



marcus
Tech @ Germany

TD-100

USER MANUAL

CONTENTS

SAFETY	3
FEATURES	4
CHAPTER 1 FRONT AND REAR PANEL SPECIFICATIONS	5
1-1 Front Panel	5
1-2 Rear Panel.....	6
1-3 Keyboard Description.....	7
1-4 A/D Conversion	7
1-5 Power Supply.....	7
1-6 Dimensions	8
CHAPTER 2 GENERAL FUNCTION GUIDE.....	9
2-1 Function Setup and Operation Procedures	9
2-2 Function Setting.....	12
CHAPTER 3 CALIBRATION	15
3-1 Load Cell Connection	15
3-2 Parameter Setting and Calibration Flow Chart	16
3-4 Specification Calibration	18
3-5 General Calibration	20
3-6 Linearity Calibration	21
3-7 Digital Calibration.....	23
3-8 Calibration Error Messages.....	24
CHAPTER 4 WEIGHT COMPARISON PROCEDURES	25
4-1 Function Configuration Menu	25
4-2 Check Weighing Configuration	28
4-3 Batching Signal Outputs	31
4-4 Normal Batching Flow Chart (SQ-01=1).....	32
4-5 Loss-in Weight Flow Chart (SQ1 = 2).....	33
4-6 Hi, OK, Lo Output Flow Chart.....	34
4-7 Normal Batching (Built-in Program) Flow Chart (SQ-01=4).....	35
4-8 Loss-in Weight (Built in Program) (SQ-01=5).....	36
4-9 Hold Mode (SQ-01 = 6).....	37
4-9-1 Hold Mode Flow Chart	38
4-9-2 Hi, OK, Lo Comparison	39
4-10 Totalizing (ACCU.) Auto / Transmit.....	39
CHAPTER 5 INTERFACE	40
5-1 Serial Input/Output Interface (Built-in)	40
5-2 BCD Parallel Output Interface (OP-02).....	48
5-3 Analogue Current Output Interface (OP-03).....	50
5-4 External Parallel Input /Output Interface	52
CHAPTER 6 MAINTENANCE	57
6-1 Restore all Parameters to The Default Factory Values.	57
6-2 Maintenance Function Parameters.....	57
6-2-1 Restore the Function Parameter Back to Its Default Value	57
6-2-1 Restore the Function Parameter Back to Its Default Value	58
6-2-2 Clear Zero Compensation and Tare Values	58
6-2-3 Clear Batch Setting.....	58
6-2-4 Display Zero Voltage (mV/V).....	58
6-2-5 Clear Batch Setting.....	59
6-3 Test Mode	60
6-3-1 7 Segment Display Testing.....	61
6-3-2 Keypad and Calibration SW Testing	61
6-3-3 Display A/D Internal Value Display	61

6-3-4 RS-232 Serial Loop Back Testing.....	61
6-3-5 EEPROM Memory Testing	61
6-3-6 Option Interface Card Testing	61
APPENDIX I DESCRIPTION OF 7 SEGMENT CHARACTERS	63
APPENDIX II FUNCTION TABLE.....	64
APPENDIX III MODBUS DATA ADDRESS TABLE	73
APPENDIX VI MODBUS DATA ADDRESS TABLE.....	74

SAFETY

- ☞ When the instrument is installed, connect an earth bonding conductor from FG to the earth connection marked “ \perp ”.
- ☞ Disconnect the mains power supply before opening the instrument housing. NOTE: There are no user serviceable parts inside.
- ☞ To install the optional interface cards, it is necessary to disconnect the mains power supply and fit a yellow/green earth bonding cable to the rear panel.
- ☞ Before turning the power on ensure the supply voltage is within the DC24V.
- ☞ The operating ambient temperature range is $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$.
($+14^{\circ}\text{F} \sim +104^{\circ}\text{F}$)

FEATURES

TD-100 has a wide range of applications from batching to simple weighing.

Features:

Stand alone batching mode or connect to PLC for external system control

Built in batching / dosing functions

Manual / automatic discharge operation

Set cycle times in a batch

Totalise weight and number of cycles

Key in the signal voltage value (mV/V) directly via the keyboard, no need to apply any weight to calibrate the system.

Display load cell output voltage (mV/V) for future maintenance

Adjustable filter

Built-in RS232C bi-directional interface or RS485 one way serial interface

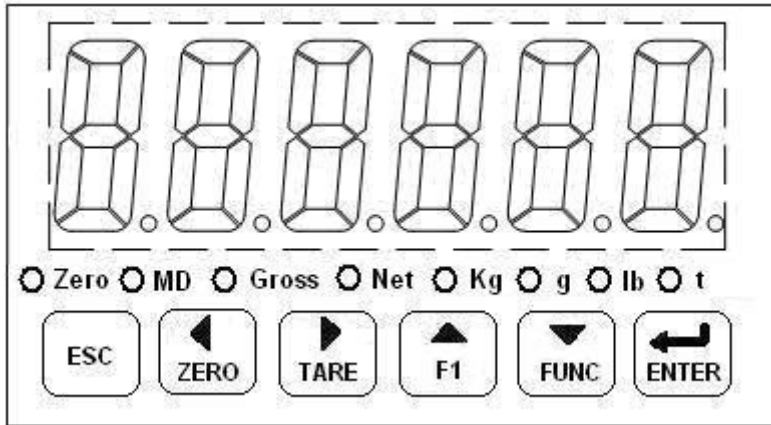
Built-in MODBUS (RTU) format

Interface options:

OP-02	BCD parallel output interface (Open collector output)
OP-03	16 Bit Analogue output interface (4 ~ 20 mA or 0~10V)
OP-04	Control I/O (4 In / 4 Out) + Setpoint In (BCD code)
OP-05	Control I/O (8 In / 8 Out)

CHAPTER 1 FRONT AND REAR PANEL SPECIFICATIONS

1-1 Front Panel



Display

- 6 digits, bright red, 7 segment LED display, character height 16mm (0.56"). Display can be switched between Gross Weight / Net Weight / Totalised Weight / Number of transactions in the total.

- Indication icons “○”

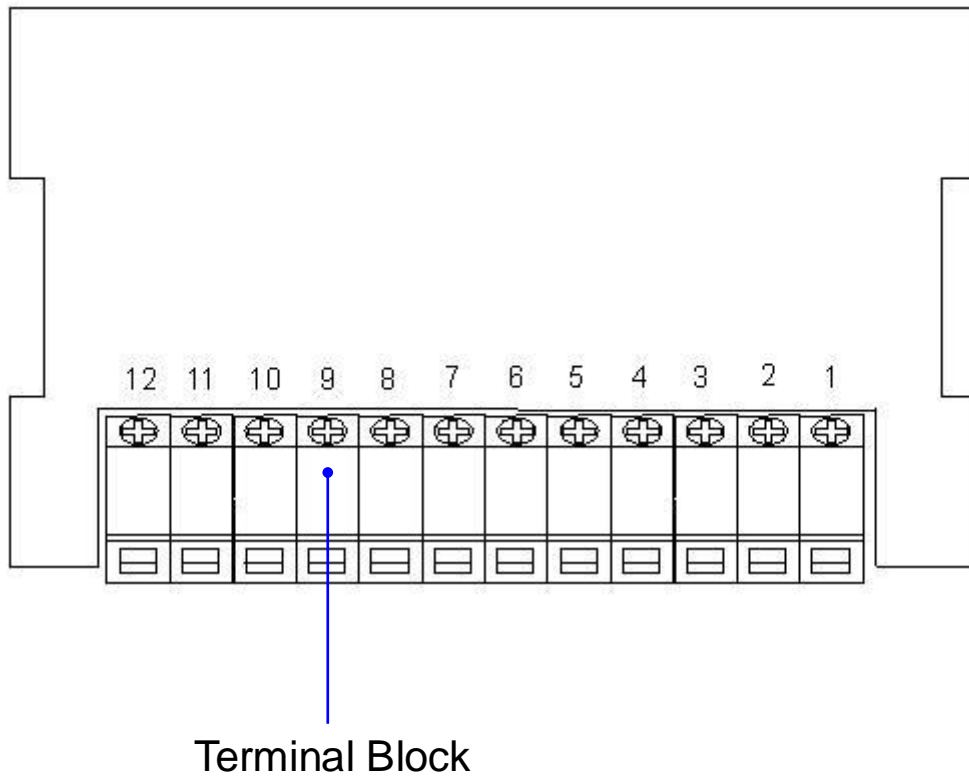
ZERO	○	: Zero Indication
MD	○	: Unstable weight Indication
GROSS	○	: Gross weight Indication
NET	○	: Net weight Indication
Kg	○	: Weighing Units:Kg
g	○	: Weighing Units:g
lb	○	: Weighing Units:lb
t	○	: Weighing Units:t

- ◆ The indicator is supplied with suitable labels to customise the icon displays. Refer to GEF. 06 ~ GEF for the various options available.

☞ Weighing Units

- ◆ Weighing Units kg / g / t / lb.


1-2 Rear Panel





☐ 12Way Terminal Block


- 1st : DC+24V
- 2nd : DC 0V
- 3rd : FG
- 4th : TXD / DA +
- 5th : RXD / DA-
- 6th : SG
- 7th : EXC+
- 8th : SEN+
- 9th : SEN-
- 10th : EXC -
- 11th : SIG +
- 12th : SIG -


1-3 Keyboard Description


- 
 When entering data or reference setting, it means “ESC”.
 In the normal operation, it puts the indicator in standby mode or escape.
 - Entering standby mode: All of the display (except ZERO “◀” symbol) and serial data output are disabled.
 - Escape from standby mode: Re-power on mains for normal operation.

- 
 When parameter setting, it moves the flashing digit left.
 - In the normal mode, it performs a Zero operation.

- 
 When parameter setting, it moves the flashing digit right.
 - In the normal mode, it performs a semi-auto Tare operation.

- 
 When parameter setting, it increments the flashing digit or steps up the
 - select item.
 - In the normal mode, it accesses the GEF-05 setting.

- 
 When parameter setting, it decrements the flashing digit or steps down the
 - select item.
 - In the normal mode, it accesses the GEF-04 setting.

- 
 :Confirm / enter key

- ☰ Function GEF-03 can be used to selectively disable individual keys.
- ☰ Zero operation, will be limited by functions CSP-05 and CSP-10.
- ☰ Zero operation, will be limited by functions CSP-10 and CSP-11.

1-4 A/D Conversion

- * Input Sensitivity : Over 0.10μV/D
- * Internal Resolution : 1 / 1,000,000
- * Max. Sampling Speed : 120 times/sec.
- * Application Range : - 0.1 mV/V ~ 4.0 mV/V
- * Load Cell Excitation Voltage : 5 VDC ±5%, 120mA
(Up to eight (8) 350 Ω load cells can be connected)

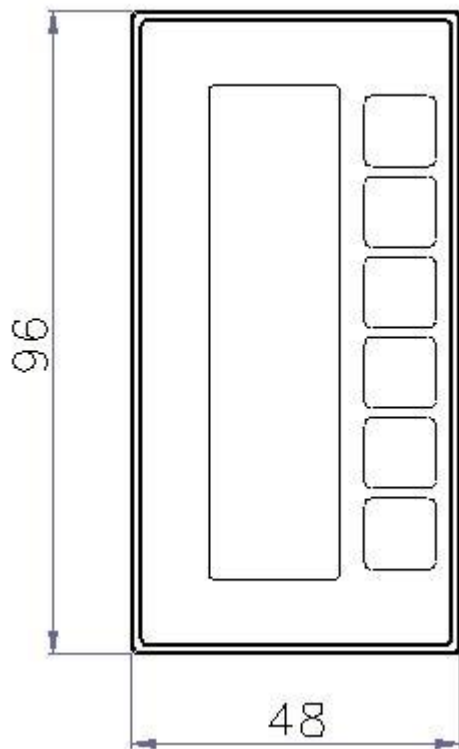
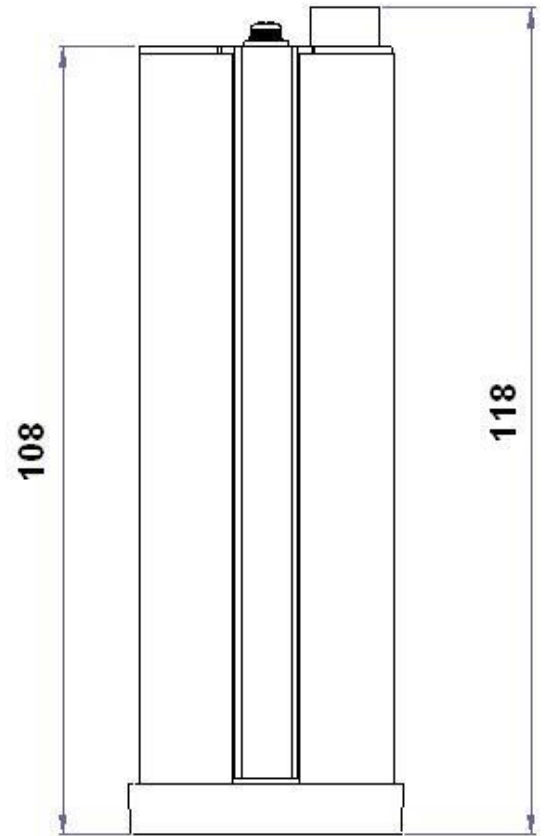
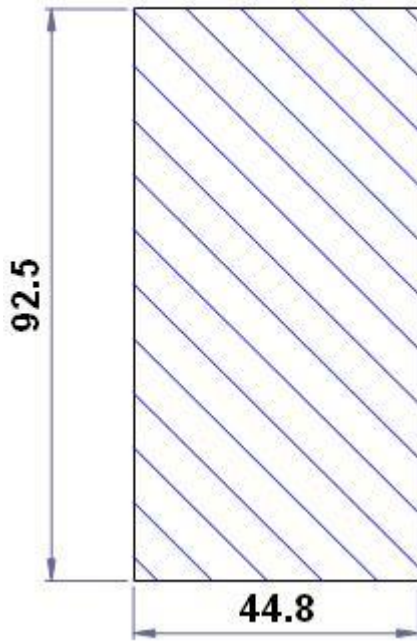
1-5 Power Supply

- ◆ DC24V

1-6 Dimensions
























UNIT : mm

Panel cutout









CHAPTER 2 GENERAL FUNCTION GUIDE



2-1 Function Setup and Operation Procedures

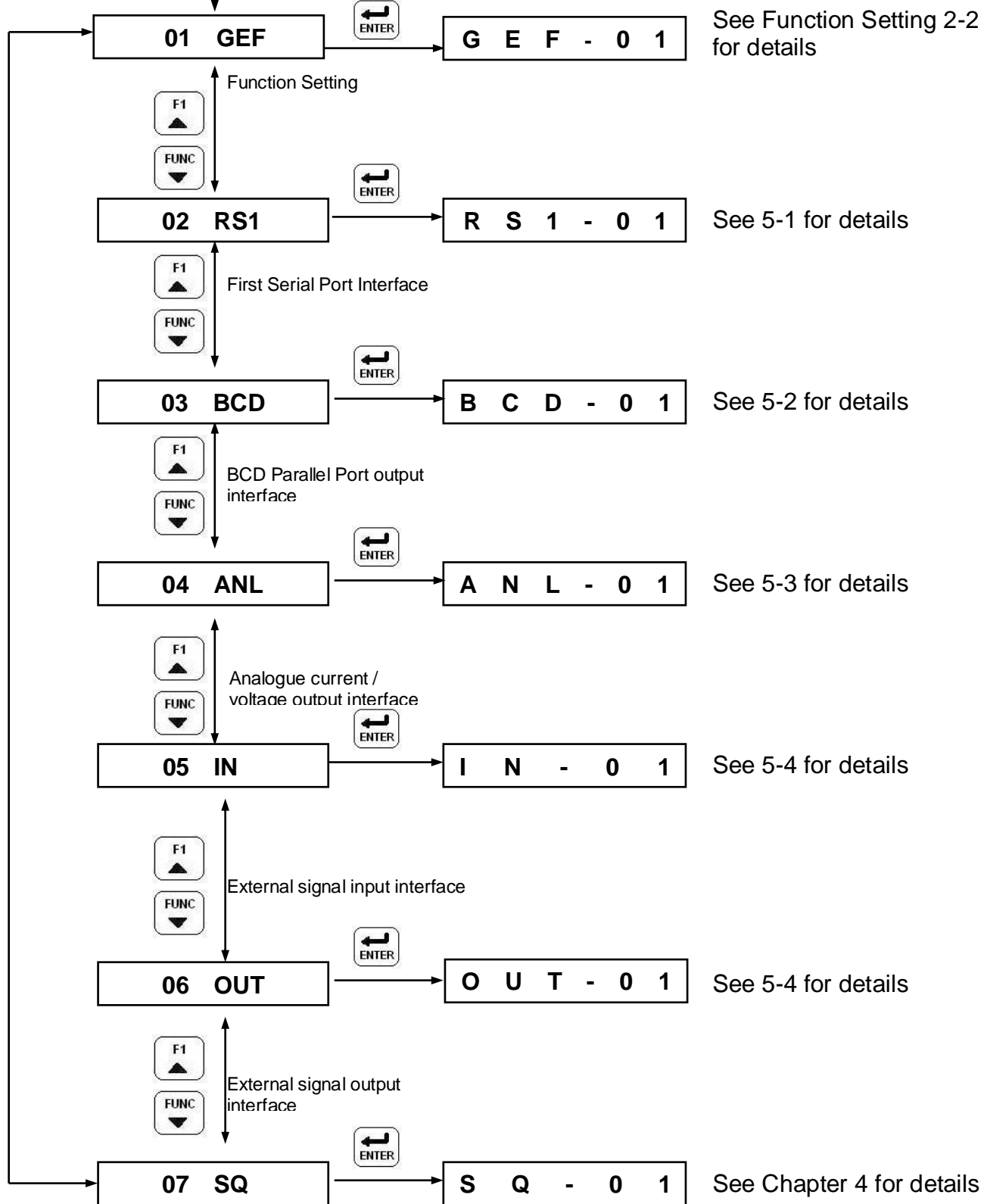
Function	Operation	Display	Description
Enter calibration mode	Press  not release, then press  key after the power is turned on	01 CSP	See 3-2 for details
Enter function setting	Press  not release, then press  key after the power is turned on	01 GEF	See 2-2 for details
Reset all parameters back to default	Turn the power on then press and hold The  and  keys during the self-testing sequence	ALL	See 6-1 for details
Reset general function parameters back to default	Turn the power on and press  and  keys during self-testing sequence	1 FNC	See 6-2-1 for details
Clear zero point compensation and tare value	Turn the power on and press  and  keys during self-testing sequence, and then press 	2 ZERO	See 6-2-2 for details
Clear setpoint parameter setting	Turn the power on and press  and  keys during self-testing sequence, and then press two times 	3 SPO	See 6-2-3 for details
Value of zero point voltage(mV/V)	Turn the power on and Press  and  , then press  three times.	4 Z_MV	See 6-2-4 for details
Value of Span voltage (mV/V)	Turn the power on and Press  and  then Press 	5 S_MV	See 6-2-5 for details
Entering to test mode	Turn the power on and press  and  keys during self-testing sequence	1 DSP	See 6-3 for details
Check weighing setpoint parameter setting	Press the  key to set the parameter of GEF.4 to 1 in the normal mode	1.Final or 1.HI HI	See 4-2 for details

Key actions in function set up mode

-  ⇒ Increases the number of the flashing digit
-  ⇒ Decreases the number of the flashing digit
-  ⇒ Moves the flashing digit one space to the left
-  ⇒ Moves the flashing digit one space to the right
-  ⇒ Saves the configuration
-  ⇒ Quits set up mode / Escape

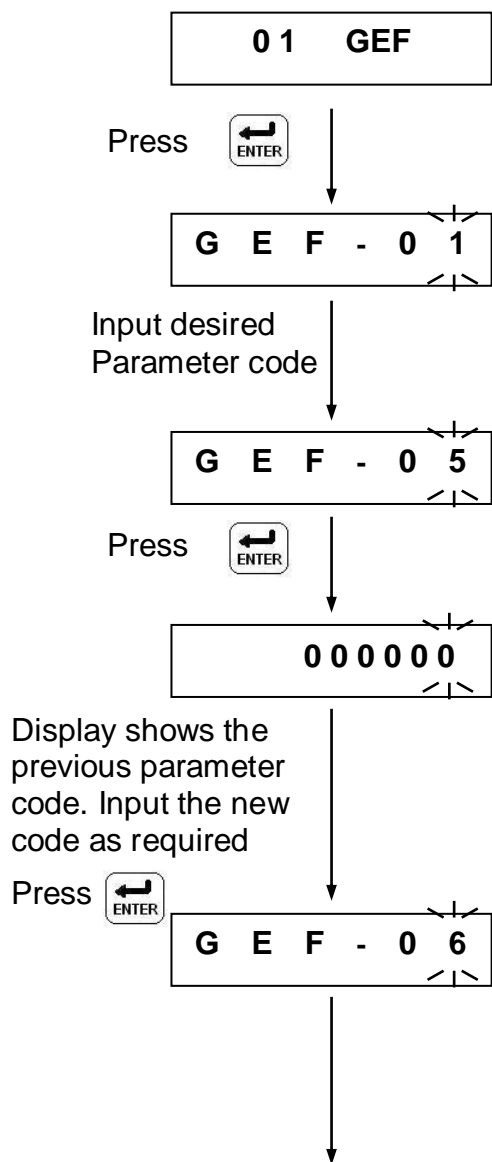
Function Setting Procedures

With weight displayed press and hold the  key. Then, press 



Weight comparison procedures

2-2 Function Setting



To continue the next function setting

or press to escape

*Function Parameter code

- GEF - 01 ⇒ Digital Filter I
- GEF - 02 ⇒ Digital Filter II
- GEF - 03 ⇒ Lock keypad function
- GEF - 04 ⇒ "FUNC" function setting
- GEF - 05 ⇒ "F1" function setting
- GEF - 06 ⇒ Front panel indication "●" setting (first)
- GEF - 07 ⇒ Front panel indication "●" setting (second)
- GEF - 08 ⇒ Front panel indication "●" setting (third)
- GEF - 09 ⇒ Front panel indication "●" setting (fourth)
- GEF - 10 ⇒ Terms of back to zero
- GEF - 11 ⇒ Hold
- GEF - 12 ⇒ Rate for display rewrite

