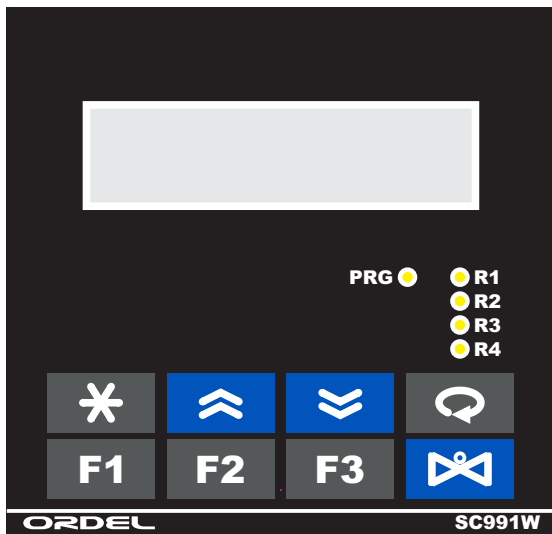


SC991W

Standard Weight Controller and Transmitter

USER GUIDE



ORDEL



- Read this user manual carefully before using the device. Responsibility for accidents and damages caused by non-compliance with the warnings in this manual belongs to the user.
- This device has been produced for use by educated people in industrial enterprises, it is not suitable for use in homes and similar places for safety reasons.
- Do not use this device in the presence of flammable and explosive gases. It may cause explosion or fire due to electric arc that may occur at the contact points.
- Liquid substances and metal parts must be prevented from entering the device. Otherwise, it may cause accidents such as fire and electric shock.
- There is no fuse and circuit breaker on the device, they must be connected externally by the user.
- In case of malfunction of the device, external measures should be taken to prevent accidents and damages that may occur in the system in which it is located.
- It should be ensured that the sensor and signal cables are away from power cables or switched inductive load cables, or it must be prevented from being electrically affected.
- Before making the device connections, it should be checked whether the supply voltage is suitable for the place where it will be used by looking at the product code.
- Do not energize the device before making the connections related to the device in accordance with the wiring diagram and do not touch the terminals while the device is energized.
- The factory configuration of the device is not suitable for every system, it must be changed by the user according to the needs of the current system.
- The useful life of the device as determined and announced by the Ministry is 10 years.
- Do not modify or try to repair the device, the device should be repaired by authorized service personnel.

EXPLANATION	Page No:
Warnings.....	2
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Device Description.....	4
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Preparation Stages for Use.....	6
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(CALIB) Weight Calibration Page Parameters	14
(OCALB) Analog Output Calibration.....	16
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Serial Communication.....	22

SC991W Model devices are fully modular devices designed for weight measurement and control in industrial environments, and each module can be individually configured. In the design phase, compliance with international standards, reliability and ease of use are based.

2 Line 16 Character LCD Display

5 LED Indicators

1 Loadcell Sensor Input (1mV/V, 2mV/V, 3mV/V)

2 Analog Outputs (0/4-20mA, 0/2-10V)

1 Piece RS485 Communication Unit

4 Relays or Logic Outputs (24V)

100-240Vac Universal or 24Vac/dc Supply

Isolation Between Input/Output Modules

2 Different Relay Functions

ON/OFF Control

- Before starting to use the device, make use of this user manual and perform the following operations in order.
- SC991W Model devices are completely modular devices, therefore, before using the device, check the product code to see if the supply voltage and input-output modules are suitable.
- Before making other connections of the device, only supply the supply voltage and enter the configuration page to make the most suitable configuration for your system.
- After the device is properly configured, set the set values and hysteresis of the relays you have selected as alarm on the operator page.
- Cut off the power of the device and make other connections according to the connection diagram.
- Make the system to be controlled ready for operation and re-energize the system with the device.
- Check all functions of the device during normal use.
- Finally, in order to prevent the intervention of unauthorized persons, enter the configuration page again and set the security-related parameters and return to the Process-Screen.

