

SCN100

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.

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SCN100R Model instruments are designed to measure process value in industrial environments. The design phase is based on compliance with international standards, reliability and ease of use. Therefore, they are ergonomic devices that can be used in many sectors.

- 2 Item 2 Digit LED Display**
- 2 Item 4 Digit LED Display**
- 22 Item LED Indicator**
- 1 Item Analog Output (0/4-20mA, 0/2-10V)**
- 1 Item RS485 Communication Unit**
- 2 Item Relay or Logic Output**
- 100-240Vac Universal or 24Vac/dc Supply Voltage**
- Sensor error alarm**

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

- Model SCN100 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.

Sensor Inputs



C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8	C 9	C10								
+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-

C 11	C 12	C 13	C 14	C 15	C 16	C 17	C 18	C 19	C20								
+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-

C 21	C 22	C 23	C 24	C 25	C 26	C 27	C 28	C 29	C30								
+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-

C 31	C 32	C 33	C 34	C 35	C 36	C 37	C 38	C 39	C40								
+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-

Other Connections

RS485		RL1	RL2	PS		
A	B	COM			F	N

Module	Description
C1...C20	20 item sensor input module
RS485	Rs485 MODBUS-RTU
RL1,RL2	R1 common alarm relay, R2 Sensor open alarm
PS	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



Relay/SSR Outputs*

NO
Contact*



Power Connection *



RS-485 *
(MODBUS - RTU)



	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

SCN100R - / / / /

PS LU O1 INP A 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:

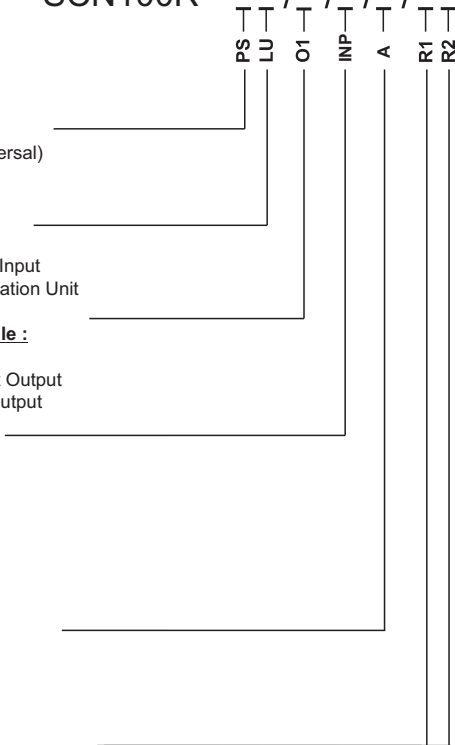
- 0 = N/A
- 1 = 10 Input
- 2 = 20 Input
- 3 = 30 Input
- 4 = 40 Input

Alarm Modules:

- 0 = N/A
- 1 = 10 Relay
- 2 = 20 Relay

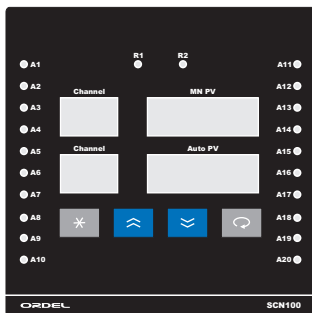
R1 and R2 Relays:

- 0 = N/A
- 1 = NO contact
- 2 = SSR output



Power Supply (PS)	100-240Vac/dc : +%10 -%15	24Vac/dc : +%10 -%20	
Power Consumption	8W,6VA		
Universal Sensor Input (S1)	Thermocouple : B,E,J,K,L,N,R,S,T,U		
	Resistance Thermometer : PT100		
	Current : 0/4-20mA		
	Voltage : 0-50mV, 0/2-10V		
Analog Input Impedance	Thermocouple, mV : 10M Ω		
Relay Outputs	Contact : 250Vac, 5A	Logic Output : 24Vdc, 20mA	
Relay Lifetime	Without Load : 10.000.000 switching		
	With 250V, 3A Resistive Load : 100.000 switching		
Memory	100 years, 100.000 renewals		
Accuracy	+/- %0.2		
Sampling Period	100ms		
Environment Temperature	Operation : -10...+55C	Storage : -20...+65C	
Protection	Front Panel :	Trunk :	
Dimensions	Width : 157 mm	Height : 90 mm	Depth : 60mm
Panel cut-out Dimensions	135+/-0,5 mm x 135+/-0,5 mm		
Weight	600 gr		

Sensor Type	Standard	Temperature Range	
		(°C)	(°F)
Type-B Thermocouple (Pt%18Rh-Pt)	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 (NiCrSi-NiSi)	IEC584-1	-200, 1300	-328, 2372
Type-R Thermocouple (Pt%13Rh-Pt)	IEC584-1	-40, 1760	104, 3200
Type-S Thermocouple (Pt%10Rh-Pt)	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	MN PV	Manuel scan display.
4	AUTO PV	Automatic scan display.For other screens it is used to show parameter value.
5	A1...A20	"A1...A20" are 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.

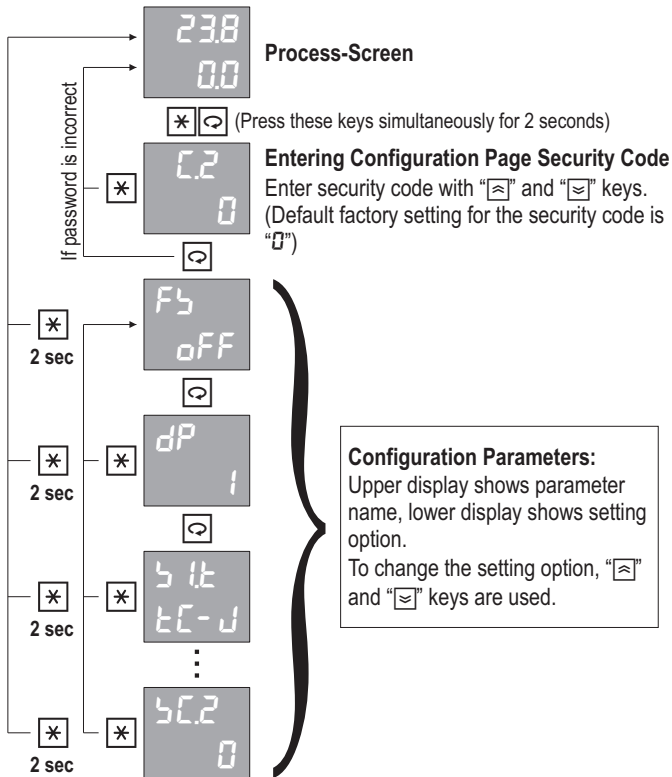




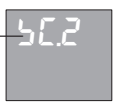


Figure-3

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. <i>Setting Preferences: off, on</i>
Par. 02		It indicates number of scan channels. <i>Setting Preferences: 0 - 40</i>
Par. 03		Channels scan time. <i>Setting Preferences: 0 - 200</i>
Par. 04		Channels monitor time. <i>Setting Preferences : 0 - 200</i>
Par. 05		Selection of C or F scale. <i>Setting Preferences : °C (°C), °F (°F)</i>
Par. 06		Slave address selection. <i>Setting Range: off(Kapali) , 1-255</i>
Par. 07		Baud Rate selection. <i>Setting Preferences: 9.6 , 19.2 , 38.4</i> <i>Unit : Kbps</i>
Par. 08		Parity bit selection. <i>Setting Preferences: nonE(None) , odd(Odd) , Evn(Even)</i>
Par. 09		"R1"Relay energized selection pulse or continuous. <i>Setting Preferences : Table-2</i>

Table-2	No	Alarm type
Cont	0	Continuous.
PULS	1	Alarm ALEn time energized and stop.

<p>Par. 10</p>		<p>"R1" If Relay is selected <i>PULS</i>. This parameter is alarm time.</p> <p><i>Setting Preferences: 0 - 9999</i></p>
<p>Par. 11</p>		<p>"R1" Relay delay time before energized.</p> <p><i>Setting Preferences: 0 - 9999</i></p>
<p>Par. 12</p>		<p>"R2" Relay enable selection.</p> <p><i>Ayar Seçenekleri : on / oFF</i></p>
<p>Par. 13</p>		<p>It determines the security code for C1 page.</p> <p><i>Setting Range : 1999 - 9999</i></p>
<p>Par. 14</p>		<p>It determines the security code for Configuration page.</p> <p><i>Setting Range : 1999 - 9999</i></p>

