FINE

Digital Weighing Indicator

Instruction Manual

(FS-2000C)

CE

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CHAPTER **1. PREFACE**

1-1. INTRODUCE

Thank you very much for your purchasing FINE Digital Weighing Indicator of **FS-2000C**
This Instruction Manual will lead you to use **FS-2000C** with top reliability,
High speed, high accuracy.

FS-2000C is Digital Weighing Indicator amplifying the analog output from a load
Cell, converting the analog signal to digital data and then displaying this data
As a weight reading and is designed for flawless performance in your demanding
Application of input-weighing, Discharger, accumulating-weighing, 3step control.
Also, an additional option will make Modern Industry demand equipment that both versatile
And available to easily connect to other devices

※ Example for application :

1. PACKING EQUIPMENTS FOR MANUAL WEIGHING
2. EQUIPMENTS FOR AUTO-FILLER WEIGHING
3. EQUIPMENTS FOR OUTPUT WEIGHING
4. EQUIPMNETS FOR ACCURACY WEIGHING
5. RECORD-MANAGEMENT FOR PRODUCT WEIGHT

☞ REMARK

- Specification subject to change for improvement without prior notice.
- If changing ,the Version No can be increased ,but keeps a former version
  As far as possible

1-2. SAFTY CONDITIONS

Please keep the following using conditions certainly

◆ EARTH
To avoid an electric error such as a noises in your production line
It should be earthed before installation certainly.
Specially it will be safe to divide the power of Indicator into a load cell.

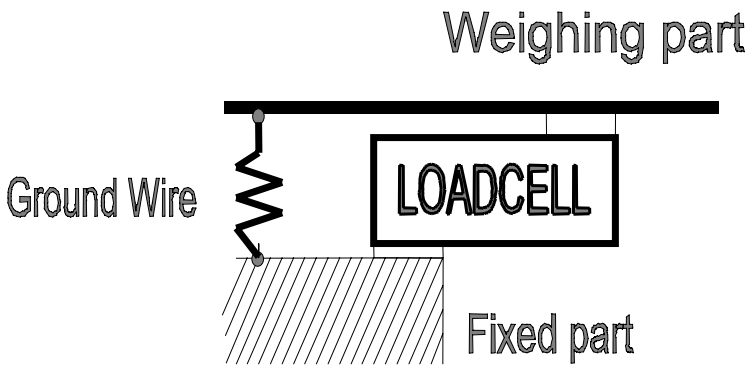
◆ SAFTY CONDITIONS
Do not use it closed to a explosive gas and an inflammable dust environments

◆ POWER
Use the power under 110/220V 50/60HZ ±10% and divide it into the power line

◆ **TEMPERTURE CONDITIONS**
OPERATING TEMPERTURE : **-**10o C **+**40o C (+14o to 104o F)
CUSTODY TEMPERTURE : **-**40o C **+**80o C (-40o to 176o F)

◆ **INSTALLATION LOAD CELL**

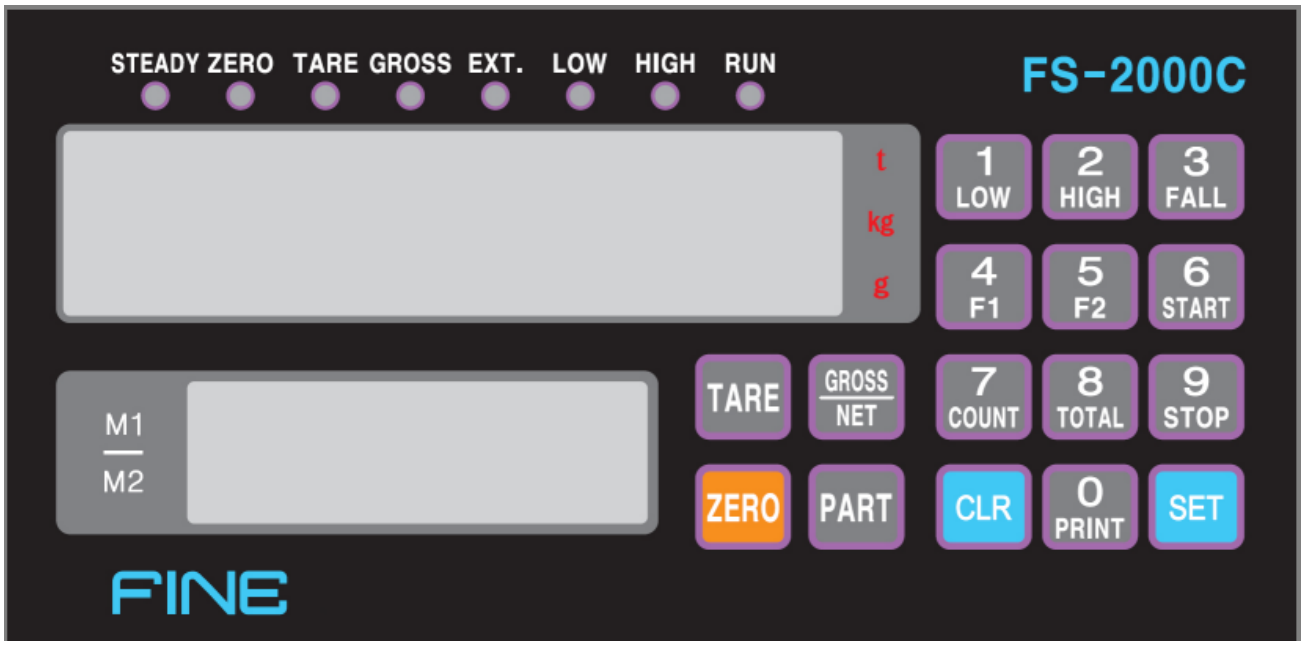
- Available to use the same load cell of 8pcs (300Ω standard)
- A ground should be installed horizontal
- Installing over 2pcs of load cell and connect each line in parallel and Insert a variable resistor under 50Ω in EX + line and minimize a output Accuracy of load cell.
  It may occur a weight error by each accuracy of load cell.
- It may occur a weight error in case of a temperature variation of load cell
- Please weld(electric spark) at the place installed with load cell and equipments, Divide the power into a connector of load cell in inevitable case
- Please connect the below construction of load cell with the above ones using The Ground to the weighing part weighing a material or a electric spark.



1-3. FEATURES

- A compact Appearance by DIN regulations (DIN 192 × 96 Panel system)
- Easy to preset, change, confirm the weight value by the numeral key.
- Improved a convenience and precision of operating with Message Function.
- Can display a various information using F1,F2,F3 key for the end-user.
- Can use or disuse each key function. (SETUP F10 Reference)
- Weight Memory function even in electric spark case (SETUP F02 Reference)
- The permit or prohibition function of Calibration (ADJUST 10 NO Switch)
- Watch-Dog timer guards for self-diagnostics.
- Set up to 1/20,000 display resolution
- Function available to change the unit value such as kg, ton, lb ,g (In case of Serial Communication & Printer)
- Available to change the function of the external input terminal (SETUP F16 Reference)
- Various option and addition for customer satisfaction such as serial communication, RS-422/485, Current Loop, Printer, Analog out, BCD Input/Output and so on.

1-4. FRONT PANEL DESCRIPTION



1-4-1. LAMP

▼ STEADY : This Lamp will be turned on the stable weight
When presetting and working a auto-function,
This STEADY Lamp will be the weighing standard. .

▼ ZERO : This Lamp will be turned when the weighing device is empty.
When presetting and working a auto-function, this
ZERO Lamp will be the weighing standard.

▼ TARE : This Lamp will be switched to Net mode
(SET-UP F12 REFERENCE)

▼ G/W : This Lamp will be turned on the gross weight
When presetting a TARE, It will be a Lamp Function.

▼ EXT. : This Lamp will be displayed with external input

▼ LOW : This Lamp will be displayed when Weight is in LOW weight range.

▼ HIGH : This Lamp will be displayed when Weight is in HIGH weight range.

▼ RUN : This Lamp is being running by the start of Seque ce Board.

1-4-2. HOW TO USE KEY

*** The Key operating can be permitted or prohibited by SETUP-F10**
*** When pushing the key, it sounds "OK".**
*** Each Key works either a single function or compound functions.**
A compound function key will be a command key when it push first and
According to the command key, the fixed value works its function,
The key to finish a input data is **SET Key.**
* The input time of compound key is limited with 5sec and automatically will
Be removed without the next key input.

☞ **ZERO Key** : This key returns the display to the center of ZERO when the weighing device is empty(the end-user selected within 2%, 10%, 50%, 90% by SET-UP F07)

☞ **TARE Key** : The way to set-up the tare weight is two way as follows.
- Manual Way
  1.Set-up of TARE Key
  ① Put a TARE on the weighing plate
  ② TARE Key →SET Key OR TARE Key → Numeral Key → SET Key
  2.Remove of TARE Key
  ① Remove TARE on the weighing plate
  ② Push TARE Key and push SET Key.
- Automatic Way
  1.Auto-TARE setting if TARE was on the weighing plate
  2.Auto-TARE setting after putting TARE and Auto-TARE Remove
  After Taking away TARE on the weighing plate.

※ Please refer to SETUP F12

☞ **G/W** Key : After setting TARE, Net Weight converts Gross weight,
OR Gross weight converts Net Weight
* Available to convert setting TARE only.

☞ **PART Key** : Usable to confirm or change the product part
* Can set up the data of each product from 1 No to 20 No.
- Confirmation PART : PART Key → CLR Key
- Changing PART : PART Key → Numeral Key →SET key

☞ **LOW key :** This key to input the low weight
LOW key → LO-SET → Numeral Key →SET key(Reference F40 Control System)

☞ **HIGH key :** This key to input the High weight
HIGH key → LO-SET → Numeral Key →SET key(Reference F40 Control System)

☞ **Fall Key : Can preset a Fall weight**
Preset + (FALL Number) + SET

☞ **F1,F2,Key** : This keys appear a various data as the end-user demands.
Available to use the end-user demanding by SETUP F21,F22,F23
(SET UP F21 REFERENCE)

☞ **TOTAL Key** : The function to delete and print SUB-total and TOTAL

* Delete : **CLR + TOTAL + SET (SUB-total Delete)**
  CLR + TOTAL + TOTAL + SET(TOTAL Delete)
* Deleting TOTAL,SUB-total delete automatically.
* **Print**: **TOTAL + PRINT (SUB-total PRINT)**
  TOTAL + TOTAL + PRINT(TOTAL PRINT)
* Possible to delete automatically when printing (SETUP F18 REFERENCE)

☞ **Start / Stop Key (refer : F40)**

Can use start & stop a weighing work.

* Please use CLR + Start Key to stop a weighing work.

☞ **PRINT Key** : This Key is to Transmit, Totalize, Print a DATA

* Unavailable to work it while Auto Mode
* Please push **CLR + Print when deleting the last TOTAL date**.
  Only Unavailable to re-power, change the PART, Available 1time only
  (The last total data will be deleted also on Auto-total)

☞ **CLR** Key : This have 4way to use as follows .

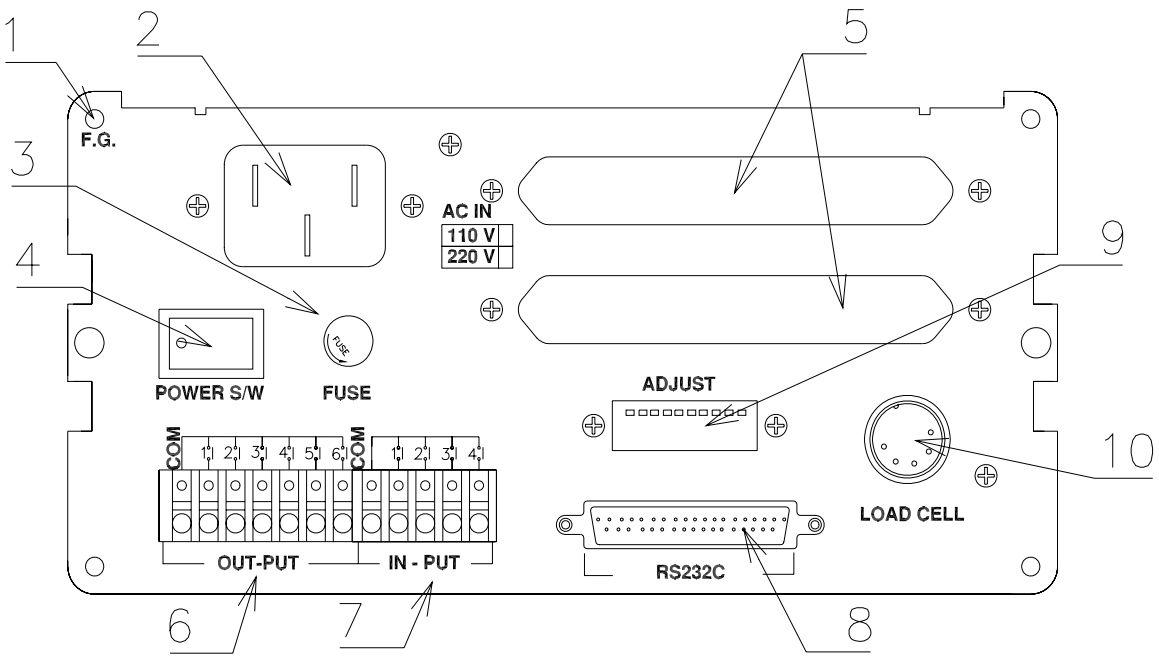
1) When cancelling it with input the setting value
2) **CLR + TOTAL(+TOTAL) +SET** When setting the total data.
3) **CLR + Print when deleting the last TOTAL date**
4) When using SETUP or CALIBRATION (3Chapter, 4Chapter REFERENCE)

* After CLR Key, If no a additional data, it will be deleted automatically. .

☞ **SET/CAL** Key : **SET** key have 2way to use as follows

1) When recording each set data
2) When using SETUP or CALIBRATION(3Chapter, 4Chapter REFERENCE)

1-4. REAR-SIDE PANEL



1. F.G. : Please earth it for safe.

2. AC IN : Available to change AC110/220V with multiple.
Before Installation then check out the power voltage.
Change 220V terminal into 110V when it change the power voltage.
(The first power supply was made by 220VAC.)

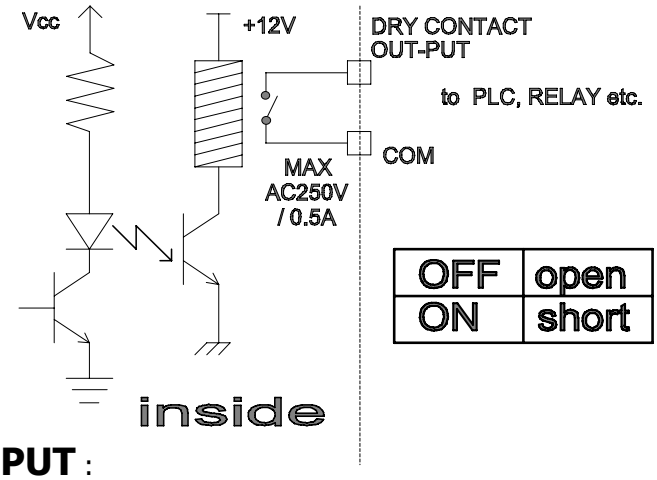
3. FUSE : please use the standard approved when it replace.
(FUSE) AC250V, 0.3A (a glass tube with small type)

4. POWER S/W) ON/OFF : It will be safe to use it after 10minuate warming time.

5. DATA OUT (Option Board.) :
Serial Communication. RS422, BCD In/Out, Analog Out 0~10V, 4~20 mA
Print Out(Serial Print / Centronics Parallel)

6. OUT-PUT :

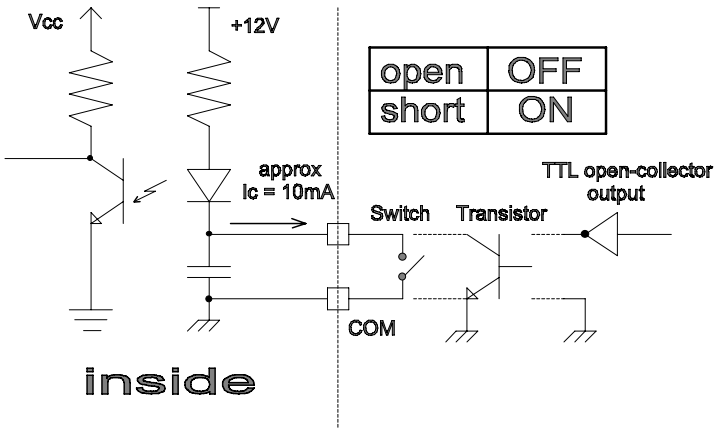
It can connect between COM and each Output Terminal by no voltage contact.
Each Output Terminal Function can be selected by SET UP F40.
Also use this output by control signal but do not use it by driving.
Max earth capacity : AC250V / 0.5A



7. IN-PUT :

It will be used for controlling this indicator from the external equipment.
The functions of input terminal is to choose it by SETUP F16
Because the power supply of input terminal is done by 12V inside,
Do not power in from the external

- An electric current is about 10mA.
- Make Min. input time by more than 50mSEC.



