

MIKROTEK P-EX






USER MANUAL





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Special Notice

The indicator is IP67 waterproof design. Only the cables with ψ 4~ ψ 7mm calibre could be used or will affect the waterproof design.

In some certain conditions, the stainless case of indicator would be opened to set up the load cell, to connect the power cable, or to change the new rechargeable battery.

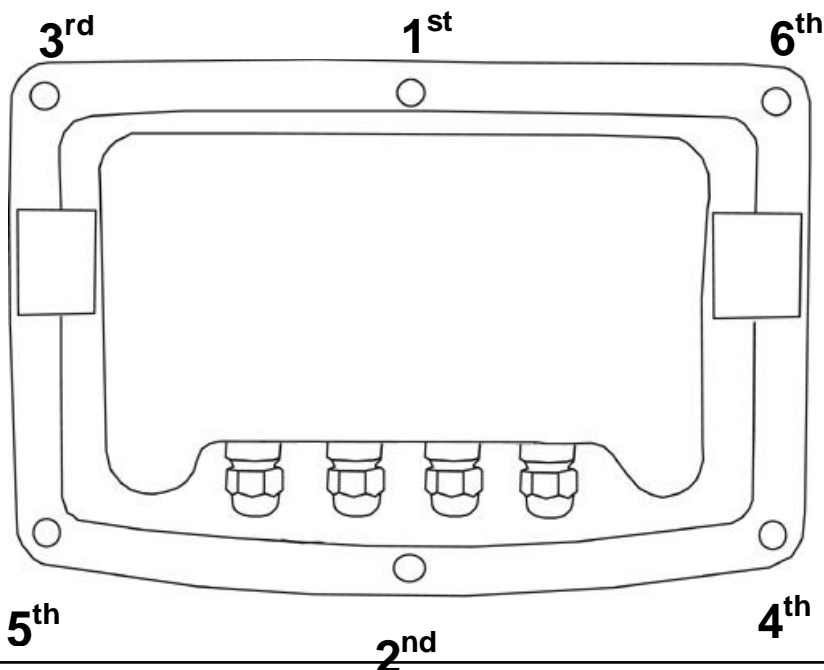
Before open the stainless case, please make sure the indicator is dry, if necessary the liquid should be wiped off.

The assembling notice should be accurately followed to assure the waterproof performance. We also strongly suggest that these procedures should be operated by the technical staff of your supplier.

ASSEMBLING NOTICE:

After the desired steps are done, screw the case with 12 kgf-cm in the following orders. Do not screw tightly before all screws are in the positions.

Screwing orders:



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 acceptable range, AC100V ~ AC240V.
- ☞ The operating ambient temperature range is -10°C ~ +40°C.
(+14°F ~ +104°F)
- ☞ The indicator is IP67 waterproof design. Only the cables with ψ 4~ ψ 7mm calibre could be used or will affect the waterproof design.

Features

MIKROTEK P-EX has a wide range of applications from batching to simple weighing.

Features:

IP 67 Waterproof design

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 bottom work 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-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.07 ~ FNC.10 for the various options available.

☞ Weighing Units

- ◆ Weighing Units kg / g / t / lb.

1-2 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.



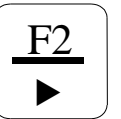
- :
In the normal mode, it performs as Zero operation.



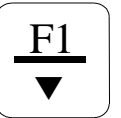
- : When parameter setting, it increments the flashing digit or steps up the select item.
In the normal mode, it performs a Gross/Net switch operation.



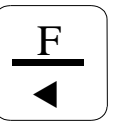
- :
In the normal mode, it performs as Tare operation.



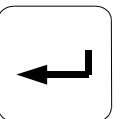
- :
When parameter setting, it move flashing to right.
In the normal mode, it accesses the FNC-06 setting.



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



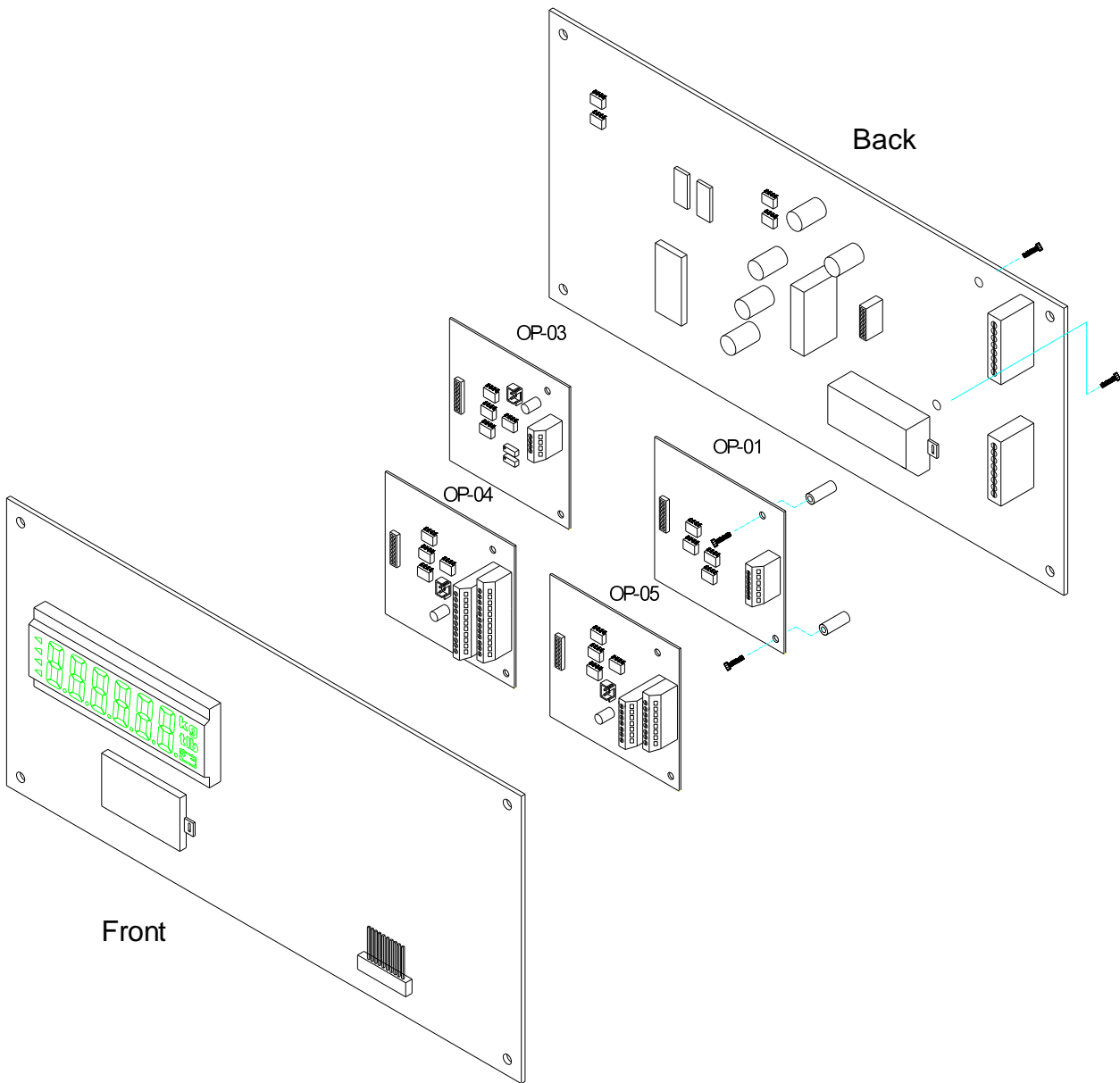
- :
When parameter setting, it move flashing to left.
In the normal mode, it accesses the FNC-04 setting.



- : Confirm / enter key

- ☰ 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.

1-3 Assembly diagram



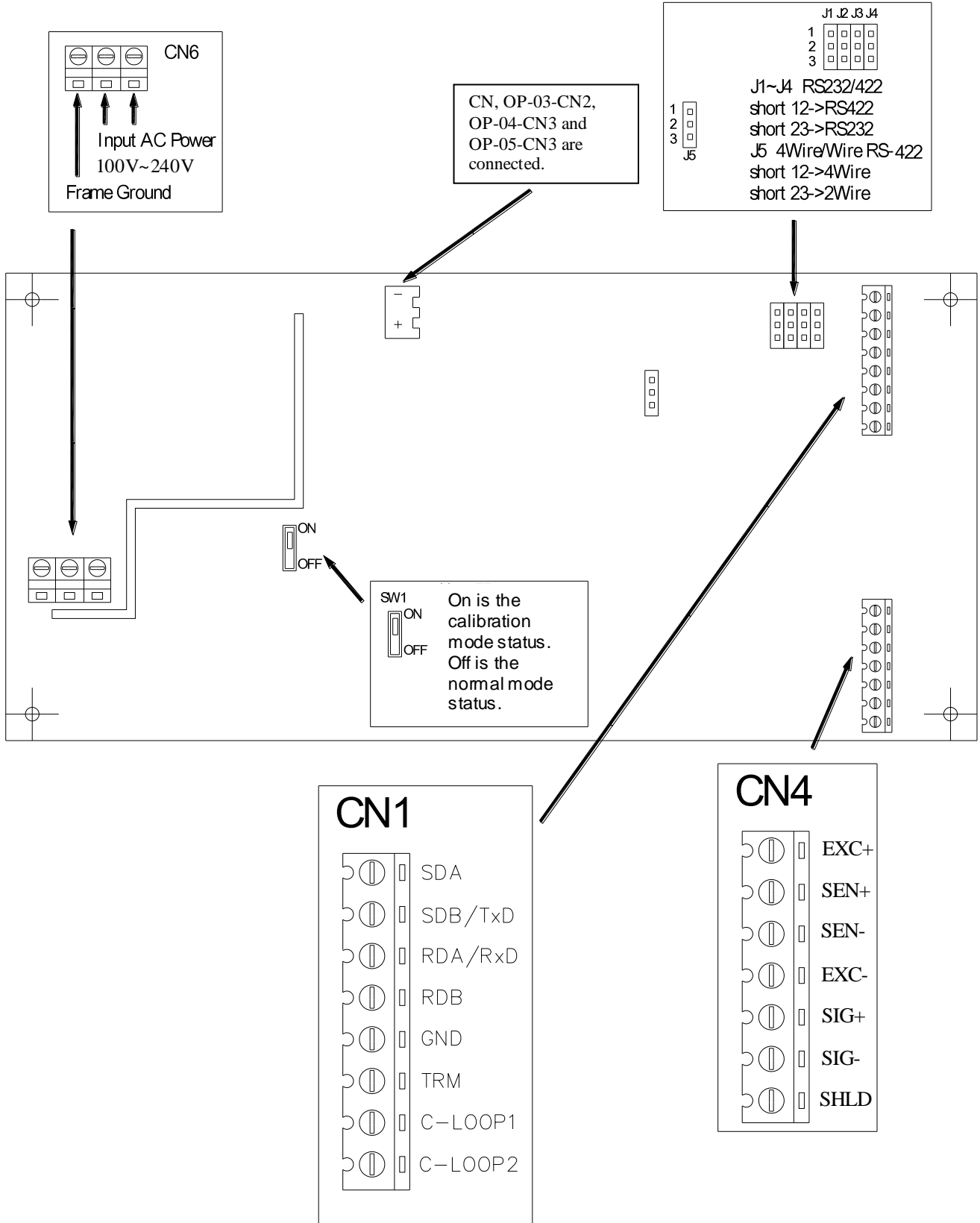
1-4 A/D Conversion

- * Input Sensitivity : Up to 0.12 $\mu\text{V/D}$
- * 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 $\pm 5\%$, 120mA
(Up to eight (8) 350 Ω load cells can be connected)

1-5 Power supply

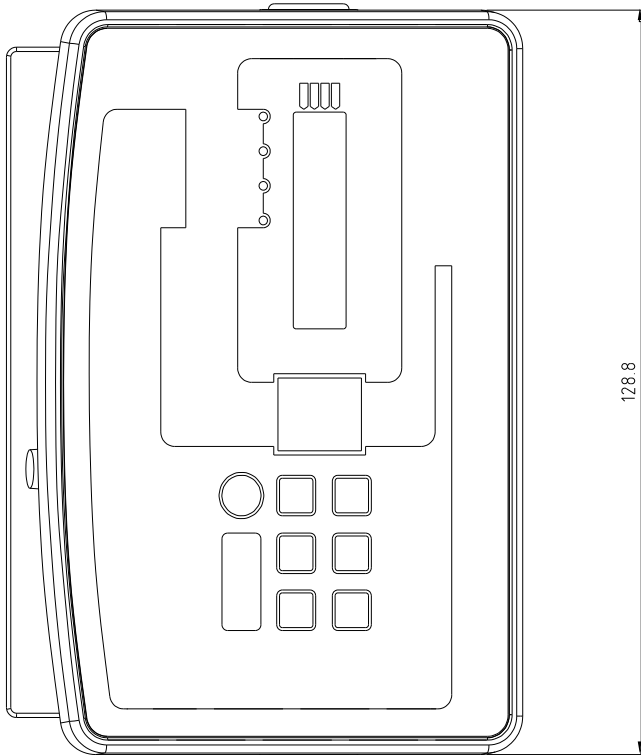
- ◆ AC 100V ~ 240V 50/60Hz
- ◆ Power consumption is about 10VA

1-6 Circuit board description

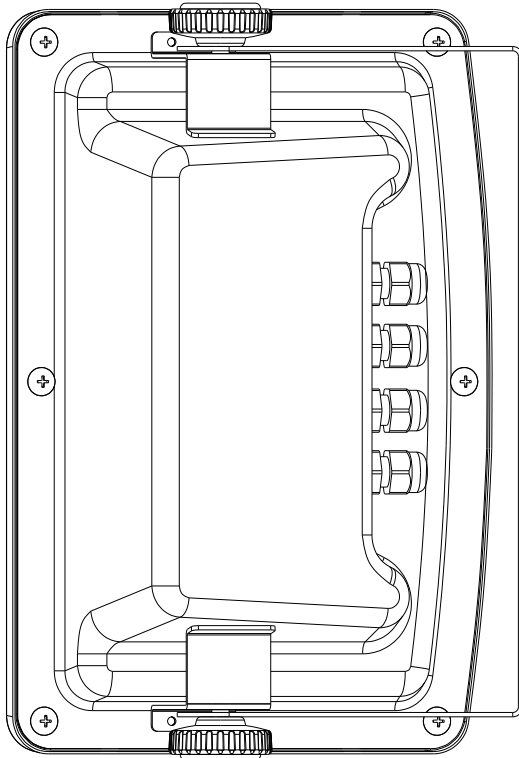
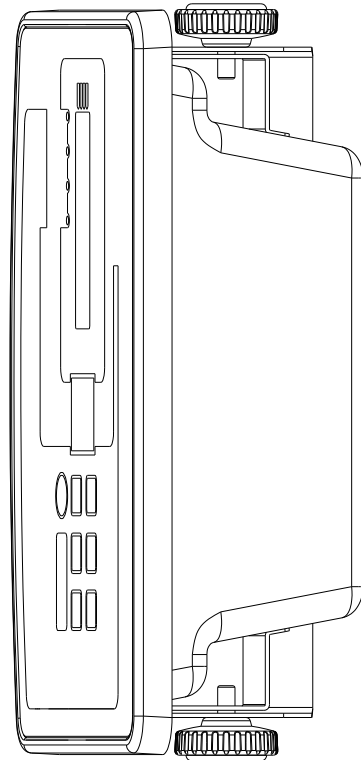


1-7 Indicator appearance

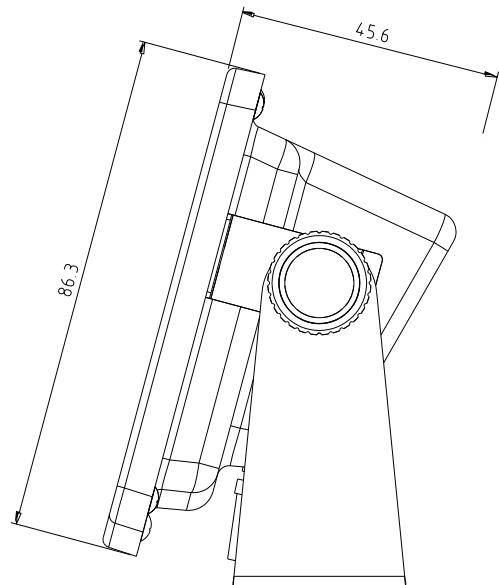
Front view



Up view























Back view






Side view

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"	00 888	See 3-2 for details
Enter function setting	Press  not release, then press  key after the power is turned on	00 888	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	8.888	See 6-1 for details
Reset general function parameters back to default	Turn the power on and Press  and  keys during self-testing sequence	8 888	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 	0 8888	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	0 888	See 6-2-3 for details
Value of zero point voltage(mV/V)	Turn the power on and Press  and  , then press  three times.	0 8888	See 6-2-4 for details
Value of Span voltage (mV/V)	Turn the power on and Press  and  , then Press 	0 8888	See 6-2-5 for details
Entering to test mode	Turn the power on and press  and  keys during self-testing sequence	0. 888	See 6-3 for details



