



Hydrogen

Proven solutions  
for new challenges



Smart in sensing



Alexander Wiegand  
Chairman and CEO, WIKA

## About us

As a family-run business acting globally, with over 11,200 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.

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## WIKA – your partner for hydrogen applications

Hydrogen applications have been established in the process industry for decades, with demand primarily being driven by refineries, methanol & ammonia production and also in direct reduction in iron and steel production. Conventional hydrogen production typically uses natural gas or coal as feedstock. It is expected, in the future, that hydrogen will have to play an important role in decarbonising the world's economy – if produced from renewable energy sources e.g. solar and wind energy.

Hydrogen processing, production, distribution and storage exposes the equipment used to extreme conditions, with temperatures as low as -253 °C, pressures of 700 bar and beyond and hydrogen migration-related impacts on metals and materials

### Hydrogen needs know-how

WIKA has long been a partner to the hydrogen industry for instrumentation related solutions, with a proven track record, and is geared up to resolve any new challenges ahead. Whether the hydrogen is produced by conventional methods or based on renewable energies – we provide solutions for the entire value chain of the hydrogen industry.



# Requirements

## Embrittlement – Safely prevent mechanical failure

Permanent contact to hydrogen may lead to so-called hydrogen embrittlement. The hydrogen can penetrate the material structures leading to a deterioration of the mechanical properties and eventually mechanical failure.

### Special alloys lengthen the service life

To avoid this effect, appropriate materials in direct contact with hydrogen have to be chosen. As a standard austenitic steels like 316L or 1.4571 are preferred. But also specific alloys like Alloy C276, Alloy 718 or 2.4711 (Elgiloy®) are well-suited for hydrogen applications. Typical for the fracture pattern of high-strength steels in the event of hydrogen embrittlement are the intergranular crack paths with gaping grain boundaries and crow's feet = microductility (short, mostly branched ridges as an indication of ductile deformation lines on a microscale) on the grain surfaces.

### Our solution

**WIKA materials used in hydrogen applications:**  
**Mechanical pressure gauges, mechanical switches:**  
**Pressure port: 316L; Probe element/movement: 316L**  
**Electronic pressure sensor: Pressure port: 316L or 1.4571; Sensor element: 2.4711.**

## Permeation – With gold against the smallest ions

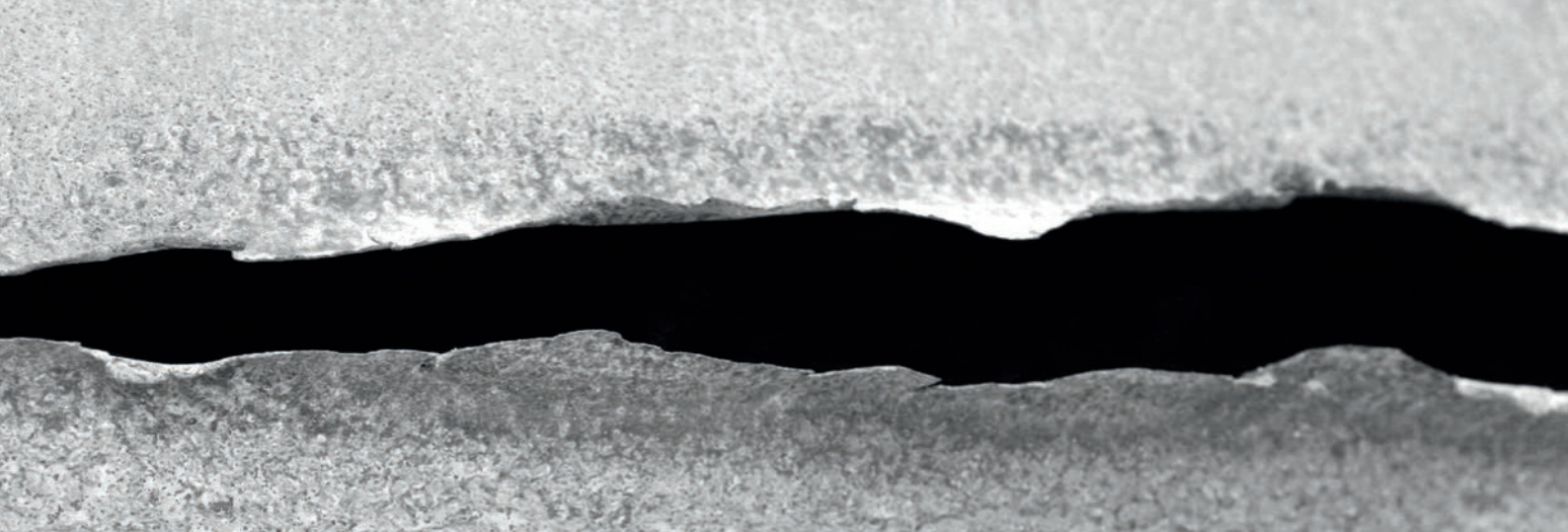
Hydrogen is the simplest element on the periodic table and its atomic radius is the smallest of the elements. However, hydrogen occurs naturally as the  $H_2$  molecule. When touching metal surfaces only relatively small energy is required to dissociate the hydrogen molecule into single atoms, and eventually into  $H^+$  ions. These ions can penetrate metal and resistance structures, which can lead to a signal drift of the sensor element over time. The higher the introduced energy, e.g. through higher process temperatures and higher pressures, the bigger this effect will be.