	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

☞ GEF Group Function Setting

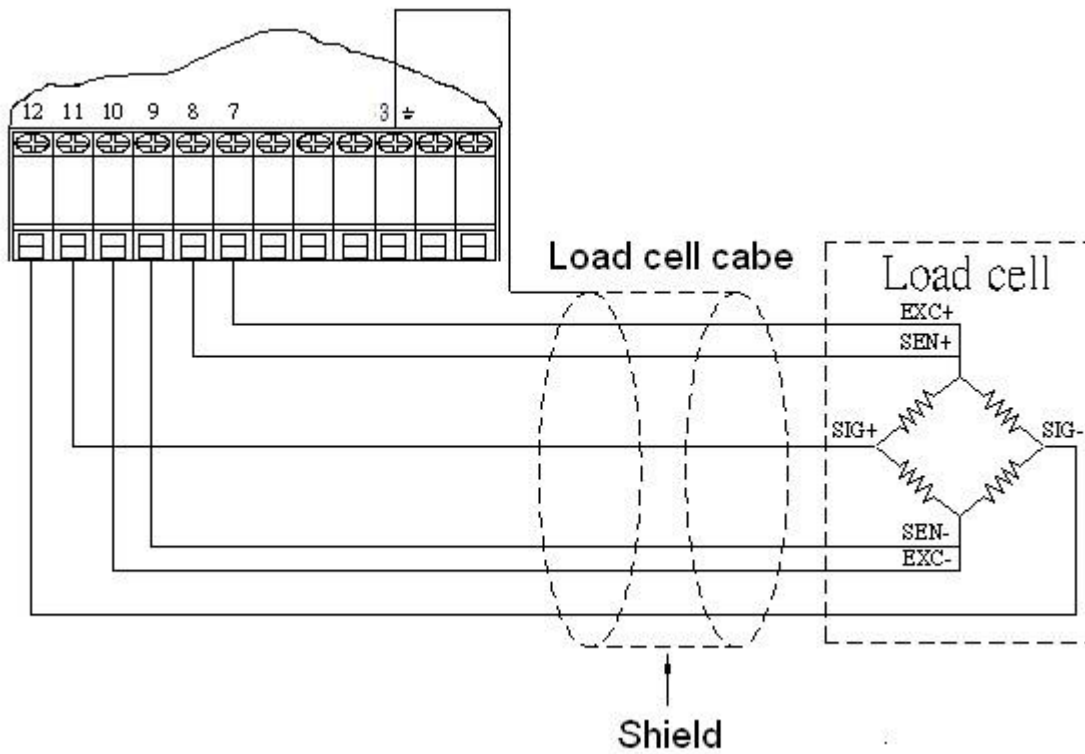
Item	Function	Setting value			Default
		Parameter	Description		
GEF-01	Digital Filter I	0	5 Hz		4
		1	4.17 Hz		
		2	2.5 Hz		
		3	2.08 Hz		
		4	1.25 Hz		
		5	1.04 Hz		
		6	0.63 Hz		
		7	0.52 Hz		
		8	0.31 Hz		
		9	0.26 Hz		
GEF-02	Digital Filter II	0	Disabled		2
		1	Less filter \updownarrow Greater		
		2			
		3			
		4			
		5			
GEF-03	Key – Locked	000000 ↓ 111111	0 1	Normal (lock disable) Close (lock enable)	The bits and front panel key positions are related to each other. 000000
		Parameter ⇒ Description			
GEF-04	“FUNC” function setting	0 ⇒ Display Net / Gross weight 1 ⇒ Setpoint parameter setting 2 ⇒ Tare reset 3 ⇒ Manual serial, parallel print output. 4 ⇒ Start load 5 ⇒ Stop load 6 ⇒ Start comparison 7 ⇒ Unload command 8 ⇒ Totalise weight and counts command			1
GEF-05	“F1” function setting	9 ⇒ Clear totalised weight and counts 10 ⇒ Hold mode 11 ⇒ Escape Hold mode(I/O DSP) 12 ⇒ Convert to Gross / Net / totalised weight / totalised Count			0

Item	Function	Setting value		Default
		Parameter	Description	
GEF-06	Front panel indication “●” setting (Zero)	Parameter ⇒ Description 0 ⇒ Zero 1 ⇒ MD 2 ⇒ Gross 3 ⇒ Net		0
GEF-07	Front panel indication “●” setting (MD)	4 ⇒ Totalised weight (Accu. V) 5 ⇒ Totalised transactions (Accu. C) 6 ⇒ SP1 7 ⇒ SP2		1
GEF-08	Front panel indication “●” setting (Gross)	8 ⇒ SP3 9 ⇒ Hi 10 ⇒ OK 11 ⇒ Lo		2
GEF-09	Front panel indication “●” setting (Net)	12 ⇒ Under 13 ⇒ Over 14 ⇒ Discharge 15 ⇒ Running 16 ⇒ Hold		3
GEF-10	Return to zero band	0	5 d	0
		1	10 d	
		2	20 d	
		3	40 d	
		4	60 d	
		5	80 d	
		6	100 d	
		7	150 d	
		8	200 d	
		9	250 d	
GEF-11	Hold	0	Hold	0
		1	Peak hold (positive 1)	
		2	Peak hold (negative)	
		3	Peak hold (absolute value)	
		4	Peak hold (positive 2)	
GEF-12	Rate for display rewrite	0	No limitation	0
		1	20 times/sec	
		2	10 times/sec	
		3	5 times/sec	
		4	1 time/sec	



CHAPTER 3 CALIBRATION

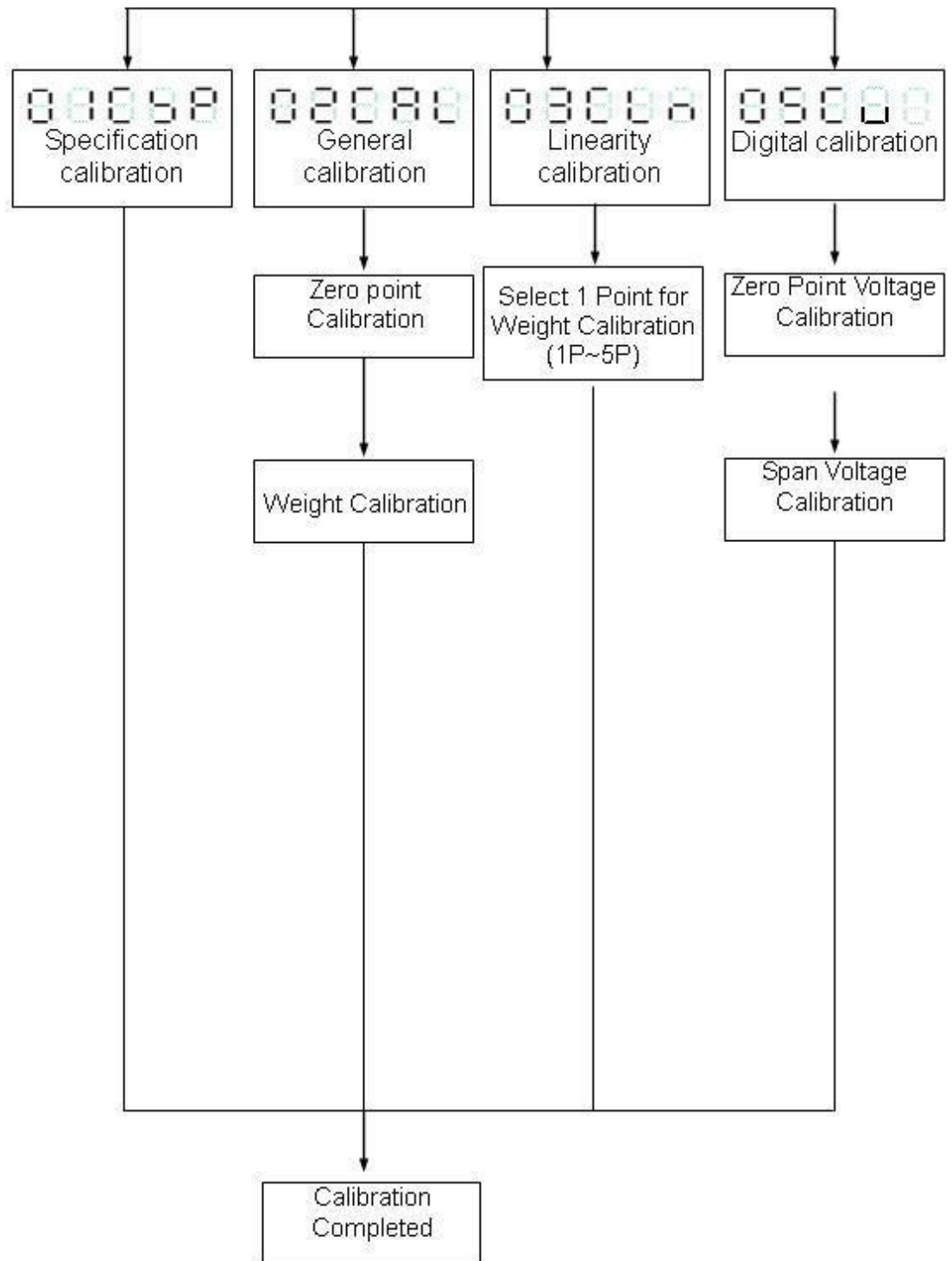
3-1 Load Cell Connection

- ☐ When using a 6 wire cable to connect the load cell, the SEN+ and SEN- can be left unconnected (see below diagram)





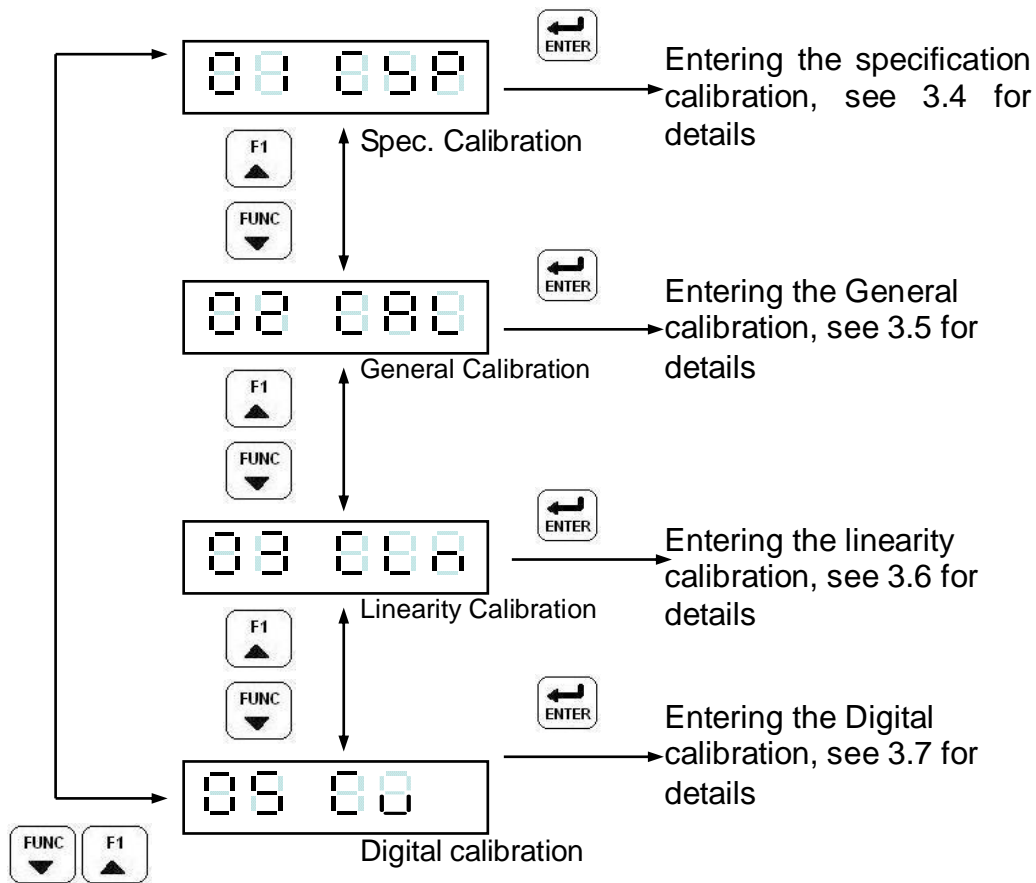
3-2 Parameter Setting and Calibration Flow Chart

With weight displayed press and hold the  key. Then, press .



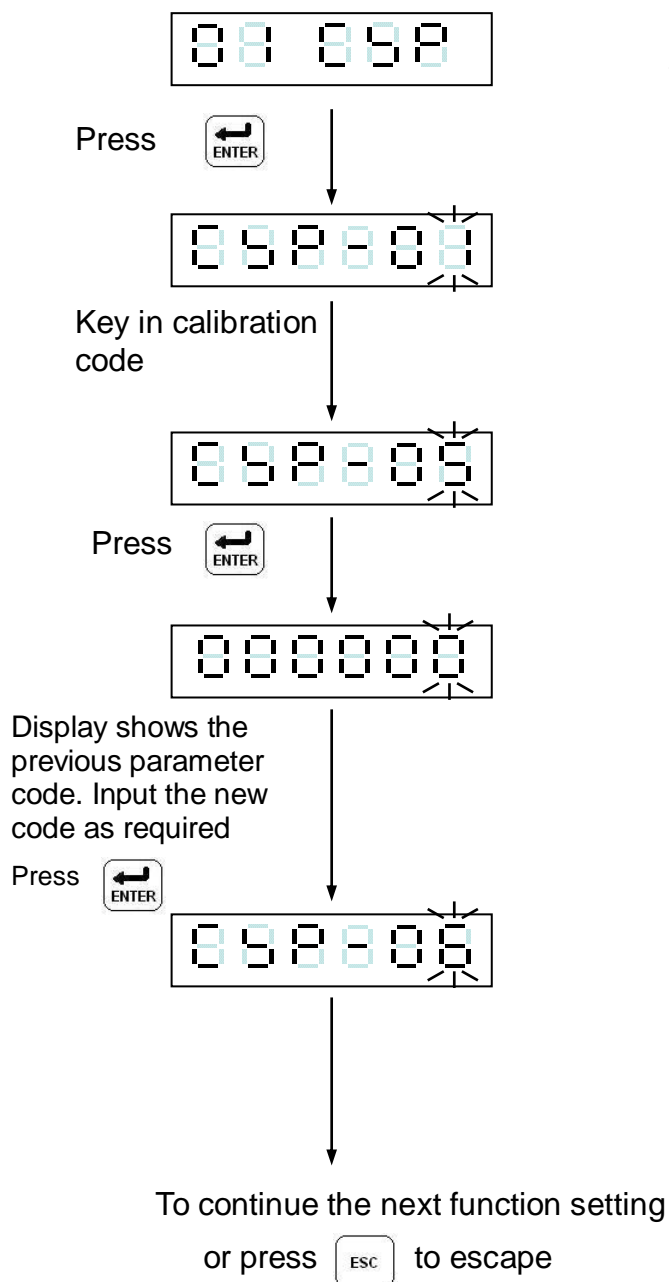
☞ Calibration process

With weight displayed press and hold the  key. Then, press 



☞ Before the Linearity Calibration, the General Calibration should be completed.

3-4 Specification Calibration



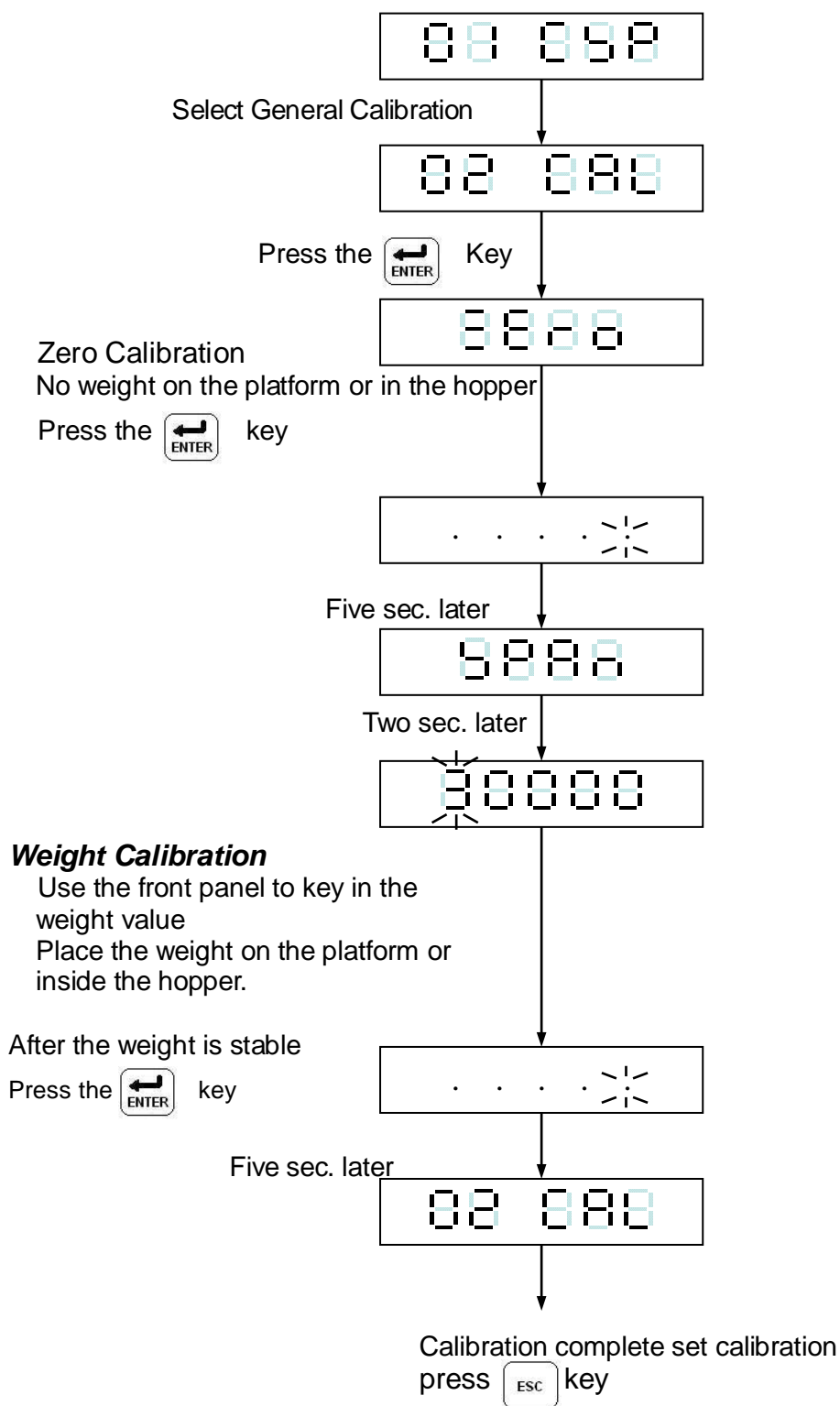
*Calibration parameter code

- ⇒ Unit
- ⇒ Decimal Point
- ⇒ Min. Division
- ⇒ Max. Capacity
- ⇒ Zero Range
- ⇒ Time of Zero tracking
- ⇒ Range of Zero tracking
- ⇒ Investigate period of unstable
- ⇒ Investigate range of unstable
- ⇒ Function Zero and Tare when the weight is unstable.
- ⇒ Tare function availability when gross weight is negative.

	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

Item	Function	Setting value		Default
		Parameter	Description	
CSP-01	Unit	0	None	2
		1	g	
		2	Kg	
		3	t	
		4	lb	
CSP-02	Decimal Point	0	None	0
		1	1 Decimal Point	
		2	2 Decimal Point	
		3	3 Decimal Point	
CSP-03	Division	1	Division size	1
		2		
		5		
		10		
		20		
		50		
CSP-04	Max. Capacity	999999 ↓ 000000	Max. capacity	999999
CSP-05	Zero range	0 =full range (±1%~30%)	Zero range = calibration zero point ± (Max. capacity×setting value %)	0
CSP-06	Time of zero tracking	0.0 ~ 5.0 (sec)	Time and range of zero tracking should be use at the same time. If the time is set to 0.0, the zero tracking function is disabled.	1.0
CSP-07	Range of zero tracking	0 ~ 9	Range of zero tracking = (setting value×½)D , D=min. division Range and time of zero tracking should be use at the same time. If the range is set to 0, the zero tracking function is disabled.	2
CSP-08	Investigate time in stable	0.0 ~ 5.0 (sec)	Investigate time and range should be use at the same time. If the time is set to 0.0, the investigate time is disabled.	1.0
CSP-09	Investigate range in stable	0 ~ 9	Investigate time and range should be use at the same time. If the range is set to 0, the investigate range is disabled.	2
CSP-10	Weight unstable, function ZERO and TARE	0	Action	0
		1	None	
CSP-11	Gross Weight is negative, function TARE	0	Action	0
		1	None	

3-5 General Calibration



	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

- Zero calibration only, press key to escape after the display shows .
- Span calibration only, press key entering directly to span calibration after the display shows .
- Please refer to error message during calibration of the display show .

