BAYKON

Industrial Weighing Systems

BX 2

WEIGHING INDICATOR OPERATION MANUAL

11/2010

Contents :

PRECAUTIONS

- DO NOT LET THE UNAUTHORIZED PEOPLE INTERFERE THE INDICATOR.
- FOR SAFETY OPERATION BX 2 SHOULD BE SUPPLIED WITH GROUNDED VOLTAGE NETWORK.
- CHECK THE POWER VOLTAGE AND GROUND CONNECTIONS BEFORE ENERGISING BX 2.
- DON'T ENERGISE BX 2 BEFORE MAKING LOAD CELL CONNECTION.
- DON'T PLUG IN OR OUT THE CABLES AND/OR CONNECTORS WHILE INDICATOR IS ENERGISED.
- DO NOT OPEN THE ENCLOSURE WHILE BX 2 CONNECTED POWER SUPPLY.

1. Features

BX 2 is a high tech weighing indicator designed for general various weighing applications. It has automatic filling, dynamic weighing, check weighing and peak holding application software besides well known weighing indicator operation.

The indicator had been designed according to OIML R76 recommendations and 90/384AT directive and EN45501 standard.

1.1. Basic Features

- Ability to select one of weighing, filling, peak holding, check weighing and dynamic weighing applications.
- Weighing in single range or multi (dual) range.
- Totalizing and printing of consequential weightings.
- Usage of 2 different ID codes and 99 alphanumerical ID memories.
- Opportunity of printing alphanumeric ID header, label header and footer.
- Taring with key, preset tare, 99 preset tare memories and auto clear of tare.
- Automatic zero tracking and zeroing via key.
- High resolution display ability, Gross/Net selection.
- Printing date and time with real time clock.
- 9 set point group memories each have 3 set points and optional parallel outputs working related to selected set point group.
- LED indicators that indicate status of the application for each different operation mode.
- Adaptive digital filter for stable and fast reading.
- Key lock function to avoid unauthorized interferes.
- Optional Alibi memory that can store last 149.764 weighing results.
- Standard RS 232C serial data output and optional two extra serial data output or optional Ethernet output for PC connection.
- Optional Analogue, Binary, RS232C, 20mA CL, RS485, MODBUS RTU or Ethernet outputs for process applications. Data transfer with HOST connection.
- 3 optically isolated inputs and 3 optically isolated outputs.

1.2. Technical Features

- Input sensitivity : 0,4 µV/inc.(approved)
  0,1 µV/inc (non approved)
- Type approval
  - Single range : 10.000 d
  - Multi range : 2 x 6.000 d
- Resolution
  - Display resolution : Up to 1 / 60.000 pieces
  - Internal resolution : Up to 1 / 8.000.000 pieces
- Load cell excitation voltage : 5 volt DC
- Quantity of the load cell : 6 units of 350ohm or 20 units 1200ohm
  (Minimum 58 ohm, maximum 1200 ohm)
- Power supply : 230 V / 50 Hz AC, 24 VDC or 12 VDC
- Power consumption : 12 VA
- Operating temperature : Between -10°C and +40°C, up to 85% humidity, noncondensing.

2. Installation and Commissioning

PRECAUTION: Please read this manual carefully before energizing the indicator and perform the commissioning operation according the procedure given here. Use trained personnel for cleaning, commissioning, checking and service of the indicator. The interference of untrained personnel may cause some unwanted damages or injures.

2.1 Mechanical Installation

First of all please determine the place where your indicator can operate safely. The place where you will use/install your indicator should be clean, not getting direct sun light if possible, with a temperature between -10ºC and +40ºC, humidity 85% non condensing at most and the cables should be installed safely to avoid mechanical damages.

Take care to the housing dimensions and the suggested panel hole dimensions given in the Chapter 11. To avoid electrical noises, protect your indicator which has very low input signal level from the equipments that produces electrical noise in panel mounting.

2.2 Electrical Installation

BX 2 has three power supply versions which are 230 VAC, 24 VDC and 12 VDC. 230 VAC indicators are supplied with power cable; and DC indicators are supplied with special power supply connector. Prepare your open end power supply cable by using this connector as seen in Figure 1 below.

Desk / Panel

Definition	Pin No for desk and panel mount type housings	Pin Number for SS housing
24 V or 12 V	1	3
0 V	2	2
Housing Gnd	3	1

Figure 1. The pin layout of DC connector.

There are two jumpers on BX 2's main board for calibration and for On/Off switch. To change the position of these jumpers, open the housing and perform necessary changes before energizing the indicator.

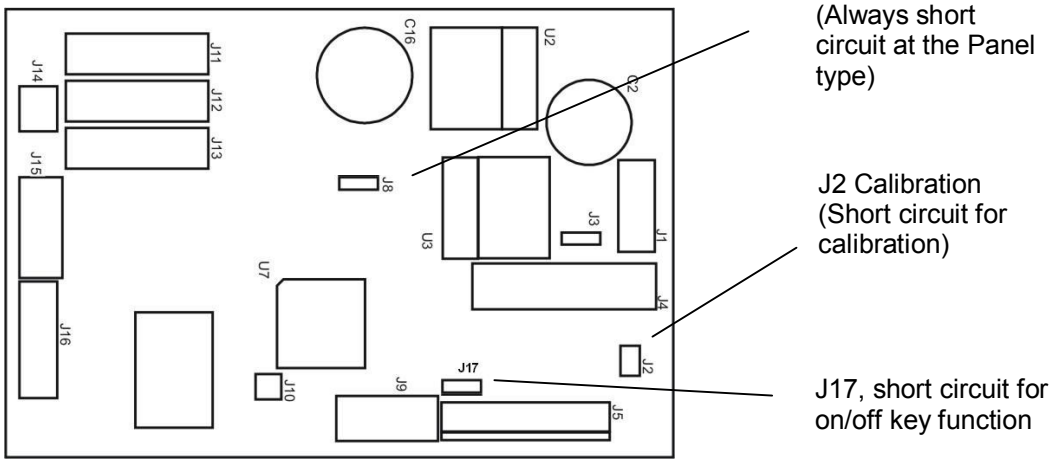


Figure 2. BX 2 Main Board

The quality of instrument's grounding will provide weighing accuracy and the safety of your indicator. If the energy condition of your plant is bad, prepare a special power line and grounding.

If you have to service the indicator, turn the power of and wait at least 30 seconds before interfering.

2.3 Load Cell Connection

The load cell wiring should be made carefully before energizing to avoid BX 2 from damages. The input resistance of the load cells that you will connect should be more than 58 Ω. The sense pins of BX 2 should be connected. The sense and excitation pins with the same polarity should be short circuited at the connector side in 4 wire load cell wiring.

6 wired Load Cell Cable Connection	4 wired Load Cell Cable Connection	Pin No for desk and panel type (DB9 Female)	Pin Number for SS housing (J12 connector)
+ Excitation	+ Excitation	1	1
+ Sense	+ Excitation	2	2
Shield	Shield	3	4
- Sense	- Excitation	4	6
- Excitation	- Excitation	5	7
+ Signal	+ Signal	7	3
- Signal	- Signal	8	5
Shield	Shield	Connector body	4

2.4 RS232C Serial Interface Connection

The connection of the standard RS232C (Interface-1) serial interface of BX 2 should be made as given in the table below.

Definition	Pin No for desk and panel mount type housings (DB9 Male)	Pin Number for SS housing (J11 connector)
TXD	2	3
RXD	3	4
GND	7	2
Shield	Connector body	1

2.5 Commissioning

After making the required installations and connections of BX 2, turn the power on and make calibration. After checking the performance of your weighing instrument you can begin to use the indicator. If there are peripheral connections, first you should turn the power off; make the required connections, perform the required safety checks and energize the indicator. Then set the related parameters and check if the peripheral devices are operating properly.

3. Front Panel and Key Functions

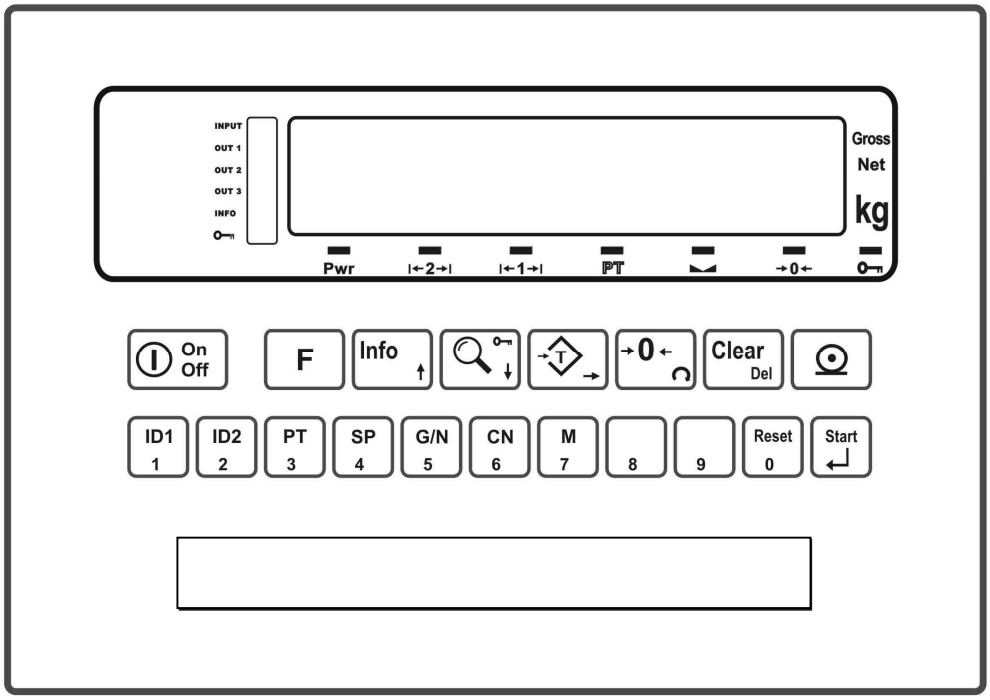


Figure 3. Front panel view of BX 2

3.1 Display

The weight display of BX 2 is seven segment LED. At the left side of the weight display, a group of indication LED's (6 LED's) take place that have different meanings according to operating mode, and under the weight display 6 LED's take place related to weighing. At the right side of the display there are three LED's for indicating the net, gross and the unit (standard kg).

The LED's at the left side of the display supply signal about the status of the indicator operation or application of which meanings differ according to active application mode. For example these LED's indicate the status of I/O s and the key lock in basic weighing mode.

The meanings of the indication LED's about basic symbols of weighing that take place under the display are:

Pwr : This LED will flash in case of voltage's decreasing. If the voltage decreases more, the indicator will automatically shut off.

I←1→I I←2→I : With multi range scales these LED's indicate the range that scale operates at the moment. For single range scales only first range LED lits.

PT : Means BX 2 works with a preset tare (Numerically entered tare via keypad)

▁◢ : Means the weight value on the display is stable.

→0← : Means the weight is in real zero range.

Here is the meaning of the LED bars on the left according to application modes:

LED	Basic Weighing	Over / Under	Peak Holding	Dynamic Weighing	Filling
■	INPUT	W + +	Ready	INPUT	Start
■	OUT 1	W +	In Process	OUT 1	Ready
■	OUT 2	OK	EOP	OUT 2	Coarse
■	OUT 3	W -	Error	OUT 3	Fine
■	INFO	W - -	INFO	INFO	EOB
■	Key Lock	Key Lock	Key Lock	Key Lock	Key Lock

For detailed information about LED descriptions, please look at Section 4 -Application Modes-.

3.2 Key Pad

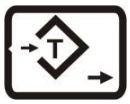
On the front panel of the BX 2 there are 19 keys. The functions of these keys are:

On/Off: It is used for turning BX 2 on or off. To turn the indicator off, this key must be pressed and hold at least 2 seconds. This key can be inhibited during programming. There is not this key on panel type housing.

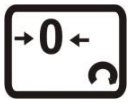
Function: This key used in combination with other keys of BX 2.

