



Dingdo

EX20002

OPERATION MANUAL

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Safety

- 2 When the instrument is installed, connect an earth bonding conductor from FG to the earth connection marked “ \perp ”.
- 2 Disconnect the mains power supply before opening the instrument housing. NOTE: There are no user serviceable parts inside.
- 2 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.
- 2 Before turning the power on ensure the supply voltage is within the acceptable range, AC85V ~ AC265V.
- 2 The operating ambient temperature range is -10°C ~ +40°C.
(+14°F ~ +104°F)



Features

EX2002 Dingo 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 the bottomwork to calibrate the weigher.

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

Adjustable filter

RS232C bi-directional and current loop one way serial interface

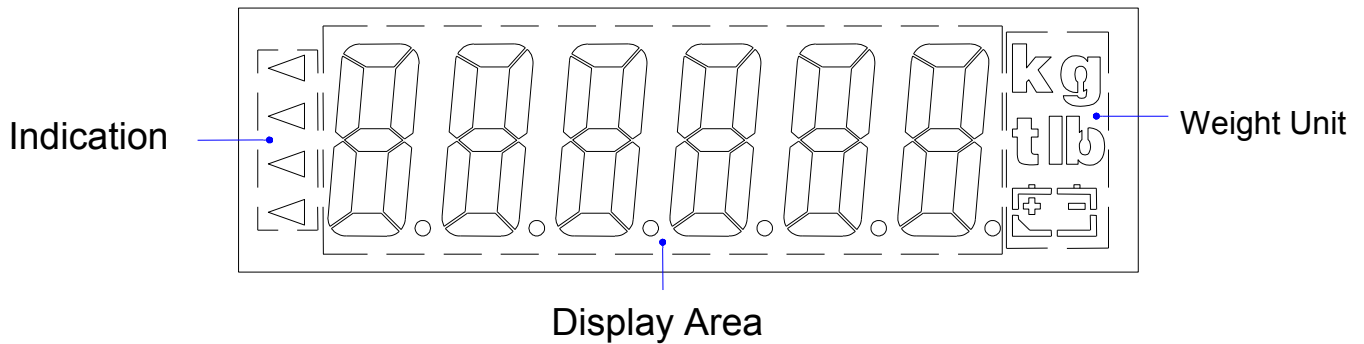
Interface options:

- | | |
|---------|---|
| OP-01 | RS422/485/232 serial interface |
| OP-02-1 | BCD parallel output interface (Open collector output) |
| OP-02-2 | BCD parallel output interface (TTL output) |
| OP-03 | 16 Bit Analogue current/voltage output interface
(4 ~ 20 mA / 0 ~ 10V) |
| OP-04 | Control I/O (4In / 4Out) + Setpoint In (BCD code) |
| OP-05 | Control I/O (8In / 8Out) |

CHAPTER 1 FRONT AND REAR PANEL SPECIFICATIONS

1-1 Front panel

□



Display

- 6 digits, bright red, 7 segment LED display, character height 16mm (0.63").
Display can be switched between Gross Weight / Net Weight / Totalised Weight / Number of transactions in the total.

- Indication icons “◀”

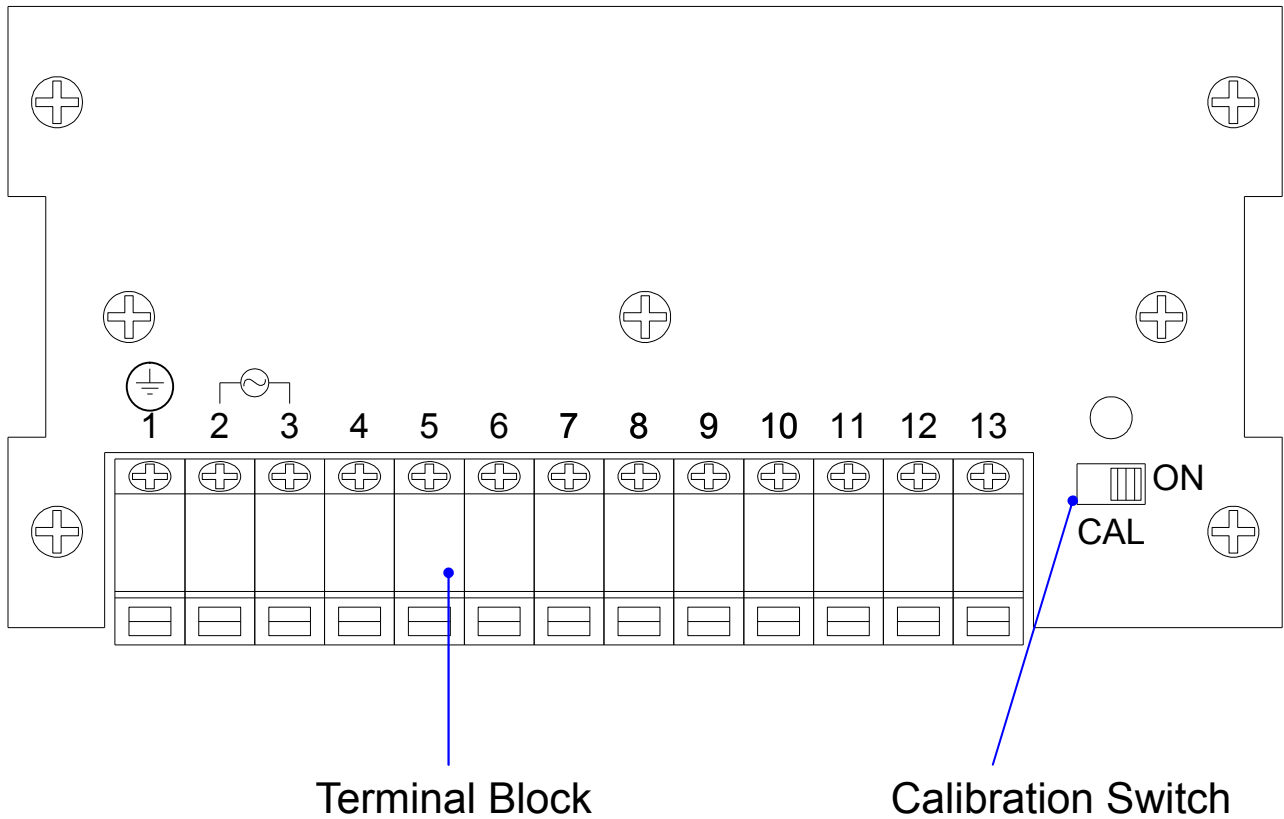
ZERO	◀	:	Zero Indication
MD	◀	:	Unstable weight Indication
GROSS	◀	:	Gross weight Indication
NET	◀	:	Net weight Indication

- ◆ The indicator is supplied with suitable labels to customise the icon displays. Refer to FNC. 06 ~ FNC.09 for the various options available.

2 Weighing Units

- ◆ Weighing Units kg / g / t / lb.

1-2 Rear panel



2 Calibration Switch set to the left is “OFF” and to the right is “ON”

2 13 Way Terminal Block

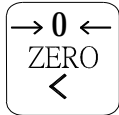
- 1st : EARTH or GROUND
- 2nd : AC IN
- 3rd : AC IN
- 4th : Not Used
- 5th : Serial Current loop out
- 6th : Serial Current loop out
- 7th : RS232 TXD
- 8th : RS232 RXD
- 9th : RS232 SG
- 10th : EXCITATION +
- 11th : EXCITATION -
- 12th : SIGNAL +
- 13th : SIGNAL -



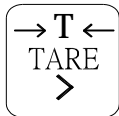
1-3 Keyboard description



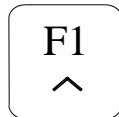
- When entering data or reference setting, it means “ESC”.
In the normal operation, it puts the indicator in standby mode or escape.
- : Entering standby mode: All of the display (except ZERO “3” symbol) and serial data output are disabled.
 - Escape from standby mode: Re-power on mains for normal operation.



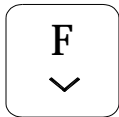
- : When parameter setting, it moves the flashing digit left.
- In the normal mode, it performs a Zero operation.



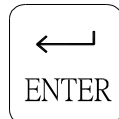
- : When parameter setting, it moves the flashing digit right.
- In the normal mode, it performs a semi-auto Tare operation.



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



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



- : Confirm / enter key

4 Function FNC-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 0.12(V/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)

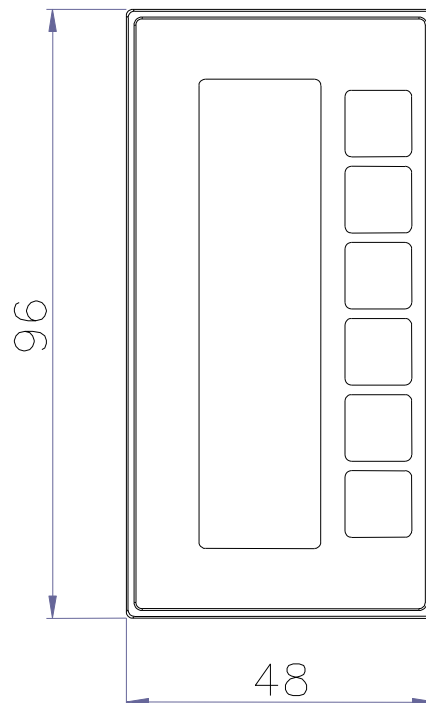
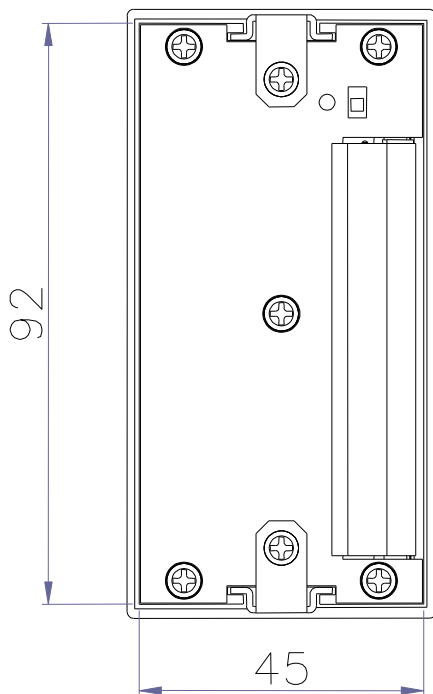
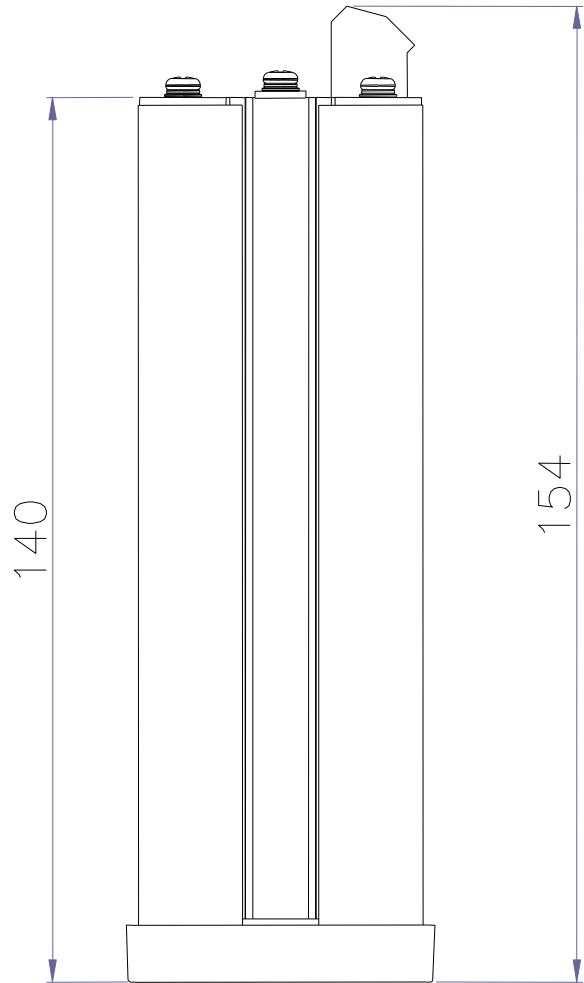
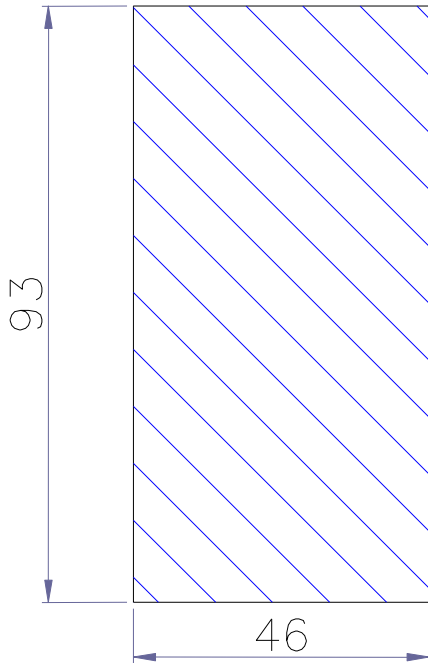
1-5 Power supply

- ◆ AC 85V ~ 265V 50/60Hz



1-6 Dimensions

Panel Cutout





CHAPTER 2 GENERAL FUNCTION GUIDE

2-1 Function setup and operation procedures

Function	Operation	Display	Description
Enter calibration mode	Turn the calibration switch to "ON"	00 000	See 3-2 for details
Enter function setting	Pres not release, then press key after the power is turned on	00 000	See 2-2 for details
Reset all parameters back to default	Turn the power on then turn the calibration switch to "ON" then press and hold the and keys during the self-testing sequence	0.000	See 6-1 for details
Reset general function parameters back to default	Turn the power on and press and keys during self-testing sequence	0 000	See 6-2-1 for details
Clear zero point compensation	Turn the power on and press and keys during self-testing sequence	0 0000	See 6-2-2 for details
Clear setpoint parameter setting	Turn the power on and press and keys during self-testing sequence	0 000	See 6-2-3 for details
Value of zero point voltage(mV/V)	Turn the power on and Press and , then press third times.	0 0000	See 6-2-4 for details
Value of Span voltage (mV/V)	Turn the power on and Press and then Press	0 0000	See 6-2-5 for details
Entering to test mode	Turn the power on and press and keys during self-testing sequence	0. 000	See 6-3 for details
Check weighing setpoint parameter setting	Press the key to set the parameter of FUNC.4 to 1 in the normal mode	0.00000 or 0.000	See 4-2 for details