3-6 Linearity Calibration

** Before the Linearity calibration, the General calibration should be completed.

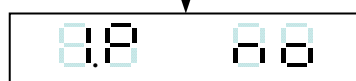
Set CAL switch to ON



Select linearity calibration



Press the Key

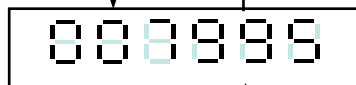


Use to select one of calibration points (1P~5P)

: no setting value
 : with setting value

Select one of five calibration, and

press the Key



Press key

Press the Key



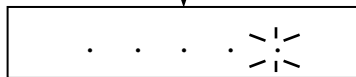
Press key

Key in the correct weight value



Press key

The current shows on the screen and the indications keep flashing



When stable, the display area shows the modified weight value



Press key

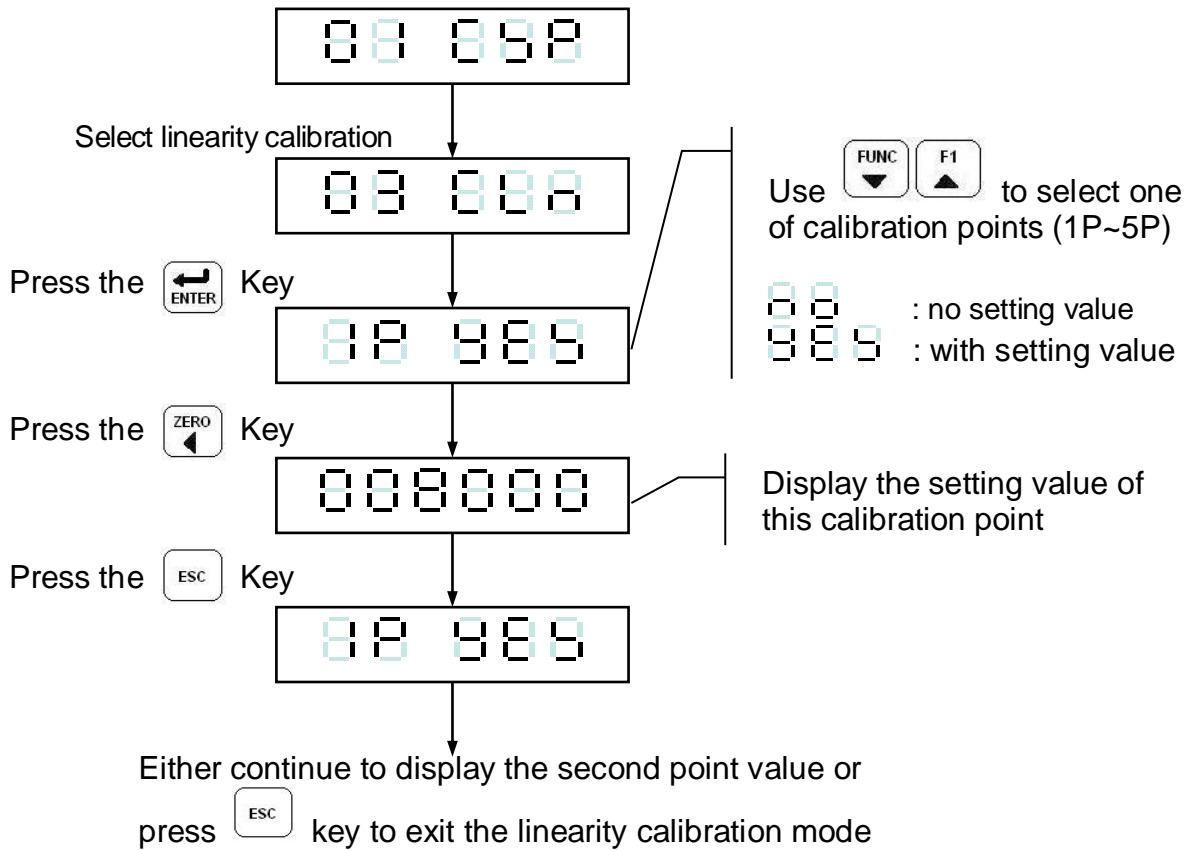


Finish the 1st calibration point setting. Either continue the second point calibration or press key to exit the linearity calibration process.

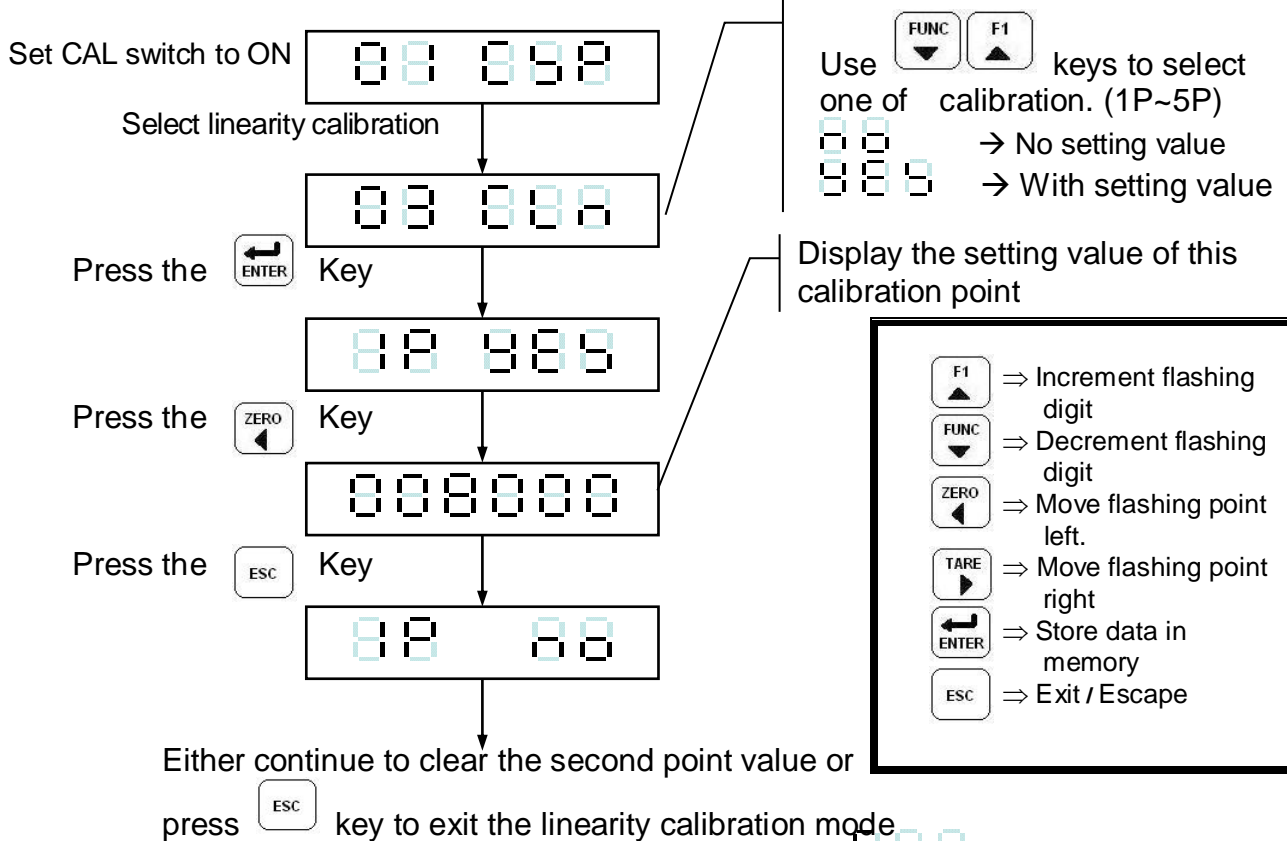
	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

Please refer to the error message list if the display shows

☞ Display the setting value of linearity calibration

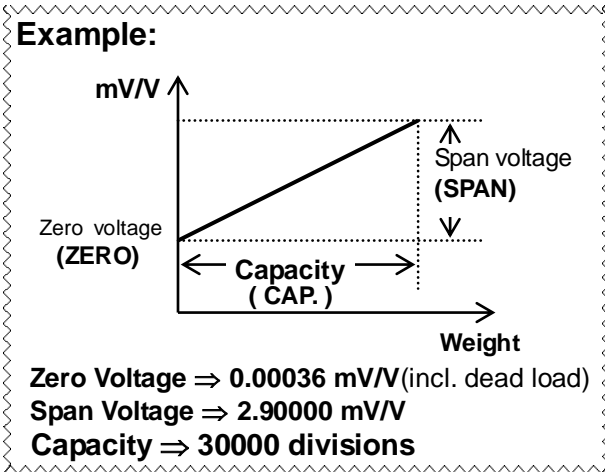
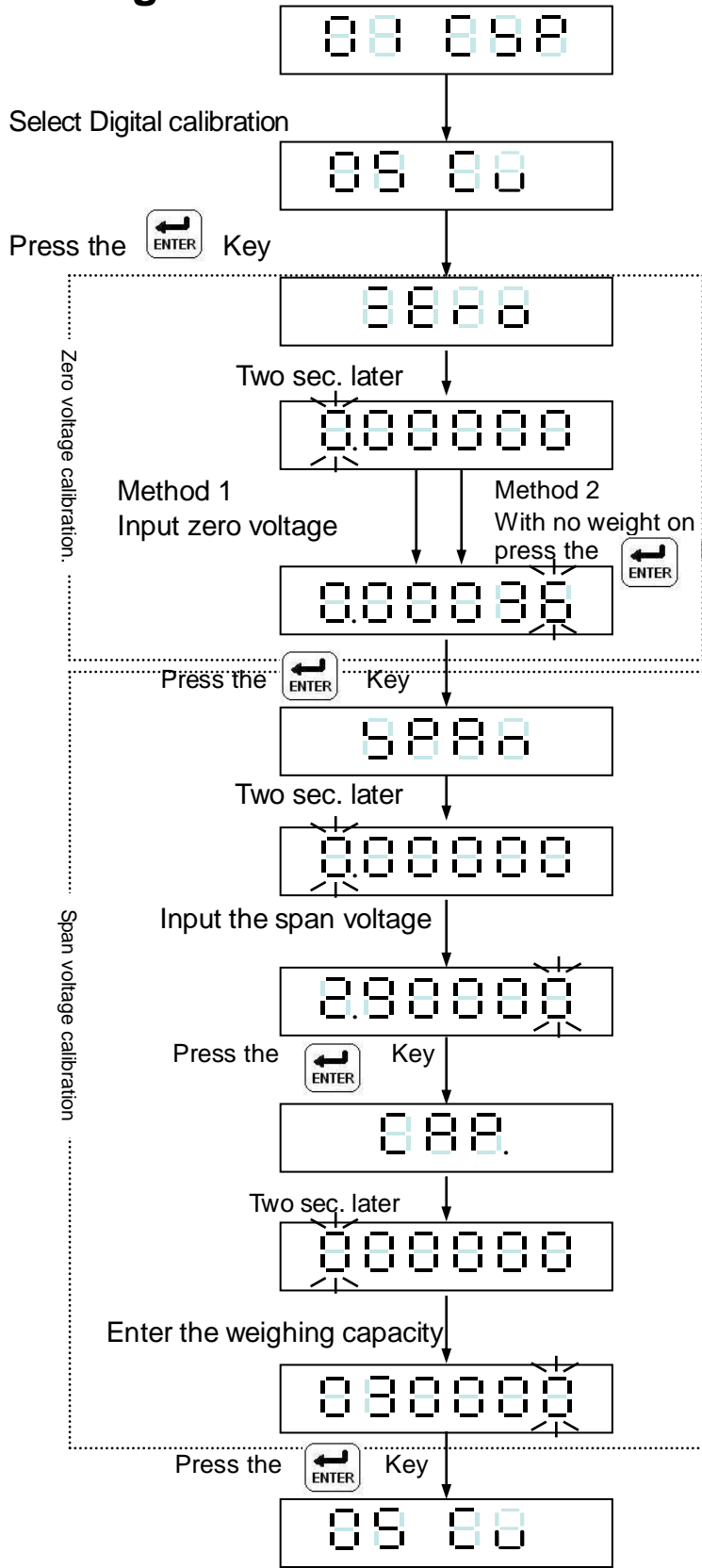


☞ Clear the setting value of linearity calibration



Please refer to the error message list if the display shows .

3-7 Digital Calibration



Method 2: With no weight on the platform or in the hopper press the ENTER Key to set zero.

- F1 \Rightarrow Increment flashing digit
- ▲ \Rightarrow Increment flashing digit
- ▼ \Rightarrow Decrement flashing digit
- FUNC \Rightarrow Decrement flashing digit
- ◀ \Rightarrow Move flashing point left
- ZERO \Rightarrow Move flashing point left
- ▶ \Rightarrow Move flashing point right
- TARE \Rightarrow Move flashing point right
- ↵ \Rightarrow Store data in memory
- ENTER \Rightarrow Store data in memory
- ESC \Rightarrow Exit / Escape

Calibration completed set calibration Press the ESC key

Please refer to the error message list if the display shows 888.x





3-8 Calibration Error Messages







- 888. 0 ⇒ Load Cell output voltage < - 0.1mV/V or > 4mV/V
- 888. 1 ⇒ Weight value ≤ previous weight value
- 888. 2 ⇒ Actual measured weight value ≤ previous weight value
- 888. 3 ⇒ Setting value 0
- 888. 4 ⇒ mV/V value entered > measuring range
- 888. 5 ⇒ mV/V value entered is too small (SPAN – Zero < 0 mV/V)
- 888. 6 ⇒ Displayed resolution is less than 0.10μV / division

CHAPTER 4 WEIGHT COMPARISON PROCEDURES

4-1 Function Configuration Menu

*Item code

<p>08 58</p> <p>Press the  key</p> <p>598 08</p> <p>Select the desired menu code</p> <p>598 05</p> <p>Press the  key</p> <p>000008</p> <p>Display shows the existing parameter code. Input a new code as required</p> <p>Press the  key</p> <p>598 05</p> <p>Continue to another function setting or press  to save and exit</p>	<table border="0"> <tr><td>598 08</td><td>⇒ Batching mode</td></tr> <tr><td>598 02</td><td>⇒ Batching start delay time</td></tr> <tr><td>598 03</td><td>⇒ Compare SP1 & SP" waiting time</td></tr> <tr><td>598 04</td><td>⇒ Batch finish output signal delay time</td></tr> <tr><td>598 05</td><td>⇒ Batch finish condition</td></tr> <tr><td>598 06</td><td>⇒ Batch finish output signal duration</td></tr> <tr><td>598 07</td><td>⇒ Supplementary load times</td></tr> <tr><td>598 08</td><td>⇒ Supplementary loading gate open time</td></tr> <tr><td>598 09</td><td>⇒ Supplementary loading gate close time</td></tr> <tr><td>598 80</td><td>⇒ Discharge start delay time</td></tr> <tr><td>598 88</td><td>⇒ Discharge stop delay time</td></tr> <tr><td>598 82</td><td>⇒ Discharge time</td></tr> <tr><td>598 83</td><td>⇒ Restart delay time</td></tr> <tr><td>598 84</td><td>⇒ Batching times</td></tr> <tr><td>598 85</td><td>⇒ Weight completed value in Zero band</td></tr> <tr><td>598 86</td><td>⇒ Hi, OK, Lo action mode</td></tr> <tr><td>598 87</td><td>⇒ Auto totalise weight / counts</td></tr> <tr><td>598 88</td><td>⇒ The parameter source for weight comparison</td></tr> <tr><td>598 89</td><td>⇒ Weight comparison delay time</td></tr> <tr><td>598 20</td><td>⇒ Tare auto</td></tr> <tr><td>598 28</td><td>⇒ Discharge auto</td></tr> </table>	598 08	⇒ Batching mode	598 02	⇒ Batching start delay time	598 03	⇒ Compare SP1 & SP" waiting time	598 04	⇒ Batch finish output signal delay time	598 05	⇒ Batch finish condition	598 06	⇒ Batch finish output signal duration	598 07	⇒ Supplementary load times	598 08	⇒ Supplementary loading gate open time	598 09	⇒ Supplementary loading gate close time	598 80	⇒ Discharge start delay time	598 88	⇒ Discharge stop delay time	598 82	⇒ Discharge time	598 83	⇒ Restart delay time	598 84	⇒ Batching times	598 85	⇒ Weight completed value in Zero band	598 86	⇒ Hi, OK, Lo action mode	598 87	⇒ Auto totalise weight / counts	598 88	⇒ The parameter source for weight comparison	598 89	⇒ Weight comparison delay time	598 20	⇒ Tare auto	598 28	⇒ Discharge auto
598 08	⇒ Batching mode																																										
598 02	⇒ Batching start delay time																																										
598 03	⇒ Compare SP1 & SP" waiting time																																										
598 04	⇒ Batch finish output signal delay time																																										
598 05	⇒ Batch finish condition																																										
598 06	⇒ Batch finish output signal duration																																										
598 07	⇒ Supplementary load times																																										
598 08	⇒ Supplementary loading gate open time																																										
598 09	⇒ Supplementary loading gate close time																																										
598 80	⇒ Discharge start delay time																																										
598 88	⇒ Discharge stop delay time																																										
598 82	⇒ Discharge time																																										
598 83	⇒ Restart delay time																																										
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598 86	⇒ Hi, OK, Lo action mode																																										
598 87	⇒ Auto totalise weight / counts																																										
598 88	⇒ The parameter source for weight comparison																																										
598 89	⇒ Weight comparison delay time																																										
598 20	⇒ Tare auto																																										
598 28	⇒ Discharge auto																																										

	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape



Functional Parameter Instruction



Item	Function	Setting value		Default
		Parameter	Description	
SQ- 01	Batching mode	1	Normal batch	1
		2	Loss-in weight	
		3	Comparison mode	
		4	Normal batch (Built-in program)	
		5	Loss-in weight (Built-in program)	
		6	Hold mode (Built-in program)	
SQ- 02	Batching start delay time	0.0 ~ 25.5 (sec)	The built-in auto-program starts the batch comparison procedure after the input of the batch start signal.	0.0
SQ- 03	SP1,SP2 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
SQ- 04	Batch finish output signal delay time	0.0 ~ 25.5 (sec)	Output the batch finished signal after this delay time.	0.5
SQ- 05	Batch finish Condition	0	Wait until the weight is stabilized	0
		1	No need to wait until the weight has stabilized	
SQ- 06	Batch finish Output signal time	0.0 ~ 25.5 (sec)	Batch finished output signal time. If set to 0, the output signal will be off until the next batch start.	1.0
<p>Batch finish signal</p>				
SQ- 07	Number of Times the supplementary loading function operates	0 ~ 255	If the set value is 0, this function is not in use.	0
SQ- 08	Supplementary loading gate open time	0.0 ~ 25.5 (sec)	Must be coordinate with times of supplementary loading, (SQ- 07)	0.1
SQ- 09	Supplementary loading gate close time	0.0 ~ 25.5 (sec)	Must be coordinate with times of supplementary loading, (SQ- 07)	1.0
<p>Supplementary loading signal</p> <p>SQ- 07 Times of "ON" of the supplementary loading</p>				



Item	Function	Setting value		Default
		Parameter	Description	
SQ- 10	Discharge start delay time	0.0 ~ 25.5 (sec)	Delay time before Discharge signal is ON.	0.0
SQ- 11	Discharge stop delay time	0.0 ~ 25.5 (sec)	Delay time before Discharge signal is OFF.	0.0
SQ- 12	Discharge time	0.0 ~ 25.5 (sec)	Won't activate internal discharge control function, if set to 0.	0
<p>The diagram illustrates the timing of the discharge signal. The top trace is the 'Discharge input signal', which is a rectangular pulse. The bottom trace is the 'Discharge output signal', which is a rectangular pulse that starts after a delay from the rising edge of the input signal, labeled 'SQ-10'. The output pulse ends after a delay from its falling edge, labeled 'SQ-11'. A label 'Weight reach zero band' points to the end of the output pulse.</p>				
SQ- 13	Restart delay time	0.0 ~ 25.5 (sec)	Delay time before Restart signal is ON.	1.0
SQ- 14	Batching counts	0 ~ 255 (times)	Number of batch runs 0 ⇒ one batch only	0
SQ- 15	Set the zero band in to final weighing value	0	No setting	0
		1	Setting	
SQ- 16	Hi, OK, Lo	0	Comparison anytime	0
		1	To compare at batch finish	
		2	To compare at external input signal	
		3	To compare at batching finish and external input signal.	
		4	Comparison auto	
SQ- 17	Auto totalise weight / counts	0	Disabled	0
		1	Enabled	
SQ- 18	The parameter source in weight comparison	0	Key in directly from front keypad	0
		1	Input directly from rear interface	
SQ- 19	Weight comparison delay time	0.0 ~ 25.5 (sec)	Comparison delay time for Hi, OK, Lo	0.5
SQ- 20	TARE auto.	0	Press keypad TARE to TARE	0
		1	TARE auto	
SQ- 21	Discharge auto	0	Input from external input or keypad	0
		1	Discharge auto + manual	


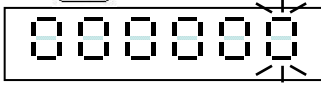
4-2 Check Weighing Configuration


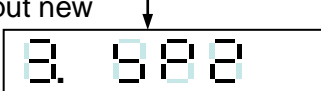
1. GEF-04 = 1, SQ-01 = 1,2,4 or 5


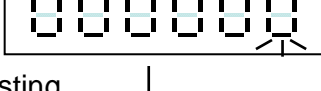
Press the  Key 



 


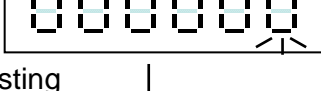
Display shows the existing **Final value** setting, Input new value as required. Press  



 


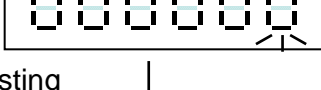
Display shows the existing **SP1 value** setting, Input new value as required. Press  



