

BAYKON



BX 6

WEIGHING TERMINAL OPERATION MANUAL

Contents:

SECTION	CONTENTS	PAGE
1.	Features	2
2.	Installation and Commissioning	3
3.	Front Panel and Key Functions	5
3.1	Display	5
3.2	Key Pad	6
3.3	Key Lock	6
4.	Serial Interface	7
5.	Application Software	7
6.	Alibi Memory	8
7.	Programming and Calibration	9
8.	Options	19
8.1	Serial Interface	19
8.2	Ethernet	20
9	Housing	21
App 1	Status Bytes in Continuous Data Output	22
App 2	Host Mode Data Structure	23
App 3	Modbus RTU Data Structure	26
App 4	Trouble Shooting	27
App 5	Parameter's Default Table	28
App 6	Calibration Table (Max / d)	29
App 7	BX 6 Model Identification	30

PRECAUTIONS

- DO NOT LET THE UNAUTHORIZED PEOPLE INTERFERE THE INDICATOR.
- FOR SAFETY OPERATION BX 6 SHOULD BE SUPPLIED WITH GROUNDED VOLTAGE NETWORK.
- CHECK THE POWER VOLTAGE AND GROUND CONNECTIONS BEFORE ENERGISING BX 6.
- DON'T ENERGISE BX 6 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 6 CONNECTED POWER SUPPLY.

1.Features

BX 6 is a high tech weighing terminal designed for various industrial weighing applications. It's available to load custom based application software to BX 6 besides standard application software. Standard application software is for labeling and for truck scale applications.

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

1.1. Basic Features

- Weighing in single range or multi (dual) range.
- Standard application software for truck scale and labeling applications etc.
- Custom based application software ability.
- Taring with key.
- Auto zero tracking and zeroing with key.
- Power on zero availability
- High resolution display mode.
- Powerful adaptive digital filter for fast and stable reading.
- Key lock option to prevent unauthorized people's interfering the indicator.
- Alibi memory that can store up to 149.764 (option) weighing results.
- Standard RS 232C output and optional RS232C serial port, RS 485, 20 mA ASCII, MODBUS and Ethernet output.
- Optional HOST connection ability.

1.2. Technical Features

- Input sensitivity : 0,4 μ V/inc.(approved),
0,1 μ V/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
- Power consumption : 35 VA
- Operating temperature : Between -10°C and +40°C , up to 85% humidity,
Non condensing.

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 -10°C and +40°C, humidity 85% non condensing at most and the cables should be installed safely to avoid mechanical damages.

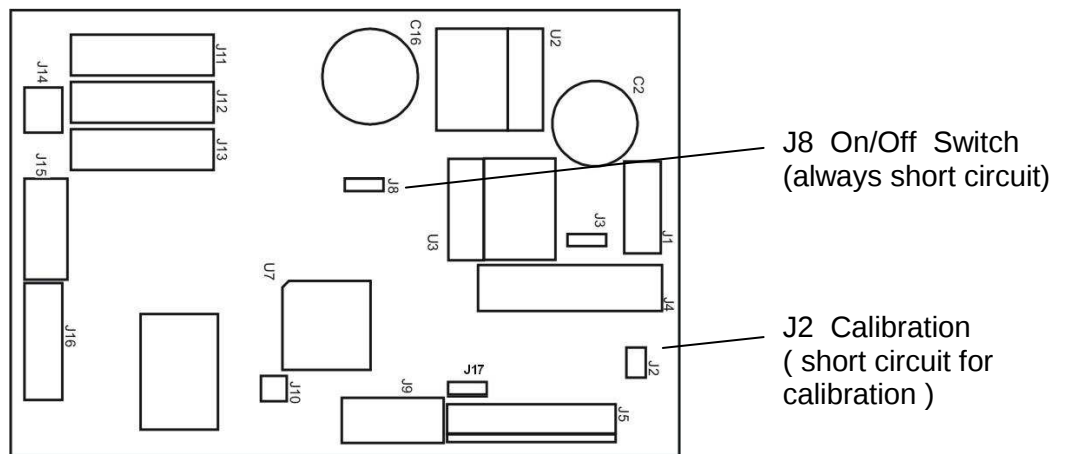
Take care to the housing dimensions for designing your operator table. If any, you can put the monitor on BX 6.

