

## *Conductivity Sensors*

- *Level detection*
- *Leak detection*





Registration No.: 1327-01



For all transactions, the latest version of the „General Conditions of Sale and Delivery for Products and Services of the Electrical Industry ZVEI“ shall apply, along with the supplementary conditions „extended reservation of proprietary rights“, together with the supplements listed on our order confirmations and/or invoices.

All specifications are subject to change without notice. Reprint, even in part, only with our consent.

© RECHNER Germany 01/2014 EN - Printed in EU, all rights reserved.

**Edition January 2014**

With publication of this catalogue all former printed catalogues about RECHNER Conductivity Sensors are invalid.

# CONDUCTIVITY SENSORS

**With ATEX certificate for use in ATEX Zone 0 (Gas) and 20 (Dust).**

The conductivity sensors or conductivity guard are designed for detection of electrically conductive liquids. They are certified for use in potentially explosive areas Zone 0 and Zone 20.

## Technology

The technology of these conductive sensors is based on the conductivity measuring principle. They are designed as a 2 wire version according to NAMUR DIN 60947-5-6 and are ATEX certified. The sensor has two measuring electrodes. When they are in contact with a conductive liquid a measuring current runs between these two measuring electrodes, which is evaluated by the sensor and a switching signal is given .

The sensors have a 12-turn potentiometer for sensitivity adjustment. This allows an optimum adjustment for the liquid to be detected.

## Mechanical Construction

The conductive sensors are available with different body sizes, like for instance M 10 x 1, M 12 x 1 or 1/4" NPT. For the sensor bodies, this means parts that touch the product, high quality materials are used. Therefore the sensors can be used for applications in the Chemical Industry and Food Industry.

- Housing materials used are:
- Sensor body: PEEK (FDA 21 CFR 177.2415)
- Electrodes: VA No. 1.4305

The application of the housing materials used is based on the technical specifications of the material and of the manufacturer. Even though RECHNER Sensors have years of application experience in many fields, concerning the use of different housing materials, the customer is responsible for checking in each case that the housing material is suitable for the application.

## Application areas:

Application areas are for example

- Limit value measuring in containers
- Leak detection at pneumatic diaphragm pumps
- Leak detection at peristaltic pumps
- Leak detection at centrifugal pumps
- Min- and Max-Level control of liquids



II 1G Ex IIC T4 Ga  
II 1D Ex ia IIIC T130°C Da

Limit value measuring  
in containers

Detection of  
conductive liquids in  
non-conductives  
and inverse

Leak detection

Peristaltic Pumps  
Pneumatic Diaphragm Pumps  
Centrifugal Pumps

## Conductivity sensors

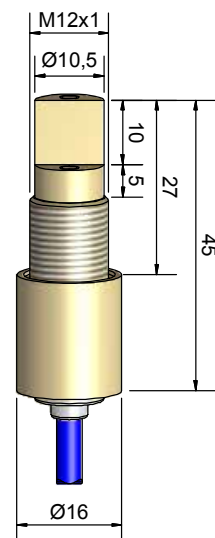
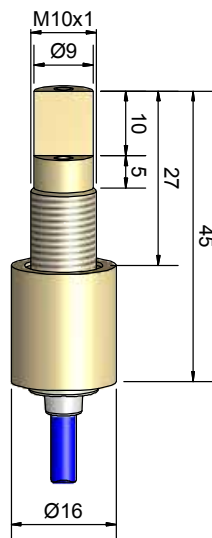
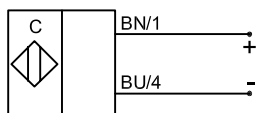
Dimension	M 10 x 1	M 12 x 1
-----------	----------	----------



