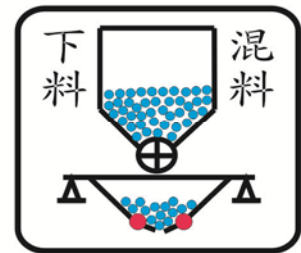
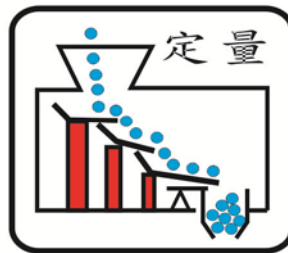
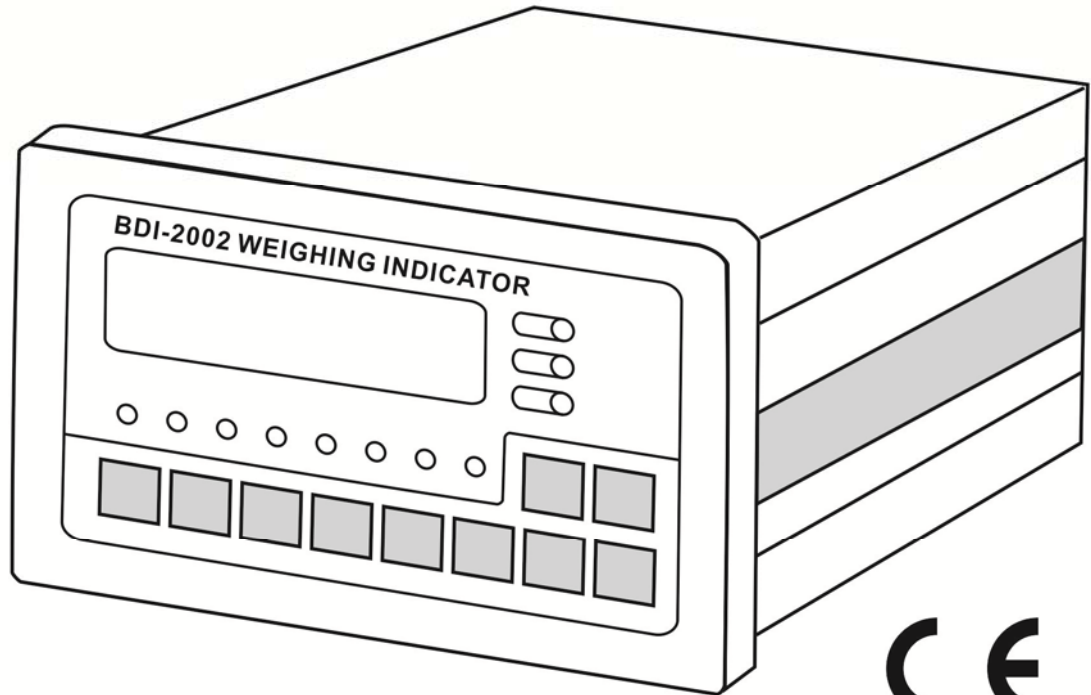




Benediction Enterprise Co., Ltd, Taiwan



BDI-2002

Weighing Indicator & Controller

User's Manual

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Benediction Enterprise Co., Ltd, Taiwan

CHAPTER 1 INTRODUCTION

§ 1-1 Welcome

The **BDI-2002** weighing indicator is a model of breakthrough high resolution. The purpose of designing **BDI-2002** is to perform quick and accurate controls. Please contact us immediately for further services if needed.

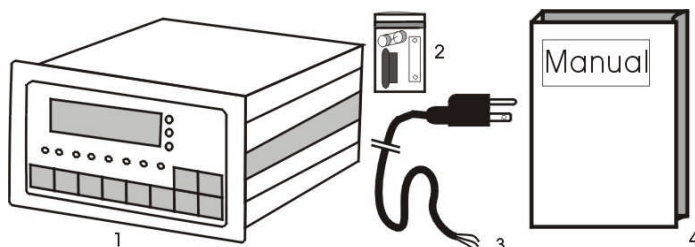
E-mail: bde.com@msa.hinet.net

Web Site: <http://www.bde.com.tw>

§ 1-2 Features

- ◎ 1/16,000 displayed resolution (Max. 1/ 60,000 depending on load cell quality & performance). Internal Resolution 1,000,000, A/D Conversion rate 120 times/ Sec.
- ◎ Watchdog virtually eliminates malfunctions that associated with computerized equipment or software failure. Full Digital Calibration makes setting ZERO and SPAN Calibration an easy task.
- ◎ Drives up to 8 parallel connecting load cells. 8k bytes SRAM with Li-battery backup. Information will not disappear even power failure.
- ◎ The settings of function and weighing parameters are all stored in the EEPROM, with storage duration over 40 years.
- ◎ Important values and parameters can have storage backup.
- ◎ Users can adjust the intensity of digits filter to avoid mechanical vibration that caused by external environments to achieve high-speed and accurate measurement.
- ◎ Set point codes can store up to 100 sets of: Final, SP1, SP2, Free Fall, HI, LO. Automatic Free Fall Compensation provides closer tolerance and precise weighing.
- ◎ 8 Set of control Input: ①ZERO Input, ②TARE Input, ③Tare reset, ④Start batch, ⑤Abort batch, ⑥Print Accumulator, ⑦Print Input, ⑧ Clear, ACC. & COUNT.
- ◎ 8 Set of control Output: ①ZERO Band output, ②SP1 output, ③SP2 Output, ④(Final-Free Fall) output, ⑤HI output, ⑥LO output, ⑦Final Output, ⑧MD/Error output.
- ◎ 5 batching modes: ①Customer Programmed Control Mode: Normal Batching, ②Customer Programmed Control Mode: Loss-in-weight Batching, ③Built-in Automatic Program Mode: Normal Batching, ④ Built-in Automatic Program Mode: Loss-in-weight Batching, ⑤ Multiple-Ingredient Batching.
- ◎ Standard Serial Output (20mA Current Loop) for remote display.
- ◎ Optional printer interface can automatically print or output data includes date, time, set point code, serial number, weight, and unit.

§ 1-3 Items In Carton



The carton in which the BDI-2002 is delivered contains: 1. Indicator.

2. Accessory pack (In bag). 3. Electric Cord. 4. This manual.

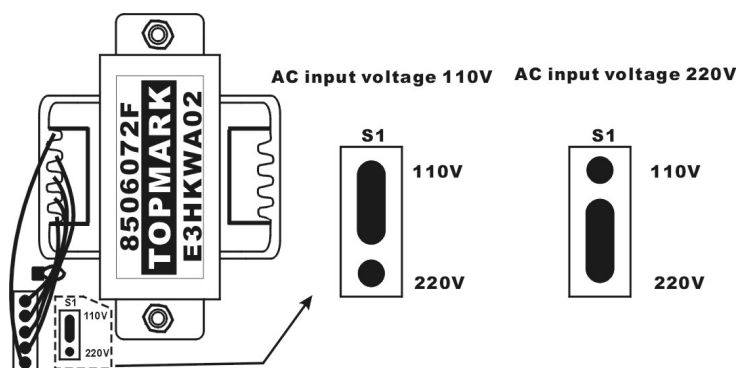
CHAPTER 2 INSTALLATION

§ 2-1 Best Conditions For Use

When installing and wire connecting on **BDI-2002**, please follow the points and guide for preventing any abnormal situation occurred.

- ⊙ Before connecting the Electric Power Supply, please identify the input Electric voltage type is AC 110V or AC 220V.
- ⊙ The Grounding Wire shall be properly connected. The Operation Temperature shall range within 0°C ~ 45°C , please DO not install in any place of direct sun-light. Due to the minute output signal from Load Cell, please use isolated cables. Also, separate the Load Cell cable from the power supply cable and control I/O cables.
- ⊙ The input power shall be AC 110V or AC 220V±10%, if the Electric Power Supply is not stable or the interference signal exists, that may cause uncertain actuation or reaction, even damages. Therefore, please utilize Electric Power Supply Stabilizer of adequate capacity.

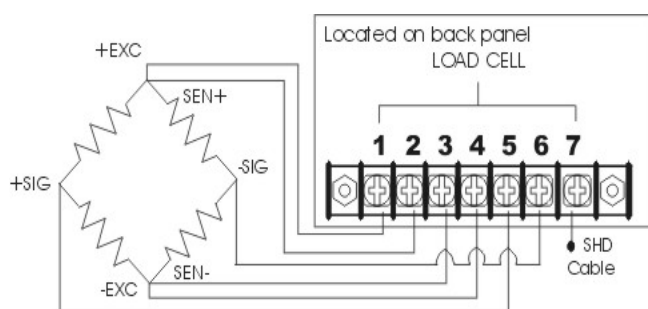
§ 2-2 Power Supply Connecting



Open the case, there is a jumper [S1] near the transformer, please insert a short-circuit pin to the available side.

§ 2-3 Connecting the Load Cell

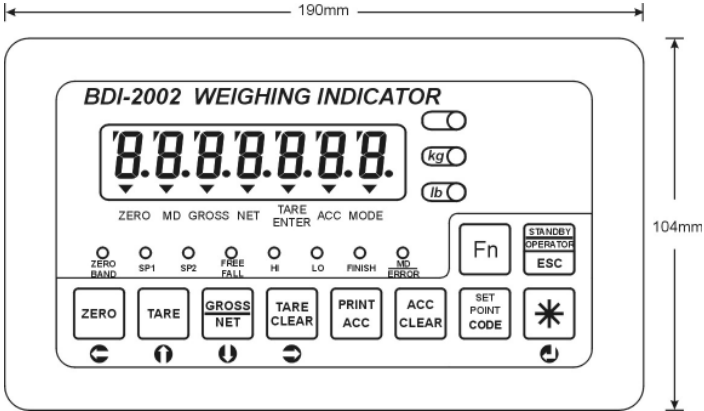
⚡ Do not plug in your power cable until you have completely connected the load cell.



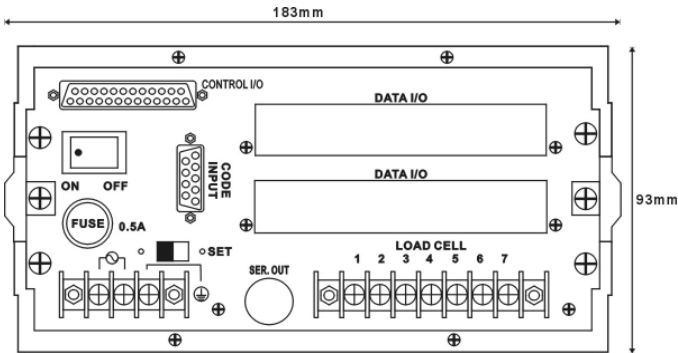
Screw	Signal
1	Positive Excitation Voltage, (EXC+)
2	Positive Sense Voltage, (SEN+)
3	Negative Sense Voltage, (SEN-)
4	Negative Excitation Voltage, (EXC-)
5	Positive Signal Voltage, (SIG+)
6	Negative Signal Voltage, (SIG-)
7	Shield, (SHD)

- ⓘ To connect your load cell to the weighing Indicator use a six-wire cable with shield - connect the wires as indicated above. If the BDI-2002 / BDI-2002 is located near the Load Cells (Within five meters or a few yards) you may use a 4-wire cable with shield, but first connect screws 1&2 and 3&4 with independent jumper leads.
- ⓘ The analogue output from the Load Cell and input/output signals are sensitive to electrical noise. Do not bind these cables together as it could result in cross-talk interface. Please also keep them away from AC power cables.

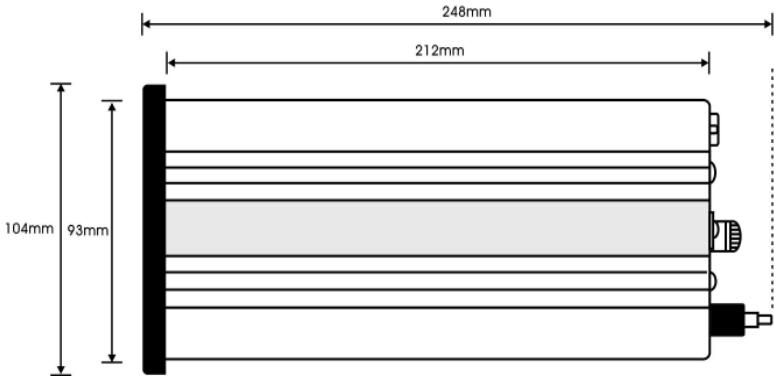
§ 2-4 Front and Rear Panel Dimensions



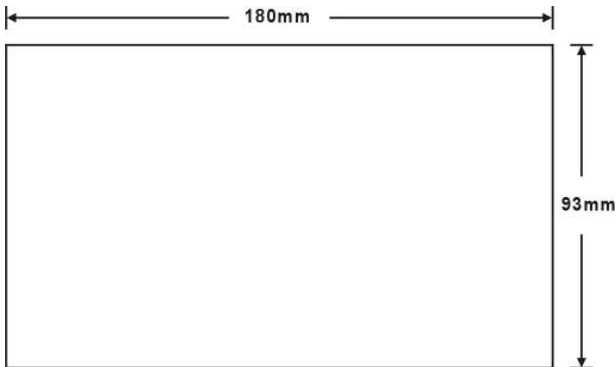
Front Panel of BDI-2002



Rear Panel of BDI-2002



Side View of BDI-2002



Mounting Cut for BDI-2002

CHAPTER 3 SPECIFICATIONS

§ 3-1 Analog Input and A/D Conversion

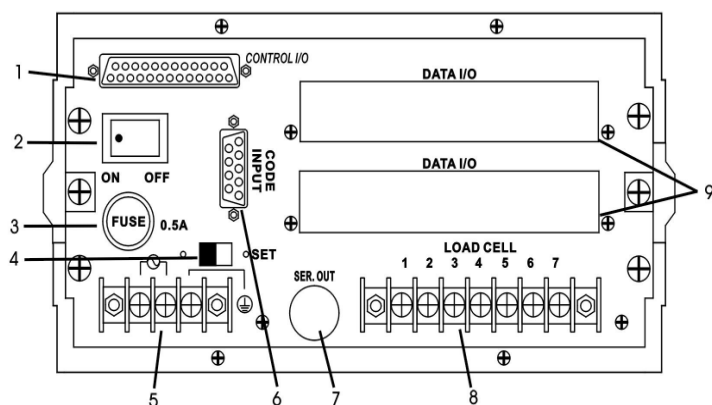
◎ Analog Input and A/D Conversion	
Type	BDI-2002
Input Sensitivity	$\geq 0.3 \mu\text{V/D}$
ZERO Adjustment Range	0 ~20mV
Load Cell Excitation	DC10V \pm 1% , 230mA, Remote Sensing. Can be connected up to 8 350 Ω Load Cells.
Non-Linearity	0.01 % F.S.
A/D Conversion Method	$\Delta \Sigma$
A/D Resolution	$\approx 1/1,000,000$
A/D Conversion Rate	Approx. 120 Times / Sec.
Max. Load Cell Input Voltage	32mV
ZERO Temperature Comp.	$\pm(0.2 \mu\text{V} + 0.001\%$ of Dead Load) $^{\circ}\text{C}$ TYP
SPAN Temperature Comp.	$\pm 0.001\%$ $^{\circ}\text{C}$ TYP
Max. Resolution	1/16,000 (May reach 1/60,000 depending on load cell quality).