 


Display shows the existing **SP2 value** setting, Input new value as required. Press  



 



Display shows the existing **Free Fall value** setting, Input new value as required. Press  



 







Display shows the existing **Over value** setting, Input new value as required. Press  



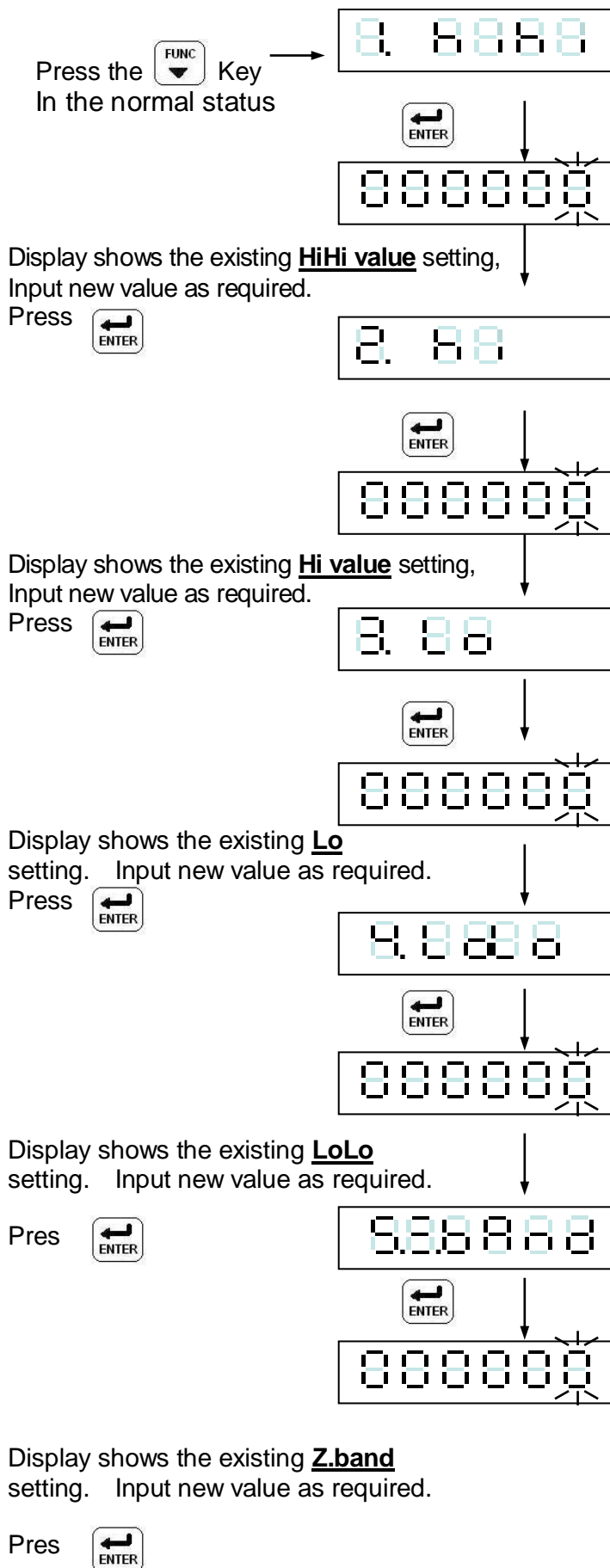
Display shows the existing **Under value** setting. Input new value as required. Press  







 

Display shows the existing **Zero Band** setting. Input new value as required. Press  



	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape


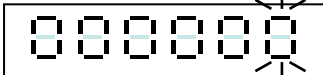
2. GEF-04 = 1, SQ-01 = 3



	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape


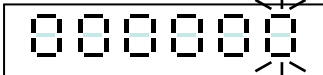
3. GEF-04 = 1, SQ-01 = 6

Press the  Key → 

↓




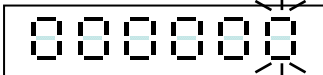
Display shows the existing **Hi value** setting,
 Input new value as required.

Press  

↓





Display shows the existing **Lo value** setting,
 Input new value as required.

Press  

↓









Display shows the existing **Zero Band**
 setting, Input new value as required.

Press  

↓



Display show the existing **Peak Ready**
value setting. Input new value as required

Press  

	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

4-3 Batching Signal Outputs

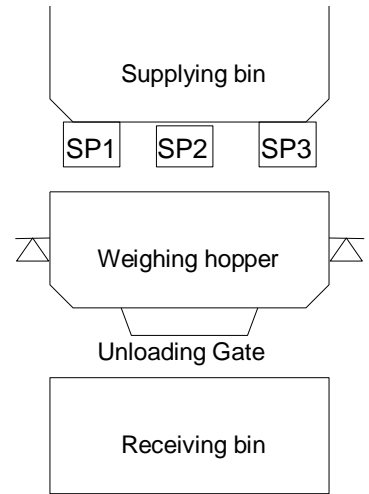
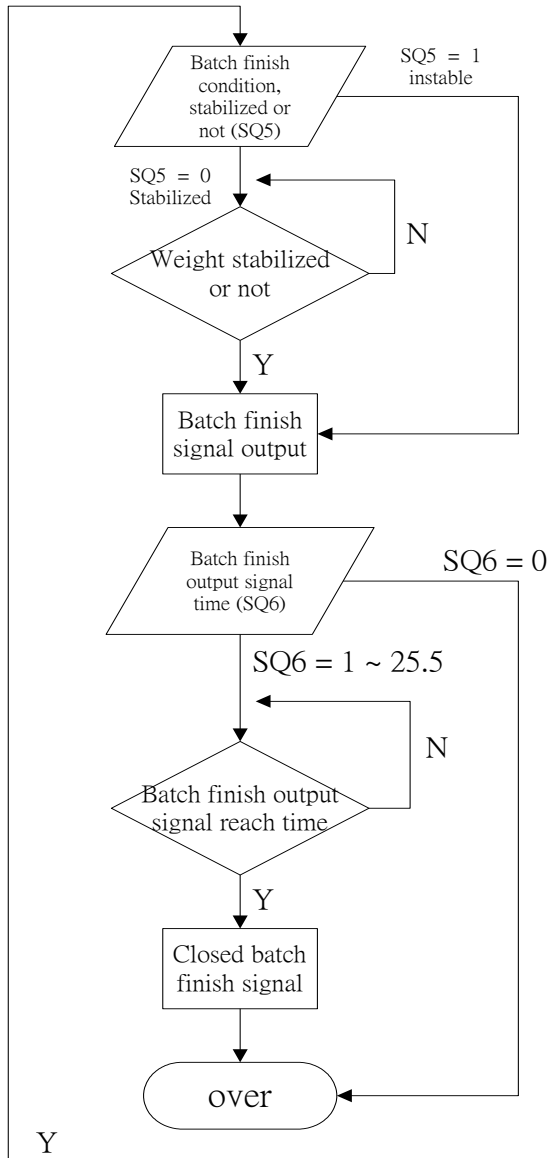
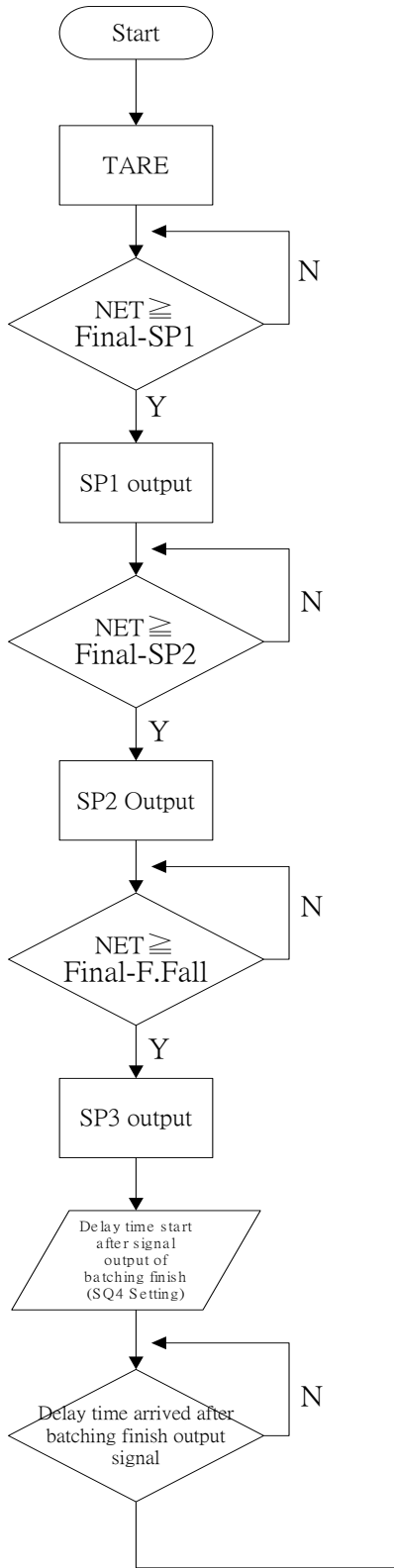
☒ Normal batching signal outputs

Signal	Output condition
SP1	$\text{Net} \geq \text{Final} - \text{SP1}$
SP2	$\text{Net} \geq \text{Final} - \text{SP2}$
SP3	$\text{Net} \geq \text{Final} - \text{Free Fall (in-flight)}$
Under	$\text{Net} < \text{Final} - \text{Under}$
Over	$\text{Net} > \text{Final} + \text{Over}$
Zero Band	$\text{Gross} \leq \text{Zero Band}$

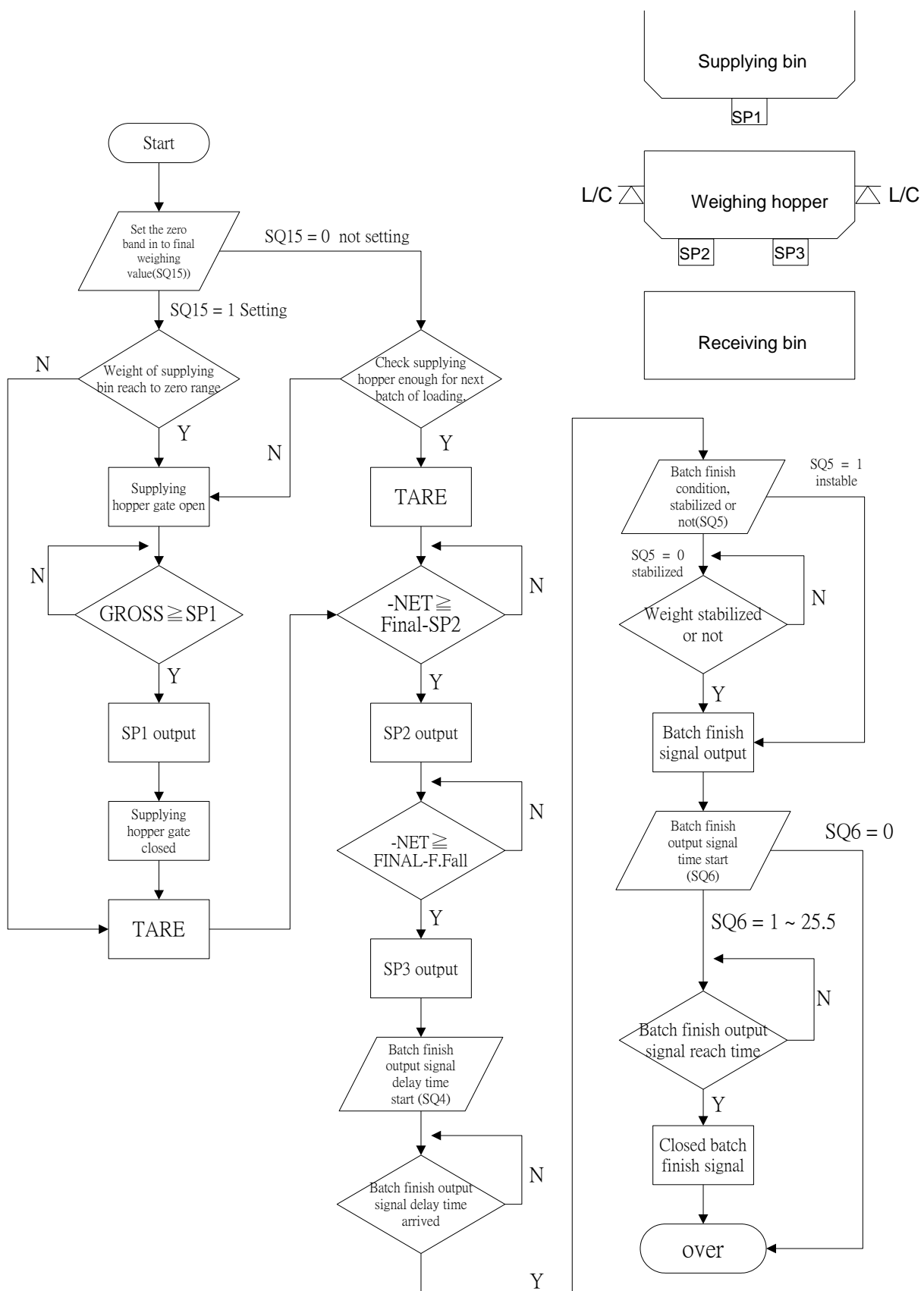
☒ Loss-in-weight signal outputs

Signal	Output condition
SP1	$\text{Gross} \geq \text{SP1}$
SP2	$-\text{Net} \geq \text{Final} - \text{SP2}$
SP3	$-\text{Net} \geq \text{Final} - \text{Free Fall (in-flight)}$
Under	$-\text{Net} < \text{Final} - \text{Under}$
Over	$-\text{Net} > \text{Final} + \text{Over}$
Zero Band	$\text{Gross} \leq \text{Zero Band}$

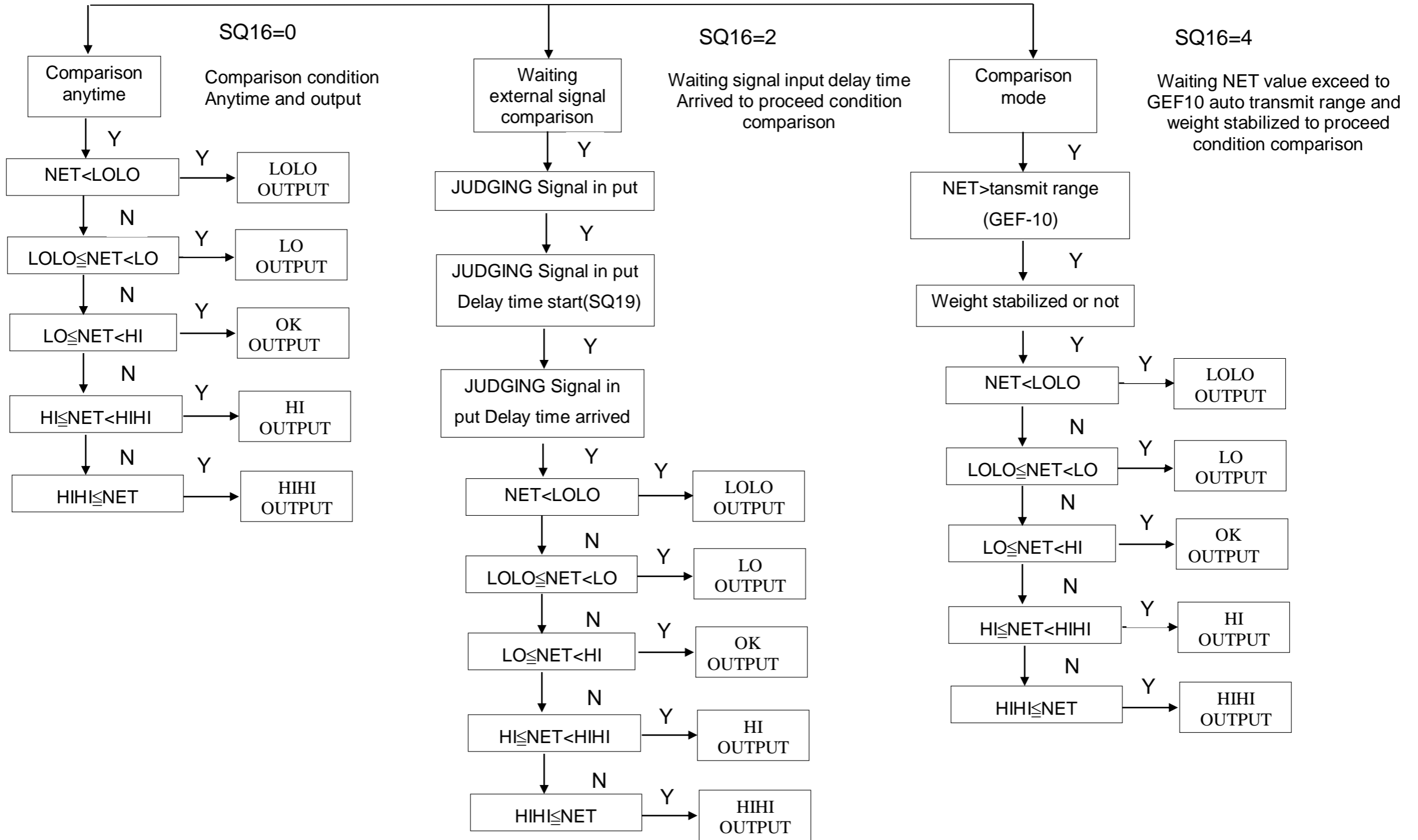
4-4 Normal Batching Flow Chart (SQ-01=1)



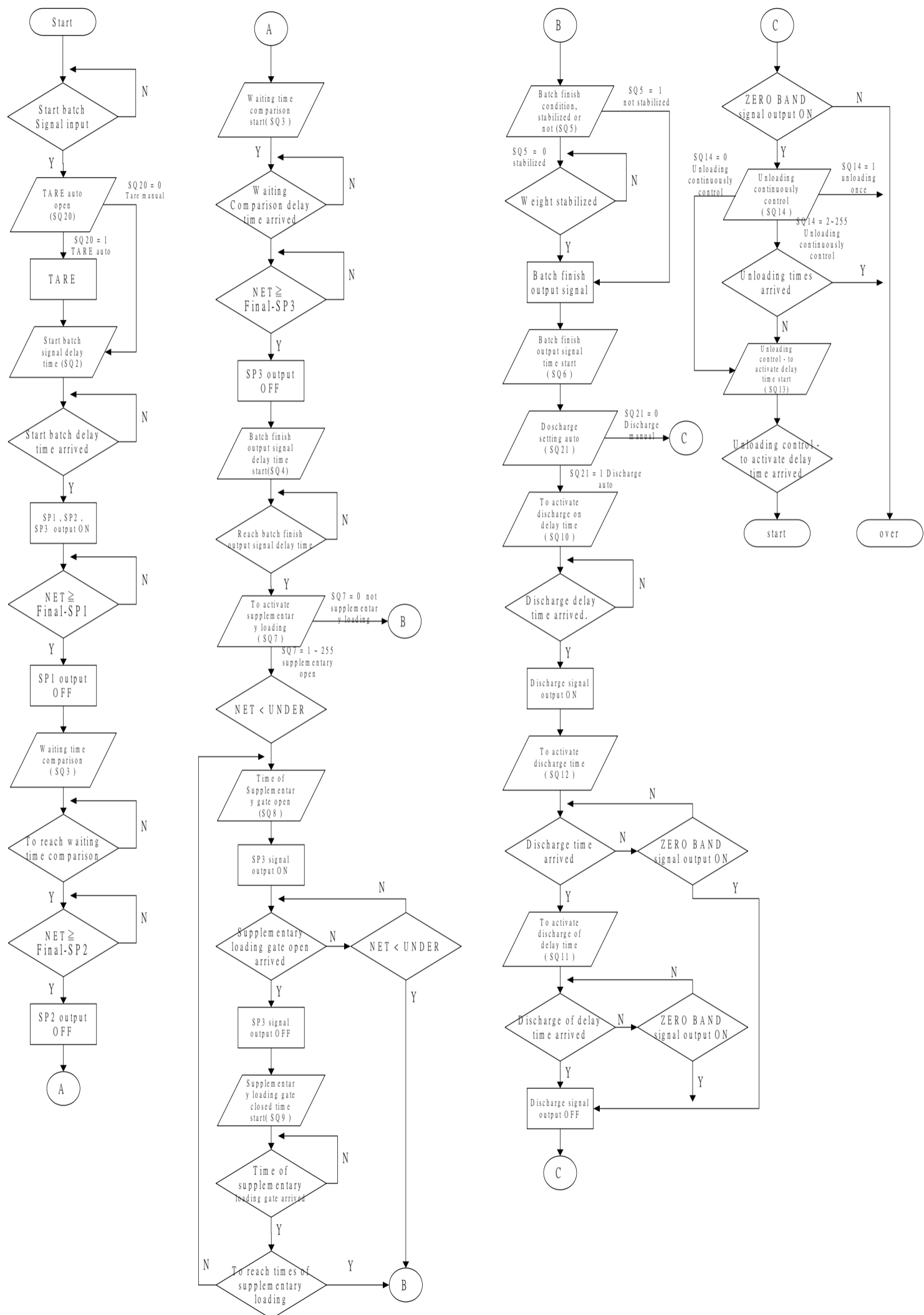
4-5 Loss-in Weight Flow Chart (SQ1 = 2)



