SMARTBOW
YOUR COWS. YOUR BUSINESS.

User Manual

W010 SMARTBOW Wallpoint

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IMPORTANT

READ CAREFULLY BEFORE USE!

KEEP THE MANUAL FOR FUTURE CONSULTATION!

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1 Introduction

1.1 General Information

Welcome to the SMARTBOW manual. We are happy that you have decided to buy our solution.

You will find the technical information, operating instructions and instructions for maintenance and fault elimination. Read this information carefully before operating the SMARTBOW system and make sure you are familiar with it. Non-observance may result in injury or damage to the system. If there is an unclear point or if you would like to have more information, please contact our support. Please read through the warranty conditions to know your rights and obligations.

Keep the manual within range, to be able to use it immediately.

1.2 Trademarks, Copyright and Disclaimer

SMARTBOW is a registered trademark of MKW electronics GmbH.

The exclusive right of use underlies the company MKW electronics GmbH. All rights reserved.

The statements contained in this publication are only for information and should not be understood as a sale offer. Certain products may not be available in some countries and the delivered products may differ from those shown in the pictures. Neither this edition nor parts of it may be copied or published by print or any other means without the written permission of MKW electronics GmbH(in the following MKWE).

The content of this publication has been compiled with the utmost care. Nevertheless MKWE is not liable for any damages that may arise from errors or omissions in this publication.

The germen manual is the original manual. Translations into other languages are based on the German manual as a source document. MKWE is not liable for discrepancies between the original German manual and versions in other languages. In case of conflicts in the content and accuracy of translated manuals, the German manual is the reference document.

The compliance to this manual as well as the conditions and methods of installation, operation, use and maintenance of the system cannot be monitored by the manufacturer. Improper installation can cause damages to material and persons. Therefore, we assume no responsibility or liability for any loss, damage or costs arising from incorrect installation, improper operation or incorrect usage and maintenance which are associated in any way.

We also assume no responsibility for patent infringements or violations of the rights of third parties arising from the use of this system.

For improvement in terms of design, operation, and/or reliability MKWE reserves the right to modify the products described in this document without prior notice. MKWE rejects from all liability related with the use or application of the product described here.

All SMARTBOW products have been developed to assist farmers in their daily work with their herd as good as possible. Because of variations in farm management, MKWE cannot be responsible for the economic results of each individual farm.

As soon as it becomes evident that safe operation is no longer possible (e.g. if there is visible damage), remove the system immediately from power supply.

1.3 We ask for your feedback

All information of this manual has been compiled with the utmost care. The recommendations are intended as guidelines. The instructions, illustrations and specifications in this manual are based on the current information available at the time of publication. Your SMARTBOW system may contain improvements and equipment or options that are not covered in this manual. New information based on the feedback from our customers, are continuously updated and expanded.

We hope SMARTBOW fits your expectations and we like to receive your feedback (please send an email to support@smartbow.at or call +43 (0) 7732 3711-175).

The SMARTBOW Team

2 Electromagnetic Compatibility (EMC)

2.1 Europe

For additional regulatory information, see the Regulatory Compliance homepage on www.smartbow.at at the following location http://www.smartbow.at/en/legal.html

2.2 USA

2.2.1 User Information acc. to FCC15.21:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2.2.2 Statement for Class B digital device acc. to FCC 15.105

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna.

— Increase the separation between the equipment and receiver.

— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

— Consult the dealer or an experienced radio/ TV technician for help.

2.3 Canada

2.3.1 Statement acc. RSS Gen Issue 3, Sect. 7.1.3

This device complies with Part 15 of the FCC Rules and with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

3 Safety

3.1 Safety Labels

The following safety labels are used on the different SMARTBOW products to warn against risks and dangers.

	European-label for the separate collection of electrical and electronic appliances Further information in chapter 9 Disposal

The security labels on your product show important and useful information, which will help you to use and maintain the SMARTBOW Wallpoint safely. Follow to the instructions below to ensure that all labels remain in perfect condition and in the right place.

Make sure that the safety labels are always clean and legible. Do not use solvents, souring agents or other comparable cleaning agents which could damage the sticker.

Replace lost or illegible safety stickers.

Safety labels can be obtained from the MKWE support.

3.2 Signal words and their meaning

The following signal words are used in the manual in order to warn the reader about risks and dangers.

⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor, moderate or serious injury.
⚠ ATTENTION	Indicates information considered important, but not hazard-related, e.g. information relating to possible property damage.

These signal words are in accordance with the standard definition for civil applications in the European Economic Area. Definitions that deviate from the standard definition may also exist in other economic areas or military applications. It is therefore essential to make sure that the signal words described here are always used just with the related product documentation and the related product. The use of signal words in connection with unrelated products or documentation can result in misinterpretation and in personal injury or material damage.

