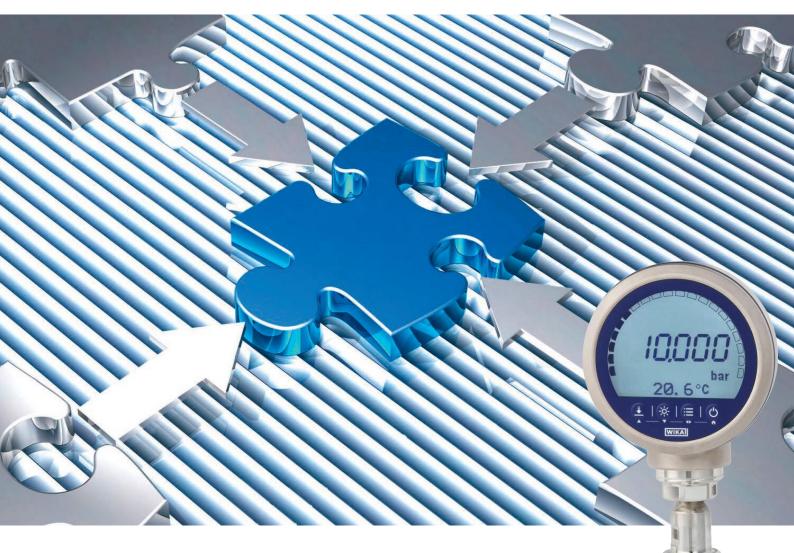
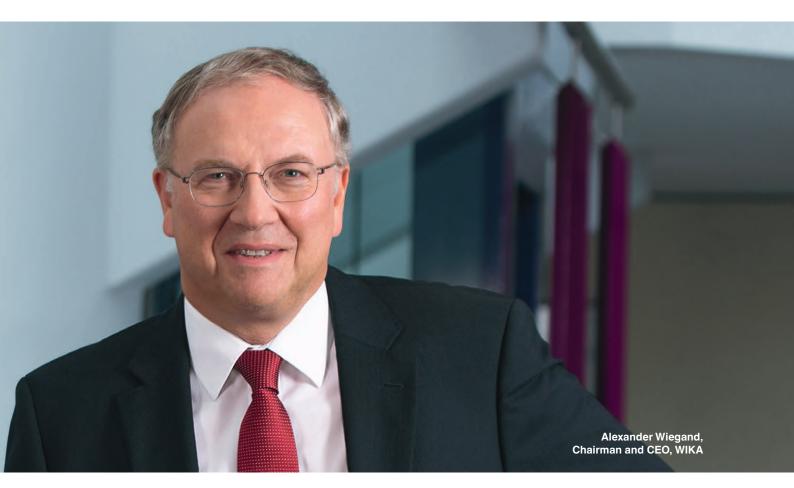
Diaphragm seals

Diaphragm seals – combinations and accessories







About us

As a family-run business acting globally, with 10,200 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

Technical information	4
Diaphragm seal models	
 With flange connection 	8
 With threaded connection 	11
 With hygienic connection 	12
Engineered solutions	17
Service	18
Accessories	19

Diaphragm seals

By using diaphragm seals, pressure measuring instruments can be adapted to even the most difficult of conditions within process industries. A diaphragm made of the appropriate material separates the medium from the measuring instrument.



Operating principle

Diaphragm seals are mounted to existing connections, which are welded to a pipeline, a process reactor or a tank.

The internal space between the diaphragm and the pressure measuring instrument is completely filled with a system fill fluid. The process pressure is transmitted by the elastic diaphragm into the fluid and from there to the measuring instrument. A diaphragm seal and its components are perfectly matched to each other to ensure a reliable measurement.

Diaphragm seals offer the advantage that they can be easily dismounted, e.g. for cleaning or calibration purposes.

Pressure measuring instrument

- Pressure gauge
- Process transmitter
- Pressure switch

System fill fluid

Mounting type

- Direct mounting
- Capillary
- Heat sink

Diaphragm

Diaphragm seal

- Upper body of diaphragm seal
- Lower body of diaphragm seal

Process connection

- Threaded connection
- Flange connection
- Hygienic connection

Combinations with measuring instruments

WIKA diaphragm seals can be connected to almost all pressure gauges, process transmitters, pressure switches or pressure sensors. Mounting may be made via a direct connection, a cooling element or a capillary.