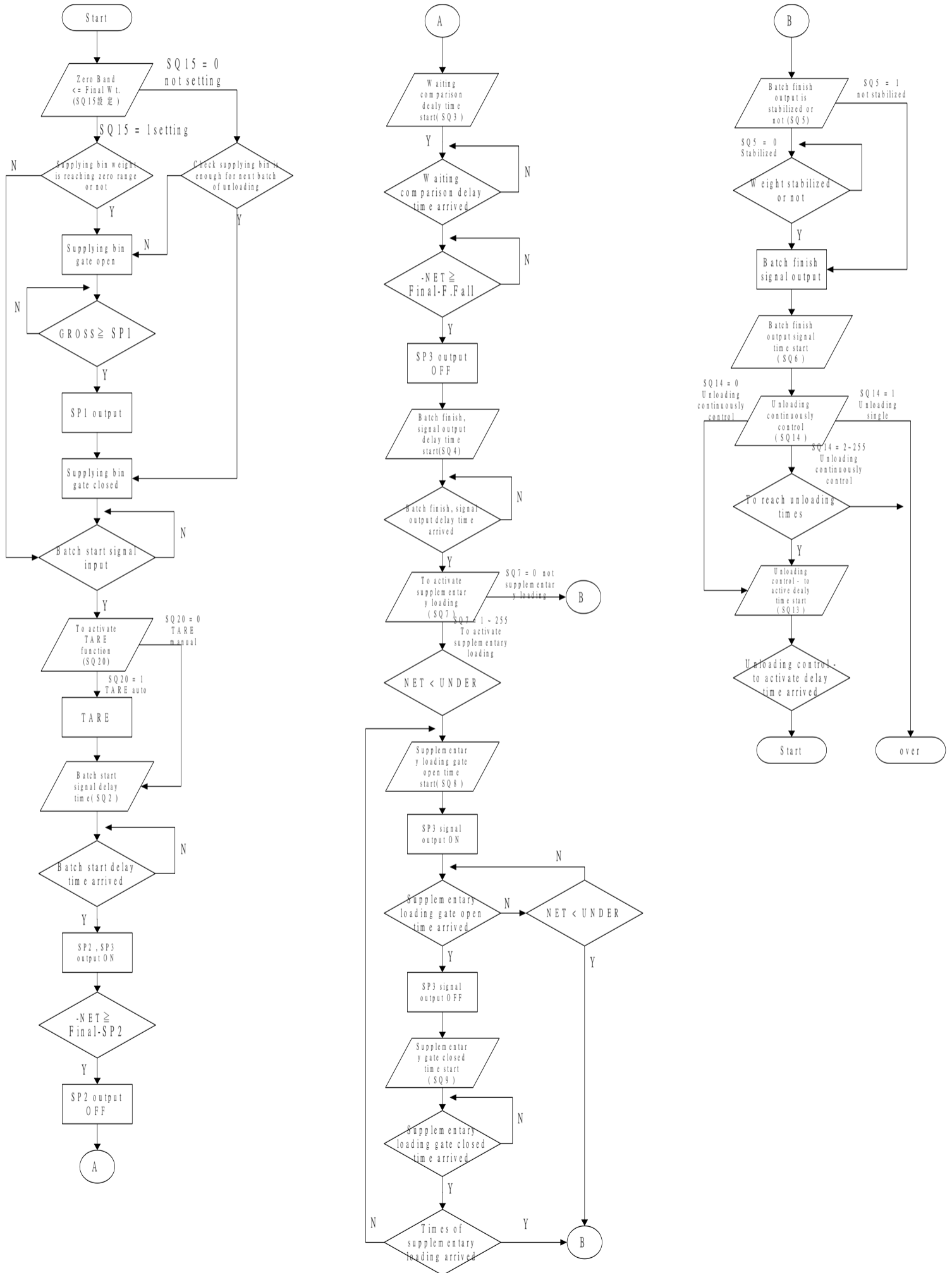
4-6 Hi, OK, Lo Output Flow Chart(SQ1 = 3)



4-7 Normal Batching (Built-in Program) Flow Chart (SQ-01=4)

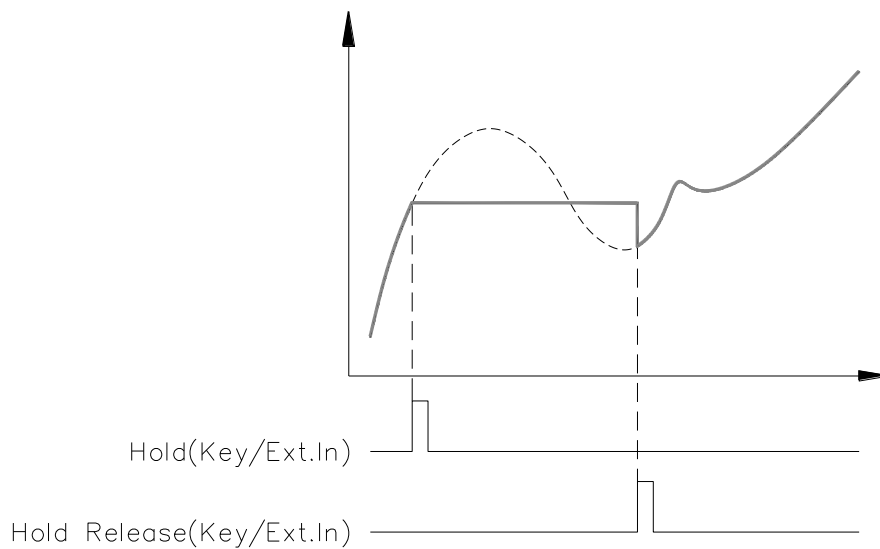


4-8 Loss-in Weight (Built in Program) (SQ-01=5)

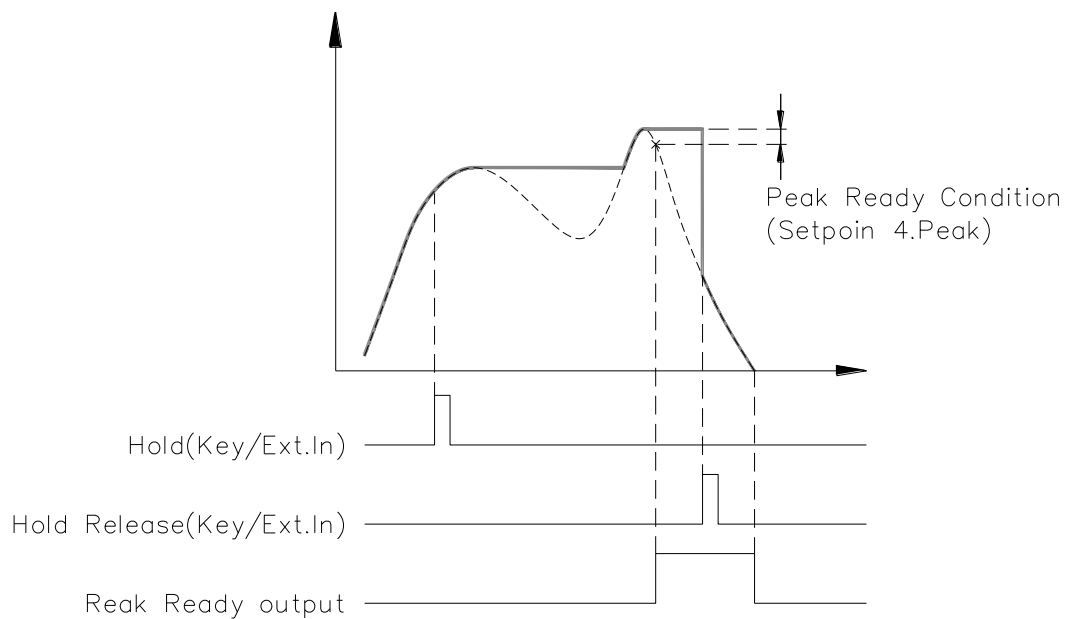


4-9 Hold Mode (SQ-01 = 6)

1. General hold mode (GEF-11 = 0)

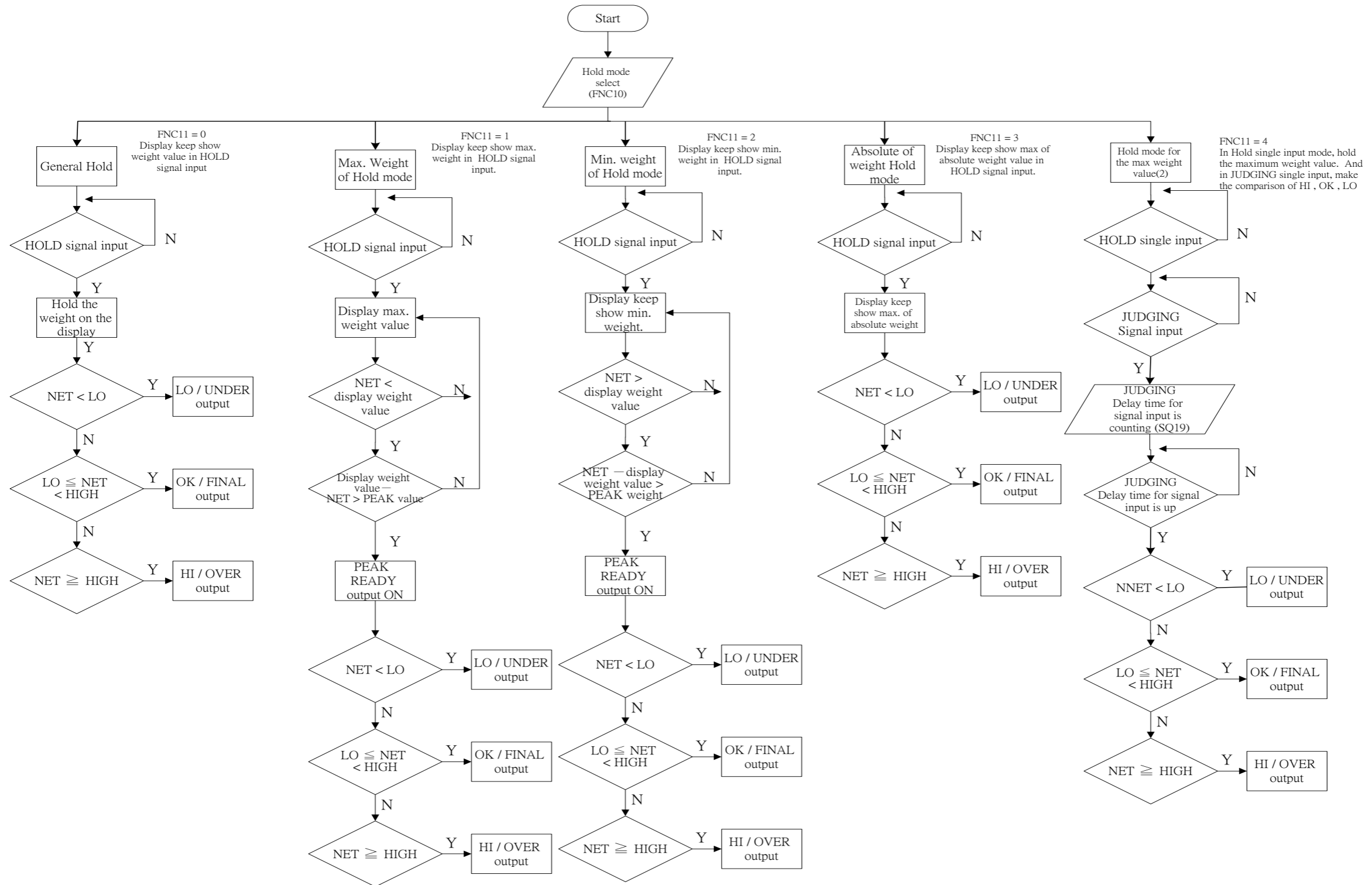


2. Peak hold mode (GEF-11 = 1, 2)



Peak hold mode with four different states (GEF-11 = 1,2,3,4), positive peak weight(1), negative peak weight, absolute value of peak weight and positive peak weight(2) . The peak holds of absolute value and positive peak weight (2) both have no peak ready signal output.

4-9-1 Hold Mode Flow Chart



4-9-2 Hi, OK, Lo Comparison

1. Normal HOLD (GEF-11 = 0)

Entering the Hold mode, Hi, OK, Lo comparison output. Escape Hold mode will switch off the outputs.

2. Peak HOLD (GEF-11 = 1, 2)

If Peak Ready is ON, Hi, OK, Lo comparison output. Escape Hold mode will switch off the outputs.

3. The absolute value of peak HOLD (GEF-11 = 3)

Entering the Hold mode, Hi, OK, Lo will refer to Peak value to do the comparison.

4. GEF-11 = 4

When the external input single Judgement is ON, Hi, OK, Lo will refer to Peak value to do the comparison.

4-10 Totalizing (ACCU.) Auto / Transmit

With automatic totalising active (SQ-17) or RS232 / RS485 or BCD output set to auto transmit.

1. SQ-01 = 1, 2, 4 or 5 batch / loss-in weight

- a) When the weight reaches the Final weight and the batch finish signal is ON the net weight will be added to the totaliser and number of additions is incremented. The RS232 / RS485 and BCD outputs transmit data.
- b) When the net weight returns to the zero range (GEF10), then the sequence in a) above can be repeated.

2. SQ-01 = 3 Comparison mode

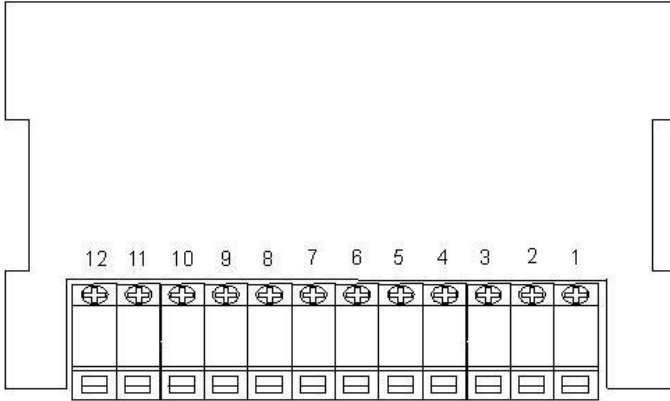
- a) When the net weight exceeds the zero range and the weight has stabilized it will be added to the totaliser and number of additions is incremented. The RS232 / RS485 and BCD outputs transmit data.

CHAPTER 5 INTERFACE

5-1 Serial Input/Output Interface (Built-in)

☞ Pin location and setting

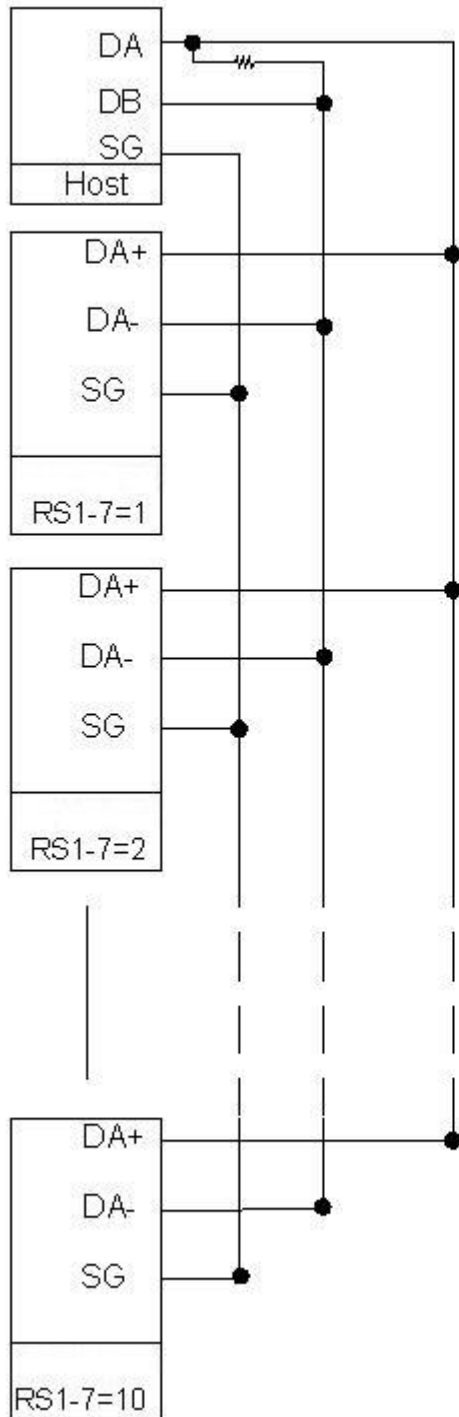
1. Built-in RS232 or RS485



PIN	Function
4	TXD / DA +
5	RXD / DA -
6	SG

☒ Connection type

RS-485

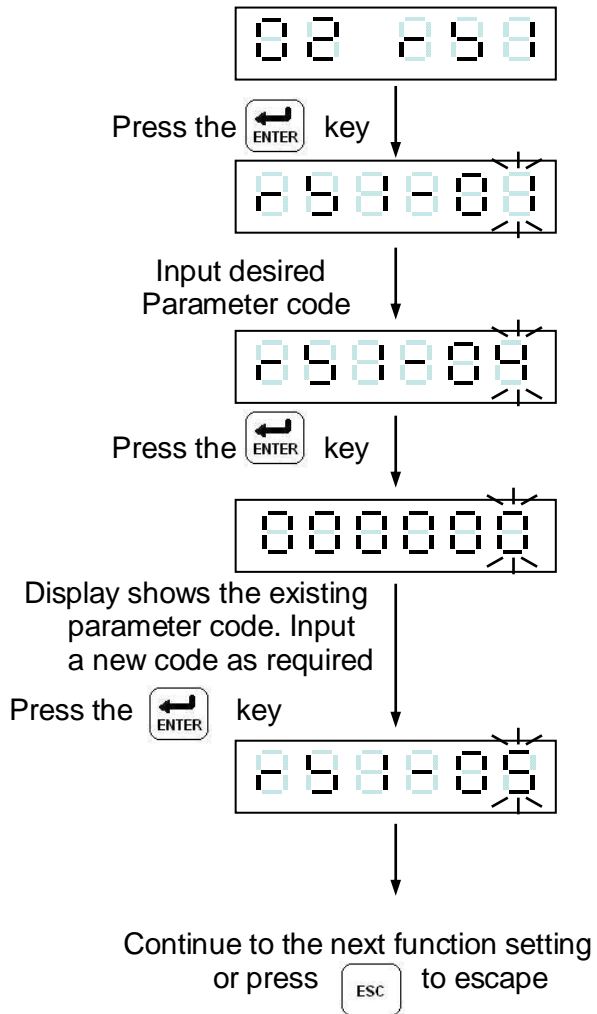


☒ Notice:

- The maximum connection is 10 sets of TD-100
- When the Host computer has the built-in terminal resist, it is not necessary to have the external one.
- When the host computer has no single (SG), it is acceptable to disconnect that part.

Function setting

First serial port interface 00 888
Setting procedure



	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

Item	Function	Setting Value				Default
		Parameter	Description			
RS1- 01	Transmit format	0	As display			0
		1	Gross only			
		2	Net only			
		3	As display (simple)			
		4	Gross (simple)			
		5	Net (simple)			
		6	Comparison + As display (simple)			
		7	Comparison +Gross (simple)			
		8	Comparison +Net (simple)			
		9	Tare			
		10	Totalised (Accu.) Weight and number of transactions			
RS1- 02	Transmit mode	0	Transmit continuous + command mode			0
		1	Auto transmit + command mode			
		2	Manual transmit + command mode			
		3	Command mode			
		4	MODBUS RTU mode			
RS1- 03	Transmit speed	0	600	7	57600	2
		1	1200	8	115200	
		2	2400			
		3	4800			
		4	9600			
		5	19200			
		6	38400			
RS1- 04	Parity Bit length Stop Bit (MODBUS mode:)	0	N, 8, 1	No parity, 8 data bits, 1 Stop bit		2
		1	O, 7(8), 1	Odd parity, 7(8) data bits, 1 Stop bit		
		2	E, 7(8), 1	Even parity, 7(8) data bits, 1 Stop bit		
		3	(N, 8, 2)	No parity, 8 data bits, 2 Stop bit		
RS1- 05	Transmit times	0	Open			0
		1	1 time/sec.			
		2	2 time/sec.			
		3	5 time/sec.			
		4	10 time/sec.			
RS1- 06	Transmission conditions	<p>0 0 0 0 0 0</p> <p>0 ⇒ transmit cont. 1 ⇒ Stop transmit</p>				000000
RS1- 07	Indicator poling address	00 ↓ 99	When set to 0, Indicator addressing is not used.			0

☐ Data format

1. General Format

NET	S	T	,	G	S	,	+	0	1	2	3	4	5	6	k	g	CR	LF
GROSS	S	T	,	N	T	,	+	1	2	3	4	.	5	6		g		
TARE	S	T	,	T	R	,	+	0	1	2	3	4	5	6		t		
+ OL	O	L	,	G	S	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP		
- OL	O	L	,	G	S	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP		
UNSTABLE	U	S	,	G	S	,	+	1	2	3	4	.	5	6	k	g		

2. Totalised (Accu.) Format

Accu. Weight	T	W	,	+	1	2	3	4	5	6	.	7	8	9	k	g	CR	LF
Accu. Wt. Over+	T	W	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Accu. Wt. Over -	T	W	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Accu. Count	T	N	,	+	0	1	2	3	4	5	6	7	8	9	SP	SP		
Accu. Count over	T	N	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		

3. Simple Format

Gross/Net or same display	+	1	2	3	4	5	6	7	CR	LF
Over load positive	+	SP	SP	SP	SP	SP	SP	SP		
Over load negative	-	SP	SP	SP	SP	SP	SP	SP		

4. Setpoint (1) + Simple Format (Gross/Net or as display)

	+	1	2	3	4	5	6	CR	LF
bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0		

- bit 0 : Zero Band
- bit 1 : Over
- bit 2 : Under / Hi
- bit 3 : SP1 / Go
- bit 4 : SP2 / Lo
- bit 5 : SP3
- bit 6 : Discharge
- bit 7 : Batch finished

5. Comparison condition (2)

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
--------	--------	--------	--------	--------	--------	--------	--------

