

RADIO SENSORS



WE GENERATE EXCITEMENT.

Since its founding by Andreas Maier in 1890, our company has lived through many exciting times. Today we are the leading manufacturer in Europe, supplying over 5,000 different products from the fields of clamping, hand tools and locks. With this extensive product range we can meet all of our customers' needs and requirements. But providing optimal quality means meeting the challenges at all levels: Expert consultation, modern team organisation, individual solutions (including special developments), flexibility in response to changing conditions, etc. And we ourselves find this so exciting that we look forward every day to shaping the market together with our employees and our customers – both now and in the future. That is something you can count on.



THE AMF SERVICE GUARANTEE

> Assuredly on the way to the top

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** AMF 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** Marking and cleaning tools included in the AMF product range.

5 Individual development

And if the product you need doesn't exist? Just ask us: We will find the best solution for you – whether it is a special version or a completely new development.

4 Warranty

We stand by our high quality standards. We handle customer complaints very liberally and without red tape – whenever possible even after the end of the warranty period.

3 Guaranteed quality standard

AMF stands for manufacturing in-house with the utmost care. A tradition we have upheld since 1890 – and naturally for many years now with a modern quality management system to ISO 9001.

2 Short delivery times

AMF's finished goods inventory with over 5,000 items guarantees a delivery readiness of 98%. You can also count on each warehouse item you order being shipped to you on the same day.

1 Service from genuine experts

„Different tasks, different solutions. In AMF's professional product range, you can find the right solution quickly and reliably: either from your local dealer or with help from the specialists in our teams. A phone call is all it takes.“

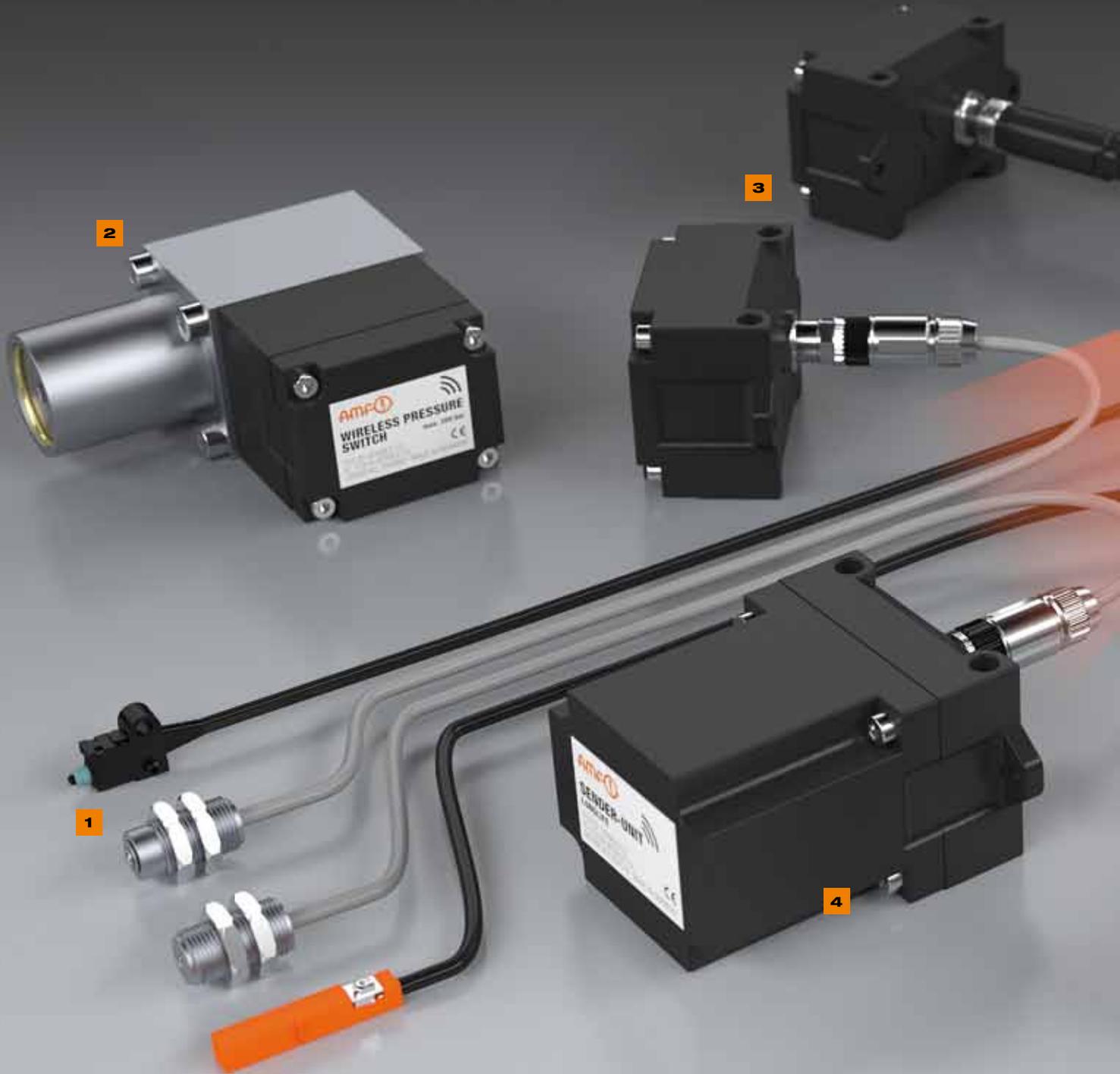
E Made in Germany

It goes without saying that our range of products is developed and manufactured by our team of employees in Germany.

<p>FUNCTIONAL PRINCIPLE OF RADIO SENSORS</p>	<p>4 - 7</p>
<p>THE GATEWAY</p> 	<p>8</p>
<p>SENDER UNITS</p> 	<p>9</p>
<p>SENSORS</p> 	<p>10 - 15</p>
<p>ACCESSOIRES</p> 	<p>16 - 17</p>



AMF RADIO SENSORS - WIRELESS COMMUNICATION TECHNOLOGY FOR YOUR PRODUCTION



1 Sensors

2 Radio pressure switch

3 Sender unit

Whether in clamping technology or for modern handling and storage systems - the AMF radio sensor is the perfect solution for a fully automated, unmanned production process. Wireless signal transmission by means of failure-free Bluetooth Low Energy 4.0, very long battery life as well as space-saving small construction are just a few features of this innovative technology. Inexpensive to buy and flexible to use, the AMF radio sensor ensures seamless process integration and thus increases the efficiency in your production.



4 Sender unit, longlife

5 Gateway



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 radio pressure switch. This monitors in this case the system pressure of the hydraulic zero point clamping station.

4 The gateway is connected to the machine control. A WLAN router can be connected optionally to access the web-based user interface of the gateway via a tablet.

No. 5010G

Gateway

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

Design:

Inputs: 8 wireless with transmission protocol Bluetooth Low Energy (BLE 4.0), transmission frequency 2.4 GHz.

Outputs: 8 potential-free relay outputs, electrically isolated, with screw terminals.

Max. 60W / 125VA - 220 VDC / 250 VAC, 2A

Radio signal range to the sender unit is approx. 10 metres. An extension of the radio signal is possible with antenna extension.

Power supply voltage: 24 V DC, nominal current 0.2 A

Designed for ambient temperatures from +5 to +65 °C.

Application:

Gateway (receiver) for wireless communication between sender units and the machine control.

The gateway monitors, processes, visualises and outputs the incoming radio signal to the machine control. The incoming radio signal on the gateway is transmitted by the sensor to the sender unit by cable and then transmitted by means of Bluetooth Low Energy (BLE 4.0) .

The sensors in conjunction with the sender unit can be used and mounted, for example, on machine tables, fixtures, in workpiece storage technology or other storage systems.

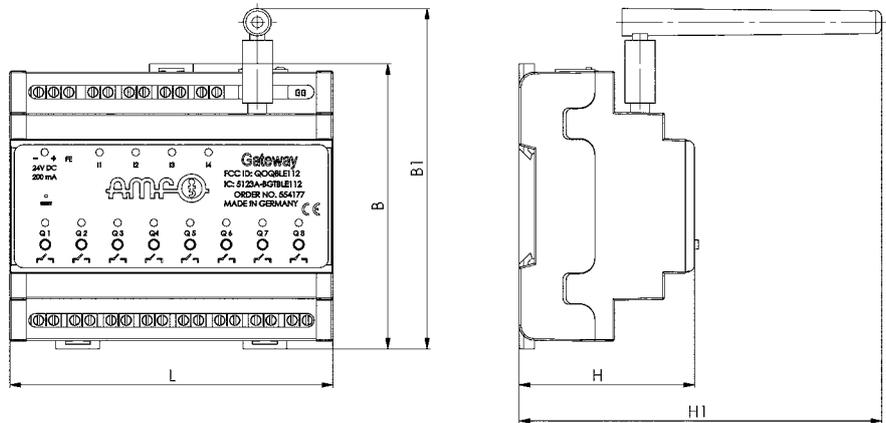
The pairing (connection) of the sender unit to the gateway can optionally take place by the pushbuttons on the gateway or can be carried out on the integrated web interface using a tablet, for example.

Note:

All switching states of the sender units can be monitored via the integrated web interface.

The interface for this is the Ethernet RJ45 socket. If a WLAN router is used, the signal can be transmitted wirelessly.

For further technical information please request the product data sheet.



Dimensions:

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

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 units are available in two versions. The longlife sender unit with Order No. 554179 has a battery life of up to 5 years and differs from the standard version in energy management (number and version of batteries) with a battery life of up to 1.5 years.

Input: 1 cabled input for the sensors.

Output: 1 wireless - to the gateway.

Radio signal range to the gateway is approx. 10 metres.

Designed for ambient temperatures from +5 to +65 °C.

Application:

Sender unit for wireless communication between sensors and the gateway.

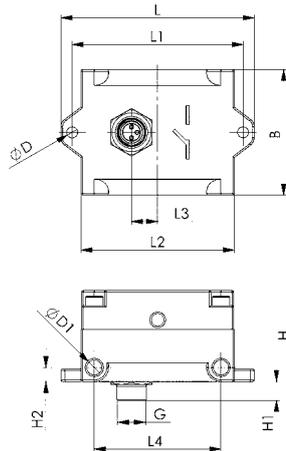
The sensor (sensor system) is connected to the sender unit by cable. The sender unit transmits the information to the gateway via Bluetooth Low Energy (BLE 4.0).

The sensors in conjunction with the sender unit can be used and mounted, for example, on machine tables, fixtures, in workpiece storage technology or other storage systems.

Note:

Designed for ambient temperatures from +5 to +65 °C.

For further technical information please request the product 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

No. 5020-D01

Radio 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 radio pressure switches are available in two versions with different pressure ranges.

Output: 1 wireless - to the gateway

Sensor type: Mechanical pressure switch

Radio signal range to the gateway is approx. 10 metres.

Application:

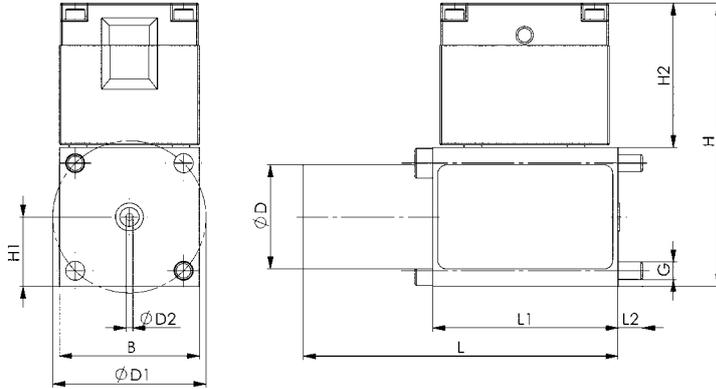
Wireless pressure switch for pressure monitoring of a hydraulic clamping circuit on machine tables, fixtures, in workpiece storage technology and other storage systems.

The integrated sender unit transmits the switching state to the gateway via Bluetooth Low Energy (BLE 4.0).

Note:

Other pressure ranges available on request.

Designed for ambient temperatures from +5 to +65 °C.



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



No. 5020-R01

Reed switch IP67

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

Design:

Reed switch with plastic housing. Function: PNP.

See specification for length of connection cable, the connector (M8) is preassembled ready for connection for the AMF sender unit.

Designed for ambient temperatures from -25 to +70 °C.

Application:

The reed switch (cylinder sensor) for T-slot cylinders signals the position of the piston, for example. It detects a ring magnet in the cylinder piston when it passes the position of the sensor and signals this via a switch signal.

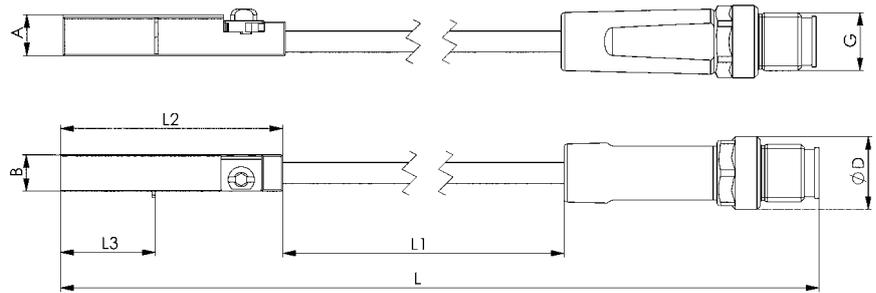
Can be used on all standard cylinders made of non-magnetisable material.

The IP67-certified switch is water, dust and moisture-resistant.

Note:

Different lengths of the connection cable are available on request.

For further technical information please request the product 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

No. 5020-M01

Microswitch, plastic housing

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

Design:

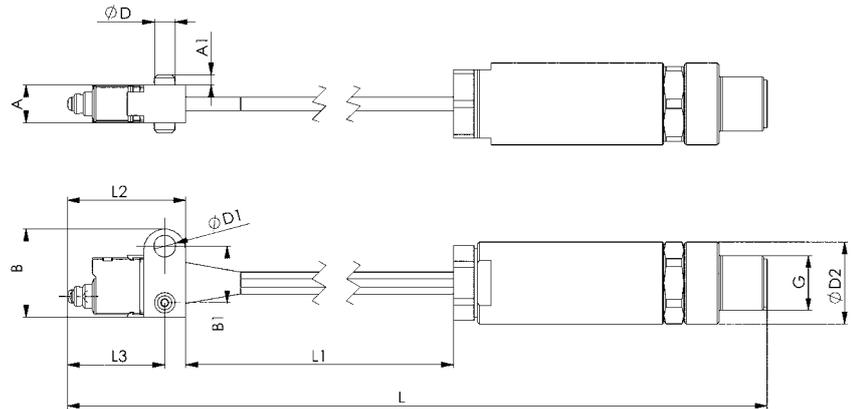
Microswitch with plastic housing. Function: PNP with mechanical contact.
See specification for length of connection cable, the connector (M8) is preassembled ready for connection for the AMF sender unit.
The stroke is a max. of 2.7 mm with an operating force of 1.2 N.
Designed for ambient temperatures from 0 to +80 °C.

Application:

With their compact design, these microswitches are suitable, for example, as grip control for robot grippers or in detector applications.
The mini stroke pushbutton has been designed for contact reliability and is ideal for applications in confined spaces
The sliding contact structure guarantees very quiet operation.
The IP67-certified switch is water, dust and moisture-resistant.

Note:

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

No. 5020-M02

Microswitch IP44



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

Design:

Microswitch with V2A housing M10x0.75 and hardened striking surface, flush mountable.

Function: PNP with mechanical contact.

See specification for length of connection cable, the connector (M8) is preassembled 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 (stainless steel ball) is a max. of 1500 N.

Designed for ambient temperatures from 0 to +80 °C.

Application:

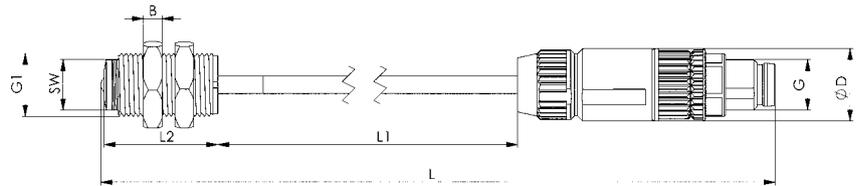
With their compact design, these microswitches are suitable, for example, as grip control for robot grippers or as positioning and contact control of workpieces in fixtures. These are particularly suitable for installation situations under cramped conditions.

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 product 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

No. 5020-M03

Microswitch IP67



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

Design:

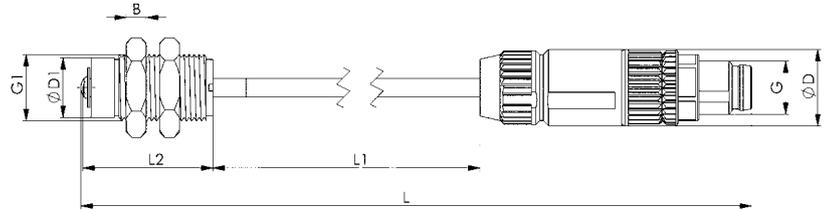
Microswitch with V2A housing M10x0.75 and hardened striking surface, flush mountable.
 Function: PNP with mechanical contact.
 See specification for length of connection cable, the connector (M8) is preassembled ready for connection for the AMF sender unit.
 The stroke is a max. of 0.3 mm with an operating force of 0.8 N. The static load of the stainless steel probe tip is a max. of 1500 N.
 Designed for ambient temperatures from 0 to +80 °C.

Application:

With their compact design, these microswitches are suitable, for example, as grip control for robot grippers or as positioning and contact control of workpieces in fixtures. These are particularly suitable for installation situations under cramped conditions. The IP67-certified switch is water, dust and moisture-resistant.

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 product 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

No. 5030ZA

Antenna extension



Order no.	Length of connecting cable [m]	dia. D	dia. D1	G	H	H1	Weight [g]
554803	1,5	48	15	M8	43,5	9,5	110

Design:

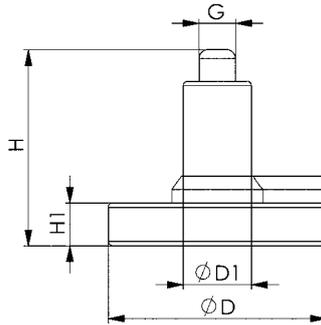
Antenna extension with magnetic base for better positioning of the antenna and for optimum transmission and reception power.

Connection cable: 1.5 metres

Connector: straight

Application:

The antenna extension is used to amplify the transmitted and received signals of the gateway. The magnetic base allows the antenna extension to be positioned and attached outside the electrical box (Faraday cage).



No. 5030ZB

Spare battery and flat seal



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

Design:

Order No. 554860: 1 button cell and 1 flat seal for sender unit

Order No. 554861: 2 button cells and 1 flat seal for longlife sender unit

Application:

Spare battery and flat seal for the sender unit.

During a battery change, the flat seal must be replaced in order to further ensure the ingress protection IP 67.

Note:

Please note that the sender unit must be paired anew with the gateway after changing the battery.

No. 5030ZP
Pairing stick

Order no.	Length	Weight [g]
	[mm]	
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.

Afterwards, the sender unit can be connected to the gateway via Bluetooth Low Energy (BLE 4.0).



No. 5030ZR
WLAN router

Order no.	L x W x H	Weight [g]
	554801	

Design:

TP-Link WLAN router up to 300 Mbits/s

WLAN frequency: 2.4 GHz

Interfaces: LAN (10/100 MBit/s) and Micro USB

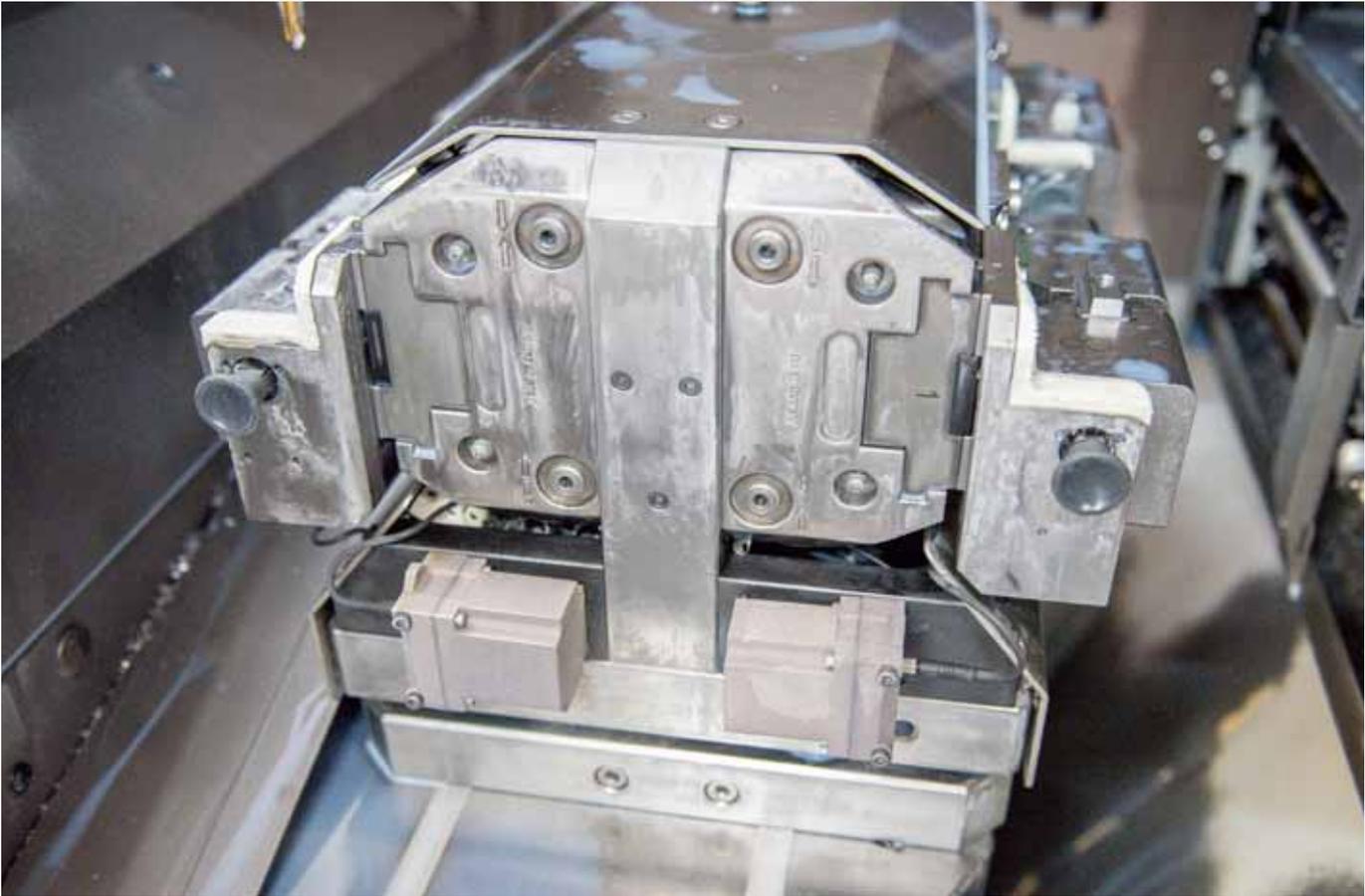
Application:

The WLAN router is used to access the web interface and to monitor the state on the gateway. For this purpose, the router is connected to the gateway by cable. The pairing mode can then be started on the gateway, for example, by WLAN via smartphone or tablet.

Note:

We recommend positioning the WLAN router outside the electrical box (Faraday cage).





Subject to technical alterations.

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 basing 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 of 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.

RADIO SENSORS CATALOGUE 2017/2018

Request additional catalogues from www.amf.de



MAGNETIC CLAMPING SYSTEMS



HYDRAULIC CLAMPING SYSTEMS



„ZERO-POINT“ CLAMPING SYSTEM



CLAMPING AND FIXTURE SYSTEMS



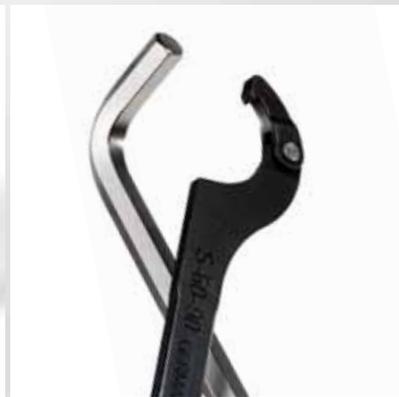
TOGGLE CLAMPS



VACUUM CLAMPING SYSTEMS



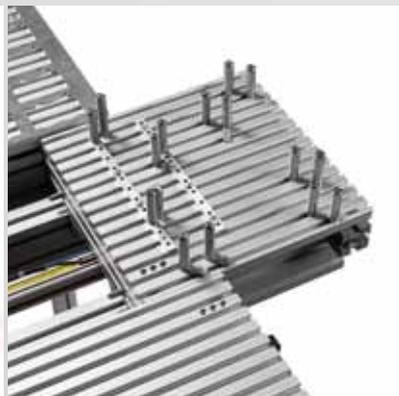
STANDARD CLAMPING ELEMENTS



HAND TOOLS



MARKING AND CLEANING TOOLS



PALLET FEED SYSTEMS



GRIPPER



LOCKS FOR DOORS AND GATES



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