### Gold keeps the systems running

To avoid the permeation of hydrogen through metal structure and with this the signal drift of the sensor a gold plating can be used. It serves as a barrier to hydrogen with a significantly lower permeation rate than for example pure 316L.

### Our solution

**WIKA offers gold plating on flush sensor solutions like models E-11, IS-3 (flush version) or diaphragm seals.**



## Precision under extreme conditions

Depending on the physical state in which hydrogen is stored different extremes in handling the media have to be tackled. Hydrogen is stored in gaseous form at a pressure of up to 700 bar. Due to temperature effects and safety factors, pressure sensors need to be capable of measuring up to 1,050 bar in, for example, hydrogen fuelling stations. In liquid form the hydrogen has a temperature of -253 °C or below. Temperature measurement solutions have to be designed in such a way that they can also measure this temperature at a high accuracy while keeping the good insulation of the hydrogen tank.

### The measuring instrument must be able to do this

In contrast, the presence of hydrogen in high-temperature processes, such as partial oxidation, a conventional hydrogen production process, poses a particular challenge to the longevity of the thermocouples.

### Our solution

**WIKA offers electrical temperature measuring instruments in a special cryo design that can measure temperatures down to -258 °C, reliably and with repeatable accuracy. Pressure and temperature sensors also cover the requirements for pressures of up to 1,050 bar.**

**The use of monocrystalline sapphire glass in the TC84 sapphire-design thermocouple reduces the pathway of hydrogen at process temperatures of up to 1,700 °C and can thus avoid or delay premature sensor failure caused by hydrogen poisoning.**

## Prevent leaks

Hydrogen in connection with air will create an explosive atmosphere already starting at a content of 4 mole % of hydrogen in the air. An excessive leakage must therefore be avoided. In general, a big focus is put on ventilation.

### Metal seals preferred

For this reason metal seals often are the preferred solution in hydrogen applications. Also inside the measuring instrument the leakage rate must be avoided or at least reduced to a minimum.

### Our solution

**WIKA is providing pressure measuring instruments in a fully welded design, avoiding internal polymeric sealing. Additionally products for hydrogen applications undergo helium leak testing during production.**

# Hydrogen production

## Electrolysis

The green hydrogen value chain commonly starts with water electrolysis: A process where water molecules are being split into hydrogen and oxygen. The process is fuelled by renewable energy sourced from e.g. solar, wind or hydro power.

### Efficient and safe measurement solutions

- Alkaline electrolyzers utilising a potassium hydroxide solution as the electrolyte
- Proton exchange membrane (PEM) electrolyzers where a polymer electrolyte membrane represents the electrolyte
- “Solid Oxide Electrolyser cell” (SOEC) electrolyzers, a technology where steam is split electrochemically into hydrogen and water at temperatures reaching up to 850 °C

Each electrolyser concept poses its unique set of challenges in terms of process pressure, temperature and media. Our broad range of pressure, temperature, flow and level measurement solutions addresses these, thus ensuring efficient and safe electrolyser operation.



