NanEyeM handling guidelines

Application Note

Published by ams-OSRAM AG
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Application Note No. AN001077

Valid for:
NanEyeM

Abstract

This application note gives recommendations on how to handle NanEyeM devices, from ams OSRAM. Guidelines about handling, shortening cables, repairing connections and cleaning contamination. Customers with specific requirements, that are not covered by this document, shall contact ams OSRAM.

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1 Introduction

This document presents instructions for the handling of the NanEyeM module with cable, in order to avoid damage to the sensor due to improper usage.

NanEyeM is a miniature sized image sensor for vision applications where size is a critical factor. Due to small module size and thin wires, this product needs to be handled with care. This document clarifies about how customers can handle of NanEyeM and provides recommendations regarding its integration on custom systems.

Information:

For more information about the sensor, please check the product datasheet, NanEyeM_DS001033, at the ams OSRAM webpage.

1.1 Ordering information

Q number	Material title	Chroma	Package	Optics	Delivery form	Delivery quantity (MOQ)
Q65114A3383	NEM_RGB_2M_FOV120_F4.0	RGB	With 2 m cable	FOV120; F4	Spool	1
Q65114A3384	NEM_RGB_2.5M_FOV120_F4.0	RGB	With 2.5 m cable	FOV120; F4	Spool	1

Information:

Device traceability is based on the serial numbers labeled on the spools.

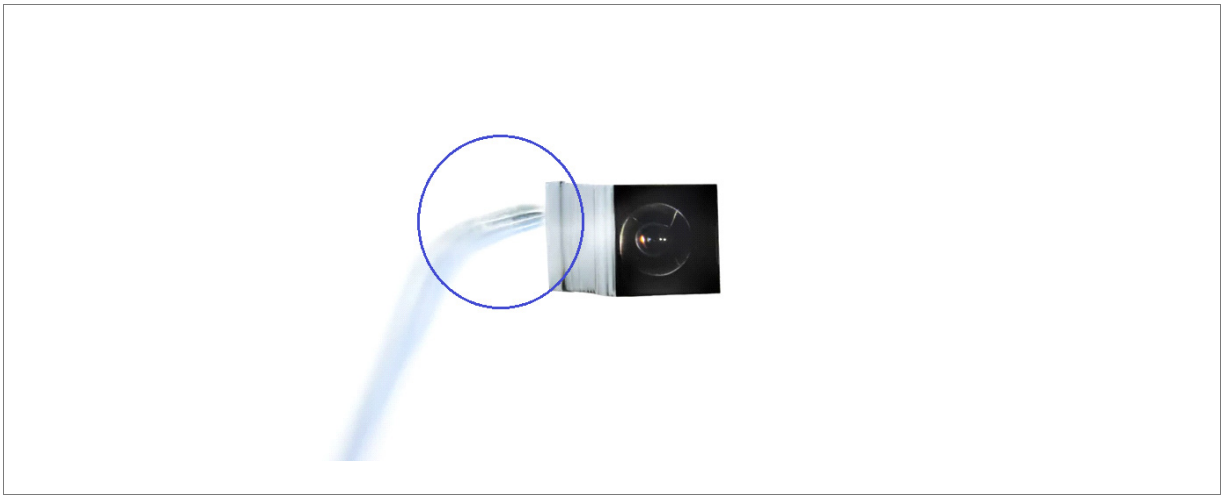
2 Handling the NanEyeM

Due to the packaging characteristics of this product, it is recommended for the customer to not pull or hang the module, under the risk of detaching the cable from the sensor head.

NanEyeM can support a maximum force of 60 g for cable pulling, according to the performed tests. In case the cable is detached near the camera head zone (critical area), repair is not possible.

Removing or damaging the black paint of the sensor will deeply affect camera performance (e.g. creating artifacts, light leakage, etc) and must be avoided.

Figure 1: NanEyeM critical area



In case the cable is broken along its length (non-critical area), please refer to section 3. The cable wires have a specific pinout guided by the colored wire (Ground (VSS)). Please be aware that swapping the pinout will cause the camera not to be operational and may cause irreversible damage to the module.

It is also important to have special attention when connecting the modules to the evaluation boards. For that purpose, please follow correctly the instructions of the EVK User guide.