Info: This key is being used to view Total, CN, date and time information. To toggle between this info you have to press this repeatedly and at last you will get back to weighing mode again.
To clear the weight total, you need to press “Clear“ key while the total value is seen on the display and [All C] will appear on the display. You can confirm deletion by pressing “Enter“ key or cancel by pressing “F” key.

High Resolution: By pressing this key the weight value can be viewed with higher resolution in a short period.



Taring: Pressing this key tares the scale and get into the Net mode.



Zeroing: In Gross mode, if the scale doesn’t show zero while there is no load on the pan, you can zero the scale by pressing this key.

Clear: Pressing this key clears the tare or preset tare (PT) value and the scale turn back to Gross mode.

Print: By pressing this key weight data and other information depending on the setup parameters sent to a printer or a PC via serial port.

ID1, ID2: These keys are used for entering new ID codes or with “F” key for calling IDs from the memory. To enter a new ID, first you have to press one of ID keys (ID1 or ID2) then enter the value via numerical keypad and confirm with “Enter”. You can cancel ID entrance and get back to weighing mode by pressing F key.

Preset Tare: After pressing this key you can manually enter a tare value via numerical key pad. And by confirming with enter key, the indicator tares the scale with this value. If you do not want to change the value, press F key.

Set Point: These keys are being used to view SP values or by using with other keys to save set points to memory or calling them from memory.

Gross/Net: This key is being used to see gross weight value without clearing tare value while working in Net mode.

Label No: After pressing this key, first [CN] message appears on the display then you can see the CN no. By pressing “F” key or after a while automatically it turns back to weighing mode.

Memory: This key is being used for data entry to ID, PT and setpoint memories.

Reset : This key is being used to reset the process in Filling, Peak holding and Dynamic modes.

Enter : This key is being used for confirming an entered value and to get to the next parameter in setting mode. This key is also being used to start the process in Filling, Peak holding and Dynamic modes.

Numerical Keypads : These keys are used for entering numerical values in setting mode or for ID and SP.

3.3 Key Lock

BX 2 has ability to lock the keys to avoid unauthorized person’s interfere.

You can activate or deactivate this function by pressing <F> and “Key Lock” keys sequentially. The LED with key sign which takes place at the bottom of the info LED’s at the left side of the display indicates the keys are locked.

This function is generally used in process applications.

4. Application Modes

BX 2 indicator can be used in different common applications such as over/under, peak holding, dynamic weighing and automatic filling modes besides basic weighing application.

The LED's that take place at the left side of the display of BX 2 and the parallel I/O have different meanings according to the chosen application mode. The meanings and the structure of the connection of parallel I/O according to the selected mode are given in the Section 10.4.

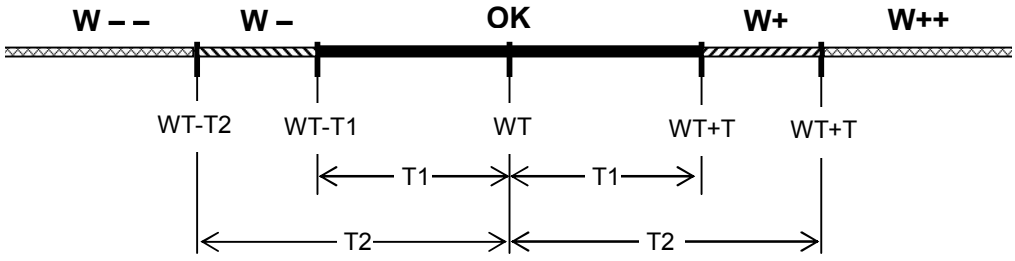
4.1. Basic Weighing

This is the convenient application mode for general weighing applications. BX 2 weighing indicator can be used in both single range and dual range scales. In the weighing mode the weight data can be printed together with header and footer on the label. It also has ability of totalizing sequence weighing, 99 preset tare memories, 99 alphanumerical ID memories and 9 groups – each group has 3 outputs - set point memories.

If alphanumeric header of ID and/or alphanumeric ID data had been downloaded to BX 2, the alphanumeric name of ID can also be printed together with alphanumeric ID header. Please look at section 5, section 7 and the print out samples in section 6.

4.2 Over / Under

This application mode is used to check the weight of the load placed on the pan according to the pre entered target and tolerance values. BX 2 can store 9 set point groups each includes three different set points. By this way the target and tolerance values for 9 different items can be stored in BX 2 and the selection of these items can be simply made by keys.



The nominal target value and tolerance data will be entered as given below.

WT (Target weight) = SP1
T1 tolerance = SP2
T2 tolerance = SP3

In check weighing mode, the weight value must be over a threshold value (defined in parameter 101) for activating the outputs.

When the weight exceeds the threshold value, the weight control process automatically starts, keys are locked and the weighing result is followed from the left side LED's and/or parallel outputs.

4.3. Peak Holding

The peak holding mode is generally used in compression, tension and tearing test applications. The force is followed and the maximum value is being held on the display. The threshold value (defined in parameter 101), Ending rate (defined in parameter 102) and Alarm value (defined in parameter 104) should be entered in the programming mode.

The peak holding process starts by pressing “Start “key. The output 2, which means the peak holding process is running become active. Until the force reach the threshold value (par. 101), the message [LoAd] and the applied force seen on the display sequentially. In this period the force is not watched to hold the peak value. After reaching the threshold value [LoAd] message will disappear, the force began to be watched and the maximum force displayed. If the force decreases more than the rate entered as the Ending rate (par.[102]) the peak holding process ends, output 2 become passive again. The output 3, which means the peak holding process ended become active. The [PEAK] message and the peak value appears on the display continuously. If the auto print function had been activated (par.046 = 1) the test result will automatically be printed.
The “ Reset “ key can be used to stop the process. If the force exceeds the value entered as Alarm value (par. 104) the process automatically ends and [ovEr] message appears on the display. The alarm condition would be ended by pressing the “ Reset “ key.

The starting or resetting the process can be also performed via parallel inputs.

Multi line data format output is available in this mode.

4.4. Dynamic Weighing

Dynamic weighing mode generally used for weighing unstable objects like animals. The Threshold value (par. 101) and the Time parameter (par. 103) should be entered in programming mode for dynamic weighing.

If the weight value is over the threshold value, dynamic weighing will be started by pressing Start key or applying Start input.

[------] message will appear on the display. After the entered time delay (min 5 seconds) [End] message and then the weight value appears on the display. If the auto print function had been activated (par.046 = 1) the test result will automatically be printed.

Dynamic weighing process can be stop by pressing the “ Reset “ key or by activating the Input 3.

4.5. Filling

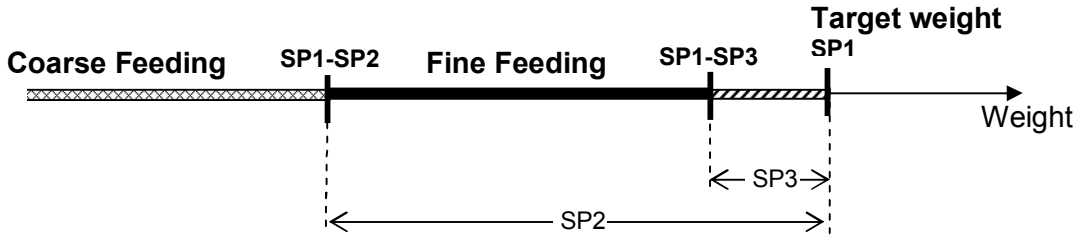
Filling mode is used for automatic filling application in gross or in net . BX 2 can store 9 set point groups each includes three different set points. By this way the target weight, coarse feeding and fine feeding values for 9 different items can be stored in BX 2 and the selection of these items can be simply made by keys.

The target weight, coarse and fine feeding values will be entered as set points given below.

SP1 = Target value ,

SP2 = Fine feeding (If the actual weight value get closer to the target value more than the value entered here the feeding turn into fine feeding) ,

SP3 = Preact Value (If the actual weight value get closer to the target value more than the value entered here the feeding ends).



Threshold value defined in parameter 101 is used for tare control. If the weight is bigger than this threshold value, the filling process starts by pressing Start key or applying Start input and the coarse feeding (output 1) and fine feeding (output 2) will be active after taring, if any.

After reaching the fine feeding value (SP1-SP2) the coarse feeding output (output 1) become passive and after reaching the preact value (SP1-SP3) fine feeding output (output 2) becomes passive and End Of Filling output (output 3) becomes active which indicates end of filling process. If the auto print function had been activated (par.046 = 1) the result will automatically be printed

After unloading the scale, the End Of Filling output (output 3) become passive again and the indicator become ready for the next filling.

The meanings and the structure of the connection of parallel I/O according to the selected mode are given in the Section 10.4.

5. Memory Operations

5.1 ID Memory

BX 2 has two ID codes and ability to assign names to them for print out. These IDs can either be entered via related keys or can be loaded via serial ports in host mode with alphanumeric ID even with the indicators that don't have alphanumeric keys.

BX 2 has 99 ID memories. This memory can be shared between two ID's however you want. ID codes with their alphanumeric ID are loaded in host mode via serial port. **INDFACE** software can be used to down load ID's from a PC.

To call an ID from the memory, you have to press F key first, and then ID1 or ID2 ; then [ıd --] prompt appears on the display. At that moment, Enter the ID code (from 1 to 99) and confirm with Enter key. After selecting the desired ID, indicator will turn back to weighing mode. If you want to turn back to weighing mode without calling any ID, you can simply press F key while [ıd --] prompt is on the display.

After calling any ID from BX 2's memory, you can print the alphanumeric ID code on the printout. (Look par 043 and 044) .
If you download ID headers to BX 2, the alphanumeric ID headers can be printed instead of default ID headers.

5.2 Preset Tare Memory

99 numerical tare values can be stored in BX 2 indicator and can any time be called as preset tare.

To store a numerical tare value into memory first you have to press M key, after [MeMorY] prompt appears on the display. You need to press PT key . [PtN 1] message will appear on the display which means that you have reached the 1st code of the preset tare memory. You can directly enter the code number of the desired preset tare or you can search preset tare code by ↑ and ↓ keys. After reaching the desired code, you can get in by pressing Enter key. The preset tare value will be seen on the display. Type the new preset tare value via numerical keys, then press Enter key again to confirm the entered value and get to the next tare code. Pressing F key will be enough to turn back to weighing mode.

For taring with any preset tare value from the memory, first press F key, then press PT key. [Pt --] message will appear on the display. You should type the related preset tare code - from 1 to 99 - via numerical keys and confirm with Enter key. The chosen preset tare value will be seen on the display for a little while and then the indicator tares the scale and net weight seen on the display. You can turn back to weighing mode without selecting any preset tare code by pressing F key.

If the selected tare code is empty [EMPtY] message will appear on the display. If the tare value is zero or greater than the scale capacity [Err Pt] message appears on the display. The messages can be accepted by pressing "Enter" key and new values can be entered.

5.3 Set Point Memory

BX 2 has 9 set point groups that each has 3 set point values. The set points of BX 2 can only be used by selecting from the memory. That's why the only way that should be followed is first saving setpoints to memory and then calls the desired group.

First, you need to press M key to store set points to BX 2. If you press SP key while [MeMorY] message seen on the display [SPN xx] message will appear. Here the first digit is the group number; the second digit is the set point number in that group. For example [SPN 12] means the 2nd set point of the 1st group. Here you can search between set points by ↑ and ↓ keys and confirm the desired set point by Enter key. The selected set point number and the set point value will be seen on the display sequentially. After entering the new set point value via numerical keys, you can confirm the entered value and get to the next set point by pressing the "Enter" key. Pressing F key will be enough to get back to weighing mode without making any changes.

To call a set point group from the memory, you have to press F and SP keys sequentially. The [SP -] message will appear on the display. Here you have to enter the set point group number from 1 to 9 and confirm with enter key. The set points in the group will be seen on the display sequentially with set point numbers and indicator will get back to weighing mode. You can also get back to weighing mode without selecting a set point group by pressing F key.

6. Serial Interface

BX 2 can be connected to peripherals via serial port. The baud rate of serial data output can be selected as 1200, 2400, 4800, 9600, 19200, 38400 or 57600. Data length and parity can be 8 bit no parity, 7 bit even parity, 7 bit odd parity **.** The serial data interface has 1 start bit and 1stop bit.