Technical data	M 10 x 1		M 12 x 1	
	Description	Art.-No.	Description	Art.-No.
Type	RCS-02-M10/45-N-27-VA/PEEK-StEx	RC 0006	RCS-02-M12/45-N-27-VA/PEEK-StEx	RC 0003
Electrical version	2 wire DC		2 wire DC	
Output function	NAMUR EN 60947-5-6		NAMUR EN 60947-5-6	
Certificates	CE, RoHS, ATEX		CE, RoHS, ATEX	
ATEX certificate No.	BVS 10 ATEX 049		BVS 10 ATEX 049	
ATEX	II 1G Ex IIC T4 Ga II 1D Ex ia IIIC T130°C Da		II 1G Ex IIC T4 Ga II 1D Ex ia IIIC T130°C Da	
Operating voltage (U <sub>B</sub> )	U <sub>B</sub> = 15 V DC		U <sub>B</sub> = 15 V DC	
Power consumption	I <sub>i</sub> = 30 mA		I <sub>i</sub> = 30 mA	
Sensitivity min.	200 µS / cm*		200 µS / cm*	
Sensitivity max.	0.2 µS / cm*		0.2 µS / cm*	
Permitted ambient temperature	-20...+90 °C		-20...+90 °C	
Degree of protection IEC 60529	IP 67**		IP 67**	
Norm	EN 60947-5-2		EN 60947-5-2	
Connection cable	2 m, PVC, 2 x 0.14 mm <sup>2</sup>		2 m, PVC, 2 x 0.14 mm <sup>2</sup>	
Housing material	PEEK (FDA 21 CFR 177.2415)		PEEK (FDA 21 CFR 177.2415)	
Material	VA No. 1.4305		VA No. 1.4305	
Pressure	5 bar		5 bar	

\* Other sensitivity ranges are possible on customer request

\*\* With sealed potentiometer screw



## M 12 x 1



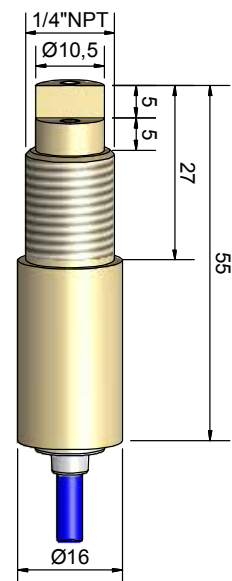
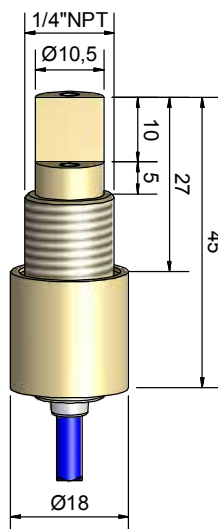
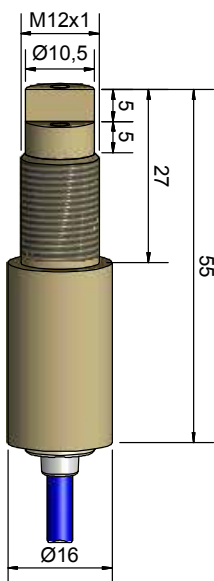
## 1/4" NPT