2.2 Electrical Installation

BX 6 operates with 230 VAC 50 Hz and supplied with power cable.

There are two jumpers on BX 6's weighing board for calibration and for On/Off switch. To change the position of these jumpers, open the housing and perform needed changes and/or control them before energizing the indicator.

Figure 1.
BX 6
weighing
board



Ground BX 6 indicator with a cable which has at least 6 mm² cross section by using the grounding connector at the backside. The quality of this grounding will provide weighing accuracy with the safety of your indicator. If the energy condition of your plant is not good, 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 6 from damages. The input resistance of the load cells that you will connect should be more than 58 Ω . The sense pins of BX 6 should be connected. The sense and excitation pins with the same polarity should be short circuited at the connector side in 4 line load cell wiring.

Pin No (DB9 Female)	6 wired Load Cell Cable Connection	4 wired Load Cell Cable Connection
1	+ Excitation	+ Excitation
2	+ Sense	+ Excitation
3	Shield	Shield
4	- Sense	- Excitation
5	- Excitation	- Excitation
7	+ Signal	+ Signal
8	- Signal	- Signal
Connector body	Shield	Shield

Parallel Port

The standard printer output of BX 6 is standard PC compatible parallel port which is 25 pin D-sub female. You can use standard parallel port printer cables for printer connection.

RS232C Serial Interface (COM1)

The serial port COM1 may be used for serial printer, host, and second scale etc. connections of the PC board. The pin configuration of COM1 is;

Pin No (DB9 Male)	Definition
2	RXD
3	TXD
5	GND
Connector body	Shield

Monitor and Keyboard Connectors

The standard monitor (D-sub, 15 pin, female) and PS2 compatible keyboard connectors may be used for connecting monitor and/or keyboard to BX 6.

Commissioning

After making the required installations and load cell connection of BX 6, 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 like monitor, keyboard, parallel port, parallel I/O etc. , first you should turn the power off; make the required connections, perform the required safety checks and energize the indicator. The parallel port, monitor and keyboard connectors are standard PC compatible. Then set the related parameters if there is any and check if the peripheral devices and application software are operating properly. For commissioning of application software, please look the software manual given you together with instrument.

3. Front Panel and Key Functions

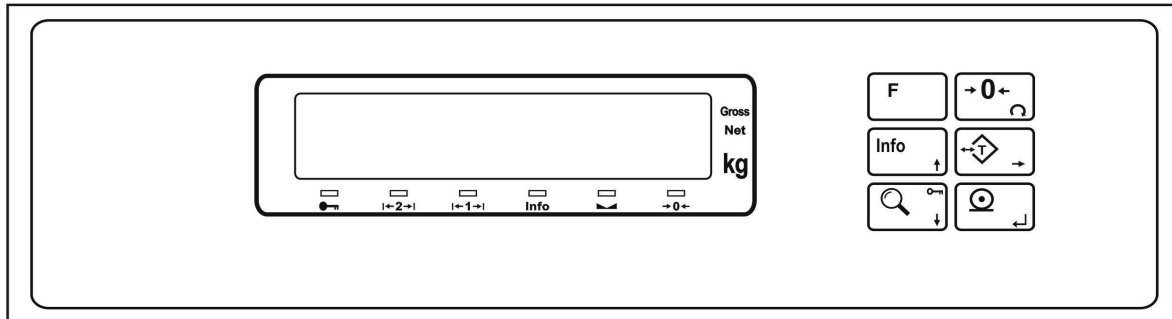


Figure 2. Front panel view of BX 6

3.1 Display

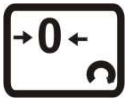
The weight display of BX 6 is seven segment LED. Under the weight display 6 LEDs take place related to weighing. At the right side of the display there are three LED's for indicating the net, gross and the unit.