8. RS-232C (25P D-type Female) : (OP-01)

9. Load cell Connector(N-16)

① EX+ (+5V) ② EX- (-5V) ③ SIG+
④ SIG- ⑤ SHIELD

10. ADJUST : It has DIP Switch which can adjust ZERO and SPAN

- (No 1 - No 6 : ZERO Adjust , No 7 - 8: SPAN Adjust , No 10 : Calibration Lock
- The Functions of each input terminal can be selected by SETUP F16

1-6. SPECIFICATION

1. Analog Input & A/D Conversion

Input Sensitivity	0.2 /D
ZERO adjustment Range	-4mV 42.0mV
Load cell excitation	DC 10V (± 5 V)
Max Input voltage	32mV
Temperature Coefficient	± 20 ppm / ℃
INPUT Noise	± 0.5 P.P
INPUT Impedance	10 (MAX)
A/D Converter	130,000 Count
Non-Linearity	0.005 F.S

2. DIGITAL SECTION

MAX.DISPLAY	"1000000"
MIN.DIVISION	x1, x2, x5, x10, x20, x50
DISPLAY UNIT	7-Segment, 7digit Highly bright fluorescent tube
KEY BOARD	Numerical Key and Function Key(0-9,CLR,SET/CLR)
Data Back-up	APPR.10 YEAR

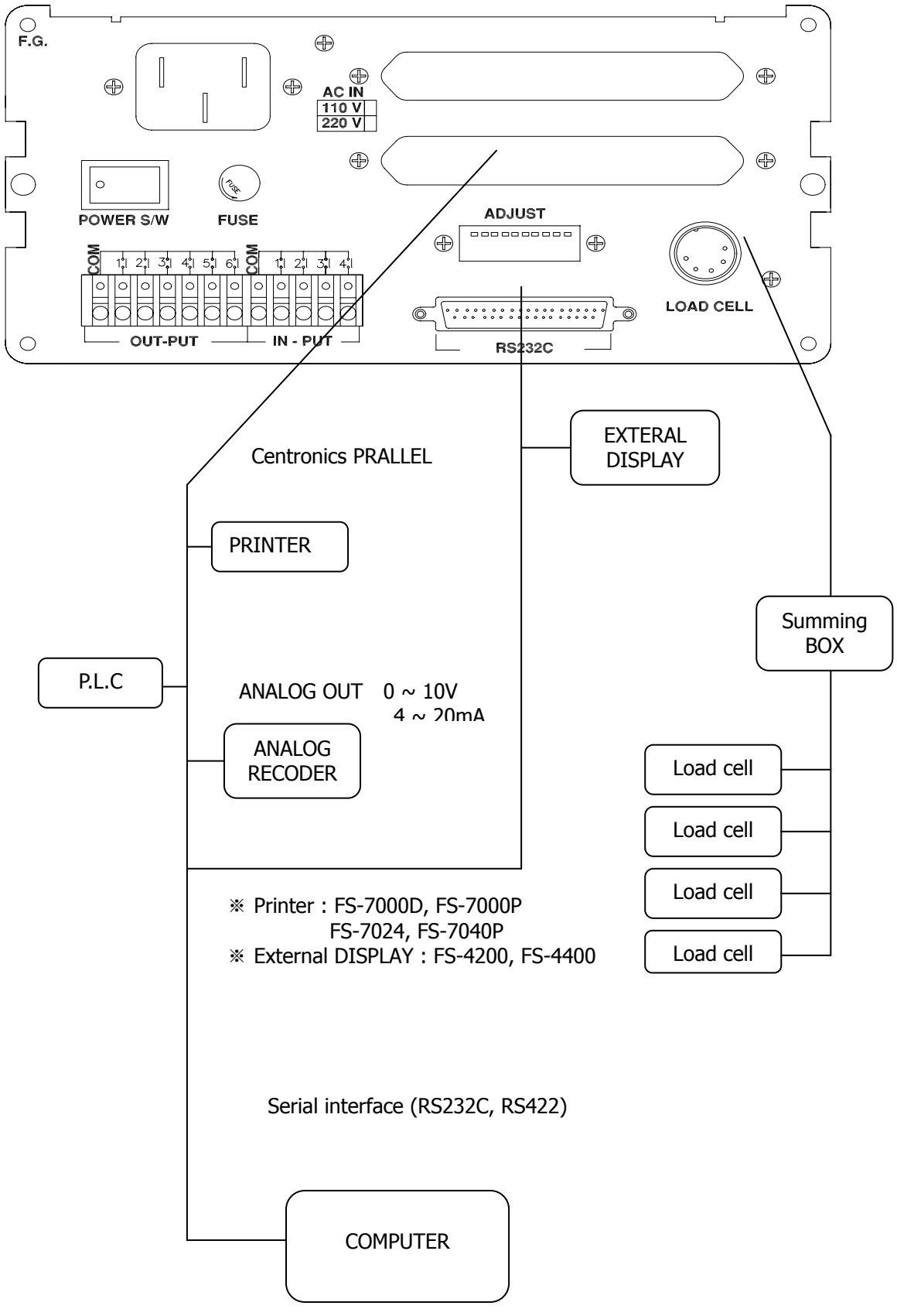
3. GENERAL

POWER	AC110 / 220V (±10%), 50 / 60Hz, 10VA
PRODUCT WEIGHT	NET 2.3kg BOX 3.3kg
Operating Temperature	-10℃ 40℃
Operating Humidity	85%RH MAX (Non-Condensing)
Physical Dimension	193.6 x 98 x 166 (mm)

4. OPTION

OP-01	STANDARD
OP-02	Serial I/F : CURRENT LOOP
OP-03	Parallel I/F : BCD Out
OP-04	Serial I/F : RS422, RS485
OP-05	Analog Output : V out (0-10V / 10V-0V)
OP-06	Analog Output : I out (4-20mA / 20-4mA)
OP-07	Print I/F : CENTRONICS Parallel
OP-10	Parallel I/F : BCD In PART

1-7. The example for the connecting to external devices



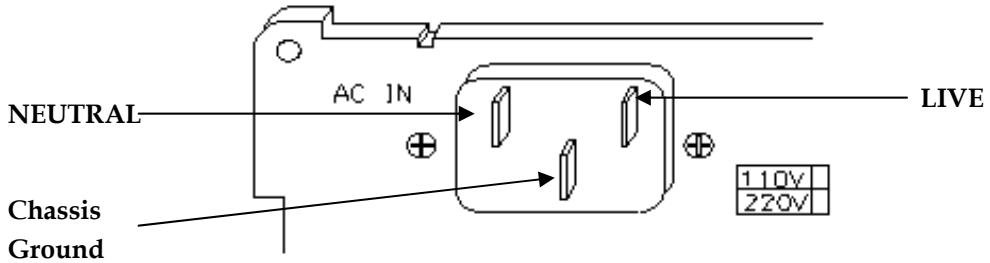
CHAPTER 2. INSTALLATION

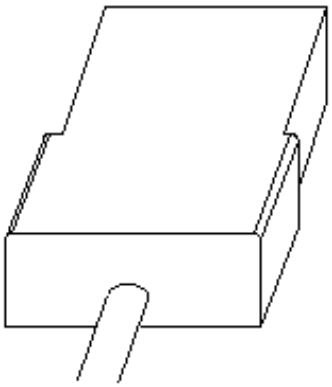
☞ **Installation Caution.** 

- Be careful for avoid from a strong impact, vibration. temperature. water, wind.
- Be careful for avoid Installation from a high moisture around.
- Be careful for avoid Installation from a high temperature fluctuation.(±10℃/h).
- Be careful that the power should be isolated from the main power box.
- Be careful that the power should be done by the standard voltage
- (110V/220V ± 10% 50/60Hz – First Power voltage **220VAC)**
- Be careful that the main switch should be off for connecting to the external device.
- Be careful that it should ground with the external device.
- Note that it should calibrate and set up for the first installation.

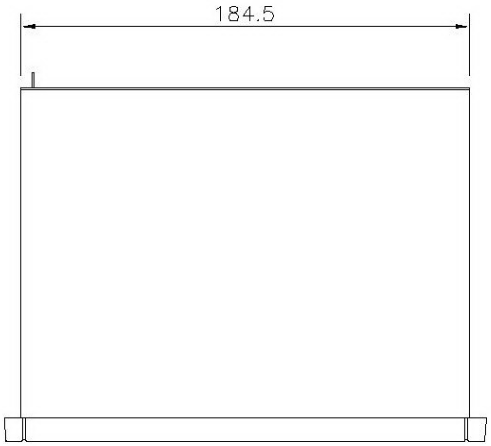
☞ **Necessary Part for installation.**

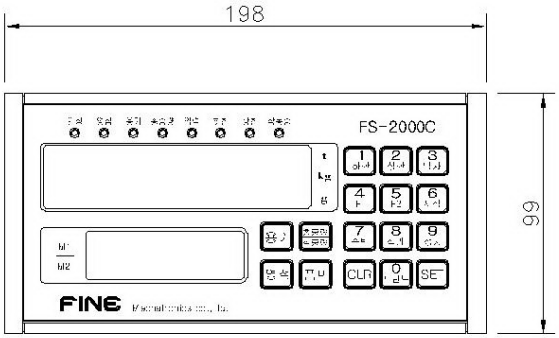
- Power Code Connector : 1EA
- FUSE : 2EA (PIPE TYPE 250V 0.3A SMALL TYPE)
- LOAD CELL Connector : 1EA (N16-05)
- Instruction Manual : 1Copy
- Adaptable Connector for Option Connection.

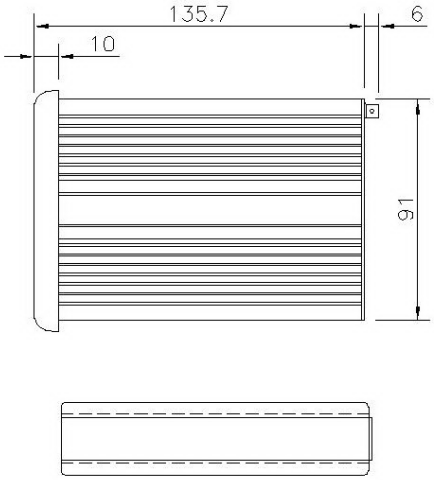


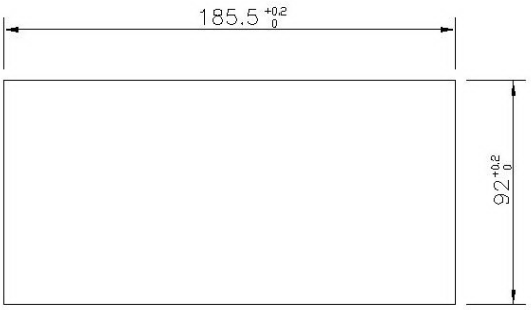


2-1.Out-Dimmension & CUTTING SIZE

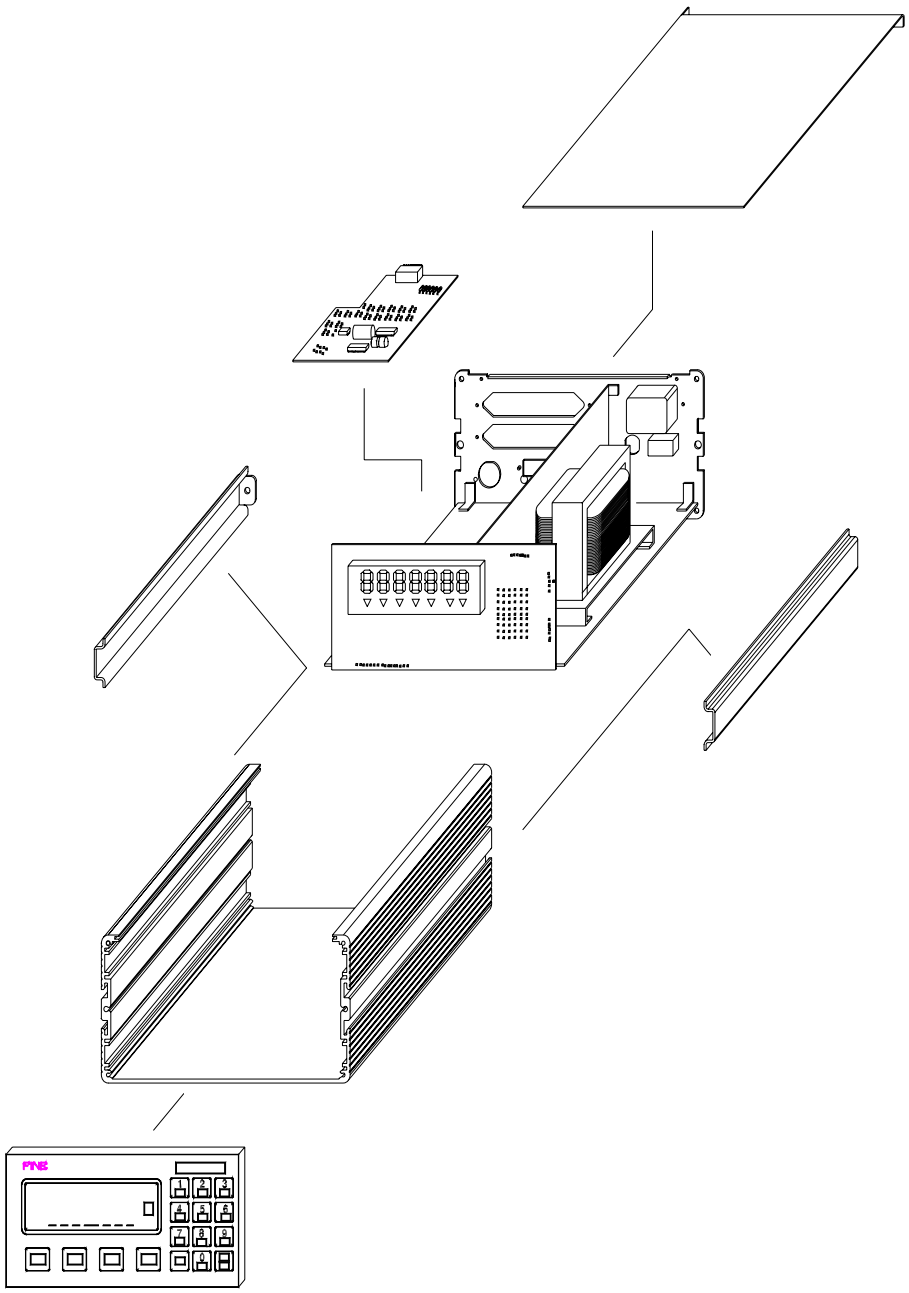








2-2. ASSEMBLE DRAWING



2-3.HOW TO CONNECT TO LOAD CELL

1. Recommend Load cell

The Rated Output(R.O) of a load cell should be 1mV/V ~ 3mV/V

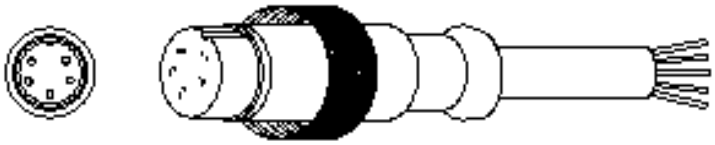
Specially FINE Cell is 2 mV/V ±0.005 and can be supplied together.

▣ **The Rated Output voltage of load cell is not absolute value but relative value.**

Ex) The Rated output voltage is the same with 3mV/V for 10kg Load cell and 10ton.

2. Load cell Connector

- Please connect the indicator to a load cell according to the wire color.
- Available to connect the load cell Until Max. 8pcs Load cell in parallel.(Max 300Ω)



3. The wire color depending on the load cell manufacturer

Manufacturer.	1 EXC +	2 EXC -	3 SIG +	4 SIG -	5 SHLD	Reference.
FINE CELL	**Red**	**White**	**Green**	**Blue**	**Shield**	
CAS	Red	White	Green	Blue	Shield	
Interface	Red	Black	Green	White	Shield	
Tedia	Green	Black	Red	White	Shield	

- Load Cell connector Standard : N16-05.

2-4. ERROR & CLEAR

Error	Source	Clear	Reference
Unstable Weight	① Load cell Broken. ② Load cell Insulation Resistance Error ③ Touching to a moving frame. ④ Touching to a moving frame	①Measure the rated output of load cell. ②Measure load cell Insulation resistance	① Input resistance : about 400 Ω ②output resistance about 350 Ω ③ Insulation resistance : 100
Increasing weight or Not return to ZERO	① Load cell broken. ② Load cell not connecting	① Measure load cell insulation resistance (normal : 100 or OL display) ② check load cell connector	
Minus Weight(-)	① Rated output of load cell (SIG +, SIG -) exchanged	① check load cell connector.	ERR-55.
"bAd"	① Load cell Broken. ② Connect Condition. ③ Out of basic ZERO	① check load cell. ②check load cell connector. ③adjust ZERO(5000~50000)	
"UL" (Under Load)	① Load cell Broken. ② Connect Condition. ③ Out of basic ZERO	① check load cell. ②check load cell connector. ③adjust ZERO(5000~50000)	
"OL" (Over Load)	① Load cell Broken. ② Connect Condition. ③ Excessive Weight.	① check load cell. ②check load cell connector. ③ remove excessive weight	

CHAPTER 3.CALIBRATION

▣ What is Calibration?

Calibration is to make Max. Weight, Min. Division, Decimal point which Digital Indicator displays be consistent to the actual weight loaded by a load cell on the platform.

☞ It should calibrate certainly when a load cell or indicator will be changed.

3-1. ZERO ADJUSTMENT

▣ What is zero adjustment.?

ZERO is the standard point which can indicate the weight..
Digital Indicator displays the weight as much as amplified analog value of ZERO from load cell.
It displays "UL" if the actual weight of display was less than ZERO which FINE indicator demands.
Otherwise, it displays "bAd" if the actual weight of display was more than ZERO.
Then FINE indicator will not run when it displays " UL "or "bAd"

☞ ZERO RANGE Which FINE Indicator demands.
Adjust the value displayed to **"test1"** closed to 1000 - 20000 (Recommend 5000) by
(Dip-Switch No 1- No 6)

1. HOW TO ADJUST ZERO POINT

If you power in Digital Indicator while pressing No 1 Key of keypad

Then it displays " test "

Then if pressing No 1key again then it displays "test1" and displays " ZERO POINT ".
Then if it does not display " ZERO POINT" then turn " ON " of all No 1 ~ No 6 Dip-Switch on real Size panel of Digital indicator and adjust ZERO POINT closed to around 5000 by Dip-Switch.

For example,

- Power In while pressing No 1key of Keypad
- Press No 1key of keypad again.;
- Adjust ZERO POINT closed to around 5000 by Dip-switch on the real panel.

2. How to adjust a Dip-switch

Small Amplified ←----------→ Large Amplified								
	1	2	3	4	5	6	Zero point Amplified	Amplified Example.
1	ON	ON	ON	ON	ON	ON	0	0
2	OFF	ON	ON	ON	ON	ON	1	-980 Amplified Volume
3	ON	OFF	ON	ON	ON	ON	2	-1960 Amplified Volume
4	OFF	OFF	ON	ON	ON	ON	3	-2940 Amplified Volume
5	ON	ON	OFF	ON	ON	ON	4	-3920 Amplified Volume
62	OFF	ON	OFF	OFF	OFF	OFF	61	-59980 Amplified Volume
63	ON	OFF	OFF	OFF	OFF	OFF	62	-60760 Amplified Volume
64	OFF	OFF	OFF	OFF	OFF	OFF	63	-61740 Amplified Volume

- Adjust ZERO POINT by NO 1 ~ NO 6 Only of Dip-Switch.
- Do not adjust ZERO POINT by NO 7 and NO 8 which can adjust for SPAN adjustment.
- NO 9 of Dip-Switch is to Self- Test Digital Indicator through the input signal(SIG +, SIG-) of Load cell and always turn OFF NO 9 of Dip-Switch.
- NO 10 of Dip-Switch is to prohibit or permit "Calibration" which can not be access to any persons.

