



Pressure | Temperature | Level

# Measurement technology for heating systems



Smart in sensing



### WIKA in brief

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A family business  
since 1946

---

> 11,200 employees

---

Global service and  
distribution

---

1.2 billion euro turnover

---

Quality management:  
ISO 9001, ISO 13485

---

Environmental  
management: ISO 14001

---

”

WIKA's unique experience  
and know-how make  
sensing technology  
smarter, add more value  
and prepare it for a  
sustainable future.

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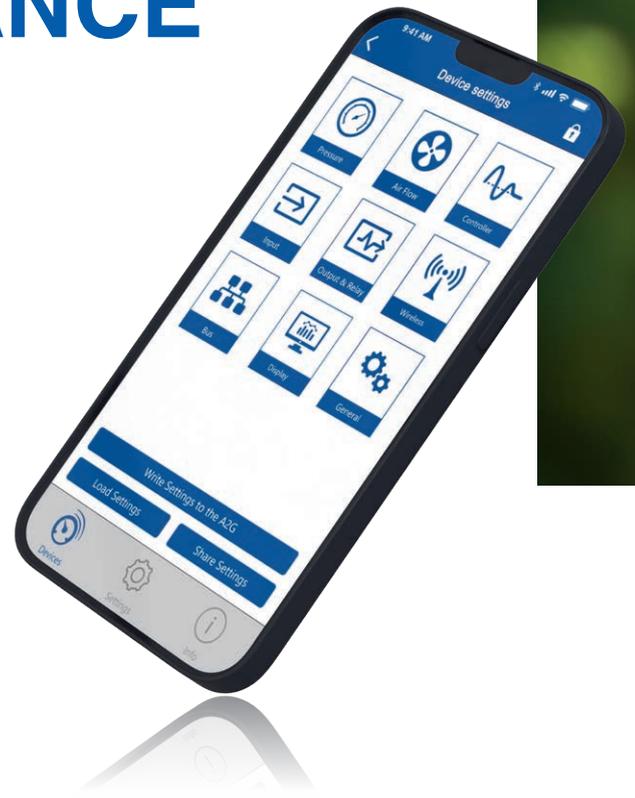
## WIKA – YOUR RELIABLE PARTNER

Heating technology is undergoing a profound change. The industry is switching to climate-neutral energy sources and sustainable systems. It is driving forward the electrified supply of heat and hot water generated from renewable energies as well as the use of hydrogen, geothermal and solar thermal systems. Ever more intelligent and efficient heating systems are developed to conserve resources, extend the service life of the technology used and enable networking with other building systems.

As the market leader in measurement technology, we support your transformation with a broad portfolio of innovative and high-precision products, IIoT solutions and services, which we are continuously developing with more than 100 development engineers. Together with our global service and distribution network and our own production, we offer smart, efficient, and sustainable top quality for your requirements. In this way, we can continue to grow together. That is “Smart in sensing” and you can rely on it now and in the future.

Alexander Wiegand,  
Chairman and CEO, WIKA

# COMPETENT RELIABLE HIGH PERFORMANCE



## Efficient and sustainable

Private homeowners, local authorities, residential and commercial property companies – they all need heating systems for their buildings that are efficient and fulfil climate targets.

WIKA supports you, as a manufacturer of heating systems, combined heat and power plants and heat pumps, in partnership and cooperation, with the appropriate measurement technology. In future-oriented heating systems, energy use and operation are optimised by smart control systems based on IIoT technologies. The intelligent sensor technology can be easily configured via bus systems or wireless communication and adapted to the respective situation.

Users receive information on the processes in real time. They can centralise their monitoring to save time and money, and access all relevant data remotely via an app. Just because they do not fully comply with the changed legal regulations, existing systems do not necessarily have to be replaced. Many of them can be converted to a more sustainable heating.

WIKA helps you with the task of making your heating technology smart. In addition to our wide-ranging portfolio, we work closely with you to develop individual devices, components and accessories. The close collaboration between our development experts, our in-house test laboratories and our highly flexible production facilities leads to the desired solutions without any loss of time.



### Everything from a single source

As a WIKA customer, you have a product range of unrivalled breadth and depth at your disposal. You can choose from a large selection of mechanical, mechatronic and electronic instruments for measuring pressure, temperature and level. This offer is complemented by WIKA's extensive range of accessories. This includes valves, stop-cocks, syphons, digital indicators, temperature controllers and many other components to enable the correct implementation of each measuring location.



### Optimum inventory control

As a customer, we offer you a Vendor Managed Inventory (VMI). With this method, we take responsibility for your stock levels and ensure timely replenishment to the required extent. We take into account both your current and future requirements.

### Just-in-time delivery

Thanks to our efficient production and impeccable logistics, every WIKA product gets to the right place at the right time, even in high quantities – all around the world. More than 1.5 million instruments in standard versions are available on demand.



### Individual design

WIKA enables the individual configuration of your products. The possibilities extend from the specific design of the dial and numerous options for the geometry and colour of the case to labelling.



### Packaging to your wishes

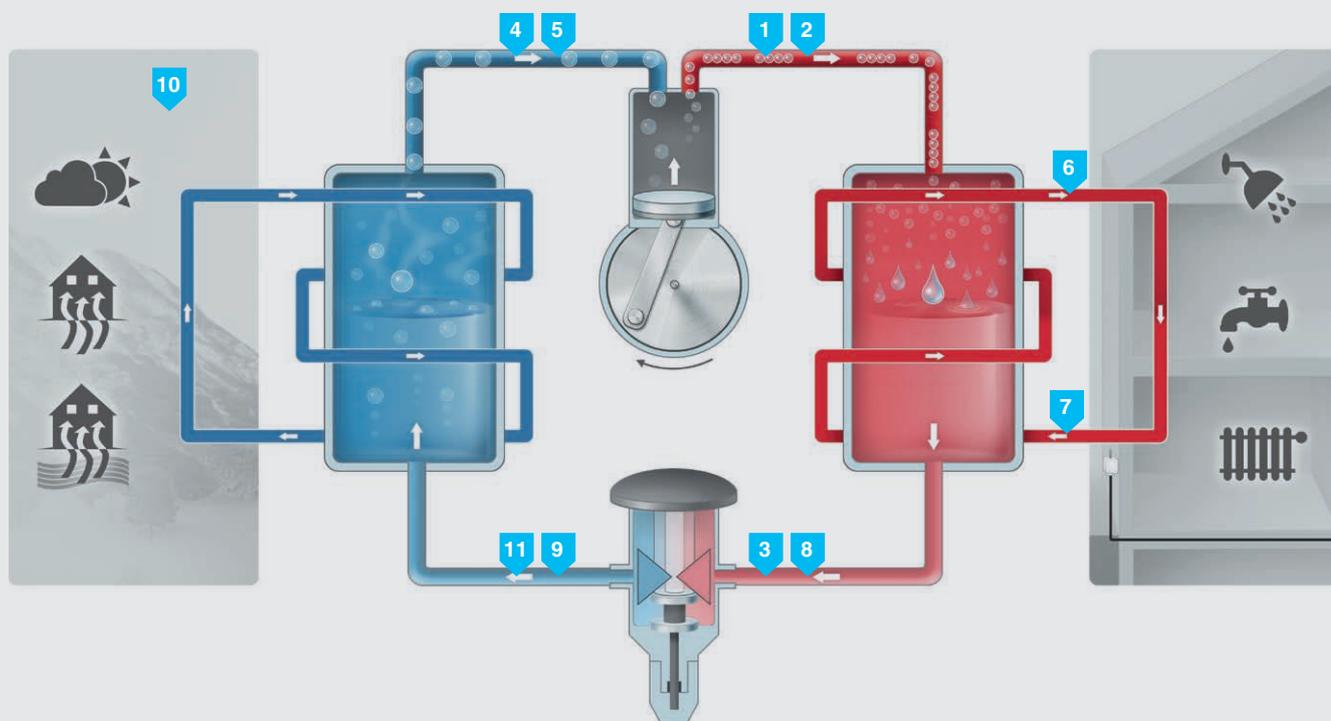
We also fulfil your wishes when it comes to packaging for shipping. You decide on the nature and scope of the documentation to be enclosed. This also applies to the labelling, which can be provided either with barcode or with 2D code.

# HEAT PUMPS

The heat pump principle had already been developed back in the 18th century. What originally arose from a need to cool food is now used in the heating and air-conditioning of buildings.

To monitor pressure and temperature measuring parameters in heat pump circuits, different measuring principles can be employed. In the case of pressure measurement, this programme extends from the tried-and-tested Bourdon tube pressure gauge through to pressure sensors.

To monitor the temperature of a heat pump, multiple versions of screw-in, insertion and strap-on thermometers are available. With the TF41 outdoor thermometer, you also create a reliable weather compensation for your controller.



## Legend – Measuring points:

- |                                  |   |
|----------------------------------|---|
| 1 Hot gas (temperature)          | 7 Heating circuit (pressure)                          |
| 2 High-pressure line (pressure)  | 8 Liquid line (high pressure)                         |
| 3 Liquid line (high temperature) | 9 Liquid line (low temperature)                       |
| 4 Suction gas (temperature)      | 10 Environment, outside of the building (temperature) |
| 5 Low-pressure line (pressure)   | 11 Liquid line (low pressure)                         |
| 6 Heating circuit (temperature)  |   |