The combined systems can withstand a pressure of 10 mbar up to 3,600 bar at extreme temperatures (-130 ... +400 °C) and with a wide variety of media, thus enabling accurate pressure measurements under extreme conditions.

The optimal diaphragm seal designs, materials, system fill fluids and accessories are available for each application. The configuration of the combination of pressure measuring instruments and diaphragm seals depends, among other things, on the application conditions in which the diaphragm seal system must work.

For the diaphragm seals, test certificates and approvals for special applications can be supplied.



The realisation of your individual solution



Create your perfect diaphragm seal solution together with us. From the wide variety of realisable combinations, our technology experts will find a proven solution for your application. As required, we will adapt our systems to your individual application.

Talk to us - we are happy to provide you with advice!

System fill fluids



Designation	Identifica- tion num- ber	Solidi- fication point	Boiling/ degradation point	Density at 25 °C	Kin. Viscosity at 25 °C	Comments
	KN	°C	°C [°F]	°C [°F]	cSt	
Silicone oil	2	-45	+300	0.96	54.5	Universal application
Glycerine	7	-35	+240	1.26	759.6	FDA 21 CFR 182.1320
Silicone oil	17	-90	+200	0.92	4.4	For low temperatures
Halocarbon	21	-60	+175	1.89	10.6	Oxygen ¹⁾ and chlorine
Methylcyclopentane	30	-130	+60	0.74	0.7	For very low temperatures
High-temperature silicone oil	32	-25	+400	1.06	47.1	For high temperatures
Neobee [®] M-20	59	-35	+260	0.92	10.0	FDA 21 CFR 172.856, 21 CFR 174.5
DI water	64	+4	+85	1.00	0.9	For ultrapure media
Silicone oil	68	-75	+250	0.93	10.3	
DI water/propanol mixture	75	-30	+60	0.92	3.6	For ultrapure media
Medicinal white mineral oil	92	-15	+260	0.85	45.3	FDA 21 CFR 172.878, 21 CFR 178.3620(a); USP, EP, JP

Other system fill fluids on request

Note:

- The stated lower temperature limit is a purely physical characteristic of the system fill fluid. The resulting response time has to be calculated and evaluated separately.
- The upper temperature limit for a diaphragm seal system is further restricted by the operating pressure and the diaphragm. To determine the upper temperature limit for the individual diaphragm seal system, a calculation is required.

¹⁾ For oxygen applications the following values per BAM test (Federal Institute for Materials Research and Testing) apply:

Maximum temperature	Maximum oxygen pressure
to 60 °C	50 bar
> 60 °C to 100 °C	30 bar
> 100 °C to 175 °C	25 bar

Materials, coatings

Special materials

The diaphragm provides for the separation from the medium. The pressure is transmitted to the measuring instrument via the system fill fluid which is inside the diaphragm seal system.

UNS)
R05200
N10276
106022
106600
108825
106625
104400
102200
N02201
R50400
R52400
531603
531603
108904
632100
\$31635
\$30403
631050
\$17400
531803
632750
R58120

Coatings

Stainless steel with ECTFE

Stainless steel with PFA (FDA; 21 CFR 177.1550 and 21 CFR 177.2440) Stainless steel with antistatic PFA (suitable for Ex applications) Stainless steel with gold plating, various coating thicknesses: ~6, 25, 40 μm Stainless steel with gold-rhodium (gold ~4 μm, rhodium ~0.1 ... ~0.2 μm) Stainless steel with Wikaramic[®]

Other materials and coatings on request



The standard material for diaphragm seals is stainless steel 316L. For the wetted parts, a wide range of steels, special materials and coatings are available for almost all diaphragm seal designs.

With flange connection

The combinations of diaphragm seals with flange connection can be used for processes with aggressive, adhesive, corrosive, highly viscous, environmentally hazardous or toxic media. With its connection dimensions, the flange-type diaphragm seal is suitable for all currently used standard flanges.

Another modification of this model is the diaphragm seal with extended diaphragm, which, among other things, is used at thick and/or insulated process lines or vessel walls. Cell-type diaphragm seals are used with a blind flange at the process.