3.3 Operating states

The SMARTBOW Wallpoint may be operated only under the operating conditions and the positions specified by the manufacturer. Applicable local or national safety regulations and rules for the prevention of accidents must be observed in all work performed.

The SMARTBOW Wallpoint is exclusively produced for use in livestock sheds.. Any other use is only permitted with a written permission of MKW electronics GmbH.

Do not place the SMARTBOW Wallpoint on heat-generating devices such as radiators or fan heaters. The ambient temperature must not exceed the maximum temperature specified in the product documentation or in the data sheet. Product overheating can damage the Wallpoint permanently.

3.4 Electrical safety

Unless expressly permitted, never remove the cover or any part of the housing while the SMARTBOW Wallpoint is in operation. Doing so will expose circuits and components and can lead to injuries, or damage to the SMARTBOW Wallpoint.

Any object that is not designed to be placed in the openings of the housing must not be used for this purpose. Doing so can cause damage to the SMARTBOW Wallpoint.

Unless specified otherwise, the SMARTBOW Wallpoint is protected against the ingress of liquids. When the cable entry cover is opened it must be protected against penetration by liquids. If the necessary precautions are not taken the SMARTBOW Wallpoint may be damaged.

Do not use the SMARTBOW Wallpoint under adverse environmental conditions such as

- inflammable gases, vapours and solvents
- strong vibrations

An operation under the conditions described above may damage the SMARTBOW Wallpoint.

Prior to cleaning the SMARTBOW Wallpoints, disconnect it completely from the power supply (e.g. network cable). Use a soft, non-lining cloth to clean the product. Never use chemical cleaning agents such as alcohol, acetone or diluents for cellulose lacquers.

3.5 Operation

In some countries there are laws about digital positioning and tracking of people, animals and/or objects. Only the user is responsible not to violate such laws or regulations.

Before you start processing the SMARTBOW Wallpoint mechanically and/or thermally or before you disassemble it, be sure to read and pay special attention to the chapter 9 “Waste disposal”.

Depending on the function, the SMARTBOW Wallpoint can produce an elevated level of electromagnetic radiation, which is within the range of the legal standards. Considering that unborn babies require increased protection, pregnant women must be protected by appropriate measures. Persons with pacemakers may also be exposed to risks from electromagnetic radiation. The employer/operator must evaluate workplaces where there is a special risk of exposure to radiation and if necessary, take measures to avoid the potential danger.

Should a fire occur, the SMARTBOW Wallpoint may release hazardous substances (gases, fluids, etc.) that can cause health problems. Therefore, suitable measures must be taken, e.g. protective masks and protective clothing must be worn.

3.6 Repair and Service

Adjustments, replacement of parts and repair may be performed only by electrical experts authorized by MKWE. Only original parts may be used for replacing parts. A safety test must always be performed after parts have been replaced (visual inspection, functional test). This helps to ensure the continued safety of the SMARTBOW Wallpoint.

3.7 Transport

The packaging of the SMARTBOW Wallpoint protects the housing from damage.

If you have to return a SMARTBOW Wallpoint to MKWE, it should be packed so that external influences cannot cause damage to the product.

3.8 Magnetic fields

Please be aware that magnetic fields delete data media (diskettes, hard disks, USB flash drives, digital cameras, check cards, credit cards, audio and video cassettes) and can affect or destroy electronic and mechanical components, e.g. pacemaker monitors, compasses, counters, etc. In any case keep a safety distance of about 1 meter.

Do not use the magnets in locations where they are exposed to high heat (> 80°C).

Magnetic fields of permanent magnets have, according to present knowledge, no measurable positive or negative influence on people. A health risk due to the magnetic field of a permanent magnet is unlikely but cannot be completely excluded.

3.9 Waste disposal/Environmental protection

Waste electrical and electronic equipment must not be disposed of with unsorted municipal waste, but must be collected separately.

If products or their components are mechanically and/or thermally processed in a manner that goes beyond their intended use, hazardous substances (heavy-metal dust such as lead, beryllium, nickel) may be released. For this reason, the product may only be disassembled by specially trained personnel. Improper disassembly may be hazardous to your health. The national waste disposal regulations must be observed.

4 The SMARTBOW Wallpoint

4.1 General product information

Figure 1: SMARTBOW Wallpoint

The SMARTBOW Wallpoint is attached to suitable walls, poles, etc. Through radio signals the position of SMARTBOW Eartags is determined in the barn. The communication and data exchange between the SMARTBOW Eartags and the SMARTBOW station operates via the SMARTBOW Wallpoints in the barn or outdoor area

A SMARTBOW Wallpoint consists of the following components:

- Housing incl. electronics
- Cover for cable entry, incl. screws
- sealing Plugs for unused cable entry's
- detachable antennas
- plastic nut for attachment on Wallpoint mounting accessories

Figure 2: SMARTBOW Wallpoint components

The SMARTBOW Wallpoint must not be repositioned by the end user; otherwise we cannot guarantee correct system behaviour. The SMARTBOW Wallpoint cover for cable entry must not be opened at any time. There are no serviceable parts inside,

⚠ ATTENTION

The screws of the cover are sensitive to too high torque (torque < 0,6Nm).