This user manual has been prepared in accordance with the above procedure. How to do these operations is given in detail in the relevant sections.

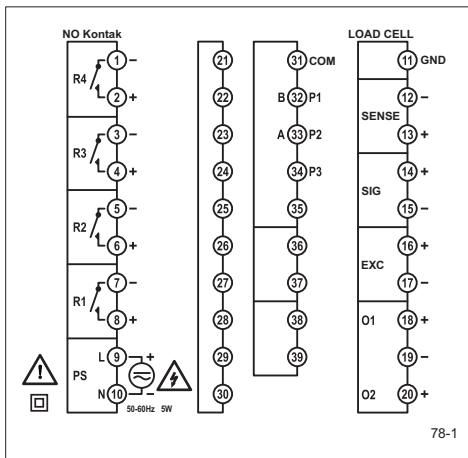
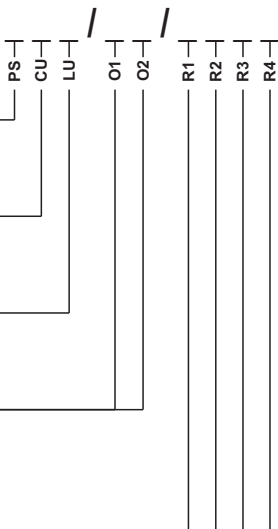


Figure-1

Module	Explanation
LOAD CELL	Loadcell connection.
CU	RS485 Communication Module
O1	First Analog Output module
O2	Second Analog Output module.
O2	Not used in this model.
R1,R2,R3,R4	Relay Output modules (The contents of these modules are determined by the product code, and their functions are determined by the "r 1F, r 2F, r 3F, r 4F" parameters on the configuration page).
PS	Supply voltage input (supply voltage is determined by the product code).

SC991W -

**Supply Voltage :**

0 = 100-240V AC/DC

1 = 24V AC/DC

Communication Module:

0 = None

3 = RS485 Communication

Logic Input Module:

0 = None

1 = 15V Logic Input

Analog Output module :

0 = None

1 = 0/4-20mA Current Output

2 = 0/2-10V DC Voltage Output

Relay Output Modules:

0 = None

1 = NO Contact

2 = 24V DC Logic Output (for driving SSR)

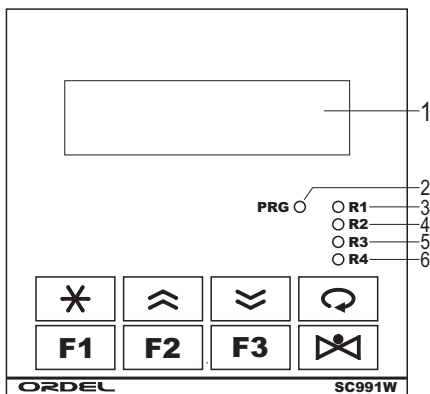
3 = NO/NC Contact

NOTE: When R1,R2 modules are coded as (3), the R4 module should be coded as (0).

When coded as R1 or R2 relay, NO/NC should be selected for both relays.

Relay output modules can be coded as contact or logic outputs in the product code, but only the term relay is used when talking about these outputs in this user manual.










Supply Voltage (PS)	100-240Vac/dc : +%10 -%15	24Vac/dc : +%10 -%20	
Power consumption	6W,10VA		
Screen	2 X 16 Dijit LCD screen		
Load Cell Input	1-3 mV/V Max. 4 piece 350 Ω load cell		
Load Cell Supply	8V +/- %0,25V		
Analog Output (O1)	Current : 0/4-20mA (RL ≤ 500Ω)	Voltage : 0/2-10V (RL ³ 1MW)	
Relay outputs (R1,R2,R3,R4)	Contact : 250Vac, 5A	Logic Output: 24Vdc, 20mA	
Contact Life	No-load : 10.000.000 switching		
	250V, 5A Resistive Load: 100,000 switching		
Memory	100 years, 100,000 renewals		
Accuracy	+/- %0.2		
Ambient temperature	Operation : -20...+50C		
Dimensions	Width : 96mm	Height : 96mm	Depth : 110mm
Panel cut dimensions	92+/-0,5 mm x 92+/-0,5 mm		
Weight	430gr		



PROCESS-SCREEN:

When the device is energized, the measured process value or error message is displayed on the “PV” display, and the control set value is displayed on the “SP” display, after the program version is displayed on the gesterges for about 2 seconds. This screen is called the Process-Screen. This screen is used continuously during normal operation.

