

# DevKit SERIES

## QUICK START GUIDE

### DESCRIPTION

DevKit is a set of accessories for AMS/AM0 detection modules and TO46/SMD detectors. A wide range of accessories enables flexible adjustment of key parameters to meet specific application requirements, including: responsivity, coupling, bandwidth, electrical interface, and analogue-to-digital conversion. The accessories are designed to be stacked sequentially, allowing multiple units to be combined into a single assembly.

The DevKit is compatible with a variety of detection modules and detectors. Please note that the kit contents vary depending on the specific detection module or detector selected.



FIGURE 1. DevKit with included components

### COMPONENTS

The DevKit contents for the various variants are presented in TABLE 1.

TABLE 1. List of components for different DevKit variants

Accessory symbol	Description	DevKit-AMS-01	DevKit-AM0-01	DevKit-TO46-01	DevKit-SMD-01
<a href="#">AMS-x10-AMP</a>	Differential voltage amplifier with 10V/V gain and DC coupling	2x	2x	2x	2x
<a href="#">AMS-x10-ACAMP</a>	Differential voltage amplifier with 10V/V gain and AC coupling	2x	2x	2x	2x
<a href="#">AMS-100k-LPF</a>	Low-pass filter with 100kHz bandwidth limit. Reduces noise when a higher bandwidth is not required	1x	1x	1x	1x
<a href="#">AMS-1.27-EA</a>	Passive adapter to a standard connector with 1.27 mm pitch for easy connection in an experimental setup	1x	1x	1x	1x
<a href="#">AMS-x1-SMA</a>	Differential to single-ended converter with SMA signal output for easy connection to scopes	1x	1x	1x	1x
<a href="#">AMS-DIG-PROC</a>	Digital processing board with a powerful microcontroller and onboard processing capabilities	1x	1x	1x	1x
<a href="#">AMS-DIG-USB</a>	USB adapter which can be used with AMS-DIG-PROC to connect directly to the computer	1x	1x	1x	1x
<a href="#">AMS-HS</a>	Heatsink compatible with AMS modules (included only when ordered with an AMS module)	1x	-	-	-
<a href="#">AMS-90-FLEX</a>	Flexible PCB which can be used between the detection module and accessories	1x	1x	1x	1x
<a href="#">TO46-3.6k-AMP</a>	Differential amplifier compatible with TO46 detectors	-	-	1x	-
<a href="#">SMD-3.6k-AMP</a>	Differential amplifier compatible with SMD detectors	-	-	-	1x
<a href="#">AM0-AMS-EA</a>	Adapter for AM0 modules	-	1x	-	-

## GETTING STARTED

If ordered with a compatible detection module, the DevKit is delivered initially pre-configured. Unless otherwise specified, the default stack assembly includes a detection module, one AMS-x10-AMP amplifier, an AMS-DIG-PROC digital processing board, and an AMS-DIG-SMA. Such a configuration for the AMS variant is presented in Figure 2.

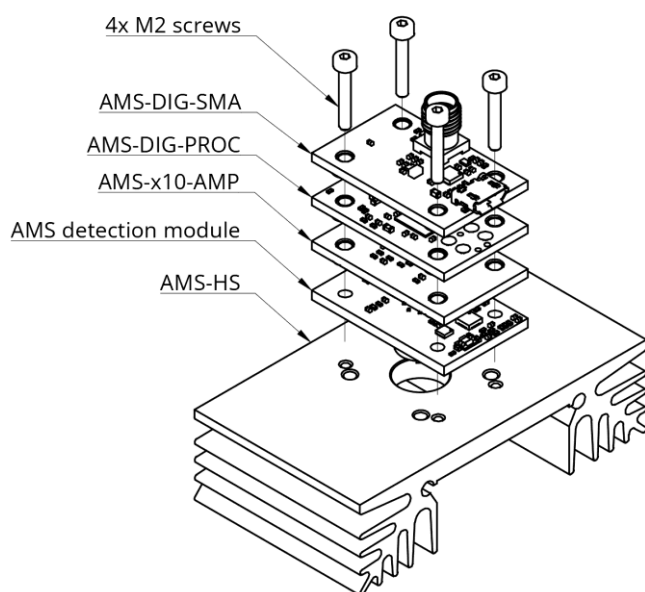


FIGURE 2. Default configuration of the DevKit-AMS-01

This configuration allows connection to PC and implementing software using our Python or C libraries, which can be found here:

<https://gitlab.com/vigophotonics/ams-dig-proc>

There is no stand-alone application available. However, there are examples of Python scripts and C snippets that can be found here:

<https://ams-dig-proc.readthedocs.io/>

## STACK CONFIGURATION

The stacking order of analog accessories is generally not critical. However, when cascading multiple DC-coupled amplifiers, please note that the DC offset is amplified alongside the signal. Consequently, in practice, the system should be limited to a maximum of two DC-coupled amplifiers, unless additional DC offset compensation measures are implemented.

AC-coupled amplifiers are exempt from this limitation, allowing for total gains of 1000x or greater. It is also possible to combine AC and DC amplifiers within the same assembly.

Note: The output of the AMS-DIG-PROC is strictly digital and must be connected exclusively to the AMS-DIG-USB interface.

Due to the delicate nature of the detection module connectors, extreme care is required during stack assembly and disassembly. Please note that the connectors have a limited mechanical lifespan (only 30 mating cycles). Do not apply excessive force. The PCBs must always be securely fastened together using screws in all four mounting holes to prevent damage.