

proense® SC6 Series Signal Conditioners

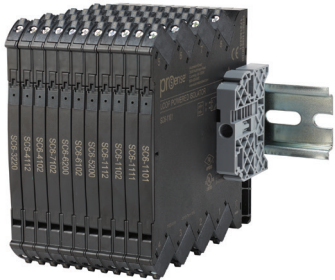
Quick Start Guide

AUTOMATIONDIRECT®

3505 HUTCHINSON ROAD
CUMMING, GA 30040-5860

Description:

This Quick Start Guide provides basic information for configuring the ProSense SC6 series signal conditioners. For more specific information and additional instructions please visit www.AutomationDirect.com and download the free instructions manuals for the SC6 series.



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⚡ WARNING ⚡

! To avoid the risk of electric shock and fire, the safety instructions of this guide must be observed and the guidelines followed. The specifications must not be exceeded, and the device must only be applied as described in the following. Prior to the commissioning of the device, this installation guide must be examined carefully. Only qualified personnel (technicians) should install this device. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. Until the device is installed, do not connect hazardous voltages to the device.

! In applications where hazardous voltage is connected to in/outputs of the device, sufficient spacing or isolation from wires, terminals and enclosure to surroundings (incl. neighboring devices), must be ensured to maintain protection against electric shock.

! Potential electrostatic charging hazard. To avoid the risk of explosion due to electrostatic charging of the enclosure, do not handle the units unless the area is known to be safe, or appropriate safety measures are taken to avoid electrostatic discharge.

SAFETY INSTRUCTIONS

Receipt and unpacking

Unpack the device without damaging it. The packing should always follow the device until it has been permanently mounted. Check at the receipt of the device whether the type corresponds to the one ordered.

Environment

Avoid direct sunlight, dust, high temperatures, mechanical vibrations and shock, as well as rain and heavy moisture. If necessary, heating in excess of the stated limits for ambient temperatures should be avoided by way of ventilation. All devices can be used for Measurement / Overvoltage Category II and Pollution Degree 2. The module is designed to operate safely at an altitude of 2000m or less.

Mounting

Mounting and connection of the device should comply with national legislation for mounting of electric materials, i.e. wire cross section, protective fuse, and location. Descriptions of input / output and supply connections are shown in this installation guide and on the side label.

The device is provided with field wiring terminals and shall be supplied from a power supply having double or reinforced insulation. A power switch should be easily accessible and close to the device. The power switch shall be marked as the disconnecting unit for the device.

The **SC6 Series** must be mounted on a DIN rail that complies with EN 60715.

UL installation

Use 60/75°C copper conductors only.

Wire size AWG 26-12

UL file number..... E498965

The device is an Open Type Listed Process Control Equipment. To prevent injury resulting from accessibility to live parts the equipment must be installed in an enclosure.

The Division 2 or Zone 2 power supply unit must comply with NEC Class 2, as described by the National Electrical Code® (ANSI / NFPA 70).

cFMus installation in Division 2 or Zone 2

FM18US0045X Cl. I, Div. 2, Group A, B, C, D T4

or Cl. I, Zone 2, AEx nA IIC T4

FM18CA0023X Cl. I, Div. 2, Group A, B, C, D T4

or Cl. I, Zone 2, Ex nA IIC T4

In class I, Division 2 or Zone 2 installations, the subject equipment shall be mounted within a tool secured enclosure which is capable of accepting one or more of Class I, Division 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70) or in Canada in the Canadian Electrical Code (C22.1).

The SC6 Series Isolators and Converters must be connected to limited output NEC Class 2 circuits, as outlined in the National Electrical Code® (ANSI / NFPA 70), only. If the devices are connected to a redundant power supply (two separate power supplies), both must meet this requirement.

Where installed in outdoor or potentially wet locations the enclosure shall at a minimum meet the requirements of IP54.

Warning: Substitution of components may impair suitability for zone 2 / division 2.

Warning: To prevent ignition of explosive atmospheres, disconnect power before servicing and do not separate connectors when energized and an explosive gas mixture is present.

Warning: Do not mount or remove devices from the power rail when an explosive gas mixture is present.

