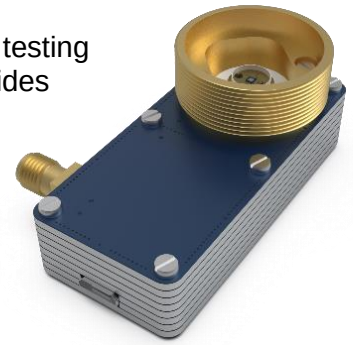
D-EM10R-X
Evaluation Module

D-EM10R-X – Specification



The evaluation module D-EM10R-X is designed to simplify the testing procedure of photodetectors, e.g., DEPHAN D-105-RC-X series. It provides a stable PC controlled power source for the plugged photodetector and wideband readout of its output signal, which is amplified and matched with the 50Ω load, e.g., oscilloscope input.
D-EM10R-SM1 version includes an adapter to a standard SM1 thread of 1" lens tubes.

Features

- Enables evaluation of HD-SiPMs
- Adjustable detector operating voltage
- High voltage stability under high load
- Module temperature control
- Pre-amplified analog output
- Detector current measurement
- USB interface

Absolute maximum ratings

Parameter	Value	Unit
Operating conditions	-20..+60°C, no condensation	-
Storage conditions	-20.. +80°C, no condensation	-
Detector max current	1.5	mA

Electrical characteristics (T_{opr} = 25°C)

Parameter	Value			Unit
	Min	Typical	Max	
Input power voltage	4.4	5.0	5.25	V
Input power current	20	120	140	mA
Detector supply voltage*1	5		80	V
Voltage setting resolution		0.1		V
Current measurement limit	0.02		1000	uA
Current measurement error*2	2	5	10	%
Absolute temperature measurement error*3	1	2	5	°C
Temperature measurement stability	0.1	0.5	1	°C
Amplifier gain	30		32	dB
Saturated output power (at 3dBm compression)		25.4		dBm
Amplifier RMS noise level	2.2		2.6	mV
AC coupling cutoff frequency		2		MHz
Output load resistance		50		Ω
Power and control interface	USB			-
Supported operating systems*4	Windows10, Linux			

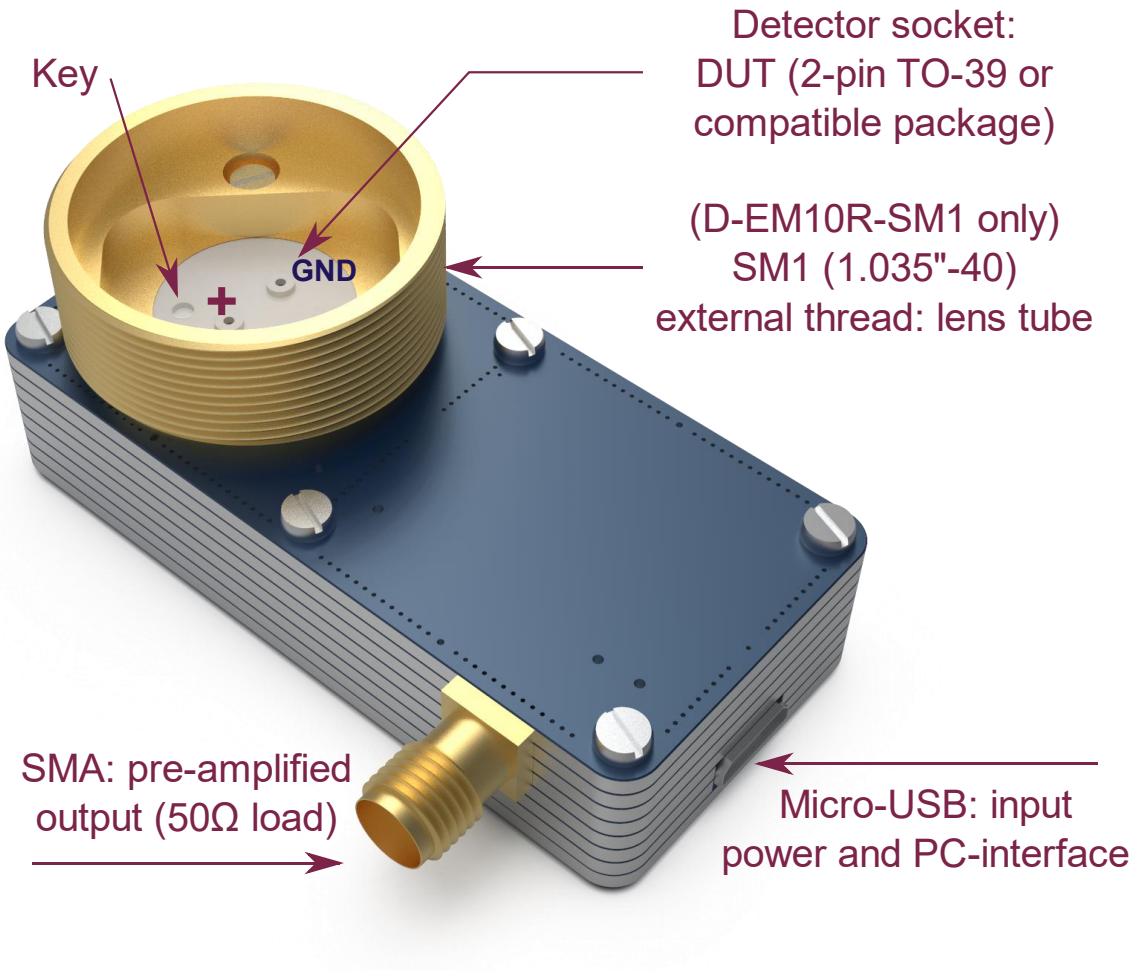
*1: Voltage settling time ≤ 1ms under variable load resistance; Voltage setting time ≤ 200ms
*2: According to current measurement limit
*3: Temperature sensor measures internal module temperature
*4: Special driver installation is required to operate under not listed OS

