



Connecting The Imaging Source MIPI Camera Modules with Jetson Nano



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Connecting TIS MIPI Camera Modules with Jetson Nano

Items Included within the Scope of Delivery



Fig. 1: Items shown above are included in the kit.

Note: An M12 lens must be selected based on application-specific criteria and, therefore, must be ordered separately.



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Additional Necessary Hardware

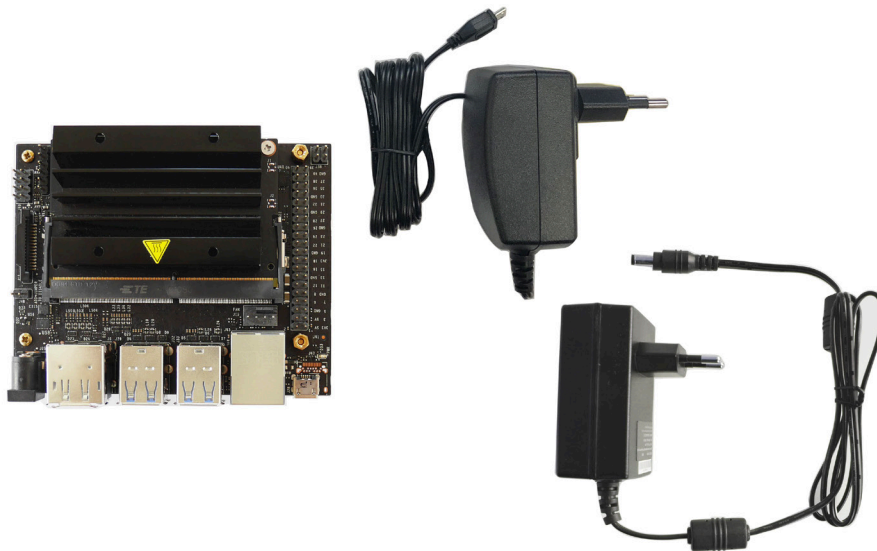


Fig. 2: The items shown above (Nvidia Jetson Nano and DC OR USB 2 power supply) are not included in the kit and must be purchased separately from third-party vendors.

DC power supply: 20 W, 5 V, 4 A, (DC jack: Ø 5,5 mm / 2,1 mm) connected to the NVIDIA Nano board socket J25 (**IMPORTANT: 2-pin header jumper must be placed on the J48 header**)

USB 2 power supply: 13 W, 5 V, 2.5 A, (USB 2.0 Micro B) connected to the NVIDIA Nano board socket J28 (**IMPORTANT: Ensure that 2-pin header jumper is NOT on the J48 header**)

Please also see NVIDIA's recommendations for [power supplies](#).

Lens: An **M12** lens must be selected based on application-specific criteria and, therefore, must be ordered separately. The Imaging Source offers a wide portfolio of [M12 lenses](#).

Additional Necessary Tools

A Phillips screwdriver and hex key (5.0 mm) will also be needed to assemble the components.



