# WIRELESS SENSORING SYSTEMS


**CATALOGUE 2020/2021**

# WE GENERATE EXCITEMENT.

Since the foundation of the company in 1890 until today the goal has remained the same: the highest quality in products and services. Nevertheless, the circumstances, tasks and challenges have changed, of course. By focussing on our core areas of expertise, we have long set new standards for innovative clamping technology - driven by our own development, the greatest possible flexibility and passion for individual solutions.

All this is only possible with committed and contented employees. Respectful interaction with others, personal development and measures for the wellbeing of each individual are therefore values that matter to us.

Company Management:
Wolfgang Balle, Johannes Maier (CEO), Jürgen Förster

## OUR COMPANY HISTORY

1890 Company founded as a lock manufacturer by Andreas Maier.

1920 Product range extended to include spanners.

1928 Production line assembly of FELLBACH LOCKS.

1951 Introduces clamping elements and diversifies into workpiece and tool clamping technology.

1965 Toggle clamps extend the AMF product range, AMF catalogues are now printed in ten languages.

1975 Further specialisation into hydraulic clamping technology.

1982 Clamping and fixture systems round off AMF's clamping expertise.

1996 AMF team organisation in all sectors of the business, Quality management with certification to ISO 9001.

2001 AMF Service Guarantee for all products.

2004 Introduction of the ZPS zero-point clamping system.

2007 The magnetic clamping technology extends the AMF product range.

2009 Development and marketing of AMF Vacuum clamping technology.

2012 LOW-COST AUTOMATION gripping, clamping, marking and cleaning.

2014 AMF presents the most extensive product range of automation solution in zero-point clamping technology.

2017 Wireless sensoring systems extend the expertise into Industry 4.0 and blends seamlessly into the AMF product range.

## PLEDGES THAT COUNT IN EVERYDAY LIFE

For this reason, we have a few principles that we follow by conviction and which always apply..

### INDIVIDUAL DEVELOPMENT

Even if the product you need does not even exist yet, we will find the right solution with you: from special designs to new developments, everything is possible.

### WARRANTY

If, despite our high quality standard, there is a complaint, this is dealt with quickly and unbureaucratically, even beyond the warranty period.

### HIGHEST QUALITY STANDARDS

Careful manufacturing based on tradition since 1890, and naturally with a modern quality management system according to ISO 9001 for many years.

### SHORT DELIVERY TIME

With over 5,000 articles in our warehouse, you can expect your order to be dispatched on the same day.

### COMPETENT SERVICE FROM EXPERTS

Your local retail partner or the specialists in our team will find the right solution for every task.

### MADE IN GERMANY

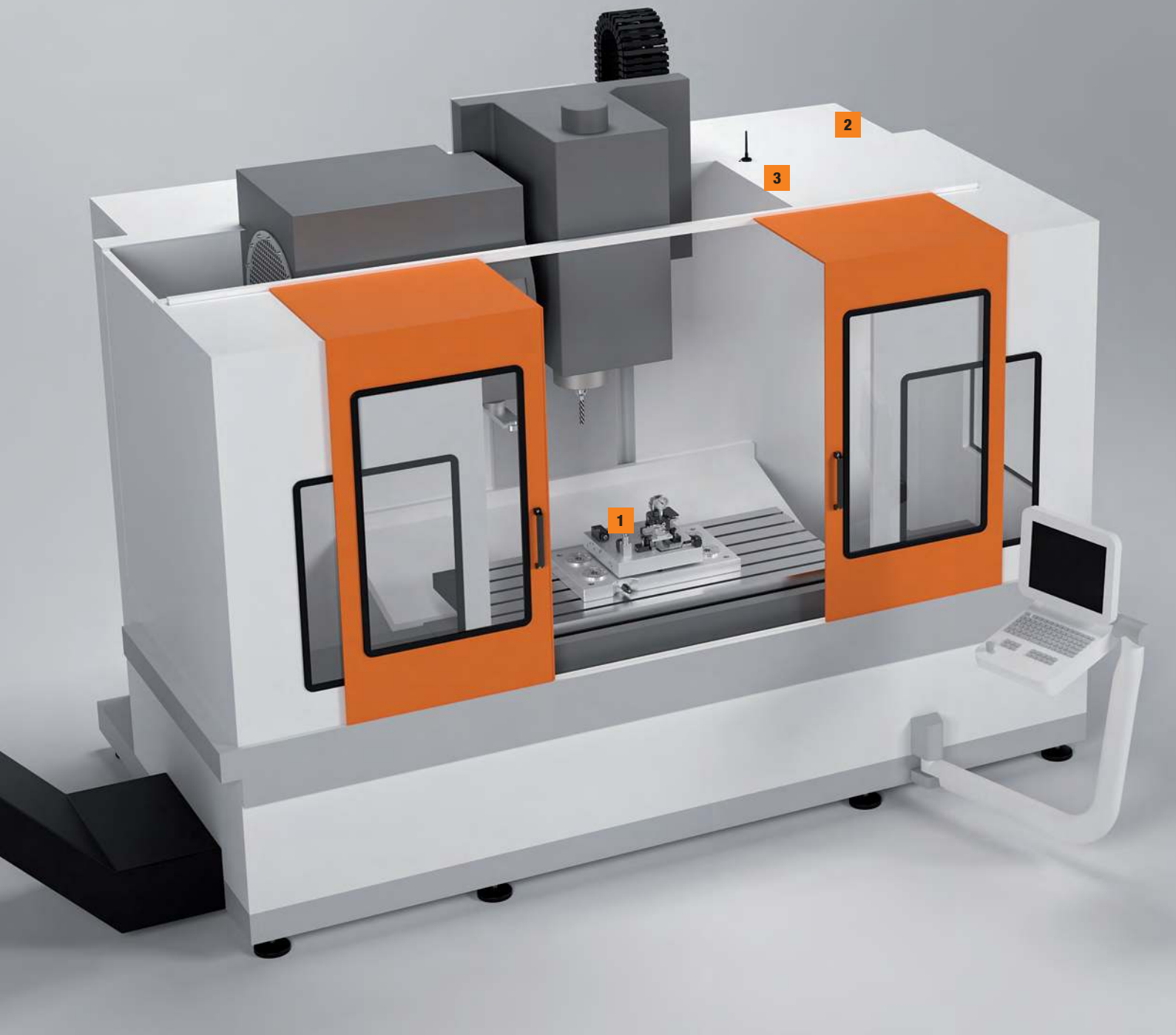
Our entire product range is developed and manufactured exclusively by our employees in Germany.

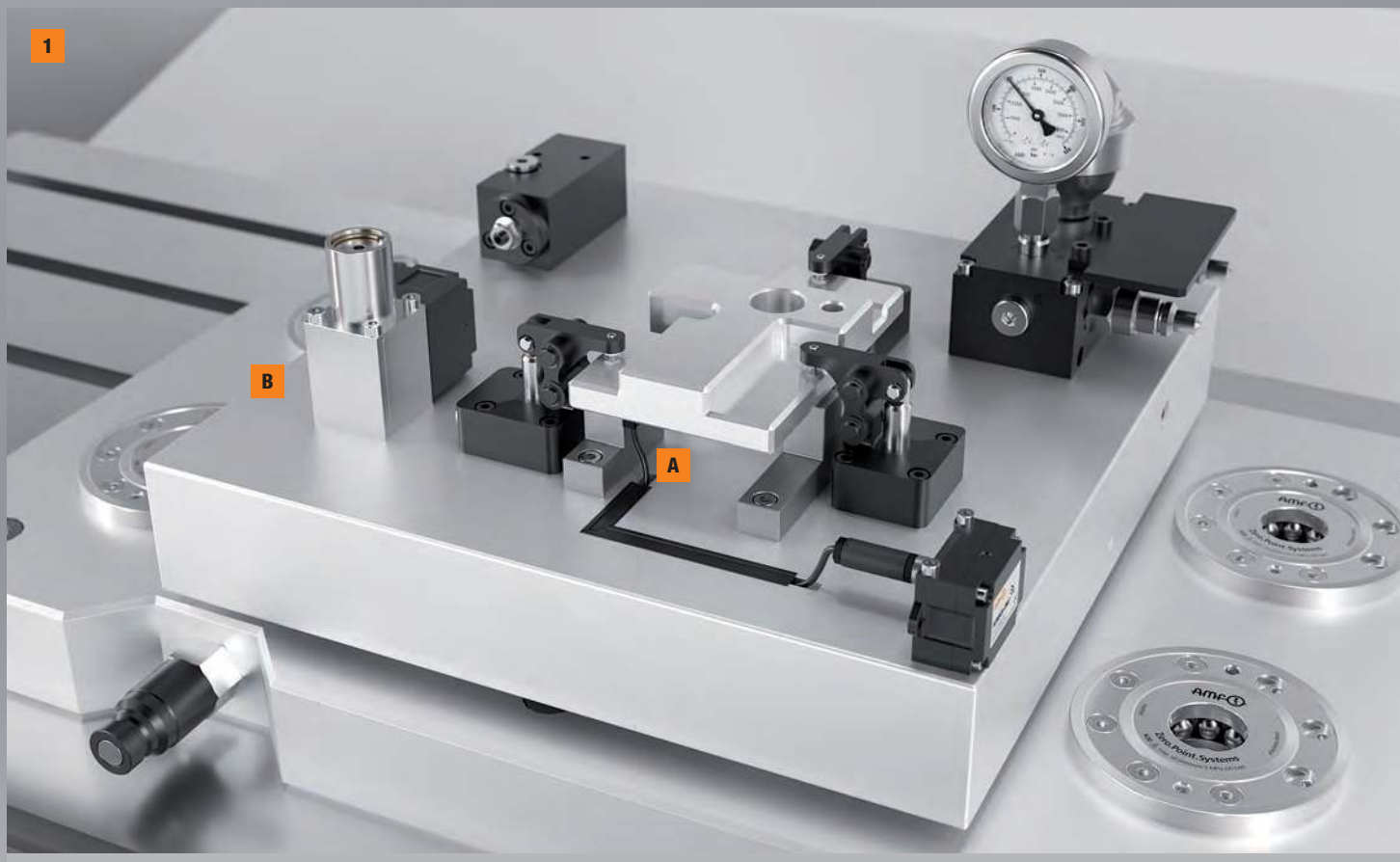
# Contents



# AMF WIRELESS SENSORING SYSTEMS –
## WIRELESS COMMUNICATION TECHNOLOGY FOR YOUR PRODUCTION

Data query in a production environment is the basis for process reliability.
However, it is not always easy to wire fixtures and to manage the data from the engine room.
The AMF Wireless sensoring systems establish wireless communication here. Different states of sensors connected directly to a Sender-Unit can be detected here. This transmits the signal wirelessly to the gateway by means of Bluetooth Low Energy 4.0. The signals are received and displayed here.

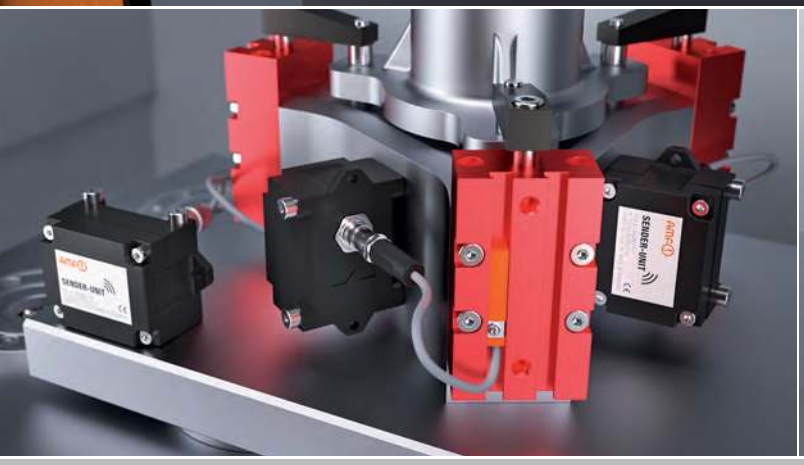





The hydraulic clamping fixture is provided with two queries. The workpiece location pad is queried via a microswitch **A** with a connected Sender-Unit. The wireless pressure switch **B** monitors the pressure of the clamping fixture hydraulic clamping circuit.


**2** The gateway can simply be attached to a top-hat rail in the electrical box and connected to the machine control.

**3** The antenna of the gateway can be placed outside the electrical box and positioned near the Sender-Unit by using the antenna extension with magnetic base.


**1** With the reed switch the position of the cylinder piston is scanned in the clamping element and transmitted by the connected Sender-Unit wirelessly to the gateway.

**2** Integrated support control by built-in microswitches in the fixture. Once the workpiece is mounted, the release is transmitted wirelessly to the gateway and machine control via the Sender-Unit.



**3** Hydraulic pressure monitoring by means of the integrated wireless pressure switch. This performs an opening check of the zero point clamping station.

**4** A WLAN router can be connected optionally to access the web-based user interface of the gateway via a tablet to ensure easier commissioning.

# MILLING / TURNING APPLICATIONS
## NO BOTHERSOME CABLES AND MORE FLEXIBILITY

In the milling and turning process, cables are often in the way due to the changing positioning of the rotary table or do not offer the necessary flexibility in order to follow the movements of the fixture. By using the AMF Wireless sensoring systems, the workpiece support can be queried easily and with process reliability and without laboriously laying cables.


**1** Sender-Units with mechanical microswitches can be mounted directly on the fixture and detect the position of the workpiece.

# EXTERNAL SETUP
## PROCESS-RELIABILITY WITH THE AMF WIRELESS SENSORING SYSTEMS

Extremely heavy and bulky components are ideally set up externally and then clamped in the processing machine.
The early detection of incorrect component support or stress saves a great deal of setup time. This query can already be carried out at the set-up station and not already in the machine by means of radio transmission.

# SETUP OF SHUTTLE TABLES
## EASY CHECKING OF WORKPIECE AND FIXTURE

A shuttle table offers the advantage of setting up the next job beforehand during the processing of a component and then changing the table directly in the engine room. The laying of a cable due to changing the tables means additional setup work. The built-in Wireless sensoring systems on the fixture makes it easier for the employee to check the correct workpiece location pad and position during the manual setup and subsequent processing.




**1** Highly accurate microswitches can be used to query whether a workpiece is clamped on the support. The sender-unit connected to the sensor transmits the signal from the machine room.

**2** The built-in wireless pressure switch monitors the hydraulic clamping pressure.

# UP TO EIGHT SIGNALS ARE PROCESSED BY THE GATEWAY

**GATEWAY**

**VISUALLY DISPLAYED ON THE GATEWAY:**
> output switched
> battery warning
> sensor out of range

YOU DECIDE HOW THE SIGNAL SHOULD BE PROCESSED.

**DIRECT**
(electrician)

**EXTERNAL CONTROL**
(PLC programmer)

**Machine control**

**NC CONTROL**
(machine programmer)

**PLC CONTROL**
(machine manufacturer)

YOU DECIDE HOW THE SIGNAL SHOULD BE DISPLAYED OR PROCESSED – HERE ARE A FEW PRACTICAL EXAMPLES

**LAMP SIMPLY ON/OFF**

**LAMP WITH LOGIC**

**MACHINE START RELEASE**

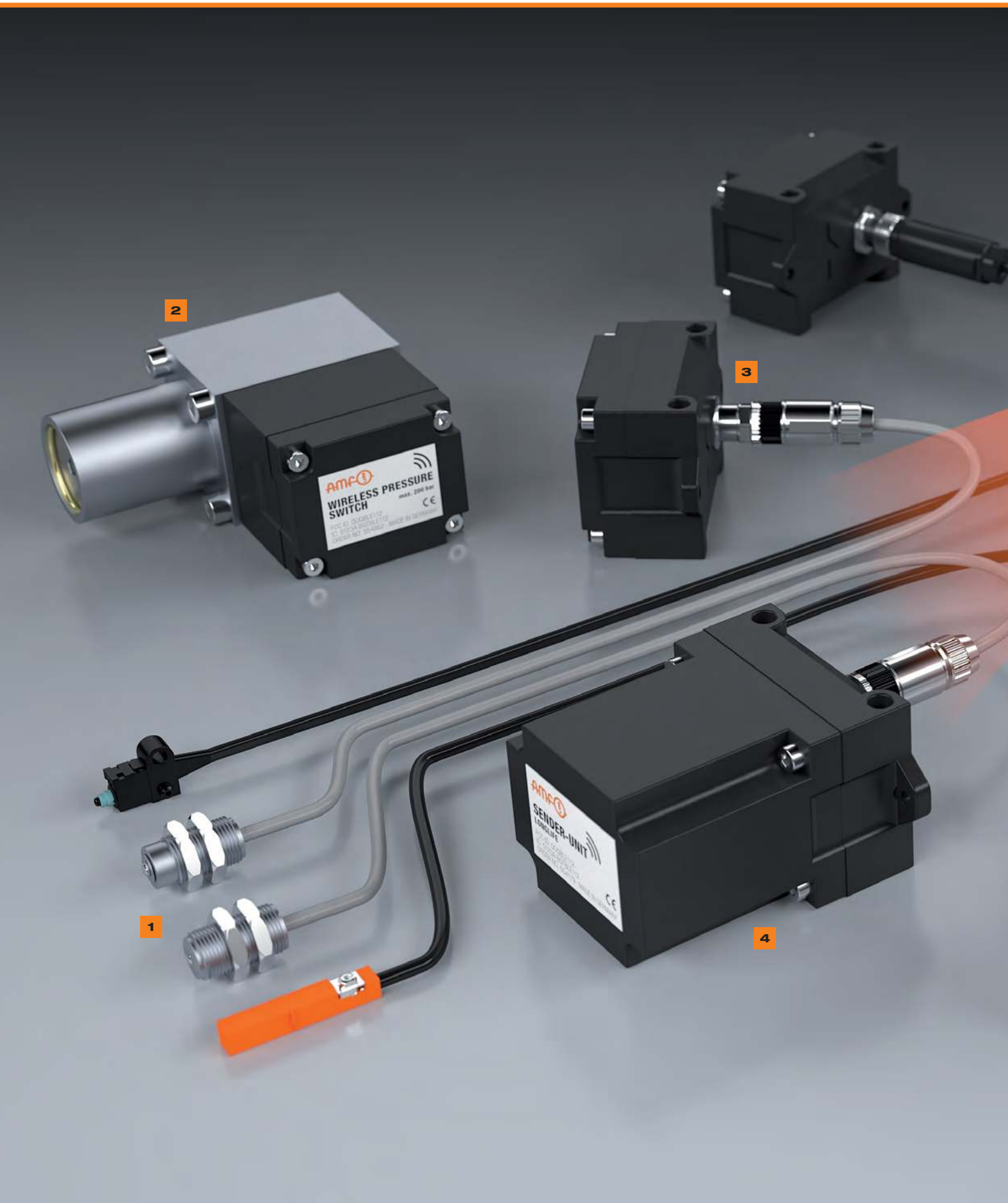
**USER-DEFINED STOP**

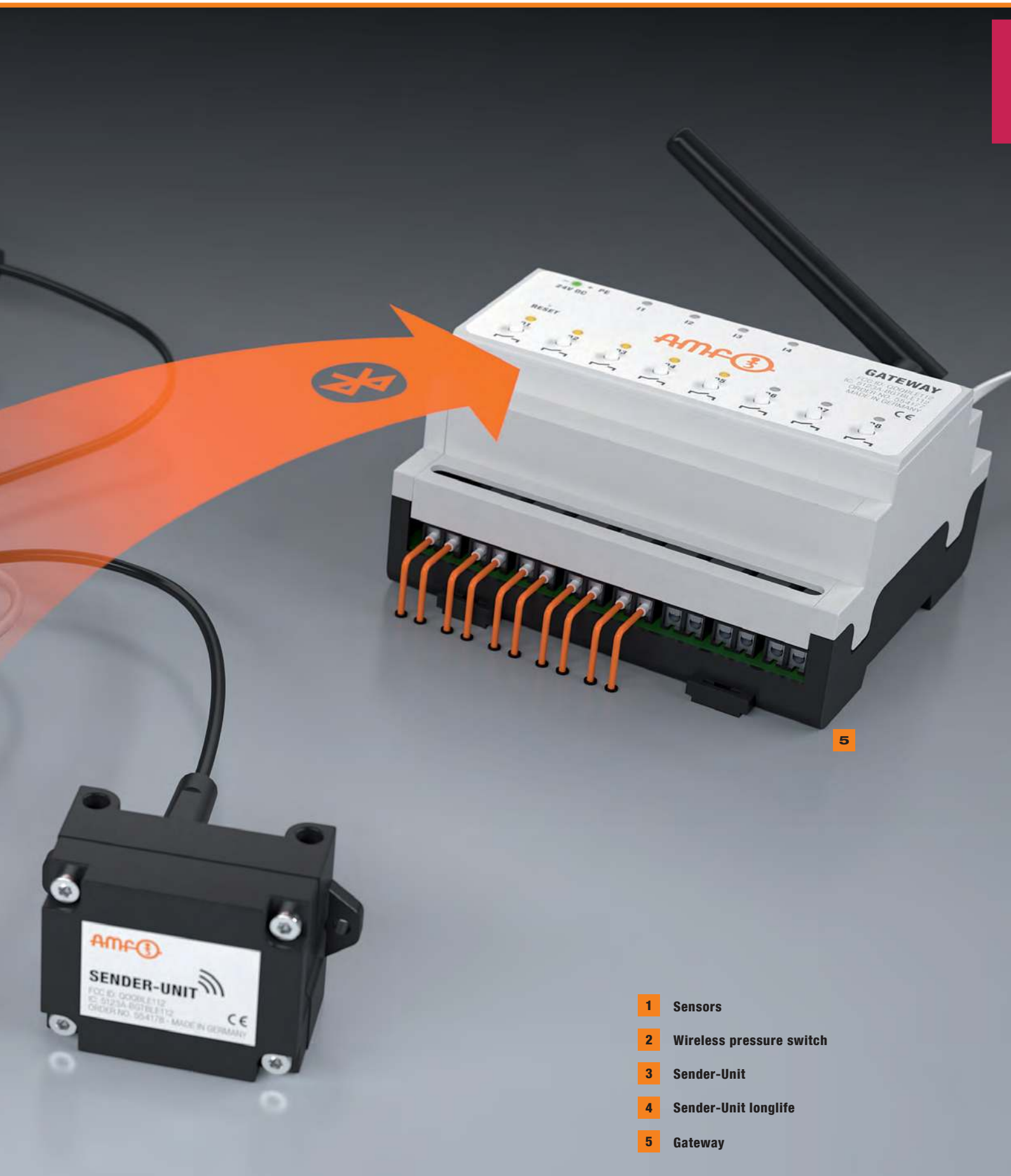
**WEB INTERFACE**

**MESSAGE ON EXTERNAL DISPLAY**

**MESSAGE ON CONTROL DISPLAY**

Subject to technical alterations.


2
WIRELESS PRESSURE SWITCH
3
1
SENDER-UNIT
4




1 **Sensors**

2 **Wireless pressure switch**

3 **Sender-Unit**

4 **Sender-Unit longlife**

5 **Gateway**

Subject to technical alterations.

## No. 5010G

## Gateway

| Order no. | Inputs wireless | Outputs relay | Ingress protection | Weight [g] |
|---|---|---|---|---|
| 554177 | 8 | 8 | IP20 | 250 |

## Application:

The gateway is a receiver for the incoming radio signals of a transmitter (Sender-Unit). The signal from the gateway is monitored and visualised and can be transmitted via potential-free relay outputs.

We recommend installing the gateway inside an electrical box and positioning the antenna near the Sender-Unit, from the electrical box, using an antenna extension cable (No. 5030ZA).

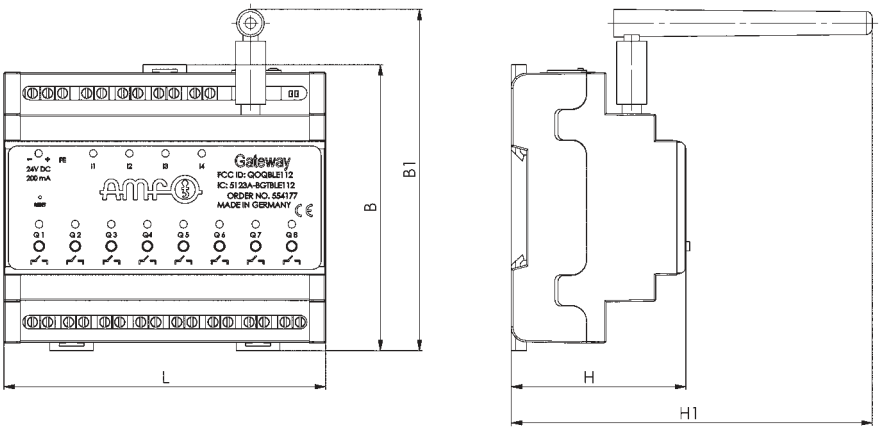
The Sender-Unit is assigned explicitly to an output of the gateway. A pairing stick (No. 5030ZP) is required for the procedure. The Sender-Unit can optionally be paired (assigned) with the gateway using pushbuttons on the gateway or by the integrated web interface. The gateway has an Ethernet interface for this purpose.

## Features:

- Input: up to 8 Sender-Units
- Outputs: 8 potential-free relay outputs
- Transmission protocol: Bluetooth Low Energy (BLE 4.0)
- Range of the radio signal: approx. 10 metres
- Supply voltage: 24 V DC
- Rated current: 0.2 A
- Integrated web interface
- Designed for ambient temperatures of +5 to +65 °C

## Note:

Supplied with antenna as standard.
Pairing stick required for pairing the Sender-Units.
For further technical information please request the data sheet.




## Dimensions:

| Order no. | B | B1 | H | H1 | L |
|---|---|---|---|---|---|
| 554177 | 95 | 113,5 | 58 | 120 | 107 |

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## No. 5010SUS

## Sender-Unit

| Order no. | Cabled input | Output wireless | Battery life up to [Years] | Ingress protection | Weight [g] |
|---|---|---|---|---|---|
| 554178 | 1 | 1 | 1,5 | IP67 | 60 |
| 554179 | 1 | 1 | 5,0 | IP67 | 132 |



### Design:

The Sender-Unit is available in two versions, which vary in battery life:
- Sender-Unit (Order no. 554178): Battery life up to 1.5 years
- Sender-Unit longlife (Order no. 554179): Battery life up to 5 years

### Application:

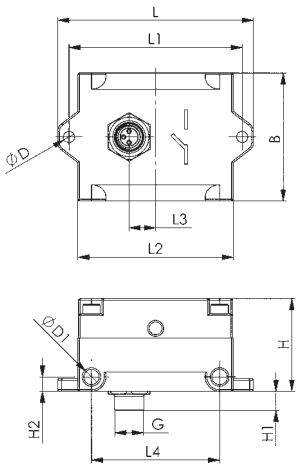
The Sender-Unit transmits a sensor signal to the gateway wirelessly. The sensor is connected to the Sender-Unit by cable. The battery condition of the Sender-Unit is monitored by the gateway and displayed visually on the gateway or web interface.

### Features:

- Input: 1 cabled for power-free sensor (e.g. microswitch or reed switch)
- Output: 1 wireless to the gateway
- Transmission protocol: Bluetooth Low Energy (BLE 4.0)
- Range of the radio signal: approx. 10 metres
- Designed for ambient temperatures of +5 to +65 °C

### Note:

For further technical information please request the data sheet.




### Dimensions:

| Order no. | B | dia. D | dia. D1 | G | H | H1 | H2 | L | L1 | L2 | L3 | L4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 554178 | 40 | 3,1 | 4,8 | M8x1 | 29 | 6 | 4,5 | 61 | 54 | 48,5 | 8,3 | 40 |
| 554179 | 40 | 3,1 | 4,8 | M8x1 | 64 | 6 | 4,5 | 61 | 54 | 48,5 | 8,3 | 40 |

Subject to technical alterations.

## No. 5010SUG

## Sender-Unit Gripper

| Order no. | Cabled input | Output wireless | Battery life up to [Years] | Ingress protection | Weight [g] |
|---|---|---|---|---|---|
| 560408 | 1 | 1 | 1,5 | IP67 | 64 |
| 560406 | 0 | 1 | 1,5 | IP67 | 58 |



### Design:

The Sender-Unit gripper is available in two versions, which vary in input for the sensor:
- Sender-Unit gripper switch (Order no. 560408): Cabled input for an M8-round connector
- Sender-Unit gripper reed (Order no. 560406): Sender-Unit with an integrated reed switch

### Application:

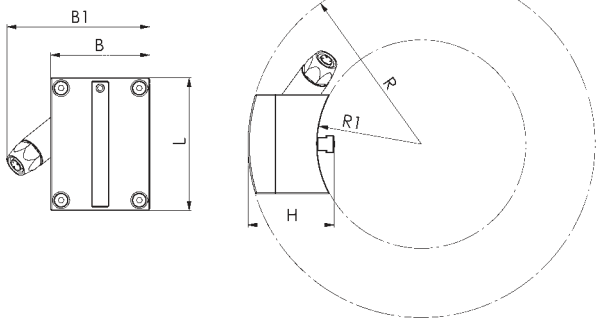
The Sender-Unit gripper is the transmitter for wireless communication between the AMF gripper (No. 1650) and the gateway (receiver). A grasped workpiece can be queried via the Sender-Unit gripper switch by means of a gripper jaw with a microswitch (Order no. 561709). The bottom or top piston position of the gripper can be detected by the Sender-Unit gripper reed.
The Sender-Unit is inserted into the T-slot of the gripper via a T-profile with a clamping screw and clamped.

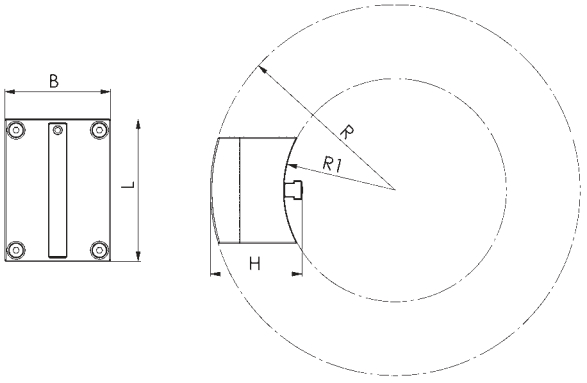
### Features:

- Output: 1 wireless to the gateway
- Transmission protocol: Bluetooth Low Energy (BLE 4.0)
- Battery life: up to 1.5 years
- Range of the radio signal: approx. 10 metres
- Designed for ambient temperatures of +5 to +65 °C

### Note:

For further technical information please request the data sheet.
Further information on the gripper can be found in the AMF gripper catalogue.




### Dimensions:

| Order no. | B | B1 | L | H | R | R1 |
|---|---|---|---|---|---|---|
| 560408 | 30 | 54,8 | 51 | 32,9 | 66,5 | 40 |
| 560406 | 38 | - | 51 | 32,9 | 66,5 | 40 |


You can find more information in the current „Gripper“ product catalogue!

Subject to technical alterations.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## No. 5020-D01

## Wireless pressure switch

| Order no. | Output wireless | Operating pressure [bar] | Battery life up to [Years] | Ingress protection | Weight [g] |
|---|---|---|---|---|---|
| 554862 | 1 | 20 - 200 | 1,5 | IP67 | 1240 |
| 554799 | 1 | 40 - 400 | 1,5 | IP67 | 1270 |

### Design:

The wireless pressure switch is available in two versions, which vary in pressure range of the operating pressure:
- Operating pressure: 20 - 200 bar
- Operating pressure: 40 - 400 bar

### Application:

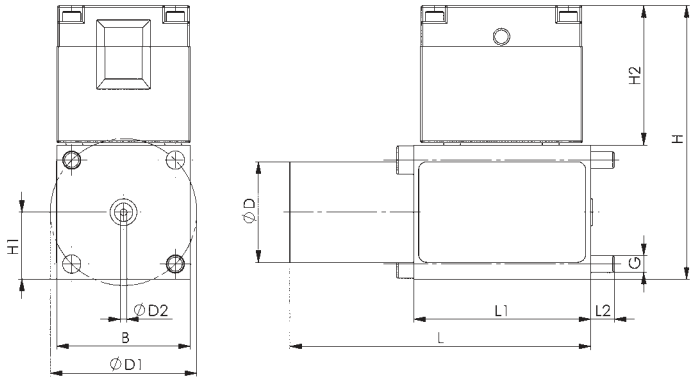
The wireless pressure switch is a mechanical pressure switch with an integrated Sender-Unit. It is used for monitoring the pressure of a hydraulic clamping circuit. The switch signal on the set switching point is transmitted wirelessly to the gateway.

### Features:

- Output: 1 wireless to the gateway
- Sensor type: Mechanical pressure switch
- Transmission protocol: Bluetooth Low Energy (BLE 4.0)
- Battery life: up to 1.5 years
- Range of the radio signal: approx. 10 metres
- Designed for ambient temperatures of +5 to +65 °C

### Note:

Other pressure ranges available on request.
For further technical information please request the data sheet.




### Dimensions:

| Order no. | B | dia. D | dia. D1 | dia. D2 | G | H | H1 | H2 | L | L1 | L2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 554862 | 40 | 30 | 44 | 2 | M5 | 82 | 20 | 42 | 90 | 53 | 7 |
| 554799 | 40 | 30 | 44 | 2 | M5 | 82 | 20 | 42 | 90 | 53 | 7 |


### Recommendations

No. 6982-02-01 Connection Plate , Order no. 60780,
Catalogue „Hydraulic Clamping Systems“

Subject to technical alterations.

## No. 5020-R01

## Reed switch R01

Plastic housing, IP 67

| Order no. | Slot | Length of connecting cable [mm] | Ingress protection | Weight [g] |
|---|---|---|---|---|
| 554800 | T8 | 300 | IP67 | 50 |

### Application:

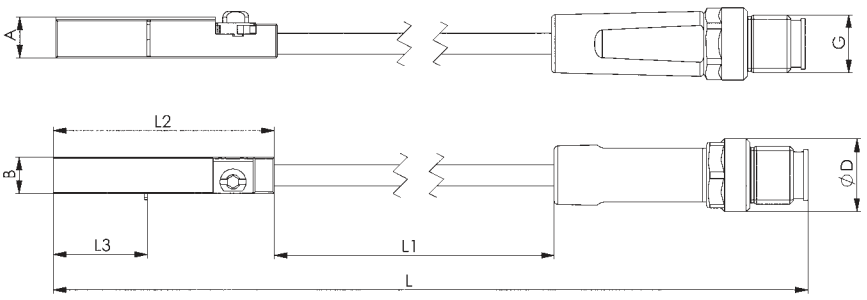
The reed switch is suitable for use on cylinders with a T-slot for querying the piston position.
The switch detects a ring magnet in the cylinder piston when this passes the position of the sensor.
The reed switch is connected to the Sender-Unit by a cable.
Can be used on all standard cylinders made of non-magnetizable material.

### Features:

- Housing: Plastic
- Function: N/O contact
- Installation: insert and clamp in T-slot
- The IP67-certified switch is water, dust and moisture-resistant
- The connector (M8) is pre-assembled ready for connection for the AMF Sender-Unit
- Designed for ambient temperatures of -25 to +70 °C

### Note:

For further technical information please request the data sheet.




### Dimensions:

| Order no. | A | B | dia. D | G | L | L1 | L2 | L3 |
|---|---|---|---|---|---|---|---|---|
| 554800 | 5,7 | 5 | 10 | M8x1 | 376 | 300 | 30,5 | 13 |

Subject to technical alterations.



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## No. 5020-M01

## Microswitch M01

Plastic housing, IP 67

| Order no. | Stroke [mm] | Length of connecting cable [mm] | Ingress protection | Weight [g] |
|---|---|---|---|---|
| 554795 | 2,7 | 150 | IP67 | 50 |
| 554796 | 2,7 | 500 | IP67 | 70 |

### Application:

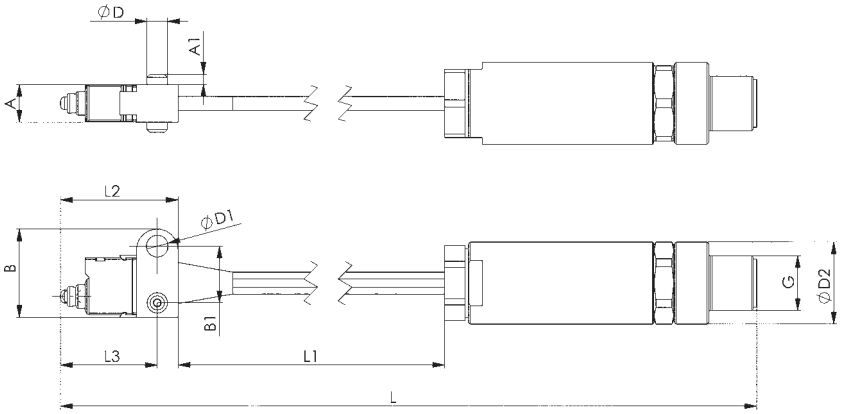
Compact microswitch for querying different states of a clamping device or component, such as support control, position monitoring or clamping control. The microswitch is connected to the Sender-Unit by a cable.

### Features:

- Housing: Plastic
- Function: N/O contact with mechanical contact
- The IP67-certified switch is water, dust and moisture-resistant
- The connector (M8) is pre-assembled ready for connection for the AMF Sender-Unit
- The stroke is a max. of 2.7 mm with an operating force of 1.2 N
- Designed for ambient temperatures of 0 to +80 °C

### Note:

Different lengths of the connection cable are available on request.
For further technical information please request the data sheet.




### Dimensions:

| Order no. | A | A1 | B | B1 | dia. D | dia. D1 | dia. D2 | G | L | L1 | L2 | L3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 554795 | 5,5 | 1,5 | 12,9 | 8,3 | 3 | 3,2 | 12 | M8x1 | 213 | 150 | 17,2 | 14,45 |
| 554796 | 5,5 | 1,5 | 12,9 | 8,3 | 3 | 3,2 | 12 | M8x1 | 563 | 500 | 17,2 | 14,45 |

Subject to technical alterations.

## No. 5020-M02

## Microswitch M02

Stainless steel housing, IP 44, precise query, axial and lateral approach direction

| Order no. | Precision [mm] | Stroke [mm] | Length of connecting cable [mm] | Ingress protection | Weight [g] |
|---|---|---|---|---|---|
| 554797 | 0,01 | 0,5 | 150 | IP44 | 75 |
| 554798 | 0,01 | 0,5 | 500 | IP44 | 130 |

### Application:

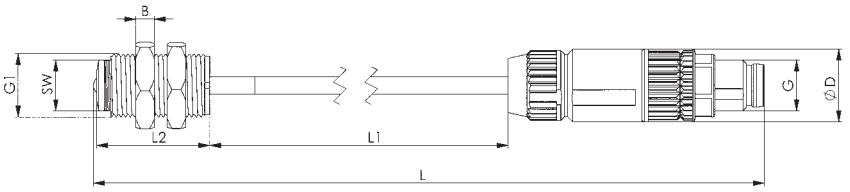
Compact microswitch for querying different states of a clamping device or component, such as support control, position monitoring or clamping control, with high accuracy. The microswitch is connected to the Sender-Unit by a cable.

### Features:

- Housing: Stainless steel , hardened stop surfaces
- Function: N/O contact with mechanical contact
- Installation: M10x0.75, flush mountable
- The connector (M8) is pre-assembled ready for connection for the AMF Sender-Unit
- The stroke is a max. of 0.5 mm with an operating force of 0.8 N
- The static load of the probe tip (ball made of stainless steel) is a max. of 1500 N
- Designed for ambient temperatures of 0 to +80 °C

### Note:

Two M10x0.75 fastening nuts are supplied as standard.
Different lengths of the connection cable are available on request.
For further technical information please request the data sheet.




### Dimensions:

| Order no. | B | dia. D | G | G1 | L | L1 | L2 | SW |
|---|---|---|---|---|---|---|---|---|
| 554797 | 3 | 11,5 | M8x1 | M10 | 209 | 150 | 18 | 8 |
| 554798 | 3 | 11,5 | M8x1 | M10 | 559 | 500 | 18 | 8 |

Subject to technical alterations.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## No. 5020-M03

## Microswitch M03

Stainless steel housing, IP 67, precise query, axial and lateral approach direction

| Order no. | Precision [mm] | Stroke [mm] | Length of connecting cable [mm] | Ingress protection | Weight [g] |
|---|---|---|---|---|---|
| 556264 | 0,01 | 0,3 | 150 | IP67 | 75 |
| 556265 | 0,01 | 0,3 | 500 | IP67 | 130 |

### Application:

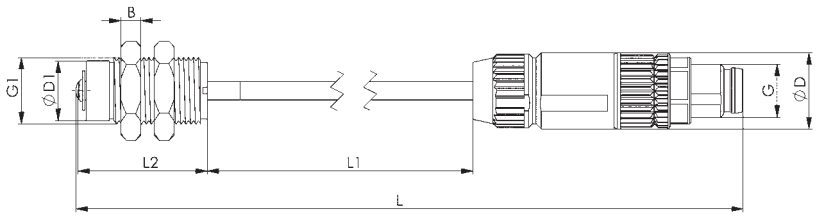
Compact microswitch for querying different states of a clamping device or component, such as support control, position monitoring or clamping control, with high accuracy. The microswitch is connected to the Sender-Unit by a cable.

### Features:

- Housing: Stainless steel , hardened stop surfaces
- Function: N/O contact with mechanical contact
- Installation: M10x0.75, flush mountable
- The connector (M8) is pre-assembled ready for connection for the AMF Sender-Unit
- The IP67-certified switch is water, dust and moisture-resistant
- The stroke is a max. of 0.3 mm with an operating force of 1.0 N
- The static load of the probe tip (stainless steel) is a max. of 3000 N
- Designed for ambient temperatures of 0 to +80 °C

### Note:

Two M10x0.75 fastening nuts are supplied as standard.
Different lengths of the connection cable are available on request.
For further technical information please request the data sheet.




### Dimensions:

| Order no. | B | dia. D | dia. D1 | G | G1 | L | L1 | L2 |
|---|---|---|---|---|---|---|---|---|
| 556264 | 3 | 11,5 | 9 | M8x1 | M10 | 211 | 150 | 19,5 |
| 556265 | 3 | 11,5 | 9 | M8x1 | M10 | 561 | 500 | 19,5 |

Subject to technical alterations.

## No. 5030ZA

## Antenna extension

| Order no. | Magnetic base | Length of connecting cable [m] | Connection | Weight [g] |
|---|---|---|---|---|
| 554803 | ● | 1,5 | RP-SMA | 110 |
| 559716 | - | 3,0 | RP-SMA | 103 |
| 559717 | - | 5,0 | RP-SMA | 173 |
| 558654 | - | 10,0 | RP-SMA | 314 |

### Application:

The antenna extension is used to position the antenna outside the electrical box near the Sender-Unit. This allows any possible interruption by the electrical box housing to be prevented. We recommend positioning the antenna as close as possible to the Sender-Unit in order to obtain good signal strength.

### Features:

- Antenna extension with a magnetic base has a connection cable with a length of 1.5 m
- Additional antenna extensions without a magnetic base are available with a length of 3 m, 5 m, and 10 m
- Connector: straight


Subject to technical alterations.



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## No. 5030ZB

## Spare battery and flat seal

| Order no. | Batteries [pcs] | Seal [pcs] | Weight [g] |
|---|---|---|---|
| 554860 | 1 | 1 | 15 |
| 554861 | 2 | 1 | 30 |
| 561746 | 1 | 1 | 15 |

### Design:

Order no. 554860: 1 button cell and 1 flat seal for Sender-Unit (Order no. 554178) and wireless pressure switch (Order no. 554862 and 554799)
Order no. 554861: 2 button cells and 1 flat seal for longlife Sender-Unit (Order no. 554179)
Order no. 561746: 1 button cell and 1 flat seal for Sender-Unit gripper switch (Order no. 560408) and Sender-Unit gripper reed (Order no. 560406)

### Application:

Spare battery for the Sender-Unit. During a battery change, the flat seal must be replaced in order to further ensure the protection class IP 67.

## No. 5030ZP

## Pairing stick

| Order no. | Length [mm] | Weight [g] |
|---|---|---|
| 554802 | 42 | 25 |

### Application:

The pairing mode is activated on the Sender-Unit using the pairing stick. A brief touch on the lateral contact area is sufficient to do this.

## No. 5030ZR

## WLAN router

| Order no. | L x W x H | Weight [g] |
|---|---|---|
| 554801 | 57 x 57 x 18 | 18 |

### Application:

The WLAN-Router is used to integrate a gateway into a WLAN network. For this purpose, the router is connected to the gateway by cable. The web interface of the gateway can then be accessed via a WLAN-capable device.

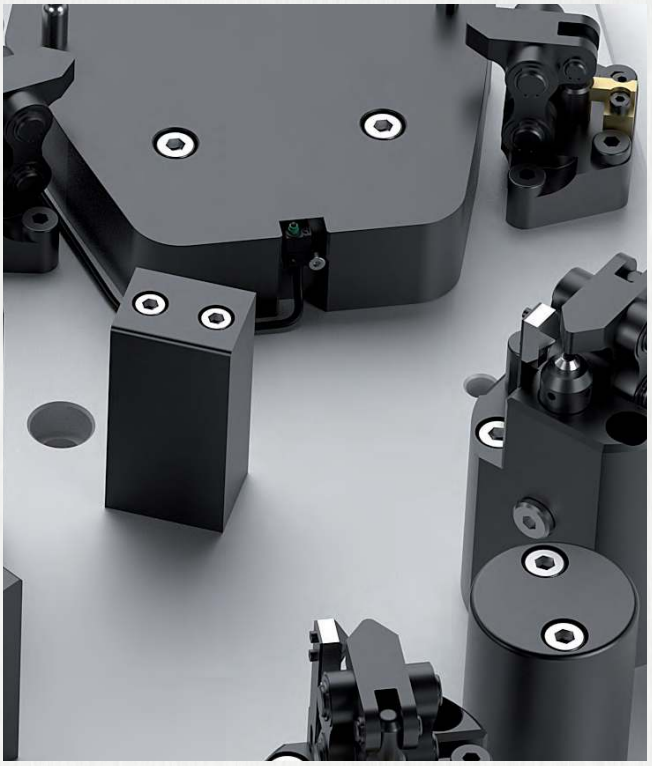
### Features:

- TP-Link WLAN router up to 300 Mbit/s
- WLAN frequency: 2.4 GHz
- Interfaces: LAN (10/100 Mbit/s) and micro USB

### Note:

We recommend positioning the WLAN router outside the electrical box.

Subject to technical alterations.

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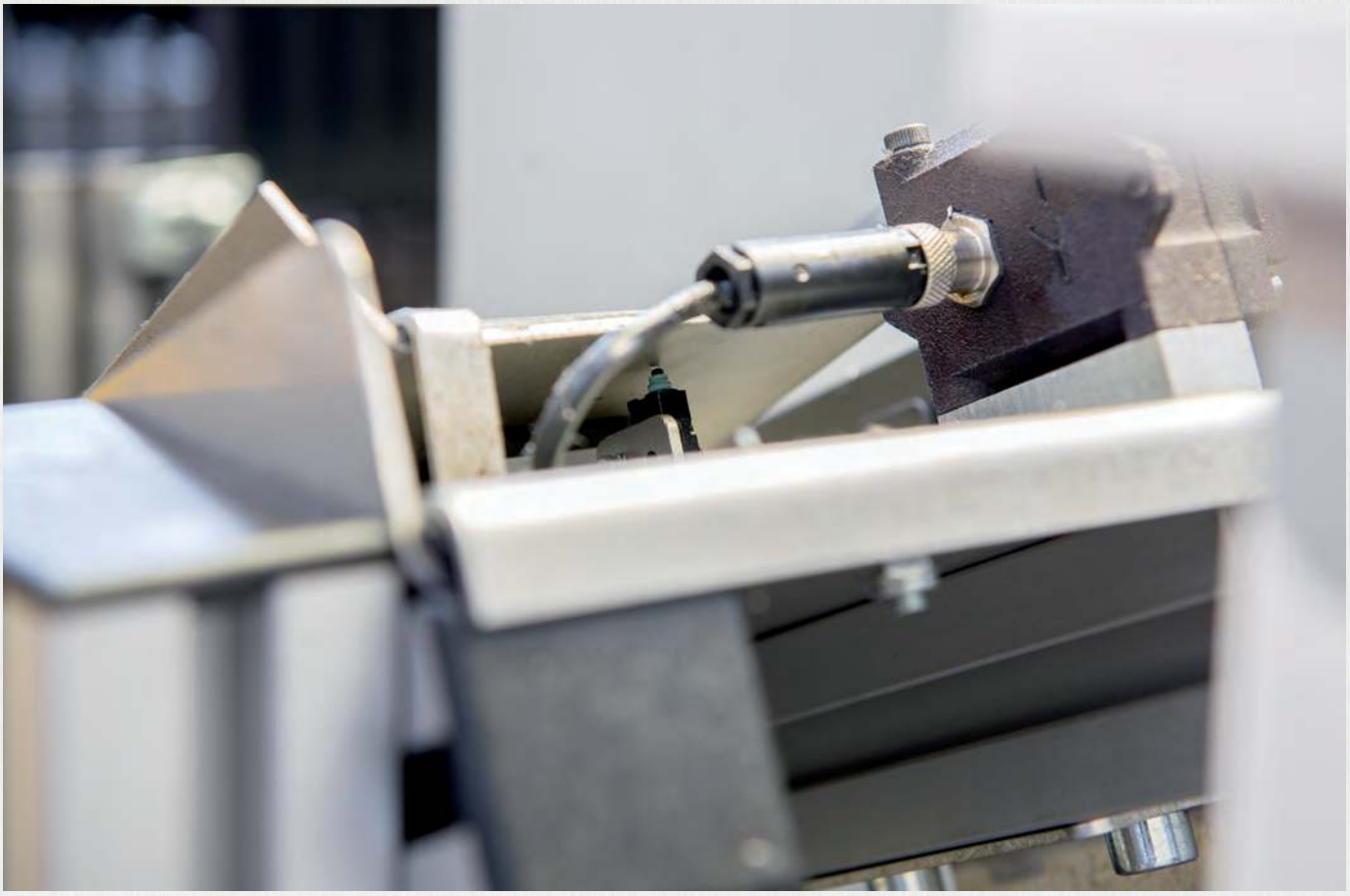

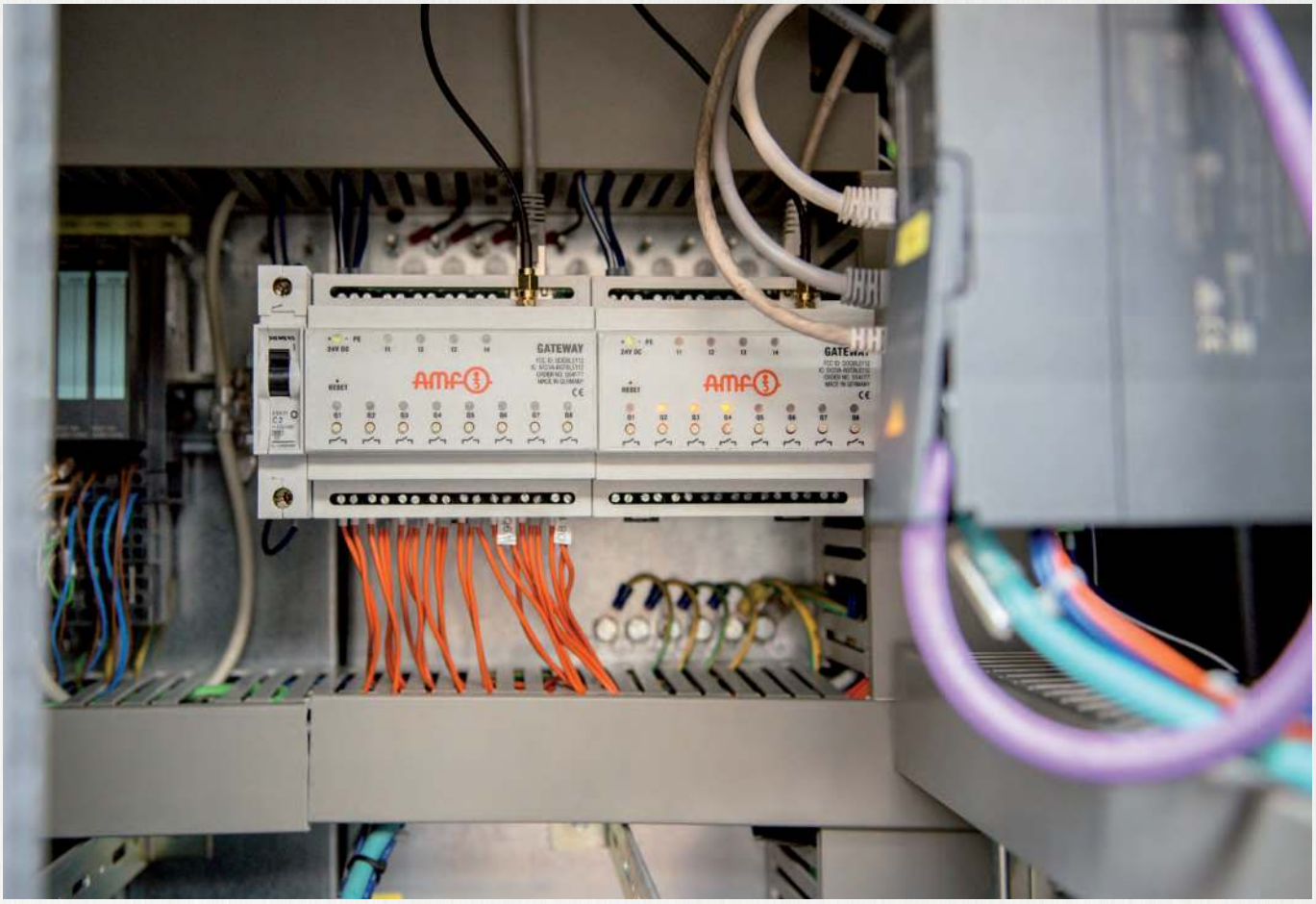


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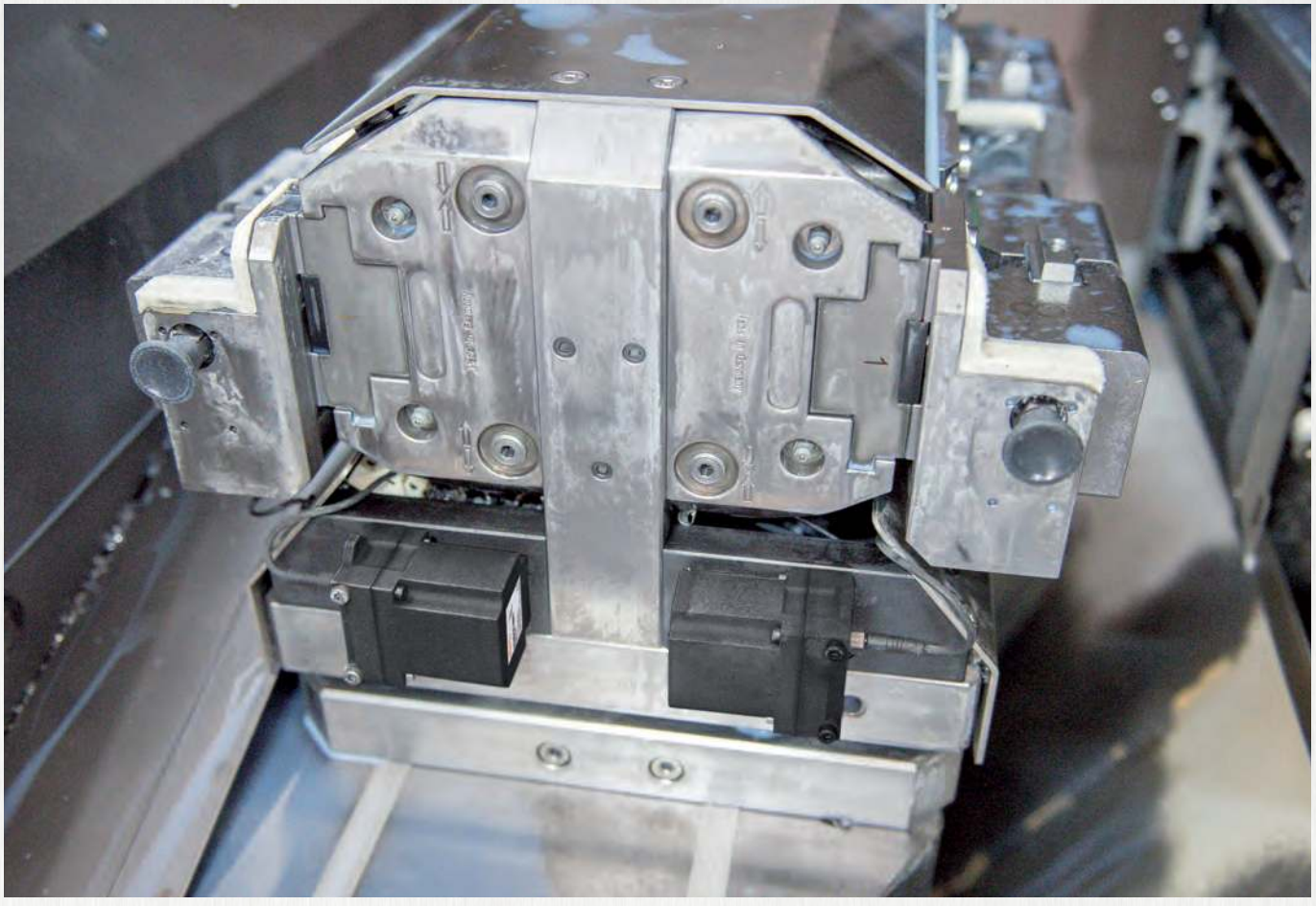

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# Terms of sale, delivery and payment

These Terms of Payment apply for companies, legal entities governed by public law and public law special funds. Our goods and services are supplied exclusively on the basis of the following conditions. Any deviating purchasing conditions of the customer not expressly recognised by us will not become part of the contract through acceptance of the order. By placing the order and accepting the goods we deliver, the customer confirms its consent to our terms and conditions.

**1. Offer and contractual conclusion**

All our offers are always subject to change without notice unless otherwise explicitly agreed. Our delivery contracts are based on the latest version of our catalogue. Dimension and weight values, as well as illustrations, drawings and data, are non-binding and can be changed by us at any time. Therefore, deviations cannot be ruled out and do not justify any compensation claims against us.
Orders are considered accepted only when confirmed by us in writing. If, for organisational reasons, the customer does not receive a separate confirmation upon the delivery of goods, the invoice shall also be deemed the order confirmation.

**2. Prices**

The prices are in EURO, ex-works, excluding VAT, packing, freight, postage and insurance. Unless otherwise agreed, our list prices valid on the day of delivery shall apply. For orders below 50 EUR goods net, we must make a minimum quantity surcharge of a 10 EURO for cost reasons.

**3. Tool costs**

Unless any other agreements have been reached, the tools fabricated for the purpose of executing the order shall remain our property in all cases, even if we have invoiced a tool cost component separately.

**4. Payment**

Unless otherwise stated on the invoice, the purchase price falls due for net payment within 30 days of the invoice date (without deduction of discount). Invoice amounts of below 50 EURO are due for payment immediately.
In case of payment default, we shall be entitled to charge default interest. The amount corresponds to our interest rate for current account credits at our main bank; the minimum however being 8 percentage points above the relevant base interest rate applied by the European Central Bank. Moreover, in case of default following written notice to the customer, we shall be entitled to cease to fulfil our obligations until payments are received.

**5. No set-off**

The customer can set-off only with legally confirmed or undisputed counterclaims.

**6. Right of withdrawal in case of delayed acceptance or payment and insolvency**

If the customer fails to accept the goods in due time, we shall be entitled to set a reasonable period of grace, after which we can dispose of the goods elsewhere and supply the customer on a reasonably longer term. Our rights to withdraw from the contract under the provisions of Section 326 BGB and demand damages for non-performance shall not be affected. If the customer fails to pay for the goods once payment is due, we shall be entitled, at the end of a reasonable period of grace we have set, to withdraw from the contract and demand the return of any goods already supplied. Section 323 BGB remains unaffected in all other cases.
If the customer applies for the opening of insolvency proceedings, we shall be entitled, prior to the ordering of security measures by the insolvency court, to withdraw from the contract and demand the immediate return of the goods.

**7. Customer-specific fabrications/project fabrications (custom fabrications)**

Customer-specific fabrications require binding information on design, quantity etc. in written form at the time of ordering. For manufacturing reasons, we reserve the right to supply up to 10% above or below the order quantity. Technical modifications or cancellations are subject to any costs incurred. The return of customer-specific fabrications is impossible.

**8. Delivery and packaging, transfer of risk**

The delivery date is non-binding; although stated to the best of our knowledge. It is subject to us receiving correct, defect-free and complete deliveries. The stated delivery dates relate to completion in the factory, starting on the day the order is accepted by us. Delivery is EXW (ex-works) in accordance with Incoterms 2010. Therefore, the costs are borne by the customer. The risk is transferred to the customer when the goods are passed to the person, company or facility nominated to execute the shipment. This applies also for partial deliveries, or if we have assumed responsibility for delivery and installation. The risk shall be transferred to the customer even in the case of delayed acceptance.
In the absence of specific shipping instructions, we shall proceed as we deem fit and without any obligation to the cheapest or most expedient method. The customer agrees that the order can also be delivered in parts, insofar as this is reasonable for the customer. We shall charge a 5 EURO processing free for shipping to third parties that we supply on behalf of the customer.
The packaging complies with the packaging ordinance. Disposable packaging shall be charged at cost price. The packaging cannot be taken back.

**9. Performance impediment and/or impossibility**

If we are hindered in the fulfilment of our obligation due to the onset of unforeseeable circumstances, which we are unable to avoid despite reasonable effort in relation to the nature of the circumstances (e.g. operational interruption, delay in the delivery of important raw materials, defects in the delivery), the delivery time shall be extended by a reasonable period, insofar as the supply of goods or services is not rendered unreasonably difficult or impossible.
If we have to accept that these circumstances are not only temporary, we shall be entitled to withdraw from the contract either in whole or in part.
If the supply of goods or services becomes impossible, the customer shall not be obliged to furnish its own contractual service. Section 275 BGB applies mutatis mutandis. If, however, the customer is solely or predominantly responsible for the circumstances that led to impossibility, it shall remain under an obligation to render the return service. The same applies if this circumstance occurs at a time when the customer is behind schedule with acceptance.

**10. Samples/returns**

Samples shall be provided only against payment. If samples or models are provided, a credit note shall be issued with the subsequent order if the order value is 125 EURO net or more. Goods can be returned only by agreement, although custom fabrications are excluded from such return.
In the case of returns for which we are not responsible (e.g. incorrect order), we shall charge a processing fee of 10%, the minimum value, however, being 7.50 EURO.

**11. Retention of title**

The goods shall remain our property unless full payment of all claims and/or until the cheques provided for this purpose are honoured. The itemisation of claims in an ongoing invoice, as well as balancing the account and the recognition thereof does not affect the retention of title. The customer is entitled to sell on the retained goods during the ordinary course of business. However, the customer is not permitted to pledge the goods or transfer them by way of security. It shall assign its claim ensuing from the selling on of the retained goods to us in advance. The customer shall be entitled to collect the claim to the extent that it has fulfilled its obligations towards us. At our request, the customer shall be obliged to state third-party debtors and we shall be entitled to report this and the assignment.

**12. Property rights**

We reserve property rights and copyrights to all contractual documents such as drafts, drawings, calculations and cost estimates. Such documents must not be reproduced or disclosed to third parties without our consent. Any rights to patents, utility models etc. reside solely with us, insofar as such patents have not yet been filed. Our products are allowed to be replicated only with our written consent.
If objects are fabricated according to drawings or samples, the customer shall warrant that any third party property rights are not infringed by manufacture or delivery. If a third party forbids manufacture and delivery on account of property rights, we shall be entitled to stop manufacture and delivery immediately. The customer shall be obliged to reimburse us with all costs incurred and indemnify us from third party compensation claims. Compensation claims by the customer are impossible.

**13. Warranty**

If the customer agrees with us a particular quality of the goods, we shall base this agreement on our technical delivery specifications. If we have to deliver according to customer drawings, specifications, samples etc., the customer shall assume the risk for suitability for the intended purpose. If, after the contract is concluded, the scope of goods or services is changed at the customer‘s request and this impairs the quality or suitability of the goods, claims for defects on the part of the customer shall be ruled out, insofar as such impairments are caused by the customer‘s requests for change.
The time at which the risk is transferred is decisive for the contractual state of the goods. Wear and tear of wearing parts caused by ordinary use does not constitute a defect. Claims for defects are ruled out in the following cases in particular: Unsuitable or improper use, incorrect installation and/or commissioning by the customer or third party, normal wear and tear, incorrect or negligent handling - in particular excessive use -, unsuitable equipment, replacement materials, chemical, electrochemical or electrical influences, unless such defects are caused by ourselves.
If the goods contain a defects, we shall provide, following a reasonable period of grace set by the customer, either a replacement or a repair as we deem fit. If such subsequent performance fails, the customer shall be entitled to either reduce the purchase price or withdraw from the contract. Any further warranty claims are ruled out. In case of negligible deviations from the agreed quality, no claims for defects shall be recognised.
The discovery of defects must be communicated to us immediately in writing. In the case of recognisable defects, however, within 10 days of acceptance, in the case of non-recognisable defects immediately after they become evident. The warranty is 12 months, starting with delivery of the goods ex-works.

**14. Liability**

With the exception of harm to life, body or health on account of a breach of duty by ourselves, our liability shall be limited to intent or gross negligence.

**15. Place of fulfilment, place or jurisdiction and governing law**

The place of fulfilment for all obligations ensuing from this contractual relationship is D-70734 Fellbach.
The place of jurisdiction for all legal disputes ensuing from the contractual relationship is the court responsible for the headquarters of Andreas Maier GmbH & Co. KG.
All disputes ensuing from the contract or regarding the validity thereof shall be finally decided by a court of arbitration in accordance with the Court of Arbitration Ordinance of the German Committee for Arbitration Court Procedures or the Conciliation and Arbitration Arrangement of the International Chamber of Commerce, recourse to ordinary courts of law being excluded. The legal dunning process, however, remains permissible.
German law shall govern (BGB and HGB). The applicability of the UN Convention on Contracts for the International Sale of Goods (CISG) is ruled out.

**16. Severability clause**

If individual provisions become legally invalid, the remaining provisions shall not be affected. The legally invalid provision shall be replaced by regulations that most closely reflect the economic purpose of the contract with reasonable consideration for the mutual interests. The publication of these Terms of Sale, Delivery and Payment renders all previous versions invalid. This does not apply for any contracts concluded prior to announcement.

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