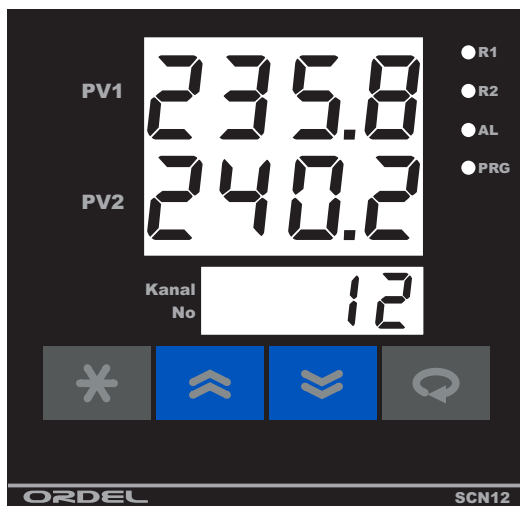


# SCN12

## USER's GUIDE



# ORDEL



- Before using the device, please read the warnings below and this guide carefully. The accidents or damages resulting from not following the warnings included in this guide are under user's responsibility.
- This device is intended to be used by qualified personnel in industrial environments, do not use in houselike environments.
- Do not use the device at places where corrosive, flammable and explosive gases exist. Contact points may create electrical discharge and this may cause explosion or fire.
- Do not allow metal fragments or lead wire scraps or liquid matters to fall inside this device. Otherwise fire or electrical shck may happen.
- Take the necessary precautions in order to prevent accidents and damages that may result in case the device gets faulty.
- There is no fuse or switch that brings the device in power down state, these should be added to the system by the user.
- Sensor and signalling cables should not be routed close to the power cables or inductive load cables.
- Do not power up the device before the connections related with the device are performed in accordance with connection diagram.
- Do not power up the device before the connections related with the device are performed in accordance with the connection diagram. While the device is powered, do not touch on the terminals.
- Configuration settings at factory out should be changed according to the user's preferences. The accidents and damages resulting from incorrect configuration settings are under users' responsibility.
- Never disassemble, repair and modify the device. These should be carried out by authorized service.

<b>SECTION</b>	<b>Page:</b>
Safety Precautions .....	2
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Connection Diagram .....	6
Product Code .....	7
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Temperature Sensor Types .....	9
Display and Key Functions .....	11
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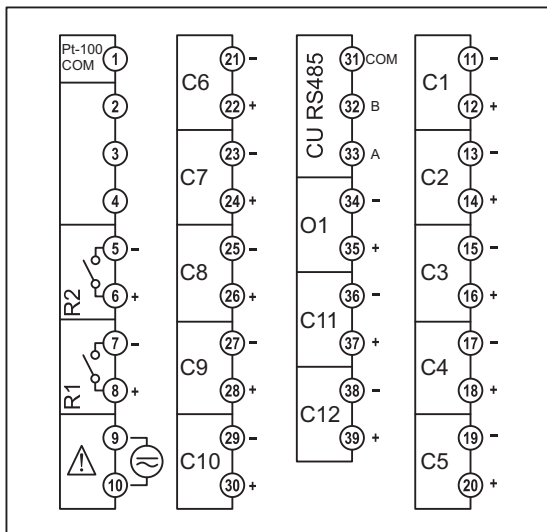
SCN100 Model devices are devices designed for the measurement of process value in industrial environments. In the design phase, compliance with international standards, reliability and ease of use are based. Therefore, they are ergonomic devices that can be used in many sectors.

- 2 Item 4 Digit LED Display**
- 2 Item LED Indicator**
- 20 Item Universal Sensor Input (TC, RT, mA, mV, V )**
- 20 item Relay output for alarm**
- 1 Item RS485 Communication Unit**
- 1 Item Analog Output (0/4-20mA, 0/2-10V)**
- 2 Item Relay or Logic Output**
- 100-240Vac Universal or 24Vac/dc Supply Voltage**
- Isolation between Input/Output Modules**
- Sensor error alarm**

Before using the device, please follow the instructions below according to the information in this guide.