## TEMPERATURE



10

Outdoor thermometer  
**TF41**



1  
3  
4  
9

Strap-on thermometer  
**TF44**



1  
3  
4  
9

OEM insertion thermometer  
**TF45**  
with cable



1  
3  
4  
9

Cable temperature sensor  
**TF-2000**



6

Expansion thermometer  
**IFC**



6

Expansion thermometer  
**TF58, TF59**

## PRESSURE



2  
5  
8  
11

Pressure sensor  
**R-1**



7

Pressure measuring  
instruments  
**101.00, 101.12**  
with capillary



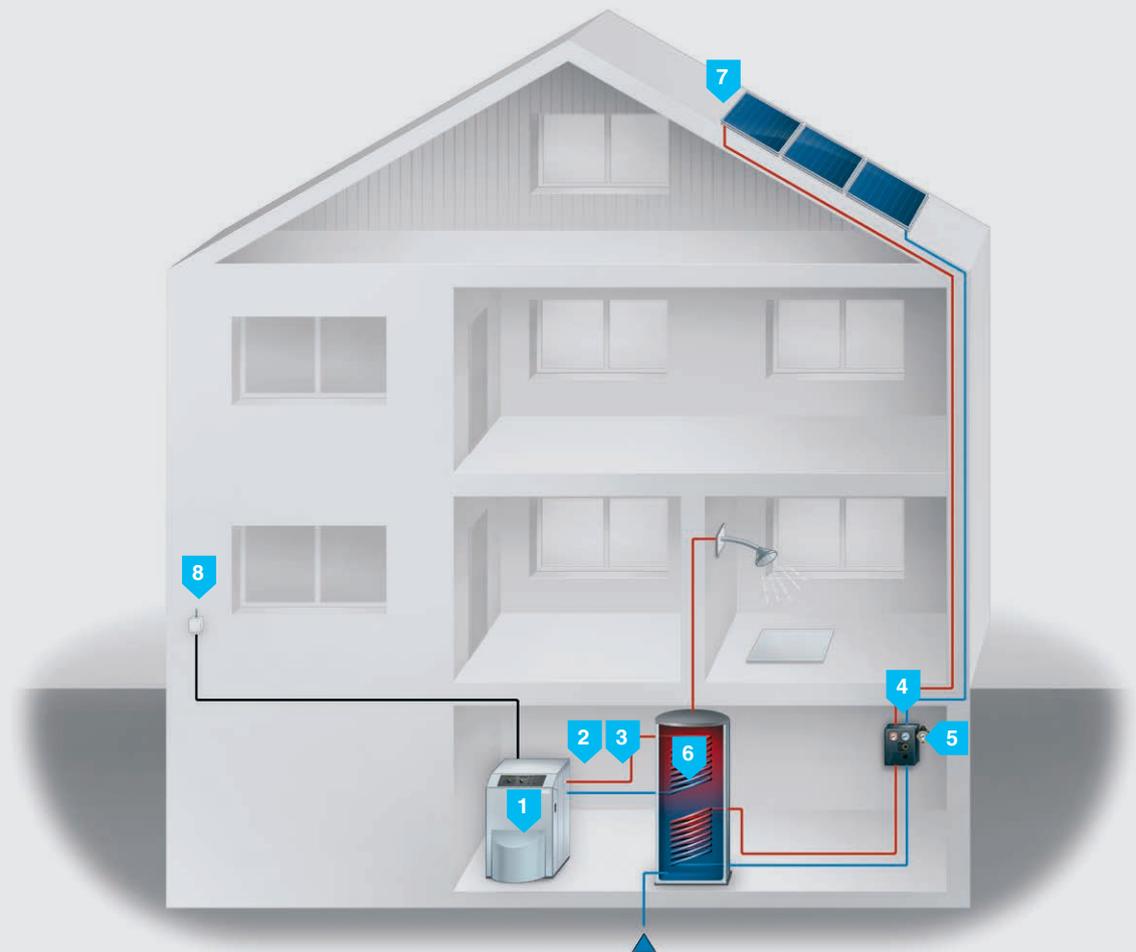
Accessories

# SOLAR THERMAL SYSTEMS

The sun is the biggest supplier of energy to the earth, and provides the starting point for an environmentally sound way to obtain energy: solar thermal energy. To supplement a gas, oil or electrically powered heating system or as a constituent element in an ice storage heating system, a solar plant converts free solar power into heat. To achieve a regular plant service life of 20 to 25 years, every single component needs to be manufactured to a high quality standard.

As a collector or storage sensor, we recommend the TF45 insertion thermometer, available with a vast array of measuring elements and switchgear. Pressure monitoring plays an equivalently important role to temperature monitoring.

The pressure conditions in the solar circuit have a decisive impact on the efficiency and service life of a solar power plant. To monitor the prevailing pressure, you can choose from a range of pressure gauges (111) as well as pressure sensors (PMT).



## Legend – Measuring points:

- |                                     |  |
|-------------------------------------|--|
| 1 Boiler (temperature)              | 6 Hot water tank (temperature)                       |
| 2 Heating flow/return (temperature) | 7 Collector (temperature)                            |
| 3 Heating flow/return (pressure)    | 8 Environment, outside of the building (temperature) |
| 4 Solar flow/return (temperature)   |  |
| 5 Solar circuit (pressure)          |  |

## TEMPERATURE



2  
4  
6

Bimetal thermometer  
**A43, A50, A51, A52**



1

Expansion thermometer  
**IFC**



1

Expansion thermometer  
**TF58, TF59**



2

Bimetal thermomanometer  
**THM10, 100.01**



4  
7

Cable resistance thermo-  
meter  
**TR40**



8

Outdoor thermometer  
**TR41**



2  
4  
6  
7

Strap-on thermometer  
**TF44**



2  
4  
6  
7

OEM insertion thermometer  
**TF45**  
with cable



2

Bimetal thermometer  
**A46**



2  
4  
6  
7

Cable temperature sensor  
**TF-2000**

## PRESSURE



3  
5

Pressure gauge  
**111**



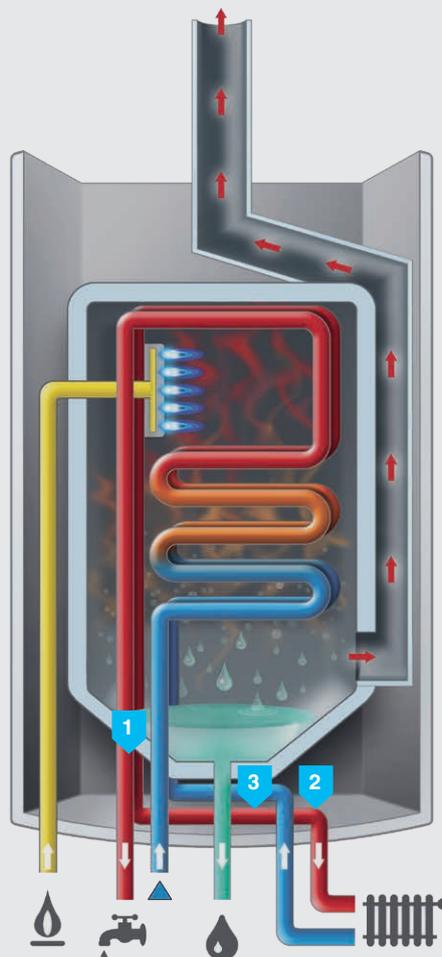
Accessories

# WALL-HUNG GAS BOILERS

Wall-hung gas boilers in our living spaces deliver heat and home comfort. These can be condensing boilers or combi-boilers: we can provide the right pressure and temperature measuring instruments for either of these variants.

Our portfolio includes measuring instruments for monitoring and controlling hot water and industrial water circuits. Pressure gauges are used to display the pressure. We also offer pressure sensors to create a digital read out.

Depending on your needs, you can choose from various different output signals. You create a pressure display independent of measuring points by using a pressure measuring instrument with capillary. Specifically for applications calling for frequent bending of capillaries, we offer the alternative to the familiar copper capillaries of ultra-flexible plastic capillaries. To measure the temperature of hot water or industrial water, expansion thermometers or thermomanometers can be used.



## Legend – Measuring points:

- 1 Hot water (temperature)
- 2 Heating circuit (pressure)
- 3 Heating water (temperature)



## TEMPERATURE



Expansion thermometer  
**IFC**



Thermomanometer  
**MFT**



Bimetal thermomanometer  
**THM10, 100.01**



Bimetal thermometer  
**A43**



Bimetal thermometer  
**A46**

## PRESSURE



Pressure measuring  
instruments  
**101**  
with capillary



Accessories

**H<sub>2</sub> ready**

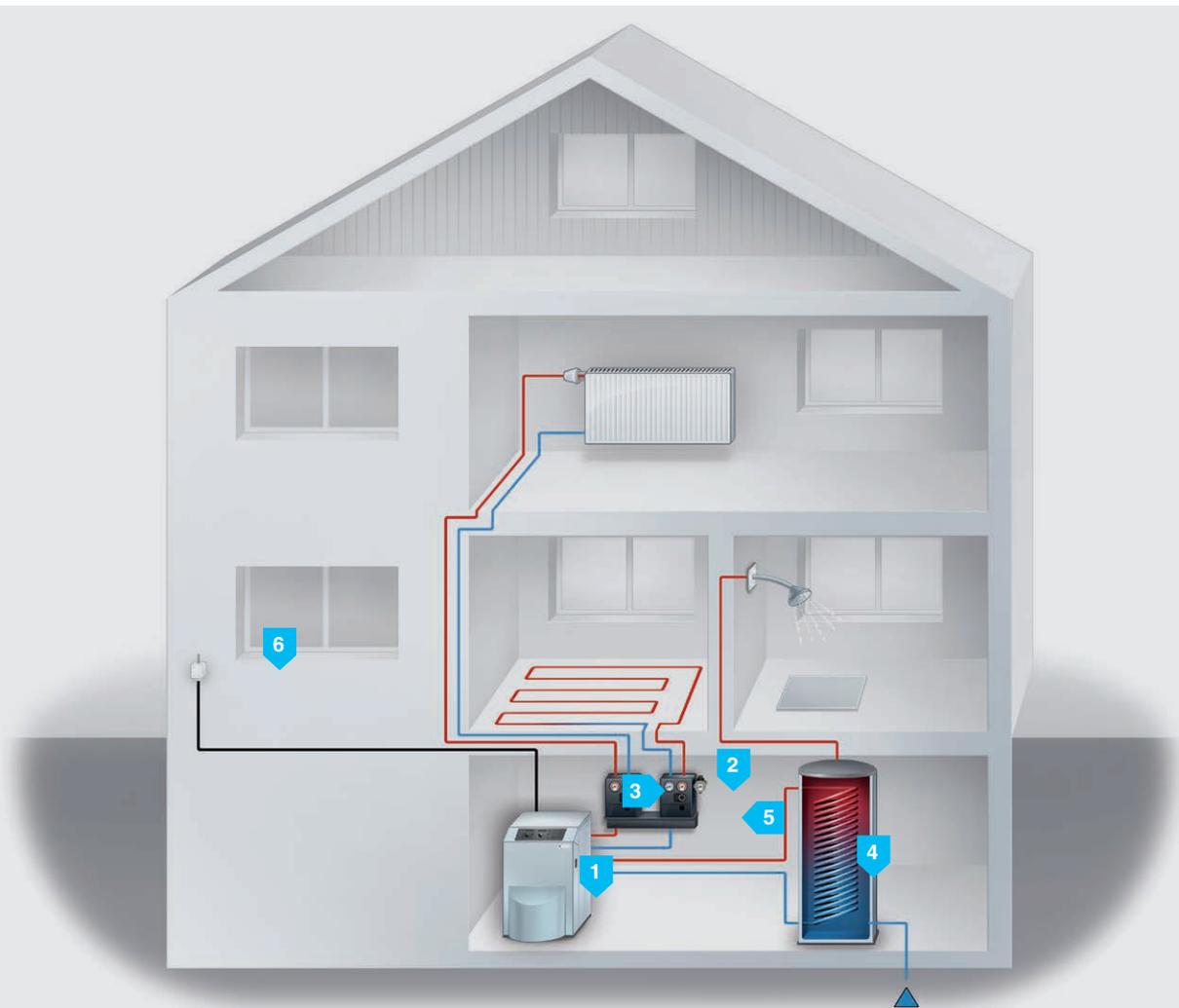


# HEATING SYSTEMS

Whether private households, administration buildings or industrial premises – you will find appropriate measuring instruments for heating and hot water supply at WIKA.

For example, you could measure the exhaust gas temperature of a boiler with our resistance thermometer TR40 and the industrial water temperature in the hot water tank with expansion or bimetal thermometers.

Measurement of ambient temperature is performed by what is at present the smallest outdoor thermometer on the market: TF41 – small and compact, with or without a protective sun cover.



## Legend – Measuring points:

- 1 Boiler
- 2 Boiler (temperature)
- 3 Heating circuit (temperature)
- 4 Hot water tank (temperature)
- 5 Heating circuit (pressure)
- 6 Environment, outside of the building (temperature)