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

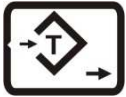
- ←1→ ←2→** : With multi range scales these LEDs indicate the range that scale operates at the moment. For single range scales only first range LED lits.
- Info** : Means BX 6 displays information different from the weight.
- ⚖** : Means the weight value on the display is stable.
- 0←** : Means the weight is in real zero range.
- 🔑** : Means the key lock is in function.

3.2 Key Pad

The keys and the key functions of BX 6 are:



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



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



Print: The function of print key is depend on the application software.



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



Info: This key is being used to view total information. To return to the weight display, press F key or Info key.

To clear the weight total, you need to press zeroing 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.



Function : This key used in combination with other keys of BX 6 as described in this manual.

3.3 Key Lock

BX 6 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 LEDs at the left side of the display indicates the keys are locked.

4. Serial Interface

There are two type of serial output in BX 6. The first is from PC board (COM1) and the data output of this interface is depend on the application software located on the PC board. The second type optional data output is from weighing board and is for interfacing with the weighing board directly.

The baud rate of optional 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 optional serial ports of BX 6 are suitable for bi-directional communication. If, you transmit ASCII codes of P, Z, T or C letters to the serial port of BX 6; the indicator will act like the related keys are pressed.

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

4.1 Continuous Mode :

The format of the data output of optional serial output in continuous mode had been given below.

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

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

4.2 Host Interface

Two type of host connection can be made : The first is the host connection from PC board which is for data transfer from application software via RS232C serial port (COM1) or Ethernet output. The second host connection can be made via serial interface option of the weighing board. This connection can be used for host interfacing of the weighing board (Look appendix 2).

5. Application Software

BX 6 has standard application software for weighbridges and for labeling etc. Additionally, the custom based application software may be loaded to BX 6.

For the information of the application software, please look the software manual given you together with the instrument.

6. Alibi Memory

The alibi memory of BX 6 shall be installed and activated for legal metrologic usage, because of the free programmable application software ability of BX 6. The alibi records can be displayed or printed.

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 weighing 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 6 (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 alibi record number of the next weighing with this indicator,
CN : Calibration counter number,
CS : Check sum status,
AS : Alibi memory record capacity.

The alibi connector must be used for printing out the alibi records. This connector (This D-sub, 9 pin and female) is located in the housing. The pin configuration of this alibi data interface connector is;

Pin No (DB9 Male)	Definition
3	TXD
5	GND

The baud rate of alibi memory serial data output is 9600. The other serial data specifications are; 1 start bit, 8 bits data length, 1stop bit and no parity bit.

7. Programming and Calibration

In this section you will find the programming and calibration procedure of 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	Select the digit will be changed	Changing parameter value or increasing the blanking digit	Enter