§ 3-2 General

◎ General	
Type	BDI-2002
Power Requirements	AC 110V or AC 220V \pm 10% , 50 / 60Hz, Approx. 17VA
Net weight	Approx. 3.2 kg [7.054 lb]
Operation Temperature	-10 $^{\circ}\text{C}$ ~ 45 $^{\circ}\text{C}$
Maximum Humidity	85% [non-condensing]
Physical Dimensions	248 (D) \times 190 (W) \times 104(H) mm

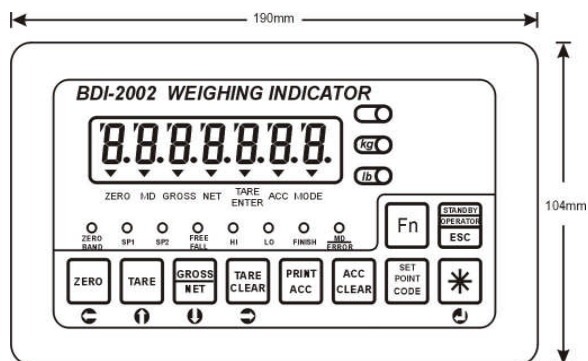
§ 3-3 Front Panel Description

* 3-3-1 Rear Panel of BDI-2002



Section	Description
1	I / O Input & Output
2	Power Switch
3	Fuse (Includes fuse set 0.5A/125V)
4	SET Switch
5	Power Supply Screw
6	Code Input (00-99)
7	20mA Current Loop
8	Screws for Load Cell
9	For Optional Interfaces

*** 3-3-2 BDI-2002 Front Panel Description**



◎ Annunciator Description	
Main Display [Green Tube]	7-segment , 7-digit display, VFD screen with a 13mm character size, displays the weight.
Minimum Division	x1 、x2 、x5 、x10 、x20 、x50
Maximum Display	+800450
Under ZERO Indicator	"—" minus sign
" ZERO " ▼Annunciator	Center of Zero
" MD " ▼Annunciator	Motion Detected = Unstable
" GROSS " ▼Annunciator	Gross Weight displayed
" NET " ▼Annunciator	Net Weight displayed
" TARE ENTERED " ▼Annunciator	Tare has been entered
" ACC " ▼Annunciator	Accumulator Mode
" MODE " ▼Annunciator	Enter Set-up Mode
" " ●Annunciator	" " Status LED Light
" kg " ● Annunciator	Kilograms Displayed
" lb " ● Annunciator	Ponds Displayed
" ZERO BAND " ●Annunciator	" ZERO Band " Output Status Annunciator
" SP1 " ●Annunciator	" SP1 " Output Status Annunciator
" SP2 " ●Annunciator	" SP2 " Output Status Annunciator
" FREE FALL " ●Annunciator	" FREE FALL " Output Status Annunciator
" HI " ●Annunciator	" HI " Output Status Annunciator
" LO " ●Annunciator	" LO " Output Status Annunciator
" FINISH " ●Annunciator	" FINISH " Output Status Annunciator
" MD/ERROR " ●Annunciator	" MD/ERROR " Output Status Annunciator

◎ Keys Description	
" ZERO / [Left Shift] " Key	Stable ZERO / Left shift key
" TARE / [Up Arrow] " Key	TARE's when stable-in Net, display ZERO / Increase the number
" GROSS 、NET / [Down Arrow] " Key	Changes from "Gross" to "Net" and vice versa / Decrease the number
"TARE CLEAR / [Right Shift] " Key	Tare is cleared / Right shift Key
" PRINT / ACC " Key	Print data will send one time / Print Accumulation
" ACC / CLEAR " Key	Display Accumulator / Clear Accumulation
" SET POINT / CODE " Key	Setting set point values/ Change set point code
" Fn " Key	Unused
" * / [Enter] " Key	Change Mode / Enter Key

" STANDBY/ESC " Key	Standby Status / Leave the current status
---------------------	---

§ 3-4 Quick Function Table

◎ WEIGHT FUNCTION TABLE		
F 000	Decimal Point Adjustment	①No Decimal ↖ 1 Decimal ✱ 2 Decimal ‡ 3 Decimal † 4 Decimal
F 001	Weighing Unit Selection	①None ②Kilogram ✱ Pound
F 002	Display Update rate	↖(10) 10 times/Sec ④(20)20 times/Sec ‡(40)40 times/Sec
F 003	Digital Filter	0 ~ 7 step digital filter
F 004	Set Zero Range	↖(5)±5% ④(10)±10% ‡(20)±20% ‡(30)±30% of Max. Capacity
F 005	Motion Detection	0.5 SEC 1 DIV ~ 1 SEC 18 DIV 16 Steps (00 Stable)
F 006	Automatic ZERO Tracking Compensation	1 SEC 0.5 DIV ~ 2 SEC 4.0 DIV 16 Steps (00 OFF)
F 007	ZERO & TARE keys Availability	ZERO & TARE keys ④ always work ↖only work when display is STABLE
F 008	TARE Key Availability	④TARE key always work ↖If the GROSS is Negative (-), TARE key does not work
F 009	Accumulation Availability	①OFF ↖Stable ✱Manual ‡ Control Input Command Accumulation

◎ 20 mA Current Loop		STANDARD
F C00	Data type	④Same as display ✱Gross Weight ‡NET Weight ‡TARE Weight ④Gross Weight, NET Weight, TARE Weight
F C01	Output Mode	④Stream ✱ Stable and auto print ‡Manual print mode ‡Accumulate and print
F C02	Output Format	④Sending without set point Code ↖Sending with set point Code

◎ Batch & Loss-in weight Weighing		
F 100	Zero Band	6 digit Zero band value (Initial "000.000")
F 101	Batching Mode	Customer Programmed Control Mode : ④ Normal Batching ② Loss-in-Weight Batching Built-in Automatic Program Mode : ③ Normal Batching ④ Loss-in-Weight Batching
F 102	Timer-Comparator Inhibitor	Set between 0.0 to 2.0 Sec (Initial 0.0 Sec)
F 103	Timer-Finish Signal	Set between 0.0 to 9.9 Sec (Initial 0.0 Sec)
F 104	Pulse Width of Finish Signal	Set between 0.0 to 2.0 Sec (Initial 0.5 Sec)
F 105	Output 8	④Unstable ↖Error
F 106	Input Mode	④ Panel key ✱ BCD Input ‡ Serial Input
F 107	Automatic Free Fall compensation	Please enter 6 digit free fall compensation value within effective range (Initial "000.000"---Free Fall OFF)
F 108	Finish Band	Selectable (enter weight) ✱initial : 00 (00 x Minimum Division)

◎ SERIAL [RS-232]		OP- 02
F 200	Baud Rate	↖(12)1200 BPS ☐(24)2400 BPS ↗(48)4800 BPS ↓(96)9600 BPS ●(19)19200
F 201	Parity	① Non-parity ☑Even Parity ✖Odd Parity
F 202	Output Data	☑Same as display ✖Gross Weight ↗NET Weight ↓TARE Weight ●Gross Weight, NET Weight, TARE Weight
F 203	Output Mode	☑Stream ✖ Stable and auto print ↗Manual Print Mode ↓Accumulate and Print ● Command Mode
F 204	Output Format	☑Sending without Set point Code ↖Sending with set point Code
F 205	Serial Address	Initial"00".(Only for RS-485).

◎PRINTER		OP-03
F 300	Setting Date, Time	Setting Year. Month, day, hour, minute, second.
F 301	Data Format	
	Date	☑ Not print ✖ Only print above the latest data ↗ Print on all
	Time	↖ Not print ☐ Only print above the latest data ↗ Print on all
	Set	☑ Not print ✖ Only print above the latest data ↗ Print on all
	Serial Number	☑ Not print ↖ Print
	Weight	☑Same as display ✖Gross Weight ↗NET Weight ↓TARE Weight ●Gross Weight, NET Weight, TARE Weight ↖Gross Weight, TARE Weight, NET Weight
Unit	①Not print ☑Only print above the latest data according to F001 ✖ Only print the latest data "g" ↗ Only print above the latest data "t" ↓Print on all according to F001 ●Print on all "g" ↖ Print on all "t"	
F 302	Output Mode	↖Stable and auto print ☐ Manual Print Mode ↗Accumulate and Print
F 303	Select Printer	☑MINI Printer ✖Normal Printer

◎ BCD		OP-04
F 400	Data type	☑Same as display ✖Gross data ↗NET data ↓TARE data
F 401	Output Mode	☑Stream ✖ Stable and print ↗Manual print mode ↓Accumulate and print
F 402	Output Logic	☑Positive Logic ✖Negative Logic

◎ Analog Output		OP-05
F 500	Analog Output Data	☑Output 4~20 mA ②Output 0~+10 V
F 501	Output Mode	☑Same as display ✖Gross data ↗NET data
F 502	Loss-in-weight Absolute Value	☑Not read Absolute Value ↖ BDI-2002 reads Absolute Value
F 503	Output current when display ZERO	0.0mA through 9.99mA (Initial 0.40mA)
F 504	Output current at Full Capacity	0.0mA through 9.99mA (Initial 20.0mA)
F 505	Output Volt when display ZERO	-2.5V through +59.9V (Initial 00.0 V)
F 506	Output Volt at Full Capacity	-2.5V through +59.9V (Initial 10.0 V)

◎Remote Set point Unit – Final Weight.		OP-07
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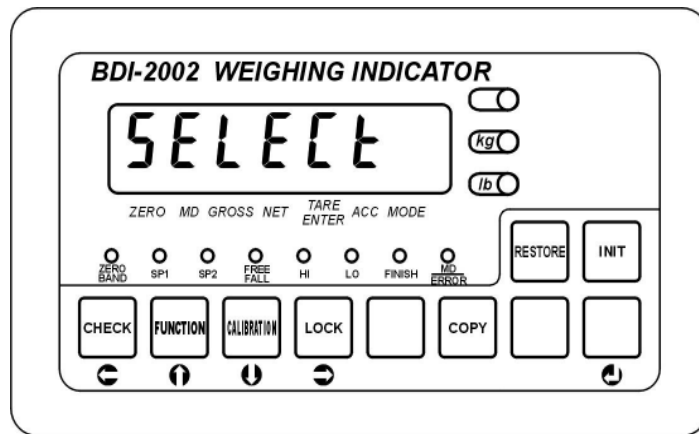
F 700	 Not used ✎ Used. (Final Weight)
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§ 3-5 Panel Key Function Table

Key	Accordance		Status
ZERO	Panel Key	ZERO	BDI - 2002 returns to the center of ZERO if the weight value within F004 range.
	Control I / O	Pin 25 +(Pin 16 or 17)	
	OP-02 (Command Mode)	Z Cr Lf	
TARE	Panel Key	TARE	BDI – 2002 switches to NET mode, ZERO’s the display and stores the TARE weight in Memory.
	Control I / O	Pin 24+ (Pin 16 or 17)	
	OP-02 (Command Mode)	T Cr Lf	
TARE CLEAR	Panel Key	TARE CLEAR	Clear TARE Value
	Control I / O	Pin23 + (Pin 16 or 17)	
GROSS	Panel Key	GROSS / NET	Shift to GROSS Mode
	OP-02 (Command Mode)	G Cr Lf	
NET	Panel Key	GROSS / NET	Shift to NET mode
	OP-02 (Command Key)	N Cr Lf	
PRINT	Panel Key	PRINT / ACC	Print or Output latest Data
	Control I / O	Pin19 + (Pin 16 or 17)	
ACC	Panel Key	PRINT / ACC	Print Accumulator Value
	Control I / O	Pin20 + (Pin 16 or 17)	
ACC	Panel Key	ACC / CLEAR	Print Accumulator Value θACC LED Light ON
CLEAR	Panel Key	ACC / CLEAR	Clear Accumulator and Count
	Control I / O	Pin18 + (Pin 16 or 17)	
CODE	Panel Key	SET POINT/CODE	Reset Set point data
	Code Input	CODE INPUT	
	OP-02 (Command Key)	CCXX Cr Lf	
SET POINT	Panel Key	SET POINT/CODE	Setting Final, SP1, SP2, Free Fall, Hi, Lo
	OP-02	S Cr Lf, SS Cr Lf	
*	Panel Key	*	<input type="checkbox"/> PRINT/ACC Print Accumulation <input type="checkbox"/> SET POINT/CODE SET POINT <input type="checkbox"/> ACC/CLEAR Clear Accumulation
Standby	Panel Key	STANDBY/ OPERATE/ESC	Standby Mode will Pause all operations
Operate	Panel Key	STANDBY/ OPERATE/ESC	Starts operation.
ESC	Panel Key	STANDBY/ OPERATE/ESC	Quit the current setting Mode
Fn	Panel Key	Fn	Unused
⇨	Panel Key	⇨	Right shift key while setting
⇩	Panel Key	⇩	Left shift key while setting
↻	Panel Key	↻	Increase value while setting
⏪	Panel Key	⏪	Decrease value while setting
↵	Panel Key	↵	“Enter” key while setting

※Please refer to chapter 6 on Control I/O and OP-02

CHAPTER 4 SYSTEM FUNCTIONS




§ 4-1 System Check

A system check should be run: after initial installation, after moving your BDI-2002, after connecting or disconnecting an attachment from the Rear Panel and as means of locating any unexplained system error. An occasional self-check to make sure everything is working properly is a good maintenance practice as well.


