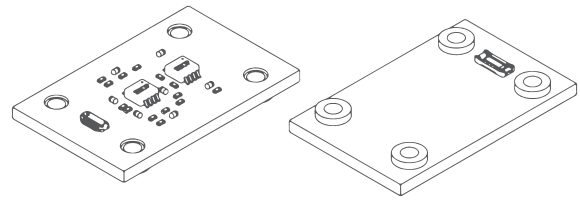


# AMS-x10-AMP/AMS-x10-ACAMP

## External amplifiers for the AMS detection module series



### FEATURES

- Compatible with the AMS3140-01 and AMS6140-01 (p. 86)
- Bandwidth: DC to 10 MHz (AMS-x10-AMP) or 0.1 Hz to 10 MHz (AMS-x10-ACAMP)
- Differential gain: x10

- Common mode gain: x1
- Rapid prototyping and proof-of-concept development
- Designed for easy integration with the AMS detection module series

### GENERAL DESCRIPTION

The AMS-x10-AMP/AMS-x10-ACAMP are external amplifiers for the AMS module series. They are designed to be an easy tool for rapid prototyping and proof-of-concept work when the default responsivity of the module is too low.

The amplifiers can be used as a “transparent” extension board that provides only amplification of differential output signal. The functionality of the other signals remains unchanged.

Common mode voltage of OUT\_P and OUT\_N signals is passed to the outputs without amplification. The differential signal is amplified 10 times. For AMS-x10-ACAMP low cut-off frequency is 0.1 Hz. The output impedance of OUT\_P and OUT\_N pins is set to 50 Ω as shown in FIGURE 1 and FIGURE 2. More detailed schematics are presented in FIGURE 4 and FIGURE 5.

For the AMS-x10-AMP signals OFFSET\_P and OFFSET\_N are crossed to keep their original functions: OFFSET\_P changes the DC value of OUT\_PAMP\_P while OFFSET\_N changes the DC value of OUT\_PAMP\_N.

For the AMS-x10-ACAMP OFFSET\_P/N do not impact the differential value of OUT\_PAMP\_P/N since the amplifier is AC coupled. It is recommended not to use OFFSET\_P/N for AMS-x10-ACAMP.

### ELECTRICAL DIAGRAMS

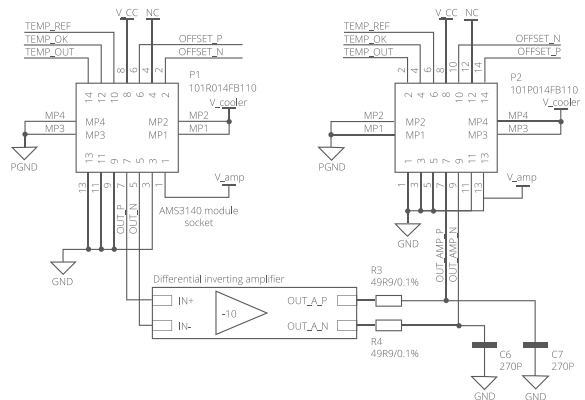


FIGURE 1. General schematic diagram of the AMS-x10-AMP.

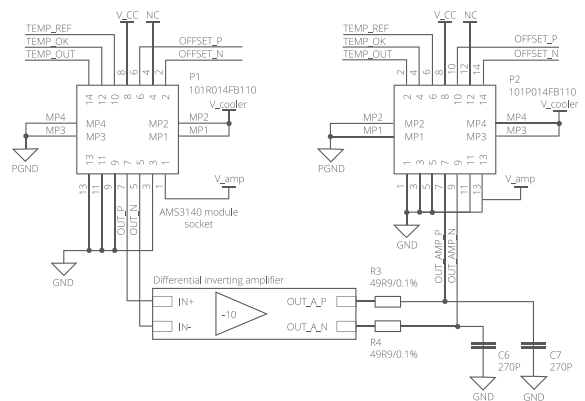


FIGURE 2. General schematic diagram of the AMS-x10-ACAMP. OFFSET\_P and OFFSET\_N are not crossed and should not be used.

