

DESCRIPTION

Cox signal conditioning amplifiers (SCAs) accept low level pickup signals and produce a stable, amplified pulse output. These SCAs are designed for magnetic or radio frequency (RF) pickups and are provided in multiple product configurations:

- MS type (mounts to existing pickup)
- Module only, with wire terminals
- Integral assembly
- Remote assembly

APPLICATION

Cox SCAs were primarily designed to maintain signal integrity when greater transmission distance is required from the flow meter pickup. Additionally, they can provide an added layer of protection from signal distortion in environments with higher levels of ambient electrical noise from various flow processes, such as, but not limited to:

- Motors/Pumps
- Fluorescent Lighting
- Wireless Devices



OPERATING PRINCIPLE

Flow meter frequency output is fed into the signal conditioning amplifier, which in turn produces a stable, amplified pulse output. Unscaled, amplified pulse data is then fed into a pulse counting indicator or a data acquisition system. The receiving device must scale the amplified, square wave signal into an applicable unit of measurement.

CONSTRUCTION

Radio Frequency (RF/Carrier)

Part Number	Description and Materials	Mount
SCA-243	RF SCA; MS Type 303 SST Tube; Solid Epoxy Encapsulation	Integral
SCA-245	RF SCA; Assembly Includes an Aluminum Encl., RF Pickup and SCA-249	Integral
SCA-249	RF SCA; Module Only PVC; Solid Epoxy Encapsulation	—
SCA-922	RF SCA; Assembly Includes NEMA 4 Polycarbonate Encl., Internal Power Supply and SCA-249	Remote
SCA-255	RF SCA; Assembly Includes an Aluminum Encl. and a two, or three-wire RF Module	Integral

Magnetic (Mag)

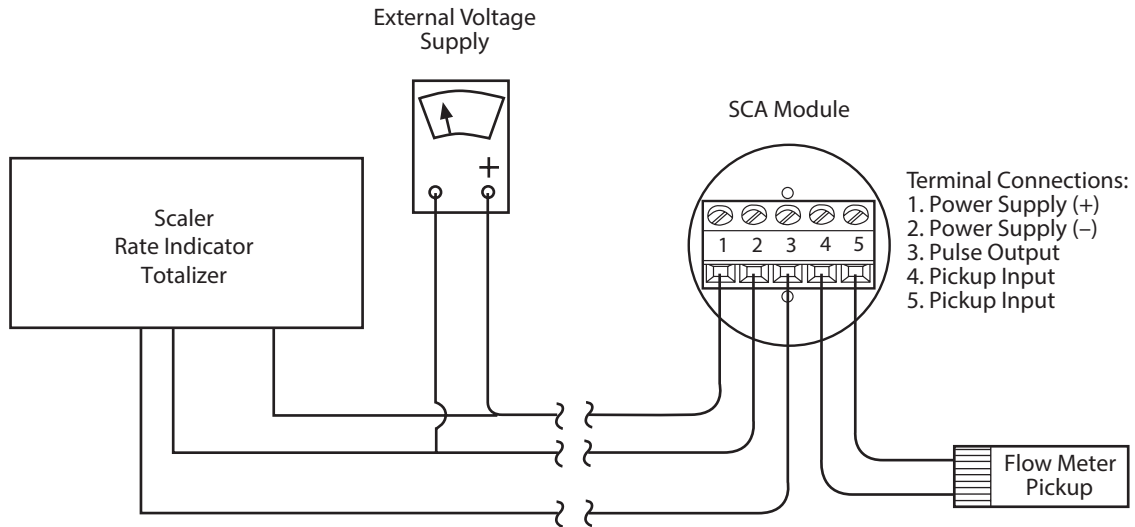
Part Number	Description	Mount
SCA-242	MAG SCA; MS Type 303 SST Tube; Solid Epoxy Encapsulation	Integral
SCA-244	MAG SCA; Assembly Includes an Aluminum Encl., MAG Pickup and SCA-248	Integral
SCA-248	MAG SCA; Module Only PVC; Solid Epoxy Encapsulation	—
SCA-923	MAG SCA; Assembly Includes NEMA 4 Polycarbonate Encl., Internal Power Supply and SCA-248	Remote

