

Active Converter, 3-Way, RTD

- Universally adjustable using DIP switch
- Bul. 931S Configurator to assist with DIP switch selection, download at www.ab.com
- Three way isolation
- Linearization
- Power supply can be cross-connected using center jumpers

931S-P1C2D-DC

Specifications	Active Converter, 3 Way, RTD	
Wiring Diagram		
Standards Compliance	UL 508, UL 1604, CSA C22.2 No. 142-M1987, CSA C22.2 No. 213-1987, EN 50178:1997, EN 61000-6-1:2007, EN 61000-6-2:2005, EN 61000-6-3:2007, EN 61000-6-4:2007	
Certifications	cULus (Class 1, Div. 2, Groups A, B, C and D, NRAG/7.E10314), CE	
Input Ratings		
Sensor	PT100/2-/3-/4-cond., Ni100/2-/3-/4-cond., potentiometer: min. 0...100 Ω, max. 0...100 kΩ, resistor: 0...450 Ω	
Temperature Range	Configurable	
Input	Passive	
Output Ratings		
Voltage	0...10V	
Current	0...20 mA / 4...20 mA	
Load Impedance (voltage/current)	≥ 1 kΩ / ≤ 600 Ω	
Step Response Time	fast/ slow: 2-, 3-, 4-conductor: 1.2 / 2.2 s; potentiometer: 0.5 / 1.1 s	
Line resistance in measuring	50 Ω for 3- and 4- conductor	
Offset Current/ Voltage	max 100 μA/max. 0.05V	
Wire Break Detection	LED flashed (output value > 20 mA, >10V)	
Fine Adjustment	≥ ± 5 %, Version 1: > = 12.5% / Poti: 12.5...25%	
Status Indicator	Active: LED On; Wire broken: LED Flashing; Error: LED Off	
Output	Active	
General Specifications		
Supply Voltage	24V DC ± 25 %	
Power Consumption	830...880...980 mW at I _{OUT} = 20 mA	
Current-carrying Capacity of Cross-Connect	≤ 2 A	
Operating Temperature	0 °C...+55 °C	
Storage Temperature	-20 °C...+85 °C	
Default Settings	PT100/3-cond./ 0...100°C / 4...20 mA / man. fine calib.: off / slow step response	
Rated Insulation Voltage	300V	
Impulse Withstand Voltage	4 kV	
Isolation Voltage Input - Output	2 kV _{eff} / 5 s	
Surge Category	III	
Pollution Severity	2	
Connection Type	Screw	
L x W x D	92.4 x 17.5 x 112.4	
Signal Conditioner	Cat. No.	Pkg. Quantity
	931S-P1C2D-DC	1

Switch positions/setting options

Input	Selection of input			
	Switch 1	1	2	3
PT100 2-conductor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PT100 3-conductor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PT100 4-conductor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
R 2-conductor	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Ni100 2-conductor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ni100 3-conductor	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ni100 4-conductor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Potentiometer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

θ _{min}	R _{min}	Poti min	Selection of minimum input size			
			Switch 1	4	5	6
0 °C	0 Ω	0 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
-10 °C	10 Ω	10 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
-20 °C	20 Ω	20 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
-25 °C	20 Ω	25 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-30 °C	30 Ω	30 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
-40 °C	40 Ω	40 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
-50 °C	50 Ω	50 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
-60 °C	60 Ω	60 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-70 °C	70 Ω	70 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
-80 °C	80 Ω	80 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
-90 °C	90 Ω		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
-100 °C	100 Ω		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-150 °C	150 Ω		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
-200 °C	200 Ω		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Special range			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Activating the manual fine calibration

Man. Cal.	Switch 1
On	<input type="checkbox"/>
Off	<input checked="" type="checkbox"/>

T	R	Potentiometer	Choice of measuring range				
			Switch 2	1	2	3	4
40K	20 Ω	20 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
50K	25 Ω	25 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
60K	30 Ω	30 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
70K	35 Ω	35 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
80K	40 Ω	40 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
90K	45 Ω	45 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
100K	50 Ω	50 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
110K	55 Ω	55 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	v
120K	60 Ω	60 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
125K	62.5 Ω	62.5 %	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
130K	65 Ω	65 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
140K	70 Ω	70 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
150K	75 Ω	75 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
160K	80 Ω	80 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
170K	85 Ω	85 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
180K	90 Ω	90 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
190K	95 Ω	95 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
200K	100 Ω	100 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
250K	125 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
300K	150 Ω	---	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
350K	175 Ω	---	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
400K	200 Ω	---	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
450K	225 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
500K	250 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
550K	275 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
600K	300 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
650K	325 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
700K	350 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
750K	375 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
800K	400 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
850K	425 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
900K	450 Ω	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Output	Selection of output	
	Switch 2	6
0...10V	<input checked="" type="checkbox"/>	<input type="checkbox"/>
0...20 mA	<input type="checkbox"/>	<input type="checkbox"/>
4...20 mA	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Step Response	Selection of step response time	
	Switch 2	8
Slow	<input checked="" type="checkbox"/>	
Quick*	<input type="checkbox"/>	

* less exact measuring