For example,

(1) A current display of digital indicator = 317720.
(2) No 1 ~ No 6 of Dip-Switch = ON.
(3) Then how ZERO Point can be closed to around 30000?
(4) If Amplified Volume was 980 if NO1 key was OFF then The Amplified Volume of Each Dip-Switch was as follows.

Dip-Switch	1	2	3	4	5	6
Amplified/V	12540	25080(12540X2)	50160	100320	200640	401280

Then if NO 1,NO2,NO3,NO5 of Dip-Switch was OFF
(12540+25080+50160+100320+200640+401280=288420)
and ZERO POINT will be 29300(317720-288420) closed to around 30000.

3-2. SPAN ADJUSTMENT

▣ what is span adjustment.

Span adjustment is to adjust the Linearity which makes the display value from "0" to Max. Weight Consistent to the actual weight

- Please do **OFF** NO 10 of Dip-switch For Calibration Access.

▶ How to access the SPAN ADJUSTMENT.
There are 2ways to access the span adjustment

☞ **The first way**
If you power in Digital Indicator while pressing No 3 Key of keypad
Then it displays " test "
Then if pressing No 3 Key again then it displays **"St. CAL"**
And if pressing " St. CAL" key it displays " d xx(01,02,05,10,20,50) ".

For example,
- Power In while pressing No 3key of Keypad **>>> "test"**
- Press No 3key of keypad again. **>>> "St. CAL"**
- Press SET/CAL **>>>"d 02"**

☞ **The second way**
① If Pressing **SET/CAL** key for 3second, It will display **"St. CAL"**
Press SET/CAL again
② **"St. CAL"** means SETUP & CALIBRATION mode

▶ HOW TO ADJUST SPAN.

S&C MODE have 7way to adjust span. Each step will be advanced with **SET/CAL** key**.**

Also, **CLR** key was used to return to the previous display.

- For the next Step : Press **SET/CAL** key
- For the previous Step : Press **CLR** key

☞ 1STEP.

A step to set up a division (Digit) and decimal point.

"d" means "Division" and "xx" means a division capable of displaying.

Also this "xx" will be displayed as 01-02-05-10-20-50 whenever pressing 0(zero) Key

In case decimal point is "0.0" then press 2 Key.

In case decimal point is "0.00" then press 3 Key

In case decimal point is "0.000" then press 4 Key.

In case decimal Point is not then press 1 Key.

And press **SET/CAL key,** then it will be go to the next step recording a division and the position Of decimal point.

☞ 2Step

A step to set up Max. Weight.

The display will appear **"CAPA"(**Capacity) and discretion number(Max.6Digit)

It can input the Max. Weight as the end-user demands instead of discretion number.

How to input is to press **SET/CAL** key after inputting discretion number.

♣ Do not excess (A division ÷ Max. Weight) with over **1/20,000**(0.00005)

If exceeding over **1/20,000, it will display "Err 01"**.

☞ 3Step

A step to check the zero conditions of Indicator.

After appearing **"dEAd",** the discretion number(Max.5digits) will appear.

If the present number is closed by 30,000(5,000~50,000) please press **SET/CAL key.**

If a discretion number did not display or was over 20000,

Do it as the zero adjustment instruction again.

☞ 4Step

A step to set up test weighter for SPAN Adjustment.

Indicator will display the capacity at weight column which was set at 2 step
After being displayed "SPAn".

Please input the value of Test Weighter for span adjustment by numeric key.
This value of span Test Weighter must be equal to full capacity, or over 10% of full capacity.

- In case of less 1/5,000 resolution , the value of Test Weighter must be over 20% of full capacity)
- If span capacity is set less 5% or over Max. Weight , Indicator will display error message. As "Err 03"

☞ 5Step

A step to load test weighter on the platform .

If it input 1000kg on the above 4STEP. Then it displays "Load".
Put the actual test weighter or the test weighter, 10% of full capacity. And SET Key.

- (Notice)
  If indicator is unmatched with load cell capacity or span standard weight,
  The Indicator will display Error message "Err04"

☞ 6Step

A step to display Span Constant Value counted.

If the range of this constant value is between 0.5000 -- 3.50000, All procedure of span adjustment Is normal.

- (Notice)
  This span constant value can not be adjusted by the numeral key or other way.

☞ 7Step

A END Step.

If it display "END" then Span Adjustment was finished completely.
Then unload the test weighter from the platform and press SET Key.

▣ For Example of SPAN ADJUSTMENT

- Max. Display Division = 50.00kg
- Display Setting Interval = 10g
- Test Weighter = 10.00kg

STEP	S&C Select Mode	St. CAL
1 STEP	Press SET/CAL	d 50
	Adjust a division by pressing 0 key	d 01
	Setting Decimal point by 3key	d 0.01
2 STEP	Press SET/CAL	c 8 0.00 after displaying CAPA
	Press 5000 by numeral Key	c 5 0.00
3 STEP	Press SET/CAL	d 4879 after displaying dead
	* Adjust ZERO POINT if this value was not closed to 10000 ~ 30000	
4 STEP	Press SET/CAL	s 50.00 after displaying SPAn
	Press 5000 by numeral Key	
5 STEP	Press SET/CAL	Load
	Load test weighter on the platform	
6 STEP	Press SET/CAL after 3second	0. 97482 1.
7 STEP	Press SET/CAL	End
	Press SET/CAL after unloading Test Weighter.	TEST " 7segment " in display. After "FinE"
	In the display	0.0 then it will be normal 1.0

3-3. ERROR MESSAGES & ADJUST

※ **tESt or FS-XXXX** : If indicator display only " tESt " or FS-XXXX (Model number) without any operation ,first of all you must adjust "Dip-Switch" of back side panel for span and zero value.

※ ERR--01

①Cause : In case resolution (A Interval/Max. Display weight) was set over 1/20,000 resolution.

②Adjust : Set under 1/20,000 resolution(A Interval/Max. Display weight)

※ ERR--02

①Cause : In case Standard Test weight was more than Max CAPACITY

②Adjust : Make Set Standard Test weight equal or less than Max CAPACITY

※ ERR--03

①Cause : In case Standard Test weight for span adjust was set less than 5% of Max CAPACITY

②Adjust : Set Standard Test weight for span adjust into less than 5% of Max CAPACITY

※ ERR--04

①Cause : In case the weight was not Steady when it account the value of a span constant

②Adjust : Adjust a span again after removing a cause to be unstable or to have vibration.

※ ERR--05

①Cause : In case the actual weight was more than Standard Test weight
Or the amplification Volume of Analog circuit inside was more than.

②Adjust :

- Please check it if the actual weight was more than Standard Test weight or not
  If it did so, please adjust the standard Test weight into the value set up.
- If it continue to display ERR--05, Adjust NO 7,8 of Dip-Switch on the rear panel.

For a reference,

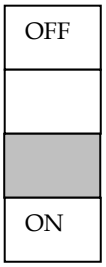
NO 1 ~6 of Dip-Switch is to adjust ZERO.

NO 7 ~8 of Dip-Switch is to adjust SPAN

Also because ZERO was changed according to NO 7 ~8 of Dip-Switch,

Please adjust ZERO again as **3-1 ZERO Adjustment**

NO7	NO8	Amplified Volume	
ON	ON	Small	1times
OFF	ON	Normal	2times
ON	OFF	Big	3times
OFF	OFF	Very Big	4times



- The way to use the Dip-Switch.

- Please adjust SPAN again after adjusting less than the present adjusted value.

※ If it continues to display ERR--05 in spite of adjusting the Dip-Switch as the above, Please check it if the cable wire of a Load cell was normal or nor.

※ ERR--55

①Cause : In case a cable wire of a Load cell was connected on reverse.

②Adjust : Please check the connection of a Load cell as a reference of **2.3 CHAPTER**

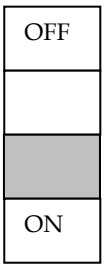
※ ERR--06

①Cause : In case the actual weight was loaded less than standard balance weight
Or was less than Analog Circuit Amplification.

②Adjust :

- Please adjust a standard balance weight into the weight set up.
- If continue to display ERR--06,Adjust NO 7,8 of the Dip-Switch on the rear panel.
  For a reference,
  NO 1 ~6 of Dip-Switch is to adjust ZERO.
  NO 7 ~8 of Dip-Switch is to adjust SPAN
  Also because ZERO was changed according to NO 7 ~8 of Dip-Switch,
  Please adjust ZERO again as **3-1 ZERO Adjustment**
  The way to use the Dip-Switch.

NO7	NO8	Amplified Volume	
ON	ON	Small	1times
OFF	ON	Normal	2times
ON	OFF	Big	3times
OFF	OFF	Very Big	4times



- Please adjust SPAN again after adjusting less than the present adjusted value.

※ If it continue to display ERR--06 in spite of adjusting the Dip-Switch as the above,
Please check it if the cable wire of a Load cell was normal or nor.

※ ERR--07

①Cause : In case it was deviated from a range of value which can be set by SET UP,

②Adjust : Please input the contents of SET UP again.

※ ERR--10

①Cause : In case the record device of Memory or Hardware was not normal

②Adjust : It can be worked by a voluntary key, but it was temporary way.
So, please try to send this Indicator to the head office for A/S.

※ " UL" (UNDER LOAD)

①Cause : In case the connection of a Load cell was not normal or a Load cell was broken.

②Adjust : Refer to the part related with a Load cell or **CHAPTER 3** ZERO ADJUSTMENT.

※ " OL" (OVER LOAD)

①Cause : In case the connection of a Load cell was not normal or a Load cell was broken.

②Adjust : Refer to the part related with a Load cell or Remove a excess weight.

CHAPTER 4. SET-UP

4-1. PREFACE

" SET-UP " is to choose each proper functions for matching the indicator with the appliances of field.

▣ **How to enter into set-up mode**

This set-up mode is required for proper weighing operation when Indicator connects With other appliance. It can enter into sep-up mode by the below two steps.

☞ **The first Step**

Depress key "**③key**" first and power on at the same time.

At that time, **"tESt"** word will be displayed on indicator.

Depress key "**③key**" again, and indicator will display as following :

S t, C A L. ; S & C Mode

At this time, press CLR key.

Indicator will display to " F01-xx " from above test message.

*** For example**

The power was OFF

1. Power "ON" while pushing **③key** --------- **"tESt"**
2. Pushing **③key** again --------- **"St. CAL"**
3. Push **CLR key** --------- **"F01 - xx"**

☞ **The second Step**

If you depress key " SET/CAL" for 3 seconds at the normal weighing mode,

Indicator will also display **"St. CAL"** as the above.

4-2.SET-UP

① If it press **CLR** key at S&C Mode, Indicator will display **"F01-xx"**

The F of **"F01-xx"** means Function and 01 means Function number

And the last 2figure **"-xx"** means each functional setting number

*** For example**

Pushing CLR key in **"St. CAL"** mode then displays as " F01-01 "

Function number will be increased to the next Function whenever it presses .

② If you proceed to next function, press CLR key or,

If you want to see your desirous any function number,
Press "CLR" key after input any function number by numeric key.
Indicator will display function number directly from present function number.

(EXAMPLE)

* Present display : F01-01
Press CLR key ----> "F02-00" display ----> Press CLR key.
----> "F03-01 display ----> Continuously press CLR key ---->
"F04-XX" ----> "F05-XX" ----> "F06-XX" ---->
Press CLR key in streams, the next function number will be displayed.

* Present display : F01-01
If you want to see function number 12,
Press numeral key "1" and "2" ----> Press CLR key ----> "F12-XX" display

③ If you want to change each functional setting number newly,
Press SET key after input the functional setting number by numeral key.

(EXAMPLE)

If "F01-01" is changed to "F01-03",
Press 3 key ----> F01-03 display ----> Press SET key.
A new function number will be memorized.

(Remarks) When you want to change " S & C MODE " from Set-up mode,
Please press key " 0 " + " CLR " consecutively.

※ ERR--07

①Cause : In case it was deviated from a range of value which can be set by SET UP,
②Adjust : Please input the contents of SET UP again.

4-3.F-FUNCTON LIST

F-NO	FUNCTION	CONTENTS
F-00 GROUP-SETTING A BASIC WEIGHIG		
F 00	S & C MODE Convert	SETUP & CALIBRATION
F 01	weight unit choice	kg, ton, lb
F 02	weight BACK-UP	NORMAL, BACK-UP
F 03	Set ZERO tracking Range	0, 0.5, 1, 2
F 04	Set Safety Motion Band	0.5, 1, 2, 4, 8
F 05	Set AUTO ZERO Range	0-99 (Auto Zero Range)
F 06	Digital Filter	0-9 (anomalous decrease)
F 07	Set ZERO Range	Max. weight 2, 10, 50, 90%
F 08	Set Delay time of Safety adjustment	0-99 (1count = 0.1sec)
F-10 GROUP-SETTING A BASIC DEVICE		
F 10	Selecting a Key Lock	Prohibition & Permit for KEY
F 11	ZERO,TARE,OPERATE MODE	Safety, Un-safety
F 12	TARE weight INPUT MODE	Set Numeral, Actual, Auto TARE
F 13	EMPTY Signal MODE	Output Choice when it is ZERO or Empty
F 14	SET EMPTY Range Set	Set Empty Range Weight
F 15	SET EMPTY Standard Set	Display weight, basic ZERO,TARE ZERO
F 16	External INPUT MODE	Input terminal function
F 18	DELETE Totalization information	Delete in Manual/Auto for totalization
F 19		
F-20 GROUP-SETTING CONTROL SYSTEM		
F 21	User key definition	No definition or Set
F 22	User key definition	No definition or Set
F-30 GROUP-SETTING Serial Interface Specification		
F 30	BRUD RATE	300, 600, ... 38.4 kbps
F 31	Set Parity Bit	EVEN, ODD, NO PARITY
F 32	Set Transmit MODE	Continue, Safety, Totalization, Command.
F 33	Set Format Transmit DATA	weight, weight + time, CAS transmit format
F 34	Insert Transmit DATA (STX)	No, Insert
F 35	Control Interface wire / RS,CS	No use(RS422/485), USE
F 36	Select Interface weight	Weighing weight, G.Weight, N.Weight
F 37	Set Transmit Comma(,)	Select ",” or not.
F-40 GROUP – CONTROL MODE		
F 40	Set - up For Controlling Weight	Simple / Sequence / Check Mode Control
F 41	**Delay time for Finish Signal**	0 ~9.9 sec set
F 42	Maintaining time for finish signal	Continuous or 0.1 ~ 9.9 sec set
F 43	Set for FALL Compensation	No use or 5,10,20,50 times
F 44	Set for Prohibited Time	No use or 0.1 ~ 9.9 sec set
F 45	Set for a weighing Range	+ range, Absolute,- range
F 46	Set for Finish Signal way	Manual, steady, steady + time, time
F 47	Set for display weight way	No use ,fixed display weight
F 48	Set for zero or tare of start	No use for a simple control mode

F-50 GROUP-SETTING BCD Output Specification		
F 50	Weight choice for output	Display, Gross, Net weight
F 51	BCD OUT Parity	Positive / Negative OUT
F-60 GROUP-SETTING Analog Out Specification		
F 60	Weight choice for output	Display, Gross, Net weight
F 61	Standard weight choice of Analog Out	Max, display weight, Standard weight
F 62	Analog Out Parity	Positive / Negative OUT
F 63	Standard weight Set of Analog Out	Set standard value of Max. Analog Out
F-70 GROUP-SETTING Printer Specification		
F 71	Set Printer system	Continue / Each
F 72	Set Line Feed after printer finished	1 Count = 1 Line (0～99)
F-90 GROUP-SETTING		
F 90	Set Device Identification No	00 ～ 99
F 91	Set Display Color	00 ~ 08
F 92	Set language	0 ~ 1
F 93	Set Display LCD	0 ~ 7
F 95	DATE Modification MODE	Yy – mm - dd in Printer option only
F 96	TIME Modification MODE	hh- mm - ss in Printer option only
F 98	Check A/D Count of Basic ZERO	Check load cell if it is normal or not

CHAPTER 5. SET-UP ILLUSTRATION

5-1. BASIC FUNCTION FOR WEIGHING

F-00	S&C MODE converting

Dimension unit set		
F-01 ▶	0	kg
	1	ton
	2	lb

Weight Back-Up		
F-02 ▶	0	NORMAL
	1	BACK-UP

※ The indicator will not be done back-up the weight when power is off or down.

※ The indicator will be done back-up the weight when power is off or down.
This weight back-up must be used after span calibration.

Zero tracking range		
F-03 ▶	0	No zero tracking
	1	0.5DIGIT / 0.25sec
	2	1DIGIT / 0.25sec
	3	2DIGIT / 0.25sec

※ The meaning of zero tracking ??

In case of increasing the weight minutely by certain external factor (like dust), this minute weight will be compensated to zero if it is within a fixed division and time.

Motion Band range			
F-04 ▶	0	0.2DIGIT	※ Motion Band ; This is to compensate for the momentary vibration value.
	1	2DIGIT	
	2	5DIGIT	
	3	10DIGIT	
If indicator is used in vibration area, please set enough motion band range			

Auto zero range		
F-05	0 ~ 99	The remaining weight is automatically to be "Zero"
※ Setting way <Example> If the indicator is set to 3kg * 1g and F05-10 , the range of auto zero will be to 1--10g. At this time, F05 function is available up to 10 % of full capacity.		

Digital filter			
F-06	0 ~ 9	Low ↕ High	More sensitive Less sensitive
If you use the indicator with conveyer belt system or any other vibrating appliance, this f06 function will be applied for filtering or absorbing the Vibrating or oscillating weighing value.			

Set for zero range		
F-07	0	Within 2 % range of Max. capacity
	1	Within 10 % range of Max. capacity
	2	Within 50 % range of Max. capacity
	3	Within 90 % range of Max. capacity
Notice : If the zero range is set to 50% by 100kg capacity scale, the load cell of scale is loaded up to 150kg. So, when the zero range is set, the load cell capacity must be considered.		