STEP 1: Turn the Power Switch OFF on the Rear Panel. Slide the **SET** switch to the set side.


STEP 2: Turn the power supply ON, the display will show blinking **SELECT**.


STEP 3: Press the **ZERO** key and screen will show blinking **CHEC**, and press  key to start check.

STEP 4: The system will check Green Tube and LED in sequence.


STEP 5: Check MEMORY [**EEPROM** 、 **SRAM**]


When the screen shows **SRAM**, please press  key. The screen will subsequently show a series blinking dots [.....] indicating system checking in process. If the screen shows **PASS**, it means checking passed. If the screen shows **FAIL**, it means system error.

STEP 6: System check will go to **EEPROM 1** checking. The screen will show **EE-1**. Please press  key and the screen will subsequently show a series blinking dots [.....] indicating system checking in process. If the screen shows **PASS**, it means checking passed. If the screen shows **FAIL**, it means system error.

STEP 7: System check will go to **EEPROM 2** checking. The screen will show **EE-2**. Please press  key and the screen will subsequently show a series blinking dots [.....] indicating system checking in process. If the screen shows **PASS**, it means checking passed. If the screen shows **FAIL**, it means system error.

STEP 8: System check will go to **BCD** checking. The screen will show **CODE 00**. Please make SHORT-CIRCUIT test on 9-Pin **D** shape Code Input on the rear panel. When short-circuiting COM9 with other pins, the short-circuit pin will show the accordance value on the screen. If not, there suggests an error occurred.

STEP 9: System check will go to **Input/Output** checking. When the screen show **I-O**, please enter  key. Subsequently, the screen will show **INPUT 0** with the 0 blinking. Please make SHORT-CIRCUIT test on 25-Pin **D** shape Code Input on the rear panel. When short-circuiting COM17 or COM16 with pin25~pin18, the short-circuit pin will light up a specific LED on the screen. If not, there suggests an error occurred.

 When short-circuiting COM17.COM16 with pin13~pin16 , the short-circuit pin will light up a specific LED on the front panel. If two or more LED light up or turned off at the same time, there suggests an error occurred.

STEP 10: When press a key, the key number will show in the middle of the screen. The lower side from left to right: **KEY 001~KEY 008**. The upper side from left to right: **KEY 009~KEY 010**. If the key number does not match, it suggests an error occurred. Please contact us.

STEP 11: Finish checking, display **END**.
Slide the **SET** switch to the original side.









 Above testing if any **FAIL** or error shows on the screen, please contact us or distributors.


§ 4-2 Functions

STEP 1: Turn the Power Switch OFF on the Rear Panel, Slide the **SET** switch to the set side.

STEP 2: Turn the power supply ON, the display will show blinking **SELECT**.

STEP 3: Press **TARE** key and screen will show blinking **FUNC** and blinking **F000** afterward.

STEP 4: Please press  or  key to move through the function category (F000, F200, F300, F400 or F500). Then press the  Key to enter the category. Use the  or  key to choose specific function (F000 ~ FC02, F100 ~ F107, F200 ~ 204, F400 ~ F402 or F500 ~ F506). In each function, please use  or  key to set function value. If you want to return to previous function category, please press **ESC** key, or press  key to enter.

 If any errors occurred, please check if each setting value within effective range.

 note : ● Indicates initial factory setting.

STEP 5: When you finished changing the Function setting, slide **SET** Switch to the original side. The screen will show **END**.

◎ General Functions

F000	Decimal Point Adjustment		
	0	No Decimal	1234567
	1	1 Decimal	123456.7
	2	2 Decimal	12345.67
●	3	3 Decimal	1234.567
	4	4 Decimal	123.4567

F003	Digital Filter				
			Filter	Environment	Response
			BENEDICTION ENTERPRISE CO., LTD, TAIWAN		
	0	No stage	Weak	Bad	Fast
	1	1 st stage			
	2	2 ^{ed} stage			
	3	3 rd stage	▲	▲	▲
●	4	4 th stage	▼	▼	▼
	5	5 th stage			
	6	6 th stage			
	7	7 th stage	Strong	Good	Slow

F001	Weighing Unit Selection	
	0	None
●	1	Kilogram
	2	Pound

F002	Display Update Rate	
	10	10 Times/Sec
●	20	20 Times/Sec
	40	40 Times/Sec

F004 Set ZERO Range		
	5	±5% of weighing platform Full Capacity
●	10	±10% of weighing platform Full Capacity
	20	±20% of weighing platform Full Capacity
	30	±30% of weighing platform Full Capacity

F006 Automatic ZERO Tracking Compensation		
	00	OFF
	11	1 SEC 0.5 DIV
	12	1 SEC 1.0 DIV
	13	1 SEC 1.5 DIV
●	14	1 SEC 2.0 DIV
	15	1 SEC 2.5 DIV
	16	1 SEC 3.0 DIV
	17	1 SEC 3.5 DIV
	18	1 SEC 4.0 DIV
	21	2 SEC 0.5 DIV
	22	2 SEC 1.0 DIV
	23	2 SEC 1.5 DIV
	24	2 SEC 2.0 DIV
	25	2 SEC 2.5 DIV
	26	2 SEC 3.0 DIV
	27	2 SEC 3.5 DIV
	28	2 SEC 4.0 DIV

F005 Motion Detection		
	00	Stable
	01	0.5 SEC 1 DIV
	02	0.5 SEC 2 DIV
	03	0.5 SEC 3 DIV
	04	0.5 SEC 4 DIV
	05	0.5 SEC 5 DIV
	06	0.5 SEC 6 DIV
	07	0.5 SEC 7 DIV
	08	0.5 SEC 8 DIV
	11	1 SEC 1 DIV
●	12	1 SEC 2 DIV
	13	1 SEC 3 DIV
	14	1 SEC 4 DIV
	15	1 SEC 5 DIV
	16	1 SEC 6 DIV
	17	1 SEC 7 DIV
	18	1 SEC 8 DIV

F007 ZERO & TARE keys Availability		
●	0	ZERO & TARE keys always work
	1	ZERO & TARE keys only work when display is STABLE

F008 TARE key Availability		
●	0	TARE key always work
	1	If the GROSS is negative, TARE key does not work

F009 Accumulation Availability		
	0	OFF
	1	Stable
	2	Manual
●	3	Control Input--Command Accumulation

◎ Standard 20 mA Current Loop

FC00 Output Data		
●	1	Same as display
	2	GROSS Weight
	3	NET Weight
	4	TARE Weight
	5	GROSS Weight, NET Weight, TARE Weight

FC01 Output Mode		
●	1	Stream
	2	Stable and auto print
	3	Manual Print Mode
	4	Accumulate and Print

FC02 Output Format		
●	0	Sending without set point Code
	1	Sending with set point Code

◎ **Batching Weighing**

F100	Set ZERO Band
6 digit Zero band value (● Initial "000.000")	

F101	Batching Mode
●	1 Customer Programmed Control Mode: Normal Batching
	2 Customer Programmed Control Mode: Loss-in-Weight Batching
	3 Built-in Automatic Program Mode: Normal Batching
	4 Built-in Automatic Program Mode: Loss-in weight Batching

F102	Timer-Comparator Inhibitor
Set between 0.0 to 2.0 Sec (● Initial 0.0 Sec)	

F103	Timer-Finish Signal
The finish signal timer can be Set between 0.0 to 9.9 Sec	
※● Initial 0.0 Sec	
※Finish Signal sent ON at 0.0 Sec.	
And stays ON until the next START Signal	

The graph illustrates the weighing process. The y-axis is 'Actual Weigh' and the x-axis is 'Time'. The curve starts at 'Start', rises through 'Sp1 (Full-Flow)', 'Sp2 (Medium-Flow)', and 'Free' to 'Final', then drops through 'Finish (Batch)' to 'ZERO Band ON'. Below the graph, signal waveforms are shown for Sp1 (Full-Flow), Sp2 (Medium-Flow), Final (Dribble-Flow), Finish, and Start. A 'Finish Time "F"' is indicated between the Final and Finish points. A note states: 'Time period from FINISH (ON) to FINISH (OFF)'.

F104	Pulse Width of Finish Signal
Set between 0.0 to 2.0 Sec	
※● Initial 0.5 Sec	
※Stable at 0.0 Sec. which is apply to F101 setting at 3 or 4.	

The graph shows a signal pulse labeled '(Batch) Finish'. The pulse is ON during the 'Free Fall' and 'Final' phases and OFF during the 'Finish (Batch)' phase. The pulse width is labeled 't'.

F105	Output 8	
☆	0	Unstable
	1	Error

F106	Input Mode	
☆	1	Panel key
	2	BCD Input

F107	Automatic Free Fall Compensation	
Please enter 6 digit free fall compensation value within effective range		
● Initial "000.000"--- Free Fall OFF		
	3	Serial Input

F108	FINISH Band
Selectable (enter weigh)	
Finish Batching's Net Weight \geq Final weight – Finish Band	
※Works only in the Built-in Automatic Program mode. (F101 = 3 or 4)	
※initial : 00 (00 x Minimum Division)	

◎ SERIAL (RS-232)

F200	Band Rate	
	12	1200BPS
★	24	2400BPS
	48	4800BPS
	96	9600BPS
	19	19200Bps

F203	Output Mode	
★	1	Stream
	2	Stable and auto print
	3	Manual Print Mode
	4	Accumulate and Print
	5	Command Mode

F201	Parity	
	0	Non-parity
★	1	Even- Parity
	2	Odd- Parity

F204	Output Format	
★	0	Sending without set point Code
	1	Sending with set point Code

F202	Output data	
★	1	Same as display
	2	GROSS Weight
	3	NET Weight
	4	TARE Weight
	5	GROSS Weight, NET Weight, TARE Weight

F205	Serial Address (for RS-485)
	01-99 (If set 00 means unused)

◎ Printer

F300	Setting Date, Time
	YY / MM / DD HH : MM : SS

F301	Data Format					
	Date	Time	Set point code	Serial Number	Weight	Unit
0	Not Print	Not Print	Not Print	Not Print		Not Print
1	Only Print above the Latest data	Only Print above the Latest data	Only Print above the Latest data	Print	Same as display	Only print above the latest data according to F101
2	Print on all	Print on all	Print on all		GROSS Weight	Only Print above the Latest data " g "
3					NET Weight	Only Print above the Latest data " t "
4					TARE Weight	Print on all according to F001
5					GROSS Weight, NET Weight, TARE Weight	Print on all " g "
6					GROSS Weight, NET Weight, TARE Weight	Print on all " t "
Initial	1	2	1	0	1	1

*At initial setting, the screen shows : 1 2 1 0 1 1

F302	Output Mode	
	1	Stable and auto print
★	2	Manual print mode
	3	Accumulate and print

F303	Select Printer	
★	1	MINI Printer
	2	Normal Printer
	3	Accumulate and print

◎ **BCD**

F400	Data Type	
★	1	Same as display
	2	GROSS Weight
	3	NET Weight
	4	TARE Weight

F401	Output Mode	
★	1	Stream
	2	Stable and auto print
	3	Manual Print Mode
	4	Accumulate and Print

F402	Output Logic	
★	1	Positive Logic
	2	Negative Logic

◎ **Analog Output**

F 500	Analog Output Data	
★	1	Output 4~20 mA
	2	Output 0~+10 V

F 504	Output current at Full Capacity	
	0.0mA through 9.99mA	
	●Initial 20.0mA	

F 501	Output Mode	
★	1	Same as display
	2	GROSS Weight
	3	NET Weight

F 505	Output Volt when display ZERO	
	-2.5V through +59.9V	
	●Initial 00.0 V	

F 502	Loss-in-weight Absolute Value	
★	0	Not read Absolute Value
	1	BDI-2002 reads Absolute Value

F 506	Output Volt at Full Capacity	
	-2.5V through +59.9V	
	●Initial 10.0 V	

F 503	Output current when display ZERO	
	0.0mA through 9.99mA	
	●Initial 4.0mA	

◎ **OP-07 BCD Remote Set point Unit: for Final Weight.**


F 700	Final Weight BCD Switch	
☆	0	Not used.
	1	Used. (Please enter 5 digit final Weight) *After install OP-07 and set F700=1, your final weight will directly record in BDI-2002. When you check SET POINT value, final weight is not changed. However, the BDI-2002 will work final weight only according to BCD Switch.

§ 4-3 CALIBRATION

1. Select FULL CALIBRATION :




STEP 1: Turn the Power Switch OFF on the rear panel. Slide the **SET** switch to the set side.

STEP 2: Turn the power switch ON. The screen will show blinking **SELECT**.



STEP 3: Press **GROSS/NET** key and a blinking **CAL** will show on the screen.
Then press the  key.

STEP 4: The screen will show **F-CAL**. Please press the  key.

[1] *Setting Minimum Division*






The display of **di 1** shows the smallest division. Use the  or  key to move through the available divisions. [1 、 2 、 5 、 10 、 20 、 50] . Press the  key to set the minimum division.

[2] *Setting Decimal (F000 will change---see § 4-2)*


The screen will show **dp** → **d000.000**. A blinking decimal will show on the screen. Use the  or  key to move through the available decimal Point position.

Press the  key to set the decimal position.







[3] *Setting Maximum Capacity*

When setting maximum capacity, the screen will show **CAP** → **C000.000**. Use the  or  key to set the numeric value, Use the  or  key to move through digits. Press the  key to finish the step.

[4] *ZERO Adjust*

The Screen will display **ZERO**. Please move the calibration mass and objects away on the Weighing device then press  key. A display of **.....** means finishing the Adjustment.


[5] *SPAN Calibration*

The screen will show **SPAN**. Press  key and place your calibration mass on the weighing device and input weight value. Use the  or  key to set the available value, and the  or  key to move through digits. Please press the  key to finish the calibration. The screen will show **.....**.

