

*TAAKATALO* 

Vaakatalo Oy Vestonkatu 11 33580 TAMPERE info@vaakatalo.com www.vaakatalo.com

# USER MANUAL Indicator Series Si-10



Si-10







Si-10SP

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## 1. INTRODUCTION

This document contains information about how to install and operate indicator Si10xx. Please read carefully the manual before using the device.

### 1.1 **PRECAUTIONS**



- Use the manufacturer approved power adapter provided with the scale. The use of improper type of adapter could damage the device.
- Do not place loads heavier than the maximum weight limits specified in this document.
- Place loads carefully on the weighing pan.
- Do not immerse the scale in water or any other liquids.
- Do not use the scale in hazardous environments.
- The scale should be used in environments free from dust, high humidity, corrosives, vibrations, extreme temperature fluctuations and excessive air movements.
- Do not place the scale on unstable surfaces.
- Avoid placing the scale near heaters or in direct sunlight.
- Switch off and disconnect the scale from the power supply before cleaning or servicing.
- Always grab the scale from the bottom when moving, do not grab the weighing pan.
- Disposal of this product and its accessories should be in accordance with your local regulations.

### 1.2 WARNINGS

Read this section carefully before installation of the Si10 indicator.

- Before start using the instrument, check if the voltage indicated on the AC/DC adaptor label is the same as the local power supply. If it is not, do not connect the scale to the power line (*Contact with instrument representative*).
- Before energizing the instrument, check all connectors are installed properly. All external cables should be installed safely to avoid mechanical damages.
- The scale should only be used under proper environmental conditions indicated in this operation manual.
- Do not use this scale in places where there are unstable conditions or explosive danger.
- Do not place the scale near heat sources or under direct solar radiation influence.
- Keep the scale far away from other electromagnetic radiation sources. Its influence could affect the weighting precision.
- When low-battery announcement appears, the battery should be charged. If the battery remains discharged for a long time, it deteriorates and could stop working.

Every month battery charging is recommended for long time battery life, if the indicator is not used.

- Use only original battery for your instrument safety.
- Disconnect from power supply and take out internal battery located on the bottom of the instrument and wait for 3 minutes before interfering the instrument.

In the case of any inconvenience of your application to the above items, contact with instrument representative.

#### IMPORTANT

In case of breakdown or inappropriate operation working due to an inadequate following of the instructions given before, the guarantee right will be lost.

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### 1.3 FEATURES

- Large segment display with 32mm digit height
- Multicolor backlight
- Programmable to g, kg, t weighing units
- Single range or Multi range operation
- Linearity correction
- Hold and Auto Hold function
- Tare
- Auto tare
- Real time clock (option)
- Tilt switch input
- Remote weight indicator operation
- Check weighing function for Hi/OK/Low with visual and acoustic announcement
- Piece counting function
- Dynamic load weighing function
- Accumulation function
- Automatic power off
- RS 232C data output for printer, PC or remote display connection.
- 100 240 VAC, 50-60 Hz / 9 VDC, 0.6A regulated power adaptor (specified by ordering).
- Optional second RS-232C data output (PC and printer).

### 1.4 TECHNICAL DATA

The indicators have the following characteristics

Model	OIML	
Туре:	Si-10 / Si-10S / Si-10SP	
Accuracy class:	III and IIII	
Weighing range:	Single interval or multi-interval	
Maximum capacity (Max):	0.6kg to 150 000kg	
Minimum capacity (Min):	≥ 20e for class III	
	≥ 10e for class IIII	
Verification scale interval (e-):	≥ 0.1g for class III	
$\frac{1}{2}$	≥ 5g for class IIII	
Maximum number of Verification	≤10000 (class III), ≤ 1000 (class IIII)	
Scale Intervals:		
Maximum tare effect:	-Max within display limits	
Mains nower supply:	100-240 VAC, 50/60 Hz	
	9-12V VDC via external AC/DC adapter (Option)	
Battery:	7.4 VDC researchable battery (Option)	
Operational temperature:	-10°C to +40°C	
	4- wire system	
	6-wire system with maximum cable length 1430m/mm <sup>2</sup>	

### 1.5 **PRODUCT MODELS**

Model	OIML	Battery	Housing	Built-in printer	Power
Si10	Yes	Option	Plastic	No	100 – 240 VAC ( internal power supply) or 9 VDC ( specify at ordering )
Si10S	Yes	Option	Stainless steel	No	100 – 240 VAC ( internal power supply) or 9 VDC ( specify at ordering )
Si10SP	Yes	Option	Stainless steel	Yes	100– 240 VAC ( internal power supply)

### 1.6 PACKAGE CONTENTS

- Indicator
- Mounting bracket
- Knobs (2pcs)
- Manual
- Warranty card
- AC power cord (in internal power supply version)
- Power adapter (in external power adapter version)

## 2. KEYPAD AND DISPLAY

The indicator has segment LCD display with multicolor backlight, keys are ergonomically designed in front of the instrument.