4.2 Scope of supply

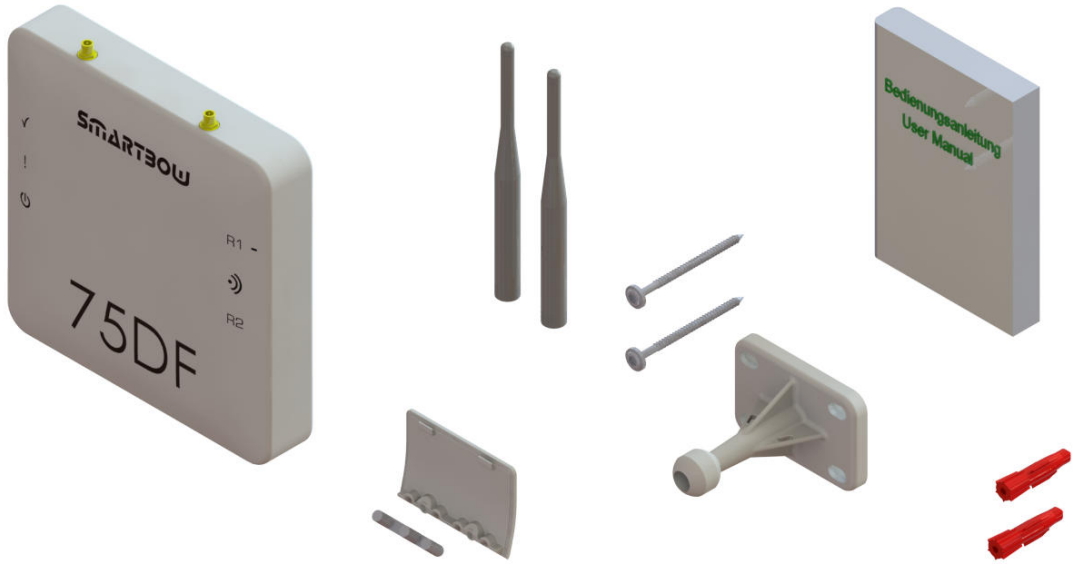


Figure 3: Scope of supply

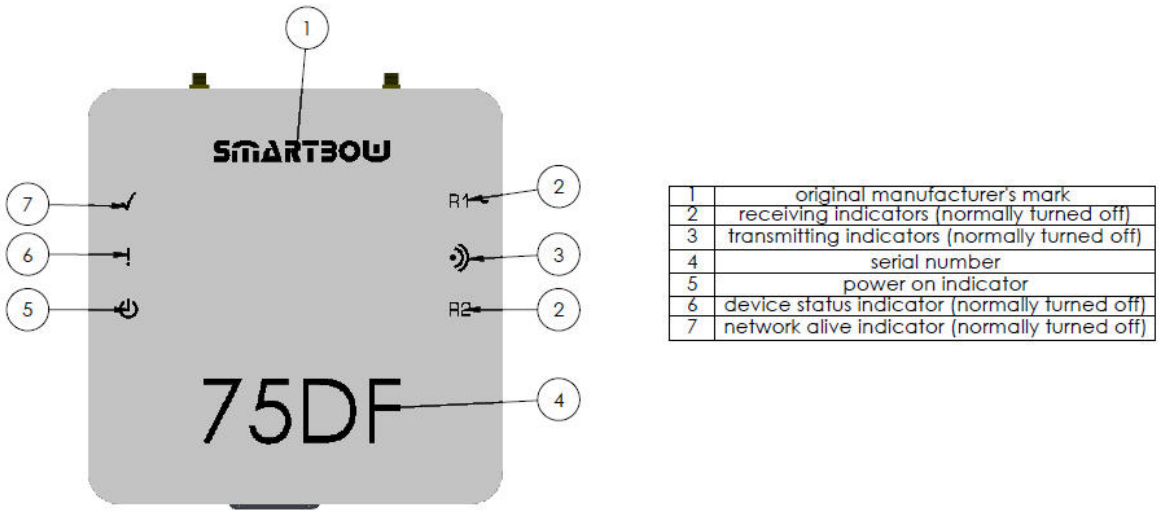
The following items are included in the delivery of the SMARTBOW Wallpoint:

1 pcs. SMARTBOW Wallpoint (packed in an antistatic foil)
2 pcs. Omni Antennas
2 pcs. Chipboard screws
2 pcs. Dowel
1 pcs. Mounting bracket for SMARTBOW Wallpoint
1 pcs. SMARTBOW Wallpoint cover incl. sealing Plugs
1 pcs. User Manual per delivery