STEP 5 : The screen will show **END**.




Slide the **SET** switch to the original side.




2. Select Digital Calibration

 An easy way to make calibration by inputting Load Cell's Full Scale Output voltage




STEP 1: Turn the Power Switch OFF on the rear panel. Slide the **SET** switch to the set side.

STEP 2: Turn the power switch ON. The screen will show blinking **SELECT**.

STEP 3: Please press **GROSS/NET** key and a blinking **CAL** will show on the screen. Then press the  key. The screen will show **F-CAL**. Please use the  or  key to choose digital Calibration (**d-CAL**).

STEP 4: The screen will show **F-CAL**. Please use the  or  key to choose digital Calibration (**d-CAL**). Please press the  key.

[1] *Setting Minimum Division*

The display of **di 1** shows the smallest division. Use the  or  key to move through the available divisions. [1 、 2 、 5 、 10 、 20 、 50] . Press the  key to set the minimum division.

[2] Setting Decimal (F000 will change---see § 4-2)

The screen will show **dp** → **d000.000**. A blinking decimal will show on the screen.
 Use the **←** or **→** key to move through the available decimal Point position. Press the **↵** key to set the decimal position.

[3] Setting Maximum Capacity

When setting maximum capacity, the screen will show **CAP** → **C000000**.
 Use the **←** or **→** key to move through digits. Use the **↑** or **↓** key to set the numeric value.
 Press the **↵** key to finish the step.

[4] Setting Full Scale Output Voltage of the Load Cell Sensors

When setting full scale output voltage of the load cell sensors, the screen will show **LC-CAP** → **L000000**. Please use the **←** or **→** key to move through digits. Use the **↑** or **↓** key to set the numeric value. Press the **↵** key to finish the step.

[5] ZERO Adjust

The Screen will display **ZERO**. Please move the calibration mass and objects away on the Weighing device then press **↵** key. A display of **.....** means finishing the Adjustment.

[6] d-SPAN Calibration

The screen will show **d-SPAN**. Press **↵** key and place your calibration mass on the weighing device and input weight value. Use the **↑** or **↓** key and the **←** or **→** key to enter Load Cell O/P Volt. Please press the **↵** key to finish d-SPAN. The screen will show **.....**.

STEP 5: The screen will show **END**. Slide the **SET** switch to the original side.

※Example of selecting **FULL CALIBRATION (Div 2, 3 decimal, Max cap.20)**

Key	Screen will display
Turn the Power Switch OFF	
Slide Set switch to the set side	
Turn the power ON.	Blinking SECECT
Press GROSS/NET.	Blinking CAL
Press ↵ key	Blinking F-CAL
Press ↵ key	di 01 (Blinking at 01)
Press ↑ key	di 02 (Blinking at 02)
Press ↵ key	dp → d000.000 (Blinking at the Decimal Point --- F000 will subject to change if ← or → key been pressed)
Press ↵ key	CAP → C010.000 (Blinking at the latest decimal)
Press ← key 4 times	010.000 (Blinking at 1)
Press ↑ key	020.000 (Blinking at 2)
Press ↵ key	ZERO
Press ↵ key → SPAN
Press ↵ key	000.000 (Blinking at the latest decimal)
Place 1kg Calibration Mass, press ↵ key 3 times, press ↑ key	001.000 (Twinkle at 1)
Press ↵ key → End

◎ Calibration Errors

C.Err 1 : The resolution exceeds 1 : 16,000.

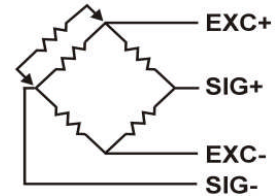
⇒ Change the minimum division and maximum capacity within 1 / 16,000.

Resolution ratio= Minimum division / maximum capacity

C.Err 2 : The load cell output is too large at ZERO calibration.

⇒ Add an additional resistor (50kΩ ~ 500KΩ) between EXC+ and SIG-.

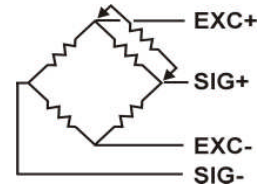
※ Refer to the Right Figure



C.Err 3 : The load cell output is too small at ZERO calibration.

⇒ Add an additional resistor (50kΩ ~ 500KΩ) between EXC+ and SIG+.

※ Refer to the Right Figure



C.Err 4 : The calibration mass has been mistakenly entered as a value greater than the maximum capacity.

⇒ Please reduce the weight of calibration mass, and re-enter the weight value.

C.Err 5: The calibration mass has been wrongly entered zero or it is smaller than the minimum capacity.

⇒ Please increase the weight of calibration mass, and re-enter the weight value.

C.Err 6: The load cell output is too low.

⇒ Replace your load cell with a more sensitive one or adjust the minimum division.

C.Err 7: The load cell signal pins are reversed, or the load cell output voltage is too low.

⇒ Check the load cell connections if reversed or load cell failure.

C.Err 8: The load cell output voltage at maximum capacity is too high.

⇒ Check the load cell specification or load cell failure.

C.Err 9: The maximum, capacity has been wrongly entered as a value smaller than 100.

⇒ Check Resolution Table.

C.Err 10: The maximum, capacity has been wrongly entered as a value greater than 800,000.

⇒ Check the load cell specification or load cell failure.

◎Display Resolution Table

Maximum Capacity	Resolution					
	1 Min. Div.	2 Min. Div.	5 Min. Div.	10 Min. Div.	20 Min. Div.	50 Min. Div.
300	1 / 300	-----	-----	-----	-----	-----
400	1 / 400	-----	-----	-----	-----	-----
500	1 / 500	-----	-----	-----	-----	-----
600	1 / 600	1 / 300	-----	-----	-----	-----
800	1 / 800	1 / 400	-----	-----	-----	-----
1,000	1 / 1000	1 / 500	-----	-----	-----	-----
1,200	1 / 1200	1 / 600	-----	-----	-----	-----
1,500	1 / 1500	1 / 800	1 / 300	-----	-----	-----
2,000	1 / 2000	1 / 1000	1 / 400	-----	-----	-----
2,500	1 / 2500	1 / 1200	1 / 500	-----	-----	-----
3,000	1 / 3000	1 / 1500	1 / 600	1 / 300	-----	-----
4,000	1 / 4000	1 / 2000	1 / 800	1 / 400	-----	-----
5,000	1 / 5000	1 / 2500	1 / 1000	1 / 500	-----	-----
6,000	1 / 6000	1 / 3000	1 / 1200	1 / 600	1 / 300	-----
8,000	1 / 8000	1 / 4000	1 / 1500	1 / 800	1 / 400	-----
10,000	1 / 10000	1 / 5000	1 / 2000	1 / 1000	1 / 500	-----
12,000	1 / 12000	1 / 6000	1 / 2500	1 / 1200	1 / 600	-----
15,000	1 / 15000	1 / 8000	1 / 3000	1 / 1500	1 / 800	1 / 300
20,000	-----	1 / 10000	1 / 4000	1 / 2000	1 / 1000	1 / 400
25,000	-----	1 / 12500	1 / 5000	1 / 2500	1 / 1200	1 / 500
30,000	-----	1 / 15000	1 / 6000	1 / 3000	1 / 1500	1 / 600
40,000	-----	-----	1 / 8000	1 / 4000	1 / 2000	1 / 800
50,000	-----	-----	1 / 10000	1 / 5000	1 / 2500	1 / 1000
60,000	-----	-----	1 / 12000	1 / 6000	1 / 3000	1 / 1200
80,000	-----	-----	1 / 16,000	1 / 8000	1 / 4000	1 / 1500
100,000	-----	-----	-----	1 / 10000	1 / 5000	1 / 2000
120,000	-----	-----	-----	1 / 12000	1 / 6000	1 / 2500
150,000	-----	-----	-----	1 / 15000	1 / 8000	1 / 3000
200,000	-----	-----	-----	-----	1 / 10000	1 / 4000
250,000	-----	-----	-----	-----	1 / 12500	1 / 5000
300,000	-----	-----	-----	-----	1 / 15000	1 / 6000
400,000	-----	-----	-----	-----	-----	1 / 8000
500,000	-----	-----	-----	-----	-----	1 / 10000
600,000	-----	-----	-----	-----	-----	1 / 12000
700,000	-----	-----	-----	-----	-----	1 / 14000
750,000	-----	-----	-----	-----	-----	1 / 15000
800,000	-----	-----	-----	-----	-----	1 / 16,000


☆**BDI-2002 Display Resolution may reach 1/60,000. (Depends on load cell quality).**




§ 4-4 PANEL KEY DISABLE

 Disable unimportant or unused keys.

STEP 1: Turn the Power Switch OFF on the rear panel. Slide the **SET** switch to the set side.

STEP 2: Turn the power switch ON. The screen will show blinking **SELECT**.

STEP 3: Please press **TARE/CLEAR** key and a blinking **LOC** will show on the screen. After enter  key, a [] will show on the screen. Please press the key you wish to disable. The screen will show the key's number. BDI-2002 will inquire if you want to lock or unlock the key: [00] u or L
(Key number [00] : Unlock or Lock the key).

STEP 4: Use the  or  key to choose lock or unlock the key and press  key for confirmation.

STEP 5: Slide the **SET** switch to the original side for finishing the step.

§ 4-5 COPY SYSTEM PARAMETER

 A backup can be stored to prevent data loss.

⊗ System Parameter: includes functions FXXX, Calibration parameters, disable keys.

STEP 1: Turn the Power Switch OFF on the rear panel. Slide the **SET** switch to the set side.

STEP 2: Turn the power switch ON. The screen will show blinking **SELECT**.


STEP 3: Press **ACC/CLEAR** key and a blinking **COPY** will show on the screen.

Enter  key.

STEP 4: Use the  or  key to choose **NO** or **YES**. If **NO** is entered, the screen will show **END**. If **YES** is entered, the screen will show→ **END**.

STEP 5: Slide the **SET** switch to the original side for finishing the step.

§ 4-6 RESTORE SYSTEM PARAMETERS

 Restoration can be used when system failed or human operation error happens.

① Restoration will not restore set-point parameters.



⊗ System Parameter: includes functions FXXX, Calibration parameters, disable keys.

⊗ Set-point Parameter: includes Final, SP1, SP2, Free Fall, Hi, Lo.

STEP 1: Turn the Power Switch OFF on the rear panel. Slide the **SET** switch to the set side.

STEP 2: Turn the power switch ON. The screen will show blinking **SELECT**.

STEP 3: Press **Fn** key and a blinking **RESTORE** will show on the screen. Please enter  key.

STEP 4: Use the  or  key to choose **NO** or **YES**. If **NO** is entered, the screen will show **END**. If **YES** is entered, the screen will show→ **END**.

STEP 5: Slide the **SET** switch to the original side for finishing the step.

§ 4-7 CLEAR SET POINT DATA

STEP 1: Turn the Power Switch OFF. Slide the **SET** switch OFF. (SET switch is OFF status).

STEP 2: Turn the power switch ON. The screen will show Normal operation condition.

STEP 3: Please press **STANDBY** key and hold **SET POINT/ CODE** key at the same time until the screen shows **C Lr cd** . Please release the **STANDBY** key (**SET POINT/CODE** key still holding). Please release the **SET POINT/CODE** key in sequence. Please press the **↻** key and the BDI-2002 will subsequently ask the operator to clear set point data.

STEP 4: Use the **↻** or **↺** key to choose **NO** or **YES** and press the **↻** key to confirm.

§ 4-8 SYSTEM INITIALIZATION

↻ Re-install resets the BDI-2002 to the initial factory settings. Use Re-install only if you want to return Function, Set Point or Calibration to their initial settings.

STEP 1: Turn the Power Switch OFF on the Rear Panel, and slide **SET** switch.

STEP 2: Turn the power switch ON. The screen will show blinking **SELECT**.

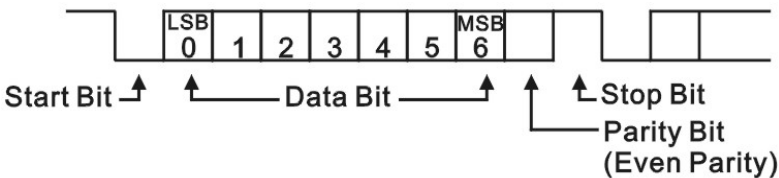
STEP 3: Press **ESC** key and a blinking **INIT** will show on the screen. Please enter **↻** key.

STEP 4: Use the **↻** or **↺** key to choose **NO** or **YES** . If **NO** is entered, the screen will show **END**. If **YES** is entered, the screen will show **.....** → **END** .

STEP 5 : Slide the **SET** switch to the original side for finishing the step.

§ 4-9 20mA Current Loop

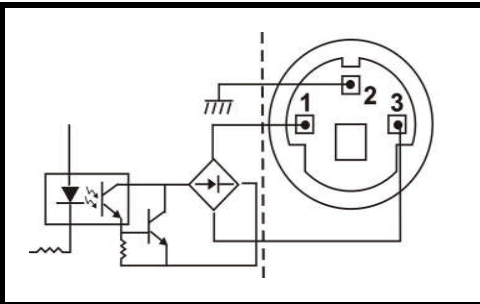
20 mA Current Loop Specifications



- 1. Baud Rate : 1200 bps
- 2. Data bit : 7 bit
- 3. Parity : Even Parity
- 4. Stop bit : 1 bit
- 5. Output Code : ASCII

Pin Assignment :

CURRENT LOOP	
1	20 mA
0	0 mA










Pin 1 : Serial Output
 Pin 2 : Frame Ground
 Pin 3 : Serial Output
 * Output has no polarity , rather it is bi-directional. *


CHAPTER 5 SET POINTS

§ 5-1 SET POINTS


5-1-1 Change Set point code and Set point values






F106	Input Mode		Set Point Input
☆	1	Panel key	From Panel key
	2	BCD Input: Code Input from rear panel	From Panel key
	3	Serial Input: RS-232 or RS-422/482 when F203=5	From Panel key or Serial Input







 How to change Set point Code: After press **SET POINT/ CODE** key, please press the  key to show the current set-point code. Use the  or  key to change set point code and the  or  key to change value. Please press the  key to finish changing set-point code. The relay will work according to the specific set-point code.







