、7 data bits 、1 stop bit.	
FUNC.75	Character finish	0	CR		1
		1	CR + LF		
FUNC.76	Unstable or over max. capacity	0	Output continue		0
		1	Output stop		
FUNC.77	Code number	0	No output		0
		1	output		

8-4-4 TRANSFER FORMAT

- Func.70 = 0
  When not using location, see 8-3-3 RS-232C for reference for transfer form.

- Func.70 = 1 ~ 99
  Indicates that already gave location for the indicator,
  Every output will be attached on the head of the form “ @location ”

  Example :
  Func.70 = 1, output form is ***@01 + Output data***

8-4-5 COMMAND MODE

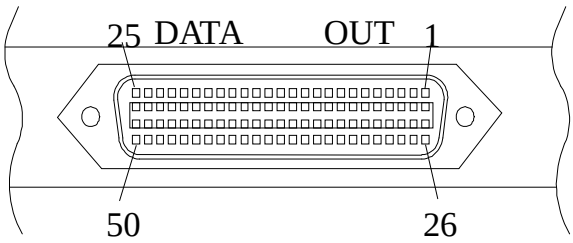
- Func.70 = 1 ~ 99,
  Indicate when the indicator received the command, will check the location first, if correct, then will start the execution of following commands,
  see 8-3-4 RS-232C for reference for command type.
  If the computer need to read location No. 2 indicator’s current weight, can send the command *@02RW<CR><LF>*

- Func.70 = 0
  Indicates when the indicator received the command, start the execution of the command right the way.

8-5 BCD SERIAL OUTPUT INTERFACE

8-5-1 PIN POSITION

REAR PENAL

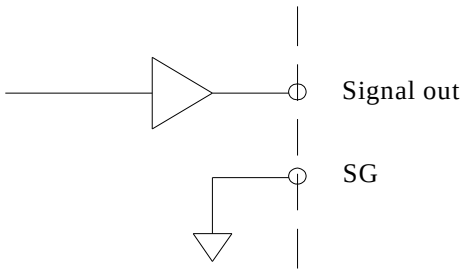


BCD Serial output interface
Use Centronic 50PIN connector

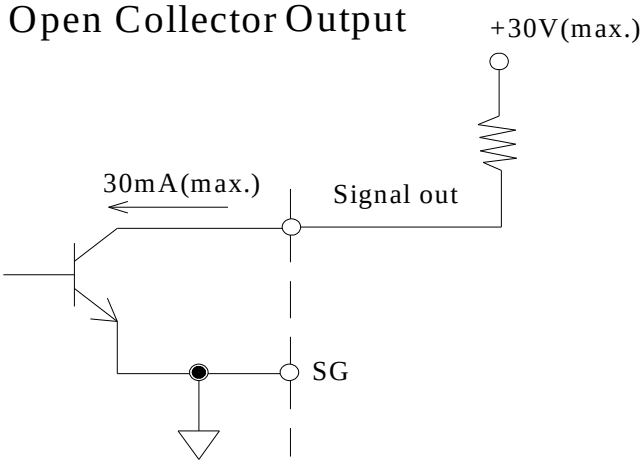
PIN NUMBER	FUNCTION	PIN NUMBER	FUNCTION
1	SG	26	SG
2	1×10	27	Gross/-NET
3	2×10	28	
4	4×10	29	
5	8×10	30	
6	1×10^{1}	31	
7	2×10^{1}	32	
8	4×10^{1}	33	Stable
9	8×10^{1}	34	
10	1×10^{2}	35	
11	2×10^{2}	36	
12	4×10^{2}	37	
13	8×10^{2}	38	
14	1×10^{3}	39	
15	2×10^{3}	40	
16	4×10^{3}	41	
17	8×10^{3}	42	POSITIVE
18	1×10	43	$DP10^{1}$
19	2×10	44	$DP10^{2}$
20	4×10	45	$DP10^{3}$
21	8×10	46	$DP10^{4}$
22	1×10	47	OVER
23	2×10	48	
24	4×10	49	Data ready
25	8×10	50	Hold input

