imagotag

Product Specification Access Point AP-2010

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1 Description

The Access Point AP-2010 by imagotag is a network device similar to WLAN access points that is required for communication with the imagotag electronic shelf labels (transmits price information to the labels).
Up to 10 000 labels can be managed per access point and the self-organizing network allows automatic roaming of labels without manual handling. The high transmission rate of the 2.4 GHz wireless technology and the intelligent task scheduling enables fast and secure updates on imago G1 labels of all sizes.

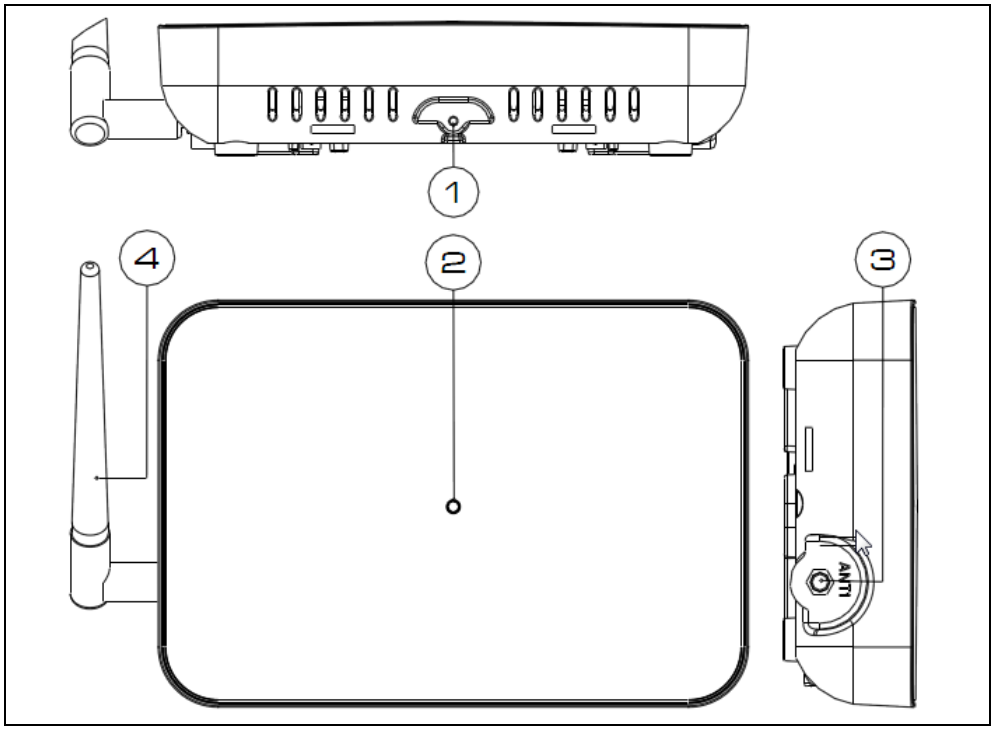
This document is the technical specification of the Access Point AP-2010.

1.1 Key Features

- Manages up to 10 000 imago G1 labels of all sizes
- Covers up to 2 000 m² (depending on shop layout)
- Low power consumption – powered by PoE (Power over Ethernet) or with low power plug
- Easy configuration and monitoring
- Optimized scheduling of tasks and self-managed roaming of labels