 Please identify the function F106=1. Otherwise, the operator can only review the set-point codes.







5-1-2 Change Set point values







 How to change Values **within** Set point Codes: Please press ***** key, then press **SET POINT/CODE** key. The screen will show blinking **CODE 00**.







STEP 1: Use the  or  key to change position and the  or  key to change set point code. Please press the  key to finish changing set-point code.







STEP 2: The screen will show **Final**. Please press the  key, and the screen will show 6-digit value with blinking 0 **000.000**. Use the  or  key to change position and  or  key to change value. Please press the  key to confirm FINAL value.

STEP 3: The screen will show **SP1**, please press the  key. The screen will show a 6-digit value with blinking 0 **000.000**. Please use the  or  key to change position and the  or  key to change value. Please press the  key to confirm SP1 value.

STEP 4: The screen will show **SP2**, please press the  key. The screen will show 6-digit value with blinking 0 **000.000**. Please use the  or  key to change position and the  or  key to change value. Please press the  key to confirm SP2 value.

STEP 5: The screen will show **Free**, please press the  key. The screen will show 6-digit value with blinking 0 **000.000**. Please use the  or  key to change position and the  or  key to change value. Please press the  key to confirm Free Fall value.

STEP 6: The screen will show **Hi**, please press the  key. The screen will show 6-digit value with blinking 0 **000.000**. Please use the  or  key to change position and the  or  key to change value. Please press the  key to confirm Hi (Over Limit) value.

STEP 7: The screen will show **Lo**, please press the  key. The screen will show 6-digit value with blinking 0 **000.000**. Please use the  or  key to change position and the  or  key to change value. Please press the  key to confirm Lo (Under Limit) value.

STEP 8: The screen will show **CODE 00**, please press the **STANDBY** key to leave set point codes. If you wish to continue reset other SET POINT CODES. Please enter values according to step1 to step 8 again.

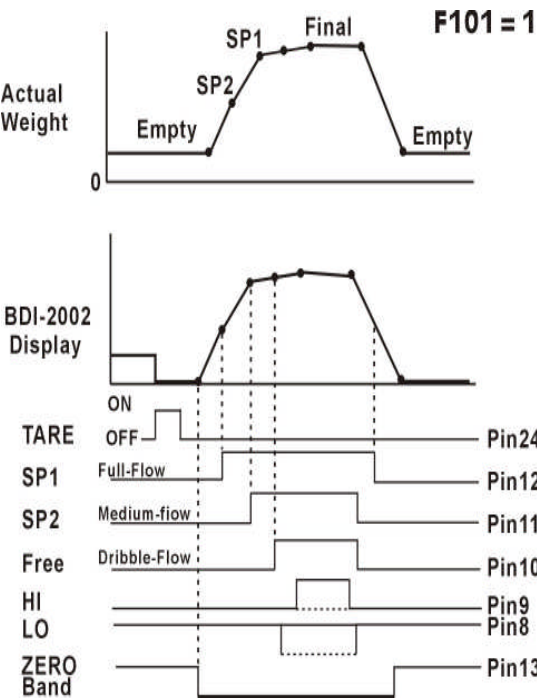
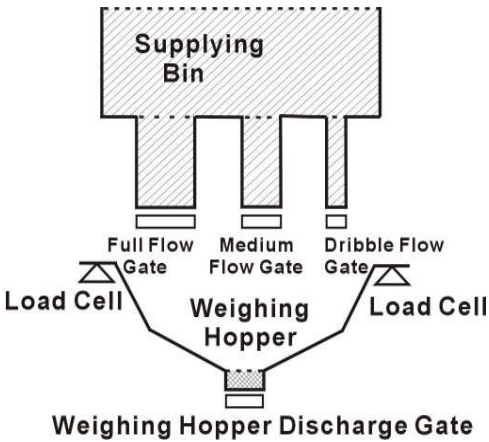
§ 5-2 BATCHING MODES

Batching Modes

1. Customer Programmed Control Mode: Normal Batching
2. Customer Programmed Control Mode: Loss-in-Weight Batching
3. Built-in Automatic Program Mode: Normal Batching
4. Built-in Automatic Program Mode: Loss-in weight Batching
5. Multiple-Ingredient Batching

Customer Programmed Control Mode: Normal Batching(F101 = 1)

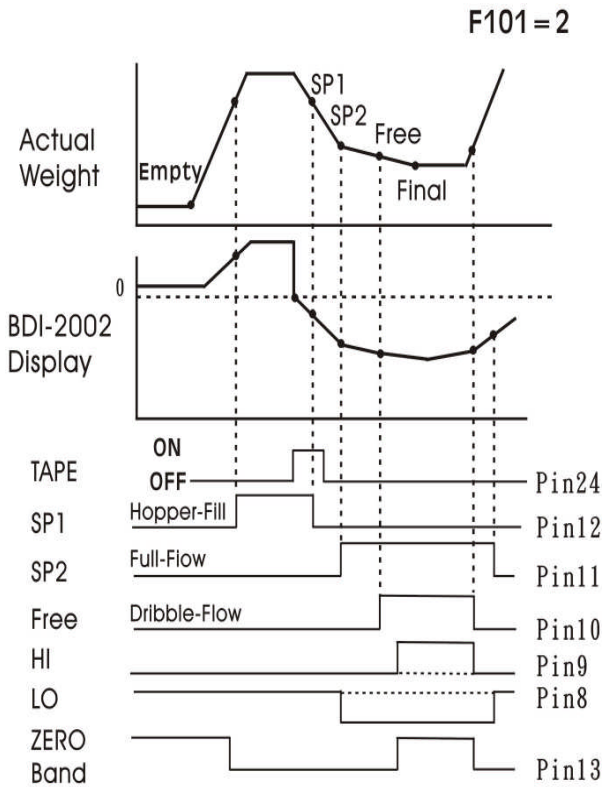
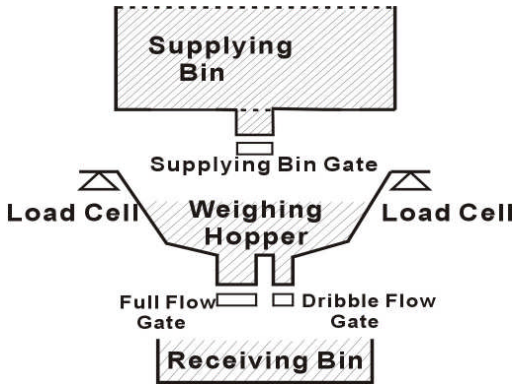
SP1 – Full Flow Gate
 SP2 – Medium Flow Gate
 Free – Dribble Flow Gate



1. The Weighing Hopper is empty, the display shows "0", and all Gates are closed. If the display is not at ZERO, **input a TARE** signal (Pin 24) to **re-ZERO** the display.
2. Open the Supply Bin's: Full-Flow Gate, Medium-Flow Gate, and Dribble-Flow Gate.
3. When the display reaches "**Final - SP 1**", the **SP 1** Output (Pin 12) signal will come **ON**. Closed the Full-Flow Gate by using the SP 1 Output ON signal.
4. When the display reaches "**Final - SP 2**", the **SP 2** Output (Pin 11) signal will come **ON**. Closed the Medium-Flow Gate by using the **SP 2** Output ON signal.
5. When the display reaches "**Final - FREE**", the **FREE** Output (Pin 10) signal will come **ON**. Closed the Dribble-Flow Gate by using the **FREE** Output ON signal.
6. After Free Fall has stopped - check if the HI and LO (Pin 9, 8) signals are OFF. If both outputs are OFF then the batch is completed correctly.
7. An Automatic Free Fall Compensation Command (Min. 200ms pulse to Pin 21) may be given at this time. If you change the Free Fall Set Point value either from the Front Panel or the RS-232C, RS-422/485 — the learned Free Fall value will be cleared.
8. Use the **FREE** (Pin 10) signal to delay a time period as the control signal is processing empty the Weighing Hopper.
9. When the GROSS weight is below the ZERO band, the ZERO Band Output will come ON -signifying the Weighing Hopper is empty. Closed the Weighing Hopper Discharge Gate by using the ZERO Band (Pin 13) Output ON signal.
10. You are now ready for your next batching event.

© Customer Programmed Control Mode: Loss-in-Weight (F101 = 2)

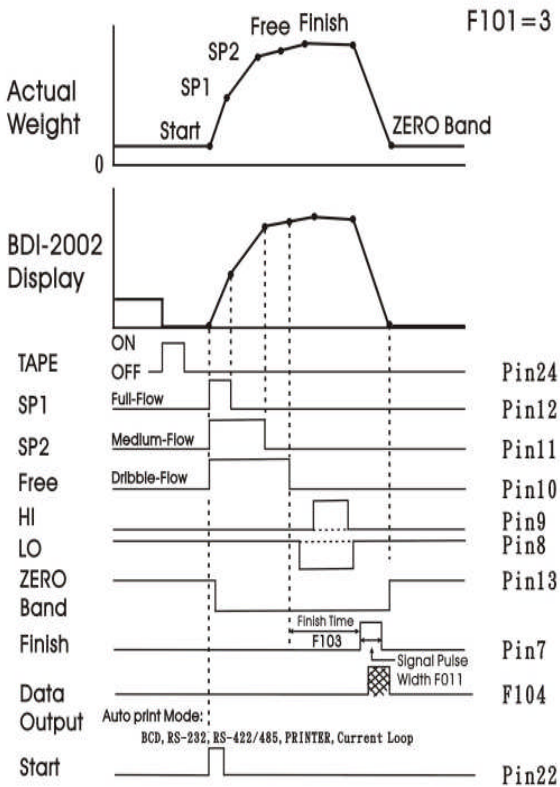
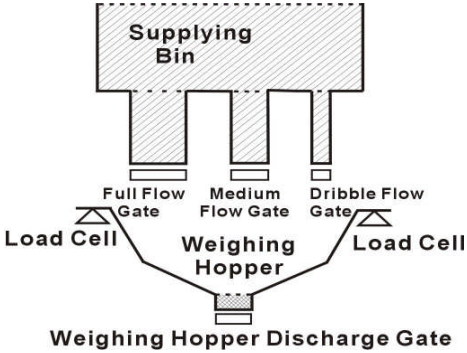
SP1 – Supplying Bin Gate
 SP2 – Full Flow Gate
 Free – Dribble Flow Gat



1. The Weighing Hopper is empty as is the Receiving Bin. The display shows "0", and all Gates are closed.
2. Open the Supplying Bin Gate.
3. When the GROSS Weight reaches "SP 1", the SP 1 Output (Pin 12) signal will come ON. Closed the Supplying Bin Gate by using the SP 1 Output ON signal.
4. The displayed weight will exceed the SP 1 value by the Free Fall value. This weight is not necessarily accurate - but accuracy is not needed at this moment since the purpose of this event is to fill up the Weighing Hopper. The SP 1 value is always compared to GROSS weight.
5. Input a TARE signal (Pin 24) to ZERO the display.
6. Open the Full-Flow Gate and the Dribble-Flow Gate for Full-Flow filling into the Receiving Bin.
7. When the display reaches "Final - SP 2", the SP 2 Output (Pin 11) signal will come ON. Closed the Full-Flow Gate by using the SP 2 Output ON signal.
8. When the display reaches "Final - FREE", the FREE Output (Pin 10) signal will come ON. Closed the Dribble-Flow Gate by using the FREE Output ON signal.
9. After Free Fall has stopped - check to see if the HI and LO (Pin 9, Pin 8) signals are OFF. If both outputs are OFF then the batch is completed correctly.
10. An Automatic Free Fall Compensation Command (Min. 200ms pulse to Pin 21) may be given at this time.
11. If the GROSS weight of the Weighing Hopper is below the ZERO Band (Pin 13), the ZERO Band Output will be ON. The ZERO Band Output will refill Weighing Hopper if needed.
12. Ready for next batching event.

◎ Built-in Automatic Program Mode: Normal Batching(F101 = 3)

SP1 - Full Flow Gate
 SP2 - Medium Flow Gate
 Free - Dribble Flow Gate
 Start signal – Pin22



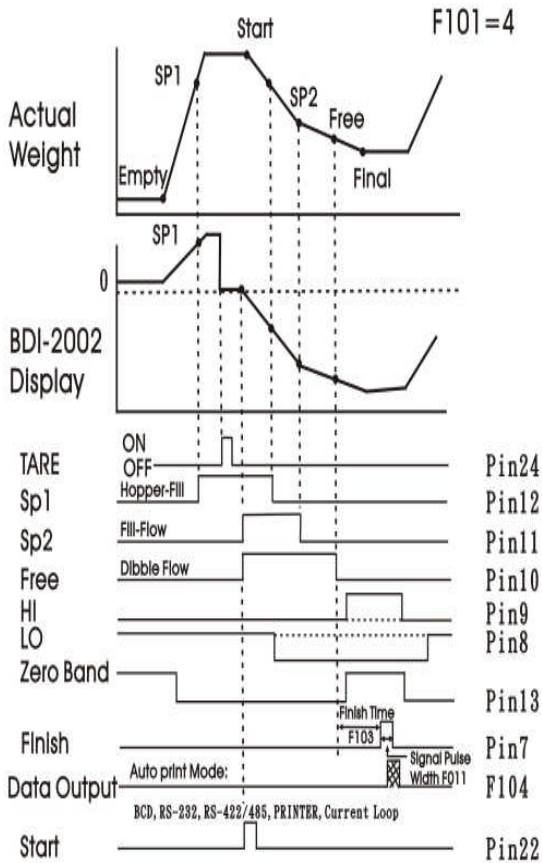
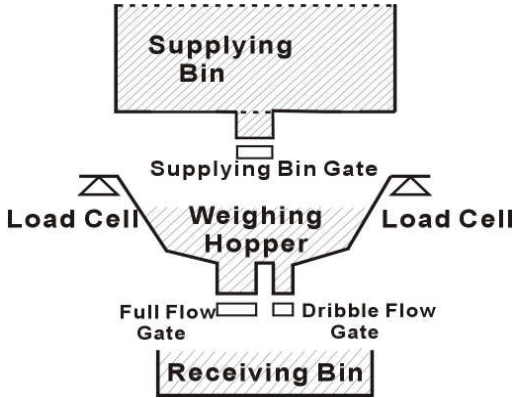
1. The Weighing Hopper is empty, the display shows "0", and all Gates are closed. If the display is not at ZERO, **input a TARE** signal (Pin 24) to **re-ZERO the display**.
2. Check if the Weighing Hopper is empty using the ZERO Band Output (Pin 13).
3. Input the Start signal via the Control I/O Interface connector (Pin 22). When the Start signal is received, then **SP 1**, **SP 2**, and Free Output signals will "come ON".