INTERNAL CIRCUIT

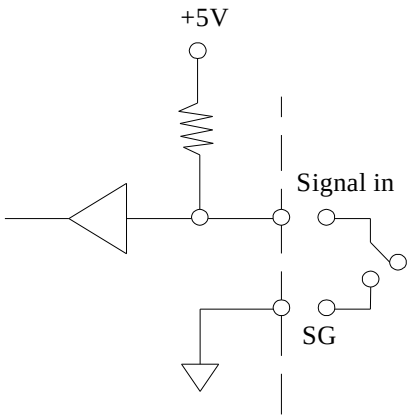
TTL Output



Open Collector Output



Hold Input



8-5-2 FUNCTION SETTING

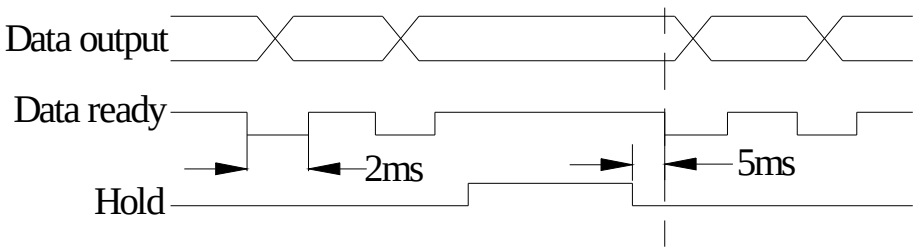
ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.80	Data type	0	As displayed	0
		1	Gross	
		2	Net	
FUNC.81	Transfer mode	0	Stream	0
		1	Auto-transfer	
		2	Manual-transfer	
FUNC.82	Output logic	0	Positive logic	0
		1	Negative logic	
FUNC.83	Data ready Signal logic	0	Positive logic	0
		1	Negative logic	

8-5-3 OUTPUT/INPUT SIGNAL DESCRIPTION

2 Total of 33 signal output point, use Func.82 and Func.83 to select each output logic.

2 If select Open Collector for signal output, must connect a external serial resistor.
The voltage must not exceed DC30V and the electric current must be less than 30mA.

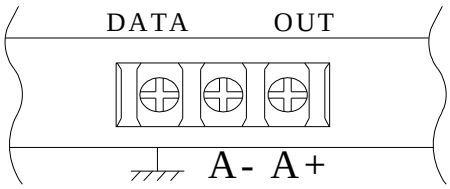
2 Hold Input when has only one signal input point, if Hold Input has to work, just connect Hold Input and SG signal together. When Hold is working, all BCD output will be held and can not be alternate.



8-6 ANALOG ELECTRIC CURRENT/VOLTAGE OUTPUT INTERFACE

This interface converts the indicator weight in to electric current or voltage in order to be able to output and following simple function setting, can adjust output value very flexibly.

8-6-1 PIN POSITION



INTERFACE SPECIFICATION

Electric current output : 0 ~ 20mA
Load resister : 0 ~ 550Ω
Resolution : 12 bit

8-6-2 FUNCTION SETTING

ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.85	Data type	0	As displayed	0
		1	Gross	
		2	Net	
FUNC.86	Lower point Weight value	000000 ↓ 999999	When the weight value reaches set position, the electric current output is the value set in Func.87	0
FUNC.87	Lower point Electric Current value	0.0 mA ↓ 20.0 mA		4.0 mA
FUNC.88	Higher point Weight value	000000 ↓ 999999	When the weight value reaches set position, the electric current output is the value set in Func.89	16000
FUNC.89	Higher point Electric Current value	0.0 mA ↓ 20.0 mA		20.0 mA

8-6-3 OUTPUT SETTING DESCRIPTION

EXAMPLE 1

When 0 kg output 0 mA , 100 kg output 20 mA

Func.86 = 0 Func.87 = 0.0
Func.88 = 100 Func.89 = 20.0

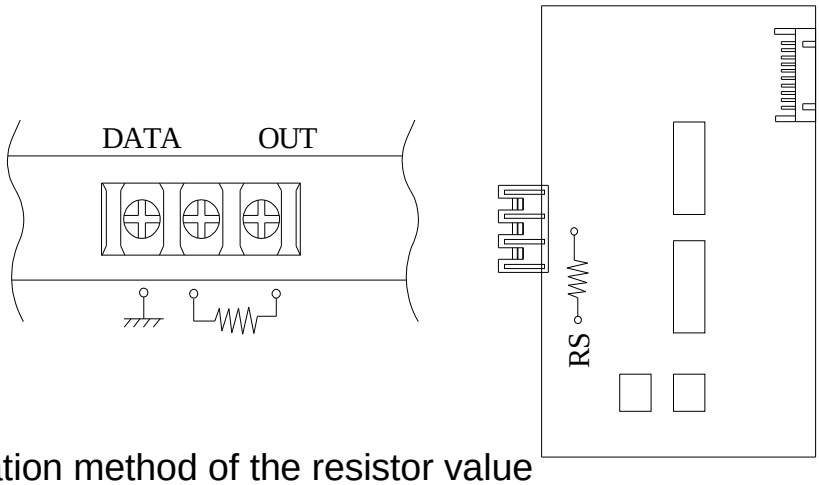
EXAMPLE 2

When 2 kg output 18 mA , 900 kg output 4 mA

FUNC. 86 = 2 FUNC. 87 = 18.0
FUNC. 88 = 900 FUNC. 89 = 4.0

8-6-4 VOLTAGE OUTPUT

2 If have to use voltage output, use a proper resistor value and connect between A+ A- of a external terminal or connect to a reserved place (RS sign) on the interface.