## 1/4" NPT



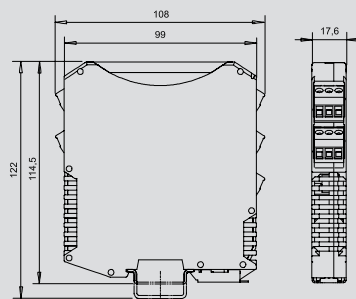
Description	Art.-No.	Description	Art.-No.	Description	Art.-No.
RCS-02-M12/55-N-27-VA/PEEK-StEx	RC 0002	RCS-02-1/4"NPT/45-N-27-VA/PEEK-StEx	RC 0005	RCS-02-1/4"NPT/55-N-27-VA/PEEK-StEx	RC 0004
2 wire DC		2 wire DC		2 wire DC	
NAMUR EN 60947-5-6		NAMUR EN 60947-5-6		NAMUR EN 60947-5-6	
CE, RoHS, ATEX		CE, RoHS, ATEX		CE, RoHS, ATEX	
BVS 10 ATEX 049		BVS 10 ATEX 049		BVS 10 ATEX 049	
II 1G Ex IIC T4 Ga II 1D Ex ia IIIC T130°C Da		II 1G Ex IIC T4 Ga II 1D Ex ia IIIC T130°C Da		II 1G Ex IIC T4 Ga II 1D Ex ia IIIC T130°C Da	
U <sub>i</sub> = 15 V DC		U <sub>i</sub> = 15 V DC		U <sub>i</sub> = 15 V DC	
I <sub>i</sub> = 30 mA		I <sub>i</sub> = 30 mA		I <sub>i</sub> = 30 mA	
100 µS / cm*		200 µS / cm*		100 µS / cm*	
0.1 µS / cm*		0.2 µS / cm*		0.1 µS / cm*	
-20...+90 °C		-20...+90 °C		-20...+90 °C	
IP 67**		IP 67**		IP 67**	
EN 60947-5-2		EN 60947-5-2		EN 60947-5-2	
5 m, PVC, 2 x 0.14 mm <sup>2</sup>		2 m, PVC, 2 x 0.14 mm <sup>2</sup>		2 m, PVC, 2 x 0.14 mm <sup>2</sup>	
PEEK (FDA 21 CFR 177.2415)		PEEK (FDA 21 CFR 177.2415)		PEEK (FDA 21 CFR 177.2415)	
VA No. 1.4305		VA No. 1.4305		VA No. 1.4305	
5 bar		5 bar		5 bar	



## ISOLATING SWITCHING AMPLIFIER - ATEX

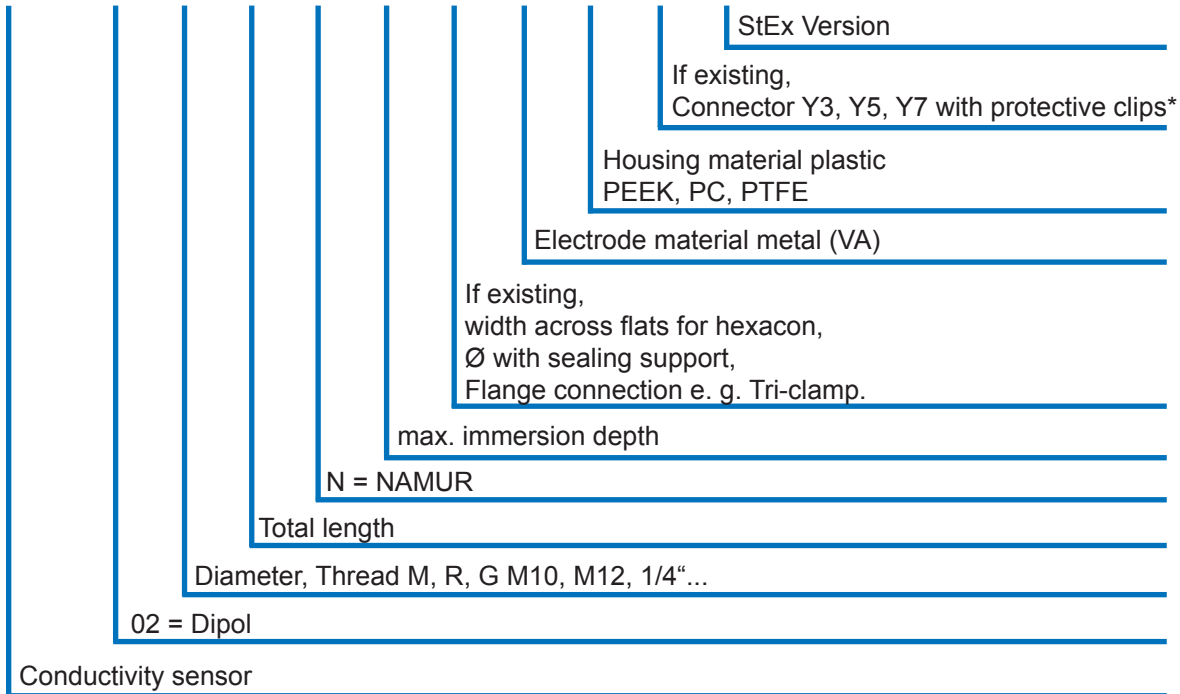
Housing	122 x 108 x 17,6 mm	122 x 108 x 17,6 mm	122 x 108 x 17,6 mm	122 x 108 x 17,6 mm
				