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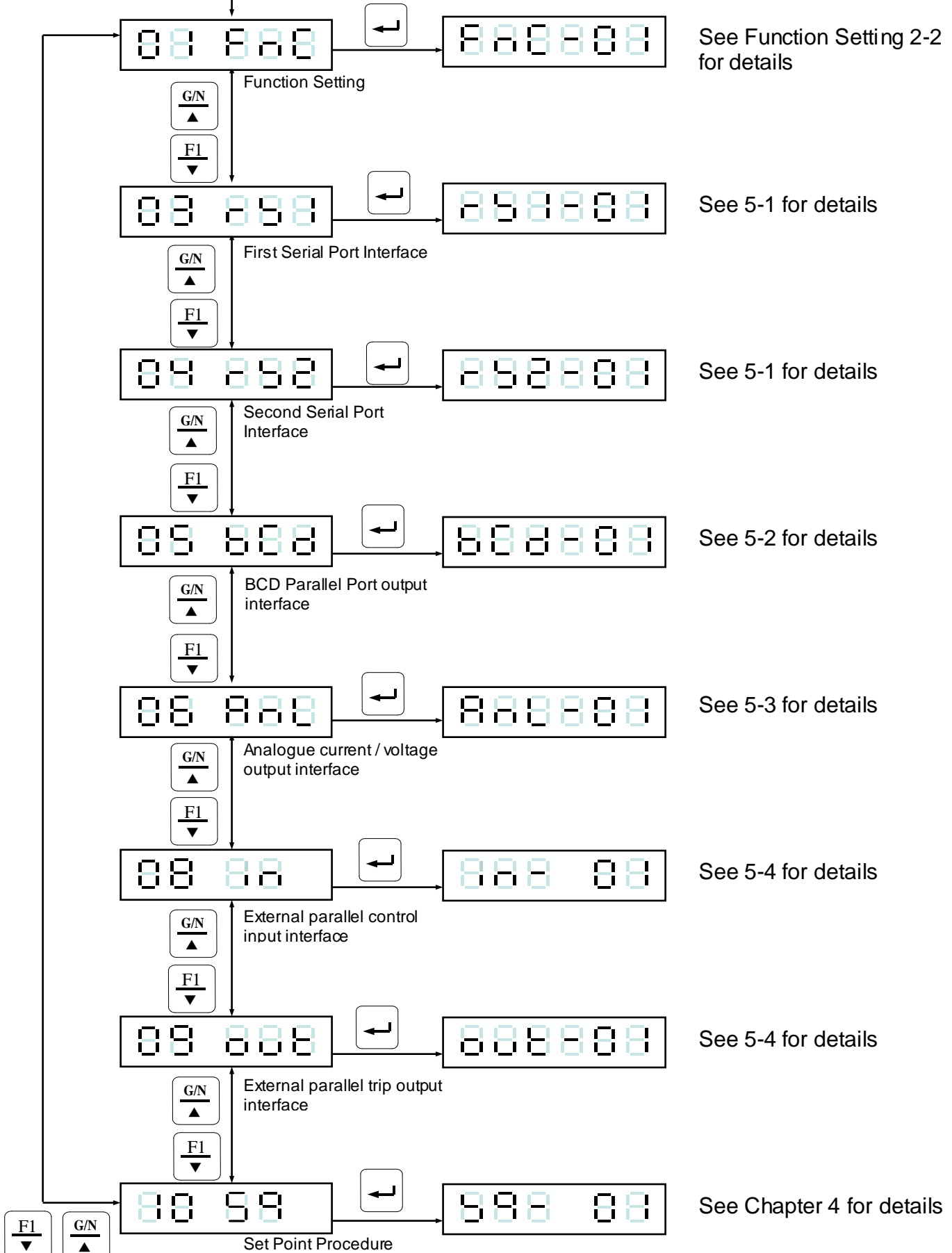
Function	Operation	Display	Description
Check weighing setpoint parameter setting	Press the  key to set the parameter of FUNC.4 to 1 in the normal mode	 or 	See 4-2 for details

 **Key actions in function set up mode**

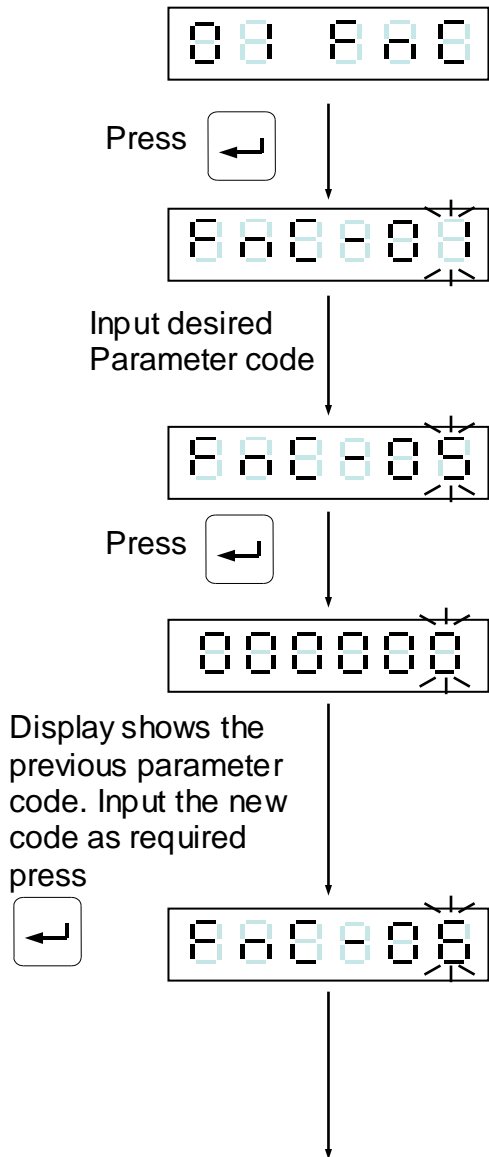
-  ⇒ Increases the number of the flashing digit
-  ⇒ Decreases the number of the flashing digit
-  ⇒ Moves the flashing digit one space to the left
-  ⇒ Moves the flashing digit one space to the right
-  ⇒ Saves the configuration
-  ⇒ Quits set up mode / Escape

Function Setting Procedures

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



2-2 Function setting 000000









To continue the next function setting

or press  to escape

*Function Parameter code

- 000000 ⇒ Digital Filter I
- 000001 ⇒ Digital Filter II
- 000002 ⇒ Lock keypad function
- 000003 ⇒ "F" function setting
- 000004 ⇒ "F1" function setting
- 000005 ⇒ "F2" function setting
- 000006 ⇒ Front panel indication "S1" setting status
- 000007 ⇒ Front panel indication "S2" setting status
- 000008 ⇒ Front panel indication "S3" setting status
- 000009 ⇒ Front panel indication "S4" setting status
- 000010 ⇒ Terms of back to zero
- 000011 ⇒ Hold
- 000012 ⇒ Display the rate of refreshment

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

☞ 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	<table border="1" style="font-size: small;"> <tr> <td>0</td> <td>Normal (lock disable)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>Close (lock enable)</td> <td>Tare</td> <td>G/N</td> <td>Zero</td> <td>F2</td> <td>F1</td> <td>F</td> </tr> </table>	0	Normal (lock disable)	0	0	0	0	0	0	1	Close (lock enable)	Tare	G/N	Zero	F2	F1	F	000000
		0	Normal (lock disable)	0	0	0	0	0	0											
1	Close (lock enable)	Tare	G/N	Zero	F2	F1	F													
FNC-04	"F" function setting	Parameter ⇒ Description		0																
		0	⇒ Setpoint parameter setting																	
		1	⇒ Tare reset																	
		2	⇒ Manually output of serial, parallel print																	
		3	⇒ Start load																	
		4	⇒ Stop load																	
FNC-05	"F1" function setting	5	⇒ Start comparison	1																
		6	⇒ Unload command																	
		7	⇒ Totalise weight and counts command																	
		8	⇒ Clear totalised weight and counts																	
		9	⇒ Hold mode																	
FNC-06	"F2" function setting	10	⇒ Escape Hold mode(I/O DSP)	2																
		11	⇒ Convert to Gross / Net / totalised weight / totalised Count																	

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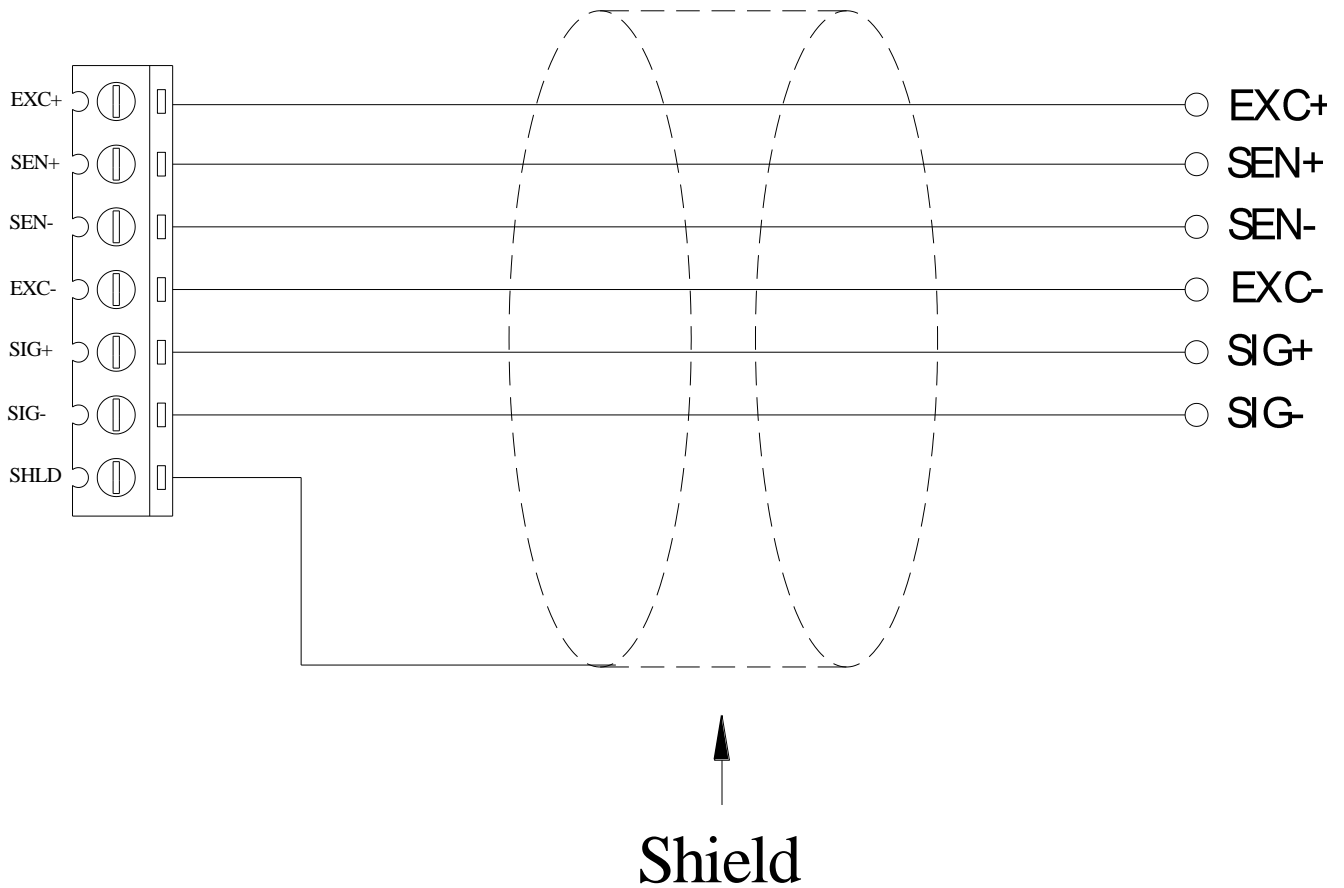
Item	Function	Setting value		Default
		Parameter	Description	
FNC-07	Front panel indication "S1" setting	Parameter ⇒ Description		0
		0	⇒ Accu. V	
		1	⇒ Accu. C	
FNC-08	Front panel indication "S2" setting	2	⇒ SP1	0
		3	⇒ SP2	
		4	⇒ SP3	
FNC-09	Front panel indication "S3" setting	5	⇒ Hi	0
		6	⇒ OK	
		7	⇒ Lo	
FNC-10	Front panel indication "S4" setting	8	⇒ Under	0
		9	⇒ Over	
		10	⇒ Unloading	
FNC-11	Return to zero band	11	⇒ Running	0
		12	⇒ 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-12	Hold	9	250 d	0
		0	Hold	
		1	Peak hold (positive)	
		2	Peak hold (negative)	
FNC-13	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	

☞ The indications of FNC-07~FNC-10 are necessarily operated with OPTION CARD.