2 Calculation method of the resistor value

$$\text{Resistor value} = \frac{\text{Voltage output (max. value)}}{\text{Current output (max. value)}}$$

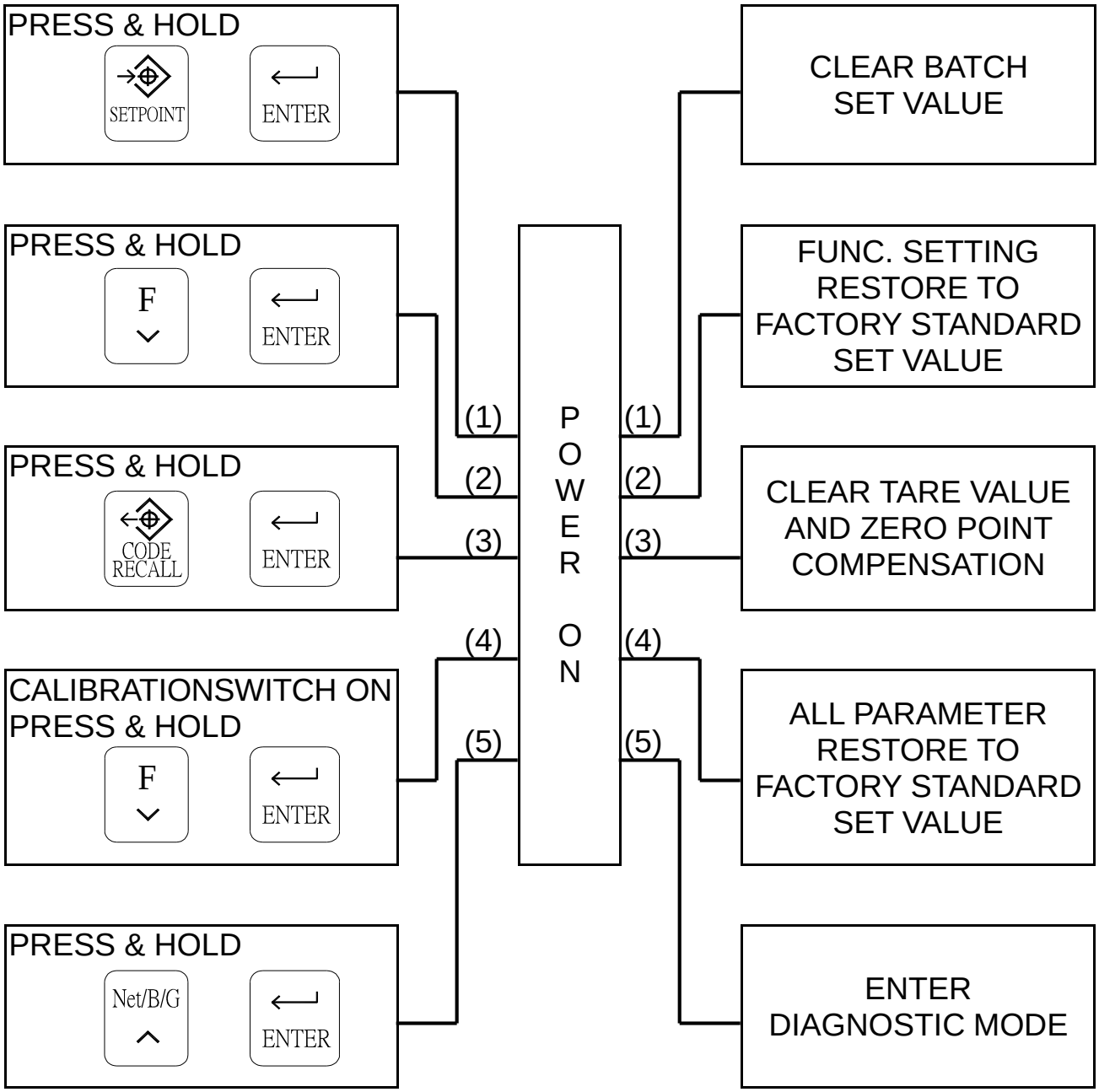
Example: If need to convert in to 0 ~10V output resistor value from 0 ~ 20mA of the electric current output

$$\text{Resistor value} = \frac{10\ \text{V}}{0.02\ \text{A}} = 500\ \Omega$$

2 the resistor value must be under 550Ω and strongly suggest to use a high resistance low temperature coefficient resistor with power over 0.2 w .