Precautions

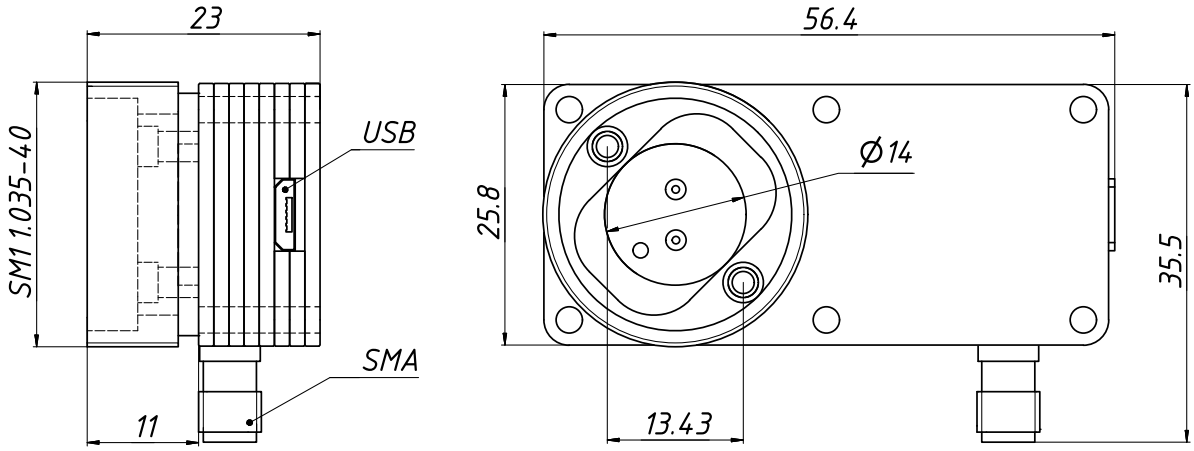
- Once power is applied, nothing must be connected to or disconnected from the module
- Do not touch the photodetector or socket contacts when power is applied to the module
- Do not apply power to the module without a photodetector installed
- RF output must be loaded on 50Ω before power is applied to the module