IPT-20



EMICOgauge



T32



FLC-UFL



BNA



## Conventional H<sub>2</sub> production

Conventional “grey” technologies for the production of hydrogen (H<sub>2</sub>) and syngas (H<sub>2</sub> & CO) supply by far the largest amount of hydrogen produced worldwide today:

In the steam-methane reforming process, XTRACTO-PAD® tubeskin thermocouples enable accurate temperature measurement of the reformer tubes. The use of monocrystalline sapphire glass in the TC84 sapphire-design thermocouple reduces the risk, in the high-temperature process of partial oxidation, of premature sensor failure caused by hydrogen poisoning.

To reduce their CO<sub>2</sub> footprint and become “blue”, additional downstream processes are added:

- Carbon Capture & Storage; for short: CCS
- Carbon Capture & Utilisation

Thus CO<sub>2</sub> is stored for later use and is prevented from being released into the atmosphere.

### All for a safe and efficient process

WIKA provides a big set of instrumentation solutions and installation & field verification services, meeting the requirements of these processes and helping to optimise efficiency.



# Storage and transport

Unless the production of the hydrogen is located at the point of usage it has to be stored and transported. Transportation is done by either gas grids or – more commonly – in various types and sizes of tanks. Pressure ranges for storage tanks range from 20 bar for liquefied tanks up to 700 – 1,000 bar for compressed gas vessels. Also liquefied hydrogen (LH<sub>2</sub>) is playing an increasingly important role due to its high energy density. Its temperature of -253 °C creates additional challenges.





## Refuelling stations

Hydrogen refuelling stations are the prerequisite to make mobility based on hydrogen possible. A hydrogen refuelling station typically consists of hydrogen supply with low-pressure storage in the range up to 250 bar, either in gaseous or liquid form, a compression area with medium- and high-pressure accumulator up to 900 bar and a cooling unit, since the hydrogen has to be cooled down to  $-40^{\circ}\text{C}$  before it is filled into the vehicle. During the refuelling process, the temperature and pressure must be monitored at several points. In addition, an approval for explosion protection is required.

### Fast response time, compact design and explosion protection

The WIKA TC90 temperature sensor offers the high pressure containment, fast response time and small design required in hydrogen dispensers.

## Compression

Compressors play a major role in the hydrogen value chain. They are the core part of any hydrogen refuelling station and are necessary to fill hydrogen tanks with the required pressure to increase the energy density. Compressor types like membrane compressors that avoid oil contamination of the hydrogen gas are typically favoured.

### Measuring and switching without pollution

At various points on a compressor temperature, pressure and level have to be monitored. Both continuous measurement and switching functions are used.

With the cryogenic thermometer, WIKA offers a specially designed and tested solution for measuring the temperature of liquid hydrogen. Depending on the physical state of the hydrogen (gaseous or cryogenic) various measurement solutions have to be used. WIKA can provide both solutions for gaseous and liquid hydrogen storage.



# Usage

## Stationary fuel cells

The number of applications with complex stationary fuel cell systems is constantly increasing. For example in the field of emergency back-up power for replacing diesel generators. But also as power and heating supply for public buildings or private homes many development projects are on the way – especially in combination with photovoltaics or windpower as local source of green energy. Excess hydrogen can be compressed and stored on-site for later usage.

### Safely monitor hydrogen, water and air circuits

In these plants, similar to electrolyzers, not all measuring instruments are in direct contact with hydrogen. For example, water or air circuits must be monitored and controlled.

## Mobile fuel cells

On the way to a mobility with reduced CO<sub>2</sub> footprint, hydrogen is considered a viable solution, especially for commercial vehicles like for example trucks, buses, municipal vehicles, forklifts or trains. The tank pressure in these vehicles is typically 350 bar with a trend towards the 700 bar standard that is used in passenger cars.

WIKA offers two instruments that are certified in accordance with EC79/2009 and thus provide proof of the sensor's compatibility with the medium hydrogen.

On 5 July 2022, regulation EC79/2009 was repealed by the EU with regulation EU2019/2144 and is therefore no longer in force, although existing EC79 certificates remain valid. According to regulation EU2019/2144, it is alternatively still possible to test components not covered in UN ECE R134 in accordance with the requirements of EC79/2009 and thus demonstrate suitability for use in hydrogen-powered vehicles.

### Despite the lack of regulation: WIKA maintains safety standards

As long as components such as pressure and temperature sensors are not defined in any new regulation, WIKA will follow this path described in EU2019/2144 and continue to carry out tests based on EC79/2009. This means that our customers can continue to rely on products that have been developed and qualified in accordance with sound engineering practice.