1	PV INDICATOR	It shows the process value or error messages on the Process-Screen, and the parameter name and value on the other screens.
2	PRG	It lights up when the device menu is entered.
3	R1 LED	“R1” It lights when the relay module is energized.
4	R2 LED	“R2” It lights when the relay module is energized.
5	R3 LED	“R3” It lights when the relay module is energized.
6	R4 LED	“R4” It lights when the relay module is energized.

KEY FUNCTIONS	
	It is used to enter the menu when  and  keys are pressed together. It is used to exit the menu when pressed alone.
	Used to change parameter option or values.
	Used to change parameter option or values.
	It is used to enter the menu when  and  keys are pressed together. A short press on any screen will move to the next parameter.
F1	Not used.
F2	Not used.
F3	Not used.
	The weight is used as the confirmation key of the calibration

SC991W Series devices are designed for weight measurement and control. Before using the SC991W device, input/output types and functions, control type and usage features should be optimally adjusted.

Depending on the order code, SC991W series devices may have one load cell input, two analog outputs, one RS485 communication and four relay output modules. The types, functions and scales of these modules are determined by the parameters on the relevant page of the program menu.

Before connecting an unconfigured device to your system, supply only the supply voltage and configure it according to the instructions below.

Entering the configuration page and setting the parameters:

- ◆ To enter the configuration page, press and hold both the “[*]” and “[<]” keys together until the (CODE ENTER) text appears on the screen while the device is energized.
- ◆ If the password is defined when the CODE INPUT appears, enter the password with the “[>]” and “[<]” keys (this password is 0 in the factory settings).
- ◆ If the password you entered is incorrect when you press the “[<]” key, PAGE SELECTION appears, but no changes can be made to the parameters.
- ◆ On the PAGE SELECTION screen, the menu to be set is accessed with “[>]” and “[<]”. Use the “[>]” and “[<]” keys to change the setting option of the parameter, and the “[<]” key to move to the next parameter. Pressing the “[*]” key for a short time will return to the beginning of the page, while pressing the “[*]” key for a long time will return to the Process-Screen.
- ◆ Figure-3 below is a graphical representation of these processes.

Note: Press the “[*]” and “[<]” keys together to see the numbers of the parameters on the configuration page to move forward.

Figure- 10















Process-Screen

Figure - 11



Figure - 12



When the device is energized, the screen in figure. 10 appears. Press the  and  keys on the front of the device at the same time. After this process, the PRG led lights up. The screen in figure.11 appears on the screen. Enter the password with the  ve  keys and press the  key. In the factory settings, the password is defined as (0). When the wrong password is entered, the parameters are visible but cannot be changed. When the  key is pressed after the password is entered, the screen in figure. 12 appears. The page to be adjusted is selected with the  and  keys on the lower screen.  and  keys are used for page selection,  key is used to enter the selected page and advance in that menu. Press  to exit.

PAGE SELECTION Parameters:

CNFIG









CALIB


OCALB

CNTRL

For detailed explanations of the parameters on these pages, see the user manual.

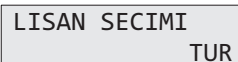
Entering (CNFIG) General Settings Page:

While entering the general settings page of the device on the main screen (Fig.10),  and  keys are pressed at the same time. After this process, the PRG led lights up. CODE INPUT appears on the screen (Figure.11). Enter the password with the  ve  keys and press the key. The screen in Figure 12 appears on the screen. CNFIG page is selected with the A and B keys on the lower screen and the  key is pressed.  and  keys are used to change the parameter.