INSTALLATION

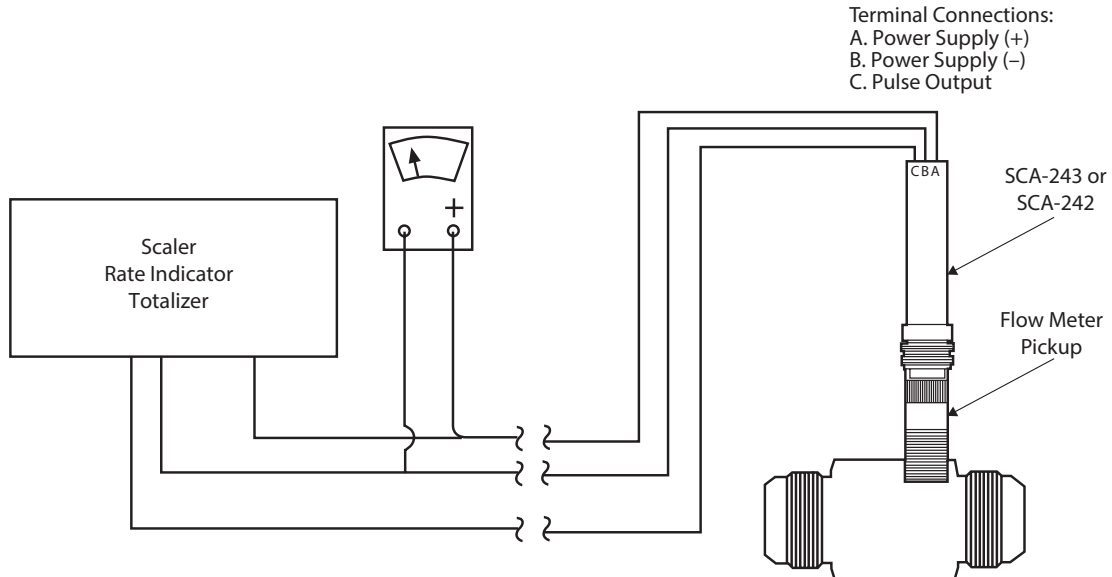
Cox magnetic and carrier pickup signal conditioning amplifiers can either mount directly onto the flow meter pickup or in a remote location and are routed into pulse counting electronics. Use the wiring diagrams below for reference.

NOTE: Remote indicator is required for rate, total and scaling.

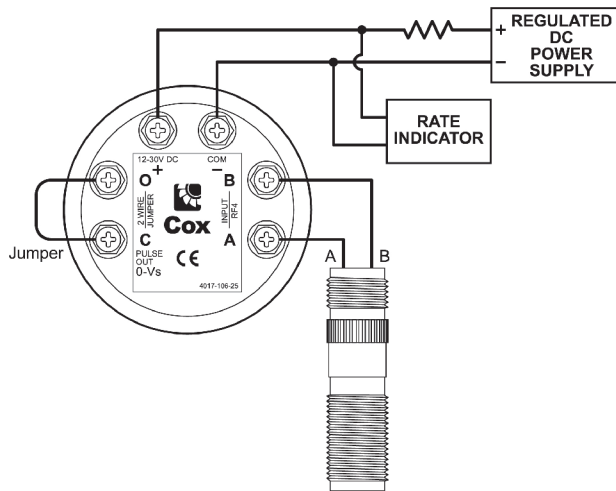
Module and Assembly Type Wiring



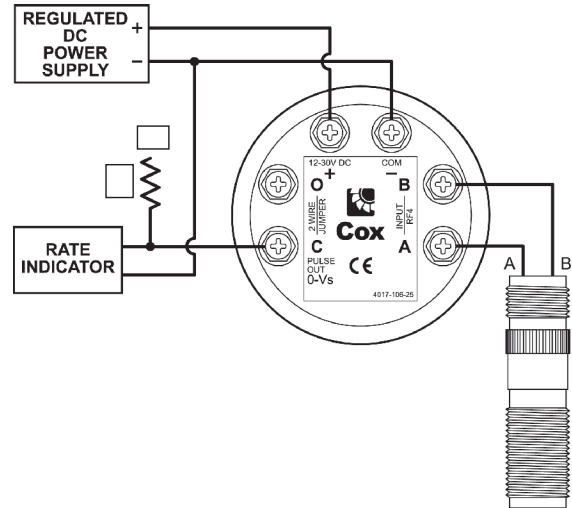
MS Type Wiring



2-Wire Module Wiring (SCA-255 Only)



3-Wire Module Wiring (SCA-255 Only)



SPECIFICATIONS

CE Compliance EN 55011, EN50022-2

**Radio Frequency
SCA-243 (MS Type) , SCA-249 (Module) and SCA-255
(Integral Assembly)**

Pulse Rise and Fall Time	0.04 μ S
Temperature Range	-40 ... 220° F (-40 ... 105° C)
Input Voltage	11.5...30V DC
Input Current Standard	16 mA
Frequency Input Range	1...5000 Hz
Output (Standard)	0...10V Pulse
Output Protection	Reverse Polarity Protected
Explosion Proof Rated Enclosure (SCA-245)	Class I: Groups C and D Class II: Groups E, F and G Class III