Set for stable judgment delay time		
F-08	0 ~ 99	If the weight is within the setting value at F04, the indicator display "steady" and make a judgment after setting delay time. (1 count = 0.1 sec delay)

Keyboard lock		
F-10 ▶	0	All keys can be used.
	1	1st, 2nd, 3rd, 4th, START, STOP keys are locked.
	2	All keys except Zero are locked.
This function can protect the wrong key-operation of worker what may happen.		

Operation mode of Zero & Tare key		
F-11 ▶	0	Zero & Tare key can be used when the scale is stable only.
	1	Zero & Tare key can be used even if the scale is in unstable.

Tare weight setting mode		
F-12	0	Keyboard input of known tare weight. After input the tare weight, press SET/CAL key to enter into memory.
	1	Preset tare weight on weighing plate

Empty signal mode		
F-13	0	Empty signal will be out when the zero signal is out.
	1	Empty signal will be out when the scale is in Zero & - (minus) weight.
	2	Empty signal will be out on the absolute weight within empty range
	3	Empty signal will be out when the scale is in "+" range & "-" weight of empty range.

Set of Empty range		
F-14	Empty range Weight set	This function is used when F-13 is set to 2 or 3.

External input mode					
F-15	COM	1	2	3	4
	0	ZERO	TARE	NET	GROSS
	1	ZERO	TARE	PRINT	NET/GROSS
	2	ZERO	TARE	START	STOP
	3	BCD 10^0	BCD 10^1	START	STOP

External output mode							
F-16	COM	1	2	3	4	5	6
	0	1st	2nd	3rd	4th	End	Empty
	1	No use	No use	No use	No use	No use	No use

Remove total Data		
F-18	0	Remove with CLR + Sub total, CLR + Gross key
	1	Auto Remove with Sub, Gross weight printing key

F1 KEY FUNCTION SETTING BY USER		
F21-	0	No AVAILABLE
	1	DATE
	2	TIME
	3	DATE & SETTING
	4	TIME & SETTING.
	5	S/T Working Number
	6	G/T Working Number
	7	S/T Weight.
	8	G/T Weight
	9	P.N Working Start DATE
	10	P.N Working Finish DATE
	11	P.N Working Start TIME
	12	P.N Working Finish TIME
	13	Display CODE No and Setting
	14	Setting Underweight Accuracy (F28 Reference)
	15	Setting Overweight Accuracy (F29 Reference)
F2 KEY FUNCTION SETTING BY USER.		
F22-	The above F1 FUNCTION SETTING is the same	
	0	No available

SET DEVICE INDENTIFICATION NO		
F90-	00 ~ 99	Unavailable for ID NO in case of **'00' setting.** Available for ID NO in case of INPUTTING ID NO *** First Setting 00**

SET DISPLAY COLOR				
F91-	0	**RED**		
	1	**GREAN**		
	2	**YELLOW**		
		ZERO	WEIGHING	STEADY
	3	**RED**	**YELLOW**	**GREEN**
	4	**GREEN**	**RED**	**YELLOW**
	5	**YELLOW**	**RED**	**GREEN**
	6	**RED**	**GREEN**	**YELLOW**
		GREEN	**YELLOW**	**RED**
	8	**YELLOW**	**GREEN**	**RED**

SET LANGUAGE		
F92-	SET LCD DISPLAY LANGUAGE	
		KOREAN
	1	ENGLISH

SET LCD DISPPLAY		
F93-		**Display the Setting Value for High, Low** **(High: upside, Low: down)**
	1	Display the Setting Value for High, Low (Low: left, High: right)
	2	Display the Setting Value High, Low as bar graph
	3	Display Low, High, Part, Total Value (Low: Upside-left, High : Upside-right) (Part : Down - left, Total Weight : Down - right)
	4	Display Low, High, Fall Value (High: Upside-left, Fall : Upside-right) (Low : Down-right)
	5	Display Low, High, Fall , Part Value (High: Upside-left, Fall : Upside-right) (Low : Down – left, Part : Down-right)
	6	Display Low, High, High Fall , Low Fall Value (High: Upside- l`eft, High Fall : Upside-right) (Low: Down-left, Low Fall : Down-right)
	It will be applied after setting F40-6,7 (Refer to function F40)	
	7	Display Low, High, High Fall , Low Fall Value (Low : Upside - left, High: High -right) (Low Fall : Down - left, High Fall : Down - right)
	It will be applied after setting F40-6,7 (Refer to function F40)	

DATE MODIFICATION MODE	
F95-	**Example)** Display "F01-00" ⑨ key → ⑤ key→ **CLR** key In case of 97year 09month 30day →2001year02month14day ⓪ key → ① key →⓪ key → ② key → ① key → ④ key → **SET/CAL**
* DATA & TIME was subjected to the OPTION setting.	

TIME MODIFICATION MODE	
F96-	**Example)** Display "F01-00" ⑨ key → ⑥ key → **CLR** key 17hour 25min 30sec → 21hour 55min 56sec ② key → ① key→ ⑤ key → ⑤ key → ⑤ key → ⑥ key → **SET/CAL** key
* DATA & TIME was subjected to the OPTION setting.	

CHECK A/D COUNT OF BASIC ZERO	
F98-	* This key was used to check a load cell Error.

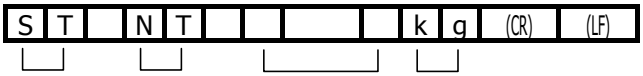
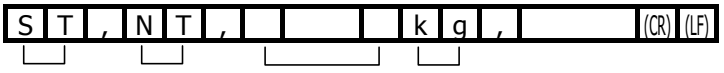
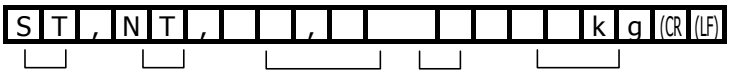
5-3 SERIAL INTERFACE

(RS-232C,CURRENT LOOP,RS-422/485)

SET BAUD RATE				
F30-	0	300 bps	5	9600 bps
	1	600 bps	6	14.4k bps
	2	1200 bps	7	19.2k bps
	3	2400 bps	8	28.8k bps
	4	4800 bps	9	38.4k bps

SET PARITY BIT		
F31-	0	EVEN
	1	ODD
	2	NO PARITY

SET TRANSMIT MODE		
F32-	0	Stream (Output in streams)
	1	Auto print (Output only when stable over 1% of full capacity)
	2	Print-key (Output only by pressing " Print " key)
	3	Output data when weight was finished
	4	Transmit COMMAND MODE
	5	Serial Printer mode only

SET FORMAT TRANSMIT DATA		
F33-	0	
	1	
	2	
* ID NO will be displayed automatically when setting of ID NO of F-90 * No available in case of F33 - 02		

INSERT TRANSMIT DATA(STX)		
F34-	0	NO STX
	1	Transmit of STX(ASCII=02)

CONTROL INTERFACE WIRE/ RS422 (485)		
F35-	0	NO USE for CS, RS / in case of RS422,485
	1	USE FOR CS, RS

SET INTERFACE WEIGHT		
F36-	⓪	Transmit Weighing Weight
	1	Transmit Display Weight
	2	Transmit G.Weight
	3	Transmit N.Weight

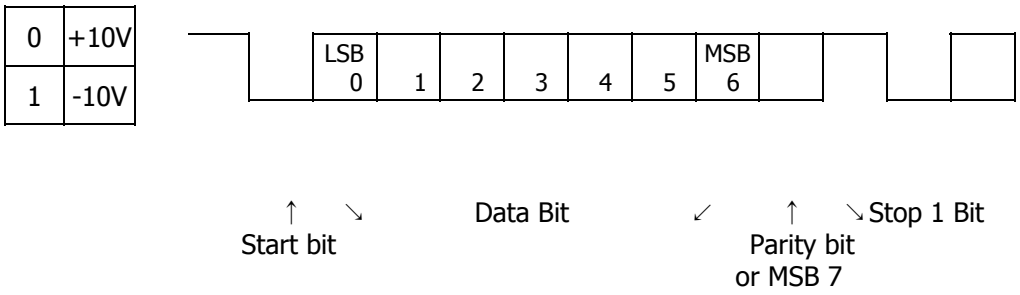
SET COMMA ","		
F37-	⓪	NO USE "," AFTER ID
	1	"," AFTER ID
		This function can use if ID is setting with F90.

5-3-1. RS-232C SERIAL INTERFACE

Because RS-232C Interface is the system that transmit the signal by Voltage Volume
It should install AC Power Cable or Electric Wire separately and the cable must be used with shield Coax Cable. And the suitable Interface Distance should be in 10M.

☒ SIGNAL FORMAT

(1) Signal Type : EIA RS-232C
(2) Transmit Method : FULL-Duplex, Asynchronous
(3) Baud rate : 300, 600, 1200, 2400, 4800, 9600, 14.4k, 19.2k, 28.8k, 38.4kbps
(4) Bit Format ⓐ Data bit : 7 or 8 (No parity)
ⓑ Stop bit : 1 Bit
ⓒ Parity bit : EVEN,ODD,NONE
ⓓ Code : ASCII



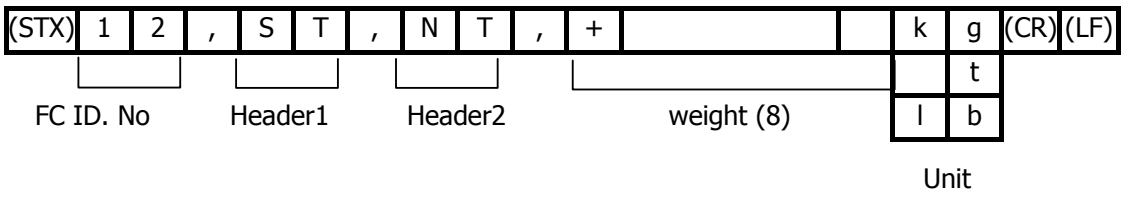
☒ STREAM MODE

It is doing Data Output in Stream Mode whenever A/D Conversion

(Reference)

- A/D Conversion : Appr.25times/sec in lower weight.
- A/D Conversion : Appr.15times/sec in Heavy Duty weight.

☒ DATA FORMAT



▶ FC(First Character)
- Insert in case of SETUP F34-01

▶ ID. No
- Insert in case of except SETUP F90- "00"

▶ Header 1
- OL : OVER LOAD
- UL : UNDER LOAD
- ST : WEIGHT STEADY
- US : WEIGHT WAVE

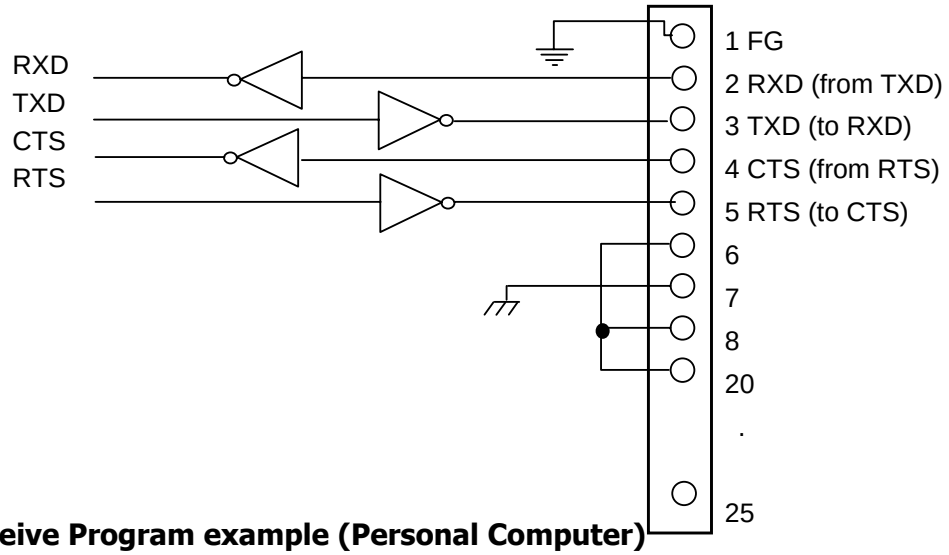
▶ Header 2
- NT : (NET WEIGHT MODE)
- GS : (GROSS WEIGHT MODE)

▶ WEIGHT (8)
- SIGN Signal (+ or -)
- Weight (Decimal Point Included)

▶ DATA For Number
- 2B(H) " " : PLUS
- 2D(H) " " : MINUS
- 2O(H) " " : SPACE
- 2E(H) " . " : Decimal Point

▶ Unit
- k : Unit of Kg
- t : Unit of TON
- l b : Unit of Pound

☒ RS-232C Circuit (25PIN -Type Female Connector)



▣ Receive Program example (Personal Computer)

In case of setting of F30-00, F31-00, F32-00, F33-00, F34-00

Basic Program

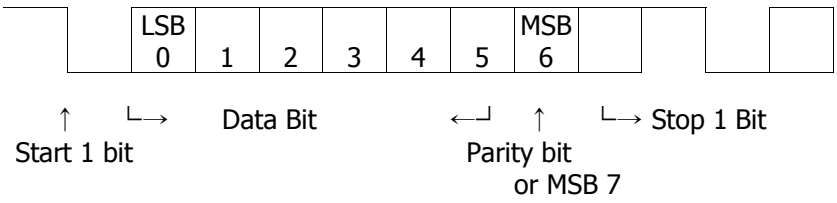
```
10  OPEN "COM1: 300, E, 7, 1, DS, CS" AS # 1
20  INPUT #1, A$, B$, C$
30  PRINT A$, B$, C$
40  GOTO 20
```

5-3-1. RS-232C SERIAL INTERFACE

▣ SIGNAL FORMAT

- Type : EIA RS-232C
- Method : Half-duplex, Non-synchronize, Bi-direction
- Format : ⓐ Baud rate : 300,600,1200,4800,9600,14.4k,19.2k,28.8k,38.4k,bps(Baud-Rate)
  ⓑ Data bit : 7 or 8 (No parity)
  ⓒ Stop bit : 1
  ⓓ Parity bit : Even, Odd, No parity
  ⓔ Code : ASCII

0	+10V
1	-10V



▣ STREAM MODE

Stream Mode output a data by A/D conversion.

☒ DATA FORMAT

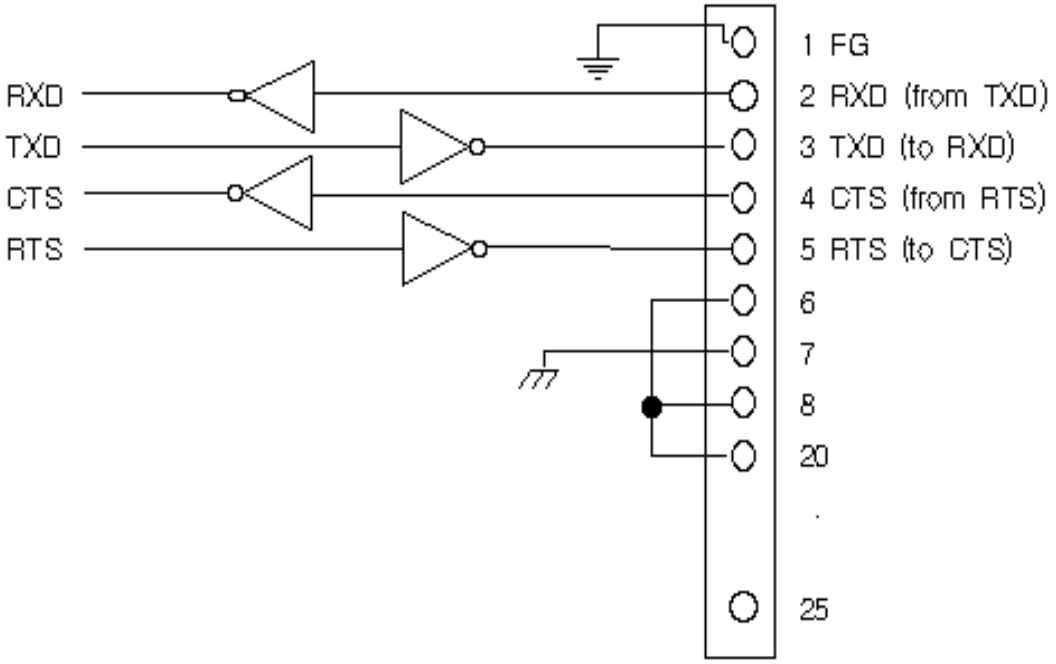
(STX)	1	2	,	S	T	,	N	T	,	+			k	g	(CR)	(LF)
														t		
FC ID. No			Header1			Header2				weight (8)			l	b		

Unit

- ▶ FC(First Character)
  - Insert in case of SETUP F34-01
- ▶ ID. o
  - Insert in case of except SETUP F90- "00"
- ▶ Header 1
  - OL : OVER LOAD
  - UL : UNDER LOAD
  - ST : WEIGHT STEADY
  - US : WEIGHT WAVE
- ▶ Header 2
  - NT : (NET WEIGHT MODE)
  - GS : (GROSS WEIGHT MODE)

- ▶ WEIGHT (8)
  - SIGNAL (+ or -)
  - Weight (Included Decimal point)
- ▶ DATA For Number
  - 2B(H) " " : PLUS
  - 2D(H) " " : MINUS
  - 2O(H) " " : SPACE
  - 2E(H) " . " : Decimal Point
- ▶ Unit
  - k : Unit of Kg
  - t : Unit of TON
  - l b : Unit of Pound

▣ **RS-232C Circuit (25P D-Type Female Connector)**



▣

Receive Program example (Personal Computer)

F30-00, F31-00, F32-00, F33-00, F34-00

Basic Program

```
10  OPEN "COM1: 300, E, 7, 1, DS, CS" AS # 1
20  INPUT #1, A$, B$, C$
30  PRINT A$, B$, C$
40  GOTO 20
```

5-3-2. CURRENT LOOP (OP-02)

▣ SINGAL FORMAT

0	20mA
1	0mA

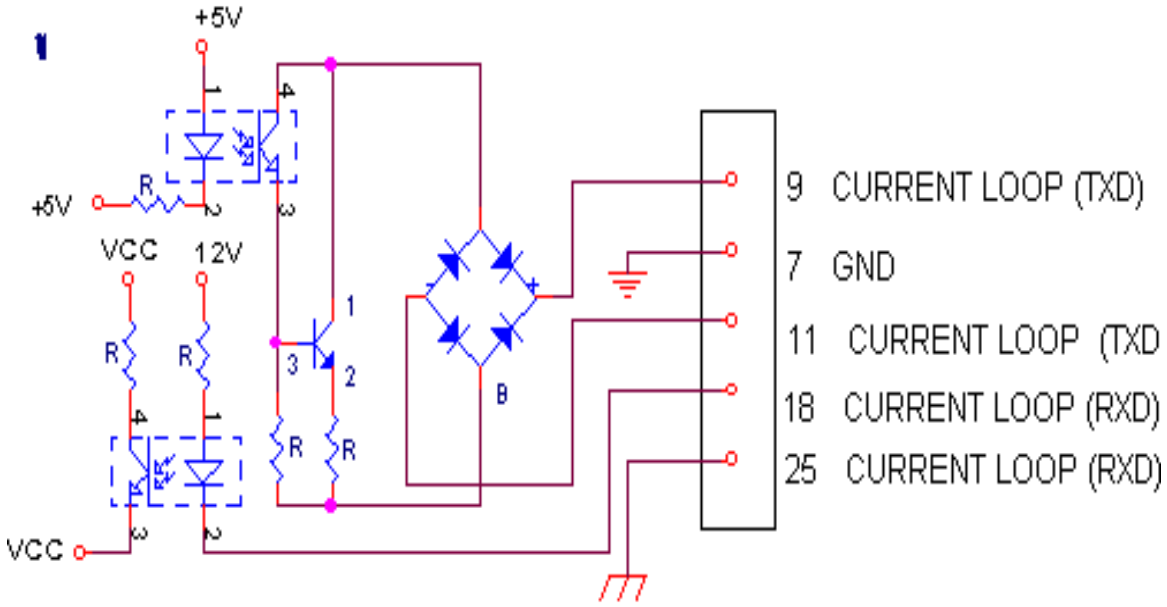
Same as 5-1 RS-232 option
It must use the interface speed with 4800bps.
The distance recommend is 100 M and the resistance is 500 Ω

▣ DATA FORMAT

Same as 5-1 RS-232 option

▣ 25P D-Type Female Connector

* The transmission terminal was made with Non-polarity.
* The receive terminal was powered with 12V.



