Termination resistors for serial connection test111

Do I need to install termination resistors when a serial cable is used?

It is considered a good practice to put **120 Ohm** resistors at both ends of the **RS232/RS485** serial cable line. The lack of termination resistors can result in poor communication and damaged devices. Hence, it is highly recommended to install termination resistors in all cases. The importance of it will depend on the implementation.
There are three important things to consider:

1. Number of devices connected in the serial cable line.
2. The length of the serial cable line.
3. The operational speed (baud rate).

When more devices are added, the length of the cable increases and baud rates are high – the more important it becomes to have terminating resistors.
RS485 serial can handle distances of roughly 1.2 km. The baud rate at which your devices communicate is also important. **RS485** speeds depend on the cable length. It can operate at over **30 Mbit/s** on cable that is up to 10 meters long and drops down to **100 kbit/s** as the cable length is closer to **1200m**.
The closer the implementation to these distances and speeds, the more important it becomes to have terminating resistors. Long lines and high speeds result in voltage and current reflections. Termination improves data integrity and prevents reflections.
Hence, if there is only one slave device with a cable length of **10 meters**, operating at a **9600** baud rate, the resistors can be neglected. When daisy chaining multiple devices, for example, the terminating resistors should be put at both ends of the line. Also, if none of the **RS485** nodes in the chain have fail-safe bias resistors then you only need to install these resistors in one node on the entire network, typically on the master node.