Measuring instruments with connections per DIN 11864

WIKA

Smart in sensing

Alexander Wiegand,
Chairman and CEO
WIKA

About us

As a family-run business acting globally, with over 9,300 highly qualified employees, the WIKA group of companies is a worldwide leader in pressure and temperature measurement. The company also sets the standard in the measurement of level, force and flow, and in calibration technology.

Founded in 1946, WIKA is today a strong and reliable partner for all the requirements of industrial measurement technology, thanks to a broad portfolio of high-precision instruments and comprehensive services.

With manufacturing locations around the globe, WIKA ensures flexibility and the highest delivery performance. Every year, over 50 million quality products, both standard and customer-specific solutions, are delivered in batches of 1 to over 10,000 units.

With numerous wholly owned subsidiaries and partners, WIKA competently and reliably supports its customers worldwide.
Our experienced engineers and sales experts are your competent and dependable contacts locally.

Contents

Hygienic design

The hygienic design of components in contact with food or pharmaceuticals is an essential pre-requisite to avoid microbiological contamination, which goes with ensuring the product‘s quality.

As part of the overall hygienic concept of a plant, the measuring instruments used must comply with special requirements on material, surface quality, process safety, connection engineering and cleaning in the scope of the CIP process.

As a company member of the European Hygienic Engineering and Design Group (EHEDG), WIKA contributes to the international standards and combines hygienic design with high-quality measurement technology.

WIKA offers a comprehensive programme for the hygienic integration of measuring instruments into sanitary applications with process connections per DIN 11864:

- Pressure sensors
- Process transmitters
- Pressure gauges
- Resistance thermometers
- Bimetal and gas-actuated thermometers
- Float switches
- Level sensors

This brochure serves as a selection aid in project planning. In the table we show you in detail which measuring instruments, with their corresponding process connections, are available.

Highest demands

In the production of food and pharmaceuticals, safety in the production and the prevention of any risks to those using the finished product is of the highest priority.

Modern production facilities are cleaned using CIP during the cleaning phase. This requires that the equipment used can be easily cleaned. The basic prerequisite for this is that the process connections must conform to the rules of hygienic design.

Process connections which are used in CIP-capable equipment should not constitute any risk in respect to sterility. They are characterised by the following features:

- A defined compression of the sealing element through a metallic stop
- Centring via a cylindrical guide
- Crevice-free sealing on the inside of the pipe

Connections per DIN 11864 offer this.

The widely used connections in accordance with DIN 11851 (milk thread fitting) and DIN 32676 (clamp) were originally developed to disassemble plant components easily. They are therefore ideally suited to equipment that needs to be removed for cleaning.
In contrast, the connections in accordance with DIN 11864 are a further development to fulfil the requirements of CIP cleaning, during which all components remain mounted.

What is DIN 11864?

DIN 11864 was prepared by the working committee "Fittings for the food industry", based on the recommendations of the EHEDG (European Hygienic Equipment Design Group) pipe couplings subgroup.

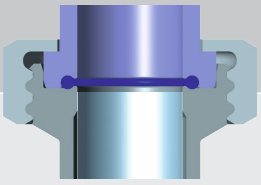
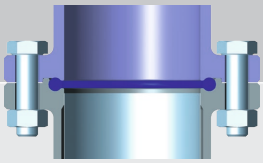
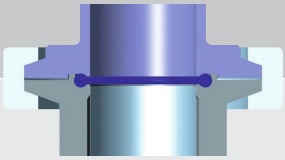
The aim of this was to incorporate the knowledge of modern hygienic design into the design and construction of process connections.

The DIN 11864 standard, “Stainless steel components for aseptic applications in the chemical and the pharmaceutical industries”, consists of 3 parts:

11864-1 Threaded pipe connection
11864-2 Flange connection
11864-3 Clamp connection

The connection is made up of two components that are matched to one another, e.g. liner and threaded coupling. The former designation ‚form A‘ referred to the O-ring between the two fittings. ‚Form B‘ (form seal), which was also previously defined in the standard, was actually not used in practical application. With the specification of measuring instruments, one must pay attention that the design of the process connection is chosen so that it matches the opposing connector on the tank or pipeline.

Designs and designations

Process connection type	Process connection specification	
Threaded connection DIN 11864-1	Liner with union nut	
	Threaded coupling with male thread	
Flange DIN 11864-2	Aseptic flange with notch	
	Aseptic flange with groove	
Clamp DIN 11864-3	Clamp with notch	
	Clamp with groove	

Electronic pressure measuring instruments

This overview shows the possible combinations of electronic pressure transmitters with the available process connections.