Connection information

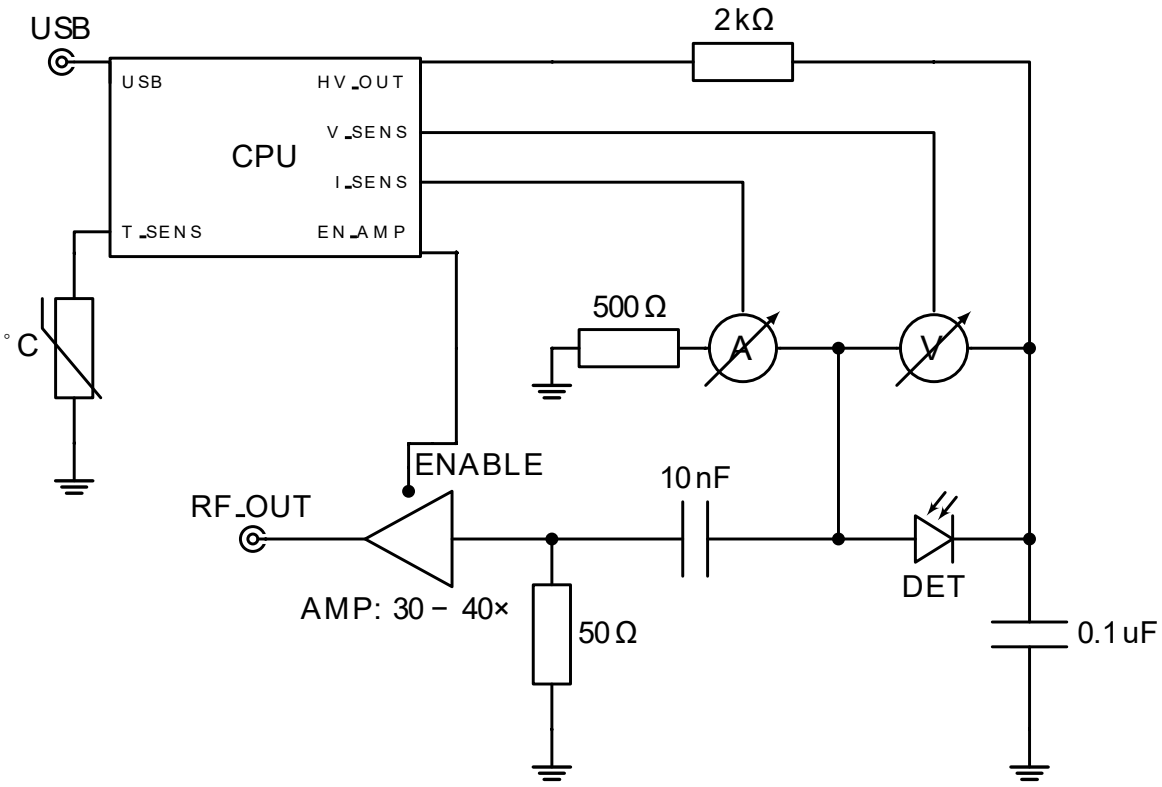
- Micro-USB: input power and PC-interface
- SMA: pre-amplified output (50Ω load)
- Detector socket (see below): DUT (2-pin TO-39 or compatible package)
- (D-EM10R-SM1 only) SM1 (1.035"-40) external thread: lens tube



Dimensional outline (for D-EM10R-SM1, unit: mm)