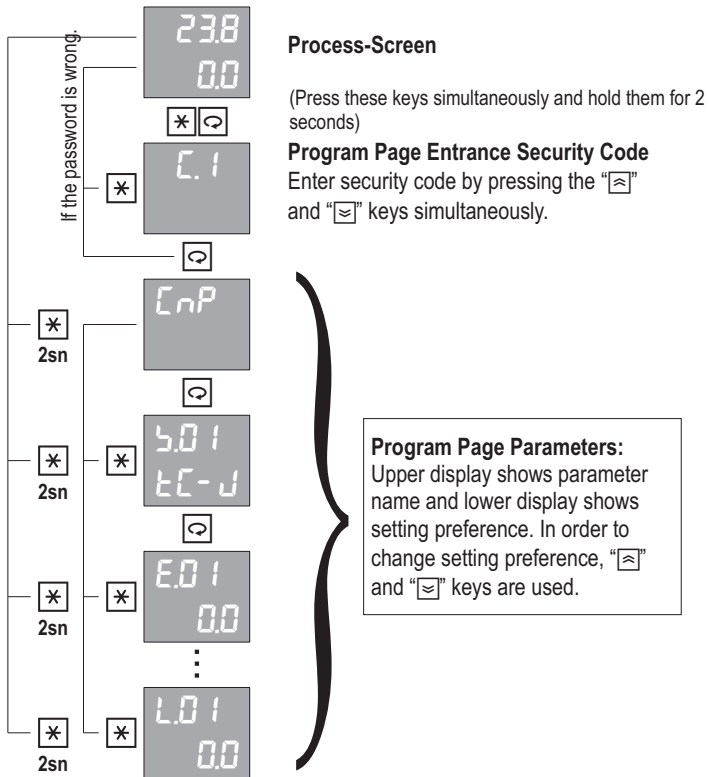


Figure-3

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

5.01
TC-U

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)
RT	10	Pt-100 Resistance Thermometer
0-50	11	0-50mV
0-10	12	0-10V
2-10	9	2-10V
0-20	10	0-20mA
4-20	11	4-20mA

0.01
0.0

Sets the decimal degree of channel 1 on the display.
If the sensor type TC / RT is selected, "0 or 1 must be set.

Setting Range : 0-3

1.01
0.0

1 channel below limit of scala

Setting Range : -999.9 - 999.9

4.01
0.0

1 It determines the upper scale value of the channel input modules.

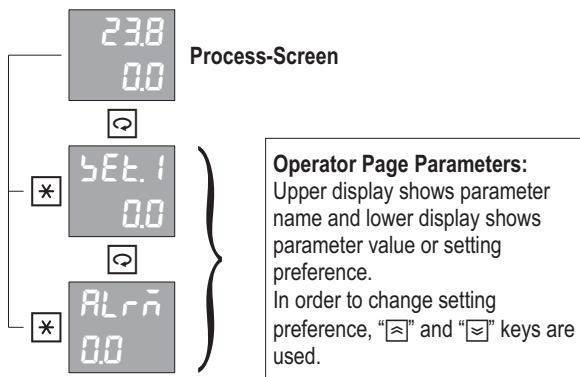

Setting Range : -999.9 - 999.9

Unit : EU


<p>E.01 0.0</p>	<p>1. Channel error offset value.</p>	
	<p>Setting Range : 0- 200</p>	
<p>⋮</p>		
<p>5.40 TC-D</p>	<p>40. Channel sensor type selection</p>	
	<p>Setting Preferences : Table-1</p>	
<p>d40 0</p>	<p>Sets the decimal degree of channel 40 on the display. If the sensor type TC / RT is selected, "0 or 1 must be set.</p>	
	<p>Setting Range : 0 - 3</p>	
<p>L.40 0.0</p>	<p>40 channel below limit of scala</p>	
	<p>Setting Range : -999.9 - 999.9</p>	
<p>H.40 0.0</p>	<p>40. channel upper limit of scala</p>	
	<p>Setting Range : -999.9 - 999.9</p>	
<p>E.40 0.0</p>	<p>40. Channel error offset value.</p>	
	<p>Setting Range: 0- 200</p>	