4 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





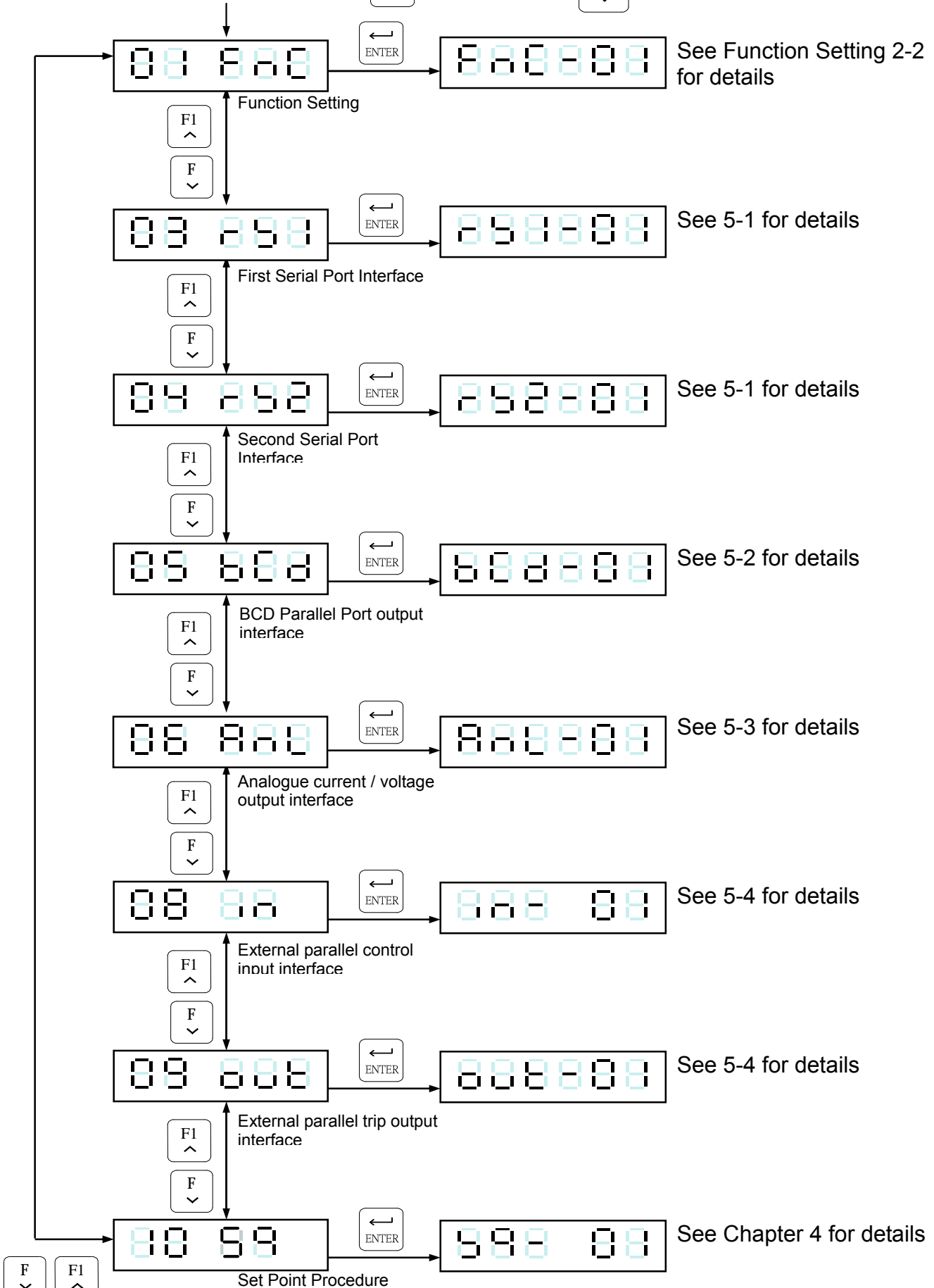
⇒ Saves the configuration



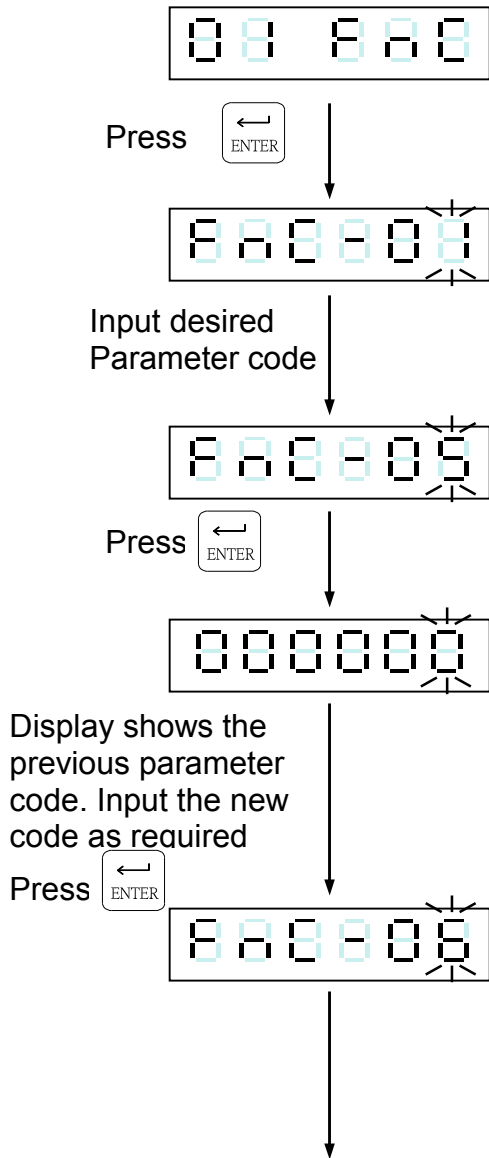
⇒ Quits set up mode / Escape

4 Function Setting Procedures












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




2-2 Function setting









*Function Parameter code

-  ⇒ Digital Filter I
-  ⇒ Digital Filter II
-  ⇒ Lock keypad function
-  ⇒ "F" function setting
-  ⇒ "F1" function setting
-  ⇒ Front panel indication "◀" setting (first)
-  ⇒ Front panel indication "◀" setting(second)
-  ⇒ Front panel indication "◀" setting (third)
-  ⇒ Front panel indication "◀" setting (fourth)
-  ⇒ Terms of back to zero
-  ⇒ Hold

To continue the next function setting

or press  to escape

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



2 FNC Group function setting

Item	Function	Setting value		Default
		Parameter	Description	
FNC-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	
FNC-02	Digital Filter II	0	Disabled	2
		1	Less filter ↑ ↓ Greater	
		2		
		3		
		4		
		5		
FNC-03	Key – Locked	000000 ↓ 111111	Normal (lock disable) Close (lock enable)	The bits and front panel key positions are related to each other. 000000
FNC-04	“F” function setting	Parameter ⇒ Description 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 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		1
FNC-05	“F1” function setting			0

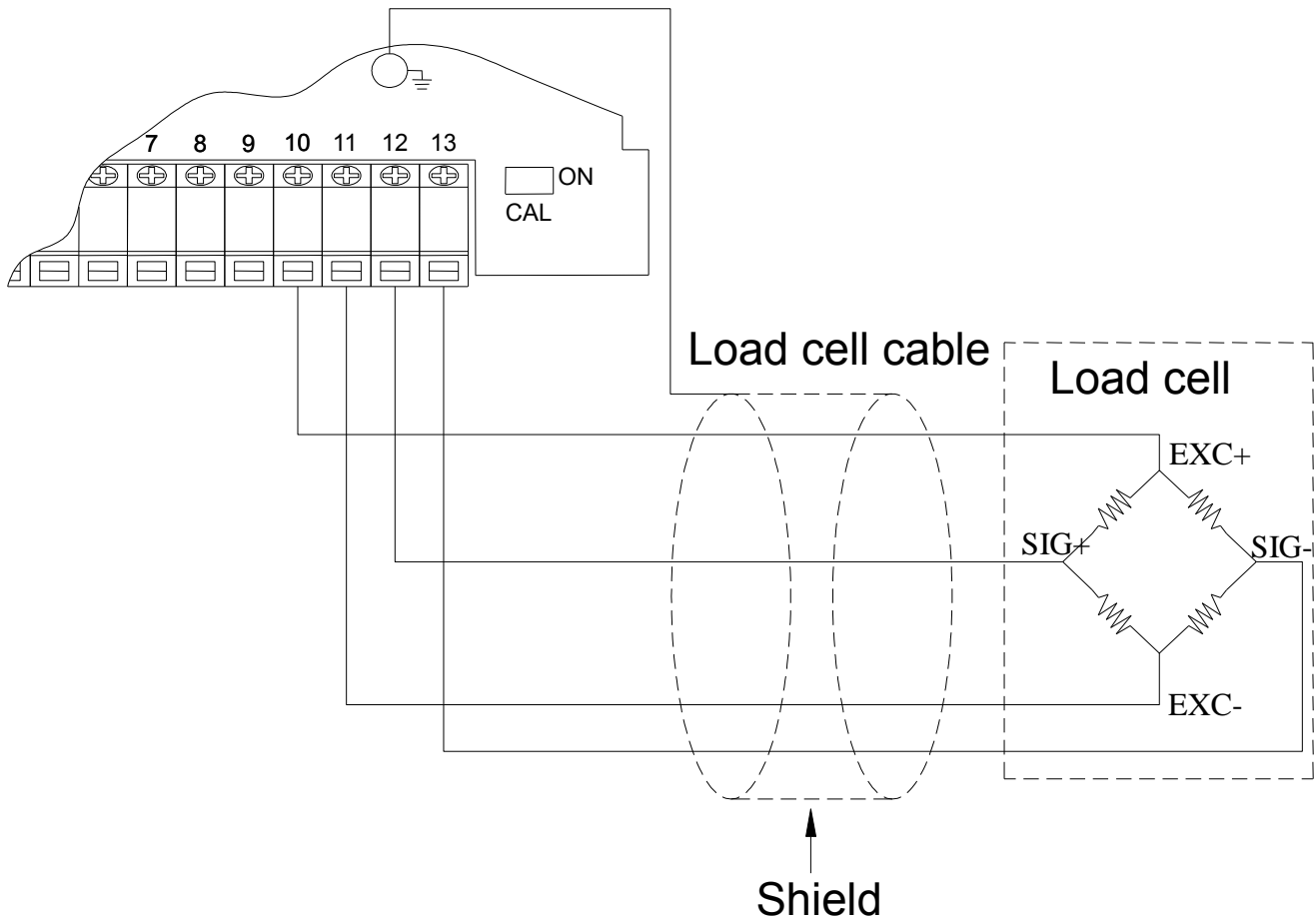


Item	Function	Setting value		Default
		Parameter	Description	
FNC-06	Front panel indication “◀” setting (top)	Parameter ⇒ Description		0
		0	⇒ Zero	
FNC-07	Front panel indication “◀” setting (next to top)	1	⇒ MD	1
		2	⇒ Gross	
FNC-08	Front panel indication “◀” setting (next to bottom)	3	⇒ Net	2
		4	⇒ Totalised weight (Accu. V)	
FNC-09	Front panel indication “◀” setting (bottom)	5	⇒ Totalised transactions (Accu. C)	3
		6	⇒ SP1	
FNC-10	Return to zero band	7	⇒ SP2	0
		8	⇒ SP3	
FNC-11	Hold	9	⇒ Hi	0
		10	⇒ OK	
FNC-12	Rate for display rewrite	11	⇒ Lo	0
		12	⇒ Under	
FNC-11	Hold	13	⇒ Over	0
		14	⇒ Discharge	
FNC-12	Rate for display rewrite	15	⇒ Running	0
		16	⇒ Hold	
FNC-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	
FNC-11	Hold	0	Hold	0
		1	Peak hold (positive)	
		2	Peak hold (negative)	
		3	Peak hold (absolute value)	
FNC-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