CHAPTER 9 MAINTENANCE

9-1DATA REPEAT FUNCIONAL CHART



9-2 CLEAR BATCH SET VALUE

(1) Press and hold the SETPOINT ENTER keys at the same time.

(2) Turn on the power.

(3) Displays Init.SEt Point blinking figures.

(4) Clearing
(4-1) If confirm, press and hold ENTER key until the indicator re-set.
(4-2) If not executing, press the I/⏻ ESC key to quit or just shut off the indicator directly.

9-3 FUNCTION SETTING RESTORE BACK TO FACTORY STANDARD SET VALUE

(1) Press and hold the F ENTER keys at the same time.

(2) Turn on the power.

(3) Displays Init.Func blinking figures.

(4) Setting
(4-1) If confirm, press and hold ENTER key until the indicator re-set.
(4-2) If not executing, press the I/⏻ ESC key to quit or just shut off the indicator directly.

9-4 CLEAR TARE VALUE AND ZERO COMPENSATION VALUE

(1) Press and hold the CODE RECALL ENTER keys at the same time.

(2) Turn on the power.

(3) Displays CLr tP blinking figures.

(4) Clearing
(4-1) If confirm, press and hold ENTER key until the indicator re-set.
(4-2) If not executing, press the I/⏻ ESC key to quit or just shut off the indicator directly.

9-5 ALL PARAMETERS RESTORE TO FACTORY STANDARD SET VALUE

(1) Switch on the calibration switch and press and hold keys at the same time.

(2) Turn on the power.

(3) Displays In it.ALL blinking figures.

(4) Setting

(4-1) If confirm, press and hold ENTER key until displays End figures, then switch off the calibration switch.

(4-2) If not executing, switch off the calibration switch.

9-6 DIAGNOSTIC MODE

(1) Press and hold the Net/B/G ^ ENTER keys at the same time.

(2) Turn on the power.

(3) When displays 1.diSP figures, indicates already enter in the diagnostic mode.

(4) Use the Net/B/G ^ and F v keys to select diagnostic item, press the ENTER key to enter in to selected item for diagnostic and press the I/⏻ ESC key to quit from the selected item.

ITEM	FIGURES	DIAGNOSTIC ITEM
1	dSP	7 segments display and LED indication light
2	KEY	Keys and calibration switch
3	232	RS-232 serial output/input
4	E IO	Control I/O interface
5	bCd	BCD parallel output interface
6	AnL	Analog output interface
7	bAt	battery
8	SP	Memory code selection interface

9-6-1 DIAGNOSTIC FOR 7 SEGMENTS DISPLAY AND LED INDICATION LIGHT

7 segments displayer displays 0 ~ 9 , "." and the LED lights will display alternately.

9-6-2 DIAGNOSTIC FOR PANEL KEYS AND THE CALIBRATION SWITCH

Switch the calibration switch "ON" or press any keys and the compare display bit will moves 0 → 1

9-6-3 DIAGNOSTIC FOR RS-232 SERIAL OUTPUT/INPUT

(1) Will betray SER. OUT. D-SUB 9pin connector, the No. 2 pin and the No. 3 pin are short circuit. When PASS figures appear, it indicates normal and when appear FAIL figures indicates malfunction.

(2) If connected to a computer (the telecommunication must be unanimously agreed) and displays 0 ~ 9 , indicates RS-232 output normally.

9-6-4 DIAGNOSTIC FOR CONTROL I/O INTERFACE

(1) Use I/O interface to input terminal input signal, on the 7 segments displayer indicates status of ON/OFF.

(2) Use Net/B/G ^ F v keys to turn on or off of each relay output condition.

9-6-5 DIAGNOSTIC FOR BCD PARALLEL OUTPUT INTERFACE

(1) In diagnostic process when displays " blinking decimal point ".

(2) The program will sequentially output each of BCD output bit and send OFF → ON → OFF signal.

(3) If displays no — IF figures, indicates this interface has not been installed.

9-6-6 DIAGNOSTIC FOR ANALOG OUTPUT INTERFACE

(1) Use Net/B/G ^ F v to select output electric current.