2 Mechanical Characteristics

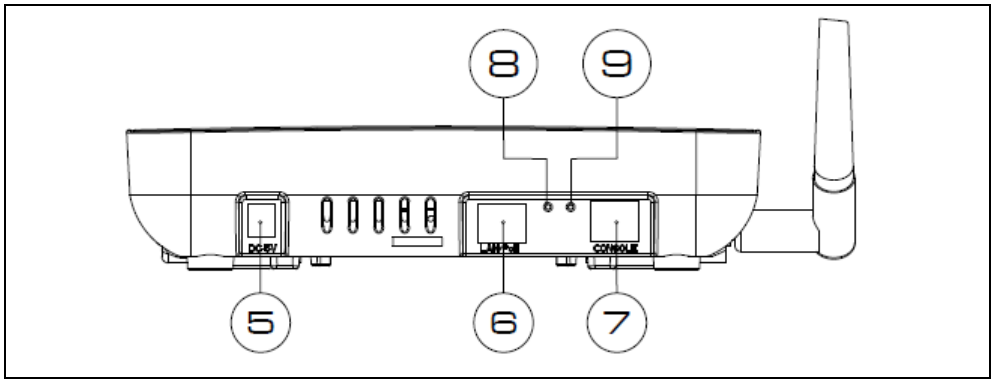
2.1 Front, Side and Top View



Front, side and top view of the AP-2010

1	Mounting plate fixation screw-hole	**3**	Antenna socket
2	LED	**4**	Antenna

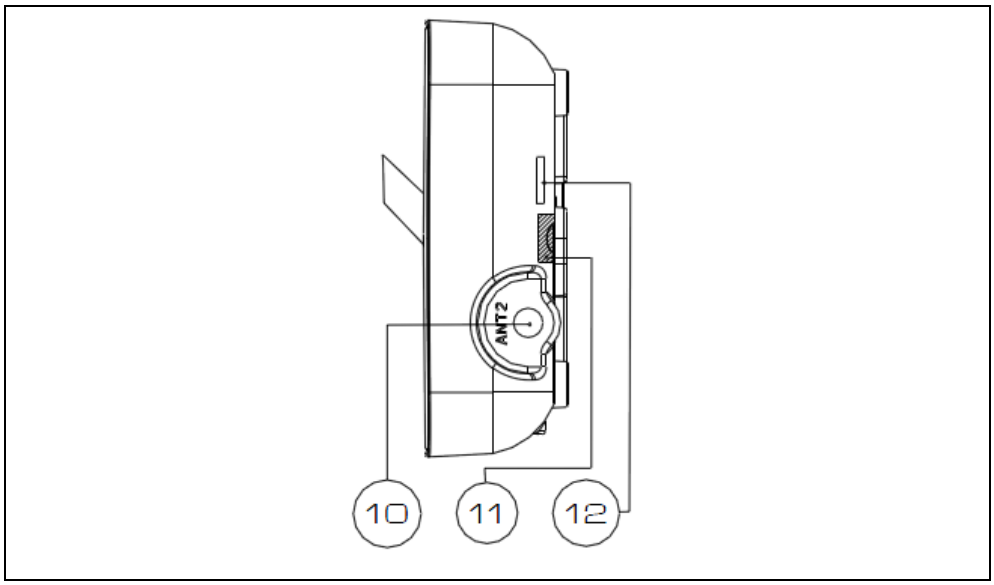
2.2 Upper Surface



Top view of the imagotag AP-2010

5	Connection for the Power Supply	**8**	Reset
6	LAN/PoE	**9**	unused
7	Console		

2.3 Side View



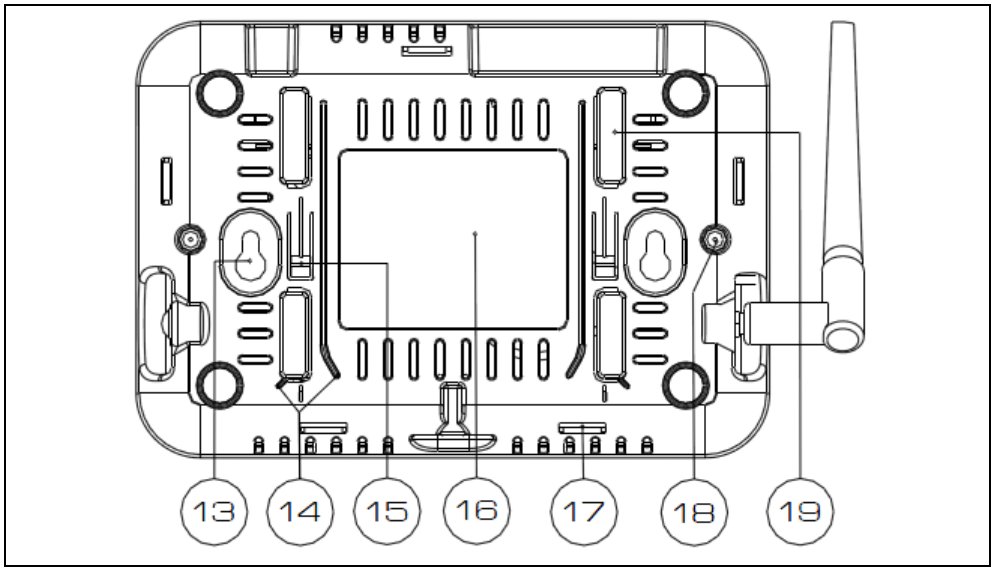
Side view of the imagotag AP-2010

10 Antenna Connector (unused)

11 Warranty Seal

12 Snap Connector Housing

2.4 Rear View



Rear view of the imagotag AP-2010

13 Mounting Tab

14 Mounting Rail

15 Locking Tab

16 Label

17 Snap Connector Housing

18 Housing Screw

19 Mounting Profile

2.5 Status LED Colors

Color	Description	Note
Red	Boot process Error	Can take about 2 minutes, if it takes much longer, the device is defective and there is a need for service.
Blue	Normal mode	---
Yellow	Operational, but not connected to any server	---
Red (blinking)	Running Firmware Update	During this time there is no connection to the electronic label

2.6 Mechanical Dimensions

With antenna:

- Outline (mm): 226 x 135 x 45
- Weight: 350 g

Without antenna:

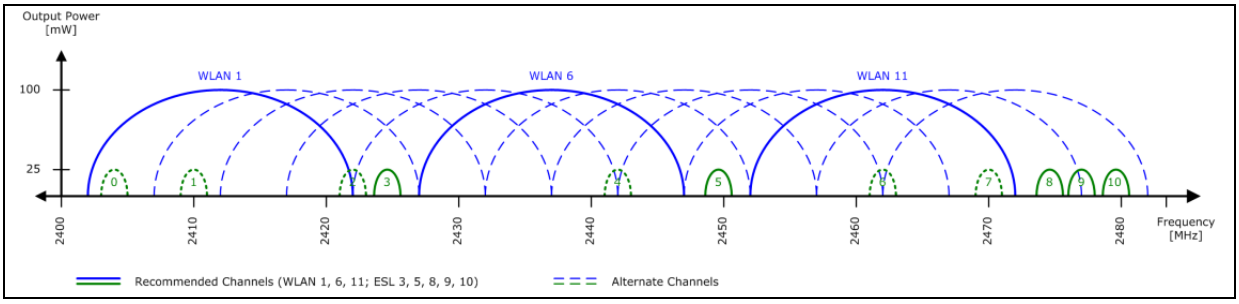
- Outline (mm): 196 x 135 x 45
- Weight: 320 g

3 Electrical Specifications

3.1 Used Channels

Kanal	Frequenz	WLAN Kanal (802.11b/g)
0	2404 MHz	WLAN 1 (2402 – 2422 MHz)
1	2010 MHz	
2	2422 MHz	
3	2425 MHz	
4	2442 MHz	WLAN 6 (2427 – 2447 MHz)
5	2445 MHz	
6	2462 MHz	WLAN 11 (2452 – 2472 MHz)
7	2470 MHz	
8	2474 MHz	
9	2477 MHz	
10	2480 MHz	

Overview of used channels of the imagotag AP-2010



Visualization of used channels of the imagotag AP-2010

3.2 Cabel Specifications

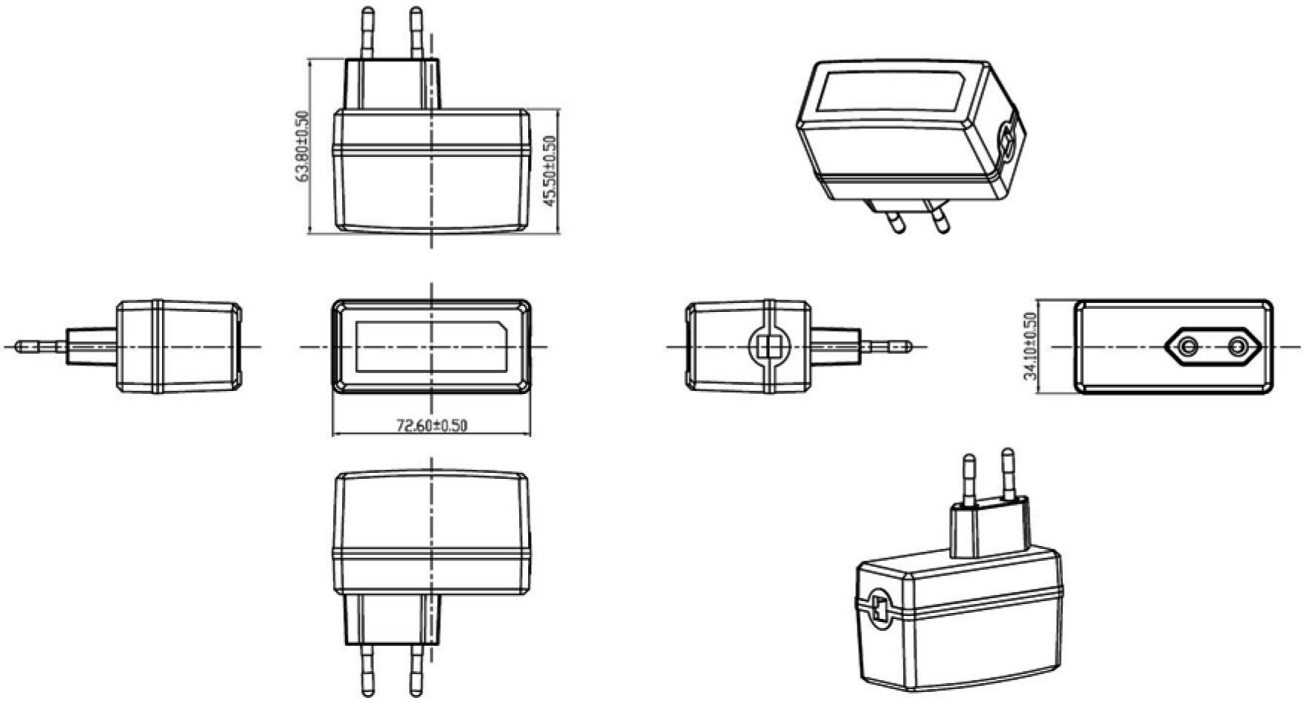
You can use a commercially available LAN cable (CAT-5 or higher) for data connection and the power supply (if PoE is used) of the imagotag AP-2010.