232.50



S-20



TR50



MH-3-HY





# Products

In general, when choosing a product, it is important to ensure that the correct version and thus the right materials are used. WIKA will be happy to advise you on specifying the relevant details.

Below is a selection from our extensive portfolio of instrumentation solutions for the hydrogen industry.

## Flow

### FLC-HHR-FP

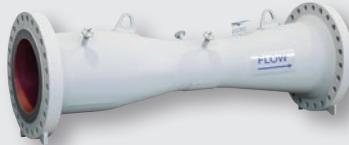
#### HHR FlowPak® flow meter



Pipe size	3 ... 48"
β and pipe length	0.40 ... 0.70
Special feature	No need for straight upstream and downstream pipes
Data sheet	FL 10.09

### FLC-VT-WS

#### Venturi tube, welded sheet



Pipe size	■ ≥ 14 in ■ 200 ... 1,200 mm
β	0.4 ... 0.7
Accuracy <sup>1)</sup>	Uncalibrated ±1.5 %
Data sheet	FL 10.04

<sup>1)</sup> The actual measuring deviation is specified during the engineering phase

### FLC-UFL

#### Ultrasonic flow meter



Pressure range	To 153 bar [2,250 psi]
Accuracy	Model FLC-UFL1: ■ 2 % (> 3 m/s) ■ 3 % (0.1 ... 3 m/s) Model FLC-UFL 2: ■ 1.5 % (> 3 m/s) ■ 2 % (0.1 ... 3 m/s)
Data sheet	FL 40.01

## Level

### BNA-S

#### Standard version



Chamber	■ Ø 60.3 x 2 mm ■ Ø 60.3 x 2.77 mm
Material	■ Stainless steel 1.4571/316Ti ■ 1.4401/1.4404 (316/316L)
Process connection	■ Flange DIN, ANSI, EN ■ Thread ■ Weld stub
Pressure	Max. 100 bar
Temperature	-196 ... +450 °C
Data sheet	LM 10.01

### BZG-S

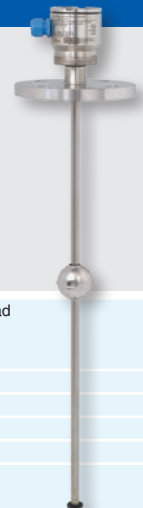
#### External chamber, standard version



Material	■ Stainless steel 1.4571 (316Ti) ■ Stainless steel 1.4401/1.4404 (316/316L)
Process connection	Flange ■ DIN EN 1092-1 DN 10 ... DN 100, PN 6 ... PN 63 ■ DIN DN 10 ... DN 100, PN 6 ... PN 64 ■ ANSI B 16.5 ½" ... 4", Class 150 ... 600
Pressure	64 bar
Temperature	-196 ... +450 °C
Data sheet	LM 11.01

### FLR-SA, FLR-SB

#### Stainless steel version



Process connection	■ Mounting thread ■ Flange DIN, ANSI, EN
Guide tube length	Max. 6,000 mm
Pressure	0 ... 100 bar
Temperature	-80 ... +200 °C
Density	≥ 400 kg/m³
Ingress protection	To IP66/IP68 per IEC/EN 60529
Data sheet	LM 20.02

# Temperature

## TR10-B

### For additional thermowell



Sensor element	1 x Pt100, 2 x Pt100
Measuring range	-196 ... +600 °C, -320 ... +1,112 °F
Connection method	2-, 3- and 4-wire
Measuring insert	MI cable
Data sheet	TE 60.02

## TR12-B

### Process resistance thermometer, for additional thermowell



Sensor element	1 x Pt100, 2 x Pt100
Measuring range	-196 ... +600 °C, -320 ... +1,112 °F
Connection method	2-, 3- and 4-wire
Measuring insert	MI cable
Option	Ex i, Ex d
Data sheet	TE 60.17

## TR50

### Surface resistance thermometer



Sensor element	1 x Pt100, 2 x Pt100
Measuring range	-196 ... +600 °C, -320 ... +1,112 °F
Connection method	2-, 3- and 4-wire
Process connection	Surface mounting
Data sheet	TE 60.50

## TC40

### Cable thermocouple



Sensor element	Types K, J, E, N or T
Measuring range	-40 ... +1,200 °C, -40 ... +2,192 °F
Measuring tip	Ungrounded or grounded
Cable	Silicone, PTFE/PFA, fibreglass
Data sheet	TE 65.40