COMMAND MODE FORMAT

COMMAND	FUNCTION	RESPONSE	
		COMMAND MODE (F32-04)	Transfer Mode
R CR LF	demand current weight	Standard DATA FORMAT	No receive
T CR LF	Same as [TARE] Key	ACK CR LF	NO
KT weight(6) CR LF	Same as [TARE] Key	ACK CR LF	NO
G CR LF	Change to 'Gross Weight	ACK CR LF	NO
N CR LF	Change to 'Net Weight	ACK CR LF	NO
Z CR LF	Same as [ZERO] Key	ACK CR LF	NO
P CR LF	Same as [PRINT] Key	ACK CR LF	NO
A CR LF	Same as [Sub-total] Key	ACK CR LF	NO
M CR LF	Remove Auto setting	ACK CR LF	NO
ST CR LF	Same as [Sub-total] Key	ACK CR LF	NO
GT CR LF	Same as [TOTAL] Key	ACK CR LF	NO
STC CR LF	Deleting Sub-total	ACK CR LF	NO
GTC CR LF	Deleting TOTAL	ACK CR LF	NO
HON CR LF	Setting HOLD	ACK CR LF	NO
HOF CR LF	Remove HOLD	ACK CR LF	NO
PN Part(2) CR LF	Change PART	ACK CR LF	NO
CD 코드(6) CR LF	Setting CODE 6numerial	ACK CR LF	NO
DT YYMMDD CR LF	Setting DATE	ACK CR LF	NO
TI HHMMSS CR LF	Setting TIME	ACK CR LF	NO
RDT CR LF	Amend DATE	YY MM DD CR LF	No receive
RTI CR LF	Amend TIME	HH MM SS CR LF	No receive
RPN CR LF	Amend PART	PART(2) CR LF	No receive
RCD CR LF	Amend CODE NO	CODE (6) CR LF	No receive
RST CR LF	Amend Sub-total data	PART(2), FREQUENCEY(6),WEIGHT(11) CR LF	No receive
RGT CR LF	Amend Total data	FREQUENCEY(8) , WEITHT (13) CR LF	No receive
REN CR LF	Amend The last Weight	WEIGHT(7) CR LF	No receive

* F90- (01-99) : It should add to 2numerial of device ID no.
* F34- 01 : Starting will come to STX(ASCII=02).

5-4. SET-UP FOR CONTROLLING WEIGHT.

SET WEIGHING SYSTEM		
F40-	0	Control Simple Comparison 1 (Limit Mode)
	1	Control Simple Comparison 2 (FALL)
	2	Control Simple Comparison 3 (LO-FALL,HI-FALL)
	3	Control Simple Comparison 4 (Accumulation of 2 Materials)
	4	Sequence Control 1 (Packer Mode)
	5	Sequence Control 2 (Fall)
	6	Sequence Control 3 (LO-FALL,HI-FALL)
	7	Sequence Control 4 (Accumulation of 2 Materials)
	8	Control Weight Judgment1 (Checker Mode)
	9	Control Weight Judgment 2
	10	Control Weight Judgment 3

*** HIGH,LOW Judging Prohibition Time**
This Function is to delay Judging weight for the time set by F44 in case of a Vibration.

*** Weighing Range** : The range to weigh a final weight after prohibition time for HIGH weight judging.
a) Manual Weighing : Total weight in inputting printer key **F46-00.**
b) Steady : Total weight when it was steady **F46-01**
c) Steady & Time : Total weight after a general time for the above (b) **F46-02.**
d) Time : Total weight after time set by **F41**

*** ZERO/TARE INPUT**: Function to keep ZERO the present weight before weighing.

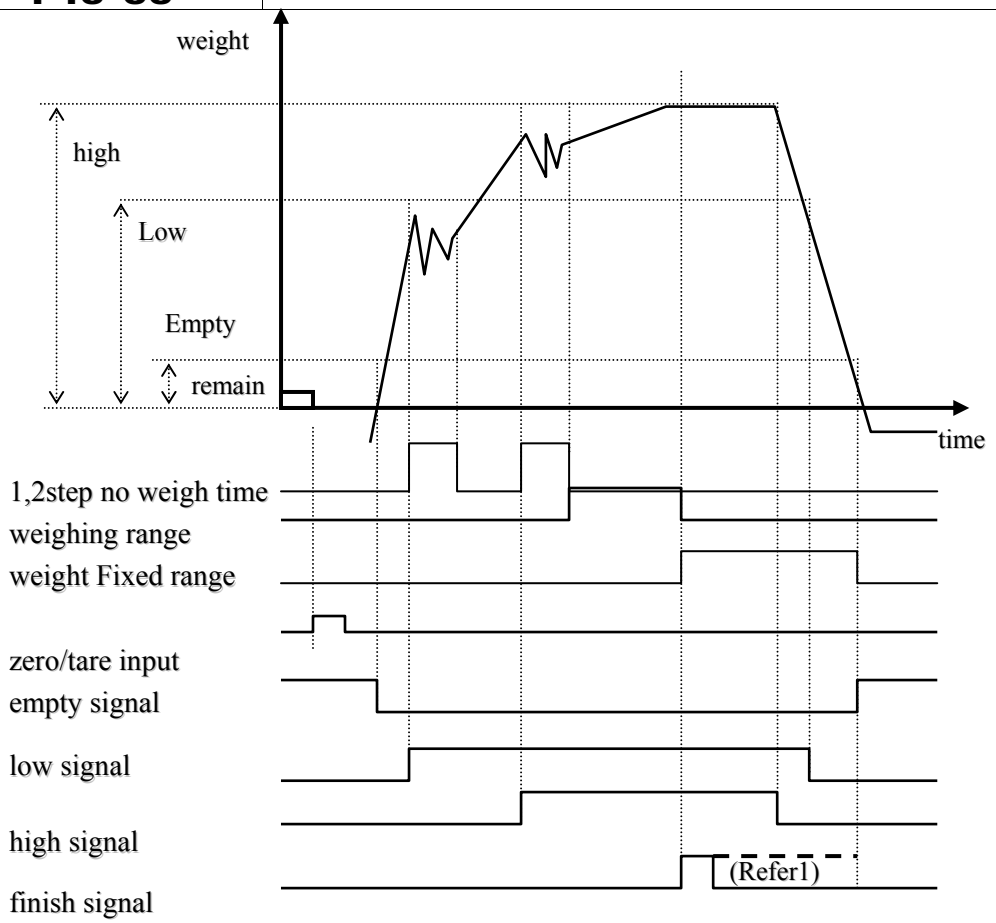
***EMPTY Signal:** It occurs a empty signal when the weight of a weighing part was less than.
- **F13** : SET EMPTY MODE
- **F14** : SET EMPTY SIZE when **F13-02,F13-03**.
- **F15** : SET weight Comparison (Display Weight, Basic ZERO)
  Recommend **F15-01(Basic ZERO)**.

*** FINISH Signal** : **ON** in weighing and **OFF** after Time set by **F42**

5-4-1 Control Simple Comparison 1 SET

Control Simple Comparison 1

F40-00



▣ High, Low Control signal according to the weight was changed.
When Each weight was same with or grater than set weight
Then, it is signal is ON, less than is OFF

▣ The weighing range according to F45 occur the high, low signal from Input-weighing(+range),discharge(-range),absolute value

▣ The FALL compensation was unavailable

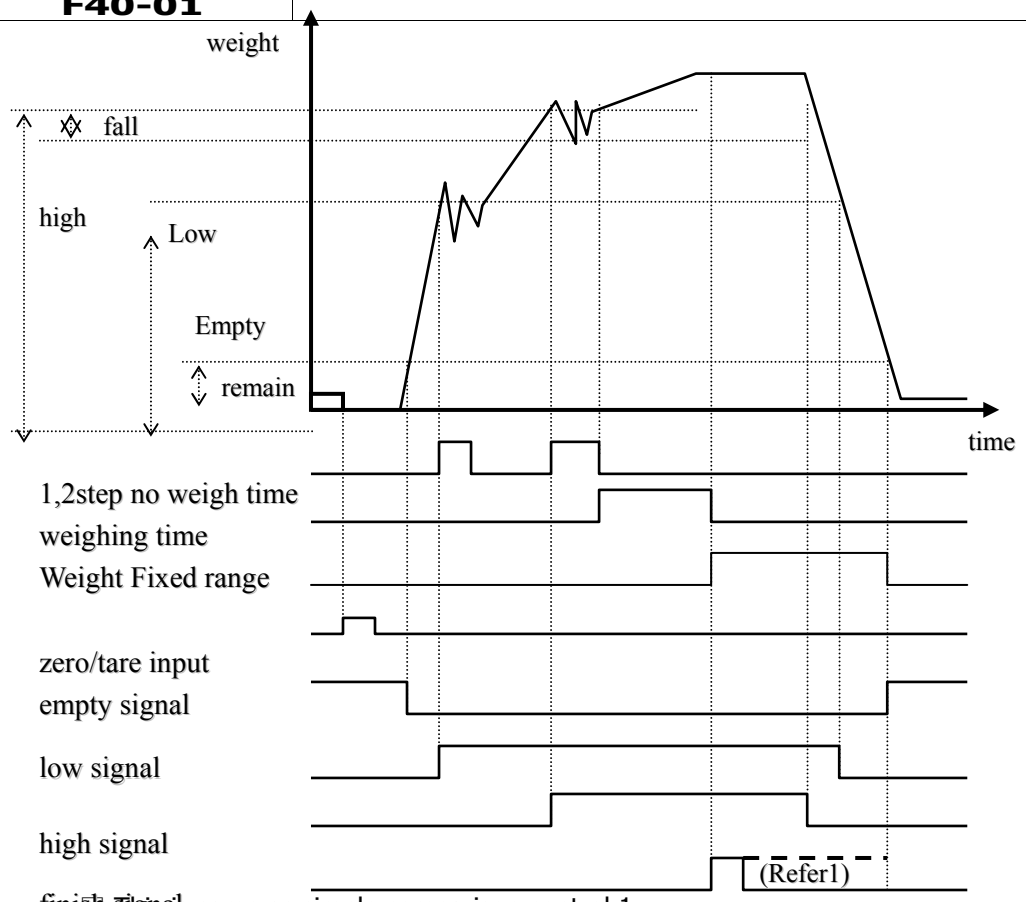
▣ It keeps the finish signal till the empty range by (refer1) **F42-00 setting.**

OUT 1 : LOW		OUT 2 : HIGH		OUT 3 : FINISH		OUT 4 :EMPTY	
F40	0			**F44**	Set prohibited time of weighing		
F41	Set Finish weighing time after high signal			**F45**	Set weighing range(input, output)		
F42	Set time of finish signal			**F46**	Finish Standard (Manual, Time, Steady)		
F43	Set FALL & No Compensation			**F47**	Weight Hold in weighing finish		

5-4-2 Control Simple Comparison 2 SET

Control Simple Comparison 2

F40-01



▣ High is same as simple comparison control 1,
High control signal was different by FALL set
HIGH SIGNAL = HIGH SET - FALL
HIGH SET is very more convenient by setting a final weighing target
Also, auto fall compensation(F43) made the weight value precise

▣ High, Low Control signal according to the weight was changed.
When Each weight was same with or grater than set weight
Then, it is signal is ON, less than is OFF

▣ The weighing range according to F45 occur the high, low signal from
Input-weighing(+range), discharge (-range),absolute value

▣ The FALL compensation was unavailable

▣ It keeps the finish signal till the empty range by (refer 1) **F42-00 setting.**

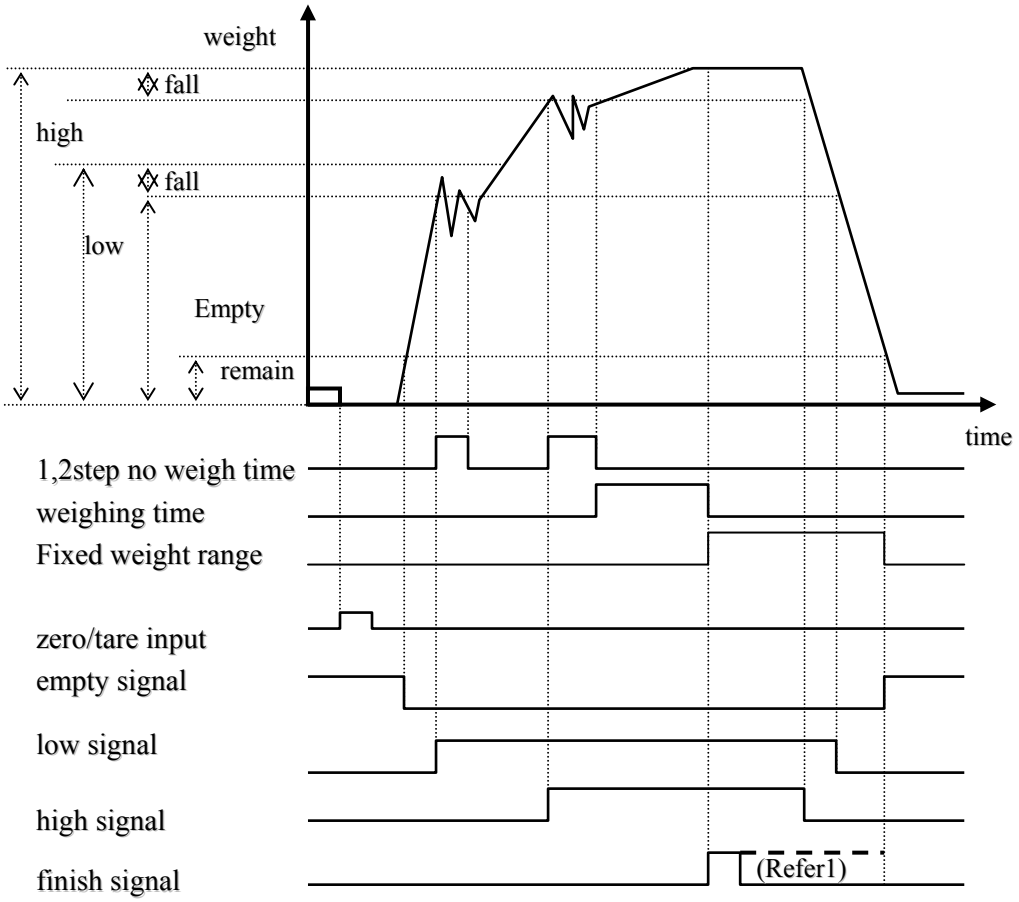
OUT 1 : LOW	**OUT 2 : HIGH**	**OUT 3 : FINISH**	**OUT 4 :EMPTY**

F40	1	**F44**	Set prohibited time of weighing
F41	Set Finish weighing time after high signal	**F45**	Set weighing range(input, output)
F42	Set time of finish signal	**F46**	Finish Standard (Manual, Time, Steady)
F43	Set FALL & No Compensation	**F47**	Weight Hold in weighing finish

5-4-3 Control Simple Comparison 3 SET

Control Simple Comparison 3

F40-02



▣ This is same as simple comparison control 1,
High, Low control signal was different by High, Low Fall set
LOW SIGNAL = LOW SET - LOW FALL
HIGH SIGNAL = HIGH SET - HIGH FALL
By setting Several Fall to HIGH,LOW Set,
HIGH,LOW can be controlled by 1step control.
Only, auto fall compensation(F43) was unavailable

▣ High, Low Control signal according to the weight was changed.
When Each weight was same with or grater than set weight
Then, it is signal is ON, less than is OFF

▣ The weighing range according to F45 occur the high, low signal from
Input-weighing(+range), discharge (-range),absolute value

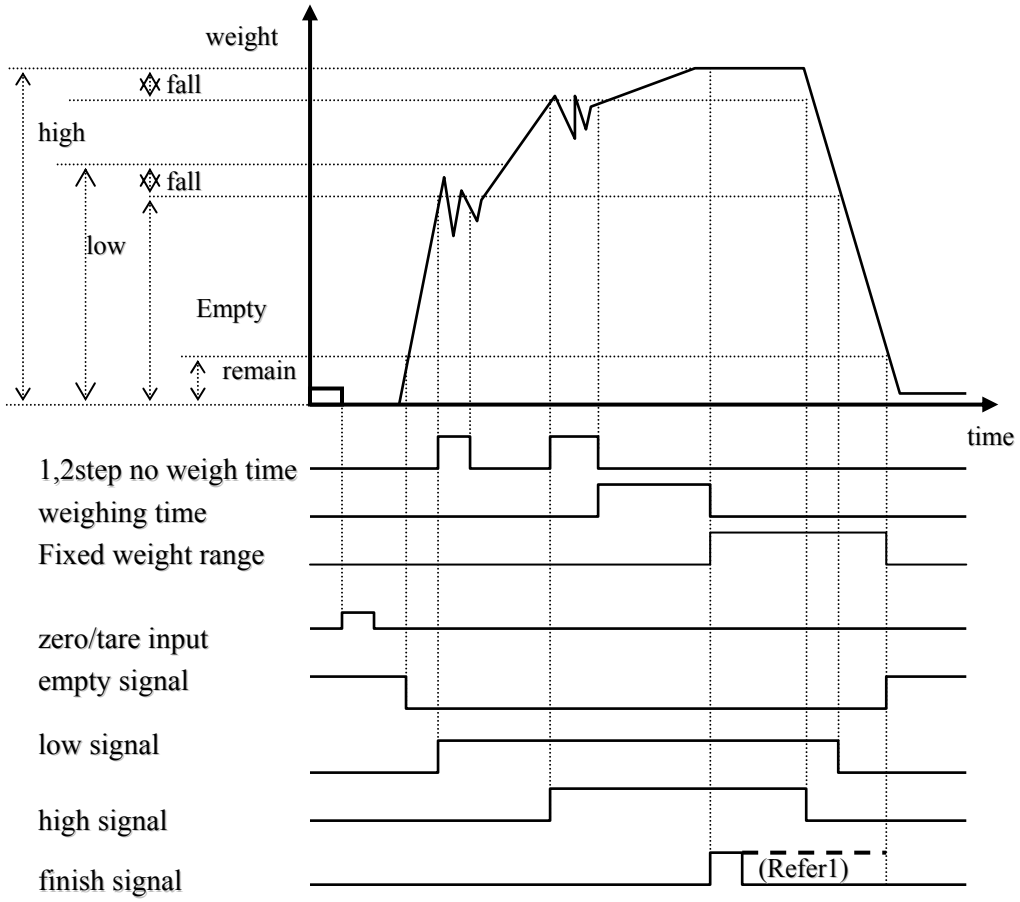
▣ It keeps the finish signal till the empty range by (refer1)
F42-00 setting.

