

TITLE Antenna specification DeLaval AM2 433/418MHz		CONFIDENTIALITY Confidential	DOCUMENT NO spec_003_200255-2_en	VERSION A
PROJECT DACTMR	PROJECT NO. 60043608	ISSUED BY Erik Björkman		DATE 2024-07-19

Antenna specification
DeLaval AM2
433/418MHz
DACTMR

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1 Document Information

1.1 Purpose and scope

This antenna specification is intended as supplementary information for certification purposes.

1.2 Terminology

AM1	DeLaval Activity Meter 1
AM2	DeLaval Activity Meter 2
PCB	printed circuit board

1.3 References

N/A

1.4 Distribution list

Name	Organization
Erik Björkman	Prevas
Wiveca Sween	DeLaval International
Rahul Sankhayan	NEMKO

1.5 Revision history

Revision	Comment	Changed by	Date
A	Draft	Erik Björkman	2024-07-19

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2 Antenna specification

2.1 Antenna design legacy

The original antenna design was created by JK Systems for DeLaval Activity Meter AM1 and was implemented by Prevas on DeLaval Activity Meter AM2 on the customer's demand.

2.2 Antenna description

The DeLaval AM2 antenna is a copper trace dipole integrated on the AM2 PCB. The positive element runs along the edge on the top layer of the 2-layer PCB (component side; see fig.2.1a), while the negative element mostly runs on the bottom layer (non-component side; see fig.2.1b) and returns to the top layer through a 0.90mm via and is coupled to the ground plane at the center of the PCB through a 3.3pF capacitor. The ground planes on each side of the PCB are interconnected with stitch vias throughout these ground planes.

The end sections of the positive element on the top layer and the negative element on the bottom layer overlap and this overlapping region is approximately 18 mm long. The enclosure holding the AM2 circuit board is filled with a potting compound and radiator elements couple to the enclosure and the potting compound and therefore the whole assembly including the enclosure and potting compound should be viewed as the antenna.

2.3 Dimensions

The nominal dimensions of the PCB are 60.6 mm x 49.0 mm x 1.6 mm and the nominal outer dimensions of the complete DeLaval AM2 are 79 mm x 60 mm x 38 mm.

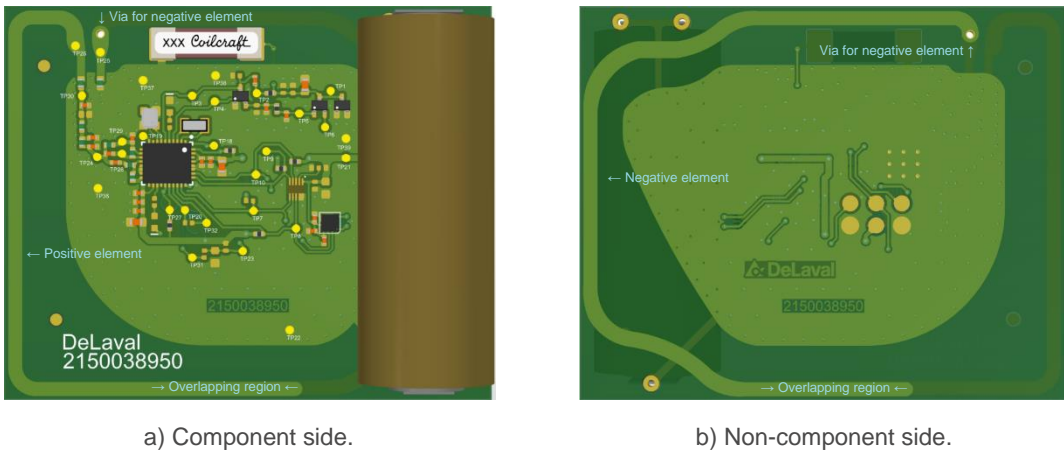
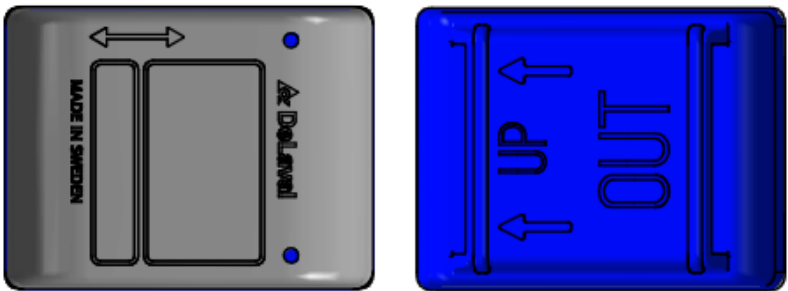
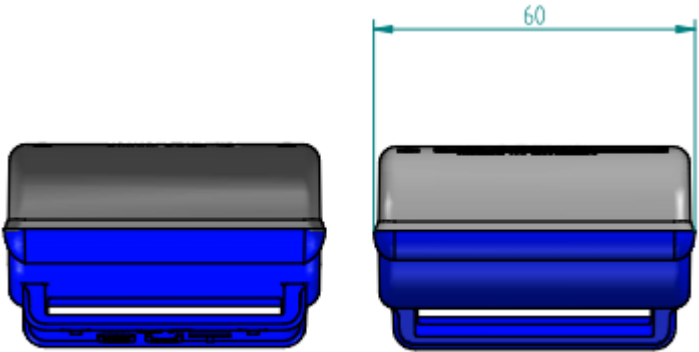


Figure 2.1: AM2 circuit board drawing marked with labels to indicate the *positive element*, the *negative element*, the *via for the negative element* and *overlapping region*.

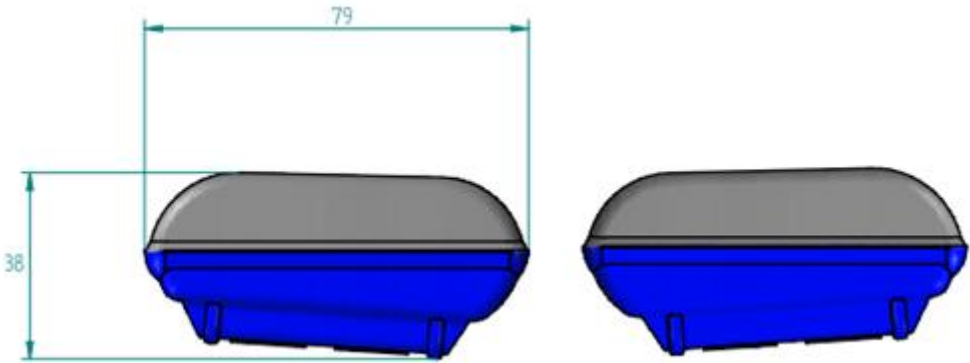
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a) Rear view (left) and front view (right).



b) Top view (left) and bottom view (right).



c) Right view (left) and left view (right).

Figure 2.2: Drawing of the AM2 enclosure. Indicated dimensions are in millimeters.

2.4 Antenna gain

- The maximum antenna gain in the 433.165 MHz – 434.485 MHz band is $G_{max} \leq -14$ dBi.
- The maximum antenna gain in the 417.165 MHz – 418.485 MHz band is $G_{max} \leq -14$ dBi.