## TEMPERATURE



2  
3  
4

Bimetal thermometer  
**A43, A50, A51, A52**



1  
4

Expansion thermometer  
**IFC**



1  
4

Expansion thermometer  
**TF58, TF59**



2

Bimetal thermomanometer  
**THM10, 100.01**



1  
4

Cable resistance thermo-  
meter  
**TR40**



6

Outdoor thermometer  
**TR41**



2  
4

Strap-on thermometer  
**TF44**



1  
2  
4

OEM insertion thermometer  
**TF45**  
with cable



1  
2  
4

Cable temperature sensor  
**TF-2000**



3

Bimetal thermometer  
**A46**

## PRESSURE



5

Pressure gauge  
**111**



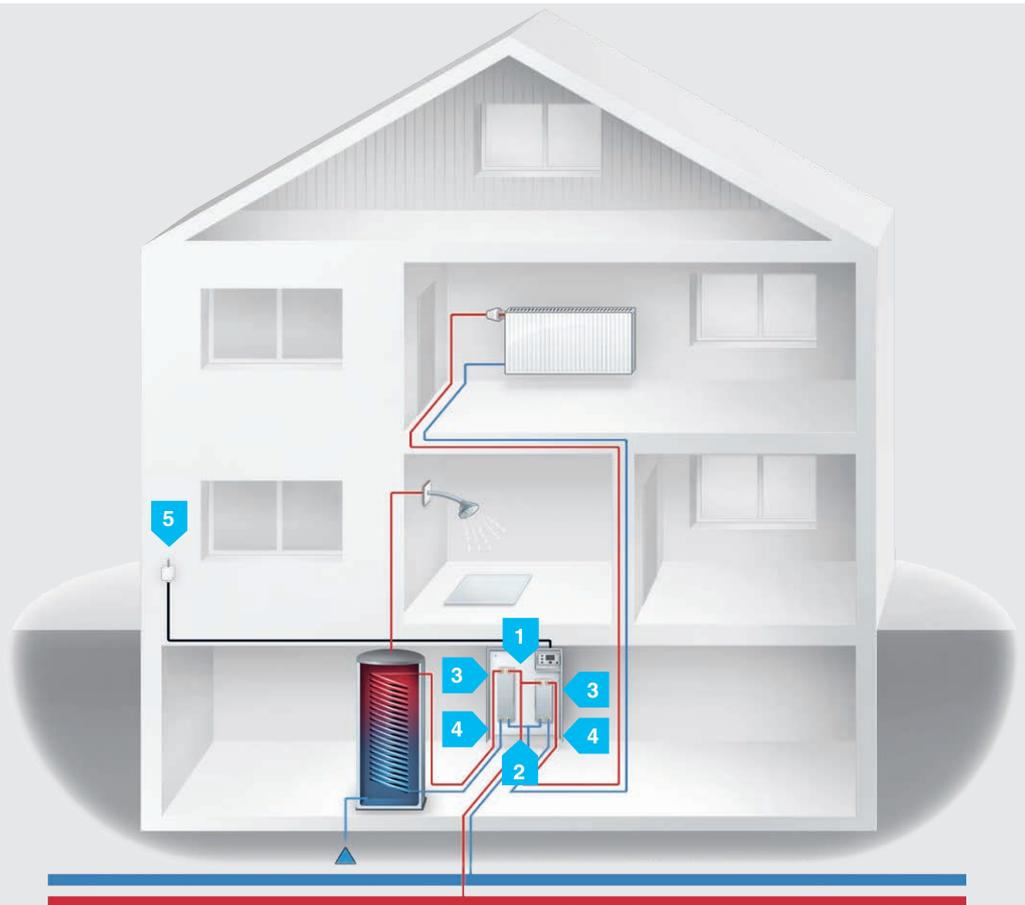
Accessories

# HEAT TRANSFER STATIONS DISTRIBUTION STATIONS

**District heating – one module in the efficient use of resources. Using energy through combined heat and power (CHP) and at the same time greatly boosting the efficiency rating of the system – one of the outstanding advantages of local and district heating.**

The principle of combined heat and power (CHP) is to take waste heat that would otherwise be unused, e.g. from electricity-generating power plants, and to supply it to consumers, even over long distances, thereby increasing the utilisation level of these power plants to as much as 90 %.

To assure problem-free connection to the district and local heating network, the operators devise their own technical connection requirements (TAB). These stipulate how and under what conditions a house station can be connected to the supply network, either directly or indirectly. Depending on the measurement task involved, you decide which of our mechanical or electrical measuring instruments to use. There is a choice of different output signals and measuring elements, meaning that you have no problem integrating these in any plant concept for open-loop or closed-loop control purposes.



## Legend – Measuring points:

- |  |   |
|--|---|
| <b>1</b> Primary heating circuit (temperature)   | <b>4</b> Secondary heating circuit (pressure)               |
| <b>2</b> Primary heating circuit (pressure)      | <b>5</b> Environment, outside of the building (temperature) |
| <b>3</b> Secondary heating circuit (temperature) |   |