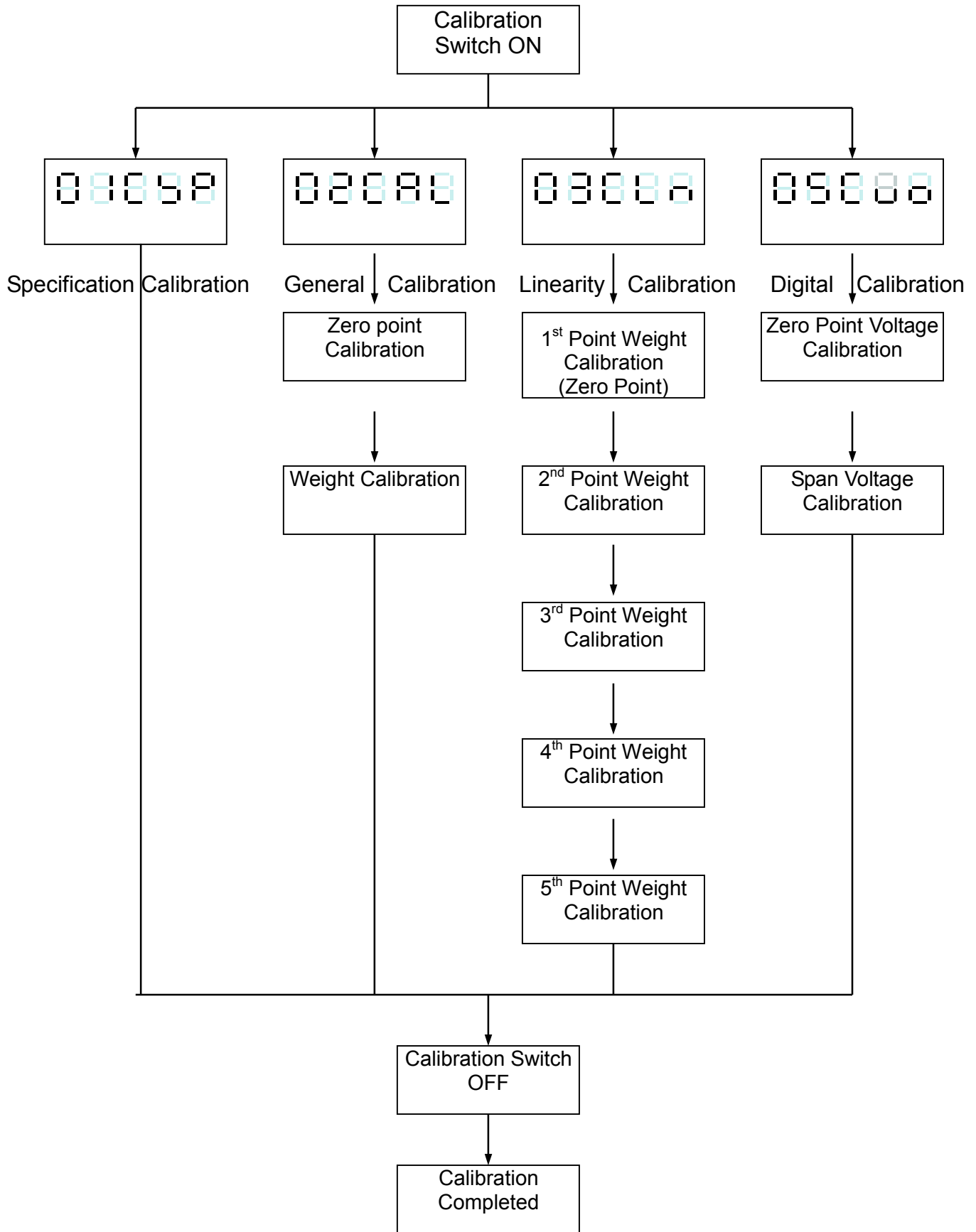
3-1 Load cell connection

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

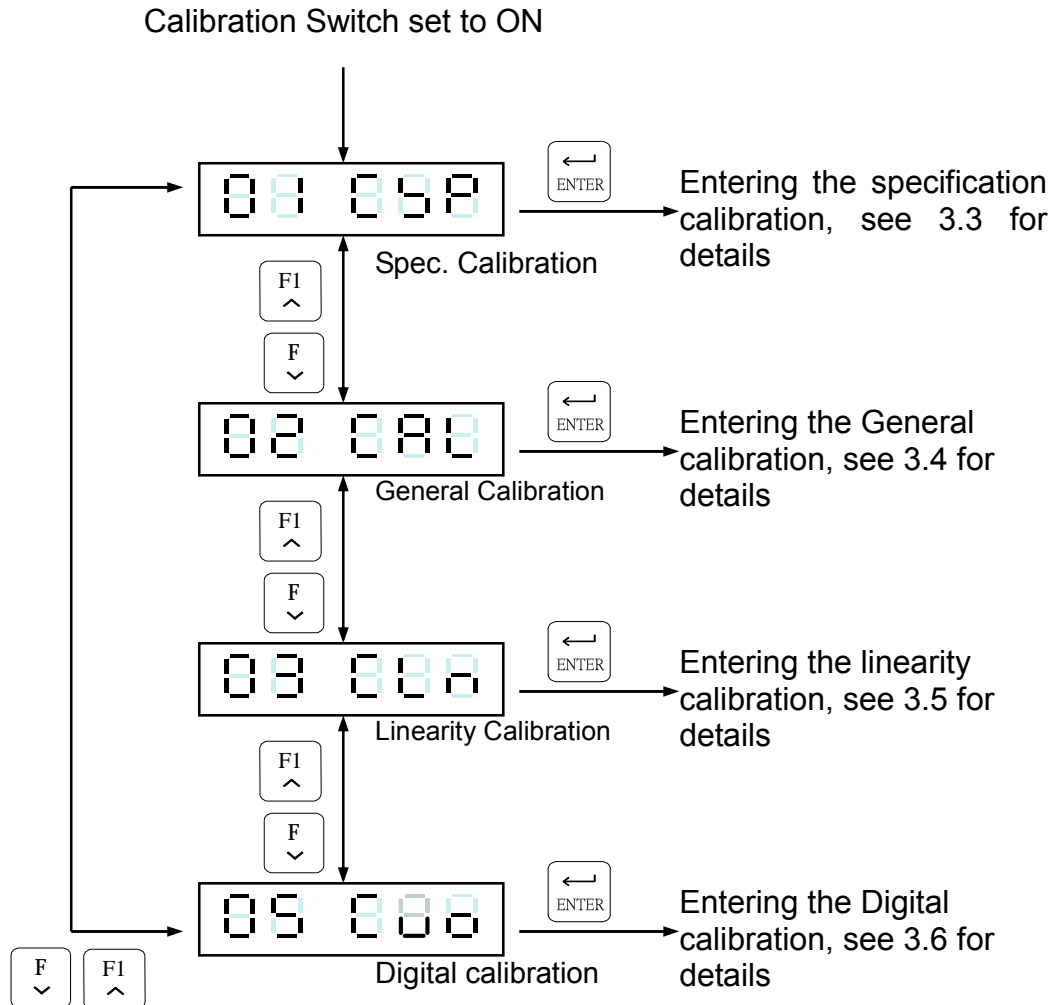




3-2 Parameter setting and calibration flow chart

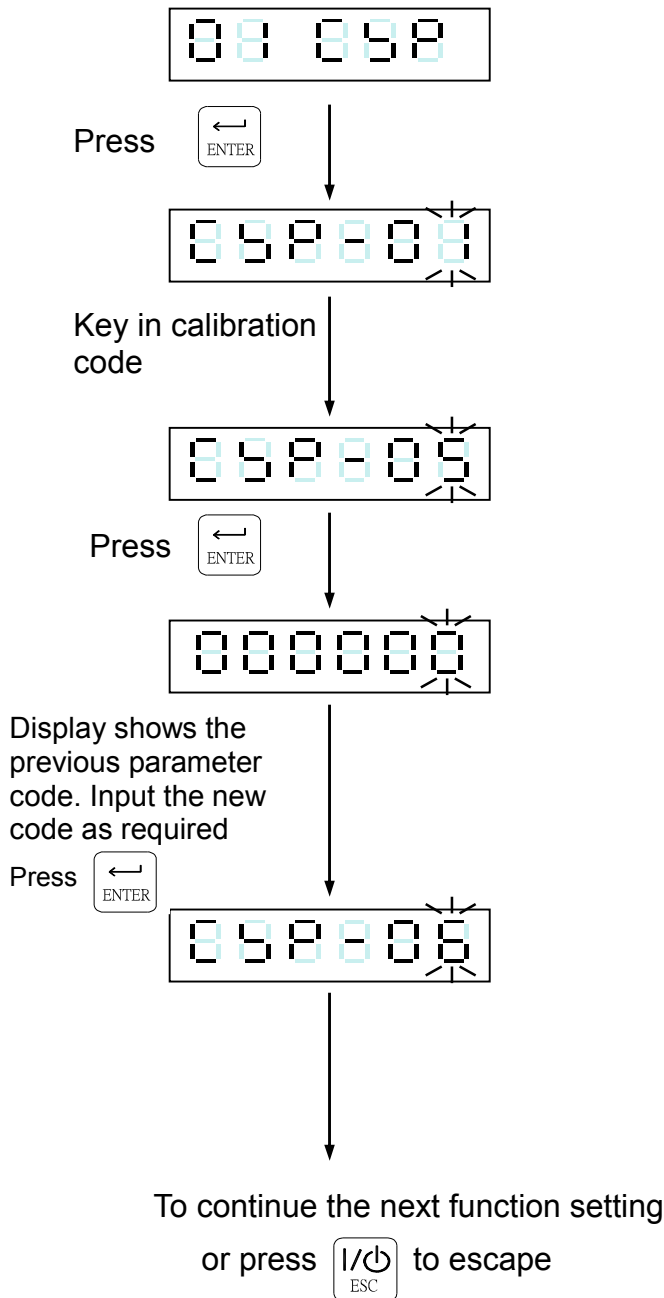


2 Calibration process









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

3-3 Specification calibration 00000



*Calibration parameter code

- 000000 ⇒ Unit
- 000002 ⇒ Decimal Point
- 000003 ⇒ Min. Division
- 000004 ⇒ Max. Capacity
- 000005 ⇒ Zero Range
- 000006 ⇒ Time of Zero tracking
- 000007 ⇒ Range of Zero tracking
- 000008 ⇒ Investigate period of unstable
- 000009 ⇒ Investigate range of unstable
- 000010 ⇒ Function Zero and Tare when the weight is unstable.
- 000011 ⇒ Tare function availability when gross weight is negative.

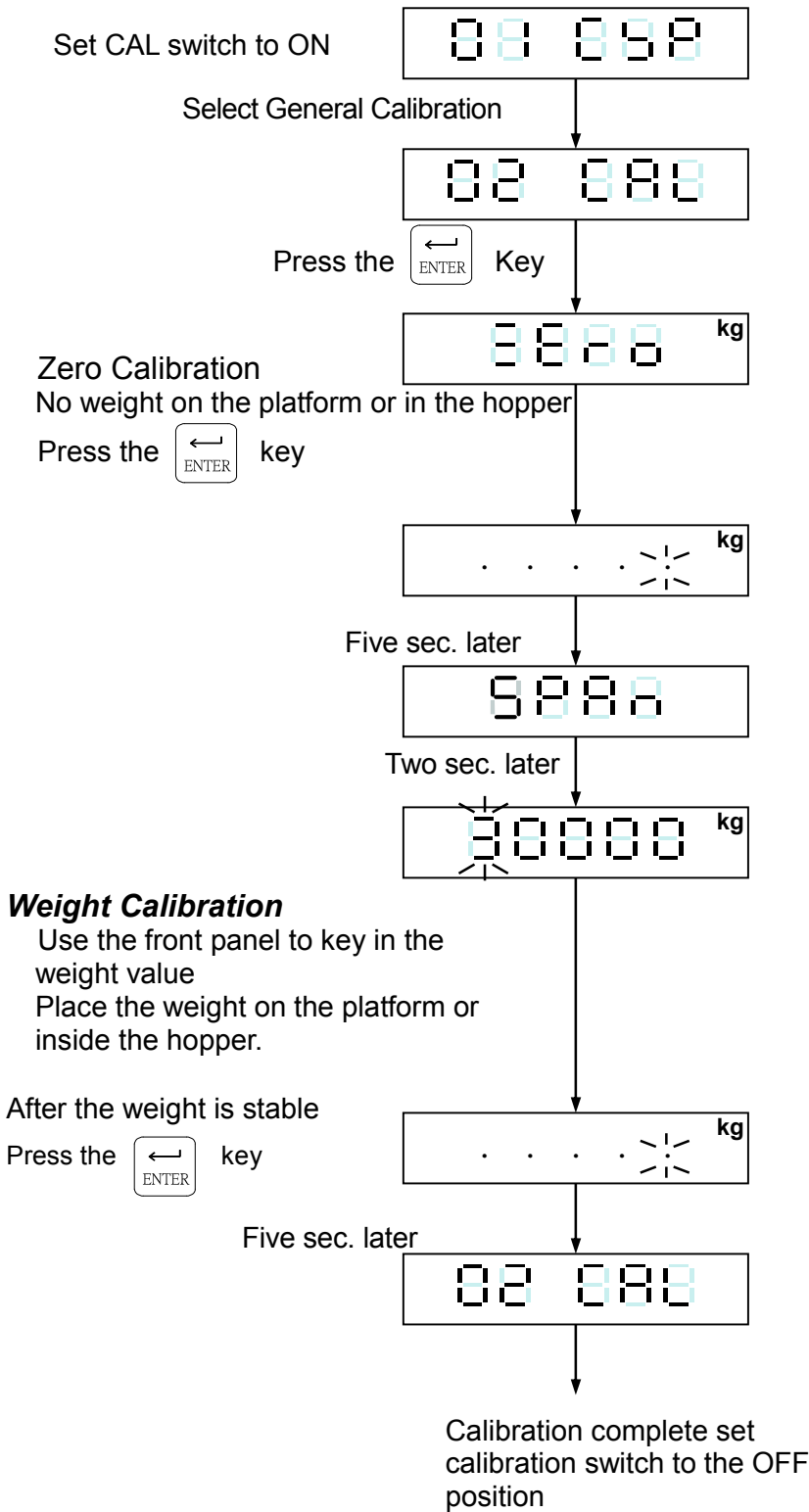
	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape



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	



3-4 General Calibration 00000



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

- 4** Zero calibration only, press key to escape after the display shows 9999.
- 4** Span calibration only, press key entering directly to span calibration after the display shows 0000.
- 4** Please refer to error message during calibration of the display show 000.X

3-5 Linearity calibration 00000

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

Set CAL switch to ON



Select linearity calibration



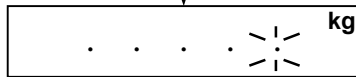
Press the  Key



First linearisation point (is zero)

Ensure there is no weight on the platform or in the hopper.

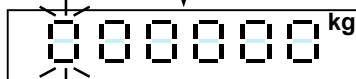
Press the  Key



Five sec. later



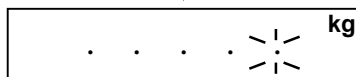
Two sec. later



Second linearisation point

Load the platform or hopper with the linearisation weight. Use the front panel to enter the weight value. When the weight is stable

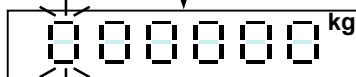
Press the  Key



Five sec. later



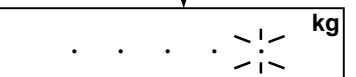
Two sec. later









Third linearisation point

Load the platform or hopper with the next linearisation weight. Use the front panel to enter the weight value. When the weight is stable

Press the  Key



Five sec. later

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

4 Please refer to the error message list if the display shows 000.x

Continue linearisation

4.88888 kg

Two sec. later

000000 kg

Fourth linearisation point

Load the platform or hopper with the next linearisation weight. Use the front panel to enter the weight value. When the weight is stable

Press the  Key

. . . . *

Five sec. later

5.88888 kg

Two sec. later

000000 kg

Fifth linearisation point (usually full load)

Load the platform or hopper with the last linearisation weight. Use the front panel to enter the weight value. When the weight is stable







Press the  Key

. . . . *

Five sec. later

00 000

Linearisation completed set calibration switch to the OFF position

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

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

3-6 Digital calibration

00 000

Set CAL switch to ON

00 000

Select Digital calibration

05 000

Press the Key.

8888

Two sec. later

0.000000

Method 1

Input zero voltage

Method 2

With no weight on the platform or in the hopper
press the Key to set zero.

0.00036

Press the Key

5888

Two sec. later

0.000000

Input the span voltage

2.900000

Press the Key

000

Two sec. later

0.000000

Enter the weighing capacity

030000

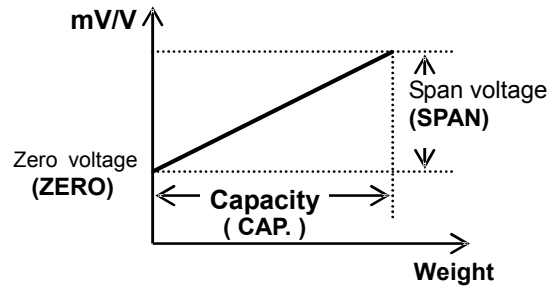
Press the Key

05 000

Calibration completed set calibration switch to the OFF position

4 Please refer to the error message list if the display shows **000.x**

Example:



Zero Voltage \approx 0.00036 mV/V (incl. dead load)
Span Voltage \approx 2.90000 mV/V
Capacity \approx 30000 divisions

Zero voltage calibration

Span voltage calibration

- | | |
|--|---|
| | \Rightarrow Increment flashing digit |
| | \Rightarrow Decrement flashing digit |
| | \Rightarrow Move flashing point left. |
| | \Rightarrow Move flashing point right |
| | \Rightarrow Store data in memory |
| | \Rightarrow Exit / Escape |



3-7 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 0.12μV / division

CHAPTER 4 WEIGHT COMPARISON PROCEDURES

4-1 Function configuration menu

*Item code

	598 00	⇒	Batching mode
	598 01	⇒	Batching start delay time
	598 02	⇒	Compare SP1 & SP” waiting time
	598 03	⇒	Batch finish output signal delay time
	598 04	⇒	Batch finish condition
	598 05	⇒	Batch finish output signal duration
	598 06	⇒	Supplementary load times
	598 07	⇒	Supplementary loading gate open time
	598 08	⇒	Supplementary loading gate closed time
	598 09	⇒	Discharge start delay time
	598 10	⇒	Discharge stop delay time
	598 11	⇒	Discharge time
	598 12	⇒	Restart delay time
	598 13	⇒	Batching times
	598 14	⇒	Weight completed value in Zero band
	598 15	⇒	Hi, OK, Lo action mode
	598 16	⇒	Auto totalise weight / counts
	598 17	⇒	The parameter source for weight comparison
	598 18	⇒	Weight comparison delay time
	598 19	⇒	Tare auto
	598 20	⇒	Discharge auto

88 59

Press the key

↓

598 00

Select the desired menu code

↓

598 05

Press the key

↓

000000

Display shows the existing parameter code. Input a new code as required

↓

598 06

Press the key

↓

Continue to another function setting

or press

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

* See SQ-XX table below for details of each menu



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>				



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

Press the



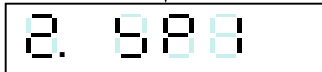
Key



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.

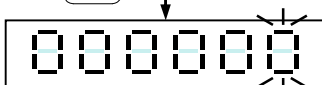
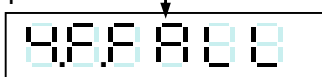
Press



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

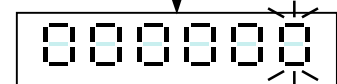
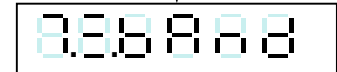
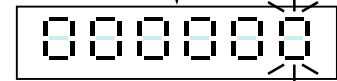
Over value setting, Input new value as required.

Press



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

Press

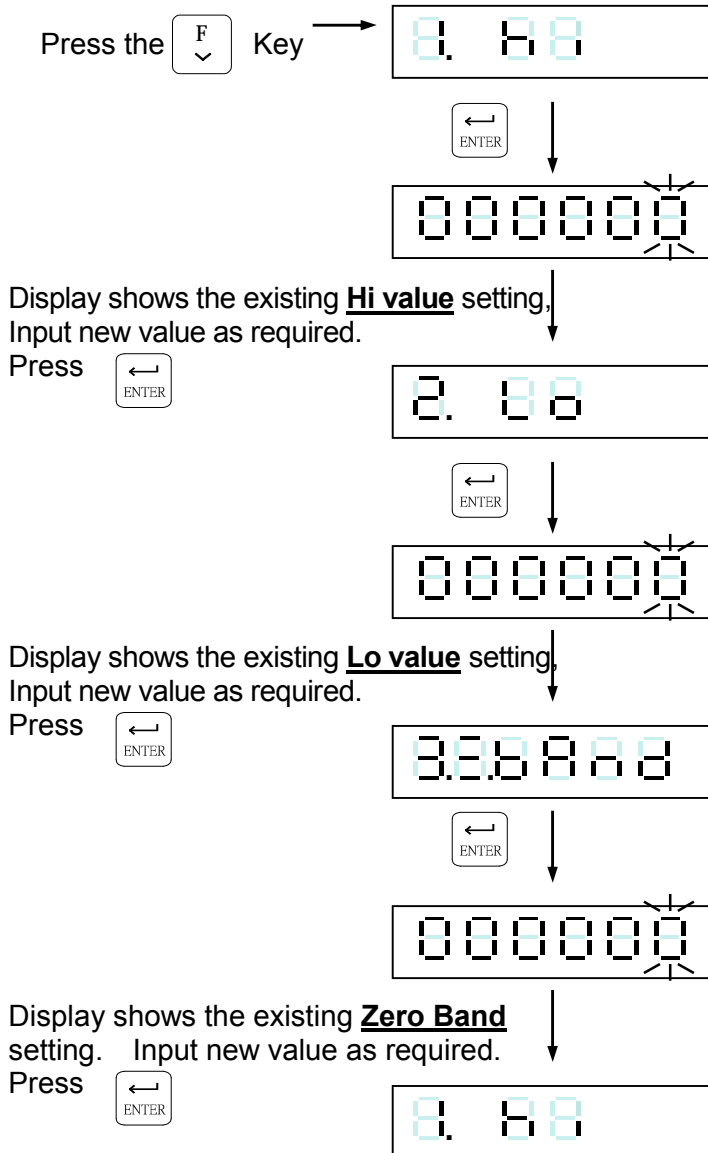








Display shows the existing **Zero Band** setting. Input new value as required.

Press



2. FNC-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. FNC-04 = 1, SQ-01 = 6

Press the Key



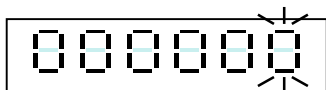
Display shows the existing **Hi value** setting, Input new value as required.

Press



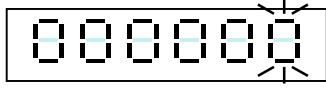
Display shows the existing **Lo value** setting, Input new value as required.