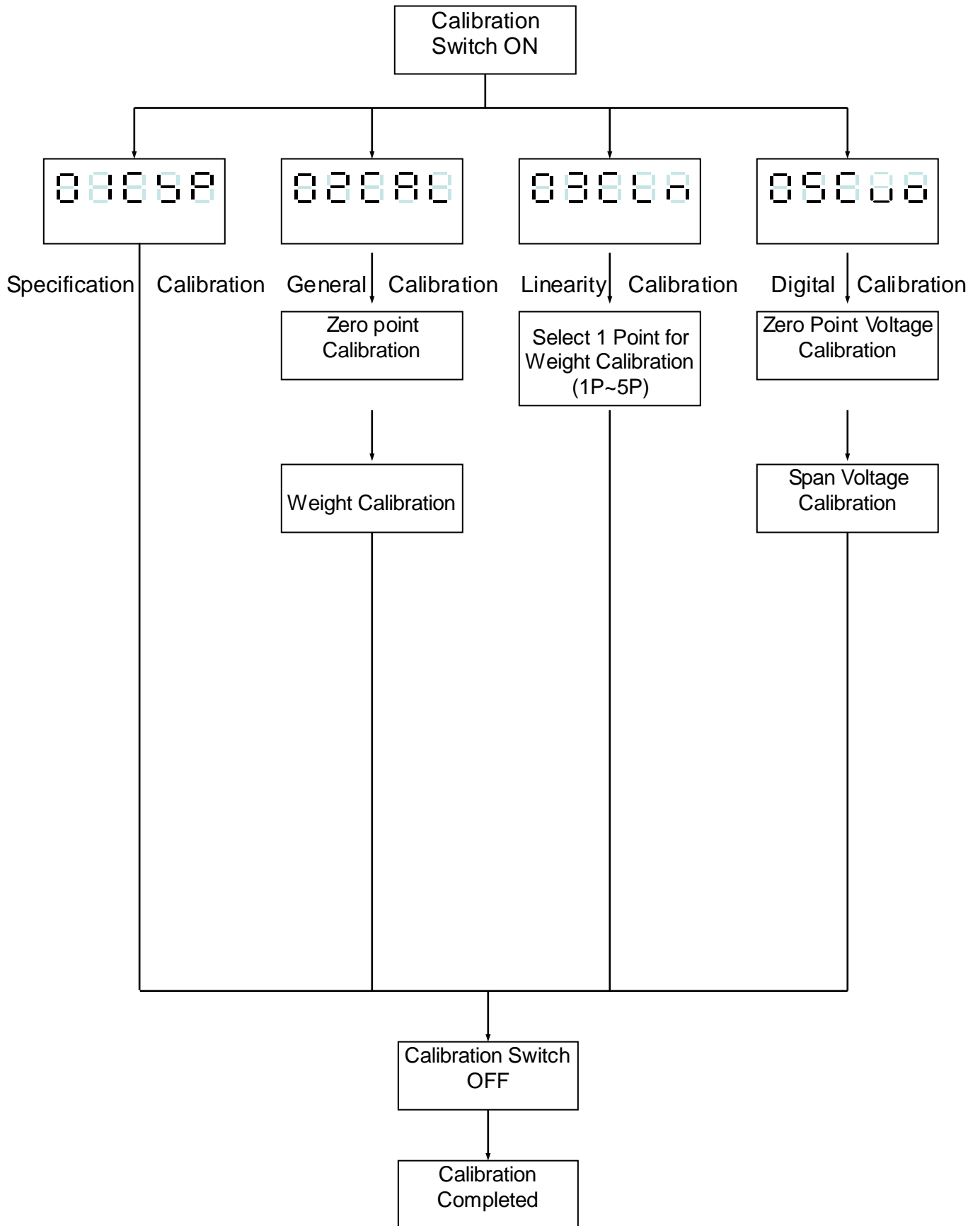
CHAPTER 3 CALIBRATION

3-1 Load cell connection

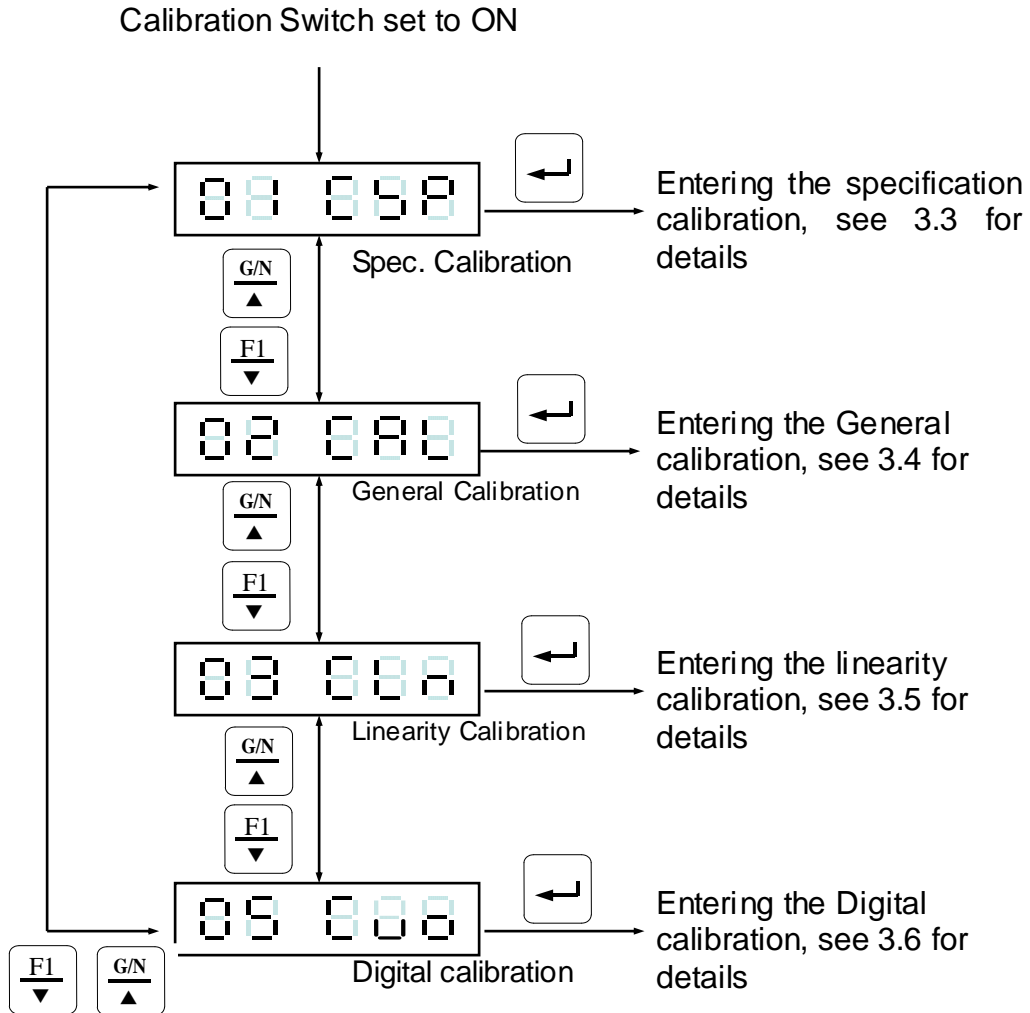
- ☞ When using a 6 wire cable to connect the load cell, the SEN+ and SEN- can be left unconnected (see below diagram)



3-2 Parameter setting and calibration flow chart

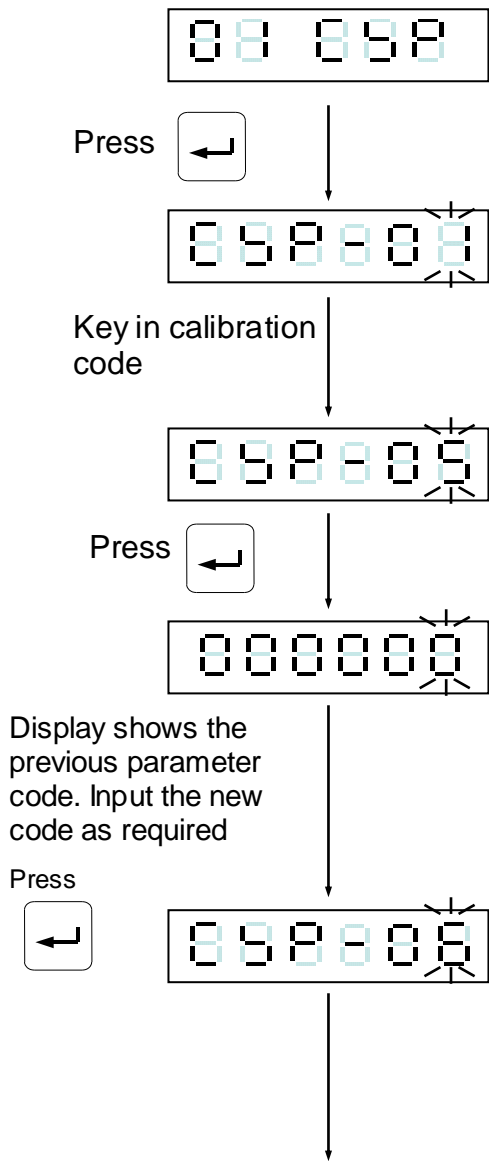


☞ Calibration process



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

3-3 Specification calibration 000000









To continue the next function setting

or press  to escape

*Calibration parameter code

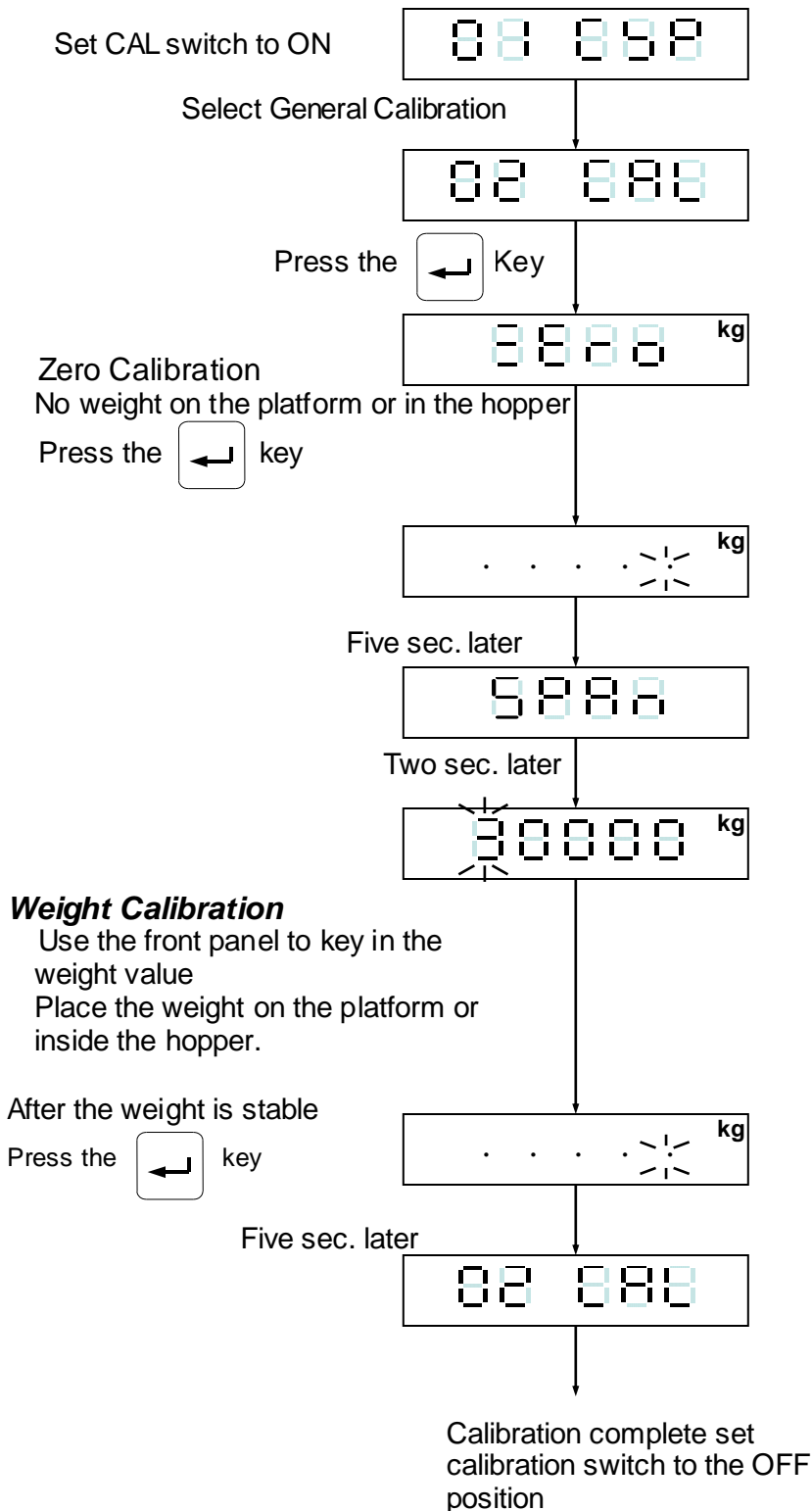
- 000000 ⇒ Unit
- 000001 ⇒ Decimal Point
- 000002 ⇒ Min. Division
- 000003 ⇒ Max. Capacity
- 000004 ⇒ Zero Range
- 000005 ⇒ Time of Zero tracking
- 000006 ⇒ Range of Zero tracking
- 000007 ⇒ Investigate period of unstable
- 000008 ⇒ Investigate range of unstable
- 000009 ⇒ Function Zero and Tare when the weight is unstable.
- 000010 ⇒ 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

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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



	⇒ 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

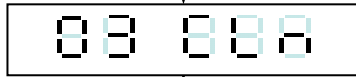
3-5 Linearity calibration 00000

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

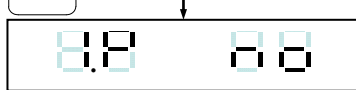
Set CAL switch to ON



Select linearity calibration



Press the Key



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

: no setting value
 : with setting value

Select one of five calibration, and

press the Key



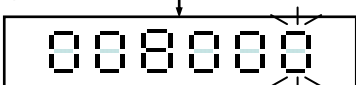
Press key

Press the Key

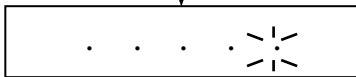


Press key

Key in the correct weight value

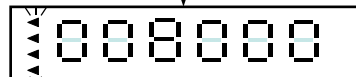


Press key



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.

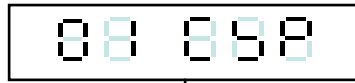
	⇒ Increment flashing digit
	⇒ Decrement flashing digit
	⇒ Move flashing point left.
	⇒ Move flashing point right
	⇒ Store data in memory
	⇒ Exit / Escape



Please refer to the error message list if the display shows

☞ Display the setting value of linearity calibration

Set CAL switch to ON



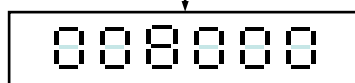
Select linearity calibration



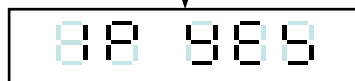
Press the Key



Press the Key



Press the Key



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

: no setting value
 : with setting value

Display the setting value of this calibration point

Either continue to display the second point value or press key to exit the linearity calibration mode

☞ Clear the setting value of linearity calibration

Set CAL switch to ON



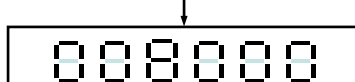
Select linearity calibration



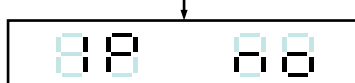
Press the Key



Press the Key



Press the Key



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

→ No setting value
 → With setting value

The screen shows the setting

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

Either continue to clear the second point value or press key to exit the linearity calibration mode

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

3-6 Digital calibration 05 888

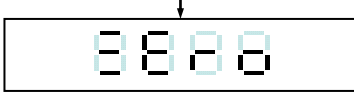
Set CAL switch to ON



Select Digital calibration

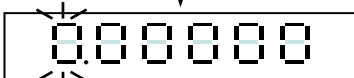


Press the Key



Zero voltage calibration

Two sec. later

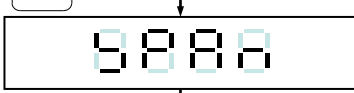


Method 1
Input zero voltage

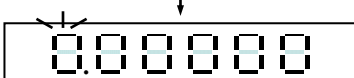
Method 2
With no weight on the platform or in the hopper
press the key to set zero.



Press the Key

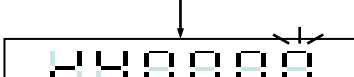


Two sec. later



Span voltage calibration

Input the span voltage



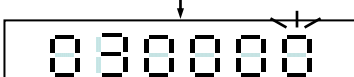
Press the Key



Two sec. later



Enter the weighing capacity



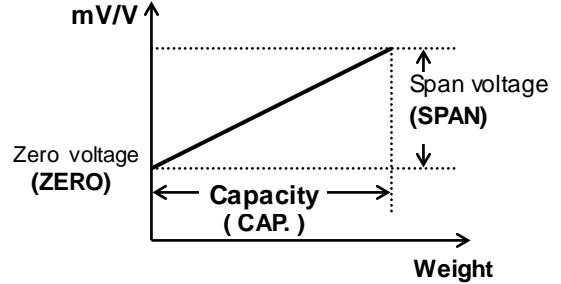
Press the Key



Calibration completed set calibration switch to the OFF position

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

Example:



Zero Voltage \Rightarrow 0.00036 mV/V (incl. dead load)

Span Voltage \Rightarrow 2.90000 mV/V

Span Capacity \Rightarrow 30000

	\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







8 8 8. 0	⇒	Load Cell output voltage < - 0.1 mV/V or > 4mV/V
8 8 8. 1	⇒	Weight value ≤ previous weight value
8 8 8. 2	⇒	Actual measured weight value ≤ previous weight value
8 8 8. 3	⇒	Setting value 0
8 8 8. 4	⇒	mV/V value entered > measuring range
8 8 8. 5	⇒	mV/V value entered is too small (SPAN – Zero < 0 mV/V)
8 8 8. 6	⇒	Displayed resolution is less than 0.12μV / division

CHAPTER 4 WEIGHT COMPARISON PROCEDURES

4-1 Function configuration menu

*Item code

<p>Press the  key</p> <p>Select the desired menu code</p> <p>Press the  key</p> <p>Display shows the existing parameter code. Input a new code as required</p> <p>Press the  key</p> <p>Continue to another function setting or press  to save and exit</p>	<table border="0"> <tr><td>598 00</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 closed time</td></tr> <tr><td>598 10</td><td>⇒ Discharge start delay time</td></tr> <tr><td>598 11</td><td>⇒ Discharge stop delay time</td></tr> <tr><td>598 12</td><td>⇒ Discharge time</td></tr> <tr><td>598 13</td><td>⇒ Restart delay time</td></tr> <tr><td>598 14</td><td>⇒ Batching times</td></tr> <tr><td>598 15</td><td>⇒ Weight completed value in Zero band</td></tr> <tr><td>598 16</td><td>⇒ Hi, OK, Lo action mode</td></tr> <tr><td>598 17</td><td>⇒ Auto totalise weight / counts</td></tr> <tr><td>598 18</td><td>⇒ The parameter source for weight comparison</td></tr> <tr><td>598 19</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 00	⇒ 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 closed time	598 10	⇒ Discharge start delay time	598 11	⇒ Discharge stop delay time	598 12	⇒ Discharge time	598 13	⇒ Restart delay time	598 14	⇒ Batching times	598 15	⇒ Weight completed value in Zero band	598 16	⇒ Hi, OK, Lo action mode	598 17	⇒ Auto totalise weight / counts	598 18	⇒ The parameter source for weight comparison	598 19	⇒ Weight comparison delay time	598 20	⇒ Tare auto	598 28	⇒ Discharge auto
598 00	⇒ Batching mode																																										
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598 03	⇒ Compare SP1 & SP" waiting time																																										
598 04	⇒ Batch finish output signal delay time																																										
598 05	⇒ Batch finish condition																																										
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598 07	⇒ Supplementary load times																																										
598 08	⇒ Supplementary loading gate open time																																										
598 09	⇒ Supplementary loading gate closed time																																										
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598 19	⇒ 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


