

BAYKON

LOADMATE^{JR}
SERVICE MANUEL

I. GENERAL DESCRIPTION

The Loadmate JR electronic scale indicator is used with strain gauge load cell scales. The unit is available in aluminium cast enclosure as desktop, wall type or panel mount.

I.1. FEATURES:

- Keyboard calibration and setup.
- Display indication for Zero and Net weight.
- Selectable increments: 1000, 2000, 2500, 3000, 4000, 5000, 6000, 8000, 10000 and 12000.
- Pushbutton Zero, Tare and Print.
- Automatic zero maintenance.
- Pushbutton zero range is $\pm 20\%$ of full scale capacity.
- Bi-directional data output in 20 mA CL ASCII, RS 232C or RS 422. Baud rate is selectable at 300, 1200, 2400, 4800 and 9600. Data output can be programmable either in demand mode or continues.
- Remote control input commands via serial data port for zero, tare, gross and print.
- Digital filter with selectable ranges for vibration or motion.
- Available in aluminium cast, static painted industrial type desktop or wall mount or rack mount enclosures.
- Over capacity blanking over selected full scale capacity.
- Under zero display blanking with minus sign.

I.2. SPECIFICATIONS:

- Operation voltage is 220 V - 50 Hz and power consumption is 20 W maximum.
- The unit operates from $-10\text{ }^{\circ}\text{C}$ / $40\text{ }^{\circ}\text{C}$ at 0 to 95% relative humidity.
- Sensitivity: Minimum $0.5\text{ }\mu\text{V}$ / Increment.
- Zero Temp. Coefficient is $0.5\text{ }\mu\text{V} / ^{\circ}\text{C}$.
- Span Temp. Coefficient is $0.001\text{ \%} / ^{\circ}\text{C}$.
- Resolution: 1 / 100.000 internal and max. 1 / 12.000 displayed . Excitation current is provided for up to 4-350 ohm load cells. Load cell cable length is max. 250 m for Baykon Load cell cable.

CAUTION

- DO NOT APPLY POWER TO THE INDICATOR UNTIL THE SUPPLY VOLTAGE HAS BEEN CHECKED.
- BE SURE POWER IS OFF BEFORE MAKING CONNECTION OR DISCONNECTION OF LOAD CELL AND DATA OUTPUT CABLE

II. OPERATING INSTRUCTION

II.1. DISPLAY

The display is 6 digit LED display with Zero, Net and Kg indication. The displays blanks at over capacity and at under capacity with the minus sign.

→0←

Zero indication: Appears when the scale is within +/- 0.25 increments and there is no motion.

n

Net indication: Will appear when the scale is Net mode.

II.2. KEYBOARD



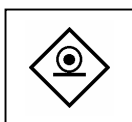
ZERO: This key is used for re-zeroing the scale. It is active in 20% of scale capacity and if there is no motion.



TARE: The scale is tared by this key. It is active if this key is enabled in setup and there is no motion. The tared weight is displayed as a negative value when the weight is removed from the platform.



CLEAR: Tare value is cleared by this key. Tare can also be cleared automatically when the scale is gross zero if Auto Clear Tare function is enabled in setup.







PRINT: The data is sent to the external device by this key. The data is not sent unless the scale is stable.

III. PROGRAMMING AND CALIBRATION

The following chart can be used as a quick reference for programming.

STEP	DESCRIPTION	DEFAULT
S1	- Internal Counter	0
S2	- Digital Filter	1
S3	- Tare Active	1
S4	- Auto Clear Tare	0
S5	- Serial Port	
	1- Mode (Demand/ Cont.)	1
	2- Baud rate	9600
	3- Check Sum	0
	4- Data format	0
CALIB	CALIBRATION	

The keys on the unit will have the following functions throughout the programming procedure.