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

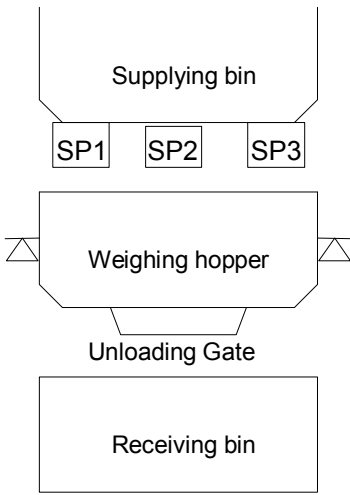
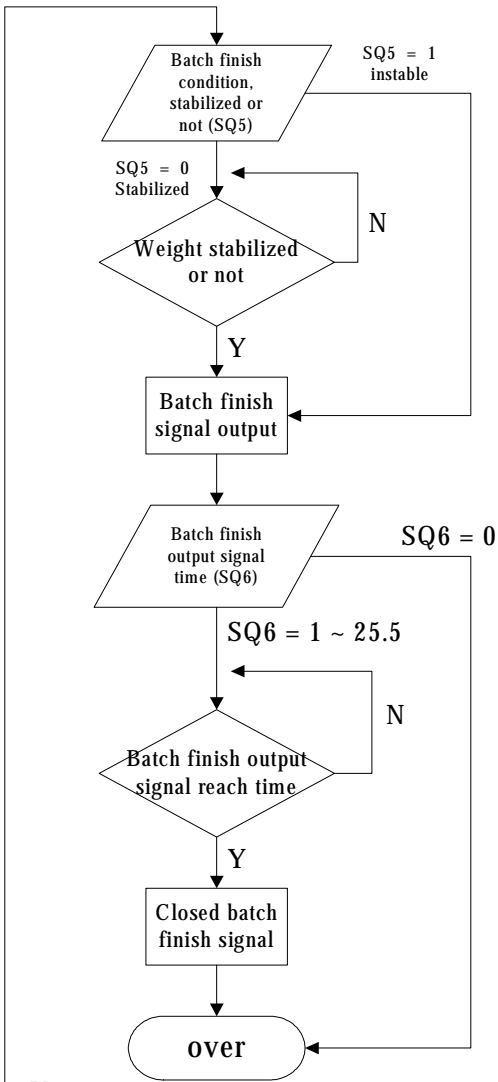
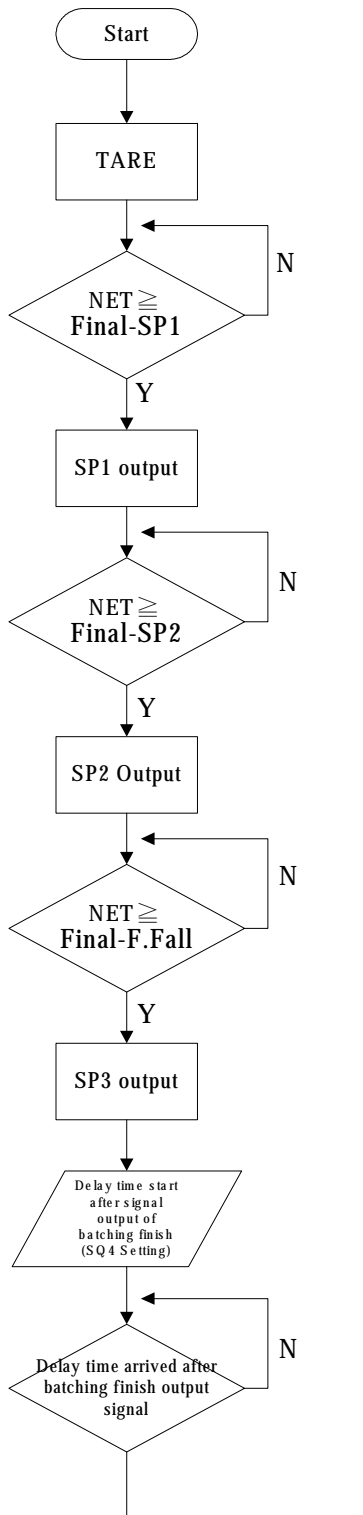
2 Normal batching signal outputs

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

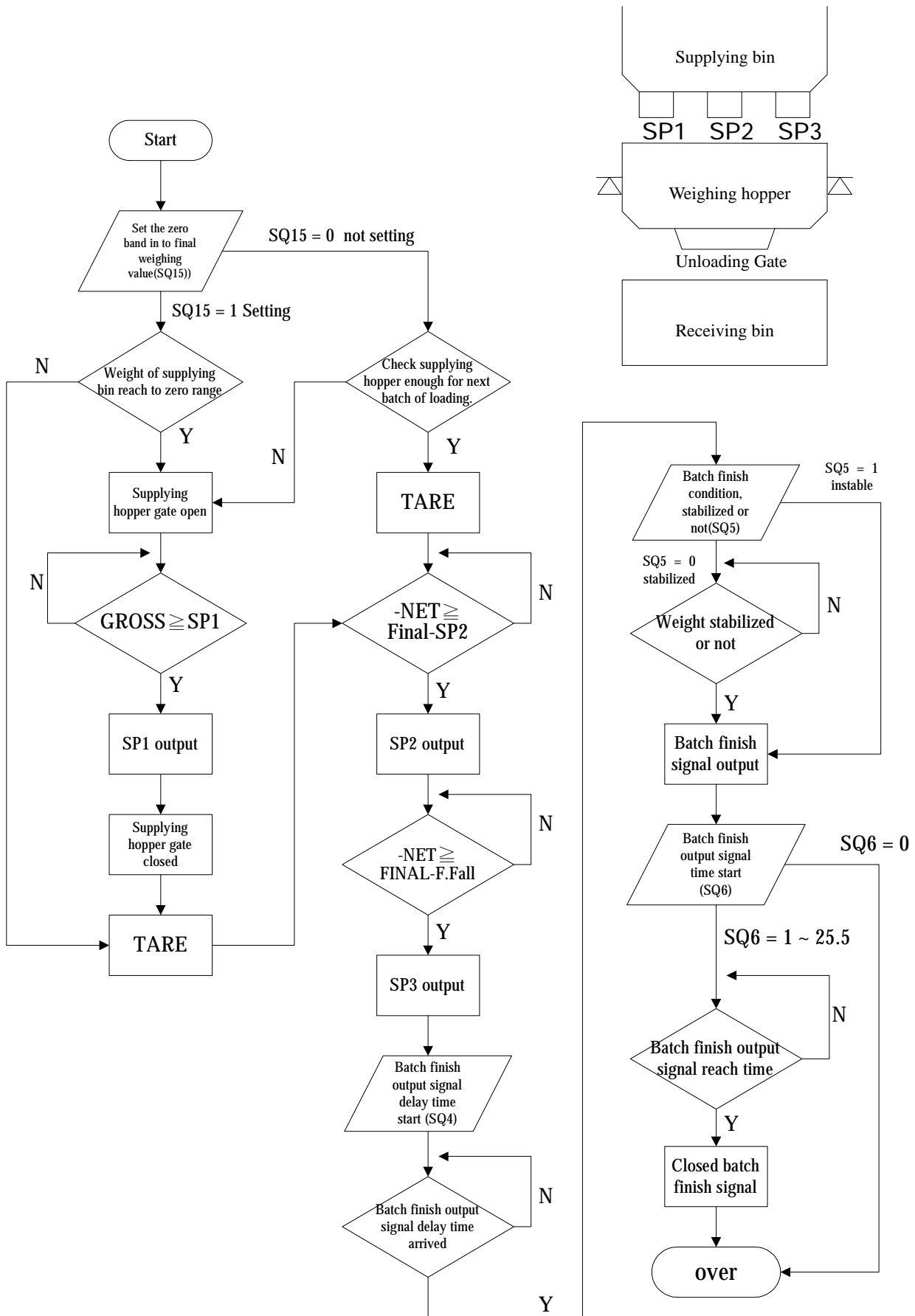
2 Loss-in-weight signal outputs

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

4-4 Normal batching flow chart (SQ-01=1)

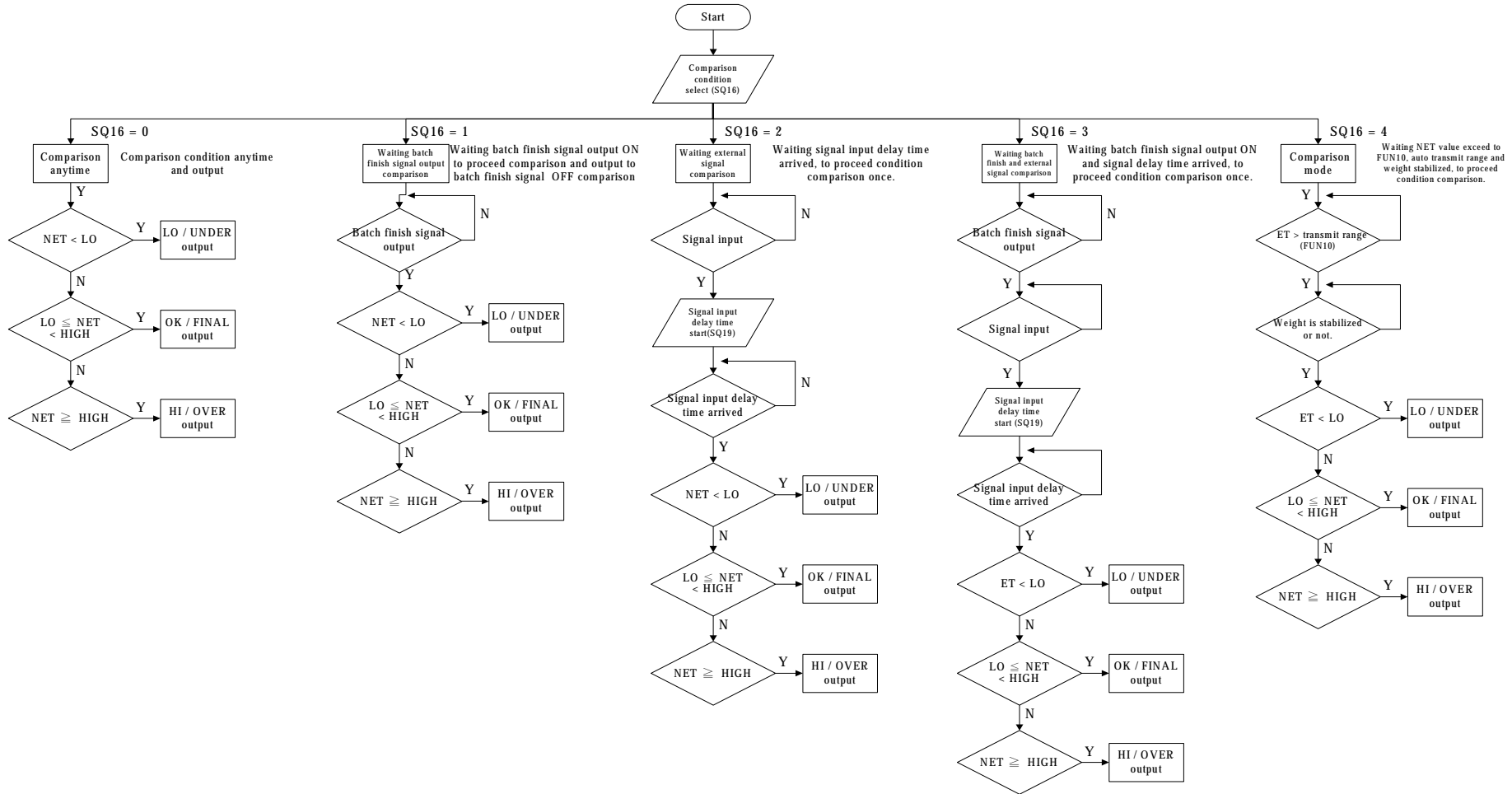


4-5 Loss-in Weight flow chart (SQ1 = 2)



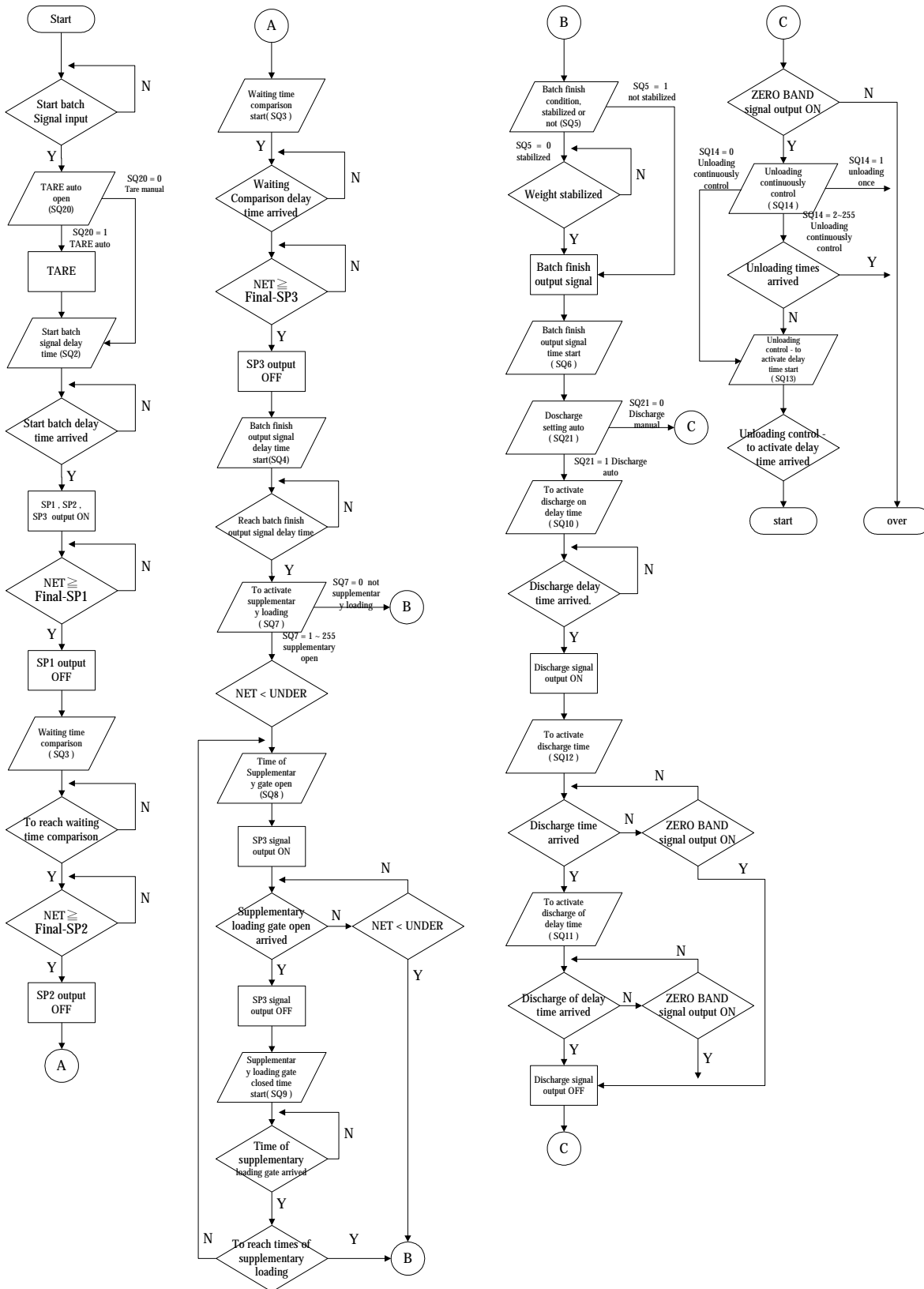


4-6 Hi, OK, Lo output flow chart



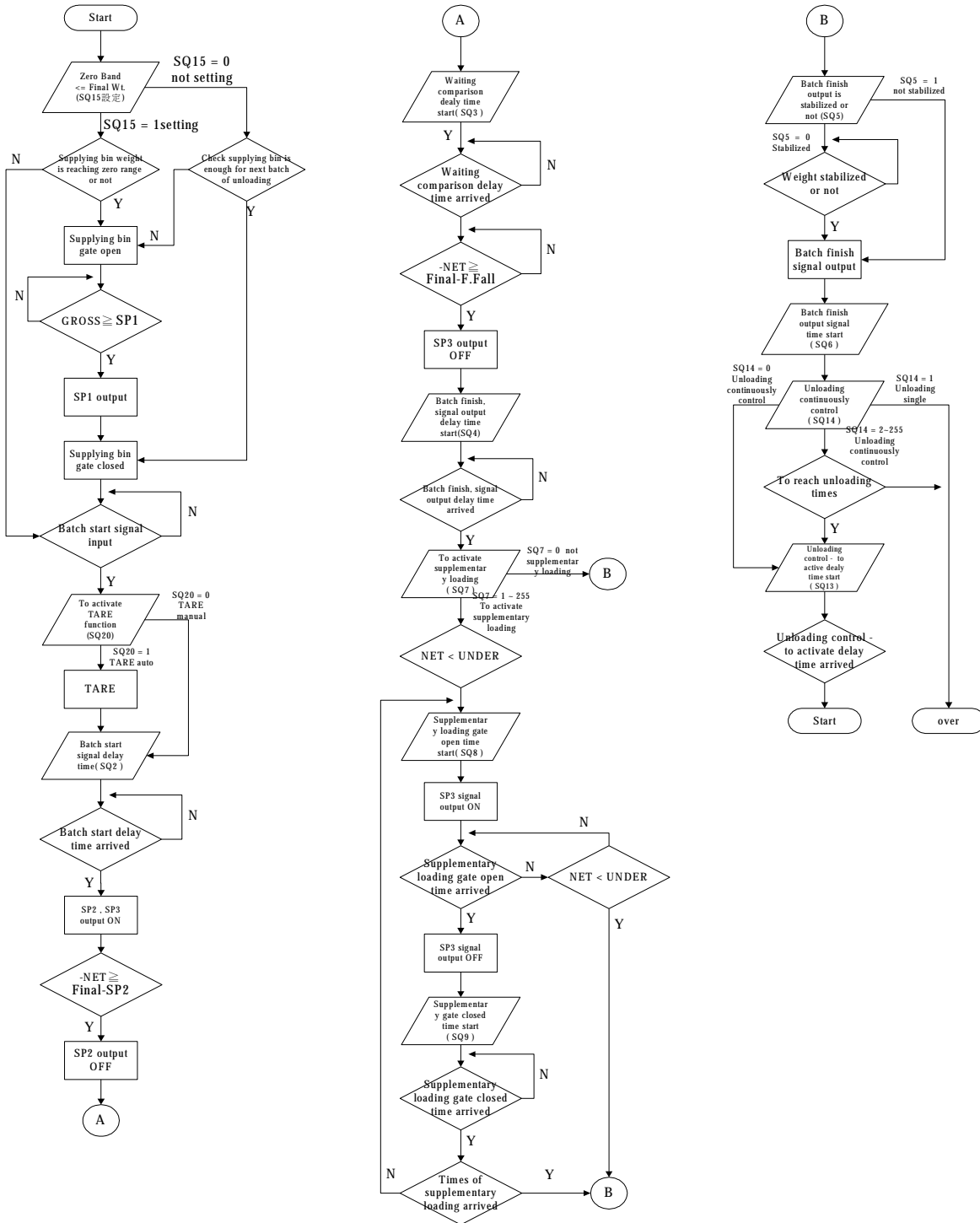


4-7 Normal batching (built-in program) flow chart (SQ-01=4)