(a) AnL 4 : 4mA

(b) AnL 12 : 12mA

(c) AnL20 : 20mA

(2) If displays no – IF figures, indicates this interface has not been installed.

9-6-7 LOW BATTERY

If displays PASS indicates normal and if displays Lo indicates that memory backup battery has run out.

9-6-8 DIAGNOSTIC FOR CODE NUMBER SELECTION INTERFECE

The program displays the signals received by the interface.

9-7 BATTERY LOW

(1) When detect the battery low, contact your local dealer for replacement

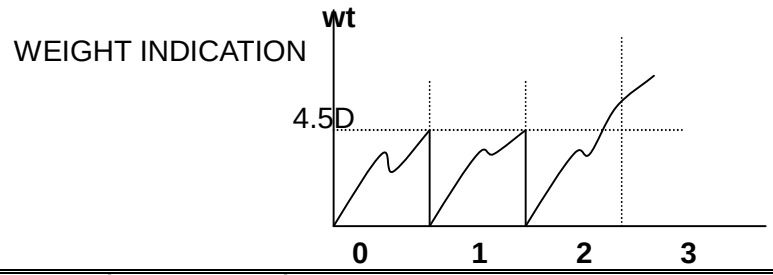
(2) Battery specification 3V , CR2032

CHAPTER 10 FUNCTION TABLES

10-1 BASIC FUNCTIONS

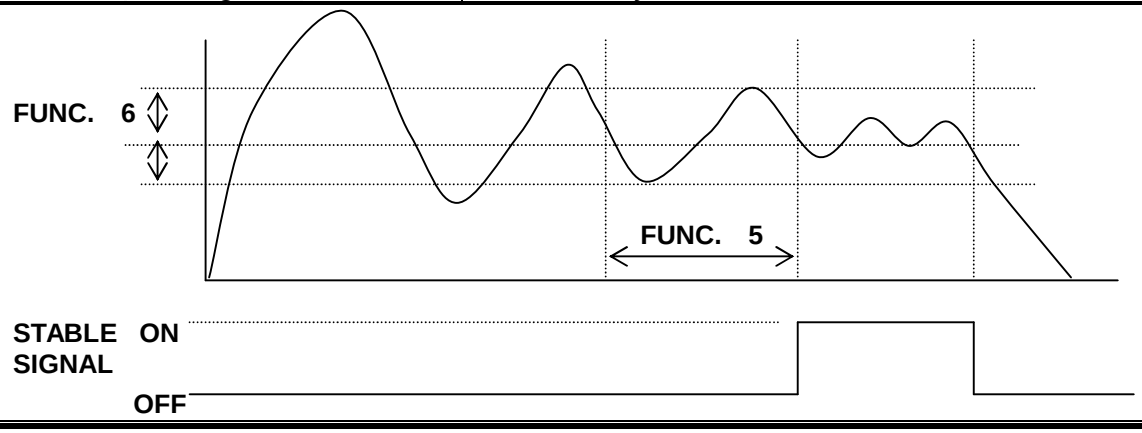
ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC. 0	Weight unit	0	None	1
		1	kg	
		2	t	
		3	lb	
FUNC. 1	Decimal	0	None	0
		1	0.0	
		2	0.00	
		3	0.000	
		4	0.0000	
FUNC. 2	Zero range	0 ~ 30 (±%)	Zero range = Zero calibration ± (Max. capacity × set value %)	2
FUNC. 3	Zero tracking	0.0 ~ 5.0 (sec)	Zero tracking time must be used with zero range at the same time. When set 0.0, the zero tracking function is off.	1.0
FUNC. 4	Zero tracking width	0 ~ 9	Tracking width=(set value×½)D,D=Min.division. The zero tracking range must be used with zero tracking time at the same time. When set 0,The zero tracking function is off.	2

EXAMPLE : FUNC. 3 = 1.0 FUNC. 4 = 9



In zero range (Func. 2), when zero point is at set up time (Func. 3), the set up range is out of range (Func. 4), the indicator will adjust this minor out range back to zero point.