- Model SCN12 devices are modular devices, so that before using the device, control supply voltage and input/output modules if they are appropriate or not by the help of product code
- First of all, connect device to power supply and by using the configuration page, configure the device.
- After configuring the device, adjust set and hysteresis values of the relays which are selected as alarm in operator page.
- Power down the device and according to the connection diagram, apply other connections.
- Prepare the system which will be controlled to be run and power up the system and the device.
- Control all functions of the device by stepping through other operating modes.
- Finally, in order to prevent the unauthorized people to observe the system, make the necessary operation for security by entering the configuration page and return to the Process Screen.

***This user guide is prepared by following the instruction order above. How these operations are made are explained in detailed in related sections.***



Module	Description
<b>C1...C12</b>	20 item sensor input module
<b>RS485</b>	Rs485 MODBUS-RTU
<b>RL1,RL2</b>	R1 common alarm relay, R2 Sensor open alarm
<b>PS</b>	Power supply (24 Va/dc or 220 Vac)

TC Inputs  
(B,E,J,K,L,N,R,S,T,U)



0-50mV



Current



0-10V



RT Inputs



RS-485 \*  
(MODBUS - RTU)



Relay/SSR Outputs\*

**NO  
Contact\***



Power Connection \*



Dip Switch Position (8 Pin)

	Pt-100	TC-mV	mA	V
1	0	0	0	0
2	0	0	0	1
3	0	0	1	0
4	0	0	1	0
5	1	0	0	0
6	1	0	0	0
7	1	1	0	0
8	1	0	0	0

Dip Switch Position (6 Pin)

	Pt-100	TC-mV	mA	V
1	0	0	0	1
2	0	0	1	0
3	0	0	1	0
4	1	0	0	0
5	1	0	0	0
6	1	1	0	0

SCN12 - / / /

T	T	T	T	T	T	T
PS	LU	O1	C	R1	R2	

**Supply Voltage :**

0 = 100-240Vac (Universal)

1 = 24Vac/dc

**Logic Input Module :**

0 = N/A

1 = 3 Item 15 V Logic Input

3 = RS485 Communication Unit

**Analog Output Module :**

0 = N/A

1 = 0/4-20mA Current Output

2 = 0/2-10V Voltage Output

**Input Modules:**

0 = N/A

1 = 5 Input

2 = 10 Input

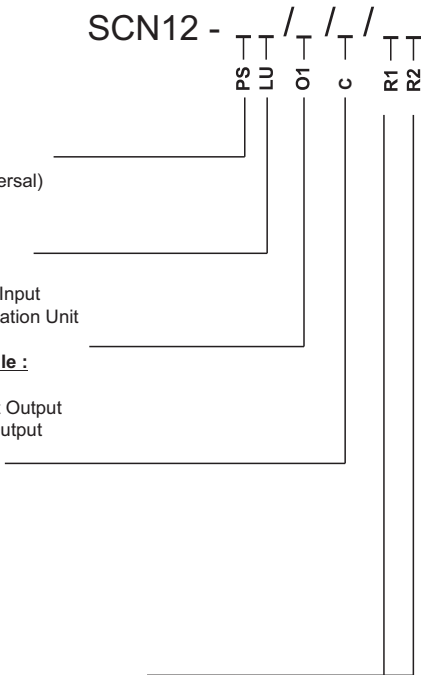
3 = 12 Input

**R1 and R2 Relays:**

0 = N/A

1 = NO contact

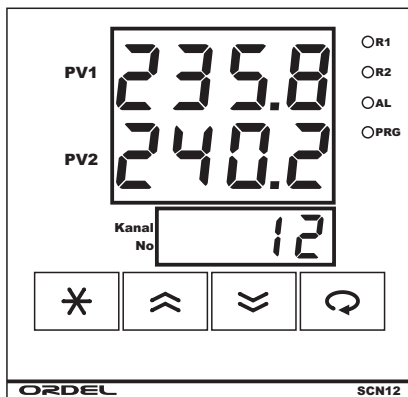
2 = SSR output





<b>Power Supply (PS)</b>	100-240Vac/dc : +%10 -%15	24Vac/dc : +%10 -%20	
<b>Power Consumption</b>	5W,8VA		
<b>Universal Sensor Input (S1)</b>	Thermocouple : B,E,J,K,L,N,R,S,T,U		
	Two Wire Transmitter : 4-20mA		
	Resistance Thermometer : PT100		
	Current : 0/4-20mA		
	Voltage : 0-50mV, 0/2-10V		
<b>Auxiliary Analog Input (S2)</b>	0/4-20mA		
<b>Transmitter Supply (TX)</b>	24Vdc ( I <sub>sc</sub> = 30mA )		
<b>Analog Input Impedance</b>	Thermocouple, mV : 10MΩ		
	Current : 10Ω		
	Voltage : 1MΩ		
<b>Analog Output (O1)</b>	Current : 0/4-20mA (RL ≤ 500Ω)	Voltage : 0/2-10V (RL ≥ 1MΩ)	
<b>Relay Outputs (R1,R2)</b>	Contact : 250Vac, 3A	Logic Output : 24Vdc, 20mA	
<b>Relay Lifetime</b>	Without Load : 10.000.000 switching		
	With 250V, 3A Resistive Load : 100.000 switching		
<b>Memory</b>	100 years, 100.000 renewals		
<b>Accuracy</b>	+/- %0.2		
<b>Sampling Period</b>	100ms		
<b>Environment Temperature</b>	Operation : -10...+55C		Storage : -20...+65C
<b>Protection</b>	Front Panel : IP54		Trunk : IP20
<b>Dimensions</b>	Width : 157 mm	Height : 90 mm	Depth : 60mm
<b>Panel cut-out Dimensions</b>	153 +/-0,5 mm x 86+/-0,5 mm		
<b>Weight</b>	500 gr		

Sensor Type	Standard	Temperature Range	
		(°C)	(°F)
Type-B Thermocouple (Pt%18Rh-	IEC584-1	60, 1820	140, 3308
Type-E Thermocouple (Cr-Const)	IEC584-1	-200, 840	-328, 1544
Type-J Thermocouple (Fe-Const)	IEC584-1	-200, 1120	-328, 1562
Type-K Thermocouple (NiCr-Ni)	IEC584-1	-200, 1360	-328, 2480
Type-L Thermocouple (Fe-Const)	DIN43710	-200, 900	-328, 1652
Type-N Thermocouple (Nicrosil-	IEC584-1	-200, 1300	-328, 2372
Type-R Thermocouple (Pt%13Rh-	IEC584-1	-40, 1760	104, 3200
Type-S Thermocouple (Pt%10Rh-	IEC584-1	-40, 1760	104, 3200
Type-T Thermocouple (Cu-Const)	IEC584-1	-200, 400	-328, 752
Type-U Thermocouple (Cu-Const)	DIN43710	-200, 600	-328, 1112
Pt-100 Resistance Thermometer	IEC751	-200, 840	-328, 1544



### PROCESS-SCREEN:

Just after powering up the device, after showing program version for 2 seconds, "PV" display shows measured process value or error message and "ST" display shows the most used parameter depending to operation mode. This screen is called **Process-Screen**. During normal operations, this screen is used.

1	R1 LED	It indicates when "R1" relay is powered up.
2	R2 LED	It indicates when "R2" relay is powered up.
3	PV1	Manuel scan display.
4	PV2	Auto scan screen. Shows parameter value on other screens
5	Kanal No	Automatic scan display.For other screens it is used to show parameter value.
6	AL	It is not used.
7	PRG	It is not used.





## SYMBOLISATION OF ALPHABETICAL CHARACTERS

A	B	C	D	E	F	G	H	I	J	K	L	M
A	b	C	d	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
n	o	P	q	r	s	t	U	v	w	x	y	z

## ERROR MESSAGES

<i>Err.1</i>	Sensor connection is broken at "S1" input.
<i>Err.2</i>	Signal is broken at "S2" input.
----	Process value is above the display scale.
----	Process value is below the display scale.

## KEY FUNCTIONS

	While in Process-Screen, if it is pressed shortly, locked relays are resetted. Pressing for 5 seconds will change the operating mode. While in other screens, it is used to revert to the first page. Pressing for 2 seconds will activate the Process-Screen.
	It is used to change the parameter option or parameter value.
	It is used to change the parameter option or parameter value.
	In any page, pressing for a while activates the next parameter. While in Process-Screen, pressing for 5 seconds will start the Auto-Tune operation. For submit operations, it must be pressed for 2 seconds.

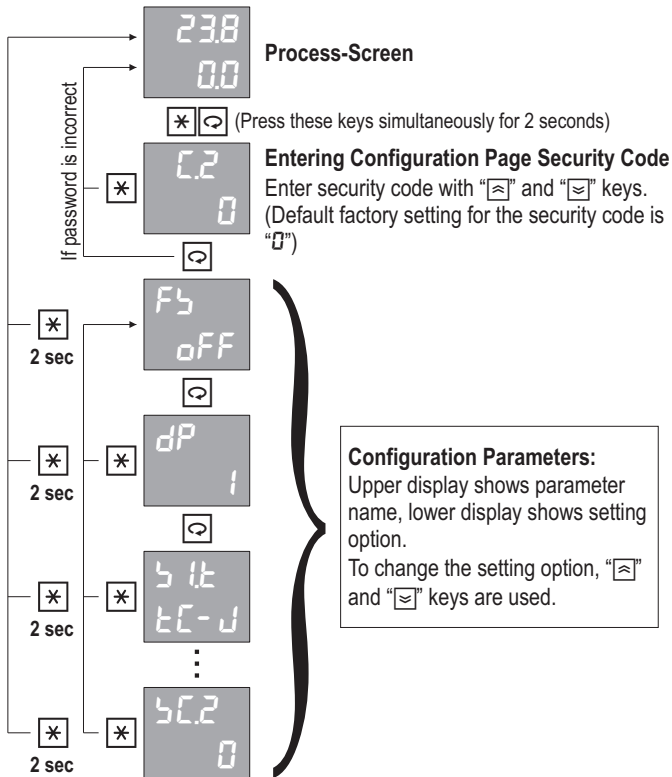


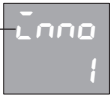









Figure-3


Detailed information about configuration page parameters can be found in the next section.

Par. 01		In order to restore the settings to the factory default, this parameter should be set to "on" and "☐" key should be pressed for two seconds.
		Setting Preferences: <b>off, on</b>
Par. 02		It determines the decimal level (number of digits after dot) of all parameters which have a unit of "EU".
		Setting Range : <b>0 - 3</b>
Par. 03		It indicates number of scan channels.
		Setting Preferences: <b>0 - 40</b>
Par. 04		Channels scan time.
		Setting Preferences: <b>0 - 200</b>
Par. 05		Channels monitor time.
		Setting Preferences : <b>0 - 200</b>
Par. 06		Selection of C or F scale.
		Setting Preferences : <b>°C (°C), °F (°F)</b>
Par. 07		Slave address selection.
		Setting Range: <b>off(Kapali) , 1 - 255</b>
Par. 08		Baud Rate selection.
		Setting Preferences: <b>9.6 , 19.2 , 38.4</b>
		Unit : Kbps
Par. 09		Parity bit selection.
		Setting Preferences: <b>nonE(None) , odd(Odd) , Evn(Even)</b>


Par. 10 —  "R1"Relay energized selection pulse or continuous.

*Setting Preferences : Table-2*


Table-2	No	Alarm type
Cont	0	Continuous.
PULS	1	Alarm ALt <sub>n</sub> time energized and stop.

Par. 11 —  "R1" If Relay is selected PULS. This parameter is alarm time.

*Setting Preferences: 0 - 9999*

Par. 12 —  "R1" Relay delay time before energized.

*Setting Preferences: 0 - 9999*

Par. 13 —  "R2" Relay enable selection.

*Setting Options: on / oFF*

Par. 34



It determines the security code for C1 page.

*Setting Range : 1999 - 9999*

Par. 35



It determines the security code for Configuration page.

*Setting Range : 1999 - 9999*



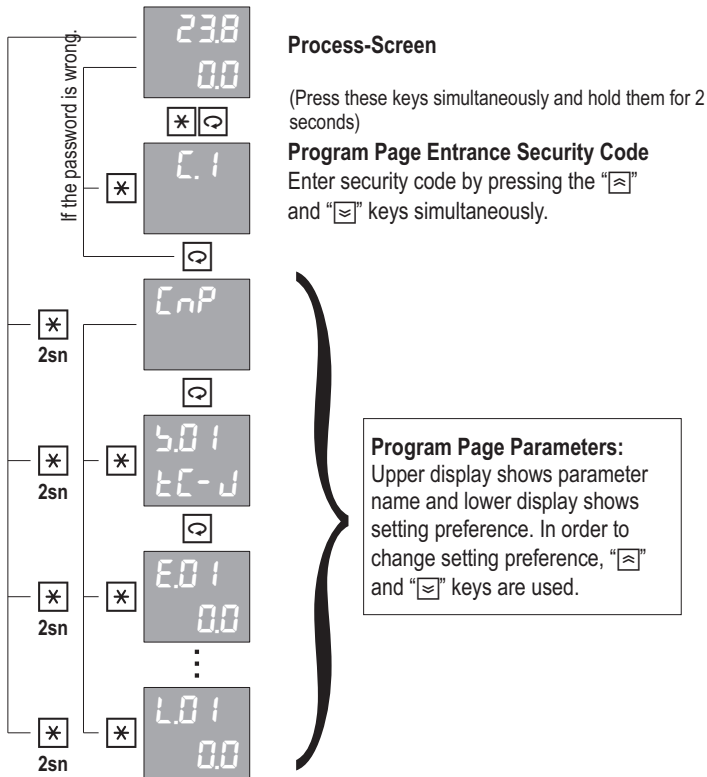


Figure-3

Detailed information about program page parameters can be found in the next section.

5.01  
tC-J

1. Channel sensor type selection

Setting Preferences: Table-1

Table-1	No	Sensor Type
tC-b	0	Type-B Thermocouple (Pt%18Rh-Pt)
tC-E	1	Type-E Thermocouple (Cr-Const)
tC-J	2	Type-J Thermocouple (Fe-Const)
tC-K	3	Type-K Thermocouple (NiCr-Ni)
tC-L	4	Type-L Thermocouple (Fe-Const)
tC-n	5	Type-N Thermocouple (Nicrosil-Nisil)
tC-r	6	Type-R Thermocouple (Pt%13Rh-Pt)
tC-s	7	Type-S Thermocouple (Pt%10Rh-Pt)
tC-t	8	Type-T Thermocouple (Cu-Const)
tC-U	9	Type-U Thermocouple (Cu-Const)
rE	10	Pt-100 Resistance Thermometer
0-50	11	0-50mV
0-20	12	0-20mA
4-20	13	4-20mA
0-10	14	0-10V
2-10	15	2-10V

E.01  
0.0







1. Channel error offset value.

Setting Range : 0-200

L.01  
0.0

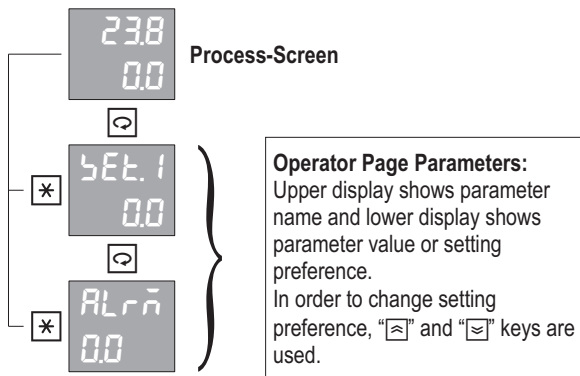

1 channel below limit of scala

Ayar Aralığı : -999.9 - 999.9


	1 channel upper limit of scala <i>Setting Range : -999.9 - 999.9</i>
	
	12. Channel sensor type selection <i>Setting Preferences : Table-1</i>
	12. Channel error offset value. <i>Setting Range: 0- 200</i>
	12 channel below limit of scala <i>Setting Range : -999.9 - 999.9</i>
	12. channel upper limit of scala <i>Setting Range : -999.9 - 999.9</i>

Note: If the sensor types and scales of all channels are all the same, parameter, and each parameter of 1.channel are set and After star key and the up arrow keys pressed at the same time.

All channels values will be 1. channel parameters automatically.

Existing configuration determines which parameters will be used in operator page and only necessary parameters are displayed. These parameters which are determined in configuration are used in normal operation conditions. So, While in Process Screen, by pressing key “

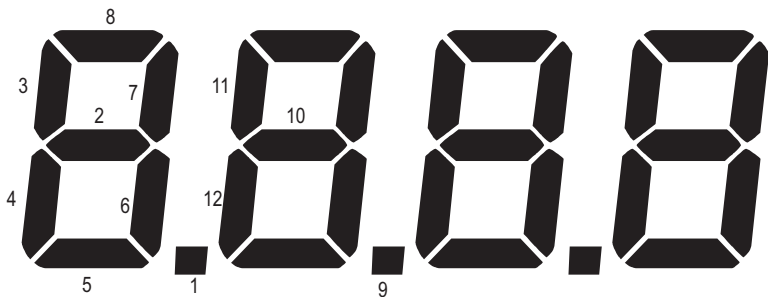
**Process-Screen**

**Operator Page Parameters:**  
Upper display shows parameter name and lower display shows parameter value or setting preference.  
In order to change setting preference, “

Detailed information about operator page parameters can be found in the next section.

<p>ALrt 8.8.8.8</p>	<p>It indicates alarmed channels</p> <p>Table 3</p>
<p>oPnL 8.8.8.8</p>	<p>It indicates open sensor alarmed channels.</p> <p>Table 3</p>
<p>Stor 0.0</p>	<p>Common alarm set value.</p> <p>Setting Range : Table-3</p>
<p>oPEn 8.8.8.8</p>	<p>it indicates open sensor alarm.</p> <p>Setting Range : Tablo-3</p>

Table-3



This devices are designed to be communicated in slave mode with MODBUS RTU protocol. All parameters and registers can be accessed with this communication type. Parameters can be read or can be set to a value.

Serial communication is established with Half-Duplex RS485 line. 32 devices can be connected to one RS485 line.

The cable which is used in communication line should be a data cable that is compatible with Half-Duplex RS485 communication and this cable should be connected parallel to all devices as a single line. Both cable ends should be terminated with a appropriate resistance. A communication line which is appropriate for 9600 Bps data transmission speed can be up to 1000m.

Each device on serial communication line should have an unique address between 1 and 255 but all devices in this line should have same speed and parity type. Communication address, speed and parity type of these devices are determined with " *Addr*, *bAud* ve *Prty*" parameters which are in configuration page.

Below, you can find information about functions which are supported by MODBUS RTU, parameter addresses and others in tables.

### **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	Description	Setting Range	
0	Decimal point (DP)	0	3
2	RS485 slave adress.	0	255
3	Baud rate of RS485.	0	2
4	parity bit for RS-485.	0	2
5	Number of total channels for scan.	1	32
6	Time between channels.	2	100
7	R1 set value. (common set)	-1999	9999
10 21	1 channel to 12 channel proress value		
50 61	1 channel to 12 channel proress value error		









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