Cleaning

When disconnected, the device may be cleaned with a cloth moistened with distilled water.

Technical Specifications

Operating temperature -25°C to +70°C (-13°F to 158°F)

Storage temperature -40°C to +85°C (-40°F to 185°F)

Supply voltage..... 16.8...31.2 VDC

Supply voltage, SC6-6102 Loop -powered / 3.3...35 VDC

Supply voltage, SC6-7102 Loop -powered / 5.5...35 VDC

Supply voltage, SC6-1101, -1111..... ≤ 1.25 V + (0.015 x Voutput)

Supply voltage, SC6-4102, -4112, -1102, -1112.....Loop-powered / 6.0...35 VDC

Max. required power:

SC6-5200, -6200..... 0.7 W

SC-1100, -1110, -3200, -7102, -6102..... 0.8 W

SC6-2200, -2220, -3220..... 1.2 W

SC6-1101, -1111..... 30mW per channel

SC6-4102, -4112..... 50mW per channel

SC6-1102, -1112 Vterminal x I per channel

¹Isolation voltage, test 2.5 kVAC

¹Isolation voltage, working 300VAC (reinforced) / 250VAC (Zone 2, Div. 2)

Double isolation..... Input/output 1/output 2/supply

Relative humidity..... < 95% RH (non-cond.)

Dimensions (HxWxD) 113 x 6.1 x 115 mm

Protection degree IP20

Weight 70 g

Approvals

UL, Standard for Safety UL 61010-1

Safe isolation EN 61140

cFM us..... Zone 2 / Div. 2

Observed authority requirements:

EMC 2014/30/EU

LVD 2014/35/EU

RoHS 2..... 2011/65/EU

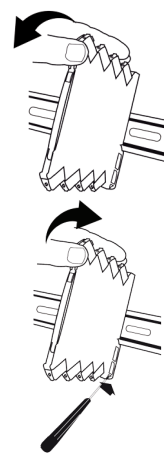
¹Does not apply to SC6-6102

Installation:

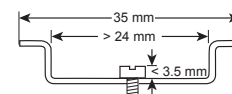
This installation guide for technical personnel covers the following products:

SC6-1100	SC6-1110	SC6-2200	SC6-3220	SC6-5200	SC6-7102
SC6-1101	SC6-1111	SC6-2220	SC6-4102	SC6-6102	SC6-PCU1
SC6-1102	SC6-1112	SC6-3200	SC6-4112	SC6-6200	

Installation on DIN rail:

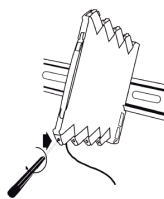


To avoid short circuit between the power rail connectors on the SC6 Series devices and the screws holding the 7.5 mm DIN rail, the head of the screws shall be no more than 3.5 mm high. SC6 Series units must be supported by module stops (ADC Series KN-EB7).



Demounting from DIN rail:

First, remember to demount the connectors with hazardous voltages. Detach the device from the DIN rail by lifting the bottom lock.



Wire size AWG 26...12 / 0.13...2.5 mm² stranded wire. Screw terminal torque 0.5 Nm.

Supply of the Power rail:

The power rail can be powered via the SC6-PCU1 Power Connector unit or alternatively a SC6 series unit with power rail connector power terminals. Max. current values are to be observed:

SC6 Series unit with power rail connector0.4 A (protective fuse 0.4 A)

SC6-PCU1 unit.....2.5 A (protective fuse 2.5 A)

Required external fuse:

Supply directly on device.....2.5 A

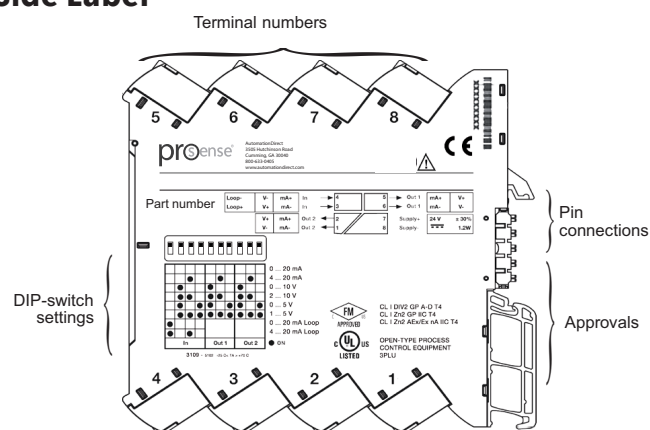
Supply of power rail using a standard device.....0.4 A

SC6-PCU1 Power connect unit.....2.5 A

Fuse Characteristics:

The 2.5 A fuse must break after not more than 120 seconds at 6.4 A.