 Previous Step	 No (0)	 Yes (1)	 Enter (Next)
---	--	---	---

PROGRAMMING AND CALIBRATION STEPS:

1. Please unplug power cable and disconnect printer/host cable if exists.
2. Insert Calibration connector to the serial port connector of the indicator.
3. Apply power, (**S1 0**) message appears on the display.
4. Follow the chart in the following pages.

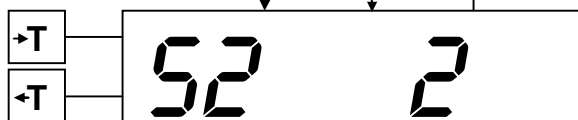
INTERNAL COUNTER/ NORMAL

0 = Normal weighing mode
1 = Internal counter is displayed.



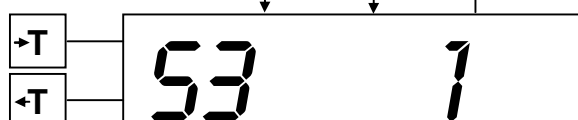
DIGITAL FILTER

0 = No filtering
1 = Low filtering
2 = Medium filtering
3 = Strong filtering



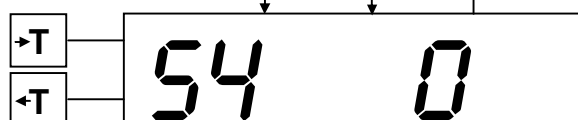
TARE KEY

0 = Disabled
1 = Enabled



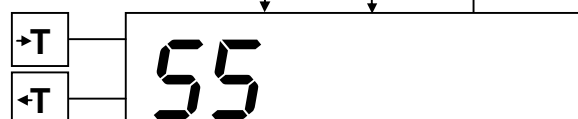
AUTO CLEAR TARE

0 = Disabled
1 = Enabled



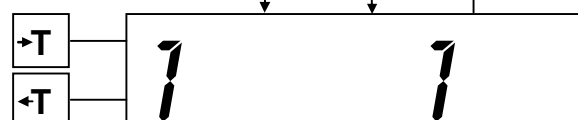
PRINTER OUTPUT

0 = To skip to calibration.
1 = To access printer parameters.



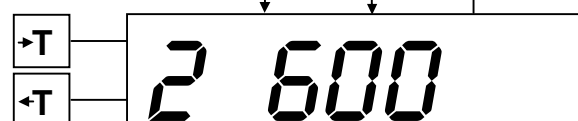
COMMUNICATION MODE

0= Continuous Mod.
1= Demand Mod.



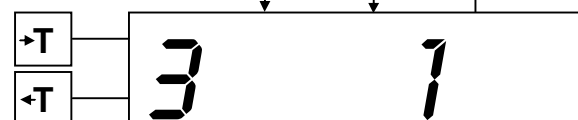
BAUD RATE

1200, 2400, 4800 and 9600
can be selected.



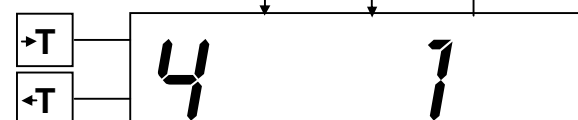
CHECKSUM

0= Checksum will be sent.
1= Checksum will not be sent.



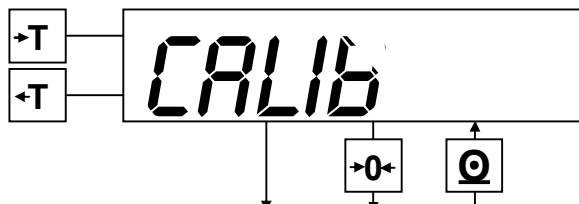
DATA FORMAT

0= Displayed weight
1= Gross, Net and tare values
in single line.
2= Gross, Net and tare values
as multiple lines.



CALIBRATION

0 = Calibration will be skipped,
Setup will proceed to the last
step which is SAVE.
1 = To access calibration.



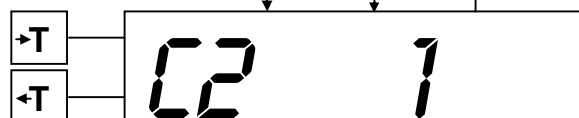
TOTAL INCREMENT

Can be selected as 1000, 2000, 2500,
3000, 4000, 5000, 6000, 8000, 10000
and 12000.



INCREMENT SIZE

Can be selected as 1, 2 and 5.



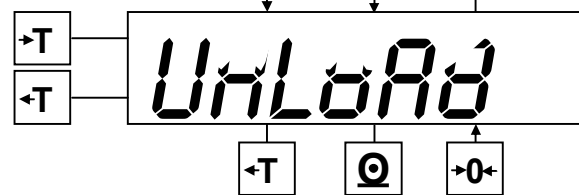
DECIMAL POINT

Can be selected as 0.0001, 0.001,
0.01, 0.1, 1 AND 10.



EMPTY SCALE

Remove all weight from the platform.

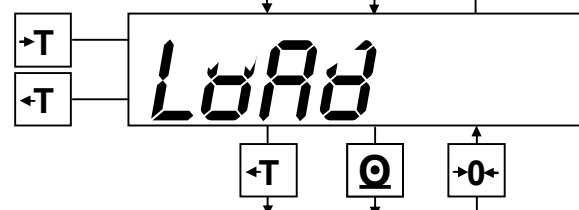


WAIT

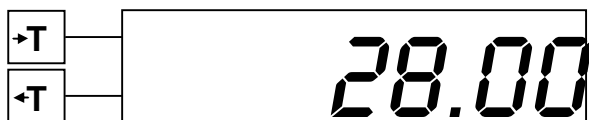


LOAD SCALE

Place test weight on the platform.



ENTER TEST WEIGHT



WAIT



EMPTY SCALE

Unload the platform.



WAIT



CALIBRATION DONE



SAVE ?



END OF CALIBRATION



UNPLUG THE POWER CABLE.

REMOVE THE CALIBRATION CONNECTOR AND APPLY POWER.

4. INPUT AND OUTPUT CONNECTIONS

4.1. CONNECTORS ON MAIN BOARD

Connector No	Description
J1	Power
J2	Load cell
J3	Serial data
J4	Keypad

4.2. LOAD CELL CONNECTOR PIN LAYOUT

Pin No	Description
1	+ Excitation
2	+ Sense
3	Screen
4	- Sense
5	- Excitation
7	+ Signal
8	- Signal

4.2. DATA OUTPUT CONNECTOR PIN LAYOUT(OPTIONAL)

Pin no	RS 232C	RS422	20 mA CL
1			+ R X D
2	T X D	A	- R X D
3	R X D	B	
4			- T X D
5			+ T X D
6			
7	LOGIC GND	LOGIC GND	LOGIC GND
8	CAL	CAL	CAL

5. SERIAL DATA OUTPUT

Specification for serial data:

- Baud rate selectable from 300 to 9600
- Parity: Even
- Data bits: 7
- Stop bit: 1

5.1 Displayed weight :

Gross weight only

	GROSS												
STX	D6	D5	D4	D3	D2	D1	D0	SP	k	g	CR	CK Sum	LF

Net weight only

NET																	
STX	D6	D5	D4	D3	D2	D1	D0	SP	k	g	SP	N	E	T	CR	CK Sum	LF

5.2 Gross, Tare and Net weight in a single line

	GROSS										TARE								
STX	D6	D5	D4	D3	D2	D1	D0	SP	K	g	D6	D5	D4	D3	D2	D1	D0		
								NET											
SP	K	G	SP	T	R	SP	D6	D5	D4	D3	D2	D1	D0	SP	K	G			
SP	N	E	T	CR	CK Sum	LF													

5.3 Gross, Tare and Net weight as multiple lines

		GROSS																
STX	D6	D5	D4	D3	D2	D1	D0	SP	k	g	SP	CR	CK Sum	LF				
TARE																		
D6	D5	D4	D3	D2	D1	D0	SP	k	g	SP	T	R	SP	CR	CK Sum	LF		
NET																		
D6	D5	D4	D3	D2	D1	D0	SP	k	g	SP	N	E	T	CR	CK Sum	LF		