7.1 Entering the Programming and Calibration Menu

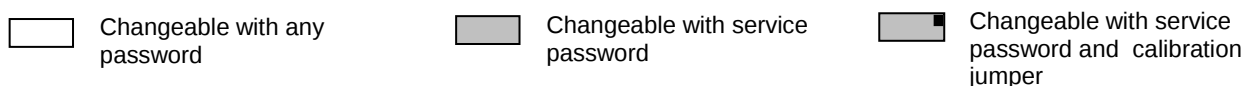
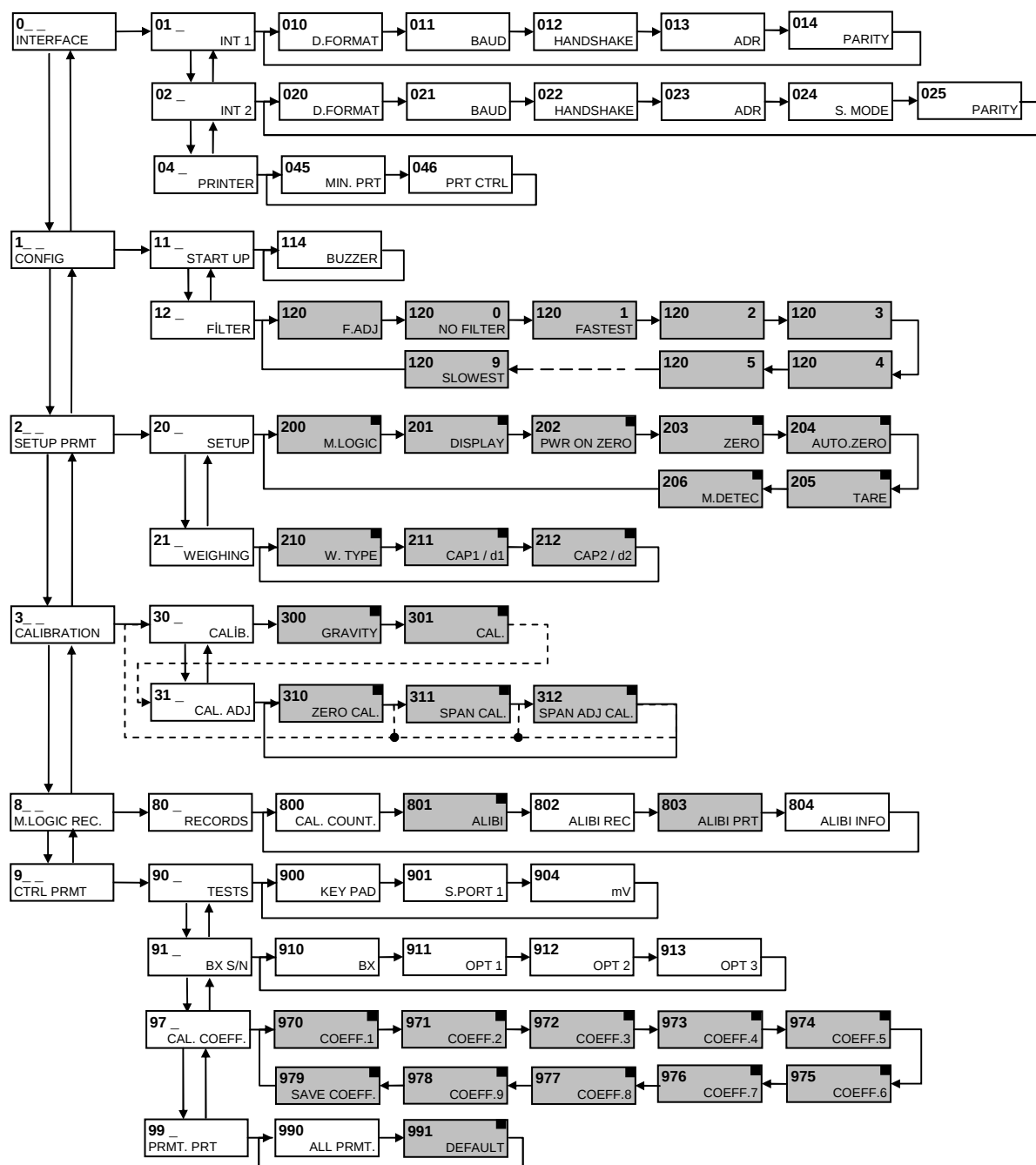
Press F and Info keys sequentially to enter the Programming and Calibration Menu. First [FunC] and then [PASSWr] prompts will be seen on the display sequentially. Here you can enter to the parameters block by using the service password (Zero and Info) or the operator password (Tare) and confirm with Enter. The calibration jumper (See Section 2.2) should be short circuit to change the metrological related parameters .

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. For entering numerical value in the parameters, press the tare key to select the digit and press the zero key the change the value.

7.2 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 goes 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.



7.3 Programming

[0--] Interface Block

You can reach the parameters about optional serial interface of BX 6 indicator in this section.

[01-] Interface-1

This sub-block includes the parameters about the 1st optional serial interface of BX 6.

[010 X] Data Format

- 0 : No data transfer.
- 1 : Continuous data output.
- 2 : NA
- 3 : Host mode. This mode is being used for programming or using the indicator with computer.

[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-2 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

[02-] Interface-2

This sub-block includes the parameters about the 2nd optional serial interface of BX 6.