FUNC. 5	Stability detection	0.0 ~ 5.0 (sec)	The stability scanning time must be used with the stability detection range at the same time. When set 0.0,the stability detection is off.	1.0
FUNC. 6	Stability detection range	0 ~ 9	The stability detection range must be used with the stability detection time at the same time. When set 0,the stability detection is off.	2



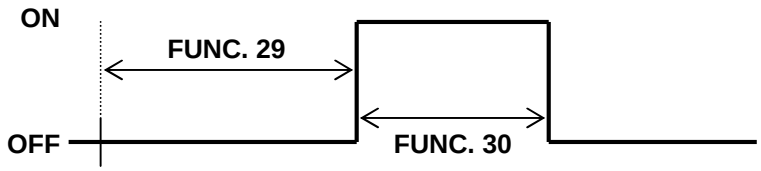
ITEM	FUNCTION	SET VALUE				FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION			
FUNC. 7	Tare and Zero when the weight is unstable	0	OFF			1
		1	ON			
FUNC. 8	Tare at negative gross	0	OFF			1
		1	ON			
FUNC. 9	Digital filter	0 ~ 49	Two sections of digital filter: 10' : 0 ~ 4 10º : 0 ~ 9 Greater the value means greater the filtering. When set 0, the digital filter function is off .			25
FUNC.10	Keys functions	00000000 ↓ 11111111	0	OFF	The bits and front panel keys position are related from each other	00000000
			1	ON		
FUNC.11	Display rewrite rate	0	20 Times/sec.			0
		1	10 Times/sec.			
		2	5 Times/sec.			
FUNC.12	Contents of Sub-display section	0	None			0
		1	Cross			
		2	Net			
		3	Tare			
		4	Batch codes and Final value			
FUNC.13	“F” key function	0	None			0
		1	Manually output the parallel and serial information.			
		2	Clear Tare			
		3	Batch start			
		4	Batch stop			

10-2 WEIGHING FUNCTIONS

ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.20	Weighing mode	0	Normal batch	0
		1	Loss-in-weight	
		2	Normal batch (Built-in program)	
		3	Loss-in-weight (Built-in program)	
		4	Check weighing 1	
		5	Check weighing 2	
		6	Check weighing 3	
		7	Check weighing 4	
FUNC.21	Batch start delay time	0.0 ~ 25.5 (sec)	The built-in auto-program starts the batch comparison procedure after input the batch start signal.	0.0
FUNC.22	Batch time monitoring	0 ~ 255 (sec)	The batch time monitoring starts after weighing start. The output signal shut off when the time is reached.	0
FUNC.23	SP1 Waiting time comparison	0.0 ~ 25.5 (sec)	No full flow comparison during this function's set time period If the set value is 0, indicates this function is not in use.	0.0
FUNC.24	SP2 Waiting time comparison	0.0 ~ 25.5 (sec)	No medium flow comparison during this function's set time period. If the set value is 0, indicates this function is not in use.	0.0
FUNC.25	F.FALL Waiting time comparison	0.0 ~ 25.5 (sec)	No dribble flow comparison during this function's set time period. If the set value is 0, indicates this function is not in use.	0.0
FUNC.26	Auto-free fall compensation	0	Off	0
		1	On	
FUNC.27	Auto-free fall compensation effective range	0 ~999999	After start the auto-free fall compensation function in effective range, the program will automatically corrected the next free fall set value.	0
FUNC.28	Batch finish signal	0	Not wait until the weight is stabilized	1
		1	Wait until the weight is stabilized.	
FUNC.29	Batch finish output signal delay time	0.0 ~ 25.5 (sec)	Output the batch finish signal after reached delay time.	0.5

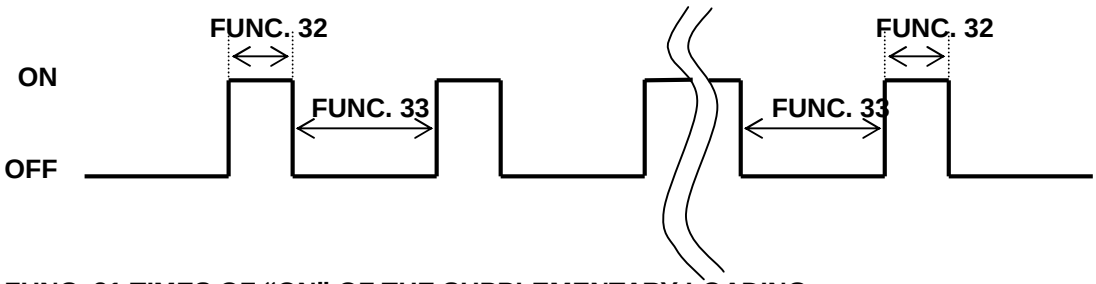
ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.30	Batch finish output signal time	0.0 ~ 25.5 (sec)	Batch finish output signal holding time. If set 0, clear the output signal until the next batch start.	0.5
FUNC.31	Times of supplementary loading	0 ~ 255	If the set value is 0, indicates this function is not in use.	0
FUNC.32	Supplementary loading gate open time	0.01 ~ 2.55	Must be coordinate with times of supplementary loading (Func.31)	0.1
FUNC.33	Supplementary loading gate close time	0.1 ~ 25.5	Must be coordinate with times of supplementary loading (Func.31)	1.0