OUT 1 : LOW		**OUT 2 : HIGH**		**OUT 3 : FINISH**		**OUT 4 :EMPTY**
F40	2		**F44**	Set prohibited time of weighing		
F41	Set Finish weighing time after high signal		**F45**	Set weighing range(input, output)		
F42	Set time of finish signal		**F46**	Finish Standard (Manual, Time, Steady)		
F43	Set FALL & No Compensation		**F47**	Weight Hold in weighing finish		

5-4-4 Control Simple Comparison 4 SET

Control Simple Comparison 4

F40-03



▣ This is same as simple comparison control 3,
High, Low was set different by each weight
LOW SIGNAL = LOW SET - LOW FALL
HIGH SIGNAL = LOW SET+(HIGH SET - HIGH FALL)
By setting Several weight to HIGH,LOW Set,
it is very convenient to manage each different weight

▣ Only, auto fall compensation(F43) was unavailable

▣ High, Low Control signal according to the weight was changed.
When Each weight was same with or grater than set weight
Then, it is signal is ON, less than is OFF

▣ The weighing range according to F45 occur the high ,low signal from
Input-weighing(+range), discharge (-range),absolute value

▣ It keeps the finish signal till the empty range by (refer1)
F42-00 setting.

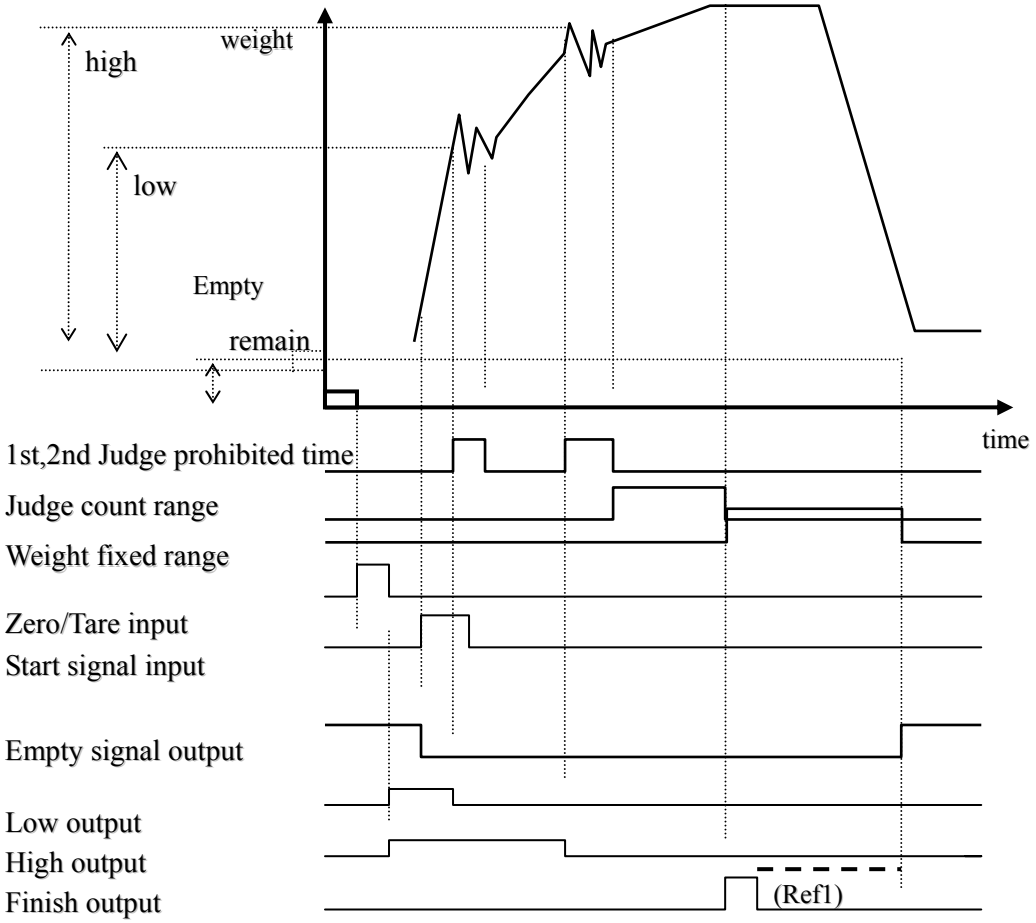
OUT 1 : LOW	**OUT 2 : HIGH**	**OUT 3 : FINISH**	**OUT 4 :EMPTY**

F40	3	**F44**	Set prohibited time of weighing
F41	Set Finish weighing time after high signal	**F45**	Set weighing range(input, output)
F42	Set time of finish signal	**F46**	Finish Standard (Manual, Time, Steady)
F43	Set FALL & No Compensation	**F47**	Weight Hold in weighing finish

5-4-5 Sequence Control 1 set

Sequence Control 1

F40-04



▣ High, Low signal will output by Start Input and will be OFF when it will be the same or more with Setting weight.
FINISH Signal after High signal OFF will be transmitted by F46 Setting and OFF Signal will not be ON even if the weight was less than Setting Value.
Also it had better use STOP Signal in No normal case
and please don't use it normally.

▣ the weight range became input weighing(+range), discharging (- range), or High, Low in the absolute value.

▣ Auto Fall Compensation(F43) will not be available

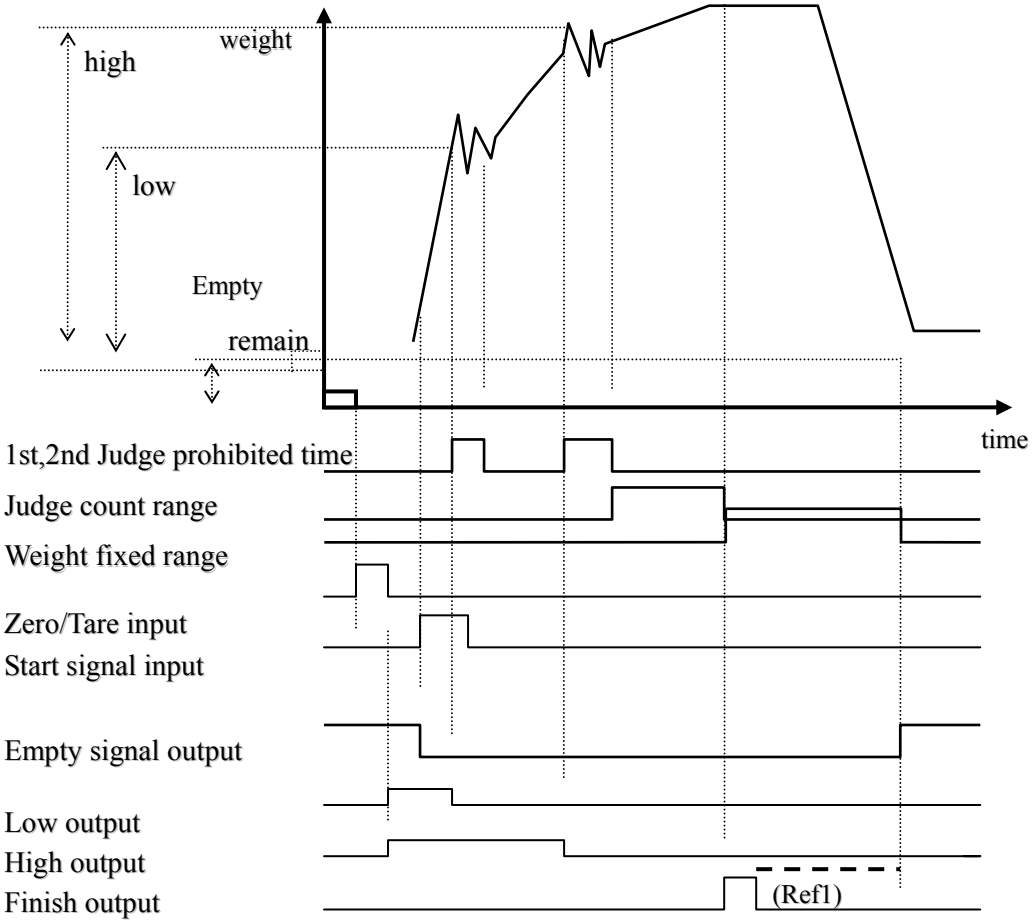
▣ Finish signal will be available until empty range in setting **F42-00**

OUT 1 : LOW		OUT 2 : HIGH		OUT 3 : FINISH		OUT 4 :EMPTY	
F40	4			**F44**	Set prohibited time of weighing		
F41	Set Finish weighing time after high signal			**F45**	Set weighing range(input, output)		
F42	Set time of finish signal			**F46**	Finish Standard (Manual, Time, Steady)		
F43	Set FALL & No Compensation			**F47**	Weight Hold in weighing finish		
				F48	Start Input + ZERO or TARE SET		

5-4-6 Sequence Control 2 set

Sequence Control 2

F40-05



▣ this function was similar to F40-04 but it can be output High signal by Fall Set
HIGH SIGNAL = HIGH SET - FALL
High Set had better use a final target weight also can weigh it correctly by F43

▣ High, Low signal will output by Start Input and will be OFF when it will be the same or more with Setting weight.
FINISH Signal after High signal OFF will be transmitted by F46 Setting and OFF Signal will not be ON even if the weight was less than Setting Value.
Also it had better use STOP Signal in No normal case and don't use it normally.

▣ the weight range became input weighing(+range),
Discharging (- range), or High, Low in the absolute value depending on F45

▣ Auto Fall Compensation(F43) will not be available

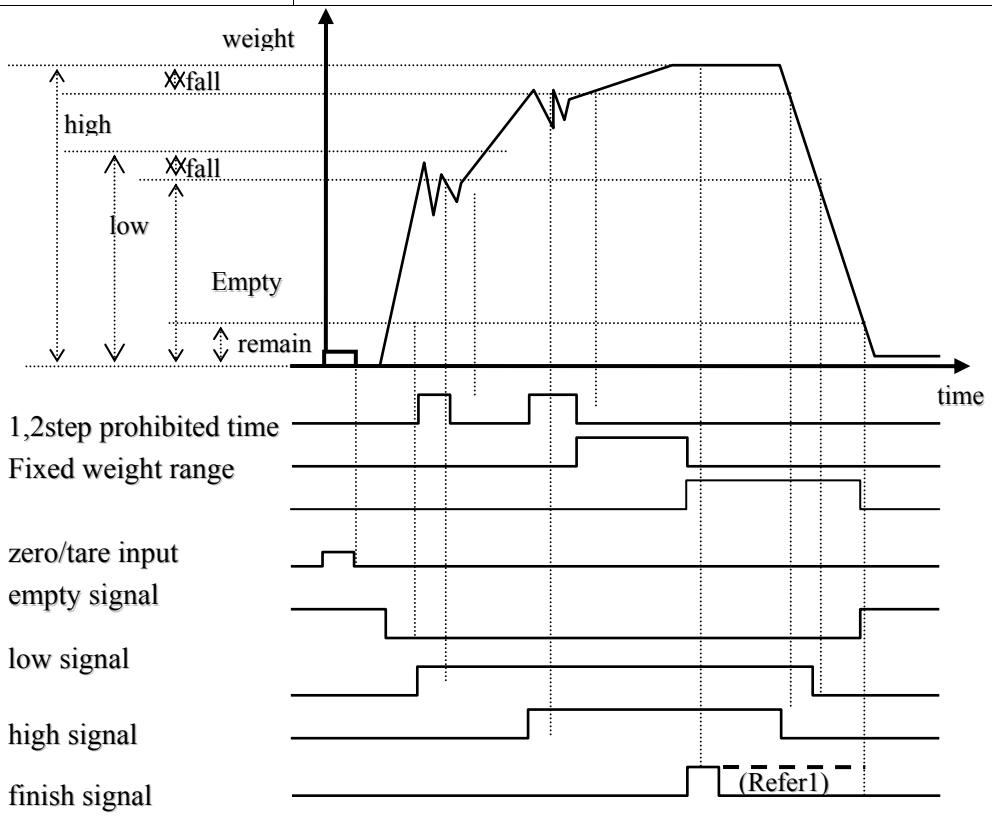
▣ Finish signal will be available until empty range in setting **F42-00**

OUT 1 : LOW		**OUT 2 : HIGH**		**OUT 3 : FINISH**		**OUT 4 :EMPTY**	
F40	5			**F44**	Set prohibited time of weighing		
F41	Set Finish weighing time after high Signal			**F45**	Set weighing range(input, output)		
F42	Set time of finish signal			**F46**	Finish Standard (Manual, Time, Steady)		
F43	Set FALL & No Compensation			**F47**	Weight Hold in weighing finish		
				F48	Start Input + ZERO or TARE SET		

5-4-7 Sequence Control 3 set

Sequence Control 3

F40-06



▣ this function was similar to F40-04 but it can be output High, Low signal by Fall Set of High, Low

LOW SIGNAL = LOW SET – LOW FALL
HIGH SIGNAL = HIGH SET – HIGH FALL

A different Kinds of products can be controlled by 1step signal by an individual FALL Set in HIGH,LOW Set.

▣ Auto Fall Compensation was not available.

▣ High, Low signal will output by Start Input and will be OFF when it will be the same or more with Setting weight.
FINISH Signal after High signal OFF will be transmitted by F46 Setting and OFF Signal will not be ON even if the weight was less than Setting Value.
Also it had better use STOP Signal in No normal case and don't use it normally.

▣ the weight range became input weighing(+range),
Discharging (- range), or High, Low in the absolute value depending on F45

▣ Auto Fall Compensation(F43) will not be available

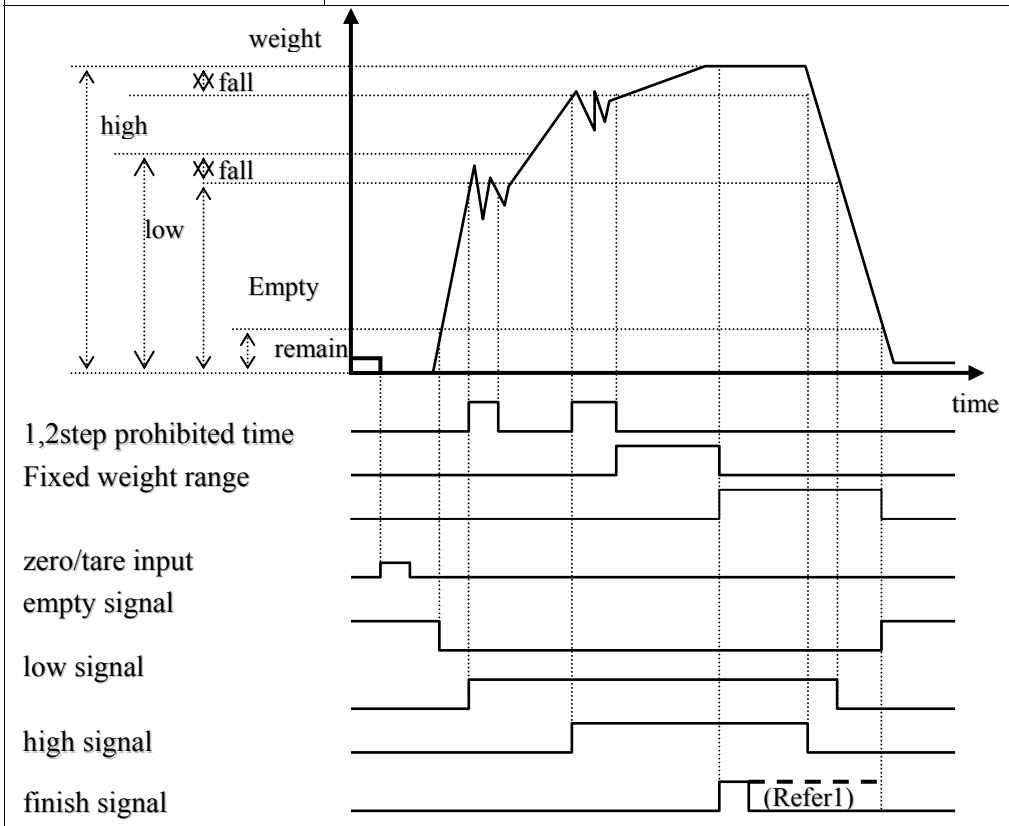
▣ Finish signal will be available until empty range in setting **F42-00**

OUT 1 : LOW		**OUT 2 : HIGH**		**OUT 3 : FINISH**	**OUT 4 :EMPTY**
F40	6		**F44**	Set prohibited time of weighing	
F41	Set Finish weighing time after high Signal		**F45**	Set weighing range(input, output)	
F42	Set time of finish signal		**F46**	Finish Standard (Manual, Time, Steady)	
F43	Set FALL & No Compensation		**F47**	Weight Hold in weighing finish	
			F48	Start Input + ZERO or TARE SET	

5-4-8 Sequence Control 4 set

Sequence Control 4

F40-07



▣ this function was similar to **F40-06** but High, Low signal Can be set by Individual weight each other

LOW SIGNAL = LOW SET – LOW FALL

HIGH SIGNAL = HIGH SET +(HIGH SET – HIGH FALL)

A different Kinds of products can be controlled by 1step signal by an individual FALL Set in HIGH,LOW Set

▣ Auto Fall Compensation was not available.