## TC84

### Sapphire-design thermocouple



Sensor element	Types S, R, B
Measuring range	0 ... 1,700 °C, 32 ... 3,092 °F
Thermowell	Sapphire (monocrystalline)
Case	Highest safety thanks to 2-chamber system
Data sheet	TE 65.84

## TC90

### Hochdruck-Thermoelement



Sensor element	Types K, J or E
Measuring range	0 ... 350 °C, 32 ... 662 °F
Measuring tip	Ungrounded or grounded
Process connection	Various high-pressure connections
Data sheet	TE 65.90

## TC95

### Multipoint thermocouple in band design



Sensor element	Types K, J, E, N or T
Measuring range	0 ... 1,200 °C, 32 ... 2,192 °F
Measuring tip	Ungrounded or grounded
Process connection	Various process connections
Data sheet	TE 70.01

## T32

### HART® temperature transmitter



Input	Resistance thermometers, thermocouples, potentiometers
Accuracy	< 0.1 %
Output	4 ... 20 mA, HART® protocol
Special feature	TÜV-certified SIL version (full assessment)
Data sheet	TE 32.04

## TW10

### Thermowell with flange



Thermowell form	Tapered, straight or stepped
Nominal width	■ ASME 1 ... 4 inch DIN/EN ■ DN 25 ... 100
Pressure rating	ASME to 2,500 lbs (DIN/EN to PN 100)
Data sheet	TW 95.10, TW 95.11, TW 95.12

# Pressure

## IS-3

### Intrinsic safety Ex i



Non-linearity (± % of span)	≤ 0.2 BFSL
Measuring range	<ul style="list-style-type: none"> <li>■ 0 ... 0.1 to 0 ... 6,000 bar</li> <li>■ 0 ... 0.25 to 0 ... 25 bar abs.</li> <li>■ -1 ... 0 to -1 ... +24 bar</li> </ul>
Special feature	<ul style="list-style-type: none"> <li>■ Further worldwide Ex approvals</li> <li>■ High-pressure version (optional)</li> <li>■ Flush process connection (optional)</li> </ul>
Data sheet	PE 81.58

## E-10

### Flameproof enclosure Ex d



Non-linearity (± % of span)	≤ 0.2 BFSL
Measuring range	<ul style="list-style-type: none"> <li>■ 0 ... 0.4 to 0 ... 1,000 bar</li> <li>■ 0 ... 0.4 to 0 ... 16 bar abs.</li> <li>■ -1 ... 0 to -1 ... +25 bar</li> </ul>
Special feature	<ul style="list-style-type: none"> <li>■ Low-power version</li> <li>■ For sour gas applications (NACE)</li> <li>■ Flush process connection (optional)</li> <li>■ Further worldwide Ex approvals</li> </ul>
Data sheet	PE 81.27

## MH-3-HY

### For mobile hydrogen applications



Accuracy (± % of span)	≤ 1
Measuring range	0 ... 20 to 0 ... 600 bar
Special feature	<ul style="list-style-type: none"> <li>■ Approval per EC79/2009</li> <li>■ Compact and robust design</li> <li>■ Diagnostic function (optional)</li> </ul>
Data sheet	PE 81.59

## UPT-20

### Universal process transmitter with standard connection, Ex intrinsically safe



Non-linearity (% of span)	≤ 0.1
Output signal	4 ... 20 mA, HART®
Measuring range	<ul style="list-style-type: none"> <li>■ 0 ... 0.4 to 0 ... 4,000 bar</li> <li>■ 0 ... 1.6 to 0 ... 40 bar abs.</li> <li>■ -0.2 ... +0.2 to -1 ... +40 bar</li> </ul>
Special feature	<ul style="list-style-type: none"> <li>■ Multi-functional display</li> <li>■ Freely scalable measuring range</li> <li>■ Simple menu navigation</li> <li>■ Conductive plastic case or stainless steel case</li> <li>■ Large LC display, rotatable</li> </ul>
Data sheet	PE 86.05