**Magnetic
SCA-242 (MS Type) and SCA-248 (Module)**

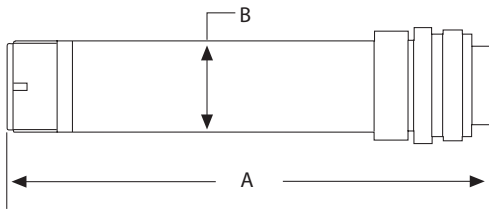
Pulse Rise and Fall Time	0.04 μ S
Temperature Range	-40 ... 220° F (-40 ... 105° C)
Input Voltage	8...30V DC
Input Current Standard	\leq 12 mA
Frequency Input Range	3...10,000 Hz
Input Sensitivity	5 mV P-P
Output (Standard)	0...10V Pulse
Output Protection	Reverse Polarity Protected
Explosion Proof Rated Housing (SCA-244 Only)	Class I: Groups C and D Class II: Groups E, F and G Class III

SCA-922 (RF) and SCA-923 (Magnetic) Remote Assemblies

Pulse Rise and Fall Time	0.04 μ S	
Temperature Range	-40...220° F (-40...105° C)	
Input Voltage	115/230V AC @ 50/60 Hz 11.5...30V DC	
Input Current Standard	DC Powered RF	\leq 16 mA
	DC Powered MAG	\leq 12 mA
Frequency Input	SCA-922 (RF)	1...5000 Hz
	SCA-923 (Mag)	3...10,000 Hz
Input Sensitivity	5 mV P-P (Magnetic Only)	
Output (Standard)	0 ...10V Pulse	
Output Protection	Reverse Polarity Protected	
NEMA 4, 12 and 13 Rated Housing	UL 508 Type 1 CSA Type 1	

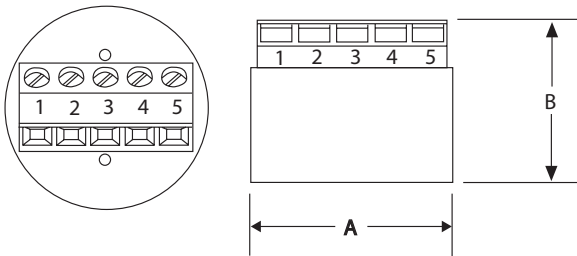
DIMENSIONS

SCA-242 and SCA-243 MS Type



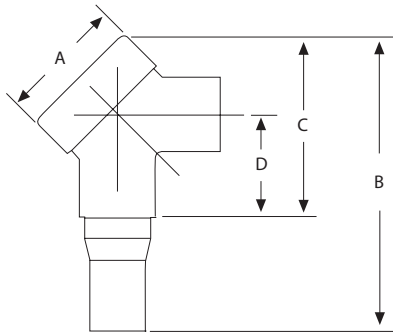
A in. (mm)	B in. (mm)
3.75 (95.25)	0.63 (16.00)

SCA-249 and SCA-248 Module



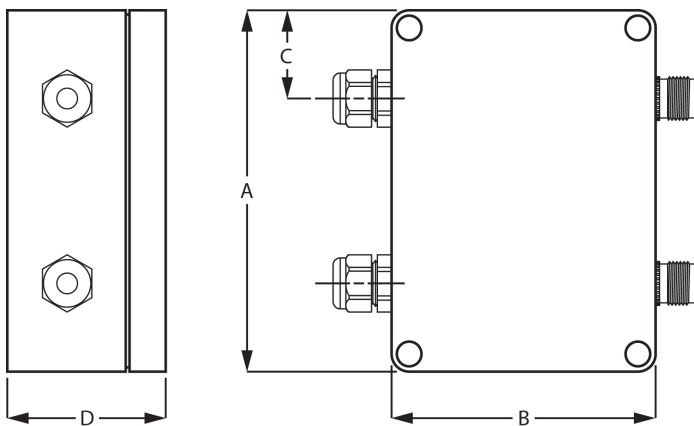
	A in. (mm)	B in. (mm)
Magnetic	1.33 (33.78)	0.83 (21.08)
Radio Frequency	1.25 (31.75)	1.13 (28.70)