Attention:

The NanEye Evaluation Kits are intended solely for evaluation purposes. It has no EMI approval and is not advisable for medical use. ams OSRAM therefore is not liable for any damage or harm resulting from its use.

CAUTION:

The device is NOT supplied sterile! Medical use of the system, not integrated into a medical device, may lead to serious harm, illness or death!

Attention:

The NanEyeM device, as is, was not made to be waterproof or liquid proof. It should be integrated in a tool or endoscope in such a way that the potting material, or adhesive, will seal all sides of the camera module, except the optical front window, from direct contact with water and/or liquids. Using the module without any protection has a high potential for damage, such as scratching on the side wall painting, breaking of the cable and even leak water/liquids into it.

3 Shorten the cable / repairing connections

3.1 Pinout information

If the user needs to repair a connection or shorten the cable, this section explains the procedure to rework the soldering of the wires. It is not recommended to leave a cable length lower than 5cm, in order to avoid being too close to the sensor module.

The NanEyeM has a 4-wire cable, which connects to a 6-pin PCB Flex.

Figure 2: NanEyeM 4-wire cable pinout

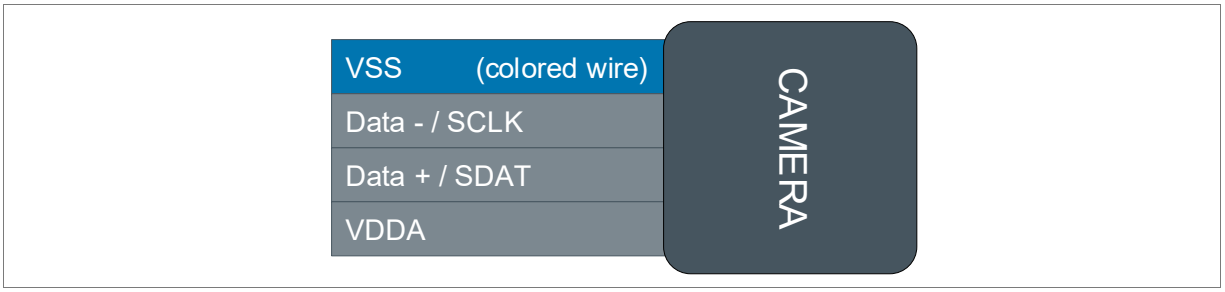


Figure 3: NanEyeM 6-pin flex PCB connector pinout

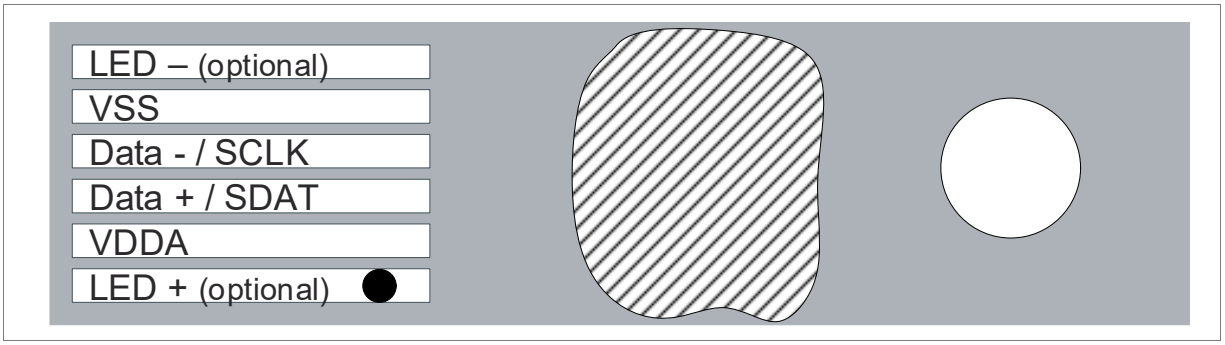


Table 1: Pin description of NanEyeM

Pin number		Pin name	Pin type[1]	Description
Cable 4-wire	Connector 6-wire			
	1	LED-	AO	LED cathode (optional)[2]
1	2	VSS	VSS	Ground supply
2	3	DATA- / SCLK	DIO	Serial clock input, LVDS neg. output
3	4	DATA+ / SDAT	DIO	Serial data input/output, LVDS pos. output
4	5	VDDA	Supply	Positive supply
	6	LED+	AI	LED anode (optional)[2]

(1) Explanation of abbreviations:
DIO Digital Input/Output
AI Analog Input
AO Analog Output

(2) The current available NanEyeM products come with a 4-wire cable as in Figure 2. These connector pins are optional in case the user would like to connect a LED device.