The meanings of the icons on the display are: as follow

	Stability symbol
>0<	Center of Zero symbol
Pass	Weight is not stable
kg	Weighing unit is located on the right of the weighing display as kg, g, t.
	Battery status icon
NET	Weight indication is in net.
	Tare is displayed
PCS	Displayed value shows number of pieces in counting mode.
000 000	Indicator in in counting mode
HOLD	Weighing value is in Hold/Auto hold

Dynamic mode is active		
hans	Accumulation value is displayed	
	Weight is under the limit in checkweighing mode	
OK	Weight is within the limit in checkweighing mode	
	Weight is over the limit in checkweighing mode	
x10	Displayed weight in shown in high resolution	

## Key functions

C	Power on/off key : Hold key to power on/off the instrument
	Mode key: Hold to enter main menu
Mode	Mode key: Double press to enter checkweihging mode, dynamic mode,
_	Filter and x10 weighing
Esc	<b>Escape key:</b> In menu mode, press this key to escape from menu and return
	to normal mode
•	Zero key: Hold this key to adjust the scale zero, if there is any drift. Zeroing
→0←,	should be done if there is no any load on the platform
\ <b>∀</b> ∕	Clear accumulation: Hold to clear accusations in accumulation mode
	Arrow down key: Used in input program mode
+֔>,	Tare key: Perform a tare operation
	Arrow up: Used in input program mode
	Switch between units
* ,	Enter counting mode when there is gross weight
	Start Dymamic weighing when active active
	Arrow right: Used in input program mode to move cursor right
	Enter key: Enter key when in menus
Print	Hold key: holds current weight when HOLD function active
	Print key: Prints receipt/label when print function active
	Accumulation key: prints accumulated weightings when function active

## 3. INSTALLATION

**PRECAUTION:** Please read this manual carefully before installation of the instrument. Applying the recommendations in this section will increase your system reliability and long term performance.

The scale should be placed as clean as possible area, not getting direct sun light if possible, with a temperature between -10 °C and +40 °C, humidity not exceeding 85% noncondensing. All external cables should be installed safely to avoid mechanical damages. Scale instruments are very low level signal measuring instruments. To avoid electrical noise, scale should be separated from the equipment that produces electrical noise.

### 3.1 BATTERY

The indicator can be operated on the internal rechargeable battery when AC power is not available. The indicator will automatically switch to battery operation if there is a power failure or the power cord is removed.



**Note:** Before using the indicator for the first time, the internal rechargeable battery should be fully charged for up to 12 hours. The indicator can be operated during the charging process. The battery is protected against overcharging and the indicator can remain connected to the AC power line.

Connect AC power to the indicator and allow it to charge. The indicator can operate for up to 100 hours on a fully charged battery.

The indicator will display Lo.BAT and automatically turn off when the battery is fully discharged.

## CAUTION



BATTERY IS TO BE REPLACED ONLY BY AN AUTHORIZED SERVICE DEALER.

RISK OF EXPLOSION CAN OCCUR IF REPLACED WITH THE WRONG TYPE OR CONNECTED IMPROPERLY.

Dispose of the lithium battery according to local laws and regulations.

### 3.2 PERIPHERAL CONNECTIONS

#### Warning:

- 1. Please always remember that Si30 indicator is very low voltage measuring instrument. Please do not forget that the instrument must be powered off before inserting or removing any peripheral connector.
- 2. 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.
- 3. All required electrical connections should be done as described below.

#### 3.2.1 MAIN BOARD WIRING CONNECTIONS

To avoid damages, the load cell wiring should be made carefully before energizing the instrument. Load cell connection detail is shown in Figure 3...

In 4-wire installations jumpers RJ4 and RJ5 must be shortened. The two jumpers are located right from the load cell connector.

If you have junction box in your system, use 6 wire cable between indicator and the junction box.

In 6-wire installation you must remove RJ4 and RJ5





Figure 3.2.1.1 Main board connections AC model

The electrical connectors of I10 are located at the bottom of the indicator as seen below left and electrical terminals of I10S are located on the printed circuit board in the housing as seen below right.

#### 3.2.2 EXTERNAL CONNECTIONS

To avoid damages, the load cell wiring should be made carefully before energizing the instrument. Load cell connection, Interface and power detail is shown in Figure 3.