## CPT-20, CPT-21

### Process pressure transmitter with capacitive ceramic measuring cell



Non-linearity (% of span)	≤ 0.05
Output signal	4 ... 20 mA, HART® protocol (optional), PROFIBUS® PA, FOUNDATION™ Fieldbus
Measuring range	<ul style="list-style-type: none"> <li>■ 0 ... 0.025 to 0 ... 100 bar abs.</li> <li>■ -1 ... 0 to -1 ... +100 bar</li> </ul>
Special feature	<ul style="list-style-type: none"> <li>■ Particularly robust, ceramic measuring cell</li> <li>■ Dry ceramic measuring cell with variable sealing concept</li> <li>■ Freely scalable measuring ranges</li> <li>■ Case from plastic, aluminium or stainless steel</li> <li>■ Flush process connection (optional)</li> </ul>
Data sheet	PE 86.07

## DPT-20

### Differential pressure transmitter, intrinsically safe or with flameproof enclosure



Non-linearity (% of span)	≤ 0.065 ... 0.1
Output signal	4 ... 20 mA, HART® protocol (optional), PROFIBUS® PA, FOUNDATION™ Fieldbus
Measuring range	0 ... 10 mbar to 0 ... 16 bar
Special feature	<ul style="list-style-type: none"> <li>■ Freely scalable measuring ranges</li> <li>■ Static load 160 bar, optionally 400 bar</li> <li>■ Case from plastic, aluminium or stainless steel</li> <li>■ With integrated display and instrument mounting bracket for wall/pipe mounting (optional)</li> <li>■ 3- or 5-way valve optional</li> <li>■ SIL 2 per IEC 61508</li> </ul>
Data sheet	PE 86.22



## 232.30, 233.30

For the process industry,  
safety version



Nominal size	63, 100, 160 mm
Scale range	■ NS 63: 0 ... 1 to 0 ... 1,000 bar ■ NS 100: 0 ... 0.6 to 0 ... 1,000 bar ■ NS 160: 0 ... 0.6 to 0 ... 1,600 bar
Accuracy class	1.0 (NS 100, 160), 1.6 (NS 63)
Ingress protection	IP65
Data sheet	PM 02.04

## 232.50, 233.50

For the process industry,  
standard version



Nominal size	63, 100, 160 mm
Scale range	■ NS 63: 0 ... 1 to 0 ... 1,000 bar ■ NS 100: 0 ... 0.6 to 0 ... 1,000 bar ■ NS 160: 0 ... 0.6 to 0 ... 1,600 bar
Accuracy class	1.0 (NS 100, 160), 1.6 (NS 63)
Ingress protection	IP65
Data sheet	PM 02.02

## BA

Bourdon tube pressure  
switch



Setting range	0 ... 2.5 to 0 ... 1,000 bar
Ignition protection type	Ex ia or Ex d
Switch	1 or 2 x SPDT or 1 x DPDT
Switching power	■ AC 250 V/20 A ■ DC 24 V/2 A
Data sheet	PV 32.20, PV 32.22

# Valves

## IV20

Block-and-bleed valve,  
square or flat form



Application	For shutting off and venting pressure measuring instruments with threaded connection
Version	Block-and-bleed valve
Material	Stainless steel
Nominal pressure	To PN 420 (6,000 psi) Option: To PN 680 (10,000 psi)
Data sheet	AC 09.19

## IV30, IV31, IV50, IV51

Valve manifold for differential  
pressure measuring instruments



Application	For shutting off, pressure compensating as well as purging and venting differential pressure measuring instruments
Version	Three-way and five-way valves
Material	Stainless steel
Nominal pressure	To PN 420 (6,000 psi) Option: To PN 680 (10,000 psi)
Data sheet	AC 09.23

## HPNV

High-pressure needle valve



Application	For injection systems, test benches, hydraulic power packs, blow-out protection, blasting/cutting with water, high-pressure cleaning
Version	2-way valve, straight or angled bore; 3-way valve, one or two pressure connections
Material	Stainless steel
Nominal pressure	15,000 ... 60,000 psi [1,034 ... 4,136 bar] Option: To PN 680 (10,000 psi)
Data sheet	AC 09.27

# Special solutions

## Cryogenic thermometers

Due to the global use of hydrogen, extremely low-temperature measurement during transport and storage is gaining an ever-greater relevance. With the cryo design, WIKA provides a suitable option for all relevant temperature measuring instruments for this demanding application.

In laboratory trials, resistance thermometers (Pt1000) and thermocouples (type E) were tested for their suitability in cryogenic applications. The special cryo design features a high accuracy of  $\pm 3$  Kelvin at  $-253\text{ }^{\circ}\text{C}$  [ $-423\text{ }^{\circ}\text{F}$ ] as well as high reproducibility.

