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The 2.1mm DC barrel connector is one of the most common power connectors used in electronics, and its history is intertwined with the evolution of low-voltage DC power supply standards. Here's an overview of its development and usage:

Origins and Evolution

- **Early Electronics and Power Needs (1950s-1970s):** DC barrel connectors were developed in the mid-20th century, primarily to meet the needs of consumer electronics such as radios and early computing devices. The demand for a standard connector increased as manufacturers sought a way to power devices without needing bulky batteries.
- **Introduction of Standard Sizes (1970s):** The 2.1mm and 2.5mm DC barrel connectors became popular during the 1970s as the electronics industry standardized on a few common sizes. The distinction between the 2.1mm and 2.5mm variants was the inner pin diameter, while the outer barrel remained standardized at 5.5mm. These connectors were easy to manufacture and provided a simple, cost-effective way to power low-voltage devices.

Widespread Adoption

- **Computing and Home Electronics (1980s-1990s):** The 2.1mm connector gained significant traction during the 1980s and 1990s as it became a de facto standard for powering small appliances, routers, modems, and a variety of consumer electronics. During this period, manufacturers like Sony, Panasonic, and others began using these connectors in their power adapters and chargers.
- **Consumer Electronics Boom (2000s):** With the expansion of consumer electronics in the early 2000s, including digital cameras, portable gaming systems, and handheld devices, the 2.1mm barrel connector became even more ubiquitous. The increased adoption was driven by its reliability, ease of use, and the fact that it could support a range of low to medium power requirements (typically 5V to 24V, up to around 3A).

Standardization and Variations

- **No Single Global Standard:** Despite its popularity, there is no universal standard governing barrel connectors, which has led to confusion and compatibility issues. Manufacturers often select 2.1mm or 2.5mm connectors based on slight differences in current rating and fitment. This lack of strict standardization has been a source of frustration for consumers and repair technicians.
- **Role in Open Hardware and DIY Communities:** In recent years, the 2.1mm barrel connector has found new life in the open hardware and DIY electronics communities. Platforms like Arduino, Raspberry Pi accessories, and many prototyping systems have adopted this connector, solidifying its place in modern electronics design.

Recent Developments

- **Challenges from New Standards (2010s-Present):** While the 2.1mm DC barrel connector remains popular, it is now being challenged by newer standards such as USB-C, which offers more features (power delivery, data transfer, and higher power capacity). However, the 2.1mm connector is still favored in many legacy and specialized applications due to its simplicity and robustness.

Why 2.1mm?

The 2.1mm size likely became popular due to a combination of mechanical stability, power handling capacity, and ease of integration into circuit designs. It offers a good balance between size and current-carrying capacity, making it ideal for a wide range of low-power devices.

Conclusion

The 2.1mm DC barrel connector has been a staple in the electronics industry for decades. Its staying power is a testament to its reliability, simplicity, and versatility, even as newer standards continue to emerge.

Daniel B Lynch Sr.

Chief Executive Officer

Memory Protection Devices Inc.