▣ High, Low signal will output by Start Input and will be OFF when it will be the same or more with Setting weight.
FINISH Signal after High signal OFF will be transmitted by F46 Setting and OFF Signal will not be ON even if the weight was less than Setting Value.
Also it had better use STOP Signal in No normal case and don't use it normally.

▣ the weight range became input weighing(+range), Discharging (- range), or High, Low in the absolute value depending on F45

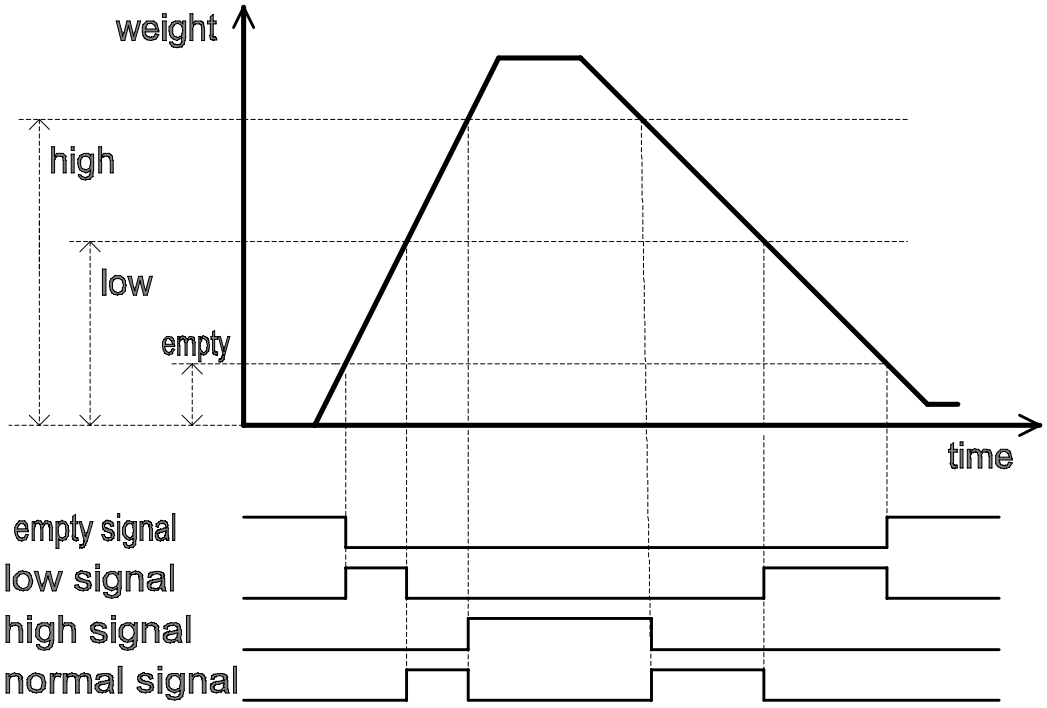
▣ Auto Fall Compensation(F43) will not be available

▣ Finish signal will be available until empty range in setting **F42-00**

OUT 1 : LOW		**OUT 2 : HIGH**		**OUT 3 : FINISH**		**OUT 4 :EMPTY**	
F40	6			**F44**	Set prohibited time of weighing		
F41	Set Finish weighing time after high Signal			**F45**	Set weighing range(input, output)		
F42	Set time of finish signal			**F46**	Finish Standard (Manual, Time, Steady)		
F43	Set FALL & No Compensation			**F47**	Weight Hold in weighing finish		
				F48	Start Input + ZERO or TARE SET		

5-4-8 Check Mode Control 1 set

Check Mode Control 1	
F40-08	



▣ It occurs signal included in range of present weight by high, low set
And signal according to the weight changing

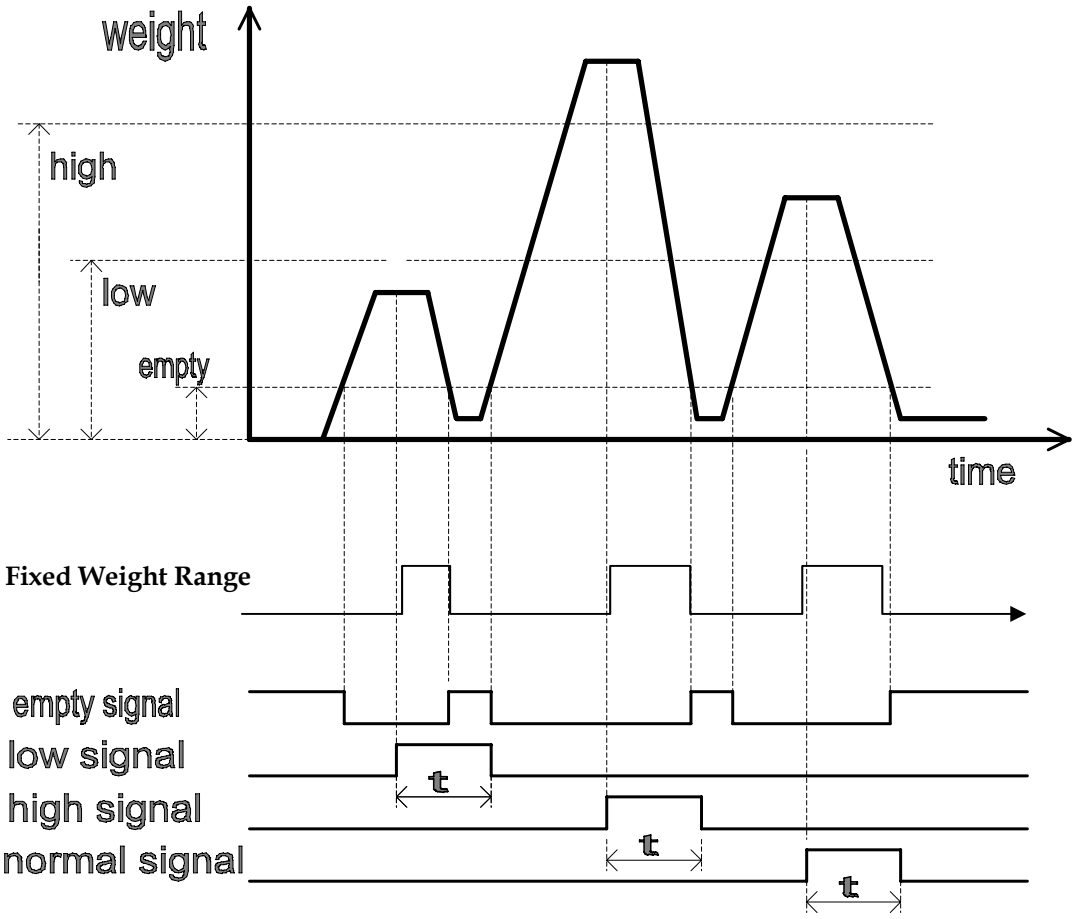
LOW SIGNAL = EMPTY ~ LOW WEIGHT
NORMAL SIGNAL = LOW WEIGHT ~ HIGH WEIGHT
HIGH SIGNAL = FROM WEIGHT MORE THAN HIGH WEIGHT

▣ auto fall compensation(F43) was unavailable
▣ the weight range became (+range), (- range), or in the absolute value depending on F45

OUT 1 : LOW	**OUT 2 : HIGH**	**OUT 3 : NORMAL**	**OUT 4 :EMPTY**
F40	8	**F44**	NO Available.
F41	NO Available .	**F45**	Set weighing range (**+, -, absolute value range**)
F42	NO Available.	**F46**	Available for manual input (Printer KEY)
F43	NO Available	**F47**	No available
		F48	No available

5-4-10 Check Mode Control 2 set

Check Mode Control 2	
F40-09	



▣ It occurs signal included in range of present weight by high, low set the next Judgment can be judged under empty

LOW SIGNAL = EMPTY ~ LOW WEIGHT
NORMAL SIGNAL = LOW WEIGHT ~ HIGH WEIGHT
HIGH SIGNAL = FROM WEIGHT MORE THAN HIGH WEIGHT

▣ the weight range became (+range), (- range), or in the absolute value depending on F45

▣ Finish Signal keeps it until Empty range by **t = F42-00**

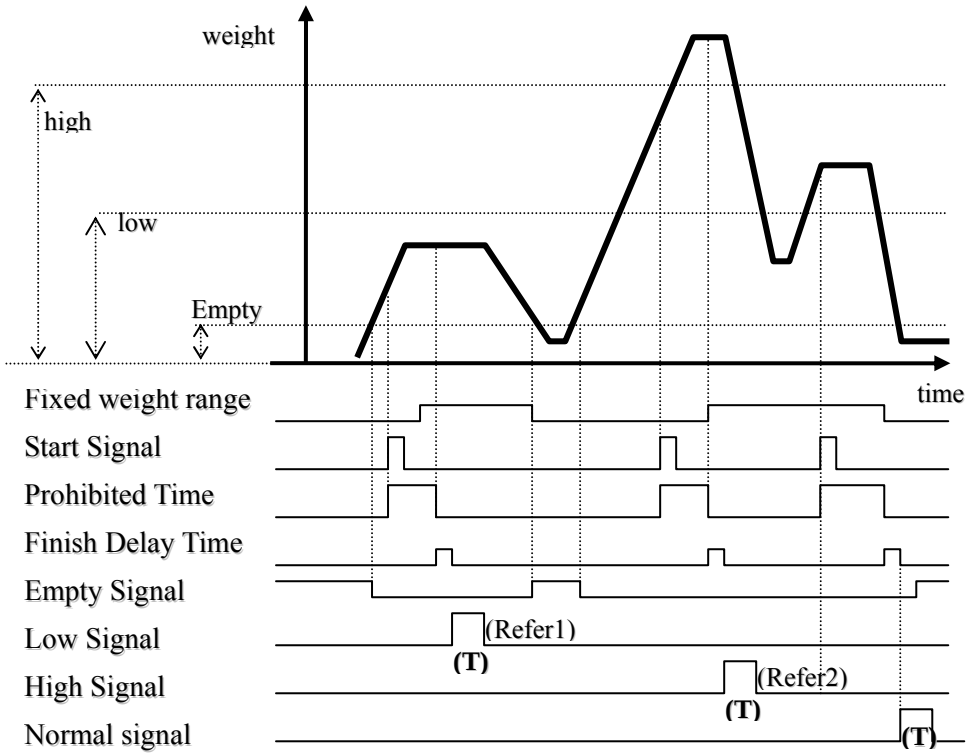
OUT 1 : LOW	**OUT 2 : HIGH**	**OUT 3 : NORMAL**	**OUT 4 :EMPTY**

F40	9	**F44**	NO Available.
F41	NO Available .	**F45**	Set weighing range (**+**, **-, absolute value range**)
F42	Set the range of Finish Signal	**F46**	Manual or Steady
F43	NO Available	**F47**	Hold Function in weighing
F08	Steady Finish Delay Time SET	**F48**	No available

5-4-10 Check Mode Control 3 set

Check Mode Control 2

F40-10



▣ Finish Delay Signal will be output by Start Signal and the range signal will output depending on the HIGH,LOW Set after Finish Delay Time.

OW SIGNAL = EMPTY ~ LOW WEIGHT
NORMAL SIGNAL = LOW WEIGHT ~ HIGH WEIGHT
HIGH SIGNAL = FROM WEIGHT MORE THAN HIGH WEIGHT

▣ the weight range became (+range), (- range), or in the absolute value depending on F45
▣ Finish Signal keeps it until Empty range by **t = F42-00**
▣ Refer 1) Finish Signal keeps it until Empty by **F42-00**
▣ Refer 2) Finish Signal keeps it until Start Input by **F42-00**

OUT 1 : LOW	**OUT 2 : HIGH**	**OUT 3 : NORMAL**	**OUT 4 :EMPTY**
F40	10	**F44**	NO Available.
F41	NO Available .	**F45**	Set weighing range (**+, -, absolute value range**)
F42	Set the range of Finish Signal	**F46**	Manual or Steady
F43	NO Available	**F47**	Hold Function in weighing
		F48	No available

Delay time for End Judgment		
F-41	0 99	This is the delay time for the weighing judgement after the final setting value is operated. 0 = 0 sec 1 = 0.1 sec 99 = 9.9 sec ***First Setting : 10(1sec)**

Maintaining time for End judgment		
F-42	0 99	Set the maintaining time of End judgment signal. 0 = Continuous maintaining 1 = 0.1 sec 99 = 9.9 sec ***First Setting : "00"(Continuous)**

Function SETTING For FALL COMPANSTION		
F-43	0	NO FALL COMPENSATION
	1	80% FALL COMPENSATION WITH 5Times
	2	90% FALL COMPENSATION WITH 10Tmes
	3	90% FALL COMPENSATION WITH 20Times
	4	100% FALL COMPENSATION WITH 50Times
Fall Compensation will not be available if setting weight was over ± 10% range		

Setting for Judge Prohibited Time		
F-44	0 99	Judgment will not be done for this function setting time after 1^{st},2^{nd} Relay. ***First Setting : "03"(sec)**

SETTING For a weighing Range		
F-45	0	" + " only Control Signal possible
	1	Absolute Value Control Signal Possible
	2	" + " only Control Signal possible

SETTING For Finish Judgment system		
F-46	0	Printer key
	1	Finished Signal by Safe Signal
	2	Finished Signal by Safe Signal or F41
	3	Finished Signal by F41
Automatic Histogram when Finish Relay work		

SETTING For Finish Display system		
F-47	0	Display for weight change
	1	Empty Signal or Start Signal

SETTING ZERO ,TARE WHEN START TO IINPUT		
F-48	0	No Function
	1	ZERO setting by F07 only
	2	Setting TARE

5-5. Additional Set up Function

5-5-1 OP - 03 BCD OUTPUT

Parallel BCD OUT is a device to output after make the displayed weight into BCD CODE.
Also, this device is to control, display, record as connected with PLC(Programmed Logic Control).

* A recommend distance is in 10 M
* BCD code makes a denary into 4figure of a binary number

(Example)
In case of BCD 1987, it display **0001 1001 1000 0111**

BCD OUTPUT Weight Selecting		
F50-	⓪	Displayed Weight Value
	1	GROSS Weight
	2	NET Weight

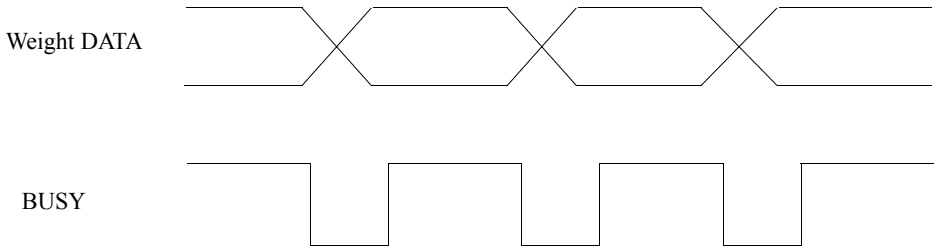
BCD OUTPUT POLARITY		
F51-	⓪	Positive Logic
	1	Negative Logic

☒ Connected Pin Diagram

PIN NO	S I G N A L
1	GROUND (GND)
2	1×10^0
3	2×10^0
4	4×10^0
5	8×10^0
6	1×10^1
7	2×10^1
8	4×10^1
9	8×10^1
10	1×10^2
11	2×10^2
12	4×10^2
13	8×10^2
14	1×10^3
15	2×10^3
16	4×10^3
17	8×10^3
18	1×10^4
19	2×10^4
20	4×10^4
21	8×10^4
22	1×10^5
23	2×10^5
24	4×10^5
25	8×10^5

PIN NO	S I G N A L
26	Hi : Net LOW : Gross
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	EX. Vcc
38	
39	EX. Vcc
40	
41	
42	Hi : Positive Polarity
43	Decimal Point 10^1
44	" 10^2
45	" 10^3
46	
47	OVER LOAD
48	
49	BUSY
50	HOLD (INPUT)

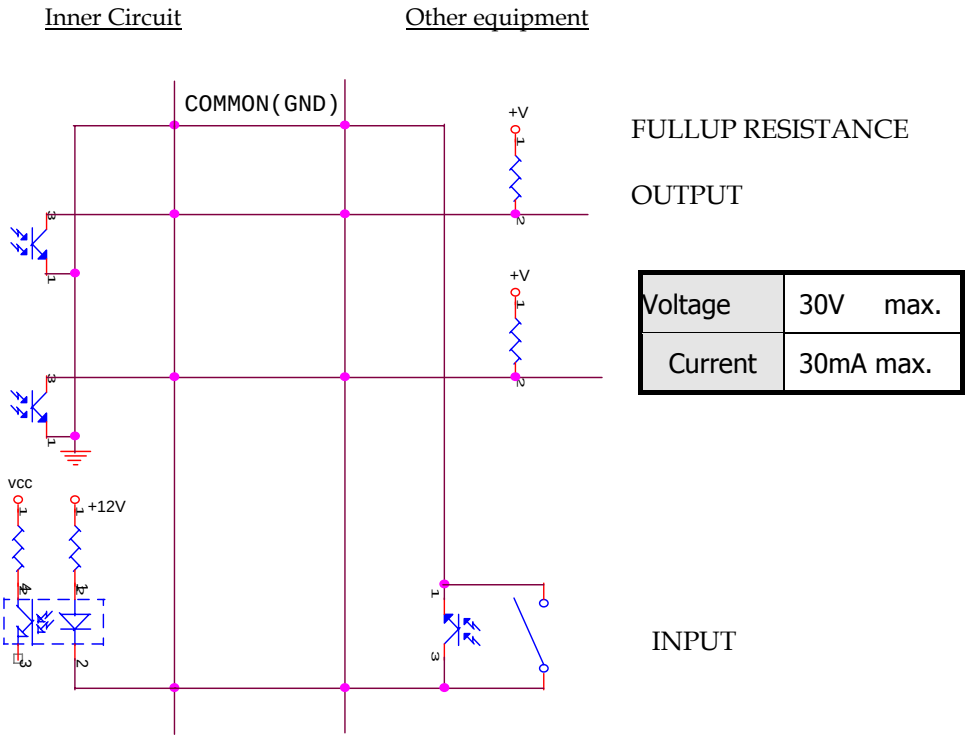
► 50 PIN CONNECTOR: CHAMP 57-40500(Ampheonol) (Female)
► TTL OPEN-COLLECTOR OUTPUT
► HOLD INPUT should be connected with OPEN COLLECTOR TYPE or Switch Earth.
► And OUTPUT DATA will hold while HOLD INPUT



▪ Signal Logic

①	BCD DATA Out	→ Positive logic
②	POLARITY	→ " — " = H
③	OVER	→ " OVER " = H
④	BUSY	→ " BUSY " = H
⑤	BCD HOLD	→ " BUSY " = L

☒ BCD OUTPUT CIRCUIT



Voltage	30V max.
Current	30mA max.