Note: When the Final Weight is 0, the Pin 12, 11 and 10 are kept OFF.

4. Open the Supply Bin's: Full-Flow Gate, Medium-Flow Gate, and Dribble-Flow Gate.
5. When the display reaches "**Final - SP 1**", the **SP 1** Output (Pin 12) signal will come **OFF**. Closed the Full-Flow Gate by using the **SP 1** Output OFF signal.
6. When the display reaches "**Final - SP 2**", the **SP 2** Output (Pin 11) signal will come **OFF**. Closed the Medium-Flow Gate by using the **SP 2** Output OFF signal.
7. When the display reaches "**Final - Free**", the **Free** Output (Pin 10) signal will come **OFF**. Closed the Dribble-Flow Gate by using the Free Output OFF signal.
8. Batch Finish signal is sent after the set time period (F103) or when the display is stable.
9. After Free Fall has stopped - check to see if the HI and LO (Pin 9, 8) signals are OFF. If both outputs are OFF then the batch is completed correctly.
10. Automatic Free Fall is now recalculated for the next event.
11. The Weighing Hopper Discharge Gate will be opened using the Finish Output (Pin 7) ON signal.
12. Data Output is sent (Auto print Mode: BCD, RS-232C, RS-422/485, Printer or Current Loop). The NET Weight data will be accumulated.
13. Ready for the next batching event.
14. If an Abort signal is sent (Pin 21) anytime after the Start signal is received, then:
 - (1) SP 1, SP 2 and Free signals will go OFF, and Gates will be closed.
 - (2) Batch Finish and Data Output signals will be sent.
 - (3) NET Weight data will be accumulated.

◎ Built-in Automatic Program Mode: Loss-in-Weight Batching (F101=4)

SP1 – Supplying Bin Gate
 SP2 – Full Flow Gate
 Free – Dribble Flow Gate
 Start signal – Pin22




1. The Weighing Hopper/ Supply Bin is empty .The display shows "0", and all Gates are closed.
2. Open the Supplying Bin Gate.
3. When the GROSS Weight reaches "**SP 1**", the **SP 1** Output (Pin 12) signal will come **ON**. Closed the Supplying Bin Gate by using the **SP 1** Output ON signal.
4. The displayed weight will exceed the **SP 1** value by the Free Fall value. This weight is not necessarily accurate - but accuracy is not needed at this moment since the purpose of this event is to fill up the Weighing Hopper. The SP 1 value is always compared to GROSS weight.
5. Input a TARE signal (Pin 24) to ZERO display.
6. Input the Start signal via the Control I/O interface connector (Pin 22). When the Start signal is received, the SP 2 and Free Outputs "come ON".

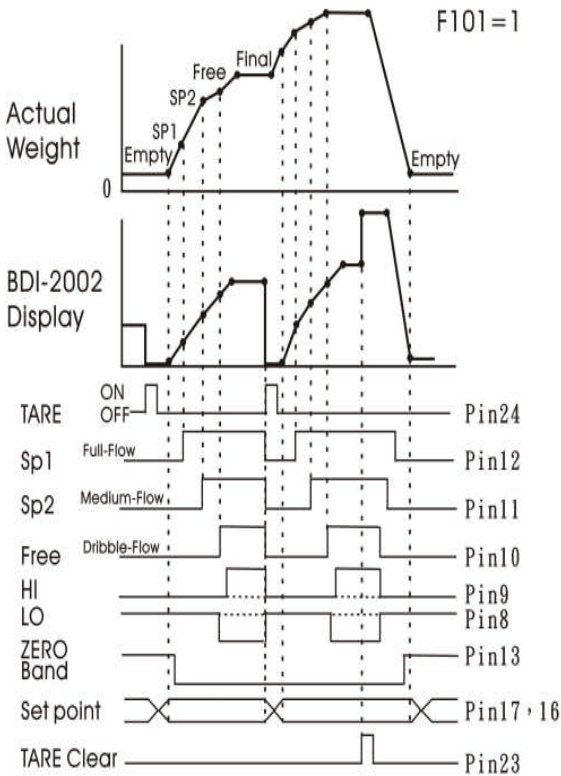
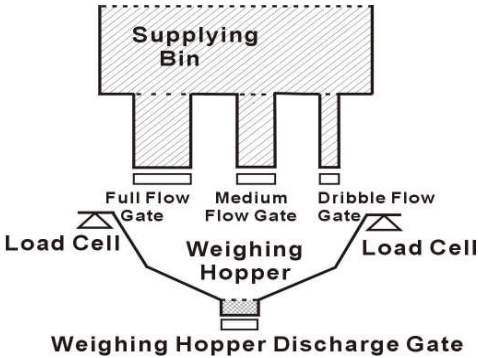
Note : When the Final Weight is 0, the Pin 11 and 10 are kept OFF .

7. Open the Full-Flow Gate and the Dribble-Flow Gate for Full-Flow filling into the Receiving Bin.
8. When the display reaches "**Final - SP 2**", the **SP2** Output (Pin 11) signal will come **OFF**. Closed the Full-Flow Gate by using the **SP2** Output OFF signal.
9. When the display reaches "**Final - FREE**", the **FREE** Output (Pin 10) signal will come **OFF**. Closed the Dribble-Flow Gate by using the **FREE** Output OFF signal.
10. Batch Finish signal is sent after the set time period (F103) or when the display is stable.
11. After Free Fall has stopped - check if the HI and LO (Pin 9, 8) signals are OFF. If both outputs are OFF then the batch is completed correctly.
12. Automatic Free Fall is now recalculated for the next event.
13. The Weighing Hopper Discharge Gate will be opened using the Finish Output (Pin 7) ON signal.
14. Data Output is sent (Auto print Mode: BCD, RS-232C, RS-422/485, Printer or Current Loop). The NET Weight data will be accumulated.
15. Signal (Pin 13) will refill using ZERO Band Output if needed. Ready for next batching event.
16. Ready for the next batching event.
17. If an Abort signal is sent (Pin 21) anytime after the Start signal is received, then: (1) SP 1, SP 2 and Free signals will go OFF, and Gates will be closed. (2) Batch Finish and Data Output signals will be sent. (3) NET Weight data will be accumulated.

◎ **Multiple-Ingredient Batching**

 Multiple-Ingredient Batching can be done in any of the four Batch settings of Function (F101). Accumulation will be performed by Automatic Free Fall Compensation Command (control I/O Pin 10) in the Customer-Programmed Control mode and at Final Output in the Built-in Automatic Program mode. The **example** below is a Normal Batching operation in the Customer Programmed Control Mode.

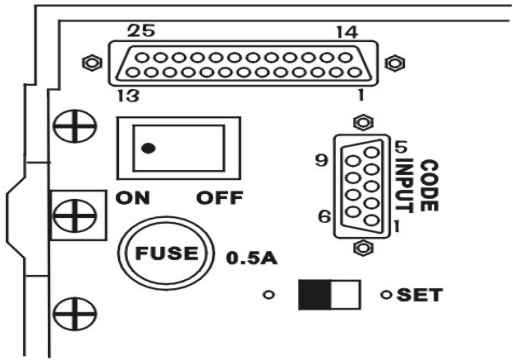
SP1 – Full Flow Gate
 SP2 – Medium Flow Gate
 Free – Dribble Flow Gate



1. The Weighing Hopper is empty, the display shows "0", and all Gates are closed. If the display is not at ZERO, **input a TARE signal** (Pin 24) to **re-ZERO the display**.
2. Input the Set Point Code number for Batching.
3. Open the supplying Bin's : Full-Flow Gate, Medium-Flow Gate, and Dribble-Flow Gate.
4. When the display reaches "**Final - SP 1**", the **SP 1** Output (Pin 12) signal will come **ON**. Closed the Full-Flow Gate by using the SP 1 Output ON signal.
5. When the display reaches "**Final - SP 2**", the **SP 2** Output (Pin 11) signal will come **ON**. Closed the Medium-Flow Gate by using the SP 2 Output ON signal.
6. When the display reaches "**Final - FREE**", the **FREE** Output (Pin 10) signal will come **ON**. Closed the Dribble-Flow Gate by using the FREE Output ON signal.
7. An Automatic Free Fall Compensation Command (Min. 200ms pulse to Pin 21) may be given at this time
8. After Free Fall has stopped - check to see if the HI and LO (Pin 9, 8) signals are OFF. If both outputs are OFF then the batch is completed correctly.
9. Please input a TARE signal (Pin 24) and set point code, then preparing another substance batching.
10. Load the next substance into the Supplying Bin. Prepare the proper Program, Operator Settings (if needed). Repeat Steps 3 ~ 8.
11. Use the FREE (Pin 10) signal to delay a time period as the control signal is processing to empty the Weighing Hopper.
12. When the GROSS weight is below the ZERO band, the ZERO Band Output will come ON which signifying the Weighing Hopper is empty. Closed the Weighing Hopper Discharge Gate by using the ZERO Band (Pin 13) Output ON signal.
13. You are now ready for your next batching event.

CHAPTER 6 OPTIONS

§ 6-1 I/O INTERFACE

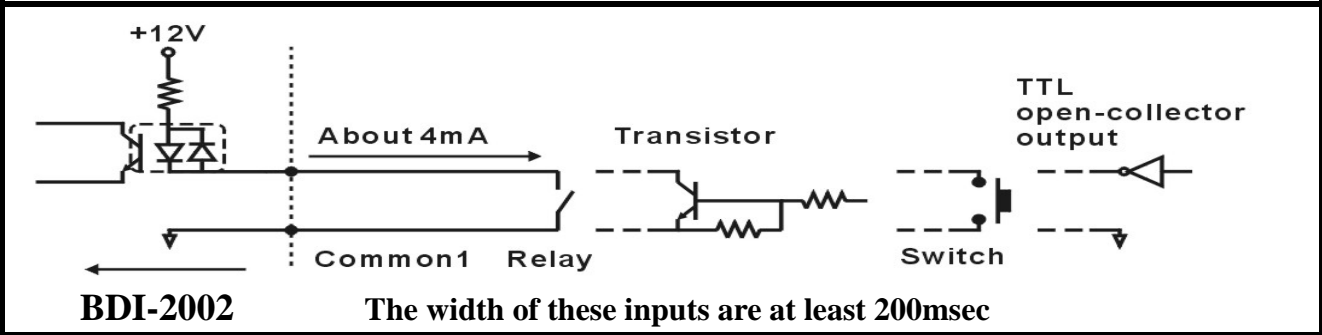


CODE INPUT			
Pin	Name	Pin	Name
1	1x1	6	2x10
2	2x1	7	4x10
3	4x1	8	8x10
4	8x1	9	Common
5	1x10		

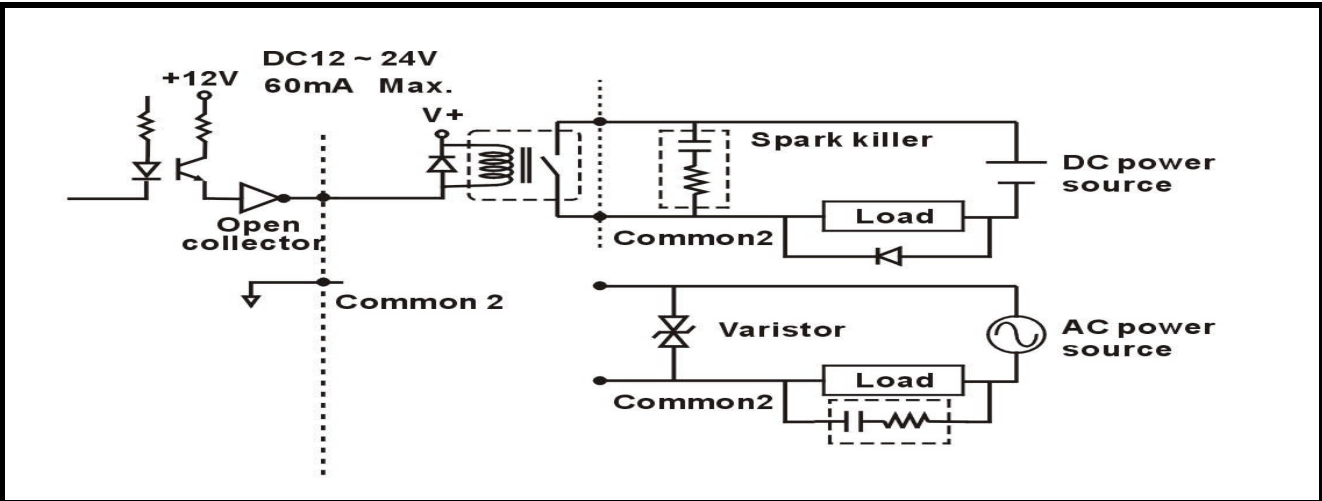
- FINAL**
 The Total Weight of the batching event with six-digit value.
- SP1"Optional Preliminary, Set Point 1**
 Close the Weighing Hopper Full Flow Gate with six-digit value.
- SP2" Preliminary, Set Point 2**
 Close the Weighing Hopper Medium Flow Gate with six-digit value.
- FREE FALL**
 Close the Weighing Hopper Dribble Flow Gate with six-digit value.
- HI"Over Limit**
 Please enter six-digit Over Limit Value
 $NET\ weight > Final + Over\ Limit\ Value$
- LO"Under Limit**
 Please enter six-digit Under Limit Value
 $NET\ weight < Final - Under\ Limit\ Value$

© Control I / O

Input :



Output :