BATCH FINISH SIGNAL



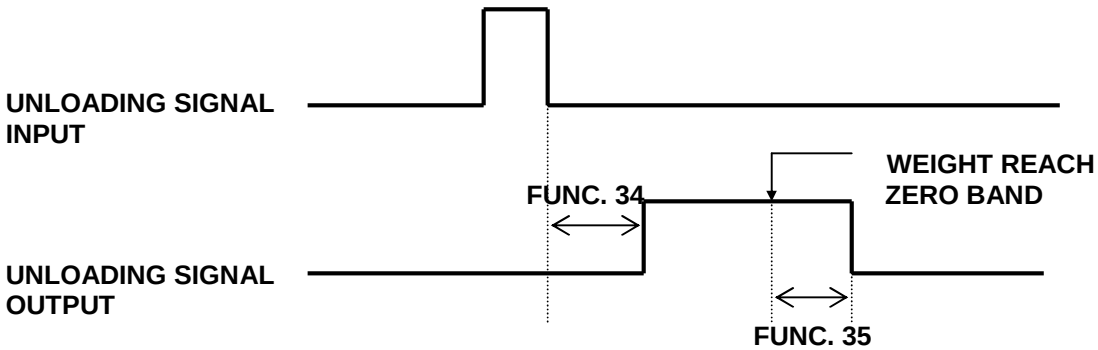
BATCH FINISH

SUPPLEMENTARY LOADING SIGNAL



FUNC. 31 TIMES OF "ON" OF THE SUPPLEMENTARY LOADING

ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.34	Unloading start delay time	0.0 ~ 25.5 (sec)	Delay time setting. Unloading signal ON	0.0
FUNC.35	Unloading stop delay time	0.0 ~ 25.5 (sec)	Delay time setting Unloading signal OFF	0.0
FUNC.36	Max. unloading time	0 ~ 255 (sec)	Will not activate internal unloading control function, If set 0.	0
FUNC.37	Under and Over	0	Compare at any weighing moment	0
		1	Compare after final batch	
FUNC.38	Set the zero band in to final weighing value	0	Not setting	0
		1	setting	
FUNC.39	Code number input	0	Front panel input	0
		1	Rear panel code input	



Note :

1. **FUNC. 21 ~ FUNC. 37 use for built-in program of loading and unloading batch. FUNC. 20 set in 2, 3 mode.**
2. **FUNC. 38 only be use for built-in program of unloading batch. FUNC. 20 set in 3 mode.**

10-3 EXTERNAL CONTROL OUTPUT SIGNALS

ITEM	FUNCTION	SET VALUE PARAMETER - DESCRIPTION	FACTORY STANDARD SET VALUE
FUNC.41	Input 1	0 ⇒ No use 1 ⇒ Zero 2 ⇒ Tare 3 ⇒ Clear Tare 4 ⇒ Batch Start 5 ⇒ Batch Stop 6 ⇒ Unloading Start 7 ⇒ Print serial and parallel output information manually	1
FUNC.42	Input 2		2
FUNC.43	Input 3		3
FUNC.44	Input 4		4
FUNC.45	Input 5		5
FUNC.46	Input 6		6

10-4 RELAY OUTPUTS

<table>
<tr><th rowspan="2">ITEM</th><th rowspan="2">FUNCTION</th><th colspan="4">SET VALUE</th><th rowspan="2">FACTORY STANDARD SET VALUE</th></tr>
<tr><th>PARAMETER</th><th colspan="3">DESCRIPTION</th></tr>
<tr><td rowspan="2">FUNC.50</td><td rowspan="2">Output Connection mode</td><td rowspan="2">00000000
↓
11111111</td><td>0</td><td>Normal Open (connection A)</td><td rowspan="2">The bits and output point position are related from each other</td><td rowspan="2">00000000</td></tr>
<tr><td>1</td><td>Normal Close (connection B)</td></tr>
<tr><td>FUNC.51</td><td>Output 1</td><td colspan="4" rowspan="10">PARAMETER Þ DESCRIPTION