Figure 3.1 External connection Si10 AC model

Interface



Figure 3.2 External connection Si10S AC model

## 3.2.3 LOAD CELL CONNECTION

To avoid damages, the load cell wiring should be made carefully before energizing the instrument. Load cell connection detail is shown in Figure 3..

In 4-wire installations jumpers RJ4 and RJ5 must be shortened. The two jumpers are located right from the load cell connector.

If you have junction box in your system, use 6 wire cable between indicator and the junction box.

In 6-wire installation you must remove RJ4 and RJ5



Figure 3.3 Load cell termination internal connector



Figure 3.4 4-wire and 6-wire connection



Figure 3.5 Load cell external connector (when equipped)

**Warning:** Always place jumpers RJ4 and RJ5 for 4 wire connection. Non-placed jumpers may cause the wrong Excitation voltage measurement and create an accuracy problem.

*Warning:* Connect the load cell cable shield to the reference ground or shield pin of the load cell connector.

## 3.2.4 SERIAL PORT CONNECTIONS

The COM1 port provides an RS-232/485 connection for external serial devices. Figure 3.5 indicates indicator internal signals on the COM1 port. Figure 3.5 indicates external port signals on DB9 connector. Make the connections as necessary.



#### COM1 SAMPLE CONNECTION

Figure 3.5 Sample COM1 internal termination connection



DB9 Male

	Male DB9		
Signal	COM1	COM2	
TXD	2	8	
RXD	3	7	
GND	5	5	

Figure 3.6 Sample COM1 and COM2 DB9 external connector

### 3.2.5 POWER SUPPLY CONNECTION AND GROUNDING

The instrument shall be used with regulated 9 VDC adaptor supplied with the instrument in version with external adapter or with AC cord when supplied with internal power supply.

Before connecting the power supply, check that voltage written on the AC/DC adaptor is same as the local power supply. If it is not, do not connect the scale, and contact your authorized representative. If voltage is correct, connect the plug on the power cable to the power supply.

The protected ground shall be connected to the 230 VAC powered instrument against the safety and electrical disturbances.

After the scale has been connected, it performs a display test. When the display shows zero, the scale is ready for operation.

### 3.2.6 CHECK SCALE PERFORMANCE

#### Warning:

- 1. Scale set-up and calibration should be done according to your application. Please read this document carefully and select parameter values which will fit your application before programming the instrument.
- 2. You cannot change Set-up parameter values and calibration after sealing the instrument in legal usage. Be sure proper adjustments you done before sealing the scale.

Check scale accuracy by loading it with test weights before usage. If there is any error, call the authorized technician to adjust the scale.

## 4. OPERATION



Press **to** power on the indicator. Scale activates the display for a few seconds then scale version is displayed. After start up cycle, weight value is displayed.

(--0-- ERR) prompt at power on announces zeroing range at the power on is exceeded or scale was not unloaded at power on. The scale should be unloaded before power on.



Figure 4.1 Weight display.

Place the object you desire to weight over the scale. Weight of the object is displayed on the display.

#### 4.1 ZEROING

Zeroing is done to compensate deviations from zero of the unloaded pan.

1. Clean the unloaded platform and check if there is anything touching the platform.



2. Hold key to compensate zero deviation. Zeroing is done if the scale is stable and in zeroing range.

3. Symbol appears to indicate that zeroing is done and the scale is at center of zero.



If zeroing is not done properly, press key again.

### 4.2 AUTO TARE

When Auto Tare is set ON from the WEIGHING FUNCTIONS menu, the initial item placed on the scale is automatically tared.

The tare value is automatically cleared when the weight on the scale is fully removed.

#### 4.3 CHANGING UNITS OF MEASURE



Hold until the desired unit of measure is displayed, then release the button. Unit change is active only when scale in at zero.

**NOTE:** Only units of measure must be enabled from WEIGHING FUNCTIONS menu if unit change is allowed from the scale built menu which is jumper protected function

#### 4.4 PRINTING DATA



Press the

button to send data to a printer or computer.

**NOTE:** To ensure that the desired data is output correctly, first set the printing parameters and the communication parameters

Print is allowed only when weight is stable

#### 4.5 PRINT QUICK EDIT



You can easily change basic printing information with short cut menu

LABEL – choose label # form to print	
Possible label form editable by label editor:	01
01 - Default	
02 – Ontional	LADLL
04 – Optional	
To change press Print Press to go to next parameter	
	0
LUI-I Llaadin Jahalin musada	
Used in labeling mode	101-1
Enter up to 15 numbers	
Use arrow Up, Down, Right to input	
Press to go to next parameter	
LOT-2	0
Used in labeling mode	0
	LOT-2
Enter up to 15 numbers	
Use arrow Up, Down, Right to input	
Duint	
Print	
Press to go to next parameter	
LOT-3	
Used in labeling mode	
5	U
Enter up to 15 numbers	LOT-3
·	
Use arrow Up, Down, Right to input	
Print	
Press to go exit menu	

#### 4.6 PIECE COUNTING

Use this mode to count parts of uniform weight.