The serial ports of BX 2 are suitable for bi-directional communication. If, you transmit ASCII codes of P, Z, T or C letters to the serial port of BX 2; the indicator will act like the related keys are pressed.

Only continuous output can be programmed for more than one interface.

6.1 Continuous Mode:

The format and the definition of the data output is given below.

	Status			Indicated						Tare							
STX	STA	STB	STC	D5	D4	D3	D2	D1	D0	D5	D4	D3	D2	D1	D0	CR	CSUM

You can find the structure of status bytes in Appendix 1.

6.2 Print Mode:

The format of the data output in Print mode can be selected in 4 different type form in the parameter group 04- . The print format is not available more than one interface.

1. Single Line

You can send the data in single line like below by pressing ⊙ key.

```
12/05/2005   14:47   ID1 : 3    CN:    71   G:   3.007 kg   T :   1.001 kg  N:   2.006 kg
```

DATE				TIME				ID1				ID2				CN				GROSS				TARE				NET					
MSD		LSD	SP	MSD		LSD	SP	MSD		LSD	SP	MSD		LSD	SP	MSD		LSD	SP	MSD		LSD	SP	MSD		LSD	SP	MSD		LSD	LF	CR
10			3	5			3	Max. 34			3	Max. 34			3	9			3	13			3	13			3	13			1	1

2. Multi Line

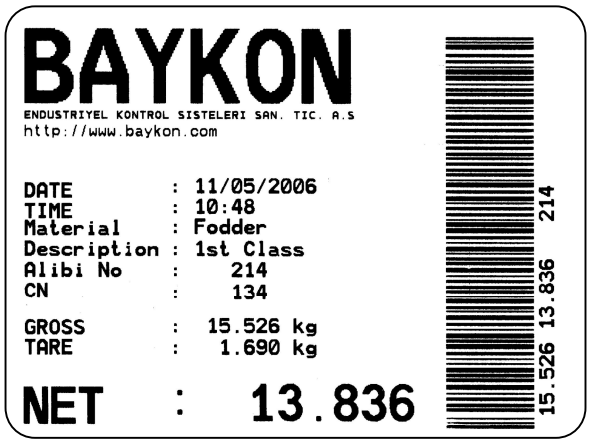
You can send the data in multiple lines as seen in the label given below by pressing ⊙ key. You can find a sample on the below left.

```
   Baykon A.S.
www.baykon.com
İstanbul, Turkey

Date  : 12/05/2005
Time  : 14:47
CN    : 130
Material 1 : AB120
Material 2 : BLACK

GROSS    9.550 kg
TARE     1.500 kg
NET      7.550 kg

  *** Thank You ***
```

```
   Baykon A.S.
 www.baykon.com
 İstanbul, Turkey

Date  : 12/05/2005
Time  : 14:47
CN    :    30
Material 1: KR0120
Material 2: Red

TARE     0.550 kg
  1      1.500 kg NET
  2      3.000 kg NET
  3      3.750 kg NET
-----------------
TOTAL
         8.250 kg NET

   * Thank You *
```

3. EPL Format

You can design your **label in EPL format by using INDFACE** software. After down loading label format to the indicator and programming parameter [040] as 3, BX 2 prints the label required after pressing the ⊙ key. This format is not available in peak hold mode.



4. Totalizing

In this data output form (parameter [040] is 4), a series of weightings and total are printed as seen on the right below of the page 13. The printed weight values are added on the total accumulator in this data output form.

The sequential weighing is printed pressing the “Print” key. You can print the total by calling the total by pressing “Info” key and then “Print” key (during total displaying) for finishing the label.

The total accumulator is cleared and the consecutive no will be increased by one automatically after printing the total weight.

6.3 Host Mode

BX 2 indicator can communicate with a PC in host mode. You can upload or download data to the indicator by adjusting the related interface parameters by BAYKON **INDFACE** software or using the command sets given in the Appendix 2 .

7. Header and Footer

It is possible to load 4 lines of header and 2 line of footer to BX 2 and print a label with header and footer in print mode.

A required header or footer to print on the label can be loaded to BX 2 indicator by a PC via serial port in host mode. BAYKON **INDFACE software** can be used for loading these data to BX 2. By entering the header/footer loading page of the **INDFACE** software, the header and footer data can be downloaded to BX 2 or the preloaded data can be uploaded to PC.

The free **INDFACE software** can be downloaded from BAYKON web site.

8. Alibi Memory

If the alibi memory of BX 2 installed and activated, BX 2 keeps the last 149.764 weighing records in the alibi memory. This recorded data can be seen on the indicator's display or can be transmitted via serial port.

To reach a definite record you have to enter to parameter [802]. After reaching the desired record, the recorded data can be view from display. If it is needed you can print this record together with following 9 records by pressing print key. If you press print key in parameter [803], the whole recorded data will be sent via serial port. Printing can be finished via F key.

The empty fields will be printed as ------ and the corrupted records will be printed as xxxxx. For the records of which weighing results can not be given, the message [no rec] will be seen on display.

If the alibi memory is activated, the alibi record number is also found on the print out data.

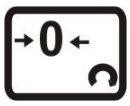
After installing the alibi board or changing main board changed Error 41 or 42 will seen on the display after power on for activating alibi memory. If the calibration jumper is short circuited, you can activate the alibi board by pressing enter key after power on. Otherwise, the alibi errors will be disappeared by pressing enter key, but you could not get any data output from BX 2 (Error 43 will be seen after pressing print key).

By parameter 804, you can print the information data about alibi card. These data are;

SN : Alibi card pin code,
SA : The start alibi record number with this indicator,
LA : The last alibi record number with this indicator,
CN : Calibration counter number,
CS : Check sum status,
AS : Alibi memory record capacity.
LD : Alibi memory record firmware date.

9. Programming and Calibration

In this section you will find the programming and calibration procedure of BX 2 indicator according to your application. The signs those take place on the lower right corner of the keys indicate the function of the keys in programming menu. The basic meanings of these keys are given in the table below.

						
Exit without saving	Advancing next parameter	Get back to previous parameter	Entering parameter value	Changing d value	Clear	Confirm

9.1. Entering the Programming and Calibration Menu

Press F and Info keys sequentially to enter the Programming and Calibration Menu. First [FunC] and then [PASSWr] prompts will be seen on the display sequentially. Here you can enter to the parameters block by using the service password (Zero and Info) or the operator password (Tare) and confirm with Enter. The calibration jumper (See Section 2.2) should be short circuit to change the legal metrologic related parameters (There is black box on the top right top of the grey coloured boxes on the next page) in the service mode.

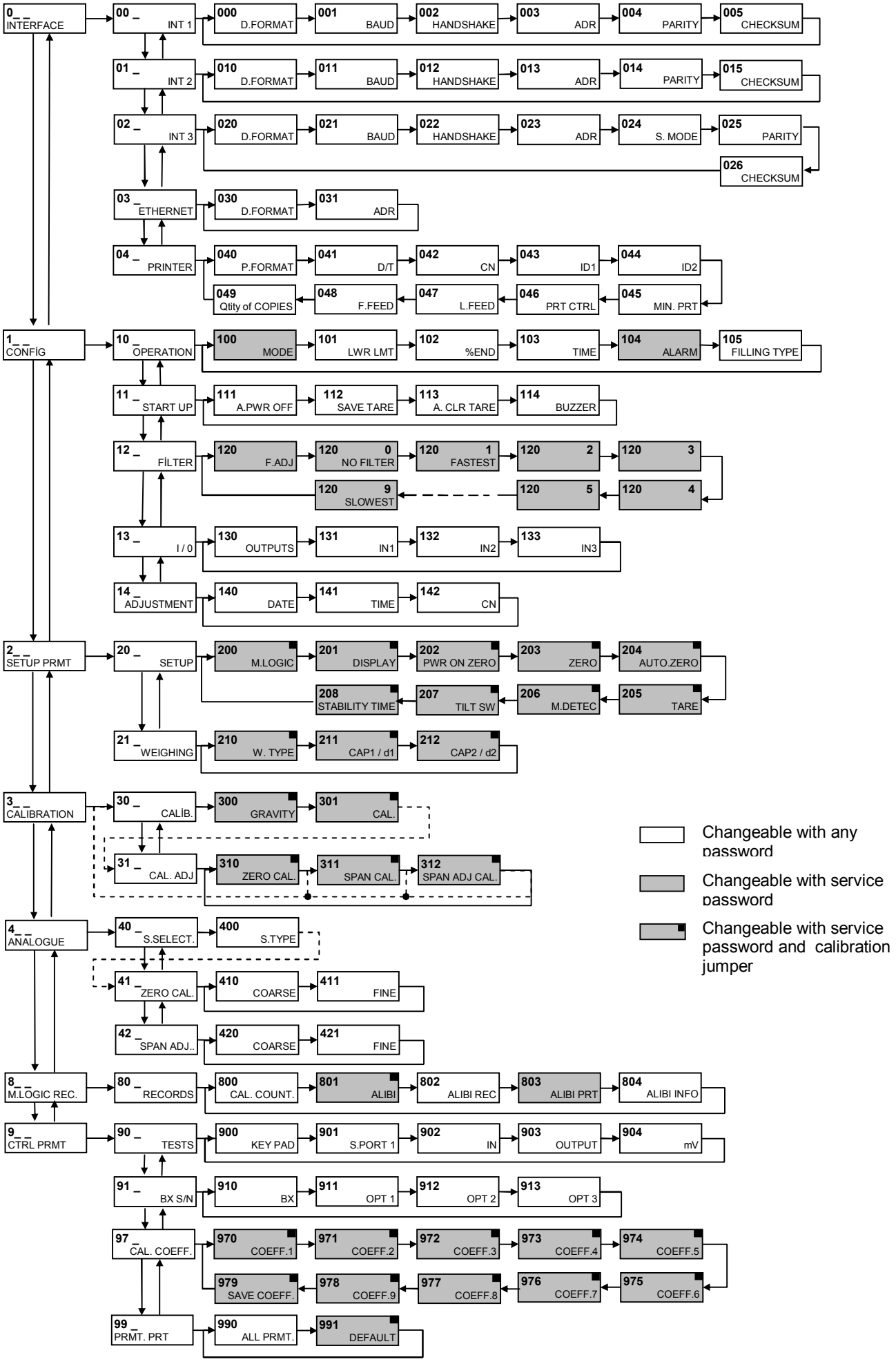
Programming and Calibration menu consist of main blocks which are shown as [X--] and sub-blocks. By using ↑ and ↓ keys you can reach previous or next main blocks. After reaching the desired main block, you can get in by pressing Enter key. As you enter the block you will reach the first sub-block in that main block. The sub-block address will be seen on the display as [X0-]. You can also search between the sub-blocks by using ↑ and ↓ keys and reach the first parameter of the sub-block seen on the display by pressing Enter key. The number of the parameter comes on display as [XY0]. Again you can search between parameters by ↑ and ↓ keys.

9.2. Exiting the Programming and Calibration Menu

If you press F key on which parameter you are, you will get out of the active sub-block and reach the next sub-block. If you press F key again, you will get out of the active block and reach the next main block. If you press F key once again, the [SAvE] message appears on the display. Here you can press Enter key to save the changes into the memory, or you can press Tare key to store the changes until the power off, or you can press F key to abort changes. [Wait] message will be seen on the display for a little while, and automatically get back to weighing mode.

Especially for legal metrological usage, please don't forget to turn the power off and remove the calibration jumper to start operation.

INDFACE software can be used for programming and calibration of the instrument from PC.