Pipe standard	Process connection	Diaphragm seal model 990.51 with electronic process transmitter or digital pressure gauge				
		from 0 … 400 mbar	from 0 … 600 mbar	from 0 … 1 bar	from 0 … 2.5 bar	
Pipes per DIN 11866 row A or DIN 11850 row 2	DN 10 (pipe dimension 13.0 x 1.5)	○	○	○	○	
	DN 15 (pipe dimension 19.0 x 1.5)	○	○	○	○	
	DN 20 (pipe dimension 23.0 x 1.5)	○	○	○	○	
	DN 25 (pipe dimension 29.0 x 1.5)	○	○	○	●	
	DN 32 (pipe dimension 35.0 x 1.5)	○	○	○	●	
	DN 40 (pipe dimension 41.0 x 1.5)	○	○	●	●	
	DN 50 (pipe dimension 53.0 x 1.5)	○	○	●	●	
	DN 65 (pipe dimension 70.0 x 2.0)	○	●	●	●	
	DN 80 (pipe dimension 85.0 x 2.0)	●	●	●	●	
	DN 100 (pipe dimension 104.0 x 2.0)	●	●	●	●	
Pipes per DIN 11866 row B or DIN ISO 1127 row 1	DN 13.5 (pipe dimension 13.5 x 1.6)	○	○	○	○	
	DN 17.2 (pipe dimension 17.2 x 1.6)	○	○	○	○	
	DN 21.3 (pipe dimension 21.3 x 1.6)	○	○	○	○	
	DN 26.9 (pipe dimension 26.9 x 1.6)	○	○	○	●	
	DN 33.7 (pipe dimension 33.7 x 2.0)	○	○	○	●	
	DN 42.4 (pipe dimension 42.4 x 2.0)	○	○	●	●	
	DN 48.3 (pipe dimension 48.3 x 2.0)	○	○	●	●	
	DN 60.3 (pipe dimension 60.3 x 2.0)	○	●	●	●	
	DN 76.1 (pipe dimension 76.1 x 2.0)	○	●	●	●	
	DN 88.9 (pipe dimension 88.9 x 2.3)	●	●	●	●	
Pipes per DIN 11866 row C or ASME BPE	1/2" (pipe dimension 12.7 x 1.65)	○	○	○	○	
	3/4" (pipe dimension 19.05 x 1.65)	○	○	○	○	
	1" (pipe dimension 25.4 x 1.65)	○	○	○	●	
	1 1/2" (pipe dimension 38.1 x 1.65)	○	○	●	●	
	2" (pipe dimension 50.8 x 1.65)	○	○	●	●	
	2 1/2" (pipe dimension 63.5 x 1.65)	○	●	●	●	
	3" (pipe dimension 76.2 x 1.65)	●	●	●	●	
	4" (pipe dimension 101.6 x 2.11)	●	●	●	●	





	Pressure transmitter model SA-11	Pressure switch model PSA-31	Process transmitter model UPT-21	Process transmitter model IPT-11	In-line diaphragm seal model 981.51 with electrical process transmitter	
					from 0 … 400 mbar	from 0 … 1 bar
	○	○	○	○	○	○
	○	○	○	○	○	○
	○	○	●	●	○	○
	○	○	●	●	○	●
	●	●	●	●	○	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	○	○	○	○	○	○
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	○	○	○	○	○	○
	○	○	●	●	○	●
	○	●	●	●	○	●
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	●	●	●	●	●	●
	○	○	○	○	○	○
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	○	○	●	●	○	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●