[020 X] Data Format

- 0 : No data transfer.
- 1 : Continuous data output.
- 2 : NA
- 3 : Host mode. This mode is being used for programming or using the indicator with computer.
- 4 : Modbus RTU

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-2 operates as RS232C (par. 012 ≠ 2) .
1 : Serial Interface-2 operates as RS485 .
2 : Serial Interface-2 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

[04-] Weight Data transfer

The serial interface between weighing board and PC104 board is standard single line format, 9600 baudrate. You can adjust only following features.

[045] Minimum Print

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

[046 X] Print Method

This parameter selection must be convenient to the application software in PC board.

0 : Printing via key or application software.
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.

[1--] Configuration Block

In this block the parameters take place which are being used to set BX 6 according to your application.

[11-] Start Up

[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.

[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 center of zero.

0 = disable 1 = $\pm 0,5e$ 2 = $\pm 1e$ 3 = $\pm 3e$

[205 X] Tare

0 = Tare disabled 1 = Pushbutton Tare

[206 X] Motion Detector

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

0 = $\pm 0,3e$ 1 = $\pm 0,5e$ 2 = $\pm 1e$ 3 = $\pm 2e$ 4 = No motion detector

[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.

If single range had been selected :

[212] Capacity

Press Tare key to enter this parameter.

[CAP]

[XXXXXX]

The capacity of the first weighing range (Select from Appendix 6) will be entered here via Tare and Zero keys and confirmed with Enter key.

[d]

[XXXXXX]

Display resolution will be selected by Zero key and confirmed with Enter key.

If dual range had been selected :

[211] Range 1

Press Tare key to enter this parameter.

[CAP1]

[XXXXXX]

The capacity of the first weighing range (Select from Appendix 6) will be entered here via Tare and Zero keys and confirmed with Enter key.

[d1]

[XXXXXX]

Display resolution of the first weighing range will be selected by Zero key and confirmed with Enter key .

[212] Range 2

Press Tare key to enter this parameter.

[CAP2]

[XXXXXX]

The capacity of the first weighing range (Select from Appendix 6) will be entered here via Tare and Zero keys and confirmed with Enter key.

[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, which 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 [WAit] 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, define the new value via Tare and Zero keys, place the test weights on the scale and press Enter key. Just like zero calibration [WAit] 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 weighing from zero drifts. Begin the zero adjustment by pressing Enter key. Unload the scale when the display shows [ZEro.CA] message and press Enter key again. The display will show [WAit] 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, define the new value via Tare and Zero keys, place the test weights on the scale and press Enter key. Just like zero calibration [WAit] 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 key 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 [WAit] 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, define the new value via Tare and Zero keys, place the test weights on the scale and press Enter. Just like zero calibration [WAit] 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

[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

This parameter shall be selected as 1 for legal metrologic usage of the instrument.

0 = Not used 1 = In use

[802] Finding Any Record From Alibi Memory

You can call a record by entering record no via Tare and Zero 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 6 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.

[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 6 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 6. These values can be used when a problem occurs about the calibration of BX 6 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 from Alibi memory connector located in the terminal.

[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.

8. Options

8.1 Serial Interface

2 additional serial interfaces (for weighing board interfacing) can be added to BX 6 in addition to standard COM1. One of the outputs of optional serial interface card is RS232, and the other one can be selected as RS232, RS485 or 20 mA ASCII CL. 012 parameter should not be selected as 2 (hardware handshake), for programming the second optional data output as RS232C. Up to 32 instruments can be connected with RS485 output.

The settings of interfaces is being made in Serial data 1 (par 01-) and Serial data 2 (par 02-) parameter groups. The pin configuration of the optional D25 female serial interface connector is given below.

Pin Number (DB25 Female)	012 parameter is 0 or 1	012 parameter is 2
2	TxD1 (par. 01-)	TxD1 (par. 01-)
3	RxD1 (par. 01-)	RxD1 (par. 01-)
4	TxD2 (par. 02-)	RTS1 (par. 01-)
5	RxD2 (par. 02-)	CTS1 (par. 01-)
7	GND (RS 232C)	GND (RS 232C)
8	R- (par. 02-)	R- (par. 02-)
9	R+ (par. 02-)	R+ (par. 02-)
10	T+ (par. 02-)	T+ (par. 02-)
11	+V (par. 02-)	+V (par. 02-)
19	Termination (RS 485)	Termination (RS 485)
20	Termination (RS 485)	Termination (RS 485)
21	A (par. 02-)	A (par. 02-)
22	B (par. 02-)	B (par. 02-)
24	T- (par. 02-)	T- (par. 02-)
D25 body	Shield	Shield

The RS485 interface termination can be done by short circuited pin 19 and 20. 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 the instrument).

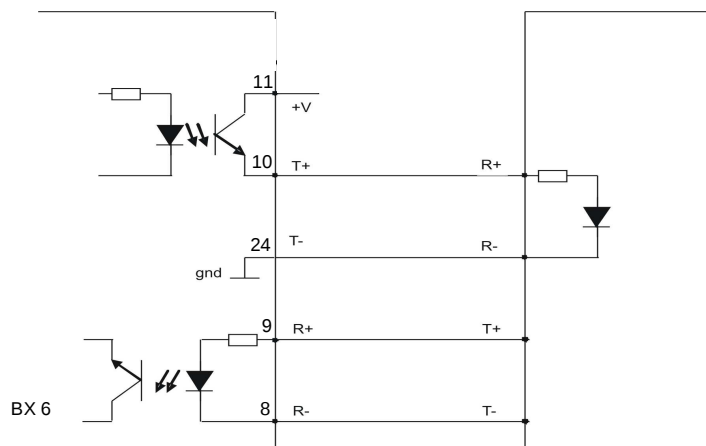


Figure 3. 20 mA CL ASCII interface connection

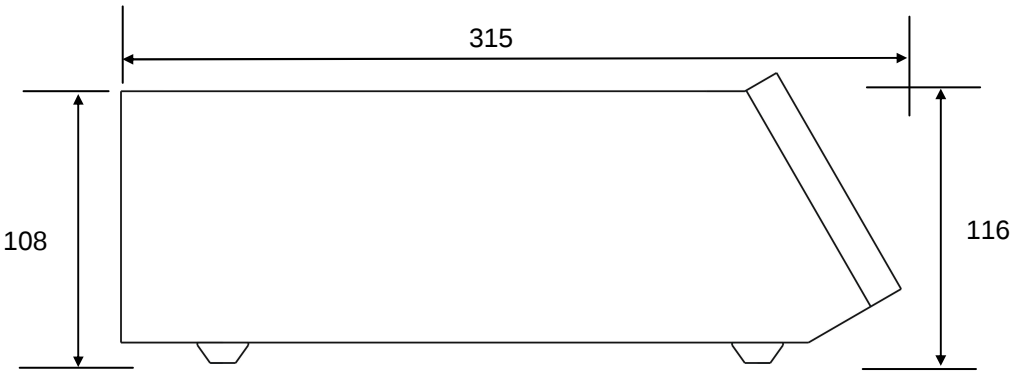
8.2 Ethernet

If the connection given in the table below is made with Ethernet option, BX 6 will be able to communicate with the peripherals. The Ethernet output can be done from PC board for data transfer.

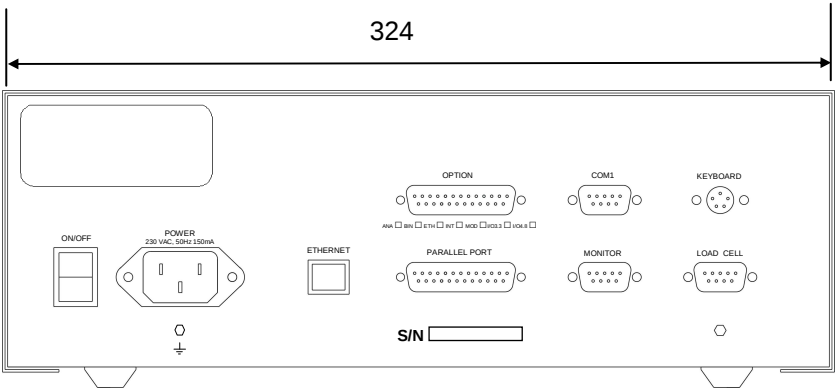
Pin configuration of RJ45 Ethernet connector is indicated below:

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

9. Housing



BX 6 side view



BX 6 rear view

Appendix 1:

Status Bytes in Continuous Data Output

Definition Table for Status A									
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		
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	
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

CR = 0x0D

CSUM = 0 – (STX + STATUS A + + CR)

Continuous mode data format is given below:

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

Appendix 2:

Host Mode Data Structure

If related parameters are adjusted for host communication, BX 6 weighing board will be connected to your system in Host Mode. BX 6 weighing board 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 Mod	1 – Net mode			
				D4	0				
				D5	0				
				D6	0				
				D7	0				
				D8	0				
				D9	0				
				D10	0				
				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	Not used								
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	Not used				
				06	Not used				
				07	Not used				

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>

Appendix 3:

Modbus RTU Data Structure

If parameters are adjusted for Modbus option; the BX 6 indicator will be connected to MODBUS RTU system as slave.

BX 6 indicator is defined in the system by the address info entered in the address parameter (for RS 485) and supports "0x03" and "0x10" 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	
				D2	Stable	1 – Weight unstable	
				D3	Net Mod	1 – Net mode	
				D4	0		
				D5	0		
				D6	0		
				D7	0		
				D8	0		
				D9	0		
				D10	0		
				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	Not used						
6							
7							
40004	R	2	Tare				
40006	R	2	Gross Weight				
40008	R	1	Status	The same as address 40003			
40009	W	1	Control	00	No		
				01	Zero		
				02	Tare		
				03	Clear		
				04	Print		
				05	Not used		
				06	Not used		
				07	Not used		

Examples : Performing reading and writing operation 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

Appendix 4:

Trouble Shooting

BX 6 weighing terminal 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

Weighing errors :

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 27	Indicator is not calibrated	-Calibrate the indicator
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	Weighing pcb info error	- Call BAYKON
E XXXX	Digital hardware interface error in weighing board	- Call BAYKON

* Please look chapter 6.

Application errors :

If there is an error because of application software or PC board, the related error code and/or description of error can be seen on the connected monitor. The description of the error codes can be found in the application software manuals.

Appendix 5:

Parameter's Default Table

0--	Interface Block	
01-	Interface 1	
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
02-	Interface 2	
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
04-	Printer	
045	Minimum print	20
046	Print method	0 = With Print Key
1--	Configuration Block	
11-	Start Up	
114	Buzzer active?	0 = Not used
12-	Filter	
120	Filter	7
2--	Scale Block	
20-	Set up	
200	Approved	0 = No
201	Increased indication	0 =With x10 key
202	Power on zero	2 = $\pm$ %10
203	Zero with key	1 = $\pm$ %2
204	Auto zero tracking	0 = Not used
205	Tare	1 = With Tare Key
206	Motion detector	1 = $\pm$ 0,5e
21-	Scale Build	
210	Scale Type	0 = Single Range
211	Capacity 1 / d1	
212	Capacity (2) / d(2)	60000 kg / 20 kg

3--	Calibration Block	
30-	Calibration	
300	Gravity	
301	Calibration	
31-	Adjustment	
310	Zero adjustment	
311	Span adjustment	
312	Span adjustment under load	
8--	Metrological Data Block	
80-	Legal Metrology	
800	Counter	
801	Alibi memory	
802	Calling an alibi record	
803	Print Alibi memory	
804	Alibi information	
9--	Diagnostic	
90-	Tests	
900	Key pad 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 $n = \text{Max capacity} / e$ values are given in the table below. Use this table while selecting your Max and e values.