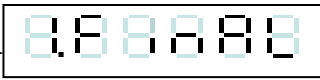
Item	Function	Setting value		Default
		Parameter	Description	
SQ- 01	Batching mode	1	Normal batch	1
		2	Loss-in weight	
		3	Comparison mode	
		4	Normal batch (Built-in program)	
		5	Loss-in weight (Built-in program)	
		6	Hold mode (Built-in program)	
SQ- 02	Batching start delay time	0.0 ~ 25.5 (sec)	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 style="text-align: center;">SQ- 07 Times of "ON" of the supplementary loading</p>				


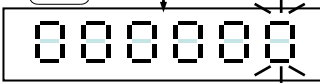
**TEKFAA/S
MIKROTEK P-EX**


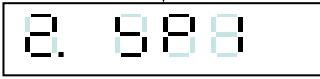
Item	Function	Setting value		Default
		Parameter	Description	
SQ- 10	Discharge start delay time	0.0 ~ 25.5 (sec)	Delay time before Discharge signal is ON.	0.0
SQ- 11	Discharge stop delay time	0.0 ~ 25.5 (sec)	Delay time before Discharge signal is OFF.	0.0
SQ- 12	Discharge time	0.0 ~ 25.5 (sec)	Won't activate internal discharge control function, if set to 0.	0
<p>The diagram illustrates the timing relationship between the Discharge input signal and the Discharge output signal. The input signal is a rectangular pulse. The output signal is a rectangular pulse that begins after a delay period labeled SQ-10 from the start of the input pulse. The output pulse ends after a delay period labeled SQ-11 from the end of the input pulse. A vertical dashed line indicates the point where the weight reaches the zero band, which occurs during 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 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	


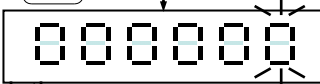
4-2 Check weighing configuration


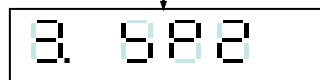
1. FNC-04 = 1, SQ-01 = 1,2,4 or 5


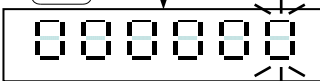
Press  Key → 



↓




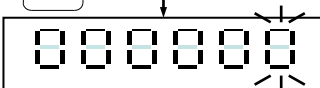
Display shows the existing **Final value** setting, Input new value as required.
Press 




↓




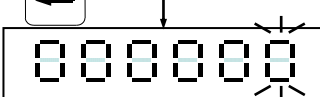
Display shows the existing **SP1 value** setting, Input new value as required.
Press 




↓



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




↓




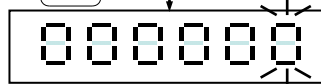
Display shows the existing **Free Fall value** setting, Input new value as required.
Press 




↓









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 



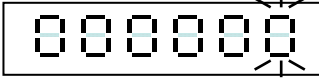
↓



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


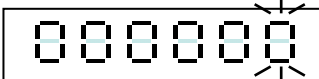
2. FNC-04 = 1, SQ-01 = 3

Press the  Key → 

 ↓



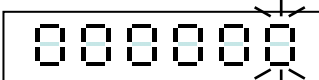
Display shows the existing **Hi value** setting.
Input new value as required.

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  


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


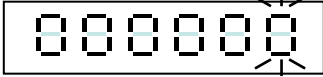
3. FNC-04 = 1, SQ-01 = 6

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

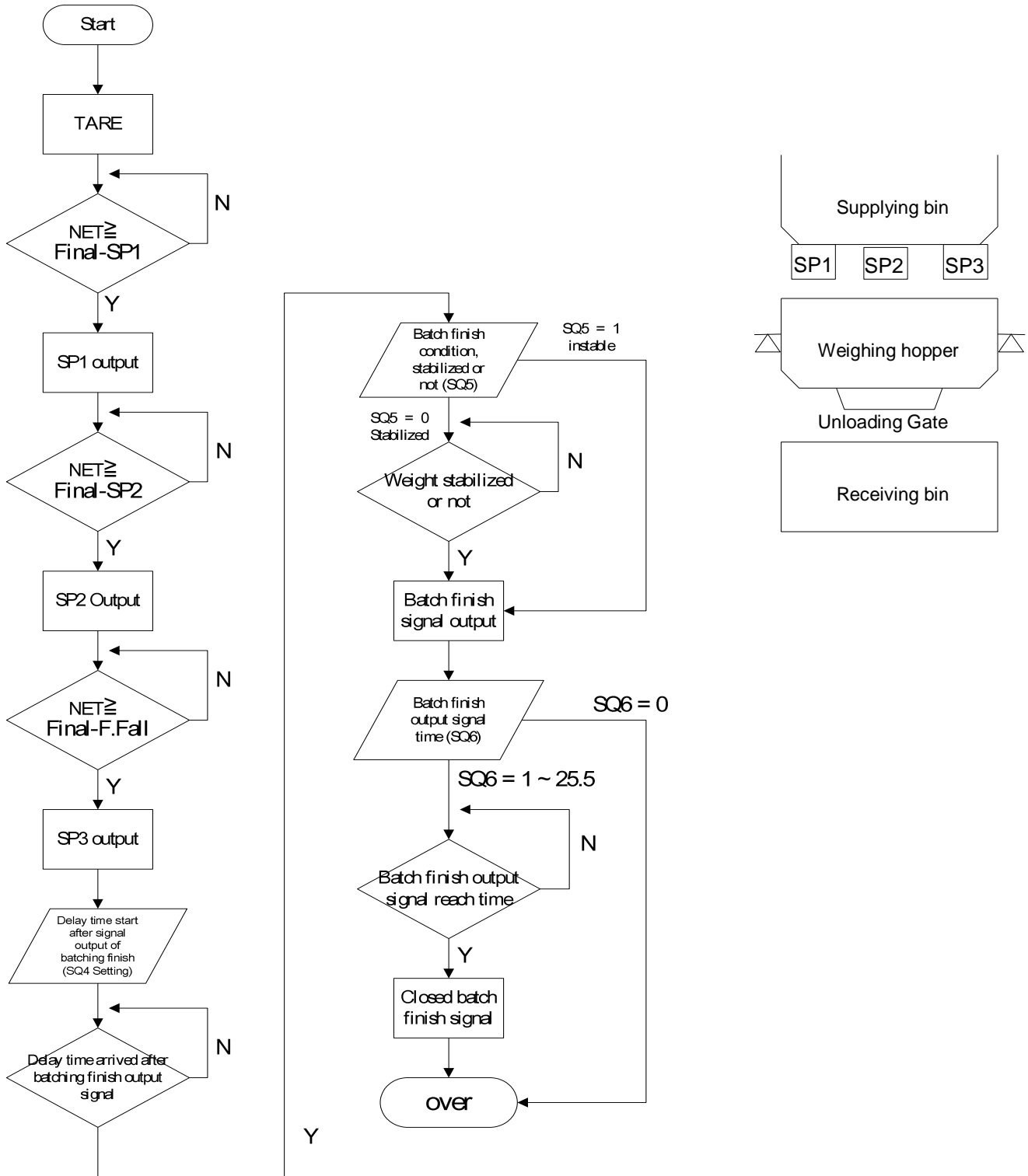
☐ Normal batching signal outputs

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	$\text{Gross} \leq \text{Zero Band}$

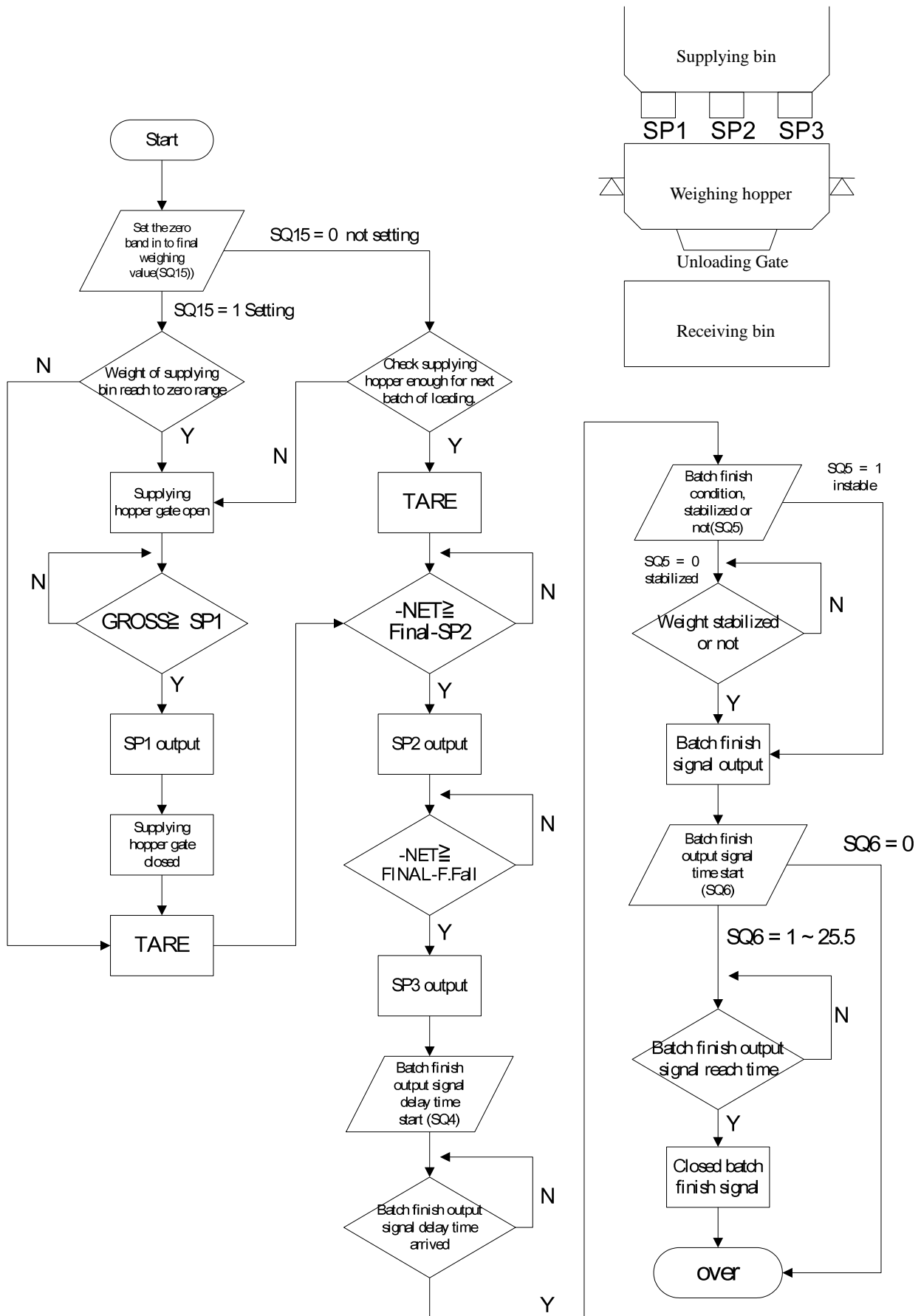
☐ Loss-in-weight signal outputs

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	$\text{Gross} \leq \text{Zero Band}$

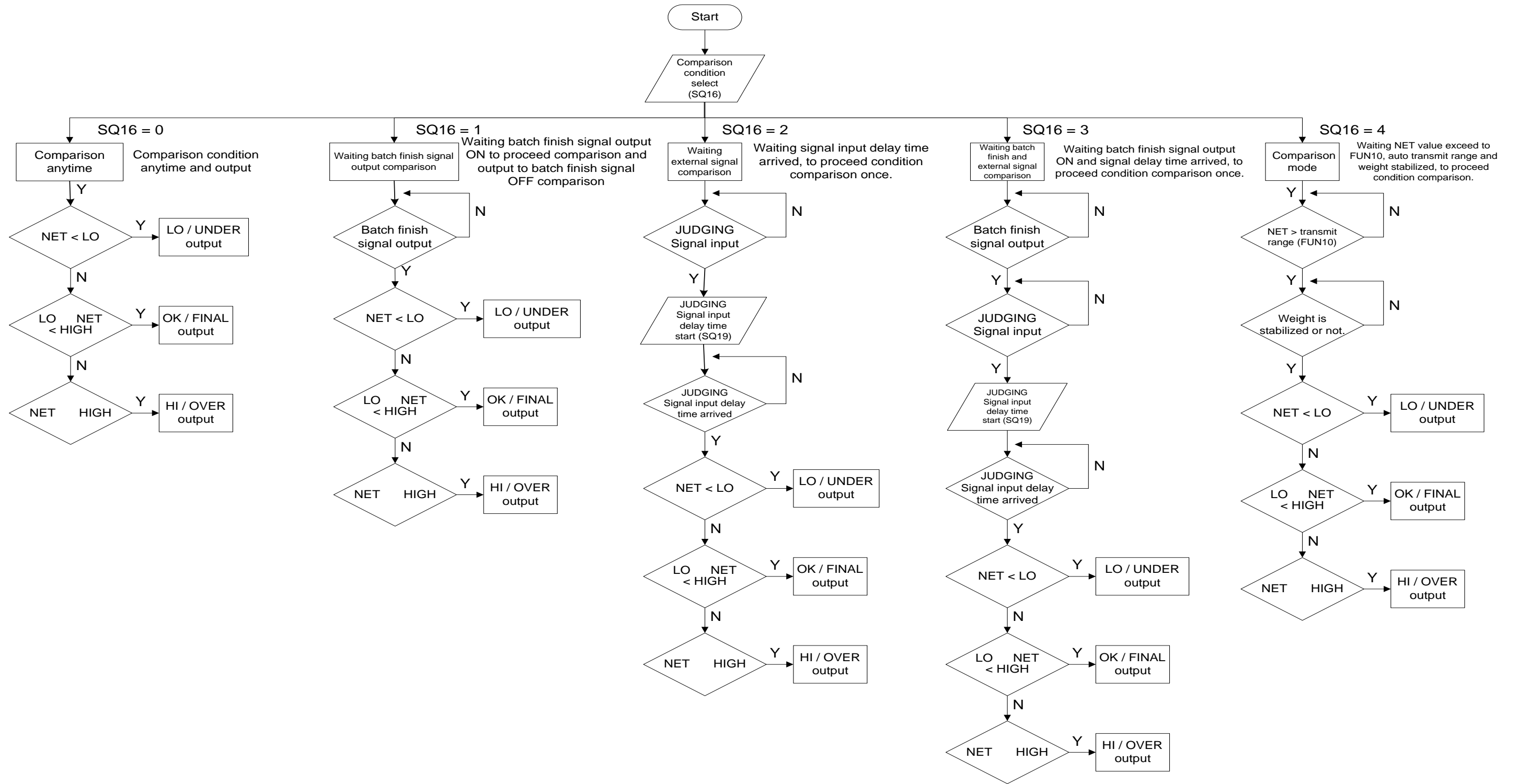
4-4 Normal batching flow chart (SQ-01=1)



