

# Custom Panel Shop Power System Solutions



## Eaton's Electrical Services and Systems provides turn-key custom solutions for electrical distribution and control systems.

Our Custom Panel Shop, located in Warrendale, PA, is electronically integrated into the regional engineering service offices located throughout North America. This capability allows us to provide: engineering, design, custom enclosures, metal fabrication, and assembly for Industrial Control Panels.

Working with EESS Power Systems Automation Group, the Custom Panel Shop can provide complete systems integration services including system design, PLC programming, start up and training. All projects include complete drawings and documentation.

Specifications are available to assist creation of bid documents to promote these unique capabilities. In addition, we have proven experience with the application of IQ Meter panels, High Resistance Grounding Units and operator consoles.

These capabilities compliment Eaton's expertise in field service project management, electrical system engineering, power system analysis, power quality improvements, equipment life extension and operational excellence programs.

## Custom Panel Shop Standard Applications, Solutions and Capabilities

- Protective Relaying/ Switchgear Door Upgrades
- Power Xpert Meter Panels, portable or enclosed units
- PLC Control Panels
- Remote Breaker Control Panels
- Air Terminal Chambers (ATC) and bus transition enclosures
- Switchboard controls and retrofit
- Generator and Transfer Switch Controls
- Motor Control Panels with 3 Phase Disconnect
- Arc Flash Limiter Solutions (AFL)
- High Resistance Grounding Units (HRGU)
- Voltage Transient Suppression Devices (Snubbers)
- Harmonic Filters
- Wire Harnesses
- MCC Bucket Retrofills

## New or redesigned panels can be applied to supplement other life extension projects such as:

- New front doors, relays and controls associated with circuit breaker replacements
- Stand alone modernization of protective relays and controllers

To learn more about how our engineered solutions can improve your application, contact your local Eaton Engineering Services and Systems office.



Powering Business Worldwide

## Engineered Solutions Standard Specifications

At a minimum, all NEC & UL508A Industrial Control Panel assembly standards are followed. In addition, all customer project specifications are treated as the governing document, as long as it does not contradict the NEC. In the absence of customer specifications, our panel specifications are below:

### Drawings

In the absence of customer-supplied drawings, enclosure layout drawing(s), including device layout and bill of material, as well as a wiring diagram and schematics are supplied.

### Devices

Devices are custom fit to the enclosure and secured with front accessible hardware into the back panel.

### Wire Type

SIS switchboard wire, XLPE, 90°C, 600V

### Wire Color

Standard wire color is grey. Red is available upon request.

### Shielded Cable

300V, 14 AWG twisted pair is typically used for analog signals. Shields are grounded at the source of power. The cable is finished with heat shrink on either end of the cable.

### Wire Routing

Wiring is continuous without splices. Wires are run in gray wireway. AC and DC signal wiring are segregated to avoid parallel runs as much as practically possible. Wires are run in a "drip-loop" across a panel hinge and protected with plastic spiral wrap

### Wire Labels

Computer generated heat-shrink style wire labels are installed at both ends of each wire. The Standard "FROM" Format is utilized.

### Termination Blocks

Eaton's IEC-style din-rail terminal blocks are used. Terminal blocks for control wire are rated at 600V, 30A. Blocks for power are rated at 600V, 50A. Blocks are marked with sequential numbers. A maximum of two terminations per block opening is permitted.

### Legends

Internal relays, starters, and terminal strips are labeled with white text on black background.

### Testing

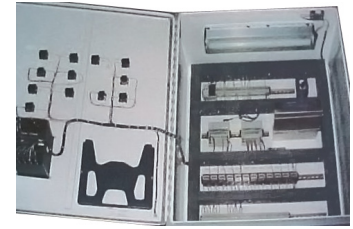
Each panel is point-to-point tested per the drawing.

### Options

- Drawings: network architecture, connection diagrams, single-line, 3-line, etc.
- Custom wire colors are available to meet customer requirements.
- Smart wire
- NEMA-style terminations
- Custom wire labels
- Engraved lamicord legends
- Testing: full functional testing, power up of all devices.
- UL 508A Industrial Control Panel listing by UL representative. Additional fees will apply.



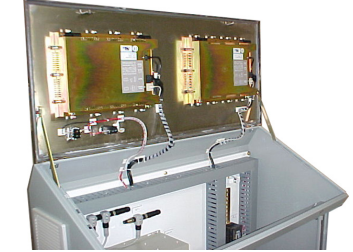
PLC and Motor Control Panels



Transfer Scheme Upgrades



Motor Control Panels with 3 Phase Disconnect



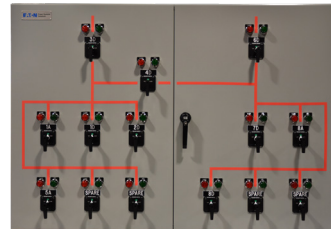
Operator Consoles



High Resistance Grounding Units



Protective Relaying / Switchgear Door Upgrades



Remote Breaker Control Panel



Remote Breaker Control Panel



Protective Relaying / Switchgear Door Upgrades

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