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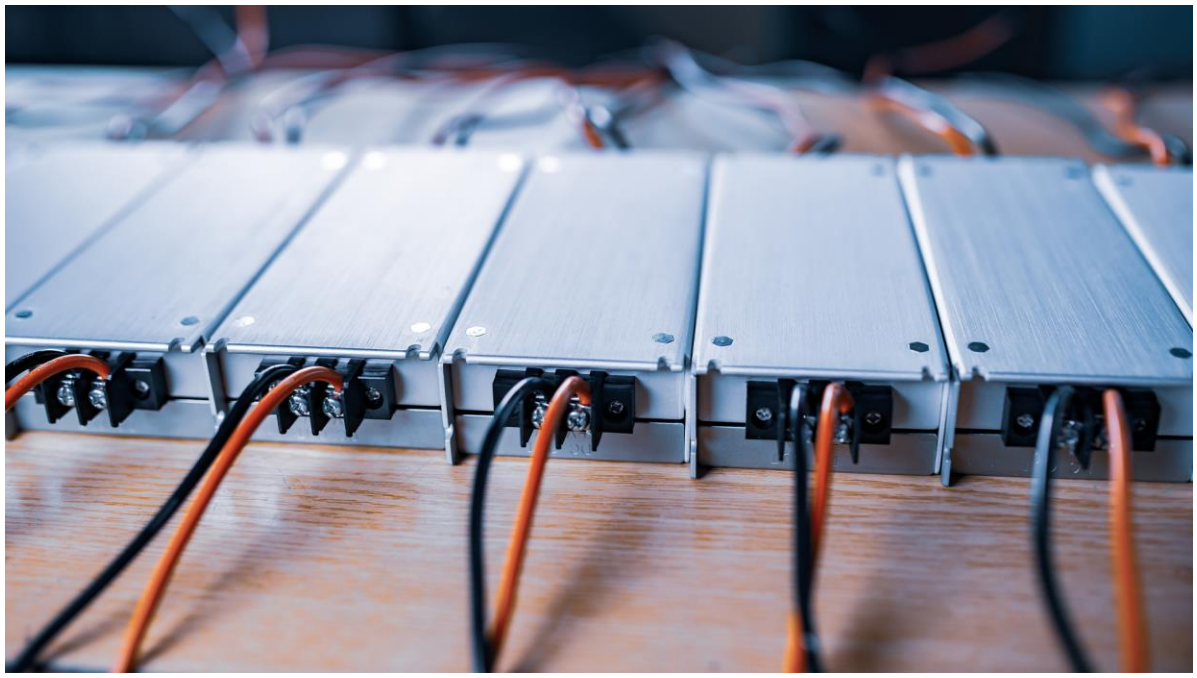
Fundamentals of Industrial Measurement Technology

Electrical Power Supply



ProDSP Post Series Nr.29.

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To operate products under test, a **stable electrical power supply** with **adequate performance** is **required**.

This is fundamentally different from electrical excitation, where the deliverable power is typically not the critical factor.

So, what should you pay attention to? Let me show you:

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Power and accuracy

- In most cases, **stability is more important** than **high accuracy**
- If a precise output is required (<0.1%, <10 mV ripple), then a precision power supply is necessary

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Isolation considerations

- Generally, **an expectation** for **functional testers**
- Often **omitted for flasher or ICT testing** → significant cost reduction

Operating range

- **Voltage range** (can even be negative)
- **Maximum current** → typically specified in terms of power
- **Higher voltage** → **lower current** (at identical power)

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Protection functions

- **OCP**: overcurrent protection (reduces the effects of short circuits)
- **OVP**: overvoltage protection (against programming errors)

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Stability

- How quickly can it **track changes**?
- How **stable** is the output **in steady-state** operation?
- With **simpler power supplies**, stability is **not a trivial** question

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Sense capability (4-wire supply)

- Compensates for **voltage drop** in cabling
- Often **disabled** at low currents (< a few mA)
- Built-in **protections** are **required** in case of sense line disconnection

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Special functions

- **Load / sink mode** → battery simulation
- **AC supply** → clarification of phase count and frequency

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