SCA-245 and SCA-244 Integral Assembly



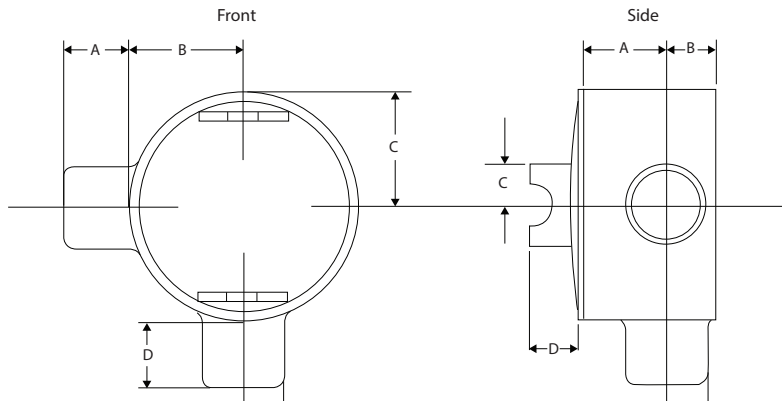
A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)
1.88 (47.75)	4.00 (101.60)	2.88 (73.15)	1.63 (41.40)

SCA-922 and SCA-923 Remote Assembly



A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)
5.12 (130.05)	3.75 (95.25)	1.25 (31.75)	2.35 (59.69)

SCA-255 Integral Assembly



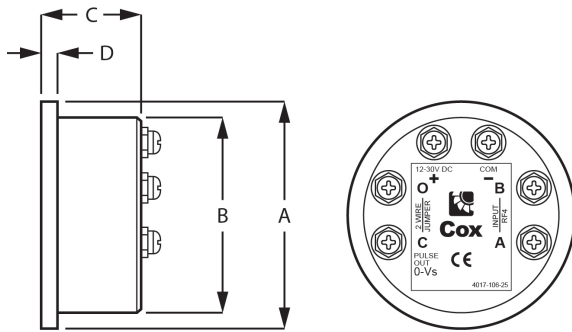
Front View

A	B	C	D	E
in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)
1.00 (25.40)	1.75 (44.45)	1.75 (44.5)	1.00 (25.40)	0.63 (16.00)

Side View

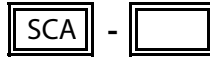
A	B	C	D	E
in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)
1.25 (31.75)	0.75 (19.05)	0.63 (16.00)	0.75 (19.05)	0.63 (16.00)

Module Only for SCA-255



A	B	C	D
in. (mm)	in. (mm)	in. (mm)	in. (mm)
2.50 (63.50)	2.15 (54.61)	1.10 (27.94)	0.18 (4.57)

PART NUMBER CONSTRUCTION



MODEL / TYPE

Radio Frequency (RF/Carrier)	
MS Type RF, Mounts Directly to Existing Pickup	243
Integral Assembly AL Encl., RF Pickup and SCA-249 ¹	245
Module Only	249
Remote Assembly NEMA 4 Encl., 115V AC and SCA-249	922
Integral Assembly AL Encl., Two/Three Wire RF Module	255
Magnetic (MAG)	
MS Type MAG, Mounts Directly to Existing Pickup	242
Integral Assembly AL Encl., MAG Pickup and SCA-248 ²	244
Module Only	248
Remote Assembly NEMA 4 Encl, 115V AC and SCA-248	923

¹ RF Pickup Part Number: 9850012R0010

² MAG Pickup Part Number: 900910-03

EXAMPLE PART NUMBER: SCA-245

INTENTIONAL BLANK PAGE

Control. Manage. Optimize.

Cox Instruments is a registered trademark of Badger Meter, Inc. Other trademarks appearing in this document are the property of their respective entities. Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists. © 2018 Badger Meter, Inc. All rights reserved.

www.badgermeter.com

The Americas | Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400
México | Badger Meter de las Americas, S.A. de C.V. | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882
Europe, Eastern Europe Branch Office (for Poland, Latvia, Lithuania, Estonia, Ukraine, Belarus) | Badger Meter Europe | ul. Korfantego 6 | 44-193 Knurów | Poland | +48-32-236-8787
Europe, Middle East and Africa | Badger Meter Europa GmbH | Nurtinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0
Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503
Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01
Asia Pacific | Badger Meter | 80 Marine Parade Rd | 21-06 Parkway Parade | Singapore 449269 | +65-63464836
China | Badger Meter | 7-1202 | 99 Hangzhong Road | Minhang District | Shanghai | China 201101 | +86-21-5763 5412
Switzerland | Badger Meter Swiss AG | Mittelholzerstrasse 8 | 3006 Bern | Switzerland | +41-31-932 01 11