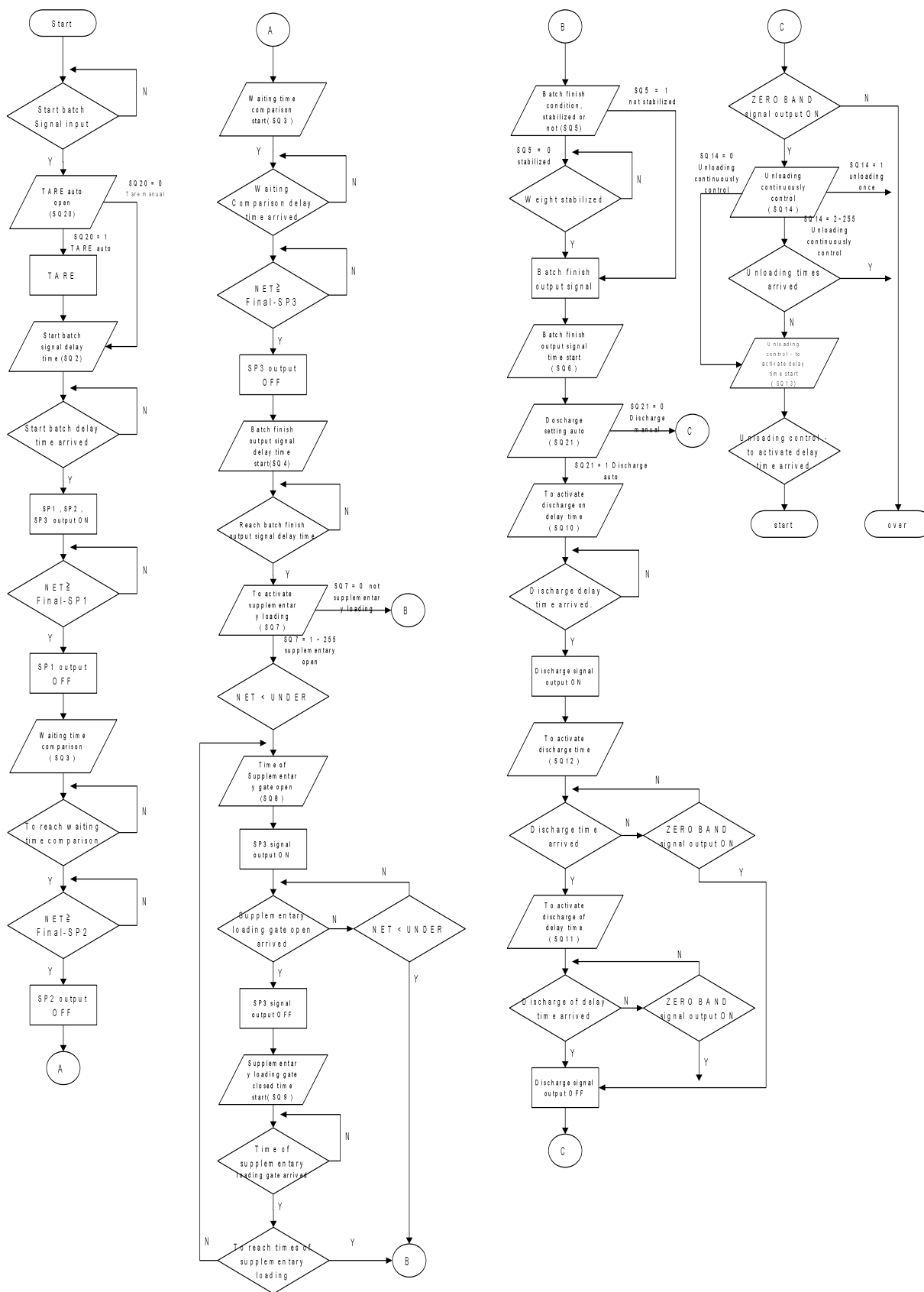
4-5 Loss-in Weight flow chart (SQ-01 = 2)



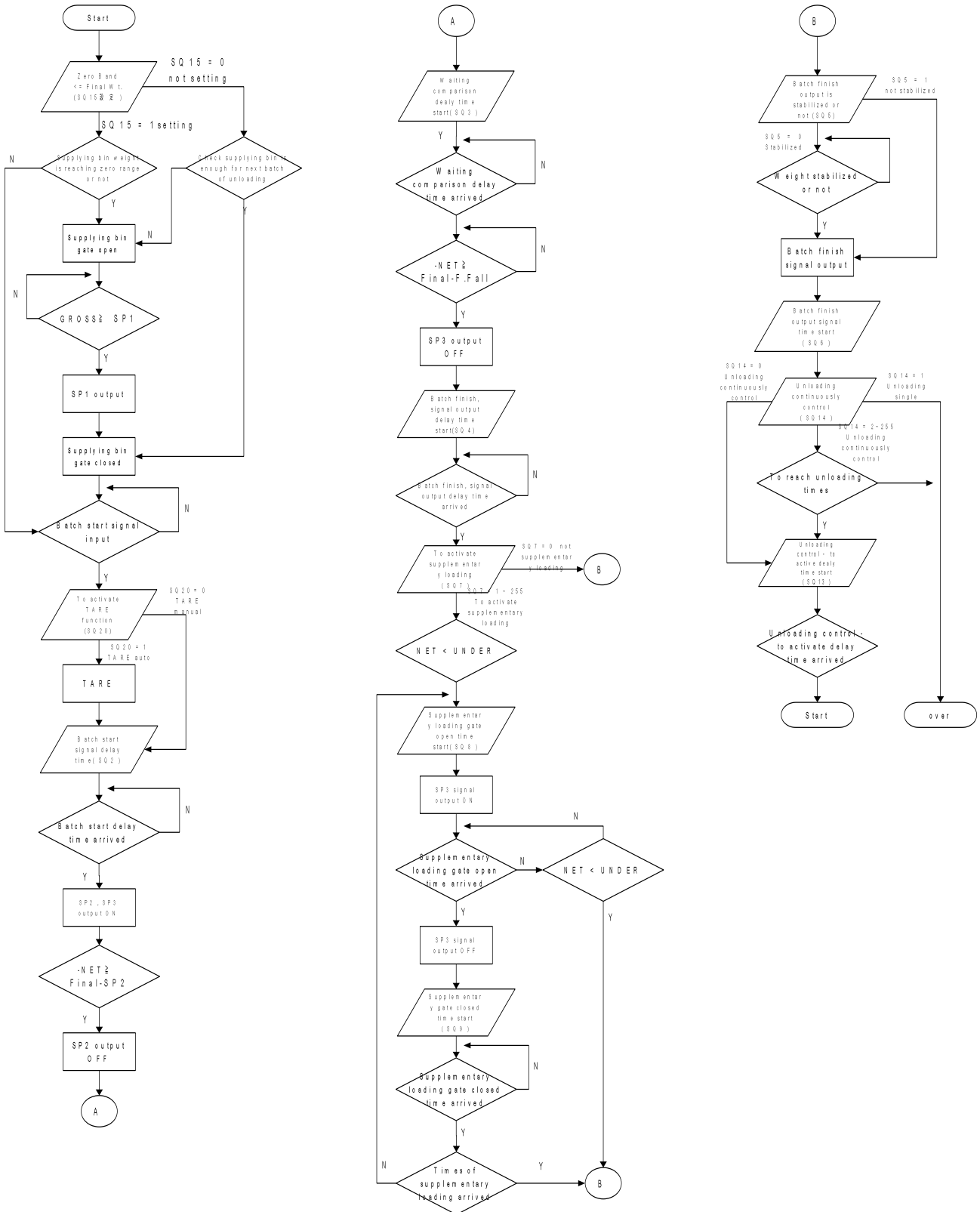
4-6 Hi, OK, Lo output flow chart



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

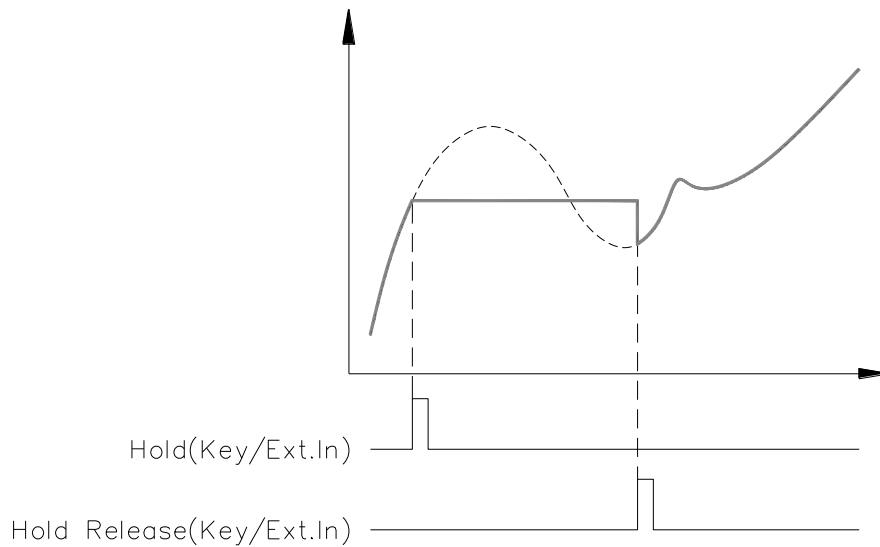


4-8 Loss-in Weight (built in program) (SQ-01=5)

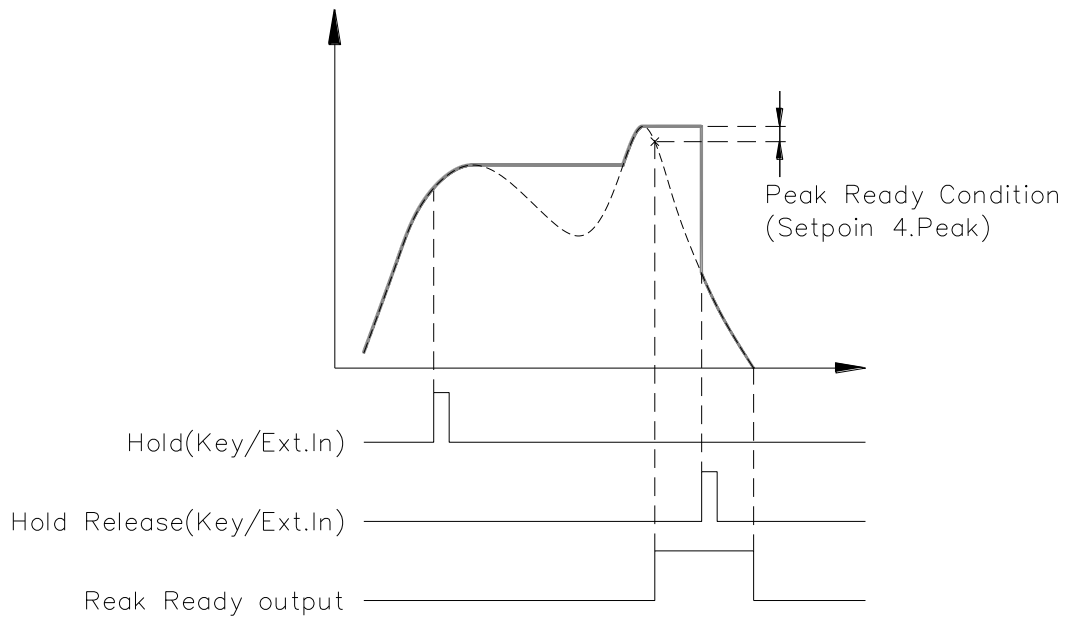


4-9 Hold mode (SQ-01 = 6)

1. General hold mode (FNC-12 = 0)

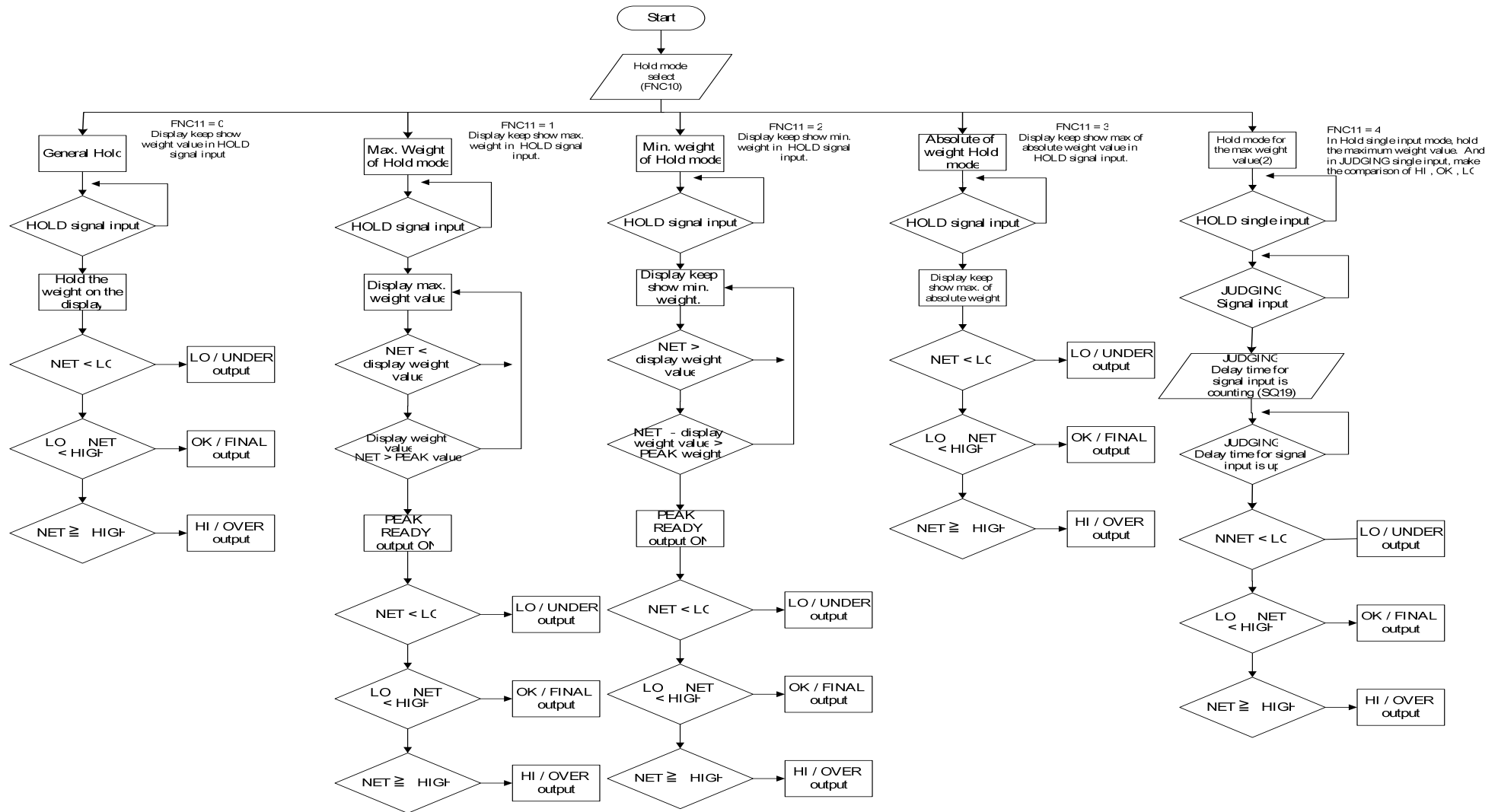


2. Peak hold mode (FNC-12 = 1, 2)



Peak hold mode with four different states (FNC-12 = 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-12 = 0)

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

2. Peak HOLD (FNC-12 = 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-12 = 3)

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

4. FNC-12 = 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 (FNC-10), then the sequence in a) above can be repeated.

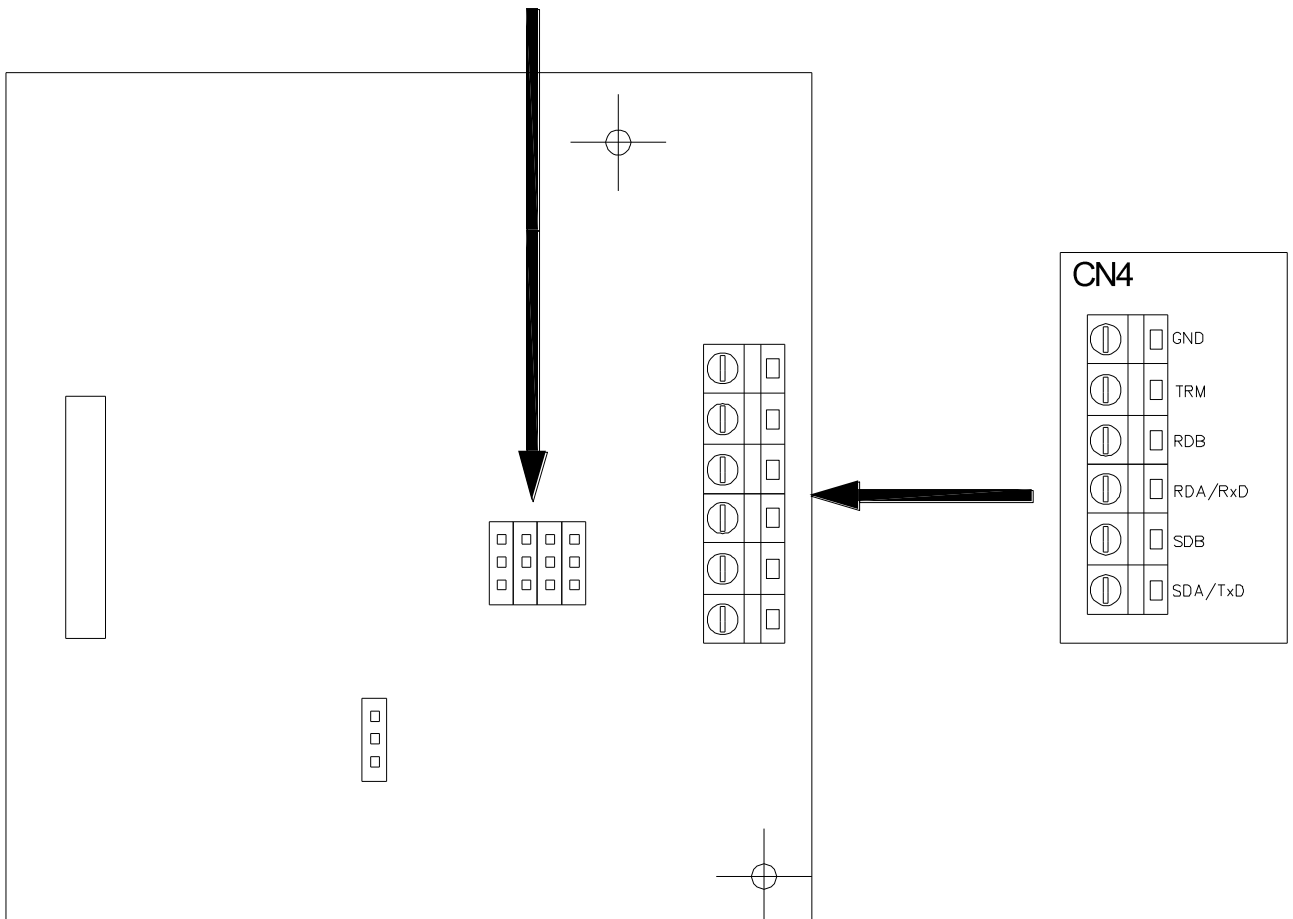
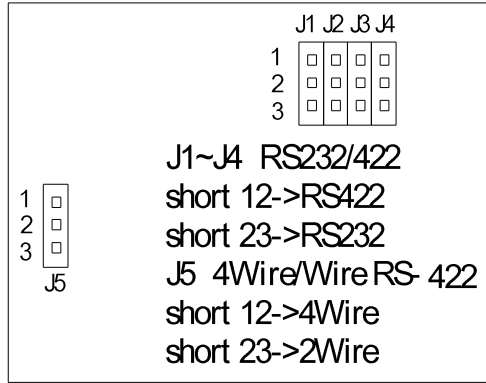
2. SQ-01 = 3 Comparison mode

- 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.