Connecting TIS MIPI Camera Modules with Jetson Nano

Anatomy of a Jetson Nano Board

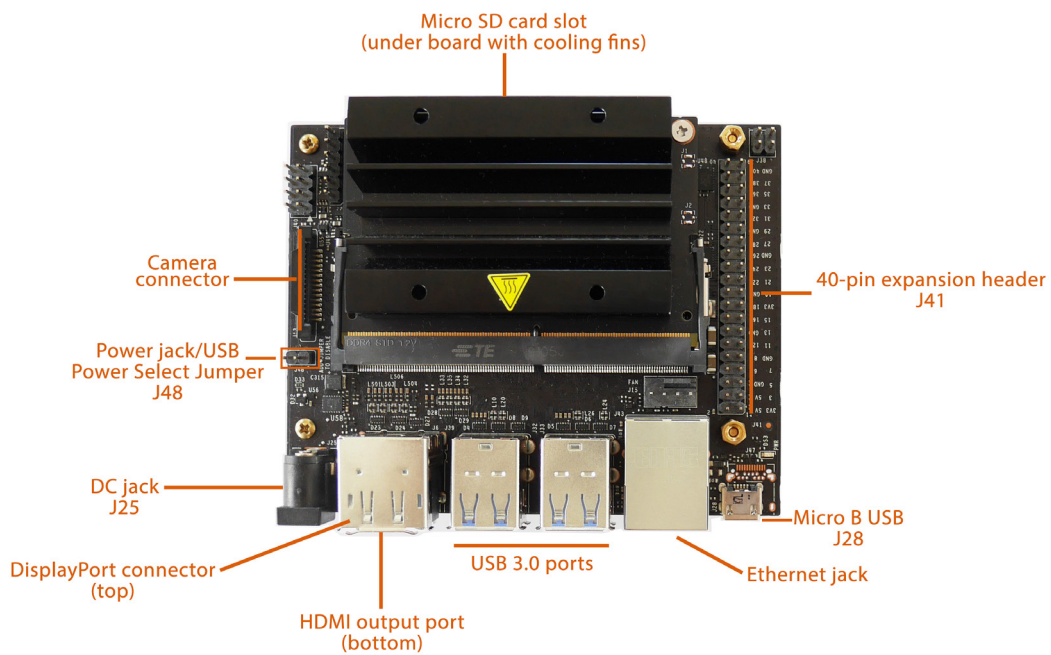


Fig. 3: Jetson Nano board layout



Connecting TIS MIPI Camera Modules with Jetson Nano

Step 1: Add standoffs to Nano board

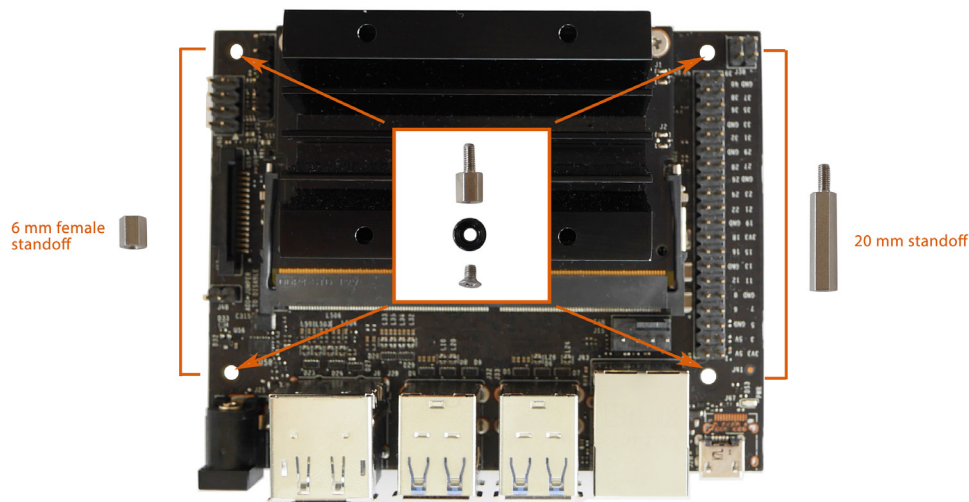


Fig. 4: For the "feet" of the Nano board, screw the black spacers to the 6 mm male standoffs (4x, above image center). From the bottom of the board, place the threaded post of these feet through the board's corner holes. Affix the feet: on the board's camera-connector side, use the 6mm female standoffs; on the board's 40-pin side, use the 20 mm male standoffs

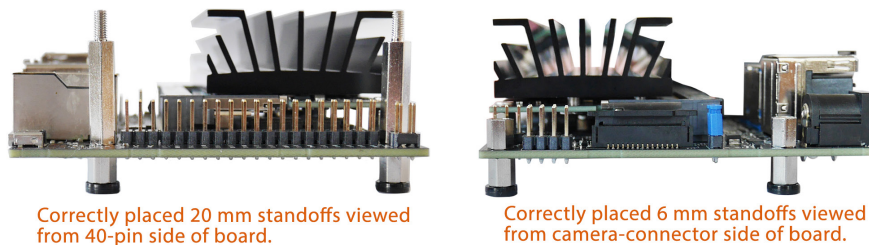


Fig. 5: Correctly placed standoffs



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Step 2: Add 40-pin Stacking Header

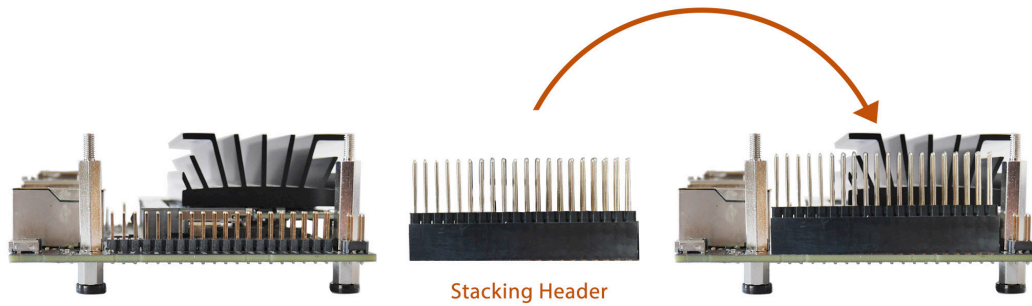


Fig. 6: With the standoffs in place, now add the stacking header to the board by carefully aligning the board's pins to the header slots. Press the stacking header down until it is flush with the board.