0_ _ INTERFACE
00 _ INT 1
000 D.FORMAT
001 BAUD
002 HANDSHAKE
003 ADR
004 PARITY
005 CHECKSUM
01 _ INT 2
010 D.FORMAT
011 BAUD
012 HANDSHAKE
013 ADR
014 PARITY
015 CHECKSUM
02 _ INT 3
020 D.FORMAT
021 BAUD
022 HANDSHAKE
023 ADR
024 S. MODE
025 PARITY
026 CHECKSUM
03 _ ETHERNET
030 D.FORMAT
031 ADR
04 _ PRINTER
040 P.FORMAT
041 D/T
042 CN
043 ID1
044 ID2
045 MIN. PRT
046 PRT CTRL
047 L.FEED
048 F.FEED
049 Qtity of COPIES
1_ _ CONFİG
10 _ OPERATION
100 MODE
101 LWR LMT
102 %END
103 TIME
104 ALARM
105 FILLING TYPE
11 _ START UP
111 A.PWR OFF
112 SAVE TARE
113 A. CLR TARE
114 BUZZER
12 _ FİLTER
120 F.ADJ
120 0 NO FILTER
120 1 FASTEST
120 2
120 3
120 4
120 5
120 9 SLOWEST
13 _ I / 0
130 OUTPUTS
131 IN1
132 IN2
133 IN3
14 _ ADJUSTMENT
140 DATE
141 TIME
142 CN
2_ _ SETUP PRMT
20 _ SETUP
200 M.LOGIC
201 DISPLAY
202 PWR ON ZERO
203 ZERO
204 AUTO.ZERO
205 TARE
206 M.DETEC
207 TILT SW
208 STABILITY TIME
21 _ WEIGHING
210 W. TYPE
211 CAP1 / d1
212 CAP2 / d2
3_ _ CALİBRATION
30 _ CALİB.
300 GRAVITY
301 CAL.
31 _ CAL. ADJ
310 ZERO CAL.
311 SPAN CAL.
312 SPAN ADJ CAL.
4_ _ ANALOGUE
40 _ S.SELECT.
400 S.TYPE
41 _ ZERO CAL.
410 COARSE
411 FINE
42 _ SPAN ADJ..
420 COARSE
421 FINE
8_ _ M.LOGIC REC.
80 _ RECORDS
800 CAL. COUNT.
801 ALIBI
802 ALIBI REC
803 ALIBI PRT
804 ALIBI INFO
9_ _ CTRL PRMT
90 _ TESTS
900 KEY PAD
901 S.PORT 1
902 IN
903 OUTPUT
904 mV
91 _ BX S/N
910 BX
911 OPT 1
912 OPT 2
913 OPT 3
97 _ CAL. COEFF.
970 COEFF.1
971 COEFF.2
972 COEFF.3
973 COEFF.4
974 COEFF.5
975 COEFF.6
976 COEFF.7
977 COEFF.8
978 COEFF.9
979 SAVE COEFF.
99 _ PRMT. PRT
990 ALL PRMT.
991 DEFAULT
Changeable with any password
Changeable with service password
Changeable with service password and calibration jumper

9.3. Programming

[0--] Interface Block

You can reach the parameters about serial interface of BX 2 indicator in this section. The data output modes can be used once except continuous data output,

[00-] Interface-1

This sub-block includes the parameters about the 1st serial interface (standard) of BX 2.

[000 X] Data Format

0 : No data transfer
1 : Continuous data output
2 : Print mode (refer to parameter [040])
3 : Host mode

[001 X] Baud Rate

0 : 1200 Baud 1 : 2400 Baud 2 : 4800 Baud
3 : 9600 Baud 4 : 19200 Baud 5 : 38400 Baud
6 : 57600 Baud

[002 X] Handshake

0 : No Handshake 1 : Xon/Xoff

[003 XX] Address

You can define a device address between 1 and 99 by this parameter. If you enter 0, indicator will operate without an address.

[004 X] Data length and Parity

0 : 8 bit, no parity 1 : 7 bit, odd parity 2 : 7 bit, even parity

[005 X] Checksum

0 : No checksum byte sent 1 : Checksum byte enabled

[01-] Interface-2

This sub-block includes the parameters about the 2nd serial interface of BX 2.

[010 X] Data Format

0 : No data transfer
1 : Continuous data output
2 : Print mode (refer to parameter [040])
3 : Host mode

[011 X] Baud Rate

0 : 1200 Baud 1 : 2400 Baud 2 : 4800 Baud
3 : 9600 Baud 4 : 19200 Baud 5 : 38400 Baud
6 : 57600 Baud

[012 X] Handshake

0 : No Handshake 1 : Xon/Xoff 2 : Hardware.

Warning: If you choose hardware as handshake, the serial interface 3 can not be used as RS232C.

[013 XX] Address

You can define a device address between 1 and 99 by this parameter. If you enter 0, indicator will operate without an address.

[014 X] Data length and Parity

0 : 8 bit, no parity 1 : 7 bit, odd parity 2 : 7 bit, even parity

[015 X] Checksum

0 : No checksum 1 : Checksum enable

[02-] Interface-3

This sub-block includes the parameters about the 3rd serial interface of BX 2.

[020 X] Data Format

0 : No data transfer
1 : Continuous data output
2 : Print mode (refer to parameter [040])
3 : Host mode
4 : Modbus RTU High-Low (high word is followed by low word 40001-40002)
5 : Modbus RTU Low-High (low word is followed by high word 40001-40002)

Note: The parameter **[**025] must be selected as 0 for Modbus RTU output.

[021 X] Baud Rate

0 : 1200 Baud 1 : 2400 Baud 2 : 4800 Baud
3 : 9600 Baud 4 : 19200 Baud 5 : 38400 Baud
6 : 57600 Baud

[022 X] Handshake

0 : No Handshake 1 : Xon/Xoff

[023 XX] Address

You can define a device address between 1 and 99 by this parameter. If you enter 0, indicator will operate without an address.

[024 X] Serial Mode

0 : Serial Interface-3 operates as RS232C (if par. 012 ≠ 2) .
1 : Serial Interface-3 operates as RS485 .
2 : Serial Interface-3 operates as 20 mA CL ASCII.

[025 X] Data length and Parity

0 : 8 bit, no parity 1 : 7 bit, odd parity 2 : 7 bit, even parity

[026 X] Checksum

0 : No checksum 1 : Checksum enable

[03-] Ethernet

This sub-block includes the parameters about the Ethernet output of BX 2.

[030 X] Data Format

0 : No Ethernet output
1 : Continuous data output
2 : Printer mode (refer to parameter [040])
3 : Host mode
4 : Modbus TCP High-Low (high word is followed by low word 40001-40002)
5 : Modbus TCP Low-High (low word is followed by high word 40001-40002)

Note : In continuous data format of Ethernet interface, checksum byte is disabled.

[031 XX] Address

The address of BX 2 will be entered via numerical keypad.

[04-] Printer

If one of the serial interfaces is selected as printer, the label settings will be made in his sub-block.

[040 X] Print Out Format

1 : Single line
2 : Multi line
3 : EPL format
4 : Totalizing

[041 X] Date/Time

0 : Date/Time information won't be transferred via serial interface
1 : Date/Time information will be transferred via serial interface

[042 X] CN (Consecutive No)

0 : The CN won't be transferred via serial interface
1 : The CN will be transferred via serial interface

[043 X] ID1

0 : ID1 won't be transferred via serial interface
1 : Only ID1 code will be transferred via serial interface
2 : Only alphanumerical data of ID1 will be transferred.
3 : The code and alphanumeric data of ID1 will be transferred.

Warning: The Code/Alphanumeric data table should be loaded into ID memory via serial interface to print Alphanumeric data of ID.

[044 X] ID2

0 : ID2 won't be transferred via serial interface
1 : Only ID2 code will be transferred via serial interface
2 : Only alphanumerical ID2 will be transferred.
3 : The code and alphanumeric ID2 will be transferred.

Warning: The Code/Alphanumeric data table should be loaded into ID memory via serial interface to print alphanumeric data of ID.

[045] Minimum Print

[XXXXXX] If the weight is less than the value entered here, the data will not be printed.

[046 X] Print Mode

0 : Printing via key.
1 : Auto print.
2 : Print interlock

Explanation: If this parameter selected as auto print, the data will automatically be printed when the data exceeds minimum print value and become stable. The weight value should decrease under minimum print value to reprint.
If this parameter selected as print interlock, after printing the weight must be changed to reprint.

[047 XY] Line Feed

X=0,1,2….9 : Enter the number of the line feed for the top of the label
Y=0,1,2….9 : Enter the number of the line feed for the bottom of the label

[048 X] Form Feed

0 : No FF
1 : After printing, the printer will go to next page automatically.

[049 X] Quantity of Copies

X : 1,2….9 : Enter the label quantity for each weighing.

Note: This function is valid only for [040] = 2.

[1--] Configuration Block

In this block the parameters take place which are being used to set BX 2 according to your application.

[10-] Application

In this sub-block you can select the application mode and enter the parameters related to the selected mode.

[100 X] Mode

0 : Simple Weighing Mode 1 : Check Weighing Mode 2 : Peak Holding Mode
3 : Dynamic Mode 4 : Filling Mode

[101] Threshold Weight

[XXXXXX] The minimum weight value, over which weight you want to start the process in peak holding, check weighing, dynamic and filling modes is entered here via numerical keys. Please refer to Modes for details.

[102 XX] Ending Percentage

This parameter is used in Peak Holding mode. The peak point will be catched when the weight value decreases more than the percentage entered here.

[103 X.X] Time

This parameter is used in weighing of unstable samples (dynamic mode). The evaluation will be performed at the end of this time. This value is entered as seconds and can be min 5 sec.

[104] Alarm

[XXXXXX] The alarm value over which weight you want, BX 2 produce alarm signal will be entered here via numerical keys. See Application Modes section for detailed information.

[105] Filling Type

0 : Gross Filling 1 : Net Filling

[11-] Start Up

[111 X] Auto Power Off

0 : Auto power off disabled
1 : Power off after 3 minutes of stability or no key function.
2 : Power off after 10 minutes of stability or no key function.

[112 X] Tare Memory

0 : No. 1 : Tare value is stored at power off.

Note: The parameter [202] must be selected as 0 to store Tare at power off.

[113 X] Auto Clear Tare

0 : No. 1 : The scale gets back to gross mode after unloading.

[114 X] Buzzer

0 : No Buzzer.
1 :The Buzzer will active when a key pressed, in case of error messages or when the alarm is active.

[12-] Filter

In this block the proper filter values according to the operating conditions can be entered. One of the most important features of BX series is viewing filter characteristic on the display and with the help of this option, you can select the most suitable filter without exiting the programming mode.

[120 X] Filter

The filter value can be selected from 0 to 9 (The minimum value of the filter at least 7 in normal weighing applications). As you enter this parameter and press Enter key while [120 X] seen on the display, the weight variation can be seen on the display. The value of the filter can be changed by using ↑ and ↓ keys and the weight variation for every value can be seen on the display. After finishing the filter selection you can go to next step by pressing the F key.

[13-] Parallel I/O

BX 2 has 3 parallel input and 3 parallel output. These inputs and outputs have different meanings according to different application modes. All of the inputs and outputs can be programmed in weighing mode.

[130 X] Outputs

The outputs operate with respect to the indicated weight except process. But Output 3 in the last selection operates with respect to gross weight while operating as Error and Alarm.

0 = No.
1 = (Output1 = Sp1), (Output2 = Sp2), (Output3 = Sp3)
2 = (Output1 = Sp1), (Output2 = Sp2), (Output3 = Stable)
3 = (Output1 = Sp1), (Output2 = Sp2), (Output3 = Error and Alarm)

[131 X] Input 1

0 = Not used 1 = Zero 2 = Tare 3 = Clear
4 = Print 5 = Key lock

Warning: The input will be used as tilt switch input for tilting applications.

[132 X] Input 2

0 = Not used 1 = Zero 2 = Tare 3 = Clear
4 = Print 5 = Key lock

[133 X] Input 3

0 = Not used 1 = Zero 2 = Tare 3 = Clear
4 = Print 5 = Key lock

[14-] Entries

In this block you can enter date, time and the initial CN.

[140] Date

[DD.MM.YY]
First, press → key for date entrance, then enter the new date via numerical keys and save by pressing Enter key.

[141] Time

[HH.MM]
First, press → key for time entrance, then enter the new time via numerical keys and save by pressing Enter key.

[142] Label No (CN)

[XXXXXX]
The desired value is entered via numerical keys and saved by pressing Enter key. If the number exceeds 65535, it will automatically reset and begin from 1 again.

[2--] Scale Block

[20-] Set Up

The parameters about weighing operation are being entered here.