Side Label



Programming (DIP Switch Settings)

SC6-2200

1	2	3	4	5	6	7	8	9	10	DIP Switch
										0...20mA
										4...20mA
										0...10V
										2...10V
										0...5V
										1...5V
										0...20mA Loop
										4...20mA Loop
										• = ON
In										Out

SC6-2220

1	2	3	4	5	6	7	8	9	10	DIP Switch	
										0...20mA	
										4...20mA	
										0...10V	
										2...10V	
										0...5V	
										1...5V	
										0...20mA Loop	
										4...20mA Loop	
										• = ON	
In										Out1	Out2

SC6-3200

1	2	3	4	5	6	7	8	9	10	DIP Switch	
										0...20mA	
										4...20mA	
										0...10V	
										2...10V	
										0...5V	
										1...5V	
										-20...+20mA	
										-10...+10mA	
										-10...+10V	
										-5...+5V	
										• = ON	
On										Off	Filter
In										Out	

SC6-3220

1	2	3	4	5	6	7	8	9	10	DIP Switch	
										0...20mA	
										4...20mA	
										0...10V	
										2...10V	
										0...5V	
										1...5V	
										-20...+20mA	
										-10...+10mA	
										-10...+10V	
										-5...+5V	
										• = ON	
On										Off	Filter
In										Out 1	Out 2

SC6-5200

Sensor S1	1	2	3	Sensor Error Detection S1	7
TC J (Int. CJC)				None	
TC K (Int. CJC)				Enable	
TC J (Ext. CJC)					
TC K (Ext. CJC)					
Output S1	4	5	6	Output Error Level S1	8
0...20 mA				Downscale	
4...20 mA				Upscale	
0...10 V					
2...10 V					
0...5 V					
1...5 V					
• = ON					
Noise Supp. S1	9	Resp. T. S1	10		
50 Hz		< 30 ms			
60 Hz		300 ms			
• = ON					

SC6-6102

Sensor S1	1	2	3	Sensor Error Detection S1	7
Pt100, 2w				None	
Pt100, 3w				Enable	
Pt100, 4w					
TC J (Int. CJC)					
TC K (Int. CJC)					
TC J (Ext. CJC)					
TC K (Ext. CJC)					
Output S1	4	5	6	Output Error Level S1	8
4...20 mA				Downscale	
20...4 mA				Upscale	
• = ON					
Noise Supp. S1	9	Resp. T. S1	10		
50 Hz		< 30 ms			
60 Hz		300 ms			
• = ON					

SC6-6200

Sensor S1	1	2	3	Sensor Error Detection S1	7
Pt100, 2w				None	
Pt100, 3w				Enable	
Pt100, 4w					
TC J (Int. CJC)					
TC K (Int. CJC)					
TC J (Ext. CJC)					
TC K (Ext. CJC)					
Output S1	4	5	6	Output Error Level S1	8
0...20 mA				Downscale	
4...20 mA				Upscale	
0...10 V					
2...10 V					
0...5 V					
1...5 V					
• = ON					
Noise Supp. S1	9	Resp. T. S1	10		
50 Hz		< 30 ms			
60 Hz		300 ms			
• = ON					

SC6-7102

Sensor S1	1	2	3	Sensor Error Detection S1	7
Pt100, 2w				None	
Pt100, 3w				Enable	
Pt100, 4w					
TC J (Int. CJC)					
TC K (Int. CJC)					
TC J (Ext. CJC)					
TC K (Ext. CJC)					
Output S1	4	5	6	Output Error Level S1	8
4...20 mA				Downscale	
20...4 mA				Upscale	
• = ON					
Noise Supp. S1	9	Resp. T. S1	10		
50 Hz		< 30 ms			
60 Hz		300 ms			
• = ON					

