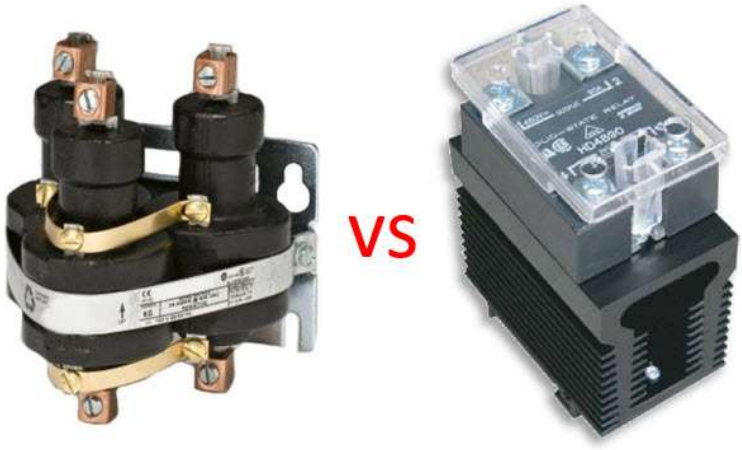
Mercury Displacements Relays vs Solid State Relays & Power Controllers

Mercury displacement relays have been in the market for many years, and for several good reasons. Their initial popularity was driven by life expectancy, which can be more than 10x that of traditional electromechanical relays (EMRs) and contactors. They also provide a silent-switching solution, as opposed to EMRs, which generate acoustical noise with each operation. This can quickly become an irritant in residential or commercial applications.



However, there is one significant downside to mercury displacement relays and contactors; they contain mercury. Owing to the toxicity level of mercury, continued pressure from the market and regulatory agencies since the 1980's, and the simultaneous emergence of solid-state relays (SSRs) as a viable alternative, the market for MDRs has significantly declined over time. Most historical users of MDRs have long-since switched to solid state relays or solid-state power controllers. Unfortunately, change doesn't always come easy and MDRs are still found in some industrial products, even though the residential use of mercury has decreased by >97% since 1980.

The primary source of resistance to change from MDRs to solid-state solutions is cost. Comparable SSRs and power controllers provide significant benefits over MDRs, including long life, position insensitivity, low coil/input power consumption and PLC compatibility, amongst others. However, their initial purchase price is typically higher than equivalent rated MDRs, which dissuades some from making the change, especially if their products are not currently under regulatory pressure to change. Ironically, if the total cost-of-ownership over the life of the product, potential liability and disposal costs are taken into consideration, solid-state solutions are often less expensive.

Solid State Relays & Power Controllers vs. Mercury Displacement Relays

PROS

- Eco-friendly
- Long life expectancy (>7M hours MTBF)
- Position insensitive
- Silent operation
- Low input power consumption
- Zero-crossing output
- Fast response time (<100µsec)

CONS

- Initial purchase price
- Power dissipation (heat)

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While power dissipation is another primary concern of those switching from MDRs to SSRs, HBControls offers multiple single-phase and three-phase solid-state power controllers designed as environmentally safe and reliable alternatives to MDRs. Each power controller utilizes solid-state relays pre-assembled onto efficient, custom-designed heat sinks and derated for full load-current in a 40°C ambient temperature.

Single-Phase Power Controllers
www.hbcontrols.com/ac-single-phase-controllers

Two-Pole & Three-Phase Power Controllers
www.hbcontrols.com/multiphase-controllers

Proportional Output Power Controllers (Phase-Angle & Burst Fire)
www.hbcontrols.com/proportional-output

DC Output Power Controllers
www.hbcontrols.com/dc-output-power-controllers

For additional information or support, please visit us at www.hbcontrols.com or contact our support team @ 800.879.7918 / support@hbcontrols.com.