► OUTPUT CIRCUIT IS OPEN COLLECTOR TYPE
► If output demand TTL LEVEL ,insert full up - resistance to a board of BCD OPTION
► When inserting a full up resistance ,please change 5v ~ 30V in **37,39 NO** Resistance and Voltage .

5V = 1 kΩ , 10V = 2 kΩ , 15V = 2.7kΩ , 24V = 5 kΩ

5-5-2 OP-04 RS-422 / 485 Serial Interface

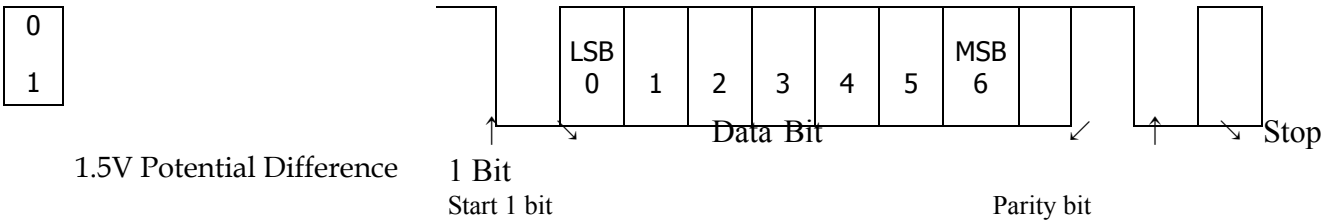
- RS-422/485 is to transmit signal by voltage deviation and more stable than others.
- RS- 485 should be connected as follows.

  RXD(+) + TXD(+), RXD(-) + TXD(-)
- Please Specially connect them Separately disconnecting AC Power Cable or Other Wire
- Also Cable should be surely connected with Shield Twist Cable.
- Recommend Distance is in **1.2 km** .
- It should connect Termination Resistance of 300Ωon the end side of wire.

☒ SINGAL FORMAT

① TYPE : RS-422/485

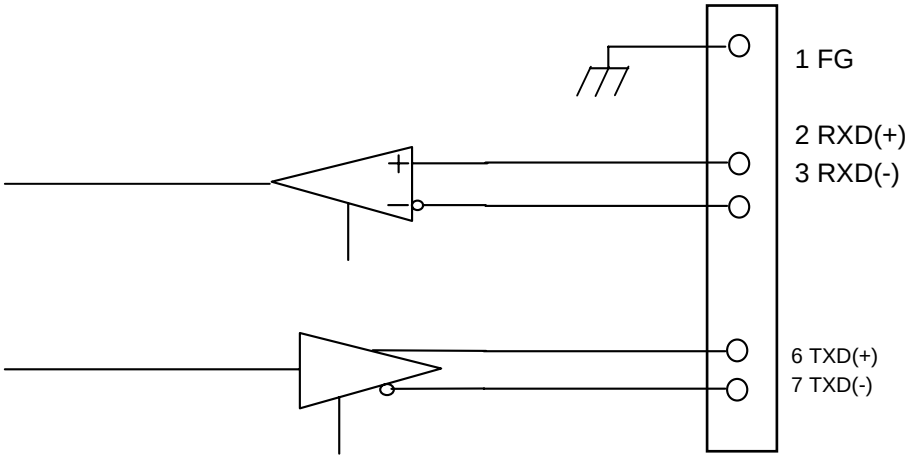
② FORMAT : ⓐ Baud-Rate : 300 ~ 38.4k . Selection
ⓑ Data Bit : 7 or 8 (NO Parity)
ⓒ Stop : 1
ⓓ Parity Bit : Even, Odd, NO Parity Selection
ⓔ Code : ASCII



☒ DATA FORMAT

- It is the Same with RS - 232C

☒ RS-422 / 485 Circuit (9P D-Type Female Connector)



5-4-3 OPTION-05/06 ANALOG OUT

- This option is a device to output and convert the weight value to External device(Recorder P.L.C Center control so) controlled by Analog Signal.
- The voltage output occurs the voltage according to the size of weight in 0V ~10V.
- The current output occurs the current according to the size of weight in 4mA~20Ma
- The precision of Analog output is Max.1/3000
- It will not be suitable for a high precision over 1/3000

Select Weight for Analog Out		
F60-	⓪	Displayed Weight value
	1	GROSS Weight
	2	NET Weight
Gross or Net Weight can be different with weight value displayed		

Select Analog Out Standard		
F61-	⓪	Max. Weight Standard
	1	Standard value setup by F-63

Select Analog Out Polarity		
F62-	⓪	Positive out : 4mA, 0V while weight is 0
	1	Negative out : 20mA, 5V, 10V while weight is 0

SET Standard Weight For Analog Out	
F63-	Analog max out value when weight setup. **<u>* first Setting 000000</u>**

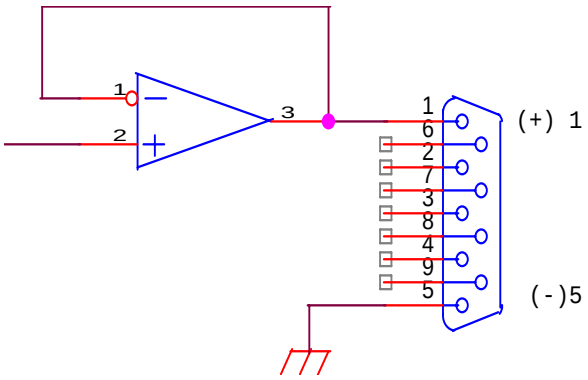
5-4-3V OP-05 voltage (0 ~ 10V) ANALOG OUT

- Voltage output occurs proportionally according to the weight range In 0V ~10V.
- Type of voltage output can be adjusted according to SET UP F60

☒ SPECIFICATION

Output Voltage	0~ 10V DC output
Precision	Max 1/3000
Min Load Impedance	More than 1 kΩ

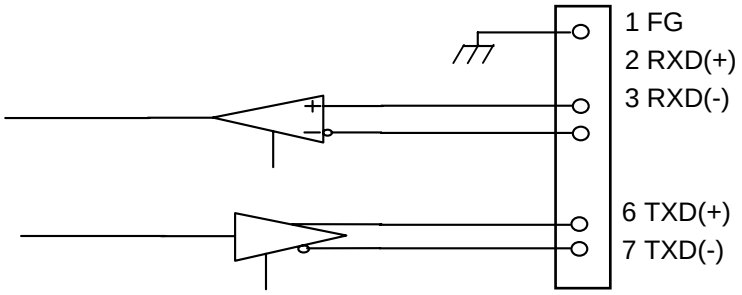
☒ Connector Pin Diagram(9P D-TYPE Female)& Voltage out circuit



※ Caution

Because NO 5(-) Terminal is not GND, It should not connect with GND line or BODY GND

☒ Adjustment



① If the weight was 0 then 0V and was Max. Weight then 10V.

※Caution

Because display weight and output voltage may be different in case of Gross/Net Weight. Be careful that the weight setting should be checked out before.

② When output voltage was measured by digital multi-meter then if it was different then adjust VR1(ZERO), VR2(SPAN) located in Analog output PCB inside Digital Indicator.

☒ How to calibrate for output rate between 0v and 10v.

① Adjust voltage with 0V when display weight is 0(ZERO) by VR1(ZERO)

② Adjust voltage difference with 10V when display weight is 0(ZERO) and Max. weight by VR2(SPAN)

③ Adjust voltage with 0V when display weight is 0(ZERO) by VR 1(ZERO).

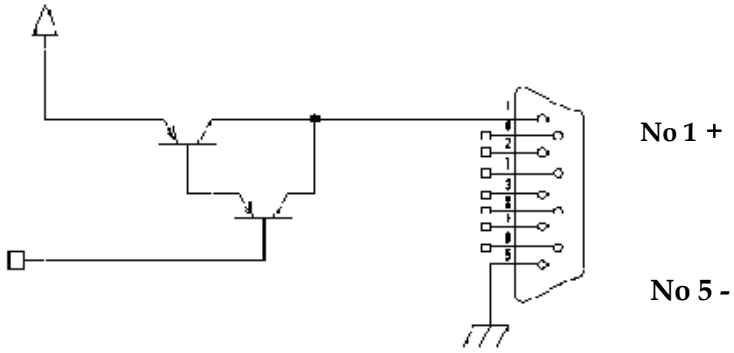
5-4-3I OP -06 Electric current (4 -20mA) ANALOG OUT

- Voltage output occurs proportionally according to the weight range In 4 ~20 mA
- Type of voltage output can be adjusted according to SET UP F60

☒ Specification

output Voltage	4 ~ 20 mA DC Current out
Precision	Max 1/3000
Min. Load Impedance	More than 500 Ω

☒ Connector Pin Diagram(9P D-TYPE Female & Current out circuit)



※ Caution

Because NO 5(-) Terminal is not GND, It should not connect with GND line or BODY GND

☒ Adjustment

① If the weight was 0 then 4mA and was Max. Weight then 20mA.

※Caution

Because display weight and output voltage may be different in case of Gross/Net Weight. Be careful that the weight setting should be checked out before.

② When output voltage was measured by digital multi-meter then if it was different then adjust VR1(ZERO), VR2(SPAN) located in Analog output PCB inside Digital Indicator.

☒ How to calibrate for output rate between 0v and 10v.

① Adjust voltage with 4mA when display weight is 0(ZERO) by VR1(ZERO)

② Adjust voltage difference with 16mA when display weight is 0(ZERO) and Max. weight by VR2(SPAN)

③ Adjust voltage with 4mA when display weight is 0(ZERO) by VR 1(ZERO).

5-4-4. OP-07 PRINTER

- This printer Interface have Centronics Parallel and Serial system.
- SERIAL is from 1 to 999999
- CODE figure is 6(six) and set according each PART.
- SUB TOTAL can be recorded Until 10figures.
- GRD TOTAL can be recorded Until 12figures.
- The data can be kept in spite of stoppage of the power

PRINTER SHEET SELECT		
F71-	⓪	PRINT SHEET 0
	1	PRINT SHEET 1
	2	PRINT SHEET 2
	3	PRINT SHEET 3
	4	PRINT SHEET 4

PRINT SHEET 0

```
============
   DATE  :  1999-01-01
   TIME  :     12:35:07
   CODE  :      123456
SERIAL  PART  WEIGHT
     1     1      1.000 kg
     2     1      1.100 kg
     3     1      1.200 kg
     4     1      0.900 kg
     5     1      1.000 kg
============
 SUB-TOTAL
START : 1998-12-30  8:12
  END : 1999-01-01 14:26
    PART :          01
    CODE  :     123456
  COUNT =            5
 WEIGHT =       5.200 kg
```

PRINT SHEET 1

```
============
   DATE  :  1999-01-01
   TIME  :     12:35:07
   CODE  :      123456
SERIAL  PART  WEIGHT
     1     1      1.000
kg
============
   DATE  :  1999-01-01
   TIME  :     12:35:07
   CODE  :      123456
SERIAL  PART  WEIGHT
     2     1      1.000
kg
============
 SUB-TOTAL
START : 1998-12-30  8:12
  END : 1999-01-01 14:26
    PART :          01
    CODE  :     123456
  COUNT =            2
 WEIGHT =       2.000 kg
```

PRINT SHEET 2

```
====================
  DATE   :   2001-01-01
  TIME    : 12:35:07
  CODE :    123456
 SERIAL   PART   WEIGHT
 GROSS   NET   WEIGHT
     1       1       20.00 kg
 520.00kg         500.00 kg
     2       1       20.00 kg
 530.00kg         510.00 kg
====================
  SUB-TOTAL
 START : 1998-12-30   12:35
    END : 1999-01-01   12:38
    PART :            01
   CODE   :       123456
  COUNT =              5
  WEIGHT=     110.00kg
```

PRINT SHEET 3

```
====================
  DATE   :   2001-01-01
  TIME    : 12:35:07
  CODE :    123456
 SERIAL   PART   WEIGHT
 GROSS   NET   WEIGHT
     1       1       20.00 kg
 520.00kg         500.00 kg
     2       1       20.00 kg
 530.00kg         510.00 kg
====================
DATE : 2001-01-01
TIME   :12 : 38 : 07
CODE : 123656
SERIAL   PART   WEIGHT
 GROSS   NET   WEIGHT
     1       1       20.00 kg
 520.00kg         500.00 kg
     2       1       20.00 kg
 530.00kg         510.00 kg
====================
  SUB-TOTAL
 START : 1998-12-30   12:35
    END : 1999-01-01   12:38
    PART :            01
   CODE   :       123456
  COUNT =              5
  WEIGHT=     110.00kg
```

PRINT SHEET 4

```
====================
  DATE   :   2001-01-01
  SERIAL : 123456
  CODE   : 765432
  GROSS : 24.560 Kg.
  TARE   :   5.670 Kg
  NET    : 18.890 Kg

====================
D/T : 2002-05-21 12:38
  SERIAL : 123456
  CODE   : 765432
  GROSS : 24.560 Kg.
TARE   :   5.670 Kg
  NET    : 18.890 Kg

====================
D/T : 2002-05-21 12:45
  SERIAL : 123456
  CODE   : 765432
  GROSS : 24.570 Kg.
TARE   :   5.670 Kg
  NET    : 18.900 Kg
```

SET LINE FEED FOR PRINTING		
F72	0 ~ 99	1 LINE PRINT OUT PER 1COUNT(LINE FEED) * **FIRST SET-UP 00**

SET SUB TOTAL PRINTER MODE		
F73	0	SUB TOTAL PRINT SHEET 0
	1	SUB TOTAL PRINT SHERT 1

Sub-total PRINT SHEET 1
========== SUB-TOTAL START : 2000-03-28 12:34 END : 2000-03-29 9:50 PART : 1 CODE : 123456 COUNT : 10 MIN : 9.998 kg MAX : 10.002 kg AVG : 10.000 kg ==========

Sub-total PRINT SHEET 0
========== SUB-TOTAL START : 2000-03-28 12:34 END : 2000-03-29 9:50 PART : 1 CODE : 123456 COUNT : 10 WEIGHT : 100.000 kg ==========

☒ **PRINTER**

PIN NO.	Contents
1	STROBE
2	D0
3	D1
4	D2
5	D3
6	D4
7	D5
8	D6
9	D7
10	ACK
11	BUSY
12	N.C
13	N.C

PIN NO.	Contents
14	N.C
15	N.C
16	N.C
17	N.C
18	GND
19	N.C
20	N.C
21	N.C
22	N.C
23	N.C
24	N.C
25	N.C

CONNECTOR PIN (25P D-Type Female Connector)

5-4-5. OP-10 BCD INPUT.

Parallel BCD input is used to change the PART to the external device.
This device make it effective to weigh a various works changing the PART with a connection of Computer, PLC, Digital Switch.

The inside circuit of Input & Output circuit use a photo-coupler and was isolated from the external

* Recommend distance is under 10 M
* BCD code makes a denary into 4figure of a binary number
* In case PART 19 displayed with BCE CODE such as 0001 10001
  0 = OFF, 1 = ON

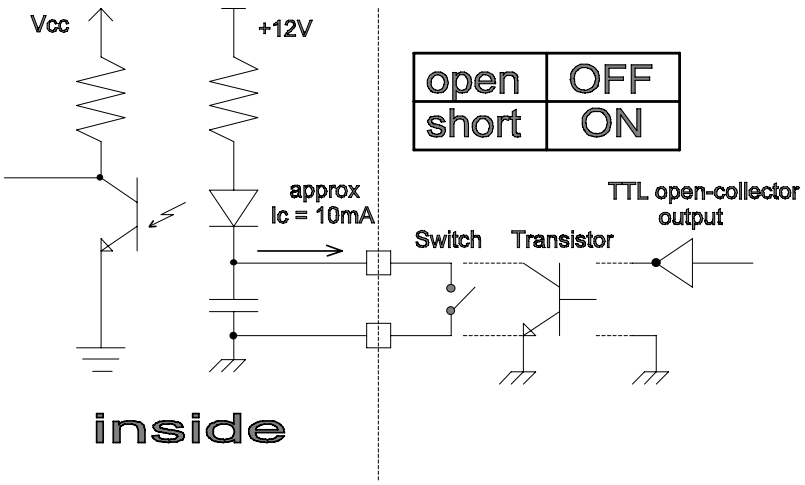
☒ 15P D-Type Female Connector

When a additional Input needs, Additional Input will be used except of the external 4EA.

☒ BCD INPUT CIRCUIT

PIN NO	SIGNAL
1	1×10^0
2	2×10^0
3	4×10^0
4	8×10^0
5	1×10^1
6	2×10^1
7	4×10^1
8	8×10^1

PIN NO	SIGNAL
9	EARTH (GND)
10	
11	AID INPUT 1
12	AID INPUT 2
13	AID INPUT 3
14	AID INPUT 4
15	EARTH (GND)



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