Mechanical pressure measuring instruments

Pipe standard	Process connection	Diaphragm seal model 990.51 with pressure gauge				
		from 0 … 0.6 bar	from 0 … 1 bar	from 0 … 2 bar	from 0 … 4 bar	
Pipes per DIN 11866 row A or DIN 11850 row 2	DN 10 (pipe dimension 13.0 x 1.5)	○	○	○	○	
	DN 15 (pipe dimension 19.0 x 1.5)	○	○	○	○	
	DN 20 (pipe dimension 23.0 x 1.5)	○	○	○	○	
	DN 25 (pipe dimension 29.0 x 1.5)	○	○	○	●	
	DN 32 (pipe dimension 35.0 x 1.5)	○	○	○	●	
	DN 40 (pipe dimension 41.0 x 1.5)	○	○	●	●	
	DN 50 (pipe dimension 53.0 x 1.5)	○	○	●	●	
	DN 65 (pipe dimension 70.0 x 2.0)	○	●	●	●	
	DN 80 (pipe dimension 85.0 x 2.0)	●	●	●	●	
	DN 100 (pipe dimension 104.0 x 2.0)	●	●	●	●	
Pipes per DIN 11866 row B or DIN ISO 1127 row 1	DN 13.5 (pipe dimension 13.5 x 1.6)	○	○	○	○	
	DN 17.2 (pipe dimension 17.2 x 1.6)	○	○	○	○	
	DN 21.3 (pipe dimension 21.3 x 1.6)	○	○	○	○	
	DN 26.9 (pipe dimension 26.9 x 1.6)	○	○	○	●	
	DN 33.7 (pipe dimension 33.7 x 2.0)	○	○	○	●	
	DN 42.4 (pipe dimension 42.4 x 2.0)	○	○	●	●	
	DN 48.3 (pipe dimension 48.3 x 2.0)	○	○	●	●	
	DN 60.3 (pipe dimension 60.3 x 2.0)	○	●	●	●	
	DN 76.1 (pipe dimension 76.1 x 2.0)	○	●	●	●	
	DN 88.9 (pipe dimension 88.9 x 2.3)	●	●	●	●	
Pipes per DIN 11866 row C or ASME BPE 1997	1/2" (pipe dimension 12.7 x 1.65)	○	○	○	○	
	3/4" (pipe dimension 19.05 x 1.65)	○	○	○	○	
	1" (pipe dimension 25.4 x 1.65)	○	○	○	●	
	1 1/2" (pipe dimension 38.1 x 1.65)	○	○	●	●	
	2" (pipe dimension 50.8 x 1.65)	○	○	●	●	
	2 1/2" (pipe dimension 63.5 x 1.65)	○	●	●	●	
	3" (pipe dimension 76.2 x 1.65)	●	●	●	●	
	4" (pipe dimension 101.6 x 2.11)	●	●	●	●	

● possible ○ not possible

	In-line diaphragm seal model 981.51 with pressure gauge			**Flush diaphragm pressure gauge model PG43SA-S**	**Pressure gauge model PG43SA-D** with integrated diaphragm monitoring	**Compact flush diaphragm pressure gauge model PG43SA-C**
	from 0 … 0.6 bar	from 0 … 1 bar	from 0 … 4 bar			
	○	○	○	○	○	○
	○	○	○	○	○	○
	○	○	○	○	○	○
	○	○	●	○	○	● *
	○	○	●	○	○	● *
	○	●	●	●	●	● *
	○	●	●	●	●	● **
	○	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	○	○	○	○	○	○
	○	○	○	○	○	○
	○	○	○	○	○	○
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	○	●	●	●	●	●
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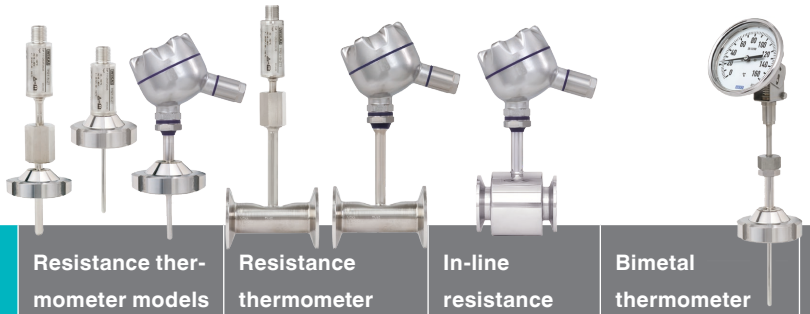
	●	●	●	●	●	●

*) Not possible for DIN 11864-1 form A threaded pipe connection with liner and grooved union nut, and not possible for DIN 11864-2 flange connection