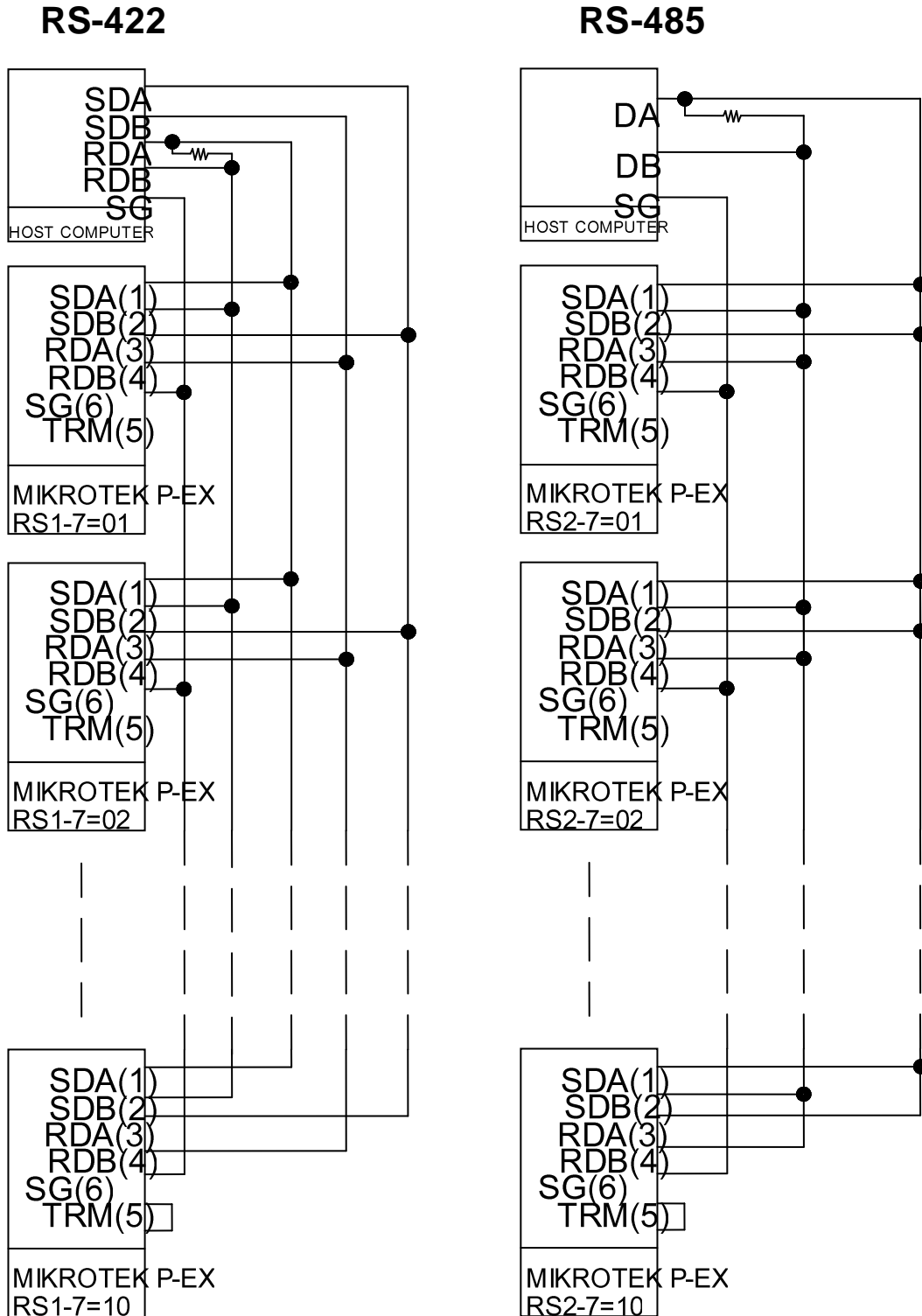
CHAPTER 5 INTERFACE

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

Pin location and setting



☞ Connection type

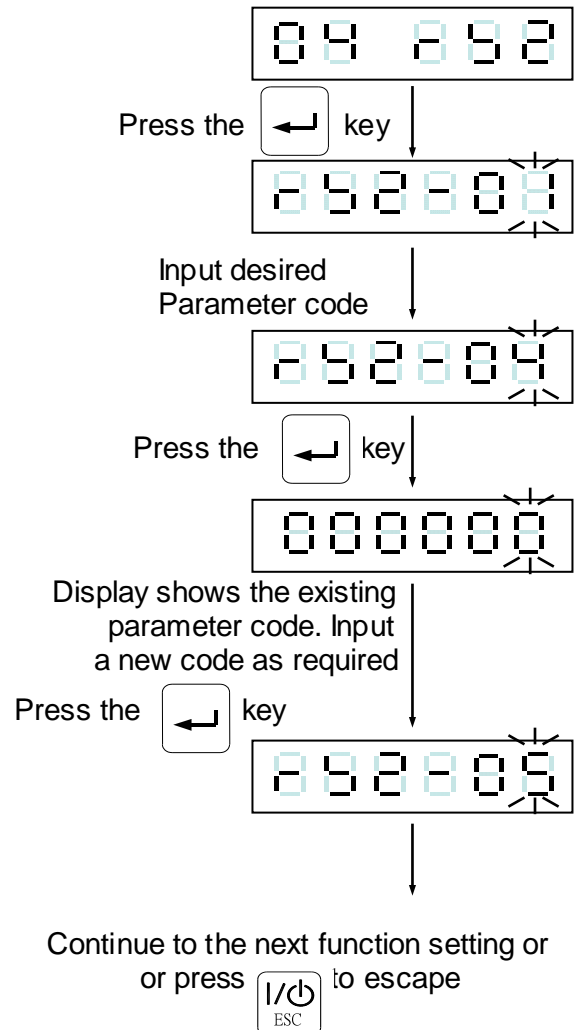
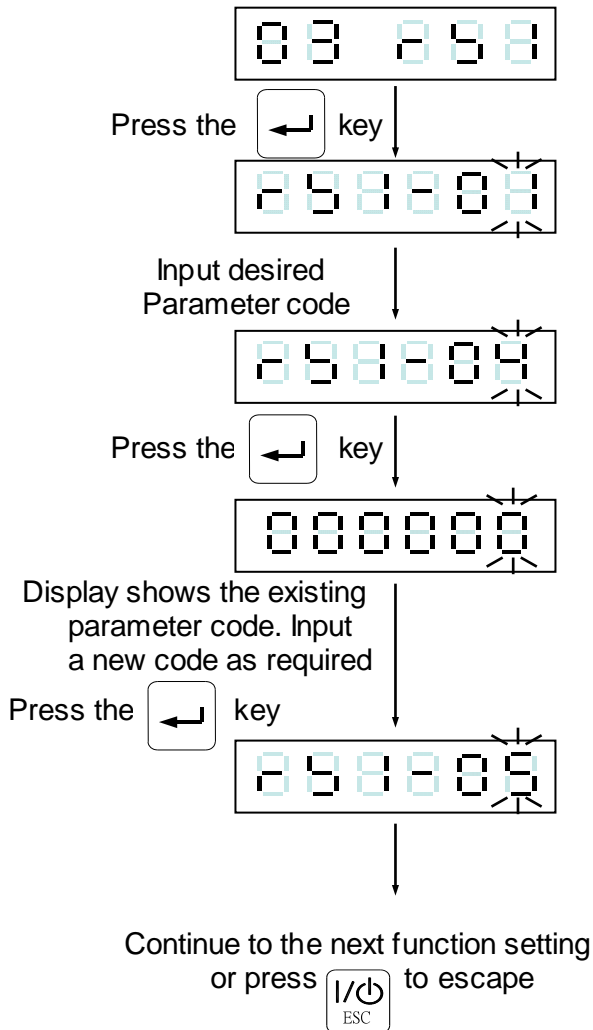


☰ Notice:

- The maximum connection is 10 sets of MIKROTEK P-EX When the Host computer has the built-in terminal resist, it is not necessary to have the external one.
- On the last set of MIKROTEK P-EX, the TRM & RDB can be connected depends on the situation.
- When the host computer has no single (SG), it is acceptable to disconnect that part

Function setting

First serial port interface 00 858
Setting procedure



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

**TEKFAA/S
MIKROTEK P-EX**

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	<p>0 0 0 0 0 0</p> <p>0 ⇒ transmit cont. 1 ⇒ Stop transmit</p>		000000
RS1- 07 RS2- 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. 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 ON : 0 (ASC II Code 30 H)
 OFF : 1 (ASC II Code 31 H)
 Byte 2 : Under / Hi
 Byte 3 : SP1 / Go
 Byte 4 : SP2 / Lo
 Byte 5 : SP3
 Byte 6 : Discharge
 Byte 7 : Batch finished

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	

☞ Command mode

1. Command Format A

Host

--

`<CR>< LF>`
 Slave

--

`<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

--

`<CR>< LF>`
 Slave

--

`<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□□ □□: setting items

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

3. COMMAND FORMAT C

Host	Command + Data	<CR>< LF>
Slave	Command + Data	<CR>< LF>

Write weight compared value WS□□XXXXXX
 XXXXXX : value (6 bytes) □□ : setting items

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

Error messages

- E1: Format command fault
- E2: Setting parameters over range
- E3: Command not recognised

Indicator poling address

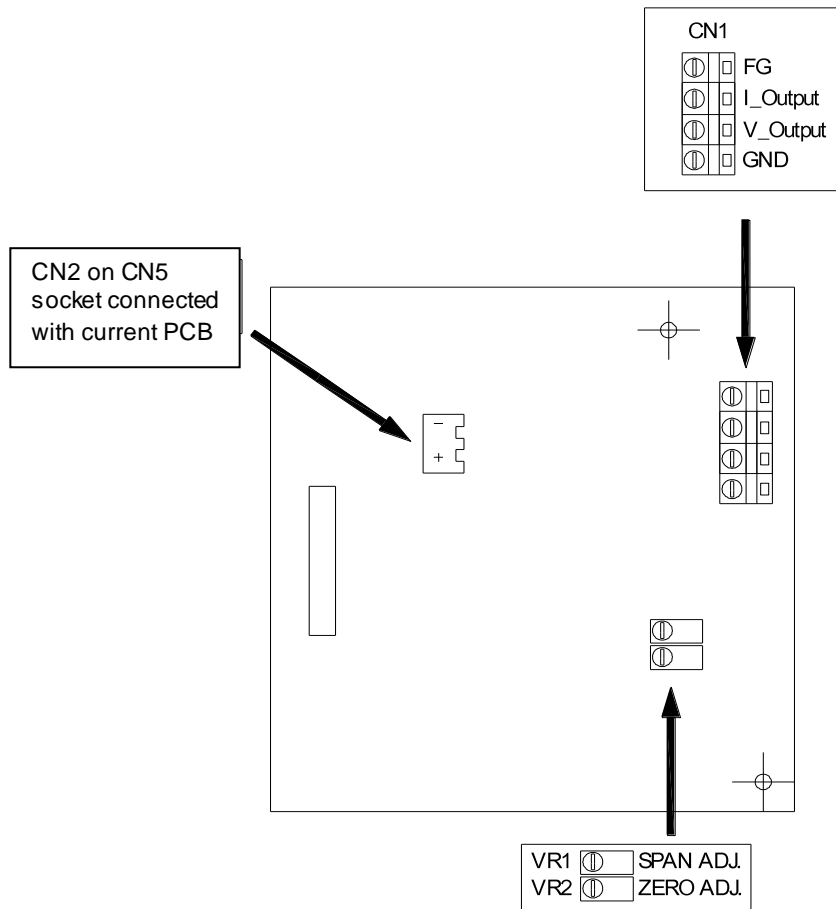
If the indicator has an address configured in RS1(2) – 07, it will only respond to messages prefixed with its address.

For example: The indicator poling address is set to 02, it would send the weight value only if it received the command.

@02RW < CR > < LF >

5-2 Analogue Current / Voltage Output Interface (OP-03)

📍 Location



A. Terminal (4 PIN)

1	FG:	Frame Ground
2	I_Output:	0~20mA current output, positive
3	V_Output:	0 ~ 10V voltage output, positive
4	GND:	Current / voltage signal, negative

B. SPAN adjustment

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

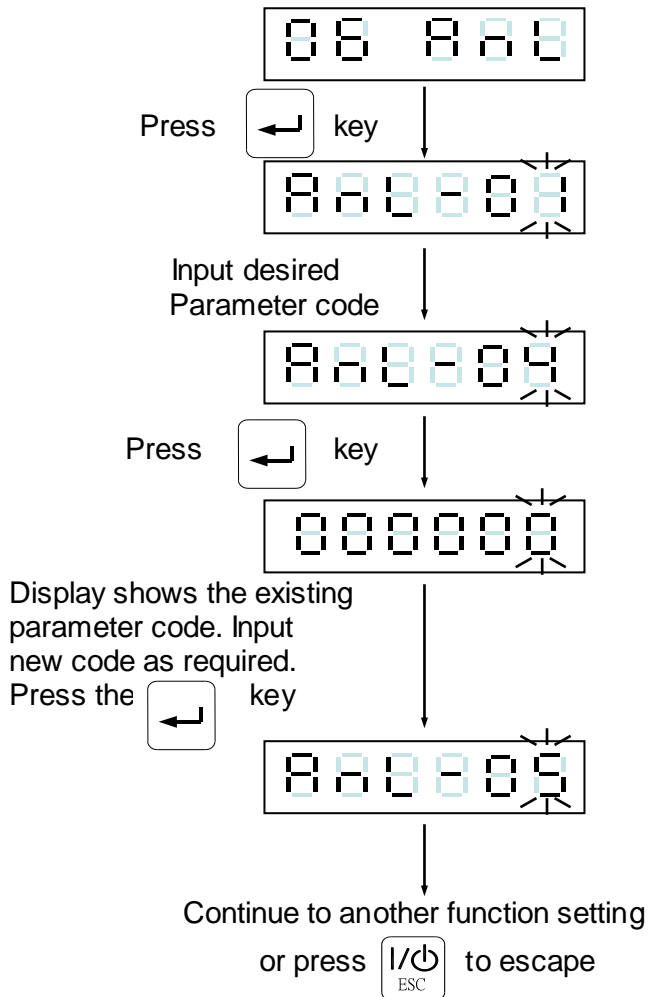
C. ZERO adjustment

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

📍 Analogue output interface specification

Resolution	:	16 bits
Current output	:	0 ~ 20mA (0 ~ 550 Ω load)
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