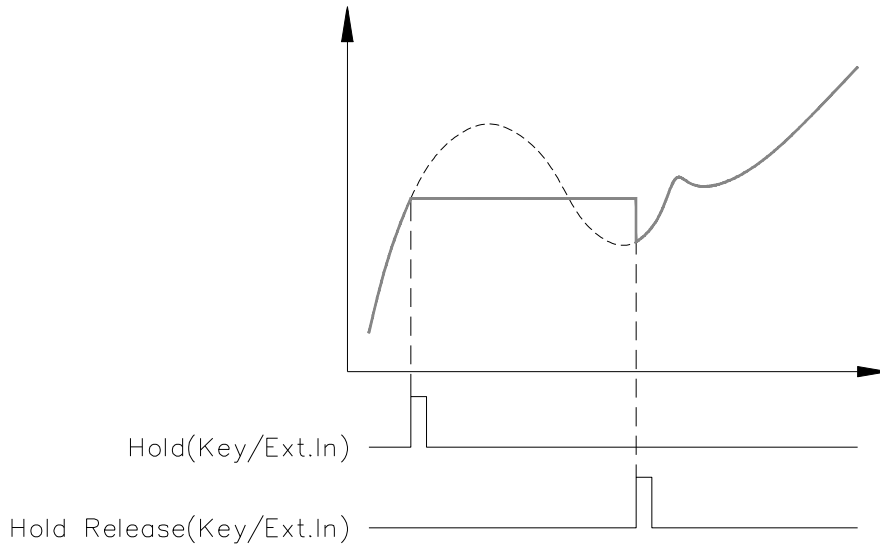


4-8 Loss-in Weight (built in program) (SQ-01=5)

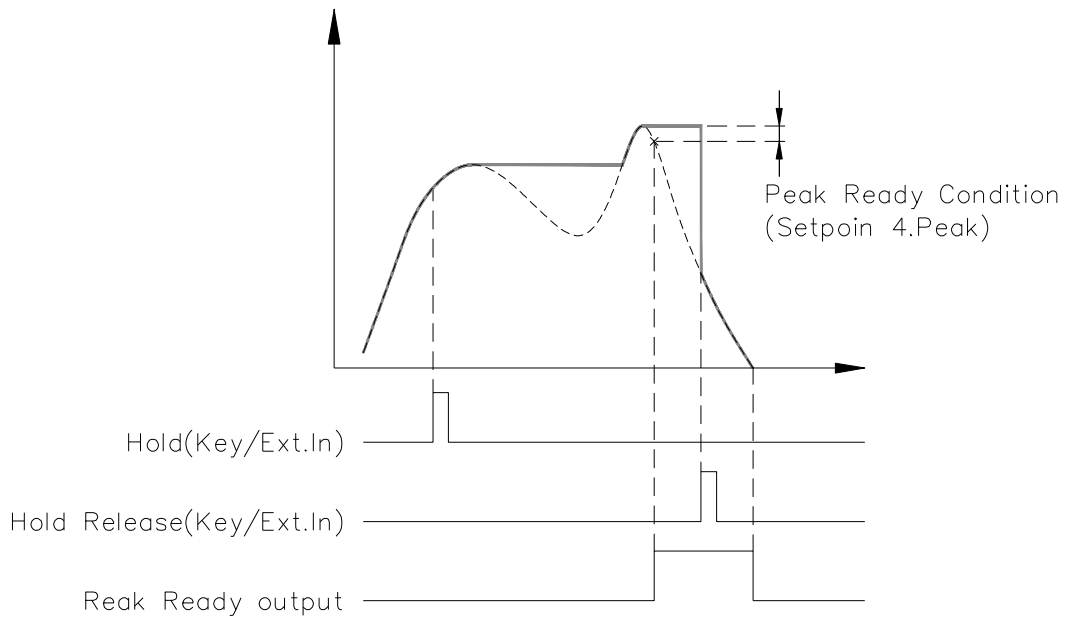


4-9 Hold mode (SQ-01 = 6)

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



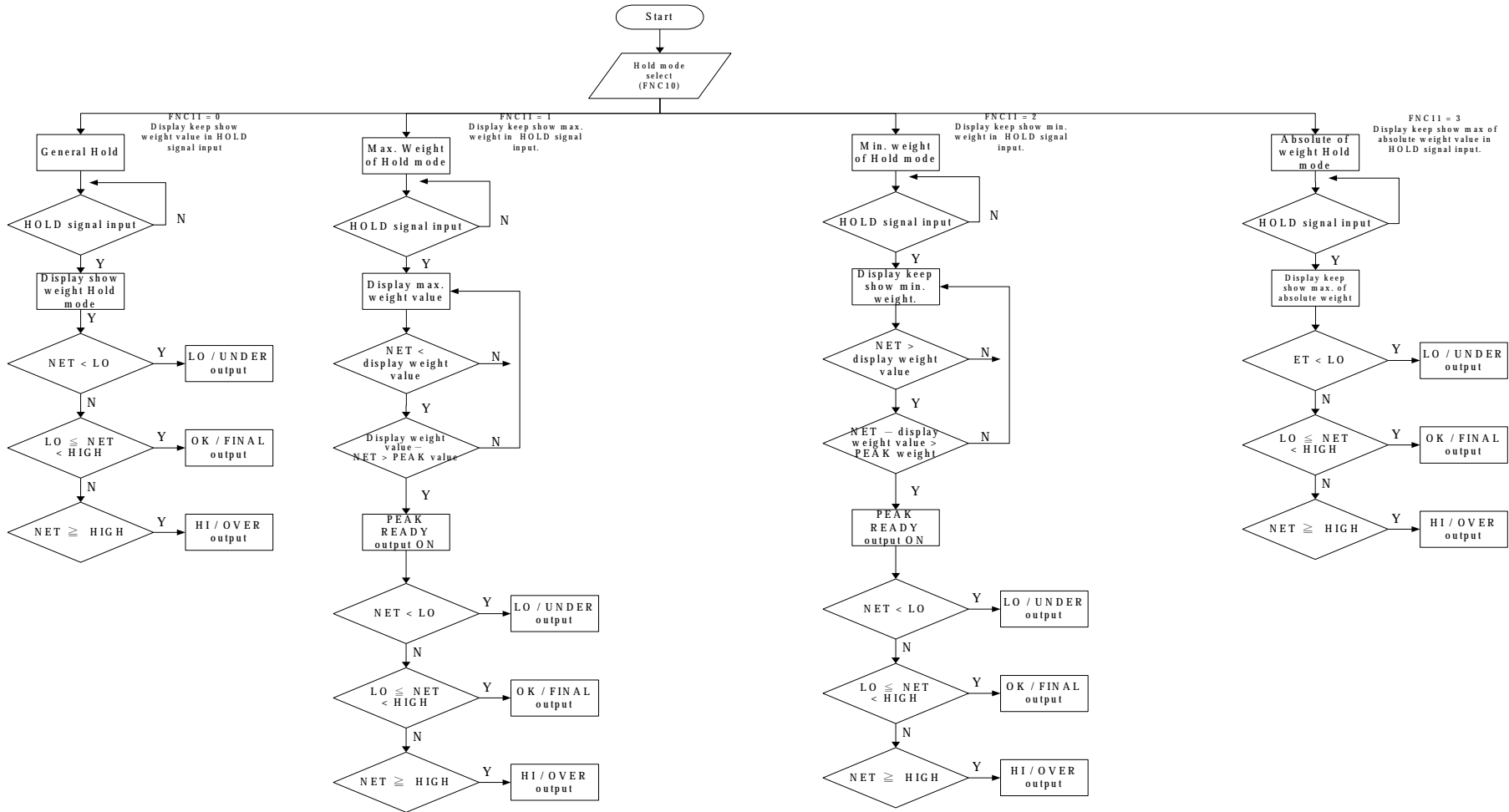
2. Peak hold mode



Peak hold mode with four different states (FNC-11 = 1,2,3,4), positive peak weight(1), negative peak weight, absolute value of peak weight(3) 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 (FNC-11 = 0)

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

2. Peak HOLD (FNC-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 (FNC-11 = 3)

Entering the Hold mode, 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 (FNC-10), then the sequence in a) above can be repeated.

2. SQ-01 = 3 Comparison mode

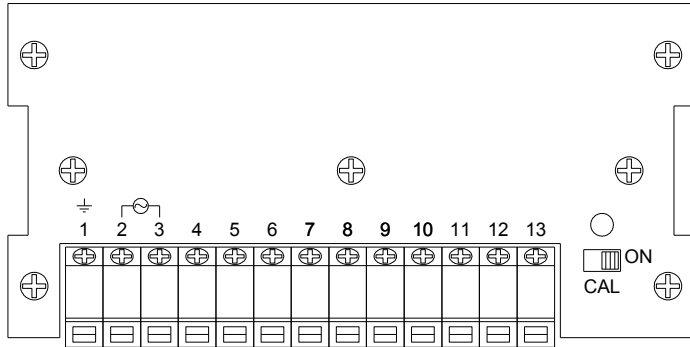
- a) When the net weight exceeds the zero range and the weight has stabilized it will be added to the totaliser and number of additions is incremented. The RS232 / RS485 and BCD outputs transmit data.

CHAPTER 5 INTERFACE

5-1 Serial input/output interface (default OP-01)

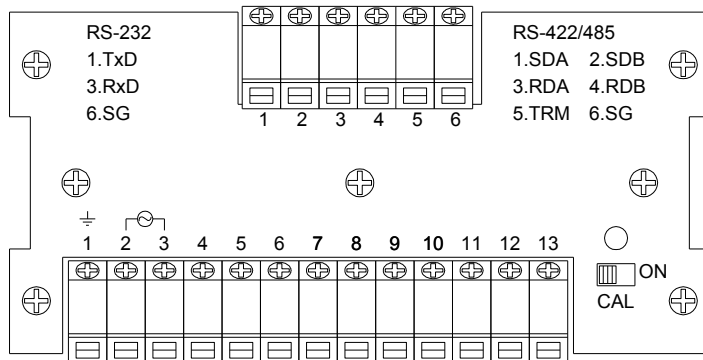
2 Pin location and setting

1. Default RS232 and Current-loop



PIN	Function
5	Current loop out
6	Current loop out
7	TXD
8	RXD
9	SG

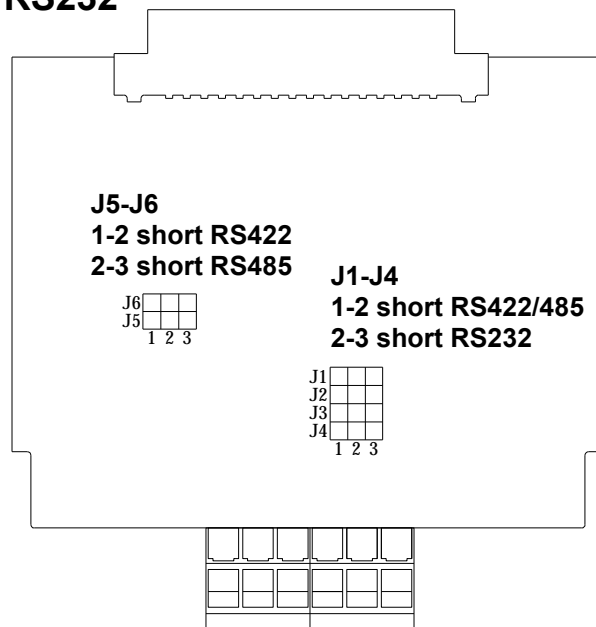
2. OP-01 RS422/RS485/RS232



PIN	Function	
	RS422/RS485	RS232
1	SDA	TXD
2	SDB	
3	RDA	RXD
4	RDB	
5	TRM	
6	SG	SG

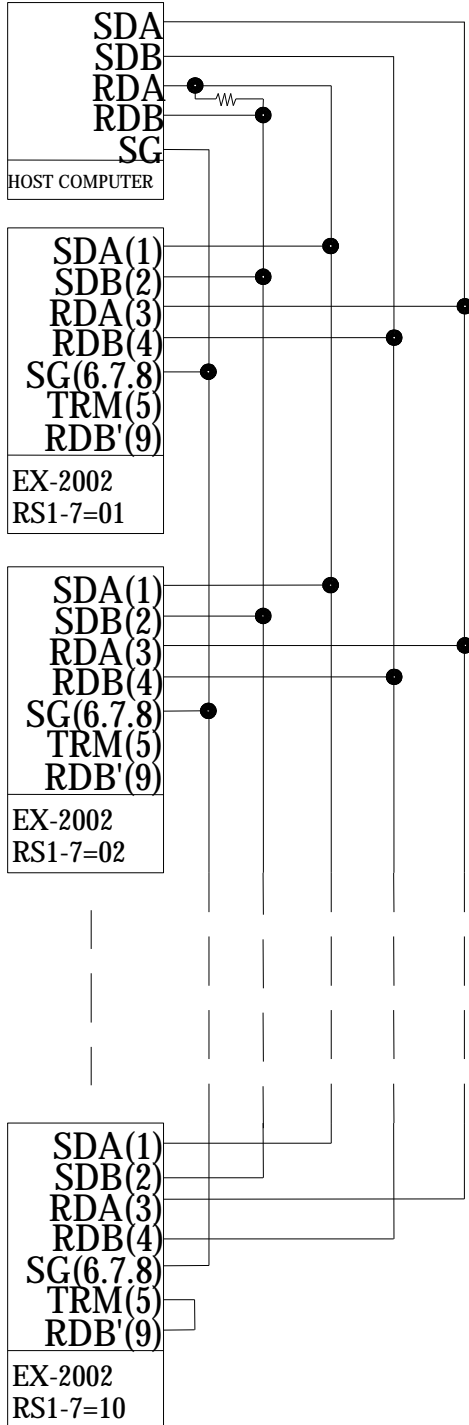
2 Jumper configuration

1. OP-01 RS422/RS485/RS232

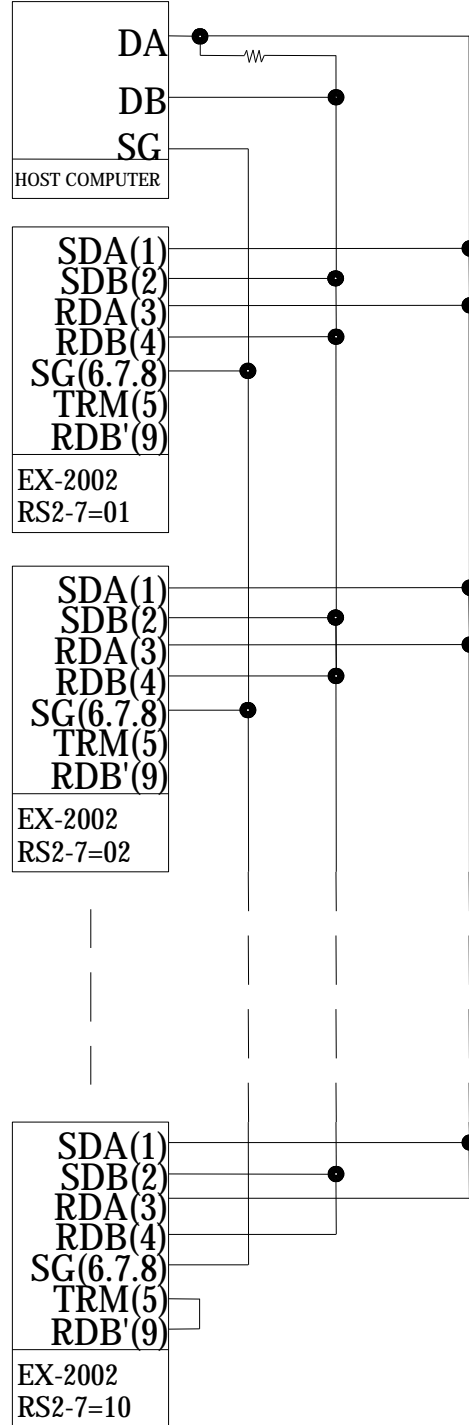


2 Connection type

RS-422

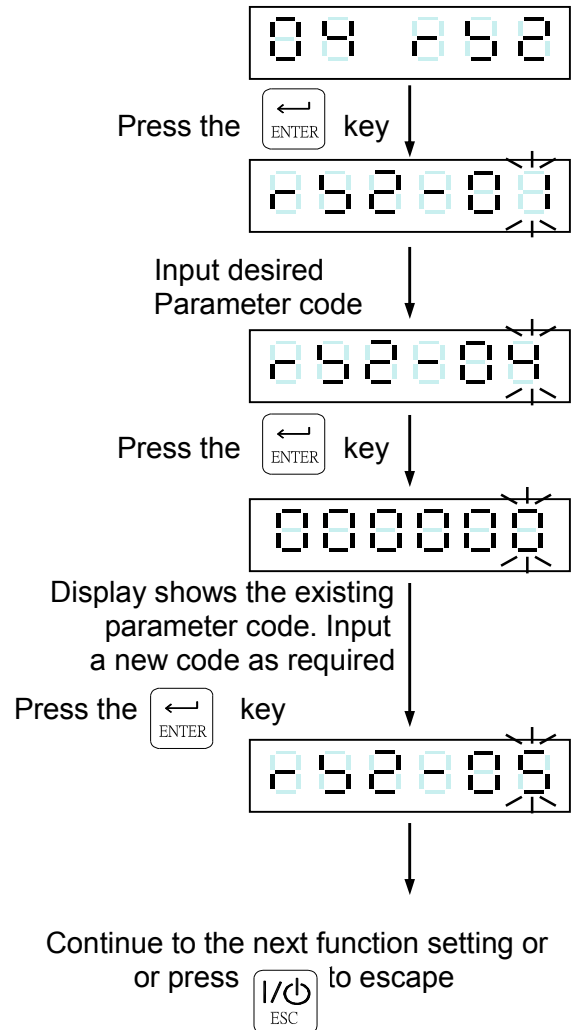
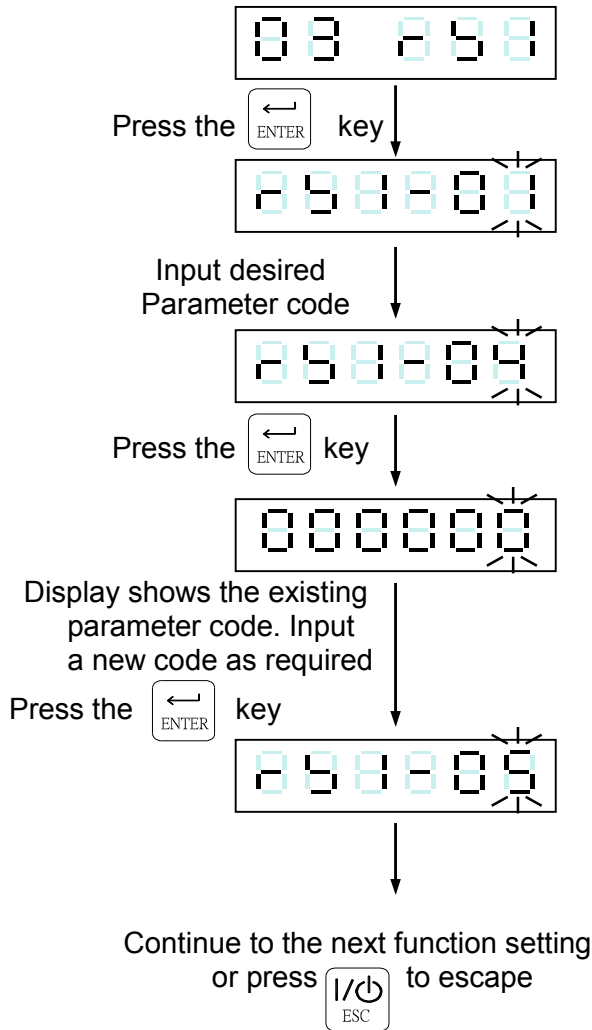








RS-485



2 Function setting

First serial port interface 03 858
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 RS2- 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 RS2- 02	Transmit mode	0	Transmit continuous + command mode	0	
		1	Auto transmit + command mode		
		2	Manual transmit + command mode		
		3	Command mode		
RS1- 03 RS2- 03	Transmit speed	0	600	2	
		1	1200		
		2	2400		
		3	4800		
		4	9600		
		5	19200		
RS1- 04 RS2- 04	Parity Bit length Stop Bit	0	N, 8, 1	No parity, 8 data bits, 1 Stop bit	2
		1	O, 7, 1	Odd parity, 7 data bits, 1 Stop bit	
		2	E, 7, 1	Even parity, 7 data bits, 1 Stop bit	
RS1- 05 RS2- 05	Transmit times	0	Open		0
		1	1 time/sec.		
		2	2 time/sec.		
		3	5 time/sec.		
		4	10 time/sec.		
RS1- 06 RS2- 06	Transmission conditions			0 ⇒ transmit cont. 1 ⇒ Stop transmit	000000
RS1- 07 RS2- 07	Indicator poling address	00 ↓ 99	When set to 0, Indicator addressing is not used.		0



2 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. Sample Format

Gross/Net or as display	+	1	2	3	4	5	6	CR	LF
Over load positive	+	SP	SP	SP	SP	SP	SP		
Over load negative	-	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	Number of transactions in total
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	tonne
	lb	6CH, 62H	lb
Ending code	CR, LF	0DH, 0AH	Ending code
Separating code	,	2CH	Comma



2 Command mode

1. Command Format A

Host Command <CR><LF>

Slave Command <CR><LF>

MZ	Zero	CZ	Zero compensation On/OFF
MT	Tare	CT	Clear TARE value
MG	Gross Weight	MN	Net weight
AT	Accu. Current net weight and times plus 1.		
ST	Deduct times of last accu. Value minus 1		
DT	Clear accu. Value and times		
BB	Start batching (one time)	HB	Load stop
BC	Start batching (continuous)		
BD	Start unload		
SC	Transmit continuous	SA	Auto transmit
SM	Manual transmit	SO	Command mode
%	Stop continuous transmission and enter the command mode		

2. Command Format B

Host Command <CR><LF>

Slave Data <CR><LF>

RW	Read current weight	RT	Read TARE
RG	Read Gross Weight	RN	Read Net weight
RB	Read current display of wt (simple)	RH	Read Gross (simple)
RI	Read Net (simple)		
RJ	Read comparison situation + current display of weight (simple)		
RK	Read comparison situation + Gross (simple)		
RL	Read comparison situation + Net (simple)		
RO	Read comparison situation (2)		
RF	Read prior completed weight	RA	Read accu. Value (incl. times)

Note : Prior command plus %

Read Weight Compared value: RS□□

FW	Read target item of unload value	S1	Read SP1
S2	Read SP2	S3	Read SP3
UD	Read Under	LO	Read LO
ZB	Read Zero Band	HI	Read HI
PR	Reading Peak value	OV	Read Over

Ex:

Command : RSFW <CR> <LF>

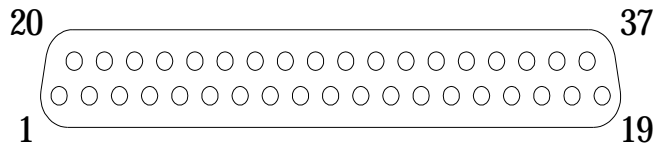
EX2002 reply : RSFW□□□□□□

Finish 6 bytes

5-2 BCD parallel output interface (OP-02)

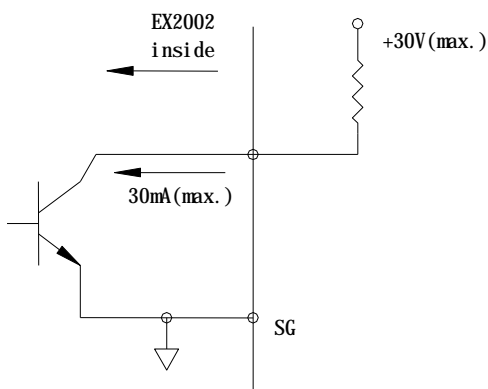
2 PIN Location

D-Sub 37PIN

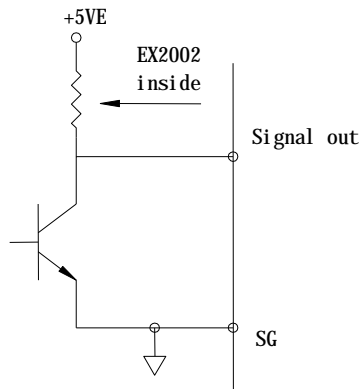


PIN	Function	PIN	Function
1	SG	20	SG
2	1×10 ⁰	21	2×10 ⁰
3	4×10 ⁰	22	8×10 ⁰
4	1×10 ¹	23	2×10 ¹
5	4×10 ¹	24	8×10 ¹
6	1×10 ²	25	2×10 ²
7	4×10 ²	26	8×10 ²
8	1×10 ³	27	2×10 ³
9	4×10 ³	28	8×10 ³
10	1×10 ⁴	29	2×10 ⁴
11	4×10 ⁴	30	8×10 ⁴
12	1×10 ⁵	31	2×10 ⁵
13	4×10 ⁵	32	8×10 ⁵
14	Gross / - Net	33	Stable / - MD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

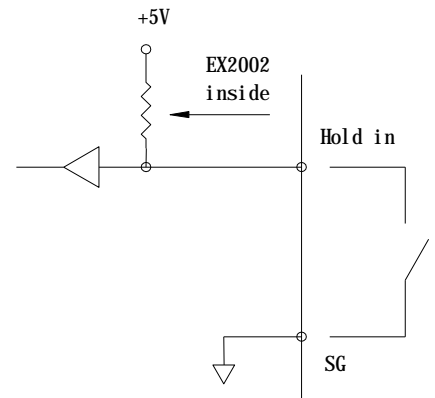
2 Equivalent Circuit



Open Collector Output (OP-02-1)

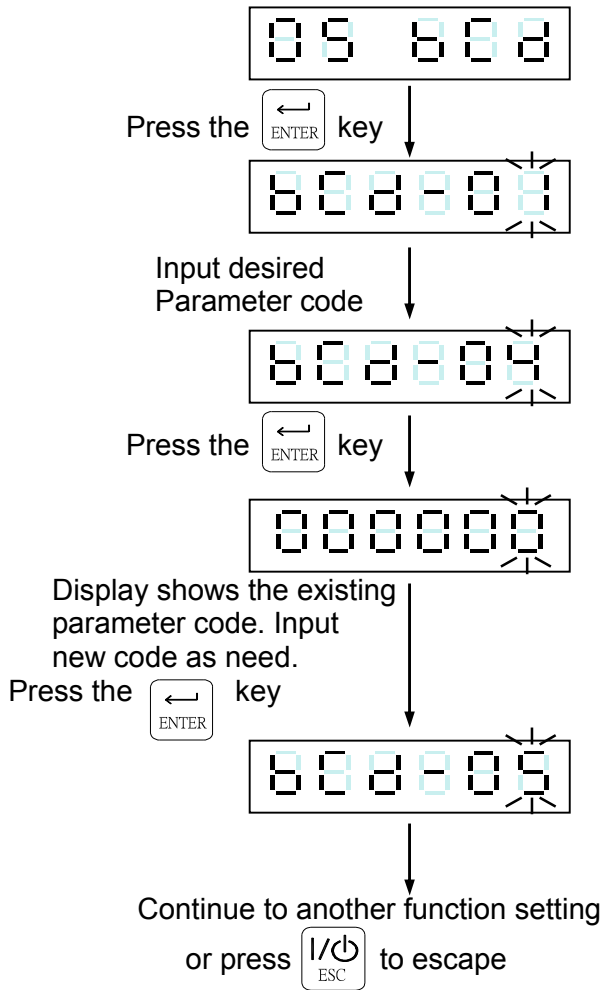








TTL Output (OP-02-2)



Hold Input

2 Function setting

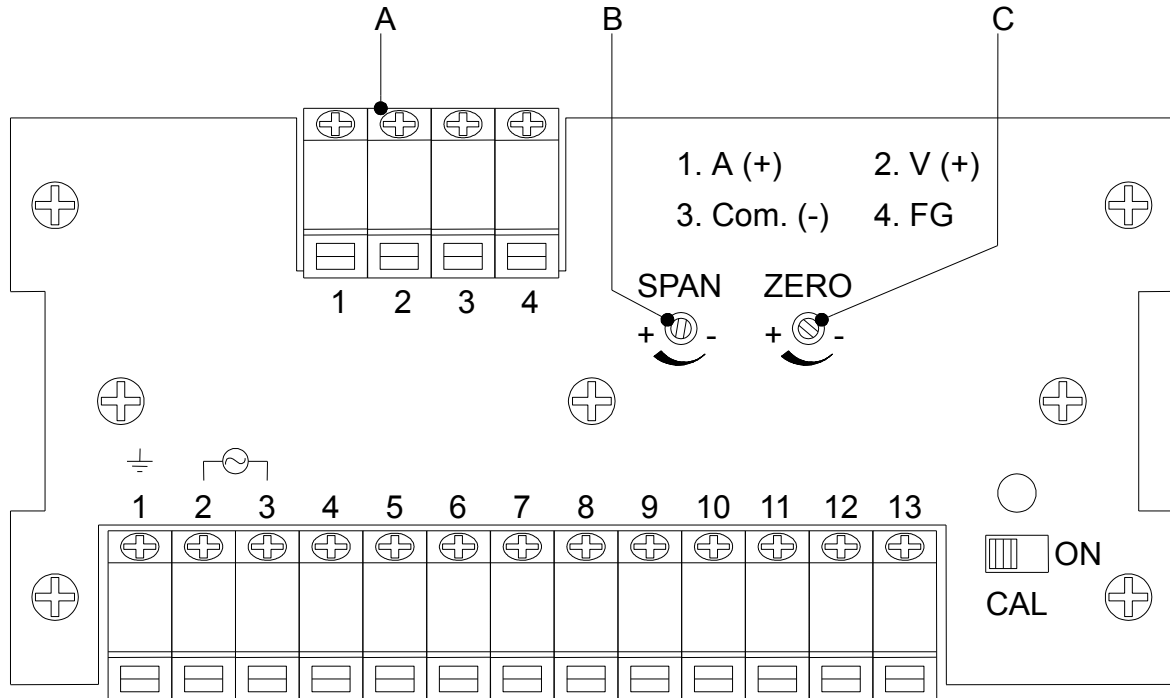


	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape

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 / Voltage Output Interface (OP-03)

2 Location



A. Terminal (4 way)

- 1 : 0 ~ 20mA current output, positive
- 2 : 0 ~ 10V voltage output, positive
- 3 : Current / voltage signal, negative
- 4 : Ground / 0V

B. SPAN adjustment

Current / voltage Span adjustment to increase value turn clockwise, decrease value turn anticlockwise.

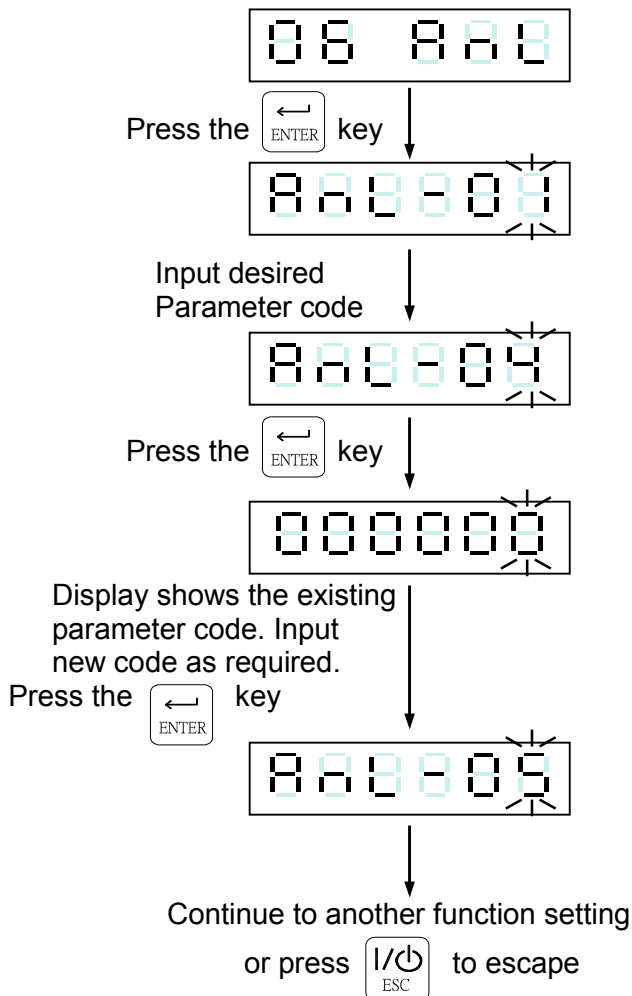
C. ZERO adjustment







Current / voltage Zero adjustment to increase value turn clockwise, decrease value turn anticlockwise.

