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Fundamentals of Industrial Measurement Technology

Firmware Flashing

ProDSP Post Series Nr.38.

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Microcontrollers on PCBs must be programmed at some stage of the manufacturing process so that they receive their **final firmware**. This can be done in several possible ways and forms:

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Possible Flashing Methods

- **Pre-flashed chip**: the device is programmed before assembly
- **Dedicated flashing station**: typically after ICT, the chip is programmed directly via connection to the PCB

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Possible Flashing Methods

- **Flasher integrated into FCT**: flashing is performed before functional testing
- **EOL flashing**: the chip already contains a bootloader, enabling programming via the final communication interface

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Important design considerations

- Ability to disconnect the flasher
- Simple but safely switchable power supply unit (PSU)
- Proper connection and grounding design

Connection guidelines

- The **distance** between the programmer and the product should **not be too long**; recommended maximum distance is ~20–30 cm
- **Wires** should preferably be **routed** as twisted pairs referenced to ground; twisted-pair ribbon cables are also available on the market
- The **product ground** and the **programmer ground** must always be **tied together**

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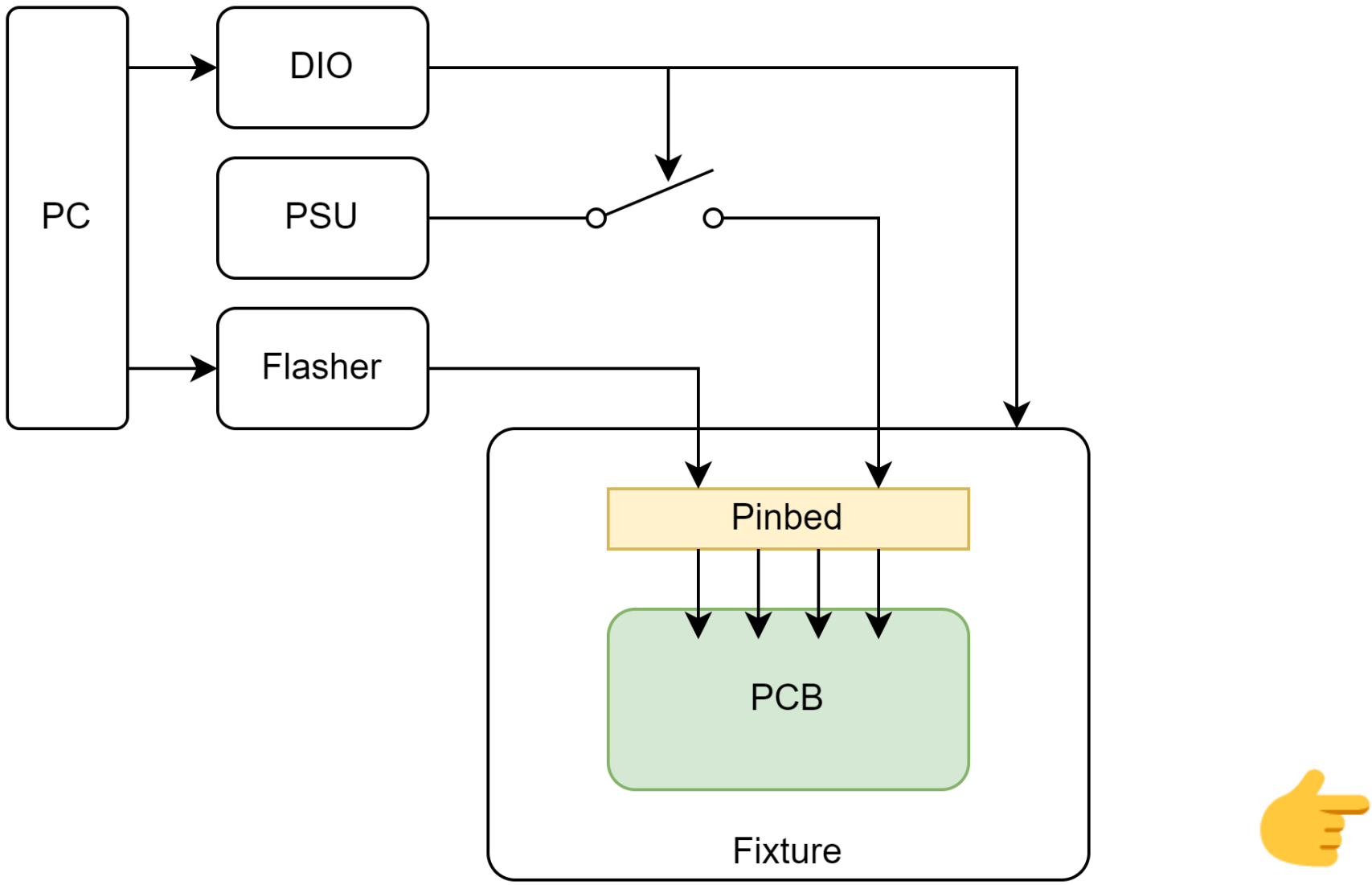
Standalone flashing station architecture



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