Şekil - 12

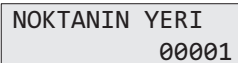
SAYFA SECIMI
CNFIG

The **CNFIG** page is the menu where the general settings of the device are made. From here, the language used in the device, the decimal value in the weight display, communication settings and password settings are made.



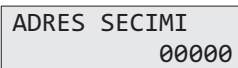
LISAN SECIMI
TUR

Selects the language to be used. (TUR) Turkish, (ENG) English.




NOKTANIN YERI
00001

Determines the location of the point in weight measurement. It can be adjusted between 1 and 3.



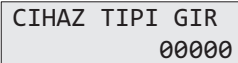
ADRES SECIMI
00000

Sets the address of the device. If the communication of the device will not be used, the address should be selected as 0.



BAUD SECIMI
0009,6

It determines the communication speed of the device. This parameter can be set to a value between 9600 bps and 115500 bps.














CIHAZ TIPI GIR
00000

This parameter should be set to "0".





Introduction to (CALIB) Weight Calibration Page :

While entering the general settings page of the device on the main screen (Fig.10),

 and  keys are pressed at the same time. After this process, the PRG led lights up. CODE INPUT appears on the screen (Figure.11). Enter the password with the  and  keys and press the  key. The screen in Figure 12 appears on the screen. CALIB (Fig.13) page is selected with the  and  keys on the lower screen. To enter the menu, press the  key and press MOLD respectively. WEIGHT / RESET / MOLD. FAKTOR / LOADCELL FAKTOR parameters are displayed.  ve  keys are used to change parameters. Press  to exit.

Şekil - 13

SAYFA SECIMI
CALIB

CALIB page is the menu where weight calibration is done. First of all, adjust the calibration factor from the LOADCELL FAKTOR parameter in figure. 17 according to the load cell type used in the device. Then go to the (MOLD WEIGHT) parameter in figure. 14 and enter the weight of the load to be used in the calibration here by using the  and  keys, then press the  key to move to the next parameter. The screen will appear as in Figure 15. Zero calibration is done in this parameter. When there is no load on the scale, reset is done by pressing the key. Thus, the tare is taken and by pressing the  key again, the next parameter is passed. The screen in Figure. 16 appears. In this parameter, the weight entered in the figure. 14 calibration weight is placed on the scale and the calibration process is performed by pressing the key. Thus, the calibration process is done.

Parameters on this page:

MOLD. WEIGHT

RESET

MOLD. FAKTOR

LOADCELL FAKTOR

Figure - 14

KALIB. AGIRLIGI 0010,0

It determines the weight value to be used in the calibration process. You cannot enter a value below 10Kg in this parameter. Therefore, you need to choose the calibration weight accordingly.

Figure - 15

SIFIRLAMA 00000

It is zero calibration. This operation should be done when the scale is empty. For this, when the scale is empty, this parameter is read and zero calibration of the scale is done by pressing the key. Make sure that the value does not change by doing this operation a few times.



Figure - 16

KALIB. FAKTOR 00000

It is the weight calibration done when there is a load on the scale. MOLD on the scale in fig.14. The weight is set as the value entered in the WEIGHT and the calibration process is done by pressing the key. Make sure that the value does not change by doing this operation several times.


Figure- 17

LOADCELL FAKTOR 000001

It determines the load cell factor to be connected to the device. This parameter is set to one of the 1mV / V, 2mV / V, 3mV / V options by using the  ve  keys.

Introduction to (OCALB) Analog Output Calibration Page :

This is the page where the analog output calibrations of the device are made. To enter this page, $\boxed{\times}$ and $\boxed{\square}$ keys are pressed at the same time while on the main screen (Fig.10). After this process, the PRG led lights up. CODE INPUT appears on the screen (Figure.11). Enter the password with the $\boxed{\leftarrow}$ and $\boxed{\rightarrow}$ keys and press the $\boxed{\square}$ key. The screen in Figure 12 appears on the screen. On the lower screen, the OCALB (Fig.18) page is selected with the $\boxed{\leftarrow}$ and $\boxed{\rightarrow}$ keys. CURRENT OUT.1 SUB / CURRENT OUT1 when proceeding by pressing the $\boxed{\square}$ key to enter the menu. HIGH / CURRENT OUT.2 LOWER / CURRENT OUT2. UST parameters appear. $\boxed{\leftarrow}$ and $\boxed{\rightarrow}$ keys are used to change parameters. Press $\boxed{\times}$ to exit.