4.3 Technical Data

Type	SMARTBOW Wallpoint
Power supply	Power over Ethernet Class 2, 48V, IEEE 802.3af compliant
Typical indoor range (Wallpoint to Wallpoint)	500m, line of sight
Typical location accuracy	80% < 1m[1]
Location accuracy average all measurements	1,21m[2]
Resolution	1cm
Operating temperature	-20 to +60°C
Storage temperature	-20°C to +70°C
Dimensions (without antennas) (l x w x h)	202x194x75mm
Weight (without antennas)	ca. 800g
Protection class	IP65

Table 1: Technical Data SAMRTBOW Wallpoint



1	original manufacturer's mark
2	receiving indicators (normally turned off)
3	transmitting indicators (normally turned off)
4	serial number
5	power on indicator
6	device status indicator (normally turned off)
7	network alive indicator (normally turned off)

Figure 4: SMARTBOW Wallpoint labelling elements front

[1] Conditions defined by MKW electronics GmbH
[2] Conditions defined by MKW electronics GmbH

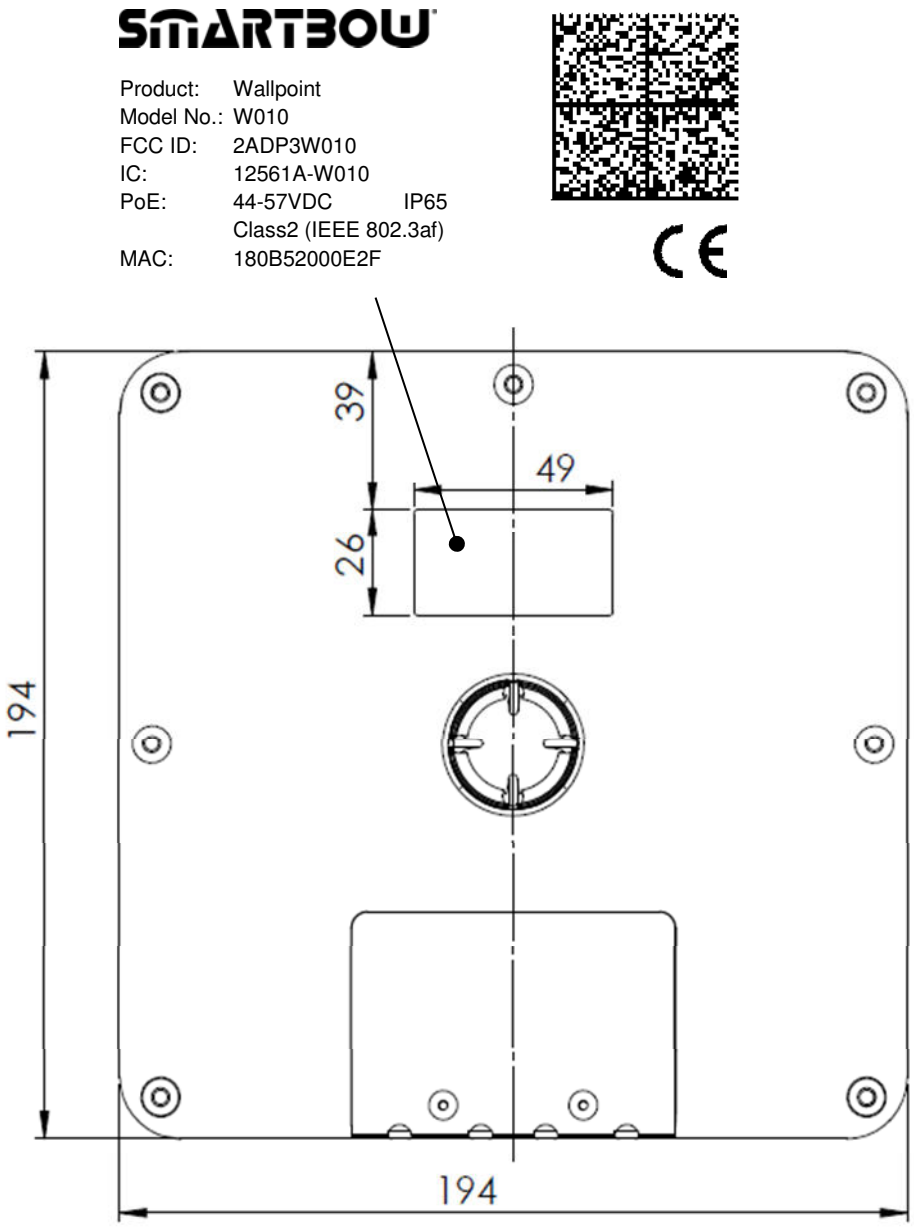


Figure 5: SMARTBOW Wallpoint labelling elements rear

4.4 Modification on the SMARTBOW Wallpoint

There are no modifications on the product that need to be performed by the end user, no serviceable parts inside.