[200 X] Approved

0 = No 1 = Yes

[201 X] Increased Indication

0 = by pressing key 1 = Always increased indication

[202 X] Power On Zero

According to the selection below, during power on, if the weight is in the percentage of the capacity, the scale will automatically be zeroed. If the weight is not in zeroing range, the display will show [E E E] message until pressing enter key.

0 = disable 1 = ± 2% 2 = ± 10%

[203 X] Zeroing Range

0 = disable 1 = ± 2% 2 = ±20%

[204 X] Auto Zero Tracking

AZT automatically readjusts the scale to zero for compensating selected small deviation per second around centre of zero.

0 = disable 1 = ± 0,5e 2 = ± 1e 3 = ± 3e

[205 X] Tare

0 = Tare disabled
1 = Multi tare via key
2 = Tare via key if scale is in gross mode.
3 = Multi tare via key and preset tare
4 = Tare via key and preset tare if scale is in gross mode.

[206 X] Motion Detector

This parameter defines the sensitivity level which will determine what is considered as stable.

0 = ± 0,3e 1= ± 0,5e 2= ± 1e 3= ± 2e 4= No motion detector

[207 X] Tilt Switch

The tilt switch is being used to connect tilt switch to prevent wrong weighing results in mobile scales like mobile palette scales because of the slope of the floor. If this parameter is activated, the input 1 must be connected to the tilt switch.

0 = Not used 1 = NC contact 2 = NO contact

[208 X] Stability Time

If the scale is stabile during this time, the scale is accepted as a stabile to process zeroing, tare, print etc. commands. It can be entered up to 9.9 sec.

[21-] Scale Build

The capacity and the resolution of the scale will be defined here.

[210 X] Scale Type

The capacity and resolution parameters will vary according to the selection here.

0 = Single Range 1 = Dual Range

You will reach the next parameter by pressing the Enter key. But please note that the following parameters will vary according to this selection.

<u>If single range had been selected</u> ;

[212] Capacity

Press Enter key to reach this parameter.

[CAP]
[XXXXXX]
Type the capacity of the scale (Select from Appendix 6) via numerical keys and confirm the value with pressing Enter.

[d]
[XXXXXX]
Display resolution will be selected by Zero key and confirmed with Enter key.

<u>If dual range had been selected</u> ;

[211] Range 1

Press Enter key to reach this parameter.

[CAP1]
[XXXXXX]
The capacity of the first weighing range (Select from Appendix 6) will be typed here via numerical keys and confirmed with Enter.

[d1]
[XXXXXX]
Display resolution of the first weighing range will be selected by Zero key and confirmed with Enter key

[212] Range 2

Press Enter key to reach this parameter.

[CAP2]
[XXXXXX]
The capacity of the second weighing range (Select from Appendix 6) will be typed here via numerical keys and confirmed with Enter.

[d2]
[XXXXXX]
Display resolution of the second weighing range will be selected by Zero key and confirmed with Enter key

[3--] Calibration Block

The calibration of the scale will be performed here.

[30-] Calibration

[300] Gravity

This parameter should be used in the scale that will be verified in two stages by gravity adjustment (in legal metrologic applications). This parameter **should not be touched** in other applications.

If you enter a value in this parameter before calibration (as six decimal digits. Enter 798564 for 9.798564), this value will be assumed as the reference gravity acceleration where the first stage of the calibration performed. After calibration this parameter will be zeroed. If value of this parameter is zero, that means no gravity adjustment had been performed after calibration.
In the second stage of verification, the gravity acceleration of the place that the weighing instrument will be used should be entered (as six decimal digits. Enter 800065 for 9. 800065) and exit programming by saving the changes without entering the calibration (par 301).

[301] Calibration

Begin the calibration by pressing Enter key. Unload the scale when the displays shows [ZEro.CA] message and press “Enter” key. The display will show [WAıt] message during zero calibration. In this while the pan must be empty and the scale must be stable. Approximately 10 seconds later display will show [LoAd] and then [XXXXXX] . The value shown on the display is the weight that should be used for span calibration. If the value of the test weights that will be used is different from the value shown on the display, type the new value via numerical keys, place the test weights on the scale and press Enter key. Just like zero calibration [WAıt] message will shown on the display 10 seconds while span calibration is being performed. Then indicator will prompt you to save the calibration by [SAvE] message. You can save the calibration by pressing Enter key. Pressing F key will not save the calibration.

[31-] Adjustment

In this sub-block you can only perform zero adjustment or span adjustment without full calibration operation.

[310] Zero Adjustment

This parameter is only being used for refreshing the zero level of the scale to prevent wrong weightings from zero drifts. Begin the zero adjustment by pressing Enter key. Unload the scale when the displays shows [ZEro.CA] message and press Enter key again. The display will show [WAıt] message during zero adjustment. In this while the scale must be unloaded and stable. Approximately 10 seconds later display will prompt you to save the calibration by [SAvE] message. You can confirm the saving zero adjustment by pressing Enter or cancel it by pressing F key.

[311] Span Adjustment

This parameter lets you to perform span adjustment. By pressing Enter key [XXXXXX] appears on the display. The value shown on the display is the weight that should be used for span calibration. If the value of the test weights that will be used is different from the value shown on the display, type the new value via numerical keys, place the test weights on the scale and press Enter. Just like zero calibration [WAıt] message will shown on the display 10 seconds while span calibration is being performed. Then indicator will prompt you to save the calibration by [SAvE] message. You can confirm the saving calibration by pressing Enter or cancel it by pressing F key.

[312] Span Adjustment Under Load

This parameter is being used to perform span adjustment of a scale without lifting the load on it. This operation especially used for span adjustment for filled tanks. You can make span adjustment without removing the load in the tank.

As you press enter key [P.ZEro] message appears on the display. This means the scale will determine the present load as temporary zero. After getting ready for this level, which means temporary zero adjustment “Enter” key should be pressed. The display will show [WAıt] message during temporary zero adjustment. After this step, the display will show [LoAd] a little while and then [XXXXXX] . The value shown on the display is the weight that should be used for span calibration. If the value of the test weights that will be used is different from the value shown on the display, type the new value via numerical keys, place the test weights on the scale and press Enter. Just like zero calibration [WAıt] message will shown on the display 10 seconds while span calibration is being performed. Then indicator will prompt you to save the calibration by [SAvE] message. You can confirm the saving calibration by pressing Enter or cancel it by pressing F key

[4--] Analogue Output Block

The calibration of the optional analog output is performed in this sub-block.

[40-] Signal Selection

[400] Analogue Output Mode

0 = 4 – 20 mA 1 = 0 – 10 VDC

[41-] Zero Adjustment

[410] Coarse Zero Adjustment

The coarse zero adjustment is being performed by pressing Zero key one after another to increase the analogue signal level or Clear key to decrease the analogue signal level.

[411] Fine Zero Adjustment

The fine zero adjustment is being performed by pressing Zero key continuously one after another to increase the analogue signal level or Clear key to decrease the analogue signal level.

[42-] Span Adjustment

[420] Coarse Span Adjustment

Coarse span adjustment is being performed by pressing Zero key continuously one after another to increase the analogue signal level or Clear key to decrease the analogue signal level by taking the full capacity value as reference without placing any weight.

[421] Fine Span Adjustment

Fine span adjustment is being performed by pressing Zero key one after another to increase the analogue signal level or Clear key to decrease the analogue signal level by taking the full capacity value as reference without placing any weight.

[8--] Metrological Data Block

The parameters about Metrologic Registry are being entered in this section.

[80-] Metrologic Records

In this block, change the parameters with ↑ key and use enter key according to parameter descriptions.

[800] Counter

This counter increases by 1 automatically after entering the programming mode with calibration jumper and service password. This counter can not be changed manually.

[801] Alibi Memory

0 = Not used 1 = In use

[802] Finding Any Record From Alibi Memory

You can call a record via numerical keys in the alibi memory. If Print key is pressed while an Alibi record is on the display, this record will be printed with the 9 records previous it.

[803] Print All Alibi Memory Records

The data in the Alibi memory can be printed by pressing Print key. You can stop printing with F key.

[804] Alibi Info

You can get some fundamental information about Alibi board and records by pressing Print key.

[9--] Diagnostics

The operations about checking and testing BX 2 can be made here.

[90-] Tests

[900] Key Pad

Press Enter key. [900 --] message appears on the display. In this step every keys ASCII code will be shown on the display as you press the related key. By this way you can test if all the keys are functional or not. Pressing ↑ key will take you to the next parameter.

[901] Serial Interface-1

The characters in the alphabet will sequentially be transferred from serial interface 1 port by pressing Zero key one after another. Received numerical data is seen on display.

[902] Parallel Inputs

[ı X YY]
To perform parallel input test, enter the number of parallel input to YY digits and press “Enter” key. X shows the logical condition of that input.

[903] Parallel Outputs

[o X YY]
To perform parallel output test, enter the number of parallel output to YY digits and press Enter key. X shows the logical condition of that output which can be changed by pressing Zero key.

[904] mV Indication

As you press Enter key the output voltage of the load cell will be shown on the display. This uncalibrated value is only for test / service purposes.

[91-] Serial Numbers

[910] BX Serial No

The serial number of BX 2 will be shown on the display as you press Enter key.

[911] Option 1 Serial No

The serial number of BX option 1 will be shown on the display as you press Enter key.

[912] Option 2 Serial No

The serial number of BX option 2 will be shown on the display as you press Enter key.

[913] Option 3 Serial No

The serial number of BX option 3 will be shown on the display as you press Enter key.

[97-] Calibration Coefficients

The parameters take places in this section are the calibration parameters of BX 2. These values can be used when a problem occurs about the calibration of BX 2 if they had been noted before. You can refresh the calibration by entering correct values.

[99-] Printing Parameter Values

[990] Print All Parameters

By pressing Print key the whole parameters can be printed.

[991] Loading Default Parameters

Press Enter key. [Ld dEf] message appears on the display. Press Tare key for loading default values or press F key to go 9- sub block.

10. Options

10.1 Serial Interface

2 additional serial interfaces can be added to BX 2 in addition to standard RS232C serial data output. One of the outputs of the optional serial interface card is RS232C, and the other one can be selected as RS232C, RS485 or 20 mA CL ASCII. If parameter 012 is selected as 2 (hardware handshake), the second data output can not be used as RS232C. Up to 32 instruments can be connected with RS485 output.

The settings of interfaces is being made in serial port -2 (par 01-) and serial port-3 (par 02-) parameter groups. The pin configuration is given below.

Definition		**Desk&Panel Type**	**SS Housing Type**	
[012] parameter is 0 or 1	[012]parameter is 2	**DB25 Female**	**J10 conn.**	**JR1 & JR2**
TxD1 (par. 01-)	TxD1 (par. 01-)	2	8	15
RxD1 (par. 01-)	RxD1 (par. 01-)	3	7	14
TxD2 (par. 02-)	RTS1 (par. 01-)	4	3	10
RxD2 (par. 02-)	CTS1 (par. 01-)	5	2	9
GND (RS 232C)	GND (RS 232C)	7	9	13
R- (par. 02-)	R- (par. 02-)	8	Not Used	Not Used
R+ (par. 02-)	R+ (par. 02-)	9	Not Used	Not Used
T+ (par. 02-)	T+ (par. 02-)	10	Not Used	Not Used
+V (par. 02-)	+V (par. 02-)	11	Not Used	Not Used
Termination (RS 485)	Termination (RS 485)	19	Not Used	Not Used
Termination (RS 485)	Termination (RS 485)	20	Not Used	Not Used
A (par. 02-)	A (par. 02-)	21	5	12
B (par. 02-)	B (par. 02-)	22	4	11
T- (par. 02-)	T- (par. 02-)	24	Not Used	Not Used
+24V (20 mA CL)	+24V (20 mA CL)	25	Not Used	Not Used
Shield	Shield	D25 body	1	1

The RS485 interface termination can be done by short circuited pin 19 and 20 at the desk and panel type enclosures or by jumper JP4 on the interface board in stainless steel housing . These short circuits terminates the line with internal termination resistor 100 Ω .