3.3 Power Supply Specifications

Sunny Computer Technology Europe s.r.o.

- Model: SYS1449-1505-W2E
- Input: 100-240 V ~ 1.0 A MAX, 50-60Hz
- Output: 5V 3A
- Output Power: 15W MAX
- Operating Temperature: 0° C to + 45° C
- Dimension (mm): 72.5 x 34 x 45

Note: This is the European version



3.4 Barcode Information

The AP-2010 comes with an AP-ID, P/N, MAC and S/N. The AP-ID consists of 5 decimal digits (0-9).

3.4.1 Serial Number

Part	Description	Format	Example	Comment	Source
A	Production fab	2 alpha	01		Specified by imagotag once for each fab
B	Product family	2 alpha	A1		Specified by imagotag in the product specification document
C	Type identifier	2 hex	A0		
D	Product version	2 alpha	02		
E	Product revision	3 alpha	004	Incremented on every change of product specification	
-	Separator	"-"	-		Fixed
F	Internal	1 alpha	I	Internal	Calculated during production
G	Year	2 dec	12		
H	Week	2 dec	38	Calendar week in current year (01-53)	
I	Weekday	1 dec	5		
J	Internal	4 dec	1133	Continuous Serial Number (Counter)	

S/N Format: `AABBCCDDEEE-FGGHHIJJJJ`
S/N Example: `01A1A002004-I123851133`

Note:

- Calendar week date is calculated according to ISO 8601 (see http://en.wikipedia.org/wiki/ISO_week_date)

3.4.2 Product Number

Part	Description	Format	Example
B	Product family	2 alpha	A1
C	Type identifier	2 hex	A0
D	Product version	2 alpha	02

P/N Format: `BBCCDD`
P/N Example: `A1A001`

4 Electrical & RF Characteristics

4.1 General Technical characteristics

Power:

- External Power Supply: 5 VDC / 3A
- Power Supply via PoE: IEEE 802.3af, IEEE 802.3at
- Power consumption: 15W MAX, typical 3W

Technology:

- Radio technology: proprietary
- Operating frequency: 2.4 GHz (ISM-Band) – 2.4835 GHz
- Transmitted power: ≤ 10 dBm
- Number of Channels: 11
- Access protocol: proprietary

4.2 Power and Current Consumption

Power consumption measurements indicate that the AP-2010 has the following patterns:

- Operating Current: ≤ 60 mA (max. current)
- Operating Power: ≤ 280 mW
- Supply Voltage: 5V ± 10%

4.3 General Specifications

4.3.1 Hardware

- 600 MHz ARM Cortex-A8
- Memory - 256MB DDR2 memory
- 256MB NAND Flash
- SD/MMC card connector
  - 512 MB card with imagotag software preinstalled
- Power over Ethernet (PoE IEEE 802.3af / IEEE 802.3at)
  - The original IEEE 802.3af-2003 PoE standard provides up to 15.4 W of DC power (minimum 44 V DC and 350 mA to each device). Only 12.95 W is assured to be available at the powered device as some power is dissipated in the cable.
- Other Interfaces
  - Serial RS232 Interface
  - 10/100 Ethernet Interface
- Power
  - Power source options (DC, PoE)
  - 3.3 V I/O operation
  - DC supply 5V ± 10%, 3A Max

4.3.2 Software Package

- OS: Embedded Linux (Kernel: 2.6.32)
- imago AP-2010 application software in latest version (current 1.0.4)
- imago RF Firmware in latest version (current 2.0.6)

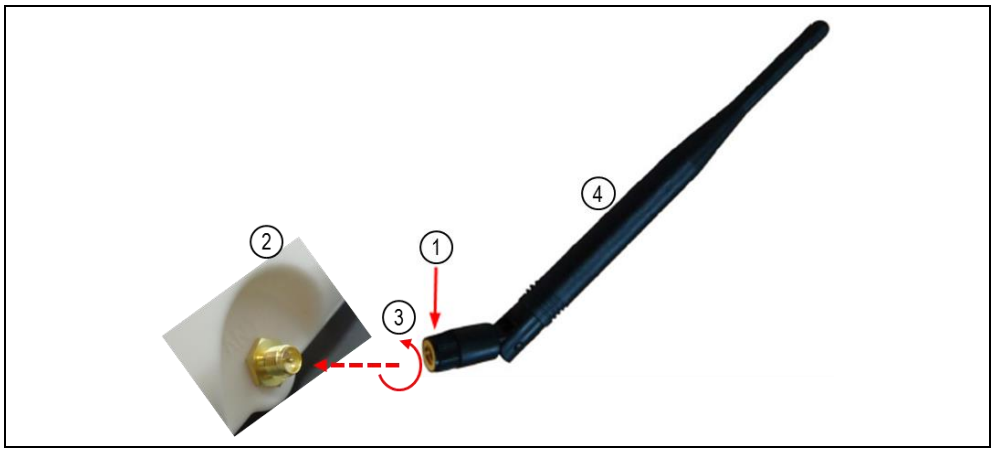
5 Mounting

5.1 Mounting Location Specifications

The Access Point could be mounted on a:

- Concrete wall
- Mortar wall
- T-Mounting Rail

5.2 Screw of the Antenna



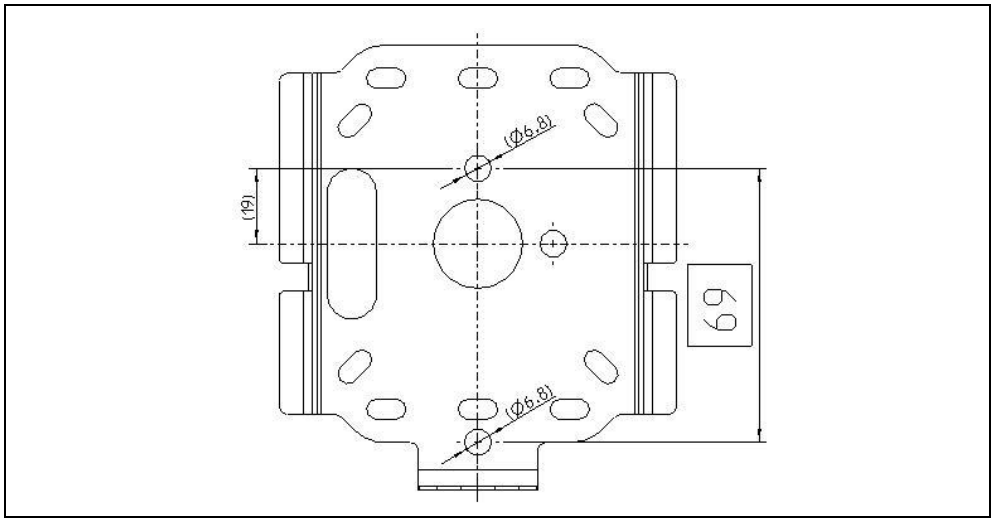
Screw of the Antenna

1	Front Part	**3**	Direction of Rotation
2	Connection Socket	**4**	Rear Part (Swiveling)

Note: Screw the antenna with only the front part (1)

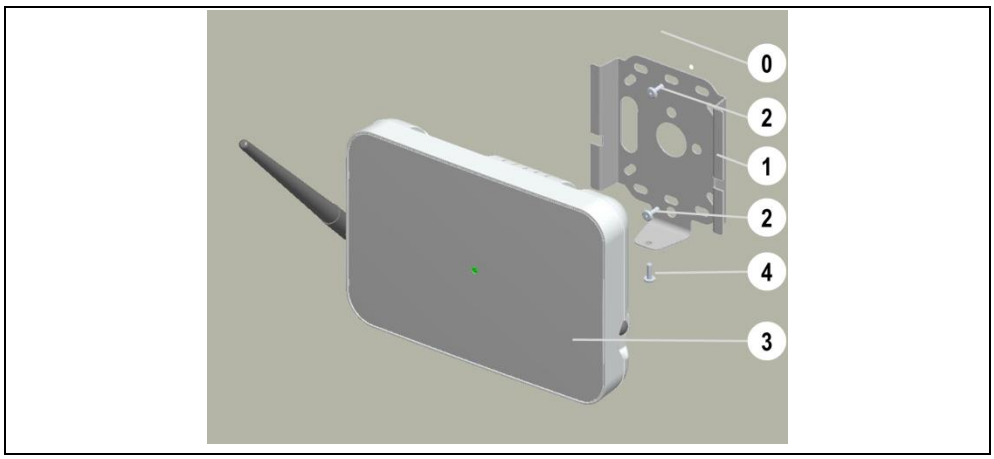
5.3 Metal Bracket for Mounting on Wall, Ceiling or T-Mounting Rail

Once the metal bracket is mounted, the AP-2010 will be mechanical connected and fixed with a fixing screw.



Metal Bracket for imagotag AP-2010

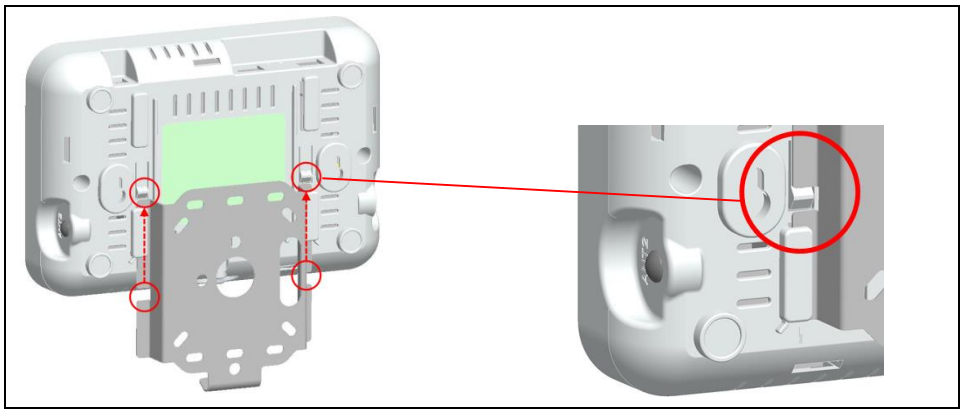
5.3.1 Mounting on Wall or Ceiling



Wall or Ceiling Mounting (Scheme)