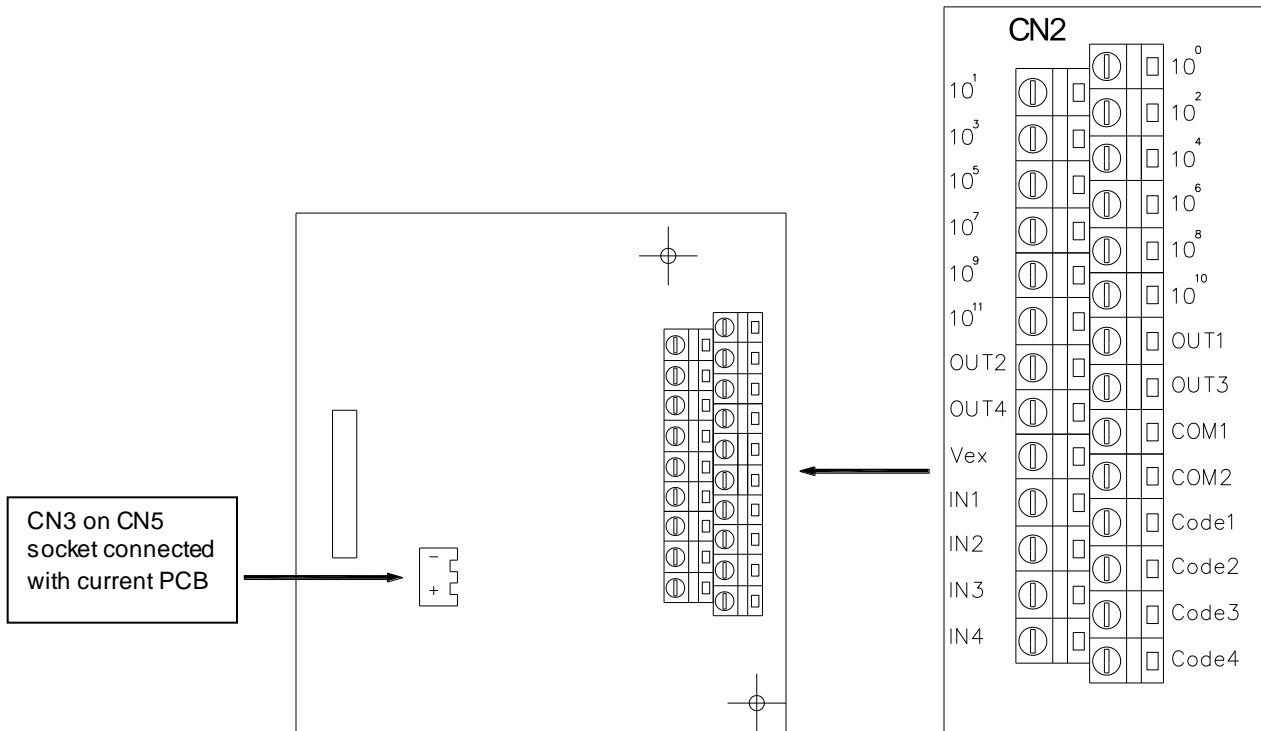
Item	Function	Setting value		Default
		Parameter	Description	
AnL- 01	Data type	0	As display	0
		1	Gross	
		2	Net	
AnL- 02	Signal output	0	Current output	0
		1	Voltage output	
AnL- 03	Weight in Lo	000000 ~ 999999	When the weight reaches the value of that in AnL-03, the current / voltage output is changed 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

Analogue output notes

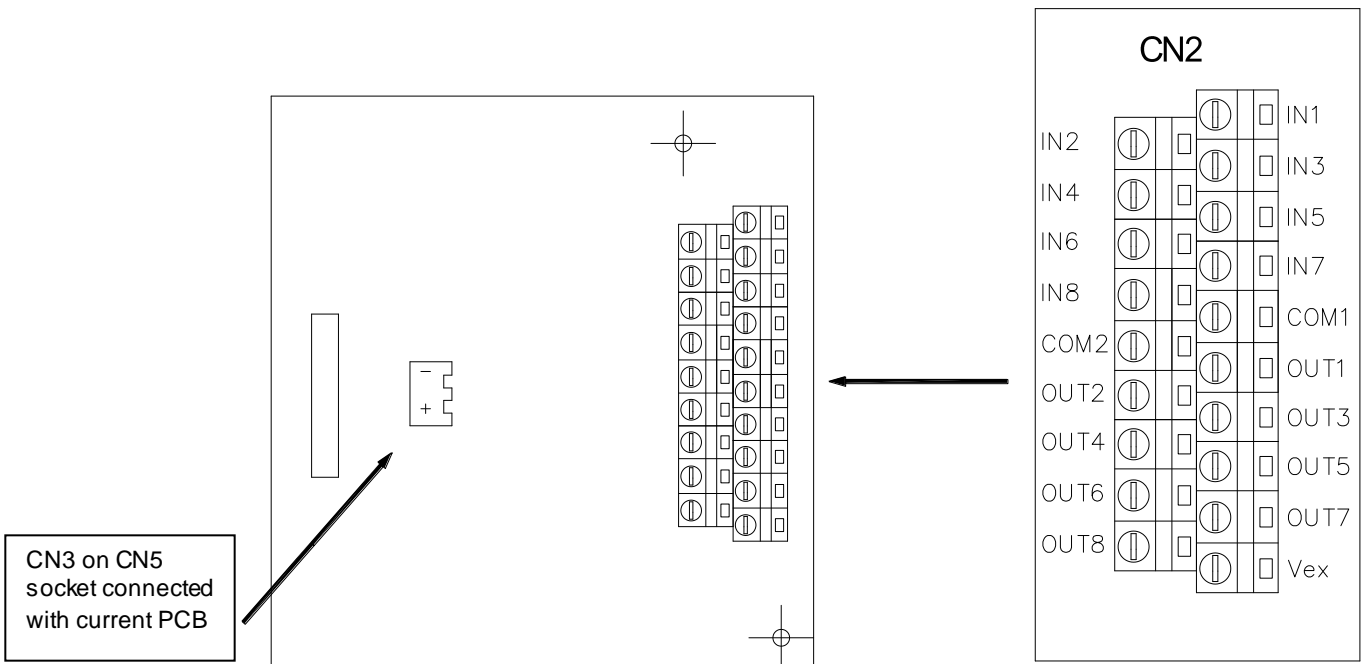
1. The current output, load resistor should not exceed 550 Ω . It is recommended that a resistor with a low temperature coefficient and a power rating above 0.2 W be used.
2. Avoid short circuits between the positive and negative analogue output terminals as the interface this may cause damage.
3. It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

5-3 External parallel input / output interface (OP-04, OP-05)

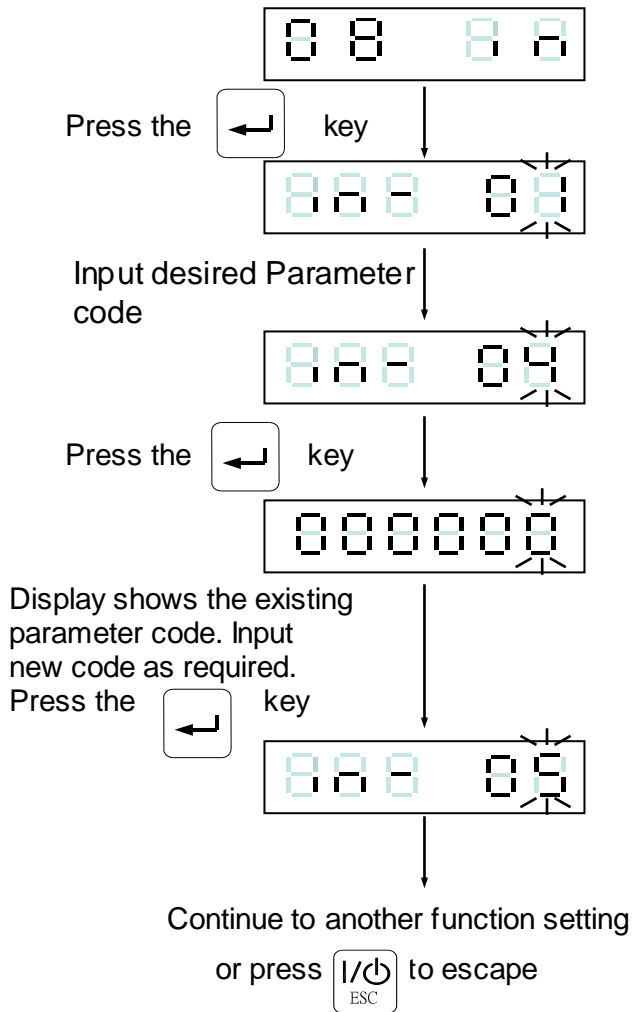
OP-04



OP-05



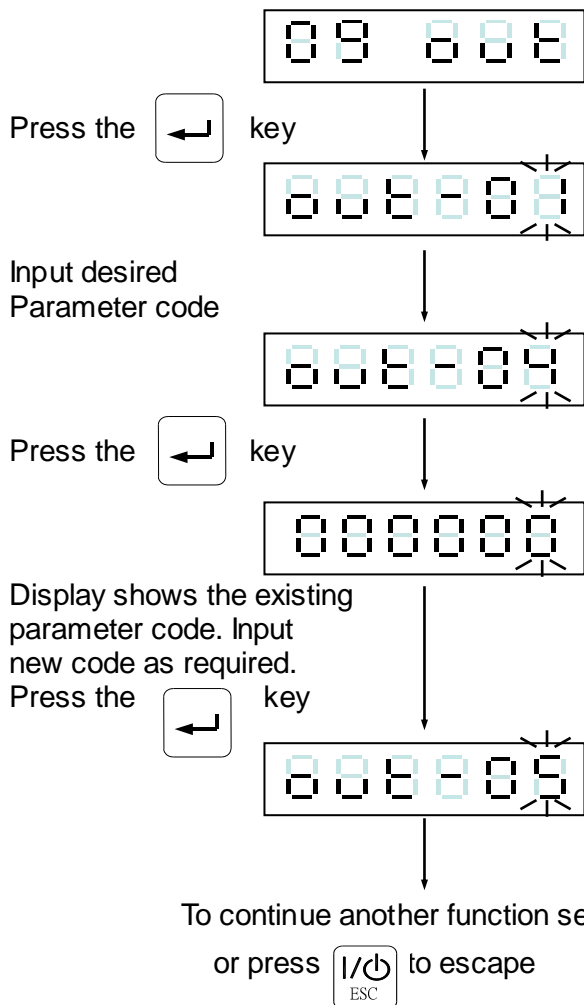
☞ Input signal configuration



	⇒ 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	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	

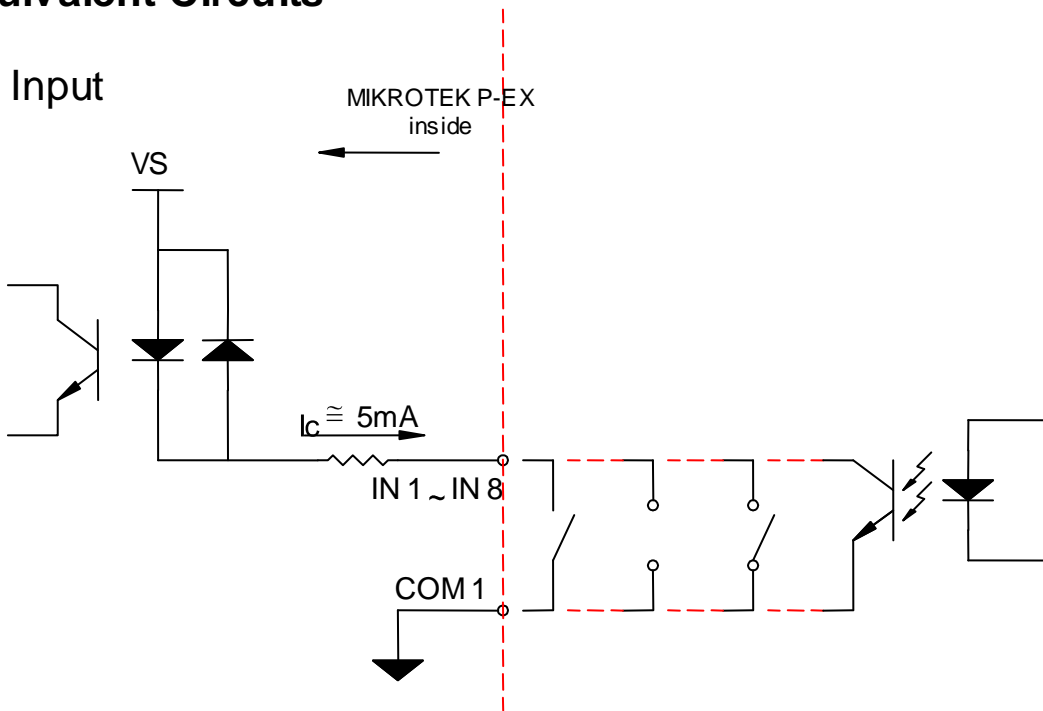
Output signal setting



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

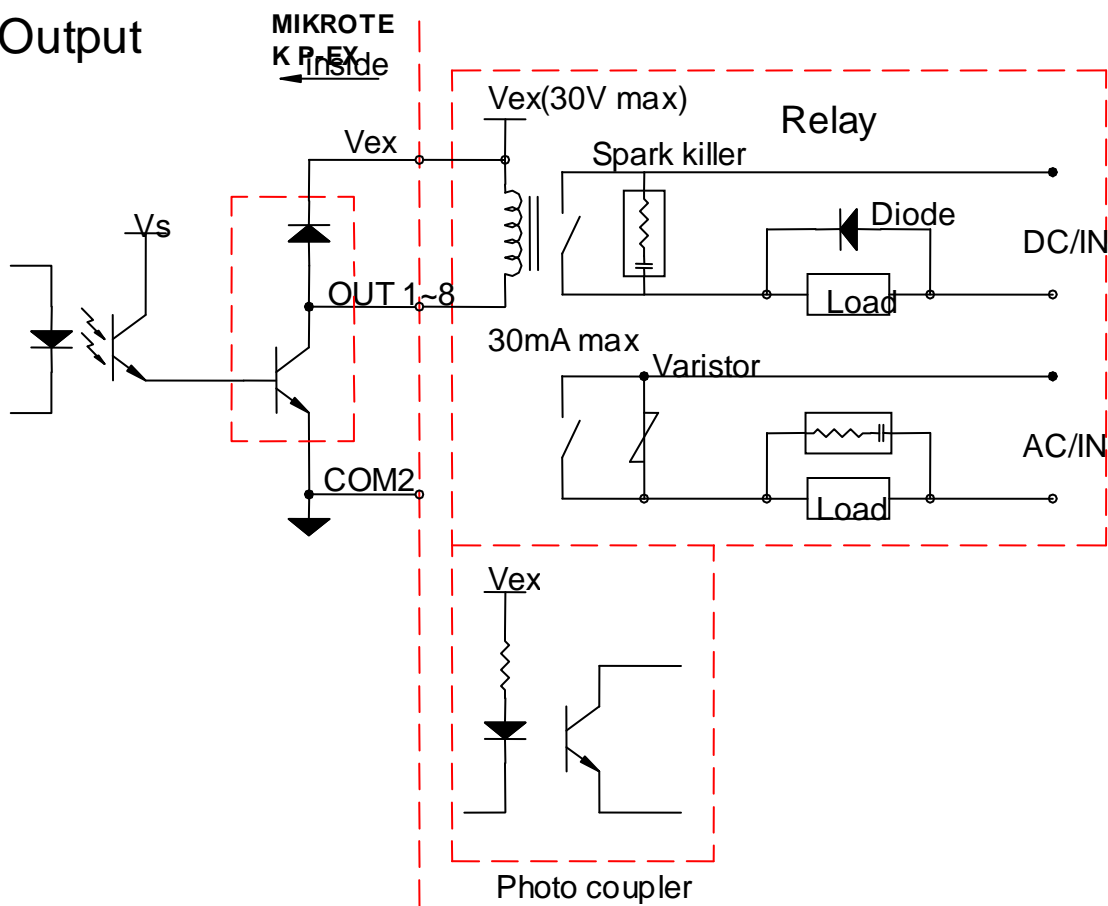
Item	Function	Setting value		Default
		Parameter	Description	
OUT- 01	Output 1	0 ⇒ None		1
OUT- 02	Output 2	1 ⇒ Zero band		2
OUT- 03	Output 3	2 ⇒ SP1		3
OUT- 04	Output 4	3 ⇒ SP2		4
OUT- 05	Output 5	4 ⇒ SP3		5
OUT- 06	Output 6	5 ⇒ Batching completed		6
OUT- 07	Output 7	6 ⇒ Discharge		7
OUT- 08	Output 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 → 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 ↔ OFF, Short ↔ ON.
- ☰ Warning: Don't use external power (AC or DC) to connect to the input terminals.