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Step 3: Thread and connect flex cable to deserializer board

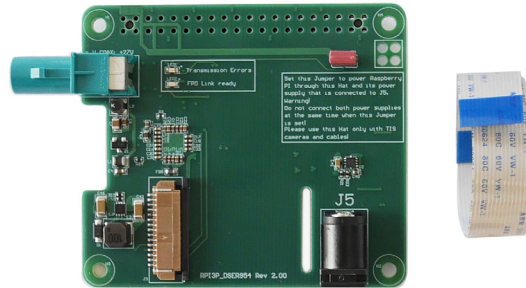


Fig. 7: Deserializer board and flex cable

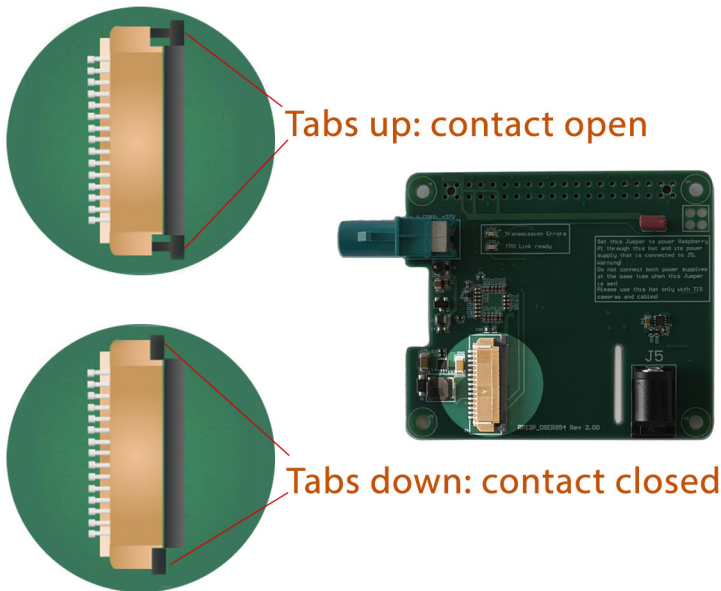
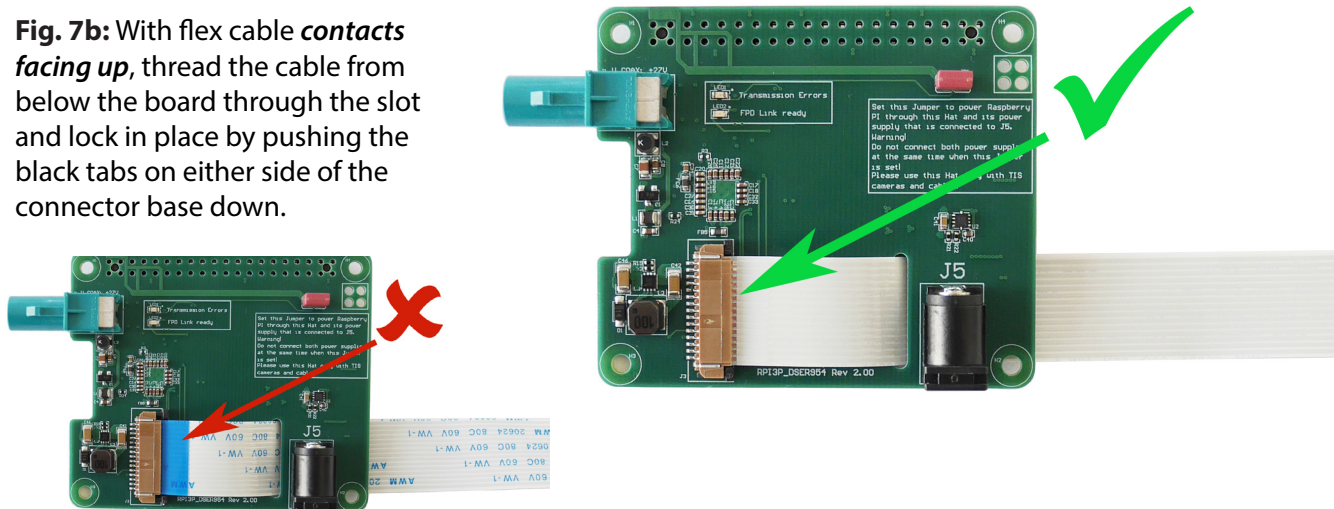


Fig. 7a: Ensure that the black locking tabs on the side of the connector base have been pushed up (open).

Fig. 7b: With flex cable **contacts facing up**, thread the cable from below the board through the slot and lock in place by pushing the black tabs on either side of the connector base down.





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Step 4: Mount deserializer to Nano board

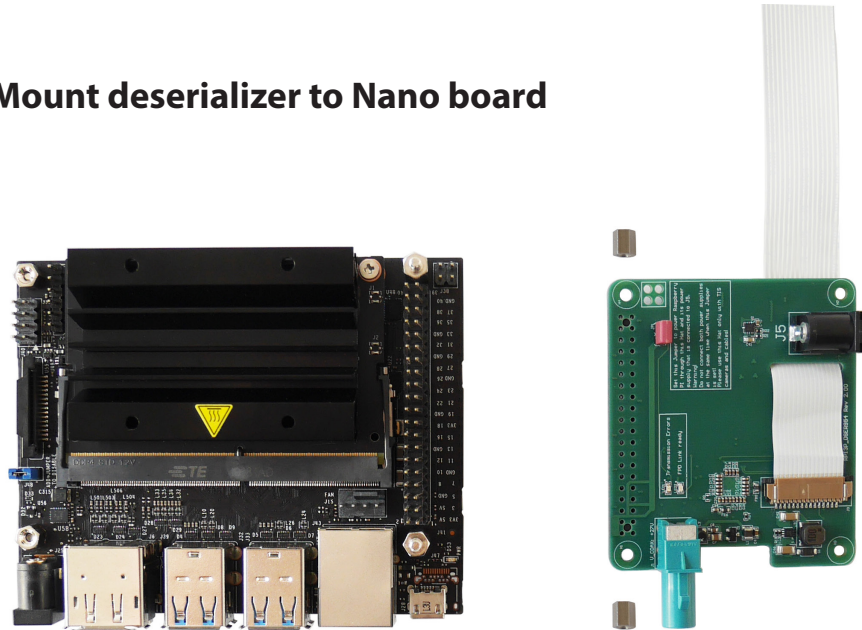


Fig. 8: Place deserializer on Nano board's pins. When correctly placed, the tops of the pins should be visible through the deserializer board. Affix in place with provided 6 mm female standoffs.

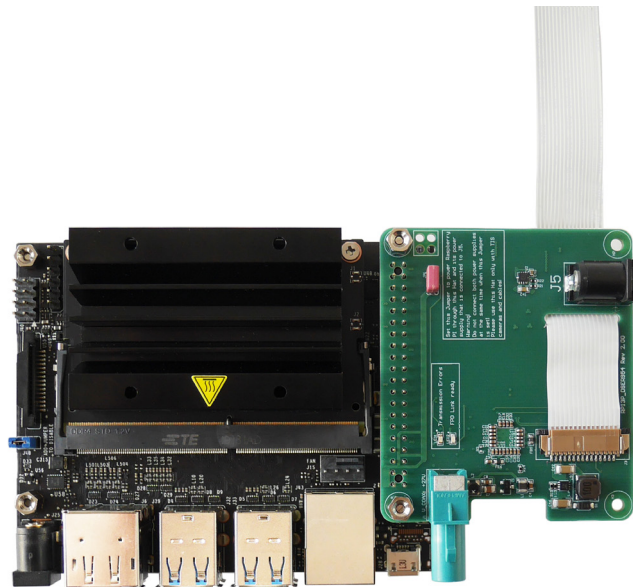


Fig. 8a: Image shows deserializer board and Nano correctly connected.



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Step 5: Connect deserializer flex cable to Nano board

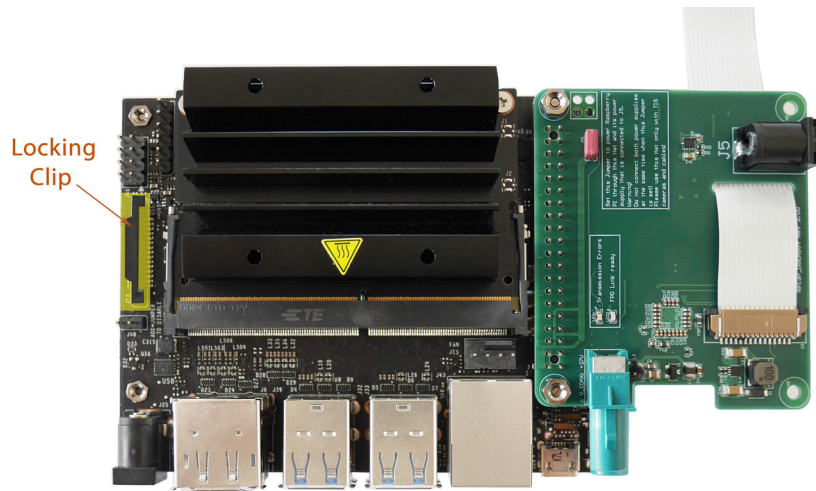


Fig. 9: Ensure that the camera connector's locking clip is up (open). Going under the Nano board, connect the Nano and deserializer boards by placing the flex cable (with contacts facing in toward the board) into the MIPI CSI camera connector base. Push the locking clip down to secure the connection..

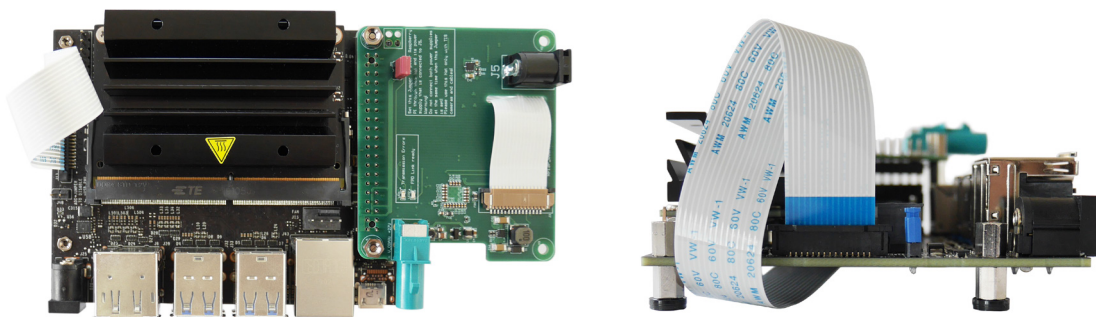


Fig. 9a and 9b: Correctly connected flex cable with contacts facing inward.



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Step 6: Attach lens holder and lens to sensor



Fig. 10: Sensor, lens holder with screws and lens.

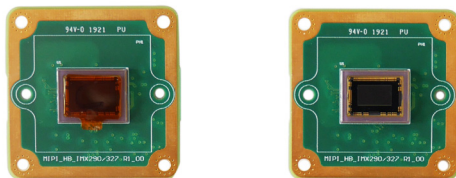


Fig. 10a: Remove protective foil from sensor

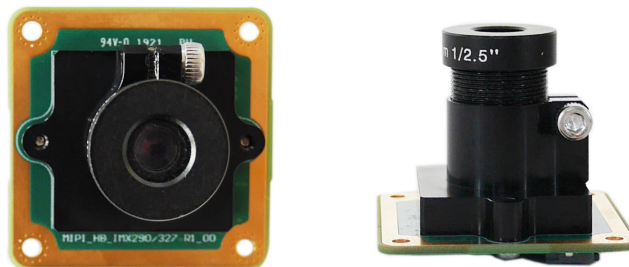


Fig. 10b and 10c: Place lens holder on the sensor and affix with screws *from the back of the board*. Screw lens into lens holder.



Connecting TIS MIPI Camera Modules with Jetson Nano

Step 7: Attach serializer to camera sensor

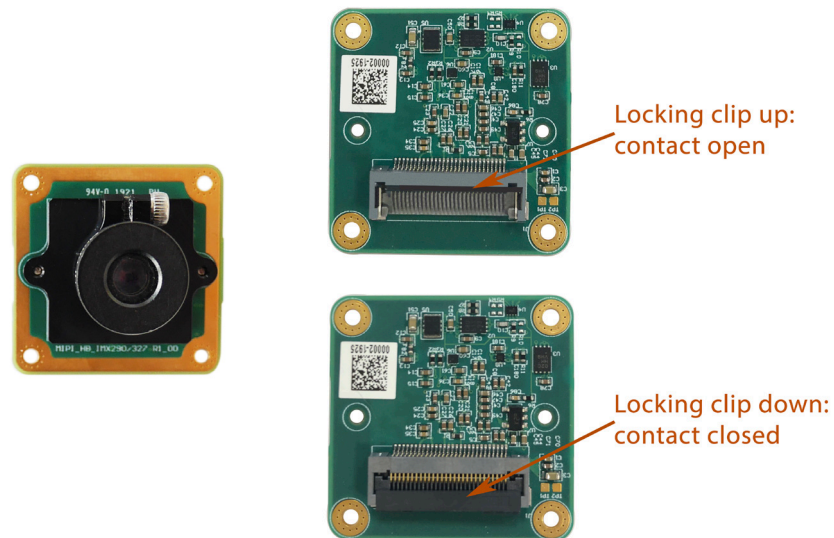


Fig. 11: Ensure that the locking clip on the sensor's connector base is up (contact open).

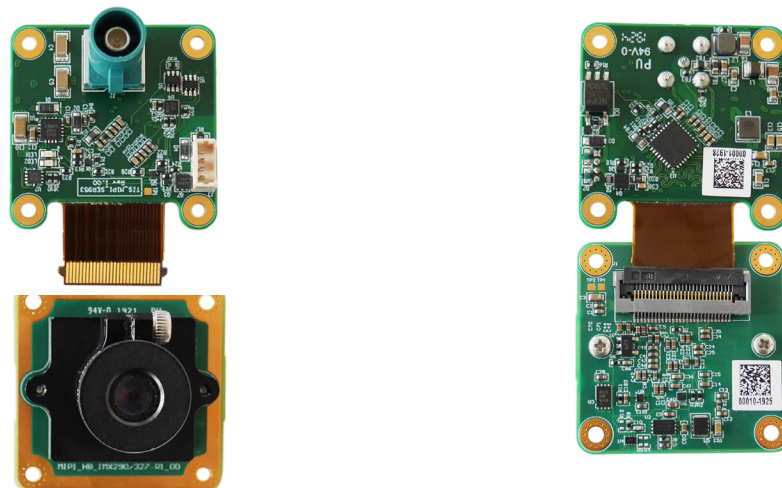


Fig. 11a and 11b: Flip serializer and sensor. Place the flat cable connector into the sensor's connector base and press the locking clip down to secure the connection.



Connecting TIS MIPI Camera Modules with Jetson Nano

Step 7 (cont'd): Attach serializer to camera sensor

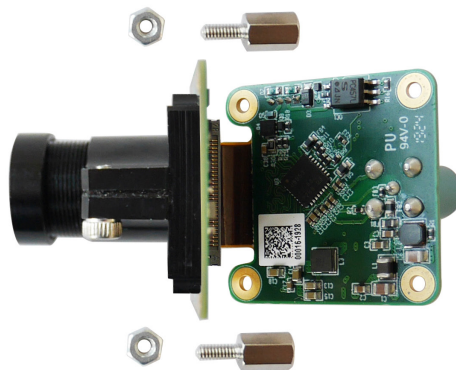


Fig. 12: Place standoffs through the back of the camera board's four corner holes so that threads are facing out and affix with nuts from the front.

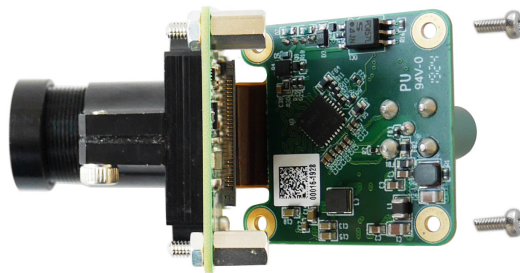


Fig. 12a: Press sensor and serializer backs together and use the remaining screws to affix the boards to one another.

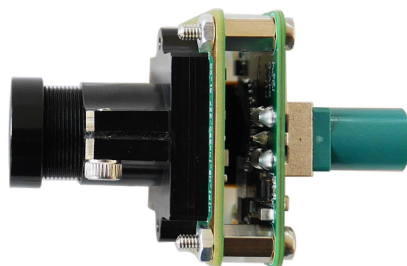


Fig. 12b: Correctly affixed sensor and serializer.



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Step 8: Download application software and insert SD card

Using the provided USB card reader, go to The Imaging Source's [MIPI download area](#) to download the desired application software.

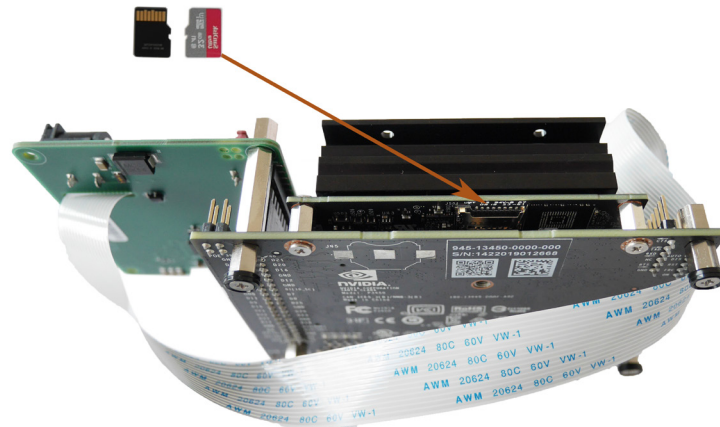


Fig. 13: Insert micro SD card (contacts facing up) into the Nano board's card slot and click into place (card should be flush with the edge of the board).

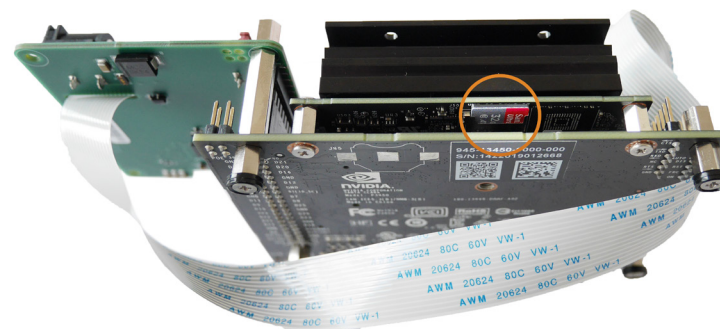


Fig. 13a: Correctly placed micro SD card.



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Step 9: Connect Nano board and camera with cable

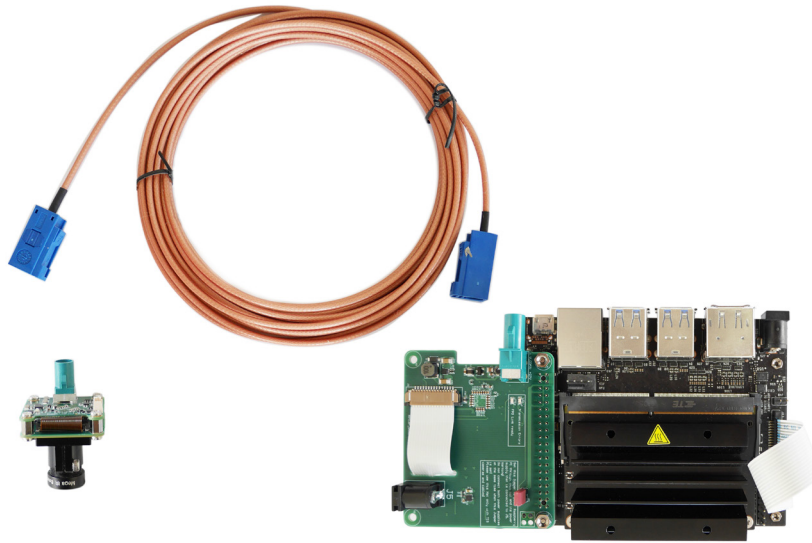


Fig. 14: Connect camera and Nano board with FAKRA cable (max. 15 m).

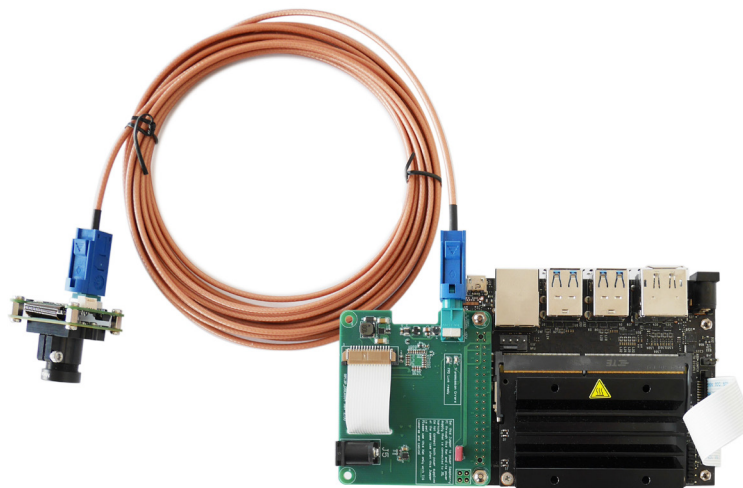


Fig. 14a: Correctly connected camera and Nano board.



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Step 10: Connect system to power supply and monitor

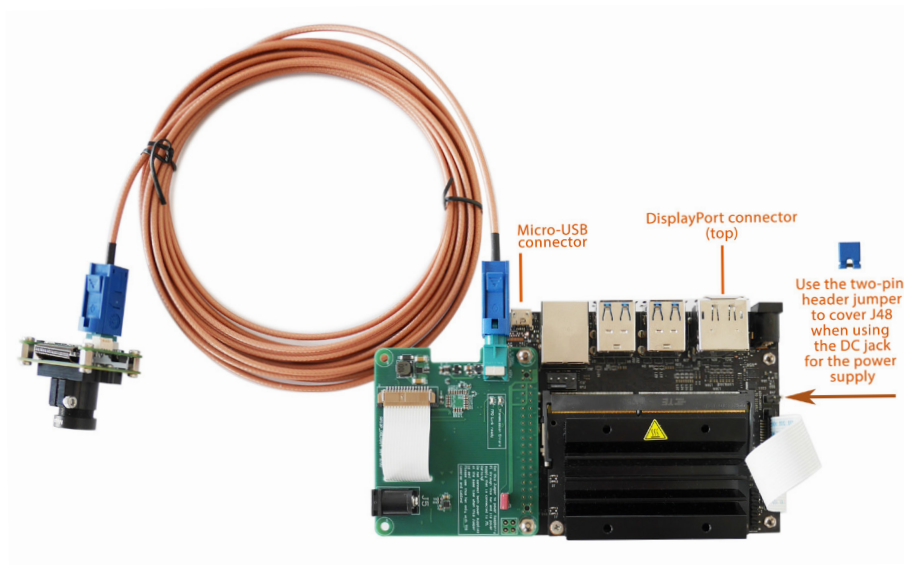


Fig. 15: Connect the system to an (unplugged) power supply (**IMPORTANT:** see additional information regarding power supplies on [page 4](#)). Next, connect a monitor via the DisplayPort connector. Connect the system to power.

Note: Disconnect from power when adding/removing peripherals.



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When everything has been properly connected, a live camera image should be displayed on the monitor.

If, however, after checking cables and connections there is no live camera image (see Fig. 16, below), please contact customer support.

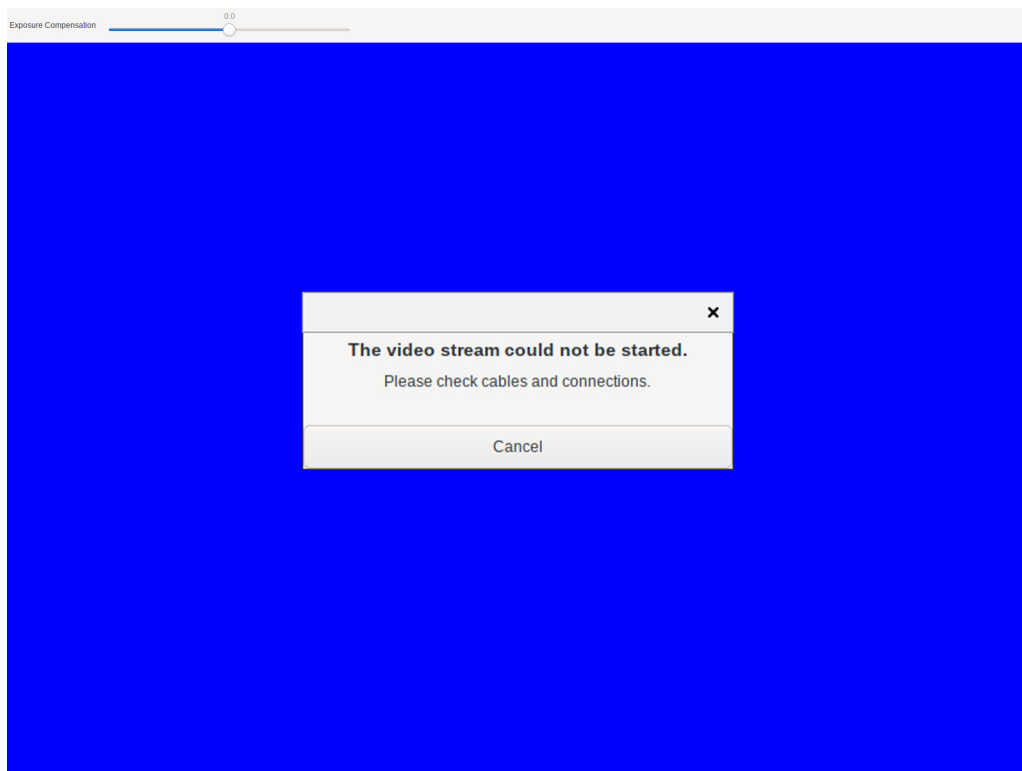


Fig. 16: Error screen



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