

proSense® SCU Series Universal Signal Conditioner

SCU-8400 Signal Conditioner



Part No. SCU-8400



The SCU-8400 Universal Signal Conditioner from AutomationDirect is extremely versatile providing the flexibility to convert, transmit, scale and isolate unipolar and bipolar signals from a wide variety of process sensors and controller I/O. The scalable input accepts signals up to +/-100 mA or +/-300 VDC with spans as low as 0.5 mA or 25 mVDC. Numerous selectable input and output ranges, two-point field scalability, and configuration for direct or inverse acting signals will handle most any DC voltage or current conversion application. The SCU-8400 also features the ability to establish a square root relationship between input and output useful in flow measurement applications. An integral excitation power supply output is available to power a 2-wire transmitter or a 3-wire potentiometer. The isolated universal supply voltage input eliminates the need for separate transformers or power supplies. Isolation is also provided between input and output. The fast response time of < 20 ms is ideal for measuring signals produced by torque, position, current and acceleration sensors.

The SCU-8400 is easily configured with the SCU-PDM1 menu-structured LCD programming/display module (a computer running special calibration software is not required and there are no confusing

DIP switches or jumpers to set). Automatic scrolling Help text identifies each menu item. The detachable programming/display module can store and transfer configuration parameters from one signal conditioner to another, minimizing set-up time in multiple unit applications. Programming is available in seven different languages and the programming/display module can be password protected to prevent unauthorized changes to the configuration. When not used for configuration, the programming/display module can remain on the signal conditioner to display the input signal value, engineering units, and output signal. A process simulation function allows manual manipulation of the input signal to control the output signal for trouble-shooting and checkout.

Features

- Scalable unipolar or bipolar inputs of +/-100 mA or +/-300 VDC
- Selectable input ranges, two-point field scalability, and direct or inverse acting signal configuration to handle most any DC voltage or current conversion
- Available square root function
- Fast response time of < 20 ms is ideal for measuring torque, position, current and acceleration sensors
- Buffered voltage output option to handle high current load devices
- Universal supply voltage, 21.6 to 253 VAC or 19.2 to 300 VDC, polarity insensitive
- 3-way isolation between input, output, and power
- Auxiliary power supply output for 2-wire transmitters and 3-wire potentiometers
- Easy-to-use detachable LCD programming/display module SCU-PDM1 (Sold separately and required for programming)
- Transfer configuration settings from one signal conditioner to another with SCU-PDM1
- Integral 35mm DIN rail mounting adapter
- Removable screw terminal blocks are keyed to ensure correct installation
- cULus and CE marked
- 5 year warranty



SCU-8400 Universal Signal Conditioner				
Part No.	Description	Quantity	Weight (lbs)	Price
SCU-8400	ProSense signal conditioner, isolated, unipolar or bipolar current, voltage input, unipolar or bipolar current, voltage output, 21.6-253 VAC/19.2-300 VDC operating voltage, 35mm DIN rail mount, removable screw terminal plugs.	1	0.34	

SCU-8400 Signal Conditioner

SCU-8400 Universal Signal Conditioner Technical Specifications		
General Specifications		
Power	AC Power	21.6 to 253 VAC, 50/60 Hz
	DC Power	19.2 to 300 VDC
Consumption	≤ 2.5W	
Fuse	400 mA slow blow / 250 VAC (Not user replaceable)	
Auxiliary Power Supply Output	Auxiliary supplies: 2-wire loop supply (terminal 43, 44).....> 16 V @ 20 mA 3-wire loop supply (terminal 42, 44).....> 18...< 28 V @ 23...0 mA Loop supply limitation (terminal 42, 44).....27...35 mA avg., < 80 mA peak Reference voltage.....2.5V ±0.5% Reference voltage, load.....0...15 mA Current limit, reference voltage.....< 60 mA	
Isolation Voltage, Test / Working	2.3 kVAC / 250 VAC (reinforced) / 500 VAC (basic)	
Configuration Interface	Programming/display module, SCU-PDM1 (sold separately)	
Signal Dynamics, Input / Output	24 bit / 18 bit	
Signal/noise Ratio	Min. 60 dB	
Response Time (0 to 90%, 100 to 10%)	< 20ms	
Calibration Temperature	20 to 28°C [68 to 82.4°F]	
Accuracy	The greater of the general and basic values (See Accuracy Table 1)	
EMC Immunity	≤ ±0.5% of span	
Extended EMC Immunity: NAMUR NE 21, A criterion, burst	≤ ±1% of span	
Conducted emission, class A	150 kHz to 10 MHz	
Environmental Conditions	Operating Temperature	-20 to +60°C [-4 to 140°F]
	Storage Temperature	-20 to +85°C [-4 to 185°F]
	Operating and Storage Humidity	95% relative humidity (non-condensing)
Approvals	UL: E197592, UL 508/C22.2 No. 14 CE: EMC 2014/30/EU LVD 2014/35/EU RoHS2 2011/65/EU amended by 2015/863	
Construction	IP 20, case body is black high impact plastic. Pollution degree 2.	
Connections	Wire strip length	7.5 mm [0.3 in]
	Wire gauge	26 - 14 AWG standard wire
	Torque	0.5 N-m [4.5 inch-lbs]
Weight	250g [8.8 oz], 285g [10.1 oz] with programming module	
Dimensions (HxWxD)	109 x 23.5 x 104mm [4.3 x 0.93 x 4.1 in], 109 x 23.5 x 116mm [4.3 x 0.93 x 4.6 in] with programming module	