The 20mA CL ASCII transmit output is passive in standard. The connections should be made as given in the figure below for activating this transmit output (Active output is not available for 12 VDC instruments).

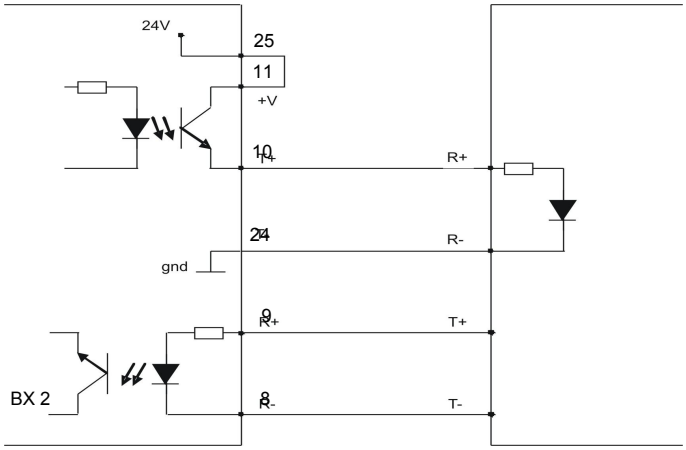


Figure 4. 20 mA CL ASCII interface connection

10.2 Binary Output

By addition of this option to BX 2, you will have 17 bits binary output that is changing between 0 and 131071 related to display value and a zeroing input.

The value of the binary output will change related to display value as given in the table below.

	BINARY OUTPUTS		
Condition (On Displayed)	**Data**	**Negative**	**Error**
Over	High	Low	High
Under	High	High	High
Adc Out	High	Low	High
Weight indication	Binary	X	Low

The pin configuration of the D25 female binary connector is given below.

PIN NO	CONNECTİON	DEFINITION
1	24V DC	POWER SUPPLY
2	GND	POWER SUPPLY
15	TEST	INPUT
3	D0	2^0
16	D1	2^1
4	D2	2^2
17	D3	2^3
5	D4	2^4
18	D5	2^5
6	D6	2^6
19	D7	2^7
7	D8	2^8
20	D9	2^9
8	D10	2^{10}
21	D11	2^{11}
9	D12	2^{12}
22	D13	2^{13}
10	D14	2^{14}
23	D15	2^{15}
11	D16	2^{16}
24	Strobe	1 = Data Ready
12	Zero	Input
25	Error	Output
13	Negative	Output
D25 body	Shield	

Data Ready means the weight data can be read from outputs. If this output is low, wrong reading of the weight value is probable.

If you apply test input, the weight data output will be interrupted and all outputs will be activated sequentially during test input is active. Outputs are PNP open collector and common is ground.

Binary output card have to be supplied with 24 VDC (max. 28VDC) and total output current could be maximum 200 mA.

10.3 Analogue Output

BX 2 can be equipped with 4 – 20 mA or 0 – 10 V analogue output option. Analogue output is being adjusted digitally from the parameter group 4-- .

The value of the analogue output changes as linear by the display value. But, if there is no numerical value on the display, the value of the analogue output will be given as in the following table:

Condition (On Display)	**0 – 10 V output**	**4-20 mA output**	**Alarm output**
The weight is more than the range (Over)	13 V	24 mA	High
The weight is under the zero range (Under)	-1.4 V	0 mA	High
Error [Err XX]	13 V	24 mA	High
ADC is out of operating range [Adc Out]	13 V	24 mA	High

As it seen from the table above the linear range of the analogue output is limited between - 1.4 volt and 13 volt.

There is an optically isolated input on the analogue card for zeroing the scale via analogue output option connector. You can make the connection of zeroing input and alarm output as seen in Figure 5. The connections of analogue output connector is given in the table below.

Description	**Desk&Panel Type**	**SS Housing Type**	
	DB25 Female	**J10 connector**	**JR1 & JR2**
+ Zeroing input (+24V)	8	6	13
- Zeroing input (0V)	9	5	12
Alarm output	18	8	7
GND	22	9	11
Iout	23	3	10
Vout	24	2	9
Shield	DB25 body	1	1

10.4 Parallel 3 Input / 3 Output

It is possible to use 3 optically isolated inputs and 3 optically isolated outputs according to it's application mode by installing parallel I/O card to BX 2. The electrical connection of the inputs and outputs should be made as seen in the Figure 3. The input voltage should be max. 28 VDC and the optically isolated input current is 30 mA ; The supply voltage needed for the outputs is max. 28 VDC and the max. total output current is 300 mA.

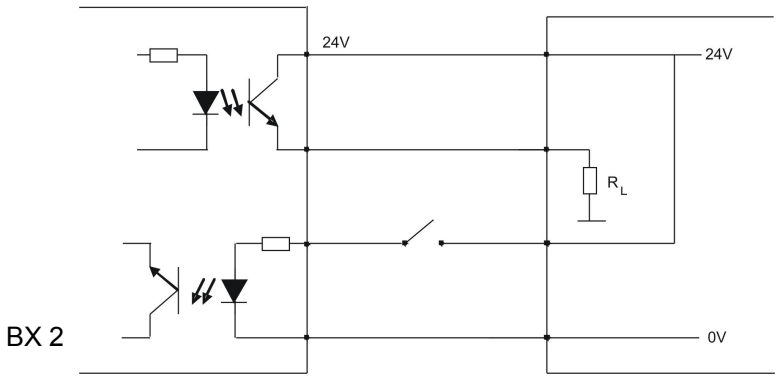


Figure 5. Parallel I / O ports connection diagram

The pin configurations of the parallel Input/Output connectors are given below.

Definition	Desk&Panel Type	SS Housing Type	
	DB25 Female Pin No	J10 connector Pin No	JR1 & JR2 Pin No
GND	13	1	1
+24V	25	2	2
Output 1	1	7	8
Output 2	3	8	7
Output 3	5	9	6
Input 1	11	3	10
Input 2	10	4	11
Input 3	9	5	12
Shield	Connector Body	Not Used	Not Used

The meanings of the inputs and outputs change according to the selected mode. The input/output tables for each mode given below:

Weighing mode:

I/O	Definition
Input1	Parameter 131
Input2	Parameter 132
Input3	Parameter 133
Output1	Parameter 130
Output2	Parameter 130
Output3	Parameter 130

+ / - mode:

I/O	Definition
Input1	Parameter 131
Input2	Parameter 132
Input3	Parameter 133
Output1	OK
Output2	Out of tolerance t2
Output3	Load stable and over min value

Dynamic weighing mode:

I/O	Definition
Input1	Parameter 131
Input2	Start
Input3	Reset
Output1	Parameter 130
Output2	Parameter 130
Output3	Parameter 130

Peak hold mode:

I/O	Definition
Input1	Parameter 131
Input2	Start
Input3	Reset
Output1	Alarm.
Output2	In process.
Output3	End of process

Filling mode:

I/O	Definition
Input1	Parameter 131
Input2	Start
Input3	Reset
Output1	Coarse feed
Output2	Fine feed
Output3	End of filling

10.5 Ethernet

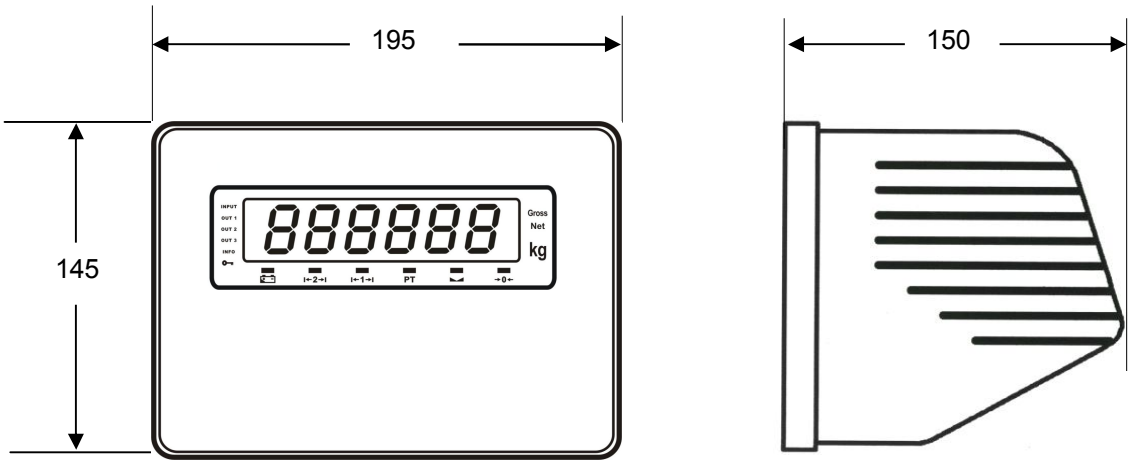
If the connection given in the table below is made with Ethernet option and the set the related parameters up, BX 2 will be able communicate with all data output formats given in this manual (data transfer with print key, host mode or Modbus etc.).

Pin configuration of RJ45 Ethernet connector is indicated below:

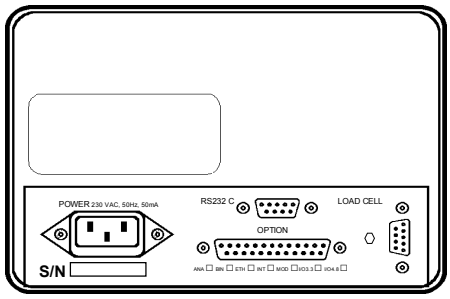
Pin No (RJ45)	Definition
1	TX+
2	TX-
3	RX+
6	RX-

11. Housing

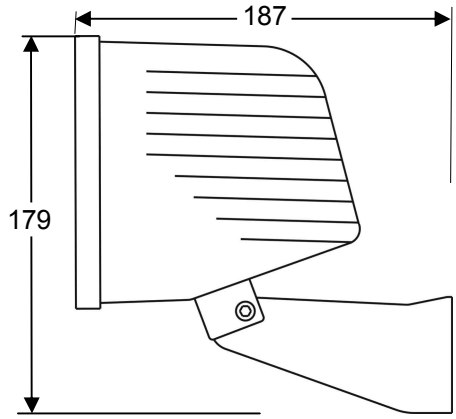
Desk type housing dimensions:



BX 2 desk type front and side view

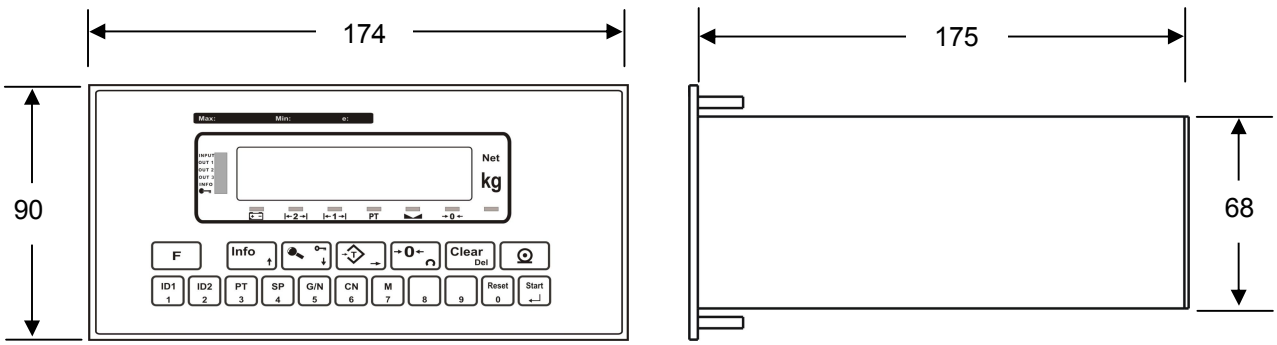


BX 2 desk type rear view

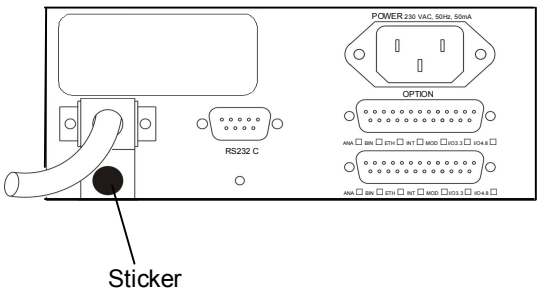


Dimensions of Desk type
BX 2 housing with wall mount
apparatus

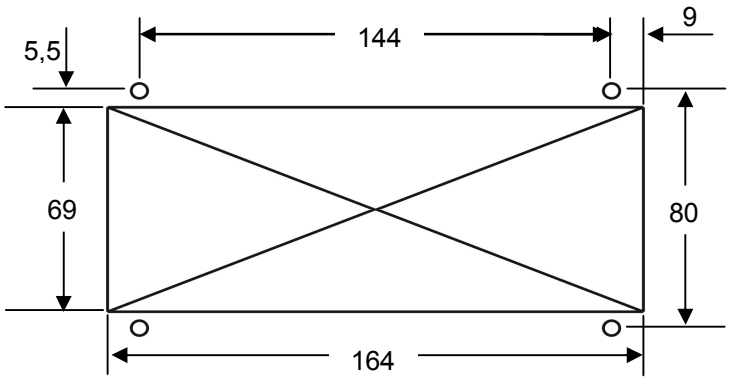
Panel type housing dimensions:



BX 2 Panel type front and side view

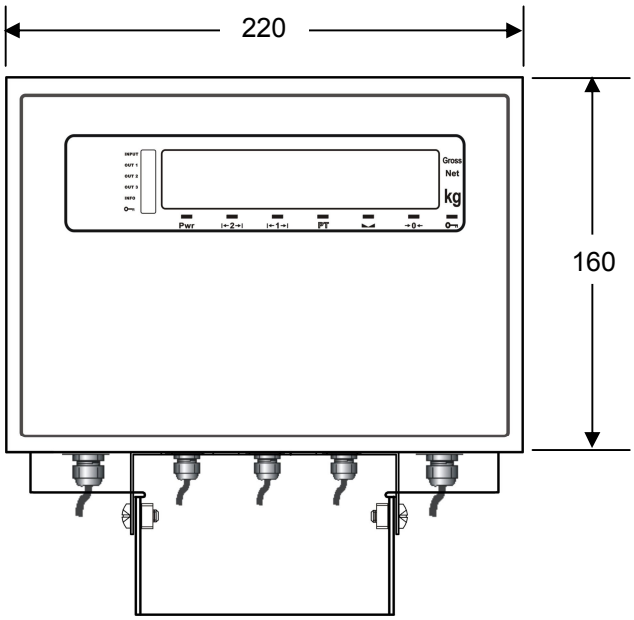


BX 2 Panel type rear view

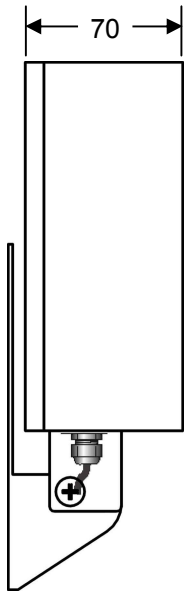


The hole dimensions for mounting
BX 2 Panel type on panel

Stainless steel type housing dimensions:



Stainless steel housing front view



Stainless steel housing
side view

Appendix 1:

Status Bytes in Continuous Data Output

Definition Table for Status A (STA)									
Bits 0, 1 and 2				Bits 3 and 4			Bit 5	Bit 6	Bit 7
0	1	2	Decimal point	3	4	Increment size	Always 1	Always 1	X
0	0	0	XXXXOO	1	0	X 1			
1	0	0	XXXXXO	0	1	X 2			
0	1	0	XXXXXX	1	1	X 5			
1	1	0	XXXXX.X						
0	0	1	XXXX.XX						
1	0	1	XXX.XXX						
0	1	1	XX.XXXX						
1	1	1	X.XXXXX						

Definition Table for Status B (STB)		
Bit 0	Gross=0	Net=1
Bit 1	Weight positive = 0	Weight negative=1
Bit 2		Over load = 1
Bit 3	Stable =0	Unstable =1
Bit 4		Always =1
Bit 5		Always =1
Bit 6	When energized	Zeroed = 1
Bit 7	x	

Definition Table for Status C (STC)	
Bit 0	Always 0
Bit 1	Always 0
Bit 2	Always 0
Bit 3	Always 0
Bit 4	Always 1
Bit 5	Always 1
Bit 6	Always 0
Bit 7	x

STX = 0x02
CR = 0x0D

CHECKSUM (CSUM) = 0 – (STX + STA + STB + ... + CR)

Continuous mode data format is given below:

	Status			Indicated						Tare							
STX	STA	STB	STC	D5	D4	D3	D2	D1	D0	D5	D4	D3	D2	D1	D0	CR	CSUM

Appendix 2:

Host Mode Data Structure

If related parameters are adjusted for host communication, BX 2 indicator will be connected to your system in Host Mode. BX 2 supports “0x03” and “0x10” functions.

03 (0x03) Reading Holding Registers

This function code is being used to read the information in the register addresses which have been permitted to be read in holding registers. The reading operation will be performed by transmitting the information about the registry to be read as given in the “request Table”. The indicator will evaluate the data that had been received and will transmit the info in the format given in the “Reply Table” or “Error Table”.

Request :

Field Name	Host-Bus	ASCII Code
STX	@	64
Slave Add	X X	X,X
Function	0 3	48,51
Starting Add Hi	X X	X,X
Starting Add Lo	X X	X,X
No. of Points Hi	X X	X,X
No. of Points Lo	X X	X,X
Error Check	X X (csum)	X,X
EOP	Cr	13

Reply :

Field Name	Host-Bus	ASCII Code
STX	@	64
Slave Add	X X	X,X
Function	0 3	48,51
Byte Count	X X	X,X
Data Hi	X X	X,X
Data Lo	X X	X,X
…	X X	X,X
Error Check	X X (csum)	X,X
EOP	Cr	13

Error :

Field Name	Host-Bus	ASCII Code
STX	@	64
Slave Add	X X	X,X
Fonksiyon	8 3	56,51
Exception code	X X	X,X
Error Check	X X (csum)	X,X
EOP	Cr	13

Exception codes :

1 : Function code is not supported.
2 : Out of beginning and ending address range.
3 : Invalid value entrance
4 : Operation error.

16 (0x10) Preset Multiple Registers

This function code is being used to change the information in the register addresses which have been permitted to be written in holding registers. The writing operation will be performed by transmitting the information about the registry to be changed as given in the “Request Table”. The indicator will evaluate the data that had been received and will transmit the info in the format given in the “Reply Table” or “Error Table”.

Request :

Field Name	Host-Bus	ASCII Code
STX	@	64
Slave Add	X X	X,X
Function	1 0	49,48
Starting Add Hi	X X	X,X
Starting Add Lo	X X	X,X
No. of Registers Hi	X X	X,X
No. of Registers Lo	X X	X,X
Byte Count	X X	X,X
Data Hi	X X	X,X
Data Lo	X X	X,X
…		
Error Check	X X (csum)	X,X
EOP	Cr	13

Reply :

Field Name	Host-Bus	ASCII Code
STX	@	64
Slave Add	X X	X,X
Function	1 0	49,48
Starting Add Hi	X X	X,X
Starting Add Lo	X X	X,X
No. of Registers Hi	X X	X,X
No. of Registers Lo	X X	X,X
Error Check	X X (csum)	X,X
EOP	Cr	13

Error :

Field Name	Host-Bus	ASCII Code
STX	@	64
Slave Add	X X	X,X
Function	9 0	57,48
Exception code	X X	X,X
Error Check	X X (csum)	X,X
EOP	Cr	13

Exception codes :

1 : Function code is not supported.
2 : Out of beginning and ending address range.
3 : Invalid value entrance or wrong byte number.
4 : Operation error.

Error Check Calculating :

CSUM = 0 – (Slave_Add + Function + … + Last_data)
(STX and CSUM are neglected while calculating CSUM)

Address	R/W	Word	Command	Definiton		
0000	R	2	Display Value	Gross or Net		
0002	R	1	Status	D0	Busy	1 – System Busy
				D1	Data ok	1 – Data ok 0 – Error
				D2	Stable	1 – Weight is unstable
				D3	Net Mode	1 – Net mode
				D4	P. Tare	1 – Numerical Tare
				D5	Output 1	1 – Output Active
				D6	Output 2	
				D7	Output 3	
				D8	Input 1	1 – Input Active
				D9	Input 2	
				D10	Input 3	
				D11	0	
				D12	0	
				D13 D14 D15	Error Code	0 No Errors
						1 ADC out of range
						2 ADC over load
						3 ADC under load
						4 System Error
						5 BX is not in weighing mode
						6
						7
0003	R	2	Tare			
0005	R	2	Gross weight			
0007	R	1	Status	The same as address 0002		
0008	W	1	Control	00	No	
				01	Zeroing	
				02	Tare	
				03	Delete	
				04	Print	
				05	Numerical Tare usage (40010)	
				06	Download setpoint from buffer to indicator (000B … 000F) → SP	
				07	Upload setpoint from indicator to buffer SP → (000B … 000F)	
0009	W	2	Numerical Tare			
000B	R/W	2	Set Point 1	Set Point 1 buffer		
000D	R/W	2	Set Point 2	Set Point 2 buffer		
000F	R/W	2	Set Point 3	Set Point 3 buffer		

Examples : The commands that will be used for the indicators of which Instrument address is 1

Reading weight data : @,01,03,00,00,00,02,FA,<Cr>
Reading status data : @,01,03,00,02,00,01,9F,<Cr>
Reading Tare data : @,01,03,00,03,00,02,F7,<Cr>
Taring : @,01,10,00,08,00,01,02,00,02,E2,<Cr>

Loading 1500 value to Set point 1 :

1.step : @,01,10,00,0B,00,02,04,00,00,05,DC,FD,<Cr>
2.step : @,01,10,00,08,00,01,02,00,06,DE,<Cr>

Reading Set point 1 (SP1=1500) :

1. step : @,01,10,00,08,00,01,02,00,07,DD,<Cr>
2. step : @,01,03,00,0B,00,02,EF,<Cr>

NOTE : The points that should be paid attention while loading and reading set points are:

To load any value to BX 2, the value should first be loaded to buffer **(address 000B)** then the command **6** should be transmitted to address **0008** to make BX 2 to use the value at 000B address.

To read a value from BX, first of all you should send command **7** to **0008** address to make BX 2 to load the value to buffer, and then you can read the value at **000B** address.

The **6** and **7** commands those are transmitted to **0008** address lets you to load or read all set points.

Appendix 3:

Modbus RTU Data Structure

If the instrument is programmed for Modbus, the indicator will be connected to Modbus RTU system as slave via RS485 interface (by Interface 2&3 option) or Ethernet TCP/IP option. .

BX 2 indicator is defined in the system by the address info entered in the address parameter and supports “03” and “10” functions.