Technical Data				
Operating voltage ( $U_B$ )	120...230 V AC	120...230 V AC	18...31,2 V DC	18...31,2 V DC
Output function	1 x potential-free change-over contact	2 x potential-free change-over contact	2 x potential-free change-over contact	2 x transistor output / open collector
Contact rating each relay AC max. Contact rating each relay DC max.	250 V AC / 4 A 250 V DC / 2 A	250 V AC / 4 A 250 V DC / 2 A	250 V AC / 4 A 250 V DC / 4 A	35 V DC / 50 mA
Type	<b>N-132/1-01</b>	<b>N-132/2-01</b>	<b>N-132/2-10</b>	<b>N-132/2-E-10</b>
Art.-No.	<b>N 00012</b>	<b>N 00015</b>	<b>N 00017</b>	<b>N 00018</b>
Certification	CE, ATEX, FM	CE, ATEX, FM	CE, ATEX, FM	CE, ATEX, FM
ATEX Certification No.	BVS 09 ATEX E 087X	BVS 09 ATEX E 087X	BVS 09 ATEX E 087X	BVS 09 ATEX E 087X
ATEX	II (1) G [Ex ia] IIC II (1) D [Ex ia] IIIB	II (1) G [Ex ia] IIC II (1) D [Ex ia] IIIB	II (1) G [Ex ia] IIC II (1) D [Ex ia] IIIB	II (1) G [Ex ia] IIC II (1) D [Ex ia] IIIB
No-load current ( $I_s$ )	Typ. 12 mA	Typ. 18 mA	Typ. 55 mA	Typ. 36 mA
No-load voltage max. ( $U_s$ )	9,6 V DC	9,6 V DC	9,6 V DC	9,6 V DC
Short circuit current max. ( $I_k$ )	10 mA	20 mA	20 mA	20 mA
Outer inductance max. ( $L_o$ )	[Exia] IIC 350 mH/ IIB 1000 mH	[Exia] IIC 90 mH/ IIB 340 mH	[Exia] IIC 90 mH/ IIB 340 mH	[Exia] IIC 90 mH/ IIB 340 mH
Outer capacitance max. ( $C_o$ )	[Exia] IIC 3,6 $\mu$ F/ IIB 26 $\mu$ F	[Exia] IIC 3,6 $\mu$ F/ IIB 26 $\mu$ F	[Exia] IIC 3,6 $\mu$ F/ IIB 26 $\mu$ F	[Exia] IIC 3,6 $\mu$ F/ IIB 26 $\mu$ F
Actuating signal	NAMUR EN 60947-5-6	NAMUR EN 60947-5-6	NAMUR EN 60947-5-6	NAMUR EN 60947-5-6
Permitted ambient temperature	-20...+70 °C	-20...+70 °C	-20...+70 °C	-20...+70 °C
Display	Red / yellow and green	Red / yellow and green	Red / yellow and green	Red / yellow and green
Norm	EN 60947-5-6	EN 60947-5-6	EN 60947-5-6	EN 60947-5-6
Degree of protection IEC 60529	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20
Connection	Screw terminals	Screw terminals	Screw terminals	Screw terminals

### Dimensions:



## TYPE CODE

RCS-...-.../...-...-...-.../...-...-...



\* After mounting, the plug-and-socket connector has to be protected by means of the protective clip.