Nominal sizes in DN 15 ... 125 and DN ½" ... 5". Standards in EN, ASME (former ANSI), GOST, API and JIS

Internal diaphragm

990.12		990.16		990.45	
Threaded de	esign	High-pressu	re version	High-temperature version	
Application	General applications in the process industry; for small flange connections (< DN 25/1") and pressures > 40 bar	Application	Process industry; for small flange connections (≤ DN 25/1") and pressures ≥ 400 bar	Application	Process industry with particularly high medium temperatures from 360 °C [680 °F] to a maximum of 450 °C [842 °F]
PN	10 250 bar	PN Data sheet	400 (class 2500) DS 99.08	PN	40 bar (class 400 600)
Data sheet	(class 150 1500) DS 99.31			Data sheet	DS 99.45
990.26	-	990.41			
Internal diap	bhragm	Large worki	ng volume, threaded design		

For mounting to pressure measuring instruments for differential pressure or for low

10 ... 100 bar (class 150 ... 300)

pressures.

DS 99.32

Application

Data sheet

PN

Application	Process industry; for small flange connections (≤ DN 25/1")
PN	10 40 bar (class 150 300)
Data sheet	DS 99.26

Flush diaphragm

990.28		990.29		990.35	
Cell-type		Flange-type	with extended diaphragm	Cell-type with	n extended diaphragm
Application	Process and petrochemical industries with high measuring requirements	Application	Process and petrochemical industries, particularly for thick or insulated vessel walls	Application	Process and petrochemical industries, particularly for thick or insulated vessel walls
PN	10 100 (400) bar (class 150 2500)	PN	10 100 (400) bar (class 150 2500)	PN	10 100 (400) bar (class 150 600)
Data sheet	DS 99.28	Data sheet	DS 99.29	Data sheet	DS 99.30

990.27

Flush diaphragm



Application	Process and petrochemical industries with high measuring requirements
PN	10 250 (400) bar (class 150 2500)
Data sheet	DS 99.27

990.23

With rotatable retainer flange



Application	For use in the pulp and paper industry
PN	40 bar (class 400 / 600)
Data sheet	DS 99.34

With flange connection

By using welding flanges for the connection to the process, a compact assembly can be realised at the measuring point with block flanges or saddle flanges. In addition, stress from vibration, potential leakage points and installation and maintenance costs are reduced. The measuring instrument is in a vertical position. Depending on the pressure rating, the fixing is made using a different number of screws.

The process connection is realised directly at the flange.

Flush diaphragm for installation via block or saddle flange



In-line diaphragm seals

981.10		981.27	
Cell-type		Flange-type	3
Application	For direct, permanent instal- lation in pipelines; for flowing media; for measuring points free of dead space	Application	For direct, permanent instal- lation in pipelines; for flowing media; for measuring points free of dead space
PN max.	400 bar (class 150 2500)	PN max.	16 or 40 bar (class 150 300)
Data sheet	DS 98.28	Data sheet	DS 98.27

With threaded connection

The combinations of diaphragm seals with threaded connection can be used for processes with aggressive, corrosive, environmentally hazardous or toxic media. The diaphragm seals are available with female or male thread in their basic design. The wide variety of available process connections enables many different adaptations without any problems.

Process connections with female or male threads in G $^{1\!\!/}_{2}$... 1 $^{1\!\!/}_{2}$ and $^{1\!\!/}_{4}$... 1 $^{1\!\!/}_{2}$ NPT.



990.34

Welded design



Application	Machine-building, plant-con- struction and process-industry applications with high require- ments
PN	160, 400, 600 or 1,000 bar
Data sheet	DS 99.04

990.40

F

Large working volume, threaded design



Application	For mounting to pressure measuring instruments for differential pressure or for low
PN max.	pressures. 40 bar
Data sheet	DS 99.06

With hygienic connection

These combinations of diaphragm seals with pressure measuring instruments in hygienic design can be used for processes with gases, compressed air or vapour and also with liquid, pasty, powdery and crystallising media.

The diaphragm seals resist the temperatures that occur and meet the requirements for sterile connections.

SIP and CIP criteria, which are an essential requirement for sanitary applications, are met by using WIKA diaphragm seals.

These acronyms stand for the sterilisation and cleaning of the wetted parts in the process.

The combination of pressure measuring instruments with flush diaphragm seals or in-line diaphragm seals meets the stringent demands made on hygienic instrumentation and is suitable for even the most difficult measuring requirements.

