

# HARSH ENVIRONMENT COATING

## For MiCOM GE Vernova Px40

Our harsh environment coating extends working life and ensures the security and performance of relays.

The harsh environment coating provides additional protection against harsh environments with high humidity and airborne contaminants.

### Solution for Harsh Environments

GE Vernova offers harsh environment coating of PCBs for MiCOM GE Vernova Px40 protection relays. For industrial customers, especially oil and gas customers whose installations may have high concentrations of corrosive gases such as  $H_2S$ ,  $SO_2$  or salt mist gases, the coating will protect and extend the life of products in harsh environments.

### Influence of Harsh Environments

Surface mounted components on PCBs are faced with environmental challenges in industrial facilities. Harsh chemical environments, especially those with gaseous sulphides, may result in corrosion or even failure of surface mounted components. For example, hydrogen sulphide in the atmosphere attacks silver-based components causing a form of growth over a period of time known as 'Silver Whiskers', which can lead to short circuits and product failures.



### Customer Benefits

- Extends life of products
- Ensures security and reliability of performance
- Environmentally-friendly



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## Benefits of Harsh Environment Coated Products

Adding harsh environment conformal coating to PCBs provides a shield against harsh environments containing H<sub>2</sub>S, NO<sub>2</sub> and SO<sub>2</sub>, moisture and salt spray. It improves and extends the working life of the product and ensures the security and reliability of performance, improving asset management and increasing uptime.

## Benefits of the Coating Material

- Rapid application of coating by dipping the entire PCB - no masking of components
- Coated PCBs can be re-worked, enabling quick repairs
- The coating provides a thin barrier of about 1 Micron. As it is very thin and does not gap fill, it has no effect on the 'thermal cycling' reliability of the product
- Excellent health & safety profile and environmental properties - non-flammable and low in toxicity, RoHS compliant, UL approved
- Wide operating temperature range - coating endures up to 200°C for long periods
- Excellent protection and particle repellency profile - coats all surfaces of a component reducing the surface energy, enabling exceptional repellency of moisture and particles

## Harsh Environment Tests

MiCOM Px40 relays have been tested and approved as per IEC 60068 environmental testing standard to the following specifications:

- EN 60068-2-60 1995, Part 2, Test Ke, Method (Class) 3 Industrial corrosive environment/ poor environmental control, mixed gas flow test. 21 days at 75% relative humidity and 30°C, exposure to elevated concentrations of H<sub>2</sub>S (100 ppb), Cl<sub>2</sub> (20 ppb), NO<sub>2</sub> (200 ppb)
- EN 60068-2-52 salt mist, 7 days
- EN 60068-2-43 for H<sub>2</sub>S, 21 days (15 ppm)
- EN 60068-2-42 for SO<sub>2</sub>, 21 days (25 ppm)

## Temperature & Humidity Environmental Tests

MiCOM GE Vernova Px40 relays have been tested and approved as per IEC 60255 and IEC 60068 environmental testing standards to the following specifications:

### Ambient temperature range

Per IEC 60255-6: 1988:

-25°C to +55°C (or -13°F to +131 °F)

Storage and transit:

-25°C to + 70°C (or -13°F to +158°F)

### Tested as per

IEC 60068-2-1: 2007:

-25°C storage (96 hours)

-40°C operation (96 hours)

IEC 60068-2-2:2007:

+85°C storage (96 hours)

+85°C operation (96 hours)

### Ambient humidity range

Per IEC 60068-2-3: 1969:

56 days at 93% relative humidity and +40 °C

Per IEC 60068-2-30: 1980:

Damp heat cyclic six (12 + 12) hour cycles, 93 % RH, +25°C to +55°C

For more information, visit  
**[gevernova.com/grid-solutions](https://gevernova.com/grid-solutions)**

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