BDI-2002

◎ **INPUT Pins DESCRIPTION**

Pin	Signal Name	Description
Pin 25	ZERO Input (Pulse input)	BDI-2002 returns to the center of ZERO when the weighing device is empty
Pin 24	TARE Input (Pulse input)	BDI-2002 switches to TARE mode, ZERO's the display and stores the TARE weight in memory.
Pin 23	TARE Reset (Pulse input)	TARE value is cleared to "0".
Pin 22	↖ Built-In program Mode, start Batch Input	↖ Batching will be started when Pin 22 is short-circuit to COM1
	* Customer Program- control Mode set point "data" abort read input	* When Pin 22 is short-circuit to COM1, BDI-2002 will stop receiving data from set points, keeping the previous data.
Pin 21	↖ Built-In program Mode, Abort the Batch (Pulse Input)	↖ When Pin 21 is short-circuit to COM1, the batch is aborted and FINISH signal is sent, and the NET weight will be accumulated.
	* Customer Program- control Mode Automatic Free Fall Compensation command (Pulse input).	* When Pin 21 is short-circuit to COM1, BDI-2002 will estimate the free fall value for the next batch, and the NET weight will be accumulated.
Pin 20	Print Accumulator	Accumulator will be printed when P20 short-circuited with COM1.
Pin 19	PRINT Input (pulse input)	When FC01, F203=3, F401=3, F302=2 shorted with COM1, Data will be sent one time.
Pin 18	Clear Accumulated Value and Count (pulse input)	If this command is accepted, all the accumulated weight and accumulated count will be cleared.
Pin 16 or 17	Input Common (COM1)	

◎ **OUTPUT Pins DESCRIPTION**

Pin	Signal Name	Description
Pin 13	ZERO BAND Output	GROSS Weight \leq ZERO Band
Pin 12	SP1 Output	↖ Batching Mode: NET Weight \geq Final Weight- SP1
		* Loss-in-weight Mode: GROSS Weight $>$ SP1
Pin 11	SP2 Output	NET Weight \geq Final Weight- SP2
Pin 10	Free Fall Output	NET Weight \geq Final Weight- Free Fall

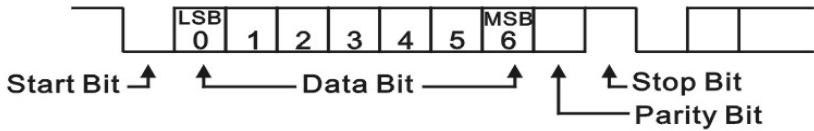
Pin 9	HI Output	NET Weight > Final Weight + HI
Pin 8	LO Output	NET Weight < Final Weight - LO
Pin 7	FINAL Output	Built-In program Mode: send signal at Final.
Pin 6	Motion Detection / Error Output	☞ F105 = 0: Output at Stable; Shorted when motion. ☛ F105 = 1: ☞ Error occurred, ☛ over Zero Band range, or ☛ Over weight capacity or printer error.
Pin 3. Pin 4	Output 12V	Output Current Max 0.5A
Pin 1. Pin 2	Output Common	

§ 6-2 OP-02 SERIAL RS-232

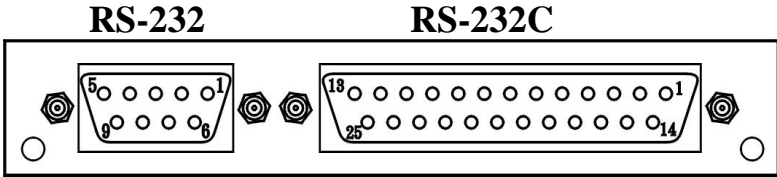
☒ Please refer to F200 ~ F204 in § 4-2 Functions

GENERAL INTRODUCTION

Specifications		
Type	EIA-RS-232C 12V	
Transmission	Half Duplex, Asynchronous Transmission	
Baud Rate	1200、2400、4800、9600、19200BPS	
Bit	8 bit	7 bit
Parity	non- parity	even parity, odd parity
Stop Bit	1 bit	
Output Code	ASC II	

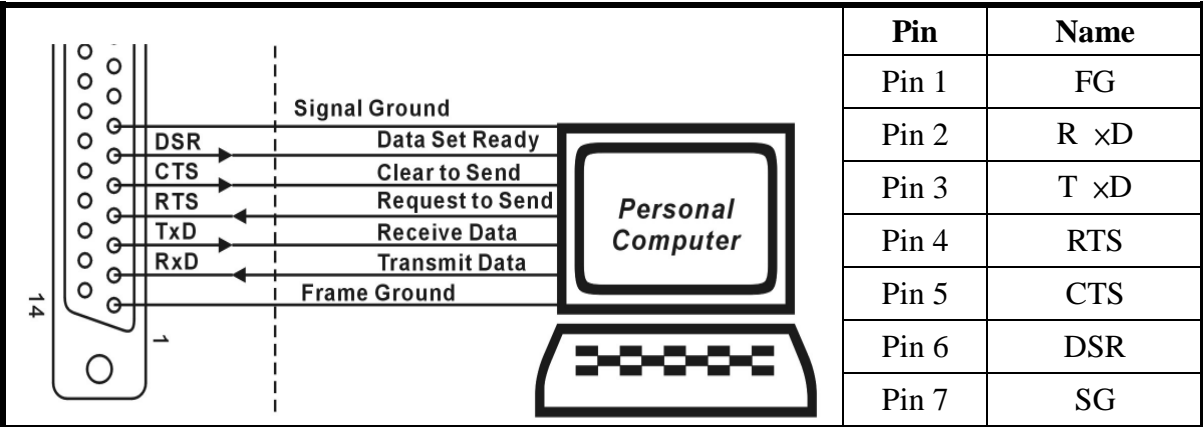


OP-02A (As seen below)

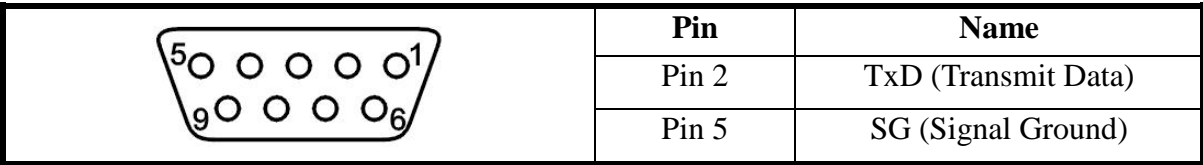


◆ I/O Specifications of OP-02A

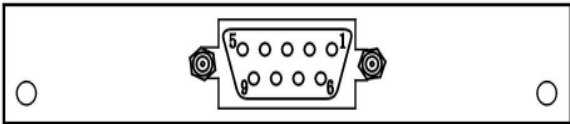
(1) 25 Pin D- Shape



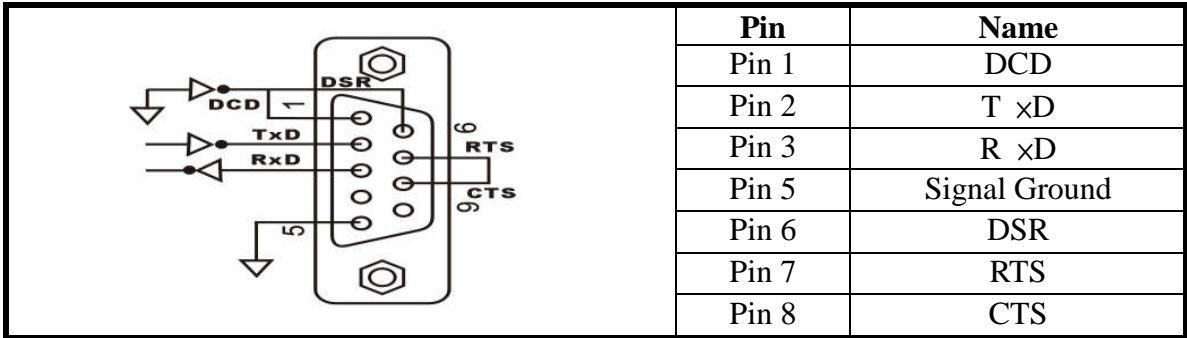
(2) 9Pin D Shape



OP-02A1 (As seen below)

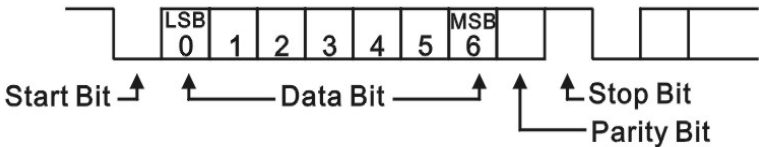


Pin Assignments of OP-02A1 :



OP-02B (RS422)

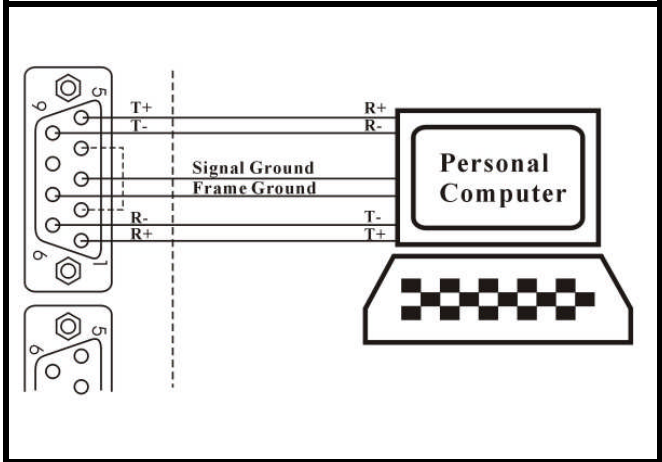
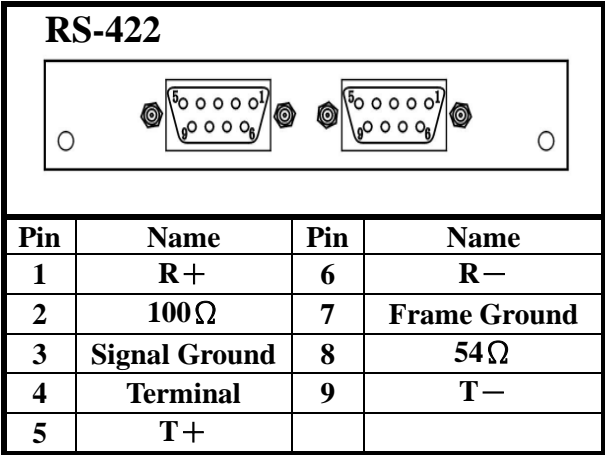
Specifications		
Type	EIA-RS-422	
Transmission	Half Duplex, Asynchronous Transmission	
Baud Rate	1200 · 2400 · 4800 · 9600 · 19200BPS	
Bit	8 bit	7 bit
Parity	non- parity	even parity, odd parity
Stop Bit	1 bit	
Output Code	ASC II	



	RS-422
1	R+ > R-
0	R+ < R-

Pin Assignments of RS-422 :

Pin Connection :



◆Serial Interface [OP-02] Data Format.

Format1 (Data Update speed is the same as F002)

C	D	,	0	1	,	S	T	,	N	T	,	0	0	5	4	3	2	.	1	k	g	Cr	Lf
≤CODE		≤ Code		≤Header 1		≤ Header 2		≤ Data (8 digits in length)								≤ UNIT							
number																							

※HEADER 1		
O	L	<input type="checkbox"/> Over Max. Capacity or under Min. Capacity
S	T	<input type="checkbox"/> STABLE
U	S	<input type="checkbox"/> UNSTABLE

※HEADER 2		
N	T	<input type="checkbox"/> NET
G	S	<input type="checkbox"/> GROSS
T	R	<input type="checkbox"/> TARE

※UNIT		
k	G	<input type="checkbox"/> Kilogram
l	B	<input type="checkbox"/> Pound

ASCII data characters

- “ 0 ” ~ “ 9 ”
- “ ” Space (20H)
- “ . ” Decimal Point (2EH)
- “ - ” Minus (2DH)
- “ + ” Plus (2BH)

※Command List Table

Sending Command to BDI-2002	BDI-2002 response
R Cr Lf < READ >	Sending latest data once (Data format depends on F202)
Z Cr Lf < ZERO >	BDI-2002 display will ZERO. Z Cr Lf will be sent by BDI-2002.
T Cr Lf < TARE >	BDI-2002 will go to NET Mode and display will TARE. T Cr Lf will be sent by BDI-2002.
N Cr Lf < NET >	BDI-2002 will go to NET Mode. N Cr Lf will be sent by BDI-2002.
G Cr Lf < GROSS >	BDI-2002 will go to GROSS Mode. G Cr Lf will be sent by BDI-2002.

Sending Command to BDI-2002	BDI-2002 response
BB Cr Lf < BEGIN BATCHING >	Send back signal “BB”. “BB” can only be received in the Built in Automatic Program Control Mode
HB Cr Lf < HALT BATCHING >	Send back signal “HB”. “HB” an only be received in the Built in Automatic Program Control Mode
RF Cr Lf < READS FINAL NET >	Sending Final NET weight. If B Cr Lf is send by BDI-2002, that means batching is still in process.
S Cr Lf < SETPOINT >	Signal “S Cr Lf ” will send back by BDI-2002. BDI-2002 will send back SET POINT CODE until totally receive SET POINT CODE data.
SS xx Cr Lf < SET SETPOINT >	SS XX Cr Lf will send back by BDI-2002. BDI-2002 will send back SET POINT values until totally receive SET POINT values.