Byte 0 : Zero Band

Byte 1 : Over

Byte 2 : Under / Hi

Byte 3 : SP1 / Go

Byte 4 : SP2 / Lo

Byte 5 : SP3

Byte 6 : Discharge

Byte 7 : Batch finished

ON : 0 (ASC II Code 30 H)

OFF : 1 (ASC II Code 31 H)

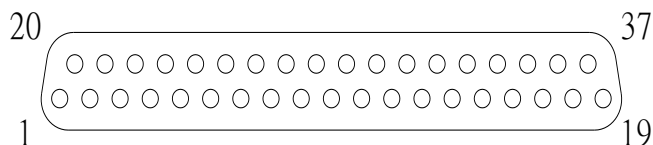
Description

	Output	ASCII	Description
Status 1	OL	4FH, 4CH	Over load
	ST	53H, 54H	Weight stable
	US	55H, 53H	Weight unstable
Status 2	GS	47H, 53H	Gross Weight
	NT	45H, 54H	Net Weight
	TR	54H, 52H	TARE
	TW	54H, 57H	Totalised Weight
	TN	54H, 4EH	Totalised Times
Data of Weight	0 ~ 9	30H ~ 39H	Figure of weight
	+, -	2BH, 2DH	Symbol (+ or -) of weight
	Space	20H	Over load
	.	2EH	Decimal
Units	Space, Space	20H, 20H	None
	kg	6BH, 67H	kg
	Space t	20H, 74H	ton
	lb	6CH, 62H	lb
Ending code	CR, LF	0DH, 0AH	Ending code
Separating code	,	2CH	

5-2 BCD Parallel Output Interface (OP-02)

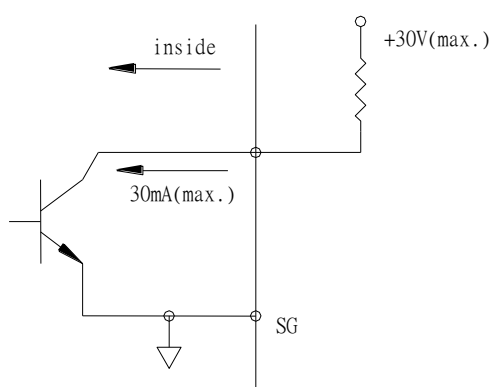
☐ PIN Location

D-Sub 37PIN

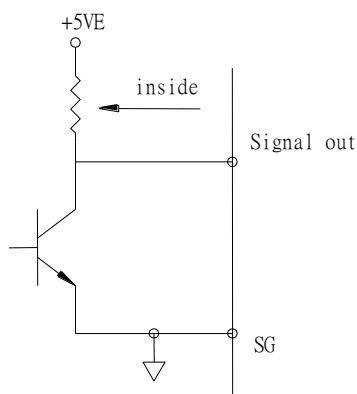


PIN	Function	PIN	Function
1	SG	20	SG
2	1×10^0	21	2×10^0
3	4×10^0	22	8×10^0
4	1×10^1	23	2×10^1
5	4×10^1	24	8×10^1
6	1×10^2	25	2×10^2
7	4×10^2	26	8×10^2
8	1×10^3	27	2×10^3
9	4×10^3	28	8×10^3
10	1×10^4	29	2×10^4
11	4×10^4	30	8×10^4
12	1×10^5	31	2×10^5
13	4×10^5	32	8×10^5
14	Gross / - Net	33	Stable / - MD
15	Plus / - Minus	34	DP1
16	DP2	35	DP3
17	DP4	36	Over / - Normal
18	Data ready	37	Hold input
19			

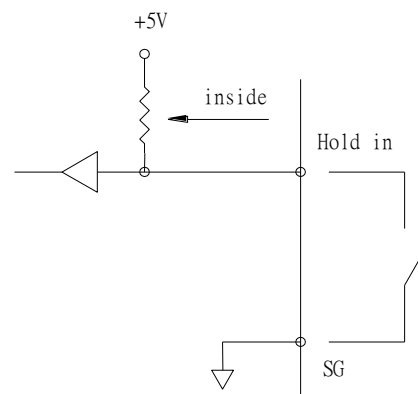
☐ Equivalent Circuit



Open Collector Output (OP-02-1)

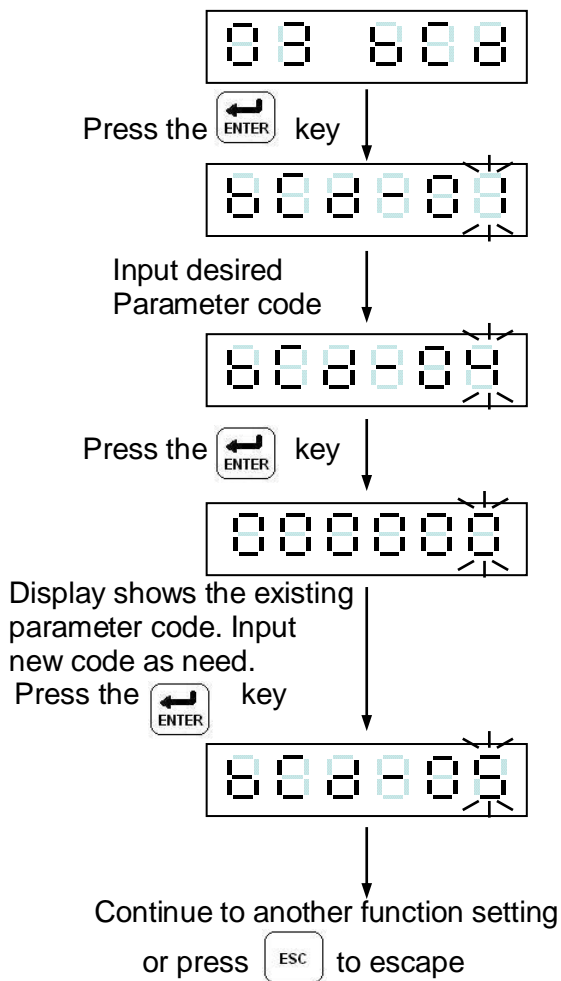


TTL Output (OP-02-2)



Hold Input

Function setting

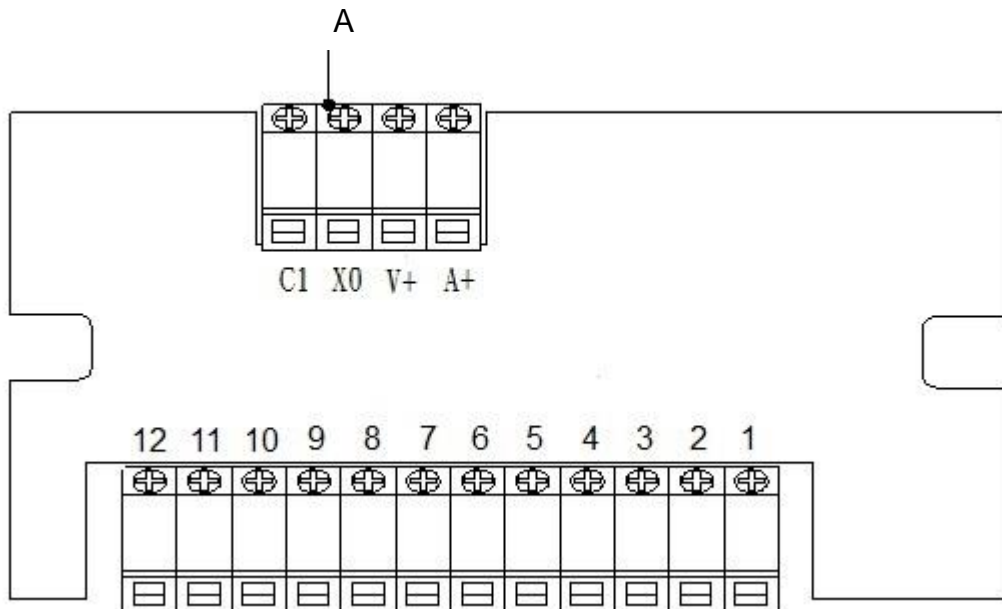


	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

Item	Function	Setting value		Default
		Parameter	Description	
bCd- 01	Data type	0	As display	0
		1	Gross	
		2	Net	
bCd- 02	Transmit mode	0	Transmit continuous	0
		1	Auto transmit	
		2	Manual transmit	
bCd- 03	Output Logic	0	Positive logic action	0
		1	Negative logic action	
bCd- 04	Data ready Signal logic	0	Positive logic action	0
		1	Negative logic action	
bCd- 05	OL output code	0	FFFFFF	0
		1	999999	
bCd- 06	Data code	0	BCD Code	0
		1	Hex. Code	

5-3 Analogue Current Output Interface (OP-03)

☞ Location



A. Terminal (4 way)

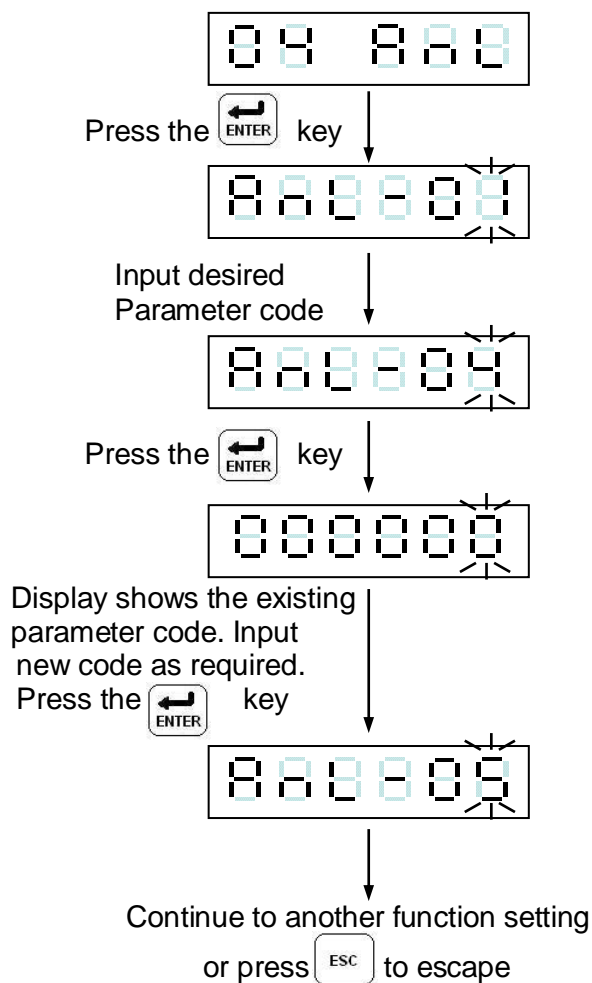
- C1 : Ground
- X0 : External Parallel Input ZERO
- V+ : 0 ~ 10V voltage output
- A+ : 4 ~ 20mA current output, positive

*

☞ Analogue output interface specification

- Resolution : 16 bits
- Current output : 4 ~ 20mA
- Voltage output : 0~10V

Function setting



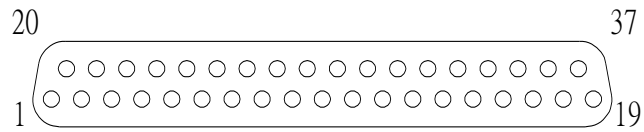
	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

Item	Function	Setting value		Default
		Parameter	Description	
AnL- 01	Data type	0	As display	0
		1	Gross	
		2	Net	
AnL- 02	Signal output	0	Current output	0
		1	Voltage output	
AnL- 03	Weight in Lo	0 ~ 999999	When the weight reaches the value of that in AnL-03, the current / voltage output is changed to that configured in AnL-05.	0
AnL- 04	Weight in Hi	0 ~ 999999	When the weight reaches the value of that in AnL-04, the current / voltage output is changed to that configured in AnL-06,07.	30000
AnL- 05	Current in Lo	0 ~ 65535	10940 \approx 4mA	10940
AnL- 06	Current in Hi	0 ~ 65535	54560 \approx 20mA	54560
AnL- 07	Voltage in Hi	0 ~ 65535	50100 \approx 10V	50100

5-4 External Parallel Input /Output Interface

☐ PIN location

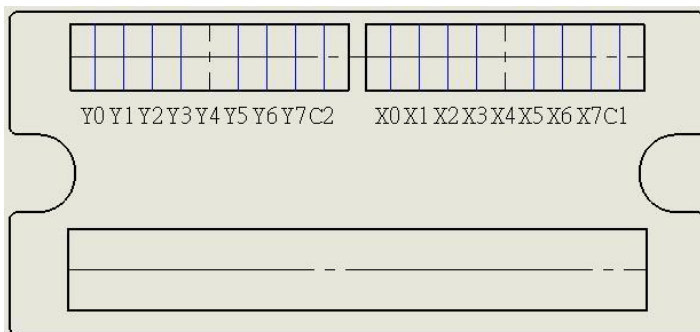
D-Sub 37PIN



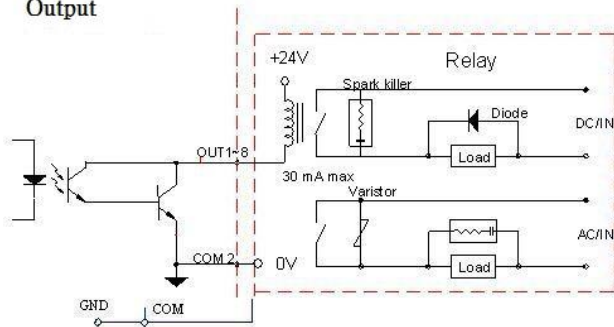
☐ OP-04 Control I/O (4 in / 4 out) + Setpoint Input (BCD code)

PIN	I/O	Signal	PIN	I/O	Signal
1	IN	Code 100	20	IN	Code 101
2	IN	Code 102	21	IN	Code 103
3	IN	Code 104	22	IN	Code 105
4	IN	Code 106	23	IN	Code 107
5	IN	Code 108	24	IN	Code 109
6	IN	Code 1010	25	IN	Code 1011
7			26		
8			27	OUT	OUT 1
9	OUT	OUT 2	28	OUT	OUT 3
10	OUT	OUT 4	29	IN	Vex
11		COM 2	30		COM 2
12			31		
13		COM 1	32		COM1
14	IN	IN 1	33	IN	IN 2
15	IN	IN 3	34	IN	IN 4
16			35		
17			36	IN	Code 1
18	IN	Code 2	37	IN	Code 4
19	IN	Code 8			

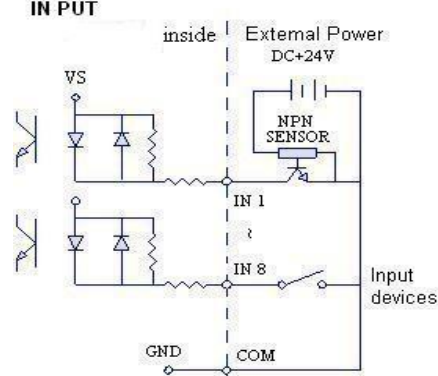
OP-05 Control I/O (8 in / 8 out)



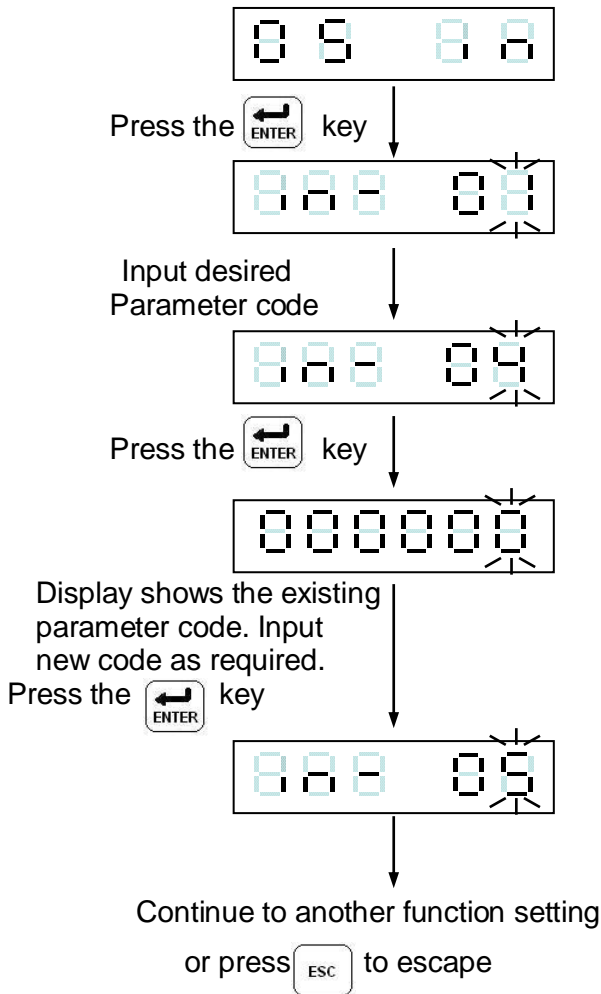
Output



IN PUT



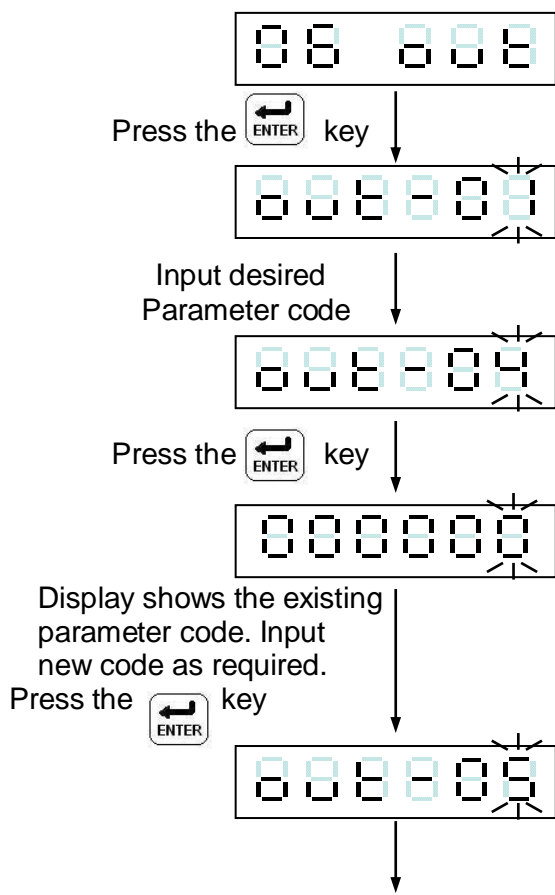
☞ Input signal configuration



	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

Item	Function	Setting value		Default
		Parameter	⇒ Description	
IN - 01	Input 1	0	⇒ None	1
IN - 02	Input 2	1	⇒ Zero	
IN - 03	Input 3	2	⇒ Tare	2
IN - 04	Input 4	3	⇒ Tare reset	
IN - 05	Input 5	4	⇒ Start batching	3
IN - 06	Input 6	5	⇒ Stop batching	
IN - 07	Input 7	6	⇒ Discharge Command	4
IN - 08	Input 8	7	⇒ Hold	
		8	⇒ Hold display & I/O reset	5
		9	⇒ Totalise (Accu) Command	
		10	⇒ Clear totaliser (Accu)	6
		11	⇒ Clear previous total (Accu) Value.	
		12	⇒ Start to compare	7
		13	⇒ Serial and parallel printer manual output	
		14	⇒ Net / Gross	8

Output signal setting

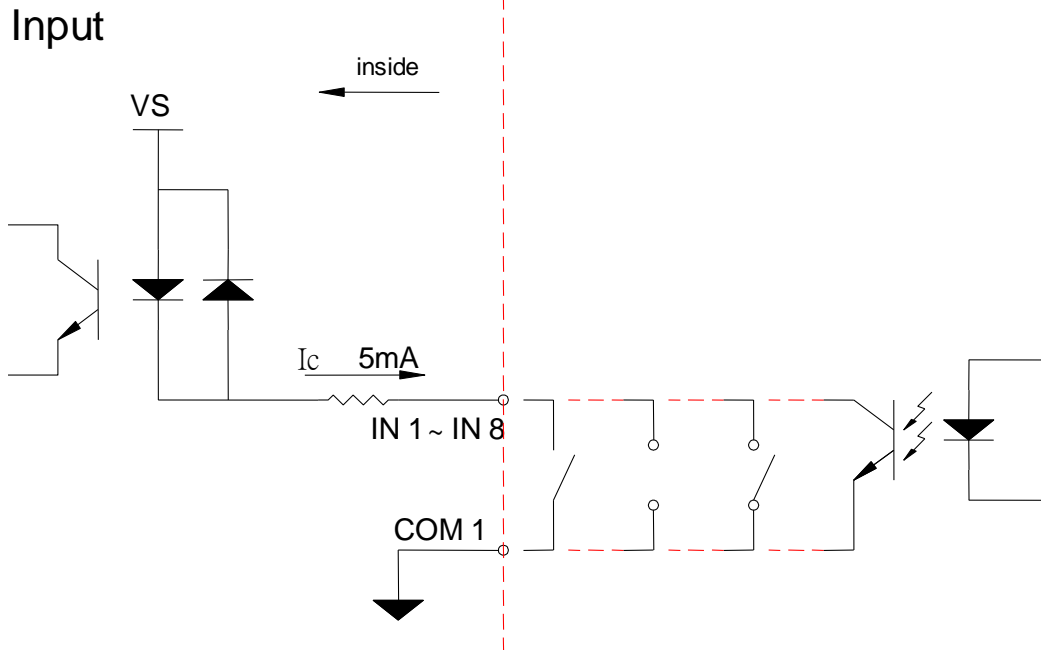


	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

To continue another function setting, or press to escape

Item	Function	Setting value		Default
		Parameter	Description	
OUT- 01	Output 1	0 ⇒ None		1
OUT- 02	Output 2	1 ⇒ Zero band		2
OUT- 03	Output 3	2 ⇒ SP1		3
OUT- 04	Output 4	3 ⇒ SP2		4
OUT- 05	Output 5	4 ⇒ SP3		5
OUT- 06	Output 6	5 ⇒ Batching completed		6
OUT- 07	Output 7	6 ⇒ Discharge		7
OUT- 08	Output 8	7 ⇒ Peak ready		8
		8 ⇒ Stable		
		9 ⇒ Internal batching process running		
		10 ⇒ Under		
		11 ⇒ Over		
		12 ⇒ Hi Hi		
		13 ⇒ Hi		
		14 ⇒ OK		
		15 ⇒Lo		
		16 ⇒LoLo		
OUT-09	The output logic of OUT-04~OUT-01	0000 → positive logic	1111 → negative logic	0000
OUT-10	The output logic of OUT-08~OUT-05	0000 → positive logic	1111 → negative logic	0000