MKW electronics GmbH doesn't approve any modifications on the products that are made by unauthorized persons. Modifications can have negative effects on the quality and proper function of the products of MKW electronics GmbH.

4.5 General and special warranty conditions

4.5.1 General warranty conditions

These general warranty conditions apply only in connection with the general terms and conditions of sale (GTC) of MKW electronics GmbH at the purchasing moment of the Wallpoint. The current version of the GTC is visible on the homepage of MKWE (http://www.mkwe.at).

The warranty always begins on the date of transfer of the SMARTBOW® Wallpoints bought from MKWE or an authorized seller of MKWE and refers to any material or production damage, which may occur while normal using. The warranty period is derived from the proof of purchase.

Please keep the original proof of purchase in a safe place. MKWE and its authorized service partners reserve the right to refuse a warranty repair or a warranty confirmation if a proof cannot be provided.

If you have to return a SMARTBOW Wallpoint please make sure that it is packed securely.

Please send us with the SMARTBOW Wallpoint a detailed description of the problem. In order to assert your claims or before sending, please contact the MKWE Support.
The SMARTBOW Wallpoint always has to be sent completely, that means with all parts from the scope of supply. An incomplete reception of shipment will delay the repair / exchange. MKWE does not take over any liability for additionally sent materials, which do not belong to the original scope of supply.

This warranty does not have any effect on your existing statutory warranty claims and is subject to the laws of the country, in which the SMARTBOW Wallpoint was bought by the end customer from the authorized distributer and is valid only in this country.

4.5.2 Warranty coverage

In case of a fault in your SMARTBOW Wallpoint covered by this warranty, MKWE ensures the repair or the replacement of the SMARTBOW Wallpoint. The decision whether to repair or replace the SMARTBOW Wallpoint will be made by MKWE. For this reason MKWE will decide if the sent SMARTBOW Wallpoint will be replaced in the same quality and function.

We assume no guarantee for expendable materials, which mean parts which must be replaced at regular intervals.

If it turns out during the repair, that it is an error that is not covered by warranty, MKWE reserves the right to charge a handling fee as well as the costs for the repair (material and labour) which refers to an estimate.

4.5.3 Warranty exclusion

MKWE makes no guarantees for failure and damage caused by external influences (heat, water, lightning, etc.), accidental damage, improper use, changes, alterations and extensions made on the SMARTBOW Wallpoint, use of foreign parts, neglect, improper packaging, improper storage or loss in returning the SMARTBOW Wallpoint.

This warranty is void if the defect in the SMARTBOW Wallpoints is caused by maintenance or repair, which was performed by someone else than the MKWE or an authorized service partner. The warranty also void if labels or serial numbers of the SMARTBOW Wallpoints or a component of the SMARTBOW Wallpoints is changed or made illegible.

4.5.4 Support Hotline

Before returning the Wallpoint to MKWE we recommend to contact us via the support hotline or by mail. You will receive further information on how you can make your claim under warranty.

The SMARTBOW support is available under support@smartbow.at or +43 (0) 7732 3711-175).

5 Installation

5.1 Installation of the SMARTBOW Wallpoint

The Wallpoint has to be installed only by MKWE technicians or authorized partners. In order to do this a Cat5e cable (specification see Appendix A), without connectors, is required at the position where the SMARTBOW Wallpoint will be installed. Refer to the cabling plan provided by MKWE or authorized partners for the positions where the SMARTBOW Wallpoints will be installed. The cable will be terminated and tested by the technician. It is not possible to relocate the SMARTBOW Wallpoint after installation; this can lead to undesired and unstable system behaviour.

5.2 Mounting the SMARTBOW Wallpoint

Necessary tools for installation:

- 1 pcs. cordless drill driver
- 1 pcs.TX25 bit
- 1 pcs. screwdriver TX10 (if possible with torque limitation M_{max}=0,6Nm)
- 1 pcs. knife
- 1 pcs. pencil

Optional tools for installation (depends on material of wall)

- 1 pcs. impact drilling machine
- 1 pcs. 8mm impact drill

Step 1: Use mounting bracket to mark drill pattern

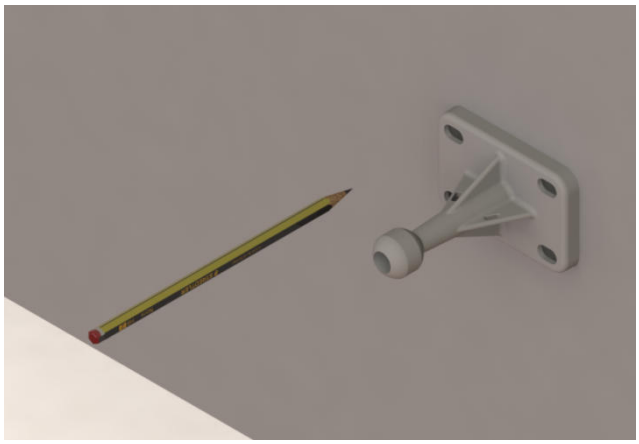


Figure 6: Marking the drill pattern

Step 2: Drill holes for dowels (skip this if you mount the SMARTBOW Wallpoint on wood)