## ARTICLE LIST

Art.-No.	Description	Page
N00012	N-132/1-01	6
N00015	N-132/2-01	6
N00017	N-132/2-10	6
N00018	N-132/2-E-10	6
RC0006	RCS-02-M10/45-N-27-VA/PEEK-StEx	4
RC0003	RCS-02-M12/45-N-27-VA/PEEK-StEx	4
RC0002	RCS-02-M12/55-N-27-VA/PEEK-StEx	5
RC0005	RCS-02-1/4"NPT/45-N-27-VA/PEEK-StEx	5
RC0004	RCS-02-1/4"NPT/55-N-27-VA/PEEK-StEx	5

# SENSORS FOR INDUSTRIAL AUTOMATION

## OVERVIEW OF THE RECHNER-SENSORS CATALOGUES:

### CAPACITIVE SENSORS

- HIGH PERFORMANCE SERIES
- NORMLINE SERIES
- 26 / LEVELMASTER SERIES
- 95 SERIES
- KXS-EXTREME SERIES

### CAPACITIVE LEVEL MEASURING SYSTEMS

- TRUE-LEVEL / PER-LEVEL / i-LEVEL SERIES
- FOR GLUE DETECTION APPLICATION

### INDUCTIVE SENSORS

### MAGNETO-RESISTIVE SENSORS

### OPTOELECTRONIC SENSORS

### FLOW SENSORS

### CONDUCTIVITY SENSORS

### ATEX CERTIFIED PRODUCTS

### POWER SUPPLIES AND EX-BARRIERS

### TRANSISTOR AMPLIFIERS

### SHORTFORM CATALOGUE

YOUR REPRESENTATIVE

## **RECHNER** INDUSTRIE-ELEKTRONIK GmbH

**Gaußstraße 8-10 • 68623 Lampertheim • Germany**

Tel. (0 62 06) 50 07-0 Fax (0 62 06) 50 07-36 Fax Intl. +49 (0) 62 06 50 07-20 www.rechner-sensors.com e-mail: info@rechner-sensors.de

#### CANADA

**Rechner Automation Inc**  
348 Bronte St. South - Unit 11  
Milton, ON L9T 5B6

Tel. 9056360866  
Fax. 9056360867  
contact@rechner.com  
www.rechner.com

#### GREAT BRITAIN

**Rechner (UK) Limited**  
Unit 6, The Old Mill  
61 Reading Road  
Pangbourne, Berks, RG8 7HY

Tel. +44 118 976 6450  
Fax. +44 118 976 6451  
info@rechner-sensors.co.uk  
www.rechner-sensors.co.uk

#### ITALY

**Rechner Italia srl**  
Via della Beverara 13/A  
40131 Bologna  
Italy

Tel. +39-051-6350752  
Fax. +39-051-6346741  
info@rechneritalia.it  
www.rechneritalia.it

#### PEOPLE'S REPUBLIC OF CHINA

**RECHNER SENSORS SIP CO.LTD.**  
Building H,  
No. 58, Yang Dong Road  
Suzhou Industrial Park  
Jiangsu Province

Tel. +8651267242858  
Fax. +8651267242868  
assist@rechner-sensor.cn  
www.rechner-sensor.cn

#### REPUBLIC OF KOREA (SOUTH)

**Rechner-Korea Co. Ltd.**  
A-1408 Ho,  
Keumgang Penterium IT Tower,  
Hakeuro 282, Dongan-gu  
Anyang City, Gyunggi-do, Seoul

Tel. +82 31 422 8331  
Fax. +82 31 423 83371  
sensor@rechner.co.kr  
www.rechner.co.kr

#### UNITED STATES OF AMERICA

**Rechner Electronics Ind. Inc.**  
6311 Inducon Corporate Drive,  
Suite 5  
Sanborn, NY. 14132

Tel. 8005444106  
Fax. 9056360867  
contact@rechner.com  
www.rechner.com