Print Sample :

Panasonic KX-P1121 Matrix Printer

F301=222154 F302=2 F303=2
F303=1

Date	Time	Code	Count	Gross Wt	Net Wt	Tare Wt
91/09/17	11:46:43	00	0	+ 5.991kg	+ 4.867kg	+ 1.124kg
91/09/17	11:46:51	00	0	+ 5.991kg	+ 4.867kg	+ 1.124kg
91/09/17	11:46:53	00	0	+ 5.991kg	+ 4.867kg	+ 1.124kg
91/09/17	11:46:54	00	0	+ 5.991kg	+ 4.867kg	+ 1.124kg
Net Total :				+ 0.000		

Print Sample :

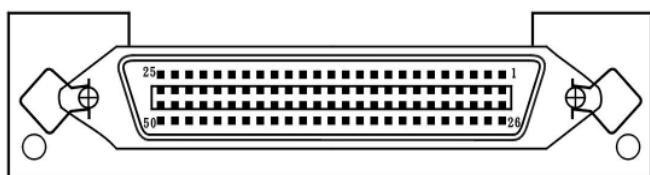
Mini Matrix Printer PH24

F301=222154 F302=2

Date	: 91/09/17
Time	: 11:44:16
Code	: 00
Count	: 0
Gross	: + 5.991kg
Net	: + 4.867kg
Tare	: + 1.124kg
Net Total : + 0.000	

§ 6-4 PARALLEL BCD INTERFACE

☒ Please refer to F400 ~ F402 in § 4-2 Functions

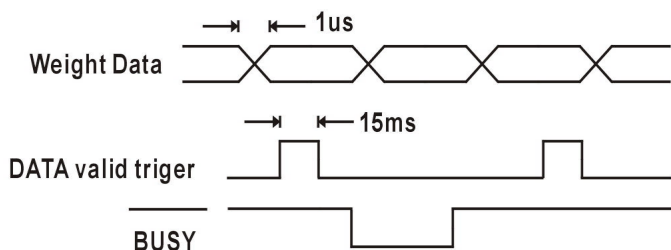


※OPEN COLLECTOR TYPE

■Maximum Voltage : 30V

■Maximum Current : 24mA

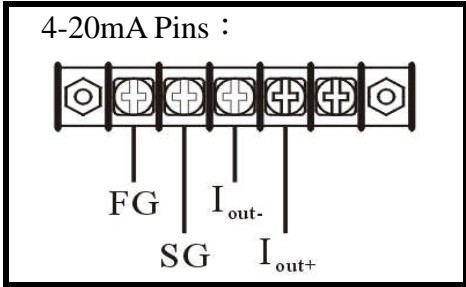
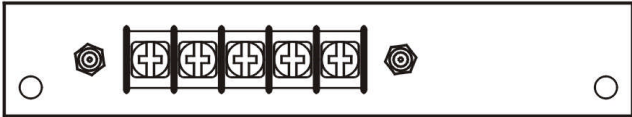
※Please add a pull-up resistance if connected to a TTL LOGIC.



Pin	Pin Name	Pin	Pin Name
1	GROUND	26	NC
2	1×1	27	Hi = NET , Lo = GROSS
3	2×1	28	NC
4	4×1	29	NC
5	8×1	30	NC
6	1×10	31	NC
7	2×10	32	NC
8	4×10	33	Lo = MOTION
9	8×10	34	1×1 CODE
10	1×100	35	2×1 "
11	2×100	36	4×1 "
12	4×100	37	8×1 "
13	8×100	38	1×10 "
14	1×1000	39	2×10 "
15	2×1000	40	4×10 "
16	4×1000	41	8×10 "
17	8×1000	42	Lo = Negative Polarity
18	1×10000	43	/ Decimal Point 1
19	2×10000	44	/ Decimal Point 2
20	4×10000	45	/ Decimal Point 3
21	8×10000	46	/ Decimal Point 4
22	1×100000	47	Hi = Overload
23	2×100000	48	NC
24	4×100000	49	PRN 1
25	8×100000	50	/ Busy (input)

§ 6-5 Analog Output OP-05

☒ Please refer to F500 ~ F506 in § 4-2 Functions



* OP-05 Analog output 4 ~ 20mA

Range	4 ~ 20mA (Possible: 2 ~ 22mA)
Resolution	Min. 1 / 3000
Temp. coefficient	± (0.015% / °C of rdg + 0.01mA) / °C
Max. resistance load	Max.500Ω

⚠ If you add a 250Ω resistor , the output will be 1V to 5V (4~20mA)

① This resistor must be large enough for proper power consumption.

Use the following formula: $W = I^2 \times R$ where

W: Power I: Output Current R: Resistor

If a 500Ω resistor is used , power consumption will be :

$$W = (0.02)^2 \times 500 = 0.2 \text{ when the Output Current is set to } 0.2\text{mA}$$

The resistor should have a power greater than "0.5" (w = 0.5) and have a very low temperature coefficient. In this example power consumption is "0.2" and thus, the 500Ω resistor is adequate.

⚠ Setting Output Current

$$I_{OUT} = I_Z + (\text{weight} / \text{capacity}) * (I_M - I_Z) \quad (\text{if } 2 \leq I_{OUT} \leq 22\text{mA})$$

I_{OUT}: Output Current I_Z: Output at ZERO (F501) I_M: Output at Maximum Capacity (F502)

Example: A weighing system has a Maximum Capacity of 10,000kg.

If you need the Output current to be 4mA at ZERO display, and 20mA at 1/2

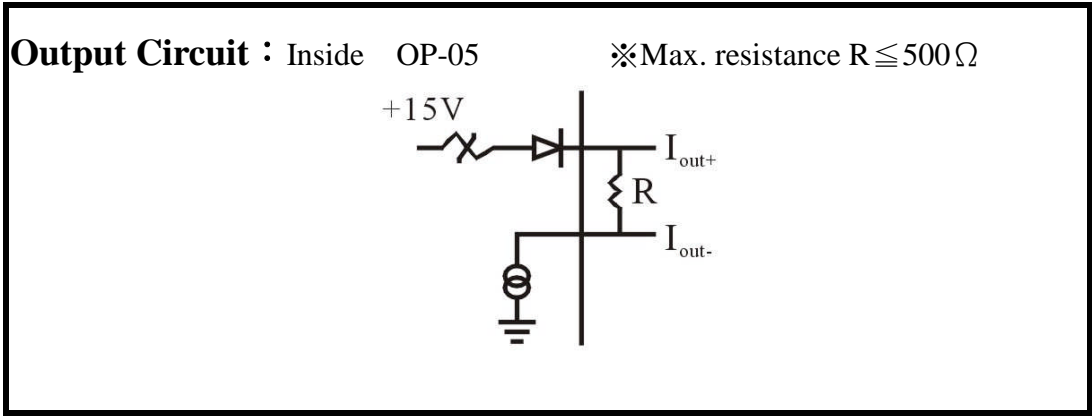
Maximum Capacity then:

$$I_M = \text{capacity} / \text{simulated} \times (I_{OUT} - I_Z) + I_Z$$

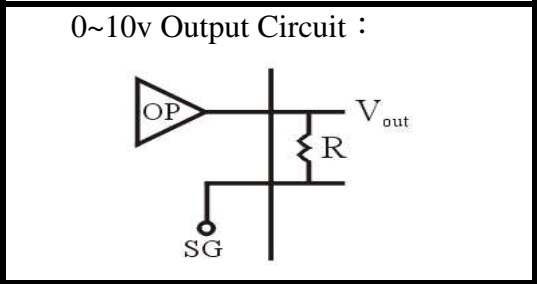
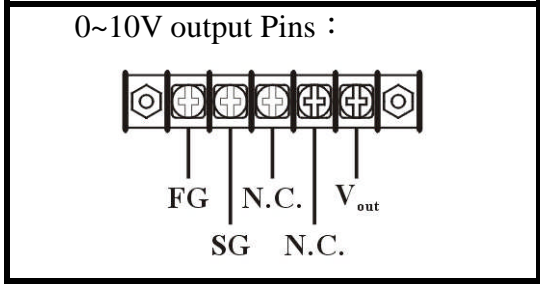
$$I_M = 10000 / 5000 \times (20\text{mA} - 4\text{mA}) + 4\text{mA} = 36\text{mA}$$

When Output at Full Scale is set at 36mA, and Output Current at Display ZERO is set at 4mA, then at 1/2 Capacity (5000kg) the Output Current will be 20mA.

※ NOTE: The Maximum Output will be saturated at 22mA.



*** OP-06 Analog Output 0 ~ 10V**



Range	0 ~ +10V , (Possible: -1.25 ~ 11.25V)
Resolution	Min. 1 / 3000
Temp. coefficient	± (0.015% / °C of rdg + 0.01mA) / °C
Max. resistance load	Min. 5KΩ

⚠ If you add a 10 KΩ resistor , the output will be 0mA to 1mA (0~10 V)

ⓘ This resistor must be large enough for proper power consumption.

Use the following formula: $W = V^2 / R$ where

W: Power V: Output Voltage R: Resistor

⚠ Setting Output Voltage

$$V_{OUT} = V_Z + (\text{weight} / \text{capacity}) * (V_M - V_Z) \quad (\text{if } 0 \leq V_{OUT} \leq 10 \text{ V})$$

V_{OUT}: Output Voltage

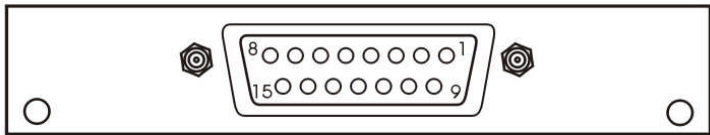
V_Z: Output at ZERO (F505)

V_M: Output at Maximum Capacity (F506)

NOTE: The Maximum Output will be saturated at 11.25.

§ 6-6 Remote Set Point Unit: Final Weight OP-07

⊠ Please refer to F700 in § 4-2 Functions



■ Pin Assignment :

Pin	Description	Pin	Description
1	Finish 10 ⁰	9	1
2	Finish 10 ¹	10	2
3	Finish 10 ²	11	4
4	Finish 10 ³	12	8
5	Finish 10 ⁴	13	SHIELD
6	SHIELD	14	
7		15	
8			

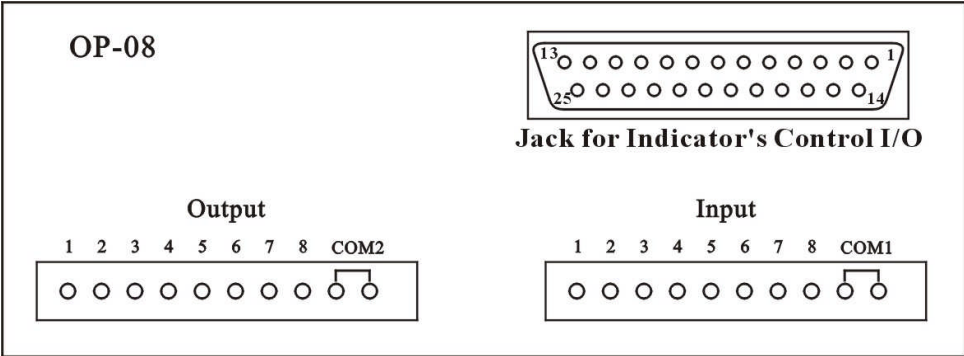
§ 6-7 RELAY CONTROL INTERFACE OP-08 (Two Types)

****This option is to connecting BDI-2001B OP-01 Control I/O, which enable OP-01 to RELAY OUTPUT.**

Specifications:

Power : Standard : DC12 from BDI-2001B.

Pin assignment :



Accessory :

- (1) 25PIN Male to Female Wire 1.8 Meter.

(A) RELAY TYPE

Input(IN)

Number of Pins : 8.
Input Common Pin : COM1

Output(OUT):

Number of Pins : 8.
Type : for RELAY.
Max. Load : 250VAC, 30VDC, 3A
Output Common Pin : COM2
RELAY durance : About 100,000 Times.
LED light will ON when work.

(B) SSR TYPE

Input(IN)

Number of Pins : 8.
Input Common Pin : COM1

Output(OUT):

Number of Pins : 8.
Type : for RELAY.
Max. Load : 24~280VAC, 3A (Only for AC)
Output Common Pin : COM2
RELAY durance : About 100,000 Times.

CONTROL I/O Pins		
	OP-08 I/O	BDI-2001B Control I/O
Input	1	PIN 25
	2	PIN 24
	3	PIN 23
	4	PIN 22
	5	PIN 21
	6	PIN 20
	7	PIN 19
	8	PIN 18
Output	1	PIN 13
	2	PIN 12
	3	PIN 11
	4	PIN 10
	5	PIN 9
	6	PIN 8
	7	PIN 7
	8	PIN 6

LED light will ON when work.

APPENDIX

BDI-2002 QUICK MANUAL-1

1.Change Set point code.

How to change Set point Code : Press **SET POINT / CODE** key to show the current set-point code. Use **◀, 0, ▶, or ↻** to change value. Please press the **↵** key to finish changing set-point code.

* * * Factory set initial F106=1. Please identify the function F106=1. Otherwise, the operator can only review the set-point codes.

2.Change Set point values within the Codes.

How to change Values within Set point Codes : Please press ***** key, then press **SET POINT / CODE** key. The screen will show blinking **CODE 00**.

STEP 1 : Use **◀, 0, ▶, or ↻** key to find set point code. Please press the **↵** key.

STEP 2 : The screen will show **Final**. Please press the **↵** key. And the screen will show 6-digit value with blinking **0 000.000**. Use **◀, 0, ▶, or ↻** key to change value. Please press the **↵** key to confirm FINAL value.

STEP 3 : The screen will show **SP1**. Please press the **↵** key, and the screen will show 6-digit value with blinking **0 000.000**. Use **◀, 0, ▶, or ↻** key to change value. Please press the **↵** key to confirm Set Point 1 value.

STEP 4 : The screen will show **SP2**. Please press the **↵** key, and the screen will show 6-digit value with blinking **0 000.000**. Use **◀, 0, ▶, or ↻** key to change value. Please press the **↵** key to confirm Set Point 2 value.

STEP 5 : The screen will show **FREE**. Please press the **↵** key, and the screen will show 6-digit value with blinking **0 000.000**. Use **◀, 0, ▶, or ↻** key to change value. Please press the **↵** key to confirm Free Fall value.

STEP 6 : The screen will show **HI**. Please press the **↵** key, and the screen will show 6-digit value with blinking **0 000.000**. Use **◀, 0, ▶, or ↻** key to change value. Please press the **↵** key to confirm HI (Over limit) value.

STEP 7 : The screen will show **LO**. Please press the **↵** key, and the screen will show 6-digit value with blinking **0 000.000**. Use **◀, 0, ▶, or ↻** key to change value. Please press the **↵** key to confirm LO (Under limit) value.

STEP 8 : The screen will show CODE 00, please press the **STANDBY** key to leave set point codes. If you wish to continue reset other SET POINT CODES. Please enter values according to step 1 to step 8 again.

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