**) Not possible for DIN 11864-2 flange connection

Temperature and level measuring instruments



Pipe standard	Process connection	Resistance thermometer models TR21-A, TR21-C and TR22-A with thermowell TW22	Resistance thermometer models TR21-B and TR22-B with thermowell TW61	In-line resistance thermometer model TR25	Bimetal thermometer models 53, 54 and 55 with thermowell TW22
Pipes per DIN 11866 row A or DIN 11850 row 2	DN 10 (pipe dimension 13.0 x 1.5)	●	●	●	○
	DN 15 (pipe dimension 19.0 x 1.5)	●	●	●	○
	DN 20 (pipe dimension 23.0 x 1.5)	●	●	●	○
	DN 25 (pipe dimension 29.0 x 1.5)	●	●	●	○
	DN 32 (pipe dimension 35.0 x 1.5)	●	●	●	○
	DN 40 (pipe dimension 41.0 x 1.5)	●	●	●	●
	DN 50 (pipe dimension 53.0 x 1.5)	●	●	●	●
	DN 65 (pipe dimension 70.0 x 2.0)	●	●	●	●
	DN 80 (pipe dimension 85.0 x 2.0)	●	●	●	●
	DN 100 (pipe dimension 104.0 x 2.0)	●	●	●	●
Pipes per DIN 11866 row B or DIN ISO 1127 row 1	DN 13.5 (pipe dimension 13.5 x 1.6)	●	●	●	○
	DN 17.2 (pipe dimension 17.2 x 1.6)	●	●	●	○
	DN 21.3 (pipe dimension 21.3 x 1.6)	●	●	●	○
	DN 26.9 (pipe dimension 26.9 x 1.6)	●	●	●	○
	DN 33.7 (pipe dimension 33.7 x 2.0)	●	●	●	●
	DN 42.4 (pipe dimension 42.4 x 2.0)	●	●	●	●
	DN 48.3 (pipe dimension 48.3 x 2.0)	●	●	●	●
	DN 60.3 (pipe dimension 60.3 x 2.0)	●	●	●	●
	DN 76.1 (pipe dimension 76.1 x 2.0)	●	●	●	●
	DN 88.9 (pipe dimension 88.9 x 2.3)	●	●	●	●
Pipes per DIN 11866 row C or ASME BPE 1997	1/2" (pipe dimension 12.7 x 1.65)	●	●	●	○
	3/4" (pipe dimension 19.05 x 1.65)	●	●	●	○
	1" (pipe dimension 25.4 x 1.65)	●	●	●	○
	1 1/2" (pipe dimension 38.1 x 1.65)	●	●	●	●
	2" (pipe dimension 50.8 x 1.65)	●	●	●	●
	2 1/2" (pipe dimension 63.5 x 1.65)	●	●	●	●
	3" (pipe dimension 76.2 x 1.65)	●	●	●	●
	4" (pipe dimension 101.6 x 2.11)	●	●	●	●

● possible ○ not possible





	Gas-actuated thermometer model 73 with thermowell TW22	**Gas-actuated thermometer model 74**	**Level sensor model FLM-H** magnetostrictive measuring principle	**Level sensor model FLR-H** with reed-chain technology	**Float switch model FLS-H**
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
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WIKA worldwide

Europe

Austria
WIKA Messgerätevertrieb
Ursula Wiegand GmbH & Co. KG
Tel. +43 1 8691631
info@wika.at / www.wika.at

Benelux
WIKA Benelux
Tel. +31 475 535500
info@wika.nl / www.wika.nl

Bulgaria
WIKA Bulgaria EOOD
Tel. +359 2 82138-10
info@wika.bg / www.wika.bg

Croatia
WIKA Croatia d.o.o.
Tel. +385 1 6531-034
info@wika.hr / www.wika.hr

Denmark
WIKA Danmark A/S
Tel. +45 4581 9600
info@wika.as / www.wika.as

Finland
WIKA Finland Oy
Tel. +358 9 682492-0
info@wika.fi / www.wika.fi

France
WIKA Instruments s.a.r.l.
Tel. +33 1 787049-46
info@wika.fr / www.wika.fr

Germany
WIKA Alexander Wiegand SE & Co. KG
Tel. +49 9372 132-0
info@wika.de / www.wika.de

Italy
WIKA Italia S.r.l. & C. S.a.s.
Tel. +39 02 93861-1
info@wika.it / www.wika.it

Poland
WIKA Polska spółka z ograniczoną
odpowiedzialnością sp. k.
Tel. +48 54 230110-0
info@wikapolska.pl
www.wikapolska.pl

Romania
WIKA Instruments Romania S.R.L.
Tel. +40 21 4048327
info@wika.ro / www.wika.ro

Russia
AO "WIKA MERA"
Tel. +7 495-648018-0
info@wika.ru / www.wika.ru

Serbia
WIKA Merna Tehnika d.o.o.
Tel. +381 11 2763722
info@wika.rs / www.wika.rs

Spain
Instrumentos WIKA S.A.U.
Tel. +34 933 9386-30
info@wika.es / www.wika.es

Switzerland
WIKA Schweiz AG
Tel. +41 41 91972-72
info@wika.ch / www.wika.ch

Türkiye
WIKA Instruments
Endüstriyel Ölçüm Cihazları Tic. Ltd. Şti.
Tel. +90 216 41590-66
info@wika.com.tr
www.wika.com.tr