## TEMPERATURE



1  
3

Bimetal thermometer  
**A43, A50, A51, A52**



1  
3

Expansion thermometer  
**IFC**



1  
3

Expansion thermometer  
**TF58, TF59**



1  
3

Machine glass thermometer  
**32**



1  
3

Bimetal thermomanometer  
**100.12, THM10**



1  
3

OEM screw-in thermometer  
**TR35**  
with plug connection



5  
3

Outdoor thermometer  
**TR41**



1  
3

Strap-on thermometer  
**TF44**



1  
3

OEM insertion thermometer  
**TF45**  
with cable



1  
3

Cable temperature sensor  
**TF-2000**



1  
3

Miniature resistance thermo-  
meter  
**TR33**  
Miniature design



1  
3

Expansion thermometer  
**70**

## PRESSURE



2  
4

Pressure gauge  
**111, 212.20, 232.50,  
213.53**



2  
4

Compact pressure switch  
**PSM**



2  
4

Pressure sensors  
**A-10, S-20**

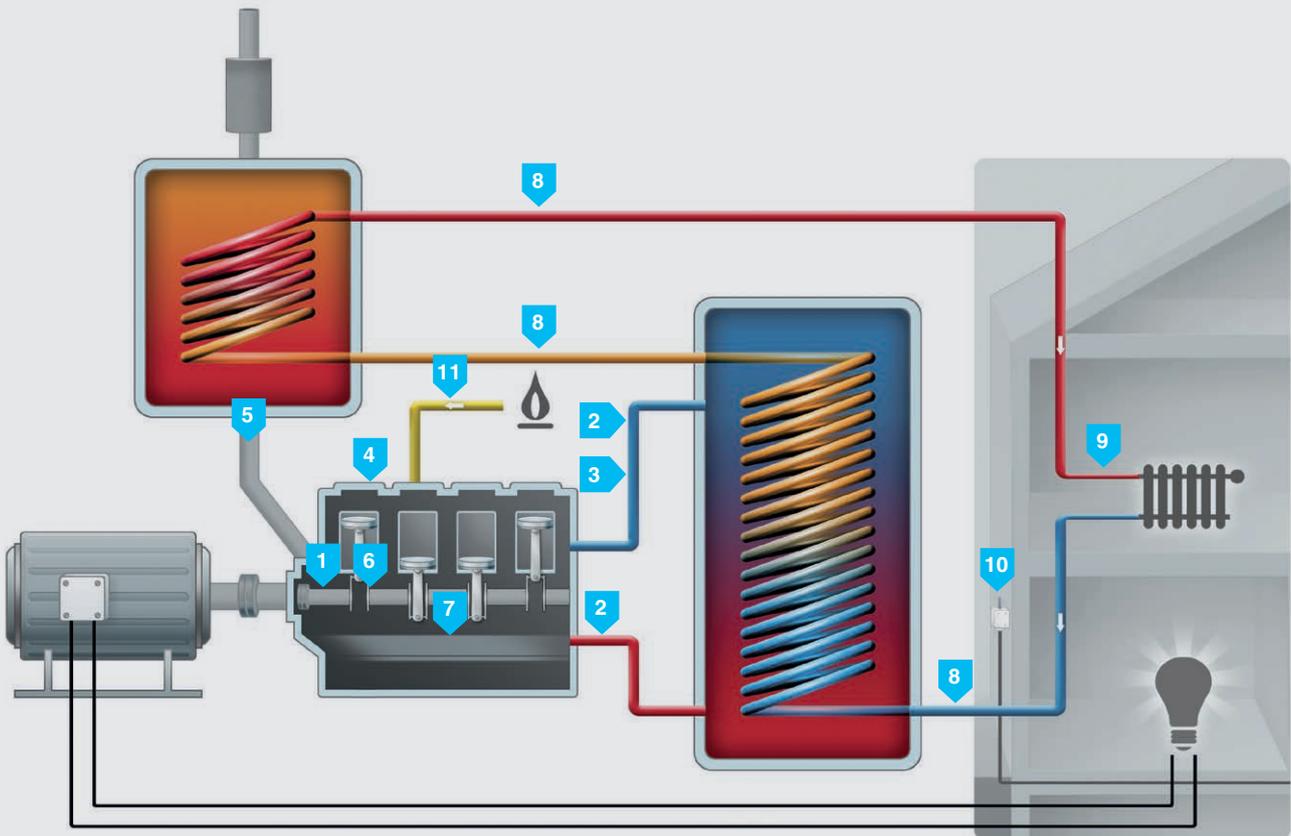


Accessories

# COMBINED HEAT AND POWER PLANTS

Just a few years ago, combined heat and power plants were only conceivable for power plants, industrial buildings or residential developments, but now they are finding their way into the basements of private homes. Through the development of “Micro CHP”, with a footprint the size of a washing machine, this form of combined heat and power (CHP) is also becoming of interest to private households.

For this kind of domestic CHP solution, we can offer you reliable and inexpensive measuring instruments for pressure, temperature and level. For example, check the oil pressure of an internal combustion engine with an electronic pressure sensor, while obtaining a reliable oil level check with a level switch or with a magnetic float switch. Oil temperature is monitored by a screw-in thermometer or by a safety temperature limiter. With a pressure gauge or a pressure sensor you can keep an eye on the water pressure in the heating circuit.



## Legend – Measuring points:

- |                                 |  |   |
|---------------------------------|--|---|
| 1 Engine oil (temperature)      | 6 Engine oil (pressure)                      | 9 Heating circuit (pressure, flow)                    |
| 2 Coolant circuit (temperature) | 7 Engine oil (level)                         | 10 Environment, outside of the building (temperature) |
| 3 Coolant circuit (pressure)    | 8 Heating circuit (temperature, flow/return) | 11 Gas supply line (pressure)                         |
| 4 Cylinder head (temperature)   |  |   |
| 5 Exhaust gas (temperature)     |  |   |