990.22, 990.52, 990.53

Clamp connection A Process Clamp connection per ASME connection BPE Clamp connection per DIN 32676 Clamp connection per ISO 2852 PN max. ■ 40 bar (DN 20 ... 50) 25 bar (from DN 65) Data sheet DS 99.41







Threaded connections

990.18 Milk thread f	fitting per DIN 11851	990.19 Threaded co	onnection SMS standard	990.20 Threaded cor	nnection IDF standard
		Â			
Process connection	Grooved union nut/threaded coupling	Process connection	Grooved union nut/threaded coupling	Process connection	Thread with grooved union nut
PN max.	40 or 25 bar	PN max.	40 or 25 bar	PN max.	40 or 25 bar
Data sheet	DS 99.40	Data sheet	DS 99.40	Data sheet	DS 99.40

Homogenisers

990.21

Threaded connection APV-RJT standard

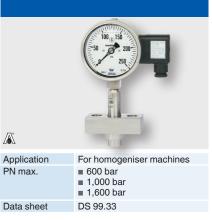


Process	Thread with grooved union nut
connection	
PN max.	40 or 25 bar

PN max.	40 or 25 bar
Data sheet	DS 99.40

990.30

For homogenisers



The model 990.30 mechanical pressure measuring instrument has been specifically developed for homogenising processes, where there are extremely dynamic pressure loads.

Complex structural features allow pressures of up to 2,500 bar and ensure a long service life.

With hygienic connection

Manufacturer-specific connections

990.60

NEUMO BioControl®



Process	For installation into the NEUMO	
connection	BioControl [®] system	
PN max.	16 bar (size 50 80)	
	■ 70 bar (size 25)	
Data sheet	DS 99.55	

910.60

NEUMO BioControl® housing



connection PN max. 16 bar Data sheet AC 09.14



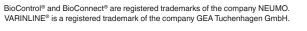


NEUMO BioConnect® connection

 Process connection
 NEUMO BioConnect® thread or flange

 PN max.
 16 bar (thread) 70 bar (flange)

 Data sheet
 DS 99.50



The in-line diaphragm seal is perfectly suited for use with flowing media. With the seal being completely integrated into the process line, measurements do not cause any disturbing turbulences, corners, dead spaces or other obstructions in the flow direction. The in-line diaphragm seal is clamped directly into the pipeline. With in-line diaphragm seals with their perfectly circular cylindrical form, the medium flows through unhindered and effects the self-cleaning of the measuring chamber. Different nominal widths allow the in-line diaphragm seals to be adapted to any pipeline cross-section.

In-line diaphragm seals

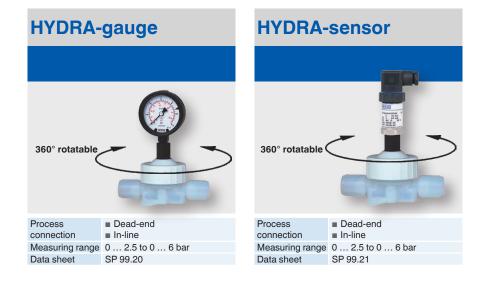
Milk thread fitting DIN 11851 TRI-CLAMP® Image: Connection Process connection PN max. Thread (DN 20 40) = 25 bar (from DN 50) Process Connection PN max. = 40 bar (DN 20 40) = 25 bar (from DN 50) Process Connection PN max. = 40 bar (DN 20 40) = 25 bar (from DN 50)	981.18		981.22	
Process connectionThreadProcess connectionTRI-CLAMP®, clamp DIN 32676, ISO 2852PN max.= 40 bar (DN 20 40) = 25 bar (from DN 50)PN max.= 40 bar (DN 20 40) = 25 bar (from DN 50)	Milk thread fitting DIN 11851		TRI-CLAMP®	
connection connection 32676, ISO 2852 PN max. = 40 bar (DN 20 40) = 25 bar (from DN 50) = 40 bar (DN 20 40) = 25 bar (from DN 50)	▲ 100 million			
■ 25 bar (from DN 50) ■ 25 bar (from DN 50)		Thread		
Data shast DC 09 40	PN max.		PN max.	
Data sneet DS 98.52	Data sheet	DS 98.40	Data sheet	DS 98.52

981.50		981.51	
NEUMO BioConnect®		Aseptic connection	
Process connection PN max. Data sheet	NEUMO BioCon- nect [®] thread or flange ■ 16 bar (thread) ■ 70 bar (flange) DS 98.50	Process connection	 DIN 11864-1 threaded connection DIN 11864-2 flange DIN 11864-3 clamp connec- tion
		PN max. Data sheet	16 40 bar DS 98.51
		Data Shoot	20 00.01

HYDRA-line diaphragm seal systems

This product family has been developed in co-operation with well-known customers in the semiconductor industry. The complete product concept has been adapted to the special requirements of the process equipment and UHP chemicals distribution system sectors. The patented HYDRA doublediaphragm system enables a safe and reliable separation of the pressure sensor from the process medium. Simultaneously diffusing process media such as HF or HCI vapours are given off to the environment. Any falsification of the measuring result or the destruction of the sensor element is avoided.