## CONNECTIVITY

There are two sockets placed on the board (see FIGURE 3). P1 is the interface to the AMS module. P2 acts as an output socket with a pinout exactly the same as on the AMS module.

The part number of P2 is the same as on the AMS module. Please check the datasheet of the AMS module series for more details about pin functions.

TABLE 1. P2 socket pin functions

Pin number	Symbol	Function
1, 3, 5, 11	GND	Signal and amplifier supply ground
7	OUT_AMP_P	Amplified positive signal output
9	OUT_AMP_N	Amplified negative signal output
12	NC	Not used. Leave floating
2	TEMP_OUT	Analog temperature output
4	TEMP_OK	Comparator output signal
6	TEMP_REF	Temperature reference voltage
13	V <sub>amp</sub>	Amplifier supply input
8	V <sub>cc</sub>	Internal supply voltage output
10	OFFSET_P	DC offset for positive signal output
14	OFFSET_N	DC offset for negative signal output
MP3, MP4	V <sub>cooler</sub>	Supply voltage input for the temperature controller
MP1, MP2	PGND	Ground path for temperature controller. Connect to GND

For more information please check the datasheet of the AMS module series (p. 86)

## MECHANICAL REQUIREMENTS

There are four spacers mounted on the PCB to keep the proper distance between the AMS module and AMS x10-AMP/AMS x10-ACAMP. Warning! The P1 socket is very sensitive to mechanical stress.

The AMS x10-AMP/AMS x10-ACAMP has to be fixed to the AMS detection module with screws and nuts. Caution is required when assembling the adapter with the module.

## MECHANICAL LAYOUT

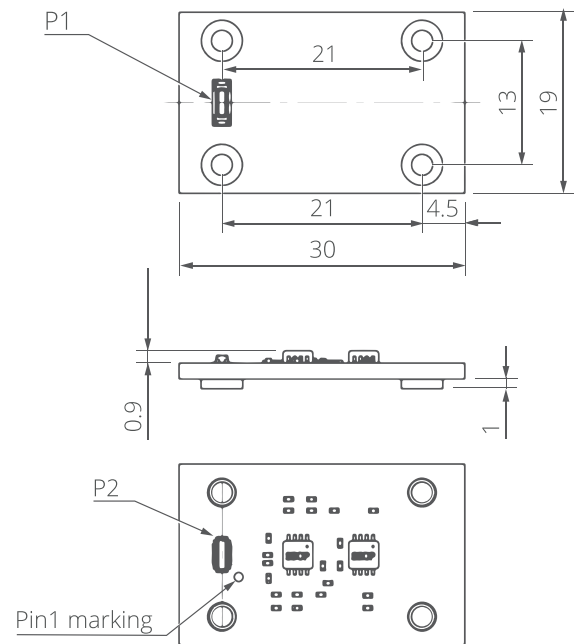


FIGURE 3. Dimensions of the AMS-x10-AMP and AMS-x10-ACAMP (given in mm)