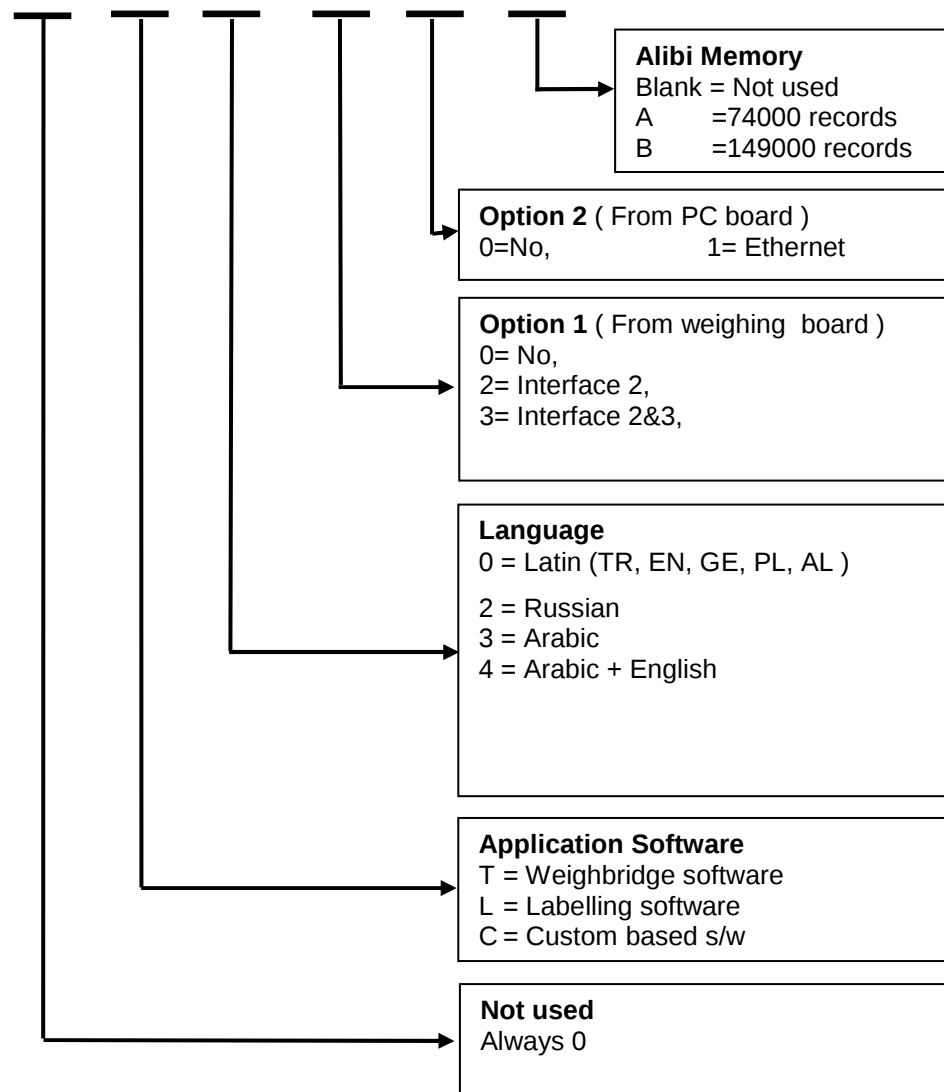
NUMBER OF SCALE INTERVAL (n)																				
	1000	2000	2400	2500	3000	4000	5000	6000	8000	10000	12000	15000	16000	20000	25000	30000	40000	50000	60000	
SCALE INTERVAL (e)	0,001	1	2		3	4	5	6	8	10	12	15	16	20	25	30	40	50	60	
	0,002	2	4		5	6	8	10	12	16	20	24	30	32	40	50	60	80	100	120
	0,005	5	10	12		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	50.000 100.000	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													

Appendix 7:

BX 6 Model Identification

Below, you will find the order coding system to identify the features of your BX 6 indicator.

BX 6. C D E. F G H



Descriptions :

1. Ethernet option must be ordered together with instrument.
2. If it is not specified during ordering process, the standard language version is Latin and programmable for English and Turkish. Please specify Arabic language during order processing.

Notes :

Notes :

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](http://www.baykon.com)