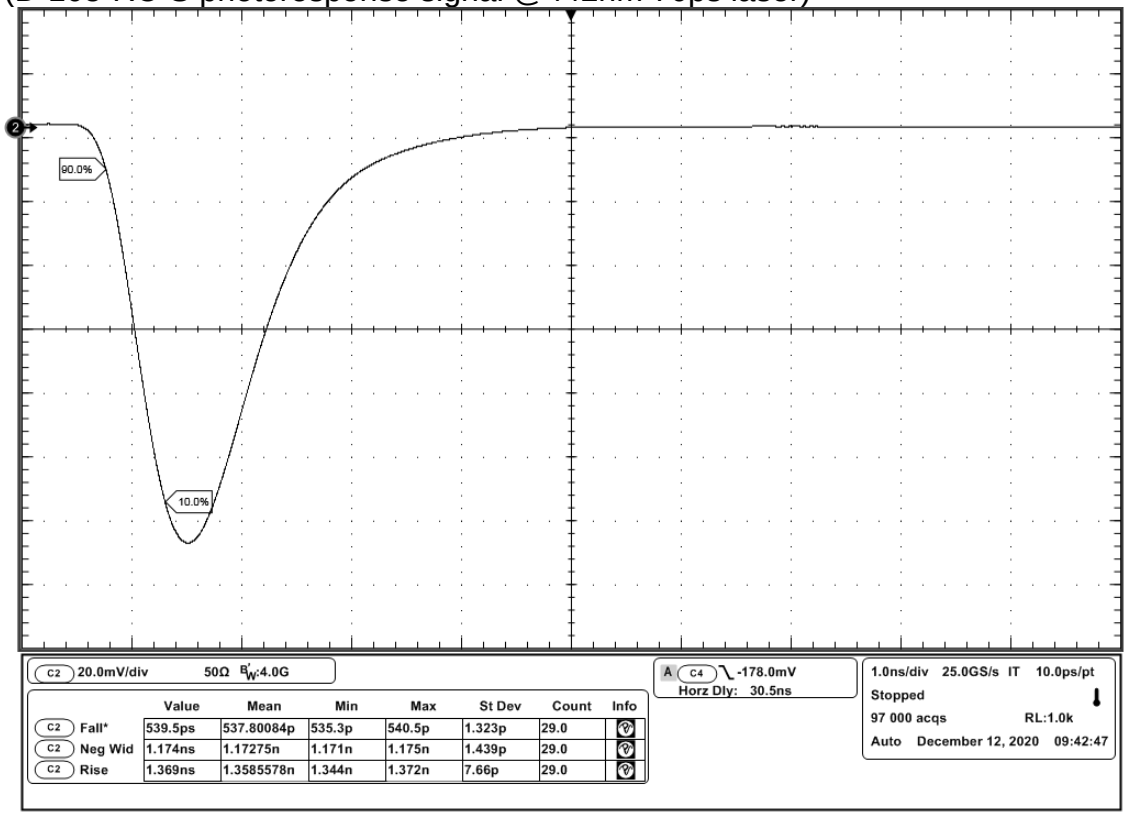


Block diagram

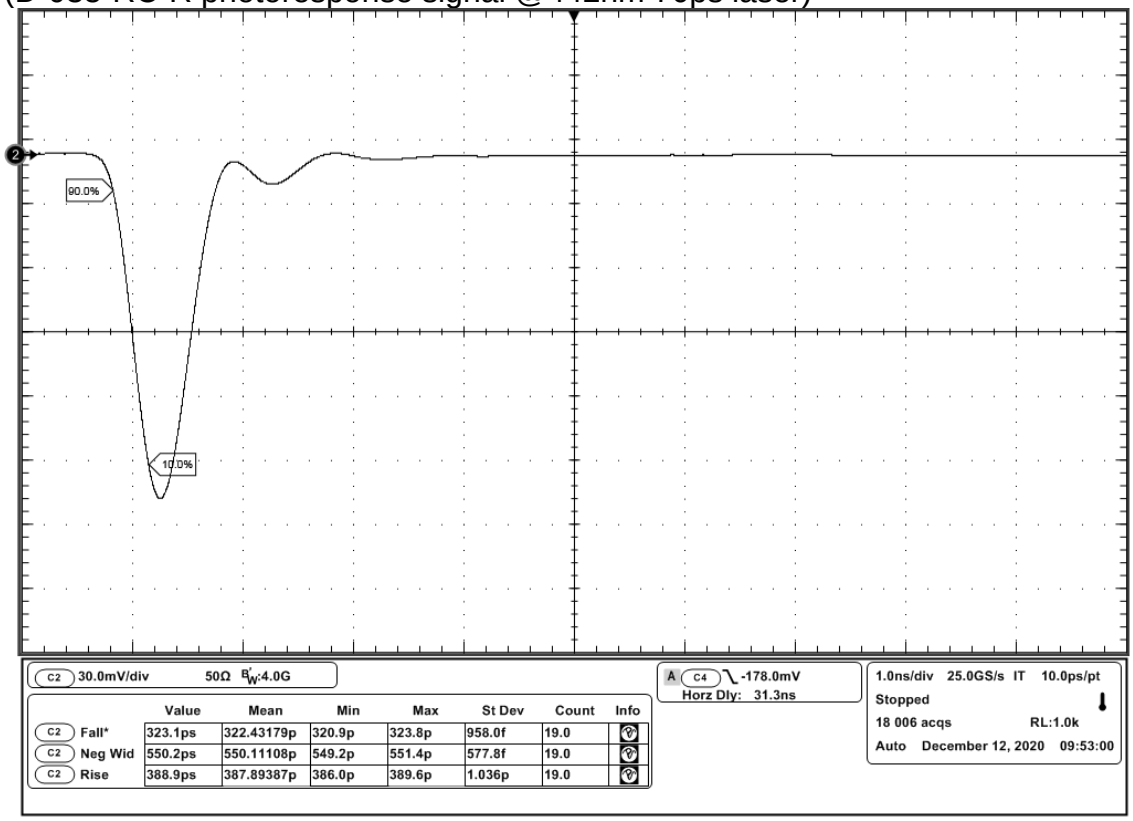


Typical pulse shape

(D-105-RC-S photoresponse signal @442nm 70ps laser)



(D-035-RC-R photoresponse signal @442nm 70ps laser)



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