2 Analogue output interface specification

- Resolution : 16 bits
- Current output : 0 ~ 20mA (0 ~ 550 Ω load)
- Voltage output : 0 ~ 10V

2 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	000000 ~ 999999	When the weight reaches the value of that in AnL-03, the current / voltage output is changed to that configured in AnL-04.	0
AnL- 04	Current / Voltage in Lo	0.0 mA ~ 20.0 mA or 0.0 V ~ 10.0 V		4.0
AnL- 05	Weight in Hi	000000 ~ 999999	When the weight reaches the value of that in AnL-05, the current / voltage output is changed to that configured in AnL-06.	300000
AnL- 06	Current / Voltage in Hi	0.0 mA ~ 20.0 mA or 0.0 V ~ 10.0 V		20.0



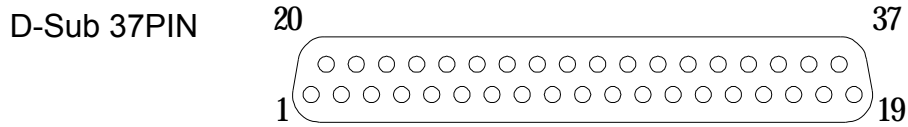
2 Analogue output notes

1. The current output, load resistor should not exceed 550 Ω . It is recommended that a resistor with a low temperature coefficient and a power rating above 0.2 W be used.
2. Avoid short circuits between the positive and negative analogue output terminals as the interface this may cause damage.
3. It is recommended that a screened cable is used to connect the analogue output to its load and that the screen is earthed to avoid noise interference.



5-4 External parallel input / output interface

2 PIN location



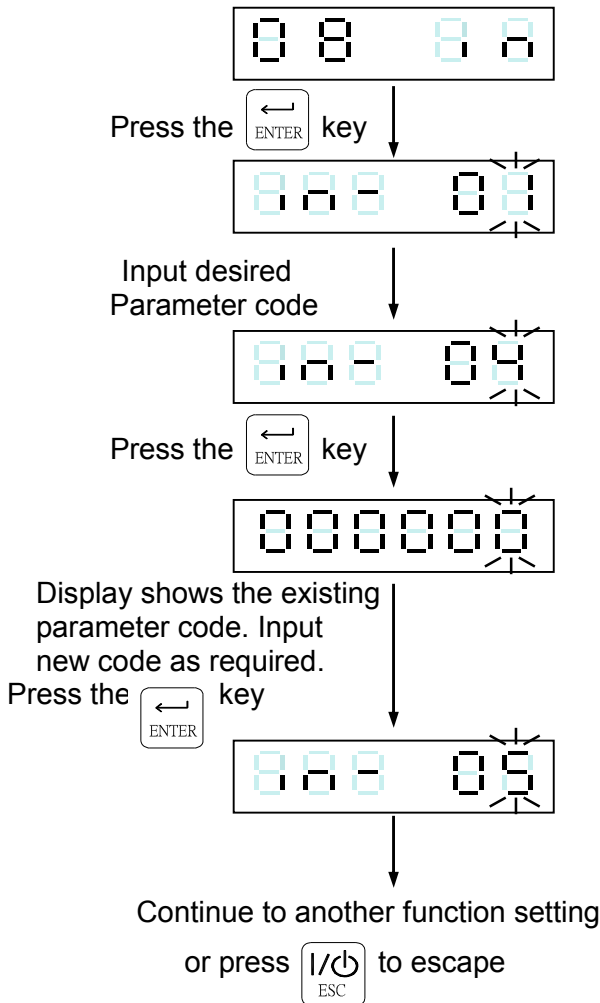
2 OP-04 Control I/O (4 in / 4 out) + Setpoint Input (BCD code)







PIN	I/O	Signal	PIN	I/O	Signal
1	IN	Code 10 ⁰	20	IN	Code 10 ¹
2	IN	Code 10 ²	21	IN	Code 10 ³
3	IN	Code 10 ⁴	22	IN	Code 10 ⁵
4	IN	Code 10 ⁶	23	IN	Code 10 ⁷
5	IN	Code 10 ⁸	24	IN	Code 10 ⁹
6	IN	Code 10 ¹⁰	25	IN	Code 10 ¹¹
7			26		
8			27	OUT	OUT 0
9	OUT	OUT 1	28	OUT	OUT 2
10	OUT	OUT 3	29	IN	Vex
11		COM 2	30		COM 2
12			31		
13		COM 1	32		COM1
14	IN	IN 0	33	IN	IN 1
15	IN	IN 2	34	IN	IN 3
16			35		
17			36	IN	Code 1
18	IN	Code 2	37	IN	Code 4
19	IN	Code 8			

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

PIN	I/O	Signal	PIN	I/O	Signal
1	IN	IN 0	20		COM 1
2	IN	IN 1	21		COM 1
3	IN	IN 2	22		COM 1
4	IN	IN 3	23		COM 1
5	IN	IN 4	24		COM 1
6	IN	IN 5	25		COM 1
7	IN	IN 6	26		COM 1
8	IN	IN 7	27		COM 1
9		COM 1	28		COM 1
10		COM 2	29		COM 2
11	OUT	OUT 0	30		COM 2
12	OUT	OUT 1	31		COM 2
13	OUT	OUT 2	32		COM 2
14	OUT	OUT 3	33		COM 2
15	OUT	OUT 4	34		COM 2
16	OUT	OUT 5	35		COM 2
17	OUT	OUT 6	36		COM 2
18	OUT	OUT 7	37		COM 2
19	IN	Vex			

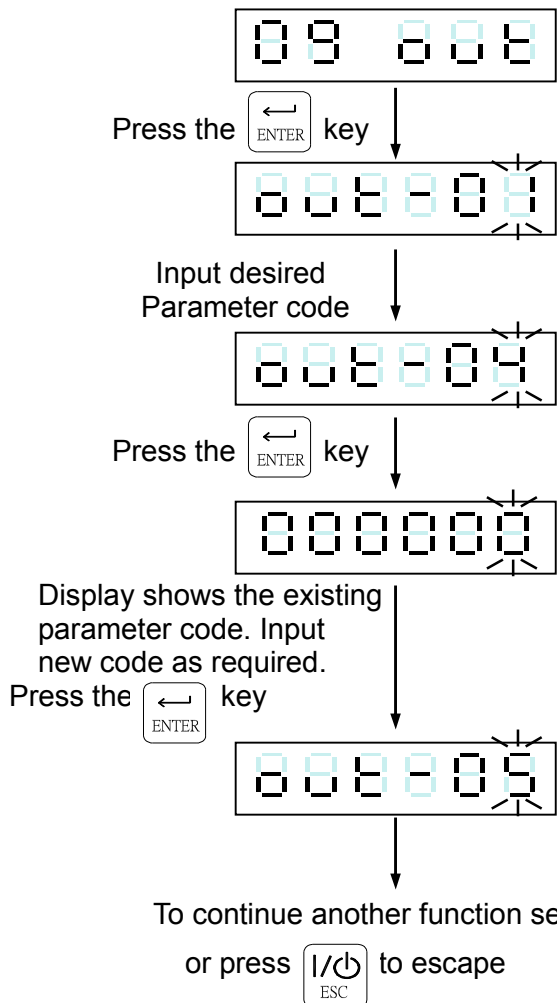
2 Input signal configuration



	⇒ 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
		1	⇒ Zero	
IN - 02	Input 2	2	⇒ Tare	2
		3	⇒ Tare reset	
IN - 03	Input 3	4	⇒ Start batching	3
		5	⇒ Stop batching	
IN - 04	Input 4	6	⇒ Discharge Command	4
		7	⇒ Hold	
IN - 05	Input 5	8	⇒ Hold display & I/O reset	5
		9	⇒ Totalise (Accu) Command	
IN - 06	Input 6	10	⇒ Clear totaliser (Accu)	6
		11	⇒ Clear previous total (Accu) Value.	
IN - 07	Input 7	12	⇒ Start to compare	7
		13	⇒ Serial and parallel printer manual output	
IN - 08	Input 8	14	⇒ Net / Gross	8

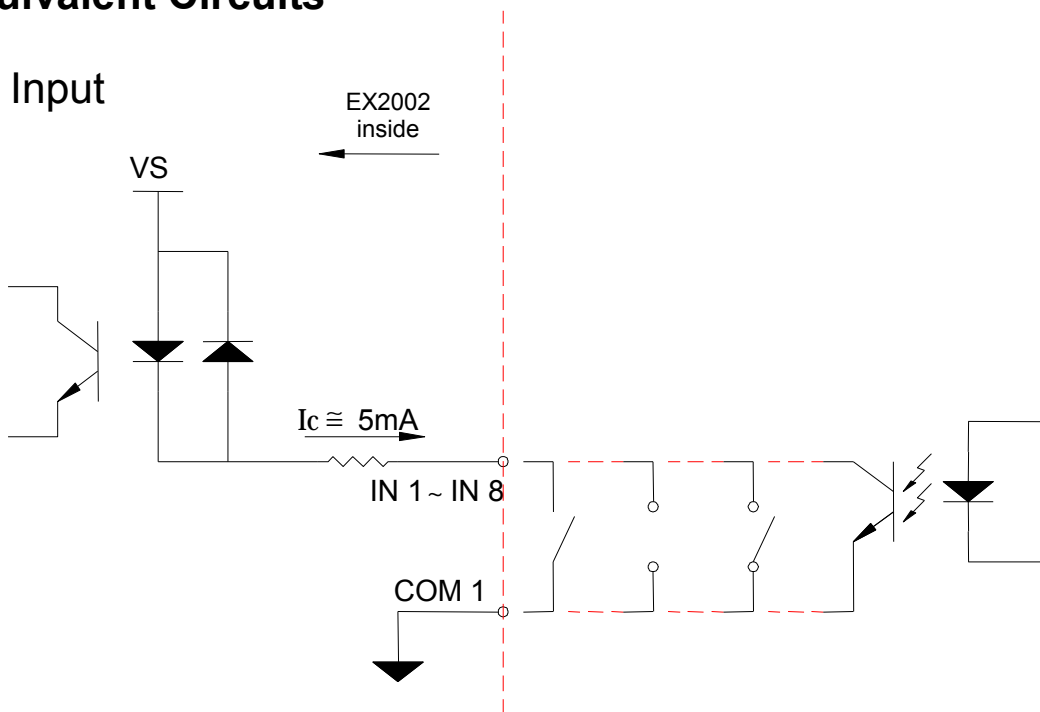
2 Output signal setting



F1 ↑	⇒ Increment flashing digit
F ↓	⇒ Decrement flashing digit
←0 ZERO ←	⇒ Move flashing point left.
→T TARE →	⇒ Move flashing point right
← ENTER	⇒ Store data in memory
I/O ESC	⇒ Exit / 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		
		13 ⇒ OK		
		14 ⇒ Lo		
OUT-09	The output logic of OUT-04~OUT-01		0000 à positive logic 1111 à negative logic	0000
OUT-10	The output logic of OUT-08~OUT-05		0000 à positive logic 1111 à negative logic	0000

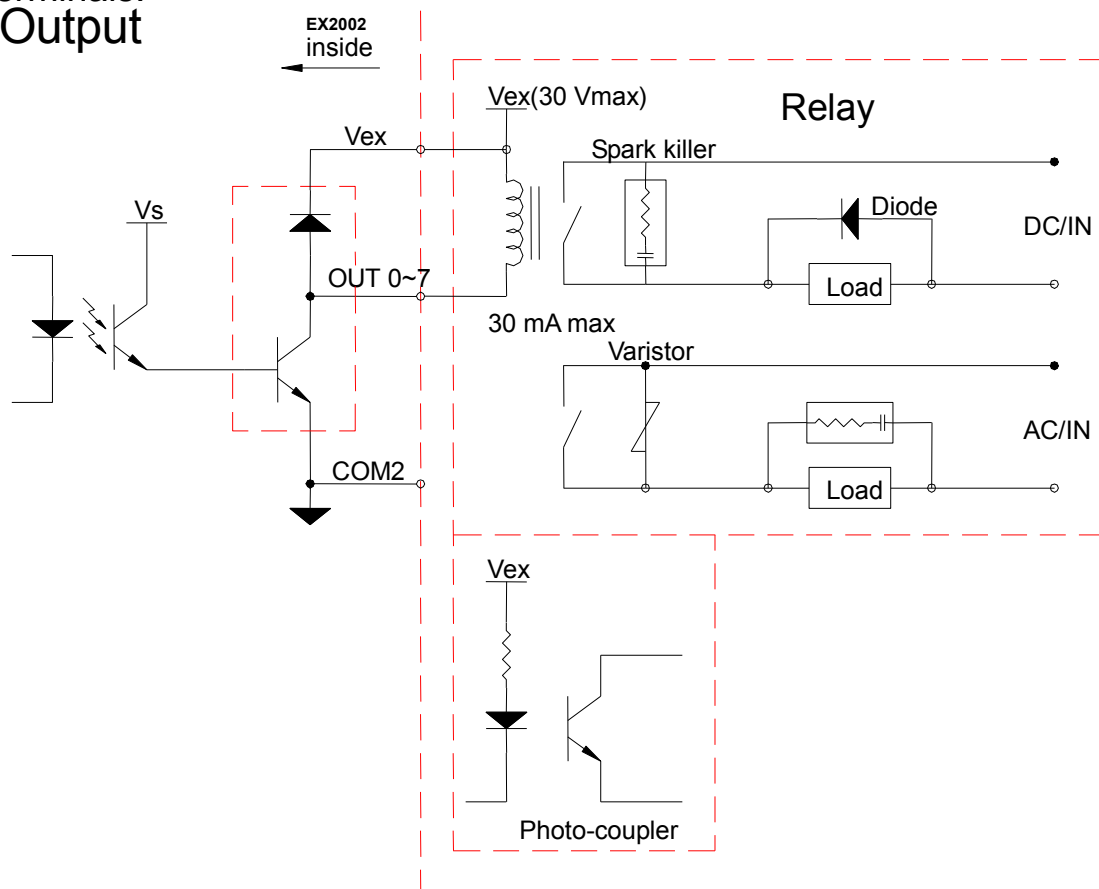
2 Equivalent Circuits



4 IN 1 ~ IN 8 and COM 1. Input signal - Open ↔ OFF, Short ↔ ON.

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

Output



2 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:-

- Final (5 digits), SP2 (4 digits) & Free Fall (3 digits)

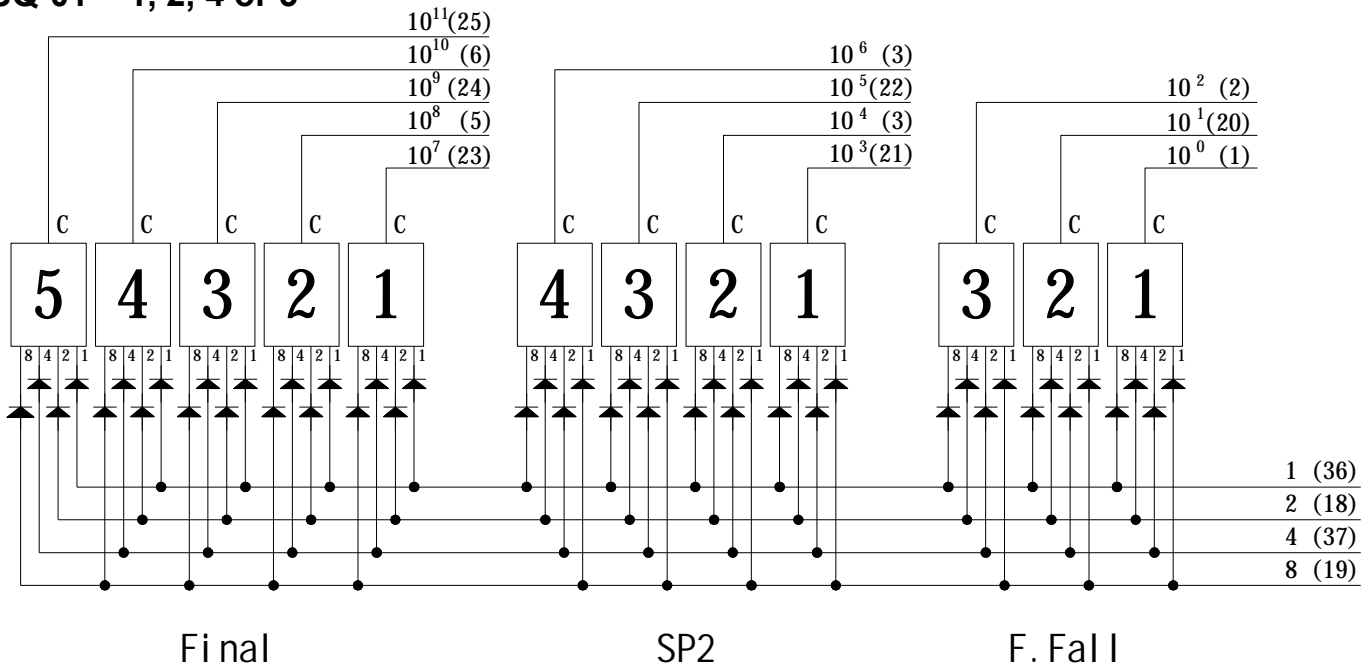
or

, Hi (6 digits), Lo (6 digits)