0	Mounting Surface	**3**	imagotag AP-2010
1	Metal Bracket	**4**	Fixation Screw
2	Mounting Screw		

a. Install the metal bracket to the wall or ceiling with the help of dowels and mounting screws.

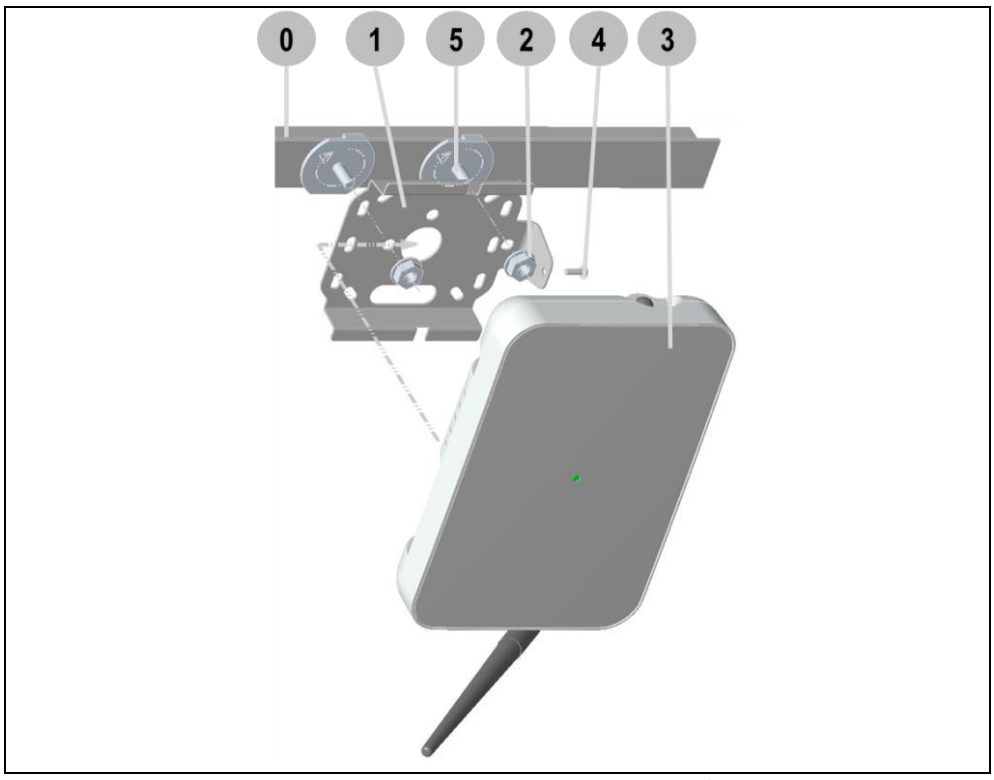


imagotag AP-2010 Locking Tabs

b. Slide the access point to the mechanical lock of the locking tabs
c. Attach the AP-2010 with the enclosed fixation screw to the metal bracket

5.3.2 Mounting on a T-Mounting Rail

Attach the metal bracket using the included “caddy® clips” from Erico® and the enclosed, self-locking screw nuts M6.



Mounting an AP-2010 on a T-Mounting Rail

0	T-Mounting Rail	**3**	imagotag AP-2010
1	Metal Bracket	**4**	Fixation Screw
2	Self-locking Screw Nuts M6	**5**	ERICO® „caddy® clips“

a. Place 2 pieces of “caddy® clips” with the right distance on the T-Mounting Rail and fix it (twist)
b. Place the metal bracket
c. Fix the Metal Bracket with 2 pieces of the self-locking screw nuts M6
d. Slide the access point to the mechanical lock of the locking tabs
e. Attach the AP-2010 with the enclosed fixation screw to the metal bracket

6 Environmental

6.1 Humidity and Operating Conditions

Turned OFF:

- Temperature: -20° C to + 70° C
- Humidity: 10% to 85% (non-condensing)

Turned ON:

- Temperature: 0° C to + 40° C
- Humidity: 10% to 80% (non-condensing)

6.2 Storage Conditions

Temperature: -20 °C to + 70 °C
Humidity: 10% to 85% (non-condensing)

6.3 Cleaning Instructions

Steps:

1) Shutdown Access Point
2) Plug Out Power Supply (AC or PoE)
3) Clean the Access Point with the help of a damp cloth

Note: Do not use liquid or aerosol cleaners.