SC6-5200, SC6-6200, SC6-6102, SC6-7102 Models:

Temperature Range Programming

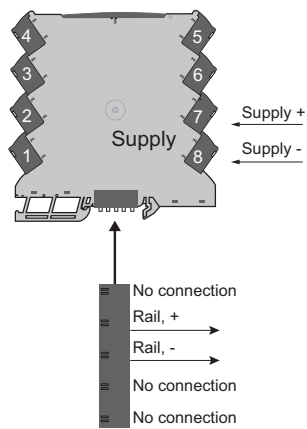
Start Temp.	DIP S2				End Temp.	DIP S2				End Temp.	DIP S2				End Temp.				
	1	2	3	4		5	6	7	8		9	10	5	6		7	8	9	10
-200°C (-328°F)					0°C (32°F)					105°C (221°F)					375°C (707°F)				
-180°C (-292°F)				•	5°C (41°F)					110°C (230°F)				•	400°C (752°F)				•
-150°C (-238°F)				•	10°C (50°F)					115°C (239°F)				•	450°C (842°F)				•
-100°C (-148°F)				•	15°C (59°F)					120°C (248°F)				•	500°C (932°F)				•
-50°C (-58°F)				•	20°C (68°F)					125°C (257°F)				•	550°C (1022°F)				•
-25°C (-13°F)				•	25°C (77°F)					130°C (266°F)				•	600°C (1112°F)				•
-10°C (14°F)				•	30°C (86°F)					135°C (275°F)				•	650°C (1202°F)				•
-5°C (23°F)				•	35°C (95°F)					140°C (284°F)				•	700°C (1292°F)				•
0°C (32°F)				•	40°C (104°F)					145°C (293°F)				•	750°C (1382°F)				•
5°C (41°F)				•	45°C (113°F)					150°C (302°F)				•	800°C (1472°F)				•
10°C (50°F)				•	50°C (122°F)					160°C (320°F)				•	850°C (1562°F)				•
20°C (68°F)				•	55°C (131°F)					170°C (338°F)				•	900°C (1652°F)				•
25°C (77°F)				•	60°C (140°F)					180°C (356°F)				•	950°C (1742°F)				•
50°C (122°F)				•	65°C (149°F)					190°C (374°F)				•	1000°C (1832°F)				•
100°C (212°F)				•	70°C (158°F)					200°C (392°F)				•	1050°C (1922°F)				•
200°C (392°F)				•	75°C (167°F)					225°C (437°F)				•	1100°C (2012°F)				•
					80°C (176°F)					250°C (482°F)				•	1150°C (2102°F)				•
					85°C (185°F)					275°C (527°F)				•	1200°C (2192°F)				•
					90°C (194°F)					300°C (572°F)				•	1250°C (2282°F)				•
					95°C (203°F)					325°C (617°F)				•	1300°C (2372°F)				•
					100°C (212°F)					350°C (662°F)				•	1350°C (2462°F)				•
														•	1372°C (2502°F)				•

Note: °F values are calculated equivalents for °C values

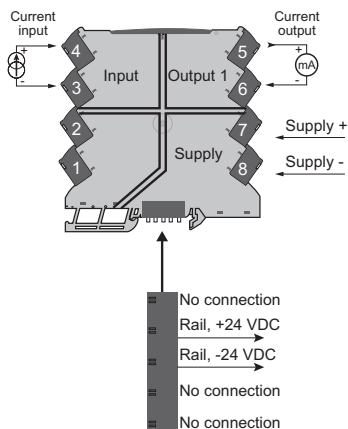
Wiring Diagrams

Note: The SC6 2-wire Transmitter Input is a current input which provides an excitation voltage to the input device, otherwise known as an active or sourcing input, while the SC6 Current Input requires the input device be provided with an external excitation voltage, otherwise known as a passive or sinking input.