Step 3: Put dowels into drilled holes (skip this if you mount the SMARTBOW Wallpoint on wood)

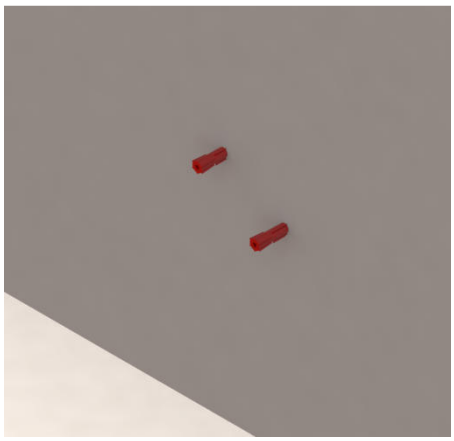


Figure 7: Dowel insertion

Step 4: Screw the mounting bracket with provided chipboard screws

Figure 8: Screwing the mounting bracket

Step 5: Connect the SMARTBOW Wallpoint to the terminated Ethernet cable and close it with the SMARTBOW Wallpoint cover and sealing Plugs. Tighten the screws with the screwdriver TX10.

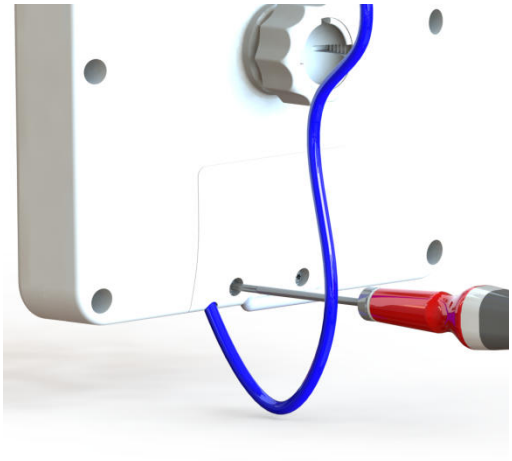


Figure 9: Closing the SMARTBOW Wallpoint

⚠ ATTENTION

You must not apply a tightening torque of more than 0.6Nm, otherwise the case could be damaged. We recommend to use a torque wrench

Step 6: Attach the SMARTBOW Wallpoint to the mounting bracket and tighten plastic nut

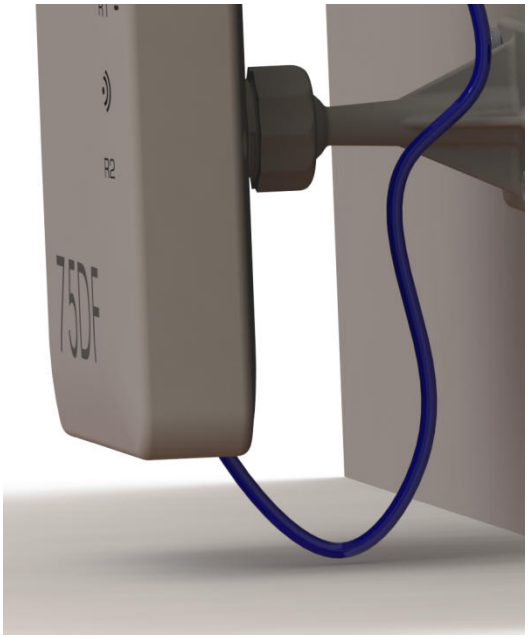


Figure 10: Attaching the SMARTBOW Wallpoint to the mounting bracket

Step 7: Remove plastic covers and attach the antennas to the SMARTBOW Wallpoint

Figure 11: Installing the antennas

⚠ ATTENTION Antennas that are not mounted properly can lead to undesired product performance.

5.2.1 Installation pipe clamp

Necessary tools for installation:

- 13mm wrench

Step 1: Put the first bracket of the pipe clamp around the pipe and add the mounting bracket. Temporarily tighten the nuts by hand.