Output



☞ Thumbwheel Switches (for OP-04)

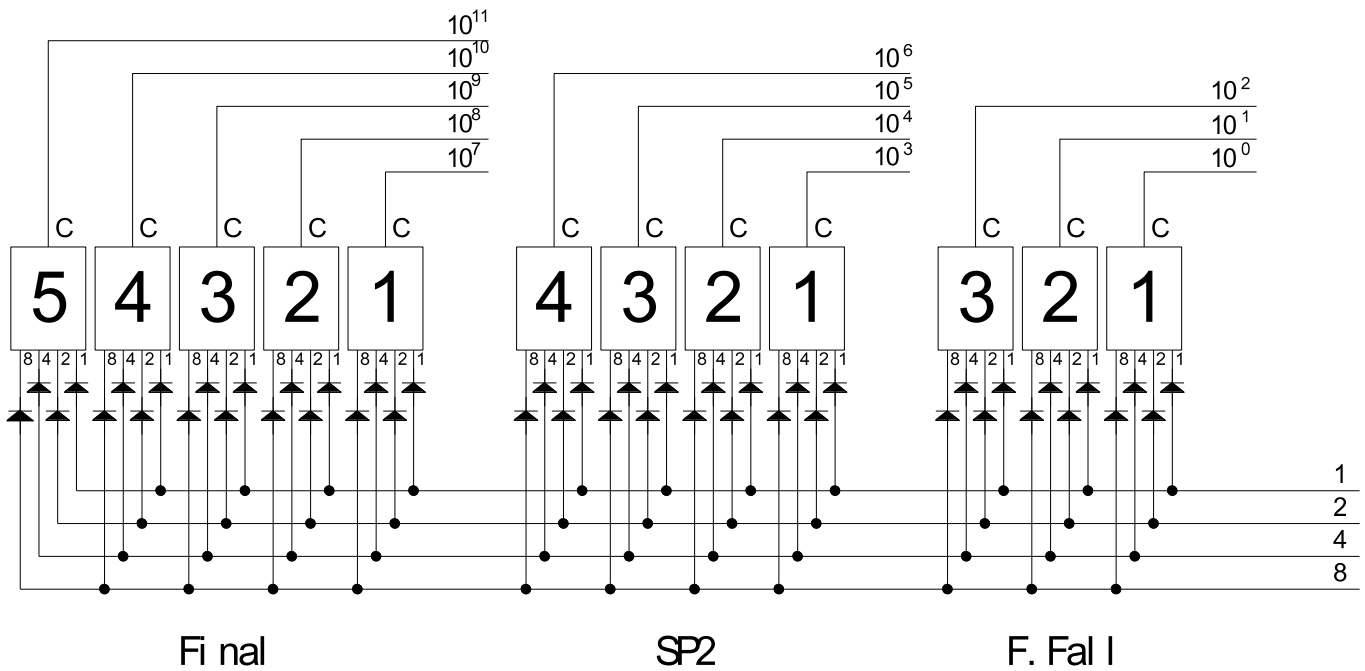
The interface can connect to external thumbwheel switches or a PLC to input various parameters depending on the configuration of SQ-01. The input variables are:-

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

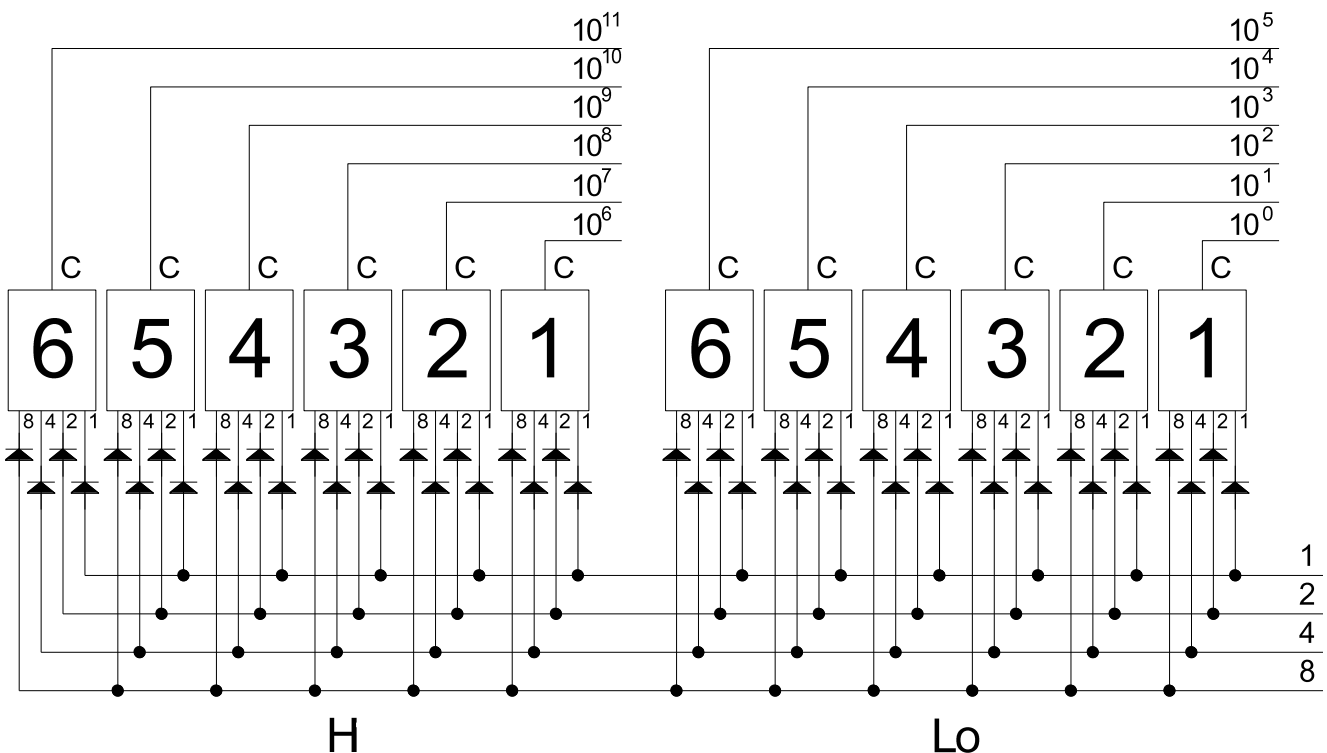
When using external thumbwheel Switches, SQ-18 should be set to 1.

Connection data

SQ-01 = 1, 2, 4 or 5





SQ-01 = 3 or 6




CHAPTER 6 MAINTENANCE

6-1 Restore all parameters to 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

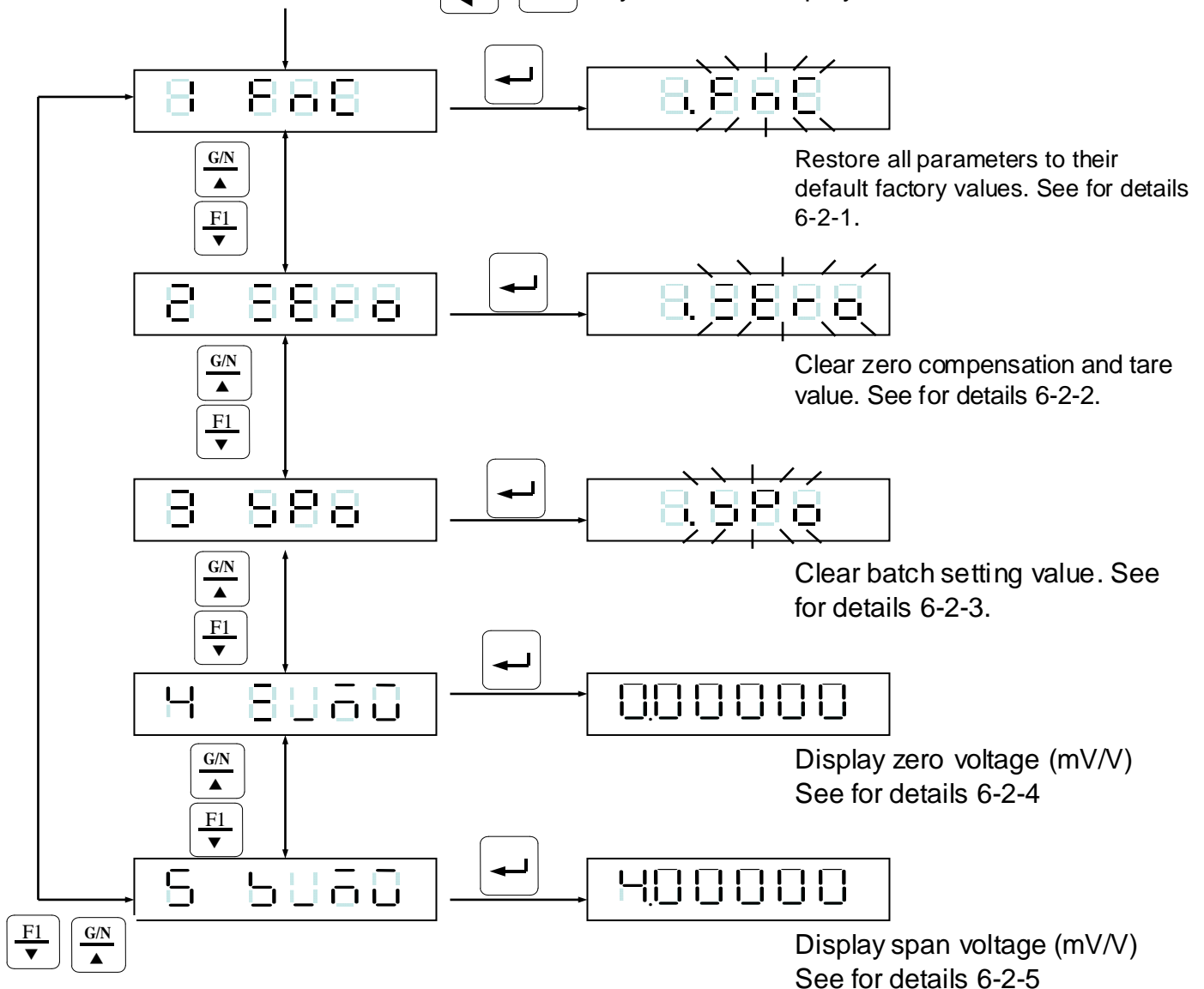
(3-1) To confirm press  key & don't release it until the display shows

, 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.

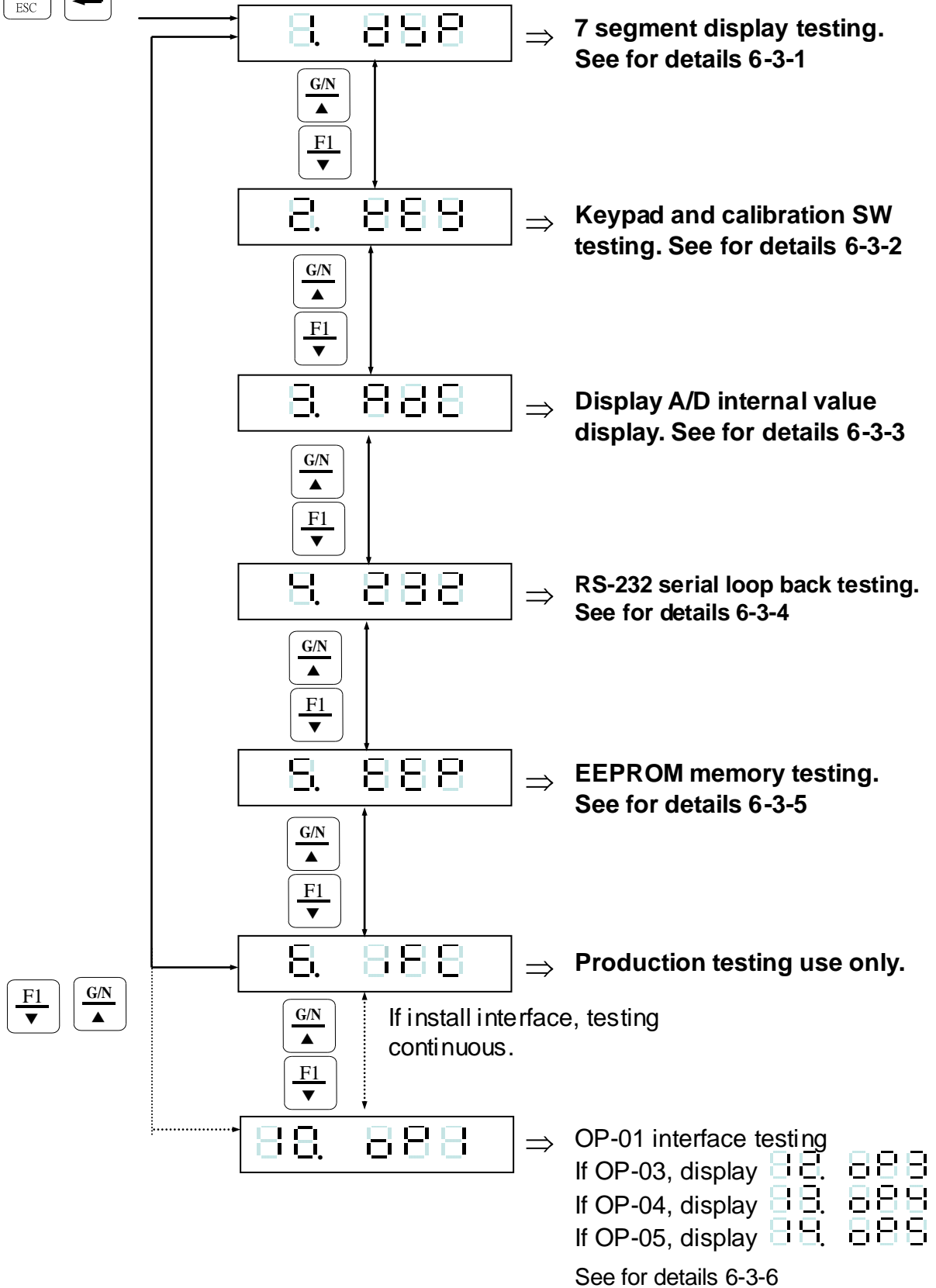
6-2-5 Clear batch setting

- (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




Press  



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

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.

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-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.

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.



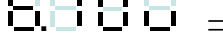
Use the   keys to select the output current level desired.

 ⇒ 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


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

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





1)    





Input 1 ~ 4 signal ON/OFF, related to display  →   




Press  Key
 ~  in sequence, represents Outputs 1 ~ 4

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

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

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

Press  key
 ~  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	

☞ 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)	000000
		111111	1 Close (lock enable)	
FNC-04	"F" function setting	Parameter ⇒ Description		1
		0 ⇒ Setpoint parameter setting		
FNC-05	"F1" function setting	1 ⇒ Tare reset		0
		2 ⇒ Manually output of serial, parallel print		
FNC-06	"F2" function setting	3 ⇒ Start load		2
		4 ⇒ Stop load		
		5 ⇒ Start comparison		
		6 ⇒ Unload command		
		7 ⇒ Totalise weight and counts command		
		8 ⇒ Clear totalised weight and counts		
		9 ⇒ Hold mode		
		10 ⇒ Escape Hold mode(I/O DSP)		
		11 ⇒ Convert to Gross / Net / totalised weight / totalised Count		

**TEKFAA/S
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Item	Function	Setting value		Default
		Parameter	Description	
FNC-07	Front panel indication "S1" setting	Parameter ⇒ Description		0
		0	⇒ Accu. V	
		1	⇒ Accu. C	
		2	⇒ SP1	
FNC-08	Front panel indication "S2" setting	3	⇒ SP2	0
		4	⇒ SP3	
		5	⇒ Hi	
FNC-09	Front panel indication "S3" setting	6	⇒ OK	0
		7	⇒ Lo	
		8	⇒ Under	
		9	⇒ Over	
FNC-10	Front panel indication "S4" setting	10	⇒ Unloading	0
		11	⇒ Running	
		12	⇒ Hold	
FNC-11	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-12	Hold	0	Hold	0
		1	Peak hold (positive)	
		2	Peak hold (negative)	
		3	Peak hold (absolute value)	
FNC-13	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 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	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>0 0 0 0 0 0</p> <p>└─ Negative(Net Wt.)</p> <p>└─ Weight unstable</p> <p>└─ Overload (OL)</p> </div> <div> <p>0 ⇒ transmit cont.</p> <p>1 ⇒ Stop transmit</p> </div> </div>		000000
RS1- 07 RS2- 07	Indicator poling address	00	When set to 0, Indicator addressing is not used.	0
		99		

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

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

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

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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>				

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 illustrates the timing relationship between the discharge input and output signals. The input signal is a rectangular pulse. The output signal is a rectangular pulse that begins after a delay period labeled 'SQ-10' and terminates after a delay period labeled 'SQ-11'. A horizontal line above the output signal is labeled 'Weight reach zero band', indicating the period during which the discharge is active.</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	