3.2 Repairing procedure

Attention:

- Every handling must be performed under ESD controlled environment following established procedures for ESD prevention.
- Any integration should be considered take as reference the NanEyeM datasheet.
- ams OSRAM is not liable for any damage caused on the module by improper repairing or customer customization.

Please follow the steps below in order to connect correctly the wires to the connector:

1. Make sure that all the module's pins are disconnected from any external device and the module is handled in a ESD controlled environment.
2. Inspect the cable for damaged segment(s).
3. Cut off the cable damaged segment(s), with a plier or a scalpel, remaining only with module with the undamaged cable attached to the camera end.

Figure 4: Cable cutting position

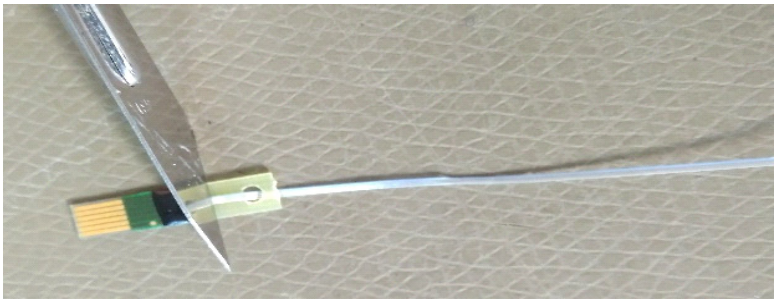
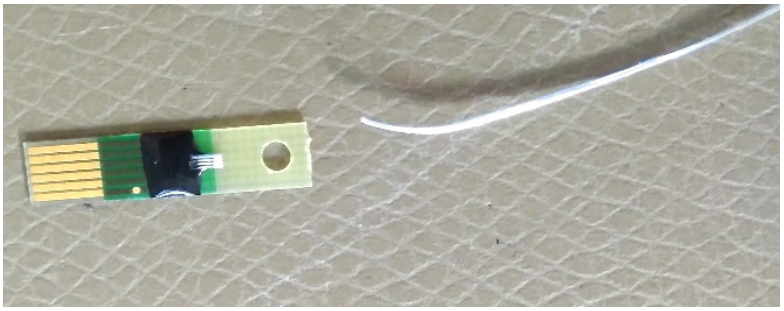


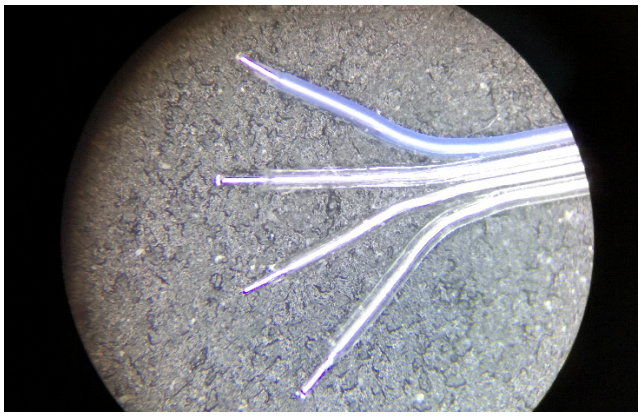
Figure 5: Cable cut



4. Separate the wires along 3 mm, with a scalpel, making sure that the copper wire is not damaged.

5. Strip carefully 1 mm isolation of the electrical cables, using an appropriate mechanical stripping tool or a fiber optics thermal stripper, without damaging or cutting the copper wire.