Ukraine
TOV WIKA Prylad
Tel. +38 044 496 83 80
info@wika.ua / www.wika.ua

United Kingdom
WIKA Instruments Ltd
Tel. +44 1737 644-008
info@wika.co.uk / www.wika.co.uk

North America

Canada
WIKA Instruments Ltd.
Tel. +1 780 4637035
info@wika.ca / www.wika.ca

USA
WIKA Instrument, LP
Tel. +1 770 5138200
info@wika.com / www.wika.us

Gayesco-WIKA USA, LP
Tel. +1 713 4750022
info@wikahouston.com
www.wika.us

Mensor Corporation
Tel. +1 512 3964200
sales@mensor.com
www.mensor.com

Latin America

Argentina
WIKA Argentina S.A.
Tel. +54 11 5442 0000
ventas@wika.com.ar
www.wika.com.ar

Brazil
WIKA do Brasil Ind. e Com. Ltda.
Tel. +55 15 3459-9700
vendas@wika.com.br
www.wika.com.br

Chile
WIKA Chile S.p.A.
Tel. +56 9 4279 0308
info@wika.cl / www.wika.cl

Colombia
Instrumentos WIKA Colombia S.A.S.
Tel. +57 601 7021347
info@wika.co / www.wika.co

Mexico
Instrumentos WIKA Mexico S.A. de C.V.
Tel. +52 55 50205300
ventas@wika.com / www.wika.mx

Asia

China
WIKA Instrumentation Suzhou Co., Ltd.
Tel. +86 512 6878 8000
info@wika.cn / www.wika.com.cn

India
WIKA Instruments India Pvt. Ltd.
Tel. +1800-123-101010
info@wika.co.in / www.wika.co.in

Japan
WIKA Japan K. K.
Tel. +81 3 5439-6673
info@wika.co.jp / www.wika.co.jp

Kazakhstan
TOO WIKA Kazakhstan
Tel. +7 727 225 9444
info@wika.kz / www.wika.kz

Korea
WIKA Korea Ltd.
Tel. +82 2 869-0505
info@wika.co.kr / www.wika.co.kr

Malaysia
WIKA Instrumentation (M) Sdn. Bhd.
Tel. +60 3 5590 6666
info@wika.my / www.wika.my

Philippines
WIKA Instruments Philippines Inc.
Tel. +63 2 234-1270
info@wika.ph / www.wika.ph

Singapore
WIKA Instrumentation Pte. Ltd.
Tel. +65 6844 5506
info@wika.sg / www.wika.sg

Taiwan
WIKA Instrumentation Taiwan Ltd.
Tel. +886 3 420 6052
info@wika.tw / www.wika.tw

Thailand
WIKA Instrumentation Corporation
(Thailand) Co., Ltd.
Tel. +66 2 326 6876
info@wika.co.th / www.wika.co.th

Uzbekistan
WIKA Instrumentation FE LLC
Tel. +998 71 205 84 30
info@wika.uz / www.wika.uz

Africa/Middle East

Botswana
WIKA Instruments Botswana (Pty.) Ltd.
Tel. +267 3110013
info@wika.co.bw / wika.co.bw

Egypt
WIKA Near East Ltd.
Tel. +20 2 240 13130
info@wika.com.eg / www.wika.com.eg

Namibia
WIKA Instruments Namibia Pty Ltd.
Tel. +26 4 61238811
info@wika.com.na / www.wika.com.na

Nigeria
WIKA WEST AFRICA LIMITED
Tel. +234 17130019
info@wika.com.ng / www.wika.ng

Saudi Arabia
WIKA Saudi Arabia Llc
Tel. +966 53 555 0874
info@wika.sa / www.wika.sa

South Africa
WIKA Instruments Pty. Ltd.
Tel. +27 11 62100-00
sales@wika.co.za / www.wika.co.za

United Arab Emirates
WIKA Middle East FZE
Tel. +971 4 883-9090
info@wika.ae / www.wika.ae

Australia

Australia
WIKA Australia Pty. Ltd.
Tel. +61 2 88455222
sales@wika.com.au / www.wika.com.au

New Zealand
WIKA Instruments Limited
Tel. +64 9 8479020
info@wika.co.nz / www.wika.co.nz

WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30 | 63911 Klingenberg | Germany
Tel. +49 9372 132-0 | info@wika.de | www.wika.de

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www.wika.com