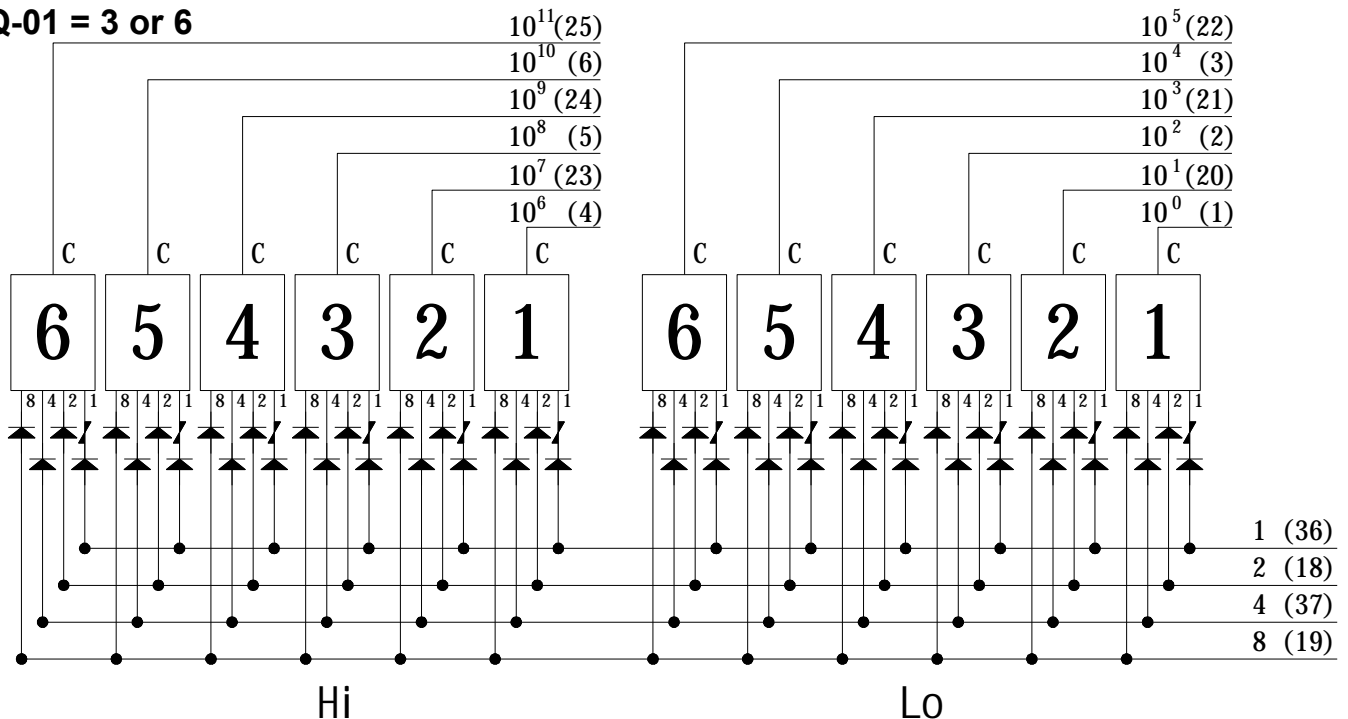
When using external thumbwheel Switches, SQ-18 should be set to 1.

Connection data

SQ-01 = 1, 2, 4 or 5








SQ-01 = 3 or 6



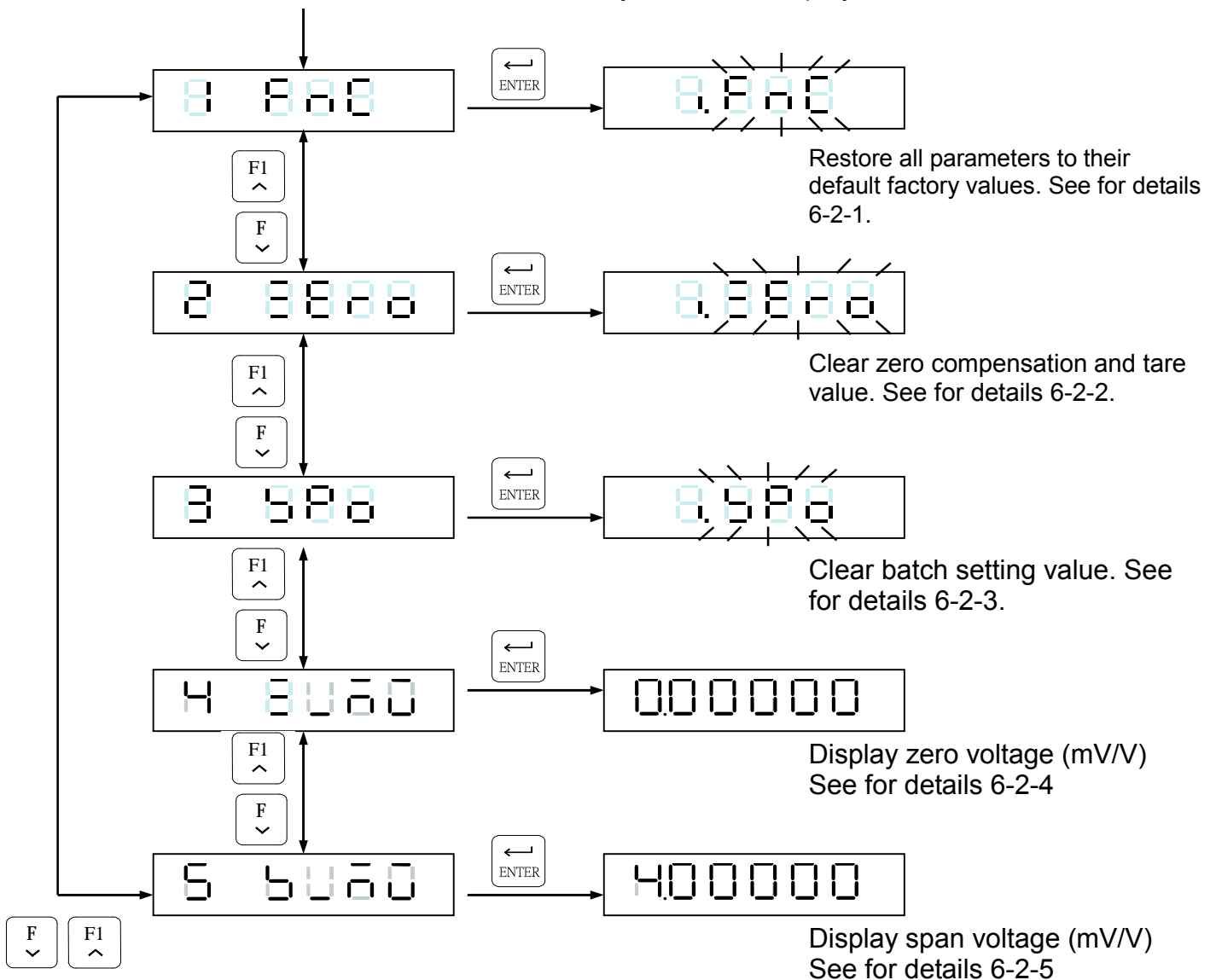
CHAPTER 6 MAINTENANCE

6-1 Restore all parameters to their default factory values.









- (1) While the indicator is counting back to zero, adjust SW to ON and 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.
 - (3-2) To abort, set the calibration SW to OFF directly.

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 or switch the power off.








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 or switch the power off.

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 or switch the power off.

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 or switch the power off.



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

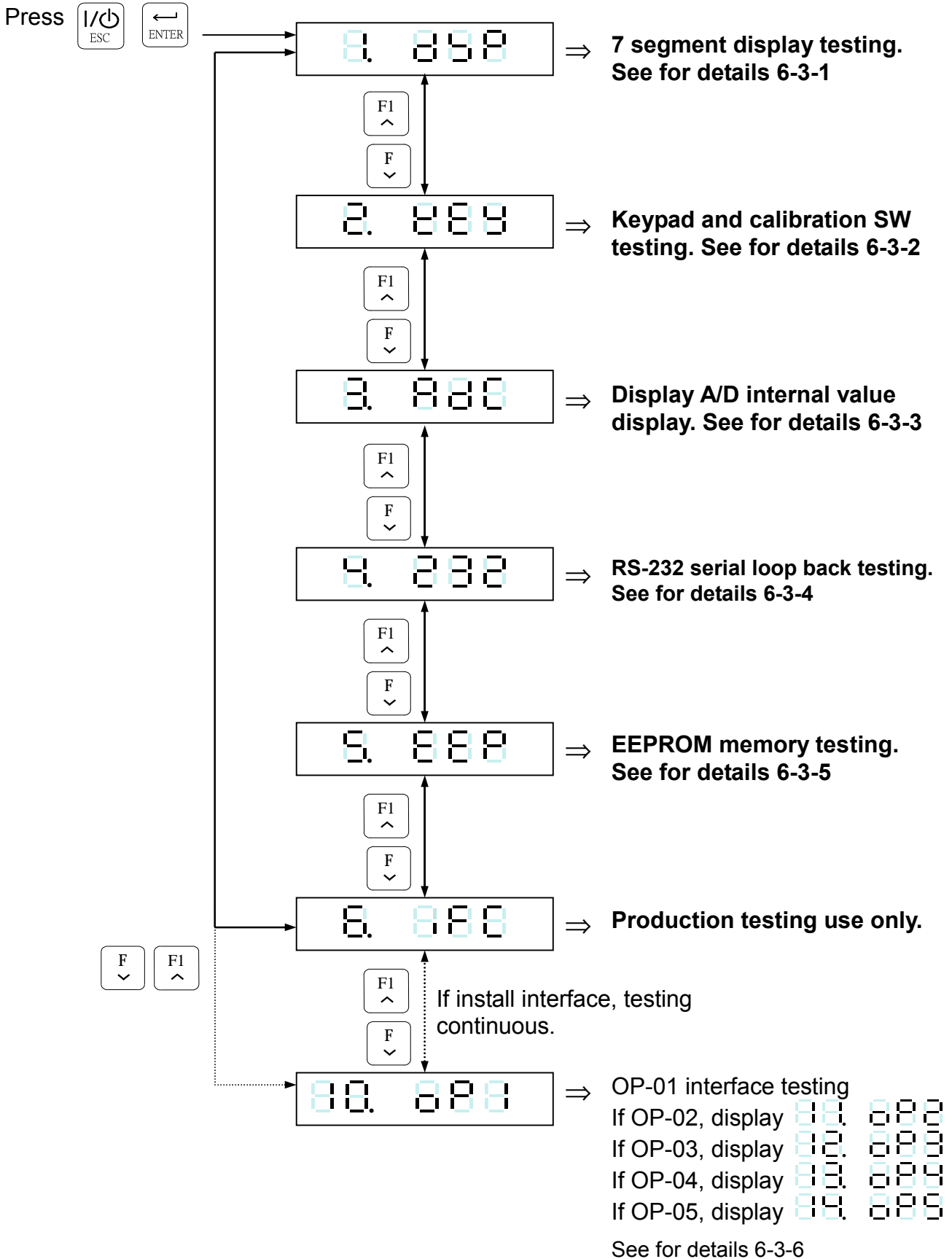
(3) Press the key, the display shows the span voltage (mV/V).

e.g.

(4) Press key or switch the power off.

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 and calibration SW testing



Setting the calibration SW to "ON", or 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 7 and pin 8 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

2 OP-01 RS232/RS422/RS485 testing

1) RS232 testing

J1~J4 ⇒ 1, 2 short (Adjust J1~J4 mini jumper to 2, 3)

Terminal pin 1 and pin 3 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.

2) RS422 testing

J1~J4 ⇒ 1, 2 short (Adjust J1~J4 mini jumper to 1, 2)

J5~J6 ⇒ 1, 2 short (Adjust J5~J6 mini jumper to 1, 2)

Terminal pin1 and pin 3, pin 2 and pin 4 must be separately 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.

2 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.



2 OP-03 Analogue current output interface testing

1) 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

2) 0 ~ 10V voltage output testing

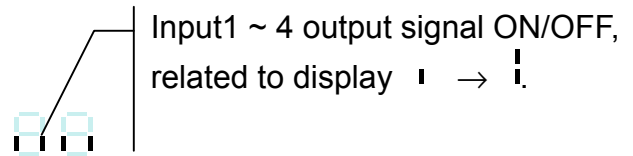
Use a voltmeter to measure the voltage between pin 2 & pin 3 of the interface.

Use the keys to select the output voltage level desired.

	⇒	1V
	⇒	5V
	⇒	10V

4 Warning: To avoid damage to components use only a voltmeter.

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



Press Key
 ~ in sequence, represents Outputs 1 ~ 4


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




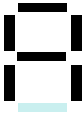






















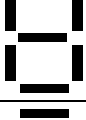











2 OP-05 Control I/O (8I/8O) testing



Input 1 ~ 8 signal ON/OFF, related to display 1 → 1.

Press  key
8 ~ 8 in sequence, represents Output 1 ~ 8

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	



2 FNC GROUP FUNCTION SETTING

Item	Function	Setting value			Default	
		Parameter	Description			
FNC-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			
FNC-02	Digital Filter II	0	Disabled		2	
		1	Less filter ↑ ↓ Greater			
		2				
		3				
		4				
		5				
FNC-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)		
FNC-04	"F" function setting	Parameter ⇒ Description			1	
		2	⇒ Display Net / Gross weight			
		3	⇒ Setpoint parameter setting			
		2	⇒ Tare reset			
		3	⇒ Manual serial, parallel print output.			
		4	⇒ Start load			
FNC-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	
FNC-06	Front panel indication “◀” setting (top)	Parameter ⇒ Description		0
		0	⇒ Zero	
		1	⇒ MD	
		2	⇒ Gross	
FNC-07	Front panel indication “◀” setting (next to top)	3	⇒ Net	1
		4	⇒ Totalised weight (Accu. V)	
		5	⇒ Totalised transactions (Accu. C)	
		6	⇒ SP1	
FNC-08	Front panel indication “◀” setting (next to bottom)	7	⇒ SP2	2
		8	⇒ SP3	
		9	⇒ Hi	
		10	⇒ OK	
FNC-09	Front panel indication “◀” setting (bottom)	11	⇒ Lo	3
		12	⇒ Under	
		13	⇒ Over	
		14	⇒ Discharge	
FNC-10	Return to zero band	15	⇒ Running	0
		16	⇒ Hold	
		0	5 d	
		1	10 d	
		2	20 d	
		3	40 d	
		4	60 d	
		5	80 d	
		6	100 d	
		7	150 d	
8	200 d			
FNC-11	Hold	9	250 d	0
		0	Hold	
		1	Peak hold (positive)	
		2	Peak hold (negative)	
FNC-12	Rate for display rewrite	3	Peak hold (absolute value)	0
		0	No limitation	
		1	20 times/sec	
		2	10 times/sec	
		3	5 times/sec	
		4	1 time/sec	



Serial Input/Output Interface (Build in OP-1)

Item	Function	Setting value		Default	
		Parameter	Description		
RS1- 01 RS2- 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 RS2- 02	Transmit mode	0	Transmit continuous + command mode	0	
		1	Auto transmit + command mode		
		2	Manual transmit + command mode		
		3	Command mode		
RS1- 03 RS2- 03	Transmit speed	0	600	2	
		1	1200		
		2	2400		
		3	4800		
		4	9600		
		5	19200		
RS1- 04 RS2- 04	Parity Bit length Stop Bit	0	N, 8, 1	No parity, 8 data bits, 1 Stop bit	2
		1	O, 7, 1	Odd parity, 7 data bits, 1 Stop bit	
		2	E, 7, 1	Even parity, 7 data bits, 1 Stop bit	
RS1- 05 RS2- 05	Transmit times	0	Open		0
		1	1 time/sec.		
		2	2 times/sec.		
		3	5 times/sec.		
		4	10 times/sec.		
RS1- 06 RS2- 06	Transmission conditions				000000
RS1- 07 RS2- 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	000000 ~ 999999	When the weight reaches the value of that in AnL-03, the current / voltage output is changed to that configured in AnL-04.	0
AnL- 04	Current / Voltage in Lo	0.0 mA ~ 20.0 mA or 0.0 V ~ 10.0 V		4.0
AnL- 05	Weight in Hi	000000 ~ 999999	When the weight reaches the value of that in AnL-05, the current / voltage output is changed to that configured in AnL-06.	300000
AnL- 06	Current / Voltage in Hi	0.0 mA ~ 20.0 mA or 0.0 V ~ 10.0 V		20.0



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	⇒ Hi	
		13	⇒ OK	
		14	⇒ Lo	
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
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	