

Philatron Introduces Philaflex-HF-125™ Halogen-Free Power Cables for +125°C Continuous Operating Temperature for AI Data Center Applications

AI Data Centers Need +125°C Continuous Operation Temperature Wire & Cable

Due to data centers shifting from traditional IT environments to AI data centers high-density, industrial-power demands - there is an increasing need for continuous +125°C temperature rated wire and cable. While standard data center ambient temperatures are between 18°C and 27°C (64°F & 81°F), the specific requirements for AI infrastructure drive the need for higher thermal ratings:

1. Sustained High-Power Loads

AI workloads (GPU clusters) operate at near-peak utilization for extended periods, unlike traditional servers with fluctuating demand. This creates **SUSTAINED ELECTRICAL STRESS** on conductors and insulation, leading to continuous heat generation that can exceed the limits of standard 90°C rated cables.



2. High-Density Power Distribution

Localized Hotspots: Even with efficient cooling, localized "hotspots" near high-current connectors and busbars can reach temperatures where standard materials degrade.

3. Higher Reliability and Longer Life

Philaflex-HF-125™ Insulation versus PVC and XLPE Insulations

a. Philaflex-HF-125™: Created for Continuous Operating Temperature of +125°C

Philaflex-HR125™ Insulation meets American Society for Testing and Materials (ASTM) D794 Test for +125°C continuous use temperature - ensuring that Philaflex-HF-125™ insulation will not degrade nor cause the degradation of connectors and switchgear components at prolonged high temperature of +125°C. Philatron-HR125™ Insulation meets ASTM D746 Test for -49°C Brittleness Temperature.

b. Reduced Lifespan of PVC Insulation

While standard PVC insulated cables may be rated for 60°C to 90°C, continuous operation at the upper limit significantly reduces their service life. Prolonged heat exposure (typically above 60°C to 70°C) reduces insulation integrity, causes creeping, deformation, and increased risk of electrical failure. PVC insulated cables also degrade adjacent plastic connectors and switchgear components due to release of corrosive hydrochloric acid as PVC heats up - especially above 100°C.

c. XLPE Insulation Is Not the Answer for Prolonged Continuous High Temperatures

Maximum continuous temperature of XLPE is 90°C. Short-term limit for emergency operating temperature is 105°C for not more than 72 hours on average per year due to the thermal expansion of XLPE insulation. The thermal expansion of XLPE insulation is significant above 80°C. Mechanical accessories on XLPE cables operating near their temperature limits must be capable of withstanding the outward radial stress caused by the expanding XLPE, but more critically they must deal with the thermal contraction as XLPE cools which can lead to electrically weak interface and partial discharge inception.

4. Safety for People and Protection for Expensive Equipment

a. Equipment Protection

AI Data Centers often have large amounts of cables with equipment compacted in confined spaces, poorly ventilated areas - such as under-floor plenums or ceiling trays. In the event of a fire, traditional cables release hydrogen chloride gas when burned and form into hydrochloric acid which can corrode valuable sensitive circuit boards and semiconductor equipment within minutes. Philaflex-HF-125™ is halogen free and emits no corrosive byproducts.

b. Personnel Safety:

In the event of a fire, Philaflex-HF-125™ LSZH cables emit significantly less smoke which improves visibility for evacuation and emits no toxic gases which eliminates the risk of lethal gas inhalation.

UL Standards: Philaflex-HF-125™ cables are designed to conform to applicable UL safety standards, including:

- **UL 1277** Tray Cables
- **UL 83** Thermoplastic-Insulated Wires and Cables
- **UL 62** Flexible Cords and Cables
- **UL 758** Appliance Wiring Material

Long-Term Value for AI-Data-Center Operators

Philatron designs its cable systems to deliver the highest value-to-cost ratio for operators of mission-critical electrical infrastructure. By combining high-temperature insulation performance, LSZH safety characteristics, and robust mechanical durability, Philaflex-HF-125™ cables help reduce maintenance cycles, replacement costs, and operational downtime in AI data center environments.

About Philatron

Headquartered in Santa Fe Springs, California, [Philatron Wire & Cable](#) is a premier U.S. manufacturer of innovative rapid production turnaround wire and cable solutions. Certified to ISO and IATF standards, Philatron serves industries ranging from industrial and automotive to aerospace and defense. With a legacy of innovation and a commitment to American quality, Philatron is the trusted partner powering tomorrow's infrastructure.

For more information, visit:

<https://www.philatron.com/>

Philatron USA: (800) 421-3547 (PST)

Tammy Ashton

Vice President

tashton@philatron.com