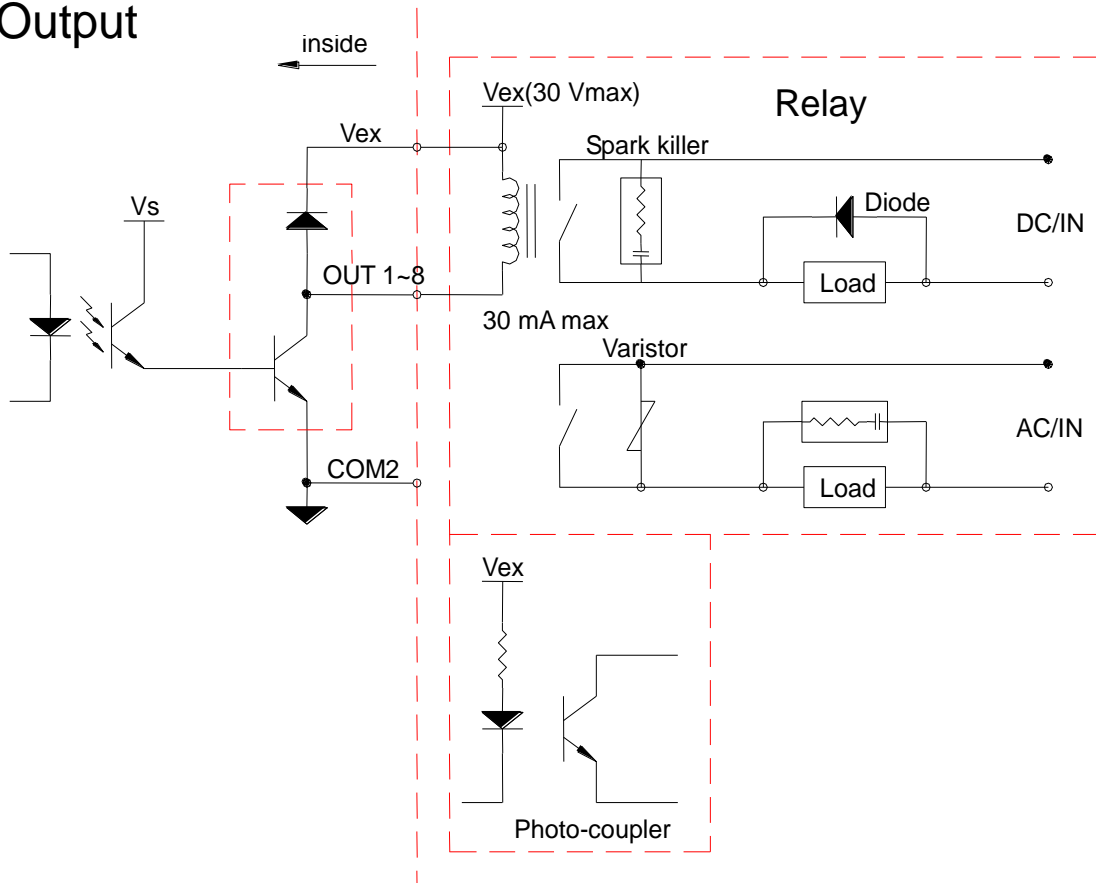
☞ Equivalent Circuits



☞ IN 1 ~ IN 8 and COM 1. Input signal - Open \leftrightarrow OFF, Short \leftrightarrow ON.

☞ Warning: Don't use external power (AC or DC) to connect to the input terminals.

Output



☞ Thumbwheel Switches (for OP-04)

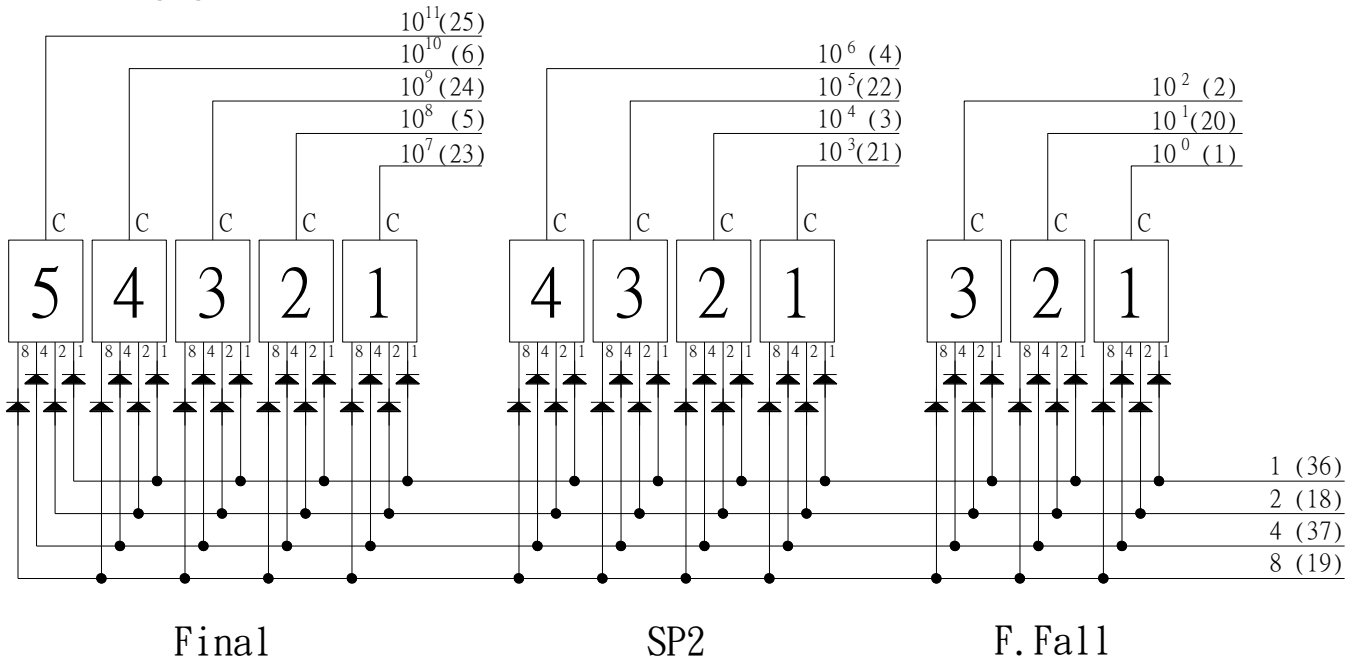
The interface can connect to external thumbwheel switches or a PLC to input various parameters depending on the configuration of SQ-01. The input variables are:-

- ① Final (5 digits), SP2 (4 digits) & Free Fall (3 digits)
- or ② Hi (6 digits), Lo (6 digits)

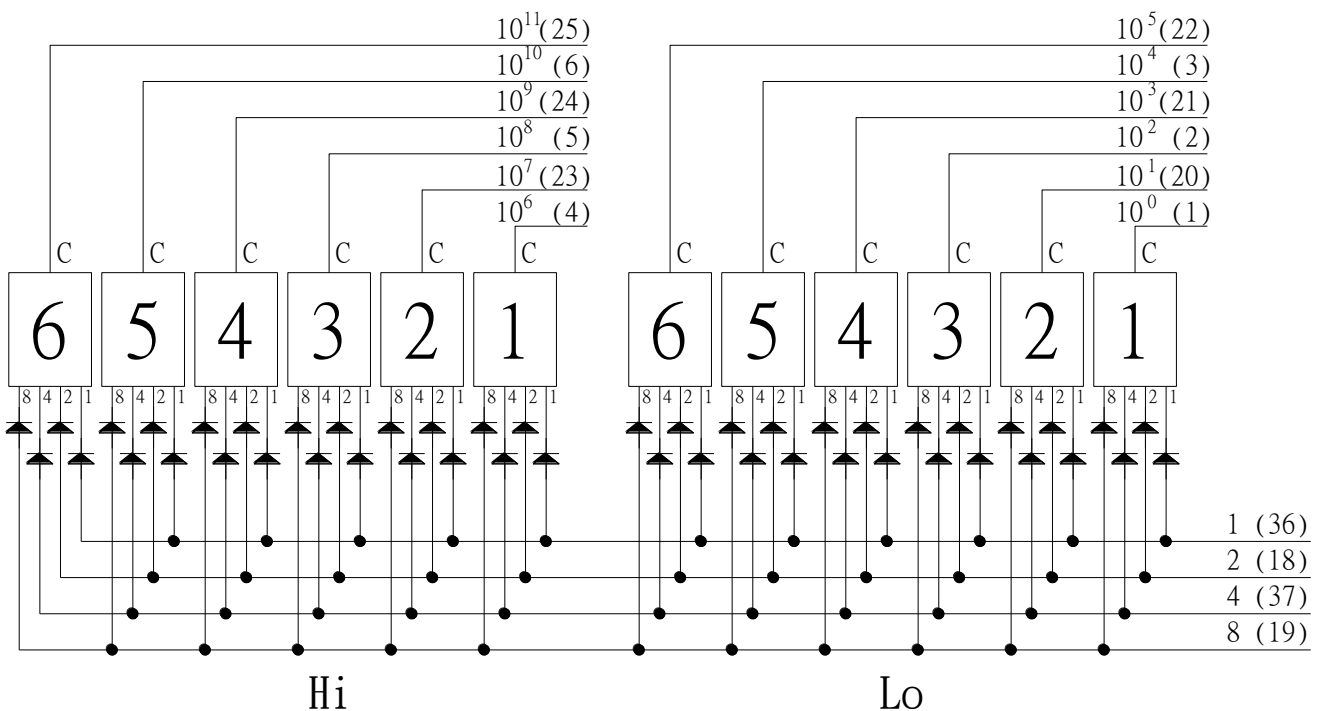
When using external thumbwheel Switches, SQ-18 should be set to 1.

Connection data

SQ-01 = 1, 2, 4 or 5








SQ-01 = 3 or 6



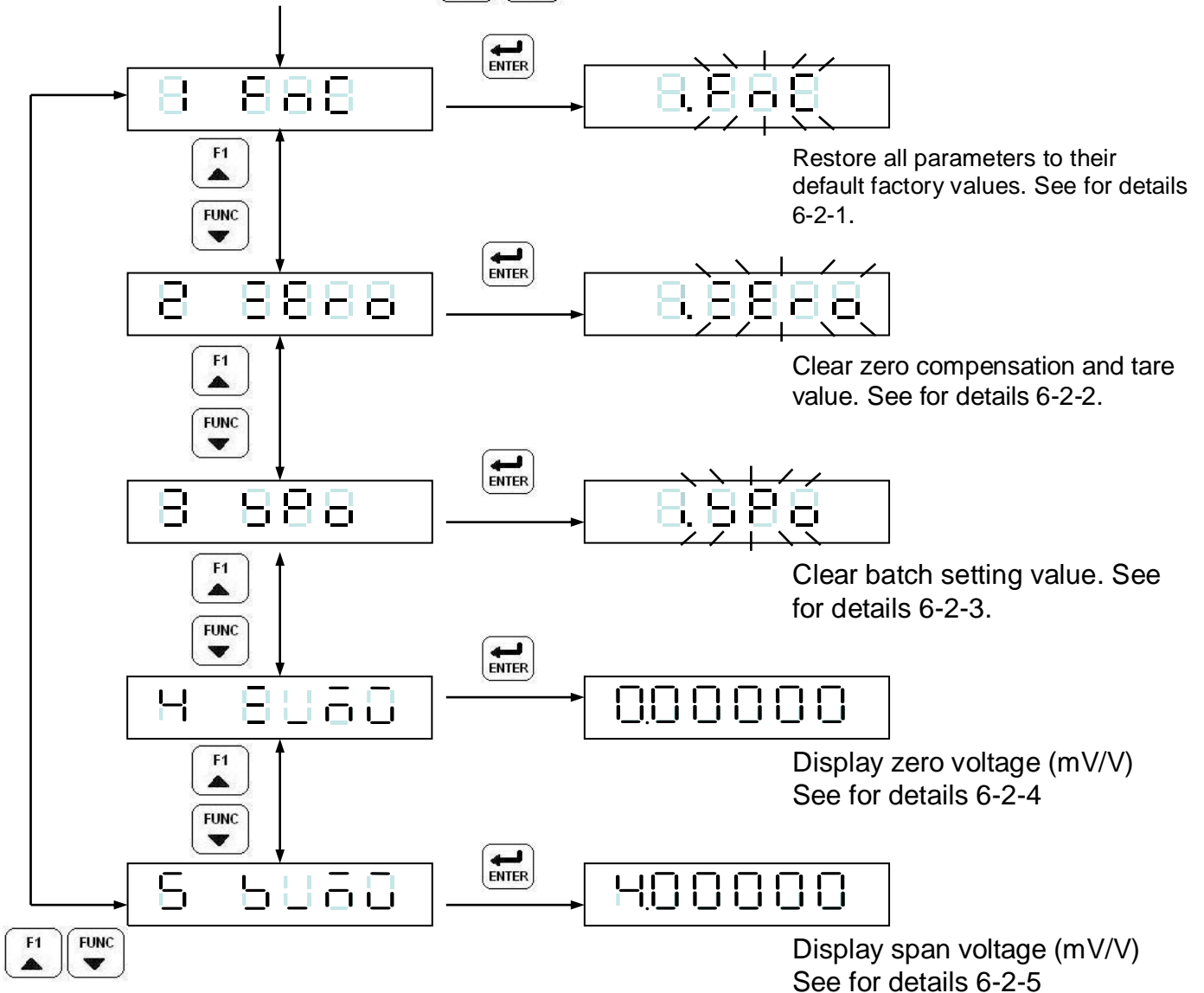
CHAPTER 6 MAINTENANCE

6-1 Restore all Parameters to The Default Factory Values.

- (1) While the indicator is counting back to zero, adjust press  
- (2) Display shows the flashing digits 
- (3) Confirm / abort
 - (3-1) To confirm press  key & don't release it until the display shows , then release the key and return the calibration SW to OFF.

6-2 Maintenance Function Parameters










Power on the machine. Press   keys while the display counts back to zero.












6-2-1 Restore the Function Parameter Back to Its Default Value

- (1) During the indicator count back to zero, press  
- (2) The display shows 
- (3) Press  key and the display shows  flashing.
- (4) Confirm / abort
 - (4-1) To confirm, press the  key & don't release it. The display will then show .
 - (4-2) To abort press the  key








6-2-2 Clear Zero Compensation and Tare Values

- (1) During the indicator count back to zero, press  
- (2) The display shows  press the F1 key to display 
- (3) Press  key, the display shows  flashing.
- (4) Confirm / abort
 - (4-1) To confirm press the  key & don't release it. The display will then show .
 - (4-2) To abort press the  key








6-2-3 Clear Batch Setting

- (1) During the indicator count back to zero, press  
- (2) The display shows  press the F1 key to display 
- (3) Press  key, the display shows  flashing.
- (4) Confirm / abort
 - (4-1) To confirm press the  key & don't release it. The display will then show .
 - (4-2) To abort press the  key

6-2-4 Display Zero Voltage (mV/V)

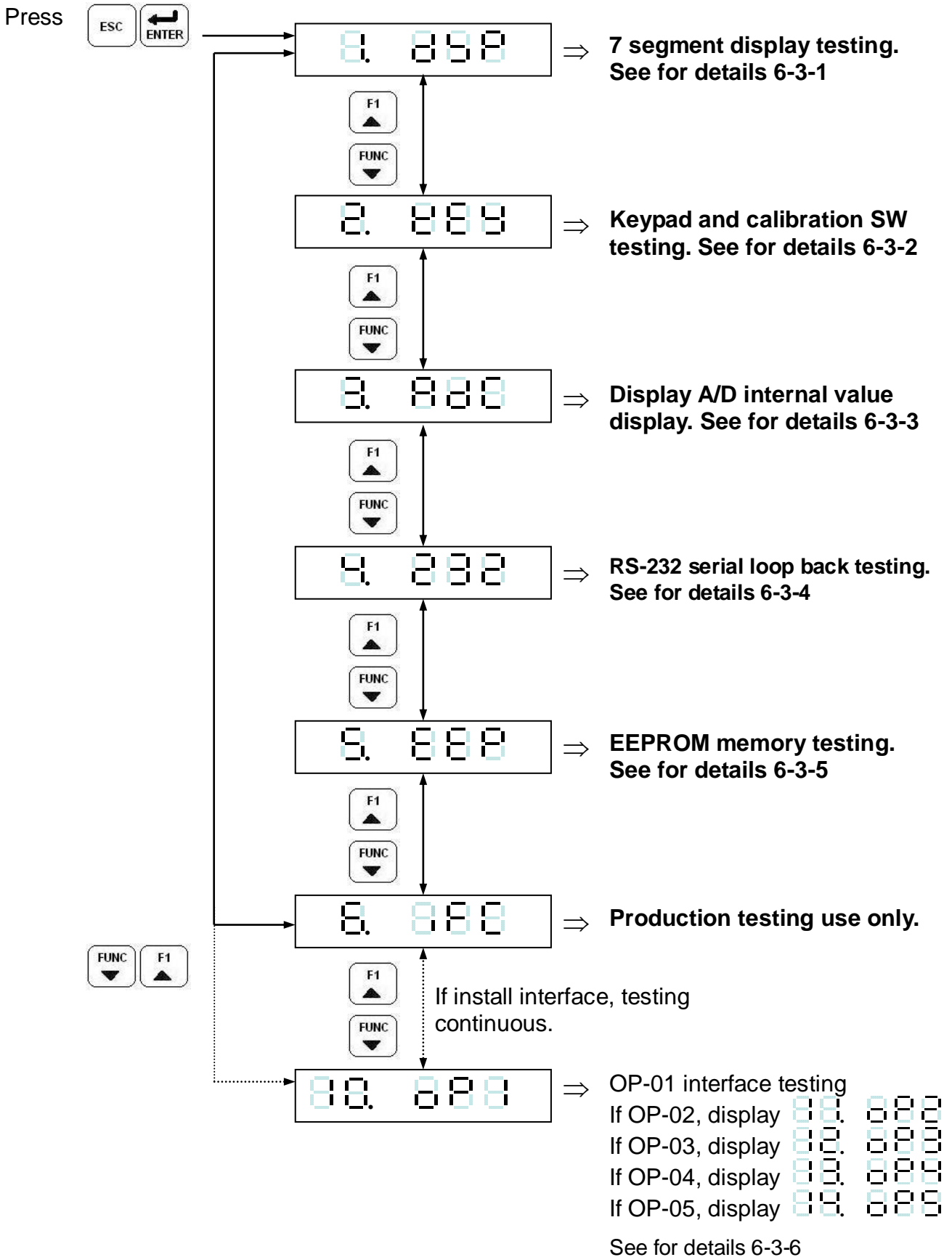
- (1) During the indicator count back to zero, press  
- (2) The display shows  press the F1 key to display 
- (3) Press  key the display shows the zero voltage (mV/V). e.g. 
- (4) Press  key

6-2-5 Clear Batch Setting



- (1) During the indicator count back to zero, press  
- (2) The display shows  press the F1 key to display 
- (3) Press the  key, the display shows the span voltage (mV/V).
e.g. 
- (4) Press  key

6-3 Test Mode




During the indicator count back to zero



6-3-1 7 Segment Display Testing

The display will show  ~ , then display “.” and all of the icons. To exit press 

6-3-2 Keypad SW Testing



pressing any key will cause the related display segment to change from  → . To exit press 

6-3-3 Display A/D Internal Value Display



Display range is 0 ~ 520,000d (-0.1mV/V ~ 4.0mV/V). To exit press 

6-3-4 RS-232 Serial Loop Back Testing

Terminal pin 5 and pin 6 must be connected together at the rear of the indicator.

If display shows , the interface is working normally. If display shows , the interface is not working correctly.

6-3-5 EEPROM Memory Testing

If the display shows , it means normal. If the display shows , the memory is not working correctly.

6-3-6 Option Interface Card Testing



OP-02 BCD parallel output interface testing


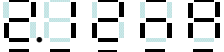
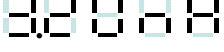
- 1) A flashing decimal point indicates the test procedure is active.
- 2) Program will transmit OFF → ON → OFF signal for each output bit of the BCD interface in sequence.