Address	R/W	Word	Command	Definition			
40001	R	2	Display value	Gross or Net			
40003	R	1	Status	D0	Busy	1 – System Busy	
				D1	Data ok	1 – Data ok 0 – Error (Refer to D13~D15)	
				D2	Stable	1 – Weight unstable	
				D3	Net Mode	1 – Net mode	
				D4	P.Tare	1 – Preset tare	
				D5	Output 1	1 – Output active	
				D6	Output 2		
				D7	Output 3		
				D8	Input 1	1 – Input active	
				D9	Input 2		
				D10	Input 3		
				D11	0		
				D12	0		
				D13 D14 D15	Error Code	0	No Errors
						1	ADC out of range
						2	ADC over load
						3	ADC under load
						4	System fault
						5	BX is not in weighing mode
40004	R	2	Tare				
40006	R	2	Gross Weight				
40008	R	1	Status	The same as address 40003			
40009	R/W	1	Control	00	No		
				01	Zero		
				02	Tare		
				03	Clear		
				04	Print		
				05	Preset tare usage (40010-11)		
				06	Download setpoint from buffer to indicator. (40012 … 40016) → SP		
				07	Upload setpoint from indicator to buffer SP → (40012 … 40016)		
40010	R/W	2	Preset tare				
40012	R/W	2	Set Point 1	Set Point 1 buffer			
40014	R/W	2	Set Point 2	Set Point 2 buffer			
40016	R/W	2	Set Point 3	Set Point 3 buffer			
40030	R/W	1	Calibration	0	None		
				188	Adjust Zero Calibration		
				220	Adjust Span Calibration (First load 40031-32 with span test weight value)		
40031	R/W	2	Span Calibration Value				

40033	R	1	Calibration Status	D0 .. D7 Calibration Process Status	1	Ready for calibration
					3	Zero calibration in process
					4	Span calibration in process
					9	Error (Refer to D8 ... D15)
				D8 .. D15 Calibration Errors	1	Calibration Timeout - Restart calibration
					2	ADC Error - Re-energize the instrument - If seen again, change the board.
					3	Instrument can not be calibrating - Check load cell cable - Re-energize the instrument
					34	Instrument can not be calibrating - Load cell signal is very low or too high
					35	Calibration Error - Calibration test weight is not enough - Increase calibration weight value (40031-32) - Check load cell connections
					37	Scale unstable - Wait until scale become stable - Check grounding wiring
					38	Calibration Jumper is not installed - Check Calibration jumper

Examples : Performing reading and writing operation (Modbus RTU HiLo) according to hex system with the instruments of which address is 1;

Reading weight data : 01,03,00,00,00,02,C4,0B
Reading status data : 01,03,00,02,00,01,25,CA
Reading tare data : 01,03,00,03,00,02,34,0B
Taring : 01,10,00,08,00,01,02,00,02,26,D9

Reading Set point 1 :
1.step : 01,10,00,08,00,01,02,00,07,E6,DA
2.step : 01,03,00,0B,00,02,B5,C9

Loading 1500 value to set point 1:
1. step : 01,10,00,0B,00,02,04,00,00,05,DC,B0,DC
2. step : 01,10,00,08,00,01,02,00,06,27,1A

EXPLANATION:

The reading and loading set point is being made in two steps.

Reading operation:

1. Step : The set point will be transmitted from indicator to buffer. The set points will be loaded to 00,0B], [00,0C], [00,0D] set point addresses by transmitting 00,07 command (Loading set points to buffer) to [00,08] (40009) address.

2. Step : The set points will be read from [00,0B] (40012), [00,0D] (40014), [00,0F] (400016) addresses.

Writing Operation:

1. Step : The set point values will be written in buffer. (The set point values will be written in ([00,0B] (40012), [00,0D] (40014), [00,0F] (400016)) set point addresses.)

2. Step : The set points written in buffer wil be transmitted to indicator. The set points will be written in [00,08] (40009) address by 00,06 command (Loading set points from buffer to indicator).

Note : Writing preset tare operation is being performed like set point writing operation. (Preset tare entrance is can not be done in BX 2).

Attention : For hardware connection details, please look the related hardware descriptions in this manual.

Please find Modbus information in the web site of http://www.modbus.org

Appendix 4:

Trouble Shooting

BX 2 weighing indicator had been designed as a very reliable and virtually error free instrument. However if there is an error occurs, do not attempt to repair the equipment before understanding what caused the error. Note the problems you have with your instrument and the error messages shown on the display. Then try to solve the problem according to the error table given below.

Error Table

ERROR CODE	DESCRIPTION	THINGS TO DO
Under	Weight is too low	-Check the load -Load cell or instrument could be broken.
over	Over Load	- Check the load -Load cell or instrument could be broken.
Adc Out	Load exceeds the operation range	- Check the load - Check the calibration -Load cell or instrument could be broken.
Err 1	ADC error	- Re-energize indicator - Call BAYKON
Err 2	ADC error	- Re-energize indicator - Call BAYKON
Err 3	Indicator can not be calibrating	- Check load cell cable and load then start calibration again
Err 10	EEPROM error	-Configure the instrument -EEPROM broken
Err 20	Calibration error	-Calibrate the indicator..
Err 21	Configuration error	-Configure the indicator.
Err 22	Tare, CN, Total weight and the SP, PT and ID in use error	-Check SP, PT and ID entries. - Check Tare, CN and Total weight
Err 23	Header Error	-Reload the header
Err 24	Footer Error	-Reload Footer.
Err 26	Set point error	- Reload Set points.
Err 27	Indicator is not calibrated	-Calibrate the indicator
Err 28	Date & Time Error	-Adjust Date & Time. -Change the battery.
Err 29	ID error	-Reload ID information.
Err 30	Processor Error	- Call BAYKON
Err 34	Indicator can not be calibrating	- Load cell signal is negative , very low or too high
Err 35	Calibration Error	- Calibration test weight is not enough - Check load cell connections.
Err 37	Scale unstable	-Wait until scale become stable. -Check grounding wiring.
Err 40	Alibi error	-Correct parameter 801. -Alibi card broken
Err 41	New alibi card installed	-Appears when new alibi card installed. (*)
Err 42	Alibi card serial no. is not identical	-Appears when new alibi card installed. (*)
Err 43	Alibi card serial no. is not identical, no print operation will be performed	-Recognize the alibi card to indicator
Err 44	Alibi card info error	- Call BAYKON.
Err 46	Alibi recording capacity error	- Call BAYKON
Err 47	Main pcb info error	- Call BAYKON
Err 61	U10 is not installed	- Call BAYKON
E XXXX	Hardware error	- Call BAYKON

* Please look chapter 8.

Appendix 5:

Parameter's Default Table

0--	**Interface Block**	
00-	**Interface 1**	
000	Data Format	2 = Printer
001	Baud rate	3 = 9600
002	Hand shake	0 = Not used
003	Address	0
004	Data length and Parity	0 = 8 bit, no parity
005	Checksum	1 = Enabled
01-	**Interface 2**	
010	Data Format	0 = Not used
011	Baud rate	3 = 9600
012	Hand shake	0 = No
013	Address	0
014	Data length and Parity	0 = 8 bit, no parity
015	Checksum	1 = Enable
02-	**Interface 3**	
020	Data Format	0 = Not used
021	Baud rate	3 = 9600
022	Hand shake	0 = Not used
023	Address	0
024	Serial Mode?	0 = RS232C
025	Data length and Parity	0 = 8 bit, no parity
026	Checksum	1 = Enable
03-	**Ethernet**	
030	Data Format	0 = Not used
031	Address	0
04-	**Printer**	
040	Print out format	2 = Multi line
041	Date & Time	1 = Will be printed
042	CN	1 = Will be printed
043	ID1	0 = Won't be print
044	ID2	0 = Won't be print
045	Minimum print	20
046	Print method	0 = With Print Key
047	Line feed	11 = 1 LF + 1 LF
048	Form feed	0 = No
049	Quantity of copies	1
1--	**Configuration Block**	
10-	**Application**	
100	Mode	0 = Weighing
101	Threshold weight	100
102	Ending percentage	%50
103	Time (Dynamic)	9.9 sec.
104	Alarm	0 = Passive
105	Filling type	0 = Gross
11-	**Start Up**	
111	Auto power off	0 = Not used
112	Tare memory	0 = Not used
113	Auto tare clear	0 = Not used
114	Buzzer active ?	0 = Not used
12-	**Filter**	
120	Filter	7
13-	**Parallel I / 0**	
130	Outputs	0
131	Input 1	0
132	Input 2	0
133	Input 3	0
14-	**Entries**	
140	Date entrance	dd.mm.yy
141	Time entrance	hh.mm
142	Label No entrance	
2--	**Scale Block**	
20-	**Set up**	
200	Approved	0 = No
201	Increased indication	0 =With x10 key
202	Power on zero	2 = ± %10
203	Zero with key	1 = ± %2
204	Auto zero tracking	0 = Not used
205	Tare	1 = With Tare Key
206	Motion detector	1 = ± 0,5e
207	Tilt	0 = No
208	Stability Time	0.0
21-	**Scale Build**	
210	Scale Type	0 = Single Range
211	Capacity 1 / d1	
212	Capacity (2) / d(2)	6 kg / 0.001 kg
3--	**Calibration Block**	
30-	**Calibration**	
300	Gravity	
301	Calibration	
31-	**Adjustment**	
310	Zero adjustment	
311	Span adjustment	
312	Span adjustment under load	
4--	**Analogue Output Block**	
40-	**Signal Selection**	
400	Analogue Output Signal Type	
41-	**Zero Adjustment**	
410	Coarse Zero Adjustment	
411	Fine Zero Adjustment	
42-	**Span Adjustment**	
420	Coarse Span Adjustment	
421	Fine Span Adjustment	
8--	**Metrological Data Block**	
80-	**Legal Metrology**	
800	Calibration counter	
801	Alibi memory	
802	Calling a record	
803	Print Alibi memory	
804	Alibi information	
9--	**Diagnostic**	
90-	**Tests**	
900	Key Pad test	
901	Serial interface-1 test	
902	Parallel inputs test	
903	Parallel outputs test	
904	mV indication	
91-	**Serial numbers**	
910	BX Serial no	
911	Option1 serial no	
912	Option2 serial no	
913	Option3 serial no	
97-	**Calibration coefficients**	
97X	Calibration coefficients	
99-	**Printing Parameters**	
990	Whole parameters	
991	Load default parameters	

Appendix 6:

Calibration Table

The n= Max capacity / e values are given in the table below. Use this table while selecting your Max and e values.

SCALE INTERVAL (e)	NUMBER OF SCALE INTERVAL (n)																				
	1000	2000	2400	2500	3000	4000	5000	6000	8000	10000	12000	15000	16000	20000	25000	30000	40000	50000	60000
0,001	1	2			3	4	5	6	8	10	12	15	16	20	25	30	40	50	60
0,002	2	4		5	6	8	10	12	16	20	24	30	32	40	50	60	80	100	120
0,005	5	10	12		15	20	25	30	40	50	60	75	80	100	125	150	200	250	300
0,01	10	20	24	25	30	40	50	60	80	100	120	150	160	200	250	300	400	500	600
0,02	20	40	48	50	60	80	100	120	160	200	240	300	320	400	500	600	800	1.000	1.200
0,05	50	100	120	125	150	200	250	300	400	500	600	750	800	1.000	1.250	1.500	2.000	2.500	3.000
0,1	100	200	240	250	300	400	500	600	800	1.000	1.200	1.500	1.600	2.000	2.500	3.000	4.000	5.000	6.000
0,2	200	400	480	500	600	800	1.000	1.200	1.600	2.000	2.400	3.000	3.200	4.000	5.000	6.000	8.000	10.000	12.000
0,5	500	1.000	1.200	1.250	1.500	2.000	2.500	3.000	4.000	5.000	6.000	7.500	8.000	10.000	12.500	15.000	20.000	25.000	30.000
1	1.000	2.000	2.400	2.500	3.000	4.000	5.000	6.000	8.000	10.000	12.000	15.000	16.000	20.000	25.000	30.000	40.000	50.000	60.000
2	2.000	4.000	4.800	5.000	6.000	8.000	10.000	12.000	16.000	20.000	24.000	30.000	32.000	40.000	50.000	60.000	80.000	100.000	120.000
5	5.000	10.000	12.000	12.500	15.000	20.000	25.000	30.000	40.000	50.000	60.000	75.000	80.000	100.000	125.000	150.000	200.000	250.000	300.000
10	10.000	20.000	24.000	25.000	30.000	40.000	50.000	60.000	80.000	100.000	120.000	150.000	160.000	200.000	250.000	300.000	400.000	500.000	600.000
20	20.000	40.000	48.000	50.000	60.000	80.000	100.000	120.000	160.000	200.000	240.000	300.000	320.000	400.000	500.000	600.000	800.000		
50	50.000	80.000 100.000	120.000	125.000	150.000	200.000	250.000	300.000	400.000	500.000	600.000	750.000	800.000						
100	100.000	200.000	240.000	250.000	300.000	400.000	500.000	600.000	800.000										
200	200.000	400.000	480.000	500.000	600.000	800.000													

BAYKON A.Ş.

Kimya Sanayicileri Organize Sanayi Bölgesi Organik Cad. No:31
Tepeören, 34956 İstanbul, TURKEY
Tel : 0216 593 26 30 (pbx) Fax : 0216 593 26 38
e-mail: baykonservis@baykon.com
http:// www.baykon.com