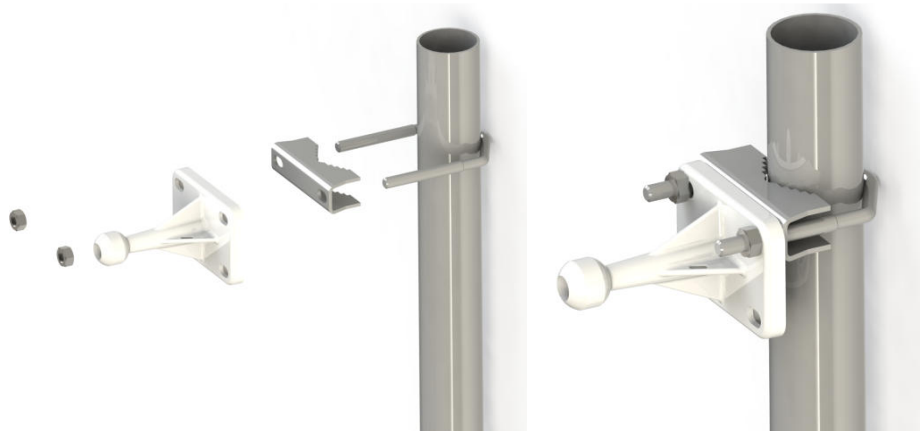


Figure 12: Mounting pipe clamp first bracket

Step 2: Attach the second bracket of the pipe clamp

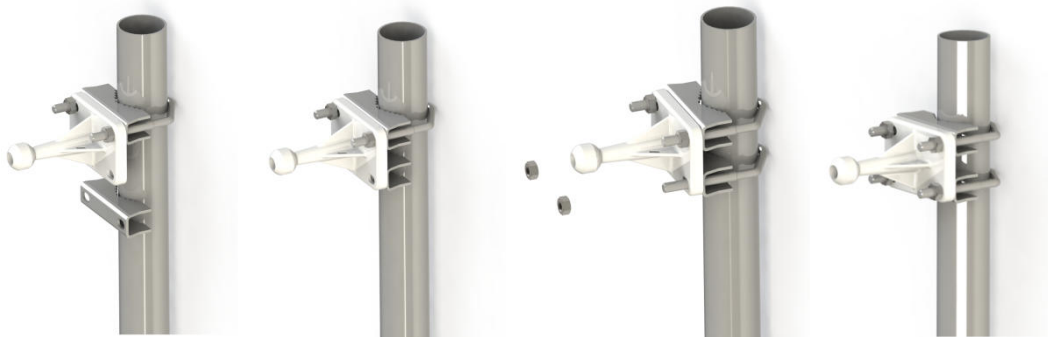


Figure 13: Mounting pipe clamp second bracket

Step 3: Tighten the nuts using a 13mm wrench

Figure 14: Tightening the 4 nuts

5.2.2 Installation I-beam clamp

Necessary tools for installation:

- 17mm wrench
- 6mm Allen key

Step 1: Screw the I-Beam clamps onto the mounting bracket with the 2 supplied M8x20 screws by use of the 6mm Allen key.

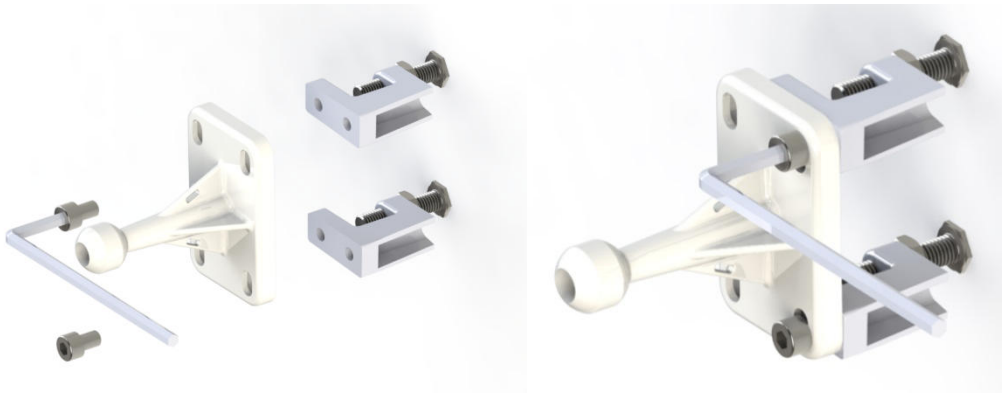


Figure 15: Screwing the I-Beam clamp onto the mounting bracket

Step 2: Mount the clamps to the I-Beam using a 17mm wrench

Figure 16: Tightening of the 2 screws

6 Equipment

6.1 100101 Pipe clamp

Figure 17: Pipe clamp

Use the clamp holder if you mount the SMARTBOW Wallpoint to a pipe with diameters from 26-63mm (1" – 2 ½ "). There are 2 brackets per pack. For mounting instructions see point 5.2.1.

6.2 100103 Magnetic holder

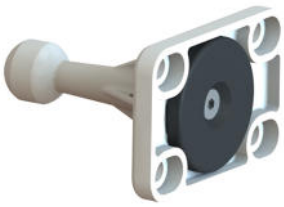


Figure 18: Magnetic holder

For fast and easy installation on magnetic materials (like steel), there is a special mounting bracket with integrated magnet available

⚠ ATTENTION Do not use this holder if you use the localization feature.