OP-03 Analogue current output interface testing

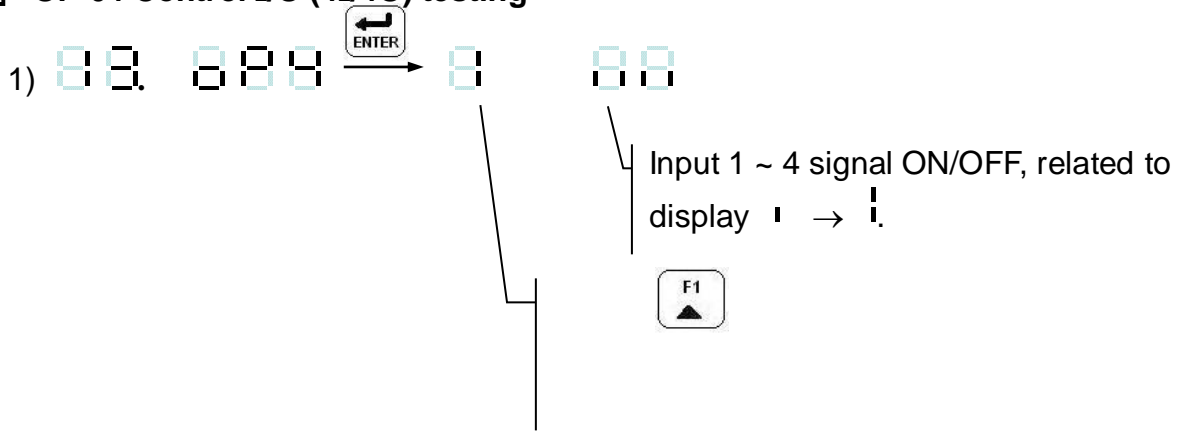
4 ~ 20mA current output testing


Use an ammeter to measure the output current between pin1 & pin 3 of the interface.

Use the   keys to select the output current level desired.

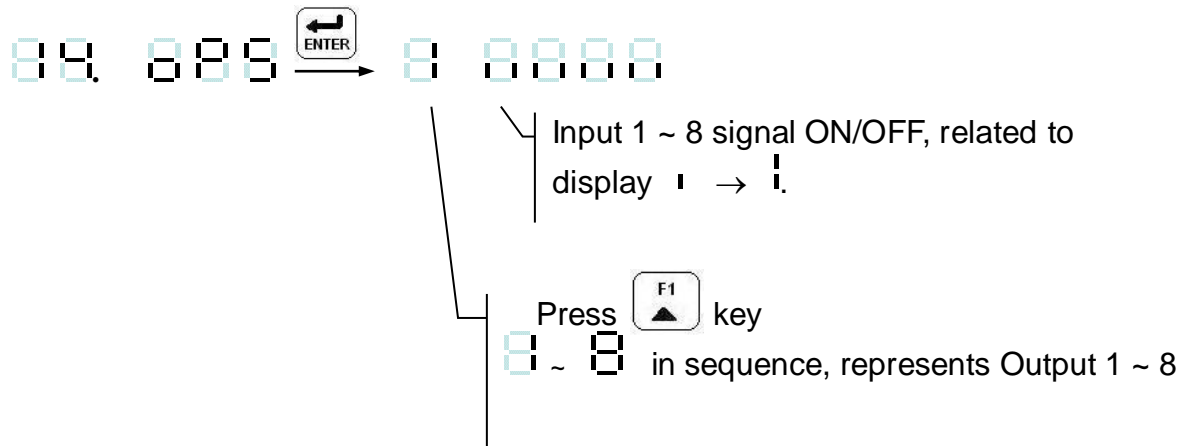
 ⇒ 4mA
 ⇒ 12mA
 ⇒ 20mA

OP-04 Control I/O (4I/4O) testing



2) Press  key to switch to the control input value.

OP-05 Control I/O (8I/8O) testing



APPENDIX I DESCRIPTION OF 7 SEGMENT CHARACTERS

Digit	7 segments letter	Alphabet	7 segments letter	Alphabet	7 segments letter
0		A		N	
1		B		O	
2		C		P	
3		D		Q	
4		E		R	
5		F		S	
6		G		T	
7		H		U	
8		I		V	
9		J		W	
		K		X	
		L		Y	
		M		Z	

APPENDIX II FUNCTION TABLE

Specification Calibration

Item	Function	Setting Value		Default
		Parameter	Description	
CSP-01	Unit	0	None	2
		1	g	
		2	Kg	
		3	t	
		4	lb	
CSP-02	Decimal Point	0	None	0
		1	1 Decimal Point	
		2	2 Decimal Point	
		3	3 Decimal Point	
CSP-03	Division	1	Division	1
		2		
		5		
		10		
		20		
		50		
CSP-04	Max. Capacity	999999 ↓ 000000	Max. capacity	999999
CSP-05	Zero range	0 =full range (±1%~30%)	Zero range = calibration zero point ± (Max. capacity×setting value %)	0
CSP-06	Time of zero tracking	0.0 ~ 5.0 (sec)	Time and range of zero tracking should be use at the same time. If the time is set to 0.0, the zero tracking function is disabled.	1.0
CSP-07	Range of zero tracking	0 ~ 9	Range of zero tracking = (setting value×½)D , D=min. division Range and time of zero tracking should be use at the same time. If the range is set to 0, the zero tracking function is disabled.	2
CSP-08	Investigate time in stable	0.0 ~ 5.0 (sec)	Investigate time and range should be use at the same time. If the time is set to 0.0, the investigate time is disabled.	1.0
CSP-09	Investigate range in stable	0 ~ 9	Investigate time and range should be use at the same time. If the range is set to 0, the investigate range is disabled.	2
CSP-10	Weight unstable, function ZERO and TARE	0	Action	0
		1	None	
CSP-11	Gross Weight is negative, function TARE	0	Action	0
		1	None	

☞ FNC Group Function Setting

Item	Function	Setting value			Default	
		Parameter	Description			
GEF-01	Digital Filter I	0	5 Hz		4	
		1	4.17 Hz			
		2	2.5 Hz			
		3	2.08 Hz			
		4	1.25 Hz			
		5	1.04 Hz			
		6	0.63 Hz			
		7	0.52 Hz			
		8	0.31 Hz			
		9	0.26 Hz			
GEF-02	Digital Filter II	0	Disabled		2	
		1	Less filter ↑ ↓ Greater			
		2				
		3				
		4				
		5				
GEF-03	Key – Locked	000000	0	Normal (lock disable)	The bits and front panel key positions are related to each other.	000000
		↓ 111111	1	Close (lock enable)		
GEF-04	“FUNC” function setting	Parameter ⇒ Description			1	
		0	⇒ Display Net / Gross weight			
		1	⇒ Setpoint parameter setting			
		2	⇒ Tare reset			
		3	⇒ Manual serial, parallel print output.			
		4	⇒ Start load			
GEF-05	“F1” function setting	5	⇒ Stop load		0	
		6	⇒ Start comparison			
		7	⇒ Unload command			
		8	⇒ Totalise weight and counts command			
		9	⇒ Clear totalised weight and counts			
		10	⇒ Hold mode			
		11	⇒ Escape Hold mode (I/O DSP)			
		12	⇒ Convert to Gross / Net / totalised weight / totalised Count			

Item	Function	Setting value		Default
		Parameter	Description	
GEF-06	Front panel indication “●” setting (top)	Parameter ⇒ Description		0
GEF-07	Front panel indication “●” setting (next to top)	0	⇒ Zero	
		1	⇒ MD	
GEF-08	Front panel indication “●” setting (next to bottom)	2	⇒ Gross	
		3	⇒ Net	
GEF-09	Front panel indication “●” setting (bottom)	4	⇒ Totalised weight (Accu. V)	1
		5	⇒ Totalised transactions (Accu. C)	
GEF-07	Front panel indication “●” setting (next to top)	6	⇒ SP1	
		7	⇒ SP2	
GEF-08	Front panel indication “●” setting (next to bottom)	8	⇒ SP3	2
		9	⇒ Hi	
GEF-09	Front panel indication “●” setting (bottom)	10	⇒ OK	3
		11	⇒ Lo	
GEF-09	Front panel indication “●” setting (bottom)	12	⇒ Under	
		13	⇒ Over	
GEF-09	Front panel indication “●” setting (bottom)	14	⇒ Discharge	3
		15	⇒ Running	
GEF-09	Front panel indication “●” setting (bottom)	16	⇒ Hold	3
GEF-10	Return to zero band	0	5 d	0
		1	10 d	
		2	20 d	
		3	40 d	
		4	60 d	
		5	80 d	
		6	100 d	
		7	150 d	
		8	200 d	
		9	250 d	
GEF-11	Hold	0	Hold	0
		1	Peak hold (positive 1)	
		2	Peak hold (negative)	
		3	Peak hold (absolute value)	
		4	Peak hold (positive 2)	
GEF-12	Rate for display rewrite	0	No limitation	0
		1	20 times/sec	
		2	10 times/sec	
		3	5 times/sec	
		4	1 time/sec	

Serial Input/Output Interface (Build in)

Item	Function	Setting Value				Default
		Parameter	Description			
RS1- 01	Transmit format	0	As display			0
		1	Gross only			
		2	Net only			
		3	As display (simple)			
		4	Gross (simple)			
		5	Net (simple)			
		6	Comparison + As display (simple)			
		7	Comparison +Gross (simple)			
		8	Comparison +Net (simple)			
		9	Tare			
		10	Totalised (Accu.) Weight and number of transactions			
RS1- 02	Transmit mode	0	Transmit continuous + command mode			0
		1	Auto transmit + command mode			
		2	Manual transmit + command mode			
		3	Command mode			
		4	MODBUS RTU mode			
RS1- 03	Transmit speed	0	600	7	57600	2
		1	1200	8	115200	
		2	2400			
		3	4800			
		4	9600			
		5	19200			
		6	38400			
RS1- 04	Parity Bit length Stop Bit (MODBUS mode:)	0	N, 8, 1	No parity, 8 data bits, 1 Stop bit		2
		1	O, 7(8), 1	Odd parity, 7(8) data bits, 1 Stop bit		
		2	E, 7(8), 1	Even parity, 7(8) data bits, 1 Stop bit		
		3	(N, 8, 2)	No parity, 8 data bits, 2 Stop bit		
RS1- 05	Transmit times	0	Open			0
		1	1 time/sec.			
		2	2 time/sec.			
		3	5 time/sec.			
		4	10 time/sec.			
RS1- 06	Transmission conditions	<p>0 0 0 0 0 0</p> <p>0 ⇒ transmit cont. 1 ⇒ Stop transmit</p>				000000
RS1- 07	Indicator poling address	00 ↓ 99	When set to 0, Indicator addressing is not used.			0

BCD Parallel Output Interface (OP – 02)

Item	Function	Setting value		Default
		Parameter	Description	
bCd- 01	Data type	0	As display	0
		1	Gross	
		2	Net	
bCd- 02	Transmit mode	0	Transmit continuous	0
		1	Auto transmit	
		2	Manual transmit	
bCd- 03	Output Logic	0	Positive logic action	0
		1	Negative logic action	
bCd- 04	Data ready Signal logic	0	Positive logic action	0
		1	Negative logic action	
bCd- 05	OL output code	0	FFFFFF	0
		1	999999	
bCd- 06	Data code	0	BCD Code	0
		1	Hex. Code	

Analogue Current/Voltage Output Interface (OP - 03)

Item	Function	Setting value		Default
		Parameter	Description	
AnL- 01	Data type	0	As display	0
		1	Gross	
		2	Net	
AnL- 02	Signal output	0	Current output	0
		1	Voltage output	
AnL- 03	Weight in Lo	0 ~ 999999	When the weight reaches the value of that in AnL-03, the current / voltage output is changed to that configured in AnL-05.	0
AnL- 04	Weight in Hi	0 ~ 999999	When the weight reaches the value of that in AnL-04, the current / voltage output is changed to that configured in AnL-06,07.	30000
AnL- 05	Current in Lo	0 ~ 65535	10940 \approx 4mA	10940
AnL- 06	Current in Hi	0 ~ 65535	54560 \approx 20mA	54560
AnL- 07	Voltage in Hi	0 ~ 65535	50100 \approx 10V	50100

External Parallel Input/Output Interface (OP-04 & OP-05)

Item	Function	Setting value		Default
		Parameter	Description	
IN - 01	Input 1	0	⇒ None	1
IN - 02	Input 2	1	⇒ Zero	2
IN - 03	Input 3	2	⇒ Tare	3
IN - 04	Input 4	3	⇒ Tare reset	4
IN - 05	Input 5	4	⇒ Start batching	5
IN - 06	Input 6	5	⇒ Stop batching	6
IN - 07	Input 7	6	⇒ Discharge Command	7
IN - 08	Input 8	7	⇒ Hold	8
		8	⇒ Hold display & I/O reset	
		9	⇒ Totalise (Accu) Command	
		10	⇒ Clear totaliser (Accu)	
		11	⇒ Clear previous total (Accu) Value.	
		12	⇒ Start to compare	
		13	⇒ Serial and parallel printer manual output	
		14	⇒ Net / Gross	

Item	Function	Setting value		Default
		Parameter	Description	
OUT- 01	Output 1	0	⇒ None	1
OUT- 02	Output 2	1	⇒ Zero band	2
OUT- 03	Output 3	2	⇒ SP1	3
OUT- 04	Output 4	3	⇒ SP2	4
OUT- 05	Output 5	4	⇒ SP3	5
OUT- 06	Output 6	5	⇒ Batching completed	6
OUT- 07	Output 7	6	⇒ Discharge	7
OUT- 08	Output 8	7	⇒ Peak ready	8
		8	⇒ Stable	
		9	⇒ Internal batching process running	
		10	⇒ Under	
		11	⇒ Over	
		12	⇒ HiHi	
		13	⇒ Hi	
		14	⇒ OK	
		15	⇒ Lo	
		16	⇒ LoLo	
OUT- 09	The output logics of OUT-04~OUT-01	0000	⇒ positive logic	0000
		1111	⇒ negative logic	
OUT- 10	The output logics of OUT-08~OUT-05	0000	⇒ positive logic	0000
		1111	⇒ negative logic	

Item	Function	Setting value		Default
		Parameter	Description	
SQ- 01	Batching mode	1	Normal batch	1
		2	Loss-in weight	
		3	Comparison mode	
		4	Normal batch (Built-in program)	
		5	Loss-in weight (Built-in program)	
		6	Hold mode (Built-in program)	
SQ- 02	Batching start delay time	0.0 ~ 25.5 (sec)	The built-in auto-program starts the batch comparison procedure after the input of the batch start signal.	0.0
SQ- 03	SP1,SP2 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
SQ- 04	Batch finish output signal delay time	0.0 ~ 25.5 (sec)	Output the batch finished signal after this delay time.	0.5
SQ- 05	Batch finish Condition	0	Wait until the weight is stabilized	0
		1	No need to wait until the weight has stabilized	
SQ- 06	Batch finish Output signal time	0.0 ~ 25.5 (sec)	Batch finished output signal time. If set to 0, the output signal will be off until the next batch start.	1.0
<p>Batch finish signal</p>				
SQ- 07	Number of Times the supplementary loading function operates	0 ~ 255	If the set value is 0, this function is not in use.	0
SQ- 08	Supplementary loading gate open time	0.0 ~ 25.5 (sec)	Must be coordinate with times of supplementary loading, (SQ- 07)	0.1
SQ- 09	Supplementary loading gate close time	0.0 ~ 25.5 (sec)	Must be coordinate with times of supplementary loading, (SQ- 07)	1.0
<p>Supplementary loading signal</p> <p>SQ- 07 Times of "ON" of the supplementary loading</p>				

Function Configuration Menu

Item	Function	Setting value		Default
		Parameter	Description	
SQ- 10	Discharge start delay time	0.0 ~ 25.5 (sec)	Delay time before Discharge signal is ON.	0.0
SQ- 11	Discharge stop delay time	0.0 ~ 25.5 (sec)	Delay time before Discharge signal is OFF.	0.0
SQ- 12	Discharge time	0.0 ~ 25.5 (sec)	Won't activate internal discharge control function, if set to 0.	0
<p>The diagram shows two signals: 'Discharge input signal' and 'Discharge output signal'. The input signal is a rectangular pulse. The output signal is a rectangular pulse that starts after a delay from the rising edge of the input pulse, labeled 'SQ-10'. The output pulse ends after a delay from its falling edge, labeled 'SQ-11'. A label 'Weight reach zero band' points to the end of the input pulse.</p>				
SQ- 13	Restart delay time	0.0 ~ 25.5 (sec)	Delay time before Restart signal is ON.	1.0
SQ- 14	Batching counts	0 ~ 255 (times)	Number of batch runs 0 ⇒ one batch only	0
SQ- 15	Set the zero band in to final weighing value	0	No setting	0
		1	Setting	
SQ- 16	Hi, OK, Lo	0	Comparison anytime	0
		1	To compare at batch finish	
		2	To compare at external input signal	
		3	To compare at batching finish and external input signal.	
		4	Comparison auto	
SQ- 17	Auto accu. weight / counts	0	Disabled	0
		1	Enabled	
SQ- 18	The parameter source in weight comparison	0	Key in directly from front keypad	0
		1	Input directly from rear interface	
SQ- 19	Weight comparison delay time	0.0 ~ 25.5 (sec)	Comparison delay time for Hi, OK, Lo	0.5
SQ- 20	TARE auto.	0	Press keypad TARE to TARE	0
		1	TARE auto	
SQ- 21	Discharge auto	0	Input from external input or keypad	0
		1	Discharge auto + manual	

APPENDIX III MODBUS DATA ADDRESS TABLE

Data Register		Bit I/O			Bit I/O	
Modbus	SCALE	Modbus	SCALE	Output	Modbus	SCALE Input
40000 ~ 40001	As display value	00000		Stable status	01000	Zero
40002 ~ 40003	Gross weight	00001		Zero status	01001	Clear zero compensation
40004 ~ 40005	Net weight	00002		Gross	01002	Tare
40006 ~ 40007	Tare value	00003		Net	01003	Clear tare
40008 ~ 40009	Gross weight hold value				01004	Clear pre-tare
40010 ~ 40011	Net weight hold value	00050		Zero Band	01005	Display the gross weight on main display
40012 ~ 40013	Weight final value	00051		Sp1	01006	Display the net weight on main display
40014 ~ 40015	SP	00052		Sp2/LoLo		
40016 ~ 40017	SP	00053		Sp3/HiHi		
40018 ~ 40019	Totalised value	00054		Batch Finish		
40020 ~ 40021	Totalised times	00055		Under		
40022 ~ 40023	Totalised times of HI value	00056		Over	01050	Totalised the current net weight and add 1 to the totalised times
40024 ~ 40025	Totalised times of LO value	00057		Discharging	01051	Deduct the last totalised value and deduct 1 to the totalised times
40026 ~ 40027	Totalised times of OK value	00058		SP	01052	Clear the totalised value and times
		00059		Hi	01053	Running
		00060		Go	01054	Stop
		00061		Lo	01055	Discharge starts
41000 ~ 41001	Pre-tare value	00062		SP	01056	Hold mode ON/OFF
41002 ~ 41003	Zero band value	00063		Peak ready	01057	Release "Hold value"
41004 ~ 41005	Target value	00064		Running	01058	Output judgement
41006 ~ 41007	SP1 value	00065		ZERO calibration	01059	ZERO calibration
41008 ~ 41009	SP2 value	00066		SPAN calibration	01060	SPAN calibration
41010 ~ 41011	SP3 value	00067		Calibrate ERR0		
41012 ~ 41013	LO_LO value	00068		Calibrate ERR2		
41014 ~ 41015	LO value	00069		Calibrate ERR6		
41016 ~ 41017	HI_HI value					
41018 ~ 41019	HI value					
41020 ~ 41021	Under value					
41022 ~ 41023	Over value					
41024 ~ 41025	Peak value setting					
41100 ~ 41101	SPAN calibration value					

The settings marked in grey are not available.

APPENDIX VI MODBUS DATA ADDRESS TABLE

(For Hitech and Pro-face Human Machine Interface)

Data Register		Bit I/O			Bit I/O	
Modbus	SCALE	Modbus	SCALE	Output	Modbus	SCALE Input
40001 ~ 40002	As display value	00001		Stable status	01001	Zero
40003 ~ 40004	Gross weight	00002		Zero status	01002	Clear zero compensation
40005 ~ 40006	Net weight	00003		Gross	01003	Tare
40007 ~ 40008	Tare value	00004		Net	01004	Clear tare
40009 ~ 40010	Gross weight hold value				01005	Clear pre-tare
40011 ~ 40012	Net weight hold value	00051		Zero Band	01006	Display the gross weight on main display
40013 ~ 40014	Weight final value	00052		Sp1	01007	Display the net weight on main display
40015 ~ 40016	SP	00053		Sp2/LoLo		
40017 ~ 40018	SP	00054		Sp3/HiHi		
40019 ~ 40020	Totalised value	00055		Batch Finish		
40021 ~ 40022	Totalised times	00056		Under		
40023 ~ 40024	Totalised times of HI value	00057		Over	01051	Totalised the current net weight and add 1 to the totalised times
40025 ~ 40026	Totalised times of LO value	00058		Discharging	01052	Deduct the last totalised value and deduct 1 to the totalised times
40027 ~ 40028	Totalised times of OK value	00059		SP	01053	Clear the totalised value and times
		00060		Hi	01054	Running
		00061		Go	01055	Stop
		00062		Lo	01056	Discharge starts
41001 ~ 41002	Pre-tare value	00063		SP	01057	Hold mode ON/OFF
41003 ~ 41004	Zero band value	00064		Peak ready	01058	Release "Hold value"
41005 ~ 41006	Target value	00065		Running	01059	Output judgement
41007 ~ 41008	SP1 value	00066		ZERO calibration	01060	ZERO calibration
41009 ~ 41010	SP2 value	00067		SPAN calibration	01061	SPAN calibration
41011 ~ 41012	SP3 value	00068		Calibrate ERR0		
41013 ~ 41014	LO_LO value	00069		Calibrate ERR2		
41015 ~ 41016	LO value	00070		Calibrate ERR6		
41017 ~ 41018	HI_HI value					
41019 ~ 41020	HI value					
41021 ~ 41022	Under value					
41023 ~ 41024	Over value					
41025 ~ 41026	Peak value setting					
41101 ~ 41102	SPAN calibration value					

☐ The settings marked in grey are not available.