## TEMPERATURE



8

Bimetal thermometer  
**A43, A50, A51, A52**



1

2

Safety temperature limiter  
**SB15**



4

5

Cable thermocouple  
**TC40**



1

8

OEM screw-in thermometer  
**TR35**  
with plug connection



10

Outdoor thermometer  
**TF41**



2

8

Strap-on thermometer  
**TF44**



2

8

OEM insertion thermometer  
**TF45**  
with cable



2

8

Cable temperature sensor  
**TF-2000**



8

Miniature resistance thermo-  
meter  
**TR33**  
Miniature design



1

2

8

Cable resistance thermo-  
meter  
**TR40**

## PRESSURE



3

6

Pressure sensors  
**A-10, S-20**



3

6

Pressure gauge  
**111, 212.20, 232.50,  
213.53**



9

Capsule pressure gauge  
**611.10, 611.13, 612.20**



6

Compact pressure switch  
**PSM**



Accessories

## LEVEL



7

Optoelectronic OEM level  
switch  
**OLS-C01**



7

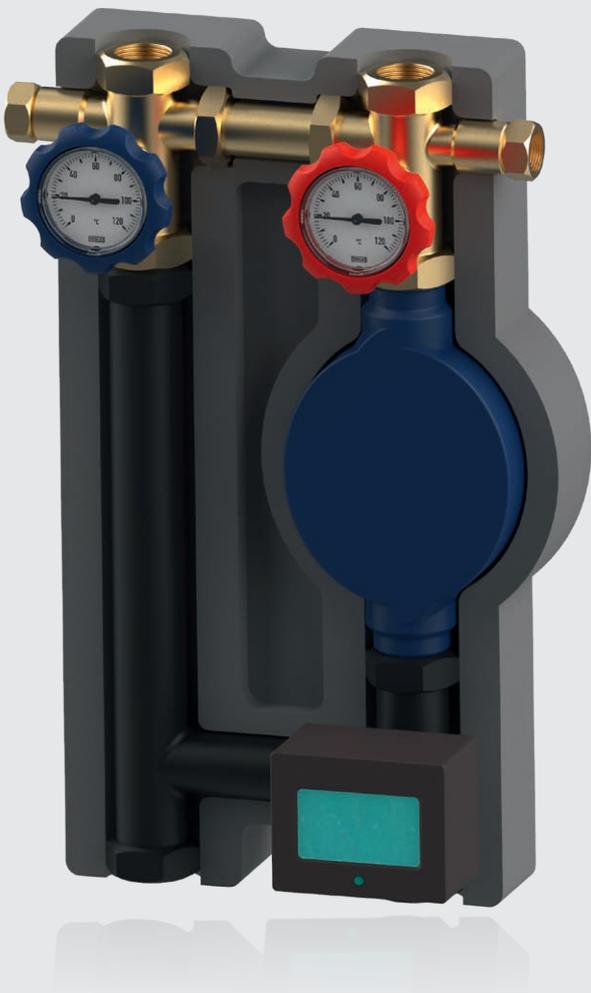
Float switch  
**RLS-1000, RLS-2000**  
for industrial applications

# COMPONENTS AND SYSTEMS

The decision for investment in a heating system is generally a decision for the next 20 to 30 years. If you want to ensure that your rooms are reliably supplied with heat and hot water during this time, then you should also pay attention to quality when selecting the peripheral equipment. In particular for installers, who must answer for the quality of their work in front of the end customer, this is a crucial feature in deciding which components to choose.

Whether you provide entire systems or individual components for the heating trade, in our product portfolio all established measuring instruments for pressure and temperature measurement are available. You can also choose whether you will receive the instruments in practical, bulk packaging for further processing or in individual packaging for use as accessories.

Pump assembly with two WIKA thermometers



Safety valve with WIKA pressure gauge



Safety assembly with WIKA pressure gauge



## TEMPERATURE



Bimetal thermometer  
A43, A50, A51, A52

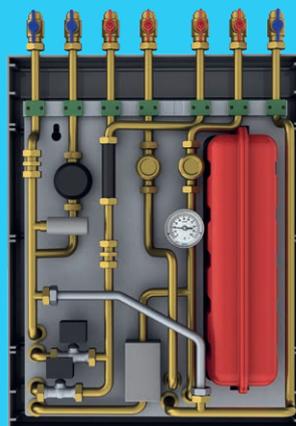
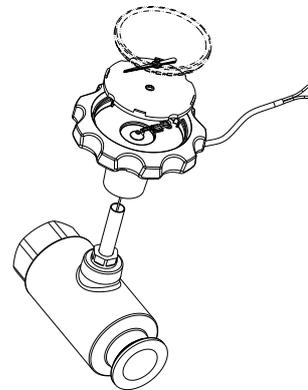
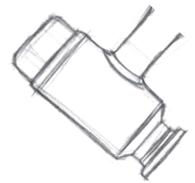
## PRESSURE



Pressure gauges  
111

## INTEGRATED CUSTOMISED SOLUTIONS

From idea to completed implementation: Benefit from our experienced development and design-engineering staff in order to break new ground. Together with us, develop your concept for measurement technology so that it fits perfectly into your future system solutions. Regardless of whether you are modifying an existing measuring system with us or developing a new measuring instrument from the ground up, you can benefit from our many years of practical experience and our knowledge of the key aspects of your market segment.



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You can find further  
information here!



Smart in sensing

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