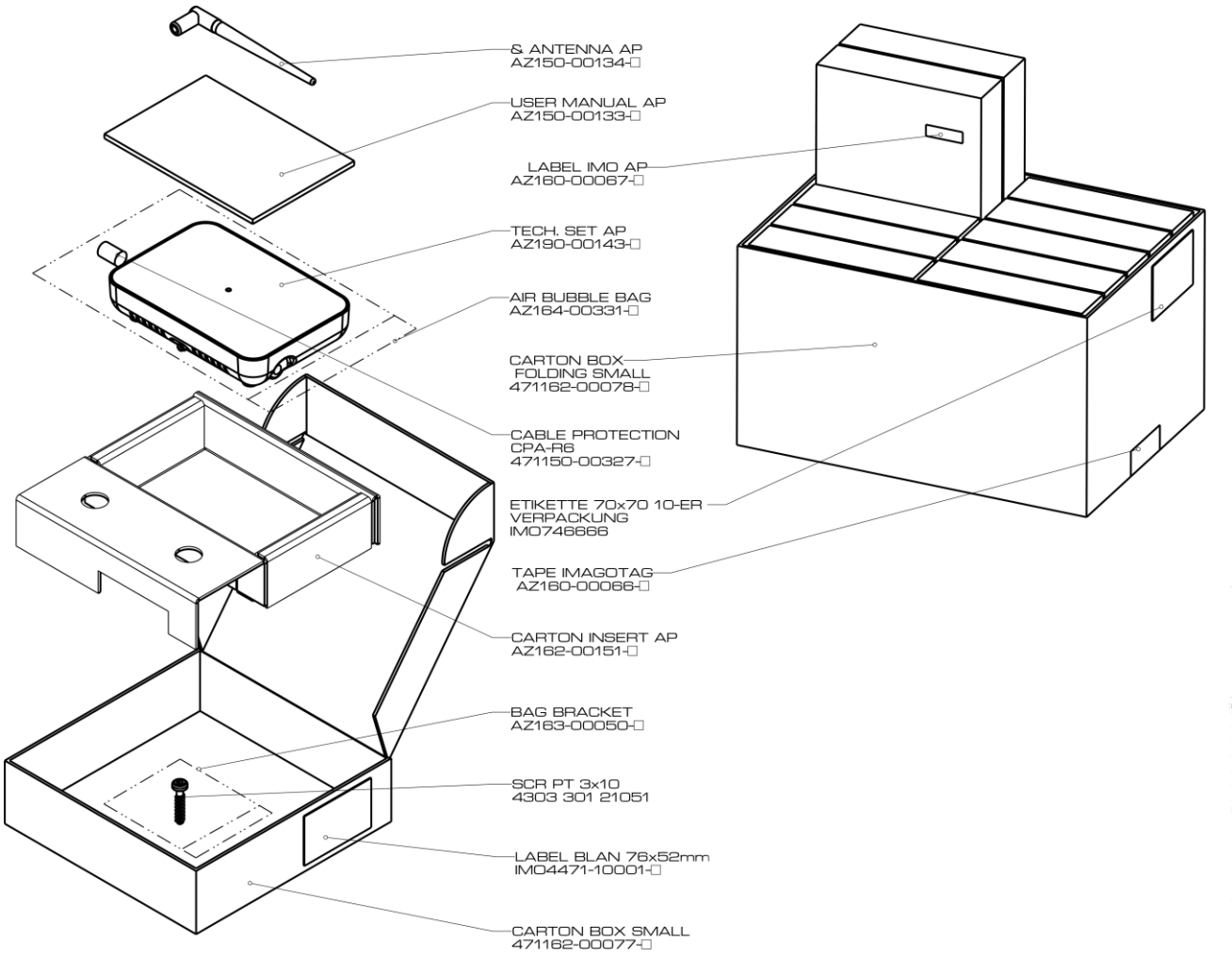
7 Packing

7.1 Packing Dimensions

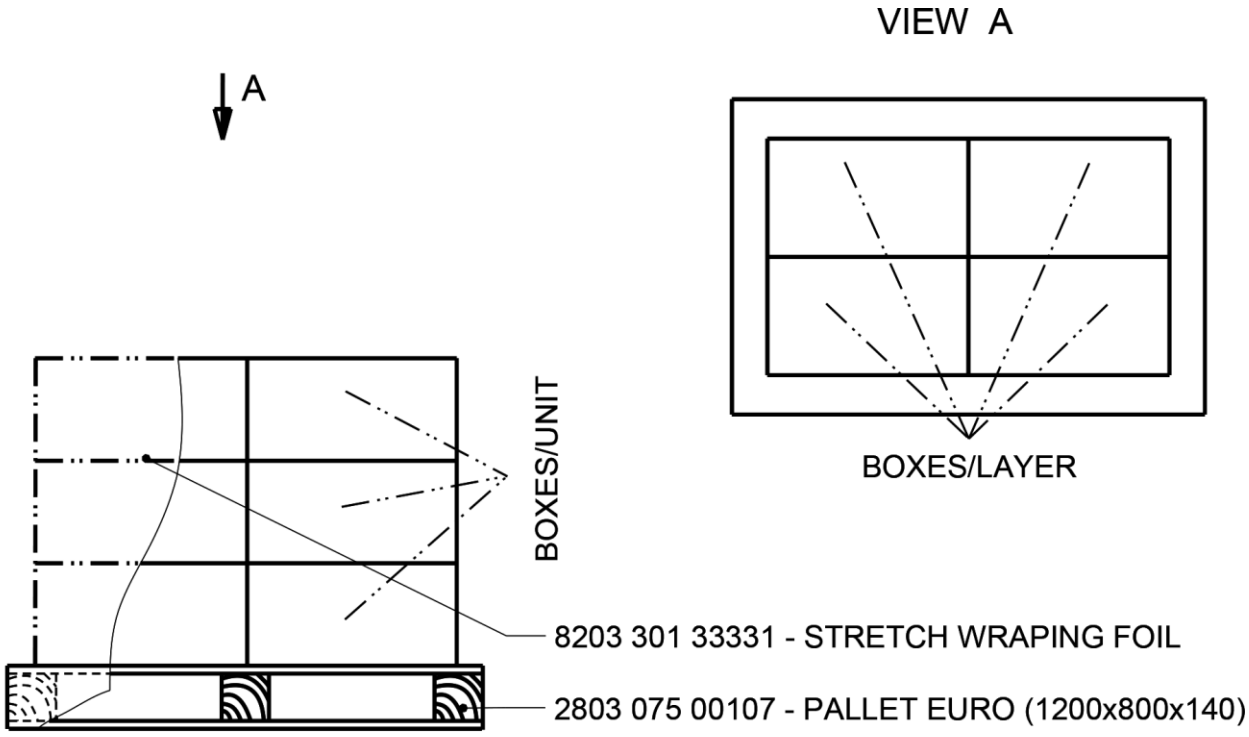
DIMENSIONS					STACKING			QUANTITY	
	LENGTH	WIDTH	HEIGHT						
BOX	**520**	**350**	**260**		LAYER / UNIT	**3**		SETS / BOX	**10**
PALLET	**1200**	**800**	**140**		BOXES / LAYER	**4**		SETS / LAYER	**40**
UNIT	**1200**	**800**	**960**		BOXES / UNIT	**12**		SETS / UNIT	**120**

Imagotag AP-2010 / Box: 10

7.2 Illustrations



7.3 Palletization



PROCEDURE

1. Stack BOXES on PALLET
2. Fix stacked BOXES with STRETCH WRAPPING FOIL

7.4 Ordering Information

You can choose between the following offered packages & accessories of the AP-2010:

Article Number	Model	Description
120002	AP-2010	AP-2010 incl. Antenna
120003	AP-2010	AP-2010 Bundle incl. Antenna and PSU (EUR)
120004	AP-2010	AP-2010 Bundle incl. Antenna and mounting plate
120008	AP-2010	AP-2010 Bundle incl. Antenna, PSU (EUR) and mounting plate
130001	Antenna	ANT OMNI 5 RP SMA INDOOR
120007	Mounting Plate	Mounting Plate
120005	AP-2010 PSU (EUR)	Power Supply

8 Certifications

Housing, board and the display of the imagotag AP-2010 conform with the ROHS Directive

The product meets the EU safety, health and environmental protection requirements and has the approval of CE marking

8.1 Applied Standards

Information Technology Equipment
EN 60950-1/A2:2013
UL 60950-1/A2:2014
CSA CAN/CSA-C22.2 NO.60950-1-07
EMV
EN 301489-17 V2.2.1
R&TTE
EN 300328 V1.8.1
Human Exposure to Electromagnetic Fields
EN 62479:2010

8.2 Declaration

The company imagotag GmbH declares on his own responsibility that the AP-2010 corresponds to the standards mentioned above.

8.2.1 FCC

This device complies with part 15 of the FCC Rules. 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.

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

8.2.2 IC

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

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'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

9 Security Terms

- Don't drop it.
- Keep it away from water.
- Don’t use the AP-2010 with defective parts.
- Don’t use the AP-2010 with spare parts and accessories which are not examined and approved by the imagotag GmbH.
- Unauthorized changes or modifications to the electronic label and their components without the consent of imagotag GmbH are not allowed.

- Don't throw defective batteries into the dustbin. Give them to a reprocessing company.
- Don't throw AP-2010 into the dustbin. Give them to a reprocessing company.
- Contact imagotag GmbH for more details about this process.