To start counting, place known quantity of parts on scale and hold Display will show parts counting set up.



Enter the number of parts corresponding to the weight and start counting by pressing





To exit parts counting mode hold

#### 4.6.1 COUNTING PIECES INTO A CONTAINER

For counting parts in the container, place the empty container on the scale and tare it by



holding the key. After taring the scale preform counting of the parts as described in section 4.6 or call are preset counting part.

Note: The result of the Piece Counting is no a legal value

#### 4.7 CHECKWEIGHING

Indicator Si10 in specifically designed for checkweihing with Color changing backlight, acoustic signal and visual displaying of Hi, OK, Lo

Use this mode to compare the weight of items to a target weight range.

## Mode

To enter Checkweighing mode double press **DESC** button until message **SELECT HI-LO** is displayed.

Select menu HI-LO and confirm with

button to basic check weighing settings.

In this menu you have to enter the following data:

- LO: 000.000 Enter weight of Low target limit
- HI: 000.000 Enter weight of Hi target limit
- Auto- 0/1 If you want weighing limits to be stored and remembered after  $\triangleright$ indicator reset you must activate parameter Auto -1

Print

When Auto=0 indicator will start with the set checkweighing parameters

START HI-LO – confirm with  $\triangleright$ to start checkweighing



Esc To exit checkweighing mode press button.

**Note:** Target weight is the weight between Low and Hi weight limits and it is shown with OK. followed by sound or blinking screen depending on checkweighing set up. Note: Checkweihging function must be activated and advance set up from CHECKWEIGHING SETUP. Refer to section 6. CHECKWEIGHING SETUP

#### 4.8 DYNAMIC WEIGHING

Use this mode to weigh moving items such as live animals

# Mode

Esc To enter dynamic weighing mode double press button until message. **DYNAM WEIGHT** is displayed



button to activate it.

When dynamic weighing is active icon **build** is blinking and display shows message "START/current Weight"

Select menu WEIGHT DYNAMIC and press



To start Dynamic weighing, place weight on the load receptor and press button

Dynamic weighing will stop when scale is unloaded or when when is pressed.

**Note:** The result of the Dynamic weighing will be on hold for 8 sec. And will be cleared **Note:** The result of the Dymanic weighing is no a legal value

Note: Dynamic weighing function must be activated from WEIGHING FUNCTIONS. Refer to section 8  $\,$ 

#### 4.9 HOLD

Use this mode when current weight must be placed on hold on the display.

Print

To hold current weight press and hold weight will be displayed as shown



Hold weight will be displayed for 7sec. or until cleared by Esc button.

Note: Hold weight function must be activated from WEIGHING FUNCTIONS. Refer to section 8.

When Hold function is active Auto print function is not active

#### 4.10 AUTO HOLD

Use this mode when weighing a large objects which cover the display.

Place weight on the scale and when weighing is stable the weight will stay on hold as shown



Hold weight will be displayed for 7sec. or until cleared by Esc button.

**Note:** Auto Hold weight function must be activated from WEIGHING FUNCTIONS. Refer to section 8.

When Hold function is active Auto print function is not active

### 4.11 EXPANDED RESOLUTION 10X

Use this mode to see weighing in high resolution.

To activate this mode:





The indicator will show extended resolution (d=0.1) for 4 sec.

#### 4 1 2 TOTALIZATION

Totalization function is used to accumulate different weighing values, when activated all

weighing are accumulated by pressing the button. If printer is connected a printout is made for each weighing.

To see current accumulations press the button when scale is free of weight and indication is at zero.

To print current accumulations press the

To clear current accumulations hold the

To exit Totalization menu press

**NOTE:** Totalization function must be activated from PRINT SETUP menu. Refer to section 9.

#### 4.13 **TILT SWITCH**

The instrument can be equipped with an optional external tilt switch. When the instrument is out of the Tilt limits the switch will be active and weighing will be terminated by the following messages:

TILTED SCALE	Tilt Switch is ON
TILT SENSOR	Problem with Tilt Sensor
TILT SETUP	Tilt sensor not found or problem in calibration data





Print



**→∩**•

Print

to delete accumulations

button when totalized menu is shown

## 5. SETUP MENU DIAGRAM



# 6. CHECKWEIGHING SETUP

Access advanced checkweighing setup





## 7 WEIGHING FUNCTIONS (FUNC ENABLE)









## 8 PRINT SETUP

Setup menu for Printing and Accumulation Access from general menu as shown:







## 9 LABEL FORMS

#### By Default there are 3 label forms to choose.

Label 01		Lat	oel 02	La	bel 03
label=01		label=02		label=03	
LOT-1: LOT-2: LOT-3:	00000123 24512345 00034456	LOT-1: LOT-2: LOT-3	00000123 24512345 00034456	LOT-1: LOT-2: LOT-3:	00000123 24512345 00034456
Weighing N: 01-01-2000	#00000174 14:32	Weighing N: 01-01-2000	#00000175 14:32	Weighing N: 01-01-2000	#00000176 14:32
Gross: Tare : Net :	1.138 kg 0.138 kg 1.000 kg	Gross: Net :	1.138 kg 1.000 kg	Net :	1.000 kg
		Basic \	Weighing		
label=01		label=02	Veigning	label=03	
LOT-1: LOT-2: LOT-3:	00000123 24512345 00034456	LOT-1: LOT-2: LOT-3:	00000123 24512345 00034456	LOT-1: LOT-2: LOT-3:	223 24512345 00034456
Weighing N: 01-01-2000	#00000162 14:19	Weighing N: 01-01-2000	#00000163 14:19	Weighing N: 01-01-2000	#00000164 14:19
GGross: Tare : Net : Refference weigh 1.000kg/ 100 Quantity:	2.204 kg 0.204 kg 2.000 kg t: pcs 200 pcs	Gross: Net : Refference weig 1.000kg/ 10 Quantity:	2.204 kg 2.000 kg ht: 0pcs 200 pcs	Net : Refference wei 1.000kg/ 1 Quantity:	2.000 kg ght: 00pcs 200 pcs
		Piece (	Counting		
label=01		label=02	oounting	label=03	
LOT-1: LOT-2: LOT-3:	00000123 24512345 00034456	LOT-1: LOT-2: LOT-3:	00000123 24512345 00034456	LOT-1: LOT-2: LOT-3:	00000123 24512345 00334456
Weighing N: 01-01-2000	#00000168 14:31	Weighing N: 01-01-2000	#00000169 14:31	Weighing N: 01-01-2000	#00000170 14:31
Dyn Gross: Tare : Dyn Net :	1.138 0.138 kg 1.000 kg	Dyn Gross: Dyn Net : DYNAMIC WEIGHT	1.138 1.000 kg	Dyn Net : DYNAMIC WEIGHT	1.000 kg
DYNAMIC WEIGHT					
		L Dynamic	Weighing	1	

#### **NOTE:** Other forms may be optionally loaded by Label Editor sofoftware

# **10 INTERFACE SETUP**

Setup menu for setting up interfaces Access from general menu as shown:





10.8 COM3 PROTOCOL Select protocol 00- PC software SiComm 01- Label editor connection 02- Printer connection 03- Reserved 04- Reserved Use arrows to input Press to go to next parameter	00 PROT-3
10.9 COM3 SUBPROTOCOL Used for protocol variations 00- Reserved 01- Reserved 02- Reserved 03- Reserved 04- Reserved Use arrows to input	00 NET-3
To exit menu hold Esc until indicator is in weighing mode IMPORTANT: To saver interface setting you must go over all parameters with until the instrument makes a click signal and exits Interface Menu	

# **11 SYSTEM PARAMETERS**

System parameters menu is jumper protected and it is used during initial scale setup. From this menu you can enable/disable different functions

Access from general menu as shown:



11.4 DYNAMIC WEIGHING 0- Disabled 1- Active To change press	0 DYNAMIC WEIGHT
Press to go to next parameter	
11.5 UNIT CHANGE Allows unit change 0- Disabled 1- Active To change press	0 ALTERN DIMENS
Press to go to next parameter	
The instrument can be equipped by internal or external TILT switch depending on application. 00- Disabled 01- Disabled 02- Disabled 03- Active internal tilt switch (if equipped) 04- Active external tilt switch active	0 TILT TYPE
Use numerical keyboard to input   Print   Press to go to next parameter	
If Tilt Switch is active the following menus appear	





## Main office

3 Kapitan Krystev str.

Silistra 7500

BULGARIA

Tel.: +359 86 820 200, 882 255

e-mail: info@elicom-bg.com

www.elicom.bg