All wetted parts are made of PFA or PTFE UHP grade.



Diaphragm monitoring

WIKA's patented double-diaphragm design is the solution for critical processes where neither the medium should find its way into the environment, nor should the system fill fluid find its way into the product.

In the event of a diaphragm rupture, a second diaphragm in the diaphragm seal system ensures the reliable separation of the environment and the process. The measuring task can still be performed. Time to act - without any risk for the process.

DMS27

Diaphragm monitoring system with flange connection





PATENTED

Process

Material

connection

Application

Data sheet

US 2018180505, DE 102016015447. CN 108240885

threaded connection

DMS34

Diaphragm monitoring system with

Threaded connection

Process industry

Monel

DS 95.18

DMS-FP

Diaphragm monitoring system with hygienic connection

PATENTED US 2018180505, DE 102016015447 CN 108240885

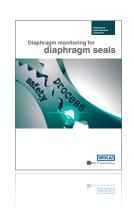


Process connection	Clamp connection per DIN 32676
Application	Sanitary applications
Material	Stainless steel 1.4435 (31 UNS S31603
Data sheet	DS 95.20

6L),

Process connections

DMSU21SA		
Diaphragm monitoring system with HART [®] protocol		
US 10794787, NL 2019251		
Process connection	 Clamp connection per DIN 32676 or ISO 2852 Aseptic threaded pipe connection per DIN 11864-1 Aseptic flange connection per DIN 11864-2 Aseptic clamp connection per DIN 11864-3 Ingold connection with union nut VARIVENT[®] 	
Application	Pharmaceutical industry and aseptic food processing	
Material	Stainless steel 1.4435 (316L) UNS S1603	
Data sheet	DS 95.11	



Extensive information can be found in the flyer "Diaphragm monitoring for diaphragm seals" at www.wika.de.

Service for diaphragm seal systems

Has your system failed unexpectedly and a smooth process flow is no longer possible?

Send us your instrument and we will restore its functionality in line with your wishes.

Through our globally established service centres we can support you at any location and guarantee short delivery times.

Extensive information can be found in our flyer "Replacement service for diaphragm seal systems with process transmitters" at www.wika.de.



Process transmitter model DPT-10 with two diaphragm seals

Order catalogue "Diaphragm seal systems with short delivery times"

These combinations of diaphragm seals with pressure measuring instruments particularly stand out for their very fast availability.

Universally applicable diaphragm seal systems are suitable for demanding applications in diverse industries.



Extensive information can be found in our brochure "Diaphragm seal systems with short delivery times" at www.wika.de.

Accessories

- Flushing rings
- Block and saddle flanges
- Plug screws
- Valves
- Instrument mounting brackets and adapters
- Union nuts
- Transition pieces
- Connection adapters, e.g. VARINLINE[®], clamp, aseptic, welding sleeves, weld stubs
- Indicator for panel mounting

Certificates and approvals

Given the increasing demands in terms of quality and product safety of industrial products, certified measuring instruments for pressure contribute considerably to the safety of the production processes. Therefore we offer a wide range of approvals and certificates.





Tests

- PMI test
- Roughness measurement
- Coating thickness measurement
- Dye penetrant test
- Surface roughness
- Leak test
- Pressure test

Approvals

- Pressure equipment directive
- EHEDG
- 3-AFDA
- NACE
- BAM
- EAC
- GOST
- ATEX

Certificates

- Ingress protection
- Material proof
- RoHS
- Oil- and grease-free
- Accuracies of the span
- Switching accuracy
- Indication accuracy
- Food contact materials



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.I. & C. S.a.s. Tel. +39 02 93861-1 info@wika.it www.wika.it

Poland

WIKA Polska spółka z ogranizoną 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.com

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. +91 20 66293-200 sales@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

Africa / Middle East

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.ng@wika.com www.wika.com.eg

Saudi Arabia

WIKA Saudi Arabia Llc Tel. +966 53 555 0874 mohammed.khaiz@wika.com 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

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