Figure- 18

SAYFA SECIMI
OCALB

OCALB page is the page where analog outputs are set. Setting the parameters on this page differs according to the product code of the device. If the output of the device is selected as current, the current output setting can be adjusted as 0-20mA or 4-20mA. If the output of the device is selected as volts, it can be adjusted as 0-10V or 2-10V. In order to adjust the analog outputs, firstly the screen in figure.18 is displayed and by pressing the $\boxed{\square}$ key, the screen in figure.19 is displayed. In this parameter, the lower limit calibration of the first analog output is made. By using the $\boxed{\leftarrow}$ ve $\boxed{\rightarrow}$ keys, the output is adjusted until 0 or 4mA for the current, and 0 or 2V for the V output, depending on the device type. Then, by pressing the $\boxed{\square}$ key, the next parameter is passed. The peer in Figure.20 will appear. In this parameter, upper limit calibration of the first analog output is made. By using the $\boxed{\leftarrow}$ ve $\boxed{\rightarrow}$ keys, the output can be adjusted until 20mA for the current, and 10V for the V output, depending on the device type. Then, by pressing the $\boxed{\square}$ key, the next parameter is passed. For the second analog output to the screen, lower value calibrations from figure.21 and higher value from figure.22 are made. It is set in the same way as in the first output. In this way, analog outputs are calibrated.

The scale of the analog output is determined from the ENTER SCALE parameter in the CNTRL page (fig.28).

Parameters on this page:

AKIM CIK1 . A1T

AKIM CIK1 . UST

AKIM CIK2 . A1T

AKIM CIK2 . UST

Figure - 19

```
AKIM CIK1. ALT
00000
```



It is the parameter for the lower limit calibration of the first analog output. While this parameter is on the screen, the setting is made with the  and  keys until the desired value is read at the output. This parameter should be adjusted according to the device type. If the output of the device is mA, it should be set to either 0mA or 4mA. If the output of the device is V, it should be set to either 0V or 2V.

Figure - 20

```
AKIM CIK1. UST
00000
```



It is the parameter for the upper limit calibration of the first analog output. While this parameter is on the screen, the setting is made with the  and  keys until the desired value is read at the output. This parameter should be adjusted according to the device type. If the output of the device is mA, it should be set to 20mA. If the output of the device is V, it should be adjusted to 10V values.

Figure - 21

```
AKIM CIK2. ALT
00000
```





It is the parameter for the lower limit calibration of the second analog output. While this parameter is on the screen, the setting is made with the  and  keys until the desired value is read at the output. This parameter should be adjusted according to the device type. If the output of the device is mA, it should be set to either 0mA or 4mA. If the output of the device is V, it should be set to either 0V or 2V.

Figure - 22


```
AKIM CIK2. UST
00000
```

It is the parameter for the upper limit calibration of the second analog output. While this parameter is on the screen, the setting is made with the  and  keys until the desired value is read at the output. This parameter should be adjusted according to the device type. If the output of the device is mA, it should be set to 20mA. If the output of the device is V, it should be adjusted to 10V values.

(CNTRL) It is the page where the relay output functions of the device are made.

To enter this page, press **[*]** and **[<]** keys at the same time while on the main screen (Fig.10). After this process, the PRG led lights up. CODE INPUT appears on the screen (Figure.11). Enter the password with the **[>]** and **[<]** keys and press the **[<]** key. The screen in Figure 12 appears on the screen. On the lower screen, the CNTRL (Fig.23) page is selected with the **[>]** **[<]** keys. When you proceed by pressing the **[<]** key to enter the menu, RL1, RL2, RL3, RL4 TYPE and ENTER SCALE parameters appear respectively. **[>]** and **[<]** keys are used to change parameters. Press **[*]** to exit.