The test data from the laboratory investigations served as the basis for calculating new polynomials for Pt1000 resistance thermometers in the range of  $-258\text{ }^{\circ}\text{C}$  ...  $-200\text{ }^{\circ}\text{C}$  [ $-432\text{ }^{\circ}\text{F}$  ...  $-328\text{ }^{\circ}\text{F}$ ] which are used in the configuration of WIKA transmitters.





## Preventing fugitive emissions

Valve and connection plate solutions: no matter whether with thread, flange or compression fittings – WIKA valve solutions close tightly and enable the process to be isolated safely. The ready-to-install EMICOGauge pressure gauge valves reduce the risk of fugitive emissions and the time required for installation and commissioning.

## Additional protection, where it's needed

### Gold coatings for flush measuring instruments:

Hydrogen molecules can dissociate on metal surfaces and individual hydrogen atoms can then migrate through the metal lattice into the pressure transmission medium behind. This effect is dependent upon pressure, temperature and the material selected. In the oil, the individual particles recombine into hydrogen molecules and can thus form a hydrogen bubble. This bubble increases the internal pressure of the measuring instrument and thus leads to a zero offset. A gold coating significantly reduces the permeation of hydrogen ions through metal diaphragms and thus enables a much longer service life without the effects of the hydrogen.



## The right approval, worldwide

For all your applications, WIKA offers a wide variety of measuring instruments with country-specific approvals.



- ATEX/IECEx for stationary applications
- EC79/2009 for mobile applications

➔ **We not only offer you suitable high-end measuring instruments, but also special solutions that we would be happy to develop together with you. Talk to us.**



# Helium leak testing systems

In the case of components for hydrogen applications, high demands are placed on leak tightness, often in combination with high test pressures of up to 1,000 bar or more. Leak testing methods with tracer fluids are used for this. With its Testing & Automation Technology division, WIKA offers customer-specific helium test systems with different degrees of automation, and for test pressures of over 1,000 bar. With helium leak testing methods, detection limits of up to  $10^{-9}$  mbar·l/s can be achieved, under ideal conditions.

These test methods or leak tests, in conjunction with intelligent system concepts, allow short cycle times, location of the leak and can be implemented reliably and largely independently of the test volume. Temperature changes, for example, through the test pressure loading, preliminary processes such as welding or soldering or by changed environmental conditions, can be neglected in these leak tests.

## In-house testing is faster

WIKA offers both manual and fully automatic testing systems with the following proven test methods:

- Integral vacuum methods  
(including He high pressure or bombing)
- Accumulation methods
- Sniffing methods

Since WIKA also uses testing systems for leak testing in its own series production or in its test laboratories, we supply leak testing systems with tried and tested functional safety. When designing a system, we attach great importance to the validity of the measurement results, as well as an overall cost-effective concept which is individually adapted to your requirements. In addition to the building of complete testing systems, we also integrate special processes, such as leak tests in individual test cells, into existing systems or into your own planned plant.



Helium leak testing system



Combined assembly and leak test systems

# Lasting impressions with reliable services



## What can we do for you?

### Installation & Commissioning

WIKA's field installation experts go to the customers' sites to provide tailored solutions that result in a short downtime. We ensure process safety with our list of installations that include multipoint thermometers in reactors, thermocouples in furnaces and level measurement instrumentation.

### Analysis & Support

WIKA offers reliable consultation services, both analytical and technical, for a wide range of industries. Our qualified service technicians support in solving problems and ensure that your measuring instrument is back in working order in the shortest possible time.

### Inspection & Testing

You can rely on WIKA for on-site verification and function testing that is non-invasive and non-destructive. Our expertise also includes in-situ verifications of multipoint thermometers.

### Maintenance & Repair

You can count on WIKA to do repairs – from diaphragm seal systems up to highly accurate calibration instruments. We support you in optimising your operational processes. Benefit from our know-how for solutions that are tailored to your needs.

### Calibration

WIKA provides its calibration services on-site at your premises or in our laboratory, for WIKA as well as other instruments. Pressure, temperature, mass, electrical, force, dimensional, flow and torque are some of the other calibrations and adjustments that we provide on shortest delivery times.

**SERVICES**   
**EXCEEDING  
EXPECTATIONS**

# WIK A worldwide

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