## DETAILED SCHEMATICS

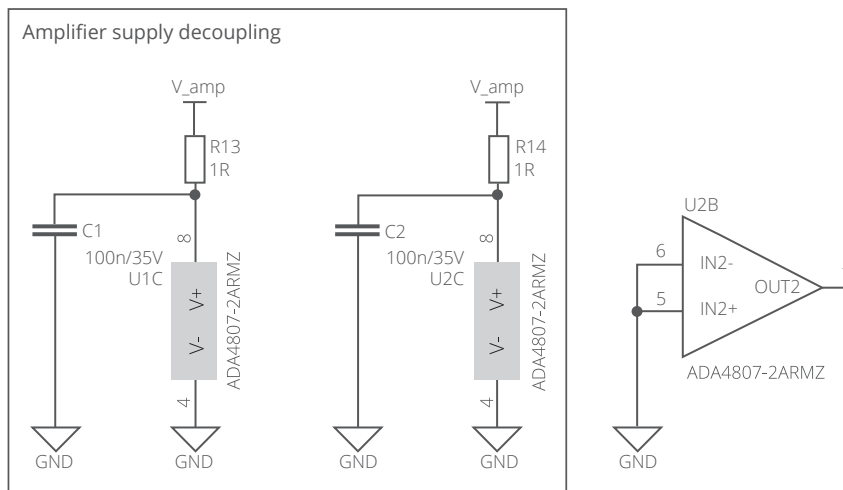
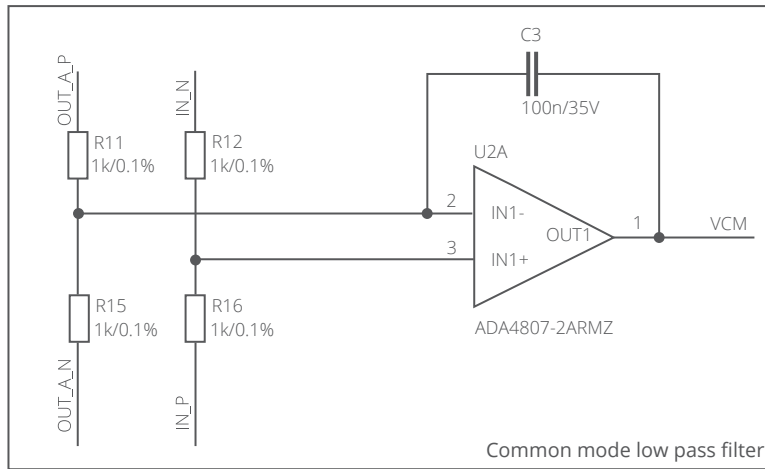
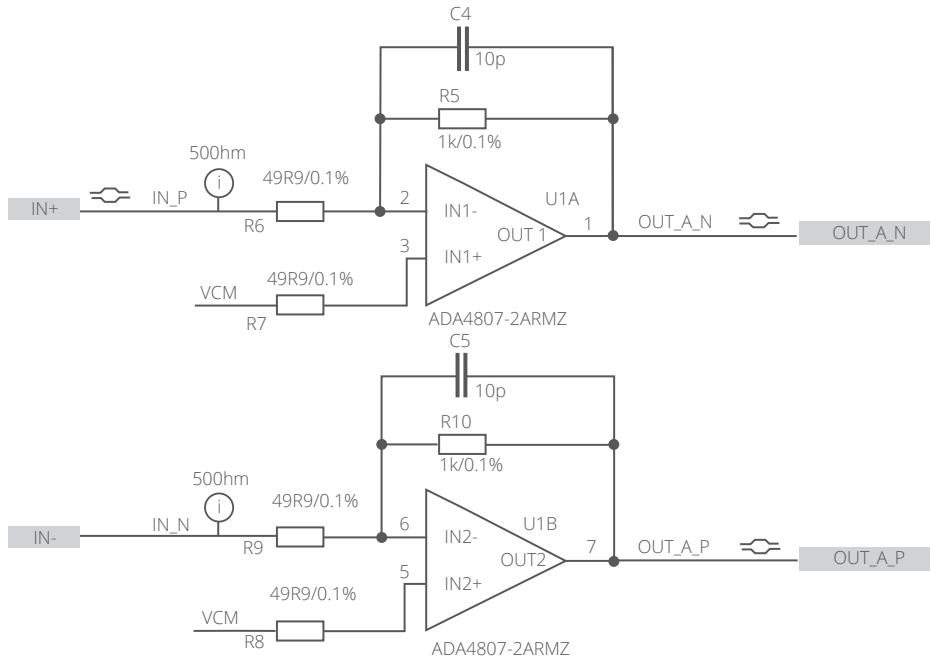