Accuracy Table 1		
General Values		
Input Type	Absolute Accuracy	Temperature Coefficient
All	≤ ± 0.05% of span	≤ ± 0.01% of span/°C
Basic Values		
Type	Basic Accuracy	Temperature Coefficient
Current input	± 0.334 µA	± 0.067 µA/°C
Voltage input	± 8.33 µV	± 1.67 µV/°C
Current output	± 1.33 µA	± 0.266 µA/°C
Buffered voltage output	± 267 µV	± 53.4 µV/°C
Shunted voltage output (±1 V)	± 267 µV	± 53.4 µV/°C
Shunted voltage output (±10V)	± 1333 µV	± 0.267 µV/°C

SCU-8400 Signal Conditioner

Input/Output Specifications

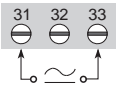
Model	SCU-8400
Input	
Current input ranges	0...1, 0...5, 1...5, 0...20, 4...20, ± 1 , ± 5 , ± 10 , ± 20 , ± 50 , ± 100 mA
Current input resistance	Nom. 20 Ω + PTC 10 Ω
Current min. span	0.5 mA
Input voltage drop, nom.	0.6 V @ 20 mA
Voltage input ranges	0...0.1, 0...1, 0.2...1, 0...2.5, 0...5, 1...5, 0...10, 2...10, 0...100, 0...300, ± 0.1 , ± 1 , ± 2.5 , ± 5 , ± 10 , ± 100 , ± 300 V
Voltage min. span	25mV
Voltage input resistance	> 2.5 V input: 3 M Ω nom. \leq 2.5 V input: > 10 M Ω
3-wire potentiometer input (terminal 41, 42 & 44)	0...100%
Potentiometer reference voltage (terminal 42, 44)	2.5 V
Potentiometer calibration resistance	5k Ω
Min. potentiometer resistance	200 Ω
Output	
Current output ranges (direct or inverted action)	0...5, 1...5, 0...10, 2...10, 0...20, 4...20, S4-20 mA, ± 5 , ± 10 , ± 20 mA
Current output min. span	4mA
Load (max.), current output	\leq 1000 Ω / ± 20 V @ ± 20 mA
Current limit	\leq 28 mA (unipolar) / ± 28 mA (bipolar)
Load stability	0.001% of span / 100 Ω
Response time, programmable	0.0 to 60.0 sec
Passive 2-wire programmable ranges	0 to 20 and 4 to 20mA (direct or inverted action)
External 2-wire loop supply	3.5 to 28.8 VDC
Voltage output programmable ranges (direct or inverted action)	0/0.2...1, 0/1...5, 0/2...10, ± 1 , ± 5 , ± 10 V
Response time, programmable	0.0 to 60.0 sec
Shunted voltage output signal range	± 1.2 V / ± 12 V
Shunted programmable standard ranges	0...1, 0...2.5, 0...5, 0...10, 2...10, ± 1 , ± 2.5 , ± 5 , ± 10 V
Shunted custom configurable output range	± 10 V
Shunted min. span	0.8 V
Load (min.), shunted voltage output	\geq 500 k Ω
Buffered voltage output signal range	± 23 V
Buffered programmable standard ranges	0...1, 0.2...1, 0...2.5, 0...5, 1...5, 0...10, 2...10, 0...20, 4...20, ± 1 , ± 2.5 , ± 5 , ± 10 , ± 20 V
Buffered custom configurable output range	± 20 V
Buffered min. span	0.8 V
Load (min.), buffered voltage output	> 2 k Ω
Current limit, buffered voltage output	< 50 mA

SCU-8400 Signal Conditioner

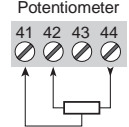
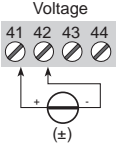
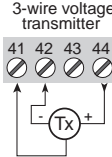
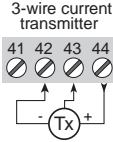
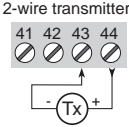
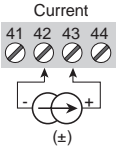
Wiring Diagram

Model SCU-8400

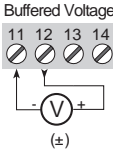
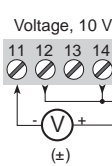
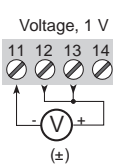
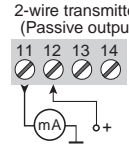
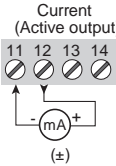
Supply:



Inputs:

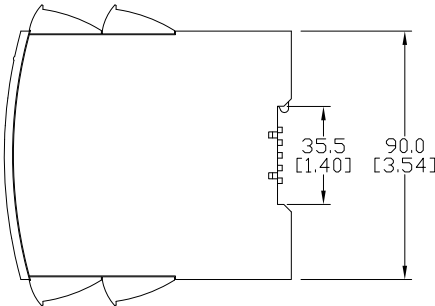
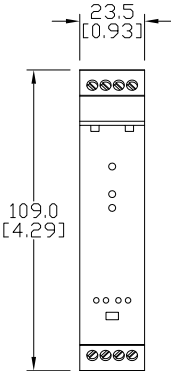
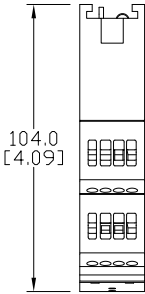


Outputs:



Dimensions

mm [inches]



See our website [www.tps.com](#) for complete Engineering drawings.

SCU Series Signal Conditioner Accessories

Programming/Display Module SCU-PDM1



Application:

- The AutomationDirect SCU-PDM1 module easily connects to the front of the Universal Signal Conditioners and is used as a display and to enter or adjust the programming of the module.
- Can be moved from one module to another and download the configuration of the first transmitter to subsequent transmitters.
- Fixed display for visualization of process data and status.
- Required for programming all SCU Series Universal Signal Conditioner models.

Technical characteristics:

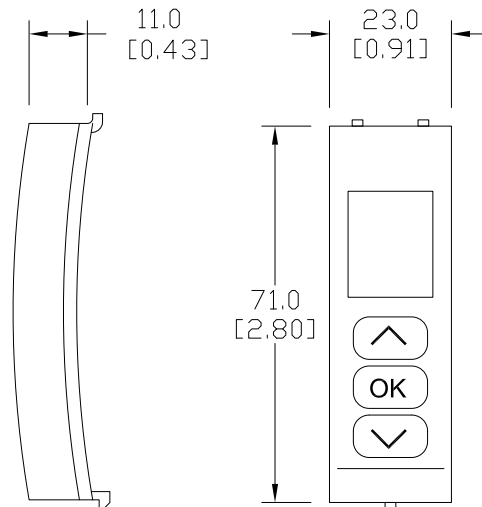
- LCD display with 4 lines; Line 1 (H = 5.57 mm, 0.22 in) shows input signal, line 2 (H = 3.33 mm, 0.13 in) shows units, line 3 (H = 3.33 mm, 0.13 in) shows analog output or user defined text and line 4 shows communication and relay status.
- Programming access can be blocked by assigning a password. The password is saved in the transmitter in order to ensure against unauthorized modifications to the configuration.
- Not capable of standalone or remote operation.
- For Use With: SCU-3100, SCU-1400, SCU-1600, SCU-8400, SCU-7900

Mounting/Installation:

- Snap SCU-PDM1 onto the front of the universal signal conditioners.
- Can be installed or removed whether the signal conditioner is powered or not.

Selectable Engineering Units

°C	hp	kW	mA	pH
°F	hPa	kWh	mbar	rpm
%	Hz	l	mmHg	s
A	in	l/h	min	S
bar	in/h	l/min	mm	t
cm	in/min	l/s	mm/s	t/h
ft	in/s	m	mol	uA
ft/h	ips	m/h	MPa	um
ft/min	K	m/min	mV	uS
ft/s	kA	m/s	MW	V
g	kg	m/s ²	MWh	W
gal/h	kJ	m ³	N	Wh
gal/min	kPa	m ³ /h	Ohm	yd
GW	kV	m ³ /min	Pa	



See our website [www.automationdirect.com](#) for complete Engineering drawings.

External Cold Junction Compensation Connector



Part No. SCU-CJC1

Installation:

- Remove terminal block included with SCU-1400, SCU-1600 or SCU-3100 signal conditioner and replace with SCU-CJC1.

SCU Series Signal Conditioner Accessories				
Part No.	Description		Weight (lb)	Price
SCU-PDM1	ProSense detachable programming/display module, for use with SCU series signal conditioners.	1	0.04	
SCU-CJC1	ProSense external cold junction compensation (CJC) connector, for use with SCU-3100, SCU-1400, SCU-1600 signal conditioners.	1	0.02	