Şekil - 23



The image shows a rectangular box with a light gray background. Inside the box, the text 'SAYFA SECIMI' is written in a large, bold, black font at the top. Below it, the text 'CNTRL' is written in a slightly smaller, bold, black font, indicating that this option is selected.

CNTRL page is the page that determines the relay output functions. The set values of these relays are determined by the parameters between SET1...SET4 on the operator screen. There are two options in the relay functions. These (ULC) are energized to rise below the relay set value, and energized if (LLC) is above the relay set value. In addition, you can set the upper limit of the scale to be entered into the set values with the ENTER SCALE parameter on this page.

Parameters on this page:

RL1 TIPI

RL2 TIPI

RL3 TIPI

RL4 TIPI

SKALA GIR

Figure - 24

RL1 TIPI

OFF

It determines the function of the first relay output. The SET1 1 parameter on the operator screen determines the set value of this relay.

Setting options: Table.01

Table.01

OFF : Off

ULC : It ensures that the relay is energized when it is below the set value.

ULL : If the relay is above the set value, it is energized.

Figure - 25

RL2 TIPI

OFF

It determines the function of the second relay output. The SET2 parameter on the operator screen determines the set value of this relay.

Setting options: Table.01

Figure - 26

RL3 TIPI

OFF

It determines the function of the third relay output. The SET3 parameter on the operator screen determines the set value of this relay.

Setting options: Table.01

Figure - 27

RL4 TIPI

OFF

It determines the function of the fourth relay output. The SET4 parameter on the operator screen determines the set value of this relay.

Setting options: Table.01

Figure - 28

SKALA GIR 00000

With this parameter, you can limit the set values of the relays. In addition, this parameter determines the upper limit of the analog output.

Which of the parameters on the operator page will be used is determined according to the configuration. These parameters, which are determined as a result of the configuration, are the parameters that are used continuously during normal operation, therefore, these parameters can be accessed by pressing the "☐" key at any time while on the Process-Screen, and by pressing the "✱" key, it is returned to the Process-Screen. These parameters are programmed with the corresponding parameters in the CNTRL page.

SET1

0000.0

Relay1 setpoint

SET2

0000.0

Relay2 setpoint

SET3

0000.0

Relay3 setpoint

SET4

0000.0

Relay4 setpoint

SC991 Model devices are designed in such a way that serial communication can be established in slave mode with the standard MODBUS RTU protocol. With this communication, all parameters and variables in the device can be accessed. These parameters can be read and set.

Serial communication is via Half-Duplex RS485 line. 32 devices can be connected on a line.

The cable used in the communication line must be a shielded data cable suitable for Half-Duplex RS485 communication and this cable is connected to all devices in parallel as a single line. There must be a suitable terminating resistor at the beginning and end of the line. The length of a line that is prepared properly and has sufficient 9600 bps communication can be extended up to 1000 meters.

Each of the devices on the serial communication line must be given a separate communication address between 1 and 255, but the communication speed and parity type of all devices on a line must be the same. The communication address, communication speed and parity type of these devices are determined by the "Addr, Baud ve Parity" parameters in the configuration page.

Supported functions, parameter addresses and other information required for communication in the standard MODBUS RTU protocol are given in the tables below

Supported Standard MODBUS RTU Functions:

Function 01 = Read Coils

Function 03 = Read Holding Registers

Function 05 = Write Single Coil

Function 06 = Write Single Register

Function 16 = Write Multiple Registers

REGISTER Type Parameters(REGISTERS)

Address	Explanation	Setting Range		Unit	Unit	Writing
1	Measured process value					No
2	Set value of relay 1.					Yes
3	Set value of relay 2.					Yes
4	Set value of relay 3.					Yes
5	Set value of relay 4.					Yes

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