5.4 Continuous data output

STATUS				GROSS								TARE								CR	CK Sum
STX	STA	STB	STC	SP	D6	D5	D4	D3	D2	D1	D0	D6	D5	D4	D3	D2	D1	D0			

[SP] : Space,

[CR] : Carriage return

[LF] : Line feed

[D6] : Most significant digit

[D0] : Least significant digit

CK Sum : Check Sum character - Optional

STATUS BYTES OF CONTINUOUS DATA FORMAT

Status word A			
Bit 0, 1 and 2			
0	1	2	Decimal point
0	0	0	XXXXOO
1	0	0	XXXXXO
0	1	0	XXXXXX
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
Bit 3 and 4			Readibility
3	4		
1	0		X 1
0	1		X 2
1	1		X 5
Bit 5			Always=1
Bit 6			Always=1
Bit 7			Not used

Status B	
Bit 0	Gross=0, Net=1
Bit 1	Weight positive=0, Weight negative=1
Bit 2	Over weight=1
Bit 3	Stable=0, In-motion = 1
Bit 4	Kg=1
Bit 5	Always = 1
Bit 6	Power up = 1
Bit 7	Not used

Status C	
Bit 0	Always = 0
Bit 1	Always = 0
Bit 2	Always = 0
Bit 3	Print button pushed= 1
Bit 4	Expanded data = 1
Bit 5	Always = 1
Bit 6	Always = 0
Bit 7	Not used

6. LM Binary - JR

25 PIN DSUB FEMALE CONNECTOR PIN LAYOUT

PIN NO	CONNECTION	DESCRIPTION
1	+ 24V DC	+EXCITATION
14-2	0 V (24 VDC)	- EXCITATION
15	TEST	INPUT(+ 24VDC)
3	D0	⁰ 2
16	D1	¹ 2
4	D2	² 2
17	D3	³ 2
5	D4	⁴ 2
18	D5	⁵ 2
6	D6	⁶ 2
19	D7	⁷ 2
7	D8	⁸ 2
20	D9	⁹ 2
8	D10	¹⁰ 2
21	D11	¹¹ 2
9	D12	¹² 2
22	D13	¹³ 2
10	D14	¹⁴ 2
23	D15	¹⁵ 2
11	D16	¹⁶ 2
24	Data ok	1= Data ready 0= Data not ready
12	Calibration	DECIMAL POINT
25	Calibration	DECIMAL POINT
13	MINUS +/-	SIGN

ATTENTION:

- Max. pin output current is **200 mA**.
- Applied voltage must be **Max +26 VDC**.
When the test input is applied, all output flash (T=1 Sn.)
- Driver IC is **UDN 2981**.
- To go into calibration, pin 12 and 25 are connected each other.
- Data OK signal is a pulse (73 msec +24 VDC and 25 msec 0 V (+ 24VDC))

7. ERROR TABLE

CODE	DESCRIPTION	POSSIBLE CAUSE & SOLUTION
E 1	Scale in motion	<ul style="list-style-type: none">- Please check power connection and ground.- Check platform
E 2	Illegal test weight	<ul style="list-style-type: none">- Please enter correct test weight value .
E 3	Calibration Error	<ul style="list-style-type: none">- Recalibrate the scale.- Check the load cell connection.- Check the mechanic of the platform.- Replace main board.
E 4	Calibration Error	<ul style="list-style-type: none">- Recalibrate the scale.- Check the load cell connection.- Check the mechanic of the scale.- Replace main board.
E 5	Over capacity	<ul style="list-style-type: none">- Reduce test weight used.- Control calibration parameters. (C1, C2 and C3)
E 6	Insufficient test weight	<ul style="list-style-type: none">- Increase test weight used.- Control calibration parameters. (C1, C2 and C3)

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