0 ⇒ No use
1 ⇒ Zero Band
2 ⇒ Under/Hi-Hi
3 ⇒ Over/Hi
4 ⇒ SP1/Go
5 ⇒ SP2/Lo
6 ⇒ Free Fall / Lo - Lo
7 ⇒ Unloading
8 ⇒ Batch Finish
9 ⇒ Stable
10 ⇒ Running (built-in program in weighing process)
11 ⇒ Error (built-in program incorrect weighing)
12 ⇒ External Input signal acknowledge
13 ⇒ Weighing Capacity Overflow
14 ⇒ Battery Low</td><td>1</td></tr>
<tr><td>FUNC.52</td><td>Output 2</td><td>2</td></tr>
<tr><td>FUNC.53</td><td>Output 3</td><td>3</td></tr>
<tr><td>FUNC.54</td><td>Output 4</td><td>4</td></tr>
<tr><td>FUNC.55</td><td>Output 5</td><td>5</td></tr>
<tr><td>FUNC.56</td><td>Output 6</td><td>6</td></tr>
<tr><td>FUNC.57</td><td>Output 7</td><td>7</td></tr>
<tr><td>FUNC.58</td><td>Output 8</td><td>8</td></tr>
</table>

10-5 RS-232 & CURRENT LOOP FUNCTIONS

ITEM	FUNCTION	SET VALUE			FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION		
FUNC.60	Data type	0	As displayed		0
		1	Gross		
		2	Net		
		3	Tare		
		4	G / N / T		
FUNC.61	Transfer mode	0	Stream		0
		1	Auto-transfer		
		2	Manual-transfer		
		3	Command mode		
		4	Speed mode Comparison condition + Gross weight		
		5	Speed mode Comparison condition + Net weight		
FUNC.62	Transfer speed	0	1200		1
		1	2400		
		2	4800		
		3	9600		
		4	19200		
		5	38400		
FUNC.63	Parity bit Bit length Stop bit	0	N、8、1	None parity bit、8 data bit、1 stop bit.	2
		1	O、7、1	Odd parity bit、7 data bit、1 stop bit.	
		2	E、7、1	Even parity bit、7 data bit、1 stop bit.	
FUNC.64	Finish character	0	CR		1
		1	CR + LF		
FUNC.65	Unstable or Over max. capacity	0	Output continue		0
		1	Output stop		
FUNC.66	Code number	0	No output		0
		1	Output		

10-6 RS-422 / RS-485 INTERFACES FUNCTIONS

ITEM	FUNCTION	SET VALUE			FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION		
FUNC.70	Location	0	Not in use		0
		01 ~ 99	Location setting		
FUNC.71	Data type	0	As displayed		0
		1	Gross		
		2	Net		
		3	Tare		
		4	G / N / T		
FUNC.72	Transfer mode	0	Stream		3
		1	Auto-transfer		
		2	Manual-transfer		
		3	Command mode		
		4	Speed mode Comparison condition + gross wt.		
		5	Speed mode Comparison condition + net weight		
FUNC.73	Transfer speed	0	1200		1
		1	2400		
		2	4800		
		3	9600		
		4	19200		
FUNC.74	Parity bit Bit length Stop bit	0	N、8、1	None parity bit、8 data bits、1 stop bit.	2
		1	O、7、1	Odd parity bit、7 data bits、1 stop bit.	
		2	E、7、1	Even parity bit、7 data bits、1 stop bit.	
FUNC.75	Character finish	0	CR		1
		1	CR + LF		
FUNC.76	Unstable or over max. capacity	0	Output continue		0
		1	Output stop		
FUNC.77	Code number	0	No output		0
		1	output		

10-7 BCD OUTPUT INTERFACES FUNCTIONS

ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.80	Data type	0	As displayed	0
		1	Gross	
		2	Net	
FUNC.81	Transfer mode	0	Stream	0
		1	Auto-transfer	
		2	Manual-transfer	
FUNC.82	Output logic	0	Positive logic	0
		1	Negative logic	
FUNC.83	Data ready Signal logic	0	Positive logic	0
		1	Negative logic	

10-8 ANALOG OUTPUT INTERFACES FUNCTIONS

ITEM	FUNCTION	SET VALUE		FACTORY STANDARD SET VALUE
		PARAMETER	DESCRIPTION	
FUNC.85	Data type	0	As displayed	0
		1	Gross	
		2	Net	
FUNC.86	Lower point Weight value	000000 ↓ 999999	When the weight value reaches set position, the electric current output is the value set in Func.87	0
FUNC.87	Lower point Electric Current value	0.0 mA ↓ 20.0 mA		4.0 mA
FUNC.88	Higher point Weight value	000000 ↓ 999999	When the weight value reaches set position, the electric current output is the value set in Func.89	16000
FUNC.89	Higher point Electric Current value	0.0 mA ↓ 20.0 mA		20.0 mA