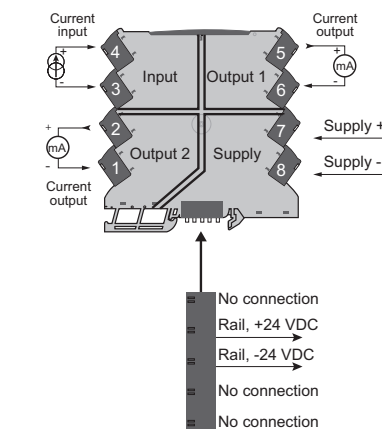
SC6-PCU1



SC6-1100

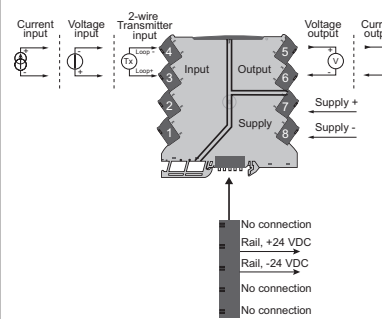


SC6-1110

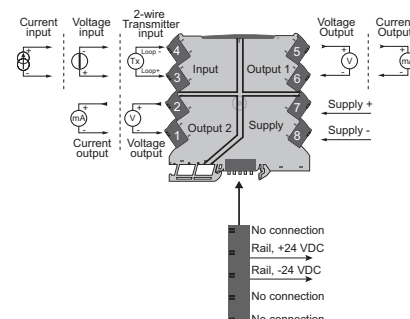


Wiring Diagrams Cont.

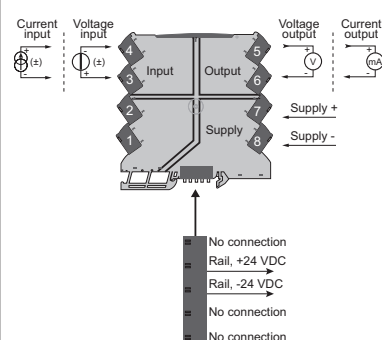
SC6-2200



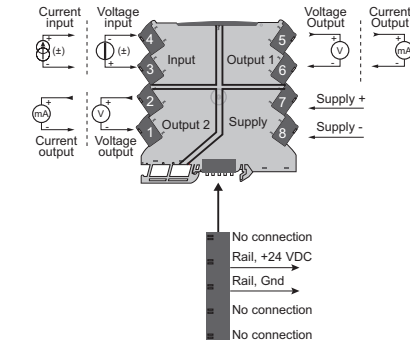
SC6-2220



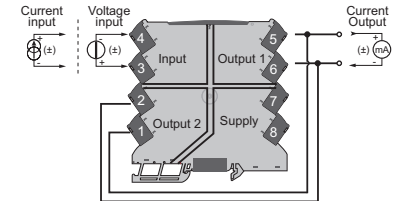
SC6-3200



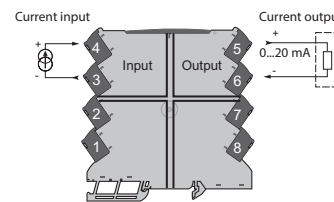
SC6-3220



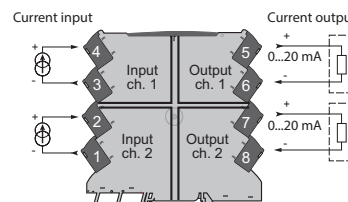
Bipolar Input to bipolar output wiring set-up:



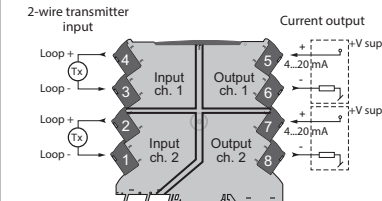
SC6-1101



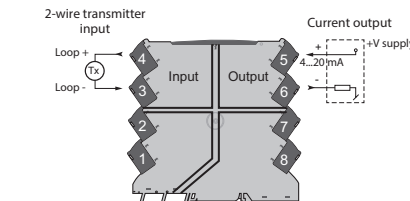
SC6-1111



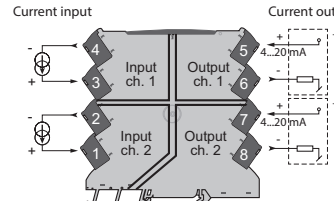
SC6-4112



SC6-4102



SC6-1112



SC6-1102

