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, which is 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-PDM2 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-PDM2 (Sold separately and required for programming)
- Transfer configuration settings from one signal conditioner to another with SCU-PDM2
- 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.	Application	Isolation	Input	Output	Field Configurable	Operating Voltage	Mounting	Electrical Connection	Quantity	Weight (lbs)	Drawing Link	Price
SCU-8400	Signal conditioner	Yes	Unipolar or bipolar current, potentiometer, voltage	Unipolar or bipolar current, voltage	Yes*	21.6-253 VAC/19.2-300 VDC	35mm DIN rail	Removable screw terminal plugs	1	0.34	PDF	$;044ef:

* Requires SCU-PDM2

SCU-8400 Universal 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	400mA slow blow / 250VAC (Not user replaceable)	
Auxiliary Power Supply Output	Auxiliary supplies: 2-wire loop supply (terminal 43, 44).....> 16 V @ 20mA 3-wire loop supply (terminal 42, 44).....> 18...< 28V @ 23...0 mA Loop supply limitation (terminal 42, 44).....27...35 mA avg., < 80mA peak Reference voltage.....2.5V ±0.5% Reference voltage, load.....0...15 mA Current limit, reference voltage.....< 60mA	
Isolation Voltage, Test / Working	2.3 kVAC / 250 VAC (reinforced) / 500 VAC (basic)	
Configuration Interface	Programming/display module, SCU-PDM2 (sold separately) or SCU-PDM1 (discontinued and replaced by SCU-PDM2)	
Signal Dynamics, Input / Output	24bit / 18bit	
Signal/noise Ratio	Min. 60dB	
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)	
EMC Immunity	≤ ± 0.5% of span	
Extended EMC Immunity: NAMUR NE 21, A criterion, burst	≤ ± 1% of span	
Conducted emission, class A	150kHz to 10MHz	
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 116 or 131mm depending on which programming module, PDM1 or PDM2 [4.3 x 0.93 x 4.6 or 5.16 in] with programming module	

Accuracy Table		
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 Universal Signal Conditioner

Input/Output Specifications

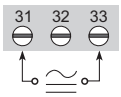
Model	SCU-8400
Input	
Current input ranges	0...1, 0...5, 1...5, 0...20, 4...20, ±1, ±5, ±10, ±20, ±50, ±100mA
Current input resistance	Nom. 20Ω + PTC 10Ω
Current min. span	0.5 mA
Input voltage drop, nom.	0.6 V @ 20mA
Voltage input ranges	0...0.1, 0...1, 0.2...1, 0...2.5, 0...5, 1...5, 0...10, 2...10, 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 MΩ nom. ≤ 2.5 V input: > 10 MΩ
3-wire potentiometer input (terminal 41, 42 & 44)	0...100%
Potentiometer reference voltage (terminal 42, 44)	2.5 V
Potentiometer calibration resistance	5kΩ
Min. potentiometer resistance	200Ω
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	≤ 1000 Ω / ± 20V @ ± 20mA
Current limit	≤ 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 / ±12V
Shunted programmable standard ranges	0...1, 0...2.5, 0...5, 0...10, 2...10, ±1, ±2.5, ±5, ±10V
Shunted custom configurable output range	±10V
Shunted min. span	0.8 V
Load (min.), shunted voltage output	≥ 500kΩ
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	± 20V
Buffered min. span	0.8 V
Load (min.), buffered voltage output	> 2kΩ
Current limit, buffered voltage output	< 50mA

SCU-8400 Universal Signal Conditioner

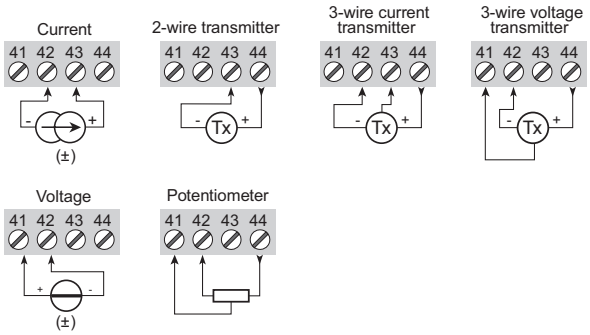
Wiring Diagram

Model SCU-8400

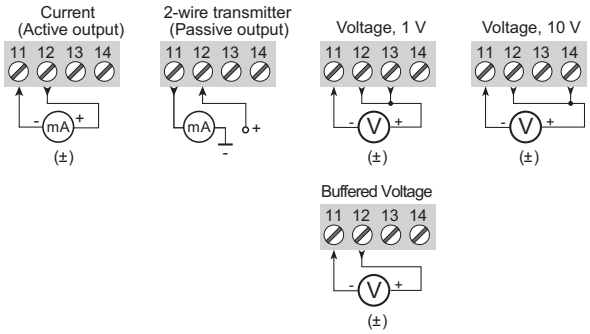
Supply:



Inputs:



Outputs:



SCU Series Universal Signal Conditioner Accessories

Programming/Display Module SCU-PDM2

Application:

- The AutomationDirect SCU-PDM2 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:

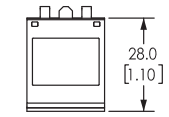
- LCD display with 4 lines; Line 1 (H = 5mm, 0.20 in) shows input signal, line 2 (H = 3.5 mm, 0.14 in) shows units, line 3 (H = 3.5 mm, 0.14 in) shows analog output or user defined text and line 4 shows communication and relay status.
- Programming access can be blocked by assigning a password. The password 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, SCU-2200, SCU-2501, SCU-2502, SCU-2503

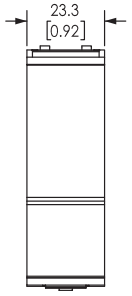
Mounting/Installation:

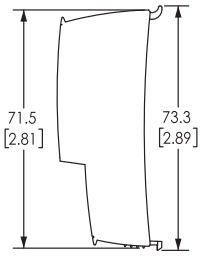
- Snap SCU-PDM2 onto the front of the universal signal conditioners.
- Can be installed or removed whether the signal conditioner is powered or not.

Selectable Engineering Units

°C	hP	kW	mA	pH	MHz
°F	hPa	kWh	mbar	rpm	P/m
%	Hz	l	mils	s	P/h
A	in	l/h	min	S	P/d
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/s2	MWh	W	
gal/h	kJ	m3	N	Wh	
gal/min	kPa	m3/h	Ohm	yd	
GW	kV	m3/min	Pa	KHz	







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-PDM2	ProSense detachable programming/display module, for use with SCU series signal conditioners.	1	0.04	$-5hjv:
SCU-CJC1	ProSense external cold junction compensation (CJC) connector, for use with SCU-3100, SCU-1400, SCU-1600 signal conditioners.	1	0.02	$44eh: