

LaserDock PRO - Laser to CNC Magnetic Docking Station

User Manual

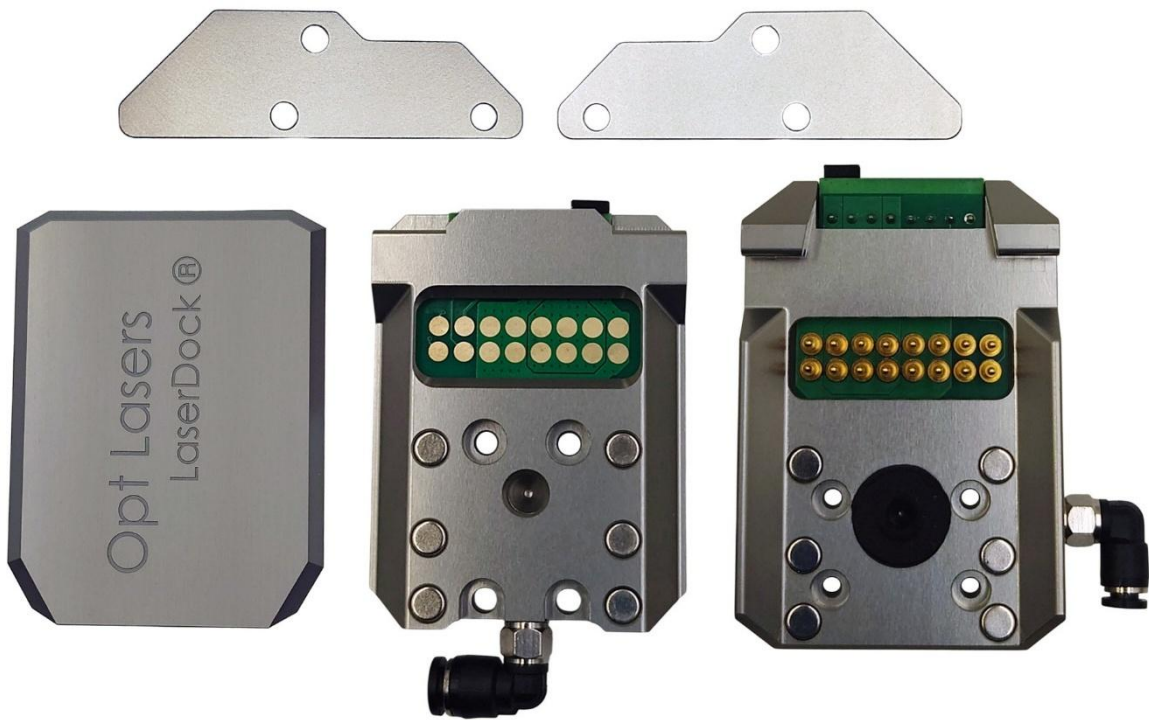


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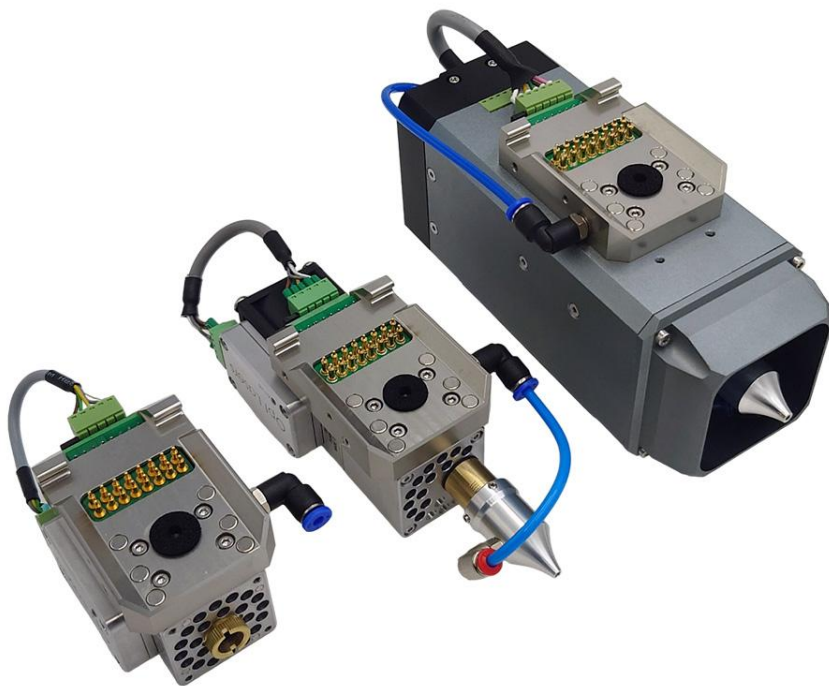
General Description

Crafted with the intention of optimizing CNC laser usage, the LaserDock PRO seamlessly connects electrical signals and the air assist supply to the laser head. In the current landscape of CNC laser cutting, employing air assist has evolved into a standard practice due to its ability to enhance cutting speed by 2-3 times (typically) and up to 6.5 times (with Opt Lasers air assist technology).

The LaserDock PRO eliminates the need to repeatedly attach a lengthy air supply tube to the laser head. Instead, the air tube effortlessly connects directly to the LaserDock PRO, allowing for a simple reattachment of a short secondary air tube between the LaserDock PRO and the laser head. This innovative design ensures rapid attachment and detachment functionality, distinguishing it from competing laser docking products that tend to be slower due to the requirement of rerunning the air supply tube.

Tailored for heavier laser heads, the LaserDock PRO proves to be an invaluable asset for individuals engaged in cutting and engraving activities. It streamlines the process of attaching and detaching laser heads from CNC machines in a matter of seconds. The LaserDock PRO enables users to effortlessly remove the laser head in the blink of an eye, promoting cleanliness and efficiency.

This LaserDock PRO is compatible with laser heads featuring both single and multiple laser diodes, including PLH3D-XT8, XT-50, XT-10, and XF+ laser heads.



LaserDock PRO Components

The LaserDock PRO consists of the following components:



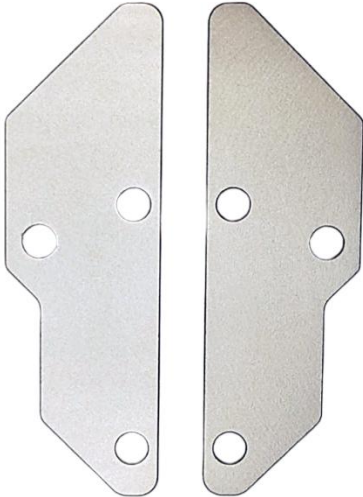
Laser Side Part



CNC Side Part



Cover



Blockers

Accessories Bag

Additionally, the accessories bag contains the following:

- Short Connection Cable, to connect Laser Side Part to laser head
- Replacement 6-pin connector
- Replacement air connector
- Replacement rubber seal for the Laser Side Part
- Necessary screws
- Hex key



Laser Side Part

Use the provided four screws to firmly attach this part to your laser head. Separate Laser Side Parts can be purchased from Opt Lasers store to outfit different PLH3D-Series lasers, making it easy to swap between lasers for various tasks.

The Laser Side Part is outfitted with an M5 4 mm diameter air hose connector. Connect the air assist hose between the Laser Side Part and your laser head's nozzle.



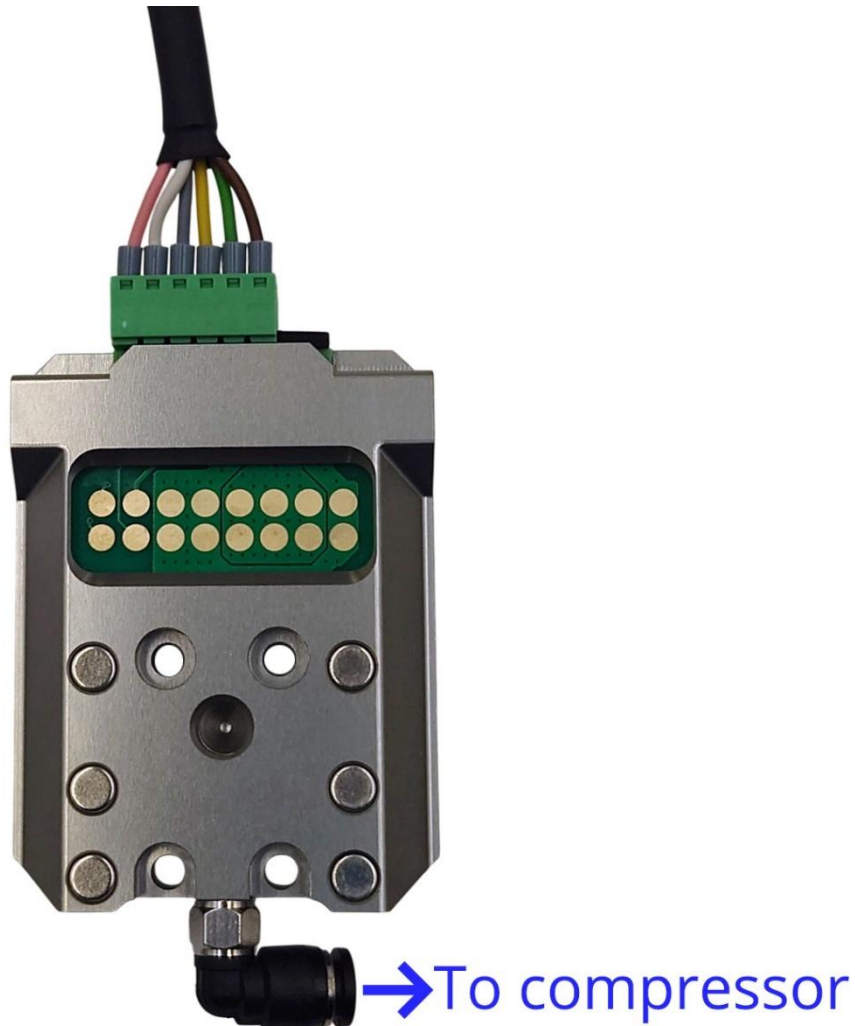


LaserDock PRO Laser Side Part mounted on the PLH3D-XT8 laser head

CNC Side Part

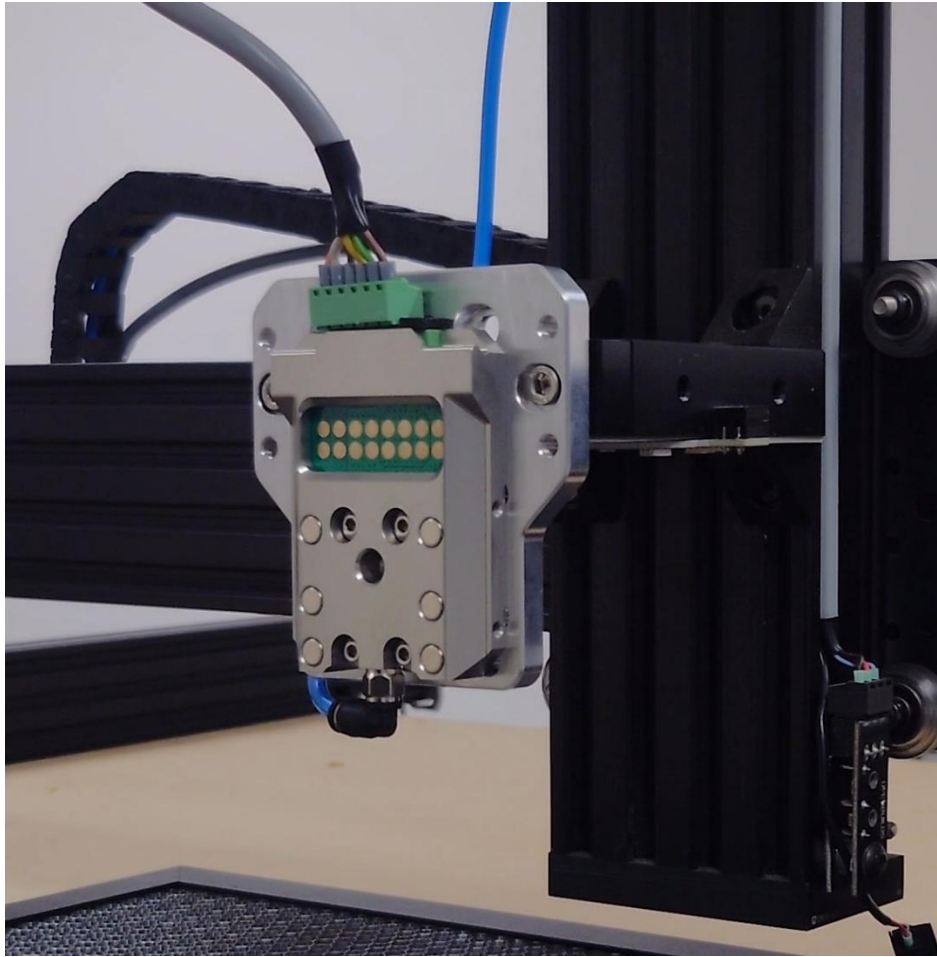
First, mount the intermediate mount onto the CNC machine, and then secure the CNC Side Part to the mount by fastening the screws for a precise fit. Multiple CNC Side Parts can be purchased from Opt Lasers store for use with multiple machines, allowing easy swapping of a laser between them.

The CNC Side Part is outfitted with an M5 6 mm diameter air hose connector. Connect the air assist hose from your compressor to the connector on the CNC Side Part.



Note: We recommend adding a flowmeter to your air assist system to monitor the flow rate of compressed air. In general, for laser cutting, the optimum real airflow value typically falls within the range of 5-15 l/min. The recommended pressure is 2 bars.

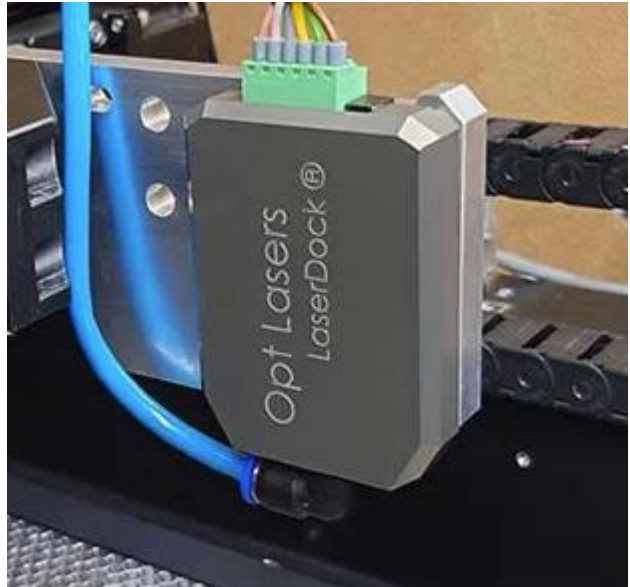
Note: Ensure that your compressor is equipped with a filter and an oil separator to prevent the discharge of dirty air and/or oil droplets onto the laser head's optics. Failure to do so could result in laser optics' damage.



Laser Dock PRO CNC Side Part connected to a CNC machine through a mount

Cover

Safeguard the CNC Side Part when the laser is not in use by utilizing the LaserDock PRO Cover. This protective cover ensures the longevity and cleanliness of the CNC Machine Side Part, shielding it from potential damage, dust, or other environmental factors during periods of inactivity. Simply place the cover over the CNC Side Part to maintain its optimal condition when not actively engaged in laser operations.



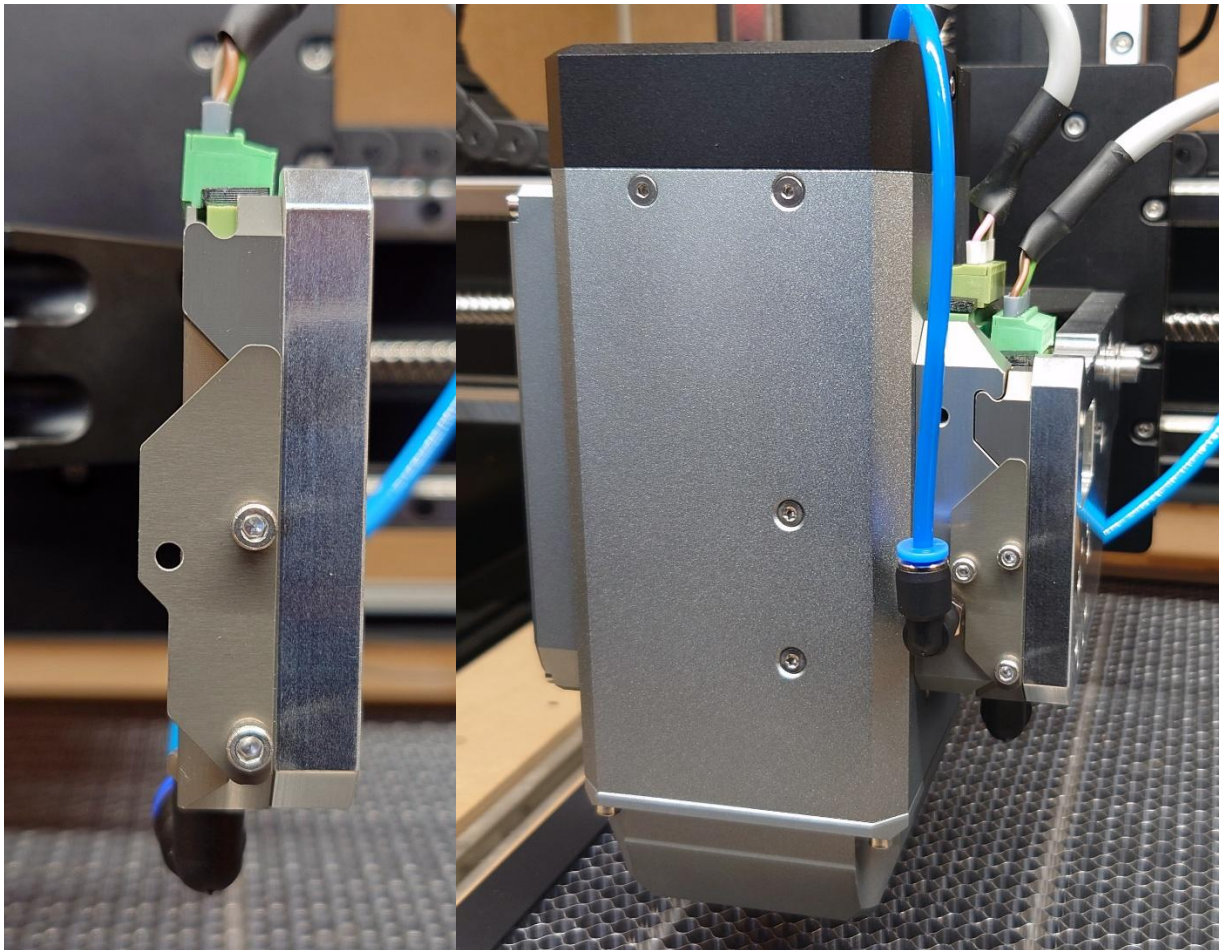
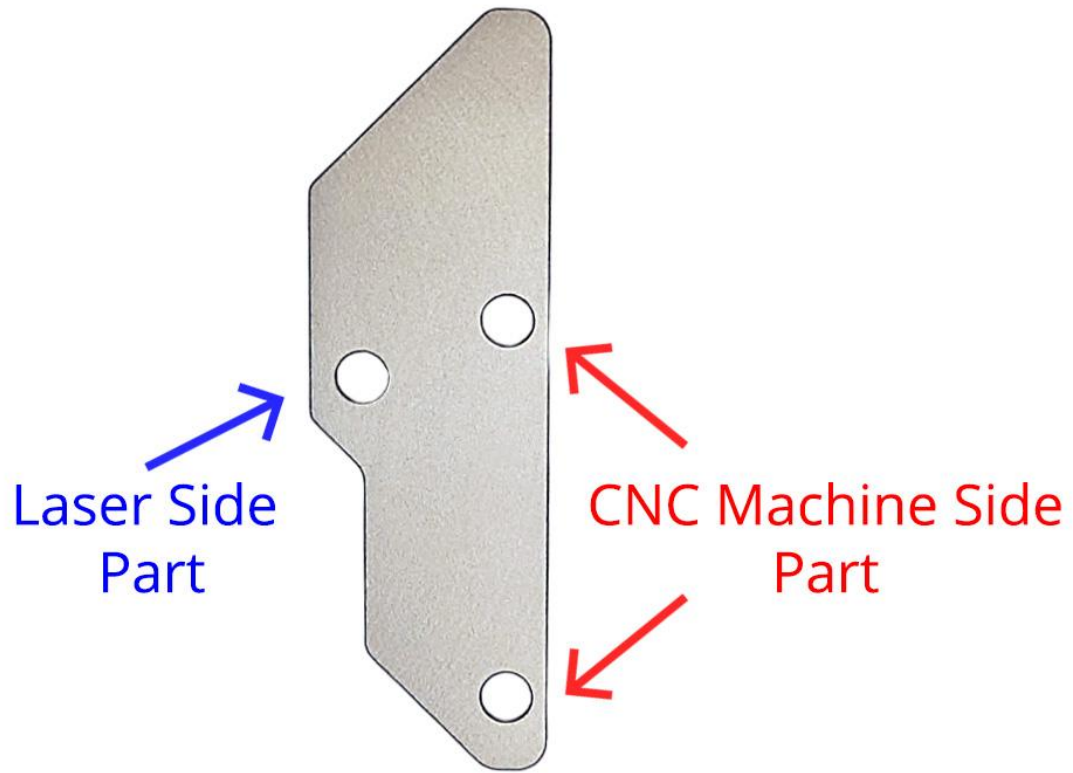
Blockers

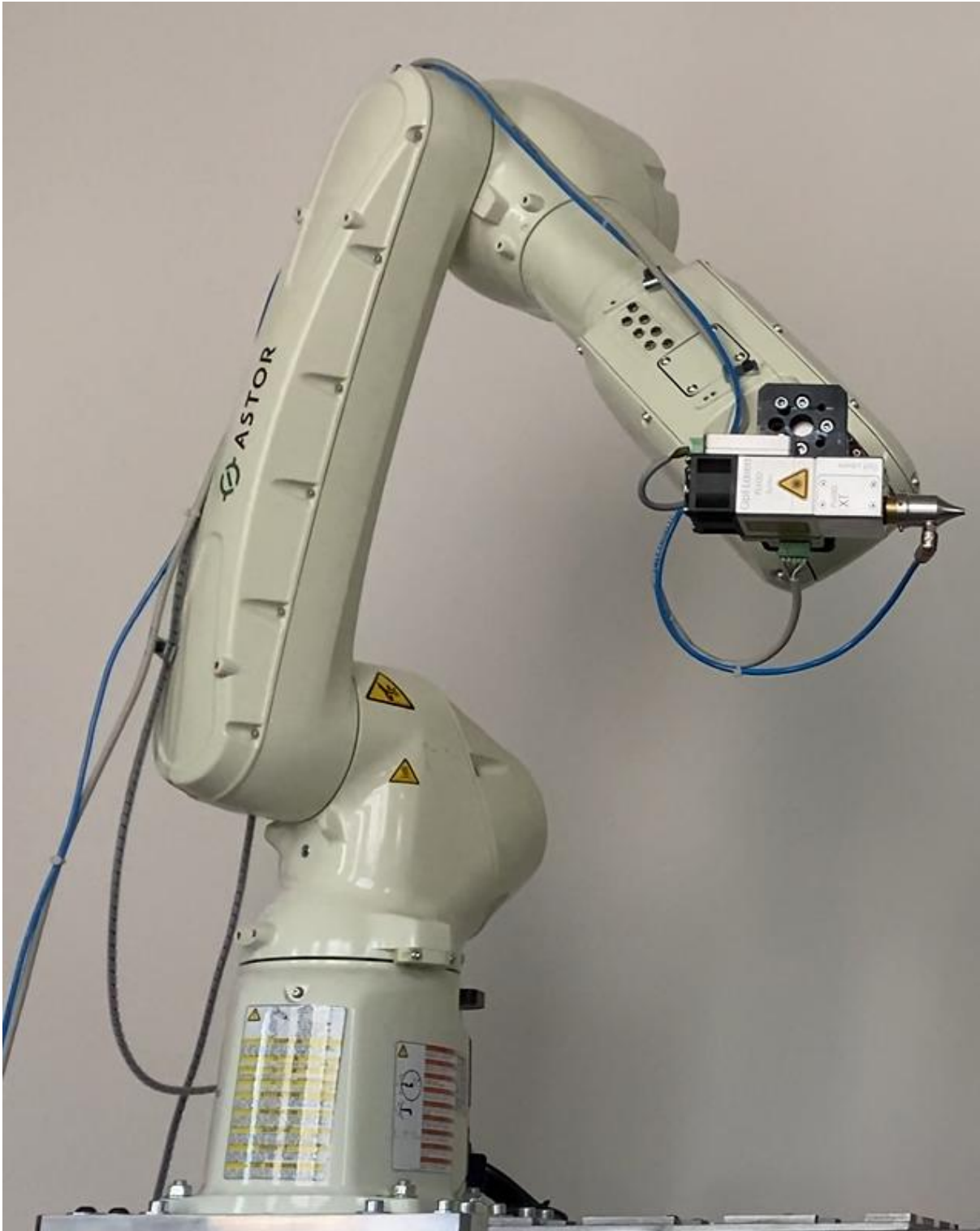
When intending to operate the laser head in the following conditions:

1. for an extended duration or
2. permanently affixed to the CNC machine or
3. in a significantly titled position

ensure a secure connection by installing the LaserDock PRO Blockers. The Blockers are also intended to be used for Robotic Arms.

Start by securing the Blockers with the included screws on the CNC Side Part. Then, attach the Laser Side Part side of the LaserDock and tighten the screws securely.

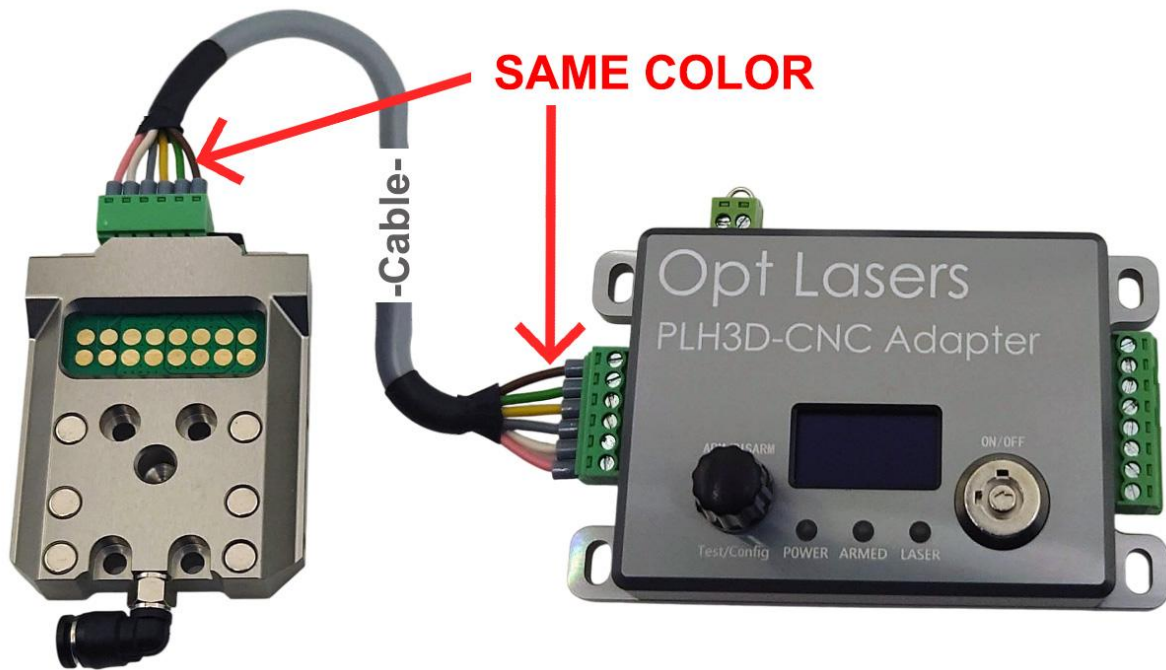




Cable Connection

Connect the (long) laser cable from the Adapter PRO to the CNC side part. Pay attention to the correct order of the wires – the uppermost wire in the Adapter should match the color of the wire the closest to the black plug in the Dock. The same rule applies to the remaining wires in the connector (e.g., brown to brown, green to green, yellow to yellow, etc.).

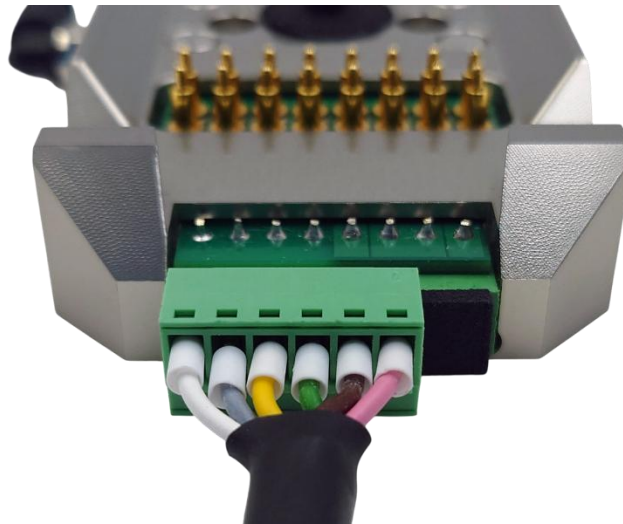
Note: The order of the wire colors may vary between different batches. Be sure to follow the general matching rule described above.



The PLH3D-Series laser heads utilize either a 6-pin or a 5-pin connector. The next section discusses the connection for different combinations of these connectors.

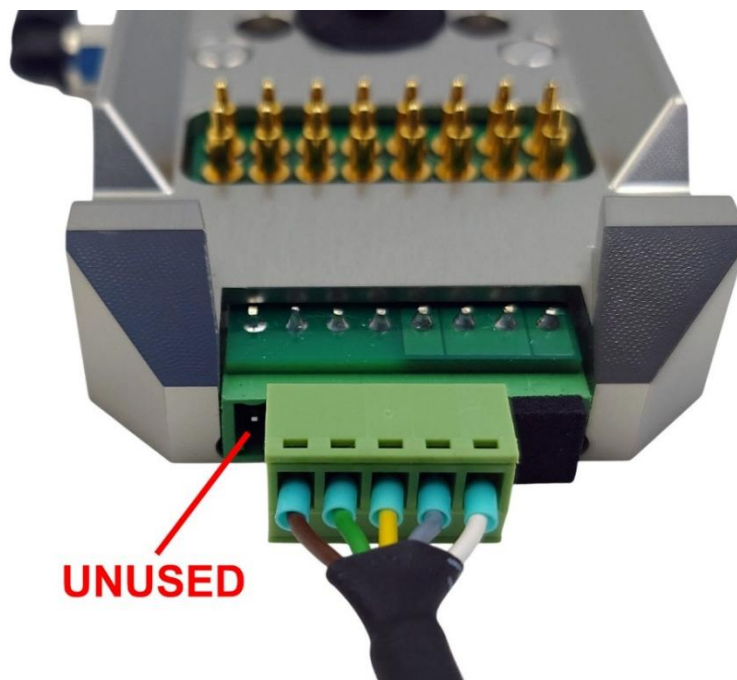
6-pin Connector

Ensure the black plug is in the correct place and connect the connector.



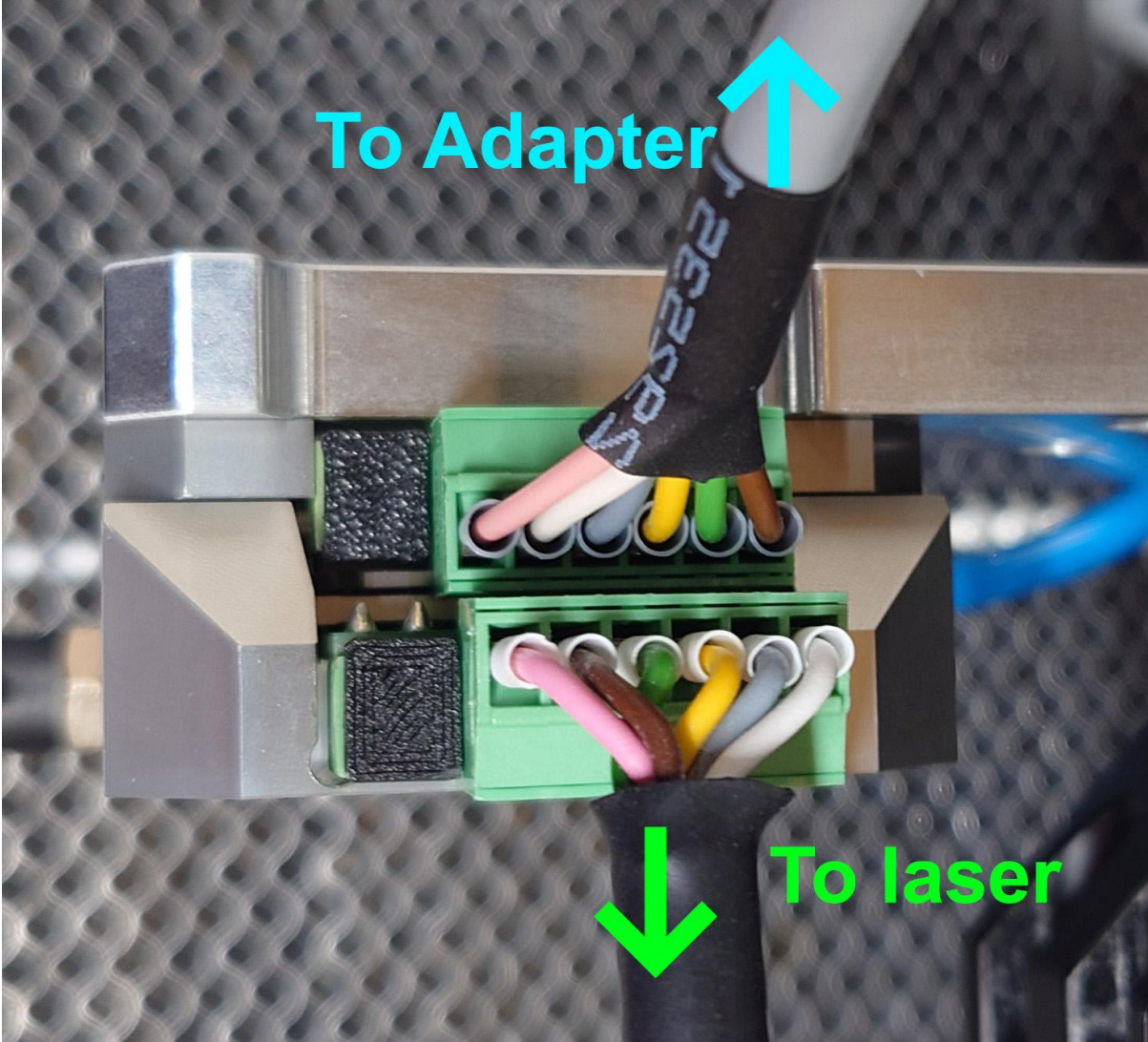
5-pin Connector

Ensure the black plug is in the correct place and connect the connector right next to the plug. The pin furthest from the black plug should remain unconnected.

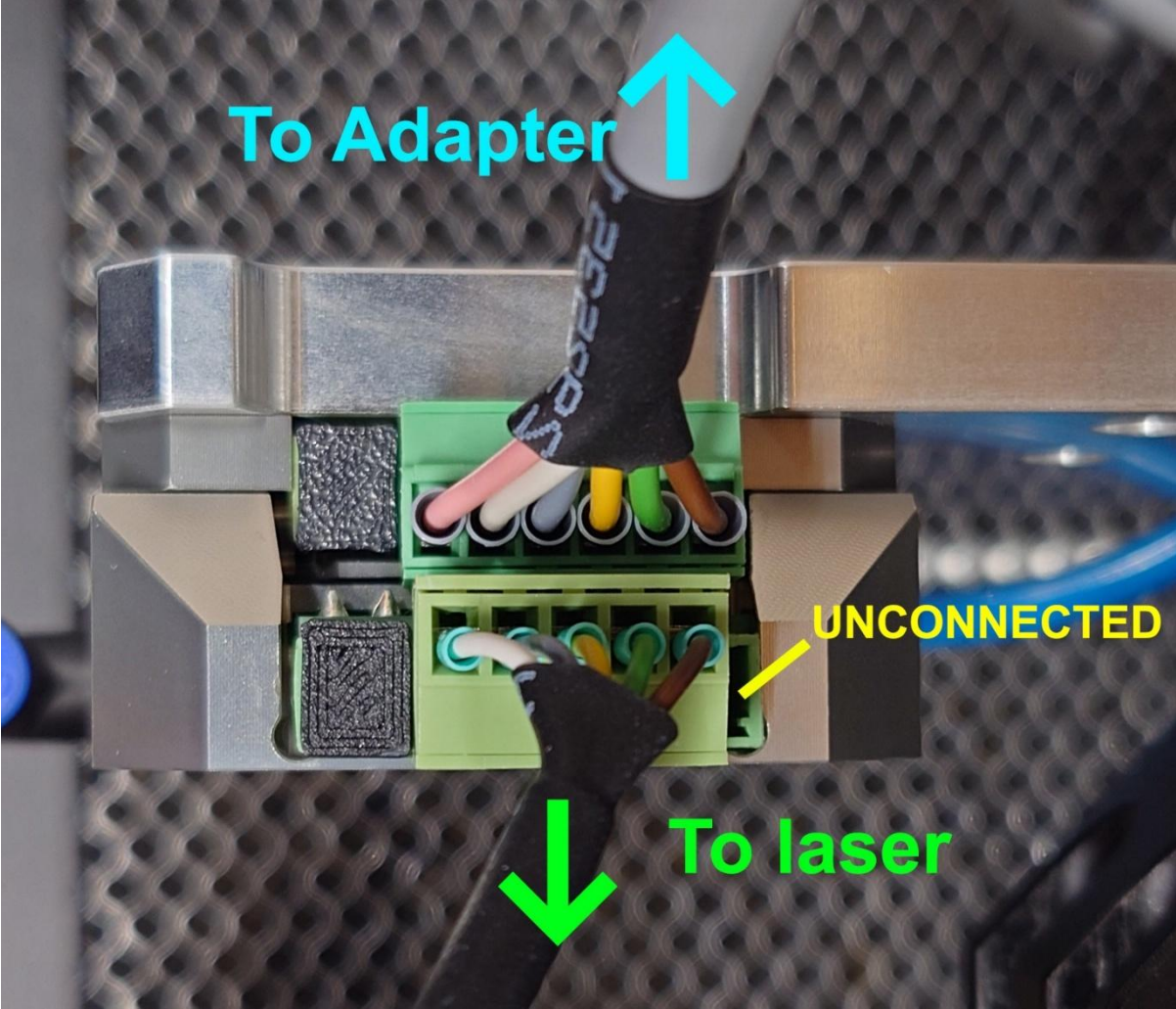


Note: In Adapter PRO settings, set the “STATUS INPUT” to ‘ignored’ when using a cable with a 5-pin connector (see Adapter PRO User Manual for details).

6-pin Connector to 6-pin Connector

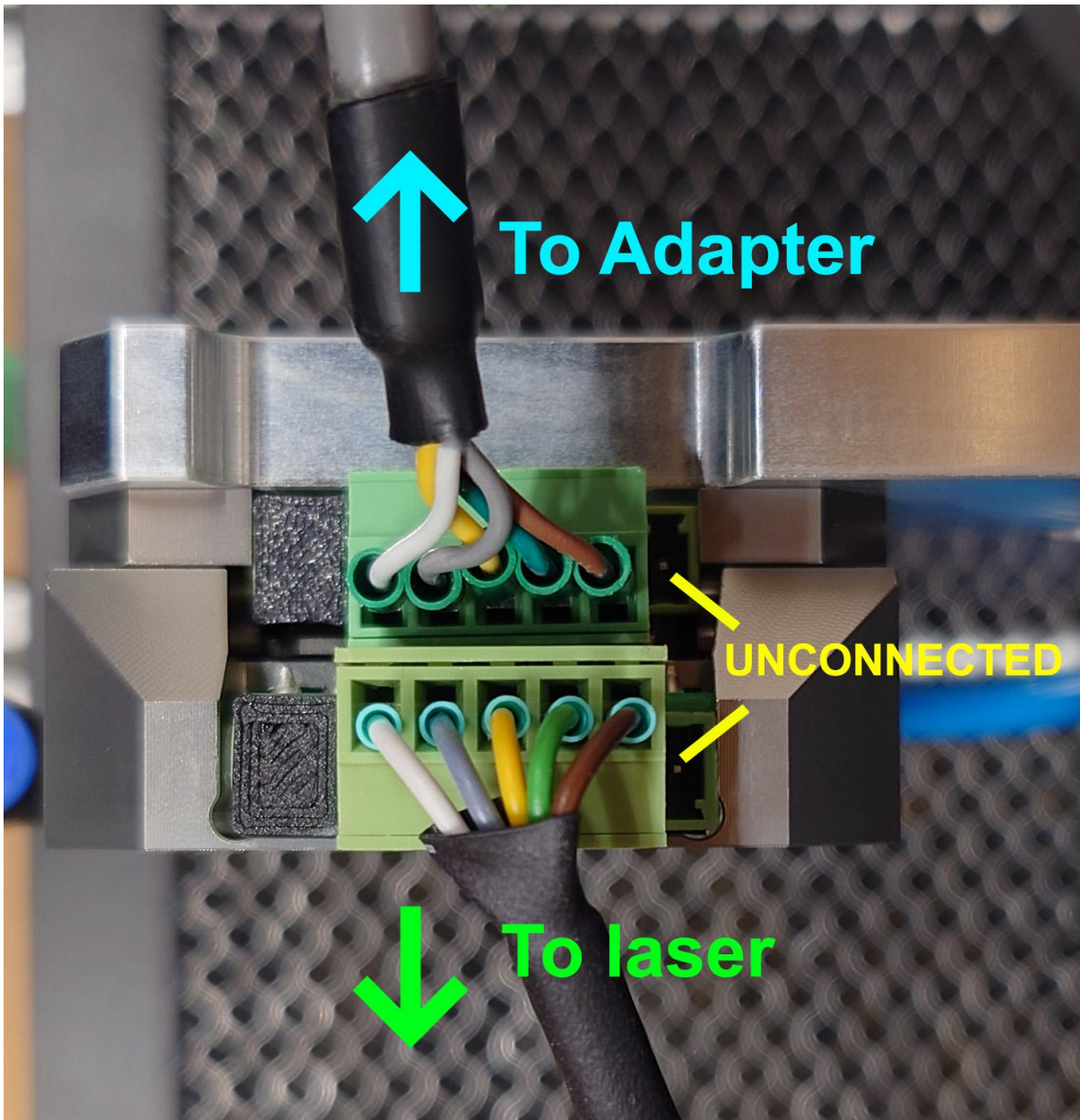


6-pin Connector to 5-pin Connector



Note: In Adapter PRO settings, set the "STATUS INPUT" to 'ignored' when using a cable with a 5-pin connector (see Adapter PRO User Manual for details).

5-pin Connector to 5-pin Connector

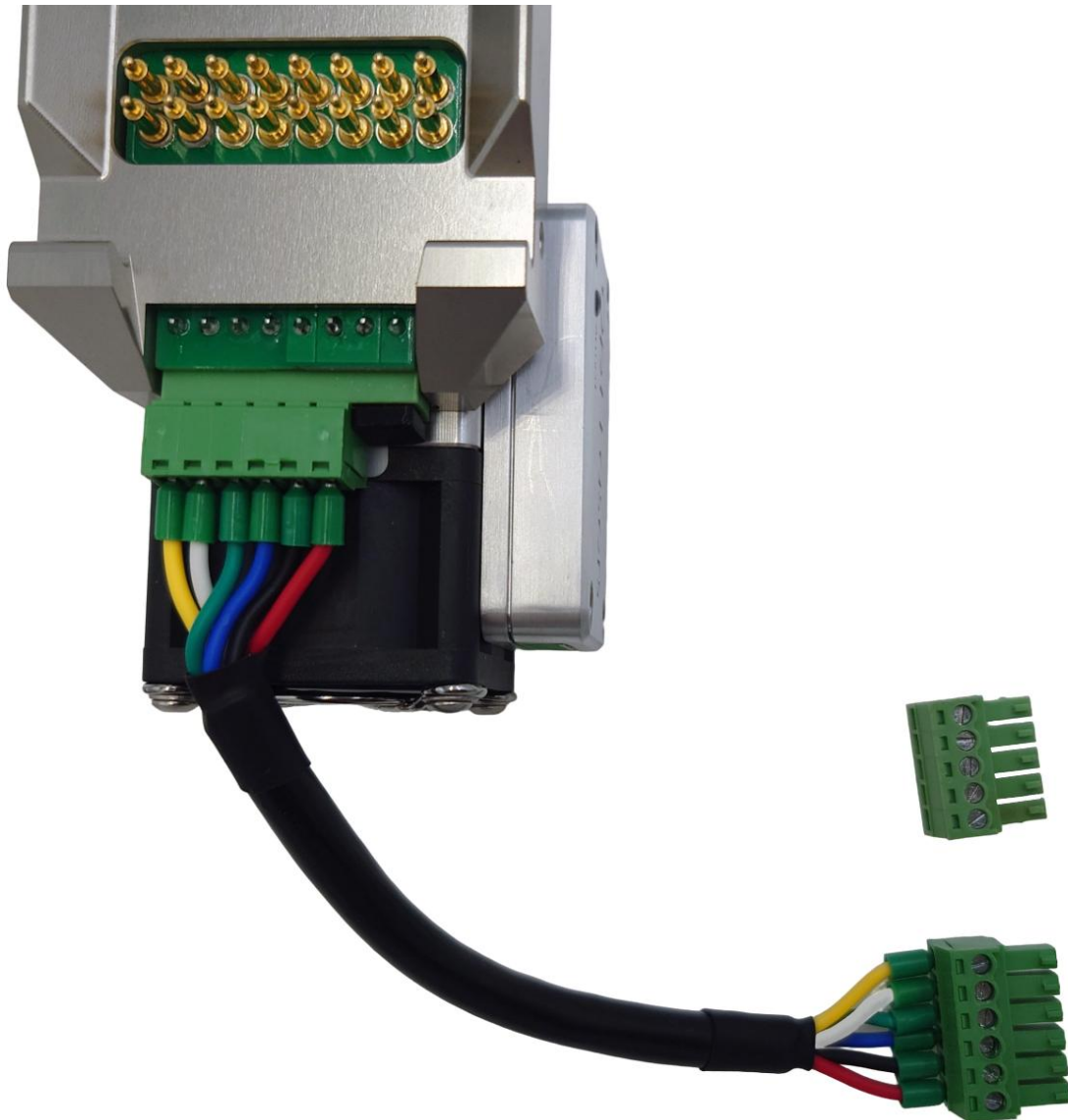


Note: In Adapter PRO settings, set the "STATUS INPUT" to 'ignored' when using a cable with a 5-pin connector (see Adapter PRO User Manual for details).

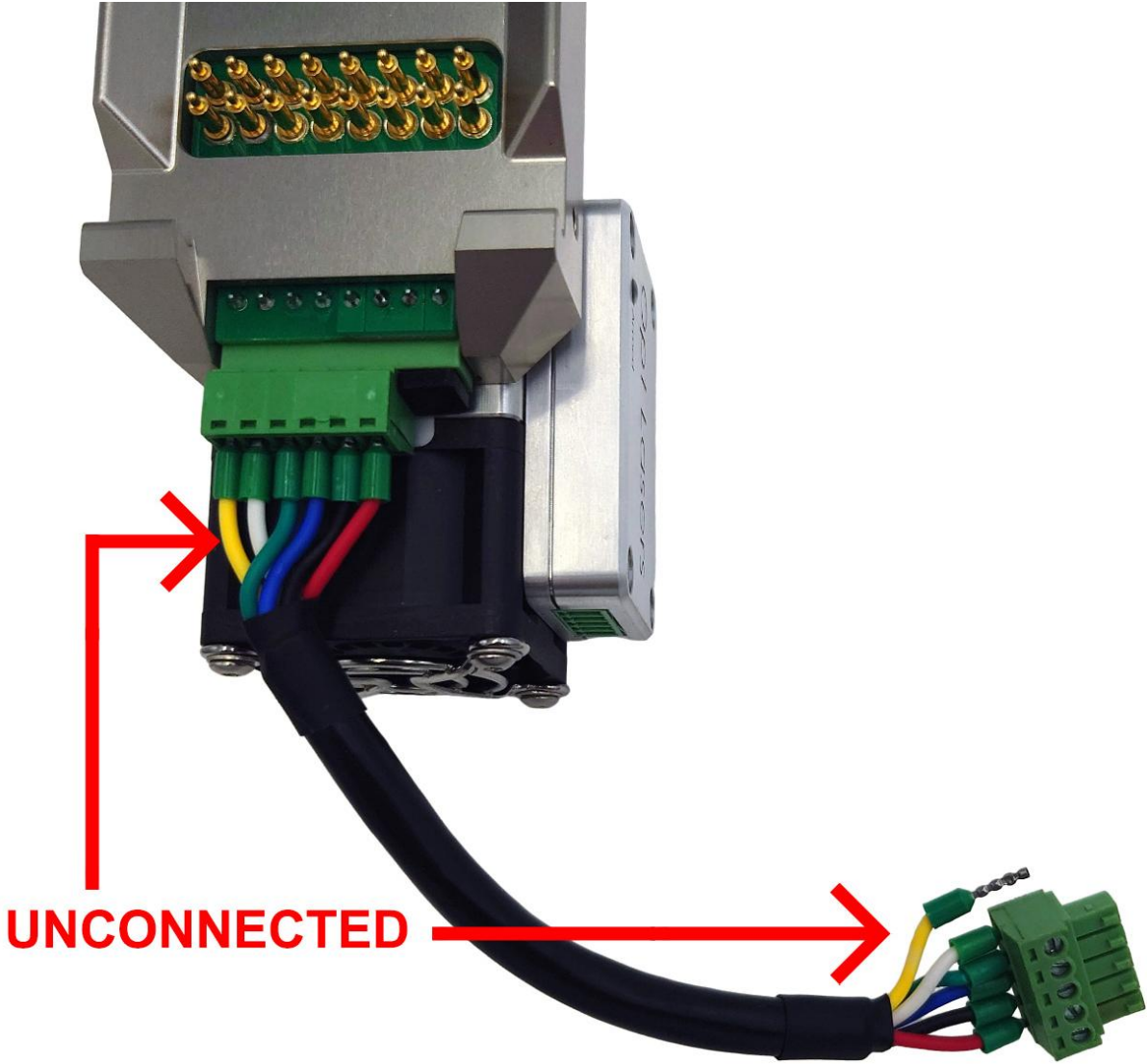
Rewiring LaserDock PRO Connection Cable to a 5-pin Connector

The short connection cable that links the laser head to the Laser Side Part comes with a 6-pin connector on both ends by default. However, older PLH3D-Series lasers use a 5-pin connector. To use this cable with a 5-pin connector laser, you will need to rewire one end with a 5-pin connector that comes with the laser head (plugged in).

1. Mount the Laser Side Part to the laser head. Connect one end of the short cable to the Laser Side Part.



2. On the other end of the cable, remove the 6-pin connector and rewire the wires into the 5-pin connector, following the correct order of the wires. The wire that is furthest from the black plug on the Laser Side Part should remain unconnected.



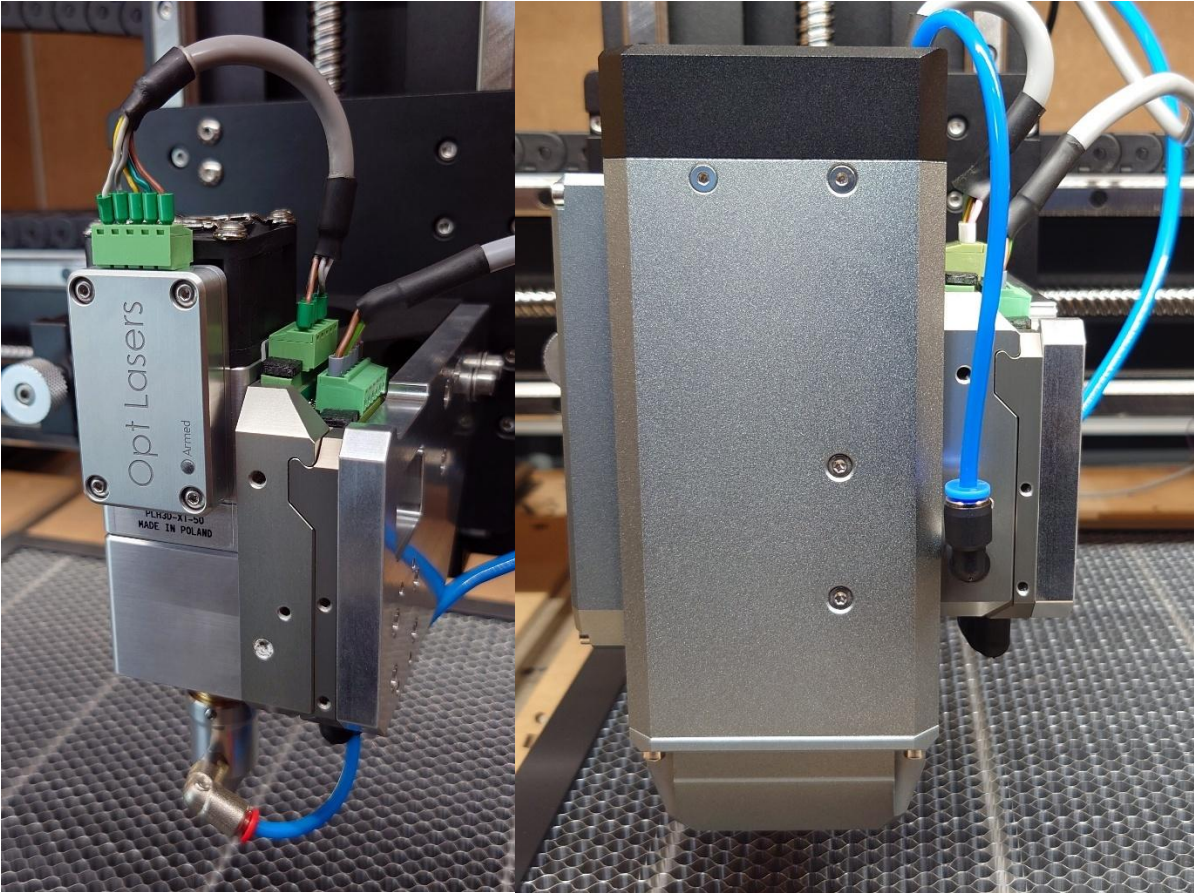
3. Plug the 5-pin connector into the laser head. The unconnected wire can be capped off or secured with tape, for example.



Note: In Adapter PRO settings, set the “STATUS INPUT” to ‘ignored’ when using a cable with a 5-pin connector (see Adapter PRO User Manual for details).

Compatibility with PLH3D-series Lasers

The LaserDock PRO is compatible with XT8, XT-50, XT-10 and XF+ laser heads.

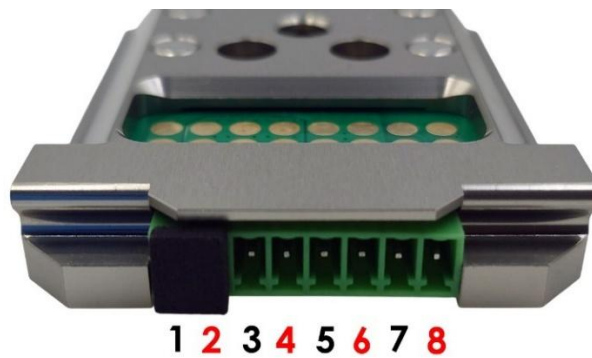


Pin Descriptions

Pin Function	Pin Description	Pin number
GND	GND Power (max current 8A)	1
VCC	VCC Power (max current 8A)	2
VCC	VCC Power (max current 8A)	3
GND	GND Power (max current 8A)	4
SGND	GND Signal (max 500 mA)	5
Mod #2 PWM	Modulation Signal #2 PWM (max 500 mA)	6
Mod #1 ANG	Modulation Signal #1 ANG (max 500 mA)	7
ST	Status line (max 500 mA)	8

Note: Ensure the black plug is placed in PIN1 and PIN2.

CNC Machine Side Part



Laser Side Part



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