⚠ CAUTION For proper holding force a minimum thickness for the magnetic material of 3mm is necessary.

6.3 100104 I-beam clamp

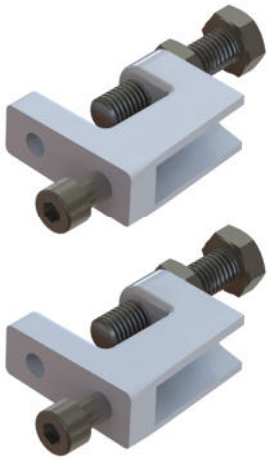


Figure 19: I-beam clamp

The I-beam is suitable for mounting the SMARTBOW Wallpoint to I-beams with flange thickness from 2 to 22mm. Larger clamps are available upon request.

7 Transport and storage

7.1 Transport

Always use the original packaging for transporting the SMARTBOW Wallpoint to avoid scratching the surface.

7.2 Storage

Store the SMARTBOW Wallpoint in dry, cool, clean surroundings. Please take care that the storage temperature range does not exceed the limits shown in chapter 4.3 Technical Data.

7.3 Cleaning

⚠ ATTENTION Clean the SMARTBOW Wallpoint only in closed state.

Heavy soiling of the housing can be removed mechanically with a spatula. Avoid the use of sharp tools. Clean the housing with a damp cloth and mild cleaning agent. Do not use any abrasives or solvents such as alcohol, acetone, and nitro thinner. Avoid direct high pressure cleaning near the cable entries.

8 Trouble Shooting

This chapter contains a list of faults and solutions.

Problem	Reason	Solution
SMARTBOW Wallpoint Power LED doesn't light	cable not plugged	plug Ethernet cable into RJ45 plug inside housing (see chapter 5.2 Step 7)
	switch has no power	Check if the station, respectively the switchbox, where the SMARTBOW Wallpoint is plugged into, has power.
	faulty SMARTBOW Wallpoint	please contact the service hotline +43 (0) 7731 3711 - 165

Table 2: Troubleshooting

9 Waste

Please do your part to protect the environment by disposing used SMARTBOW Wallpoints environmentally friendly under European WEEE Directive 2002/96/EG (directive on electrical and electronic equipment), and/or national laws. Improper disposal of electronic products could have a negative impact on the environment and human health due to potentially hazardous substances.

The package contains the following materials:

- corrugated cardboard/cardboard
- films/flat bags of polyethylene
- adhesive tape of PVC

- Keep packaging materials away from children - can cause suffocation!
- Bring the packaging to an official collection point.

MKW electronics GmbH is focused on sustainability and takes over all duties of the return and disposal for EU manufacturers. Please contact your MKW electronics service center to dispose of the product environmentally friendly. A separate collection and proper recycling of the electronic waste helps to use natural resources carefully. Your cooperation in the correct disposal of this product enables the effective use of natural resources.

10 Support

For support and customer service please do not hesitate to contact our SMARTBOW team.

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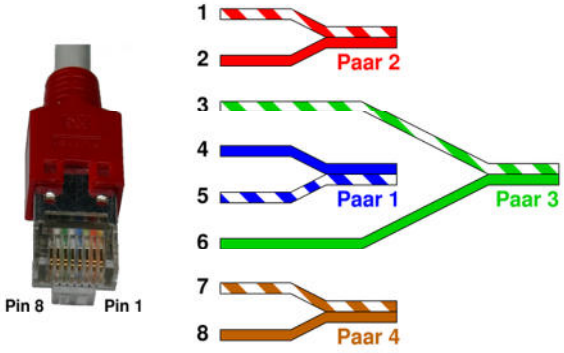
APPENDIX A SPECIFICATION OF CAT5E CABLE

- Shielding: Foil and braid shielded
- Conductor cross section: 4x2xAWG24
- Outer Diameter: 6mm ± 0,1mm
- Working temperature: -20°C…. +60°C

APPENDIX B USED TELECOMMUNICATION STANDARD

T-568B		
1	orange/white	1
2	orange	2
3	green/white	3
4	blue	4
5	blue/white	5
6	green	6
7	brown/white	7
8	brown	8

Table 3: Pin assignment EIA/TIA T568B



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12 GLOSSARY

SMARTBOW Eartag	Low Power 2.4GHz ISM band transceiver sensor module which supports localization, 3-axis accelerometer and ambient temperature
SMARTBOW Station	Local server at the farm for data analysis and localization

13 List of included amendments

Date	Version	Remark
12.01.2015	1	Original
29.01.2015	1.1	Chapter 3.9 Smartbow Wallpoint has a battery …. removed
20.04.2015	1.2	Label IC ID: changed to IC: