Datasheet FU.SEN.RSC.101 TRUE 4-20mA Contact Sensor IP65

General description:

RSC.101 are ultrasound current output sensors designed to be used with industrial standard measurement systems, such as PLC, DCS, and DAQ system.
The design is optimized for permanent installations in the most challenging environments. RSC contact sensors are suitable to ultrasound driven lubrication, mechanical monitoring, steam & valve systems, etc. Sensitive to friction, impact and turbulences, RSC provide overall ultrasound levels (RMS) generated by all types of assets.

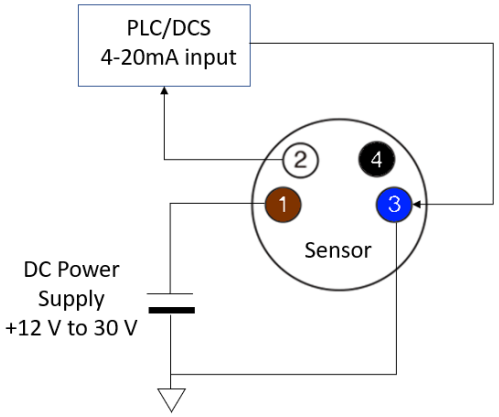


Main Features:

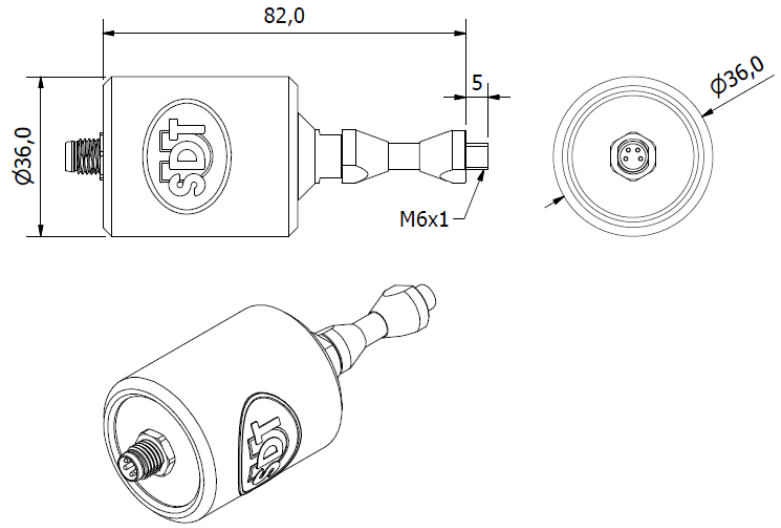
- 4-20 mA output (DC coupling) corresponding to ultrasound RMS
- Built-in analog circuit “Ultrasound to RMS”
- Hardware calibration
- Case temperature measurement (optional)
- Plug & Play over a large measurement range
- Can be acquired at low sampling rate (static mode only)

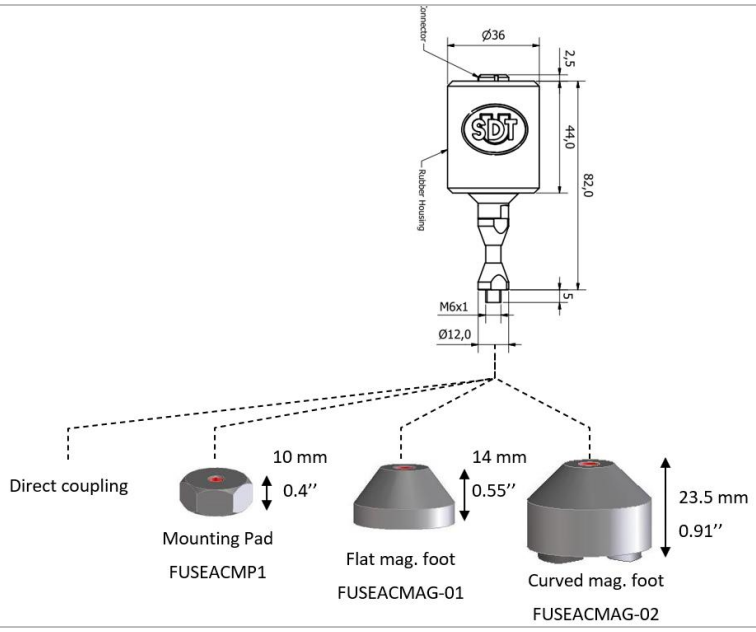
Top view pinout (IEC 60947-5-2 compliant) and Wiring diagram:

1 = POWER SUPPLY (Brown)
2 = OUTPUT CURRENT (White)
3 = GROUND (Blue)
4 = OUTPUT SELECTION - should be left unconnected if not used – (Black)



Technical specifications:

General specifications	
Dimensions [mm]	
Description	CONMONSense RSC US 4-20mA M8 4PM - THREADED SENSOR M6
Type of transducer	Piezoelectric
Materials	Housing: Stainless steel Connector plate: Aluminum Holster: Nitrile Butadiene Rubber
Weight	126 [Gram] / 4.44 [Oz]
IP rating	IP 65
Tests/approvals EMC (Directive 2014/30/EU)	• EN 61326-1:2013 • EN 55011: 2016 + A1:2017 • EN 61000-4-2:2009 • EN 61000-4-3:2006 + A1:2008 + IS1:2009 + A2:2010 • EN 61000-4-4:2013 • EN 61000-4-6:2014 • EN 61000-4-8:2010
Installation	
Power supply	12 [V] to 30 [V] DC
Maximum consumption	750 [mW]
Operating temperature	-20 [°C] to +70 [°C] / -4 [°F] to +158 [°F] (see SDT heat sink in section accessories for warmer environments)
Recommended max cable length	30 [m] / 100 [feet] (EMC tests not guaranteed beyond)
Recommended tightening torque	2 [N.m] / 17.7 [lbf.in]
Connector	M8 - 4 pin - Male
Ultrasound signal (Typical)	
Resonant frequency	F_{res} = 37 [kHz] +/- 1 [kHz]
Band-pass frequency	+/- 2 [kHz] centered on F_{res}
Detector type	RMS
Stabilization time	1 [s]
Output range	4 to 20 [mA]
Measuring range	20 to 100 [dBµV_{RMS}]
Sensitivity	0.2 [mA/dBμV_{RMS}]
Resolution	0.5 [dBμV_{RMS}]

Temperature	Optional (see below)
Optional accessories offered by SDT	
Cables with Straight M8 Connector – PUR RAL7021 -25°C.+90°C IP65 – STRAIGHT SHIELDED	
FU.RSC.CABL.01.015-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 1.5m
FU.RSC.CABL.01.030-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 3.0m
FU.RSC.CABL.01.050-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 5.0m
FU.RSC.CABL.01.100-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 10.0m
FU.RSC.CABL.01.200-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 20.0m
FU.RSC.CABL.01.XXX-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END XX.Xm
Cables with 90° M8 Connector – PUR RAL7021 -25°C.+90°C IP65 – STRAIGHT SHIELDED	
FU.RSC.CABL.02.015-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 1.5m
FU.RSC.CABL.02.030-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 3.0m
FU.RSC.CABL.02.050-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 5.0m
FU.RSC.CABL.02.100-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 10.0m
FU.RSC.CABL.02.200-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 20.0m
FU.RSC.CABL.02.XXX-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END XX.Xm
Connector to complete assembly	
SICOCA-M8-4MSS-01	CABLE CONNECTOR M8 4PM SHIELDED STRAIGHT A-KEY w/SCREW TERMINAL
SICOCA-M8-4FSS-01	CABLE CONNECTOR M8 4PF SHIELDED STRAIGHT A-KEY w/SCREW TERMINAL
Cables with straight M8 connector 4PM <> M8 4PF – PUR BLACK -25°C.+80°C IP65 – STRAIGHT SHIELDED	
FU.RSC.CABL.05.015-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 1.5m
FU.RSC.CABL.05.030-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 3.0m
FU.RSC.CABL.05.050-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 5.0m
FU.RSC.CABL.05.100-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 10m
FU.RSC.CABL.05.200-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 20m
FU.RSC.CABL.05.XXX-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF XX.Xm
Mounting accessories	
FA.RSC.ACC.002-01	CONMONSense - HEAT SINK - AISI303 Ø30,0 (M6) x74,5mm
FU.SEACMAG-01	Flat Magnetic Foot
FU.SEACMAG-02	Curved Magnetic Foot
FU.SEACMP1	Mounting pad

The foot is a part of the resonant structure, please do not disassemble it!

Configuration:

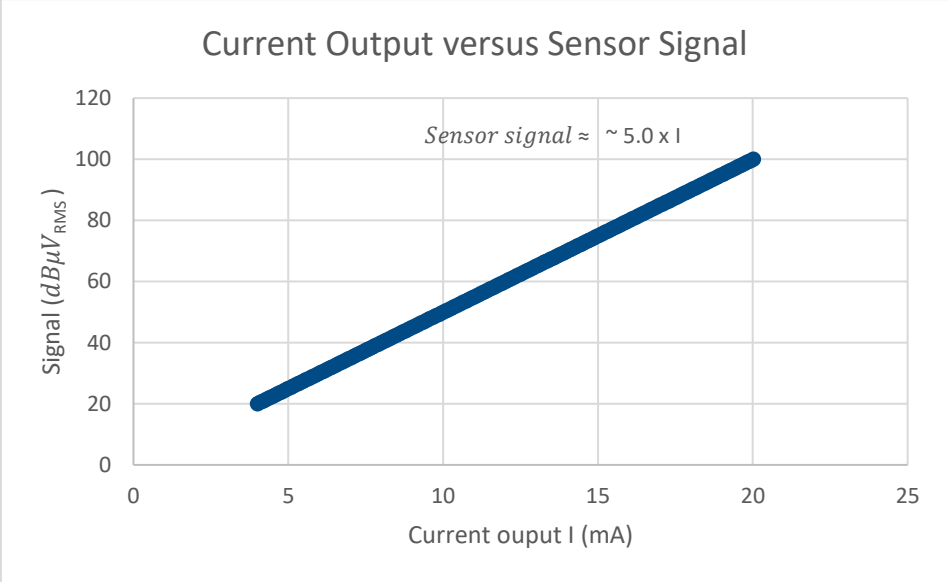
The selection line is used to switch the ultrasound signal and the temperature.

Ultrasound output (default):

By pulling (and holding) the communication line high (VDD – Power supply) or by keeping it floating (not connected), the output signal will mirror ultrasound RMS readings refreshed a typical rate of a second. The output doesn't require high sampling rate.

The sensor signal range is 20 [$dB_{\mu V\ RMS}$] (4 mA) to 100 [$dB_{\mu V\ RMS}$] (20 mA). The output relationship is defined as follows:

- $Sensor\ signal\ [dB\mu V_{RMS}] \approx \frac{Measured\ current\ [mA]}{Sensitivity}$
- Sensitivity:
  - 0.2 mA/dBμV_{RMS}
  - offset = 0
- Resolution:
  - 0.5 $dB\mu V_{RMS}$

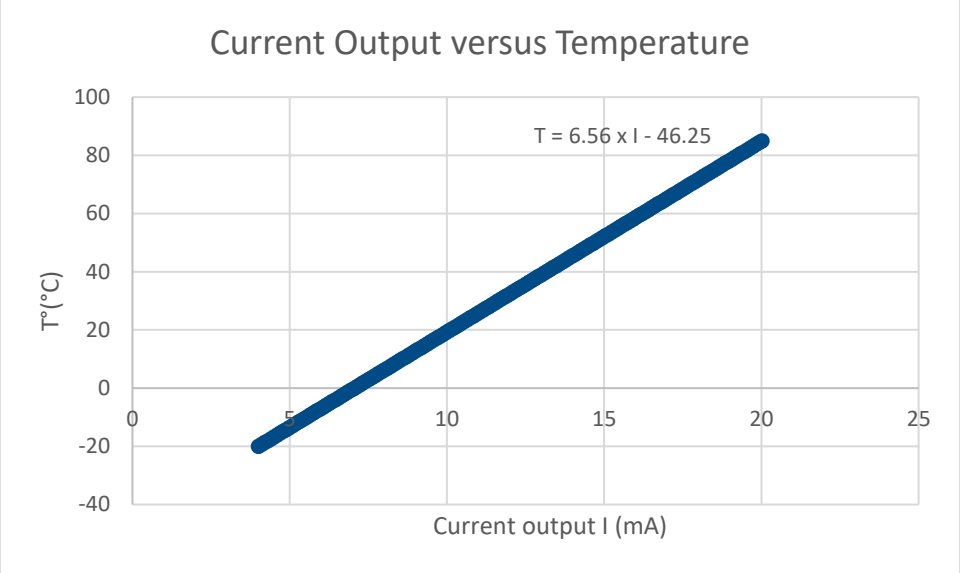


Temperature output (optional):

By pulling (and holding) the communication line low (0V – GND), the output signal will mirror the case temperature. Ultrasound readings are not available at the same time.

The temperature range is -20 [$°C$] (4 mA) to +100 °C (20 mA). The output relationship is defined as follows:

- $Case\ temperature\ T\ [°C] \sim \left(\frac{Measured\ current\ [mA]}{Sensitivy}\right) + Offset$
- Sensitivity:
  - 0.15 mA /°C
  - Offset = - 46.25 °C
- Resolution:
  - 1.00 °C



03	CMA 28/02/2023	Maximum T° range	RGO
02	CMA 14/11/2022	Minor change ER to “RSC static”	RGO
01	CMA 9/11/2022	Original version	RGO
Rev.	**Writer**	**Nature of modification**	**Approved**

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.