FIGURE 4. Schematic of the differential amplifier of the AMS x10-AMP

## DETAILED SCHEMATICS

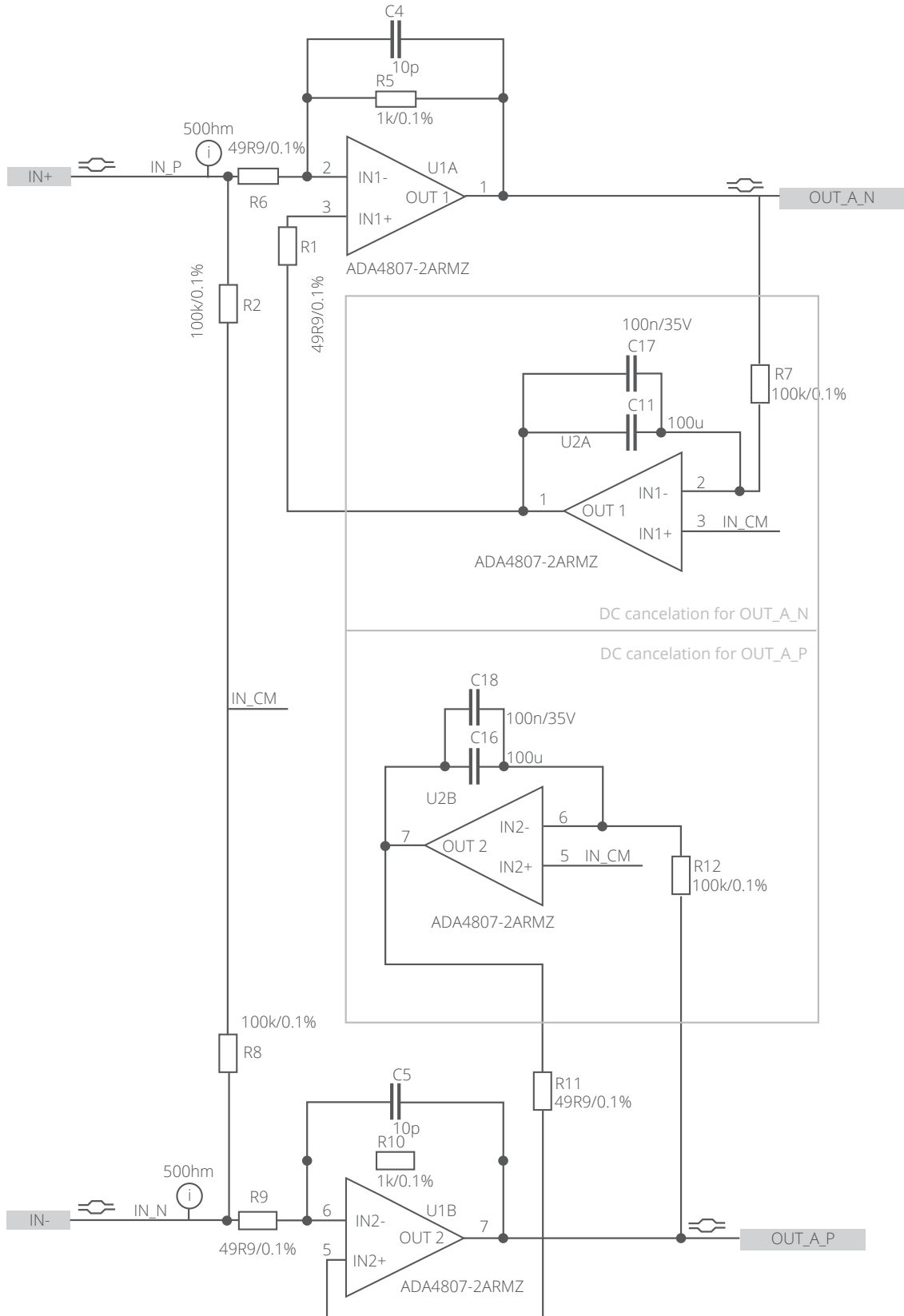


FIGURE 5. Schematic of the differential amplifier of the AMS x10-ACAMP