Panel Essentials Series 4: Electrical Control Components

Introduction

To start our Panel Essentials series, we talked about some basic elements of a control panel—DIN Rail, Wire & Cable Management and UL508 Design (you can find these previous editions linked below).

Now that we've covered structural components and design, let's dive into the fun part—all the cool electrical controls that bring your design to life. There are a number of things to consider such as how they handle different environments, how much power they can handle, what jobs they're good for, whether they've got good stamps of approval, and of course, how much they'll cost. But one thing you can't compromise on is reliability in all key function areas of your control panel.

If you want to make sure you have reliability locked down, you have to know your products inside and out. Let's check out your options. Click on the product links below for the full scoop on each product, including all the features, benefits and options.

Power & Actuation Products

The principal functions of power & actuation electrical controls are to disconnect, control and/or protect a circuit from a ground fault, short-circuit or overload current. Power circuits have a significant electrical capacity (commonly 240-600 VAC 3-Phase) and rely on components such as the following:

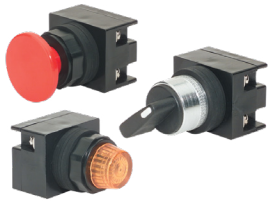
Disconnect Switches	Miniature Circuit Breakers	Contactors and Control Relays	Overload Relays
			

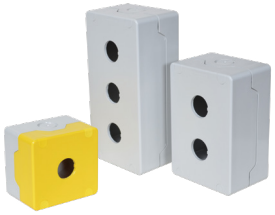
Motor Protection Circuit Breakers	Direct On-Line-Starters
	

Other power & actuation products include molded case circuit breakers, fuses and fuse holders.

Human Machine Interface (HMI) Products

HMI products are devices that are actuated by a person to direct the operation of another device and/or indicate the status of an operating system. The interface may be touch, sight, sound or any physical or cognitive function. HMI products in a control circuit deal at a lower electrical capacity (commonly 240-600 VAC 3-Phase) and are used to control the power components. Common HMI components include:

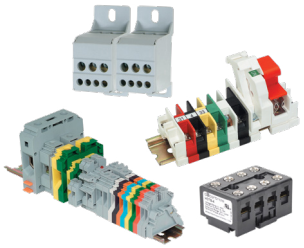
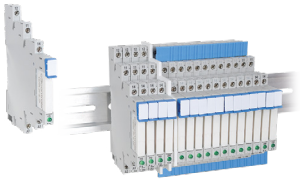
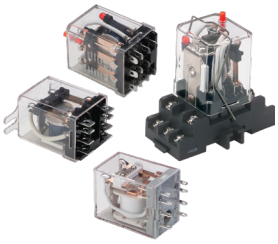
30mm Industrial Pilot Devices	30mm Hazardous Location Pilot Devices	22mm IEC Pilot Devices	22mm NEMA Pilot Devices
			

16mm Pilot Lights	13mm Pilot Lights	Cam Switches	Enclosures
			

Other HMI products include beacons, audible alarms, electronic operator interfaces and meters.

Control Logic Products

Control logic products are devices that control other products in a control circuit in a logical sequence or based on a defined period of time. This control is carried out by electrical actuation rather than by a person. Control logic products also include devices that distribute electricity throughout a control panel. Common voltages for control logic products are 120VAC or 24VDC and components are:

Terminal Blocks	Terminal Block Relays	Electronic Timing Relays	General Purpose Relays
			

Industrial Power Supplies


Other control logic products include programmable relays, programmable logic controllers, power supplies, and control transformers.

Product Reliability - Key Points

You may know the type of product that you need, but are you looking for the right product/company features? If you want reliability, here are some key points to consider:

- **Safety & Compliance:** A reliable product goes a long way in ensuring the safety of your team and machinery, as well creating a smooth approval and marketing process. It is always a good choice to make sure a product meets global standards for quality and safety. Key standards include UL, CSA and IEC for products and NFPA, CSA and IEC for installation. Compliance also speaks to design, fabrication and performance — creating an end product you can trust.

- **Durability:** A reliable product will also provide durability. Construction, material and testing play large roles in delivering a product with optimal performance and life even when utilized within demanding applications and varying environments. You may need to consider whether the product will be exposed to and be able to withstand moisture, extreme temperatures, corrosive chemicals and contaminants, noise and vibration.

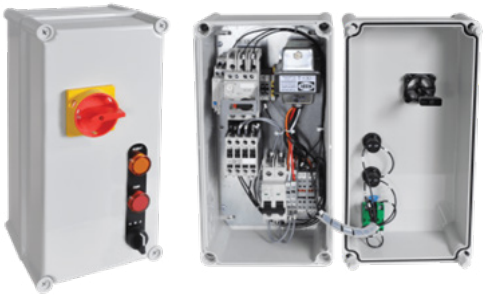
- **Efficiency:** A reliable product will be well-crafted yet efficient in design as a result of excellent and innovative engineering and product development. While delivering optimum performance, an efficient product can also deliver lightweight material and a minimal footprint within your control panel. The benefits can include space and performance optimization, increased productivity, inventory reduction, ease of installation/maintenance, cost savings and improved cash flow. You'll also want to consider versatility, which creates additional efficiency benefits including range of operation, seamless compatibility and the sharing capability of common accessories.

- **Service & Support:** A reliable product is backed by a customer-centered warranty, a knowledgeable and responsive support team and a shipping policy that allows you to get your product when you need it. You'll want to consider how your supplier stands behind their product.

As you consider your needs for control panel electrical control components, check out all of c3controls' Product Showcase pages and online product configurators to explore the many ways c3controls can provide products that perform and help you protect your biggest investments.

Panel Solutions

For your complete panel needs, c3controls operates a UL508A certified panel shop serving the OEM and panel builders across a wide variety of industries. Check out our enclosed panel solutions!



c3controls Panel Essentials Papers

- **Series 1:** DIN Rail
- **Series 2:** Wire Duct and Terminal Blocks *(for wire and cable management)*
- **Series 3:** UL508A Control Panel Design Considerations
- **Series 4:** Electrical Control Components
- **Series 5:** Control Panel Industry Trends