Figure 6: Wires separation and stripping



6. Clean the connector from remains of previous cables, making sure that there is no short between the copper wires.

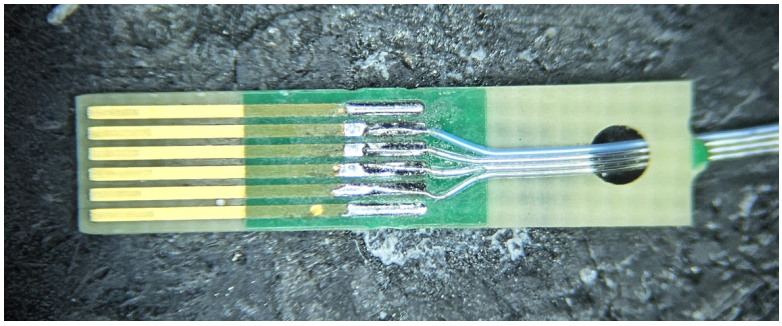
Information:

Please note in the final application system, the user would assemble/solder on the respective system connector/PCB. Please consider the procedure below as an example only.

7. When soldering to the connector, respect the correct pin order as shown in Figure 3. The small dot near the traces, gives orientation to the soldering.

Figure 7 shows an example of the PCB Flex connector, where the colored VSS wire can be easily seen. Please note that the wires were soldered in a new connector, in the original position.

Figure 7: NanEye 6-pin PCB flex connector soldered wires



8. After resoldering the cable wires to the PCB, apply a strain relief electrically insulating resin, to secure the connections and prevent mechanical stress on the solder joints. For temporary or easily removable, hot glue can be used (Figure 8). For permanent strain relief, epoxy resin is recommended (Figure 9).

Figure 8: Strain relief insulating hot glue

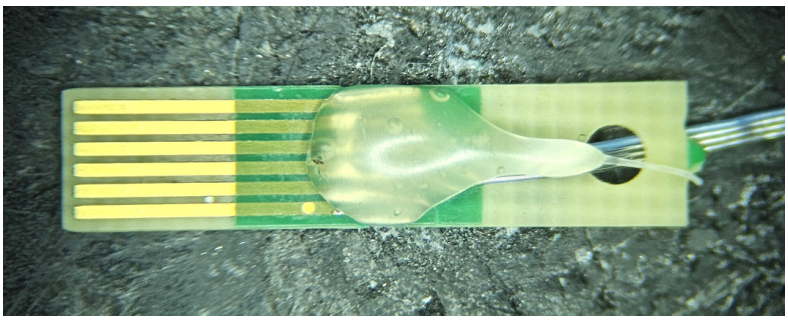
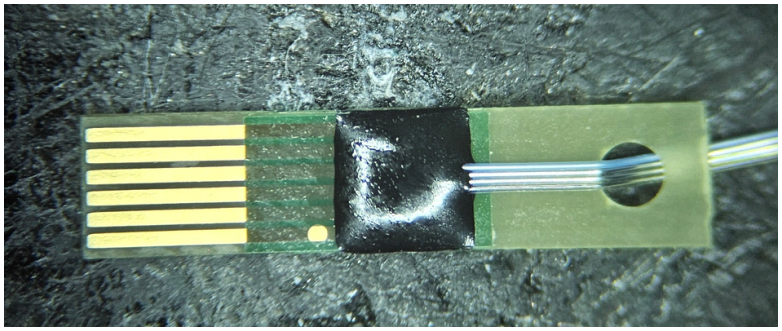


Figure 9: Strain relief insulating epoxy resin



4 Cleaning the sensor

If there is any contamination or dirt on the glass/lens, it can be cleaned with DI water and foam swab. If the contamination or dirt is, for some reason, irremovable by DI water and foam swab, then, as a second option, IPA (Isopropyl Alcohol) can be used. However, please make sure that the IPA cleaning should only applied be on the top side of the glass/lens surface. Please use a cotton swab and clean the top lens surface only. When applying it, the lens cleaning operator should do it very carefully and smoothly.

Attention:

ams OSRAM is not liable for any damage caused on the module by improper cleaning procedures.

5 Product return policy

ams OSRAM is not liable for any improper handling, customizing, repairing or cleaning procedures, performed by the customer.

In case a customer finds a need to return a product, within warranty period, Technical support team must be contacted to start an FAR/RMA process, in advance to any return of product(s). Only with the approval of the Quality Assurance department, the customer can return the product(s).

6 Revision information

Changes to current revision v1-00	Page
Initial production version	

- Page and figure numbers for the previous version may differ from page and figure numbers in the current revision.
- Correction of typographical errors is not explicitly mentioned.

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