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 “

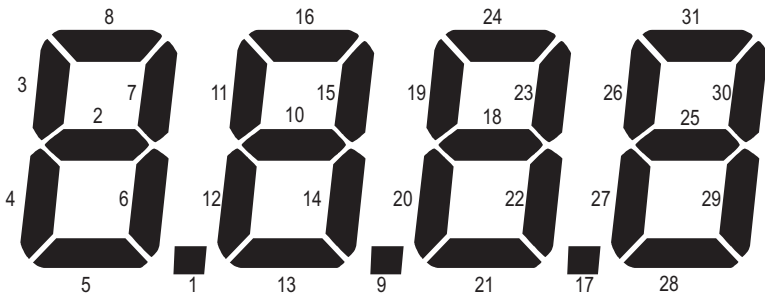
Process-Screen

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 tranmission 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*, *bRÜd* ve *PrŁY*" 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	Adjust monitoring display time (AutoPV)	0	3
2	Device communication address(0 no device)	0	255
3	Communication baud rate(0- 9.6, 1- 19.2, 2- 38.4 Kb)	0	2
4	Communication parity type (0 none, 1 odd , 2 even)	0	2
5	Number of used channel starting from first	1	20
6	Adjust scan time	3	10
7	Common control hysteresis value	0	100
8	Relay function (0=Positive Cnt, 1=Negative Cnt)	0	1
9	Common set	-1999	9999
10	1 channel measured process value		
11	2 channel measured process value		
12	3 channel measured process value		
13	4 channel measured process value		
14	5 channel measured process value		
15	6 channel measured process value		
16	7 channel measured process value		
17	8 channel measured process value		
18	9 channel measured process value		
19	10 channel measured process value		
20	11 channel measured process value		
21	12 channel measured process value		
22	13 channel measured process value		
23	14 channel measured process value		
24	15 channel measured process value		
25	16 channel measured process value		
26	17 channel measured process value		
27	18 channel measured process value		
28	19 channel measured process value		
29	20 channel measured process value		
30	21 channel measured process value		
31	22 channel measured process value		

Address	Description	Setting Range	
32	23 channel measured process value		
33	24 channel measured process value		
34	25 channel measured process value		
35	26 channel measured process value		
36	27 channel measured process value		
37	28 channel measured process value		
38	29 channel measured process value		
39	30 channel measured process value		
40	31 channel measured process value		
41	32 channel measured process value		
42	33 channel measured process value		
43	34 channel measured process value		
44	35channel measured process value		
45	36 channel measured process value		
46	37 channel measured process value		
47	38 channel measured process value		
48	39 channel measured process value		
49	40 channel measured process value		
50	Temperature correction value of 1 channel		
51	Temperature correction value of 2 channel		
52	Temperature correction value of 3 channel		
53	Temperature correction value of 4 channel		
53	Temperature correction value of 5 channel		
54	Temperature correction value of 6 channel		
55	Temperature correction value of 7 channel		
56	Temperature correction value of 8 channel		
57	Temperature correction value of 9 channel		
58	Temperature correction value of 10 channel		
59	Temperature correction value of 11 channel		
60	Temperature correction value of 12 channel		

Address	Description	Setting Range	
61	Temperature correction value of 13 channel		
62	Temperature correction value of 14 channel		
63	Temperature correction value of 15 channel		
64	Temperature correction value of 16 channel		
65	Temperature correction value of 17 channel		
66	Temperature correction value of 18 channel		
67	Temperature correction value of 19 channel		
68	Temperature correction value of 20 channel		
69	Temperature correction value of 21 channel		
70	Temperature correction value of 22 channel		
71	Temperature correction value of 23 channel		
72	Temperature correction value of 24 channel		
73	Temperature correction value of 25 channel		
74	Temperature correction value of 26 channel		
75	Temperature correction value of 27 channel		
76	Temperature correction value of 28 channel		
77	Temperature correction value of 29 channel		
78	Temperature correction value of 30 channel		
79	Temperature correction value of 31 channel		
80	Temperature correction value of 32 channel		
73	Temperature correction value of 33 channel		
74	Temperature correction value of 34 channel		
75	Temperature correction value of 35 channel		
76	Temperature correction value of 36 channel		
77	Temperature correction value of 37 channel		
78	Temperature correction value of 38 channel		
79	Temperature correction value of 39 channel		
80	Temperature correction value of 40 channel		

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